



Workshop Manual

Audi A4 2001 ➤

Audi A4 Cabriolet 2003 ➤

Audi A6 2005 ➤

Audi A8 2003 ➤

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Rear final drive 0AR

Edition 07.2007

List of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Repair Group

00 - Technical data

39 - Final drive - rear differential



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

Contents

00 - Technical data	1
1 Rear final drive identification	1
1.1 Audi A4 2001 ➤ – Code letters, allocation, transmission ratios and capacities	2
1.2 Cabriolet 2003 ➤ – Code letters, allocation, transmission ratios and capacities	2
1.3 Audi A6 2005 ➤ – Code letters, allocation, transmission ratios, capacities	3
1.4 Audi A8 2003 ➤ – Code letters, allocation, transmission ratios, capacities	4
2 Transmission layout	6
3 General repair instructions	8
3.1 Jacking mode (vehicles with pneumatic suspension)	8
3.2 Special tools	8
3.3 Components	8
39 - Final drive - rear differential	10
1 Exploded view - servicing propshaft	10
1.1 Removing and installing propshaft - Audi A4, Audi Cabriolet and Audi A6	11
1.2 Removing and installing propshaft on Audi A8	18
1.3 Detaching and attaching propshaft at rear final drive	24
2 Measuring and marking radial run-out at flange for propshaft	27
3 Checking gear oil in rear final drive	28
4 Exploded view - rear final drive on Audi A4, Audi Cabriolet and Audi A6	29
4.1 Removing and installing rear final drive on Audi A4, Audi Cabriolet and Audi A6	29
5 Exploded view - rear final drive on Audi A8	34
5.1 Removing and installing rear final drive on Audi A8	34
6 Renewing flange shaft oil seals	39
7 Renewing protective ring on flange shaft	43
8 Renewing oil seal for propshaft flange on rear final drive (rear final drive installed)	45
8.1 Renewing protective ring on flange for propshaft	51



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00 – Technical data

1 Rear final drive identification

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

- ◆ 6-speed manual gearbox 02X
- ◆ 6-speed manual gearbox 0A3
- ◆ Automatic gearbox 09E, four-wheel drive
- ◆ Automatic gearbox 09L, four-wheel drive

Allocation, Audi A4 2001 ➤, Cabriolet 2003 ➤ ⇒ [page 2](#)

Allocation, Audi A6 2005 ➤ ⇒ [page 3](#)

Allocation, Audi A8 2003 ➤ ⇒ [page 4](#)

Location on rear final drive

Final drive 0AR -arrow 1-

Code letters and date of manufacture -arrow 2-

Final drive 0AR -arrow-

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Code letters and date of manufacture for rear final drive

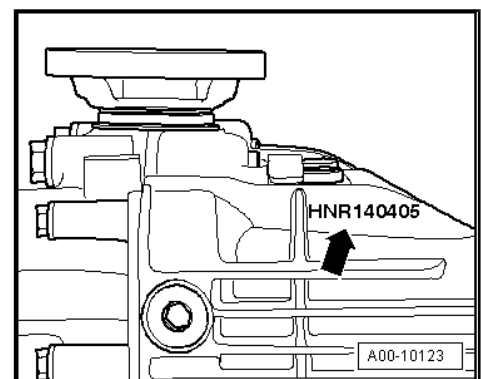
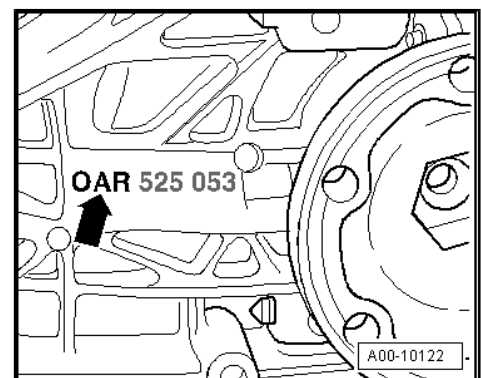
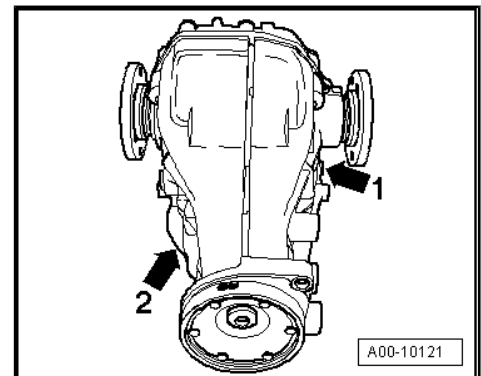
Example:	HNR	14	04	05
	Code letters	Day	Month	Year -2005- of manufacture

Other information can be disregarded.



Note

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.





1.1 Audi A4 2001 ► – Code letters, allocation, transmission ratios and capacities

Rear final drive		0AR		
Code letters		HNL	HNP	HNQ
Manufactured	from to	06.05	11.05	06.05
Allocation	Engine	2.0 ltr. - 147 kW TFSI 3.0 ltr. - 150 kW TDI 3.0 ltr. - 171 kW TDI 3.2 ltr. - 188 kW FSI 4.2 ltr. - 253 kW S4	3.0 ltr. -150 kW TDI 4.2 ltr. -253 kW	1.8 ltr. - 120 kW
Ratio	Final drive Z ₂ : Z ₁	31 : 10 = 3.100	35 : 9 = 3.889	37 : 9 = 4.111
Drive shaft flange Ø		75.5 mm	75.5 mm	70.7 mm
Capacity		0.9 litres		
Specifica- tion		Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		
Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue .				

Rear final drive	0AR		
Code letters	HNR	JKN	
Manufactured from to	06.05	12.07	
Allocation engine	4.2 ltr. - 309 kW RS4	2.0 ltr. - 103 kW TDI	
Ratio Final drive Z ₂ : Z ₁	37 : 9 = 4.111	37 : 10 = 3.700	
Drive shaft flange Ø	75.5 mm	75.5 mm	
Capacity	0.9 litres		
Specification	Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		
Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue .			

1.2 Cabriolet 2003 ► – Code letters, allocation, transmission ratios and capacities

Rear final drive		0AR		
Code letters		HNL	HNP	HNR
Manufactured	from to	06.05	11.05	06.05
Allocation	Engine	3.0 ltr. - 150 kW TDI 3.0 ltr. - 171 kW TDI 3.2 ltr. - 188 kW FSI 4.2 ltr. - 253 kW S4	3.0 ltr. - 150 kW TDI 3.0 ltr. - 171 kW TDI 4.2 ltr. - 253 kW S4	4.2 ltr. - 309 kW RS4
Ratio	Final drive Z ₂ : Z ₁	31 : 10 = 3.100	35 : 9 = 3.889	37 : 9 = 4.111

Rear final drive	0AR		
Code letters	HNL	HNP	HNR
Drive shaft flange Ø	75.5 mm	75.5 mm	75.5 mm
Capacity	0.9 litres		
Specifica- tion	Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		
Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue .			

1.3 Audi A6 2005 ▶ – Code letters, allocation, transmission ratios, capacities

Rear final drive	0AR		
Code letters	HNL	HNN	HNP
Manufactured from to	09.05	11.05	11.05
Allocation engine	2.7 ltr. - 120 kW TDI 2.7 ltr. - 132 kW TDI 3.0 ltr. - 155 kW TDI 3.0 ltr. - 171 kW TDI 3.2 ltr. - 188 kW FSI 4.2 ltr. - 442 kW FSI	2.7 ltr. - 120 kW TDI 2.7 ltr. - 132 kW TDI 3.0 ltr. - 155 kW TDI 3.0 ltr. - 165 kW TDI 3.0 ltr. - 171 kW TDI 2.8 ltr. - 154 kW FSI 3.0 ltr. - 160 kW 3.2 ltr. - 188 kW FSI 4.2 ltr. - 246 kW 4.2 ltr. - 257 kW FSI 5.2 ltr. - 309 kW FSI 5.2 ltr. - 320 kW FSI	3.0 ltr. - 155 kW TDI 3.0 ltr. - 165 kW TDI 3.0 ltr. - 171 kW TDI
Ratio Final drive Z ₂ : Z ₁	31 : 10 = 3.100	32 : 9 = 3.555	35 : 9 = 3.889
Drive shaft flange Ø	75.5 mm	75.5 mm	75.5 mm
Capacity	0.9 litres		
Specification	Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		

Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue



Rear final drive	0AR		
Code letters	HNR	JKN	
Manufactured from to	11.05	12.07	
Allocation Engine	3.0 ltr. - 155 kW TDI 3.0 ltr. - 171 kW TDI 3.2 ltr. - 188 kW FSI	3.0 ltr. - 155 kW TDI	
Ratio Final drive Z ₂ : Z ₁	37 : 9 = 4.111	37 : 10 =3.700	
Drive shaft flange Ø	75.5 mm	75.5 mm	
Capacity	0.9 litres		
Specification	Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		
Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue .			

1.4 Audi A8 2003 ► – Code letters, allocation, transmission ratios, capacities

Rear final drive		0AR		
Code letters		HNK	HNM	
Manufactured from to		06.05	06.05	
Allocation Engine		3.0 ltr. - 155 kW TDI 4.2 ltr. - 235 kW TDI 4.2 ltr. - 240 kW TDI 3.7 ltr. - 206 kW 4.2 ltr. - 213 kW 4.2 ltr. - 246 kW 5.2 ltr. - 309 kW FSI 5.2 ltr. - 331 kW FSI 6.0 ltr. - 331 kW	3.0 ltr. - 155 kW TDI 3.0 ltr. - 171 kW TDI 3.2 ltr. - 188 kW FSI 3.2 ltr. - 191 kW FSI 4.2 ltr. - 257 kW FSI 5.2 ltr. - 331 kW FSI 6.0 ltr. - 331 kW	
Ratio Final drive Z ₂ : Z ₁		31 : 10 = 3.100	32 : 9 = 3.555	
Drive shaft flange Ø		108 mm	108 mm	
Capacity		0.9 litres		

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Rear final drive	0AR		
Code letters	HNK	HNM	
Speci- fica- tion	Gear oil G 052 145 A1 (container size 0.5 litre) Gear oil G 052 145 S2 (container size 1.0 litre)		
Select correct unit by checking engine, manual gearbox and automatic gearbox versions in ⇒ Electronic parts catalogue .			



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2 Transmission layout

◆ Illustrated with 6-speed manual gearbox 0A3, four-wheel drive

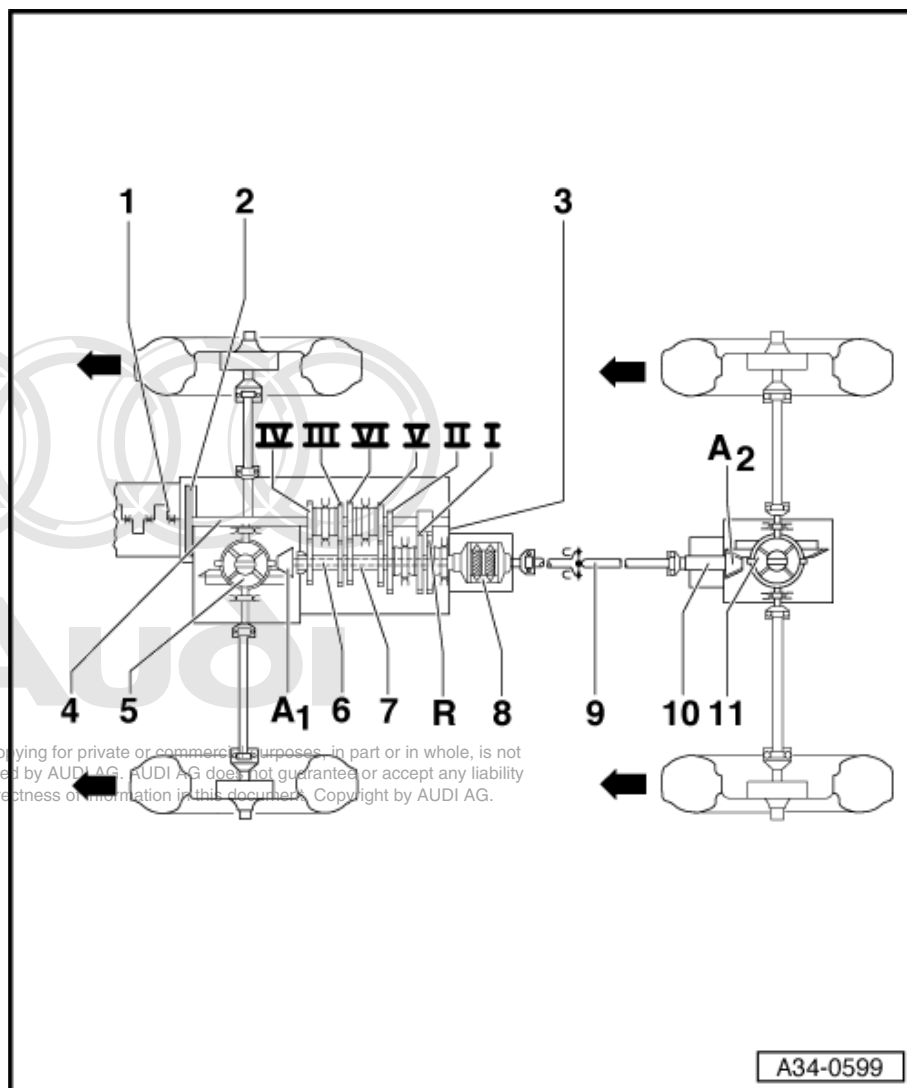
Identification



Note

Arrows point in direction of travel

- 1 - Engine
- 2 - Clutch
- 3 - Gearbox
- 4 - Input shaft (main shaft)
- 5 - Differential (front)
- 6 - Front pinion shaft (output shaft)
- 7 - Hollow shaft
- 8 - Torsen differential
- 9 - Propshaft
- 10 - Rear pinion shaft
- 11 - Differential (rear)



Ratio

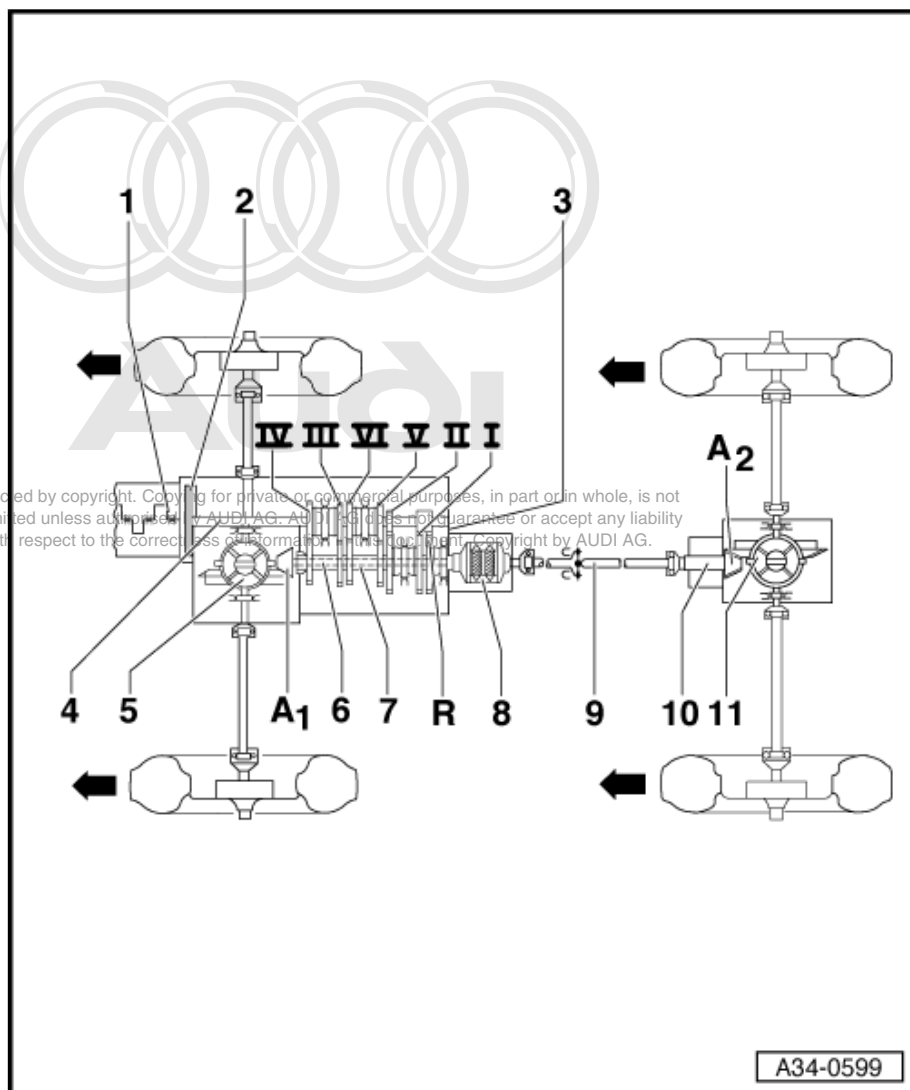


Note

Arrows point in direction of travel

- I - 1st gear
- II - 2nd gear
- III - 3rd gear
- IV - 4th gear
- V - 5th gear
- VI - 6th gear
- R - Reverse gear
- A1 - Final drive (front)
- A2 - Final drive (rear)

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3 General repair instructions

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

A number of generally applicable instructions for the various repair procedures are summarised here under the heading "Components" ⇒ [page 8](#) . They apply to the work described in this Manual.

3.1 Jacking mode (vehicles with pneumatic suspension)

Before raising the vehicle on a 2-column lifting platform (wheels off the ground) you must first activate the jacking mode ⇒ Rep. Gr. 43 .

