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Workshop Manual

Audi A3 2013 ➤

Audi A3 Limousine China 2014 ➤

Audi A3 Sportback China 2014 ➤

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

Engine ID	CJSA	CJSB	CJXB	CJXC	CNS B	CNT C	CHH B	CJXF	CYF B
	CJXD	CJX G	DJHA	DJHB	DJJA	DHH A	DLR A	DNU E	

Edition 11.2019



List of Workshop Manual Repair Groups

Repair Group

- 00 - Technical data
- 10 - Removing and installing engine
- 13 - Crankshaft group
- 15 - Cylinder head, valve gear
- 17 - Lubrication
- 19 - Cooling
- 21 - Turbocharging/supercharging
- 24 - Mixture preparation - injection
- 26 - Exhaust system
- 28 - Ignition system



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



Contents

00 - Technical data	1
1 Identification	1
2 Safety precautions	2
3 Repair instructions	3
10 - Removing and installing engine	4
1 Removing and installing engine	4
1.1 Removing engine	4
1.2 Separating engine and gearbox	37
1.3 Securing engine to engine and gearbox support	46
1.4 Installing engine	46
2 Assembly mountings	51
2.1 Exploded view - assembly mountings	51
2.2 Supporting engine in installation position	54
2.3 Removing and installing engine mountings	55
2.4 Removing and installing gearbox mounting	56
2.5 Removing and installing pendulum support	58
2.6 Adjusting assembly mountings	59
2.7 Checking adjustment of assembly mountings (engine/gearbox mountings)	61
3 Engine cover panel	62
13 - Crankshaft group	63
1 Cylinder block (pulley end)	63
1.1 Exploded view - cylinder block (pulley end)	63
1.2 Removing and installing poly V-belt	63
1.3 Removing and installing poly V-belt tensioner	63
1.4 Removing and installing vibration damper	63
1.5 Removing and installing bracket for ancillaries	64
1.6 Removing and installing engine support	64
2 Cylinder block (gearbox end)	66
3 Crankshaft	67
4 Balance shaft	68
5 Pistons and conrods	69
15 - Cylinder head, valve gear	70
1 Timing chain cover	70
1.1 Exploded view - timing chain cover	70
1.2 Removing and installing timing chain cover	70
1.3 Renewing oil seal for vibration damper	72
2 Chain drive	73
2.1 Exploded view - camshaft timing chains	73
2.2 Exploded view - drive chain for balance shaft	73
2.3 Removing and installing bearing saddle	73
2.4 Removing and installing camshaft timing chain	73
2.5 Removing and installing drive chain for balance shaft	74
2.6 Checking timing chain	74
2.7 Checking valve timing	74
3 Cylinder head	75
3.1 Exploded view - cylinder head	75
3.2 Removing and installing cylinder head	75
3.3 Checking compression	87



4	Valve gear	88
4.1	Exploded view - valve gear	88
4.2	Removing and installing camshaft	88
4.3	Installing ball for slider	90
4.4	Removing and installing actuators for camshaft adjustment	90
4.5	Removing and installing camshaft control valve 1 N205	91
4.6	Removing and installing valve stem oil seals	91
5	Inlet and exhaust valves	92
17	- Lubrication	93
1	Sump/oil pump	93
1.1	Exploded view - sump/oil pump	93
1.2	Engine oil	93
1.3	Removing and installing sump (bottom section)	93
1.4	Removing and installing oil pump	93
1.5	Removing and installing sump (top section)	93
1.6	Removing and installing oil level and oil temperature sender G266	94
2	Engine oil cooler	95
3	Crankcase breather	96
4	Oil filter/oil pressure switches	97
4.1	Exploded view - oil filter	97
4.2	Exploded view - oil pressure switches/oil pressure control	97
4.3	Removing and installing oil pressure switch F22	97
4.4	Removing and installing oil pressure switch for reduced oil pressure F378	98
4.5	Removing and installing stage 3 oil pressure switch F447	98
4.6	Removing and installing valve for oil pressure control N428	99
4.7	Removing and installing piston cooling jet control valve N522	99
4.8	Checking oil pressure	99
19	- Cooling	100
1	Cooling system/coolant	100
1.1	Connection diagram - coolant hoses	100
1.2	Checking cooling system for leaks	105
1.3	Draining and filling cooling system	105
2	Coolant expansion tank	110
2.1	Exploded view - coolant expansion tank	110
2.2	Removing and installing coolant expansion tank	110
3	Coolant pump/thermostat assembly	113
3.1	Exploded view - coolant pump/thermostat	113
3.2	Exploded view - electric coolant pump	116
3.3	Exploded view - coolant valves	117
3.4	Exploded view - coolant temperature senders	120
3.5	Removing and installing electric coolant pump	120
3.6	Removing and installing coolant pump	126
3.7	Removing and installing toothed belt for coolant pump	128
3.8	Removing and installing actuator for engine temperature regulation N493	129
3.9	Removing and installing thermostat housing	129
3.10	Removing and installing coolant temperature sender G62	132
3.11	Removing and installing radiator outlet coolant temperature sender G83	133
3.12	Removing and installing coolant valves	134
4	Coolant pipes	140
4.1	Exploded view - coolant pipes	140
4.2	Removing and installing coolant pipes	141
5	Radiator/radiator fans	146



5.1	Exploded view - radiator/radiator fans	146
5.2	Exploded view - auxiliary radiator	149
5.3	Removing and installing radiator	149
5.4	Removing and installing radiator cowl	152
5.5	Removing and installing radiator fan V7	153
5.6	Removing and installing auxiliary radiator	154
21	Turbocharging/supercharging	156
1	Turbocharger	156
1.1	Exploded view - turbocharger	156
1.2	Removing and installing turbocharger	160
1.3	Removing and installing charge pressure positioner V465	172
1.4	Adjusting charge pressure positioner V465	173
2	Charge air system	175
2.1	Exploded view - charge air system	175
2.2	Exploded view - hose connections for charge air system	176
2.3	Removing and installing charge air cooler	176
2.4	Removing and installing charge pressure sender G31	177
2.5	Checking charge air system for leaks	178
24	Mixture preparation - injection	179
1	Injection system	179
1.1	Overview of fitting locations - injection system	179
2	Air cleaner	190
2.1	Exploded view - air cleaner housing	190
2.2	Removing and installing air cleaner housing	191
3	Intake manifold	193
3.1	Exploded view - intake manifold	193
3.2	Removing and installing intake manifold	193
3.3	Removing and installing throttle valve module J338	195
3.4	Cleaning throttle valve module	196
3.5	Checking intake manifold change-over function	196
4	Injectors	197
4.1	Exploded view - fuel rail with injectors	197
4.2	Removing and installing fuel rail	197
4.3	Removing and installing injectors	197
4.4	Cleaning injectors	198
5	Senders and sensors	199
5.1	Exploded view - actuator for structure-borne sound and control unit for structure-borne sound	199
5.2	Removing and installing control unit for structure-borne sound J869 and actuator for structure-borne sound R214	200
5.3	Removing and installing intake air temperature sender G42 / intake manifold pressure sender G71	200
5.4	Removing and installing fuel pressure sender G247	201
5.5	Checking fuel pressure sender G247	201
5.6	Removing and installing fuel pressure sender for low pressure G410	202
5.7	Removing and installing exhaust gas pressure sensor 1 G450	202
6	High-pressure pump	203
6.1	Exploded view - high-pressure pump	203
6.2	Removing and installing high-pressure pump	203
7	Lambda probe	204
7.1	Exploded view - Lambda probe	204
7.2	Removing and installing Lambda probe	204
8	Engine control unit	206



8.1	Removing and installing engine/motor control unit J623	206
26	- Exhaust system	210
1	Exhaust pipes/silencers	210
1.1	Exploded view - silencers	210
1.2	Separating exhaust pipes/silencers	213
1.3	Removing and installing silencers	216
1.4	Stress-free alignment of exhaust system	218
1.5	Checking exhaust system for leaks	219
2	Emission control system	220
2.1	Exploded view - emission control system	220
2.2	Removing and installing catalytic converter	222
2.3	Removing and installing exhaust flap control unit J883	231
3	Exhaust gas temperature control	233
4	Secondary air system	234
28	- Ignition system	235
1	Ignition system	235



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00 – Technical data

1 Identification

(ARL006724; Edition 11.2019)

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

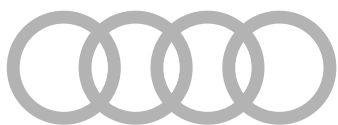


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2 Safety precautions

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

⇒ [“1.1 Removing engine”, page 4](#)

⇒ [“1.2 Separating engine and gearbox”, page 37](#)

⇒ [“1.3 Securing engine to engine and gearbox support”, page 46](#)

⇒ [“1.4 Installing engine”, page 46](#)

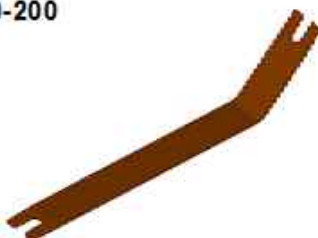
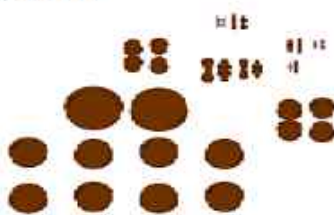
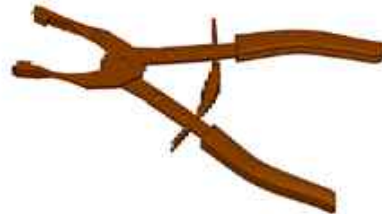
1.1 Removing engine

⇒ [“1.1.1 Removing engine - vehicles without particulate filter”, page 4](#)

⇒ [“1.1.2 Removing engine - vehicles with particulate filter”, page 20](#)

1.1.1 Removing engine - vehicles without particulate filter

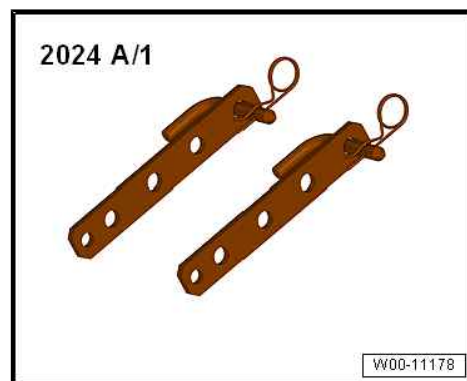
Special tools and workshop equipment required

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

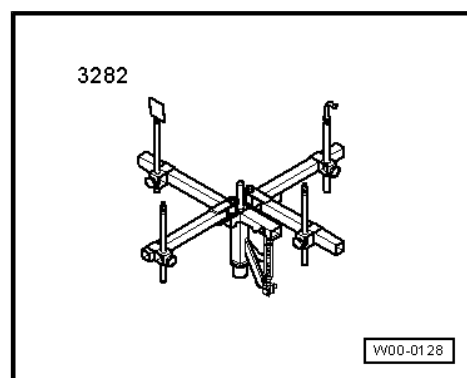
◆ Removal lever - 80-200-



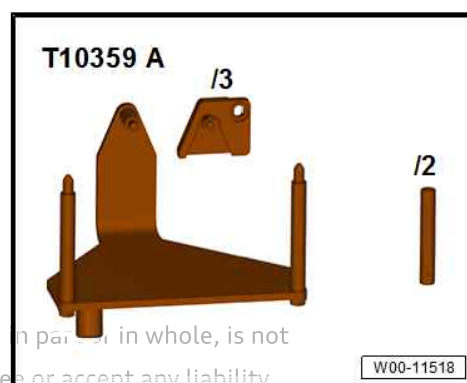
- ◆ Stepladder (commercially available) or -VAS 5085-
- ◆ Engine bung set - VAS 6122-
- ◆ Coolant collecting system - VAS 5014- or drip tray for work-shop hoist - VAS 6208-
- ◆ Hose clip pliers - VAS 6362-
- ◆ Engine and gearbox jack - VAS 6931-
- ◆ Extension -2024A/1- for lifting tackle - 2024A-



- ◆ Locking element included with gearbox support - 3282-



- ◆ Engine bracket - T10359A-



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- ◆ Safety goggles
- ◆ Protective gloves



Procedure



Note

- ♦ *The engine is removed from underneath together with the gearbox.*
- ♦ *Re-fit all cable ties and heat insulation sleeves in the same locations when installing.*



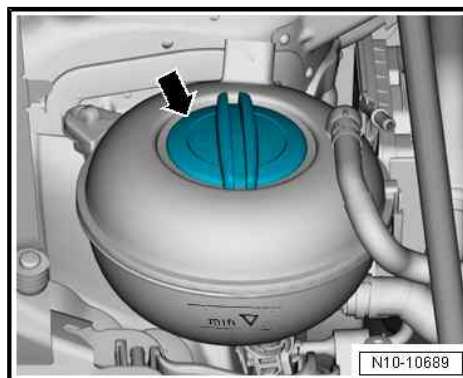
WARNING

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

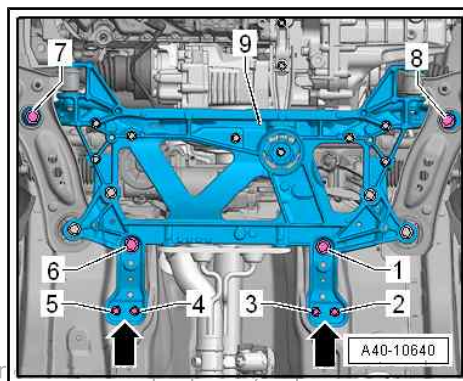
Danger of scalding skin and other parts of the body.

