



Workshop Manual

Audi A4 2015 ➤

Audi A5 2016 ➤

6-cylinder TDI engine, 3.0 ltr. 4-valve common rail (EA 897 - Gen. II)

Engine ID	DCP C	DCP E							
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Edition 08.2018



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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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00 – Technical data

1

Identification

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All information can be found in ⇒ Servicing 6-cylinder TDI engine,
common rail; Rep. gr. 00 ; Identification .



2 Safety precautions

All information can be found in ⇒ Servicing 6-cylinder TDI engine,
common rail; Rep. gr. 00 ; Safety precautions .



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3 Repair instructions

All information can be found in ⇒ Servicing 6-cylinder TDI engine,
common rail; Rep. gr. 00 ; Repair instructions .



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10 – Removing and installing engine

1 Removing and installing engine

⇒ [“1.1 Removing engine”, page 4](#)

⇒ [“1.2 Separating engine and gearbox”, page 18](#)

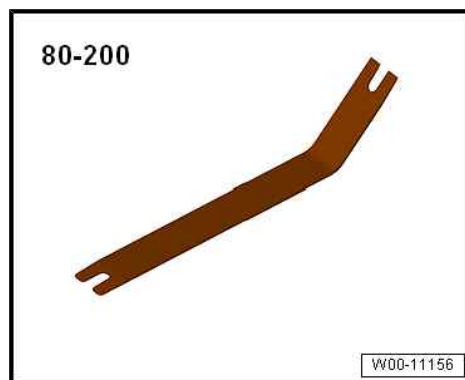
⇒ [“1.3 Securing engine to engine and gearbox support”, page 26](#)

⇒ [“1.4 Installing engine”, page 28](#)

1.1 Removing engine

Special tools and workshop equipment required

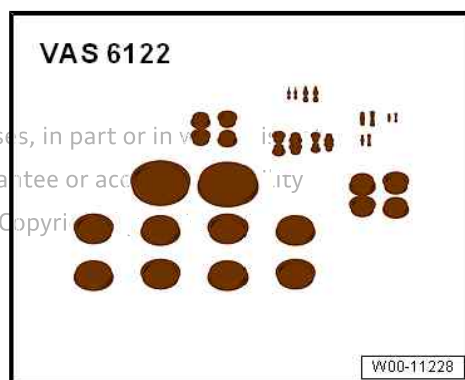
◆ Removal lever - 80-200-



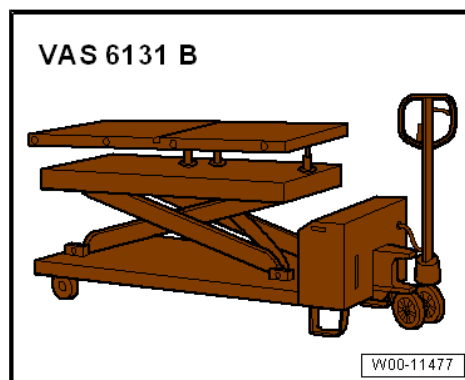
◆ Engine bung set - VAS 6122-



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◆ Scissor-type assembly platform - VAS 6131 B-

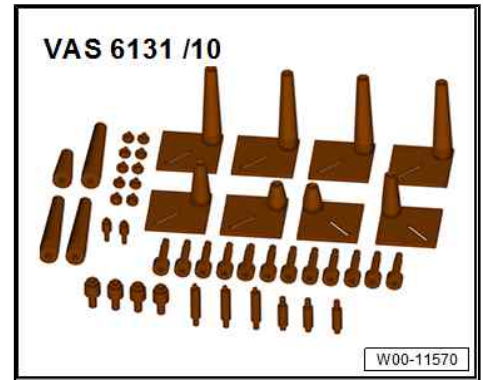




- ◆ Support set for Audi - VAS 6131/10-



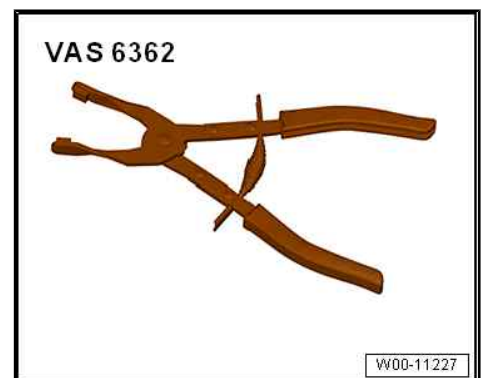
- ◆ Adapter -VAS 6131/11-1- from support set, Audi A8 >2002 - VAS 6131/11- (not illustrated)
- ◆ Adapter (2x) -VAS 6131/13-2- from support set, Audi Q7 >2005 - VAS 6131/13-



- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

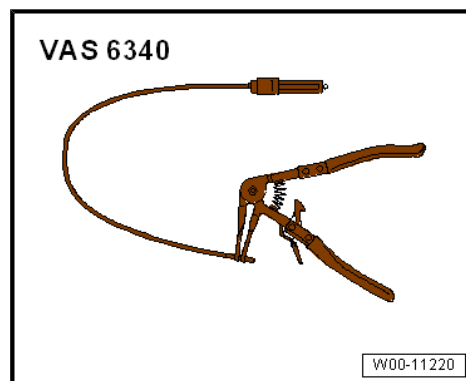


- ◆ Hose clip pliers - VAS 6362-





- ◆ Hose clip pliers - VAS 6340-

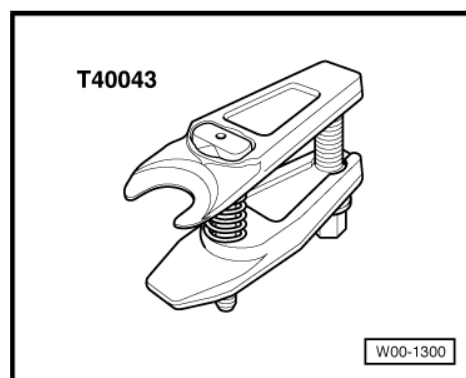


- ◆ Ball joint ejector - VAS 251 805-

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- ◆ Ball joint puller - T40043-

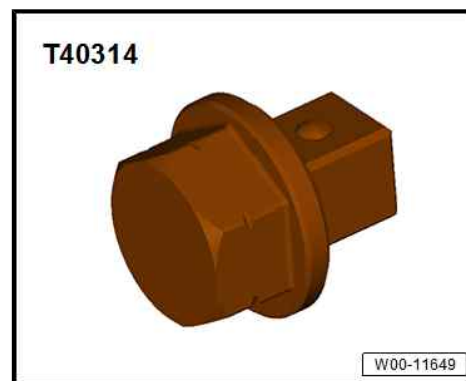


- ◆ Wrench, 21 mm - T40263-





◆ Adapter - T40314-



◆ Stepladder (commercially available)

Procedure



- ◆ *The engine is removed from underneath together with the gearbox and subframe (with lock carrier installed).*

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- ◆ *Fit cable ties in the same locations when installing.*
- ◆ *Observe rules for cleanliness → Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Repair instructions; Rules for cleanliness.*

- ◆ *All bolts on running gear components with bonded rubber bushes must be tightened with suspension in unladen position (vehicle unladen).*
- ◆ *Bonded rubber bushes can only be turned to a limited extent. Therefore, before tightening the bolts, suspension components with bonded rubber bushes must be brought into a position corresponding to the normal position while driving (unladen position). Otherwise, the bush would be subject to torsion loading and its service life shortened.*

- Before starting work, determine unladen position ⇒ Running gear, axles, steering; Rep. gr. 00 ; Repair instructions; Lifting suspension to unladen position (vehicles with coil springs) .
- Bring front wheels into straight-ahead position.

 Note

The electromechanical parking brake must be released before disconnecting the battery, so that the propshaft can be turned during removal.

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



- Release catches -arrows B- and open cover -1- -arrow A-.

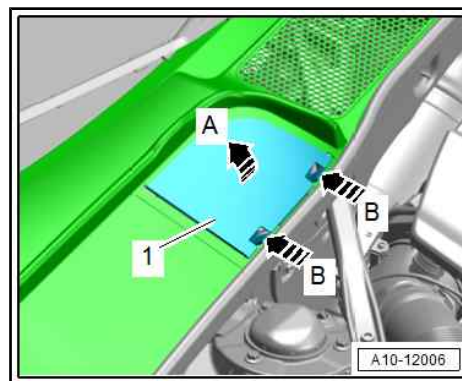


WARNING

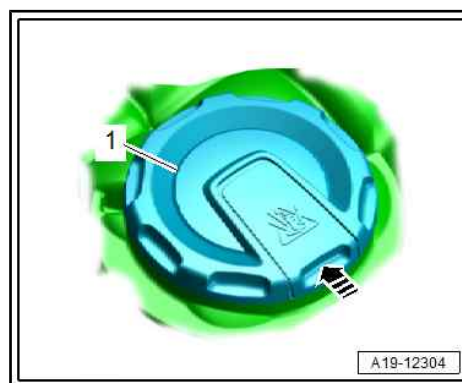
The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant.

Danger of scalding skin and other parts of the body.

- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*



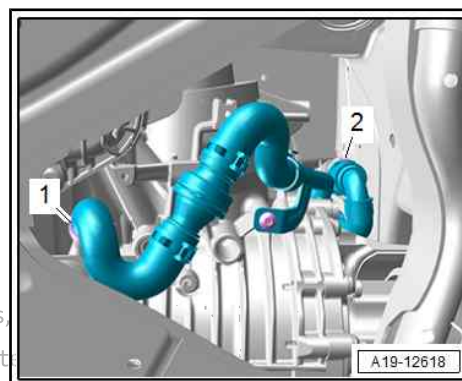
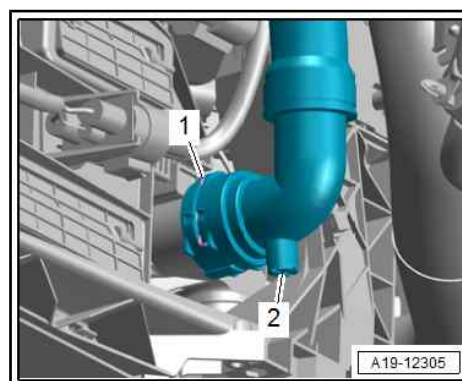
- Release fastener -arrow- and open filler cap -1- on coolant expansion tank.
- Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Remove front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Remove wheel spoilers (left and right) and wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Remove drain plug -2- and drain off coolant.
- Lift retaining clip -1- and detach coolant hose from radiator.



- Release hose clip -1-, disconnect coolant hose from ATF cooler and drain off coolant.
- Lift retaining clip -2- and disconnect coolant hose.



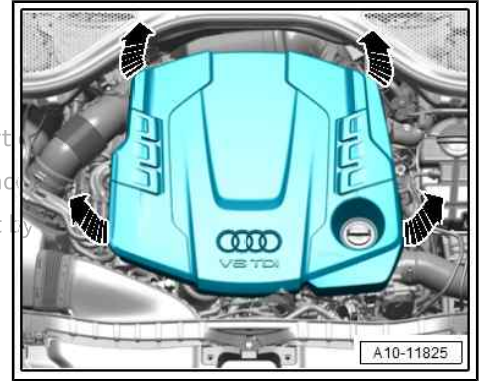
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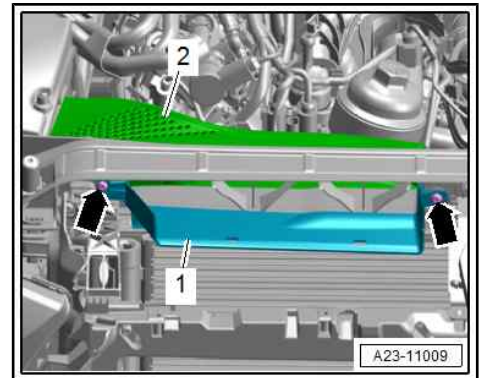


- Carefully pull engine cover panel off retaining pins one after another -arrows-. Do not jerk engine cover panel away, and do not try to pull on one side only.

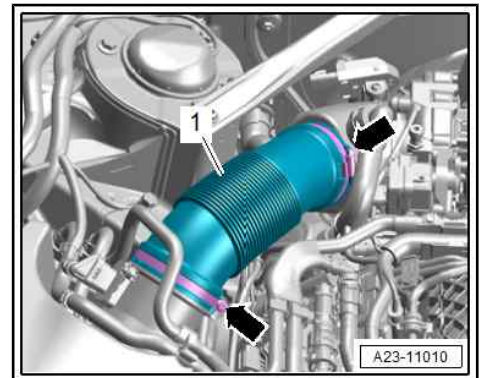
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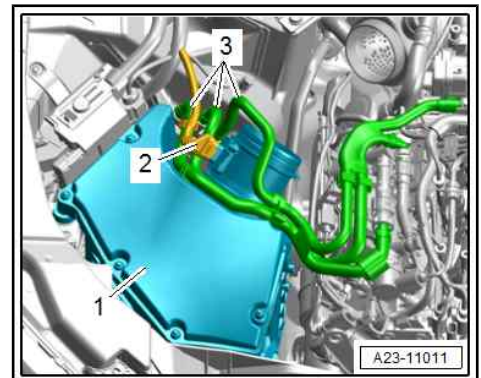
- Remove bolts -arrows- and detach air duct -2-.



- Release hose clips -arrows- and detach air pipe -1-.

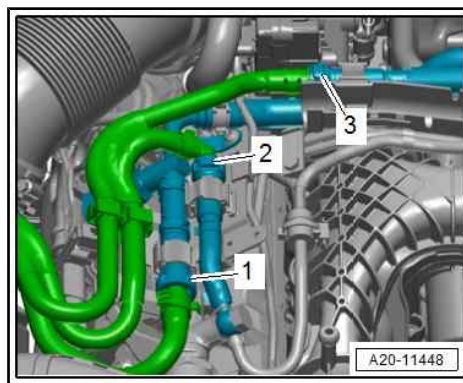


- Unplug electrical connector -2- for air mass meter - G70- .
- Move fuel hoses -3- clear and push to one side.
- Lift off air cleaner housing -1- and detach.

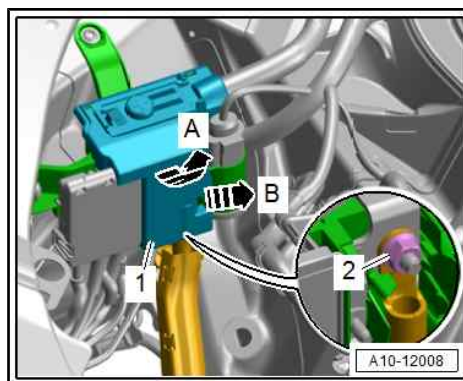




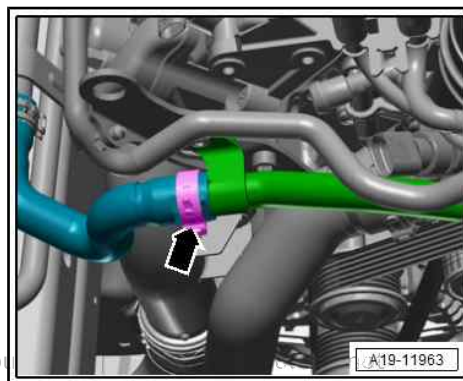
- Disconnect fuel hoses -1, 2, 3- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Move coolant hoses clear and tie to right side.
- Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .



- Release catch -arrow B- and open electronics box -1- -arrow A-.
- Remove nut -2- and move B+ wire clear.
- Move wiring duct (top) clear.

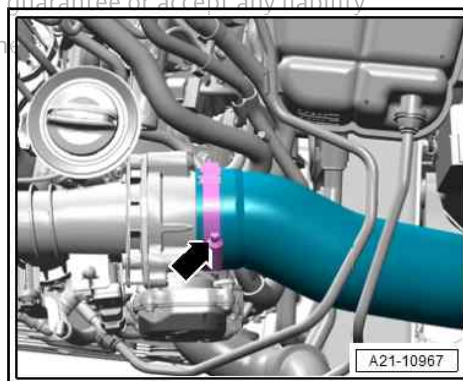


- Release hose clip -arrow- and disconnect coolant hose from coolant pipe (front).



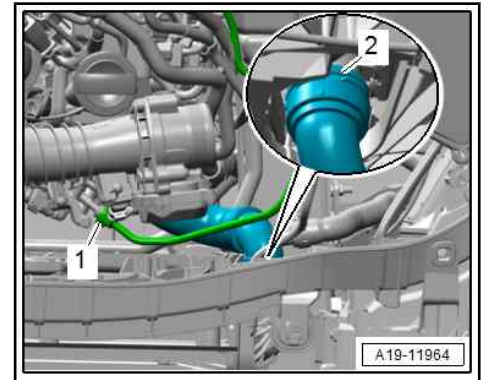
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- Release hose clip -arrow- and detach air hose.

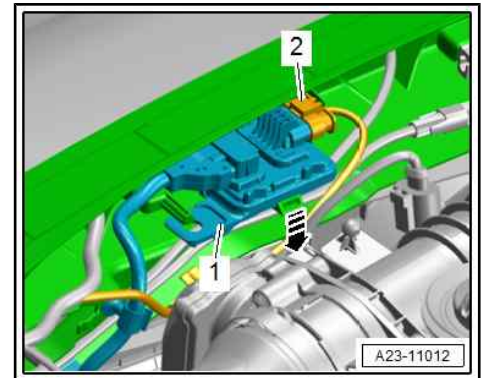




- Lift retaining clip -2- and disconnect coolant hose (top left) from radiator.
- Lift retaining clip -1- and disconnect coolant hose.



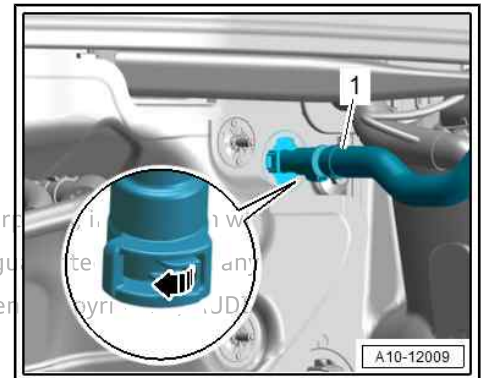
- Unplug electrical connector -2-.
- Release catch -arrow- and detach control unit for NOx sender - J583- -item 1-; move control unit clear and place it on engine.
- Move wiring harness clear if engine and gearbox are to be separated later.



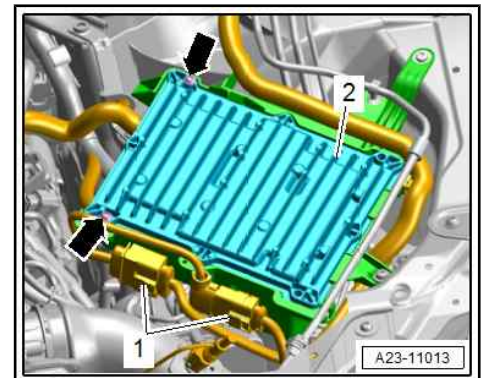
- Release catch -arrow- and disconnect vacuum hose -1-.



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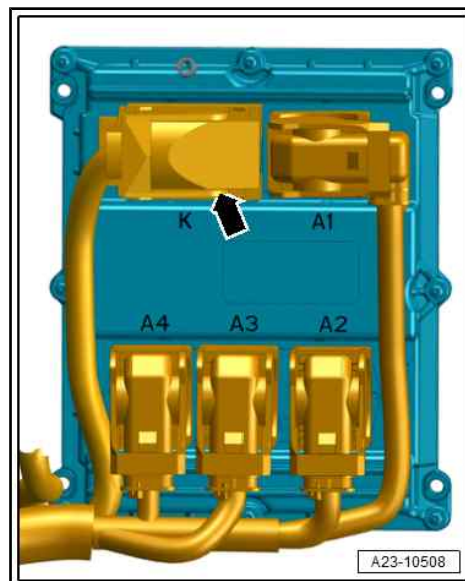


- Take electrical connectors -1- out of bracket, disconnect them and move electrical wiring clear.
- Remove bolts -arrows- and detach engine control unit - J623- -item 2-.

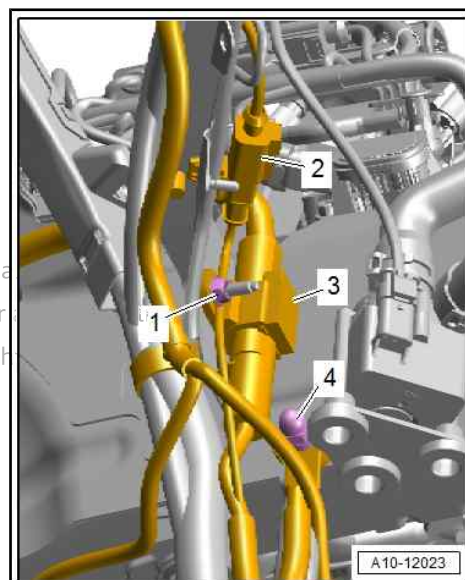




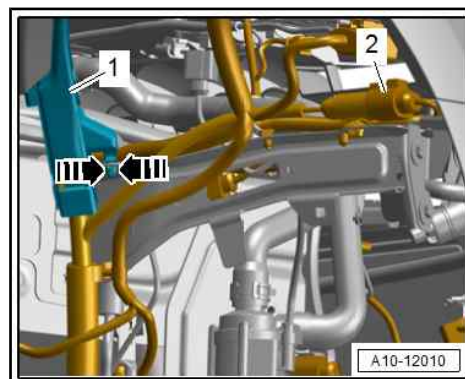
- Unplug electrical connector "K" -arrow-.
- Place engine control unit - J623- on engine and secure to prevent it from dropping.

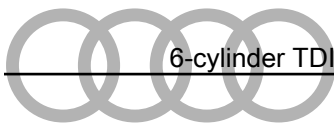


- Unplug electrical connector -2- and move wiring clear.
- Loosen nut -1- a few turns, move electrical connector -3- clear and unplug.
- Remove nut -4- and move earth wires clear.



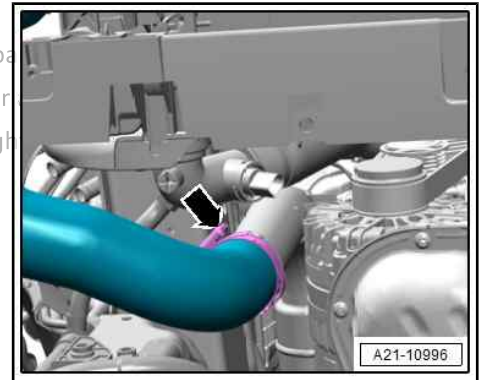
- Take electrical connector -2- out of bracket, unplug it and move electrical wiring clear.
- Release fasteners -arrows- and move wiring duct -1- clear.



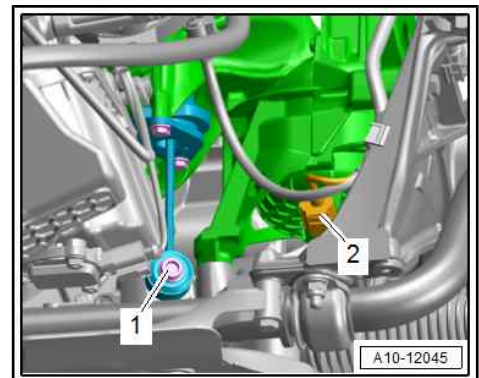


- Release hose clip -arrow- and detach air hose from air pipe.

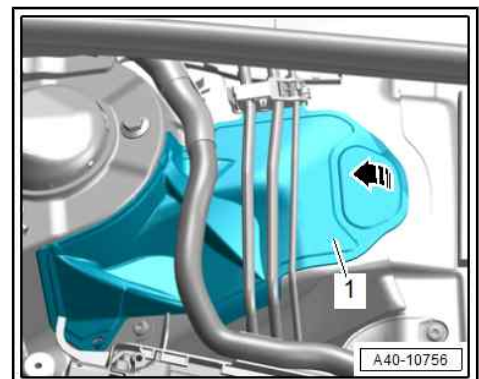
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- Unplug electrical connector -2- for electrohydraulic engine mounting solenoid valve on both sides and move wiring clear.
- If you intend to secure engine to engine and gearbox support in a later step, unscrew bolt -1- for support mounting.



- Open cover -1- -arrow- on suspension turret (both sides).

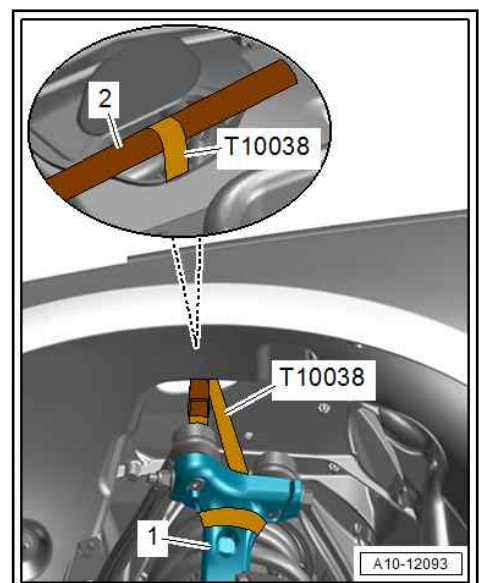


Caution

Danger of damage to the joints of the upper links.

- ◆ ***The weight of the wheel bearing housings must be supported.***

- Tie up wheel bearing housing -1- on both sides with tensioning strap - T10038- as shown (use the handle of a hammer -2- to do so).





- To protect thread, unscrew nut -arrow- on joint pin of track rod ball joint until nut is flush with thread of joint pin.



WARNING

Risk of injury if parts are allowed to drop out.

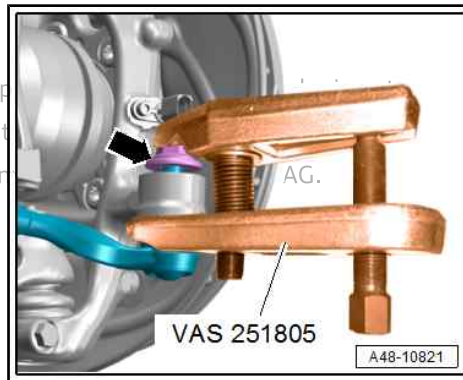
- ◆ *The track rod ball joint will release suddenly from the wheel bearing housing when pressed out. Use engine and gearbox jack - VAS 6931- or similar to provide support.*



Caution

Risk of damage to ball joint puller.

- ◆ *Make sure the two lever arms of the puller are parallel when maximum force is exerted.*



- Press track rod ball joint off wheel bearing housing using ball joint ejector - VAS 251 805- ; counterhold with a 6 mm hexagon socket.

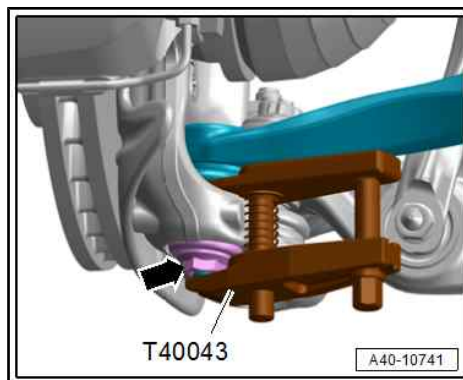
- To protect thread, unscrew nut -arrow- on joint pin of guide link until nut is flush with thread of joint pin. Counterhold joint pin if necessary.



WARNING

Risk of injury if parts are allowed to drop out.

- ◆ *The swivel joint will release suddenly from the wheel bearing housing when pressed out. Use engine and gearbox jack - VAS 6931- or similar to provide support.*



- Press joint pin of guide link out of tapered seat using ball joint puller - T40043- , taking care not to damage boot.

- Unscrew nut and move guide link clear at wheel bearing housing; if necessary, counterhold at joint pin with a TX 40 socket wrench.

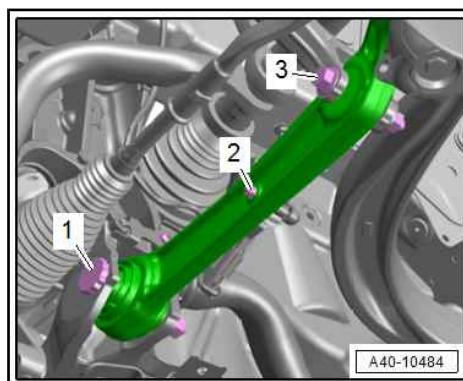
- On appropriate versions: Remove nut -2- and move coupling rod for vehicle level sender clear.
- Detach bolted connections -1, 3- for track control link.
- Swivel track control link towards front.



Note

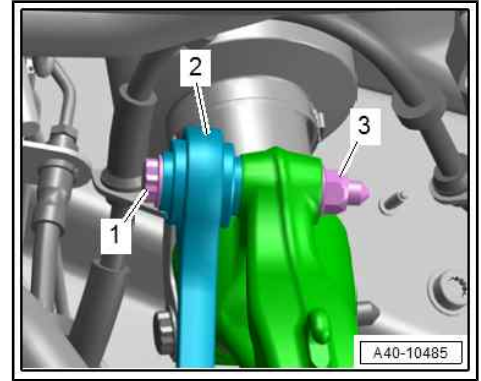
To remove bolt -1-, turn steering to full left/right lock.

- Repeat procedure on opposite side of vehicle.

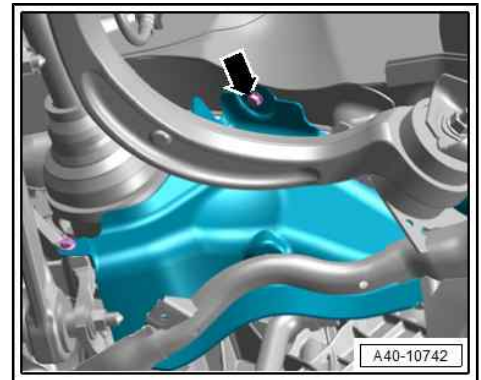




- On both sides, unscrew nut -3- and pull out bolt -1- for coupling rod -2-.
- Unbolt drive shaft (left and right) from gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



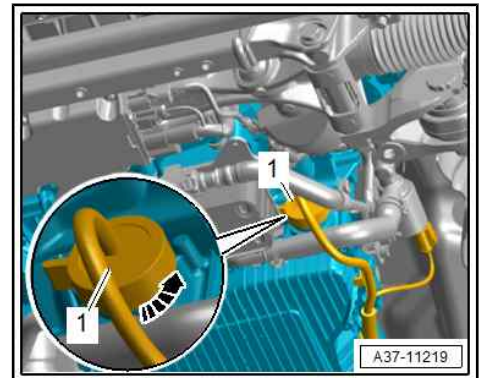
- Remove bolt -arrow- for subframe shield on both sides.
- Detach intermediate steering shaft from steering rack and move clear by telescoping together ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Remove poly V-belt from air conditioner compressor pulley ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Remove air conditioner compressor from bracket ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .



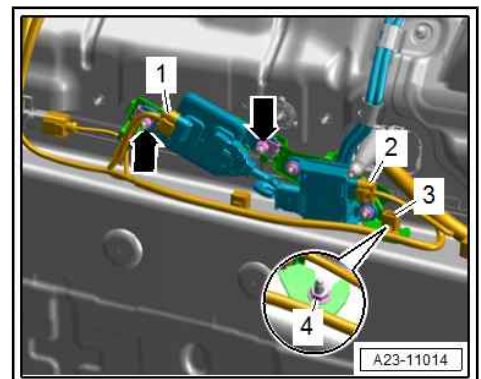
Caution

Risk of irreparable damage to gearbox control unit (mechanic unit) because of electrostatic discharge.

- ◆ ***Before unplugging or plugging in electrical connector, mechanic must discharge static electricity. To do so, touch vehicle earth, heater radiator, or lifting platform, with your hand.***
- ◆ ***Do NOT touch connector contacts in gearbox connector with your hands.***

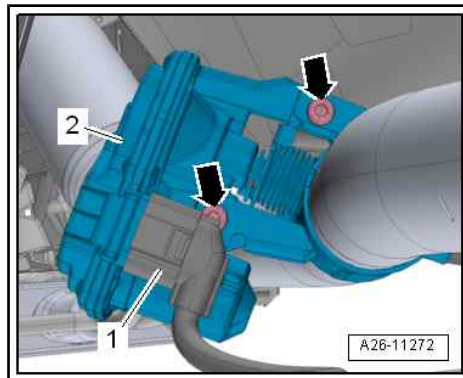


- Turn retainer catch anti-clockwise -arrow- and unplug electrical connector -1- at gearbox.
- Remove underbody trim (front left and centre left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Unplug electrical connectors -1, 2- and move clear.
- Pull clip -3- off stud.
- Remove nuts -arrows- and loosen (do not remove) nut -4-.
- Tie bracket with control unit for NOx sender 2 - J881- to front exhaust pipe.





- Unplug electrical connector -1- for exhaust flap control unit - J883- .



- Unplug electrical connector -2-.

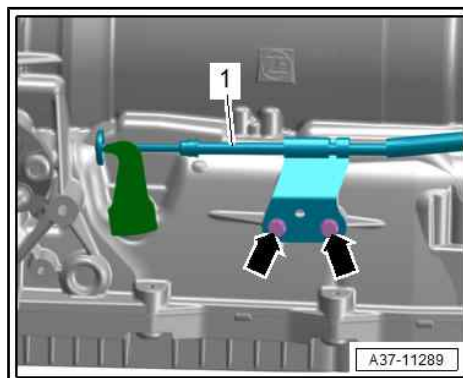
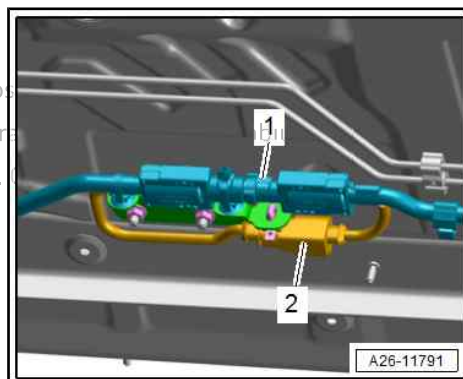


Note

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To remove bolt -1- turn steering to full left/right lock.

- Disconnect SCR supply line -1- ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Exploded view - reducing agent supply line .
- Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .
- Remove bolts -arrows- and move manual release cable -1- for parking lock clear.



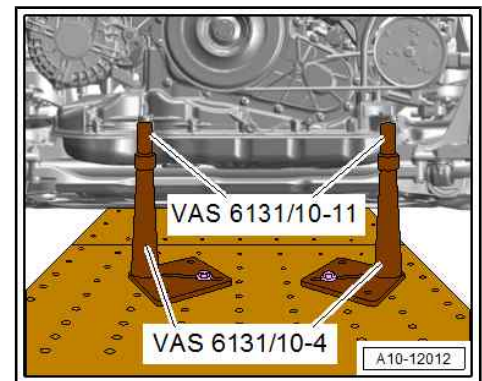
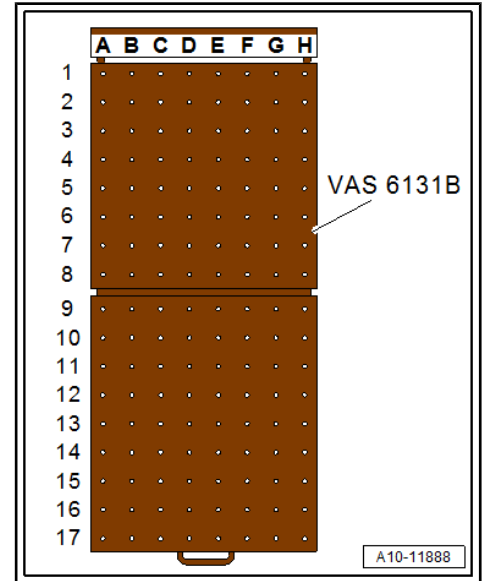


Set up the scissor-type assembly platform as follows:

- Set up scissor-type assembly platform - VAS 6131 B- with support set for Audi - VAS 6131/10- , adapter -VAS 6131/11-1- and adapters -VAS 6131/13-2- as follows:

Platform coordinates	Parts from -VAS 6131/10- , adapter -VAS 6131/11-1- and adapter -VAS 6131/13-2-			
C4	/10-1	/10-4	/10-5	/10-11
E4	/10-1	/10-4	/10-5	/10-11
E10	/10-1	/10-2	/10-5	/13-2
B15	/10-1	/10-3	/10-5	/11-1
F15	/10-1	/10-2	/10-5	/10-6
F17	/10-1	/10-2	/10-5	/13-2

- Initially hand-tighten the support elements on the scissor-type assembly platform.
- Position scissor-type assembly platform - VAS 6131 B- horizontally.
- Take note of spirit level (bubble gauge).
- Position scissor-type assembly platform - VAS 6131 B- below engine/gearbox assembly.
- Position support elements from -VAS 6131/10- at both sides of engine, as shown.
- Make sure that threaded spindles are screwed in completely.

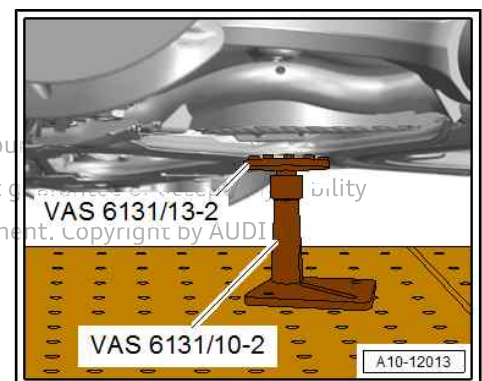


- Support subframe as shown using support elements from - VAS 6131/10- and adapter -VAS 6131/13-2- .



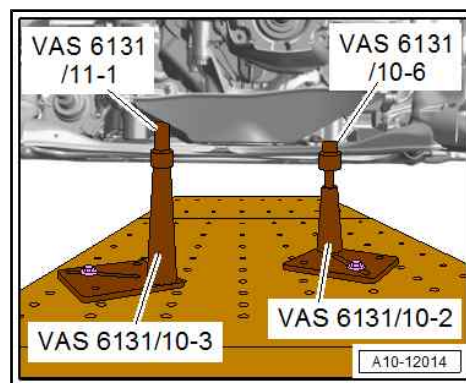
Note

The support elements only support the subframe, the base plate is not secured to the scissor-type assembly platform.

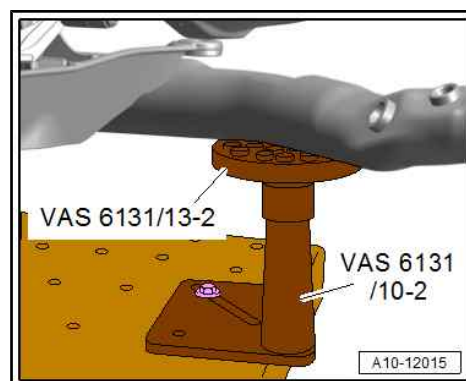




- Position support elements from -VAS 6131/10- and adapter - VAS 6131/11-1- at tunnel cross member, as shown.



- Position support elements from -VAS 6131/10- and adapter - VAS 6131/13-2- under front exhaust pipe, as shown.
- Turn remaining spindles for support elements upwards until all locating lugs make contact with mounting points.
- Tighten base plates for support elements to 20 Nm on scissor-type assembly platform - VAS 6131 B- .
- Fix position of subframe ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Fixing position of subframe .



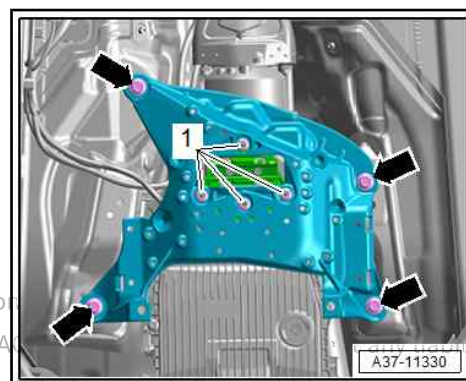
- Remove bolts -arrows- on tunnel cross member.



Caution

Danger of damage to hoses, pipes and wiring connections and to engine compartment.

- ◆ ***Check that all hoses and wiring connections between engine, gearbox, subframe and body have been detached.***
- ◆ ***Carefully guide out engine/gearbox assembly with subframe from engine compartment when lowering.***
- ◆ ***Guide drive shafts carefully past gearbox.***



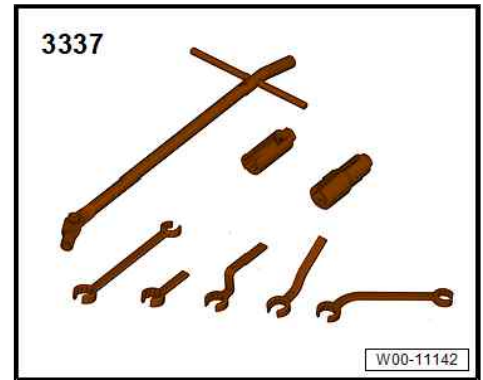
- Lower scissor-type assembly platform - VAS 6131 B- with engine/gearbox assembly and pull out from underneath vehicle.
- Tie up drive shafts.

1.2 Separating engine and gearbox

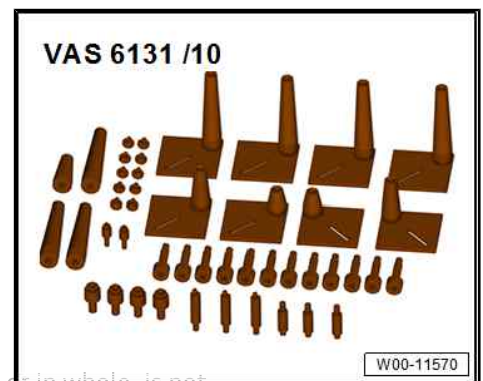
Special tools and workshop equipment required



- ◆ Lambda probe open ring spanner set - 3337-

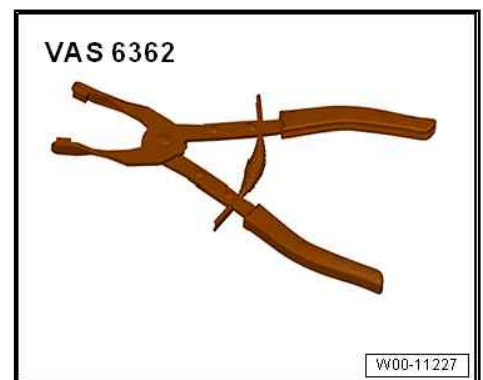


- ◆ Support set for Audi - VAS 6131/10-



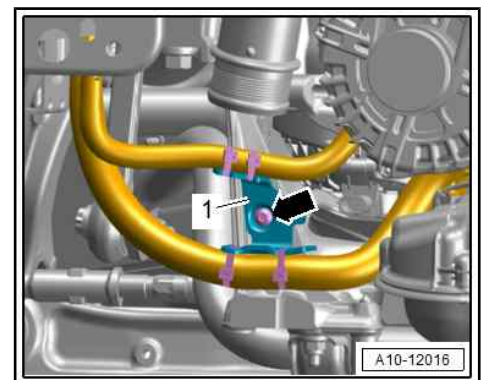
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- ◆ Adapter -VAS 6131/11-2- from support set, Audi A8 >2002 - VAS 6131/11- (not illustrated)
- ◆ Adapter -VAS 6131/12-2- from support set, Audi A6 >2005 - VAS 6131/12- (not illustrated)
- ◆ Hose clip pliers - VAS 6362-



Procedure

- Engine/gearbox assembly removed and secured to scissor-type assembly platform - VAS 6131 B-
- Remove bolt -arrow- and move bracket -1- clear with electrical wiring harness.





- Move SCR supply line -1- clear at subframe.



WARNING

Risk of accident caused by weight of subframe.

♦ **A second mechanic is required for removal of the subframe.**

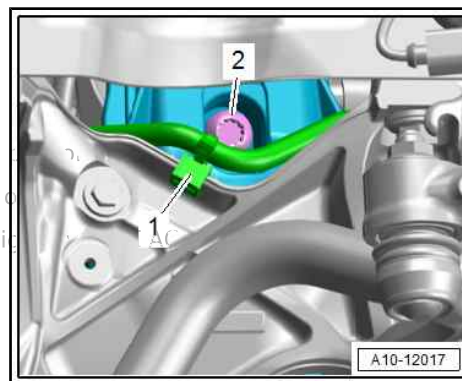
- On both sides, remove bolt -2- and detach subframe to one side (remove support elements).



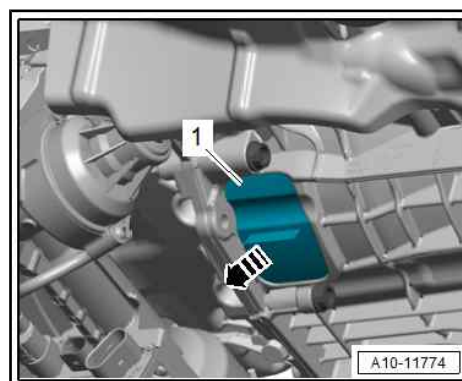
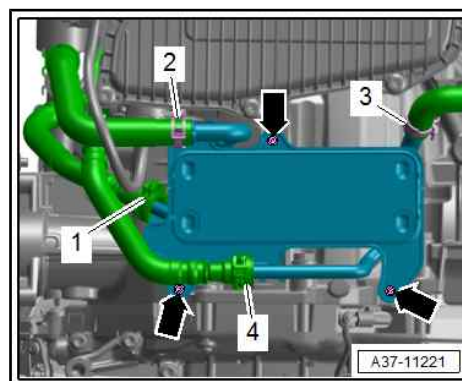
Note

The illustration shows the installation position with the engine installed.

- Remove bolts -arrows- and push ATF cooler slightly to one side with hoses -1, 2, 4- attached.



- Detach bottom cover -1- from gearbox -arrow-.

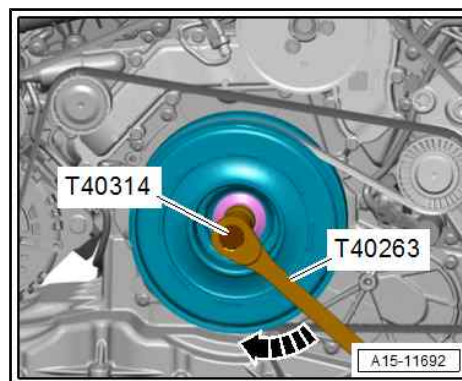


Caution

Irreparable damage can be caused if the camshaft timing chain slips.

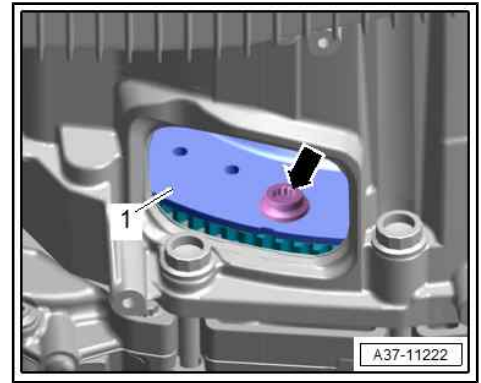
♦ **Turn crankshaft only in direction of engine rotation -arrow-.**

- To slacken bolts for flywheel, counterhold crankshaft at vibration damper using wrench, 21 mm - T40263- and adapter - T40314- .