3.2 Special tools

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

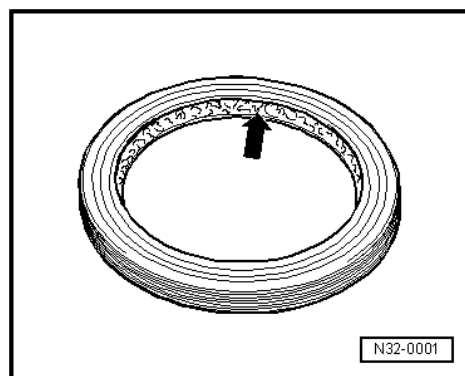
3.3 Components

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 in the final drive and top up if necessary ⇒ [page 28](#) .
- ◆ Capacity and specification, Audi A4 2001 ▶ ⇒ [page 2](#)
- ◆ Capacity and specification, Cabriolet 2003 ▶ ⇒ [page 2](#)
- ◆ Capacity and specification, Audi A6 2005 ▶ ⇒ [page 3](#)
- ◆ Capacity and specification, Audi A8 2003 ▶ ⇒ [page 4](#)
- ◆ 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 surrounding areas before dismantling.

O-rings, oil seals and gaskets

- ◆ Always renew O-rings, 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.
- ◆ Before installing oil seals, lightly oil the outer circumference of the seal and fill the space between the sealing lips -arrow- about half full with grease -G 052 128 A1- .
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ Lightly lubricate O-rings before installation to prevent them from being trapped and damaged during assembly.
- ◆ After renewing seals and gaskets, check and, if necessary, top up oil level in final drive ⇒ [page 28](#) .

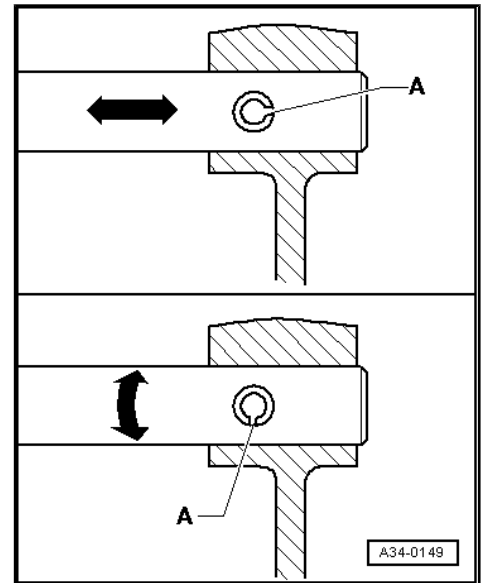


Locking elements

- ◆ 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-.

Nuts, bolts

- ◆ 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 tap or similar). Otherwise there is a danger of the bolts shearing off the next time they are removed.



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39 – Final drive - rear differential

1 Exploded view - servicing propshaft



Note

- ◆ *Refer to general repair instructions ⇒ [page 8](#) .*
- ◆ *No repair work can be carried out on the propshaft with the exception of removing, installing and adjusting.*
- ◆ *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 gearbox or 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.*
- ◆ *Before removing, mark the positions of all parts in relation to each other. Reinstall in the same position to avoid excessive imbalance, resulting in bearing damage and rumbling noise.*
- ◆ *Use counterhold tool -T10172- with adapters -T10172/5- to slacken and tighten the propshaft bolts.*
- ◆ *After detaching the propshaft from the rear final drive, the additional balancing washer (thicker washer) that may be fitted between the lock plate and the bolt head (hexagon socket bolt) must not be reinstalled.*
- ◆ *If problems occur (noise or vibration), ensure that the centre bearing is free of stress and check the radial runout of the propshaft flange at the rear final drive before renewing the propshaft ⇒ [page 27](#) .*



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1 - Rear final drive

- ☐ Removing and installing on Audi A4, Audi Cabriolet and Audi A6
⇒ [page 29](#)
- ☐ Removing and installing on Audi A8
⇒ [page 34](#)

2 - Gasket

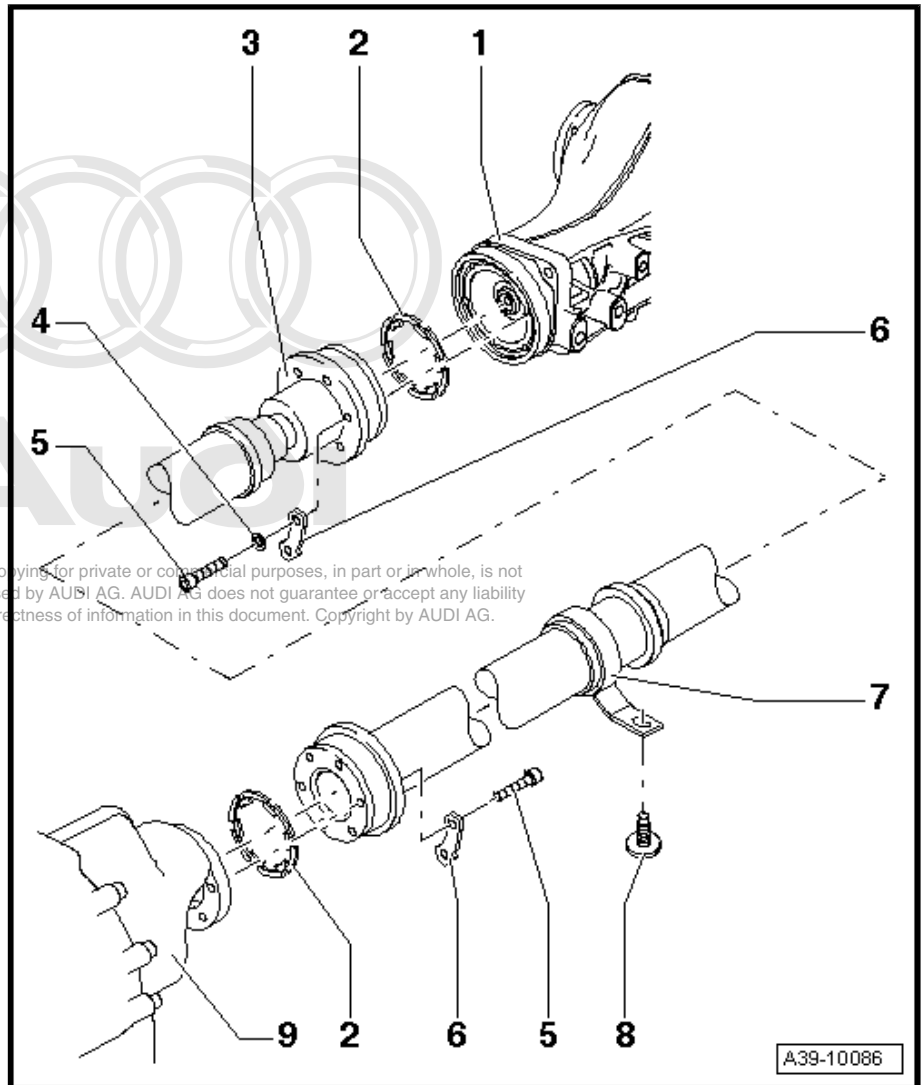
- ☐ Renew
- ☐ Pull off protective foil
- ☐ Degrease flange shaft and glue on gasket

3 - Propshaft

- ☐ Removing and installing on Audi A4, Audi Cabriolet and Audi A6
⇒ [page 11](#)
- ☐ Removing and installing on Audi A8
⇒ [page 18](#)

4 - Balancing washer

- ☐ Not fitted on all vehicles
- ☐ May be fitted between one socket head bolt
⇒ [Item 5 \(page 11\)](#)
and one lock plate
⇒ [Item 6 \(page 11\)](#) at rear final drive
- ☐ If fitted, this balancing washer must not be re-installed after the propshaft has been detached from the rear final drive.

**5 - Hexagon socket-head bolt, 55 Nm**

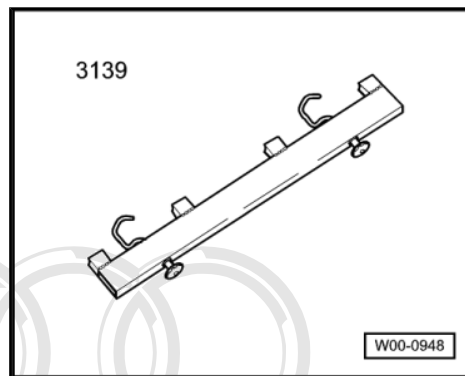
- ☐ Self-locking
- ☐ Always renew
- ☐ The tapped holes for the bolts in the flange shafts must always be cleaned (e.g. with a thread tap)
- ☐ Use counterhold tool -T10172- with adapters -T10172/5- to slacken and tighten

6 - Lock plate**7 - Centre bearing****8 - Hexagon bolt, 25 Nm****9 - Gearbox**

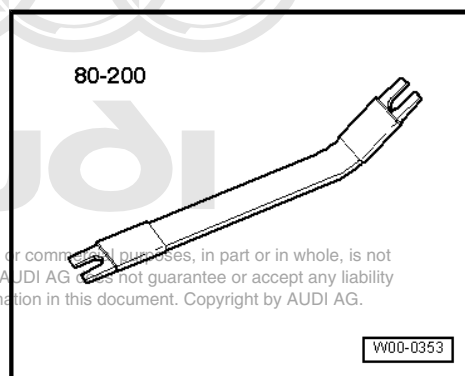
1.1 Removing and installing propshaft - Audi A4, Audi Cabriolet and Audi A6

Special tools and workshop equipment required

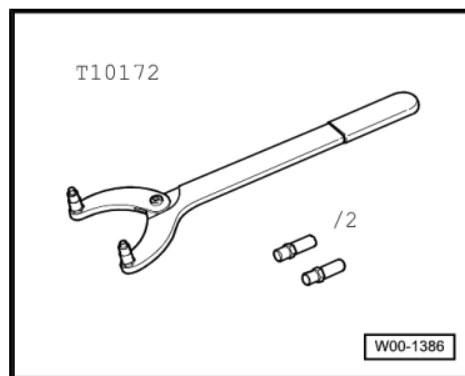
◆ Assembly tool -3139-



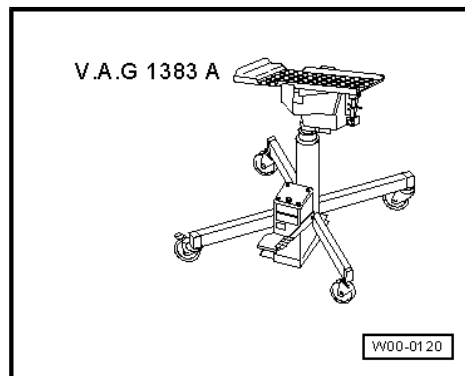
◆ Removal lever -80 - 200-



◆ Counterhold tool -T10172- with adapters -T10172/5-



◆ Engine/gearbox jack -V.A.G 1383 A- with universal gearbox mounting -V.A.G 1359/2-



Removing propshaft on Audi A4, Audi Cabriolet and Audi A6

- ◆ Please refer to notes ➔ [page 10](#) .
- ◆ Repairs on the propshaft should be carried out on a two pillar hoist.

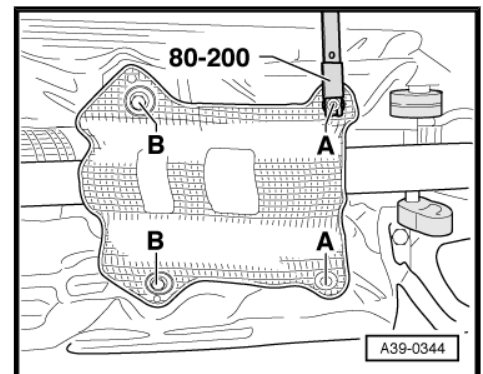
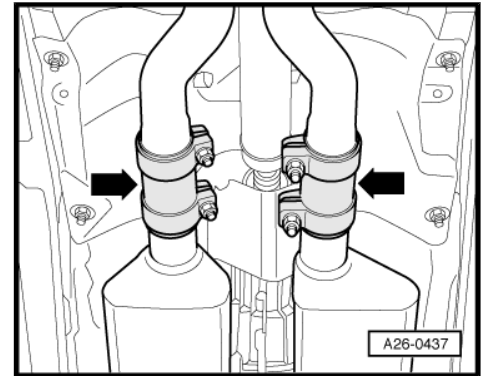
Audi A4 and Audi Cabriolet

- Remove rear section of exhaust system behind clamps -arrows- ➔ Rep. Gr. 26 .



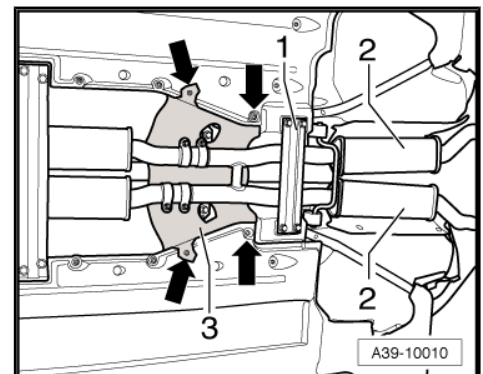
- Lever off fasteners -A- for heat shield above centre bearing.
- Unscrew securing bolts for centre bearing -B-. Support the propshaft by hand during this procedure.
- Remove heat shield with propshaft supported.
- Fit securing bolts for centre bearing again and tighten lightly.

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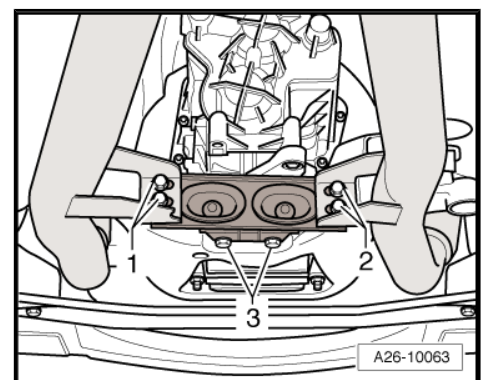
Audi A6

- Remove rear cross piece -1-, where fitted.
- Detach heat shield -3- from vehicle underbody -arrows-.

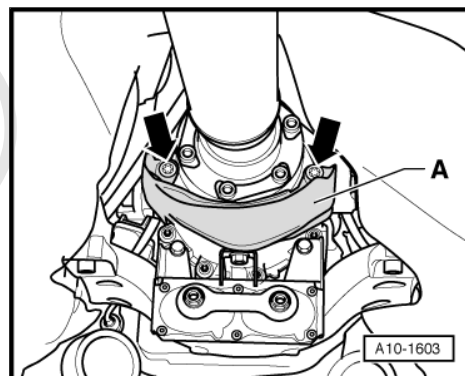


Continued for all vehicles

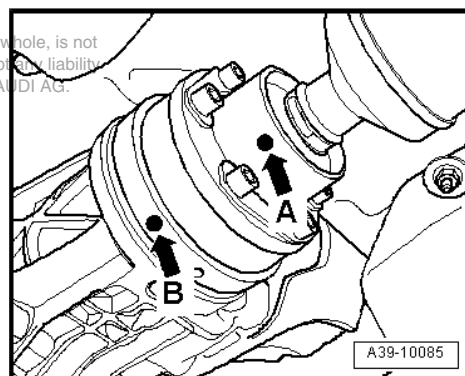
- Where fitted, remove bolts securing front exhaust pipes -1- and -2-.



- Detach guard plate -A- from gearbox -arrows-.



- Check whether there is a factory marking (coloured dot) on the propshaft flange and on the rear final drive flange.
- If not, mark position of propshaft flange -arrow A- in relation to rear final drive flange -arrow B- with paint marker.

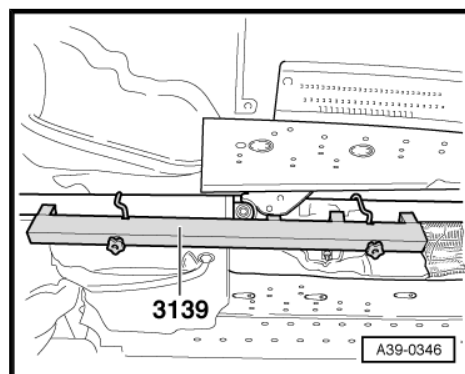


- Attach assembly tool 3139 and tighten plastic nuts.

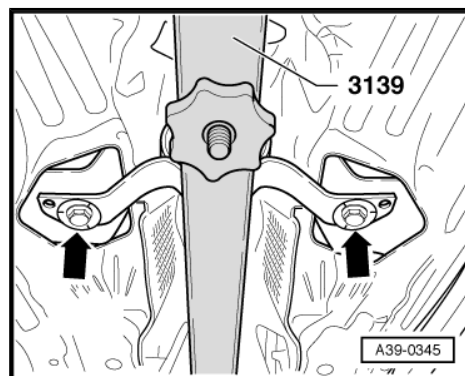


Note

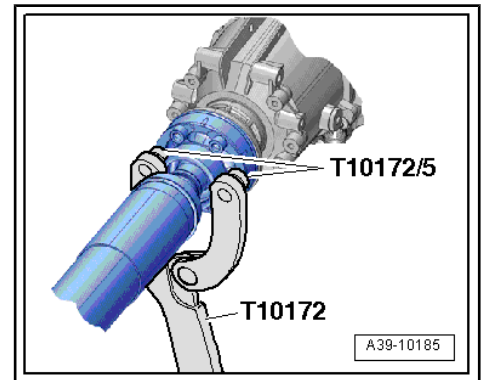
Do not fit assembly tool onto balance plates.



- Remove bolts -arrows- securing centre bearing.



- Remove bolts from connection between propshaft and gearbox (counterhold using counterhold tool -T10172- with -T10172/5-).
- Remove propshaft from gearbox and support propshaft with engine and gearbox jack -V.A.G 1383 A- .



- Remove bolts -1- (6x) on rear CV joint.
- Use counterhold tool -T10172- with adapters -T10172/5- .
- Remove the propshaft.