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

- Open filler cap -arrow- on coolant expansion tank.



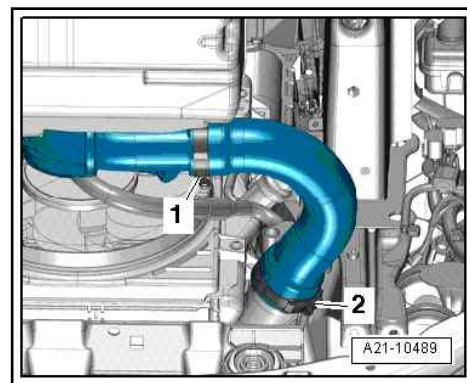
- Remove subframe -9- without steering rack ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe without steering rack .



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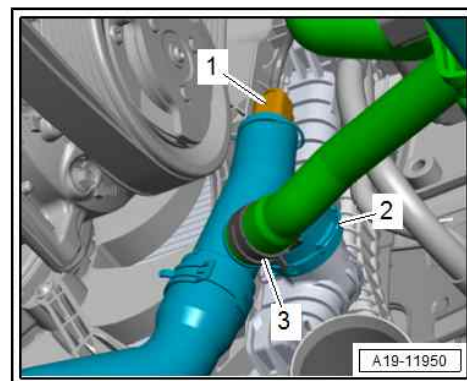
- Release hose clips -1, 2- and detach air hose.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Unplug electrical connector -1-.
- Place drip tray for workshop hoist - VAS 6208- underneath.
- Lift retaining clip -2-, disconnect coolant hose (bottom right) from radiator and drain off coolant.

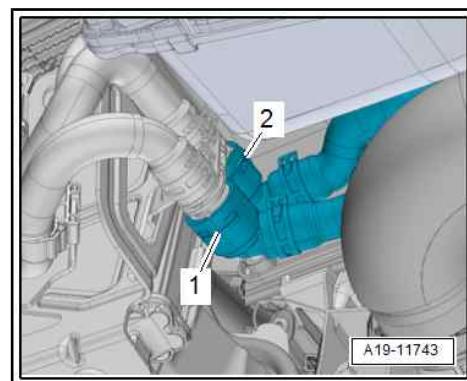
Vehicles with auxiliary radiator (right-side):

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



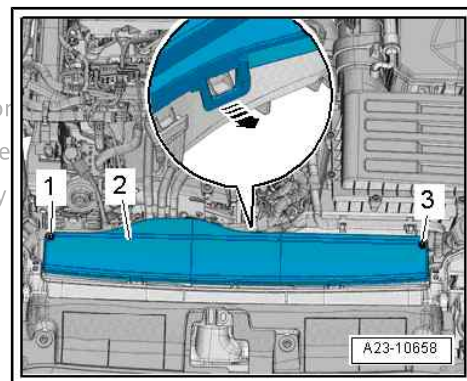
Vehicles with auxiliary radiator (left-side):

- Lift retaining clips -1, 2-, disconnect coolant hoses and drain off coolant.
- Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .



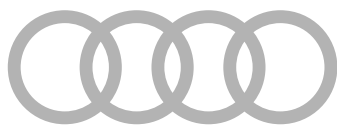
All vehicles (continued):

- 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 bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.



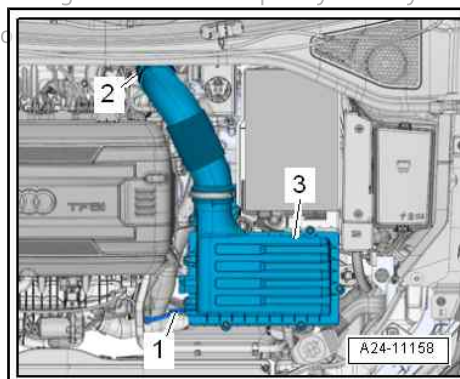
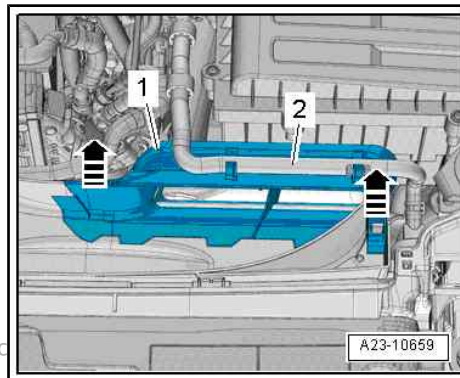


- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.

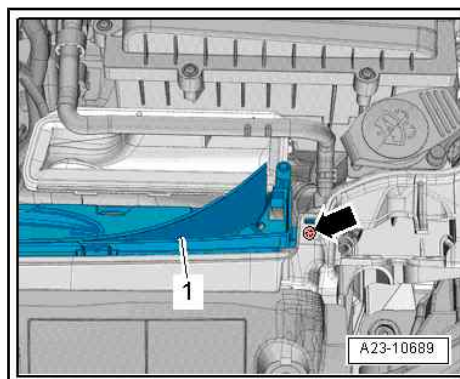


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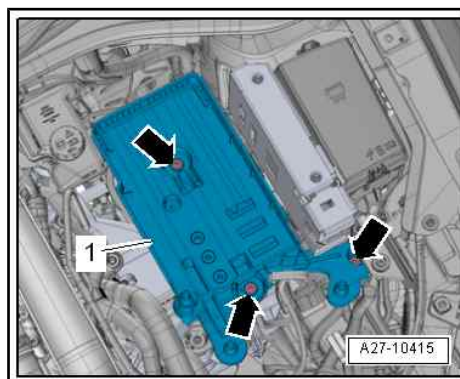
- Disconnect vacuum hose -1-.
- Release hose clip -2- and detach air hose.
- Detach air cleaner housing -3-.



- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.

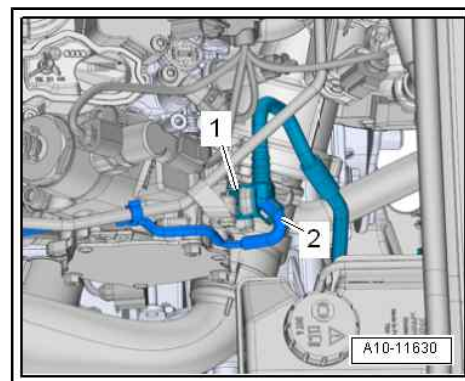


- Remove battery tray -1- ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .





- Disconnect vacuum hose -2-.
- Press release tabs on vacuum hose -1- and detach hose from vacuum pump.



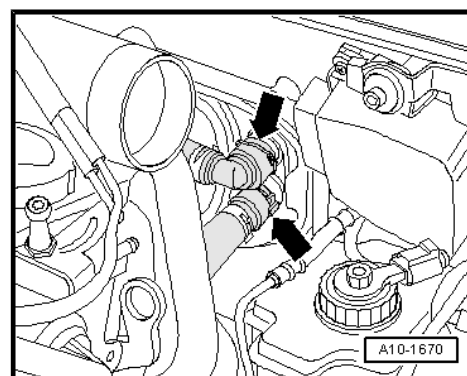
Vehicles without auxiliary heater:



Note

Place a cloth underneath heat exchanger for heater to catch escaping coolant.

- Lift retaining clips -arrows- and disconnect coolant hoses from heat exchanger for heater.
- Guide coolant hoses downwards and drain off coolant.



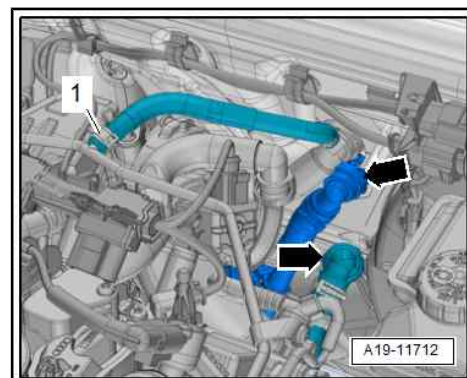
Vehicles with auxiliary heater:



Note

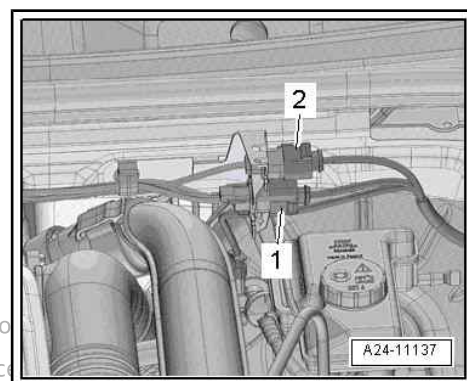
Place a cloth underneath heat exchanger for heater to catch escaping coolant.

- Release hose clip -1-, lift retaining clips -arrows- and disconnect coolant hoses.



All vehicles (continued):

- Detach electrical connectors -1, 2- from bracket, unplug connectors and move electrical wiring clear.



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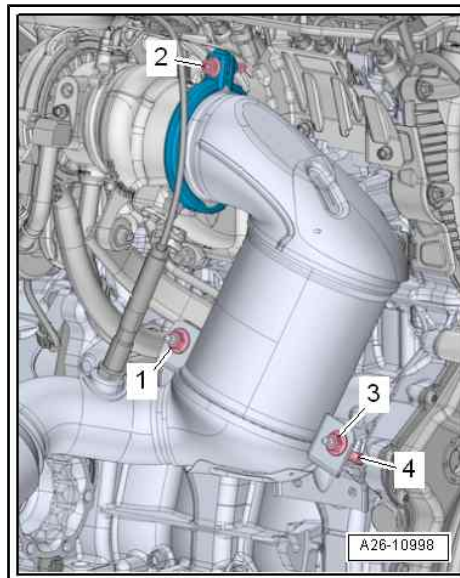


- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1, 3-.



Note

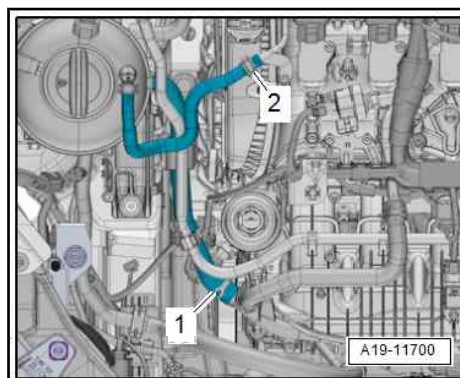
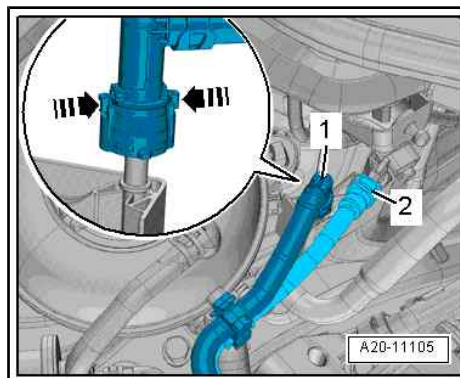
For illustration purposes, the installation position is shown with the engine removed.