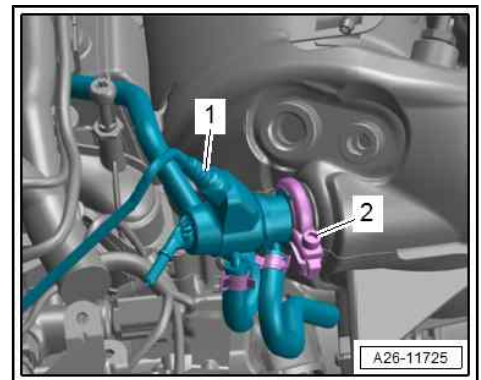




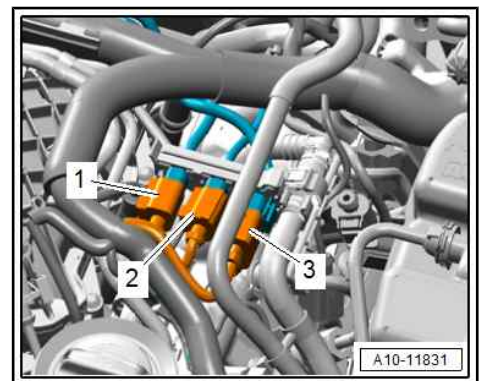
- Remove 6 bolts -arrow- for flywheel from drive plate -1-. Turn crankshaft 60° in direction of engine rotation each time.



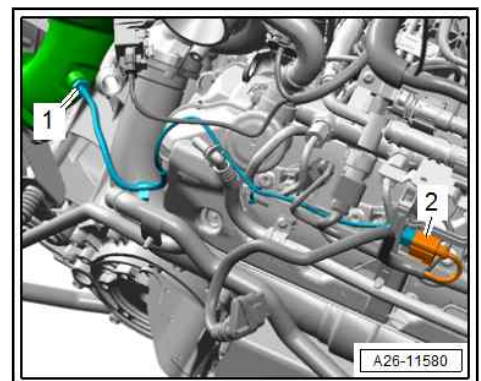
- Unscrew bolt -2- and loosen retaining clip.
- Detach injector for reducing agent - N474- -item 1- and press to one side.



- Unplug electrical connectors -1, 2, 3- and move electrical wiring clear.



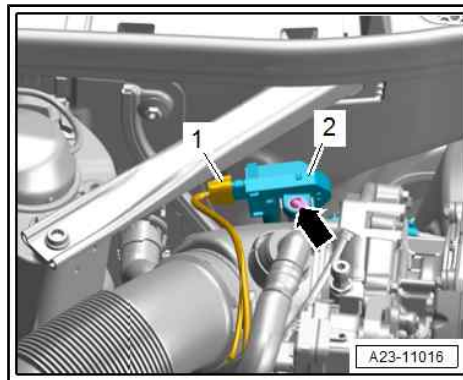
- Remove exhaust gas temperature sender 4 - G648- -item 1-.



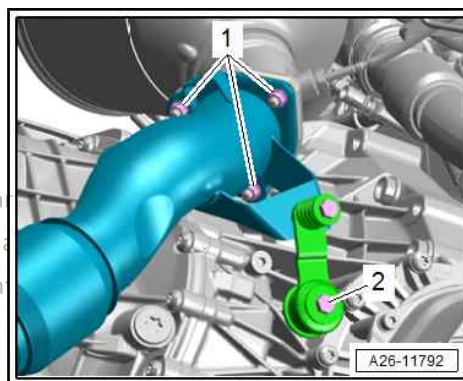
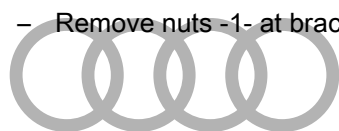
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- Remove bolt -arrow-.
- Unplug electrical connector -1-.
- Move bracket -2- clear with pressure differential sender - G505- .



- Remove nuts -1- at bracket for front exhaust pipe.



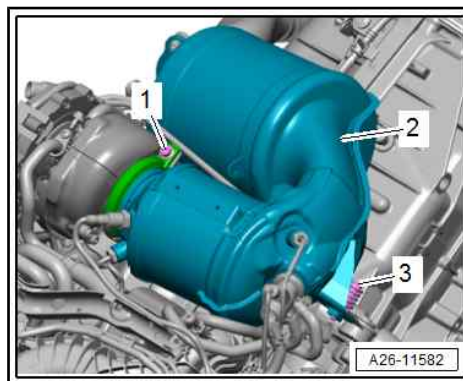
- Remove bolt -3- on retainer.



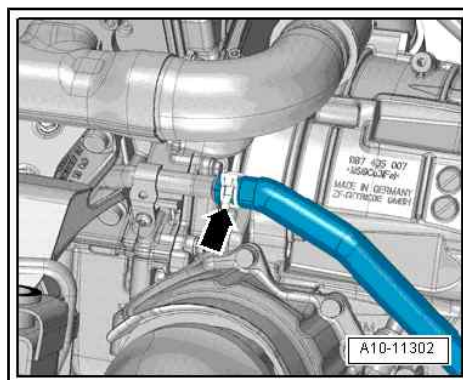
WARNING

Please note the following warnings when working on all parts of the exhaust system:

- ◆ **Wear gloves (e.g. rubber, not textile) and safety goggles to avoid contact with eyes and skin - risk of injury.**

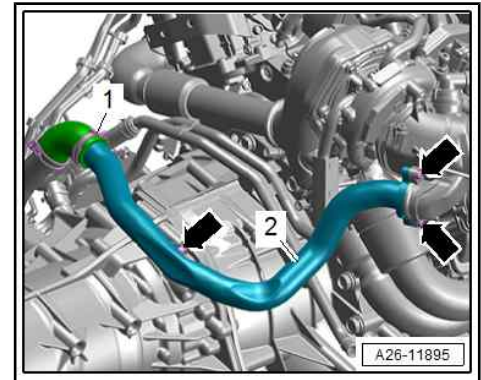


- Open screw-type clip -1- and place it on intake funnel of emission control module -2-.
- Detach emission control module with front exhaust pipe.
- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Release hose clip -arrow- and detach coolant hose.

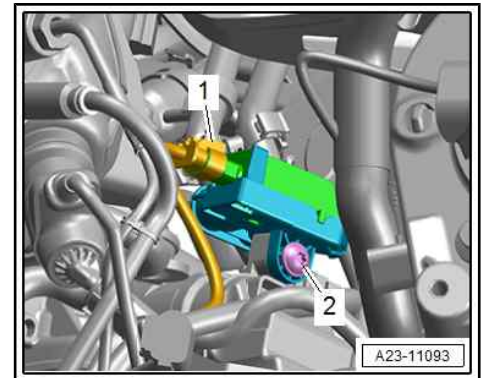




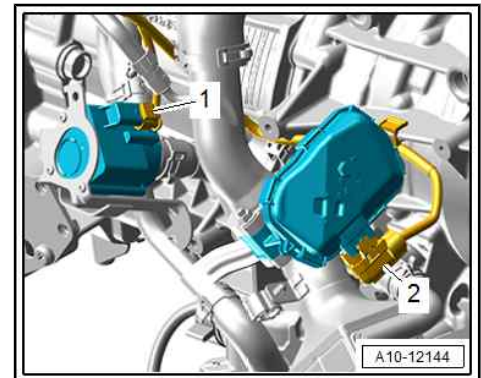
- Remove bolts -arrows-.
- Release screw-type clip -1- and detach exhaust gas recirculation pipe -2-.



- Unplug electrical connector -1-.
- Remove bolt -2- and move pressure differential sender 2 - G524- clear.

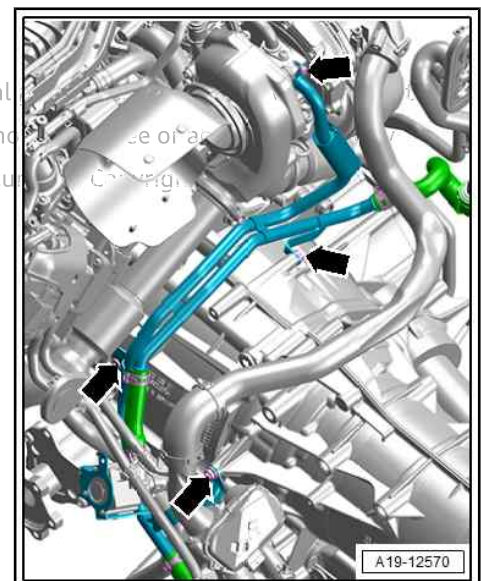


- Unplug electrical connectors and move electrical wiring clear:
- 1 - Continued coolant circulation pump - V51-
 - 2 - Exhaust gas recirculation control motor 2 - V339-



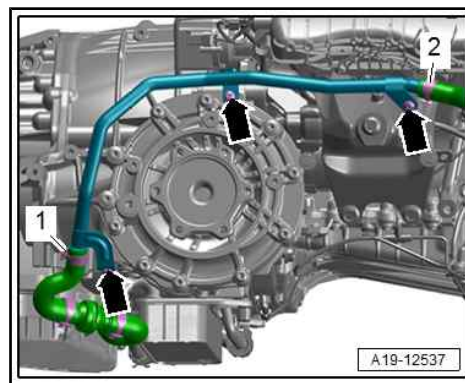
- Remove bolts -arrows- and move coolant pipes (rear) to one side.

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- Remove bolts -arrows- and move coolant pipe (right-side) to one side.



- Set up scissor-type assembly platform - VAS 6131 B- with support set for Audi - VAS 6131/10- , adapter -VAS 6131/11-2- and adapter -VAS 6131/12-2- as follows:

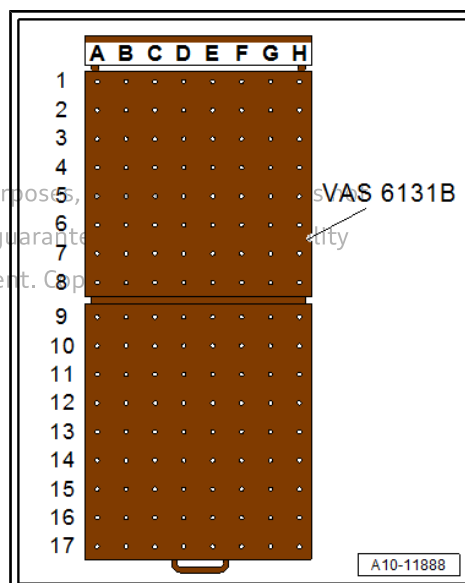


Note

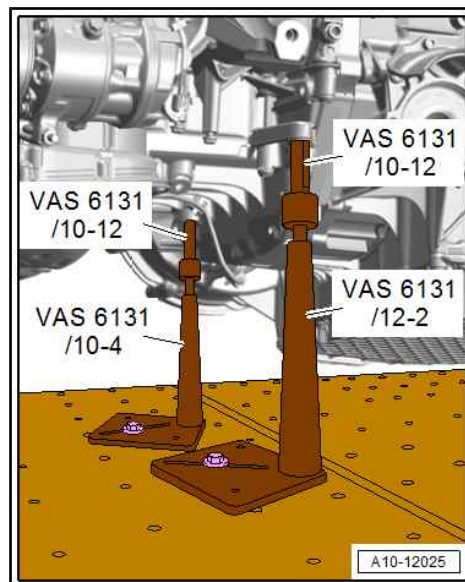
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The other support elements remain unchanged.

Platform coordinates	Parts of support set for Audi - VAS 6131/10- , adapter -VAS 6131/11-2- and adapter - VAS 6131/12-2-			
C7	/10-1	/12-2	/10-5	/10-12
E7	/10-1	/10-4	/10-5	/10-12
C10	/10-1	/10-4	/10-5	/10-12
F10	/10-1	/10-4	/10-5	/11-1



- Position support elements from -VAS 6131/10- and adapter - VAS 6131/12-2- at both sides of engine, as shown.



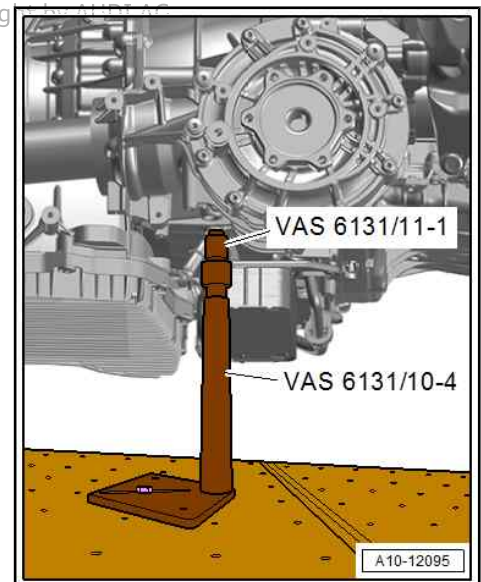
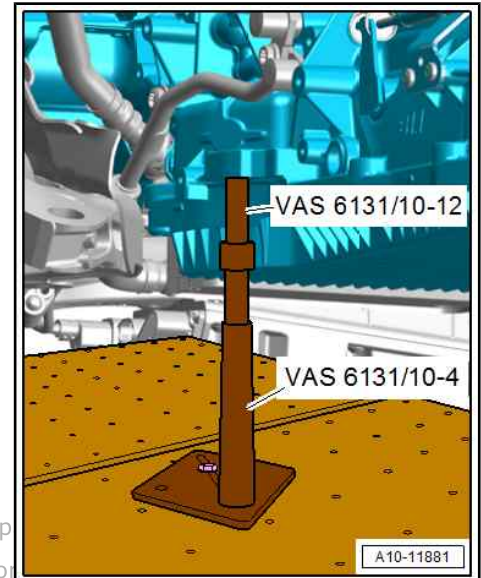


- Position support elements from -VAS 6131/10- at left of gear-box.

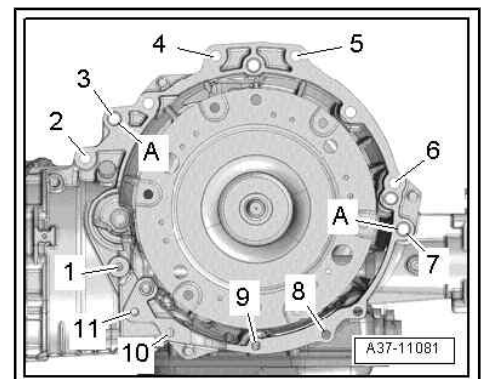


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- Position support elements from -VAS 6131/10- and adapter -VAS 6131/11-1- at right of gearbox.
- Turn spindles (left and right) upwards until all locating lugs make contact with mounting points.
- Tighten base plates for support elements to 20 Nm on scissor-type assembly platform - VAS 6131 B- .

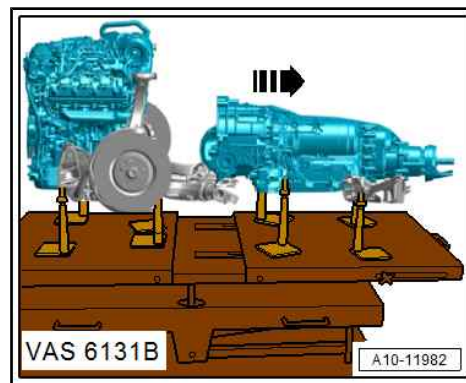


- Remove bolts -2 ... 11- securing gearbox to engine.
- Loosen bolt -1- for starter.





- Loosen clamping bolts on sides of scissor-type assembly platform - VAS 6131 B- , pull rear section of platform (together with gearbox) slightly towards rear -arrow-, and at the same time remove bolt for starter completely.
- Pull gearbox towards rear as far as it will go; lower it slightly with front spindles if necessary.



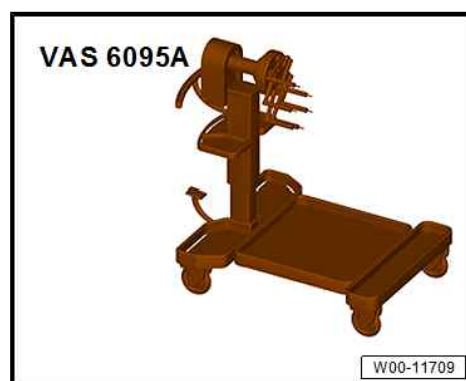
1.3 Securing engine to engine and gearbox support

Special tools and workshop equipment required

- ◆ Lifting tackle - 3033-

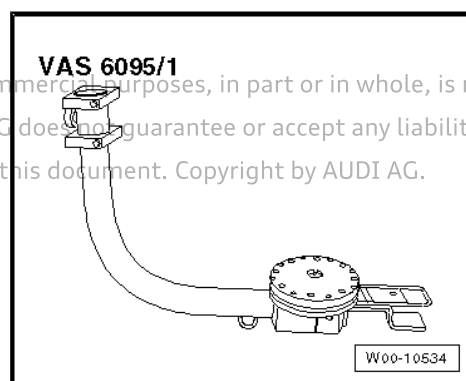


- ◆ Engine and gearbox support - VAS 6095A-



- ◆ Universal mounting - VAS 6095/1- and bracket for V6 TDI engine - VAS 6095/1-14-

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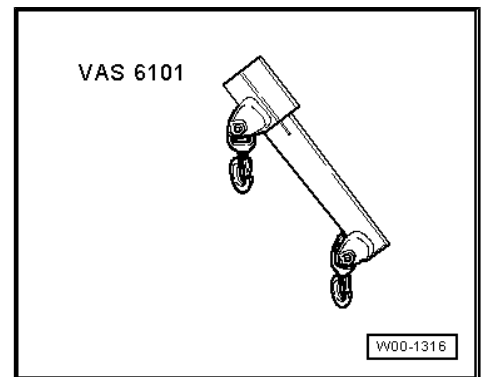




◆ Workshop hoist - VAS 6100-

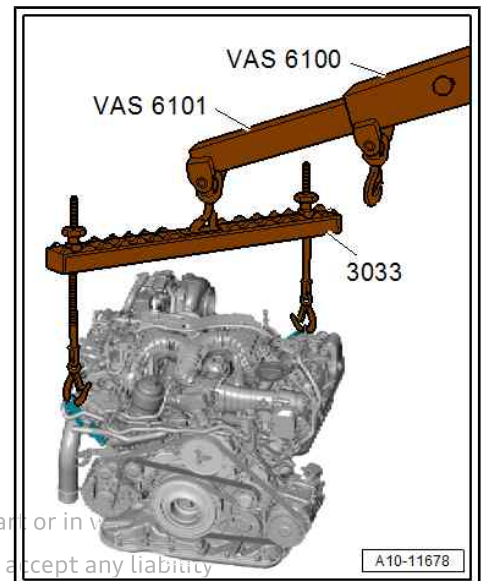


◆ Lift arm extension (workshop hoist) - VAS 6101-



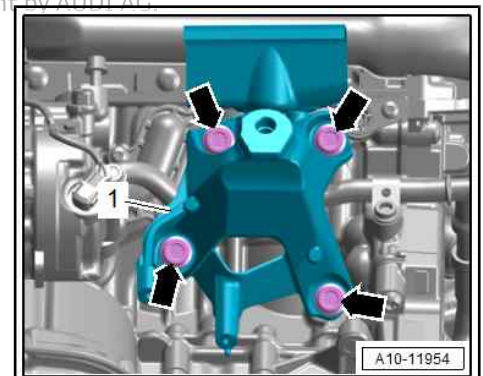
Procedure

- Engine/gearbox assembly removed and secured to scissor-type assembly platform - VAS 6131 B- (with engine detached from gearbox)
- Attach lift arm extension - VAS 6101- to workshop hoist - VAS 6100- .
- Attach lifting tackle - 3033- to engine lifting eyes and workshop hoist as shown in illustration.
- Take up weight of engine with workshop hoist, but do not lift.



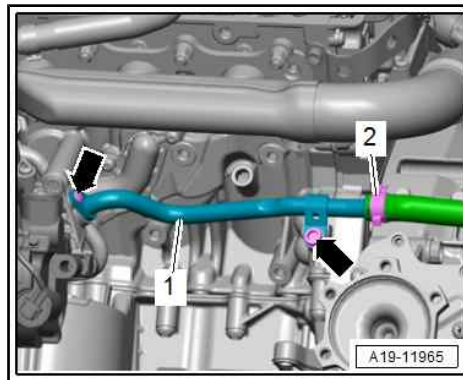
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- Remove bolts -arrows- and detach engine support (left-side) -1-.



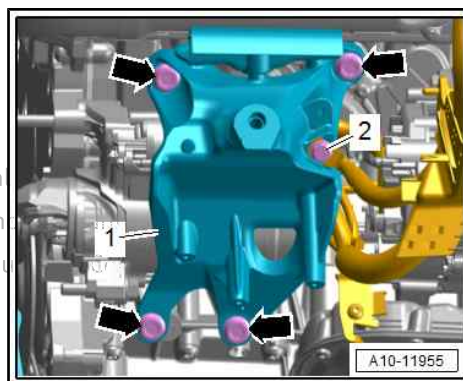


- Remove bolts -arrows-.
- Detach coolant pipe (left-side) -1- and move clear to side.

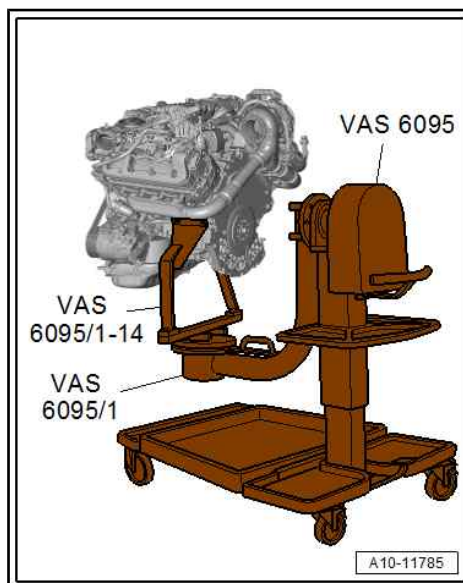


- Remove bolt -2- for earth wire.
- Remove bolts -arrows- and detach engine support -1-.
- Tie up starter on engine.

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- Using universal mounting - VAS 6095/1- and bracket for V6 TDI engine - VAS 6095/1-14- , secure engine to engine and gearbox support - VAS 6095A- (40 Nm), as shown.

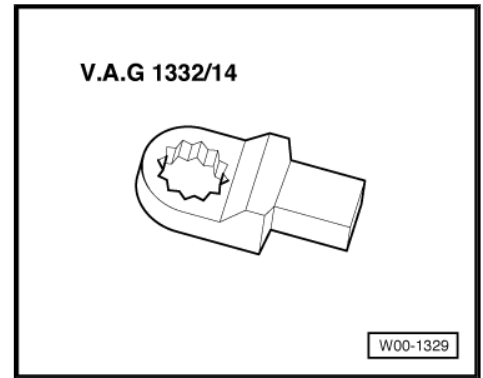


1.4 Installing engine

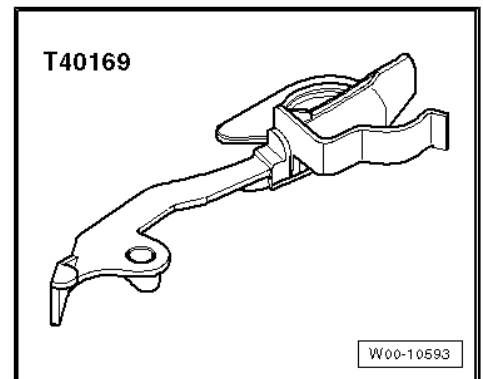
Special tools and workshop equipment required



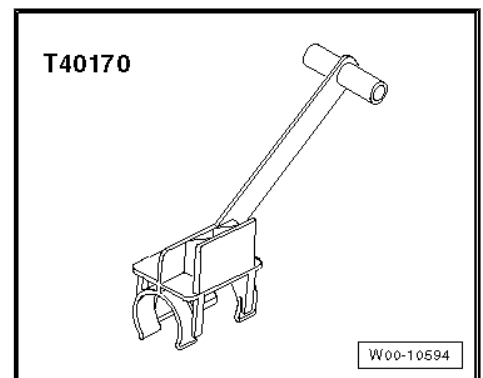
- ◆ Ring spanner insert AF 16 - V.A.G 1332/14-



- ◆ Assembly aid - T40169-



- ◆ Transportation lock - T40170-



- ◆ All special tools listed under "Removing engine"
- ◆ Cleaning solution - D 009 401 04-

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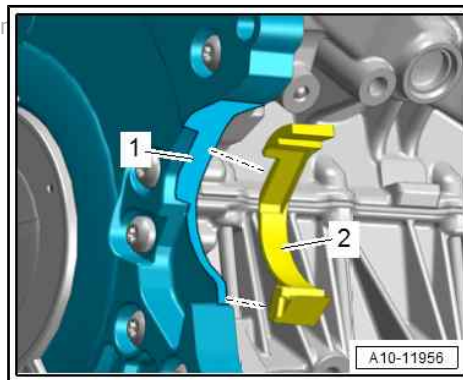


Procedure



Note

- ◆ *After removing, renew bolts tightened with specified tightening angle.*
- ◆ *Renew self-locking nuts and bolts as well as seals, gaskets and O-rings after removal.*
- ◆ *Do not remove plugs or protective caps until you are ready to fit the relevant line.*
- ◆ *Hose connections and air pipes/hoses must be free of oil and grease prior to fitting.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Re-install all cable ties in the same locations when installing.*
- ◆ *Bonded rubber bushes can only be turned to a limited extent. Therefore, only tighten the bolted connections for the suspension once the vehicle is in the unladen position or the reference position.*
- Install coolant pipe (left-side) ⇒ [page 86](#) .
- Install engine supports and engine mountings ⇒ [page 36](#) .
- Engine with subframe positioned on scissor-type assembly platform - VAS 6131 B-
- Before installing gearbox, remove residue from threaded holes for engine/gearbox bolts in cylinder block using a thread tap
- The following preparations are required before joining engine and gearbox:
- Clean contact surface -1- on timing chain cover (bottom) and on sealing element -2- with cleaning fluid - D 009 401 04- .
- Bond sealing element to timing chain cover (bottom).

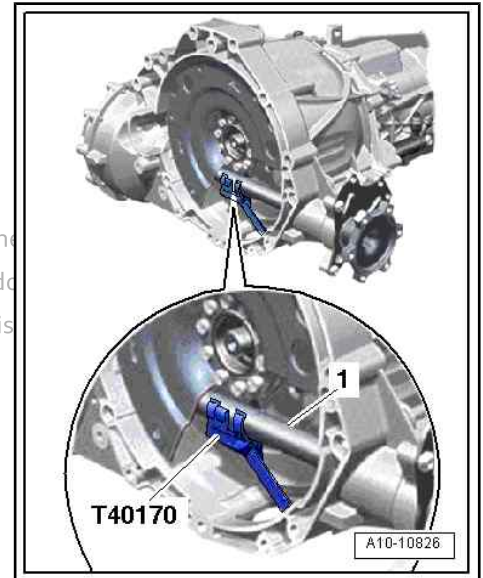




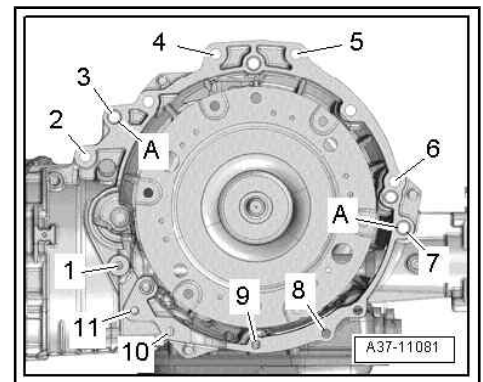
- Insert transportation lock - T40170- into gearbox housing from below and clamp onto flange shaft -1-.



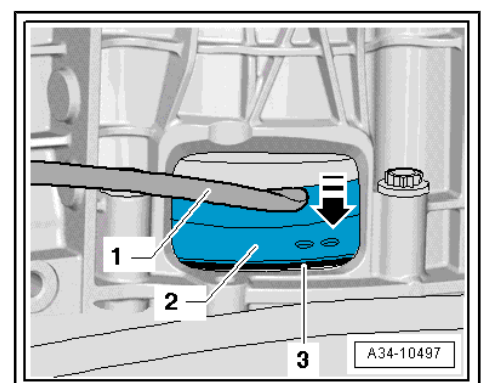
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- Check whether dowel sleeves -A- for centring engine and gearbox are fitted in cylinder block.
- Check whether aluminium bolts securing engine to gearbox can be reused; if so, apply marking ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Removing and installing gearbox; Tightening torques for gearbox .
- When joining the engine and the gearbox, make sure that the end seal is seated correctly.
- Bring gearbox into position on engine and at the same time screw in bolt -1- for starter.
- Screw in bolts -2 ... 11- by hand until they make contact.
- Tighten bolts -1 ... 11- ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Removing and installing gearbox; Tightening torques for gearbox .
- Remove transport lock - T40170- .



- The following step is necessary to ensure that the torque converter is straight and that it makes even contact with the drive plate.
- Use assembly lever -1- to press torque converter -2- slightly against drive plate -3- -arrow-.



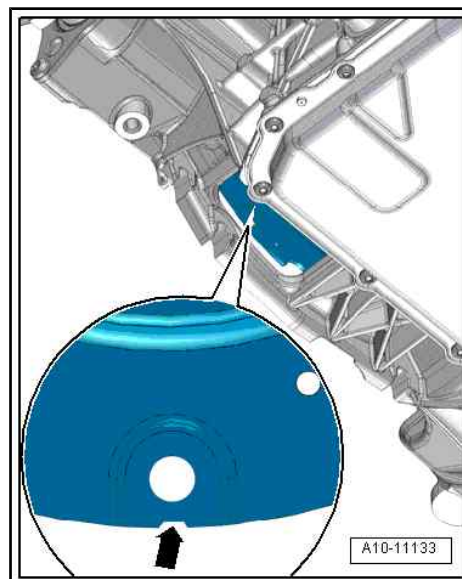


- Bolt torque converter onto drive plate as follows:
- Turn torque converter until hole is visible next to notch -arrow- in recess in bottom of gearbox housing.



Note

There is only one notch on the circumference; turn the torque converter accordingly.

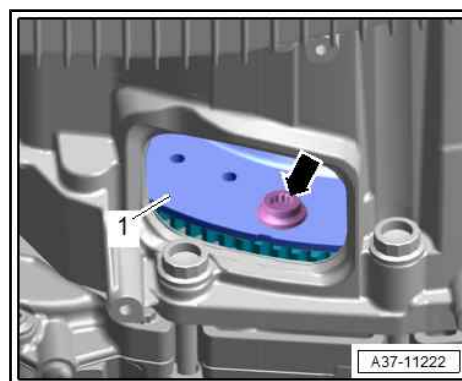


- Tighten bolt -arrow- for torque converter -1- accessible in this position ⇒ 8-speed automatic gearbox; Rep. gr. 32 ; Torque converter; Exploded view - torque converter .



Note

Use ring spanner insert AF 16 - V.A.G 1332/14- to tighten bolts.



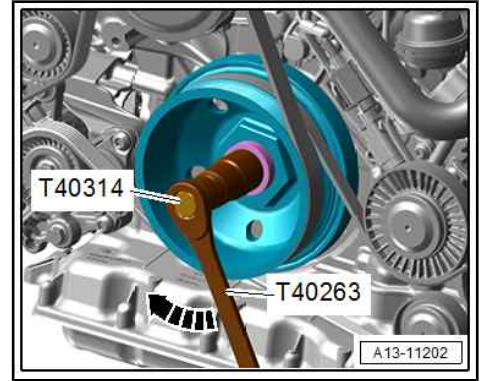
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Caution

Irreparable damage can be caused if the camshaft timing chain slips.

- ◆ **Turn crankshaft only in direction of engine rotation -arrow-.**



- Then tighten remaining 5 bolts to specified torque (turn crankshaft by 60° each time -arrow-) ⇒ 8-speed automatic gearbox; Rep. gr. 32 ; Torque converter; Exploded view - torque converter .
- Install coolant pipes (rear) and coolant pipe (right-side) ⇒ [page 86](#) .
- Install emission control module ⇒ [page 158](#) .
- Install front exhaust pipe ⇒ [page 152](#) .
- Install pressure differential sender - G505- ⇒ [page 143](#) .
- Install pressure differential sender 2 - G524- and exhaust gas recirculation pipe ⇒ [page 172](#) .
- Install exhaust gas temperature sender 4 - G648- ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control .
- Connect SCR supply line ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Exploded view - reducing agent supply line .
- Install ATF cooler ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; ATF circuit; Removing and installing ATF cooler .

Remaining installation steps are carried out in reverse sequence; note the following:

- Remove locating pins ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Fixing position of subframe .
- Install tunnel cross member ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings .
- Install manual release cable for parking lock ⇒ Rep. gr. 37 ; Selector mechanism .
- Install bracket for NOx sender 2 - G687- / particulate sensor - G784- ⇒ [page 143](#) .
- Install air conditioner compressor ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Exploded view - air conditioner compressor drive unit .
- Install poly V-belt ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Install subframe shield ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe shield .
- Secure drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft .



- Install coupling rod ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Exploded view - subframe .
- Install lower suspension links ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower suspension links, swivel joint; Exploded view - lower suspension links, swivel joint .
- Install track rod ball joint ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering rack; Exploded view - steering rack .
- Install engine control unit - J623- ⇒ [page 148](#) .
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Connect fuel hoses ⇒ Fuel supply system, diesel engines; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



Caution

Risk of irreparable damage to control units because of excessive voltage.

- ◆ ***Never use battery charging equipment for boost starting.***

- Install air cleaner housing ⇒ [page 126](#) .
- Fill with engine oil and check oil level ⇒ Maintenance ; Booklet 830 .
- Install propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Install wheel spoiler and wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Fit front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Install lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- If engine was renewed, perform adaptions listed in Guided Function "0001 - Adapt learnt values - after component replacement" ⇒ Vehicle diagnostic tester.



Caution

Risk of damage to components.

- ◆ ***Only perform additional adaptions for those components which were renewed after removal.***

- Bleed fuel system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injection system; Filling and bleeding fuel system .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Connect coolant hoses with plug-in connector ⇒ [page 101](#) .



Note

Do not reuse coolant.

- Fill up with coolant ➔ [page 72](#) .
- Check ATF level ➔ Automatic gearbox; Rep. gr. 37 ; ATF; Checking ATF level .
- Install underbody trim ➔ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .
- Install noise insulation panels ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .

Tightening torques with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

- ◆ *Tightening torques apply only to lightly greased, oiled, phosphated or black-finished nuts and bolts.*
- ◆ *Additional lubricant such as engine oil or gearbox oil may be used, but do not use lubricant containing graphite.*
- ◆ *Do not use degreased parts.*
- ◆ *Tolerance for tightening torques: $\pm 15\%$.*

Component		Nm
Bolts/nuts	M6	9
	M7	15
	M8	20
	M10	40
	M12	65

- ◆ ➔ ["2.1 Exploded view - assembly mountings", page 36](#)
- ◆ Engine to gearbox ➔ Rep. gr. 34 ; Removing and installing gearbox; Tightening torques for gearbox



2 Assembly mountings

⇒ "2.1 Exploded view - assembly mountings", page 36

⇒ "2.2 Supporting engine in installation position", page 38

⇒ "2.3 Removing and installing engine mountings", page 39

⇒ "2.4 Removing and installing gearbox mounting", page 42

2.1 Exploded view - assembly mountings

Engine mounting

1 - Subframe

2 - Bolt

□ 20 Nm

3 - Bolt

□ 10 Nm

4 - Support mounting

□ Removing and installing

⇒ page 41

□ Installation position

⇒ page 37

5 - Bolt

□ 55 Nm

6 - Engine support

□ Removing and installing

⇒ page 46

7 - Heat shield

8 - Bolt

□ 10 Nm

9 - Bolt

□ 55 Nm

10 - Engine mounting

□ with

◆ Left electrohydraulic engine mounting solenoid valve - N144-

◆ Right electrohydraulic engine mounting solenoid valve - N145-

□ Removing and installing

⇒ page 39

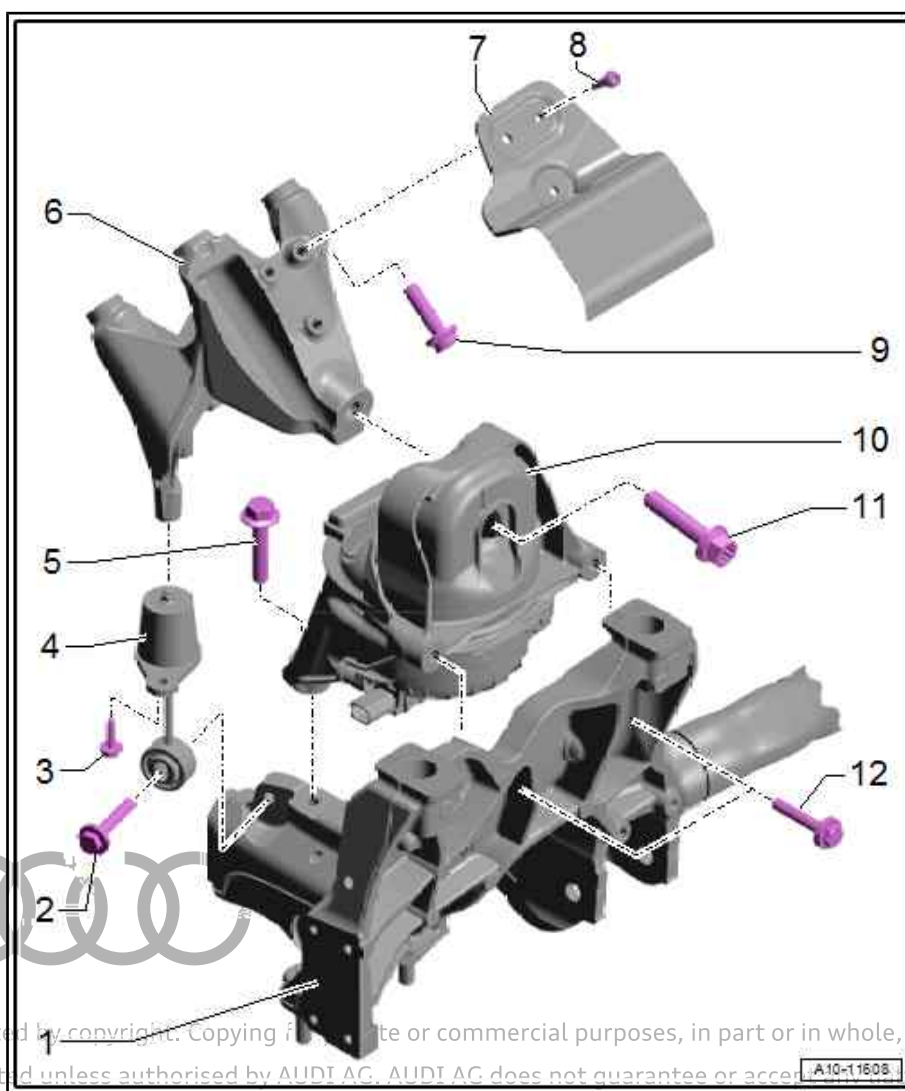
11 - Bolt

□ Renew after removing

□ 90 Nm +90°

12 - Bolt

□ 30 Nm



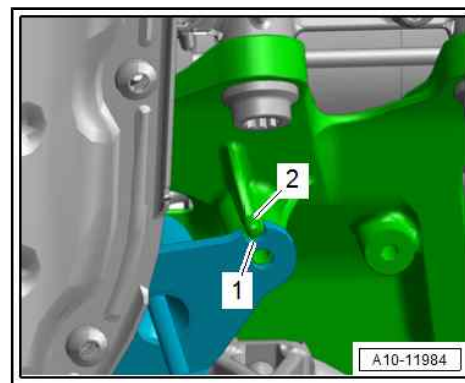
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A10-11608



Installation position of support mounting

- ◆ Projection -2- on engine support must engage in recess -1- on support mounting.



Gearbox mounting

1 - Bolt

- Tightening torques ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings

2 - Tunnel cross member

- Removing and installing ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings

3 - Nut

- Only remove if detaching gearbox mounting from gearbox support
- Tightening torques ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings

4 - Gearbox support

- Removing and installing ⇒ [page 42](#)

5 - Bolt

- Tightening torques ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings

6 - Gearbox mounting

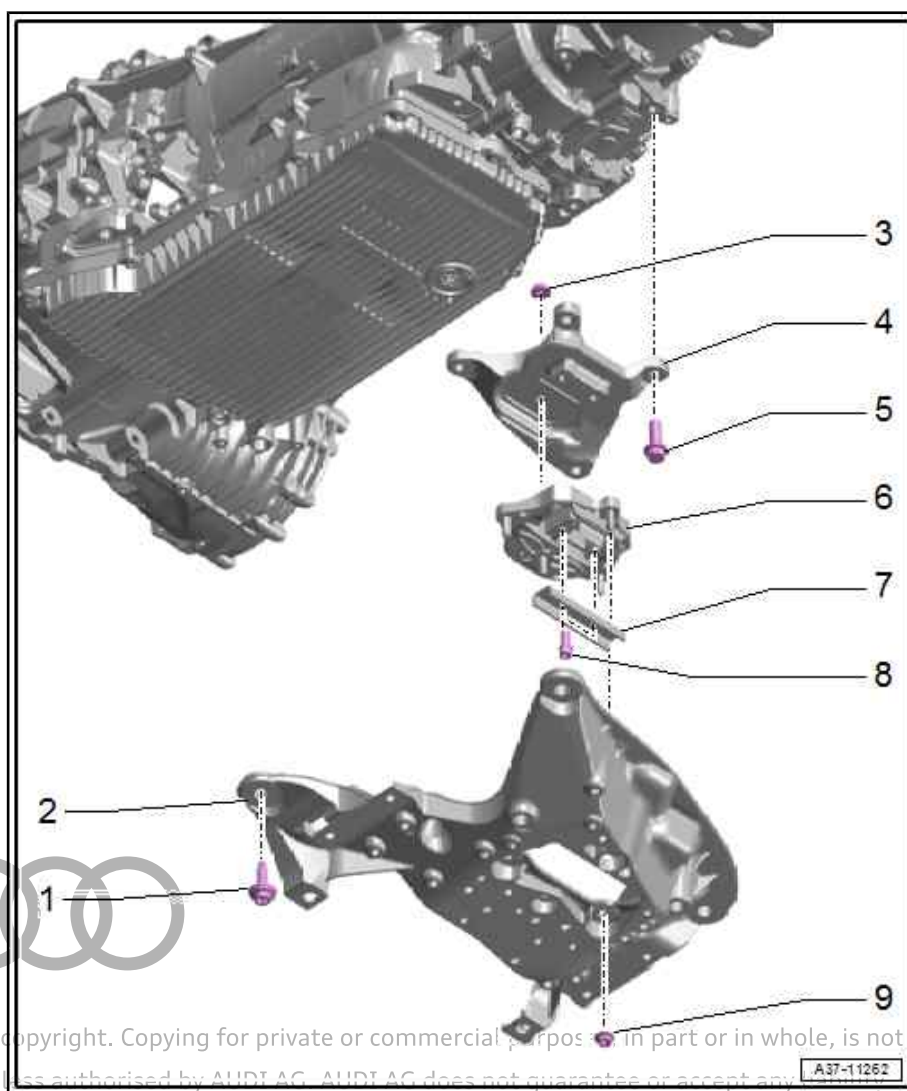
- Removing and installing ⇒ [page 42](#)

7 - Stop plate

- For gearbox mounting

8 - Bolt

- Only remove if detaching gearbox mounting from gearbox support
- Tightening torques ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings



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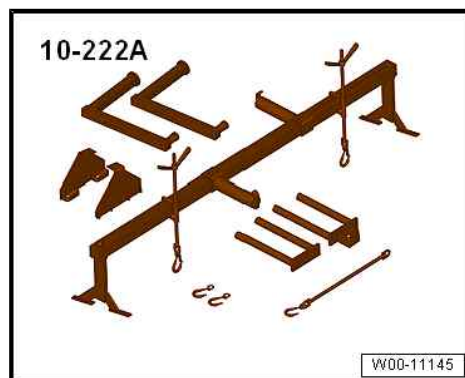
9 - Nut

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings

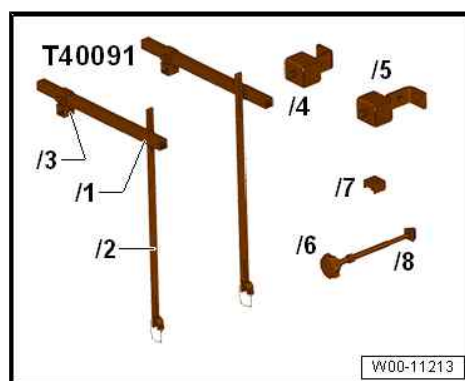
2.2 Supporting engine in installation position

Special tools and workshop equipment required

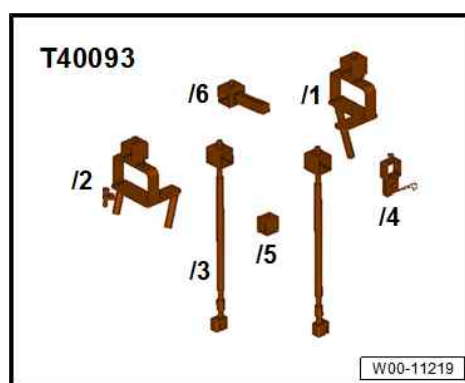
- ◆ Support bracket - 10-222A-



- ◆ Engine support (basic set) - T40091-



- ◆ Engine support bracket (supplementary set) - T40093-



Procedure



WARNING

Risk of accident when weight of engine is shifted.

- ◆ *In order to support the engine as described below, the gearbox and tunnel cross members must be installed.*



- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Set up support bracket - 10-222A- on longitudinal members (left and right), as shown.
- Engage spindles -10-222A/11- at engine lifting eyes (left and right).
- Tighten spindles slightly to take up weight of engine, but do not lift.

Attaching

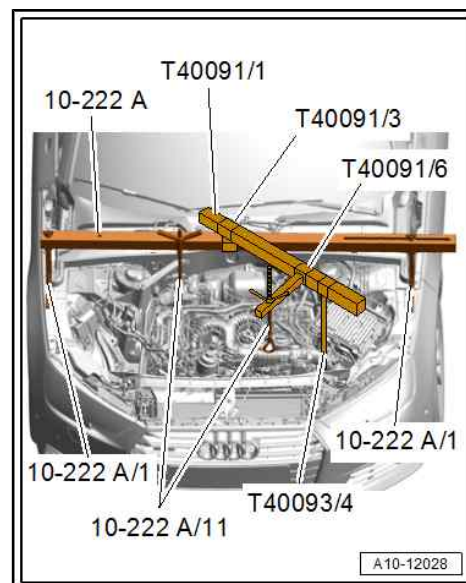
Assembly is performed in reverse sequence; note the following:



Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ Fig. ““Bracket with pressure differential sender -G505- - tightening torque””, page 143

2.3 Removing and installing engine mountings

⇒ [“2.3.1 Removing and installing engine mounting \(left-side\)”, page 39](#)

⇒ [“2.3.2 Removing and installing engine mounting \(right-side\)”, page 41](#)

⇒ [“2.3.3 Removing and installing engine mounting - support mounting \(left-side\)”, page 41](#)

⇒ [“2.3.4 Removing and installing engine mounting - support mounting \(right-side\)”, page 42](#)

2.3.1 Removing and installing engine mounting (left-side)

Removing

- Support engine in installation position ⇒ [page 38](#) and take up weight with spindle - 10-222A/11- until load on engine mounting is relieved.



