Workshop Manual

Audi A4 2015 ➤ , Audi A4 Avant 2015 ➤ , Audi A4 China 2016 ➤ , Audi A4 allroad quattro 2016 ➤ , Audi A5 2016 ➤ , Audi A6 2019 ➤ , Audi A6 China 2019 ➤ , Audi A7 Sportback 2018 ➤ , Audi A8 2018 ➤ , Audi Q5 2017 ➤ , Audi Q5 China 2019 ➤ , Audi Q7 2016 ➤ , Audi Q8 2018 ➤

Rear final drive 0D2, 0D3, 0DB, 0B0, 0BX, 0DG, 0G2, 09R

Edition 09.2018

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List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

39 - Final drive - rear differential

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

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00 – Technical data

1 Identification

(ARL006062; Edition 09.2018)

⇒ “1.1 Identification of final drive”, page 1

⇒ “1.2 Identification of four-wheel drive coupling 0CJ or 0CX”, page 5

1.1 Identification of final drive

⇒ “1.1.1 Identification of final drive 0DB, 0D2, 0G2”, page 1

⇒ “1.1.2 Identification of final drive 0DG ”, page 2

⇒ “1.1.3 Identification of final drive 0B0 quattro ultra ”, page 3

⇒ “1.1.4 Identification of final drive 0D3, 0BX quattro sport ”, page 4

1.1.1 Identification of final drive 0DB, 0D2, 0G2

The rear final drive “0DB” is installed in conjunction with the following gearbox types:

- 7-speed dual clutch gearbox 0CK, four-wheel drive

Rear final drives “0D2” and “0G2” are installed in conjunction with the following gearbox types:

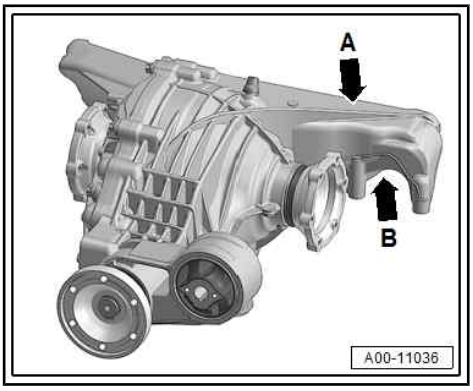
- 8-speed automatic gearbox 0D5, four-wheel drive
- 8-speed automatic gearbox 0D7, four-wheel drive (Q7 hybrid only)

Rear final drive allocation

- ⇒ “2.1 Allocation of gearbox to engine”, page 7

Location on rear final drive 0DB, 0D2 and 0G2

- -Arrow A- Barcode sticker with part number and date of manufacture
- -Arrow B- Code letters, serial number and production date



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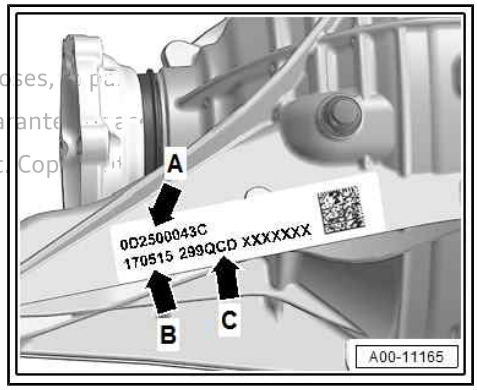
Example of barcode sticker with part number and date of manufacture



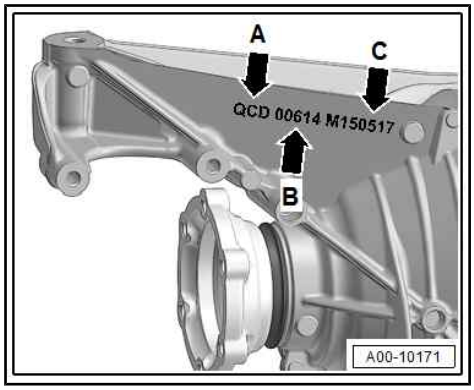
- -Arrow A- Final drive 0D2 with Part No. (in this example 0D2 500 043C)
- -Arrow B- Production date of rear final drive

Example:	17	05	15
	I	I	I
	Day	Month	Year of manufacture -2015-

- -Arrow C- Code letters -QCD-

Other information can be disregarded.

Example of manufacturing data of rear final drive



- -Arrow A- Code letters -QCD-
- -Arrow B- Code letters -00614-
- -Arrow C- Production date

Example:	QCD	00614	M	15	05	17
	I	I	I	I	I	I
	Code letters	Serial number	Manufacturer	Year of manufacture -2015-	Month	Day

Other information can be disregarded.

- When installing a new rear final drive unit, it is important to verify not only the code letters but also the PR No. and the engine code of the vehicle in the ⇒ Electronic parts catalogue . This is necessary to ensure that the correct version is installed.

1.1.2 Identification of final drive 0DG

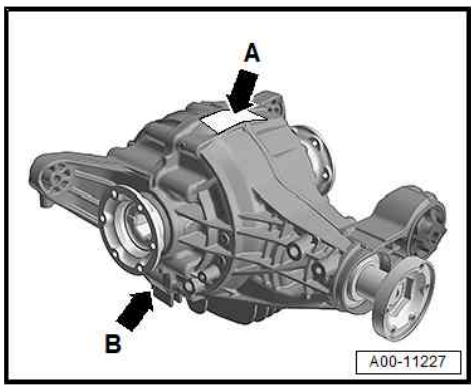
The rear final drive 0DG is installed in conjunction with the following gearbox types:

- 8-speed automatic gearbox 0D6, four-wheel drive

Rear final drive allocation

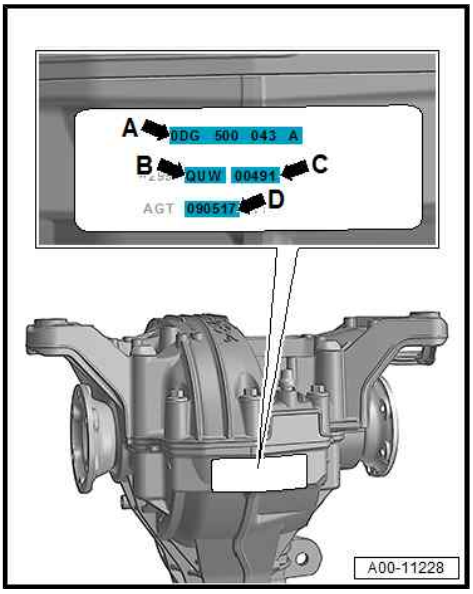
- ⇒ “2.1 Allocation of gearbox to engine”, page 7

Location on rear final drive



- -Arrow A- Barcode sticker with part number, code letters, daily manufacturing number and date of manufacture
- -Arrow B- Code letters, serial number and production date

Data on barcode sticker (example)

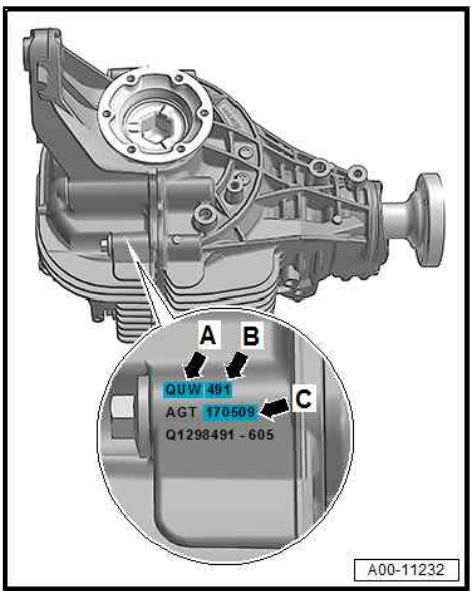


- -Arrow A- Final drive »0DG« with part number (in this example 0DG 500 043 A)
- -Arrow B- Code letters -QUW-
- -Arrow C- Serial daily manufacturing number -00491-
- -Arrow D- Production date of rear final drive

Example:	09	05	17
	I Day	I Month	I Year of manufacture -2017-

Other information can be disregarded.

Manufacturing data of rear final drive (example)



- -Arrow A- Code letters -QUW-
- -Arrow B- Serial daily manufacturing number -491-
- -Arrow C- Production date

Example:	17	05	09
	I Year of manufacture -2017-	I Month	I Day

Other information can be disregarded.

- When installing a new rear final drive unit, it is important to verify not only the code letters but also the PR No. and the engine code of the vehicle in the ⇒ Electronic parts catalogue . This is necessary to ensure that the correct version is installed.

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1.1.3 Identification of final drive 0B0 “quattro ultra”

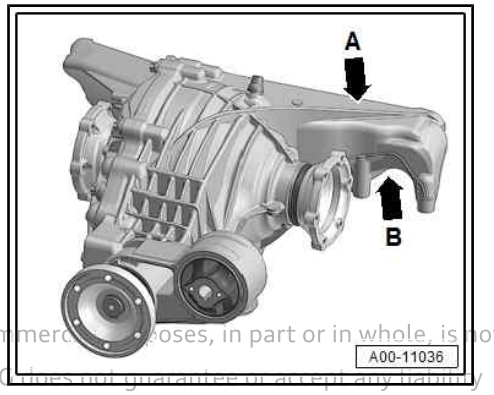
The rear final drive 0B0 “quattro ultra” is installed in conjunction with the following gearbox types:

- 6-speed manual gearbox 0CX, four-wheel drive
- 7-speed dual clutch gearbox 0CK, four-wheel drive

Rear final drive allocation

- ⇒ “2.1 Allocation of gearbox to engine”, page 7

Location on rear final drive 0B0 “quattro ultra”, 09R “quattro ultra”



- -Arrow A- Barcode sticker with part number, code letters and date of manufacture
- -Arrow B- Code letters, serial number and production date

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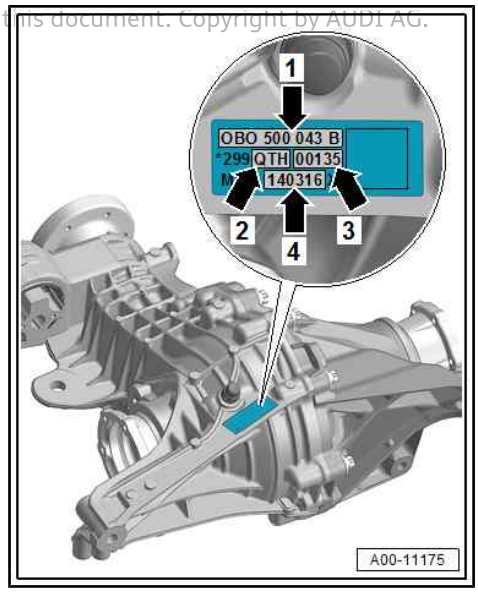
Example of barcode sticker with part number, code letters and date of manufacture

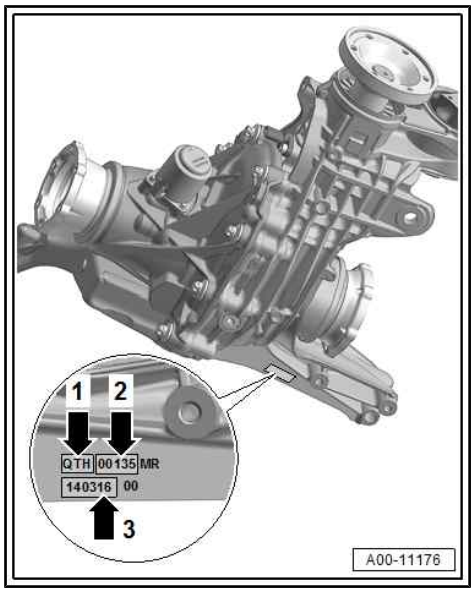


- -Arrow 1- Final drive »0B0« with part number (in this example 0B0 500 043 B)
- -Arrow 2- Code letters -QTH-
- -Arrow 3- Serial number -00135-
- -Arrow 4- Production date of rear final drive -140316-

Example:	14	03	16
	I	I	I
	Day	Month	Year of manufacture -2016-

Other information can be disregarded.

Example of manufacturing data of rear final drive



- -Arrow 1- Code letters -QTH-
- -Arrow 2- Serial number -00135-
- -Arrow 3- Production date -140316-

Example:	14	03	16
	I	I	I
	Day	Month	Year of manufacture -2016-

Other information can be disregarded.

- When installing a new rear final drive unit, it is important to verify not only the code letters but also the PR No. and the engine code of the vehicle in the ⇒ Electronic parts catalogue . This is necessary to ensure that the correct version is installed.

1.1.4 Identification of final drive 0D3, 0BX “quattro sport”

The rear final drive 0D3 “quattro sport” is installed in conjunction with the following gearbox types:

- 8-speed automatic gearbox 0D5, four-wheel drive

The rear final drive 0BX “quattro sport” is installed in conjunction with the following gearbox types:

- 8-speed automatic gearbox 0D6, four-wheel drive

Rear final drive allocation

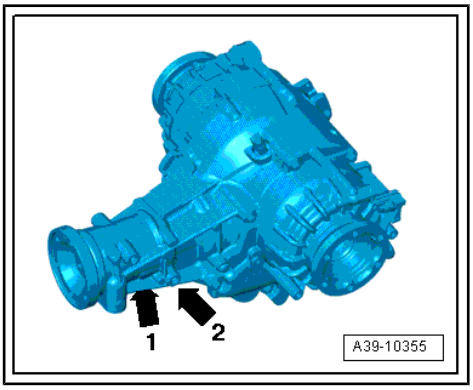
- ⇒ “2.1 Allocation of gearbox to engine”, page 7

Location on rear final drive

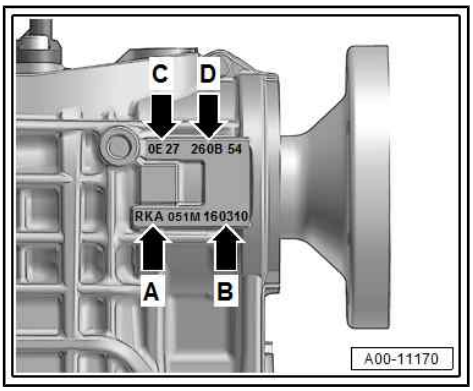
Classification of clutches -arrow 1-

Code letters and date of manufacture -arrow 2-

- The rear final drive 0D3/0BX “quattro sport” can be identified by its hydraulic control unit with superposition gears at the sides.



- -Arrow A- Code letters -RKA-
- -Arrow B- Production date -160310-



Example:	16	03	10
	I Year -20016- of manufacture	I Month	I Day

- -Arrow C- Classification of clutch on left side (classification of friction coefficients for clutch). Example: -0E27-
- -Arrow D- Classification of clutch on right side (classification of friction coefficients for clutch). Example: -260B-

Other information can be disregarded.

- When installing a new rear final drive unit, it is important to verify not only the code letters of the final drive but also the PR No. and the engine code of the vehicle in the ⇒ Electronic parts catalogue. This is necessary to ensure that the correct version is installed.

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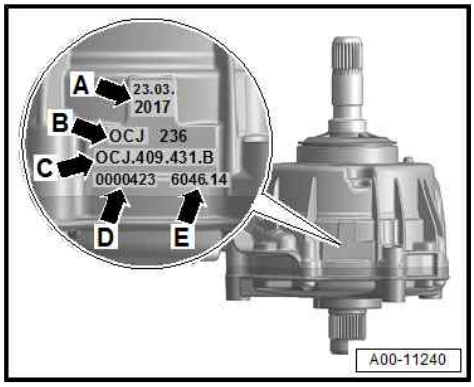
1.2 Identification of four-wheel drive coupling 0CJ or 0CX

There are two versions of the four-wheel drive coupling. As they look identical, they can only be distinguished from each other by the part number.

- Four-wheel drive coupling 0CJ can transfer up to 800 Nm.
- Four-wheel drive coupling 0CX can transfer up to 1200 Nm.

Location on four-wheel drive coupling 0CJ or 0CX



- -Arrow A- Production date

Example: 23.03.2017

- -Arrow B- Type of four-wheel drive coupling

Example: 0CJ

- -Arrow C- Part number

Example: 0CJ 409 431 B

- -Arrow D- Serial number

Example: 0000423

- -Arrow E- Coupling classification

Example: 6046.14

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2 Technical data

⇒ “2.1 Allocation of gearbox to engine”, page 7

⇒ “2.2 Capacities”, page 13

2.1 Allocation of gearbox to engine

⇒ “2.1.1 Code letters, allocation, transmission ratios - Audi A4”, page 7

⇒ “2.1.2 Code letters, allocation, transmission ratios - Audi A5”, page 8

⇒ “2.1.3 Code letters, allocation, transmission ratios - Audi Q5”, page 9

⇒ “2.1.4 Code letters, allocation, transmission ratios - Audi Q7, Q8”, page 10

⇒ “2.1.5 Code letters, allocation, transmission ratios - Audi A6”, page 10

⇒ “2.1.6 Code letters, allocation, transmission ratios - Audi A7”, page 11

⇒ “2.1.7 Code letters, allocation, transmission ratios - Audi A8”, page 12

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2.1.1 Code letters, allocation, transmission ratios - Audi A4

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0DB		
Code letters		**QBZ**	**QCC**	**QGH**
Ratio	Final drive $Z_2 : Z_1$	47 : 11 = 4.273	47 : 11 = 4.273	49 : 11 = 4.454

Rear final drive		0DB		
Code letters		**RZV**		
Ratio	Final drive $Z_2 : Z_1$	47 : 11 = 4.273		

Rear final drive		0D2		
Code letters		**QXS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0G2		
Code letters		**QVF**	**SRP**	
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	43 : 13 = 3.308	

Rear final drive		0B0 »quattro ultra«		
Code letters		**QTG**	**QTH**	**SBX**
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.400	51 : 13 = 3.923	39 : 11 = 3.545

Rear final drive		0B0 »quattro ultra«		
Code letters		**SBW**	**SNK**	
Ratio	Final drive $Z_2 : Z_1$	51 : 13 = 3.923	44 : 10 = 4.400	

Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

2.1.2 Code letters, allocation, transmission ratios - Audi A5

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- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0DB		
Code letters		**QBZ**	**RZV**	**RZW**
Ratio	Final drive $Z_2 : Z_1$	47 : 11 = 3.545	47 : 11 = 3.545	47 : 11 = 3.545

Rear final drive		0DB		
Code letters		**QCC**		
Ratio	Final drive $Z_2 : Z_1$	47 : 11 = 3.545		

Rear final drive		0G2		
Code letters		**QVF**	**SRP**	
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	43 : 13 = 3.308	

Rear final drive		0B0 »quattro ultra«		
Code letters		**QTG**	**SBX**	**SNK**
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.400	39 : 11 = 3.545	44 : 10 = 4.400

Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

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2.1.3 Code letters, allocation, transmission ratios - Audi Q5

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0D2		
Code letters		**RDZ**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0B0 »quattro ultra«		
Code letters		**QTF**	**SNJ**	**SNK**
Ratio	Final drive $Z_2 : Z_1$	53 : 10 = 5.300	53 : 10 = 5.300	44 : 10 = 4.300

Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

2.1.4 Code letters, allocation, transmission ratios - Audi Q7, Q8

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0D2		
Code letters		**QCD**	**RWN**	
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	43 : 13 = 3.308	

Rear final drive		0DG		
Code letters		**QUS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0BX »quattro sport«		
Code letters		**RKA**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

2.1.5 Code letters, allocation, transmission ratios - Audi A6

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0G2		
Code letters		**SRP**	**SQP**	**UEH**
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	43 : 13 = 3.308	43 : 13 = 3.308

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Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0B0 »quattro ultra«		
Code letters		**SNK**		
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.300		

Rear final drive		09R »quattro ultra«		
Code letters		**RPZ**	**RQA**	
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.300	44 : 10 = 4.300	

2.1.6 Code letters, allocation, transmission ratios - Audi A7

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

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⇒ “2.2 Capacities”, page 13

Rear final drive		0G2		
Code letters		**SRP**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0DG		
Code letters		**QUU**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0BX »quattro sport«		
Code letters		**RKB**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0B0 »quattro ultra«		
Code letters		**SNK**		
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.300		

Rear final drive		09R »quattro ultra«		
Code letters		**RPZ**	**RQA**	
Ratio	Final drive $Z_2 : Z_1$	44 : 10 = 4.300	44 : 10 = 4.300	

2.1.7 Code letters, allocation, transmission ratios - Audi A8

The following data can be found in the ⇒ Electronic parts catalogue .

- Production dates
- Allocation to engine
- Allocation of drive shaft flanges
- Allocation to automatic gearbox according to code letters and PR numbers

⇒ “2.2 Capacities”, page 13

Rear final drive		0G2		
Code letters		**SRP**	**RYZ**	
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	43 : 13 = 3.308	

Rear final drive		0DG		
Code letters		**QUU**	**QUW**	
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308	36 : 13 = 2.769	

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Rear final drive		0D3 »quattro sport«		
Code letters		**QQS**		
Ratio	Final drive $Z_2 : Z_1$	43 : 13 = 3.308		

Rear final drive		0BX »quattro sport«		
Code letters		**RJZ**	**RKB**	
Ratio	Final drive $Z_2 : Z_1$	36 : 13 = 2.769	43 : 13 = 3.308	

2.2 Capacities

•

⇒ “2.2.1 Capacity of rear final drive 0DB”, page 13

⇒ “2.2.2 Capacity of rear final drive 0D2, 0G2”, page 13

⇒ “2.2.3 Capacity of rear final drive 0DG”, page 13

⇒ “2.2.4 Capacity of rear final drive 0B0 quattro ultra ”, page 14

⇒ “2.2.5 Capacity of rear final drive 09R quattro ultra ”, page 14

⇒ “2.2.6 Capacity of rear final drive 0D3 quattro sport ”, page 14

⇒ “2.2.7 Capacity of rear final drive 0BX quattro sport ”, page 14

⇒ “2.2.8 Capacity of four-wheel drive coupling 0CX, 0DJ”, page 15

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2.2.1 Capacity of rear final drive 0DB

Capacity of final drive	0.67 ltr.
The following data can be found in the ⇒ Electronic parts catalogue : ♦ Specification of gear oil for rear final drive	

– Check gear oil level ⇒ page 107 .

2.2.2 Capacity of rear final drive 0D2, 0G2

Capacity of final drive	0.85 ltr.
The following data can be found in the ⇒ Electronic parts catalogue : ♦ Specification of gear oil for rear final drive	

– Check gear oil level ⇒ page 107 .

2.2.3 Capacity of rear final drive 0DG

Capacity of final drive	1.0 ltr.
The following data can be found in the ⇒ Electronic parts catalogue : ♦ Specification of gear oil for rear final drive	

– Check gear oil level ⇒ page 107 .

2.2.4 Capacity of rear final drive 0B0 “quattro ultra”

Capacity of final drive	0.96 ltr.
The following data can be found in the ⇒ Electronic parts catalogue : ◆ Specification of gear oil for rear final drive	

2.2.5 Capacity of rear final drive 09R “quattro ultra”

Capacity of final drive	1.3 ltr.
The following data can be found in the ⇒ Electronic parts catalogue : ◆ Specification of gear oil for rear final drive	

2.2.6 Capacity of rear final drive 0D3 “quattro sport”

Rear final drive	0D3 “quattro sport”
Gear oil capacity ◆ For final drive (differential and pinion shaft) ◆ ⇒ “3.2 Checking gear oil level”, page 107	0.95 ltr. Gear oil specifications ⇒ Electronic parts catalogue
ATF capacity ◆ For hydraulic control unit and superposition gears ◆ ⇒ “4.1 Checking ATF level”, page 119	Approx. 0.93 ltr. Gear oil specifications ⇒ Electronic parts catalogue

2.2.7 Capacity of rear final drive 0BX “quattro sport”

Rear final drive	0BX “quattro sport”
Gear oil capacity ◆ For final drive (differential and pinion shaft) ◆ ⇒ “3.2 Checking gear oil level”, page 107 ◆ ⇒ “3.3 Draining and filling gear oil”, page 109	1.4 ltr. Gear oil specifications ⇒ Electronic parts catalogue

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Rear final drive	0BX “quattro sport”
ATF capacity ◆ For hydraulic control unit and superposition gears ◆ ⇒ “4.1 Checking ATF level”, page 119 ◆ ⇒ “4.2 Draining and filling ATF”, page 119	Approx. 1.2 ltr. Gear oil specifications ⇒ Electronic parts catalogue

2.2.8 Capacity of four-wheel drive coupling 0CX, 0DJ

Four-wheel drive coupling	Four-wheel drive coupling 0CX, 0DJ
Capacity of four-wheel drive coupling	0.36 ltr.
◆ ATF specifications ⇒ Electronic parts catalogue	

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3 Transmission layout

⇒ “3.1 Transmission layout - vehicles without four-wheel drive coupling”, page 16

⇒ “3.2 Transmission layout - vehicles with four-wheel drive coupling quattro ultra ”, page 17

3.1 Transmission layout - vehicles without four-wheel drive coupling

1 - Rear final drive

- ❑ Exploded view ⇒ page 50
- ❑ Removing and installing ⇒ page 50

2 - Propshaft

- ❑ Exploded view ⇒ page 30
- ❑ Removing and installing ⇒ page 32

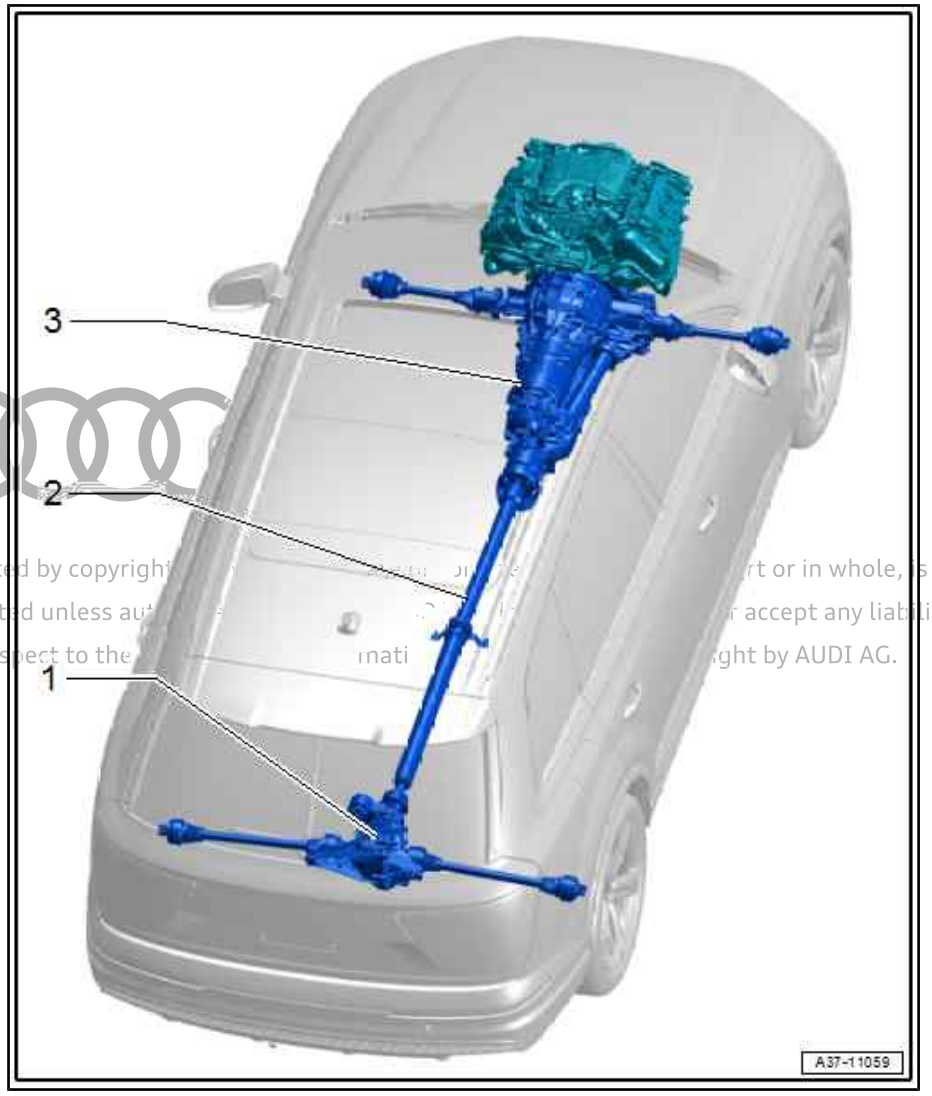
3 - Gearbox

- ❑ Removing and installing

♦ ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Removing and installing gearbox

♦ ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Removing and installing gearbox

♦ ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Removing and installing gearbox



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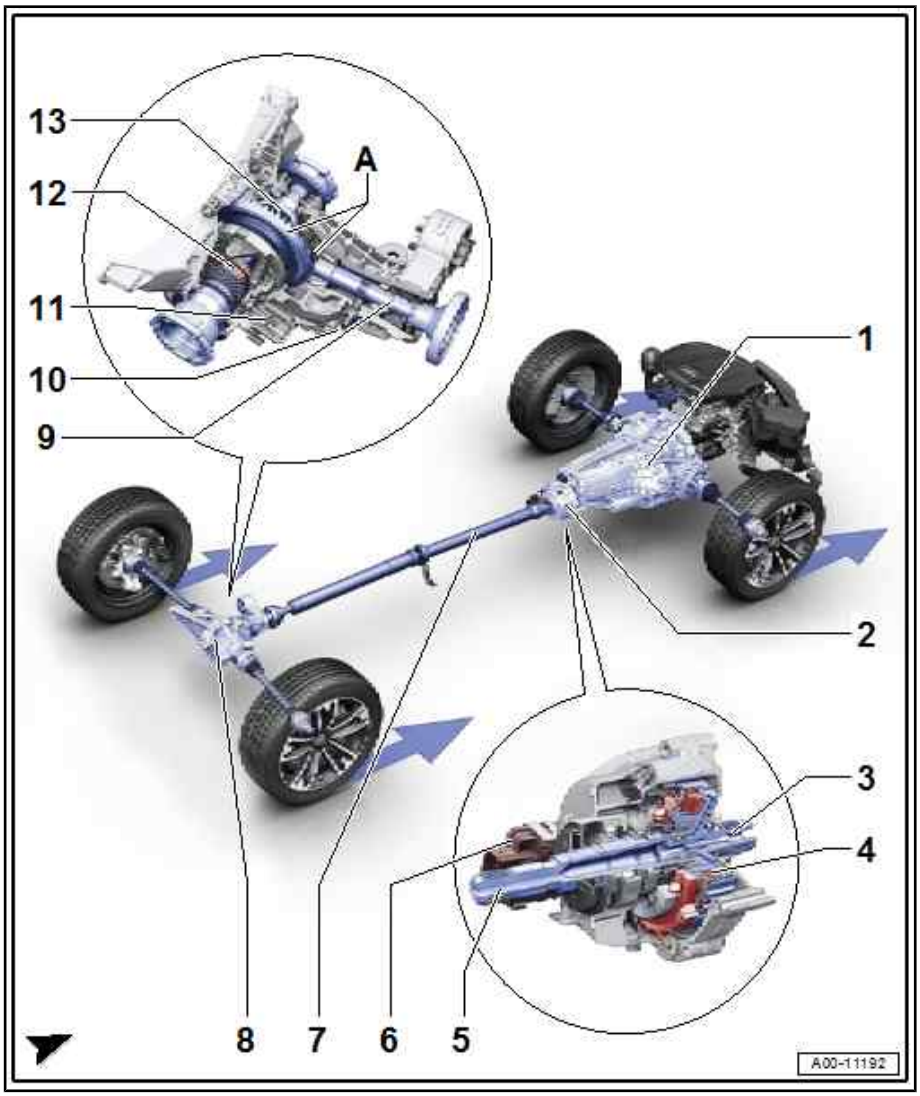
3.2 Transmission layout - vehicles with four-wheel drive coupling »quattro ultra«

Identification and ratio



1 - Gearbox

- ♦ Removing and installing
- ♦ ⇒ Gearbox; Rep. gr. 34 ; Removing and installing gearbox

2 - Four-wheel drive coupling

- ❑ ⇒ "7.1 Exploded view - four-wheel drive coupling", page 186

3 - Four-wheel drive coupling input shaft

4 - Multi-plate clutch

5 - Four-wheel drive coupling output shaft

6 - All-wheel drive control unit - J492-

The following are integrated in the all-wheel drive control unit :

- ♦ Clutch actuator for all-wheel drive - V622-
- ♦ Clutch position sender for all-wheel drive - G969-
- ♦ Removing and installing ⇒ page 194

7 - Propshaft

- ❑ Exploded view ⇒ page 30
- ❑ Removing and installing ⇒ page 32

8 - Rear final drive

- ❑ Exploded view ⇒ page 50
- ❑ Removing and installing ⇒ page 50

9 - Rear pinion shaft

10 - Propshaft speed sender - G970-

- ❑ Removing and installing ⇒ page 90

11 - Clutch actuator 2 for all-wheel drive - V623-

- ❑ Removing and installing ⇒ page 91

12 - Dog clutch

13 - Rear differential

A - Final drive gear set (pinion shaft and crown wheel) on rear final drive

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4 Safety precautions

⇒ “4.1 Safety precautions when working on vehicle”, page 18

⇒ “4.2 Safety precautions when working on vehicles with start/ stop system”, page 19

⇒ “4.3 Safety precautions when working on high-voltage system”, page 19

4.1 Safety precautions when working on vehicle

Accident risk; vehicle may start to move

If you select a gear while the engine is running, the vehicle may start to move.

– Move selector lever to position “P”.

– Apply parking brake.

Danger from toxic exhaust gases when engine is running.

– When the engine is running, the exhaust system must always be connected to the exhaust gas extractor.

Risk of injury as the radiator fan(s) may start up automatically.

– Unplug electrical connectors before working in vicinity of radiator cowl.

Risk of irreparable damage to electronic components

– Switch off ignition before disconnecting and connecting test equipment.

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Risk of irreparable damage to electronic components

When disconnecting the battery there is a risk of irreparable damage to electronic components.

– Always switch off the ignition before disconnecting the battery.

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

4.2 Safety precautions when working on vehicles with start/stop system

Risk of injury - engine may start unexpectedly

The engine can start unexpectedly if the vehicle's start/stop system is activated. A message in the instrument cluster indicates whether the start/stop system is activated.

– To deactivate the start/stop system, switch off the ignition.

4.3 Safety precautions when working on high-voltage system

High voltage can cause fatal injury

The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock

– Persons with life-sustaining or other electronic medical devices in or on their body must not perform any work on the high-voltage system. Such medical devices include internal analgesic pumps, implanted defibrillators, pacemakers, insulin pumps and hearing aids.

– The high-voltage system must be de-energised by a suitably qualified person.

Risk of injury - engine may start unexpectedly

It is difficult to determine whether the drive system of an electric vehicle or hybrid vehicle is active. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).

– Switch off ignition.

– Place ignition key outside vehicle interior.

Risk of damage to high-voltage wiring

Incorrect handling may result in damage to the insulation for high-voltage wires or high-voltage connectors.

– Never use high-voltage wiring or high-voltage connectors as a support.

– Never support tools or equipment on high-voltage wires and high-voltage connectors.

– Never bend or kink high-voltage wiring.

– Pay attention to coding when connecting high-voltage connections.

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High voltage can cause fatal injury

The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock if high-voltage components or high-voltage wiring are damaged.

– Carry out visual check of high-voltage components and high-voltage wiring.
– Never use cutting/forming tools or other sharp-edged implements.
– Never perform work using welding, brazing, thermal bonding or hot air.

4.4 Safety precautions when working in the vicinity of high-voltage components

High voltage can cause fatal injury

The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock if high-voltage components or high-voltage wiring are damaged.

– Carry out visual check of high-voltage components and high-voltage wiring.
– Never use cutting/forming tools or other sharp-edged implements.
– Never perform work using welding, brazing, thermal bonding or hot air.

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Risk of injury - engine may start unexpectedly

It is difficult to determine whether the drive system of an electric vehicle or hybrid vehicle is active. Moving parts can trap or draw in parts of the body and/or clothing (safety hazard).

– Switch off ignition.
– Place ignition key outside vehicle interior.

5 Repair instructions

⇒ “5.1 General repair instructions”, page 21

⇒ “5.2 Safety precautions and testing - rear final drive 0D3 quattro sport and 0BX quattro sport ”, page 21

⇒ “5.3 Safety precautions and testing - four-wheel drive coupling 0CJ or 0CX”, page 24

⇒ “5.4 Special tools”, page 24

⇒ “5.5 Components”, page 24

⇒ “5.6 Contact corrosion”, page 26

5.1 General repair instructions

Proper tools and the maximum possible care and cleanliness are essential for satisfactory repairs to the transmission units. The usual basic safety precautions also naturally apply when carrying out repair work.

To avoid unnecessary repetition, a number of generally applicable instructions for the various repair procedures are summarised here under the heading “Components” ⇒ page 24 . They apply to the work described in this Manual.

5.2 Safety precautions and testing - rear final drive 0D3 “quattro sport” and 0BX “quattro sport”

- If repairs to the rear final drive 0D3 and 0BX “quattro sport” are not carried out properly, this can lead to malfunctions of the final drive.
- Tests, repairs and service work may only be performed by suitably qualified staff.

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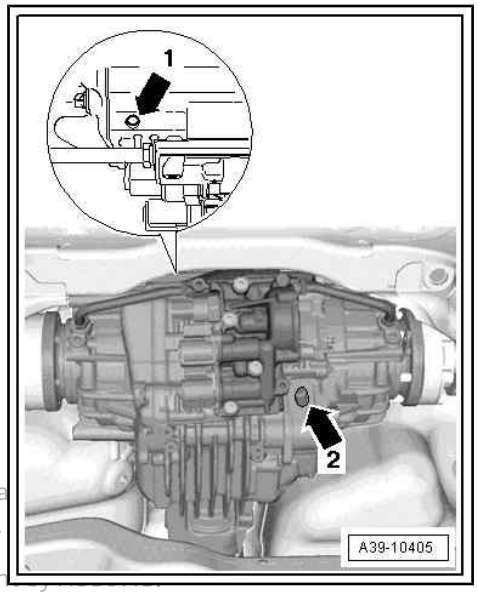
Correct oil level



- ♦ Ensure that the rear final drive is filled with specified quantity of oil ⇒ page 13 .
- ♦ Eliminate any leaks on the rear final drive, e.g. at sealing surfaces or oil seals. The oil might also escape via the oil escape holes between the superposition gears on the left side -arrow 1- or right side -arrow 2- and the rear final drive.
- • Malfunction of rear final drive.
- • Do NOT operate the rear final drive if you have detected any leaks or if the oil level is low.
- • Eliminate any leaks on the rear final drive.
- • Top up any missing ATF or gear oil ⇒ page 119 and ⇒ page 108 .
- • Use only the ATF or gear oil available as a replacement part ⇒ Electronic parts catalogue .
- • If the leaks cannot be repaired, the rear final drive must be renewed.

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Change interval for ATF and gear oil on final drive 0BX “quattro sport”

- • The gear oil and ATF must be changed every 90,000 km on final drive 0BX “quattro sport” ⇒ page 14 .

Rear final drive control functions

- • Malfunction of gearbox/final drive activation
- • It is important to follow all instructions closely when renewing components of the gearbox or final drive. Only then can the correct performance and response of the rear final drive 0D3 and 0BX “quattro sport” be ensured.

Renewing final drive components

- ♦ When the differential lock control unit - J187- is renewed, the learnt values (adaptive values) for the degradation of the final drive (e.g. clutch wear, oil ageing) must be transferred using the ⇒ Vehicle diagnostic tester, as otherwise the performance of the rear final drive can be impaired.
- ♦ When a superposition gear or the complete rear final drive is renewed, the clutch classification must be entered again in the differential lock control unit - J187- ⇒ Vehicle diagnostic tester. If the clutch classification is not carried out in the differential lock control unit - J187- , the performance of the rear final drive will be impaired. In addition, the corresponding classification mark on the rear final drive housing must be made unrecognisable when a superposition gear has been renewed. There is a mark for the new classification on the housing of the new superposition gear.
- ♦ Do not place the removed rear final drive on the components of the hydraulic control unit (e.g. clutch valves). This could damage the components.

Renewing oil pressure and oil temperature sender -G437- and/or -G640-

- ♦ After renewing the oil pressure and oil temperature sender - G437- or the oil pressure and oil temperature sender 2 - G640- , the identity of the corresponding sender must be re-adapted in the differential lock control unit - J187- ⇒ Vehicle diagnostic tester.

- Do not renew both oil pressure and oil temperature senders (-G437- and -G640-) at the same time, as at least one valid sender identity is required at any time for the allocation of the rear final drive to the differential lock control unit - J187- . If both senders are renewed at the same time, the differential lock control unit - J187- would interpret this as the replacement of the rear final drive. This would erase all the learnt values in the control unit and impair the performance of the rear final drive.
- If both oil pressure and oil temperature senders (-G437- and -G640-) have to be renewed due to mechanical damage, e.g. damage to the connector housing, this should be done in two steps: After the first sender has been renewed, the identity of the sender must be re-adapted in the differential lock control unit - J187- ⇒ Vehicle diagnostic tester. Proceed in the same manner for the second sender.
- If both oil pressure and oil temperature senders (-G437- and -G640- have to be renewed due to an electrical fault, the clutch classification must be entered again in the differential lock control unit - J187- ⇒ Vehicle diagnostic tester. In addition, the ATF must be renewed
⇒ “4.2 Draining and filling ATF”, page 119 .

Checking torque distribution

The function `32 - Check torque distribution` must be performed after the following operations:

- Work on wiring of rear final drive
- Work on valves: clutch valve for all-wheel drive - N445- and clutch valve 2 for all-wheel drive - N446-
- Work on hydraulic control unit

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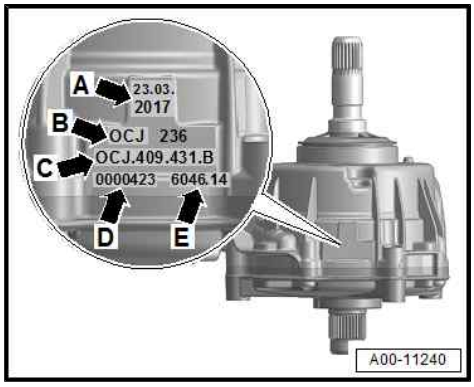
5.3 Safety precautions and testing - four-wheel drive coupling 0CJ or 0CX



Four-wheel drive coupling

- The four-wheel drive coupling has its own oil supply.
- After installing a replacement four-wheel drive coupling or performing a repair, check ATF level and fill up as required ⇒ page 191 .
- Capacities ⇒ page 15 , specifications ⇒ Electronic parts catalogue .
- Check setting torque of coupling ⇒ page 197 .

Renewing ATF for four-wheel drive coupling

- If ATF is renewed, »learnt values for oil ageing« must be reset in folder `22 - Four-wheel drive electronics` of `Guided Functions`. In addition, function `22 - Change four-wheel drive clutch ATF` must be reset for new ATF ⇒ page 191 .

Renewing four-wheel drive coupling

- Removing and installing four-wheel drive coupling ⇒ page 187
- If four-wheel drive coupling is renewed, it must be operated for the first time using the `22 - Replace control unit` function in the `22 - Four-wheel drive electronics` folder in `Guided Functions` ⇒ page 190 .

Renewing all-wheel drive control unit - J492-

- Removing and installing all-wheel drive control unit ⇒ page 194
- Additional work (reading out learnt values of old control unit) is required when renewing all-wheel drive control unit - J492- ⇒ page 196 .

5.4 Special tools

For a complete list of special tools used in this Workshop Manual ⇒ Workshop equipment and special tools catalogue .

5.5 Components

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Rear final drive

- Allocate bolts and other components according to final drive code letters, refer to ⇒ Electronic parts catalogue .
- When installing a new rear final drive unit, check the oil level ⇒ page 107 in the final drive and top up if necessary.
- Capacities and specifications ⇒ page 13 .
- When installing mounting brackets as well as other waxed components, the contact surfaces must be cleaned. The contact surfaces must be free of wax and grease.
- Thoroughly clean all joints and connections and the surrounding areas before disconnecting.

Propshaft

- The propshaft of the type with splines on the gearbox end can only be separated from the gearbox by removing it completely.
- Always keep the propshaft horizontal while pulling it off or fitting it on the four-wheel drive coupling output shaft.

- The propshaft should normally be kept straight when it is stored or transported.
- The propshaft can be bent as far as the stop at the centre joint, but must not be subjected to any kind of force. The centre joint or the protective boot can be damaged if the joint is forced against its stop.
- The propshaft must be tied up or supported at one end if it is detached only at the rear final drive. If necessary, the propshaft can be bent as far as the stop at the centre joint, but it must not be subjected to force.
- Observe correct tightening sequence for bolts securing propshaft to rear final drive ⇒ page 31 .

Note the following before renewing the propshaft due to complaints concerning noise and/or vibrations.

– Remove all bolts securing propshaft to rear final drive.

– Secure propshaft again using new bolts (tighten in specified sequence ⇒ page 31).

Environmental and waste disposal regulations for oil

- Gear oil and any other type of oil must be handled with care.
- Dispose of drained oil properly.
- Always adhere to statutory environmental and waste disposal regulations.
- Observe the information shown on the packaging of the oil.

O-rings, seals, oil seals and gaskets

- Always renew O-rings, seals, oil seals and gaskets.
- After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- Thoroughly clean housing joint surfaces before assembling.
- Lightly lubricate O-rings before installation to prevent them from being trapped and damaged during assembly.
- Lightly lubricate outer circumference of oil seals before installation.
- Pack space between sealing lips -arrow- half-full with sealing grease - G 052 128 A1- .
- The open side of the oil seal should face the side containing the fluid.
- Check gear oil level in gearbox after installing new gaskets, oil seals, seals and O-rings ⇒ page 107 .

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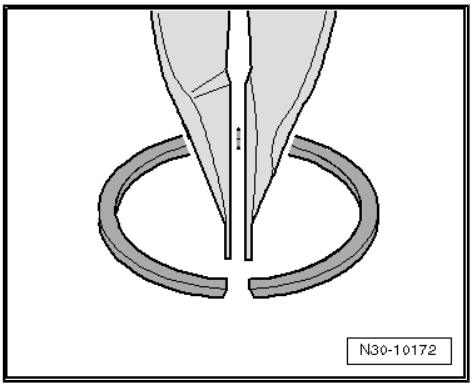
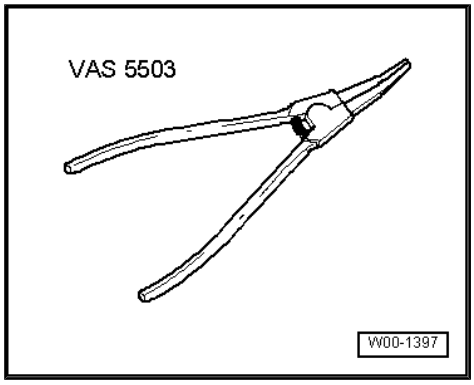
Locking elements





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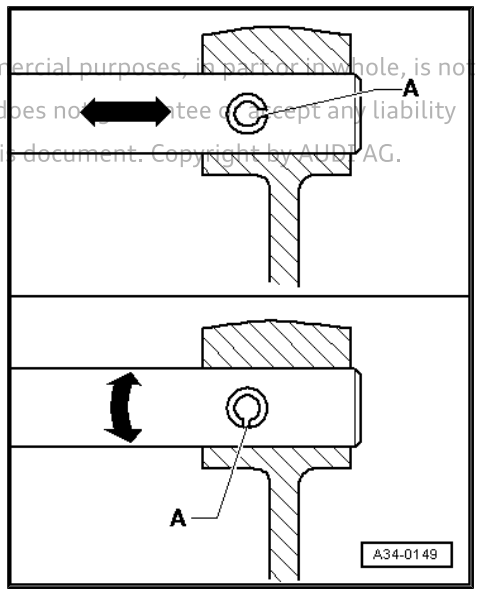
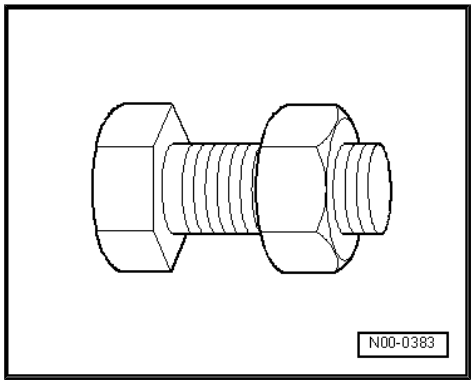
- Do not over-stretch circlips.
- Always renew circlips which have been damaged or over-stretched.
- Installation position for some circlips: the circlip is fitted so that the narrow part of the gap is at the top. This also gives the pliers a better grip when removing and installing.
- To facilitate assembly, use circlip pliers - VAS 5503A- .
- Circlips must be properly seated in the base of the groove.
- Renew spring pins. Position: the slit -A- should be in line with the line of force -arrow-.



- Do not over-stretch circlips.
- Always renew circlips which have been damaged or over-stretched.
- Circlips must be properly seated in the base of the groove.
- Renew spring pins. Position: the slit -A- should be in line with the line of force -arrow-.

Bolts/nuts



- Nuts and bolts for securing covers and housings must be slackened and tightened in diagonal sequence.
- Loosen and tighten particularly sensitive parts in diagonal sequence and in stages, taking care to keep them straight.
- The tightening torques stated apply to non-oiled nuts and bolts.
- Always renew self-locking bolts and nuts.
- Clean the threads of bolts which are secured with locking fluid using a wire brush (does not apply to propshaft bolts: these must be renewed). Then apply locking fluid - AMV 185 101 A1- to bolt threads before installing.
- Threaded holes which take self-locking bolts or bolts coated with locking fluid must be cleaned using a thread tap or similar. Otherwise there is a danger of the bolts shearing off the next time they are removed.

5.6 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used (e.g. bolts, nuts, washers, etc.).

For this reason, only fasteners with a special surface coating are fitted.

Rubber or plastic parts and adhesives also consist of non-conductive materials.

If you are not sure whether used parts can be re-installed, always fit new parts ⇒ Electronic parts catalogue .

Please note:

- We recommend using only genuine replacement parts; these have been tested and are compatible with aluminium.
- We recommend the use of accessories approved by Audi.
- Damage caused by contact corrosion is not covered by warranty.

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6 Electrical components

⇒ “6.1 Overview of fitting locations - electrical components”, page 28

6.1 Overview of fitting locations - electrical components

⇒ “6.1.1 Electrical components - final drive 0B0 quattro ultra, 09R quattro ultra ”, page 28

⇒ “6.1.2 Electrical components - rear final drive 0D3 and 0BX quattro sport ”, page 29

6.1.1 Electrical components - final drive 0B0 “quattro ultra”, 09R “quattro ultra”

1 - Propshaft speed sender - G970-

- ❑ Fitting location: on rear final drive
- ❑ Removing and installing ⇒ page 90

2 - Clutch actuator 2 for all-wheel drive - V623-

- ❑ Fitting location: on rear final drive
- ❑ Removing and installing ⇒ page 91

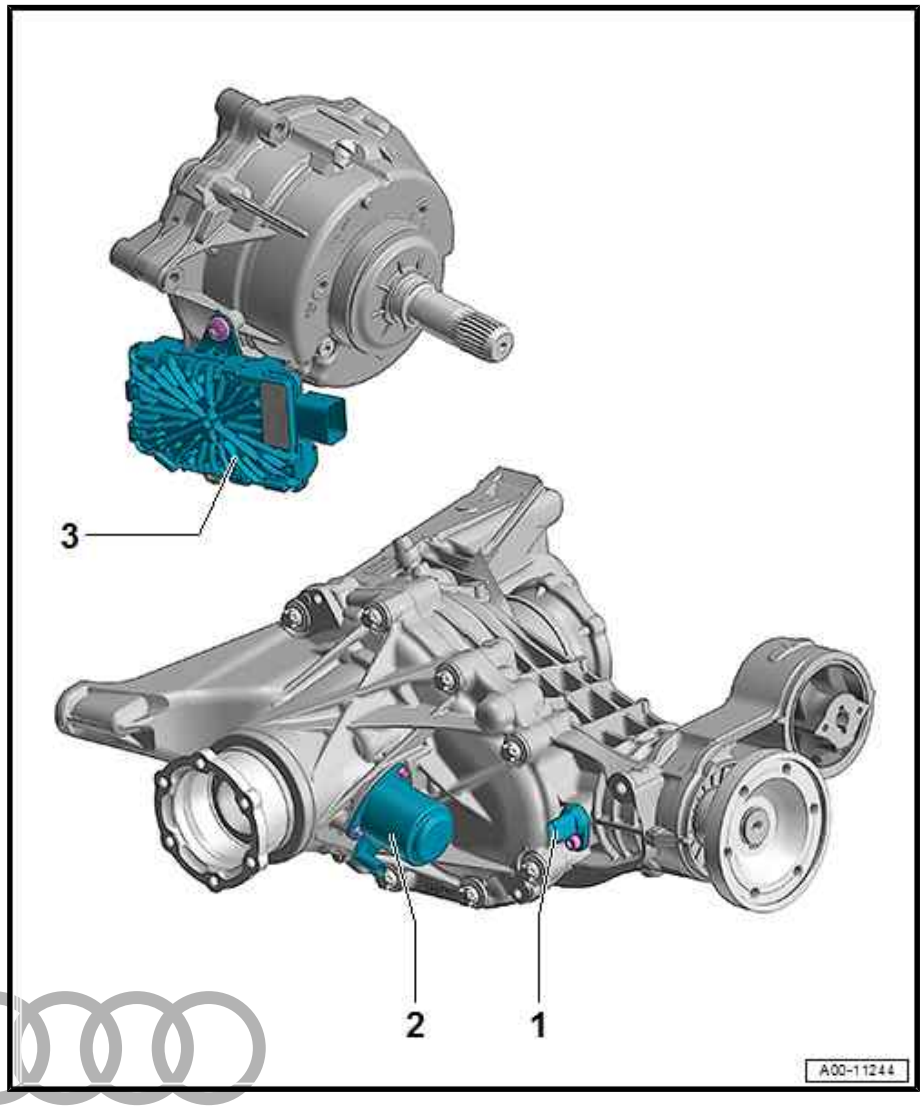
3 - All-wheel drive control unit - J492-

- ❑ Includes:

♦ Clutch actuator for all-wheel drive - V622-

♦ Clutch position sender for all-wheel drive - G969-

- ❑ Fitting location: ⇒ page 203
- ❑ Removing and installing ⇒ page 194
- ❑ Additional work required after renewing control unit ⇒ page 196
- ❑ Important signals are transferred from the engine control unit and ABS control unit - J104- via data bus to the all-wheel drive control unit



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6.1.2 Electrical components - rear final drive 0D3 and 0BX “quattro sport”

1 - Oil pressure and oil temperature sender 2 - G640-

2 - Oil pressure and oil temperature sender - G437-

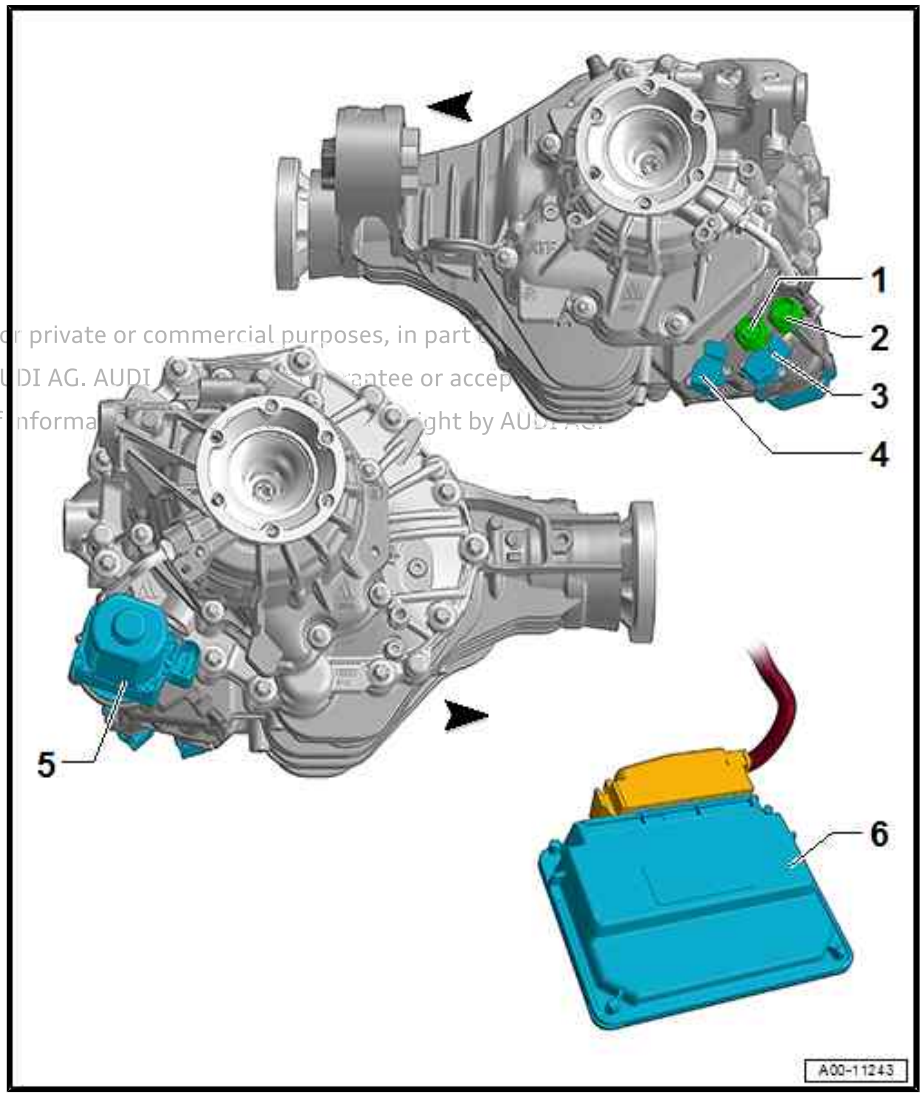
3 - Clutch valve 2 for all-wheel drive - N446-

4 - Clutch valve for all-wheel drive - N445-

5 - All-wheel drive pump - V415-

6 - Differential lock control unit - J187-

- ❑ Fitting location: ⇒ page 203
- ❑ Additional work required after renewing control unit ⇒ page 208
- ❑ Important signals are transferred from the engine control unit and ABS control unit - J104- via data bus to the all-wheel drive control unit



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39 – Final drive - rear differential

1 Propshaft

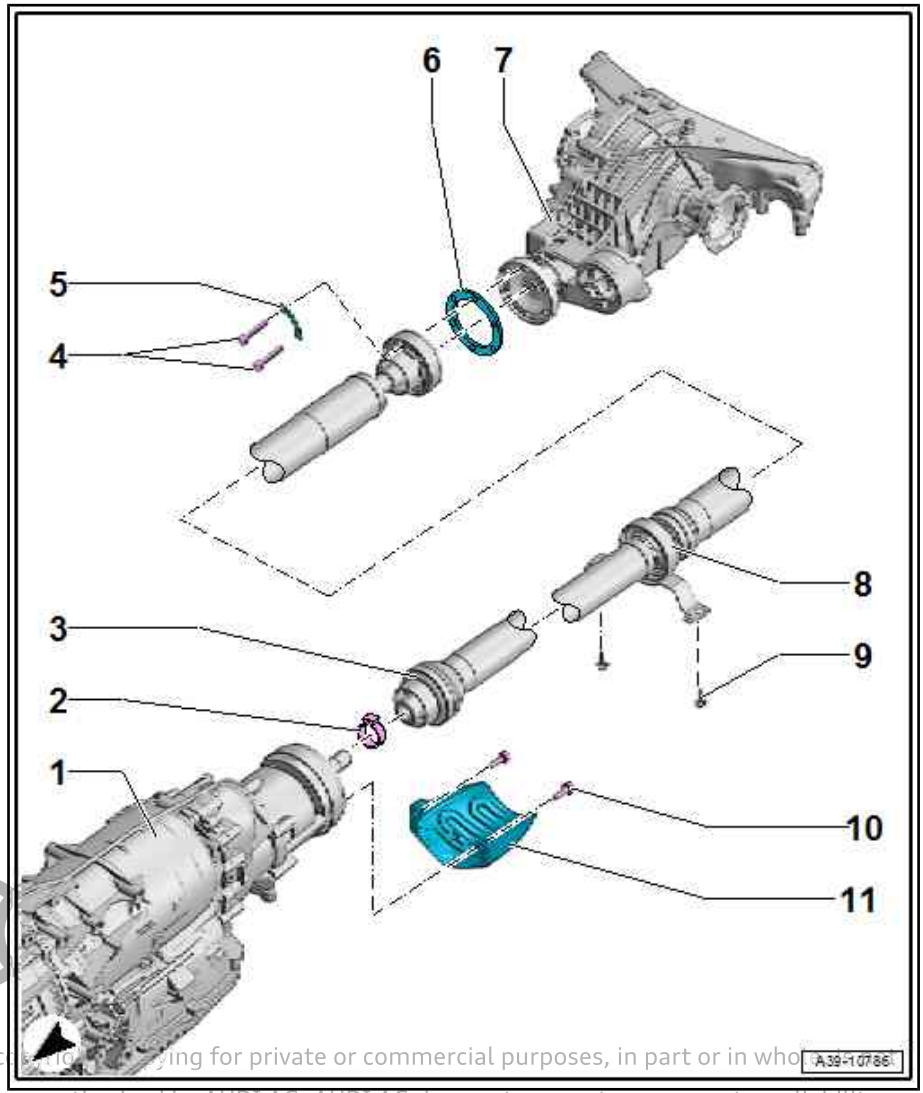
⇒ “1.1 Exploded view - propshaft”, page 30

⇒ “1.2 Removing and installing propshaft”, page 32

⇒ “1.2.3 Detaching and attaching propshaft at rear final drive”, page 45

⇒ “1.3 Renewing protective boot”, page 47

1.1 Exploded view - propshaft



1 - Gearbox

2 - Clip

- ❑ Renew
- ❑ Note the different versions ⇒ page 31

3 - Propshaft

- ❑ Removing and installing ⇒ page 32
- ❑ Detaching and attaching propshaft at rear final drive ⇒ page 45
- ❑ Renewing protective boot ⇒ page 47
- ❑ Note the different versions ⇒ page 31

4 - Bolt

Bolts M8 or M10

- ❑ Always renew
- ❑ M8 bolts are self-locking bolts; therefore remaining locking fluid must be removed from threaded holes in flange shaft on rear final drive. The threads can be cleaned with a thread tap
- ❑ Tightening torque and sequence ⇒ page 31

5 - Lock plate

- ❑ Always renew

6 - Gasket

- ❑ Renew gasket if damaged (buckled or kinked)
- ❑ Renew gasket if rubber coating has become detached
- ❑ Degrease flange shaft and fit gasket
- ❑ Different coloured sides can be disregarded for installation

7 - Rear final drive

Removing and installing ⇒ page 50

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8 - Centre bearing

❑ Fit centring pin into hole on underbody, then secure

9 - Bolt

❑ 20 Nm

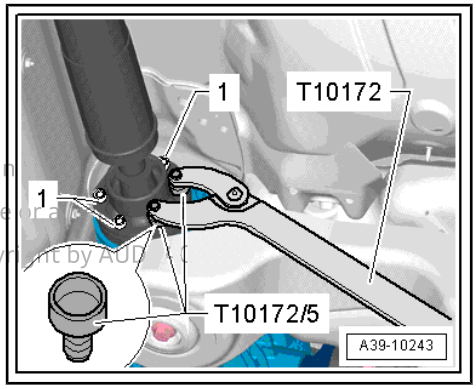
10 - Bolt

❑ 28 Nm

11 - Heat shield

❑ Not fitted on all versions

Securing propshaft to rear final drive - tightening torque and sequence



- Always renew propshaft bolts -1- and washers.
- Counterhold M8 bolt using counterhold tool - T10172- and adapters -T10172/5- .
- Counterhold M10 bolt using counterhold tool - T10172- and adapters -T10172/6- .

– Tighten bolts -1- in 3 stages as follows:

Stage	Bolts	Tightening torque/angle specification
I.	-1-	• Bolt - M8- ⇒ bolt nearest to coloured dots: 30 Nm[1)] ♦ Bolt - M10- ⇒ bolt nearest to coloured dots: 50 Nm[1)]
II.	-1-	• Bolt - M8- ⇒ all remaining bolts: 30 Nm ♦ Bolt - M10- ⇒ all remaining bolts: 50 Nm
III.	-1-	• All bolts: turn 90° further
• [1)] This pushes the CV joint slightly towards the opposite side and reduces the imbalance.		

Propshaft with external axial locking mechanism

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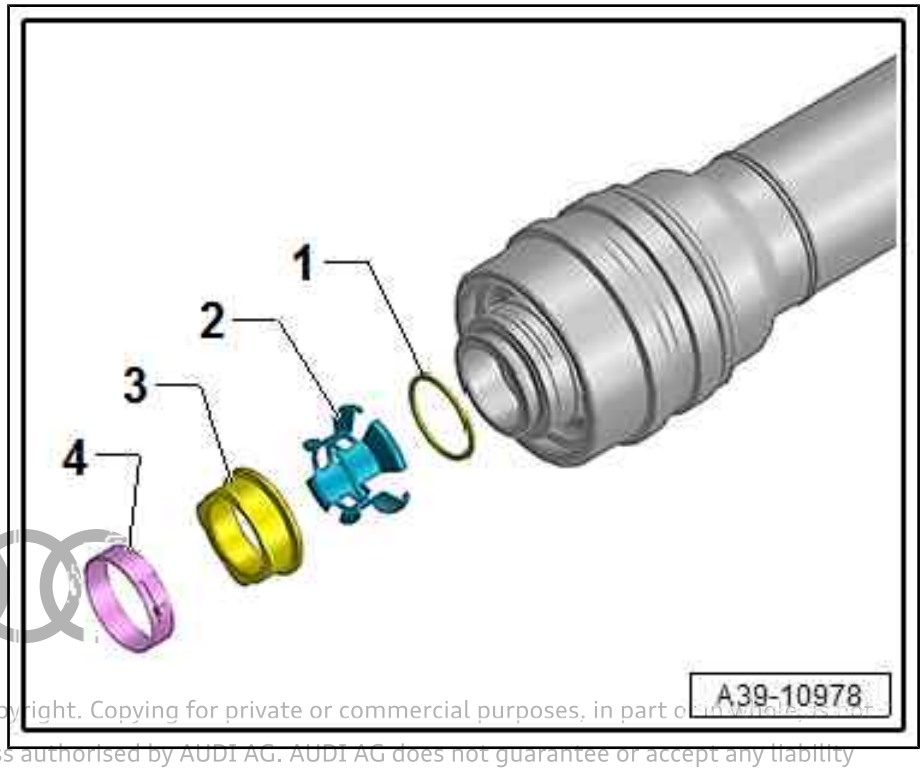
1 - O-ring
- ❑ Renew

2 - Axial locking mechanism
- ❑ Renew

3 - Spacer ring
- ❑ Renew

4 - Clip
- ❑ Renew



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1.2 Removing and installing propshaft

⇒ “1.2.1 Removing and installing propshaft - Audi A4, A5, Q5”, page 32

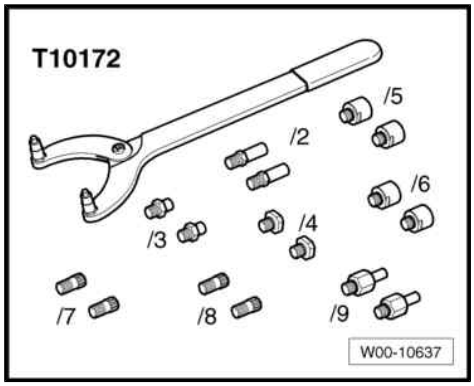
⇒ “1.2.2 Removing and installing propshaft - Audi Q7, Q8, A6, A7, A8”, page 38

⇒ “1.2.3 Detaching and attaching propshaft at rear final drive”, page 45

1.2.1 Removing and installing propshaft - Audi A4, A5, Q5

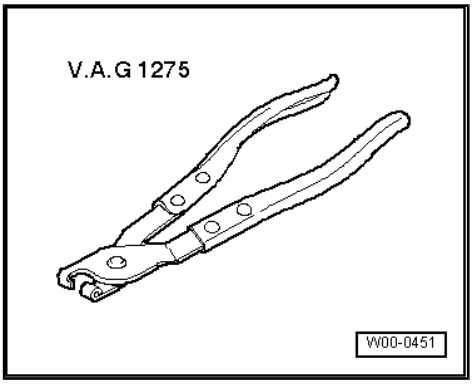
Special tools and workshop equipment required

- ♦ Counterhold tool - T10172-



- ♦ Adapters -T10172/5- (for M8 bolts)
- ♦ Adapters -T10172/6- (for M10 bolts)

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



- High-temperature grease - G 052 133 A3-

Removing

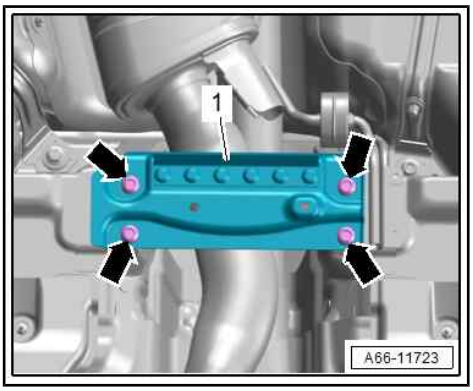
Observe notes on propshaft:

- Refer to general repair instructions ⇒ page 21 .
- The propshaft of the type with splines on the gearbox end can only be separated from the gearbox by removing it completely.
- Always keep the propshaft horizontal while pulling it off or fitting it on the four-wheel drive coupling output shaft.
- The propshaft should normally be kept straight when it is stored or transported.
- The propshaft can be bent as far as the stop at the centre joint, but must not be subjected to any kind of force. The centre joint or the protective boot can be damaged if the joint is forced against its stop.
- The propshaft must be tied up or supported at one end if it is detached only at the rear final drive. If necessary, the propshaft can be bent as far as the stop at the centre joint, but it must not be subjected to force.
- Observe correct tightening sequence for bolts securing propshaft to rear final drive ⇒ page 31 .