Note

Lay a cloth under the connection to catch escaping fuel.

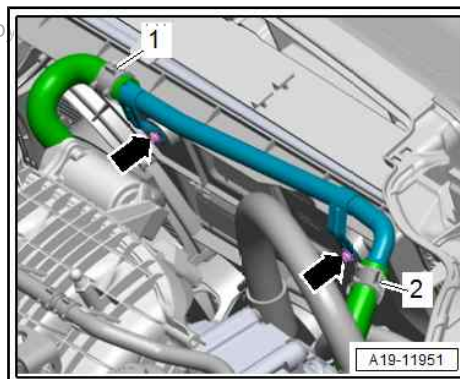
- Disconnect fuel line -1- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Move fuel line clear.
- Press release tabs on both sides of hose -2- for activated charcoal filter.
- Disconnect hose and move it clear.
- Release hose clips -1, 2- and disconnect coolant hoses.



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Vehicles with auxiliary radiator (right-side):

- Release hose clip -1- and disconnect coolant hose.
- Remove bolts -arrows- and place coolant pipe to right side.





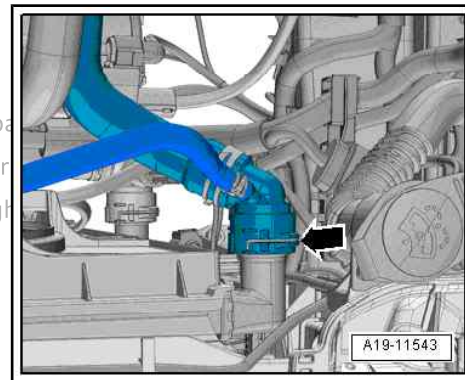
All vehicles (continued):



Note

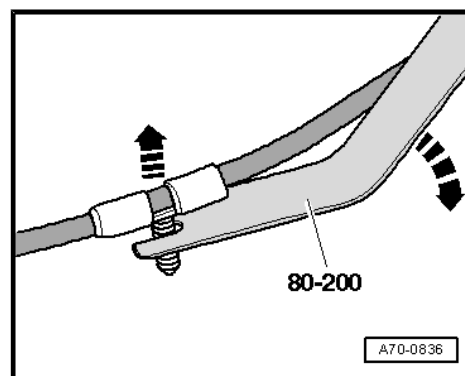
The illustration shows the radiator for vehicles with a 1.8 ltr. engine; it is similar on other vehicles.

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

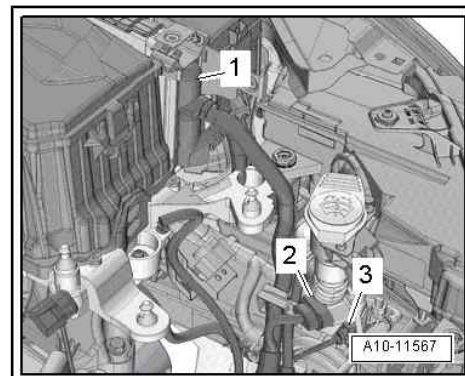


Note

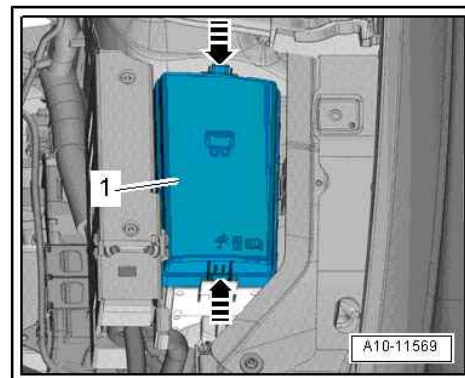
Use removal lever - 80-200- to lever out the wiring clips when performing the next work steps.



- Unplug electrical connector -1- at engine control unit - J623- ➔ [page 206](#) .
- Detach electrical connectors -2, 3- from bracket and unplug.
- Move electrical wiring clear.

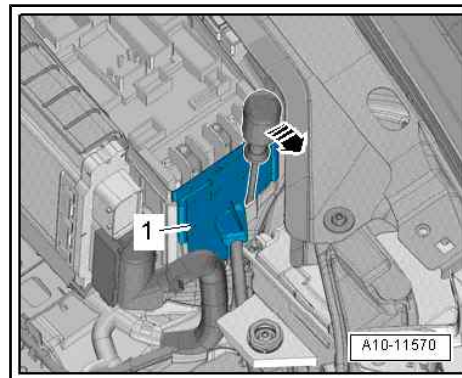


- Release catches -arrows- and detach cover -1- for electronics box in engine compartment.

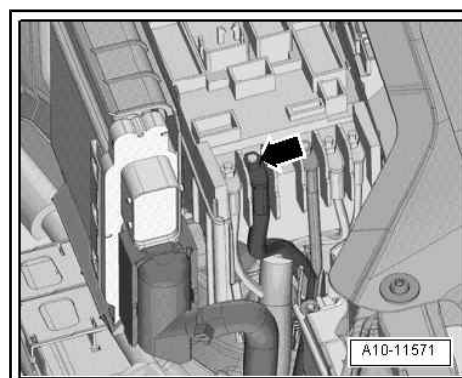




- Release catch using a screwdriver -arrow- and detach cover -1- for electronics box in engine compartment upwards.



- Remove nut -arrow-, detach electrical wiring and move clear.



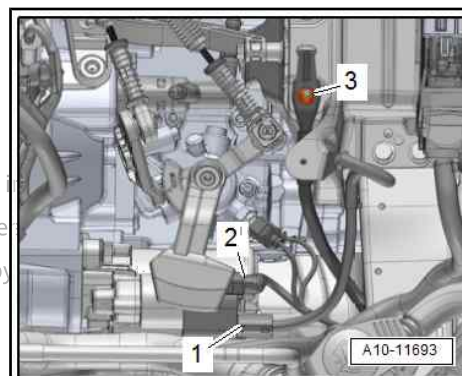
Vehicles with manual gearbox:

- Unplug electrical connector -2-.
- Push back cover -1- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -3- and detach earth wire.

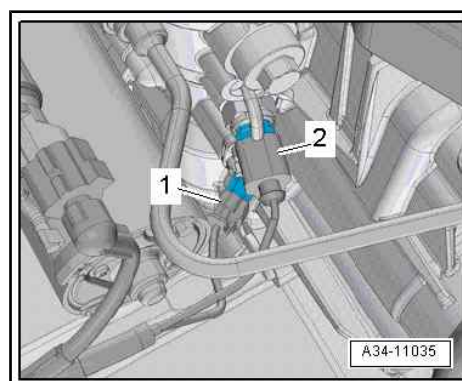


Note

On some versions the earth wire is attached to the starter bolt.



- Disconnect electrical connectors on gearbox (front left):
 - 1 - For gearbox neutral position sender - G701-
 - 2 - For reversing light switch - F4-
- Detach gear selector cable and gate selector cable from gearbox, remove cable support bracket and place to one side with selector cables attached ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .





Vehicles with manual gearbox 02S:

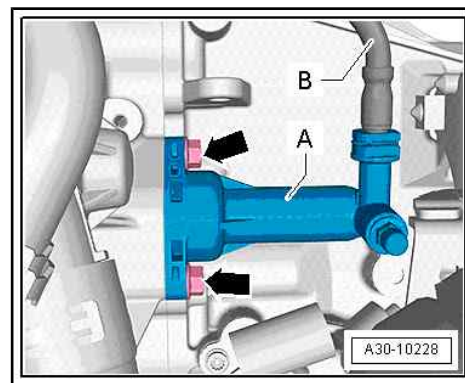
- Remove clutch slave cylinder -A- and place to one side with pipe/hose assembly attached ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing clutch slave cylinder .



Caution

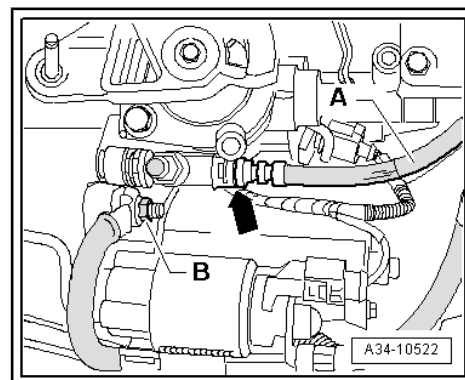
Risk of damage to clutch slave cylinder.

- ◆ *Do not operate clutch pedal after clutch slave cylinder has been removed from gearbox together with pipe/hose assembly.*



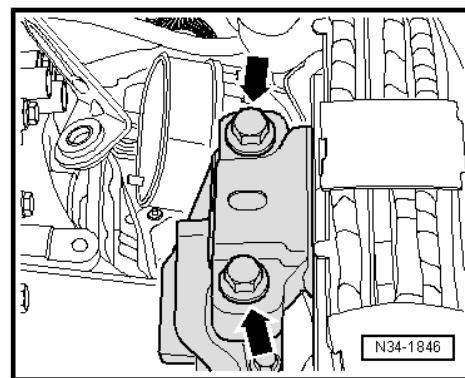
Vehicles with manual gearbox 02Q:

- Detach pipe/hose assembly -A- from bleeder connection ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing lines for clutch hydraulics .



Vehicles with manual gearbox 02S/02Q:

- Loosen bolts -arrows- for gearbox mounting approx. 2 turns.



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Vehicles with dual clutch gearbox 0CW:

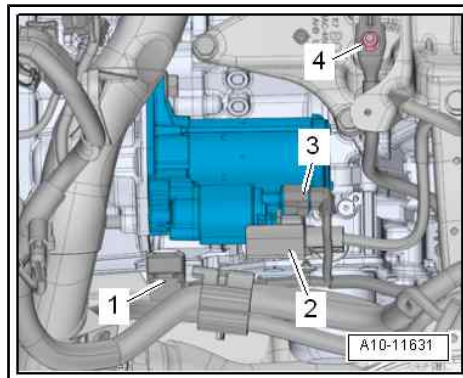
- Detach selector lever cable from gearbox and pull it out of cable support bracket ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .
- Unplug electrical connector -3-.
- Push back cover -2- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -4- and detach earth wire.



Caution

Risk of damage to control unit (mechatronic unit) by static discharge.

- ◆ **Do NOT touch connector contacts in gearbox connector with your hands.**



- Touch vehicle earth with bare hands to eliminate any static charge.
- Unplug electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- .

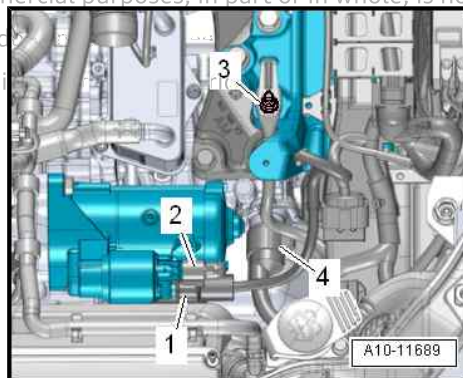
Vehicles with dual clutch gearbox 0D9:

- Detach selector lever cable from gearbox and pull it out of cable support bracket ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .
- Unplug electrical connector -2-.
- Push back cover -1- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -3- and detach earth wire.



Note

On some versions the earth wire is attached to the starter bolt.



Caution

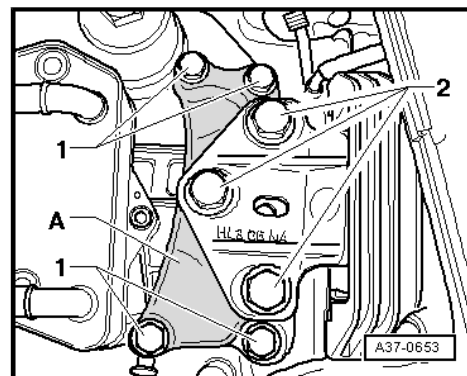
Risk of damage to control unit (mechatronic unit) by static discharge.

