

Audi 100 1991 ➤

Fuel supply system - diesel engines								
Engine ID	1Z	AAS	AAT	ABP	AEL	AHU		

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List of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups Audi 100 1991 ➤

Fuel supply system - diesel engines

Repair Group 20 - Fuel supply system



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

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Fuel supply system - diesel engines



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20 - Fuel supply system

1 - Notes on performing work on fuel supply system

1.1 - Notes on performing work on fuel supply system

1.2 - Safety precautions when working on fuel supply system

Pay attention to the following when removing and installing fuel gauge sender/fuel pick-up unit from full or partially filled fuel tank:

Attention:

Fuel tank may only be partially filled. The amount of fuel which can be left in the tank is indicated at the appropriate location in the text. Drain fuel tank if necessary. Procedure for front-wheel drive vehicles => Page 21 .

- ◆ Before starting work, switch on exhaust extraction system and place extraction hose in the vicinity of the fuel tank assembly opening to draw off the fuel vapours escaping.
If no exhaust extraction system is available, use can be made of a radial fan with a displacement of more than 15 m³/h provided that motor is not in air flow.
- ◆ Do not allow fuel to come into contact with skin. Wear fuel-resistant gloves.

Drain fuel tank prior to removal so as to reduce weight.

Attention:

Fuel tank must be empty to reduce weight. Drain fuel tank if necessary. Procedure for front-wheel drive vehicles => Page 21 .

1.3 - Rules for cleanliness

When working on fuel supply/injection system, pay careful attention to the following rules:

- ◆ Carefully clean all joints and adjacent areas before disconnecting.
- ◆ Place parts removed on a clean surface and cover them over. Do not use fluffy cloths.
- ◆ Carefully cover or seal opened components if repairs are not to be performed immediately.
- ◆ Only install clean components:
Do not remove replacement parts from wrapping until immediately prior to installation.
Do not use parts that have been stored loose (e.g. in tool boxes).
- ◆ When system is open:
Do not work with compressed air.
Do not move vehicle unless absolutely necessary.
- ◆ Care is also to be taken to ensure that diesel fuel does not run onto the coolant hoses. If necessary, hoses must be cleaned immediately. Damaged hoses are to be replaced.



2 - Fuel supply system - Front-wheel drive

2.1 - Fuel supply system - Front-wheel drive

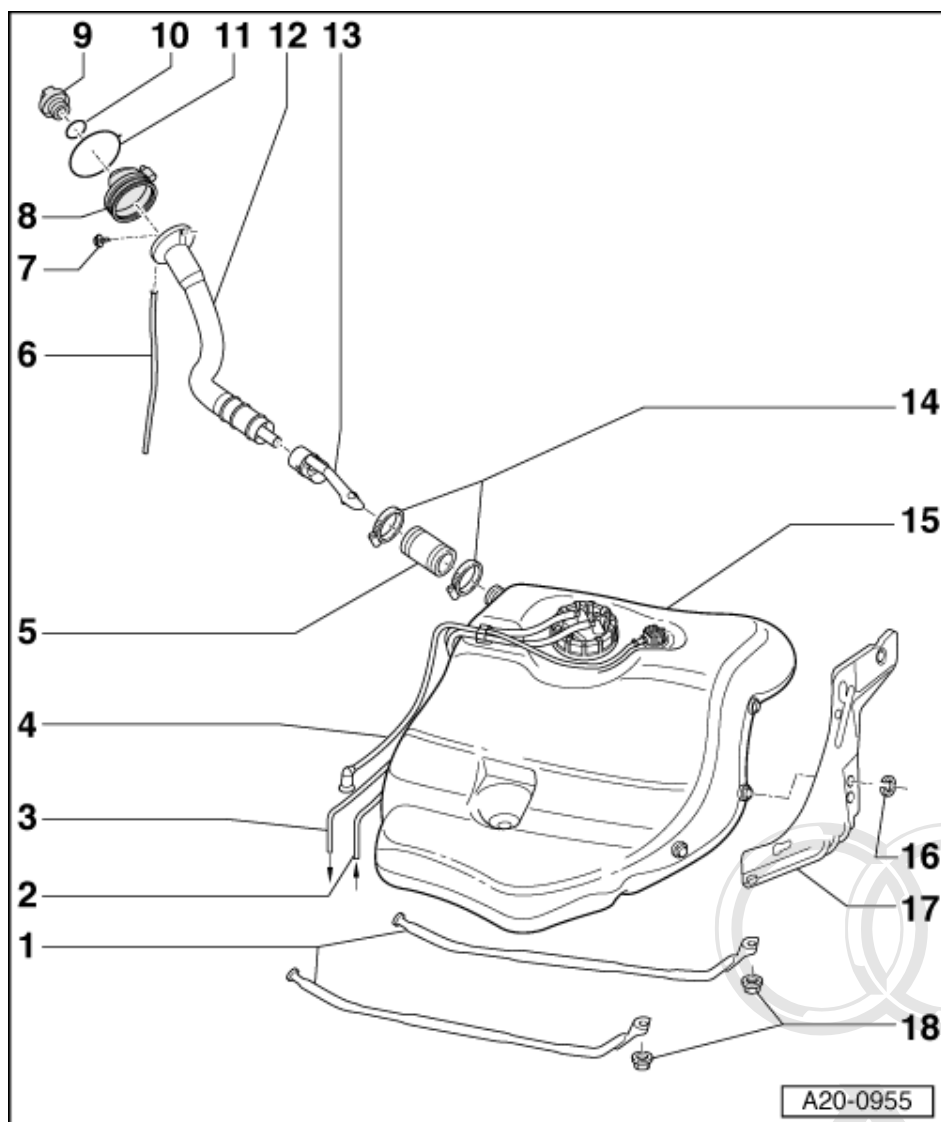
Notes:

- ♦ Secure all hose connections with standard hose clamps.

=> Parts List

- ♦ Special tool V.A.G 1921 is recommended for fitting spring clips.
- ♦ Always replace sealing rings and gaskets on assembly.

2.2 - Exploded view of components: Fuel tank with attachments



1 Securing strap

- ♦ Engage on underside of vehicle on right

2 Fuel return pipe

- ♦ From fuel filter
- ♦ Mark before disconnecting
- ♦ Clipped to top of fuel tank

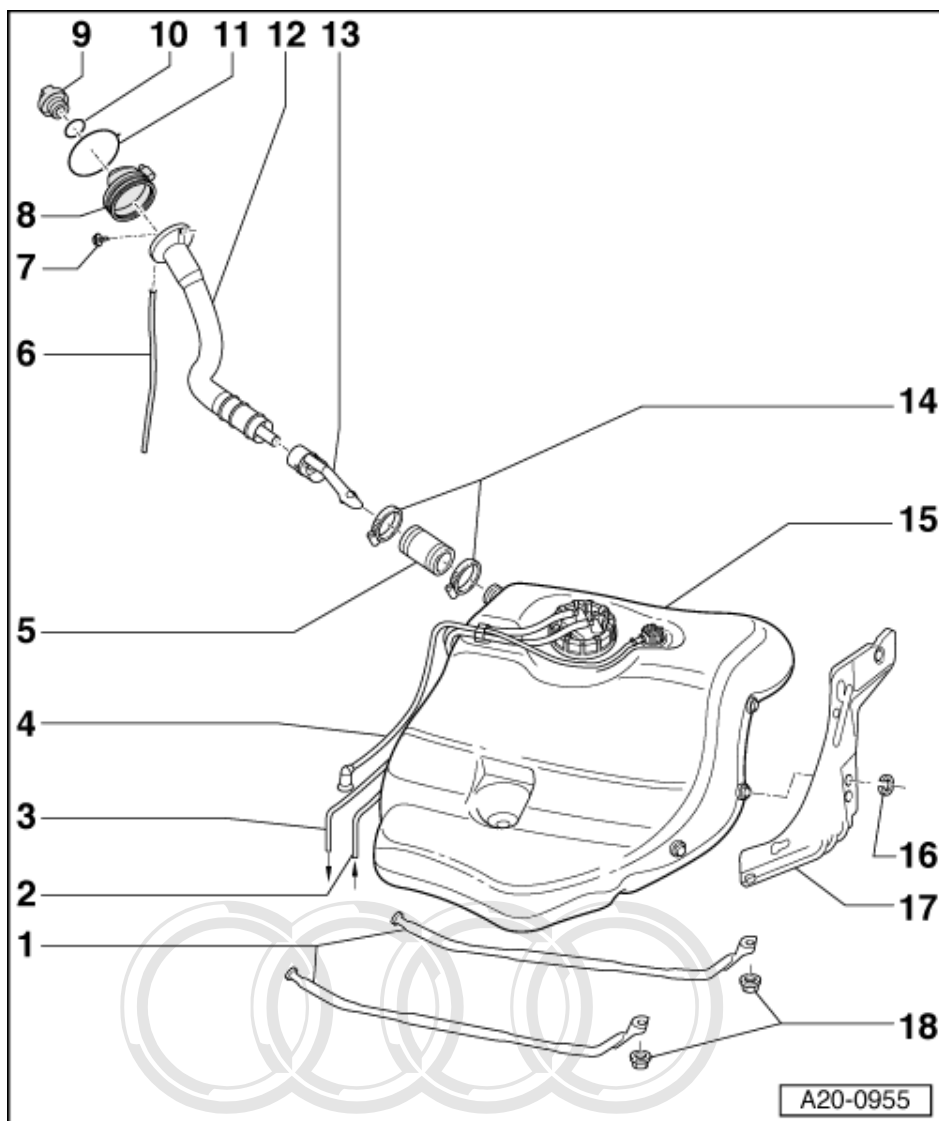
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3 Fuel supply pipe

- ♦ To fuel filter
- ♦ Mark before disconnecting
- ♦ Clipped to top of fuel tank

4 Breather pipe

- ♦ Exits from underside of vehicle on right
- ♦ Do not kink
- ♦ Clipped to top of fuel tank



5 Adapter hose

6 Overflow hose

- ♦ Engage in wheel housing

7 1 Nm

8 Rubber adapter

9 Cap

10 Sealing ring

- ♦ Replace if damaged

11 Tensioning ring

12 Fuel filler neck

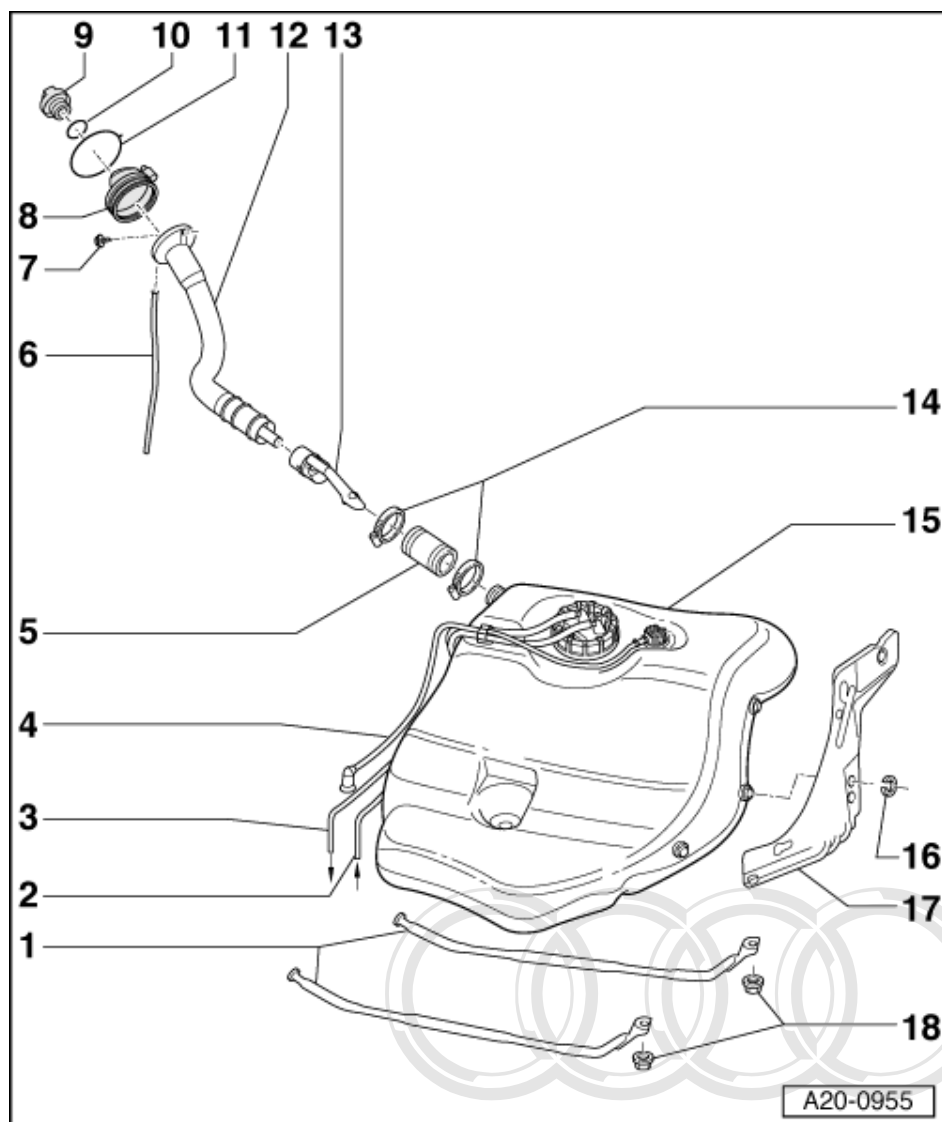
- ♦ Removing and installing=>Page 6

13 Insert

- ♦ With non-return flap

14 Hose clamps

- ♦ Tighten to 2.6 Nm



15 Fuel tank

- ♦ Removing and installing=>Page 6

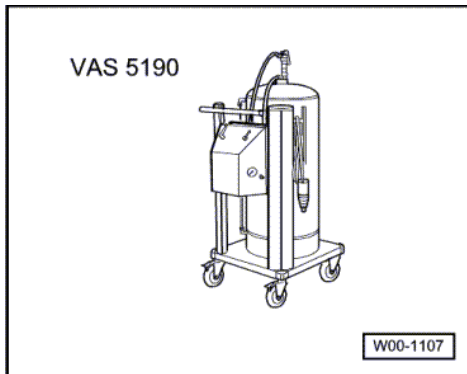
16 Clamping washer

17 Heat shield

- ♦ For fuel tank
- ♦ Make sure rubber plugs are properly attached
- ♦ Engage in retaining pins at fuel tank and secure with clamping washer

18 23 Nm

2.3 - Draining fuel tank



Special tools and workshop equipment required

- ♦ VAS 5190

Or

- ♦ V.A.G 1433 A

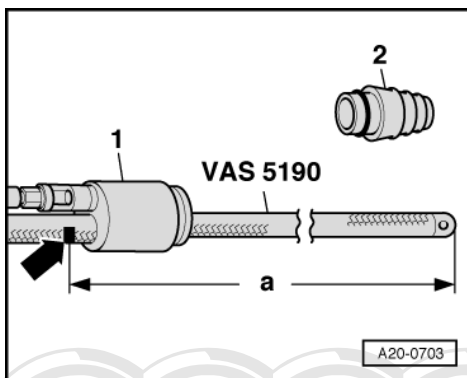
Sequence of operations

Heed safety precautions => Page 1 .

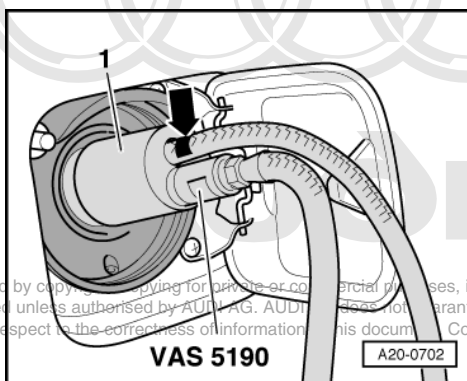
Observe rules for cleanliness =>Page 1 .

Attention:
 Attach earth wire of V.A.G 1433

- Detach cap from fuel filler neck.

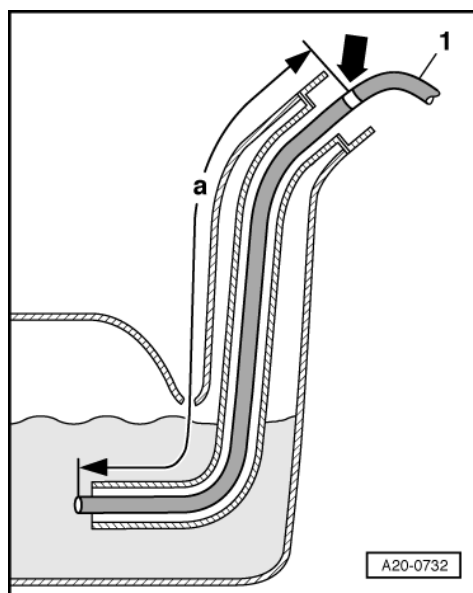


- -> Pull tapered section -2- off shank section -1- of VAS 5190.
- Use insulating tape to make a mark -arrow- on drain hose at a distance a = 1315 mm from end of hose.





- -> Screw shank section -1- of extraction unit VAS 5190 onto filler neck of fuel tank.
- Insert drain hose into fuel tank until previously affixed mark -arrow- makes contact with shank section.

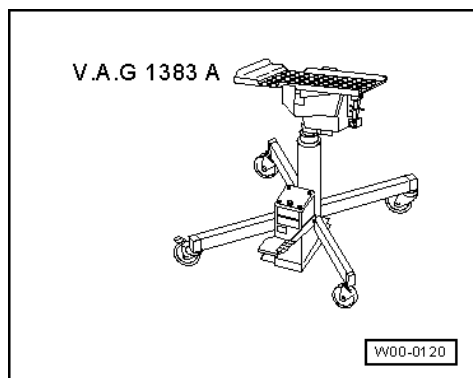


Notes:

- ♦ The procedure is essentially the same if use is made of an extractor with no shank section.
 - ♦ -> In this case, use insulating tape to make a mark -arrow- on drain hose at a distance $a = 1250$ mm from end of hose. Drain hose has been properly inserted if previously affixed mark is opposite edge of filler neck.
 - ♦ If hose is difficult to insert, apply a thin coat of engine oil. Never use silicone lubricants.
- Drain fuel tank by way of filler neck.
 - Carefully pull out drain hose.

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2.4 - Removing and installing fuel tank with attachments



Heed safety precautions => Page **1**.

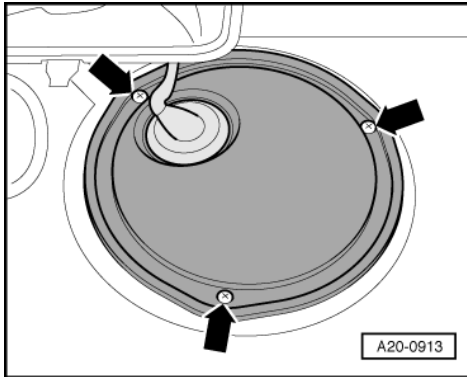
Observe rules for cleanliness =>Page **1**.

Special tools and workshop equipment required

- ♦ V.A.G 1383 with V.A.G 1359/2

Removing

- Fuel tank must be empty when removing it from vehicle so as to reduce weight. Drain fuel tank if necessary. Procedure => Page 5.
- Remove luggage compartment lining.

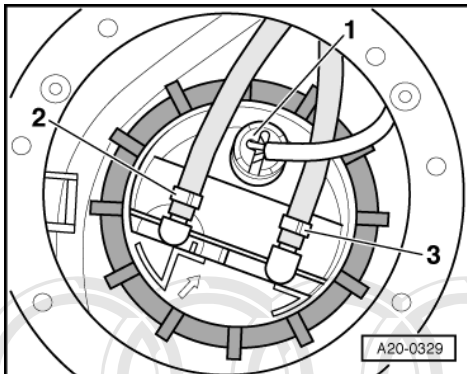


Avant:

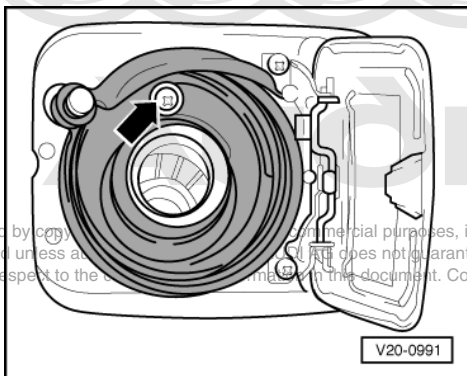
- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.

All models:

- -> Unscrew cover -arrows-.



- -> Release connector -1- and unplug.



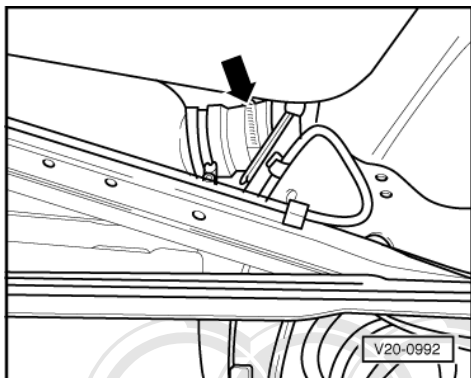
- Clean area around fuel filler neck.
- Open filler neck compartment lid and detach cap from fuel filler neck.
- -> Screw out bolt -arrow- at fuel filler neck.
- Unscrew rear right wheel.