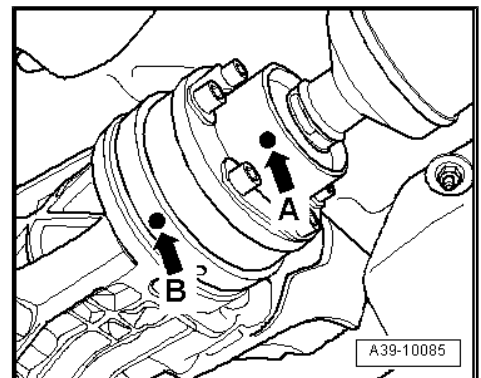
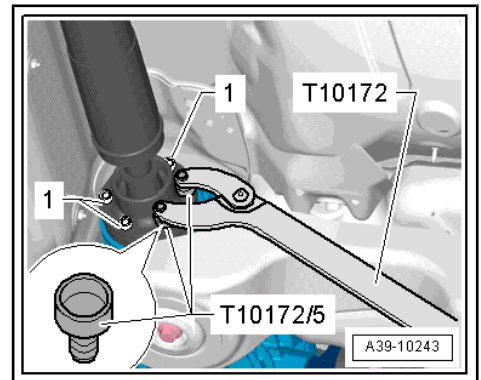
**Note**

The propshaft must be kept straight when it is stored or transported.

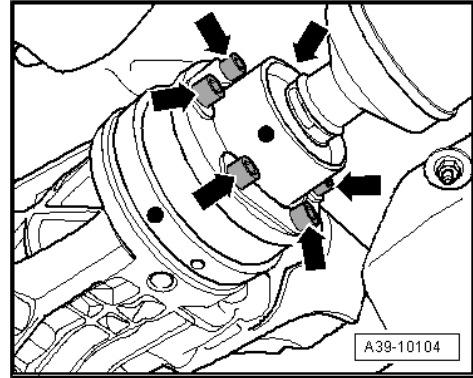
Installing propshaft on Audi A4 and Cabriolet and on Audi A6

Perform installation in reverse sequence of removal. Note the following:

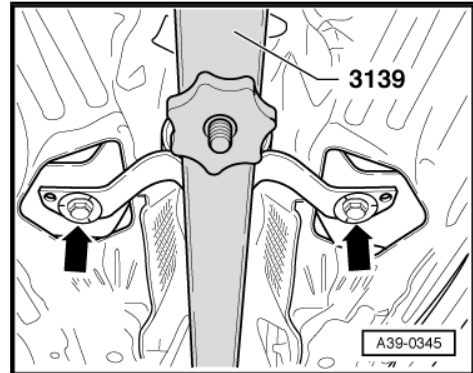
- ◆ Remove old, dried-out high-temperature grease from CV joints and flanges for propshaft. Put in exactly the same quantity of fresh high-temperature grease -G 000 633- .
- ◆ Clean all remaining locking fluid out of the tapped holes in the propshaft flange shafts on the gearbox and rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.
- ◆ After detaching the propshaft from the rear final drive, the additional balancing washer (thicker washer) that may be fitted between the lock plate and one of the securing bolts must not be reinstalled.
- ◆ Always install new securing bolts for propshaft (self-locking bolts).
- ◆ Note correct position of propshaft: the central CV joint is located behind the centre bearing and towards the rear final drive.
- ◆ Make sure that the marks on the propshaft flange -arrow A- and on the gearbox/final drive flange -arrow B- are in line.
- ◆ If a new propshaft is being installed and the factory marking on the rear final drive flange is no longer visible, the radial run-out at the flange for the propshaft must be measured ⇒ page 27 , and the coloured marking on the new propshaft must be aligned with the new marking on the flange.
- Gaskets for propshaft on flanges of gearbox and rear final drive must be renewed. Degrease sealing surfaces and glue on new gaskets.



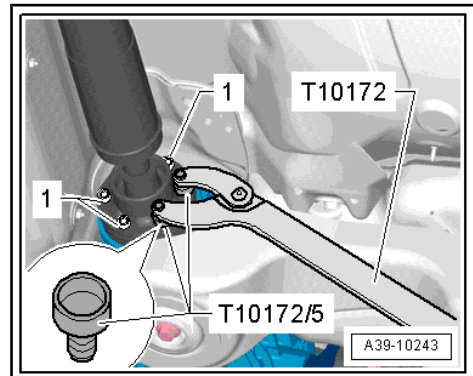
- Bring propshaft into position and fit new bolts at rear final drive -arrows- and at gearbox.



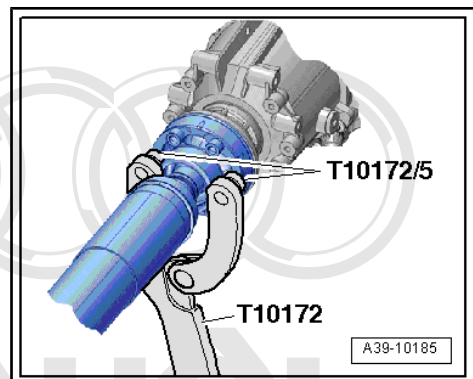
- Screw in securing bolts -arrows- so that centre bearing can still be moved.



- Tighten bolts -1- securing propshaft on rear final drive to specified torque ➔ [Item 5 \(page 11\)](#) .
- Use counterhold tool -T10172- with adapters -T10172/5- .



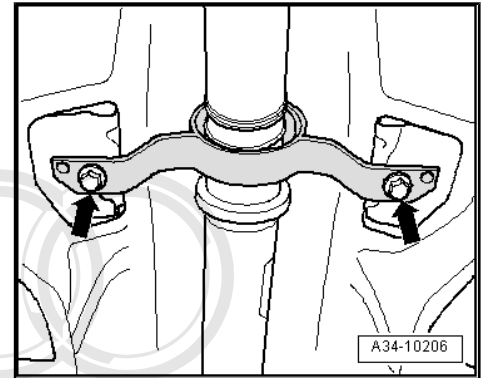
- Tighten bolts securing propshaft (front end) to specified setting ➔ [Item 5 \(page 11\)](#) .
- Use counterhold tool -T10172- with adapters -T10172/5- .
- Remove assembly tool -3139- .



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Audi A4 and Audi Cabriolet

- Remove securing bolts -arrows-. The propshaft must be supported by a second mechanic during this procedure.



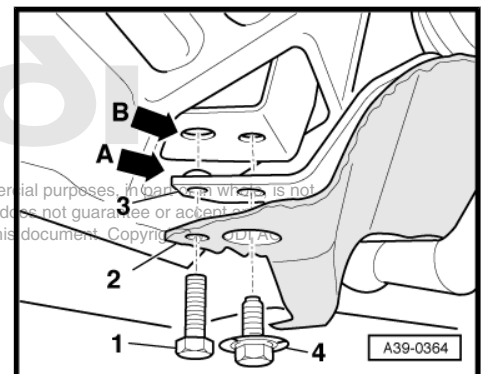
- Install heat shield -2- (continue to support propshaft).
- Fit securing bolts -4- on left and right again and screw in a few turns.
- Secure heat shield -2- on centre bearing -3- with one bolt on each side -1- (M8x30).

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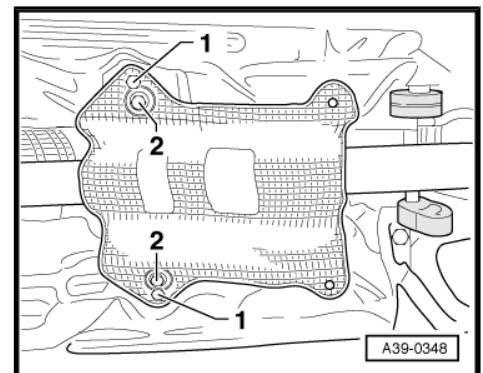


Note

The centralising lug -arrow A- must fit in the locating hole -arrow B- when tightening the bolt with washer -4-.

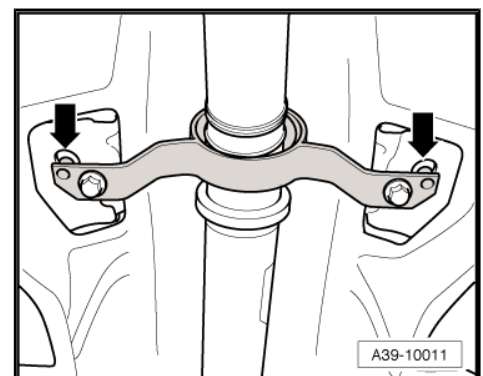


- Secure centre propshaft bearing to body so it is free of stress and tighten -2-. Tightening torque ⇒ [Item 8 \(page 11\)](#)
- Remove locating bolts -1-.
- Insert retaining clips for heat shield.



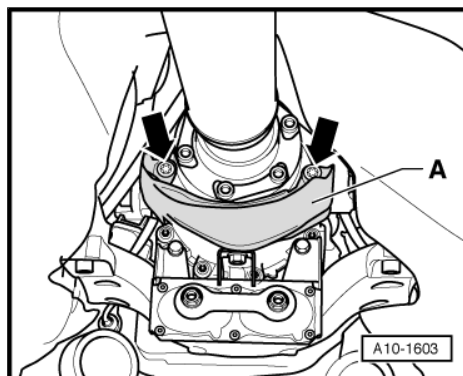
Audi A6

- Secure centre propshaft bearing to body so it is free of stress and tighten to specified torque ⇒ [Item 8 \(page 11\)](#). The centralising lugs on the centre bearing mounting must fit in the locating holes -arrows-.

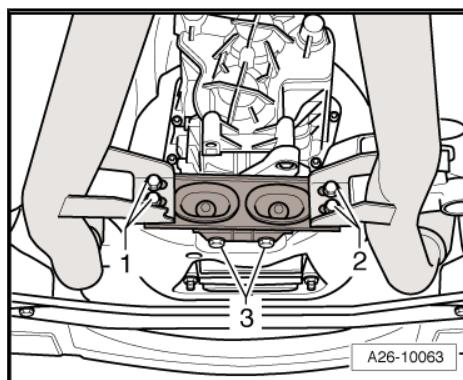


Continued for all vehicles

- Secure guard plate -A- on gearbox -arrows-.



- Where required, secure front exhaust pipes -1- and -2-.

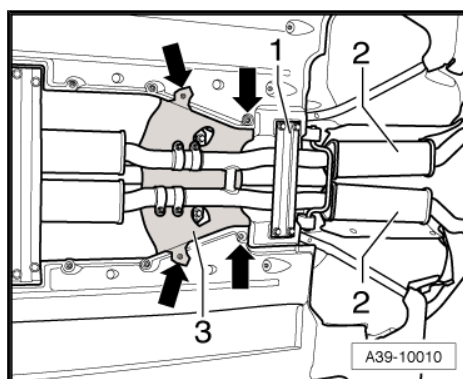


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- Where fitted, secure heat shield -3- to vehicle underbody -arrows-.
- Install rear section of exhaust system -2- ⇒ Rep. Gr. 26 .
- Where fitted, install rear cross piece -1- ⇒ Rep. Gr. 40 .

Tightening torques

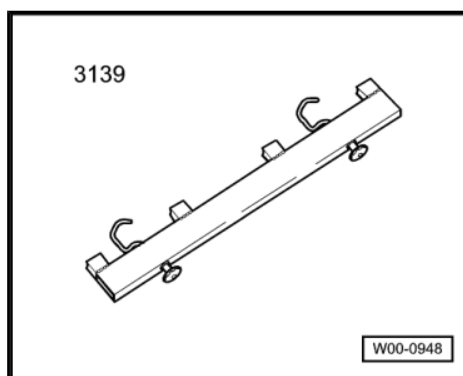
Component	Nm
Heat shield for propshaft to gearbox	25



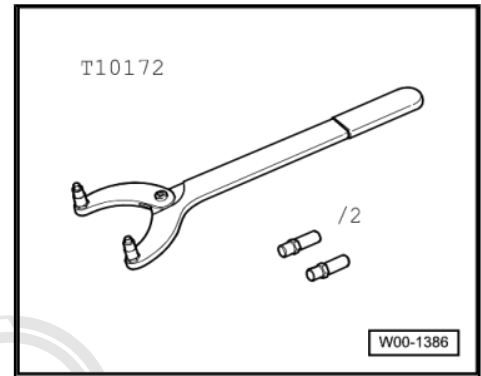
1.2 Removing and installing propshaft on Audi A8

Special tools and workshop equipment required

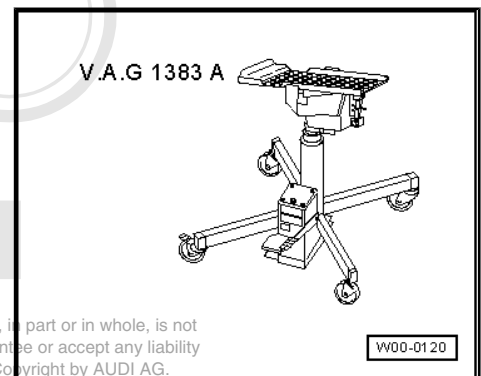
- ◆ Assembly tool -3139-



- ◆ Counterhold tool -T10172- with adapters -T10172/5-



- ◆ Engine and gearbox jack -V.A.G 1383 A- with universal support -V.A.G 1359/2-



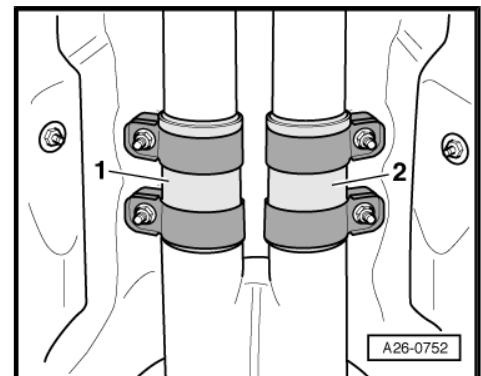
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Removing propshaft

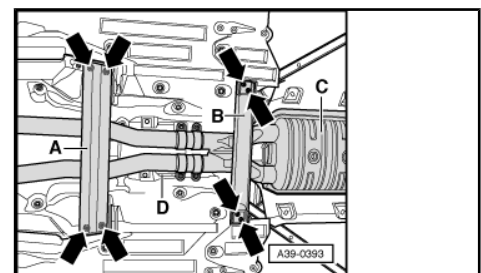


Note

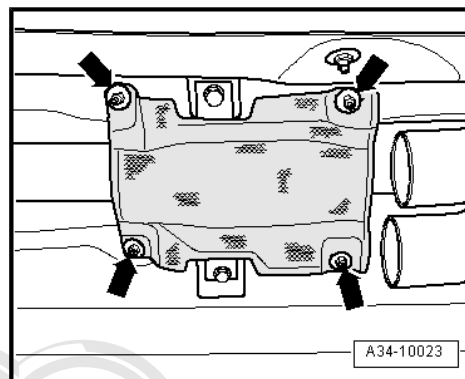
- ◆ *Observe notes ⇒ [page 10](#) .*
- ◆ *Repairs on the propshaft should be carried out on a two pillar hoist.*
- Disconnect exhaust system at clamps -1- and -2-.



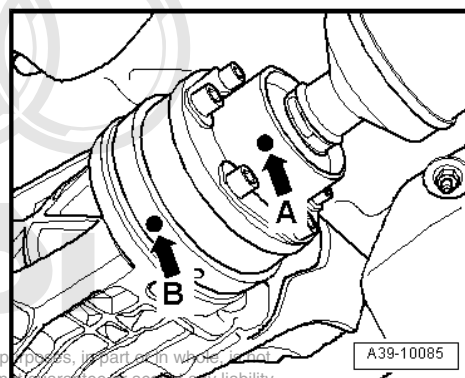
- Remove both tunnel braces -A- and -B-.
- Remove rear section of exhaust system -C- ⇒ Rep. Gr. 26 .



- Remove heat shield -arrows-.
- Remove main catalytic converters ⇒ Rep. Gr. 26 .



- Check whether there is a factory marking (coloured dot) -arrows A and B- on the propshaft flange and on the rear final drive flange.
- If not, mark position of propshaft flange -arrow A- in relation to rear final drive flange -arrow B- with paint marker.



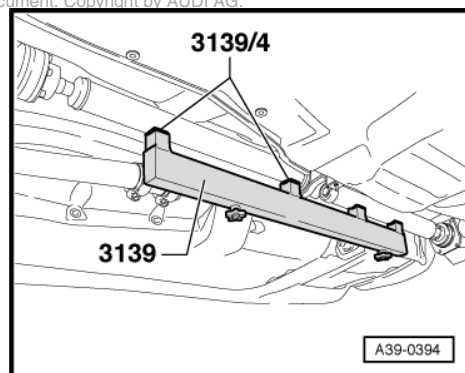
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- Attach assembly tool -3139- with -3139/4- , and tighten the plastic nuts.

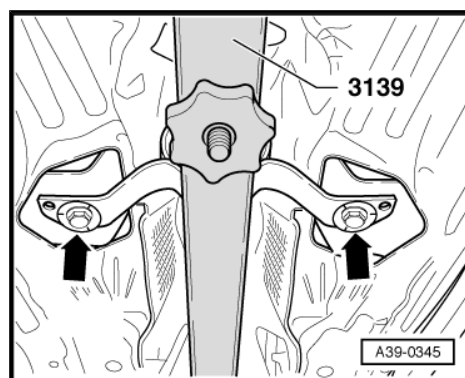


Note

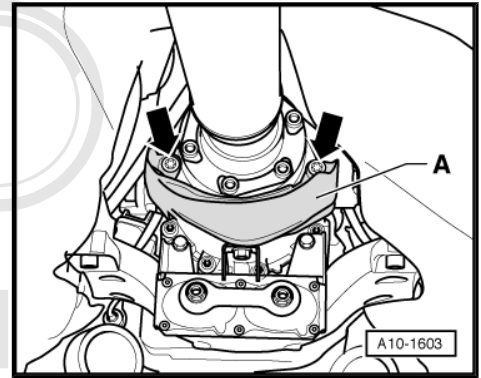
Do not fit assembly tool onto balance plates.



