

Workshop Manual Audi A3 2004 ➤

4-cylinder direct injection engine (1.8, 2.0 ltr. 4-valve
TFSI - generation II)

Engine ID	BYT	BZB	CAW B	CBF A	CCT A	CCZ A	CDA A	BPU	
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Edition 03.2017



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List of Workshop Manual Repair Groups

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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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Audi A3 2004 ►

4-cylinder direct injection engine (1.8, 2.0 ltr. 4-valve TFSI - generation II) - Edition 03.2017



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00 – Technical data

1 Identification

(ARL005095; Edition 03.2017)

All information can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification .

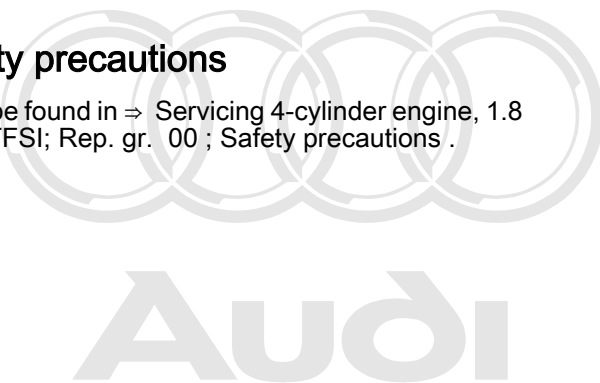


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2 Safety precautions

All information can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Safety precautions .



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3 Repair instructions

All information can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; 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 22](#)

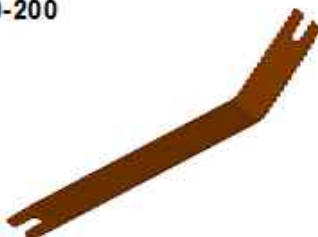
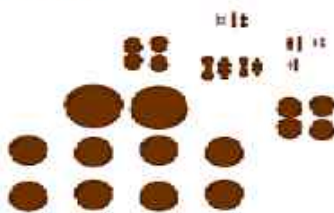
⇒ ["1.3 Securing engine to engine and gearbox support", page 26](#)

⇒ ["1.4 Installing engine", page 26](#)

1.1 Removing engine

Special tools and workshop equipment required

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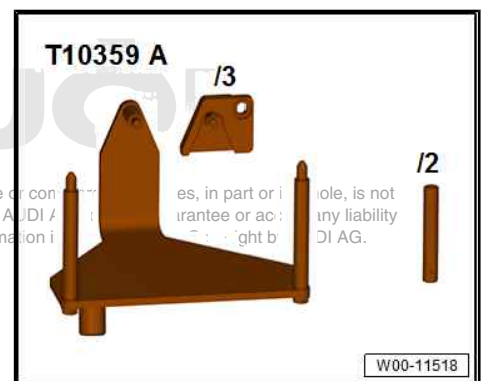
80-200 	VA S 5085 
VA S 6122 	VA S 6208 
VA S 6362 	VA S 6931 

- ◆ Removal lever - 80-200-
- ◆ Stepladder (commercially available) or -VAS 5085-
- ◆ Engine bung set - VAS 6122-
- ◆ Drip tray for workshop hoist - VAS 6208-
- ◆ Hose clip pliers - VAS 6362-
- ◆ Engine and gearbox jack - VAS 6931-

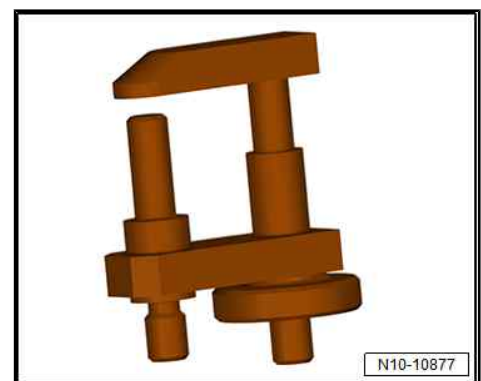
- ◆ Extension -2024 A /1- of lifting tackle - 2024 A- for vehicles with dual clutch gearbox



- ◆ Engine bracket - T10359A-



- ◆ Locking element included with gearbox support - 3282-



- ◆ Safety goggles
- ◆ Protective gloves

Procedure



Note

- ◆ *The engine is removed from underneath together with the gearbox.*
- ◆ *Fit cable ties in the original positions when installing.*
- ◆ *All open inlet and exhaust ports must be sealed with suitable plugs (e.g. from engine bung set - VAS 6122-).*



WARNING

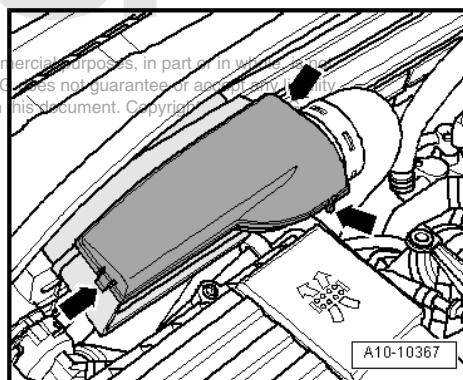
The cooling system is under pressure when the engine is hot. Hot steam/hot coolant can escape - risk of scalding.

Danger of scalding skin and other parts of the body.

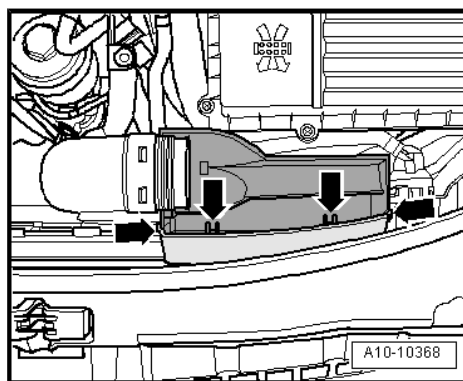
- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

- Open filler cap on coolant expansion tank.
- Pull cover off air duct (release clips on sides) -arrows-.

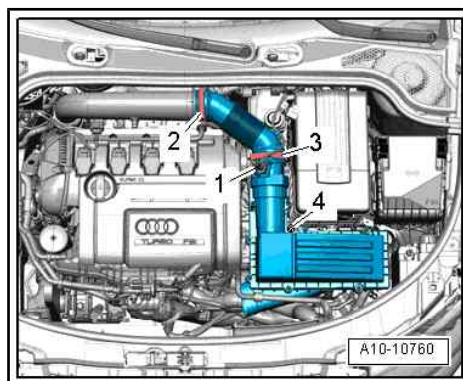
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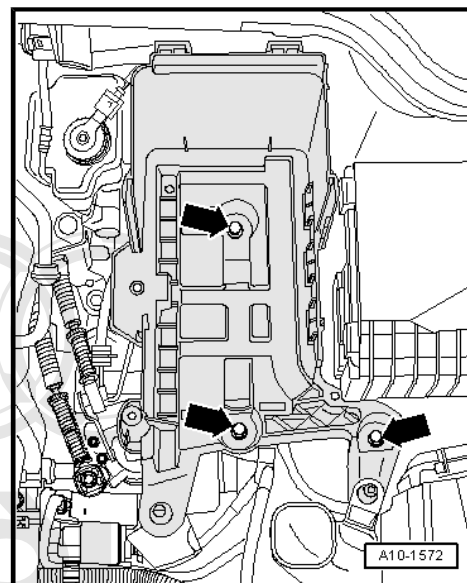
- Unclip air duct at the bottom by releasing clips -arrows-.
- Detach air duct at bottom together with air hose.



- Unplug electrical connector -1- at air mass meter - G70- .
- Detach air hose -2-.
- Unscrew bolt -4- and remove air cleaner housing.
- Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery .

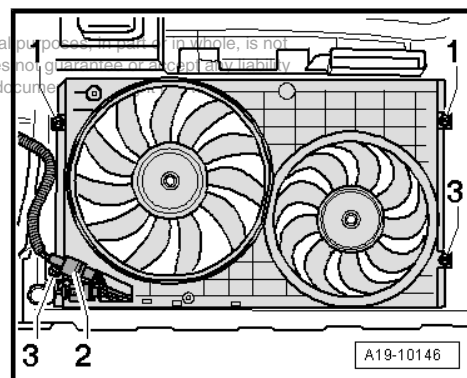


- Remove battery tray -arrows-.

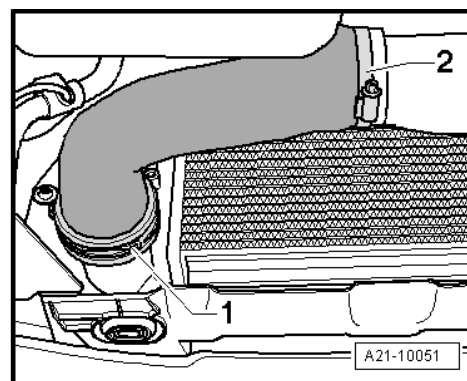
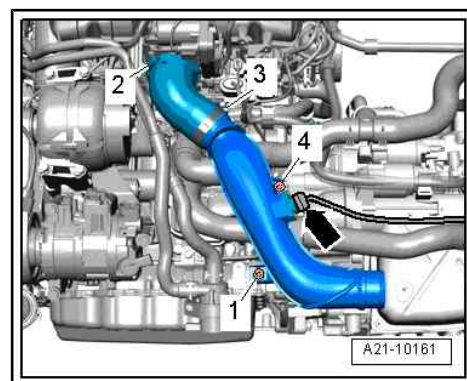


- Remove bolts -1- for radiator cowl from above.

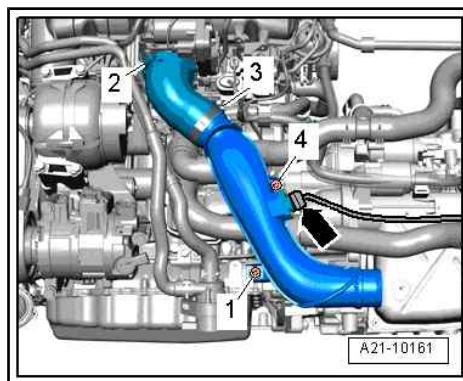
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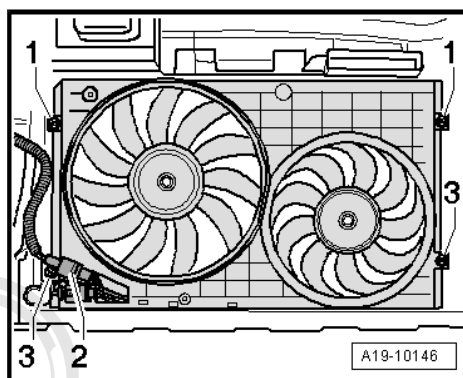
- Release hose clip -2-.
- Remove bolt -4-.
- Unplug electrical connector -arrow- and move wiring clear.
- Remove both front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liners on both sides ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .
- Release hose clips -1 and 2- and remove air hose.



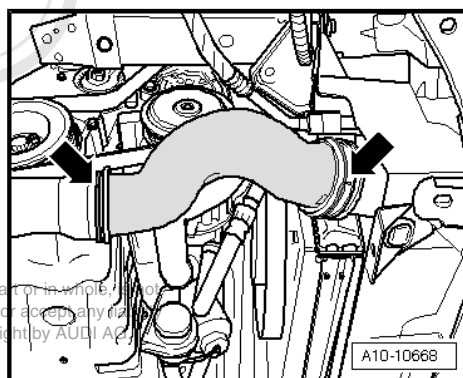
- Remove bolt -1- and take out air pipe downwards.



- Unplug electrical connector -2-.
- Remove bolts -3- and take out air cowl downwards.

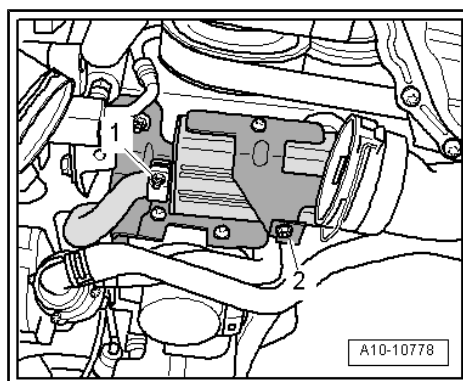


- Remove air hose -arrows-.



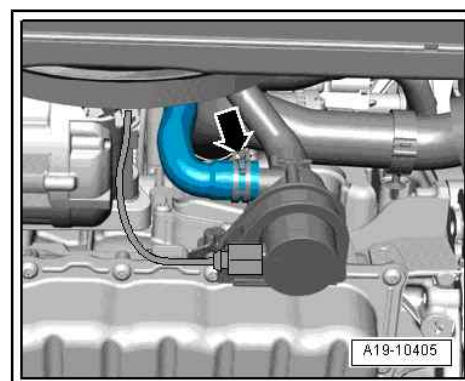
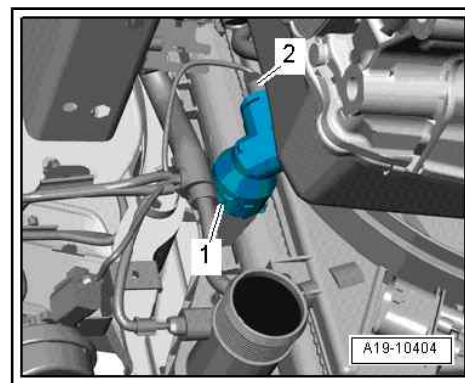
Vehicles with auxiliary heater:

- Slacken clip -1- and remove bolt -2-.
- Detach exhaust silencer for auxiliary heater.



All vehicles:

- Unplug electrical connector -2- for radiator outlet coolant temperature sender - G83- .
- Place drip tray for workshop hoist - VAS 6208- beneath engine.
- Pull off retaining clip, remove coolant hose -1- and drain off coolant.
- Disconnect coolant hose from continued coolant circulation pump - V51- -arrow- and drain off remaining coolant.

**Vehicles with auxiliary heater:**

- Disconnect coolant hoses -arrows- and drain off remaining coolant.

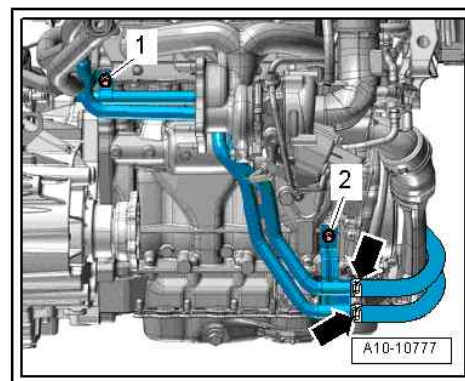
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All vehicles:**WARNING**

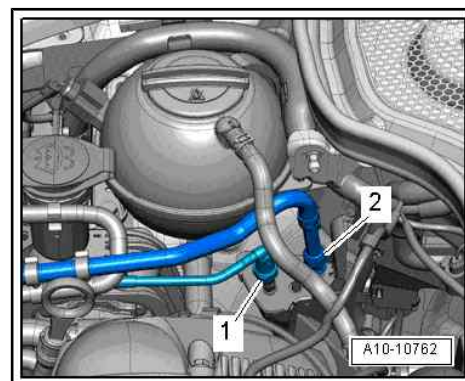
The fuel system is pressurised.

Risk of injury as fuel may spray out.

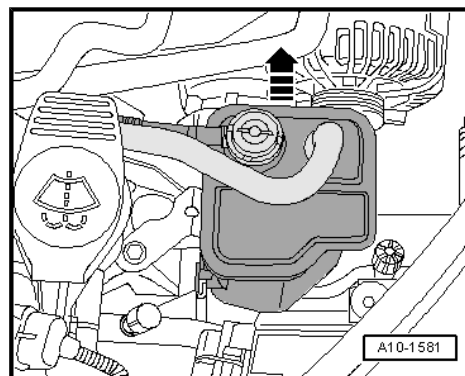
- *Put on safety goggles.*
- *Put on protective gloves.*
- *Release pressure (wrap a clean cloth around connection and open connection carefully).*



- Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair notes; Rules for cleanliness .
- Disconnect fuel supply hose -2- by pressing release ring.
- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).



- Pull activated charcoal filter upwards and out of bracket -arrow- and place on engine.

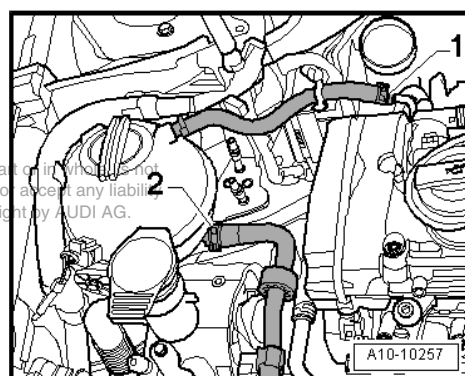
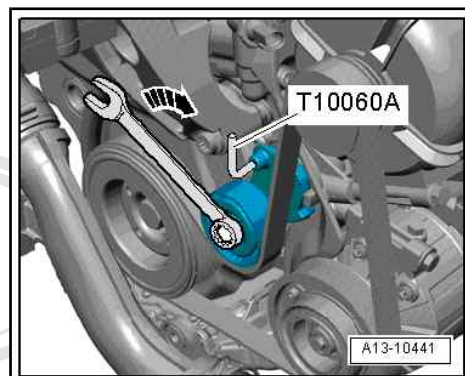


Caution

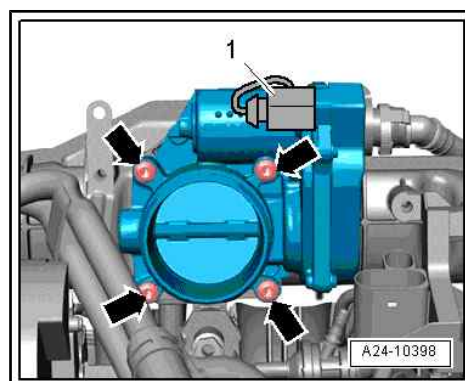
Wrong direction of rotation for a used poly V-belt can lead to irreparable damage.

- ◆ *Before removing the poly V-belt mark the direction of rotation with chalk or a felt-tip pen for re-installation.*

- To slacken poly V-belt turn tensioner in direction of -arrow-.
- Remove poly V-belt and release tensioner.
- Detach coolant hoses -1 and 2-.

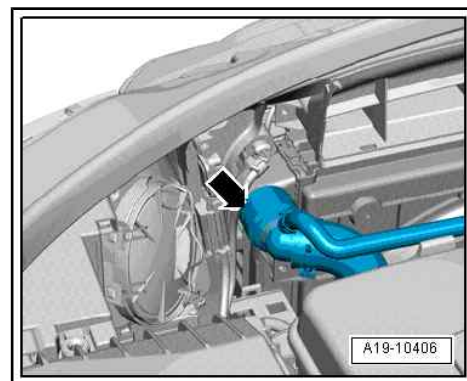


- Unplug electrical connector -1- at throttle valve module - J338- .
- Unscrew bolts -arrows- and detach throttle valve module - J338- .

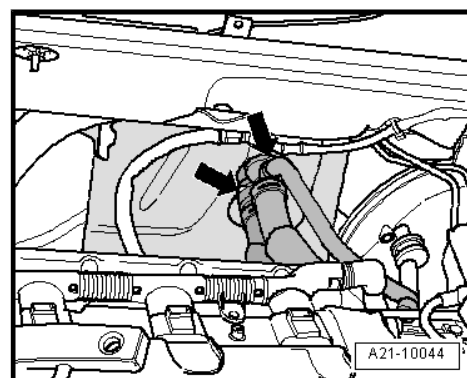


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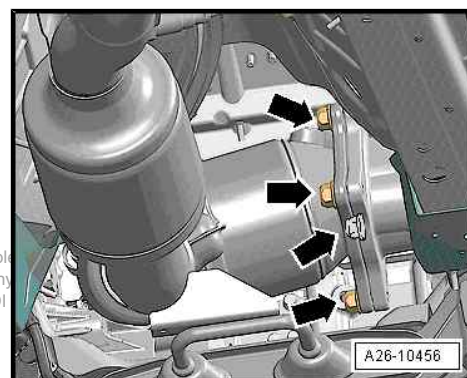
- Detach coolant hose at top of radiator -arrow-.



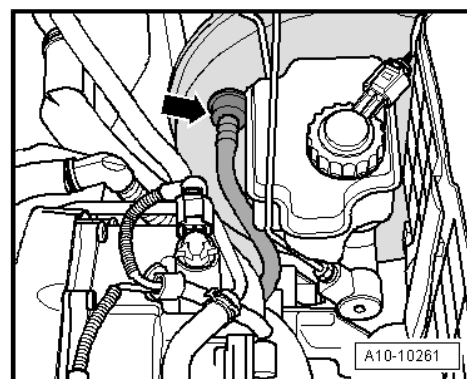
- Detach coolant hoses going to heat exchanger -arrows-.



- Remove nuts (accessible from above) -arrows- securing front exhaust pipe to turbocharger.

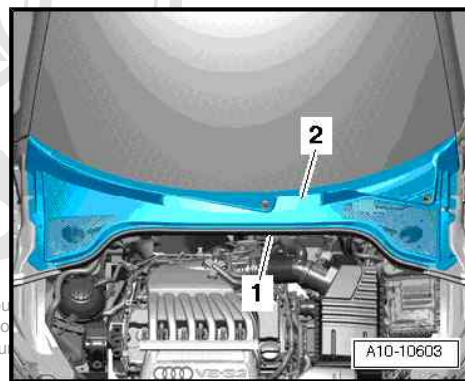


- Detach vacuum hose from brake servo -arrow-.



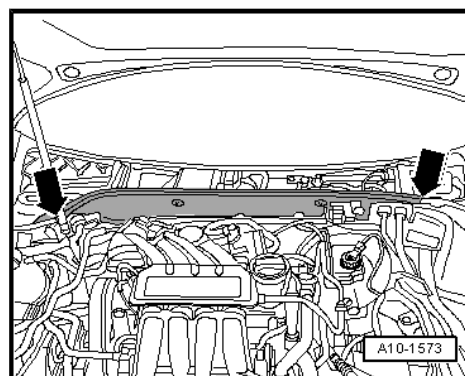
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- Remove plenum chamber cover -2- ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

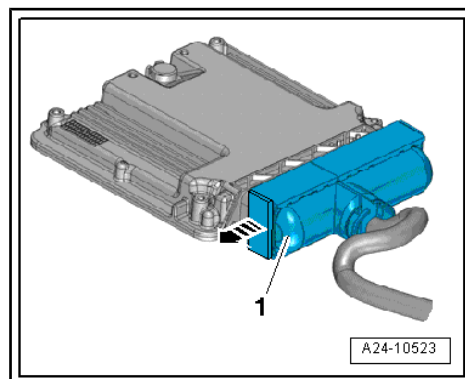


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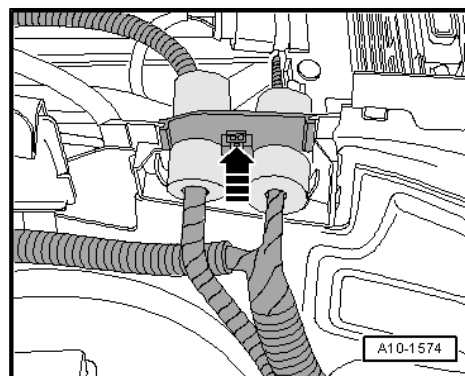
- Move clear engine wiring harness at rear of plenum chamber partition panel.
- Remove plenum chamber partition panel -arrows-.



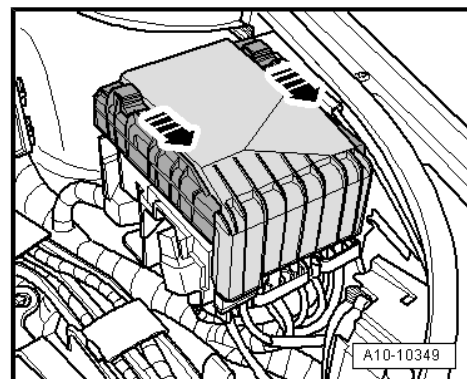
- Remove engine control unit ⇒ [page 120](#) .
- Unplug electrical connector -1- for engine wiring harness -arrow-.



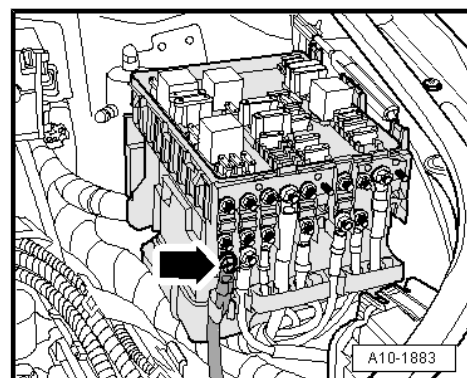
- Release wiring protector for engine wiring harness -arrow- and lift protector off.



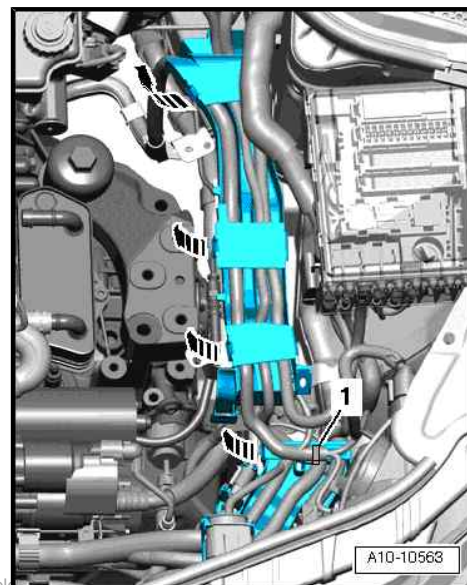
- Slide the two clips in the direction of the -arrows- and remove cover from electronics box in engine compartment.



- Unscrew terminal 30 wire -arrow- from electronics box in engine compartment and move it clear.

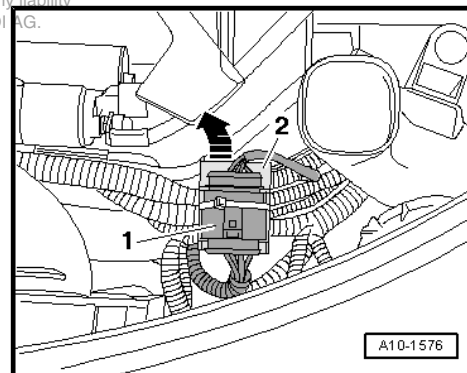


- Open wiring duct brackets -arrows-.
- Cut open cable tie -1-.



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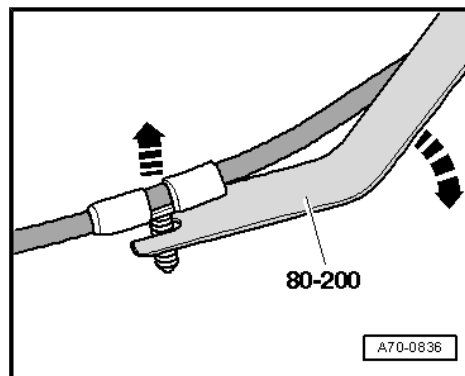
- Move clear and unplug electrical connector 1.
- Open wiring duct bracket located below -2-.
- Remove wiring harness for engine control unit from wiring duct and place on engine.





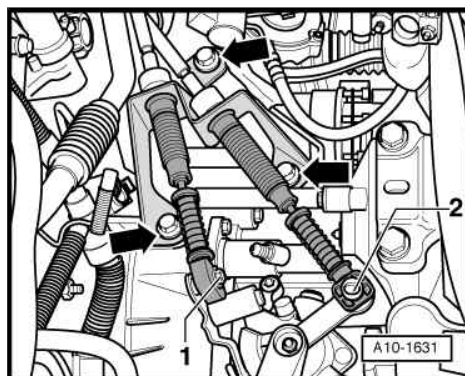
Note

Use removal lever - 80 - 200- to lever out the wiring clips.

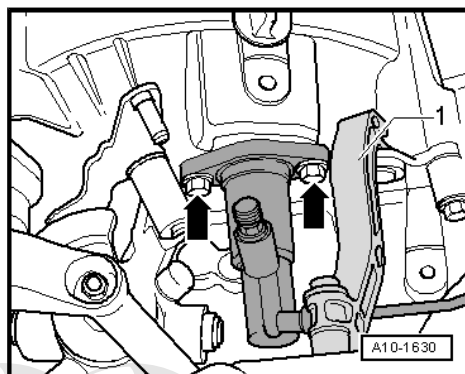


Vehicles with manual gearbox:

- Detach cable support bracket from gearbox -arrows-.
- Unclip circlip -1- from gear selector cable and circlip -2- from selector lever cable.
- Pull selector cable end-pieces with selector cables off gearbox selector lever and gear selector relay lever.
- Tie selector cables with cable support bracket to one side.



- Detach brace -1-.
- Move clear hydraulic line going to clutch slave cylinder.
- Detach clutch slave cylinder -arrows- and place to one side. Do not open pipes.

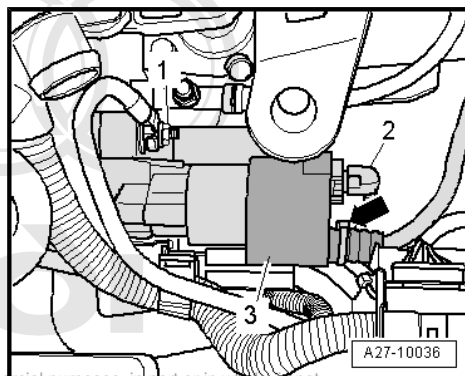


Caution

Avoid damage to clutch slave cylinder.

- ◆ Do not operate clutch pedal with slave cylinder removed.

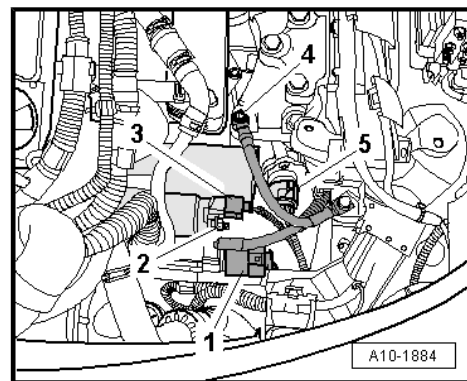
- If fitted, cut open cable tie -arrow- for protective sleeve.
- Unplug electrical connector -2-.
- Push back protective cover and unscrew B+ cable at starter solenoid switch
- Unscrew earth wire -1-.



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Vehicles with dual clutch gearbox:

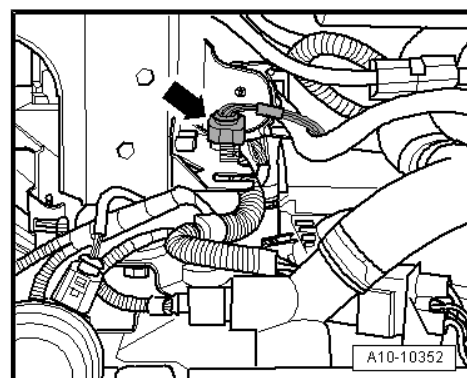
- Unplug electrical connectors -1, 3, 5-.
- Detach protective sleeve and remove electrical wire -2- at starter solenoid switch.
- Unscrew earth wire -4-.

**All vehicles:**

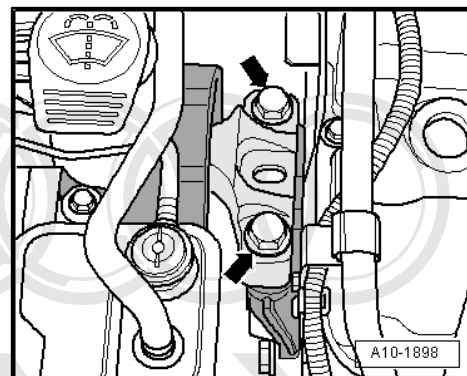
- Unplug electrical connector -arrow- at longitudinal member (bottom left).

**Note**

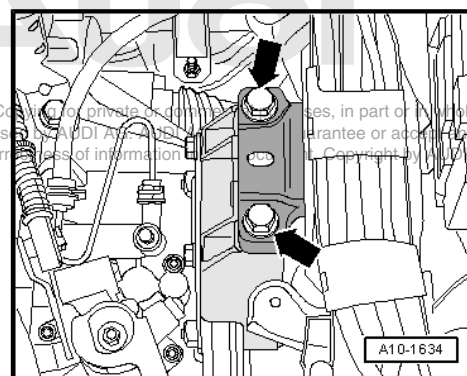
For illustration purposes, the installation position is shown from below.



- Loosen bolts -arrows- of assembly mounting at engine approx. 2 turns.

**Vehicles with manual gearbox:**

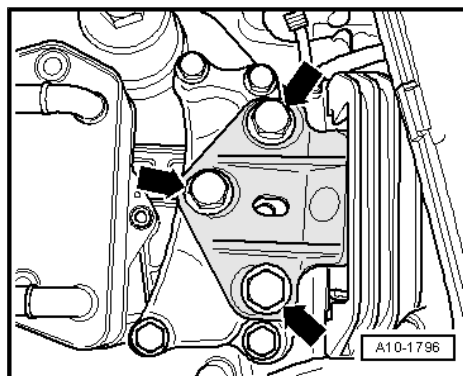
- Loosen bolts -arrows- of assembly mounting at gearbox approx. 2 turns.



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Vehicles with dual clutch gearbox:

- Loosen bolts -arrows- of assembly mounting at gearbox approx. 2 turns.



All vehicles:

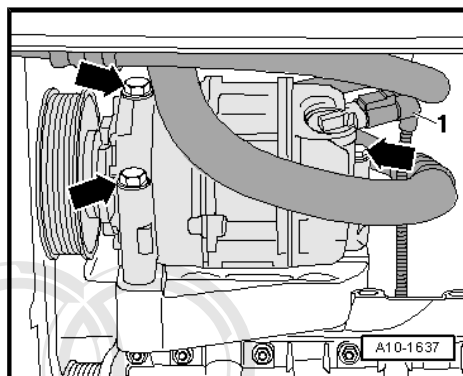
- Unplug electrical connector -1- for magnetic clutch on air conditioner compressor.



WARNING

Risk of injury caused by refrigerant.

- ◆ *The air conditioner refrigerant circuit must not be opened.*



- Remove bolts -arrows- for air conditioner compressor.



Caution

Danger of damage to refrigerant lines and hoses.

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

- Tie up air conditioner compressor together with refrigerant hoses to longitudinal member (refrigerant hoses remain connected).

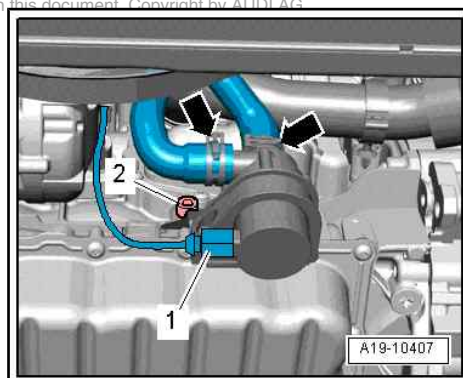
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- Remove bolt -2- at bracket for continued coolant circulation pump - V51- .



Note

The continued circulation coolant pump - V51- remains installed.