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- Remove rear right wheel housing liner.

=> General Body Repairs; Repair Group 66; Wheel housing liners Wheel housing liners

- Detach overflow hose from holder.



Attention:

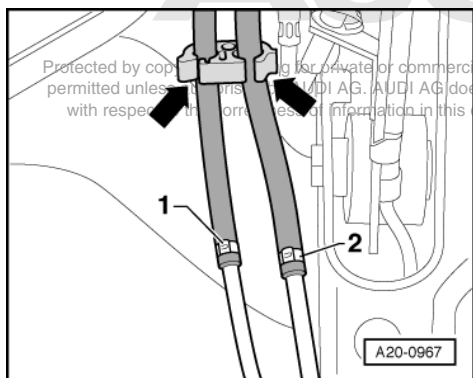
Even if fuel tank is empty, a small quantity of fuel may escape on unfastening hose clamp at adapter hose.

- -> Unfasten outer hose clamp -arrow- at adapter hose between fuel tank and fuel filler neck.

Note:

Leave adapter hose in position on fuel tank connection.

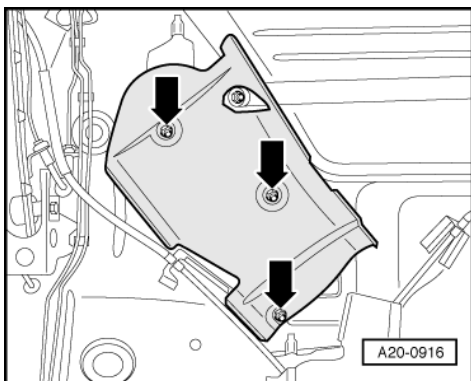
- Detach and take out fuel filler neck.



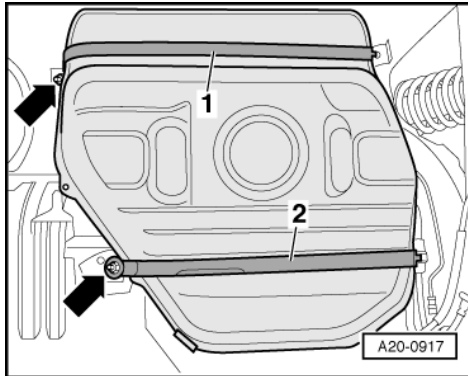
- -> Disconnect fuel supply pipe -2- on underside of vehicle as well as fuel return pipe -1- and catch fuel which escapes.
- Disengage fuel pipes from holder -arrows-.

Vehicles with auxiliary heater:

- Additionally disconnect fuel supply pipe to auxiliary heater.



- Remove rear section of exhaust system.
- => Engine, Mechanics; Repair Group 26
- -> If fitted, detach heat shield -arrows-.



- Position engine/gearbox lifter V.A.G 1383 A beneath vehicle to support fuel tank.

Attention:
 To reduce weight, fuel tank must be empty on removal.

- -> Unscrew nuts -arrows- and allow securing straps -1- and - 2- to hang down on right side of vehicle.
- Lower fuel tank at front and take out.

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Installing

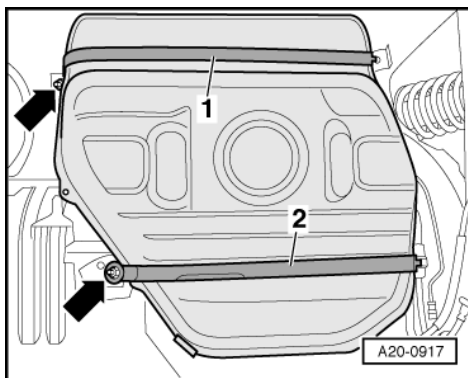
Install in reverse order, paying attention to the following:

Notes:

- ♦ Secure all hose connections with standard hose clamps.

=> Parts List

- ♦ Always replace sealing rings and gaskets on assembly.
- Check whether fuel supply, return and breather pipes are clipped in at top of fuel tank.
- Position fuel tank on underside of vehicle using engine/gearbox lifter V.A.G 1383 A.



- -> Pre-assemble front securing strap -2-, then fit rear securing strap -1- and screw on before screwing on front securing strap.
- Fit fuel filler neck.

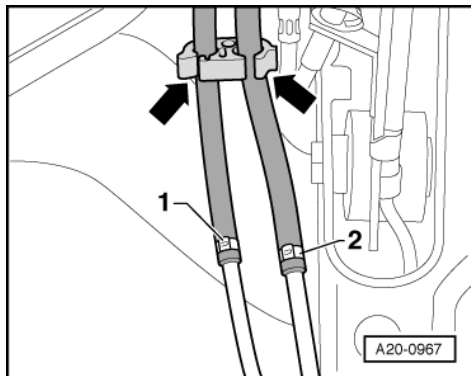


- Engage overflow hose at holder.
- Install rear right wheel housing liner.

=> General Body Repairs; Repair Group 66; Wheel housing liners Wheel housing liners

- Install rear section of exhaust system.

=> Engine, Mechanics; Repair Group 26



- -> Attach fuel supply pipe -2- and fuel return pipe -1- and tighten hose clamps.

Note:

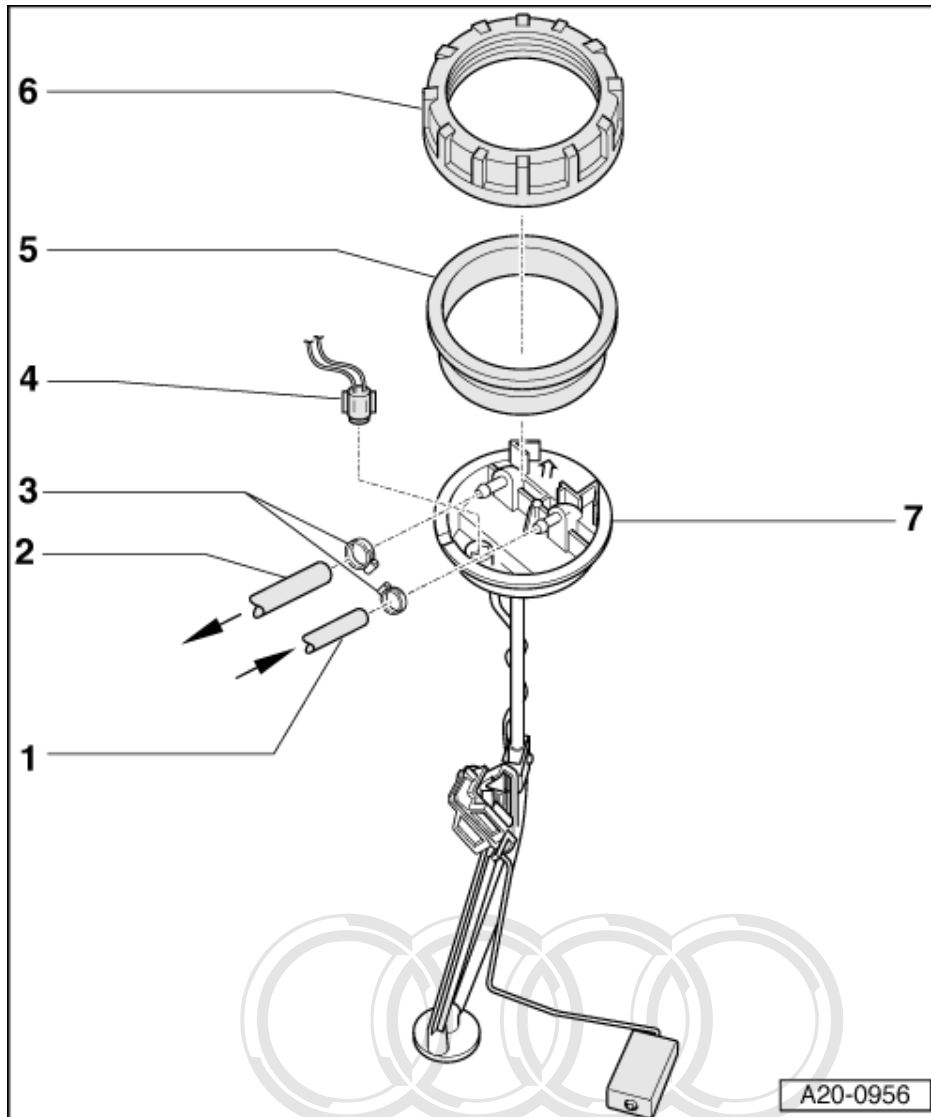
Make sure fuel hoses are a tight fit.

Tightening torques

Component	Nm
Hose clamps	1.5
Securing straps to body	23
Hose clamp for fuel filler neck to fuel tank	2.6
Heat shield to body	1.3
Fuel filler neck to body	1

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2.5 - Exploded view of components: Fuel gauge sender



1 Fuel return pipe

- ♦ From fuel filter
- ♦ Mark before disconnecting

2 Fuel supply pipe

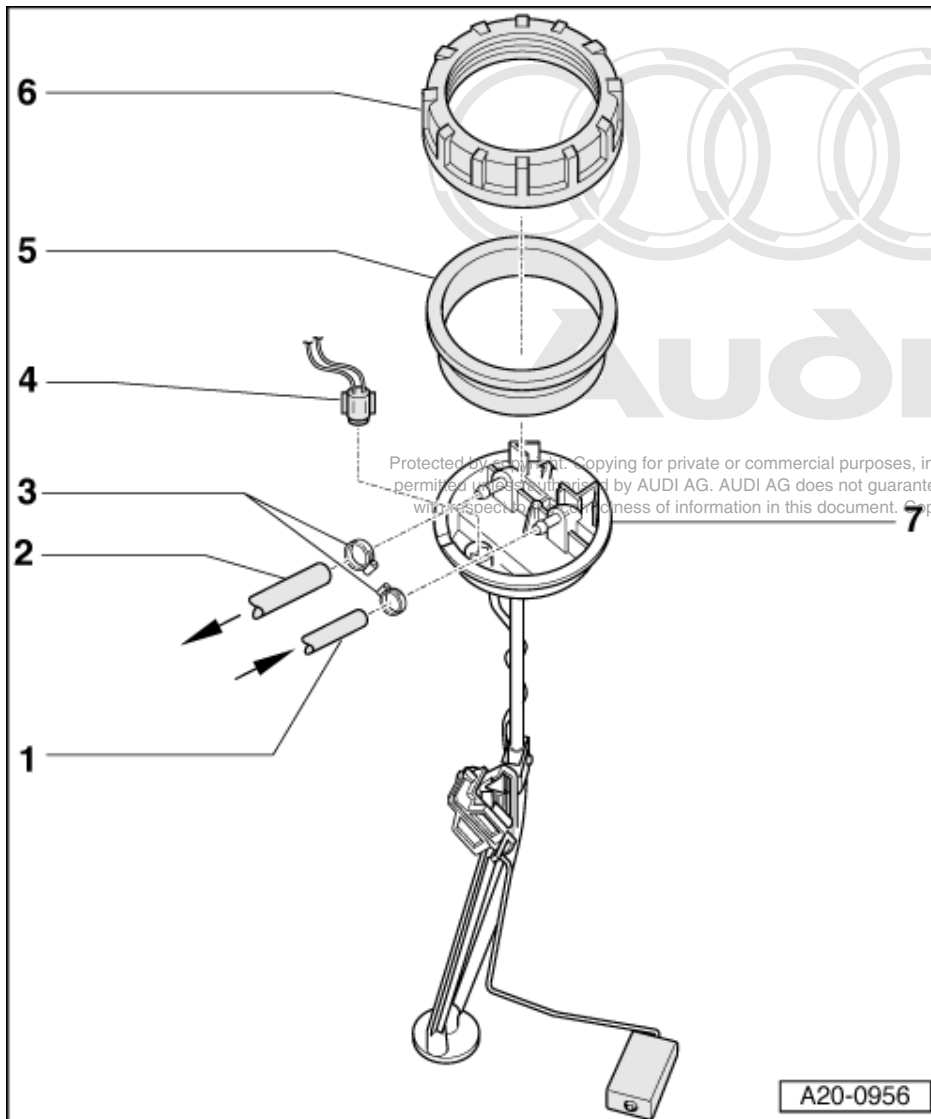
- ♦ To fuel filter
- ♦ Mark before disconnecting

3 Hose clamps

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4 Connector

- ♦ For fuel gauge sender -G



5 Sealing ring

- ♦ Replace
- ♦ When installing, fit dry seal in fuel tank opening

6 Union nut, 60 Nm

- ♦ Use spanner 3217 to remove and install

7 Fuel gauge sender -G

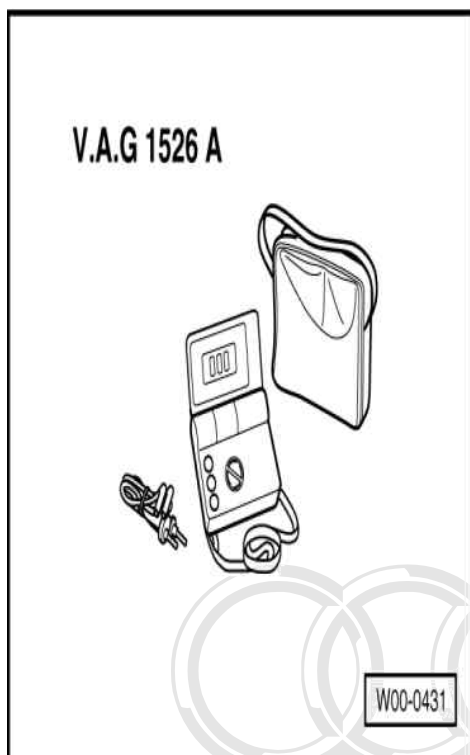
- ♦ Checking resistance values
=> Page 12
- ♦ Removing and installing
=> Page 15

2.6 - Checking fuel gauge sender -G

Note:

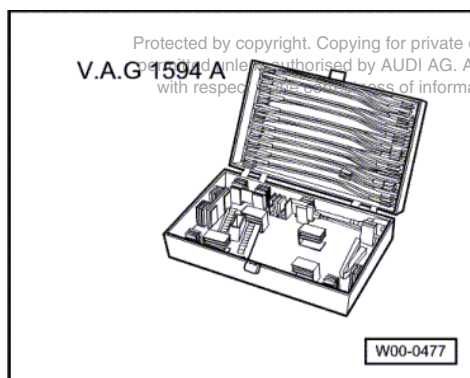
Checking signal from fuel gauge sender

=> Electrical System; Repair Group 90

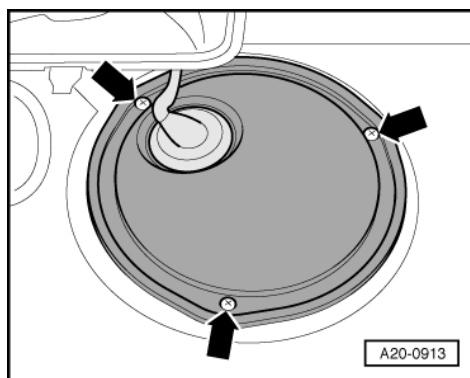


Special tools and workshop equipment required

- ♦ V.A.G 1526 A



- ♦ V.A.G 1594 A



Test sequence

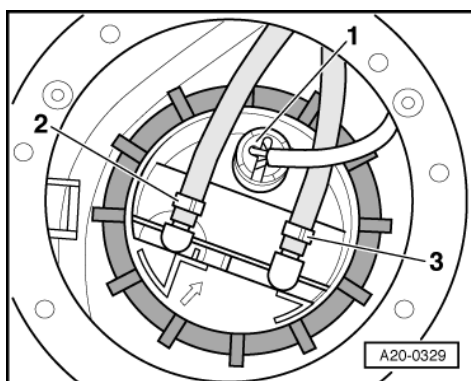
- Remove luggage compartment lining.

Avant:

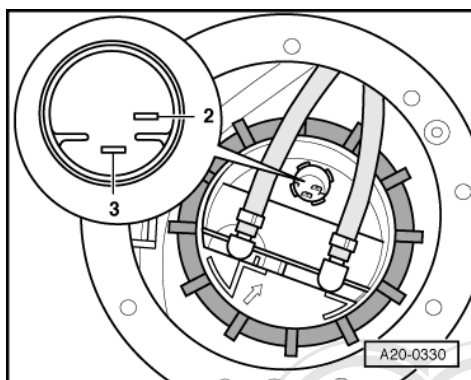
- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.

All models:

- -> Unscrew cover -arrows-.



- -> Release connector -1- and unplug.



- -> Measure resistance at both contacts -2- and -3- at sender housing.

Sender installed	Sender at lower stop	Sender at upper stop
Fuel gauge sender -G	approx. 275 ω	approx. 40 ω

- If measurement result is 0 or ∞ ω , replace fuel gauge sender
=> Page 15.

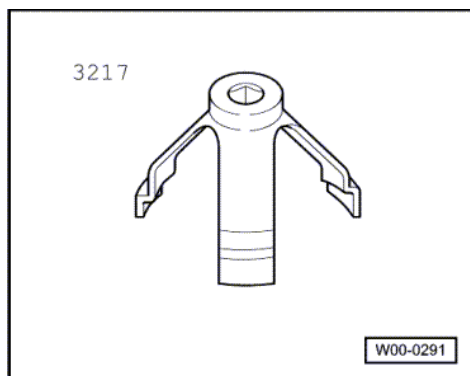
Note:

Checking resistance values "Tank full"/"Tank empty" involves removing fuel gauge sender -G => Page 15 and swivelling sender float to upper/lower stop.

The following values are obtained with the fuel gauge sender removed on account of the greater deflection of the float arm:

Sender removed	Sender at lower stop	Sender at upper stop
Fuel gauge sender -G	approx. 280 ω	approx. 40 ω

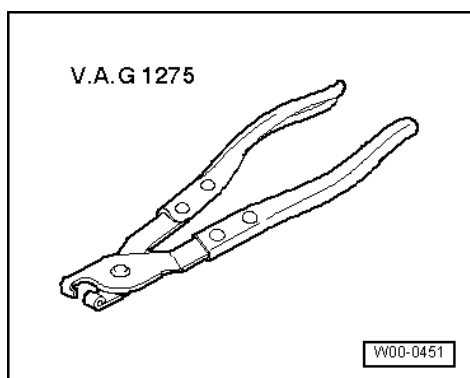
2.7 - Removing and installing fuel gauge sender -G



Special tools and workshop equipment required

- ♦ Spanner for union nut 3217

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- ♦ Hose clamp pliers V.A.G 1275

Removing

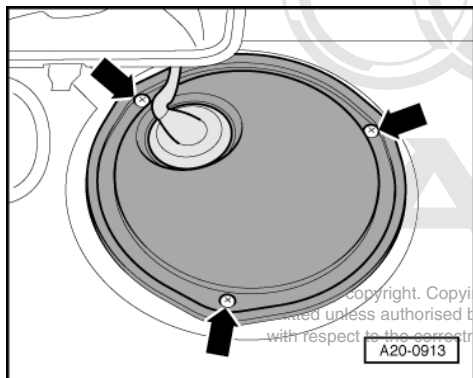
Heed safety precautions => Page **1** .

Observe rules for cleanliness =>Page **1** .

- When removing fuel gauge sender, fuel tank must not be more than 2/3 full. Drain fuel tank if necessary. Procedure => Page **5** .
- Remove luggage compartment lining.

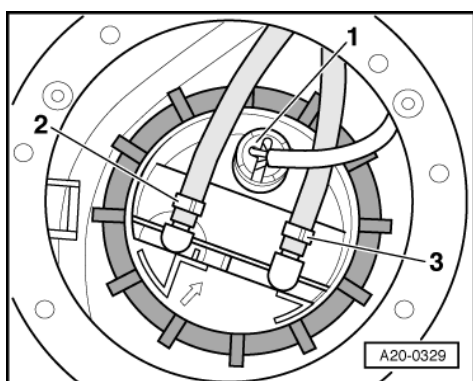
Avant:

- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.

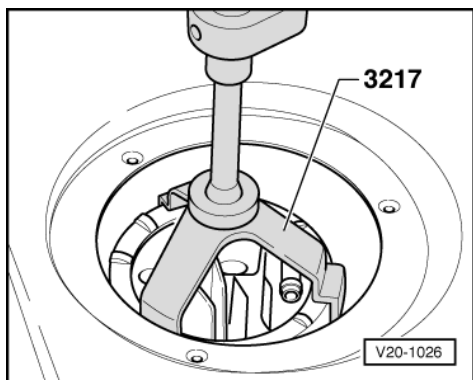


All models:

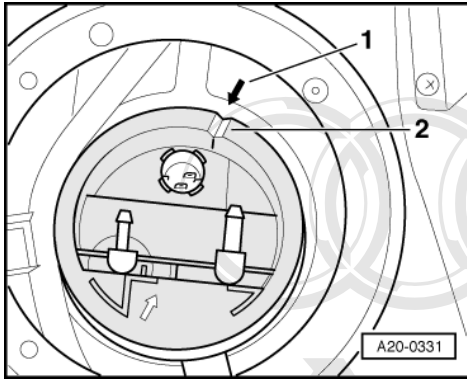
- -> Unscrew cover -arrows-.