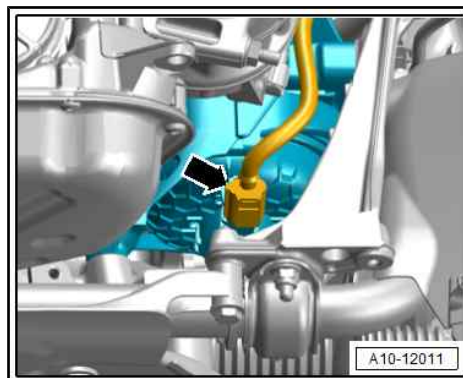
Caution

Risk of damage to drive shafts.

- ◆ *When lifting the engine, the drive shafts must not make contact with the suspension struts.*



- Remove support mounting (left-side) ⇒ [page 41](#) .
- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove poly V-belt from air conditioner compressor pulley ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
- Remove air conditioner compressor from bracket and tie up to left side ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .
- Unplug electrical connector -arrow- for left electrohydraulic engine mounting solenoid valve - N144- .



- Remove bolts -arrows-.
- Raise engine slightly with spindle - 10-222A/11- and detach engine mounting -1-.

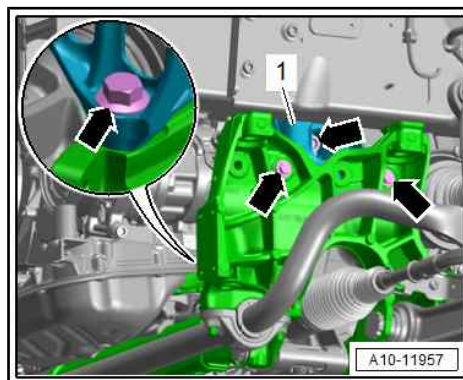
Installing

Installation is carried out in reverse order; note the following:



Note

After removing, renew bolts tightened with specified tightening angle.



- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install poly V-belt ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt.

Tightening torques

- ♦ ⇒ [“2.1 Exploded view - assembly mountings”, page 36](#)
- ♦ ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Exploded view - air conditioner compressor drive unit
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



2.3.2 Removing and installing engine mounting (right-side)

Removing

- Lower subframe ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Lowering subframe .
- Remove bolts -arrows- and detach engine mounting (right-side) -1-.

Installing

Installation is carried out in reverse order; note the following:



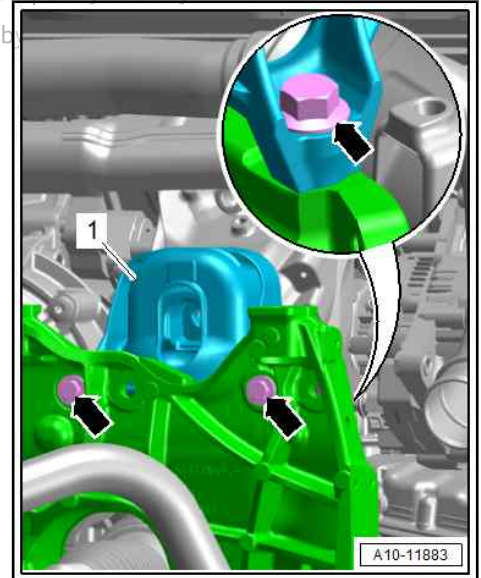
Note

After removing, renew bolts tightened with specified tightening angle.

- Install subframe ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Lowering subframe .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - assembly mountings”, page 36](#)



2.3.3 Removing and installing engine mounting - support mounting (left-side)

Removing

- Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove bolts -arrows- and detach support mounting (left-side) -2-.

Installing

Installation is carried out in reverse order; note the following:



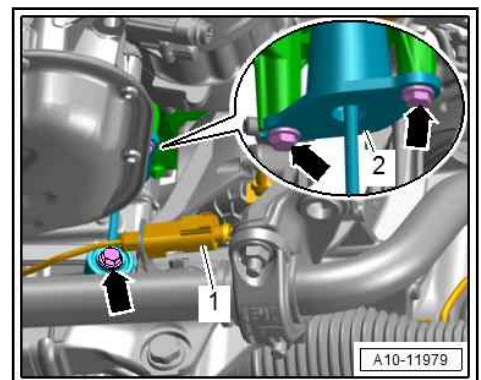
Note

After removing, renew bolts tightened with specified tightening angle.

- Installation position ⇒ [page 37](#) .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - assembly mountings”, page 36](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

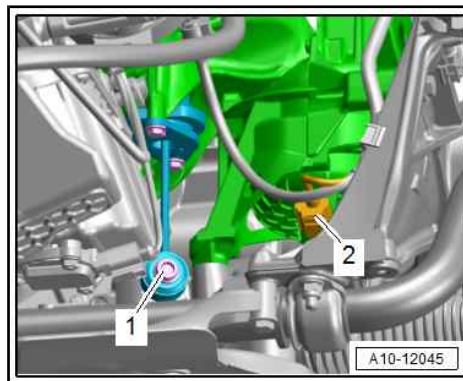




2.3.4 Removing and installing engine mounting - support mounting (right-side)

Removing

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Support engine in installation position ⇒ [page 38](#) .
- Remove bolt -1- for support mounting (left-side).



- Remove bolts -arrows- for support mounting (right-side) -1-.
- Raise engine slightly with spindle - 10-222A/11- and detach support mounting towards left.

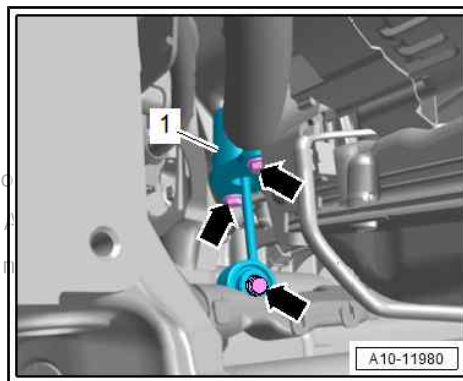
Installing

Installation is carried out in reverse order; note the following:

- Installation position ⇒ [page 37](#) .

Tightening torques

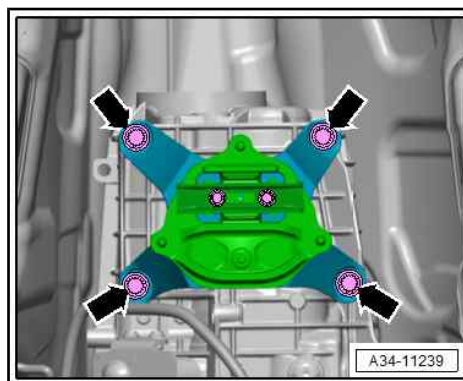
- ♦ ⇒ [“2.1 Exploded view - assembly mountings”, page 36](#)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



2.4 Removing and installing gearbox mounting

Removing gearbox support with gearbox mounting

- Remove tunnel cross member ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings .
- Remove bolts -arrows- and detach gearbox support and gearbox mounting from gearbox.





Removing and installing gearbox mounting

- Unscrew bolts -1- and detach stop -2- for gearbox mounting.
- Remove nut -5- and detach gearbox mounting -3- from gearbox support -4-.

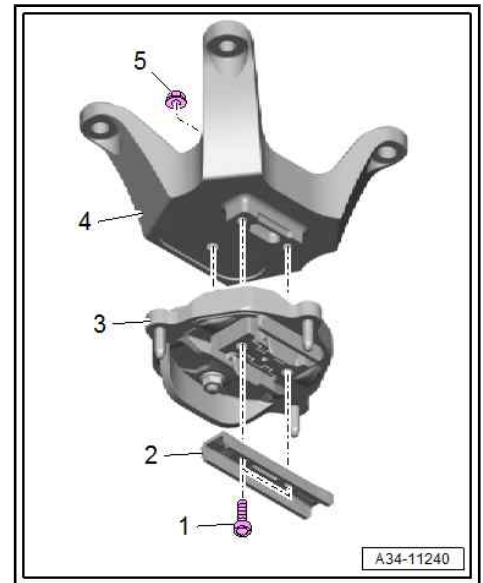
Installing

Installation is carried out in reverse order; note the following:

- Tighten nut -5- hand-tight initially.
- Tighten bolts -1- and then nut -5-.

Tightening torques

- ◆ ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings



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3 Engine cover panel

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 : Engine cover panel; Removing and installing engine cover panel .

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13 – Crankshaft group

1 Cylinder block (pulley end)

⇒ [“1.1 Exploded view - cylinder block \(pulley end\)”, page 45](#)

⇒ [“1.2 Exploded view - sealing flange \(pulley end\)”, page 45](#)

⇒ [“1.3 Removing and installing poly V-belt”, page 45](#)

⇒ [“1.4 Removing and installing tensioner for poly V-belt”, page 45](#)

⇒ [“1.5 Removing and installing vibration damper”, page 45](#)

⇒ [“1.6 Removing and installing bracket for ancillaries”, page 46](#)

⇒ [“1.7 Removing and installing engine support”, page 46](#)

⇒ [“1.8 Renewing crankshaft oil seal \(pulley end\)”, page 47](#)

⇒ [“1.9 Removing and installing sealing flange \(pulley end\)”, page 47](#)

1.1 Exploded view - cylinder block (pulley end)

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end) .

1.2 Exploded view - sealing flange (pulley end)

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - sealing flange (pulley end) .

1.3 Removing and installing poly V-belt

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .

1.4 Removing and installing tensioner for poly V-belt

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing tensioner for poly V-belt .

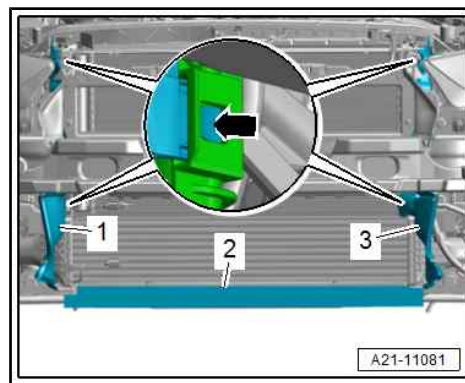
1.5 Removing and installing vibration damper

Removing

- Remove lock carrier cover, air intake grille (left and right) and closure plate at bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .



- Release catches -arrow- and detach air ducts -1, 3-.
- Unclip air duct (bottom) -2-.



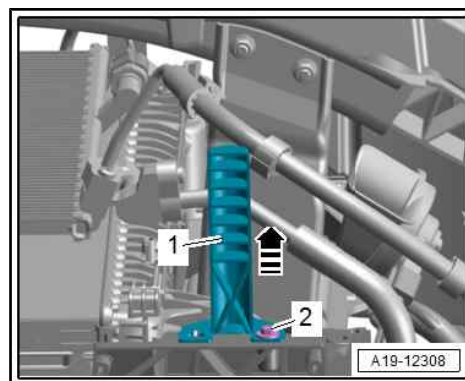
- Remove bolt -2- on both sides and press radiator bracket -1- with radiator towards front -arrow-.

All other procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing vibration damper .

Installing

Additional work:

- Install lock carrier cover, air intake grille (left and right) and closure plate at bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .



Tightening torques

- ♦ ⇒ ["4.1 Exploded view - radiator/radiator fans", page 100](#)

1.6 Removing and installing bracket for ancillaries

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries .

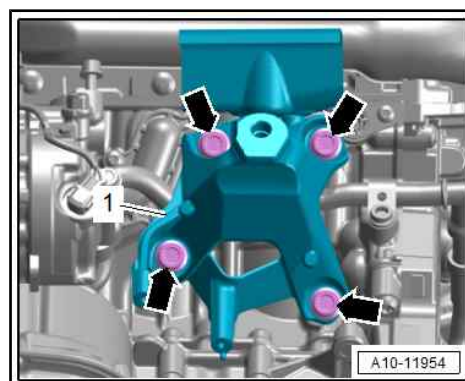
1.7 Removing and installing engine support

Removing

- Remove engine mounting ⇒ [page 39](#) .

Engine support (left-side):

- Remove bolts -arrows- and detach engine support -1-.

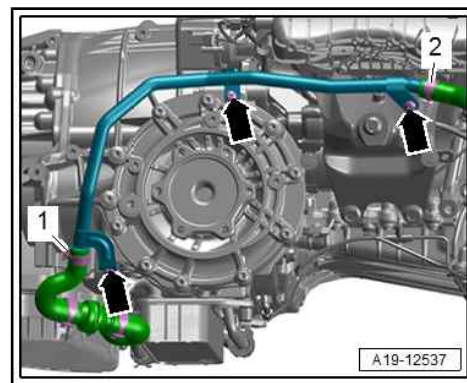


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Engine support (right-side):

- Remove drive shaft cover ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Remove bolts -arrows- and press coolant pipe (right-side) slightly to one side.



- Remove bolt -2- for earth wire.
- Remove bolts -arrows- and detach engine support -1-.

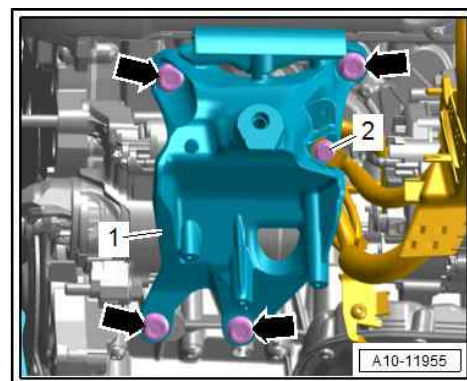
Installing

Installation is carried out in reverse order; note the following:

- Install engine mountings ⇒ [page 39](#) .
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - assembly mountings”, page 36](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pipes; Exploded view - coolant pipes
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)



1.8 Renewing crankshaft oil seal (pulley end)

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Renewing crankshaft oil seal (pulley end) .

1.9 Removing and installing sealing flange (pulley end)

Removing

- Remove intake manifold flap motor - V157- ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing intake manifold flap motor - V157- .
- Remove tensioner for poly V-belt ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing tensioner for poly V-belt .
- Remove vibration damper ⇒ [page 45](#) .
- Remove coolant pipe (front) ⇒ [page 89](#) .

All other procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing sealing flange (pulley end) .

Installing

- Install coolant pipe (front) ⇒ [page 89](#) .

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- Install vibration damper ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing vibration damper .
- Install tensioner for poly V-belt ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing tensioner for poly V-belt .
- Install intake manifold flap motor - V157- ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing intake manifold flap motor - V157- .



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2 Cylinder block (gearbox end)

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (gearbox end) .



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3 Crankshaft

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Crankshaft .

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4 Balance shaft

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Balance shaft .



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5 **Pistons and conrods**

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15 – Cylinder head, valve gear

1 Timing chain cover

⇒ [“1.1 Exploded view - timing chain cover”, page 53](#)

⇒ [“1.2 Removing and installing timing chain cover”, page 53](#)

1.1 Exploded view - timing chain cover

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Timing chain cover; Exploded view - timing chain cover .

1.2 Removing and installing timing chain cover

⇒ [“1.2.1 Removing and installing timing chain cover \(top left\)”, page 53](#)

⇒ [“1.2.2 Removing and installing timing chain cover \(top right\)”, page 53](#)

⇒ [“1.2.3 Removing and installing timing chain cover \(bottom\)”, page 53](#)

1.2.1 Removing and installing timing chain cover (top left)

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Timing chain cover; Removing and installing timing chain cover .

1.2.2 Removing and installing timing chain cover (top right)

Removing

- Remove coolant pipe (bottom front) for turbocharger ⇒ 6-cylinder TDI engine, 3.0 ltr. 4-valve common rail; Rep. gr. 19 ; Coolant pipes; Removing and installing coolant pipes .

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Timing chain cover; Removing and installing timing chain cover .

1.2.3 Removing and installing timing chain cover (bottom)

Removing

- Gearbox removed ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Removing and installing gearbox; Removing gearbox .
- Steering rack secured to subframe with original bolts (bolts should be tightened to specified torque but not turned through specified angle).

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- Lower engine evenly using spindles -10-222/11- until spindle at engine lifting eye at rear right is loosened.
- Disengage spindle from engine lifting eye at rear right and move clear to one side.

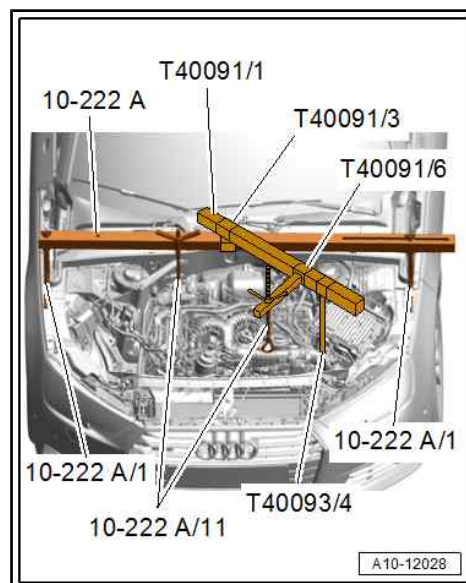


WARNING

Risk of injury.

- ◆ *The engine must be secured with the spindle at the engine lifting eye (front left) to keep it from tipping.*

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Timing chain cover; Removing and installing timing chain cover .



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2 Chain drive

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3 Cylinder head

⇒ [“3.1 Exploded view - cylinder head”, page 56](#)

⇒ [“3.2 Exploded view - cylinder head cover”, page 56](#)

⇒ [“3.3 Removing and installing cylinder head”, page 56](#)

⇒ [“3.4 Removing and installing cylinder head cover”, page 56](#)

⇒ [“3.5 Removing and installing seals for injectors”, page 58](#)

⇒ [“3.6 Checking compression”, page 58](#)

3.1 Exploded view - cylinder head

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Exploded view - cylinder head .

3.2 Exploded view - cylinder head cover

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Exploded view - cylinder head cover .

3.3 Removing and installing cylinder head

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Removing and installing cylinder head .

3.4 Removing and installing cylinder head cover

⇒ [“3.4.1 Removing and installing cylinder head cover - bank 1 \(right-side\)”, page 56](#)

⇒ [“3.4.2 Removing and installing cylinder head cover - bank 2 \(left-side\)”, page 57](#)

3.4.1 Removing and installing cylinder head cover - bank 1 (right-side)

Removing

- Remove air cleaner housing ⇒ [page 126](#) .
- Remove bolt -arrow-.
- Unplug electrical connector -1-.
- Move bracket -2- clear with pressure differential sender - G505- .

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Removing and installing cylinder head .

Installing

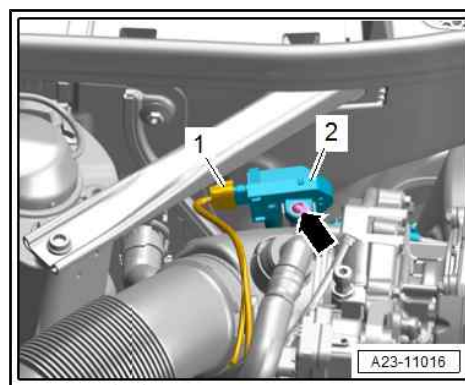
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- Install air cleaner housing ⇒ [page 126](#) .

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Tightening torques

- ♦ ⇒ [Fig. “Bracket with pressure differential sender -G505- - tightening torque” , page 143](#)

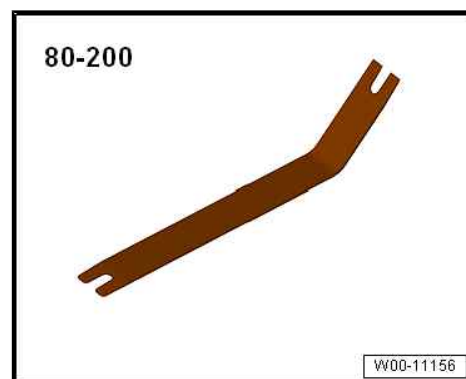




3.4.2 Removing and installing cylinder head cover - bank 2 (left-side)

Special tools and workshop equipment required

- ◆ Removal lever - 80-200-



- ◆ Sealant ⇒ Electronic parts catalogue

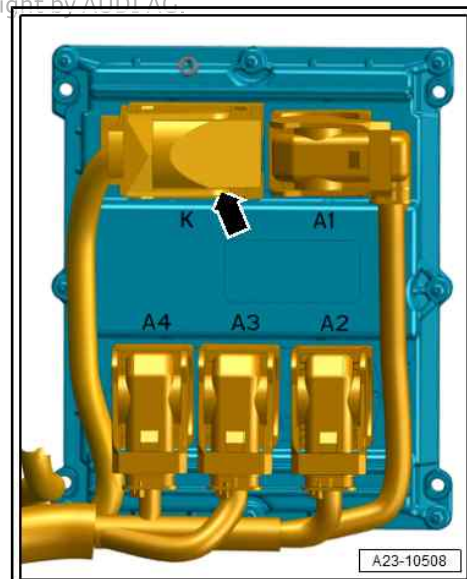
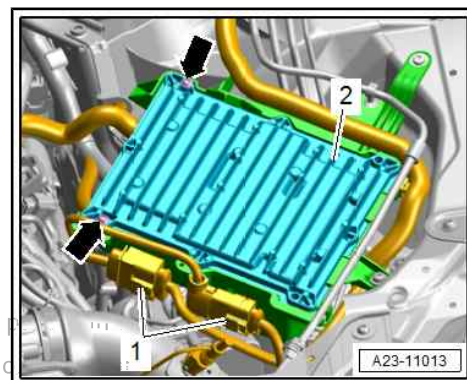
Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Take electrical connectors -1- out of bracket, disconnect them and move electrical wiring clear.
- Remove bolts -arrows- and detach engine control unit - J623- -item 2-.



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- Unplug electrical connector "K" -arrow-.
- Place engine control unit - J623- on engine and secure to prevent it from dropping.





- Move coolant line -3- and electrical wiring harness -2- clear.
- Remove bolts -arrows- and detach bracket -1- for engine control unit.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Removing and installing cylinder head.

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- Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

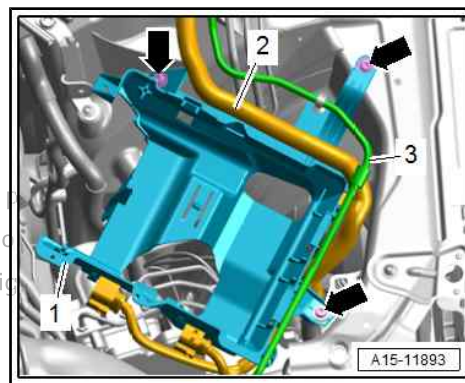
♦ ⇒ [“9.1 Exploded view - engine control unit”, page 148](#)

3.5 Removing and installing seals for injectors

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Removing and installing seals for injectors .

3.6 Checking compression

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Checking compression .





4 Valve gear

⇒ [“4.1 Exploded view - valve gear”, page 59](#)

⇒ [“4.2 Removing and installing cam actuators”, page 59](#)

⇒ [“4.3 Measuring axial clearance of camshaft”, page 59](#)

⇒ [“4.4 Measuring radial clearance of camshaft”, page 59](#)

⇒ [“4.5 Removing and installing camshaft”, page 59](#)

⇒ [“4.6 Removing and installing valve stem oil seals”, page 59](#)

4.1 Exploded view - valve gear

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Exploded view - valve gear .

4.2 Removing and installing cam actuators

Removing

Cylinder bank 1 (right-side):

- Remove air cleaner housing ⇒ [page 126](#) .

Cylinder bank 2 (left-side):

- Detach engine control unit - J623- from bracket and move aside ⇒ [page 148](#) .

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All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Removing and installing cam actuators .

Installing

Additional work:

- Install air cleaner housing ⇒ [page 126](#) .

Tightening torques

- ♦ ⇒ [“9.1 Exploded view - engine control unit”, page 148](#)

4.3 Measuring axial clearance of camshaft

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Measuring axial clearance of camshaft .

4.4 Measuring radial clearance of camshaft

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Measuring radial clearance of camshaft .

4.5 Removing and installing camshaft

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Removing and installing camshaft .

4.6 Removing and installing valve stem oil seals

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Valve gear; Removing and installing valve stem oil seals .



5 Inlet and exhaust valves

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15; Inlet and exhaust valves.

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17 – Lubrication

1 Sump/oil pump

⇒ [“1.1 Exploded view - sump/oil pump”, page 61](#)

⇒ [“1.2 Engine oil”, page 61](#)

⇒ [“1.3 Removing and installing sump \(bottom section\)”, page 61](#)

⇒ [“1.4 Removing and installing sump \(top section\)”, page 61](#)

⇒ [“1.5 Removing and installing oil pump”, page 62](#)

⇒ [“1.6 Removing and installing oil level and oil temperature sender G266”, page 62](#)

1.1 Exploded view - sump/oil pump

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Sump/oil pump; Exploded view - sump/oil pump .

1.2 Engine oil

- ◆ Refer to ⇒ Maintenance ; Booklet 830 for instructions on draining and filling up engine oil, checking oil level, removing and installing oil filter element.

1.3 Removing and installing sump (bottom section)

Removing

- Lower subframe cross brace (do not press off joint pin of guide link) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe cross brace .

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Sump/oil pump; Removing and installing sump (bottom section) .

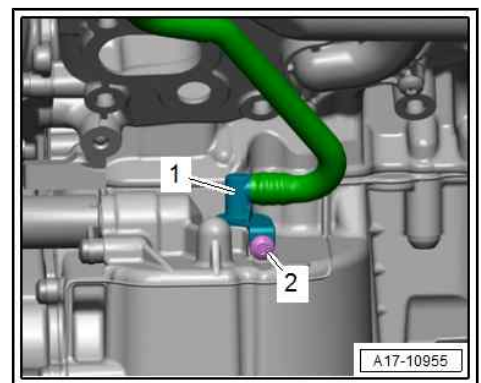
Tightening torques

- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Exploded view - subframe

1.4 Removing and installing sump (top section)

Removing

- Remove bolt -2- and disconnect vacuum hose -1-.



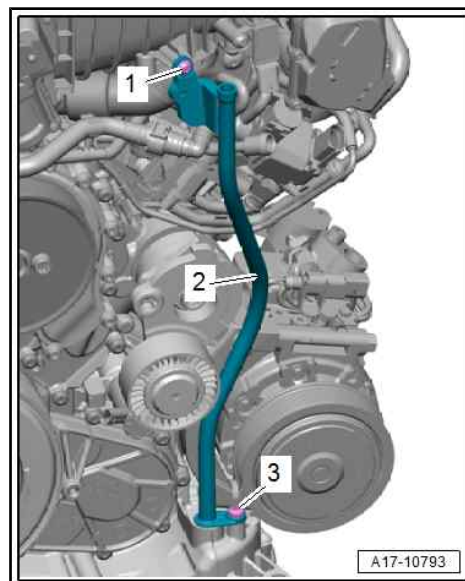


- Remove bolts -1, 3- and pull out guide tube -2- for oil dipstick.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Sump/oil pump; Removing and installing sump (top section) .

Tightening torques

- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end)



1.5 Removing and installing oil pump

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Sump/oil pump; Removing and installing oil pump .

1.6 Removing and installing oil level and oil temperature sender - G266-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Sump/oil pump; Removing and installing oil level and oil temperature sender - G266- .



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2 Engine oil cooler

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Engine oil cooler .



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3 Crankcase breather

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail (EA 897 Gen II); Rep. gr. 17 ; Crankcase breather .



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4 Oil filter/oil pressure switches

⇒ ["4.1 Exploded view - oil filter", page 65](#)

⇒ ["4.2 Exploded view - oil pressure switches/oil pressure control", page 65](#)

⇒ ["4.3 Removing and installing oil filter housing", page 65](#)

⇒ ["4.4 Removing and installing oil pressure switch F22 ", page 66](#)

⇒ ["4.5 Removing and installing oil temperature sender G8 ", page 66](#)

⇒ ["4.6 Removing and installing oil pressure sender G10 ", page 66](#)

⇒ ["4.7 Checking oil pressure", page 66](#)

⇒ ["4.8 Removing and installing valve for oil pressure control N428 ", page 66](#)

⇒ ["4.9 Removing and installing oil temperature sender 2 G664 ", page 67](#)

4.1 Exploded view - oil filter

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil filter .

4.2 Exploded view - oil pressure switches/oil pressure control

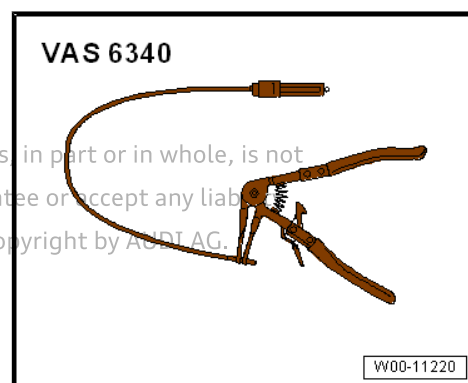
All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control .

4.3 Removing and installing oil filter housing

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6340-

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Removing

- Remove oil filter element ⇒ [page 61](#) .
- Remove poly V-belt ⇒ [page 45](#) .
- Drain coolant ⇒ 6-cylinder TDI engine, 3.0 ltr. 4-valve common rail; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Unbolt coolant pipe (front) and disconnect from thermostat ⇒ 6-cylinder TDI engine, 3.0 ltr. 4-valve common rail; Rep. gr. 19 ; Coolant pipes; Removing and installing coolant pipes .



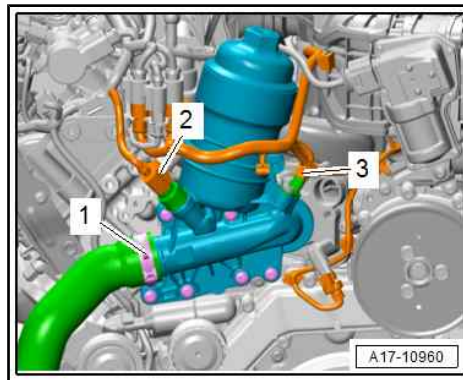
- Unplug electrical connector -2- for oil pressure sender - G10- .
- Release hose clip -1- and disconnect coolant hose.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switch; Removing and installing oil filter housing .

Installing

Additional work:

- Install poly V-belt ⇒ [page 45](#) .



4.4 Removing and installing oil pressure switch - F22-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switch; Removing and installing oil pressure switch - F22- .

4.5 Removing and installing oil temperature sender - G8-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches ; Removing and installing oil temperature sender - G8- .

4.6 Removing and installing oil pressure sender - G10-

Removing

- Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Remove bolts -arrows- and detach air duct -2-.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches ; Removing and installing oil pressure sender - G10- .

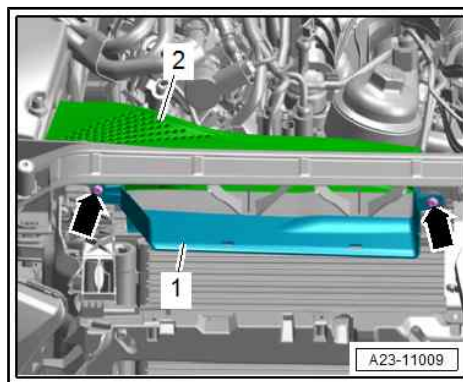
Installing

Additional work:

- Install lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .

Tightening torques

- ♦ ⇒ [“3.1 Exploded view - air cleaner housing”, page 125](#)



4.7 Checking oil pressure

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches; Checking oil pressure .

4.8 Removing and installing valve for oil pressure control - N428-

Removing

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches; Removing and installing valve for oil pressure control - N428- .

Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

4.9 Removing and installing oil temperature sender 2 - G664-

Removing

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Release hose clip -arrow- and detach coolant hose.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 17 ; Oil filter/oil pressure switches ; Removing and installing oil temperature sender 2 - G664- .

Installing

Additional work:



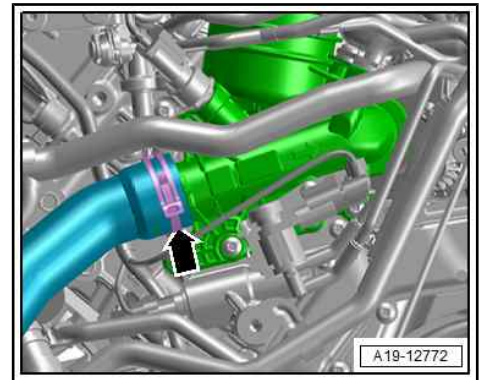
Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 72](#) .

Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation





19 – Cooling

1 Cooling system/coolant

⇒ [“1.1 Connection diagram - coolant hoses”, page 68](#)

⇒ [“1.2 Checking cooling system for leaks”, page 72](#)

⇒ [“1.3 Draining and filling cooling system”, page 72](#)

1.1 Connection diagram - coolant hoses

⇒ [“1.1.1 Connection diagram - coolant hoses, equipment version without auxiliary heater”, page 68](#)

⇒ [“1.1.2 Connection diagram - coolant hoses, equipment version with auxiliary heater”, page 71](#)

1.1.1 Connection diagram - coolant hoses, equipment version without auxiliary heater



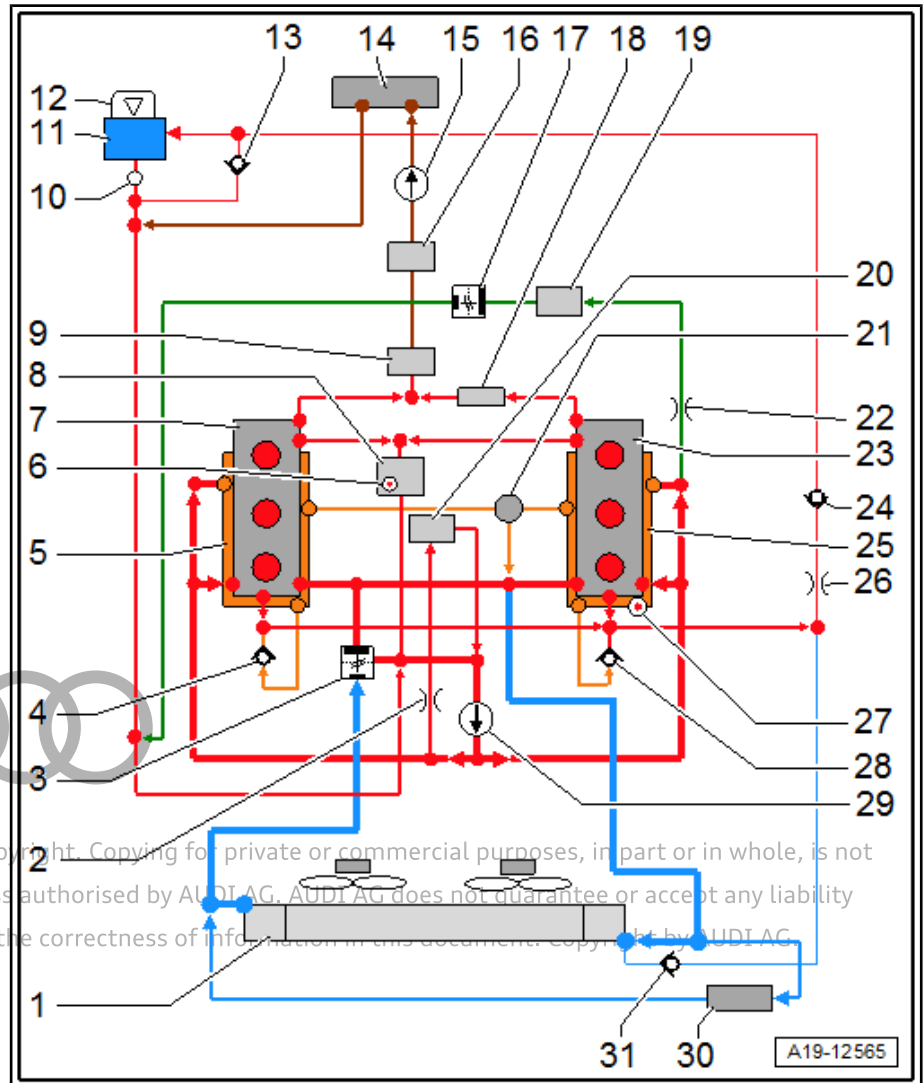
Note

- ◆ *Blue = Large coolant circuit*
- ◆ *Red = Small coolant circuit*
- ◆ *Orange = Coolant circuit for cylinder block.*
- ◆ *Brown = Heating circuit*
- ◆ *Green = Coolant circuit for gearbox*
- ◆ *Arrows show direction of coolant flow.*

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- 1 - Radiator
- 2 - Restrictor
- 3 - Thermostat
- 4 - Non-return valve
- 5 - Cylinder block
 - ☐ Cylinder bank 1 (right-side)
- 6 - Coolant temperature sender - G62-
- 7 - Cylinder head
 - ☐ Cylinder bank 1 (right-side)
- 8 - Exhaust gas recirculation cooler
- 9 - Turbocharger
- 10 - Siphon
- 11 - Coolant expansion tank
- 12 - Filler cap
 - ☐ Checking pressure relief valve ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks
- 13 - Non-return valve
- 14 - Heat exchanger for heater
- 15 - Coolant circulation pump - V50-
- 16 - Exhaust gas recirculation cooler
 - ☐ Low pressure
- 17 - Thermostat
 - ☐ For coolant circuit for gearbox
- 18 - Injector for reducing agent - N474-
- 19 - ATF cooler
- 20 - Engine oil cooler
- 21 - Coolant shut-off valve
- 22 - Restrictor
- 23 - Cylinder head
 - ☐ Cylinder bank 2 (left-side)
- 24 - Non-return valve
- 25 - Cylinder block
 - ☐ Cylinder bank 2 (left-side)





26 - Restrictor

27 - Temperature sender for engine temperature regulation - G694-

28 - Non-return valve

29 - Coolant pump

30 - Auxiliary radiator

☐ Optional equipment

31 - Non-return valve



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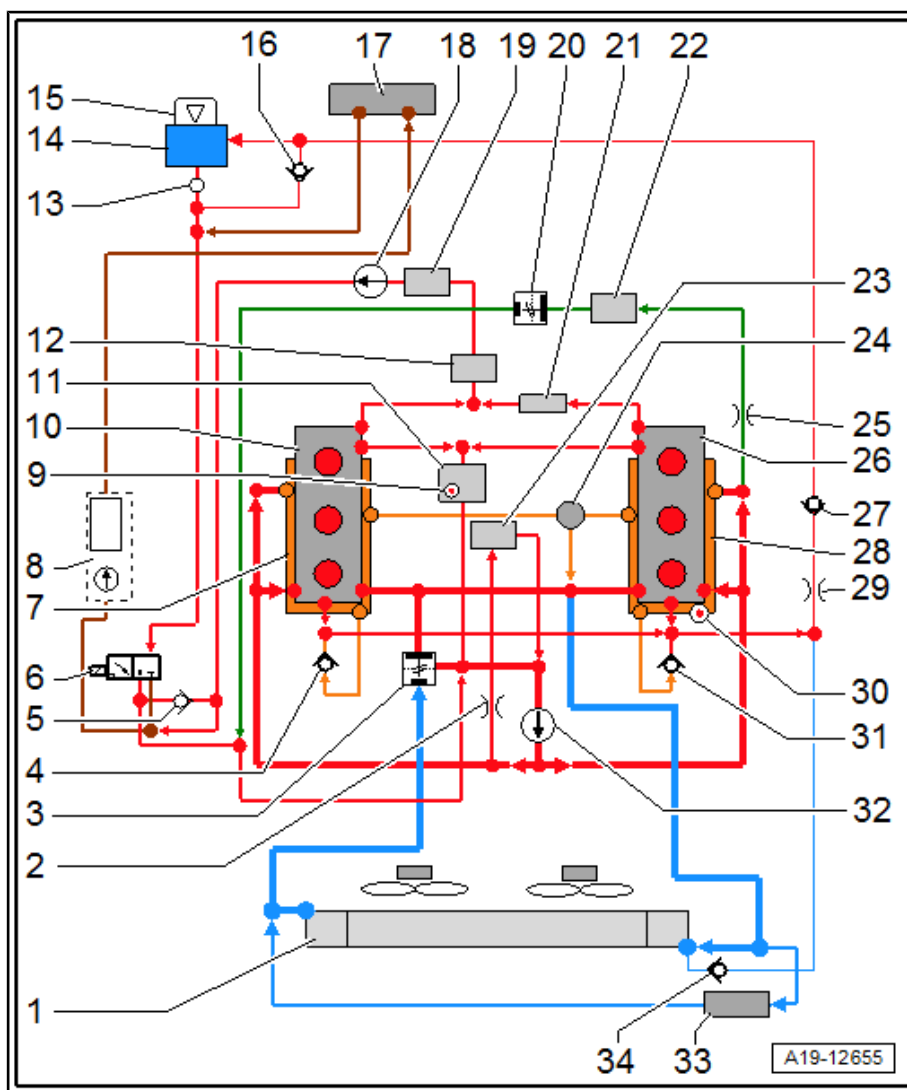
1.1.2 Connection diagram - coolant hoses, equipment version with auxiliary heater



Note

- ◆ Blue = Large coolant circuit
- ◆ Red = Small coolant circuit
- ◆ Orange = Coolant circuit for cylinder block.
- ◆ Brown = Heating circuit
- ◆ Green = Coolant circuit for gearbox
- ◆ Arrows show direction of coolant flow.

- 1 - Radiator
- 2 - Restrictor
- 3 - Thermostat
- 4 - Non-return valve
- 5 - Non-return valve
- 6 - Heater coolant shut-off valve - N279-
- 7 - Cylinder block
 - Cylinder bank 1 (right-side)
- 8 - Auxiliary heater
 - With circulation pump - V55-
- 9 - Coolant temperature sender - G62-
- 10 - Cylinder head
 - Cylinder bank 1 (right-side)
- 11 - Exhaust gas recirculation cooler
- 12 - Turbocharger
- 13 - Siphon
- 14 - Coolant expansion tank
- 15 - Filler cap
 - Checking pressure relief valve ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks





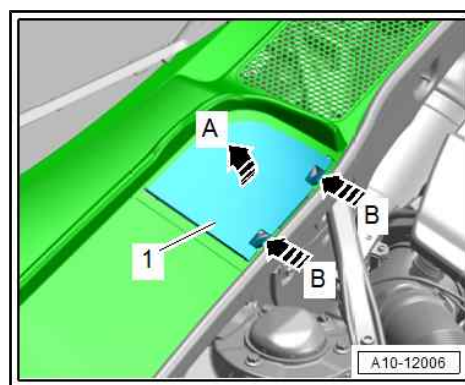
- 16 - Non-return valve
- 17 - Heat exchanger for heater
- 18 - Coolant circulation pump - V50-
- 19 - Exhaust gas recirculation cooler
 - ☐ Low pressure
- 20 - Thermostat
 - ☐ For coolant circuit for gearbox
- 21 - Injector for reducing agent - N474-
- 22 - ATF cooler
- 23 - Engine oil cooler
- 24 - Coolant shut-off valve
- 25 - Restrictor
- 26 - Cylinder head
 - ☐ Cylinder bank 2 (left-side)
- 27 - Non-return valve
- 28 - Cylinder block
 - ☐ Cylinder bank 2 (left-side)
- 29 - Restrictor
- 30 - Temperature sender for engine temperature regulation - G694-
- 31 - Non-return valve
- 32 - Coolant pump
- 33 - Auxiliary radiator
 - ☐ Optional equipment
- 34 - Non-return valve

1.2 Checking cooling system for leaks

Procedure

- Release catches -arrows B- and open cover -1- -arrow A-.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks .



1.3 Draining and filling cooling system

Special tools and workshop equipment required



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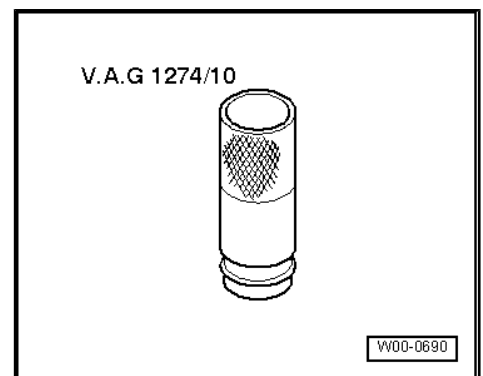
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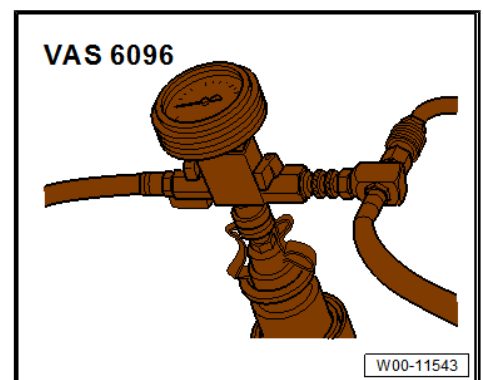
- ◆ Adapter for cooling system tester - V.A.G 1274/8-



- ◆ Pipe for cooling system tester - V.A.G 1274/10-



- ◆ Cooling system charge unit - VAS 6096-



- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

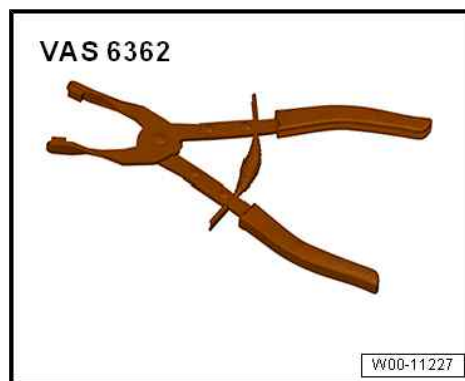


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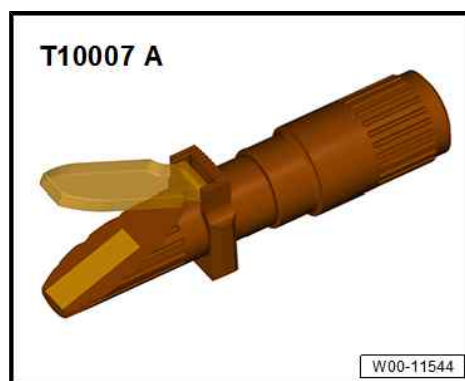




- ◆ Hose clip pliers - VAS 6362-



- ◆ Refractometer - T10007A-



- ◆ Safety goggles
- ◆ Protective gloves

Draining coolant



WARNING

Risk of injury as the radiator fans may start up automatically.

- ◆ *Even when the ignition is switched off, the radiator fans can start up without warning due to accumulated heat in the engine compartment, etc.*

- Release catches -arrows B- and open cover -1- -arrow A-.

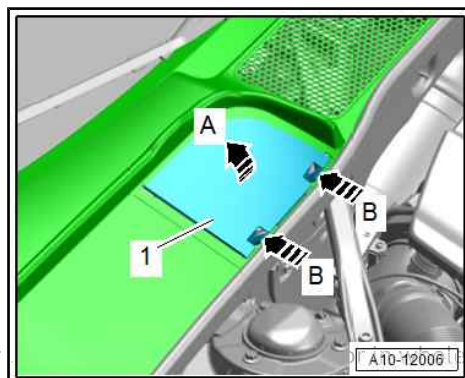


WARNING

The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant.

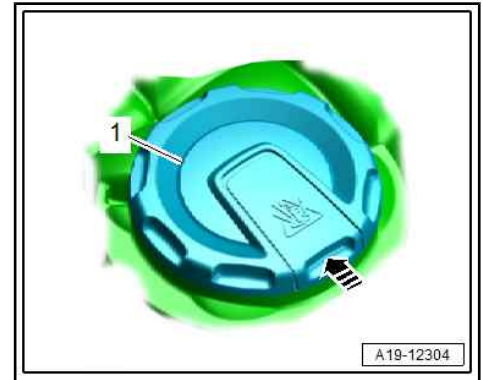
Danger of scalding skin and other parts of the body.