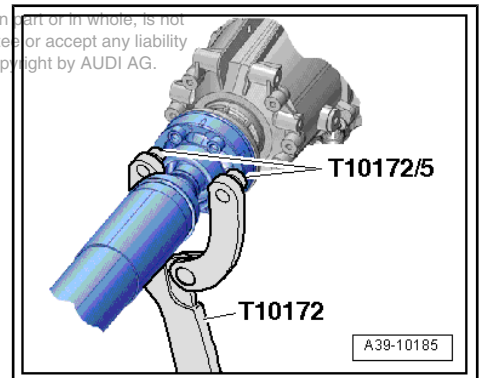
- Remove bolts -arrows- securing centre bearing.



- Unbolt heat shield -A- from gearbox -arrows-.



- Remove bolts from connection between propshaft and gearbox (counterhold using counterhold tool -T10172- with -T10172/5-).
- Remove propshaft from gearbox and support propshaft with engine and gearbox jack -V.A.G 1383 A- .



- Remove bolts -1- (6x) on rear CV joint.
- Use counterhold tool -T10172- with adapters -T10172/5- .
- Remove the propshaft.

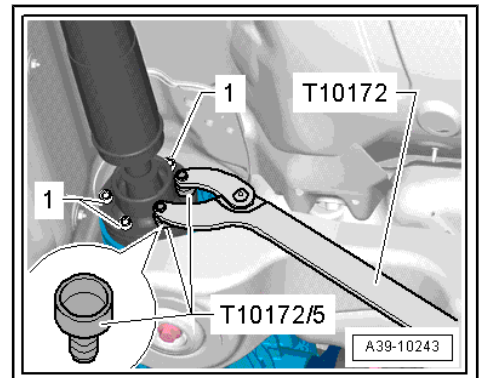


Note

The propshaft must be kept straight when it is stored or transported.

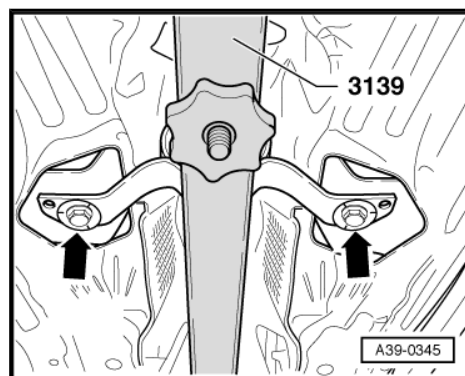
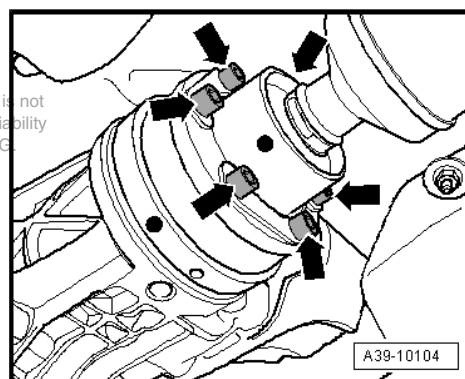
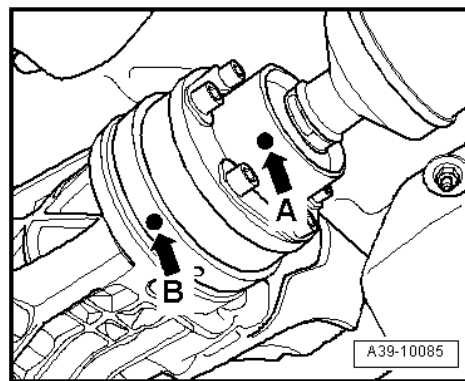
Installing propshaft on Audi A8

Perform installation in reverse sequence of removal. Note the following:



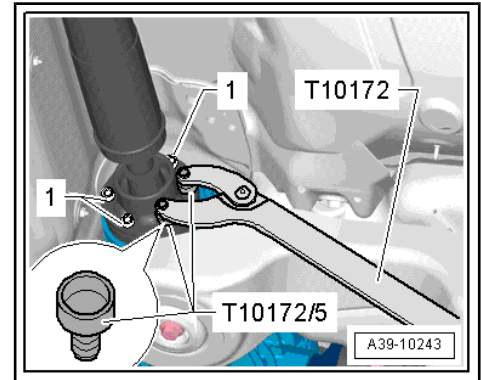
- ◆ Remove old, dried-out high-temperature grease from CV joints and flanges for propshaft. Put in exactly the same quantity of fresh high-temperature grease -G 000 633- .
- ◆ Clean all remaining locking fluid out of the tapped holes in the propshaft flange shafts on the gearbox and rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.
- ◆ After detaching the propshaft from the rear final drive, the additional balancing washer (thicker washer) that may be fitted between the lock plate and one of the securing bolts must not be reinstalled.
- ◆ Always install new securing bolts for propshaft (self-locking bolts).
- ◆ Note correct position of propshaft: the central CV joint is located behind the centre bearing and towards the rear final drive.
- ◆ Make sure that the marks on the propshaft flange -arrow A- and on the gearbox/final drive flange -arrow B- are in line.
- ◆ If a new propshaft is being installed and the factory marking on the rear final drive flange is no longer visible, the radial run-out at the flange for the propshaft must be measured [⇒ page 27](#) , and the coloured marking on the new propshaft must be aligned with the new marking on the flange.
- Gaskets for propshaft on flanges of gearbox and rear final drive must be renewed. Degrease sealing surfaces and glue on new gaskets.
- Bring propshaft into position and fit new bolts at rear final drive -arrows- and at gearbox.

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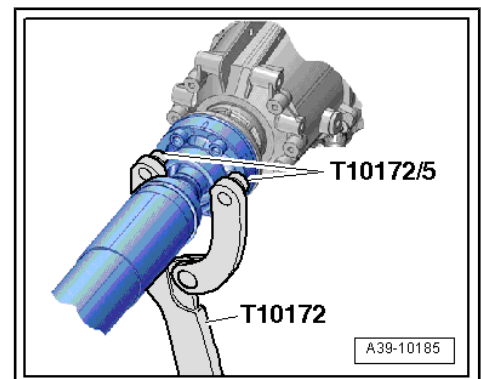


- Screw in securing bolts -arrows- so that centre bearing can still be moved.

- Tighten bolts -1- securing propshaft on rear final drive to specified torque ➔ [Item 5 \(page 11\)](#) .
- Use counterhold tool -T10172- with adapters -T10172/5- .

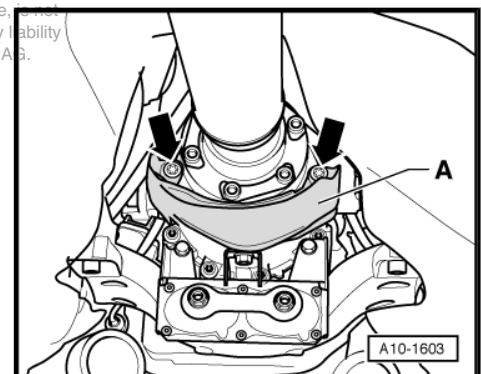


- Tighten bolts securing propshaft (front end) to specified setting ➔ [Item 5 \(page 11\)](#) .
- Use counterhold tool -T10172- with adapters -T10172/5- .
- Remove assembly tool -3139- .



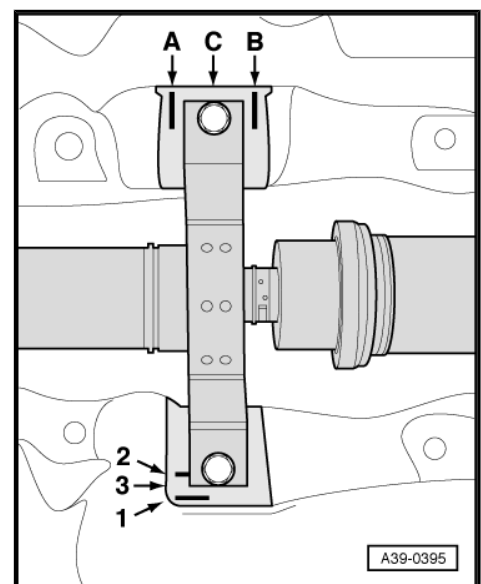
- Install heat shield -A- -arrows-

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Moving centre bearing to central position:

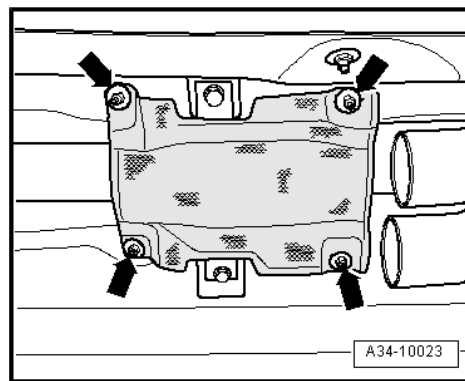
- Slacken securing bolts for centre bearing slightly.
- Move propshaft forward onto stop and mark position of centre bearing on body -arrow A-.
- Move propshaft to rear onto stop and mark position of centre bearing on body -arrow B-.
- Move propshaft to right onto stop and mark position of centre bearing on body -arrow 1-.
- Move propshaft to left onto stop and mark position of centre bearing on body -arrow 2-.
- Move propshaft to central position -arrow C- and -arrow 3-.
- The centre bearing must be positioned in central position between marks -arrow A- and -arrow B- and between -arrow 1- and -arrow 2-.
- Tighten securing bolts of centre bearing to torque ➔ [Item 8 \(page 11\)](#) .





Continued:

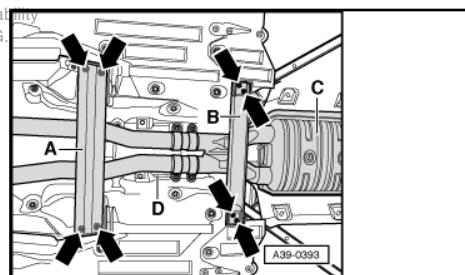
- Install heat shield below centre bearing -arrows-.
- Install exhaust system and perform stress-free alignment ⇒ Rep. Gr. 26 .



- Install both tunnel braces -A- and -B- ⇒ Rep. Gr. 66

Tightening torques

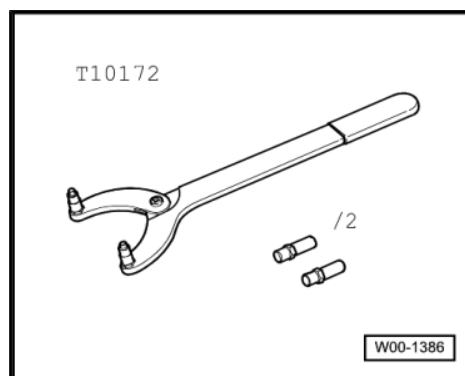
Component	Nm
Heat shield for propshaft to gearbox	25



1.3 Detaching and attaching propshaft at rear final drive

Special tools and workshop equipment required

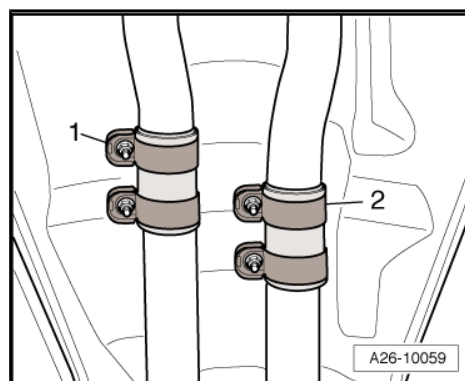
- ◆ Counterhold tool -T10172- with adapters -T10172/5-



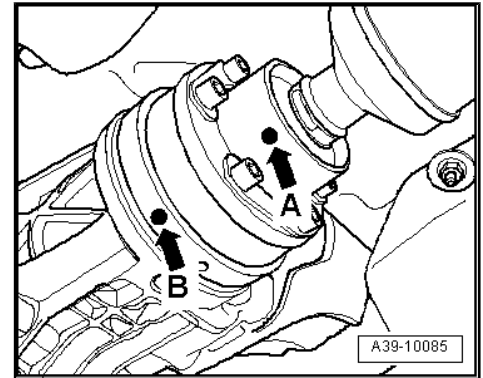
- ◆ High-temperature grease -G 000 633-

Detaching propshaft from rear final drive

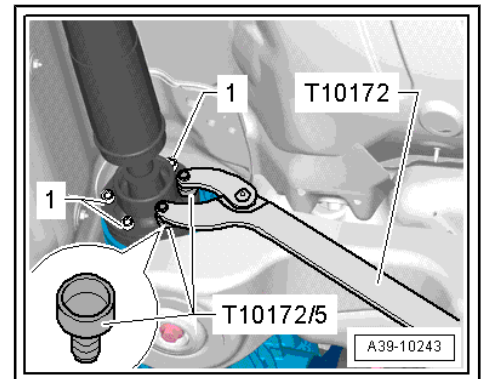
- ◆ Please refer to notes ⇒ [page 10](#) .
- ◆ Repairs on the propshaft should be carried out on a two pillar hoist.
- Release clamps -1- and -2- and remove rear section of exhaust system ⇒ Rep. Gr. 26 .



- Check whether there is a factory marking (coloured dot) on the propshaft flange and on the rear final drive flange.
- If not, mark position of propshaft flange -arrow A- in relation to rear final drive flange -arrow B- with paint marker.



- Remove bolts -1- (6x) on rear CV joint.
- Use counterhold tool -T10172- with adapters -T10172/5-.

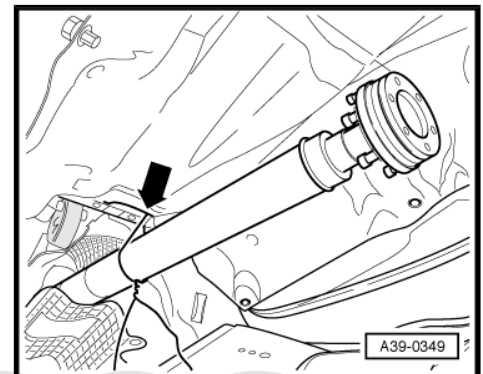


- Separate propshaft from rear final drive and tie up to one side -arrow-.

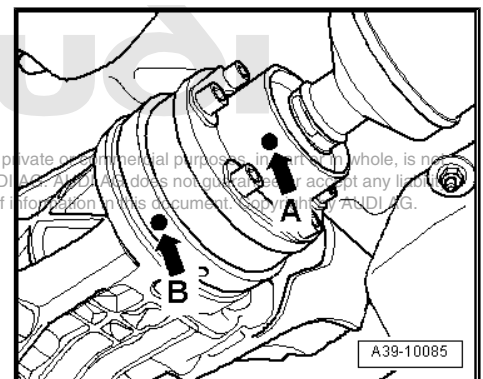
Attaching propshaft to rear final drive

Perform installation in reverse sequence of removal. Note the following:

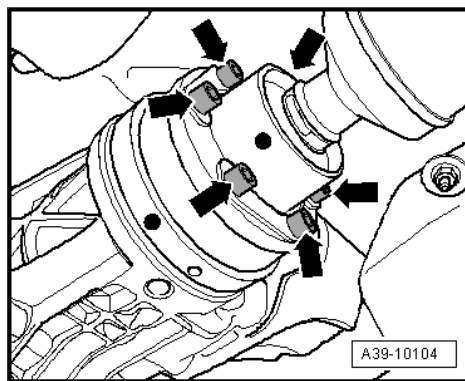
- ◆ Remove old, dried-out high-temperature grease from CV joint and flange for propshaft. Put in exactly the same quantity of fresh high-temperature grease G 000 633.
- ◆ Clean remaining locking fluid out of tapped holes in flange shaft on rear final drive. The threads can be cleaned with a thread tap. Otherwise the securing bolts can shear off when they are screwed in.
- ◆ After detaching the propshaft from the rear final drive, the additional balancing washer (thicker washer) that may be fitted between the lock plate and one of the securing bolts must not be reinstalled.
- ◆ Always install new securing bolts for propshaft (self-locking bolts).



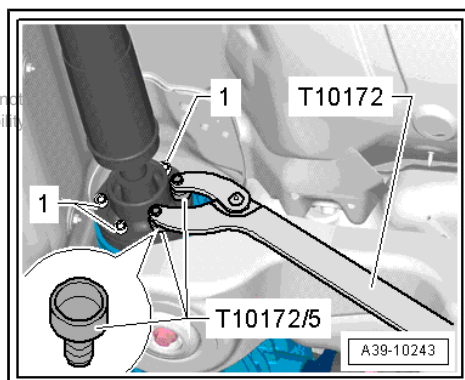
- Gasket for propshaft on rear final drive flange must be renewed. Degrease sealing surface and glue on new gasket.
- Bring propshaft into position and fit bolts on CV joints.
- Make sure that the marks on the propshaft flange -arrow A- and on the rear final drive flange -arrow B- are in line.



- Bring propshaft into position at rear final drive and fit new bolts -arrows-.