- -> Detach fuel return pipe -2- and fuel supply pipe -3- from fuel gauge sender.
- Release connector -1- and unplug.



- -> Use spanner 3217 to unscrew union nut.
- Detach fuel gauge sender and sealing ring from fuel tank opening.



Installing

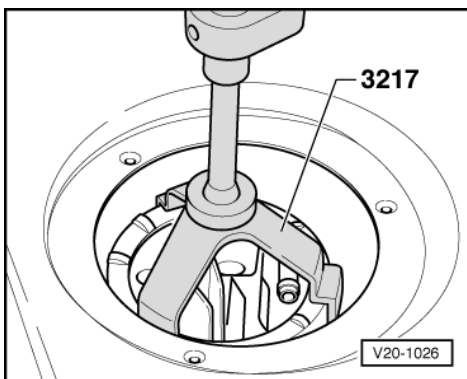
Install in reverse order, paying attention to the following:

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Secure all hose connections with standard hose clamps.

=> Parts List

- Insert new dry fuel gauge sender seal in fuel tank opening.
- -> Insert fuel gauge sender in fuel tank, paying attention to installation position.
 - Notch -2- on sender housing must be opposite mark -1- on fuel tank



- -> Use spanner 3217 to tighten union nut (60 Nm).

Note:

Hose must be held in position when tightening union nut.

- Attach wires and connector.

Note:

Make sure fuel hoses are a tight fit.

Tightening torques

Component	Nm
Union nut for fuel gauge sender	60
Hose clamps	1.5



3 - Fuel supply system - Four-wheel drive

3.1 - Fuel supply system - Four-wheel drive

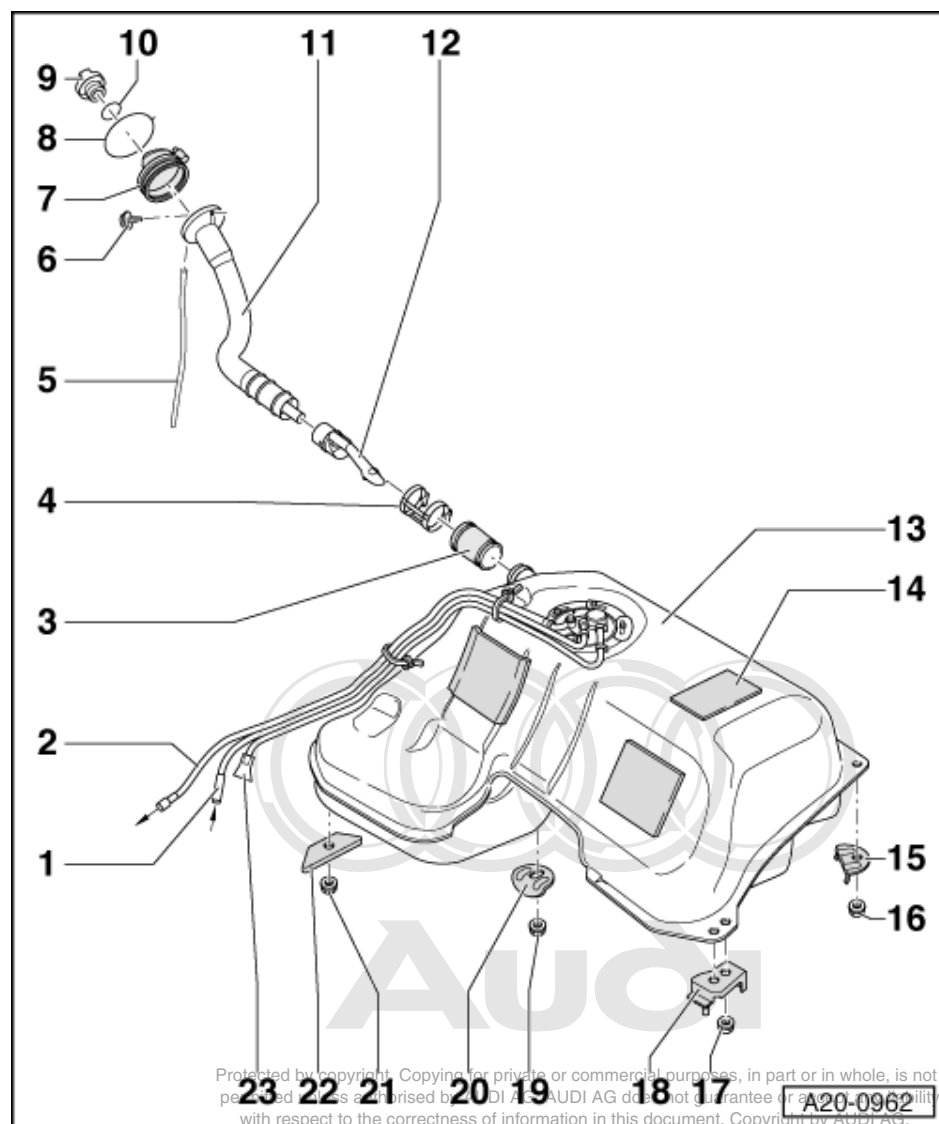
Notes:

- ♦ Secure all hose connections with standard hose clamps.

=> Parts List

- ♦ Special tool V.A.G 1921 is recommended for fitting spring clips.
- ♦ Always replace sealing rings and gaskets on assembly.

3.2 - Exploded view of components: Fuel tank with attachments



1 Fuel return pipe

- ♦ From fuel filter
- ♦ Mark before disconnecting
- ♦ Do not kink
- ♦ Attached with cable tie to fuel tank

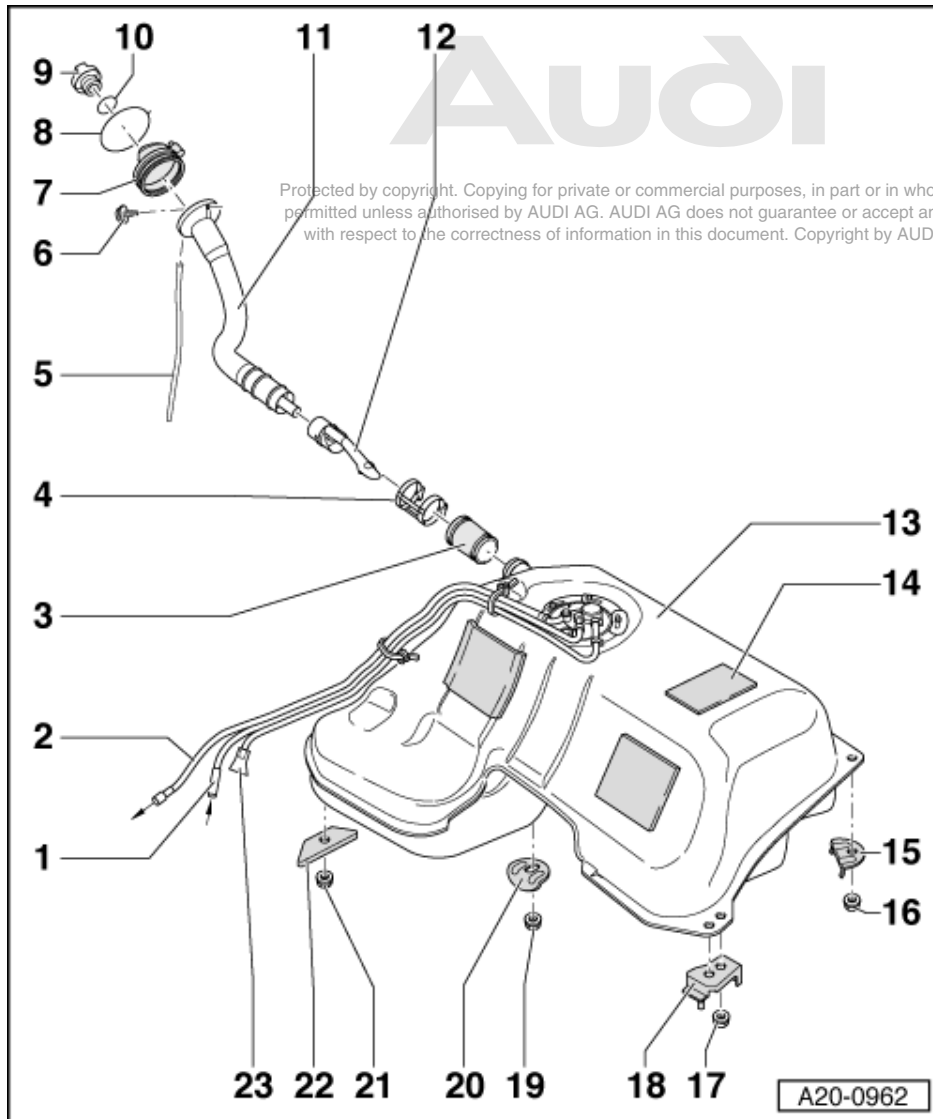
2 Fuel supply pipe

- ♦ To fuel filter
- ♦ Mark before disconnecting
- ♦ Do not kink
- ♦ Attached with cable tie to fuel tank

3 Adapter hose

4 Double clamp

- ♦ Installation position=> Fig. 21



5 Overflow hose

- ♦ Engage in wheel housing

6 1 Nm

7 Rubber adapter

8 Tensioning ring

9 Cap

10 Sealing ring

- ♦ Replace if damaged

11 Fuel filler neck

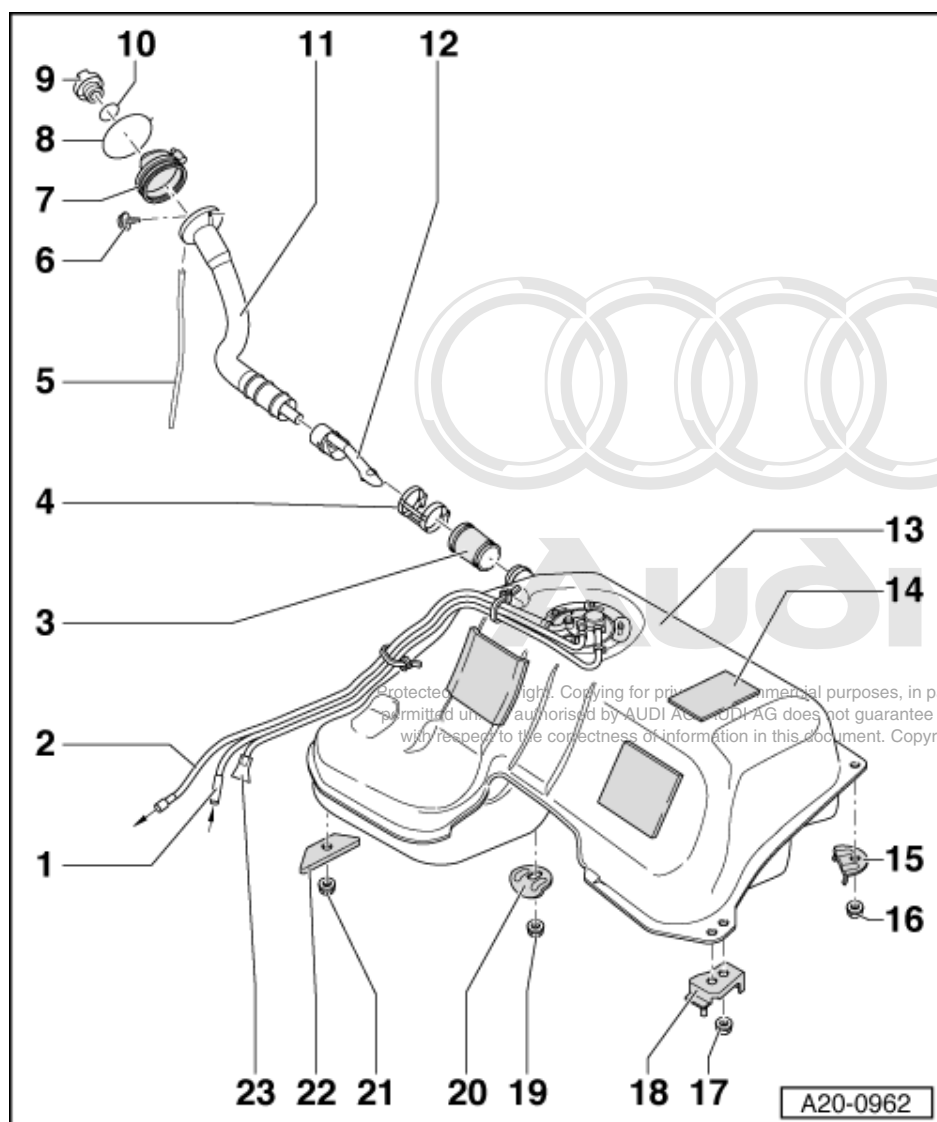
- ♦ Removing and installing=>Page 23

12 Insert

- ♦ With non-return flap

13 Fuel tank

- ♦ Removing and installing=>Page **23**



14 Pad

- ♦ Installation position => Fig. **21**

15 Intermediate plate

16 23 Nm

17 23 Nm

18 Bracket

19 23 Nm

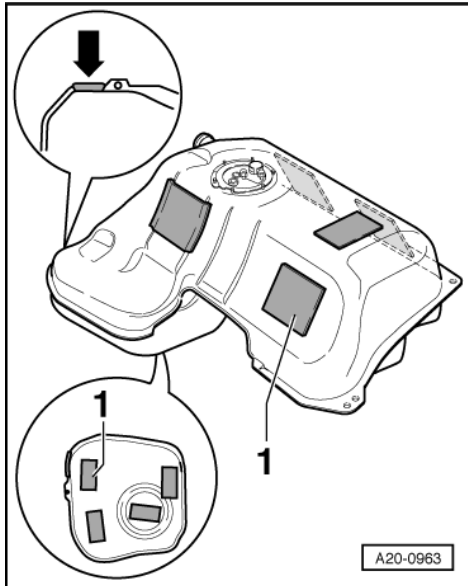
20 Intermediate plate

21 23 Nm

22 Intermediate plate

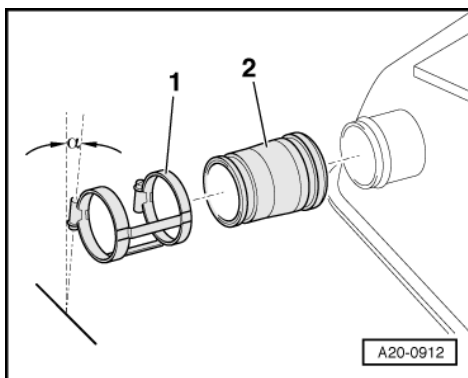
23 Breather pipe

- ♦ Exits from underside of vehicle on right
- ♦ Do not kink
- ♦ Attached with cable tie to fuel tank



-> Fig.1 Installation position of pads and edge strip

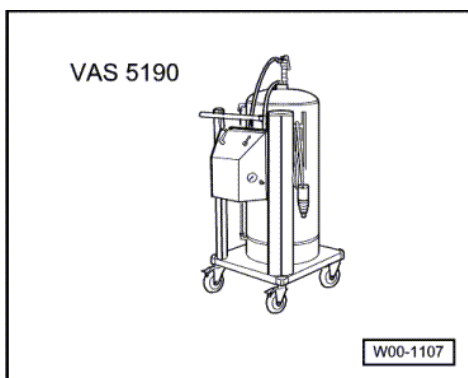
- ◆ Bond pads -1- to fuel tank as shown.
- ◆ Attach edge strip to fuel tank -arrows- as shown.



-> Fig.2 Installation position of double hose clamp

- ◆ Screw connections of double hose clamp -1- for adapter hose -2- must be at an angle of $\alpha = 10^\circ$ to perpendicular.

3.3 - Draining fuel tank



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Special tools and workshop equipment required

- ♦ VAS 5190

Or

- ♦ V.A.G 1433 A

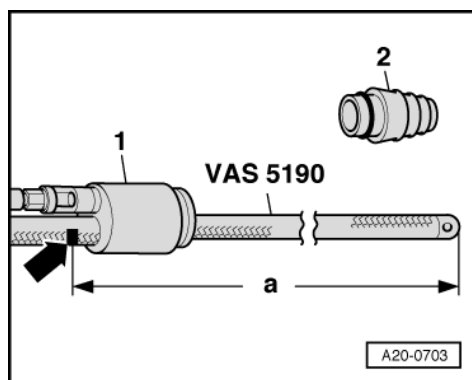
Sequence of operations

Heed safety precautions => Page **1** .

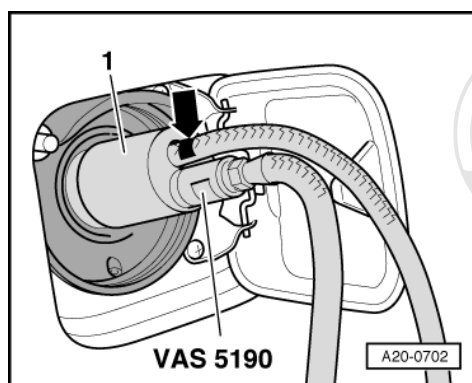
Observe rules for cleanliness =>Page **1** .

Attention:
Attach earth wire of V.A.G 1433

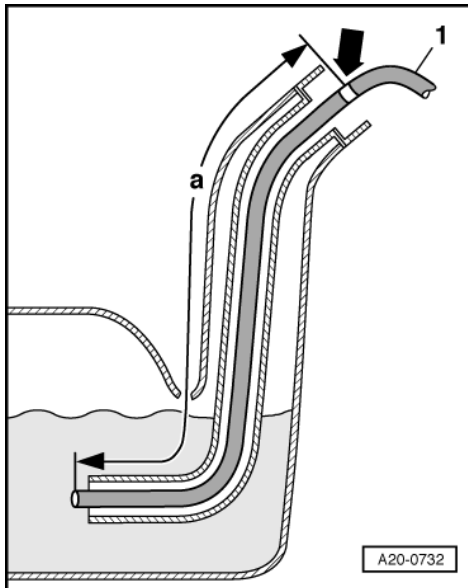
- Detach cap from fuel filler neck.



- -> Pull tapered section -2- off shank section -1- of VAS 5190.
- Use insulating tape to make a mark -arrow- on drain hose at a distance a = 1315 mm from end of hose.



- -> Screw shank section -1- of extraction unit VAS 5190 onto filler neck of fuel tank.
 - Then insert drain hose into fuel tank until previously affixed mark -arrow- makes contact with shank section.
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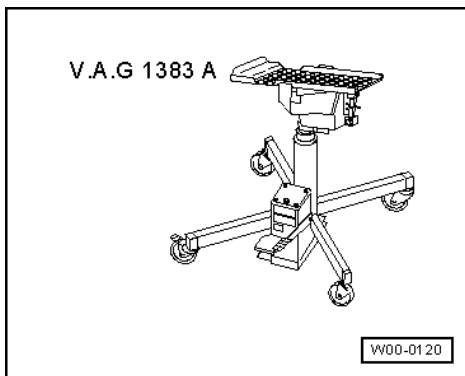


Notes:

- ♦ The procedure is essentially the same if use is made of an extractor with no shank section.
- ♦ -> In this case, use insulating tape to make a mark -arrow- on drain hose at a distance $a = 1250$ mm from end of hose. Drain hose has been properly inserted if previously affixed mark is opposite edge of filler neck.
- ♦ If hose is difficult to insert, apply a thin coat of engine oil. Never use silicone lubricants.
- Drain fuel tank as far as possible via fuel filler neck.
- Carefully pull out drain hose.

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3.4 - Removing and installing fuel tank with attachments



Special tools and workshop equipment required

- ♦ V.A.G 1383 with V.A.G 1359/2

Removing

Heed safety precautions => Page 1 .

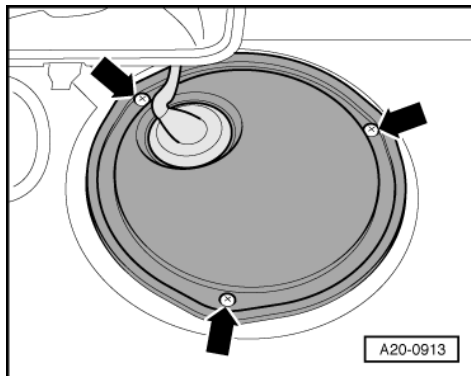
Observe rules for cleanliness =>Page 1 .

- Fuel tank must be empty when removing it from vehicle so as to reduce weight. Drain fuel tank if necessary. Procedure => Page 21 .

- Remove luggage compartment lining.

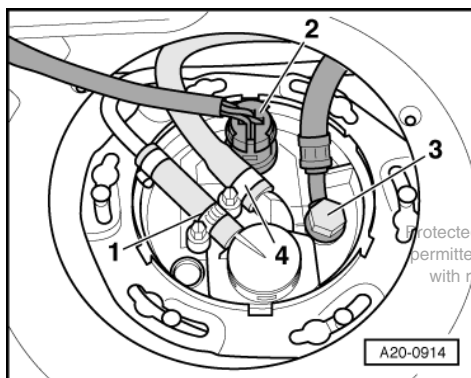
Avant:

- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.