Note the following before renewing the propshaft due to complaints concerning noise and/or vibrations.

- Remove all bolts securing propshaft to rear final drive.
- Secure propshaft again using new bolts (tighten in specified sequence ⇒ page 31).

– Remove tunnel cross-piece -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .



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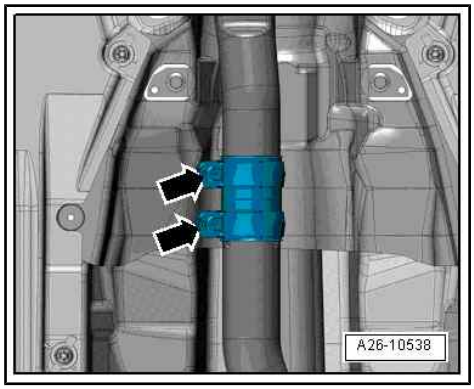
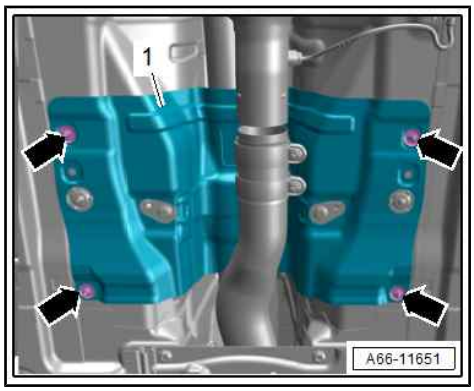
NOTICE

Risk of damage to flexible joint if handled incorrectly.

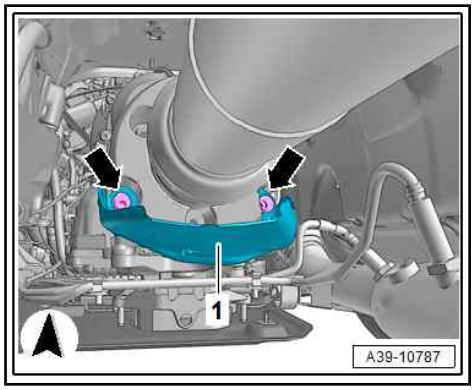
- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**



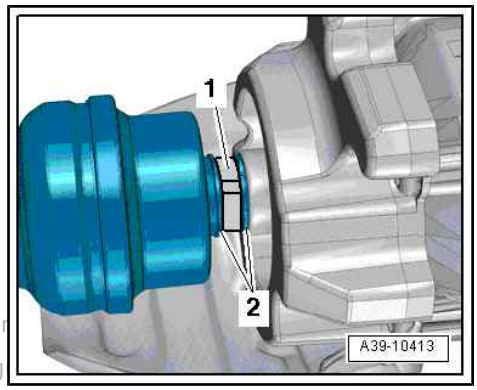
- Unfasten clamp(s) -arrows- and disconnect exhaust system.
- Tie front exhaust pipe(s) up to side of underbody.
- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



- Remove heat shield -1- above propshaft ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .



- If fitted, remove bolts -arrows- and detach heat shield -1- for propshaft.



- Cut open clip -1- for protective boot on propshaft and remove clip.

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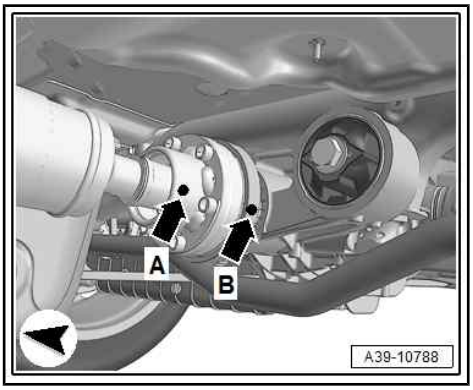
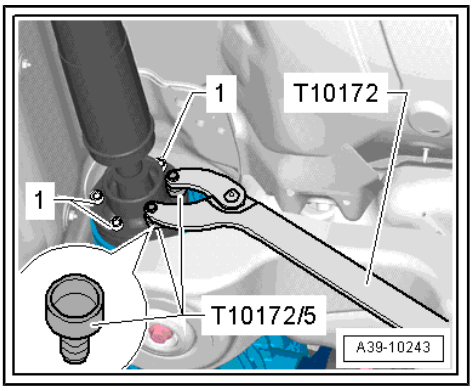
– Check whether there is a factory marking (coloured dot) -arrow A- and -arrow B- on the propshaft and on the rear final drive flange.
– If one of these markings is no longer visible, make a new paint marking accordingly.

• The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.



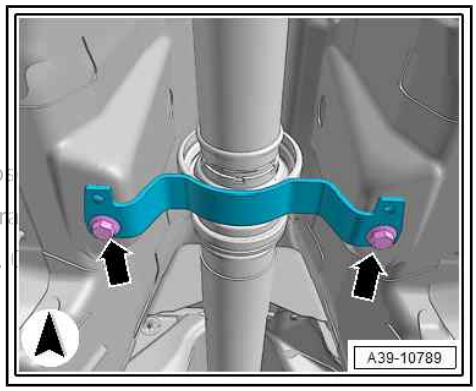
– Remove bolts -1- securing propshaft to rear final drive.
– To do so, use counterhold tool - T10172- and adapters - T10172/5- or -T10172/6- .



– Remove bolts -arrows- securing centre propshaft bearing.
– Slide propshaft forwards in elongated position and detach at rear final drive. Move clear at bottom.

Detach propshaft from gearbox as follows:

• Propshaft must be in elongated position.
• Propshaft must be pressed towards front as far as stop.
– Detach propshaft from gearbox towards rear by pulling it off sharply with one movement.



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Installing propshaft

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ “1.1 Exploded view - propshaft”, page 30

♦ Remove old, dried-out high-temperature grease from CV joint and flange for propshaft. Put in exactly the same quantity of fresh high-temperature grease - G 052 133 A3- .

♦ M8 bolts - clean remaining locking fluid out of tapped holes in flange shaft on rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.

♦ Always renew the securing bolts for the propshaft and the three washers.

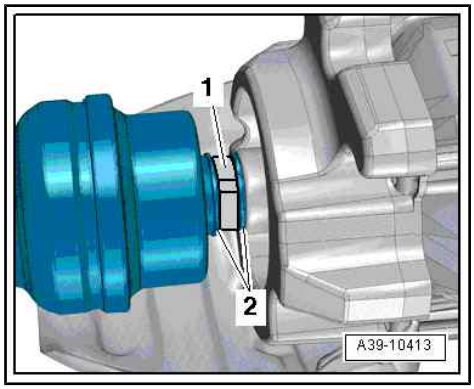
♦ Check for damage to gasket for propshaft on rear final drive flange (kinked gasket or partially detached rubber coating). A damaged gasket must be renewed.

♦ Wipe off splines of four-wheel drive coupling output shaft with a cloth before sliding on propshaft. Do not apply grease to splines.

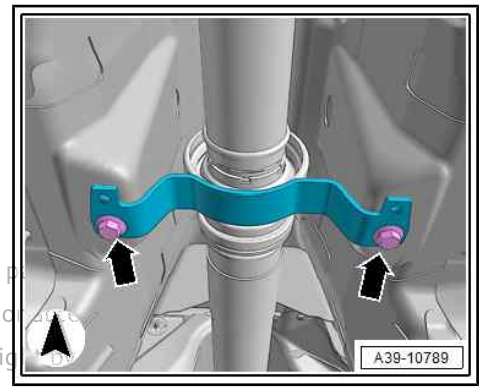
♦ Renew clip -1- for protective boot -2- on propshaft.

– Fit propshaft onto gearbox first.

- Do not bend further than 10° when fitting propshaft on splines.
- After sliding the propshaft approx. 50 mm onto the four-wheel drive coupling output shaft, turn propshaft slightly to ensure that the splines on the output shaft engage in the internal splines of the propshaft.
- Push propshaft onto splines of four-wheel drive coupling output shaft as far as stop.



– Secure centre propshaft bearing to body so it is free of stress and tighten -arrows-.



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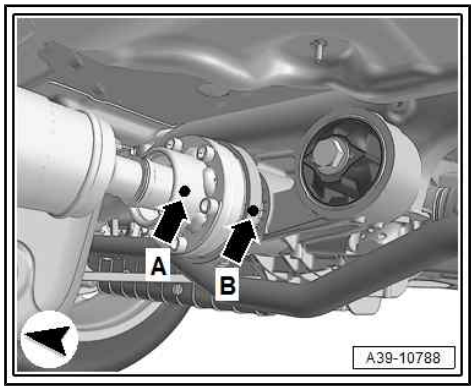
– Fit gasket for propshaft on rear final drive flange.

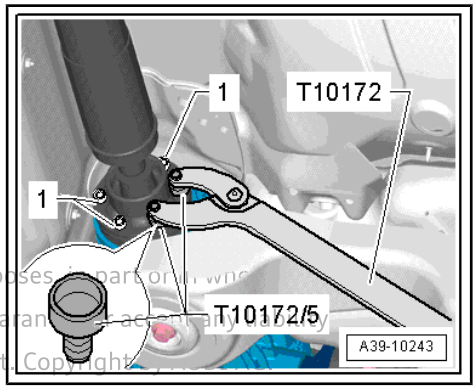
– Fit propshaft on rear final drive, paying attention to installation position:

- The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.
- Maximum misalignment of markings: 30°



– Screw in all 6 bolts -1- for propshaft 2-3 turns by hand.

• Tighten bolts -1- for propshaft in the specified sequence ⇒ Fig. ""Securing propshaft to rear final drive - tightening torque and sequence"", page 31 .



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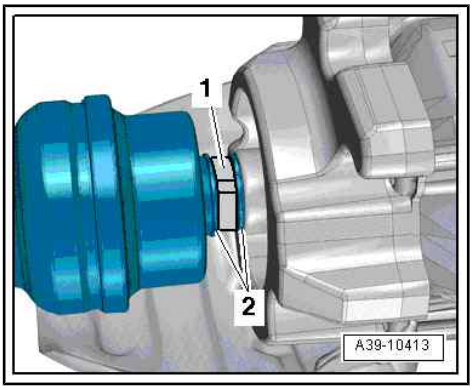
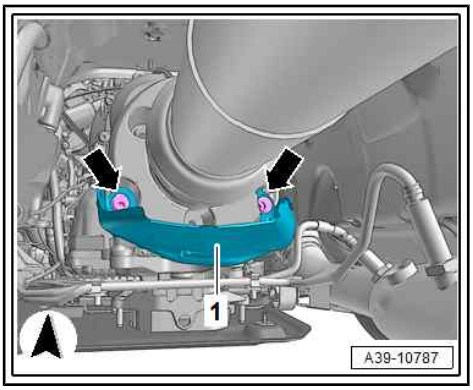
– Align clip -1- for protective boot on propshaft with shaped sections -2- and tighten using hose clip pliers - V.A.G 1275- or similar.

Note:

♦ Push the propshaft slightly towards the rear in order to be able to apply the hose clip pliers - V.A.G 1275- properly.

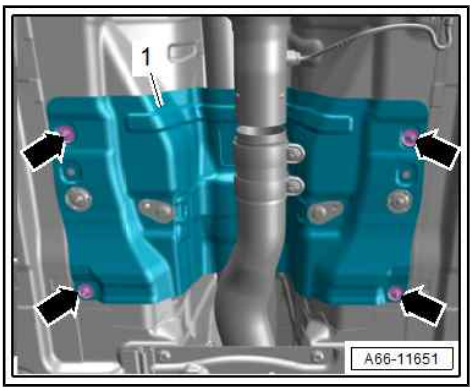


– If originally fitted, bolt heat shield -1- onto gearbox -arrows-.

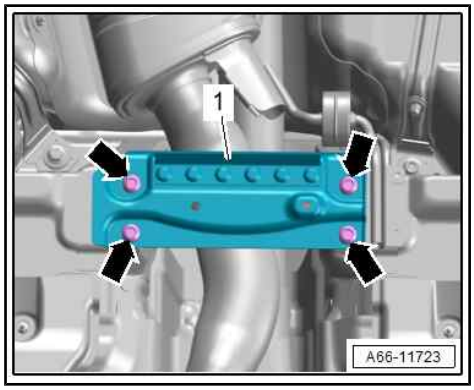


– Install heat shield -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .

– Install exhaust system and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



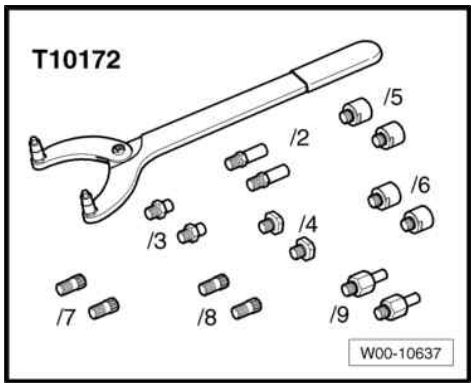
– Install cross member -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .



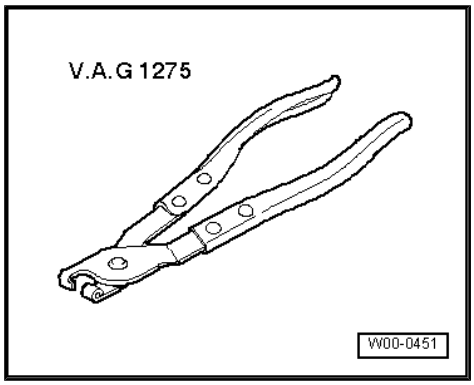
1.2.2 Removing and installing propshaft - Audi Q7, Q8, A6, A7, A8

Special tools and workshop equipment required

- Counterhold tool - T10172-



- Adapter -T10172/5- (M8 bolts)
- Adapter -T10172/6- (M10 bolts)
- Hose clip pliers - V.A.G 1275-



- High-temperature grease - G 052 133 A3-

Removing

Observe notes on propshaft:

- Refer to general repair instructions ⇒ page 21 .
- The propshaft of the type with splines on the gearbox end can only be separated from the gearbox by removing it completely.
- Always keep the propshaft horizontal while pulling it off or fitting it on the four-wheel drive coupling output shaft.
- The propshaft should normally be kept straight when it is stored or transported.

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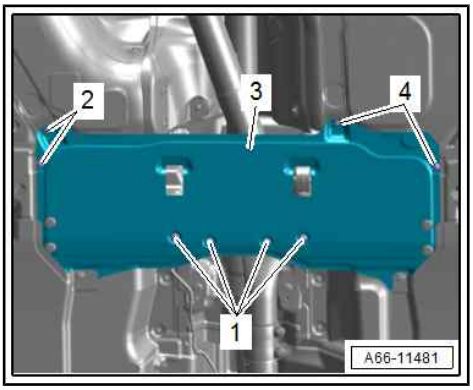
- The propshaft can be bent as far as the stop at the centre joint, but must not be subjected to any kind of force. The centre joint or the protective boot can be damaged if the joint is forced against its stop.
- The propshaft must be tied up or supported at one end if it is detached only at the rear final drive. If necessary, the propshaft can be bent as far as the stop at the centre joint, but it must not be subjected to force.
- Observe correct tightening sequence for bolts securing propshaft to rear final drive ⇒ page 31 .

Note the following before renewing the propshaft due to complaints concerning noise and/or vibrations.

- Remove all bolts securing propshaft to rear final drive.
- Secure propshaft again using new bolts (tighten in specified sequence ⇒ page 31).

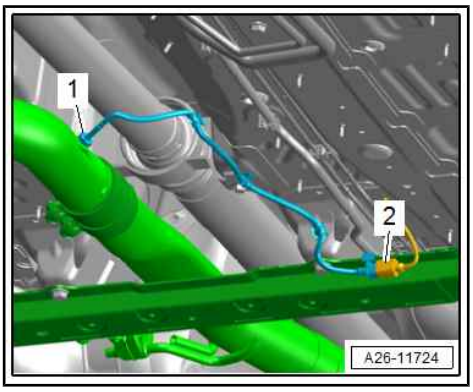
Audi Q7

– Remove underbody trim (centre) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .

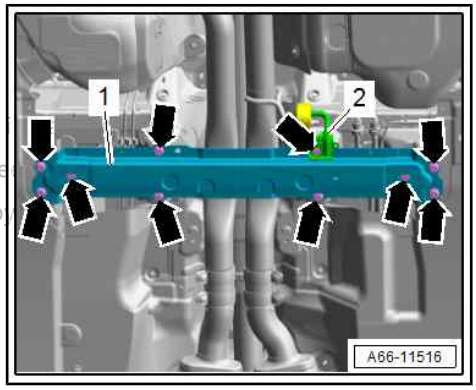


– If fitted, unplug electrical connector -2- for exhaust gas temperature sender 5 - G815- and move cable clear.

– Unscrew bolts -arrows- and remove cross member -1-.



– Remove tunnel cross-piece -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .



Audi A6, A7, A8

– Remove both tunnel cross-pieces ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .

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All vehicles (continued)

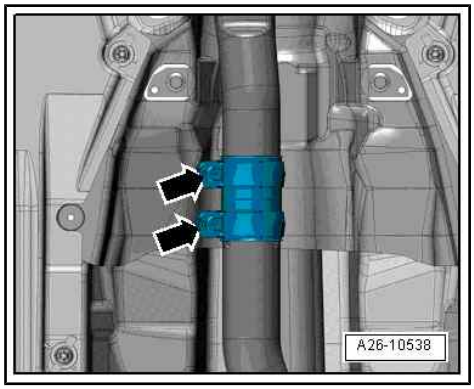
NOTICE

Risk of damage to flexible joint if handled incorrectly.

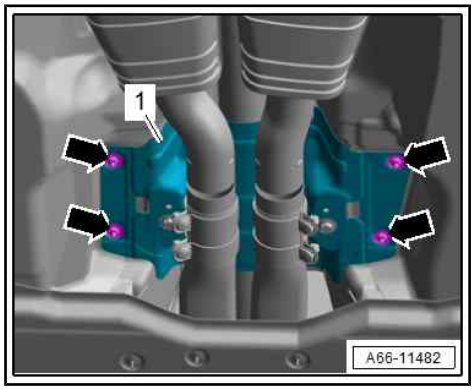
- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Unfasten clamp(s) -arrows- and disconnect exhaust system.

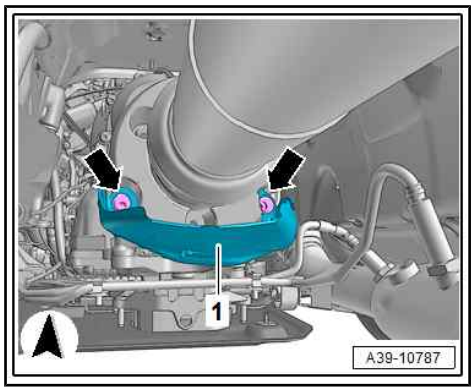
– Tie front exhaust pipe(s) up to side of underbody.



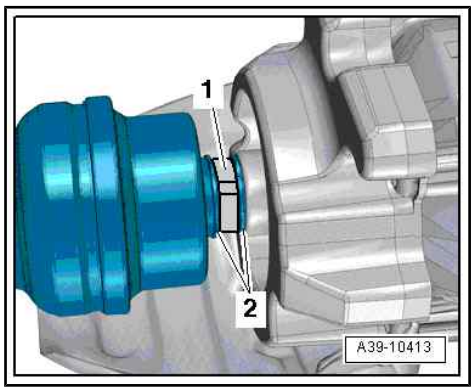
– Remove heat shield -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .



– If fitted, remove bolts -arrows- and detach heat shield -1- for propshaft.



– Cut open clip -1- for protective boot on propshaft and remove clip.



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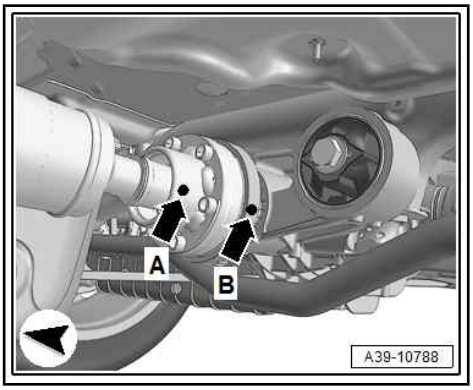
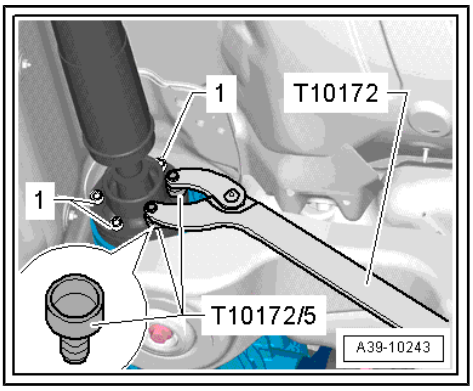
– Check whether there is a factory marking (coloured dot) -arrow A- and -arrow B- on the propshaft and on the rear final drive flange.
– If one of these markings is no longer visible, make a new paint marking accordingly.

• The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.



– Remove bolts -1- securing propshaft to rear final drive.
– To do so, use counterhold tool - T10172- and adapters - T10172/5- or -T10172/6- .



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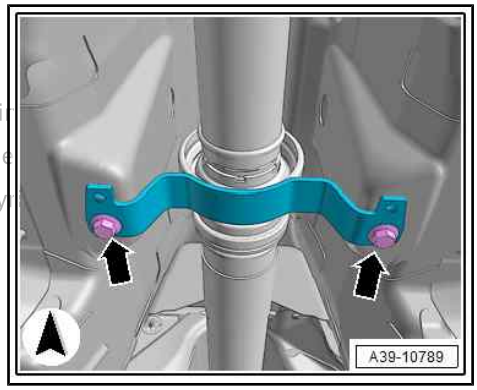
– Remove bolts -arrows- securing centre propshaft bearing.



– Slide propshaft forwards in elongated position and detach at rear final drive. Move clear at bottom.

Detach propshaft from gearbox as follows:

- Propshaft must be in elongated position.
- Propshaft must be pressed towards front as far as stop.

– Detach propshaft from gearbox towards rear by pulling it off sharply with one movement.

Installing propshaft

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ “1.1 Exploded view - propshaft”, page 30

♦ Remove old, dried-out high-temperature grease from CV joint and flange for propshaft. Put in exactly the same quantity of fresh high-temperature grease - G 052 133 A3- .

♦ M8 bolts - clean remaining locking fluid out of tapped holes in flange shaft on rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.

♦ Renew propshaft bolts and the three washers.

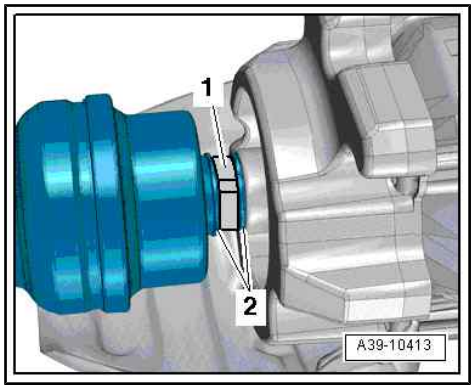
♦ Check for damage to gasket for propshaft on rear final drive flange (kinked gasket or partially detached rubber coating). A damaged gasket must be renewed.

♦ Wipe off splines of four-wheel drive coupling output shaft with a cloth before sliding on propshaft. Do not apply grease to splines.

- Do not bend further than 10° when fitting propshaft on splines.
- After sliding the propshaft approx. 50 mm onto the four-wheel drive coupling output shaft, turn propshaft slightly to ensure that the splines on the output shaft engage in the internal splines of the propshaft.
- Push propshaft onto splines of four-wheel drive coupling output shaft as far as stop.

Propshaft with internal axial locking mechanism

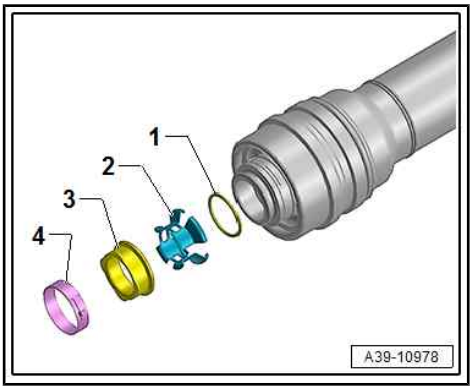
– Renew clip -1- for protective boot -2- on propshaft.



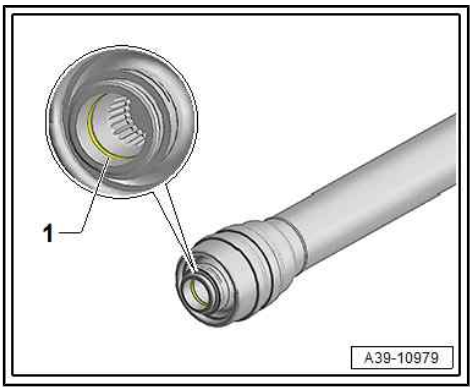
– Fit propshaft onto gearbox.

Propshaft with external axial locking mechanism

– Renew parts -1 to 4- according to repair kit.



– Insert O-ring -1- in groove.



– Fit axial locking mechanism -2- onto propshaft.
– Slide spacer ring -3- onto axial locking mechanism -2-.

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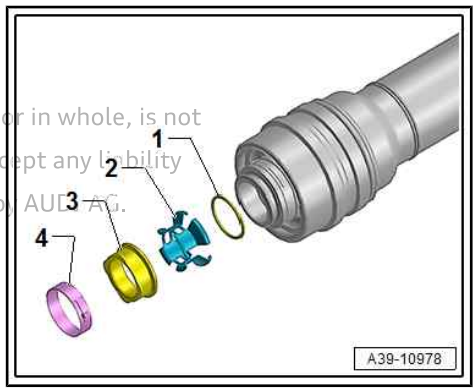
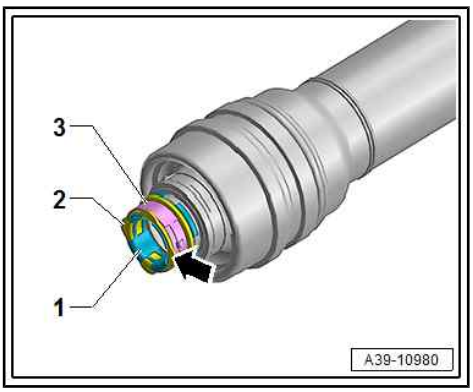


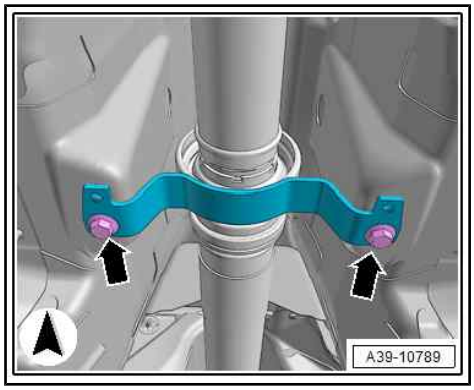
- The four projections on the spacer ring -arrow- face towards the gearbox.

– Fit clip -3- but do not tighten yet.
– Fit propshaft onto gearbox.



All versions (continued):

– Secure centre propshaft bearing to body so it is free of stress and tighten -arrows-.

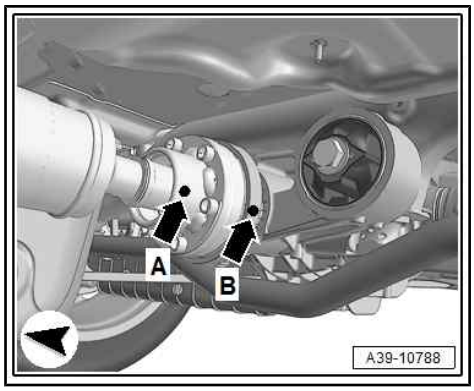


– Fit gasket for propshaft on rear final drive flange.

– Fit propshaft on rear final drive, paying attention to installation position:

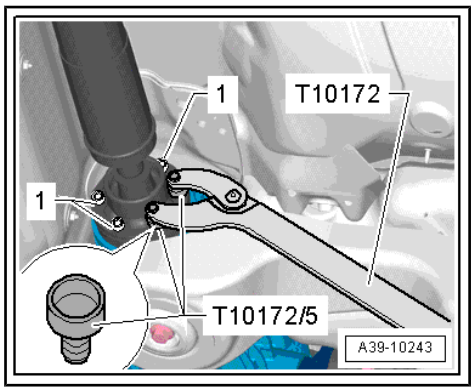
• The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.

• Maximum misalignment of markings: 30°



– Screw in all 6 bolts -1- for propshaft 2-3 turns by hand.

• Tighten bolts -1- for propshaft in the specified sequence ⇒ Fig. ““Securing propshaft to rear final drive - tightening torque and sequence”“ , page 31 .



– Align clip -1- for protective boot on propshaft with shaped sections -2- and tighten using hose clip pliers - V.A.G 1275- or similar.

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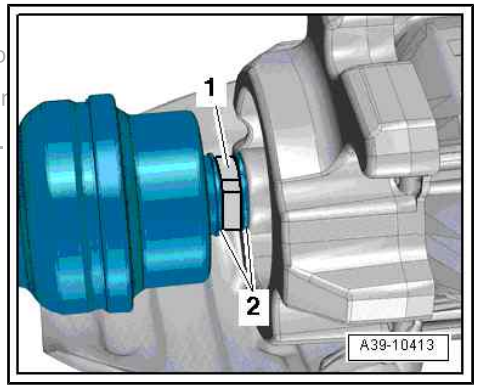
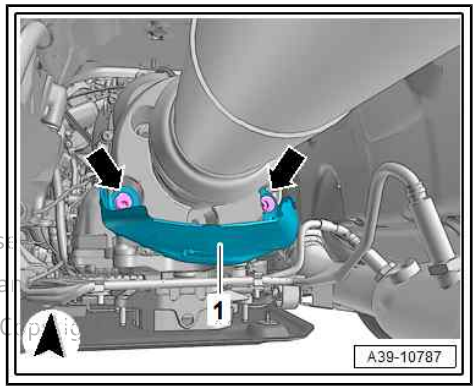
Note:

♦ Push the propshaft slightly towards the rear in order to be able to apply the hose clip pliers - V.A.G 1275- properly.



– If originally fitted, bolt heat shield -1- onto gearbox -arrows-.



– Install heat shield (centre) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .

– Install cross member ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .

– Install underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

– Install exhaust system and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

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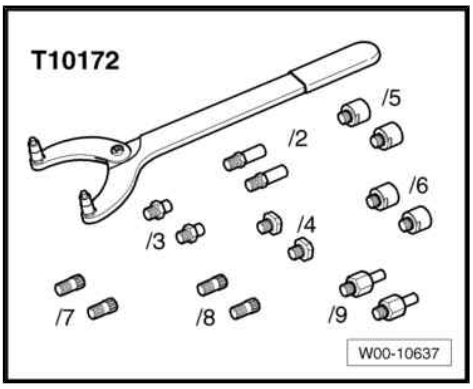
1.2.3 Detaching and attaching propshaft at rear final drive

Special tools and workshop equipment required

♦ Counterhold tool - T10172-



♦ Adapter -T10172/5- (M8 bolts)

♦ Adapter -T10172/6- (M10 bolts)

♦ High-temperature grease - G 000 633-

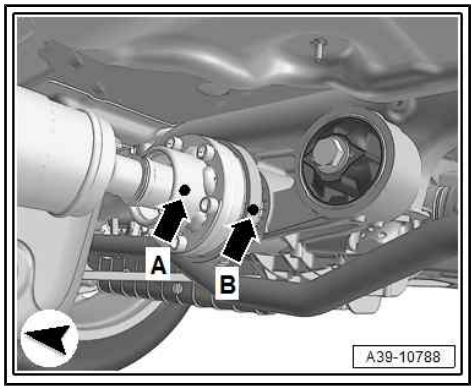
• Refer to general repair instructions ⇒ page 21 .

• The propshaft can be bent as far as the stop at the centre joint, but must not be subjected to any kind of force. The centre joint or the protective boot can be damaged if the joint is forced against its stop.

• The propshaft must be tied up or supported at one end if it is detached only at the rear final drive. If necessary, the propshaft can be bent as far as the stop at the centre joint, but it must not be subjected to force.

• Observe correct tightening sequence for bolts securing propshaft to rear final drive ⇒ page 31 .

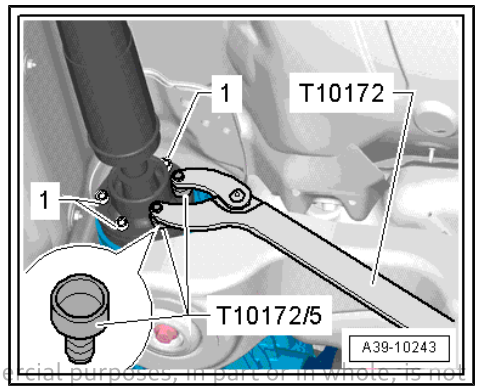
Detaching propshaft from rear final drive



– Check whether there is a factory marking (coloured dot) -arrow A- and -arrow B- on the propshaft and on the propshaft flange on the rear final drive.

– If one of these markings is no longer visible (for example -arrow A- on the propshaft), make a new paint marking accordingly.

• The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.



– Remove bolts -1- (6x) on rear CV joint.

– To do so, use counterhold tool - T10172- and adapters - T10172/5- or -T10172/6- .

– Separate propshaft from rear final drive and tie up to underbody or place on top of exhaust system.

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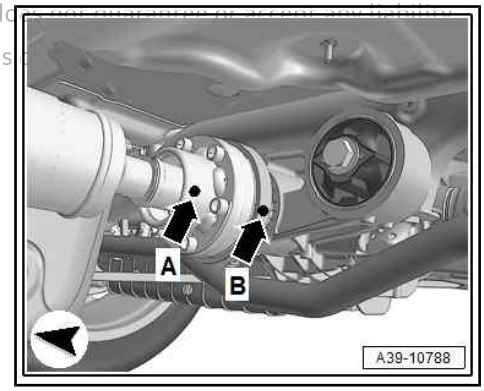
Attaching propshaft to rear final drive

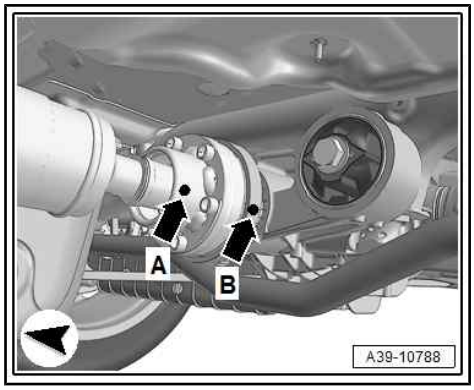


♦ Remove old, dried-out high-temperature grease from CV joint and flange for propshaft. Put in exactly the same quantity of fresh high-temperature grease - G 000 633- .

♦ M8 bolts - clean remaining locking fluid out of tapped holes in flange shaft on rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.

♦ Always renew the securing bolts for the propshaft and the three washers.

♦ Check for damage to gasket for propshaft on rear final drive flange (kinked gasket or partially detached rubber coating). A damaged gasket must be renewed.



– Fit gasket for propshaft on rear final drive flange.

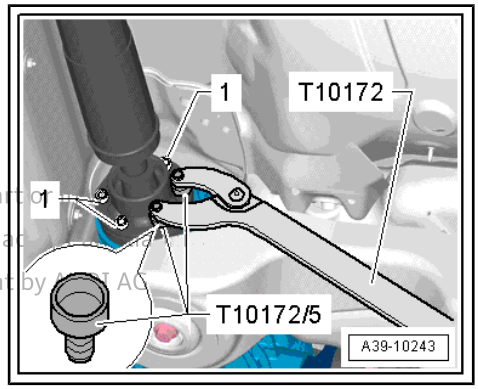
– Fit propshaft on rear final drive, paying attention to installation position:

• The markings on the propshaft -arrow A- and on the rear final drive -arrow B- should be aligned.

• Maximum misalignment of markings: 30°.

– Screw in all 6 bolts -1- for propshaft 2-3 turns by hand.

• Tighten bolts -1- for propshaft in the specified sequence ⇒ Fig. ""Securing propshaft to rear final drive - tightening torque and sequence"", page 31 .



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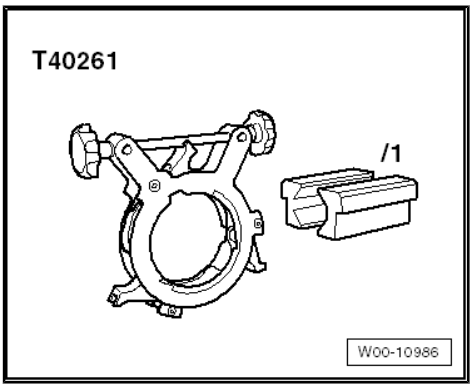
1.3 Renewing protective boot

Special tools and workshop equipment required

♦ Flanging tool - T40261-

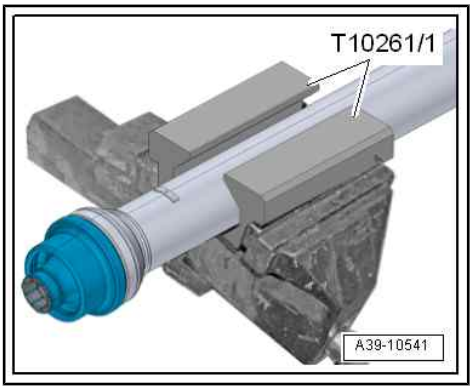


♦ Hose clip - ∅ 23 ... 35 mm-

Procedure

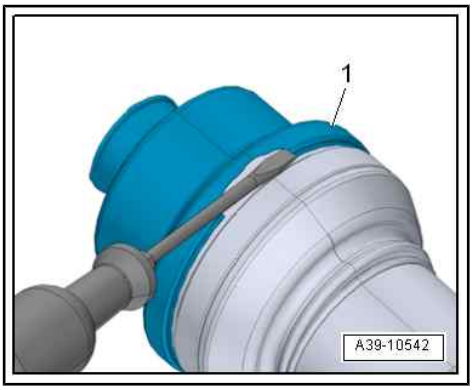
– Remove propshaft ⇒ page 32 .

– Clamp propshaft in vice using protective jaw covers - T40261/1- as shown in illustration.

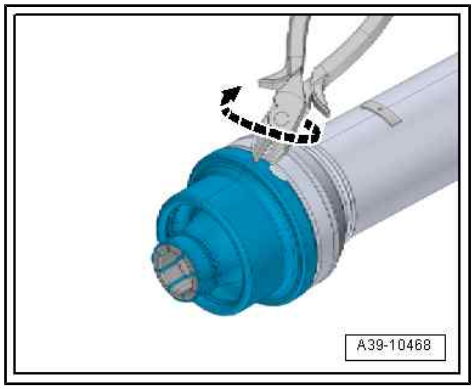


– Using a screwdriver, carefully open an initial section of seam between metal sleeve -1- and propshaft joint.

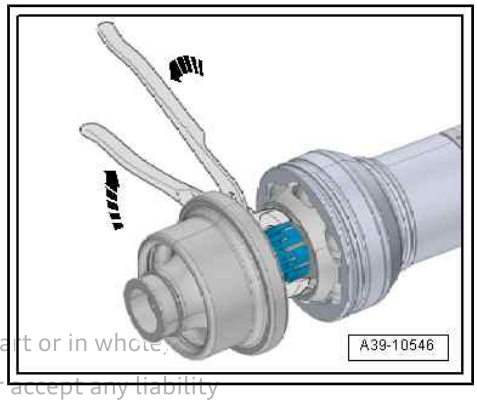
• Take care not to damage surface of propshaft joint.



– Open rest of seam on metal sleeve -arrow- using side-cutting pliers.
– Detach old protective boot with metal sleeve from propshaft joint.



– Destroy support ring using water pump pliers -arrows- and remove protective boot with metal sleeve.
• Inner part of joint and balls remain in propshaft joint.
– Wipe off old excess grease.
– Regrease propshaft joint with grease from installation kit.
• Use the same amount of grease as you wiped off plus the amount that remained in the old protective boot.



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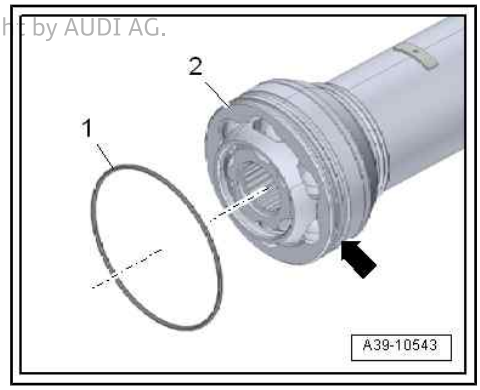
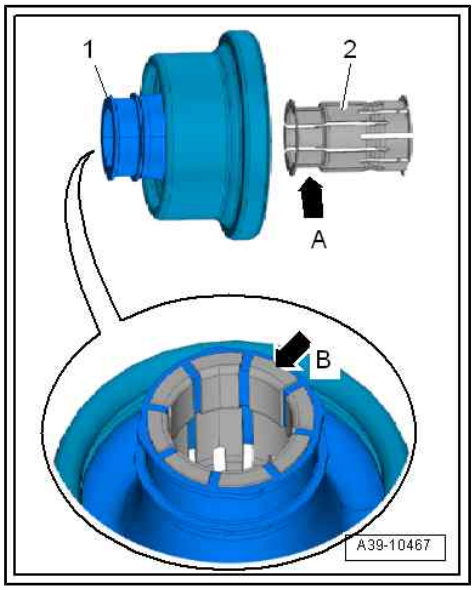
– Clean sealing surface -arrow- on propshaft joint -2-.
– Smooth down any scoring caused by removal of old protective boot.
– Insert new O-ring -1- in groove.



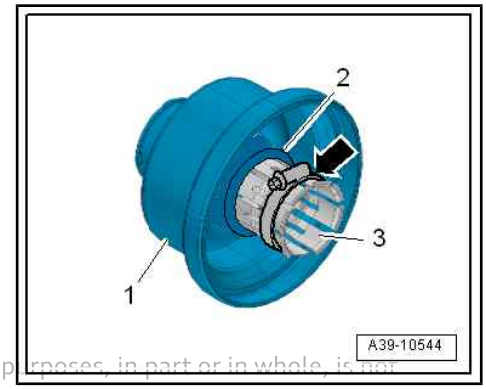
– Slide support ring -2- into opening of protective boot -1-.
• Installation direction: Recess -arrow A- is inserted into protective boot.
• Teeth -arrow B- on support ring should be visible at edge of opening on protective boot.



– Roll back protective boot -2- inside metal sleeve -1-.

– Slide hose clip -arrow- onto exposed teeth of support ring -3-, as shown in illustration.

• Do not cover ends of support ring.



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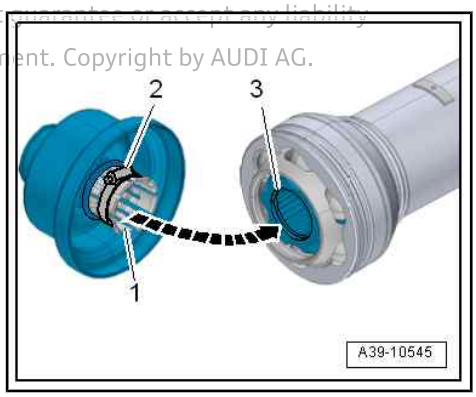
– Tighten hose clip -2- until teeth -1- of support ring can be inserted into groove -3- on inner part of joint.

– Release and detach hose clip -2-.

• Teeth of support ring must mate with groove on inner part of joint -arrow-.

– Push metal sleeve of protective boot onto joint as far as stop.



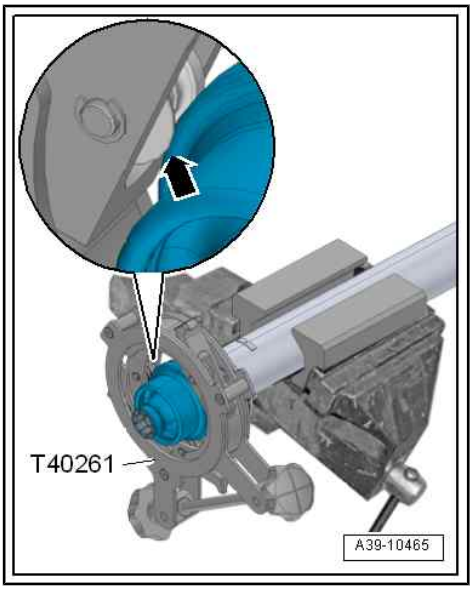
– Apply flanging tool - T40261- to metal sleeve so that stops of guide rollers -arrow- are resting on edge of metal sleeve.

– Turn flanging tool -T40261- back and forth to close seam of metal sleeve.

• Angle of rotation must be at least 90° when moving tool back and forth.

• Tighten adjusting wheel on flanging tool -T40261- as you move tool back and forth.

• Seam is finished when adjusting wheel of -T40261- can no longer be turned without difficulty.



2 Final drive

⇒ “2.1 Exploded view - final drive”, page 50

⇒ “2.2 Removing and installing final drive”, page 55

2.1 Exploded view - final drive

⇒ “2.1.1 Exploded view - rear final drive, Audi A4, A5”, page 50

⇒ “2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8”, page 52

⇒ “2.1.3 Exploded view - rear final drive, Audi Q7, Q8”, page 53

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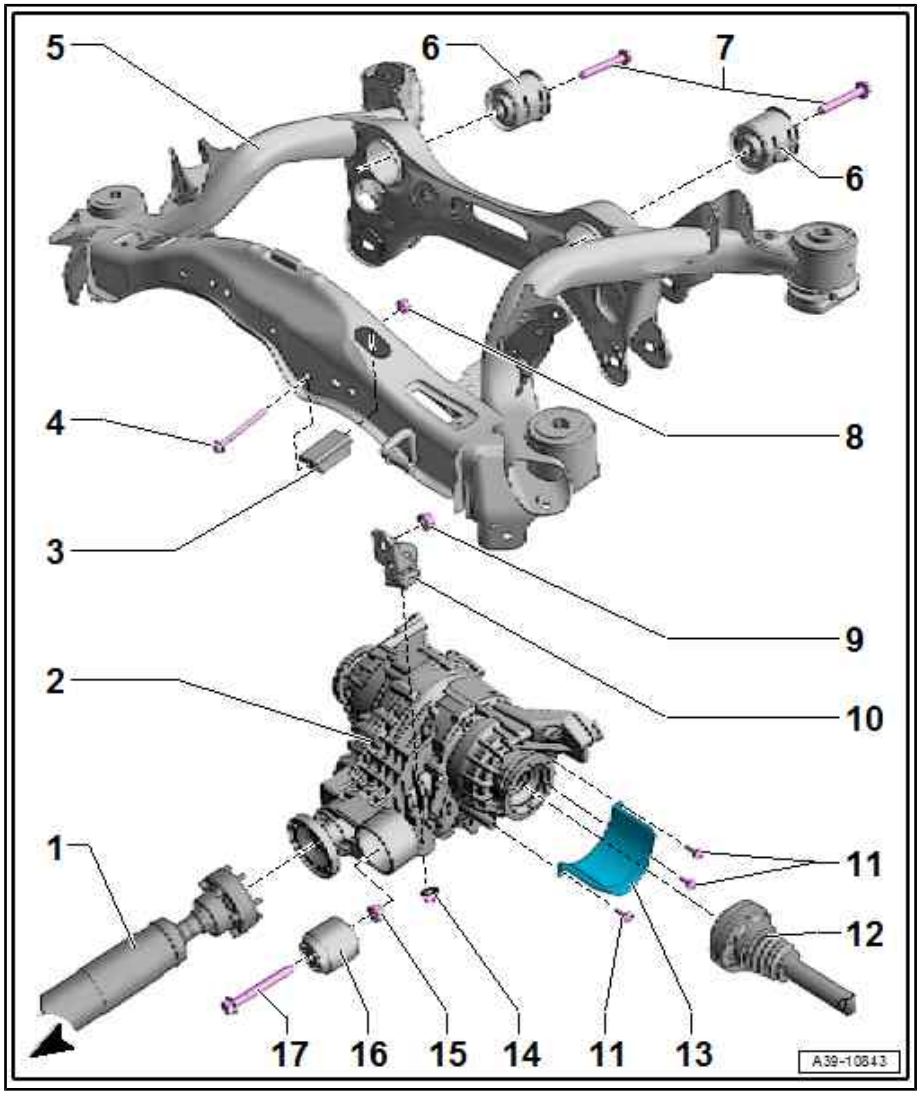
2.1.1 Exploded view - rear final drive, Audi A4, A5

Rear final drive



1 - Propshaft

- ❑ Removing and installing ⇒ page 32
- ❑ Detaching and attaching propshaft at rear final drive ⇒ page 45

2 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

3 - Stop buffer

- ❑ Installation position: rubber side faces downwards towards final drive

4 - Bolt

5 - Subframe

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

6 - Bonded rubber bush (rear)

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

7 - Bolt

- ❑ 70 Nm + 180°
- ❑ Always renew
- ❑ The bolts are of different lengths; allocate bolts according to ⇒ Electronic parts catalogue .

8 - Nut

- ❑ 20 Nm

9 - Nut

- ❑ Always renew

10 - Additional mounting

- ❑ Not fitted on all versions
- ❑ Counterhold at lower hexagon flats when tightening nut ⇒ Item 14 (page 51)

11 - Bolt

- ❑ 23 Nm
- ❑ Not fitted on all versions

12 - Drive shaft

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

13 - Heat shield

Different versions

- ❑ Installation from side with three bolts; tightening torque ⇒ Item 11 (page 51)
- ❑ Installation from below with two bolts; tightening torque ⇒ page 51

14 - Nut

- ❑ 20 Nm
- ❑ Not fitted on all versions
- ❑ Counterhold at lower hexagon flats of additional mounting when tightening ⇒ Item 10 (page 51)

15 - Nut

- ❑ Always renew

16 - Bonded rubber bush (front)

- ❑ Removing and installing ⇒ page 184

17 - M10 bolt

Vehicles with additional mounting ⇒ Item 10 (page 51)

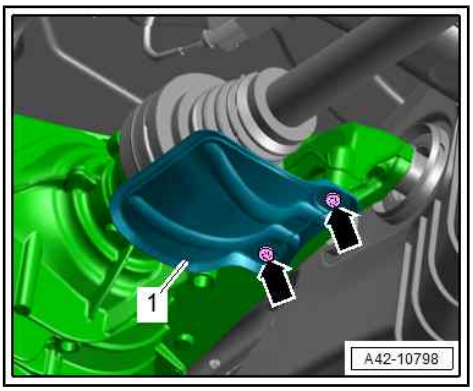
- ❑ 50 Nm + 180°
- ❑ Always renew

Vehicles without additional mounting ⇒ Item 10 (page 51)

- ❑ 55 Nm

Bolts -arrows- for heat shield -1-

- ♦ 23 Nm
- ♦ Not fitted on all versions



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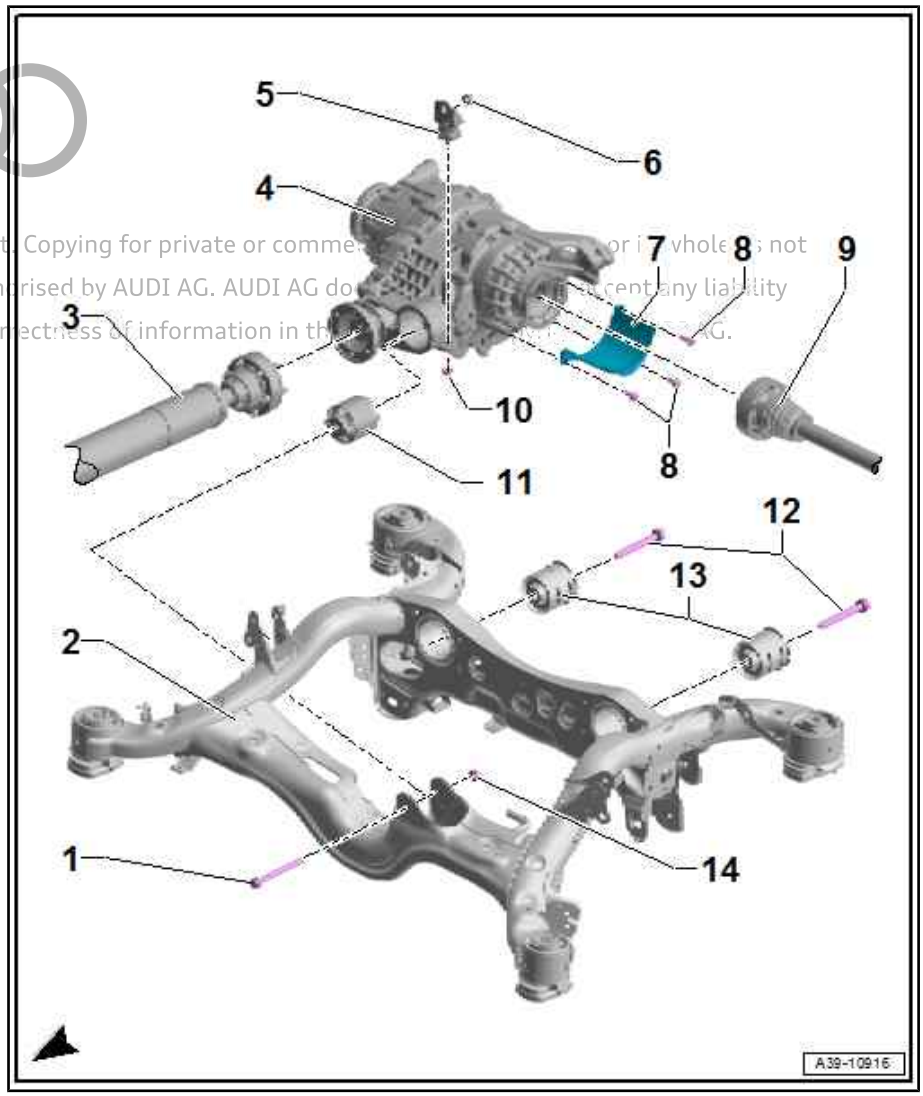
2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8

Rear final drive



1 - Bolt

- ❑ 50 Nm + 180°
- ❑ Always renew

2 - Subframe

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

3 - Propshaft

- ❑ Removing and installing ⇒ page 32
- ❑ Detaching and attaching propshaft at rear final drive ⇒ page 45

4 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

5 - Stop buffer

- ❑ Installation position: rubber side faces downwards towards final drive

6 - Nut

7 - Heat shield

Different versions

- ❑ Installation from side with three bolts, tightening torque ⇒ Item 8 (page 52)
- ❑ Installation from below with two bolts; tightening torque ⇒ page 53

8 - Bolt

- ❑ 23 Nm
- ❑ Not fitted on all versions

9 - Drive shaft

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

10 - Nut

- ❑ 20 Nm

11 - Bonded rubber bush (front)

- ❑ Removing and installing ⇒ page 184

12 - Bolt

- ❑ 70 Nm + 180°
- ❑ Always renew
- ❑ The bolts are of different lengths; allocate bolts according to ⇒ Electronic parts catalogue .

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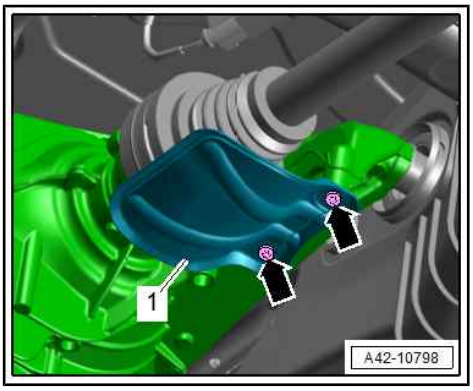
13 - Bonded rubber bush (rear)

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

14 - Nut

Bolts -arrows- for heat shield -1-

- ♦ 23 Nm
- ♦ Not fitted on all versions



2.1.3 Exploded view - rear final drive, Audi Q7, Q8

Rear final drive

1 - Propshaft

- ❑ Removing and installing ⇒ page 32
- ❑ Detaching and attaching propshaft at rear final drive ⇒ page 45

2 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

3 - Additional mounting

- ❑ 20 Nm
- ❑ Not fitted on all versions
- ❑ Must only be tightened on subframe via upper hexagon flats -arrow-
- ❑ Counterhold at lower hexagon flats when tightening nut ⇒ Item 12 (page 54)

4 - Subframe

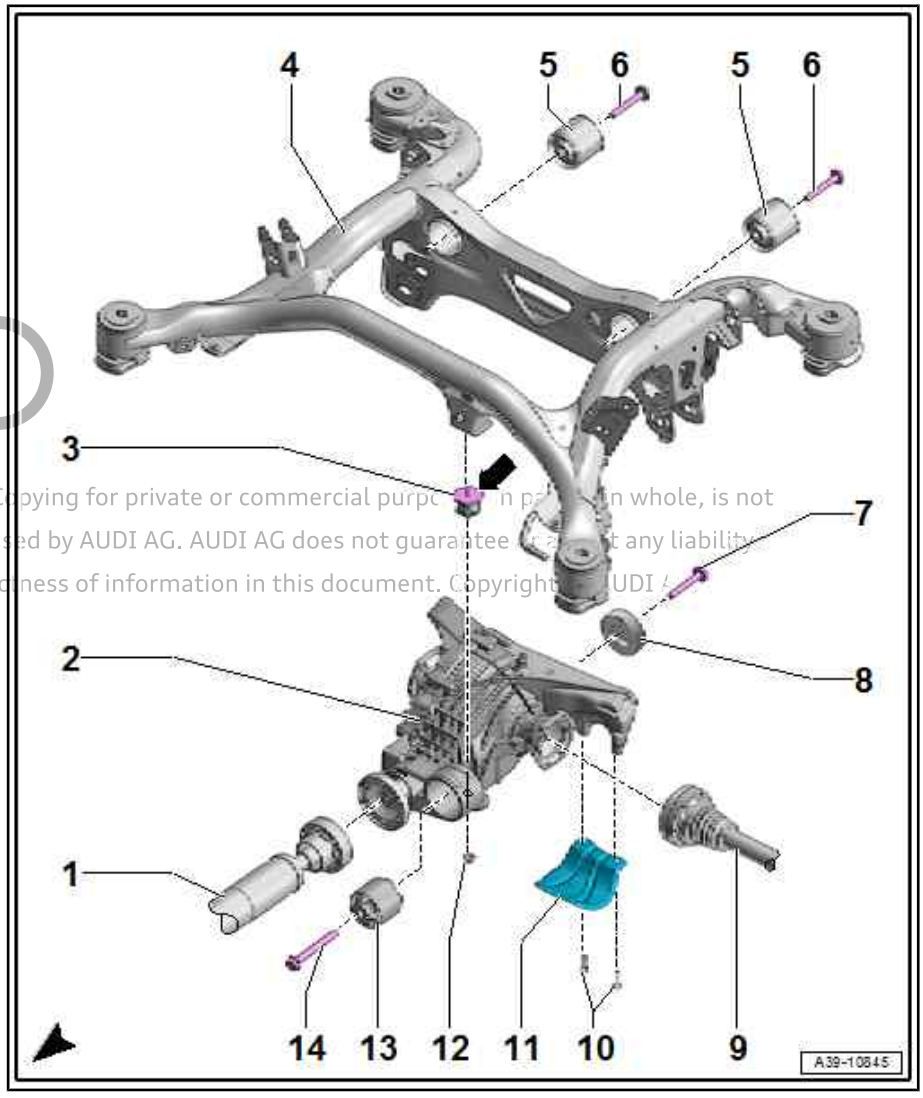
- ♦ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

5 - Bonded rubber bush (rear)

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

6 - Bolt

- ❑ 70 Nm + 180°



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- ❑ Always renew
- ❑ The bolts are of different lengths; allocate bolts according to ⇒ Electronic parts catalogue .

7 - Bolt

For vibration damper

- ❑ 55 Nm + 90°
- ❑ Always renew

8 - Vibration damper

- ❑ Not fitted on all versions
- ❑ Installation position: Protruding inside collar faces final drive

9 - Drive shaft

- ❑ Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

10 - Bolt

- ❑ 23 Nm
- ❑ Not fitted on all versions

11 - Heat shield

Different versions

- ❑ Installation from below with two bolts; tightening torque ⇒ Item 10 (page 54)
- ❑ Installation from side with three bolts; tightening torque ⇒ page 54

12 - Nut

- ❑ 20 Nm
- ❑ Not fitted on all versions

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13 - Bonded rubber bush (front)

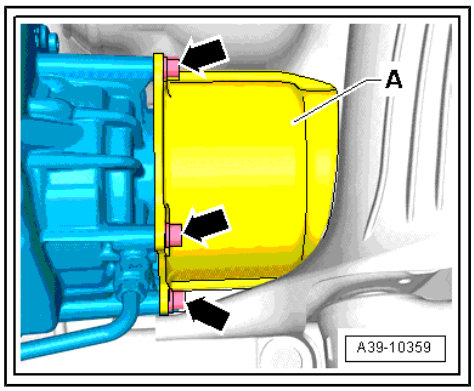
- ❑ Removing and installing ⇒ page 184

14 - M14 bolt

- ❑ 130 Nm + 180°
- ❑ Always renew

Bolts -arrows- for heat shield -A-

- ♦ 23 Nm
- ♦ Not fitted on all versions



2.2 Removing and installing final drive

⇒ “2.2.1 Removing and installing rear final drive - Audi A4, A5”, page 55

⇒ “2.2.2 Removing and installing rear final drive - Audi A4 Avant, A4 allroad with panoramic sunroof”, page 63

⇒ “2.2.3 Removing and installing rear final drive - Audi A5 Sport-back”, page 65

⇒ “2.2.4 Removing and installing rear final drive - Audi A6, A7, A8”, page 66

⇒ “2.2.5 Removing and installing rear final drive 0D2, 0B0 quattro ultra, 09R quattro ultra - Audi Q5”, page 67

⇒ “2.2.6 Removing and installing rear final drive 0D3 quattro sport - Audi Q5”, page 72

⇒ “2.2.7 Removing and installing rear final drive 0D2 and 0DG - Audi Q7, Q8”, page 74

⇒ “2.2.8 Removing and installing rear final drive 0BX quattro sport - Audi SQ7”, page 80

⇒ “2.2.9 Additional work required after renewing rear final drive 0D3 quattro sport and 0BX quattro sport ”, page 85

2.2.1 Removing and installing rear final drive - Audi A4, A5

Note different versions:

⇒ “2.2.2 Removing and installing rear final drive - Audi A4 Avant, A4 allroad with panoramic sunroof”, page 63

⇒ “2.2.3 Removing and installing rear final drive - Audi A5 Sport-back”, page 65

Special tools and workshop equipment required

- Engine and gearbox jack - VAS 6931-

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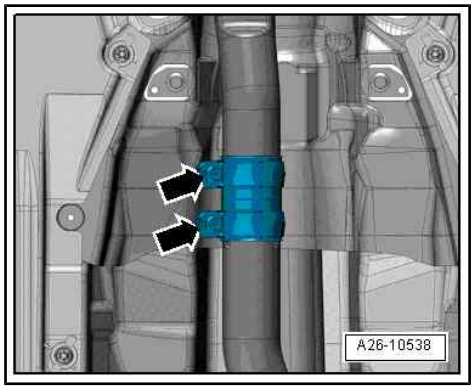
Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Tightening torques
  ⇒ “2.1.1 Exploded view - rear final drive, Audi A4, A5”, page 50

– Place vehicle on lifting platform.



NOTICE

Risk of damage to flexible joint if handled incorrectly.

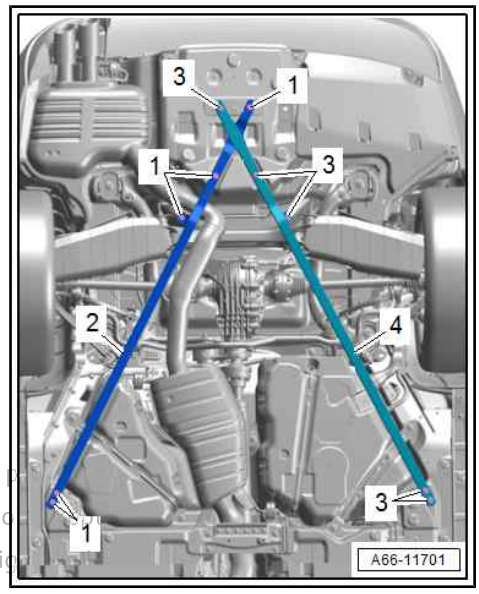
- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Unfasten clamp(s) -arrows- and disconnect exhaust system.

– Tie front exhaust pipe(s) up to side of underbody.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

– Remove rear diagonal struts (if fitted) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .



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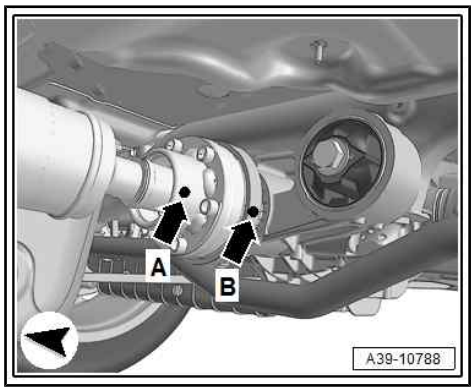
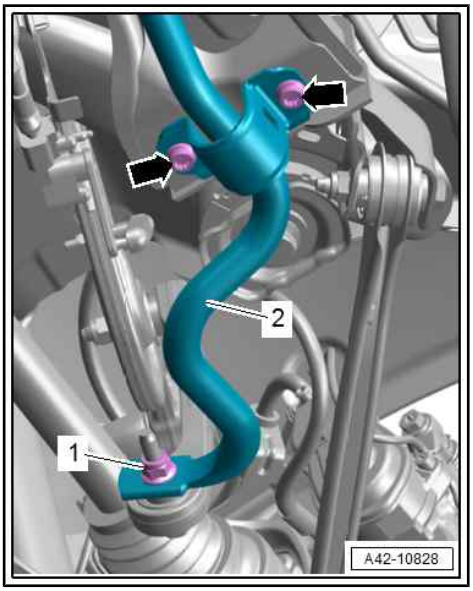
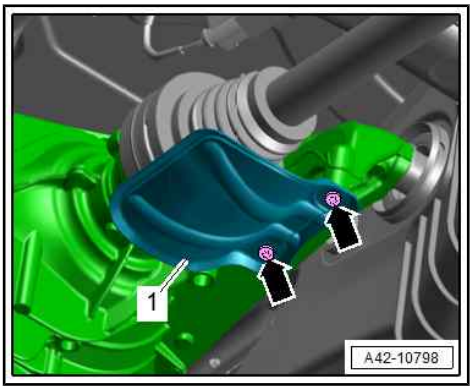
– Detach propshaft from rear final drive ⇒ page 45 .



– Unscrew bolts -arrows- for retaining clip for anti-roll bar on both sides.
– Swivel anti-roll bar downwards slightly.



– If fitted, remove bolts -arrows- and remove heat shield -1- for drive shaft (left-side).



Final drive 0D3 “quattro sport”

– Detach heat shield -A- for drive shaft (left-side) from final drive -arrows-.
– If fitted, detach heat shield -A- for drive shaft (right-side) from final drive.

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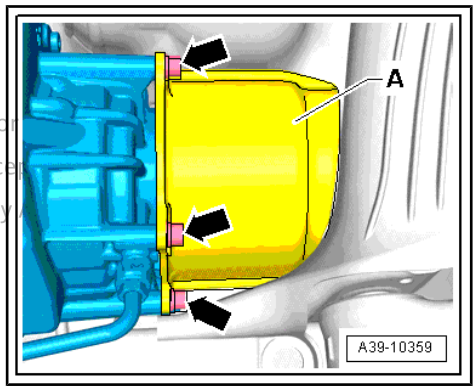
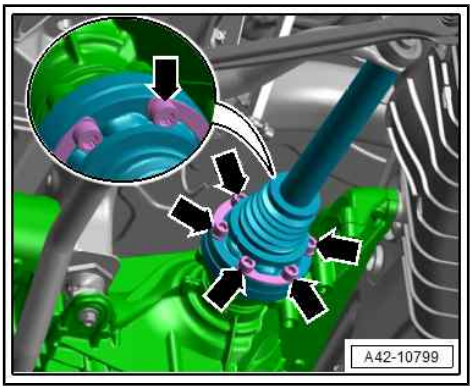


All vehicles (continued)

– Unscrew bolts -arrows- for drive shafts on both sides.



