Workshop Manual
Audi V8 1989 ▶

Booklet 6-Speed Manual Gearbox 01 E
4-Wheel Drive

Edition 03.92

Service.

List of Workshop Manual Repair Groups

Audi V8 1989 ►

Booklet — **6-Speed Manual Gearbox 01 E 4-Wheel Drive**
Edition 03.92

When filing a Technical Bulletin enter the Bulletin No. in the adjacent column. When using the Workshop Manual you can then see at a glance whether Technical Bulletins have been published in respect of the particular Repair Group in which you are looking.

Repair Group		Technical Bulletins					
00	Technical data						
30	Clutch						
34	Controls, Housing*						
35	Gears, Shafts*						
39	Front final drive, Differential*						
39	Rear final drive, Differential*						
*	Not or not fully described in this booklet						
	⇒ Note on opposite page						

Technical information should always be available to all foremen and mechanics, because their compliance with the instructions given is essential to ensure vehicle roadworthiness and safety.
In addition, the normal safety precautions to be observed when working on motor vehicles are also applicable.

Printed in Germany
000.5035.89.20

Contents

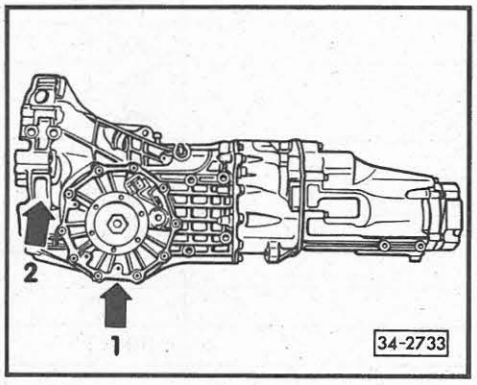
*) Not described in this booklet

⇒ Workshop Manual Audi 100 1991

Booklet 5- and 6-Speed Manual Gearbox 01E Edition 01.92

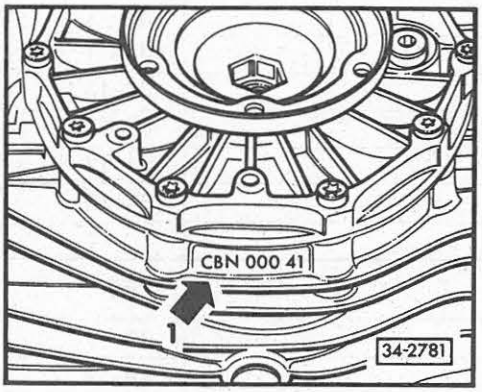
Gearbox identification

The 6-speed manual gearbox 01E 4 WD is installed in the Audi V8 from 07.91 in combination with the 3.6 litre and 4.2 litre 8-cylinder fuel injection engines.



◄ Location on gearbox

Code letters and serial No. (arrow 1)
Manual gearbox 01E (arrow 2)

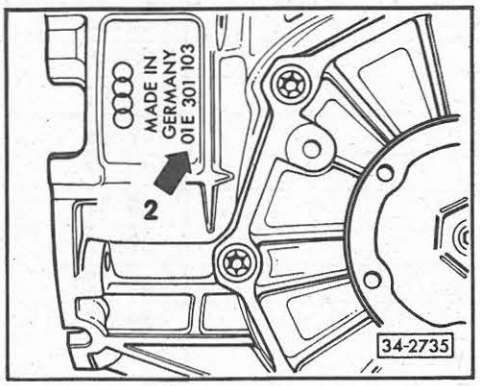


◄ Code letters and serial number of gearbox (arrow 1).

Example:	CBN	000 41
	Code letters	Serial number of gearbox

Note:

The code letters of the gearbox are also listed in the vehicle data plates.



◄ Manual gearbox 01E (arrow 2).

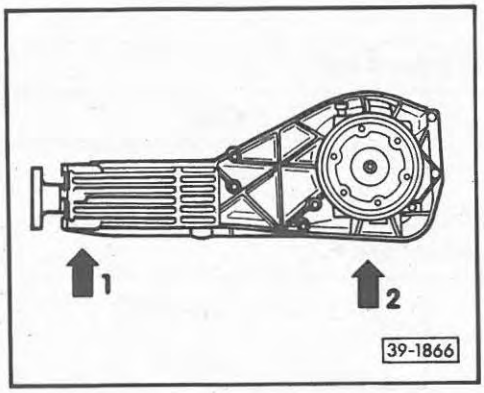
Code letters, allocation, ratios, capacities

Manual gearbox			6-speed 01E 4 WD	
Code letters			CBM	CBN
Manufactured	from to		07.91	07.91
Allocation	Type/Model		Audi V8 1991►	
	Engine:	8-cylinder V engine	3.6 l – 184 kW	3.6 l – 184 kW *) 4.2 l – 206 kW
Ratios	Final drive		37: 9 = 4.111	37: 9 = 4.111
Z2 : Z1 = i	Gearbox	1st gear	28: 8 = 3.500	28: 8 = 3.500
		2nd gear	34:18 = 1.889	34:18 = 1.889
		3rd gear	33:25 = 1.320	32:26 = 1.231
		4th gear	30:29 = 1.034	29:30 = 0.967
		5th gear	30:35 = 0,857	29:36 = 0.806
		6th gear	27:37 = 0.730	26:38 = 0.684
		Reverse	38:11 = 3.455	38:11 = 3.455
	Speedometer		electronic	8 pulses / wheel revolution
Remarks				*) Switzerland

Code letters, allocation, ratios, capacities

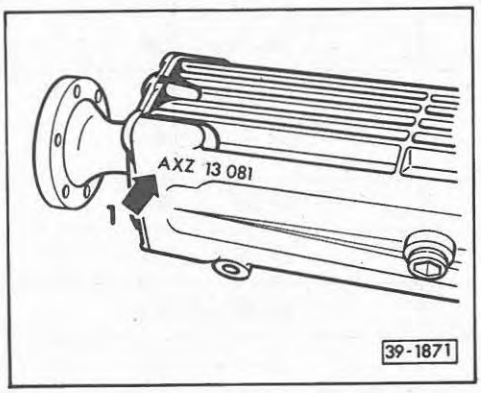
Manual gearbox Code letters	CBM	CBN
Capacity	3.5 l *) + 0.1 l gear oil additive Part No. G 009 000 01	
Specification	Gear oil G 50 (synthetic oil) SAE 75 W-90	
Clutch mechanism	hydraulic	
Clutch plate dia.	240 mm	
Drive shaft flange dia.	108 mm	
Total ratio in top gear	3.000	2.813
Allocation Rear final drive (code letters)	AXZ	
Remarks	*) + 0.3 l for oil pipes and oil cooler	

Final drive identification



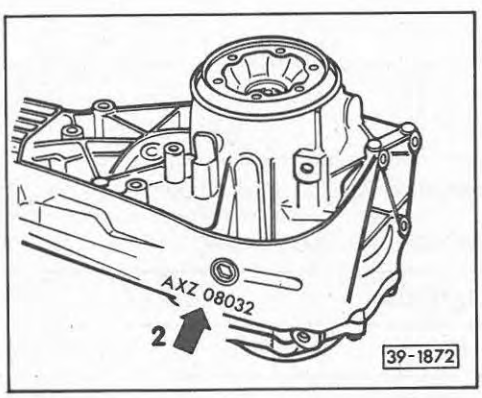
◄ The final drive 017 is also allocated to the manual gearbox 01E 4 WD.

Allocation ⇒ Technical Data, page 00–7



◄ Code letters and date of manufacture of rear final drive – up to 02.92 (arrow 1).

Example:	AXZ	13	08	1
	Code letters	Day	Month	Year (1991) of manufacture

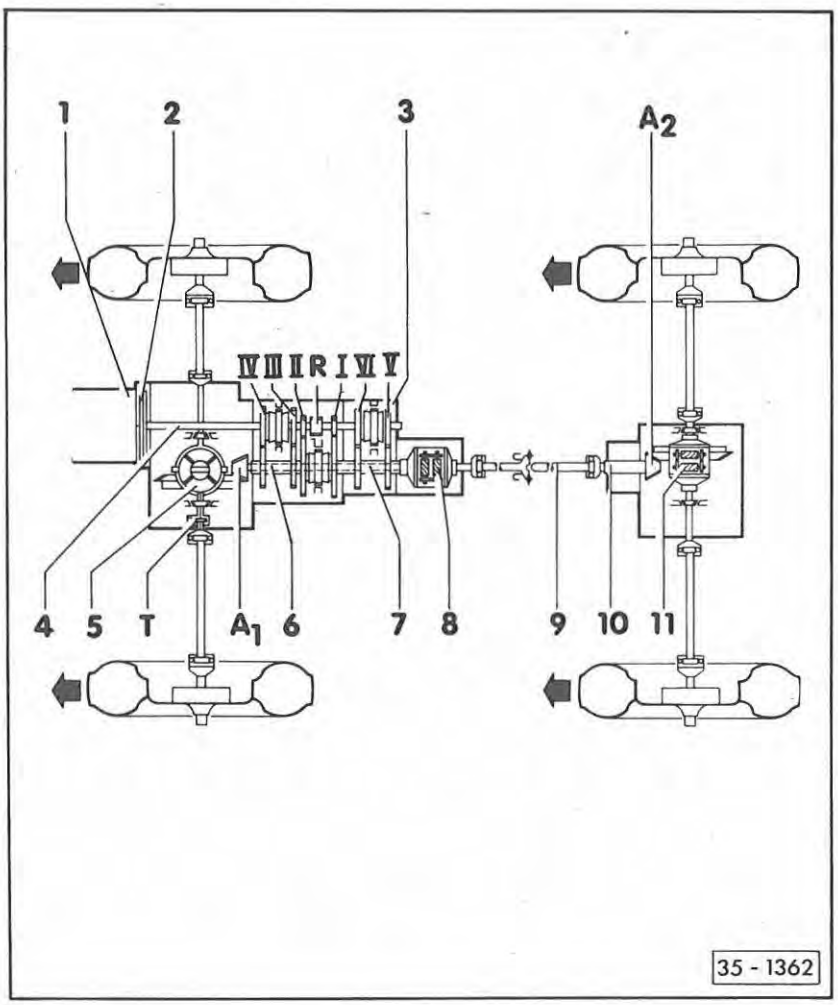


◄ Code letters and date of manufacture of rear final drive – from 02.92 (arrow 2).

Example:	AXZ	08	03	2
	Code letters	Day	Month	Year (1992) of manufacture

Code letters, allocation, ratios, capacities

Rear final drive **Code letters**		**AXZ**	
Manufactured	from to	01.90	
Allocation	Type/Model	Audi V8 1991►	
	Engine: 8-cylinder V engine	3.6 l – 184 kW 3.6 l – 184 kW*) 4.2 l – 206 kW	
Ratios Z2 : Z1 = i	Final drive	37: 9 = 4.111	
Capacity		1.7 l	
Specification		Gear oil GL 5 SAE 90 (MIL-L 2105B)	
Drive shaft flange dia.		108 mm	
Allocation	Manual gearbox (code letters)	CBM CBN	
Remarks		*) Switzerland	



Power transmission diagram

Designation

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

Ratios

I – 1st gear
II – 2nd gear
III – 3rd gear
IV – 4th gear
V – 5th gear
VI – 6th gear
R – Reverse
A_1 – Front final drive
A_2 – Rear final drive
T – Speedometer drive (electronic)
Arrows face in direction of travel

Calculation of transmission ratio

Example:

	6th gear	Final drive
Driving gear	$ZG_1 = 41$	$ZA_1 = 8$
Driven gear	$ZG_2 = 23$	$ZA_2 = 31$

$$i = \frac{Z_2}{Z_1} = \frac{\text{No. of teeth driven gear}}{\text{No. of teeth driving gear}}$$

i_G = Gear ratio $= \frac{ZG_2}{ZG_1} = \frac{23}{41} = 0.561$

i_A = Axle ratio $= \frac{ZA_2}{ZA_1} = \frac{31}{8} = 3.875$

$i_{tot.}$ = Total ratio $= i_G \times i_A$

$= \frac{23}{41} \times \frac{31}{8} = 2.134$

Notes regarding output test, brake test and towing vehicle

⇒ Special Information Bulletin "Power Transmission" No. 8.

General repair instructions

The maximum possible care and proper tools are essential requirements for performing proper and successful gearbox repairs. The generally applicable basic rules of safety naturally also apply to repair work.

A number of generally applicable notes for individual repair operations are summarized here. They apply to this Workshop Manual.

Gearbox

- When replacing the gearbox or final drive, fill with gear oil.
  Capacity and specification ⇒ page 00–4 and 00–7.

- When installing gearbox, ensure the dowel sleeves are correctly seated.

Gaskets, seals
- Thoroughly clean mating surfaces beforehand.
- Replace paper gaskets.
- Replace O-rings.

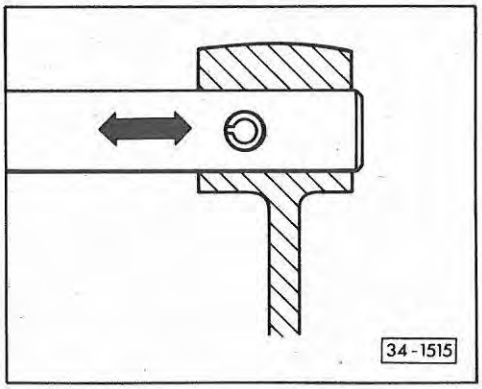
- Radial shaft seals

Before installing:
– Lightly oil outer diameter.
– Pack the space between the sealing lips with grease.

After installing:
– Check oil level; top up any oil loss. Capacity and specification ⇒ page 00–4 and 00–7.

Sealant
- Thoroughly clean mating surfaces and apply sealant AMV 188 200 03.
- Apply an even coat –not too thick– of sealant.
  – Keep vent holes clear.

Locking elements
- Replace circlips.
- Do not over-tension circlips.
- Circlips must be properly seated in the base of the groove.



- Replace tensioning sleeves.
  Installation position: Slot longitudinal to flow pattern.

- Roll pins (used from 01/92 in place of tensioning sleeves)
  Installation position: indpendent of force pattern.

Note:

Tensioning sleeve or roll pin for attaching 5th/6th speed selector fork/selector rail must only be removed and inserted with the special tool.

Nuts, bolts

- Slacken and tighten nuts and bolts for securing covers and housings diagonally.
  - Do not twist particularly sensitive parts –e.g. clutch pressure plates– and slacken and tighten in stages diagonally.
- Tightening torques are indicated for non-oiled nuts and bolts.
- Always fit new self-locking nuts and bolts.

Note:

Clean any residues of microencapsulation from tapped holes into which self-locking bolts or bolts inserted with sealant are screwed in. If not, there is a risk of the bolts seizing when screwed in and shearing off when removed again. The tapped holes can be cleaned with a thread tap.

Bearings

- Place needle bearings in position with the inscribed side (thicker metal) facing the insertion drift.
- Grease needle bearings for the input shaft in the crankshaft.
- Oil all bearings in the gearbox with gear oil before inserting. Oil particularly carefully for measuring friction torque.
- Heat inner races of taper roller bearings to approx. 100°C for installing; when fitting, press in as far as the stop with zero axial play.
- Do not mix up outer and inner races of equal sized bearings. Bearings are matched.
- Replace all taper roller bearings which are fitted to the same shaft and use the same makes.

Shims

- Measure shims at several points with a micrometer. Different tolerances enable the required shim thickness to be precisely gauged.
- Check for burrs or signs of damage.
- Install only shims which are in perfect condition.

Synchronizer rings

- Do not mix up.
  When re-using, allocate again to the same gear-wheel.
- Check for signs of wear, replace if necessary.
- Lubricate with gear oil before inserting.

Clutch mechanism

Take out clutch slave cylinder without separating the piping system when removing the gearbox. Do not operate clutch pedal any more after removing the slave cylinder otherwise the piston will be pressed out of the slave cylinder and rendered unusable.

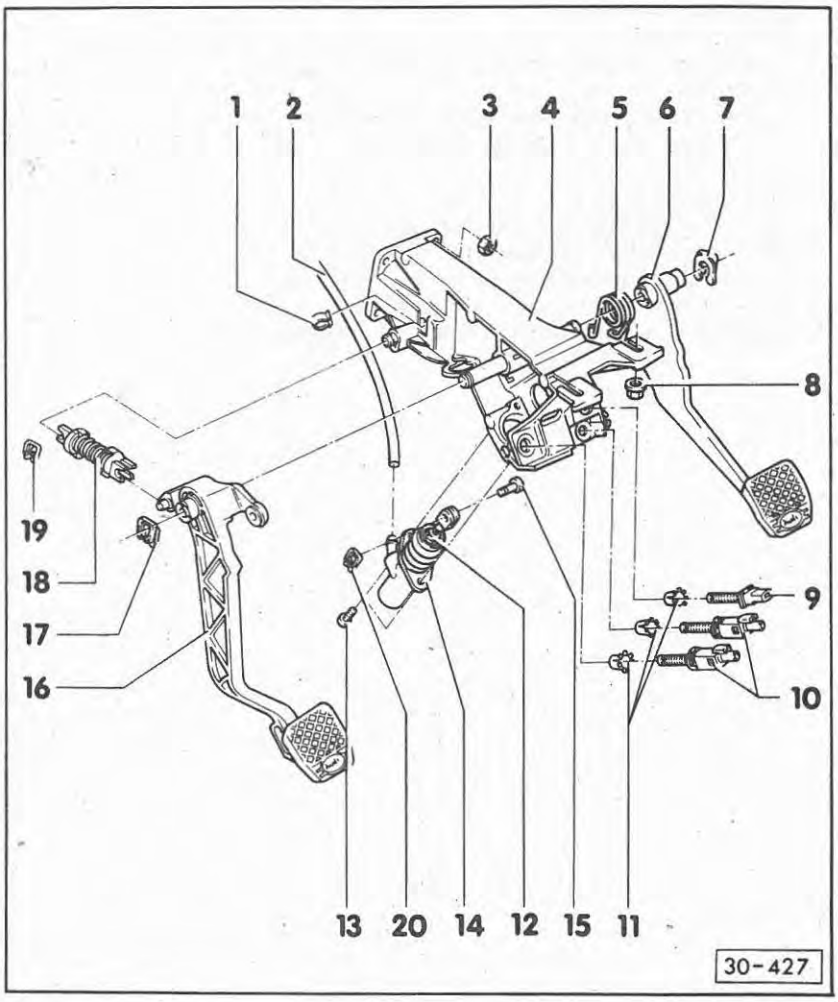
Gears, synchronizer bodies, inner races for selector gears

- When installing, press in as far as the stop with zero axial play.
- Heat gears to approx. 120°C before pressing on.
- Heat inner rings for selector gears to approx. 80°C before pressing on.

Selector gears

After installing

- 1st to 4th speed selector gears
  check for axial play of 0.15 to 0.35 mm.
- 5th and 6th speed selector gears
  check that they move freely when rotated.



Servicing clutch mechanism

List of operations

Pedal cluster

(Vehicles with 3.6 litre engine)

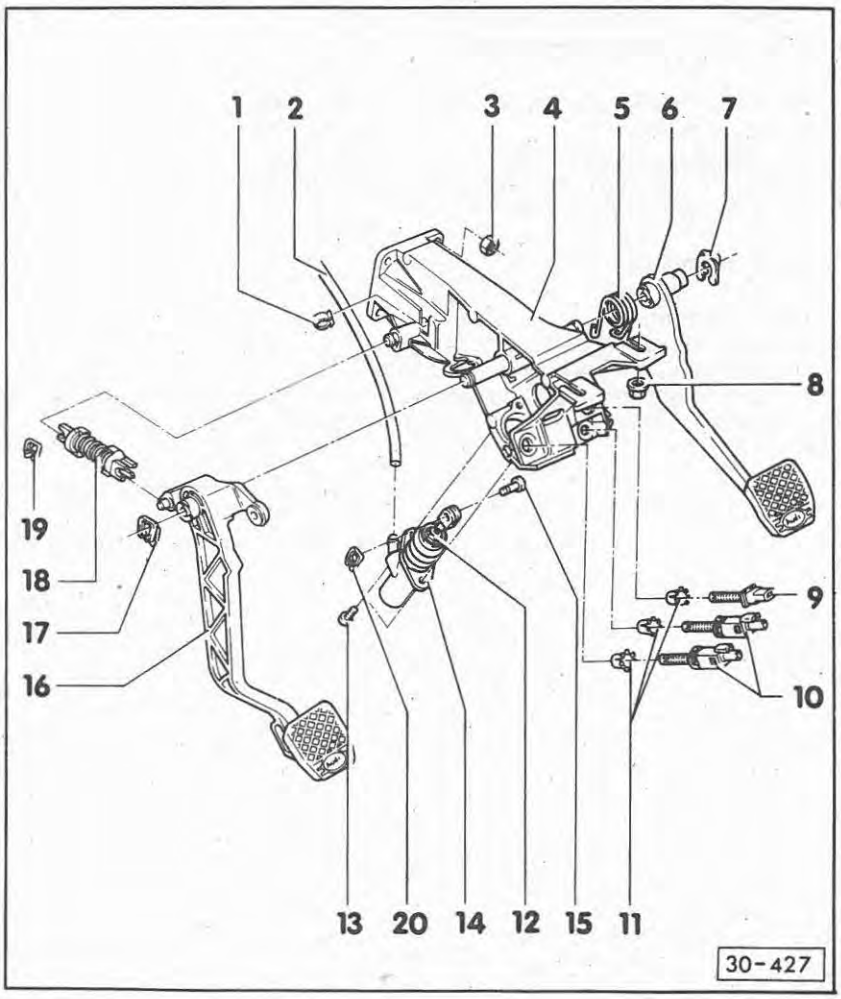
Note:

Grease all bearing points with white solid lubricating paste, Part No. AOS 126 000 005, before installing.

Important!

The travel of the brake pedal must not be shortened by additional floor coverings.

1 – Cable clip
- Hold the feed hose to the pedal bracket



2 – Feed hose
- Lay at pedal bracket accordingly and secure with cable clip

Important!

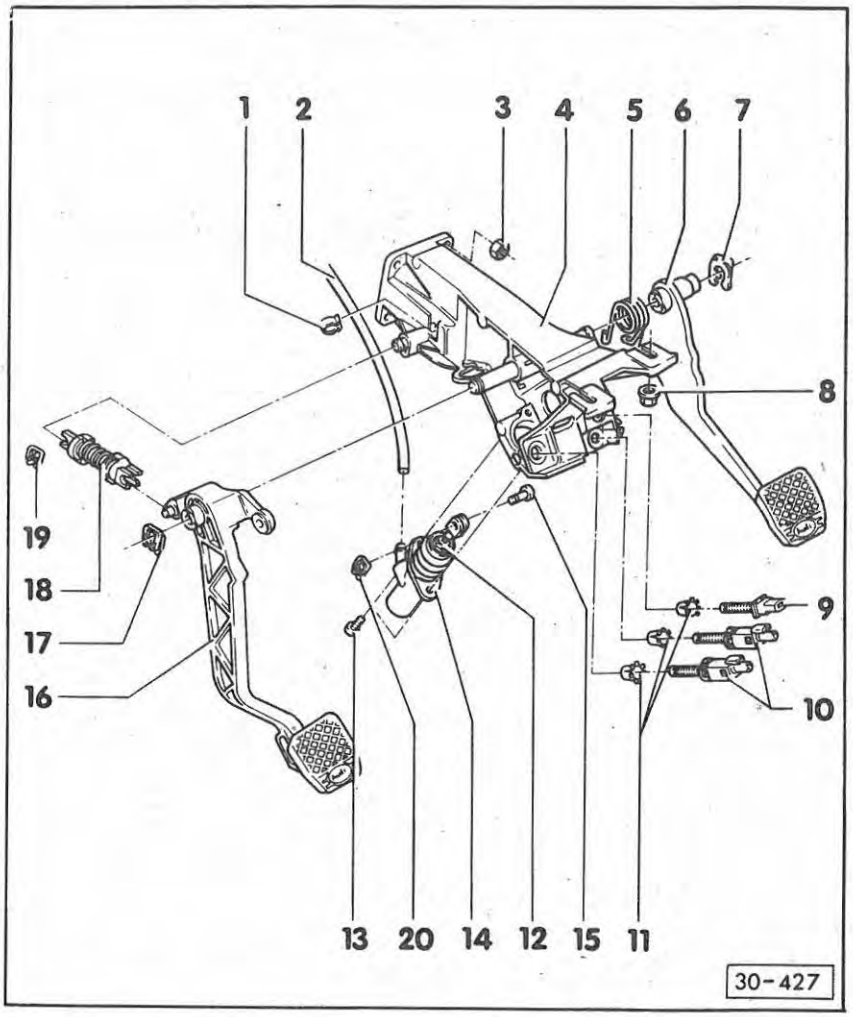
Feed hose for master cylinder must not touch over-centre spring.