- ◆ **Do NOT touch connector contacts in gearbox connector with your hands.**

- Touch vehicle earth with bare hands to eliminate any static charge.
- Turn retainer catch anti-clockwise and unplug electrical connector -4- for mechatronic unit for dual clutch gearbox - J743- .

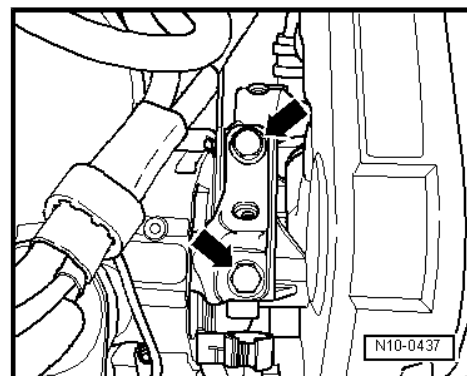


- Loosen bolts -2- for gearbox mounting approx. 2 turns.



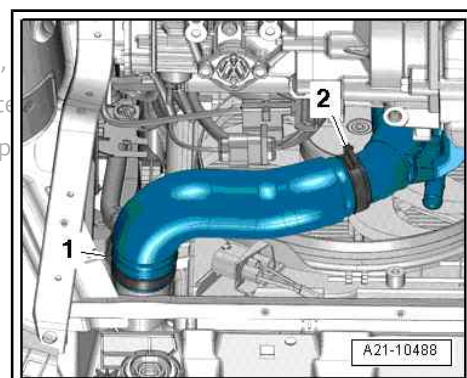
All vehicles (continued):

- Unscrew bolts -arrows- for engine mounting approx. 2 turns.

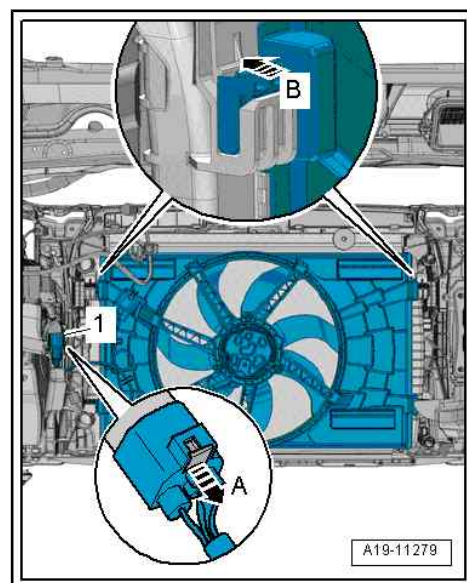


- Release hose clip -1- and detach air hose from charge air cooler.

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- Unplug electrical connector -1- for radiator fan (push retainer in direction of -arrow A- and press release catch down).
- Press locking tabs on left and right sides of radiator cowl simultaneously -arrow B- and detach radiator cowl downwards from radiator.



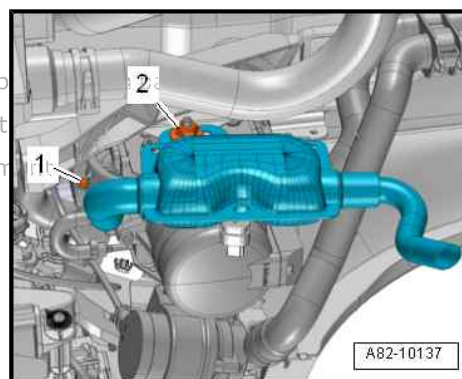
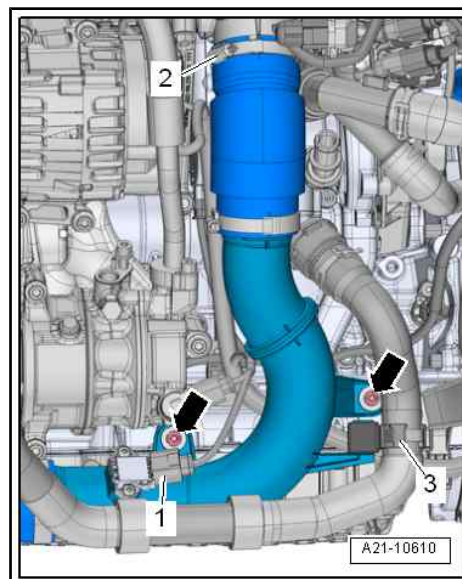


- Release hose clip -2-.
- Move coolant hose -3- clear.
- Remove bolts -arrows-.
- Unplug electrical connector -1- from charge pressure sender - G31- .
- Detach air pipe (right-side).



Vehicles with auxiliary heater:

- Open clip -1-, unscrew bolt -2- and detach silencer for auxiliary heater.
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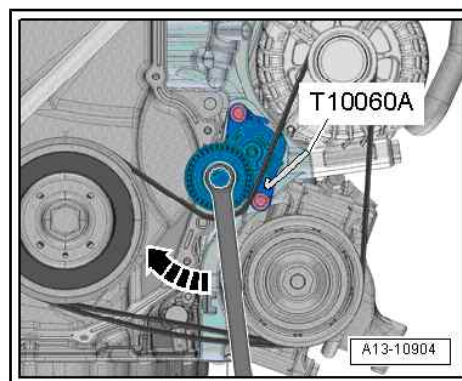


All vehicles (continued):



Note

- ♦ *Running a used poly V-belt in the opposite direction could cause irreparable damage.*
- ♦ *Before removing the poly V-belt, mark the direction of rotation with chalk or a felt-tip pen for re-installation.*
- To slacken poly V-belt, turn tensioner in clockwise direction -arrow-.
- Remove poly V-belt from pulley of air conditioner compressor and release tensioner.





- Unplug electrical connector -1- on air conditioner compressor regulating valve - N280- .



WARNING

Risk of injury caused by refrigerant.

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

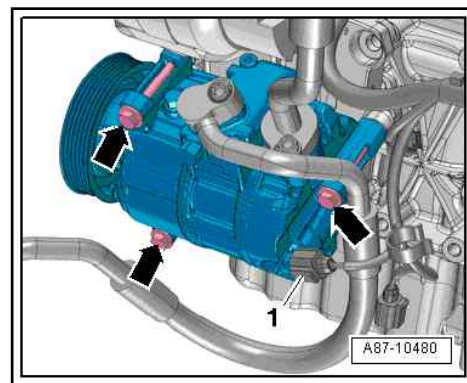
- Remove bolts -arrows-.



Caution

Risk of damage to air conditioner compressor and refrigerant pipes/hoses.

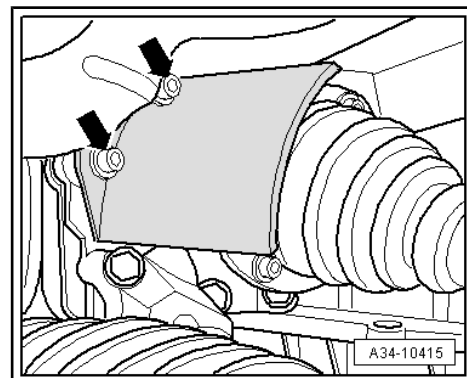
- ◆ *Do NOT stretch, kink or bend refrigerant lines and hoses.*



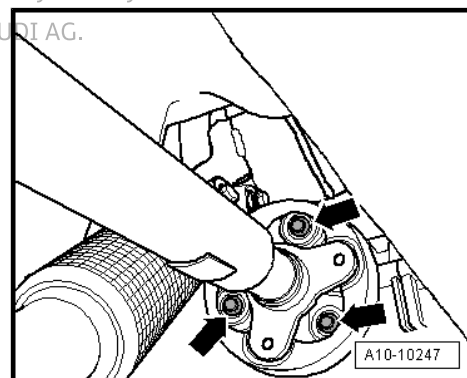
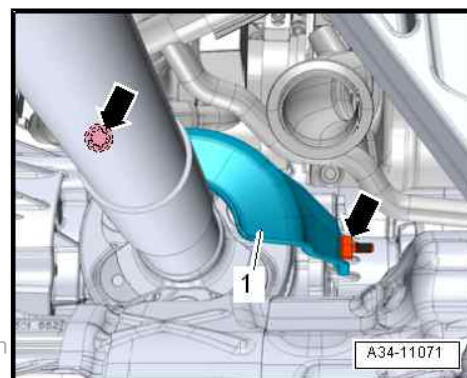
- Detach air conditioner compressor from bracket (refrigerant hoses remain connected) and tie up to right side.

Vehicles with four-wheel drive:

- Remove bolts -arrows- and detach heat shield for drive shaft (right-side).



- Remove bolts -arrows- and detach heat shield -1-.



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



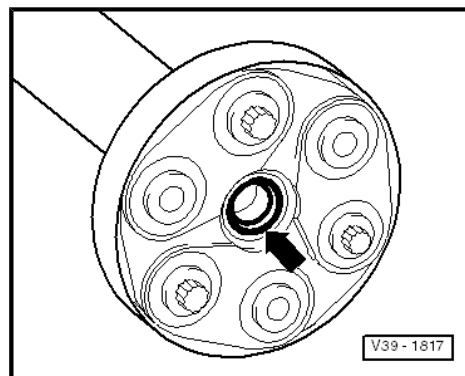
- Push engine/gearbox assembly forward slightly (towards front end) and pull propshaft off bevel box.



Caution

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

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



Note

The propshaft must be renewed if the oil seal is damaged.

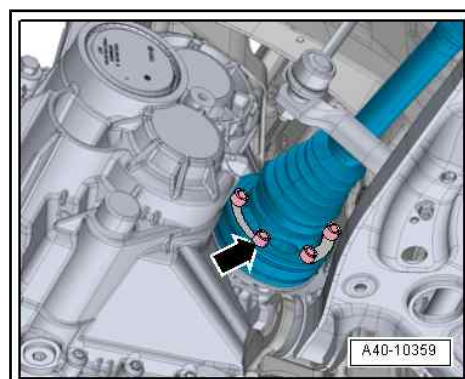
All vehicles (continued):

- Unbolt drive shaft -arrow- (left and right) from flange shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Tie up drive shafts to rear.

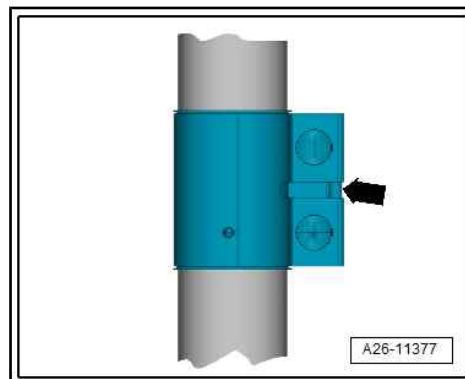


Note

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

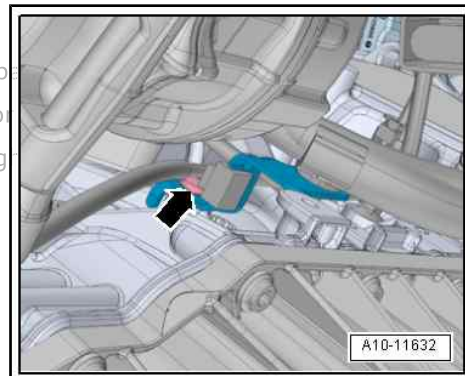


- Loosen clamp -arrow- and push towards rear.
- Detach catalytic converter with front exhaust pipe.



- Remove bolt -arrow- and push bracket for electrical wiring harness to one side.