Final drive 0D3 “quattro sport”

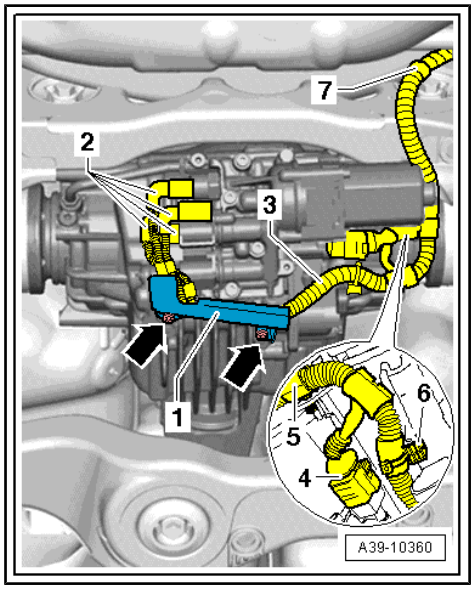
– Unscrew bolts -arrows- and detach bracket -1- from rear final drive.

– Mark connectors -2- for oil pressure and oil temperature senders and at clutch valves .

– Unplug connectors -2- from oil pressure and oil temperature senders and clutch valves .

– Then unplug connector -4- from all-wheel drive pump - V415- .

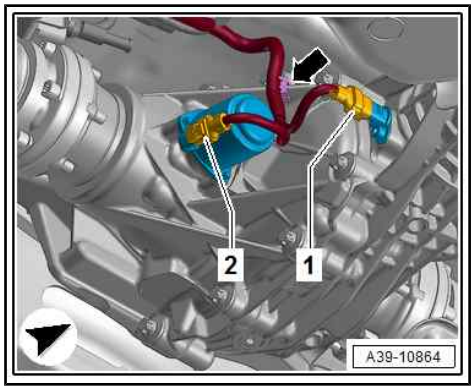
– Subsequently, unclip wiring harness -3- from final drive and subframe -items 5 ... 7- and tie up.



Final drive 0B0 “quattro ultra”, 09R “quattro ultra”

– Unplug electrical connectors -1- and -2-.

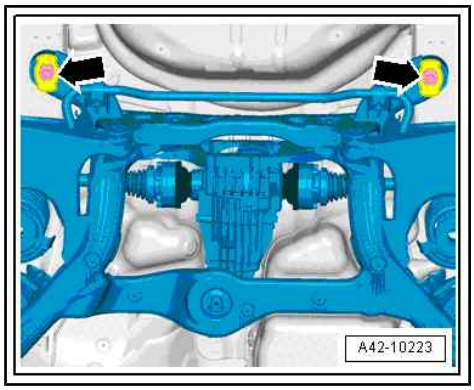
– Detach cable guide from final drive -arrow- and move wire clear.



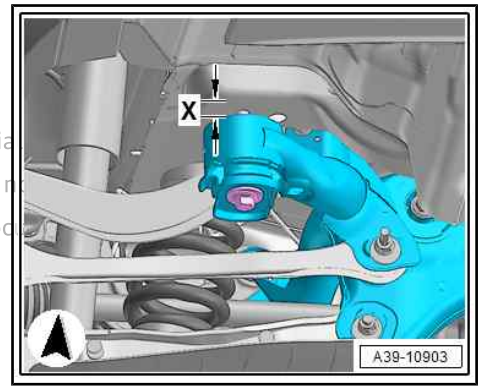
All Audi A4 and A5 vehicles except A4 allroad

Lower subframe at rear as follows:

– Unscrew both rear subframe bolts -arrows- just far enough so that there is a distance -x- to longitudinal member on both sides.



- Dimension -x- = 18 mm (maximum)



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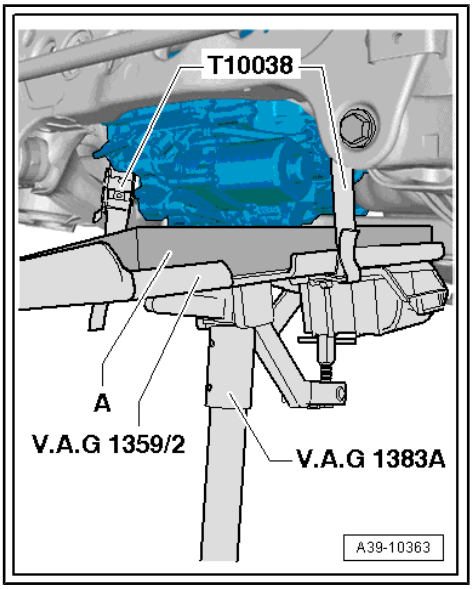
All vehicles (continued)

NOTICE

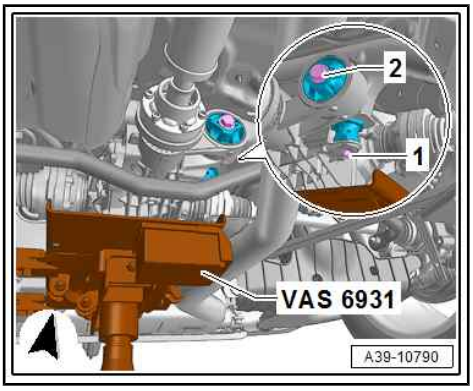
Clutch valves can be damaged if subjected to impact.

- **Place a rubber mat or hard foam slab on the gearbox support.**

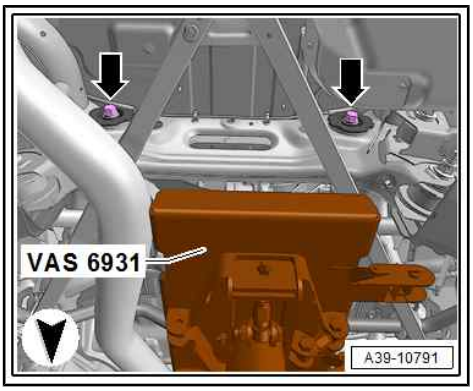
- Place engine and gearbox jack - VAS 6931- with universal gearbox support and a suitable rubber mat or hard-foam slab -A- below rear final drive.
- Use tensioning strap - T10038- to secure rear final drive to prevent it from dropping.



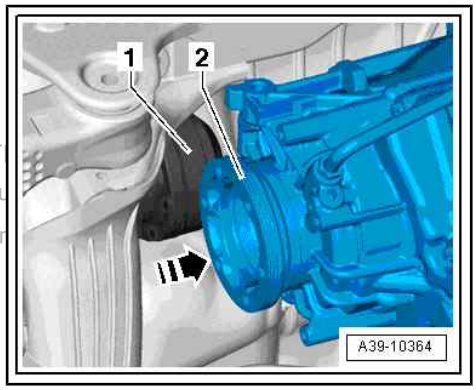
- If fitted, remove nut -1-.
- Remove bolt -2-.



- Remove securing bolts -arrows- for rear final drive.



- Push rear final drive towards right side of vehicle in direction of -arrow-.
- At the same time, guide drive shaft (left-side) -1- upwards out of flange shaft -2-.
- Then guide out drive shaft (right-side).
- Carefully lower rear final drive.
- When lowering, guide past anti-roll bar.



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Installing final drive:

Installation is carried out in reverse sequence. Note the following:

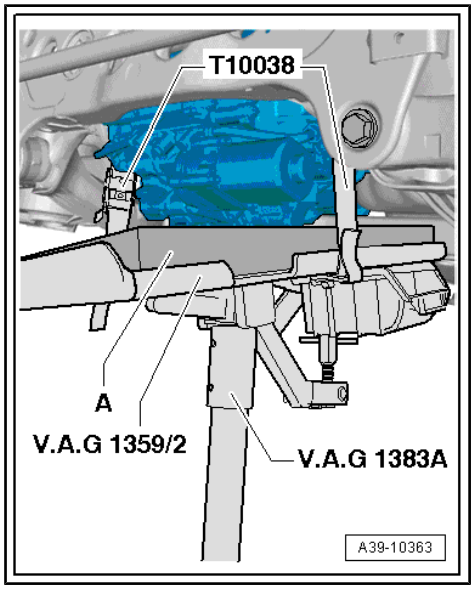
- Tightening torques
  ⇒ “2.1.1 Exploded view - rear final drive, Audi A4, A5”, page 50

NOTICE

Clutch valves can be damaged if subjected to impact.

– Place a rubber mat or hard foam slab on the gearbox support.

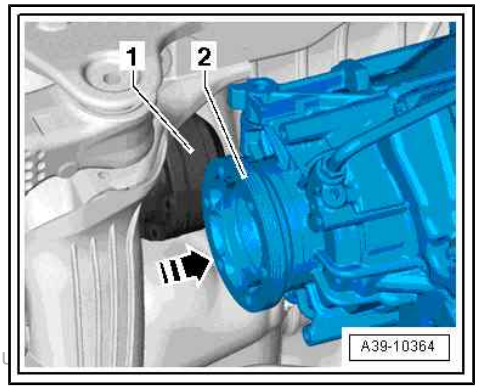
– Use engine and gearbox jack - VAS 6931- and universal gearbox support to bring rear final drive into installation position.



– At the same time, fit drive shaft (right-side) into flange shaft of final drive.

– Push final drive towards right side of vehicle in direction of -arrow-.

– Guide drive shaft -1- (left-side) into flange shaft -2-.



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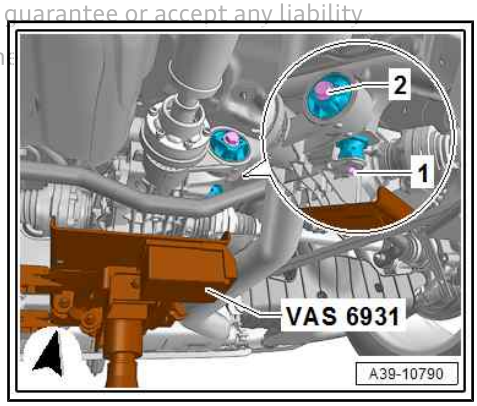
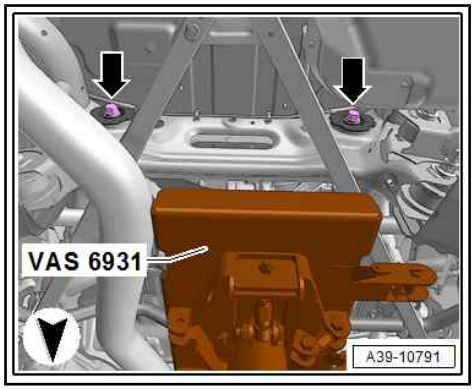
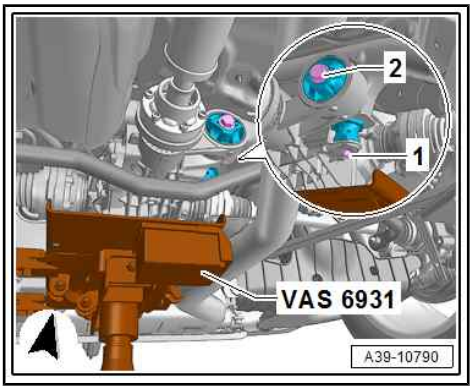
– Screw in bolt -2- hand-tight.



– Screw in and tighten new securing bolts -arrows- for rear final drive.

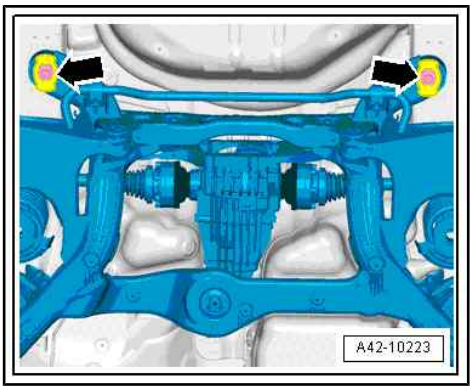


– Tighten bolt -2- and nut -1- (if fitted).



All Audi A4 and A5 vehicles except A4 allroad

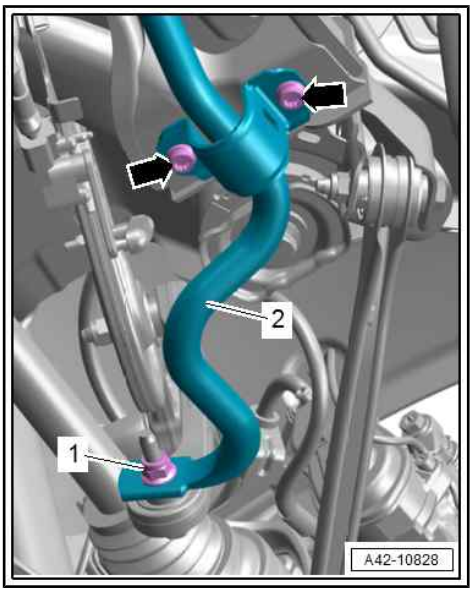
– Tighten bolts for subframe -arrows- ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe .



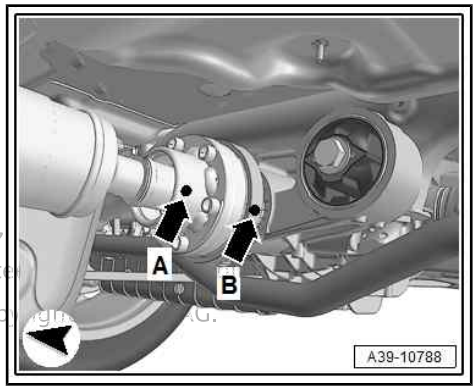
All vehicles (continued)

– Remove engine and gearbox jack - VAS 6931- from underneath final drive.

– Secure anti-roll bar -arrows- ⇒ Running gear, axles, steering; Rep. gr. 42 ; Anti-roll bar; Exploded view - anti-roll bar .



– Attach propshaft to rear final drive ⇒ page 46 .



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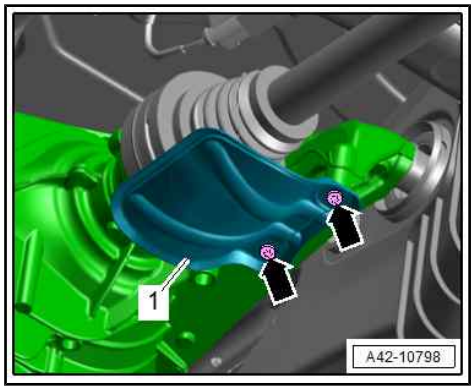
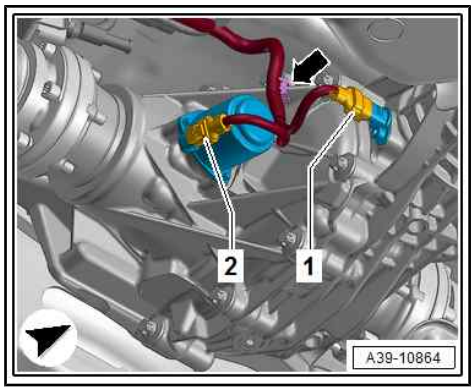
– Tighten drive shafts ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .
– If originally fitted, install heat shield -1- for drive shaft (left-side).



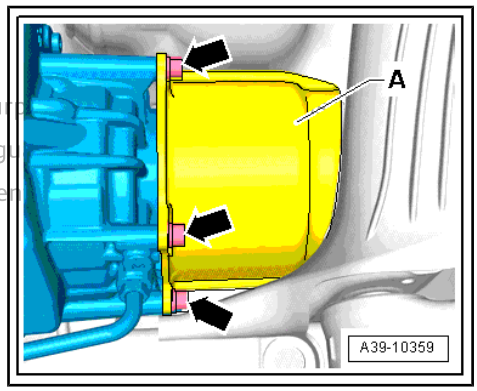
Final drive 0B0 “quattro ultra”, 09R “quattro ultra”

– Attach connectors -1- and -2-.
– Clip cable guide -arrow- into final drive.



Final drive 0D3 “quattro sport”

– Install heat shield -A- for drive shaft on rear final drive -arrows-.



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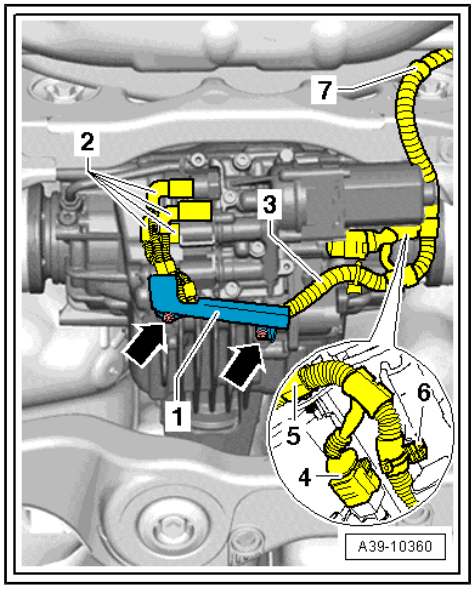
– Clip in wiring harness -3- at final drive and subframe -items 5 ... 7-.
– Plug in connectors -4- and -2-, paying attention to marks made during removal for identification of oil pressure and oil temperature senders and clutch valves .

NOTICE

Wiring harness can be damaged if it becomes trapped.

– **When attaching bracket -1- to rear final drive, make sure wiring harness -3- is not trapped.**

– Install bracket -1- on rear final drive and tighten bolts -arrows- to specified torque. Tightening torque: 9 Nm



Allocation of connectors for oil pressure and oil temperature senders and clutch valves :

- -1- = connector for oil pressure and oil temperature sender 2 - G640-
- -2- = connector for oil pressure and oil temperature sender - G437-
- -3- = connector for clutch valve 2 for all-wheel drive - N446-
- -4- = connector for clutch valve for all-wheel drive - N445-

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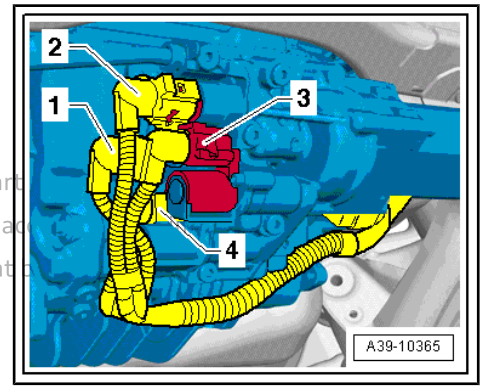
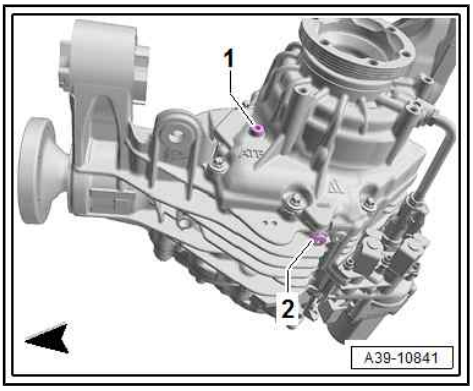


– Check ATF level in rear final drive ⇒ page 119 .
– Check gear oil level in rear final drive ⇒ page 108 .



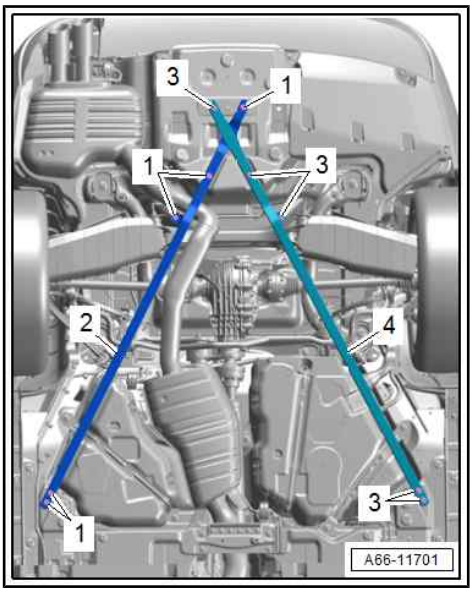
– If originally fitted, install diagonal struts (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
– Install exhaust system (rear) and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

Additional work for “quattro sport” vehicles

- Additional work is required if rear final drive 0D3 “quattro sport” has been renewed ⇒ page 85 .

Additional work for “quattro ultra” vehicles

- Additional work is required if rear final drive 0B0 “quattro ultra” or 09R “quattro ultra” has been renewed ⇒ page 196 .



2.2.2 Removing and installing rear final drive - Audi A4 Avant, A4 allroad with panoramic sunroof

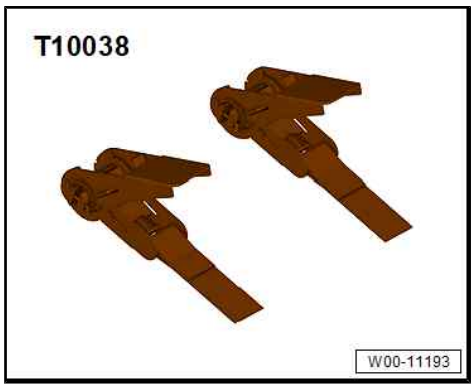
Note

- Vehicles with a panoramic sunroof have additional diagonal struts and corresponding mountings.
- Due to the mountings, the complete rear axle must be removed.

Special tools and workshop equipment required

- Workshop hoist - VAS 6100-

- Tensioning strap - T10038-

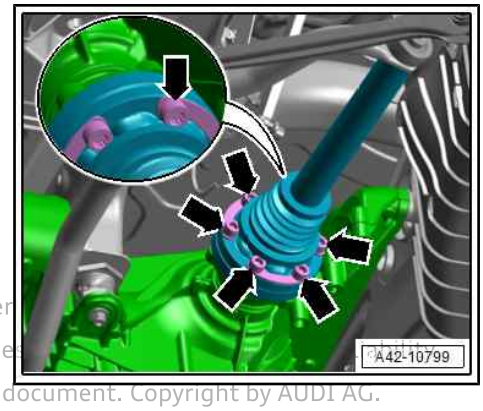


Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Rear subframe removed ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

– Unbolt drive shaft from rear final drive on both sides ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .



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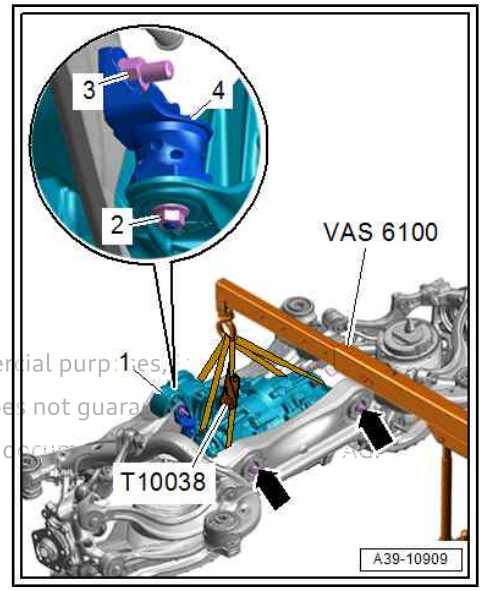
– Attach rear final drive -1- to workshop hoist - VAS 6100- using tensioning strap - T10038- , as shown.
– Detach bolted connection -3-, remove nut -2- and detach additional mounting -4-.
– Remove bolts -arrows- and detach rear final drive from rear subframe.



Installing final drive:

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ “2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8”, page 52

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Additional work for “quattro sport” vehicles

♦ Additional work is required if rear final drive 0BX “quattro sport” or 0D3 “quattro sport” has been renewed ⇒ page 85 .

Additional work for “quattro ultra” vehicles

♦ Additional work is required if rear final drive 0B0 “quattro ultra” or 09R “quattro ultra” has been renewed ⇒ page 196 .

2.2.3 Removing and installing rear final drive - Audi A5 Sportback

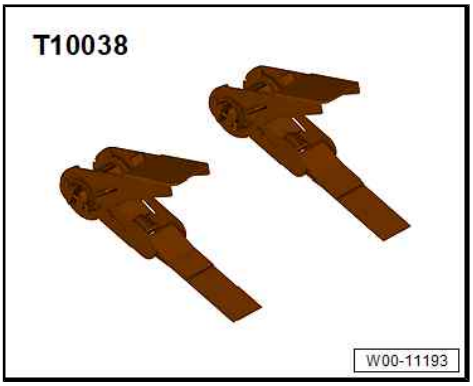
Note

♦ The Audi A5 Sportback has additional diagonal struts and corresponding mountings.
♦ Due to the mountings, the complete rear axle must be removed.

Special tools and workshop equipment required

♦ Workshop hoist - VAS 6100-

♦ Tensioning strap - T10038-

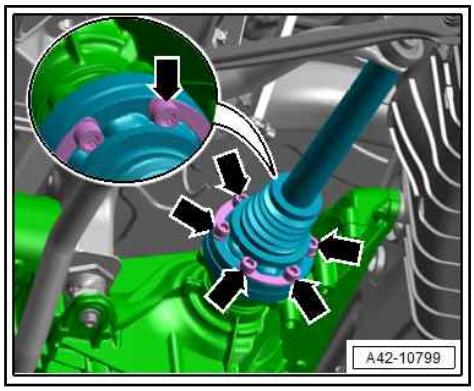


Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Rear subframe removed ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

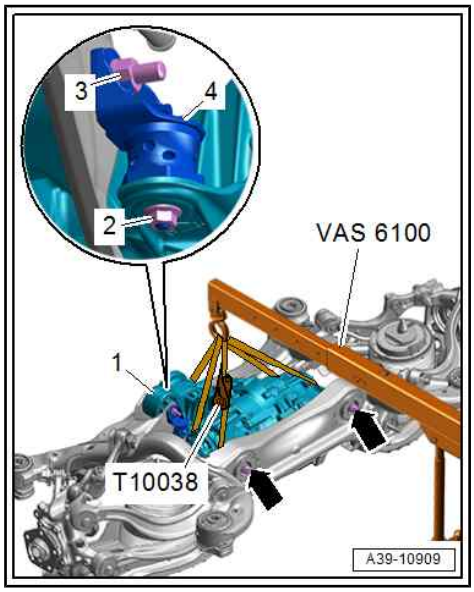
– Unbolt drive shaft from rear final drive on both sides ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .



– Attach rear final drive -1- to workshop hoist - VAS 6100- using tensioning strap - T10038- , as shown.

– Detach bolted connection -3-, remove nut -2- and detach additional mounting -4-.

– Remove bolts -arrows- and detach rear final drive from rear subframe.



Installing final drive:

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ "2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8", page 52

Additional work for "quattro sport" vehicles

◆ Additional work is required if rear final drive 0BX "quattro sport" or 0D3 "quattro sport" has been renewed ⇒ page 85 .

Additional work for "quattro ultra" vehicles

◆ Additional work is required if rear final drive 0B0 "quattro ultra" or 09R "quattro ultra" has been renewed ⇒ page 196 .

2.2.4 Removing and installing rear final drive - Audi A6, A7, A8

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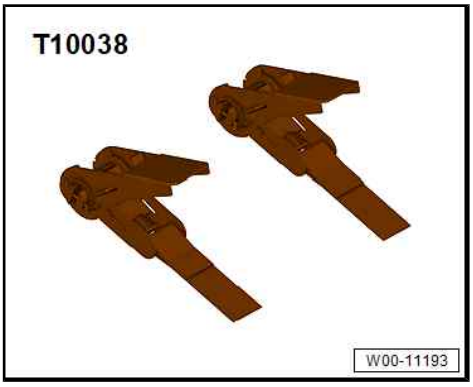
Special tools and workshop equipment required

◆ Workshop hoist - VAS 6100-

♦ Tensioning strap - T10038-

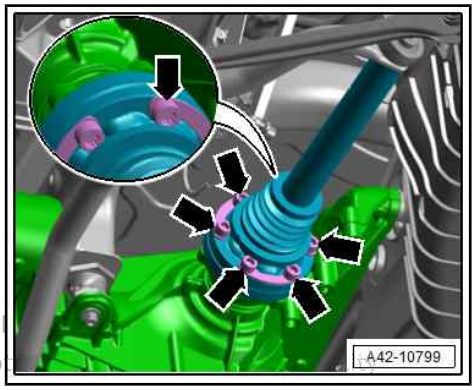


Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Rear subframe removed ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

– Unbolt drive shaft from rear final drive on both sides ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .



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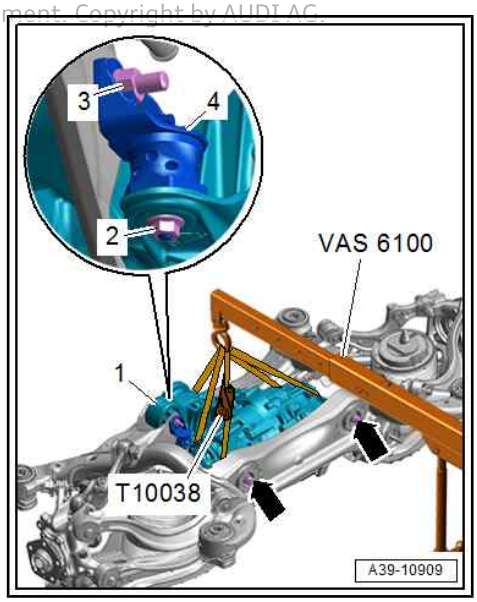
– Attach rear final drive -1- to workshop hoist - VAS 6100- using tensioning strap - T10038- , as shown.

– Detach bolted connection -3-, remove nut -2- and detach additional mounting -4-.

– Remove bolts -arrows- and detach rear final drive from rear subframe.



Installing final drive:

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ "2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8", page 52

Additional work for "quattro sport" vehicles

♦ Additional work is required if rear final drive 0BX "quattro sport" or 0D3 "quattro sport" has been renewed ⇒ page 85 .

Additional work for "quattro ultra" vehicles

♦ Additional work is required if rear final drive 0B0 "quattro ultra" or 09R "quattro ultra" has been renewed ⇒ page 196 .

2.2.5 Removing and installing rear final drive 0D2, 0B0 "quattro ultra", 09R "quattro ultra" - Audi Q5

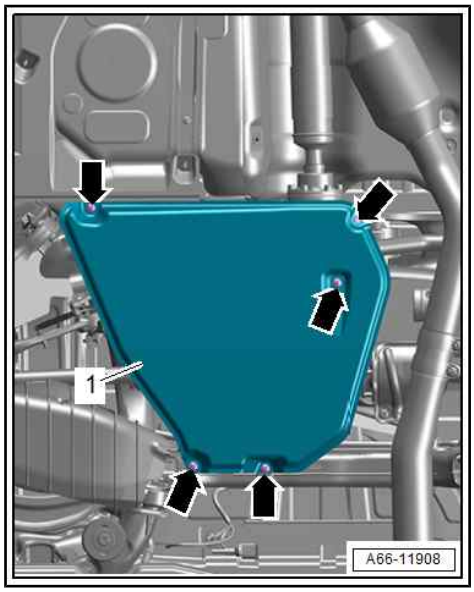
Special tools and workshop equipment required

♦ Engine and gearbox jack - VAS 6931-

Removing final drive:

Refer to general repair instructions ⇒ page 21 .

– Place vehicle on lifting platform.
– Remove spreader rivets -arrows-.
– Detach underbody trim -1-.



NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

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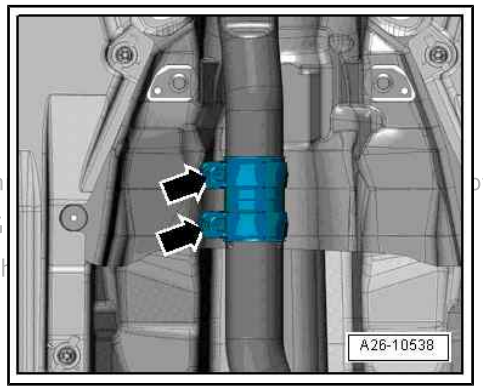
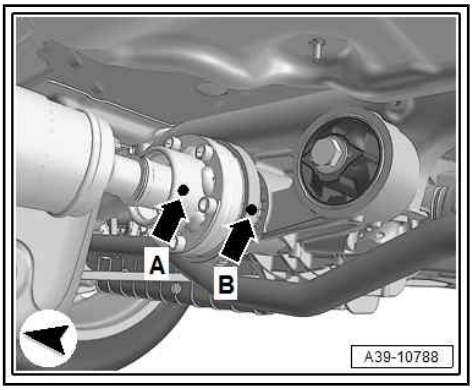
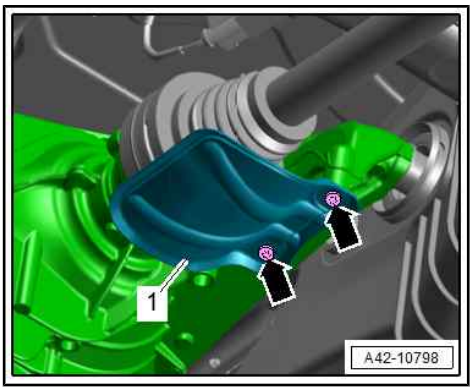
– Unfasten clamp(s) -arrows- and disconnect exhaust system.
– Tie front exhaust pipe(s) up to side of underbody.
– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



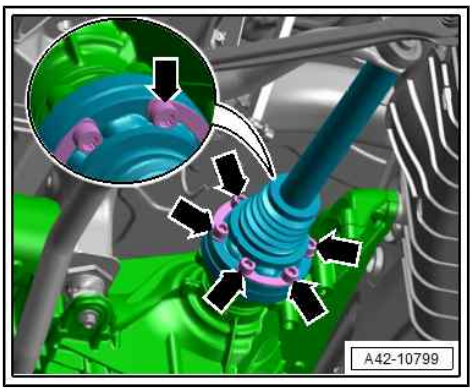
– Detach propshaft from rear final drive ⇒ page 45 .



– Remove bolts -arrows- and remove heat shield -1- for drive shaft (left-side).



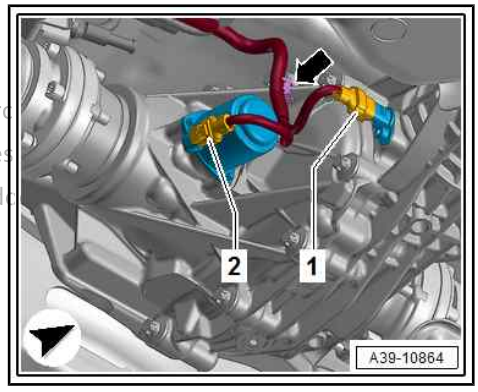
– Unscrew bolts -arrows- for drive shafts on both sides.



Final drive 0B0 “quattro ultra”, 09R “quattro ultra”

– Unplug electrical connectors -1- and -2-.

– Detach cable guide from final drive -arrow- and move wire clear.



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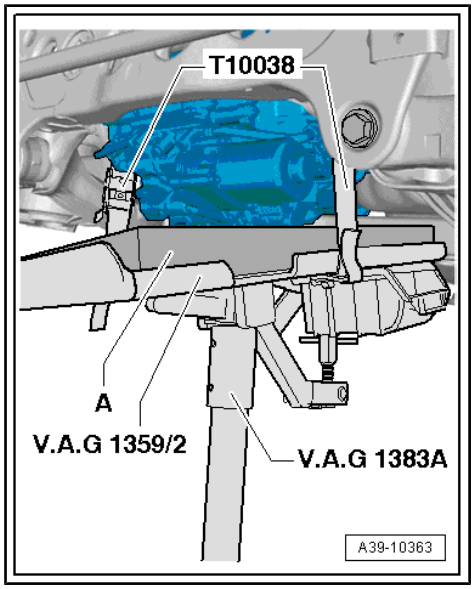
All vehicles (continued):

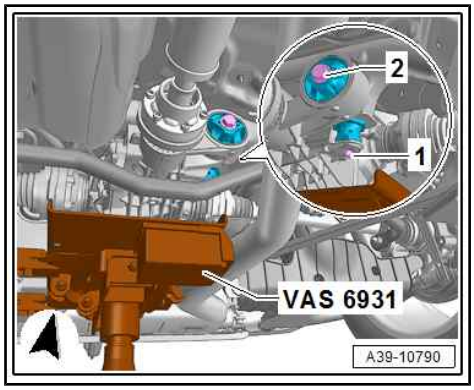
– Place engine and gearbox jack - VAS 6931- with universal gearbox support and a suitable rubber mat or hard-foam slab -A- below rear final drive.

– Use tensioning strap - T10038- to secure rear final drive to prevent it from dropping.

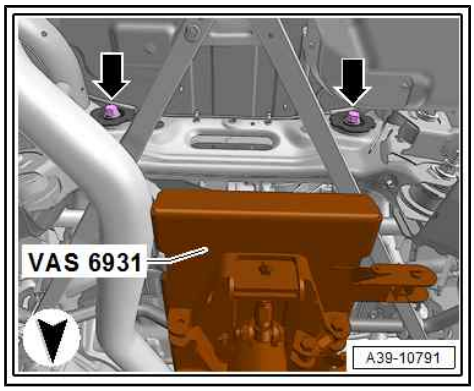


– If fitted, remove nut -1-.

– Remove bolt -2-.



– Remove securing bolts -arrows- for rear final drive.



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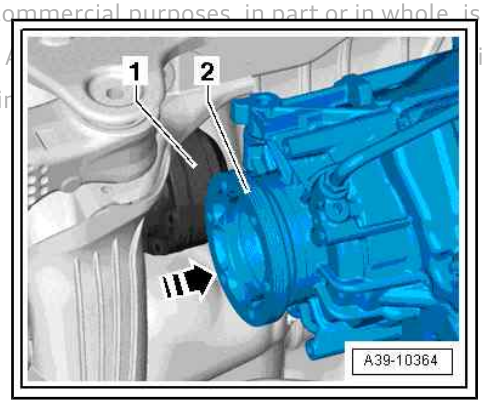
– Push rear final drive towards right side of vehicle in direction of -arrow-.

– At the same time, guide drive shaft (left-side) -1- upwards out of flange shaft -2-.

– Then guide out drive shaft (right-side).

– Carefully lower rear final drive.

– When lowering, guide past anti-roll bar.

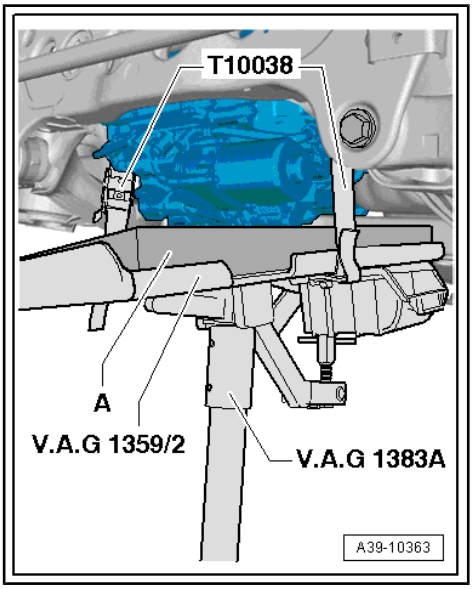


Installing final drive:

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
  ⇒ "2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8", page 52

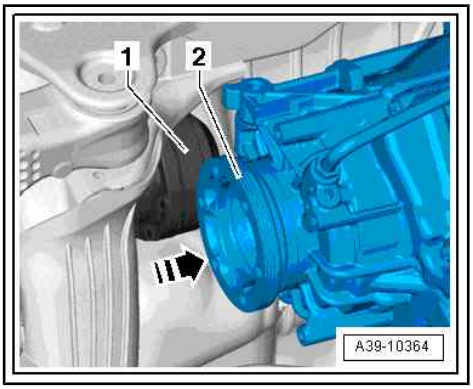
– Use engine and gearbox jack - VAS 6931- and universal gearbox support to bring rear final drive into installation position.



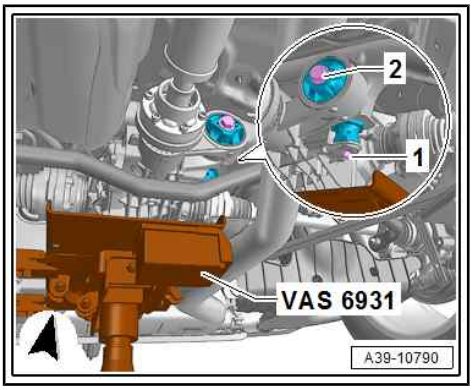
– At the same time, fit drive shaft (right-side) into flange shaft of final drive.

– Push final drive towards right side of vehicle in direction of -arrow-.

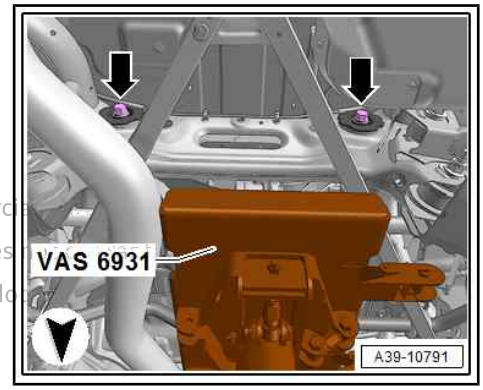
– Guide drive shaft -1- (left-side) into flange shaft -2-.



– Screw in bolt -2- hand-tight.



– Screw in and tighten new securing bolts -arrows- for rear final drive.



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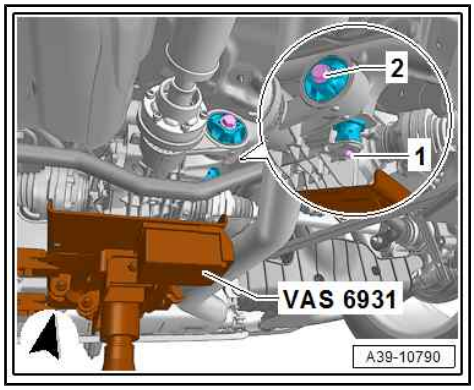
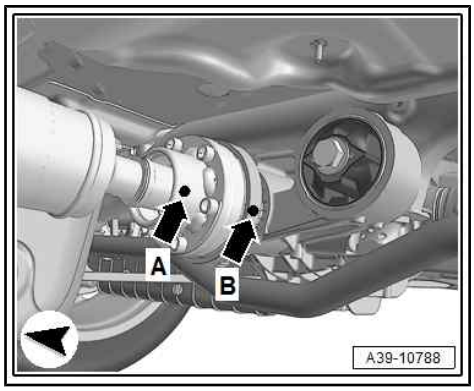
– Tighten bolt -2- and nut -1- (if fitted).

– Remove engine and gearbox jack - VAS 6931- from underneath final drive.

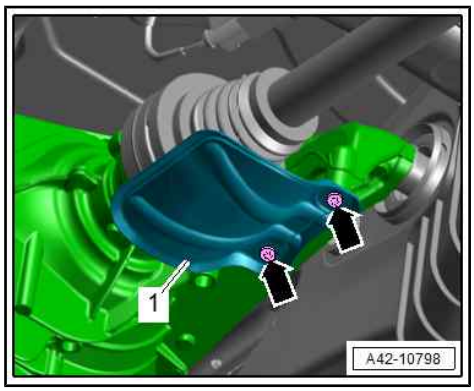


– Attach propshaft to rear final drive ⇒ page 46 .



– Tighten drive shafts ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

– If originally fitted, install heat shield -1- for drive shaft (left-side).



Final drive 0B0 “quattro ultra”, 09R “quattro ultra”

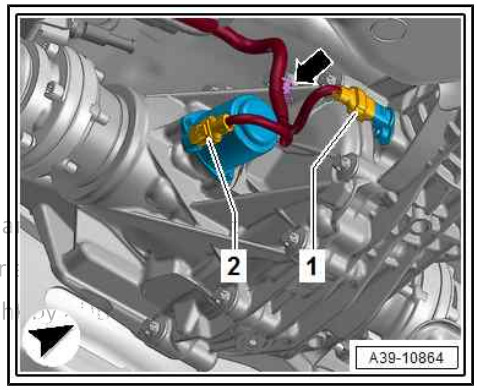
– Attach connectors -1- and -2-.

– Clip cable guide -arrow- into final drive.

All vehicles (continued):

– Check gear oil level in rear final drive ⇒ page 107 .

– Install exhaust system (rear) and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



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Additional work for “quattro ultra” vehicles

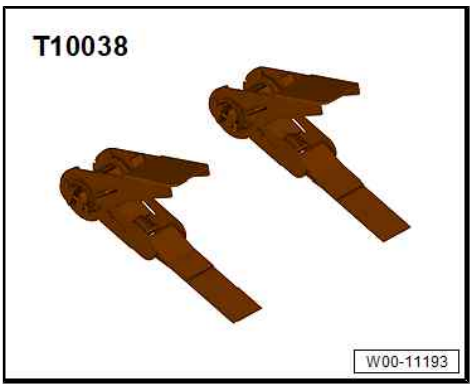
♦ Additional work is required if rear final drive 0B0 “quattro ultra” or 09R “quattro ultra” has been renewed ⇒ page 196 .

2.2.6 Removing and installing rear final drive 0D3 “quattro sport” - Audi Q5

Special tools and workshop equipment required

♦ Workshop hoist - VAS 6100-

♦ Tensioning strap - T10038-

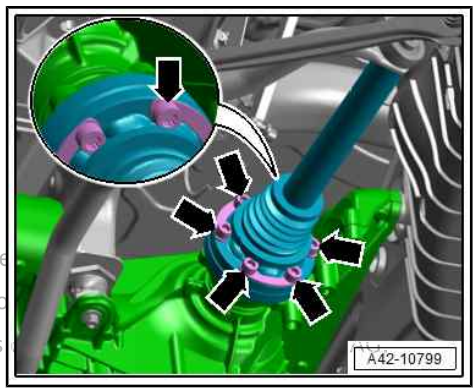


Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Rear subframe removed ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

– Unbolt drive shaft from rear final drive on both sides ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .



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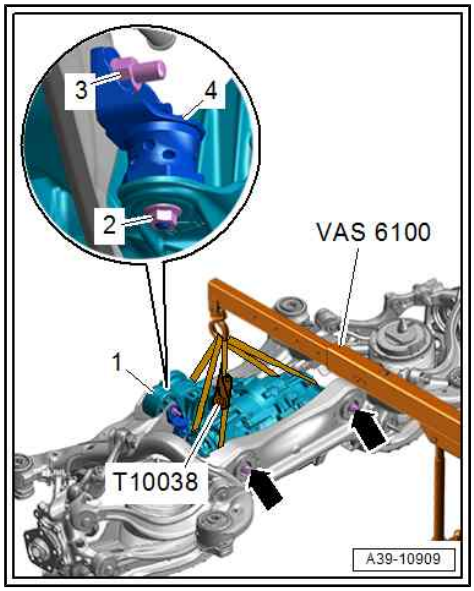
– Attach rear final drive -1- to workshop hoist - VAS 6100- using tensioning strap - T10038- , as shown.
– Detach bolted connection -3-, remove nut -2- and detach additional mounting -4-.
– Remove bolts -arrows- and detach rear final drive from rear subframe.



Installing final drive:

Installation is carried out in reverse sequence. Note the following:

- Tightening torques
⇒ "2.1.2 Exploded view - rear final drive, Audi Q5, A6, A7, A8", page 52

Additional work

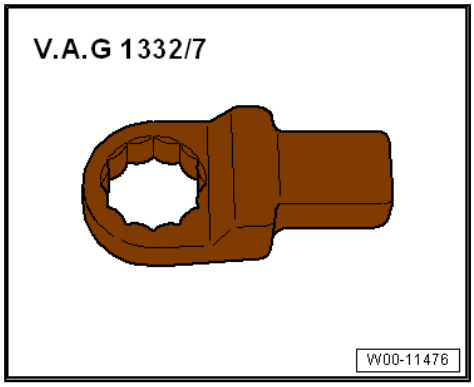
♦ Additional work is required if rear final drive 0D3 has been renewed ⇒ page 85 .

2.2.7 Removing and installing rear final drive 0D2 and 0DG - Audi Q7, Q8

Special tools and workshop equipment required

♦ Engine and gearbox jack - VAS 6931-

♦ Ring spanner insert - V.A.G 1332/7-



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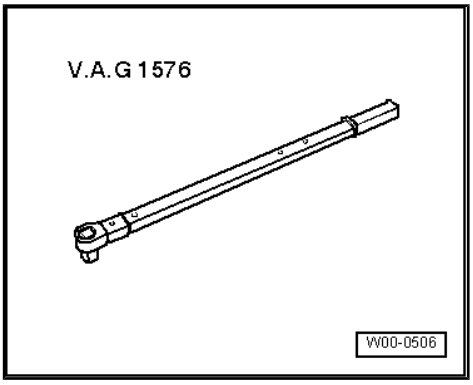
♦ Torque wrench - V.A.G 1576-

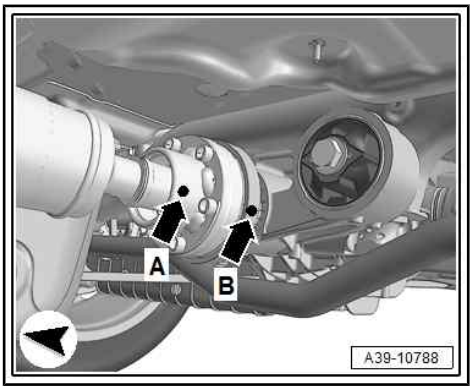


Removing final drive:

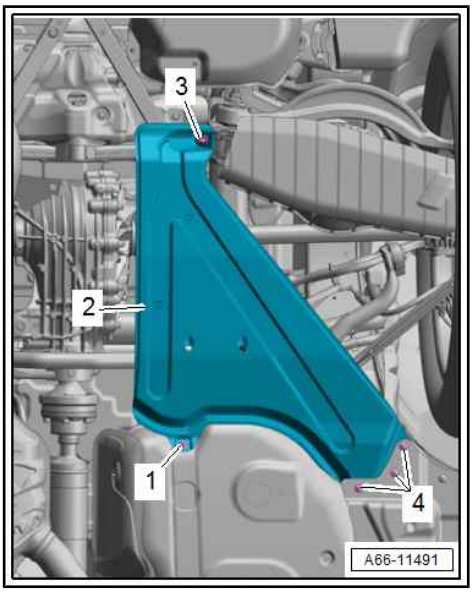
Refer to general repair instructions ⇒ page 21 .

– Place vehicle on lifting platform.

– Detach propshaft from rear final drive ⇒ page 45 .



– Remove bolts -1, 3, 4- and detach cover -2-.



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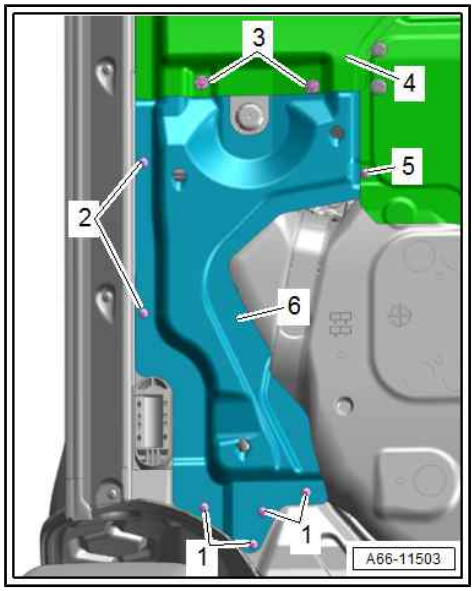
Vehicles with diagonal struts:

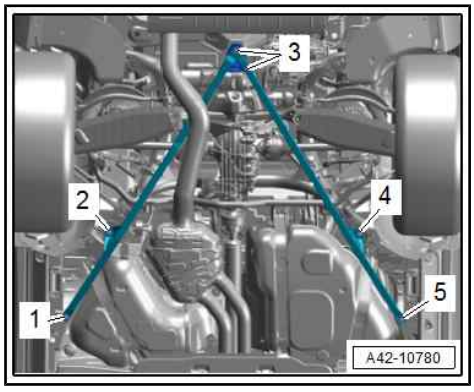
– Remove underbody trim (left-side) -6-.

– Remove nuts -3-.

– Remove bolts -1, 2, 5-.

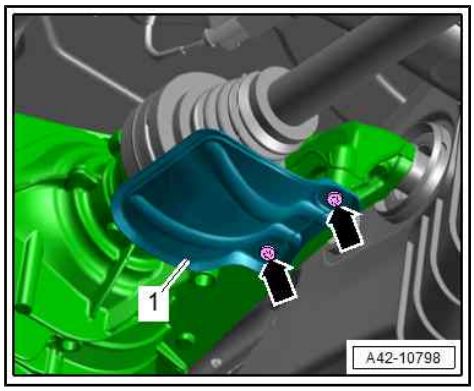


– Remove bolts -1 ... 3- and detach diagonal strut (left-side).



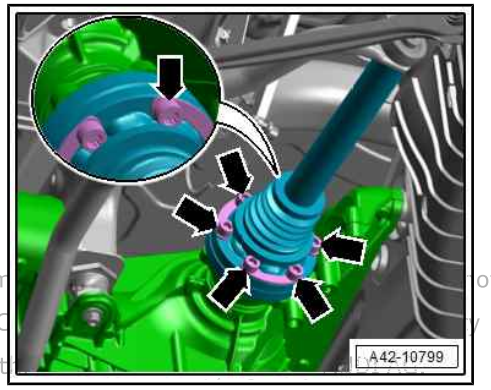
All vehicles (continued):

– Remove bolts -arrows- and remove heat shield -1- for drive shaft (left-side).



– Unscrew bolts -arrows- for drive shafts on both sides.

– Guide drive shafts out of flange shafts and place to one side.



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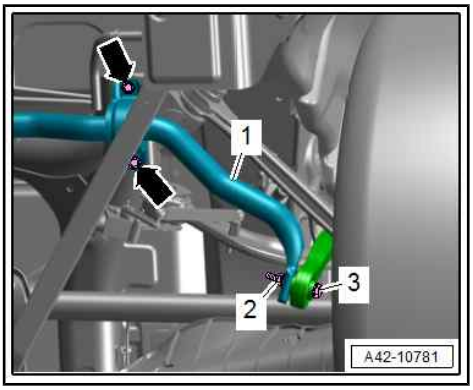
– Remove bolts -arrows- (both sides) and lower anti-roll bar.



Vehicles with air suspension:

– Unscrew nuts -arrows- and detach cover for air supply unit -1-.

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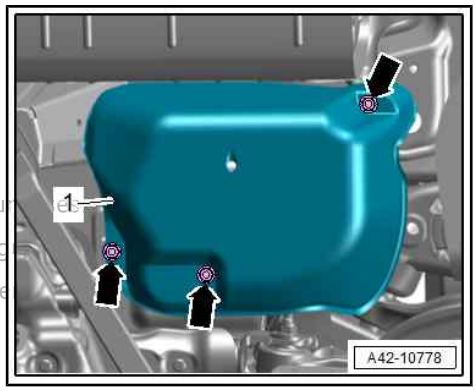
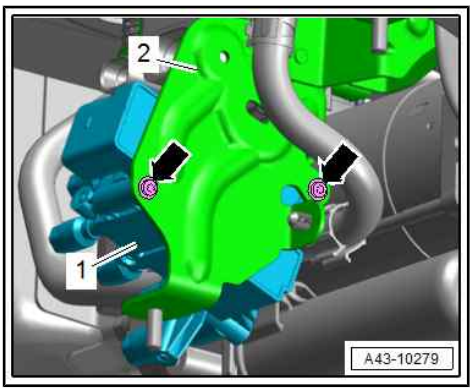


– Remove bolts -arrows-, detach solenoid valve block -1- from bracket -2- and let it hang down to one side.

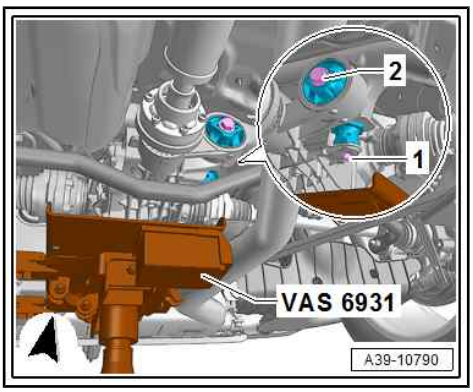


All vehicles (continued):

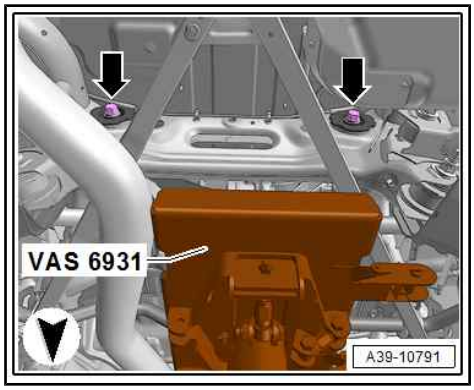
– Unscrew nut -1-.

– Position engine and gearbox jack - VAS 6931- with universal gearbox support below rear final drive.

– Remove bolt -2-.



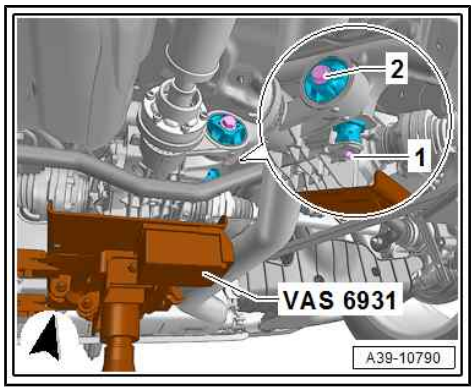
– Remove securing bolts -arrows- for rear final drive.
– Carefully lower rear final drive.
– Pivot left side of final drive upwards and guide right side out downwards.
– Then guide left side out downwards past exhaust pipe.
– Guide final drive with propshaft flange out past anti-roll bar.



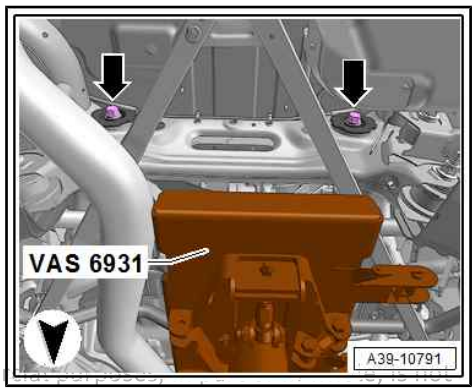
Installing final drive:

Installation is carried out in reverse sequence. Note the following:

– Use engine and gearbox jack - VAS 6931- and universal gearbox support to bring rear final drive into installation position.
– Screw in bolt -2- hand-tight.



– Screw in and tighten securing bolts -arrows- for rear final drive.



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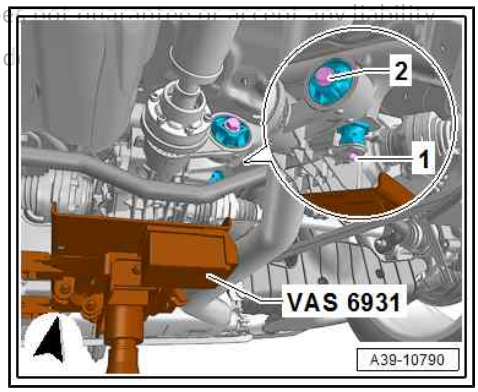
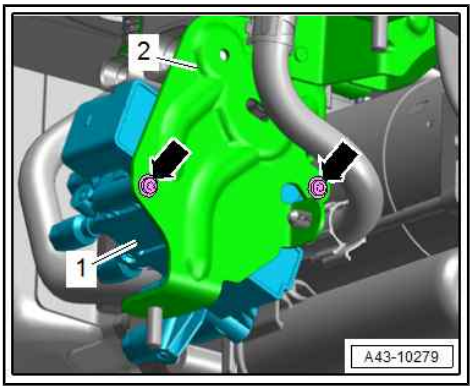
– Tighten bolt -2- using torque wrench - V.A.G 1576- and ring spanner insert - V.A.G 1332/7- .
– Tighten nut -1-.
– Remove engine and gearbox jack - VAS 6931- from underneath final drive.

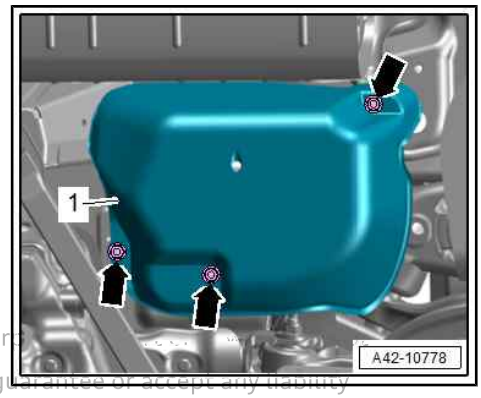


Vehicles with air suspension:

– Secure solenoid valve block -1- to bracket -2- -arrows-.



– Secure cover for air supply unit -1- with nuts -arrows-.



All vehicles (continued):

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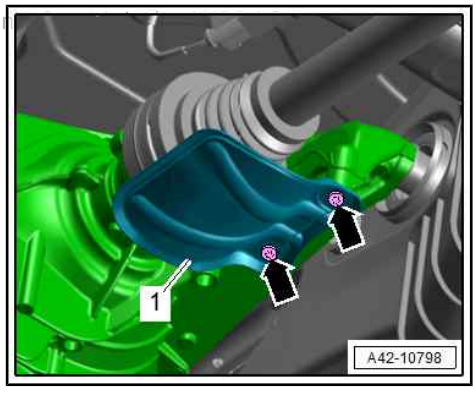
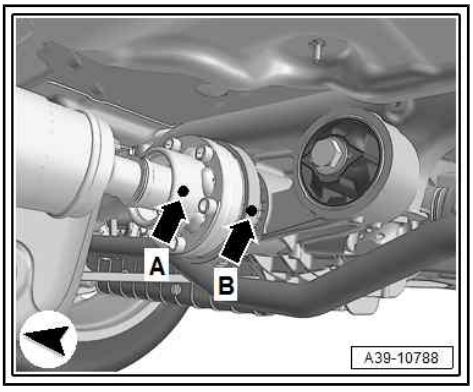
– Fit and tighten drive shafts ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

– Fit heat shield -1- for drive shaft (left-side).



– Attach propshaft to rear final drive ⇒ page 46 .

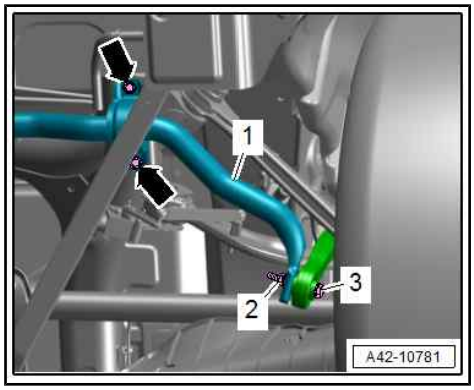


– Secure anti-roll bar -arrows-.

– If previously removed, install diagonal strut ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .

– Install underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .

– Check gear oil level in rear final drive ⇒ page 107 .



Tightening torques:

- ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 42 ; Drive shaft; Exploded view - drive shaft
- ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 42 ; Anti-roll bar; Exploded view - anti-roll bar
- ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 43 ; Air suspension; Overview of fitting locations - electrical and electronic components
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody struts
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim
- ⇒ “2.1.3 Exploded view - rear final drive, Audi Q7, Q8”, page 53
- ⇒ “1.1 Exploded view - propshaft”, page 30

2.2.8 Removing and installing rear final drive 0BX “quattro sport” - Audi SQ7

Special tools and workshop equipment required

- Engine and gearbox jack - VAS 6931-

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Removing final drive:

Refer to general repair instructions ⇒ page 21 .

- Tightening torques
⇒ “2.1.3 Exploded view - rear final drive, Audi Q7, Q8”, page 53

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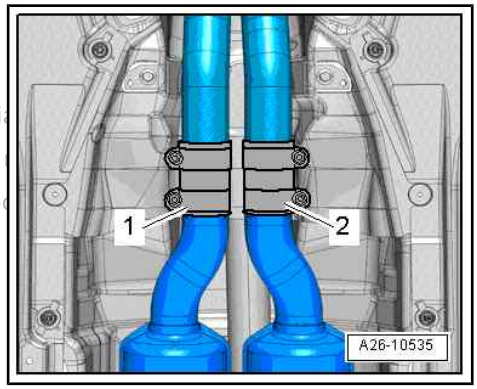
– Place vehicle on lifting platform.



NOTICE

Risk of damage to flexible joint if handled incorrectly.

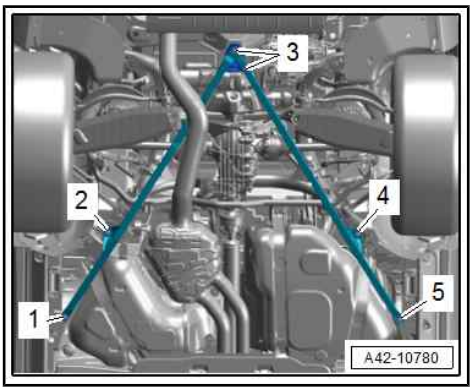
- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Unfasten clamps -1 and 2- and disconnect exhaust system.

– Tie up front exhaust pipes to underbody at side.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

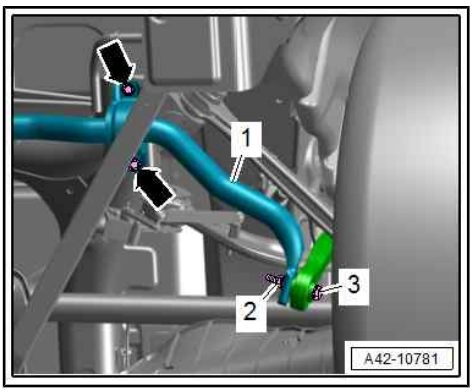
– Remove rear diagonal struts ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .



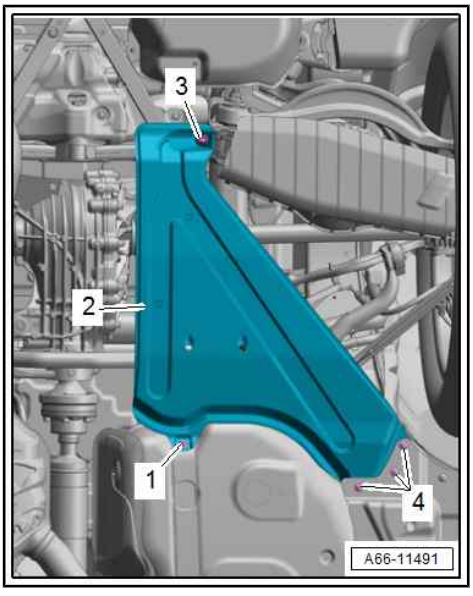
– Loosen nut -2- on anti-roll bar by a few turns; do not remove.

– Move wiring harness for roll stabilisation clear at subframe.

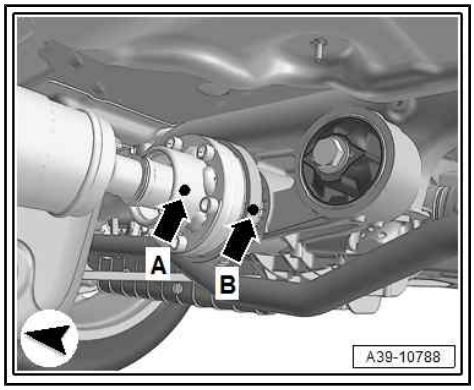
– Remove bolts -arrows- on both sides and swivel anti-roll bar downwards.



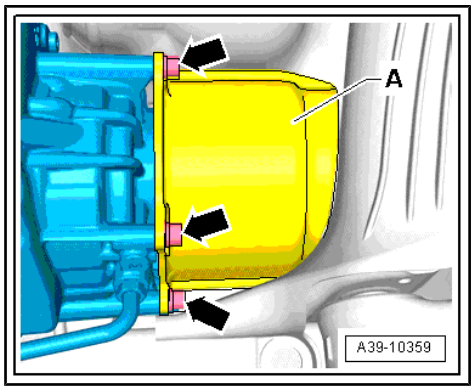
– Remove bolts -1, 3, 4- and detach cover -2-.



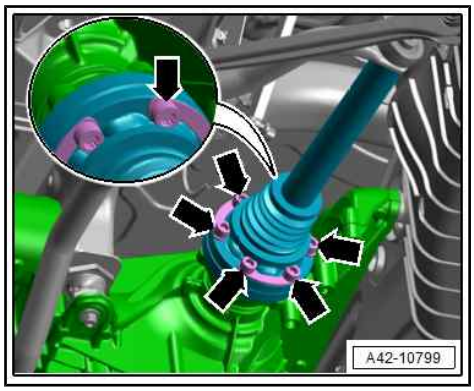
– Detach propshaft from rear final drive ⇒ page 45 .



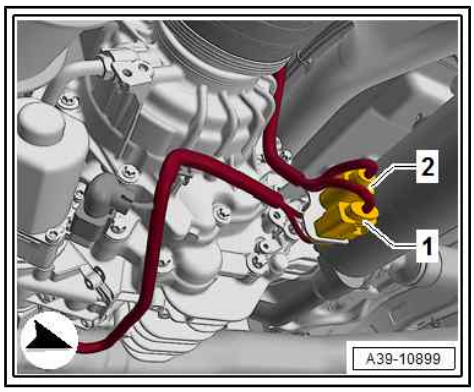
– Detach heat shield -A- for drive shaft (left-side) from final drive -arrows-.



– Unscrew bolts -arrows- for drive shafts on both sides.
– Guide drive shafts out of flange shafts and place to one side.



– Unplug electrical connectors -1- and -2- and move cables clear.



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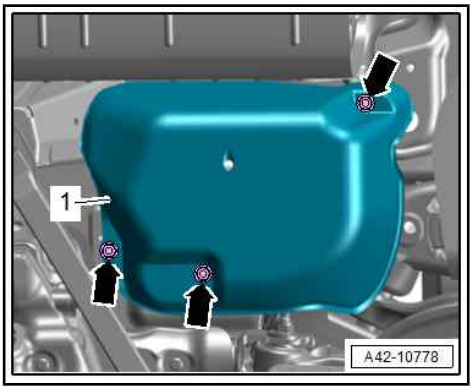
– Vehicles with air suspension: Unscrew nuts -arrows- and detach cover for air supply unit -1-.