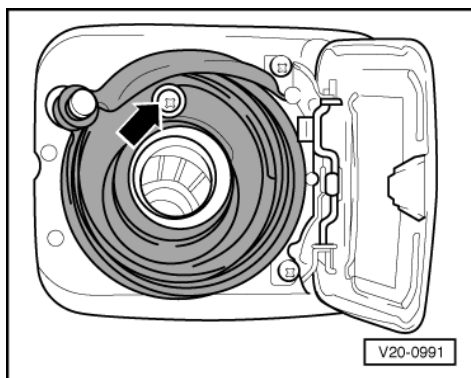


All models:

- -> Unscrew cover -arrows-.



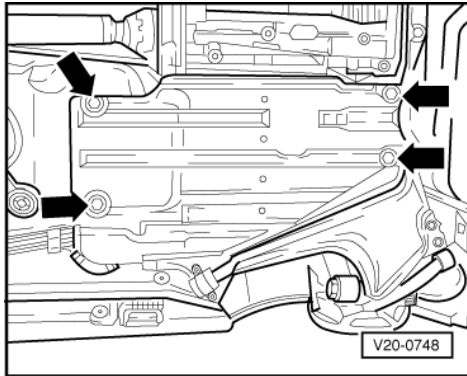
- -> Unplug connector -2- for fuel gauge sender.



- Clean area around fuel filler neck.
- Open filler neck compartment lid and detach cap from fuel filler neck.
- -> Screw out bolt -arrow- at fuel filler neck.
- Unscrew rear right wheel.
- Remove rear right wheel housing liner.

=> General Body Repairs; Repair Group 66; Wheel housing liners Wheel housing liners

- Detach overflow hose from holder.



- -> If fitted, remove guard underneath fuel tank -arrows-.
- Remove rear section of exhaust system.

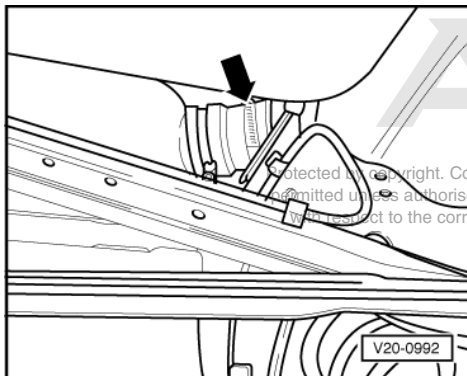
=> Engine, Mechanics; Repair Group 26

- Remove rear heat shield for exhaust system.
- Remove propshaft.

=> 5 and 6-speed Manual Gearbox 01E, Four-wheel Drive; Repair Group 39; Servicing propshaft Servicing propshaft

- Remove rear axle.

=> Running Gear, Front-wheel Drive and Four-wheel Drive; Repair Group 42



Attention:

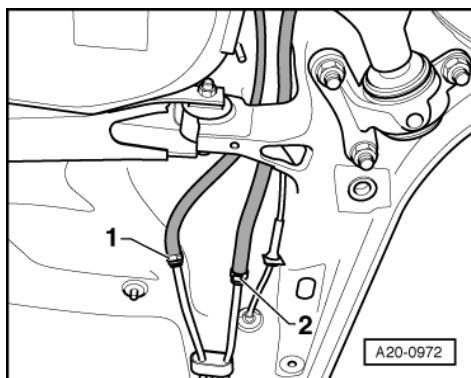
Even if fuel tank is empty, a small quantity of fuel may escape on unfastening hose clamp at adapter hose.

- -> Unfasten outer hose clamp -arrow- at adapter hose between fuel tank and fuel filler neck.

Note:

Leave adapter hose in position on fuel tank connection.

- Detach and take out fuel filler neck.



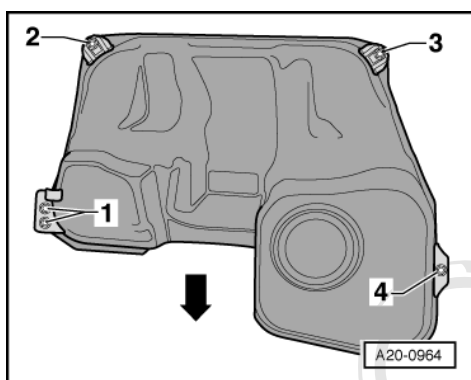
- -> Disconnect fuel supply pipe -2- on underside of vehicle as well as fuel return pipe -1- and catch fuel which escapes.
- Disengage fuel pipes from holder.
- Lay bare breather pipe.

Vehicles with auxiliary heater:

- Additionally disconnect fuel supply pipe to auxiliary heater.

All models:

- Position engine/gearbox lifter V.A.G 1383 A beneath vehicle to support fuel tank.



Attention:
To reduce weight, fuel tank must be empty on removal.

- -> Unscrew nuts -1 ... 4- and detach intermediate plates.

Note:

Arrow faces in direction of travel.

- Use V.A.G 1383 A to lower fuel tank.

Installing

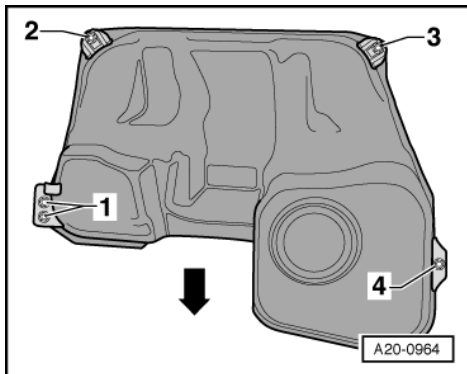
Install in reverse order, paying attention to the following:

Note:

Secure all hose connections with standard hose clamps.

⇒ Parts List

- Check whether fuel supply, return and breather pipes are attached to fuel tank with cable ties.

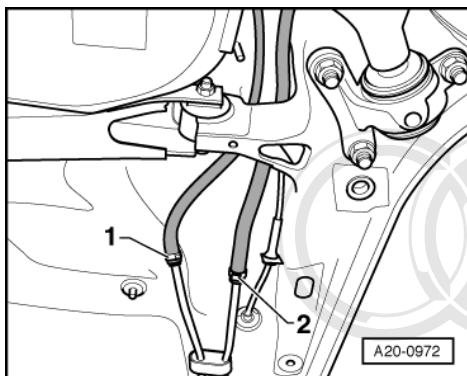


- Position fuel tank on underside of vehicle using engine/gearbox lifter V.A.G 1383 A.
- -> Secure fuel tank using nuts -1...4-.

Note:

Arrow faces in direction of travel.

- Fit fuel filler neck.
- Engage overflow hose at holder.



- -> Attach fuel supply pipe -2- and fuel return pipe -1- and tighten hose clamps.

Note:

Make sure fuel hoses are a tight fit.

- Install rear axle.
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⇒ Running Gear, Front-wheel Drive and Four-wheel Drive; Repair Group 42

- Fit propshaft.

⇒ 5 and 6-speed Manual Gearbox 01E, Four-wheel Drive; Repair Group 39; Servicing propshaft Servicing propshaft

- Install rear section of exhaust system.

⇒ Engine, Mechanics; Repair Group 26

- Install rear right wheel housing liner.

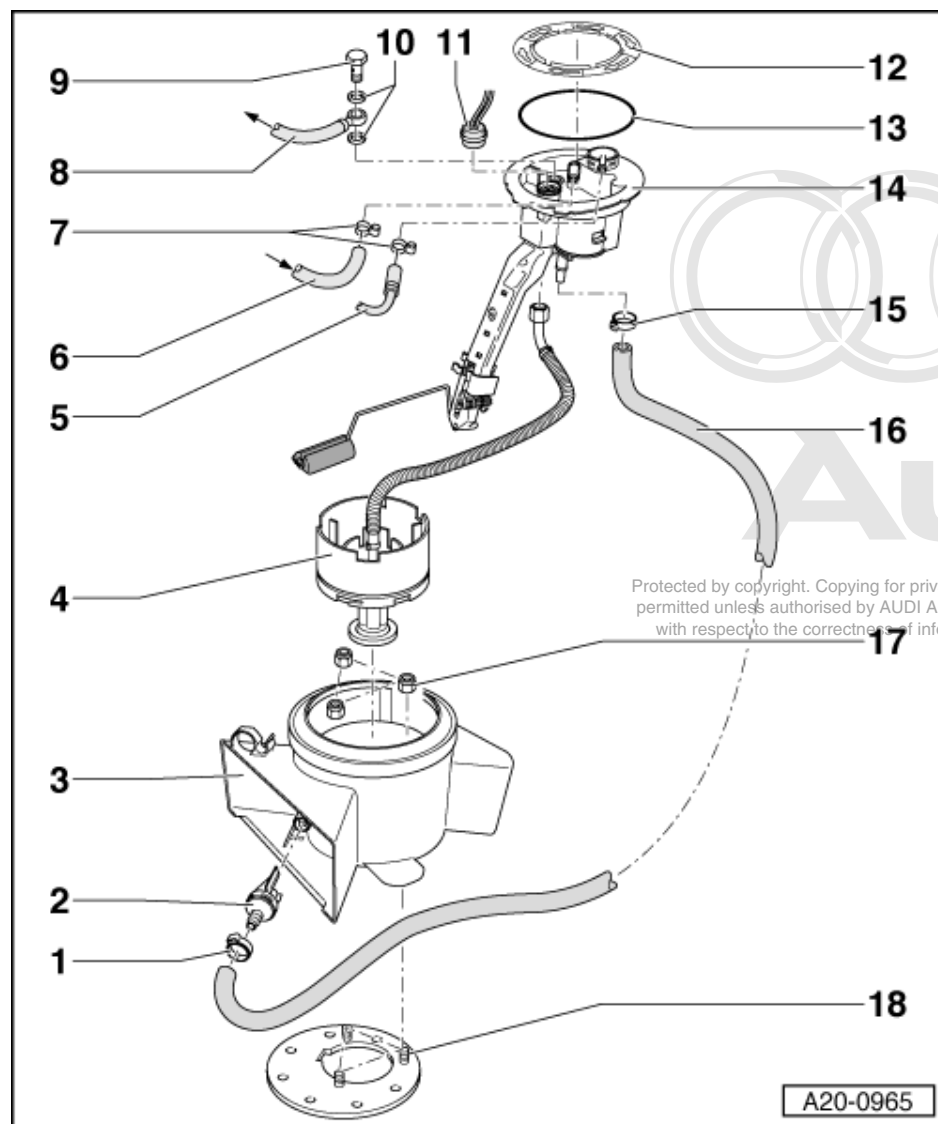


=> General Body Repairs; Repair Group 66; Wheel housing liners Wheel housing liners

Tightening torques

Component	Nm
Fuel tank to body	23
Hose clamp for fuel filler neck to fuel tank	2.6
Fuel filler neck to body	1

3.5 - Exploded view of components: Fuel pick-up unit and fuel gauge sender



Note:

On vehicles with auxiliary heater, pay attention to routing of suction pipe for auxiliary heater.

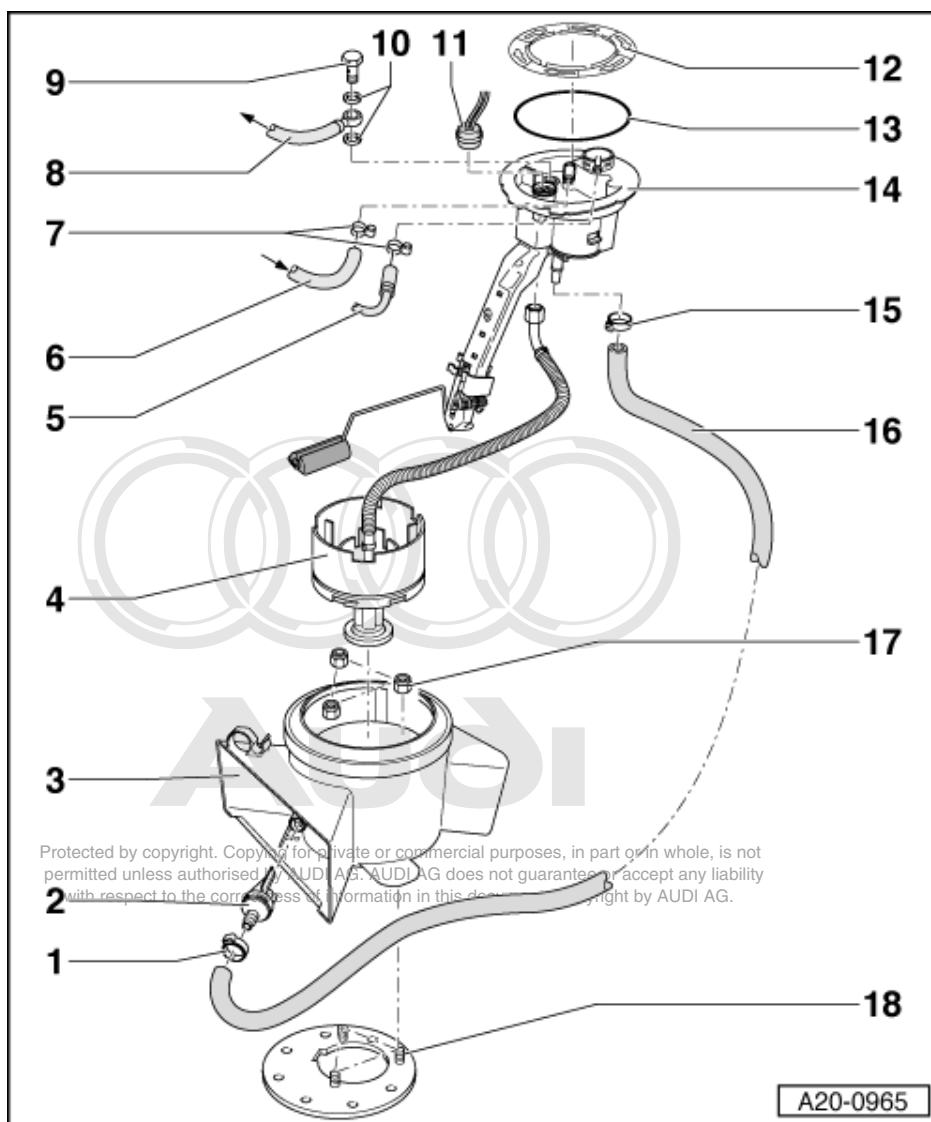
=> Heating, Air Conditioner; Repair Group 82

1 Hose clamp

- ♦ Use V.A.G 1275 to secure

2 Suction jet pump

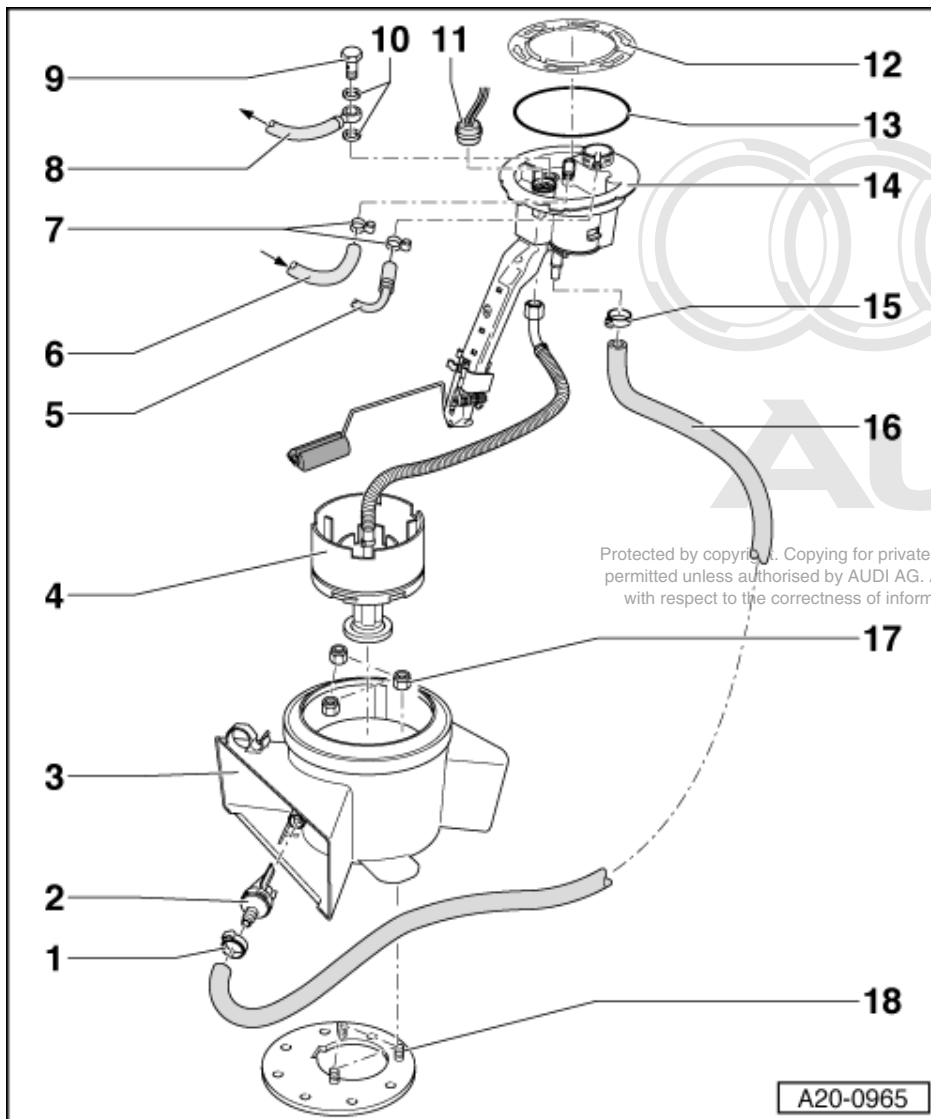
- ♦ Not available as separate replacement part
- 3 Bottom part of baffle housing**
 - ♦ Cannot be removed



- 4 Fuel pick-up unit**
 - ♦ Removing and installing=>Page 31
- 5 Breather pipe**
 - ♦ Exits from underside of vehicle on right
- 6 Fuel return pipe**
 - ♦ From fuel filter
- 7 Screw-type clamp**
- 8 Fuel supply pipe**
 - ♦ To fuel filter
- 9 Banjo bolt, 23 Nm**
- 10 Sealing rings**
 - ♦ Replace
- 11 Connector**
 - ♦ For fuel gauge sender -G
- 12 Locking ring**



- ♦ Use spanner 3087 to remove and install



13 O-ring

- ♦ Replace

14 Fuel gauge sender -G

- ♦ Checking resistance values
=> Page 35
- ♦ Removing and installing=>Page 38

15 Screw-type clamp

16 Fuel return hose

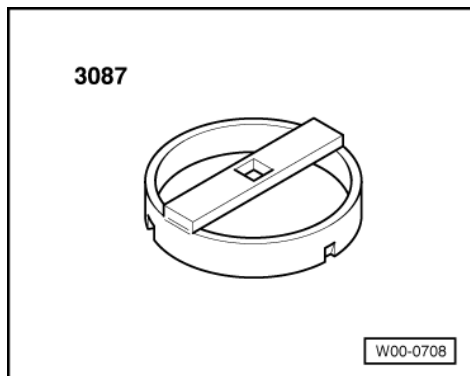
- ♦ To suction jet pump

17 5 Nm

18 Assembly flange for baffle housing

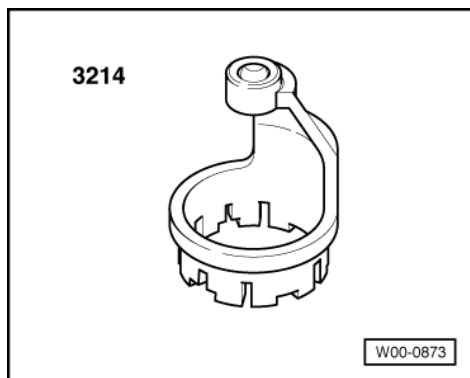
- ♦ Secured in position in fuel tank
- ♦ Cannot be removed

3.6 - Removing and installing fuel pick-up unit



Special tools and workshop equipment required

- ♦ Fuel gauge sender wrench 3087



- ♦ Fuel pump wrench 3214

Removing

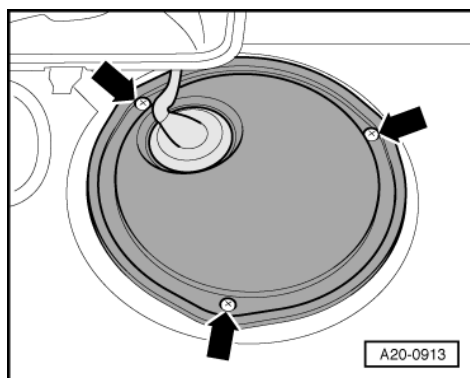
Heed safety precautions => Page 1 .

Observe rules for cleanliness => Page 1 .

- When removing fuel pick-up unit, fuel tank must not be more than 2/3 full. Drain fuel tank if necessary. Procedure => Page 21 .
- Remove luggage compartment lining.