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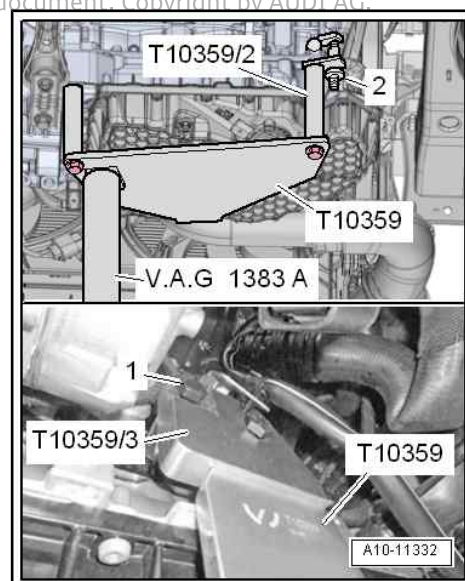
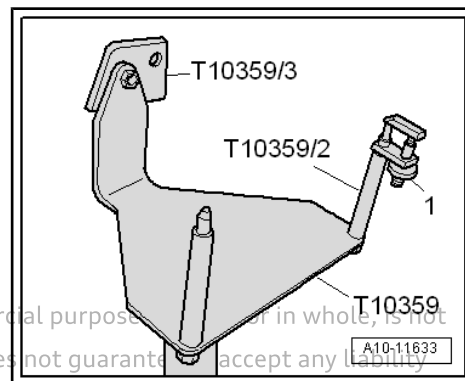




- Secure adapter -T10359/3- to engine support - T10359A- , as shown in illustration.
- Secure pin -T10359/2- to engine bracket with locking element -1- from gearbox support - 3282- .
- If necessary, remove gearbox oil cooling pump - V478-
⇒ [“3.5.2 Removing and installing gearbox oil cooling pump V478”, page 124](#) .

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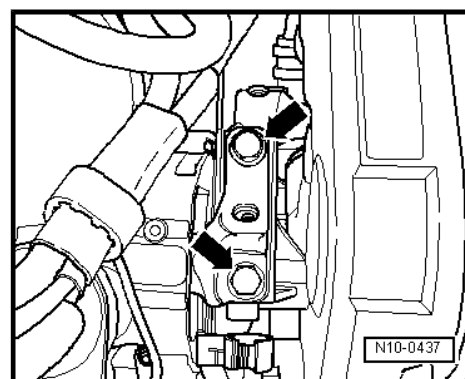
- Use bolt -1- to fix engine bracket - T10359A- with 20 Nm to cylinder block and secure with locking element -2- from gearbox support - 3282- .
- Insert engine and gearbox jack in engine bracket -T10359A- and raise engine/gearbox assembly slightly.



Note

Use stepladder when unscrewing bolts for assembly mounting.

- Remove bolts -arrows- for engine mounting.





Note

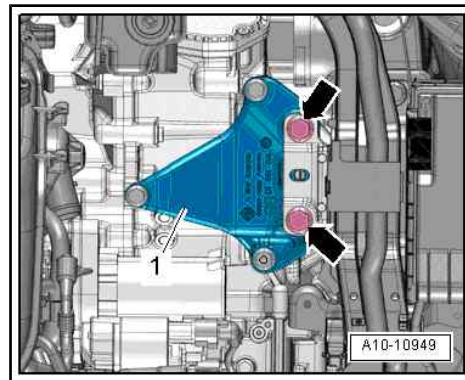
The illustration shows a vehicle with dual clutch gearbox 0CW.

- Remove bolts -arrows- securing gearbox mounting.



Note

2 or 3 bolts depending on gearbox.



Caution

Danger of damage to vacuum lines or electrical wiring and to engine compartment.

- ◆ ***Check that all vacuum lines and electrical wiring between engine, gearbox and body have been detached.***
- ◆ ***Carefully guide engine/gearbox assembly out of engine compartment when lowering.***

- Lower engine/gearbox assembly.

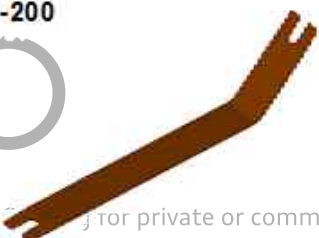
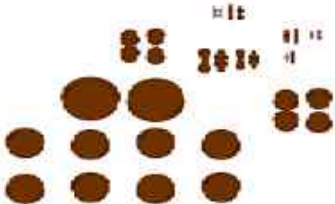
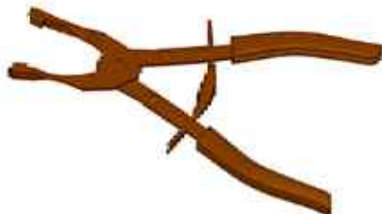
1.1.2 Removing engine - vehicles with particulate filter



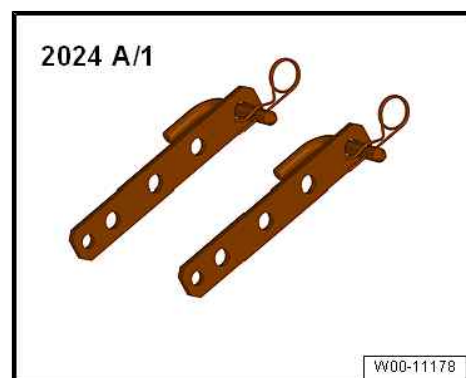
Special tools and workshop equipment required



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80-200 	VAS 5085 
VAS 6122 	VAS 6208 
VAS 6362 	VAS 6931  G10-10105

- ◆ Removal lever - 80-200-
- ◆ Stepladder (commercially available) or -VAS 5085-
- ◆ Engine bung set - VAS 6122-
- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-
- ◆ Hose clip pliers - VAS 6362-
- ◆ Engine and gearbox jack - VAS 6931-
- ◆ Extension -2024A/1- for lifting tackle - 2024A-

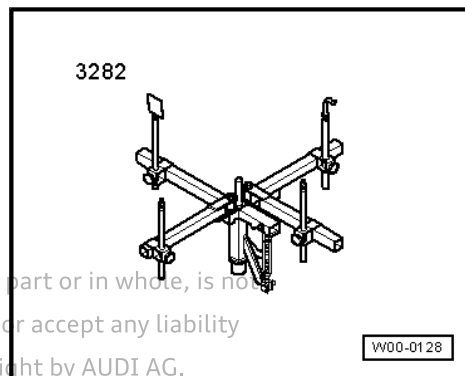




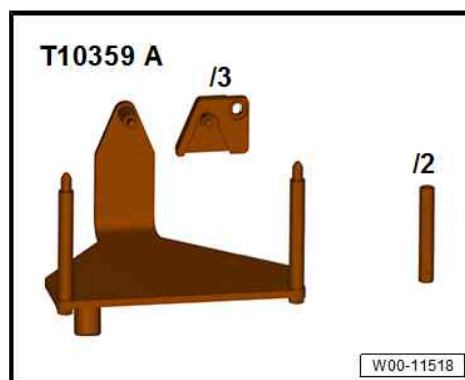
- ◆ Locking element included with gearbox support - 3282-



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- ◆ Engine bracket - T10359A-



- ◆ Safety goggles
- ◆ Protective gloves

Procedure



Note

- ◆ *The engine is removed from underneath together with the gearbox.*
- ◆ *Re-fit all cable ties and heat insulation sleeves in the same locations when installing.*



WARNING

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

Danger of scalding skin and other parts of the body.

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

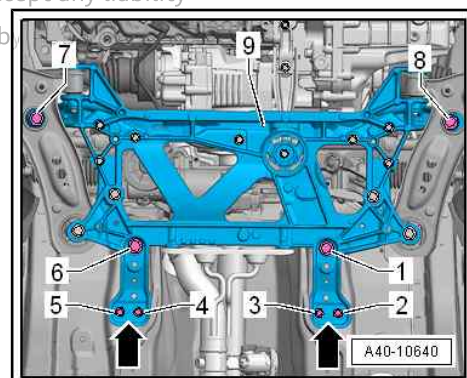
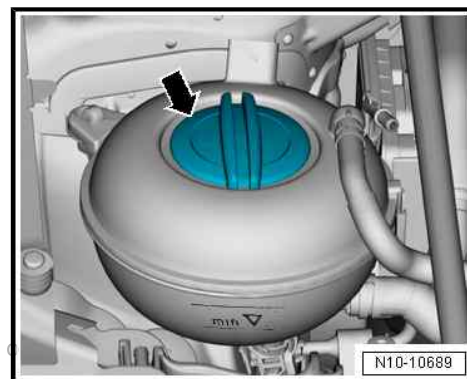


- Open filler cap -arrow- on coolant expansion tank.

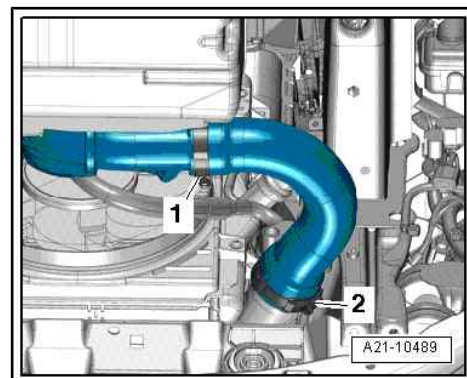


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- Remove subframe -9- without steering rack ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe without steering rack .



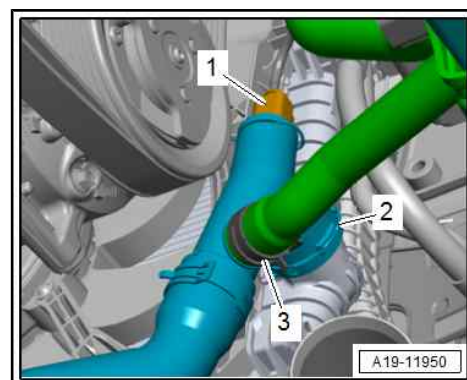
- Release hose clips -1, 2- and detach air hose.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Unplug electrical connector -1-.
- Place drip tray for workshop hoist - VAS 6208- underneath.
- Lift retaining clip -2-, disconnect coolant hose (bottom right) from radiator and drain off coolant.

Vehicles with auxiliary radiator (right-side):

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





Vehicles with auxiliary radiator (left-side):

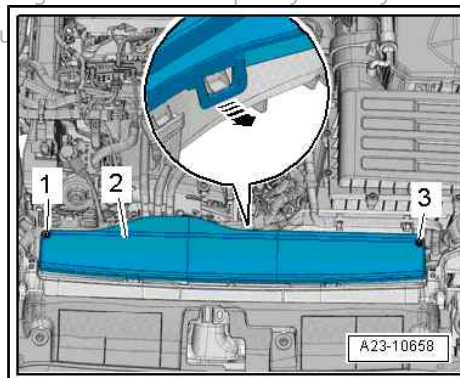
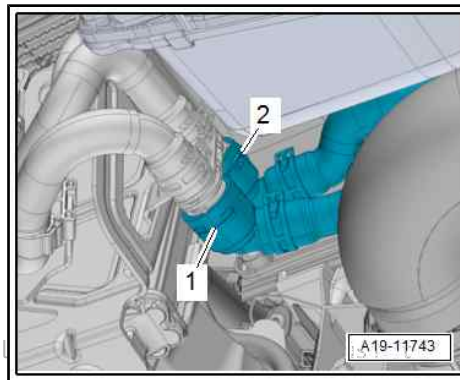
- Lift retaining clips -1, 2-, disconnect coolant hoses and drain off coolant.
- Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .



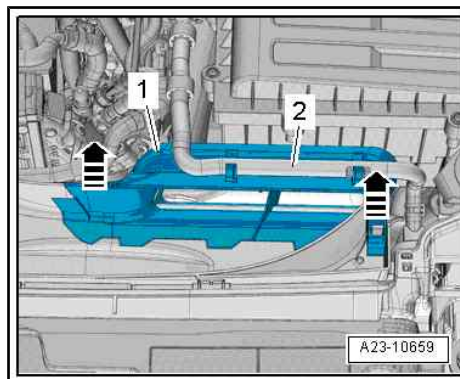
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All vehicles (continued):

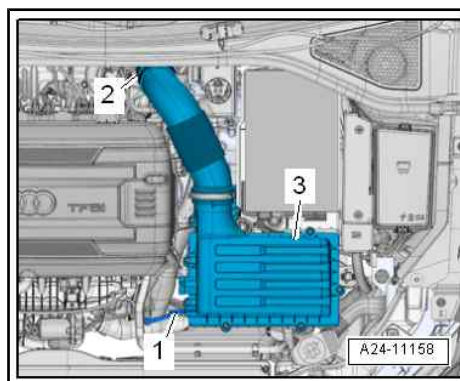
- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Remove bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.



- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.

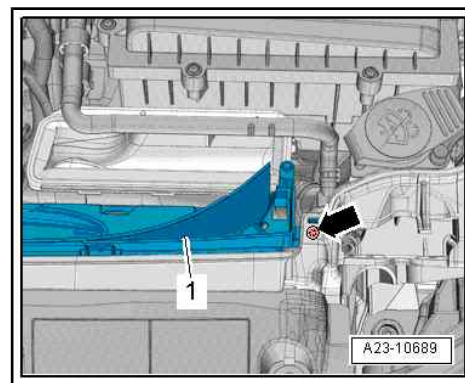


- Disconnect vacuum hose -1-.
- Release hose clip -2- and detach air hose.
- Detach air cleaner housing -3-.

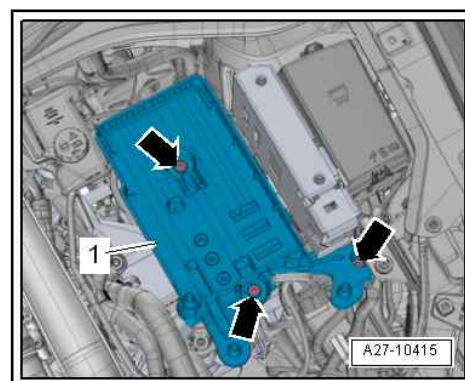




- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.



- Remove battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



- Disconnect vacuum hose -2-.
- Press release tabs on vacuum hose -1- and detach hose from vacuum pump.



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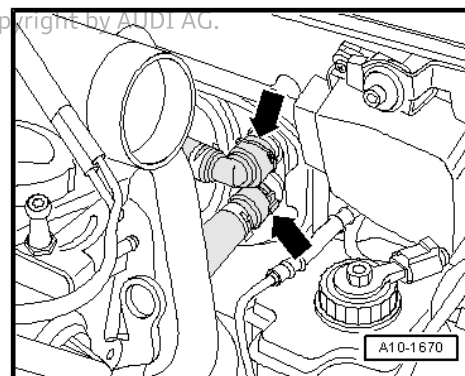
Vehicles without auxiliary heater:



Note

Place a cloth underneath heat exchanger for heater to catch escaping coolant.

- Lift retaining clips -arrows- and disconnect coolant hoses from heat exchanger for heater.
- Guide coolant hoses downwards and drain off coolant.





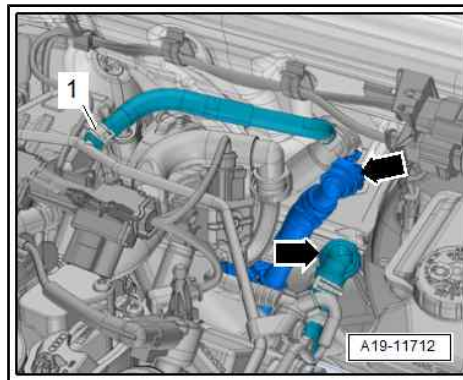
Vehicles with auxiliary heater:



Note

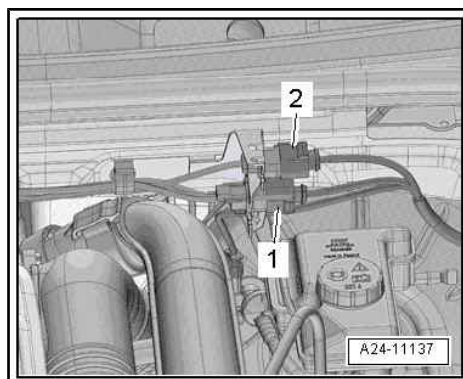
Place a cloth underneath heat exchanger for heater to catch escaping coolant.

- Release hose clip -1-, lift retaining clips -arrows- and disconnect coolant hoses.



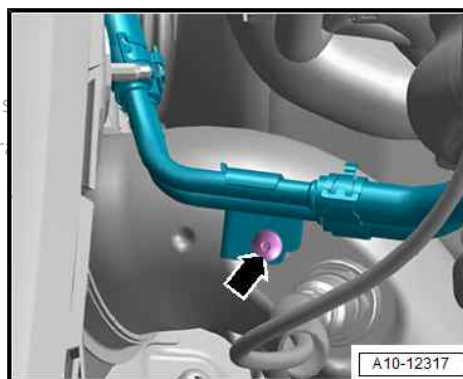
All vehicles (continued):

- Detach electrical connectors -1, 2- from bracket, unplug connectors and move electrical wiring clear.



- Remove bolt -arrow- for pressure lines.
- Move pressure lines clear.

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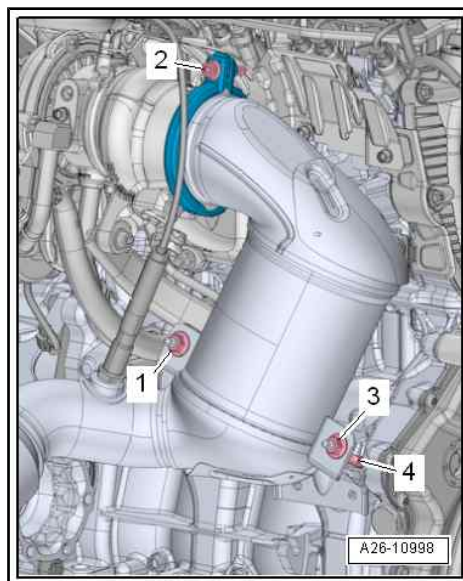


- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1, 3-.



Note

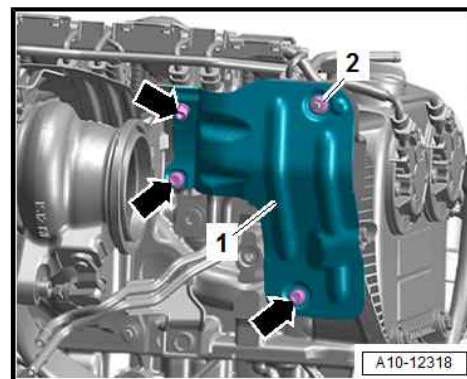
For illustration purposes, the installation position is shown with the engine removed.



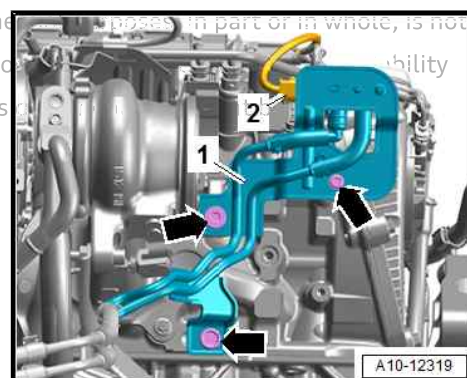


Vehicles with four-wheel drive:

- Unscrew bolts -arrows- and nut -2- and detach heat shield -1-.



- Unplug electrical connector -2-.
- Remove bolts -arrows- and move pressure lines with exhaust gas pressure sensor 1 - G450- to rear.



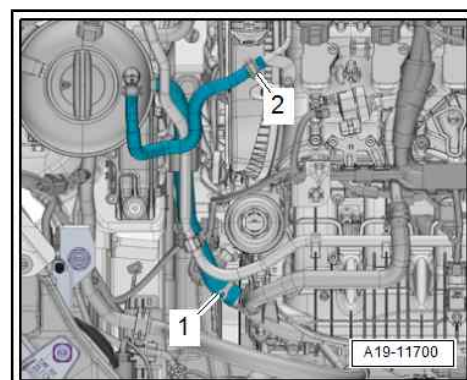
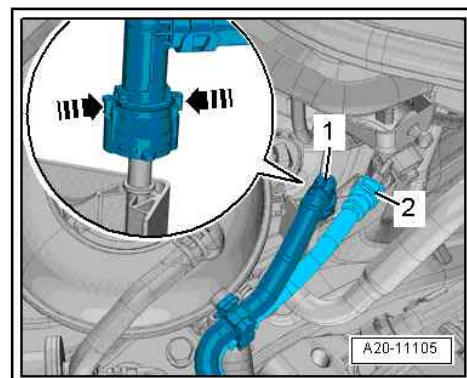
All vehicles (continued):



Note

Lay a cloth under the connection to catch escaping fuel.

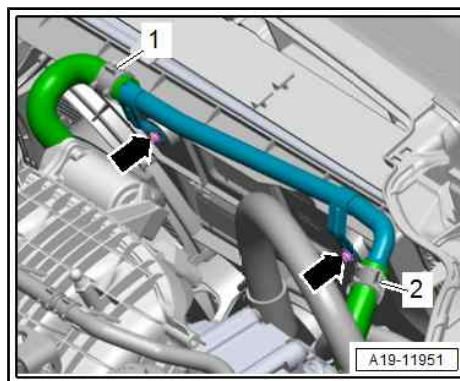
- Disconnect fuel line -1- ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Move fuel line clear.
- Press release tabs on both sides of hose -2- for activated charcoal filter.
- Disconnect hose and move it clear.
- Release hose clips -1, 2- and disconnect coolant hoses.





Vehicles with auxiliary radiator (right-side):

- Release hose clip -1- and disconnect coolant hose.
- Remove bolts -arrows- and place coolant pipe to right side.



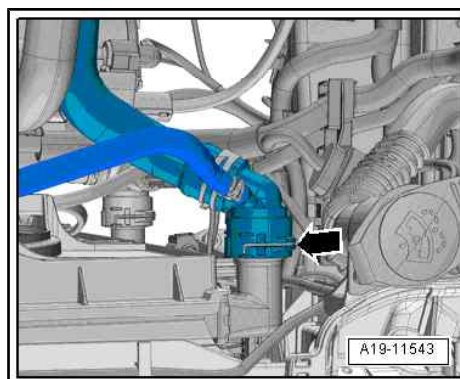
All vehicles (continued):



Note

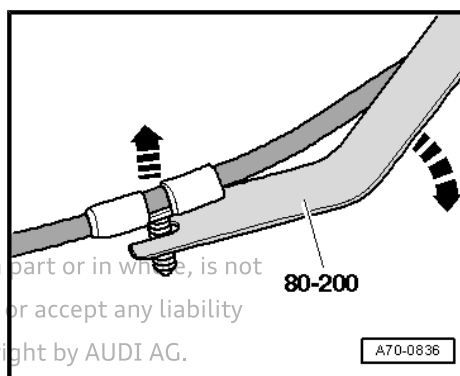
The illustration shows the radiator for vehicles with a 1.8 ltr. engine; it is similar on other vehicles.

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

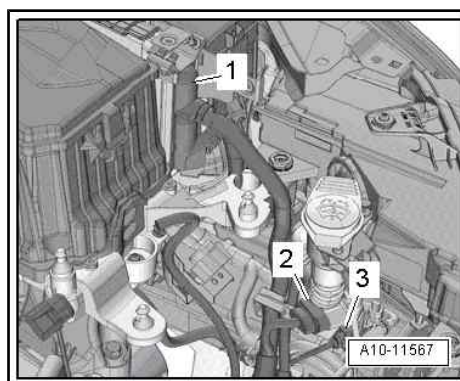


Note

Use removal lever - 80-200- to lever out the wiring clips when performing the next work steps.



- Unplug electrical connector -1- at engine control unit - J623- ➔ [page 206](#) .
- Detach electrical connectors -2, 3- from bracket and unplug.
- Move electrical wiring clear.