- *Put on protective gloves.*
- *Put on safety goggles.*
- *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*

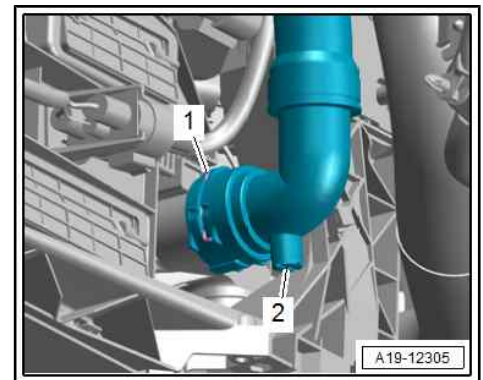




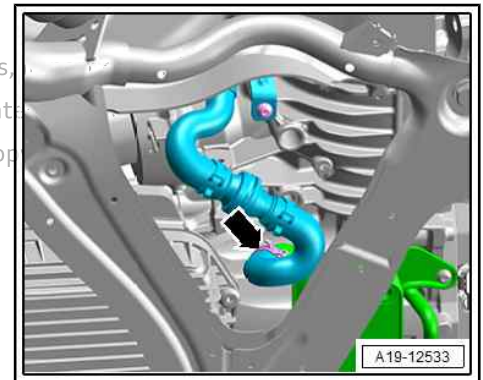
- Release fastener -arrow- and open filler cap -1- on coolant expansion tank.
- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Remove drain plug -2- at connection and drain off coolant.



- Release hose clip -arrow-.
 - Disconnect coolant hose from ATF cooler, hold end of hose downwards and drain off coolant.
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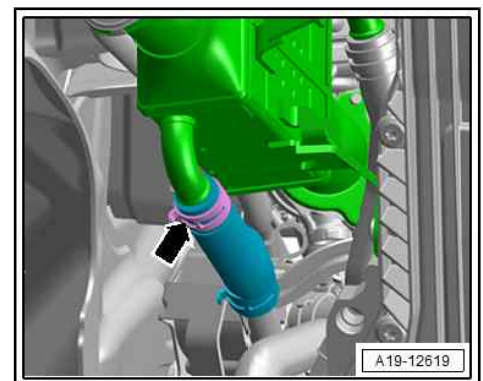
- Release hose clip -arrow-.
- Disconnect coolant hose from exhaust gas recirculation cooler, hold end of hose downwards and drain off coolant.
- Tighten drain plug and re-connect coolant hoses.

Coolant specifications

All information can be found in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

Recommended mixture ratio for coolant

- Coolant (40 %) and distilled water (60 %) for frost protection to -25 °C
- Coolant (50 %) and distilled water (50 %) for frost protection to -36 °C
- Coolant ⇒ Electronic parts catalogue



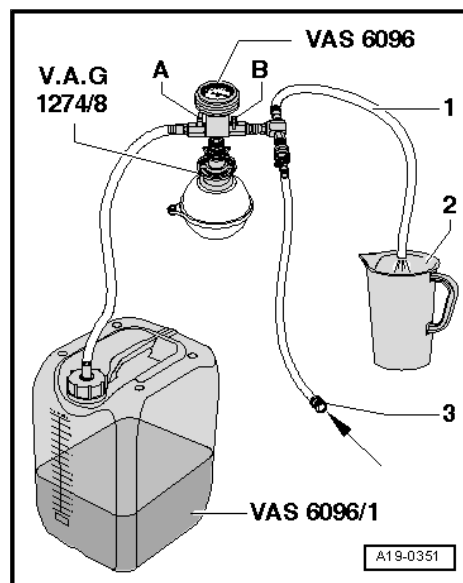
**Filling cooling system**

- Ignition switched off.
- Fill reservoir of -VAS 6096- with 10 litres of premixed coolant (according to recommended ratio; for recommended ratio see [⇒ page 75](#)).
- Fit adapter for cooling system tester - V.A.G 1274/8- onto coolant expansion tank.
- Attach cooling system charge unit - VAS 6096- to adapter - V.A.G 1274/8- .
- Run vent hose -1- into a small container -2-.

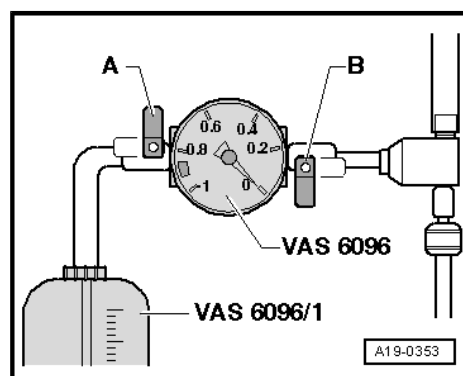
Note:

The vented air draws along a small amount of coolant, which should be collected.

- Close both valves -A- and -B- (turn lever at right angles to direction of flow).
- Connect hose -3- to compressed air supply.
- Pressure: 7 ... 10 bar.



- Open valve -B- by setting lever in direction of flow.
- The suction jet pump generates a partial vacuum in the cooling system; the needle on the gauge should move into the green zone.
- Also briefly open valve -A- (turn lever in direction of flow) so that hose on reservoir of -VAS 6096- can fill with coolant.
- Close valve -A- again.
- Leave valve -B- open for another 2 minutes.
- The suction jet pump continues to generate a partial vacuum in the cooling system; the needle on the gauge should remain in the green zone.
- Close valve -B-.
- The needle on the gauge should stop in the green zone. The vacuum level in the cooling system is then sufficient for subsequent filling.
- If the needle does not reach the green zone, repeat the process.
- Check cooling system for leaks if the vacuum is not maintained.
- Detach compressed air hose.
- Open valve -A-.
- The vacuum in the cooling system causes the coolant to be drawn out of the reservoir of -VAS 6096- ; the cooling system is then filled.
- Detach cooling system charge unit - VAS 6096- from adapter - V.A.G 1274/8- on coolant expansion tank.



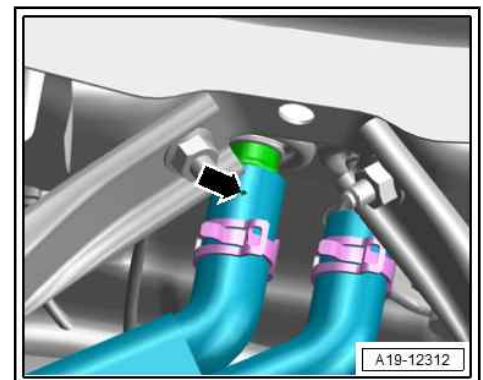
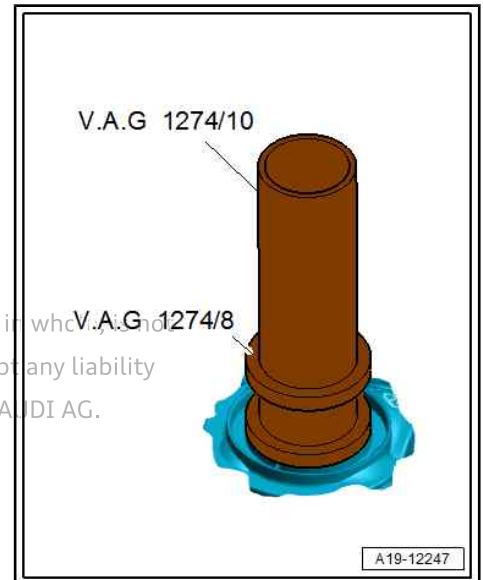
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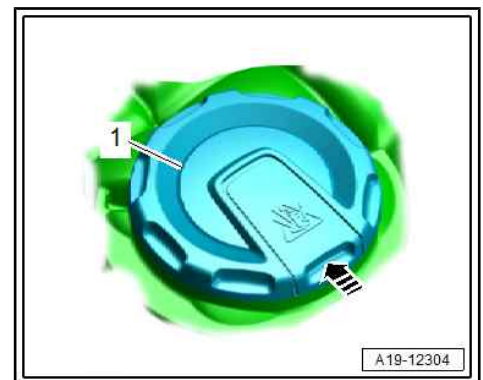
- Attach pipe -V.A.G 1274/10- onto adapter -V.A.G 1274/8- .
- Fill up with coolant until pipe for cooling system tester is filled. If required, add further coolant when performing bleeding procedure.

Bleeding cooling system

- Remove plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .



- Release hose clip on coolant hose going to heat exchanger for heater and pull back hose until bleeder hole -arrow- is no longer blocked by connection.
- Fill up with coolant until it flows out at bleeder hole in coolant hose.
- Push coolant hose back onto connection and secure with hose clip.



- Close filler cap -1- on coolant expansion tank (make sure it engages).
- On vehicles with auxiliary/supplementary heater, switch heater on for about 30 seconds.
- Start engine.

Time period	Engine speed	Air conditioner/heater setting
2 minutes	2500 rpm	• Air conditioning system "OFF", LED in AC button not lit • Heating at "HI", select lowest possible blower speed (= 0)
3 minutes	Idling speed	• Air conditioning system "OFF" • Heating at "HI"
2 minutes	2500 rpm	
3 minutes	Idling speed	
2 minutes	2500 rpm	
3 minutes	Idling speed	
1 minute	Switch off engine	



Time period	Engine speed	Air conditioner/heater setting
2 minutes	2500 rpm	
Until both large coolant hoses at radiator become warm	Idling	
1 minute	2500 rpm	

- Switch off engine.
- Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .

Checking coolant level



WARNING

The cooling system is under pressure when the engine is hot. Risk of scalding due to hot steam and hot coolant.

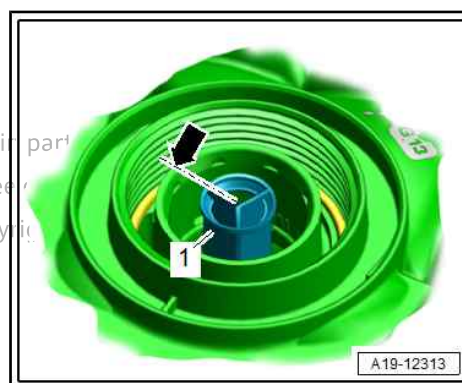
Danger of scalding skin and other parts of the body.

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

- The top edge (= MAX marking) of the float -1- must be flush with the opening -arrow- on the coolant expansion tank when the engine is cold.
- The top edge of the float may be above the opening on the coolant expansion tank when the engine is at operating temperature.
- Top up with coolant again if necessary.

Tightening torques

- ◆ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 100](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation





2 Coolant pump/thermostat assembly

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⇒ [“2.1 Exploded view - coolant pump”, page 79](#)

⇒ [“2.2 Exploded view - electric coolant pump”, page 79](#)

⇒ [“2.3 Exploded view - thermostat”, page 81](#)

⇒ [“2.4 Exploded view - coolant temperature senders”, page 81](#)

⇒ [“2.5 Removing and installing electric coolant pump”, page 82](#)

⇒ [“2.6 Removing and installing coolant pump”, page 84](#)

⇒ [“2.7 Removing and installing thermostat”, page 84](#)

⇒ [“2.8 Removing and installing coolant temperature sender G62”, page 85](#)

⇒ [“2.9 Removing and installing temperature sender for engine temperature regulation G694”, page 85](#)

⇒ [“2.10 Removing and installing coolant valves”, page 85](#)

2.1 Exploded view - coolant pump

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump .

2.2 Exploded view - electric coolant pump

⇒ [“2.2.1 Exploded view - continued coolant circulation pump V50”, page 79](#)

⇒ [“2.2.2 Exploded view - starter-alternator coolant pump V621”, page 81](#)

2.2.1 Exploded view - continued coolant circulation pump - V50-



1 - Coolant circulation pump - V50-

- ❑ Removing and installing
⇒ [page 82](#)

2 - Bolt

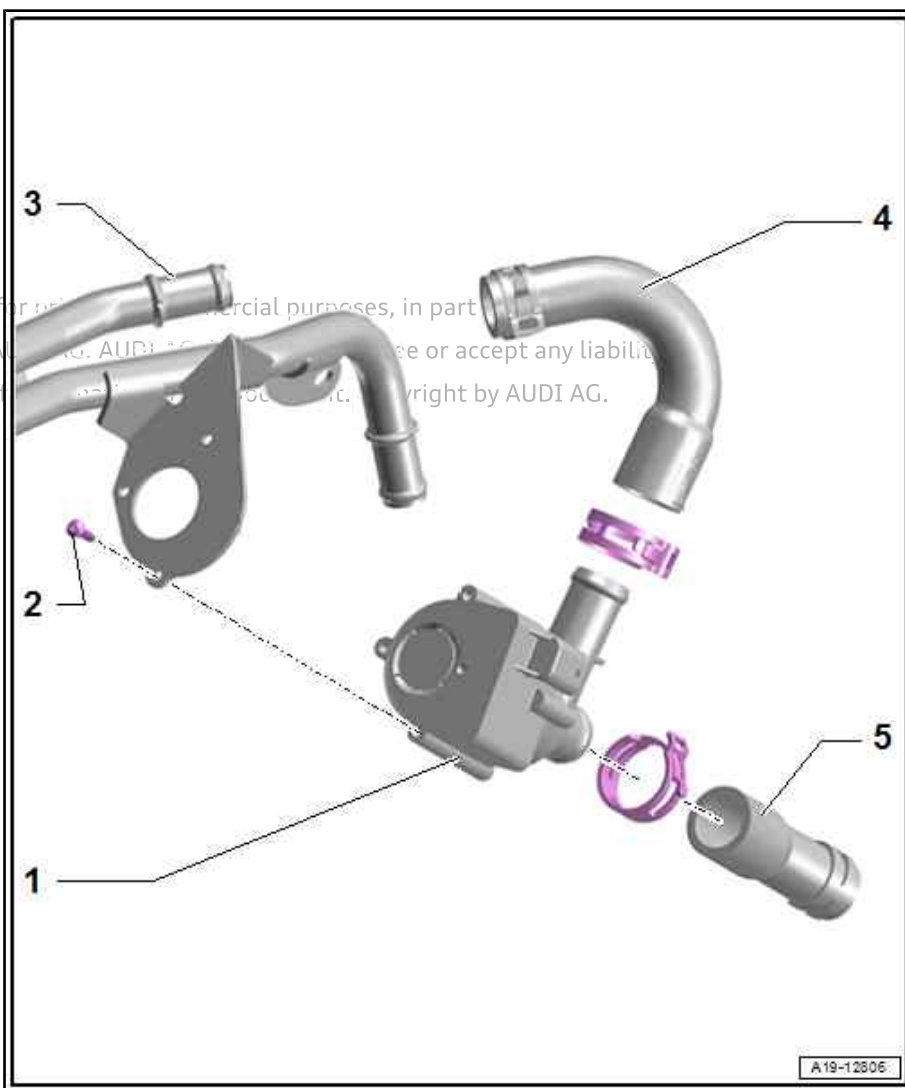
- ❑ 1.5 Nm

3 - Coolant pipes (rear)

- ❑ Removing and installing
⇒ [page 97](#)

4 - Coolant hose

5 - Coolant hose





2.2.2 Exploded view - starter-alternator coolant pump - V621-

1 - Coolant hose

2 - Starter-alternator coolant pump - V621-

- ❑ Removing and installing
⇒ [page 83](#)

3 - Coolant hose

4 - Bolt

- ❑ 9 Nm

5 - Bracket

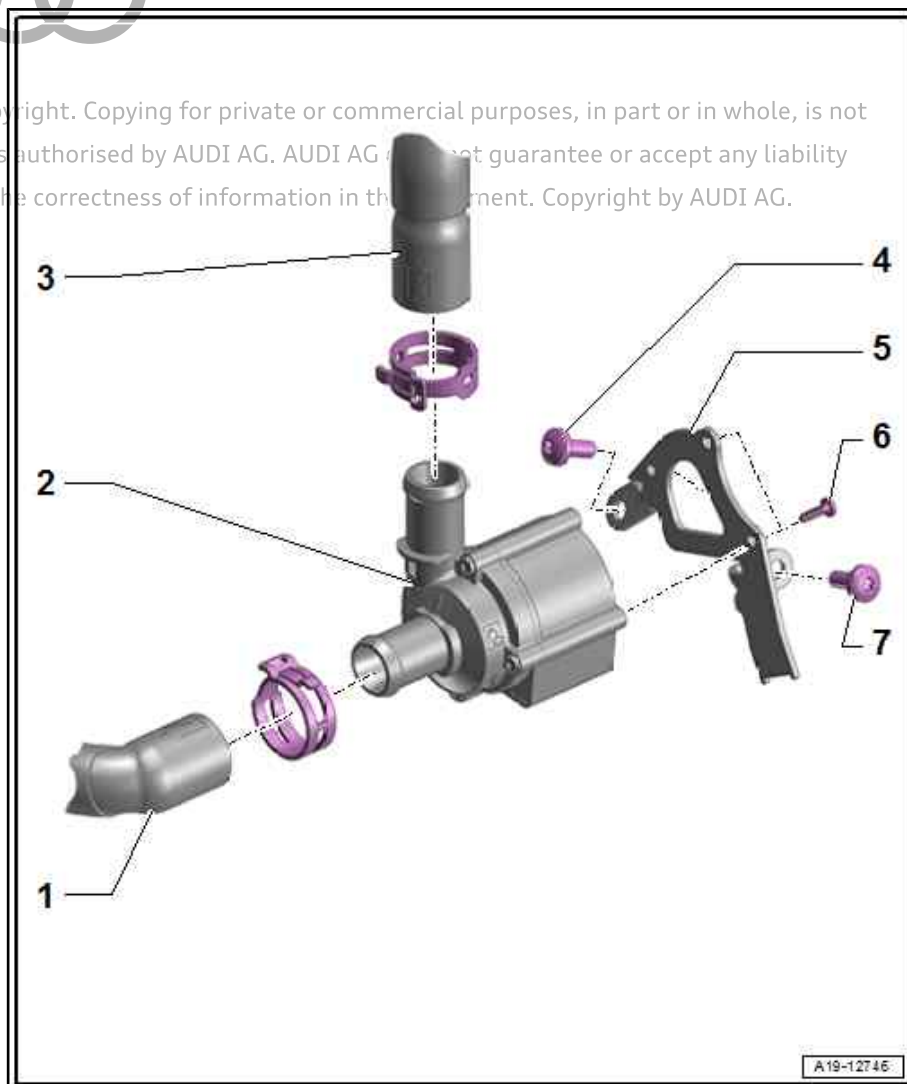
- ❑ For starter-alternator coolant pump - V621-

6 - Bolt

- ❑ 1.5 Nm

7 - Bolt

- ❑ 9 Nm



2.3 Exploded view - thermostat

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - thermostat .

2.4 Exploded view - coolant temperature senders

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant temperature senders .



2.5 Removing and installing electric coolant pump

⇒ ["2.5.1 Removing and installing coolant circulation pump V50", page 82](#)

⇒ ["2.5.2 Removing and installing starter-alternator coolant pump V621", page 83](#)

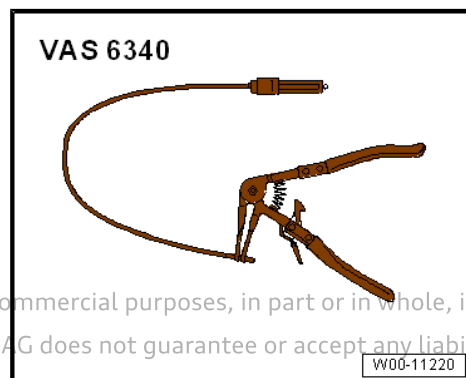
2.5.1 Removing and installing coolant circulation pump - V50-

Special tools and workshop equipment required

- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-



- ◆ Hose clip pliers - VAS 6340-



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Removing

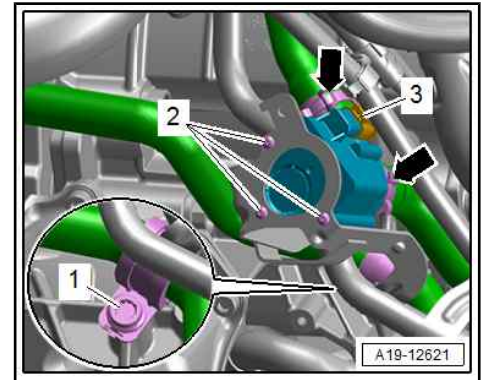
- Remove subframe shield (left-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe shield .
- Detach intermediate steering shaft from steering rack and move clear by telescoping together ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .



- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Remove bolt -1- and push coolant hose to one side.
- Unplug electrical connector -3-.
- Remove bolts -2-.
- Release hose clips -arrows-, detach coolant circulation pump - V50- and remove coolant hoses.

Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Do not reuse coolant.*
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .
- Fill up with coolant ⇒ [page 72](#) .

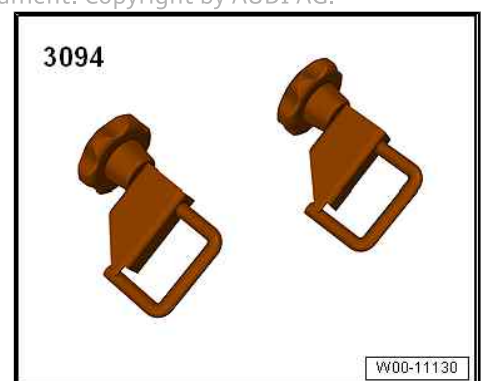
Tightening torques

- ◆ ⇒ [“2.2 Exploded view - electric coolant pump”, page 79](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Exploded view - subframe
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)

2.5.2 Removing and installing starter-alternator coolant pump - V621-

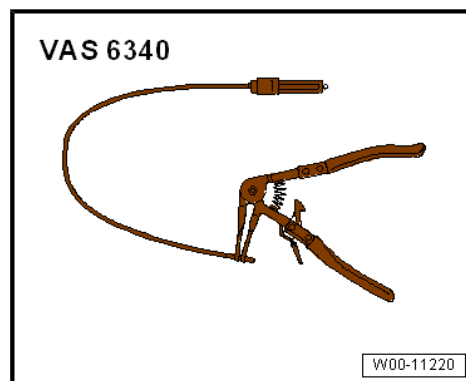
Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm - 3094-





- ◆ Hose clip pliers - VAS 6340-



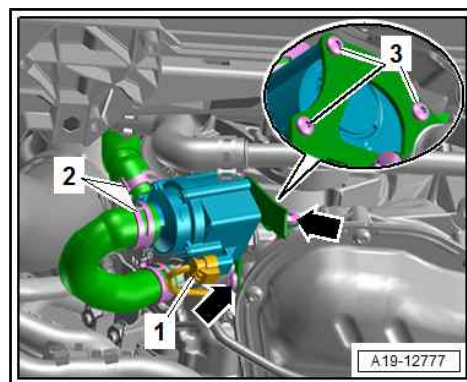
Removing

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Unplug electrical connector -1-.
- Place a cloth underneath to catch escaping coolant.
- Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -2- and disconnect hoses.
- Remove bolts -arrows- and detach starter-alternator coolant pump - V621- .
- Unscrew bolts -3- and detach coolant pump from bracket.

Installing

Installation is carried out in reverse order; note the following:

- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Do not reuse coolant.
- Fill up with coolant ⇒ [page 72](#) .



Tightening torques

- ◆ ⇒ [“2.2.2 Exploded view - starter-alternator coolant pump V621”](#), [page 81](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.6 Removing and installing coolant pump

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant pump .

2.7 Removing and installing thermostat

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail (EA 897 Gen. II); Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing thermostat

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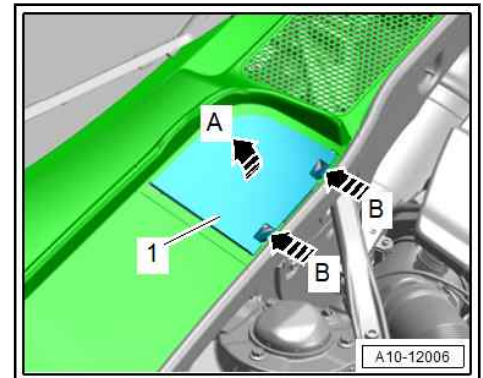


2.8 Removing and installing coolant temperature sender - G62-

Removing

- Release catches -arrows B- and open cover -1- -arrow A-.

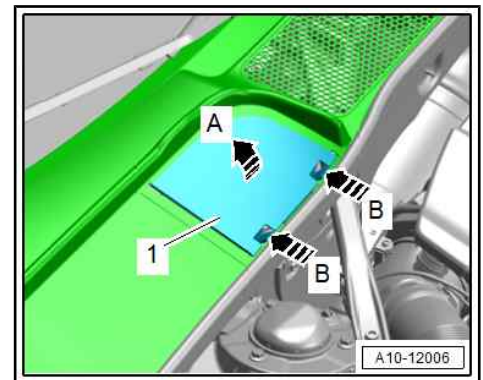
All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant temperature sender - G62- .



2.9 Removing and installing temperature sender for engine temperature regulation - G694-

Removing

- Release catches -arrows B- and open cover -1- -arrow A-.
- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



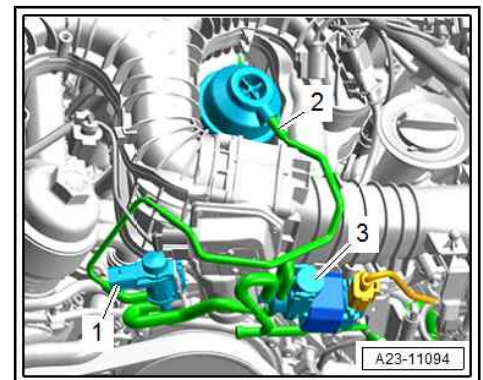
- Detach changeover valve -3- from bracket and move clear to side.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing temperature sender for engine temperature regulation - G694- .

Installing

Additional work:

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



2.10 Removing and installing coolant valves

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant valves .

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3 Coolant pipes

⇒ ["3.1 Exploded view - coolant pipes", page 86](#)

⇒ ["3.2 Removing and installing coolant pipes", page 89](#)

3.1 Exploded view - coolant pipes



Note

The arrow markings on coolant pipes and on ends of hoses must align.

Part I

Part II ⇒ [page 87](#)

1 - O-ring

- ☐ Renew after removing

2 - Bolt

- ☐ 9 Nm

3 - Bolt

- ☐ 9 Nm

4 - Bolt

- ☐ 9 Nm

5 - Coolant pipe (front)

- ☐ Removing and installing
⇒ [page 89](#)

6 - O-ring

- ☐ Renew after removing

7 - Seal

- ☐ Renew after removing

8 - O-ring

- ☐ Renew after removing

9 - Coolant pipe (top right)

- ☐ Removing and installing
⇒ [page 94](#)

10 - Bolts

- ☐ 9 Nm

11 - O-ring

- ☐ Renew after removing

12 - Coolant pipe (top)

- ☐ Removing and installing
⇒ [page 89](#)

13 - Bolt

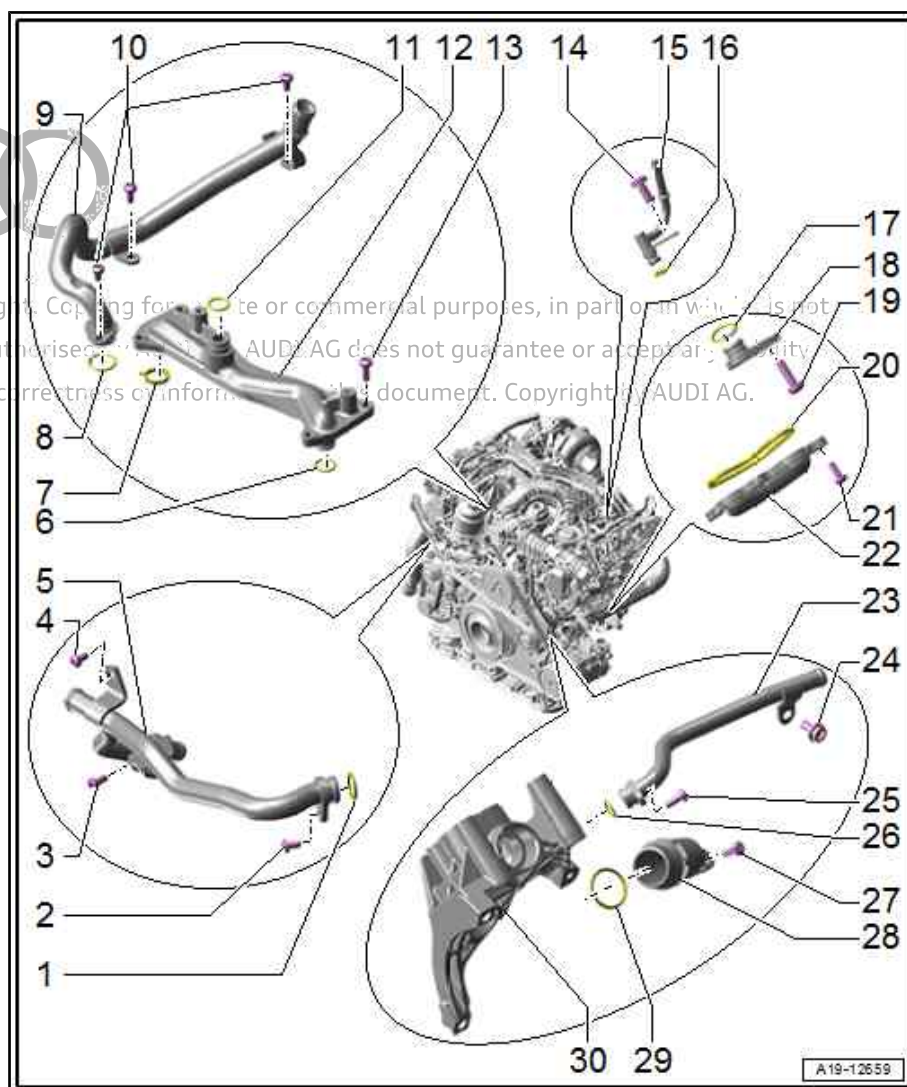
- ☐ 9 Nm

14 - Bolt

- ☐ 9 Nm

15 - Coolant pipe

- ☐ For cylinder head





16 - O-ring

- ☐ Renew after removing

17 - O-ring

- ☐ Renew after removing

18 - Sealing plug

- ☐ For cylinder block

19 - Bolt

- ☐ 9 Nm

20 - Gasket

- ☐ Renew after removing

21 - Bolt

- ☐ 9 Nm

22 - Housing cover

- ☐ For cylinder block

23 - Coolant pipe (left-side)

- ☐ Removing and installing ⇒ [page 92](#)

24 - Bolt

- ☐ 20 Nm

25 - Bolt

- ☐ 9 Nm

26 - O-ring

- ☐ Renew after removing

27 - Bolt

- ☐ 9 Nm

28 - Connection

- ☐ For coolant hose

29 - O-ring

- ☐ Renew after removing

30 - Bracket

- ☐ For air conditioner compressor
- ☐ Removing and installing ⇒ 6-cylinder TDI engine, 3.0 ltr. 4-valve common rail; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries

Part II

Part I ⇒ [page 86](#)

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1 - Coolant pipes (rear)

- ❑ Removing and installing
⇒ [page 97](#)

2 - Bolt

- ❑ 9 Nm

3 - Coolant pipe (rear) for turbocharger

- ❑ Removing and installing
⇒ [page 93](#)

4 - O-ring

- ❑ Renew after removing

5 - Bolt

- ❑ 9 Nm

6 - O-ring

- ❑ Renew after removing

7 - Bolt

- ❑ 9 Nm

8 - Coolant pipe (top front) for turbocharger

- ❑ Removing and installing
⇒ [page 96](#)

9 - Bolt

- ❑ 9 Nm

10 - O-ring

- ❑ Renew after removing

11 - Bolts

- ❑ 9 Nm

12 - Coolant pipe (bottom front) for turbocharger

- ❑ Removing and installing ⇒ [page 96](#)

13 - Bolt

- ❑ 9 Nm

14 - Coolant pipe (right-side)

- ❑ Removing and installing ⇒ [page 95](#)

15 - Bolt

- ❑ 9 Nm

16 - Bolt

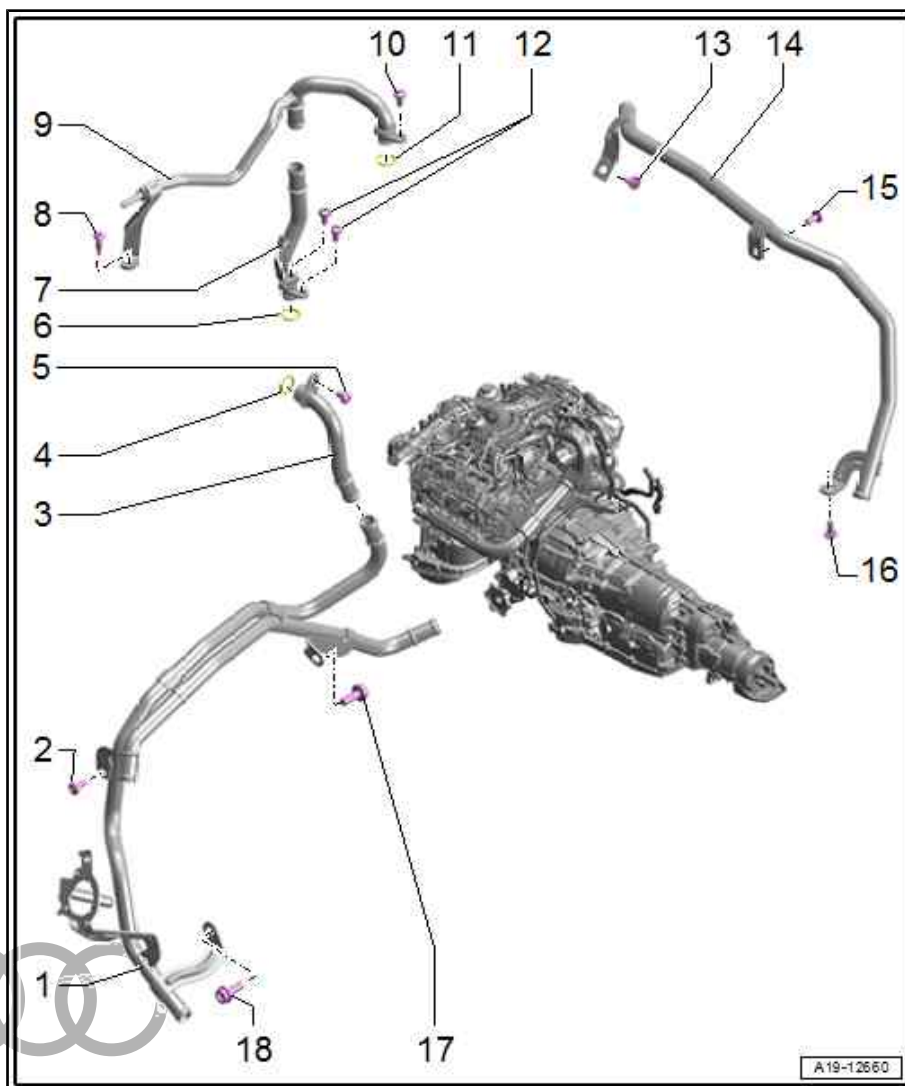
- ❑ 9 Nm

17 - Bolt

- ❑ 20 Nm

18 - Bolt

- ❑ 20 Nm



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3.2 Removing and installing coolant pipes

⇒ [“3.2.1 Removing and installing coolant pipe \(top\)”, page 89](#)

⇒ [“3.2.2 Removing and installing coolant pipe \(front\)”, page 89](#)

⇒ [“3.2.3 Removing and installing coolant pipe \(left-side\)”, page 92](#)

⇒ [“3.2.4 Removing and installing coolant pipe \(rear\) for turbo-charger”, page 93](#)

⇒ [“3.2.5 Removing and installing coolant pipe \(top right\)”, page 94](#)

⇒ [“3.2.6 Removing and installing coolant pipe \(right-side\)”, page 95](#)

⇒ [“3.2.7 Removing and installing coolant pipes \(front\) for turbo-charger”, page 96](#)

⇒ [“3.2.8 Removing and installing coolant pipes \(rear\)”, page 97](#)

3.2.1 Removing and installing coolant pipe (top)

Removing

- Remove exhaust gas recirculation cooler ⇒ [page 174](#) .
- Unscrew bolts -arrows- and remove coolant pipe (top) -1-.

Installing

Installation is carried out in reverse order; note the following:



Renew seal and O-ring after removing.

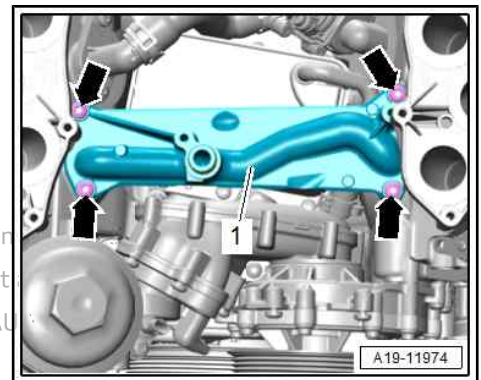
- Clean and smoothen sealing surface for O-ring.
- Lubricate O-ring with coolant and slide onto coolant pipe.
- Install exhaust gas recirculation cooler ⇒ [page 174](#) .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - coolant pipes”, page 86](#)

3.2.2 Removing and installing coolant pipe (front)

Special tools and workshop equipment required





- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

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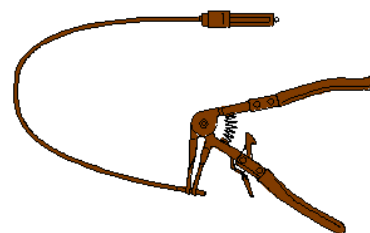
VAS 6208



W00-11209

- ◆ Hose clip pliers - VAS 6340-

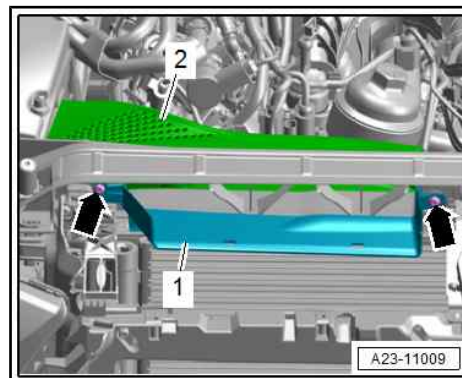
VAS 6340



W00-11220

Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Remove bolts -arrows- and detach air duct -2-.



A23-11009



- Release catches -arrows B- and open cover -1- -arrow A-.

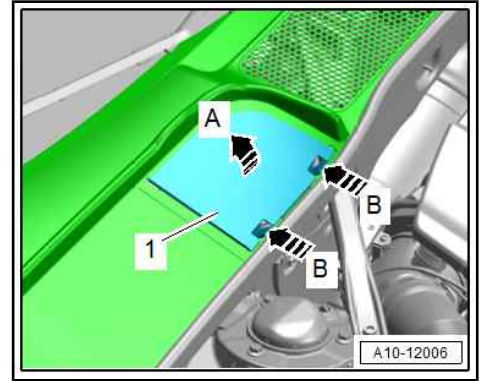


WARNING

*The cooling system is under pressure when the engine is hot.
Risk of scalding due to hot steam and hot coolant.*

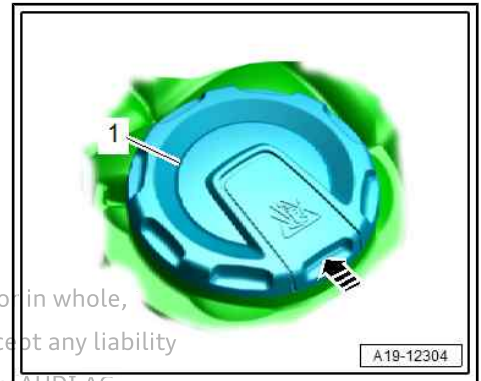
Danger of scalding skin and other parts of the body.

- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.



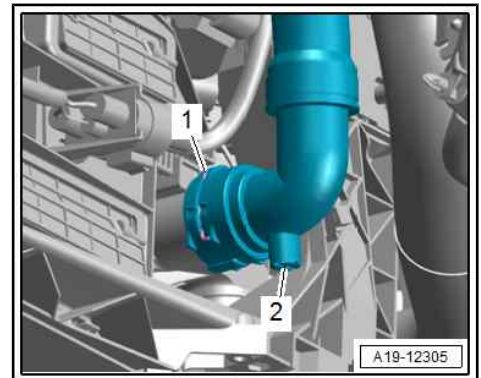
- To relieve residual pressure in cooling system, release fastener -arrow- and briefly open filler cap -1- on coolant expansion tank.

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



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- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Remove drain plug -2- and drain off coolant.





- Release hose clips -1, 2- and disconnect coolant hoses.
- Remove bolts -arrows- and detach coolant pipe (front) -3- from map-controlled engine cooling system thermostat - F265- .

Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Renew O-ring after removal.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ [Electronic parts catalogue](#) .*
- Clean and smoothen sealing surface for O-ring.
- Lubricate O-ring with coolant and slide onto coolant pipe.



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 72](#) .
- Install lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - coolant pipes”, page 86](#)
- ◆ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 100](#)
- ◆ ⇒ [“3.1 Exploded view - air cleaner housing”, page 125](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

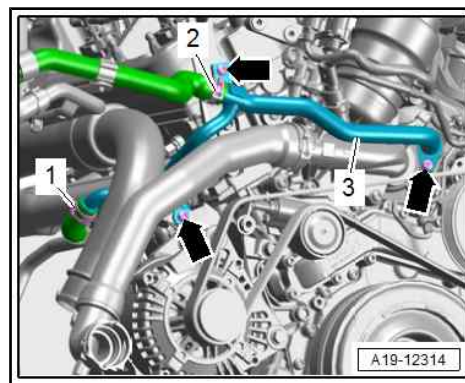
3.2.3 Removing and installing coolant pipe (left-side)

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



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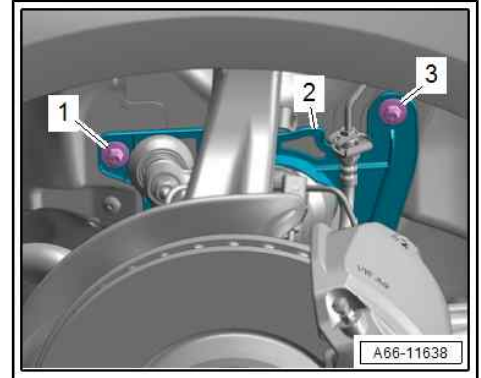


Removing

- Drain coolant ⇒ [page 72](#) .



- Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove air conditioner compressor from bracket and tie up to left side ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .
- Unscrew nuts -1, 3- and remove cover -2- for drive shaft.

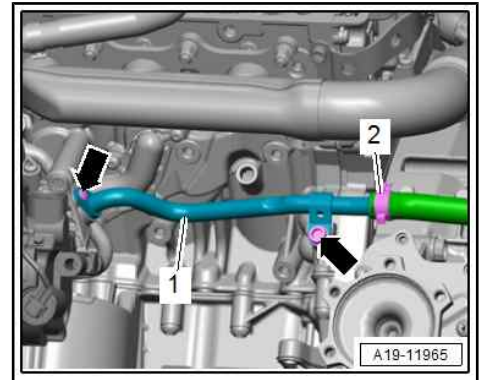


- Release hose clip -2- and detach coolant hose from coolant pipe.
- Remove bolts -arrows-.
- Detach coolant pipe (left-side) -1-.



Note

For illustration purposes, the installation position is shown with the engine support removed.



Installing

Installation is carried out in reverse order; note the following:



Note

◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*

◆ *Do not reuse coolant.*

- Fill up with coolant ⇒ [page 72](#) .

Tightening torques

◆ ⇒ ["3.1 Exploded view - coolant pipes" page 86](#)

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◆ ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Exploded view - air conditioner compressor drive unit

◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)

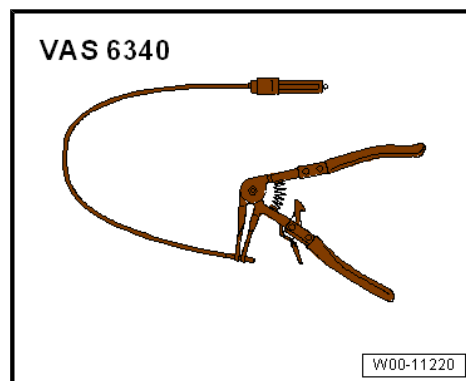
◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

3.2.4 Removing and installing coolant pipe (rear) for turbocharger

Special tools and workshop equipment required



- ◆ Hose clip pliers - VAS 6340-



Removing



Note

Reinstall heat insulation sleeves in the same locations when installing.

- Drain coolant ➔ [page 72](#) .
- Remove emission control module ➔ [page 158](#) .
- Fold heat insulation sleeve back slightly.
- Unscrew bolt -arrow- and detach coolant pipe -1- from turbo-charger.
- Loosen hose clip -2- and detach coolant pipe.

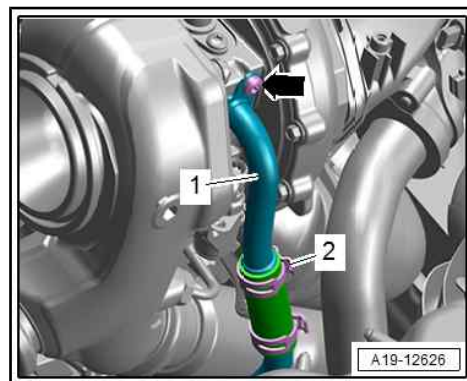
Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ Renew O-ring after removal.
- ◆ Secure all hose connections with correct type of hose clips (as original equipment) ➔ *Electronic parts catalogue* .
- Install emission control module ➔ [page 158](#) .



Note

Do not reuse coolant.

- Fill up with coolant ➔ [page 72](#) .

Tightening torques

- ◆ ➔ [“3.1 Exploded view - coolant pipes”, page 86](#)

3.2.5 Removing and installing coolant pipe (top right)

Removing

- Remove exhaust gas recirculation cooler ➔ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation; Removing and installing exhaust gas recirculation cooler .



- Detach coolant pipe (top right).

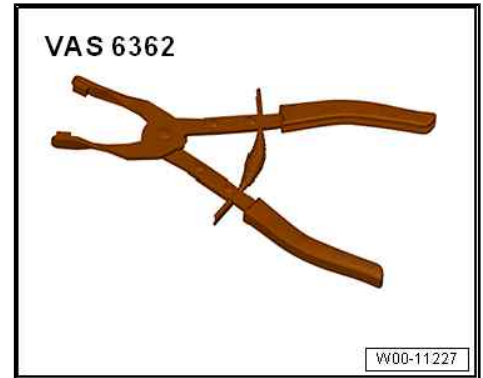
Installing

Installation is carried out in reverse sequence.

3.2.6 Removing and installing coolant pipe (right-side)

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



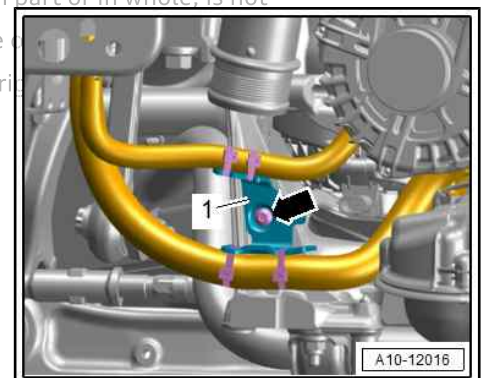
- ◆ Socket Torx T30 - T10405-



Removing

- Disconnect earth wire from battery terminal ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove cover for drive shaft (right-side) and wheel spoiler (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Remove bolt -arrow- and move bracket -1- with electrical wiring harness to one side.