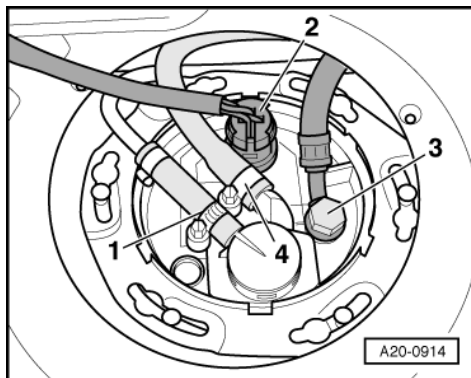
Avant:

- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.



All models:

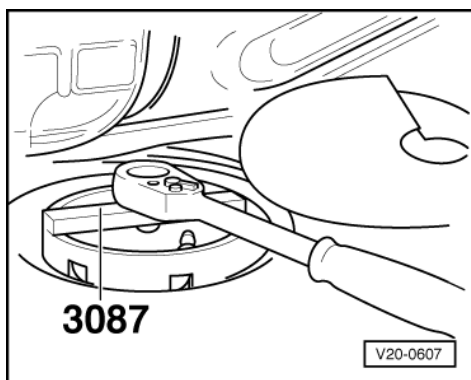
- -> Unscrew cover -arrows-.



- -> Unplug connector -2- for fuel gauge sender.
- Detach fuel return pipe -4- and breather pipe -1- and unscrew fuel supply pipe -3-.

Vehicles with auxiliary heater:

- Additionally disconnect fuel supply pipe to auxiliary heater.

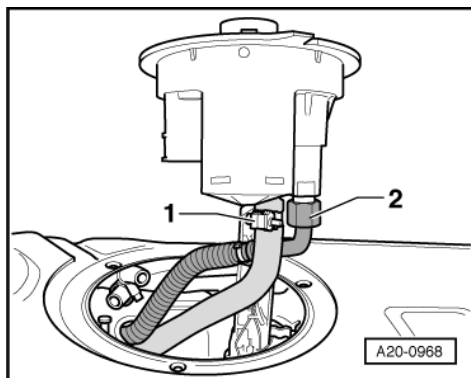


All models:

Attention:

When removing fuel pick-up unit, fuel tank must not be more than 2/3 full.

- -> Use fuel gauge sender wrench 3087 to unscrew locking ring.



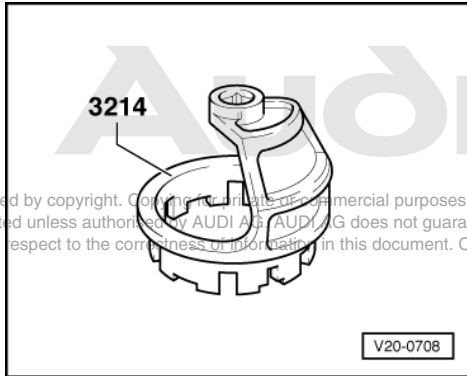
- Lift fuel gauge sender carefully out of opening in fuel tank.
- -> Detach fuel return pipe -1- on inside of fuel gauge sender.

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- Unscrew fuel supply pipe -2-.

Vehicles with auxiliary heater:

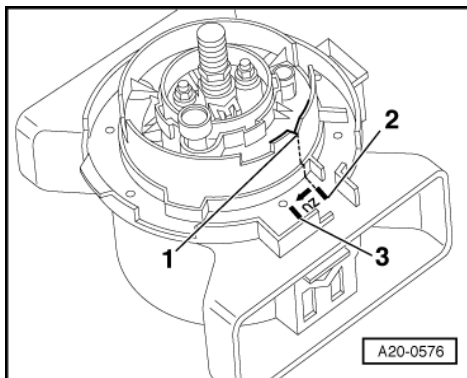
- Additionally disconnect fuel supply pipe to auxiliary heater.



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All models:

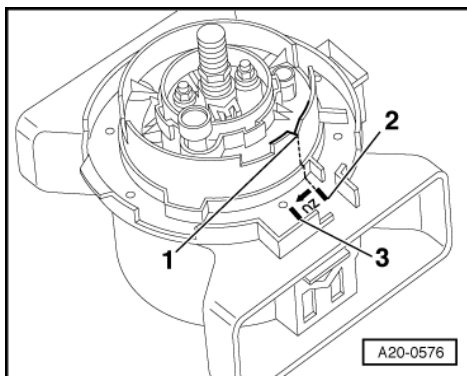
- -> Insert fuel pump wrench 3214 through fuel tank opening and apply at fuel pick-up unit.



- Turn fuel pick-up unit anti-clockwise by approx. 15° as far as stop.
 - -> Notch -1- must be in front of mark -2- (bayonet lock)
- Take out fuel pick-up unit.

Note:

For ease of illustration, baffle housing is shown without fuel tank.





Installing

Install in reverse order, paying attention to the following:

Note:

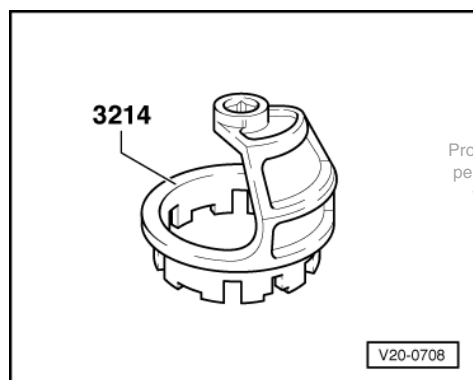
Secure all hose connections with standard hose clamps.

=> Parts List

- Insert fuel pick-up unit in fuel tank.
- -> Insert fuel pick-up unit in baffle housing in fuel tank such that notch -1- at fuel pick-up unit coincides with mark -2- at baffle housing.
- Fuel pick-up unit can be pressed down to a noticeable extent

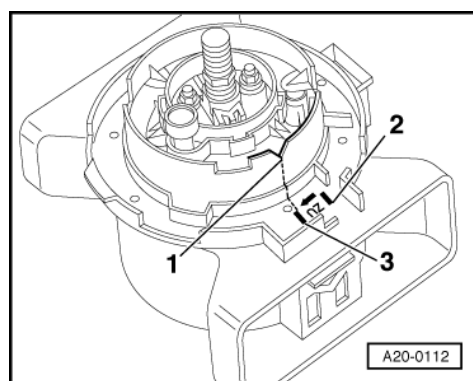
Note:

For ease of illustration, baffle housing is shown without fuel tank.

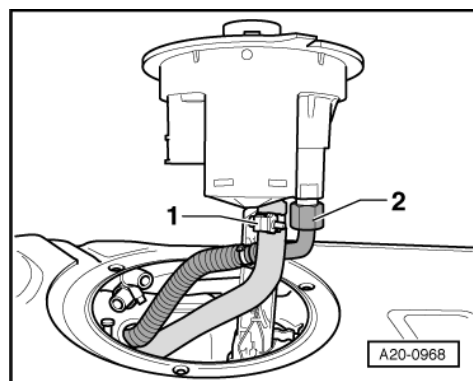


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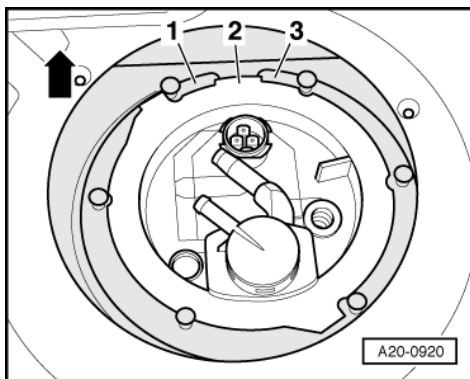
- -> Insert fuel pump wrench 3214 through fuel tank opening and apply at fuel pick-up unit.



- Turn fuel pick-up unit clockwise by approx. 15° as far as stop.
- -> Notch -1- must be in front of mark -3- (bayonet lock)
- Replace O-ring for fuel gauge sender.
- Insert fuel gauge sender in fuel tank.



- -> Attach fuel supply pipe -2- and fuel return pipe -1- as shown.

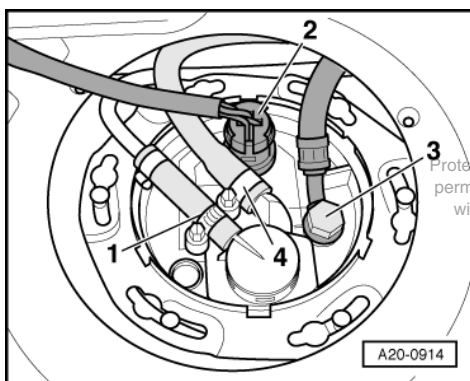


- -> Pay attention to installation position of fuel gauge sender.
 - Tab -2- at fuel gauge sender must be located between raised areas -1- and -3- at fuel tank

Note:

Arrow faces in direction of travel.

- Use fuel gauge sender wrench 3087 to secure locking ring.



- -> Screw on fuel supply pipe -3-.
- Attach fuel return pipe -4- and breather pipe -1- and tighten hose clamps.
- Attach connector -2-.

Tightening torques

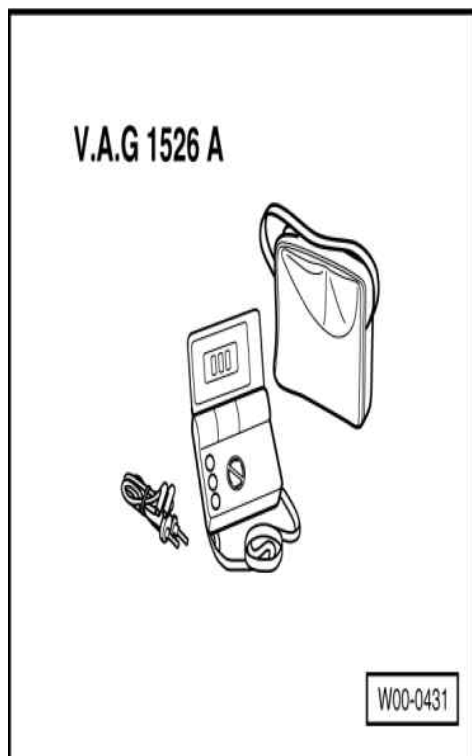
Component	Nm
Supply pipe to sender housing (union nut)	23
Supply pipe to sender housing (banjo bolt)	23
Hose clamps	2

3.7 - Checking fuel gauge sender -G

Note:

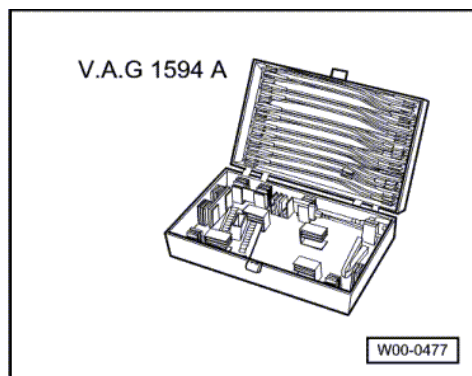
Checking signal from fuel gauge sender

=> Electrical System; Repair Group 90

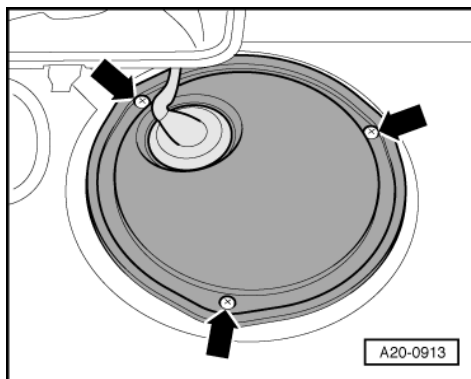


Special tools and workshop equipment required

- ♦ V.A.G 1526 A



- ♦ V.A.G 1594 A



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Test sequence

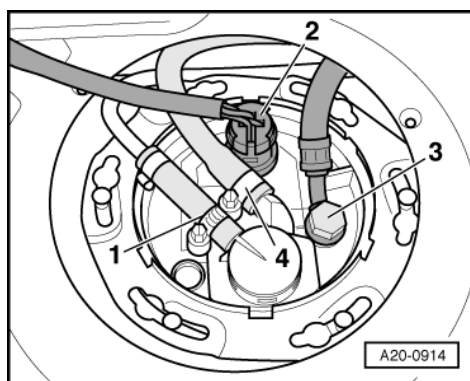
- Remove luggage compartment lining.

Avant:

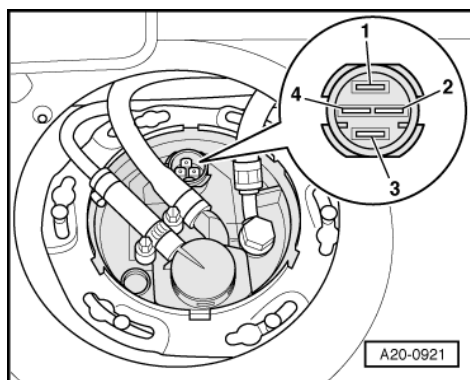
- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.

All models:

- -> Unscrew cover -arrows-.



- -> Unplug connector -2- for fuel gauge sender.



- -> Connect up multimeter for resistance measurement between contacts 2 and 3.

Sender installed	Sender at lower stop	Sender at upper stop
Fuel gauge sender -G	approx. 275 ω	approx. 40 ω

- Measured value of 0 ω is an indication of a short circuit, whereas ∞ ω signifies an open circuit in the wiring.

Note:

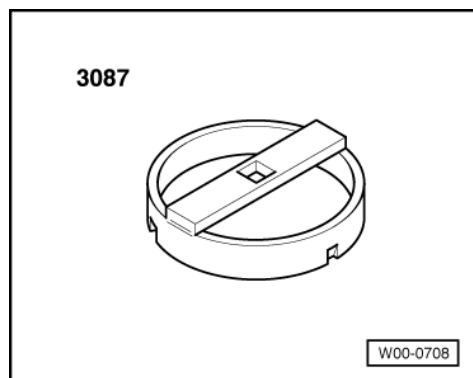
Checking resistance values "Tank full"/"Tank empty" involves removing fuel gauge sender => Page 38 and swivelling sender float to upper/lower stop.

The following values are obtained with the fuel gauge sender removed on account of the greater deflection of the float arm:



Sender removed	Sender at lower stop	Sender at upper stop
Fuel gauge sender -G	approx. 280 ω	approx. 40 ω

3.8 - Removing and installing fuel gauge sender -G



Special tools and workshop equipment required

- ♦ Fuel gauge sender wrench 3087

Removing

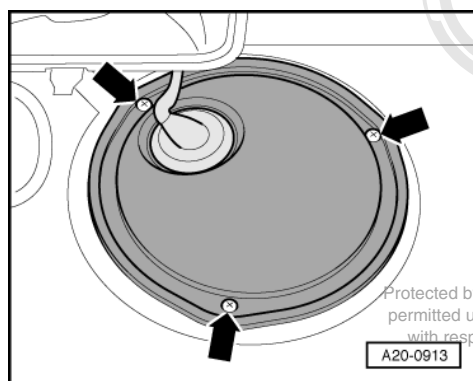
Heed safety precautions => Page 1 .

Observe rules for cleanliness =>Page 1 .

- When removing fuel gauge sender, fuel tank must not be more than 2/3 full. Drain fuel tank if necessary. Procedure => Page 21 .
- Remove luggage compartment lining.

Avant:

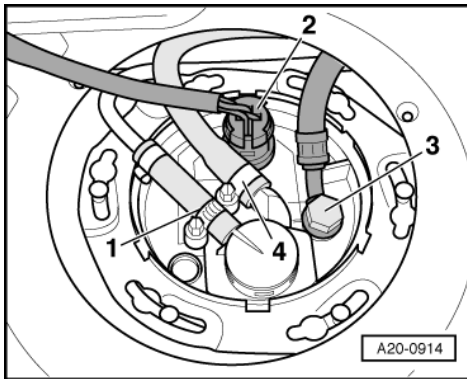
- Remove load compartment floor.
- If necessary, fold forward right backrest of rear seat bench.



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All models:

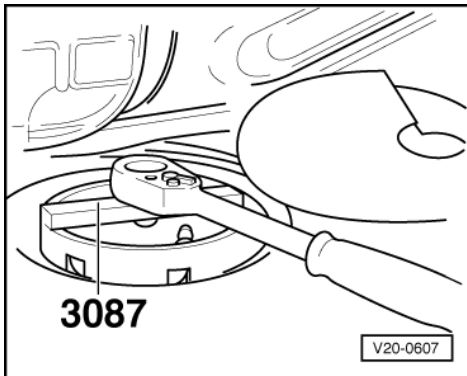
- -> Unscrew cover -arrows-.



- -> Unplug connector -2- for fuel gauge sender.
- Detach fuel return pipe -4- and breather pipe -1- and unscrew fuel supply pipe -3-.

Vehicles with auxiliary heater:

- Additionally disconnect fuel supply pipe to auxiliary heater.



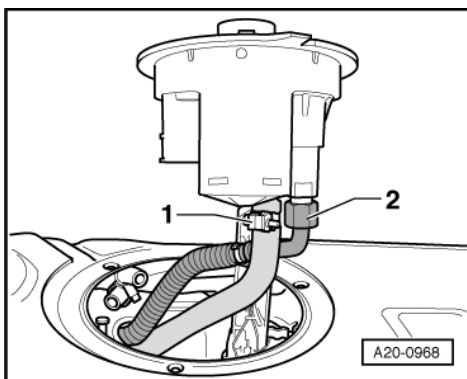
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All models:

Attention:

When removing fuel gauge sender, fuel tank must not be more than 2/3 full.

- -> Use fuel gauge sender wrench 3087 to unscrew locking ring.
- Lift fuel gauge sender carefully out of opening in fuel tank.



- -> Detach fuel return pipe -1- on inside of fuel gauge sender.
- Unscrew fuel supply pipe -2-.



Vehicles with auxiliary heater:

- Additionally disconnect fuel supply pipe to auxiliary heater.

All models:

- Take fuel gauge sender carefully out of opening in fuel tank.

Installing

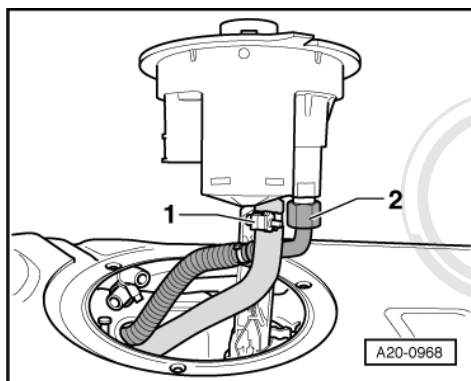
Install in reverse order, paying attention to the following:

Note:

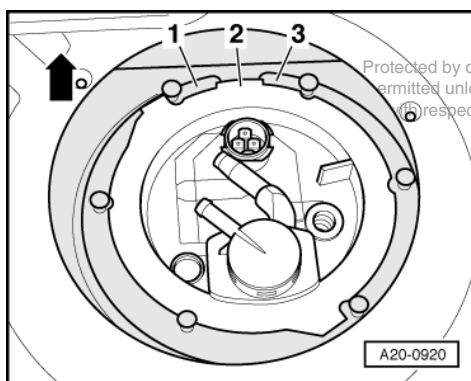
Secure all hose connections with standard hose clamps.

=> Parts List

- Replace O-ring for fuel gauge sender.
- Insert fuel gauge sender in fuel tank.



- -> Attach fuel supply pipe -2- and fuel return pipe -1- as shown.

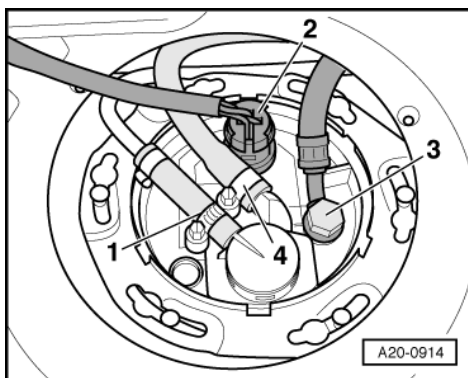


- -> Pay attention to installation position of fuel gauge sender.
- Tab -2- at fuel gauge sender must be located between raised areas -1- and -3- at fuel tank

Note:

Arrow faces in direction of travel.

- Use fuel gauge sender wrench 3087 to secure locking ring.



- -> Screw on fuel supply pipe -3-.
- Attach fuel return pipe -4- and tighten hose clamps.
- Attach connector -2-.

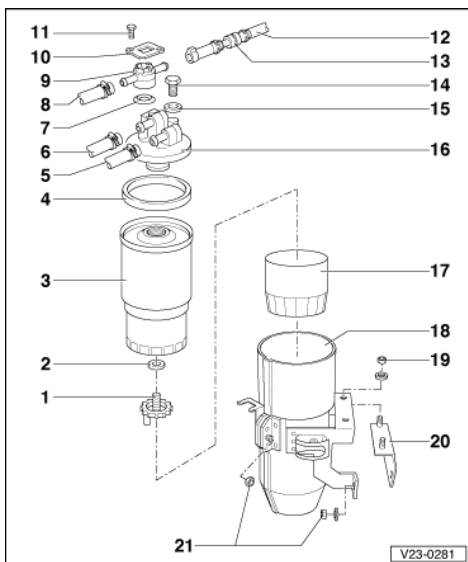
Tightening torques

Component	Nm
Supply pipe to sender housing (union nut)	23
Supply pipe to sender housing (banjo bolt)	23
Hose clamps	2

4 - Servicing fuel filter

4.1 - Servicing fuel filter

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4.2 - Exploded view of fuel filter - 4-cyl. engine

Notes:



- ♦ Secure all hose connections with standard hose clamps.