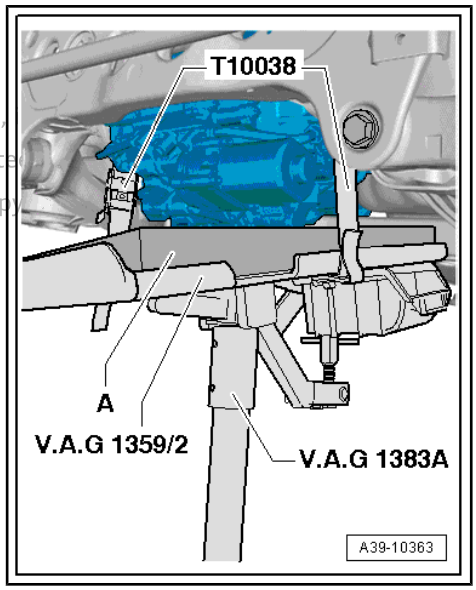
NOTICE

Clutch valves can be damaged if subjected to impact.

– **Place a rubber mat or hard foam slab on the gearbox support.**

– Place engine and gearbox jack - VAS 6931- with universal gearbox support and a suitable rubber mat or hard-foam slab -A- below rear final drive.

– Use tensioning strap - T10038- to secure rear final drive to prevent it from dropping.



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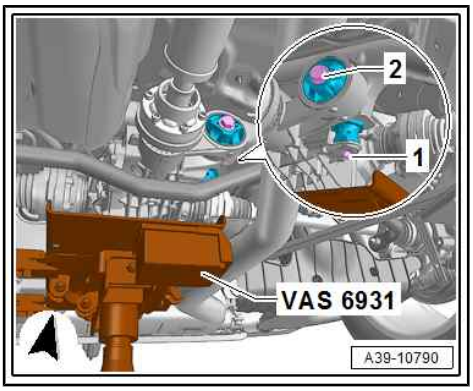
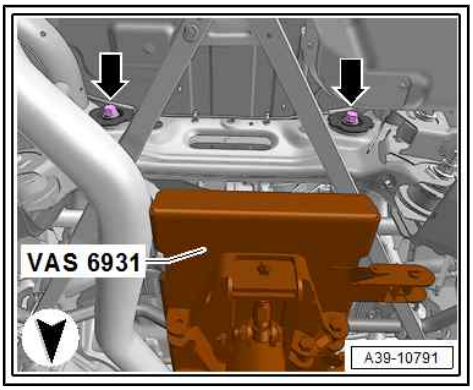
– Remove nut -1- and bolt -2-.



– Remove securing bolts -arrows- for rear final drive.

– Carefully lower rear final drive.



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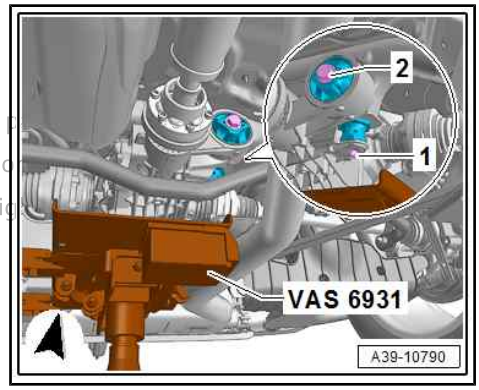
Installing final drive:

Installation is carried out in reverse sequence. Note the following:

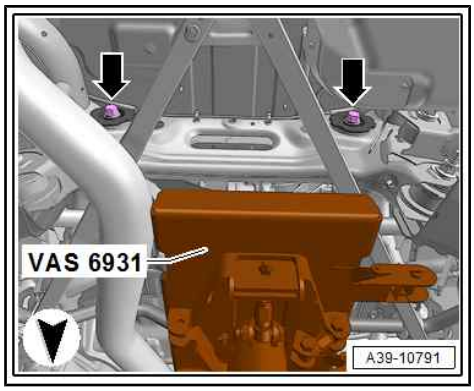
- Tightening torques
  ⇒ "2.1.3 Exploded view - rear final drive, Audi Q7, Q8", page 53

– Use engine and gearbox jack - VAS 6931- and universal gearbox support to bring rear final drive into installation position.

– Screw in bolt -2- hand-tight.

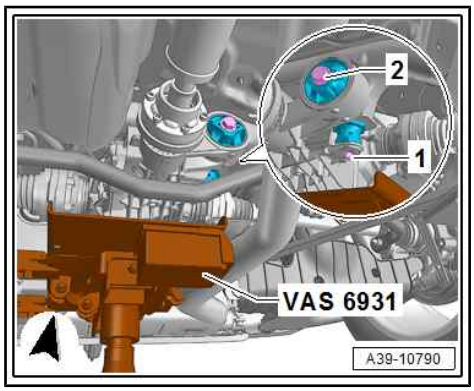


– Screw in and tighten securing bolts -arrows- for rear final drive.

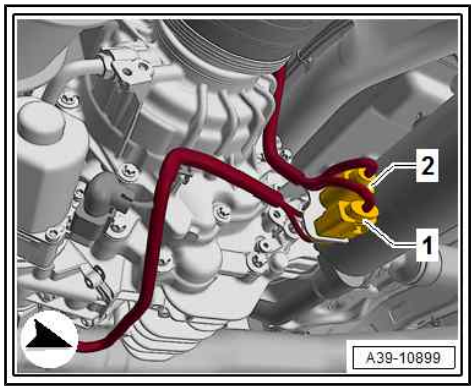


– Tighten bolt -2- and nut -1-.

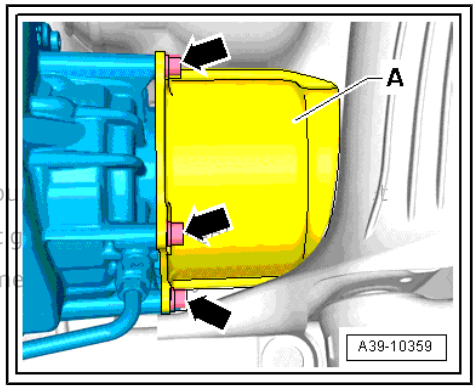
– Remove engine and gearbox jack - VAS 6931- from underneath final drive.



– Attach connectors -1- and -2-.



– Fit and tighten drive shafts ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .
– Install heat shield -A- for drive shaft (left-side) -arrows-.



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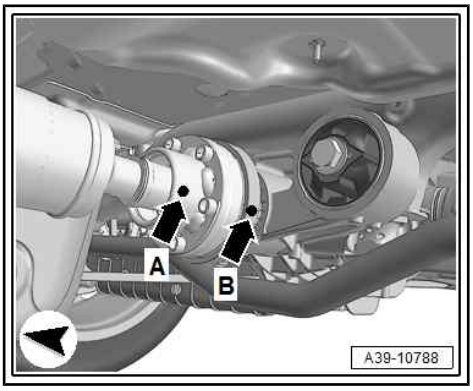
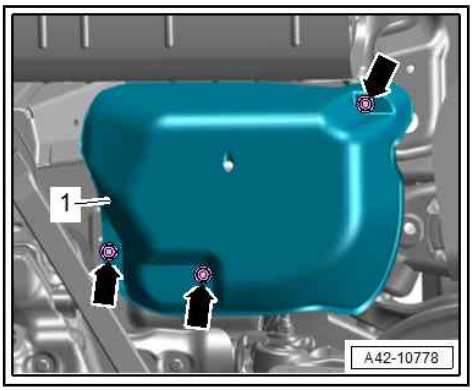
– Attach propshaft to rear final drive ⇒ page 46 .



– Vehicles with air suspension: Secure cover for air supply unit -1- with nuts -arrows-.
– Install underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
– Install rear diagonal struts ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing diagonal struts .
– Check ATF level in rear final drive.
– Check gear oil level in rear final drive ⇒ page 108 .



Additional work

♦ Additional work is required if rear final drive 0BX has been renewed ⇒ page 85 .

2.2.9 Additional work required after renewing rear final drive 0D3 “quattro sport” and 0BX “quattro sport”

• The following additional work is required if the rear final drive has been renewed:

♦ Bleeding hydraulic control unit ⇒ Vehicle diagnostic tester
♦ Adapting differential lock control unit - J187- to rear final drive ⇒ Vehicle diagnostic tester

• Only perform this additional work if the rear final drive has been renewed.

Procedure:

– Connect vehicle diagnostic tester and switch on ignition.
– Using vehicle diagnostic tester in `Guided Functions` mode, select `32 - Lock electronics` and then select the function `32 - Replace rear final drive`.

- It is important to follow all instructions given by the vehicle diagnostic tester exactly.

Using the vehicle diagnostic tester, the new rear final drive is adapted to the differential lock control unit - J187- .

- When `32 - Replacing rear final drive` function has been completed, a system check is performed. Any malfunctions during this test must be eliminated via the “Guided Fault Finding”.

2.3 Dismantling and assembling final drive

At present there is no provision for dismantling final drives 0DB, 0D2 and 0DG.

⇒ “2.3.1 Exploded view - dismantling and assembling final drive, 0B0 quattro ultra, 09R quattro ultra ”, page 86

⇒ “2.3.2 Exploded view - dismantling and assembling final drive, 0D3 and 0BX quattro sport ”, page 88

⇒ “2.3.3 Removing and installing propshaft speed sender G970 - 0B0 quattro ultra, 09R quattro ultra ”, page 90

⇒ “2.3.4 Removing and installing clutch actuator 2 for all-wheel drive V623 - 0B0 quattro ultra, 09R quattro ultra ”, page 91

2.3.1 Exploded view - dismantling and assembling final drive, 0B0 “quattro ultra”, 09R “quattro ultra”

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1 - O-ring

2 - Propshaft speed sender - G970-

- ❑ Removing and installing ⇒ page 90

3 - Bolt

- ❑ 9 Nm

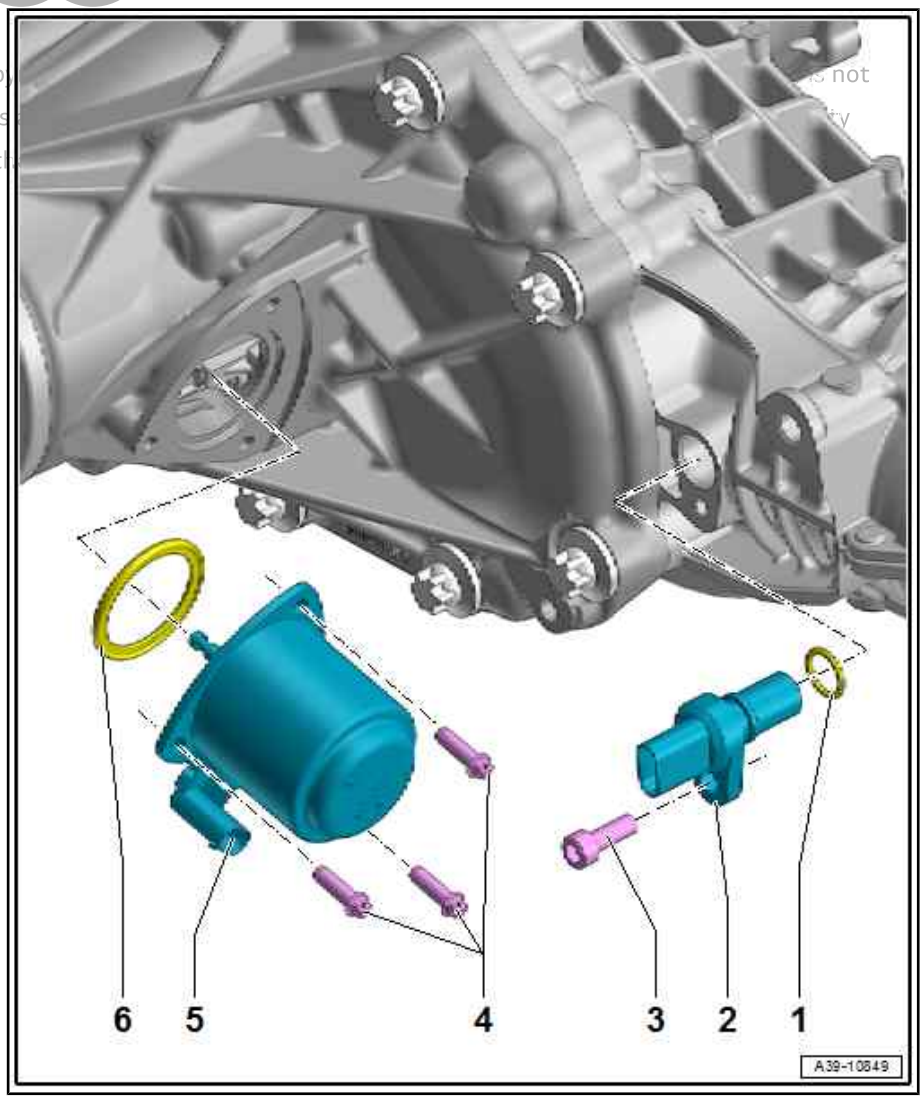
4 - Bolt

- ❑ 5 Nm
- ❑ 3x

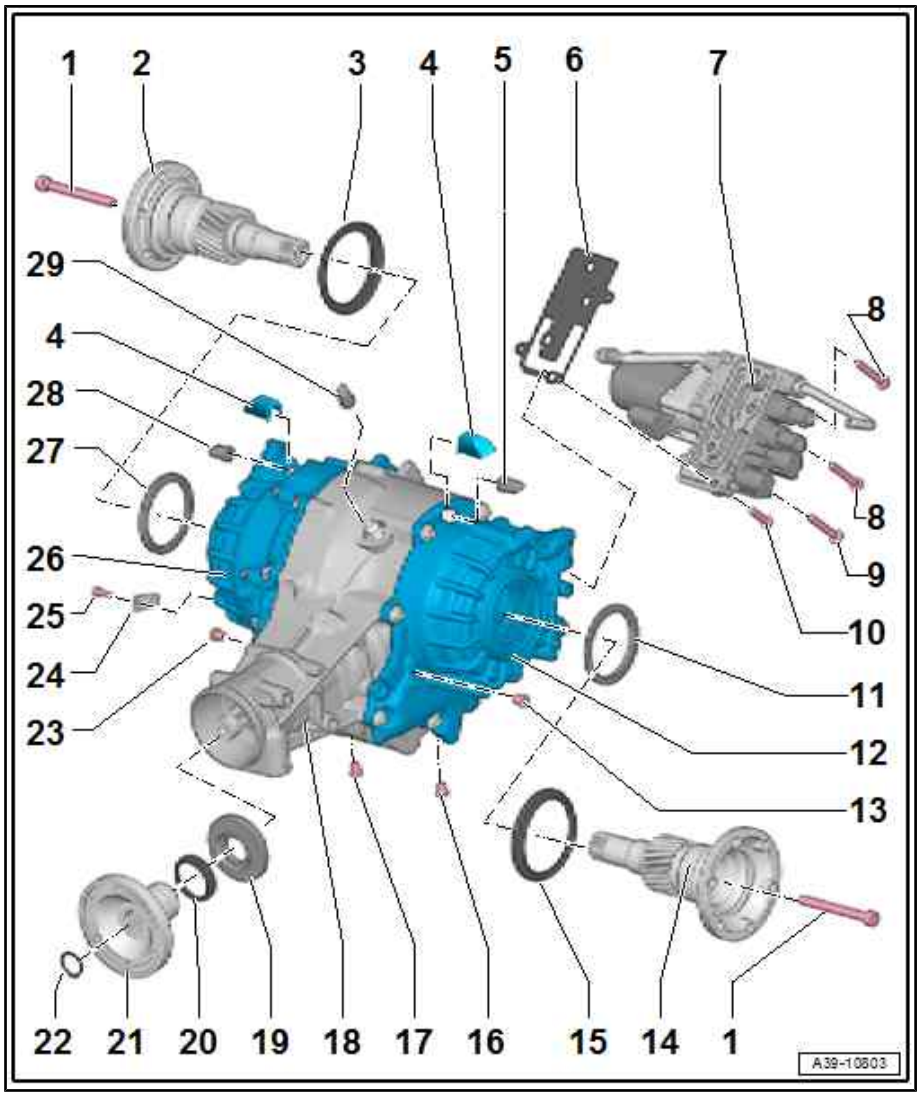
5 - Clutch actuator 2 for all-wheel drive - V623-

Removing and installing ⇒ page 91

6 - Seal



2.3.2 Exploded view - dismantling and assembling final drive, 0D3 and 0BX “quattro sport”



1 - Bolt
- ❑ 50 Nm and then turn 180° further
- ❑ Always renew

2 - Flange shaft (right-side)
- ❑ Removing and installing ⇒ page 129
- ❑ Do not interchange with flange shaft (left-side); the two shafts are different

3 - Protective ring
- ❑ Renewing ⇒ page 129

4 - Protective cap
- ❑ Not fitted on all versions

5 - ATF breather
- ❑ For superposition gear (left-side)
- ❑ Clip onto breather pipe

6 - Gasket
- ❑ With strainer

7 - Hydraulic control unit
- ❑ With all-wheel drive pump - V415- and pipes to superposition gears
- ❑ Removing and installing ⇒ page 92
- ❑ Dismantling and assembling ⇒ page 94

8 - Bolt
- ❑ 20 Nm
- ❑ 2x
- ❑ M8, 50 mm long
- ❑ Note tightening sequence ⇒ page 93

9 - Bolt
- ❑ 20 Nm
- ❑ M8, 50 mm long
- ❑ With seal underneath bolt head
- ❑ Coat thread with sealing paste - D 176 501 A1-
- ❑ Note tightening sequence ⇒ page 93

10 - Bolt
- ❑ 20 Nm
- ❑ M8, 30 mm long
- ❑ Note tightening sequence ⇒ page 93

11 - Oil seal
- ❑ For flange shaft (left-side)
- ❑ Renewing ⇒ page 129

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12 - Superposition gear (left-side)

13 - ATF inspection plug

- ❑ 15 Nm
- ❑ Always renew
- ❑ With captive seal

14 - Flange shaft (left-side)

- ❑ Removing and installing ⇒ page 129
- ❑ Do not interchange with flange shaft (right-side); the two shafts are different

15 - Protective ring

- ❑ Renewing ⇒ page 129

16 - ATF drain plug

- ❑ 15 Nm
- ❑ Always renew
- ❑ With captive seal

17 - Drain plug for gear oil

- ❑ 15 Nm
- ❑ Always renew
- ❑ With captive seal

18 - Final drive housing

19 - Oil seal

- ❑ For propshaft flange
- ❑ Renewing ⇒ page 129

20 - Protective ring

- ❑ Renewing ⇒ page 129

21 - Propshaft flange

- ❑ Removing and installing ⇒ page 129

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22 - Circlip

- ❑ Always renew
- ❑ Installing ⇒ page 175

23 - Gear oil inspection plug

- ❑ 15 Nm
- ❑ Always renew
- ❑ With captive seal

24 - Bracket

- ❑ For wiring harness

25 - Bolt

- ❑ 9 Nm

26 - Superposition gear (right-side)

27 - Oil seal

- ❑ For flange shaft (right-side)
- ❑ Renewing ⇒ page 129

28 - ATF breather

- ❑ For superposition gear (right-side)
- ❑ Clip onto breather pipe

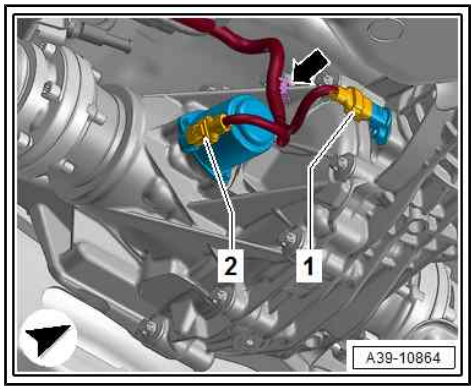
29 - Breather for final drive

- ❑ Clip onto breather pipe

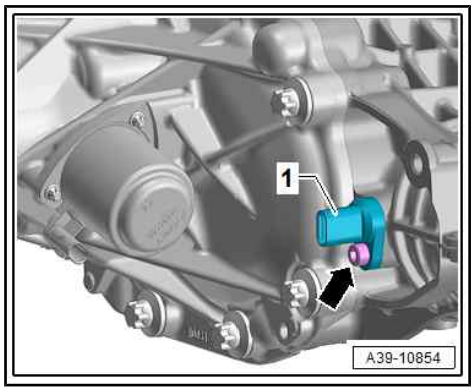
2.3.3 Removing and installing propshaft speed sender - G970- - 0B0 “quattro ultra”, 09R “quattro ultra”

Removing

– Unplug electrical connector on propshaft speed sender -1-.



– Remove bolt -arrow- and pull speed sender out.



Installing

– Renew O-ring -1-.

– Fit speed sender -2- and tighten bolt -3-. Tightening torque ⇒ Item 3 (page 87)

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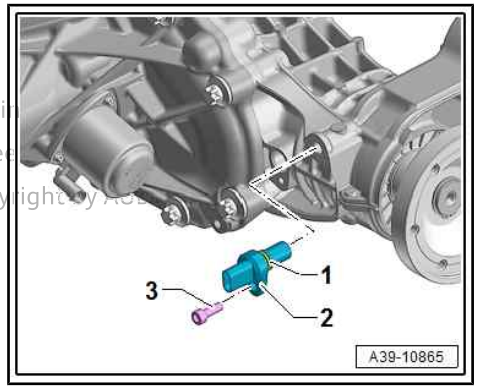
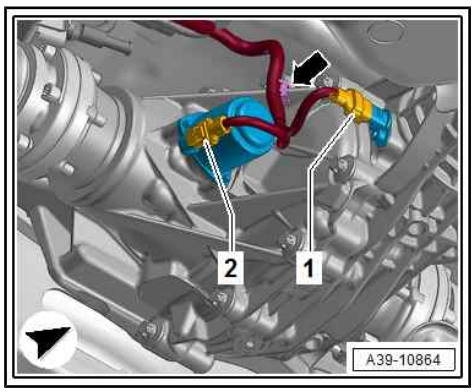
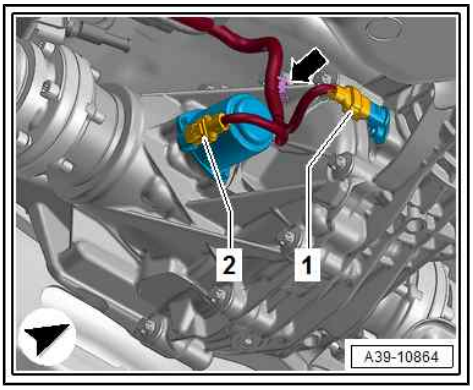


– Plug in electrical connector -1-.

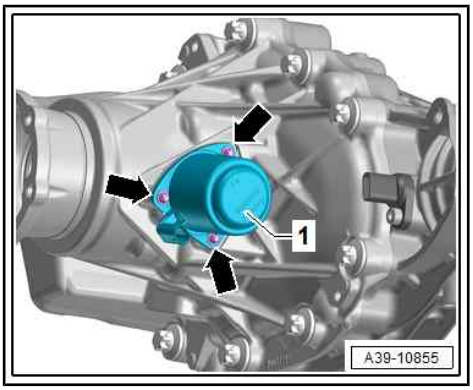


2.3.4 Removing and installing clutch actuator 2 for all-wheel drive - V623- - 0B0 “quattro ultra”, 09R “quattro ultra”

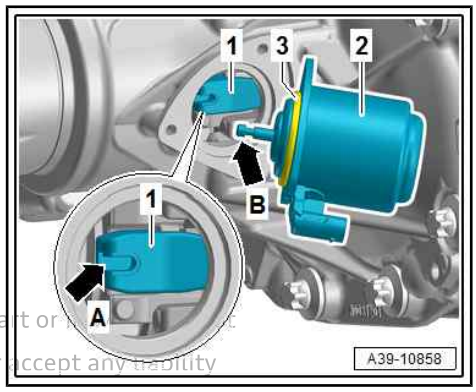
– Unplug electrical connector on clutch actuator 2 for all-wheel drive -2-.



– Remove securing bolts -arrows- and detach clutch actuator -1-.



– When doing so, guide contact surface of clutch actuator -arrow B- out of groove of locking pawl -arrow A-.



Installing

– Press new seal -3- onto clutch actuator -2-.

– Pull locking pawl -1- out slightly and hold it in this position.

– Now guide contact surface of clutch actuator -arrow B- into groove of locking pawl -arrow A-.

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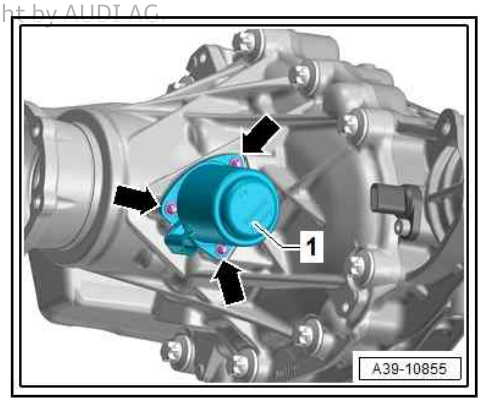
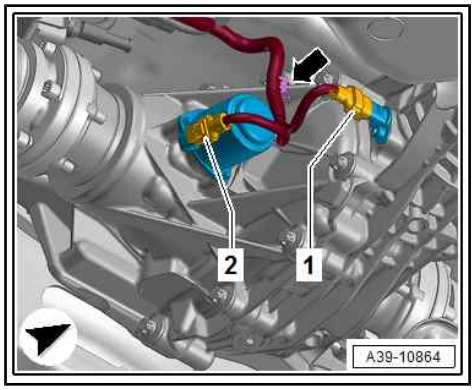
– Fit clutch actuator -1- and tighten securing bolts -arrows-.
Tightening torque ⇒ Item 4 (page 87)



– Plug in electrical connector -2-.
– Check fluid level ⇒ page 108 .

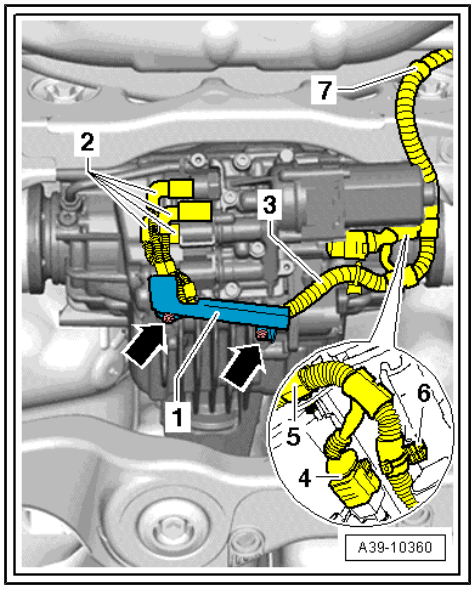


2.3.5 Removing and installing hydraulic control unit - 0D3 “quattro sport” and 0BX “quattro sport”

- Refer to general repair instructions ⇒ page 21 .
- Observe safety precautions ⇒ page 18 .

Removing

• Ignition is switched off.
– Place vehicle on lifting platform.
– Lower rear section of exhaust system slightly and secure it in place ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
– If fitted, unscrew bolts -arrows- and detach bracket -1- for wiring harness from rear final drive.



NOTICE

Take care not to interchange the connectors on the hydraulic control unit.

Risk of damage to electronic components and of rear final drive malfunctions.

– Mark connectors -2- for oil pressure and oil temperature senders and clutch valves .

– Unplug connectors -2- from oil pressure and oil temperature senders and clutch valves .
– Then unplug connector -4- from all-wheel drive pump - V415- .
– Subsequently, unclip wiring harness -3- from final drive and subframe -items 5 ... 7- and tie up.
– Position drip tray under rear final drive.
– Drain ATF from rear final drive ⇒ page 119 .
– Drain gear oil from rear final drive ⇒ page 109 .

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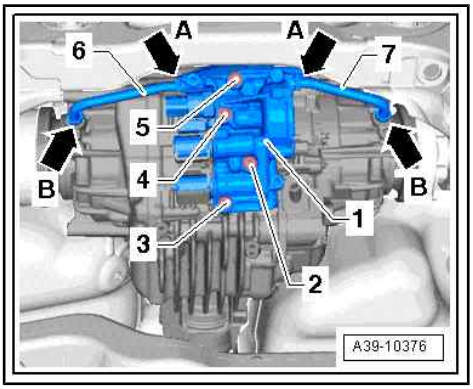
– Remove all-wheel drive pump - V415- ⇒ page 97 .
– Loosen nuts for pipe -6- (left-side) and -7- (right-side) on hydraulic control unit -arrows A- by one turn.
– Unscrew nuts on superposition gears -arrows B-.
– Unscrew bolts -2 ... 5- and detach hydraulic control unit -1- with gasket.

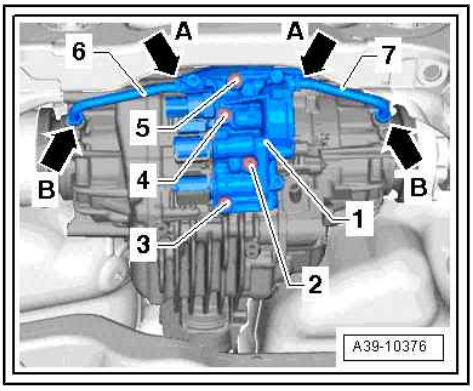


Note

♦ Carefully observe safety precautions when renewing hydraulic control unit. If possible the “old” senders must be re-installed ⇒ page 21 .

Installing

- Renew gasket between hydraulic control unit -1- and final drive housing
- Centring pins ⇒ Item 18 (page 96) must be installed in housing of hydraulic control unit.
- To attach hydraulic control unit -1- to rear final drive, pipes (left -6- and right -7-) must be screwed into control unit loosely.
- Bolt -2- must be installed together with a seal.



Attach hydraulic control unit -1- to rear final drive as follows:

First screw pipe connections -6- and -7- hand-tight into superposition gears -arrows B-.

Then hand-tighten bolts -3 … 5-.

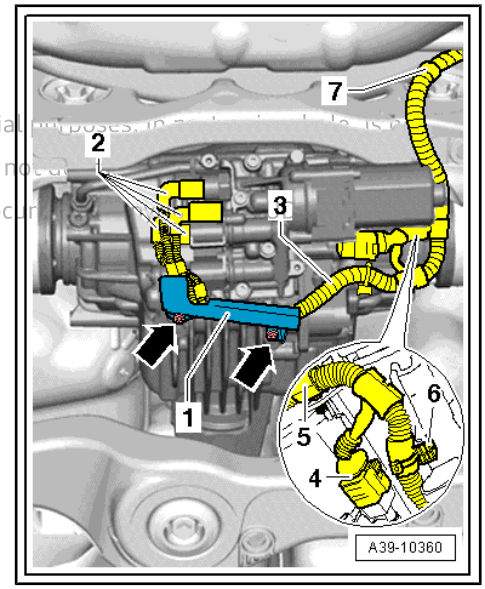
Coat thread of bolt -2- with sealing paste - D 176 501 A1- .

Screw in bolt -2- with a seal.

Then tighten bolts -2 ... 5- to specified torque in the sequence -4-, -2-, -5- and -3- (M8 x 30 mm).

Then tighten nuts -arrows A- and -arrows B- at pipes (left -6- and right -7-) to specified torque.

– Install all-wheel drive pump - V415- ⇒ page 98 .
– Clip in wiring harness -3- at final drive and subframe -items 5 ... 7-.
– Plug in connectors -4- and -2-, paying attention to marks made during removal for identification of oil pressure and oil temperature senders and clutch valves .
– If fitted, install bracket -1- for wiring harness at rear final drive and tighten bolts -arrows- to specified torque. Take care not to trap wiring harness -3-.



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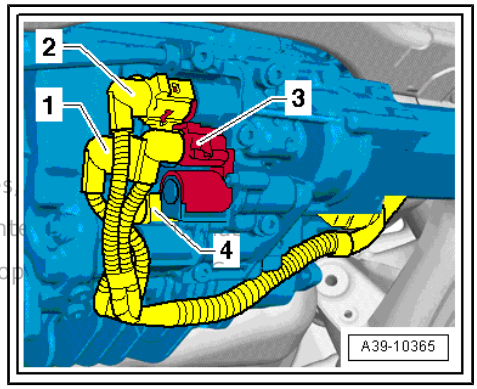

Allocation of connectors for oil pressure and oil temperature senders and clutch valves :

- -1- = connector for oil pressure and oil temperature sender 2 - G640-
- -2- = connector for oil pressure and oil temperature sender - G437-
- -3- = connector for clutch valve 2 for all-wheel drive - N446-
- -4- = connector for clutch valve for all-wheel drive - N445-

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– Fill up gear oil in rear final drive and check oil level ⇒ page 108 .

– Fill up ATF in rear final drive and check ATF level ⇒ page 119 .

– Install rear section of exhaust system and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

2.4 Hydraulic control unit, 0D3 “quattro sport” and 0BX “quattro sport”

⇒ “2.4.1 Exploded view - hydraulic control unit, 0D3, 0BX”, page 94

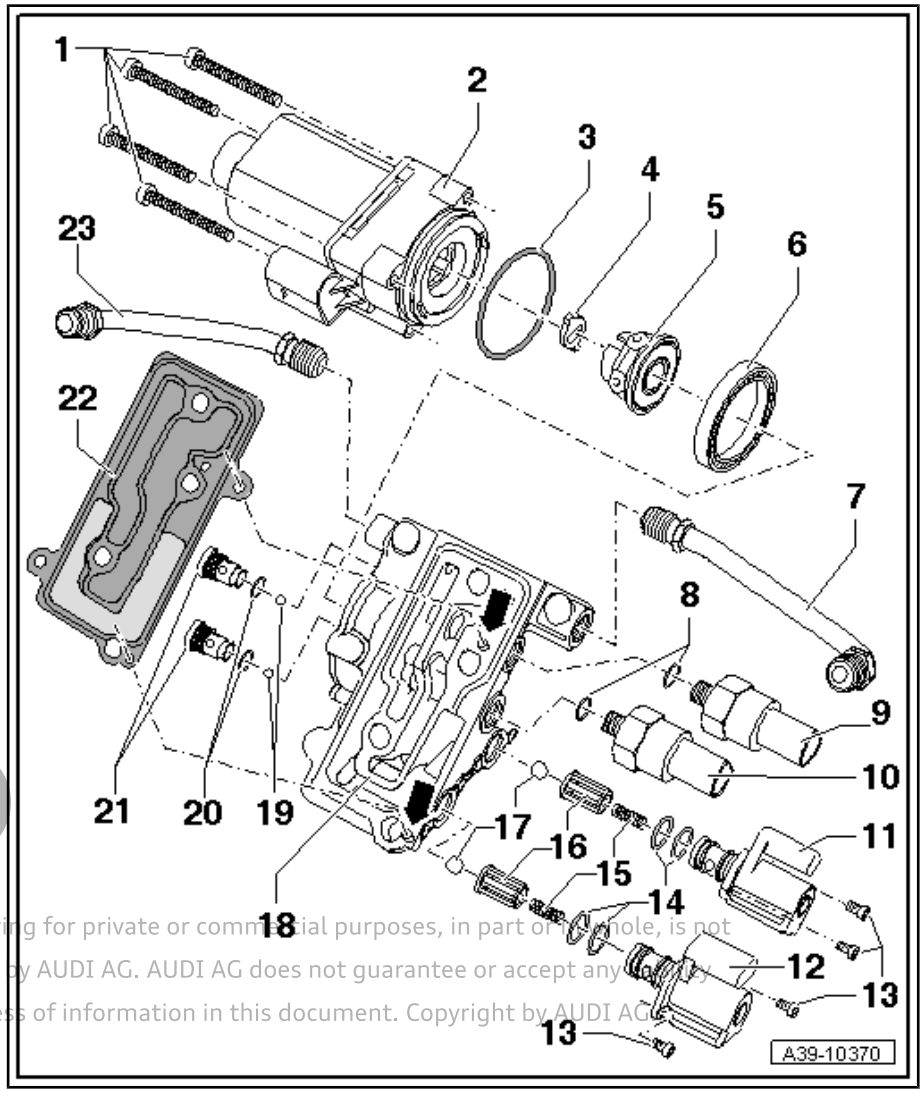
⇒ “2.4.2 Removing and installing all-wheel drive pump V415 - 0D3, 0BX”, page 97

⇒ “2.4.3 Removing and installing oil pressure and oil temperature sender G437 or oil pressure and oil temperature sender 2 G640 - 0D3, 0BX”, page 98

⇒ “2.4.4 Removing and installing clutch valve for all-wheel drive N445 or clutch valve 2 for all-wheel drive N446 - 0D3, 0BX”, page 101

⇒ “2.5 Checking torque distribution - 0D3 quattro sport and 0BX quattro sport ”, page 103

2.4.1 Exploded view - hydraulic control unit, 0D3, 0BX



1 - Bolt

- ❑ 5 Nm

2 - All-wheel drive pump - V415-

- ❑ Removing and installing ⇒ page 97

3 - O-ring

- ❑ Always renew

4 - Adapter

Note:

- ♦ Adapter can fall out during removal of all-wheel drive pump - V415-
- ♦ Before installing all-wheel drive pump - V415- , insert adapter in recesses in hydraulic pump

5 - Hydraulic pump

- ❑ Consists of guide ring, housing and 6 pistons
- ❑ Assembling ⇒ page 96

6 - Ball bearing

- ❑ Can be removed and installed by hand

7 - Pipe (left-side)

- ❑ Tighten nuts to 30 Nm
- ❑ Installed between hydraulic control unit and superposition gear (left-side)
- ❑ When installing, first screw in both nuts hand-tight

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8 - O-ring

- ❑ Always renew

9 - Oil pressure and oil temperature sender - G437-

- ❑ 10 Nm
- ❑ Brown connection
- ❑ Removing and installing ⇒ page 98

10 - Oil pressure and oil temperature sender 2 - G640-

- ❑ 10 Nm
- ❑ Black connection
- ❑ Removing and installing ⇒ page 98

11 - Clutch valve 2 for all-wheel drive - N446-

- ❑ Colour: brown
- ❑ Removing and installing ⇒ page 101
- ❑ Installation position: connector must face upwards towards oil pressure and oil temperature sender

12 - Clutch valve for all-wheel drive - N445-

- ❑ Colour: black
- ❑ Removing and installing ⇒ page 101
- ❑ Installation position: connector must face upwards towards oil pressure and oil temperature sender

13 - Bolt

- ❑ 2.5 Nm

14 - O-ring

- ❑ Always renew
- ❑ Fit on clutch valve

15 - Spring

- ❑ Insert in guide ⇒ Item 16 (page 96)

16 - Guide

- ❑ Installation position: large diameter must face ball ⇒ Item 17 (page 96)

17 - Ball

- ❑ Before installing, insert in guide ⇒ Item 16 (page 96)

18 - Housing for hydraulic control unit

- ❑ With centring pins -arrows-
- ❑ Centring pins lock hydraulic control unit with gasket on final drive housing

19 - Ball

- ❑ Before installing, insert in hole in shuttle valve ⇒ Item 21 (page 96)

20 - O-ring

- ❑ Always renew

21 - Shuttle valve

- ❑ 8 Nm
- ❑ Removing and installing ⇒ page 97

22 - Gasket

- ❑ With strainer
- ❑ Position on centring pins of housing for hydraulic control unit

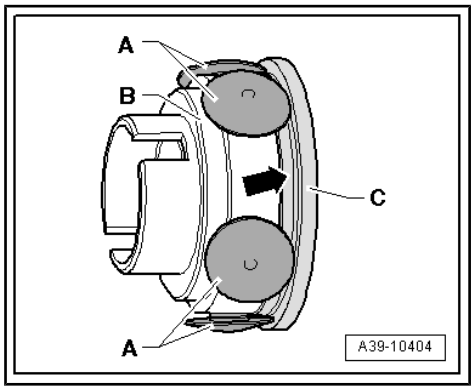
23 - Pipe (right-side)

- ❑ Tighten nuts to 30 Nm
- ❑ Installed between hydraulic control unit and superposition gear (right-side)
- ❑ When installing, first screw in both nuts hand-tight

Assembling hydraulic pump

– Insert the 6 pistons -A- into housing -B-.

– Then position guide ring -C- so that pistons make contact with shoulder -arrow-.



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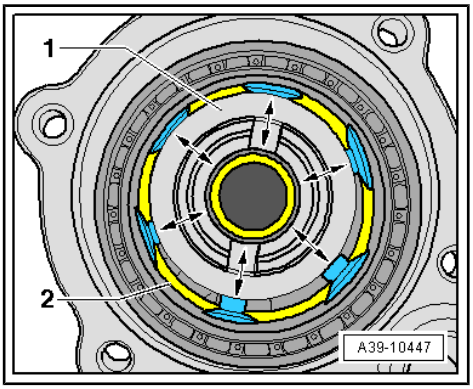
– Fit hydraulic pump -1- with guide ring -2- in housing for hydraulic control unit.

Functional check:

– Rotate hydraulic pump -1- several times. Check the following:

♦ The hydraulic pump must turn smoothly without sticking or catching.

♦ All pistons must move in and out.



Removing and installing shuttle valves

– First remove all-wheel drive pump - V415- , hydraulic pump and ball bearing ⇒ Item 6 (page 95) .

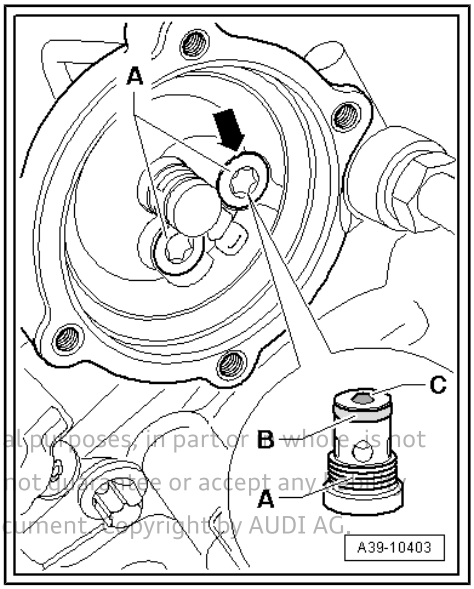
– Unscrew shuttle valves -A- (it is important to also remove ball -C-).

– To install, insert ball in hole in shuttle valve.

– Then carefully screw in shuttle valve with new O-ring -B- as far as stop.

• The shuttle valve must be below the surface of the housing -arrow-. If this is not the case, remove the valve and position the ball correctly.

– Tighten shuttle valve to specified torque ⇒ Item 21 (page 96) .



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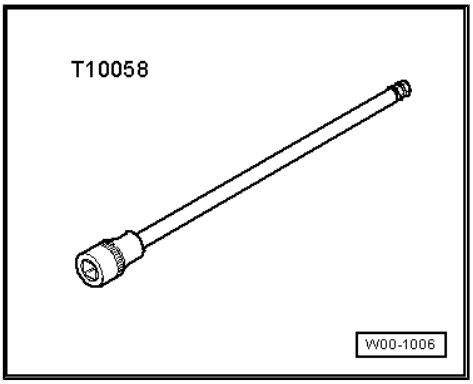
2.4.2 Removing and installing all-wheel drive pump - V415- - 0D3, 0BX

Special tools and workshop equipment required

♦ Socket - T10058-



• Refer to general repair instructions ⇒ page 21 .

• Observe safety precautions ⇒ page 18 .

Removing

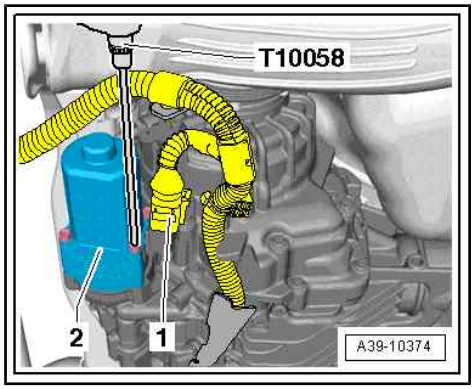
– Place vehicle on lifting platform.

• Ignition is switched off.

– Position drip tray under rear final drive.

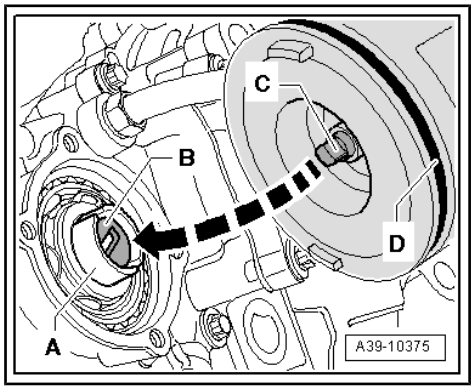
– Unplug connector -1- from all-wheel drive pump - V415- -2-.
– Unscrew the four bolts securing all-wheel drive pump - V415- to hydraulic control unit using Allen key - T10058- .
– Carefully detach all-wheel drive pump - V415- -2-; pay attention to adapter ⇒ Item 4 (page 95) in hydraulic pump.

♦ Adapter can fall out during removal of all-wheel drive pump - V415- .
♦ Before installing all-wheel drive pump - V415- , insert adapter in recesses in hydraulic pump.

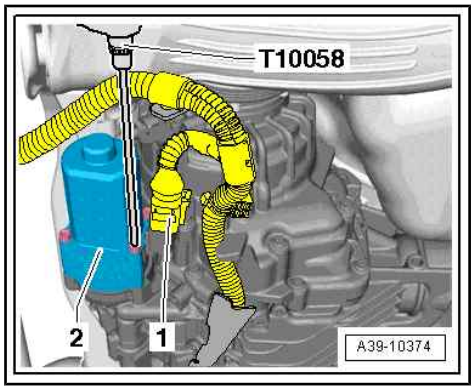


Installing

• Hydraulic pump -A- is fitted in installation position in hydraulic control unit; assembling hydraulic pump ⇒ page 96 .
• Adapter -B- is fitted in recesses in hydraulic pump.
• A new O-ring -D- is fitted on all-wheel drive pump - V415- .
– Insert all-wheel drive pump - V415- with actuating pin -C- in adapter -B-.



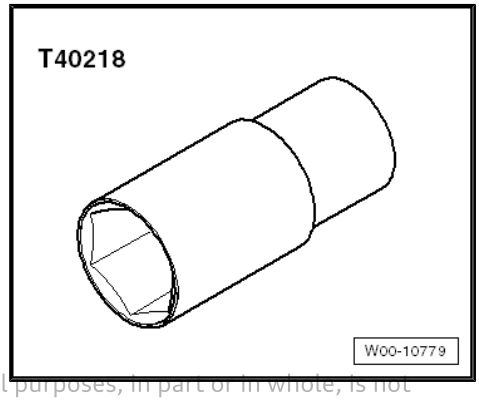
– Tighten the four bolts securing all-wheel drive pump - V415- -2- to specified torque in diagonal sequence ⇒ Item 1 (page 95) .
– Attach connector -1- to all-wheel drive pump - V415- .
– Top up ATF in rear final drive ⇒ page 120 .



2.4.3 Removing and installing oil pressure and oil temperature sender - G437- or oil pressure and oil temperature sender 2 - G640- - 0D3, 0BX

Special tools and workshop equipment required

♦ Socket, 27 mm - T40218-



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- Vehicle diagnostic tester

Important safety precautions:

- After renewing the oil pressure and oil temperature sender - G437- or the oil pressure and oil temperature sender 2 - G640- , the identity of the corresponding sender must be re-adapted in the all-wheel drive control unit - J492- ⇒ Vehicle diagnostic tester.
- Do not renew both oil pressure and oil temperature senders (-G437- and -G640-) at the same time, as at least one valid sender identity is required at any time for the allocation of the rear final drive to the all-wheel drive control unit - J492- . If both senders are renewed at the same time, the all-wheel drive control unit - J492- would interpret this as the replacement of the rear final drive. This would erase all the learnt values in the control unit and impair the performance of the rear final drive.
- If both oil pressure and oil temperature senders (-G437- and -G640-) have to be renewed due to mechanical damage, e.g. damage to the connector housing, this should be done in two steps: After the first sender has been renewed, the identity of the sender must be re-adapted in the all-wheel drive control unit - J492- ⇒ Vehicle diagnostic tester. Proceed in the same manner for the second sender.
- If both oil pressure and oil temperature senders (-G437- and -G640- have to be renewed due to an electrical fault, the clutch classification must be entered again in the all-wheel drive control unit - J492- ⇒ Vehicle diagnostic tester. In addition, the ATF in the rear final drive must be renewed ⇒ page 119 .
- Refer to general repair instructions ⇒ page 21 .
- Observe safety precautions ⇒ page 18 .

Removing

- Ignition is switched off.

– Place vehicle on lifting platform.

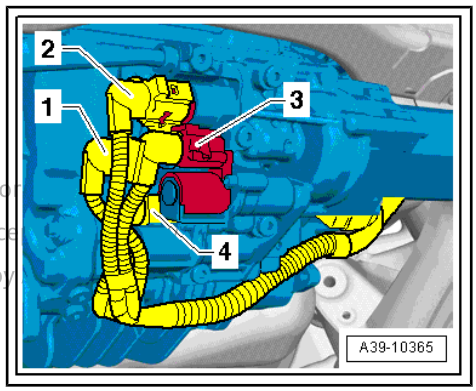
– Lower rear section of exhaust system slightly and secure.

– If necessary, remove bracket for wiring harness from rear final drive ⇒ page 92 .

– Unplug connector -1- from oil pressure and oil temperature sender 2 - G640- / connector -2- from oil pressure and oil temperature sender - G437- .

- If necessary, unplug connectors -3- and -4-.

– Position drip tray under rear final drive.



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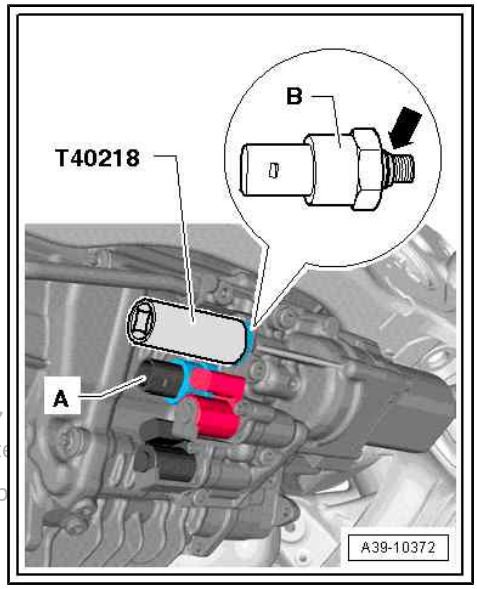
– Remove corresponding sender using socket - T40218- .

-A- = oil pressure and oil temperature sender 2 - G640- - black connection

-B- = oil pressure and oil temperature sender - G437- - brown connection



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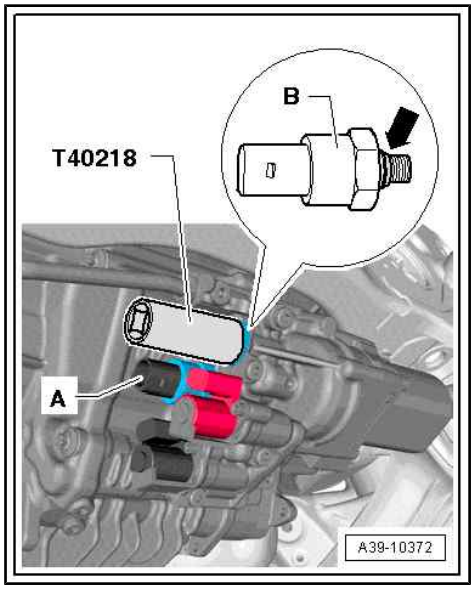
Installing

– Carefully screw in new sender with new O-ring -arrow- at its fitting location and tighten to specified torque ⇒ Item 9 (page 95) or ⇒ Item 10 (page 95) .

-A- = oil pressure and oil temperature sender 2 - G640- - black connection

-B- = oil pressure and oil temperature sender - G437- - brown connection



– Plug in connector -1- at oil pressure and oil temperature sender 2 - G640- / connector -2- at oil pressure and oil temperature sender - G437- .

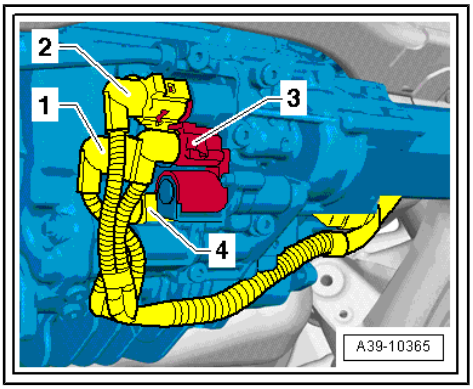
• If unplugged earlier, plug in connectors -3- and -4-.

– If removed earlier, install bracket for wiring harness at rear final drive ⇒ page 62 .

– Connect vehicle diagnostic tester and switch on ignition.

– Using vehicle diagnostic tester in `Guided Functions` mode, select `22 - Four-wheel electronics` and then select the function `22 - Adapt sender`.

• It is important to follow all instructions given by the vehicle diagnostic tester exactly.



Using the vehicle diagnostic tester, the new sender is adapted to the all-wheel drive control unit - J492- .

♦ When `22 - Adapt sender` function has been completed, a system check is performed. Any malfunctions during this test must be eliminated via the “Guided Fault Finding”.

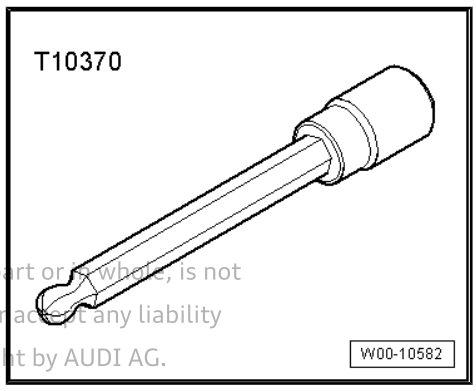
– Top up ATF in rear final drive ⇒ page 120 .

– Attach rear section of exhaust system to body and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

2.4.4 Removing and installing clutch valve for all-wheel drive - N445- or clutch valve 2 for all-wheel drive - N446- - 0D3, 0BX

Special tools and workshop equipment required

♦ Socket, 4 mm - T10370-



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♦ Refer to general repair instructions ⇒ page 21 .

♦ Observe safety precautions ⇒ page 18 .

Note

• Do NOT interchange clutch valve for all-wheel drive - N445- with clutch valve 2 for all-wheel drive - N446- .

Removing

• Ignition is switched off.

– Place vehicle on lifting platform.

– Lower rear section of exhaust system slightly and secure.

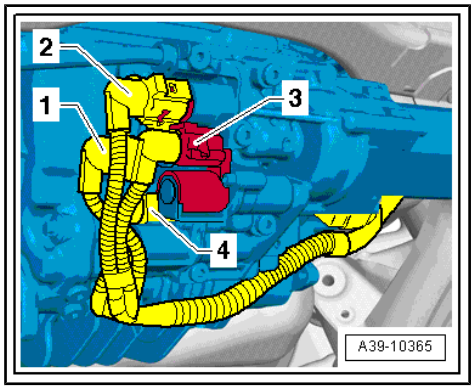
– Remove bracket for wiring harness from rear final drive ⇒ page 92 .

– Mark connectors -1 ... 4- for oil pressure and oil temperature senders and clutch valves .

– Unplug connectors -1- and -2-.

– Unplug connector -3- from clutch valve 2 for all-wheel drive - N446- / connector -4- from clutch valve for all-wheel drive - N445- .

– Position drip tray under rear final drive.

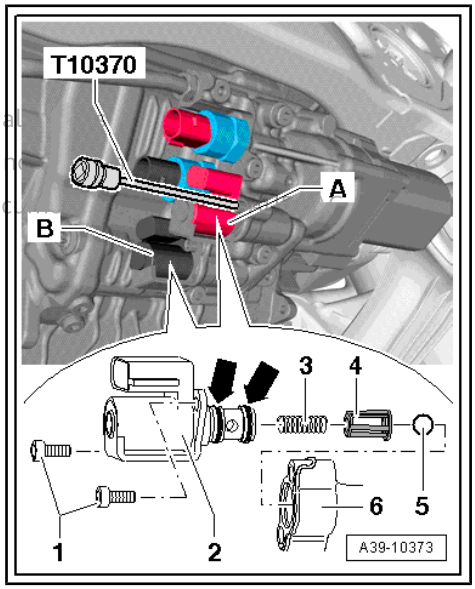


– Unscrew bolts -1- of corresponding clutch valve using 4 mm socket - T10370-

– Carefully prise out clutch valve e.g. using a flat screwdriver; observe spring -3-. Spring can fall out of opening in hydraulic control unit -6-.

-A- = clutch valve 2 for all-wheel drive - N446- , brown colour coding

-B- = clutch valve for all-wheel drive - N445- , black colour coding



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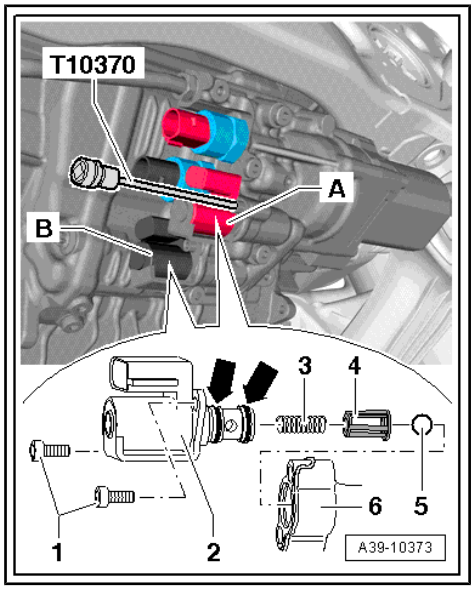
Installing

- Ball -5-, guide -4- (small diameter facing spring) and spring -3- must be installed in opening in housing -6- for clutch valve -2-.

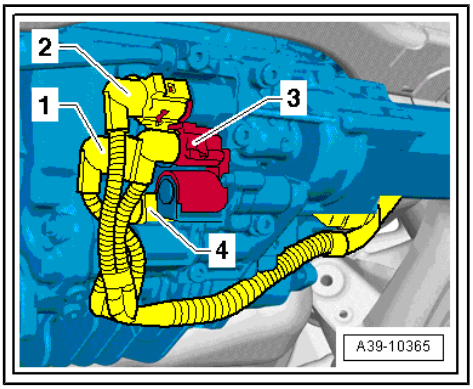
– Install new clutch valve with new O-rings -arrows- (coat O-rings with ATF).

– Pre-tighten bolts -1- evenly hand-tight until they make contact. Then tighten to specified torque ⇒ Item 13 (page 96) .

The remaining installation steps are carried out in the reverse sequence. Note the following:



Allocation of connectors for oil pressure and oil temperature senders and clutch valves :



- ♦ -1- = connector for oil pressure and oil temperature sender 2 - G640-
- ♦ -2- = connector for oil pressure and oil temperature sender - G437-
- ♦ -3- = connector for clutch valve 2 for all-wheel drive - N446-
- ♦ -4- = connector for clutch valve for all-wheel drive - N445-

– Attach bracket for wiring harness to rear final drive ⇒ page 62 .

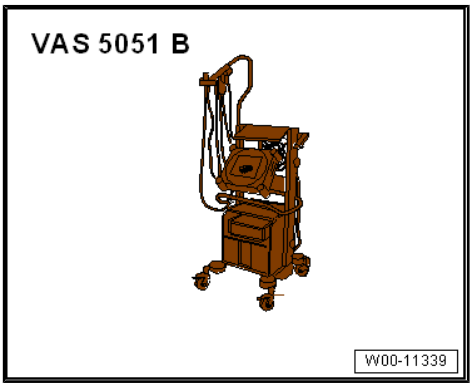
– Top up ATF in rear final drive ⇒ page 120 .

– Attach rear section of exhaust system to body and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

2.5 Checking torque distribution - 0D3 “quattro sport” and 0BX “quattro sport”

Special tools and workshop equipment required

- ♦ Vehicle diagnostic, testing and information system - VAS 5051 B-



- ♦ Refer to general repair instructions ⇒ page 21 .
- ♦ Observe safety precautions ⇒ page 18 .

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Procedure:

The function `22 - Check torque distribution` must be performed after the following operations:

- ♦ Work on wiring of rear final drive
- ♦ Work on valves: clutch valve for all-wheel drive - N445- and clutch valve 2 for all-wheel drive - N446-
- ♦ Work on hydraulic control unit

– Raise vehicle on a platform until wheels no longer make contact with the floor.

– Connect vehicle diagnostic tester and switch on ignition.

– Using vehicle diagnostic tester in `Guided Functions` mode, select `22 - Four-wheel electronics` and then select the function `22 - Check torque displacement (torque distribution)`.

• It is important to follow all instructions given by the vehicle diagnostic tester exactly.

The vehicle diagnostic tester is used to check whether the torque is directed to the correct side when the rear final drive is activated.

3 Gear oil

⇒ “3.1 Overview of fitting locations - drain and inspection plugs”, page 104

⇒ “3.2 Checking gear oil level”, page 107

⇒ “3.3 Draining and filling gear oil”, page 109

3.1 Overview of fitting locations - drain and inspection plugs

⇒ “3.1.1 Overview of fitting locations - drain and inspection plugs, 0DB, 0D2, 0G2”, page 104

⇒ “3.1.2 Overview of fitting locations - drain and inspection plugs, 0DG”, page 104

⇒ “3.1.3 Overview of fitting locations - drain and inspection plugs, 0B0 quattro ultra ”, page 105

⇒ “3.1.4 Overview of fitting locations - drain and inspection plugs, 09R quattro ultra ”, page 105

⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

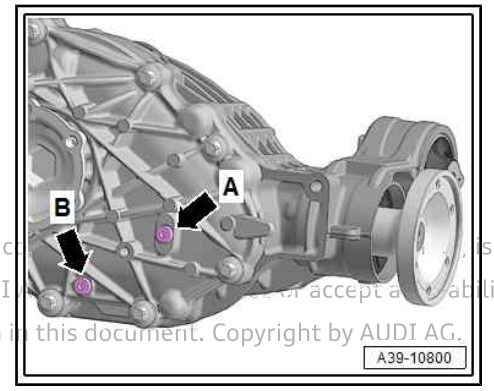
3.1.1 Overview of fitting locations - drain and inspection plugs, 0DB, 0D2, 0G2

-Arrow A- Filler and inspection plug for gear oil

- Tightening torque: 15 Nm

-Arrow B- Drain plug for gear oil

- Tightening torque: 15 Nm



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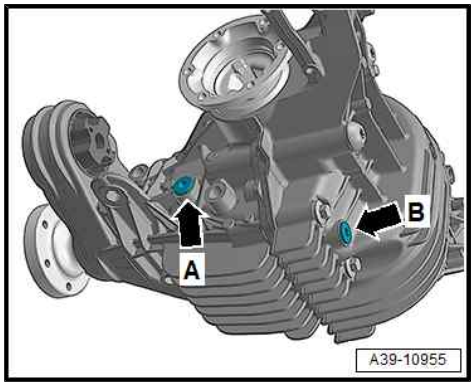
3.1.2 Overview of fitting locations - drain and inspection plugs, 0DG

-Arrow A- Filler and inspection plug for gear oil

- Tightening torque: 35 Nm

-Arrow B- Drain plug for gear oil

- Tightening torque: 35 Nm



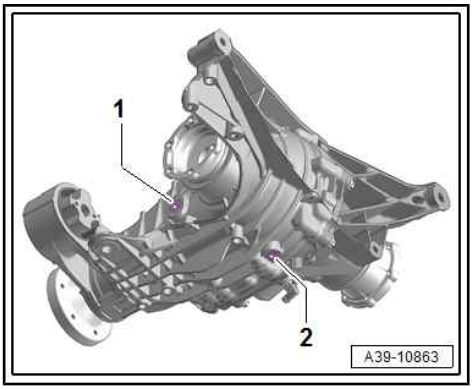
3.1.3 Overview of fitting locations - drain and inspection plugs, 0B0 “quattro ultra”

Filler and inspection plug for gear oil -1-

- Tightening torque: 16 Nm

Gear oil drain plug -2-

- Tightening torque: 16 Nm



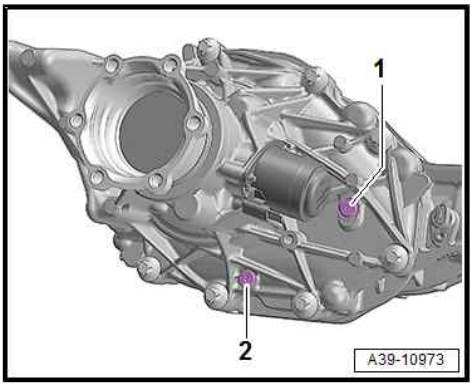
3.1.4 Overview of fitting locations - drain and inspection plugs, 09R “quattro ultra”

Filler and inspection plug for gear oil -1-

- Tightening torque: 16 Nm

Gear oil drain plug -2-

- Tightening torque: 16 Nm



3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 “quattro sport” and 0BX “quattro sport”

Drain and inspection plugs on final drive 0D3 “quattro sport”

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1 - Seal

- ❑ Captive seal of ATF inspection plug
  ⇒ Item 2 (page 106)

2 - ATF inspection plug

- ❑ 15 Nm
- ❑ Always renew

3 - Seal

- ❑ Captive seal of ATF drain plug
  ⇒ Item 4 (page 106)

4 - ATF drain plug

- ❑ 15 Nm
- ❑ Always renew

5 - Drain plug for gear oil

- ❑ 15 Nm
- ❑ Always renew

6 - Seal

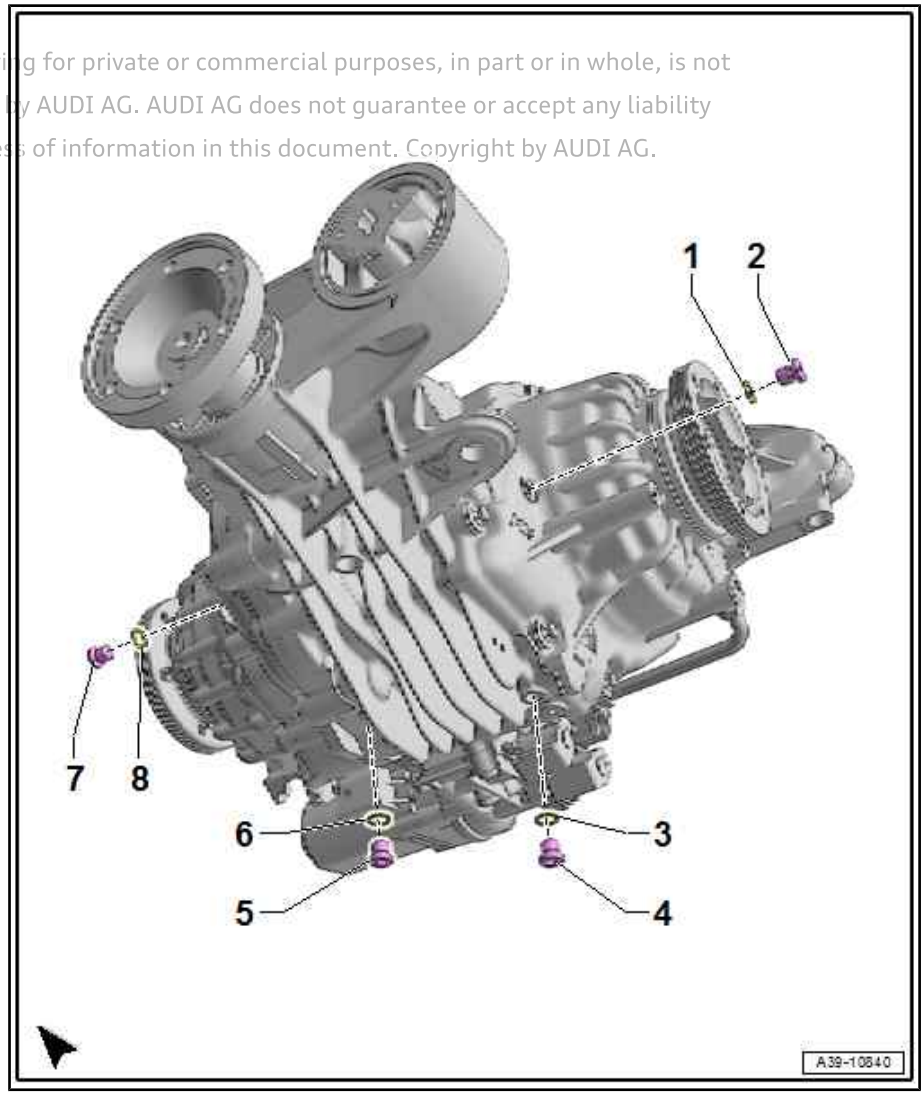
- ❑ Captive seal of drain plug for gear oil
  ⇒ Item 5 (page 106)

7 - Gear oil inspection plug

- ❑ 15 Nm
- ❑ Always renew

8 - Seal

- ❑ Captive seal of gear oil inspection plug
  ⇒ Item 7 (page 106)



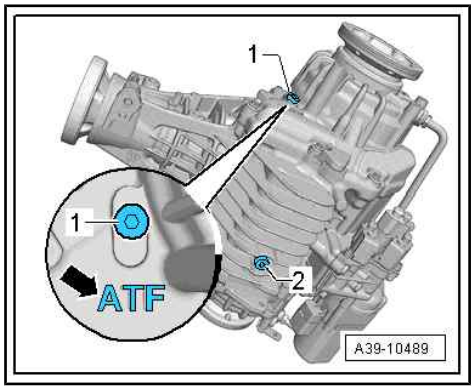
ATF plugs on final drive 0BX “quattro sport”

1 - ATF inspection plug

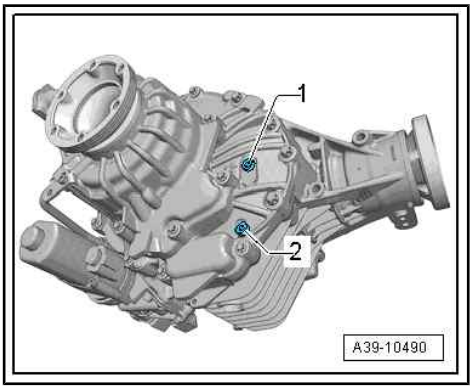
- ♦ Identification: »ATF« on final drive housing -arrow-
- ♦ Tightening torque: 15 Nm
- ♦ Always renew

2 - ATF drain plug

- ♦ Tightening torque: 15 Nm
- ♦ Always renew



Gear oil plugs on final drive 0BX “quattro sport”



1 - Gear oil inspection plug

- ♦ Tightening torque: 15 Nm
- ♦ Always renew

2 - Gear oil drain plug

- ♦ Tightening torque: 15 Nm
- ♦ Always renew

3.2 Checking gear oil level

⇒ “3.2.1 Checking gear oil level, 0DB, 0D2, 0G2”, page 107

⇒ “3.2.2 Checking gear oil level - 0DG”, page 107

⇒ “3.2.3 Checking gear oil level, 0B0 quattro ultra ”, page 108

⇒ “3.2.4 Checking gear oil level, 09R quattro ultra ”, page 108

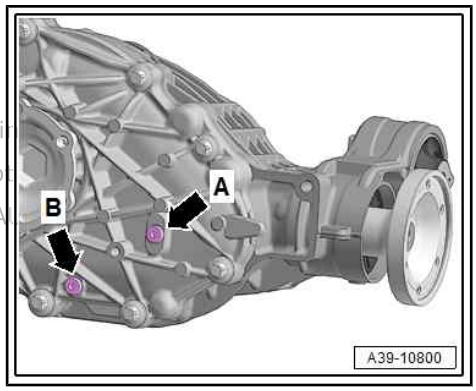
⇒ “3.2.5 Checking gear oil level, 0D3 quattro sport and 0BX quattro sport ”, page 108

3.2.1 Checking gear oil level, 0DB, 0D2, 0G2

Special tools and workshop equipment required

- ♦ Drip tray

– To check gear oil level, unscrew oil filler plug -arrow A-.