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- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Release hose clips -1, 2- and disconnect coolant hoses.
- Unscrew bolts -arrows- using socket Torx T30 - T10405- and detach coolant pipe (right-side).

Installing

Installation is carried out in reverse order; note the following:



Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Fill up with coolant ⇒ [page 72](#) .

Tightening torques

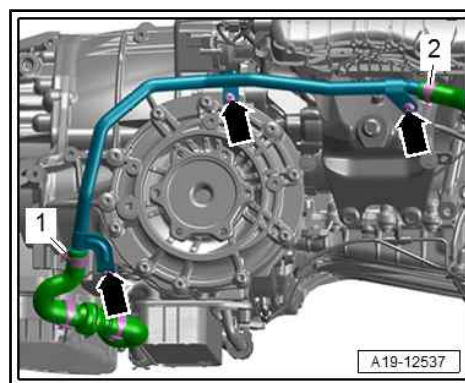
- ♦ ⇒ [“3.1 Exploded view - coolant pipes”, page 86](#)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

3.2.7 Removing and installing coolant pipes (front) for turbocharger

Special tools and workshop equipment required

- ♦ Hose clip pliers - VAS 6362-

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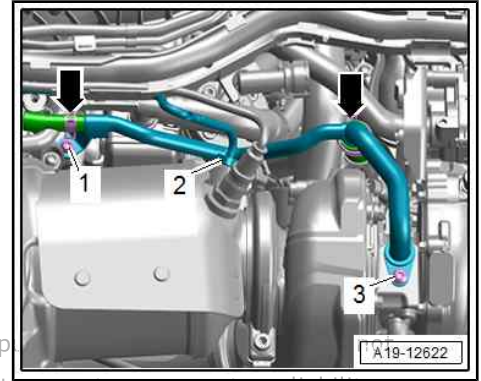


Removing coolant pipe (top front) for turbocharger

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Drain coolant ⇒ [page 72](#) .



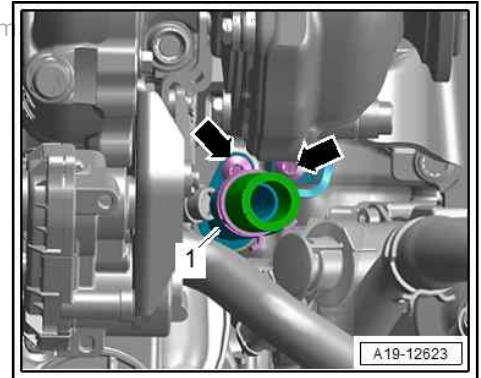
- Remove exhaust gas temperature sender 2 - G448- -item 2-
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 2 - G448- .
- Remove bolts -1, 3-.
- Release hose clips -arrows-, detach coolant pipe (top front) from turbocharger and remove.



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Removing coolant pipe (bottom front) for turbocharger

- Coolant pipe (top front) for turbocharger removed
- Remove bolts -arrows-.
- Detach coolant pipe (bottom front) -1- from cylinder block and remove.



Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Renew O-ring after removal.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- Install exhaust gas temperature sender 2 - G448- ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 2 - G448- .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 72](#) .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

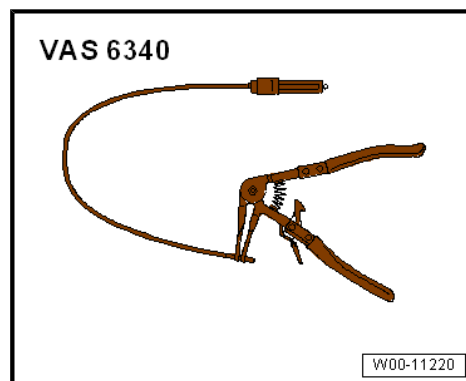
- ◆ ⇒ ["3.1 Exploded view - coolant pipes", page 86](#)

3.2.8 Removing and installing coolant pipes (rear)

Special tools and workshop equipment required



◆ Hose clip pliers - VAS 6340-



◆ Hose clip pliers - VAS 6362-



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◆ Bit XZN 10 - T10501-

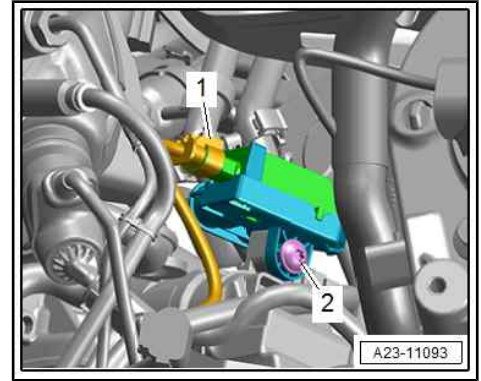


Removing

- Drain coolant ⇒ [page 72](#) .
- Remove emission control module ⇒ [page 158](#) .
- Detach intermediate steering shaft from steering rack and move clear by telescoping together ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .



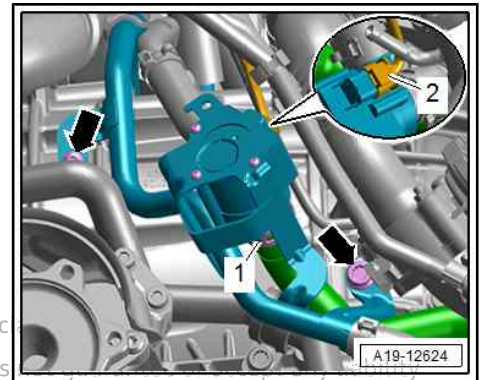
- Unplug electrical connector -1-.
- Remove bolt -2- and move pressure differential sender 2 - G524- clear.



- Unplug electrical connector -2- for coolant circulation pump - V50- .
- Remove bolts -arrows-.
- Release hose clip -1- and disconnect coolant hose.



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- Lift retaining clip -2- and disconnect coolant hose.
- Unscrew bolts -arrows- and detach coolant pipes -1-.

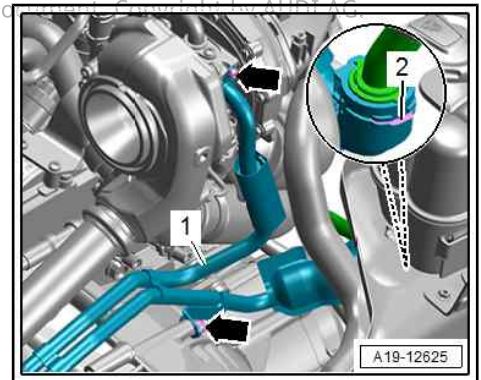
Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Renew O-ring after removal.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*



- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing steering column .
- Install emission control module ⇒ [page 158](#) .
- Install pressure differential sender 2 - G524- ⇒ [page 172](#) .
- Connect coolant hose with plug-in connector ⇒ [page 101](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 72](#) .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - coolant pipes”, page 86](#)



4 Radiator/radiator fans

⇒ ["4.1 Exploded view - radiator/radiator fans", page 100](#)

⇒ ["4.2 Removing and installing radiator", page 102](#)

⇒ ["4.3 Removing and installing radiator cowl", page 106](#)

⇒ ["4.4 Removing and installing radiator fan V7", page 108](#)

4.1 Exploded view - radiator/radiator fans

Radiator

1 - Coolant hose

- ☐ Lift retaining clip to detach
- ☐ Connecting ⇒ [page 101](#)

2 - Radiator

- ☐ Removing and installing ⇒ [page 102](#)
- ☐ If there are slight impressions on the fins, refer to ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Installing radiators and condensers

3 - O-ring

- ☐ Renew after removing

4 - Sealing plug

- ☐ Lift retaining clip to detach
- ☐ Connecting ⇒ [page 101](#)

5 - O-ring

- ☐ Renew after removing

6 - Coolant hose

- ☐ Lift retaining clip to detach
- ☐ Connecting ⇒ [page 101](#)

7 - Coolant pipe

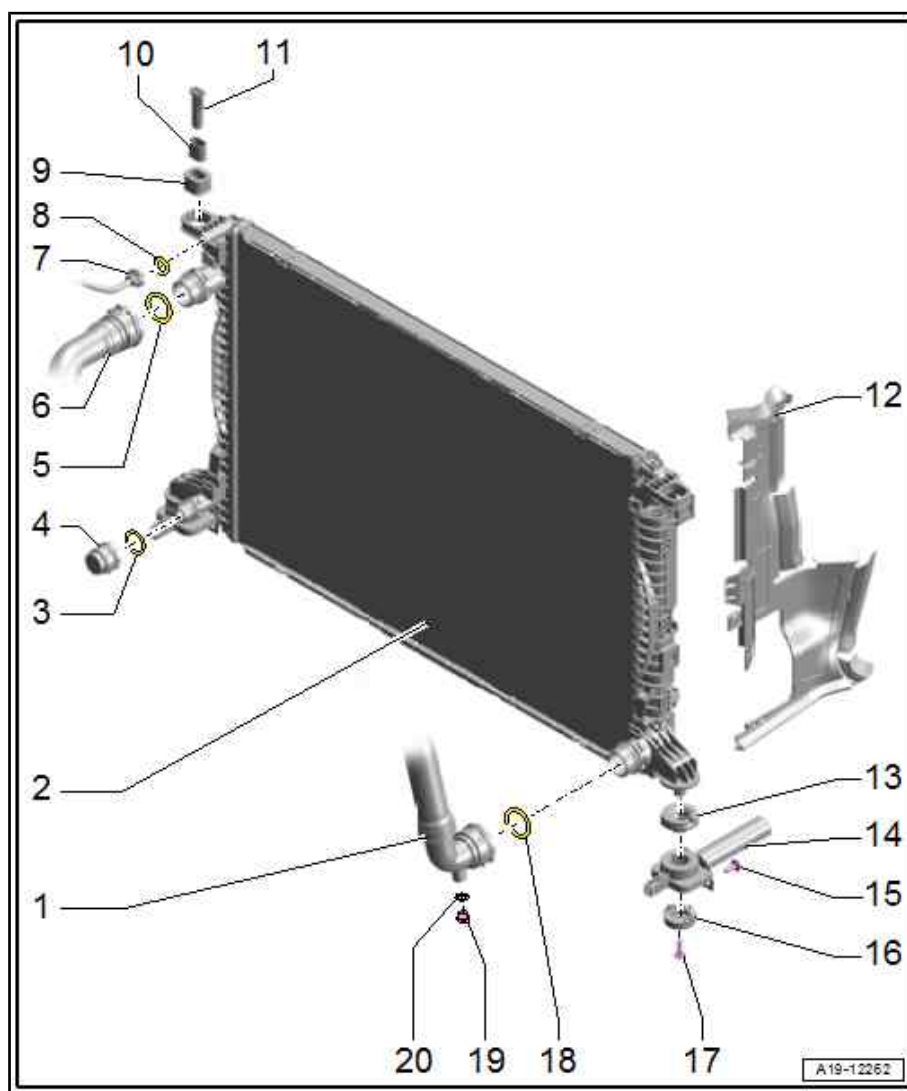
- ☐ To coolant expansion tank
- ☐ Lift retaining clip to detach
- ☐ Connecting ⇒ [page 101](#)

8 - O-ring

- ☐ Renew after removing

9 - Rubber bush

- ☐ For radiator





10 - Sleeve

11 - Retaining pin

- ☐ Use screwdriver to release and pull off

12 - Air duct

13 - Rubber bush

- ☐ For radiator

14 - Radiator bracket

15 - Bolt

- ☐ 5 Nm

16 - Washer

17 - Bolt

- ☐ 4.5 Nm

18 - O-ring

- ☐ Renew after removing

19 - Drain plug

- ☐ 1.5 ... 3 Nm

20 - O-ring

- ☐ Renew after removing

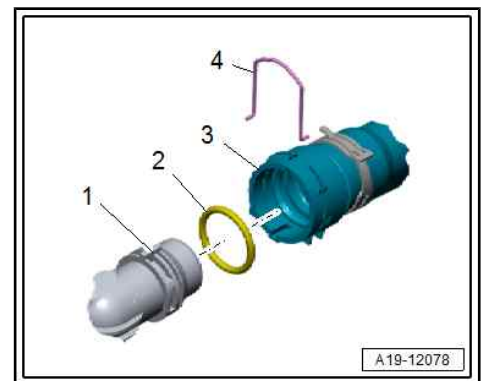
Connecting coolant hose with plug-in connector



Note

If damaged, renew retaining clip -4-.

- Remove old O-ring -2- from coolant hose -3-.
- Lightly lubricate new O-ring with coolant and fit O-ring in coolant hose.
- Press coolant hose onto connection -1- until it engages audibly.
- Press coolant hose in again and then pull to check that plug-in connector is correctly engaged.



Radiator cowl and radiator fans

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1 - Bolt

- 5 Nm

2 - Radiator cowl

- Removing and installing
⇒ [page 106](#)

3 - Bolt

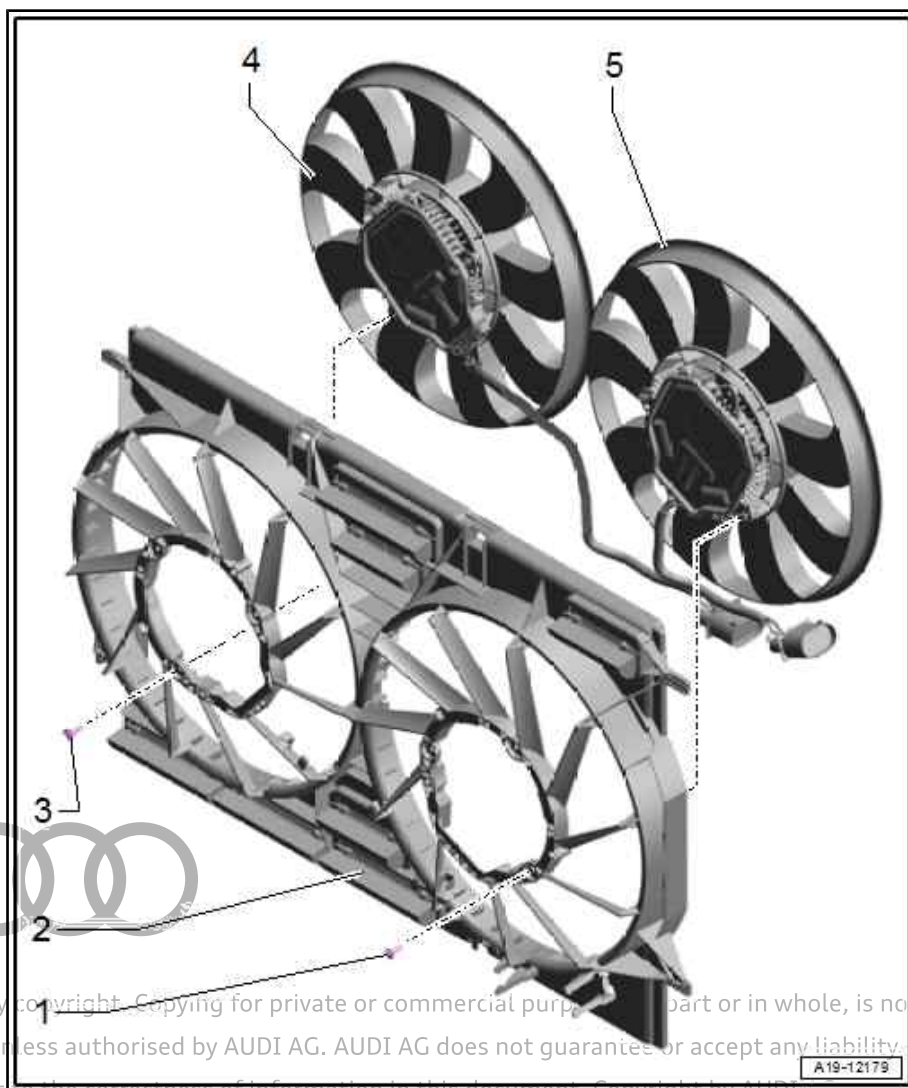
- 5 Nm

4 - Radiator fan - V7-

- With radiator fan control unit - J293-
- Removing and installing
⇒ [page 108](#)

5 - Radiator fan 2 - V177-

- With radiator fan control unit 2 - J671-
- Removing and installing
⇒ [page 108](#)



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A19-12179

4.2 Removing and installing radiator



Note

The radiator must be removed and installed together with the radiator cowl.

Special tools and workshop equipment required

- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

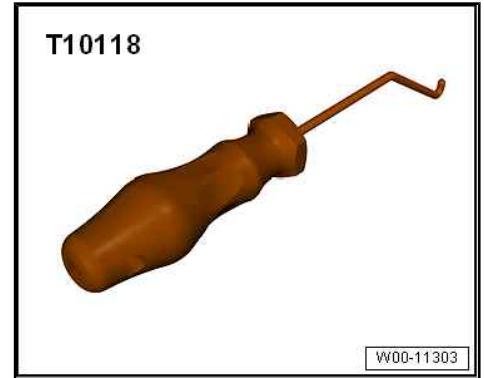
VAS 6208



W00-11209



- ◆ Assembly tool - T10118-



Removing

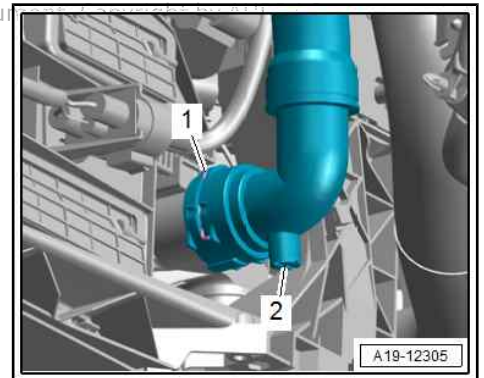


WARNING

Risk of injury as the radiator fans may start up automatically.

- ◆ ***Even when the ignition is switched off, the radiator fans can start up without warning due to accumulated heat in the engine compartment, etc.***

- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove bracket for bumper cover together with impact bar ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Exploded view - lock carrier , ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing impact bar .
- A4 with LED and matrix LED headlights; Remove headlight (left-side) ⇒ Electrical system; Rep. gr. 94 ; Headlights; Removing and installing headlights .
- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Lift retaining clip -1- and disconnect coolant hose from radiator (bottom right).

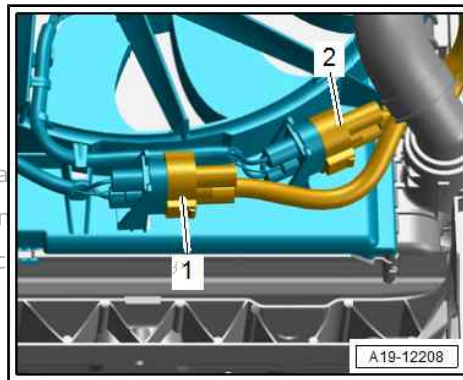




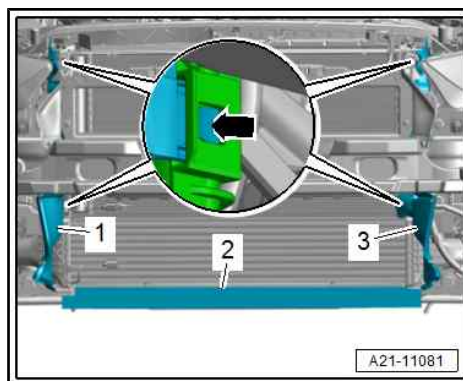
- Unplug electrical connectors -1, 2- for radiator fan.



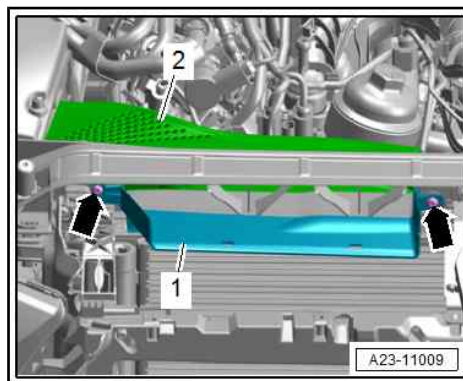
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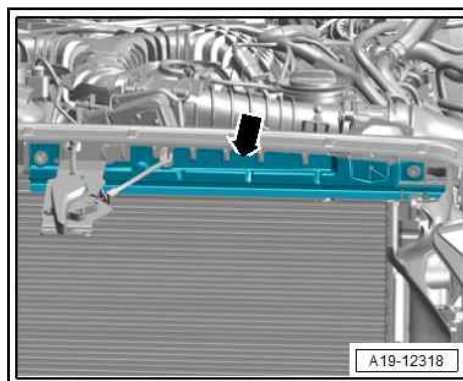
- Release catches -arrow- and detach air ducts -1, 3-.
- Unclip air duct -2-.



- Remove bolts -arrows- and detach air duct -1-.



- Detach air duct (top) -arrow-.
- Remove charge air cooler ➡ [page 113](#) .





- Unplug electrical connector -2- for high-pressure sender - G65- .



Caution

Risk of irreparable damage to radiator.

- ◆ **The radiator must be renewed if the fasteners are damaged.**

Risk of damage to refrigerant lines and hoses

- ◆ **Do NOT stretch, kink or bend refrigerant lines and hoses.**

- Release fasteners -arrows- on both sides, disengage condenser -1- from radiator and tie up to one side.

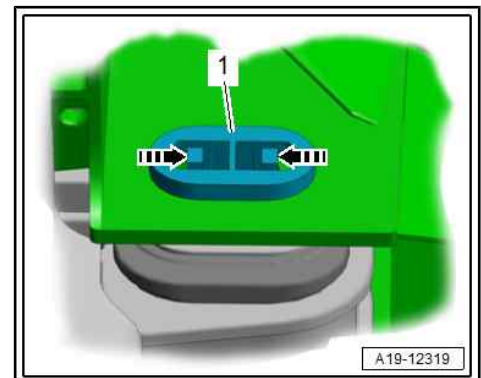
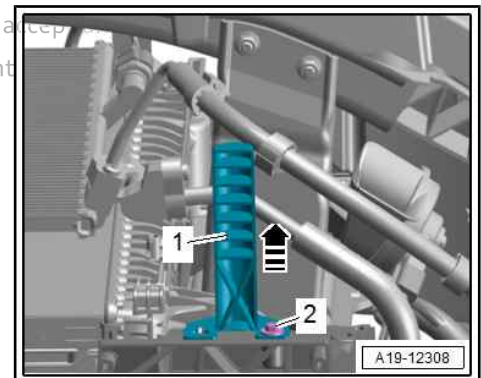
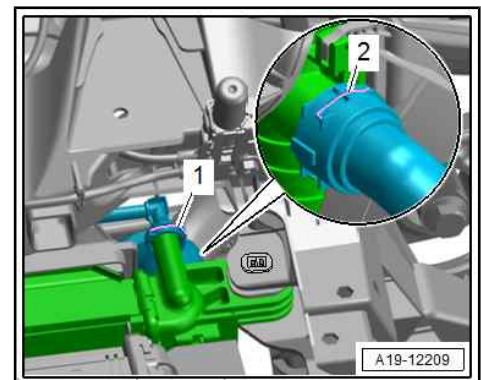
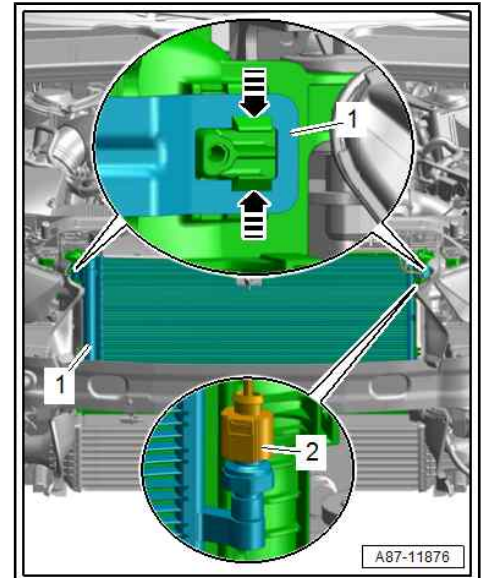
- Lift retaining clips -1, 2-, detach coolant connection from radiator and move connection clear.



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- Remove bolt -2- on both sides and press radiator bracket -1- with radiator towards front -arrow-.

- Release fasteners -arrows- on both sides and pull retaining pins -1- for radiator out upwards.
- Detach radiator.





- Press locking tabs on left and right sides of radiator cowl together -arrow- and lift radiator cowl off radiator.

Installing

Installation is carried out in reverse order; note the following:



Note

If there are slight impressions on the fins, refer to ➔ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Installing radiators and condensers .

- Install charge air cooler ➔ [page 113](#) .
- Electrical connections and routing ➔ Current flow diagrams, Electrical fault finding and Fitting locations.
- Connect coolant hose with plug-in connector ➔ [page 101](#) .



Note

Do not reuse coolant.

- Fill up with coolant ➔ [page 72](#) .
- If removed: Install headlight (left-side) ➔ Electrical system; Rep. gr. 94 ; Headlights; Removing and installing headlights .

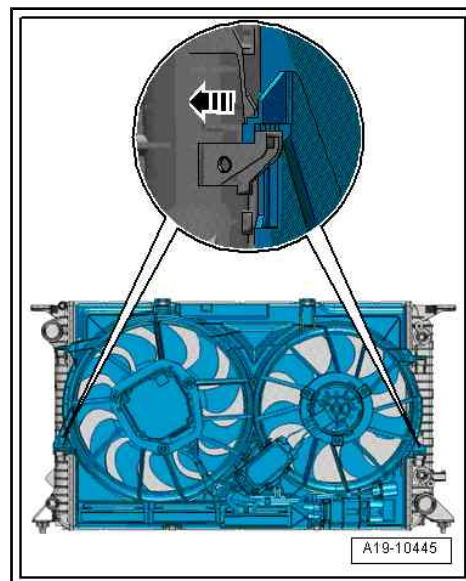
Tightening torques

- ♦ ➔ [“4.1 Exploded view - radiator/radiator fans”, page 100](#)
- ♦ ➔ [“3.1 Exploded view - air cleaner housing”, page 125](#)
- ♦ ➔ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ♦ ➔ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Exploded view - lock carrier
- ♦ ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

4.3 Removing and installing radiator cowl

Special tools and workshop equipment required

- ♦ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-





Removing

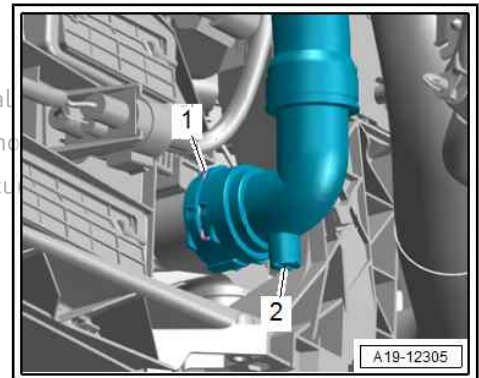


WARNING

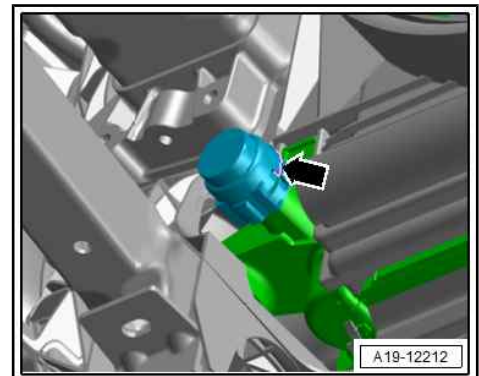
Risk of injury as the radiator fans may start up automatically.

- ◆ *Unplug electrical connectors before working in vicinity of radiator cowl.*

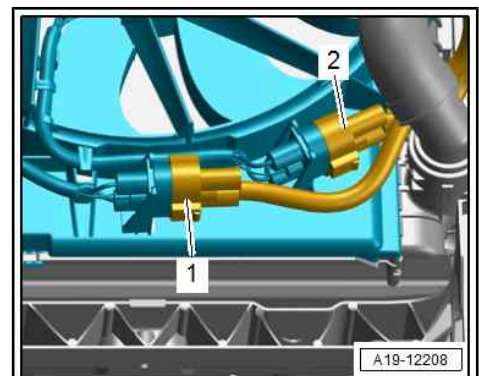
- Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove charge air cooler ⇒ [page 113](#) .
- Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
- Lift retaining clip -1- and disconnect coolant hose from radiator (bottom right).



- Lift retaining clip -arrow- and remove sealing plug (bottom left) on radiator.

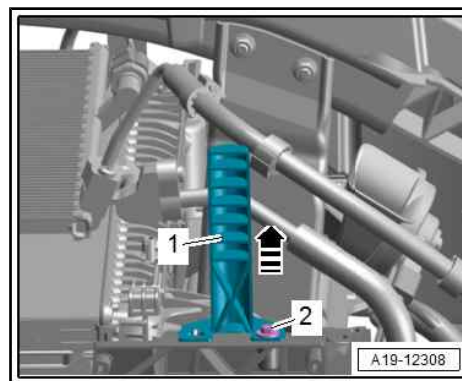


- Unplug electrical connectors -1, 2- for radiator fan.





- Remove bolt -2- on both sides and press radiator bracket -1- with radiator towards front -arrow-.



- Press locking tabs on left and right sides of radiator cowl simultaneously -arrow-, lift radiator cowl off radiator and remove from below.

Installing

Installation is carried out in reverse order; note the following:

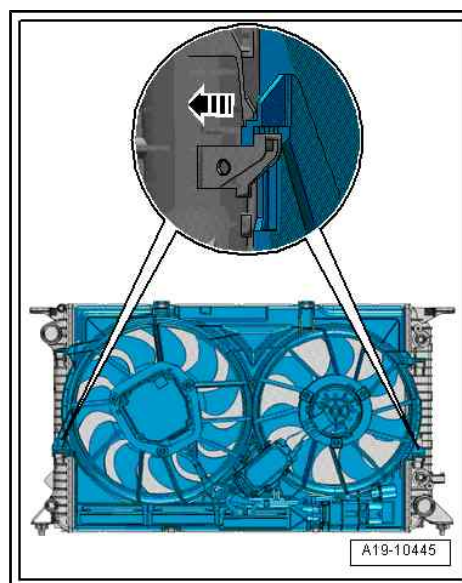


Note

- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Do not reuse coolant.*
- Install charge air cooler ⇒ [page 113](#) .
- Attach connection with plug-in connector ⇒ [page 101](#) .
- Fill up with coolant ⇒ [page 72](#) .

Tightening torques

- ◆ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 100](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



4.4 Removing and installing radiator fan - V7-

Description applies to radiator fan - V7- and radiator fan 2 - V177- .



Removing

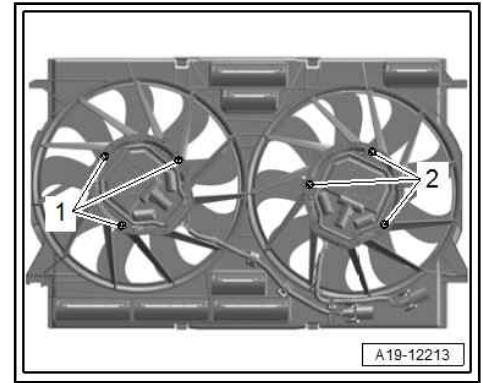
- Use correct type of fasteners for electrical wiring (as original equipment) ⇒ Electronic parts catalogue .
- Remove radiator cowl ⇒ [page 106](#) .
- Move electrical wiring harness clear.
- Unscrew bolts -1- or -2- and remove the corresponding radiator fan.



Caution

Risk of noise due to imbalance in fan wheel.

- ◆ *Do not remove balancing clamps from fan wheel.*



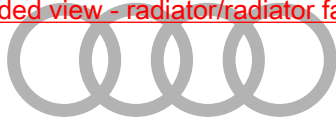
Installing

Installation is carried out in reverse order; note the following:

- Install radiator cowl ⇒ [page 106](#) .

Tightening torques

- ◆ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 100](#)



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21 – Turbocharging/supercharging

1 Turbocharger

⇒ [“1.1 Exploded view - turbocharger”, page 110](#)

⇒ [“1.2 Removing and installing turbocharger”, page 110](#)

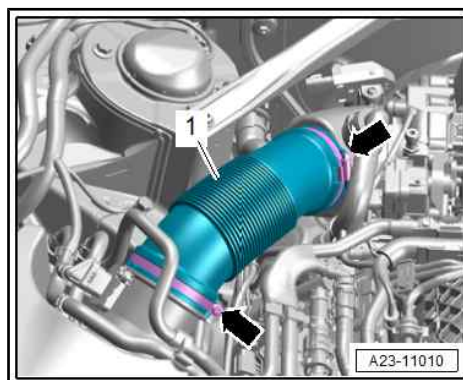
1.1 Exploded view - turbocharger

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger .

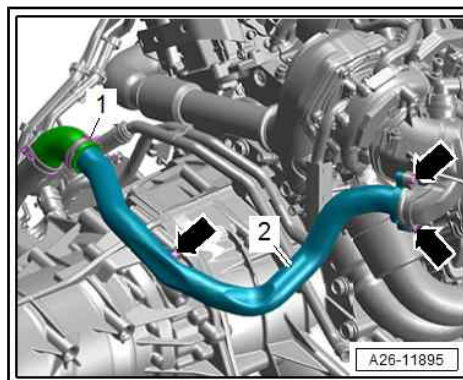
1.2 Removing and installing turbocharger

Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Release hose clips -arrows- and detach air pipe -1-.



- Remove bolts -arrows-.
- Release hose clip -1- and detach exhaust gas recirculation pipe -2-.



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- Remove bolts -1- and pull air pipe -2- off turbocharger (leave in installation position).

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Removing and installing turbocharger .

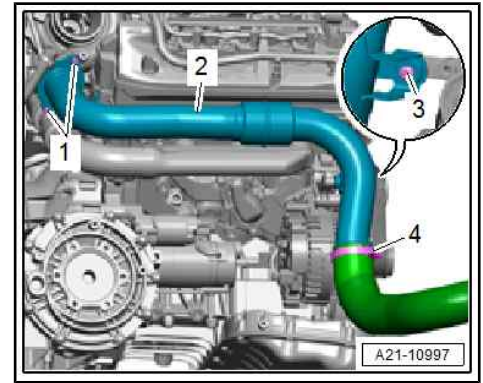
Installing

Additional work:



Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .



- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ ["5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side \(rear\)", page 172](#)



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2 Charge air system

⇒ ["2.1 Exploded view - charge air system", page 112](#)

⇒ ["2.2 Exploded view - hose connections for charge air system", page 113](#)

⇒ ["2.3 Removing and installing charge air cooler", page 113](#)

⇒ ["2.4 Removing and installing charge pressure sender G31", page 114](#)

⇒ ["2.5 Removing and installing charge air temperature sender after charge air cooler G811", page 115](#)

⇒ ["2.6 Checking charge air system for leaks", page 115](#)

2.1 Exploded view - charge air system

1 - Charge air cooler

- ❑ Removing and installing ⇒ [page 113](#)

- ❑ If there are slight impressions on the fins, refer to ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Installing radiators and condensers

2 - Air hose

- ❑ Must be free of oil and grease when installing

3 - Bolt

- ❑ 9 Nm

4 - Spacer sleeve

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6 - Air pipe

7 - Bolt

- ❑ 9 Nm

8 - Seal

- ❑ Renew after removing

9 - Air hose

- ❑ Must be free of oil and grease when installing

10 - Rubber bush

11 - Spacer sleeve

12 - Bolt

- ❑ 9 Nm

13 - Connection

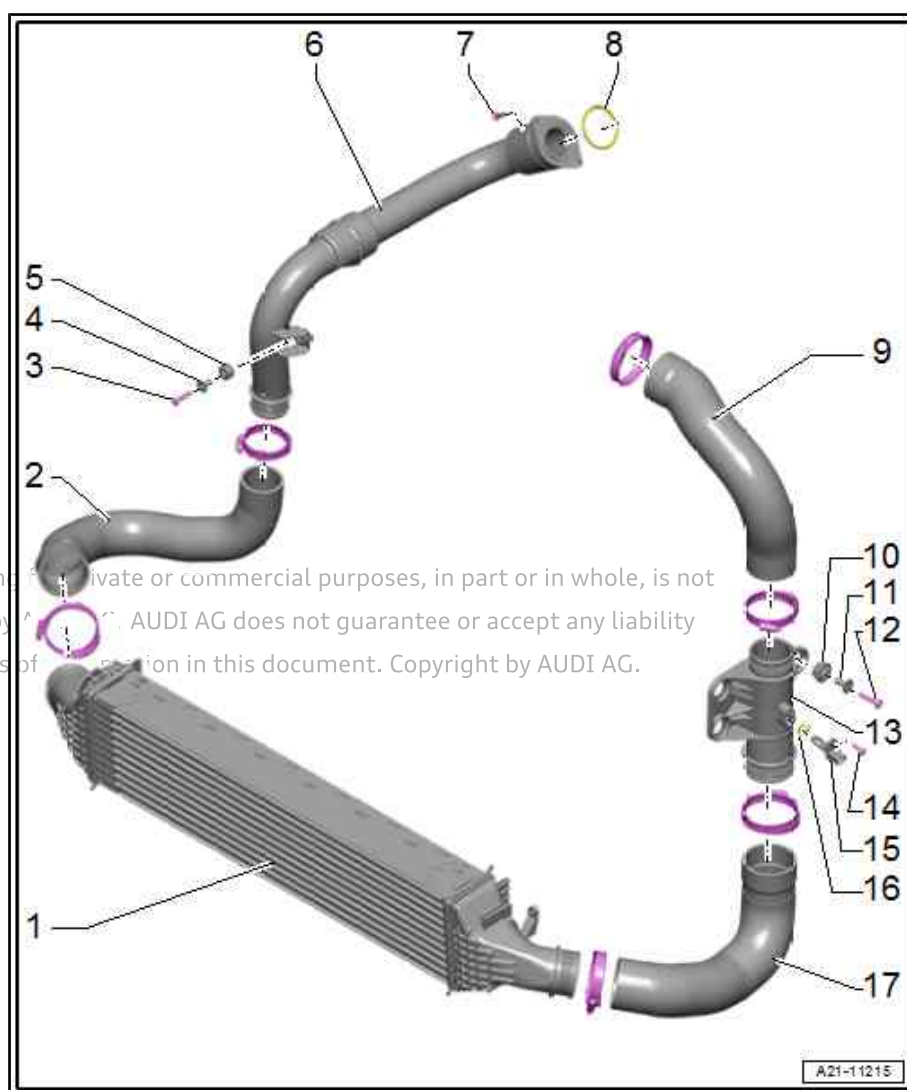
- ❑ For air duct

14 - Bolt

- ❑ 5 Nm

15 - Charge air temperature sender after charge air cooler - G811-

- ❑ Removing and installing ⇒ [page 115](#)





16 - O-ring

- ☐ Renew after removing

17 - Air hose

- ☐ Must be free of oil and grease when installing

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2.2 Exploded view - hose connections for charge air system

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

2.3 Removing and installing charge air cooler

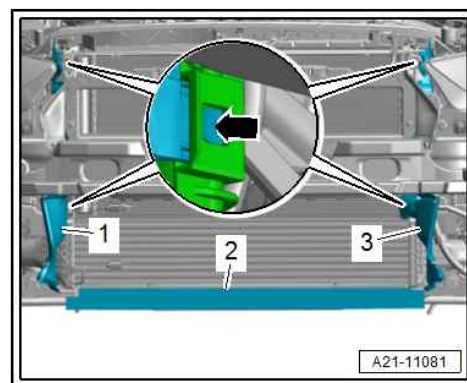
Removing



Note

Observe rules for cleanliness ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .

- Remove lock carrier cover, air intake grille (left and right) and closure plate at bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Release catches -arrow- and detach air ducts -1, 3-.



A21-11081



- Release hose clip -1- on both sides and detach air pipe from charge air cooler.

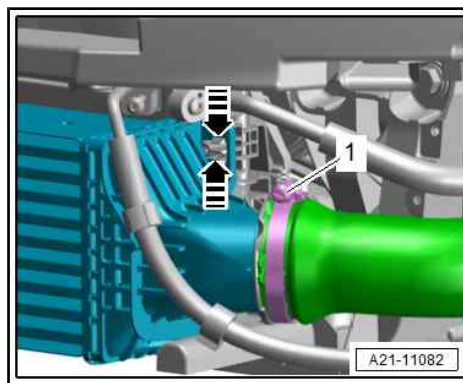


Caution

Risk of irreparable damage to charge air cooler.

- ◆ **The charge air cooler must be renewed if the fasteners are damaged.**

- Release fasteners -arrows- on both sides and disengage charge air cooler from radiator.
- Take out charge air cooler from underneath.



Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *If there are slight impressions on the fins, refer to ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Installing radiators and condensers .*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- Install lock carrier cover, air intake grille (left and right) and closure plate at bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

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2.4 Removing and installing charge pressure sender - G31-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Removing and installing charge pressure sender - G31- .



2.5 Removing and installing charge air temperature sender after charge air cooler - G811-

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Removing

- Unplug electrical connector -2-.
- Remove bolt -1- and detach charge air temperature sender after charge air cooler - G811- .

Installing

Installation is carried out in reverse order; note the following:

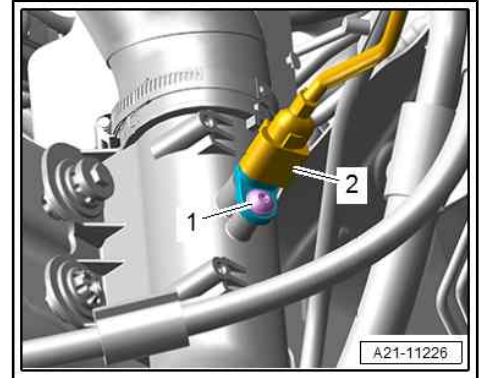


Note

Renew O-ring after removal.

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 112](#)



2.6 Checking charge air system for leaks

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Checking charge air system for leaks .



23 – Mixture preparation - injection

1 Injection system

⇒ "1.1 Overview - fuel system", page 116

⇒ "1.2 Overview of fitting locations - injection system", page 117

⇒ "1.3 Filling and bleeding fuel system", page 123

1.1 Overview - fuel system



Note

- ◆ Red = fuel supply
- ◆ Blue = fuel return
- ◆ Arrows = direction of fuel flow

1 - Injector

2 - High-pressure reservoir (rail)

- For cylinder bank 1 (right-side)

3 - Fuel temperature sender - G81-

4 - Fuel filter

5 - Fuel tank

- With fuel system pressurisation pump - G6-

6 - Fuel metering valve - N290-

7 - High-pressure pump

8 - Fuel pressure sender - G247-

9 - High-pressure reservoir (rail)

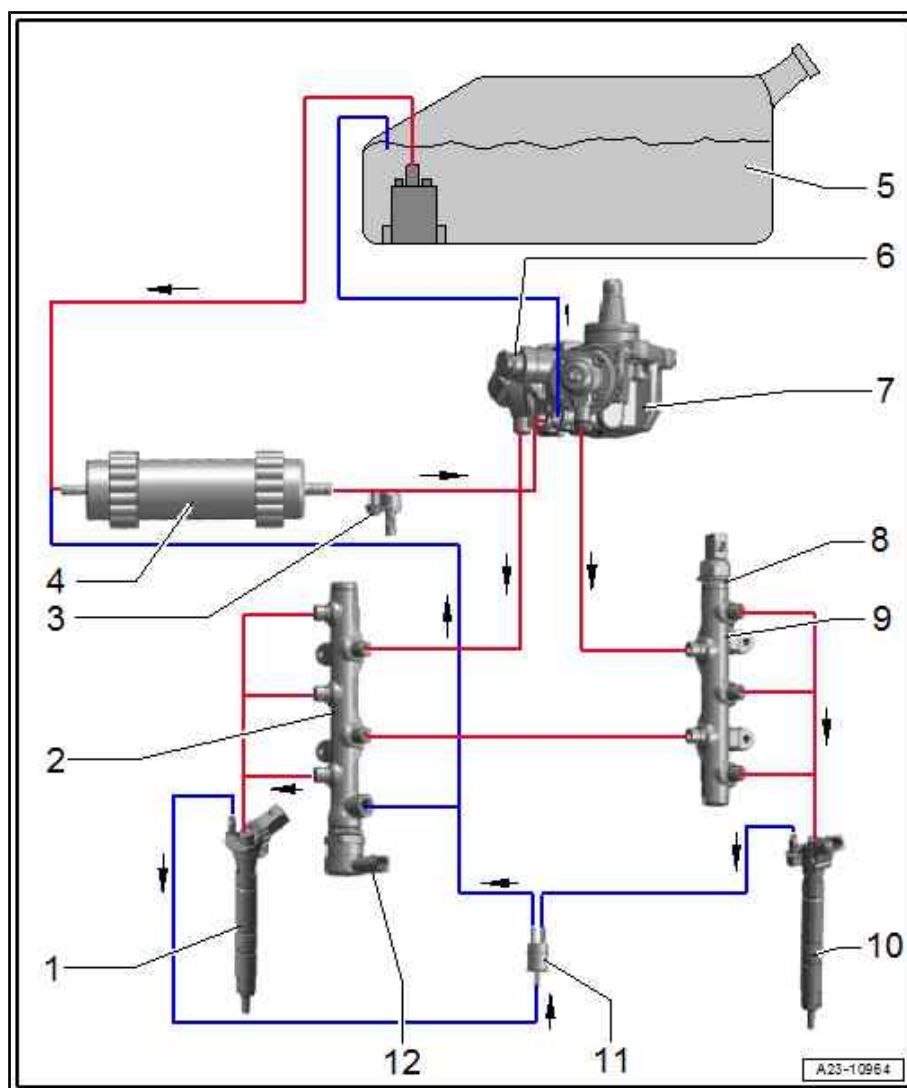
- For cylinder bank 2 (left-side)

10 - Injector

11 - Restrictor

- Maintains a residual pressure in fuel return hoses

12 - Fuel pressure regulating valve - N276-





1.2 Overview of fitting locations - injection system

Engine compartment

1 - Air mass meter - G70-

- ☐ Exploded view
⇒ [page 125](#)

2 - Pressure differential sender - G505-

- ☐ Exploded view
⇒ [page 142](#)

3 - Exhaust flap control unit - J883-

- ☐ Fitting location
⇒ [page 119](#)

4 - Accelerator pedal module - GX2-

- ☐ With:
- ◆ Accelerator position sender - G79-
- ◆ Accelerator position sender 2 - G185-
- ☐ Fitting location
⇒ [page 118](#)

5 - Exhaust gas recirculation valve 2 - GX6-

- ☐ With:
- ◆ Exhaust gas recirculation potentiometer 2 - G466-
- ◆ Exhaust gas recirculation control motor 2 - V339-
- ☐ Fitting location
⇒ [page 119](#)

6 - Coolant circulation pump - V50-

- ☐ Fitting location
⇒ [page 118](#)

7 - Brake light switch - F-

- ☐ Fitting location ⇒ [page 118](#)

8 - Pressure differential sender 2 - G524-

9 - Engine control unit - J623-

- ☐ Exploded view ⇒ [page 148](#)

10 - Charge air temperature sender after charge air cooler - G811-

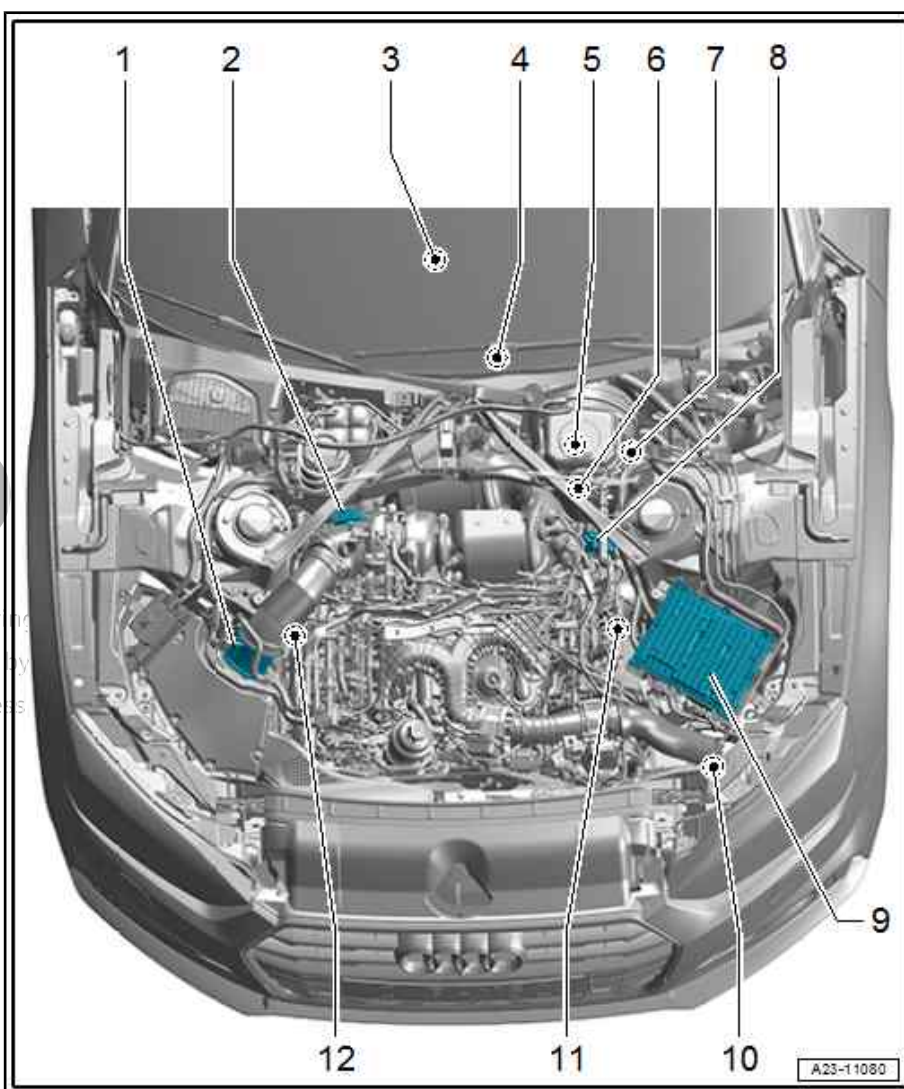
- ☐ Exploded view ⇒ [page 112](#)

11 - Left electrohydraulic engine mounting solenoid valve - N144-

- ☐ Fitting location ⇒ [page 118](#)

12 - Right electrohydraulic engine mounting solenoid valve - N145-

- ☐ Fitting location ⇒ [page 118](#)

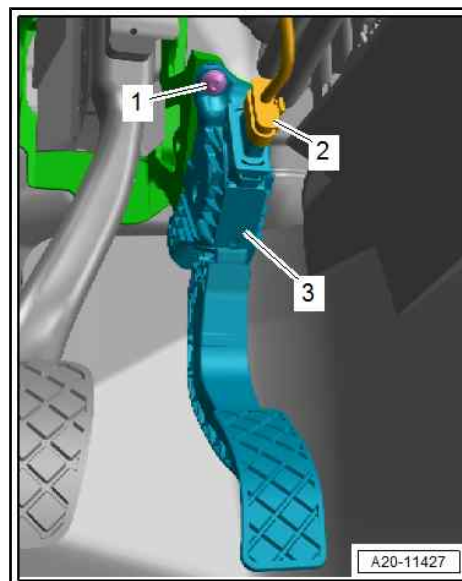




Fitting location of accelerator position sender - G79- / accelerator position sender 2 - G185-

- ◆ Integrated in accelerator pedal module -3-. Accelerator position senders cannot be renewed separately if defective.