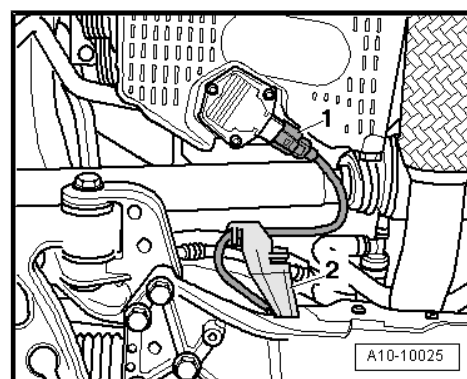
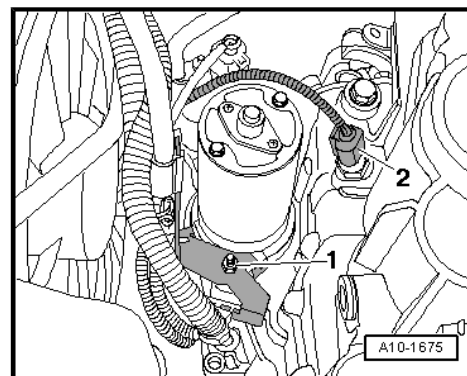


Vehicles with manual gearbox:

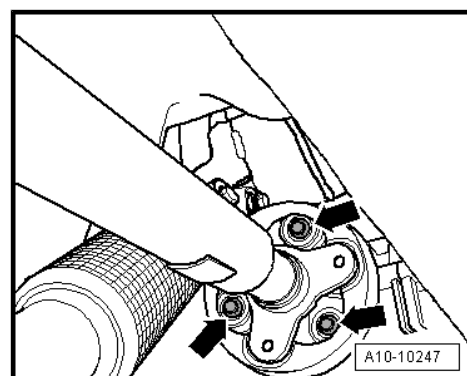
- Unplug electrical connector at reversing light switch - F4- .
- Unscrew nut -1- and detach bracket for electrical wiring.

All vehicles:

- Move clear electrical wiring harnesses to body.
- Unplug electrical connector -1- for oil level and oil temperature sender - G266- .
- Unclip bracket -2- for wire to oil level and oil temperature sender - G266- from subframe.
- Detach connector for Lambda probe ⇒ [page 113](#) and move clear.

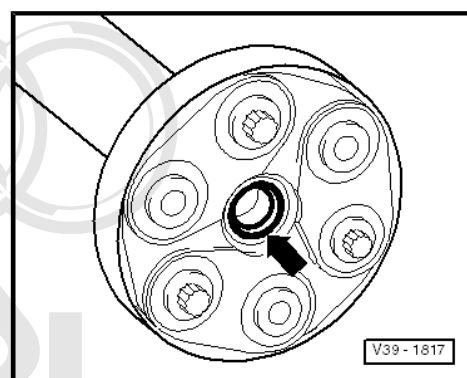
**Four-wheel drive:**

- Mark position of flexible coupling and flange for bevel box in relation to each other for re-installation.
- Remove bolts -arrows- for flexible coupling for propshaft at bevel box (counterhold using a suitable lever at triangular flange).

**Caution**

Make sure not to damage the oil seal -arrow- in the propshaft flange.

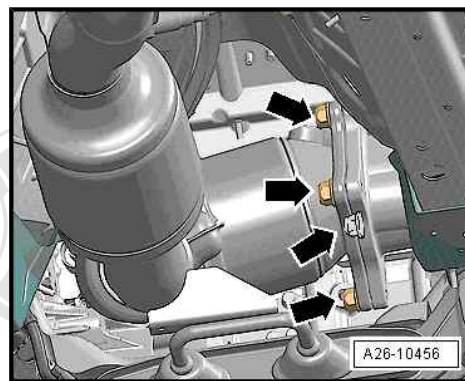
- ◆ ***Push the propshaft horizontally to the rear and towards the right side of vehicle as far as possible.***



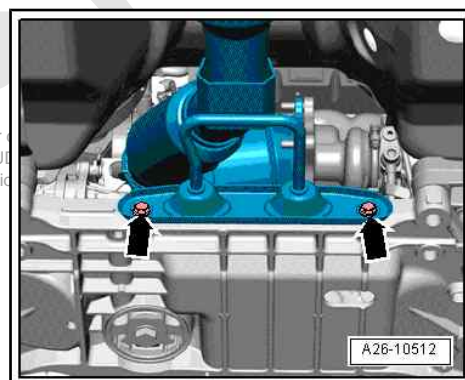
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Continued for all vehicles:

- Unscrew remaining nuts (accessible from below) securing front exhaust pipe to turbocharger -arrows-.



- Unbolt bracket for exhaust system -arrows-.



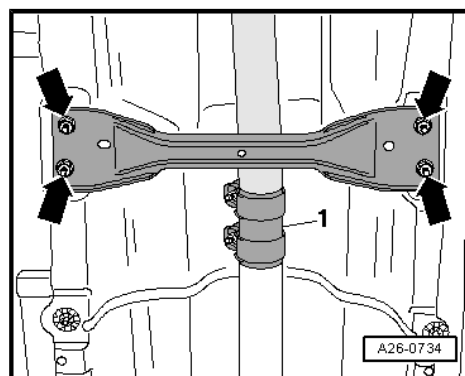
- Remove front cross member for underbody -arrows-.



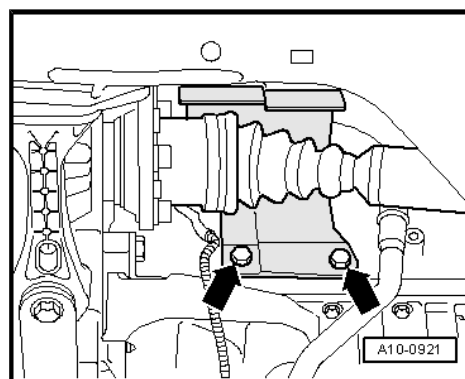
Caution

Avoid damage to flexible joints.

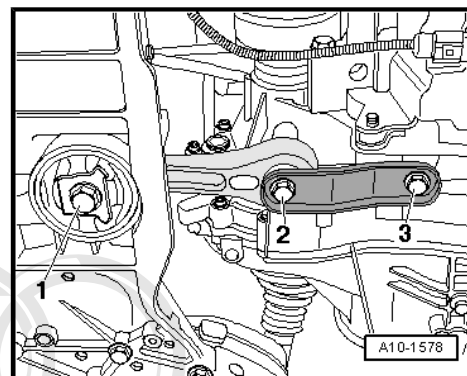
- ◆ *Do not bend flexible joints in front exhaust pipe more than 10°.*



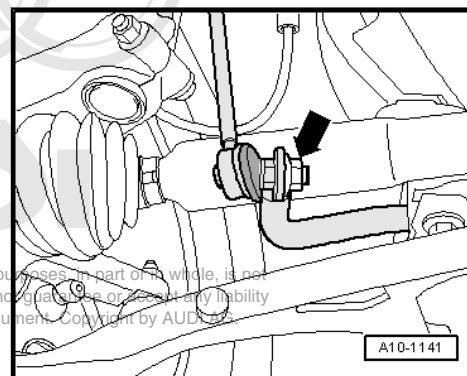
- Loosen clamp -1- and push to rear.
- Detach front exhaust pipe with catalytic converter.
- Remove heat shield for drive shaft (right-side) -arrows-.
- Unbolt drive shafts (left and right) from gearbox flange shafts.



- Remove bolts -1, 2, 3- and remove pendulum support.



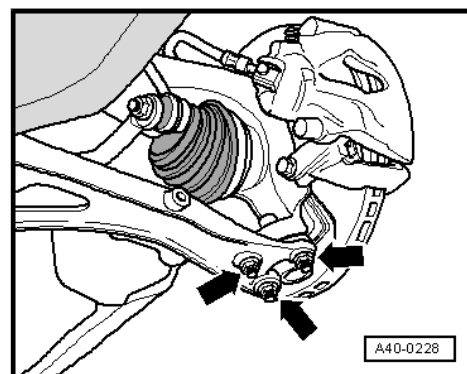
- Remove nuts -arrow- on both sides and detach coupling rod from anti-roll bar.



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Vehicles with dual clutch gearbox:

- Unscrew nuts -arrows- on swivel joint (left-side).
- If fitted, remove bolt on bracket for front left vehicle level sender - G78- .
- Detach swivel joint from wishbone.



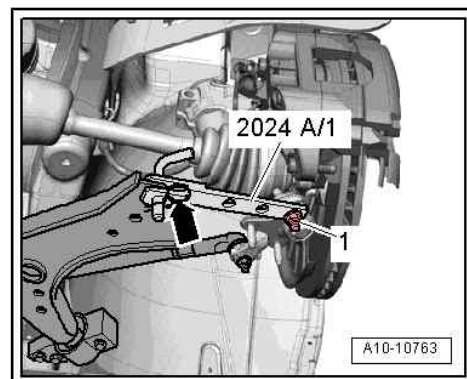
- Swing suspension strut (left-side) outwards and support with extension -2024 A /1- as shown in illustration.



WARNING

Accident risk from loose components of support bracket.

- ◆ *Secure retaining pin and swivel joint with locking pin -arrow- and nut -1-.*



Vehicles with manual gearbox:

- Tie up drive shaft (left-side) as far as possible.

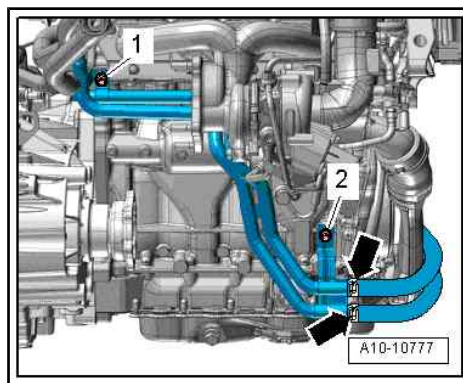


Note

Take care not to damage the surface coating of the drive shaft.

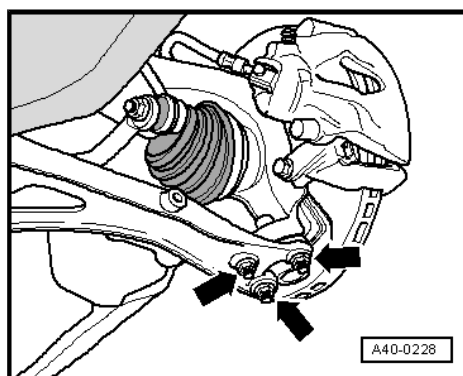
Vehicles with auxiliary heater:

- Unscrew bolts -1 and 2- and move coolant pipes to the left.

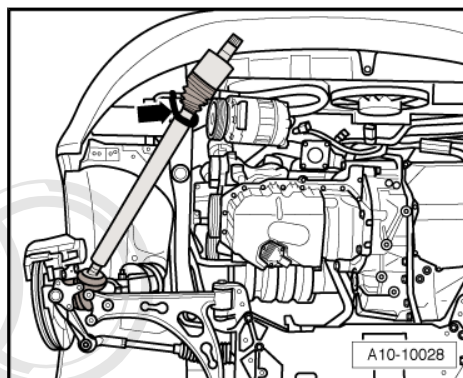


All vehicles:

- Unscrew nuts -arrows- on swivel joint (right-side).
- Detach swivel joint from wishbone.



- Pivot drive shaft (right-side) forwards; to do so, push engine/ gearbox assembly slightly forwards.
- Tie up drive shaft to longitudinal member -arrow-.



Note

Take care not to damage the surface coating of the drive shaft.

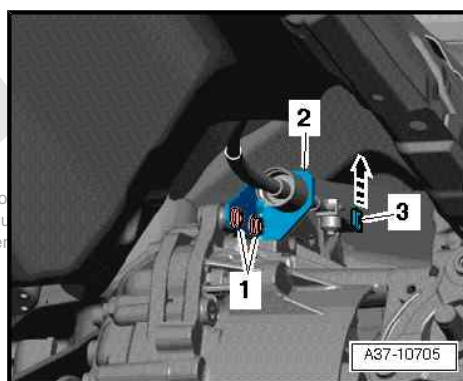
Vehicles with dual clutch gearbox:

- Remove bolts -1- securing support bracket for selector lever cable.
- Pull off securing clip -3- -arrow- and remove selector lever cable from gearbox.



Note

Take care not to bend or kink selector lever cable.



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All vehicles:

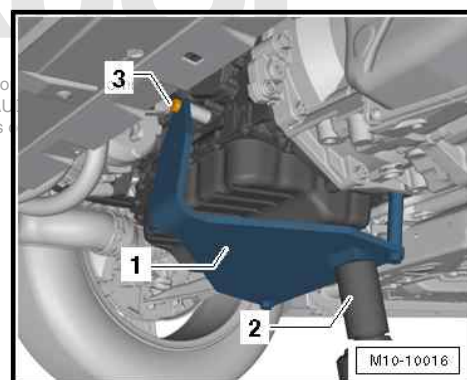
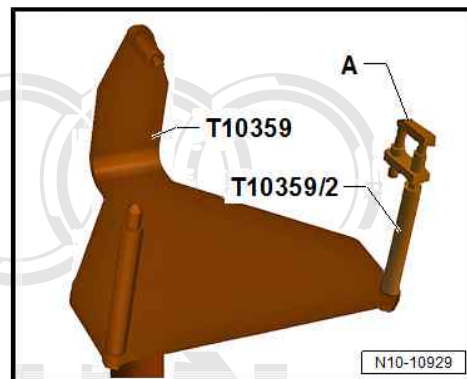
**WARNING**

To avoid any risk of injury, please make absolutely sure that the engine is adequately secured and that it cannot tip over.

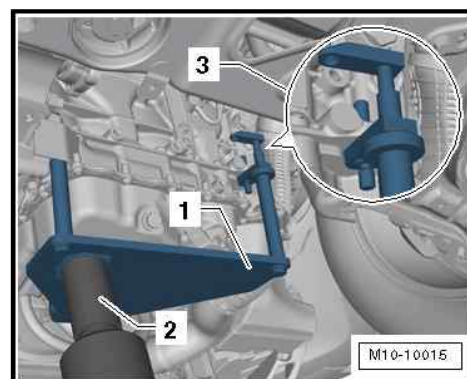
- ◆ *The safety support for engine bracket - T10359A- must be used.*

- Screw pin -T10359/2- into engine bracket - T10359A- and screw on safety support -A- from gearbox support - 3282- .
- Bring engine bracket - T10359A- -1- into position under engine and insert in mountings.
- Close safety support -3-.

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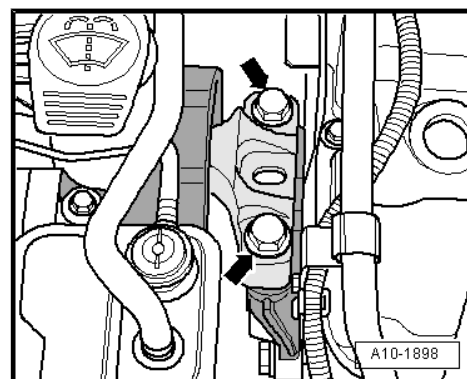


- Secure engine bracket - T10359A- -item 1- to cylinder block at threaded hole for continued coolant circulation pump - V51- with bolt -3- (tighten to 20 Nm).
- Insert engine and gearbox jack - VAS 6931- -item 2- in engine bracket - T10359A- and raise engine/gearbox assembly slightly.

**Note**

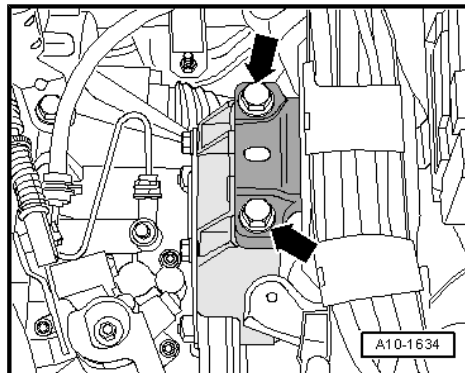
Use stepladder when unscrewing bolts for assembly mounting.

- Remove bolts -arrows- securing engine mounting.



Vehicles with manual gearbox:

- Remove bolts -arrows- securing gearbox mounting.



Vehicles with dual clutch gearbox:

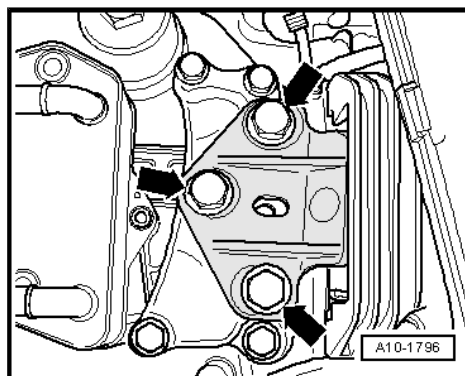
- Remove bolts for gearbox mounting from gearbox bracket -arrows-.

All vehicles:



Note

- ◆ Check that all hoses, pipes and wiring connections between engine, gearbox and body have been detached.
- ◆ Carefully guide engine/gearbox assembly when lowering to avoid damage.



- Pull engine/gearbox assembly as far forward and to left as possible, and lower gradually.

1.2 Separating engine and gearbox

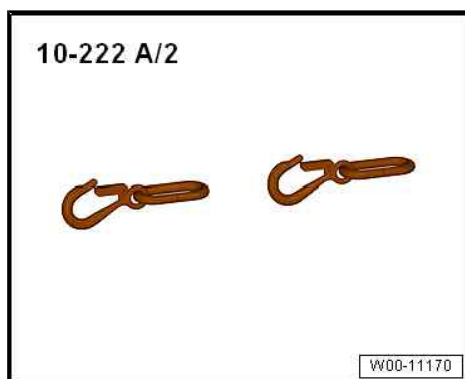
⇒ ["1.2.1 Separating engine and gearbox - vehicles with manual gearbox", page 22](#)

⇒ ["1.2.2 Separating engine and gearbox - vehicles with dual clutch gearbox", page 24](#)

1.2.1 Separating engine and gearbox - vehicles with manual gearbox

Special tools and workshop equipment required

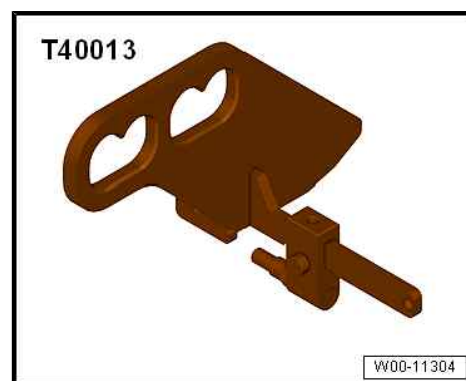
- ◆ Hooks - 10-222A/2-



◆ Workshop hoist - VAS 6100-

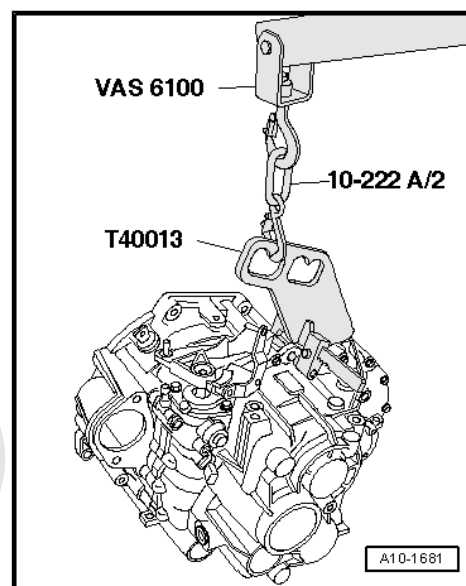


◆ Lifting tackle - T40013-

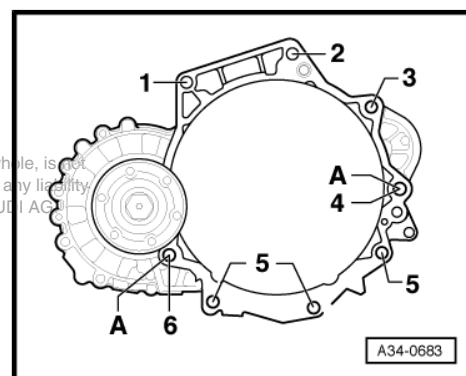


Procedure

- Engine/gearbox assembly removed and attached to engine support.
- Attach lifting tackle - T40013- to gearbox and close lock.
- Attach workshop hoist - VAS 6100- with hooks - 10 - 222 A / 2- to the lifting tackle.



- Remove bolts -3 and 4- and detach starter.
- Remove bolts -1, 2, 5, 6, 7, 8- securing gearbox to engine.
- Detach gearbox from engine.



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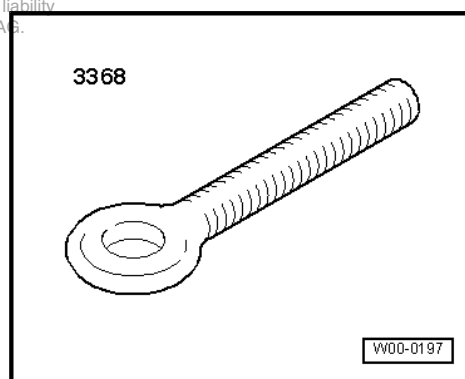
1.2.2 Separating engine and gearbox - vehicles with dual clutch gearbox

Special tools and workshop equipment required

- ◆ Lifting tackle - 2024 A-



- ◆ Eye-head bolt 3368



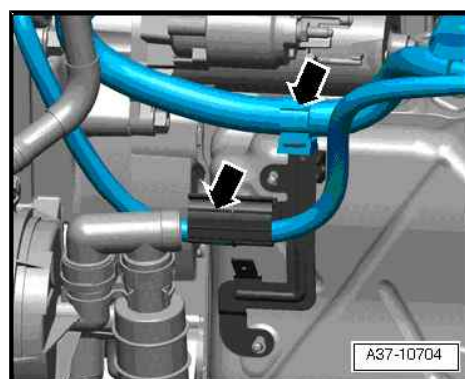
- ◆ Workshop hoist - VAS 6100-



- ◆ Self-locking flange nut (M10)

Procedure

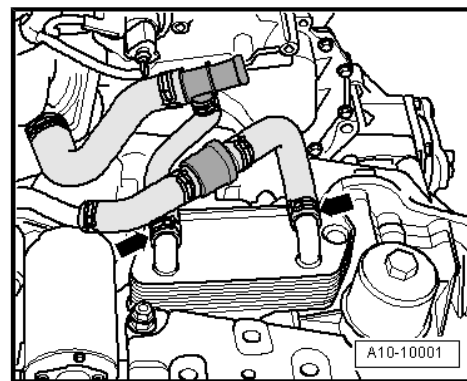
- Engine/gearbox assembly removed and attached to engine support -T10359A- .
- Move clear electrical wiring -arrows-.



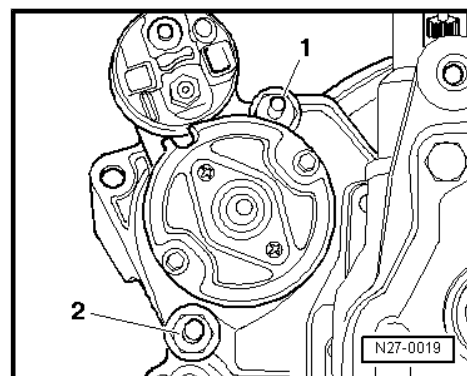
- Detach coolant hoses from gear oil cooler -arrows-.

**Note**

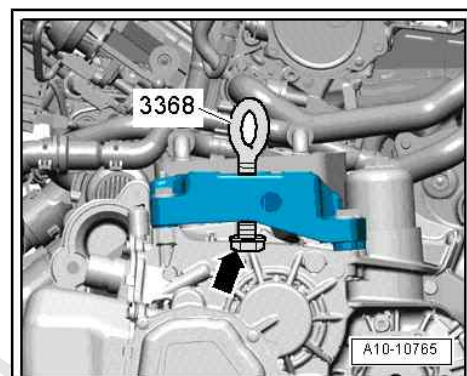
Seal off open pipes/lines and connections with clean plugs or protective caps to prevent dirt from entering.



- Remove bolts -1 and 2- and detach starter.



- Screw eye-head bolt - 3368- several turns into gearbox bracket and secure with self-locking flange nut M10 -arrow-.



- Attach lifting tackle - 2024 A- to gearbox and workshop hoist - VAS 6100- as shown in illustration.

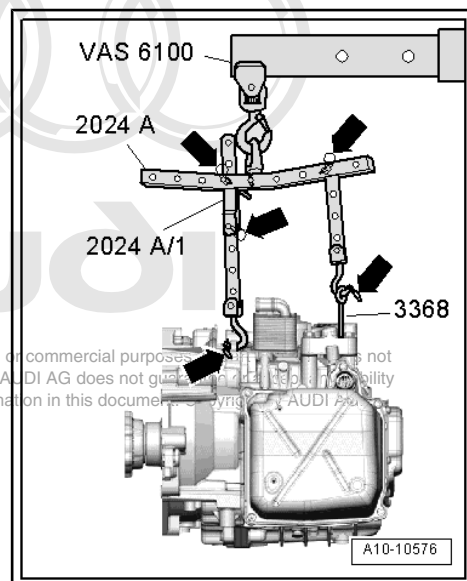
**Note**

To adjust to the centre of gravity of the assembly, the perforated rails of the support hooks must be positioned as shown.

**WARNING**

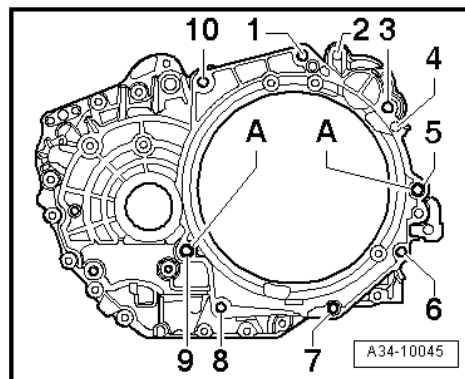
Accident risk from loose components of lifting tackle.

- ◆ **The support hooks and retaining pins on the lifting tackle must be secured with locking pins -arrows-.**



- Raise gearbox slightly.

- Remove bolts -1, 3, 5, 6, 7, 8, 9, 10- securing gearbox to engine.
- Detach gearbox from engine.



1.3 Securing engine to engine and gearbox support

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Removing and installing engine; Securing engine to engine and gearbox support .

1.4 Installing engine

Tightening torques



Note

- ♦ *Tightening torques apply only to lightly greased, oiled, phosphated or black-finished nuts and bolts.*
- ♦ *Additional lubricants such as engine or gear oil may be used, but do not use lubricants containing graphite.*
- ♦ *Do not use degreased parts.*
- ♦ *Tolerance for tightening torques: $\pm 15\%$.*
- ♦ ⇒ ["2.1 Exploded view - assembly mountings", page 30](#)
- ♦ [Assembly mountings](#) ⇒ [Gearbox; Rep. gr. 34](#)

Further tightening torques

Component		Nm
Bolts/nuts	M6	10
	M7	15
	M8	22
	M10	40
	M12	65

Procedure

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

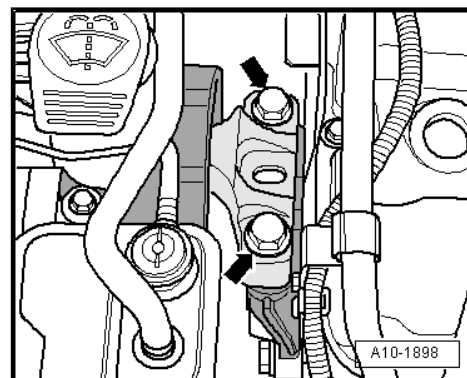
- Engine attached to engine bracket -T10359A- .

**Note**

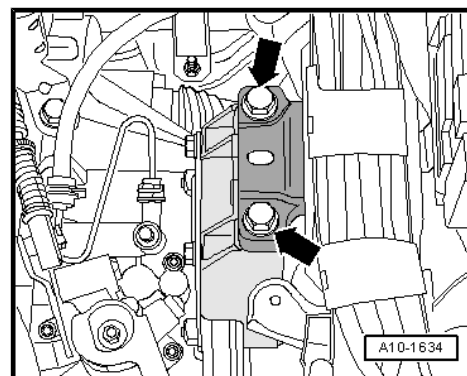
- ◆ *Renew self-locking nuts and bolts.*
- ◆ *Renew bolts which are tightened to a specified angle as well as seals and gaskets.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Fit cable ties in the original positions when installing.*

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- Secure gearbox to engine ⇒ Gearbox; Rep. gr. 34 .
- Guide engine/gearbox assembly into body.
- Tighten bolts securing engine mounting to engine support -arrows- initially hand-tight.

**Vehicles with manual gearbox:**

- Tighten bolts securing gearbox mounting to gearbox bracket -arrows- initially hand-tight.



Vehicles with dual clutch gearbox:

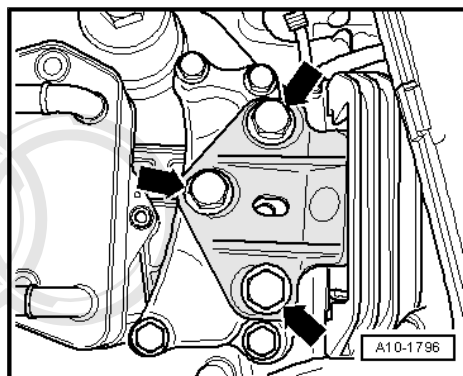
- Tighten bolts securing gearbox mounting to gearbox bracket -arrows- initially hand-tight.

All vehicles:



Note

The bolts are tightened to final torque only after adjusting the assembly mountings ⇒ [page 30](#).



- Detach engine support -T10359A- from engine.
- Install drive shafts ⇒ Running gear; Rep. gr. 40.
- Install heat shield for drive shaft ⇒ Final drive; Rep. gr. 39.
- Install coupling rod ⇒ Running gear; Rep. gr. 40.
- Install swivel joints ⇒ Running gear; Rep. gr. 40.
- Install pendulum support ⇒ [page 30](#).

Vehicles with manual gearbox:

- Install and adjust selector mechanism ⇒ Gearbox; Rep. gr. 34.
- Install clutch slave cylinder ⇒ Gearbox; Rep. gr. 30.

Vehicles with dual clutch gearbox:

- Install selector lever cable ⇒ Gearbox; Rep. gr. 34.

Vehicles with auxiliary heater:

- Install coolant pipes and silencer ⇒ Auxiliary heating; Rep. gr. 82.

All vehicles:

- Install front exhaust pipe with catalytic converter ⇒ [page 126](#).
- Align the exhaust system so it is free of stress ⇒ [page 127](#).
- Install propshaft ⇒ Final drive; Rep. gr. 39.
- Install continued coolant circulation pump - V51- ⇒ [page 72](#).
- Install air conditioning compressor ⇒ Heating, air conditioning; Rep. gr. 87.
- Install radiator cowl ⇒ [page 84](#).
- Install air pipe ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21; Charge air system; Removing and installing air pipe.
- Install poly V-belt ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13; Cylinder block (pulley end); Removing and installing poly V-belt.
- Install throttle valve module - J338- ⇒ Servicing 4-cylinder engine, 1.8 ltr.; 2.0 ltr. 4-valve TFSI; Rep. gr. 24; Intake manifold; Removing and installing throttle valve module - J338-.
- Adjust assembly mountings ⇒ [page 33](#).
- Install engine control unit ⇒ [page 120](#).
- Install plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50; Body - front.

- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery .
- Check oil level ⇒ Maintenance ; Booklet 808 .

**Caution**

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

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

- Connect coolant hose with plug-in connector ⇒ [page 83](#) .

**Note**

Do not reuse coolant.

- Fill up with coolant ⇒ [page 68](#)
- Install wheel housing liners ⇒ [General body repairs, exterior](#); Rep. gr. 66 ; Wheel housing liners .
- Fit front wheels (both sides) ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- After renewing engine, misfire adaptations must be reset. To do so, select 01 - Reset adaptations misfires in Guided Functions mode of ⇒ Vehicle diagnostic tester.

2 Assembly mountings

⇒ "2.1 Exploded view - assembly mountings", page 30

⇒ "2.2 Removing and installing engine mountings", page 31

⇒ "2.3 Checking adjustment of assembly mountings (engine/gearbox mountings)", page 33

⇒ "2.4 Adjusting assembly mountings", page 33

2.1 Exploded view - assembly mountings

1 - Bolt

- ☐ Bracket to gearbox
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

2 - Bolts

- ☐ Pendulum support to gearbox
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

3 - Engine support

- ☐ Removing and installing ⇒ page 42

4 - Bolt

- ☐ Engine support to engine
- ☐ Renew
- ☐ Tightening torque and sequence ⇒ page 31

5 - Engine mounting

- ☐ Removing and installing ⇒ page 31

6 - Bolt

- ☐ Engine mounting to body
- ☐ Renew
- ☐ 40 Nm + turn 90° further

7 - Connecting bracket

8 - Bolt

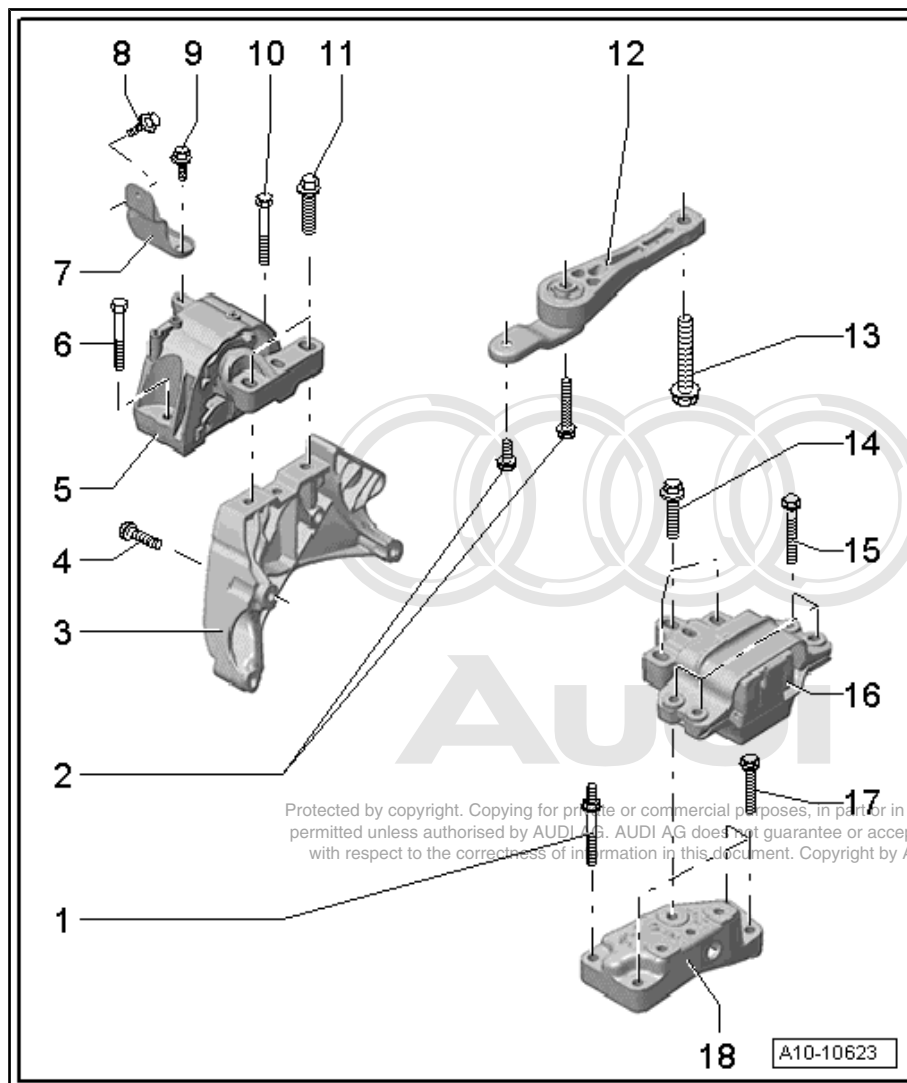
- ☐ Connecting bracket to engine mounting
- ☐ Renew
- ☐ 20 Nm + turn 90° further

9 - Bolt

- ☐ Connecting bracket to body
- ☐ Renew
- ☐ 20 Nm + turn 90° further

10 - Bolt

- ☐ Engine mounting to body
- ☐ Renew
- ☐ 40 Nm + turn 90° further



11 - Bolts

- ☐ Engine mounting to engine support
- ☐ Renew
- ☐ 60 Nm + turn 90° further

12 - Pendulum support**13 - Bolt**

- ☐ Pendulum support to subframe
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

14 - Bolt

- ☐ Gearbox mounting to gearbox bracket
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

15 - Bolt

- ☐ Gearbox mounting to body
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

16 - Gearbox mounting

- ☐ Illustration shows version for dual clutch gearbox

17 - Bolt

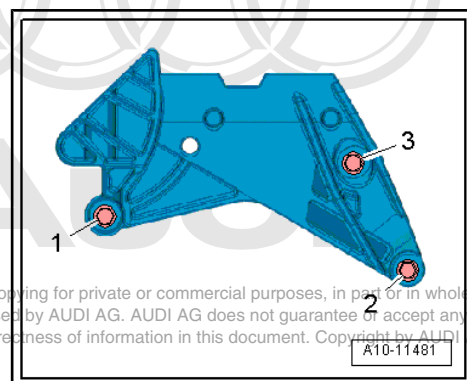
- ☐ Gearbox bracket to gearbox
- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34

18 - Gearbox bracket**Engine support - tightening torque and sequence****Note**

Renew bolts tightened with specified tightening angle.