The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

- Gear oil specification ⇒ page 13

– Screw in and tighten plug -arrow A-. Tightening torque ⇒ page 104

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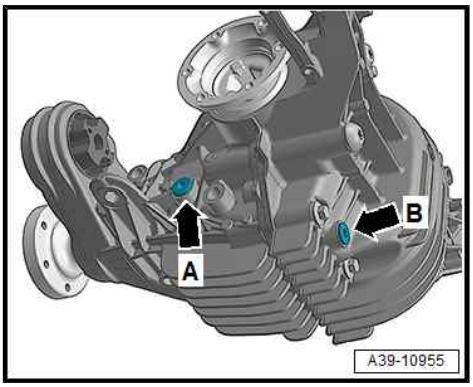
3.2.2 Checking gear oil level - 0DG

Special tools and workshop equipment required

- ♦ Drip tray

– To check gear oil level, unscrew oil filler plug -arrow A-.



The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

- Gear oil specification ⇒ page 13

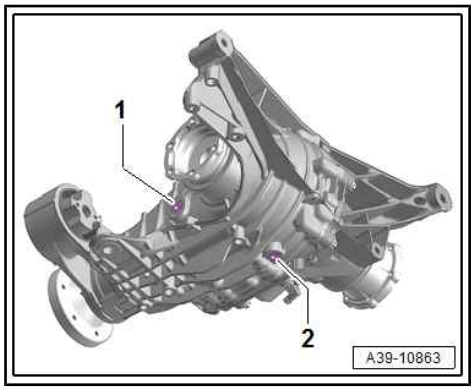
– Screw in and tighten plug -arrow A-. Tightening torque ⇒ page 104

3.2.3 Checking gear oil level, 0B0 “quattro ultra”

Special tools and workshop equipment required

- Drip tray

– Remove oil filler plug -1- to check gear oil level.



The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

- Gear oil specification ⇒ page 13

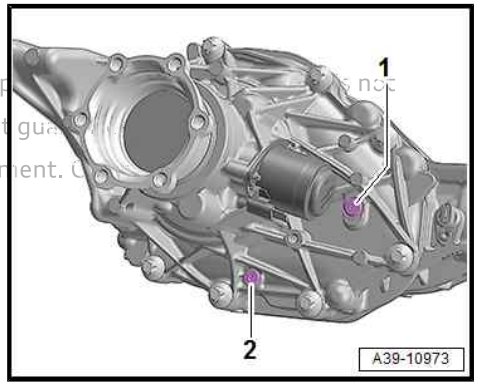
– Screw in plug -1- and tighten. Tightening torque ⇒ page 105

3.2.4 Checking gear oil level, 09R “quattro ultra”

Special tools and workshop equipment required

- Drip tray

– Remove oil filler plug -1- to check gear oil level.



The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

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- Gear oil specification ⇒ page 13

– Screw in plug -1- and tighten. Tightening torque ⇒ page 105

3.2.5 Checking gear oil level, 0D3 “quattro sport” and 0BX “quattro sport”

Test requirement

- Gear oil temperature: 10°C ... 60°C
- Rear final drive must be in installation position.
- Vehicle must be level (horizontal).
- ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

Special tools and workshop equipment required

- Drip tray

– Remove gear oil inspection plug -1- (located on right side of final drive).

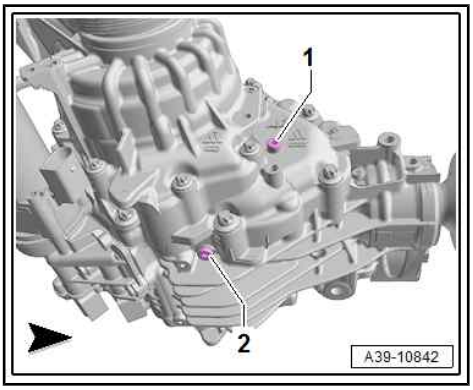
• The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

• For gear oil specification, refer to ⇒ Electronic parts catalogue .

– Top up gear oil if necessary.

◆ ⇒ “3.3 Draining and filling gear oil”, page 109

– Screw in and tighten gear oil inspection plug -1-. Tightening torque ⇒ Item 7 (page 106)



3.3 Draining and filling gear oil

⇒ “3.3.1 Draining gear oil, 0D3 quattro sport and 0BX quattro sport ”, page 109

⇒ “3.3.2 Filling up gear oil, 0D3 quattro sport ”, page 111

⇒ “3.3.3 Filling up gear oil, 0BX quattro sport ”, page 115

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3.3.1 Draining gear oil, 0D3 “quattro sport” and 0BX “quattro sport”

Special tools and workshop equipment required

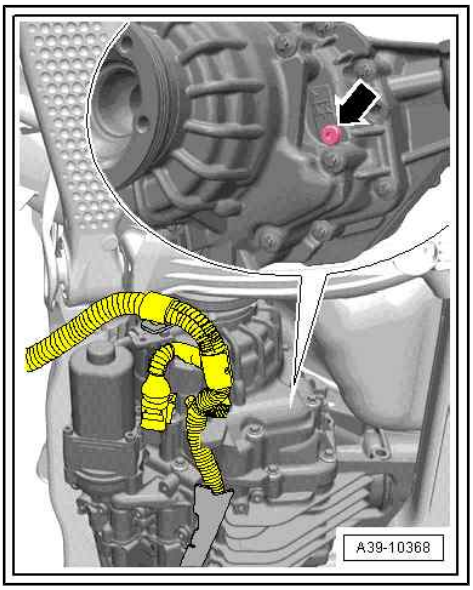
◆ Drip tray

• ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

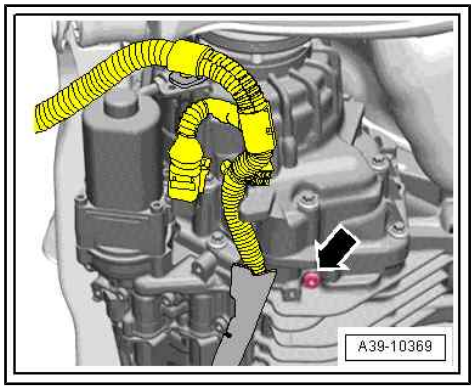
Rear final drive 0D3

– Remove gear oil inspection plug -arrow-.

• The gear oil drains out of the drain hole faster if the inspection plug is removed.

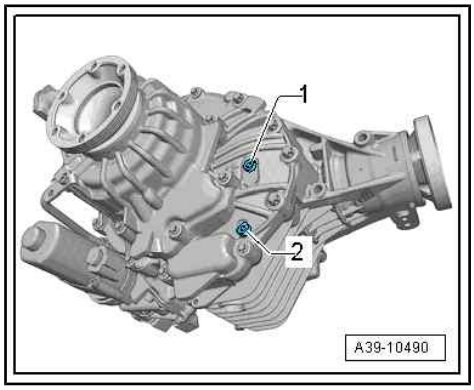


– Remove gear oil drain plug -arrow- and drain off gear oil.
– Screw in and tighten new gear oil drain plug -arrow-. Tightening torque ⇒ Item 4 (page 106)



Rear final drive 0BX

– Remove gear oil inspection plug -1-.
• The gear oil drains out of the drain hole faster if the inspection plug is removed.



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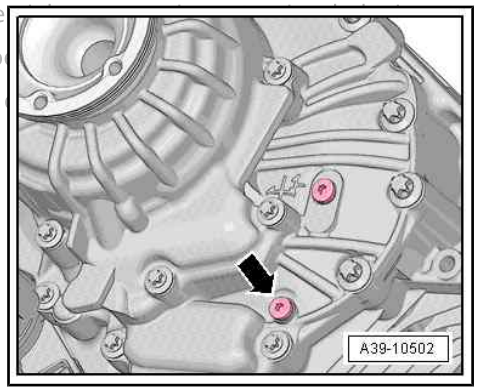
– Remove gear oil drain plug -arrow- and drain off gear oil.

Continued for all rear final drive versions

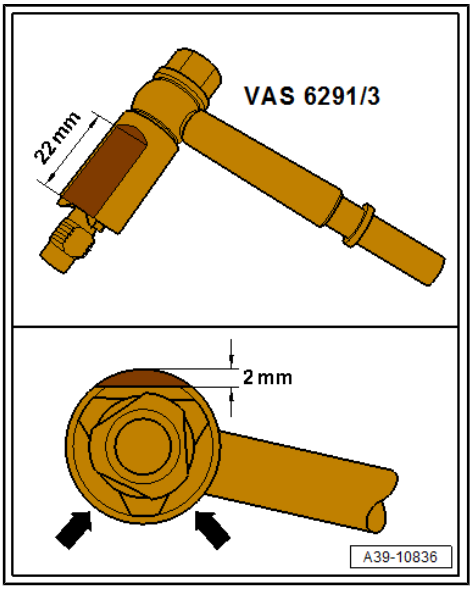
– Screw in and tighten new gear oil drain plug -arrow-. Tightening torque ⇒ Item 17 (page 89)

◆ ⇒ “3.3.2 Filling up gear oil, 0D3 quattro sport ”, page 111
◆ ⇒ “3.3.3 Filling up gear oil, 0BX quattro sport ”, page 115

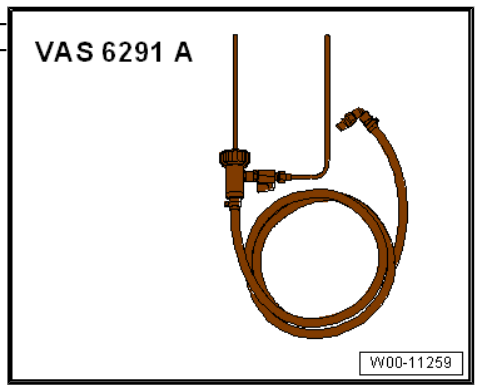


3.3.2 Filling up gear oil, 0D3 “quattro sport”

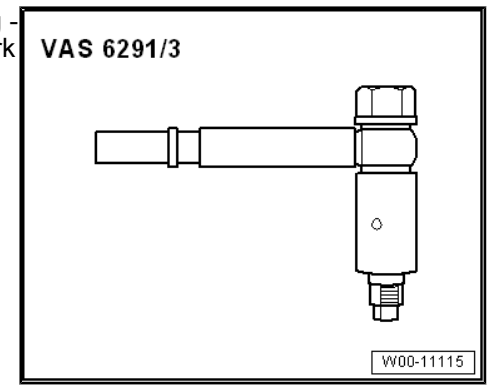
Special tools and workshop equipment required



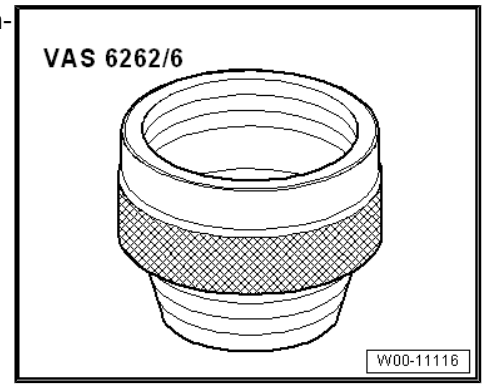
- Filling device for four-wheel drive coupling - VAS 6291A-



- Adapter for oil filling - VAS 6291/3- (rework if necessary ⇒ page 112)



- For some oil containers, adapter - VAS 6262/6- must be used.



- For some oil containers, adapter - VAS 6262/7- must be used.

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- Drip tray

Depending on version, the spacer tube of the adapter for oil filling - VAS 6291/3- may make contact with a housing rib on the final drive.

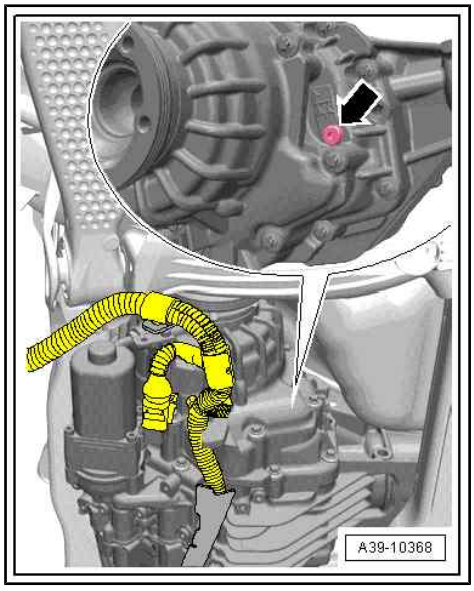
– File down the spacer tube of the adapter opposite the two holes on the side -arrows-, as shown in illustration.

Filling up gear oil

- Rear final drive must be in installation position.
- Vehicle must be level (horizontal).
- ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105
- Gear oil drain plug must be tightened. Tightening torque ⇒ Item 5 (page 106)
- For oil specification, refer to ⇒ Electronic parts catalogue .

– Raise vehicle.

– Remove gear oil inspection plug -arrow-.



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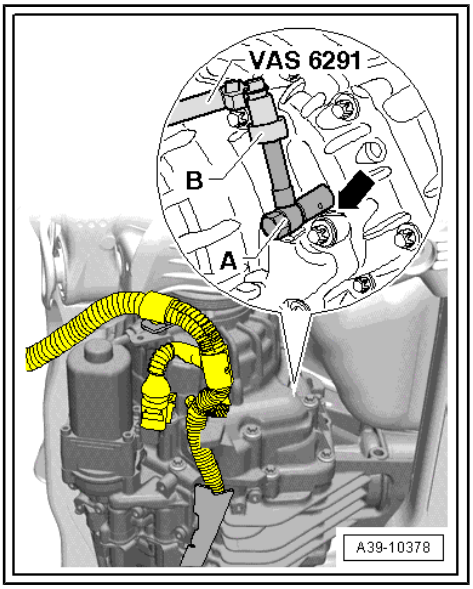
– Disconnect adapter -A- and elbow joint -B-.
– Screw adapter -A- in onto stop.

NOTICE

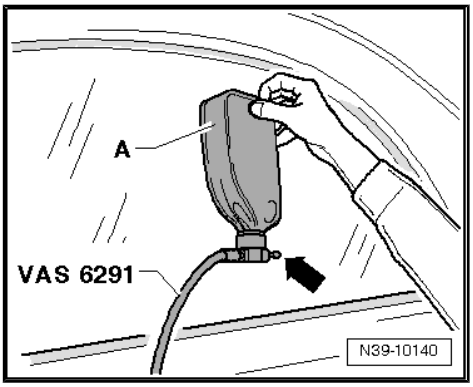
Adapter must not be screwed in incorrectly.
Risk of damage to thread of oil filler hole.
– Screw in adapter -A- straight.
– The filed down side of adapter -A- must point towards housing rib -arrow-.

– Connect elbow joint -B- and adapter -A-, making sure they engage.
– Route hose above drive shaft (right-side).
• The hose must not hang down. It must emerge above rear wheel on right side of vehicle.
– Lower vehicle.



– Please make sure that valve -arrow- is closed.
– Screw oil container -A- onto charging device - VAS 6291- .
– Now open valve -arrow- and hold oil container as shown in illustration.

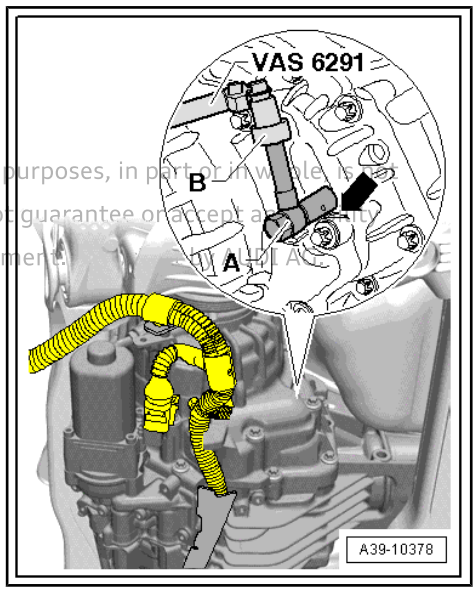
The rear final drive will now be filled.



• The rear final drive is filled correctly when oil comes out between the adapter -A- and the rear final drive housing -arrow-.
– Raise vehicle.
– If oil has started to emerge at adapter -A- place oil reservoir e.g. onto a workshop trolley.

Part of the excess oil will now flow back into the oil reservoir.

– Remove charging device - VAS 6291- as soon as oil stops flowing back into the reservoir.
• The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.
– Top up gear oil again if necessary.



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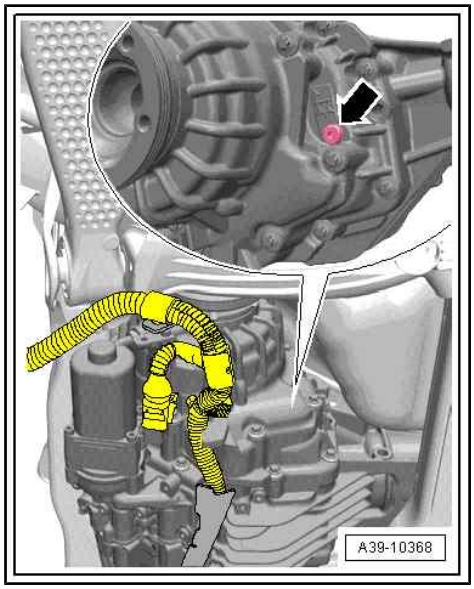
– Screw in and tighten new gear oil inspection plug -arrow-.
Tightening torque ⇒ Item 7 (page 106)



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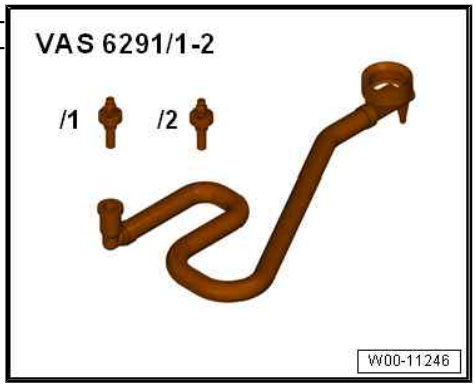
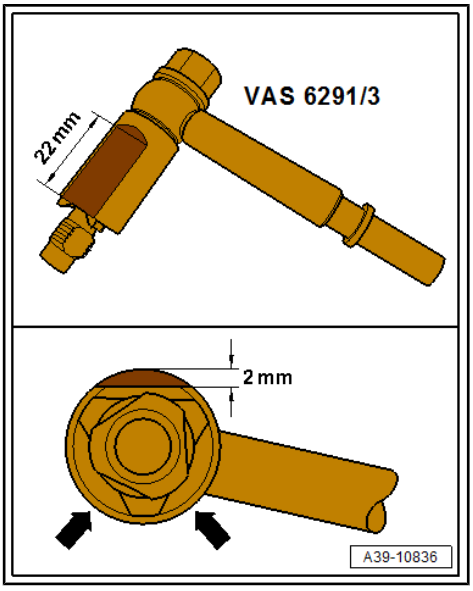
3.3.3 Filling up gear oil, 0BX “quattro sport”

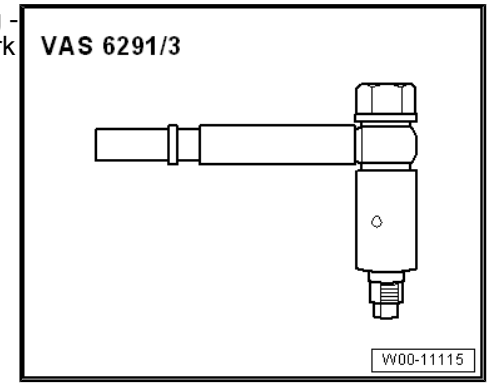
Special tools and workshop equipment required

- Filling device for four-wheel drive coupling - VAS 6291A-

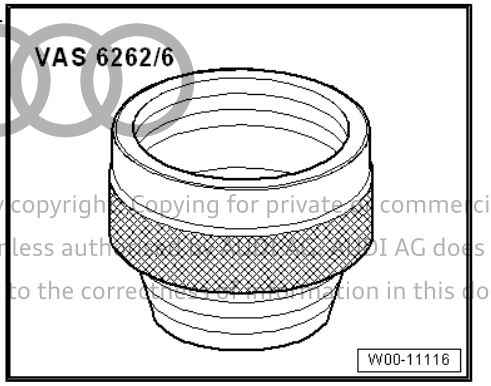




- Adapter for oil filling - VAS 6291/1- or -VAS 6291/2-
- Adapter for oil filling - VAS 6291/3- (rework if necessary ⇒ page 116)



- For some oil containers, adapter - VAS 6262/6- must be used.



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- For some oil containers, adapter - VAS 6262/7- must be used.

- Drip tray

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Depending on version, the spacer tube of the adapter for oil filling - VAS 6291/3- may make contact with a housing rib on the final drive.

– File down the spacer tube of the adapter opposite the two holes on the side -arrows-, as shown in illustration.

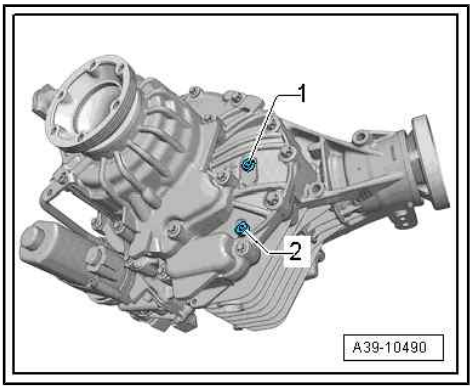
Filling up gear oil

- Rear final drive must be in installation position.
- Vehicle must be level (horizontal).
- Overview of plugs for gear oil ⇒ page 105
- Gear oil drain plug must be fitted and tightened. Tightening torque ⇒ Item 17 (page 89)
- For oil specification, refer to ⇒ Electronic parts catalogue .

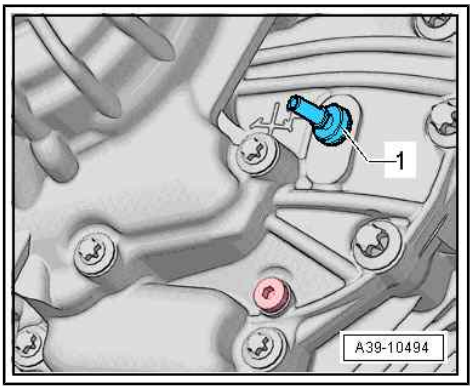
– For topping up, use charging device - VAS 6291- .

– Raise vehicle.

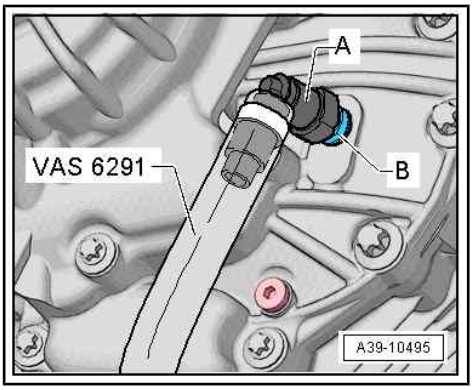
– Remove gear oil inspection plug -1-.



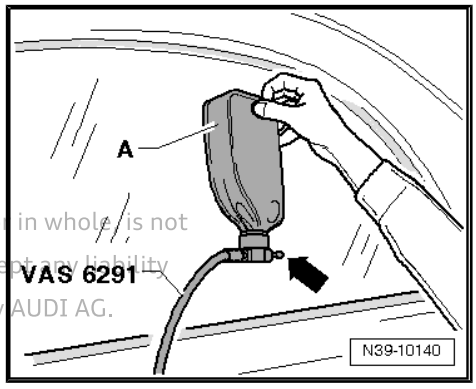
– Screw in adapter for oil filling - VAS 6291/1- or -VAS 6291/2- -1-.



– Connect elbow joint -A- and adapter -B-, making sure they engage.
– Route hose above drive shaft (right-side).
• The hose must not hang down. It must emerge above rear wheel on right side of vehicle.
– Lower vehicle.



– Please make sure that valve -arrow- is closed.
– Screw oil container -A- onto charging device - VAS 6291- .
– Now open valve -arrow- and hold oil container as shown in illustration.



The rear final drive will now be filled.

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- The rear final drive is filled correctly when oil comes out between the adapter -B- and the rear final drive housing.

– Raise vehicle.

– When oil has started to emerge at adapter -B-, place oil reservoir e.g. onto a workshop trolley.

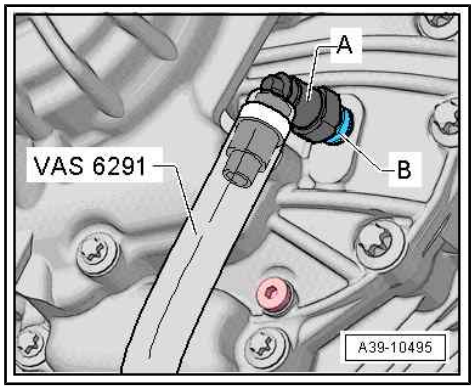
Part of the excess oil will now flow back into the oil reservoir.

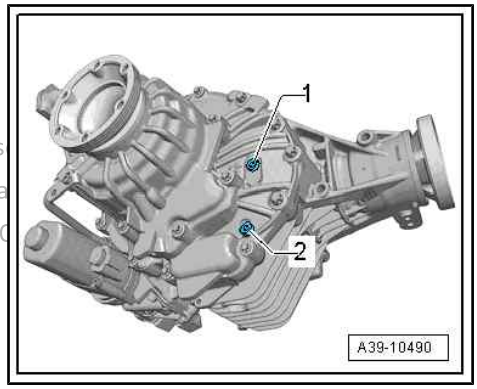
– Remove charging device - VAS 6291- as soon as oil stops flowing back into the reservoir.

- The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.

– Top up gear oil again if necessary.

– Screw in new plug -1- and tighten. Tightening torque
⇒ Item 23 (page 89)





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4 ATF

⇒ “4.1 Checking ATF level”, page 119

⇒ “4.2 Draining and filling ATF”, page 119

4.1 Checking ATF level

⇒ “4.1.1 Checking ATF level, 0D3 quattro sport and 0BX quattro sport ”, page 119

4.1.1 Checking ATF level, 0D3 “quattro sport” and 0BX “quattro sport”

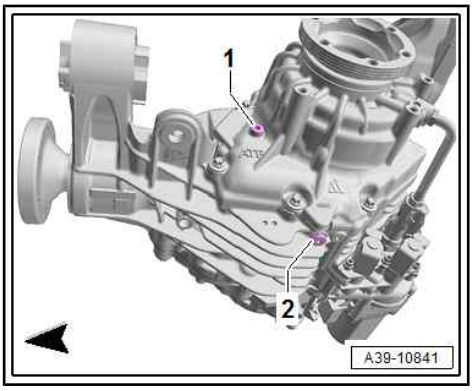
Test requirement

- ATF temperature 10°C ... 60°C
- Rear final drive must be in installation position.
- Vehicle must be level (horizontal).
- ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

Special tools and workshop equipment required

♦ Drip tray

– Unscrew ATF inspection plug -1- to check ATF level.



Note:

♦ The inspection plug -1- for checking the ATF level is located on the left side of the rear final drive. Identification: »ATF« on final drive housing.

♦ Overview of plugs for ATF
⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

- The ATF level is correct when the rear final drive is filled to the bottom lip of the filler hole.

If ATF level is correct:

– Screw in and tighten new ATF inspection plug -1-. Tightening torque ⇒ Item 2 (page 106)

If ATF level is not correct:

– Top up with ATF ⇒ page 120 .

4.2 Draining and filling ATF

⇒ “4.2.1 Draining ATF, 0D3 quattro sport ”, page 119

⇒ “4.2.2 Draining ATF, 0BX quattro sport ”, page 120

⇒ “4.2.3 Filling up ATF, 0D3 and 0BX quattro sport ”, page 120

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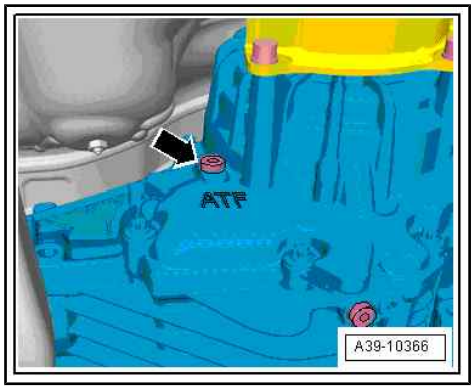
4.2.1 Draining ATF, 0D3 “quattro sport”

Special tools and workshop equipment required

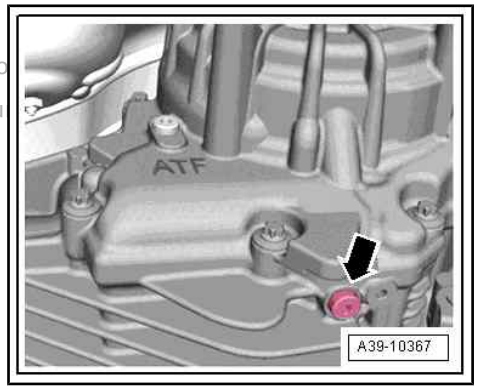
♦ Drip tray

- ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

– Remove ATF inspection plug -top arrow- so that ATF drains from drain hole faster.



– Remove ATF drain plug -bottom arrow- and drain off ATF.
– Screw in and tighten new ATF drain plug -bottom arrow-. Tightening torque ⇒ Item 4 (page 106)
– Fill up ATF in rear final drive ⇒ page 120 .



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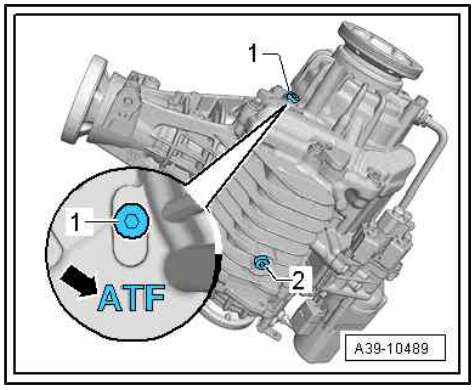
4.2.2 Draining ATF, 0BX “quattro sport”

Special tools and workshop equipment required

♦ Drip tray

• ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105

– Remove ATF inspection plug -1- so that ATF drains faster from drain hole.
– Remove ATF drain plug -2- and drain off ATF.
– Screw in and tighten new ATF drain plug -2-. Tightening torque ⇒ Item 16 (page 89)
– Fill up ATF in rear final drive ⇒ page 120 .

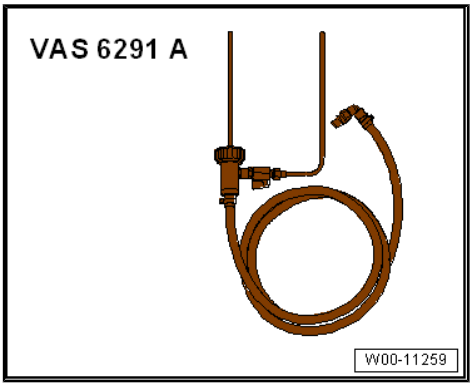


4.2.3 Filling up ATF, 0D3 and 0BX “quattro sport”

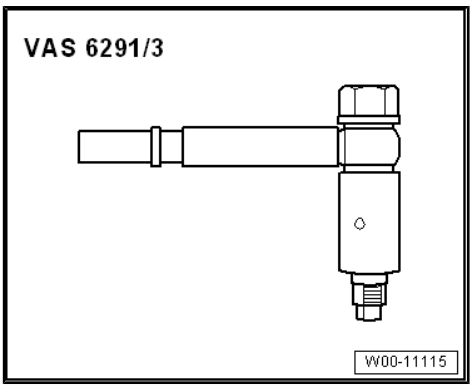
Special tools and workshop equipment required

♦ Vehicle diagnostic tester

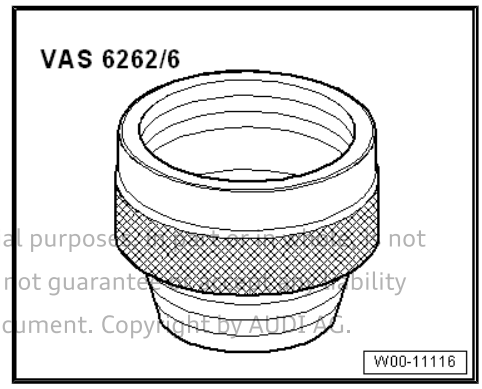
- Filling device for four-wheel drive coupling - VAS 6291A- or - VAS 6291-



- Adapter for oil filling - VAS 6291/3-



- For some oil containers, adapter - VAS 6262/6- must be used.



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- For some oil containers, adapter - VAS 6262/7- must be used.

- Drip tray

Test conditions:

- Rear final drive must be in installation position.
- Vehicle must be level (horizontal).

- ⇒ “3.1.5 Overview of fitting locations - drain and inspection plugs, 0D3 quattro sport and 0BX quattro sport ”, page 105
- ATF drain plug must be tightened. Tightening torque ⇒ Item 4 (page 106)

NOTICE

Ensure that correct gear oil is used.

Risk of damage to gearbox

– Only use gear oil specified in ⇒ Electronic parts catalogue .

– For topping up, use charging device - VAS 6291- .

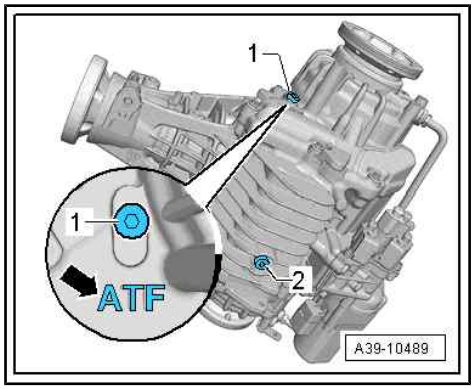
- The ATF charging device must be clean and the ATF must not be mixed with other types of lubricant!

– Raise vehicle.

– Unscrew ATF inspection plug -1-.

Note:

♦ The inspection plug -1- for checking the ATF level is located on the left side of the rear final drive. Identification: »ATF« on final drive housing -arrow-.



– Disconnect adapter -A- and elbow joint -B-.

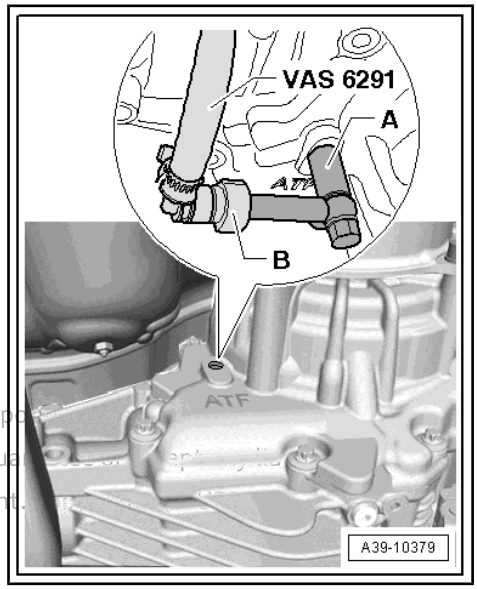
– Screw adapter -A- in onto stop.

– Connect elbow joint -B- and adapter -A-, making sure they engage.

– Route hose above drive shaft (left-side).

- The hose must not hang down. It must emerge above rear wheel on left side of vehicle.

– Lower vehicle.



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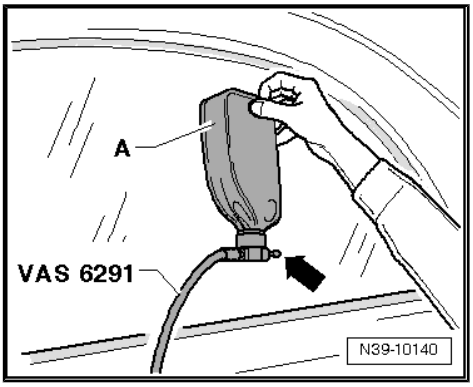
– Please make sure that valve -arrow- is closed.
– Screw oil container -A- onto charging device - VAS 6291- .
– Now open valve -arrow- and hold oil container as shown in illustration.

The hydraulic control unit and the superposition gears (left and right) in the rear final drive will now be filled.



• The hydraulic control unit for the rear final drive is filled correctly when ATF starts to come out at adapter -A-.

If no ATF has emerged at adapter -A-:

– Continue with filling procedure until fluid level is correct.

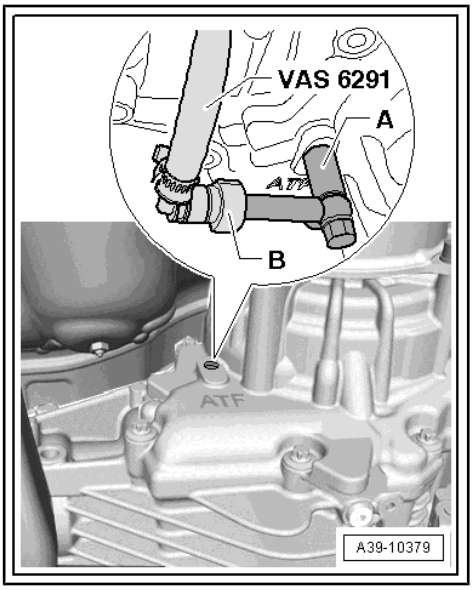
If ATF has emerged at adapter -A-:

– Raise vehicle.
– Place reservoir e.g. onto a workshop trolley.

Part of the excess oil will now flow back into the oil reservoir.

– Remove charging device - VAS 6291- as soon as ATF stops flowing back into the reservoir.

• The oil level is correct when the rear final drive is filled to the bottom lip of the filler hole.



– Screw in ATF inspection plug -arrow- hand-tight.
– Connect vehicle diagnostic tester and switch on ignition.
– Using vehicle diagnostic tester in Guided Functions mode, select 32 - Lock electronics and then select the function 32 - Adding ATF.

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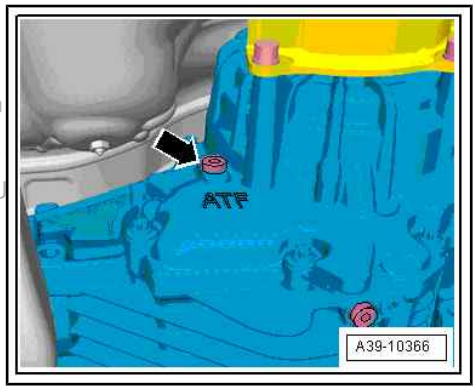
• It is important to follow all instructions given by the vehicle diagnostic tester exactly.

Use vehicle diagnostic tester to fill and vent air from the system.



Note:

• If the system detects that there is still air in the system after the function 32 - Adding ATF has been performed, the filling process must be repeated.

– Unscrew ATF inspection plug -arrow- once again.

Test condition:

• The ATF level is correct when the rear final drive is filled to the bottom lip of the filler hole -arrow-.
• Top up ATF if necessary.
• No entries (either static or sporadic) stored in event memory ⇒ Vehicle diagnostic tester.

– Screw in and tighten new ATF inspection plug -arrow-. Tightening torque ⇒ Item 2 (page 106)

5 Oil seals

⇒ “5.1 Overview of fitting locations - oil seals”, page 124

⇒ “5.2 Renewing oil seal (left-side)”, page 131

⇒ “5.3 Renewing oil seal (right-side)”, page 138

⇒ “5.4 Renewing input shaft oil seal”, page 151

⇒ “5.5 Renewing protective ring on flange shaft”, page 175

⇒ “5.6 Renewing protective ring on propshaft flange”, page 181

5.1 Overview of fitting locations - oil seals

⇒ “5.1.1 Overview of fitting locations - oil seals, 0DB, 0D2”, page 124

⇒ “5.1.2 Overview of fitting locations - oil seals, 0DG”, page 126

⇒ “5.1.3 Overview of fitting locations - oil seals, 0B0 quattro ultra ”, page 127

⇒ “5.1.4 Overview of fitting locations - oil seals, 09R quattro ultra ”, page 128

⇒ “5.1.5 Overview of fitting locations - oil seals, 0D3 quattro sport and 0BX quattro sport ”, page 129

⇒ “5.1.6 Overview of fitting locations - oil seals on four-wheel drive coupling quattro ultra ”, page 130

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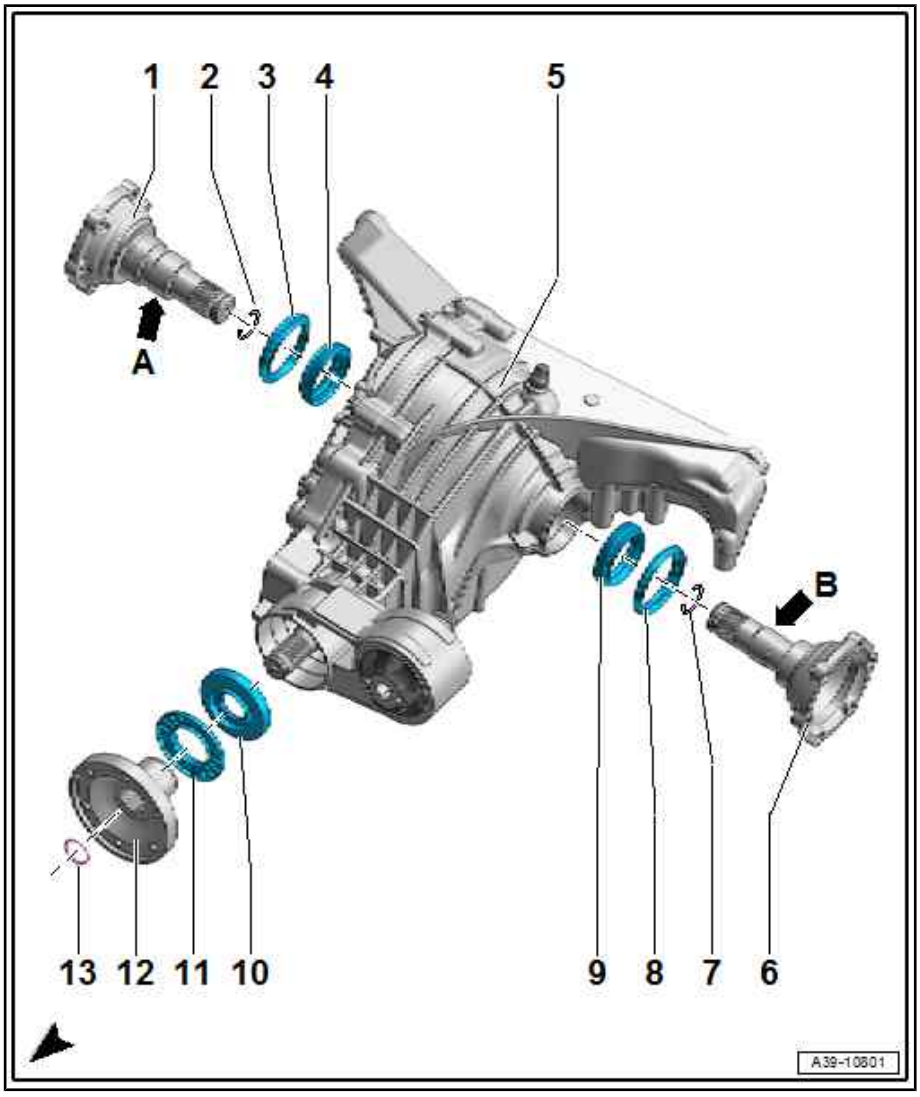
5.1.1 Overview of fitting locations - oil seals, 0DB, 0D2



1 - Flange shaft (right-side)

- ❑ Removing and installing ⇒ page 138
- ❑ Final drive 0DB: Right and left flange shafts are identical
- ❑ Final drive 0D2: -Arrow A- shaft diameter approx. 40 mm

2 - Circlip

- ❑ Always renew

3 - Protective ring (right-side)

- ❑ Renewing ⇒ page 175

4 - Oil seal (right-side)

- ❑ Renewing ⇒ page 138

5 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

6 - Flange shaft (left-side)

- ❑ Removing and installing ⇒ page 131
- ❑ Final drive 0DB: Right and left flange shafts are identical
- ❑ Final drive 0D2: -Arrow B- shaft diameter approx. 32 mm

7 - Circlip

- ❑ Always renew

8 - Protective ring (left-side)

- ❑ Renewing ⇒ page 175

9 - Oil seal (left-side)

- ❑ Renewing ⇒ page 131

10 - Input shaft oil seal

- ❑ Renewing ⇒ page 151

11 - Protective ring on flange for propshaft

- ❑ Renewing ⇒ page 181

12 - Propshaft flange

- ❑ Removing and installing ⇒ page 151

13 - Circlip

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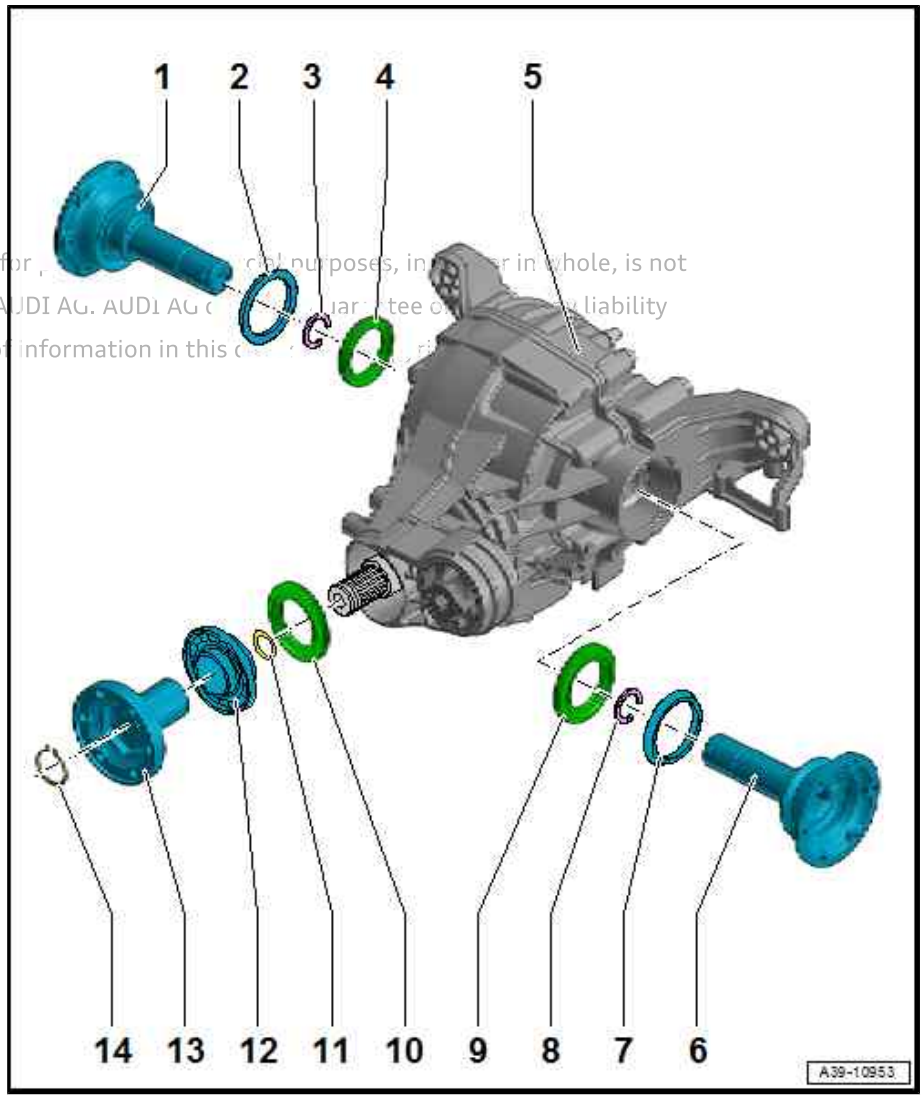
5.1.2 Overview of fitting locations - oil seals, 0DG



1 - Flange shaft (right-side)
- ❑ Removing and installing ⇒ page 138
- ❑ Right and left flange shafts are identical

2 - Protective ring (right-side)
- ❑ Renewing ⇒ page 175

3 - Circlip
- ❑ Always renew

4 - Oil seal (right-side)
- ❑ Renewing ⇒ page 138

5 - Rear final drive
- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

6 - Flange shaft (left-side)
- ❑ Removing and installing ⇒ page 131
- ❑ Right and left flange shafts are identical

7 - Protective ring (left-side)
- ❑ Renewing ⇒ page 181

8 - Circlip
- ❑ Always renew

9 - Oil seal (left-side)
- ❑ Renewing ⇒ page 131

10 - Input shaft oil seal
- ❑ Renewing ⇒ page 151

11 - O-ring
- ❑ Always renew

12 - Protective ring on flange for propshaft
- ❑ Renewing ⇒ page 181

13 - Propshaft flange
- ❑ Removing and installing ⇒ page 151

14 - Circlip

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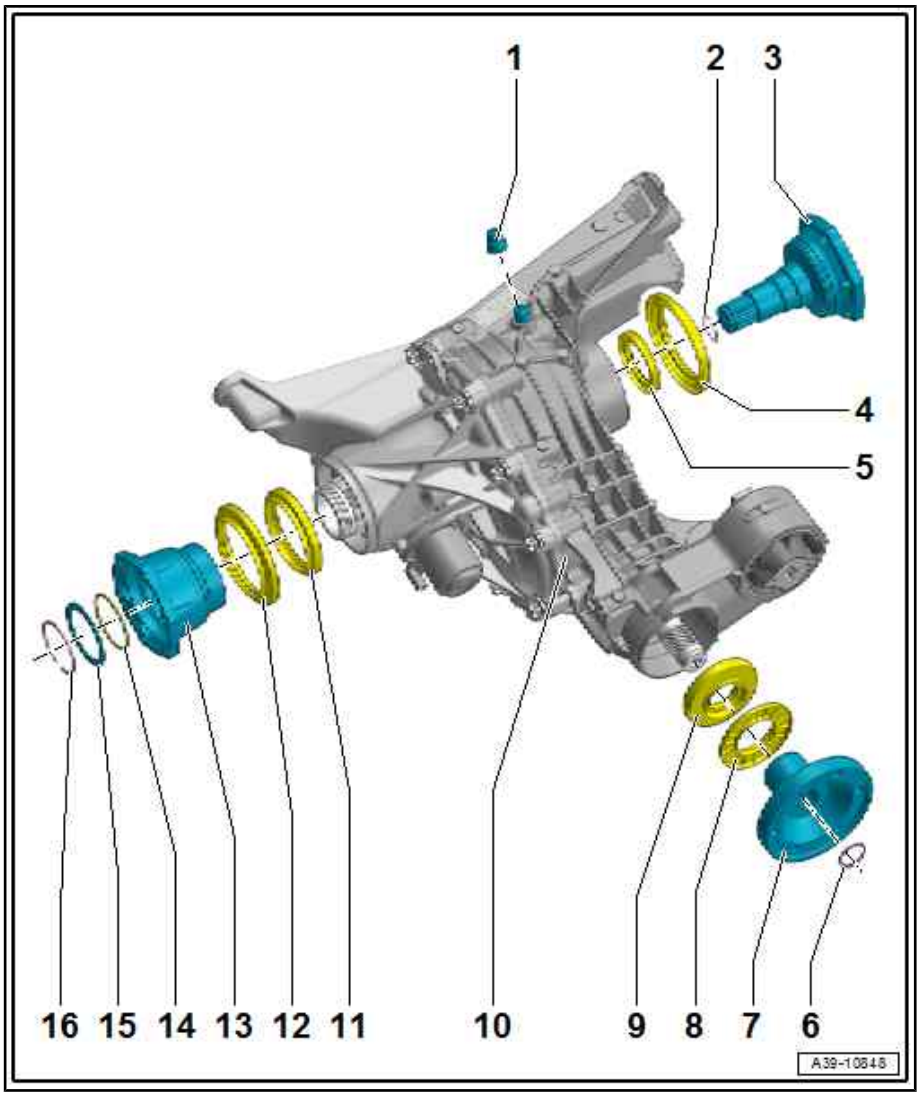
5.1.3 Overview of fitting locations - oil seals, 0B0 “quattro ultra”



1 - Breather cap

2 - Circlip

- ❑ Always renew

3 - Flange shaft (left-side)

- ❑ Removing and installing ⇒ page 131

4 - Protective ring (left-side)

- ❑ Renewing ⇒ page 175

5 - Oil seal (left-side)

- ❑ Renewing ⇒ page 131

6 - Circlip

7 - Propshaft flange

- ❑ Removing and installing ⇒ page 151

8 - Protective ring on flange for propshaft

- ❑ Renewing ⇒ page 181

9 - Input shaft oil seal

- ❑ Renewing ⇒ page 151

10 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

11 - Oil seal (right-side)

- ❑ Renewing ⇒ page 144

12 - Protective ring (right-side)

- ❑ Renewing ⇒ page 175

13 - Flange shaft (right-side)

- ❑ Removing and installing ⇒ page 144

14 - O-ring

15 - Shim

16 - Circlip

- ❑ Always renew

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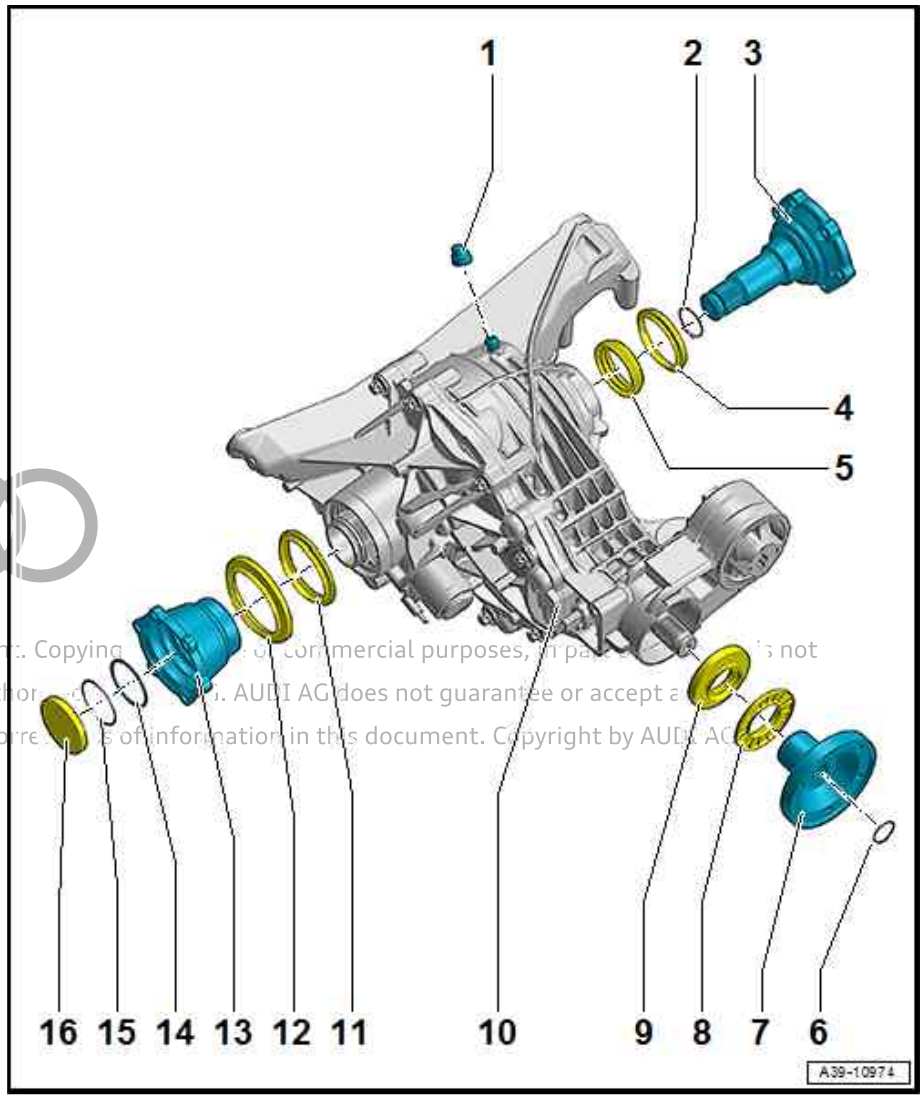
5.1.4 Overview of fitting locations - oil seals, 09R “quattro ultra”



1 - Breather cap

2 - Circlip

- ❑ Always renew

3 - Flange shaft (left-side)

- ❑ Removing and installing ⇒ page 131

4 - Protective ring (left-side)

- ❑ Renewing ⇒ page 175

5 - Oil seal (left-side)

- ❑ Renewing ⇒ page 131

6 - Circlip

7 - Propshaft flange

- ❑ Removing and installing ⇒ page 151

8 - Protective ring on flange for propshaft

- ❑ Renewing ⇒ page 181

9 - Input shaft oil seal

- ❑ Renewing ⇒ page 151

10 - Rear final drive

- ❑ ⇒ “2.2 Removing and installing final drive”, page 55

11 - Oil seal (right-side)

- ❑ Renewing ⇒ page 144

12 - Protective ring (right-side)

- ❑ Renewing ⇒ page 175

13 - Flange shaft (right-side)

- ❑ Removing and installing ⇒ page 144

14 - Shim

15 - Circlip

- ❑ Always renew

16 - Sealing cap

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5.1.5 Overview of fitting locations - oil seals, 0D3 “quattro sport” and 0BX “quattro sport”

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1 - Protective ring (right-side)

2 - Oil seal (right-side)

- ⇒ “5.3.4 Renewing oil seal (right-side) - 0D3 and 0BX quattro sport ”, page 150

3 - Oil seal (left-side)

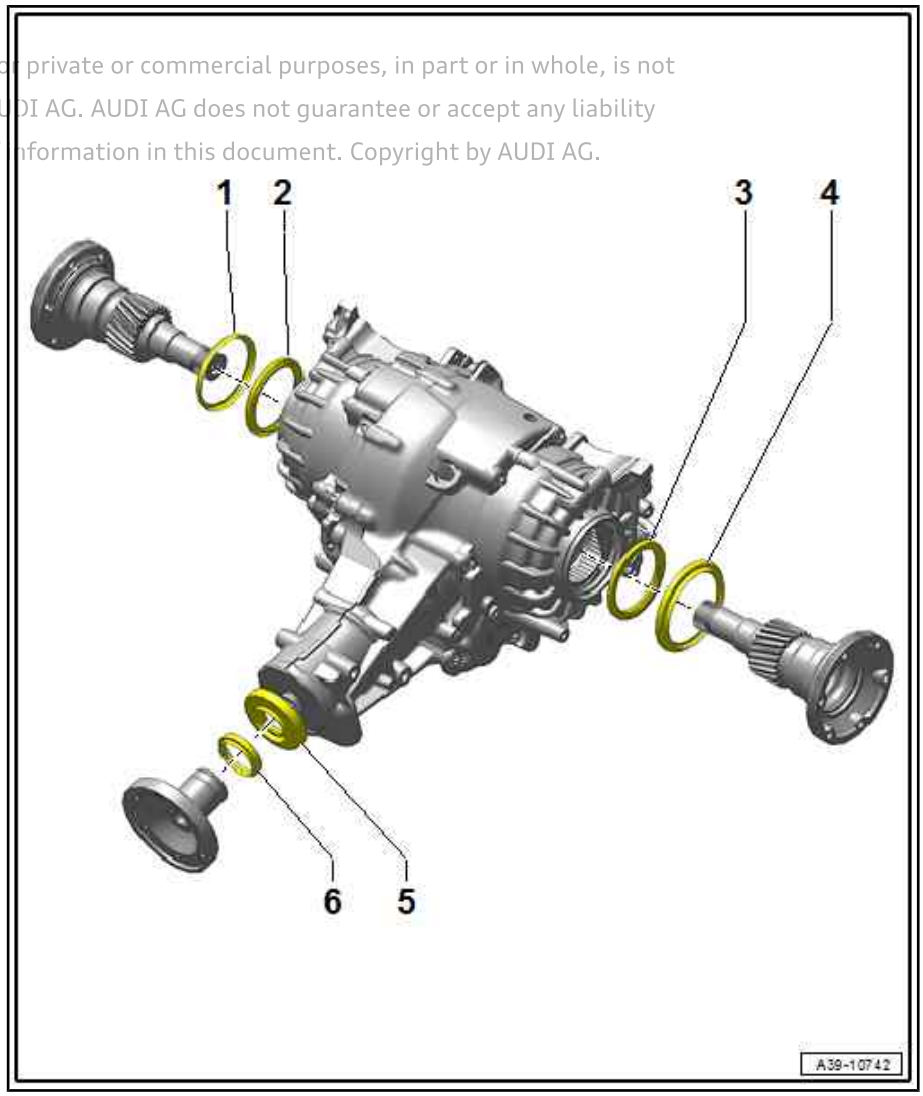
- ⇒ “5.2.2 Renewing oil seal (left-side) - 0D3 quattro sport and 0BX quattro sport ”, page 137

4 - Protective ring (left-side)

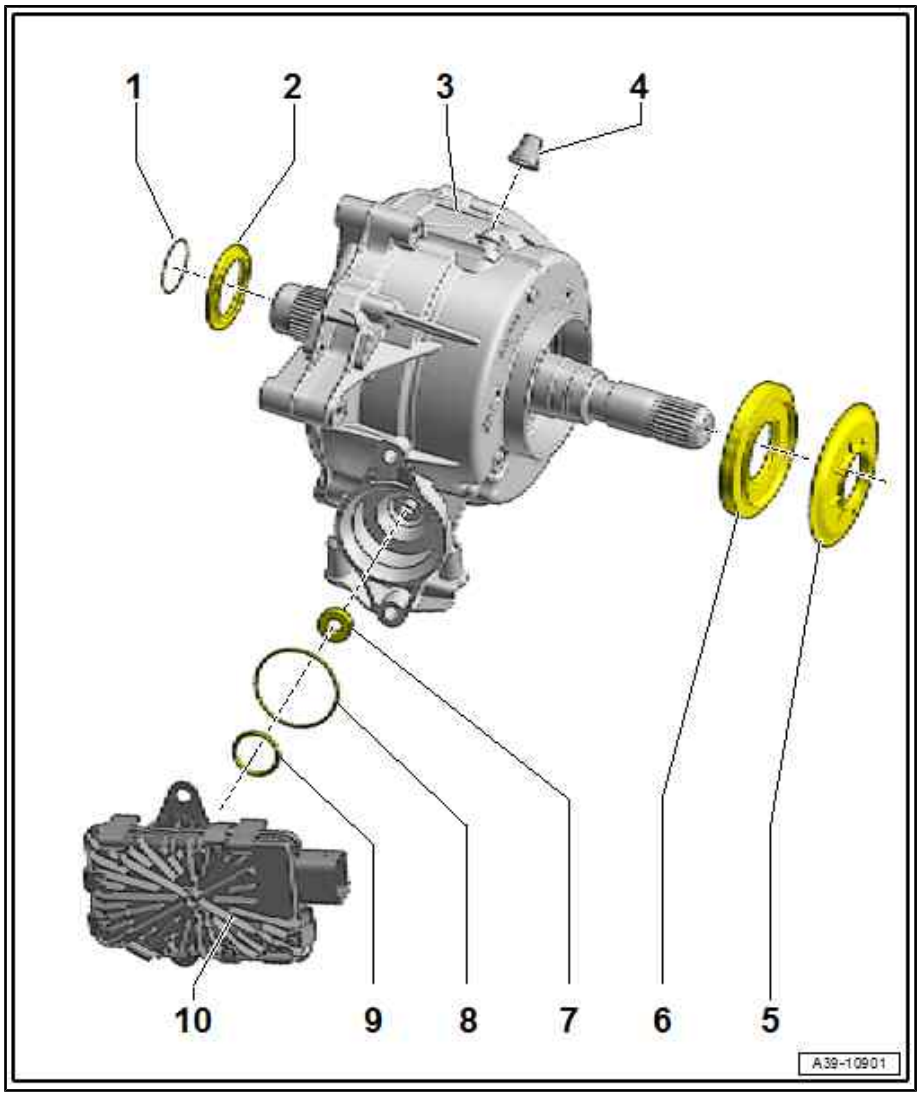
5 - Input shaft oil seal

- ⇒ “5.4.2 Renewing input shaft oil seal - 0D3 quattro sport ”, page 157
- ⇒ “5.4.4 Renewing input shaft oil seal - 0BX quattro sport ”, page 169

6 - Protective ring on input shaft



5.1.6 Overview of fitting locations - oil seals on four-wheel drive coupling “quattro ultra”



1 - O-ring

- ❑ For four-wheel drive coupling input shaft
- ❑ Renew if damaged

2 - Oil seal for four-wheel drive coupling input shaft

- ❑ Removing and installing ⇒ page 201

3 - Four-wheel drive coupling

- ❑ ⇒ “7.1 Exploded view - four-wheel drive coupling”, page 186
- ❑ Removing and installing ⇒ page 187
- ❑ Additional work required after renewing four-wheel drive coupling ⇒ page 190

4 - Breather

5 - Dust ring

- ❑ For four-wheel drive coupling output shaft
- ❑ Renew after removing
- ❑ Removing and installing ⇒ page 199

6 - Oil seal for four-wheel drive coupling output shaft

- ❑ Removing and installing ⇒ page 199

7 - Oil seal for actuator shaft

8 - O-ring

- ❑ For all-wheel drive control unit
- ❑ Renew

9 - O-ring

- ❑ For all-wheel drive control unit
- ❑ Renew

10 - All-wheel drive control unit - J492-

The following are integrated in the all-wheel drive control unit :

- ♦ Clutch actuator for all-wheel drive - V622-
- ♦ Clutch position sender for all-wheel drive - G969-
  - ❑ Additional work required after renewing control unit ⇒ page 196
  - ❑ Removing and installing ⇒ page 194

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5.2 Renewing oil seal (left-side)

⇒ “5.2.1 Renewing oil seal (left-side) - 0DB, 0D2, 0G2, 0DG, 0B0 quattro ultra, 09R quattro ultra ”, page 131

⇒ “5.2.2 Renewing oil seal (left-side) - 0D3 quattro sport and 0BX quattro sport ”, page 137

5.2.1 Renewing oil seal (left-side) - 0DB, 0D2, 0G2, 0DG, 0B0 “quattro ultra”, 09R “quattro ultra”

Special tools and workshop equipment required

- Drift - VW 295-

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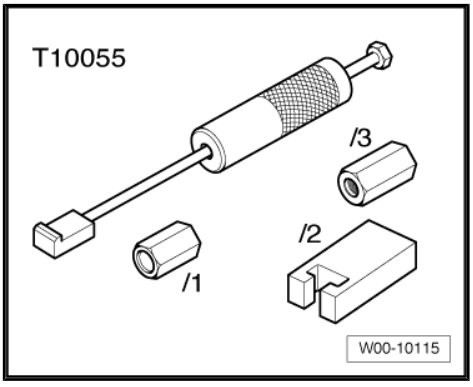
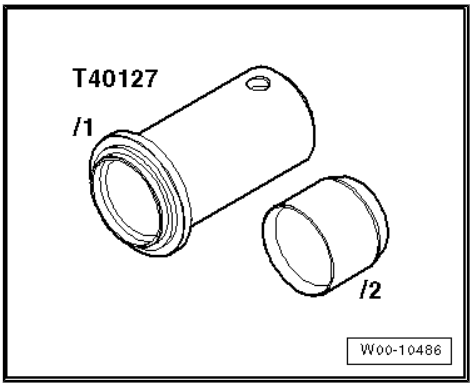
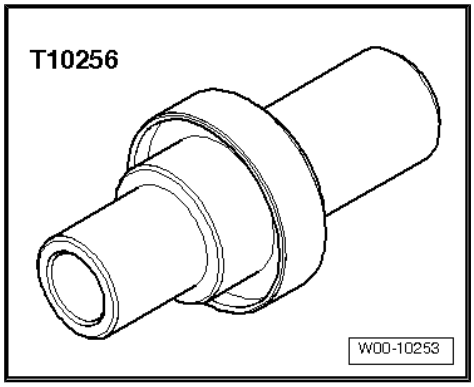
- Puller - T10055-



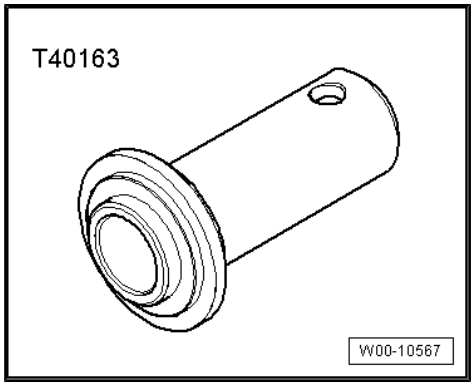
- Final drive 0D2, 0DB, 0G2: Assembly tool - T40127/1-



- Final drive 0DG: Thrust piece - T10256-

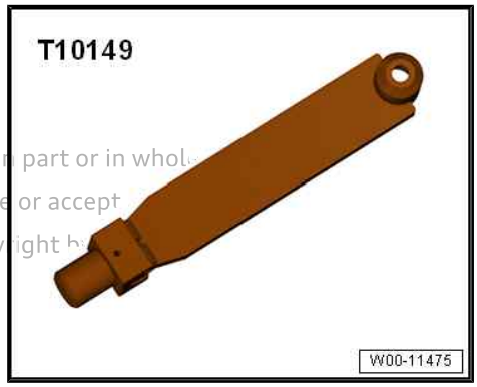


- Final drive 0B0 “quattro ultra”, 09R “quattro ultra”: Thrust piece - T40163-



- Sealing grease - G 052 128 A1-
- Audi A8: engine and gearbox jack - VAS 6931-

- Audi A8: support - T10149-



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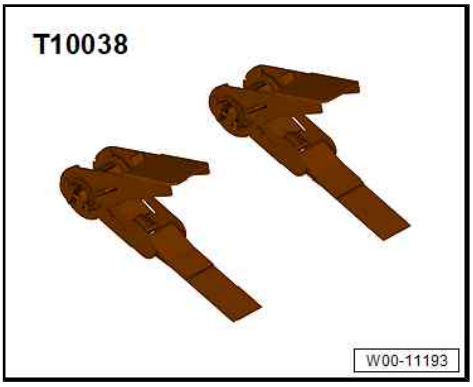
♦ Audi A8: tensioning strap - T10038-



- Rear final drive is installed.

