Workshop Manual

Audi A4 2015 ➤
Audi A4 China 2016 ➤
Audi A5 2016 ➤

4-cylinder direct injection engine (2.0 ltr. 4-valve TFSI, EA 888 Gen. III)

Engine ID	CYM C	CYR B	CYR C	CWP B	DDW A	DKN A	DKW A	DLH B	DDW B

Edition 02.2019

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List of Workshop Manual Repair Groups

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

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00 – Technical data

1 Identification

(ARL006278; Edition 02.2019)

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

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1.1 Removing engine

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1.1.1 Removing engine - vehicles with alternator

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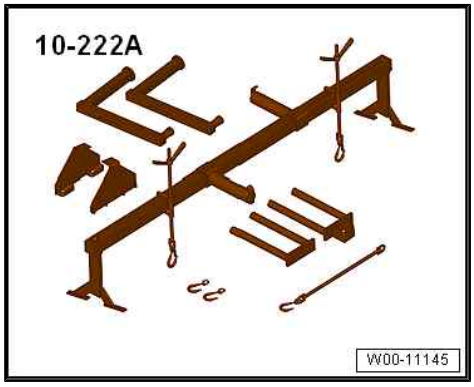
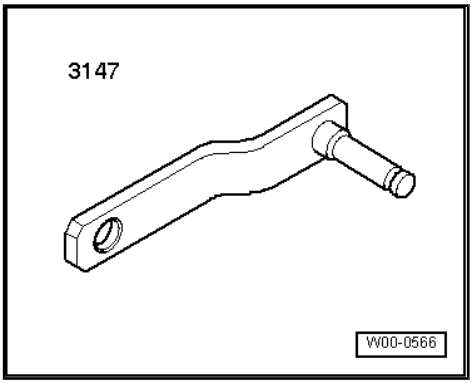
Special tools and workshop equipment required

- Support bracket - 10-222A-

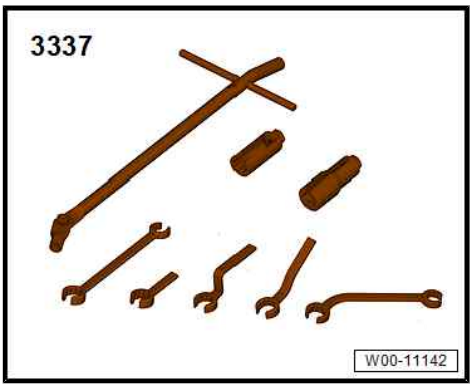


- Lifting tackle - 2024A-

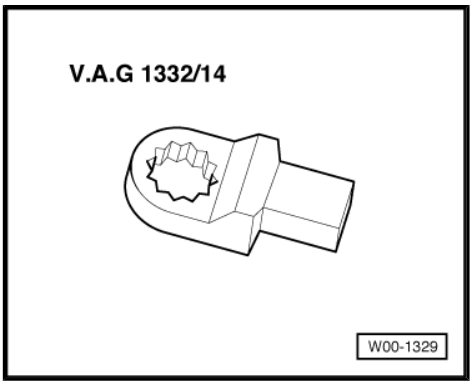
- Gearbox support - 3147-



- Lambda probe open ring spanner set - 3337-



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



- Workshop hoist - VAS 6100-

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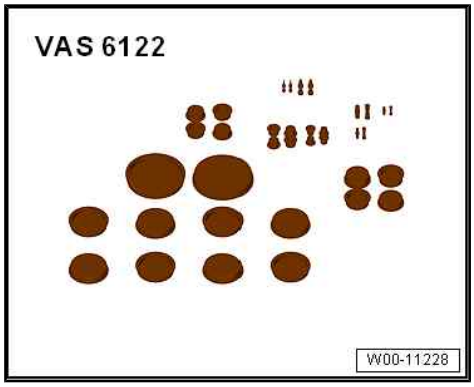
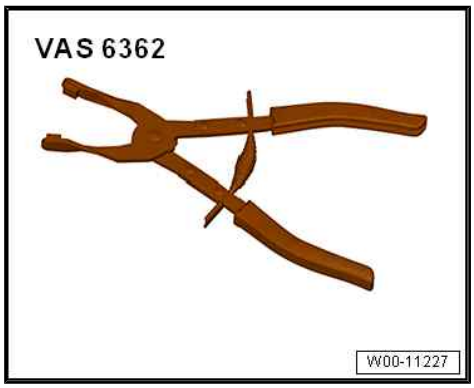
- Engine bung set - VAS 6122-

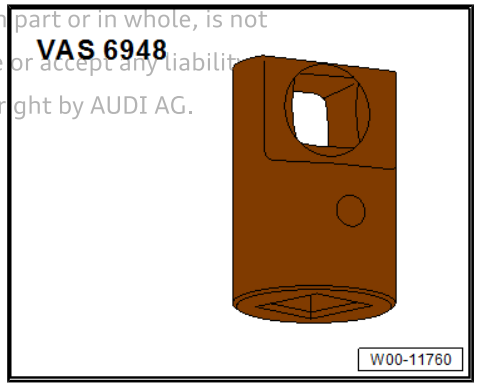


- Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

- Hose clip pliers - VAS 6362-



- Adapter - VAS 6948-



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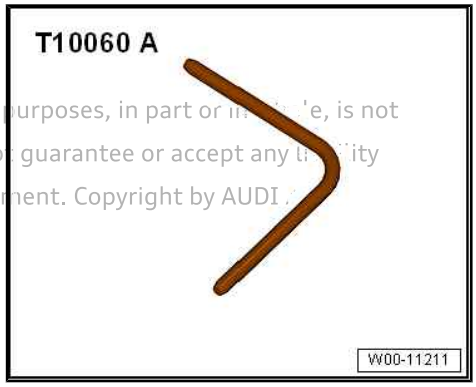
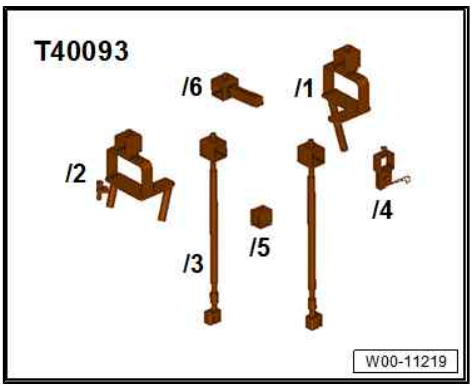
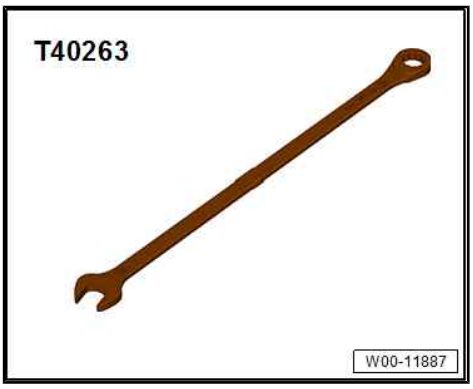
- Locking pin - T10060A-



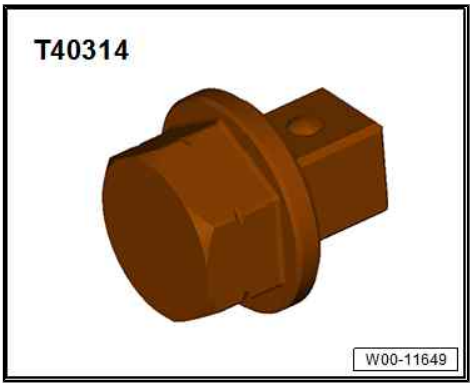
- -T40093/6- from engine support supplementary set - T40093-



- Wrench, 21 mm - T40263-



- Adapter - T40314-



- Safety goggles
- Protective gloves

Procedure

- The engine is removed upwards without gearbox.
- Re-install all cable ties in original positions.

– Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .

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

– On vehicle versions with manual gearbox: Select 4th gear.

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

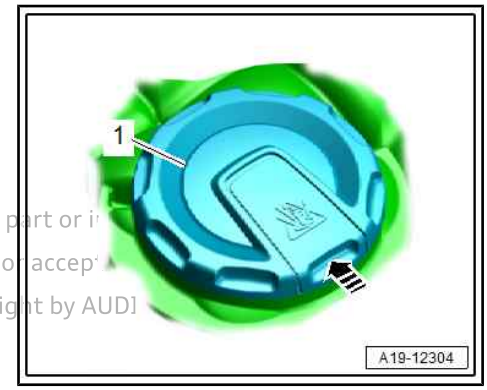
⚠ CAUTION

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

Danger of scalding skin and other parts of the body.

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

– Release fastener -arrow- (if necessary) and open filler cap -1- on coolant expansion tank.



– Remove front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .

– Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– Remove wheel spoilers (left and right) and wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .

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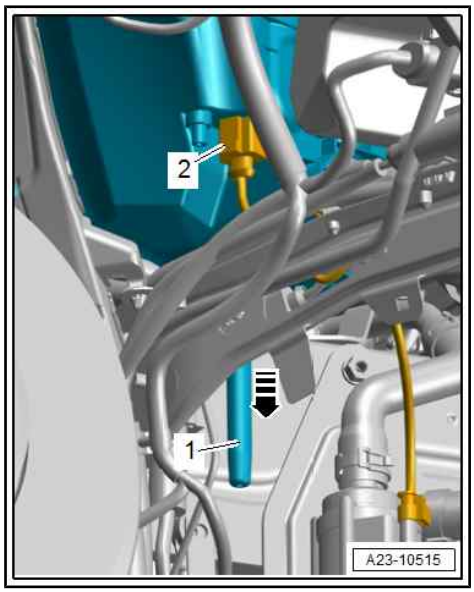
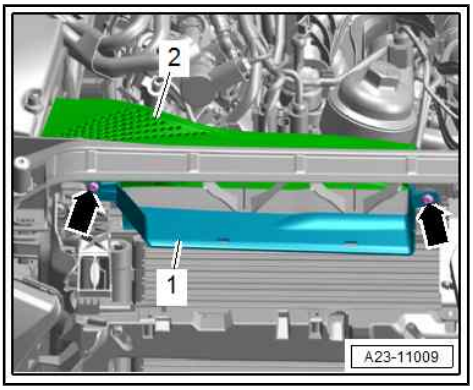
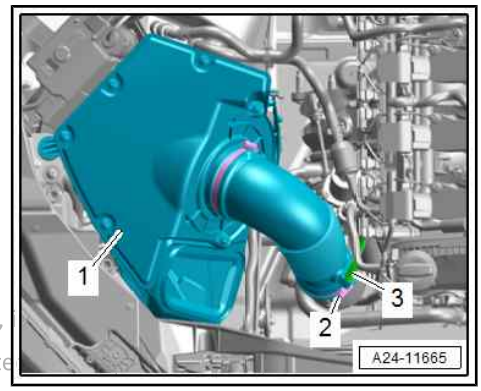
– On relevant equipment version: Unplug electrical connector -2- for variable intake manifold changeover valve - N335- and pull water drain -1- off downwards -arrow-.



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



– Disconnect vacuum hose -3-.
– Release hose clip -2- and disconnect air hose.
– Lift off air cleaner housing -1-.



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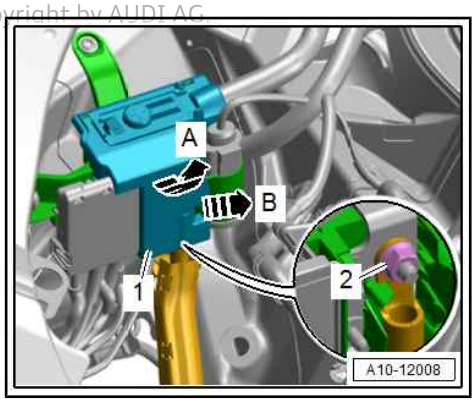
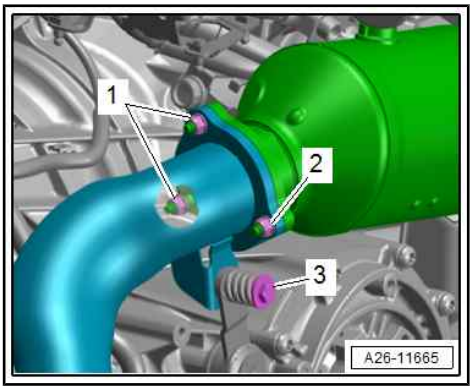
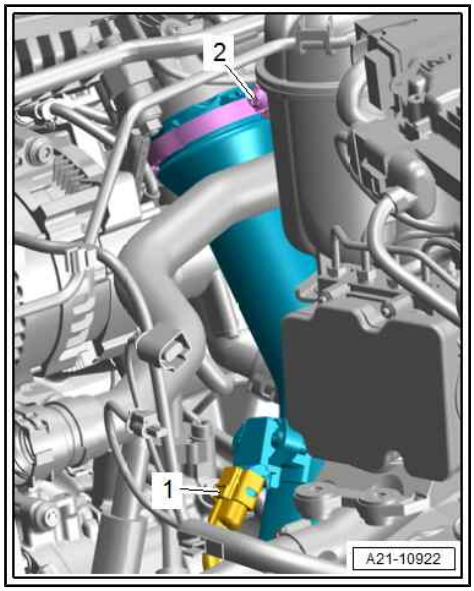
– Release catch -arrow B- and open electronics box -1- -arrow A-.
– Remove nut -2- and move B+ wire clear.
– Move wiring duct clear at top.



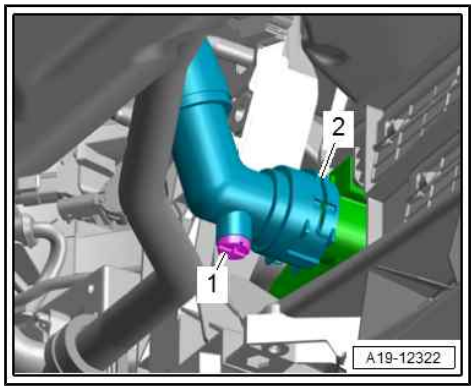
– Remove nuts -1- (accessible from above) for front silencer. (Nut -2- and bolt -3- will be removed in a later step).



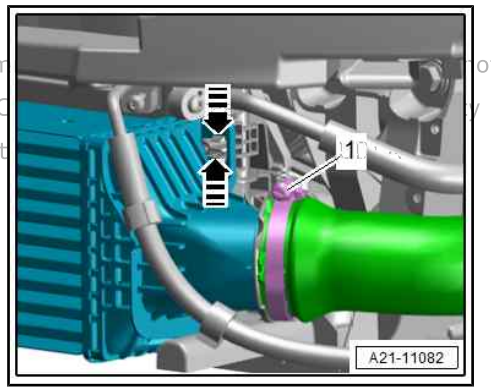
– Unplug electrical connector -1- for charge pressure sender - G31- .
– Loosen screw-type clip -2- and detach air pipe from throttle valve module - J338- .



– Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
– Open drain plug -1- at connection and drain off coolant.
– Unfasten front section of wheel housing liner (front left) and press slightly towards rear ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .



– Release hose clip -1-, disconnect air hose and detach it downwards.



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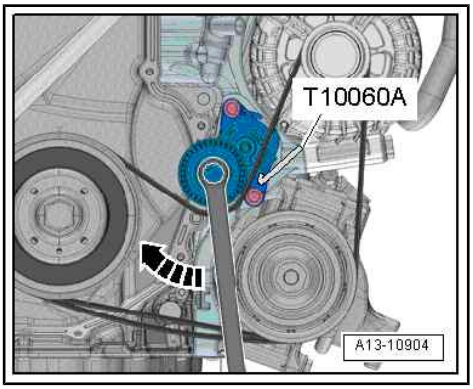
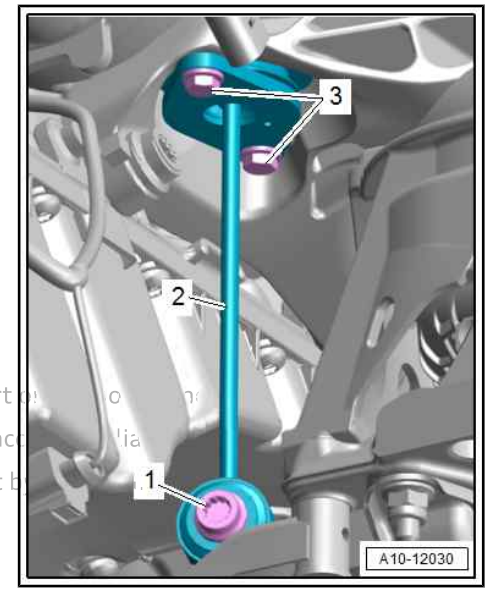
NOTICE

Risk of irreparable damage due to running a used belt in the opposite direction when it is refitted.

- **Mark running direction before removing.**
- **Pay attention to running direction when reinstalling.**



- Swivel tensioner in anti-clockwise direction -arrow- and detach poly V-belt from pulley for air conditioner compressor.
- Lock tensioner with locking pin - T10060A- .
- Remove air conditioner compressor from bracket ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .
- Remove bolt -1- for support mounting -2- (both sides).



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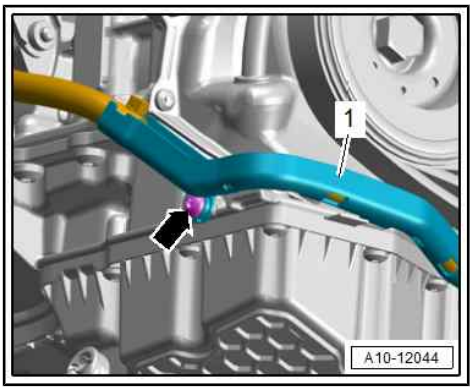
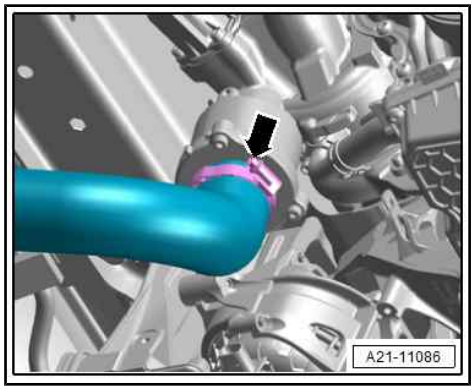
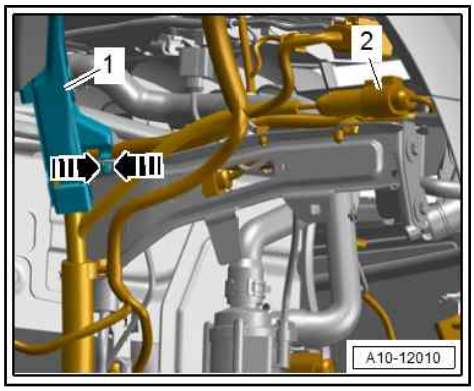
- Unscrew bolt -arrow-, detach wiring duct -1- from sump (top section) towards front and press it downwards.



– Release hose clip -arrow- and detach air hose (right-side) from turbocharger.



– Detach electrical connector -2- from bracket and unplug.
– Release fasteners -arrows- and move wiring duct -1- clear.
– Move engine wiring harness clear.



– Remove nut -arrow- and move earth wire clear.
– Remove heat shield for drive shaft (right-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .
– Unbolt drive shaft (left and right) from gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

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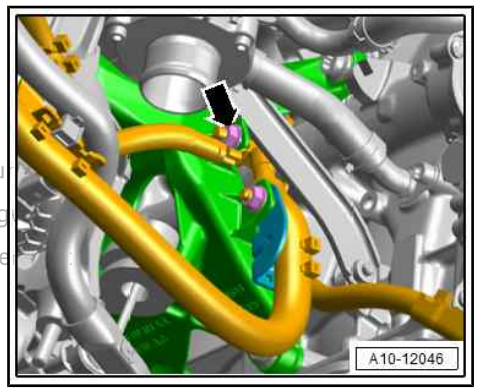
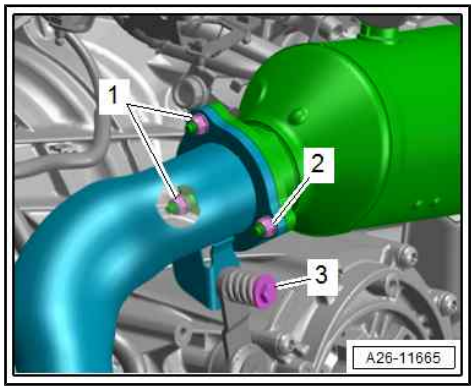


– Remove nut -2- and bolt -3- for front silencer.

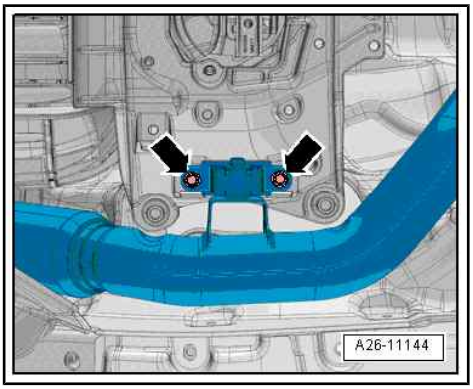


NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Remove bolts -arrows-.



– Loosen bolted connections -arrows- and push clamp towards rear.

– Detach front silencer.

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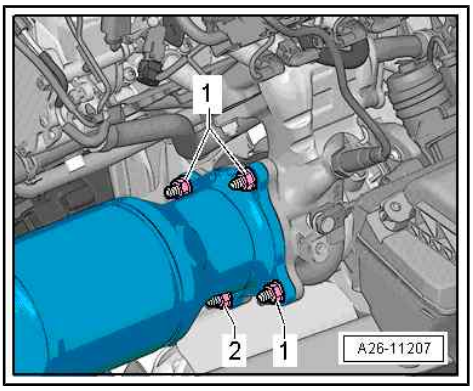
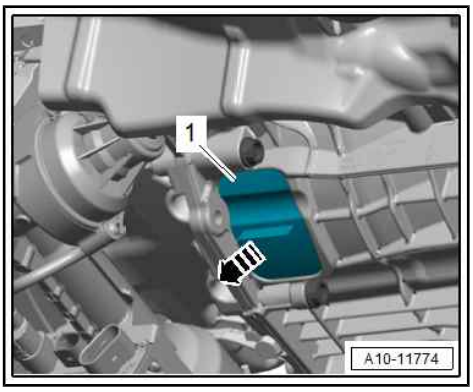
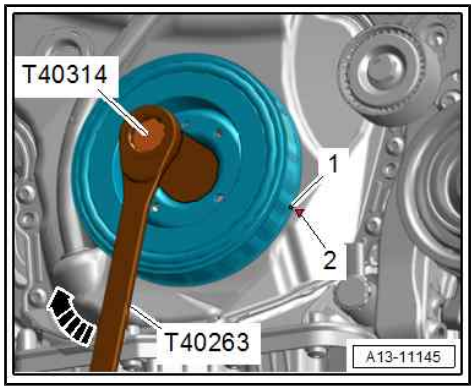
– Remove nut -2- from underneath. (Nuts -1- do not have to be removed at this stage.)



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



– Counterhold crankshaft using wrench, 21 mm - T40263- and adapter -T40314- when slackening bolts for flywheel.



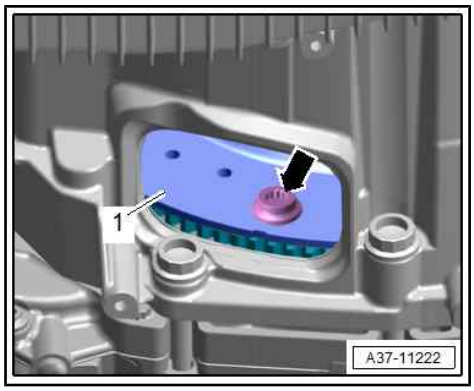
NOTICE

Risk of engine damage if valve gear drive slips

– Only turn engine in normal direction of rotation.

– Then turn crankshaft in steps of 120° in direction of engine rotation -arrow-.

– Remove 3 bolts -arrow- for flywheel -1-.



Vehicles with manual gearbox:

– Unscrew bolt -1- using ring spanner insert, 16 mm - V.A.G 1332/14- and adapter - VAS 6948- .

– Remove bolts -6 ... 10- securing gearbox to engine.

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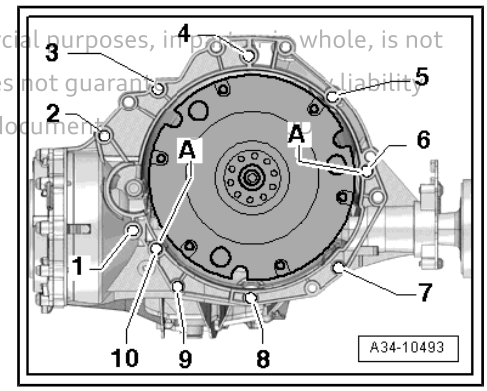
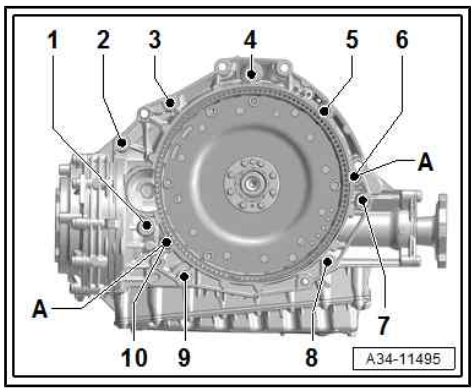


Vehicles with dual clutch gearbox:

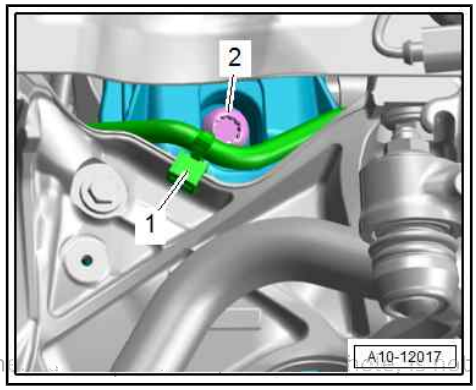
– Unscrew bolt -1- using ring spanner insert, 16 mm - V.A.G 1332/14- and adapter - VAS 6948- .

– Remove bolts -6 ... 10- securing gearbox to engine.



All vehicles (continued):

– Remove bolt -2- for engine mounting on both sides.



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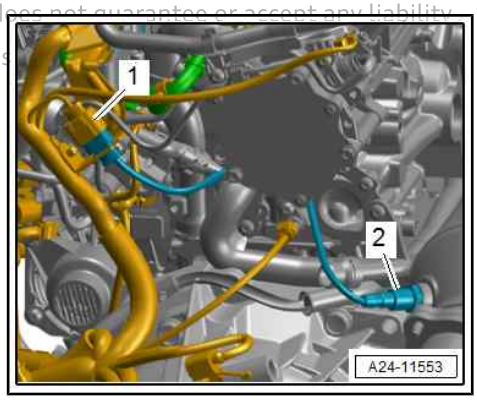
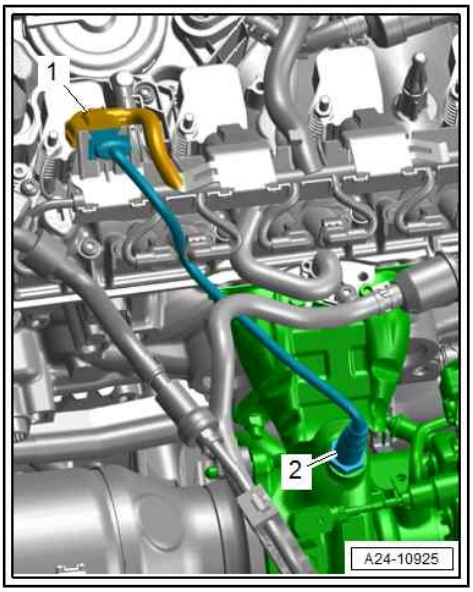
– Unplug electrical connector -1- for Lambda probe after catalytic converter - G130- item 2- and move wiring clear. (Installation position varies.)

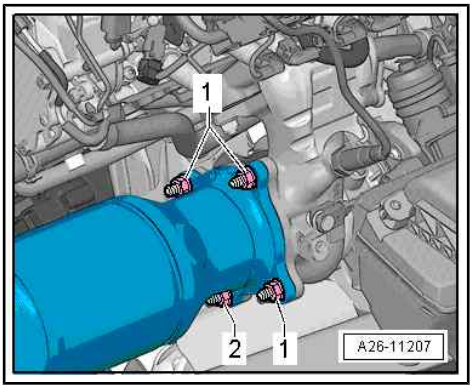


– Detach electrical connector -1- from bracket and unplug.

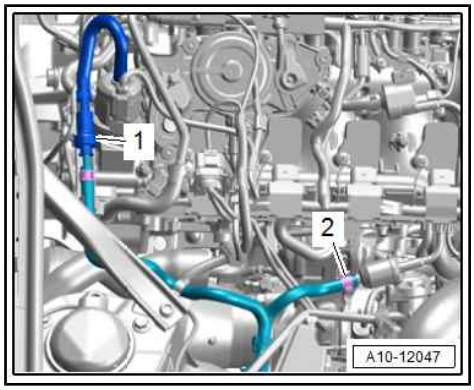
– Unscrew Lambda probe - G39- -item 2- using a tool from Lambda probe open ring spanner set - 3337- .



– Unscrew nuts -1- and detach catalytic converter upwards.



– Disconnect fuel hose -1- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
– Release hose clip -2- and disconnect hose for activated charcoal filter system.



– Pull back heat shield slightly.
– Lift retaining clip -arrow- and disconnect coolant hose.

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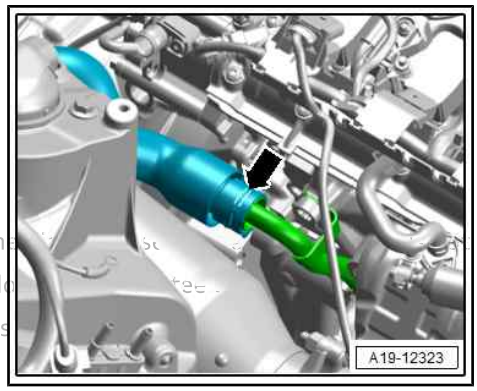
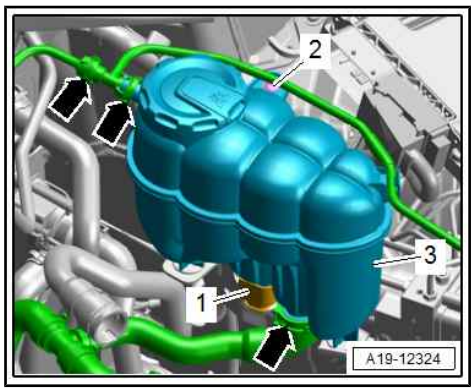


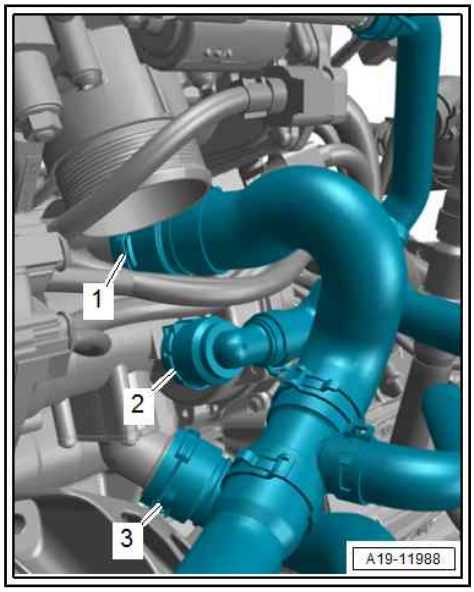
– Lift retaining clips -arrows-, disconnect coolant hoses and move them clear.
– Unplug electrical connector -1- for coolant shortage indicator switch - F66- .
– Unscrew bolt -2- and detach coolant expansion tank -3-.



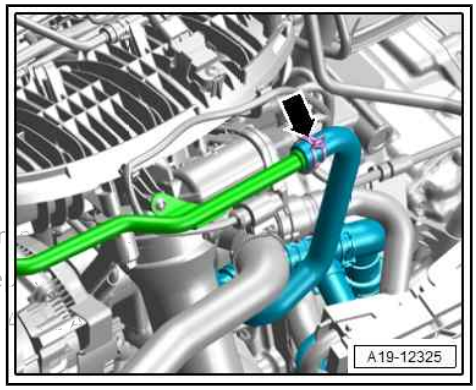
– Lift retaining clips -1, 3- and disconnect coolant hoses.

Vehicles with dual clutch gearbox:

– Lift retaining clip -2- and disconnect coolant hose.



– Release hose clip -arrow- on coolant pipe (left-side) and detach coolant hose.



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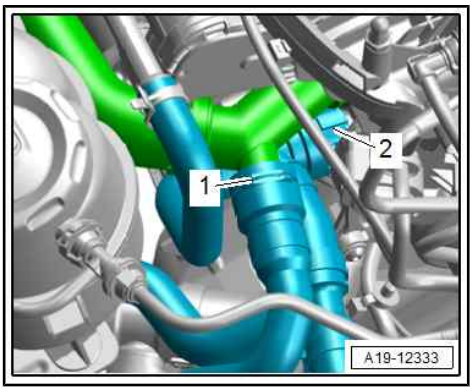
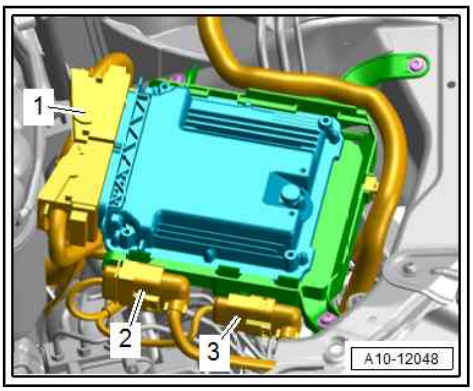
Vehicles with manual gearbox:

– Lift retaining clip -1- and disconnect coolant hose.

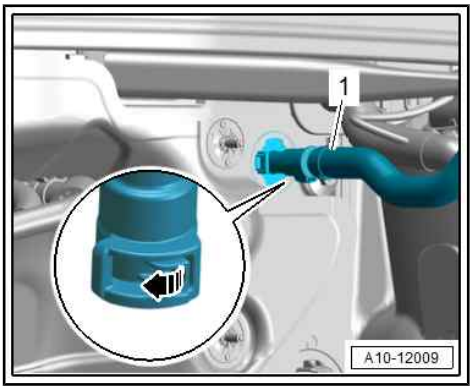


All vehicles (continued):

– Detach electrical connector -2- from bracket and unplug.
– Unplug electrical connector -1- at engine control unit.
– Move electrical wiring harness clear and place down on top of engine.



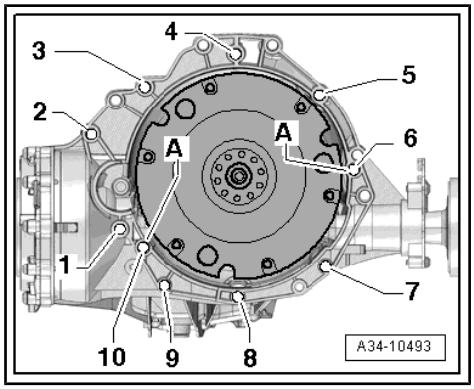
– Release catch -arrow- and disconnect vacuum hose -1-.



Vehicles with manual gearbox:

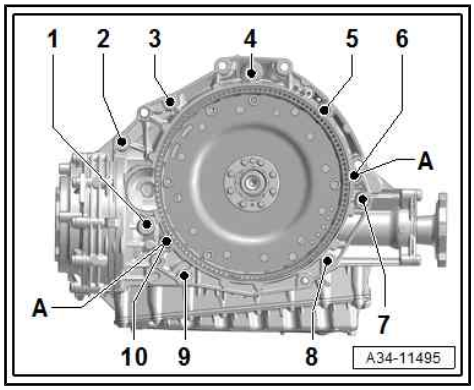
– Remove bolts -2 ... 5- (accessible from above) securing engine to gearbox.

– Separate starter slightly from gearbox and leave in position.



Vehicles with dual clutch gearbox:

– Remove bolts -2 ... 5- (accessible from above) securing engine to gearbox.

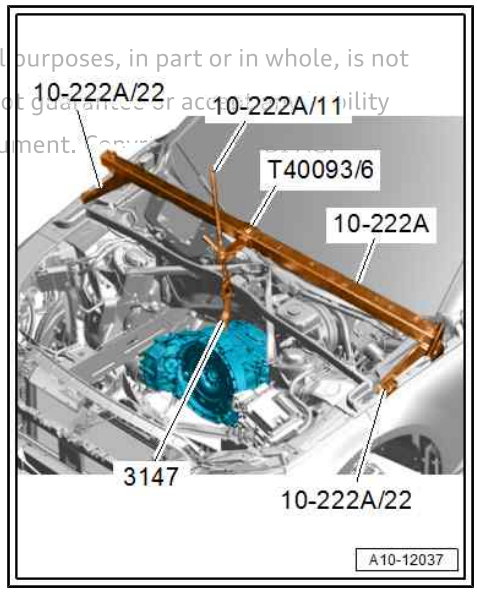


All vehicles (continued):

– Set up support bracket - 10-222A- with adapters -10-222A/22- on bolted flanges of wing panels (left and right) as illustrated.

– Use gearbox support - 10-222A/11- to hook spindle - 3147- onto gearbox. (Engine has been removed in illustration).

– Take up weight of gearbox with spindle.



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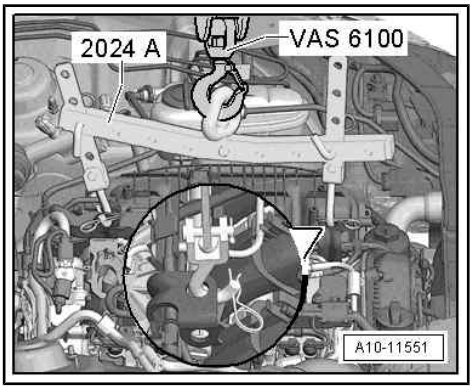
– Attach lifting tackle - 2024A- to engine and workshop hoist - VAS 6100- as shown in illustration.



CAUTION

Risk of injury if power unit drops when it is lifted.

Danger of trapping or crushing parts of the body.

– The support hooks and retaining pins on the lifting tackle must be secured with locking pins.

– Raise engine until engine mountings are clear.

– Tighten spindle - 10-222A/11- further.

NOTICE

Risk of damage to lines/pipes, hoses and engine compartment when lifting engine out.

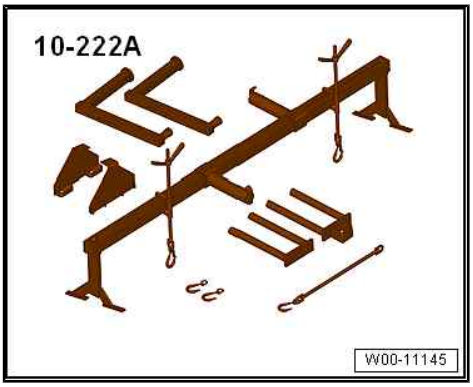
– Check that all connections between engine, gearbox, sub-frame and body have been detached.

– Separate engine from gearbox and lift engine out of engine compartment.

1.1.2 Removing engine - vehicles with starter-alternator

Special tools and workshop equipment required

♦ Support bracket - 10-222A-



♦ Lifting tackle - 2024A-

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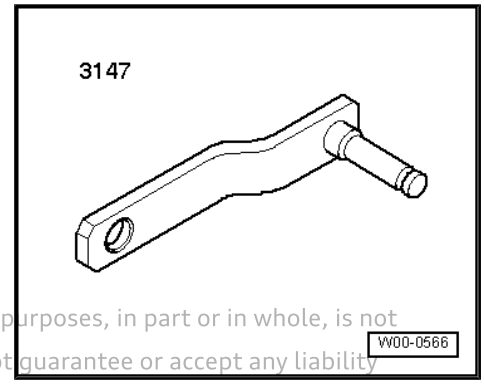
- Gearbox support - 3147-



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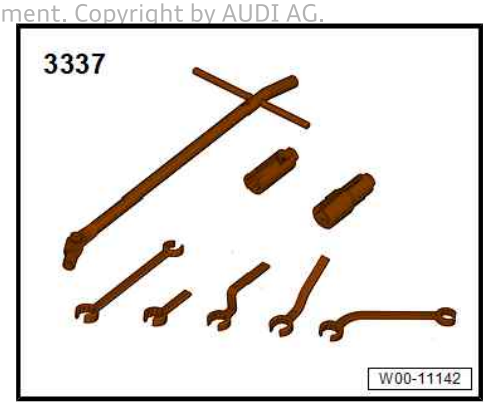
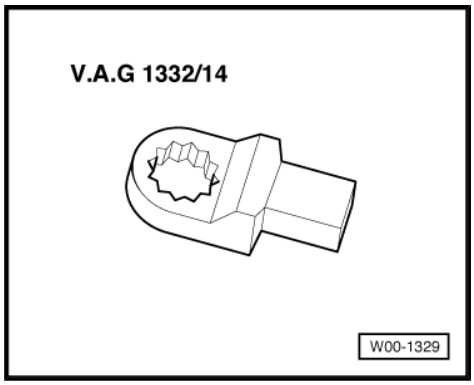
- Lambda probe open ring spanner set - 3337-

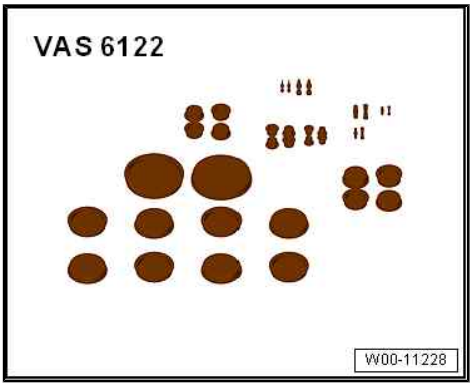


- Ring spanner insert AF 16 - V.A.G 1332/14-



- Workshop hoist - VAS 6100-

- Engine bung set - VAS 6122-



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

- Hose clip pliers - VAS 6362-

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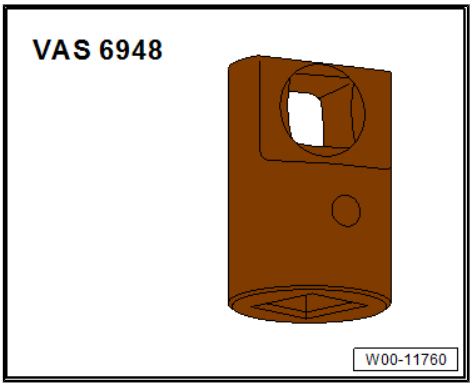
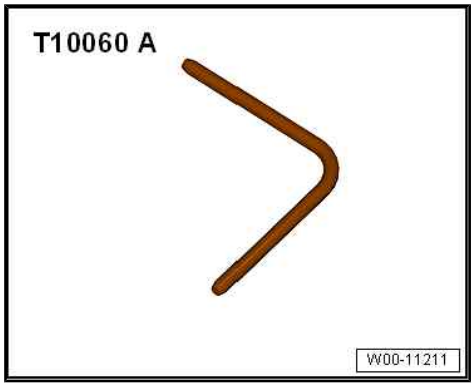
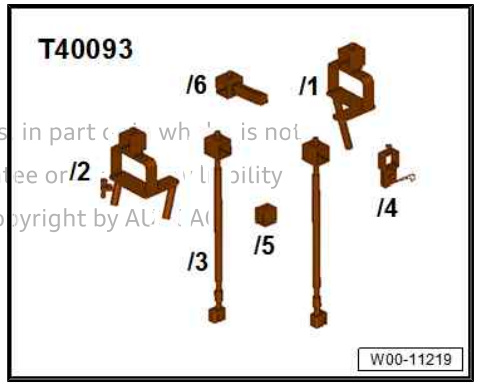
- Adapter - VAS 6948-



- Locking pin - T10060A-



- -T40093/6- from engine support supplementary set - T40093-



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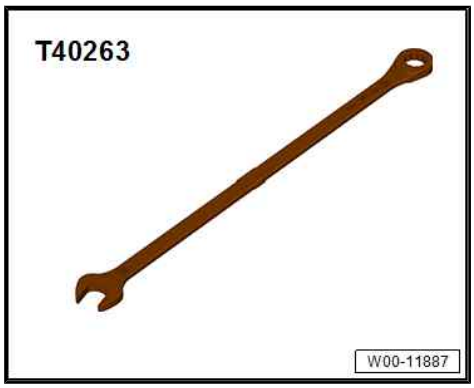
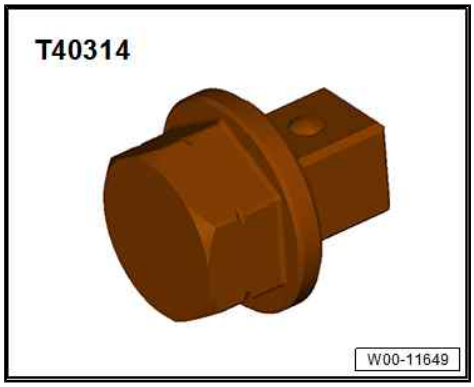
- Wrench, 21 mm - T40263-



- Adapter - T40314-



- Protective gloves
- Safety goggles

Procedure

- The engine is removed upwards without gearbox.
- Re-install all cable ties in original positions.

– Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .
– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
– On vehicle versions with manual gearbox: Select 4th gear.
– Carefully pull engine cover panel off retaining pins one after another -arrows-. Do not jerk engine cover panel away, and do not try to pull on one side only.

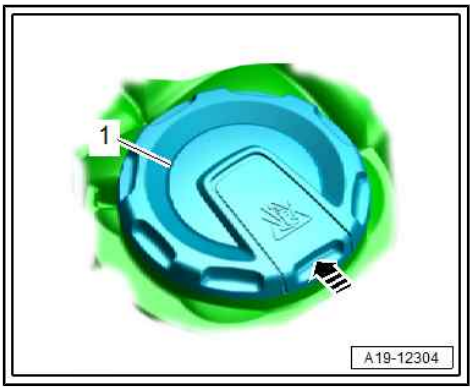
⚠ CAUTION

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

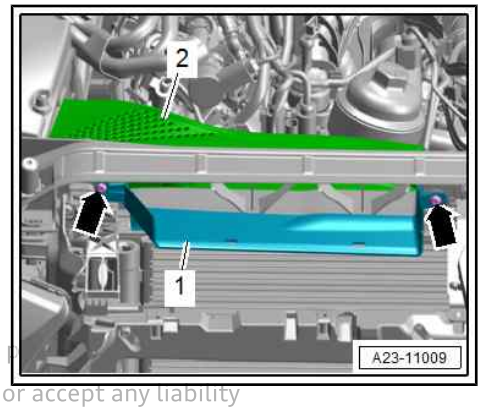
Danger of scalding skin and other parts of the body.

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

– Release fastener -arrow- and open filler cap -1- on coolant expansion tank.
– Remove front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
– Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
– Remove wheel spoiler (left and right) as well as wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
– Remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .
– Remove lock carrier cover, air intake grille (left and right) and closure plate at bumper cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .



– Remove bolts -arrows- and detach air ducts -1, 2-.