3 – Self-locking nut, 20 Nm
- Always replace

4 – Pedal bracket

5 – Return spring for brake pedal
- Attach with the long leg to the pedal bracket and with the short leg to the brake pedal

6 – Brake pedal
- Fit onto the shaft of the pedal bracket
- Is supplied as service part with injection-moulded bearing bush. Bearing bush cannot be replaced



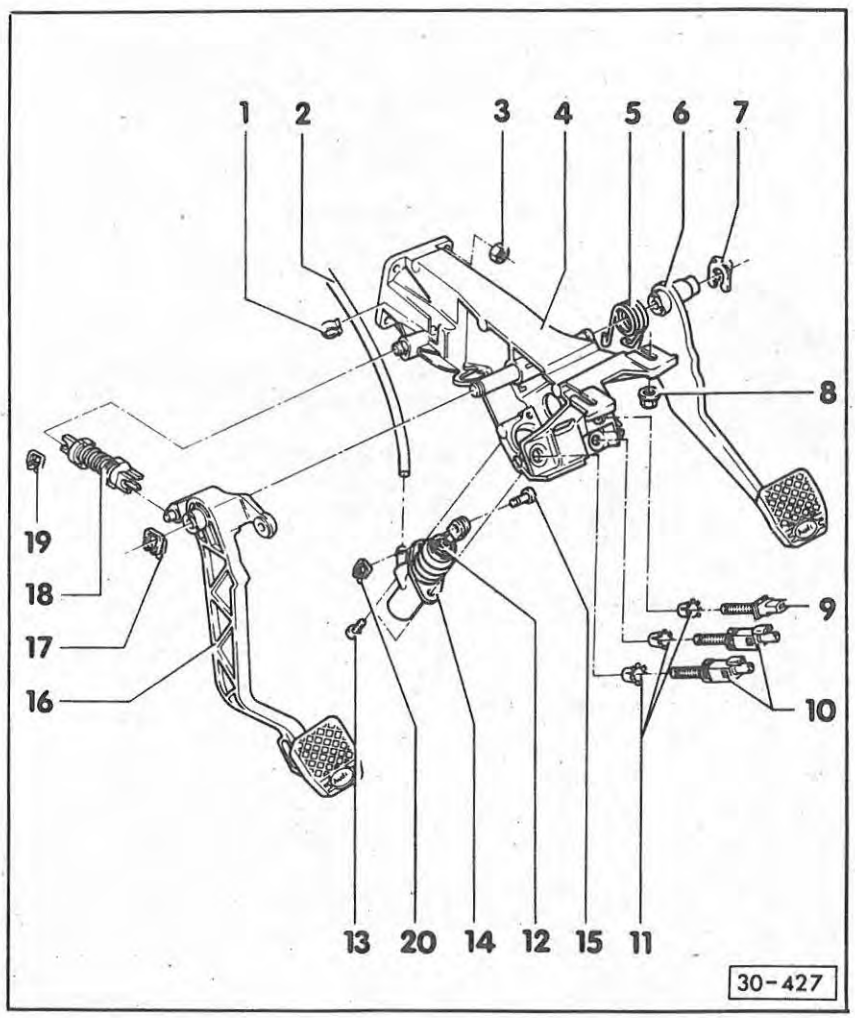
7 – Locking element
- Always replace
- Fit onto the shaft of the pedal bracket

8 – Combination nut, 20 Nm

9 – Brake light switch
- Always replace
- Press into the fitted clip
- Adjust with clevis attached:
  - Operate brake pedal
  - Press in brake light switch as far as the stop
  - Pull back brake pedal as far as the stop by hand

Note:

Adjusting clevis for brake pedal ⇒ Repair Group 46, Running Gear.

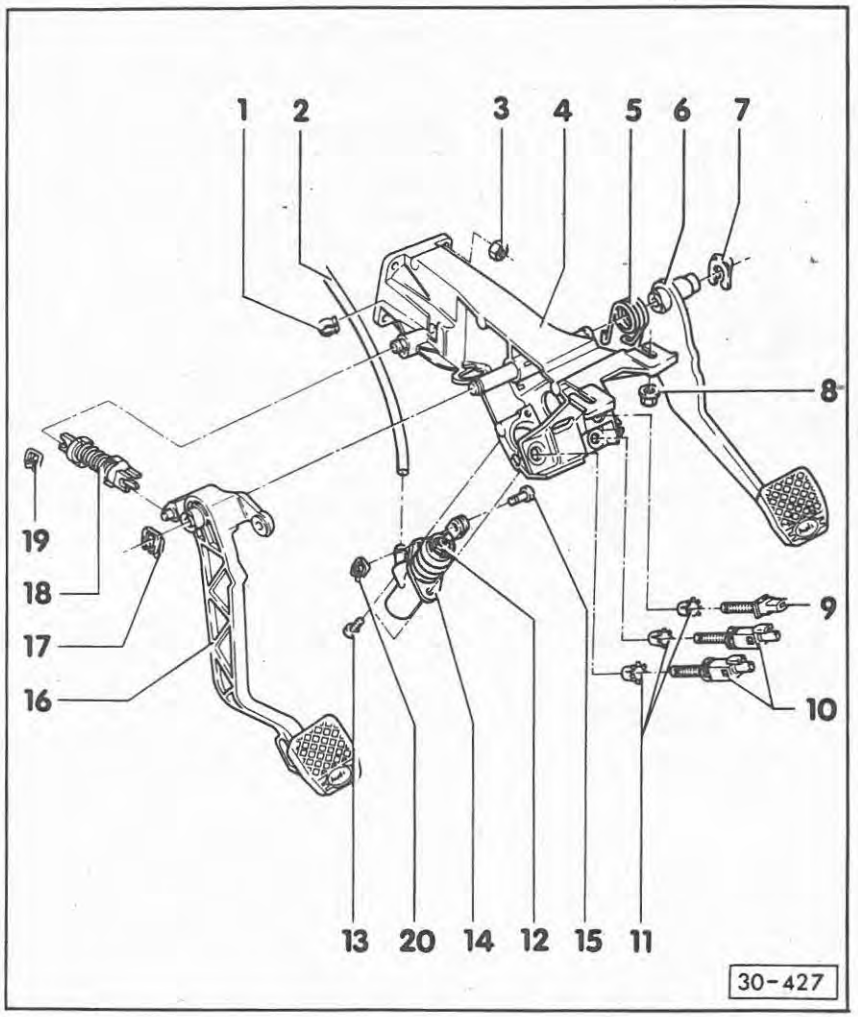


10 – Air admission valves for cruise control system
- Always replace
- Press into the fitted clip
- Adjust with clevis attached:
  - Operate brake or clutch pedal
  - Press in air admission valves as far as the stop
  - Pull back brake or clutch pedal as far as the stop by hand

11 – Clips for air admission valves of cruise control system and for brake light switch
- Press into holes provided in pedal bracket as far as the stop using pliers.

12 – Lock nut, 10 Nm
- Tighten after adjusting clevis

13 – Screw, 20 Nm
- Screw master cylinder onto pedal bracket

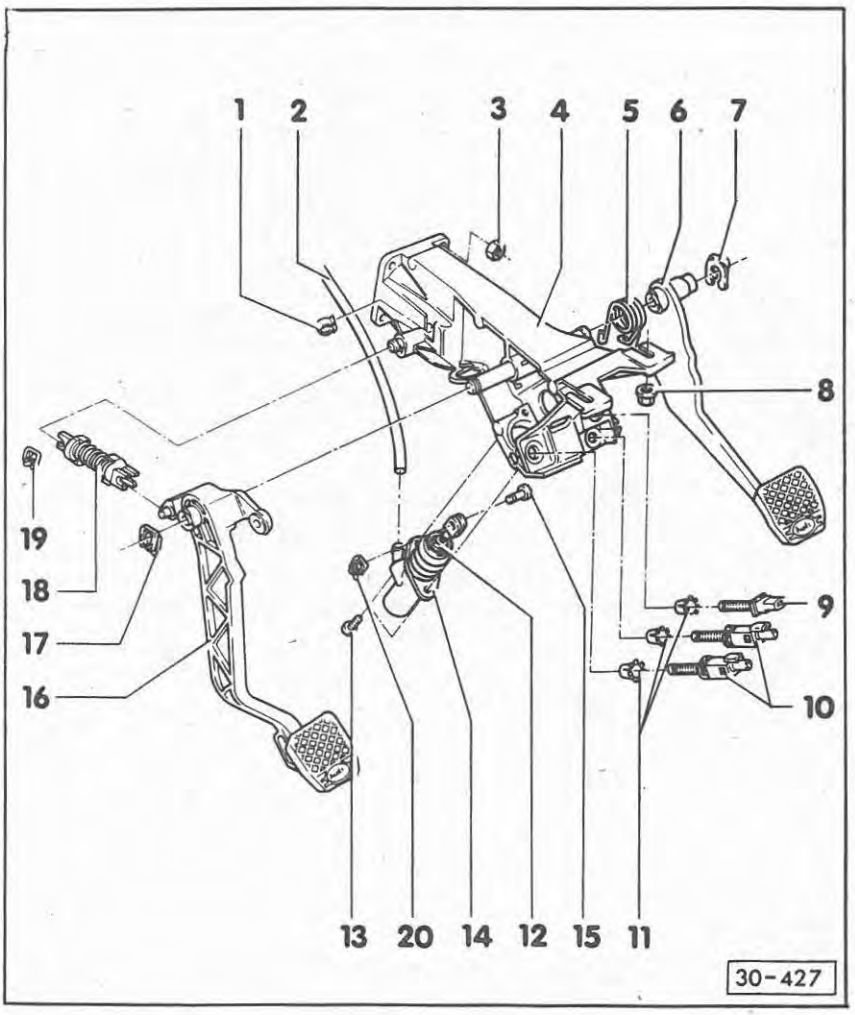


14 – Master cylinder
- Replace if leaking
- Adjusting clevis ⇒ page 30–7

15 – Pin
- Attach clevis to clutch pedal

16 – Clutch pedal
- Can be replaced with pedal bracket installed
- Is fixed in position by adjusting the clevis
- Fit onto the shaft of the pedal bracket
- Is supplied as service part with injection-moulded bearing bush. Bearing bush cannot be replaced

17 – Locking element
- Always replace
- Fit onto the shaft of the pedal bracket



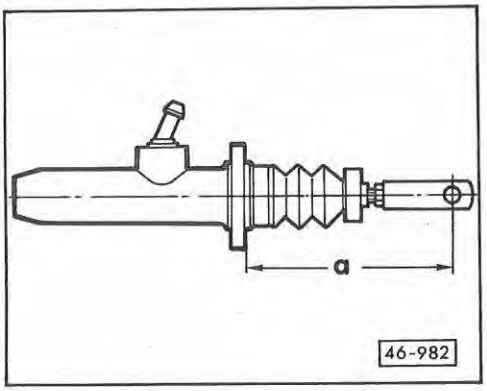
18 – Over-centre spring
- Grease at the bearing points of the bearing journals with white lubricating paste before assembling
- Removing and installing ⇒ page 30–8

19 – Locking element
- Always replace
- Fit onto the bearing journal

Note:

Does not need to be removed in order to take out the over-centre spring.

20 – Locking element
- Always replace
- Fit onto pin



◄ **Fig. 1 Adjusting clevis**

Size "a" = 109.5 ± 0.5 mm

– Turn clevis accordingly for adjusting.

Note:

When measuring, the clevis must be at right angles to the contact surface of the clutch master cylinder.

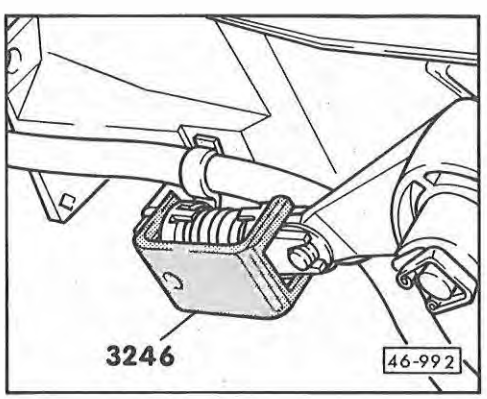
Important!

If the clutch pedal does not return by itself with the clevis correctly adjusted, this may be caused by:
- ***Air in the hydraulic system.***
- ***The pedal in its mounting or the over-centre spring being stiff.***

Removing and installing over-centre spring

Note:

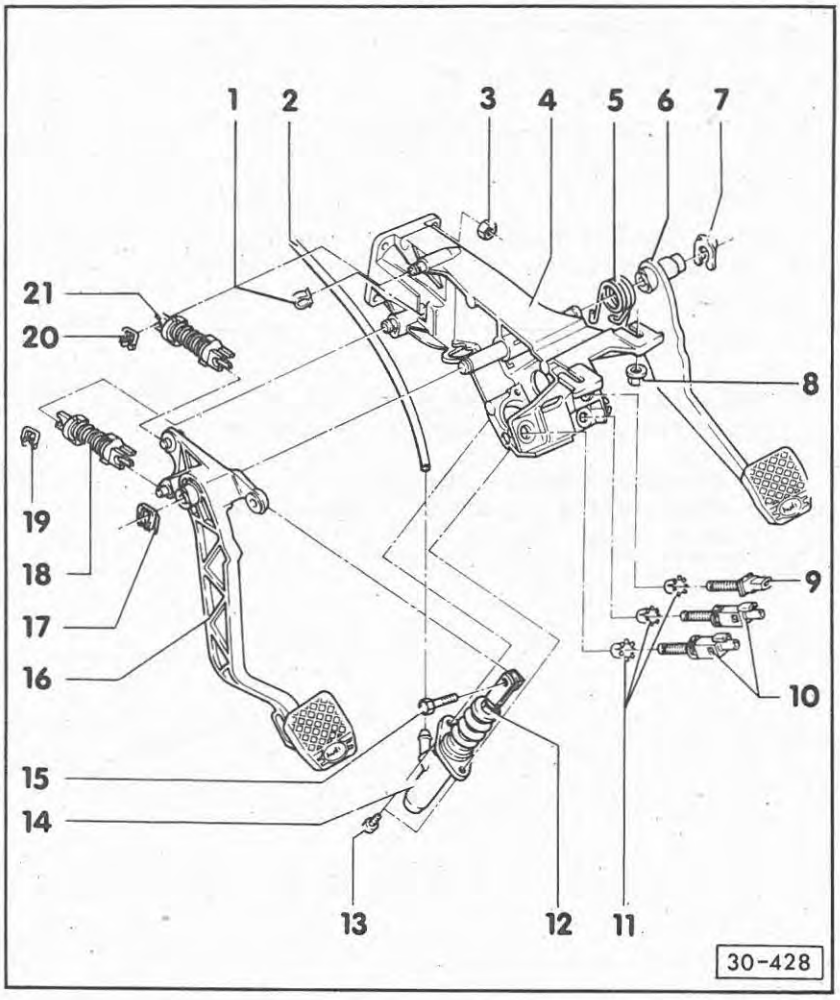
Remove the following parts before removing and installing the over-centre spring:
- *Left stowage compartment*
  ⇒ Repair Group 70, General Body Repairs.
- *Left legroom air vent*
  ⇒ Repair Group 80, General Body Repairs.



◄ Use the assembly clip 3246 for removing and installing the over-centre spring:
- Push assembly clip sideways over the over-centre spring.
- Depress clutch pedal and remove over-centre spring together with assembly clip.
- Installation is performed in the reverse order.

Notes:

- *The assembly clip has been shown with the pedal bracket removed to simplify the illustration.*
- *Before assembling, grease the bearing journals with white solid lubricating paste.*



List of operations

Pedal cluster
(Vehicles with 4.2 litre engine)

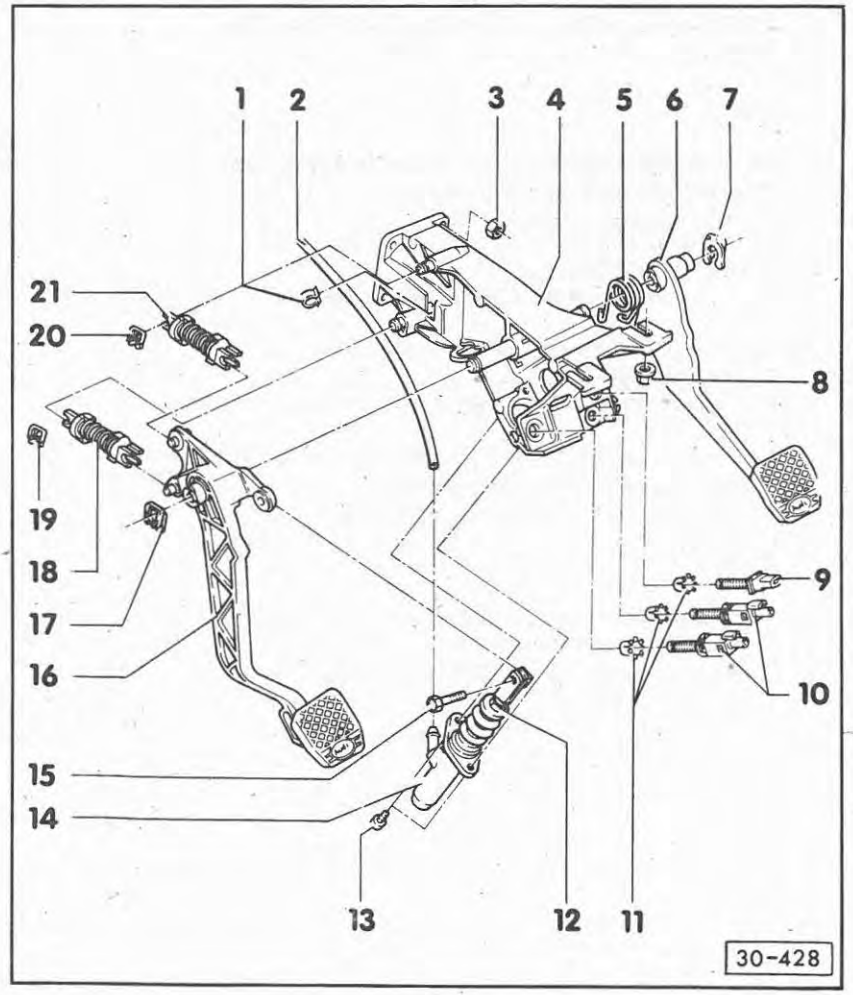
Note:

Grease all bearing points with white solid lubricating paste, Part No. AOS 126 000 005, before installing.

Important!

The travel of the brake pedal must not be shortened by additional floor coverings.

1 – Cable clip
- Hold the feed hose to the pedal bracket



2 – Feed hose
- Lay at pedal bracket accordingly and secure with cable clip

Important!

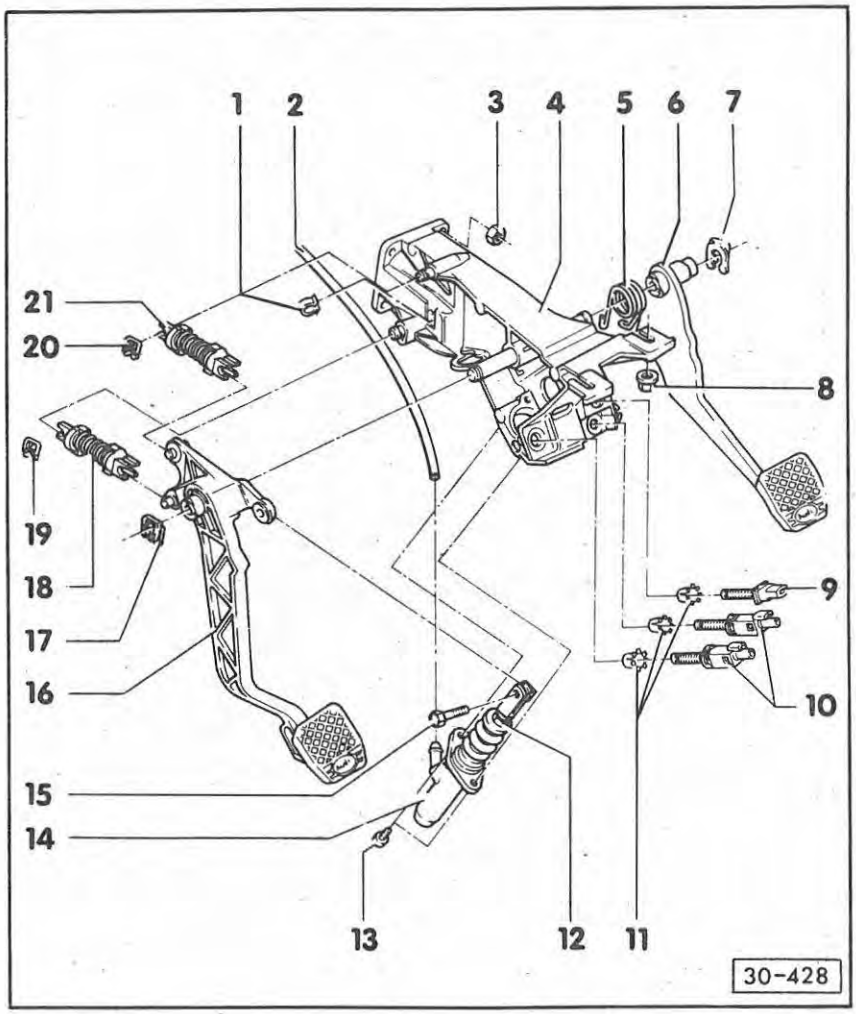
Feed hose for master cylinder must not touch over-centre spring.

3 – Self-locking nut, 20 Nm
- Always replace

4 – Pedal bracket

5 – Return spring for brake pedal
- Attach with the long leg to the pedal bracket and with the short leg to the brake pedal

6 – Brake pedal
- Fit onto the shaft of the pedal bracket
- Is supplied as service part with injection-moulded bearing bush. Bearing bush cannot be replaced



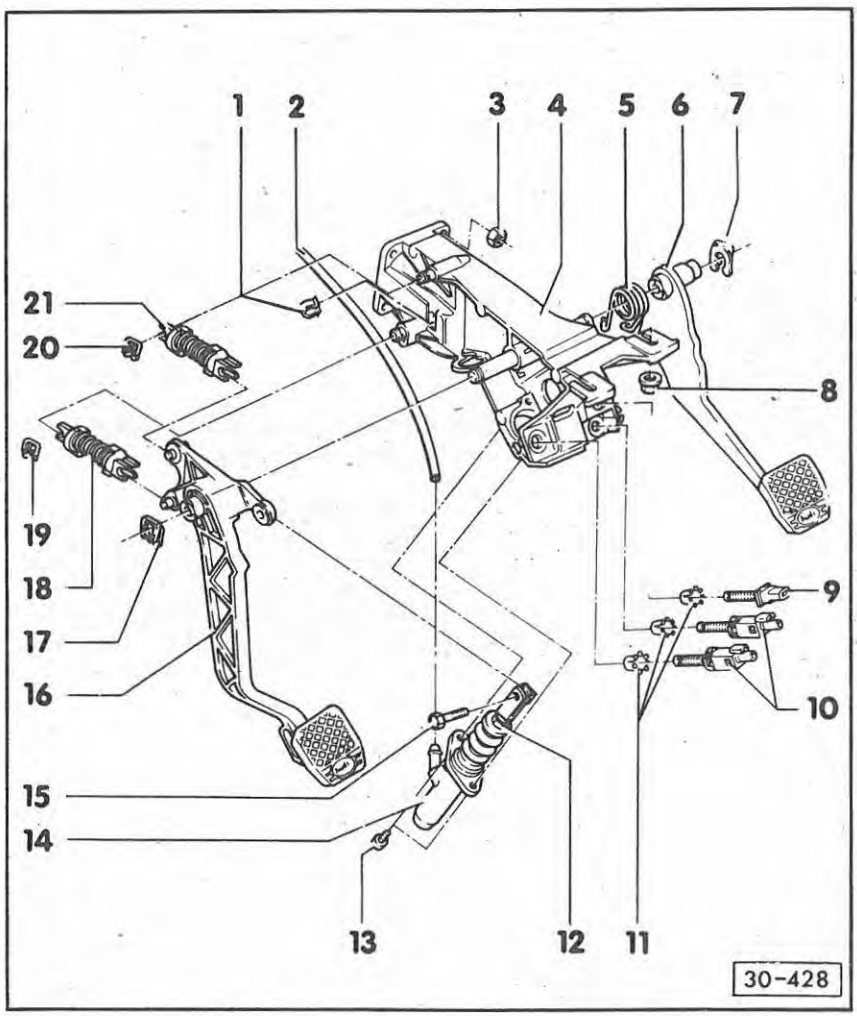
7 – Locking element
- Always replace
- Fit onto the shaft of the pedal bracket

8 – Combination nut, 20 Nm

9 – Brake light switch
- Always replace
- Press into the fitted clip
- Adjust with clevis attached:
  - Operate brake pedal
  - Press in brake light switch as far as the stop
  - Pull back brake pedal as far as the stop by hand

Note:

Adjusting clevis for brake pedal ⇒ Repair Group 46, Running Gear.