– Tighten bolts in stages in the sequence shown:

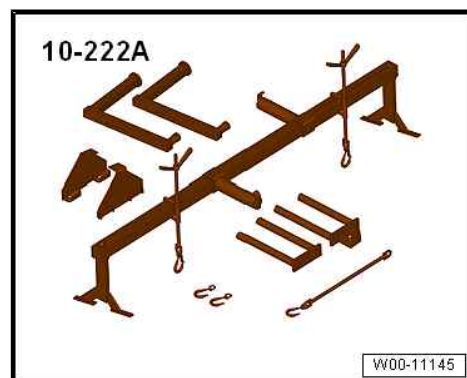
Stage	Bolts	Tightening torque/angle specification
1.	-1 ... 3-	7 Nm
2.	-1 ... 3-	40 Nm
3.	-1 ... 3-	Turn 180° further



2.2 Removing and installing engine mountings

Special tools and workshop equipment required

- ◆ Support bracket - 10-222A- with spindle - 10-222A/11-

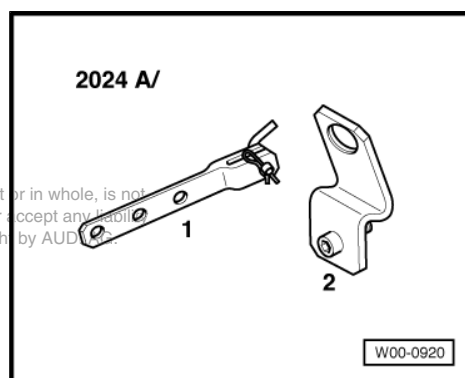




- ◆ Hook - 10-222A/20-



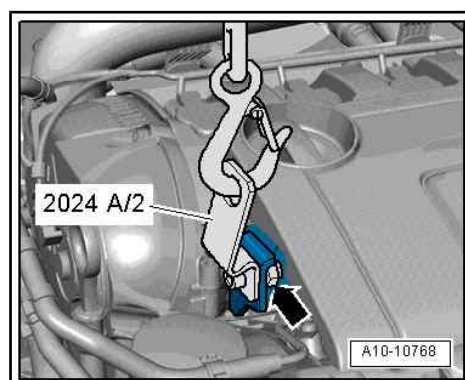
- ◆ Lug -2024 A /2- from lifting tackle - 2024A-



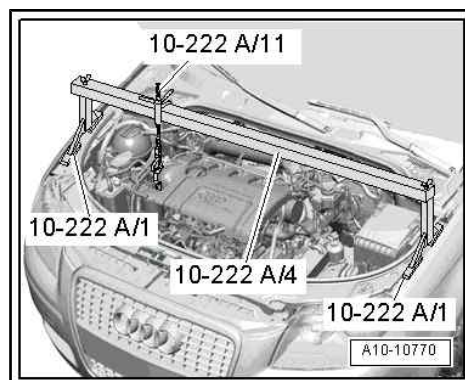
- ◆ Flange nut M10 or nut M10 with washer

Removing

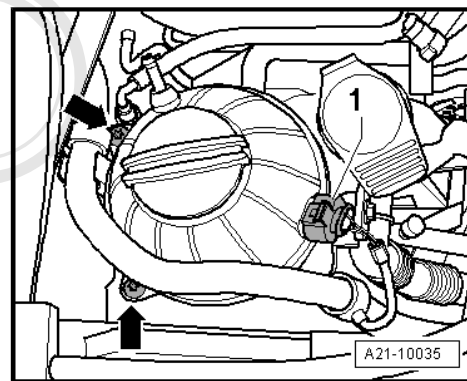
- Secure lug -2024 A /2- to engine lifting eye using flange nut -arrow-.



- Position support bracket - 10 - 222 A- on top of body flanges using the following tools:
 - ◆ Rack - 10 - 222 A /1- (2x)
 - ◆ Spindle - 10 - 222 A /11-
- Attach hook of spindle to engine lifting eye and take up weight of engine by tightening spindle slightly.



- Remove bolts -arrows-.
- Detach electrical connector -1- for coolant shortage indicator switch - F66- and move coolant expansion tank to side.



- Remove bolts -1- and -2- and remove connecting bracket.
- Remove bolts -3 ... 6- and detach engine mounting -1-.

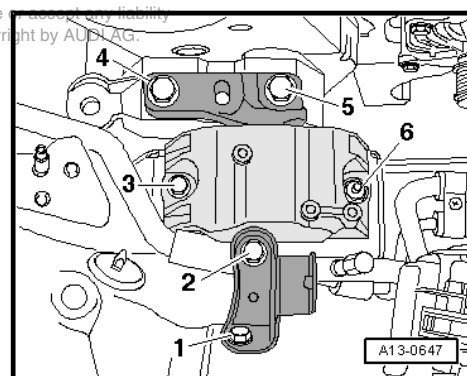
Installing

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

- Check adjustment of assembly mountings (engine/gearbox mountings) ⇒ [page 33](#).

Tightening torques

- ♦ ⇒ [“2.1 Exploded view - assembly mountings”, page 30](#)



2.3 Checking adjustment of assembly mountings (engine/gearbox mountings)

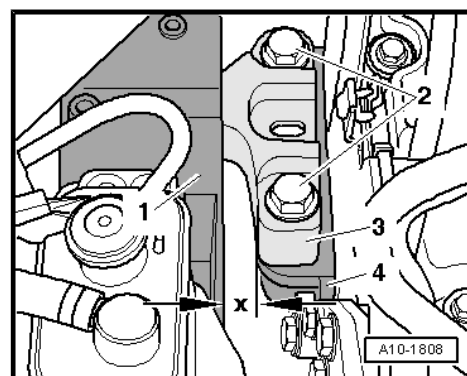
Procedure

- Check distances at mounting (right-side) for engine and gearbox:
- The two bolt heads -2- must be parallel with edge of support arm -3- for engine mounting.
- There must be a distance of -x- = 16 mm between engine mounting -1- and engine support -4-.



Note

Distance -x- = 16 mm can also be checked with a metal rod of suitable size, or similar.

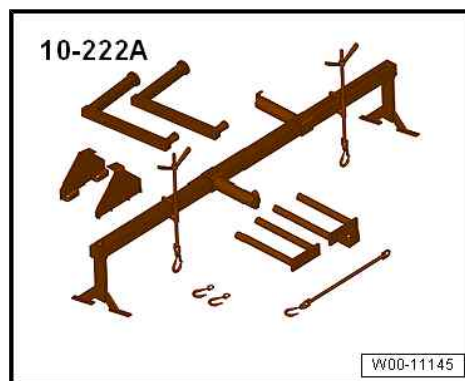


- If the distance measured is too large or small, the assembly mountings must be adjusted ⇒ [page 33](#).

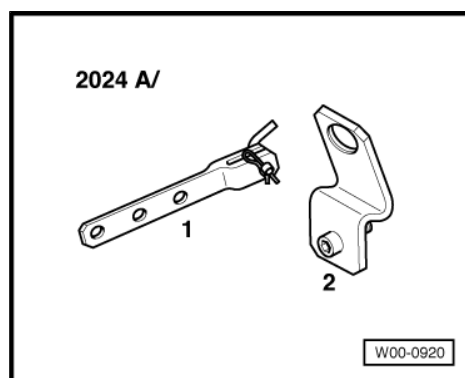
2.4 Adjusting assembly mountings

Special tools and workshop equipment required

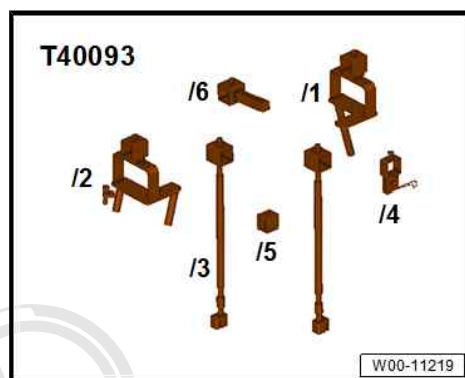
- ◆ Support bracket - 10 - 222 A- with spindle - 10 - 222 A /11- and adapter - 10 - 222 A /20-



- ◆ Extension -2024 A /1- and lug -2024 A/2- from lifting tackle - 2024A-

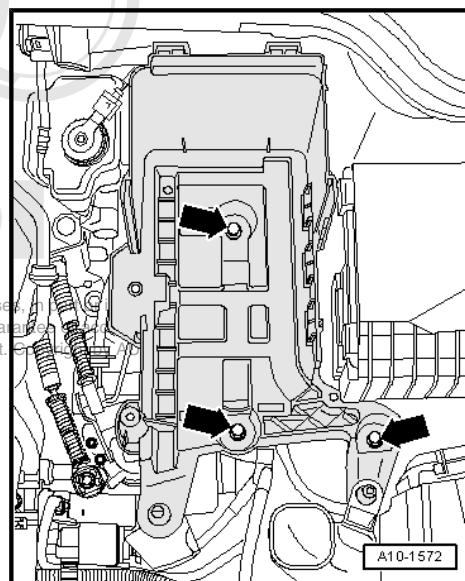


- ◆ Engine support bracket (supplementary set) - T40093-



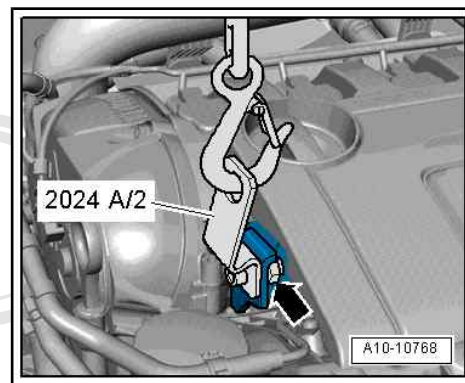
Adjusting

- Remove air cleaner housing ⇒ [page 106](#) .
- Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery .
- Remove battery tray -arrows-.



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- Secure lug -2024 A /2- to engine lifting eye using flange nut -arrow-.



- Position support bracket - 10 - 222 A- on top of body flanges using the following tools:

◆ Rack - 10 - 222 A /1- (2x)

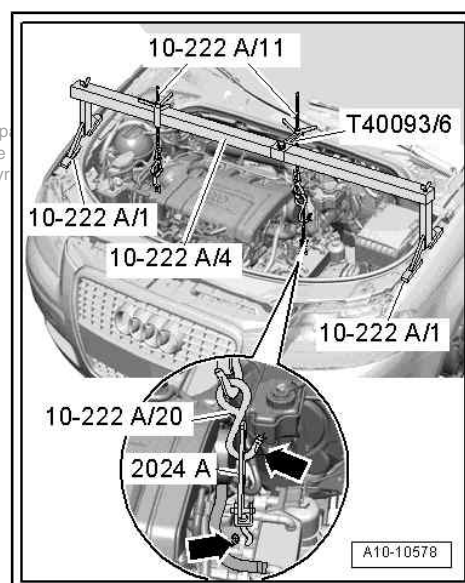
◆ Spindle - 10 - 222 A /11- (2x)

◆ Adapter - 10 - 222 A /20-

◆ Extension -2024 A /1-

◆ Adapter -T40093/6-

- Attach spindle - 10 - 222 A /11- with adapter - 10 - 222 A /20- and extension -2024 A /1- to gearbox lifting eye.

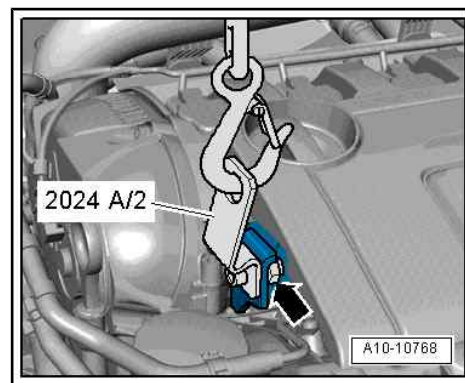


WARNING

Accident risk from loose components of support bracket.

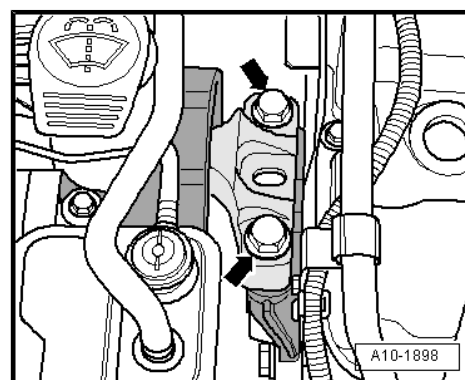
- ◆ *The support hooks and retaining pins on the support bracket must be secured with locking pins -arrows-.*

- Hook spindle - 10 - 222 A /11- onto lug -2024 A /2- on engine lifting eye.
- Take up weight of engine/gearbox assembly by evenly tightening two spindles.

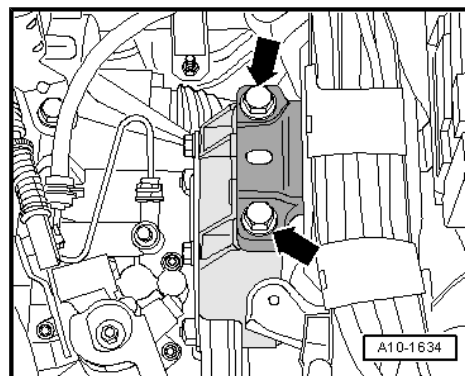


Vehicles with manual gearbox:

- Remove bolts for engine mounting from engine support -arrows- one by one and renew (if they were not renewed when installing engine).
- Initially fit bolts hand-tight.



- Remove bolts for gearbox mounting from gearbox bracket -arrows- one by one and renew (if they were not renewed when installing engine).

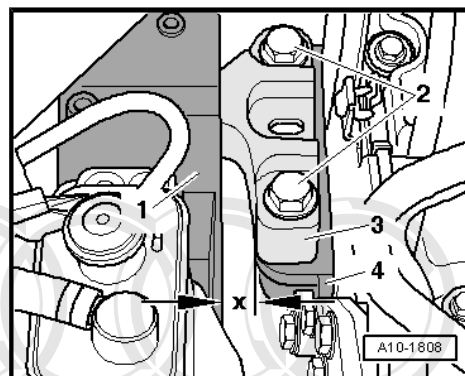


- Using a tyre iron, adjust engine/gearbox assembly between engine support -1- and support arm -3- of engine mounting until the specifications listed below are obtained:
 - The two bolt heads -2- must be parallel with edge of support arm -3- for engine mounting.
 - There must be a distance of -x- = 16 mm between engine mounting -1- and engine support -4-.

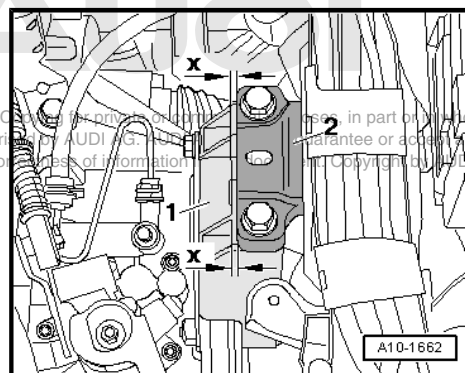


Note

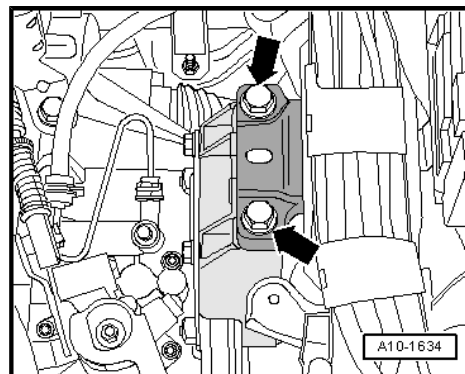
Distance -x- = 16 mm can also be checked with a metal rod of suitable size, or similar.



- Tighten bolts securing engine mounting to engine support.
- Ensure that edges of support arm (on gearbox side) -1- and gearbox mounting -2- are parallel.
- Dimension -x- must be identical on both sides of mounting.

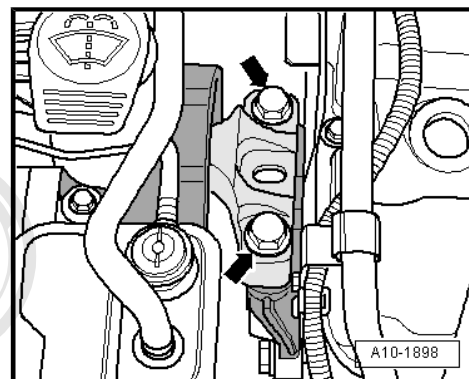


- Tighten bolts securing gearbox mounting to gearbox bracket -arrows-.

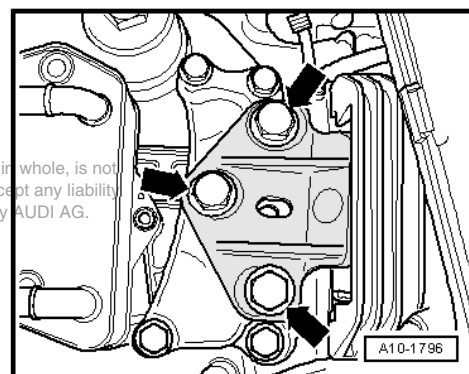


Vehicles with dual clutch gearbox:

- Remove bolts for engine mounting from engine support -arrows- one by one and renew (if they were not renewed when installing engine).
- Initially fit bolts hand-tight.



- Remove bolts for gearbox mounting from gearbox bracket -arrows- one by one and renew (if they were not renewed when installing engine).

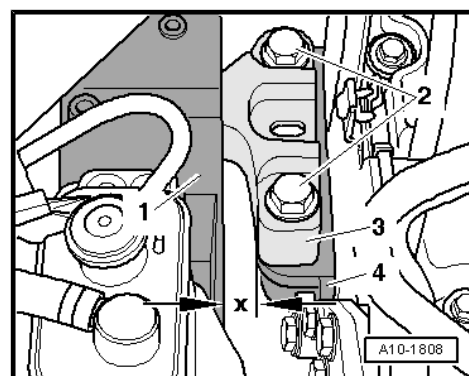


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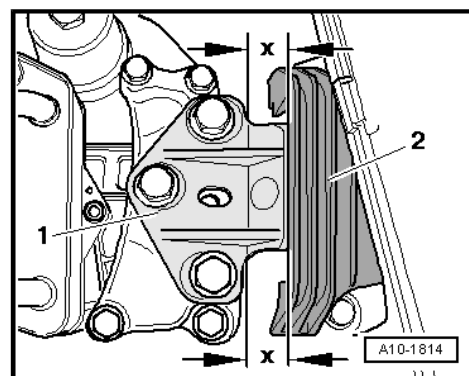
- Using a tyre iron, adjust engine/gearbox assembly between engine support -1- and support arm -3- of engine mounting until the specifications listed below are obtained:
- The two bolt heads -2- must be parallel with edge of support arm -3- for engine mounting.
- There must be a distance of -x- = 16 mm between engine mounting -1- and engine support -4-.

**Note**

Distance -x- = 16 mm can also be checked with a metal rod of suitable size, or similar.



- Tighten bolts securing engine mounting to engine support.
- Ensure that edges of support arm (on gearbox side) -1- and gearbox mounting -2- are parallel.
- Dimension -x- must be identical on both sides of mounting.



- Tighten bolts securing gearbox mounting to gearbox bracket -arrows-.

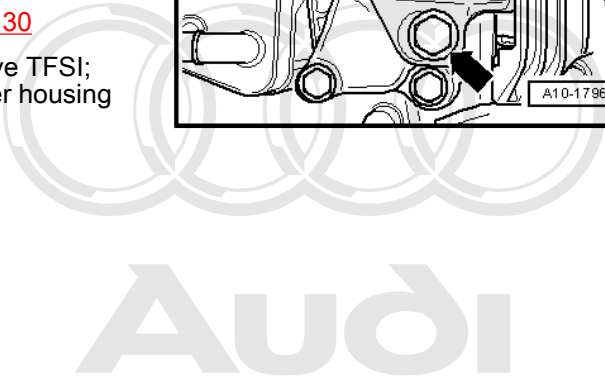
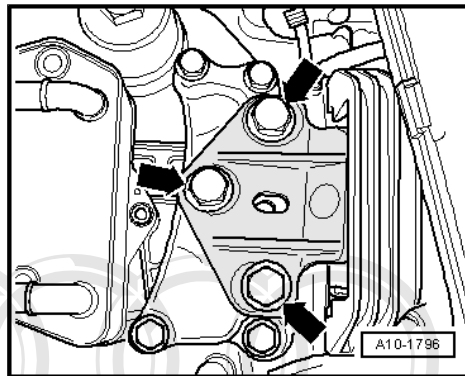
All vehicles:

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

- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery .

Tightening torques

- ◆ ⇒ ["2.1 Exploded view - assembly mountings", page 30](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI;
Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing



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3 Engine cover panel

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel .



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13 – Crankshaft group

1 Cylinder block (pulley end)

⇒ [“1.1 Exploded view - cylinder block \(pulley end\)”, page 40](#)

⇒ [“1.2 Removing and installing poly V-belt”, page 40](#)

⇒ [“1.3 Removing and installing tensioner for poly V-belt”, page 40](#)

⇒ [“1.4 Removing and installing vibration damper”, page 42](#)

⇒ [“1.5 Removing and installing bracket for ancillaries”, page 42](#)

⇒ [“1.6 Removing and installing engine support”, page 42](#)

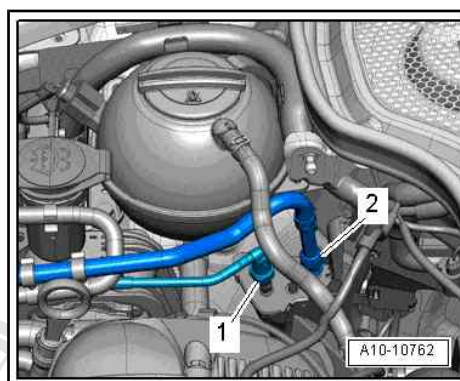
1.1 Exploded view - cylinder block (pulley end)

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (pulley end); Exploded view - cylinder block (pulley end) .

1.2 Removing and installing poly V-belt

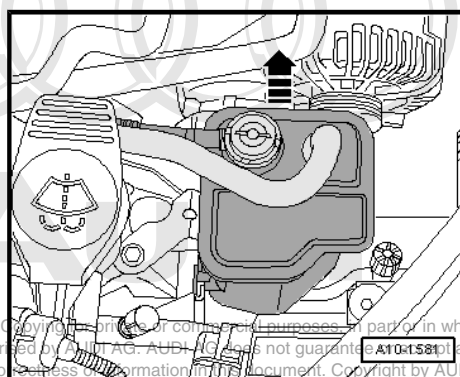
Removing

- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).
- Move clear vacuum line on coolant pipe.



- Pull activated charcoal filter upwards out of the bracket -arrow- and place to side (pipes/hoses remain attached).

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .



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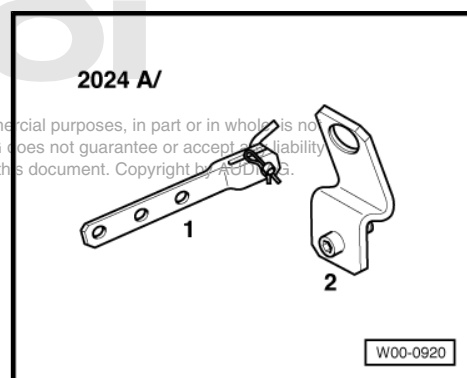
1.3 Removing and installing tensioner for poly V-belt

Special tools and workshop equipment required

- ◆ Support bracket - 10 - 222 A- with spindle - 10 - 222 A /11-



- ◆ Lug -2024 A /2- from lifting tackle - 2024A-



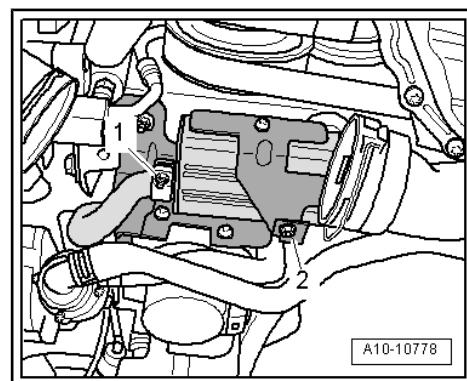
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Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

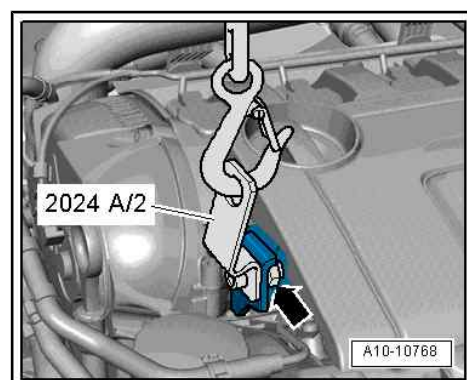
Vehicles with auxiliary heater:

- Slacken clip -1- and remove bolt -2-.
- Detach exhaust silencer for auxiliary heater.



All vehicles:

- Secure lug -2024 A /2- to engine lifting eye using flange nut -arrow-.



- Position support bracket - 10 - 222 A- on top of body flanges using the following tools:

◆ Rack - 10 - 222 A /1- (2x)

◆ Spindle - 10 - 222 A /11-

- Take up weight of engine with spindle.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt tensioner .

Installing

Additional work:

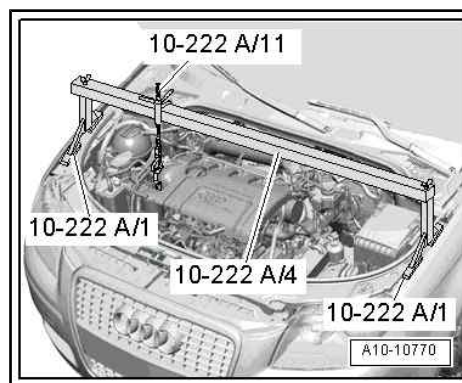
- Adjust assembly mountings ⇒ [page 33](#) .

Tightening torques

◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation

◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

◆ Silencer for auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82



1.4 Removing and installing vibration damper

Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

Vehicles with auxiliary heater:

- Slacken clip -1- and remove bolt -2-.
- Detach exhaust silencer for auxiliary heater.

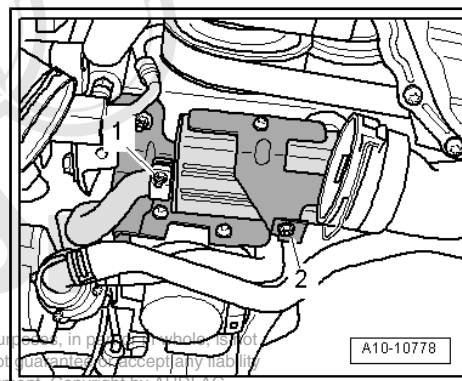
All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing vibration damper .

Tightening torques

◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation

◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

◆ Silencer for auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82



1.5 Removing and installing bracket for ancillaries

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing bracket for ancillaries .

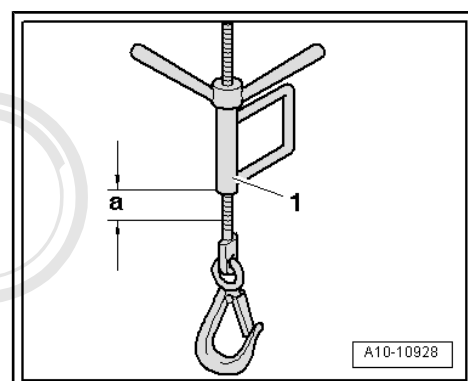
1.6 Removing and installing engine support

Special tools and workshop equipment required

◆ Bits - T10099-

**Removing**

- Remove engine mounting ⇒ [page 31](#) .
- Using spindle - 10-222A/11- -item 1-, raise engine through distance -a-.
- Distance -a- = approx. 30 mm.



- Unscrew bolts -1 ... 3- with bits - T10099- and detach engine support.

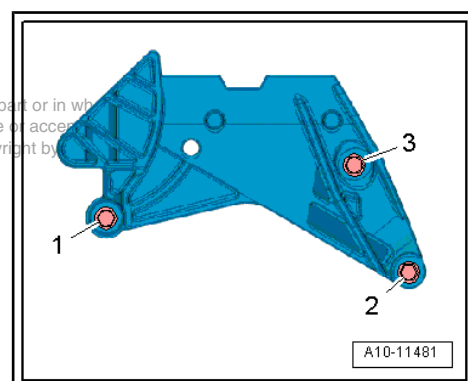
Installing

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

- Install engine mountings ⇒ [page 31](#) .

Tightening torques

- ◆ ⇒ Fig. ““Engine support - tightening torque and sequence””, [page 31](#)





2 Cylinder block (gearbox end)

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13; Cylinder block (gearbox end) .



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3 Crankshaft

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Crankshaft .



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4 Balance shaft

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13; Balance shaft .



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5 Pistons and conrods

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13; Pistons and conrods .



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15 – Cylinder head, valve gear

1 Timing chain cover

⇒ [“1.1 Exploded view - timing chain cover”, page 48](#)

⇒ [“1.2 Removing and installing timing chain cover”, page 48](#)

⇒ [“1.3 Renewing oil seal for vibration damper”, page 48](#)

1.1 Exploded view - timing chain cover

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; 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 \(top\)”, page 48](#)

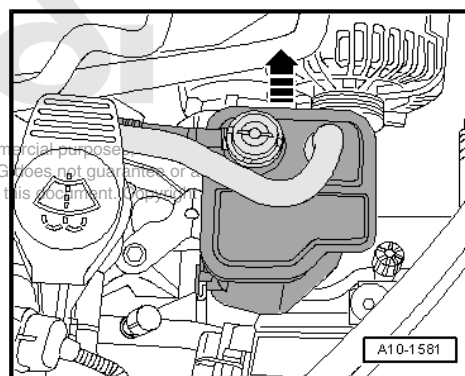
⇒ [“1.2.2 Renewing timing chain cover \(bottom\)”, page 48](#)

1.2.1 Removing and installing timing chain cover (top)

Removing

- Pull activated charcoal filter upwards out of bracket -arrow- and place to side.
- Unbolt coolant expansion tank and place to one side.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Timing chain cover; Removing and installing timing chain cover .



1.2.2 Renewing timing chain cover (bottom)

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Timing chain cover; Removing and installing timing chain cover .

1.3 Renewing oil seal for vibration damper

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Timing chain cover; Renewing oil seal for vibration damper.

2 Chain drive

⇒ ["2.1 Exploded view - camshaft timing chains", page 49](#)

⇒ ["2.2 Exploded view - drive chain for balance shaft", page 49](#)

⇒ ["2.3 Removing and installing bearing saddle", page 49](#)

⇒ ["2.4 Removing camshaft timing chain from camshafts", page 49](#)

⇒ ["2.5 Removing and installing camshaft timing chain", page 50](#)

⇒ ["2.6 Removing and installing drive chain for balance shaft", page 50](#)

⇒ ["2.7 Checking valve timing", page 50](#)

2.1 Exploded view - camshaft timing chains

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Exploded view - camshaft timing chains .

2.2 Exploded view - drive chain for balance shaft

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Exploded view - drive chain for balance shaft .

2.3 Removing and installing bearing saddle

Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Removing and installing bearing saddle .

Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

2.4 Removing camshaft timing chain from camshafts

Procedure

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Removing camshaft timing chain from camshafts .



Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

2.5 Removing and installing camshaft timing chain

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Removing and installing camshaft timing chain .

2.6 Removing and installing drive chain for balance shaft

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Removing and installing drive chain for balance shaft .

2.7 Checking valve timing

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Chain drive; Checking valve timing .



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3 Cylinder head

⇒ [“3.1 Exploded view - cylinder head”, page 51](#)

⇒ [“3.2 Removing and installing cylinder head”, page 51](#)

⇒ [“3.3 Checking compression”, page 55](#)

3.1 Exploded view - cylinder head

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15; Cylinder head; Exploded view - cylinder head .

3.2 Removing and installing cylinder head

⇒ [“3.2.1 Removing and installing cylinder head - engine codes BPU, BYT”, page 51](#)

⇒ [“3.2.2 Removing and installing cylinder head - all engine codes except BPU, BYT”, page 53](#)

3.2.1 Removing and installing cylinder head - engine codes BPU, BYT

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



Removing



Note

Fit cable ties in the original positions when installing.

- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10; Engine cover panel; Removing and installing engine cover panel .
- Drain coolant ⇒ [page 64](#) .
- Remove front exhaust pipe with catalytic converter ⇒ [page 126](#) .
- Remove camshafts
⇒ [“4.2.1 Removing and installing camshaft - engine codes BPU, BYT”, page 56](#) .

- Press release tabs, detach air hose -2- and swivel to side.
- Remove bolts -arrows- for air pipe.

Rest-of-world vehicles:

- Press release tabs and detach crankcase breather hose -1- from air pipe.
- Release hose clip -3- and detach air pipe.

USA models:

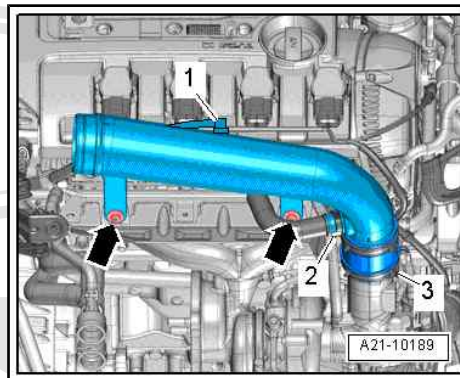


Caution

Risk of violating emission legislation applying to USA models.

- ◆ **Do NOT open hose connection -1-.**

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- Release hose clip -3- and move air pipe with crankcase breather hose -1- clear to one side (hose remains connected).

All vehicles:

- Detach vacuum hose from vacuum pump -1- and move clear.
- Unscrew earth wire -2-.
- Detach electrical connector -3- and move wiring harness clear.
- Disconnect coolant hoses -4 and 5-.

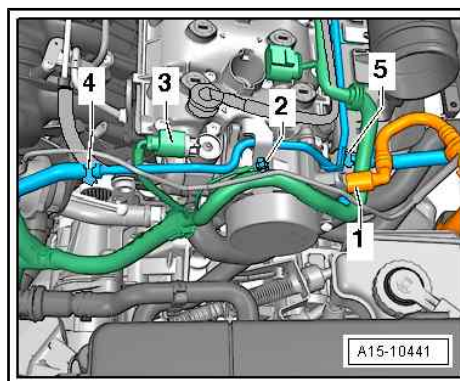


WARNING

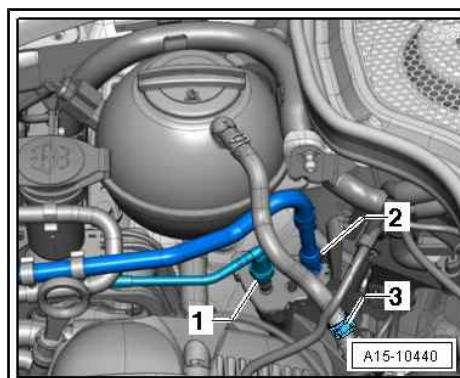
The fuel system is pressurised.

Risk of injury as fuel may spray out.

- **Put on safety goggles.**
- **Put on protective gloves.**
- **Release pressure (wrap a clean cloth around connection and open connection carefully).**



- Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair notes; Rules for cleanliness .
- Disconnect fuel supply hose -2- by pressing release ring.
- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).
- Detach coolant hose -3-.