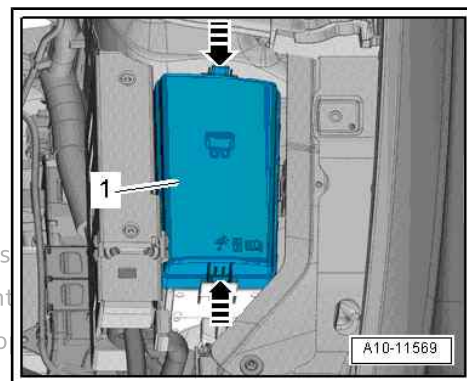




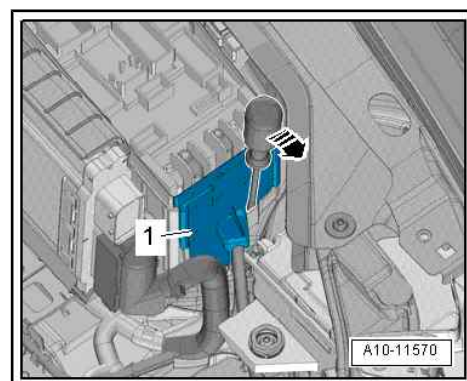
- Release catches -arrows- and detach cover -1- for electronics box in engine compartment.



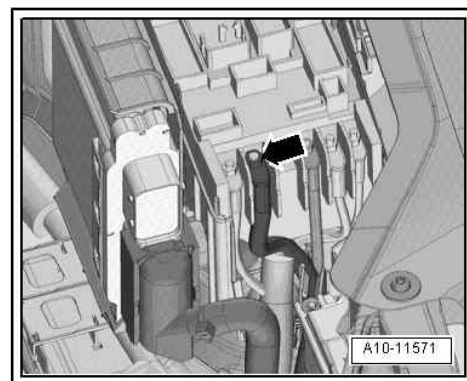
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- Release catch using a screwdriver -arrow- and detach cover -1- for electronics box in engine compartment upwards.



- Remove nut -arrow-, detach electrical wiring and move clear.



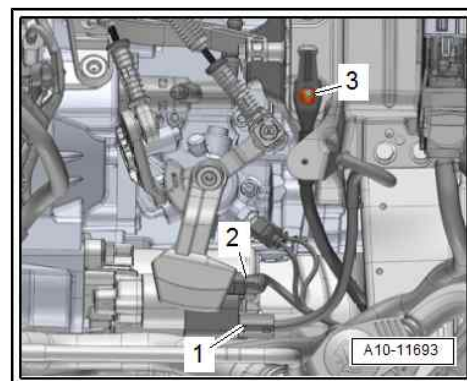
Vehicles with manual gearbox:

- Unplug electrical connector -2-.
- Push back cover -1- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -3- and detach earth wire.



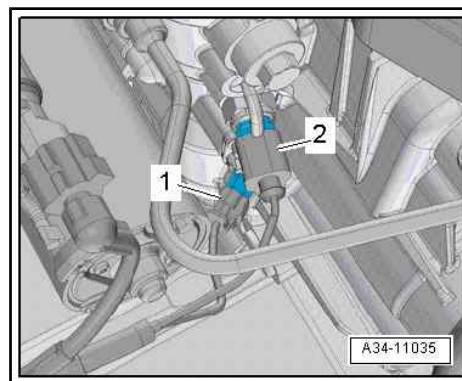
Note

On some versions the earth wire is attached to the starter bolt.





- Disconnect electrical connectors on gearbox (front left):
 - 1 - For gearbox neutral position sender - G701-
 - 2 - For reversing light switch - F4-
- Detach gear selector cable and gate selector cable from gearbox, remove cable support bracket and place to one side with selector cables attached ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .



Vehicles with manual gearbox 02S:

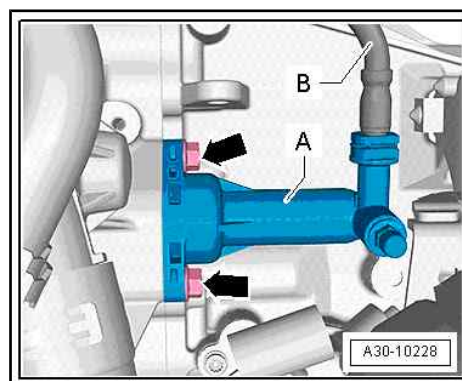
- Remove clutch slave cylinder -A- and place to one side with pipe/hose assembly attached ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing clutch slave cylinder .



Caution

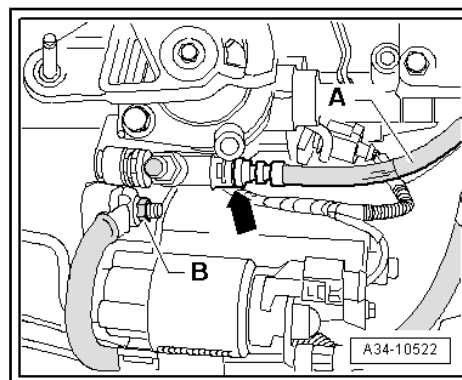
Risk of damage to clutch slave cylinder.

- ◆ *Do not operate clutch pedal after clutch slave cylinder has been removed from gearbox together with pipe/hose assembly.*



Vehicles with manual gearbox 02Q:

- Detach pipe/hose assembly -A- from bleeder connection ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing lines for clutch hydraulics .

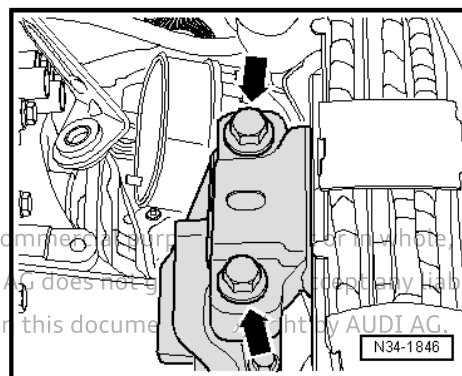


Vehicles with manual gearbox 02S/02Q:

- Loosen bolts -arrows- for gearbox mounting approx. 2 turns.



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Vehicles with dual clutch gearbox 0CW:

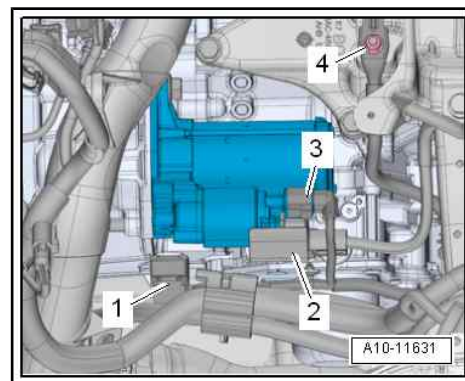
- Detach selector lever cable from gearbox and pull it out of cable support bracket ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .
- Unplug electrical connector -3-.
- Push back cover -2- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -4- and detach earth wire.



Caution

Risk of damage to control unit (mechatronic unit) by static discharge.

- ◆ ***Do NOT touch connector contacts in gearbox connector with your hands.***



- Touch vehicle earth with bare hands to eliminate any static charge.
- Unplug electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- .

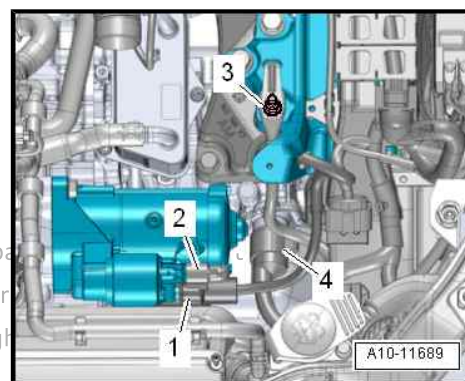
Vehicles with dual clutch gearbox 0D9:

- Detach selector lever cable from gearbox and pull it out of cable support bracket ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Removing and installing selector mechanism .
- Unplug electrical connector -2-.
- Push back cover -1- for positive battery terminal and unscrew positive wire from starter solenoid switch.
- Remove nut -3- and detach earth wire.



Note

On some versions the earth wire is attached to the starter bolt.



Caution

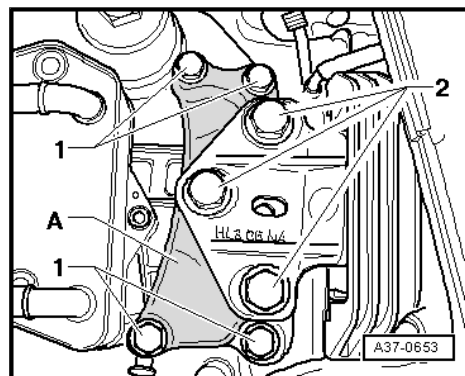
Risk of damage to control unit (mechatronic unit) by static discharge.

- ◆ ***Do NOT touch connector contacts in gearbox connector with your hands.***

- Touch vehicle earth with bare hands to eliminate any static charge.
- Turn retainer catch anti-clockwise and unplug electrical connector -4- for mechatronic unit for dual clutch gearbox - J743- .

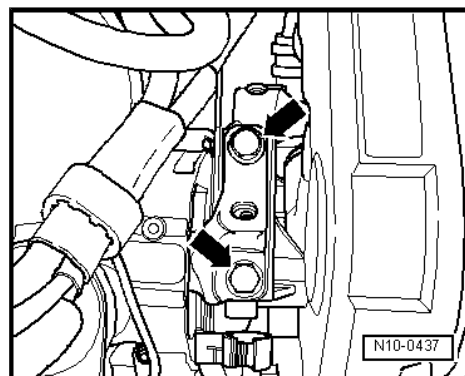


- Loosen bolts -2- for gearbox mounting approx. 2 turns.



All vehicles (continued):

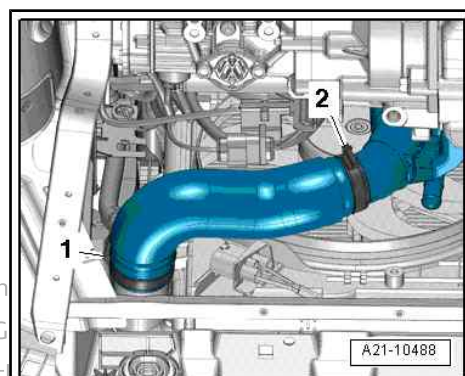
- Unscrew bolts -arrows- for engine mounting approx. 2 turns.



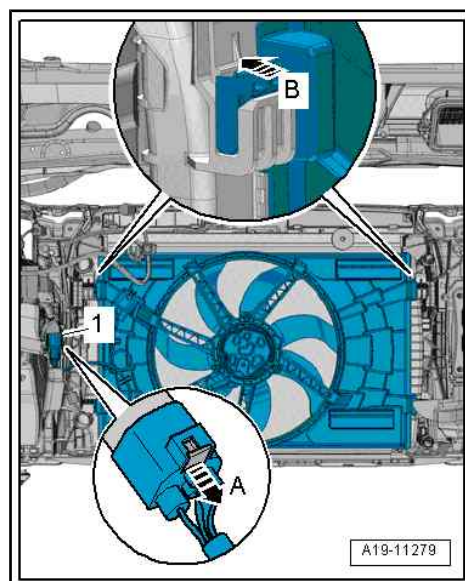
- Release hose clip -1- and detach air hose from charge air cooler.



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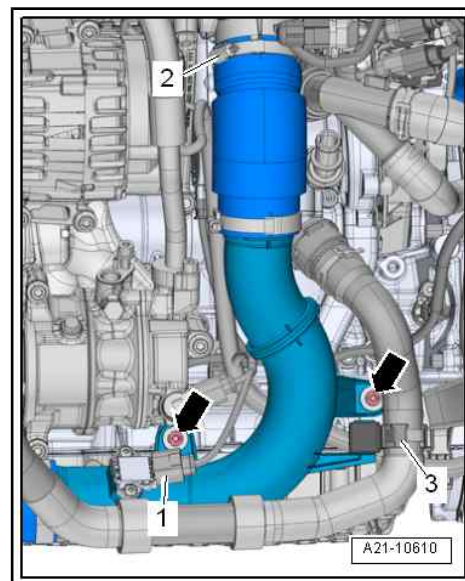


- Unplug electrical connector -1- for radiator fan (push retainer in direction of -arrow A- and press release catch down).
- Press locking tabs on left and right sides of radiator cowl simultaneously -arrow B- and detach radiator cowl downwards from radiator.