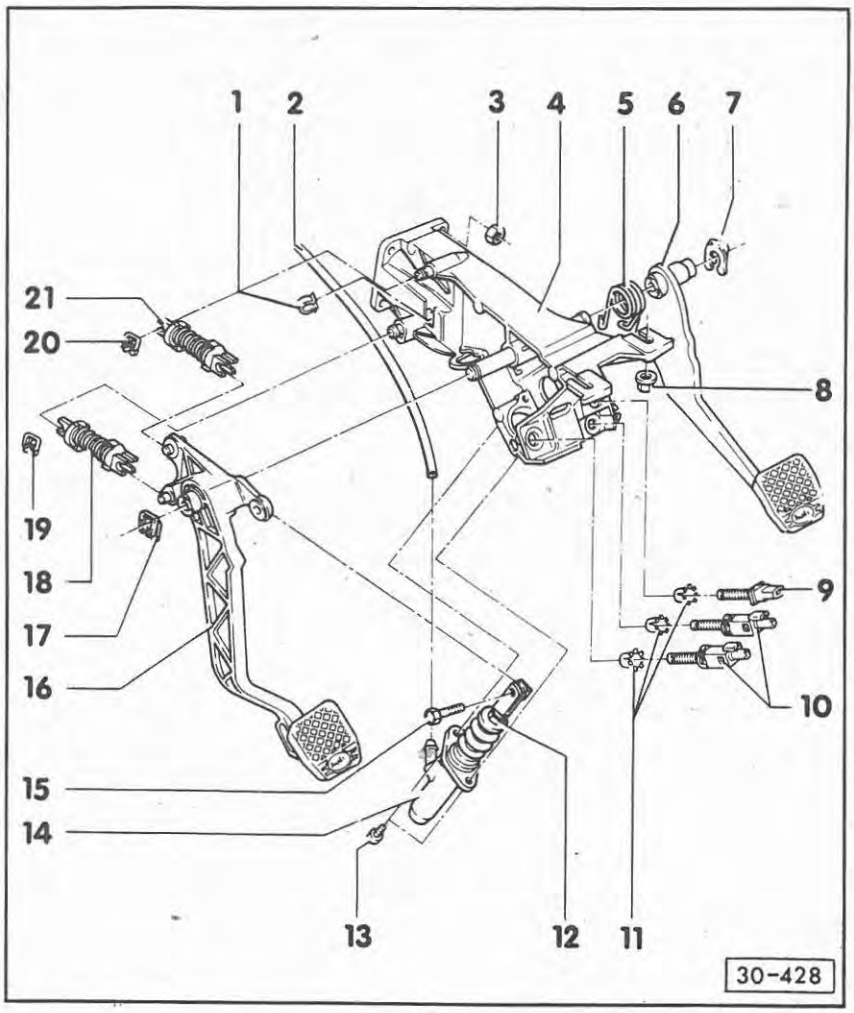


10 – Air admission valves for cruise control system
- Always replace
- Press into the fitted clip
- Adjust with clevis attached:
  - Operate brake or clutch pedal
  - Press in air admission valves as far as the stop
  - Pull back brake or clutch pedal as far as the stop by hand

11 – Clips for air admission valves of cruise control system and for brake light switch
- Press into holes provided in pedal bracket as far as the stop using pliers

12 – Lock nut, 10 Nm
- Tighten after adjusting clevis

13 – Screw, 20 Nm
- Screw master cylinder onto pedal bracket



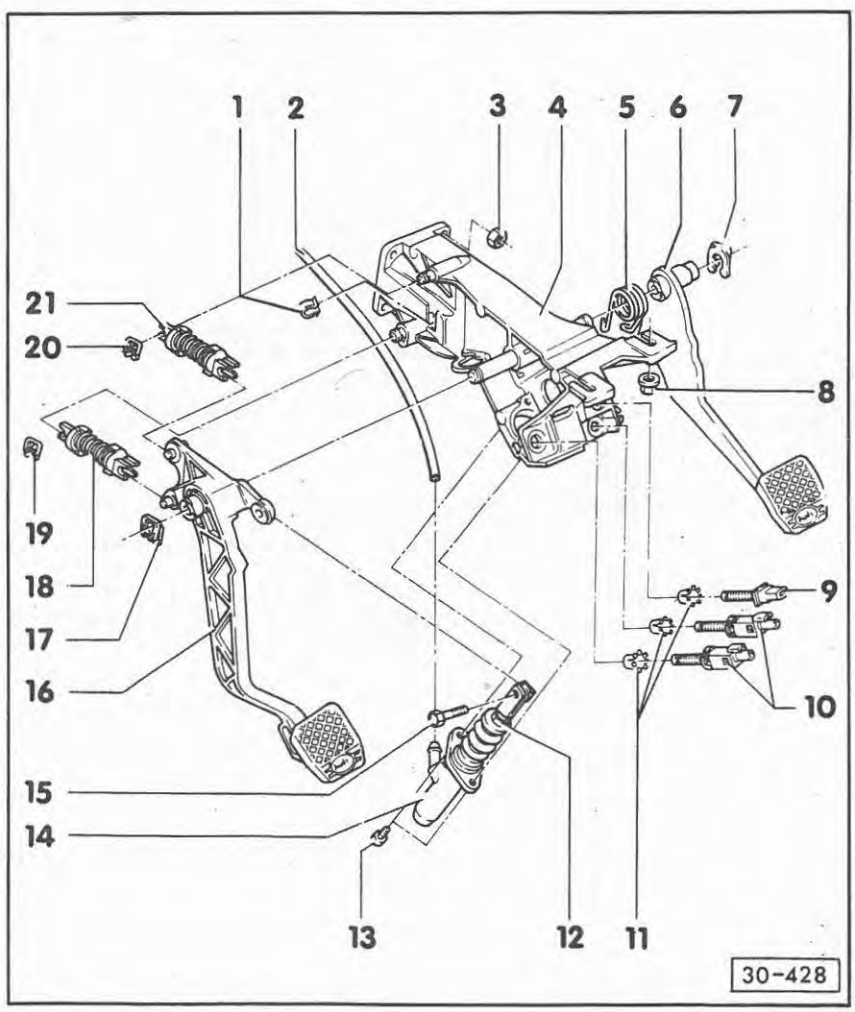
14 – Master cylinder
- Replace if leaking
- Adjusting clevis ⇒ page 30–15

15 – Bolt, 20 Nm
- Attach clevis to clutch pedal

16 – Clutch pedal
- Can be replaced with pedal bracket installed
- Is fixed in position by adjusting the clevis
- Fit onto the shaft of the pedal bracket
- Is supplied as service part with injection-moulded bearing bush. Bearing bush cannot be replaced

17 – Locking element
- Always replace
- Fit onto the shaft of the pedal bracket

18 – Over-centre spring
- Marked in yellow
- Grease at the bearing points of the bearing journals with white lubricating paste before assembling
- Removing and installing ⇒ page 30–16



19 – Locking element
- Always replace
- Fit onto the bearing journal

Note:

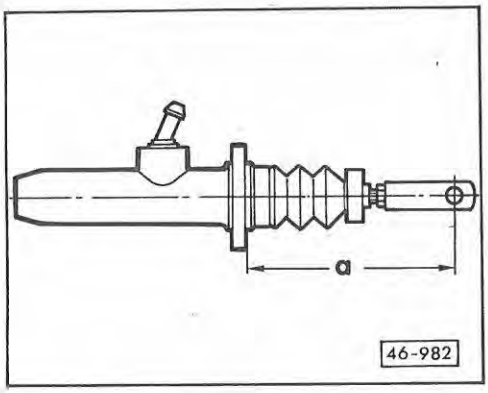
Does not need to be removed in order to take out the over-centre spring.

20 – Locking element
- Always replace
- Fit onto pin

Note:

Does not need to be removed in order to take out the over-centre spring.

21 – Over-centre spring
- Marked in white
- Grease at the bearing points of the bearing journals with white lubricating paste before assembling
- Removing and installing ⇒ page 30–16



◄ **Fig. 1 Adjusting clevis**

Size "a" = 109.5 ± 0.5 mm

– Turn clevis accordingly for adjusting.

Note:

When measuring, the clevis must be at right angles to the contact surface of the clutch master cylinder.

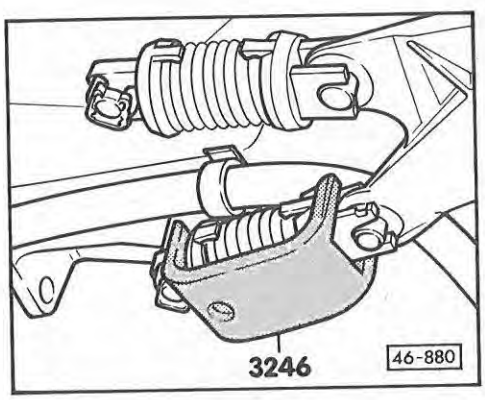
Important!

If the clutch pedal does not return by itself with the clevis correctly adjusted, this may be caused by:
- ***Air in the hydraulic system.***
- ***The pedal in its mounting or the over-centre spring being stiff.***
- ***The over-centre spring being fitted on wrongly.***

Removing and installing over-centre spring

Note:

Remove the following parts before removing and installing the over-centre springs:
- *Left stowage compartment*
  ⇒ Repair Group 70, General Body Repairs.
- *Left legroom air vent*
  ⇒ Repair Group 80, General Body Repairs.



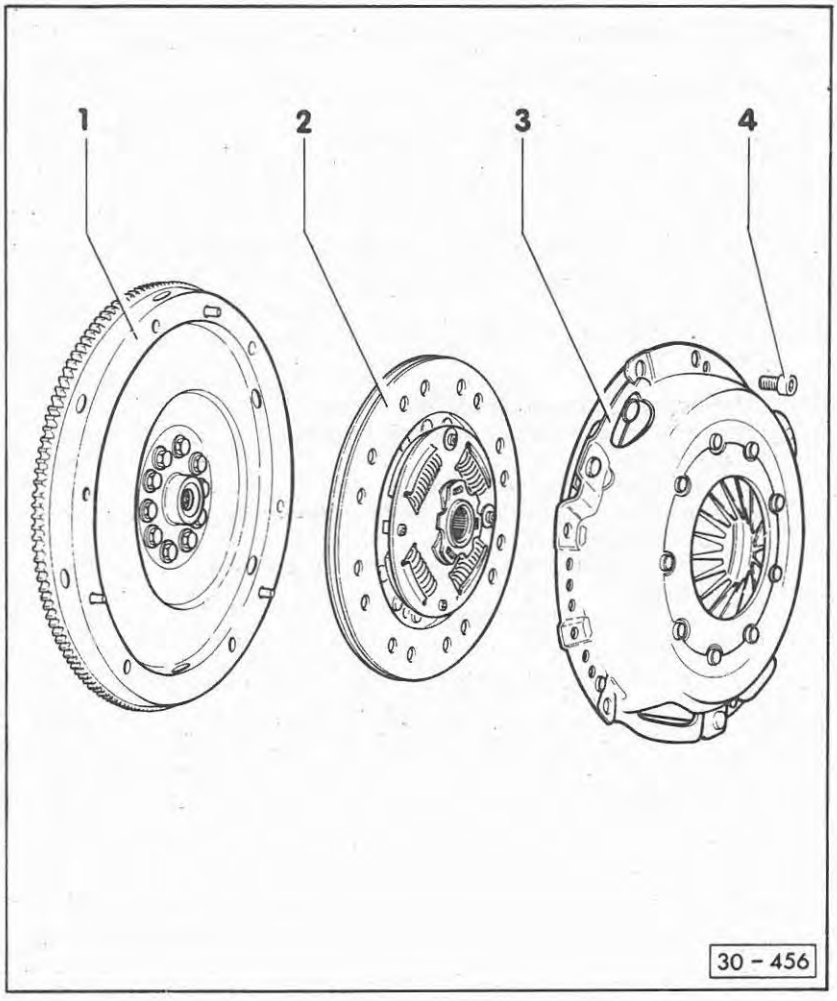
◄ Use the assembly clip 3246 for removing and installing the over-centre springs:
– Push assembly clip sideways over the over-centre spring.
– Depress clutch pedal and remove over-centre spring together with assembly clip.
– Installation is performed in the reverse order.

Important!

When installing, pay attention to coloured marking of over-centre springs ⇒ page 30–13 and 30–14.

Notes:

- *The assembly clip has been shown with the pedal bracket removed to simplify the illustration.*
- *Before assembling, grease the bearing journals with white solid lubricating paste.*



Servicing clutch

Note:

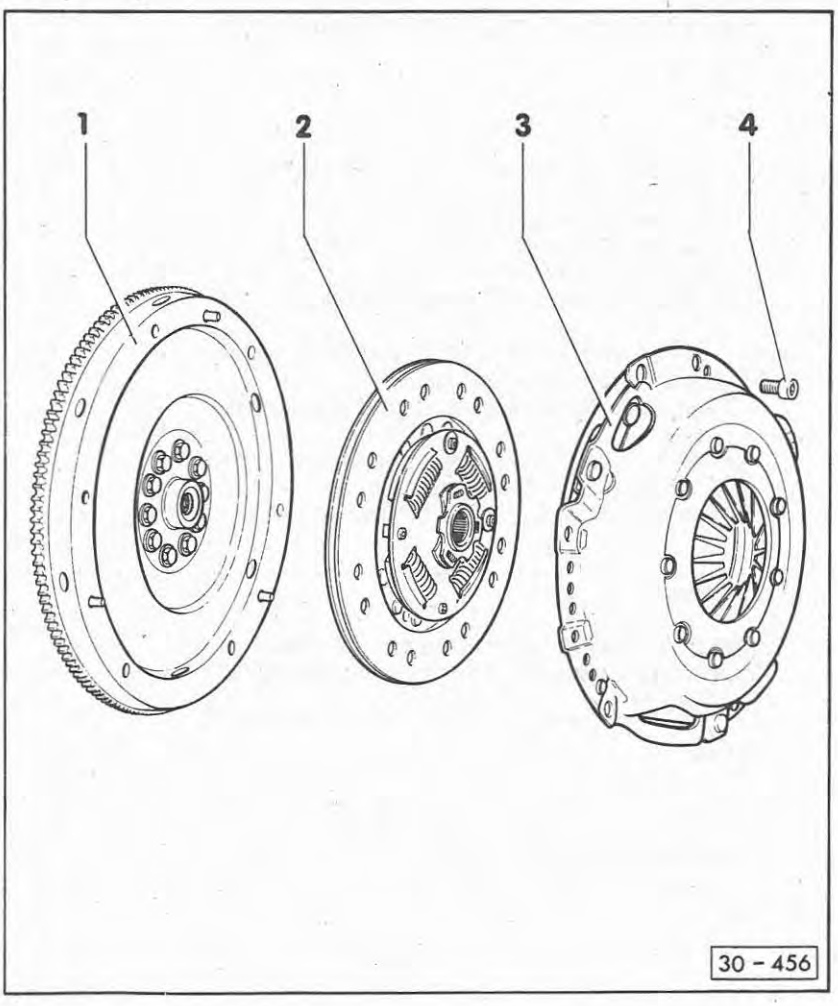
For performing work on the clutch, remove gearbox ⇒ page 34–1.

1 – Flywheel

- Removing and installing
  ⇒ Workshop Manual
  Audi 100 1991►
  Repair Group 13 – 5-Cyl. Fuel Injection Engine (4-Valve)
- Removing and inserting needle bearing in flywheel
  ⇒ Workshop Manual
  Audi 100 1991►
  Repair Group 13 – 5-Cyl. Fuel Injection Engine (4-Valve)

Notes:

- *Ensure the centering pins are tightly seated.*
- *Contact surface for clutch lining must be free of scoring, oil and grease.*



2 – Clutch plate

- Centering ⇒ Fig. 1
- Pay attention to installation position, spring cage faces pressure plate
- Do not grease

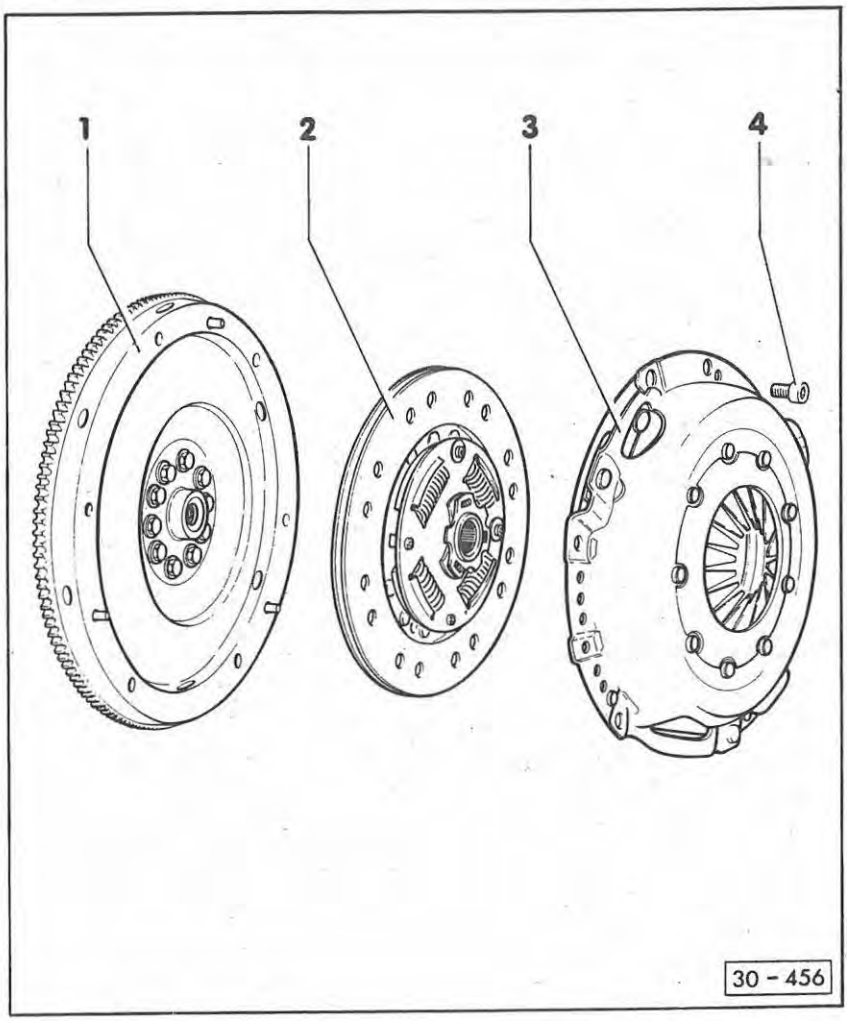
Note:

Clean splines of input shaft and, if clutch plates used, splines of hub. Remove corrosion and apply only a very thin film of grease G 000 100 to the splines of the input shaft. After this, move clutch plate back and forward on the input shaft until the hub moves freely on the shaft.
Always remove excess grease.

- Diameter of clutch plate
  ⇒ Technical Data, page 00–4

Important!

Before replacing clutch plate, pay attention to Fault Finding No. 9 – faults at clutch and clutch mechanism.



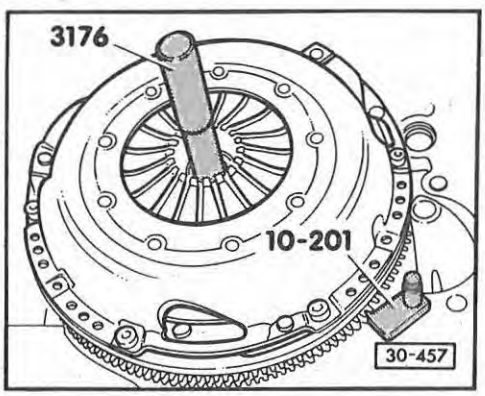
3 – Pressure plate
- Removing and installing ⇒ Fig. 1
- Checking ends of diaphragm spring ⇒ Fig. 2

Important!

Pressure plates are protected against corrosion and greased. They may only be cleaned at the contact surface otherwise the life of the clutch will be considerably reduced.

Before replacing the pressure plate, pay attention to Fault Finding No. 9 – faults at clutch and clutch mechanism.

4 – Screw, 25 Nm

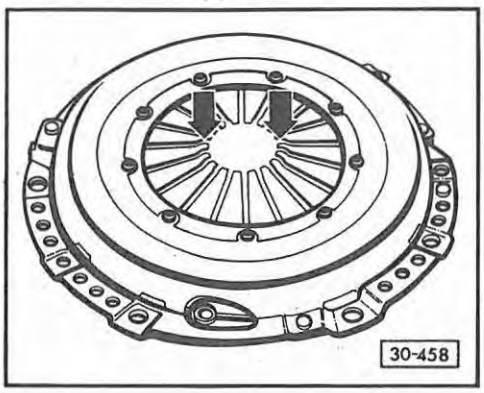


◄ Fig. 1 Removing and installing clutch

– Slacken and tighten screws in stages diagonally, 25 Nm.
- Change over counter-holder 10-201 when re moving.
- The clutch plate is centred with the guide drift 3176.

Important!

Pressure plate must be resting properly on flywheel all round. Do not insert securing screws unless this is the case. On no account, counter-pull on pressure plate otherwise the centering holes of the pressure plate and the centering pins of the flywheel will be damaged.



◄ Fig. 2 Checking ends of diaphragm spring

Wear is permissible up to half the diaphragm spring thickness.

Important!

When performing repairs, always match clutch pressure plate and driven plate on the basis of the chassis number according to the parts catalogue.

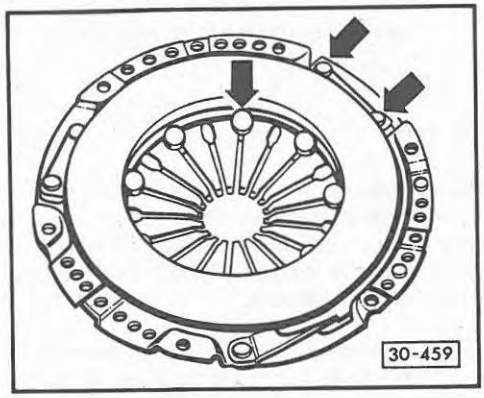


Fig. 3 Checking spring connection between pressure plate and cover for cracking, checking rivet fasteners are tight

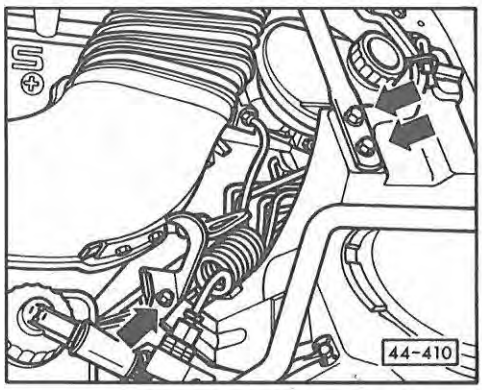
◄ Clutches with damaged or loose riveted joints (arrows) should be replaced.

Removing and installing gearbox

Removal

Note:

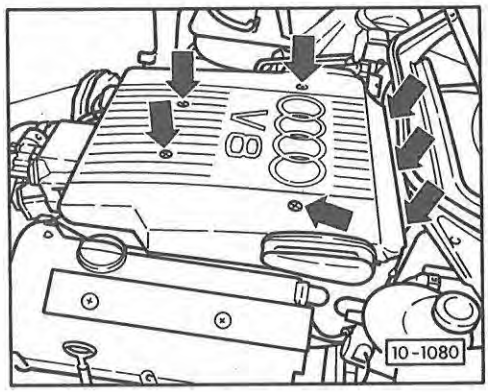
Pay attention to radio coding (determine radio code by asking customer before disconnecting battery).



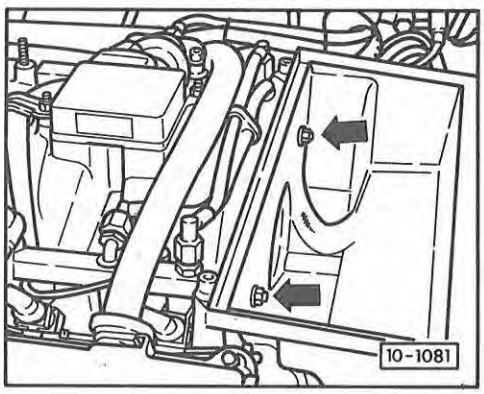
- Disconnect earth strap from battery (below rear seat).
- Take off front wheels.

◄ – Remove stabilizer bar (arrows).

- Unscrew bracket for left and right air guide pipe (arrow).



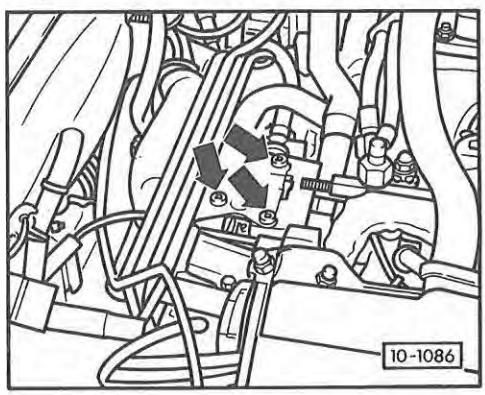
◄ – Unscrew top part of air cleaner housing (4 screws on housing, 3 screws at rear of housing).



◄ – Unscrew bottom part of air cleaner housing (arrows), push back and then lift out and up.

Note:

Nuts are self-locking – always replace.