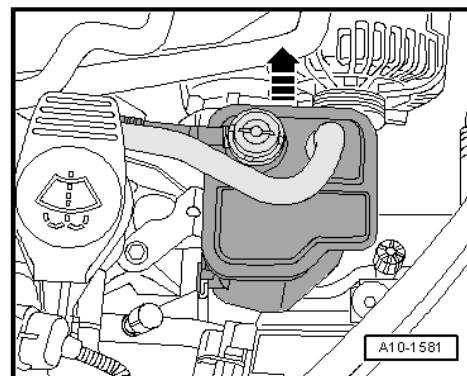
- Pull activated charcoal filter upwards and out of bracket -arrow- and place on engine.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Cylinder head; Removing and installing cylinder head .

Installing

Additional work:

- Install front exhaust pipe with catalytic converter
⇒ [page 126](#) .
- Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



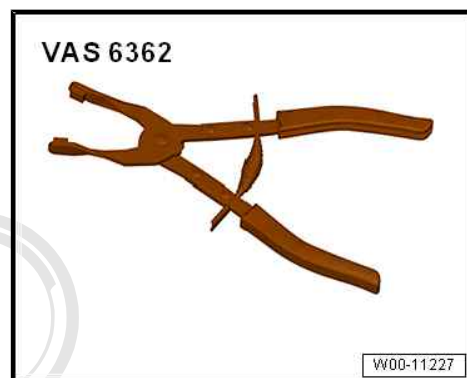
Tightening torques

- ◆ ⇒ [“2.2 Exploded view - charge air system”, page 92](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

3.2.2 Removing and installing cylinder head - all engine codes except BPU, BYT

Special tools and workshop equipment required

- ◆ Hose clip pliers - VAS 6362-



Removing



Note

Fit cable ties in the original positions when installing.

- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Drain coolant ⇒ [page 64](#) .
- Remove front exhaust pipe with catalytic converter
⇒ [page 126](#) .
- Remove camshafts
⇒ [“4.2.2 Removing and installing camshaft - all engine codes except BPU, BYT”, page 56](#) .

- Press release tabs, detach air hose -2- and swivel to side.
- Remove bolts -arrows- for air pipe.

Rest-of-world vehicles:

- Press release tabs and detach crankcase breather hose -1- from air pipe.
- Release hose clip -3- and detach air pipe.

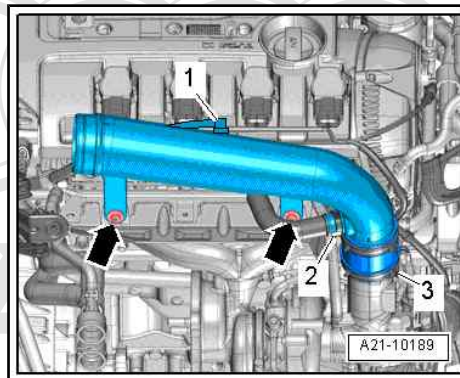
USA models:



Caution

Risk of violating emission legislation applying to USA models.

- ◆ **Do NOT open hose connection -1-.**

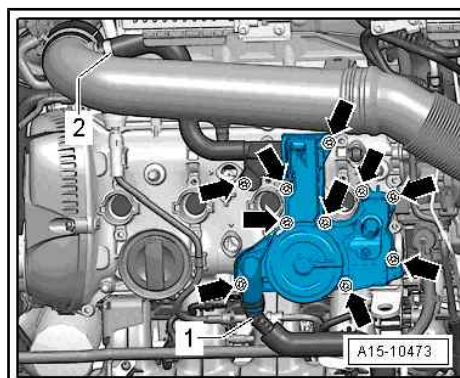


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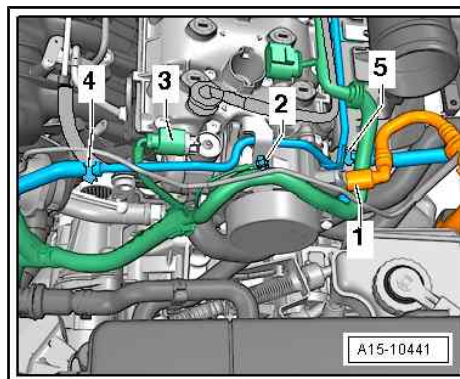
- Release hose clip -3- and move air pipe with crankcase breather hose -1- clear to one side (hose remains connected).

All vehicles:

- Disconnect crankcase breather hoses -1 and 2-.
- Remove bolts -arrows- and detach oil separator.

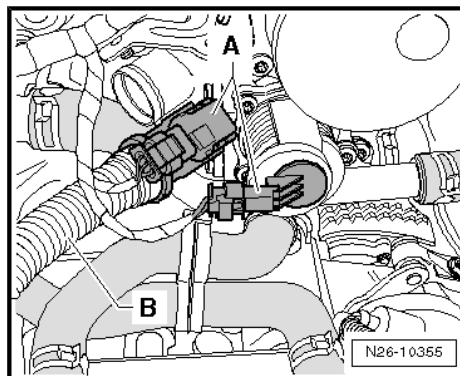


- Detach vacuum hose from vacuum pump -1- and move clear.
- Unscrew earth wire -2-.
- Detach electrical connector -3- and move wiring harness clear.
- Disconnect coolant hoses -4 and 5-.



Engine code CBFA:

- Disconnect electrical connector -A- and hose -B- from combination valve for secondary air system.



- Remove bolts -arrows- and detach coolant pipe.

All vehicles:

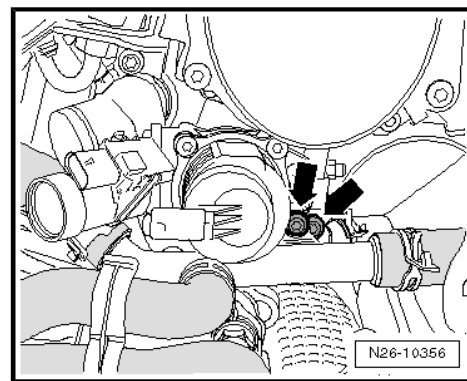


WARNING

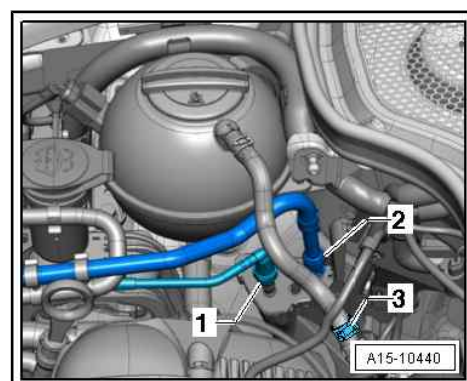
The fuel system is pressurised.

Risk of injury as fuel may spray out.

- *Put on safety goggles.*
- *Put on protective gloves.*
- *Release pressure (wrap a clean cloth around connection and open connection carefully).*



- Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Rules for cleanliness.
- Disconnect fuel supply hose -2- by pressing release ring.
- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).
- Detach coolant hose -3-.



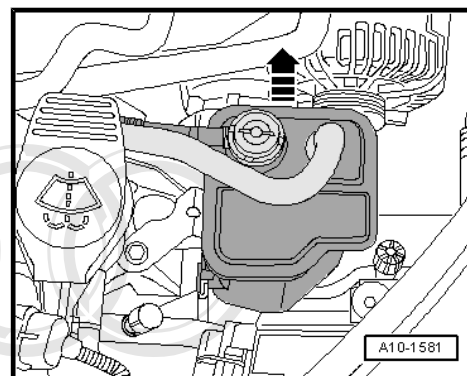
- Pull activated charcoal filter upwards and out of bracket -arrow- and place on engine.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15; Cylinder head; Removing and installing cylinder head.

Installing

Additional work:

- Install front exhaust pipe with catalytic converter ⇒ [page 126](#).
- Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10; Engine cover panel; Removing and installing engine cover panel.



Tightening torques

- ◆ ⇒ [“2.2 Exploded view - charge air system”, page 92](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21; Charge air system; Exploded view - hose connections for charge air system

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3.3 Checking compression

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15; Cylinder head; Checking compression.

4 Valve gear

⇒ ["4.1 Exploded view - valve gear", page 56](#)

⇒ ["4.2 Removing and installing camshaft", page 56](#)

⇒ ["4.3 Removing and installing camshaft control valve 1 N205", page 57](#)

⇒ ["4.4 Removing and installing valve stem oil seals", page 57](#)

4.1 Exploded view - valve gear

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear .

4.2 Removing and installing camshaft

⇒ ["4.2.1 Removing and installing camshaft - engine codes BPU, BYT", page 56](#)

⇒ ["4.2.2 Removing and installing camshaft - all engine codes except BPU, BYT", page 56](#)

4.2.1 Removing and installing camshaft - engine codes BPU, BYT

Removing

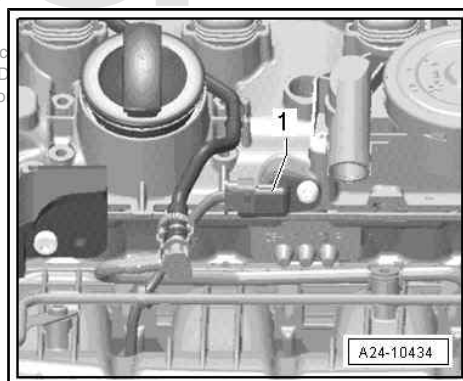
- Remove oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .
- Unplug electrical connector -1- at Hall sender - G40- .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing camshaft .

Installing

Additional work:

- Install oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .



4.2.2 Removing and installing camshaft - all engine codes except BPU, BYT

Removing

- Remove ignition coils ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing ignition coils with output stages .
- Remove oil separator on cylinder head cover (version 2) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

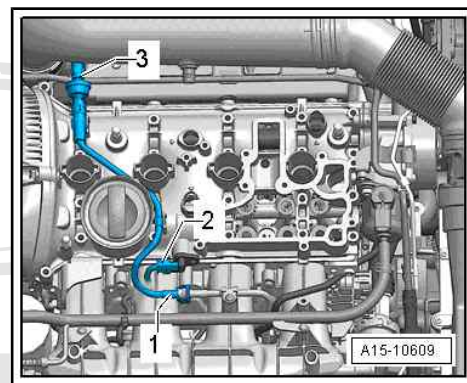
- Detach lines -1 and 3-
- Unplug electrical connector -2- from Hall sender - G40- .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing camshaft .

Installing

Additional work:

- Install oil separator on cylinder head cover (version 2) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .
- Install ignition coils ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing ignition coils with output stages



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4.3 Removing and installing camshaft control valve 1 - N205-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing camshaft control valve 1 - N205- .

4.4 Removing and installing valve stem oil seals

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing valve stem oil seals .

17 – Lubrication

1 Sump/oil pump

⇒ [“1.1 Exploded view - sump/oil pump”, page 58](#)

⇒ [“1.2 Engine oil”, page 58](#)

⇒ [“1.3 Removing and installing sump \(bottom section\)”, page 58](#)

⇒ [“1.4 Removing and installing oil pump”, page 58](#)

⇒ [“1.5 Removing and installing sump \(top section\)”, page 59](#)

⇒ [“1.6 Removing and installing oil level and oil temperature sender G266”, page 59](#)

1.1 Exploded view - sump/oil pump

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All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Sump/oil pump; Exploded view - sump/oil pump .

1.2 Engine oil

- ◆ Refer to ⇒ Maintenance ; Booklet 808 for instructions on draining and filling up engine oil, checking oil level, removing and installing oil filter.
- ◆ Refer to ⇒ Maintenance tables for engine oil capacity, oil specifications and viscosity grades.

1.3 Removing and installing sump (bottom section)

Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Cabriolet

- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Sump/oil pump; Removing and installing sump (bottom section) .

Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ◆ Noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front

1.4 Removing and installing oil pump

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Sump/oil pump; Removing and installing oil pump .

1.5 Removing and installing sump (top section)

Removing

- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Sump/oil pump; Removing and installing sump (top section) .

Tightening torques

- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

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

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; 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 can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Engine oil cooler .



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3 Crankcase breather

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ;
Crankcase breather .



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4 Oil filter/oil pressure switches

All procedures and components can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches .



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19 – Cooling

1 Cooling system/coolant

⇒ “1.1 Connection diagram - coolant hoses”, page 63

⇒ “1.2 Checking cooling system for leaks”, page 64

⇒ “1.3 Draining and filling cooling system”, page 64

1.1 Connection diagram - coolant hoses

⇒ “1.1.1 Connection diagram - coolant hoses, vehicles with manual gearbox”, page 63

⇒ “1.1.2 Connection diagram - coolant hoses, vehicles with dual clutch gearbox”, page 64

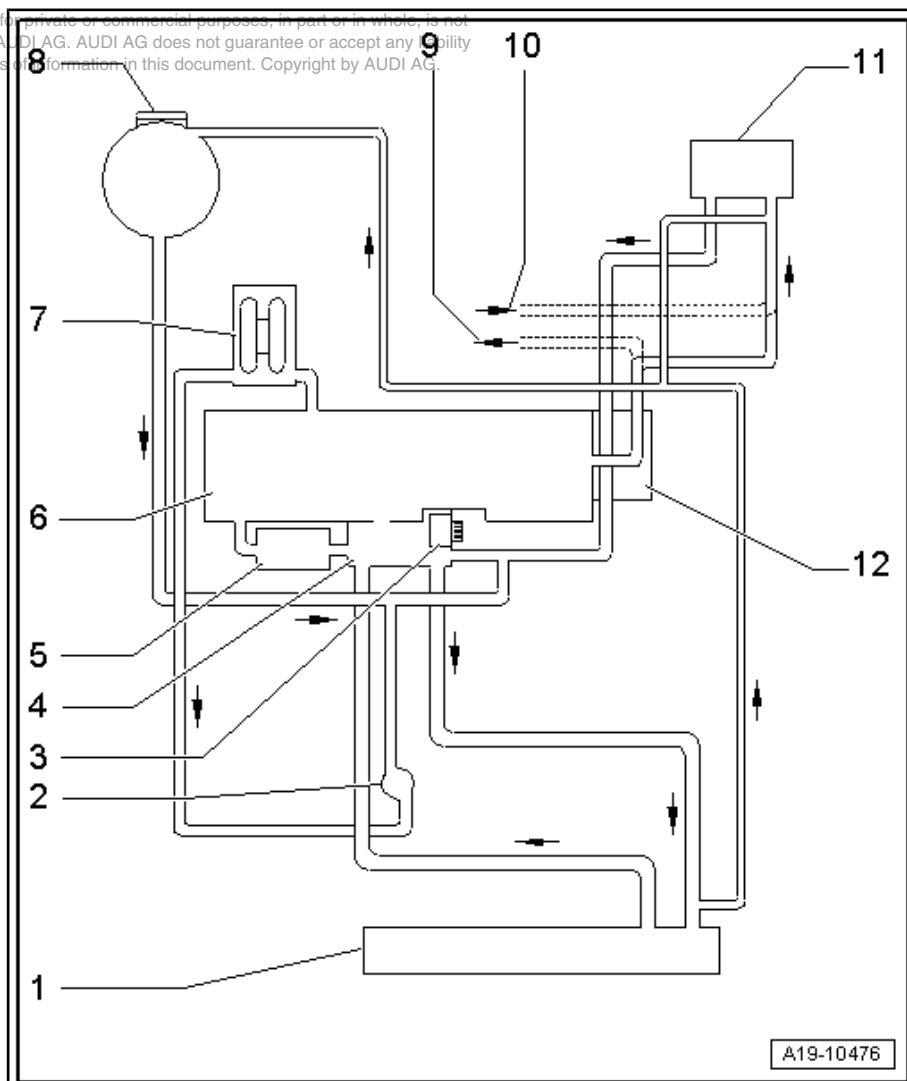
1.1.1 Connection diagram - coolant hoses, vehicles with manual gearbox



Note

-Arrows- show direction of coolant flow.

- 1 - Radiator
- 2 - Continued coolant circulation pump - V51-
- 3 - Coolant pump
- 4 - Thermostat
- 5 - Engine oil cooler
- 6 - Cylinder head and cylinder block
- 7 - Turbocharger
- 8 - Coolant expansion tank
- ☐ With filler cap
 - ☐ Checking pressure relief valve in filler cap ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19; Cooling system/coolant; Checking cooling system for leaks
- 9 - To auxiliary heater
- ☐ Incorporation of coolant circuit with auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82
- 10 - From auxiliary heater
- ☐ Incorporation of coolant circuit with auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82
- 11 - Heat exchanger for heater
- 12 - Coolant connection



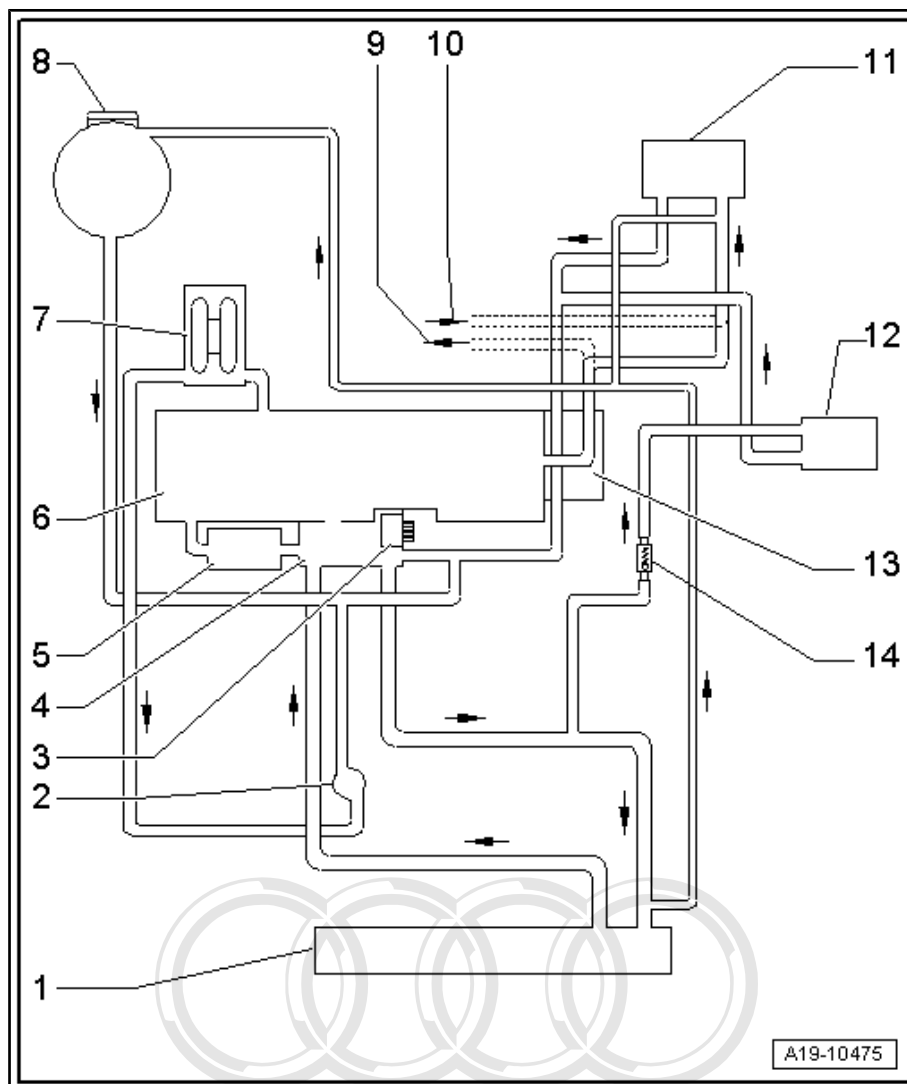
1.1.2 Connection diagram - coolant hoses, vehicles with dual clutch gearbox



Note

-Arrows- show direction of coolant flow.

- 1 - Radiator
- 2 - Continued coolant circulation pump - V51-
- 3 - Coolant pump
- 4 - Thermostat
- 5 - Engine oil cooler
- 6 - Cylinder head and cylinder block
- 7 - Turbocharger
- 8 - Coolant expansion tank
 - ☐ With filler cap
 - ☐ Checking pressure relief valve in filler cap
⇒ [page 64](#)
- 9 - To auxiliary heater
 - ☐ Incorporation of coolant circuit with auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82
- 10 - From auxiliary heater
 - ☐ Incorporation of coolant circuit with auxiliary heater ⇒ Auxiliary heating; Rep. gr. 82
- 11 - Heat exchanger for heater
- 12 - Gear oil cooler
- 13 - Coolant connection
- 14 - Thermostat for gear oil cooler



1.2 Checking cooling system for leaks

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19; Cooling system/coolant; Checking cooling system for leaks .

1.3 Draining and filling cooling system

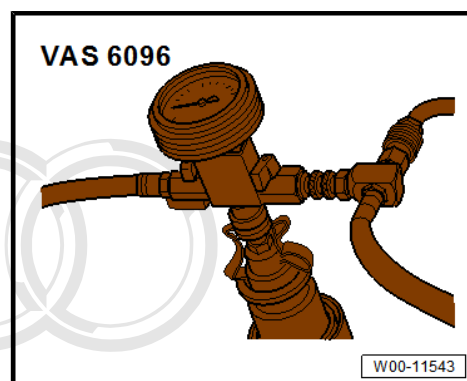
Special tools and workshop equipment required

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



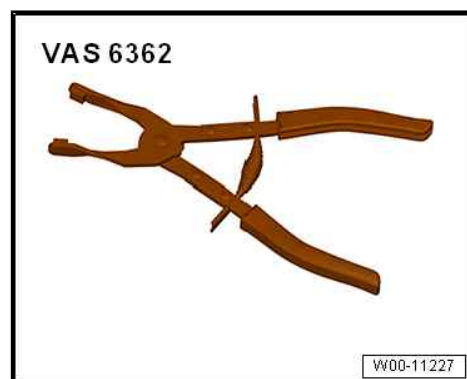
- ◆ Cooling system charge unit - VAS 6096-



- ◆ Drip tray for workshop hoist - VAS 6208-

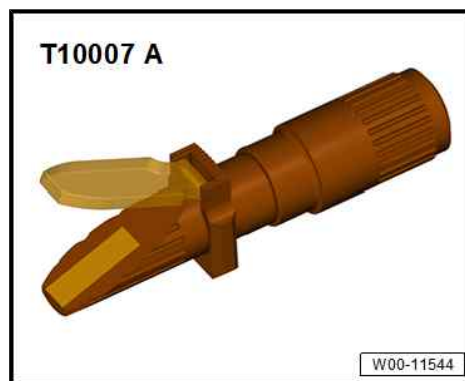


- ◆ Hose clip pliers - VAS 6362-



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◆ Refractometer - T10007A-



◆ Protective gloves

◆ Safety goggles

Draining



WARNING

The cooling system is under pressure when the engine is hot. Hot steam/hot coolant can escape - risk of scalding.

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.

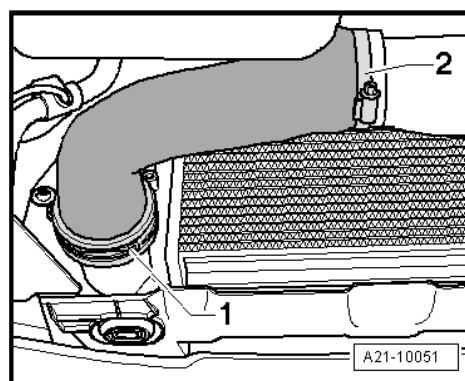
- Open filler cap on coolant expansion tank.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Cabriolet

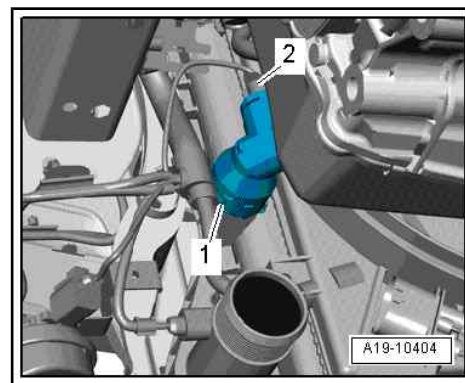
- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

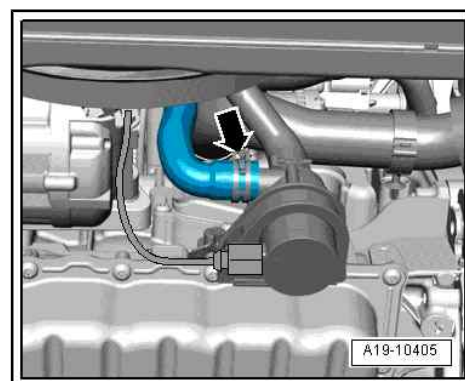
- Release hose clips -1 and 2- and remove air hose.



- Place drip tray for workshop hoist - VAS 6208- beneath engine.
- Disconnect coolant hose -1- from radiator (bottom) and drain off coolant.



- Disconnect bottom coolant hose leading to continued coolant circulation pump - V51- -arrow- and drain off coolant.



Vehicles with auxiliary heater:

- Disconnect coolant hoses -arrows- and drain off remaining coolant.

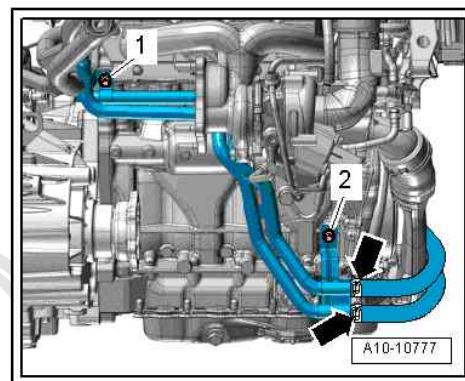
All vehicles:



Note

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

- Re-connect coolant hoses.



Coolant specifications

All information can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; 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* (ETKA)

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Filling cooling system



Note

Do not reuse coolant.

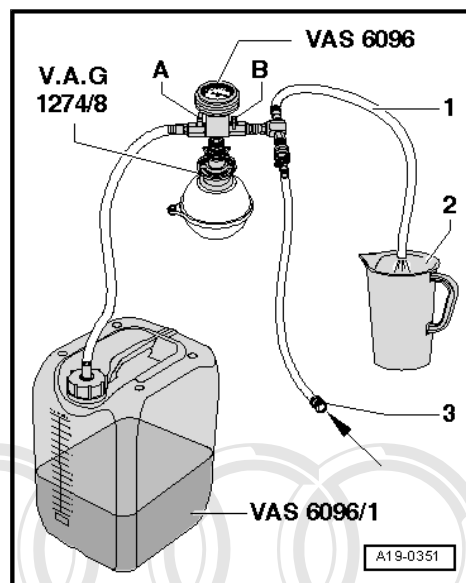
- Fill reservoir of cooling system charge unit - VAS 6096- with at least 10 litres of premixed coolant (according to recommended ratio) ⇒ [page 67](#) .
- Fit adapter for cooling system tester - V.A.G 1274/8- onto coolant expansion tank.
- Fit cooling system charge unit - VAS 6096- onto adapter for cooling system tester - V.A.G 1274/8- .
- Run vent hose -1- into a small container -2-.



Note

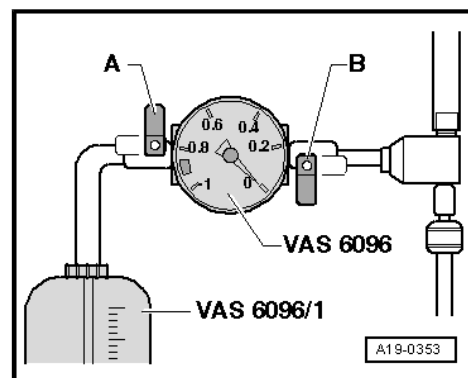
The vented air draws along a small amount of coolant, which should be collected.

- 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.



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- 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 cooling system charge unit - 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.

**Note**

- ◆ *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 the cooling system charge unit - VAS 6096- ; the cooling system is then filled.

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- Top up coolant to “max” mark.
- Install air hose ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

Cabriolet

- Install noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Set temperature to “HI”.
- Switch off air conditioner compressor (press **AC** button).
- LED in button should not light up.
- Start engine and run for 2 minutes (maximum) at approx. 1500 rpm.
- Top up coolant to overflow hole on expansion tank with engine running.
- Close filler cap on coolant expansion tank.
- Start engine and run at approx. 3000 rpm until radiator fan cuts in.
- Switch off engine.

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Checking coolant level



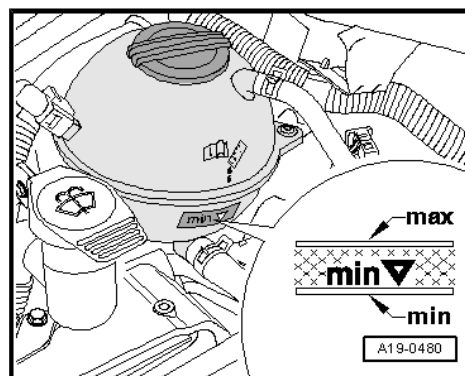
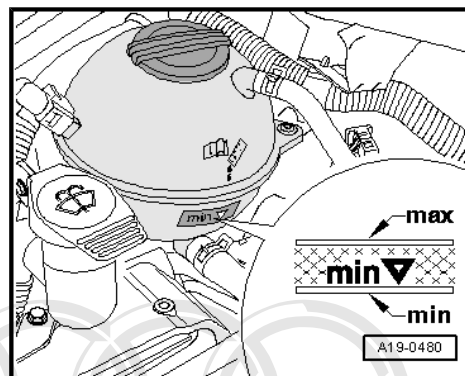
WARNING

The cooling system is under pressure when the engine is hot. Hot steam/hot coolant can escape - risk of scalding.

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 coolant level must be between the “min” and “max” markings when the engine is cold.
- The coolant level can be at the “max” marking when the engine is warm.
- Top up with coolant again if necessary.



2 Coolant pump/thermostat assembly

⇒ [“2.1 Exploded view - coolant pump/thermostat”, page 71](#)

⇒ [“2.2 Exploded view - electric coolant pump”, page 71](#)

⇒ [“2.3 Removing and installing electric coolant pump”, page 72](#)

⇒ [“2.4 Removing and installing coolant pump”, page 74](#)

⇒ [“2.5 Removing and installing toothed belt for coolant pump”, page 75](#)

⇒ [“2.6 Removing and installing thermostat”, page 75](#)

⇒ [“2.7 Checking thermostat”, page 75](#)

⇒ [“2.8 Removing and installing coolant temperature sender G62”, page 75](#)

⇒ [“2.9 Removing and installing radiator outlet coolant temperature sender G83”, page 76](#)

2.1 Exploded view - coolant pump/thermostat

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19; Coolant pump/thermostat assembly; Exploded view - coolant pump/thermostat.

2.2 Exploded view - electric coolant pump



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1 - Bracket

2 - Bolt

□ 5 Nm

3 - Coolant hose

4 - Coolant hose

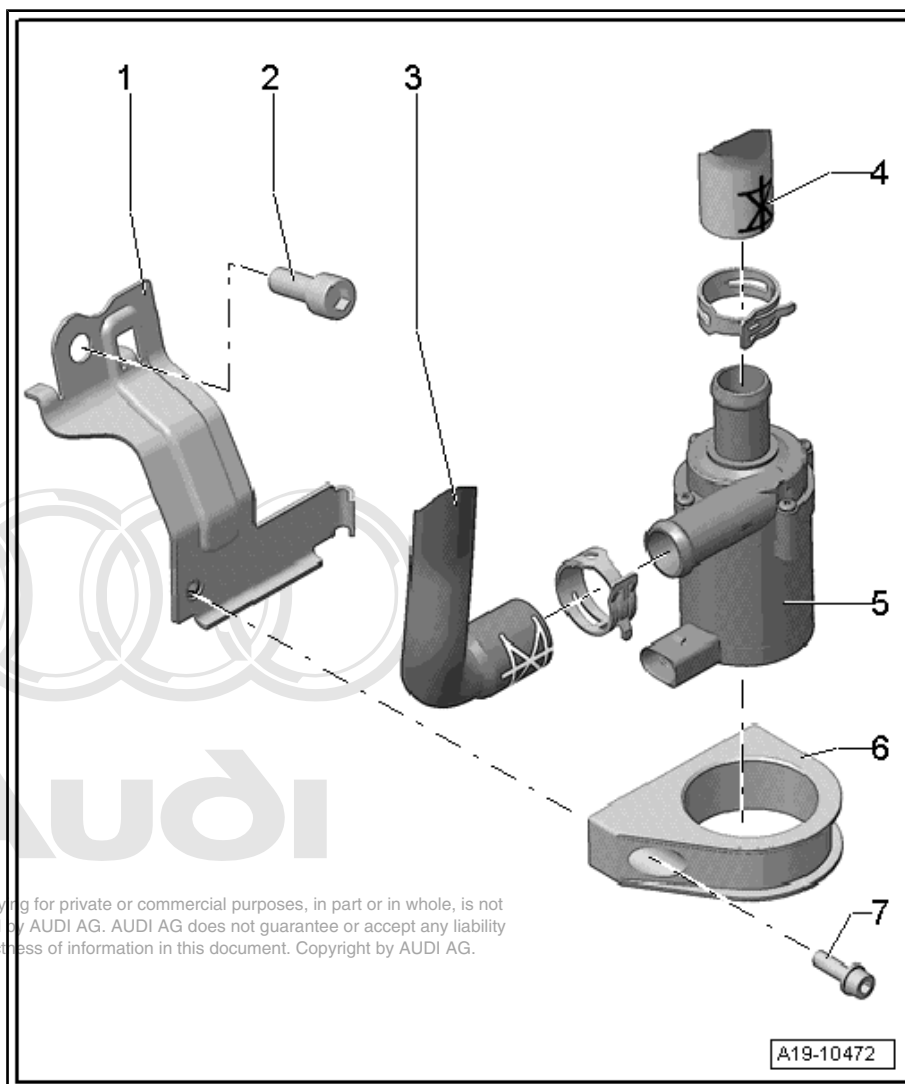
5 - Continued coolant circulation pump - V51-

□ Removing and installing
⇒ [page 72](#)

6 - Bracket

7 - Bolt

□ 8 Nm

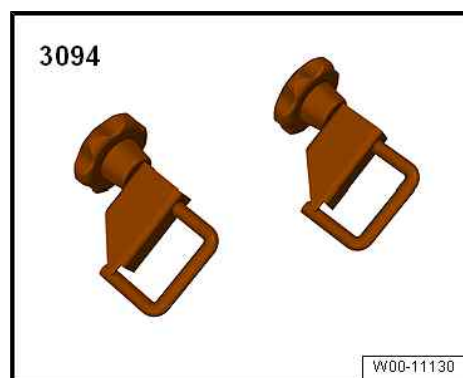


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2.3 Removing and installing electric coolant pump

Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm - 3094-



- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Hose clip pliers - VAS 6362-



- ◆ Safety goggles
- ◆ Protective gloves

Removing



WARNING

The cooling system is under pressure when the engine is hot. Hot steam/hot coolant can escape - risk of scalding.

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.*

- Open filler cap on coolant expansion tank.
- Remove noise insulation ⇒ General body repairs, exterior, Rep. gr. 50 ; Noise insulation .

Cabriolet

- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

- Unplug electrical connector -1-.
- Use hose clamps up to 25 mm - V51- to clamp off coolant hoses at continued coolant circulation pump - 3094- .
- Place drip tray for workshop hoist - VAS 6208- beneath engine.
- Release hose clips -arrows- and detach coolant hoses.
- Remove bolt -2- and detach continued coolant circulation pump - V51- .

Installing

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



Note

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

- Check coolant level ⇒ [page 70](#) .