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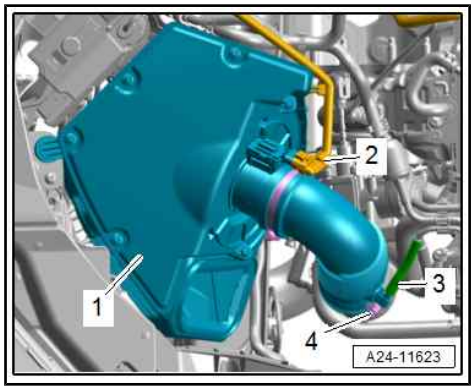
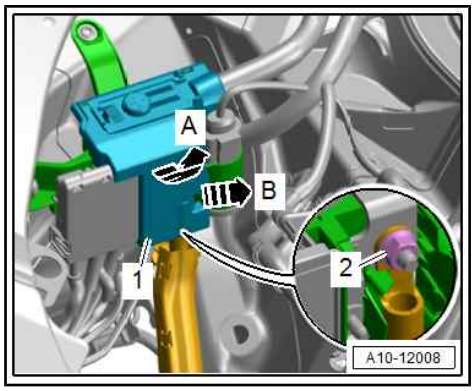
– Unplug electrical connector -2- for air mass meter - G70- .
– Disconnect vacuum hose -3-.
– Release hose clip -4- and disconnect air hose.
– Lift off air cleaner housing -1-.



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

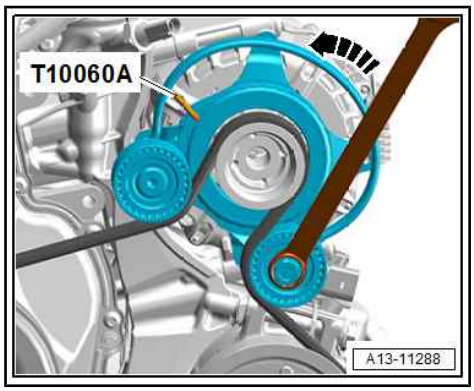


NOTICE

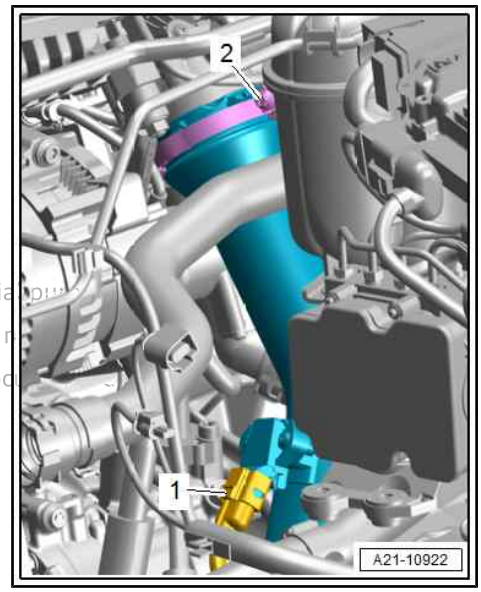
Risk of irreparable damage due to running a used belt in the opposite direction when it is refitted.

- **Mark running direction before removing.**
- **Pay attention to running direction when reinstalling.**

– To slacken poly V-belt turn tensioner in direction of -arrow-.
– Lock tensioner with locking pin - T10060A- .
– Take off poly V-belt.



– Unplug electrical connector -1- for charge pressure sender - G31- .
– Loosen screw-type clip -2- and detach air pipe from throttle valve module - J338- .
– Unfasten front section of wheel housing liner (front left) and press slightly towards rear ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .



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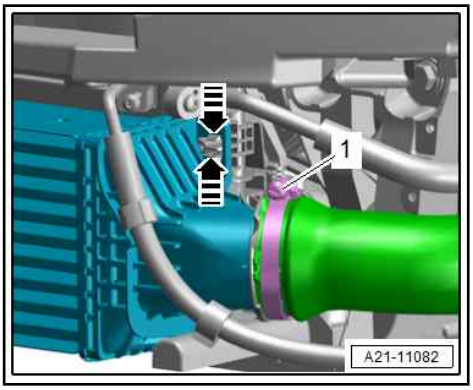
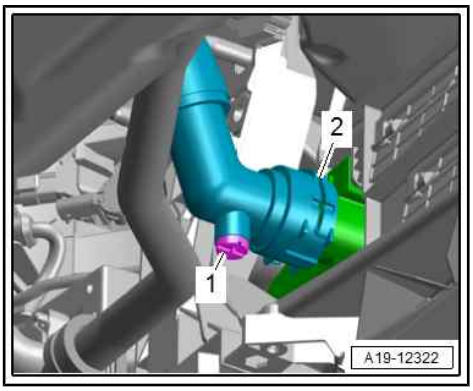
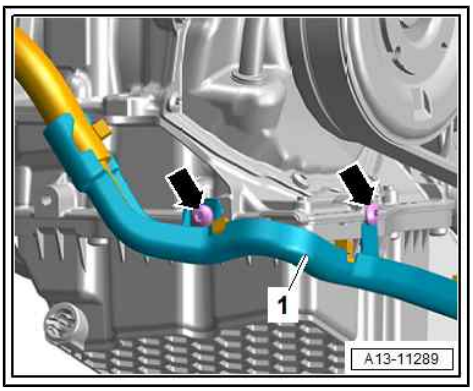
– Release hose clip -1-, disconnect air hose and detach it downwards.



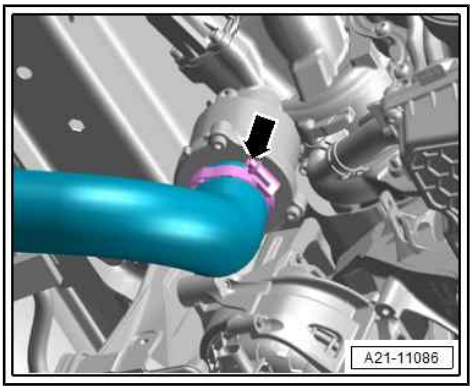
– Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
– Open drain plug -1- at connection and drain off coolant.



– Remove bolts -arrows- and press wiring duct -1- downwards. (Different versions.)
– Remove air conditioner compressor from bracket ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .



– Release hose clip -arrow- and detach air hose (right-side) from turbocharger.



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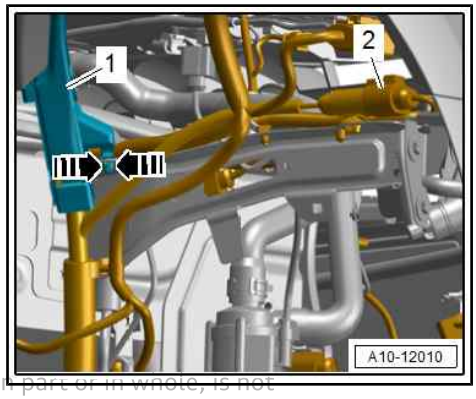
– Detach electrical connector -2- from bracket and unplug.
– Release fasteners -arrows- and move wiring duct -1- clear.
– Move clear electrical wiring harness leading to engine.



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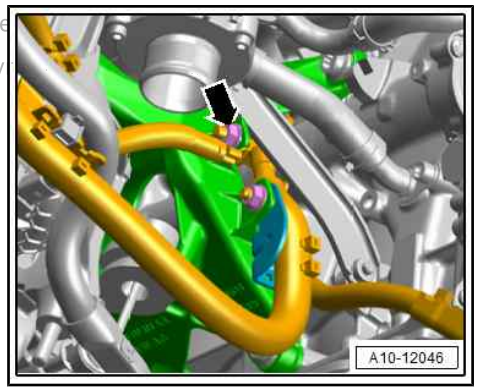
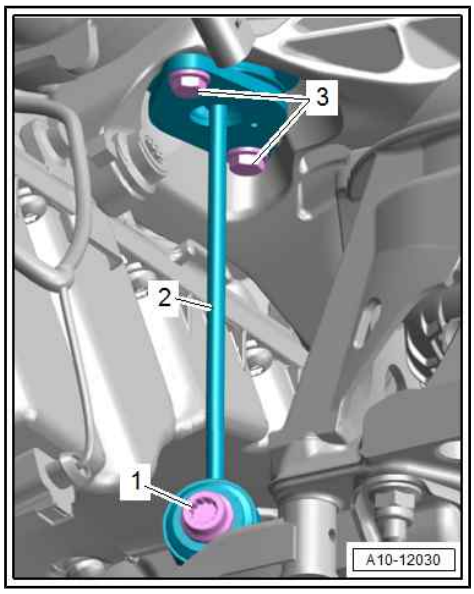
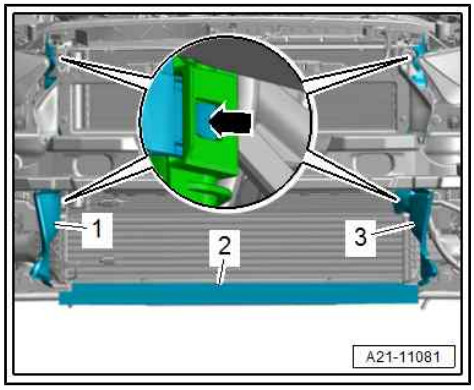
– Remove nut -arrow- and move earth wire clear.



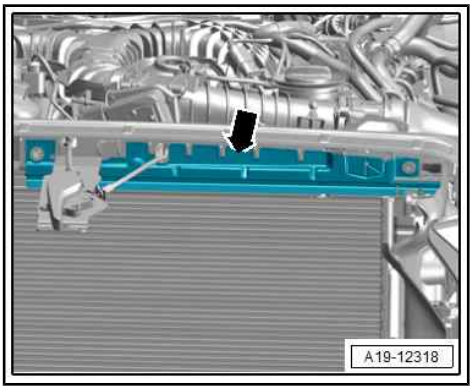
– Remove bolt -1- on both sides.



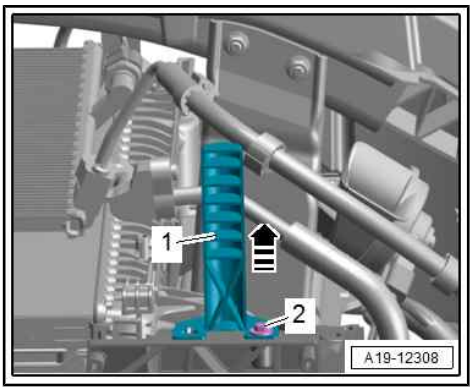
– Release catches -arrow- and detach air ducts -1, 3-.
– Unclip air duct -2-.



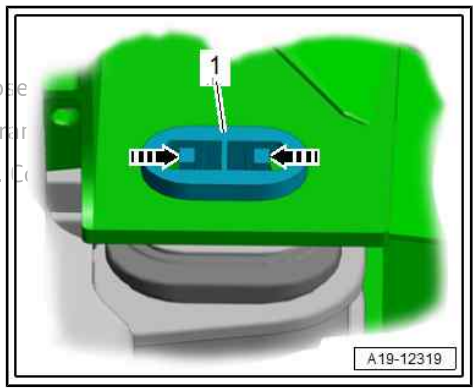
– Detach air duct (top) -arrow-.



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



– Release fasteners -arrows- on both sides and pull retaining pins -1- for radiator out upwards.
– Push radiator slightly forwards.



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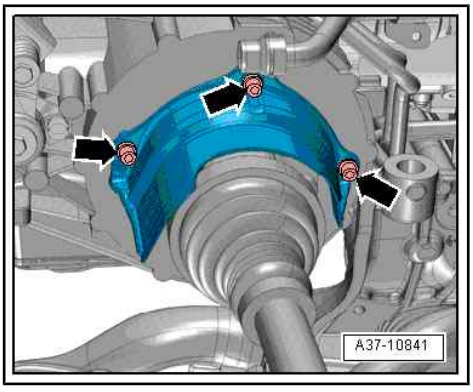
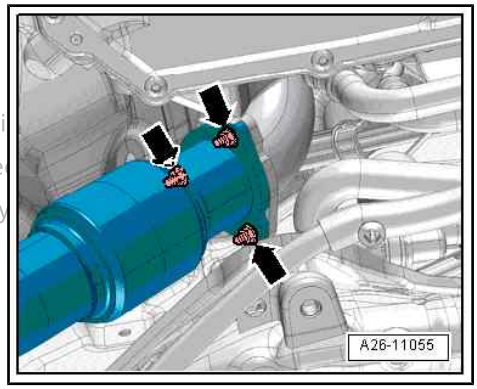
– Remove bolts -arrows- and detach heat shield for drive shaft (right-side).
– Unbolt drive shaft (left and right) from gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
– Detach intermediate steering shaft from steering rack and move clear by telescoping together ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .



– Unscrew nuts -arrows- for front silencer.



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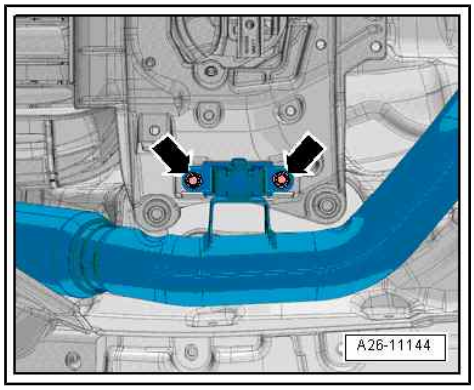
NOTICE

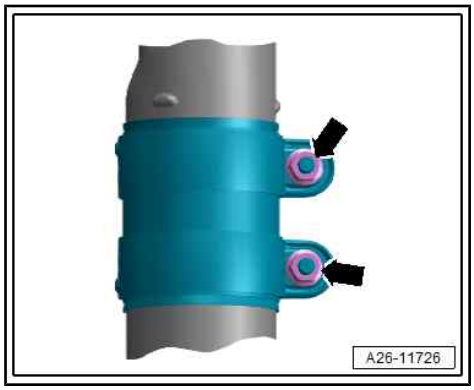
Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

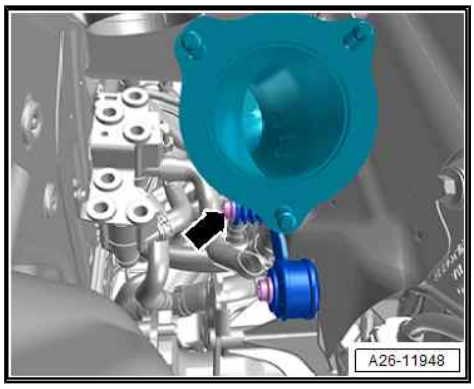
– Unscrew bolts -arrows- (shown on right side).



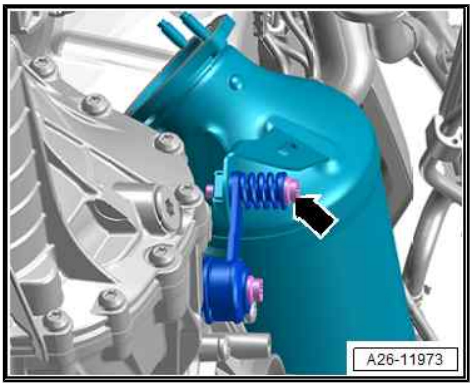
– Loosen clamp -arrows- and push towards rear.
– Detach front silencer.



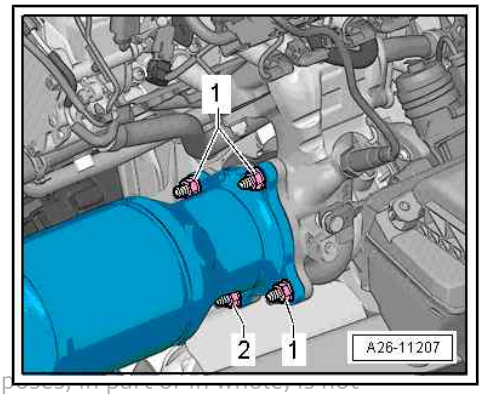
– Remove bolt -arrow- on bracket for particulate filter.



– Remove bolt -arrow- on bracket for catalytic converter.



– Remove nut -2- for catalytic converter. (Nuts -1- do not have to be removed at this stage.)



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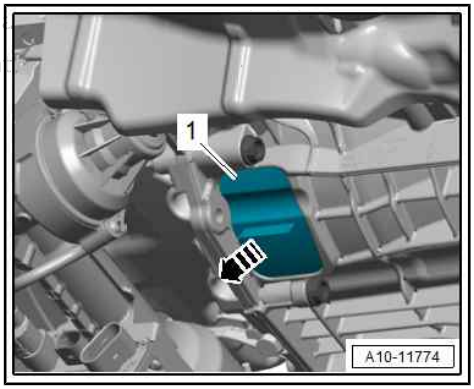
– Detach bottom cover -1- from gearbox -arrow-.



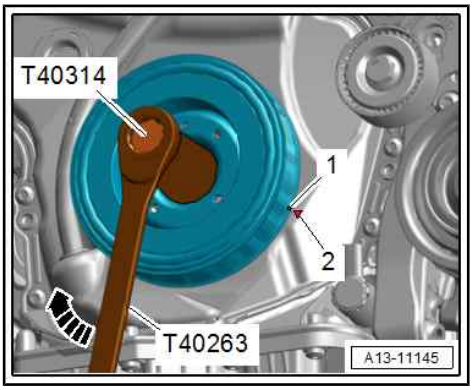
– Counterhold crankshaft using wrench, 21 mm - T40263- and adapter -T40314- when slackening bolts for flywheel.

NOTICE

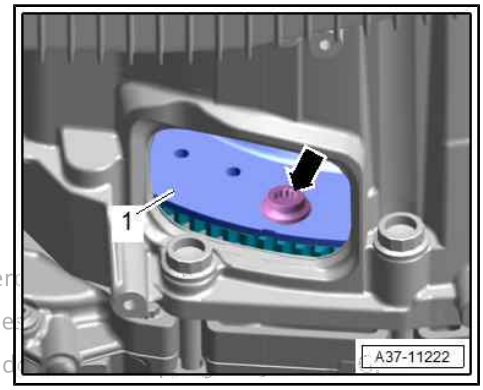
Risk of engine damage if valve gear drive slips

– Only turn engine in normal direction of rotation.

– Then turn crankshaft in steps of 120° in direction of engine rotation -arrow-.



– Remove 3 bolts -arrow- for flywheel -1-.



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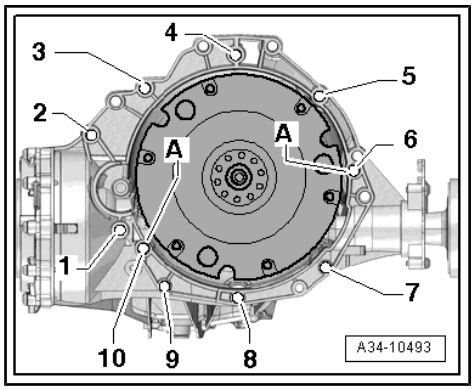
Vehicles with manual gearbox:

– Unscrew bolt -1- using ring spanner insert, 16 mm - V.A.G 1332/14- and adapter - VAS 6948- .

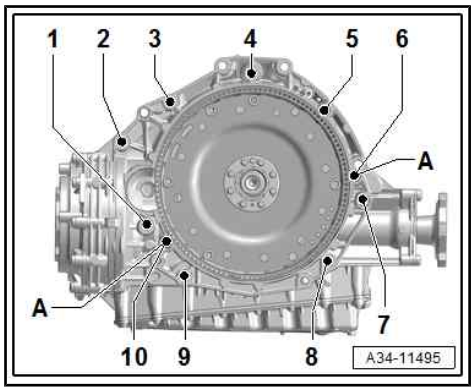
– Remove bolts -6 ... 10- securing gearbox to engine.



Vehicles with dual clutch gearbox:

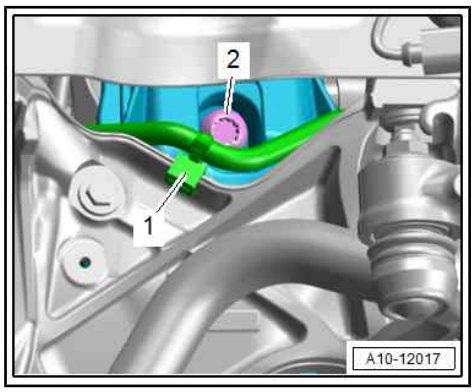
– Unscrew bolt -1- using ring spanner insert, 16 mm - V.A.G 1332/14- and adapter - VAS 6948- .

– Remove bolts -6 ... 10- securing gearbox to engine.

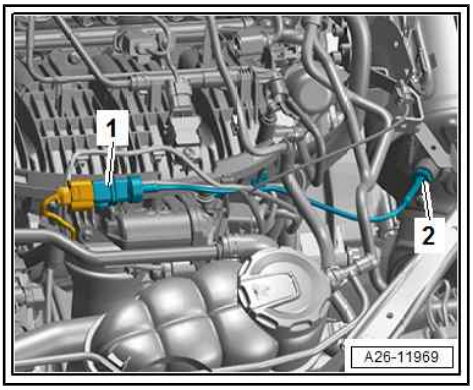


All vehicles (continued):

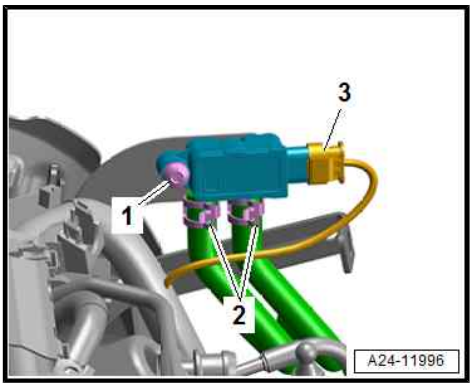
– Remove bolt -2- for engine mounting on both sides.



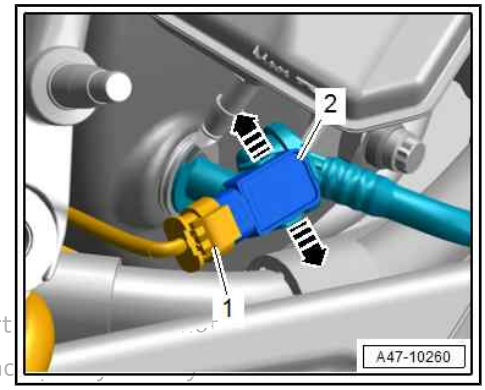
– Unplug electrical connector -1- for exhaust gas temperature sender 4 - G648- and move wiring clear.



– Unplug electrical connector -3-.
– Remove bolt -1- and move pressure differential sender - G505- clear.



– Unplug electrical connector -1- at vacuum sender - G608- -item 2-.



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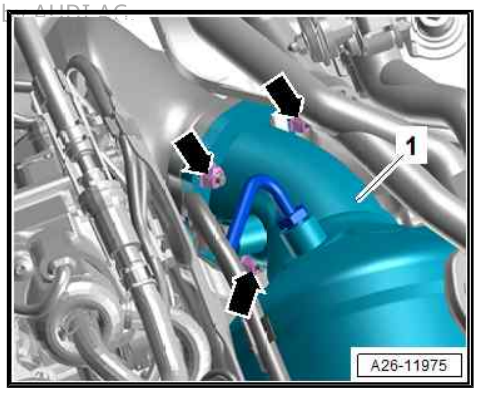
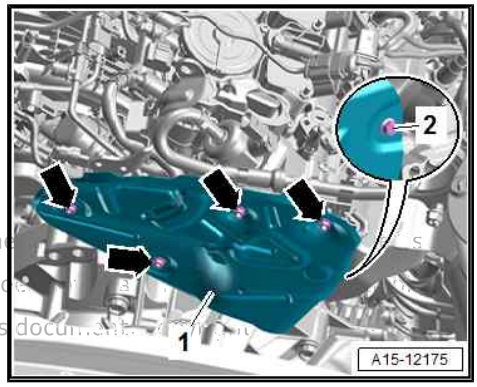
– Remove nuts -arrows- and press particulate filter -1- to rear.



– Move electrical wiring clear at heat shield -1-.
– Remove nuts -arrows- and bolt -2- and detach heat shield (shown with particulate filter removed).



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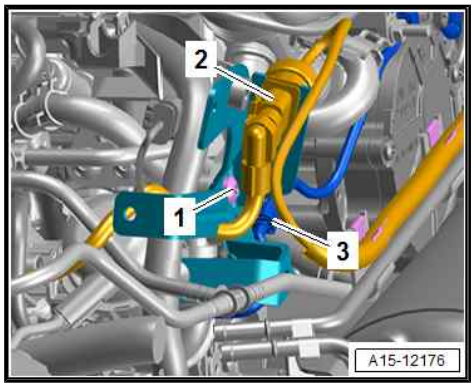
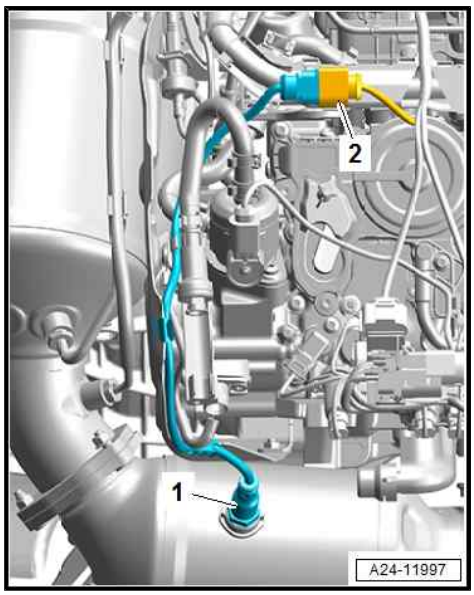
– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.
– Release retaining clip -3- and move vacuum hose clear.
– Remove bolt -1- and push bracket to one side. (Different versions.)
– Detach particulate filter.

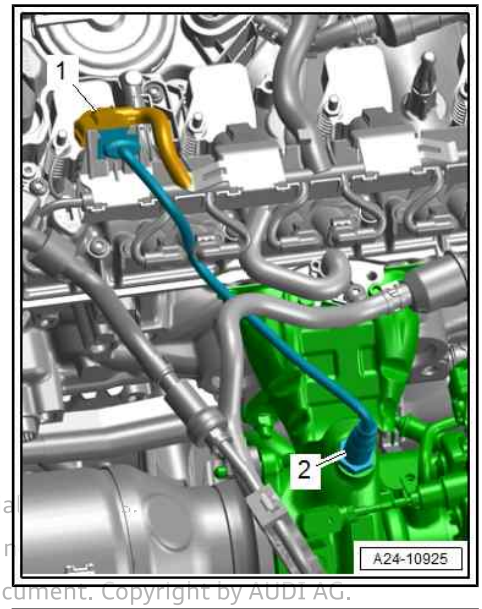


– Unplug electrical connector -2- for Lambda probe after catalytic converter - G130- -item 1- and move wiring clear.



– Unplug electrical connector -1- for Lambda probe - G39- -item 2-. (Installation position varies.)

– Move electrical wiring harness clear at engine and tie up to left side.



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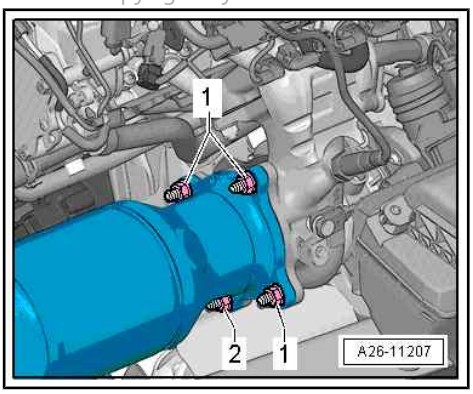
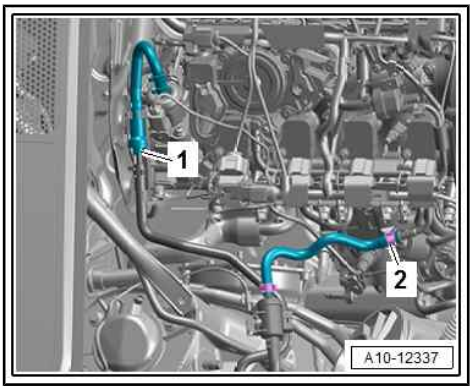
– Unscrew nuts -1- and detach catalytic converter upwards towards rear.

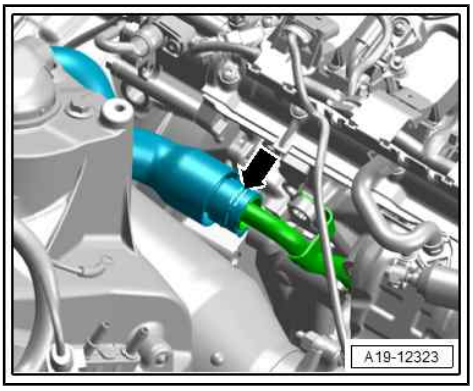


– Disconnect fuel hose -1- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .

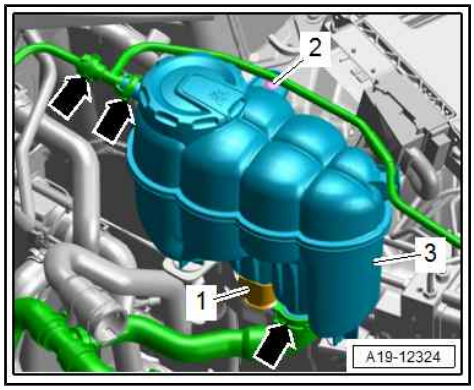
– Release hose clip -2- and disconnect hose for activated charcoal filter system.



– Lift retaining clip -arrow- and disconnect coolant hose.



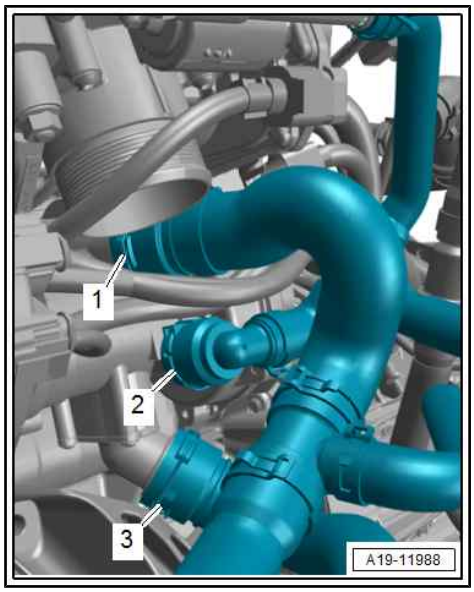
– Lift retaining clips -arrows-, disconnect coolant hoses and move them clear.
– Unplug electrical connector -1- for coolant shortage indicator switch - F66- .
– Unscrew bolt -2- and detach coolant expansion tank -3-.



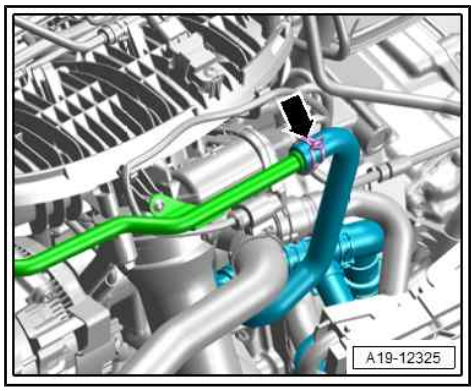
– Lift retaining clips -1, 3- and disconnect coolant hoses.

Vehicles with dual clutch gearbox:

– Lift retaining clip -2- and disconnect coolant hose.

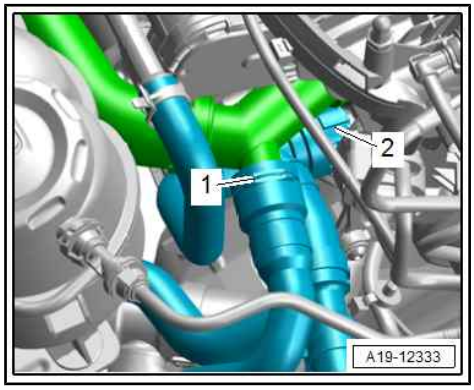


– Release hose clip -arrow- on coolant pipe (left-side) and detach coolant hose.



Vehicles with manual gearbox:

– Lift retaining clip -1- and disconnect coolant hose.



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All vehicles (continued):

– Detach electrical connector -2- from bracket and unplug.

– Unplug electrical connector -1- at engine control unit.

– Move electrical wiring harness clear and place on engine.

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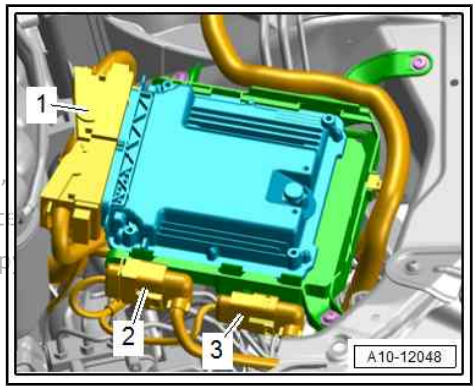
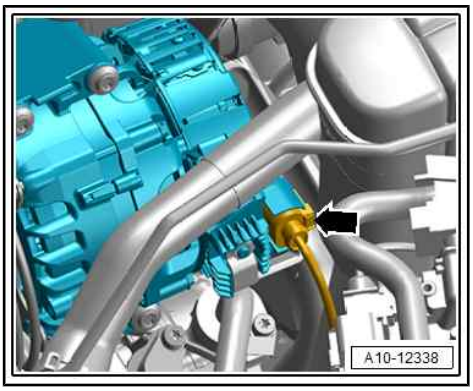
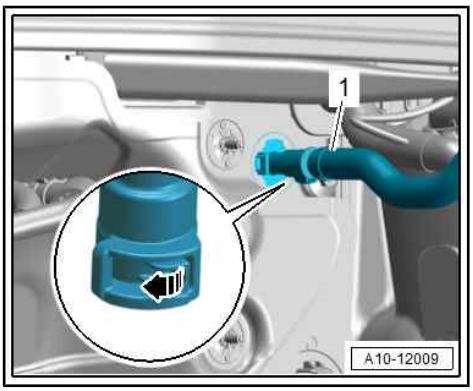


– Unplug electrical connector -arrow- for starter-alternator.



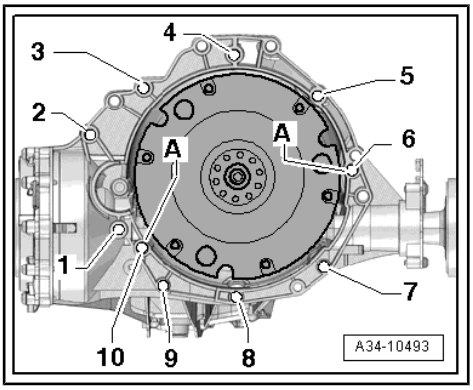
– Release catch -arrow- and disconnect vacuum hose -1-.



Vehicles with manual gearbox:

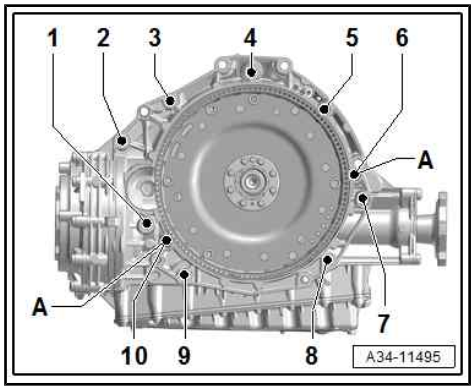
– Remove bolts -2 ... 5- (accessible from above) securing engine to gearbox.

– Separate starter slightly from gearbox and leave in position.



Vehicles with dual clutch gearbox:

– Remove bolts -2 ... 5- (accessible from above) securing engine to gearbox.

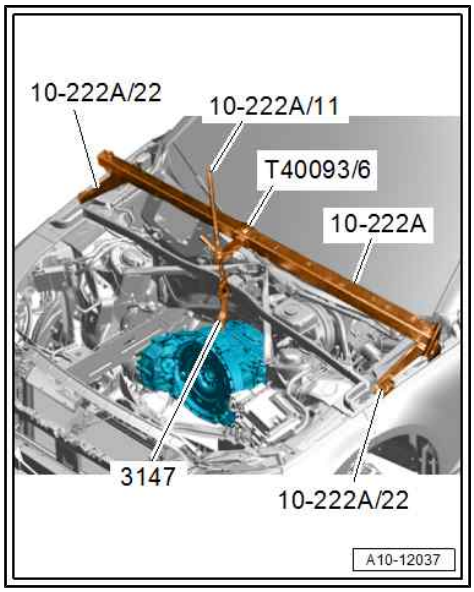


All vehicles (continued):

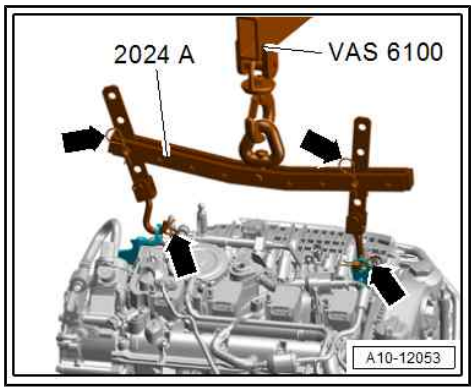
– Set up support bracket - 10-222A- with adapters -10-222A/22- on bolted flanges of wing panels (left and right) as illustrated. (Engine has been removed in illustration).

– Use gearbox support - 10-222A/11- to hook spindle - 3147- onto gearbox.

– Take up weight of gearbox with spindle.



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



CAUTION

Risk of injury if power unit drops when it is lifted.

Danger of trapping or crushing parts of the body.

– The support hooks and retaining pins on the lifting tackle must be secured with locking pins.

– Raise engine until engine mountings are clear.

– Tighten spindle - 10-222A/11- further.

NOTICE

Risk of damage to lines/pipes, hoses and engine compartment when lifting engine out.

– Check that all connections between engine, gearbox, sub-frame and body have been detached.

– Separate engine from gearbox and lift engine out of engine compartment.

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1.2 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 .

1.3 Installing engine

Special tools and workshop equipment required

- ♦ All special tools specified in removal procedure

Procedure

- After removing, renew bolts tightened with specified tightening angle.
- Renew self-locking nuts and bolts as well as seals, gaskets and O-rings after removal.
- On vehicles with manual gearbox, a needle bearing must be fitted in the drive plate ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13 ; Cylinder block (gearbox end); Renewing needle bearing in drive plate .
- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Re-install all cable ties in original positions.
- Do not reuse coolant.

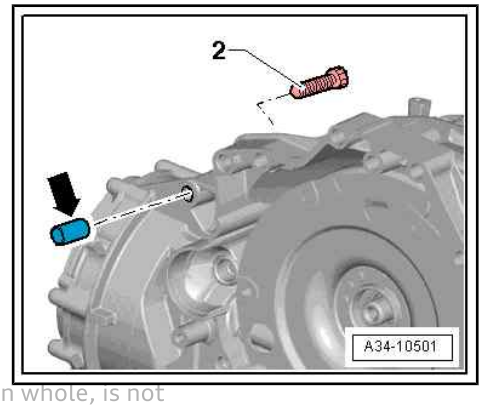
– Attach engine to gearbox, but do not yet tighten gearbox/engine connecting bolts ⇒ Gearbox; Rep. gr. 34 ; Removing and installing gearbox; Installing gearbox .

Note:

Bolt -2- secures the starter to the gearbox and is provided with a spacer sleeve -arrow-.

- The spacer sleeve must be fitted between the starter and the gearbox.

– Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .



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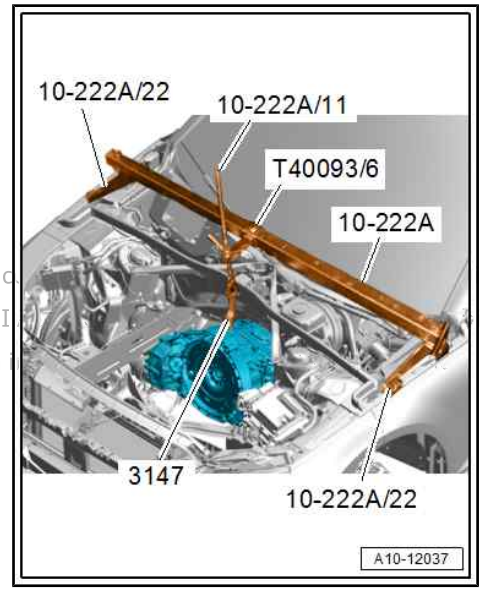
– Slacken spindle - 10-222A/11- .
– Lower workshop hoist and place engine/gearbox assembly onto engine mounting.



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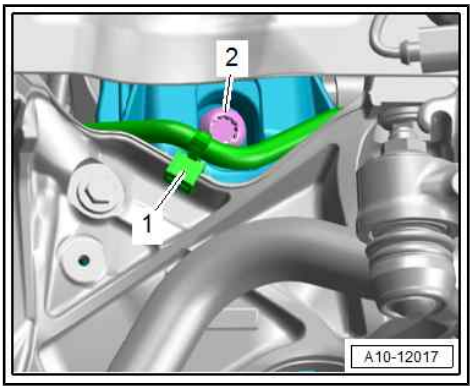

– Screw in bolts -2- (left and right) for engine mounting.
– Detach workshop hoist - VAS 6100- and lifting tackle - 2024A- .
– Tighten gearbox/engine connecting bolts ⇒ Gearbox; Rep. gr. 34 ; Removing and installing gearbox; Tightening torques for gearbox .

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

– Connect fuel hose ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
– Install Lambda probe - G39- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Lambda probe; Removing and installing Lambda probe .
– Secure drive shaft with bolts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
– Install heat shield for drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .
– Install air conditioner compressor ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Detaching and attaching air conditioner compressor at bracket .
– 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 air cleaner housing ⇒ page 136 .
– Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
– Install catalytic converter ⇒ page 164 .
– Align the exhaust system so it is free of stress ⇒ page 162 .
– Install bracket and heat shield at cylinder head ⇒ Fig. ""Bracket for heat shield - tightening torque"" , page 58 .
– 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 .
– Fill up with engine oil (⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: filling up), and check oil level (⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: checking oil level and correcting if necessary).
– Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

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NOTICE

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

– **Do not use a battery charger to boost starting.**

– If engine was renewed, perform adaptions listed in Guided Function “01 - Functions, engine mechanics” ⇒ Vehicle diagnostic tester.

Note:

Risk of damage to components: Only perform additional adaptions for those components which were renewed after removal.

– Connect coolant hose with plug-in connector ⇒ page 110 .

– Fill up with coolant ⇒ page 82 .

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

– Fit front wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .

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

Tightening torques

- 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: ± 15 %.