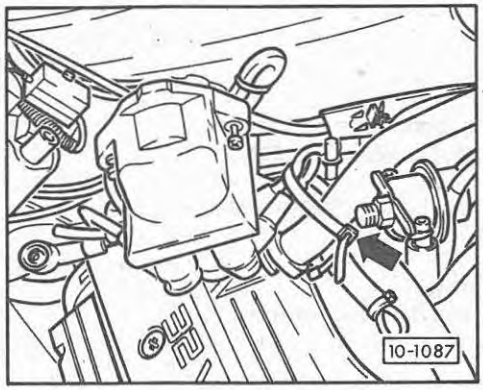


◄ – Remove securing plate of ignition cable holder (arrows).

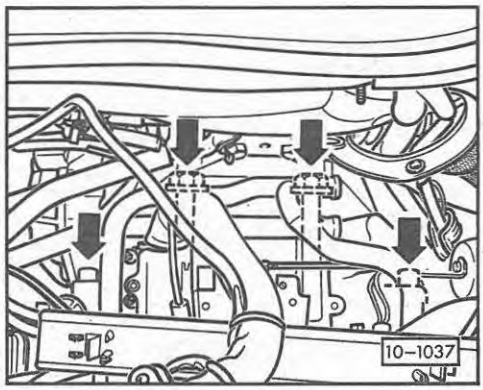
Note:

Securing screws are self-locking – always replace.

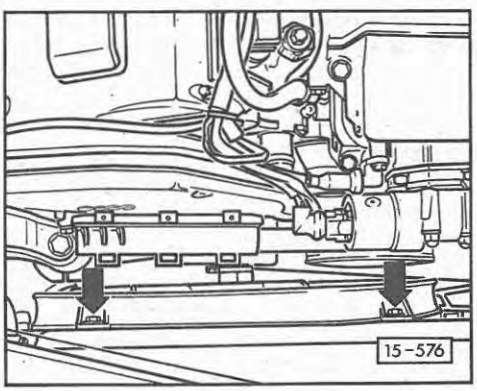
– Unscrew left and right distributor caps (wiring remains connected).



◄ – Secure both distributor caps to breather hose of crankcase with cable straps.



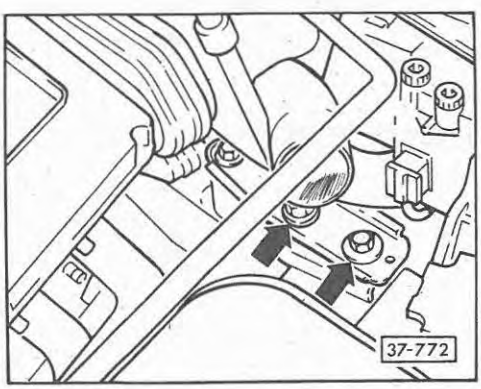
◄ – Unscrew top engine/gearbox connection bolts (arrows).



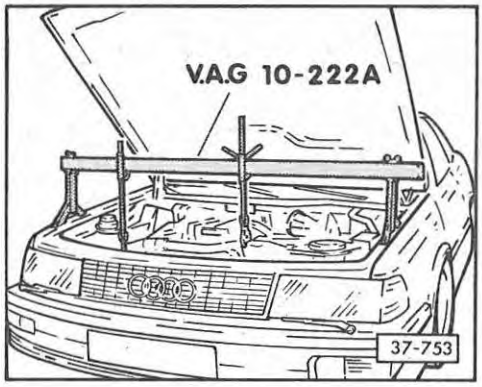
◄ – Unscrew air guide ring for viscous fan (arrows).

– Pull air guide ring up so that it jumps out of the bottom of the guide.

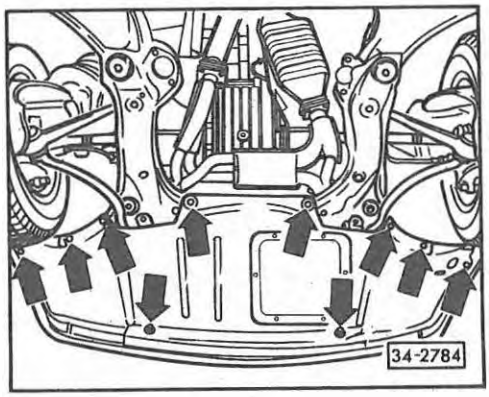
– Place air guide ring on fan wheel.



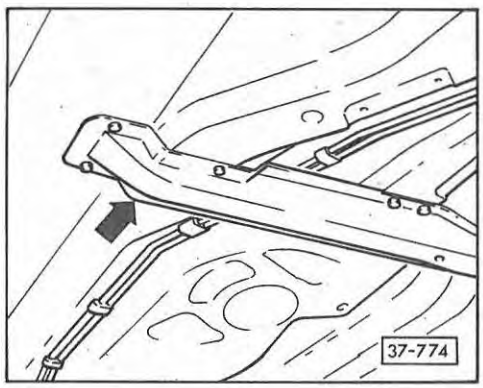
◄ – Unscrew securing bolts for engine mount/right top support at body (arrows).



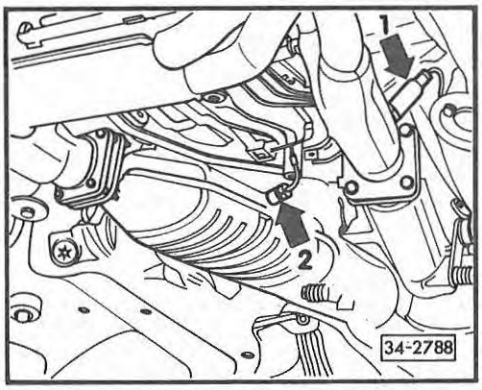
◄ – Attach supporting device V.A.G 10-222A into the left engine suspension and take up weight of engine with the spindle.



◄ – Remove noise insulation panel (arrows).

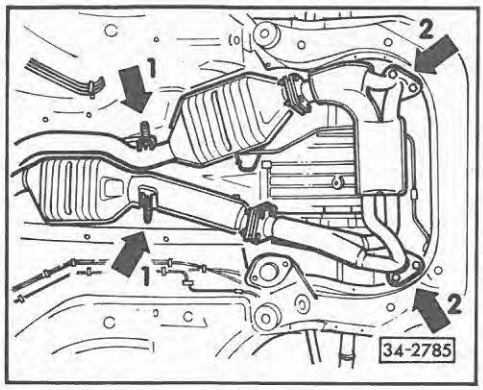


◄ – Unscrew crossmember (arrow) from body.



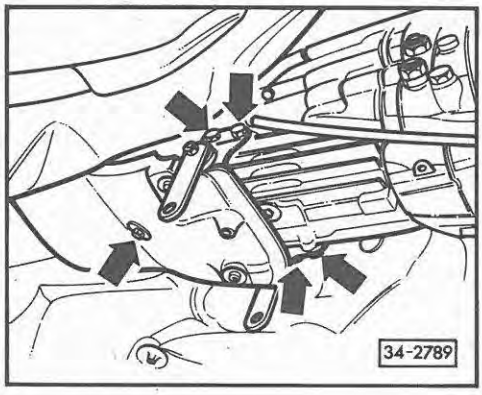
◄ – Unscrew lambda probe (arrow 1) and thermosensor (arrow 2).

– Carefully bend up retaining clip (on left and right of gearbox housing) for cables of lambda probe and thermosensor and take out electric wiring.

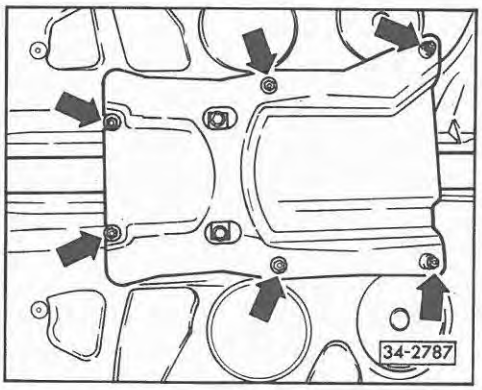


◄ – Unscrew securing bolts for catalytic converter at suspension straps (arrow 1) and collar nuts of front exhaust pipe at exhaust manifold (arrow 2).

– Detach main and tail silencers from retaining loops.



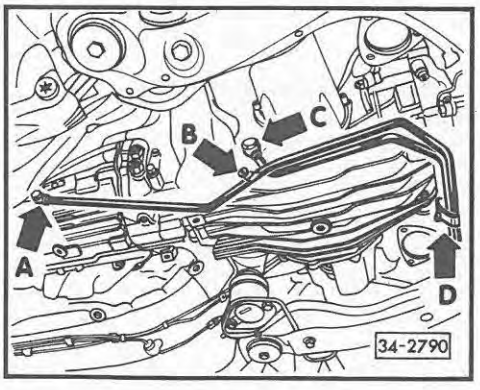
◄ – Unscrew shield from closing cover (arrows).



◄ – Remove heat shield below propshaft (arrows).

– Remove propshaft ⇒ page 39–10.

– Engage 3rd gear, unscrew clamp for torque and selector rod ⇒ Workshop Manual Audi 100 1991► Repair Group 30 – 5- and 6-Speed Manual Gearbox 01E.

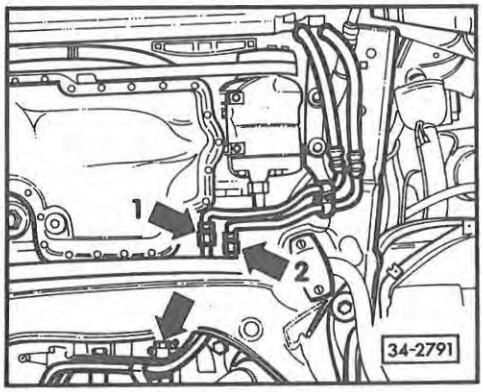


◄ – Slacken securing screw (arrow D) for angle bracket of oil pressure pipes (feed and return, at rear).

– Unscrew securing screw at oil pump cover (arrow B) for angle bracket of oil pressure pipe (return, at rear).

– Unscrew banjo bolt (arrow A) at closing cover for oil pressure pipe (return, at rear) and seal hole with plug.

– Unscrew banjo bolt at oil pump cover (arrow C) for oil pressure pipe (feed, at rear) and seal hole with plug.

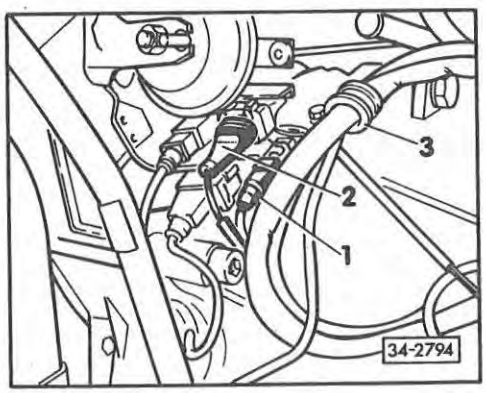


◄ – Separate oil pressure pipes (front and rear) feed (arrow 1) and return (arrow 2) and seal with plugs.

– Unscrew securing bolt (arrow) for angle bracket of oil pressure pipes (feed and return, at rear) at engine/gearbox flange.

– Unscrew shields of drive shafts.

– Unscrew drive shafts and tie up.

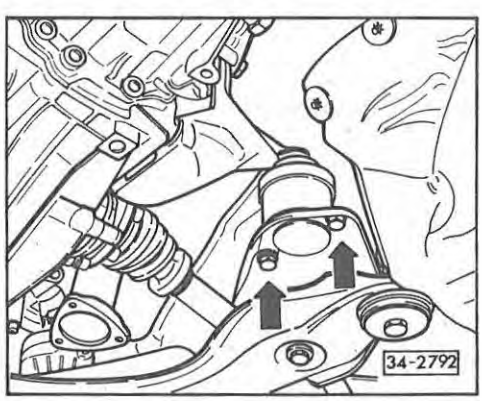


◄ – Detach plug connection of signal cable –1– and of heater –2– of lambda probe.

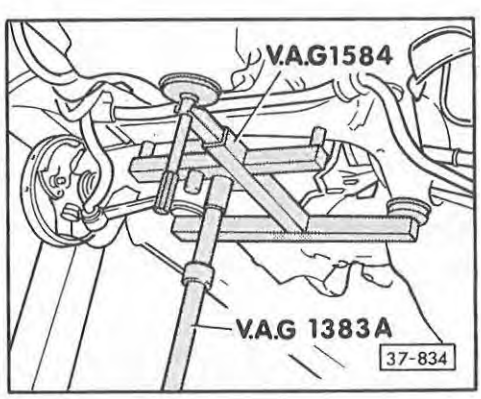
– Unscrew fixture of electric wiring –3– from gearbox housing.

– Unplug connector from speedometer sender (press down retaining bar for this step) and unclip electric cable from gearbox housing.

– Unplug connector from gearbox switch for reversing light and unclip electric cable from gearbox housing (right-hand side).



◄ – Unscrew securing bolts (arrows) of gearbox mount at subframe.



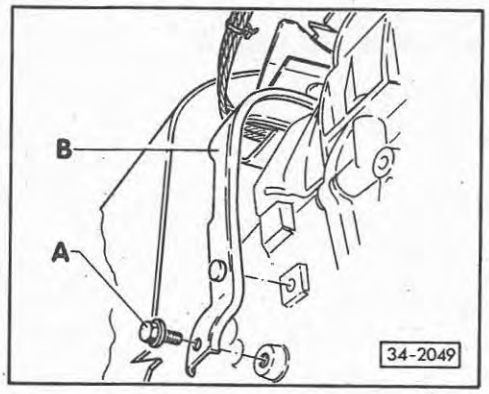
◄ – Support subframe with gearbox jack V.A.G 1383A and subframe support V.A.G 1584.

– Unscrew rear securing bolt of subframe (on left and right).

– Slowly lower gearbox jack.

Notes:

- *When lowering gearbox, ensure that the air guide ring of the viscous fan and the drive shafts do not jam.*
- *The gearbox is lowered further by tightening the lifting device V.A.G 10-222A.*



◄ – Unscrew securing bolt –A– for the cable bracket –B– of the procon-ten system.

– Push cable bracket with the procon-ten cable over the cable guide.

– Remove gearbox support together with gearbox mount (on left and right).

– Remove clutch slave cylinder.

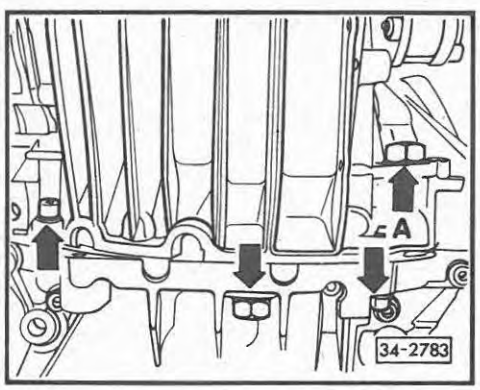
Notes:

- *Do not open piping system.*
- *To facilitate removal, swivel the selector lever at the gearbox into the position of 6th gear.*

Important!

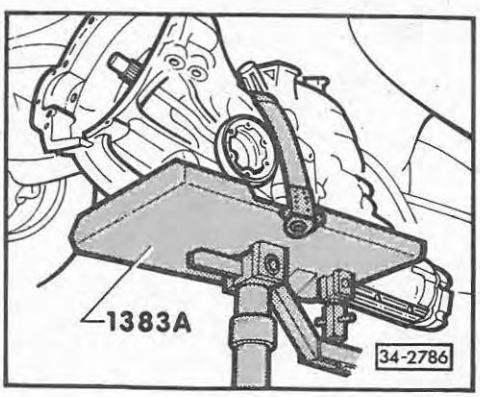
Do not operate clutch pedal any more after removing the slave cylinder.

– Support gearbox with gearbox jack V.A.G 1383 A.



◄ – Unscrew starter (arrow A) and pull off only sufficiently for it to touch the oil filter.

– Unscrew bottom engine/gearbox connecting bolts (arrows).



◄ – Press gearbox off dowel sleeves and carefully lower with gearbox jack.

Important!

When lowering, ensure clearance to the drive shafts.

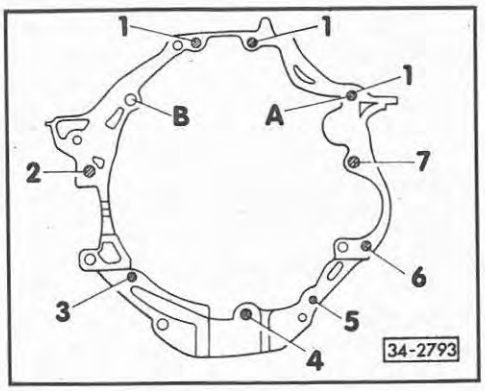
Installation

Installation of the gearbox is performed in the reverse order.

Notes:

- *Check whether the dowel sleeves for centering engine/gearbox are fitted in the gearbox flange, insert if necessary ⇒ page 34–15.*
- *Do not install clutch slave cylinder until gearbox has been installed*
  ⇒ Workshop Manual Audi 100 1991 ► Repair Group 30 – 5- and 6-Speed Manual Gearbox 01E.
- *It is essential to clean the residues of locking agent from the tapped holes in the flanged shafts for the propshaft of the manual gearbox and rear final drive as well as from the tapped hole for attaching the clutch slave cylinder with a thread tap before installing.*
- *Always replace gaskets at the connection points of the propshaft ⇒ page 39–11, item 4 and drive shafts.*
- *Always adjust propshaft ⇒ page 39–18*
  after installing ⇒ page 39–16.
- *Always adjust selector and torque rod after installing ⇒ Workshop Manual Audi 100 1991 ► Repair Group 34 – 5- and 6-Speed Manual Gearbox 01E.*

- Align exhaust system free of tension
  ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.
- Add oil to manual gearbox.
  – Capacity and specification ⇒ page 00–4.
- The front axle should be re-aligned after installing the gearbox.



Tightening torques:

◄ – Engine/gearbox attachment (flange diagram engine)

Item	Bolt	Qty.	Nm
1	M12 x 75	3	65
2	M12 x 90	1	65
3	M10 x 40	1	45
4	M10 x 45	1	45
5	M 8 x 45	1	25
6	M10 x 120	1	45
7	M12 x 110	1	65

Dowel sleeves for centering items –A– and –B–

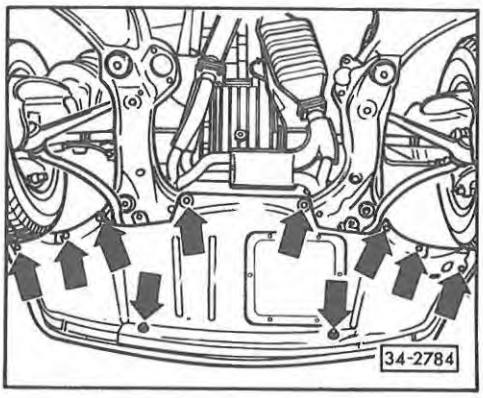
Clutch slave cylinder to gearbox .....25 Nm
Gearbox support to gearbox housing .....40 Nm
Cable guide of procon-ten system to gearbox .....40 Nm
Subframe to body .....65 Nm
and torque a further 90°
• Always replace bolt
Gearbox mount to subframe .....40 Nm
Drive shaft to flanged shaft .....80 Nm
Shield of drive shaft to gearbox .....25 Nm

Front oil pressure pipe to rear oil pressure pipe .....40 Nm
• Always replace O-ring
Banjo bolt to oil pump cover .....25 Nm
• Always replace O-ring
Banjo bolt to closing cover .....25 Nm
• Always replace O-ring
Angle bracket of return pipe to oil pump cover .....25 Nm
Angle bracket of rear oil pressure pipes to engine/gearbox flange .....25 Nm
Clamp of selector and torque rod .....25 Nm
Propshaft to gearbox/final drive .....55 Nm
Shield to closing cover M8 ... 25 Nm
M6 ... 10 Nm
Catalytic converter to suspension strap .....25 Nm
Front exhaust pipe to exhaust manifold .....25 Nm
Lambda probe in catalytic converter .....50 Nm
• Grease thread with G5. Hot bearing grease must not get into the slot area of the probe body
Crossmember to body .....10 Nm
Torque support to body .....40 Nm
Air guide ring of viscous fan toframe of radiator .....10 Nm
Air cleaner housing – bottom part .....10 Nm
Air cleaner housing – top part .....10 Nm
Anti-roll bar to suspension strut dome .....20 Nm
Tightening torque of wheels .....110 Nm

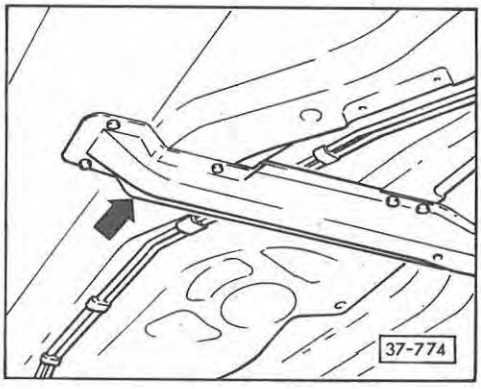
Removing and installing oil pump

Removal

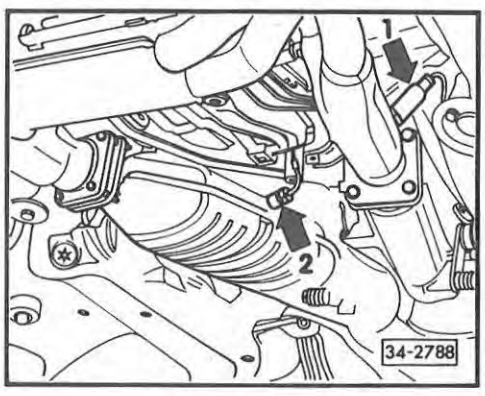
(Gearbox installed)



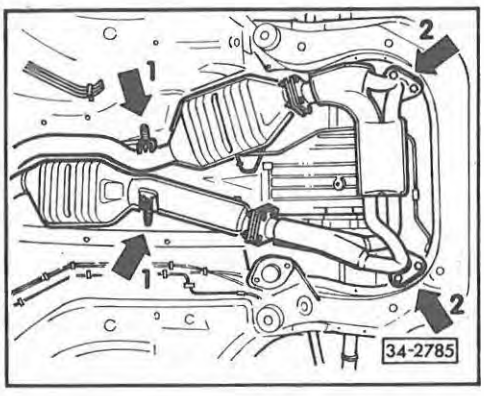
◄ – Remove noise insulation panel (arrows).



◄ – Remove crossmember (arrow) from body.



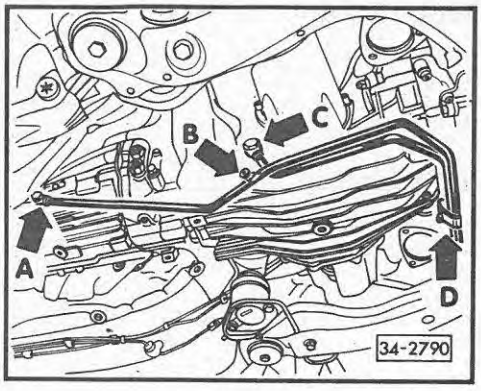
◄ – Unscrew lambda probe (arrow 1) and thermo-sensor (arrow 2).



◄ – Unscrew securing bolts for catalytic converter at suspension strap (arrow 1) and collar nuts of front exhaust pipe at exhaust manifold (arrow 2).

– Detach main and tail silencers from retaining loops.

– Place oil drip tray below and drain gear oil.



◄ – Slacken securing bolt (arrow D) for angle bracket of oil pressure pipes (feed and return, at rear).

– Unscrew securing bolt and oil pump cover (arrow B) for angle bracket of oil pressure pipe (return, at rear).

– Unscrew banjo bolt (arrow A) at closing cover for oil pressure pipe (return, at rear).

– Unscrew banjo bolt at oil pump cover (arrow C) for oil pressure pipe (feed, at rear).

– Unscrew shield of right drive shaft.

– Unscrew right drive shaft and tie up.

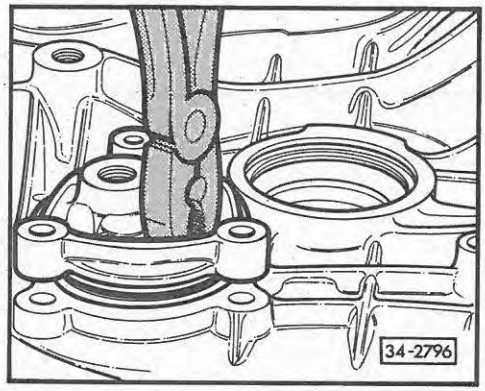
– Unscrew right flanged shaft and remove.

Note:

Dismantling principle of flanged shaft ⇒ page 39–43, Fig. 39-1868.

– Unscrew remaining top securing bolt of oil pump cover.

◄ – Use a suitable tool (pliers) to grasp oil pump at a reinforcing rib of the oil pump cover and to remove axially.



Installation

Installation of the oil pump is performed in the reverse order.