Tightening torques

- ♦ ⇒ [“2.2 Exploded view - electric coolant pump”, page 71](#)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ♦ Noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front

2.4 Removing and installing coolant pump

Removing

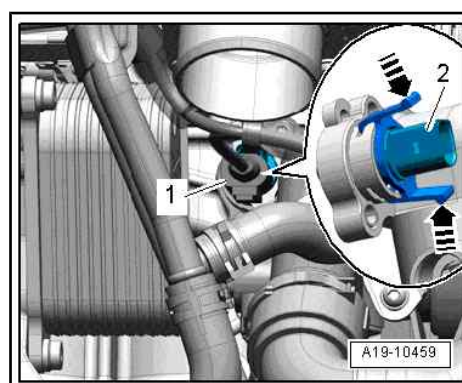
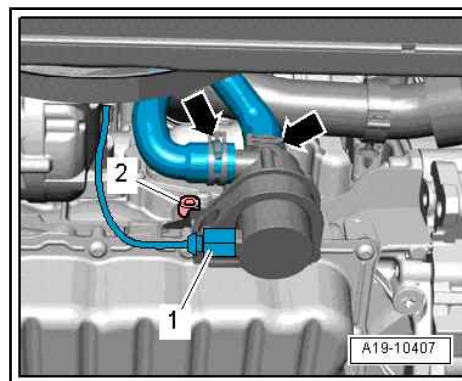
- Remove small coolant pipe ⇒ [page 79](#).
- Remove throttle valve module - J338- ⇒ Servicing 4-cylinder engine, 1.8 ltr.; 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing throttle valve module - J338- .
- Unplug electrical connector -1- at coolant temperature sender - G62- .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/ thermostat assembly; Removing and installing coolant pump .

Installing

Additional work:

- Install throttle valve module - J338- ⇒ Servicing 4-cylinder engine, 1.8 ltr.; 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing throttle valve module - J338- .
- Install small coolant pipe ⇒ [page 79](#) .



2.5 Removing and installing toothed belt for coolant pump

Removing

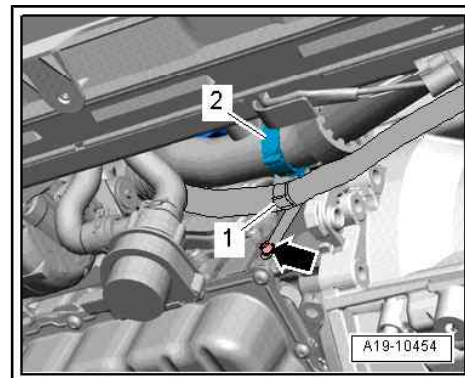
- Move coolant hose -2- and electrical wiring harness -1- clear.
- Remove bolt -arrow- and remove bracket.
- Remove oil separator on cylinder block ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing toothed belt for coolant pump .

Installing

Additional work:

- Install oil separator on cylinder block ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .



2.6 Removing and installing thermostat

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing thermostat .

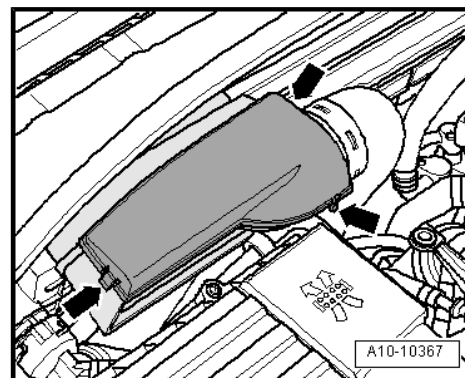
2.7 Checking thermostat

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/thermostat assembly; Checking thermostat .

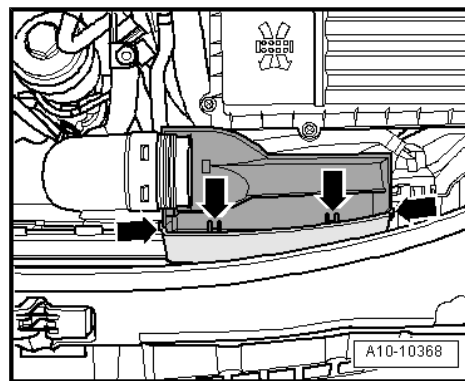
2.8 Removing and installing coolant temperature sender - G62-

Removing

- Pull cover off air duct (release clips on sides) -arrows-.



- Unclip air duct at the bottom by releasing clips -arrows-.
- Detach air duct at bottom together with air hose.

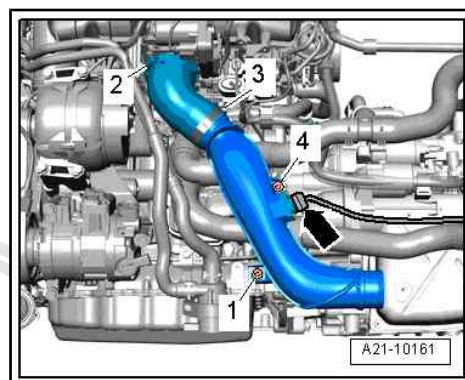


- Release hose clips -2, 3- and detach air hose.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/thermostat assembly; Removing and installing coolant temperature sender - G62- .

Tightening torques

- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system



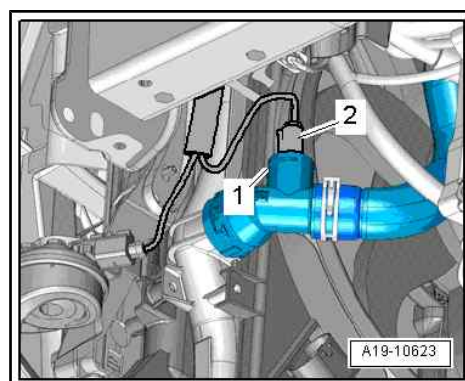
2.9 Removing and installing radiator outlet coolant temperature sender - G83-

Procedure

- Engine cold.
- To relieve residual pressure in cooling system, open filler cap on coolant expansion tank briefly and then close cap again (it should click into place).
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Unplug electrical connector -2-.
- Pull out retaining clip -1- and detach radiator outlet coolant temperature sender - G83- .
- Fit new coolant temperature sender immediately so that as little coolant as possible is lost.
- Check coolant level ⇒ [page 70](#) .

Tightening torques

- ♦ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation



3 Coolant pipes

⇒ ["3.1 Exploded view - coolant pipes", page 77](#)

⇒ ["3.2 Removing and installing coolant pipes", page 77](#)

3.1 Exploded view - coolant pipes

1 - Coolant pipes (front)

- ☐ Removing and installing
⇒ [page 77](#)

2 - Coolant hose

- ☐ From turbocharger

3 - Coolant hose

- ☐ To coolant expansion tank

4 - Bolt

- ☐ 5 Nm

5 - O-ring

- ☐ Renew

6 - Coolant hose

- ☐ To heat exchanger for heater

7 - Small coolant pipe

- ☐ Removing and installing
⇒ [page 79](#)

8 - Bolts

- ☐ 9 Nm

9 - Coolant hose

10 - Bolt

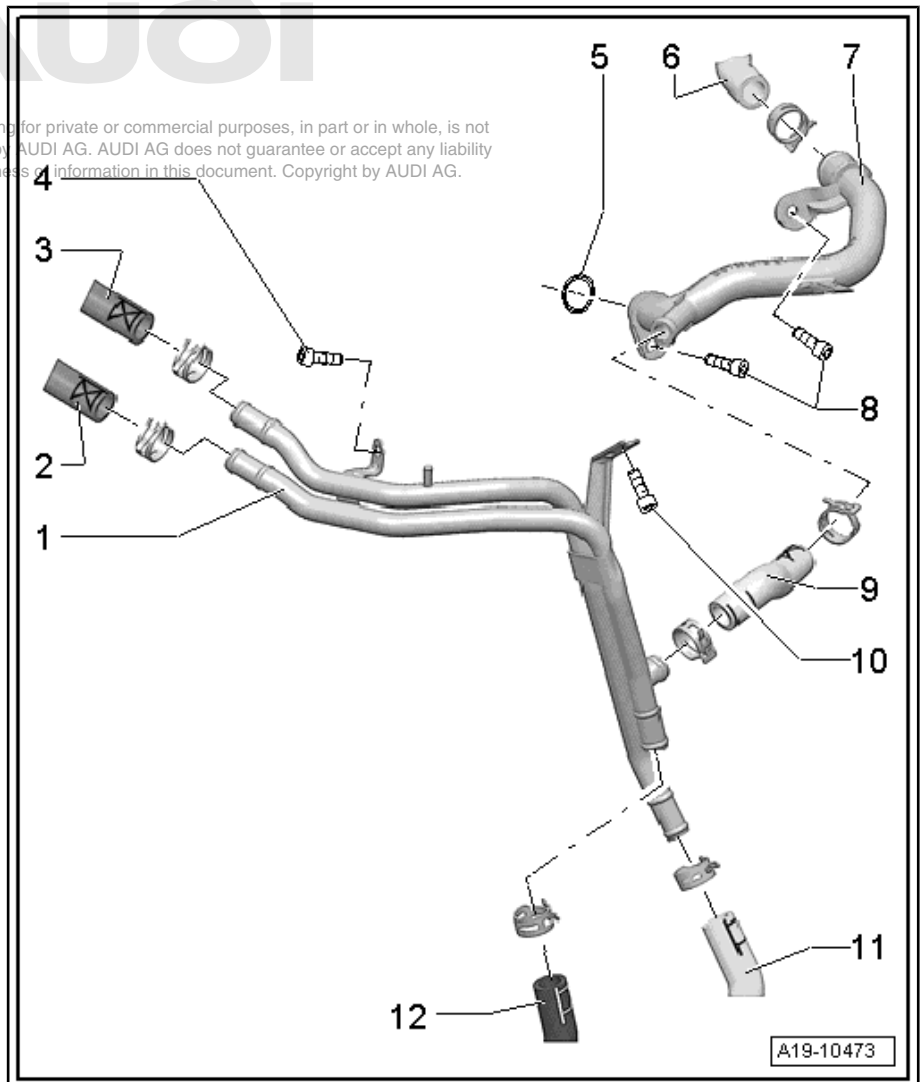
- ☐ 5 Nm

11 - Coolant hose

- ☐ From continued coolant circulation pump - V51-

12 - Coolant hose

- ☐ To continued coolant circulation pump - V51-



3.2 Removing and installing coolant pipes

⇒ ["3.2.1 Removing and installing coolant pipes \(front\)", page 77](#)

⇒ ["3.2.2 Removing and installing small coolant pipe", page 79](#)

3.2.1 Removing and installing coolant pipes (front)

Special tools and workshop equipment required

- ◆ Drip tray for workshop hoist - VAS 6208-



- ◆ Hose clip pliers - VAS 6362-



- ◆ Safety goggles
- ◆ Protective gloves

Removing

- Remove air pipe ⇒ [page 94](#) .



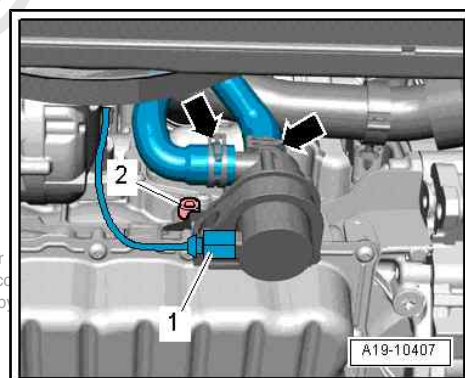
WARNING

The cooling system is under pressure when the engine is hot. Hot steam/hot coolant can escape - risk of scalding.

Danger of scalding skin and other parts of the body.

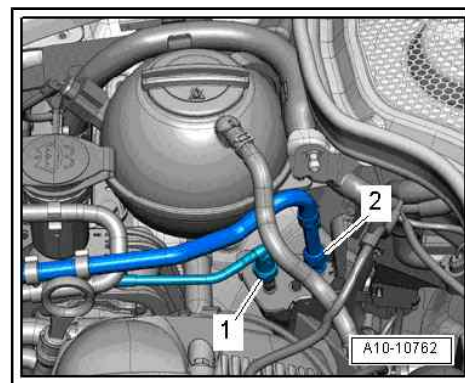
- Put on protective gloves.
- Put on safety goggles.
- Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

- Open filler cap on coolant expansion tank.
- Place drip tray for workshop hoist - VAS 6208- beneath engine.
- Disconnect coolant hoses from continued coolant circulation pump - V51- -arrows-.

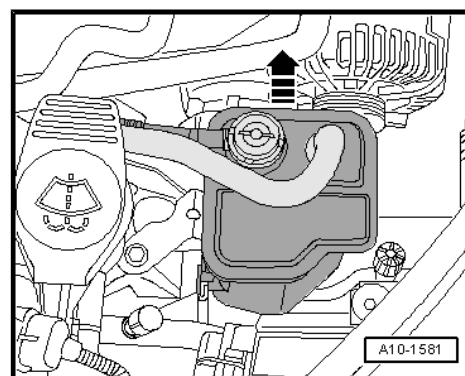


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- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).
- Detach vacuum line from coolant pipes (front).



- Pull activated charcoal filter with hoses attached upwards out of the bracket -arrow- and place to side.



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- Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -arrows- and disconnect hoses.
- Remove bolts -1- and -2- and detach coolant pipes (front).

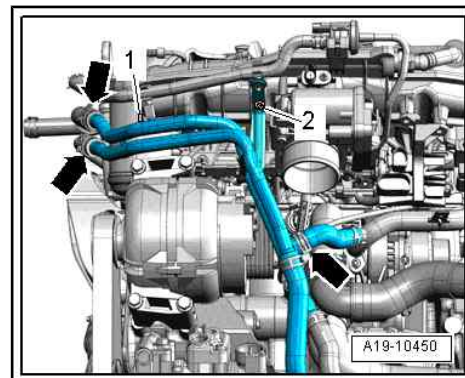
Installing

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



Note

- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Do not reuse coolant.*
- Install air pipe ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Removing and installing air pipe .
- Fill up with coolant ⇒ [page 68](#) .



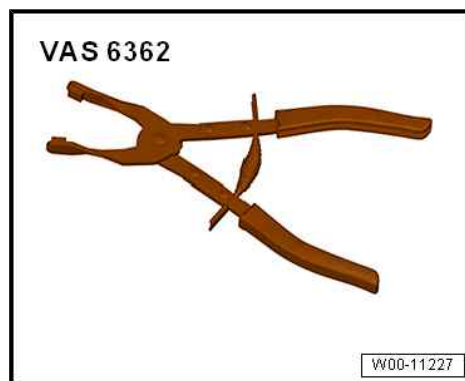
Tightening torques

- ◆ ⇒ ["3.1 Exploded view - coolant pipes", page 77](#)

3.2.2 Removing and installing small coolant pipe

Special tools and workshop equipment required

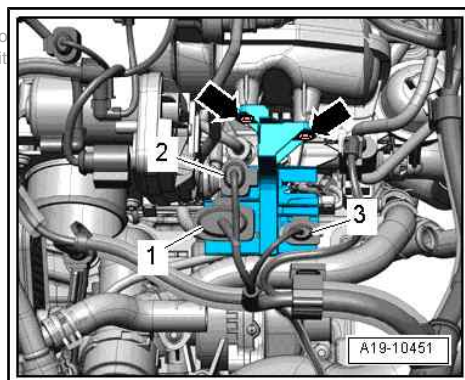
- ◆ Hose clip pliers - VAS 6362-



Removing

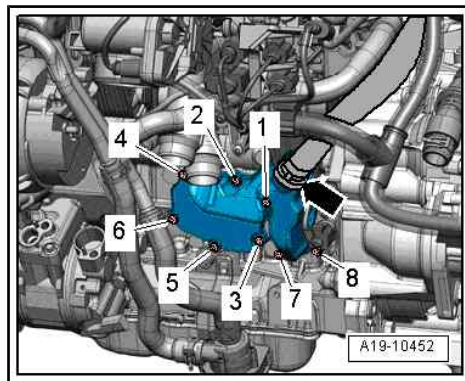
- Drain coolant ⇒ [page 64](#) .
- Remove air pipe ⇒ [page 94](#) .
- Remove bolts -arrows- and detach electrical connectors
-1 ... 3- from bracket.

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Engine with oil separator on cylinder block, version 1

- Press release tabs, detach crankcase breather hose -arrow- and move clear to one side.



All vehicles:

- Move electrical wiring on small coolant pipe clear -arrow-.
- Release hose clip -1-, lift retaining clip -4- and detach coolant hoses.
- Unscrew bolts -2 and 3- and detach small coolant pipe.

Installing

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

**Note**

- ◆ *Renew O-ring.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- Install air pipe ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21: Charge air system; Removing and installing air pipe .
- Connect coolant hose with plug-in connector ⇒ [page 83](#) .

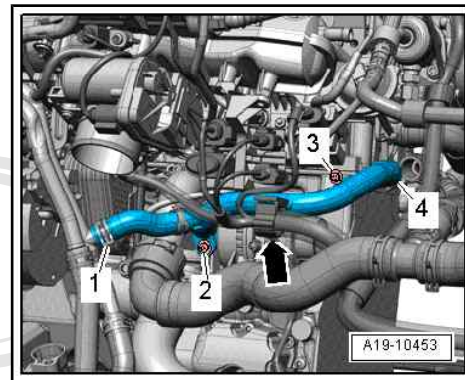
**Note**

Do not reuse coolant.

- Fill up with coolant ⇒ [page 68](#) .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - coolant pipes”, page 77](#)



4 Radiator/radiator fans

⇒ ["4.1 Exploded view - radiator/radiator fans", page 82](#)

⇒ ["4.2 Removing and installing radiator", page 83](#)

⇒ ["4.3 Removing and installing radiator cowl", page 84](#)

⇒ ["4.4 Removing and installing radiator fan V7 ", page 85](#)

4.1 Exploded view - radiator/radiator fans

1 - Radiator fan - V7-

- ☐ Removing and installing
⇒ [page 85](#)

2 - Nut

- ☐ 10 Nm

3 - Radiator cowl

4 - Coolant hose (bottom)

- ☐ To connection for thermostat

5 - Retaining clip

6 - Radiator outlet coolant temperature sender - G83-

- ☐ With O-ring
- ☐ Renew O-ring after removal
- ☐ Removing and installing
⇒ [page 75](#)

7 - O-ring

- ☐ Renew if damaged

8 - Coolant hose (top)

- ☐ From coolant pump

9 - O-ring

- ☐ Renew if damaged

10 - Bolt

- ☐ To charge air cooler
- ☐ 5 Nm

11 - Radiator

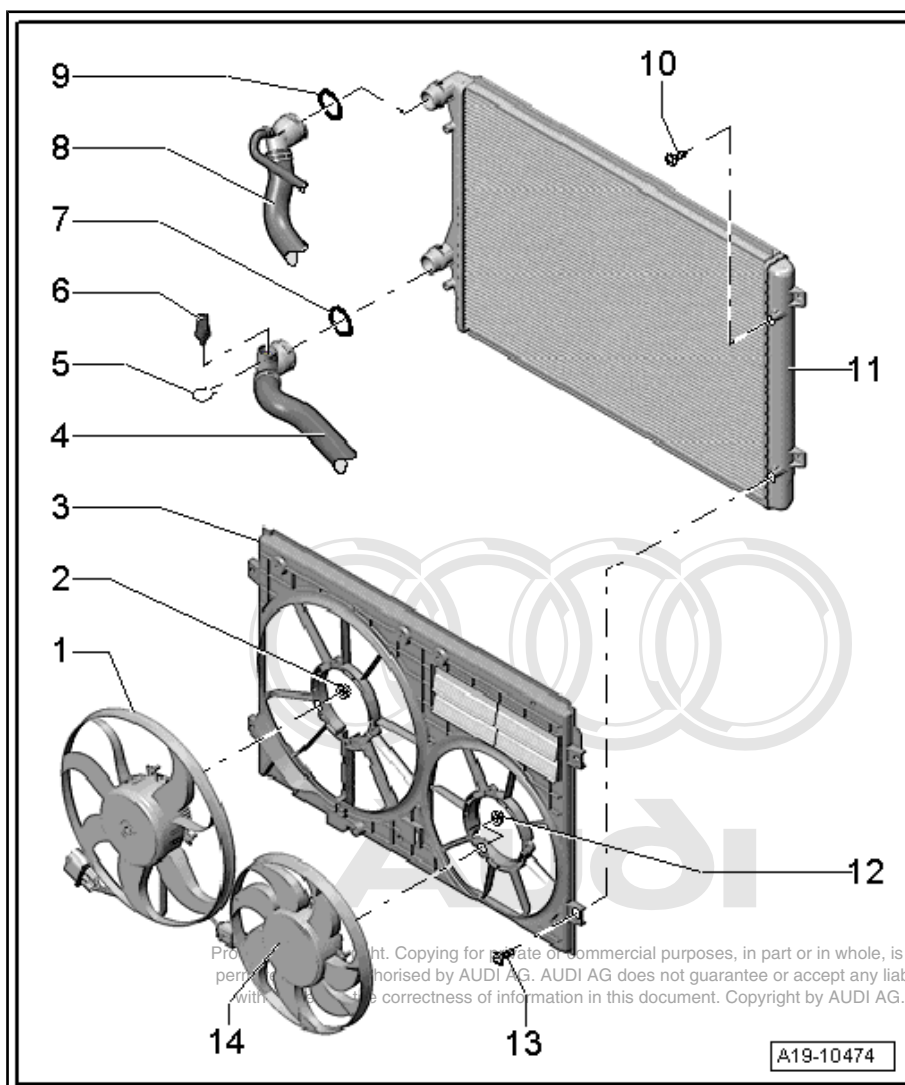
- ☐ Removing and installing
⇒ [page 83](#)
- ☐ If renewed, change coolant in entire system
- ☐ Depending on equipment version: with radiator identification sensor - G611-
⇒ ["4.5 Installing radiator identification sensor G611 ", page 85](#)
- ☐ Allocation of radiator identification sensor - G611- ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

12 - Nut

- ☐ 10 Nm

13 - Bolt

- ☐ To radiator
- ☐ 5 Nm



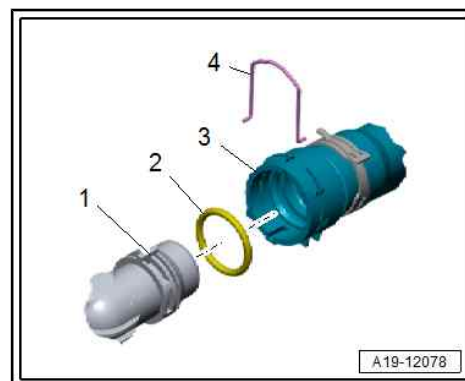
14 - Radiator fan 2 - V177-

- Removing and installing ⇒ [page 85](#)

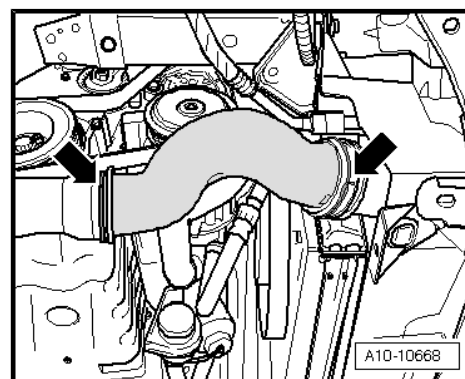
Connecting coolant hose with plug-in connector**Note**

If damaged, renew retaining clip -4-.

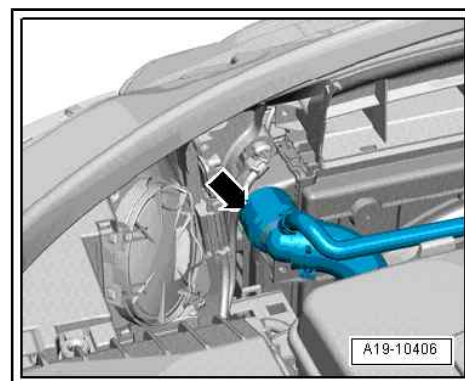
- Remove old O-ring -2- from coolant hose -3-.
- Lightly lubricate new O-ring with coolant and fit O-ring in coolant hose.
- Press coolant hose onto connection -1- until it engages audibly.
- Press coolant hose in again and then pull to check that plug-in connector is correctly engaged.

**4.2 Removing and installing radiator****Removing**

- Drain coolant ⇒ [page 64](#) .
- Remove radiator cowl ⇒ [page 84](#) .
- Remove air hose -arrows-.



- Detach top coolant hose from radiator -arrow-.
- If fitted, unplug electrical connector for radiator identification sensor - G611- .



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- Remove bolts -1 and 2- and take out radiator downwards.

Installing

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



Note

If there are slight impressions on the fins, refer to ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Installing radiators and condensers .

- Install radiator cowl ⇒ [page 84](#) .
- Connect coolant hose with plug-in connector ⇒ [page 83](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 68](#) .

Tightening torques

- ♦ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 82](#)
- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21; Charge air system; Exploded view - hose connections for charge air system

4.3 Removing and installing radiator cowl

Removing

- Remove air pipe ⇒ [page 94](#) .
- Remove bolts -1- at top.
- Unplug electrical connector -2-.
- Remove bolts -3- and take out air cowl downwards.

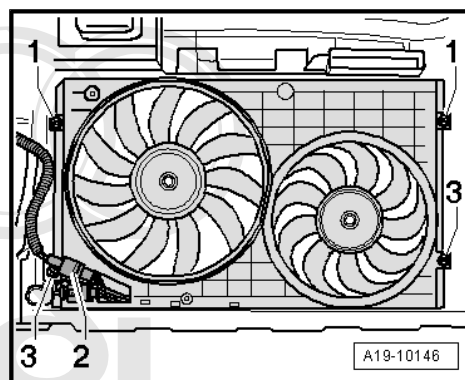
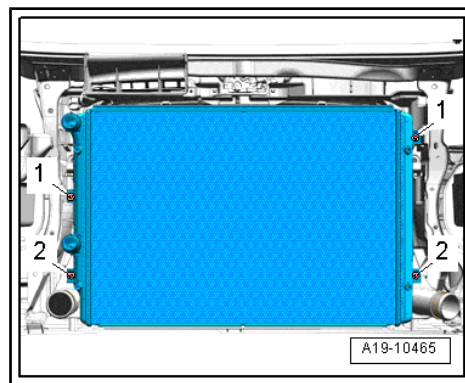
Installing

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

- Install air pipe ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21; Charge air system; Removing and installing air pipe .

Tightening torques

- ♦ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 82](#)



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4.4 Removing and installing radiator fan - V7-

Removing

- Remove radiator cowl ⇒ [page 84](#) .
- Unplug electrical connector -1-.
- Move electrical wiring clear.
- Unscrew nuts -arrows- and remove radiator fans.

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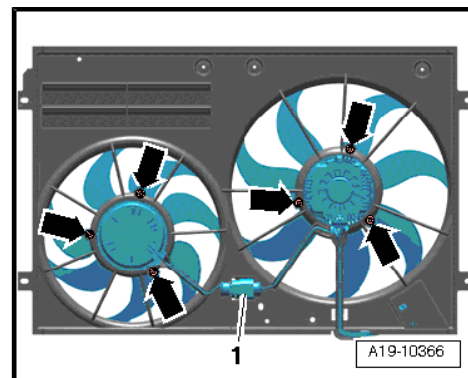
Installing

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

- Install radiator cowl ⇒ [page 84](#) .

Tightening torques

- ♦ ⇒ [“4.1 Exploded view - radiator/radiator fans”, page 82](#)



4.5 Installing radiator identification sensor - G611-

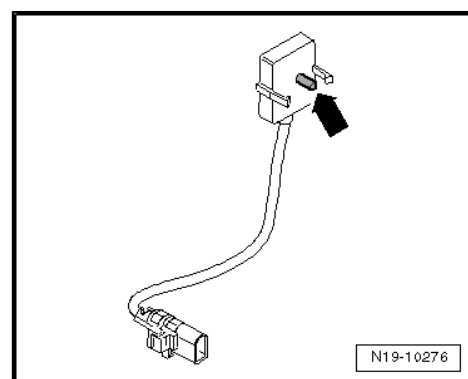


Note

- ♦ *The radiator identification sensor - G611- can only be renewed together with the radiator.*
- ♦ *The installation position of the radiator identification sensor - G611- may vary (depending on version).*

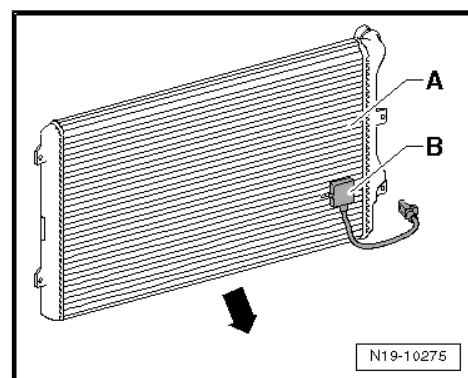
Installing

- Apply 2 grams of adhesive to cylindrical part of new sensor -arrow- ⇒ Electronic parts catalogue (ETKA) .
- Press new sensor into bracket on radiator until it engages.



Installation position (bottom):

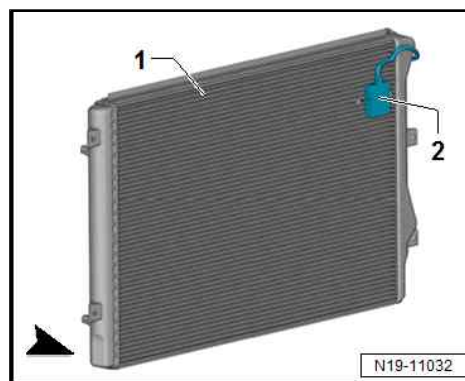
- Arrow- points in direction of travel
- A- Radiator
- B- Radiator identification sensor - G611-





Installation position (top):

- Arrow- points in direction of travel
- 1- Radiator
- 2- Radiator identification sensor - G611-



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21 – Turbocharging/supercharging

1 Turbocharger

⇒ [“1.1 Exploded view - turbocharger”, page 87](#)

⇒ [“1.2 Removing and installing turbocharger”, page 87](#)

⇒ [“1.3 Checking vacuum unit for turbocharger”, page 89](#)

⇒ [“1.4 Renewing vacuum unit for turbocharger”, page 89](#)

⇒ [“1.5 Adjusting vacuum unit for turbocharger”, page 90](#)

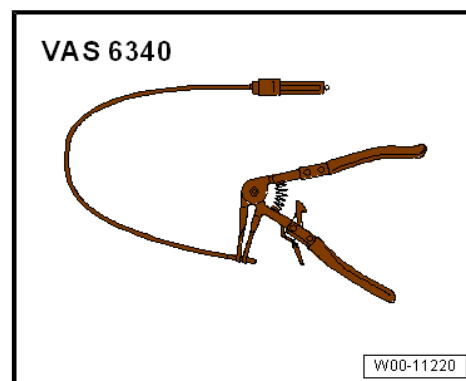
1.1 Exploded view - turbocharger

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger .

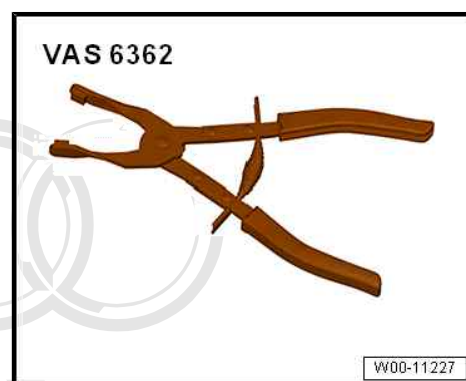
1.2 Removing and installing turbocharger

Special tools and workshop equipment required

◆ Hose clip pliers - VAS 6340-



◆ Hose clip pliers - VAS 6362-



Removing



Note

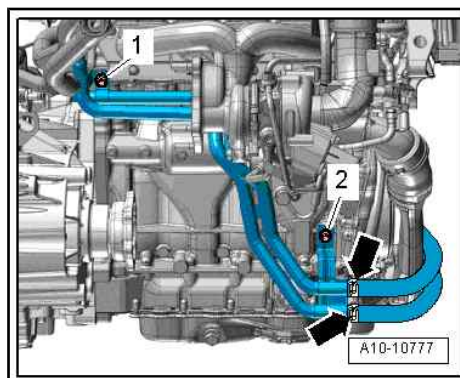
Fit cable ties in the original positions when installing.

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

- Drain coolant ⇒ [page 64](#) .

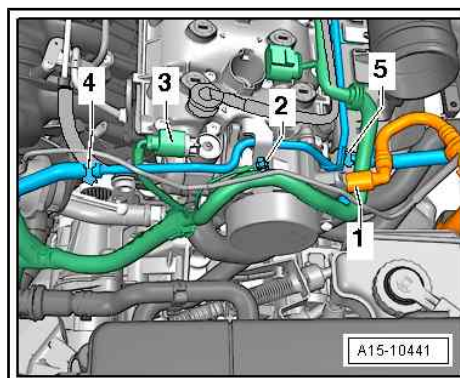
Vehicles with auxiliary heater:

- Unscrew bolts -1 and 2- and move coolant pipes to the left.



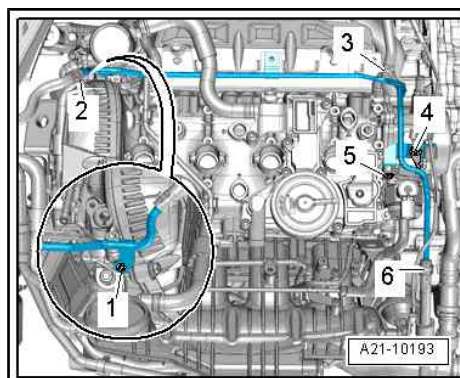
Vehicles with all engine codes except BPU, BYT:

- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Disconnect coolant hoses -4 and 5-.
- Unscrew earth wire -2-.

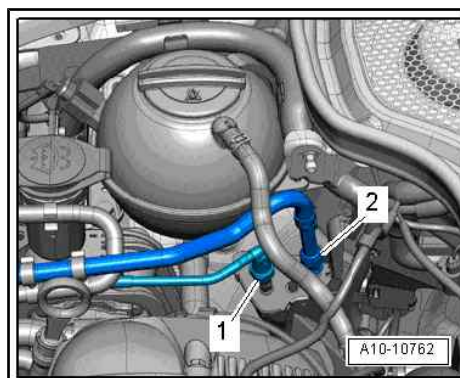


Vehicles with engine codes BPU, BYT:

- Remove oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator
- Remove bolts -1 and 5-.
- Disconnect coolant hose -3-.
- Move coolant bleeder line and earth wire -4- to the front (hoses -2 and 6- remain connected).



- Disconnect vacuum line -1- going to activated charcoal filter (press release tab).
- Detach vacuum line from coolant pipes (front).



All vehicles:

- Press release tabs, detach air hose -2- and swivel to side.
- Remove bolts -arrows- for air pipe.

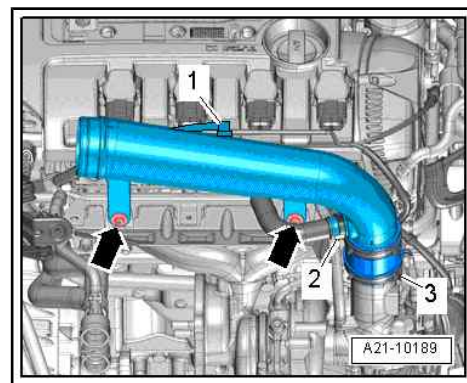
Rest-of-world vehicles:

- Press release tabs and detach crankcase breather hose -1- from air pipe.
- Release hose clip -3- and detach air pipe.

USA models:**Caution**

Risk of violating emission legislation applying to USA models.

- ◆ **Do NOT open hose connection -1-.**



- Release hose clip -3- and move air pipe with crankcase breather hose -1- clear to one side (hose remains connected).

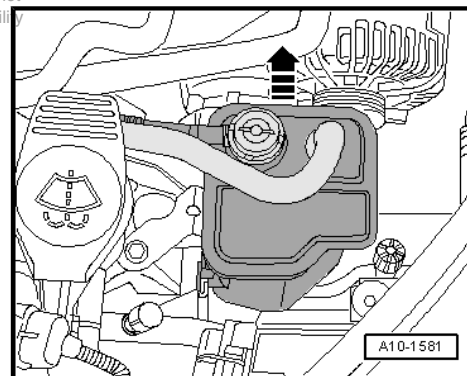
All vehicles:

- Pull activated charcoal filter with hoses attached upwards out of the bracket -arrow- and place to side.
- Remove front exhaust pipe with catalytic converter
⇒ [page 126](#).