– Observe the general repair instructions ⇒ page 21 .

– Place vehicle on lifting platform.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

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Audi A8

– Bleed air spring system ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 43 ; Air suspension .

⚠ CAUTION

Risk of accident if vehicle slips off lifting platform due to spring force of air suspension.

The spring force of the air suspension remains unchanged when the vehicle is lifted onto the lifting platform.

– Before lifting the suspension, dissipate the spring force of the air suspension by bleeding the system completely.

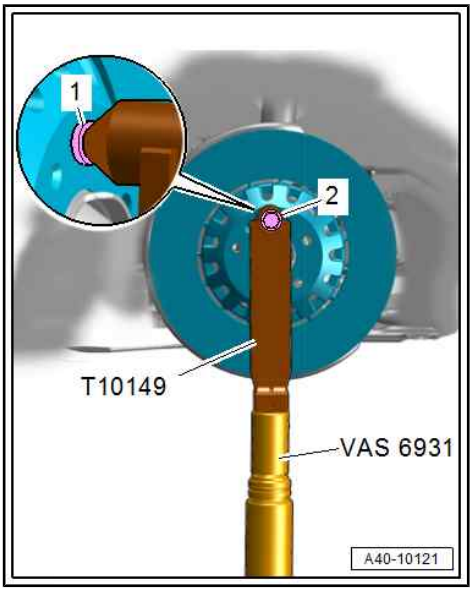
- Before raising wheel unit, secure vehicle to arms of lifting platform using tensioning straps - T10038- .

– Remove rear left wheel.

– Turn wheel hub until one of the wheel bolt holes is at the top.

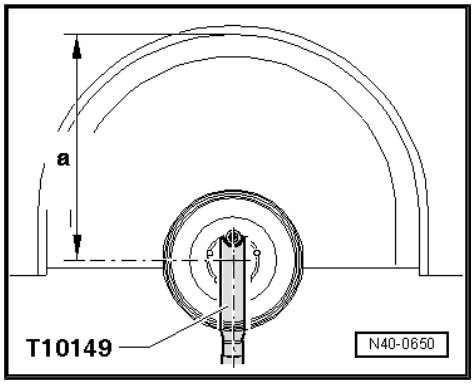
– Attach support - T10149- to wheel hub using wheel bolt -2-.

– Lift wheel bearing housing using support - T10149- with engine and gearbox jack - VAS 6931- .



– Raise wheel bearing housing until dimension -a- is obtained (to make it easier to guide drive shaft out of flange shaft).

• Dimension -a- = 470 mm



CAUTION

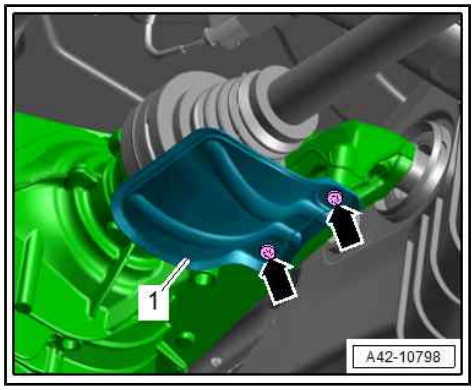
Risk of accident if vehicle is lowered or raised when engine and gearbox jack is positioned underneath.

– Never raise or lower the vehicle when the engine and gearbox jack is underneath it.

– Never leave the engine and gearbox jack under the vehicle for longer than necessary.

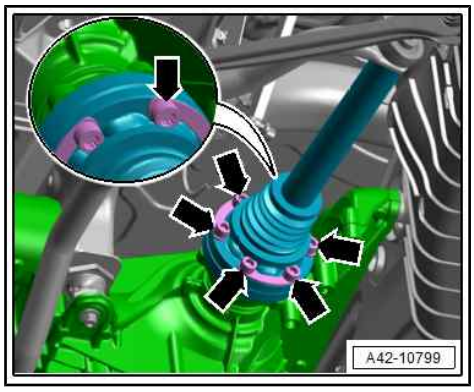
All vehicles (continued)

– Remove bolts -arrows- and remove heat shield -1- for drive shaft (left-side).



– Unscrew bolts -arrows- for drive shaft (left-side).

– Guide drive shaft upwards out of flange shaft and move to one side.



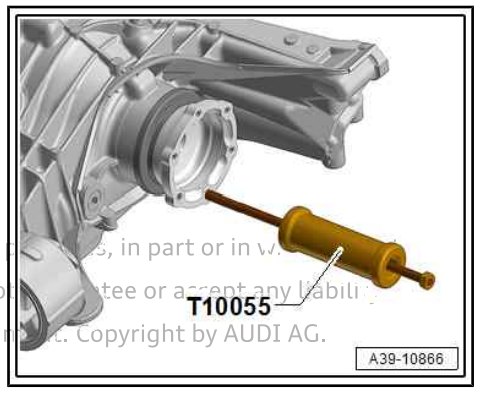
Flange shaft with M8 thread

– Pull out flange shaft (left-side) using puller - T10055- .

Flange shaft with M10 thread

– Insert spindle of puller - T10055- in any hole in flange shaft and secure with M8 nut.

– Pull out flange shaft (left-side) using puller - T10055- .



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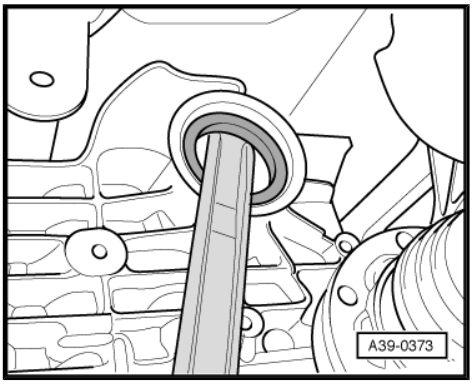
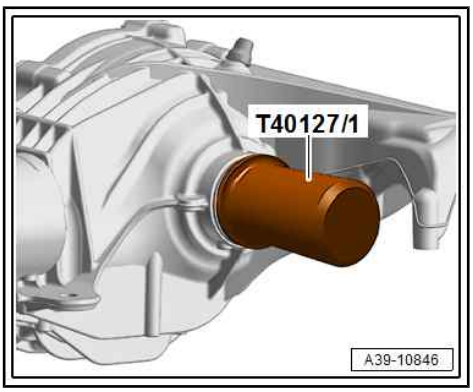
– Pry out oil seal with a suitable assembly lever.



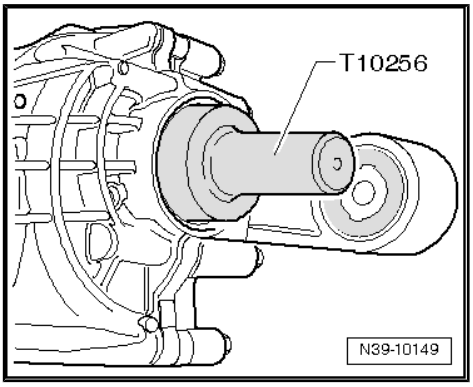
Installing oil seal, final drive 0DB, 0G2 and 0D2

– Lightly lubricate outer circumference of oil seal with gear oil.
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
– Drive in new oil seal onto stop using assembly tool - T40127/1- . Take care to keep oil seal straight when installing.



Installing oil seal, final drive 0DG

– Lightly lubricate outer circumference of oil seal with gear oil.
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
– Drive in new oil seal onto stop using thrust piece - T10256- . Take care to keep oil seal straight when installing.



Installing oil seal, final drive 0B0 “quattro ultra”, 09R “quattro ultra”

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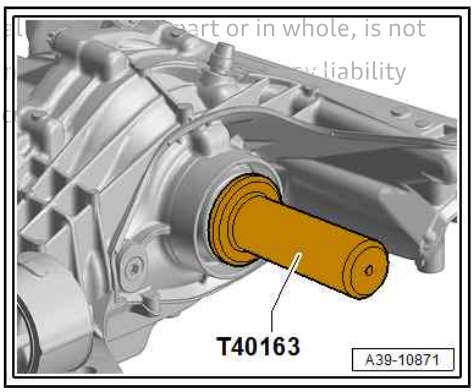
– Lightly lubricate outer circumference of oil seal with gear oil.
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
– Drive in new oil seal onto stop using thrust piece - T40163- . Take care to keep oil seal straight when installing.

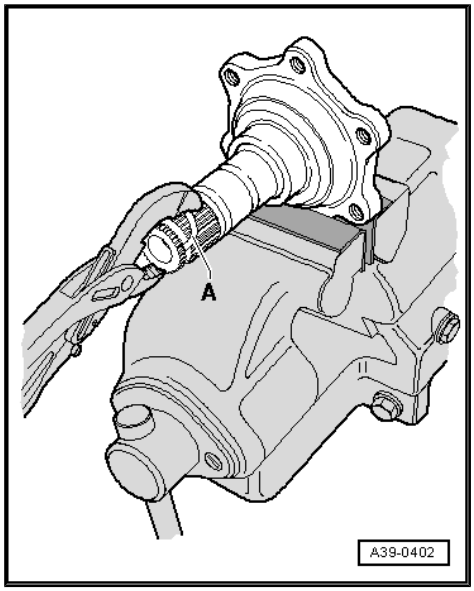


All vehicles (continued)

– Clamp flange shaft in vice, using jaw protectors.

– Remove old circlip.

– Using pliers , insert new circlip -A- in groove in flange shaft, taking care not to overstretch circlip.



– Drive in flange shaft with drift - VW 295- .

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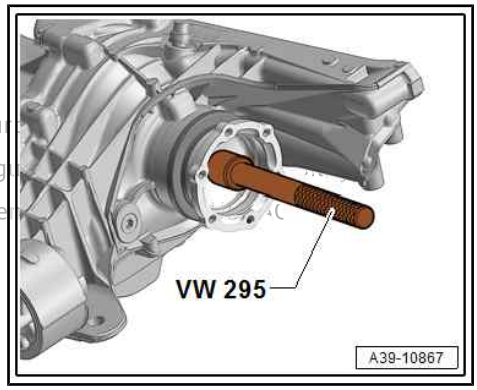
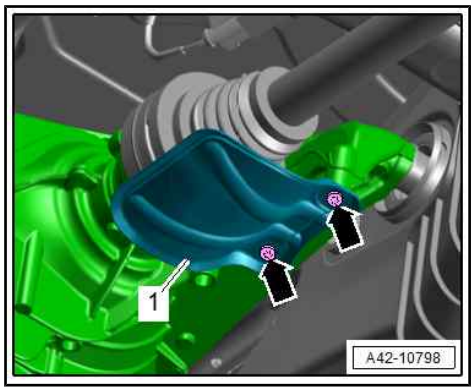


– Fit and tighten drive shaft ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .

– Fit heat shield -1- for drive shaft (left-side). Tightening torque ⇒ page 51

– Check gear oil level in rear final drive ⇒ page 107 .

– Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



Audi A8

– Lower wheel bearing housing.

– Move engine and gearbox jack - VAS 6931- aside.

– Detach support - T10149- .

– Detach tensioning strap - T10038- .

– Fit rear left wheel ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 44 ; Wheels and tyres .

– Charge air spring system ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 43 ; Air suspension .

• The vehicle must not be lowered from the lifting platform until the system has been recharged.

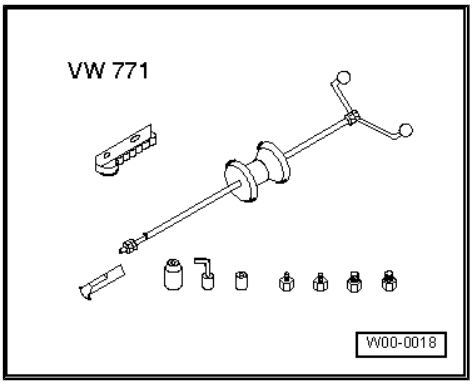
5.2.2 Renewing oil seal (left-side) - 0D3 “quattro sport” and 0BX “quattro sport”

This chapter describes the renewal of the oil seal for both the left and right flange shafts.

- The oil seals can only be renewed with the final drive removed.

Special tools and workshop equipment required

♦ Multi-purpose tool - VW 771-



♦ Thrust piece - T40221-

♦ ATF

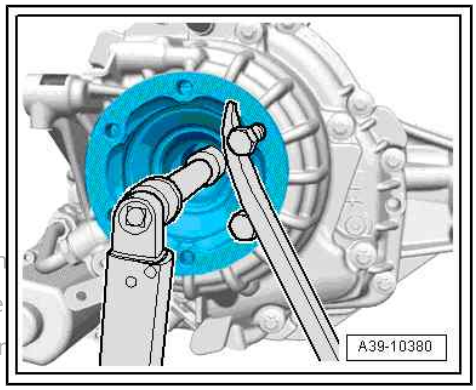
Removing

- Observe the general repair instructions ⇒ page 21 .

– Remove rear final drive ⇒ page 55 .

– Remove flange shaft securing bolt. To do this, screw two bolts into flange and counterhold flange shaft with tyre iron or other suitable lever.

– Pull out flange shaft.



Note:

- If flange shaft cannot be pulled out by hand, use multi-purpose tool -VW 771-.

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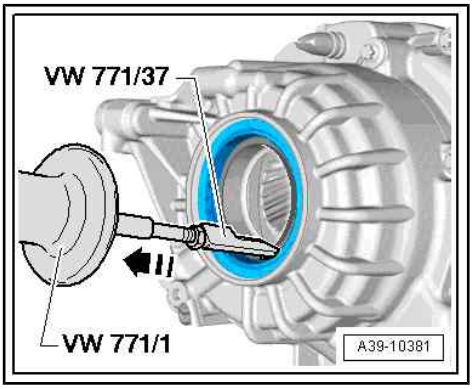
– Pull out flange shaft oil seal using -VW 771- and -VW 771/37- .



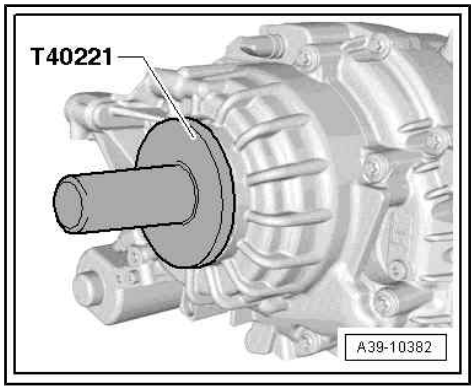
Installing

Installation is carried out in reverse sequence. Note the following:

Installing oil seal (right-side)

– Coat outer circumference and sealing lips of oil seal with ATF.

– Drive in new oil seal onto stop (take care to keep seal straight).



Installing oil seal (left-side)

– Coat outer circumference and sealing lips of oil seal with ATF.

– Drive in new oil seal onto stop (take care to keep seal straight).

– Install flange shaft.

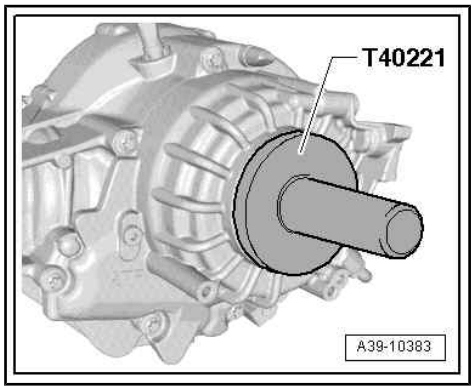
Note:

- If flange shaft cannot be inserted as far as stop by hand, knock it in using a plastic hammer.

– Tighten new bolt securing flange shaft to specified torque ⇒ Item 1 (page 88) .

– Install rear final drive ⇒ page 55 .

– Check ATF level in rear final drive ⇒ page 119 .



5.3 Renewing oil seal (right-side)

⇒ “5.3.1 Renewing oil seal (right-side) - final drive 0DB, 0D2, 0DG, 0G2”, page 138

⇒ “5.3.2 Renewing oil seal (right-side) - final drive 0B0 quattro ultra ”, page 144

⇒ “5.3.3 Renewing oil seal (right-side) - final drive 09R quattro ultra ”, page 147

⇒ “5.3.4 Renewing oil seal (right-side) - 0D3 and 0BX quattro sport ”, page 150

5.3.1 Renewing oil seal (right-side) - final drive 0DB, 0D2, 0DG, 0G2

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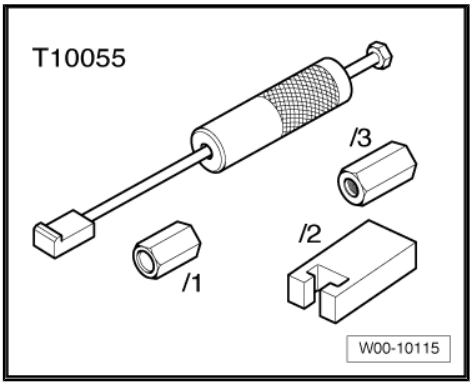
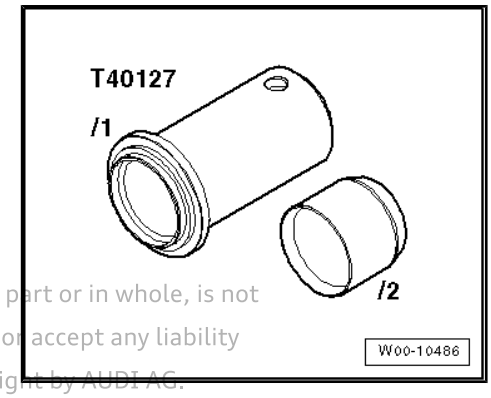
Special tools and workshop equipment required

♦ Drift - VW 295-

- Puller - T10055-



- Final drive 0DB, 0D2, 0G2: Assembly tool - T40127/1-



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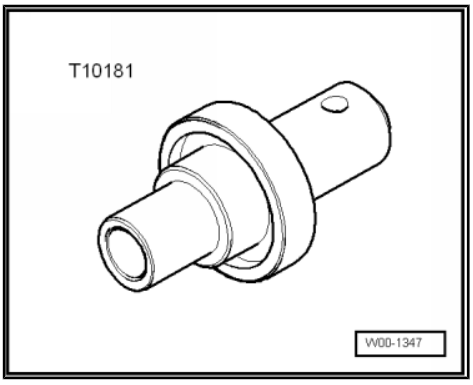
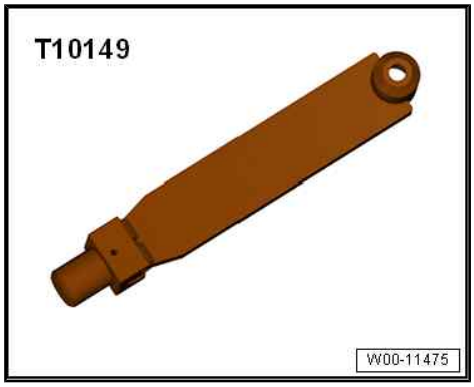
- Final drive 0DG: Thrust piece - T10181-

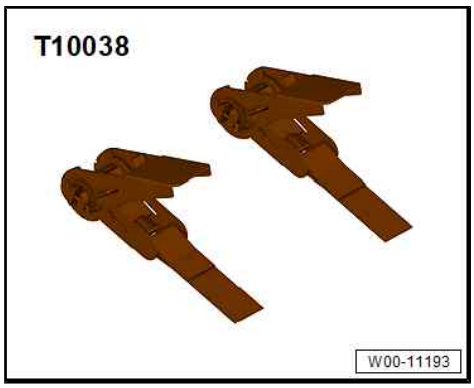


- Sealing grease - G 052 128 A1-
- Audi A8: engine and gearbox jack - VAS 6931-

- Audi A8: support - T10149-



- Audi A8: tensioning strap - T10038-



- Rear final drive is installed.

– Observe the general repair instructions ⇒ page 21 .

– Place vehicle on lifting platform.

Audi A8

– Bleed air spring system ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 43 ; Air suspension .

CAUTION

Risk of accident if vehicle slips off lifting platform due to spring force of air suspension.

The spring force of the air suspension remains unchanged when the vehicle is lifted onto the lifting platform.

– Before lifting the suspension, dissipate the spring force of the air suspension by bleeding the system completely.

- Before raising wheel unit, secure vehicle to arms of lifting platform using tensioning straps - T10038- .

– Remove rear right wheel.

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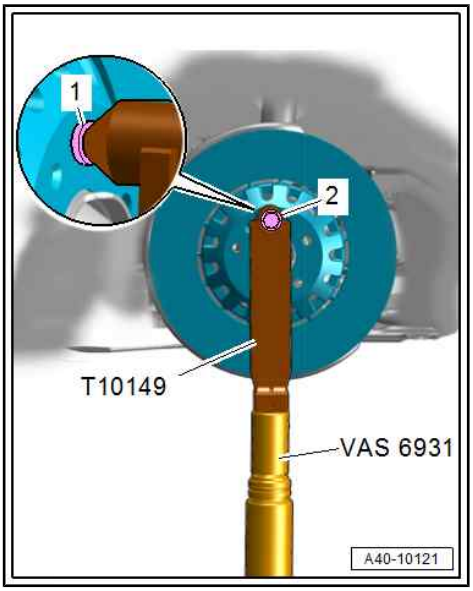
– Turn wheel hub until one of the wheel bolt holes is at the top.
– Attach support - T10149- to wheel hub using wheel bolt -2-.
– Lift wheel bearing housing using support - T10149- with engine and gearbox jack - VAS 6931- .



– Raise wheel bearing housing until dimension -a- is obtained (to make it easier to guide drive shaft out of flange shaft).

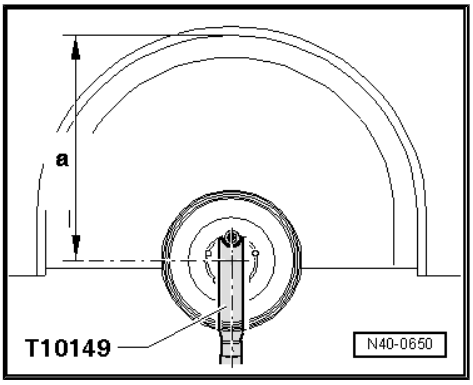
• Dimension -a- = 470 mm

CAUTION

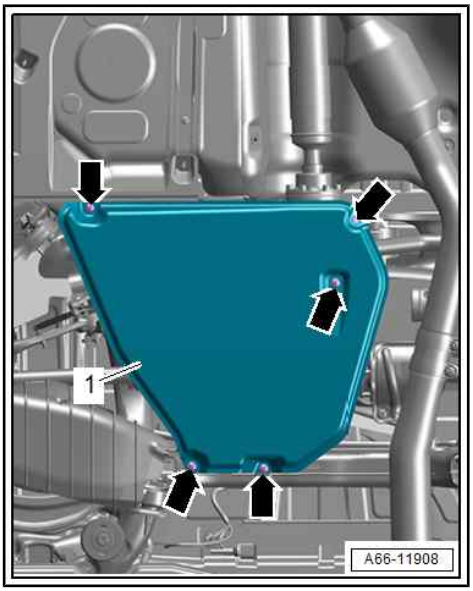
Risk of accident if vehicle is lowered or raised when engine and gearbox jack is positioned underneath.

– Never raise or lower the vehicle when the engine and gearbox jack is underneath it.

– Never leave the engine and gearbox jack under the vehicle for longer than necessary.



– Remove spreader rivets -arrows- and detach cover -1-.



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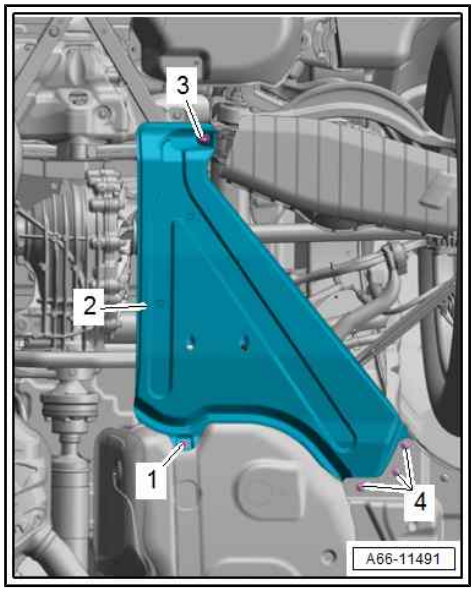
Audi Q7, SQ7

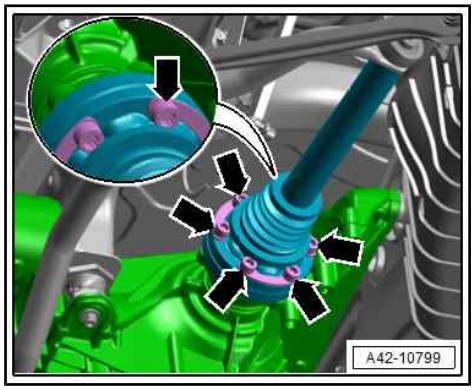
– Remove bolts -1, 3, 4- and detach cover -2-.



All vehicles (continued)

– Unscrew bolts -arrows- for drive shaft (right-side).

– Guide drive shaft upwards out of flange shaft and move to one side.



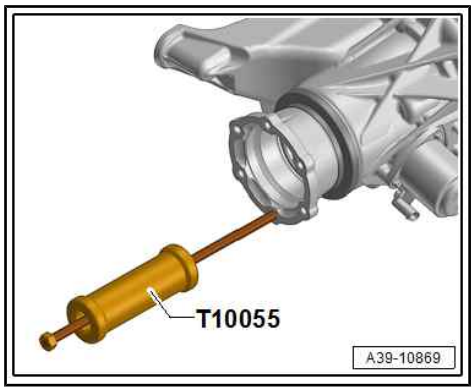
Flange shaft with M8 thread

– Pull out flange shaft (right-side) using puller - T10055- .

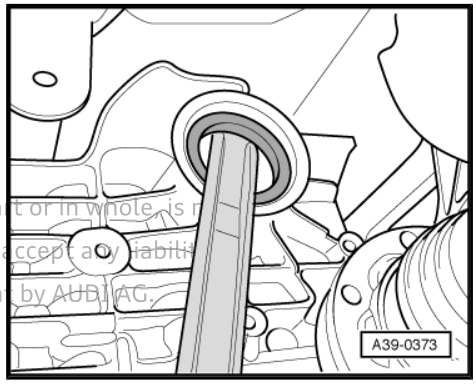
Flange shaft with M10 thread

– Insert spindle of puller - T10055- in any hole in flange shaft and secure with M8 nut.

– Pull out flange shaft (right-side) using puller - T10055- .



– Pry out oil seal with a suitable assembly lever.



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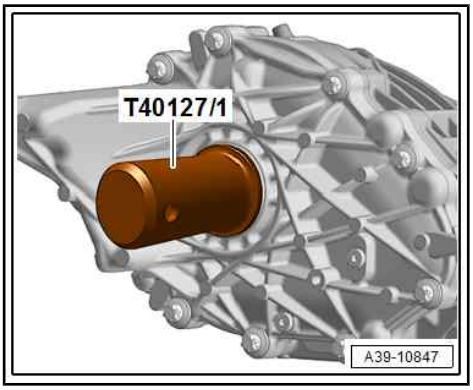
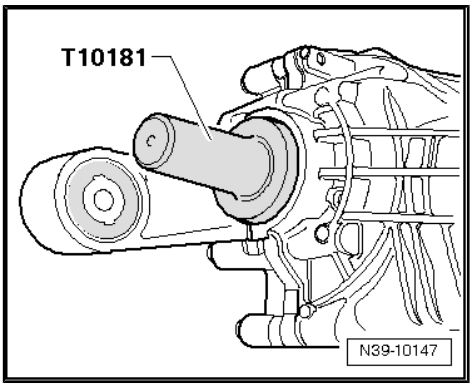
Installing oil seal, final drive 0DB, 0D2, 0G2

- Lightly lubricate outer circumference of oil seal with gear oil.
- Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
- Drive in new oil seal onto stop using assembly tool - T40127/1- . Take care to keep oil seal straight when installing.



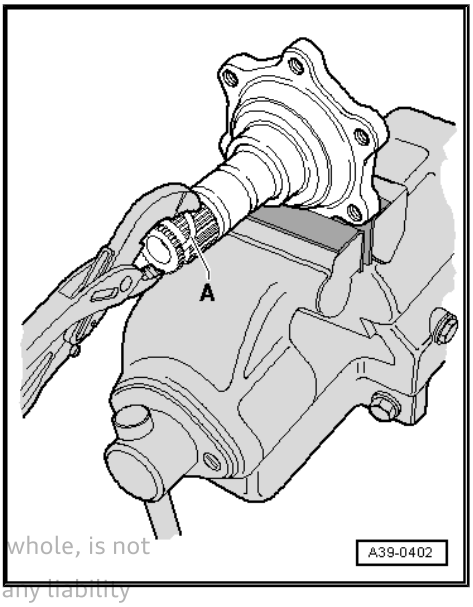
Installing oil seal, final drive 0DG

- Lightly lubricate outer circumference of oil seal with gear oil.
- Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
- Drive in new oil seal onto stop using thrust piece - T10181- . Take care to keep oil seal straight when installing.



All vehicles (continued)

- Clamp flange shaft in vice, using jaw protectors.
- Remove old circlip.
- Using pliers , insert new circlip -A- in groove in flange shaft, taking care not to overstretch circlip.



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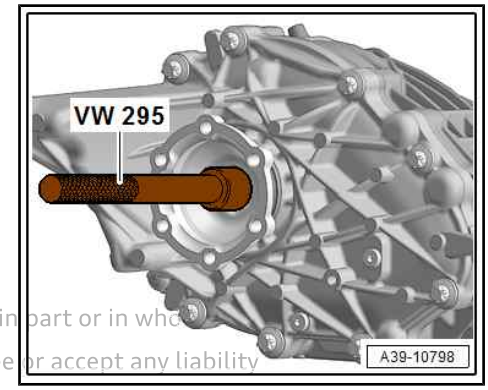
– Drive in flange shaft with drift - VW 295- .



– Fit and tighten drive shaft ⇒ Running gear, axles, steering; Rep. gr. 42 ; Drive shaft; Removing and installing drive shaft .
– Check oil level in rear final drive ⇒ page 107 .

Audi A8

– Lower wheel bearing housing.
– Move engine and gearbox jack - VAS 6931- aside.
– Detach support - T10149- .
– Detach tensioning strap - T10038- .
– Fit rear right wheel ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 44 ; Wheels and tyres .
– Charge air spring system ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 43 ; Air suspension .

• The vehicle must not be lowered from the lifting platform until the system has been recharged.

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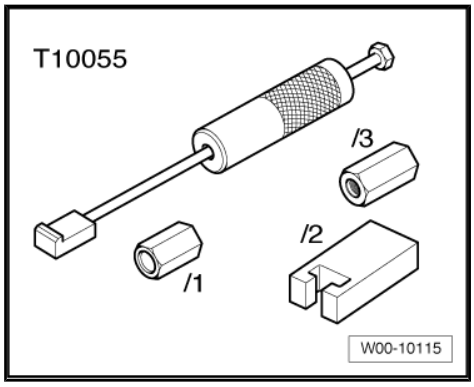
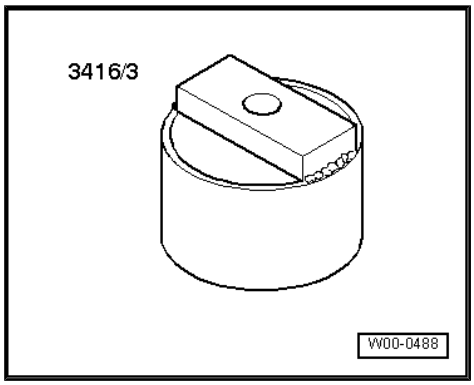
5.3.2 Renewing oil seal (right-side) - final drive 0B0 “quattro ultra”

Special tools and workshop equipment required

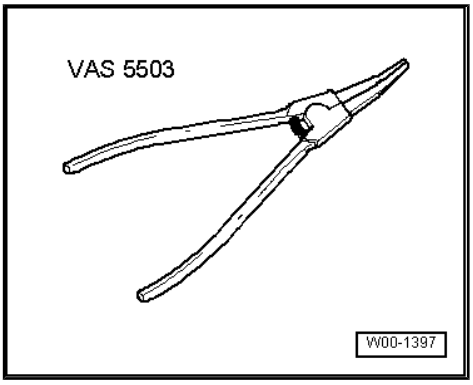
♦ Puller - T10055-



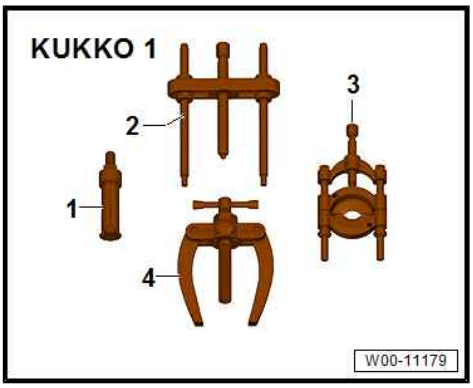
♦ Assembly tool - 3416/3-



♦ Circlip pliers - VAS 5503A-



♦ -1- Internal puller, e.g. KUKKO 21-6 - VAS 251 613-



♦ -4- Counter support, e.g. KUKKO 22-2 - VAS 251 623-

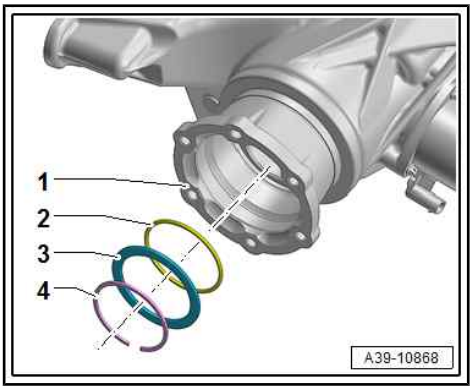
♦ Sealing grease - G 052 128 A1-

• Rear final drive removed ⇒ page 55 .

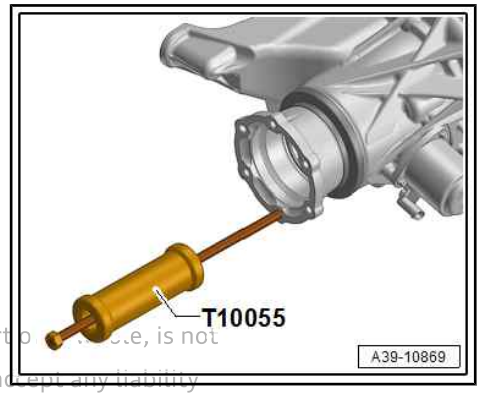
– Observe the general repair instructions ⇒ page 21 .

– Remove circlip -4- using pliers - VAS 5503A- .

– Remove shim -3- and O-ring -2-.



– Detach flange shaft (right-side) using puller - T10055- .



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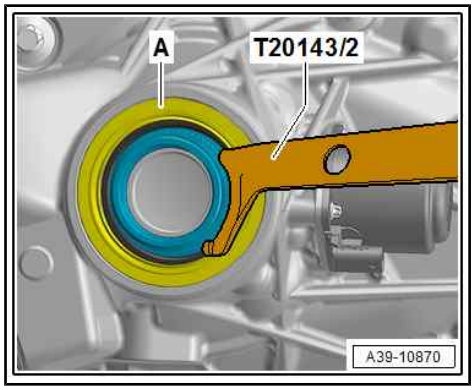
– Pry out oil seal -A- with extractor tool - T20143/2- .



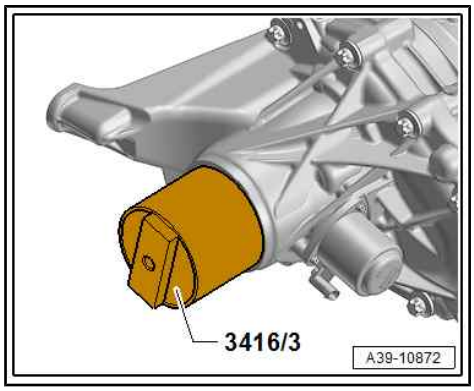
Installing

– Lightly lubricate outer circumference of oil seal with gear oil.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Drive in new oil seal to installation depth using assembly tool - 3416/3- . Take care to keep oil seal straight when installing.

• Installation depth: 7.0 mm ± 0.2 below outer edge of housing



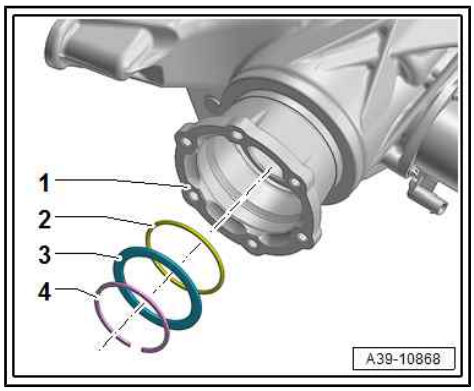
– Fit flange shaft -1-.

– Fit new O-ring -2- and shim -3-.

– Fit new circlip -4-, taking care not to overstretch circlip.

Note

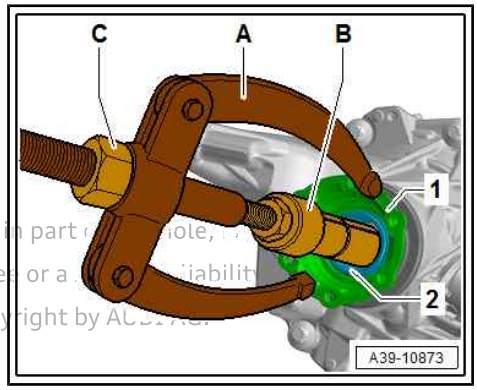
Circlip -4- can only be fitted in groove of stub shaft once flange shaft -1- is under tension.



– Insert internal puller -B- in stub shaft -2- and tension slightly.

– Fit counter-support -A-.

– Tighten nut -C- slightly to pre-tension flange shaft -1-.



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– Now press on shim -1- with two screwdrivers. This will also press circlip -2- into groove of stub shaft.

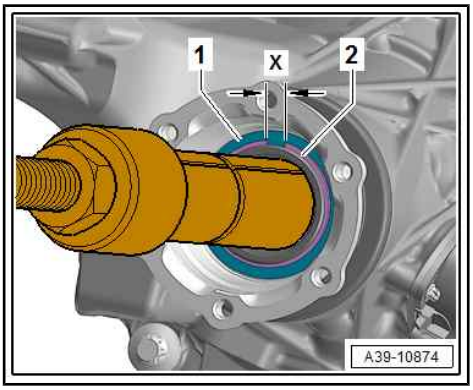
Note

If necessary, drive circlip -2- in further by tapping gently with a hammer until dimension -x- is reached.

- Dimension -x- must be 6 mm (maximum).

– Install rear final drive ⇒ page 55 .

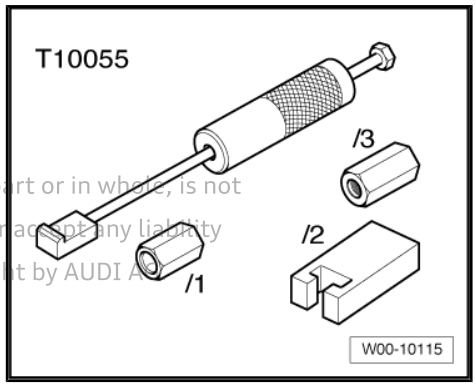
– Check oil level in rear final drive ⇒ page 107 .



5.3.3 Renewing oil seal (right-side) - final drive 09R “quattro ultra”

Special tools and workshop equipment required

♦ Puller - T10055-



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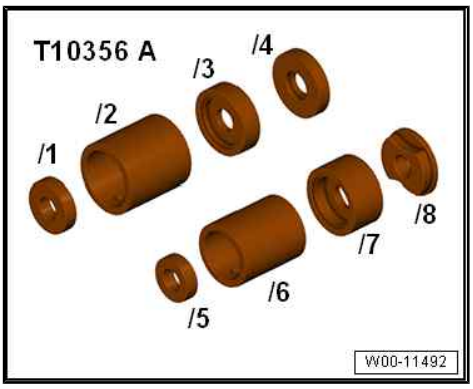
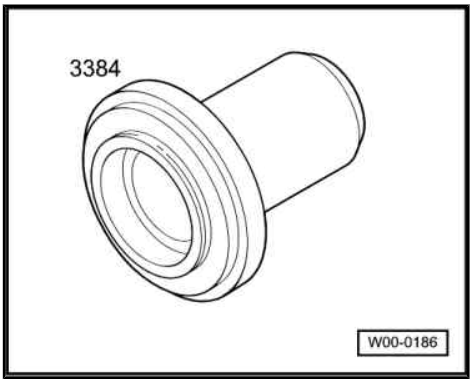
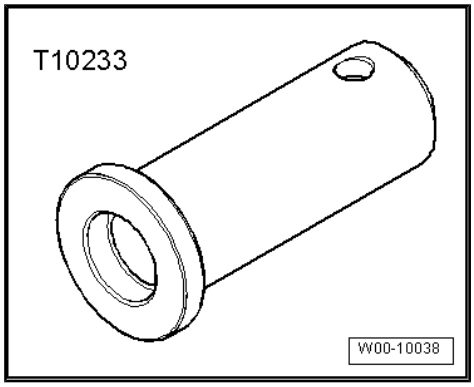
♦ Assembly tool - T10356/2-



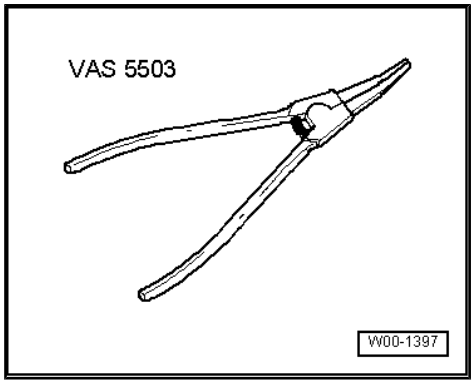
♦ Assembly mandrel - 3384-



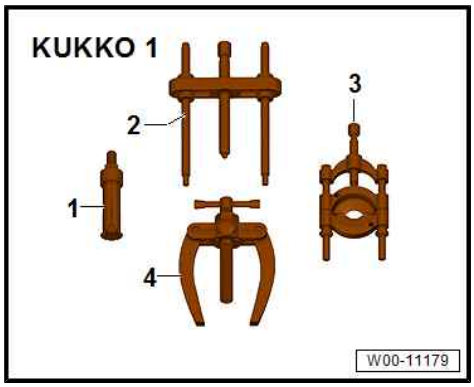
◆ Thrust piece - T10233-



◆ Circlip pliers - VAS 5503A-



◆ -1- Internal puller, e.g. KUKKO 21-6 - VAS 251 613-



◆ -4- Counter support, e.g. KUKKO 22-2 - VAS 251 623-

◆ Sealing grease - G 052 128 A1-

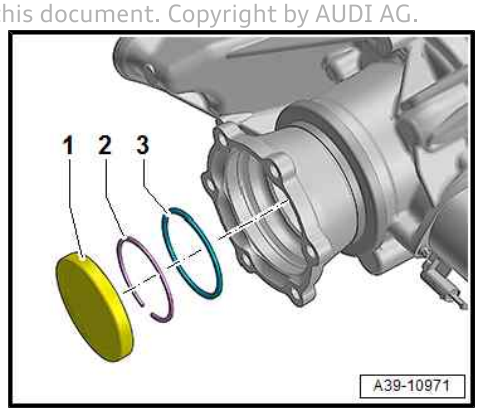
• Rear final drive removed ⇒ page 55 .

– Observe the general repair instructions ⇒ page 21 .

– Using a screwdriver, make a hole in centre of sealing cap -1- and pry it out.

– Remove circlip -2- using pliers - VAS 5503A- .

– Remove shim -3-.



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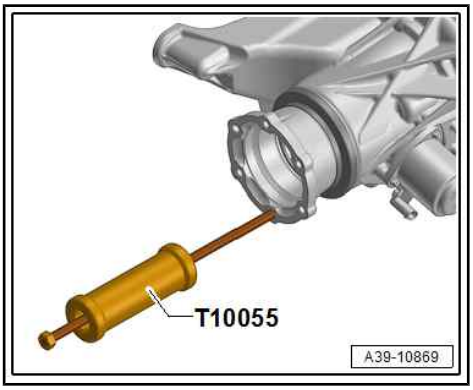
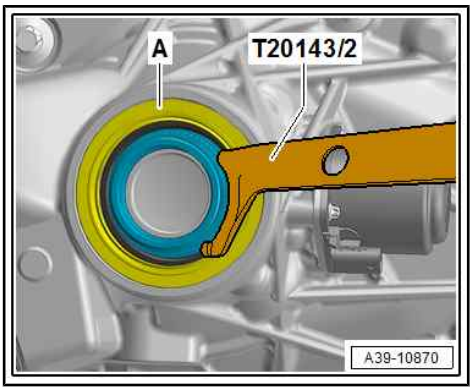
– Detach flange shaft (right-side) using puller - T10055- .



– Pry out oil seal -A- with extractor tool - T20143/2- .



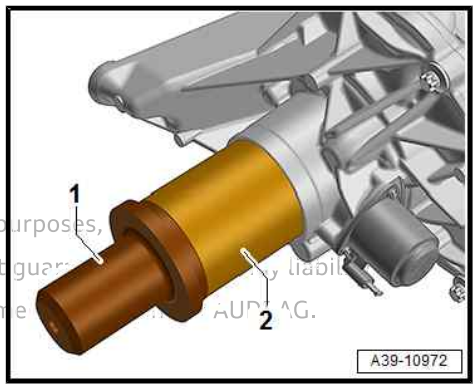
Installing

– Lightly lubricate outer circumference of oil seal with gear oil.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Drive in new oil seal to installation depth using assembly tool - T10356/2- -2- and fitting pin - 3384- -1-. Take care to keep oil seal straight when installing.

• Installation depth: 7 mm ± 0.2 below outer edge of housing



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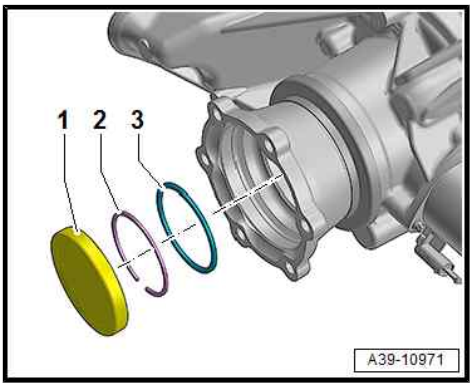
– Fit flange shaft.

– Fit shim -3-.

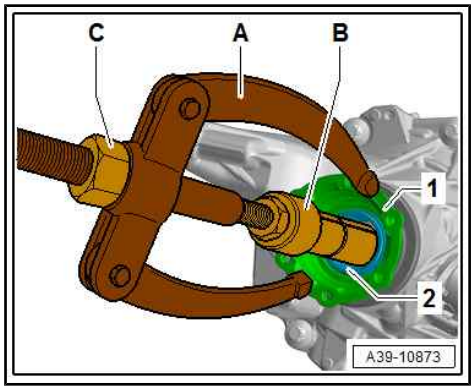
– Fit new circlip -2-, taking care not to overstretch circlip.

Note

Circlip -2- can only be fitted in groove of stub shaft once flange shaft is under tension.



– Insert internal puller -B- in stub shaft -2- and tension slightly.
– Fit counter-support -A-.
– Tighten nut -C- slightly to pre-tension flange shaft -1-.

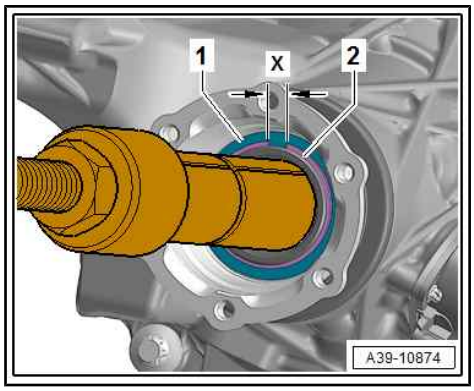


– Now press on shim -1- with two screwdrivers. This will also press circlip -2- into groove of stub shaft.

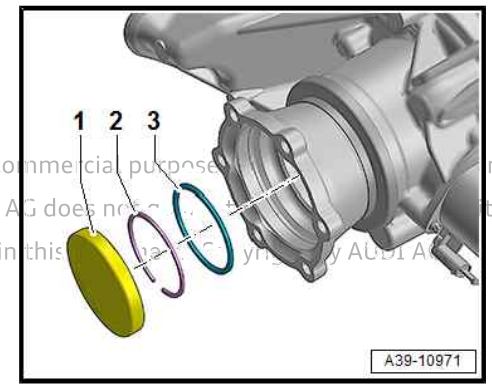
Note

If necessary, drive circlip -2- in further by tapping gently with a hammer until dimension -x- is reached.

• Dimension -x- must be 6 mm (maximum).



– Drive in new sealing cap as far as stop using thrust piece -T10233- .
– Install rear final drive ⇒ page 55 .
– Check oil level in rear final drive ⇒ page 107 .



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5.3.4 Renewing oil seal (right-side) - 0D3 and 0BX “quattro sport”

• The procedure for renewing the oil seal (right-side) is described in the chapter “Renewing oil seal (left-side)”.

⇒ “5.2.2 Renewing oil seal (left-side) - 0D3 quattro sport and 0BX quattro sport ”, page 137

5.4 Renewing input shaft oil seal

⇒ “5.4.1 Renewing input shaft oil seal - 0DB, 0D2, 0G2, 09R quattro ultra, 0B0 quattro ultra ”, page 151

⇒ “5.4.2 Renewing input shaft oil seal - 0D3 quattro sport ”, page 157

⇒ “5.4.3 Renewing input shaft oil seal - 0DG”, page 163

⇒ “5.4.4 Renewing input shaft oil seal - 0BX quattro sport ”, page 169

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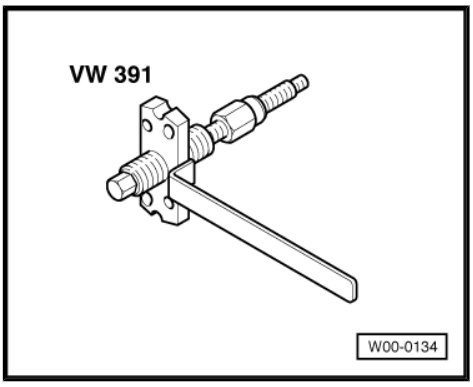
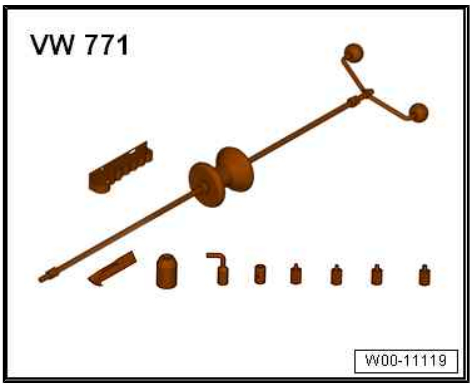
5.4.1 Renewing input shaft oil seal - 0DB, 0D2, 0G2, 09R “quattro ultra”, 0B0 “quattro ultra”

Special tools and workshop equipment required

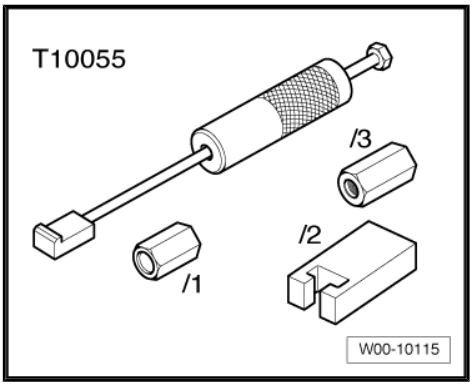
- Drive flange installing tool - VW 391-



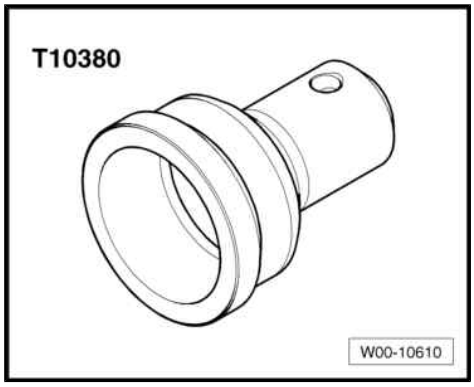
- Adapter - VW 771/40- from multi-purpose tool set - VW 771-



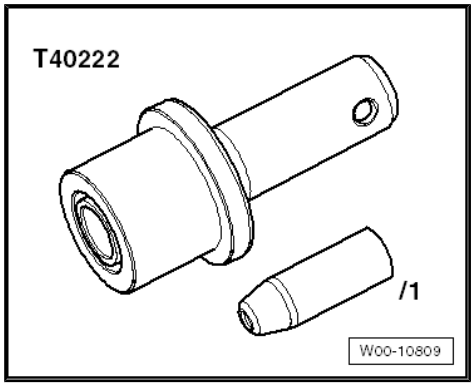
- Puller - T10055-



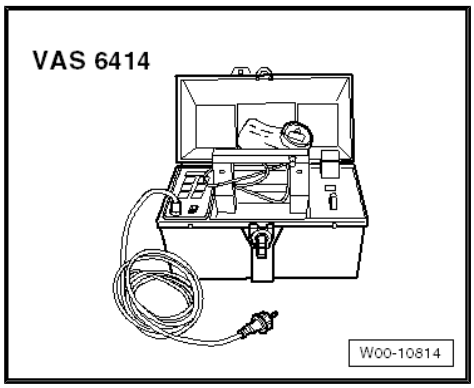
- Thrust piece - T10380-



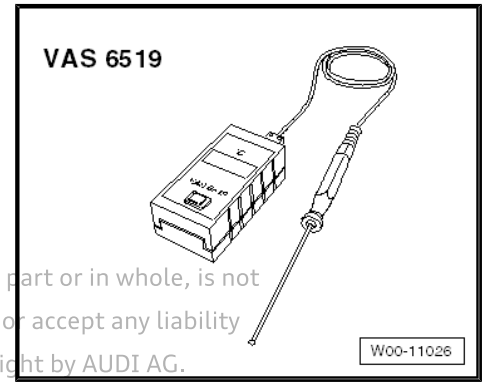
- -2- Adapter - T10055/2-
- Assembly sleeve - T40222/1-



- Inductive heater - VAS 6414-



- Or
- Hotplate (commercially available) with temperature gauge - VAS 6519-



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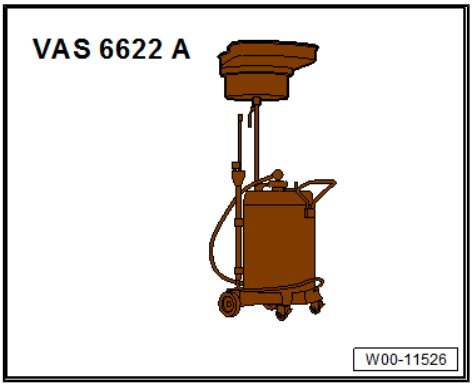
- Used oil collection and extraction unit - VAS 6622A-



- Sealing grease - G 052 128 A1-
- Bolts (2x) M 8 x 30

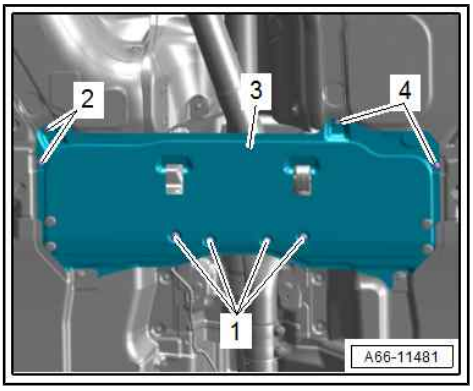
Removing

- Rear final drive is installed.
- Refer to general repair instructions ⇒ page 21 .

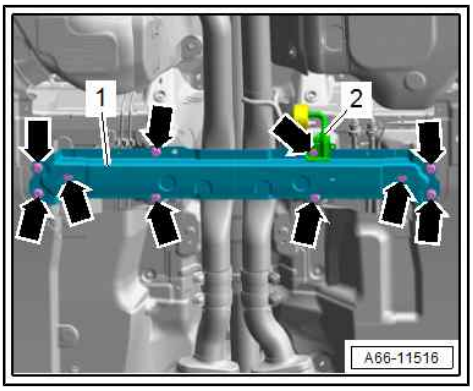
– Place vehicle on lifting platform.

Audi Q7

– Remove underbody trim (centre) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



– Unscrew bolts -arrows- and remove cross member -1-.



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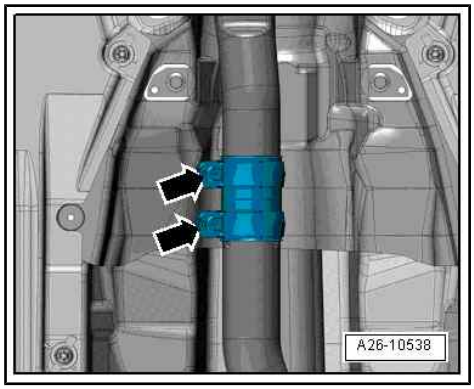
NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**



– Unfasten clamp(s) -arrows- and disconnect exhaust system.

– Tie front exhaust pipe(s) up to side of underbody.

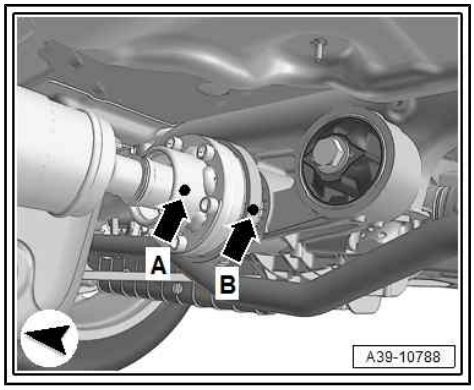
Audi A4, A5

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

All vehicles (continued)

– Detach propshaft from rear final drive ⇒ page 45 .

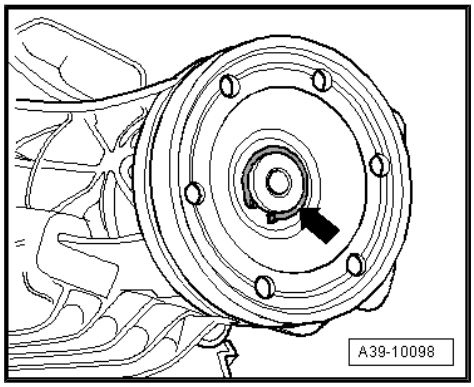
– Tie propshaft to one side.



– Remove high-temperature grease in propshaft flange on rear final drive.

– Remove circlip -arrow-.

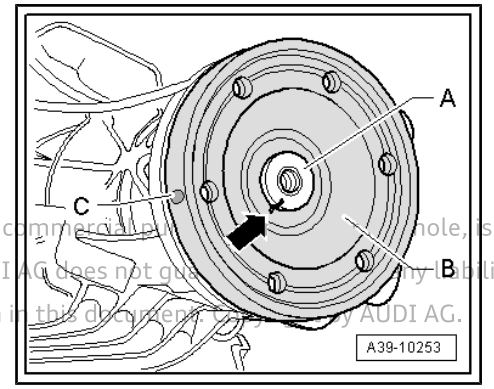
• Renew circlip with new circlip of same thickness if overstretched or damaged during removal. For correct version, refer to ⇒ Electronic parts catalogue



– Mark position of flange -B- for propshaft relative to pinion shaft -A- -arrow-.

• This marking -arrow- is necessary in order to maintain the original position of the coloured dot -C- on the outside of the flange.

• This is the only effective way to minimise the imbalance in the rear final drive.



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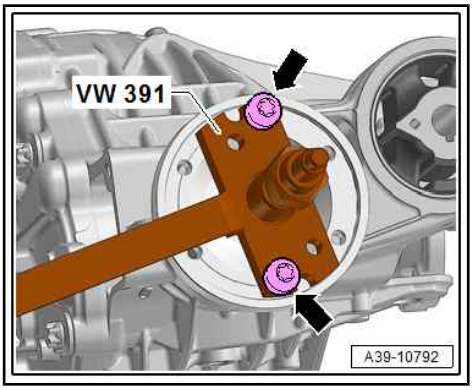
– Secure installing tool - VW 391- to propshaft flange using 2 M8 x 30 bolts -arrow-.
– Pull off propshaft flange with drive flange installing tool - VW 391- .



– Place used oil collection and extraction unit - VAS 6622A- underneath.
– Pierce metal ring of oil seal -A- in direction of -arrow - using e.g. a scriber -B-.

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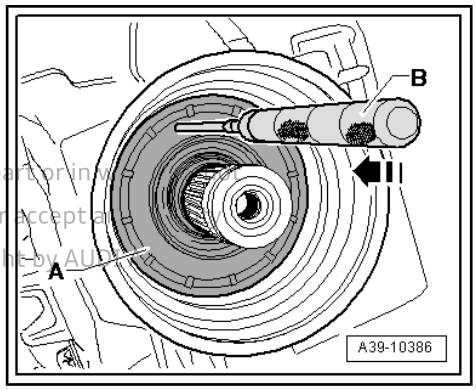
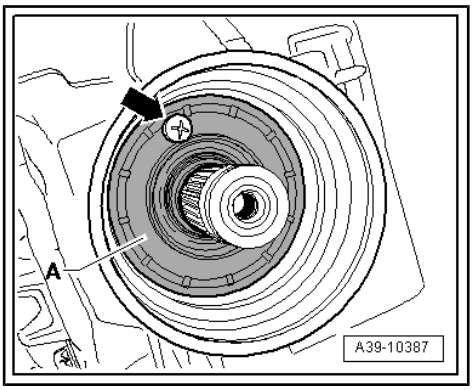
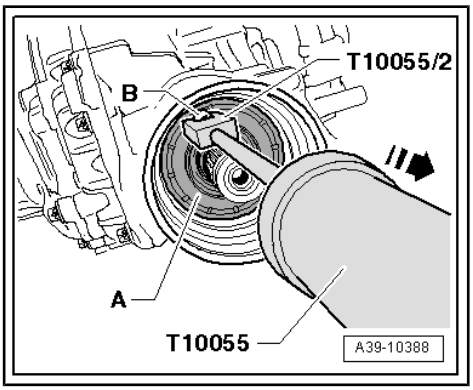


– Then screw a self-tapping screw -arrow- into this hole in oil seal -A-.



– Use self-tapping screw -B- to pull out oil seal -A- for propshaft flange in direction of -arrow-.



Installing

Installation is carried out in reverse sequence. Note the following:

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

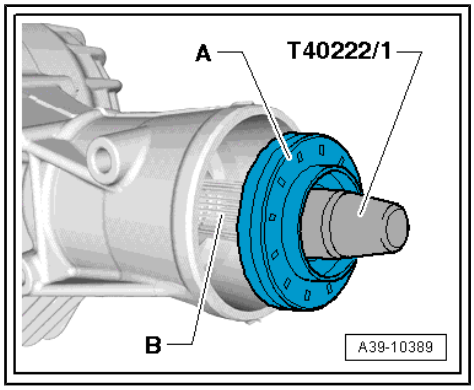
– Fit new oil seal -A- on assembly sleeve - T40222/1- .

Note:

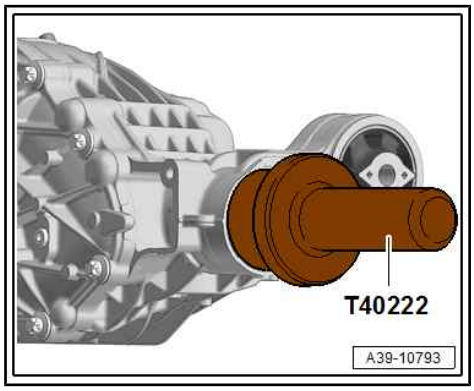
♦ Check that spring of oil seal behind sealing lip is in installation position.

– Lightly lubricate outer circumference of oil seal with gear oil.

– Fit assembly sleeve - T40222/1- onto pinion shaft -B- together with oil seal -A-.



– Drive new oil seal in to installation depth using assembly tool - T40222- .



Installation depths

Final drive	Installation depth [mm] below edge of housing
0DB	25.5 ± 0.2
0B0 “quattro ultra”	25.5 ± 0.2
0D2	24.0 ± 0.2
0G2	24.0 ± 0.2
09R “quattro ultra”	24.0 ± 0.2

– Remove assembly tool - T40222- and assembly sleeve - T40222/1- .

⚠ CAUTION

Hot components.

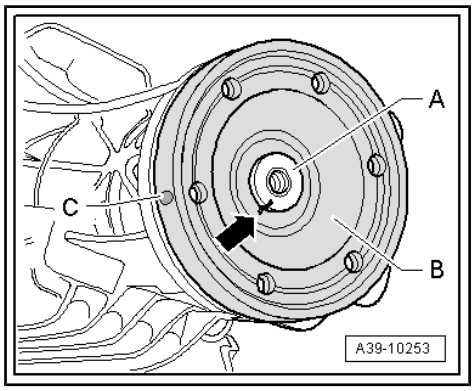
Risk of burns to hands.

– Put on protective gloves.

– If using a hotplate , the temperature value must be monitored constantly with temperature gauge - VAS 6519- .

– Heat propshaft flange -B- to 115 °C using inductive heater - VAS 6414- or a hotplate .

– Position propshaft flange -B- on pinion shaft -A- so that markings -arrow- are in line.



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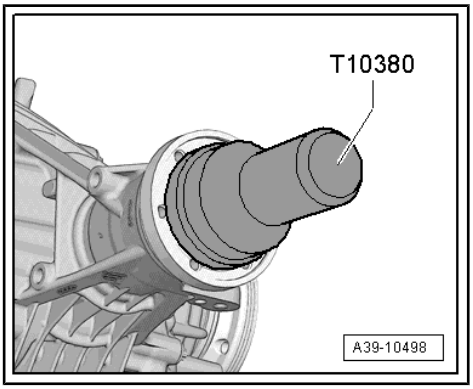
– Drive on propshaft flange as far as stop using thrust piece - T10380- .

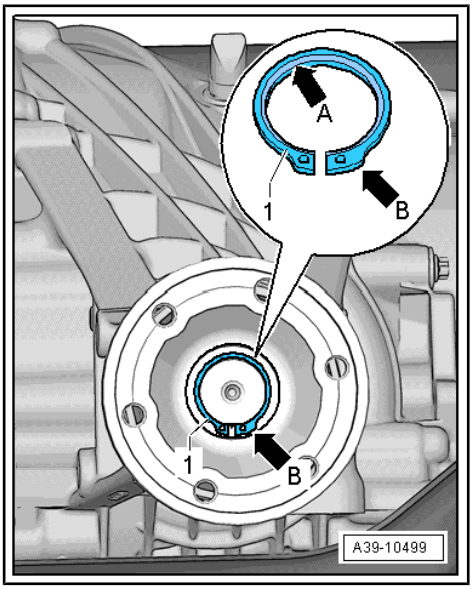


Install circlip -1- as follows:

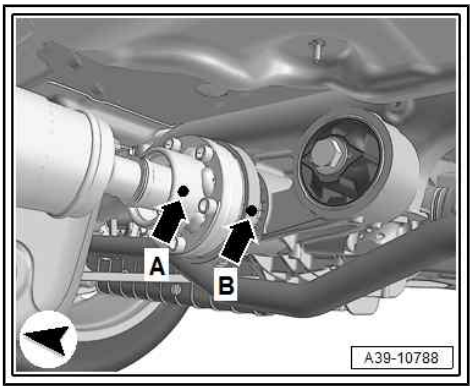
- Always renew circlip -1-.
- Chamfer on inner diameter of circlip -arrow A- must face outwards towards propshaft.
- The wider lug on the circlip -arrow B- must be on the right side, as shown in the illustration.