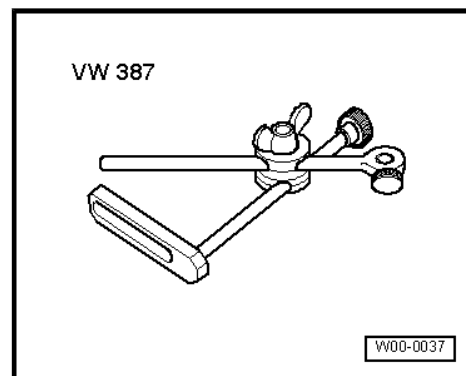
- Tighten bolts -1- securing propshaft on rear final drive to specified torque ➔ [Item 5 \(page 11\)](#) .
- Use counterhold tool -T10172- with adapters -T10172/5-
- Install rear section of exhaust system ➔ Rep. Gr. 26



2 Measuring and marking radial run-out at flange for propshaft

Special tools and workshop equipment required

- ◆ Universal dial gauge bracket -VW 387-

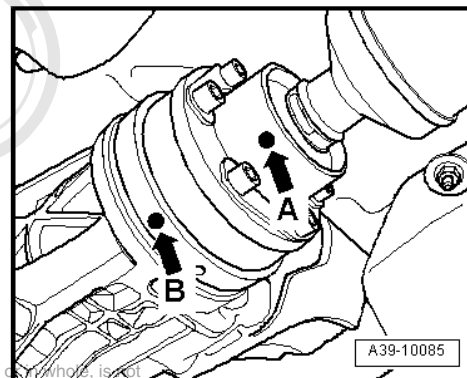


- ◆ Dial gauge
- ◆ Bolt M10×30

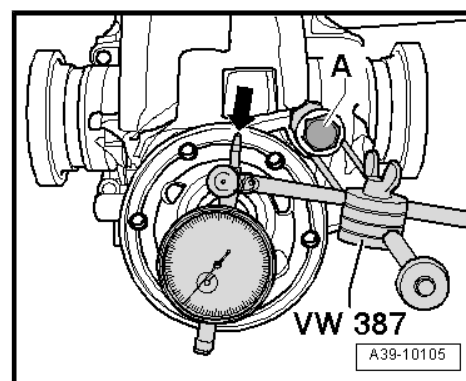


Note

- ◆ *The radial run-out must always be measured when the flange for the propshaft at the rear final drive has been removed. Remove old paint marking and make new marking.*
- ◆ *If a new propshaft is being installed and the marking on the flange shaft of the rear final drive is no longer visible, the point of maximum radial run-out (corresponding to the maximum distance from the axis of rotation) must be measured with a dial gauge and marked with a coloured dot -arrow B-.*
- ◆ *The coloured dot on the propshaft -arrow A- is then brought into alignment with this marking -arrow B-.*
- ◆ *The radial run-out can be measured without removing the rear final drive.*



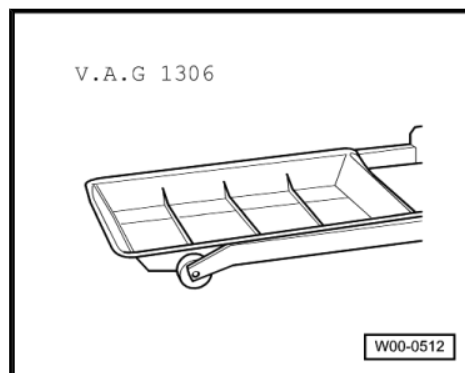
- Unbolt propshaft from rear final drive ➤ [page 24](#) .
- Secure measuring equipment to rear final drive with bolt -A- (M10x30).
- Apply dial gauge to machined surface on inner side of flange for propshaft -arrow- and set to "0" with a preload of 1 mm.
- Turn both rear wheels in the same direction to turn the flange through one complete rotation.
- Mark point of maximum radial run-out with coloured dot on outside of flange (corresponding to maximum distance from axis of rotation).
- Then remove previous marking on flange.
- Attach propshaft ➤ [page 25](#) .



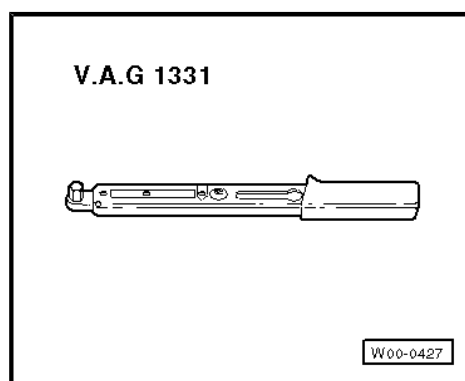
3 Checking gear oil in rear final drive

Special tools and workshop equipment required

◆ Drip tray -V.A.G 1306-



◆ Torque wrench -V.A.G 1331-

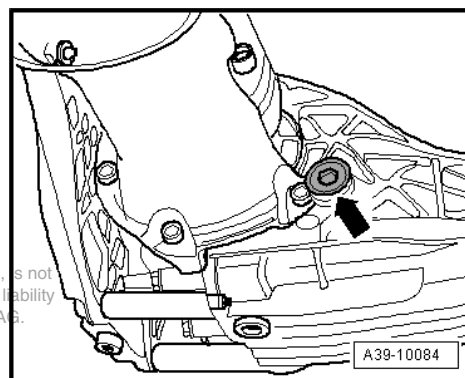


– Remove screw plug -arrow- to check gear oil.

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

- Gear oil specifications: Audi A4 2001 ► ⇒ [page 2](#)
- Gear oil specifications: Cabriolet 2003 ► ⇒ [page 2](#)
- Gear oil specifications: Audi A6 2005 ► ⇒ [page 3](#)
- Gear oil specifications: Audi A8 2003 ► ⇒ [page 4](#)

– Screw in plug -arrow- and tighten.



Tightening torque: 45 Nm

4 Exploded view - rear final drive on Audi A4, Audi Cabriolet and Audi A6

1 - Subframe

- ◆ Removing and installing ⇒ Rep. Gr. 42

2 - Hexagon bolt

3 - Hexagon bolt, 40 Nm

- ◆ Secures final drive support to subframe

- ◆ Renew nut if fitted

4 - Hexagon socket head bolts, 40 Nm

5 - Rear cross member

6 - Washer

7 - Nut

- ◆ Self-locking

- ◆ Renew

- ◆ Tightening torque ⇒ Rep. Gr. 42

8 - Rear final drive

- ◆ Removing and installing ⇒ [page 29](#)

9 - Drive shaft

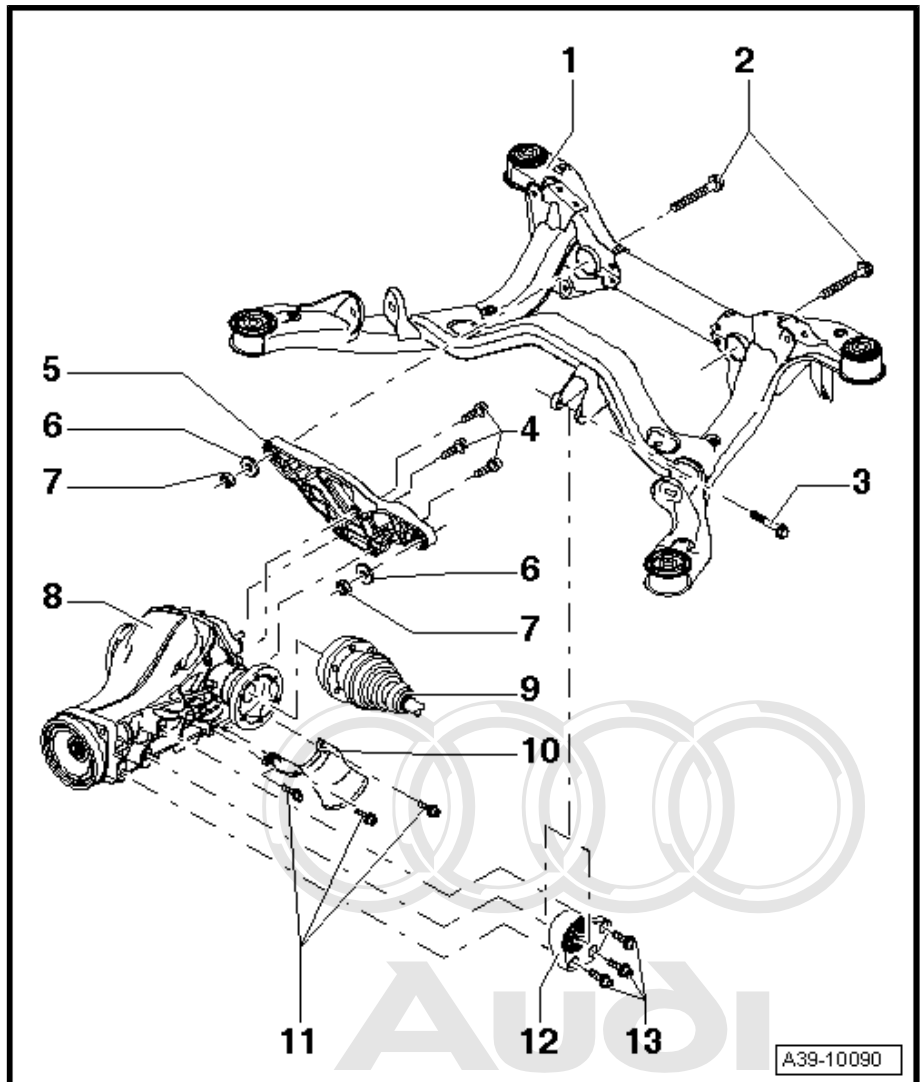
- ◆ Removing and installing ⇒ Rep. Gr. 42

10 - Guard plate

11 - Hexagon socket head bolts, 25 Nm

12 - Final drive support

13 - Hexagon socket head bolts, 40 Nm

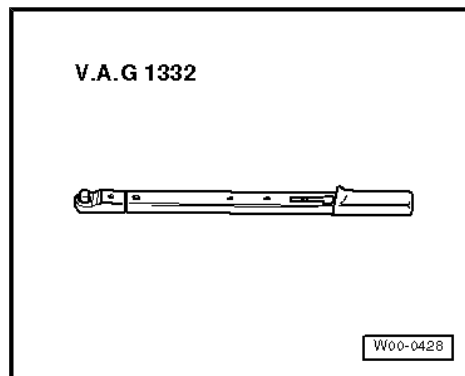


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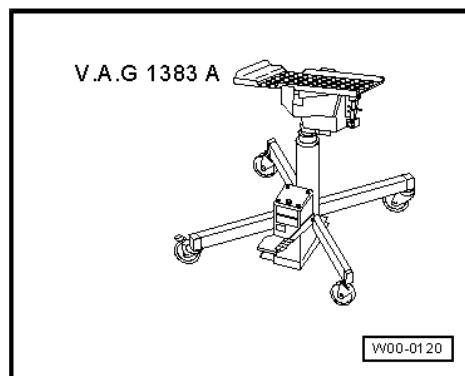
4.1 Removing and installing rear final drive on Audi A4, Audi Cabriolet and Audi A6

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1332-



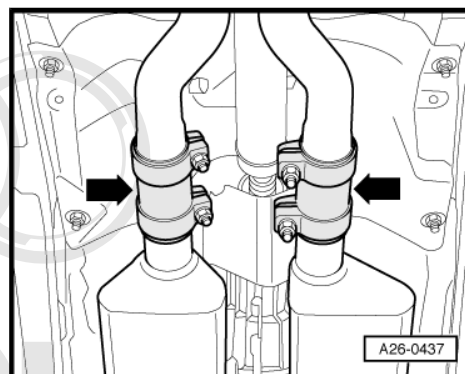
- ◆ Engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2-



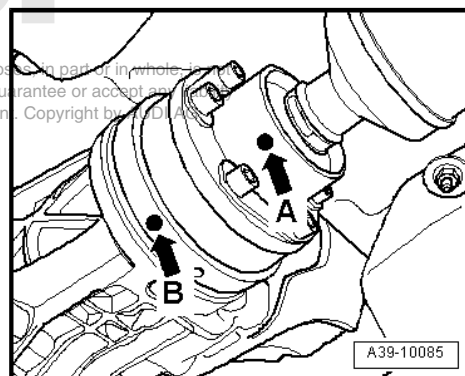
Removing

Refer to general repair instructions ⇒ [page 8](#) .

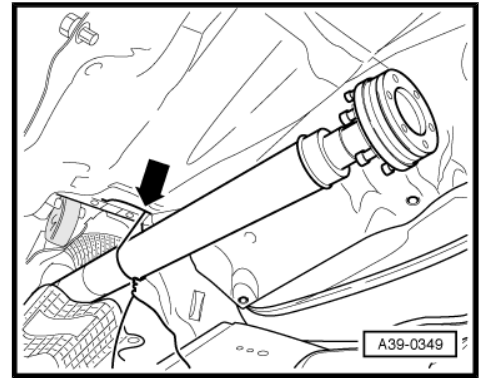
- Remove rear section of exhaust system behind clamps -arrows- ⇒ Rep. Gr. 26 .



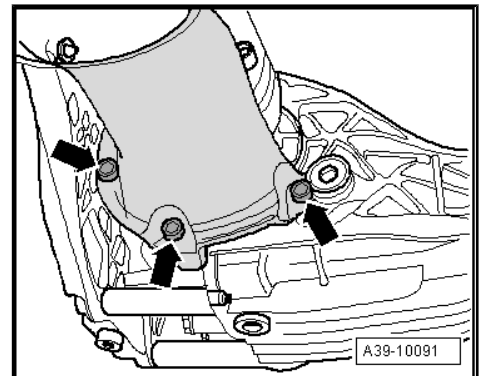
- Check whether there is a factory marking (coloured dot) on the propshaft flange and on the rear final drive flange.
- If not, mark position of propshaft flange -arrow A- in relation to rear final drive flange -arrow B- with paint marker.
- Unbolt propshaft from rear final drive ⇒ [page 24](#) .



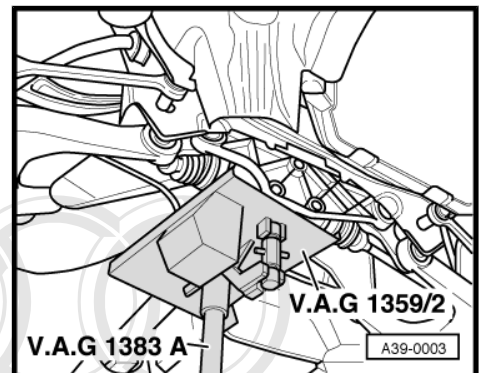
- Separate propshaft from rear final drive and tie up to one side -arrow-.



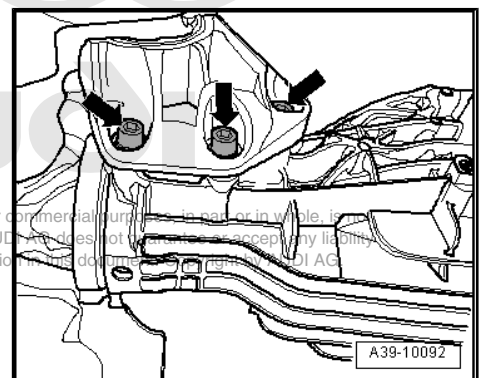
- Remove guard plates (left and right) from rear final drive -arrows-.
- Unbolt drive shafts (left and right).



- Position engine/gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- under rear final drive.
- Secure rear final drive to universal gearbox support with a strap.

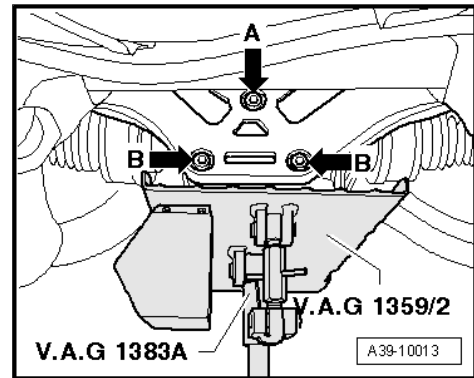


- Remove securing bolts -arrows- for final drive support.

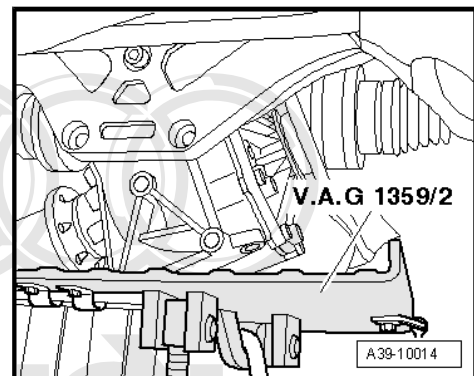


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- Remove securing bolts -arrow A- and -arrows B- from cross member.
- Bolt -arrow A- remains in cross member.



- Slightly lower rear final drive.
- Turn rear final drive slightly to the side and pull drive shafts out of flange shafts alternately on each side.
- Lower rear final drive completely.

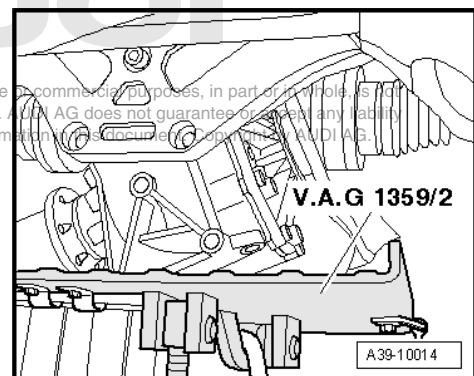


Installing rear final drive on Audi A4, Audi Cabriolet and Audi A6

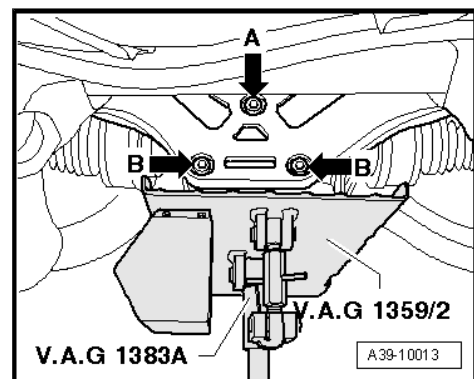
Perform installation in reverse sequence of removal. Note the following:

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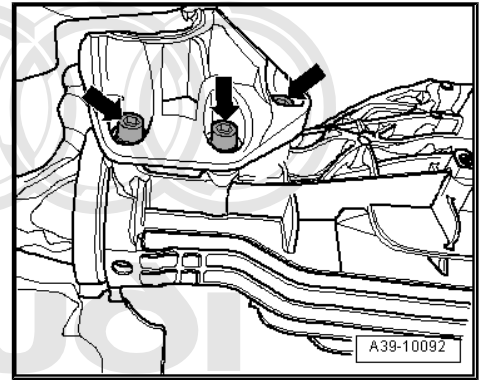
- Turn rear final drive to the side.
- Lift rear final drive and fit drive shafts into flange shafts alternately on each side.