Notes:

- *When inserting the oil pump, ensure that the drive pinion engages in the drive gear. The oil pump cover is resting properly on the housing flange all round. Always replace O-ring.*
- *Always replace gasket between drive shaft and flanged shaft (pull off protective sheet and stick gasket onto the joint).*
- *Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.*
- *Add oil to gearbox. Capacity and specification ⇒ page 00–4.*

Tightening torques:

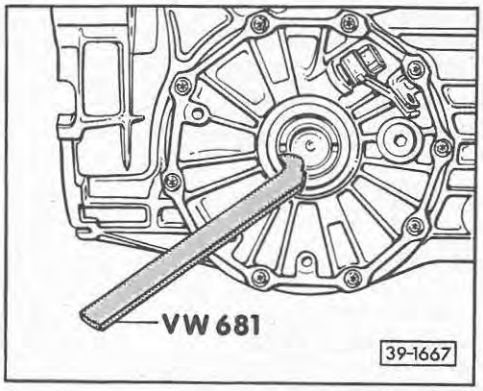
Oil pump cover to gearbox housing ..... 25 Nm
Hex. socket screw on flanged shaft ..... 10 Nm
and torque a further 90°
Drive shaft to flanged shaft ..... 80 Nm
Shield of drive shaft to gearbox ..... 25 Nm
Banjo bolt to oil pump cover ..... 25 Nm
- Always replace O-ring

Banjo bolt to closing cover ..... 25 Nm
- Always replace O-ring

Angle bracket of return pipe to oil pump cover ..... 25 Nm
Angle bracket of oil pressure pipes at rear to engine/gearbox flange ..... 25 Nm
Catalytic converter to suspension strap ..... 25 Nm
Front exhaust pipe to exhaust manifold ..... 25 Nm
Lambda probe in catalytic converter ..... 50 Nm
- Grease thread with G5. Hot bearing grease must not get onto the slot area of the probe body.

Crossmember to body ..... 10 Nm
Oil drain plug ..... 40 Nm

Replacing flanged shaft oil seal



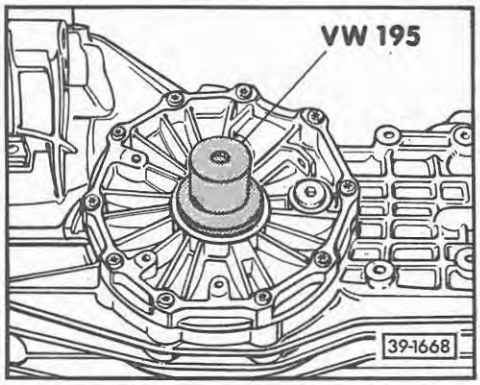
(Gearbox installed)

Note:

- *Removal and installation of left oil seal (figures) and right oil seal (not shown) is identical.*

– Disconnect drive shaft.
– Place oil drip tray below.
– Remove flanged shaft, secure with drift to prevent it turning.

◄ – Pull out seal with forcing lever VW 681.



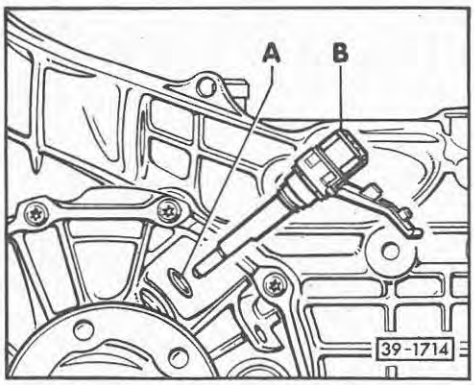
◄ – Insert seal for flanged shaft.
Insertion depth = 5.5 mm.
– Pack space between sealing and dust lips with universal grease.
– Install flanged shaft and drive shaft.

Tightening torques:

Flanged shaft to gearbox ..... 10 Nm
and torque a further 90°
Drive shaft to flanged shaft ..... 80 Nm

Replacing electronic speedometer sender and gear

(Gearbox installed)

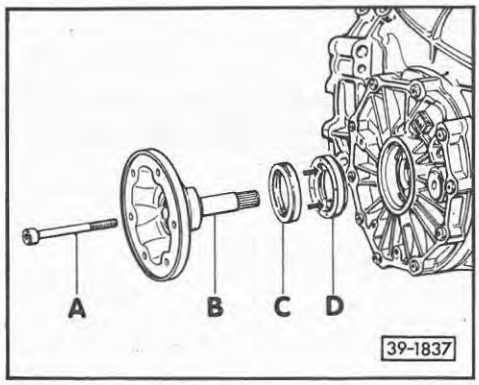


◄ – **Replacing speedometer sender –B–**

– Unplug connector from sender –B–.

– Press down retaining bar and carefully swing speedometer sender outward without damaging it otherwise the speeds may not be indicated properly.

– Always replace seal –A– when installing.



– Replacing speedometer gear –D–

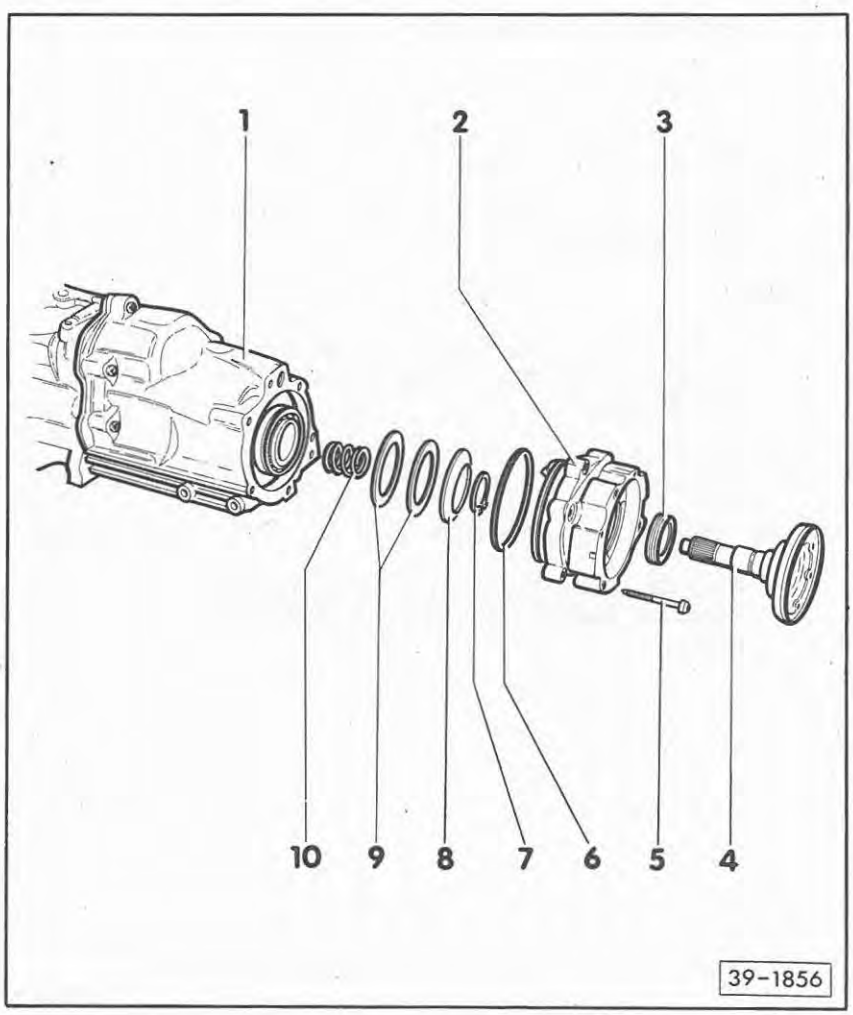
◄ – Unscrew drive shaft from left flanged shaft.
– Remove screw –A–. Secure flanged shaft with drift prevent it turning.
– Remove flanged shaft –B– and seal –C– for flanged shaft.
– Remove speedometer gear –D– with screwdriver by levering alternately at the driving studs (arrows).

When installing, pay attention to the following point:
– Press speedometer gear –D– onto the differential as far as the stop.

Note:

The driving studs of the speedometer gear (arrows) face the seal –C– and engage in the slots of the differential housing.

– Replace seal –C– for flanged shaft ⇒ page 39–1.
– Install flanged shaft ⇒ page 39–1.
– Top up gear oil.
  • Capacity and specification ⇒ page 00–4
  • Ignore additive if minor losses of gear oil exist.



Replacing seal for flange/ propshaft at gearbox

(Gearbox installed)

Sequence of operations ⇒ page 39–6

Removing and installing propshaft ⇒ page 39–10

1 – Gearbox

2 – Bearing housing with balancing weight and grooved ball bearing

Note:

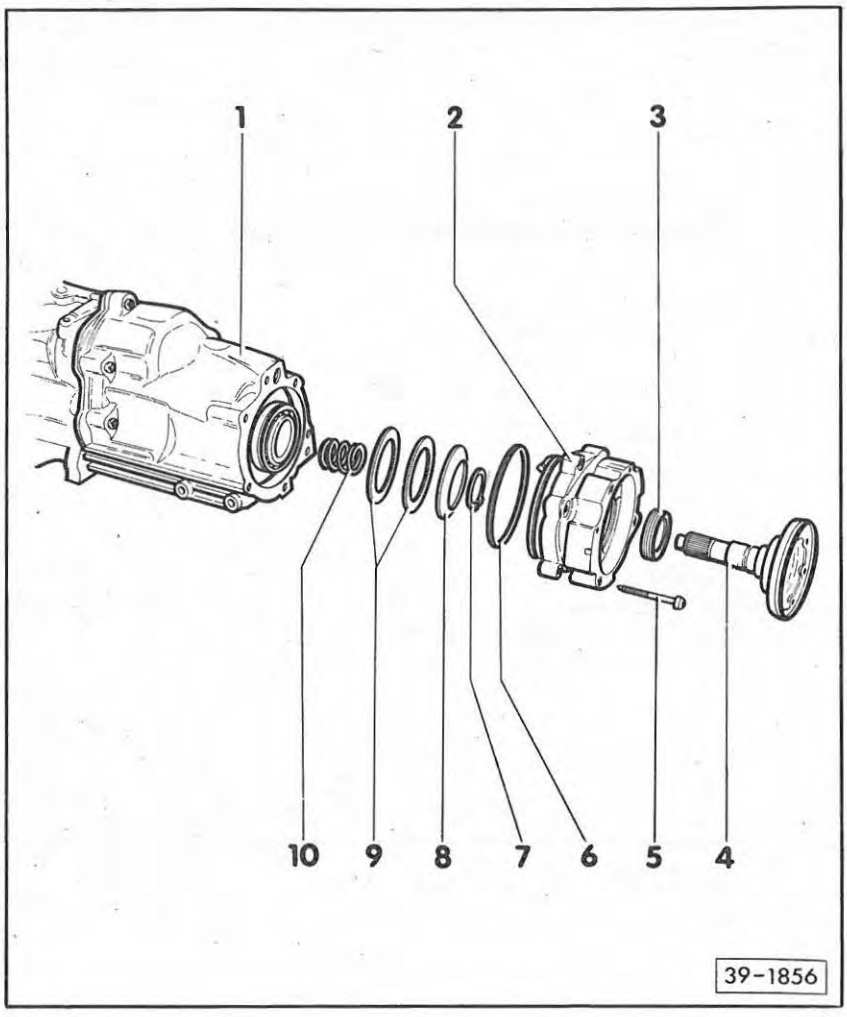
Balancing weight fitted only to vehicles with 4.2 litre engine.

3 – Seal

4 – Flanged shaft

5 – Torx screw, 25 Nm

6 – O-ring
  • Always replace



7 – Circlip

8 – Cup spring
- Mark installation position when removing (concave side faces washers ⇒ item 9)

9 – Washer

10 – Spiral spring

Sequence of operations

Removal

– Place oil drip tray below and drain gear oil (oil drain plug at closing cover).

– Unscrew securing bolts ⇒ page 39–4, item 5, for bearing housing.

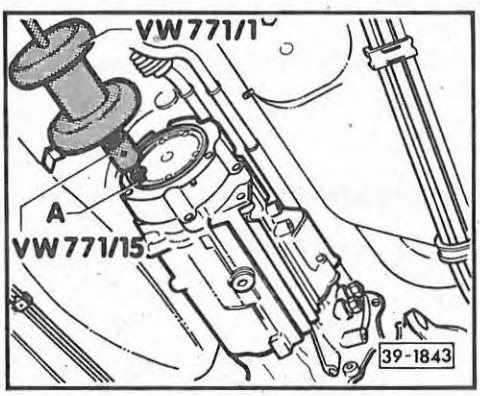
Note:

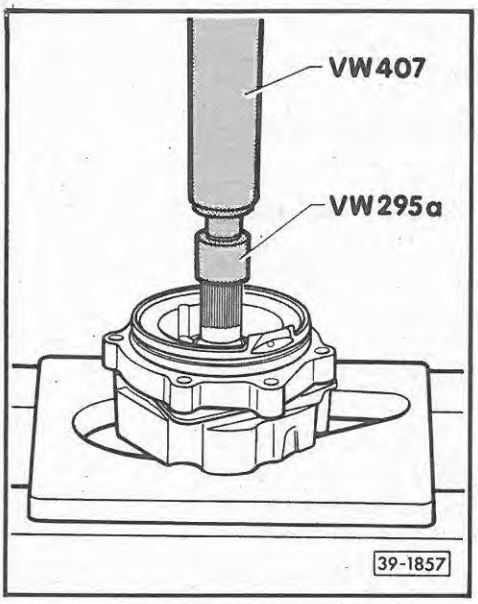
Bearing housing is pushed slightly off the closing cover by the spiral spring when the securing bolts are slackened.

◄ – Pull flanged shaft with bearing housing off the closing cover.

A – Headless set screw M8/M10

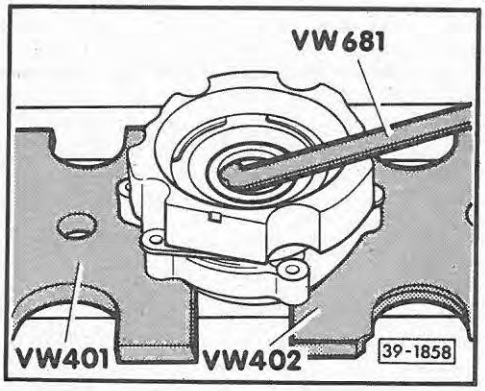
– Take off bearing housing, paying attention to installation position of cup spring ⇒ page 39–5, item 8.





– Take circlip off flanged shaft.

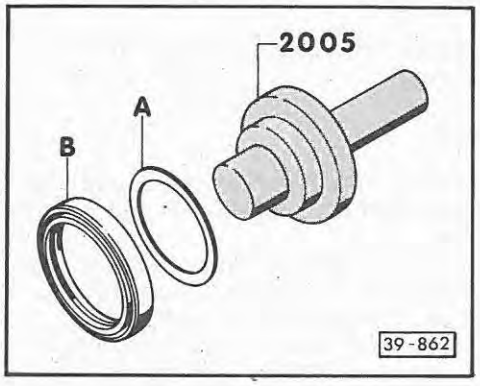
◄ – Press out flanged shaft.



◄ – Remove seal for flanged shaft.

– Thoroughly clean seat of the sealing ring.

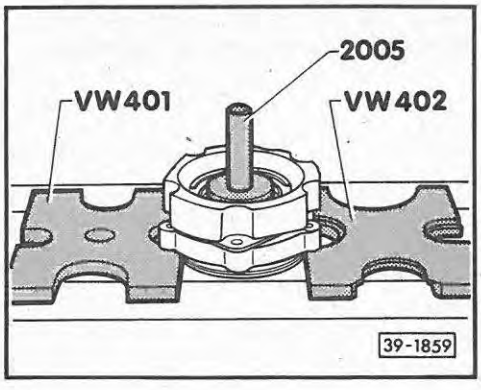
Installation



◄ – Fit seal –B– with a washer –A–
⇒ Part No. 016 311 391 B (thickness 1.7 mm)
onto insertion drift 2005.

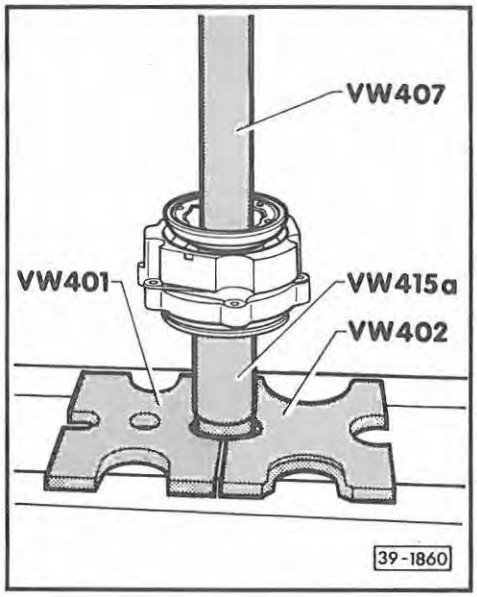
Notes:

- *Lightly oil outer diameter of seal.*
- *Pack space between sealing lips with grease.*
- *Open side of seal faces gearbox.*



◄ – Insert seal for flanged shaft.

– After inserting, remove washer –A– ⇒ top Fig.



◄ – Press in flanged shaft.

– Fit circlip onto flanged shaft.

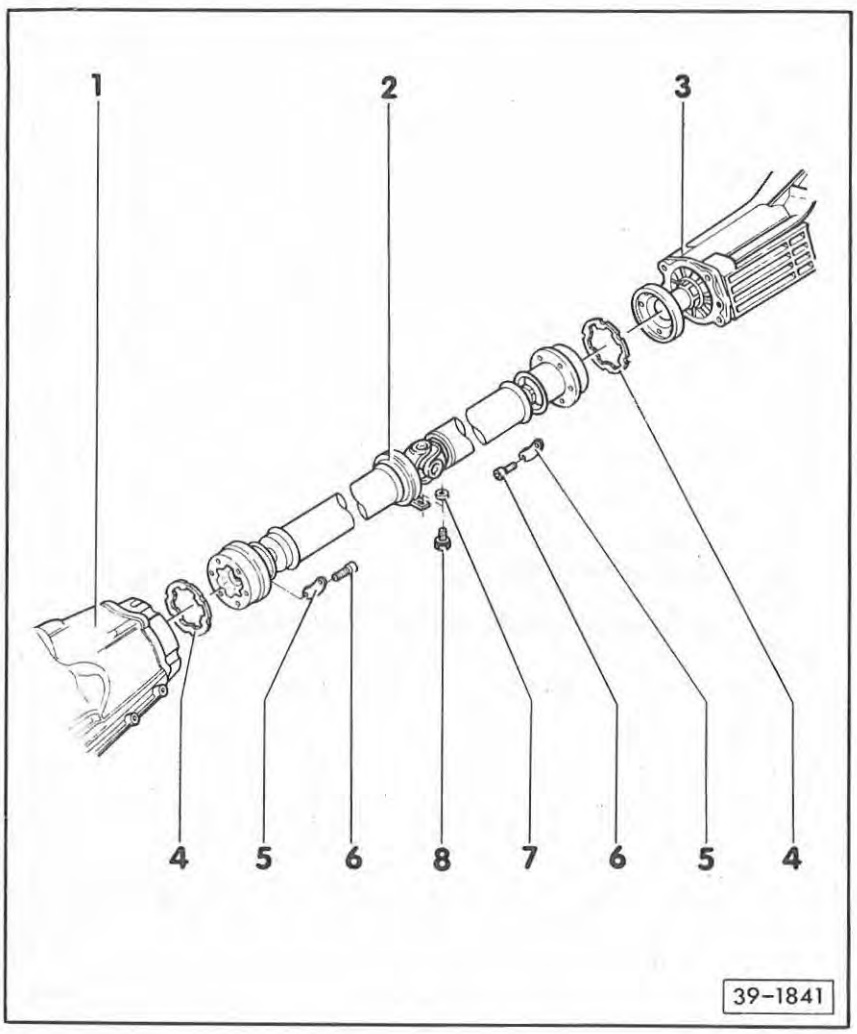
– Lightly oil O-ring and place into groove of bearing housing.

– Place cup spring and washers into bearing housing.
  • Installation position ⇒ page 39–5, items 8 – 9.

– Fit spiral spring onto flanged shaft.

– Tighten securing bolts for bearing housing in stages diagonally.

– Add gear oil
  • Specification ⇒ page 00–4.
  • Ignore additive if slight losses of gear oil.
  • Tightening torque of oil drain plug, 35 Nm.

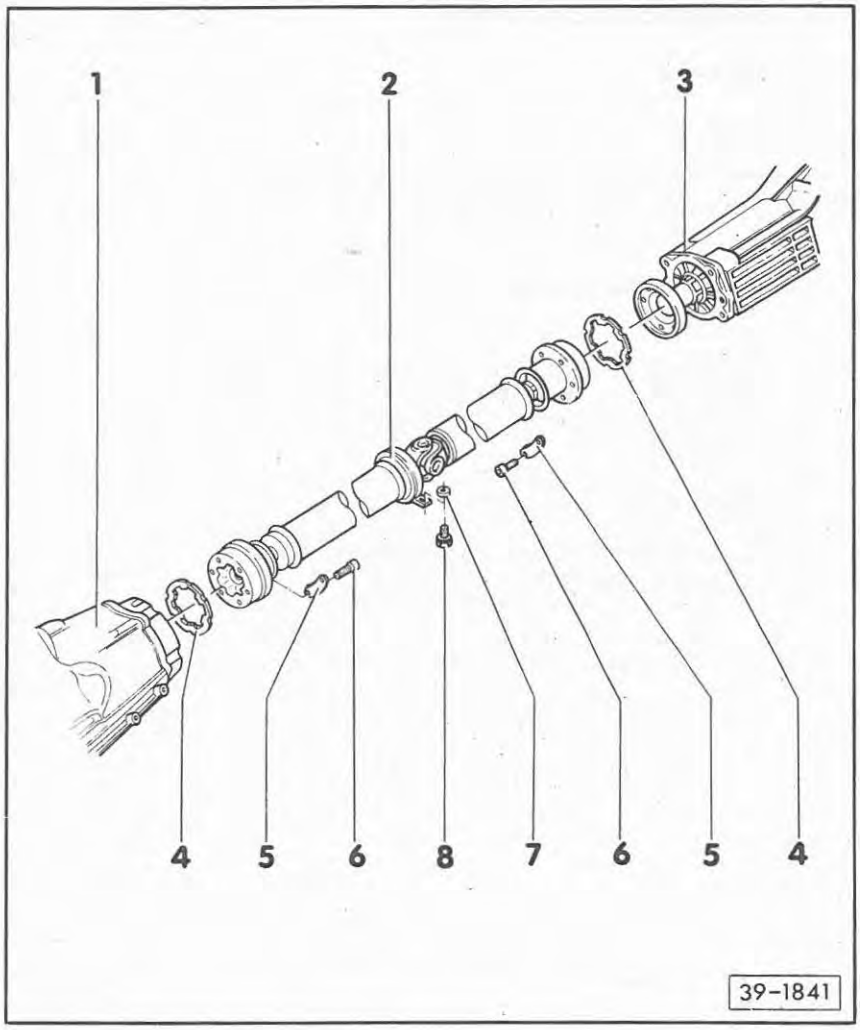


Removing and installing propshaft

Sequence of operations ⇒ page 39–13
Adjusting ⇒ page 39–18

Notes:

- *Work on the propshaft should only be performed on a two-column lifting platform.*
- *No repair work – except removal and installation and adjustment operations – may be performed on the propshaft.*
- *Universal joints and bearings cannot be replaced with workshop equipment.*
- *Front or rear propshaft cannot be removed individually.*
- *If customer complaints are received (noises, vibrations), always check whether proper adjustment of the propshaft rectifies the fault before replacing the propshaft.*



Important!

Do not twist propshaft, store and transport only stretched.
Use assembly device 3139 ⇒ page 39–15.