Exploded view ⇒ Fuel supply system; Rep. gr. 20 ; Accelerator mechanism; Exploded view - accelerator pedal module

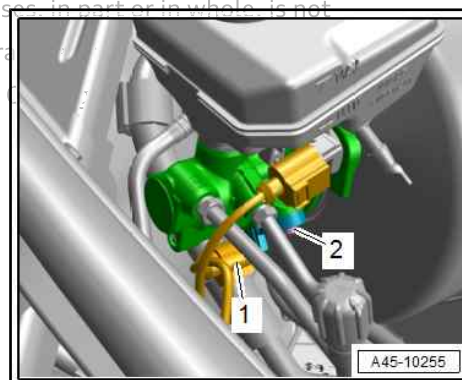


Fitting location of brake light switch - F-

- ◆ In plenum chamber on brake master cylinder

1 - Electrical connector for brake light switch - F-

Exploded view ⇒ Brake system; Rep. gr. 47 ; Brake servo/brake master cylinder; Exploded view - brake servo/brake master cylinder



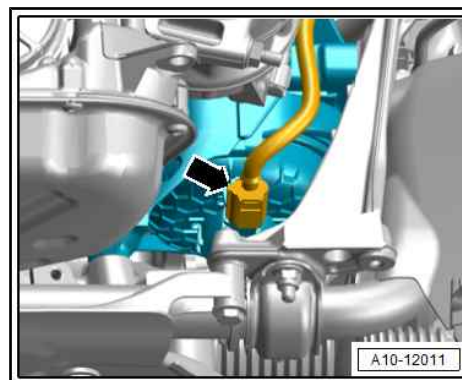
Fitting location of electrohydraulic engine mounting solenoid valves -N144- / -N145-

- ◆ Integrated in engine mounting. It cannot be renewed separately if defective.

Pfeil - Electrical connector for left electrohydraulic engine mounting solenoid valve - N144-

Removing and installing

⇒ ["2.3 Removing and installing engine mountings", page 39](#)

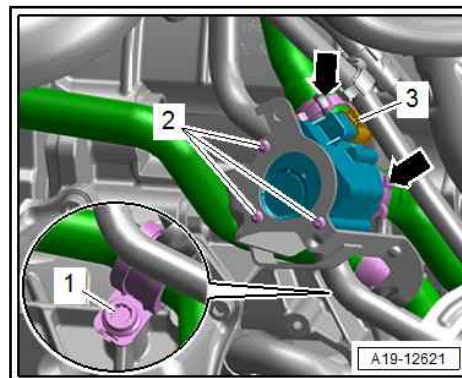


Fitting location of coolant circulation pump - V50-

- ◆ At coolant pipes (rear)

3 - Coolant circulation pump - V50-

Exploded view ⇒ [page 79](#) .



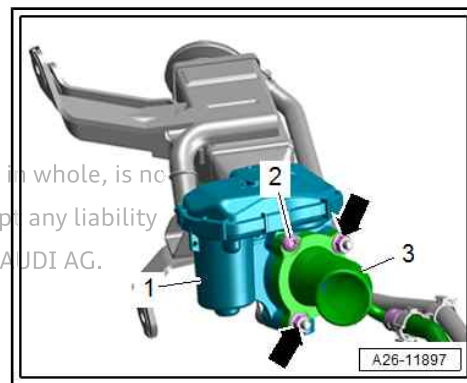


Fitting location of exhaust gas recirculation control motor 2 - V339-

- ◆ On left of gearbox

2 - Exhaust gas recirculation control motor 2 - V339-

Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail,
Rep. gr. 26: Exhaust gas recirculation; Exploded view - exhaust
gas recirculation

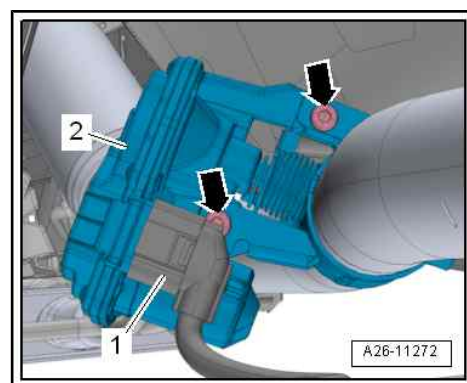


Fitting location of exhaust flap control unit - J883-

- ◆ At trap catalytic converter

2 - Exhaust flap control unit - J883-

Exploded view ⇒ [page 158](#) .



Engine (top view)



1 - Fuel pressure regulating valve - N276-

- ☐ Removing and installing ⇒ [page 138](#)
- ☐ Checking ⇒ [page 136](#)

2 - Glow plug 1 - Q10-

- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

3 - Glow plug 2 - Q11-

- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

4 - Glow plug 3 - Q12-

- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

5 - Control unit for turbocharger 1 - J724-

- ☐ On turbocharger
- ☐ Exploded view ⇒ [page 110](#)

6 - Fuel metering valve - N290-

- ☐ At high-pressure pump

7 - Exhaust gas recirculation valve 1 - GX5-

- ☐ With:
 - ◆ Exhaust gas recirculation potentiometer - G212-
 - ◆ Exhaust gas recirculation control motor - V338-

- ☐ Exploded view ⇒ [page 172](#)

8 - Fuel pressure sender - G247-

- ☐ Removing and installing ⇒ [page 135](#)

9 - Glow plug 6 - Q15-

- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

10 - Glow plug 5 - Q14-

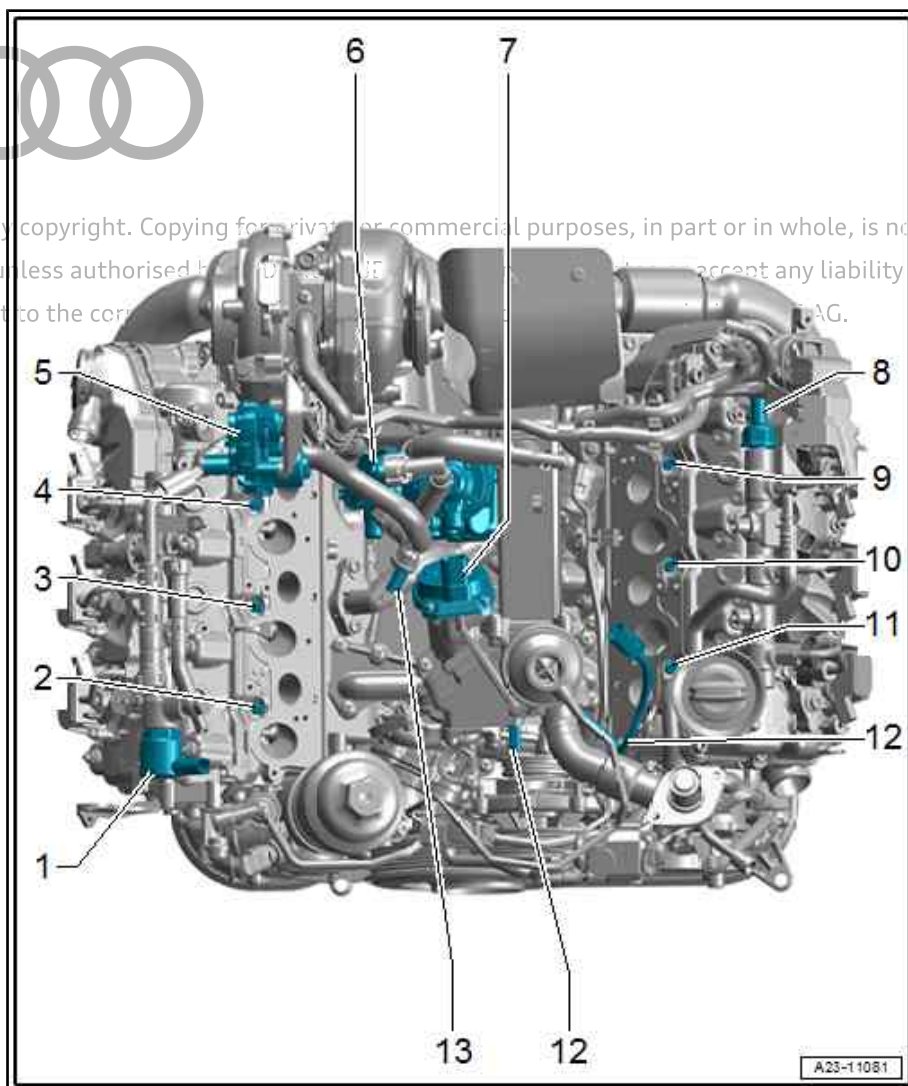
- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

11 - Glow plug 4 - Q13-

- ☐ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

12 - Exhaust gas recirculation temperature sensor - G98-

- ☐ Exploded view ⇒ [page 172](#)





13 - Coolant temperature sender - G62-

- ☐ Exploded view ➔ [page 81](#)

14 - Fuel temperature sender - G81-

Engine (front view)

1 - Oil temperature sender 2 - G664-

- ☐ Exploded view
➔ [page 45](#)

2 - Oil pressure sender - G10-

3 - Exhaust gas recirculation cooler change-over valve - N345-

4 - Intake manifold flap motor - V157-

- ☐ Exploded view
➔ [page 128](#)

5 - Coolant valve for cylinder head - N489-

6 - Charge pressure sender - G31-

- ☐ Exploded view
➔ [page 128](#)

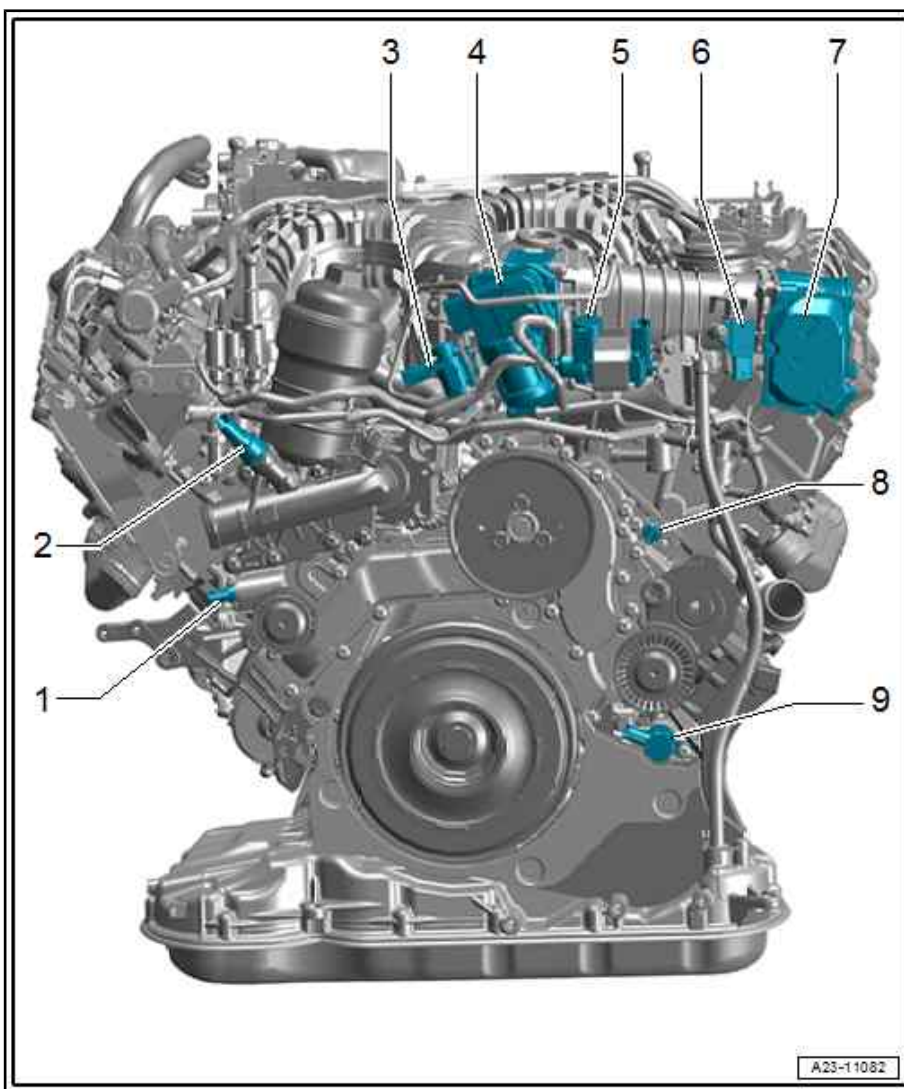
7 - Throttle valve module - GX3-

- ☐ With:
 - ◆ Throttle valve potentiometer - G69-
 - ◆ Throttle valve module - J338-
 - ◆ Exploded view
➔ [page 128](#)

8 - Temperature sender for engine temperature regulation - G694-

9 - Valve for oil pressure control - N428-

- ☐ Exploded view ➔ [page 61](#)



Engine (side view, left-side)





1 - Injector, cylinder 4 - N33-

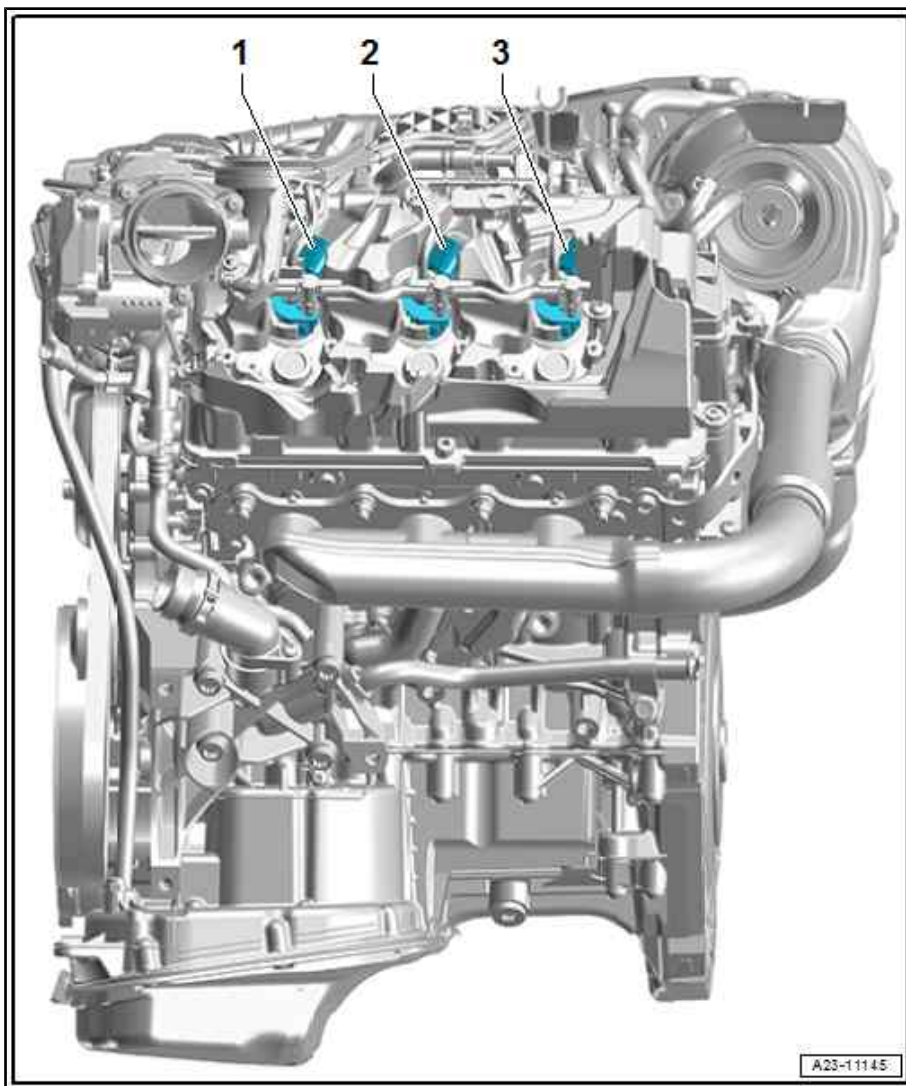
- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors

2 - Injector, cylinder 5 - N83-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors

3 - Injector, cylinder 6 - N84-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors



Engine (side view, right-side)



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1 - Engine speed sender - G28-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

2 - Injector, cylinder 3 - N32-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors

3 - Fuel pressure sender for low pressure - G410-

4 - Injector, cylinder 2 - N31-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors

5 - Injector, cylinder 1 - N30-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors

6 - Hall sender - G40-

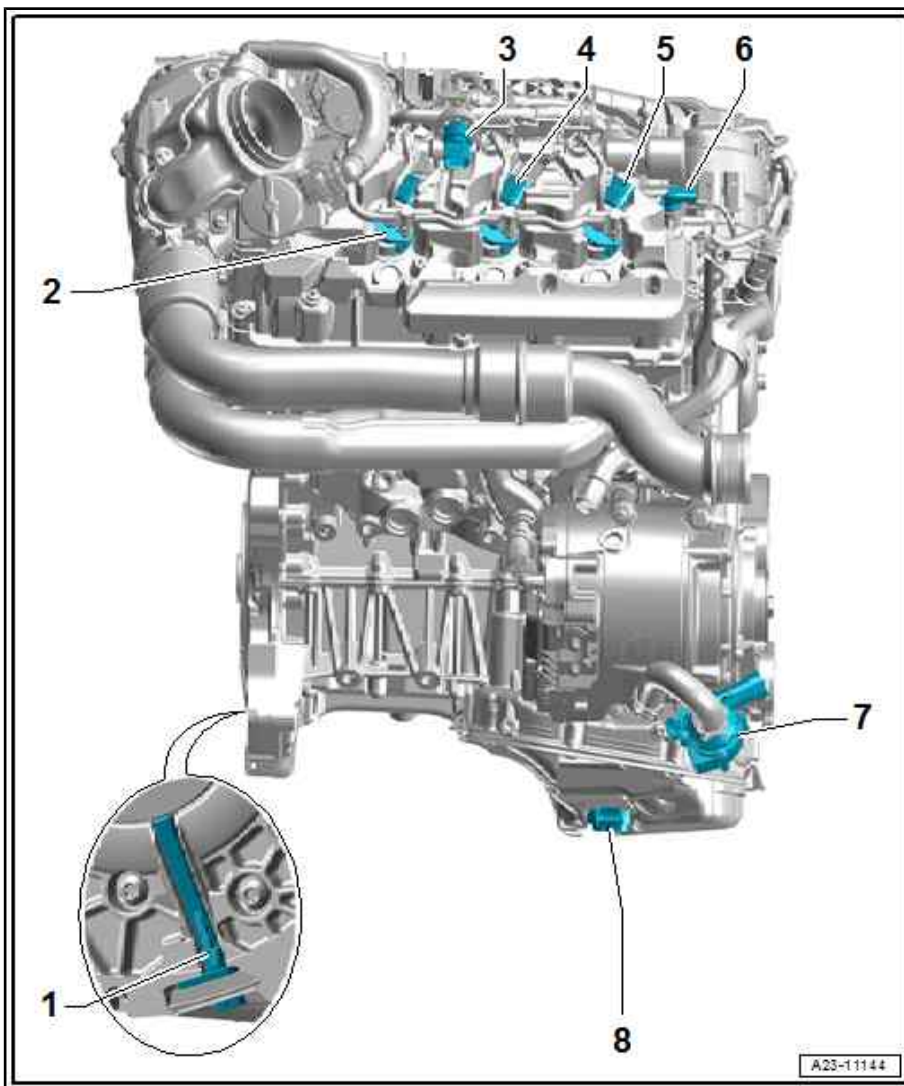
- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system; Exploded view - glow plug system

7 - Starter-alternator coolant pump - V621-

- ❑ Exploded view ⇒ ["2.2.2 Exploded view - starter-alternator coolant pump V621 ", page 81](#)

8 - Oil level and oil temperature sender - G266-

- ❑ Exploded view ⇒ Servicing 6-cylinder TDI engine, common rail (EA 897 Gen II); Rep. gr. 17 ; Sump/oil pump; Exploded view - sump/oil pump



1.3 Filling and bleeding fuel system

All procedures are described in ⇒ Servicing 6-cylinder TDI engine common rail; Rep. gr. 23; Injection system; Filling and bleeding fuel system .

1.4 Checking fuel system for leaks

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injection system; Checking fuel system for leaks .



2 Vacuum system

All procedures and components are described in ⇒ 6-cylinder TDI engine, 3.0 ltr. 4-valve common rail; Rep. gr. 23 ; Vacuum system .



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3



Air cleaner

⇒ ["3.1 Exploded view - air cleaner housing", page 125](#)

⇒ ["3.2 Removing and installing air cleaner housing", page 126](#)

3.1 Exploded view - air cleaner housing

1 - Mounting

- ☐ For air cleaner housing

2 - Water drain

- ☐ Clean

3 - Air cleaner (bottom section)

- ☐ Remove any salt deposits or dirt
- ☐ Removing and installing
⇒ ["3.2 Removing and installing air cleaner housing", page 126](#)

4 - Not fitted

5 - Air cleaner (top section)

- ☐ Remove any salt deposits or dirt
- ☐ Removing and installing
⇒ Maintenance ; Booklet 830

6 - Bolt

- ☐ Thread-forming
- ☐ Fit and screw in bolt by hand so that it is screwed into old thread. Then tighten bolt to torque
- ☐ 3.5 Nm

7 - Bolt

- ☐ Thread-forming
- ☐ Fit and screw in bolt by hand so that it is screwed into old thread. Then tighten bolt to torque
- ☐ 3.5 Nm

8 - Air mass meter - G70-

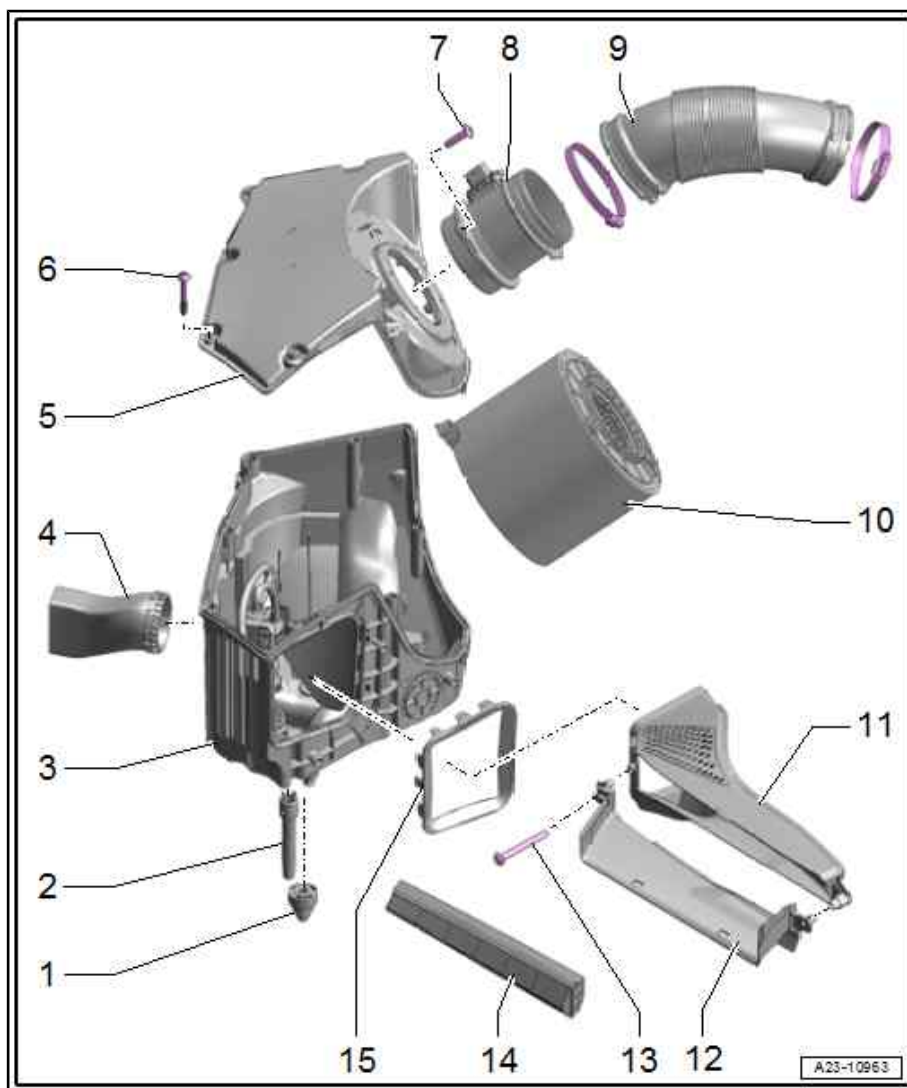
- ☐ Removing and installing ⇒ [page 134](#)

9 - Air pipe

- ☐ Observe installation markings
- ☐ Tightening torques for hose clips ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

10 - Air filter element

- ☐ Use genuine air filter element ⇒ Electronic parts catalogue
- ☐ Change intervals ⇒ Maintenance tables
- ☐ Removing and installing ⇒ Maintenance ; Booklet 830





11 - Air duct

- ☐ On lock carrier
- ☐ Remove any salt deposits or dirt

12 - Air duct

- ☐ On lock carrier
- ☐ Remove any salt deposits or dirt

13 - Bolt

- ☐ Thread-forming
- ☐ Fit and screw in bolt by hand so that it is screwed into old thread. Then tighten bolt to torque
- ☐ 2.5 Nm

14 - Snow screen

- ☐ Country-specific version

15 - Sealing element

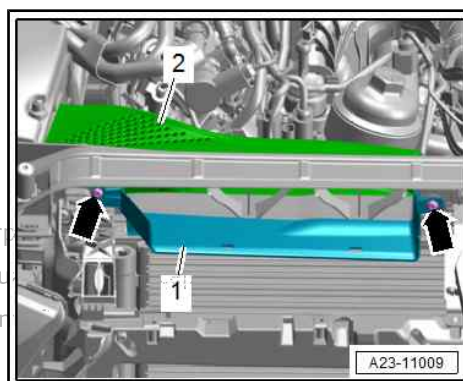
3.2 Removing and installing air cleaner housing

Removing

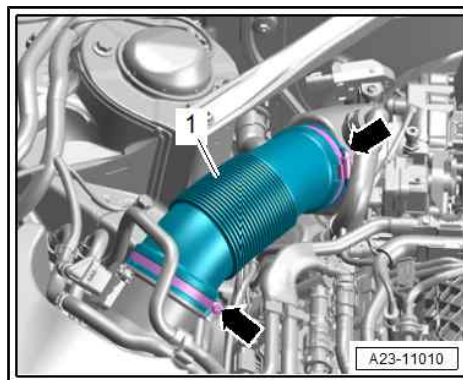
- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Remove bolts -arrows- and detach air duct -2-.



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- Release hose clips -arrows- and detach air pipe -1-.





- Unplug electrical connector -2- for air mass meter - G70- .
- Move fuel hoses -3- clear and push to one side.
- Lift off air cleaner housing -1- and detach.

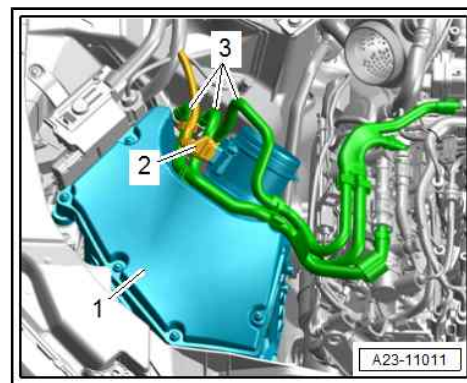
Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *The air cleaner housing must always be clean.*
- ◆ *To prevent malfunctions, cover critical parts of the engine air intake (air mass meter, air pipes, etc.) with a clean cloth when blowing out the air cleaner housing with compressed air.*
- ◆ *Use silicone-free lubricant when fitting air hoses.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- Check for salt residue and dirt in air pipe (engine intake side).
- Check air duct leading from lock carrier to air cleaner housing for dirt and leaves.
- Install lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



Tightening torques

- ◆ ⇒ [“3.1 Exploded view - air cleaner housing”, page 125](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)



4 Intake manifold

⇒ "4.1 Exploded view - intake manifold", page 128

⇒ "4.2 Removing and installing intake manifold (top section)", page 128

⇒ "4.3 Removing and installing intake manifold (bottom section)", page 129

⇒ "4.4 Removing and installing intake manifold flap motor V157", page 129

⇒ "4.5 Removing and installing throttle valve module J338", page 129

4.1 Exploded view - intake manifold

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Exploded view - intake manifold .

4.2 Removing and installing intake manifold (top section)

Removing



Caution

Risk of malfunctions caused by dirt.

- ◆ *Observe rules for cleanliness ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .*

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Release hose clips -arrows- and detach air pipe -1-.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing intake manifold (top section) .

Installing

Additional work:



Note

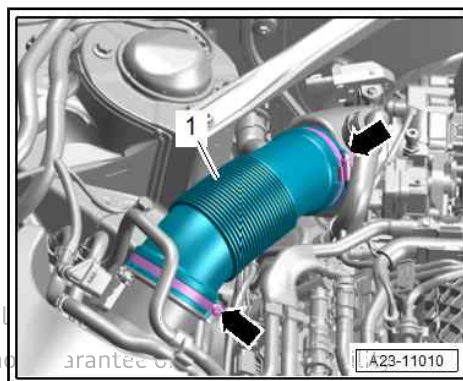
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Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system





4.3 Removing and installing intake manifold (bottom section)

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing intake manifold (bottom section) .

4.4 Removing and installing intake manifold flap motor - V157-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing intake manifold flap motor - V157- .

4.5 Removing and installing throttle valve module - J338-

Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Release hose clip -arrow-, detach air hose and tie up to left side.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Intake manifold; Removing and installing throttle valve module - J338- .

Installing

Additional work:



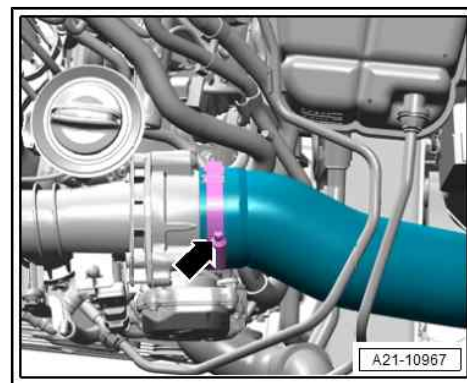
Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system





5 Injectors/high-pressure reservoir (rail)

⇒ [“5.1 Exploded view - injectors”, page 130](#)

⇒ [“5.2 Checking injectors”, page 130](#)

⇒ [“5.3 Performing adaption of correction values for injectors”, page 130](#)

⇒ [“5.4 Checking for injectors sticking open”, page 130](#)

⇒ [“5.5 Checking return flow rate of injectors with engine running”, page 130](#)

⇒ [“5.6 Checking return flow rate of injectors at starter cranking speed”, page 130](#)

⇒ [“5.7 Checking restrictor in fuel return line”, page 131](#)

⇒ [“5.8 Removing and installing injectors”, page 131](#)

⇒ [“5.9 Removing and installing high-pressure pipes”, page 132](#)

⇒ [“5.10 Removing and installing high-pressure reservoir \(rail\)”, page 132](#)

5.1 Exploded view - injectors

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Exploded view - injectors .

5.2 Checking injectors

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Checking injectors .

5.3 Performing adaption of correction values for injectors

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Performing adaption of correction values for injectors .

5.4 Checking for injectors sticking open

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Checking for injectors sticking open .

5.5 Checking return flow rate of injectors with engine running

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Checking return flow rate of injectors with engine running .

5.6 Checking return flow rate of injectors at starter cranking speed

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Checking return flow rate of injectors at starter cranking speed .



5.7 Checking restrictor in fuel return line

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Checking restrictor in fuel return line .

5.8 Removing and installing injectors

Removing



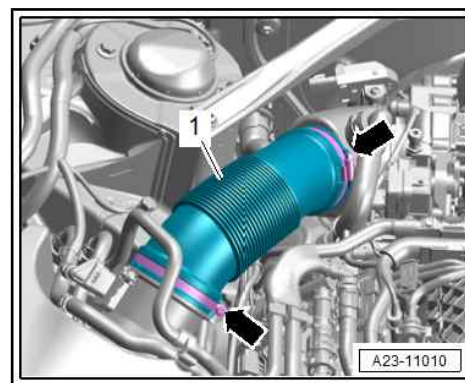
Note

All cable ties which are released or cut open when removing must be refitted in the same position when installing.

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Cylinder bank 1 (right-side):

- Release hose clips -arrows- and detach air pipe -1-.

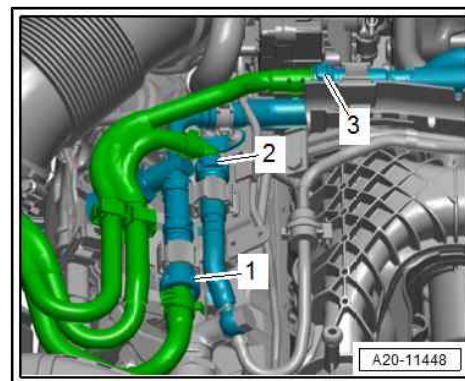


Cylinder bank 1 (right-side), injector for cylinders 1 and 2:

- Disconnect fuel hoses -1, 2, 3- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Remove air cleaner housing ⇒ [page 126](#) .

Cylinder bank 2 (left-side):

- Detach engine control unit - J623- from bracket and move aside ⇒ [page 148](#) .



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Cylinder bank 2 (left-side), injector for cylinder 6:

- Move electrical connector -1- for injector for reducing agent - N474- clear at bracket -2-.
- Unscrew bolts -arrows- and detach bracket.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Removing and installing injectors .

Installing

Additional work:



Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Connect fuel hoses ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Install air cleaner housing ⇒ [page 126](#) .
- Install engine control unit - J623- ⇒ [page 148](#) .
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 15 ; Cylinder head; Exploded view - cylinder head cover
- ◆ ⇒ Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

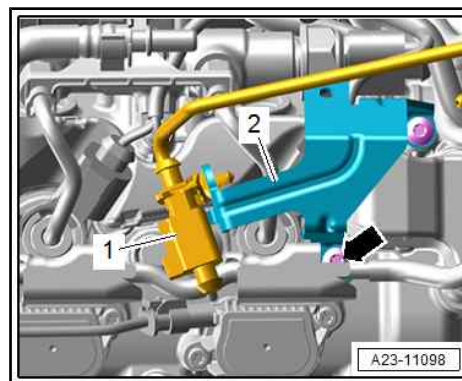
5.9 Removing and installing high-pressure pipes

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Removing and installing high-pressure pipes .

5.10 Removing and installing high-pressure reservoir (rail)

Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel.

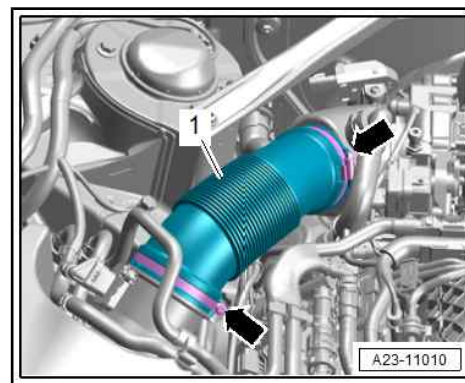


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Cylinder bank 1 (right-side):

- Release hose clips -arrows- and detach air pipe -1-.



- Disconnect fuel hoses -1, 2, 3- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Injectors/high-pressure reservoir (rail); Removing and installing high-pressure reservoir (rail) .

Installing

Additional work:



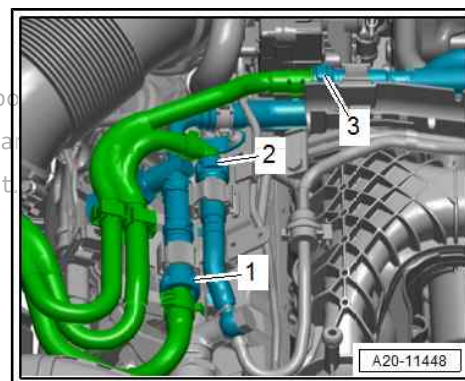
Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Connect fuel hoses ⇒ Fuel supply system, diesel engines; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system





6 Senders and sensors

⇒ [“6.1 Removing and installing air mass meter G70 ”, page 134](#)

⇒ [“6.2 Removing and installing fuel temperature sender G81 ”, page 135](#)

⇒ [“6.3 Removing and installing fuel pressure sender G247 ”, page 135](#)

⇒ [“6.4 Removing and installing fuel pressure sender for low pressure G410 ”, page 135](#)

⇒ [“6.5 Checking fuel pressure regulating valve N276 ”, page 136](#)

⇒ [“6.6 Removing and installing fuel pressure regulating valve N276 ”, page 138](#)

⇒ [“6.7 Removing and installing pressure differential sender G505 ”, page 138](#)

6.1 Removing and installing air mass meter - G70-

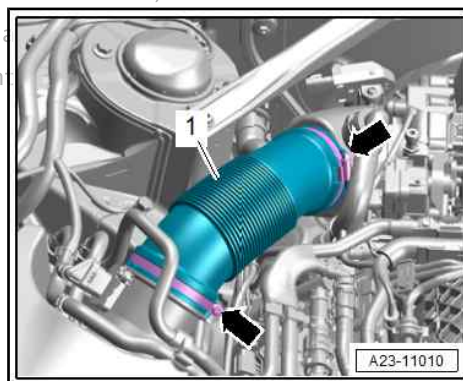
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Removing

– Release hose clips -arrows- and detach air pipe -1-





- Unplug electrical connector -1-.
- Unscrew bolts -arrows- and detach air mass meter - G70- .

Installing

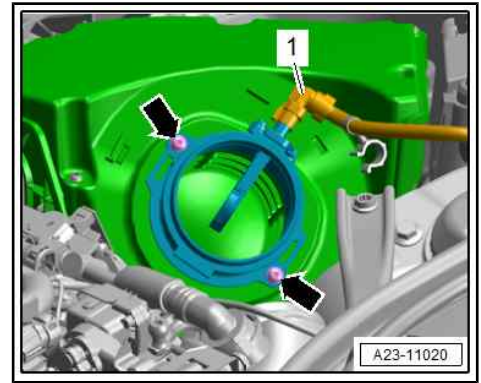
Installation is carried out in reverse order; note the following:

To ensure that the air mass meter -G70- functions correctly, it is important to observe the following notes and procedures.



Note

- ◆ *If the air filter element is very dirty or wet, dirt particles or water can reach the air mass meter and falsify the detected air mass values. This will cause a loss of power as the calculated injection quantities will be too low.*
- ◆ *Check air filter element and inside of air cleaner housing for dirt and clean if necessary ⇒ Maintenance ; Booklet 830 .*
- ◆ *Hose connections and air pipes/hoses must be free of oil and grease prior to fitting.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*



Tightening torques

- ◆ ⇒ [“3.1 Exploded view - air cleaner housing”, page 125](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

6.2 Removing and installing fuel temperature sender - G81-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Senders and sensors ; Removing and installing fuel temperature sender - G81- .

6.3 Removing and installing fuel pressure sender - G247-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Senders and sensors; Removing and installing fuel pressure sender - G247- .

6.4 Removing and installing fuel pressure sender for low pressure - G410-

Removing

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



- Release hose clips -arrows- and detach air pipe -1-.

All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Senders and sensors ; Removing and installing fuel pressure sender for low pressure - G410- .

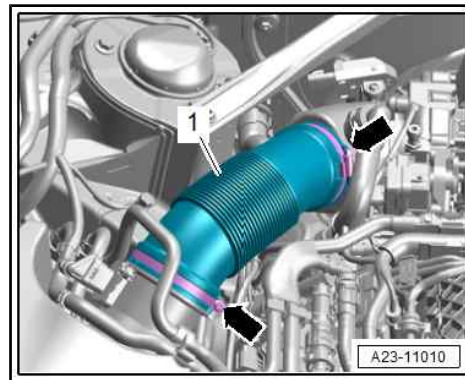
Installing

Additional work:

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

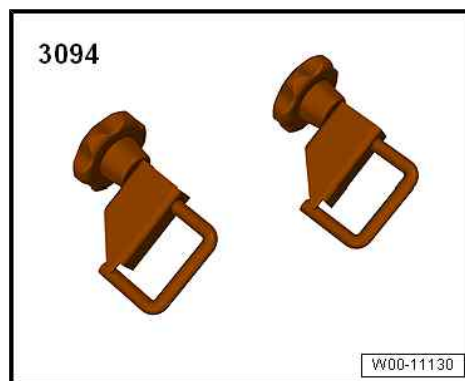
- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system



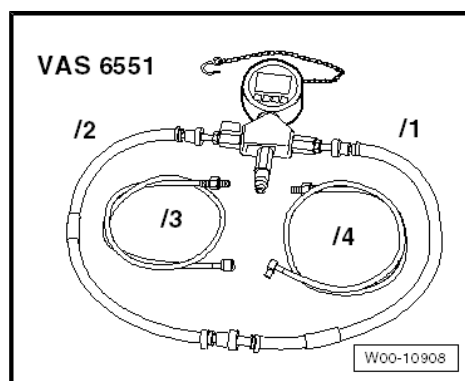
6.5 Checking fuel pressure regulating valve - N276-

Special tools and workshop equipment required

- ♦ Hose clamps, up to 25 mm - 3094-



- ♦ Test lead - VAS 6551/3- from pressure tester (diesel) - VAS 6551-



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- ♦ Fuel-resistant measuring container authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
- ♦ Test hose for return line connection correctness of information in this document. Copyright by AUDI AG.

Procedure

- Fuel temperature above 15 °C.



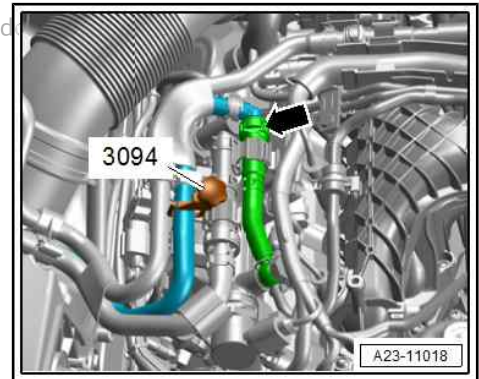
Caution

Risk of malfunctions caused by dirt.

- ◆ *Observe rules for cleanliness when working on the fuel supply system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Repair notes; Rules for cleanliness.*

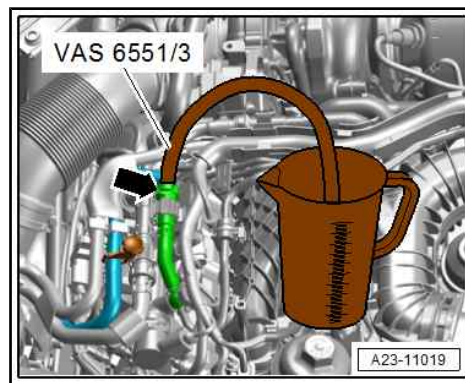
Procedure

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10; Engine cover panel; Removing and installing engine cover panel
- Seal fuel return hose -arrow- with hose clamp up to 25 mm -3094- and disconnect hose ⇒ Fuel supply system; Rep. gr. 20; Plug-in connectors; Disconnecting plug-in connectors.
- Move fuel return hose clear to one side.