=> Parts List

- ♦ Always replace sealing rings.
- ♦ Drain/replace fuel filter

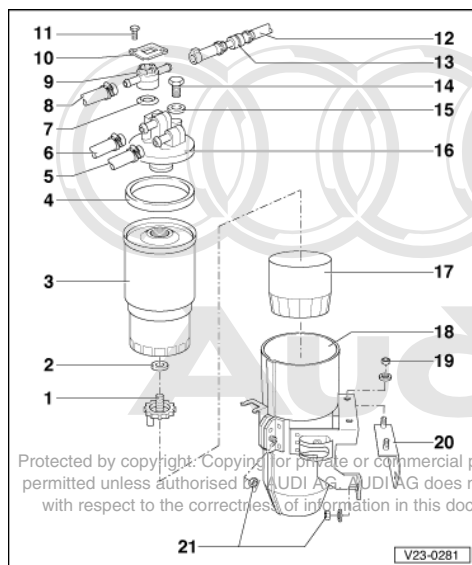
=> Maintenance

1 Drain plug

- ♦ For drainage, unfasten and allow approx. 100 cm³ of liquid to escape
- ♦ Unfasten breather plug for drainage

2 Sealing ring

- ♦ Replace if damaged



3 Fuel filter

- ♦ Removing and installing=>Page 44

4 Sealing ring

- ♦ Replace if damaged
- ♦ Moisten with diesel fuel when fitting

5 Fuel supply hose

- ♦ From fuel tank

6 Fuel supply hose

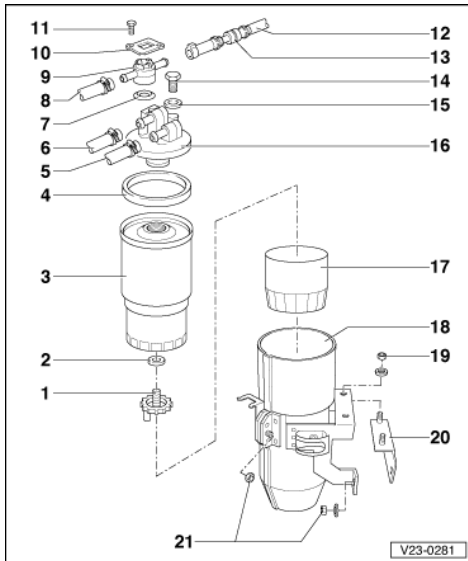
- ♦ To injection pump

7 O-ring

- ♦ Replace

8 Fuel return hose

- ♦ From injection pump



9 Regulating valve

- ♦ Installation position: Arrow pointing towards fuel tank
- ♦ Pay attention to O-ring in filter housing when fitting valve
- ♦ At temperatures below + 15 °C:
Passage to filter open
- ♦ At temperatures above + 31 °C:
Passage to filter closed

10 Retainer

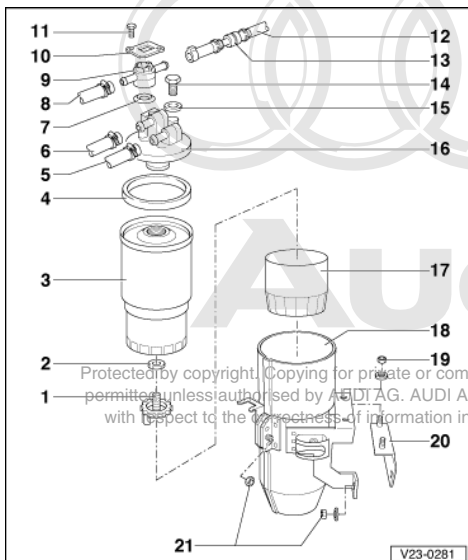
11 5 Nm

12 Fuel return hose

- ♦ To fuel tank

13 Non-return valve

- ♦ Installation position: Arrow pointing towards fuel tank



14 Breather plug, 10 Nm

- ♦ Unfasten for drainage

15 Sealing ring

- ♦ Replace

16 Fuel filter flange

17 Insert

18 Shield

19 10 Nm



20 Bracket

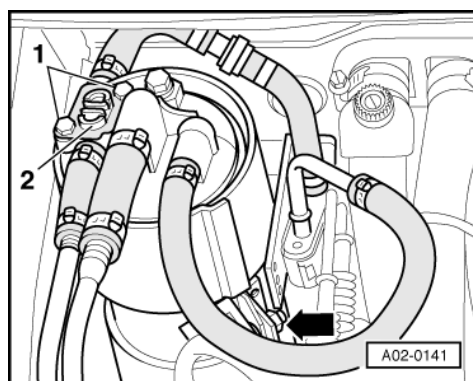
21 10 Nm

4.3 - Removing and installing fuel filter - 4-cyl. engine

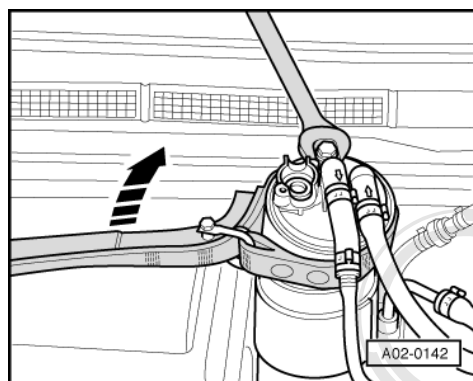
Notes:

- ♦ Make sure diesel fuel does not come into contact with coolant hoses. Clean hoses immediately if necessary.
- ♦ Observe disposal regulations.

Removing



- -> Screw out the two bolts -1- and detach regulating valve -2- with retaining plate.
- Lay aside regulating valve with connected fuel return hoses.
- Unfasten nut -arrow- at filter holder and pull filter with connected fuel supply hoses out of holder.



- -> Support top part of fuel filter with 17 mm open-ended wrench at hexagon base of breather plug. If necessary, use strap wrench to release filter -arrow-.

Attention:

Never use pliers to provide support as this could damage filter head and cause leakage in fuel system.

- Screw filter out of top part of fuel filter.

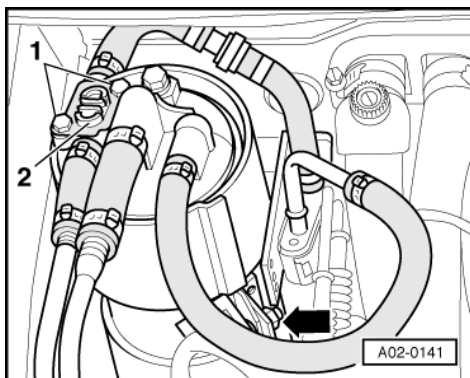
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Installing

Install in reverse order, paying attention to the following:

- Moisten sealing ring at regulating valve and rubber seal at new fuel filter with diesel fuel.
- Fill new filter with clean diesel fuel. This enables engine to be started more quickly.
- Hand-tighten filter at top part of fuel filter.

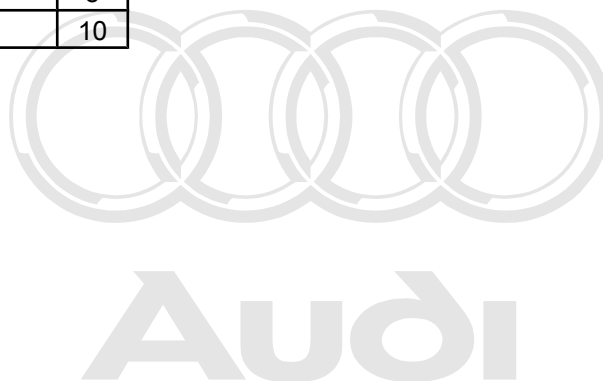
- Attach plastic insert to new filter.



- -> Insert fuel filter in holder and secure with clamping nut -arrow-.
- Screw on regulating valve -2-.
- Start engine and visually inspect fuel system for leaks.

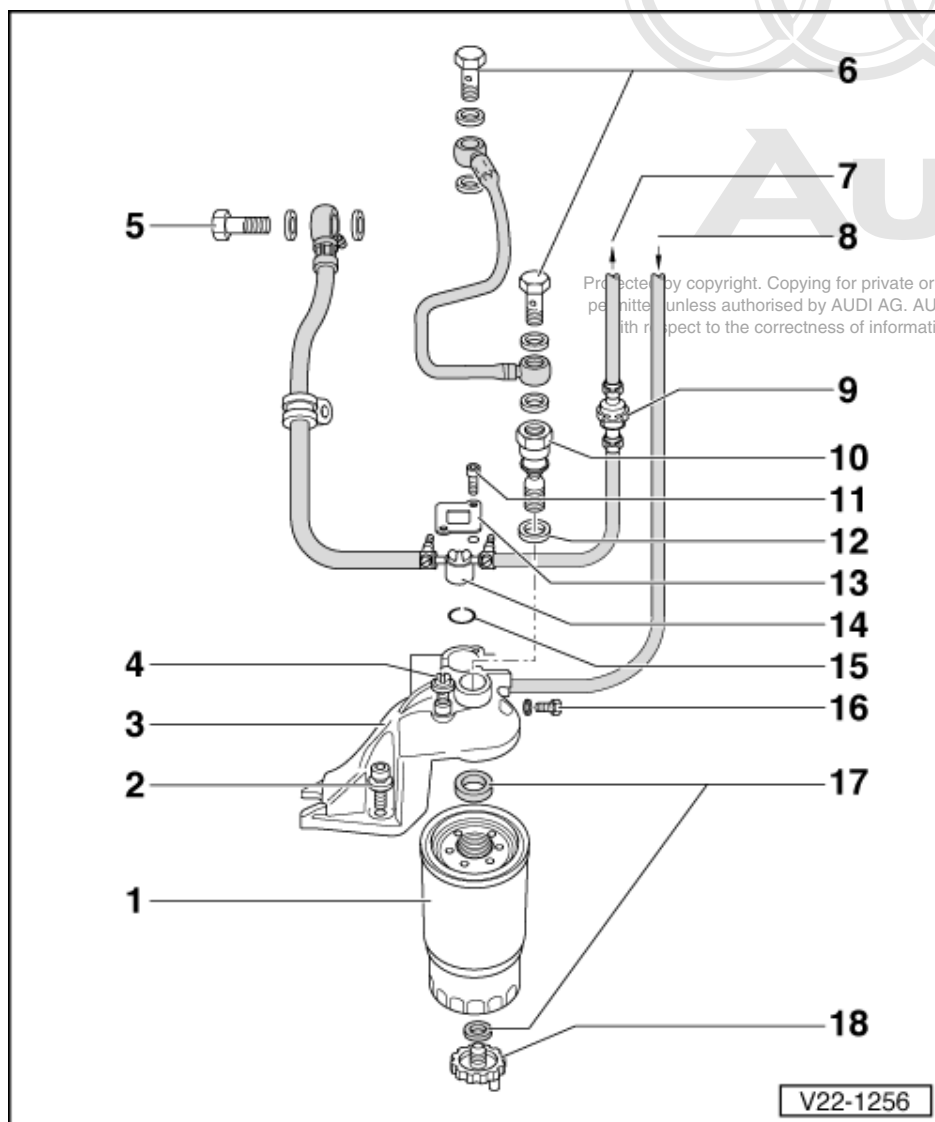
Tightening torques

Component	Nm
Regulating valve to top part of filter	5
Clamping nut to filter holder	10



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4.4 - Exploded view of fuel filter - 5-cyl. engine



Notes:

- ♦ Secure all hose connections with standard hose clamps.

=> Parts List

- ♦ Always replace sealing rings.
- ♦ Drain/replace fuel filter

=> Maintenance

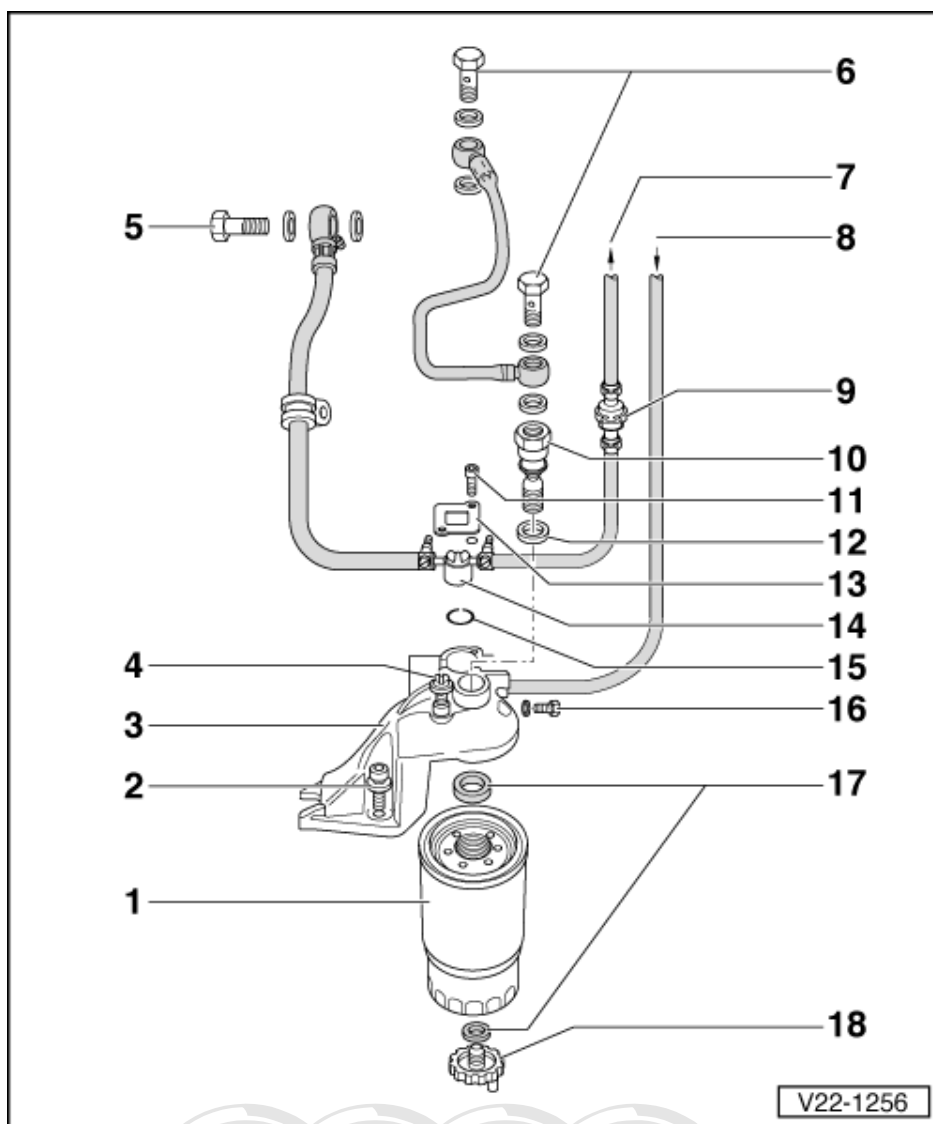
1 Fuel filter

- ♦ Removing and installing=>Page 49

2 20 Nm

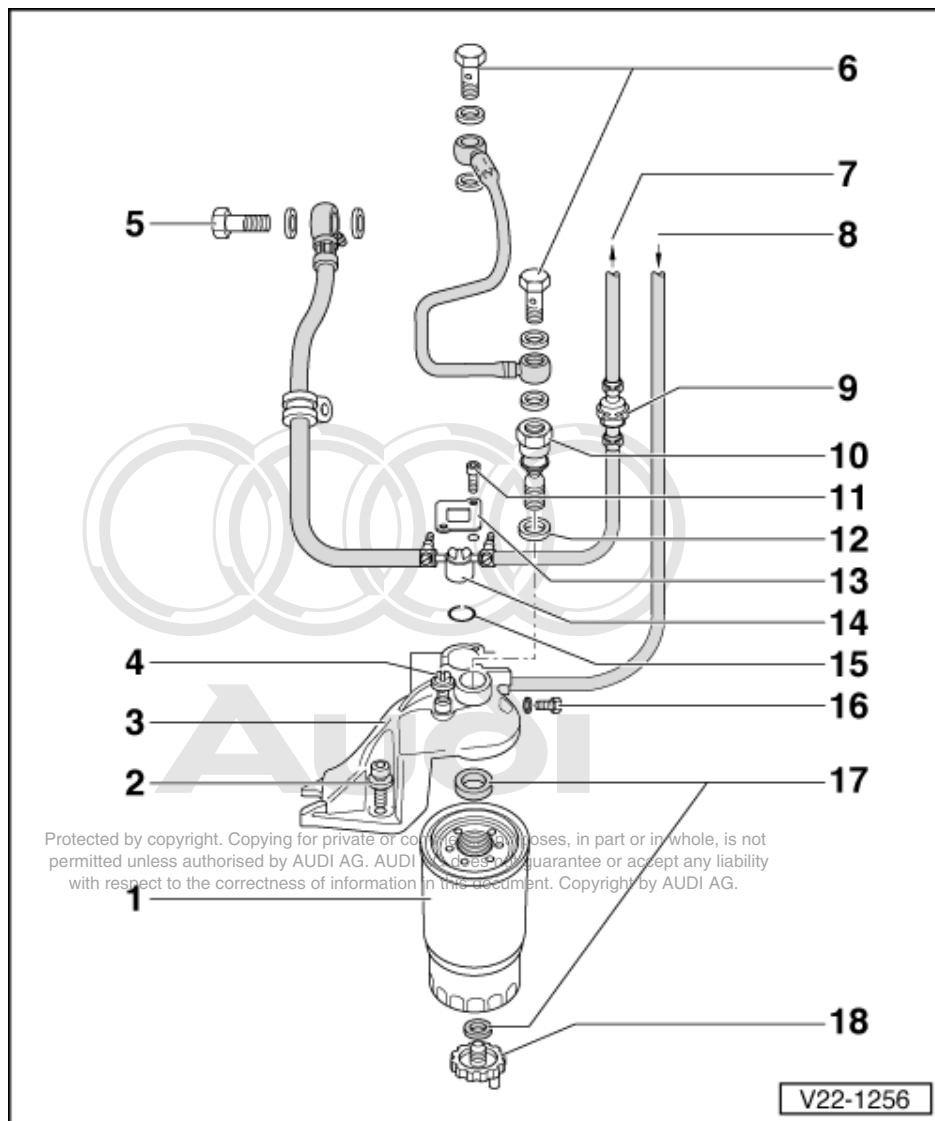
3 Bracket

- ♦ For fuel filter



- 4 Breather plug
 - ♦ Unfasten for drainage
- 5 Banjo bolt, 25 Nm
- 6 Banjo bolts, 25 Nm
 - ♦ Provide support at hexagon of connection -Item 10 - when slackening off and tightening
- 7 Fuel return pipe
 - ♦ To fuel tank
- 8 Fuel supply pipe
 - ♦ From fuel tank
- 9 Non-return valve
 - ♦ Installation position: Arrow pointing towards fuel tank