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Removing and installing turbocharger .

Installing**Additional work:**

- Install front exhaust pipe with catalytic converter
⇒ [page 126](#).
- Install oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

**Tightening torques**

- ◆ ⇒ [“2.2 Exploded view - charge air system”, page 92](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners

1.3 Checking vacuum unit for turbocharger

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Checking vacuum unit for turbocharger .

1.4 Renewing vacuum unit for turbocharger

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Renewing vacuum unit for turbocharger .



1.5 Adjusting vacuum unit for turbocharger

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Adjusting vacuum unit for turbocharger .



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2 Charge air system

⇒ [“2.1 Overview - charge air system”, page 91](#)

⇒ [“2.2 Exploded view - charge air system”, page 92](#)

⇒ [“2.3 Exploded view - hose connections for charge air system”, page 94](#)

⇒ [“2.4 Removing and installing air pipe”, page 94](#)

⇒ [“2.5 Removing and installing charge air cooler”, page 94](#)

⇒ [“2.6 Removing and installing charge pressure sender G31 ”, page 96](#)

⇒ [“2.7 Checking charge air system for leaks”, page 96](#)

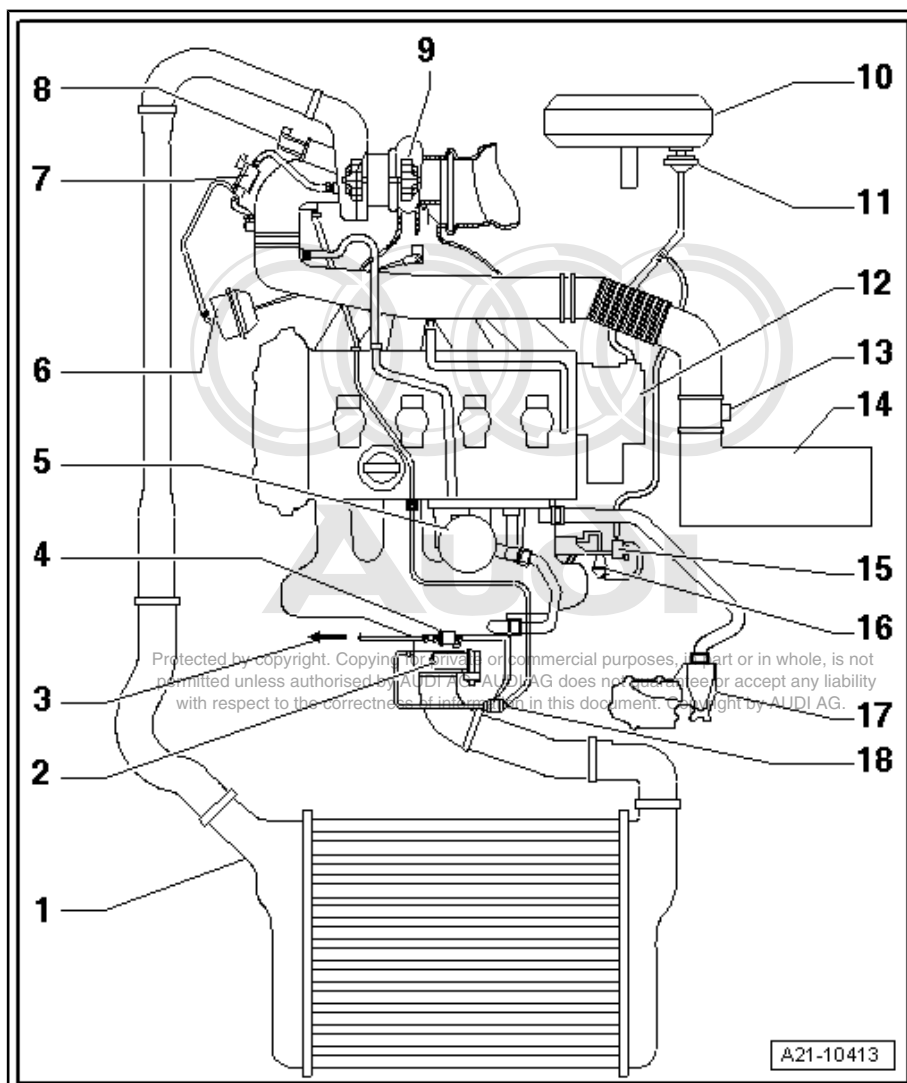
2.1 Overview - charge air system

⇒ [“2.1.1 Overview - charge air system, engine codes BPU, BYT”, page 91](#)

⇒ [“2.1.2 Overview - charge air system, all engine codes except BPU, BYT”, page 92](#)

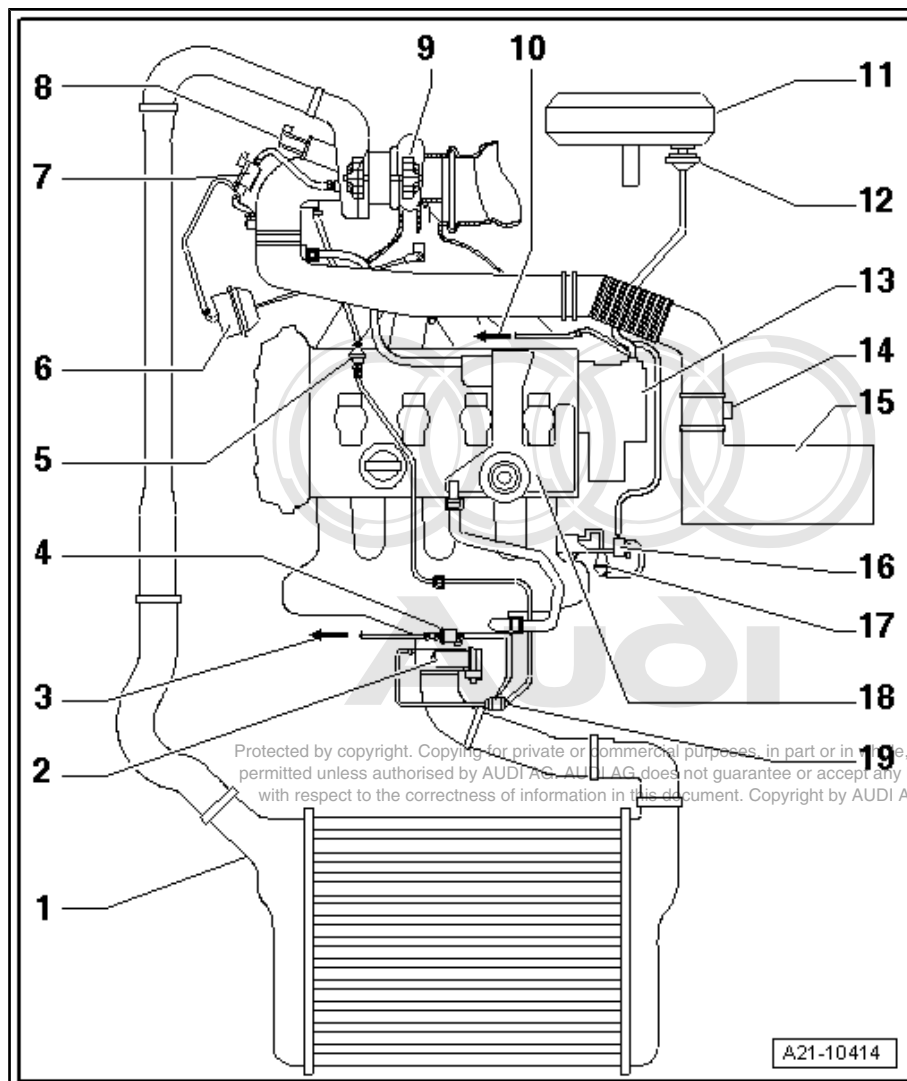
2.1.1 Overview - charge air system, engine codes BPU, BYT

- 1 - Charge air cooler
- 2 - Throttle valve module - J338-
- 3 - To activated charcoal filter
- 4 - Activated charcoal filter solenoid valve 1 - N80-
- 5 - Pressure control valve
- 6 - Vacuum unit for charge pressure control
- 7 - Charge pressure control solenoid valve - N75-
- 8 - Turbocharger air recirculation valve - N249-
- 9 - Turbocharger
- 10 - Brake servo
- 11 - Non-return valve
- 12 - Vacuum pump
- 13 - Air mass meter - G70-
- 14 - Air cleaner
- 15 - Variable intake manifold change-over valve - N156-
- 16 - Vacuum unit for intake manifold change-over
- 17 - Oil separator on cylinder block
- 18 - Non-return valve



2.1.2 Overview - charge air system, all engine codes except BPU, BYT

- 1 - Charge air cooler
- 2 - Throttle valve module - J338-
- 3 - To activated charcoal filter
- 4 - Activated charcoal filter solenoid valve 1 - N80-
- 5 - Non-return valve
- 6 - Vacuum unit for charge pressure control
- 7 - Charge pressure control solenoid valve - N75-
- 8 - Turbocharger air recirculation valve - N249-
- 9 - Turbocharger
- 10 - To fuel system diagnostic pump - V144-
☐ Country-specific version
- 11 - Brake servo
- 12 - Non-return valve
- 13 - Vacuum pump
- 14 - Air mass meter - G70-
- 15 - Air cleaner
- 16 - Variable intake manifold change-over valve - N156-
- 17 - Vacuum unit for intake manifold change-over
- 18 - Oil separator on cylinder head cover
- 19 - Non-return valve



2.2 Exploded view - charge air system



Note

Check that all air pipes and hoses and vacuum lines are correctly fitted and that there are no leaks before carrying out tests or repairs.

1 - Bolt

- ☐ 5 Nm

2 - Mounting

- ☐ For charge air cooler

3 - Charge air cooler**4 - Air pipe**

- ☐ Fitting hose connections with plug-in connectors ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

5 - Bolt

- ☐ 10 Nm

6 - Air hose

- ☐ Fitting hose connections with plug-in connectors ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

7 - Hose clip**8 - Air hose**

- ☐ To throttle valve module - J338-

9 - Hose clip**10 - Bolt**

- ☐ 10 Nm

11 - Air pipe**12 - Hose clip****13 - Air hose**

- ☐ Fitting hose connections with plug-in connectors ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

14 - Seal

- ☐ Renew

15 - Charge pressure sender - G31-

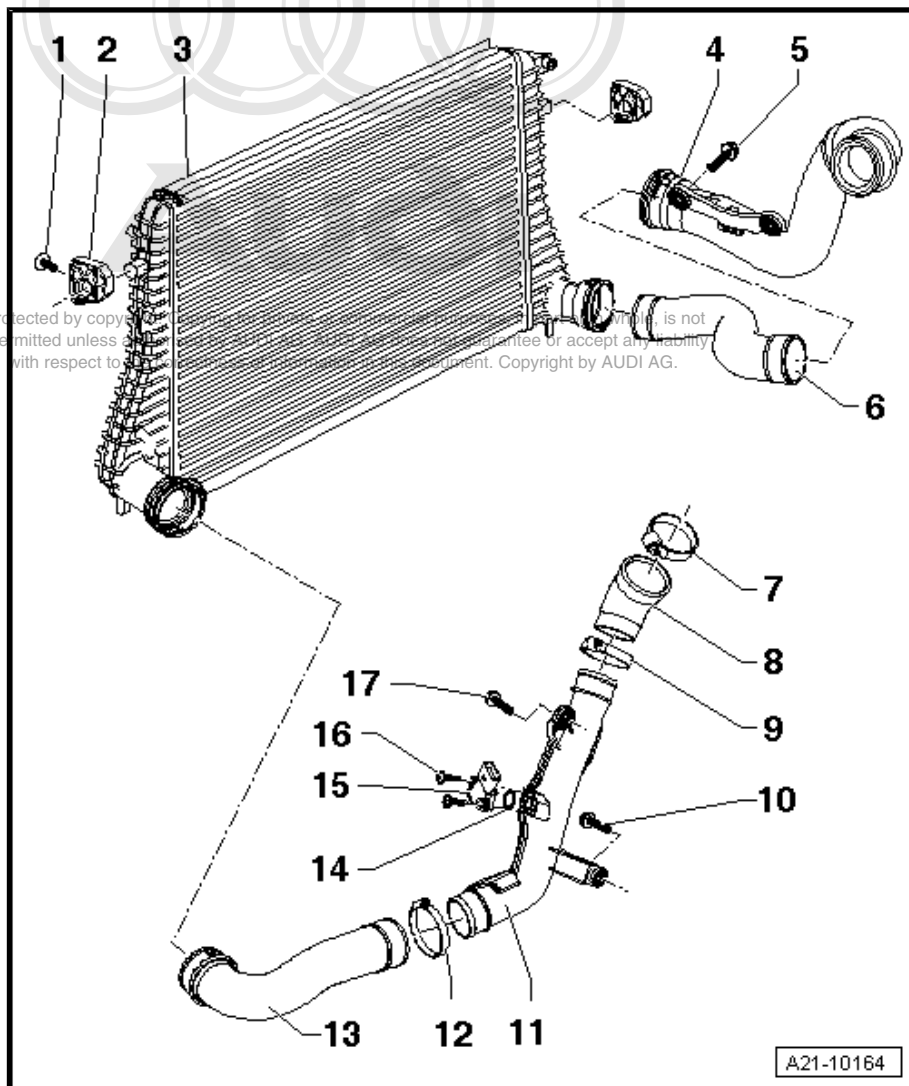
- ☐ Removing and installing ⇒ [page 96](#)

16 - Bolt

- ☐ 5 Nm

17 - Bolts

- ☐ 10 Nm



2.3 Exploded view - hose connections for charge air system

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

2.4 Removing and installing air pipe

Removing

- Remove air cleaner housing ⇒ [page 106](#)
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Cabriolet

- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

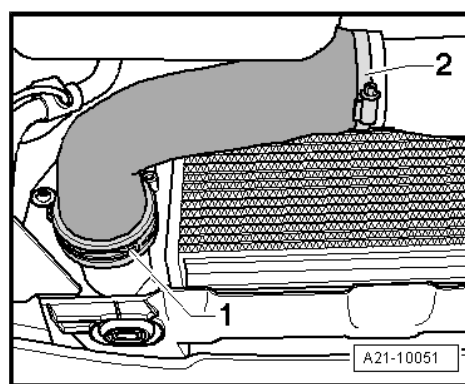
All vehicles:

- Release hose clips -1 and 2- and remove air hose.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Removing and installing air pipe .

Tightening torques

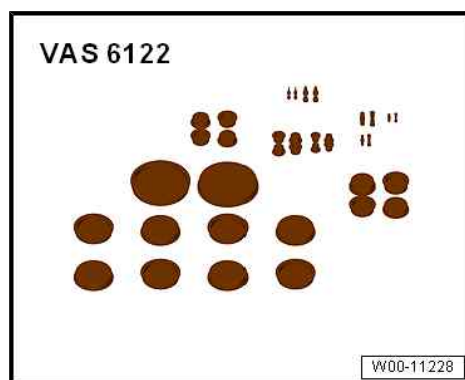
- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing
- ♦ Noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front
- ♦ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation



2.5 Removing and installing charge air cooler

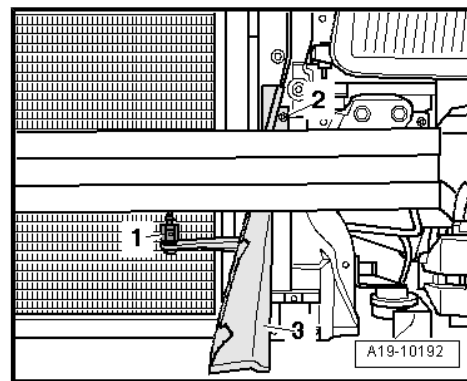
Special tools and workshop equipment required

- ♦ Engine bung set - VAS 6122-



Removing

- Remove radiator ⇒ [page 83](#) .
- Remove bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .
- Unplug electrical connector -1- at ambient temperature sensor - G17- .
- Remove bolts -2- at air ducts (left and right) on charge air cooler.
- Disengage air ducts -3- (push them slightly upwards to do so).
- Swivel air ducts to left side of vehicle and guide out air ducts at rear of bumper.



WARNING

Risk of injury caused by refrigerant.

- ◆ *The air conditioner refrigerant circuit must not be opened.*



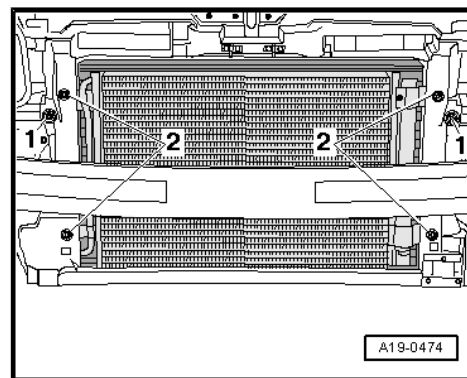
Caution

Danger of damage to refrigerant lines and hoses.

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

- Remove bolt on retaining clip for refrigerant line in vicinity of longitudinal member.
- Remove bolts -2- securing condenser.
- Remove bolts -1- securing charge air cooler.
- Swivel charge air cooler slightly to rear.

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- Remove bolt at bracket for refrigerant line (bottom right) at charge air cooler.
- Swivel condenser forward into opening in lock carrier.
- Detach charge air cooler upwards from lock carrier and remove by guiding it out diagonally from below.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

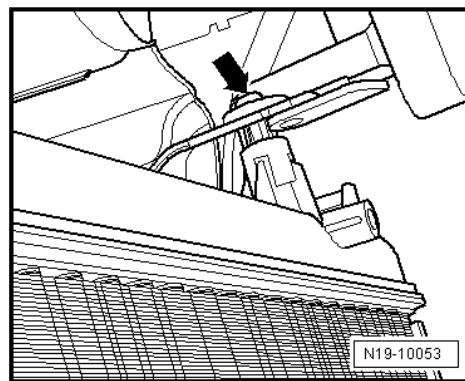
Installing

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



Note

- ♦ *If there are slight impressions on the fins, refer to ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Installing radiators and condensers .*
- ♦ *Renew seal.*
- ♦ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- Install radiator ⇒ [page 83](#) .
- Install bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .



2.6 Removing and installing charge pressure sender - G31-

Removing

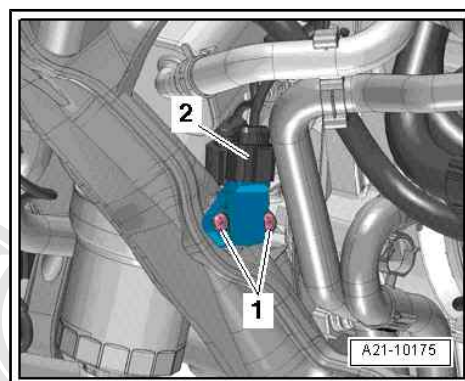
- Unplug electrical connector -2-.
- Unscrew bolts -1- and remove charge pressure sender - G31- .

Installing

Installation is carried out in reverse sequence.

Tightening torques

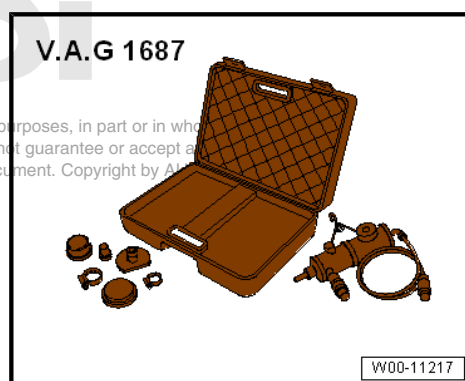
- ♦ ⇒ [“2.2 Exploded view - charge air system”, page 92](#)



2.7 Checking charge air system for leaks

Special tools and workshop equipment required

- ♦ Charge air system tester - V.A.G 1687-



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◆ Adapter - V.A.G 1687/5-

Procedure

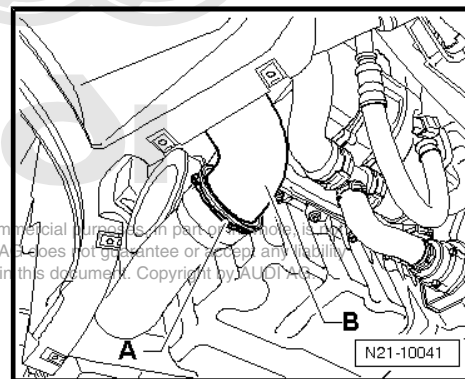
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Cabriolet

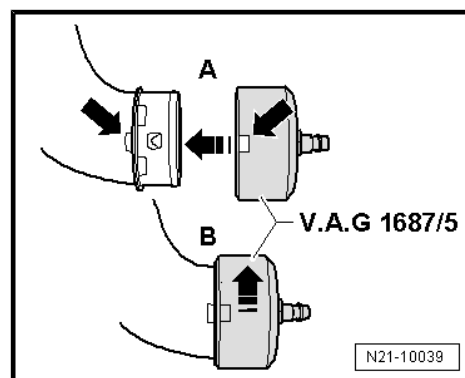
- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

- Release retaining clip -A- and disconnect hose -B- from charge air pipe.



- Fit adapter - V.A.G 1687/5- onto charge air hose -A- and turn by approx. 90° -B-.



- Connect charge air system tester - V.A.G 1687- as shown in illustration.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Checking charge air system for leaks .

Assembling

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



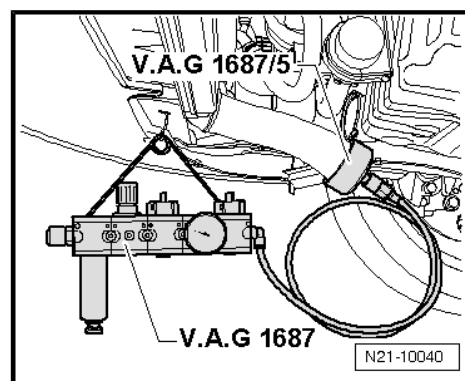
Note

Renew gasket and O-rings.

- Install air ducts ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system .

Tightening torques

- ◆ Noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation



24 – Mixture preparation - injection

1 Injection system

⇒ [“1.1 Overview of fitting locations - injection system”, page 98](#)

1.1 Overview of fitting locations - injection system

Overview of fitting locations - engine compartment

1 - Engine control unit - J623-

- ☐ Removing and installing
⇒ [page 120](#)

2 - Lambda probe - G39-

- ☐ Allocation of Lambda probes
⇒ [“8.1 Exploded view - Lambda probe”, page 111](#)

3 - Lambda probe after catalytic converter

- ◆ Lambda probe after catalytic converter - G130-
- ◆ Country-specific version: Lambda probe 3 after catalytic converter - G287-
- ☐ Allocation of Lambda probes
⇒ [“8.1 Exploded view - Lambda probe”, page 111](#)

4 - Accelerator position sender - G79- and accelerator position sender 2 - G185-

- ☐ Fitting location
⇒ [page 99](#)

5 - Brake light switch - F- / brake pedal switch - F47-

- ☐ Fitting location
⇒ [page 99](#)

6 - Clutch position sender - G476-

- ☐ Only fitted on vehicles with manual gearbox
- ☐ Fitting location ⇒ [page 99](#)

7 - Secondary air pump motor - V101-

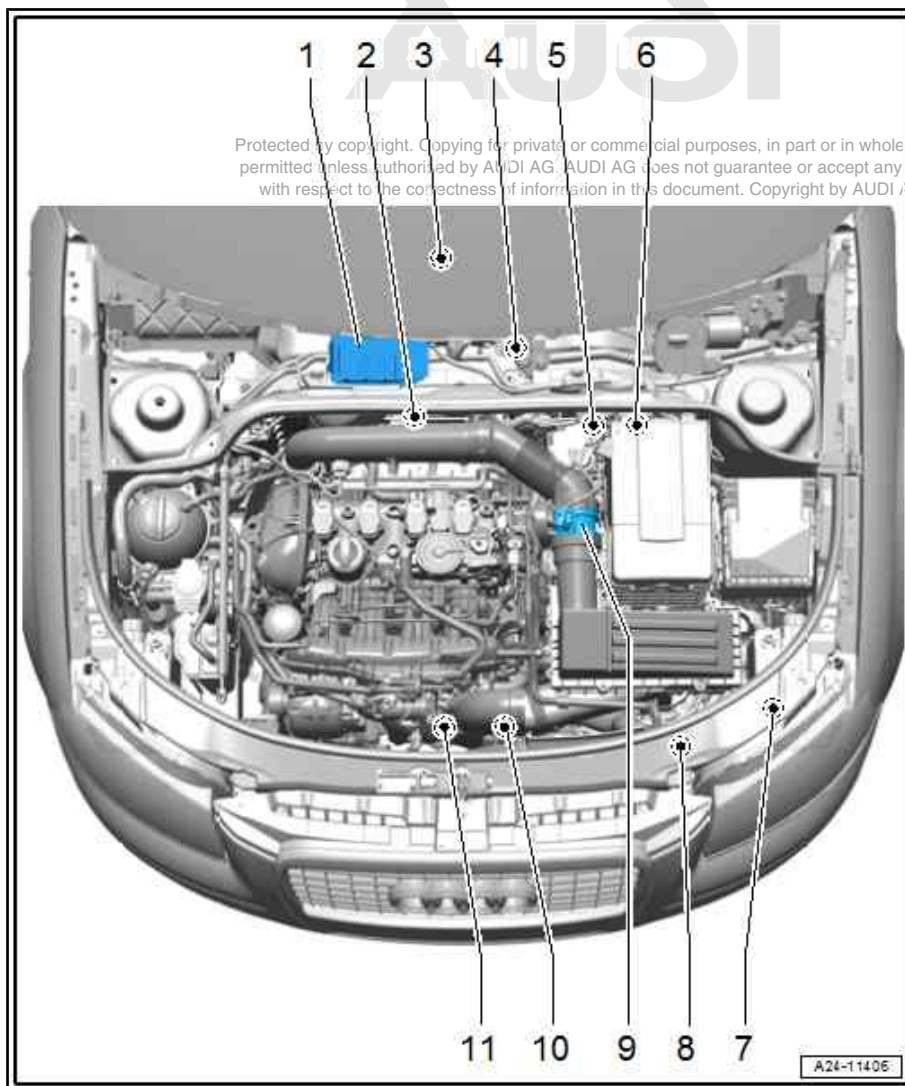
- ☐ For engine with secondary air system (country-specific version)
- ☐ Fitting location ⇒ [page 100](#)

8 - Radiator outlet coolant temperature sender - G83-

- ☐ Fitting location ⇒ [page 100](#)

9 - Air mass meter - G70-

- ☐ Also with intake air temperature sender 2 - G299- on engines with code letters CDAA
- ☐ Exploded view ⇒ [“3.1 Exploded view - air cleaner housing”, page 106](#)



10 - Charge pressure sender - G31-

- Fitting location ⇒ [page 100](#)

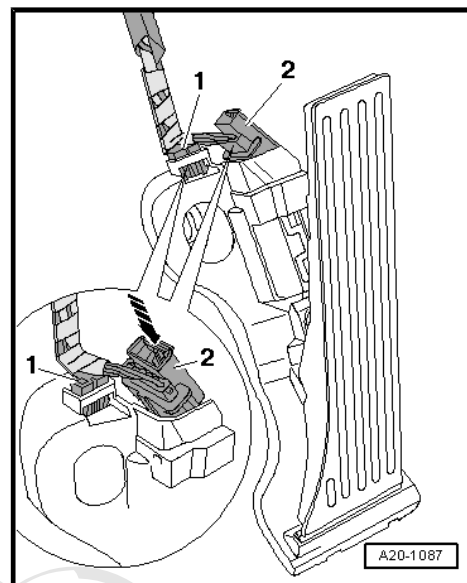
11 - Continued coolant circulation pump - V51-

- Fitting location ⇒ [page 100](#)

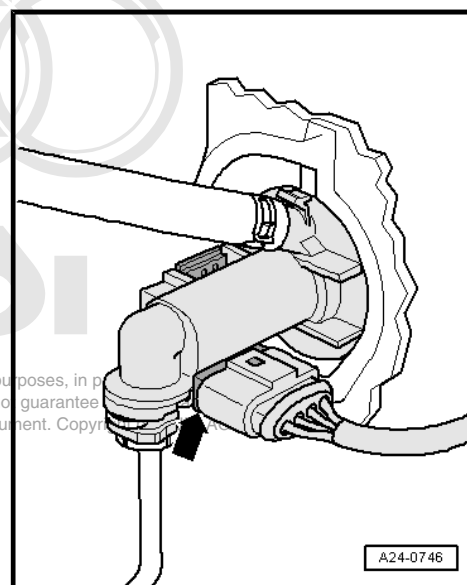
Accelerator position sender - G79- and accelerator position sender 2 - G185-

2 - Electrical connector for accelerator pedal module

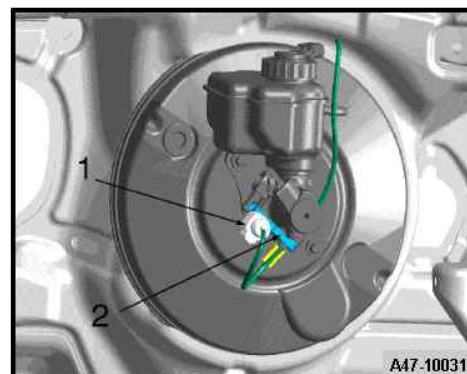
Exploded view ⇒ Fuel supply system, petrol engines; Rep. gr. 20 ; Accelerator mechanism

**Clutch position sender - G476-**

Exploded view ⇒ Gearbox; Rep. gr. 30

**Brake light switch - F- and brake pedal switch - F63-**

Removing and installing ⇒ Brake system; Rep. gr. 45 ; Brake pedal



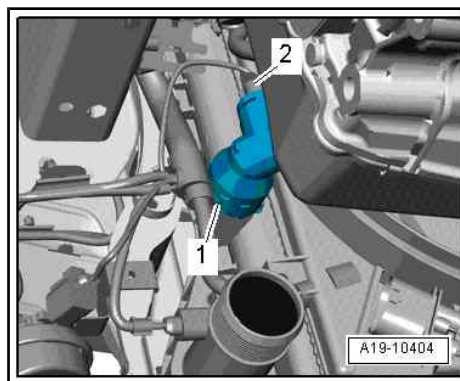
Fitting location of radiator outlet coolant temperature sender - G83-

- ◆ On radiator (bottom left)

2 - Electrical connector for radiator outlet coolant temperature sender - G83-

Exploded view

⇒ [“4.1 Exploded view - radiator/radiator fans”, page 82](#)

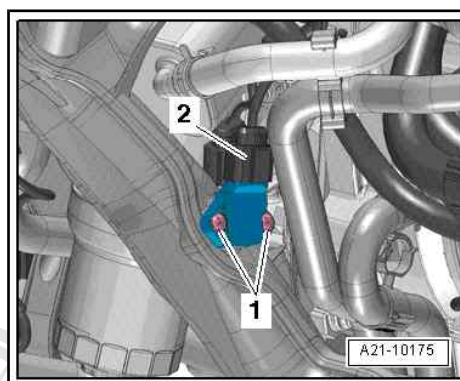


Fitting location of charge pressure sender - G31-

- ◆ At air pipe (front) on engine

Exploded view

⇒ [“2.2 Exploded view - charge air system”, page 92](#)

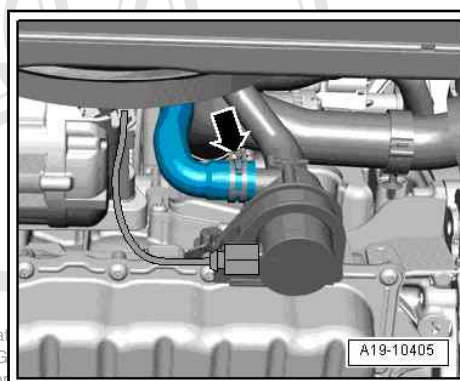


Fitting location of continued coolant circulation pump - V51-

- ◆ At front of engine (bottom)

Exploded view

⇒ [“2.2 Exploded view - electric coolant pump”, page 71](#)



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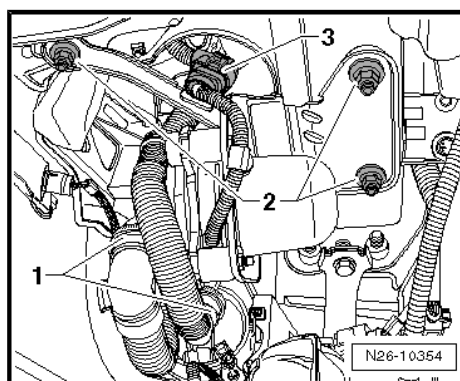
Fitting location of secondary air pump motor - V101-

- ◆ In wheel housing (front left)

3 - Electrical connector for secondary air pump motor - V101-

Exploded view

⇒ [“3.1 Exploded view - secondary air system”, page 130](#)



Overview of fitting locations - engine (view from left side)

1 - Valve for oil pressure control - N428-

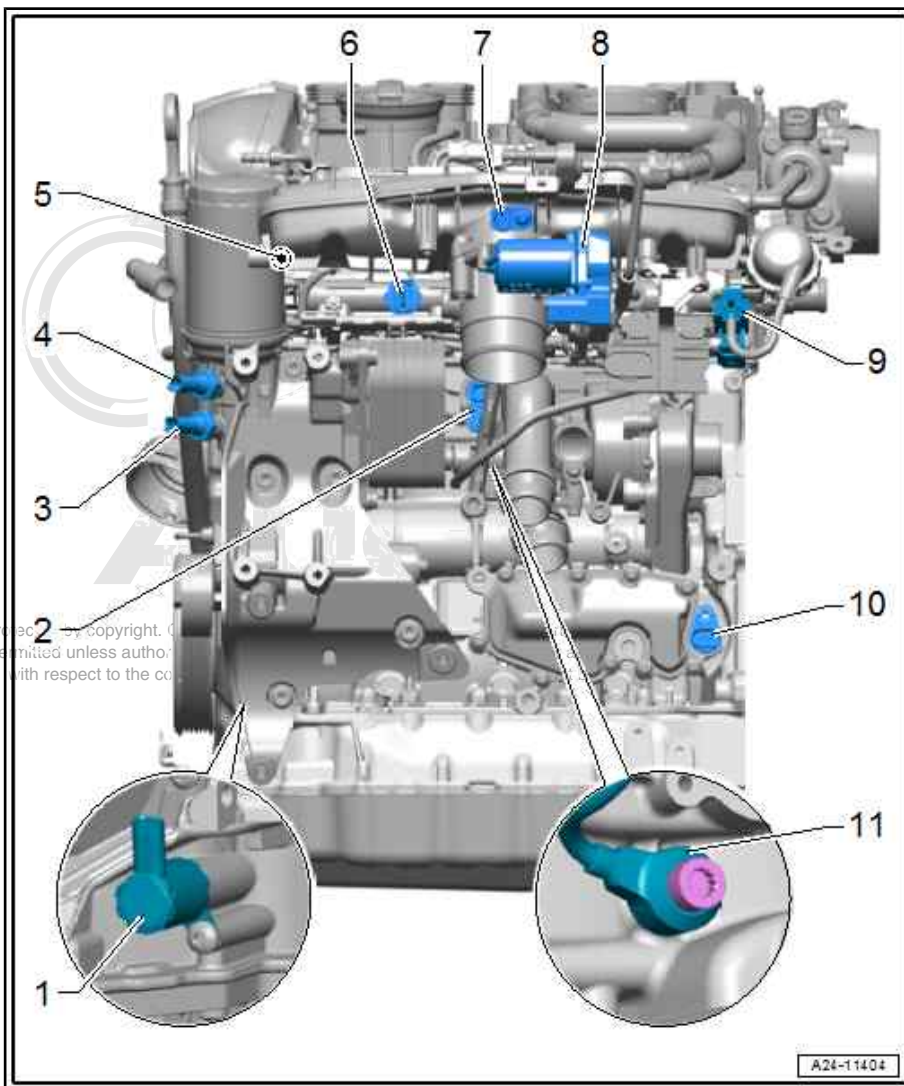
- ❑ Only on engines with oil pressure control
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control