- Connect test lead - VAS 6551/3- to return hose -arrow- and hold into measuring container, as shown in illustration.
- Start engine and run at idling speed for one minute.
- Return flow rate (engine start): 0 ml
- Leave engine running at idling speed.
- While engine is running, empty measuring container, or exchange it for an empty container and begin measurement.
- Leave engine running at idling speed for two minutes and measure return flow rate.
- Return flow rate after 2 minutes: 0 ... 60 ml



Note

If specified values are obtained, fuel pressure regulating valve - N276- is OK.

If values do not match specifications:



Note

- ◆ *The fuel pressure regulating valve - N276- and injectors were checked during the preceding measuring process.*
- ◆ *To determine which component is defective, you must check the return flow rate of the injectors.*

- Measure return flow rate of injectors with engine running
⇒ [page 130](#) .
- If return flow rate of injectors is OK, renew fuel pressure regulating valve - N276- .
- If return flow rate of injectors is not OK, renew defective injector.

Attaching

Assembly is performed in reverse sequence; note the following:

- Connect fuel hose ⇒ Fuel supply system, diesel engines; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

6.6 Removing and installing fuel pressure regulating valve - N276-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Senders and sensors; Removing and installing fuel pressure regulating valve - N276- .

6.7 Removing and installing pressure differential sender - G505-

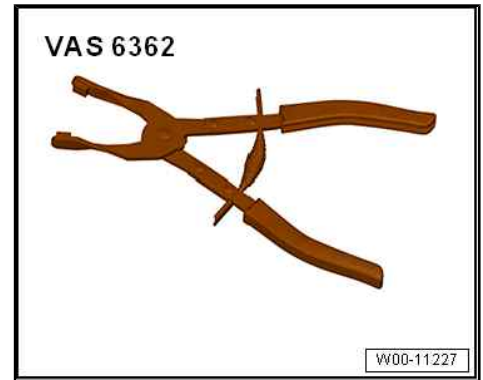
Description for removal applies to pressure differential sender - G505- and pressure differential sender 2 - G524- .

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester



- ◆ Hose clip pliers - VAS 6362-

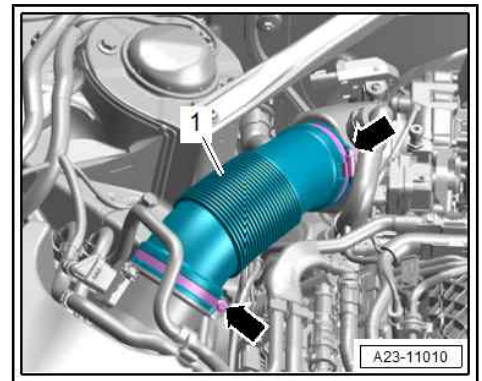


Removing

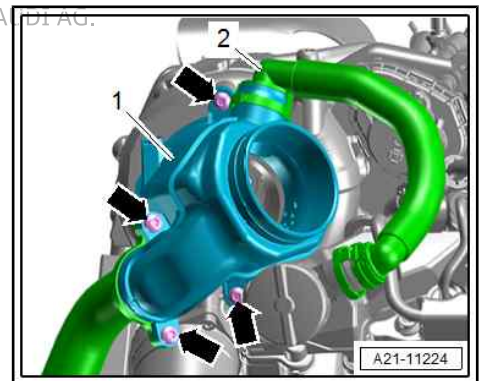
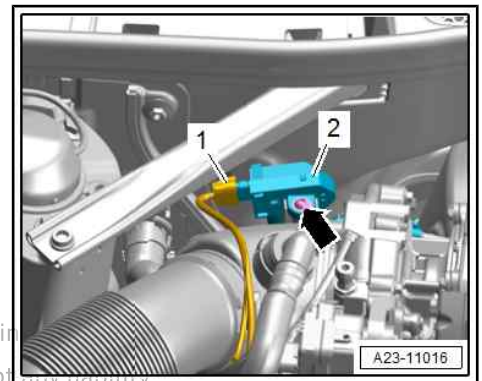
- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Pressure differential sender - G505- :

- Release hose clips -arrows- and detach air pipe -1-.



- Remove bolt -arrow-.
- Unplug electrical connector -1-.
- Move bracket -2- clear with pressure differential sender - G505- .



- Press release tabs on both sides and disconnect crankcase breather hose -2-.
- Unscrew bolts -arrows- and detach intake connecting pipe -1-.



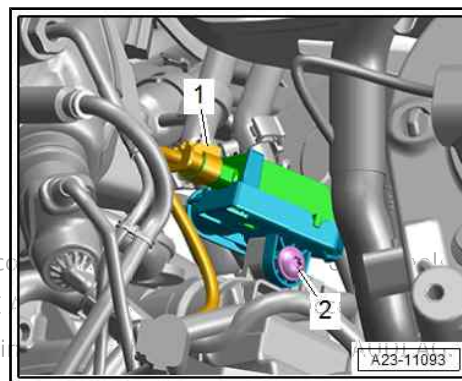
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Pressure differential sender 2 - G524- :

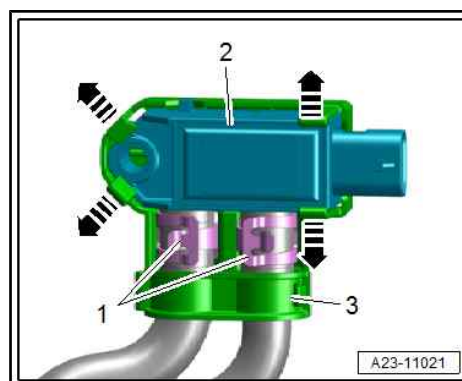
- Remove body brace (left-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Removing and installing body brace .
- Unplug electrical connector -1-.
- Remove bolt -2- and move pressure differential sender 2 - G524- clear.

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Continued for both pressure differential senders:

- Detach retaining clip -3-.
- Release catches -arrows- and detach bracket for pressure differential sender -2-.
- Release hose clips -1-.
- Spray hoses on pressure differential sender with silicone-free lubricant.
- To prevent hose connections from breaking off, carefully disconnect hoses and keep them straight when pulling them off.



Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Blow through hose (towards emission control module) with compressed air to remove dirt or ice (frozen condensation).*
- ◆ *Make sure that hoses are securely fitted and seal properly.*
- ◆ *If pressure pipes have been detached from emission control module, tighten them to specified torque.*
- ◆ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- If pressure differential sender was renewed, perform adaptations listed in Guided Function "0001 - Adapt learnt values - after component replacement" ⇒ Vehicle diagnostic tester.

Tightening torques

- ◆ ⇒ [Fig. "Bracket with pressure differential sender -G505- - tightening torque" , page 143](#)
- ◆ ⇒ ["5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side \(rear\)", page 172](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger
- ◆ ⇒ Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Suspension strut, upper links; Exploded view - suspension strut, upper links



7 High-pressure pump

All procedures and components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; High-pressure pump .

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8 Lambda probe

⇒ ["8.1 Exploded view - Lambda probe", page 142](#)

⇒ ["8.2 Removing and installing Lambda probe", page 143](#)

⇒ ["8.3 Removing and installing NOx senders", page 144](#)

8.1 Exploded view - Lambda probe

1 - NOx sender 2 - G687- with control unit for NOx sender 2 - J881-

- ☐ Removing and installing
⇒ [page 145](#)
- ☐ Tightening torques ⇒
Servicing 6-cylinder TDI
engine, common rail;
Rep. gr. 23 ; Lambda
probe; Exploded view -
Lambda probe

2 - Particulate sensor - G784-

- ☐ Removing and installing
⇒ [page 146](#)
- ☐ Tightening torques ⇒
Servicing 6-cylinder TDI
engine, common rail;
Rep. gr. 23 ; Lambda
probe; Exploded view -
Lambda probe
- ☐ Tightening torques for
control units
⇒ [page 143](#) and
⇒ [page 143](#)

3 - Pressure differential sender - G505-

- ☐ Removing and installing
⇒ [page 138](#)
- ☐ Tightening torques and
installation instructions
⇒ Servicing 6-cylinder
TDI engine, common
rail; Rep. gr. 23 ; Lamb-
da probe; Exploded
view - Lambda probe

4 - Exhaust gas temperature sender 3 - G495-

- ☐ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 3 - G495-

5 - NOx sender - G295- with control unit for NOx sender - J583-

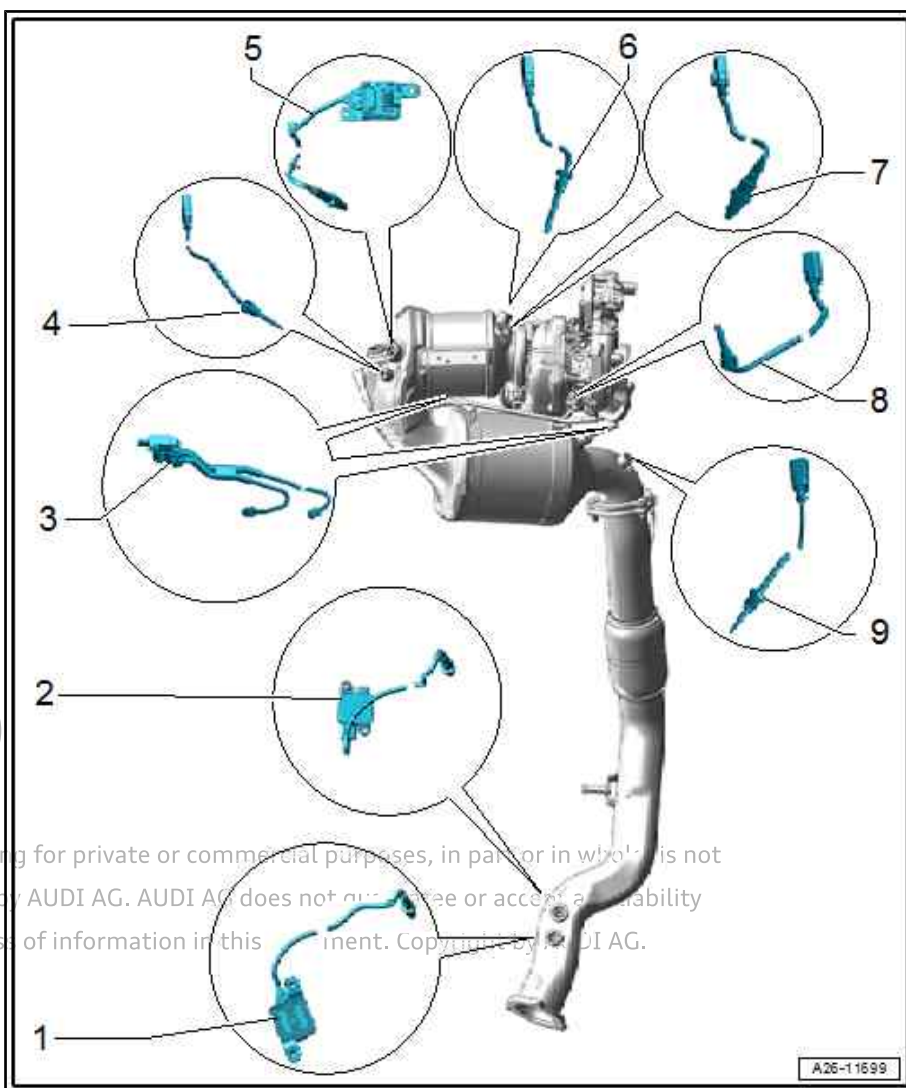
- ☐ Removing and installing ⇒ [page 144](#)
- ☐ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe

6 - Exhaust gas temperature sender 2 - G448-

- ☐ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 2 - G448-

7 - Lambda probe - G39- with Lambda probe heater - Z19-

- ☐ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Removing and installing Lambda probe





- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe

8 - Exhaust gas temperature sender 1 - G235-

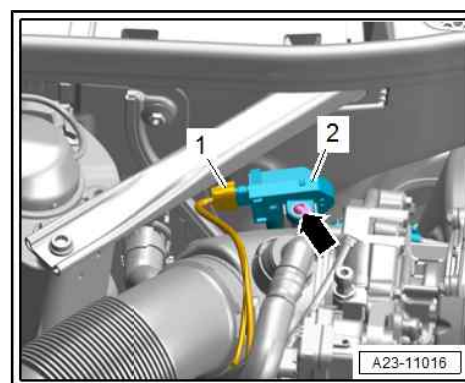
- ❑ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 1 - G235-

9 - Exhaust gas temperature sender 4 - G648-

- ❑ Removing and installing ⇒ [page 170](#)

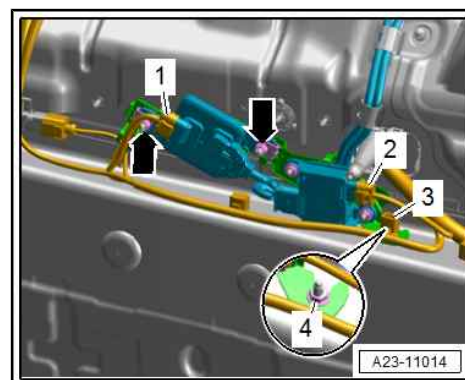
Bracket with pressure differential sender - G505- - tightening torque

- Tighten bolt -arrow- to 4.5 Nm.



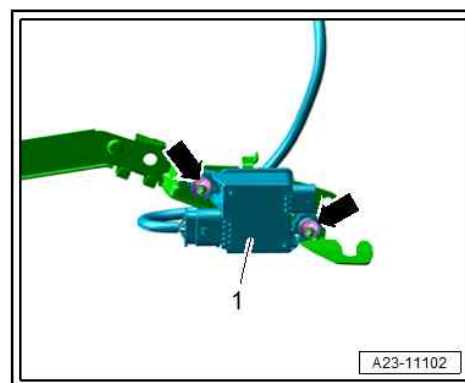
Bracket with NOx sender 2 - G687- / particulate sensor - G784- - tightening torque

- Tighten nut -4- to 9 Nm.
- Fit nuts -arrows-.



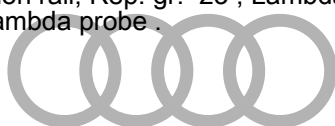
Particulate sensor - G784- - tightening torque

- Tighten nuts -arrows- to 9 Nm.



8.2 Removing and installing Lambda probe

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Removing and installing Lambda probe.





8.3 Removing and installing NOx senders

⇒ ["8.3.1 Removing and installing NOx sender G295", page 144](#)

⇒ ["8.3.2 Removing and installing NOx sender 2 G687", page 145](#)

8.3.1 Removing and installing NOx sender - G295-

Special tools and workshop equipment required

- ◆ Lambda probe open ring spanner set - 3337-

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- ◆ High-temperature paste ⇒ Electronic parts catalogue

Removing



WARNING

When working on all parts of the exhaust system:

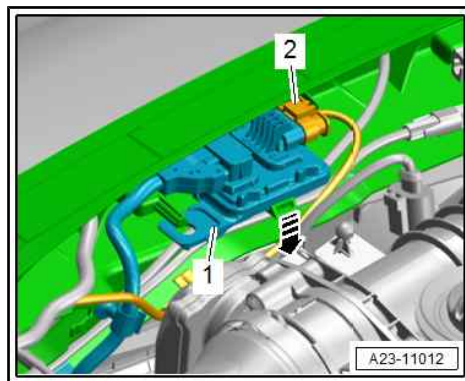
- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*



Note

Re-install all cable ties in the same locations when installing.

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Unplug electrical connector -2-.
- Release fastener -arrow-, detach control unit for NOx sender - J583- -item 1- and move it clear.





- Unscrew NOx sender - G295- -arrow- using a tool from Lambda probe open ring spanner set - 3337- .

Installing

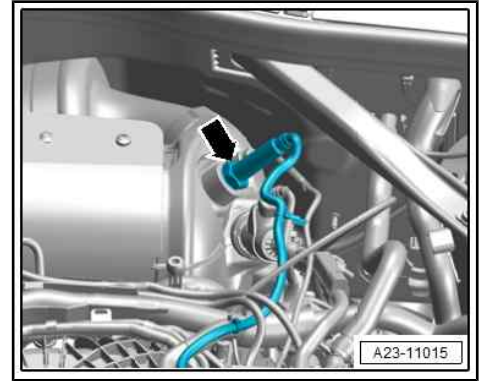
Installation is carried out in reverse order; note the following:



Note

Coat thread with high-temperature paste ⇒ Electronic parts catalogue .

- Move control unit for NOx sender - J583- into installation position and secure.
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



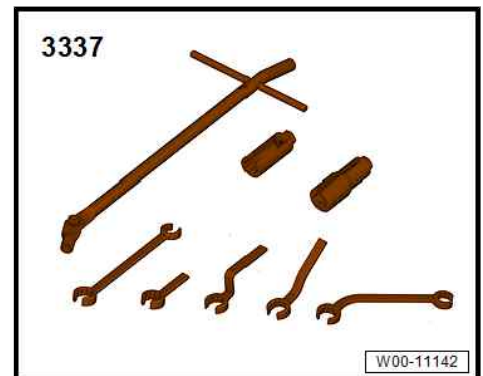
Tightening torques

- ◆ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe

8.3.2 Removing and installing NOx sender 2 - G687-

Special tools and workshop equipment required

- ◆ Lambda probe open ring spanner set - 3337-



- ◆ High-temperature paste ⇒ Electronic parts catalogue

Removing



WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the exhaust system .*

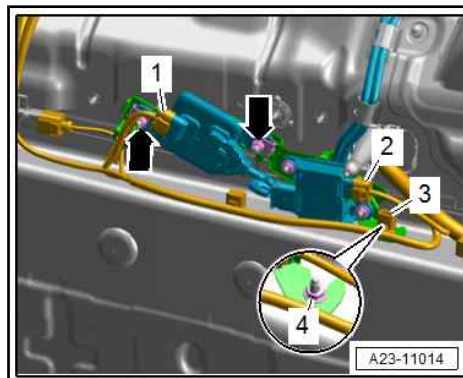


Note

Re-install all cable ties in the same locations when installing.



- Unfasten underbody trim (left-side) and lower it slightly ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Unplug electrical connector -1-.
- Pull clip -3- off stud.
- Remove nuts -arrows- and loosen (do not remove) nut -4-.
- Detach bracket and move control unit for NOx sender 2 - J881-clear.



- Unscrew NOx sender 2 - G687- -item 2- using a tool from Lambda probe open ring spanner set - 3337- .

Installing

Installation is carried out in reverse order; note the following:

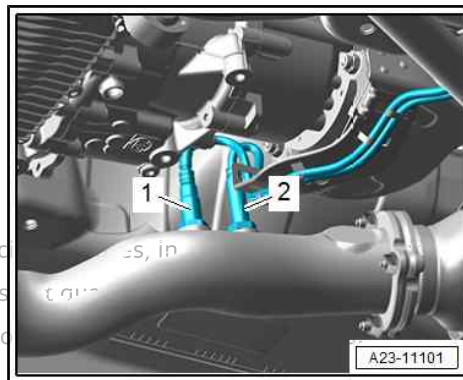


Note

Coat thread with **high-temperature paste** ⇒ *Electronic parts catalogue* .

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- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



Tightening torques

- ♦ ⇒ [Fig. ""Bracket with NOx sender 2 -G687- / particulate sensor -G784- - tightening torque"" , page 143](#)
- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim

8.4 Removing and installing particulate sensor - G784-

Removing



WARNING

When working on all parts of the exhaust system:

- ♦ **Observe safety precautions when working on the exhaust system** ⇒ *Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*

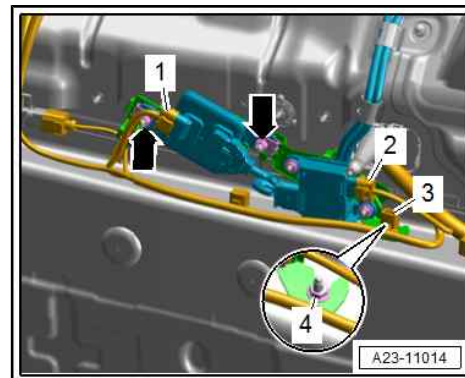


Note

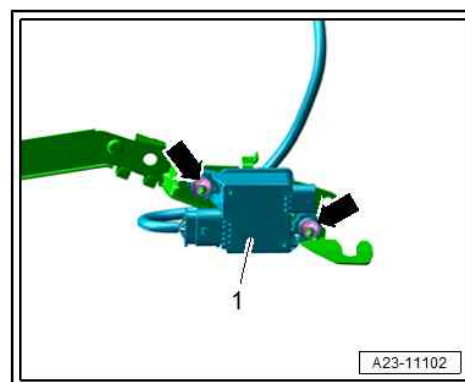
Re-install all cable ties in the same locations when installing.



- Unfasten underbody trim (left-side) and lower it slightly ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Unplug electrical connectors -1, 2-.
- Pull clip -3- off stud.
- Remove nuts -arrows- and loosen (do not remove) nut -4-.
- Detach bracket.



- Remove nuts -arrows-, detach particulate sensor - G784- from bracket and move sensor clear.



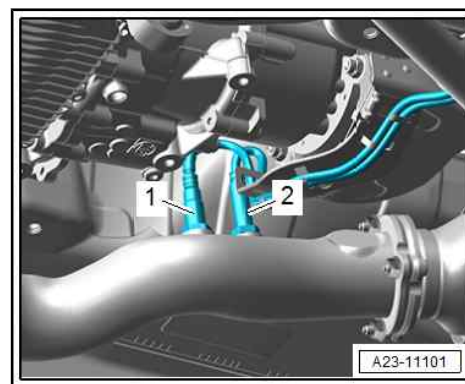
- Unscrew particulate sensor - G784- -item 1-.

Installing

Installation is carried out in reverse order; note the following:

Tightening torques

- ◆ ⇒ Fig. ““ Particulate sensor -G784- - tightening torque”“, page 143
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim



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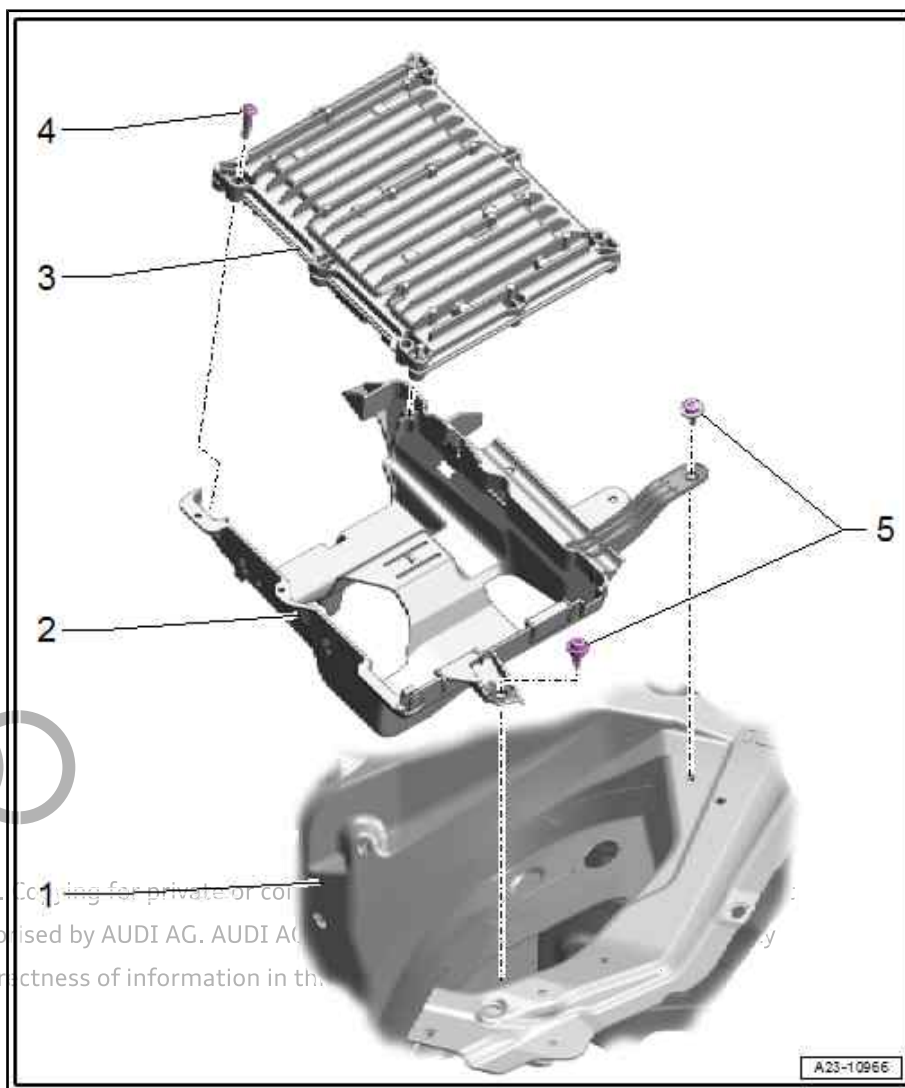
9 Engine control unit

⇒ ["9.1 Exploded view - engine control unit", page 148](#)

⇒ ["9.2 Removing and installing engine/motor control unit J623 ", page 148](#)

9.1 Exploded view - engine control unit

- 1 - Suspension turret
- 2 - Mounting bracket
 - ❑ For engine control unit - J623-
- 3 - Engine control unit - J623-
 - ❑ After renewing, perform adaptations listed in Guided Function "0001 - Adapt learnt values - after component replacement" ⇒ Vehicle diagnostic tester
 - ❑ Removing and installing ⇒ [page 148](#)
- 4 - Bolt
 - ❑ 4.5 Nm
- 5 - Bolts
 - ❑ 9 Nm



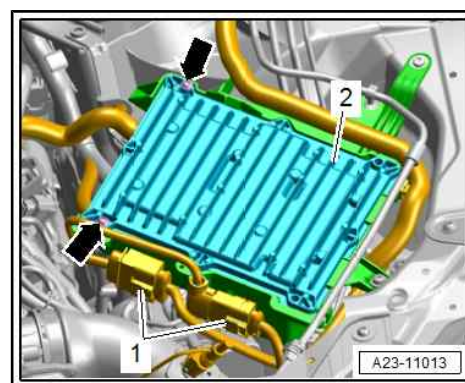
9.2 Removing and installing engine/motor control unit - J623-

Removing

- If the engine control unit - J623- is renewed, the adaption values must be read out and stored before the engine control unit - J623- is removed.
- Connect ⇒ Vehicle diagnostic tester.
- Select **Diagnosis** mode and then **Start diagnosis**.
- Choose **Select own test** tab and select following options one after the other:



- ◆ Drive train
- ◆ Select engine code and engine
- ◆ 0001 - Self-diagnosis compatible systems
- ◆ 0001 - Engine electronics
- ◆ 0001 - Engine electronics, functions
- ◆ 0001 - Adapt learnt values - after component re-
placement
- Switch off ignition and remove ignition key after storing elec-
tronic file containing adaption values.
- If the adaption values of the injectors cannot be read out of the
old (defective) engine control unit, the adaption values must
be entered into the new engine control unit manually and the
adaption procedure must be performed accordingly.
- Remove bolts -arrows- and take out engine control unit - J623-
item 2-.



- Unplug electrical connectors -arrows- and remove engine con-
trol unit - J623- .

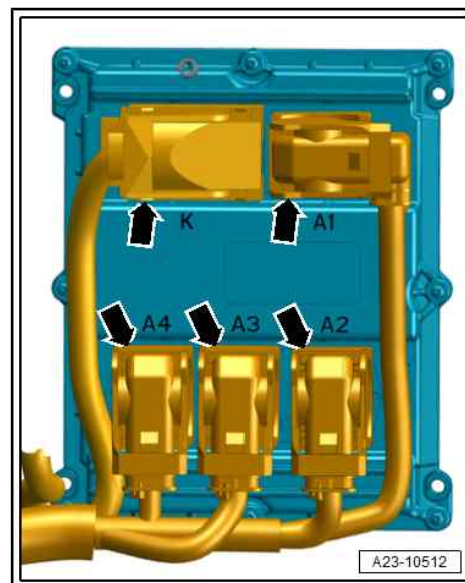
Installing

Installation is carried out in reverse order; note the following:

- If engine control unit has been renewed, perform adaptations
listed in Guided Function "0001 - Adapt learnt values - after
component replacement" ⇒ Vehicle diagnostic tester.

Tightening torques

- ◆ ⇒ ["9.1 Exploded view - engine control unit", page 148](#)





26 – Exhaust system

1 Exhaust pipes/silencers

⇒ [“1.1 Exploded view - silencers”, page 150](#)

⇒ [“1.2 Removing and installing front exhaust pipe”, page 152](#)

⇒ [“1.3 Separating exhaust pipes/silencers”, page 154](#)

⇒ [“1.4 Removing and installing silencers”, page 155](#)

⇒ [“1.5 Stress-free alignment of exhaust system”, page 156](#)

⇒ [“1.6 Checking exhaust system for leaks”, page 157](#)

1.1 Exploded view - silencers



WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the exhaust system .*



1 - Rear silencer

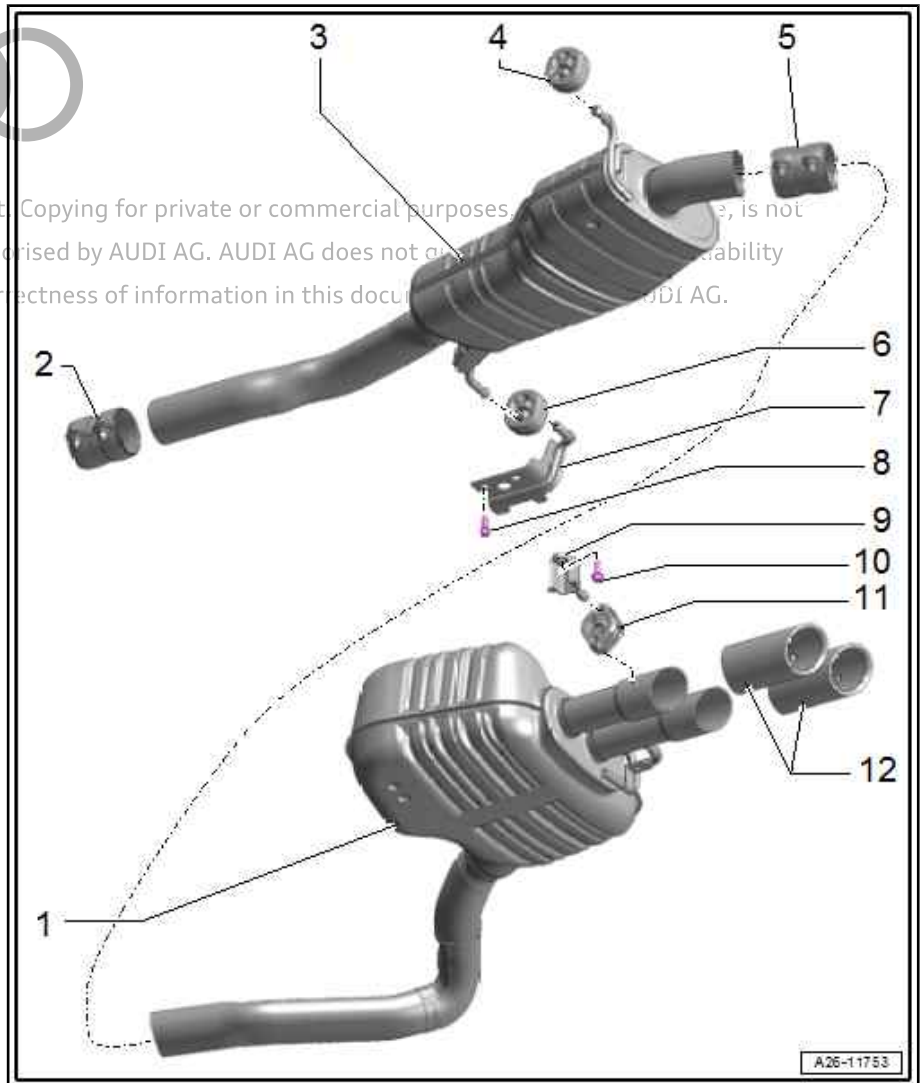
- ☐ Removing and installing
⇒ [page 155](#)
- ☐ Combined as one unit
with centre silencer as
original equipment
- ☐ Centre silencer and rear
silencer can be renewed
separately
- ☐ Cutting point
⇒ [page 154](#)
- ☐ Align exhaust system so
it is free of stress
⇒ [page 156](#)

2 - Clamp (front)

- ☐ Before tightening, align
exhaust system so it is
free of stress
⇒ [page 156](#)
- ☐ Installation position
⇒ [page 152](#)
- ☐ Tighten screw connec-
tions evenly to 23 Nm

3 - Centre silencer

- ☐ Removing and installing
⇒ [page 155](#)
- ☐ Supplied as one unit
with silencer as original
equipment
- ☐ Centre silencer and rear
silencer can be renewed
separately
- ☐ Cutting point
⇒ [page 154](#)
- ☐ Align exhaust system so
it is free of stress ⇒ [page 156](#)



4 - Rubber mounting

- ☐ Renew if damaged
- ☐ Align exhaust system so it is free of stress ⇒ [page 156](#)

5 - Clamp (rear)

- ☐ For separate replacement of centre and rear silencers
- ☐ Before tightening, align exhaust system so it is free of stress ⇒ [page 156](#)
- ☐ Installation position ⇒ [page 152](#)
- ☐ Tighten screw connections evenly to 23 Nm

6 - Rubber mounting

- ☐ Renew if damaged
- ☐ Align exhaust system so it is free of stress ⇒ [page 156](#)

7 - Retainer

- ☐ For rubber mounting

8 - Bolt

- ☐ 20 Nm

9 - Bracket

- ☐ For rubber mounting



10 - Bolt

- ❑ 20 Nm

11 - Rubber mounting

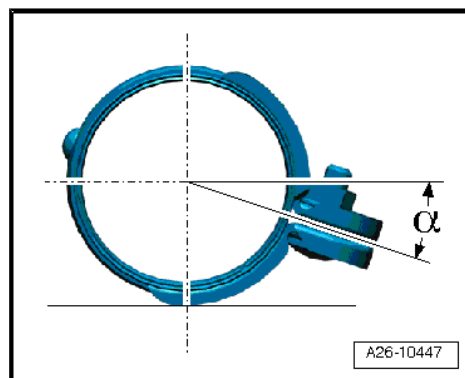
- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress ➔ [page 156](#)

12 - Trim

- ❑ For tailpipes

Clamps - installation position

- Fit clamp in position shown.
- Angle α = approx. 20°
- Bolt connections face outwards.



1.2 Removing and installing front exhaust pipe



Note

The SCR catalytic converter is integrated in the front exhaust pipe.

Removing

Special tools and workshop equipment required

- ♦ Lambda probe open ring spanner set 3337



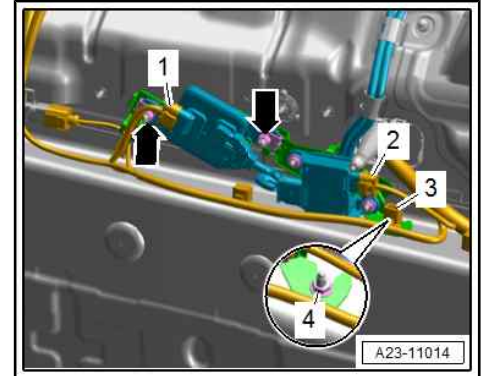
WARNING

When working on all parts of the exhaust system:

- ♦ **Observe safety precautions when working on the exhaust system ➔ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .**



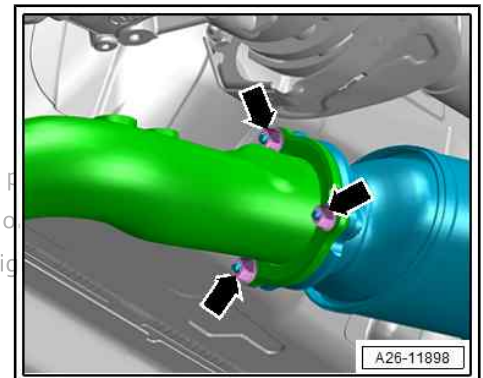
- Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Unfasten underbody trim (left-side) and lower it slightly ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Unplug electrical connectors -1, 2- and move clear.
- Pull clip -3- off stud.
- Remove nuts -arrows- and loosen (do not remove) nut -4-.
- Tie bracket with control unit for NOx sender 2 - J881- to front exhaust pipe.



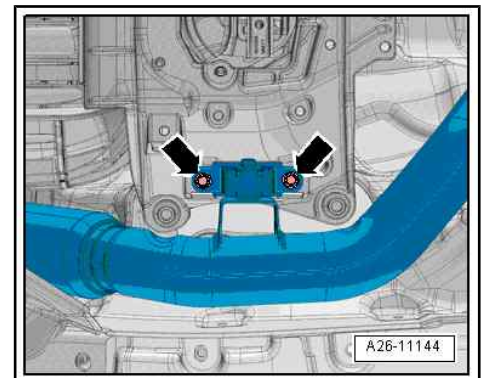
- Remove nuts -arrows-.



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- Remove bolts -arrows-.





Caution

Risk of damage to flexible joint in front exhaust pipe.

- ◆ **Do NOT bend flexible joint in front exhaust pipe more than 10°.**

- Remove bolt -2- and nuts -1-.
- Detach front exhaust pipe.

Installing

Installation is carried out in reverse order; note the following:



Note

Renew gaskets and self-locking nuts after removal.

- Align the exhaust system so it is free of stress ⇒ [page 156](#) .
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.

Tightening torques

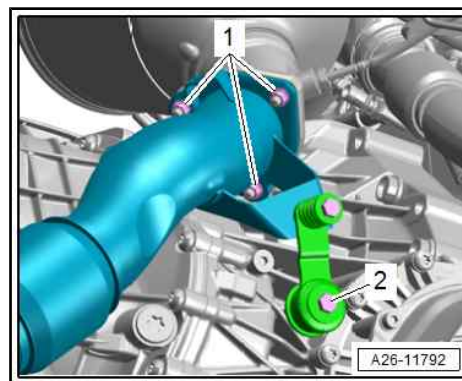
- ◆ ⇒ [“2.1 Exploded view - emission control system”, page 158](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim

1.3 Separating exhaust pipes/silencers

- ◆ The connecting pipe can be cut through at the cutting point in order to renew the centre or rear silencer separately.
- ◆ The cutting point is marked by an indentation on the circumference of the exhaust pipe.

Special tools and workshop equipment required

- ◆ Chain pipe cutter - VAS 6254-





Procedure

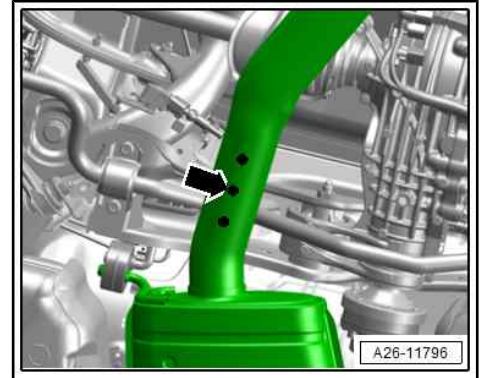


WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*

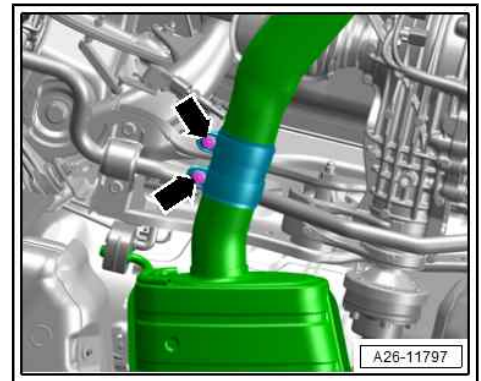
- Cut through exhaust pipes at a right angle at cutting point -arrow- using chain pipe cutter - VAS 6254- .



- Position centre of clamp over cutting point ⇒ [page 152](#) and tighten nuts -arrows-.
- Align the exhaust system so it is free of stress ⇒ [page 156](#) .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - silencers", page 150](#)



1.4 Removing and installing silencers

Removing



WARNING

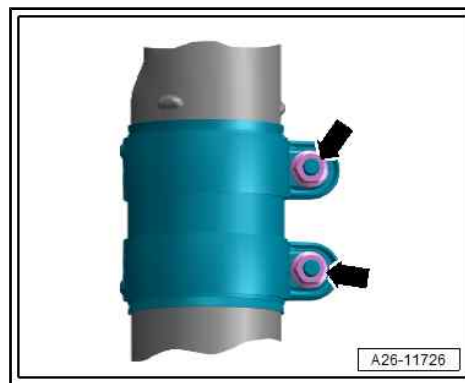
When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*

- Depending on equipment version: Remove diagonal strut (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .



- Loosen clamp -arrows- and push towards rear.
- Lower front exhaust pipe slightly and detach clamp.
- Tie up front exhaust pipe.



WARNING

Risk of accident caused by weight of silencers.

- ◆ *A second mechanic is required for removal of the rear silencer.*

- Disengage mountings -arrows- at exhaust system (rear).
- Unscrew bolt -2- and remove silencer -1-.

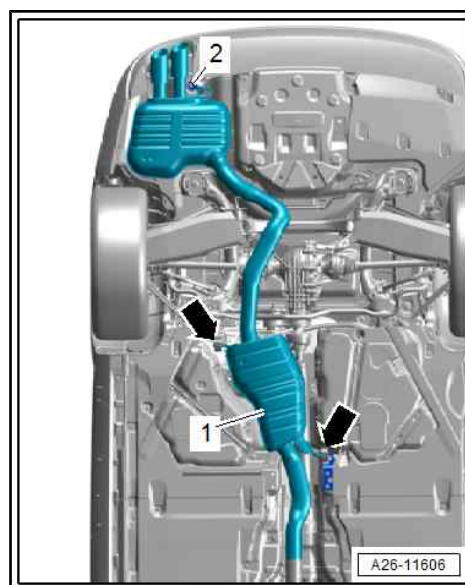
Installing

Installation is carried out in reverse order; note the following:

- Align the exhaust system so it is free of stress ⇒ [page 156](#) .

Tightening torques

- ◆ ⇒ [“1.1 Exploded view - silencers”, page 150](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim



1.5 Stress-free alignment of exhaust system

Procedure

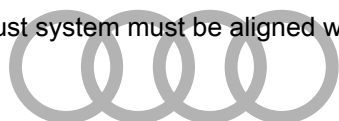


WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the exhaust system .*

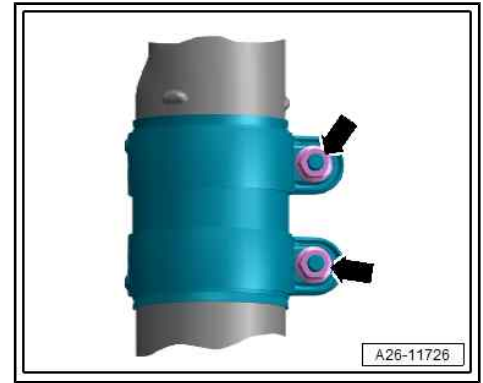
- The exhaust system must be aligned when it is cool.



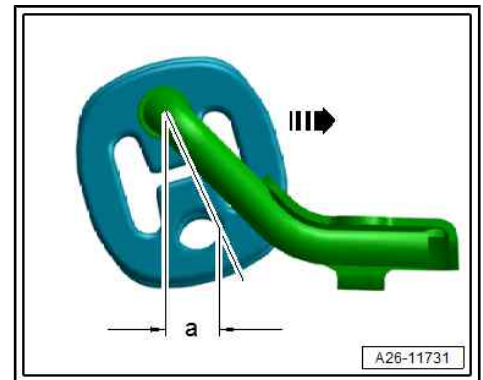
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- Loosen clamp -arrows- and push towards rear.



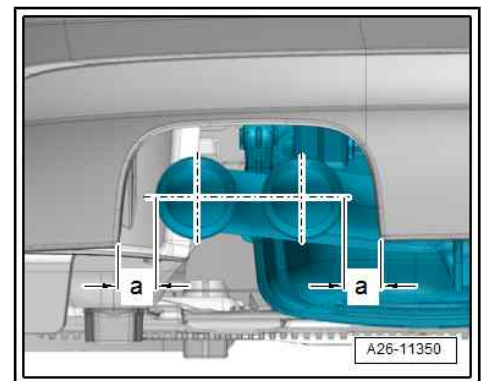
- Push exhaust system towards front of vehicle -arrow- so that mounting for exhaust pipe is preloaded by -a- = 10 ± 2 mm.
- Position clamp at front [⇒ page 152](#) and tighten bolted connections evenly.



- Check clearance between tailpipes and bumper:
- Distance -a- is the same on both sides.

Tightening torques

- ◆ [⇒ "1.1 Exploded view - silencers", page 150](#)



1.6 Checking exhaust system for leaks

All procedures are described in [⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26](#) ; Exhaust pipes/silencers; Checking exhaust system for leaks .

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2 Emission control system

⇒ "2.1 Exploded view - emission control system", page 158

⇒ "2.2 Removing and installing emission control module", page 158

⇒ "2.3 Removing and installing trap catalytic converter", page 161

⇒ "2.4 Removing and installing exhaust flap control unit J883 ", page 161

2.1 Exploded view - emission control system

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All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Emission control system; Exploded view - emission control system .

2.2 Removing and installing emission control module

Removing

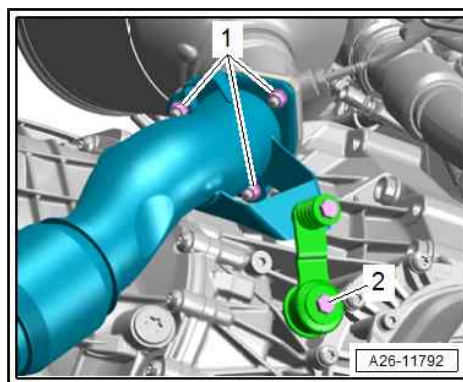


WARNING

When working on all parts of the exhaust system:

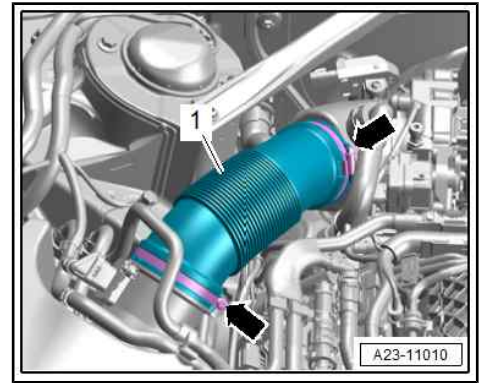
- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the exhaust system .*

- Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove nuts -1-.
- Remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

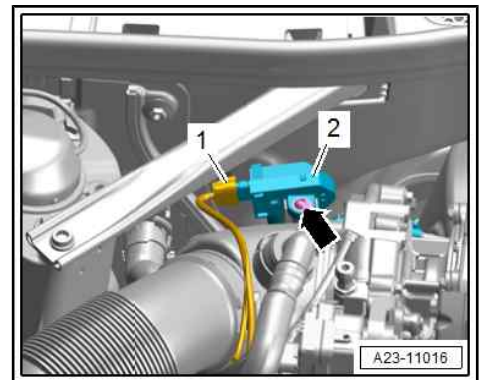




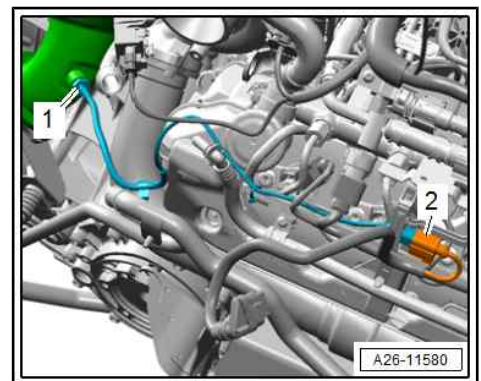
- Release hose clips -arrows- and detach air pipe -1-.