1 – Gearbox

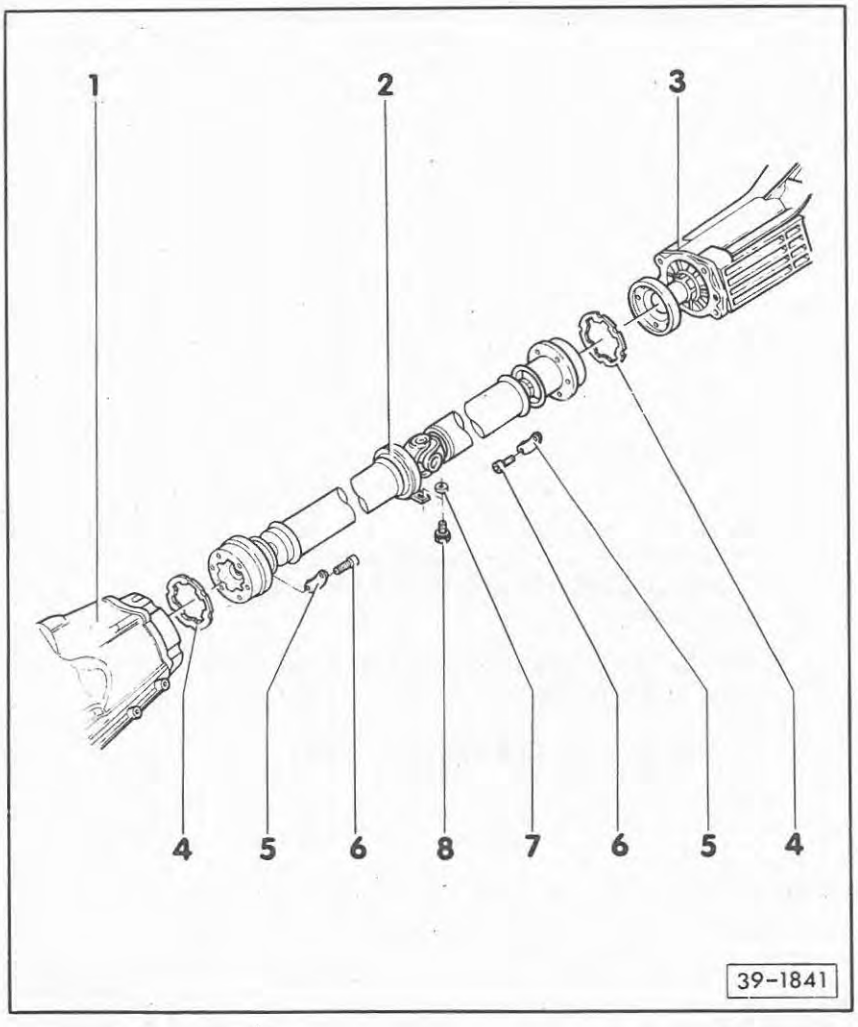
2 – Propshaft

3 – Rear final drive

4 – Gasket
- Always replace
- Remove protective sheeting beforehand

5 – Baseplate (3 off)

6 – Screw, 55 Nm (6 off)
- Always replace



7 – Shim
- Determining thickness ⇒ page 39–20

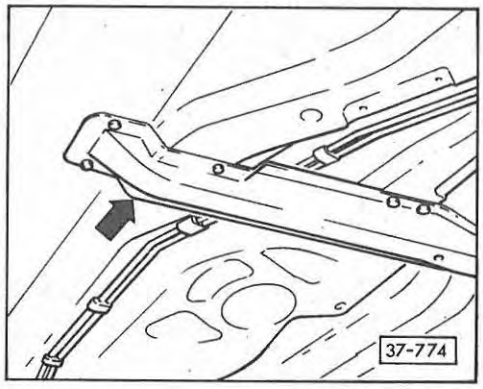
8 – Bolt, 20 Nm (2 off)

Sequence of operations

Removal

Note:

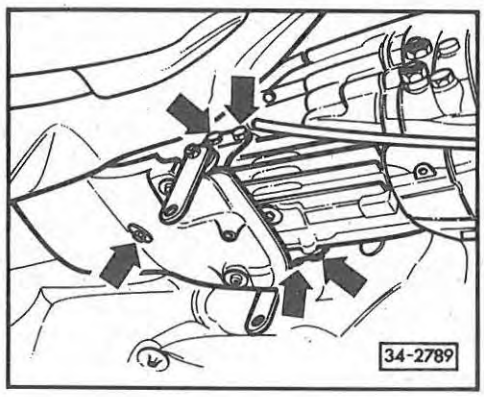
Work on the propshaft should only be performed on a two-column lifting platform.



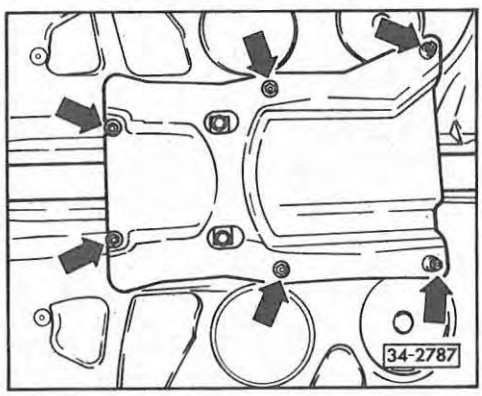
◄ – Remove front crossmember below exhaust system.

– Remove catalytic converters with main and tail silencers
⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.

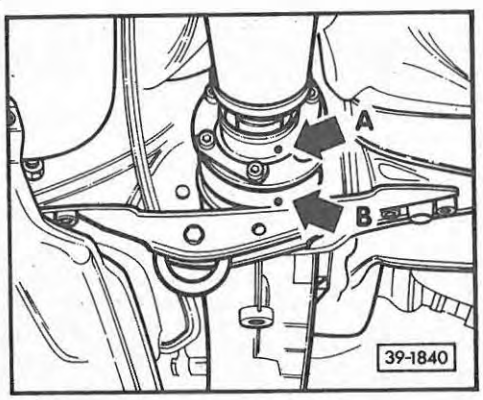
> ***Important!***
>
> ***Before removing the exhaust system, unscrew thermosensor and lambda probe.***



◄ – Unscrew shield from closing cover (arrows).



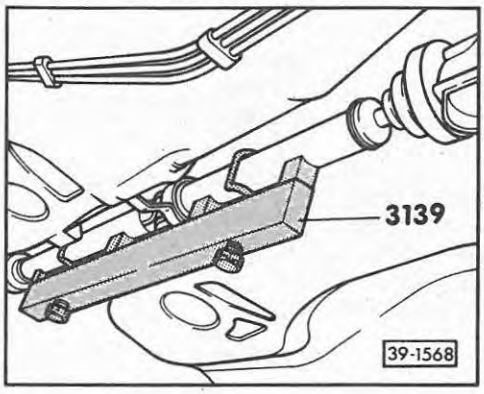
◄ – Unscrew heat shield below the propshaft (arrows).



◄ – If no marking points are provided, mark position of flange (arrow A) relative to rear final drive (arrow B) in colour.

– Slacken securing bolts of propshaft at rear final drive and at the gearbox.

– Slacken securing bolts of centre bearing.



◄ – Attach fitting device 3139 and tighten plastic nuts.

– Unscrew securing bolts of propshaft at rear final drive and at gearbox.

– Support propshaft and fitting device and unscrew securing bolts of centre bearing from body.

– Take out propshaft and fitting device.

Important!

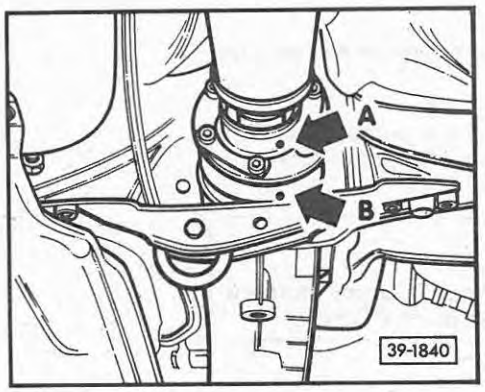
Propshaft must only be transported stretched.

Installation

Installation is performed in the reverse order.

Notes:

- *It is important to clean any residues of locking agent from the tapped holes in the flanged shafts for the propshaft of the gearbox and of the rear final drive before installing the propshaft. The tapped holes can be cleaned with a thread tap.*
- *Always fit new self-locking screws and bolts.*
- ◄ *When attaching the propshaft, ensure that the marking points of the flange of the propshaft (arrow A) and of the flanged shaft of the rear final drive (arrow B) are aligned.*
- *Always fit new gasket between propshaft and gearbox or rear final drive (pull off protective sheeting and stick gasket to the flanged shaft).*
- *After installing, adjust propshaft ⇒ page 39–18.*
- *Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.*



Tightening torques

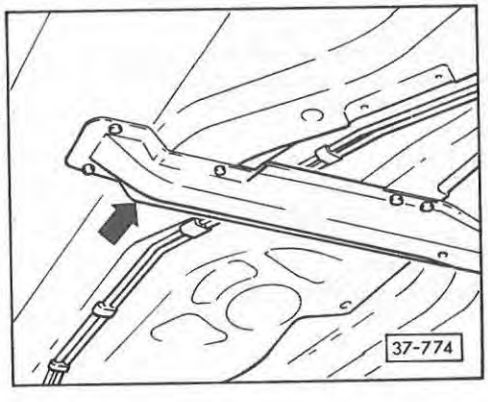
Propshaft to gearbox	55 Nm
Propshaft to rear final drive	55 Nm
Centre bearing of propshaft to body	20 Nm
Shield to closing cover	M8 ... 25 Nm
	M6 ... 10 Nm
Catalytic converter to suspension strap	25 Nm
Catalytic converter to front exhaust pipe	25 Nm
Lambda probe in catalytic converter	50 Nm
• Grease thread with G5. Hot bearing grease must not get onto the slot area of the probe body	
Crossmember to body	10 Nm

Adjusting propshaft

The adjustment operations should be performed with the greatest care as an incorrectly adjusted propshaft is frequently the cause of vibrations and droning noises.

Note:

Work on the camshaft should be performed on a two-pillar lifting platform.

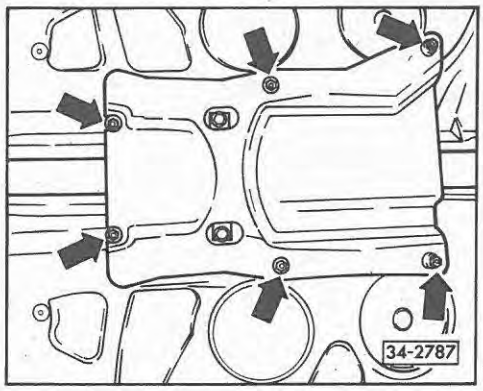


◄ – Remove front crossmember below the exhaust system (arrow).

– Remove catalytic converters with main and tail silencers ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.

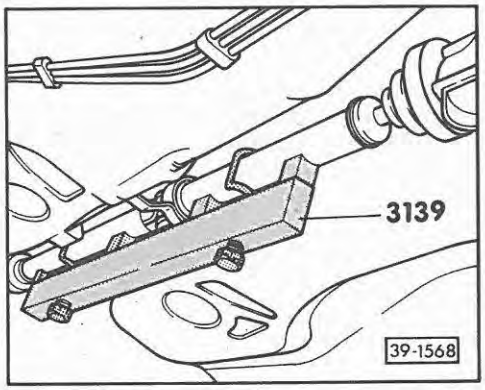
Important!

Before removing the exhaust system, unscrew the thermosensor and lambda probe.



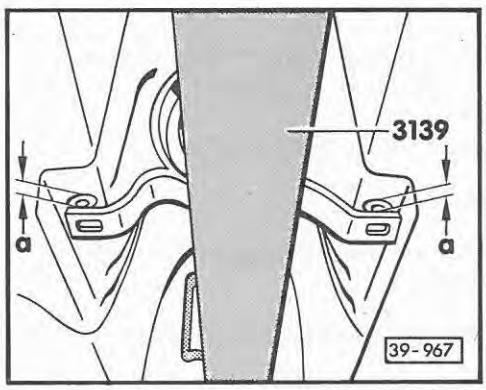
◄ – Unscrew the heat shield below the propshaft (arrows).

– Slacken securing bolts of the centre bearing.



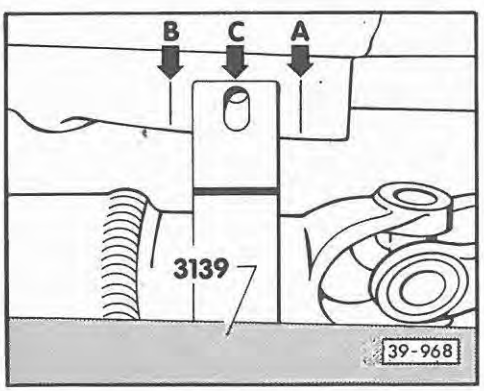
◄ – Attach fitting device 3139 and tighten plastic nuts.

– Take out securing screws and shims of the centre bearing.



◄ – Measure clearances "a" –they must be identical on the left and right– and determine the thickness of the necessary shims according to the table below.

Clearance "a" (mm)	Shims Thickness (mm)	Part No
0 ... 3	–	
3.1 ... 5	2	857 521 143
5.1 ... 7	4	857 521 143 A
7.1 ... 9	6	857 521 143 B
9.1 ... 11	8	857 521 143 C
11.1 ... 13	10	857 521 143 D



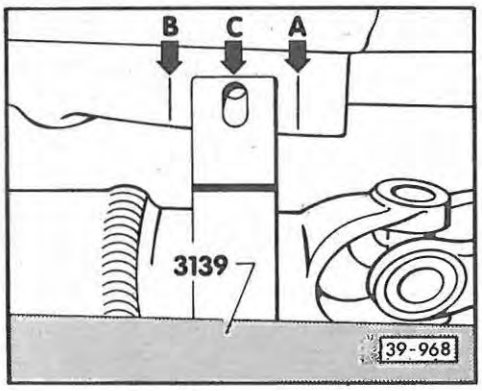
◄ – **Centering propshaft in longitudinal direction.**

– Push propshaft back as far as the stop with the fitting device.

– Mark position of centre bearing at body (arrow A).

– Push propshaft foward with the fitting device.

– Mark position of centre bearing on body (arrow B).



◄ – Centre propshaft; the centre bearing must be positioned between the markings (arrow C).

– Tighten centre bearing and calculated size of shims to body.

– Take off fitting device.

– Screw on heat shield below the propshaft.

– Install exhaust system.

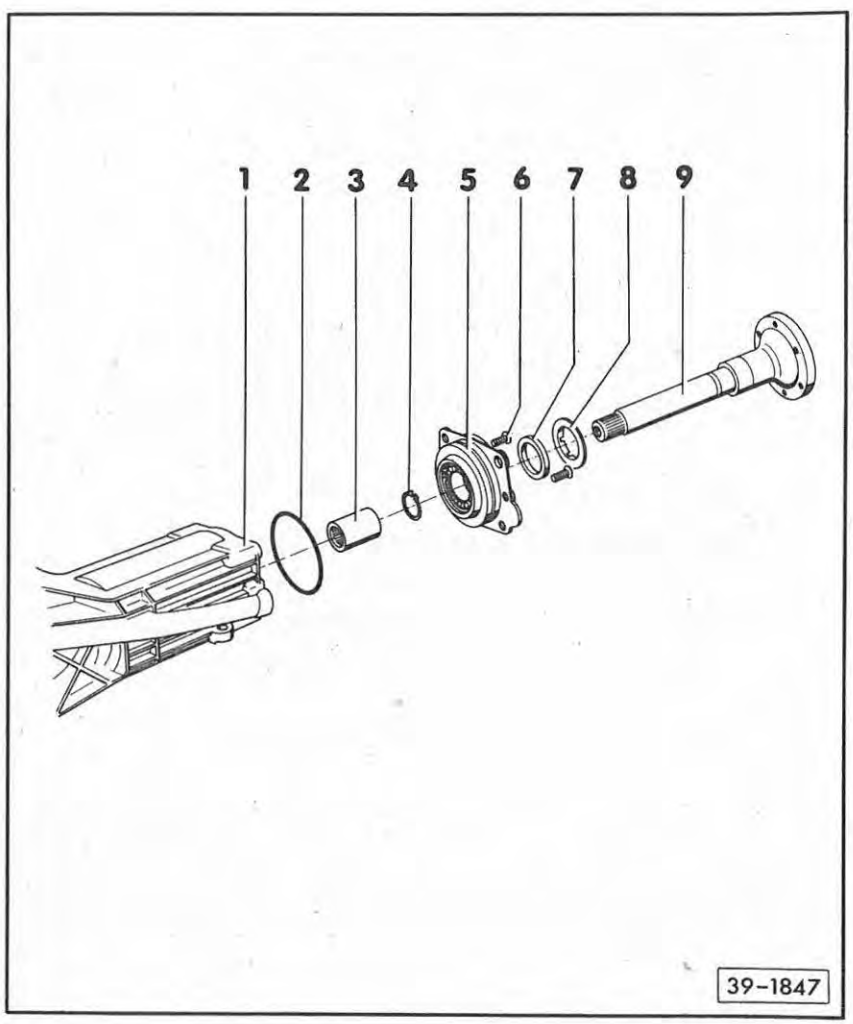
Note:

Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.

– Install front crossmember below exhaust system.

Tightening torques:

Centre bearing for propshaft to body .....20 Nm
Catalytic converter to front exhaust pipe .....25 Nm
Catalytic converter to suspension strap .....25 Nm
Front crossmember to body .....10 Nm



Replacing seal for flange/ propshaft at rear final drive

(Final drive installed)

Note:

Oil seal can only be replaced with final drive lowered.

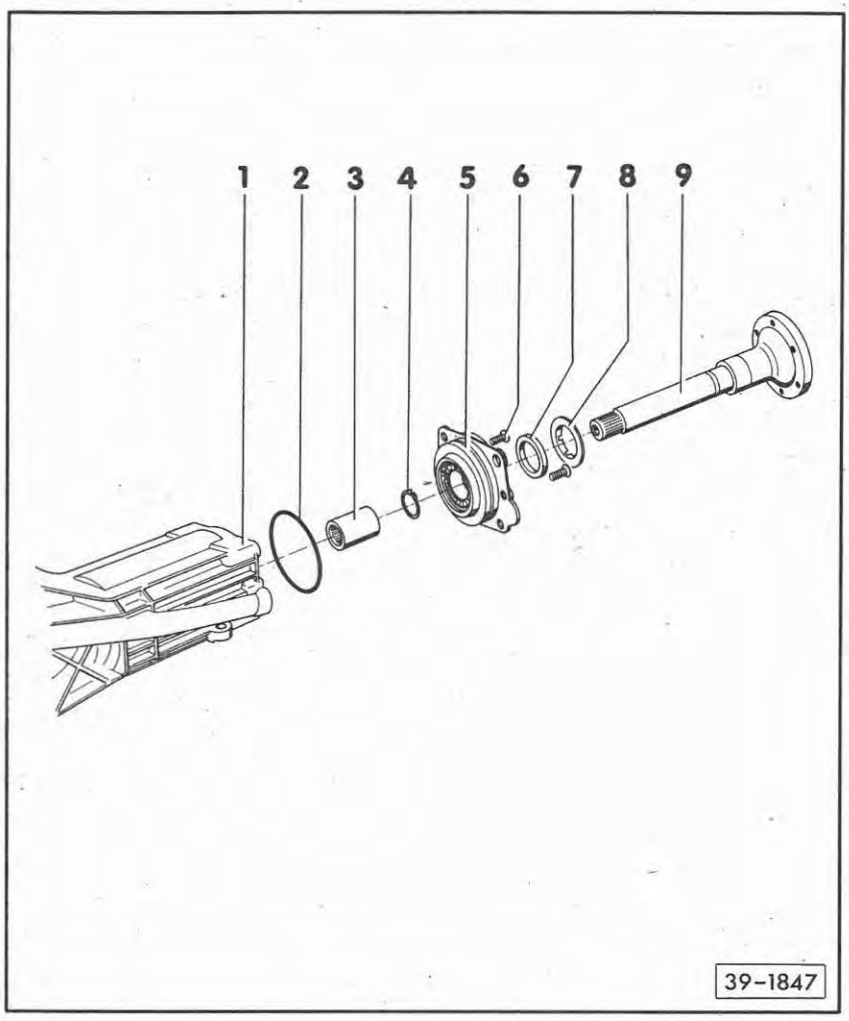
Sequence of operations ⇒ page 39–24

1 – Rear final drive

2 – O-ring
- Always replace

3 – Sleeve

4 – Small circlip



5 – Cover with grooved ball bearing and large circlip

6 – Countersunk-head screw, 25 Nm (2 off)

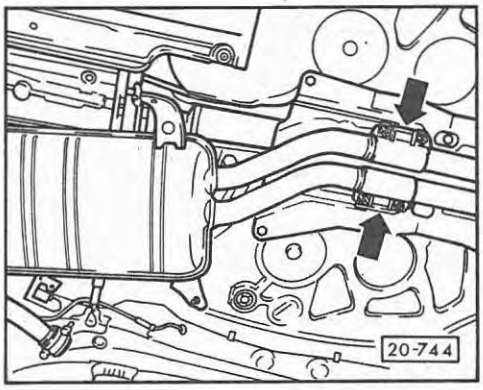
7 – Seal

8 – Plastic washer

9 – Flanged shaft
- Pay attention to position relative to propshaft, mark if necessary
- Replace gasket between flanged shaft and propshaft (take off protective sheeting and stick gasket onto flanged shaft).

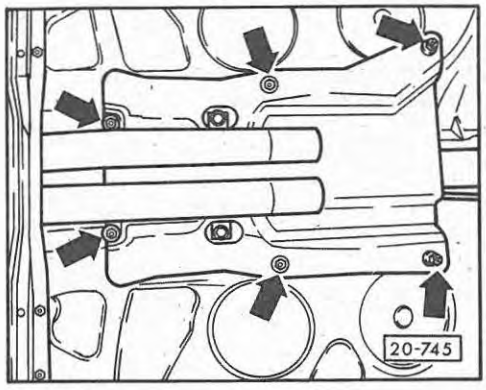
Sequence of operations

Removal

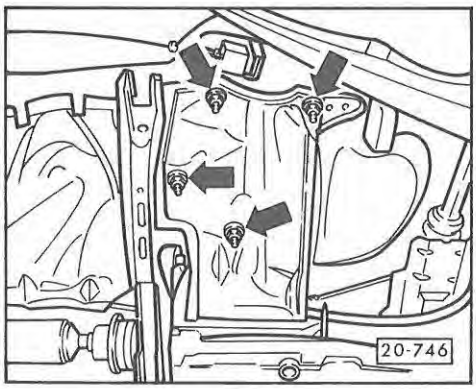


◄ – Separate exhaust system at double pipe clip.

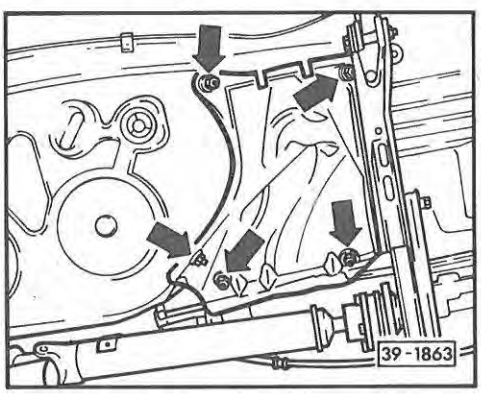
– Detach main and tail silencers from retaining loops.



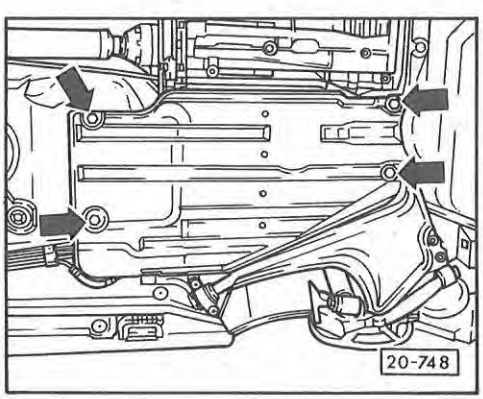
◄ – Unscrew heat shield at separation point of exhaust system (arrows); only slacken both front nuts (left in figure).



◄ – Remove heat insulation plate behind cross-member I (arrows).

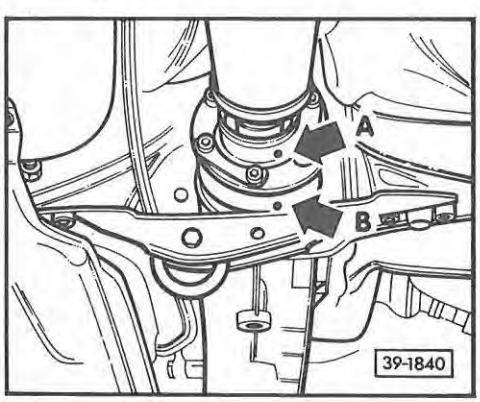


◄ – Remove heat insulation plate in front of cross-member I (arrows).

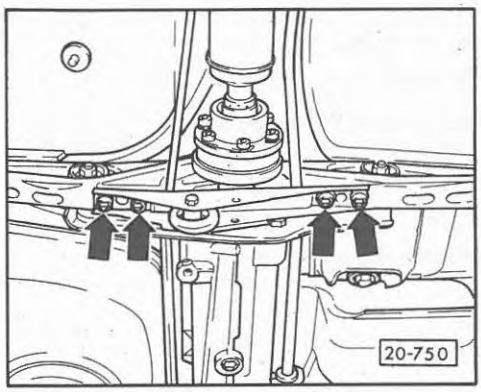


◄ – Remove cover of fuel tank (arrows).

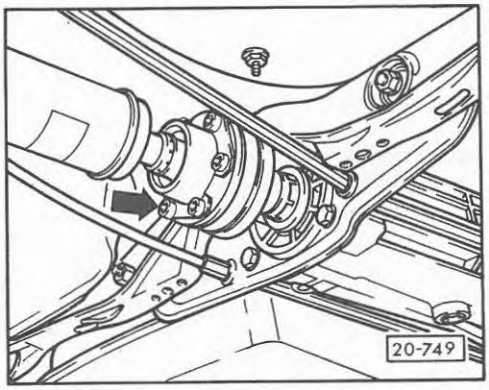
– Place oil drip tray below and drain oil in final drive.



◄ – If no marking points are provided, mark position of flange (arrow A) relative to rear final drive (arrow B) in colour.



◄ – Remove closing part (arrows).