2 - Coolant temperature sender - G62-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Coolant pump/thermostat assembly; Exploded view - coolant pump/thermostat

3 - Oil pressure switch

- ◆ Oil pressure switch - F1- , only on engines without oil pressure control
- ◆ Oil pressure switch - F22- , only on engines with oil pressure control
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control

**4 - Oil pressure switch for reduced oil pressure - F378-**

- ❑ Only on engines with oil pressure control
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control

5 - Intake manifold flap potentiometer - G336-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

6 - Fuel pressure sender - G247-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors; Exploded view - fuel rail with injectors

7 - Intake air temperature sender - G42-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

8 - Throttle valve module - J338-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

9 - Intake manifold flap valve - N316-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

10 - Engine speed sender - G28-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

11 - Knock sensor 1 - G61-

- ❑ Country-specific version: Knock sensor 2 - G66- additionally fitted on some versions ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

Overview of fitting locations - engine (view from right side)

1 - Charge pressure control solenoid valve - N75-

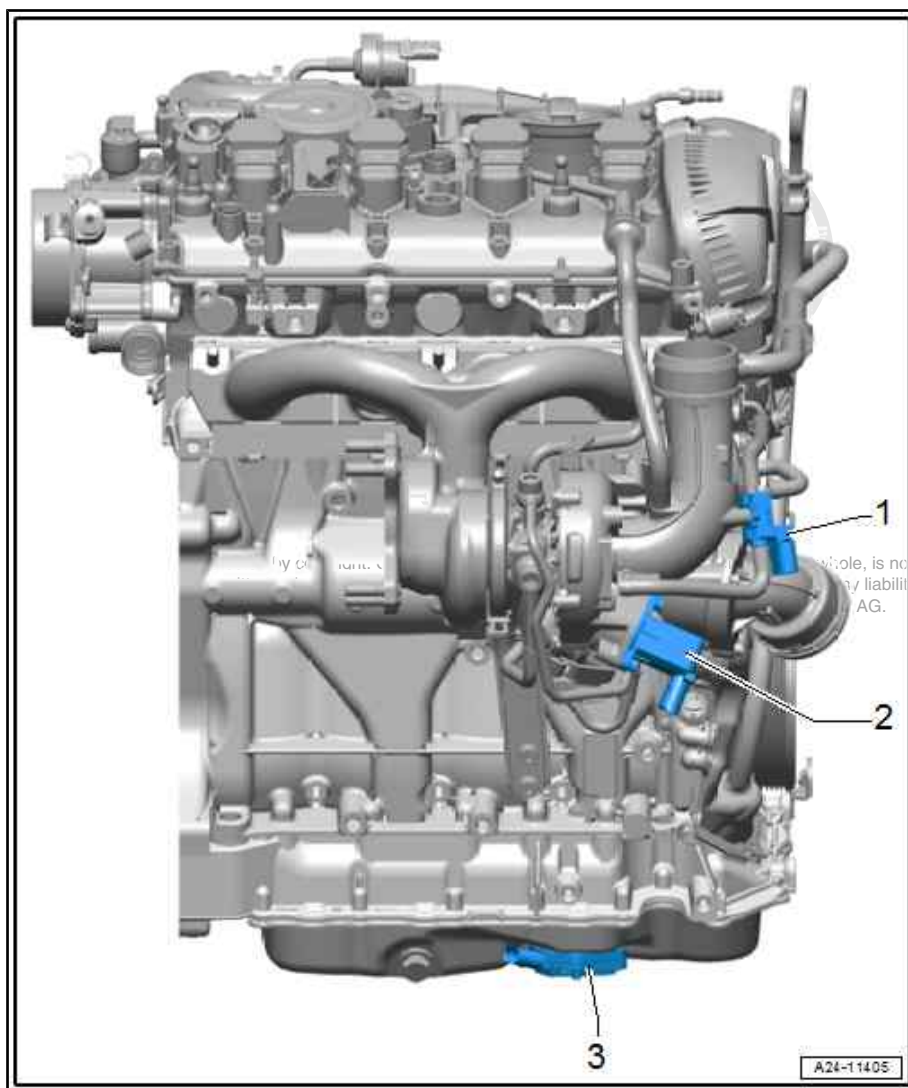
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger

2 - Turbocharger air recirculation valve - N249-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Turbocharger; Exploded view - turbocharger

3 - Oil level and oil temperature sender - G266-

- ❑ Not fitted on all versions
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Sump/oil pump; Exploded view - sump/oil pump



Overview of fitting locations - engine (view from above)

1 - Camshaft control valve 1 - N205-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Timing chain cover; Exploded view - timing chain cover

2 - Ignition coil 1 with output stage - N70-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

3 - Ignition coil 2 with output stage - N127-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

4 - Ignition coil 3 with output stage - N291-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

5 - Ignition coil 4 with output stage - N292-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

6 - Fuel metering valve - N290- or fuel pressure regulating valve - N276-

- ❑ Fuel metering valve - N290- or fuel pressure regulating valve - N276- may be fitted, depending on version
- ❑ Integrated in high-pressure pump

7 - Injector, cylinder 4 - N33-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors; Exploded view - fuel rail with injectors

8 - Injector, cylinder 3 - N32-

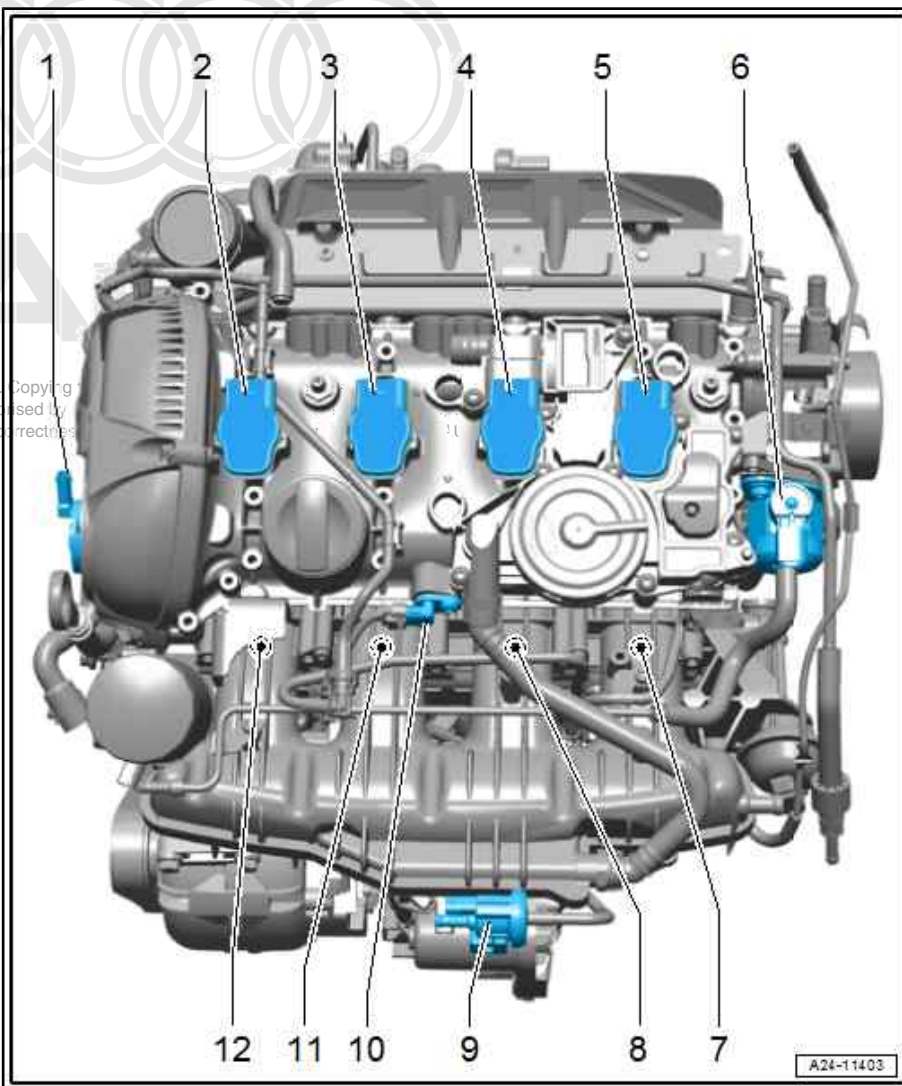
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors; Exploded view - fuel rail with injectors

9 - Activated charcoal filter solenoid valve 1 - N80-**10 - Hall sender - G40-**

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

11 - Injector, cylinder 2 - N31-

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors; Exploded view - fuel rail with injectors





12 - Injector, cylinder 1 - N30-

- Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors;
Exploded view - fuel rail with injectors



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2 Vacuum system

All procedures and components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Vacuum system .



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3 Air cleaner

⇒ ["3.1 Exploded view - air cleaner housing", page 106](#)

⇒ ["3.2 Removing and installing air cleaner housing", page 106](#)

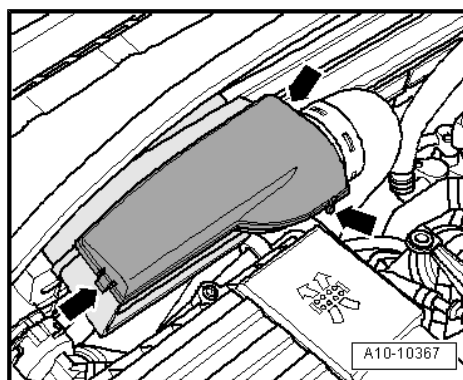
3.1 Exploded view - air cleaner housing

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .

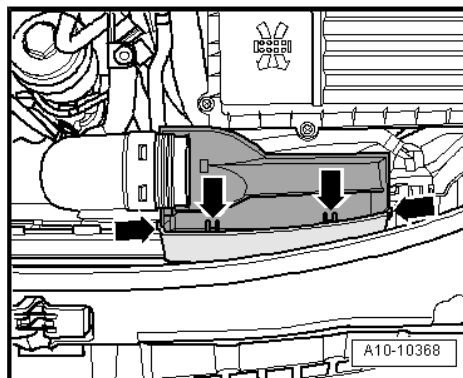
3.2 Removing and installing air cleaner housing

Removing

- Pull cover off air duct (release clips on sides) -arrows-.



- Unclip air duct at the bottom by releasing clips -arrows-.
- Detach air duct at bottom together with air hose.



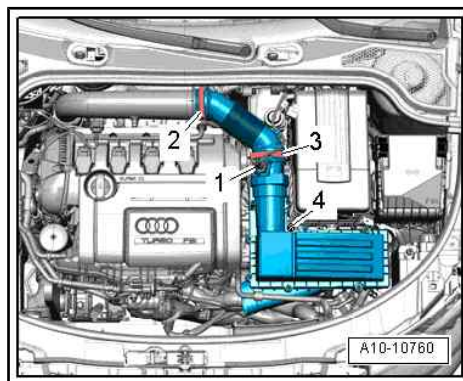
- Unplug electrical connector -1- at air mass meter - G70- .
- Detach air hose -2-.
- Unscrew bolt -4- and remove air cleaner housing.

Installing

Installation is carried out in reverse sequence.

Tightening torques

- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing



4 Intake manifold

⇒ [“4.1 Exploded view - intake manifold”, page 107](#)

⇒ [“4.2 Removing and installing intake manifold with fuel rail”, page 107](#)

⇒ [“4.3 Removing and installing throttle valve module J338”, page 107](#)

⇒ [“4.4 Cleaning throttle valve module”, page 107](#)

4.1 Exploded view - intake manifold

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold .

4.2 Removing and installing intake manifold with fuel rail

Removing

- Engine codes BPU, BYT: Remove oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing intake manifold with fuel rail .

Installing

Additional work:

- Engine codes BPU, BYT: Install oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

4.3 Removing and installing throttle valve module - J338-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing throttle valve module - J338- .

4.4 Cleaning throttle valve module

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Cleaning throttle valve module .

4.5 Checking intake manifold change-over function

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Checking intake manifold change-over function .

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5 Injectors

All procedures and components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors .



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6 Senders and sensors

All procedures and components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ;
Senders and sensors .



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7 High-pressure pump

⇒ [“7.1 Exploded view - high-pressure pump”, page 110](#)

⇒ [“7.2 Removing and installing high-pressure pump”, page 110](#)

7.1 Exploded view - high-pressure pump

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; High-pressure pump; Exploded view - high-pressure pump .

7.2 Removing and installing high-pressure pump

Removing

- Engine codes BPU, BYT: Remove oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; High-pressure pump; Removing and installing high-pressure pump .

Installing

Additional work:

- Engine codes BPU, BYT: Install oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .



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8 Lambda probe

⇒ ["8.1 Exploded view - Lambda probe", page 111](#)

⇒ ["8.2 Removing and installing Lambda probe", page 113](#)

8.1 Exploded view - Lambda probe

⇒ ["8.1.1 Exploded view - Lambda probe, engine codes BPU, BYT, BZB, CAWB", page 111](#)

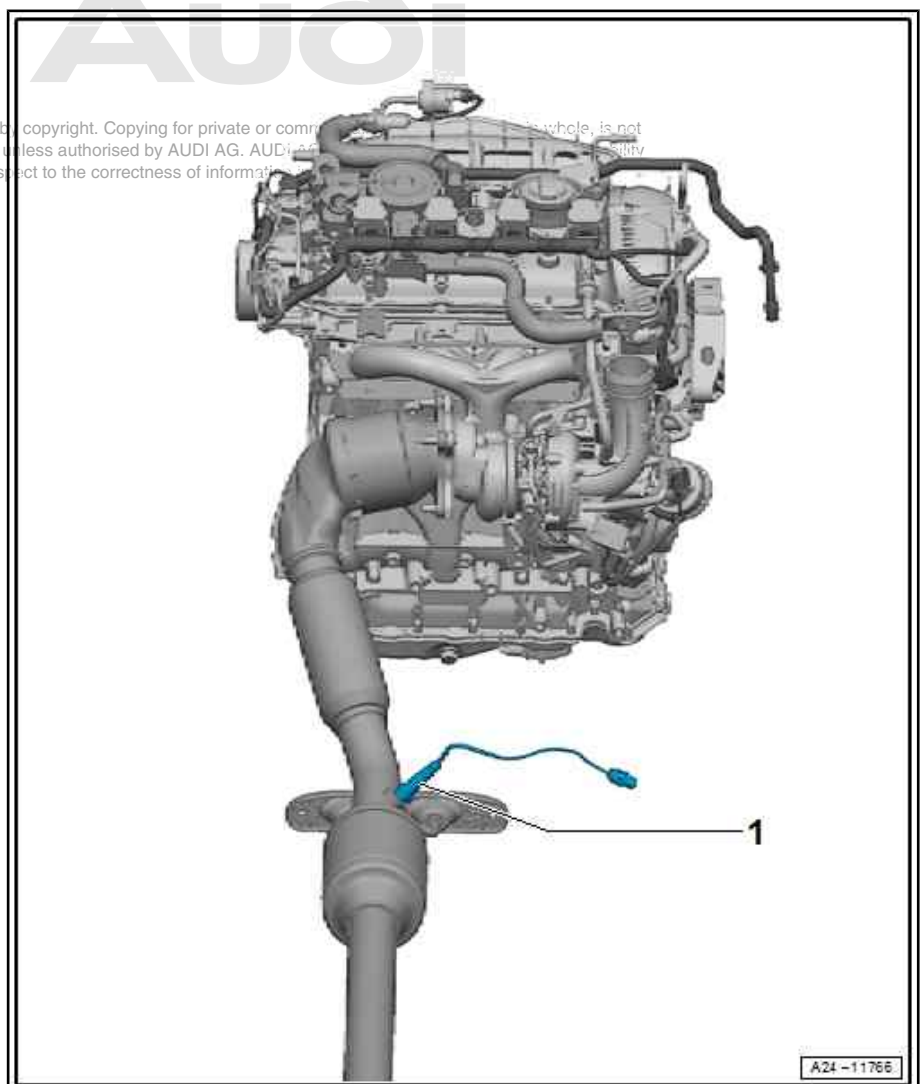
⇒ ["8.1.2 Exploded view - Lambda probe, engine codes CCTA, CCZA, CDAA", page 112](#)

⇒ ["8.1.3 Exploded view - Lambda probe, engine code CBFA", page 113](#)

8.1.1 Exploded view - Lambda probe, engine codes BPU, BYT, BZB, CAWB

1 - Lambda probe - G39- and Lambda probe heater - Z19-

- ☐ Removing and installing
⇒ [page 113](#)
- ☐ Fitting instructions
⇒ [page 114](#)
- ☐ 55 Nm



8.1.2 Exploded view - Lambda probe, engine codes CCTA, CCZA, CDAA

1 - Lambda probe - G39- and Lambda probe heater - Z19-

- ☐ Removing and installing
⇒ [page 115](#)
- ☐ Fitting instructions
⇒ [page 116](#)
- ☐ 55 Nm

2 - Electrical connector

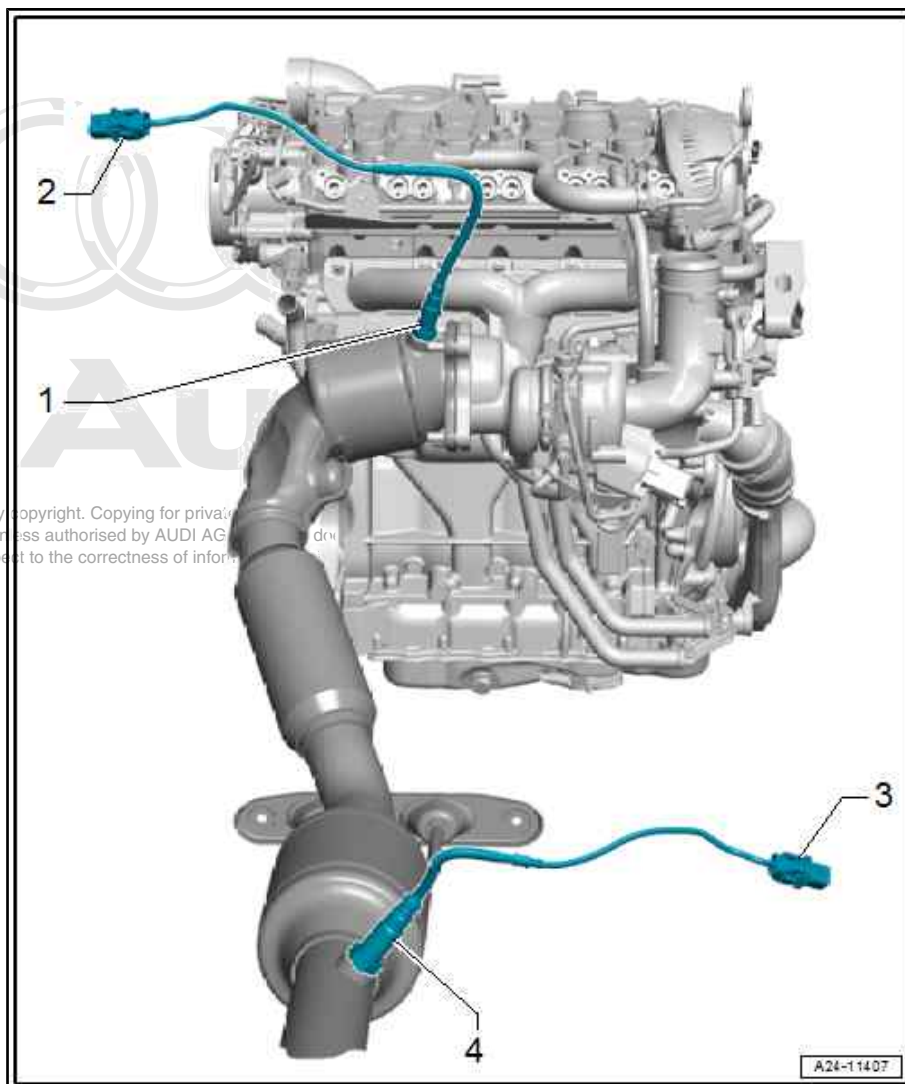
- ☐ For Lambda probe - G39- and Lambda probe heater - Z19-
- ☐ On plenum chamber partition panel (left-side)

3 - Electrical connector

- ☐ For Lambda probe after catalytic converter - G130- and Lambda probe heater 1 after catalytic converter - Z29-
- ☐ Installation position: underneath underbody cover (right-side)

4 - Lambda probe after catalytic converter - G130- and Lambda probe heater 1 after catalytic converter - Z29-

- ☐ Removing and installing
⇒ [page 117](#)
- ☐ Fitting instructions
⇒ [page 118](#)
- ☐ 55 Nm



8.1.3 Exploded view - Lambda probe, engine code CBFA

1 - Lambda probe - G39- and Lambda probe heater - Z19-

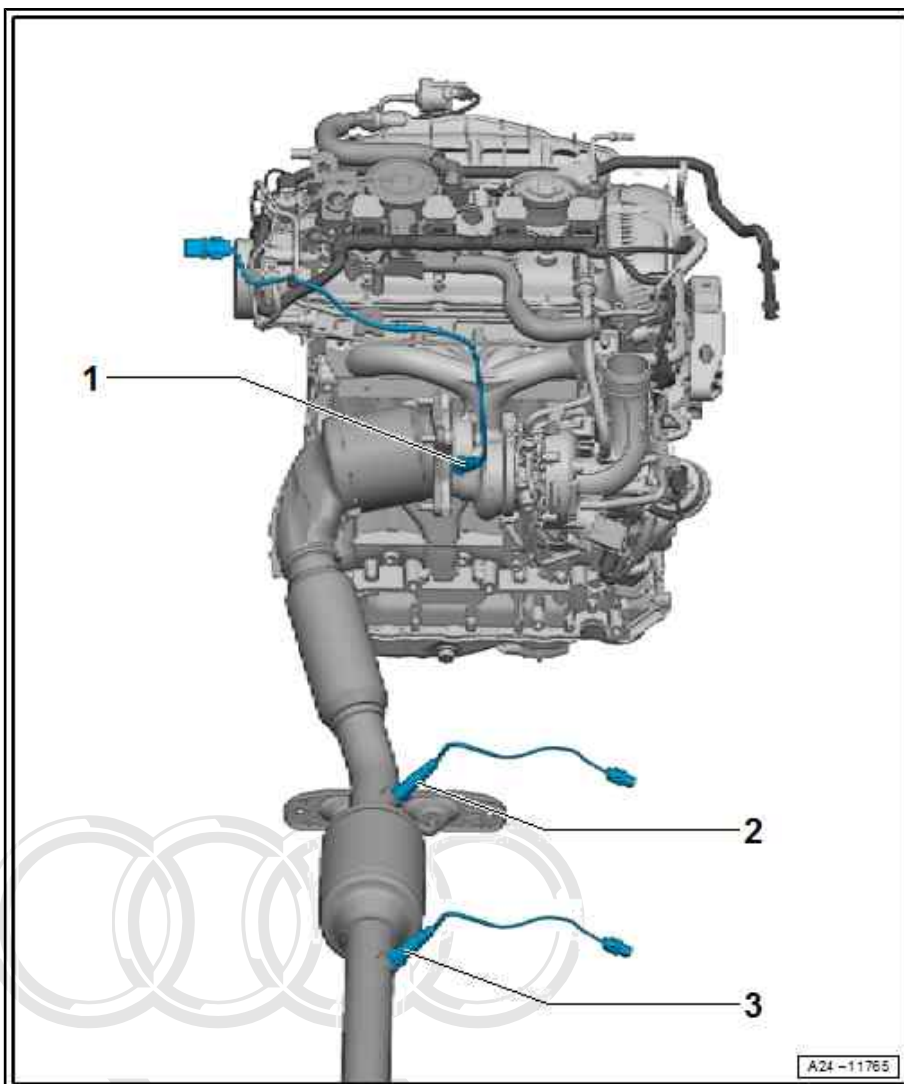
- ☐ Removing and installing
⇒ [page 116](#)
- ☐ Fitting instructions
⇒ [page 117](#)
- ☐ 55 Nm

2 - Lambda probe after catalytic converter - G130- and Lambda probe heater 1 after catalytic converter - Z29-

- ☐ Removing and installing
⇒ [page 118](#)
- ☐ Fitting instructions
⇒ [page 119](#)
- ☐ 55 Nm

3 - Lambda probe 3 after catalytic converter - G287- and Lambda probe heater 3 after catalytic converter - Z64-

- ☐ Removing and installing
⇒ [page 118](#)
- ☐ Fitting instructions
⇒ [page 119](#)
- ☐ 55 Nm



8.2 Removing and installing Lambda probe

⇒ ["8.2.1 Removing and installing Lambda probe G39 - engine codes BPU, BYT, BZB, CAWB", page 113](#)

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⇒ ["8.2.2 Removing and installing Lambda probe G39 - engine codes CCTA, CCZA, CDAA", page 115](#)

⇒ ["8.2.3 Removing and installing Lambda probe G39 - engine code CBFA", page 116](#)

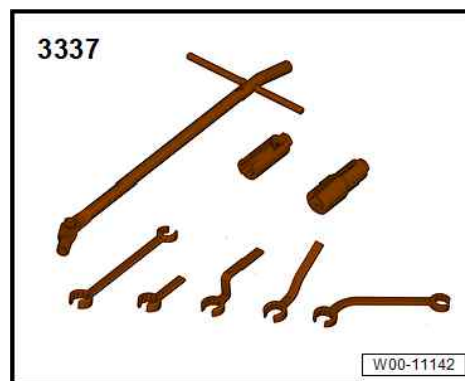
⇒ ["8.2.4 Removing and installing Lambda probe after catalytic converter G130 - engine codes CCTA, CCZA, CDAA", page 117](#)

⇒ ["8.2.5 Removing and installing Lambda probes after catalytic converter - engine code CBFA", page 118](#)

8.2.1 Removing and installing Lambda probe - G39- - engine codes BPU, BYT, BZB, CAWB

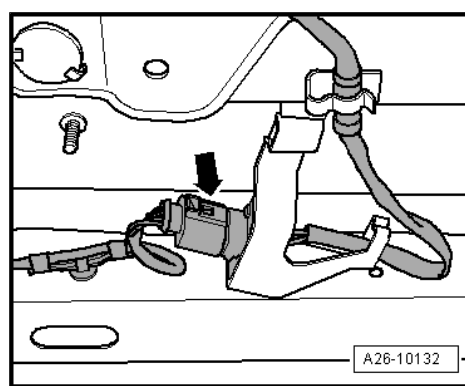
Special tools and workshop equipment required

- ◆ Lambda probe open ring spanner set - 3337-



Removing

- Remove cover (right-side) from underbody ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim .
- Detach electrical connector -arrow- from bracket and unplug.



- Unscrew Lambda probe - G39- -arrow- using a tool from Lambda probe open ring spanner set - 3337- .

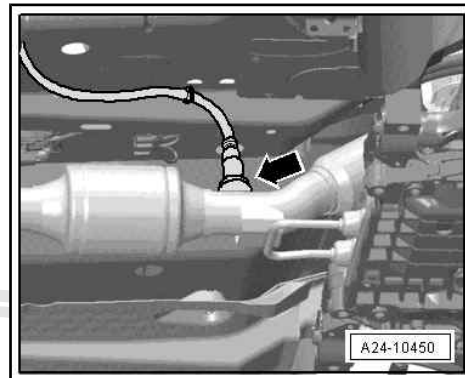
Installing

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



Note

- ◆ *Threads of new Lambda probes are already coated with assembly paste; the paste must not get into the slots on the probe body.*
- ◆ *In the case of a used Lambda probe grease only the thread with high-temperature paste. The paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue*
- ◆ *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*



Tightening torques

- ◆ ⇒ ["8.1.1 Exploded view - Lambda probe, engine codes BPU, BYT, BZB, CAWB", page 111](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim

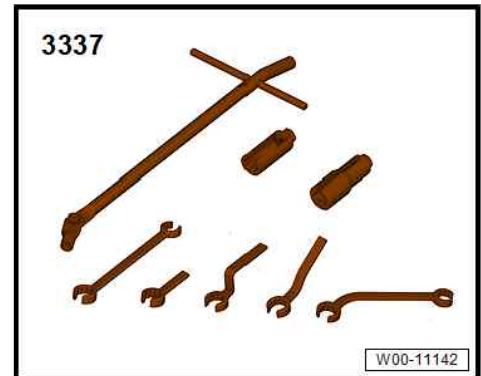
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8.2.2 Removing and installing Lambda probe

- G39- - engine codes CCTA, CCZA, CDAA

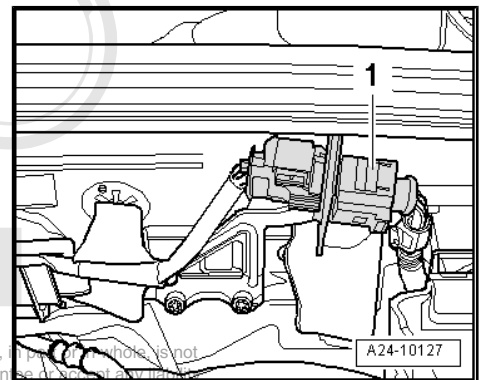
Special tools and workshop equipment required

- ◆ Lambda probe open ring spanner set - 3337-



Removing

- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Unplug electrical connector -1-.



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- Unscrew Lambda probe - G39- -1- using a tool from Lambda probe open ring spanner set - 3337- .

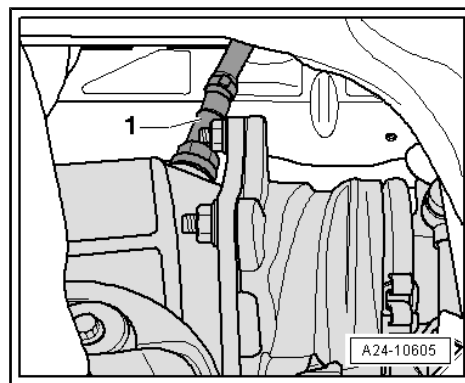
Installing

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



Note

- ◆ *Threads of new Lambda probes are already coated with assembly paste; the paste must not get into the slots on the probe body.*
 - ◆ *In the case of a used Lambda probe grease only the thread with high-temperature paste. The paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue*
 - ◆ *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*
- Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



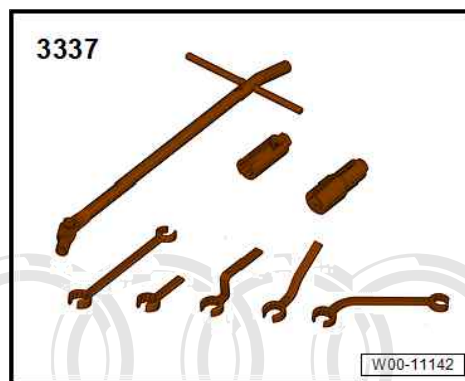
Tightening torques

- ◆ ⇒ ["8.1.2 Exploded view - Lambda probe, engine codes CCTA, CCZA, CDAA", page 112](#)

8.2.3 Removing and installing Lambda probe - G39- - engine code CBFA

Special tools and workshop equipment required

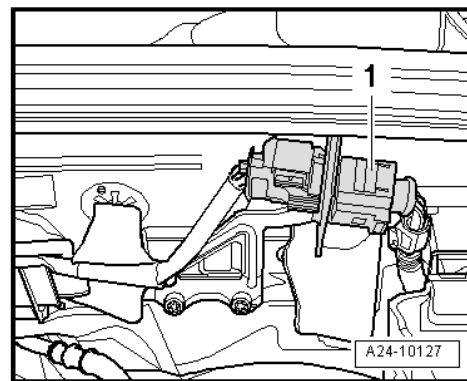
- ◆ Lambda probe open ring spanner set - 3337-



Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

- Unplug electrical connector -1-.



- Unscrew Lambda probe - G39- -1- from below using a tool from Lambda probe open ring spanner set - 3337- .

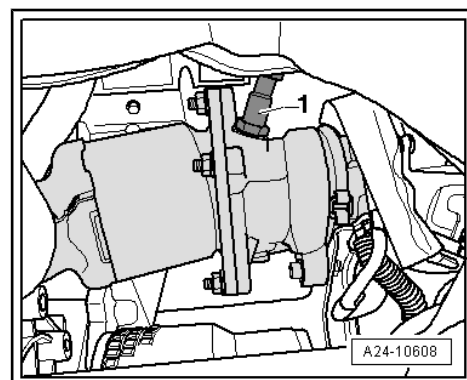
Installing

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



Note

- ◆ *Threads of new Lambda probes are already coated with assembly paste; the paste must not get into the slots on the probe body.*
- ◆ *In the case of a used Lambda probe grease only the thread with high-temperature paste. The paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue*
- ◆ *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*



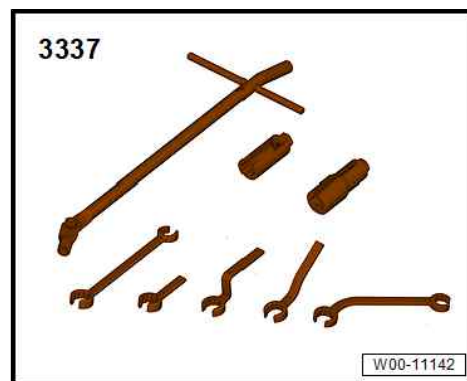
Tightening torques

- ◆ ⇒ ["8.1.3 Exploded view - Lambda probe, engine code CBFA", page 113](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation

8.2.4 Removing and installing Lambda probe after catalytic converter - G130-- engine codes CCTA, CCZA, CDAA

Special tools and workshop equipment required

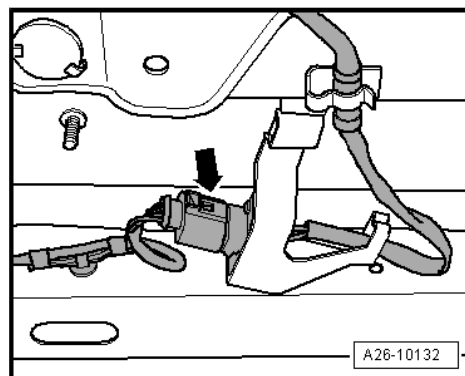
- ◆ Lambda probe open ring spanner set - 3337-



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Removing

- Remove cover (right-side) from underbody ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim .
- Unplug electrical connector -arrow-.



- Unscrew Lambda probe after catalytic converter - G130- -1- using a tool from Lambda probe open ring spanner set - 3337- .