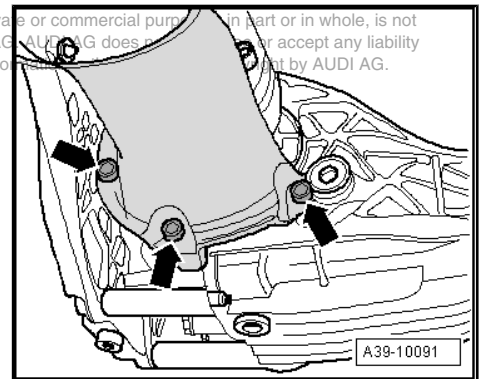
- Install securing bolt -arrow A- and tighten lightly to start with.
- Install securing bolts -arrows B-.
- Tighten securing bolts -arrow A- and -arrows B-. Tightening torque ➔ [Item 4 \(page 29\)](#) .



- Tighten securing bolts -arrows- for final drive support. Tightening torque ⇒ [Item 11 \(page 29\)](#) .



- Attach drive shafts ⇒ Rep. Gr. 42 .
- Install guard plates (left and right) on rear final drive -arrows-. Tightening torque ⇒ [Item 11 \(page 29\)](#) .
- Renew gasket on flange for propshaft and secure propshaft to rear final drive (markings must face each other ⇒ [page 25](#)) .
- Check gear oil level in rear final drive ⇒ [page 28](#) .
- Install rear section of exhaust system ⇒ Rep. Gr. 26 .



5 Exploded view - rear final drive on Audi A8

1 - Subframe

- ☐ Removing and installing
⇒ Rep. Gr. 42

2 - Hexagon bolt

3 - Washer

4 - Nut, 40 Nm

- ☐ Self-locking
- ☐ Renew

5 - Hexagon socket head bolts, 55 Nm

6 - Rear tunnel brace

7 - Drive shaft

- ☐ Removing and installing
⇒ Rep. Gr. 42

8 - Heat shield

9 - Bolt with washer, 25 Nm

10 - Final drive support

- ☐ Note assembly sequence

11 - Hexagon socket head bolt, 40 Nm + tighten 90° (1/4 turn) further

- ☐ Renew

12 - Hexagon socket head bolt, 40 Nm + tighten 90° (1/4 turn) further

- ☐ Renew

13 - Not fitted

14 - Not fitted

15 - Not fitted

16 - Not fitted

17 - Rear final drive

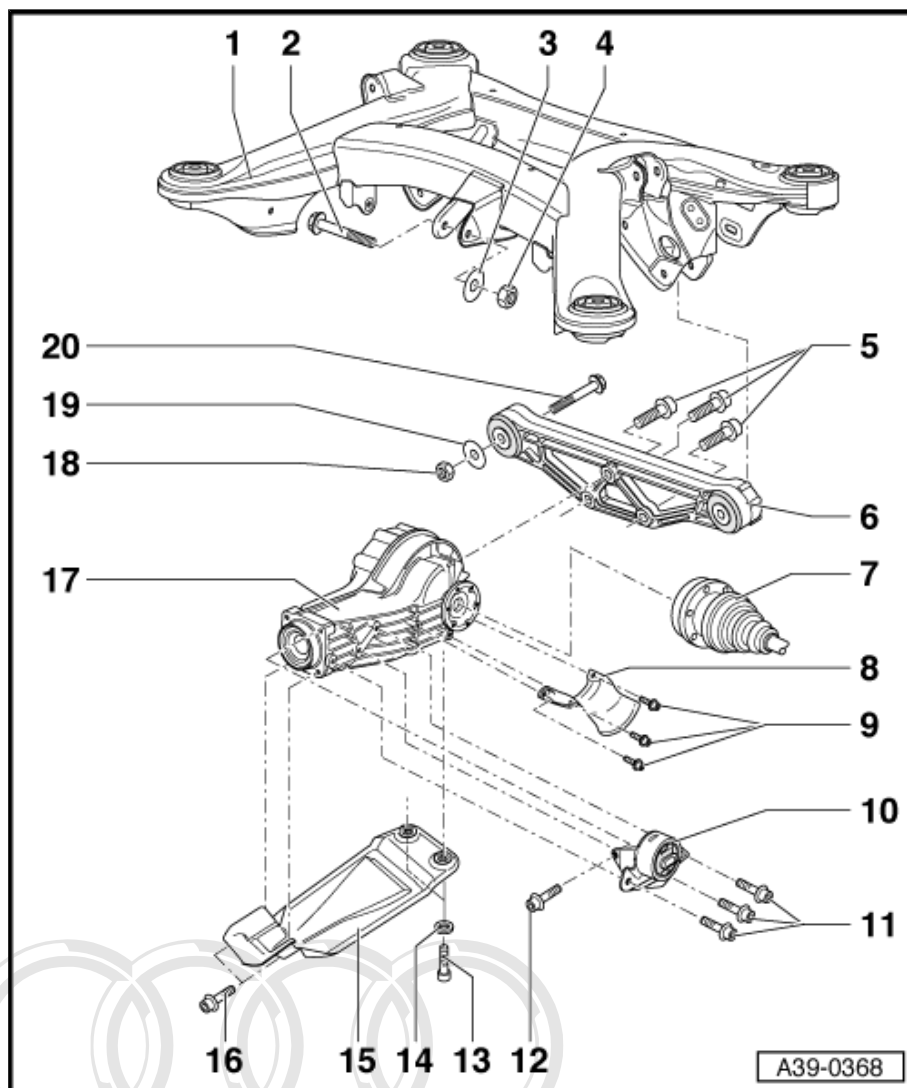
- ☐ Removing and installing ⇒ [page 34](#)

18 - Nut

- ☐ Self-locking
- ☐ Renew
- ☐ Tightening torque ⇒ Rep. Gr. 42

19 - Washer

20 - Hexagon bolt

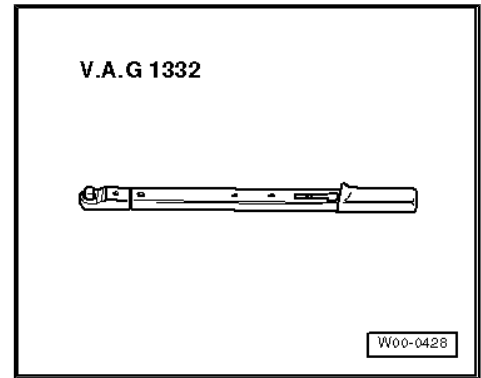


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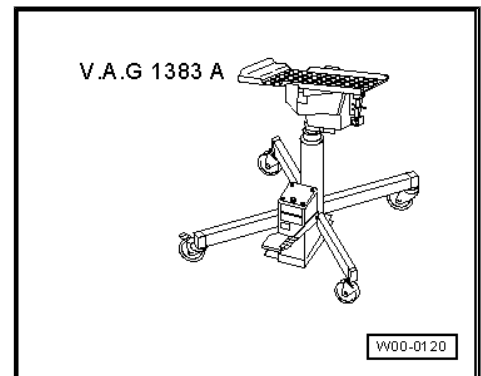
5.1 Removing and installing rear final drive on Audi A8

Special tools and workshop equipment required

◆ Torque wrench -V.A.G 1332-



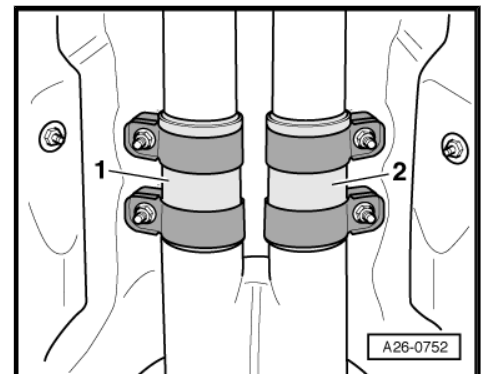
◆ Engine and gearbox jack -V.A.G 1383 A- with universal support -V.A.G 1359/2-



Removing

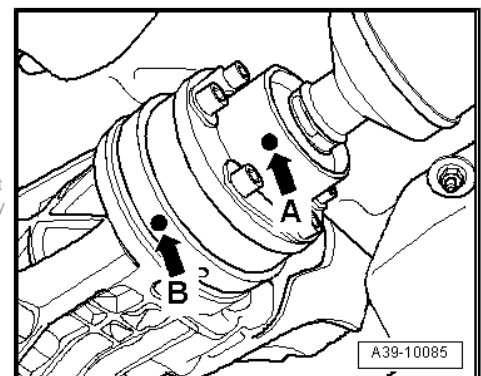
Refer to general repair instructions ⇒ [page 8](#) .

- Remove rear section of exhaust system behind clamps -1- and -2- ⇒ Rep. Gr. 26 .

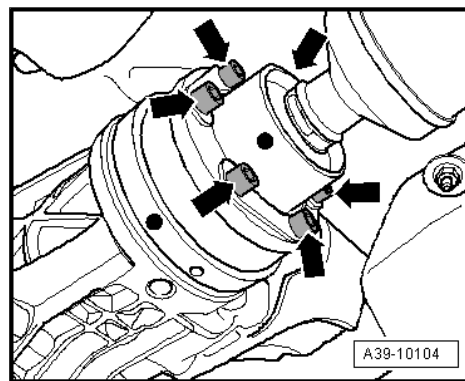


- Check whether there is a factory marking (coloured dot) -arrows A and B- on the propshaft flange and on the rear final drive flange.
- If not, mark position of propshaft flange -arrow A- in relation to rear final drive flange -arrow B- with paint marker.

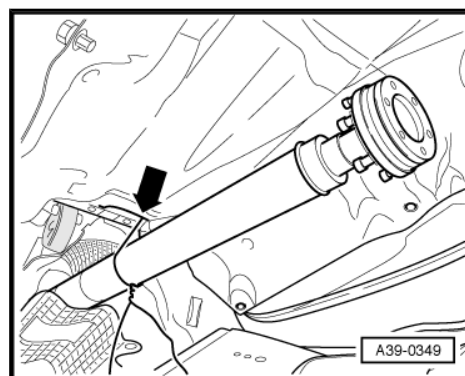
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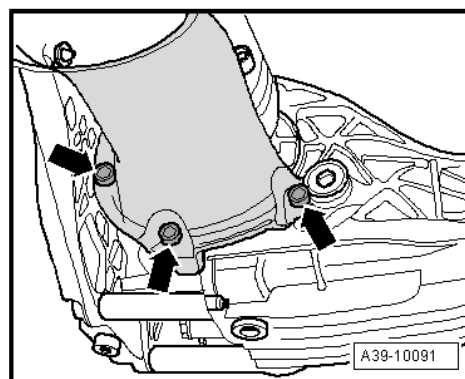
- Unbolt propshaft from rear final drive -arrows-.



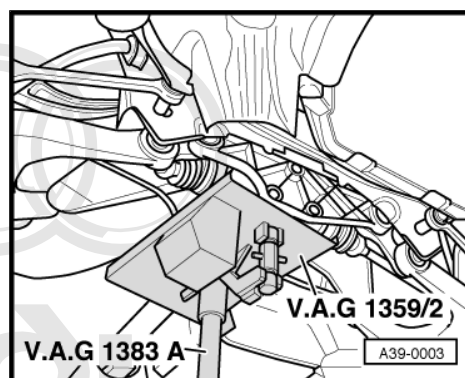
- Tie up propshaft to side -arrow-.



- Remove heat shields from rear final drive -arrows-.
- Unbolt drive shafts (left and right).

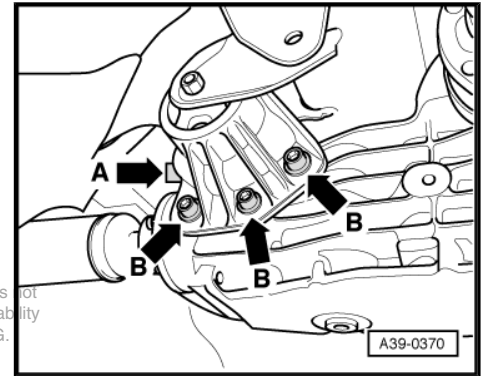


- Position engine and gearbox jack -V.A.G 1383 A- with universal support -V.A.G 1359/2- below rear final drive.

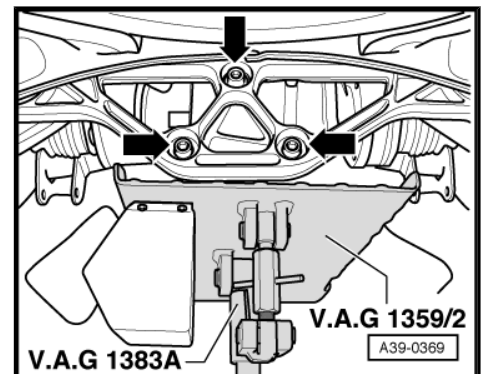


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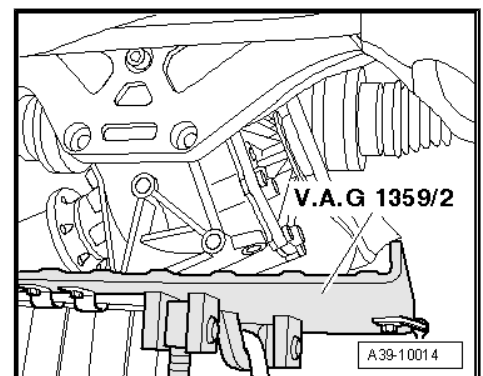
- Unscrew bolts for final drive support -arrows A and B-.



- Remove bolts -arrows- for rear cross member.



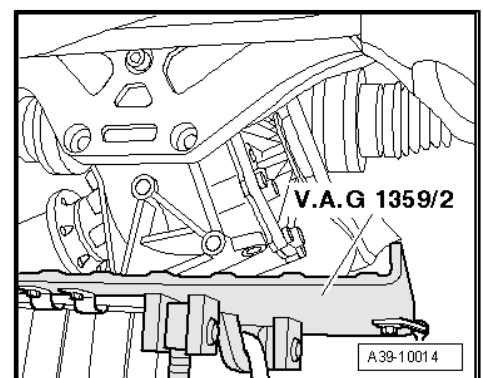
- Slightly lower rear final drive.
- Turn rear final drive slightly to the side and pull drive shafts out of flange shafts alternately on each side.
- Lower rear final drive completely.



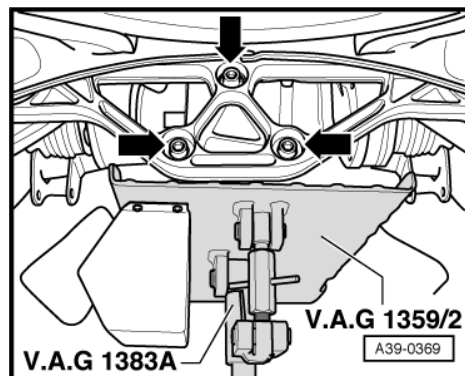
Installing rear final drive on Audi A8

Perform installation in reverse sequence of removal. Note the following:

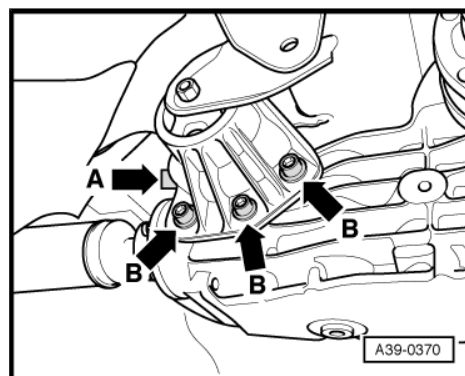
- Turn final drive to the side.
- Lift rear final drive and fit drive shafts into flange shafts alternately on each side.



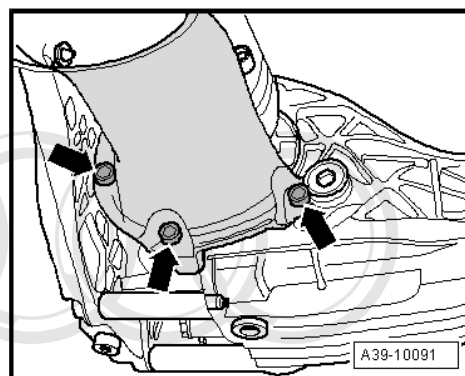
- Fit and tighten bolts -arrows-. Tightening torque
 ⇒ [Item 5 \(page 34\)](#) .



- Fit bolts -A- and -B- and tighten lightly to start with (final drive support must be in full contact with final drive). First tighten bolt -A-, then bolts -B-. Tightening torque
 ⇒ [Item 11 \(page 34\)](#) and ⇒ [Item 12 \(page 34\)](#) .



- Attach drive shafts ⇒ Rep. Gr. 42 .
- Fit heat shields at rear final drive -arrows-. Tightening torque
 ⇒ [Item 9 \(page 34\)](#) .
- Renew gasket on flange for propshaft and secure propshaft to rear final drive (markings must face each other ⇒ [page 25](#)).
- Check gear oil level in rear final drive ⇒ [page 28](#) .
- Install rear section of exhaust system and perform stress-free alignment ⇒ Rep. Gr. 26 .