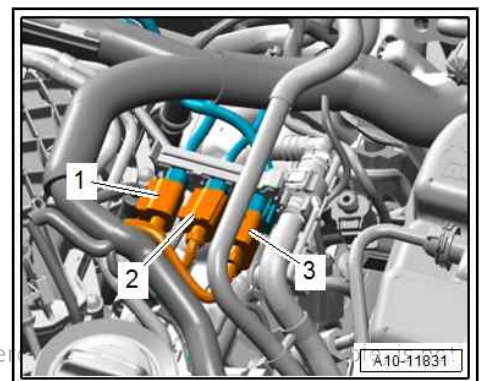
- Remove bolt -arrow-.
- Unplug electrical connector -1-.
- Move bracket -2- clear with pressure differential sender - G505- .



- Remove exhaust gas temperature sender 4 - G648- -item 1-.



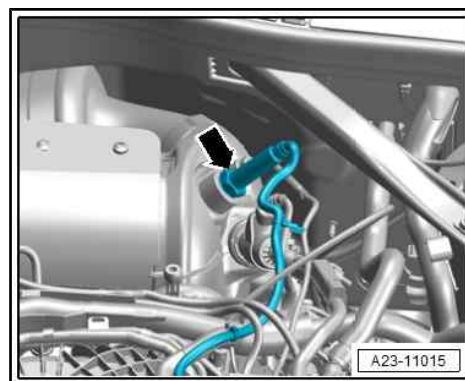
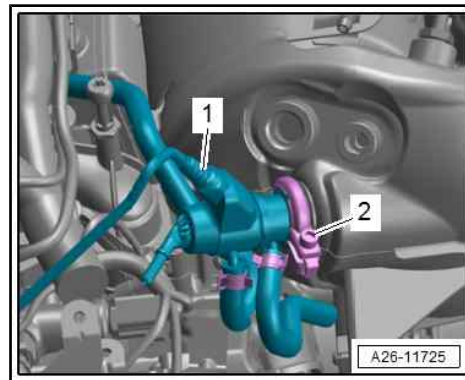
- Detach electrical connectors -1, 2, 3- from bracket, unplug connectors and move electrical wiring clear.



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- Unscrew bolt -2- and loosen retaining clip.
- Detach injector for reducing agent - N474- -item 1- and place to one side.
- Unscrew NOx sender - G295- -arrow- using a tool from Lambda probe open ring spanner set - 3337- .



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- Remove bolt -3- on retainer.
- Open screw-type clip -1- and place it on intake funnel of emission control module.
- Remove emission control module -2- (pay attention to brake servo pressure sensor - G294-).

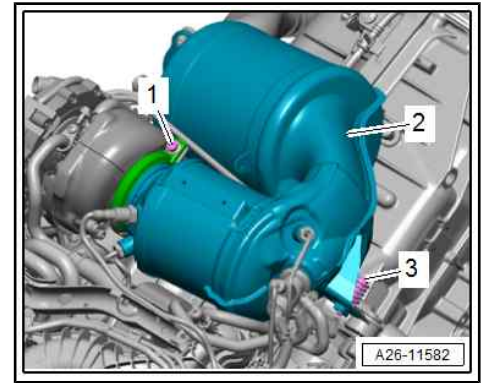
Installing

Installation is carried out in reverse order; note the following:



Note

- ◆ *Renew gaskets and self-locking nuts after removal.*
- ◆ *Dirt screen ⇒ [Item 12 \(page 173\)](#) must be renewed if emission control module was renewed.*
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install injector for reducing agent - N474- ⇒ [page 166](#) .
- If emission control module has been renewed, perform adaptations listed in Guided Function “0001 - Adapt learnt values - after component replacement” ⇒ Vehicle diagnostic tester.



Tightening torques

- ◆ ⇒ [“1.1 Exploded view - silencers”, page 150](#)
- ◆ ⇒ [“2.1 Exploded view - emission control system”, page 158](#)
- ◆ ⇒ [Fig. ““Bracket with pressure differential sender -G505- - tightening torque””, page 143](#)
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Exploded view - Lambda probe
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Exploded view - plenum chamber partition panel
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.3 Removing and installing trap catalytic converter

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail (EA 897 Gen. II) ; Rep. gr. 26 ; Emission control system; Exploded view - emission control system .

2.4 Removing and installing exhaust flap control unit - J883-

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail (EA 897 Gen. II) ; Rep. gr. 26 ; Emission control system; Exploded view - emission control system .

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3 SCR (selective catalytic reduction) system

⇒ "3.1 Exploded view - reducing agent tank", page 162

⇒ "3.2 Exploded view - reducing agent supply line", page 163

⇒ "3.3 Draining reducing agent tank", page 163

⇒ "3.4 Removing and installing reducing agent tank", page 164

⇒ "3.5 Removing and installing injector for reducing agent N474", page 166

⇒ "3.6 Removing and installing control unit for reducing agent metering system J880", page 166

3.1 Exploded view - reducing agent tank

1 - Supply line



WARNING

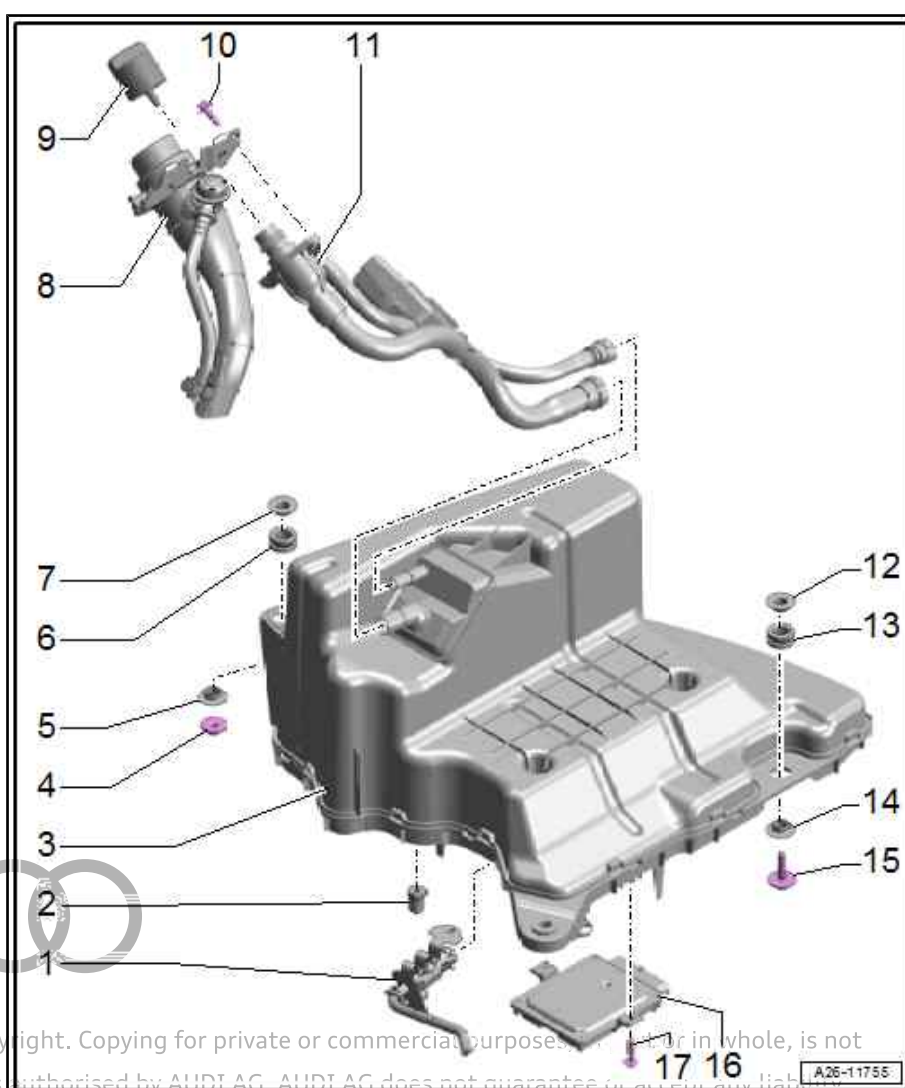
*Safety risk due to escaping reducing agent.
Observe safety measures when handling reducing agent → Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the SCR system .*

2 - Sealing plug

- ☐ For drain pipe

3 - Reducing agent tank

- ☐ With delivery unit for reducing agent metering system - GX19-
- ☐ The following components are integrated in the delivery unit for reducing agent metering system - GX19- :
 - ◆ Filter
 - ◆ Tank sender for reducing agent - G684-
 - ◆ Temperature sender for reducing agent - G685-
 - ◆ Pressure sender for reducing agent metering system - G686-
- ◆ Reducing agent quality sensor - G849- (country-specific version)
- ◆ Pump for reducing agent - V437-
- ◆ Heater for reducing agent tank - Z102-
- ◆ Heater 2 for reducing agent tank (heater circuit 3) - Z167-
 - ☐ Fitting location: on rear right under underbody





- ☐ Draining ⇒ [page 163](#)
- ☐ Removing and installing ⇒ [page 164](#)
- ☐ Adapt learnt value after filling or renewing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair notes; Adapting learnt values for SCR system

4 - Nut

- ☐ 20 Nm

5 - Spacer sleeve

6 - Grommet

7 - Spacer sleeve

8 - Filler neck

- ☐ For fuel tank

9 - Filler cap

- ☐ For filler neck for reducing agent tank

10 - Bolt

- ☐ 8 Nm

11 - Filler neck

- ☐ For reducing agent tank

12 - Spacer sleeve

13 - Grommet

14 - Spacer sleeve

15 - Bolt

- ☐ 20 Nm

16 - Control unit for reducing agent metering system - J880-

- ☐ Checking ⇒ Vehicle diagnostic tester
- ☐ Removing and installing ⇒ [page 166](#)
- ☐ Adapt learnt value after renewing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair notes; Adapting learnt values for SCR system

17 - Bolt

- ☐ 3 Nm

3.2 Exploded view - reducing agent supply line

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Exploded view - reducing agent supply line .

3.3 Draining reducing agent tank

Procedure



Note

Re-install all cable ties in the same locations when installing.



WARNING

Reducing agent can cause skin irritation.

- ◆ *Observe safety measures when handling reducing agent
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the SCR system .*
- ◆ *Put on safety goggles.*

Safety risk due to escaping reducing agent.

- ◆ *To prevent large amounts of reducing agent from escaping when the supply line is opened, wait until the reducing agent has been drawn back automatically ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the SCR system .*

- Switch off ignition.
- Open tank flap.
- Unscrew filler cap -arrow- from filler neck for reducing agent.
- Remove underbody trim (rear right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

- Place drip tray underneath.
- Press release tab and remove sealing plug -arrow-.
- Allow reducing agent to drain off into drip tray.

Attaching

Assembly is performed in reverse sequence; note the following:

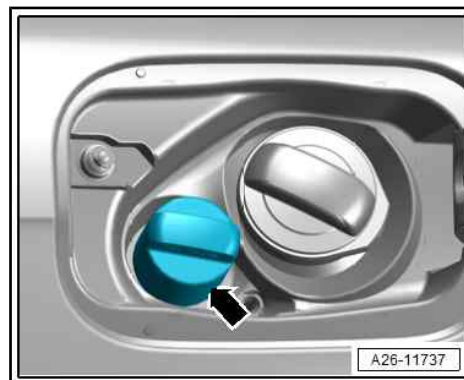
- Seal off drain pipe with sealing plug.
- Adapt learnt value after filling with reducing agent or renewing components ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair notes; Adapting learnt values for SCR system .

Tightening torques

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

3.4 Removing and installing reducing agent tank

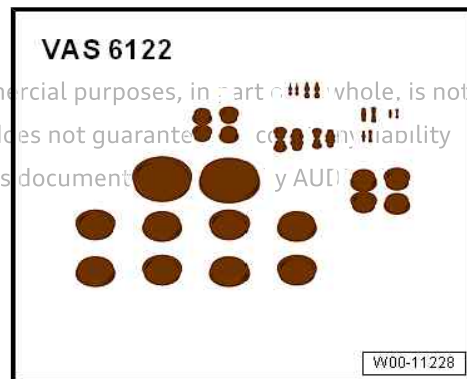
Special tools and workshop equipment required





◆ Engine bung set - VAS 6122-

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Removing

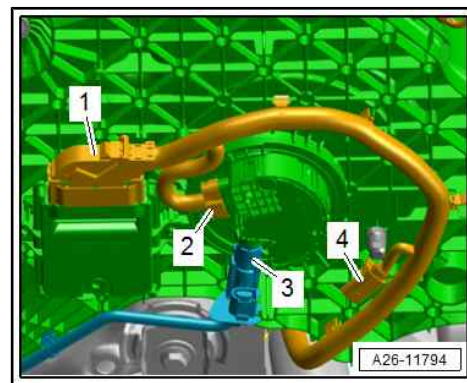


WARNING

Reducing agent can cause skin irritation.

- ◆ *Observe safety measures when handling reducing agent
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the SCR system .*
- ◆ *Put on safety goggles.*

- Drain reducing agent tank ⇒ [page 163](#) .
- Detach rear section of rear right wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (rear) .
- Disconnect SCR supply line -3- and move it clear ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Exploded view - reducing agent supply line .
- Detach electrical connector -4- from bracket.
- Unplug electrical connectors -1, 2- and move electrical wiring harness clear.
- Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .





Caution

Safety risk due to escaping reducing agent.

- ◆ **Reducing agent tank must be empty when it is removed.**

- Unscrew connections -arrows-.
- Lower reducing agent tank -1- slightly.
- Press release tabs on both sides and disconnect hoses -2-.
- Detach reducing agent tank.
- Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .

Installing

Installation is carried out in reverse order; note the following:

- Connect SCR supply line ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Exploded view - reducing agent supply line .
- Check that lines are clipped onto reducing agent tank.
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Adapt learnt value after filling with reducing agent or renewing components ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair notes; Adapting learnt values for SCR system .

Tightening torques

- ◆ ⇒ ["3.1 Exploded view - reducing agent tank", page 162](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (rear)

3.5 Removing and installing injector for reducing agent - N474-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; SCR (selective catalytic reduction) system; Removing and installing injector for reducing agent - N474- .

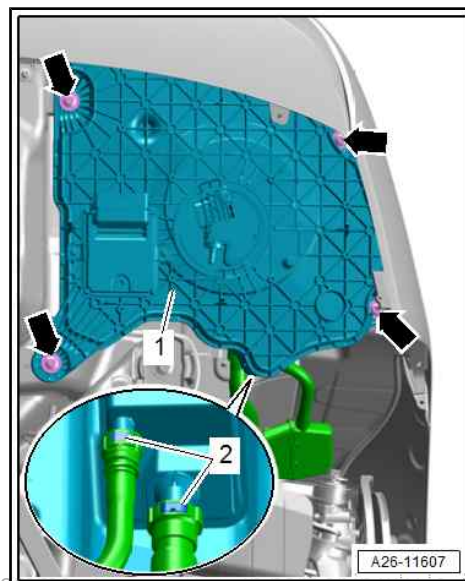
3.6 Removing and installing control unit for reducing agent metering system - J880-

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester

Removing

- Switch off ignition.
- Remove underbody trim (rear right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .





- Remove bolts -arrows- and detach control unit for reducing agent metering system - J880- -item 1-.
- Unplug electrical connector -2-.

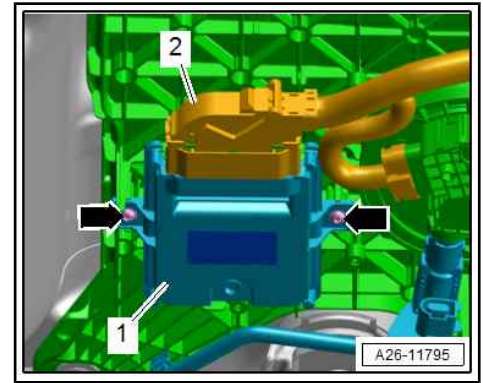
Installing

Installation is carried out in reverse order; note the following:

- If control unit for reducing agent metering system - J880- is renewed, adapt “learnt value” ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Repair notes; Adapting learnt values for SCR system .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - reducing agent tank”, page 162](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim



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4 Exhaust gas temperature control

⇒ ["4.1 Exploded view - exhaust gas temperature control", page 168](#)

⇒ ["4.2 Removing and installing exhaust gas temperature sender 1 G235", page 170](#)

⇒ ["4.3 Removing and installing exhaust gas temperature sender 2 G448", page 170](#)

⇒ ["4.4 Removing and installing exhaust gas temperature sender 3 G495", page 170](#)

⇒ ["4.5 Removing and installing exhaust gas temperature sender 4 G648", page 170](#)

4.1 Exploded view - exhaust gas temperature control



WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*



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1 - NOx sender 2 - G687- with control unit for NOx sender 2 - J881-

- ❑ Removing and installing ⇒ [page 144](#)

2 - Particulate sensor - G784-

- ❑ Removing and installing ⇒ [page 146](#)

3 - Pressure differential sender - G505-

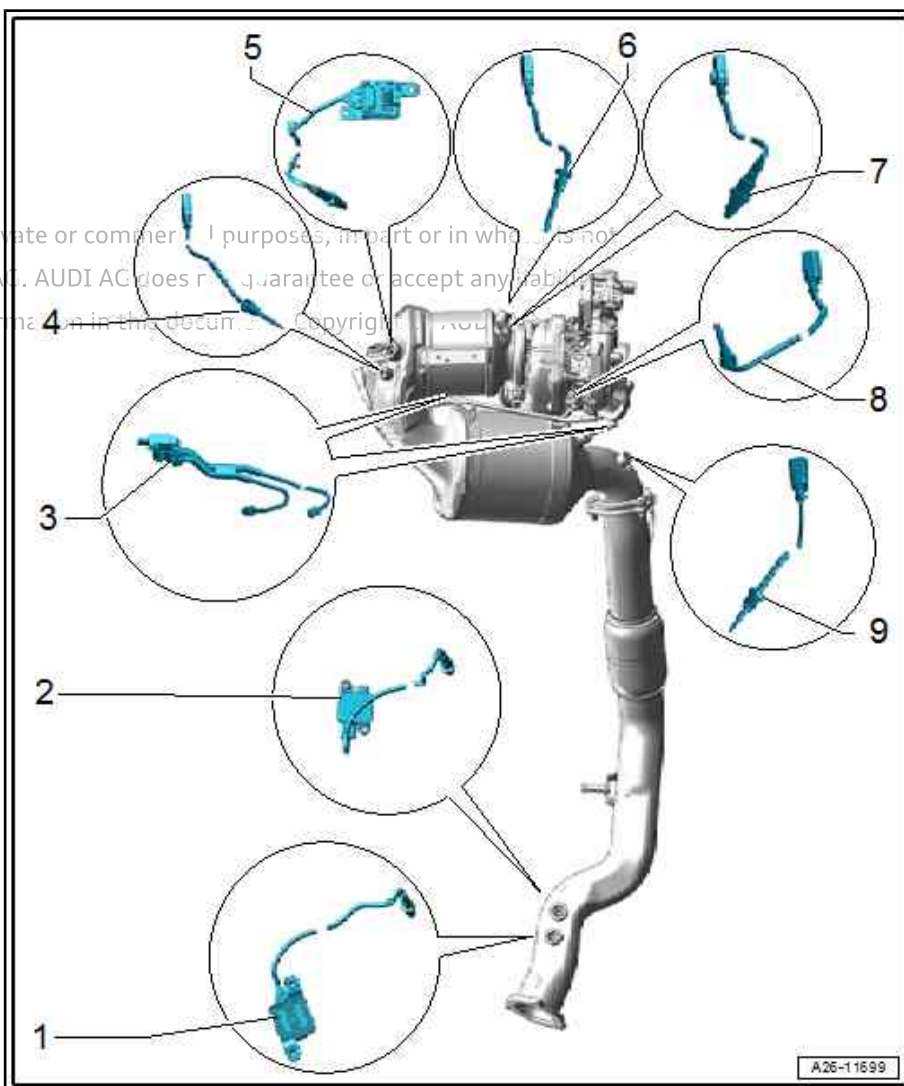
- ❑ Removing and installing ⇒ [page 138](#)

4 - Exhaust gas temperature sender 3 - G495-

- ❑ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 3 - G495-
- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control

5 - NOx sender - G295- with control unit for NOx sender - J583-

- ❑ Removing and installing ⇒ [page 144](#)



6 - Exhaust gas temperature sender 2 - G448-

- ❑ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 2 - G448-
- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control

7 - Lambda probe - G39- with Lambda probe heater - Z19-

- ❑ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 23 ; Lambda probe; Removing and installing Lambda probe

8 - Exhaust gas temperature sender 1 - G235-

- ❑ Removing and installing ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 1 - G235-
- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control

9 - Exhaust gas temperature sender 4 - G648-

- ❑ Removing and installing ⇒ [page 170](#)
- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Exploded view - exhaust gas temperature control



4.2 Removing and installing exhaust gas temperature sender 1 - G235-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 1 - G235- .

4.3 Removing and installing exhaust gas temperature sender 2 - G448-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 2 - G448- .

4.4 Removing and installing exhaust gas temperature sender 3 - G495-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 3 - G495- .

4.5 Removing and installing exhaust gas temperature sender 4 - G648-

Removing



WARNING

When working on all parts of the exhaust system:

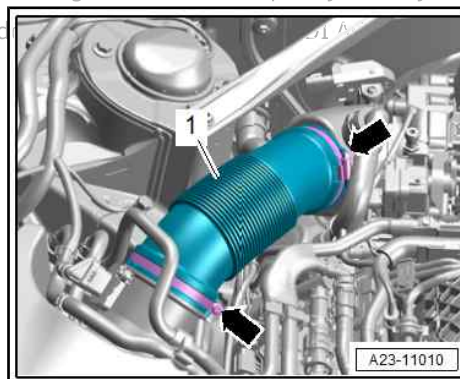
- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00 ; Safety precautions; Safety precautions when working on the exhaust system .*



Note

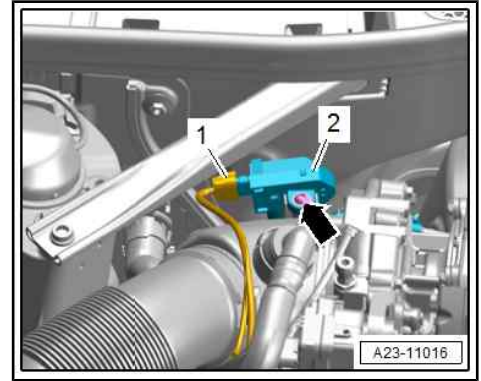
Re-install all cable ties in the same locations when installing.

- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel
- Release hose clips -arrows- and detach air pipe -1-

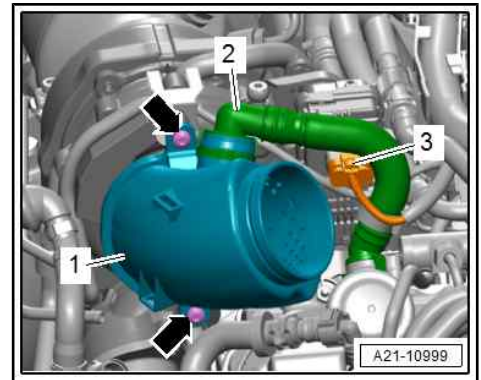




- Remove bolt -arrow-.
- Unplug electrical connector -1-.
- Move bracket -2- clear with pressure differential sender - G505- .



- Press release tabs on both sides and disconnect crankcase breather hose -2-.
- Unplug electrical connector -3- and move electrical wire clear.
- Unscrew bolts -arrows- and remove resonator -1-.



All further procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas temperature control; Removing and installing exhaust gas temperature sender 4 - G648- .

Installing

Additional work:



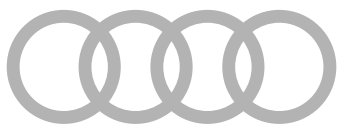
Note

Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .

- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ◆ ⇒ [Fig. “Bracket with pressure differential sender -G505- - tightening torque”](#) , page 143
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger
- ◆ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system





5 Exhaust gas recirculation

⇒ "5.1 Exploded view - exhaust gas recirculation system", page 172

⇒ "5.2 Removing and installing exhaust gas recirculation cooler", page 174

⇒ "5.4 Removing and installing exhaust gas recirculation temperature sensor G98", page 177

5.1 Exploded view - exhaust gas recirculation system

⇒ "5.1.1 Exploded view - exhaust gas recirculation system, engine side (front)", page 172

⇒ "5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side (rear)", page 172

5.1.1 Exploded view - exhaust gas recirculation system, engine side (front)

All components are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation system; Exploded view - exhaust gas recirculation system.

5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side (rear)



1 - Hoses

- ☐ To pressure differential sender 2 - G524-

2 - Pressure differential sender 2 - G524-

- ☐ Removing and installing
⇒ [page 138](#)

3 - Bracket

- ☐ For pressure differential sender 2 - G524-

4 - Bolt

- ☐ 9 Nm

5 - Nut

- ☐ 9 Nm

6 - Connection

7 - Hose

- ☐ For exhaust gas recirculation

8 - Bolt

- ☐ 9 Nm

9 - Seal

- ☐ Renew after removing

10 - Exhaust gas recirculation control motor 2 - V339-

- ☐ Removing and installing
⇒ [page 176](#)

11 - Gasket

- ☐ Renew after removing
- ☐ On some vehicle versions, gasket and dirt screen -12- are a single component

12 - Dirt screen

- ☐ Renew after removing
- ☐ On some vehicle versions, gasket -11- and dirt screen are a single component
- ☐ Dirt screen must be renewed if emission control module was renewed

13 - Bolt

- ☐ 20 Nm

14 - Bolt

- ☐ Tightening torque ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger

15 - Resonator

16 - Seal

- ☐ Renew after removing

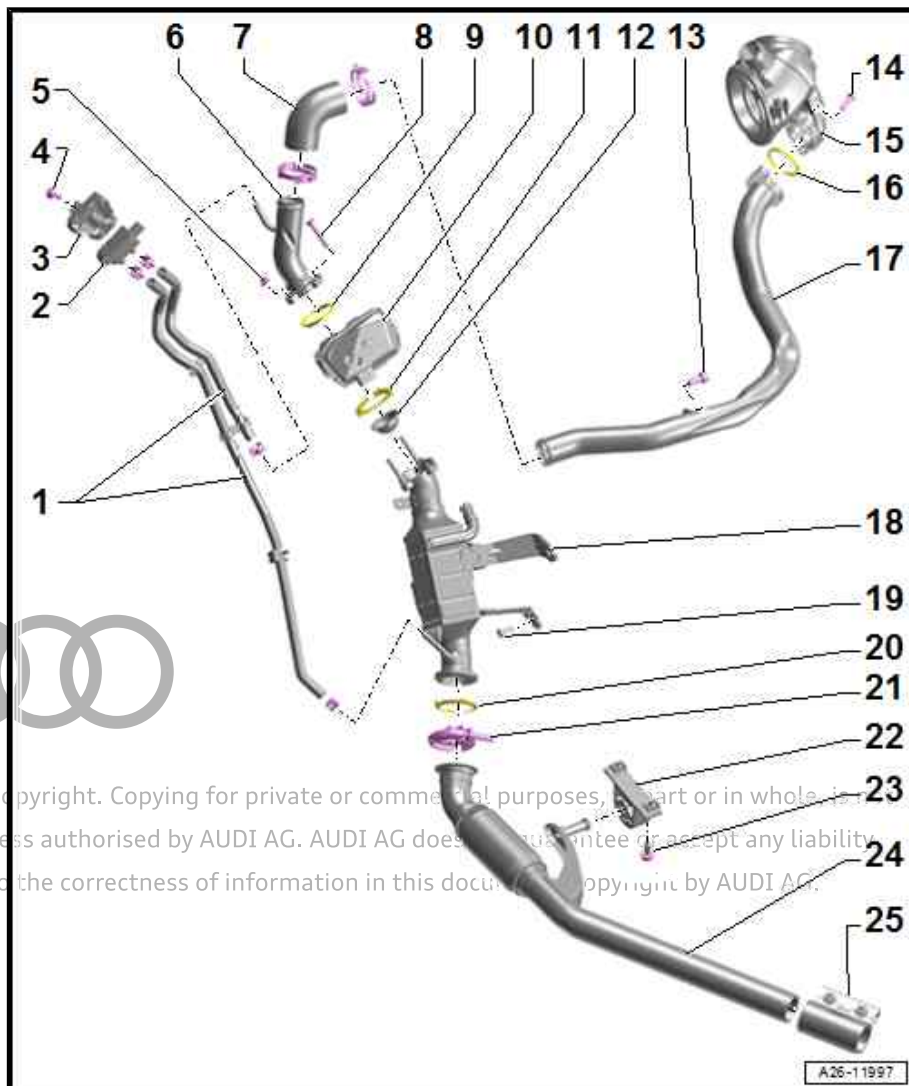
17 - Exhaust gas recirculation pipe

18 - Exhaust gas recirculation cooler (rear)

- ☐ Removing and installing ⇒ [page 174](#)

19 - Bolt

- ☐ 9 Nm





20 - Gasket

- ☐ Renew after removing

21 - Screw-type clip

- ☐ Renew after removing
- ☐ 15 Nm

22 - Mounting

- ☐ Renew if damaged

23 - Bolt

- ☐ 23 Nm

24 - Exhaust gas recirculation pipe

- ☐ With flexible joint

25 - Clamp

- ☐ Tighten screw connections evenly to 30 Nm



5.2 Removing and installing exhaust gas recirculation cooler

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⇒ **"5.2.1 Removing and installing exhaust gas recirculation cooler (front)", page 174**

⇒ **"5.2.2 Removing and installing exhaust gas recirculation cooler (rear)", page 174**

5.2.1 Removing and installing exhaust gas recirculation cooler (front)

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation; Removing and installing exhaust gas recirculation cooler .

5.2.2 Removing and installing exhaust gas recirculation cooler (rear)

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



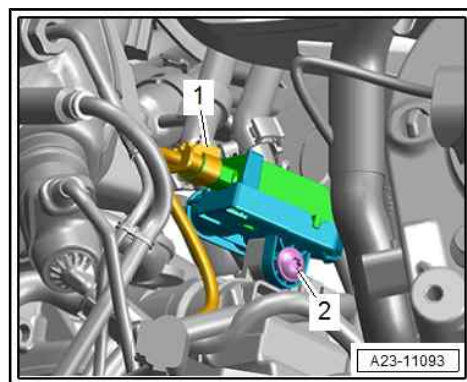


- ◆ Socket Torx T30 - T10405-

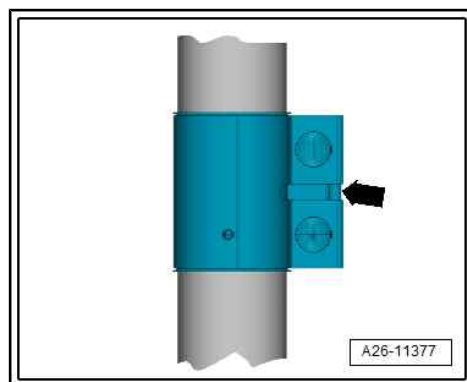


Removing

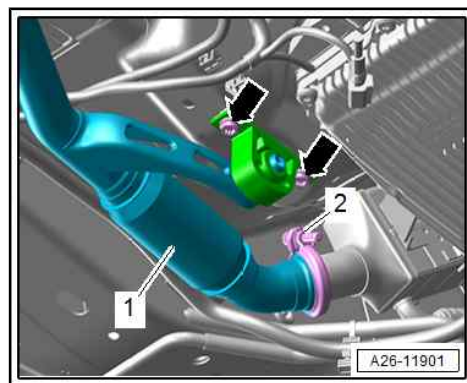
- Remove engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Unplug electrical connector -1-.
- Remove bolt -2- and move pressure differential sender 2 - G524- clear.
- Drain coolant ⇒ [page 72](#) .
- Remove subframe shield (left-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe shield .



- Release clamp -arrow- on exhaust gas recirculation pipe.



- Loosen screw-type clip -2-.
- Remove bolts -arrows- and detach exhaust pipe -1-.
- Remove tunnel cross member and lower gearbox ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings .



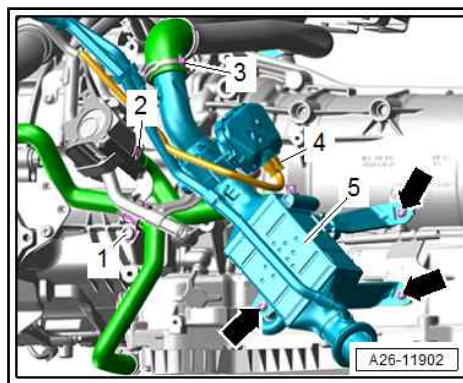
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- Release hose clip -3- at hose for exhaust gas recirculation.
- Remove bolt -1- from retaining clip.
- Release hose clip -2- and detach coolant hose from coolant circulation pump - V50- .
- Unplug electrical connector -4- and move electrical wire clear.
- Remove bolts -arrows- and detach exhaust gas recirculation cooler (rear) -5-.

Installing

Installation is carried out in reverse order; note the following:



Note

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- ♦ *Renew seals and O-rings after removal.* Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express authorization of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- ♦ *Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .*



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 72](#) .
- Install engine cover panel ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

Tightening torques

- ♦ ⇒ [“5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side \(rear\)”, page 172](#)
- ♦ ⇒ [“1.1 Exploded view - turbocharger”, page 110](#)
- ♦ ⇒ 8-speed automatic gearbox; Rep. gr. 37 ; Assembly mountings; Exploded view - assembly mountings
- ♦ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Exploded view - subframe

5.3 Removing and installing exhaust gas recirculation control motor 2 - V339-

Removing

- Remove exhaust gas recirculation cooler (rear) ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation; Removing and installing exhaust gas recirculation cooler .



- Unscrew bolt -2- and nuts -arrows- and detach exhaust gas recirculation control motor 2 - V339- -item 1-.

Installing

Installation is carried out in reverse order; note the following:



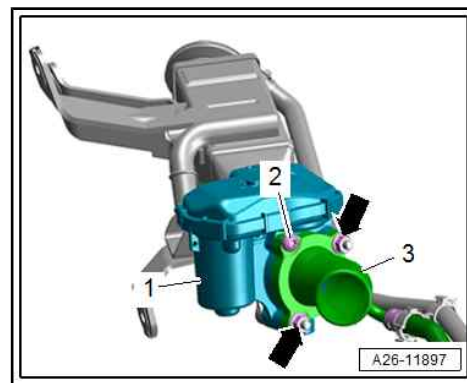
Note

Renew seals and O-rings after removal.

- Clean and insert dirt screen ⇒ [Item 12 \(page 173\)](#) .
- Install exhaust gas recirculation cooler (rear) ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation; Removing and installing exhaust gas recirculation cooler .

Tightening torques

- ◆ ⇒ [“5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side \(rear\)”, page 172](#)



5.4 Removing and installing exhaust gas recirculation temperature sensor - G98-

All procedures are described in ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust gas recirculation; Removing and installing exhaust gas recirculation temperature sensor - G98- .

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6 Exhaust manifolds

⇒ [“6.1 Exploded view - exhaust manifold”, page 178](#)

⇒ [“6.2 Removing and installing exhaust manifolds”, page 179](#)

6.1 Exploded view - exhaust manifold



WARNING

When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*

1 - Nut

- ❑ Tightening torques and installation instructions
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust manifolds; Exploded view - exhaust manifold

2 - Exhaust manifold

- ❑ Shown for cylinder bank 2 (left-side)
- ❑ Removing and installing
⇒ [page 179](#)

3 - Gasket

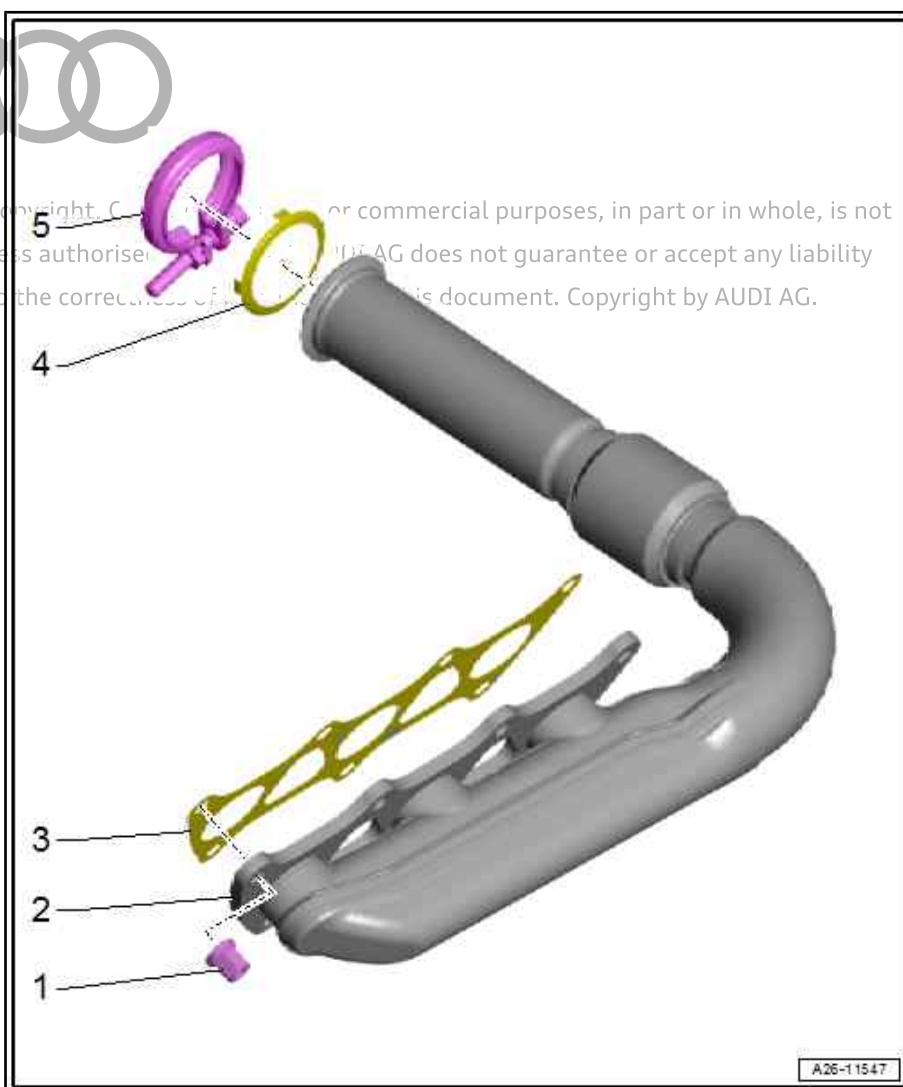
- ❑ Installation instructions
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust manifolds; Exploded view - exhaust manifold

4 - Gasket

- ❑ Installation instructions
⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust manifolds; Exploded view - exhaust manifold

5 - Clamp

- ❑ Tightening torques ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbo-charger; Exploded view - turbocharger





6.2 Removing and installing exhaust manifolds

⇒ ["6.2.1 Removing and installing exhaust manifold \(left-side\)"](#),
page 179

⇒ ["6.2.2 Removing and installing exhaust manifold \(right-side\)"](#),
page 180

6.2.1 Removing and installing exhaust manifold (left-side)

Removing

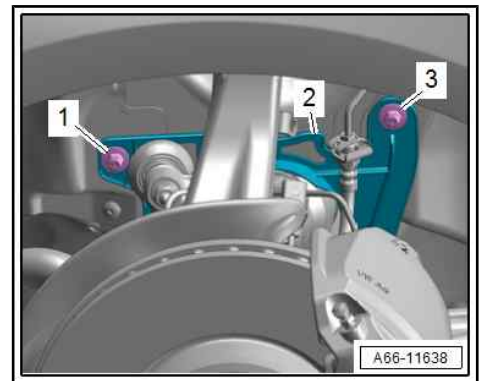


WARNING

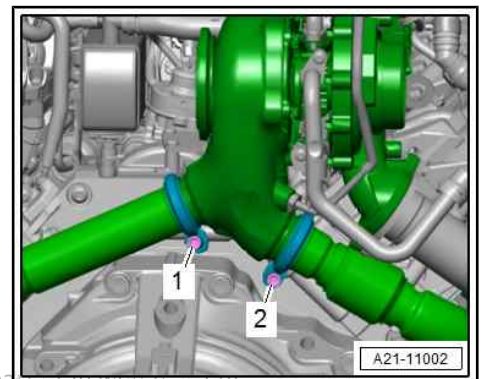
When working on all parts of the exhaust system:

- ◆ *Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .*

- Remove front wheel (left-side) ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Remove emission control module ⇒ [page 158](#) .
- Detach poly V-belt from air conditioner compressor pulley ⇒ [page 45](#) .
- Remove air conditioner compressor from bracket and tie up to left side ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .
- Unscrew nuts -1, 3- and remove cover -2- for drive shaft.



- Release clip -1- and slide it onto intake funnel of turbocharger.



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- Remove nuts -arrows- and detach exhaust manifold towards rear.

Installing

Installation is carried out in reverse order; note the following:



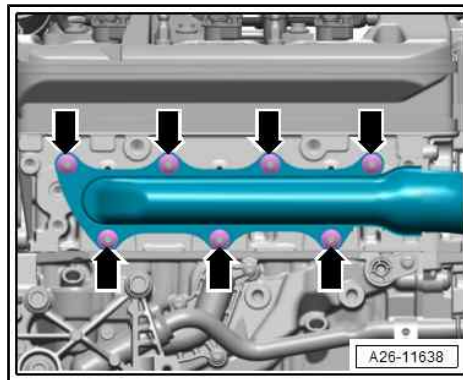
Note

Renew gaskets, seals, self-locking nuts and screw-type clip after removal.

- Install emission control module ⇒ [page 158](#) .
- Install poly V-belt ⇒ [page 45](#) .

Tightening torques

- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust manifolds; Exploded view - exhaust manifold
- ♦ ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Exploded view - air conditioner compressor drive unit
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ♦ ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres



6.2.2 Removing and installing exhaust manifold (right-side)

Removing

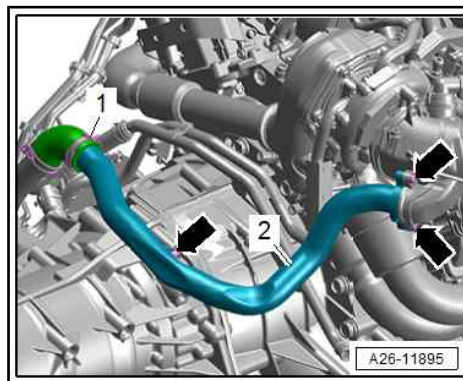


WARNING

When working on all parts of the exhaust system:

- ♦ **Observe safety precautions when working on the exhaust system ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 00; Safety precautions; Safety precautions when working on the exhaust system .**

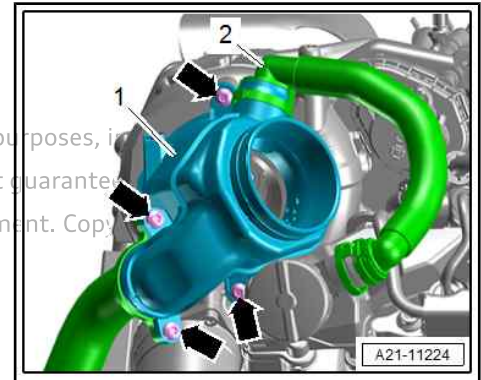
- Remove air cleaner housing ⇒ [page 126](#) .
- Remove coolant pipes (rear) ⇒ [page 97](#) .
- Unbolt coolant pipe (front) and detach from thermostat ⇒ [page 89](#) .
- Remove bolts -arrows-.
- Release screw-type clip -1- and detach exhaust gas recirculation pipe -2-.



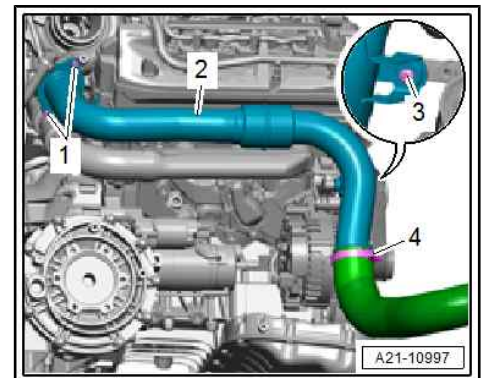


- Press release tabs on both sides and disconnect crankcase breather hose -2-.
- Unscrew bolts -arrows- and remove resonator -1-.

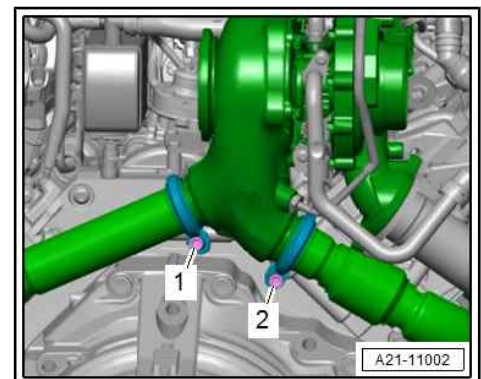
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- Remove bolts -1, 3- and press air pipe -2- to one side.



- Release clip -2- and slide it onto intake funnel of turbocharger.
- Remove engine support (right-side) ⇒ [page 46](#) .





- Remove nuts -arrows- and detach exhaust manifold towards rear.

Installing

Installation is carried out in reverse order; note the following:



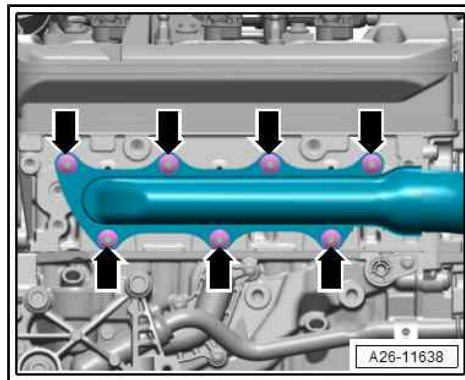
Note

Renew O-ring, bolts and screw-type clips after removal.

- Install engine support ⇒ [page 46](#) .
- Install rear coolant pipes ⇒ [page 97](#) .
- Install coolant pipe (front) ⇒ [page 89](#) .
- Install air cleaner housing ⇒ [page 126](#) .

Tightening torques

- ♦ ⇒ [“2.1 Exploded view - charge air system”, page 112](#)
- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger
- ♦ ⇒ [“5.1.2 Exploded view - exhaust gas recirculation system, low-pressure side \(rear\)”, page 172](#)
- ♦ ⇒ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 26 ; Exhaust manifolds; Exploded view - exhaust manifold



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28 – Glow plug system

1 Glow plug system

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All procedures and components are described in ➔ Servicing 6-cylinder TDI engine, common rail; Rep. gr. 28 ; Glow plug system .