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10 Connection

- ◆ Slacken off locking screw -Item **16** - to screw out connection

11 5 Nm

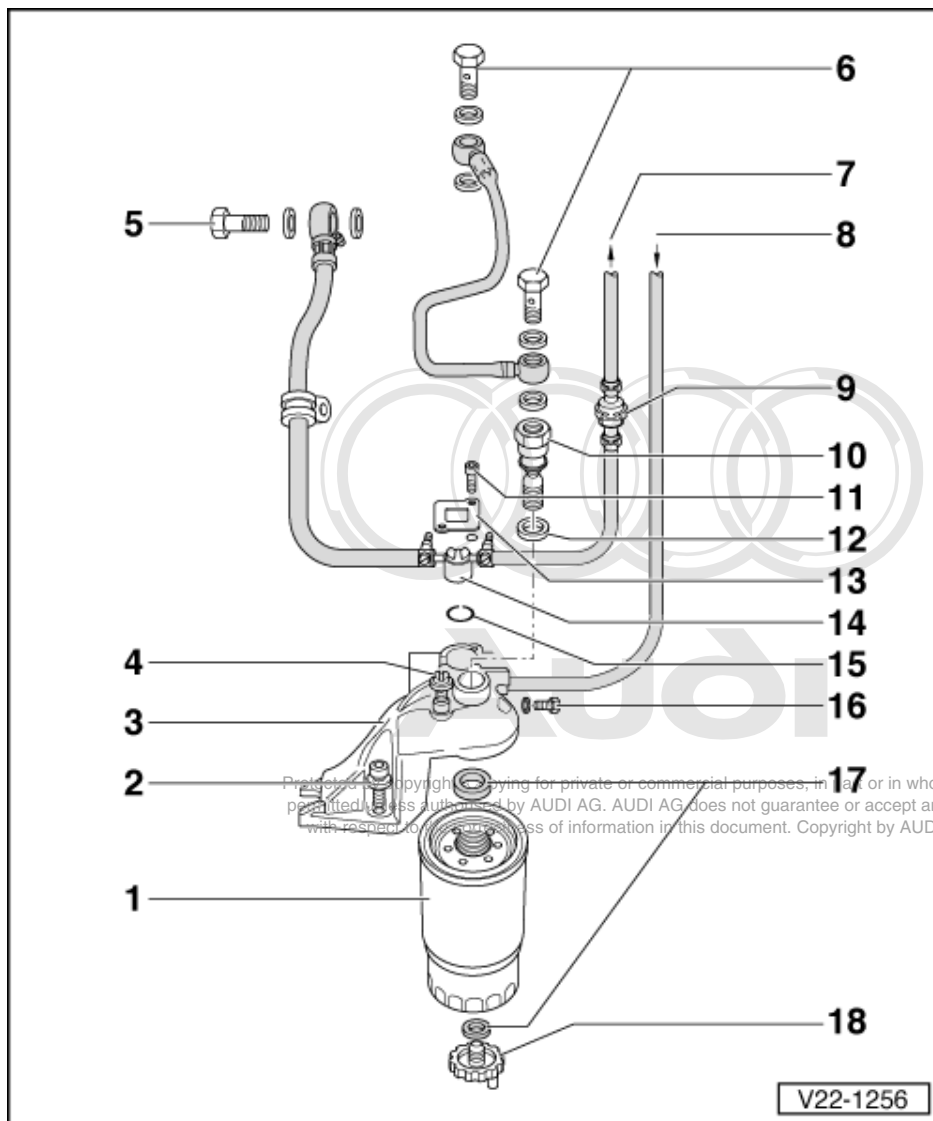
12 O-ring

- ◆ Replace

13 Retainer

14 Regulating valve

- ◆ Installation position: Arrow pointing towards fuel tank
- ◆ Pay attention to O-ring in filter housing when fitting valve
- ◆ At temperatures below + 15 °C:
Passage to filter open
- ◆ At temperatures above + 31 °C:
Passage to filter closed



15 O-ring

- ◆ Replace

16 Locking screw

- ◆ For connection -Item **10** -

17 Sealing rings

- ◆ Replace if damaged

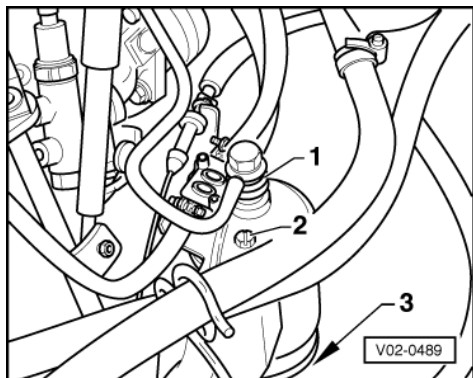
18 Drain plug

- ◆ Certain versions may be combined with water separator sender -G63
- ◆ For drainage, unfasten and allow approx. 100 cm³ of liquid to escape
- ◆ Unfasten breather plug for drainage

4.5 - Removing and installing fuel filter - 5-cyl. engine

Notes:

- ◆ Make sure diesel fuel does not come into contact with coolant hoses. Clean hoses immediately if necessary.
- ◆ Observe disposal regulations.

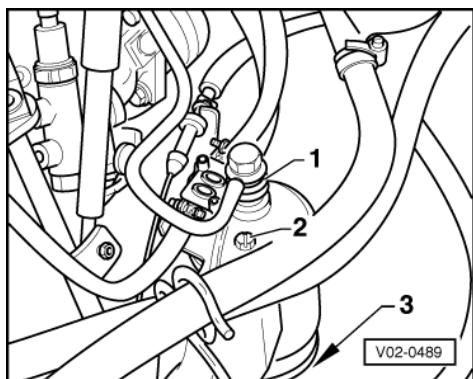


Removing

- If fitted, unplug connector to water separator sender.
- Slacken off locking screw -Item **49** several turns.
- -> Hold filter with strap wrench, unscrew connection -1- and detach filter.

Note:

Filter must not be turned.



Installing

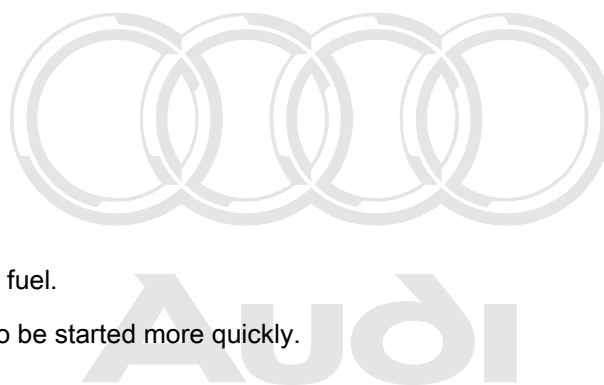
Install in reverse order, paying attention to the following:

- Moisten new sealing ring and new rubber seal with diesel fuel.
- If fitted, transfer water separator sender.
- Fill new filter with clean diesel fuel. This enables engine to be started more quickly.
- -> Screw on connection -1- with new O-ring hand-tight.

Note:

Filter must not be turned.

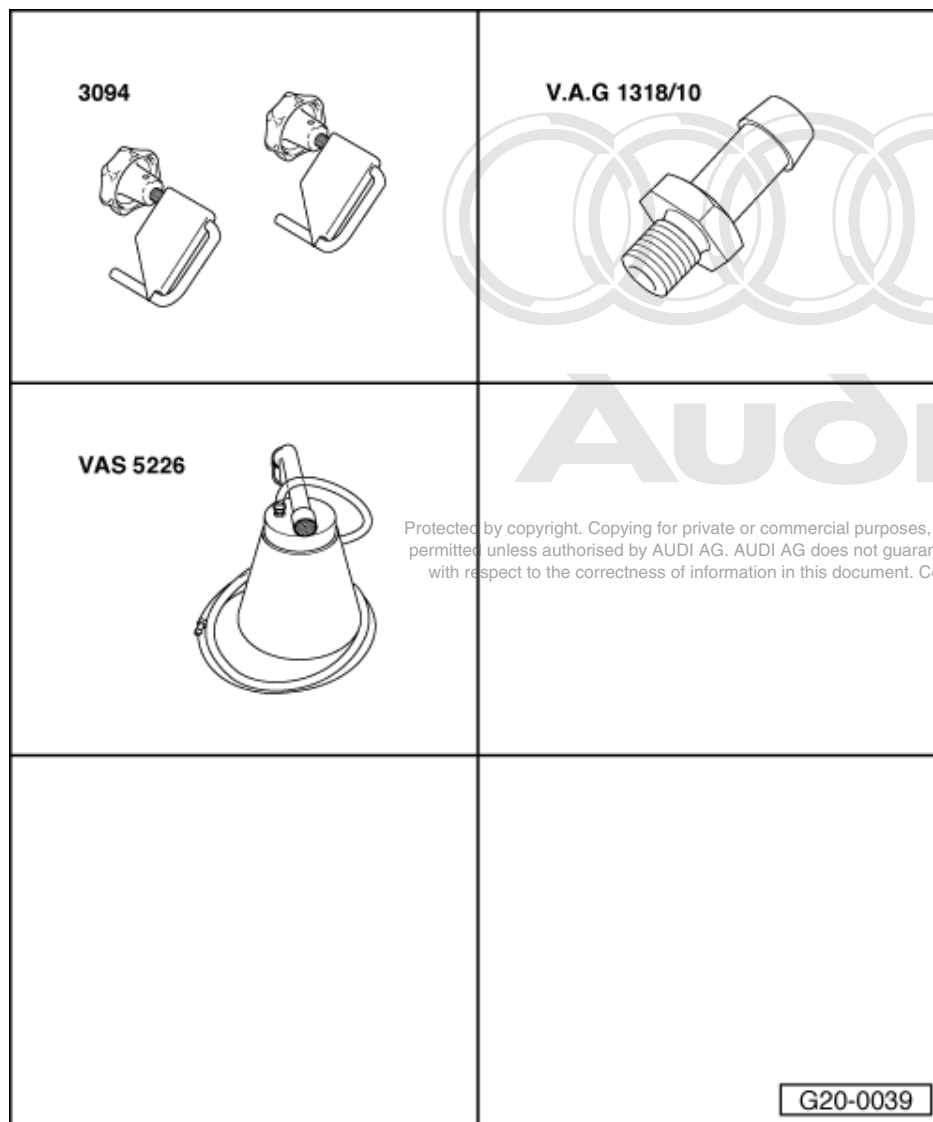
- Tighten locking screw -Item **49** .
- Start engine and visually inspect fuel system for leaks.
- Accelerate several times - there must be no bubbles in fuel flowing through transparent pipe at idle.



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5 - Bleeding fuel system

5.1 - Bleeding fuel system



Special tools and workshop equipment required

- ♦ Hose clamps 3094
- ♦ Adapter V.A.G 1318/10
- ♦ VAS 5226

Or

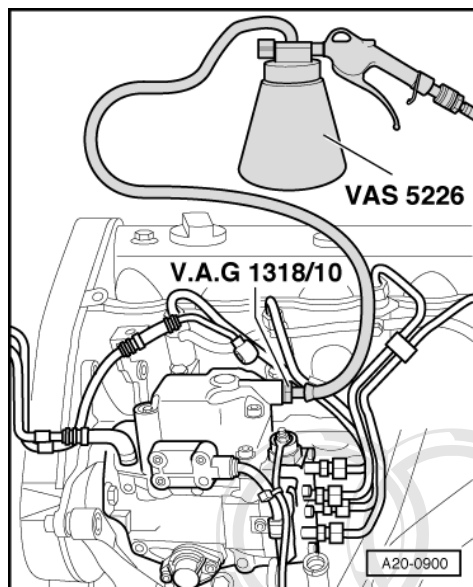
- ♦ V.A.G 1390 with V.A.G 1390/1

Sequence of operations

Note:

The sequence of operations is described on the basis of a 4-cylinder engine.

- Unscrew fuel return pipe at injection pump.

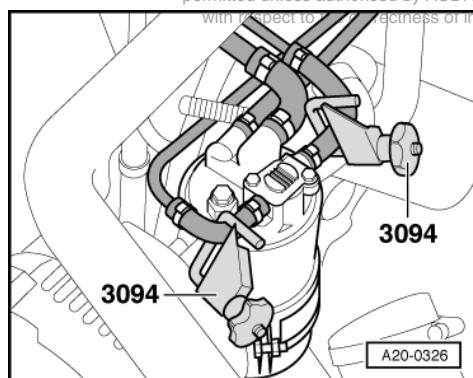


- -> Screw adapter V.A.G 1318/10 into injection pump return hole.
- Connect compressed-air supply to diesel extractor VAS 5226.
- Attach diesel extractor VAS 5226 to connection.

Notes:

- ♦ Instead of diesel extractor VAS 5226, use can also be made of vacuum hand pump V.A.G 1390 with bleeder container V.A.G 1390/1.
- ♦ Drain bleeder container in good time. Fuel must not be allowed to ingress into vacuum hand pump.

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- -> Pinch off fuel return pipe with hose clamps 3094 upstream and downstream of regulating valve.
- Operate diesel extractor VAS 5226 until there are no bubbles in fuel drawn in.
- Re-connect fuel return pipe to injection pump.

Note:

Replace sealing rings.

- Remove hose clamps 3094 at fuel return pipe.
- Start engine and visually inspect fuel system for leaks.

Tightening torques

Component	Nm
Connection to injection pump	28
Sealing nut to connection	25

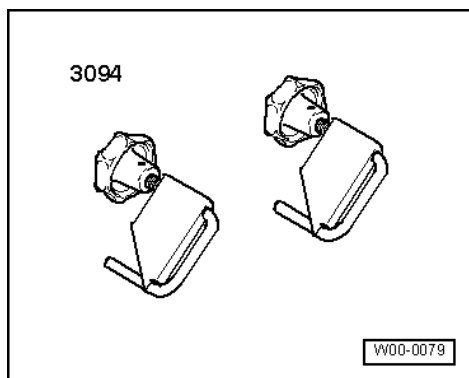
6 - Checking fuel system for leaks

6.1 - Checking fuel system for leaks

Leaks in fuel system may result in the following:

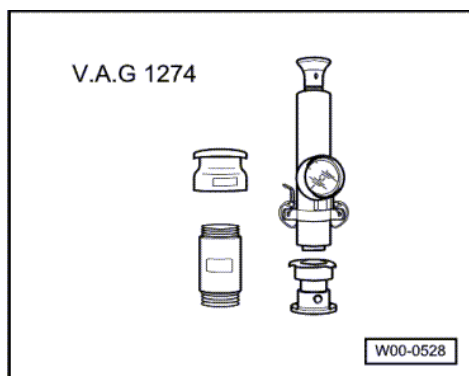
- ♦ Foaming/air bubbles in supply pipe
- ♦ Loss of power, misfiring
- ♦ Starting problems

6.2 - 4-cylinder engine



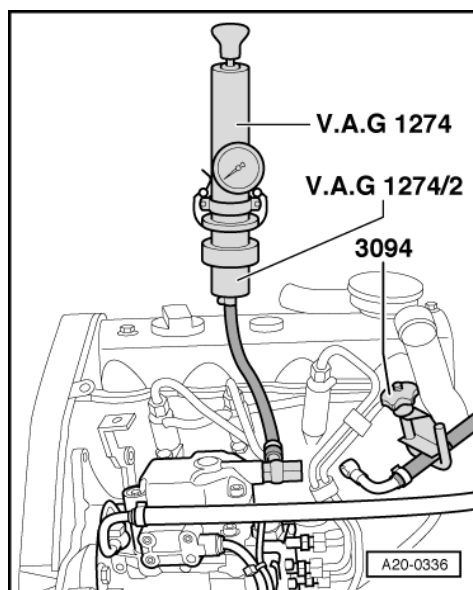
Special tools and workshop equipment required

- ♦ Hose clamps 3094



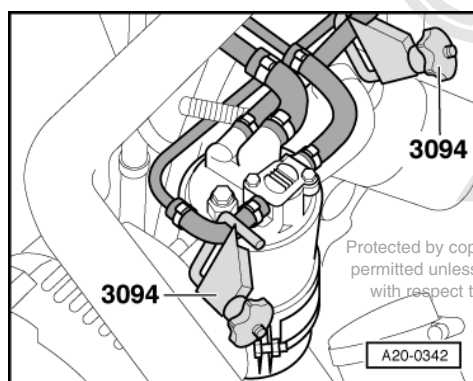
- ♦ Cooling system tester V.A.G 1274 with adapter V.A.G 1274/2 A

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Test sequence

- -> Attach adapter V.A.G 1274/2A to cooling system tester V.A.G 1274.
- Unscrew fuel return pipe at injection pump and connect up hose of adapter V.A.G 1274/2A in its place.
- Pinch off free fuel return pipe to injection pump with hose clamp 3094.



- -> Attach hose clamps 3094 at the following locations:
 - At fuel supply pipe downstream of fuel filter
 - At fuel return pipe downstream of fuel filter
- Use tester hand pump to generate a pressure of 1.0...1.5 bar.
- Locate leak and eliminate fault if there is a constant drop in pressure.

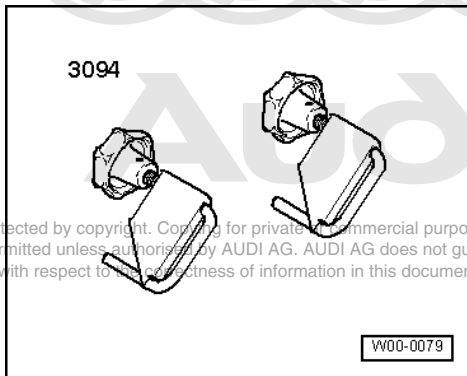
Note:

Fuel pipes can also be checked if hose clamps are moved from filter to fuel tank connections.

Tightening torque

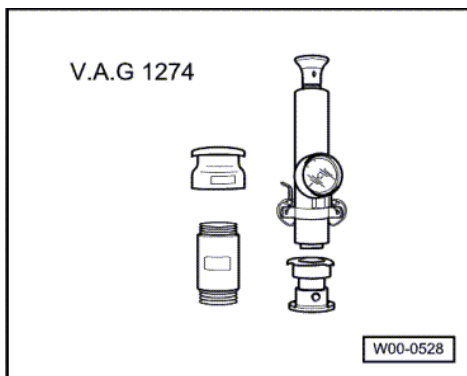
Component	Nm
Sealing nut to connection	25

6.3 - 5-cylinder engine

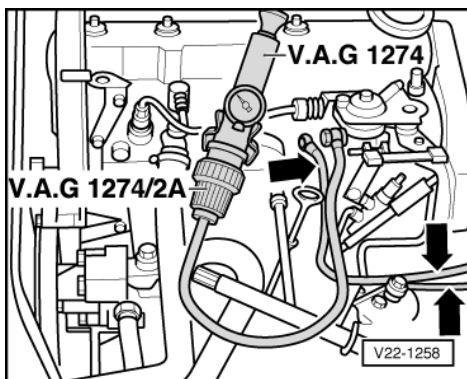


Special tools and workshop equipment required

- ♦ Hose clamps 3094



- ♦ Cooling system tester V.A.G 1274 with adapter V.A.G 1274/2 A



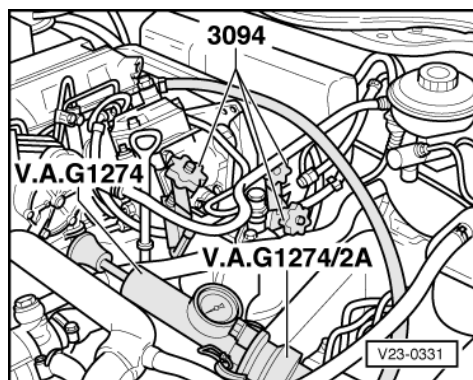
Test sequence

2.4 I engine:

- -> Attach adapter V.A.G 1274/2A to cooling system tester V.A.G 1274.
- Unscrew fuel return pipe at injection pump and connect up hose of adapter V.A.G 1274/2A in its place.
- Attach hose clamps 3094 at the following locations:
 - At free fuel return pipe to injection pump
 - At fuel supply pipe downstream of fuel filter



- At fuel return pipe downstream of fuel filter



2.5 l TDI engine:

- -> Attach adapter V.A.G 1274/2A to cooling system tester V.A.G 1274.
- Unscrew fuel return pipe at injection pump and connect up hose of adapter V.A.G 1274/2A in its place.
- Attach hose clamps 3094 at the following locations:
 - At free fuel return pipe to injection pump
 - At fuel supply pipe downstream of fuel filter
 - At fuel return pipe downstream of fuel filter

All models:

- Use tester hand pump to generate a pressure of 1.0...1.5 bar.
- Locate leak and eliminate fault if there is a constant drop in pressure.

Note:

Fuel pipes can also be checked if hose clamps are moved from filter to fuel tank connections.