When renewing flange for propshaft, please note:

- The thickness of the circlip -1- must be re-determined.
- To do so, determine the thickest circlip -1- that will just fit in the groove and install it. For part number refer to ⇒ Electronic parts catalogue .



– Attach propshaft to rear final drive ⇒ page 46 .
– Top up gear oil in rear final drive and check oil level ⇒ page 107 .
– Install cross member ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody struts .
– Assemble exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/ silencers; Exploded view - silencers .



5.4.2 Renewing input shaft oil seal - 0D3 “quattro sport”

Special tools and workshop equipment required

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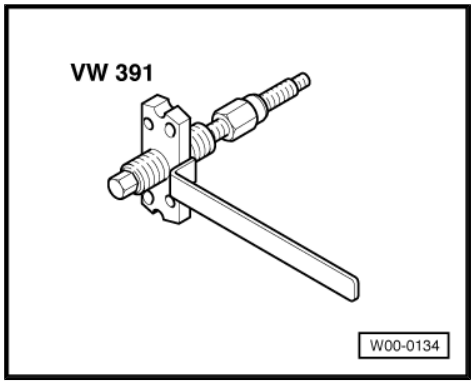
- Drive flange installing tool - VW 391-



- Puller - T10055-

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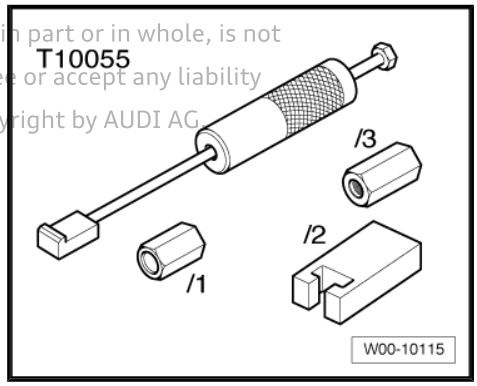
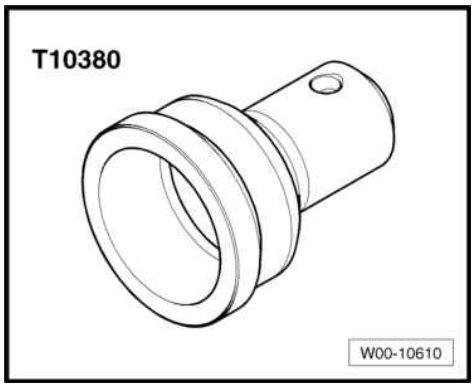
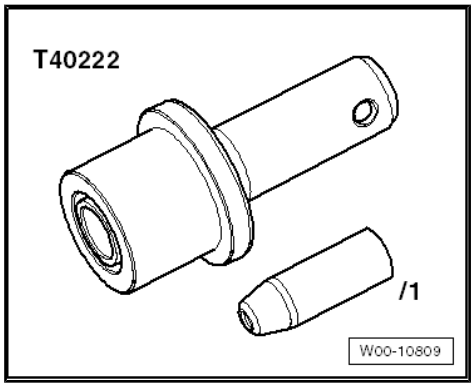


- -2- Adapter - T10055/2-
- Bolts (2x) M 8 x 30
- Thrust piece - T10380-

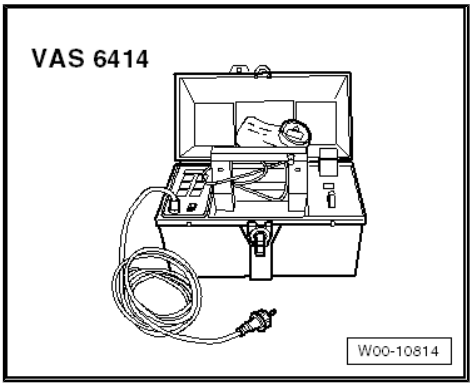


- Thrust piece - T40222-

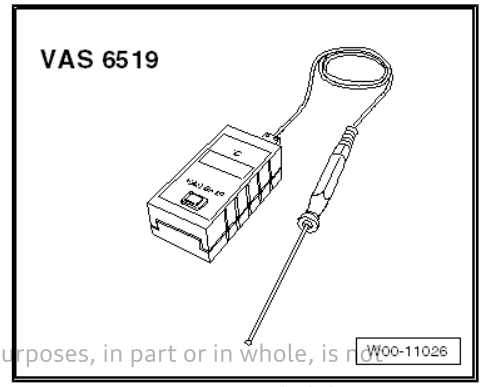


- Assembly sleeve - T40222/1-
- Sealing grease - G 052 128 A1-

- Inductive heater - VAS 6414-



- Or
- Hotplate (commercially available) with temperature gauge - VAS 6519-



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Removing

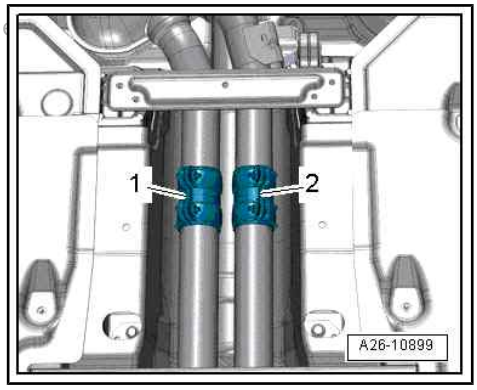
- Rear final drive installed
- Refer to general repair instructions ⇒ page 21 .

– Disconnect exhaust system at clamps -1- and -2-.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

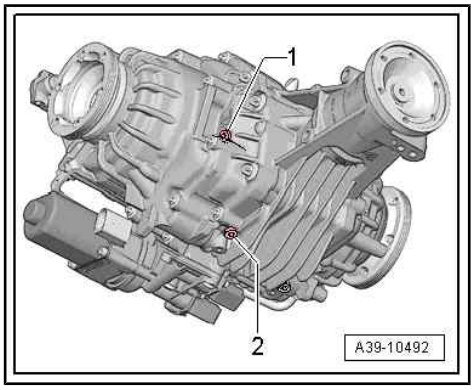
Note:

- A second mechanic is required for removing the rear section of the exhaust system.

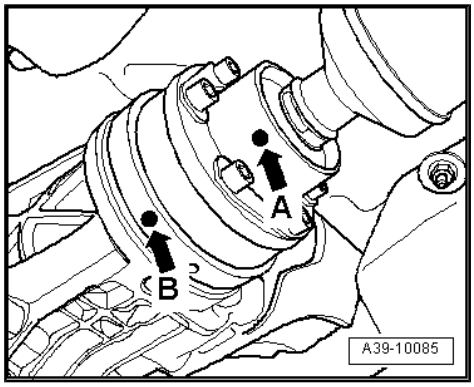


– Unscrew gear oil drain plug -2- and drain off approx. 300 ml of gear oil.

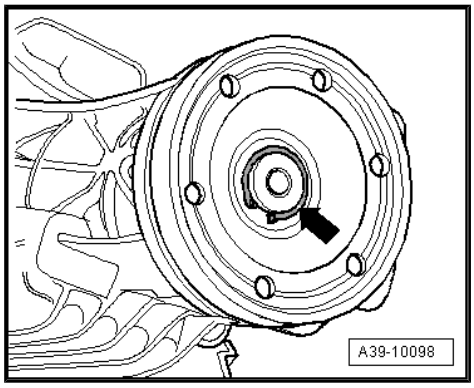
– Screw in and tighten new drain plug -2-. Tightening torque ⇒ Item 17 (page 89)



– Detach propshaft from rear final drive ⇒ page 45 .
– Tie propshaft to one side.

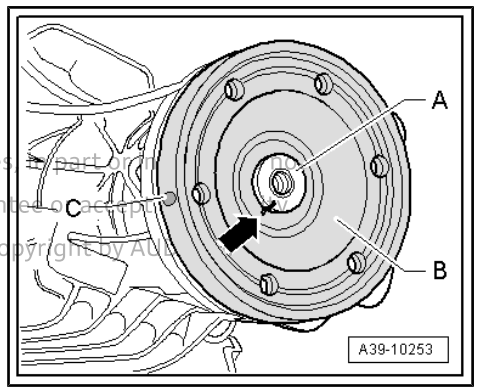


– Remove high-temperature grease in propshaft flange on rear final drive.
– Remove circlip -arrow-.



– Mark position of flange -B- for propshaft relative to pinion shaft -A- -arrow-.

• This marking -arrow- is necessary in order to maintain the original position of the coloured dot -C- on the outside of the flange.
• This is the only effective way to minimise the imbalance in the rear final drive.



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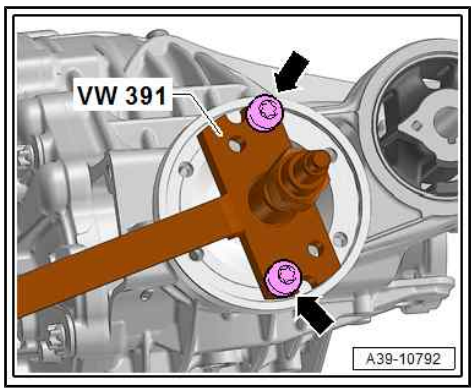
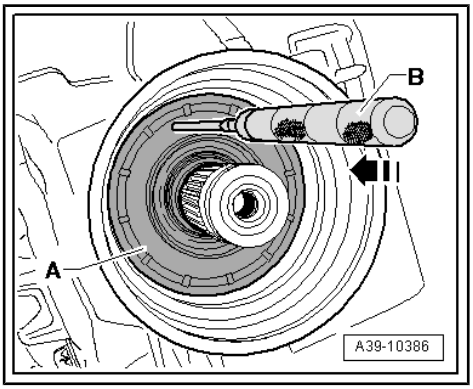
– Screw 2 M 8 x 30 mm bolts -arrows- into flange.
– Pull off propshaft flange using drive flange installing tool - VW 391- .



– Pierce metal ring of oil seal -A- in direction of -arrow - using e.g. a scriber -B-.



– Then screw a self-tapping screw -arrow- into this hole in oil seal -A-.

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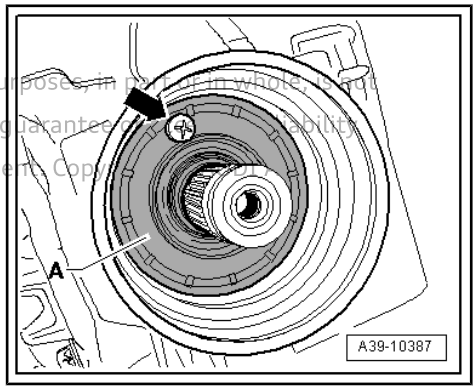
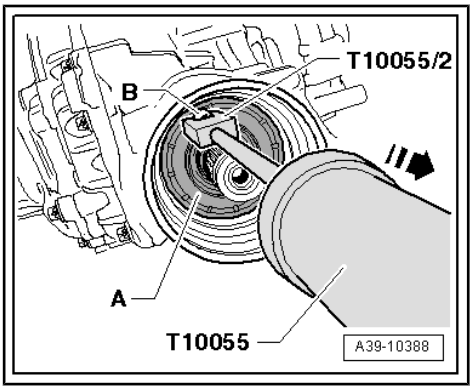


– Pull out oil seal -A- for propshaft flange in direction of -arrow-.

-B- Self-tapping screw



Installing

Installation is carried out in reverse sequence. Note the following:

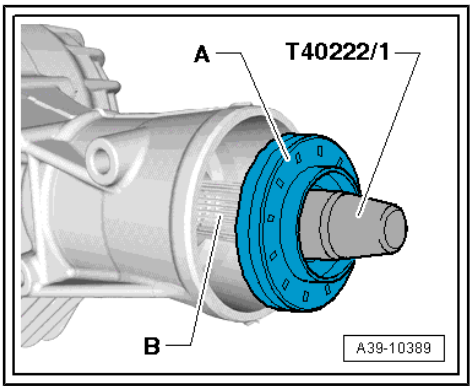
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Fit new oil seal -A- on assembly sleeve - T40222/1- .

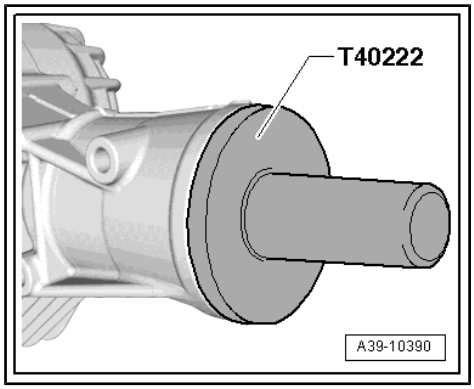
– Check that spring of oil seal behind sealing lip is in installation position.

– Lightly lubricate outer circumference of oil seal with gear oil.

– Fit assembly sleeve - T40222/1- onto pinion shaft -B- together with oil seal -A-.



– Drive in new oil seal onto stop (take care to keep seal straight).



– Heat propshaft flange -B- to 115 °C using inductive heater - VAS 6414- or a hotplate .

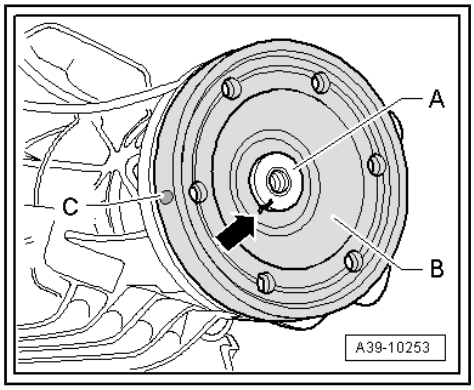
CAUTION

Hot components.

Risk of burns to hands.

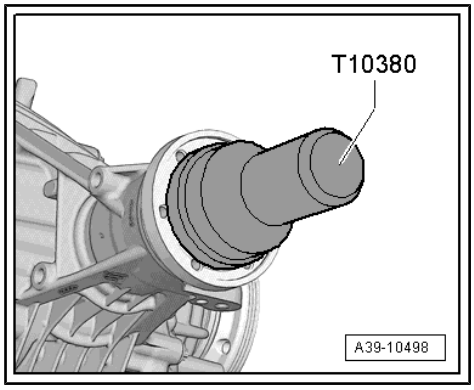
– Put on protective gloves.

– If using a hotplate , the temperature value must be monitored constantly with temperature gauge - VAS 6519- .



– Position propshaft flange -B- on pinion shaft -A- so that markings -arrow- are in line.

– Drive on propshaft flange as far as stop using thrust piece - T10380- .



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Install circlip -1- as follows:

- Always renew circlip -1-.
- Chamfer on inner diameter of circlip -arrow A- must face outwards towards propshaft.
- The wider lug on the circlip -arrow B- must be on the right side, as shown in the illustration.

– Measure thickness of old circlip -1-.

– Replace circlip -1- with a new circlip of the same thickness ⇒ Electronic parts catalogue .

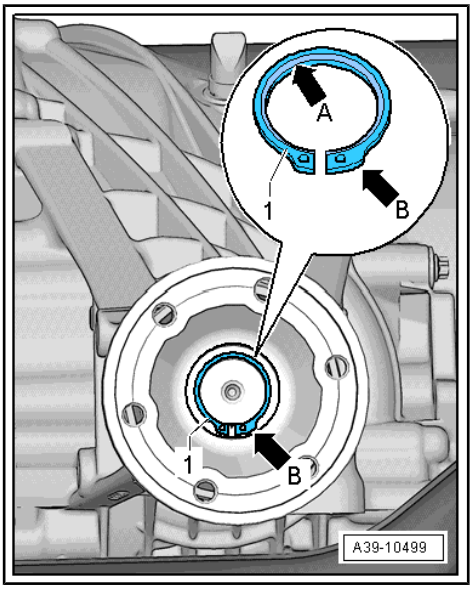
– Fit new circlip -1-.

- If the propshaft flange is being renewed, the thickness of the circlip -arrow- must be re-determined.
- To do so, determine the thickest circlip -arrow- that will just fit in the groove and install it. For part number refer to ⇒ Electronic parts catalogue .

– Top up gear oil in rear final drive 0D3 ⇒ page 111 .

– Attach propshaft to rear final drive ⇒ page 46 .

– Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



5.4.3 Renewing input shaft oil seal - 0DG

Special tools and workshop equipment required

♦ Thrust piece - VW 431-

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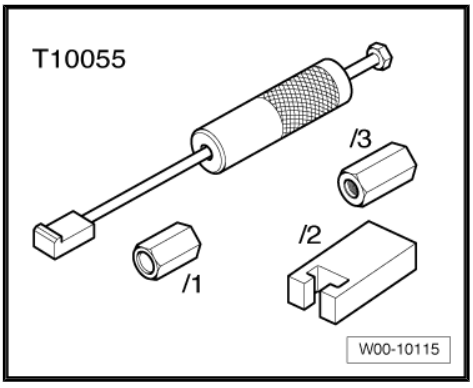
♦ Puller - T10055-



♦ -2- Adapter - T10055/2-

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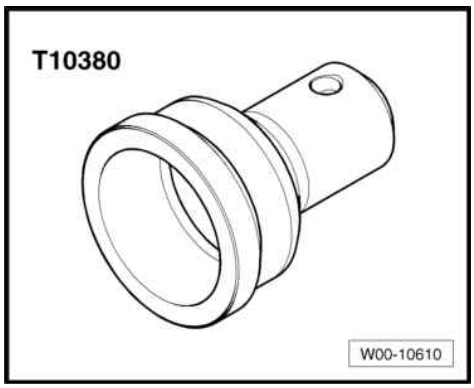
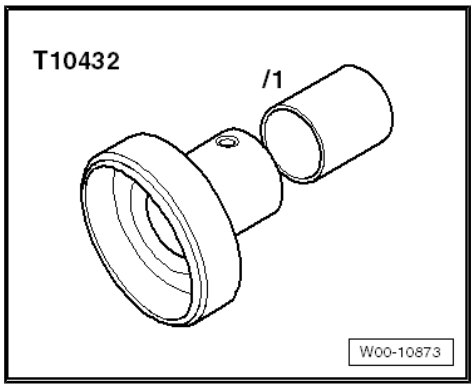
- Thrust washer from assembly tool - T10134-

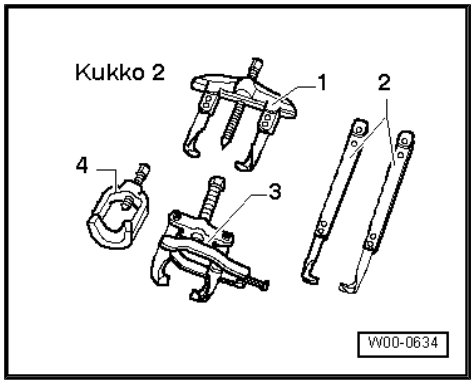
- Thrust piece - T10380-



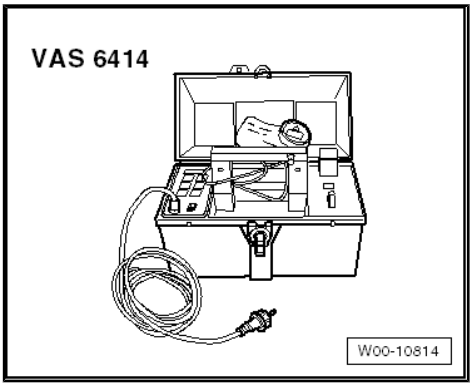
- Assembly tool - T10432-



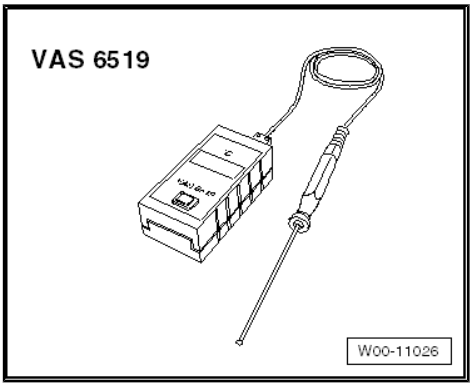
- -1- Two-arm puller - Kukko 20/10-



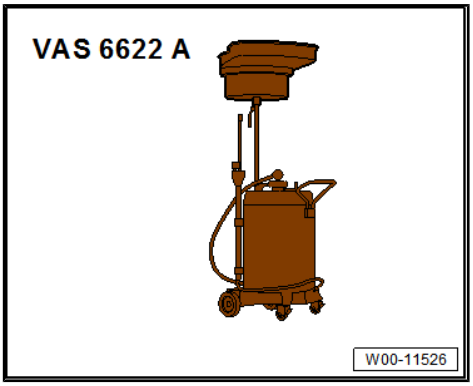
- Inductive heater - VAS 6414-



- Or
- Hotplate (commercially available) with temperature gauge - VAS 6519-



- Used oil collection and extraction unit - VAS 6622A-



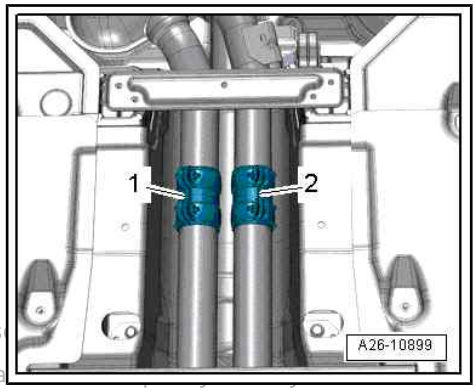
- Sealing grease - G 052 128 A1-

Removing

- Rear final drive installed

– Disconnect exhaust system at clamps -1- and -2-.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



Note:

- A second mechanic is required for removing the rear section of the exhaust system.

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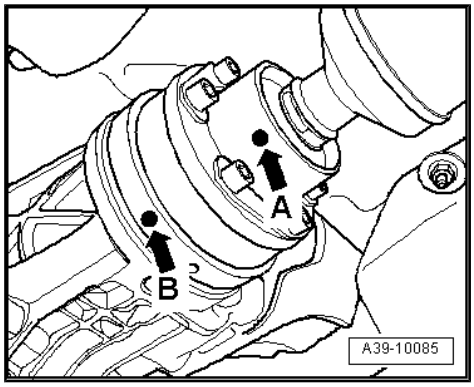
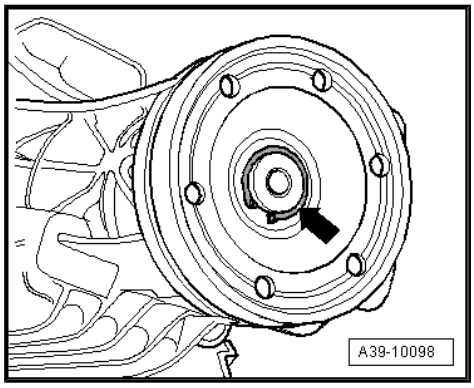
– Detach propshaft from rear final drive ⇒ page 45 .
– Guide propshaft downwards between fuel tank and rear sub-frame and tie up on one side.



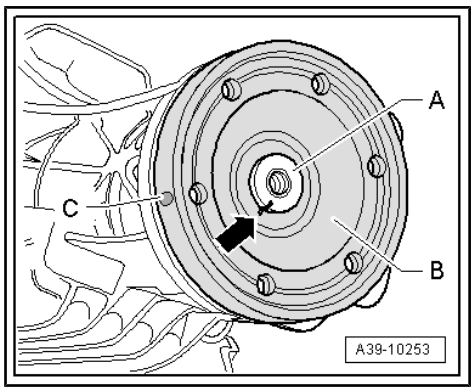
– Remove high-temperature grease in propshaft flange on rear final drive.
– Remove circlip -arrow-.



– Mark position of flange -B- for propshaft relative to pinion shaft -A- -arrow-.

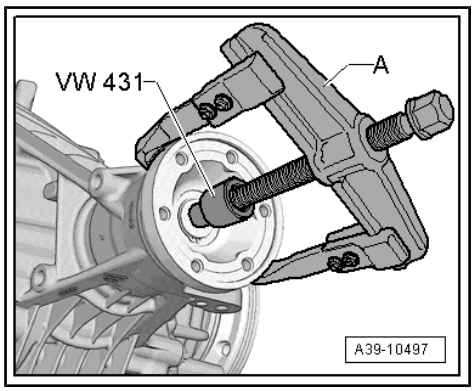
♦ This marking -arrow- is necessary in order to maintain the original position of the coloured dot -C- on the outside of the flange.

♦ This is the only effective way to minimise the imbalance in the rear final drive.



– Pull off propshaft flange.

A - E.g. two-arm puller - Kukko 20-10-



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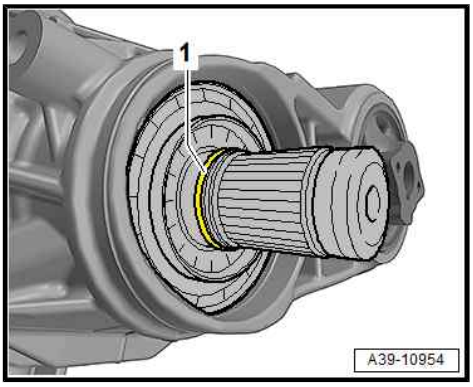
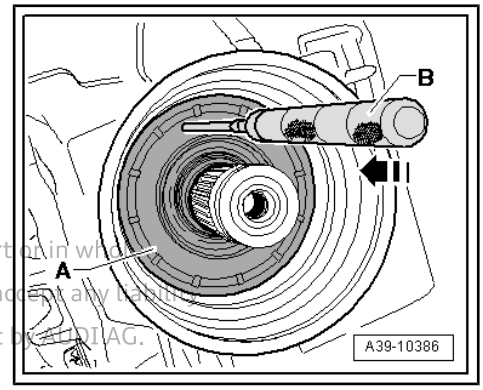
– Detach O-ring -1-.



– Place used oil collection unit underneath.
– Pierce metal ring of oil seal -A- in direction of -arrow - using e.g. a scriber -B-.



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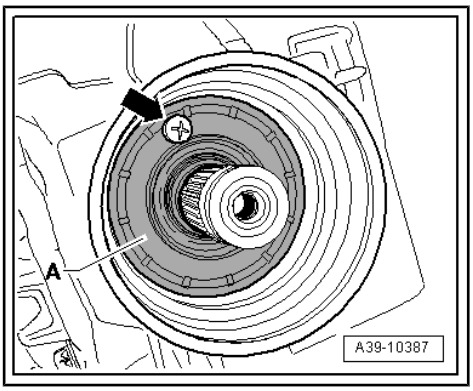
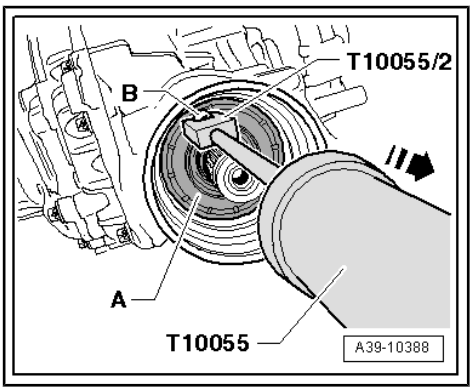
– Then screw a self-tapping screw -arrow- into this hole in oil seal -A-.



– Pull out oil seal -A- for propshaft flange in direction of -arrow-.

B - Self-tapping screw



Installing

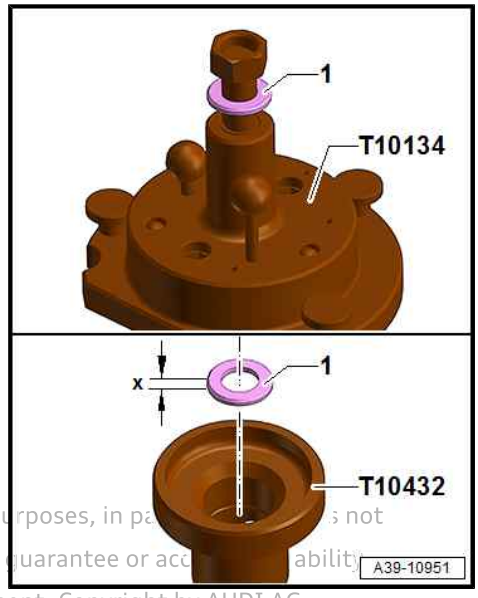
Installation is carried out in reverse sequence. Note the following:

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
– Lightly lubricate outer circumference of oil seal with gear oil.
– Fit new oil seal onto pinion shaft.

Prepare assembly tool - T10432- as follows:

– Remove thrust washer -1- from assembly tool - T10134- and insert in assembly tool - T10432- .

• Dimension x = 2.5 mm



CAUTION

Oil seal will be pressed in incorrectly if it is fitted without thrust washer -1-.

Risk of oil seal leaking

– A thrust washer of dimension -x- must be inserted to ensure that the oil seal is fitted correctly.

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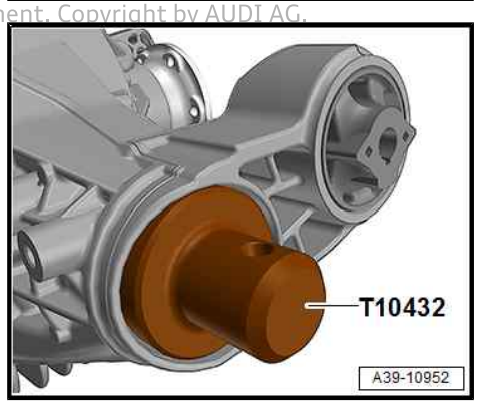
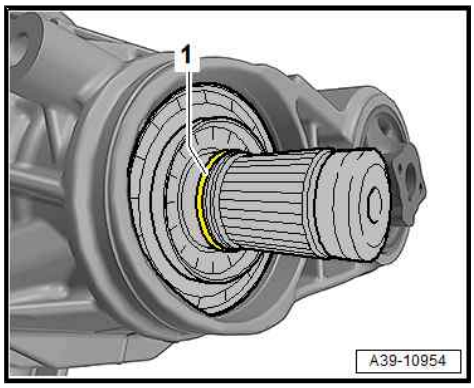
– Drive in new oil seal onto stop (take care to keep seal straight).



– Lightly lubricate new O-ring -1- with gear oil and fit on pinion shaft.



– Heat propshaft flange -B- to 120 °C using inductive heater - VAS 6414- or a hotplate .

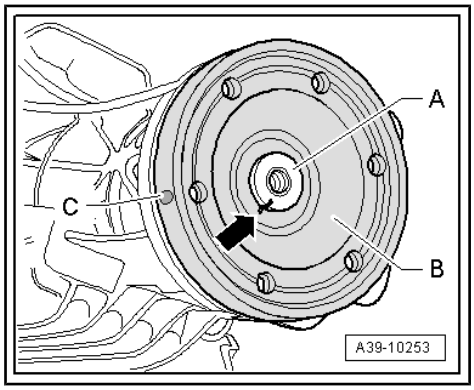
CAUTION

Hot components.

Risk of burns to hands.

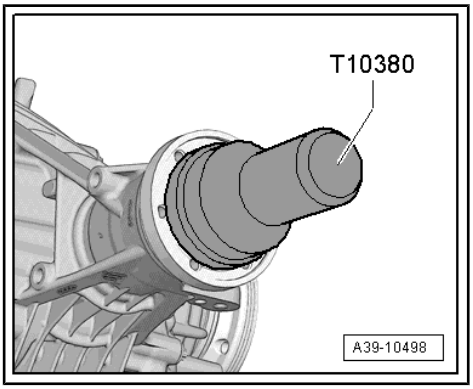
– Put on protective gloves.

– If using a hotplate , the temperature value must be monitored constantly with temperature gauge - VAS 6519- .

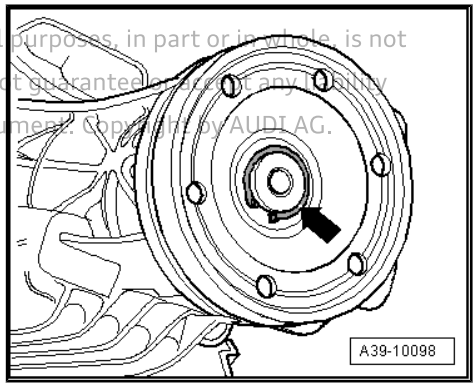


– Position propshaft flange -B- on pinion shaft -A- so that markings -arrow- are in line.

– Drive on propshaft flange as far as stop using thrust piece - T10380- .



– Fit circlip -arrow-.
– Top up gear oil in rear final drive and check oil level ⇒ page 107 .
– Attach propshaft to rear final drive ⇒ page 46 .
– Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



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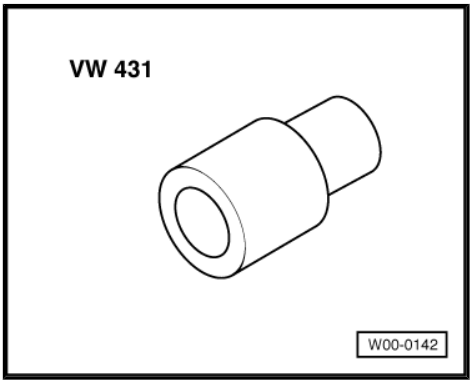
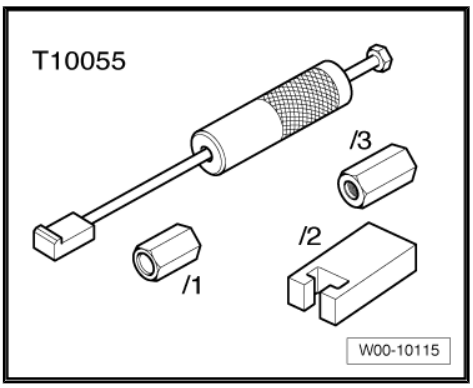
5.4.4 Renewing input shaft oil seal - 0BX “quattro sport”

Special tools and workshop equipment required

♦ Thrust piece - VW 431-

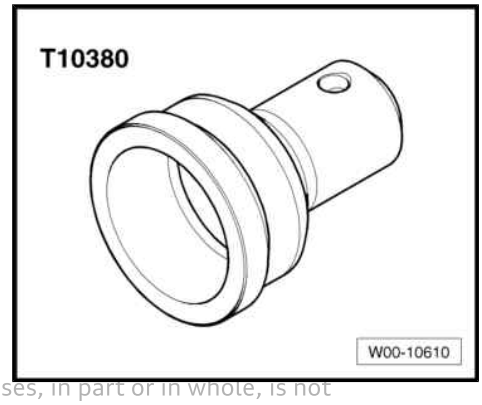


♦ Puller - T10055-



♦ -2- Adapter - T10055/2-

- Thrust piece - T10380-



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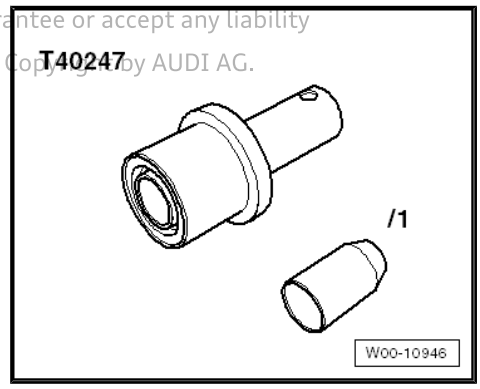
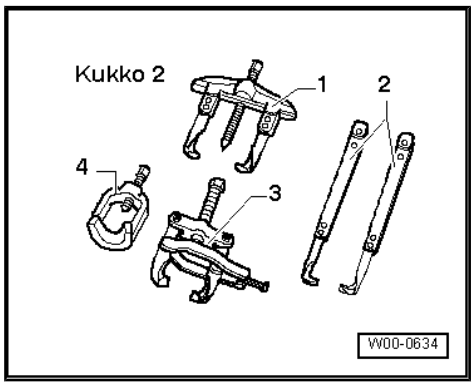
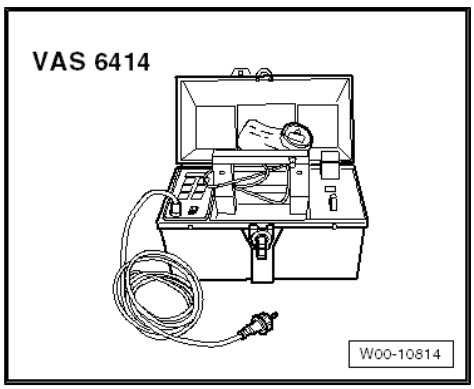
- Assembly tool - T40247-



- Assembly sleeve - T40247/1-
- -1- Two-arm puller - Kukko 20/10-

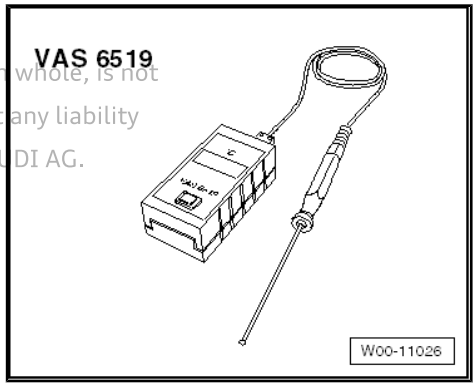


- Inductive heater - VAS 6414-



- Or

♦ Hotplate (commercially available) with temperature gauge - VAS 6519-



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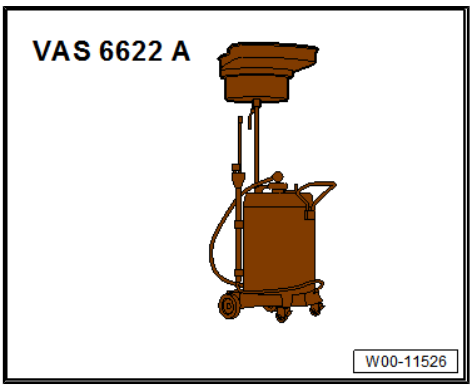
♦ Used oil collection and extraction unit - VAS 6622A-



♦ Sealing grease - G 052 128 A1-

Removing

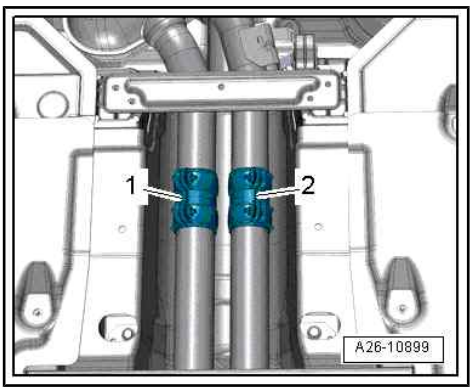
- Rear final drive installed

– Disconnect exhaust system at clamps -1- and -2-.

– Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

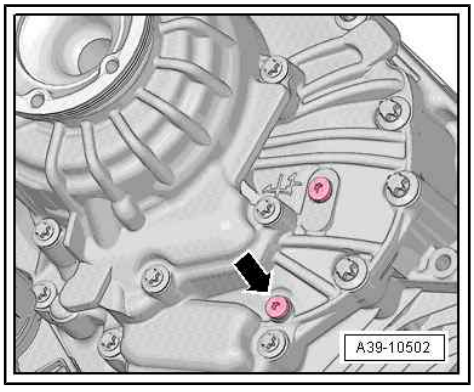
Note:

- A second mechanic is required for removing the rear section of the exhaust system.

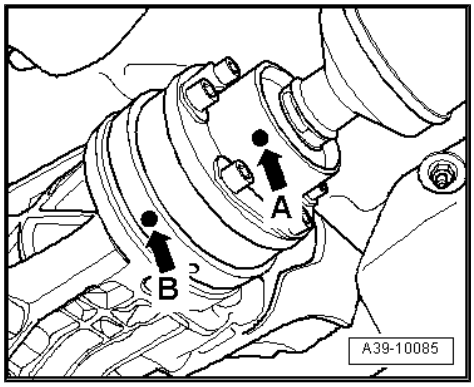


– Unscrew gear oil drain plug -arrow- and drain off approx. 300 ml of gear oil.

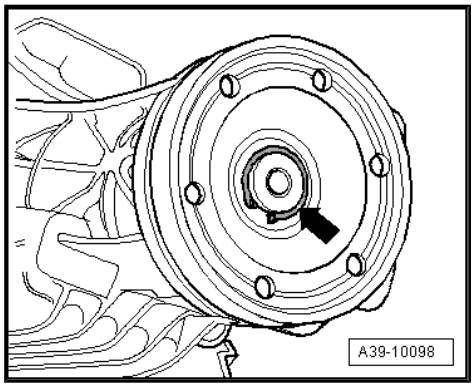
– Screw in and tighten new drain plug -arrow-. Tightening torque ⇒ Item 17 (page 89)



– Detach propshaft from rear final drive ⇒ page 45 .
– Guide propshaft downwards between fuel tank and rear sub-frame and tie up on one side.



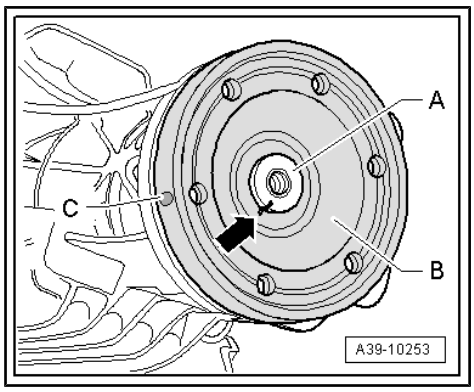
– Remove high-temperature grease in propshaft flange on rear final drive.
– Remove circlip -arrow-.



– Mark position of flange -B- for propshaft relative to pinion shaft -A- -arrow-.

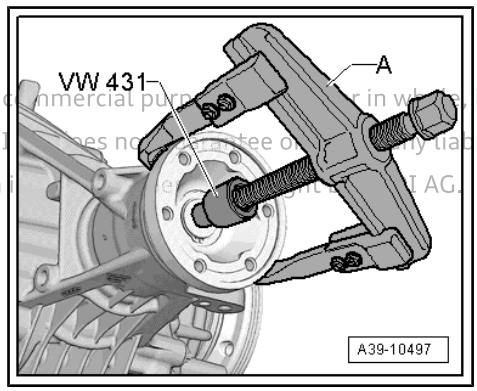
♦ This marking -arrow- is necessary in order to maintain the original position of the coloured dot -C- on the outside of the flange.

♦ This is the only effective way to minimise the imbalance in the rear final drive.



– Pull off propshaft flange.

A - E.g. two-arm puller - Kukko 20-10-



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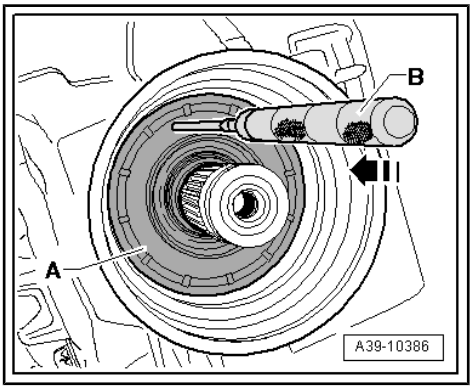
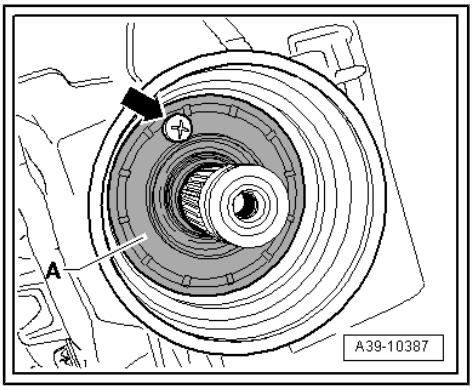
– Pierce metal ring of oil seal -A- in direction of -arrow - using e.g. a scriber -B-.

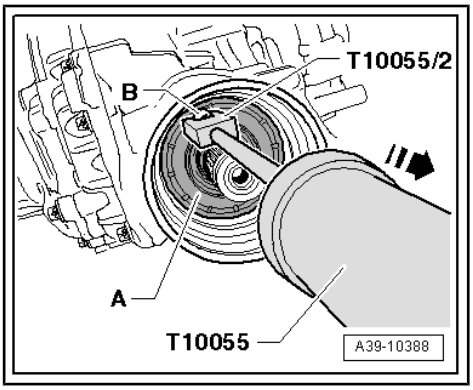


– Then screw a self-tapping screw -arrow- into this hole in oil seal -A-.



– Pull out oil seal -A- for propshaft flange in direction of -arrow-.

B - Self-tapping screw



Installing

Installation is carried out in reverse sequence. Note the following:

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

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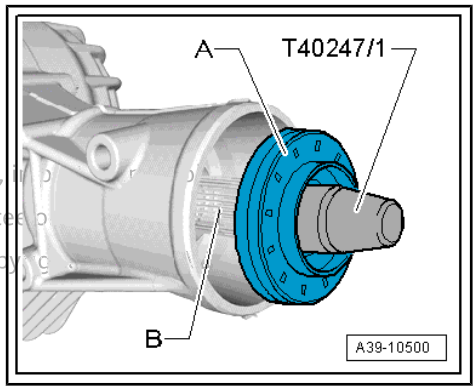
– Lightly lubricate outer circumference of oil seal with gear oil.

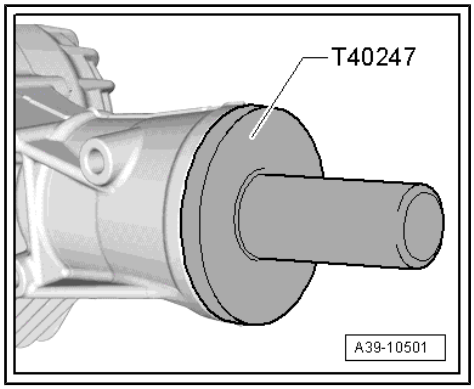
– Fit new oil seal -A- on assembly sleeve - T40247/1- .

– Check that spring of oil seal behind sealing lip is in installation position.

– Fit assembly sleeve - T40247/1- onto pinion shaft -B- together with oil seal -A-.



– Drive in new oil seal onto stop (take care to keep seal straight).



– Heat propshaft flange -B- to 115 °C using inductive heater - VAS 6414- or a hotplate .

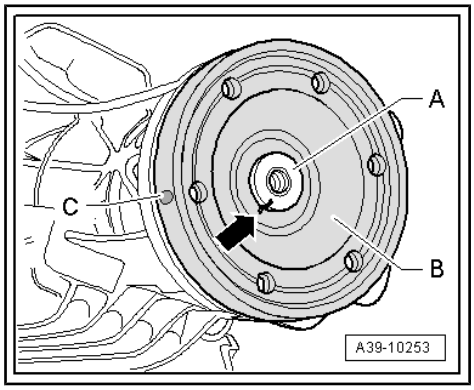
CAUTION

Hot components.

Risk of burns to hands.

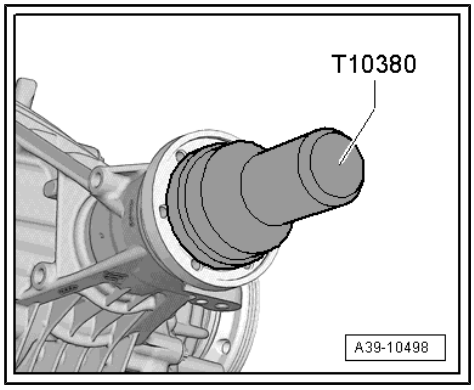
– Put on protective gloves.

– If using a hotplate , the temperature value must be monitored constantly with temperature gauge - VAS 6519- .



– Position propshaft flange -B- on pinion shaft -A- so that markings -arrow- are in line.

– Drive on propshaft flange as far as stop using thrust piece - T10380- .



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Install circlip -1- as follows:

- Always renew circlip -1-.
- Chamfer on inner diameter of circlip -arrow A- must face outwards towards propshaft.
- The wider lug on the circlip -arrow B- must be on the right side, as shown in the illustration.

– Measure thickness of old circlip -1-.

– Replace circlip -1- with a new circlip of the same thickness ⇒ Electronic parts catalogue .

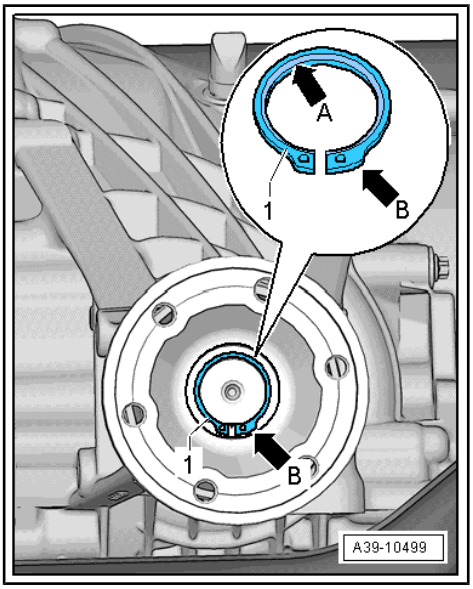
– Fit new circlip -1-.

- If the propshaft flange is being renewed, the thickness of the circlip -arrow- must be re-determined.
- To do so, determine the thickest circlip -arrow- that will just fit in the groove and install it. For part number refer to ⇒ Electronic parts catalogue .

– Top up gear oil in rear final drive 0BX ⇒ page 115 .

– Attach propshaft to rear final drive ⇒ page 46 .

– Install rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .



5.5 Renewing protective ring on flange shaft

⇒ “5.5.1 Renewing protective ring on flange shaft - 0DB, 0D2, 0G2”, page 175

⇒ “5.5.2 Renewing protective ring on flange shaft - 0D3 and 0BX quattro sport ”, page 177

⇒ “5.5.3 Renewing protective ring on flange shaft - 0B0 and 09R quattro ultra ”, page 179

5.5.1 Renewing protective ring on flange shaft - 0DB, 0D2, 0G2

Special tools and workshop equipment required

♦ Thrust plate - VW 401-

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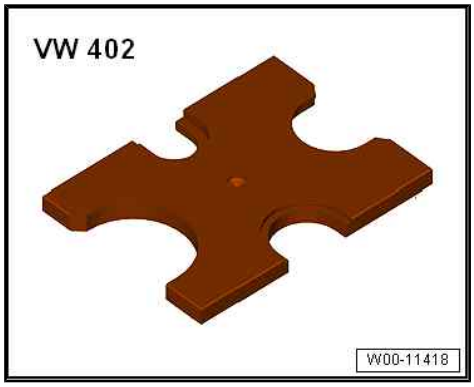
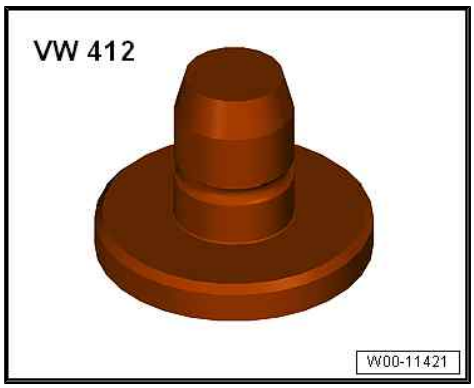
- Thrust plate - VW 402-



- Press tool - VW 412-



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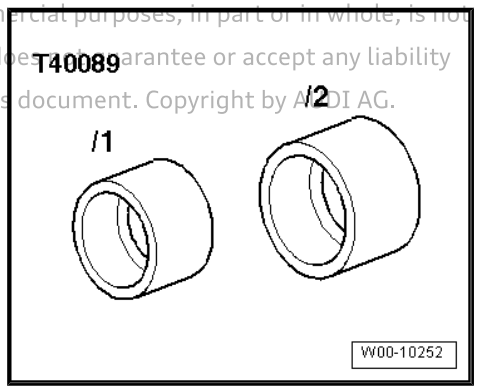
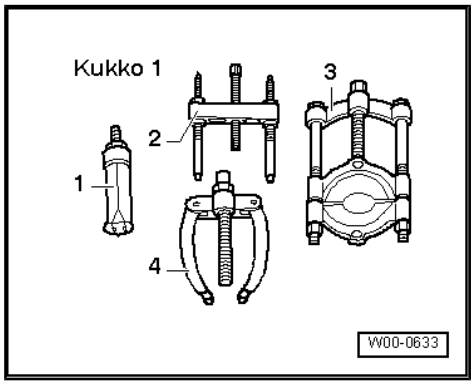
- Thrust piece - T40089/1-



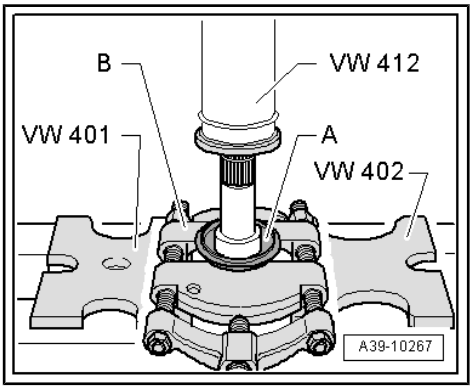
- Thrust piece - T10526-
- -3- Splitter 22...115 mm , e.g. -Kukko 17/2-



- Flange shaft must be removed.

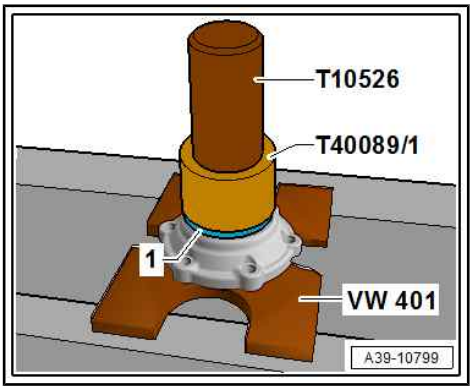
Pressing protective ring -A- off flange shaft

B - Splitter 22...115 mm , e.g. -Kukko 17/2-



Pressing protective ring -1- onto flange shaft

- Installation position: The larger outside diameter of the protective ring faces towards the flange.



5.5.2 Renewing protective ring on flange shaft - 0D3 and 0BX “quattro sport”

- The protective rings can only be renewed with the final drive and flange shafts removed.

Special tools and workshop equipment required

♦ Thrust plate - VW 401-

♦ Thrust plate - VW 402-

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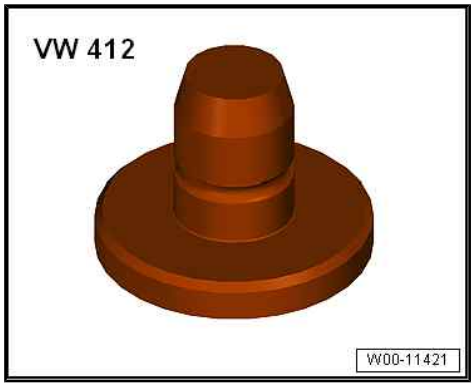
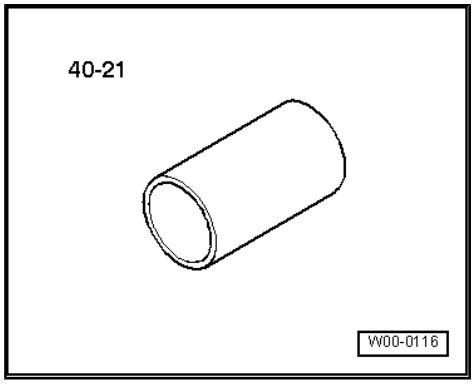
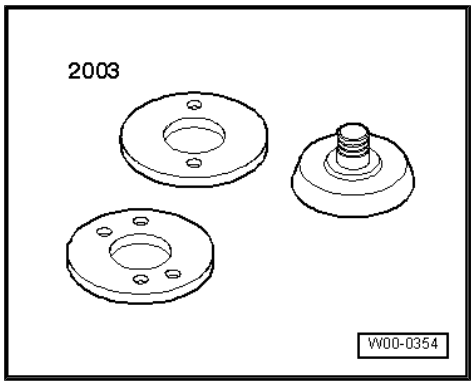
- Press tool - VW 412-



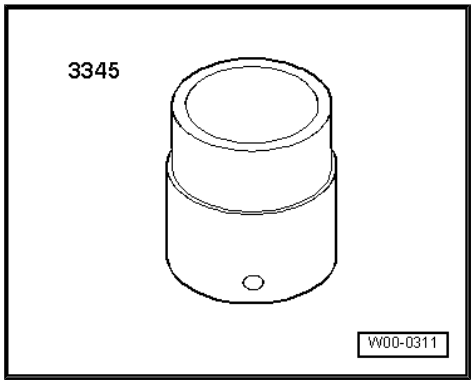
- Drift sleeve - 40 - 21-



- Installing ring - 2003/1- from fitting tool - 2003-



- Wheel bearing tube - 3345-



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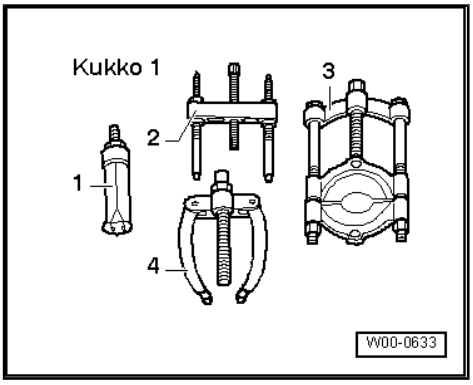
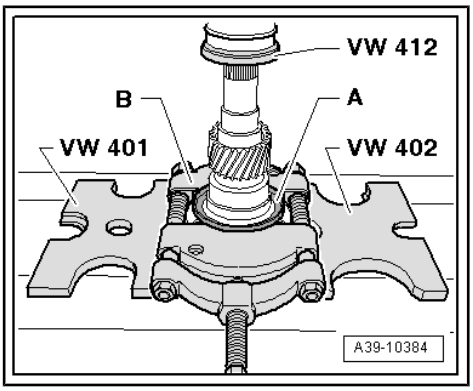
♦ -3- Splitter 22...115 mm , e.g. -Kukko 17/2-



- Rear final drive removed ⇒ page 55
- Flange shaft removed ⇒ page 137

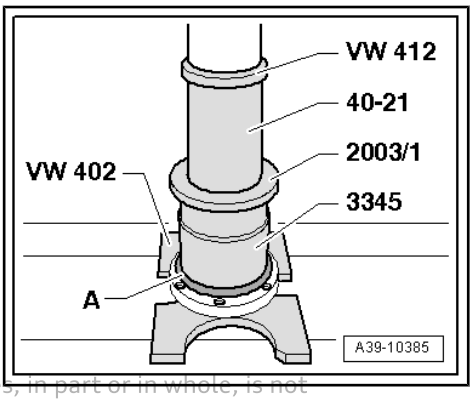
Pressing protective ring -A- off flange shaft

B - Splitter 22...115 mm , e.g. -Kukko 17/2-



Pressing protective ring -A- onto flange shaft (press on carefully)

- Installation position of protective ring -A-: larger outside diameter of protective ring faces towards wheel bearing tube -3345-



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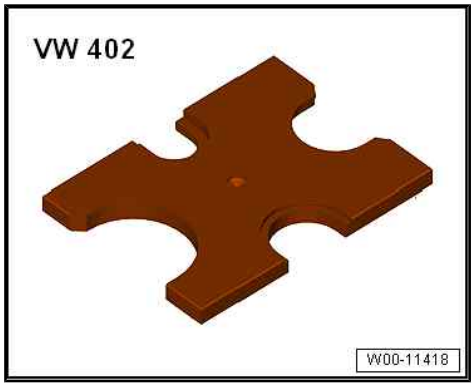
5.5.3 Renewing protective ring on flange shaft - 0B0 and 09R "quattro ultra"

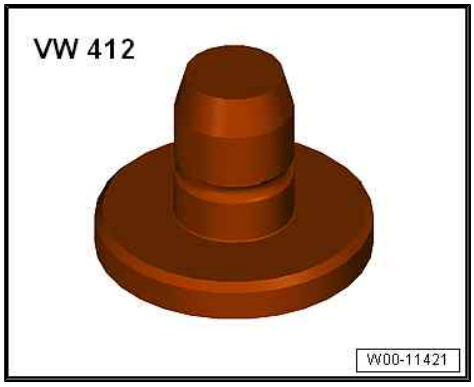
Special tools and workshop equipment required

♦ Thrust plate - VW 401-

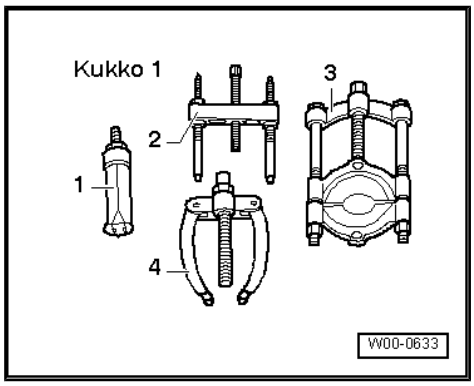
- Thrust plate - VW 402-



- Press tool - VW 412-



- -3- Splitter 22...115 mm , e.g. -Kukko 17/2-



- Thrust piece - T10143-

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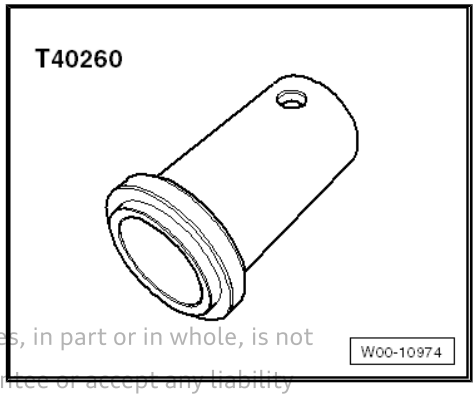
♦ Thrust piece - T40260-



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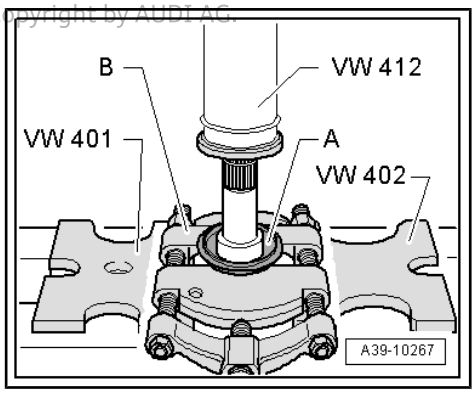
- Flange shaft must be removed.

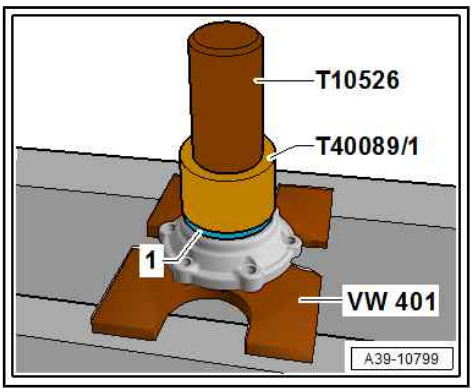
Pressing protective ring -A- off flange shaft

B - Splitter 22...115 mm , e.g. -Kukko 17/2-



Pressing protective ring -1- onto flange shaft

- Installation position: The larger outside diameter of the protective ring faces towards the flange.
- The illustration is an example. Use thrust piece - T10143- .
- For final drive “09R”, thrust piece - T40260- should be used for the left flange shaft.

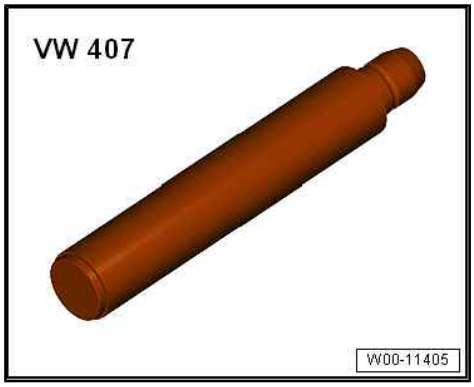


5.6 Renewing protective ring on propshaft flange

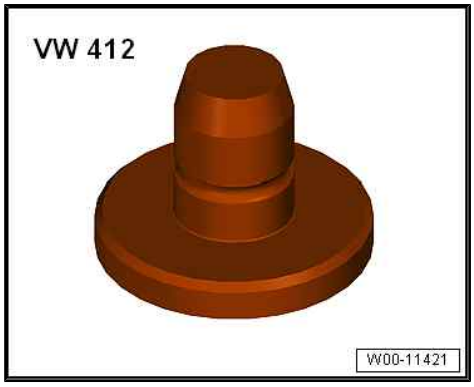
Special tools and workshop equipment required

♦ Thrust plate - VW 401-

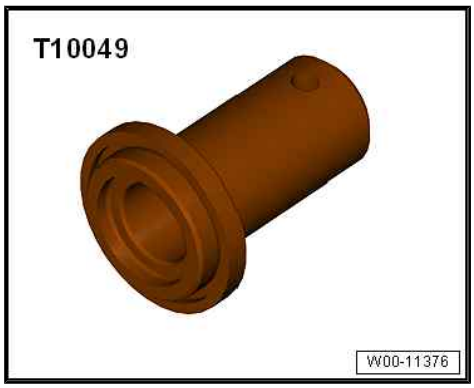
- Press tool - VW 407-



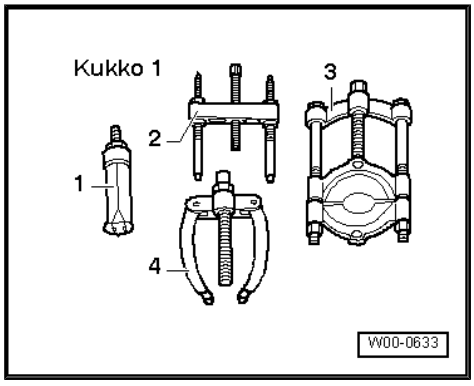
- Press tool - VW 412-



- Thrust piece - T10049-



- -3- Splitter 22...75 mm , e.g. -Kukko 17/1-



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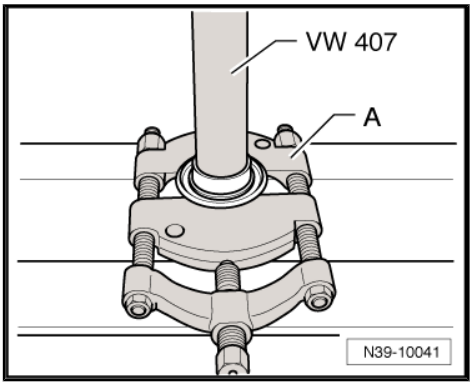
- Propshaft flange removed.

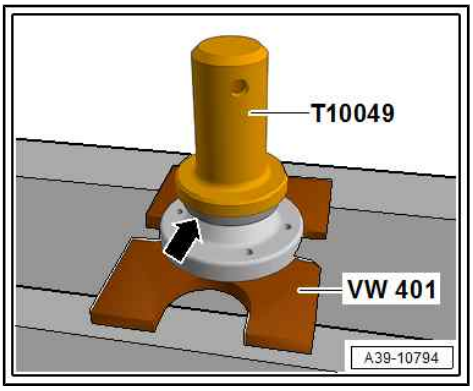
Pressing protective ring off flange for propshaft

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



Pressing protective ring -arrow- onto flange for propshaft

- Installation position: The ridged side of the protective ring faces towards the flange.
- The protective ring -A- must engage audibly in the groove on the flange.