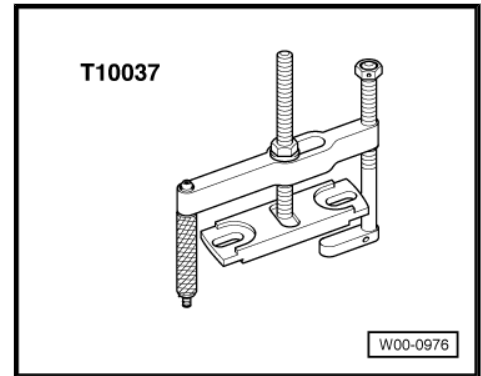
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6 Renewing flange shaft oil seals

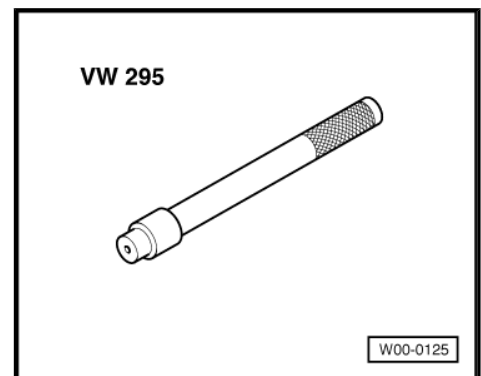
- The oil seals can be only be renewed with the rear final drive removed.

Special tools and workshop equipment required

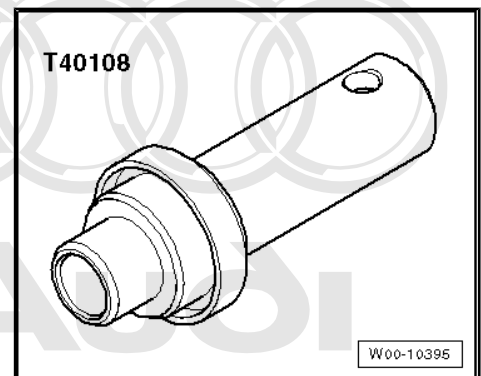
- ◆ Puller -T10037-



- ◆ Drift -VW 295-



- ◆ Thrust piece -T40108-



- ◆ Sealing grease -G 052 128 A1-

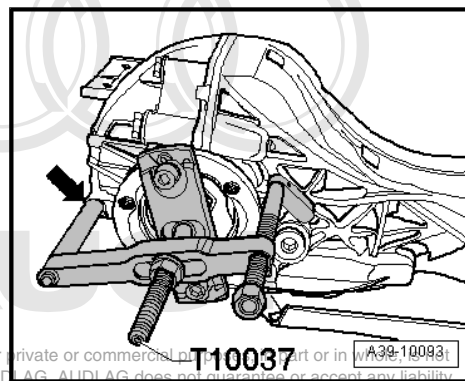
Removing

- Observe the general repair instructions ➔ [page 8](#) .
- Remove rear final drive
 ➔ [“4.1 Removing and installing rear final drive on Audi A4, Audi Cabriolet and Audi A6”, page 29](#) or
 ➔ [“5.1 Removing and installing rear final drive on Audi A8”, page 34](#) .

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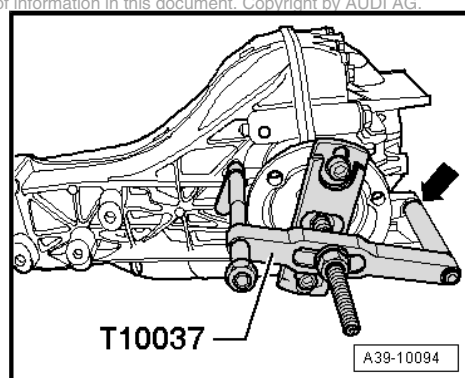
Removing flange shaft (right side)

- Place drip tray underneath.
- Secure puller -T10037- to housing -arrow- and pull out flange shaft.



Removing flange shaft (left-side)

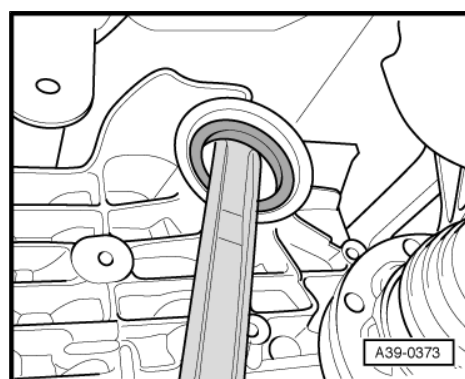
- Place drip tray underneath.
- Secure puller -T10037- to housing -arrow- and pull out flange shaft.



- Pry out oil seal with a suitable lever.

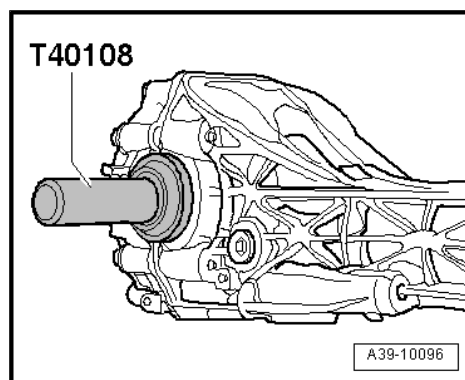
Installing

Perform installation in reverse sequence of removal. Note the following:



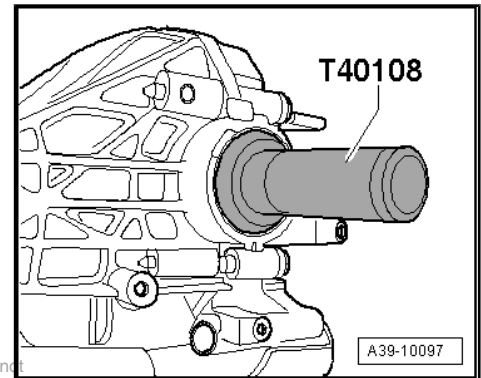
Installing oil seal (right-side)

- 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 -T40108- . Take care to keep seal straight when installing.



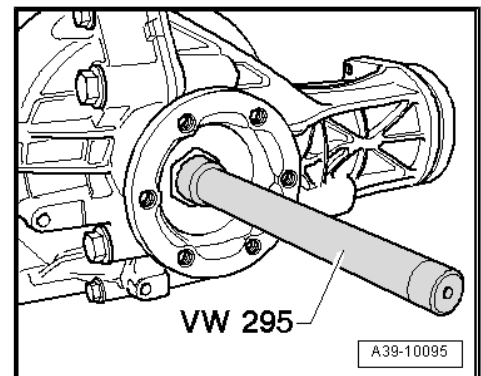
Installing oil seal (left-side)

- 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 -T40108- . Take care to keep seal straight when installing.



Installing flange shaft (right and left)

- Drive in flange shaft with drift -VW 295- .
- Install rear final drive.
- ◆ Installing on A4, Cabriolet and A6 ➔ [page 32](#)
- ◆ Installing on A8 ➔ [page 37](#)
- Check oil level in rear final drive ➔ [page 28](#) .



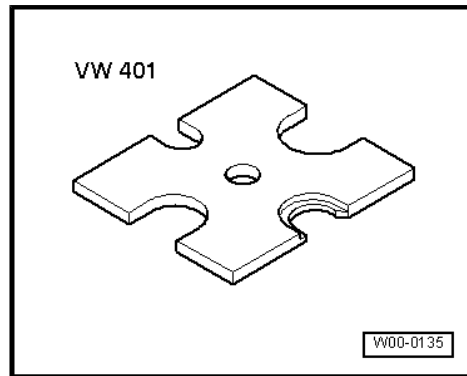


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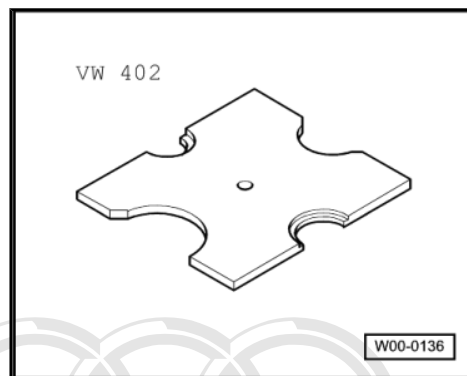
7 Renewing protective ring on flange shaft

Special tools and work-shop equipment required

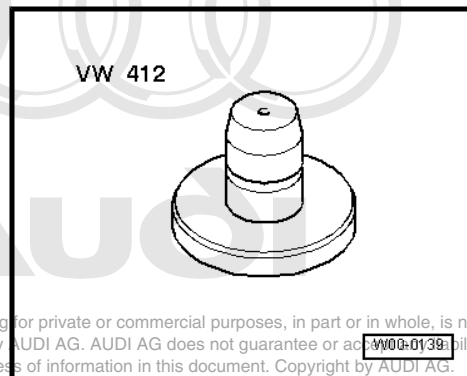
- ◆ Thrust plate -VW 401-



- ◆ Thrust plate -VW 402-

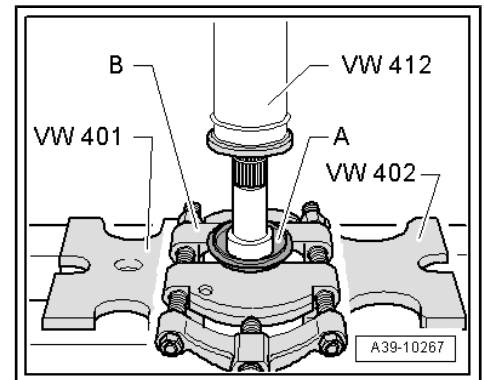
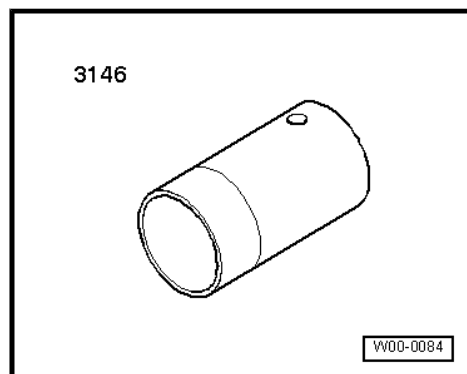


- ◆ Press tool -VW 412-

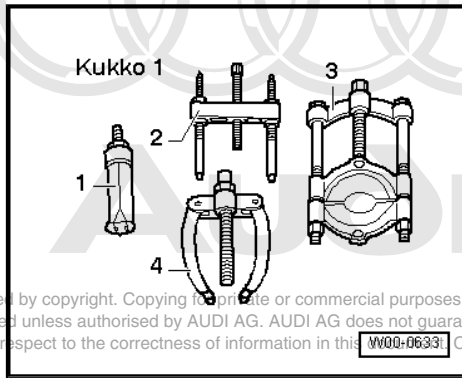


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- ◆ Tube -3146-



- ◆ -3- Splitter 22...115 mm , e.g. -Kukko 17/2-



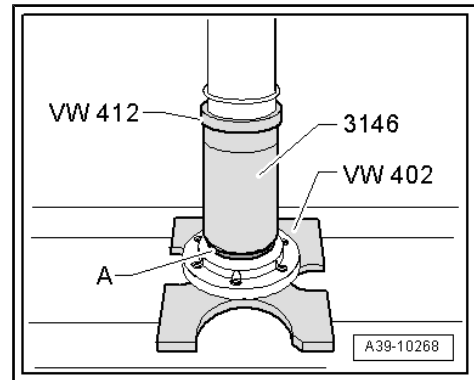
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Pressing protective ring -A- off flange shaft

B - Splitter 22...115 mm ,
e.g. -Kukko 17/2-

Pressing protective ring -A- onto flange shaft

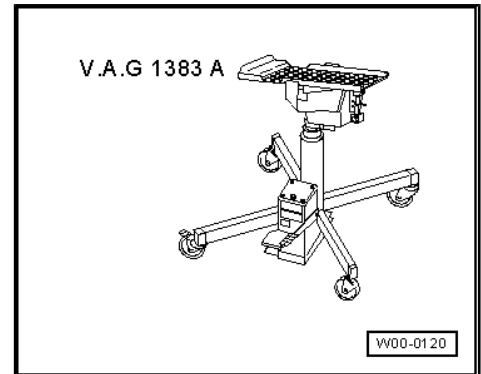
- Installation position of protective ring -A-: larger outside diameter of protective ring faces towards flange



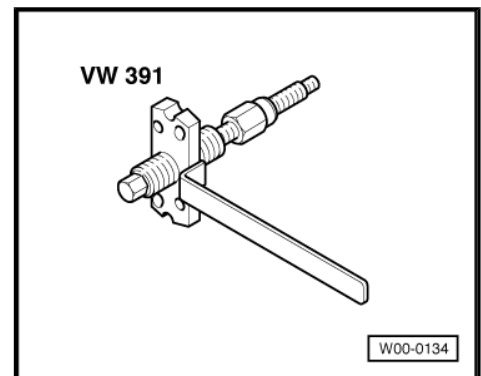
8 Renewing oil seal for propshaft flange on rear final drive (rear final drive installed)

Special tools and workshop equipment required

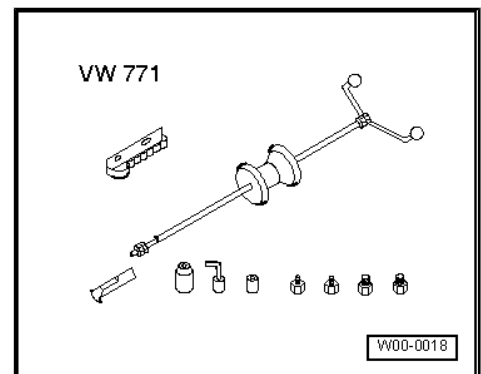
- ◆ Engine and gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2-



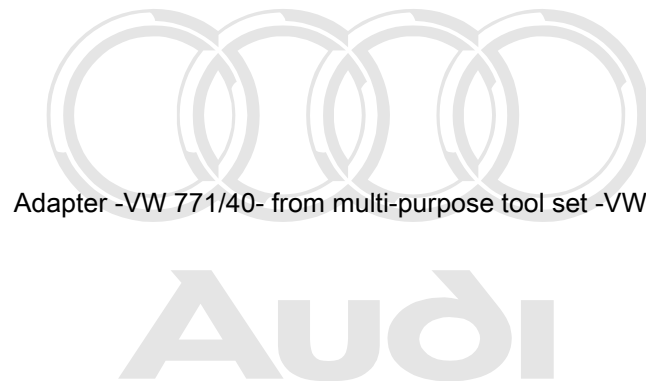
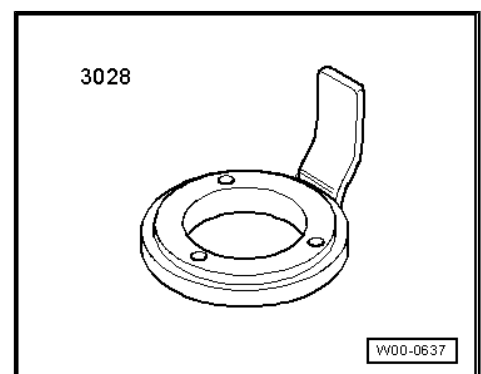
- ◆ Drive flange installing tool -VW 391-



- ◆ Adapter -VW 771/40- from multi-purpose tool set -VW 771-

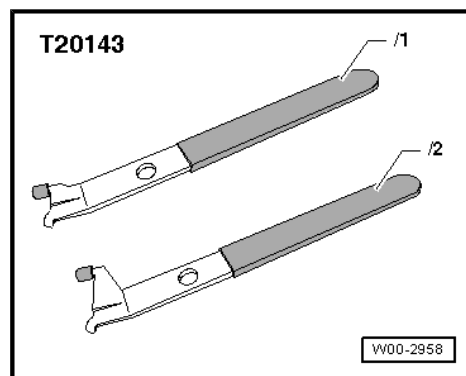


- ◆ Counterhold tool -3028-

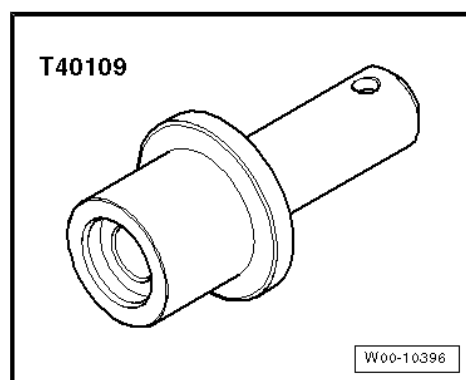


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- ◆ Extractor tool -T20143-



- ◆ Thrust piece -T40109-



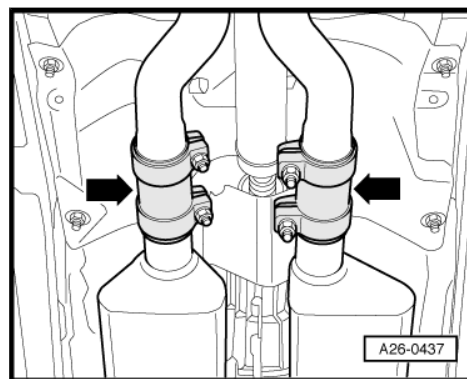
- ◆ Sealing grease -G 052 128 A1-
- ◆ 2 x Hexagon bolts M 8 x 30
- ◆ Bolts (1x) M 8 x 45

Removing

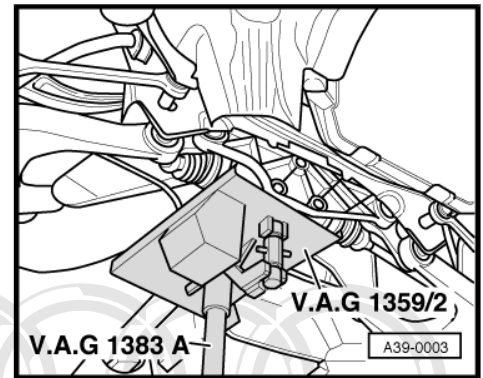
- Rear final drive installed

Refer to general repair instructions ➔ [page 8](#).