Tightening torque

Component	Nm
Banjo bolt to injection pump	25

7 - Servicing accelerator mechanism - Vehicles with mechanical accelerator mechanism

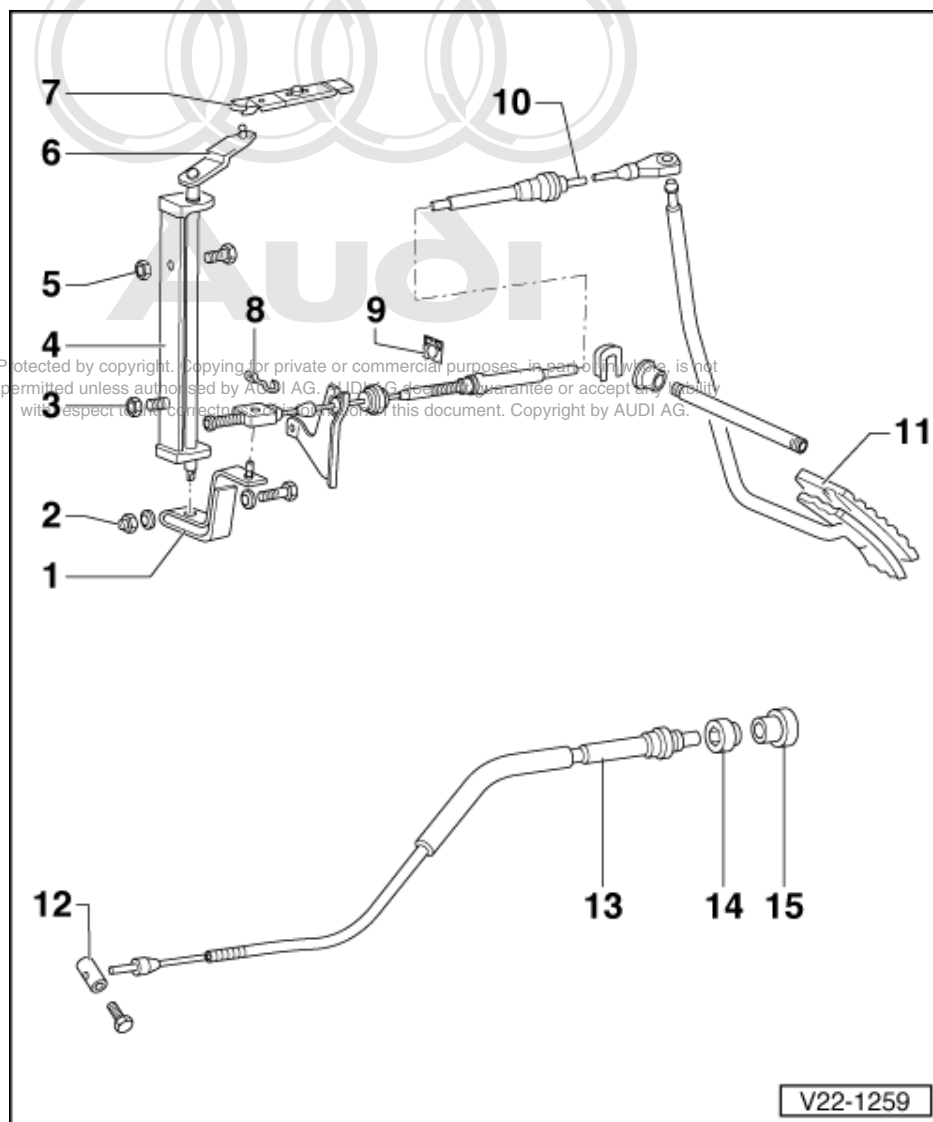
7.1 - Servicing accelerator mechanism - Vehicles with mechanical accelerator mechanism

Notes:

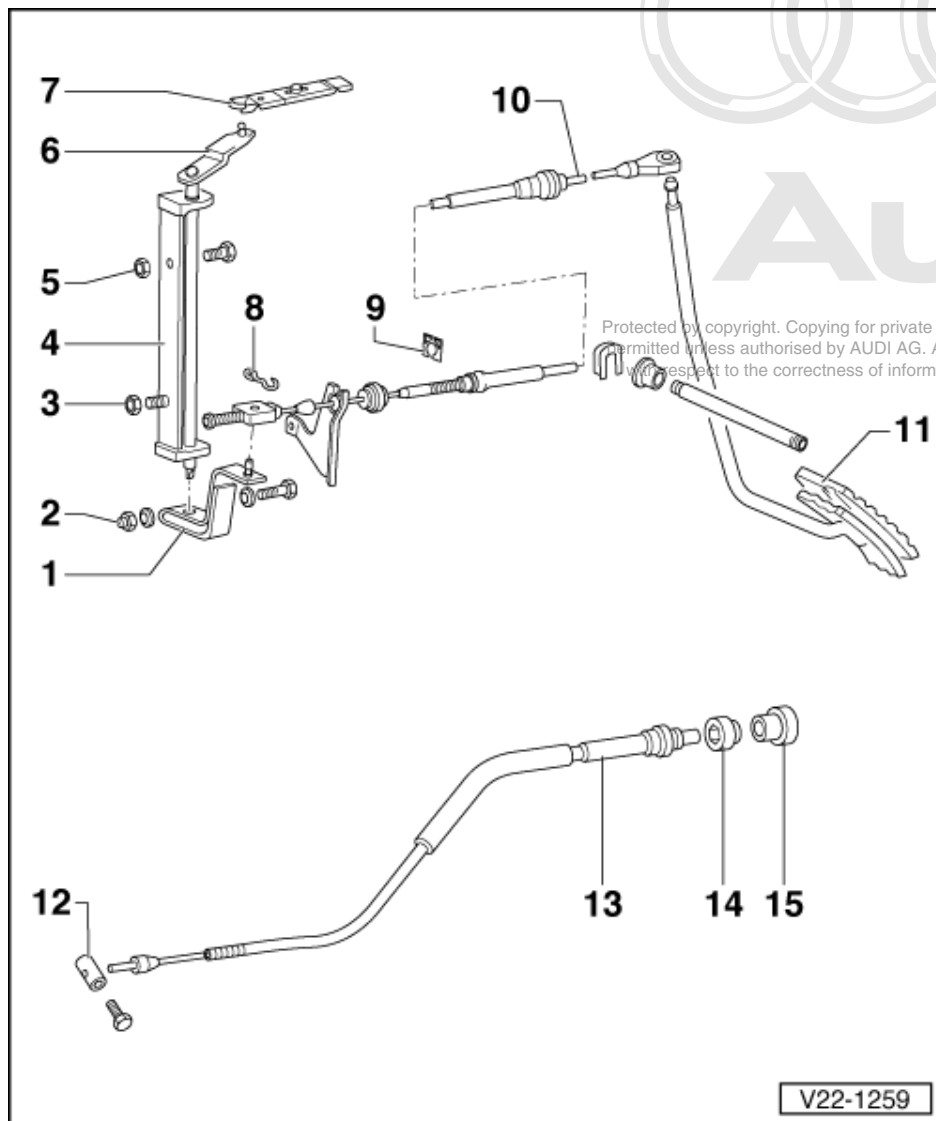
- ♦ The throttle cable is extremely sensitive to kinking and must therefore be handled with extreme care on installation.
- ♦ A single slight kink can subsequently cause cable to break whilst driving. If they have been kinked, throttle cables are therefore not to be fitted.
- ♦ Never re-use throttle cable with damaged square mount.
- ♦ On installation, make sure throttle cable is aligned between support brackets and cable attachment points.

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7.2 - Exploded view of accelerator mechanism



- 1 **Lever**
 - ♦ For throttle cable
- 2 10 Nm
- 3 20 Nm
- 4 **Mounting bracket**
 - ♦ For lever with shaft for accelerator mechanism -Item 6 -
- 5 20 Nm
- 6 **Lever**
 - ♦ With shaft for accelerator mechanism
- 7 **Connecting rod**
 - ♦ Adjusting =>Fig. 59
- 8 **Cotter plug**



9 Retainer

- ♦ For throttle cable adjustment
- ♦ Attached at support bracket to detent segment of throttle cable sheath

10 Throttle cable

- ♦ Removing and installing=>Page 59
- ♦ Adjusting => Page 60

11 Accelerator pedal

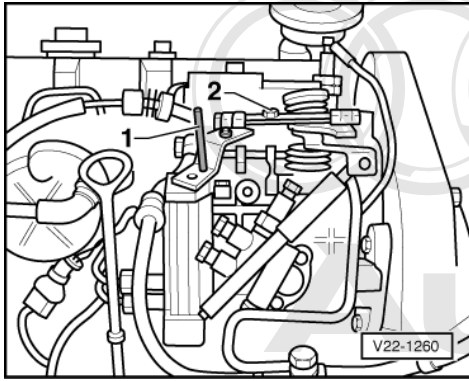
12 Clamp

13 Cable for cold starting aid

- ♦ Adjusting: Turn knob anti-clockwise as far as stop; attach clamp to cable for idling-speed increase such that it makes stress-free contact with injection pump lever

14 Nut

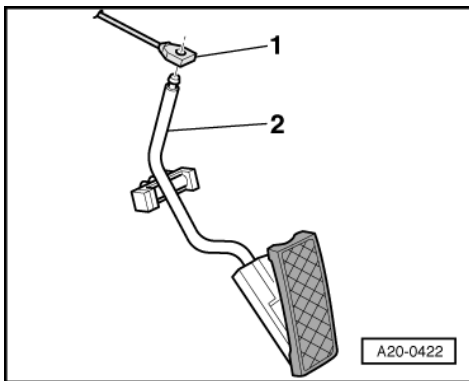
15 Adjusting knob



-> Fig.1 **Adjusting connecting rod of accelerator mechanism**
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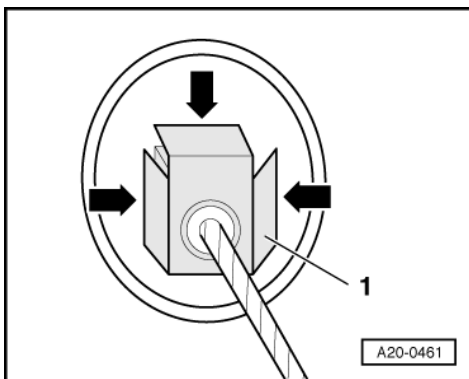
- Connecting rod fitted
- Slacken off adjusting screw -2- of connecting rod. The two halves of the connecting rod must free to move.
- Align adjustment holes at lever and mounting bracket.
- Insert $\varnothing$ 3.5 mm drill bit -Item 1- in adjustment holes to lock lever.
- Tighten adjusting screw -2- and remove drill bit.

7.3 - Removing and installing throttle cable



Removing

- Remove driver's storage compartment.
- => General Body Repairs; Repair Group 70; Dash Panel Dash Panel
- Unscrew footwell vents in driver's footwell.
 - -> Disengage end of throttle cable -1- at top of accelerator pedal -2-.





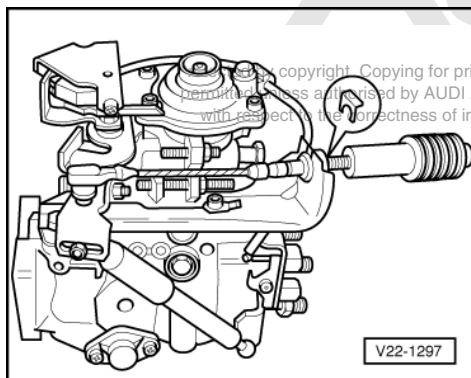
- -> Working from passenger compartment, squeeze together/break off retainer tabs -arrows- of square mount -1- at bulkhead.
- Press out square mount to front towards engine compartment.
- Remove cotter plug at throttle cable lever and disengage throttle cable.
- Pull detent segment of throttle cable sheath out of rubber grommet of support bracket; leave retainer attached.
- Pull out throttle cable towards engine compartment.

Installing

Install in reverse order, paying attention to the following:

- Heed notes => Page 56 .
- Adjust throttle cable => Page 60 .

7.4 - Adjusting throttle cable



- Throttle cable engaged at accelerator pedal and lever for throttle cable at injection pump, cotter plug fitted
- -> Pull off retainer at detent segment of throttle cable sheath.
- Press accelerator pedal into full throttle position.

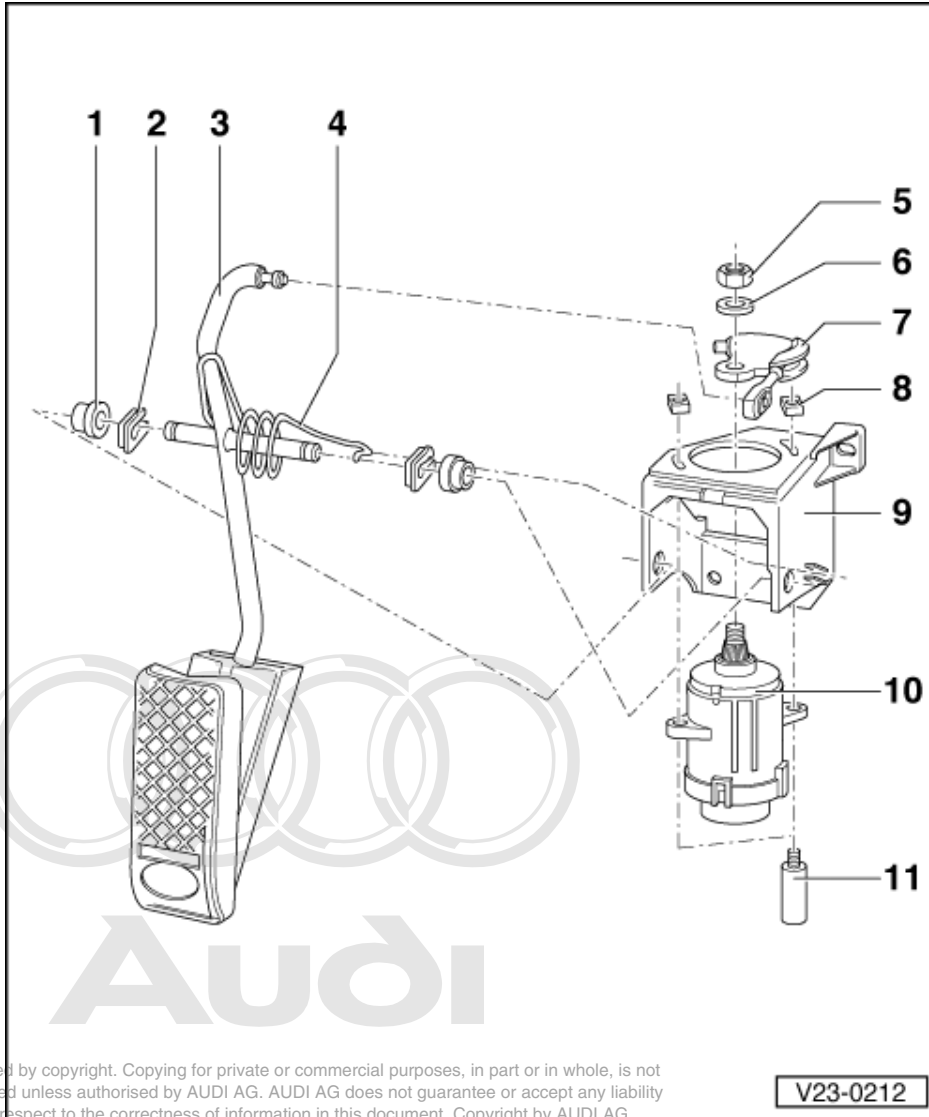
Note:

This requires a second mechanic or accelerator pedal must be supported against steering wheel using, for example, V.A.G 1788/10.

- Adjust throttle cable by re-positioning retainer at rubber grommet of support bracket such that full-throttle position is reached at injection pump.
- Release accelerator pedal.
- After performing adjustment, check idle and full-throttle stops.

8 - Servicing accelerator mechanism - Vehicles with electronic accelerator mechanism (TDI engine)

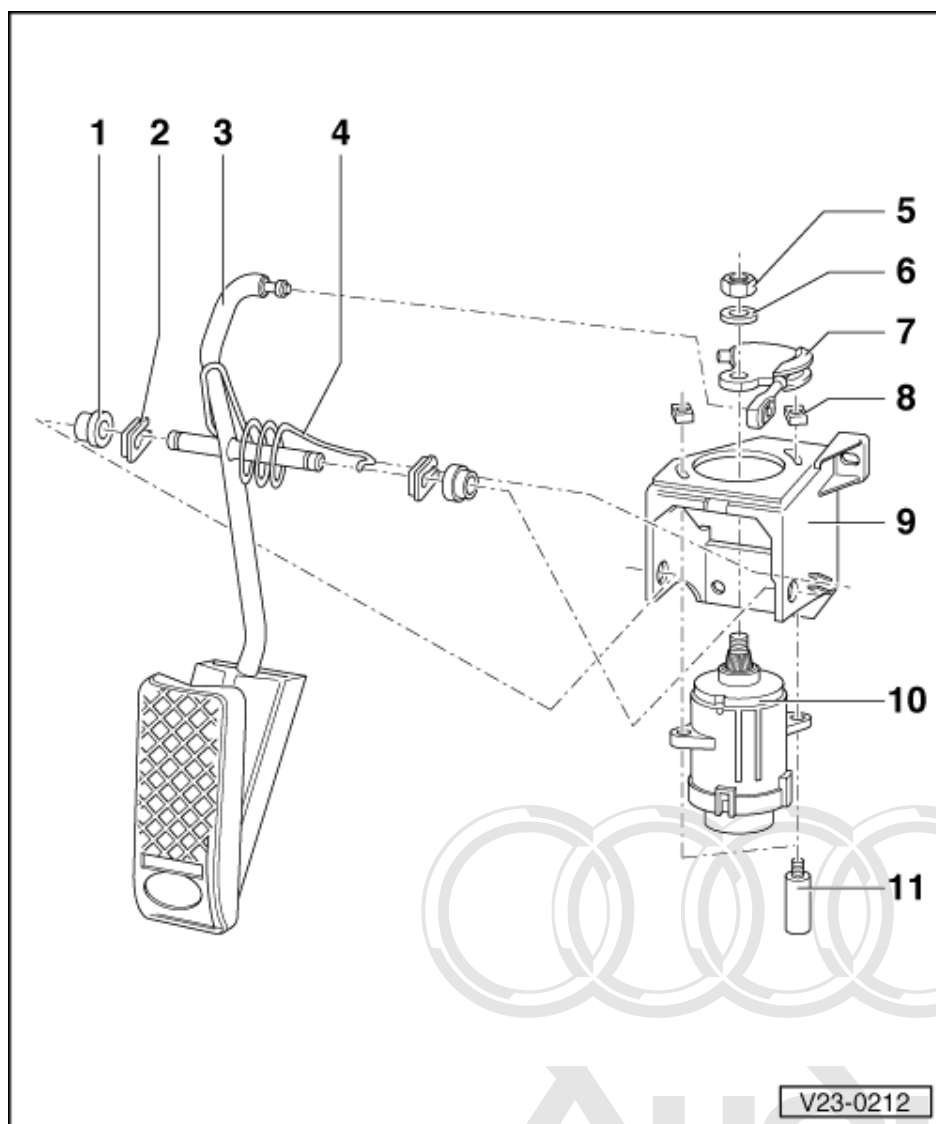
8.1 - Servicing accelerator mechanism - Vehicles with electronic accelerator mechanism (TDI engine)



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8.2 - Exploded view of accelerator mechanism

- 1 Mounting bush
- 2 Retainer
- 3 Accelerator pedal
- 4 Torsion spring
- 5 10 Nm



6 Spring lock washer

7 Cable cam

8 Square nut

9 Mounting bracket

10 Accelerator position sender -G79

♦ Installing and adjusting=>Page 62

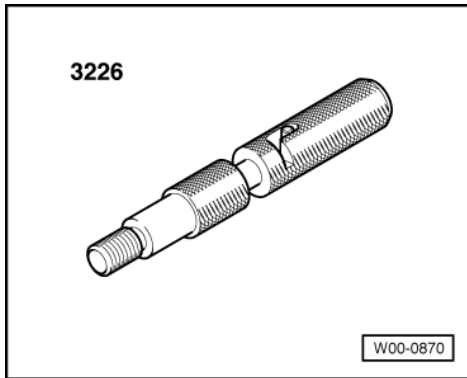
11 10 Nm

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8.3 - Installing and adjusting accelerator position sender -G79

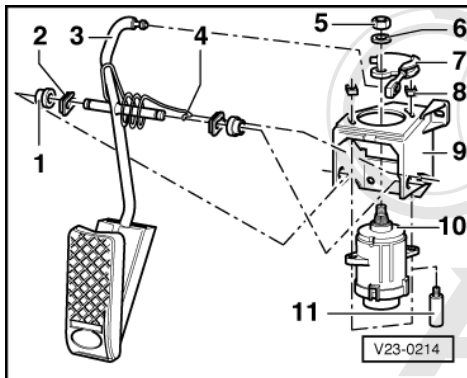
Note:

Replacement of accelerator position sender -G79 involves removing accelerator pedal.



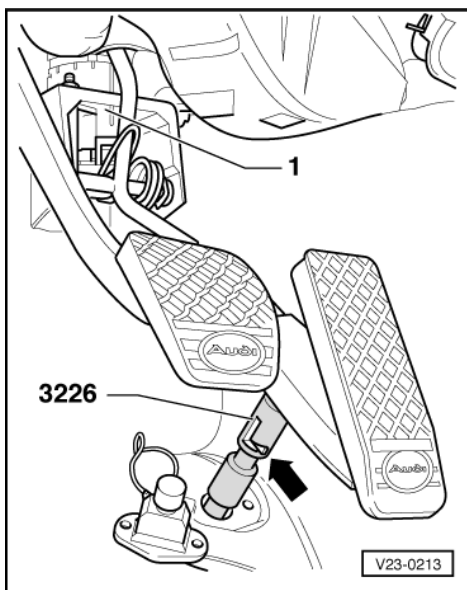
Special tools and workshop equipment required

- ♦ Adjustment gauge 3226



Sequence of operations

- -> Turn accelerator position sender -10- as far as possible to left in elongated holes of mounting bracket -9- and secure.
- Attach eye of cable cam -7- to pin of installed accelerator pedal -3-.
 - Eye must be positioned in cable cam recess
 - Cable cam must be fitted on shaft of accelerator position sender such that it is free to turn
- Pull accelerator pedal against stop at mounting bracket by turning cable cam anti-clockwise slightly.
- Screw on cable cam at accelerator position sender -10- in position attained. In doing so, provide support at flats of cable cam with 17mm open-ended wrench.
- Install pre-assembled accelerator mechanism in vehicle and adjust as follows:
- Remove full throttle stop.





- -> Screw in retracted adjustment gauge 3226 in place of full throttle stop.
- Threaded section of adjustment gauge must be screwed in as far as it will go
- Pull adjustment gauge apart and engage with locking pin -arrow-.
- Slacken off bolts of accelerator position sender and turn sender such that accelerator pedal rests without strain on adjustment gauge.
- Screw on accelerator position sender in this position.
- Remove adjustment gauge and install full throttle stop again.



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