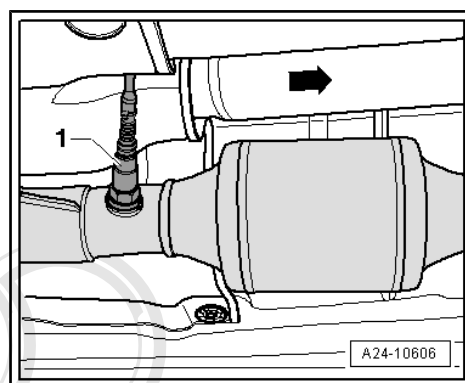
Installing

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



Note

- ◆ *Threads of new Lambda probes are already coated with assembly paste; the paste must not get into the slots on the probe body.*
- ◆ *In the case of a used Lambda probe grease only the thread with high-temperature paste. The paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue*
- ◆ *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*



Tightening torques

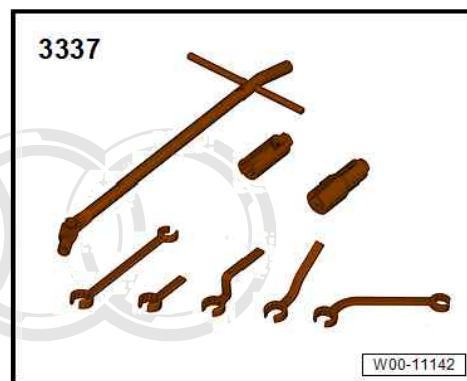
- ◆ ⇒ ["8.1.2 Exploded view - Lambda probe, engine codes CCTA, CCZA, CDAA", page 112](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim

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8.2.5 Removing and installing Lambda probes after catalytic converter - engine code CBFA

Special tools and workshop equipment required

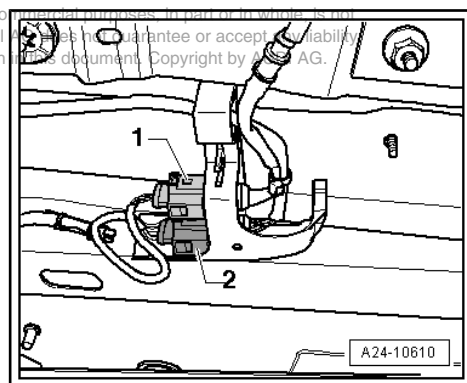
- ◆ Lambda probe open ring spanner set - 3337-



Removing

- Remove cover (right-side) from underbody ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim .
- Unplug electrical connectors:
 - 1 - For Lambda probe 3 - G287- (after catalytic converter)
 - 2 - For Lambda probe after catalytic converter - G130-

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- Unscrew Lambda probe after catalytic converter using a tool from Lambda probe open ring spanner set - 3337- :
 - 1 - Lambda probe 3 after catalytic converter - G287-
 - 2 - Lambda probe after catalytic converter - G130-

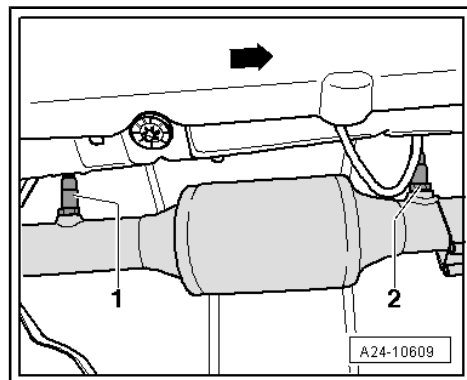
Installing

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



Note

- ◆ *Threads of new Lambda probes are already coated with assembly paste; the paste must not get into the slots on the probe body.*
- ◆ *In the case of a used Lambda probe grease only the thread with high-temperature paste. The paste must not get into the slots on the Lambda probe body. High-temperature paste ⇒ Electronic parts catalogue*
- ◆ *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*



Tightening torques

- ◆ ⇒ ["8.1.3 Exploded view - Lambda probe, engine code CBFA", page 113](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim

9 Engine control unit

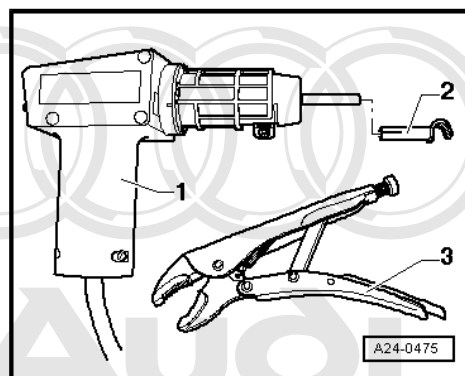
⇒ **“9.1 Removing and installing engine control unit J623”,**
page 120

⇒ **“9.2 Wiring and component check”,** **page 122**

9.1 Removing and installing engine control unit - J623-

Special tools and workshop equipment required

- ♦ Hot air blower - VAS 1978/14A- -item 1- with nozzle attachment -2- from wiring harness repair set - VAS 1978 B-



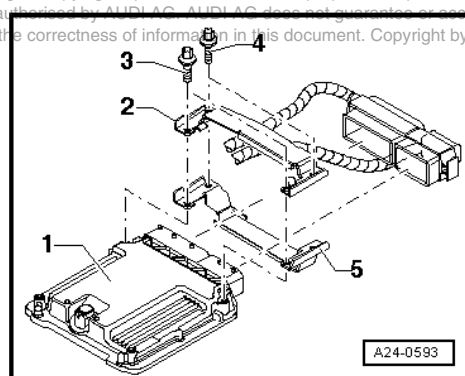
- ♦ Small, commercially available mole grips -3-



Note

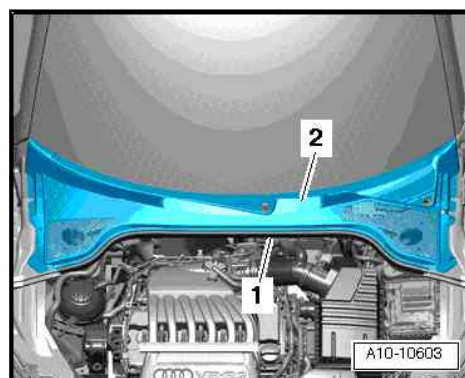
- ♦ *Not every engine control unit is bolted to a protective housing. Whether a protective housing is fitted depends on the engine/gearbox combination.*
- ♦ *The engine control unit -1- is bolted to a protective casing -2 and 5-. To make it more difficult to unscrew the shear bolts -4- for locking plate -2-, their threads have been coated with locking fluid.*
- ♦ *The metal housing has to be removed before the connectors can be unplugged from the engine control unit (e.g. to connect the test box or renew the engine control unit).*

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Removing

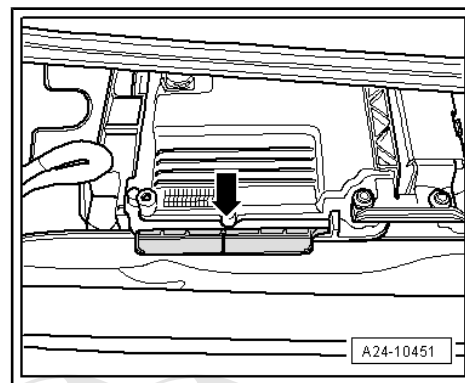
- When renewing engine control unit, select diagnosis object “Replace engine control unit” in “Guided Functions”.
- Switch off ignition and remove ignition key.
- Remove plenum chamber cover -2- ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .



- Release clip -arrow- and remove engine control unit - J623- .

**Note**

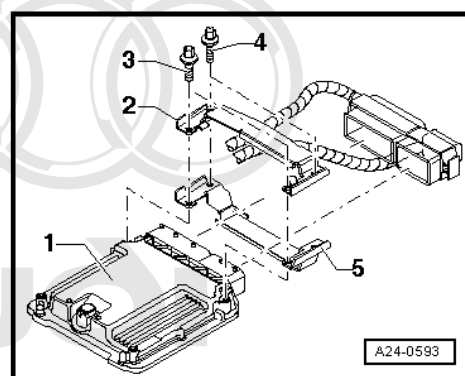
Cover painted surfaces with a cloth to prevent scratching.



To help prevent unauthorised access to the connectors on the engine control unit, the control unit is secured by means of shear bolts to a locking plate and a protective casing.

The threads of the two shear bolts -4- which are not screwed into the engine control unit are secured with locking fluid. To unscrew these two bolts, the threads must therefore be heated with the hot air blower.

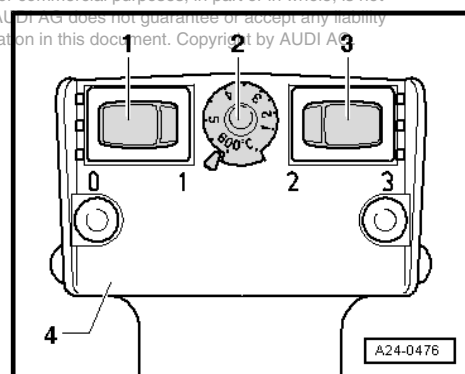
The threads of the two shear bolts -3- which are screwed into the engine control unit are not secured with locking fluid. Do not apply heat to the threads in the control unit housing; this is not necessary and would cause overheating of the control unit.



Select settings on hot air blower as shown in illustration, i.e. set temperature potentiometer -2- to maximum heat output and two-stage air flow switch -3- to position 3.

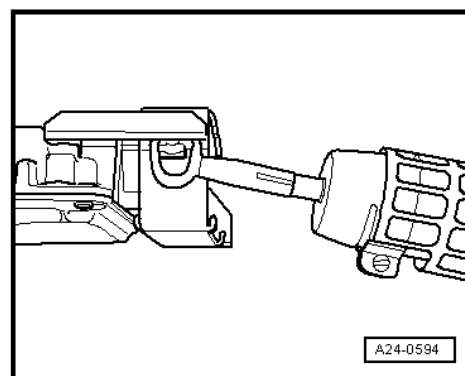
**WARNING**

Heating the thread of the locking plate also heats up the shear bolts and parts of the metal housing. Take care to avoid burns. It is also important to ensure that only the thread is heated and none of the surrounding components. These should be covered.

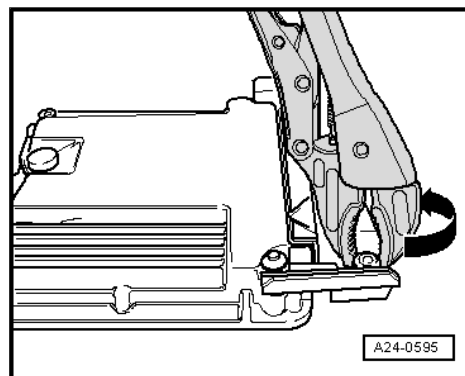


Apply heat to the threads of the shear bolts on the connector side as shown in the illustration.

Switch on the hot air blower and heat the bolt for approximately 20 ... 30 seconds.



- Unscrew shear bolts using suitable vice-grip pliers (see arrow in illustration).
- The two shear bolts screwed into the engine control unit do not need to be heated. They should be removed without being heated.
- Detach protective casing from connectors.
- Unscrew both securing bolts from engine control unit - J623- .
- Release connectors on engine control unit - J623- and unplug connectors.
- Remove engine control unit - J623- .



Installing engine control unit

Installation is performed in the reverse sequence.

- It is important that the protective housing is re-fitted on the engine control unit (if fitted previously).
- Clean threaded holes for shear bolts to remove any residue from locking fluid. This can be done using a thread tap.
- Always use new shear bolts.
- Install plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

After installing a new engine control unit, the following operation must be performed:

- Activate engine control unit via a vehicle diagnostic tester in "Guided Functions" mode, "Replace engine control unit"

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9.2 Wiring and component check

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Engine control unit ; Wiring and component check.

26 – Exhaust system

1 Exhaust pipes/silencers

⇒ [“1.1 Exploded view - silencers”, page 123](#)

⇒ [“1.2 Separating exhaust pipes/silencers”, page 125](#)

⇒ [“1.3 Removing and installing front exhaust pipe”, page 126](#)

⇒ [“1.4 Stress-free alignment of exhaust system”, page 127](#)

⇒ [“1.5 Checking exhaust system for leaks”, page 128](#)

1.1 Exploded view - silencers

1 - Bolt

- ☐ 23 Nm

2 - Mounting

- ☐ Renew if damaged

3 - Gasket

- ☐ Renew

4 - Nut

- ☐ Renew
- ☐ Coat studs of turbo-charger with high-temperature paste
- ☐ High-temperature paste
⇒ Electronic parts catalogue
- ☐ 40 Nm

5 - Front exhaust pipe with catalytic converters



Caution

*Risk of damage to flexible joint.
Do not bend flexible joint more than 10°.*

Install flexible joint so that it is not under tension.

Take care not to damage wire mesh on flexible joint.

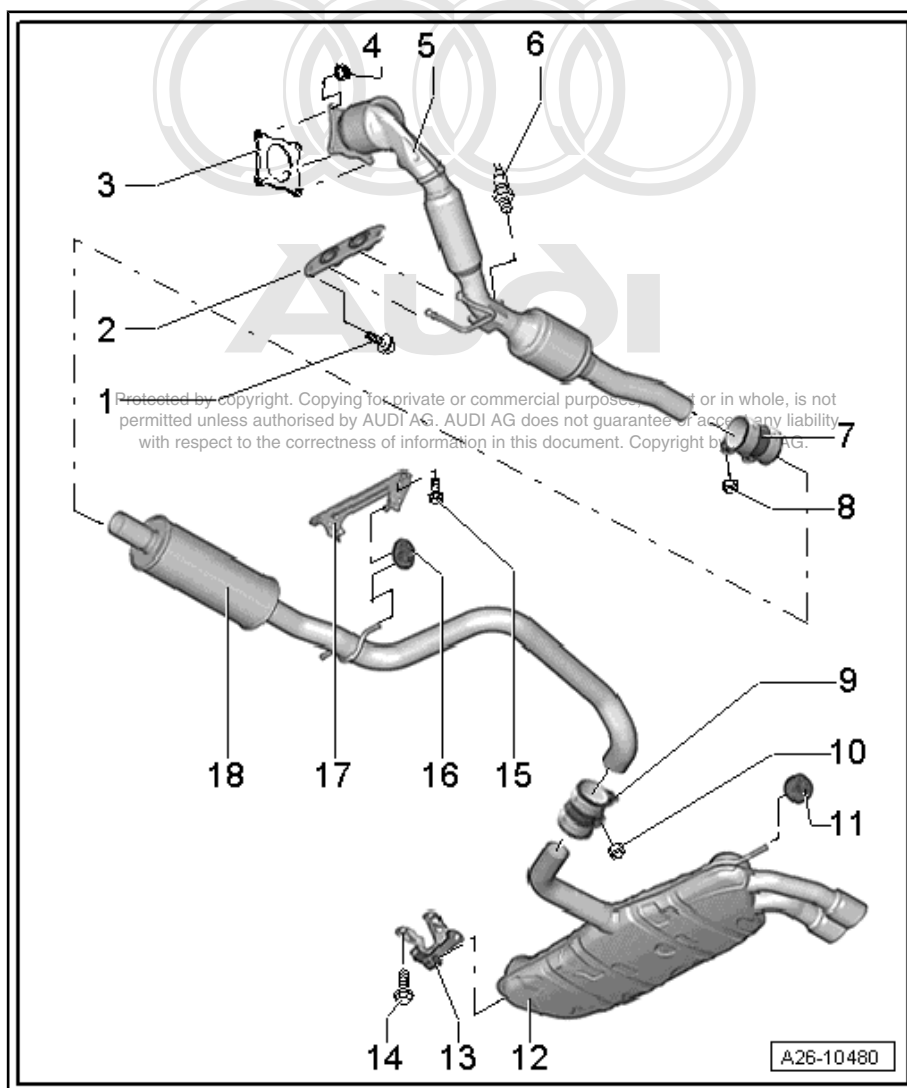
- ☐ Protect catalytic converter from damage by knocks and impact
- ☐ Removing and installing ⇒ [page 126](#)
- ☐ Align exhaust system so it is free of stress ⇒ [page 127](#)

6 - Lambda probe

- ☐ Exploded view ⇒ [“8.1 Exploded view - Lambda probe”, page 111](#)

7 - Clamp (front)

- ☐ Before tightening, align exhaust system so it is free of stress ⇒ [page 127](#)
- ☐ Installation position ⇒ [page 124](#)



- ☐ Tighten bolt connections evenly.

8 - Nut

- ☐ 25 Nm

9 - Clamp (rear)

- ☐ Before tightening, align exhaust system so it is free of stress ⇒ [page 127](#)
- ☐ Installation position ⇒ [page 125](#)
- ☐ Tighten bolt connections evenly.

10 - Nut

- ☐ 25 Nm

11 - Rubber mounting

- ☐ Renew if damaged

12 - Rear silencer

- ☐ Combined in one unit with centre silencer as original equipment. Can be renewed individually for repair purposes
- ☐ Cutting point ⇒ [page 125](#)
- ☐ Align exhaust system so it is free of stress ⇒ [page 127](#)

13 - Mounting

- ☐ Renew if damaged

14 - Bolt

- ☐ 23 Nm

15 - Bolt

- ☐ 23 Nm

16 - Rubber mounting

- ☐ Renew if damaged

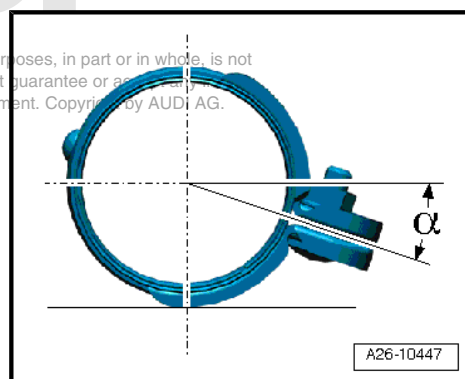
17 - Bracket for exhaust system

18 - Centre silencer

- ☐ Combined in one unit with rear silencer as original equipment. Can be renewed individually for repair purposes
- ☐ Cutting point ⇒ [page 125](#)
- ☐ Align exhaust system so it is free of stress ⇒ [page 127](#)

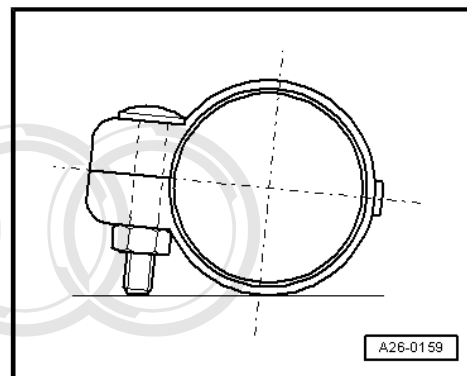
Installation position of front clamp

- Fit the clamp at the angle shown.
- Bolted connections face to right.
- Nuts face upwards.
- $\alpha = \text{approx. } 20^\circ$



Installation position of rear clamp

- Install clamp so that ends of bolts do not protrude beyond bottom of clamp.
- Bolted connections face downwards.

**1.2 Separating exhaust pipes/silencers**

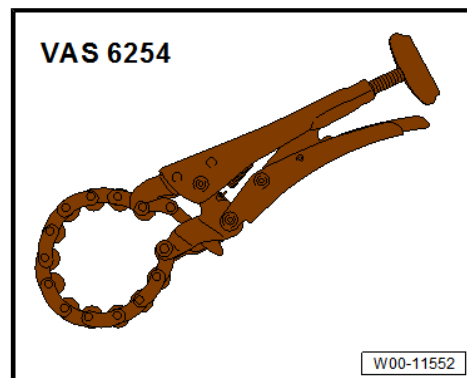
- ◆ The connecting pipe can be cut through at the cutting point provided in order to renew the centre and rear silencers separately.

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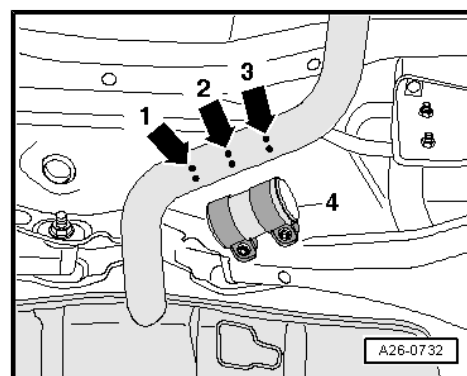
- ◆ The cutting point is marked by an indentation on the outside of the exhaust pipe.

Special tools and workshop equipment required

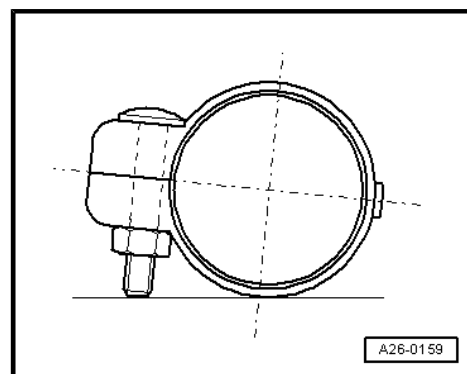
- ◆ Chain pipe cutter - VAS 6254-

**Procedure**

- Cut through exhaust pipe at right angles at the position marked -arrow 2- using chain pipe cutter - VAS 6254- .
- Position clamp -4- at side marks when installing -arrow 1- and -arrow 3-.



- Install clamp so that ends of bolts do not protrude beyond bottom of clamp.
- Bolted connections face downwards.
- Align the exhaust system so it is free of stress ⇒ [page 127](#) .



1.3 Removing and installing front exhaust pipe



Note

The front exhaust pipe is removed together with the catalytic converter.

Special tools and workshop equipment required

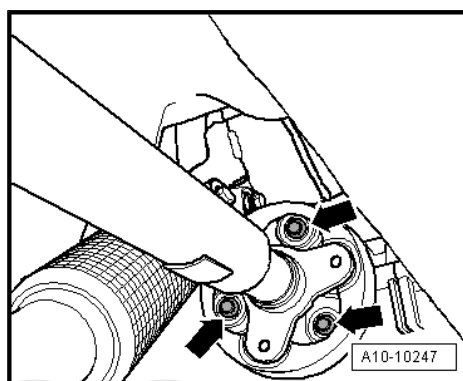
- ◆ High-temperature paste ⇒ Electronic parts catalogue

Removing

- Remove air cleaner housing ⇒ [page 106](#).

Four-wheel drive:

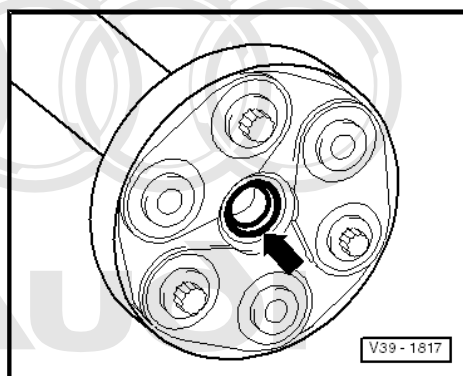
- Mark position of flexible coupling and flange for bevel box in relation to each other for re-installation.
- Remove bolts -arrows- for flexible coupling for propshaft at bevel box (counterhold using a suitable lever at triangular flange).



Caution

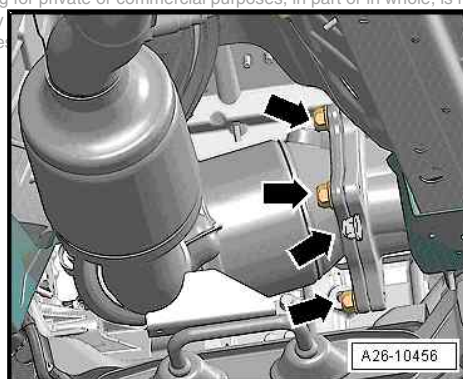
Make sure not to damage the oil seal -arrow- in the propshaft flange.

- ◆ Push the propshaft horizontally to the rear and towards the right side of vehicle as far as possible.



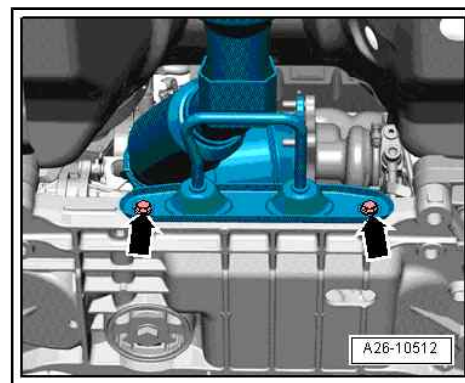
Continued for all vehicles:

- Remove nuts -arrows- securing front exhaust pipe to turbo-charger.
- Detach connector for Lambda probe - G39- ⇒ [page 113](#) and move clear.



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- Unbolt bracket for exhaust system -arrows-.

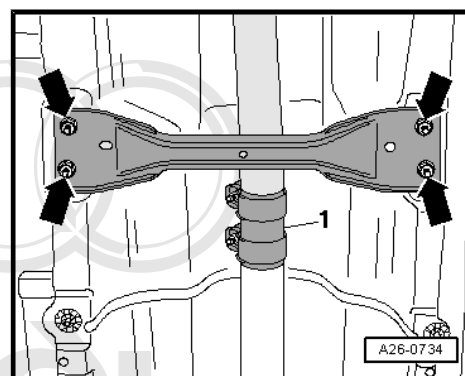


- Remove front cross member for underbody -arrows-.

Caution

Avoid damage to flexible joints.

◆ *Do not bend flexible joints in front exhaust pipe more than 10°.*



- Loosen clamp -1- and push to rear.
- Detach catalytic converter with front exhaust pipe.

Installing

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

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Note

- ◆ *Renew gaskets and self-locking nuts.*
- ◆ *Coat exhaust manifold studs with high-temperature paste; for high-temperature paste refer to ⇒ [Electronic parts catalogue](#) .*

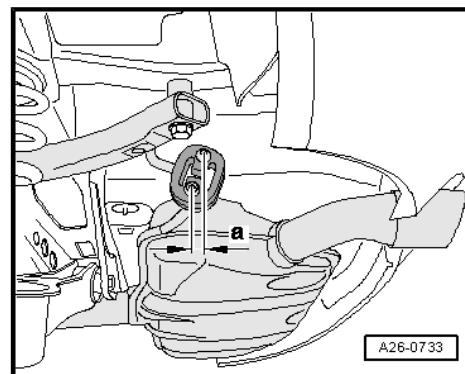
- Align the exhaust system so it is free of stress ⇒ [page 127](#) .

Tightening torques

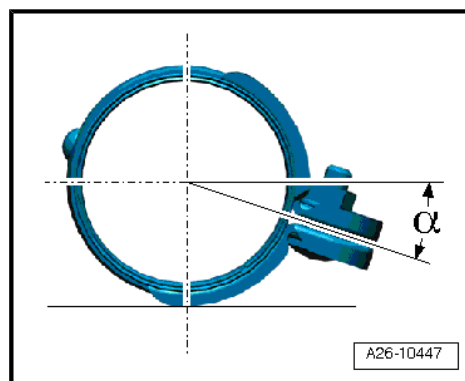
- ◆ ⇒ [“1.1 Exploded view - silencers”, page 123](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing

1.4 Stress-free alignment of exhaust system

- The exhaust system must be aligned when it is cool.
- Loosen bolts on front clamp ⇒ [Item 7 \(page 123\)](#) .
- Push exhaust system towards front of vehicle -arrow- so that mounting for rear silencer is preloaded by -a- = 15 ... 17 mm.



- Position the clamp at the angle shown.
- Bolted connections face to right.
- Nuts face upwards.
- $\alpha = \text{approx. } 20^\circ$
- Tighten bolt connections on clamp evenly.

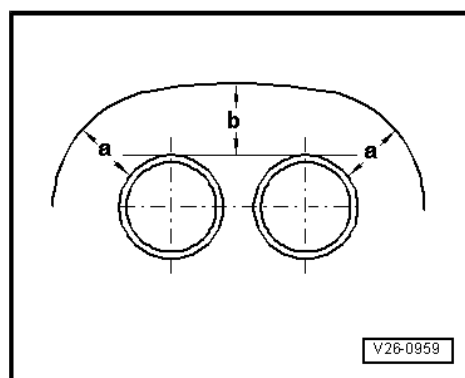


Aligning tailpipes:

- Align tailpipes so that distance -a- (left-side) is the same as distance -a- (right-side).
- At the same time, distance -b- must be obtained between bumper cut-out and top of tailpipes.
- ◆ Dimension b = at least 21 mm
- If necessary, unfasten rear silencer mounting to align tailpipes.

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - silencers", page 123](#)



1.5 Checking exhaust system for leaks

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Exhaust pipes/silencers; Checking exhaust system for leaks .



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2 Exhaust manifold

The exhaust manifold and the turbocharger are combined as one unit; removing and installing ⇒ [page 87](#) .



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3 Secondary air system

⇒ "3.1 Exploded view - secondary air system", page 130

⇒ "3.2 Removing and installing secondary air pump motor V101", page 130

⇒ "3.3 Removing and installing combination valve", page 131

3.1 Exploded view - secondary air system

Only for engine code CBFA

1 - Gasket

☐ Renew

2 - Combination valve for secondary air system

☐ Removing and installing
⇒ page 131

3 - Bolt

☐ 9 Nm

4 - Sender 1 for secondary air pressure - G609-

5 - Seal

☐ Renew

6 - To air cleaner

7 - Secondary air lines

8 - Locating aid for drain line from air cleaner

9 - Nut

☐ 9 Nm

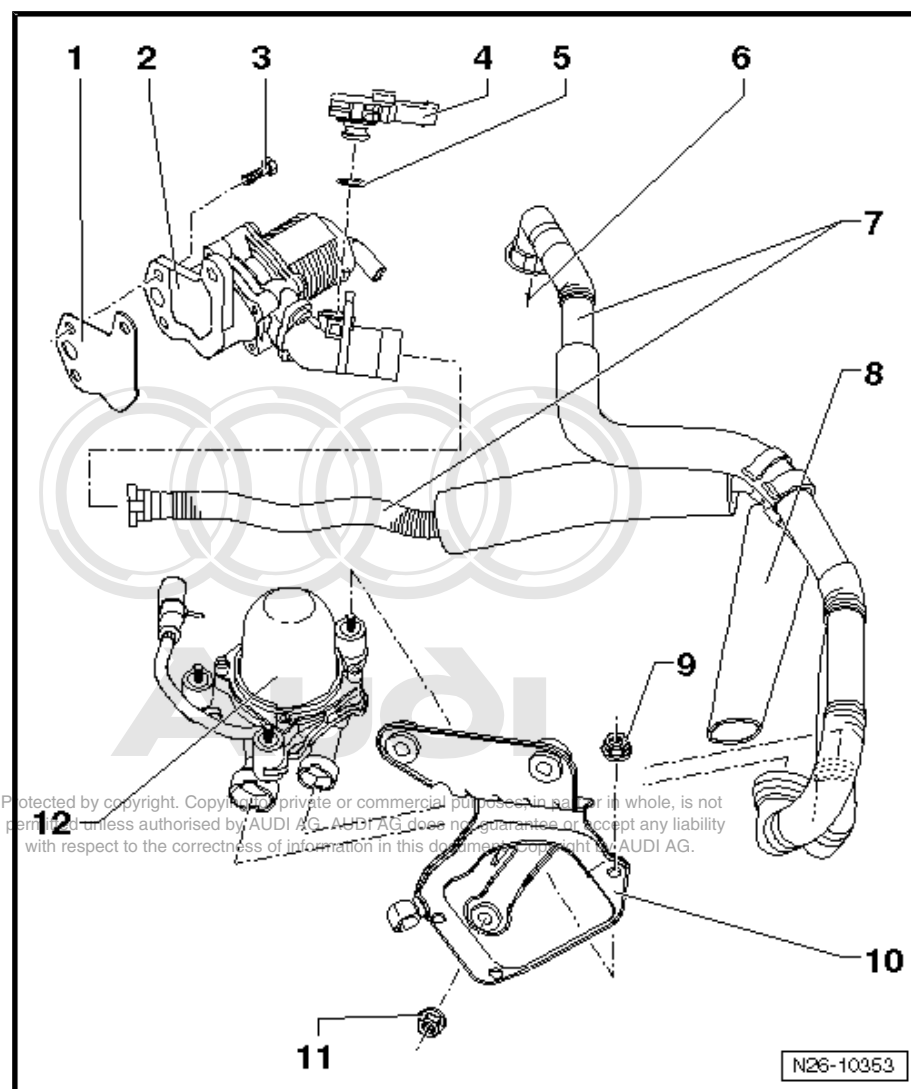
10 - Bracket for secondary air pump motor - V101-

11 - Nut

☐ 25 Nm

12 - Secondary air pump motor - V101-

☐ Removing and installing
⇒ page 130



3.2 Removing and installing secondary air pump motor - V101-

Removing:

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
- Remove front section of wheel housing liner (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners .

Cabriolet

- Remove noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front .

All vehicles:

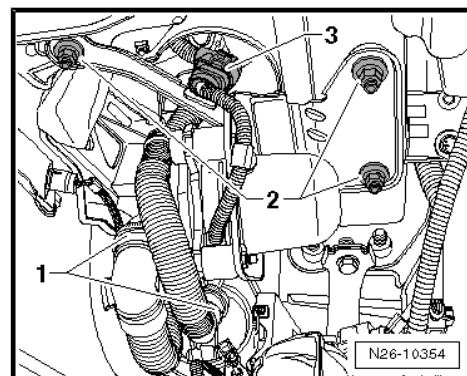
- Detach connecting lines -1-, loosen bolts -2-, unplug electrical connector -3- and take out secondary air pump motor - V101- .

Installing:

Installation is carried out in reverse sequence.

Tightening torques

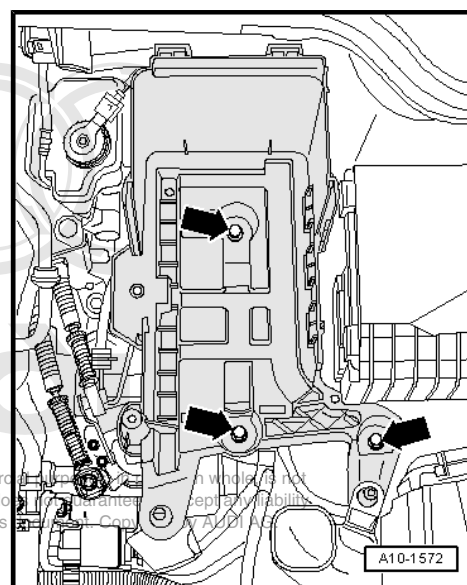
- ◆ ⇒ [“3.1 Exploded view - secondary air system”, page 130](#)
- ◆ Noise insulation frame ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front
- ◆ ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners



3.3 Removing and installing combination valve

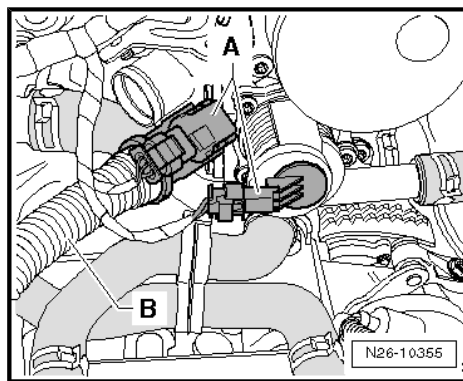
Removing:

- Remove air cleaner housing ⇒ [page 106](#) .
- Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery .
- Remove battery tray -arrows-.

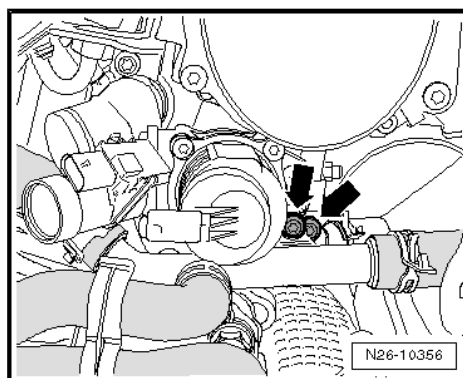


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- Disconnect electrical connector -A- and hose -B- from combination valve for secondary air system.



- Remove bolts -arrows- and detach coolant pipe.



- Remove bolts -arrows- and detach combination valve for secondary air system.

Installing:

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



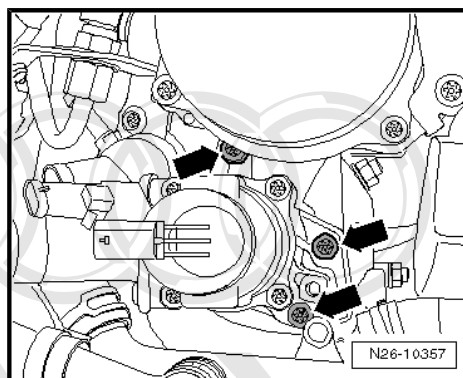
Note

Renew gaskets and self-locking nuts.

- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery .

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - secondary air system”, page 130](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI;
Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing



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28 – Ignition system

1 Ignition system

⇒ [“1.1 Exploded view - ignition system”, page 133](#)

⇒ [“1.2 Removing and installing ignition coils with output stages”, page 133](#)

⇒ [“1.3 Removing and installing knock sensor 1 G61”, page 133](#)

⇒ [“1.4 Removing and installing Hall senders”, page 133](#)

⇒ [“1.5 Removing and installing engine speed sender G28”, page 133](#)

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1.1 Exploded view - ignition system

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system .

1.2 Removing and installing ignition coils with output stages

Removing

- Engine codes BPU, BYT: Remove oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing ignition coils with output stages .

Installing

Additional work:

- Engine codes BPU, BYT: Install oil separator on cylinder head cover (version 1) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Removing and installing oil separator .

1.3 Removing and installing knock sensor 1 - G61-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing knock sensor 1 - G61- .

1.4 Removing and installing Hall senders

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing Hall senders .

1.5 Removing and installing engine speed sender - G28-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing engine speed sender - G28- .