- Remove rear section of exhaust system behind clamps
 - ~~arrows~~ ➔ [Rep. Gr. 26](#).
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- Detach propshaft from rear final drive and tie up ➔ [page 24](#).

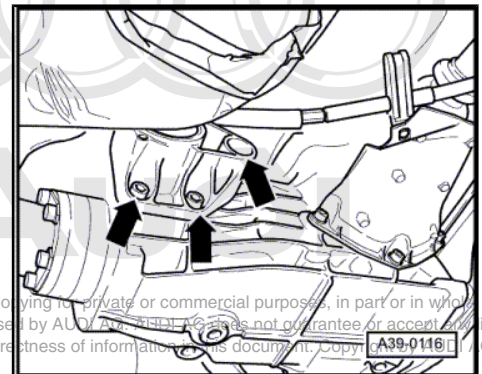


- Position engine/gearbox jack -V.A.G 1383 A- with universal gearbox support -V.A.G 1359/2- under rear final drive.



Audi A4, Cabriolet and A6

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



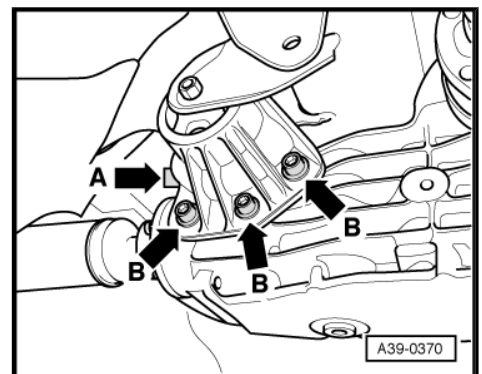
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Audi A8

- Unscrew bolts for final drive support -arrow A- and -arrows B-.

Continued for all vehicles

- Carefully lower final drive until flange for propshaft is freely accessible.

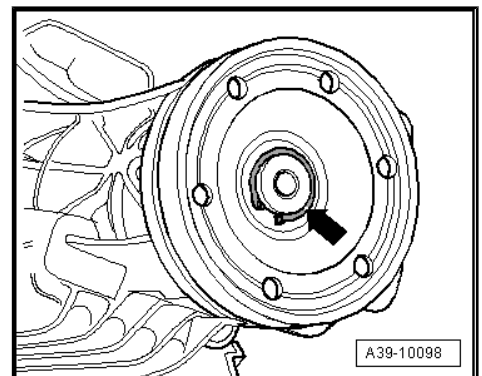


- Remove circlip -arrow-.



Caution

Renew circlip with new circlip of same thickness if overstretched or damaged during removal. For correct version, refer to ➔ Electronic parts catalogue

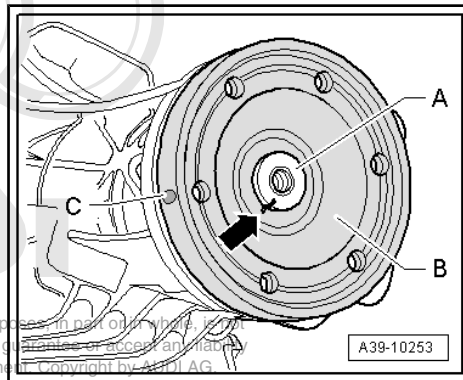


- Mark position of flange -B- for propshaft relative to pinion shaft
-A- -arrow-.

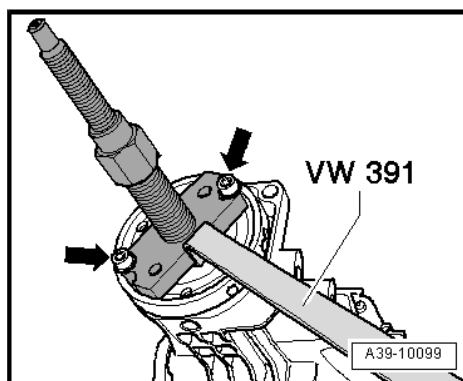

Note

- ◆ *This marking is necessary in order to maintain the original position of the coloured dot -C- on the outside of the flange.*
- ◆ *The coloured dot -C- marks the point of maximum radial run-out on the flange (corresponding to maximum distance from axis of rotation).*

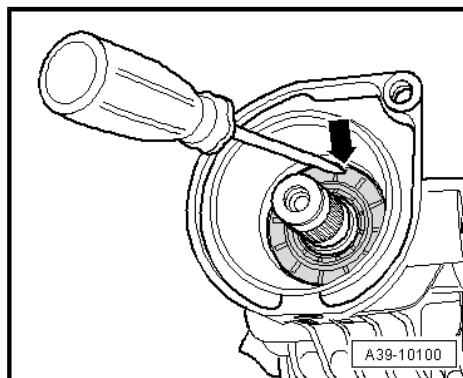
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- Screw two bolts M 8 x 30 -arrows- into flange.
- Place drip tray underneath.
- Pull off flange for propshaft using drive flange installing tool - VW 391- .



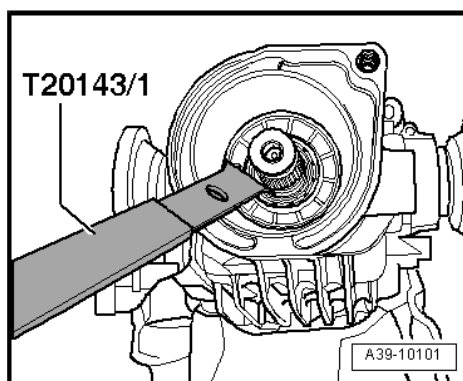
- Carefully press seal slightly inwards at top part of outer circumference -arrow-.



- The seal is then positioned at an angle. Lever out seal.


Caution

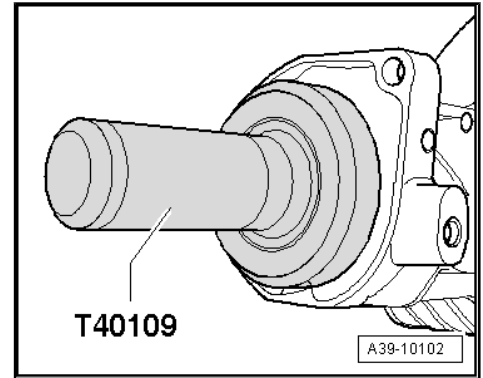
Take care not to damage the contact surface for the oil seal on the pinion shaft.



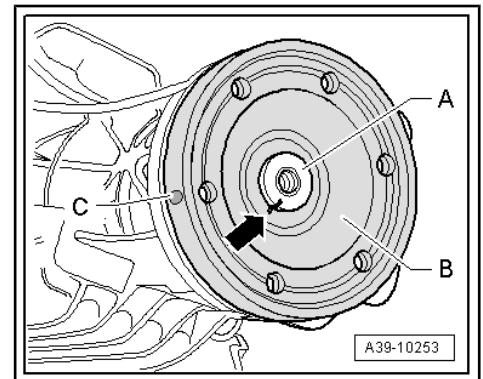
Installing

Perform installation in reverse sequence of removal. Note the following:

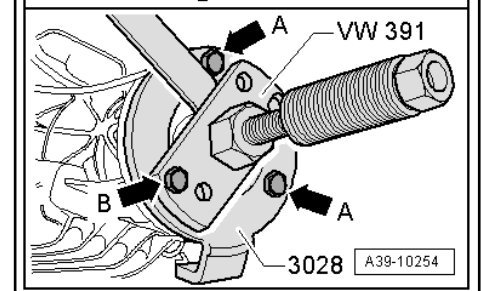
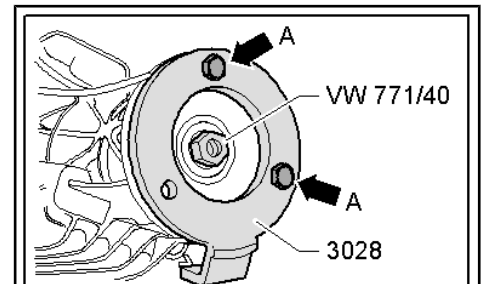
- Lightly lubricate outer circumference of oil seal with gear oil.
- Pack space between sealing lip and dust lip half-full with sealing grease -G 052 128 A1- .
- Drive in new seal onto stop (take care to keep seal straight).



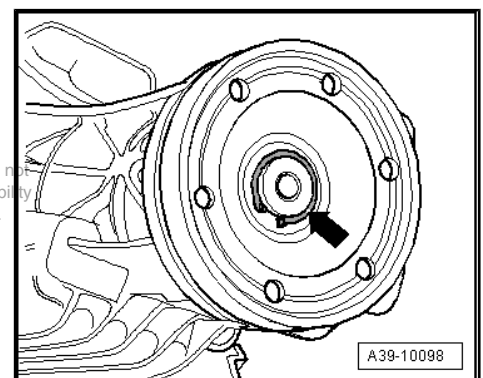
- Position flange for propshaft -B- on pinion shaft -A- so that markings -arrow- are in line.



- Screw adapter -VW 771/40- into threaded hole in pinion shaft.
- Attach counterhold tool -3028- to flange for propshaft with bolts (M 8 x 30) -arrows A-.
- Secure installing tool -VW 391- with bolt (M 8 x 45) -arrow B-. At the same time, screw spindle of installing tool into adapter -VW 771/40- .
- Pull in flange for propshaft as far as stop (counterhold spindle of installing tool with spanner).



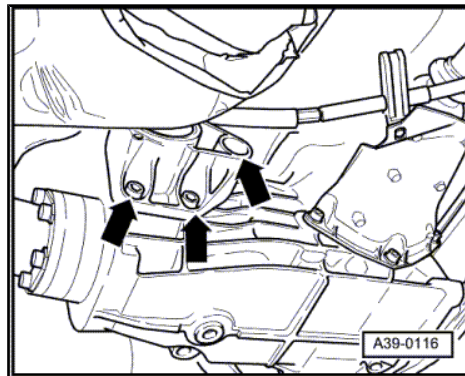
- Fit circlip -arrow-.



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Audi A4, Cabriolet and A6

- Tighten securing bolts -arrows- for final drive support. Tightening torque ⇒ [Item 13 \(page 29\)](#) .

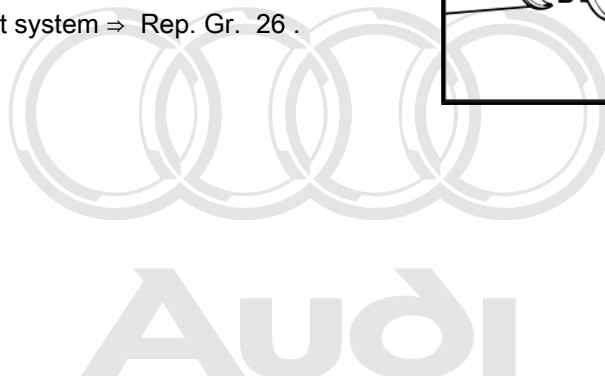
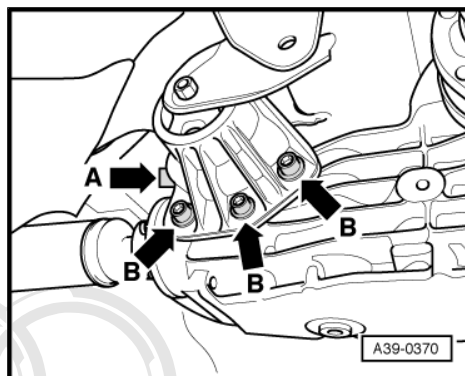


Audi A8

- Tighten bolts for final drive support -arrow A- and -arrows B-. Tightening torque ⇒ [Item 11 \(page 34\)](#) and ⇒ [Item 12 \(page 34\)](#) .

Continued for all vehicles

- Install propshaft on rear final drive ⇒ [page 25](#) .
- Check oil level in rear final drive ⇒ [page 28](#) .
- Install rear section of exhaust system ⇒ Rep. Gr. 26 .

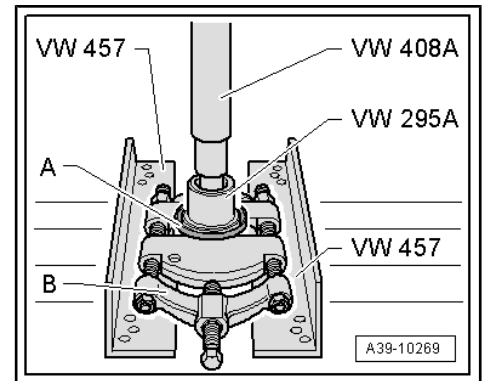
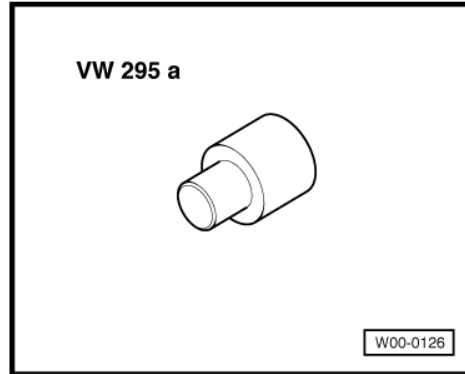


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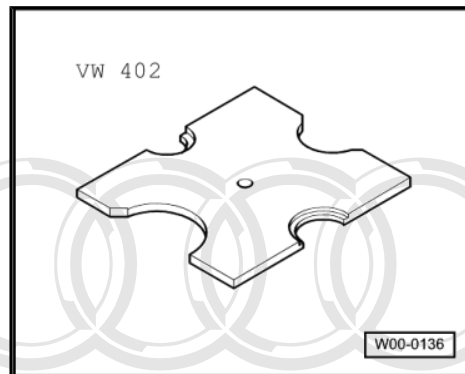
8.1 Renewing protective ring on flange for propshaft

Special tools and workshop equipment required

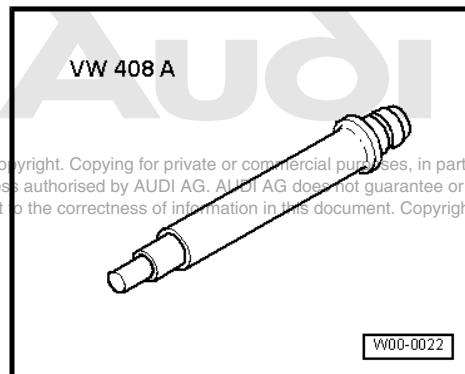
- ◆ Adapter -VW 295 A-



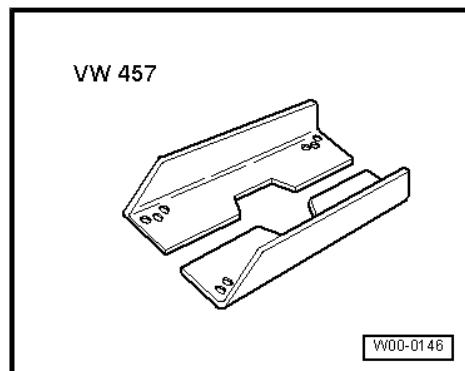
- ◆ Thrust plate -VW 402-



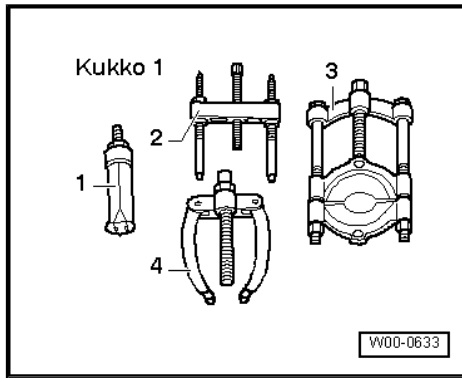
- ◆ Press tool -VW 408 A-



- ◆ Support rails -VW 457-



- ◆ -3- Splitter 22...75 mm , e.g. -Kukko 17/1-

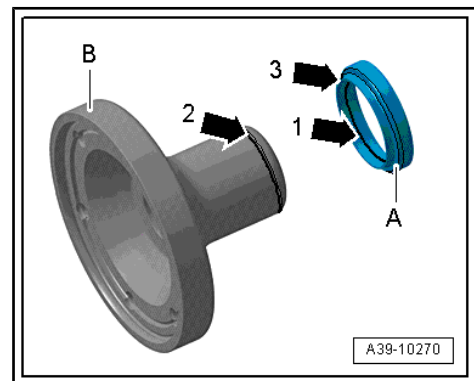


Pressing protective ring -A- off flange for prop- shaft

B - Splitter 12...75 mm ,
e.g. -Kukko 17/1-

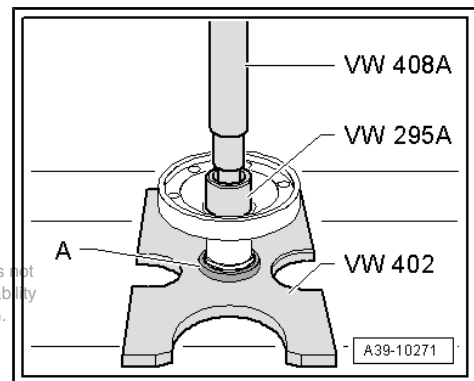
Installation position of protective ring -A- on flange for propshaft

- The projecting ridge -arrow 1- on the protective ring -A- must be fitted in the annular groove -arrow 2- on the flange -B-. The smaller outside diameter -arrow 3- then faces towards the flange.



Pressing protective ring -A- onto flange for propshaft

- The protective ring -A- must engage in the annular groove on the flange ➔ [page 52](#) .



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