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

- ⇒ “2.1 Exploded view - assembly mountings”, page 41
- Bolts securing engine to gearbox ⇒ Gearbox; Rep. gr. 34 ; Removing and installing gearbox; Tightening torques for gearbox

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2 Assembly mountings

⇒ “2.1 Exploded view - assembly mountings”, page 41

⇒ “2.2 Supporting engine in installation position”, page 44

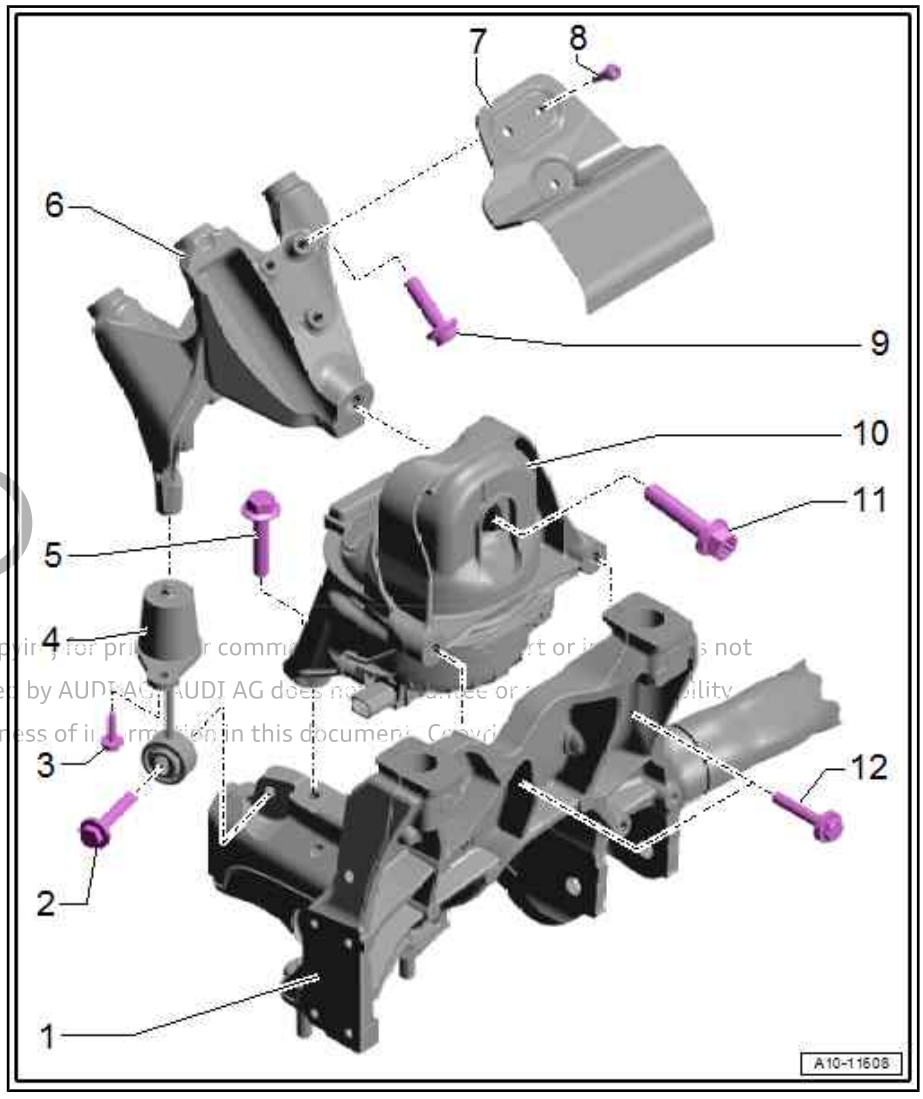
⇒ “2.3 Removing and installing engine mountings”, page 45

⇒ “2.4 Removing and installing gearbox mounting”, page 47

2.1 Exploded view - assembly mountings

- Exploded view - engine mounting ⇒ page 41
- Exploded view - gearbox mounting for manual gearbox ⇒ page 42
- Exploded view - gearbox mounting for dual clutch gearbox ⇒ page 43

Exploded view - engine mounting



1 - Subframe

2 - Bolt

- ❑ 20 Nm

3 - Bolt

- ❑ 10 Nm

4 - Support mounting

- ❑ Removing and installing ⇒ page 47
- ❑ Installation position ⇒ page 42

5 - Bolt

- ❑ 55 Nm

6 - Engine support

- ❑ Removing and installing ⇒ page 50

7 - Heat shield

8 - Bolt

- ❑ 10 Nm

9 - Bolt

- ❑ 55 Nm

10 - Engine mounting

- ❑ with

- ♦ Left electrohydraulic engine mounting solenoid valve - N144-
- ♦ Right electrohydraulic engine mounting solenoid valve - N145-
  - ❑ Removing and installing ⇒ page 45

11 - Bolt

- ❑ Renew after removing
- ❑ 90 Nm +90°

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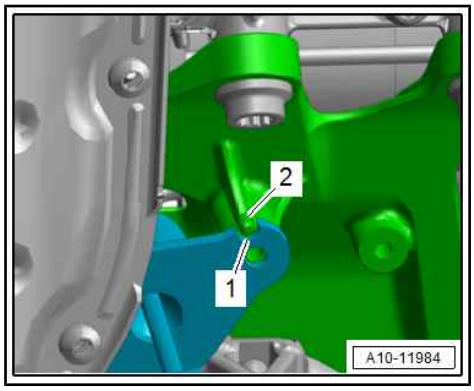
12 - Bolt

- ❑ 30 Nm

Installation position of support mounting

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



Exploded view - gearbox mounting for manual gearbox

1 - Nut

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

2 - Bolt

- ❑ Tightening torques ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

3 - Tunnel cross member

- ❑ Removing and installing ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

4 - Stop plate

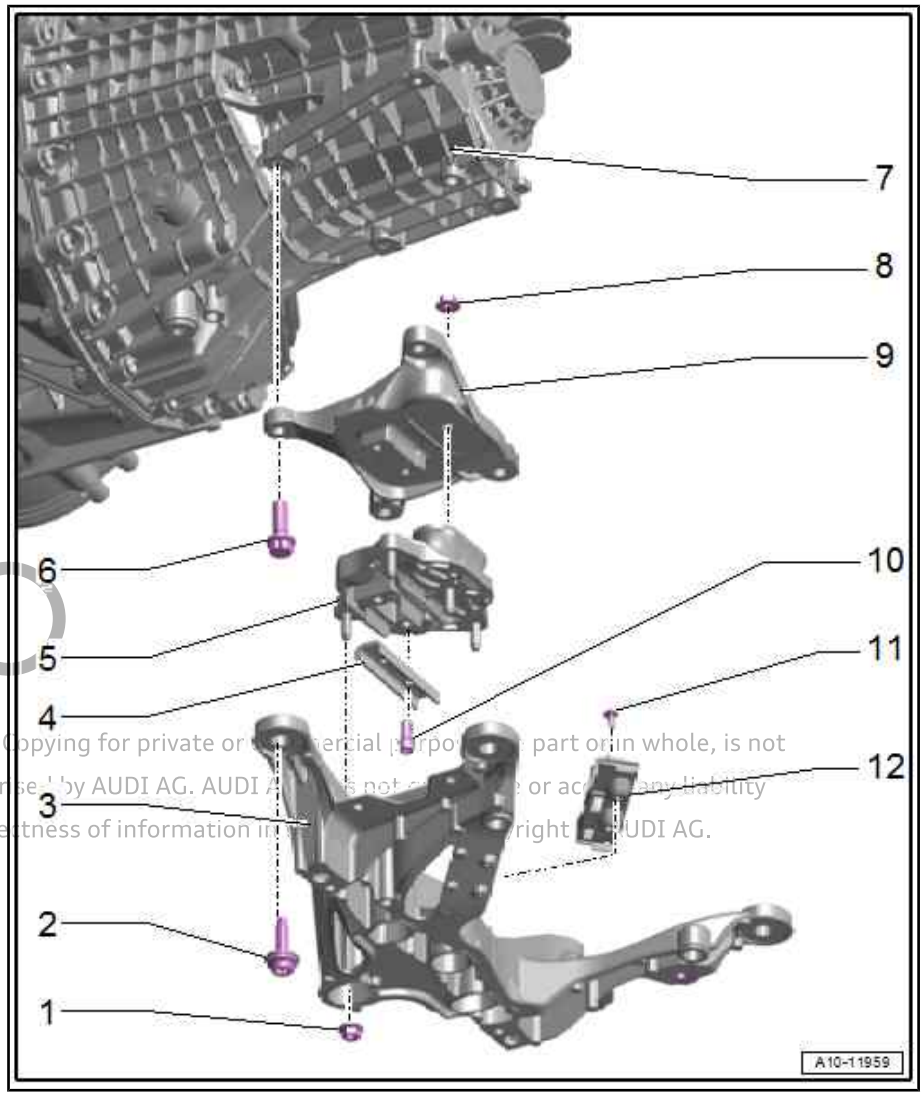
- ❑ For gearbox mounting

5 - Gearbox mounting

- ❑ Removing and installing ⇒ page 47

6 - Bolt

- ❑ Tightening torques ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings



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7 - Gearbox

8 - Nut

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

9 - Gearbox support

- ❑ Removing and installing ⇒ page 47

10 - Bolt

- ❑ Tightening torques ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

11 - Bolt

- ❑ 9 Nm

12 - Bracket

- ❑ For electrical connector

Exploded view - gearbox mounting for dual clutch gearbox

1 - Bolt

- ❑ Tightening torques ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

2 - Tunnel cross member

- ❑ Removing and installing ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

3 - Stop plate

- ❑ For gearbox mounting

4 - Gearbox mounting

- ❑ Removing and installing ⇒ page 47

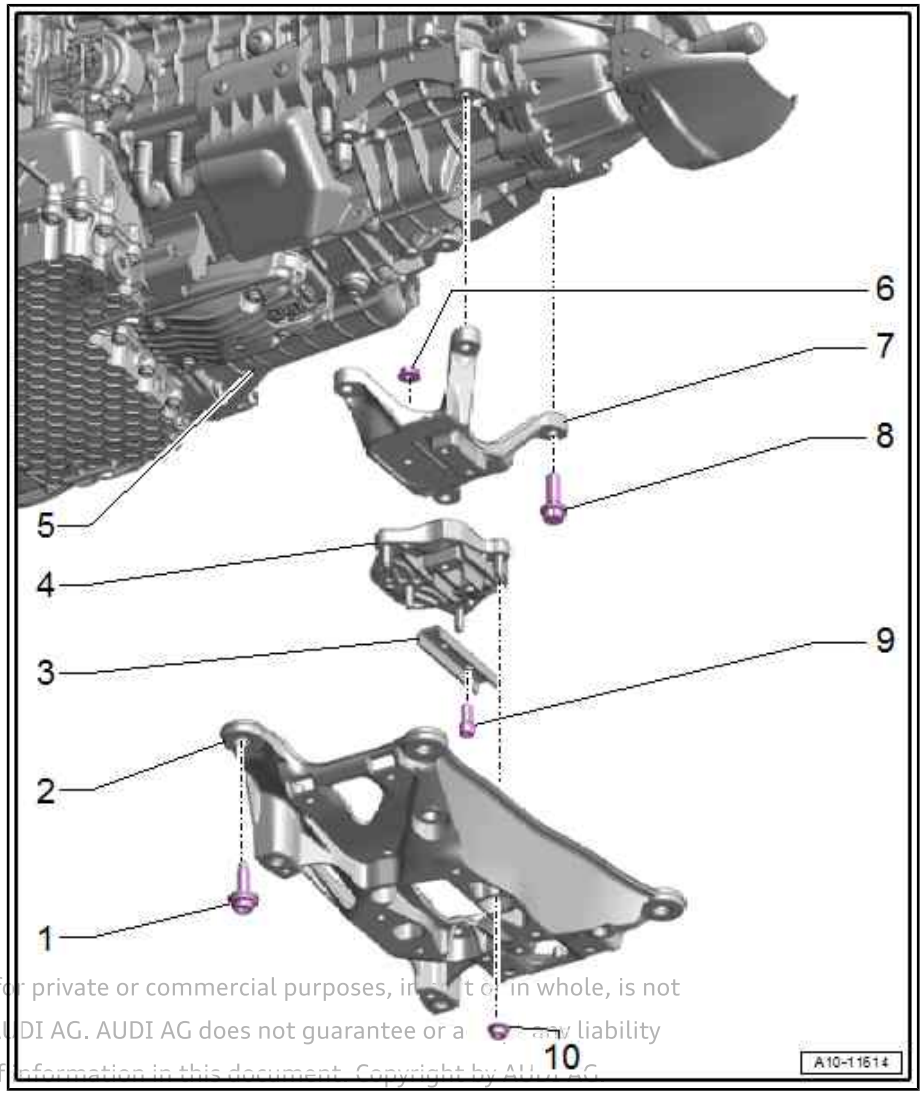
5 - Gearbox

6 - Nut

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

7 - Gearbox support

- ❑ Removing and installing ⇒ page 47



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8 - Bolt

- ❑ Tightening torques ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

9 - Bolt

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

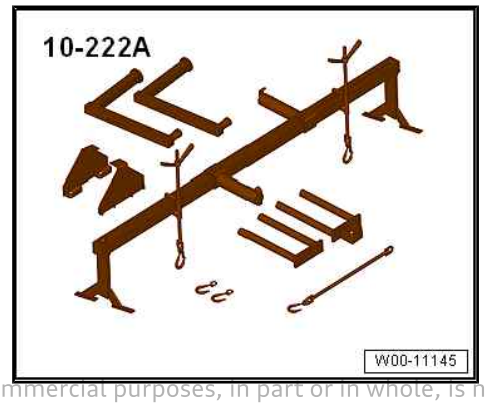
10 - Nut

- ❑ Only remove if detaching gearbox mounting from gearbox support
- ❑ Tightening torques ⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

2.2 Supporting engine in installation position

Special tools and workshop equipment required

- ♦ Support bracket - 10-222A-



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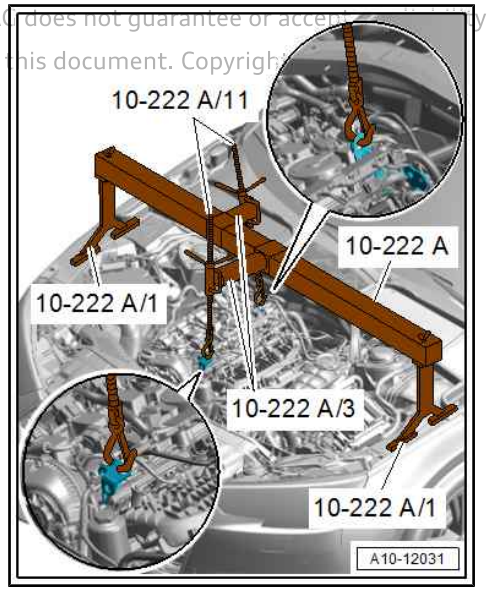
Procedure

– 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 .

– Set up support bracket - 10-222A- on upper wheel housing longitudinal members (left and right), as shown.

– Attach spindles -10-222A/11- to engine lifting eyes.

– Take up weight of engine with spindles, but do not lift.



Assembling

Assembly is performed in reverse sequence; note the following:

– 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 .

2.3 Removing and installing engine mountings

⇒ "2.3.1 Removing and installing engine mountings", page 45

⇒ "2.3.2 Removing and installing support mounting", page 47

2.3.1 Removing and installing engine mountings

Removing

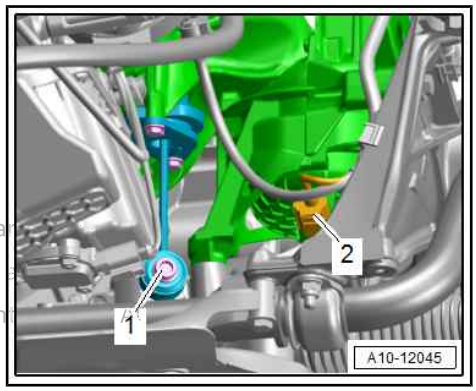
– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .

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

– Unplug electrical connector -2- for electrohydraulic engine mounting solenoid valve.

Engine mounting (left-side):

– Remove bolt -1- for support mounting.



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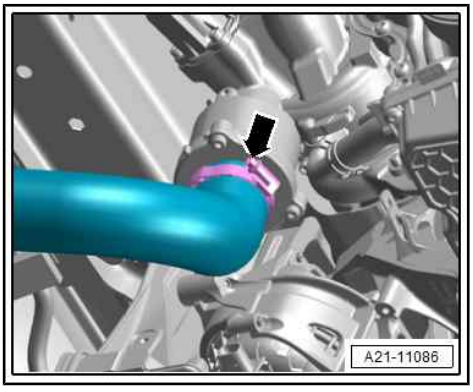
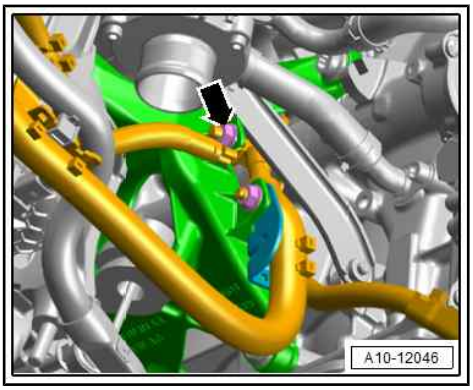
Engine mounting (right-side):

– Remove support mounting (right-side) ⇒ page 47 .

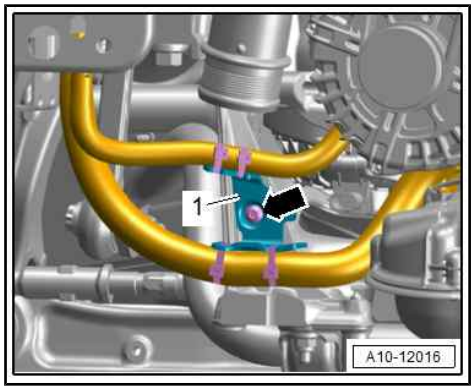
– Release hose clip -arrow- and detach air hose.



– Remove nut -arrow- and move earth wire clear.



– Remove bolt -arrow- and move bracket -1- clear with electrical wiring harness.



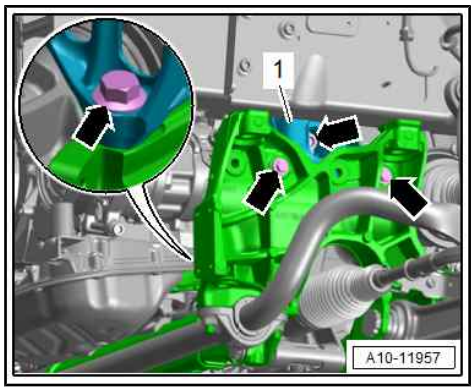
Both sides (continued):

Note:

Risk of damage to drive shafts: When lifting the engine, the drive shafts must not make contact with the suspension struts.

– Support engine in installation position ⇒ page 44 and take up weight with spindles -10-222A/11- until load on engine mounting is relieved.

– Remove bolts -arrows- and detach engine mounting -1-.



Installing

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

- After removing, renew bolts tightened with specified tightening angle.

Tightening torques

- ⇒ “2.1 Exploded view - assembly mountings”, page 41
- ⇒ 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
- Earth wire ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

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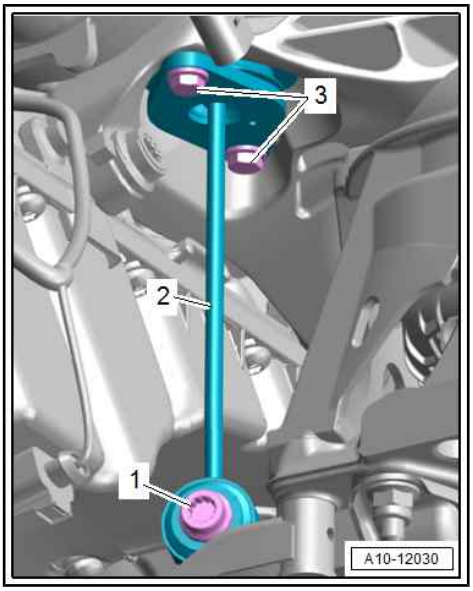
2.3.2 Removing and installing support mounting

Removing

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

– Unscrew bolts -1, 3- and detach support mounting -2-.



Installing

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

- After removing, renew bolts tightened with specified tightening angle.

– Observe correct installation position ⇒ page 42 .

Tightening torques

♦ ⇒ “2.1 Exploded view - assembly mountings”, page 41

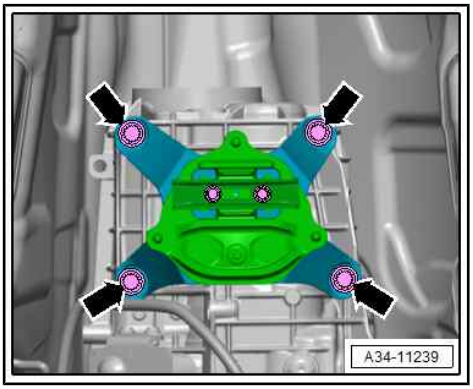
♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.4 Removing and installing gearbox mounting

Removing gearbox support with gearbox mounting

– Remove tunnel cross member ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings .

– Remove bolts -arrows- and detach gearbox support and gearbox mounting from gearbox.



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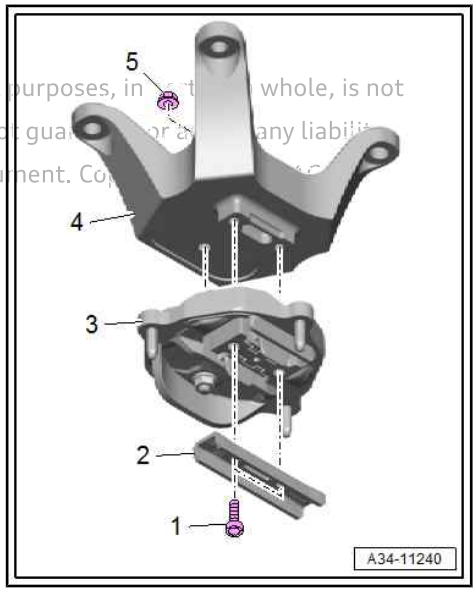
Removing gearbox mounting

– Unscrew bolts -1- and detach stop -2- for gearbox mounting.

– Remove nut -5- and detach gearbox mounting -3- from gearbox support -4-.



Installing

– Tighten nut -5- hand-tight initially.

– Tighten bolts -1- and then nut -5-.

The remaining installation steps are carried out in the reverse sequence.

Tightening torques

♦ ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

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 49

⇒ “1.2 Removing and installing poly V-belt”, page 49

⇒ “1.3 Removing and installing tensioner for poly V-belt”, page 49

⇒ “1.4 Removing and installing vibration damper”, page 49

⇒ “1.5 Removing and installing bracket for ancillaries”, page 49

⇒ “1.6 Removing and installing engine support”, page 50

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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

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 poly V-belt .

1.3 Removing and installing tensioner for poly V-belt

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 poly V-belt tensioner .

1.4 Removing and installing vibration damper

Removing

– Remove radiator cowl ⇒ page 114 .

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 .

Installing

Additional work:

– Install radiator cowl ⇒ page 114 .

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

⇒ “1.6.1 Removing and installing engine support (left-side)”, page 50

⇒ “1.6.2 Removing and installing engine support (right-side)”, page 51

1.6.1 Removing and installing engine support (left-side)

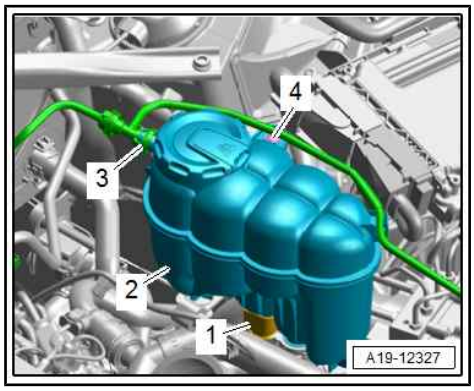
Removing

– 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 .

– Lift retaining clip -3-, disconnect coolant hose and move it clear.

– Unplug electrical connector -1- for coolant shortage indicator switch - F66- .

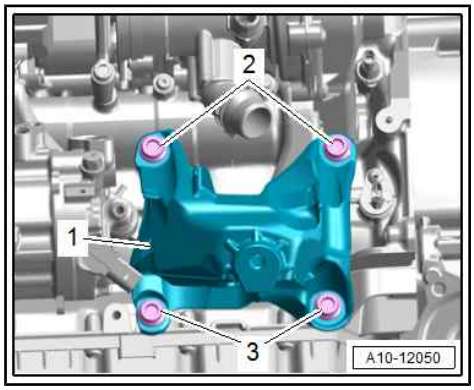
– Remove bolt -4- and push coolant expansion tank -2- to one side.



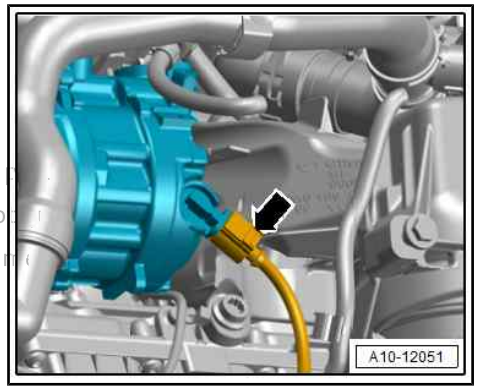
– Remove top bolts -2- for engine support -1-. (Engine has been removed in illustration).

– Remove support mounting (left-side) ⇒ page 47 .

– Remove engine mounting (left-side) ⇒ page 45 .



– Unplug electrical connector -arrow- for air conditioner compressor.



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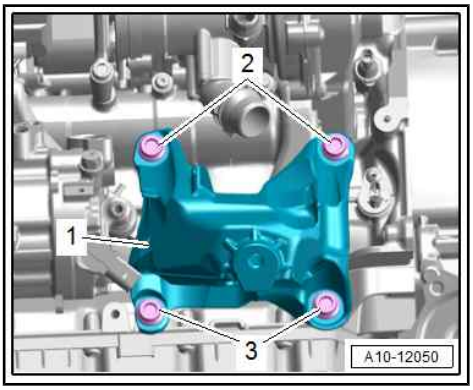
– Unscrew bottom bolts -3- and detach engine support (left-side) -1-.



Installing

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

- After removing, renew bolts tightened with specified tightening angle.

– Connect coolant hose with plug-in connector ⇒ page 110 .

– Install support mountings ⇒ page 47 .

– 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

♦ ⇒ “2.1 Exploded view - assembly mountings”, page 41

1.6.2 Removing and installing engine support (right-side)

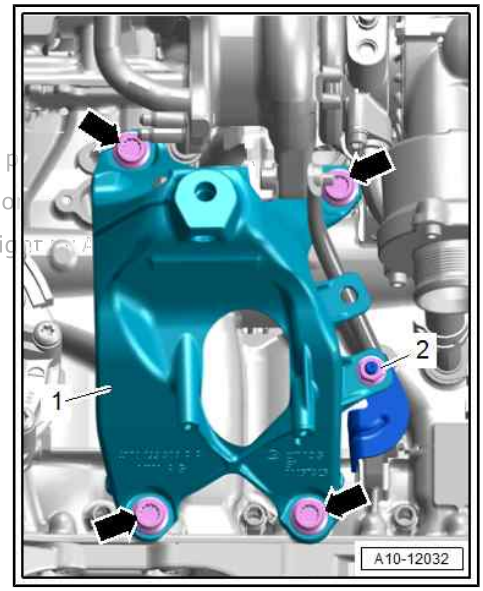
Removing

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

– Remove engine mounting (right-side) ⇒ page 45 .

– Remove nut -2- and move bracket with electrical wiring clear.

– Remove bolts -arrows- and detach engine support -1- (right-side). (Engine has been removed in illustration).



Installing

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

- After removing, renew bolts tightened with specified tightening angle.

– Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

Tightening torques

♦ ⇒ “2.1 Exploded view - assembly mountings”, page 41

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 56

⇒ “1.2 Removing and installing timing chain cover”, page 56

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

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⇒ “1.2.1 Removing and installing timing chain cover (top)”, page 56

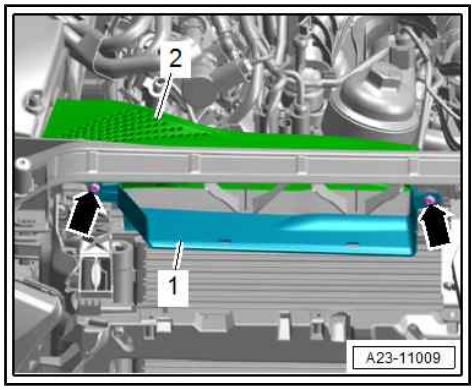
⇒ “1.2.2 Renewing timing chain cover (bottom)”, page 56

1.2.1 Removing and installing timing chain cover (top)

Removing

– Remove lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Exploded view - bumper cover .

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



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 .

Installing

Additional work:

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

Tightening torques

◆ ⇒ “2.1 Exploded view - air cleaner housing”, page 135

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 .

2 Chain drive

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

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3 Cylinder head

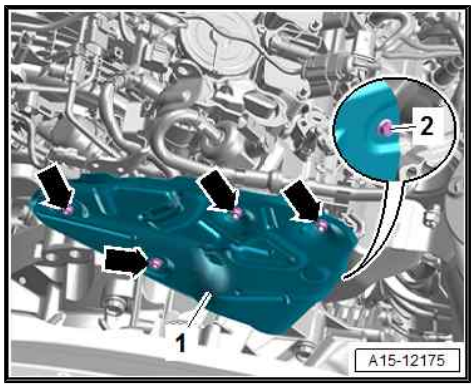
⇒ “3.1 Exploded view - cylinder head”, page 58

⇒ “3.2 Removing and installing cylinder head”, page 58

⇒ “3.3 Checking compression”, page 64

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 .

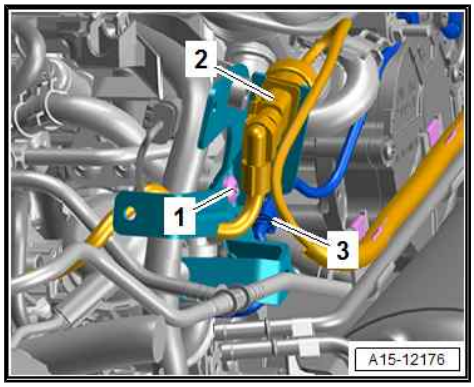


Heat shield - tightening torque

– Tighten nuts -arrows- and bolt -2- to 9 Nm.

Bracket for heat shield - tightening torque

– Tighten bolt -1- to 9 Nm.



3.2 Removing and installing cylinder head

⇒ “3.2.1 Removing and installing cylinder head - vehicles without particulate filter”, page 58

⇒ “3.2.2 Removing and installing cylinder head - vehicles with particulate filter”, page 61

3.2.1 Removing and installing cylinder head - vehicles without particulate filter

Removing

– Remove camshafts ⇒ page 65 .

NOTICE

Risk of irreparable damage to engine if valve timing is incorrect

– **Do not turn the crankshaft after the camshafts have been removed.**

– Remove throttle valve module - J338- ⇒ page 145 .

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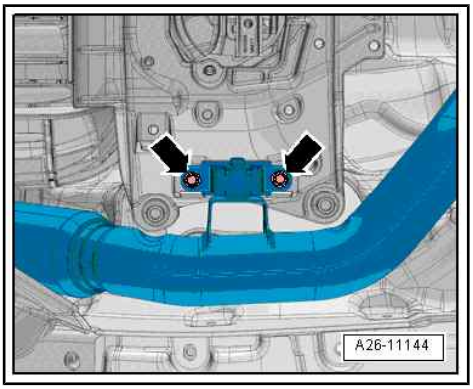
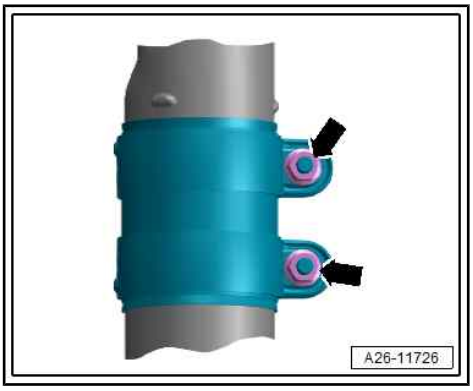
– Unscrew bolts -arrows- for front silencer.



– Loosen bolted connections -arrows- and push clamp towards rear.



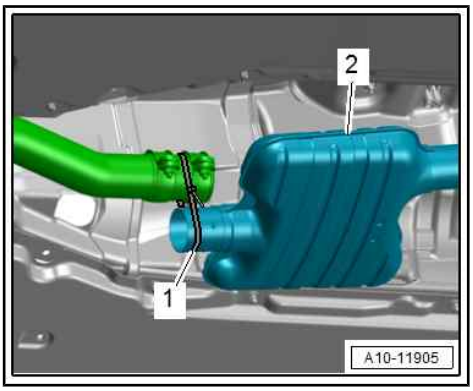
NOTICE

Risk of damage to flexible joint if handled incorrectly.

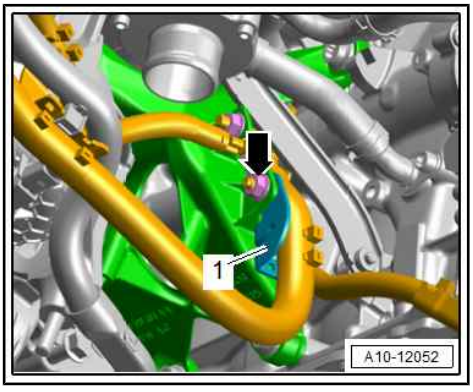
- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Lower front silencer -2- slightly and secure it with a cable tie -1-, as shown.

– Drain coolant ⇒ page 82 .



– Remove nut -arrow- and press bracket -1- with electrical wiring harness to one side.



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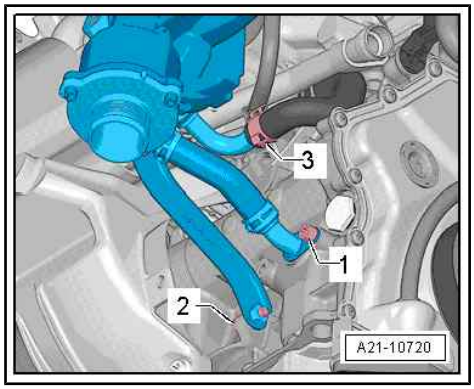
– Remove bolt -2-.
– Place a cloth underneath to catch escaping engine oil.
– Unscrew bolt -1- and detach oil return connection.



– Remove heat shield -arrows-.

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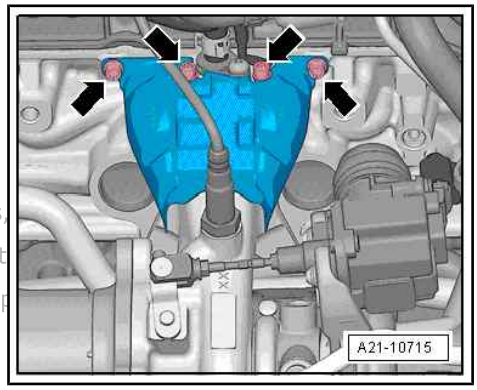
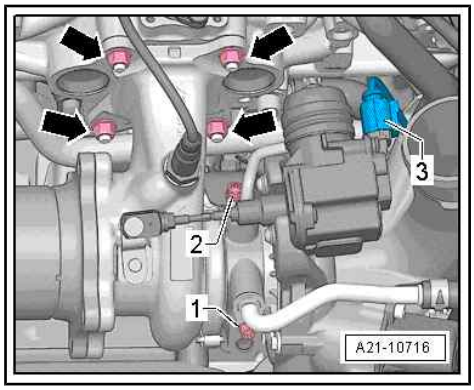
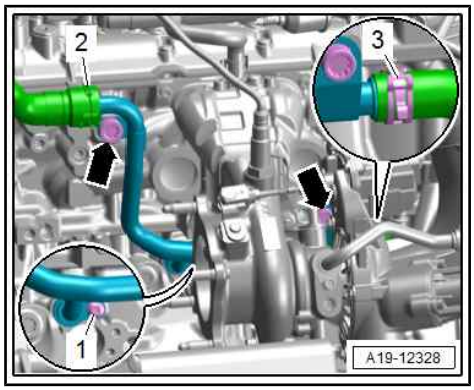


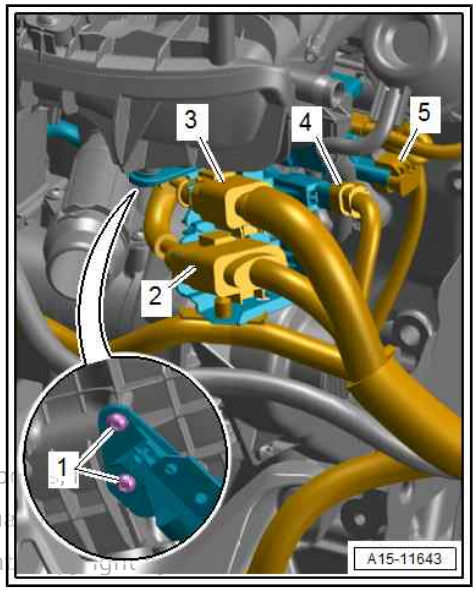
– Remove bolt -2- and detach oil supply line.
– Remove nuts -arrows- and pull turbocharger off studs.



– Remove bolts -arrows- at coolant pipe (right-side).



– Detach electrical connectors -2 and 3- from bracket and unplug.
– Unplug electrical connectors -4, 5-.
– Remove bolts -1- securing bracket.



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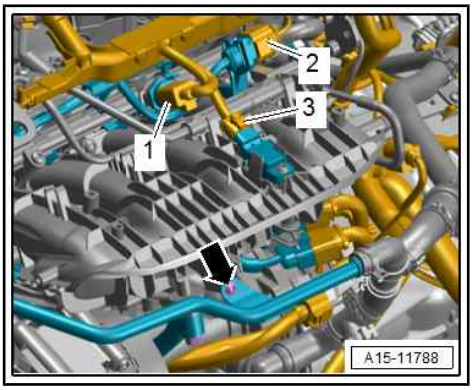
– Unplug electrical connector -3-.
– Vehicles with MPI engine: Unplug electrical connectors -1, 2-.



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 .

Tightening torques

- ⇒ “1.1 Exploded view - silencers”, page 154
- Bracket for wiring harness ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

3.2.2 Removing and installing cylinder head - vehicles with particulate filter

Removing

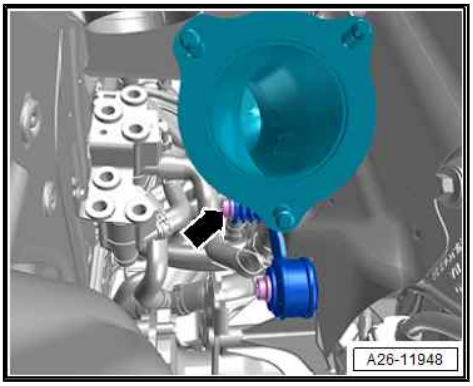
– Remove camshafts ⇒ page 65 .

NOTICE

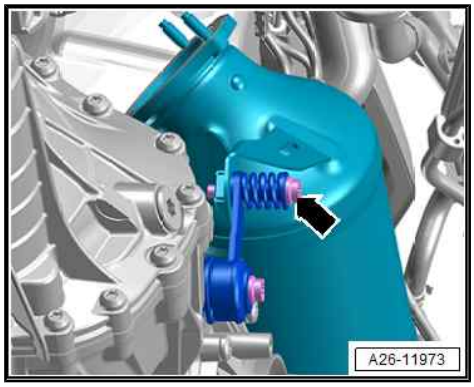
Risk of irreparable damage to engine if valve timing is incorrect

– Do not turn the crankshaft after the camshafts have been removed.

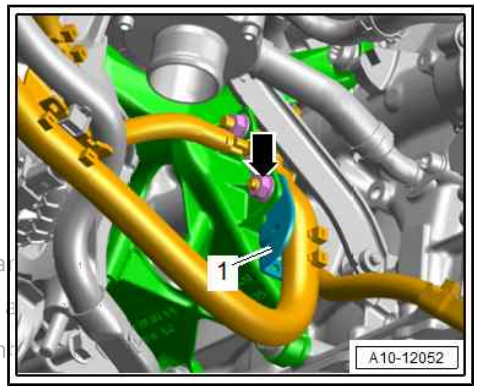
– Remove throttle valve module - J338- ⇒ page 145 .
– Remove front silencer ⇒ page 159 .
– Remove bolt -arrow- on bracket for particulate filter.



– Remove bolt -arrow- on bracket for catalytic converter.
– Drain coolant ⇒ page 82 .



– Remove nut -arrow- and press bracket -1- with electrical wiring harness to one side.



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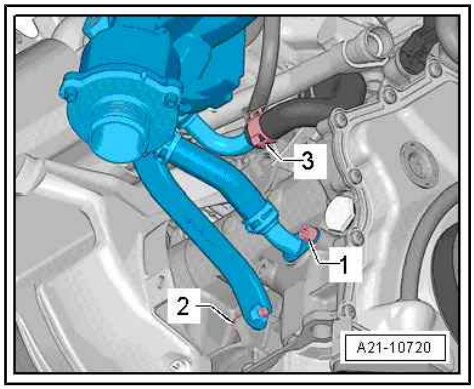
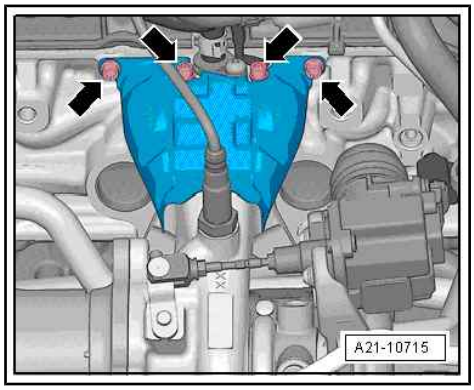
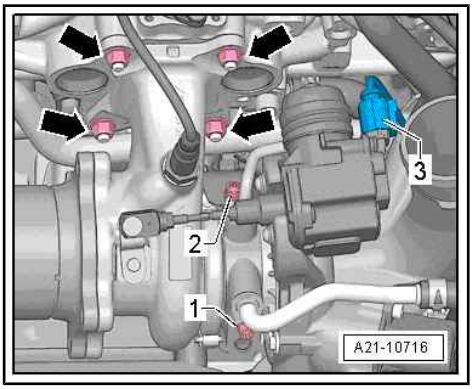
– Remove bolt -2-.
– Place a cloth underneath to catch escaping engine oil.
– Unscrew bolt -1- and detach oil return connection.



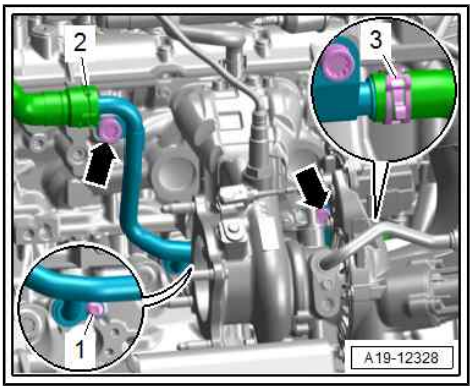
– Remove heat shield -arrows-.



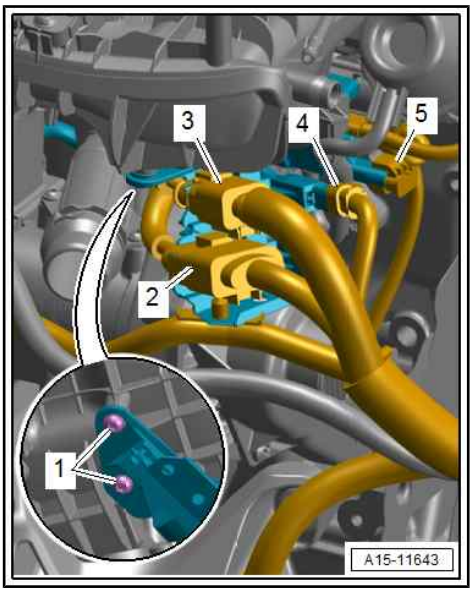
– Remove bolt -2- and detach oil supply line.
– Remove nuts -arrows- and pull turbocharger off studs.



– Remove bolts -arrows- at coolant pipe (right-side).

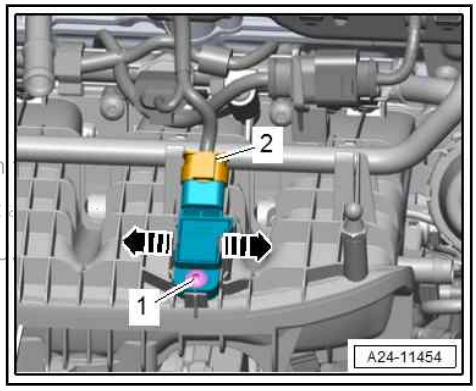


– Detach electrical connectors -2 and 3- from bracket and unplug.
– Unplug electrical connectors -4, 5-.
– Remove bolts -1- securing bracket.



– Unplug electrical connector -2- at intake air temperature sender - G42- / intake manifold pressure sender - G71- .

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 .



Tightening torques

♦ ⇒ “1.1 Exploded view - silencers”, page 154

♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Exploded view - emission control 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 .

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4 Valve gear

⇒ “4.1 Exploded view - valve gear”, page 65

⇒ “4.2 Removing and installing camshaft”, page 65

⇒ “4.3 Installing ball for slider”, page 70

⇒ “4.4 Removing and installing cam adjustment actuators”, page 70

⇒ “4.5 Removing and installing camshaft control valve 1 N205 ”, page 70

⇒ “4.6 Removing and installing valve stem oil seals”, page 71

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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 - vehicles without particulate filter”, page 65

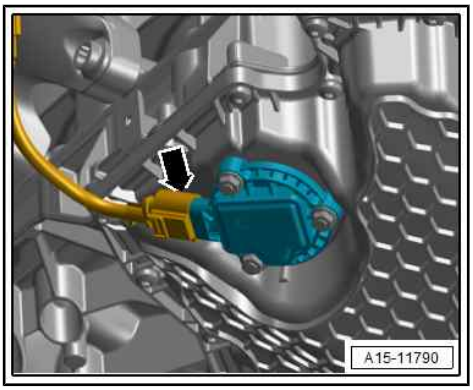
⇒ “4.2.2 Removing and installing camshaft - vehicles with particulate filter”, page 67

4.2.1 Removing and installing camshaft - vehicles without particulate filter

Removing

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

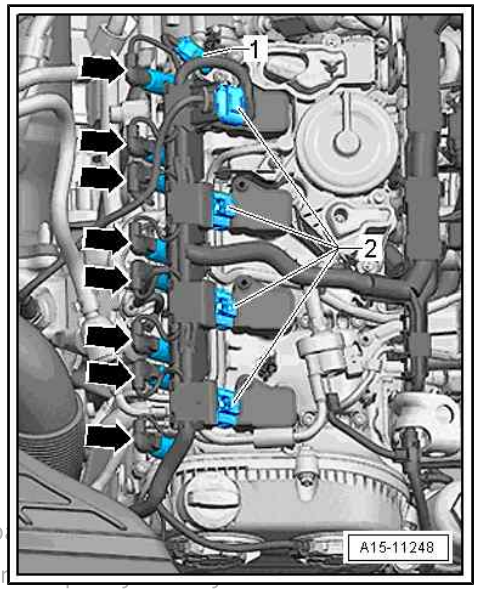
– Unplug electrical connector -arrow- for oil level and oil temperature sender - G266- .



– Remove air cleaner housing ⇒ page 136 .

– Remove timing chain cover (top) ⇒ 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 .

– Unplug electrical connectors -arrows- for cam adjustment actuators.



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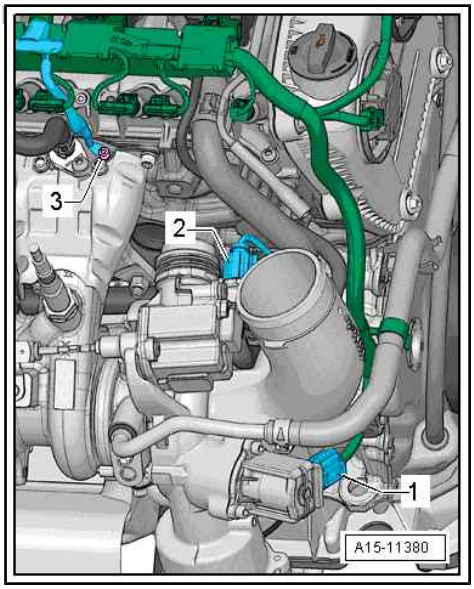
– Unplug electrical connector -1- for charge pressure positioner - V465- .

– Unplug electrical connector -2- for turbocharger air recirculation valve - N249- .



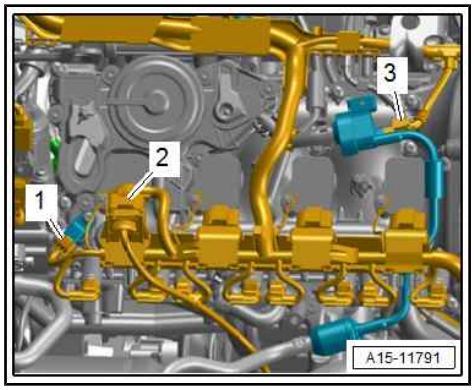
– Unplug electrical connectors and move electrical wiring clear:

1 - For Hall sender 3 - G300-

2 - For Lambda probe - G39- (take out of bracket)

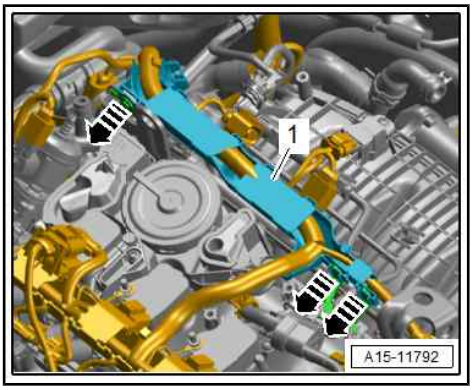
3 - For activated charcoal filter solenoid valve 1 - N80-

– Remove ignition coils with output stages ⇒ 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 .

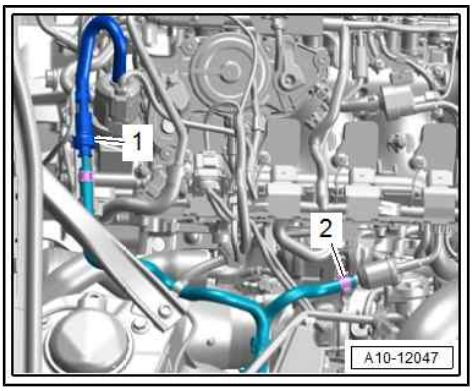


– Move electrical wiring clear.

– Release retainers -arrows-, detach wiring duct -1- with electrical wiring harness and move to one side.

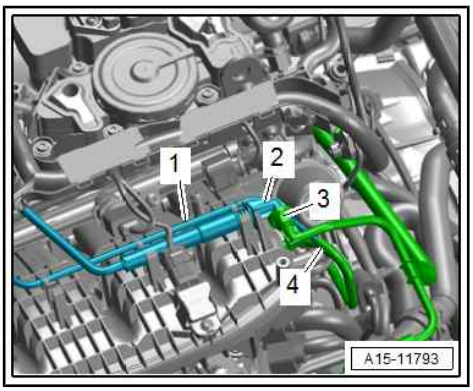


– Release hose clip -2- and disconnect hose for activated charcoal filter system.



– Lift retaining clip -3-, detach coolant hose -2-, move it clear at cylinder head and push it towards right side.

– Detach vacuum hose -4-, disconnect vacuum line -1- for intake manifold flap valve - N316- and move clear at cylinder head.



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 air cleaner housing ⇒ page 136 .

Tightening torques

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

4.2.2 Removing and installing camshaft - vehicles with particulate filter

Removing

– Remove noise insulation panels ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– Remove air cleaner housing ⇒ page 136 .

– Remove timing chain cover (top) ⇒ 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 .

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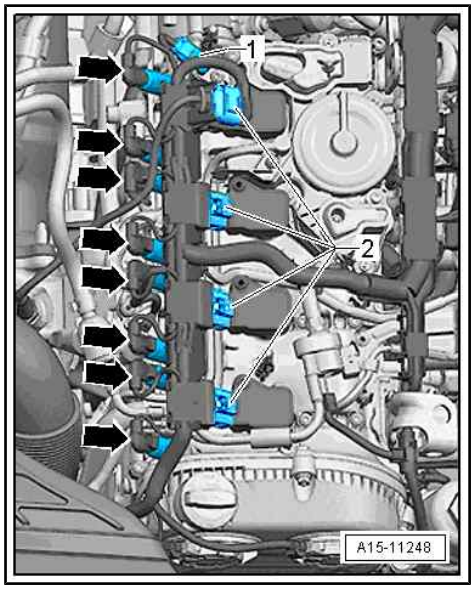
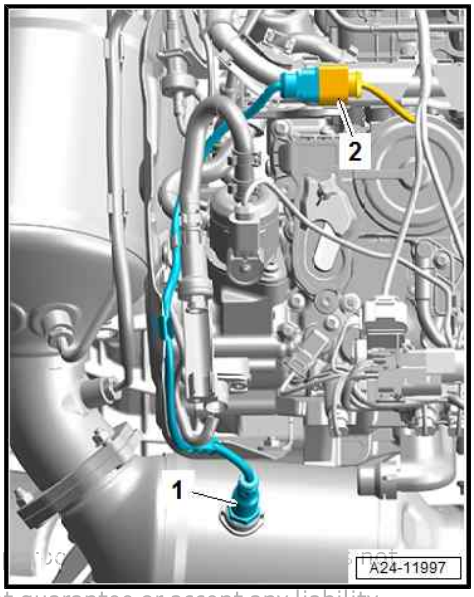
– Unplug electrical connectors -arrows- for cam adjustment actuators.