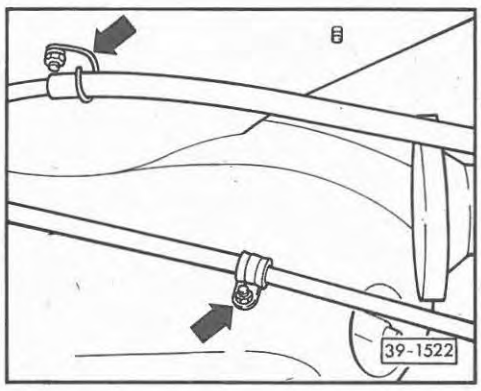


◄ – Remove securing screws of propshaft at rear final drive.

– Tie up propshaft.

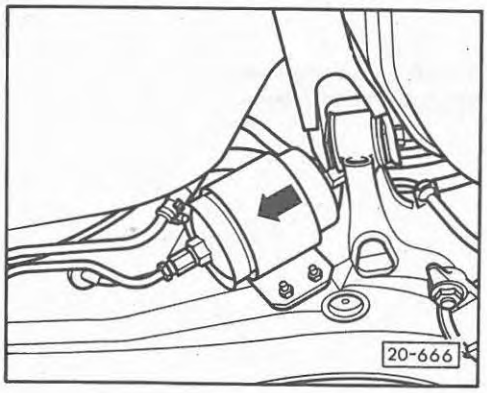
Important!

Tie up propshaft only sufficiently as is necessary to remove the output flange (universal joint of propshaft may be damaged).

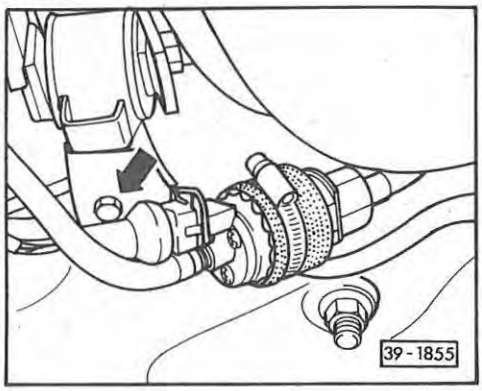


◄ – Remove holder for handbrake cables (arrows).

– Slacken adjusting nut for handbrake cables and detach cables at the compensating bar
⇒ Repair Group 46 – Running Gear.



◄ – Slacken clip for fuel filter and move filter in direction of arrow (as far as fuel feed pipe permits).

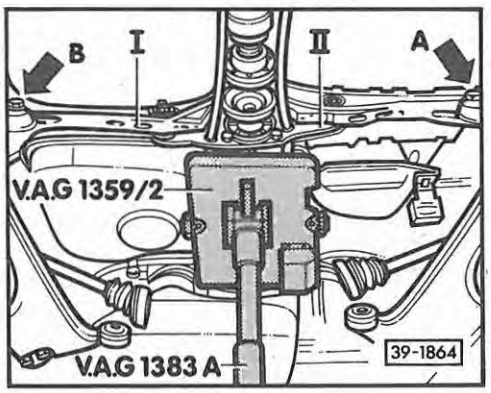


◄ – Remove bracket for metering pump (only on vehicles fitted with auxiliary heater).

– Support final drive with gearbox jack V.A.G 1383 A and V.A.G 1359/2.

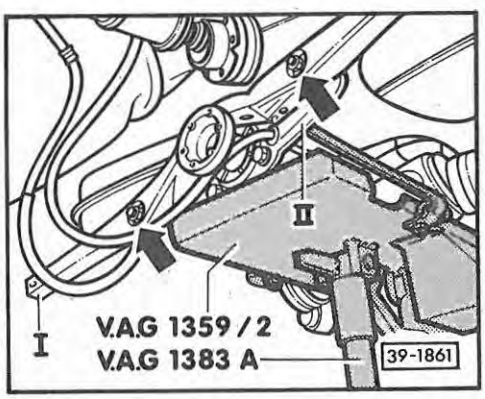
– Attach final drive with strap.

– Carefully pull handbrake cables through eyes of crossmember II to the rear.



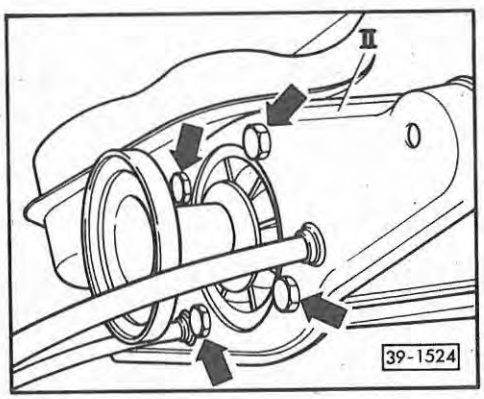
◄ – Slacken bolt (arrow A) for crossmember I.

– Unscrew bolt (arrow B) for crossmember I and carefully lower final drive with gearbox jack.

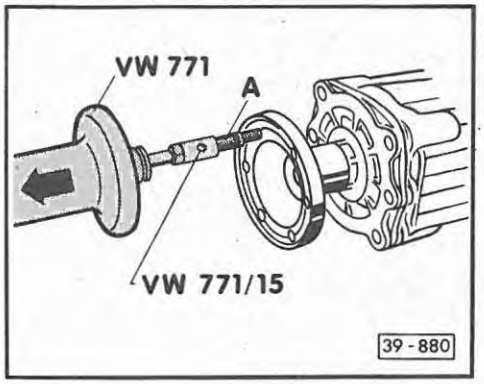


◄ – Unscrew crossmember II from crossmember I (arrows).

– Tie up crossmember I.

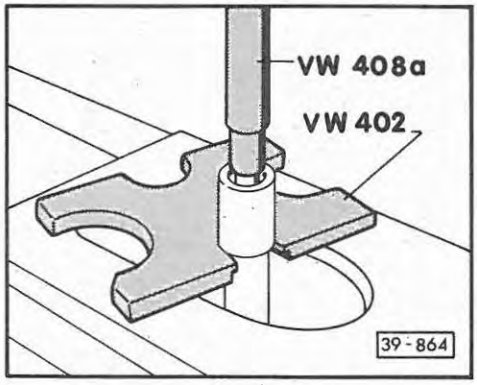


◄ – Unscrew crossmember II from final drive (arrows) and pull off beyond the flange of the final drive.



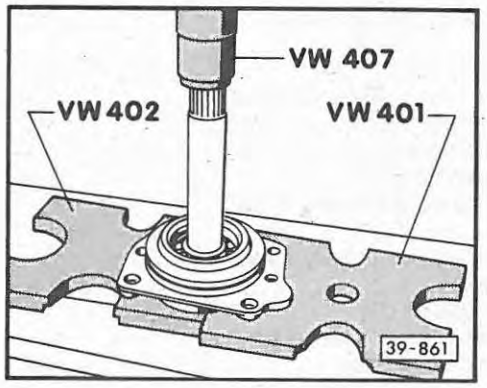
◄ – Unscrew cover of final drive and pull out.

A – Headless set screw M8/M10

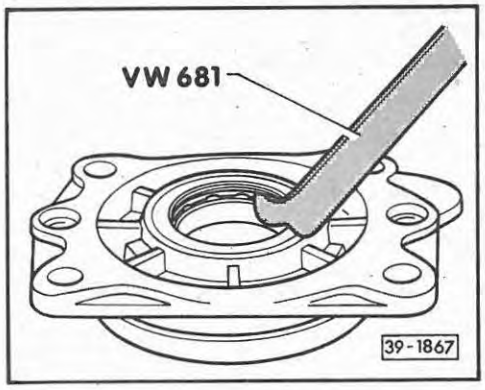


◄ – Press off sleeve.

– Take off small circlip.



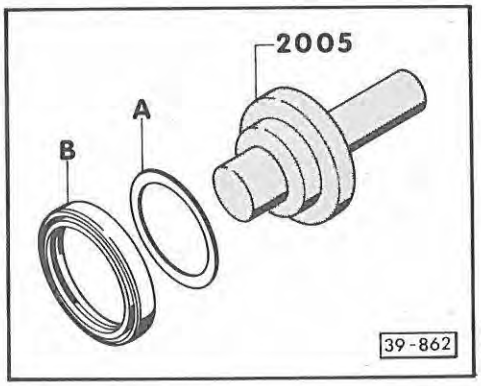
◄ – Press out flanged shaft.



◄ – Remove seal with VW 681.

– Thoroughly clean seat of seal.

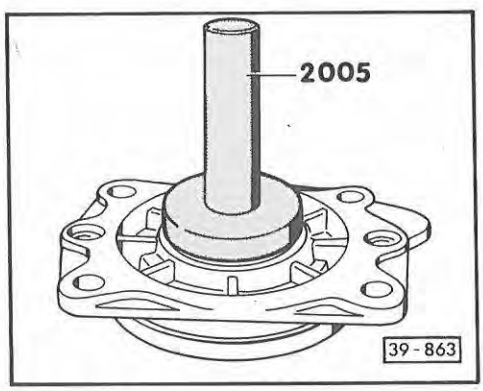
Installation



◄ – Fit new seal –B– with a washer –A–, Part No. 016 311 391 B (thickness 1.7 mm), onto insertion drift 2005.

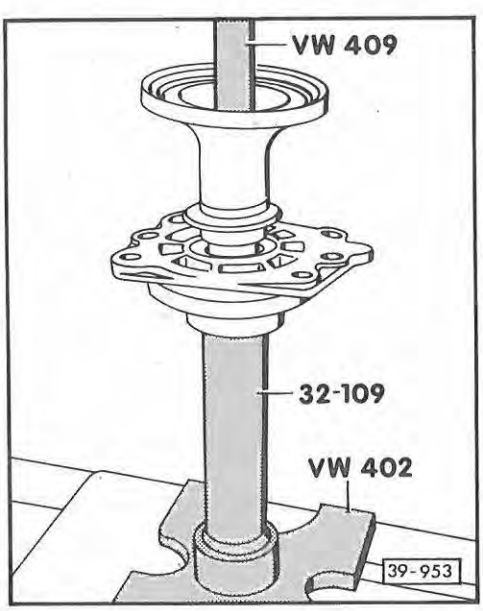
Notes:

- *Thoroughly clean seat of seal.*
- *Lightly oil outer diameter of seal.*
- *Pack space between the sealing lips with universal grease.*
- *Open side of seal faces final drive.*



◄ – Insert seal as far as the stop.

– Take off insertion drift and washer –A– ⇒ top Fig.



◄ – Press in flanged shaft (with plastic washer ⇒ page 39–23, item 8).
– Fit on small circlip.
– Fit on sleeve and drive on with a plastic hammer.
– Insert cover (with new O-ring) and flanged shaft into rear axle housing and screw tight.
– Screw crossmember II onto final drive.
– Screw crossmember I onto crossmember II and body.
– Attach bracket with metering pump (only for vehicles with auxiliary heater).
– Push back fuel filter and tighten clip.
– Attach handbrake cables to compensating bar.
– Attach bracket with handbrake cables.
– Adjust handbrake ⇒ Repair Group 46 – Running Gear.
– Bolt on propshaft, ensuring that the marking points on the flanges of the propshaft and of the rear final drive are aligned ⇒ page 39–26, Fig. 39-1840.
– Adjust propshaft ⇒ page 39–18.
– Screw on closing part (support for exhaust system).
– Install cover of fuel tank.

- Install heat insulation panels in front of and behind crossmember II.
- Install heat shield and separation point of exhaust system.
- Install exhaust system (main and final silencers)
  - Always replace double pipe clip.
- Add gear oil
  - Capacity and specification ⇒ page 00–7.

Notes:

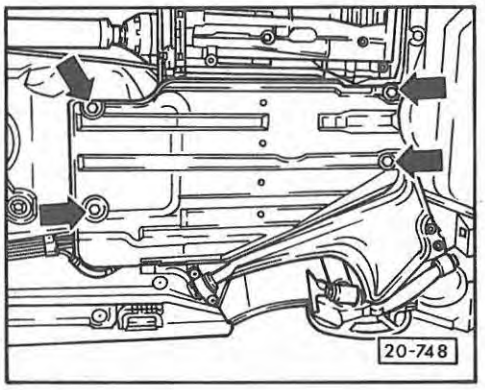
- *It is essential to clean any residues of locking fluid from the tapped holes in the flanged shaft for the propshaft of the rear final drive before installing the propshaft. The tapped holes can be cleaned with a thread tap.*
- *Always fit new self-locking nuts and bolts.*
- *Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.*

Tightening torques:

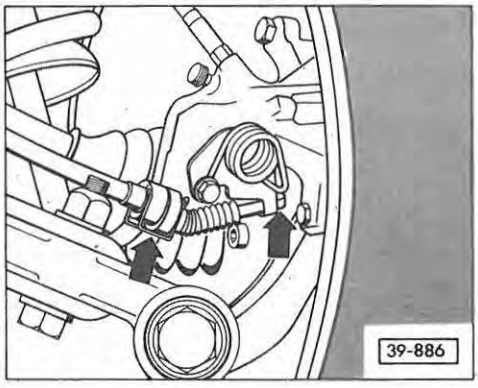
Cover to rear final drive	25 Nm
Crossmember II to rear final drive	45 Nm
Crossmember I to crossmember II	45 Nm
Crossmember I to body	45 Nm
Bracket for metering pump to body	25 Nm
Clip for fuel filter to body	10 Nm
Propshaft to rear final drive	55 Nm
Closing part to crossmember I	55 Nm
Cover of fuel tank to body	20 Nm
Double pipe clip to exhaust system	40 Nm

Replacing oil seal for right flanged shaft

(Final drive installed)



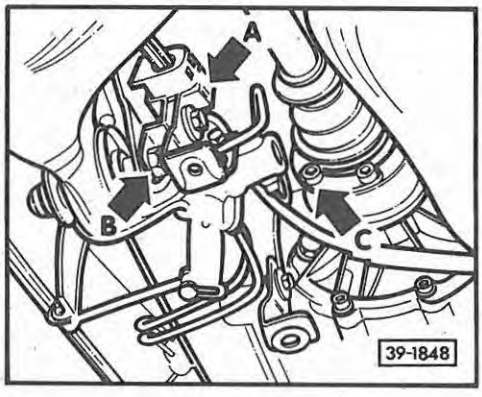
◄ – Remove cover of fuel tank (arrows).



◄ – Detach handbrake cable at right brake caliper (arrows).

Note:

When detaching the handbrake cable, ensure that the plastic sheathing of the handbrake cable is not damaged.



◄ – Push handbrake cable out of fixture (arrow A).

– Unscrew trapezium arm from crossmember (arrow B) and carefully lower with gearbox jack V.A.G 1383 A and vehicle jack support.

– Unscrew drive shaft and place down (arrow C).

– Unscrew flanged shaft; secure with drift when performing this step to prevent it turning.

– Place oil drip tray below.

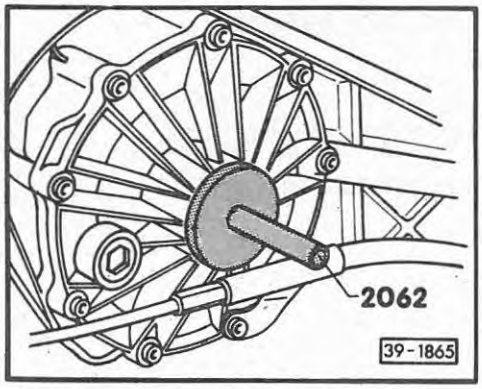
– Pull out flanged shaft by hand; detach with two assembly bars, if necessary.

Important!

When levering off flanged shaft, do not damage shoulder on axle housing.

– Lever out oil seal with a suitable tool, e.g. assembly bar.

– Clean seat for seal.



◄ – Insert seal for flanged shaft as far as the stop using 2062.

Notes:

- *Lightly oil outer diameter of seal.*
- *Pack space between the sealing lips with universal grease.*
- *Open side of seal faces final drive.*

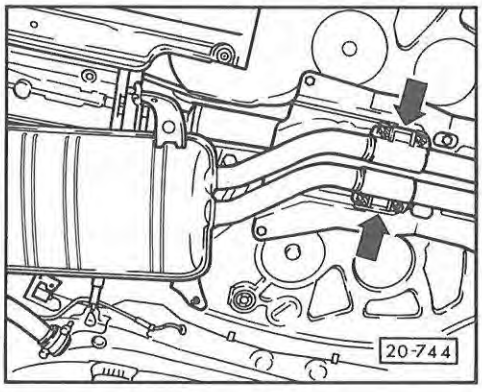
– Secure flanged shaft with hex. socket screw.
– Replace gasket between drive shaft and flanged shaft (pull off protective sheet and stick gasket onto the joint).
– Install drive shaft.
– Bolt trapezium arm to crossmember.
– Attach handbrake cable to brake caliper and press into fixture.
– Install cover of fuel tank.
– Check oil level in final drive, correct if necessary.
  • Capacity and specification ⇒ page 00–7.

Tightening torques:

Hex. socket screw of flanged shaft	10 Nm and torque a further 90°
Drive shaft to flanged shaft	80 Nm
Trapezium arm to crossmember	85 Nm
• Always fit new self-locking nut	
Cover plate of fuel tank to body	20 Nm

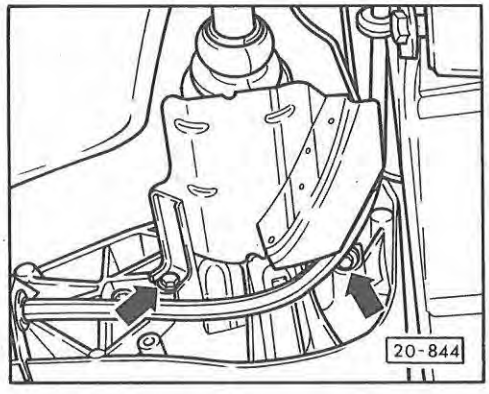
Replacing oil seal for left flanged shaft

(Final drive installed)

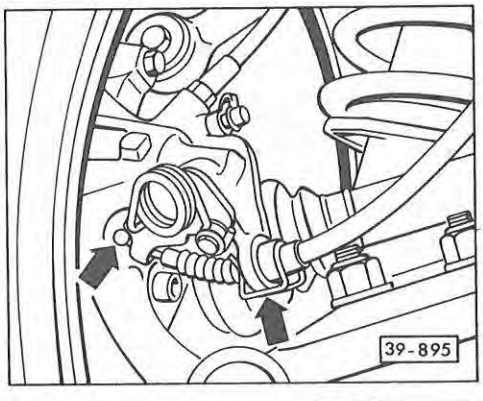


◄ – Separate exhaust system at double pipe clip.

– Detach main and final silencers from retaining loops.



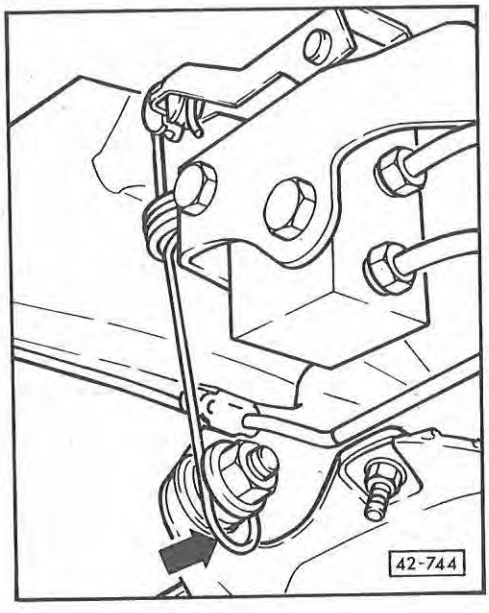
◄ – Remove cover plate for drive shaft (arrows).



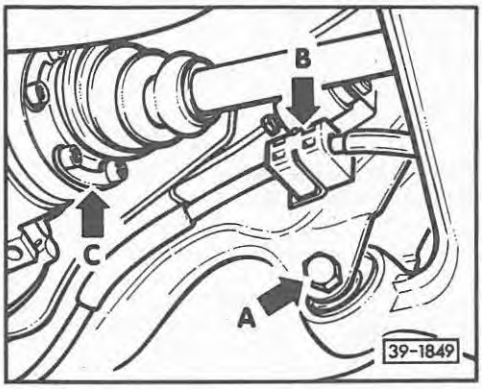
◄ – Detach handbrake cable at left brake caliper (arrows).

Note:

When detaching the handbrake cable, ensure that the plastic sheathing of the handbrake cable is not damaged.



◄ – Detach spring for brake pressure regulator (arrow) (only on vehicles without self-levelling suspension).

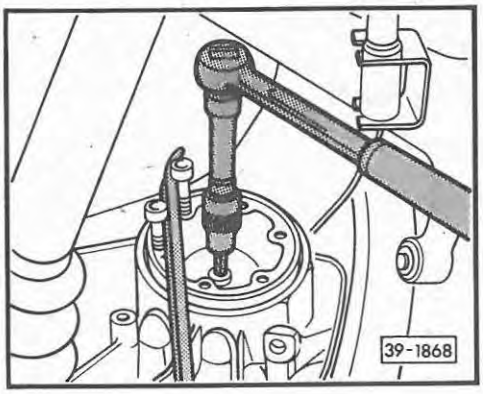


◄ – Unscrew trapezium arm from crossmember (arrow A) and lower with gearbox jack V.A.G 1383A and small vehicle jack support.

– Press handbrake cable out of the fixture (arrow B).

– Unscrew drive shaft (arrow C).

– Place oil drip tray below.

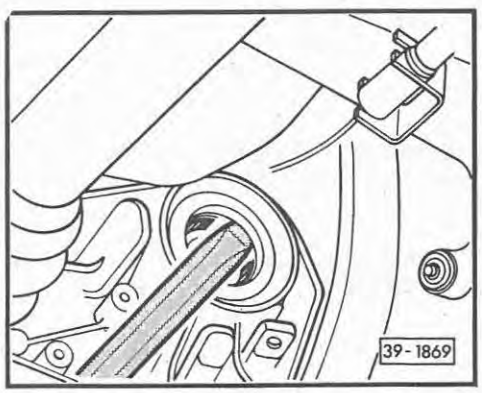


◄ – Unscrew flanged shaft.

– Pull out flanged shaft at the screwed-in screws.

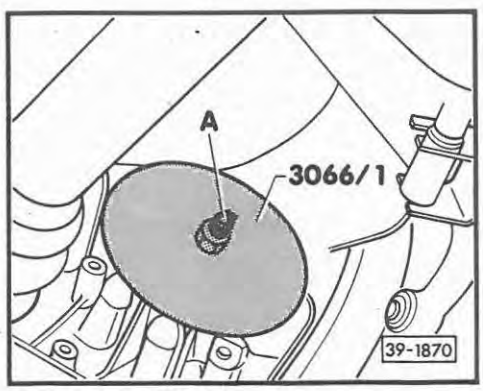
Note:

Do not lose shim between flanged shaft and differential.



◄ – Lever out seal with assembly bar.

– Thoroughly clean seat of seal.



◄ – Screw threaded rod –A– from assembly device 3066 into the differential.

Notes:

- *Lightly oil outer diameter of seal.*
- *Pack space between the sealing lips with universal grease.*
- *Open side of seal faces final drive.*

– Fit seal onto the thrust plate 3066/1 and pull in as far as the stop with the hex. nut from 3066/1.

– Secure flanged shaft with hex. socket screw.

Note:

Before installing the flanged shaft, insert shims.

– Replace gasket between drive shaft and flanged shaft (pull off protective sheet and stick gasket onto the joint).

– Install drive shaft.

– Bolt trapezium arm onto crossmember.

– Attach spring for brake pressure regulator (only on vehicles without self-levelling suspension).

Note:

Checking and adjusting brake pressure regulator
⇒ *Repair Group 47 – Running Gear.*

– Attach handbrake cable to brake caliper.

– Press handbrake cable into fixture.

– Install cover plate for drive shaft.

– Install exhaust system (main and final silencers).

Notes:

- *Always fit new double pipe clip.*
- *Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.*

– Check oil level in final drive, correct if necessary.
  - Capacity and specification ⇒ page 00–7.

Tightening torques:

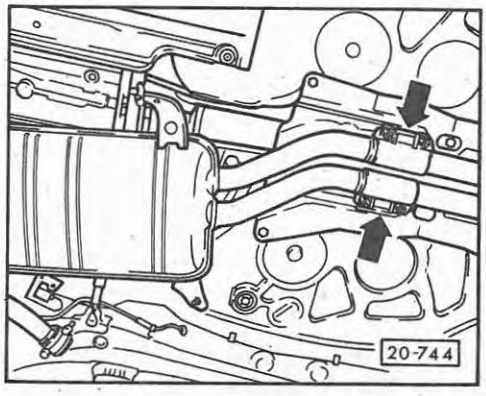
Hex. socket screw of flanged shaft ..... 10 Nm
and torque a further 90°
Drive shaft to flanged shaft ..... 80 Nm
Trapezium arm to crossmember ..... 85 Nm
- Always fit new self-locking nut

Cover plate for drive shaft ..... 25 Nm
Double pipe clip to exhaust system ..... 40 Nm
- Always replace

Removing and installing rear final drive

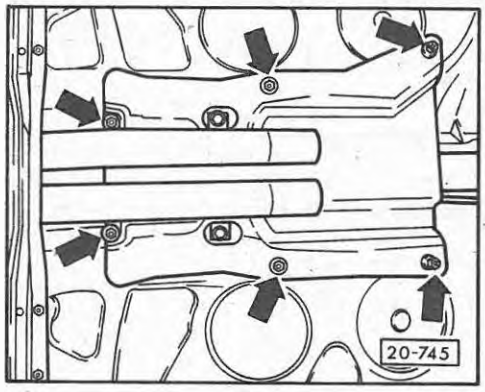
Removal

– Take off rear wheels.