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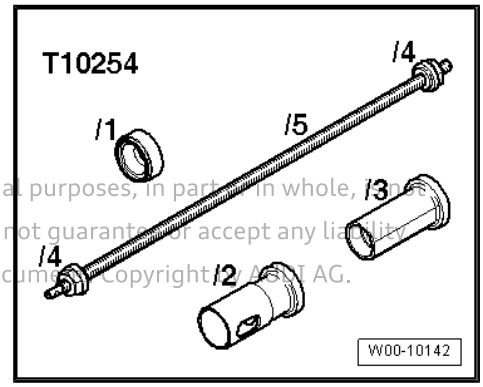
6 Assembly mountings

⇒ “6.1 Removing and installing bonded rubber bush”, page 184

6.1 Removing and installing bonded rubber bush

Special tools and workshop equipment required

- Assembly tool - T10254-



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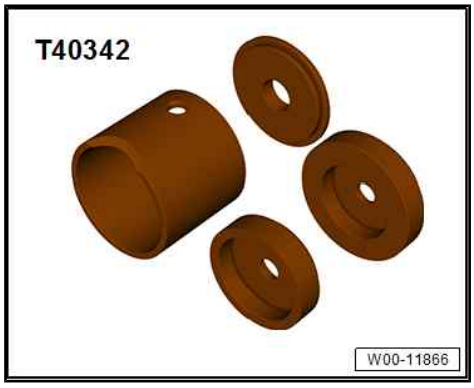
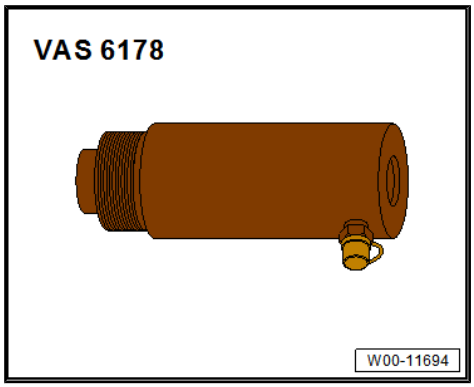
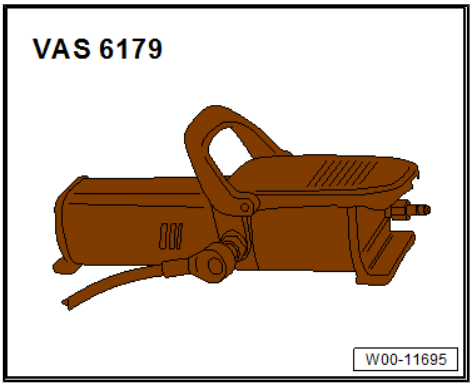
- Assembly tool - T40342-



- Hydraulic cylinder - VAS 6178-

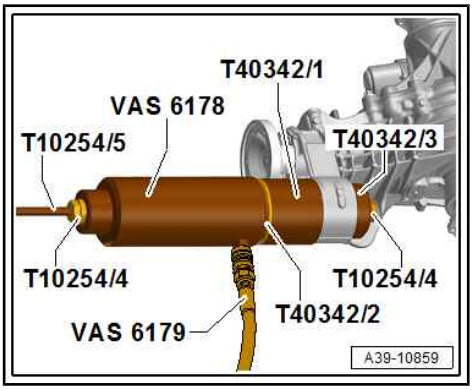


♦ Foot pump - VAS 6179-



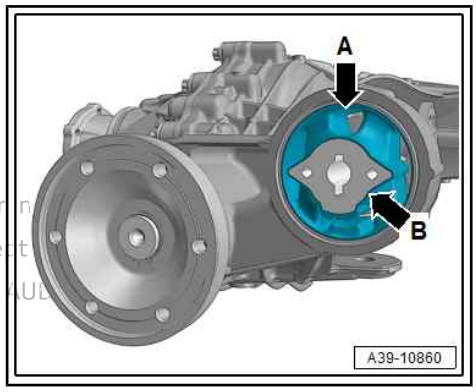
♦ Assembly oil ⇒ Electronic parts catalogue

Removing bonded rubber bush



Installation position of bonded rubber bush:

- The trapezium-shaped hole in the bonded rubber bush -arrow A- points upwards.
- Rubber-coated side of metallic insert -arrow B- faces prop-shaft.



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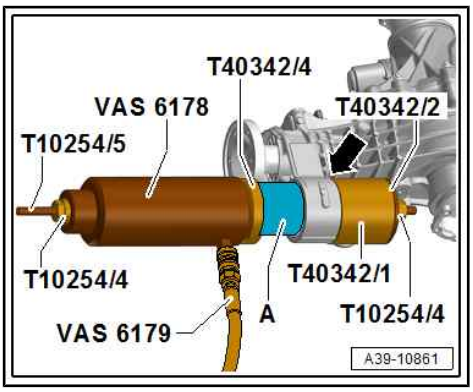
Pressing in bonded rubber bush -A-

- Note installation position of bonded rubber bush ⇒ page 185
- Tapered side of assembly sleeve - T40342/1- -arrow- faces inwards towards final drive
- Tapered side of pressure plate - T40342/4- faces hydraulic cylinder - VAS 6178-

– Lubricate outer circumference of bonded rubber bush -A- with assembly oil.

– Press bonded rubber bush onto pressure plate - T40342/4- as far as stop.



7 Four-wheel drive coupling

⇒ “7.1 Exploded view - four-wheel drive coupling”, page 186

⇒ “7.2 Removing and installing four-wheel drive coupling”, page 187

⇒ “7.3 Additional work required if four-wheel drive coupling was renewed”, page 190

⇒ “7.4 Checking oil level”, page 191

⇒ “7.5 Draining and filling fluid for four-wheel drive coupling”, page 191

⇒ “7.6 Removing and installing control unit”, page 194

⇒ “7.7 Additional work for quattro ultra vehicles”, page 196

⇒ “7.9 Renewing oil seal for four-wheel drive coupling output shaft”, page 199

⇒ “7.10 Renewing oil seal for four-wheel drive coupling input shaft”, page 201

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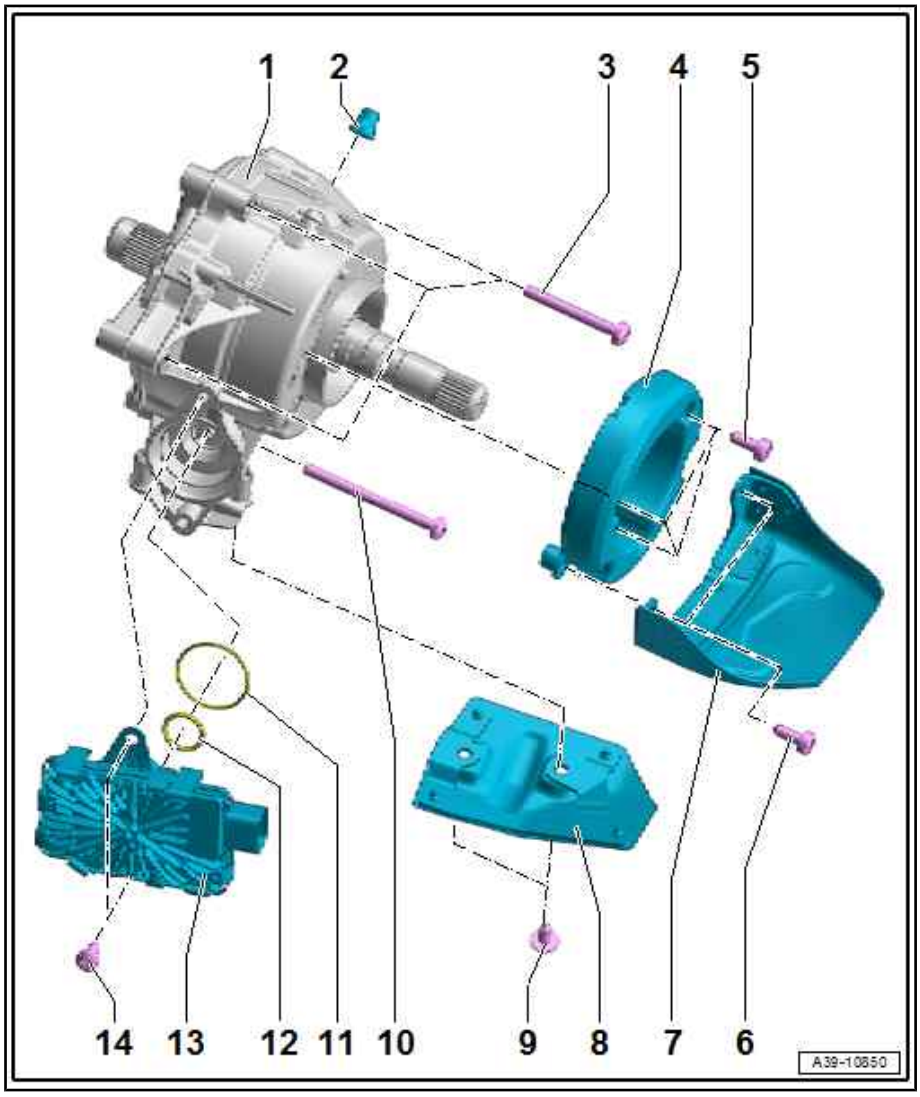
7.1 Exploded view - four-wheel drive coupling



1 - Four-wheel drive coupling

- ❑ Removing and installing ⇒ page 187
- ❑ Additional work required after renewing four-wheel drive coupling ⇒ page 190
- ❑ ⇒ “5.1.6 Overview of fitting locations - oil seals on four-wheel drive coupling quattro ultra ”, page 130

2 - Breather

3 - Bolt

- ❑ 8 Nm + 180°
- ❑ Renew
- ❑ M8 × 70
- ❑ 3x

4 - Damper weight

- ❑ Depending on version

5 - Bolt

- ❑ 28 Nm
- ❑ Depending on version

6 - Bolt

- ❑ 28 Nm
- ❑ Depending on version

7 - Heat shield

- ❑ For propshaft
- ❑ Depending on version

8 - Heat shield

- ❑ For all-wheel drive control unit

- ❑ Depending on version

9 - Bolt

- ❑ 8 Nm
- ❑ Depending on version

10 - Bolt

- ❑ 8 Nm + 180°
- ❑ Renew
- ❑ M8 × 100

11 - O-ring

- ❑ For all-wheel drive control unit
- ❑ Renew

12 - O-ring

- ❑ For all-wheel drive control unit
- ❑ Renew

13 - All-wheel drive control unit - J492-

The following are integrated in the all-wheel drive control unit :

- ♦ Clutch actuator for all-wheel drive - V622-
- ♦ Clutch position sender for all-wheel drive - G969-
  - ❑ Additional work required after renewing control unit ⇒ page 196
  - ❑ Removing and installing ⇒ “7.6 Removing and installing control unit”, page 194

14 - Bolt

- ❑ 21 Nm

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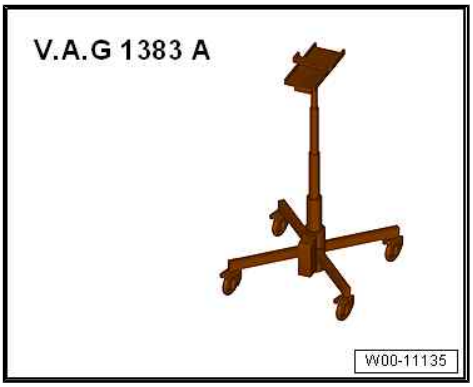
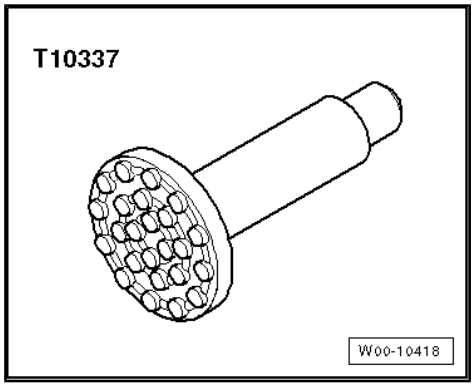
7.2 Removing and installing four-wheel drive coupling

Engine and gearbox jack - V.A.G 1383 A-



Gearbox support - T10337-

Sealing grease - G 052 128 A1-



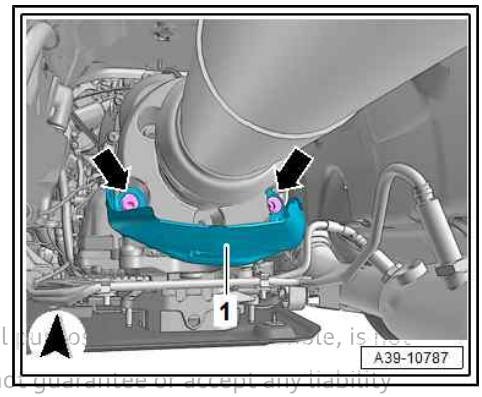
Removing

- Gearbox installed
- Ignition is switched off.
- Refer to general repair instructions ⇒ page 21 .
- If four-wheel drive coupling is being renewed, it must be operated for the first time using the `22 - Replace control unit` function in the `22 - Four-wheel drive electronics` folder in `Guided Functions` ⇒ page 190 .

– Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– If fitted, remove bolts -arrows- and detach heat shield -1- for propshaft.

– Remove propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .



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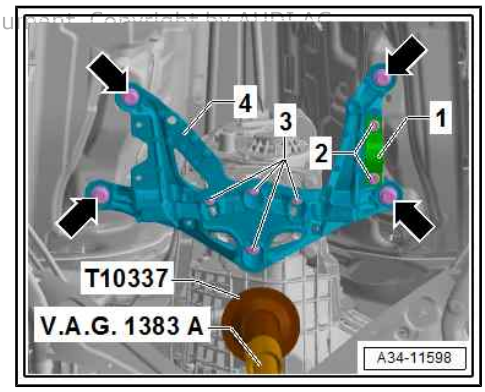
⚠ CAUTION

Falling parts can cause injury.

– Engine and gearbox jack - V.A.G 1383 A- must remain in position when work is being carried out and must not be left unattended under the vehicle.



– Apply lifting column of engine and gearbox jack -V.A.G 1383 A- to gearbox from below (with gearbox support - T10337- attached).

– Raise gearbox slightly using engine and gearbox jack - V.A.G 1383 A- .

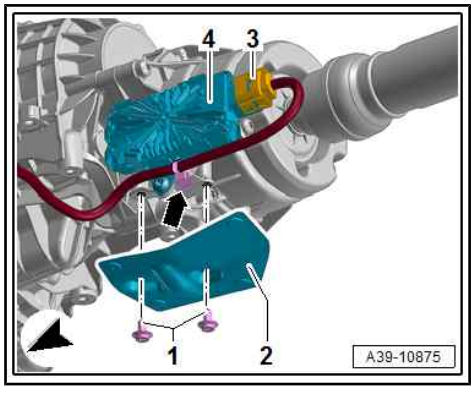
– Remove bolts -arrows- for tunnel cross member.

– Lower gearbox as far as possible without gearbox making contact with subframe cross brace.

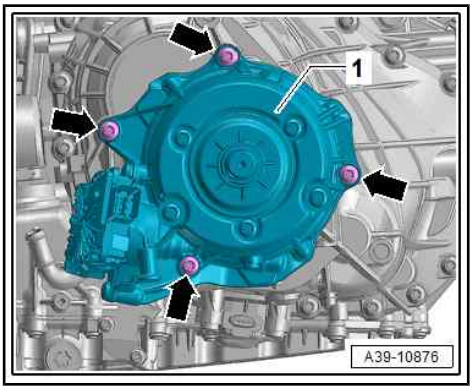
– If fitted, remove bolts -1- and detach heat shield -2-.

– Unplug connector -3- from all-wheel drive control unit -4-.

– Unclip wiring on four-wheel drive coupling -arrow- and move it to one side.



– Unscrew bolts -arrows- and detach four-wheel drive coupling from gearbox.



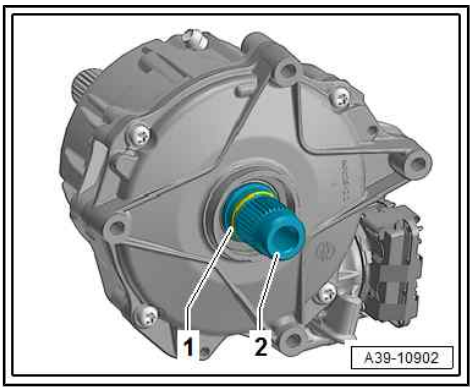
Installing

Installation is carried out in reverse order; note the following:

- Tightening torques
⇒ “7.1 Exploded view - four-wheel drive coupling”, page 186

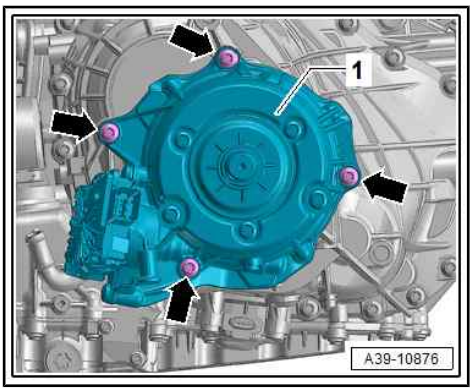
– Check O-ring -1- on four-wheel drive coupling input shaft -2- for damage and renew if necessary.

– Apply a very thin coating of sealing grease - G 052 128 A1- to splines of four-wheel drive coupling input shaft.



– Fit four-wheel drive coupling -1- on gearbox and tighten bolts -arrows- hand-tight.

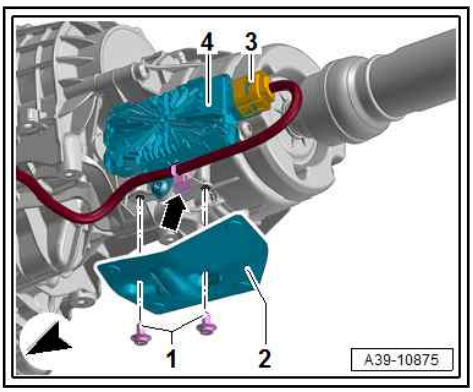
– Tighten bolts -arrows- alternately and diagonally to specified torque.



– Plug connector -3- in on all-wheel drive control unit -4-.

– Secure wiring on four-wheel drive coupling -arrow-.

– If fitted, secure heat shield -2- with bolts -1-.



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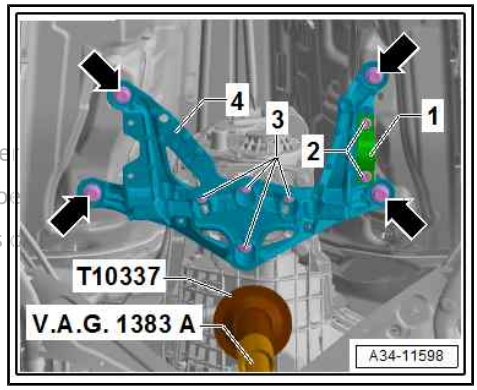
– Raise gearbox slightly using engine and gearbox jack - V.A.G 1383 A- .

– Tighten bolts for tunnel cross member -arrows-. Tightening torque ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings.

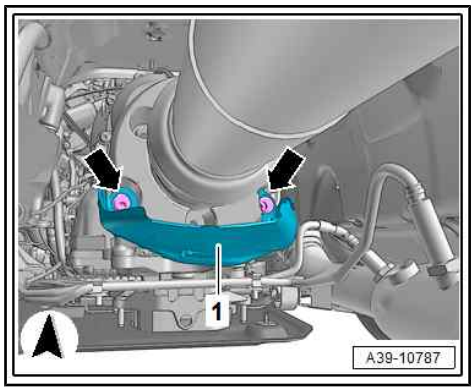
– Check ATF level in four-wheel drive coupling ⇒ page 191 .



– Install propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .

– If fitted, install heat shield for propshaft -1-.

– Install rear noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



If four-wheel drive coupling was renewed:

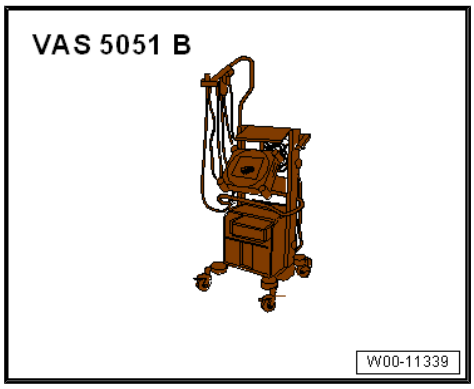
- If four-wheel drive coupling was renewed, it must be operated for the first time using the `22 - Replace control unit` function in the `22 - Four-wheel drive electronics` folder in `Guided Functions`
⇒ “7.3 Additional work required if four-wheel drive coupling was renewed”, page 190 .

7.3 Additional work required if four-wheel drive coupling was renewed

- This additional work must only be performed if the four-wheel drive coupling is renewed.

Special tools and workshop equipment required

◆ Vehicle diagnostic, testing and information system - VAS 5051 B-



– Connect vehicle diagnostic, testing and information system - VAS 5051 B- and switch on ignition.

– Using vehicle diagnostic, testing and information system - VAS 5051 B- in `Guided Functions` mode, select `22 - Four-wheel drive electronics` and then select the function `22 - Replacing control unit`.

– Start the selected program and follow the instructions on the display of the vehicle diagnostic tester.

- It is important to follow all instructions given by the vehicle diagnostic tester exactly.

7.4 Checking oil level

Test requirement:

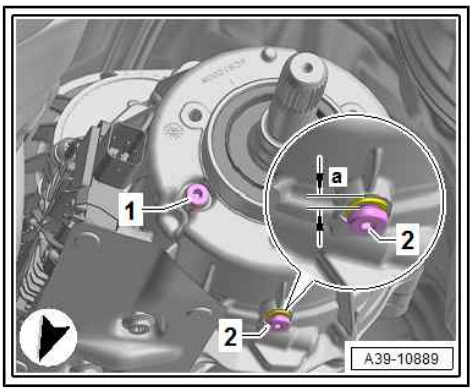
- Vehicle standing on level surface
- ATF drain plug -2- must be unscrewed approx. 5 turns -a- so that ATF fluid level in four-wheel drive coupling sets correctly.

– Unscrew ATF drain plug -2- five turns.

- Dimension -a- corresponds to 5 mm or 5 turns.

– Remove ATF filler plug -1-.

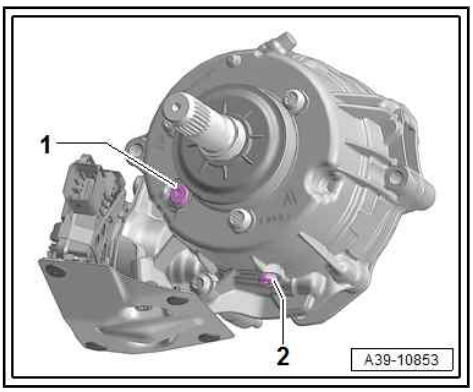
- The fluid level is correct if the four-wheel drive coupling is filled up to the lower edge of the filler hole.
- If necessary, fill ATF up to the lower edge of the oil filler hole.



– Tighten ATF filler plug -1- and ATF drain plug -2-.

Tightening torques

- Plug -1-: 15 Nm
- Plug -2-: 15 Nm



7.5 Draining and filling fluid for four-wheel drive coupling

Special tools and workshop equipment required

◆ Used oil collection and extraction unit - VAS 6622A-

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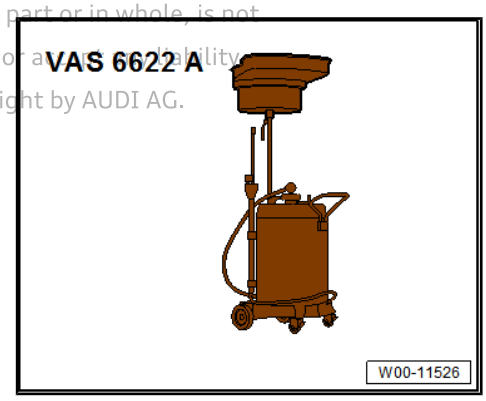
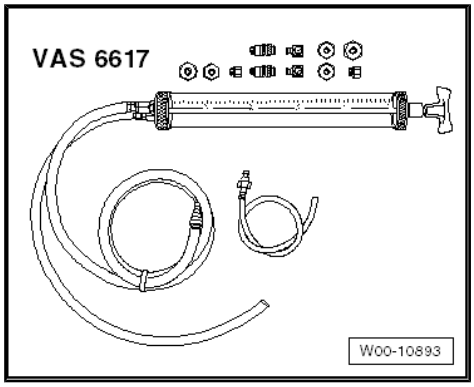
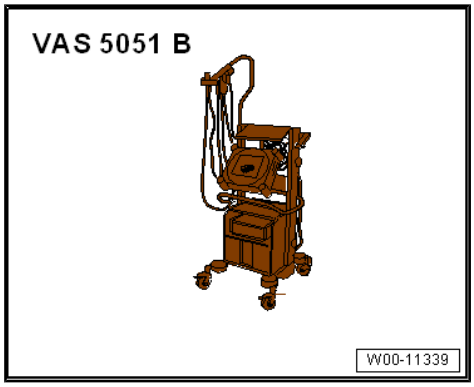


- Hand pump for gear oil - VAS 6617-



- Adapter - VAS 6617/11-
- Vehicle diagnostic, testing and information system - VAS 5051 B-



- Safety goggles

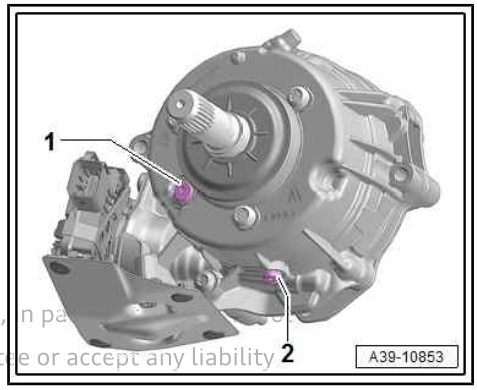
Draining ATF

- Vehicle standing on level surface
- ATF specifications ⇒ Electronic parts catalogue .
- »Learnt values for oil ageing« in all-wheel drive control unit - J492- must always be reset to a new ATF when ATF is renewed ⇒ page 193 .

– Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– Place used oil collection and extraction unit - VAS 6622A- underneath.

– Remove ATF drain plug -2- and allow ATF to drain off.



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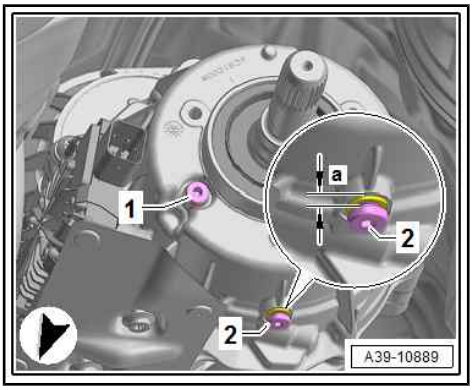
Filling up ATF

- ATF drain plug -2- must be unscrewed approx. 5 turns -a- so that ATF runs into all chambers of four-wheel drive coupling.
- Dimension -a- corresponds to 5 mm or 5 turns.

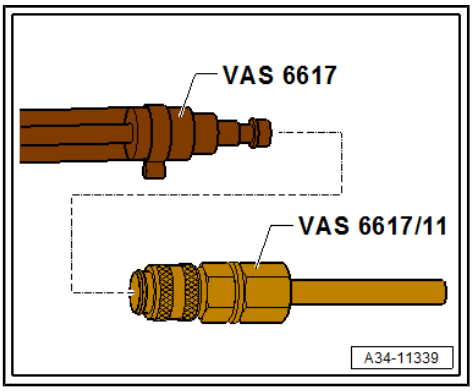
– Screw in ATF drain plug -2- as far as stop and then unscrew again by 5 turns.

– Remove ATF filler plug -1-.



– Slowly fill ATF using hand pump for gear oil - VAS 6617- and adapter - VAS 6617/11- .

- The fluid level is correct if the four-wheel drive coupling is filled up to the lower edge of the filler hole.



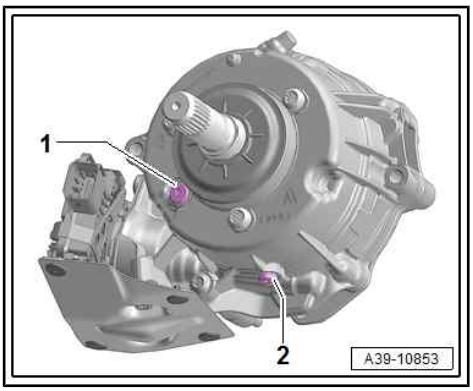
– Tighten ATF filler plug -1- and ATF drain plug -2-.

Tightening torques

- Plug -1-: 15 Nm
- Plug -2-: 15 Nm

– Install rear noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

- »Learnt values for oil ageing« in all-wheel drive control unit - J492- must be reset to a new ATF as follows after ATF has been renewed.



Resetting »learnt values for oil ageing«:

– Connect vehicle diagnostic, testing and information system - VAS 5051 B- and switch on ignition.

– Using vehicle diagnostic, testing and information system - VAS 5051 B- in `Guided Functions` mode, select `22 - Four-wheel drive electronics` and then select the function `22 - Change four-wheel drive clutch ATF`.

– Start the selected program and follow the instructions on the display of the vehicle diagnostic tester.

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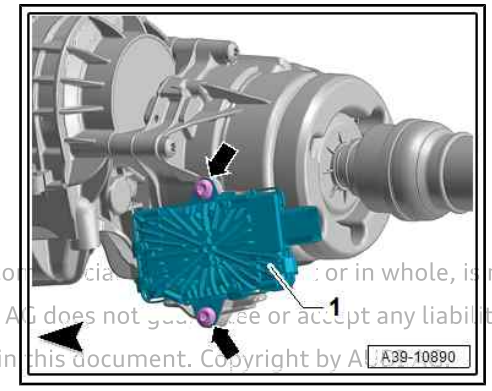
7.6 Removing and installing control unit

The following are integrated in the all-wheel drive control unit - J492- -1-:

- Clutch actuator for all-wheel drive - V622-
- Clutch position sender for all-wheel drive - G969-



Renewing

- If all-wheel drive control unit - J492- needs to be renewed, »clutch learnt values« of old control unit must now be read out using vehicle diagnostic, testing and information system - VAS 5051 B-
  ⇒ “7.7 Additional work for quattro ultra vehicles”, page 196 .

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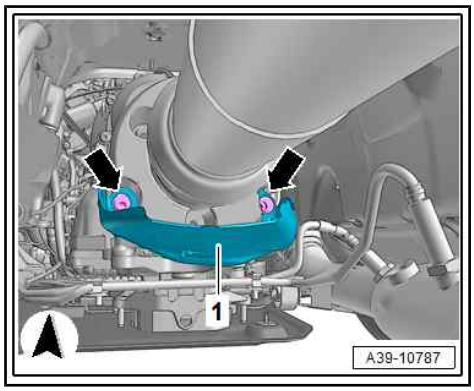
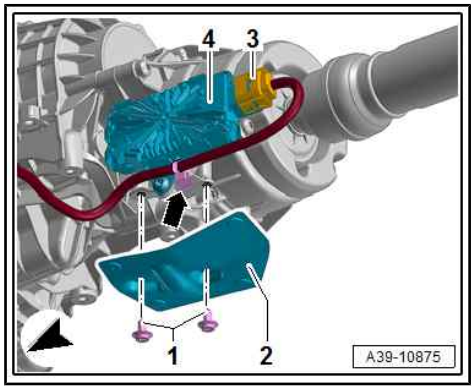
Removing

- Four-wheel drive coupling fitted
- Ignition is switched off.
- Refer to general repair instructions ⇒ page 21 .

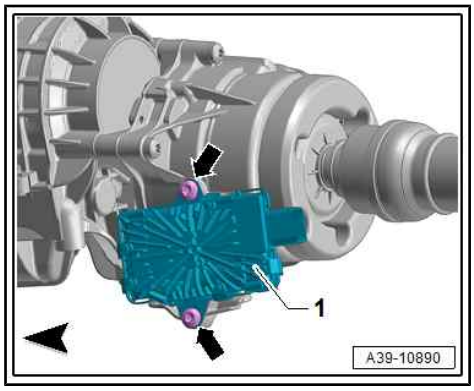
– If fitted, remove bolts -arrows- and detach heat shield -1- for propshaft.



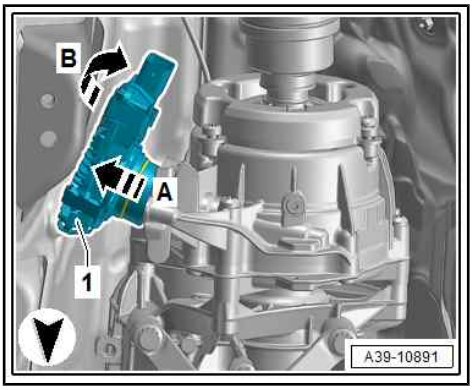
– If fitted, remove bolts -1- and detach heat shield -2-.
– Unplug connector -3- from all-wheel drive control unit -4-.
– Unclip wiring on four-wheel drive coupling -arrow- and move it to one side.



– Remove bolts -arrows-.



– Pull all-wheel drive control unit off four-wheel drive coupling, tilt it slightly and take it out downwards.

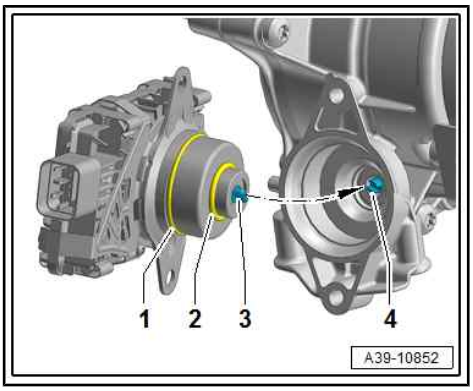


Installing

Installation is carried out in reverse order; note the following:

- Tightening torques
⇒ “7.1 Exploded view - four-wheel drive coupling”, page 186

– Install all-wheel drive control unit as follows:

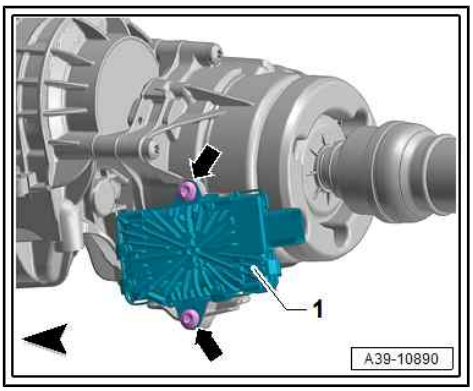


♦ Renew O-rings -1- and -2-.

♦ Lubricate O-rings with ATF.

♦ Drive lug with flat section -3- must be guided into groove of actuator shaft -4-.

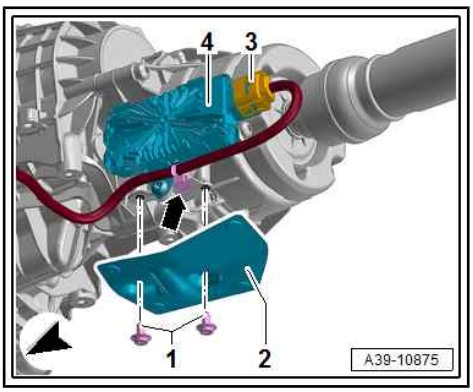
– Tighten bolts -arrows-.



– Plug connector -3- in on all-wheel drive control unit -4-.

– Secure wiring on four-wheel drive coupling -arrow-.

– If fitted, secure heat shield -2- with bolts -1-.



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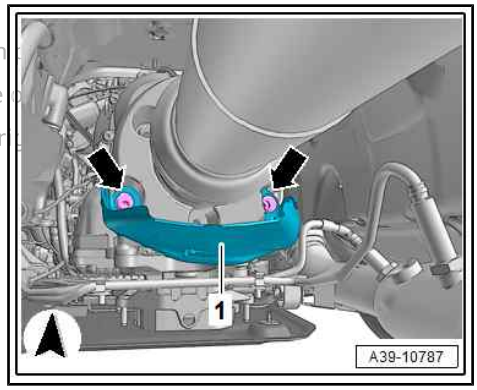
– If fitted, install heat shield for propshaft -1-.



If control unit has been renewed:

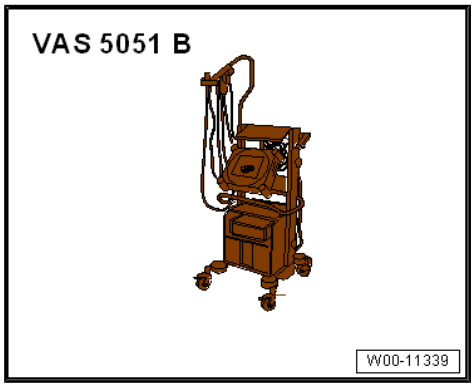
- Additional work is required at this point if all-wheel drive control unit - J492- has been renewed
  ⇒ “7.7 Additional work for quattro ultra vehicles”, page 196 .

7.7 Additional work for “quattro ultra” vehicles

- Only perform this additional work if all-wheel drive control unit - J492- or rear final drive 0B0 “quattro ultra” or 09R “quattro ultra” has been renewed.

Special tools and workshop equipment required

♦ Vehicle diagnostic, testing and information system - VAS 5051 B-



Note

♦ If all-wheel drive control unit - J492- needs to be renewed, »clutch learnt values« of old control unit must be read out using vehicle diagnostic, testing and information system - VAS 5051 B- before it is removed.

♦ These »clutch learnt values« must be transferred to the new control unit.

♦ If the »clutch learnt values« cannot be read out, the ATF must be renewed and the »clutch classification« must be entered in the new control unit.

♦ The classification is marked on the four-wheel drive coupling ⇒ page 5 .

– Connect vehicle diagnostic, testing and information system - VAS 5051 B- and switch on ignition.

– Using vehicle diagnostic, testing and information system - VAS 5051 B- in `Guided Functions` mode, select `22 - Four-wheel drive electronics` and then select the function `22 - Replacing control unit`.

– Start the selected program and follow the instructions on the display of the vehicle diagnostic tester.

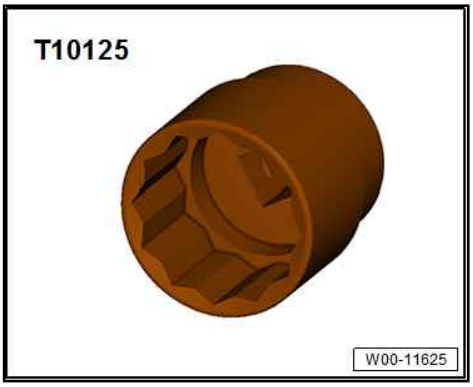
• It is important to follow all instructions given by the vehicle diagnostic tester exactly.

7.8 Checking setting torque of four-wheel drive coupling

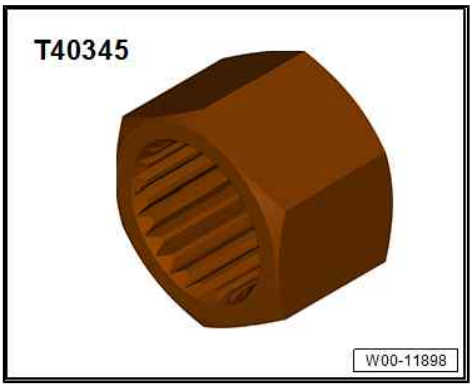
It is only necessary to check the setting torque if “Guided Fault Finding” requests it.

Special tools and workshop equipment required

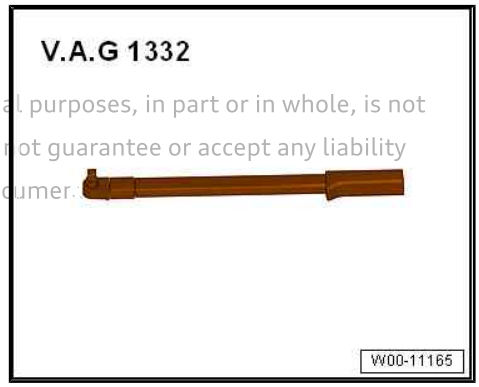
- Socket (36 mm) - T10125- (1/2”)



- Socket (36 mm) (3/4”, commercially available)
- Or
- 3/4" to 1/2” adapter
- Counterhold tool - T40345-



- Torque wrench - V.A.G 1332-



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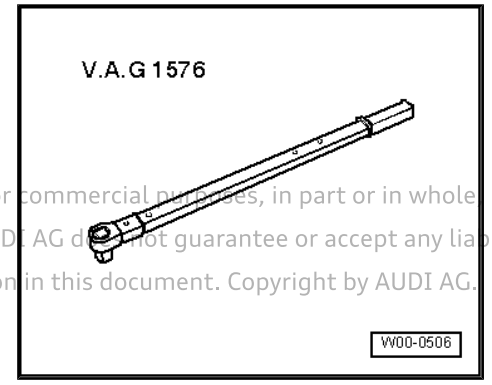
♦ Torque wrench - V.A.G 1576-



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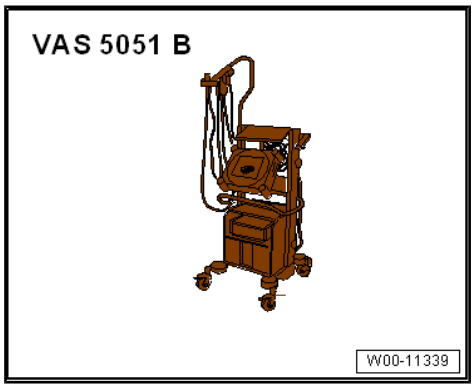
♦ Vehicle diagnostic, testing and information system - VAS 5051 B-



- Only check setting torque if “Guided Fault Finding” specifically requests it.

– Remove propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .

– Connect vehicle diagnostic, testing and information system - VAS 5051 B- and switch on ignition.

– Using vehicle diagnostic, testing and information system - VAS 5051 B- in `Guided Functions` mode, select `22 - Four-wheel drive electronics` and then select the function `22 - Final control diagnosis`.

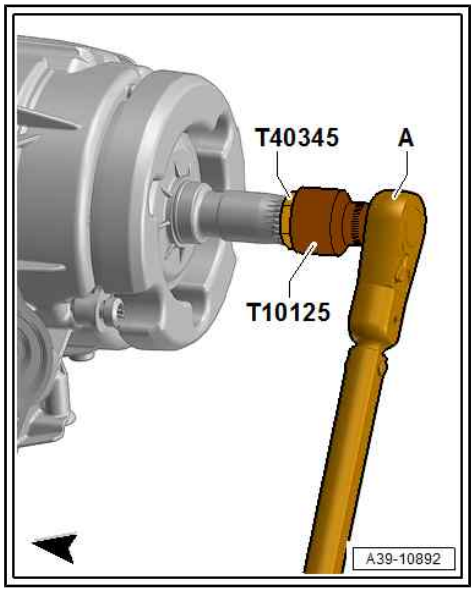
– Start the selected program and follow the instructions on the display of the vehicle diagnostic tester.

– Fit tool as shown to check setting torque of four-wheel drive coupling.

A - Torque wrench - V.A.G 1332- and -V.A.G 1576-

- Use torque wrench - V.A.G 1576- to check higher setting torques.
- You will require a commercially available 3/4” socket (36 mm) or a 3/4” to 1/2” adapter to do this.

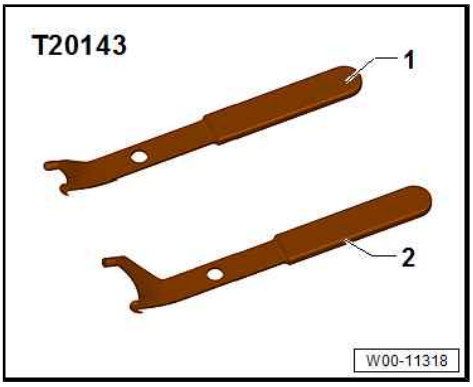
– Install propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .



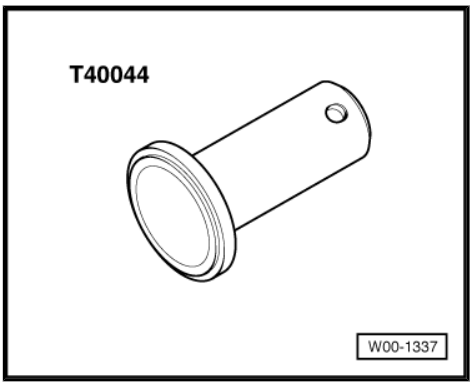
7.9 Renewing oil seal for four-wheel drive coupling output shaft

Special tools and workshop equipment required

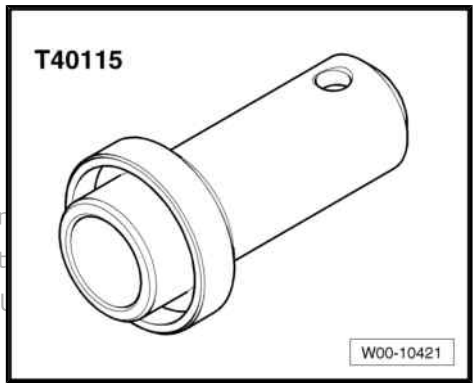
- Extractor tool - T20143/2-



- Thrust piece - T40044-



- Thrust piece - T40115-



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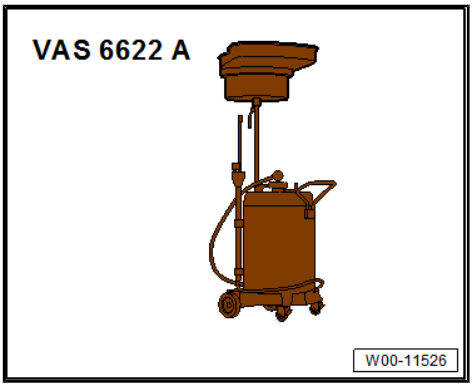
- Used oil collection and extraction unit - VAS 6622A-



- Sealing grease - G 052 128 A1-

Removing

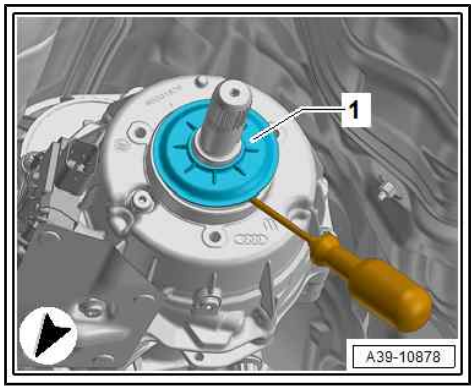
- Four-wheel drive coupling fitted
- Ignition is switched off.
- Refer to general repair instructions ⇒ page 21 .

– Remove propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .

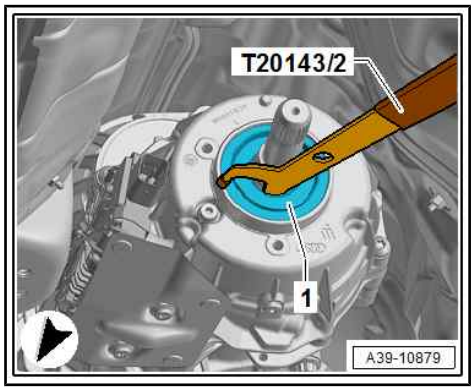
– Drain ATF for four-wheel drive coupling ⇒ page 191 .

– Pry off dust ring -1-.

- The dust ring cannot be removed without being damaged.



– Lever out oil seal for four-wheel drive coupling output shaft -1- using extractor tool - T20143/2- .



Installing

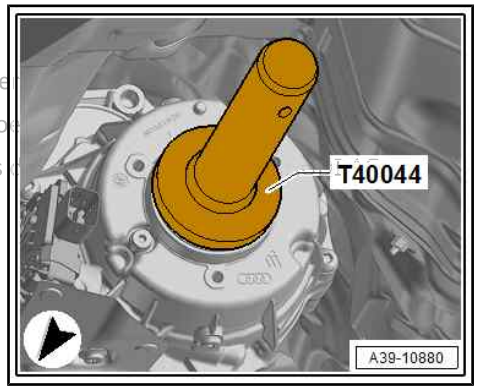
– Clean contact surface and sealing surface.

– Lightly lubricate outer circumference of seal with ATF.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Drive in oil seal as far as stop using thrust piece - T40044- . Make sure oil seal remains straight.

- Installation position: open side of oil seal should face gearbox housing.



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– Drive on new dust ring -1- using thrust piece - T40115- until it engages on output shaft.
– Fill up ATF for four-wheel drive coupling and reset »learnt values for oil ageing« in all-wheel drive control unit - J492- ⇒ page 191 .
– Install propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .

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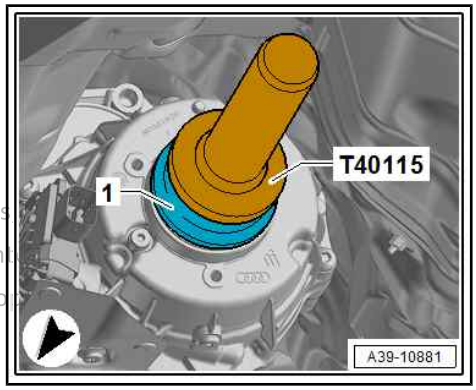
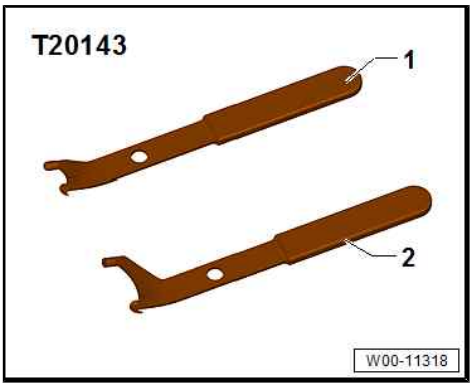


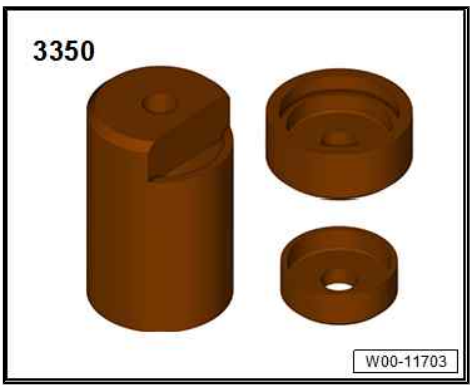
7.10 Renewing oil seal for four-wheel drive coupling input shaft

Special tools and workshop equipment required

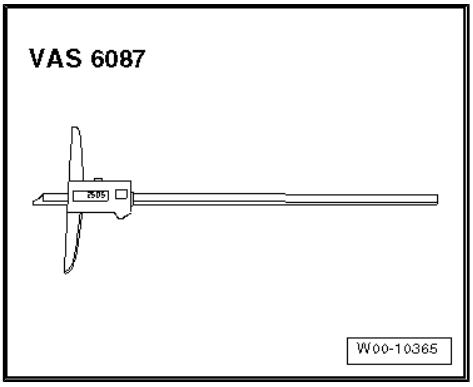
♦ Extractor tool - T20143/2-



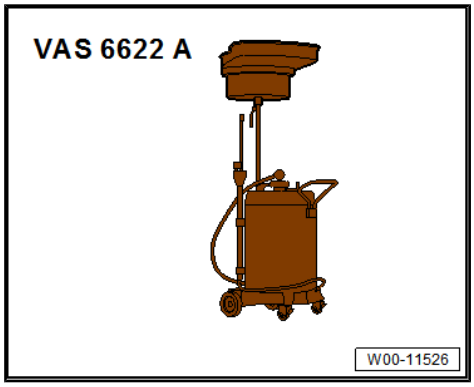
♦ Assembly tool - 3350-



♦ Digital depth gauge - VAS 6087-



♦ Used oil collection and extraction unit - VAS 6622A-



♦ Sealing grease ; select correct type from ⇒ Electronic parts catalogue

Removing

- Refer to general repair instructions ⇒ page 21 .
- – Drain ATF for four-wheel drive coupling ⇒ page 191 .
- – Remove four-wheel drive coupling ⇒ page 187 .
- – Lever out oil seal using extractor tool - T20143/2- .

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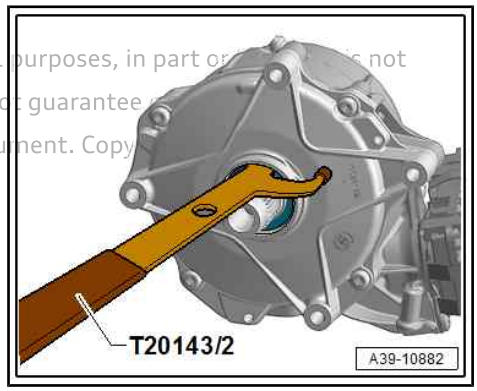
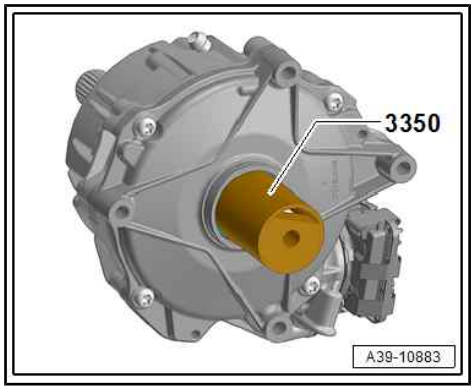


Installing

- – Clean contact surface and sealing surface.
- – Lightly lubricate outer circumference of seal with ATF.
- – Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
- Installation position: open side of oil seal should face gearbox housing.
- Take care not to tilt oil seal when driving in.



- – Drive oil seal in as far as dimension -x- using assembly tool - 3350- .
- Dimension -x- = 11.2 mm below lower edge of housing
- – Install four-wheel drive coupling ⇒ page 187 .
- – Fill up ATF for four-wheel drive coupling and reset »learnt values for oil ageing« in all-wheel drive control unit - J492- ⇒ page 191 .

8 Gearbox control system

⇒ “8.1 Overview of fitting locations - gearbox control system”, page 203

⇒ “8.2 Removing and installing all-wheel drive control unit J492 - vehicles with quattro ultra ”, page 206

⇒ “8.3 Removing and installing differential lock control unit J187 - vehicles with quattro sport ”, page 206

⇒ “8.4 Additional work required after renewing differential lock control unit J187 ”, page 208

8.1 Overview of fitting locations - gearbox control system

⇒ “8.1.1 Overview of fitting locations - gearbox control system, Audi A4, A5”, page 203

⇒ “8.1.2 Overview of fitting locations - gearbox control system, Audi Q5”, page 204

⇒ “8.1.3 Overview of fitting locations - gearbox control system, Audi Q7, Q8”, page 205

⇒ “8.1.4 Overview of fitting locations - gearbox control system, Audi A6, A7”, page 205

⇒ “8.1.5 Overview of fitting locations - gearbox control system, Audi A8”, page 206

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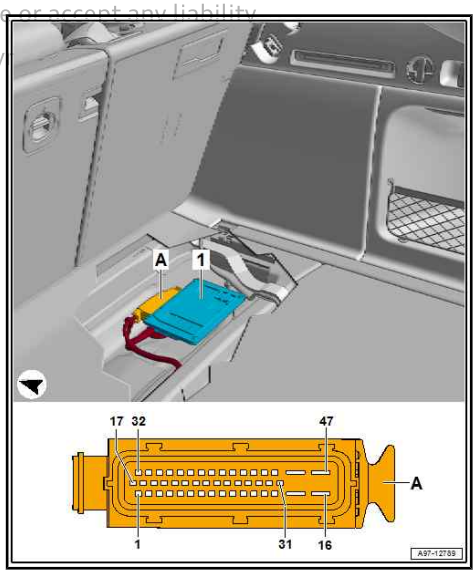
8.1.1 Overview of fitting locations - gearbox control system, Audi A4, A5

Differential lock control unit - J187- , vehicles with final drive 0D3 “quattro sport”

Fitting location: differential lock control unit - J187- -1- is located in front right of luggage compartment under luggage compartment floor.

⇒ “8.3 Removing and installing differential lock control unit J187 - vehicles with quattro sport ”, page 206



All-wheel drive control unit - J492- , vehicles with final drive 0B0 “quattro ultra”

Fitting location: the all-wheel drive control unit - J492- -1- is located on the gearbox on the four-wheel drive coupling.

Removing and installing all-wheel drive control unit - J492-
⇒ page 194

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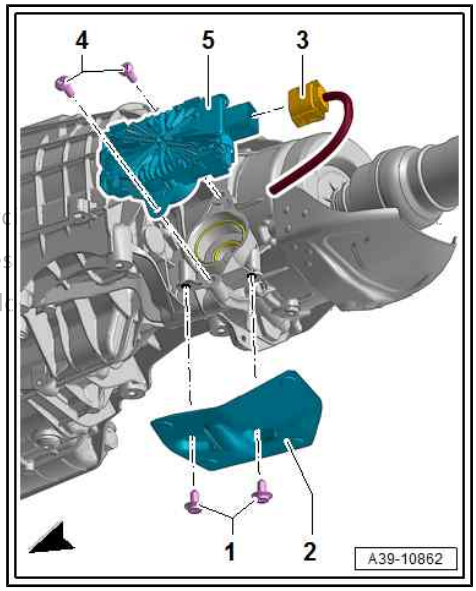


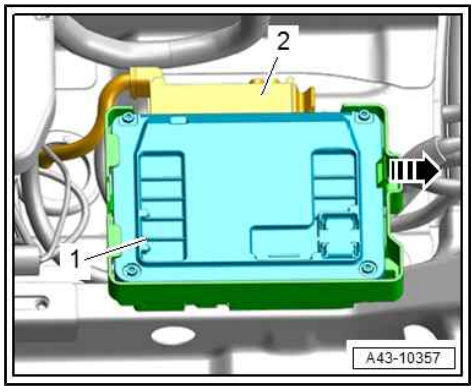
8.1.2 Overview of fitting locations - gearbox control system, Audi Q5

Differential lock control unit - J187- , vehicles with final drive 0D3 “quattro sport”

Fitting location: differential lock control unit - J187- -1- is located in luggage compartment in spare wheel well.

– Remove tool box ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Exploded view - luggage compartment floor .

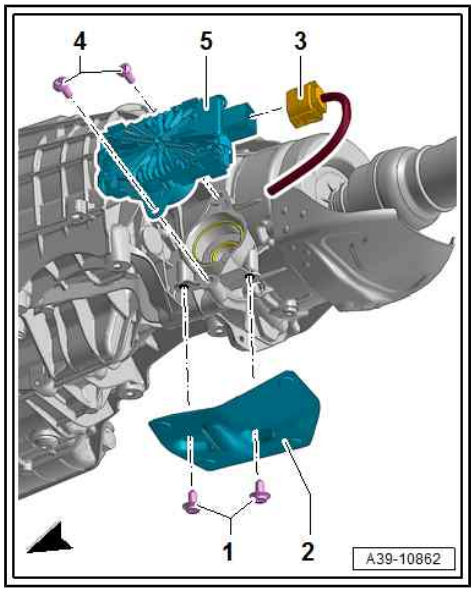
⇒ “8.3 Removing and installing differential lock control unit J187 - vehicles with quattro sport ”, page 206



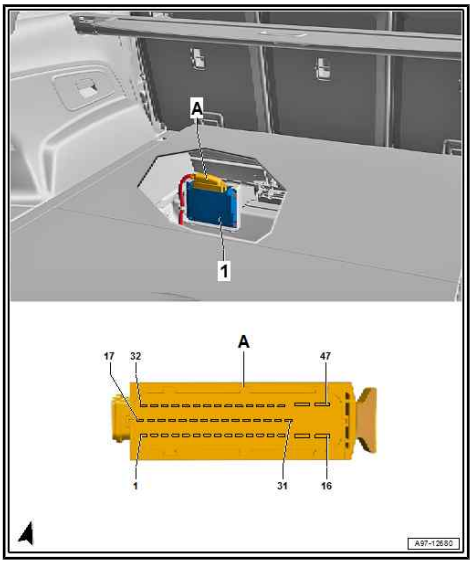
All-wheel drive control unit - J492- , vehicles with final drive 0B0 “quattro ultra”

Fitting location: the all-wheel drive control unit - J492- -1- is located on the gearbox on the four-wheel drive coupling.

Removing and installing all-wheel drive control unit - J492-
⇒ page 194



8.1.3 Overview of fitting locations - gearbox control system, Audi Q7, Q8



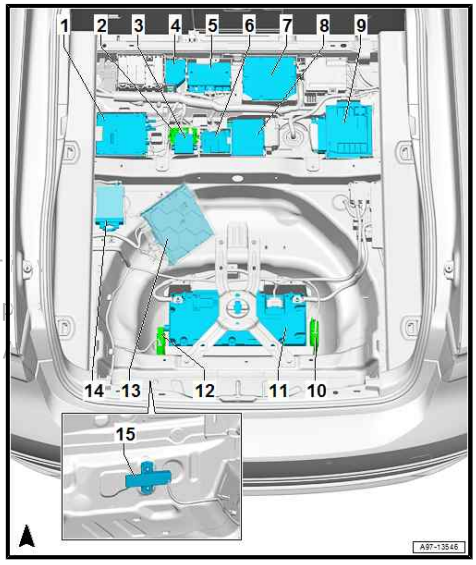
Differential lock control unit - J187- , vehicles with final drive 0BX "quattro sport"

Fitting location: differential lock control unit - J187- -1- is located in front left of luggage compartment under luggage compartment floor.

- Fitting location is shown for vehicles without a third row of seats.
- On vehicles with a third row of seats, the fitting location varies slightly from the illustration.

⇒ "8.3 Removing and installing differential lock control unit J187 - vehicles with quattro sport ", page 206

8.1.4 Overview of fitting locations - gearbox control system, Audi A6, A7



Differential lock control unit - J187- , vehicles with final drive 0D3 "quattro sport" or 0BX "quattro sport"

Fitting location: differential lock control unit - J187- -9- is located in luggage compartment (right-side).

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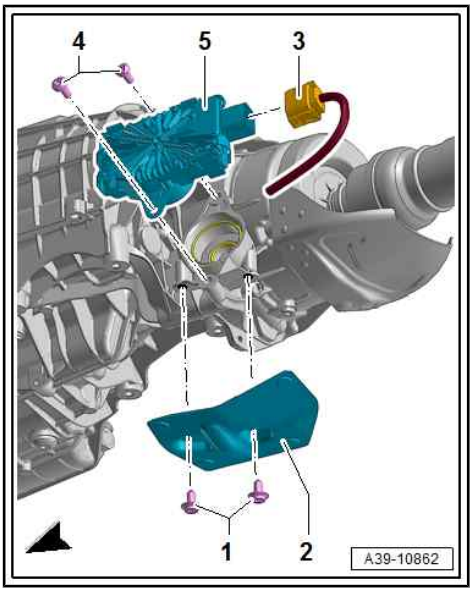
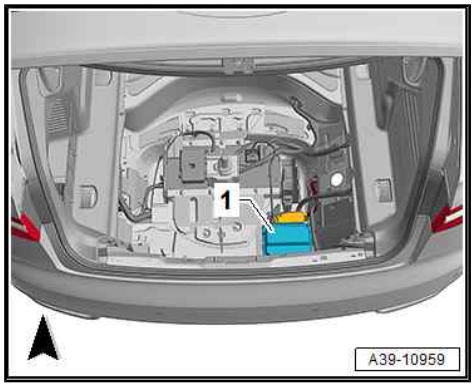


All-wheel drive control unit - J492- , vehicles with final drive 0B0 "quattro ultra" or 09R "quattro ultra"

Fitting location: the all-wheel drive control unit - J492- -1- is located on the gearbox on the four-wheel drive coupling.

Removing and installing all-wheel drive control unit - J492-
⇒ page 194

8.1.5 Overview of fitting locations - gearbox control system, Audi A8



Differential lock control unit - J187- , vehicles with final drive 0D3 “quattro sport”

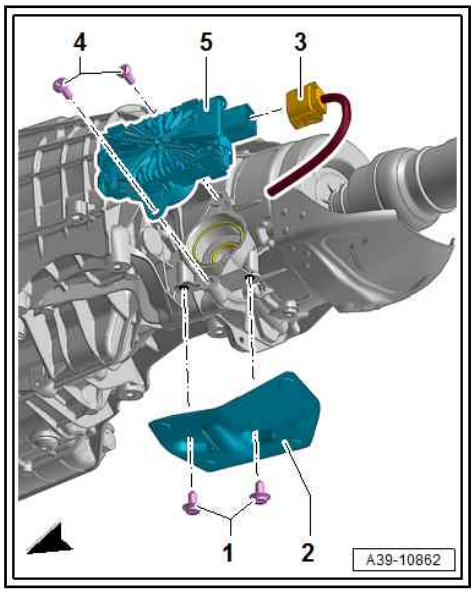
Fitting location: differential lock control unit - J187- -1- is located in luggage compartment in spare wheel well (right-side).

⇒ “8.3 Removing and installing differential lock control unit J187 - vehicles with quattro sport ”, page 206

8.2 Removing and installing all-wheel drive control unit - J492- - vehicles with “quattro ultra”

- Fitting location of all-wheel drive control unit - J492- ⇒ page 204

Removing and installing all-wheel drive control unit - J492- -5- ⇒ page 194



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8.3 Removing and installing differential lock control unit - J187- - vehicles with “quattro sport”

⇒ “8.3.1 Removing and installing differential lock control unit J187 - Audi A4, A5, Q5 with quattro sport ”, page 206

⇒ “8.3.2 Removing and installing differential lock control unit J187 - Audi A6, A7 with quattro sport ”, page 207

⇒ “8.3.3 Removing and installing differential lock control unit J187 - Audi Q7, Q8 with quattro sport ”, page 207

⇒ “8.3.4 Removing and installing differential lock control unit J187 - Audi A8 with quattro sport ”, page 208

8.3.1 Removing and installing differential lock control unit - J187- - Audi A4, A5, Q5 with “quattro sport”

- Ignition is switched off.

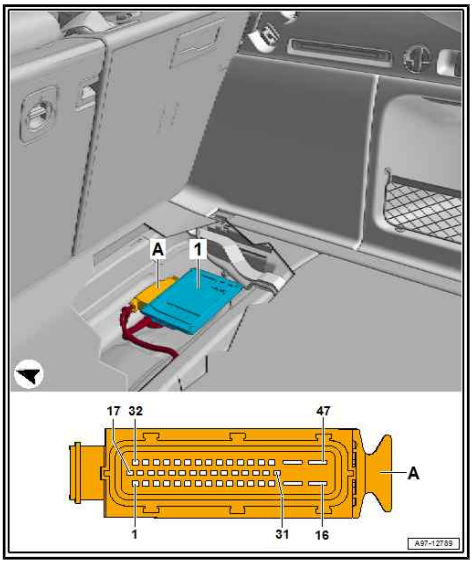
– Remove luggage compartment floor covering.

– Unclip differential lock control unit - J187- -1- from bracket.

– Release connector -A- and unplug from differential lock control unit - J187- .

– Installation of differential lock control unit - J187- is carried out in reverse order of removal.

• Additional work is required if differential lock control unit - J187- has been renewed ⇒ page 208 .



8.3.2 Removing and installing differential lock control unit - J187- - Audi A6, A7 with “quattro sport”

• Ignition is switched off.

– Remove luggage compartment floor covering.

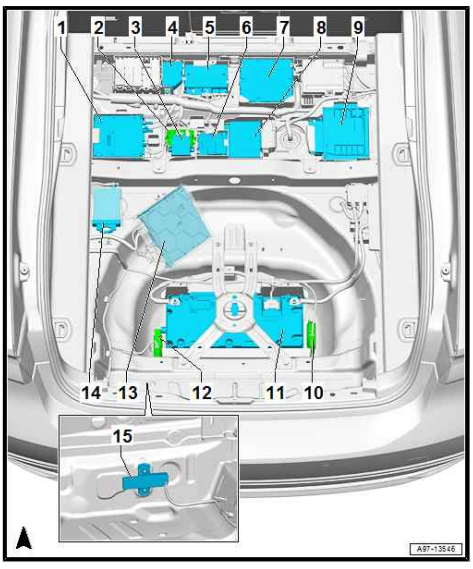
– Remove mounting frame for loading aid ⇒ General body repairs, interior; Rep. gr. 70 ; Luggage compartment trim panels; Removing and installing frame for loading aid .

– Unclip differential lock control unit - J187- -9- from bracket.

– Release connector and unplug from differential lock control unit - J187- .

– Installation of differential lock control unit - J187- is carried out in reverse order of removal.

• Additional work is required if differential lock control unit - J187- has been renewed ⇒ page 208 .



8.3.3 Removing and installing differential lock control unit - J187- - Audi Q7, Q8 with “quattro sport”

• Ignition is switched off.

– Remove luggage compartment floor covering.

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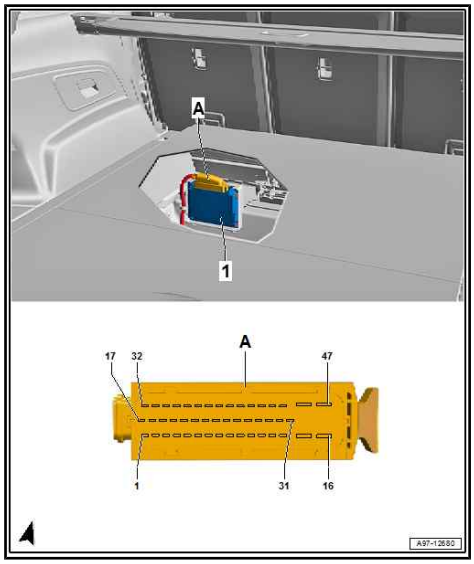
– Unclip differential lock control unit - J187- -1- from bracket.

– Release connector -A- and unplug from differential lock control unit - J187- .

– Installation of differential lock control unit - J187- is carried out in reverse order of removal.

• Additional work is required if differential lock control unit - J187- has been renewed ⇒ page 208 .



8.3.4 Removing and installing differential lock control unit - J187- - Audi A8 with “quattro sport”

• Ignition is switched off.

– Remove luggage compartment floor covering.

– Unclip differential lock control unit - J187- -1- from bracket.

– Installation of differential lock control unit - J187- is carried out in reverse order of removal.

• Additional work is required if differential lock control unit - J187- has been renewed ⇒ page 208 .

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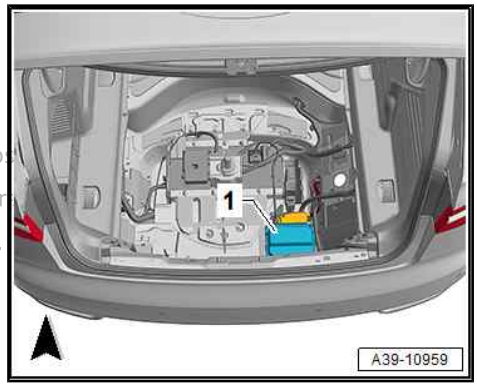

8.4 Additional work required after renewing differential lock control unit - J187-

• Only perform this additional work if differential lock control unit - J187- has been renewed.

– Connect vehicle diagnostic tester and switch on ignition.

– Using vehicle diagnostic tester in `Guided Functions` mode, select `32 - Lock electronics` and then select the function `32 - Replace control unit`.

• It is important to follow all instructions given by the vehicle diagnostic tester exactly.

The rear final drive fitted in the vehicle is adapted to the differential lock control unit - J187- using the vehicle diagnostic tester.

• When the function `32 - Replace control unit` has been completed, a system check is performed. Any malfunctions during this test must be eliminated via the “Guided Fault Finding”.