– Unplug electrical connector -2- for Lambda probe after catalytic converter - G130- -item 1- and move wiring clear.



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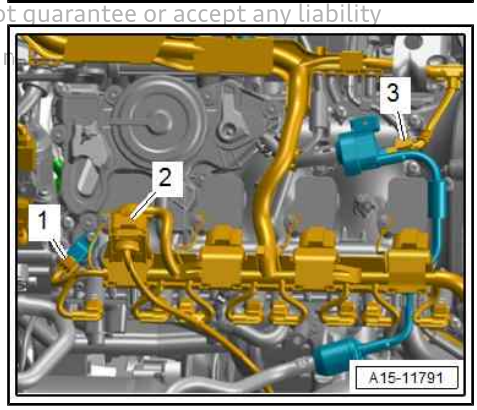
– Unplug electrical connectors and move electrical wiring clear:

1 - For Hall sender 3 - G300-

2 - For Lambda probe - G39- (take out of bracket)

3 - For activated charcoal filter solenoid valve 1 - N80-



– Remove ignition coils with output stages ⇒ 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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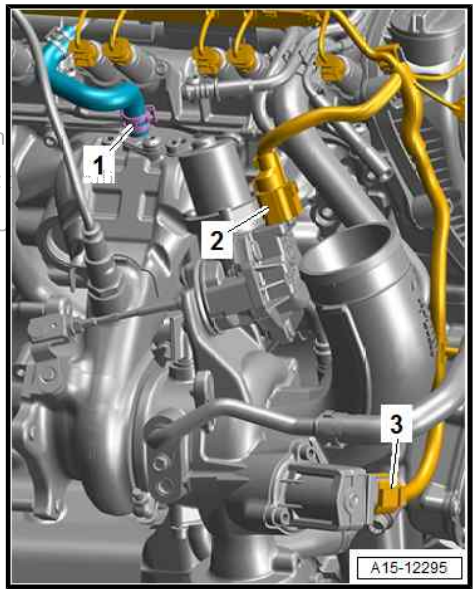
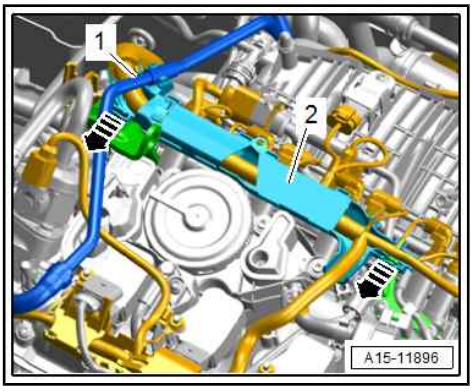
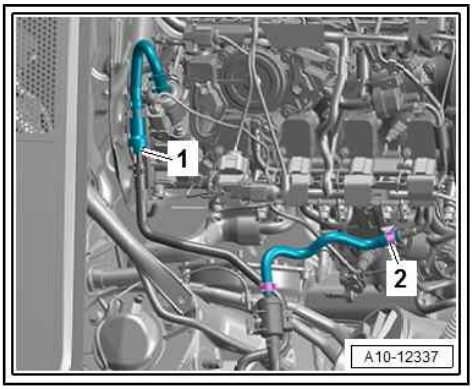
– Unplug electrical connector -2- for charge pressure positioner - V465- .
– Unplug electrical connector -3- for turbocharger air recirculation valve - N249- .
– Release hose clip -1-, disconnect coolant hose and move hose clear.



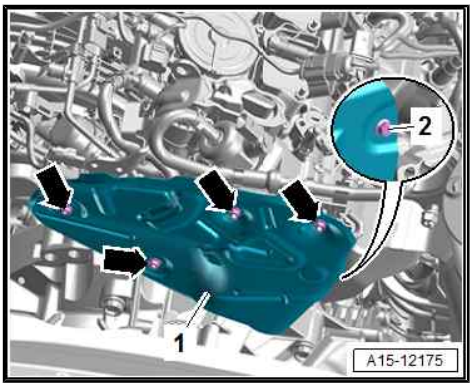
– Move electrical wiring clear.
– Release retainers -arrows-, detach wiring duct -1- with electrical wiring harness and move to one side.



– Release hose clip -2- and disconnect hose for activated charcoal filter system.



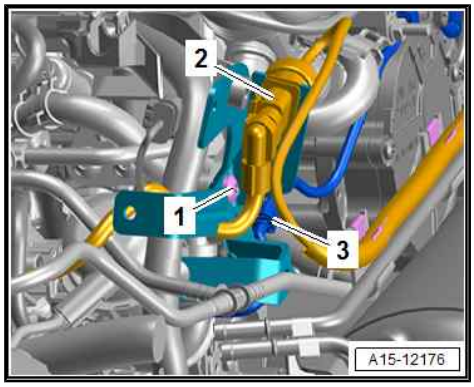
– Move electrical wiring clear at heat shield -1-.
– Remove nuts -arrows- and bolt -2- and detach heat shield (shown with particulate filter removed).



– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.

– Release retaining clip -3- and move vacuum hose clear.

– Remove bolt -1- and push bracket to one side. (Different versions.)



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:

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

– Install ignition coils with output stages ⇒ 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 .

– Install timing chain cover (top) ⇒ 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 .

– Install air cleaner housing ⇒ page 136 .

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Tightening torques

◆ ⇒ Fig. ""Heat shield - tightening torque"" , page 58

◆ ⇒ Fig. ""Bracket for heat shield - tightening torque"" , page 58

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

4.3 Installing ball for slider

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

4.4 Removing and installing cam adjustment actuators

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 cam adjustment actuators .

4.5 Removing and installing camshaft control valve 1 - N205-

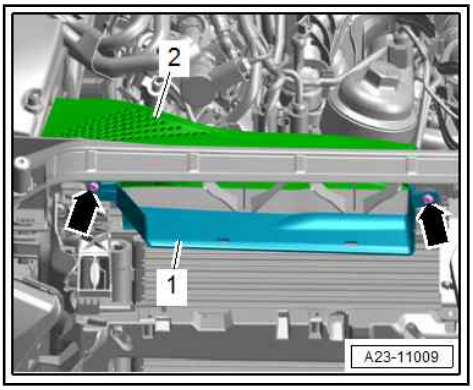
The description applies to camshaft control valve 1 - N205- and exhaust camshaft control valve 1 - N318- .

Removing

Exhaust camshaft control valve 1 - N318- :

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

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



All further procedures are described in ⇒ Servicing 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- .

Installing

Additional work:

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

Tightening torques

◆ ⇒ “2.1 Exploded view - air cleaner housing”, page 135

4.6 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 .

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5 Inlet and exhaust valves

All procedures can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Inlet and exhaust valves .

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17 – Lubrication

1 Sump/oil pump

⇒ “1.1 Exploded view - sump/oil pump”, page 73

⇒ “1.2 Engine oil”, page 73

⇒ “1.3 Removing and installing sump (bottom section)”, page 73

⇒ “1.4 Removing and installing oil pump”, page 75

⇒ “1.5 Removing and installing sump (top section)”, page 75

⇒ “1.6 Removing and installing oil level and oil temperature sender G266 ”, page 75

1.1 Exploded view - sump/oil pump

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

- Draining engine oil ⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: draining
- Extracting engine oil ⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: extracting
- Filling up with engine oil ⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: filling up
- Removing and installing oil filter element ⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: renewing oil filter
- Checking oil level ⇒ Maintenance ; Booklet 830 ; Maintenance; Engine oil: checking oil level and correcting if necessary
- Oil capacities, oil specifications and viscosity grades ⇒ Maintenance tables .

1.3 Removing and installing sump (bottom section)

Removing

– Remove wheel spoilers (front) on both sides ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .

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

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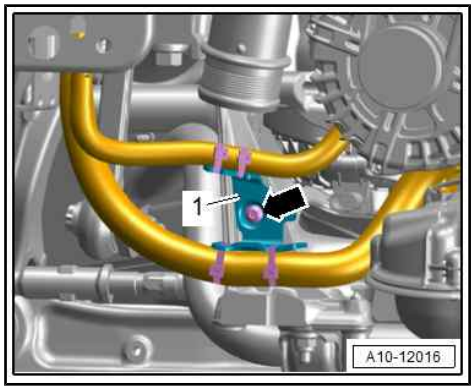
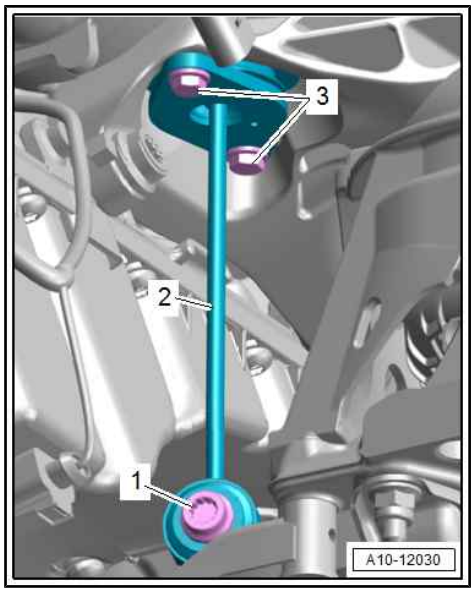
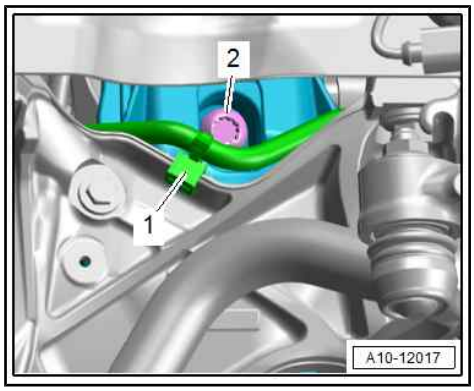
– Remove bolt -arrow- and move bracket -1- clear with electrical wiring harness.



– Remove bottom bolt -1- for support mounting -2- (both sides).



– Remove bolt -2- for engine mounting on both sides.
– Support engine in installation position ⇒ page 44 .



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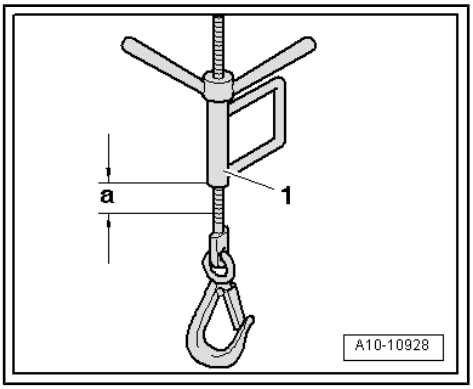

Note:

Risk of damage to drive shafts: When lifting the engine, the drive shafts must not make contact with the suspension struts.

– Using spindle - 10-222A/11- -item 1-, raise engine through distance -a-.

• Distance -a- = approx. 20 mm.

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

- ⇒ “2.1 Exploded view - assembly mountings”, page 41
- Bracket for electrical wiring harness ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

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)

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 sump (top section) .

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 79

⇒ “1.2 Checking cooling system for leaks”, page 81

⇒ “1.3 Draining and filling cooling system”, page 82

1.1 Connection diagram - coolant hoses

⇒ “1.1.1 Connection diagram - coolant hoses, equipment version without auxiliary heater”, page 79

⇒ “1.1.2 Connection diagram - coolant hoses, equipment version with auxiliary heater”, page 80

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

- Blue = Large coolant circuit
- Red = Small coolant circuit
- Brown = Heating circuit
- Green = Coolant circuit for gearbox
- Arrows = Direction of coolant flow

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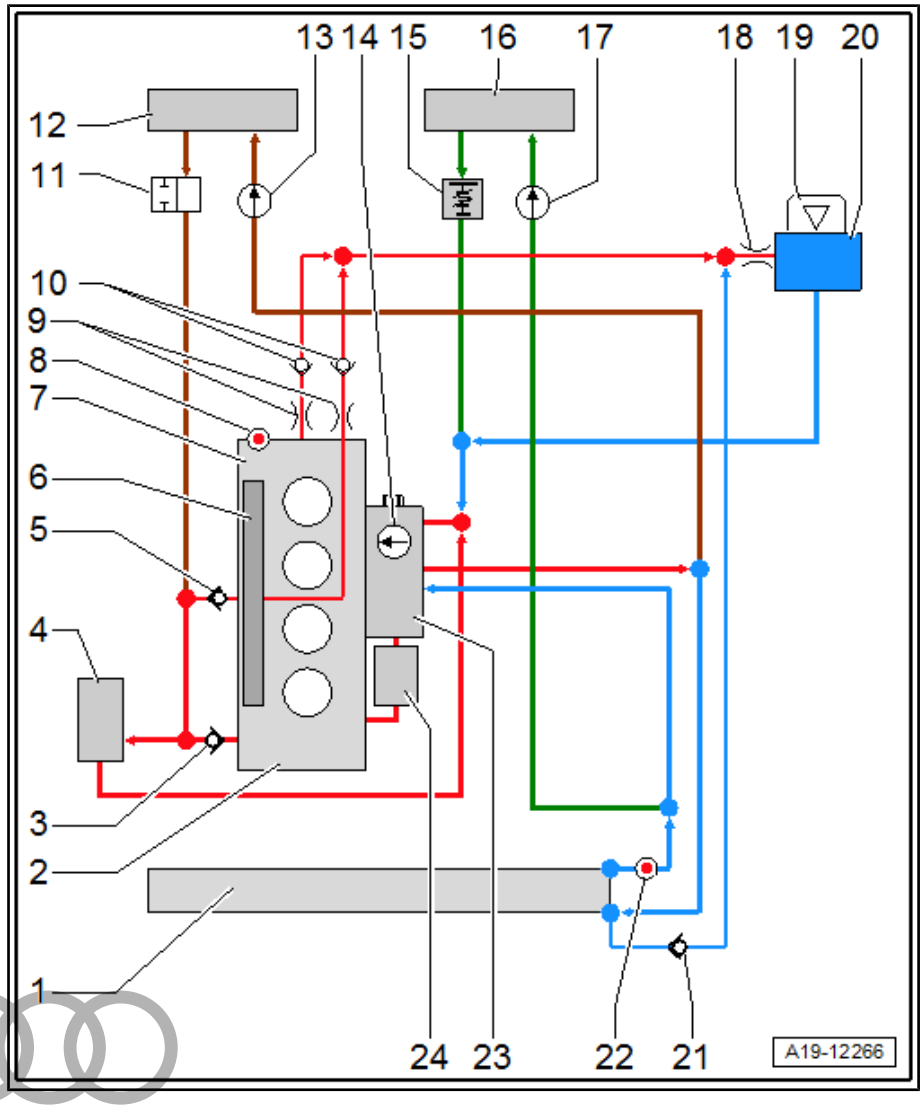

1 - Radiator

2 - Cylinder block

3 - Non-return valve

4 - Turbocharger

5 - Non-return valve

6 - Exhaust manifold

7 - Cylinder head

8 - Coolant temperature sender - G62-

9 - Restrictors

10 - Non-return valves

11 - Coolant shut-off valve

- ❑ Activated by Climatronic coolant shut-off valve - N422- (negative pressure)

12 - Heat exchanger for heater

13 - Coolant circulation pump - V50-

14 - Coolant pump

15 - Thermostat

- ❑ For coolant circuit for gearbox
- ❑ For equipment version with dual clutch gearbox

16 - ATF cooler

- ❑ For equipment version with dual clutch gearbox

17 - Continued coolant circulation pump - V51-

- ❑ For equipment version with dual clutch gearbox

18 - Restrictor

19 - Filler cap

- ❑ Checking pressure relief valve ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks

20 - Coolant expansion tank

21 - Non-return valve

22 - Radiator outlet coolant temperature sender - G83-

23 - Actuator for engine temperature regulation - N493-

24 - Engine oil cooler

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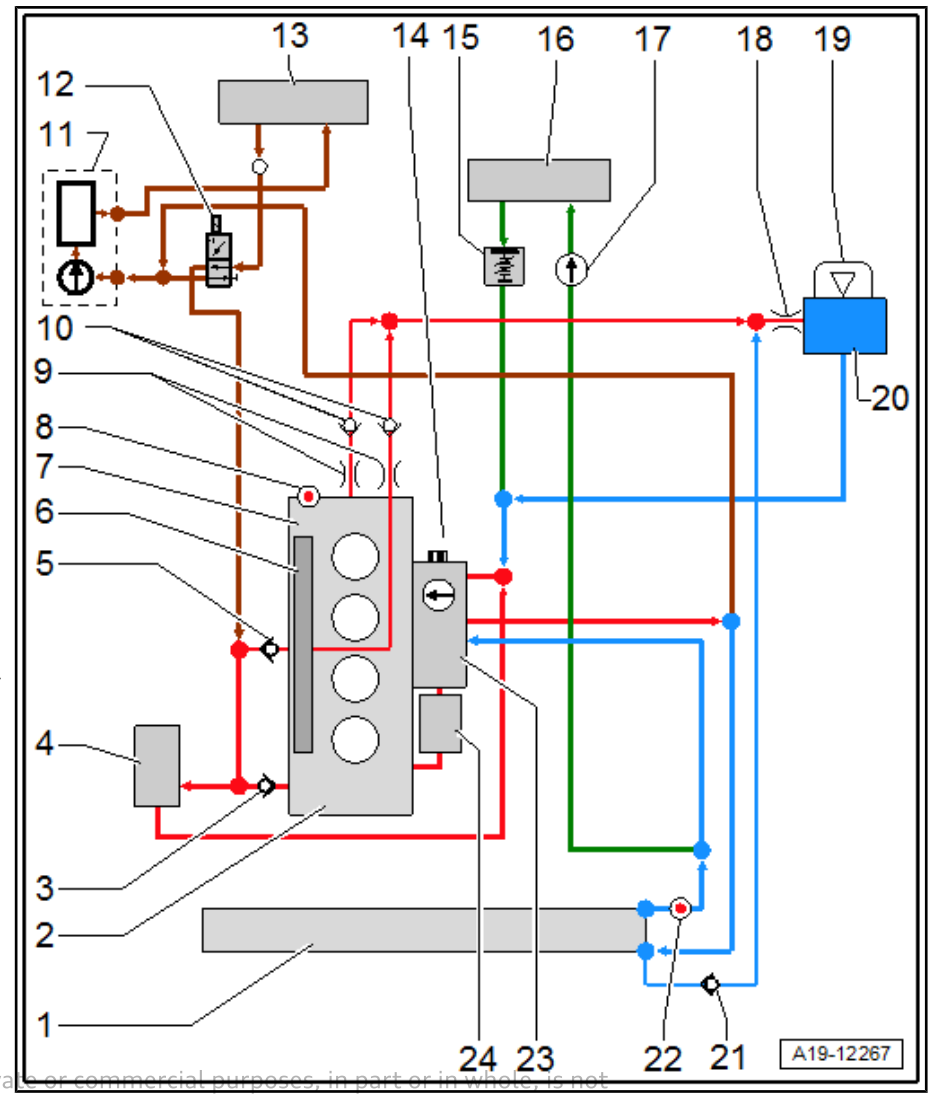
1.1.2 Connection diagram - coolant hoses, equipment version with auxiliary heater

- ◆ Blue = Large coolant circuit
- ◆ Red = Small coolant circuit
- ◆ Brown = Heating circuit

- Green = Coolant circuit for gearbox
- Arrows = Direction of coolant flow



1 - Radiator

2 - Cylinder block

3 - Non-return valve

4 - Turbocharger

5 - Non-return valve

6 - Exhaust manifold

7 - Cylinder head

8 - Coolant temperature sender - G62-

9 - Restrictors

10 - Non-return valves

11 - Auxiliary heater

- ❑ With circulation pump - V55-

12 - Heater coolant shut-off valve - N279-

13 - Heat exchanger for heater

14 - Coolant pump

15 - Thermostat

- ❑ For coolant circuit for gearbox
- ❑ For equipment version with dual clutch gearbox

16 - ATF cooler

- ❑ For equipment version with dual clutch gearbox

17 - Continued coolant circulation pump - V51-

- ❑ For equipment version with dual clutch gearbox

18 - Restrictor

19 - Filler cap

- ❑ Checking pressure relief valve ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 ; Cooling system/coolant; Checking cooling system for leaks

20 - Coolant expansion tank

21 - Non-return valve

22 - Radiator outlet coolant temperature sender - G83-

23 - Actuator for engine temperature regulation - N493-

24 - Engine oil cooler

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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

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

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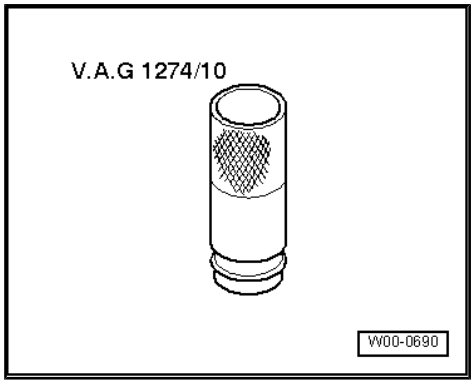
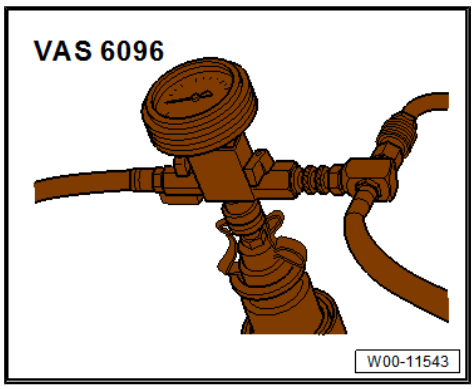
- Pipe for cooling system tester - V.A.G 1274/10-

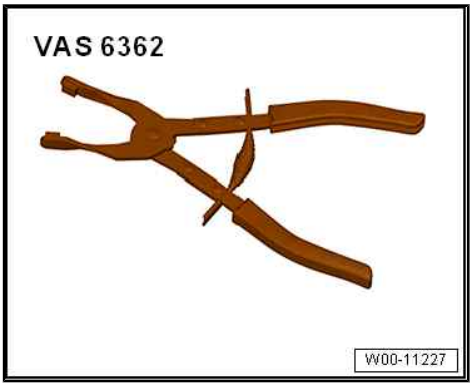


- Cooling system charge unit - VAS 6096-

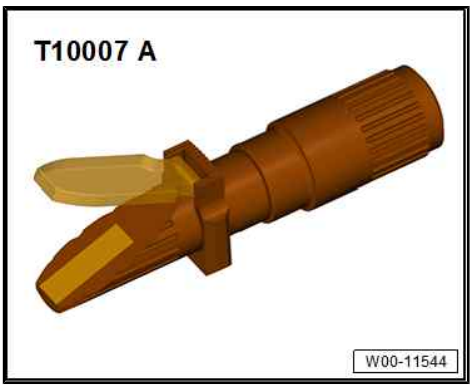


- Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-

- Hose clip pliers - VAS 6362-



- Refractometer - T10007A-



- Safety goggles
- Protective gloves

Draining

CAUTION

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

Danger of scalding skin and other parts of the body.

– Put on protective gloves.

– Put on safety goggles.

– Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

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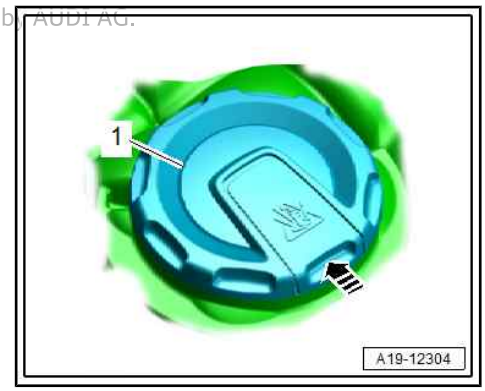
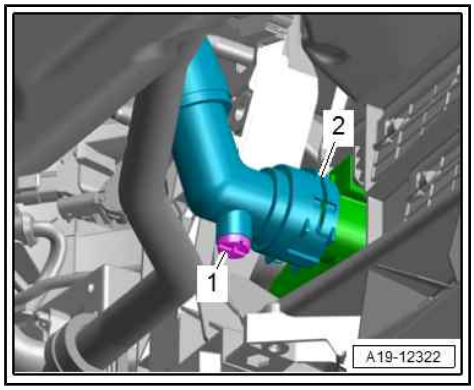
– Release fastener -arrow- (if necessary) and open filler cap -1- on coolant expansion tank.

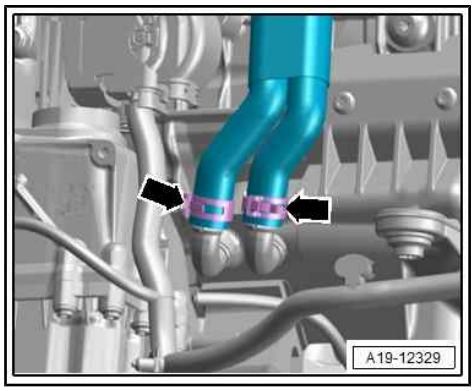
– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



– Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
– Remove drain plug -1- at connection and drain off coolant.



– On relevant versions: Release hose clips -arrows-, disconnect coolant hoses from ATF cooler and drain off coolant.
• Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
– Tighten drain plug and 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

NOTICE

Danger of corrosion damage if unsuitable mixtures of water and coolant additives are used.

– Only use distilled water as this ensures optimum corrosion protection.

• 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

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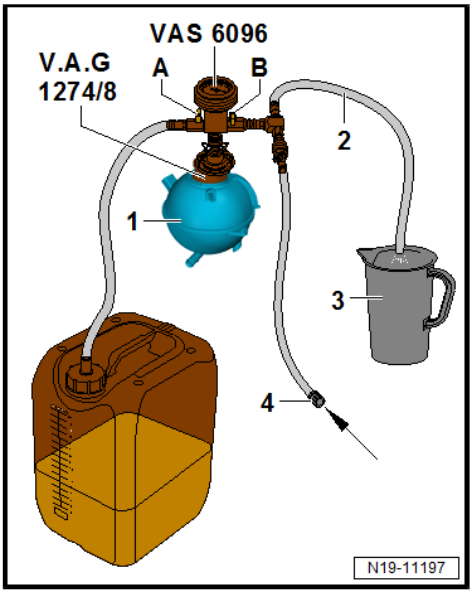
Filling cooling system

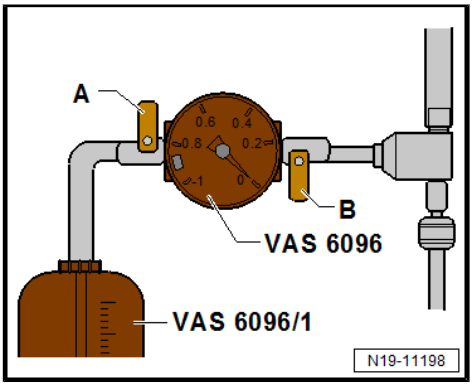


- Do not reuse coolant.
- Fill reservoir of -VAS 6096- with 10 litres of premixed coolant (according to recommended ratio; for recommended ratio see ⇒ page 84).
- Fit adapter for cooling system tester - V.A.G 1274/8- onto coolant expansion tank -1-.
- Attach cooling system charge unit - VAS 6096- to adapter - V.A.G 1274/8- .
- Run vent hose -2- into a small container -3-.

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 -4- to compressed air supply.
- Pressure: 7 ... 10 bar.
- Open valves in coolant circuit; select `01 - Coolant circuit bleeding routine` in `Guided Functions` ⇒ vehicle diagnostic tester .



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

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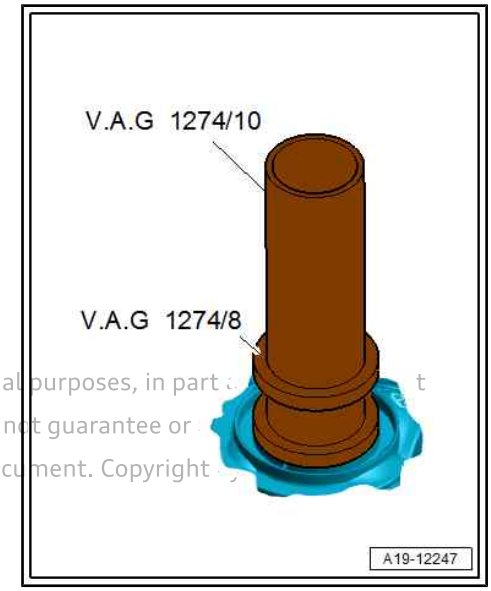
– Attach pipe -V.A.G 1274/10- onto adapter -V.A.G 1274/8- .
– Fill up pipe for cooling system tester - V.A.G 1274/10- with coolant. If required, add further coolant when performing bleeding procedure.



Bleeding cooling system

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

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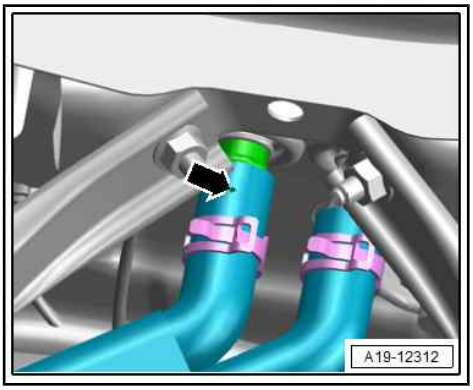
– Release hose clip -1- on coolant hose going to heat exchanger for heater and pull back hose until bleeder hole -arrow- is no longer blocked by connection.

– Fill up with coolant until it flows out at bleeder hole in coolant hose.

– Push coolant hose back onto connection and secure with spring-type hose clip.

– Close filler cap on coolant expansion tank (make sure it engages).

– Start engine.



Time period	Engine speed	Air conditioner/heater setting
3 minutes	2000 rpm	• Air conditioning system “OFF”, LED in AC button not lit • Heating at “HI”, select lowest possible blower speed (= 0)
Until both large coolant hoses at radiator become warm	Idling	• Air conditioning system “OFF” • Heating at “HI”
2 minutes	2000 rpm	• Air conditioning system “OFF” • Heating at “HI”

– Switch off ignition and allow engine to cool down.

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

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Checking coolant level

⚠ CAUTION

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

Danger of scalding skin and other parts of the body.

– Put on protective gloves.

– Put on safety goggles.

– Cover filler cap on expansion tank with a cloth and open carefully to release pressure.

- The coolant level must be at the “MAX” marking when the engine is cold.
- The coolant level can be above the “MAX” marking when the engine is warm.

– Top up with coolant again if necessary.

Tightening torques

◆ ⇒ “4.1 Exploded view - radiator/radiator fan”, page 109

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

2 Coolant pump/thermostat assembly

⇒ “2.1 Exploded view - coolant pump/thermostat”, page 88

⇒ “2.2 Exploded view - electric coolant pump”, page 88

⇒ “2.3 Exploded view - coolant temperature senders”, page 90

⇒ “2.4 Exploded view - coolant valve for gearbox”, page 91

⇒ “2.5 Removing and installing electric coolant pump”, page 91

⇒ “2.6 Removing and installing coolant pump”, page 94

⇒ “2.7 Removing and installing toothed belt for coolant pump”, page 95

⇒ “2.8 Removing and installing actuator for engine temperature regulation N493 ”, page 96

⇒ “2.9 Removing and installing coolant temperature sender G62 ”, page 96

⇒ “2.10 Removing and installing radiator outlet coolant temperature sender G83 ”, page 98

⇒ “2.11 Removing and installing coolant valves”, page 98

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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

1 - Bolt

- ❑ 9 Nm

2 - Coolant circulation pump - V50-

- ❑ Removing and installing ⇒ page 91

3 - Continued coolant circulation pump - V51-

- ❑ Removing and installing ⇒ page 93

4 - Bolt

- ❑ 9 Nm

5 - Rubber grommet

6 - Bolt

- ❑ 2.7 Nm

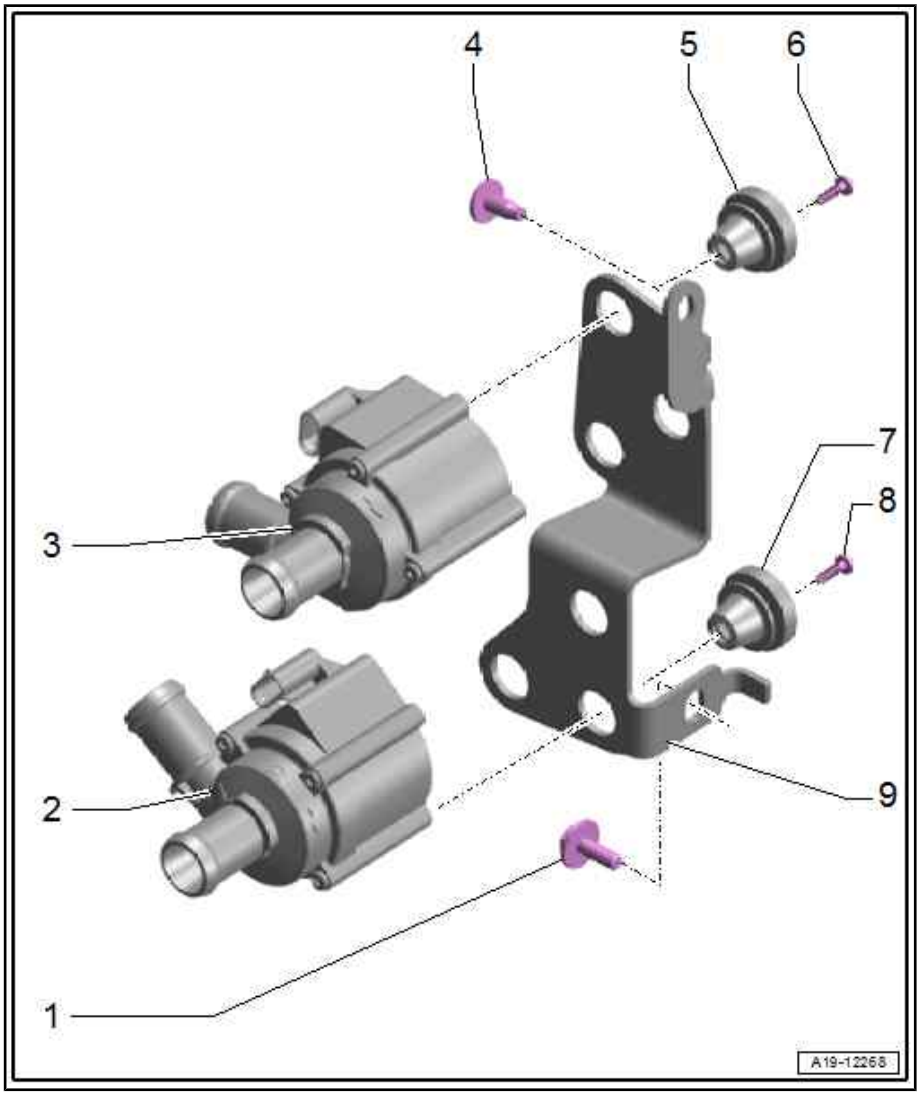
7 - Rubber grommet

8 - Bolt

- ❑ 2.7 Nm

9 - Bracket

- ❑ For electric coolant pumps



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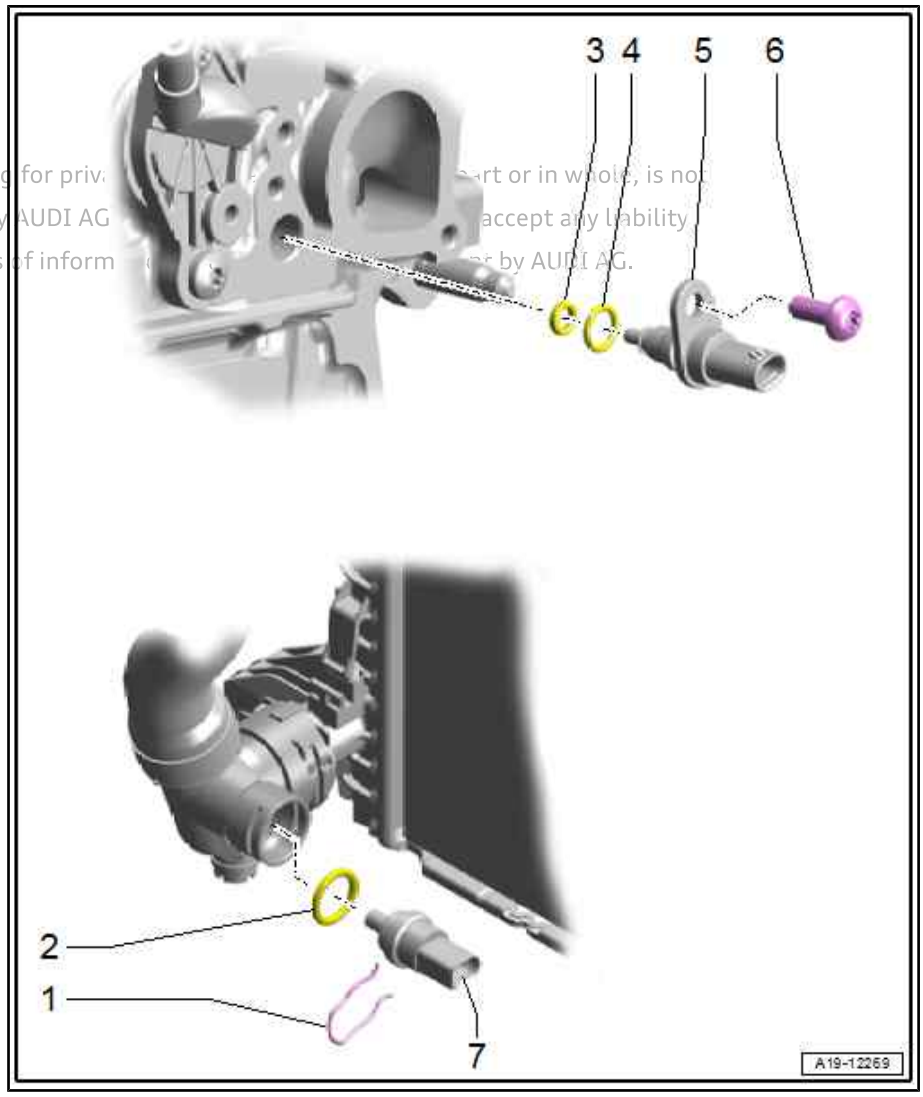
2.3 Exploded view - coolant temperature senders



1 - Retaining clip

- ❑ Check for firm attachment

2 - O-ring

- ❑ Renew after removing
- ❑ Lubricate with coolant

3, 4 - O-rings

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

5 - Coolant temperature sender - G62-

- ❑ On cylinder head (gearbox end)
- ❑ Removing and installing ⇒ 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-

6 - Bolt

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

7 - Radiator outlet coolant temperature sender - G83-

- ❑ Removing and installing ⇒ page 98

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2.4 Exploded view - coolant valve for gearbox

1 - Coolant valve for gearbox - N488-

- ❑ Depending on version
- ❑ Removing and installing ⇒ page 98

2 - Coolant hose

3 - Bolt

- ❑ 23 Nm

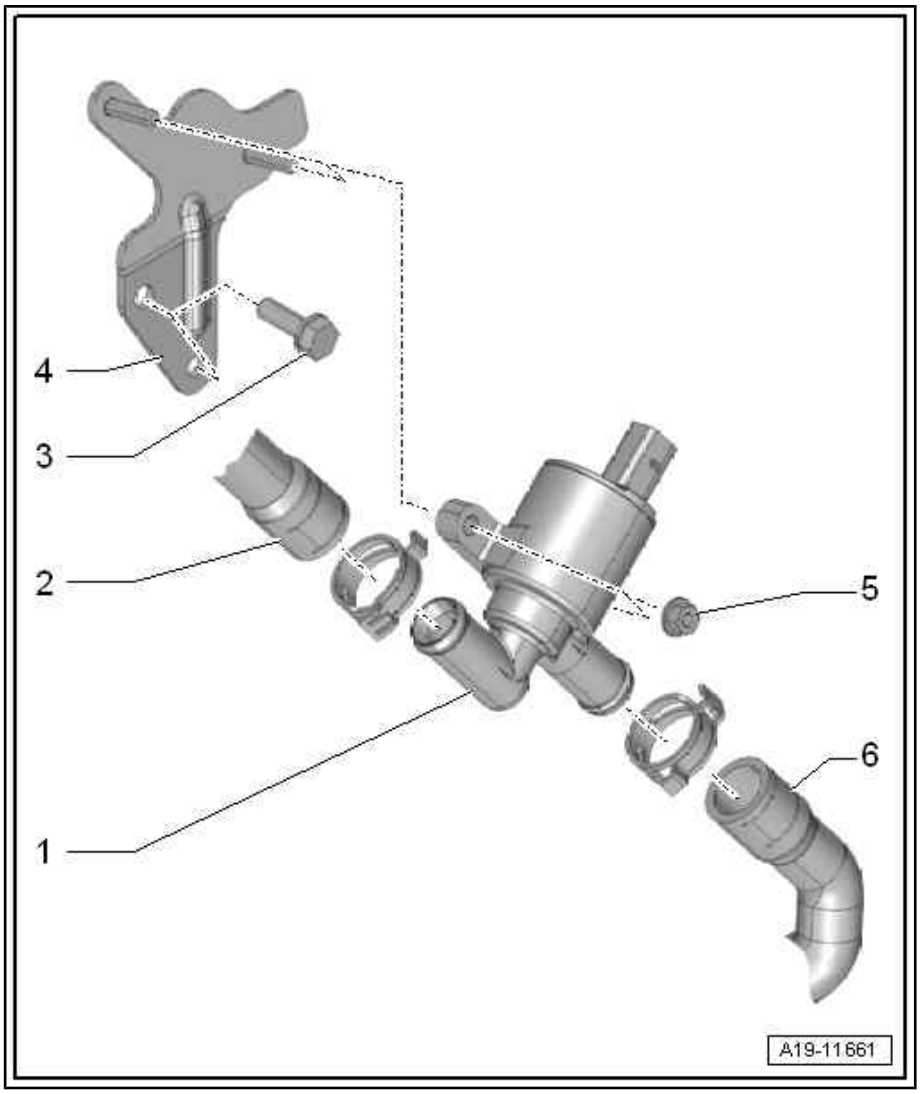
4 - Bracket

- ❑ For coolant valve for gearbox - N488-

5 - Nut

- ❑ 9 Nm

6 - Coolant hose



2.5 Removing and installing electric coolant pump

⇒ "2.5.1 Removing and installing coolant circulation pump V50 ", page 91

⇒ "2.5.2 Removing and installing continued coolant circulation pump V51 ", page 93

2.5.1 Removing and installing coolant circulation pump - V50-

Special tools and workshop equipment required

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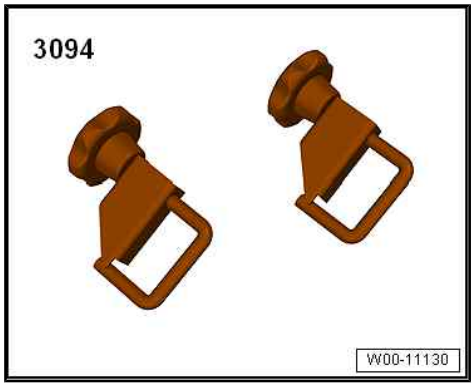
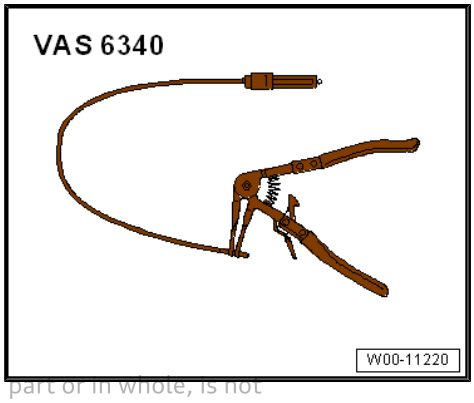
- Hose clamps, up to 25 mm - 3094-



- Hose clip pliers - VAS 6340-



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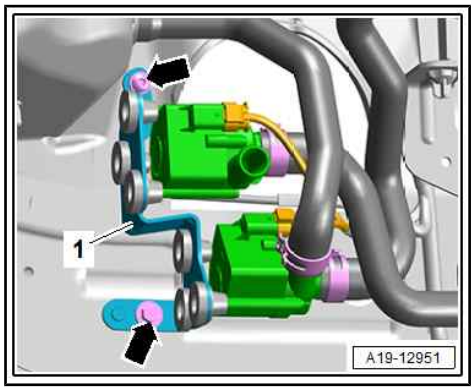
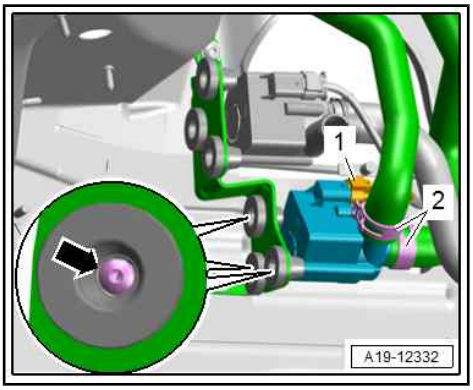
Removing

– 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 .

– Vehicles with particulate filter: Remove bolts -arrows- for bracket -1-.



– Unplug electrical connector -1-.
– Place a cloth underneath to catch escaping coolant.
– Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -2- and disconnect hoses.
– Remove bolts -arrow- and detach coolant circulation pump - V50- .



Installing

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

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

– Fill up with coolant ⇒ page 82 .
– 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 - electric coolant pump”, page 88

2.5.2 Removing and installing continued coolant circulation pump - V51-

Special tools and workshop equipment required

♦ Hose clamps, up to 25 mm - 3094-

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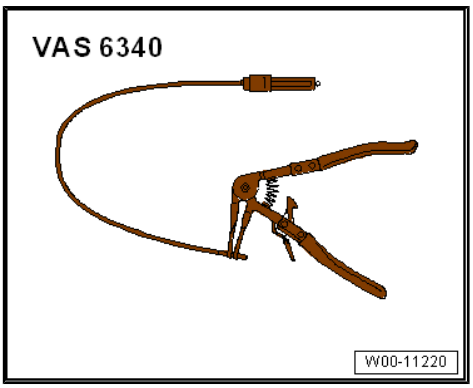
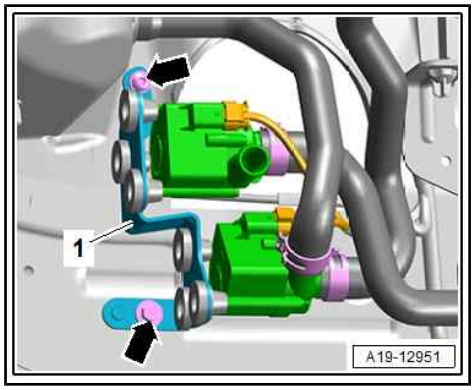
♦ Hose clip pliers - VAS 6340-



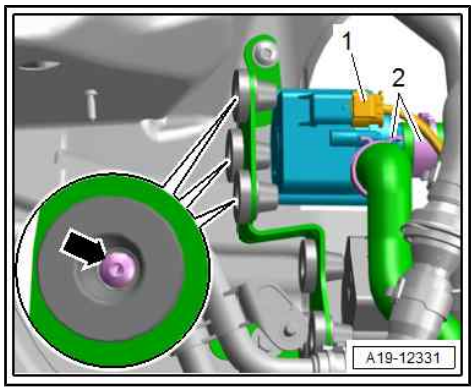
Removing

– 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 .