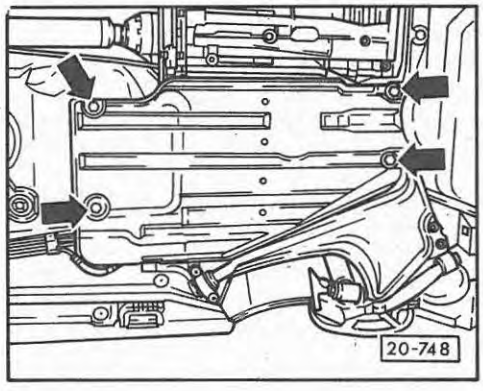


◄ – Separate exhaust system at double pipe clip.

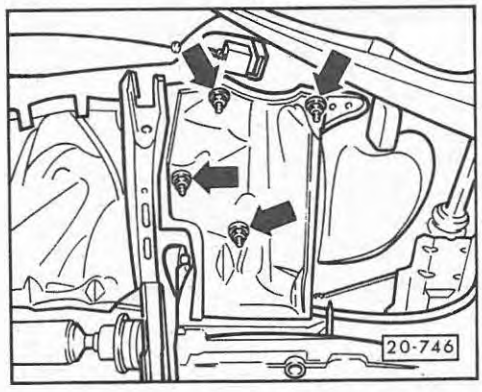
– Detach main and final silencers from retaining loops.



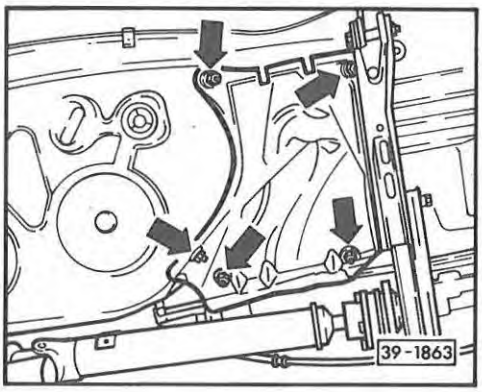
◄ – Unscrew heat shield at the separation point of the exhaust system (arrows), only slacken both front nuts (left in figure).



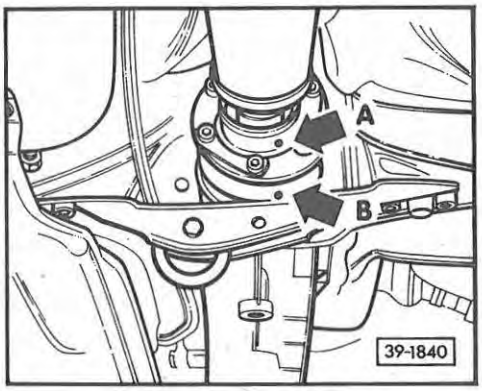
◄ – Remove cover plate of fuel tank (arrows).



◄ – Remove heat insulation plate behind cross-member I (arrows).



◄ – Remove heat insulation plate in front of cross-member I (arrows).

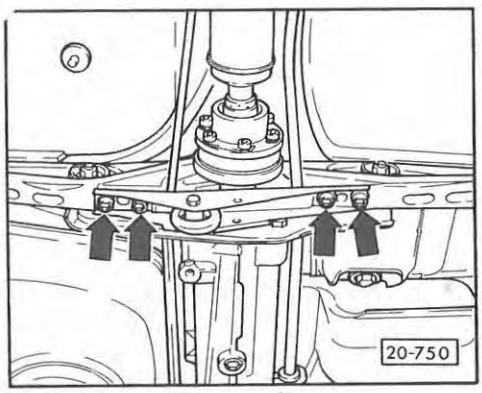


◄ – Slacken securing screws of propshaft at rear final drive after marking position of flange –A– relative to rear final drive –B– in colour if no marking points are provided.

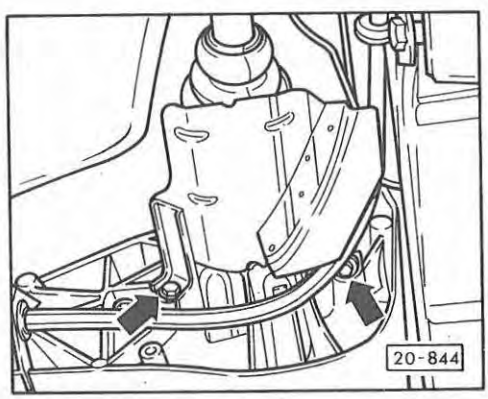
– Unscrew propshaft and tie up.

Important!

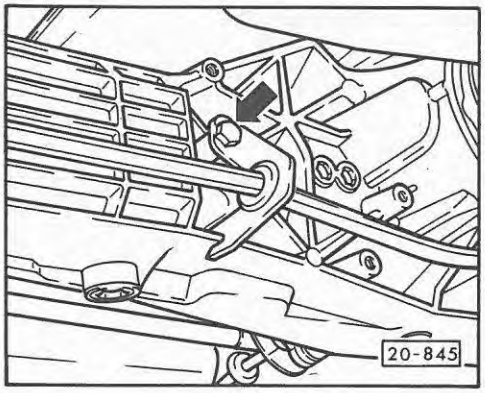
Tie up propshaft only as much as is necessary to remove the final drive.



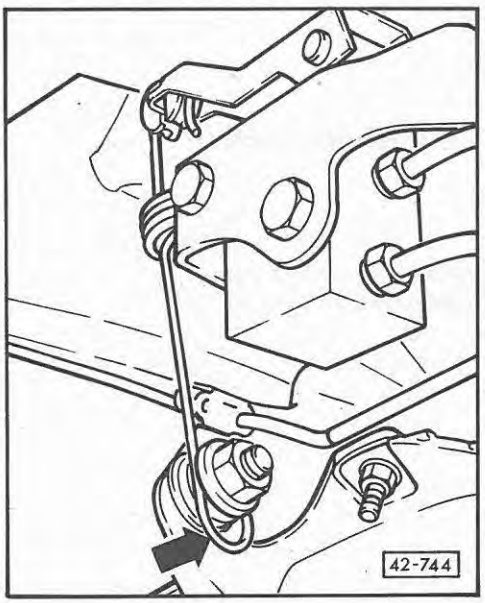
◄ – Remove closing part (arrows).



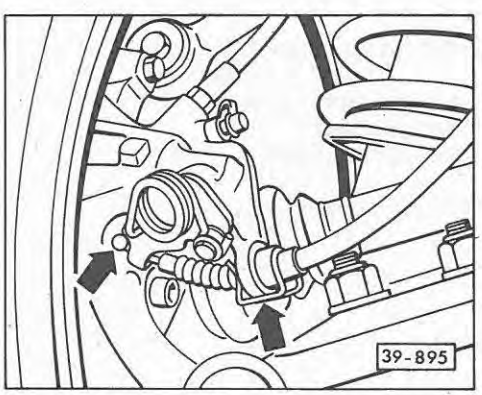
◄ – Unscrew cover plate for left drive shaft (arrows).



◄ – Unscrew left bracket of handbrake cable from final drive (arrows).



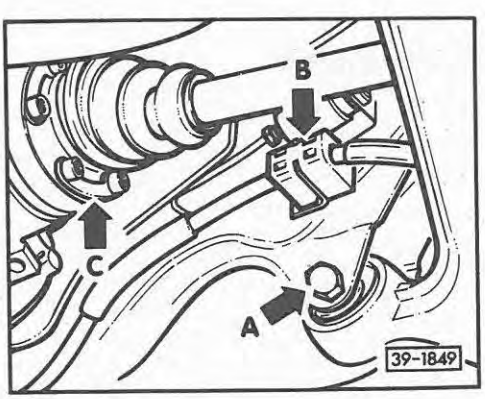
◄ – Detach spring for brake pressure regulator (arrow) (only on vehicles without self-levelling suspension).



◄ – Detach handbrake cable at left brake caliper (arrows).

Note:

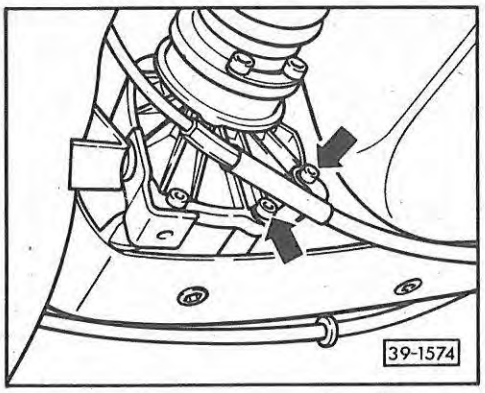
When detaching the handbrake cable, ensure that the plastic sheathing of the handbrake cable is not damaged.



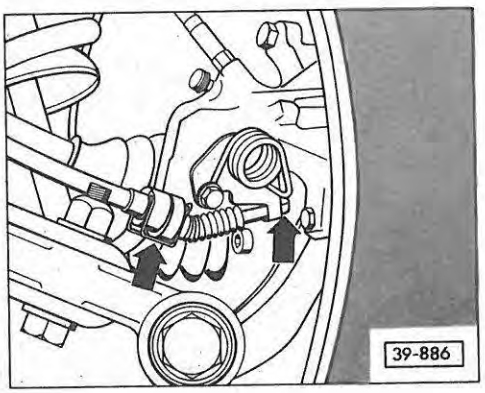
◄ – Unscrew left trapezium arm from crossmember (arrow A) and lower with gearbox jack V.A.G 1383A and small vehicle jack support.

– Press handbrake cable out of the fixture (arrow B).

– Unscrew drive shaft and place down (arrow C).



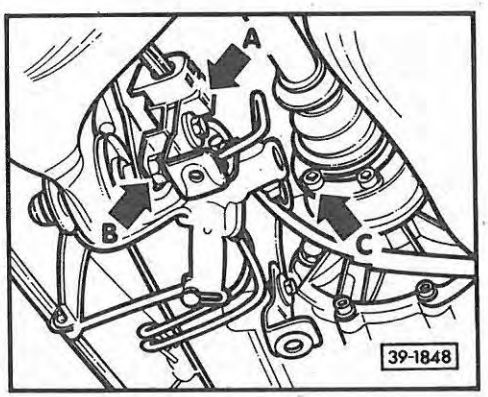
◄ – Unscrew right-hand bracket of handbrake cable from final drive (arrows).



◄ – Detach handbrake cable at right brake caliper (arrows).

Note:

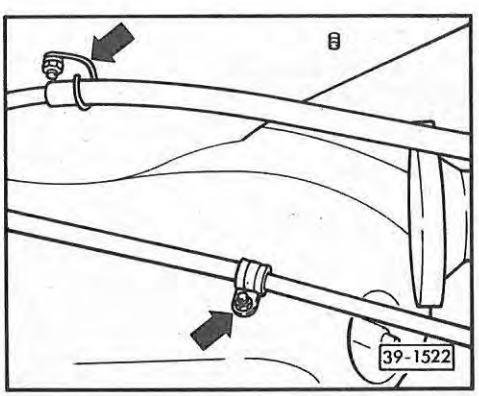
When detaching the handbrake cable, ensure that the plastic sheathing of the handbrake cable is not damaged.



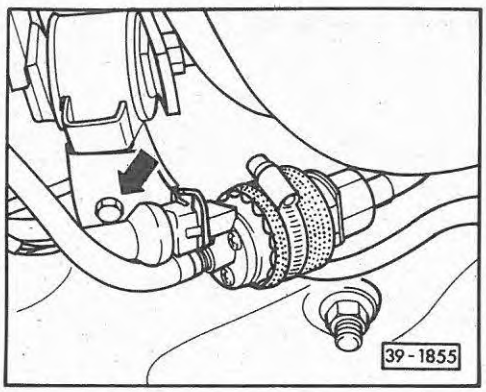
◄ – Press handbrake cable out of fixture (arrow A).

– Unscrew right trapezium arm from crossmember (arrow B) and carefully lower with gearbox jack V.A.G 1383A and small vehicle jack support.

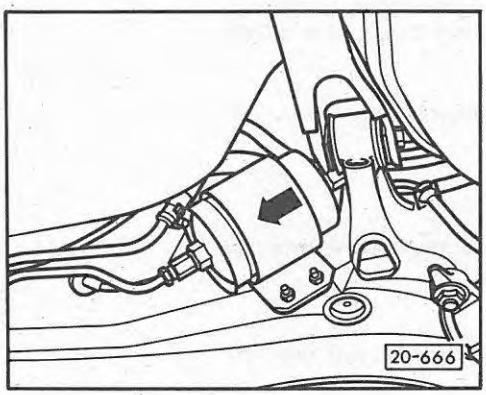
– Unscrew drive shaft and place down (arrow C).



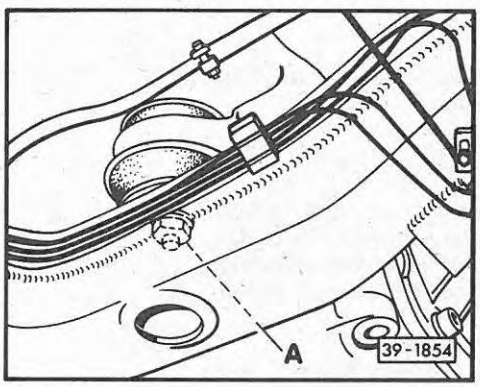
◄ – Unscrew handbrake cables at body (arrows).



◄ – Unscrew bracket for metering pump (only on vehicles with auxiliary heater).



◄ – Slacken clip for fuel filter and move filter in direction of arrow (as far as the fuel feed pipe permits).

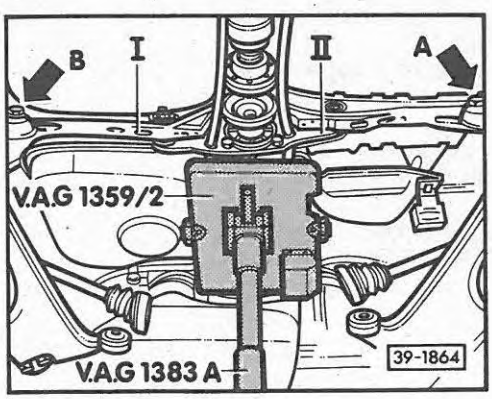


◄ – Rear suspension:
Unscrew nut –A–.

– Support final drive with gearbox jack V.A.G 1383A and V.A.G 1359/2.

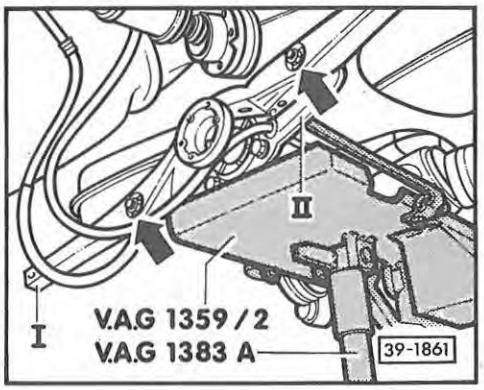
– Secure final drive with strap.

– Pull handbrake cables carefully forward through the eyes of the crossmember II.



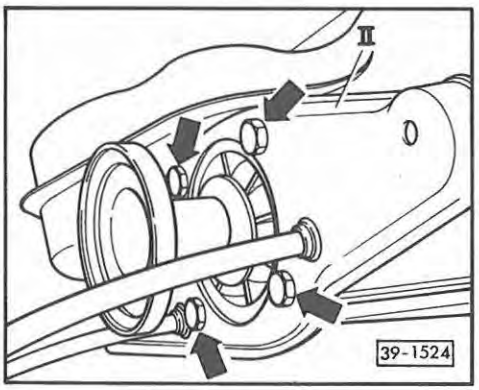
◄ – Slacken bolt (arrow A) for crossmember I.

– Unscrew bolt (arrow B) for crossmember I and carefully lower crossmember I with gearbox jack.



◄ – Unscrew crossmember II from crossmember I (arrows).

– Tie up crossmember I.



◄ – Unscrew crossmember II from final drive (arrows) and guide away beyond the flange of the final drive.

– Slowly lower final drive complete at front with rear gearbox support.

Note:

When lowering the final drive, at the same time pull away to the left from the fuel tank.

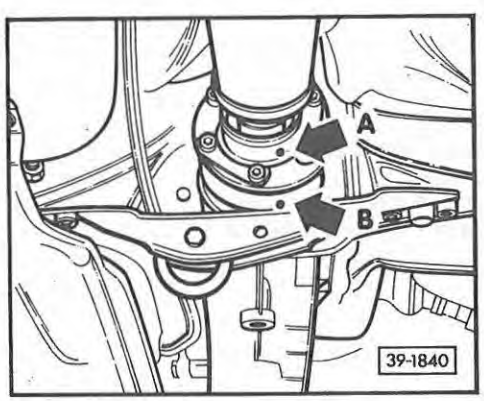
– Lift final drive out of rear axle beam with gearbox support and securing bolt.

Installation

Installation is performed in the reverse order. Pay attention to the following points:

Notes:

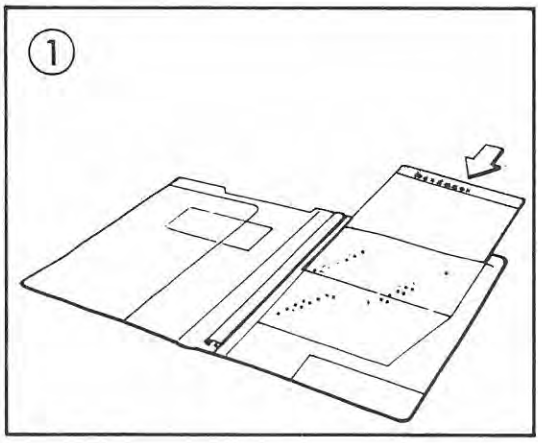
- *It is important to clean any residues of locking fluid from the tapped holes in the flanged shaft for the propshaft of the rear final drive before installing the propshaft. The holes can be cleaned with a thread tap.*
- *Always fit new self-locking nuts.*
- *Always replace gaskets between flanged and drive shafts as well as the propshaft and rear final drive ⇒ page 39–11, item 4 (pull off protective sheet and stick gasket into flanged shaft).*

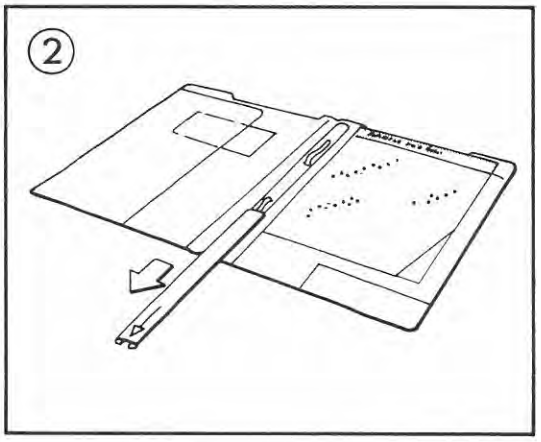


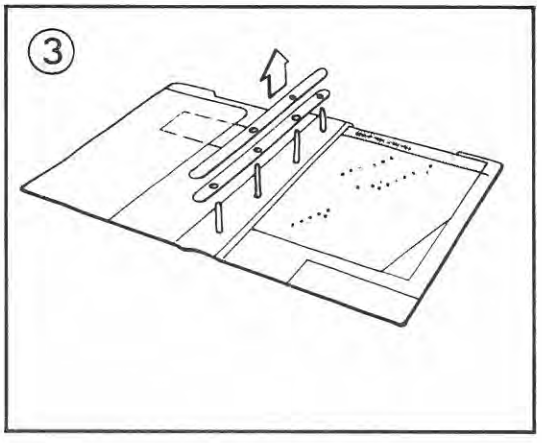
◄ • *When installing the propshaft, ensure that the marking points of the flange of the propshaft (arrow A) and of the flanged shaft of the rear final drive (arrow B) are aligned.*
- *After installing, adjust propshaft ⇒ page 39–18.*
- *Always replace double pipe clip when installing exhaust system.*
  Align exhaust system free of tension ⇒ Repair Group 26 – 8-Cyl. Fuel Injection Engine, Mechanics.
- *Check oil level in final drive, add oil if necessary.*
  – Capacity and specification ⇒ page 00–7.

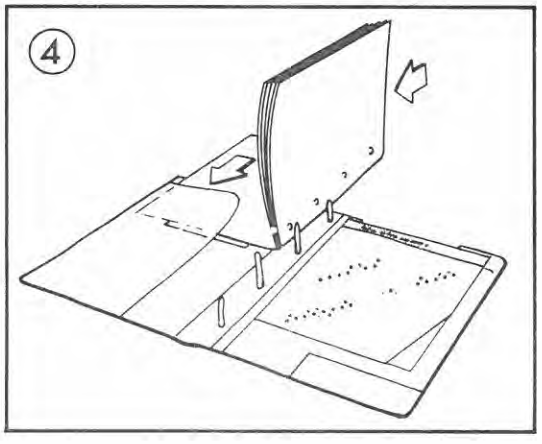
Tightening torques:

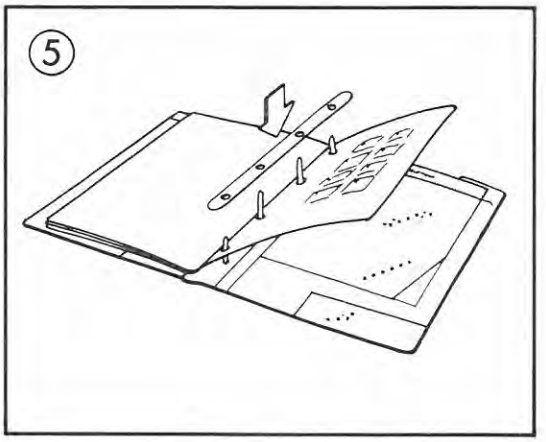
Crossmember II to final drive	45 Nm
Crossmember II to crossmember I	45 Nm
Crossmember I to body	45 Nm
Rear suspension to crossmember	50 Nm
Bracket for metering pump to body	25 Nm
Clip for fuel filter to body	10 Nm
Drive shaft to rear final drive	80 Nm
Trapezium arm to crossmember	85 Nm
Bracket for right handbrake cable to final drive	25 Nm
Bracket for left handbrake cable to final drive	25 Nm
Cover plate for drive shaft to final drive	25 Nm
Closing part to crossmember I	55 Nm
Propshaft to rear final drive	55 Nm
Cover plate of fuel tank to body	20 Nm
Double pipe clip to exhaust system	40 Nm
Tightening torque of wheels	110 Nm

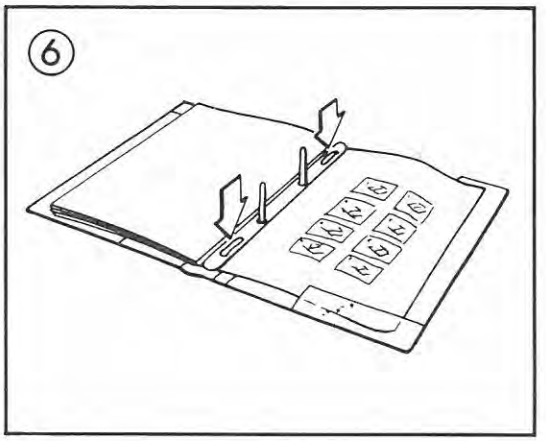


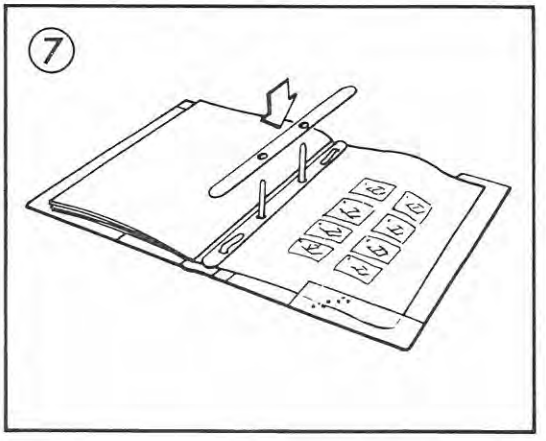


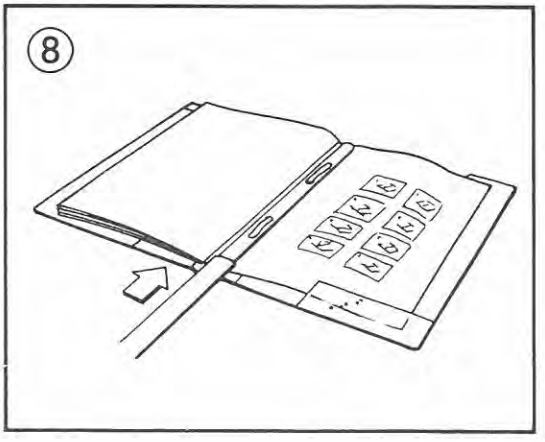












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