– Vehicles with particulate filter: Remove bolts -arrows- for bracket -1-.



– Unplug electrical connector -1-.
– Place a cloth underneath to catch escaping coolant.
– Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -2- and disconnect hoses.
– Remove bolts -arrow- and detach continued coolant circulation pump - V51- .



Installing

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

- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
– Fill up with coolant ⇒ page 82 .
– 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 - electric coolant pump”, page 88

2.6 Removing and installing coolant pump

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 .
– Drain coolant ⇒ page 82 .

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– Unplug electrical connectors -2 ... 5-.

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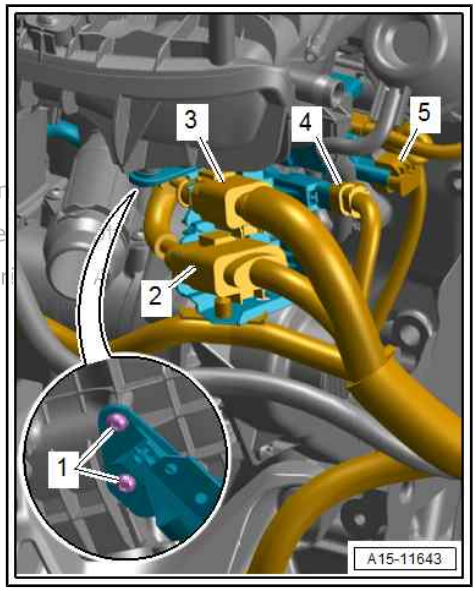
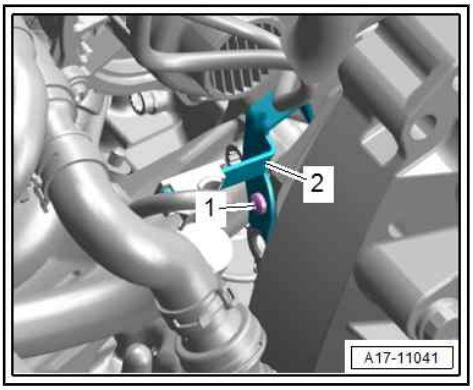


– Remove bolt -1- and push bracket -2- with engine wiring harness to one side.



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:

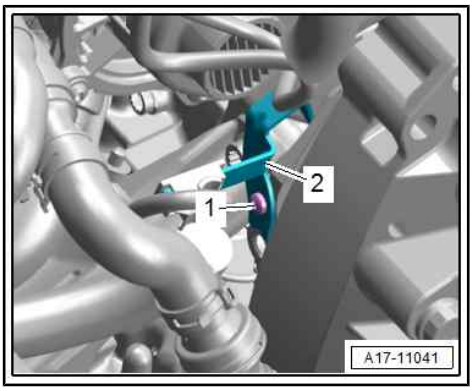
– Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

2.7 Removing and installing toothed belt for coolant pump

Removing

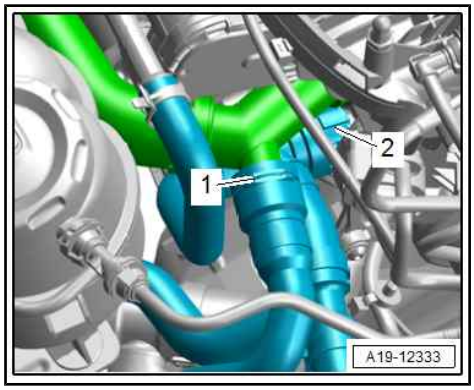
– Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

– Remove bolt -1- and push bracket -2- with engine wiring harness to one side.



– Drain coolant ⇒ page 82 .

– Lift retaining clips -1, 2-, disconnect coolant hoses and press to one side.



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:

– Connect coolant hose with plug-in connector ⇒ page 110 .

– Fill up with coolant ⇒ page 82 .

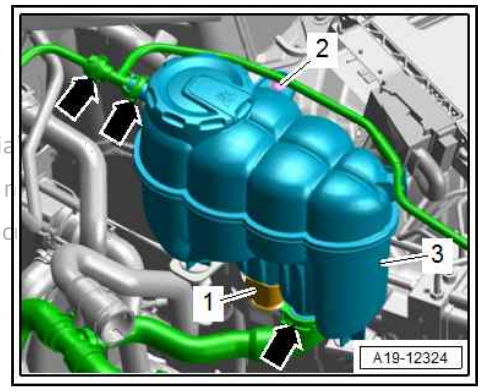
– Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

2.8 Removing and installing actuator for engine temperature regulation - N493-

Removing

– Drain coolant ⇒ page 82 .

– Lift retaining clips -arrows-, disconnect coolant hoses and move them clear.



– Unplug electrical connector -1- for coolant shortage indicator switch - F66- .

– Unscrew bolt -2- and detach coolant expansion tank -3-.

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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 actuator for engine temperature regulation - N493- .

Installing

Additional work:

– Connect coolant hose with plug-in connector ⇒ page 110 .

2.9 Removing and installing coolant temperature sender - G62-

⇒ “2.9.1 Removing and installing coolant temperature sender G62 - vehicles without particulate filter”, page 96

⇒ “2.9.2 Removing and installing coolant temperature sender G62 - vehicles with particulate filter”, page 97

2.9.1 Removing and installing coolant temperature sender - G62- - vehicles without particulate filter

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 coolant temperature sender - G62- .

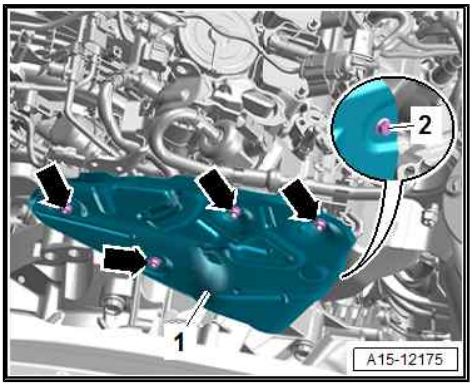
2.9.2 Removing and installing coolant temperature sender - G62- - vehicles with particulate filter

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 .

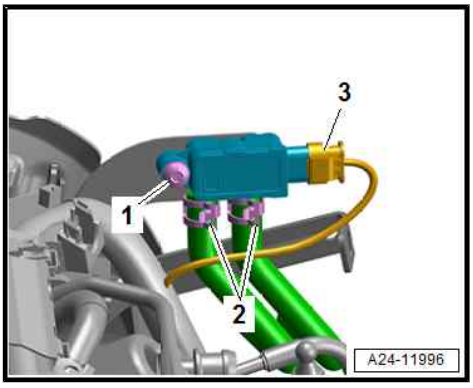
– Move electrical wiring clear at heat shield -1-.

– Remove nuts -arrows- and bolt -2- and detach heat shield (shown with particulate filter removed).



– Unplug electrical connector -3-.

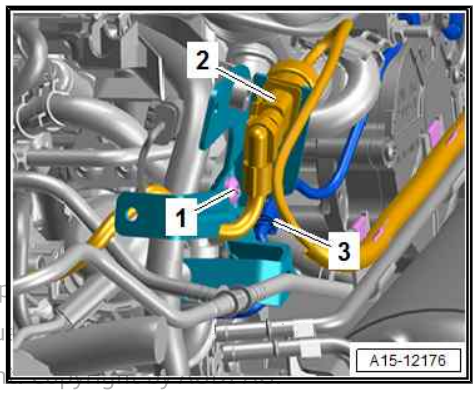
– Remove bolt -1- and press pressure differential sender - G505- to side.



– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.

– Release retaining clip -3- and move vacuum hose clear.

– Remove bolt -1- and detach bracket. (Different versions.)



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- .

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Installing

Additional work:

– 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

♦ ⇒ Fig. ""Heat shield - tightening torque"" , page 58

♦ ⇒ Fig. ""Bracket for heat shield - tightening torque"" , page 58

♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Cylinder head; Exploded view - cylinder head

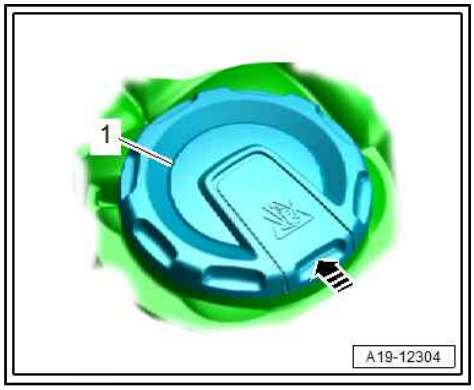
2.10 Removing and installing radiator outlet coolant temperature sender - G83-

Removing

- Engine cold.

– Relieve residual pressure in cooling system by releasing fastener -arrow- (if necessary) and briefly opening filler cap -1- on coolant expansion tank.

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



– Unplug electrical connector -2-.

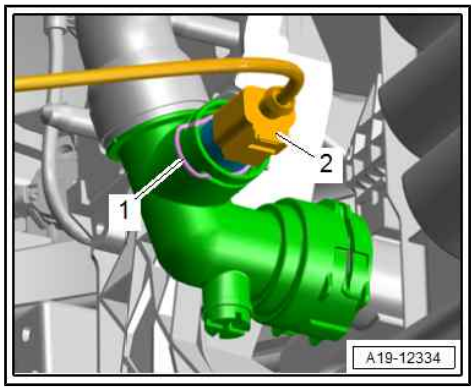
– Place a cloth underneath to catch escaping coolant.

– Detach retaining clip -1- and pull out radiator outlet coolant temperature sender - G83- .

- Renew O-rings after removing.

– To avoid loss of coolant, insert new coolant temperature sender immediately.

– Check coolant level ⇒ page 87 .



Tightening torques

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

2.11 Removing and installing coolant valves

⇒ "2.11.1 Removing and installing coolant valve for gearbox N488 ", page 98

2.11.1 Removing and installing coolant valve for gearbox - N488-

Coolant valve for gearbox - N488- is fitted on some vehicle versions.

Special tools and workshop equipment required

◆ Hose clamps, up to 25 mm - 3094-

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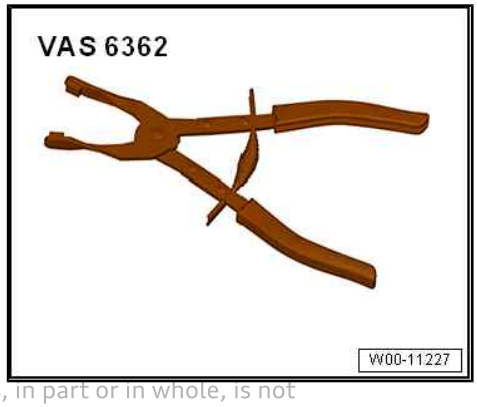
♦ Hose clip pliers - VAS 6362-



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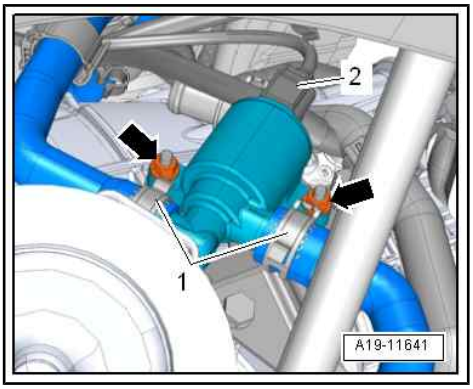
Removing

– Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .

– Unplug electrical connector -2-.

– Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -1- and disconnect hoses.

– Remove nuts -arrows- and detach coolant valve for gearbox - N488- .



Installing

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

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

– Check coolant level ⇒ page 87 .

Tightening torques

♦ ⇒ “2.4 Exploded view - coolant valve for gearbox”, page 91

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

3 Coolant pipes

⇒ “3.1 Exploded view - coolant pipes”, page 100

⇒ “3.2 Removing and installing coolant pipes”, page 101

⇒ “3.3 Removing and installing coolant pipes for gearbox”, page 106

3.1 Exploded view - coolant pipes

- Exploded view - coolant pipes on engine ⇒ page 100
- Exploded view - coolant pipes for gearbox ⇒ page 100

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

Exploded view - coolant pipes on engine

1 - Bolt
- ❑ 9 Nm

2 - Coolant hose

3 - Coolant pipe (left-side)
- ❑ Removing and installing ⇒ page 101

4 - Coolant hose

5 - Bolt
- ❑ 20 Nm

6 - Bolt
- ❑ 9 Nm

7 - Bolt
- ❑ 20 Nm

8 - Coolant pipe (right-side)
- ❑ Removing and installing ⇒ page 103

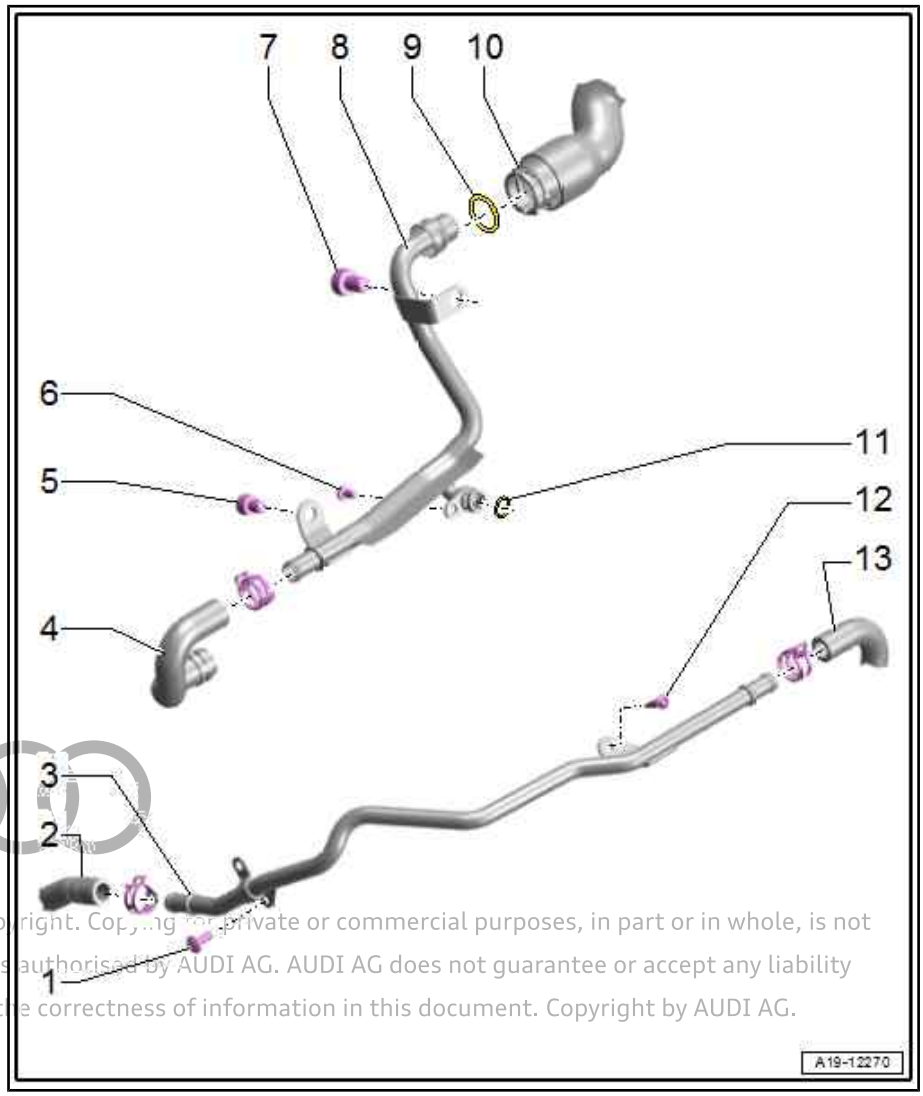
9 - O-ring
- ❑ Renew after removing

10 - Coolant hose
- ❑ To remove, fold back heat insulation sleeve and lift retaining clip
- ❑ Connecting ⇒ page 110

11 - O-ring
- ❑ Renew after removing

12 - Bolt
- ❑ 6 Nm

13 - Coolant hose



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Exploded view - coolant pipes for gearbox

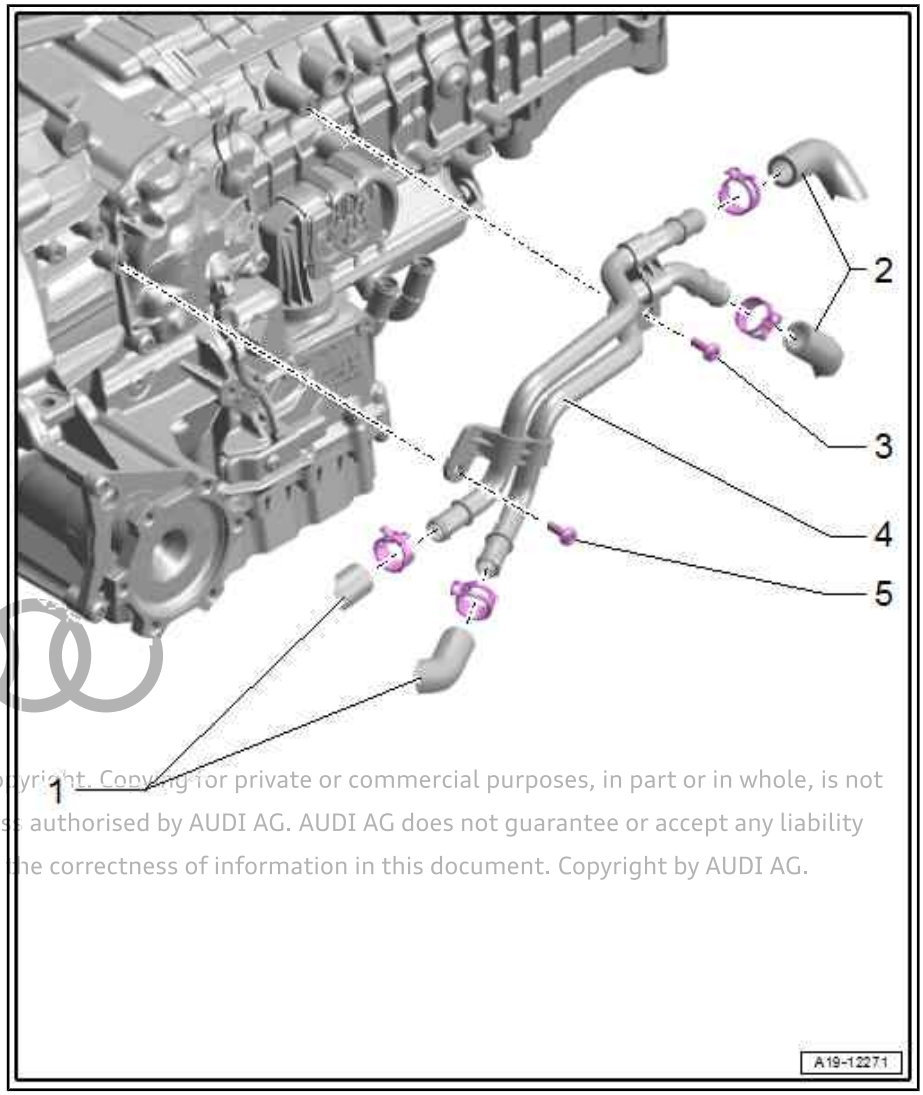
1 - Coolant hoses

2 - Coolant hoses

3 - Bolt
- ❑ 9 Nm

4 - Coolant pipes for gearbox
- ❑ Removing and installing ⇒ page 106

5 - Bolt
- ❑ 9 Nm



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3.2 Removing and installing coolant pipes

⇒ "3.2.1 Removing and installing coolant pipe (left-side)", page 101

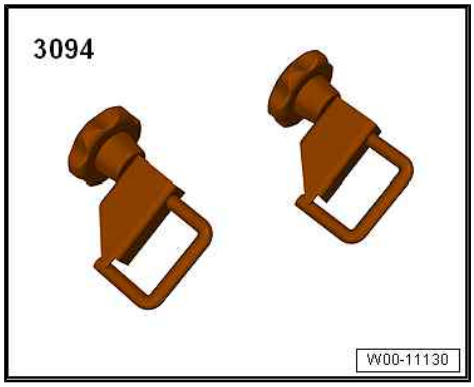
⇒ "3.2.2 Removing and installing coolant pipe (right-side) - vehicles without particulate filter", page 103

⇒ "3.2.3 Removing and installing coolant pipe (right-side) - vehicles with particulate filter", page 105

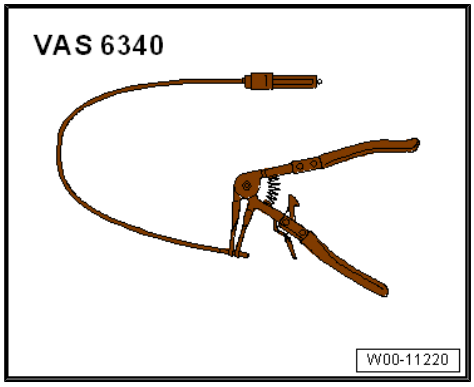
3.2.1 Removing and installing coolant pipe (left-side)

Special tools and workshop equipment required

- Hose clamps, up to 25 mm - 3094-



- Hose clip pliers - VAS 6340-



Removing

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CAUTION

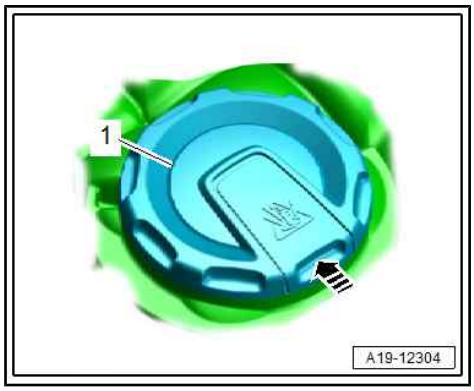
The cooling system is under pressure when the power unit is hot. Risk of scalding due to hot steam and hot coolant.

Danger of scalding skin and other parts of the body.

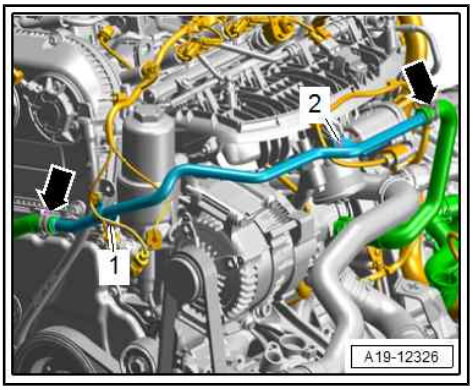
- **Put on protective gloves.**
- **Put on safety goggles.**
- **Cover filler cap on expansion tank with a cloth and open carefully to release pressure.**

– Release fastener -arrow- (if necessary) and briefly open filler cap -1- on coolant expansion tank.

– 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 .



– Move electrical wiring clear.
– Remove bolts -1, 2-.
– Place a cloth underneath to catch escaping coolant.
– Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -arrows- and disconnect hoses.
– Detach coolant pipe.



Installing

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

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

– 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 .
– Check coolant level ⇒ page 87 .

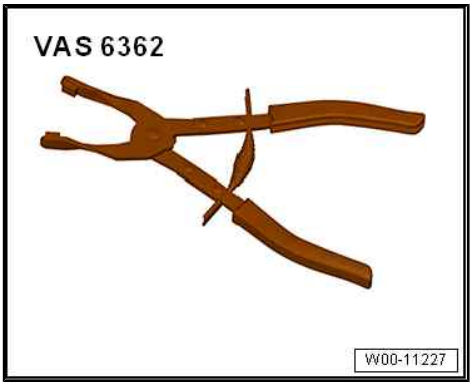
Tightening torques

♦ ⇒ “3.1 Exploded view - coolant pipes”, page 100

3.2.2 Removing and installing coolant pipe (right-side) - vehicles without particulate filter

Special tools and workshop equipment required

♦ Hose clip pliers - VAS 6362-



♦ Socket Torx T30 - T10405-

Removing

- Re-install all heat insulation sleeves in the same locations when installing.

– Drain coolant ⇒ page 82 .

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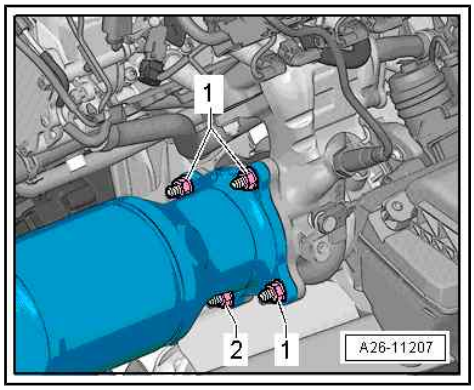
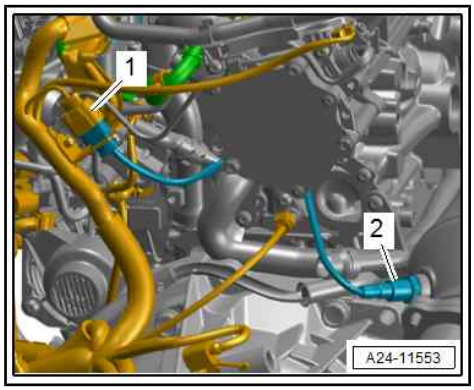
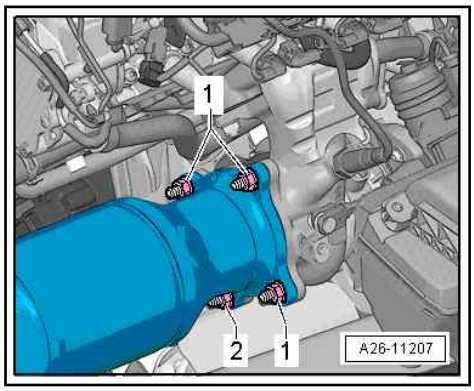
– Remove front silencer ⇒ page 159 .
– Remove nut -2- from underneath. (Nuts -1- do not have to be removed at this stage.)
– Remove air cleaner housing ⇒ page 136 .



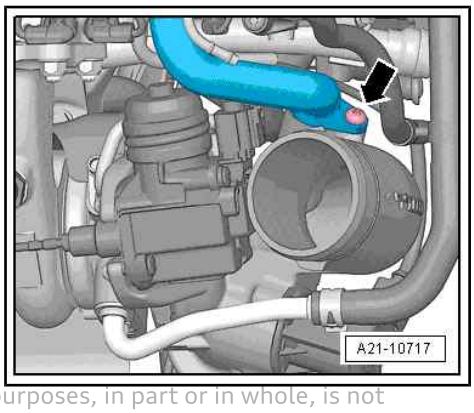
– Unplug electrical connector -1- for Lambda probe after catalytic converter - G130- -item 2- and move wiring clear.



– Remove nuts -1- from above and move catalytic converter towards rear.



– Remove bolt -arrow- and detach crankcase breather hose from turbocharger.



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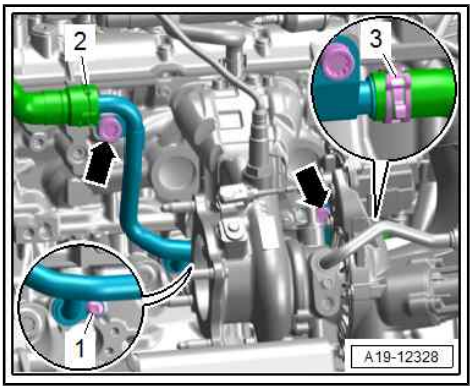
– Fold back heat insulation sleeve, lift retaining clip -2- and disconnect coolant hose.

– Release hose clip -3- and disconnect coolant hose.

– Remove bolts -arrows- and -1-, detach coolant pipe (right-side) from cylinder block and remove coolant pipe.



Installing

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

- Renew O-ring after removal.
- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Do not reuse coolant.

– Install catalytic converter ⇒ page 164 .

– Install air cleaner housing ⇒ page 136 .

– Connect coolant hose with plug-in connector ⇒ page 110 .

– Fill up with coolant ⇒ page 82 .

Tightening torques

♦ ⇒ “3.1 Exploded view - coolant pipes”, page 100

3.2.3 Removing and installing coolant pipe (right-side) - vehicles with particulate filter

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Special tools and workshop equipment required

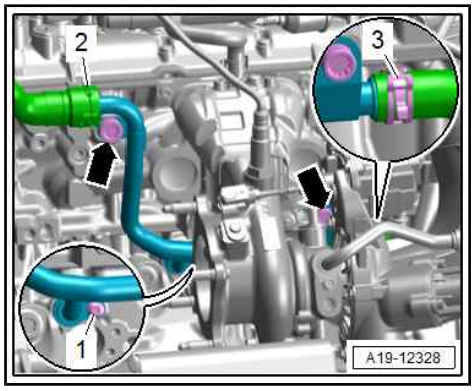
♦ Hose clip pliers - VAS 6362-

♦ Socket Torx T30 - T10405-

Removing

- Re-install all heat insulation sleeves in the same locations when installing.

– Remove catalytic converter ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Removing and installing catalytic converter .
– Drain coolant ⇒ page 82 .
– Fold back heat insulation sleeve, lift retaining clip -2- and disconnect coolant hose.
– Release hose clip -3- and disconnect coolant hose.
– Remove bolts -arrows- and -1-, detach coolant pipe (right-side) from cylinder block and remove coolant pipe.



Installing

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

- Renew O-ring after removal.
- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Do not reuse coolant.

– Install catalytic converter ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Removing and installing catalytic converter .
– Fill up with coolant ⇒ page 82 .

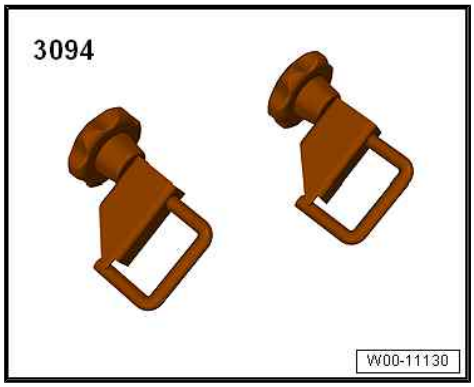
Tightening torques

♦ ⇒ “3.1 Exploded view - coolant pipes”, page 100

3.3 Removing and installing coolant pipes for gearbox

Special tools and workshop equipment required

♦ Hose clamps, up to 25 mm - 3094-



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

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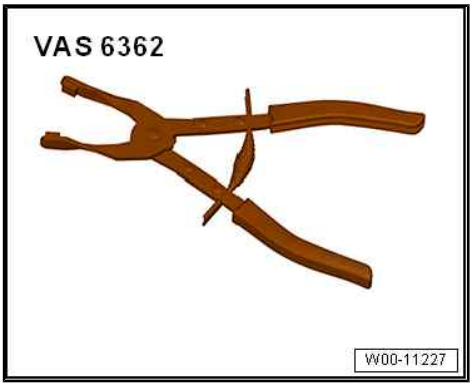
♦ Hose clip pliers - VAS 6362-



Removing

⚠ CAUTION

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

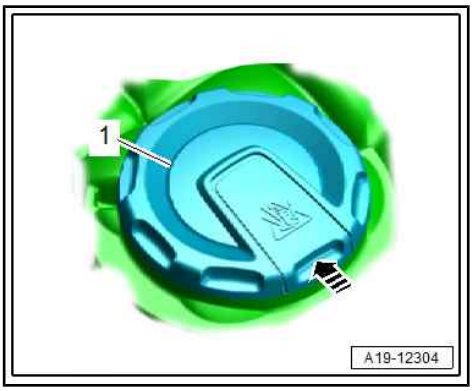
Danger of scalding skin and other parts of the body.

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

– Release fastener -arrow- and briefly open filler cap -1- on coolant expansion tank.

– 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 .

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



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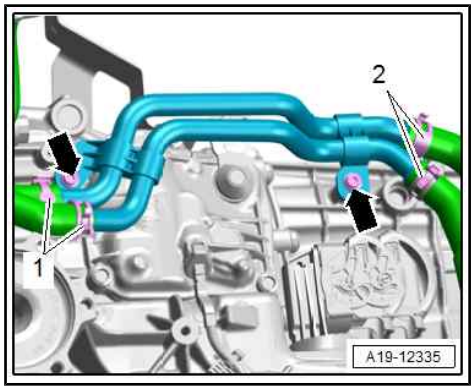
– Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.
– Remove bolts -arrows-.
– Clamp off coolant hoses using hose clamps up to 25 mm - 3094- , release hose clips -1- and disconnect hoses.
– Loosen hose clips -2- and detach coolant pipes.



Installing

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

- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Do not reuse coolant.

– Fill up with coolant ⇒ page 82 .
– 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

◆ ⇒ “3.1 Exploded view - coolant pipes”, page 100
◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

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4 Radiator/radiator fan

⇒ “4.1 Exploded view - radiator/radiator fan”, page 109

⇒ “4.2 Removing and installing radiator”, page 111

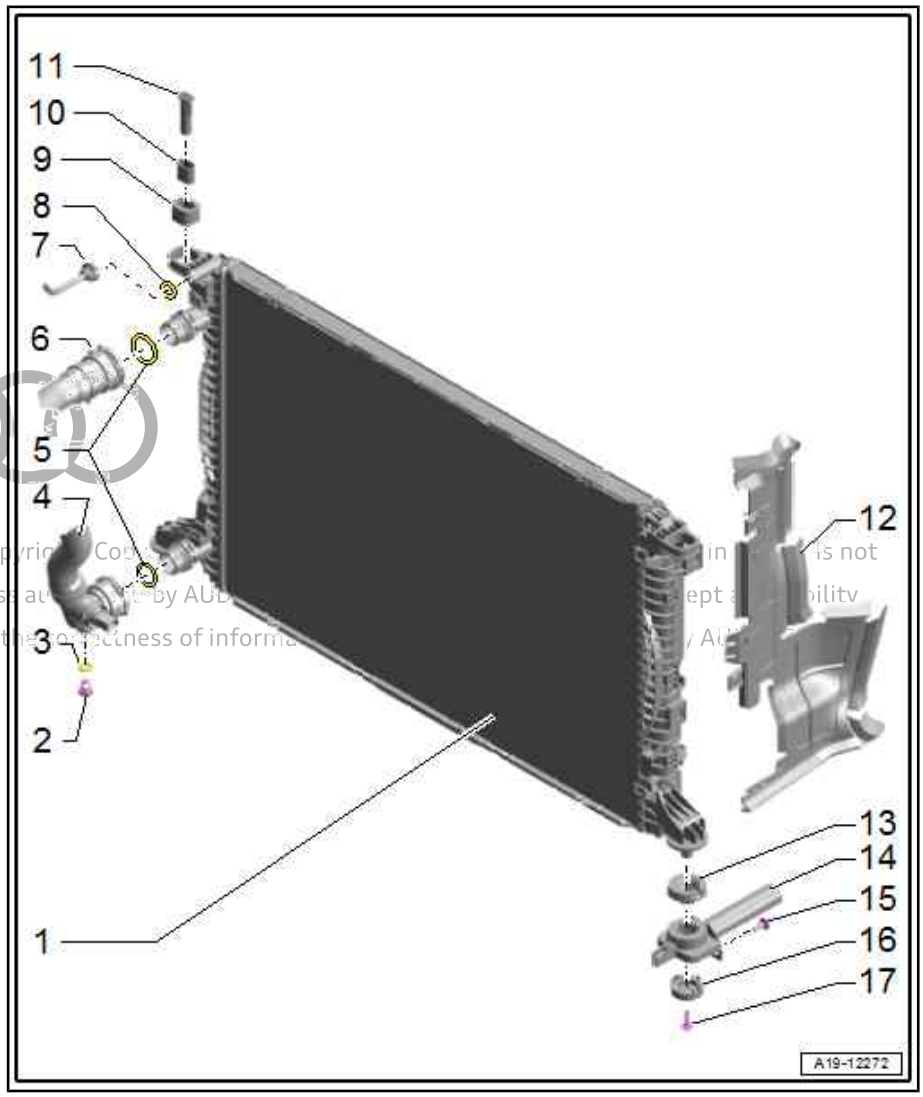
⇒ “4.3 Removing and installing radiator cowl”, page 114

⇒ “4.4 Removing and installing radiator fan V7 ”, page 116

4.1 Exploded view - radiator/radiator fan

- Exploded view - radiator ⇒ page 109
- Exploded view - radiator cowl and radiator fan ⇒ page 110

Exploded view - radiator



1 - Radiator

- ❑ Removing and installing ⇒ page 111
- ❑ 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
- ❑ If renewed, change coolant in entire system

2 - Drain plug

- ❑ 1.5 … 3 Nm

3 - O-ring

- ❑ Renew if damaged

4 - Coolant hose

- ❑ Lift retaining clip to detach
- ❑ Connecting ⇒ page 110

5 - O-rings

- ❑ Renew after removing

6 - Coolant hose

- ❑ Lift retaining clip to detach
- ❑ Connecting ⇒ page 110

7 - Coolant pipe

- ❑ To coolant expansion tank
- ❑ Press release ring to detach
- ❑ Connecting ⇒ page 110

8 - O-ring

- ❑ Renew after removing

9 - Rubber bush

- ❑ For radiator

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10 - Sleeve

11 - Retaining pin

- ❑ Use screwdriver to release and pull off

12 - Air duct

13 - Rubber bush

- ❑ For radiator

14 - Radiator bracket

15 - Bolt

- ❑ 5 Nm

16 - Washer

17 - Bolt

- ❑ 4.5 Nm

Connecting coolant hose with plug-in connector

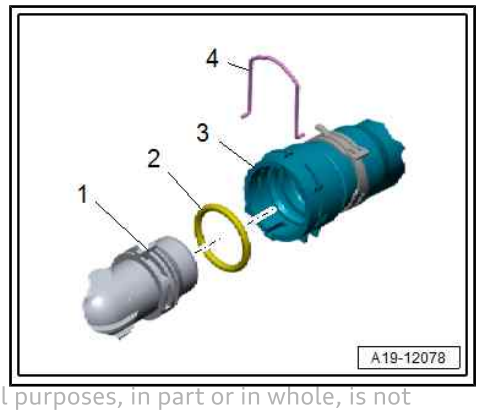
- If damaged, renew retaining clip -4-.

– 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.



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Exploded view - radiator cowl and radiator fan

1 - Radiator cowl

- ❑ Removing and installing ⇒ page 114

2 - Bolt

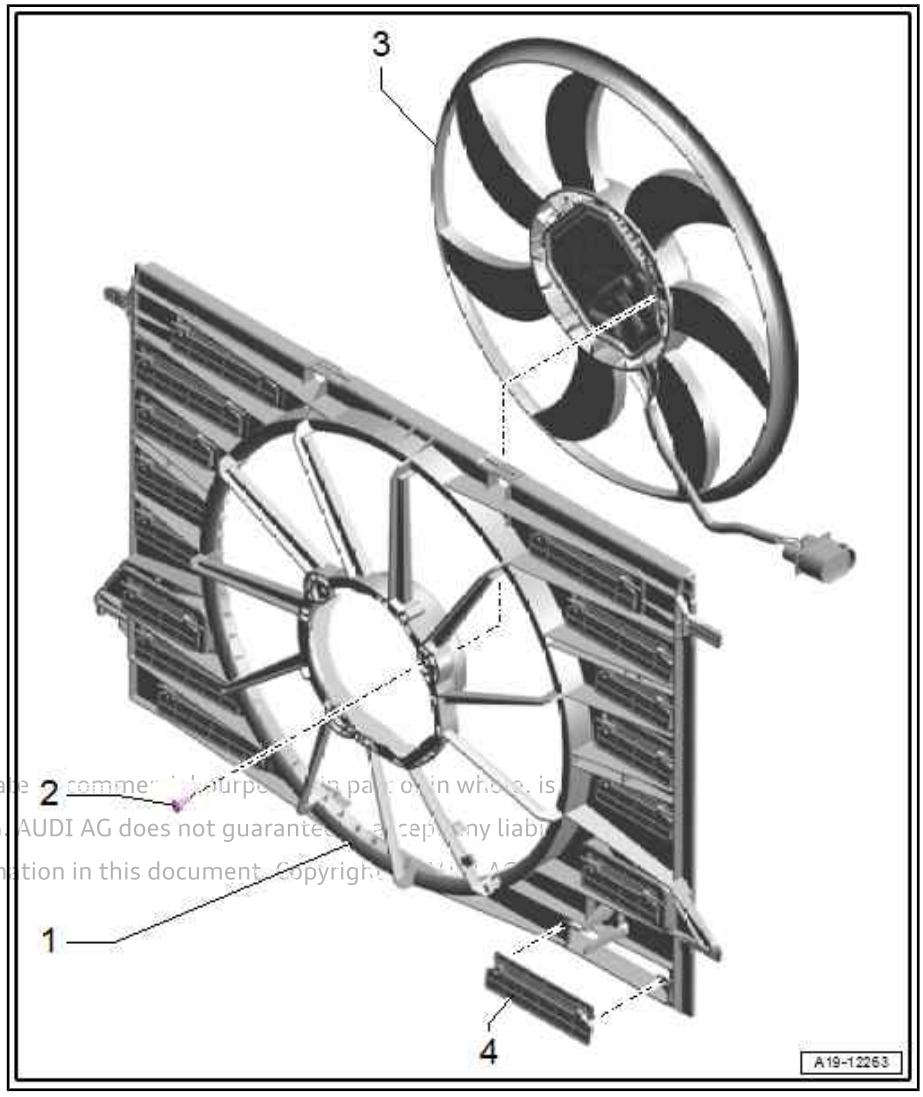
- ❑ 5 Nm

3 - Radiator fan - V7-

- ❑ With radiator fan control unit - J293-
- ❑ Removing and installing ⇒ page 116

4 - Radiator blind

- ❑ Depending on vehicle equipment



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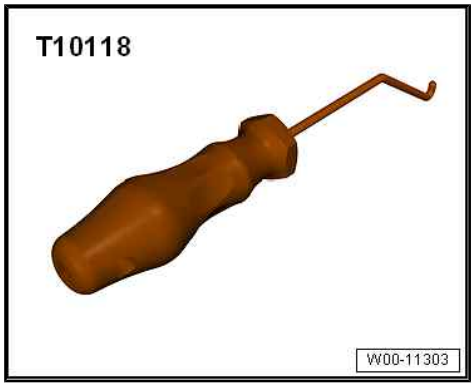
4.2 Removing and installing radiator

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

Special tools and workshop equipment required

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

♦ Assembly tool - T10118-



Removing

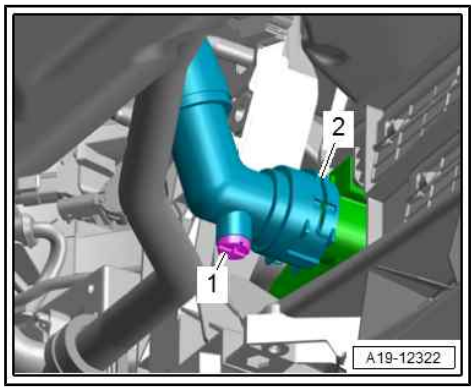
– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

– Remove bracket for bumper cover together with impact bar ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Exploded view - lock carrier .

– Place collector tank from coolant collecting system -VAS 5014- or drip tray for workshop hoist - VAS 6208- underneath.

– A4: Remove headlight (left-side) ⇒ Electrical system; Rep. gr. 94 ; Headlights; Removing and installing headlights .

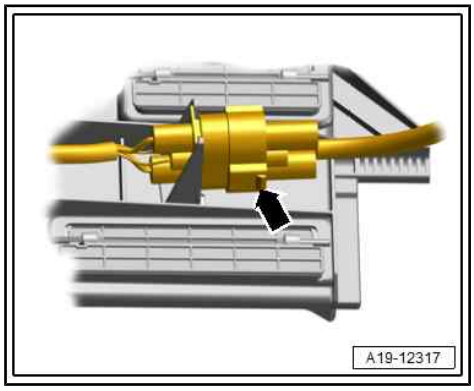
– Lift retaining clip -2- and disconnect coolant hose from radiator (bottom right).



⚠ CAUTION

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

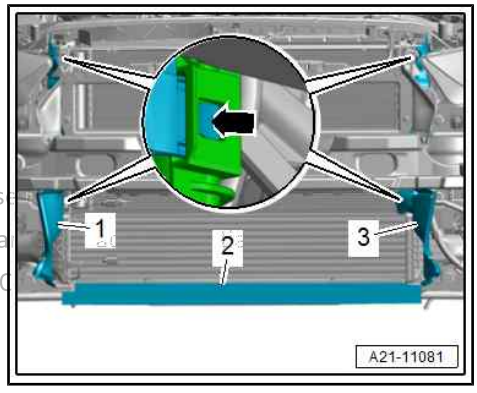
– When working in the vicinity of the radiator, keep a safe distance from the radiator fan.



– Unplug electrical connector -arrow- for radiator fan.

– Release catches -arrow- and detach air ducts -1, 3-.

– Unclip air duct -2-.



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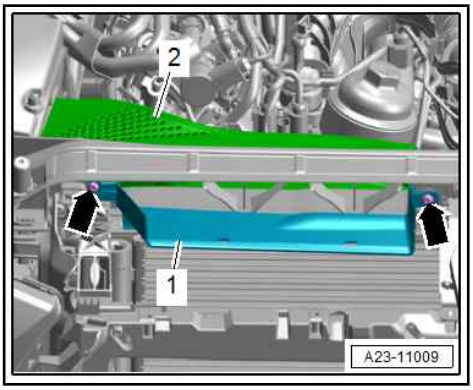
– Remove bolts -arrows- and detach air duct -1-.



– Detach air duct (top) -arrow-.

– Remove charge air cooler ⇒ page 121 .

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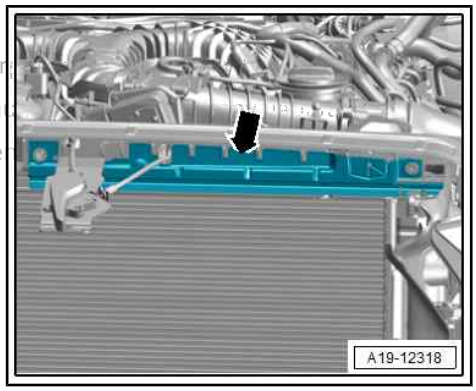


– Unplug electrical connector -2- for high-pressure sender - G65- .

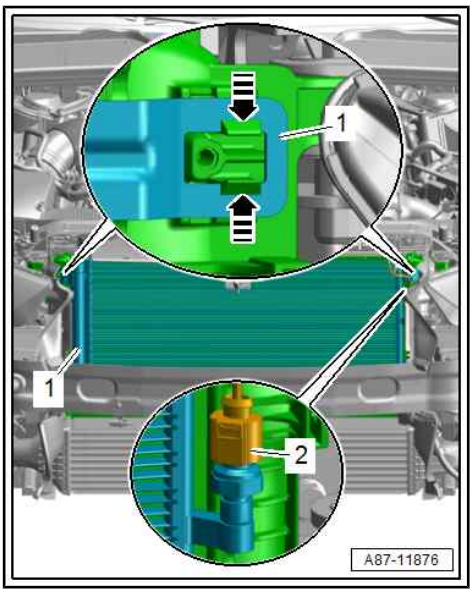
NOTICE

Danger of irreparable damage to refrigerant lines if the inside film is torn.

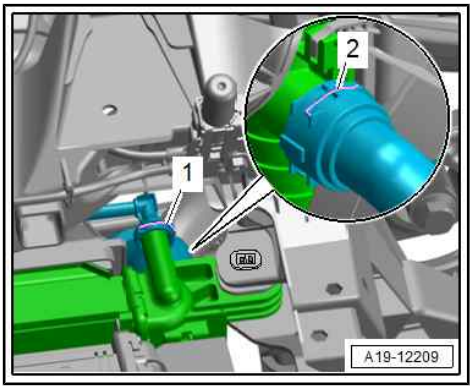
– **Never bend refrigerant lines which have a radius smaller than r = 100 mm.**

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

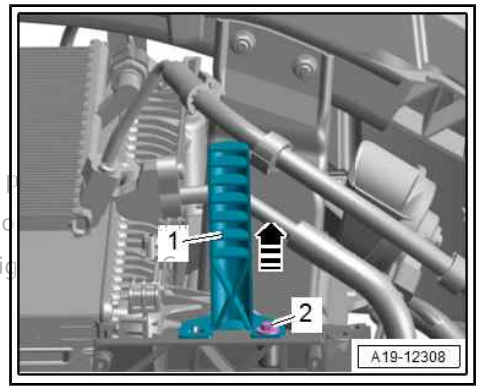
• Renew radiator if fasteners are irreparably damaged.



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



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



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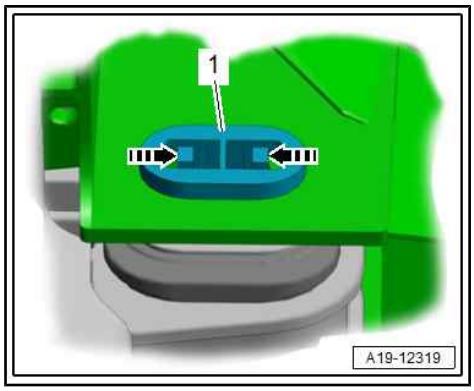
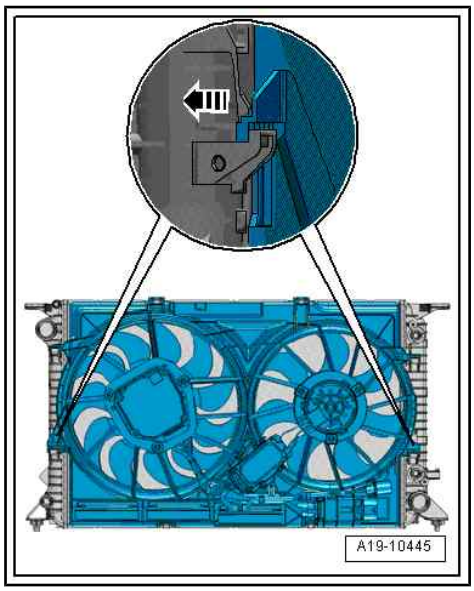
– Release fasteners -arrows- on both sides and pull retaining pins -1- for radiator out upwards.
– Detach radiator.



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



Installing

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

- 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 .
- Change coolant in entire system after renewing radiator.

– Install charge air cooler ⇒ page 121 .
– Install headlight ⇒ Electrical system; Rep. gr. 94 ; Headlights; Removing and installing headlights .
– Connect coolant hose with plug-in connector ⇒ page 110 .
– Fill up with coolant ⇒ page 82 .

Tightening torques

- ⇒ “4.1 Exploded view - radiator/radiator fan”, page 109
- ⇒ “2.1 Exploded view - air cleaner housing”, page 135
- ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Exploded view - lock carrier
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

4.3 Removing and installing radiator cowl

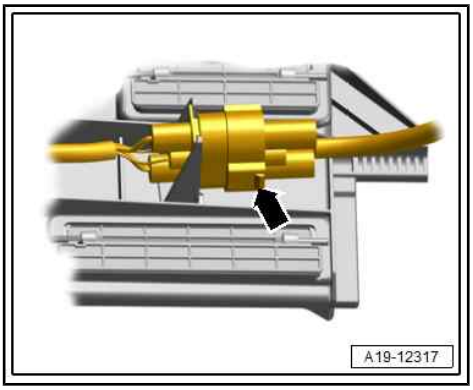
Removing

– Remove noise insulation (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
– Remove charge air cooler ⇒ page 121 .

CAUTION

Risk of injury as the radiator fans may start up automatically.
– Unplug electrical connectors.

– Unplug electrical connector -arrow- for radiator fan.



– Unclip air duct (bottom) -arrow-.

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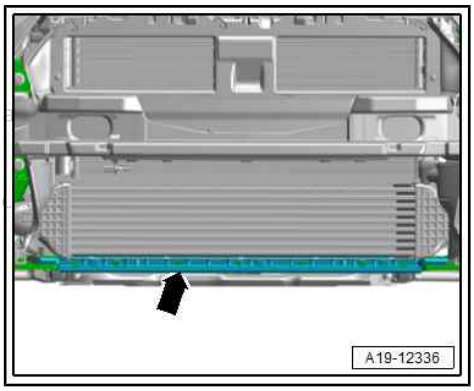
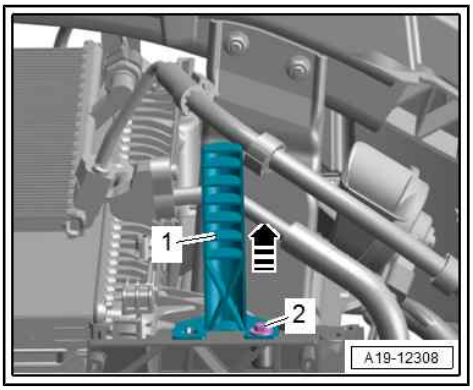


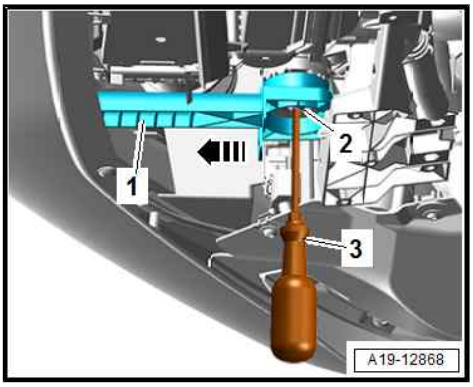
– Remove bolt -2- (both sides) for radiator bracket -1-.



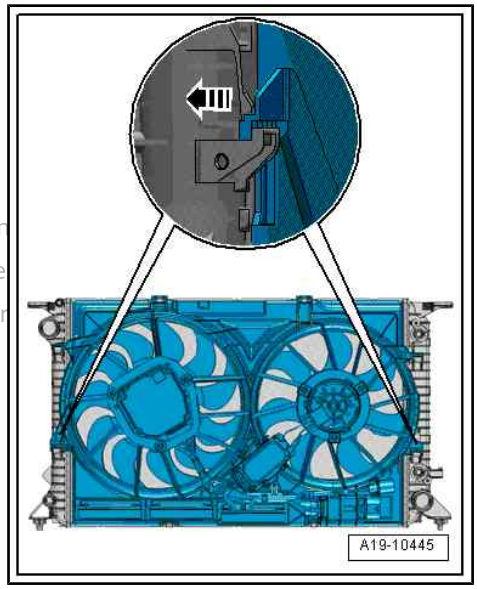
– Remove bolt -2- (both sides) for radiator bracket -1- using suitable tool -3-.
– Detach radiator bracket -1- (both sides) in direction of -arrow-.

Note:

Mark installation position of radiator bracket relative to rubber bush (for re-installation).



– Press locking tabs on left and right sides of radiator cowl -arrow- and at the same time lift radiator cowl off radiator.
– Take radiator cowl out downwards between radiator and lock carrier, pressing bottom of radiator module as far forwards as possible.



Installing

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

– Install charge air cooler ⇒ page 121 .

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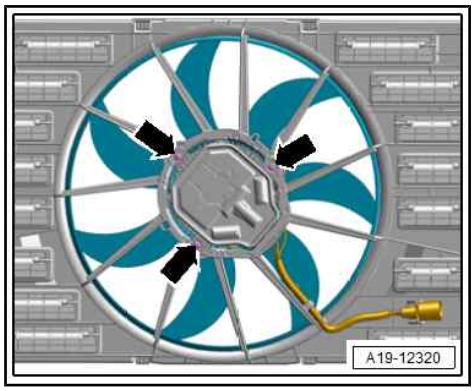
Tightening torques

- ⇒ “4.1 Exploded view - radiator/radiator fan”, page 109
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

4.4 Removing and installing radiator fan - V7-

Removing

– Remove radiator cowl ⇒ page 114 .
– Move electrical wiring harness clear.
– Unscrew bolts -arrows- and remove radiator fan.



Note:

Missing balancing clamps on fan wheel can cause noises due to imbalances.

Installing

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

– Install radiator cowl ⇒ page 114 .

Tightening torques

- ⇒ “4.1 Exploded view - radiator/radiator fan”, page 109

21 – Turbocharging/supercharging

1 Turbocharger

⇒ "1.1 Exploded view - turbocharger", page 117

⇒ "1.2 Removing and installing turbocharger", page 117

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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

⇒ "1.2.1 Removing and installing turbocharger - vehicles without particulate filter", page 117

⇒ "1.2.2 Removing and installing turbocharger - vehicles with particulate filter", page 118

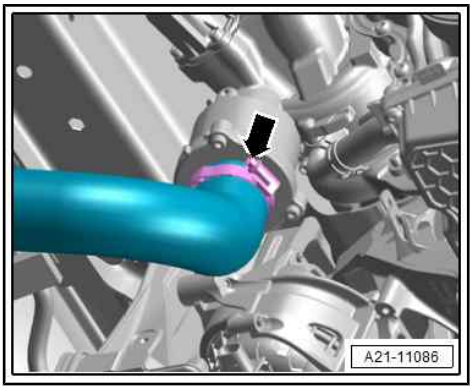
1.2.1 Removing and installing turbocharger - vehicles without particulate filter

Removing

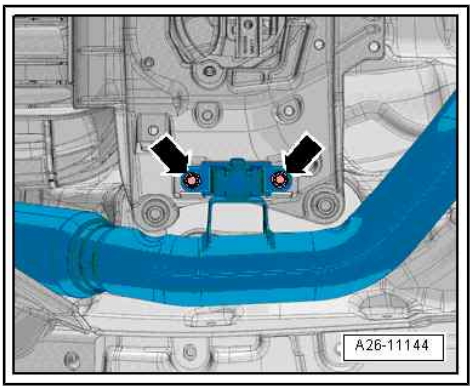
– Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

– Drain coolant ⇒ page 82 .

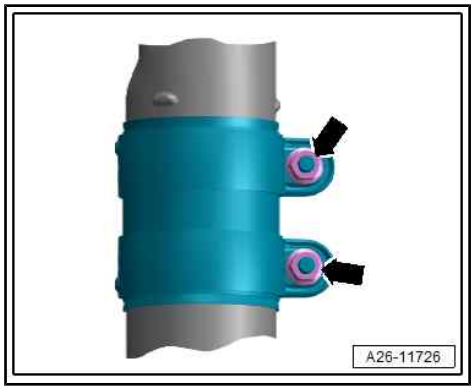
– Open hose clip -arrow-, detach air hose and swivel to side.



– Unscrew bolts -arrows- for front silencer.



– Loosen bolted connections -arrows- and push clamp towards rear.

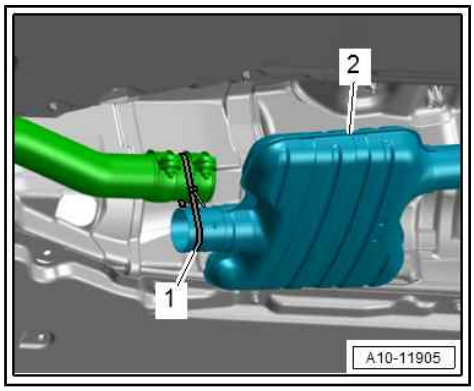


NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

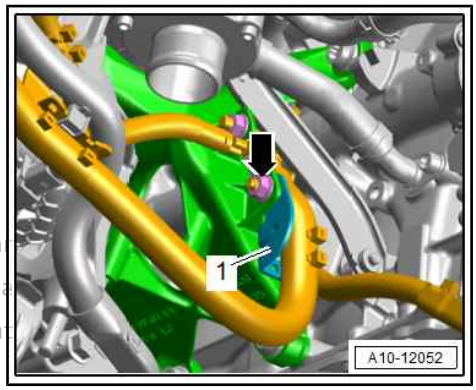
– Lower front silencer -2- slightly and secure it with a cable tie -1-, as shown.



– Remove nut -arrow- and press bracket -1- with electrical wiring harness to one side.

– Remove air cleaner housing ⇒ page 136 .

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 air cleaner housing ⇒ page 136 .

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– 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

- ⇒ “1.1 Exploded view - silencers”, page 154
- ⇒ 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

1.2.2 Removing and installing turbocharger - vehicles with particulate filter

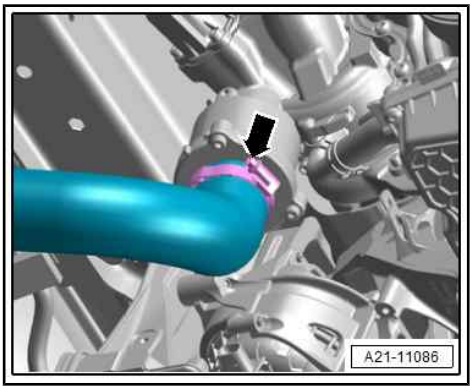
Removing

– 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 .

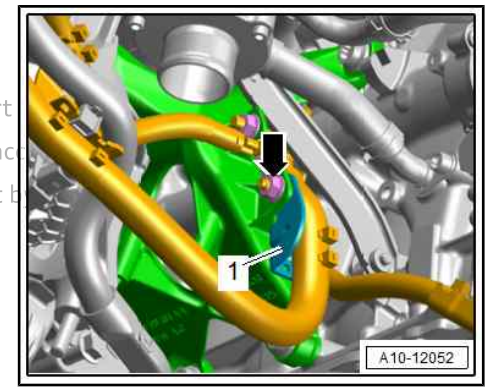
– Drain coolant ⇒ page 82 .

– Remove catalytic converter ⇒ page 165 , ⇒ page 164 .

– Open hose clip -arrow-, detach air hose and swivel to side.



– Remove nut -arrow- and press bracket -1- with electrical wiring harness to one side.



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.

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Installing

Additional work:

– Install catalytic converter ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Removing and installing catalytic converter .

Tightening torques

- ⇒ “1.1 Exploded view - silencers”, page 154
- ⇒ 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 Charge air system

⇒ “2.1 Exploded view - charge air system”, page 120

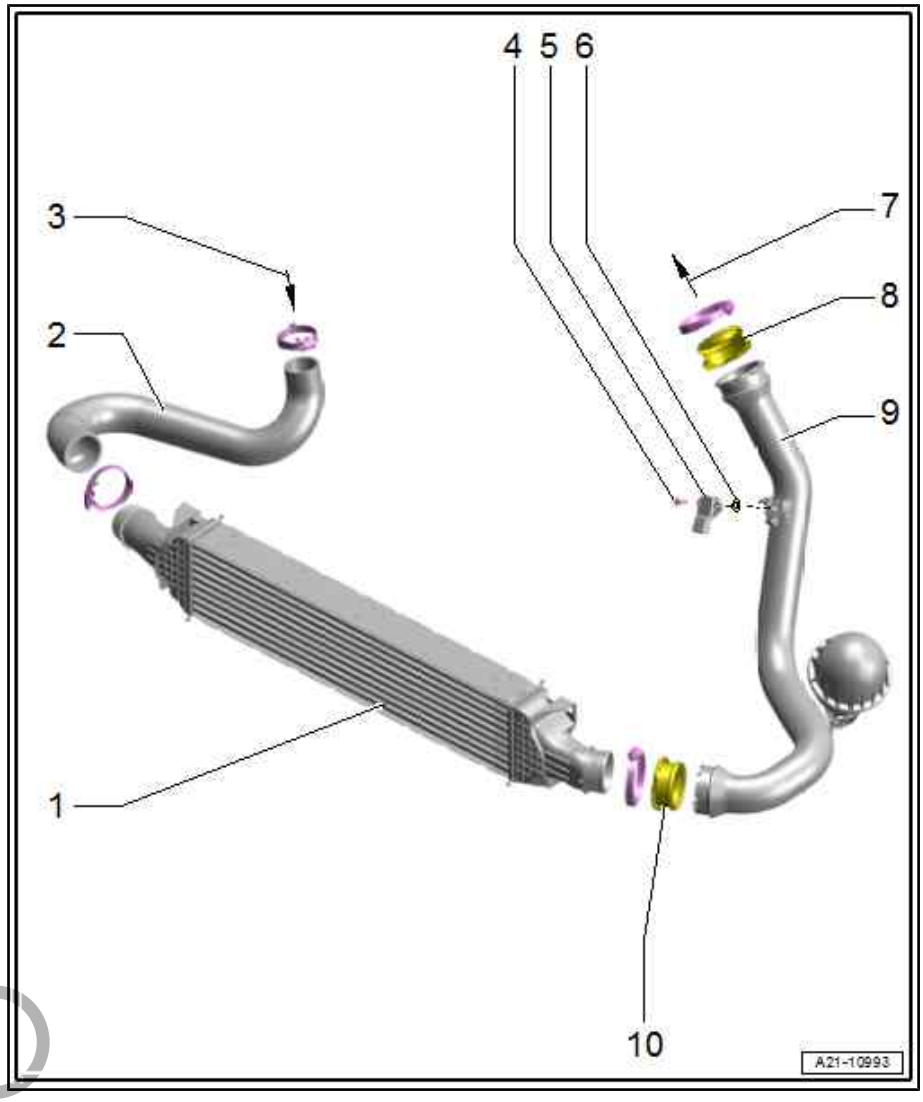
⇒ “2.2 Exploded view - hose connections for charge air system”, page 121

⇒ “2.3 Removing and installing charge air cooler”, page 121

⇒ “2.4 Removing and installing charge pressure sender G31 ”, page 122

⇒ “2.5 Checking charge air system for leaks”, page 122

2.1 Exploded view - charge air system



1 - Charge air cooler

- ❑ Removing and installing ⇒ page 121
- ❑ 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

2 - Air hose

- ❑ Must be free of oil and grease when installing

3 - From turbocharger

4 - Bolt

- ❑ Repair method if fastener breaks off
- ❑ Thread-forming
- ❑ Fit and screw in bolt by hand so that it is screwed into old thread. Then tighten bolt to torque
- ❑ 7 Nm

5 - Charge pressure sender - G31-

- ❑ Removing and installing ⇒ page 122

6 - O-ring

- ❑ Renew after removing

7 - To intake manifold

8 - Seal

- ❑ Renew if damaged

9 - Air pipe

- ❑ Must be free of oil and grease when installing

10 - Seal

- ❑ Renew if damaged

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2.2 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 .

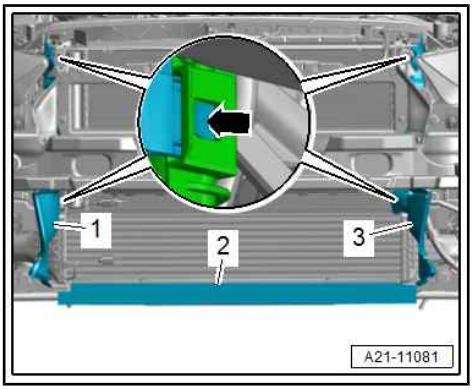
2.3 Removing and installing charge air cooler

Removing

– Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .

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

– Release catches -arrow- and detach air ducts -1, 3-.

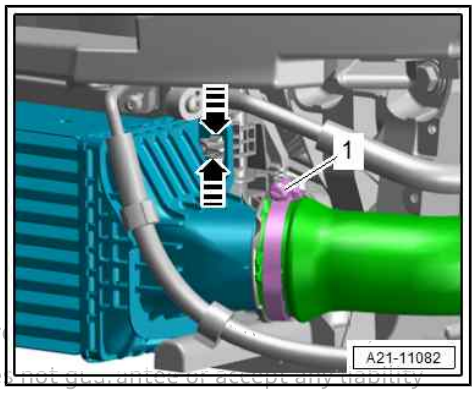


– Release hose clip -1- on both sides and detach air pipe from charge air cooler.

– Release fasteners -arrows- on both sides and carefully disengage charge air cooler from radiator.

• Renew charge air cooler if fasteners are broken.

– Take out charge air cooler from underneath.



Installing

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

• 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 .

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

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

Tightening torques

♦ ⇒ Servicing 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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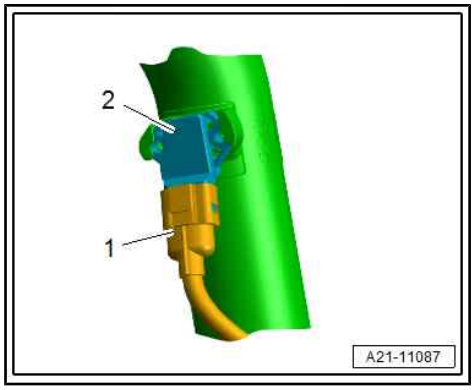
2.4 Removing and installing charge pressure sender - G31-

Removing

– Unplug electrical connector -1-.

– Turn charge pressure sender - G31- -item 2- anti-clockwise and pull it out of air pipe.



Installing

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

- Renew O-ring after removal.
- Repair solution if fastener on air pipe has broken off: Secure charge pressure sender - G31- with two bolts, refer to ⇒ Electronic parts catalogue .

– Place charge pressure sender - G31- in installation position and turn it clockwise until it engages.

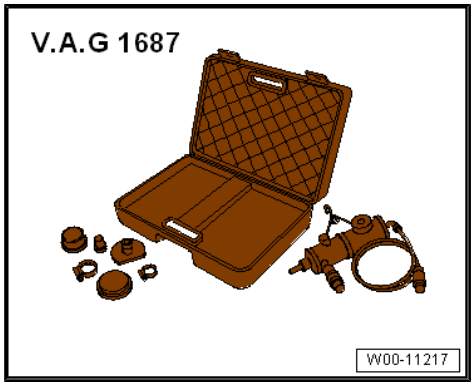
Tightening torques

♦ ⇒ “2.1 Exploded view - charge air system”, page 120

2.5 Checking charge air system for leaks

Special tools and workshop equipment required

♦ Charge air system tester - V.A.G 1687- with end seal - V.A.G 1687/6- and adapters -V.A.G 1687/3- , -V.A.G 1687/13-2- , -V.A.G 1687/15-

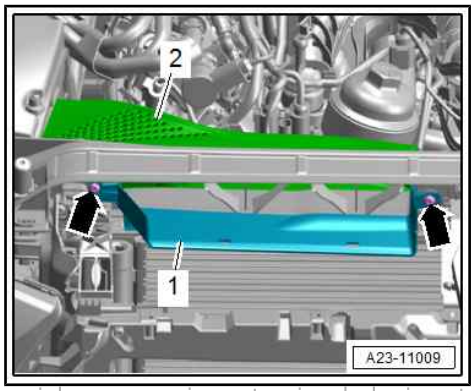


Procedure

– 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 .

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

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



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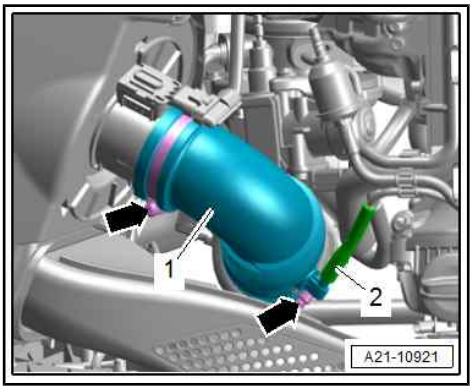
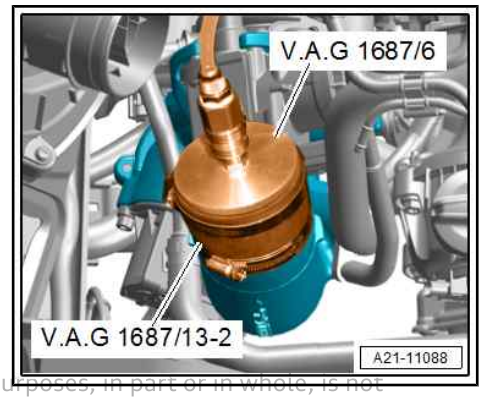
– Loosen hose clips -arrows-.
– Disconnect vacuum hose -2- and remove air pipe -1-.



– Fit end seal - V.A.G 1687/6- and adapter - V.A.G 1687/13-2- on turbocharger.



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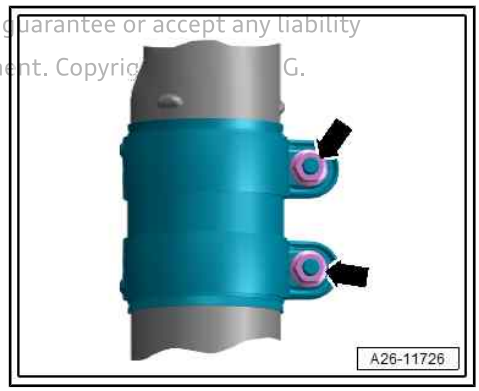
– Loosen bolted connections -arrows- and push clamp towards rear.

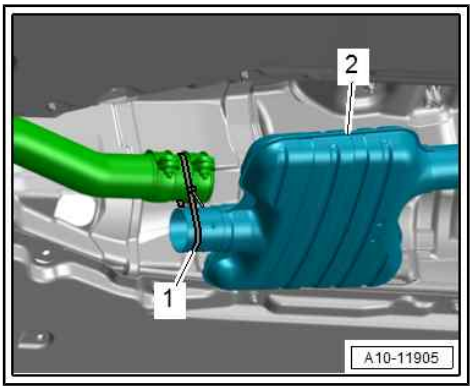


NOTICE

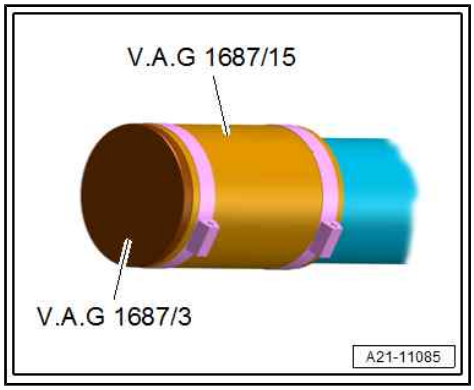
Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

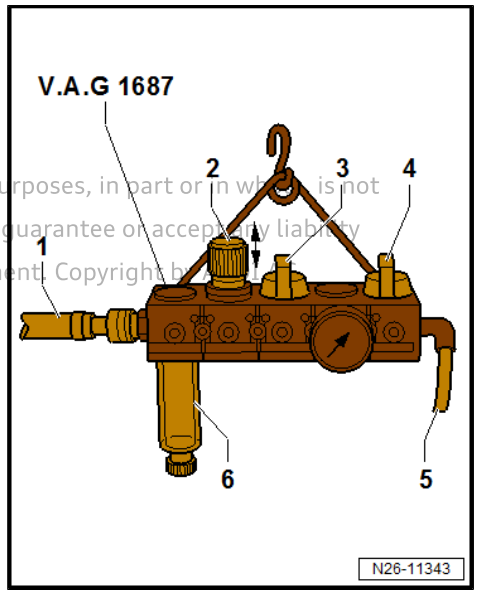
– Lower front silencer -2- slightly and secure it with a cable tie -1-, as shown.



– Seal off front silencer with adapters -V.A.G 1687/3- and -V.A.G 1687/15- .



– Connect charge air system tester - V.A.G 1687- with connection -5- to end seal - V.A.G 1687/6- .



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 .

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Assembling

Assembly is performed in reverse sequence; note the following:

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

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

– 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

- ⇒ “2.1 Exploded view - air cleaner housing”, page 135
- ⇒ “1.1 Exploded view - silencers”, page 154
- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - charge air system

24 – Mixture preparation - injection

1 Injection system

⇒ "1.1 Overview of fitting locations - injection system", page 125

1.1 Overview of fitting locations - injection system

- Overview of fitting locations - engine compartment ⇒ page 125
- Overview of fitting locations - engine (from above) ⇒ page 128
- Overview of fitting locations - engine (inlet side) ⇒ page 130
- Overview of fitting locations - engine (exhaust side) ⇒ page 131
- Overview of fitting locations - engine (view from front), vehicles without particulate filter ⇒ page 133
- Overview of fitting locations - engine (view from front), vehicles with particulate filter ⇒ page 133

Overview of fitting locations - engine compartment

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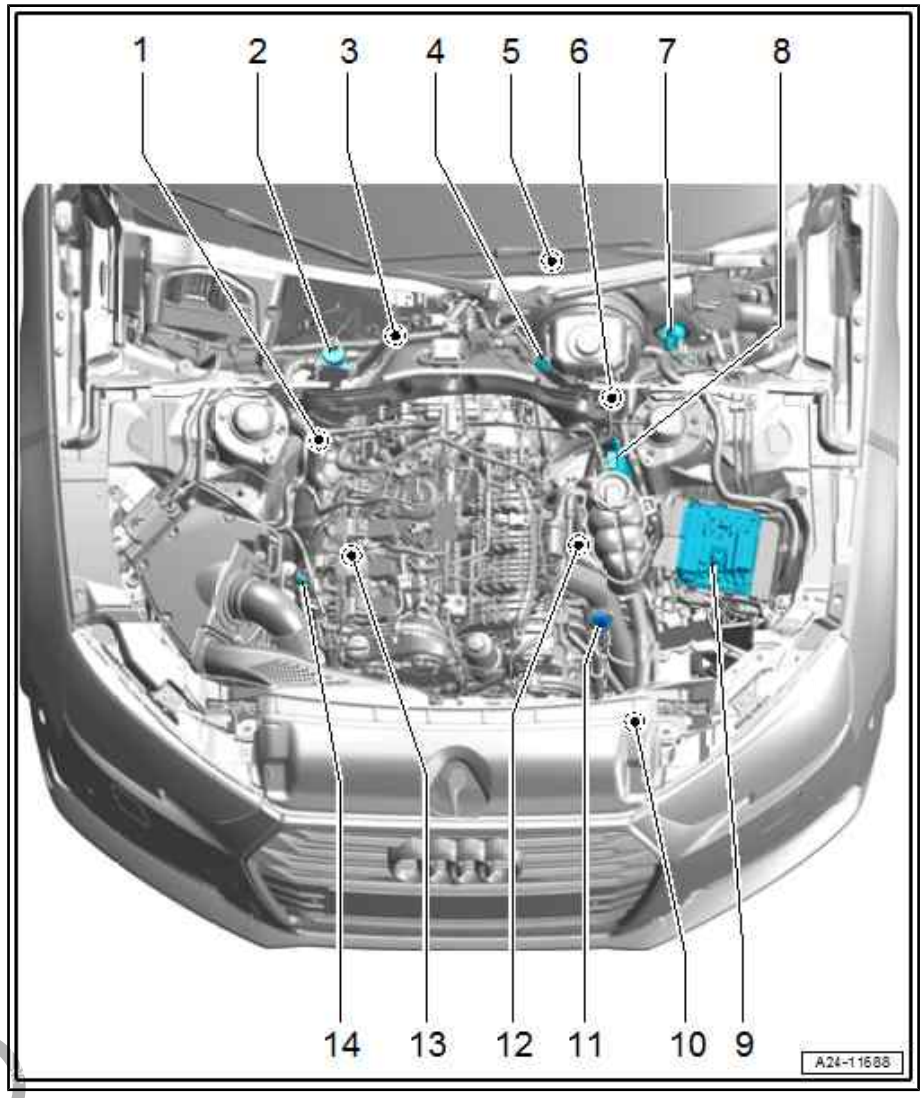

1 - Lambda probe after catalytic converter - G130- with Lambda probe 1 heater after catalytic converter - Z29-

- ❑ Fitting location ⇒ page 128

2 - Coolant shut-off valve - N82-

- ❑ On equipment version with auxiliary heating: heater coolant shut-off valve - N279-

3 - Gear detection sensor - G604-

- ❑ For equipment version with manual gearbox
- ❑ Fitting location ⇒ page 127

4 - Brake servo pressure sensor - G294-

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

- ❑ Fitting location ⇒ page 127

6 - Brake light switch - F-

- ❑ Fitting location ⇒ page 127

7 - Clutch position sender - G476-

- ❑ With clutch pedal switch - F36- / clutch pedal switch for engine start - F194-
- ❑ For equipment version with manual gearbox
- ❑ Fitting location ⇒ page 127

8 - Coolant circulation pump - V50- , continued coolant circulation pump - V51-

- ❑ Exploded view ⇒ page 88

9 - Engine control unit - J623-

- ❑ Exploded view ⇒ page 152

10 - Radiator outlet coolant temperature sender - G83-

- ❑ Fitting location ⇒ page 128

11 - Charge pressure sender - G31-

- ❑ Exploded view ⇒ page 120

12 - Right electrohydraulic engine mounting solenoid valve - N145-

- ❑ Fitting location ⇒ page 128

13 - Left electrohydraulic engine mounting solenoid valve - N144-

- ❑ Fitting location ⇒ page 128

14 - Lambda probe - G39- with Lambda probe heater - Z19-

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

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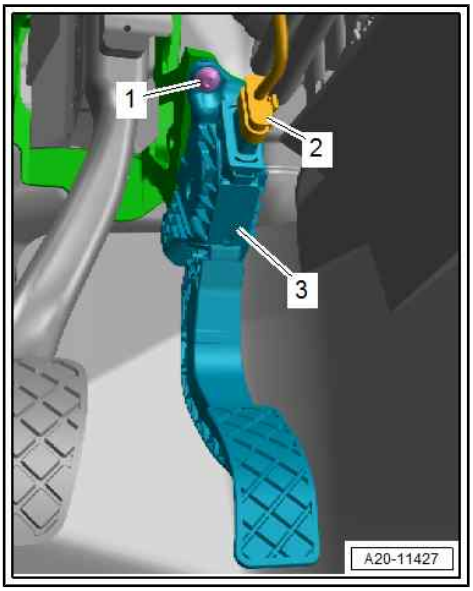
Fitting location of accelerator position sender - G79- / accelerator position sender 2 - G185-

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

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

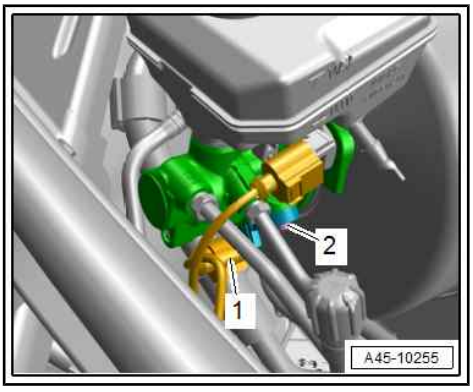


Fitting location of brake light switch - F-

- In engine compartment on brake master cylinder

1 - Electrical connector for brake light switch - F-

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



Fitting location of clutch position sender - G476-

- Integrated in clutch master cylinder in plenum chamber on driver's side. It cannot be renewed separately if defective.

5 - Electrical connector for clutch position sender - G476-

Exploded view ⇒ Rep. gr. 30 ; Clutch mechanism; Exploded view - pedal cluster

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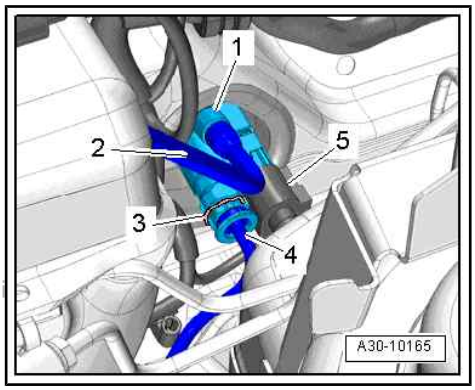
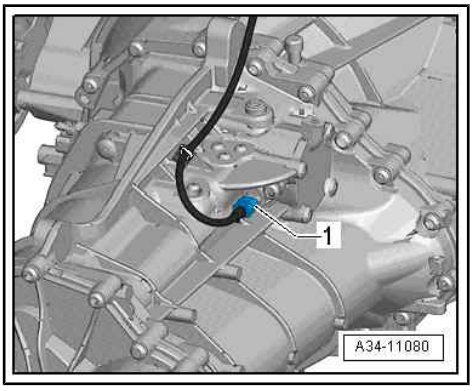


Fitting location of gear detection sensor - G604-

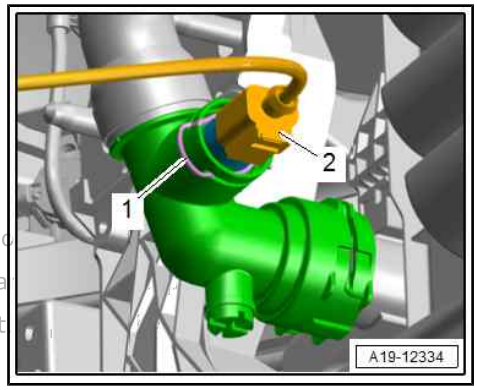
- At top right of manual gearbox

1 - Gear detection sensor - G604-

Removing and installing ⇒ 6-speed manual gearbox; Rep. gr. 34 ; Selector mechanism ; Removing and installing gear detection sensor - G604-



Fitting location of radiator outlet coolant temperature sender - G83-



♦ In coolant connection on radiator at bottom left

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

Exploded view ⇒ page 90 .

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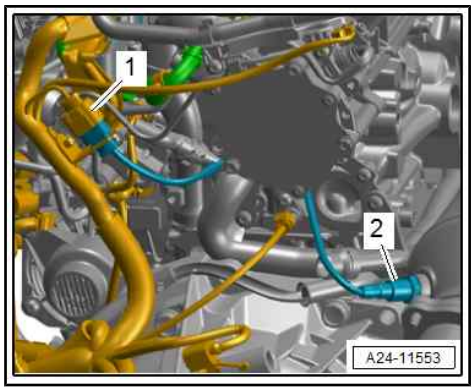
Fitting location of Lambda probe after catalytic converter - G130- with Lambda probe 1 heater after catalytic converter - Z29-



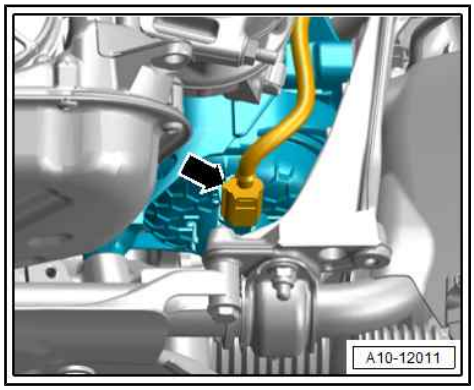
♦ In catalytic converter

1 - Electrical connector for Lambda probe after catalytic converter - G130- and Lambda probe 1 heater after catalytic converter - Z29-

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

Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Lambda probe; Exploded view - Lambda probe

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



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

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

Removing and installing
⇒ “2.3.1 Removing and installing engine mountings”, page 45

Overview of fitting locations - engine (from above)

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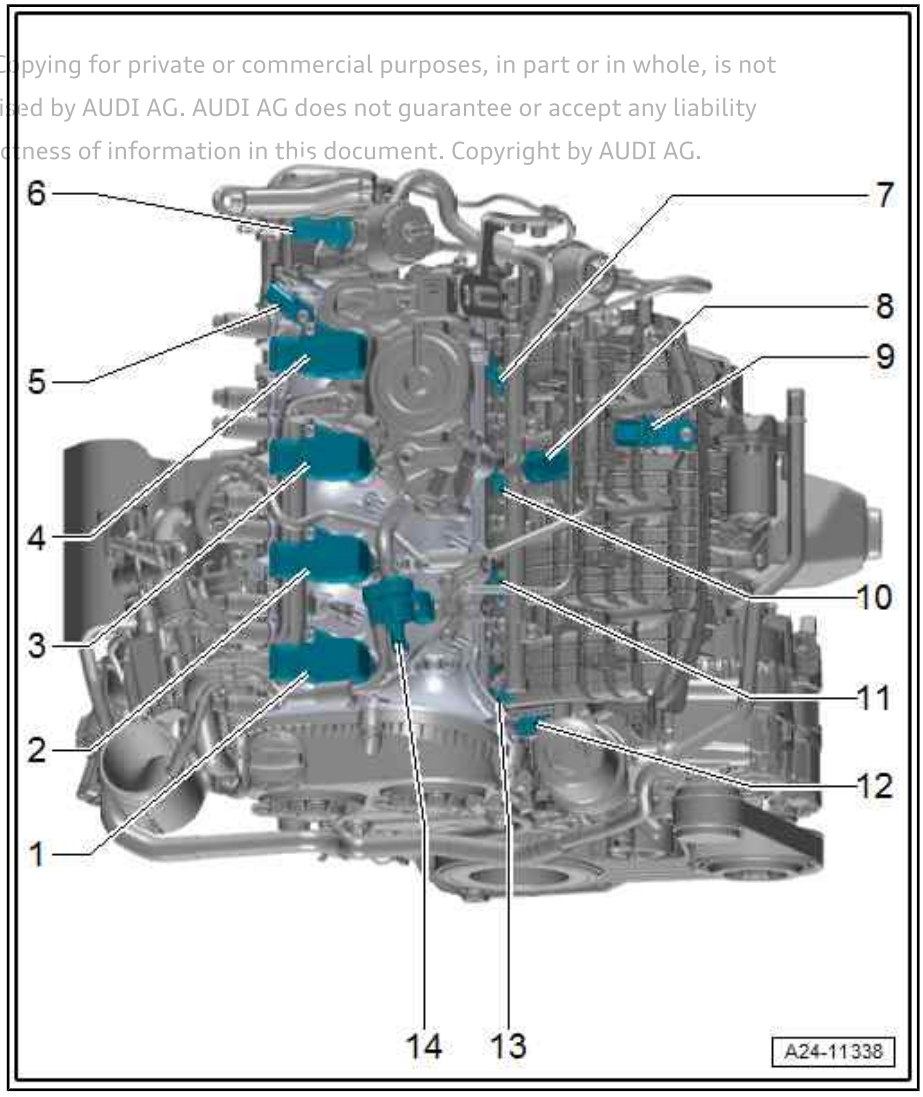

1 - Ignition coil 1 with output stage - N70-

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

2 - 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

3 - 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

4 - 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

5 - Hall sender 3 - G300-

- ❑ 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 pressure regulating valve or fuel metering valve

- ❑ Depending on version of high-pressure pump:

- ♦ Fuel pressure regulating valve - N276- or
- ♦ Fuel metering valve - N290-

- ❑ Integrated in high-pressure pump; cannot be renewed separately

7 - Injector 2, cylinder 4 - N535- , MPI

- ❑ 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 - Fuel pressure sender for low pressure - G410- , MPI

- ❑ 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 - Intake air temperature sender - G42- / intake manifold pressure sender - G71-

- ❑ 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 - Injector 2, cylinder 3 - N534- , MPI

- ❑ 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

11 - Injector 2, cylinder 2 - N533- , MPI

- ❑ 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 - 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

13 - Injector 2, cylinder 1 - N532- , MPI

- ❑ 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

14 - Activated charcoal filter solenoid valve 1 - N80-

Overview of fitting locations - engine (inlet side)

1 - Actuator for engine temperature regulation - N493-

- ❑ 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

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2 - Injector, cylinder 2 - N31- , FSI

- ❑ 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

3 - Injector, cylinder 1 - N30- , FSI

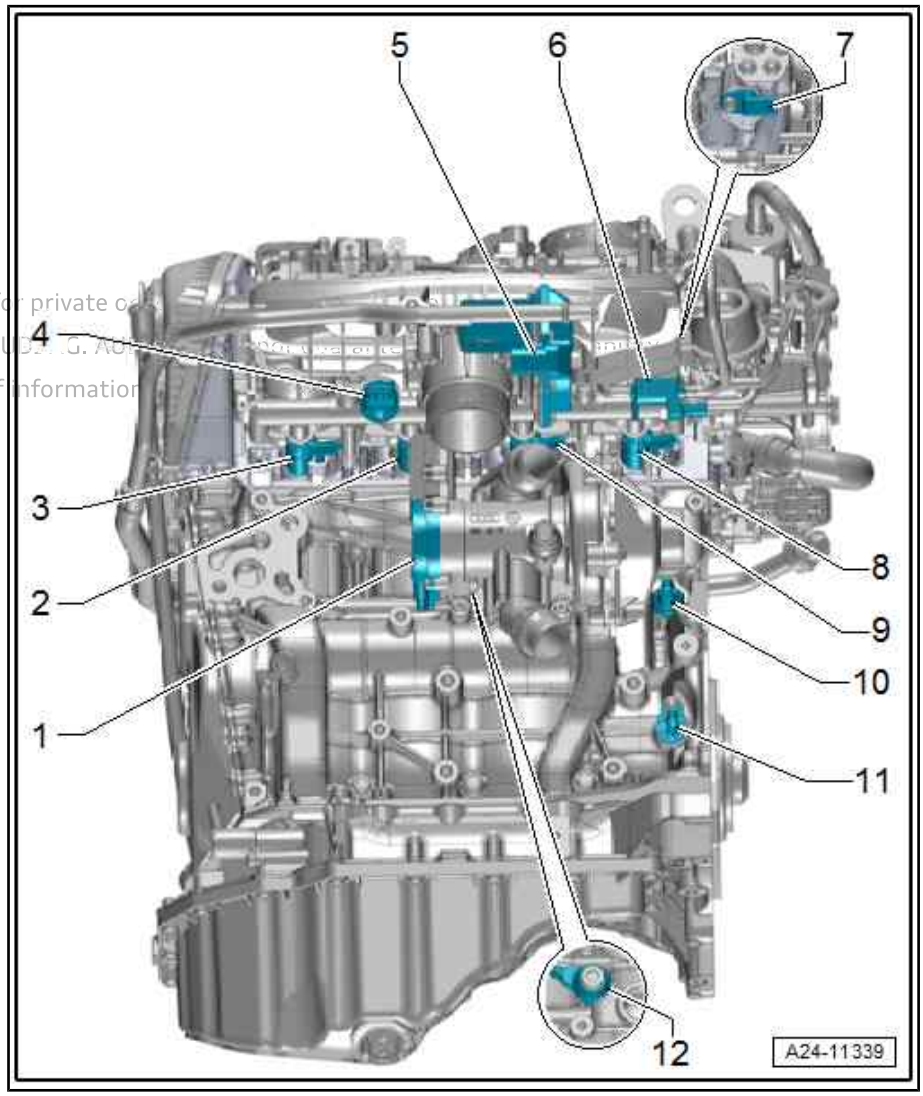
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Injectors; Exploded view - fuel rail with injectors

4 - 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

5 - Throttle valve module - J338-

- ❑ with



- ♦ Throttle valve drive (for electric throttle) - G186-
- ♦ Throttle valve drive angle sender - G187-
- ♦ Throttle valve drive angle sender 2 - G188-
  - ❑ 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 - 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

7 - 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

8 - Injector, cylinder 4 - N33- , FSI

- ❑ 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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9 - Injector, cylinder 3 - N32- , FSI

- ❑ 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

10 - Stage 3 oil pressure switch - F447-

- ❑ 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

11 - 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

12 - Knock sensor 1 - G61-

- ❑ 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 (exhaust side)

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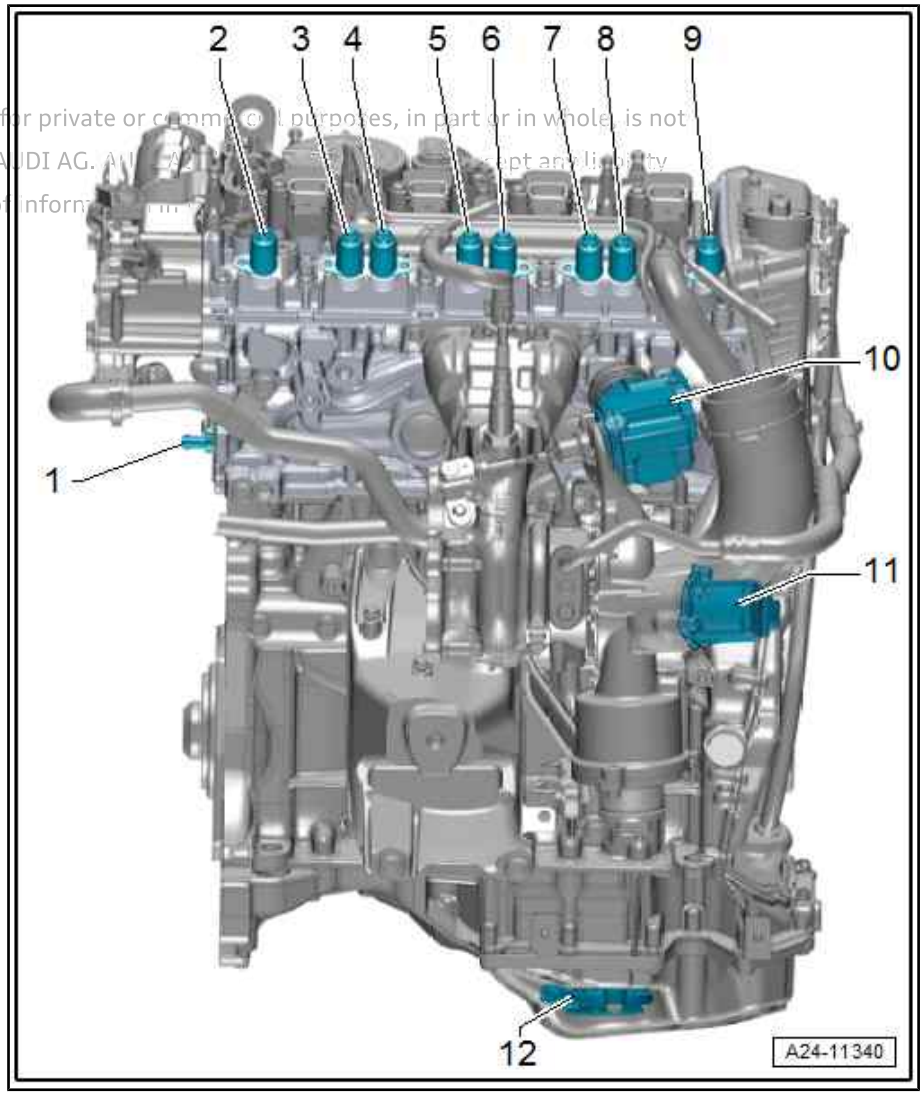


1 - Coolant temperature sender - G62-

- ❑ 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 temperature senders

2 - Cam adjustment actuator 8 - F373- (for cylinder No. 4)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

3 - Cam adjustment actuator 7 - F372- (for cylinder No. 4)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

4 - Cam adjustment actuator 6 - F371- (for cylinder No. 3)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

5 - Cam adjustment actuator 5 - F370- (for cylinder No. 3)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

6 - Cam adjustment actuator 4 - F369- (for cylinder No. 2)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

7 - Cam adjustment actuator 3 - F368- (for cylinder No. 2)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

8 - Cam adjustment actuator 2 - F367- (for cylinder No. 1)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

9 - Cam adjustment actuator 1 - F366- (for cylinder No. 1)

- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

10 - Charge pressure positioner - V465- with position sender for charge pressure positioner - G581-

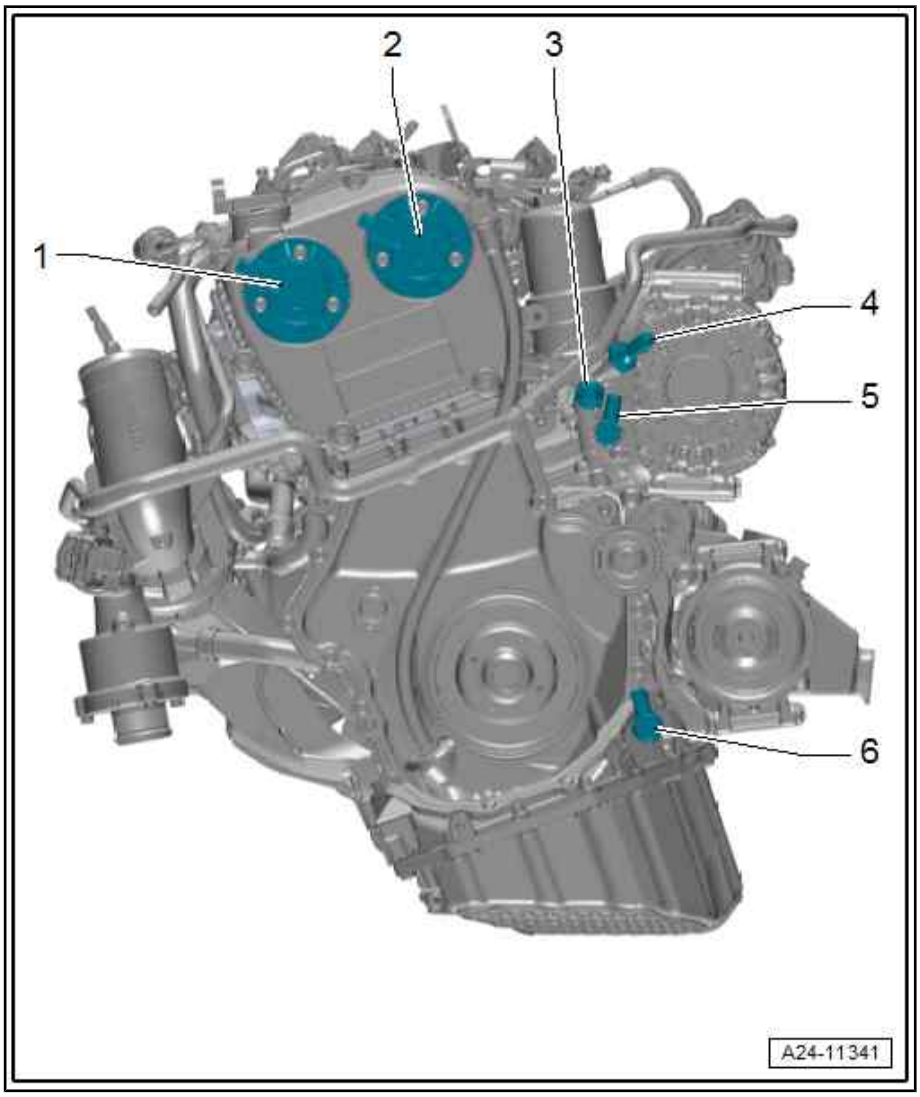
11 - Turbocharger air recirculation valve - N249-

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

12 - Oil level and oil temperature sender - G266-

- ❑ 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 front), vehicles without particulate filter



1 - Exhaust camshaft control valve 1 - N318-

- ❑ 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 - 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

3 - Oil pressure switch - F22-

- ❑ 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-

- ❑ 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 - Piston cooling jet control valve - N522-

- ❑ 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

6 - Valve for oil pressure control - N428-

- ❑ 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

Overview of fitting locations - engine (view from front), vehicles with particulate filter

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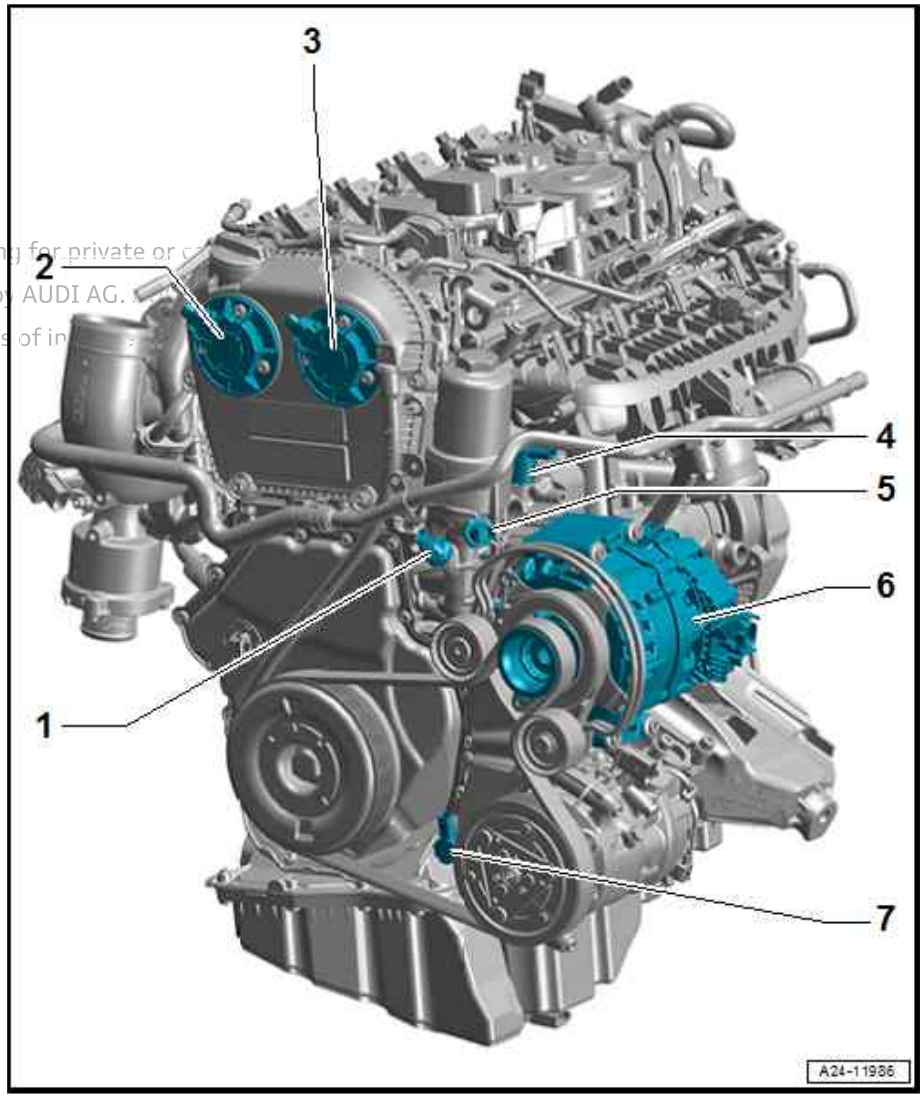


1 - Oil pressure switch - F22-

- ❑ 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 - Exhaust camshaft control valve 1 - N318-

- ❑ 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

3 - 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

4 - Piston cooling jet control valve - N522-

- ❑ 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 - Oil pressure switch for reduced oil pressure - F378-

- ❑ 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

6 - Starter-alternator - C29-

- ❑ Exploded view ⇒ Electrical system; Rep. gr. 27 ; Alternator; Exploded view - alternator

7 - Valve for oil pressure control - N428-

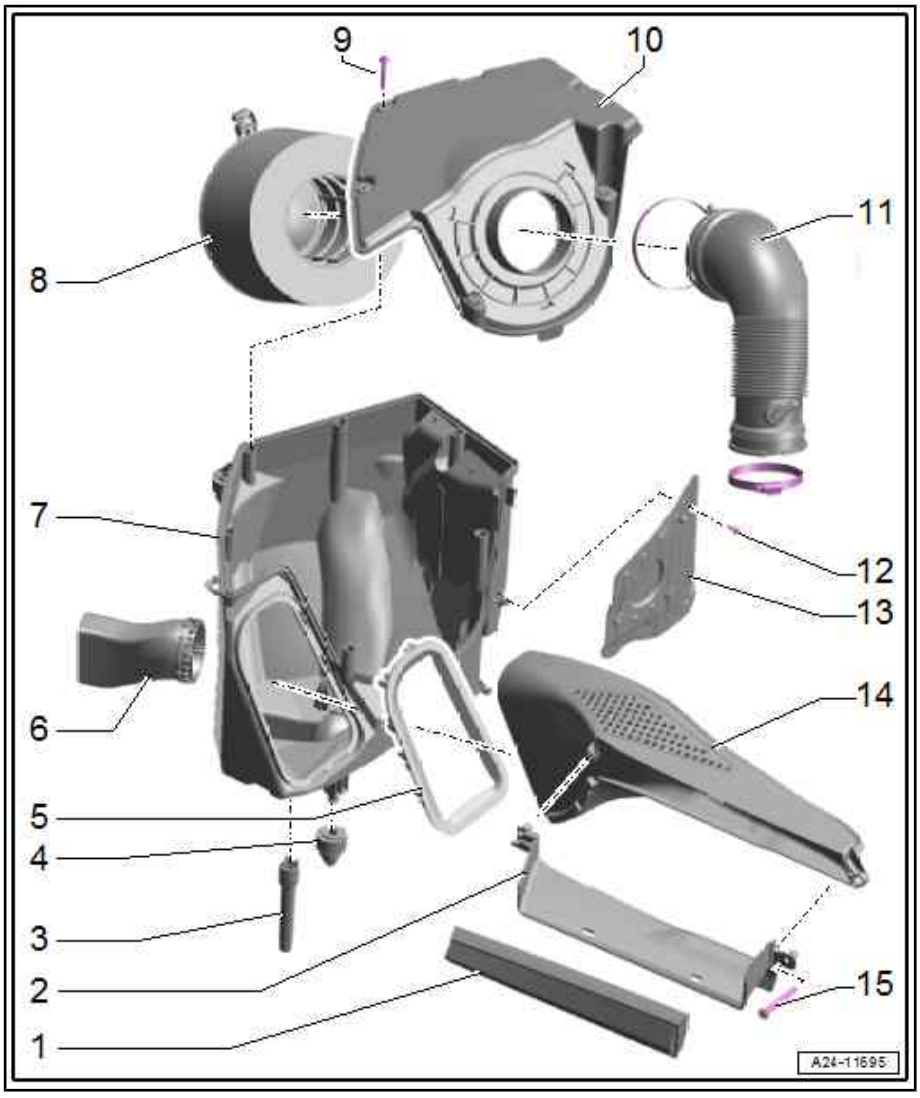
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control

2 Air cleaner

⇒ "2.1 Exploded view - air cleaner housing", page 135

⇒ "2.2 Removing and installing air cleaner housing", page 136

2.1 Exploded view - air cleaner housing



1 - Snow screen

- ❑ Country-specific version

2 - Air duct

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

3 - Sealing element

4 - Water drain

- ❑ Clean

5 - Mounting bracket

- ❑ For air cleaner housing

6 - Air duct

- ❑ For country-specific version with variable intake manifold change-over valve - N335-
- ❑ Not fitted after air cleaner (bottom section) has been renewed ⇒ page 138

7 - Air cleaner (bottom section)

- ❑ Remove any salt deposits or dirt
- ❑ Country-specific version: variable intake manifold changeover valve - N335- is not fitted after air cleaner (bottom section) has been renewed ⇒ page 138
- ❑ Removing and installing ⇒ page 136

8 - Air filter element

- ❑ Use genuine air filter element ⇒ Electronic parts catalogue
- ❑ Change intervals ⇒ Maintenance tables
- ❑ Removing and installing ⇒ Maintenance ; Booklet 830 ; Maintenance; Air cleaner: renewing filter element and cleaning housing

9 - Bolt

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

10 - Air cleaner (top section)

- ❑ Remove any salt deposits or dirt
- ❑ Removing and installing ⇒ Maintenance ; Booklet 830 ; Maintenance; Air cleaner: renewing filter element and cleaning housing

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11 - Air pipe

- ❑ Observe installation markings
- ❑ Tightening torque for hose clips ⇒ 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

12 - Bolt

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

13 - Heat shield

14 - Air duct

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

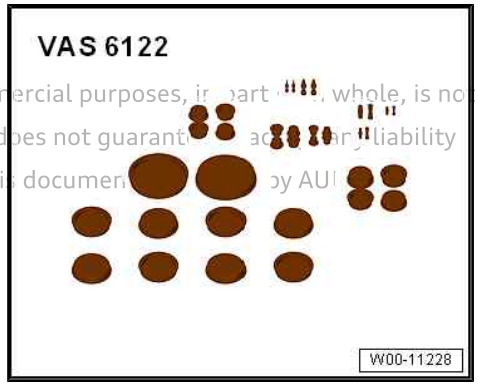
15 - Bolt

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

2.2 Removing and installing air cleaner housing

Special tools and workshop equipment required

- ♦ Engine bung set - VAS 6122-



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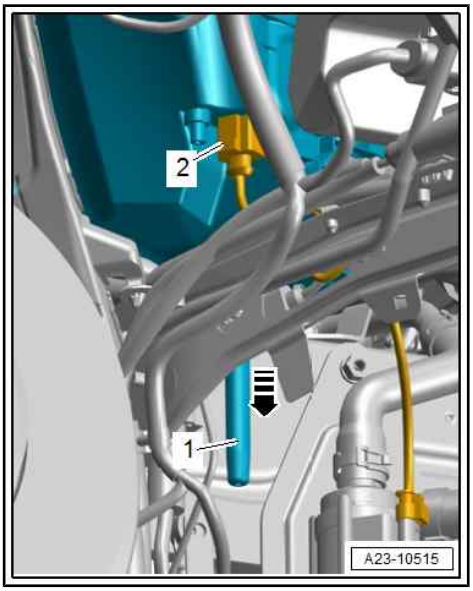
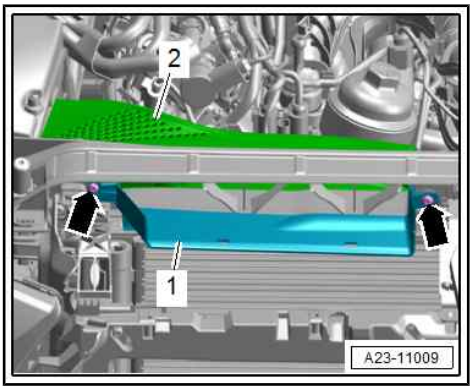
Removing

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

– Version with air filter bypass flap valve - N275- : Unplug electrical connector -2-.
– Detach water drain -1- downwards -arrow-.



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



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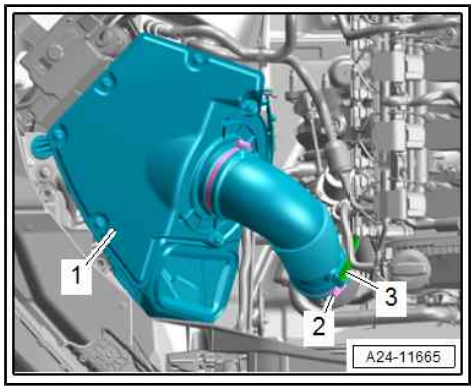
– Disconnect vacuum hose -3-.
– Release hose clip -2- and detach air hose.
– Lift off air cleaner housing -1- and detach.
– Seal off turbocharger with sealing plug (thoroughly cleaned) from engine bung set - VAS 6122- .



Installing

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

- The air cleaner housing must always be clean.
- Use silicone-free lubricant when fitting air hoses.
- Renew O-ring after removal.
- Secure all hose connections with correct type of hose clips (as original equipment) ⇒ Electronic parts catalogue .
- Country-specific version:
  variable intake manifold changeover valve - N335- is not fitted after renewal; fit a mating plug onto electrical connector in electrical wiring harness ⇒ Electronic parts catalogue .

– Check water drain in air cleaner (bottom section) for dirt and other obstructions and clean if necessary.
– Check for dirt in air duct going from lock carrier to air cleaner housing.
– Install lock carrier cover ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front) .

Tightening torques

♦ ⇒ “2.1 Exploded view - air cleaner housing”, page 135
♦ ⇒ 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 Intake manifold

⇒ “3.1 Exploded view - intake manifold”, page 139

⇒ “3.2 Removing and installing intake manifold”, page 139

⇒ “3.3 Removing and installing throttle valve module J338 ”, page 145

⇒ “3.4 Cleaning throttle valve module”, page 145

⇒ “3.5 Checking intake manifold change-over function”, page 145

3.1 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 .

3.2 Removing and installing intake manifold

⇒ “3.2.1 Removing and installing intake manifold - vehicles without particulate filter”, page 139

⇒ “3.2.2 Removing and installing intake manifold - vehicles with particulate filter”, page 141

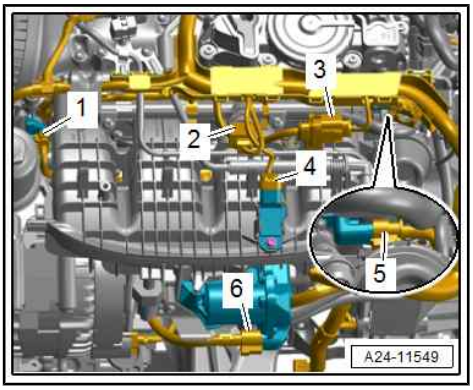
3.2.1 Removing and installing intake manifold - vehicles without particulate filter

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 .

– If there is no B+ cover on the alternator, disconnect battery to avoid short circuits ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Unplug electrical connectors and move electrical wiring clear:



1 - For intake manifold flap potentiometer - G336-

2 - For fuel pressure sender for low pressure - G410- (vehicles with MPI engine)

3 - Main connector for injectors (vehicles with MPI engine)

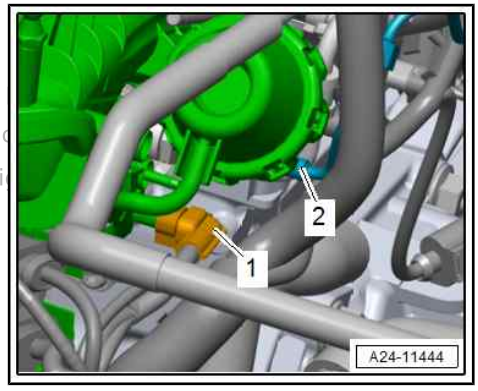
4 - For intake air temperature sender - G42-

5 - For Hall sender - G40-

6 - For throttle valve module - J338-

– Unplug electrical connector -1- for intake manifold flap valve - N316- .

– Disconnect vacuum hose -2-.



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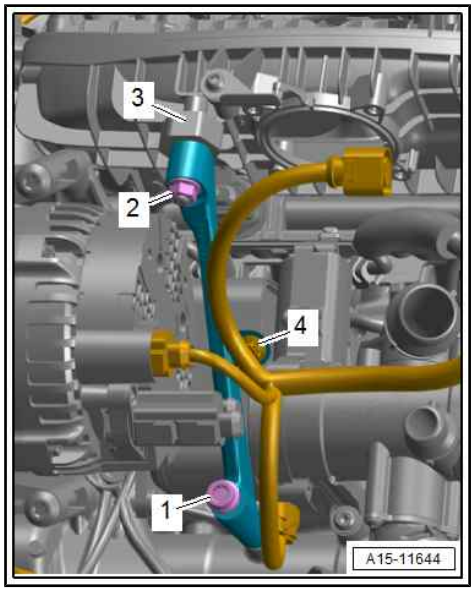
– Unscrew nut -2- and bolt -1- and remove support for intake manifold.



– Move electrical wiring clear.

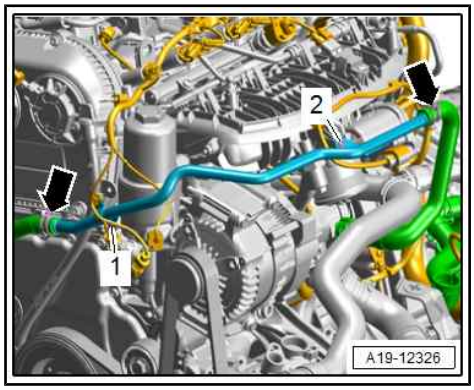
– Remove bolts -1 and 2- and press coolant pipe (left-side) to the side.

CAUTION

The fuel system is pressurised.

Risk of injury as fuel may spray out.

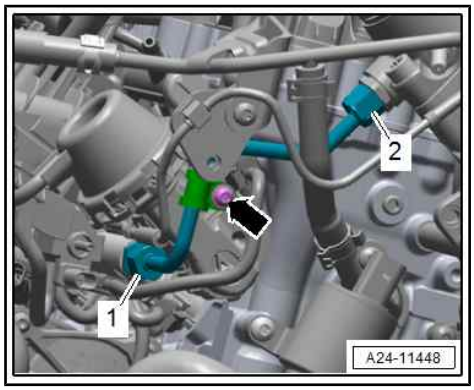
- **Put on safety goggles.**
- **Put on protective gloves.**
- **Release pressure (wrap a clean cloth around connection and open connection carefully).**



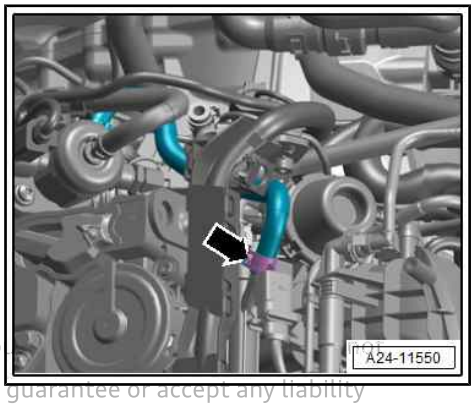
– Unscrew bolt -arrow- and union nuts -1, 2-.

– Detach high-pressure pipe.

– Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .



– Vehicles with MPI engine: Release hose clip -arrow- and disconnect fuel hose.



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– Move coolant line -2- clear at intake manifold and push to one side.
– Disconnect vacuum hose -4-.
– Move vacuum line -1- for intake manifold flap valve - N316- clear at intake manifold.

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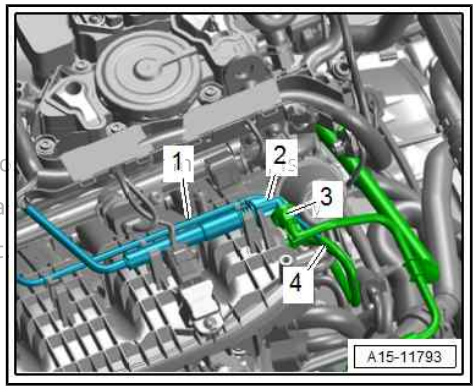
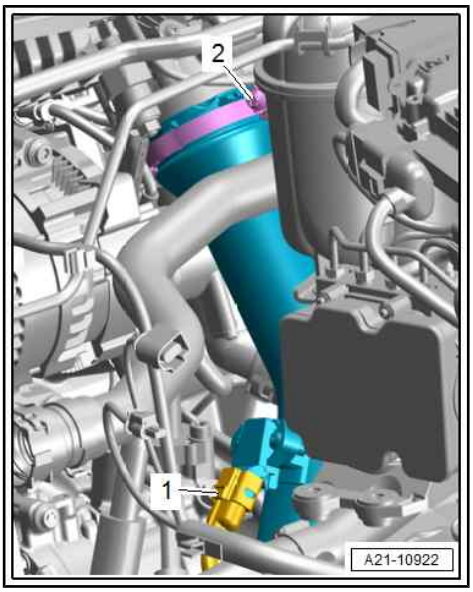


– Unplug electrical connector -1- for charge pressure sender - G31- .
– Loosen screw-type clip -2- and detach air pipe from throttle valve module - J338- .

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 .



Installing

Additional work:

– Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
– 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

♦ ⇒ 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

♦ ⇒ “3.1 Exploded view - coolant pipes”, page 100

3.2.2 Removing and installing intake manifold - vehicles with particulate filter

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 .
– If there is no B+ cover on the alternator, disconnect battery to avoid short circuits ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Unplug electrical connectors and move electrical wiring clear:

1 - For intake manifold flap potentiometer - G336-

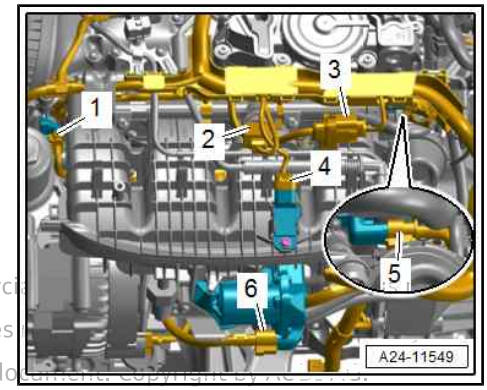
2 - For fuel pressure sender for low pressure - G410- (vehicles with MPI engine)

3 - Main connector for injectors (vehicles with MPI engine)

4 - For intake air temperature sender - G42-

5 - For Hall sender - G40-

6 - For throttle valve module - J338-



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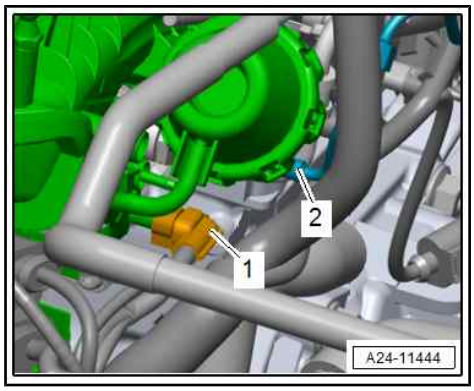
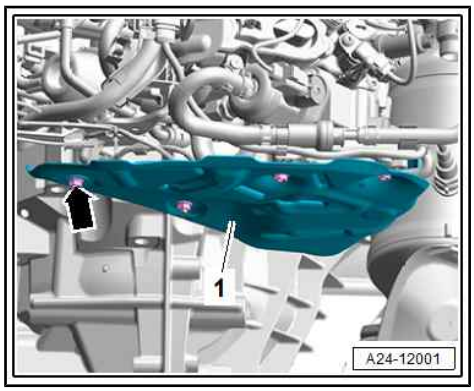
with respect to the correctness of information in this do

– Unplug electrical connector -1- for intake manifold flap valve - N316- .

– Disconnect vacuum hose -2-.

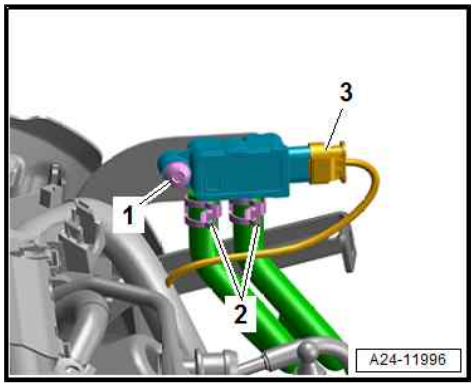


– Remove nut -arrow- on heat shield (shown with particulate filter removed).

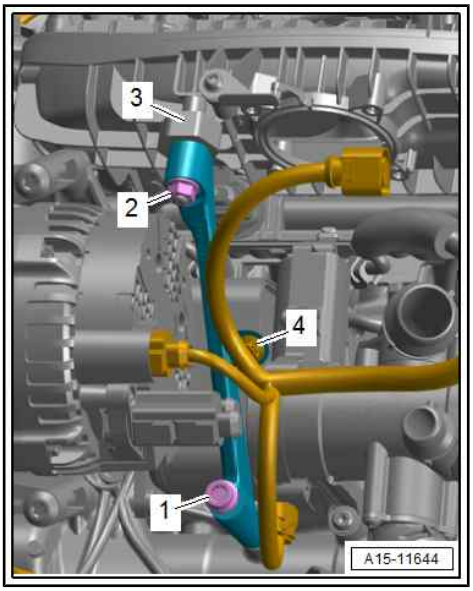


– Unplug electrical connector -3-.

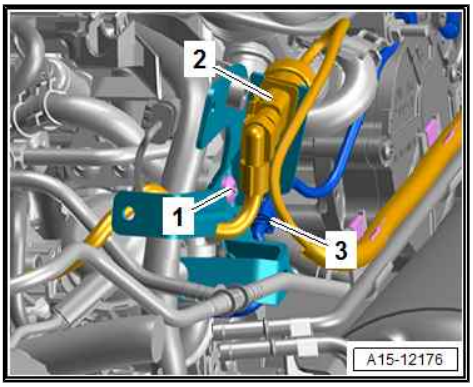
– Remove bolt -1- and press pressure differential sender - G505- to side.



– Unscrew nut -2- and bolt -1- and remove support for intake manifold.



– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.
– Release retaining clip -3- and move vacuum hose clear.
– Remove bolt -1- and detach bracket. (Different versions.)



– Unplug electrical connector -1- for exhaust gas temperature sender 4 - G648- and move wiring clear.

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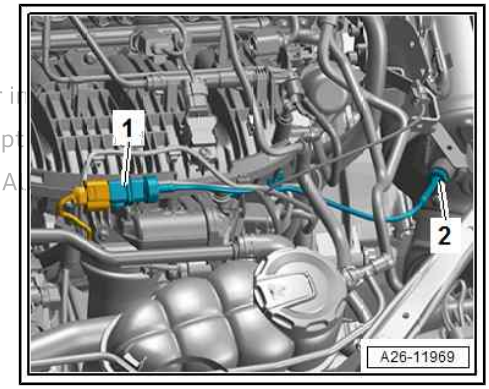
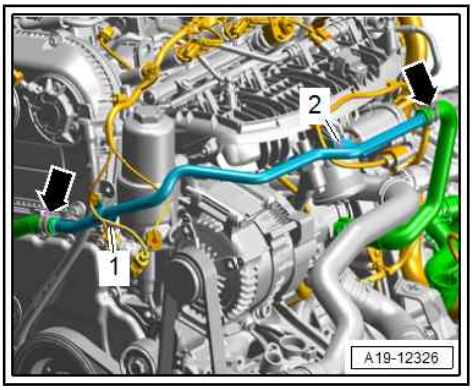


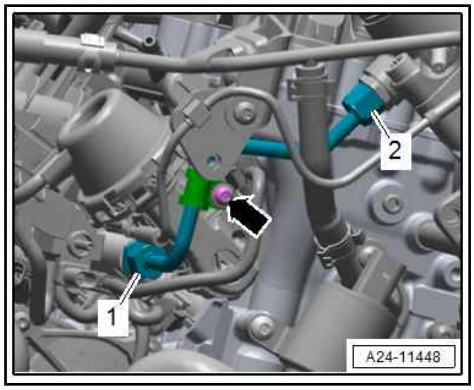
– Move electrical wiring clear.
– Remove bolts -1 and 2- and press coolant pipe (left-side) to the side.

CAUTION

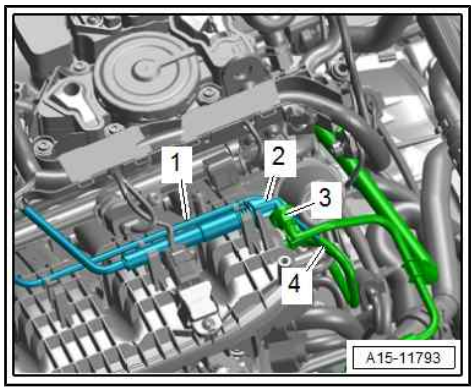
The fuel system is pressurised.
Risk of injury as fuel may spray out.
– Put on safety goggles.
– Put on protective gloves.
– Release pressure (wrap a clean cloth around connection and open connection carefully).



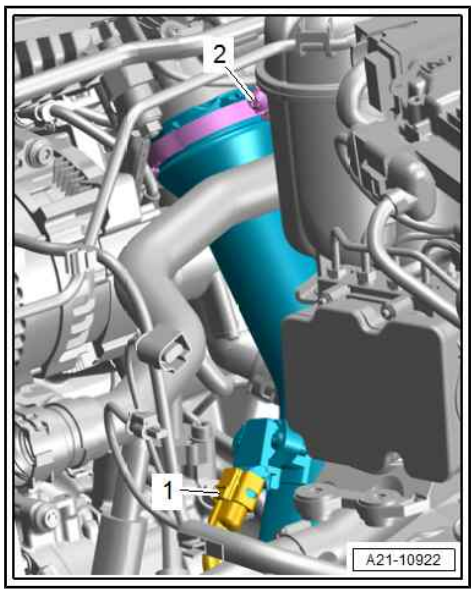
– Unscrew bolt -arrow- and union nuts -1, 2-.
– Detach high-pressure pipe.
– Seal off open lines and connections with plugs (thoroughly cleaned) from engine bung set - VAS 6122- .



– Move coolant line -2- clear at intake manifold and push to one side.
– Disconnect vacuum hose -4-.
– Move vacuum line -1- for intake manifold flap valve - N316- clear at intake manifold.



– Unplug electrical connector -1- for charge pressure sender - G31- .
– Loosen screw-type clip -2- and detach air pipe from throttle valve module - J338- .



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 .

Installing

Additional work:

– Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
– 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

- ⇒ Fig. ""Heat shield - tightening torque"" , page 58
- ⇒ Fig. ""Bracket for heat shield - tightening torque"" , page 58
- ⇒ "3.1 Exploded view - coolant pipes", page 100
- ⇒ 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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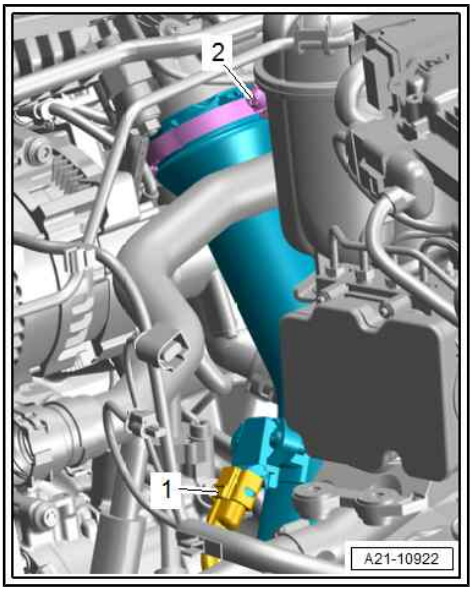
3.3 Removing and installing throttle valve module - J338-

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- for charge pressure sender - G31- .

– Loosen screw-type clip -2-, detach air pipe downwards from throttle valve module - J338- and tie it to side.



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 throttle valve module - J338- .

Installing

Additional work:

– 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

♦ ⇒ 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

3.4 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 .

3.5 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 .

4 Injectors

⇒ “4.1 Exploded view - fuel rail with injectors”, page 146

⇒ “4.2 Removing and installing fuel rail”, page 146

⇒ “4.3 Removing and installing injectors”, page 146

⇒ “4.4 Cleaning injectors”, page 146

4.1 Exploded view - fuel rail with injectors

All components are described in ⇒ 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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4.2 Removing and installing fuel rail

Removing

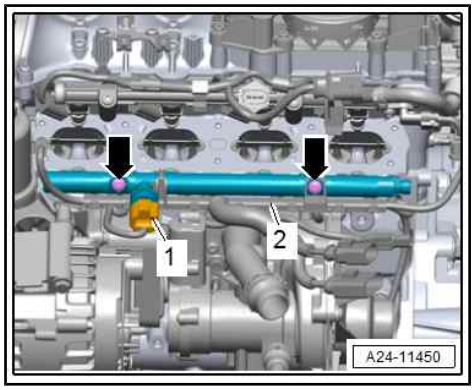
– Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair instructions; Rules for cleanliness .

– Remove intake manifold ⇒ page 139 .

– Unplug electrical connector -1- for fuel pressure sender - G247- .

– Remove bolts -arrows-.

– Move wiring duct -2- clear of fuel rail and detach fuel rail from injectors.



Note:

Unplug electrical connectors of any injectors that remained lodged in fuel rail.

Installing

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

4.3 Removing and installing injectors

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

4.4 Cleaning injectors

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

5 Senders and sensors

⇒ “5.1 Removing and installing intake air temperature sender G42 / intake manifold pressure sender G71 ”, page 147

⇒ “5.2 Removing and installing fuel pressure sender G247 ”, page 147

⇒ “5.3 Checking fuel pressure sender G247 ”, page 148

⇒ “5.4 Removing and installing fuel pressure sender for low pressure G410 ”, page 148

5.1 Removing and installing intake air temperature sender - G42- / intake manifold pressure sender - G71-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors; Removing and installing intake air temperature sender - G42- / intake manifold pressure sender - G71- .

5.2 Removing and installing fuel pressure sender - G247-

⇒ “5.2.1 Removing and installing fuel pressure sender G247 - vehicles with alternator”, page 147

⇒ “5.2.2 Removing and installing fuel pressure sender G247 - vehicles with starter-alternator”, page 148

5.2.1 Removing and installing fuel pressure sender - G247- - vehicles with alternator

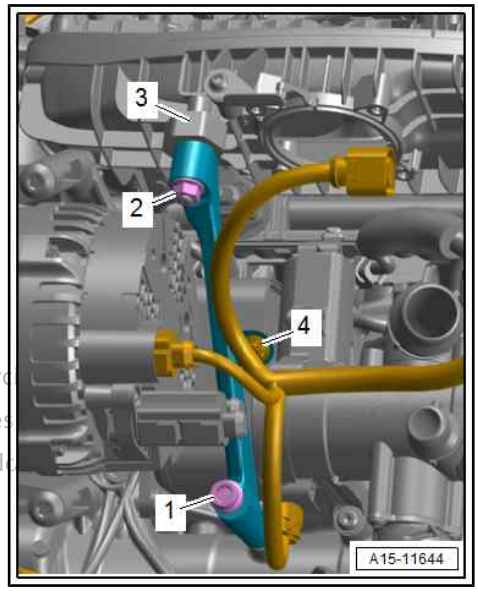
Removing

– 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 .

– If there is no B+ cover on the alternator, disconnect battery to avoid short circuits ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– Unscrew nut -2- and bolt -1- and remove support for intake manifold.

– Remove bonded rubber bush -3-.



All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors; Removing and installing fuel pressure sender - G247- .

Installing

Additional work:

– Observe steps required after re-connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

– 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 .

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5.2.2 Removing and installing fuel pressure sender - G247- - vehicles with starter-alternator

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors; Removing and installing fuel pressure sender - G247- .

5.3 Checking fuel pressure sender - G247-

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors; Checking fuel pressure sender - G247- .

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

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors ; Removing and installing fuel pressure sender for low pressure - G410- .

6 High-pressure pump

⇒ “6.1 Exploded view - high-pressure pump”, page 149

⇒ “6.2 Removing and installing high-pressure pump”, page 149

6.1 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 .

6.2 Removing and installing high-pressure pump

⇒ “6.2.1 Removing and installing high-pressure pump - vehicles without particulate filter”, page 149

⇒ “6.2.2 Removing and installing high-pressure pump - vehicles with particulate filter”, page 149

6.2.1 Removing and installing high-pressure pump - vehicles without particulate filter

All 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 .

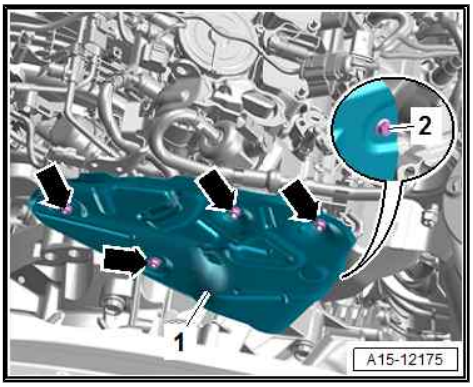
6.2.2 Removing and installing high-pressure pump - vehicles with particulate filter

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 .

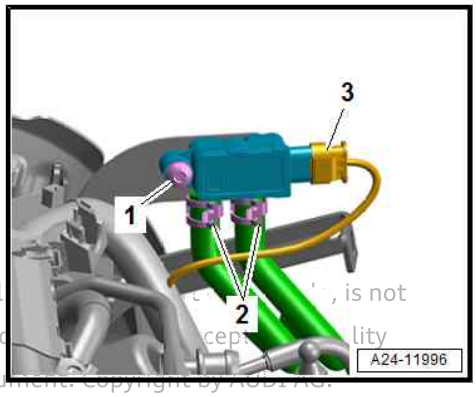
– Move electrical wiring clear at heat shield -1-.

– Remove nuts -arrows- and bolt -2- and press heat shield upwards slightly (shown with particulate filter removed).



– Unplug electrical connector -3-.

– Remove bolt -1- and press pressure differential sender - G505- to side.



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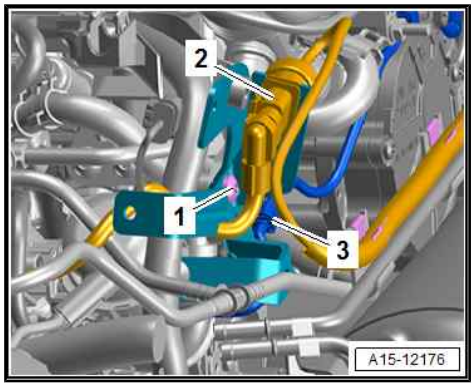
– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.
– Release retaining clip -3- and move vacuum hose clear.
– Remove bolt -1- and push bracket to one side. (Different versions.)



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:

– 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

- ⇒ Fig. ""Heat shield - tightening torque"" , page 58
- ⇒ Fig. ""Bracket for heat shield - tightening torque"" , page 58

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7 Lambda probe

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

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8 Engine control unit

⇒ “8.1 Exploded view - engine control unit”, page 152

⇒ “8.2 Removing and installing engine control unit J623 ”, page 152

8.1 Exploded view - engine control unit

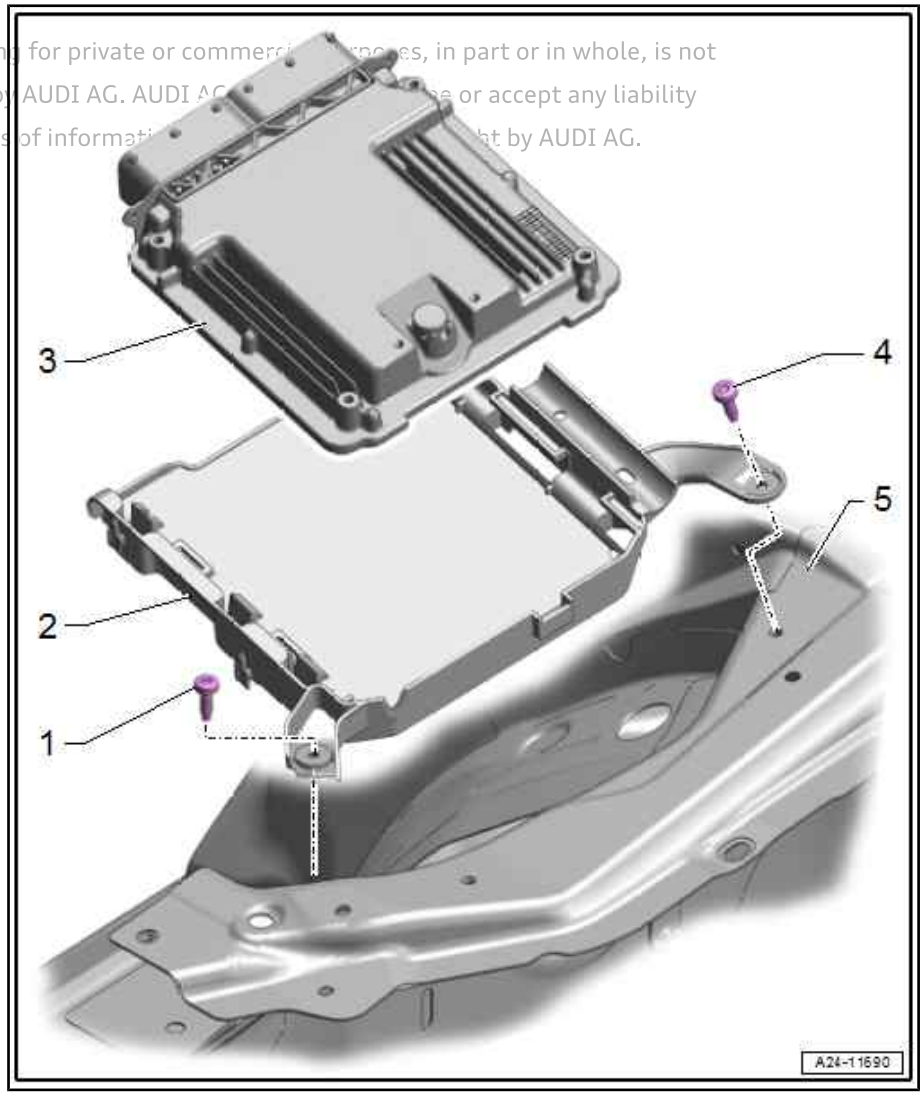
1 - Bolt
- ❑ 9 Nm

2 - Mounting
- ❑ For engine control unit - J623-

3 - Engine control unit - J623-
- ❑ Removing and installing ⇒ page 152

4 - Bolt
- ❑ 9 Nm

5 - Suspension turret



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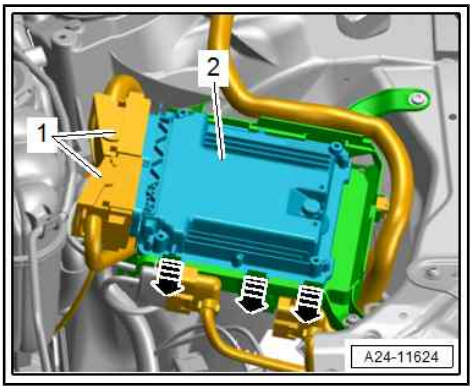
8.2 Removing and installing engine control unit - J623-

Removing

– If engine control unit is renewed, run `01 - Replace control unit` in `Guided Functions` mode of ⇒ Vehicle diagnostic tester.

– Release catches -arrows- and detach engine control unit - J623- -item 2-.
– Unplug electrical connectors -1-.



Installing

After installing a new engine control unit:

– Activate engine control unit ⇒ Vehicle diagnostic tester, `Guided Functions`, `Replace engine control unit`.

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26 – Exhaust system

1 Exhaust pipes/silencers

⇒ “1.1 Exploded view - silencers”, page 154
⇒ “1.2 Separating exhaust pipes/silencers”, page 158
⇒ “1.3 Removing and installing front silencers”, page 159
⇒ “1.4 Removing and installing silencers”, page 161
⇒ “1.5 Stress-free alignment of exhaust system”, page 162
⇒ “1.6 Checking exhaust system for leaks”, page 163

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1.1 Exploded view - silencers

⇒ “1.1.1 Exploded view - silencers, vehicles with front-wheel drive”, page 154
⇒ “1.1.2 Exploded view - silencers, vehicles with four-wheel drive”, page 156

1.1.1 Exploded view - silencers, vehicles with front-wheel drive

1 - Mounting
- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress
  ⇒ page 162

2 - Bolt
- ❑ 23 Nm

3 - Bracket

4 - Centre silencer
- ❑ Combined in one unit with rear silencer as original equipment. Can be renewed separately for repair purposes
- ❑ Cutting point
  ⇒ page 158
- ❑ Align exhaust system so it is free of stress
  ⇒ page 162

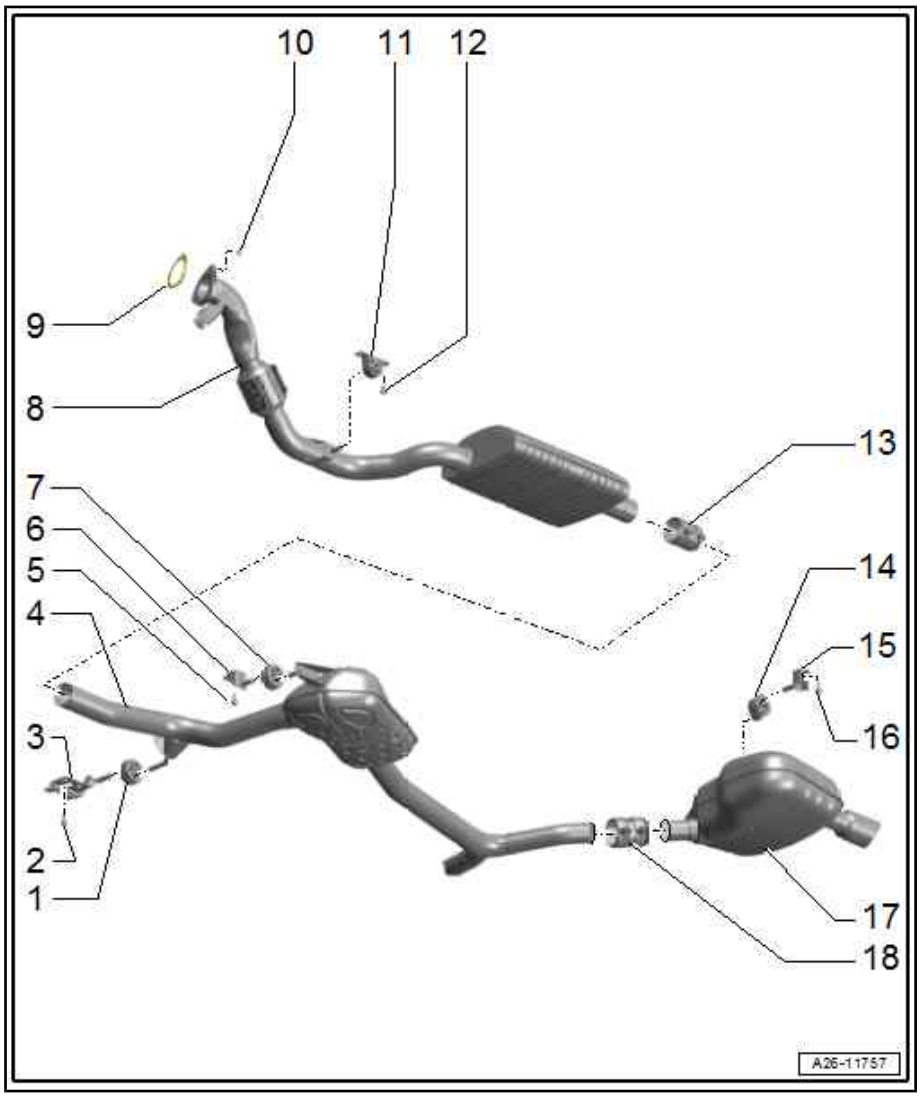
5 - Bolt
- ❑ 23 Nm

6 - Bracket

7 - Mounting
- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress
  ⇒ page 162

8 - Front silencer
- ❑ With flexible joint:

♦ Do not bend more than 10°



- ♦ Install so that it is not under tension
- ♦ Take care not to damage wire mesh on flexible joint
  - ❑ Removing and installing ⇒ page 159
  - ❑ Align exhaust system so it is free of stress ⇒ page 162

9 - Gasket

- ❑ Renew after removing

10 - Nut

- ❑ 23 Nm

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11 - Mounting

- ❑ Different versions
- ❑ Renew if damaged
- ❑ Check preload ⇒ page 162

12 - Bolt

- ❑ 23 Nm

13 - Clamp (front)

- ❑ Before tightening, align exhaust system so it is free of stress ⇒ page 162
- ❑ Installation position ⇒ page 156
- ❑ Tighten screw connections evenly to 23 Nm

14 - Mounting

- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress ⇒ page 162

15 - Retainer

16 - Bolt

- ❑ 23 Nm

17 - Rear silencer

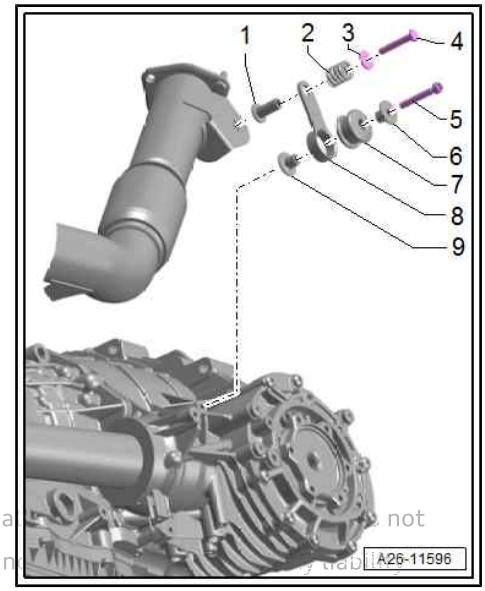
- ❑ Combined in one unit with centre silencer as original equipment. Can be renewed separately for repair purposes
- ❑ Cutting point ⇒ page 158
- ❑ Align exhaust system so it is free of stress ⇒ page 162

18 - Clamp (rear)

- ❑ Before tightening, align exhaust system so it is free of stress ⇒ page 162
- ❑ Installation position ⇒ page 156
- ❑ Tighten screw connections evenly to 23 Nm

Components of mountings for front silencer

1 - Spacer sleeve
2 - Compression spring
3 - Washer
4 - Bolt, 23 Nm
5 - Bolt, 23 Nm
6 - Spacer sleeve
7 - Buffer
8 - Bracket
9 - Spacer sleeve



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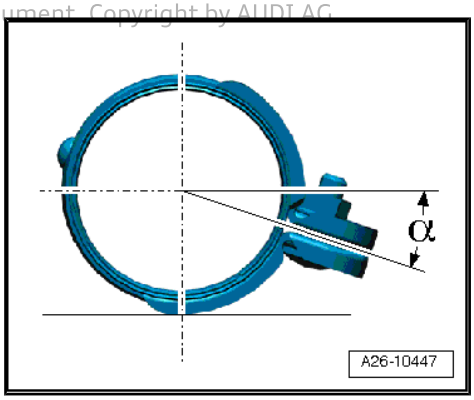
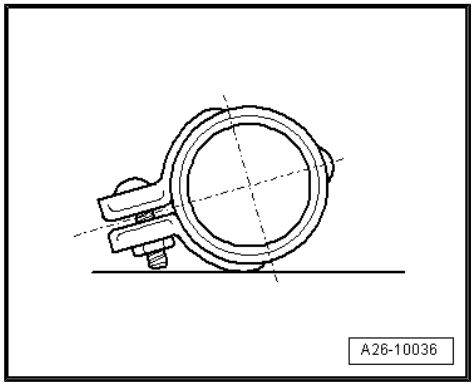
Installation position - front clamp

– Fit clamp in position shown.
• Angle -α- = approx. 20°
• Bolt connections facing towards right
• Nuts face downwards.

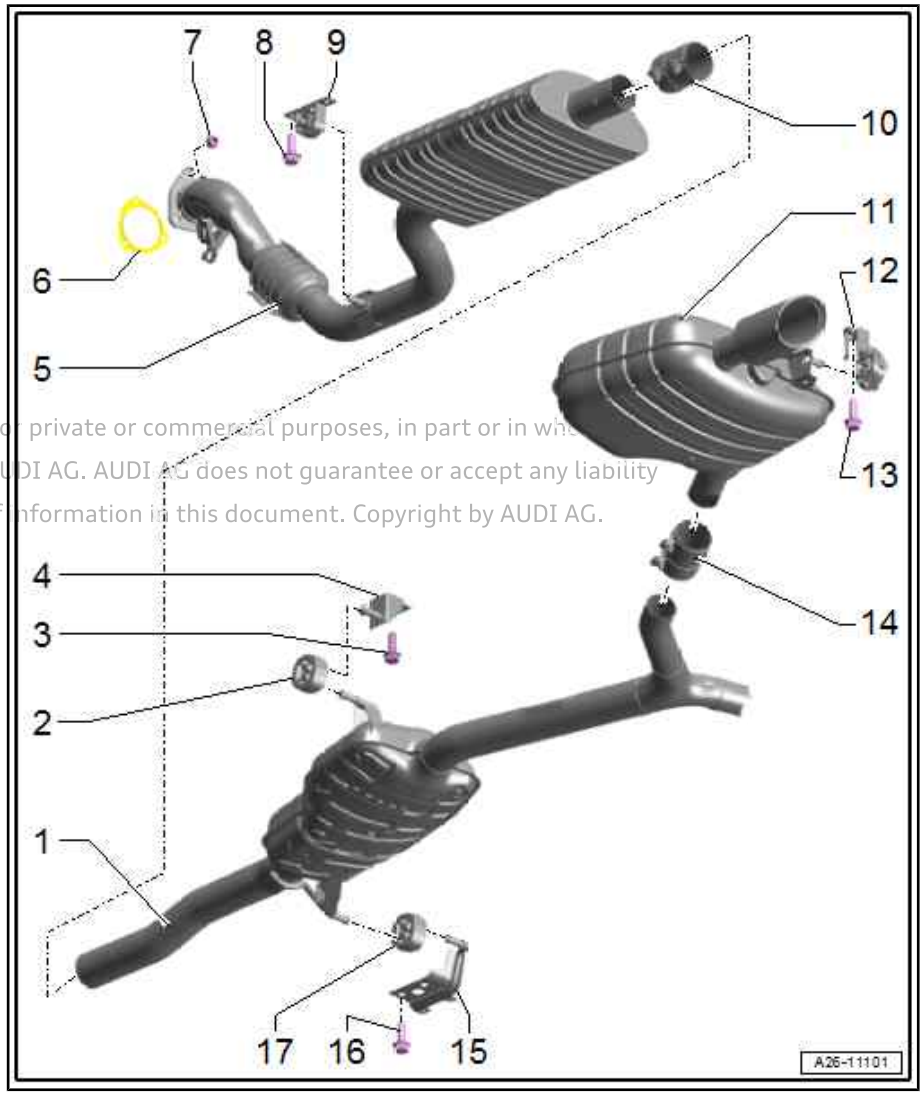


Installation position - rear clamp

– Fit clamp in position shown.
• Bolt connections face to left
• Nuts face downwards.
• Install clamp so that ends of bolts do not protrude beyond bottom of clamp.



1.1.2 Exploded view - silencers, vehicles with four-wheel drive



1 - Centre silencer

- ❑ Combined in one unit with rear silencers as original equipment. Can be renewed separately for repair purposes
- ❑ Cutting point ⇒ page 158
- ❑ Align exhaust system so it is free of stress ⇒ page 162

2 - Mounting

- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress ⇒ page 162

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3 - Bolt

- ❑ 23 Nm

4 - Bracket

5 - Front silencer

- ❑ With flexible joint:
- ♦ Do not bend more than 10°
- ♦ Install so that it is not under tension
- ♦ Take care not to damage wire mesh on flexible joint
- ❑ Removing and installing ⇒ page 159
- ❑ Align exhaust system so it is free of stress ⇒ page 162

6 - Gasket

- ❑ Renew after removing

7 - Nut

- ❑ 23 Nm

8 - Bolt

- ❑ 23 Nm

9 - Mounting

- ❑ Renew if damaged
- ❑ Check preload ⇒ page 162

10 - Clamp (front)

- ❑ Before tightening, align exhaust system so it is free of stress ⇒ page 162
- ❑ Installation position ⇒ page 156
- ❑ Tighten screw connections evenly to 23 Nm

11 - Rear silencer

- ❑ Combined in one unit with centre silencer as original equipment. Can be renewed separately for repair purposes
- ❑ Cutting point ⇒ page 158
- ❑ Align exhaust system so it is free of stress ⇒ page 162

12 - Mounting

- ❑ Renew if damaged

- ❑ Check preload ⇒ page 162

13 - Bolt

- ❑ 23 Nm

14 - Clamp (rear)

- ❑ Before tightening, align exhaust system so it is free of stress ⇒ page 162
- ❑ Installation position ⇒ page 156
- ❑ Tighten screw connections evenly to 23 Nm

15 - Retainer

16 - Bolt

- ❑ 23 Nm

17 - Mounting

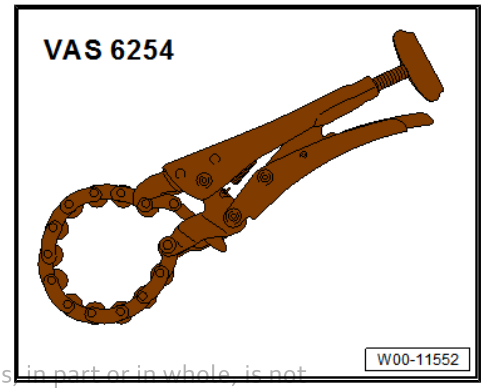
- ❑ Renew if damaged
- ❑ Align exhaust system so it is free of stress ⇒ page 162

1.2 Separating exhaust pipes/silencers

- The connecting pipe can be cut through at the cutting location in order to renew the centre and rear silencers separately.
- The cutting point is marked by an indentation on the circumference of the exhaust pipe.

Special tools and workshop equipment required

- Chain pipe cutter - VAS 6254-



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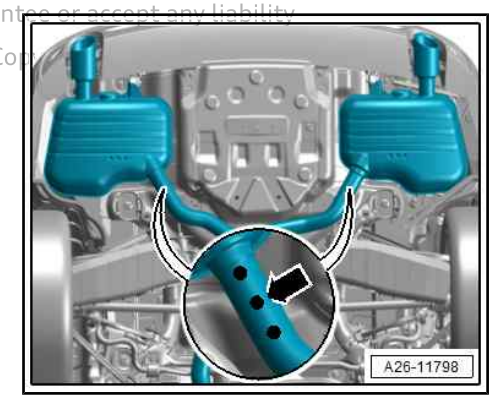
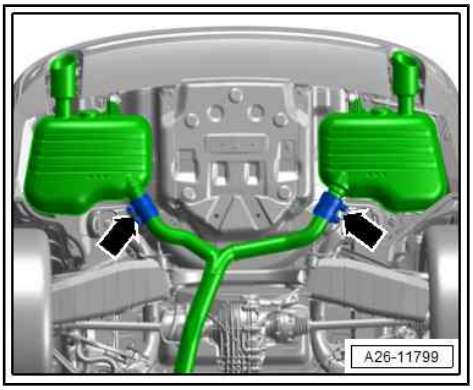
Procedure

– Cut through exhaust pipes at right angle at notch -arrow- using chain pipe cutter - VAS 6254- .



– Position centre of clamps -arrows- over cutting location.
– Fit clamps ⇒ page 156 .
– Align the exhaust system so it is free of stress ⇒ page 162 .



1.3 Removing and installing front silencers

⇒ "1.3.1 Removing and installing front silencer - vehicles without particulate filter", page 159

⇒ "1.3.2 Removing and installing front silencer - vehicles with particulate filter", page 160

1.3.1 Removing and installing front silencer - vehicles without particulate filter

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 .
– Remove nuts -1- (accessible from above) for front silencer.
– Remove noise insulation (rear) ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .
– Remove nut -2- and bolt -3- for front silencer.

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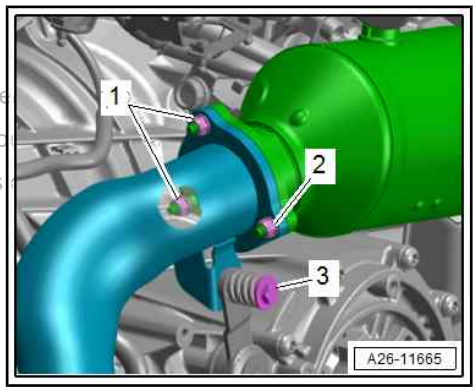
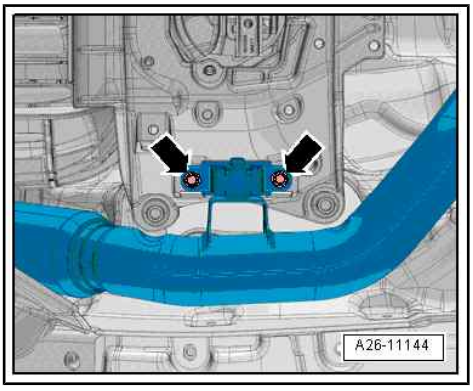
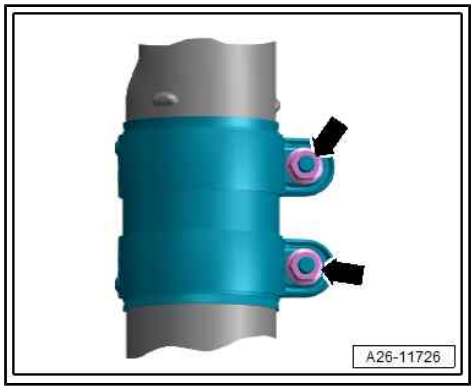


– Unscrew bolts -arrows- for front silencer.



– Loosen clamp -arrows- and push towards rear.



NOTICE

Risk of damage to flexible joint if handled incorrectly.

– Do not bend flexible joint more than 10°.

– Install flexible joint so that it is not under tension.

– Detach front silencer.

Installing

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

- Renew gaskets and self-locking nuts after removal.

– Align the exhaust system so it is free of stress ⇒ page 162 .

– 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

◆ ⇒ “1.1 Exploded view - silencers”, page 154

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

1.3.2 Removing and installing front silencer - vehicles with particulate filter

Removing

– Unscrew nuts -arrows- for front silencer.

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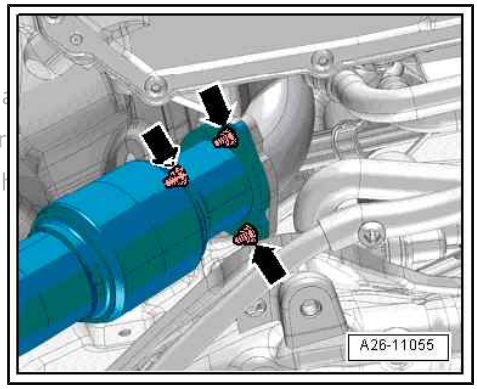
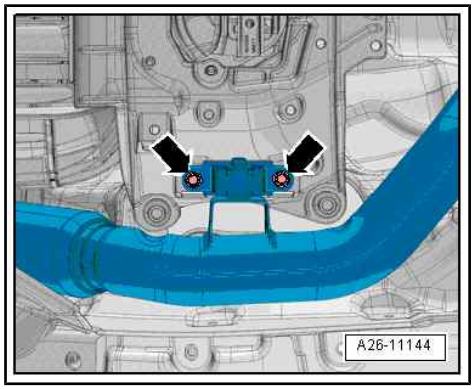
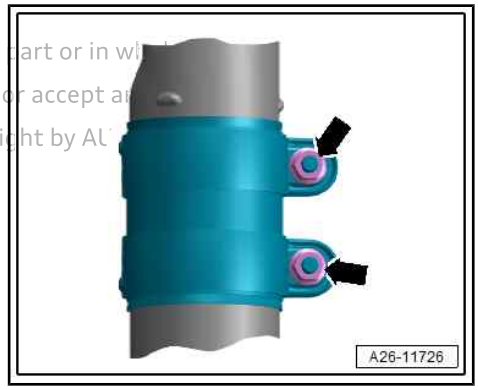


– Unscrew bolts -arrows- for front silencer (shown on right side).



– Loosen clamp -arrows- and push towards rear.



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NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Detach front silencer.

Installing

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

- Renew gaskets and self-locking nuts after removal.

– Align the exhaust system so it is free of stress ⇒ page 162 .

Tightening torques

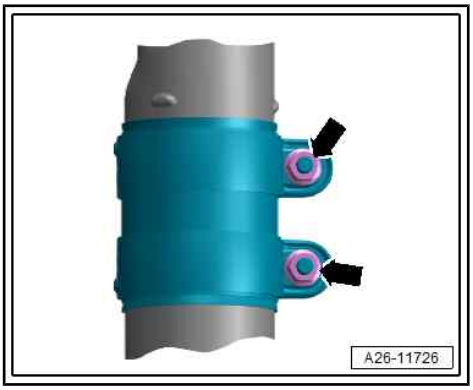
♦ ⇒ “1.1 Exploded view - silencers”, page 154

1.4 Removing and installing silencers

Removing

– Depending on country/equipment version: Remove diagonal struts (left and right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody struts .

– Loosen clamp -arrows- and push towards rear.



NOTICE

Risk of damage to flexible joint if handled incorrectly.

- **Do not bend flexible joint more than 10°.**
- **Install flexible joint so that it is not under tension.**

– Lower front silencer slightly and detach clamp.

– Tie up front silencer.

Vehicles with front-wheel drive:

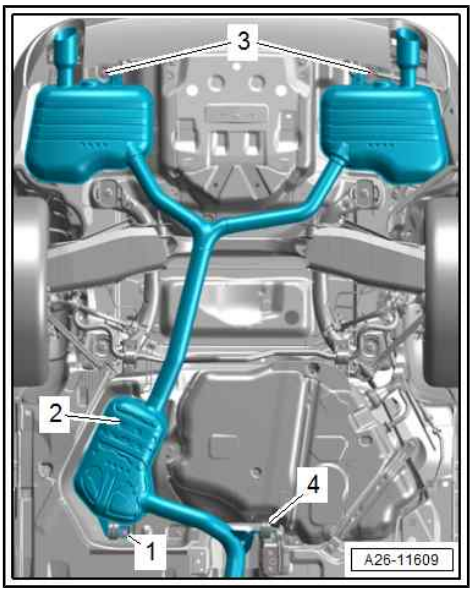
CAUTION

Risk of accident caused by weight of silencers.

- **Perform the following work with the assistance of a second mechanic.**

– Disengage mounting -4- at exhaust system.

– Unscrew bolts -1, 3- and remove silencer -2-.



Vehicles with four-wheel drive:

CAUTION

Risk of accident caused by weight of silencers.

– Perform the following work with the assistance of a second mechanic.

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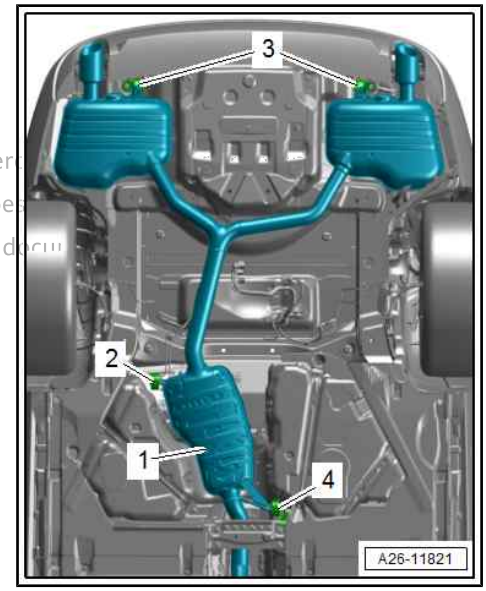


– Disengage mounting -2, 4- at exhaust system.

– Unscrew bolts -3- and remove silencer -1-.

Installing

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

– Align the exhaust system so it is free of stress ⇒ page 162 .

Tightening torques

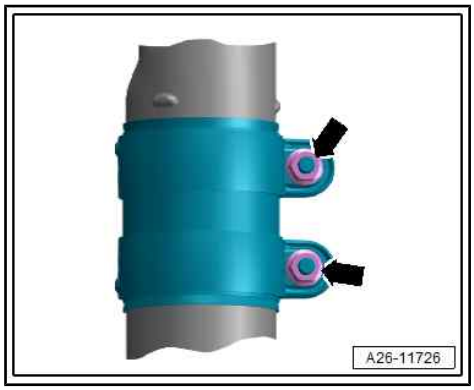
- ⇒ “1.1 Exploded view - silencers”, page 154
- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody struts

1.5 Stress-free alignment of exhaust system

Procedure

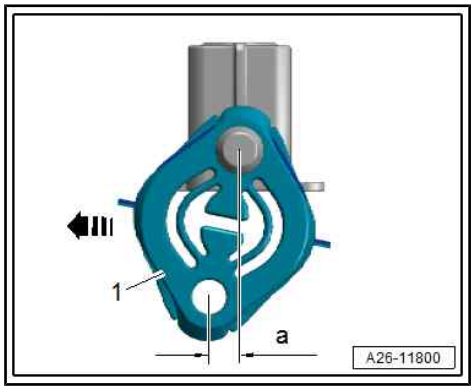
- The exhaust system must be aligned when it is cool.

– Slacken front clamp -arrows-.



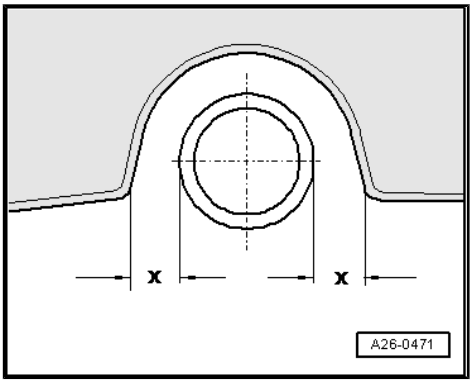
– Push exhaust system towards front of vehicle -arrow- so that mounting -1- for exhaust pipe is preloaded by -a- = 6 ... 10 mm.

– Position clamp at front ⇒ page 156 and tighten bolted connections evenly.



– Check clearance between tailpipes and bumper on both sides:

• Dimension -x- (left-side) = dimension -x- (right-side)



Tightening torques

◆ ⇒ “1.1 Exploded view - silencers”, page 154

1.6 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 Emission control system

⇒ “2.1 Exploded view - emission control system”, page 164

⇒ “2.2 Removing and installing catalytic converter”, page 164

⇒ “2.3 Removing and installing particulate filter”, page 166

2.1 Exploded view - emission control system

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Exploded view - emission control system .

2.2 Removing and installing catalytic converter

⇒ “2.2.1 Removing and installing catalytic converter - vehicles without particulate filter”, page 164

⇒ “2.2.2 Removing and installing catalytic converter - vehicles with particulate filter”, page 165

2.2.1 Removing and installing catalytic converter - vehicles without particulate filter

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Removing

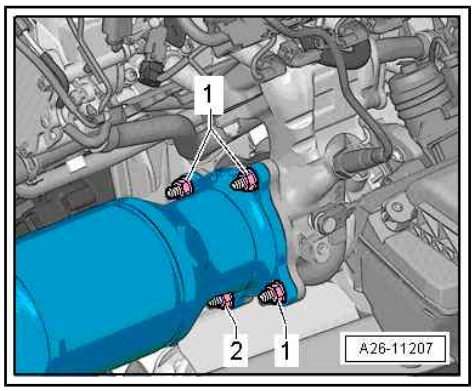
- Re-install all cable ties in original positions.

– Remove front silencer ⇒ “1.3.1 Removing and installing front silencer - vehicles without particulate filter”, page 159 .

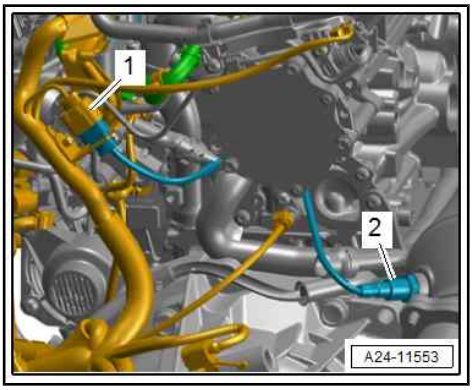
– Remove air cleaner housing ⇒ page 136 .

– Remove Lambda probe - G39- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Lambda probe; Removing and installing Lambda probe .

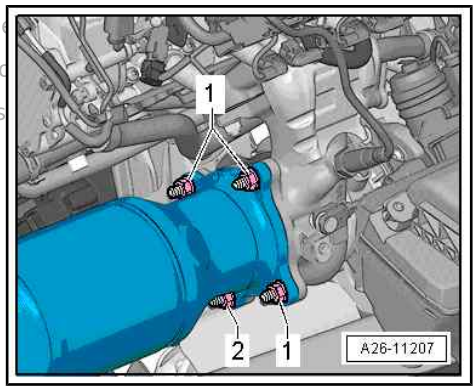
– Remove nut -2- from underneath. (Nuts -1- do not have to be removed at this stage.)



– Remove electrical connector -1- for Lambda probe after catalytic converter - G130- -item 2- from bracket and unplug connector.



– Remove nuts -1- from above and lift out catalytic converter.



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Installing

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

- Renew gaskets and self-locking nuts after removal.

– Install Lambda probe - G39- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Lambda probe; Removing and installing Lambda probe .

– Install air cleaner housing ⇒ page 136 .

– Install front silencers
⇒ “1.3.1 Removing and installing front silencer - vehicles without particulate filter”, page 159 .

Tightening torques

♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Exploded view - emission control system

♦ ⇒ “1.1 Exploded view - silencers”, page 154

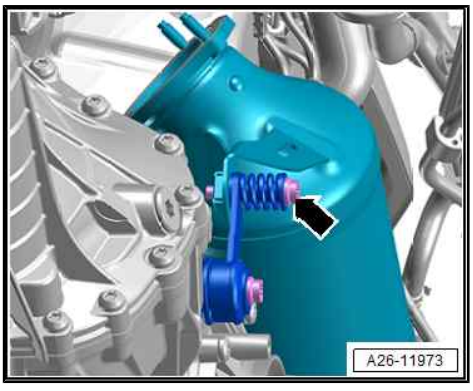
2.2.2 Removing and installing catalytic converter - vehicles with particulate filter

Removing

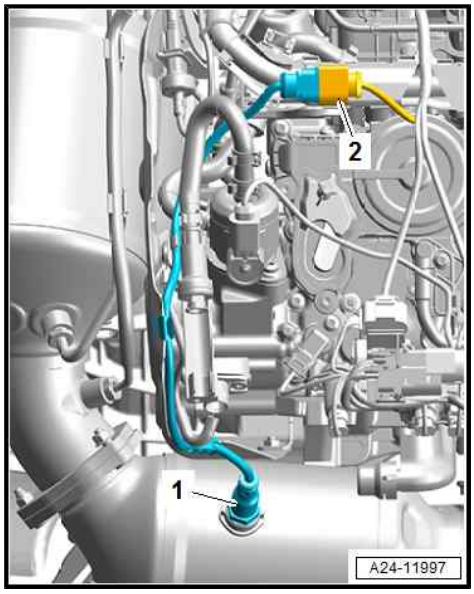
– Remove air cleaner housing ⇒ page 136 .

– Remove particulate filter ⇒ page 166 .

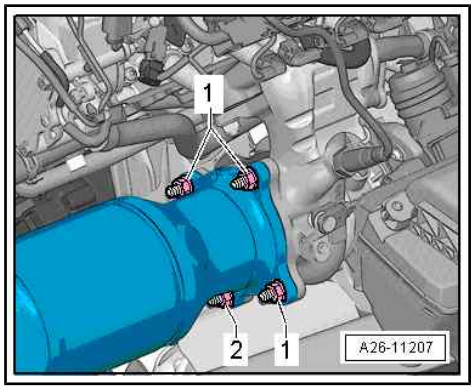
– Remove bolt -arrow- on bracket for catalytic converter.



– Remove electrical connector -2- for Lambda probe after catalytic converter - G130- -item 1- from bracket and unplug connector.



– Unscrew nuts -1 and 2- and detach catalytic converter upwards towards rear.



Installing

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

- Renew gaskets and self-locking nuts after removal.

– Install air cleaner housing ⇒ page 136 .

– Install particulate filter ⇒ page 166 .

Tightening torques

◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Exploded view - emission control system

2.3 Removing and installing particulate filter

Removing

– Remove front silencer ⇒ “1.3.2 Removing and installing front silencer - vehicles with particulate filter”, page 160 .

– Remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

– Detach intermediate steering shaft from steering rack and move clear by telescoping together ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .

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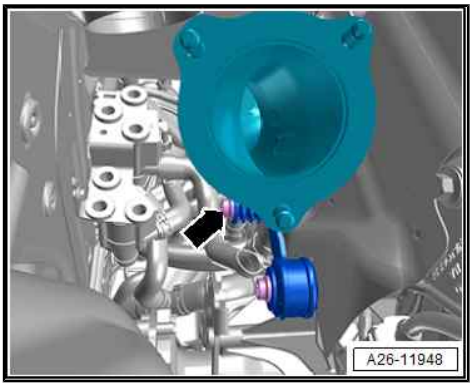
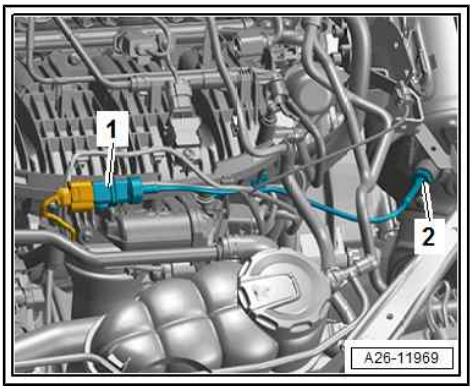
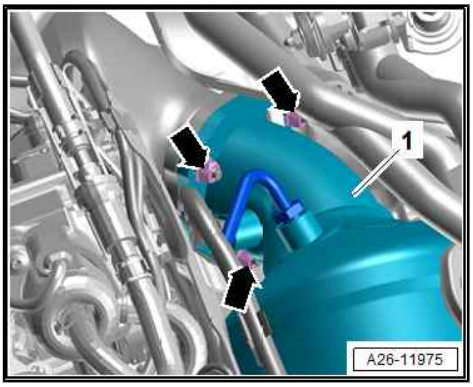
– Remove bolt -arrow- on bracket for particulate filter.



– Unplug electrical connector -1- for exhaust gas temperature sender 4 - G648- and move wiring clear.



– Remove nuts -arrows- and move particulate filter -1- slightly to rear.



– Unplug electrical connector -3-.
– Remove bolt -1- and press pressure differential sender - G505- to side.

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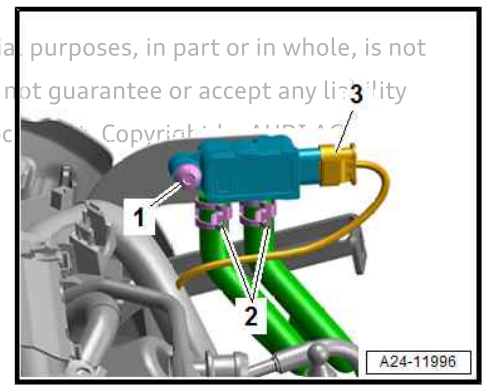
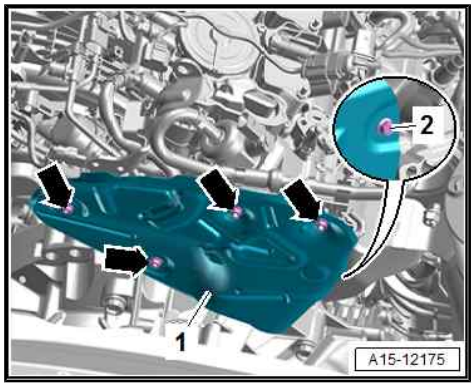
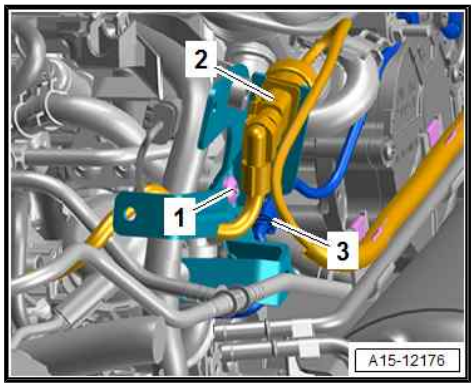


– Move electrical wiring clear at heat shield -1-.
– Remove nuts -arrows- and bolt -2- and detach heat shield (shown with particulate filter removed).



– Take electrical connector -2- for exhaust gas temperature sender 3 - G495- out of bracket and unplug.
– Release retaining clip -3- and move vacuum hose clear.
– Remove bolt -1- and detach bracket. (Different versions.)
– Detach particulate filter.



Installing

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

– Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
– Install plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .
– Install front silencers ⇒ “1.3.2 Removing and installing front silencer - vehicles with particulate filter”, page 160 .

Note

If the particulate filter has been renewed, the ash deposit volume must be reset using ⇒ Vehicle diagnostic tester.

- `01 - Self-diagnosis compatible systems`
- `01 - Engine electronics, functions`
- `01 - Functions, engine mechanics`

Tightening torques

- ⇒ Fig. ““Heat shield - tightening torque”“ , page 58
- ⇒ Fig. ““Bracket for heat shield - tightening torque”“ , page 58
- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Emission control system; Exploded view - emission control system

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3 Exhaust gas temperature control

⇒ “3.1 Exploded view - exhaust gas temperature control”, page 169

⇒ “3.2 Removing and installing exhaust gas temperature sender 3 G495 ”, page 169

⇒ “3.3 Removing and installing exhaust gas temperature sender 4 G648 ”, page 170

3.1 Exploded view - exhaust gas temperature control

1 - Pressure differential sender - G505-

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

2 - Lambda probe 1 before catalytic converter - GX10-

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

3 - Lambda probe 1 after catalytic converter - GX7-

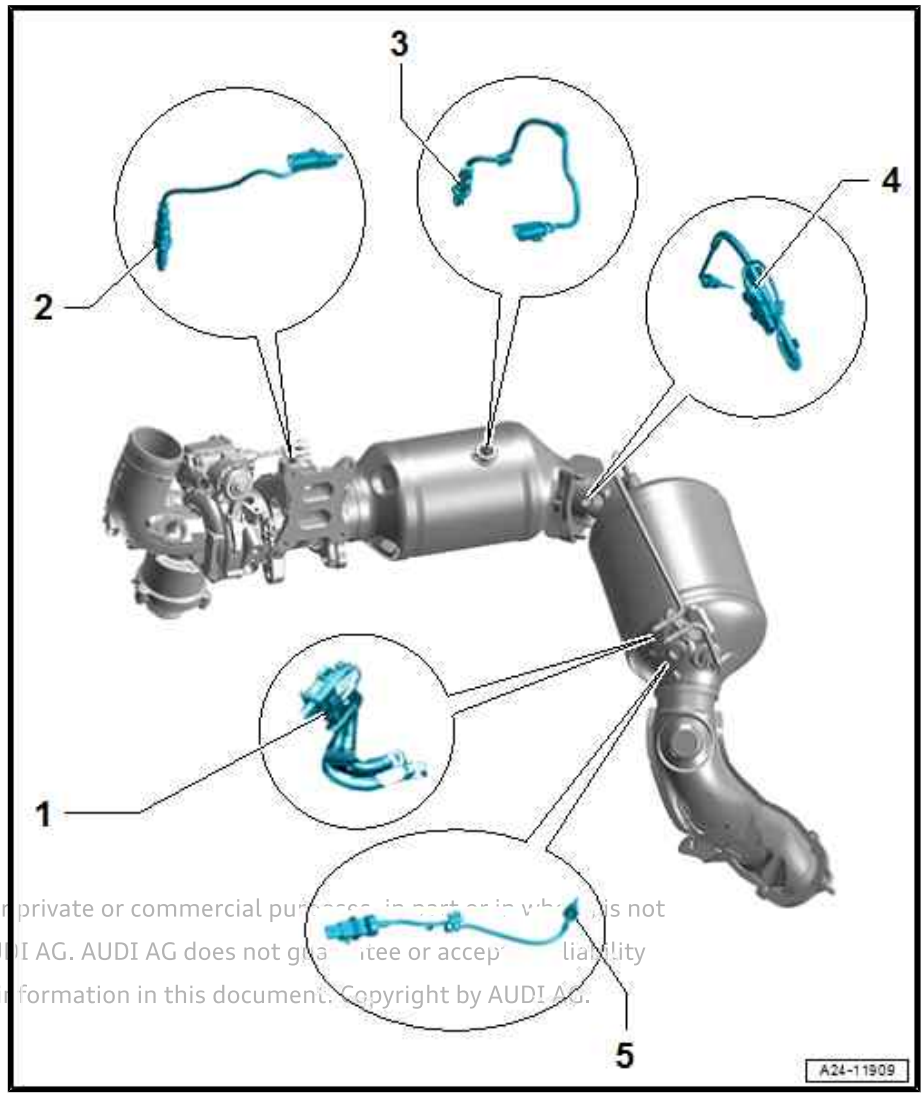
- ❑ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Lambda probe; Exploded view - Lambda probe

4 - Exhaust gas temperature sender 3 - G495-

- ❑ Removing and installing ⇒ page 169
- ❑ 45 Nm

5 - Exhaust gas temperature sender 4 - G648-

- ❑ Removing and installing ⇒ page 170
- ❑ 45 Nm



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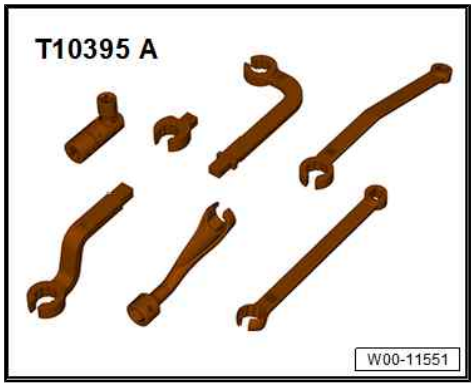
3.2 Removing and installing exhaust gas temperature sender 3 - G495-

Special tools and workshop equipment required

♦ Tool set - T10395 A- with suitable tool insert



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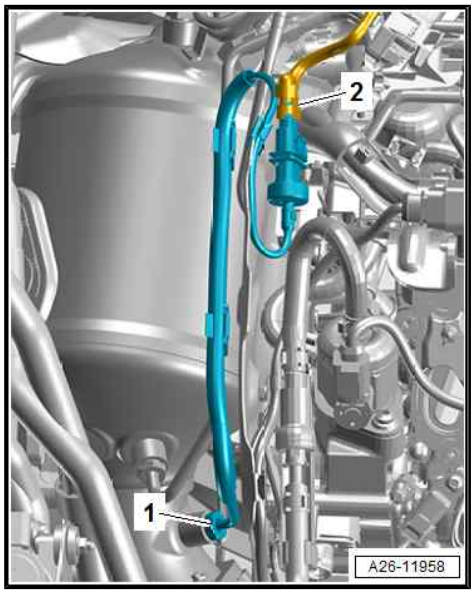
Removing

– Remove plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

– 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 -2- and move electrical wire clear.

– Remove exhaust gas temperature sender 3 - G495- -item 1-.



Installing

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

- Take care to protect exhaust gas temperature sender from knocks and impact; if dropped, the exhaust gas temperature sender can no longer be used.

– When installing, ensure sufficient clearance.

– 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 .

– Install plenum chamber partition panel ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber partition panel .

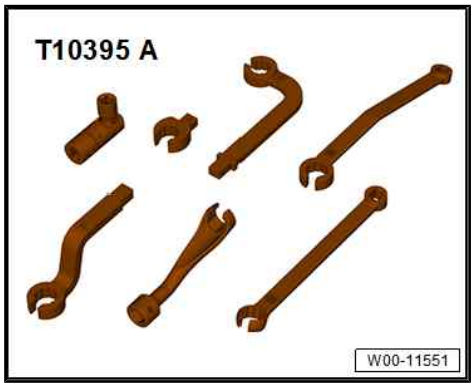
Tightening torques

♦ ⇒ “3.1 Exploded view - exhaust gas temperature control”, page 169

3.3 Removing and installing exhaust gas temperature sender 4 - G648-

Special tools and workshop equipment required

♦ Tool set - T10395 A- with suitable tool insert

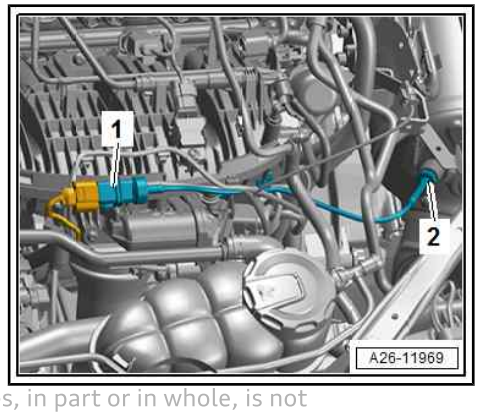


Removing

– 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- and move electrical wire clear.

– Remove exhaust gas temperature sender 4 - G648- -item 2-.



Installing

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

- Take care to protect exhaust gas temperature sender from knocks and impact; if dropped, the exhaust gas temperature sender can no longer be used.

– 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

◆ ⇒ "3.1 Exploded view - exhaust gas temperature control", page 169

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28 – Ignition system

1 Ignition system

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

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