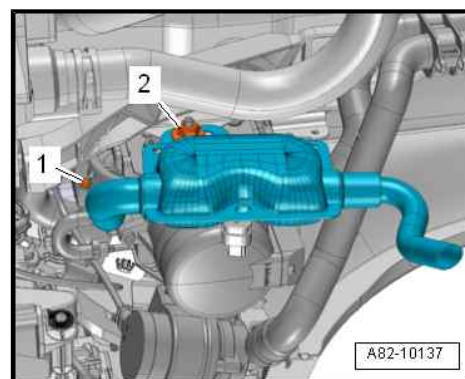


- Release hose clip -2-.
- Move coolant hose -3- clear.
- Remove bolts -arrows-.
- Unplug electrical connector -1- from charge pressure sender - G31- .
- Detach air pipe (right-side).



Vehicles with auxiliary heater:

- Open clip -1-, unscrew bolt -2- and detach silencer for auxiliary heater.

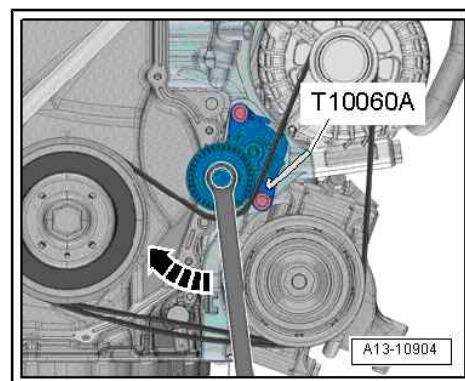


All vehicles (continued):



Note

- ◆ *Running a used poly V-belt in the opposite direction could cause irreparable damage.*
- ◆ *Before removing the poly V-belt, mark the direction of rotation with chalk or a felt-tip pen for re-installation.*
- To slacken poly V-belt, turn tensioner in clockwise direction -arrow-.
- Remove poly V-belt from pulley of air conditioner compressor and release tensioner.



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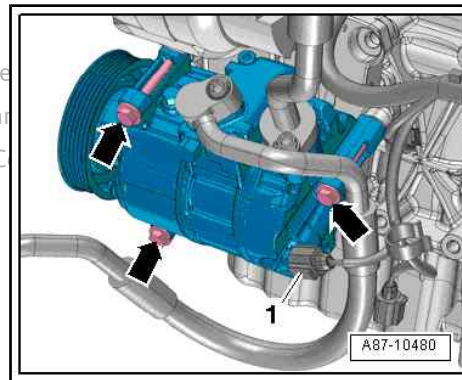
- Unplug electrical connector -1- on air conditioner compressor regulating valve - N280- .



WARNING

Risk of injury caused by refrigerant.

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



- Remove bolts -arrows-.



Caution

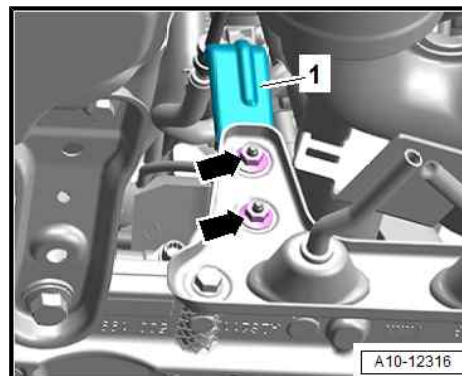
Risk of damage to air conditioner compressor and refrigerant pipes/hoses.

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

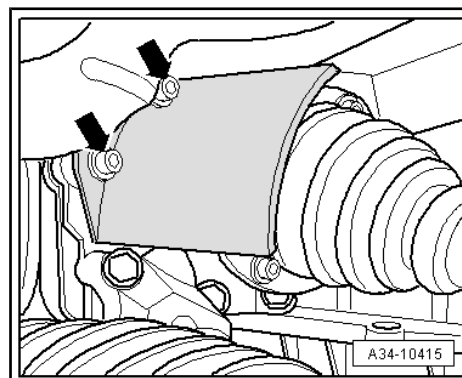
- Detach air conditioner compressor from bracket (refrigerant hoses remain connected) and tie up to right side.

Vehicles with four-wheel drive:

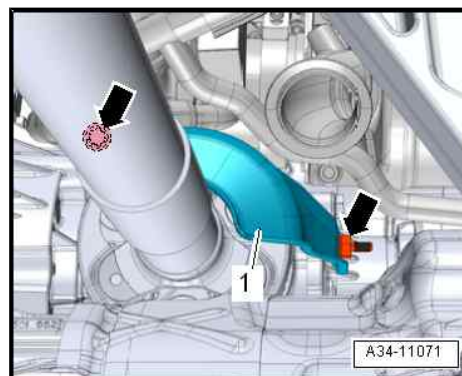
- Remove nuts -arrows-, move bracket -1- for pressure line clear and push to side.



- Remove bolts -arrows- and detach heat shield for drive shaft (right-side).



- Remove bolts -arrows- and detach heat shield -1-.





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



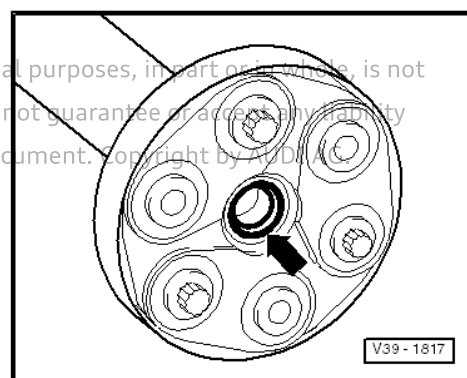
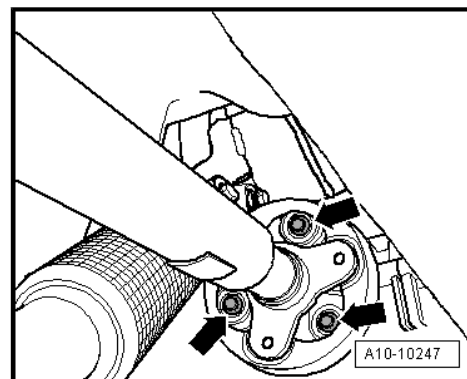
- Push engine/gearbox assembly forward slightly (towards front end) and pull propshaft off bevel box.



Caution

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

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



Note

The propshaft must be renewed if the oil seal is damaged.

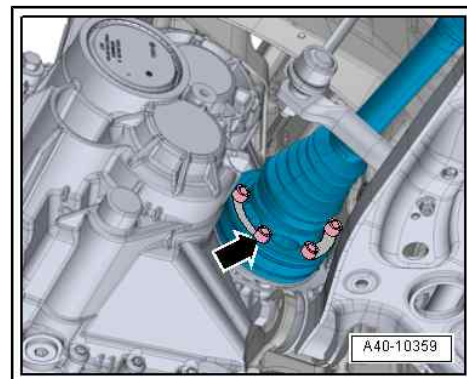
All vehicles (continued):

- Unbolt drive shaft -arrow- (left and right) from flange shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Tie up drive shafts to rear.

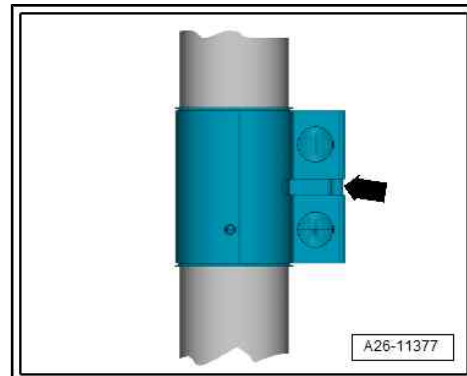


Note

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

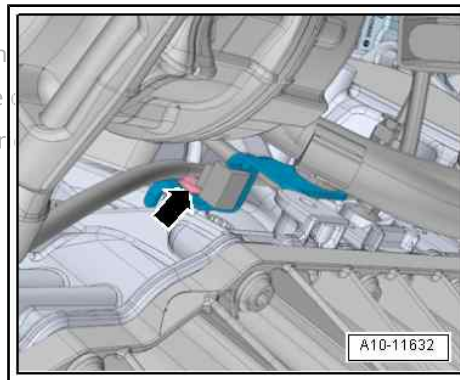


- Loosen clamp -arrow- and push towards rear.
- Detach catalytic converter with front exhaust pipe.

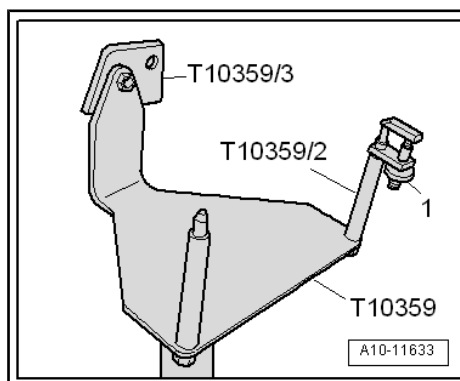




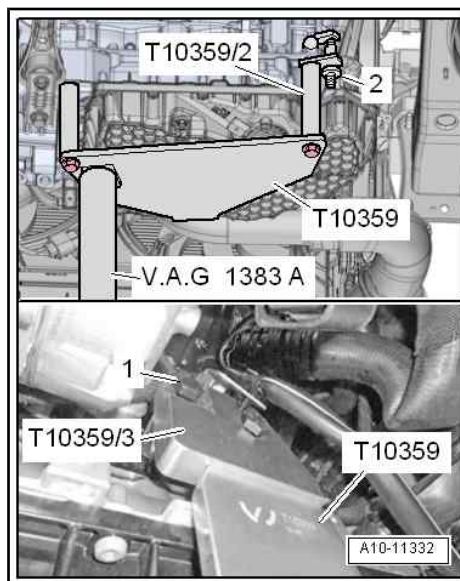
- Remove bolt -arrow- and push bracket for electrical wiring harness to one side.



- Secure adapter -T10359/3- to engine support - T10359A- , as shown in illustration.
- Secure pin -T10359/2- to engine bracket with locking element -1- from gearbox support - 3282- .
- If necessary, remove gearbox oil cooling pump - V478-
⇒ ["3.5.2 Removing and installing gearbox oil cooling pump V478", page 124](#) .



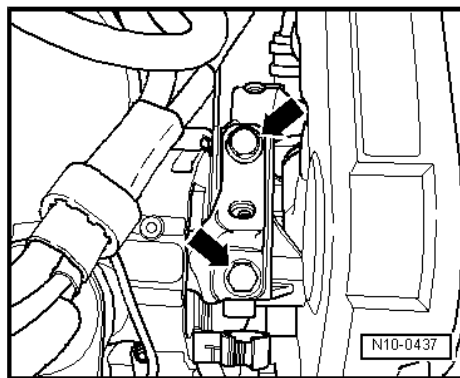
- Use bolt -1- to fix engine bracket - T10359A- with 20 Nm to cylinder block and secure with locking element -2- from gearbox support - 3282- .
- Insert engine and gearbox jack in engine bracket -T10359A- and raise engine/gearbox assembly slightly.



Note

Use stepladder when unscrewing bolts for assembly mounting.

- Remove bolts -arrows- for engine mounting.





Note

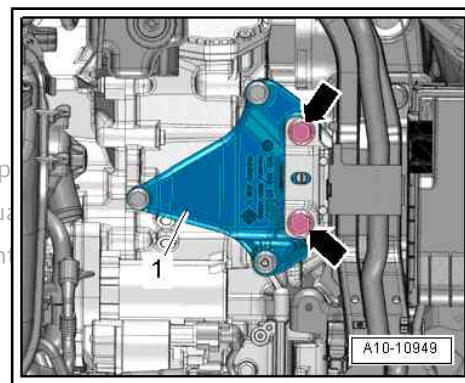
The illustration shows a vehicle with dual clutch gearbox 0CW.

- Remove bolts -arrows- securing gearbox mounting.



Note

2 or 3 bolts depending on gearbox.



Caution

Danger of damage to vacuum lines or electrical wiring and to engine compartment.

- ◆ Check that all vacuum lines and electrical wiring between engine, gearbox and body have been detached.
- ◆ Carefully guide engine/gearbox assembly out of engine compartment when lowering.

- Lower engine/gearbox assembly.

1.2 Separating engine and gearbox

⇒ [“1.2.1 Separating engine and gearbox - vehicles with manual gearbox 02S”, page 37](#)

⇒ [“1.2.3 Separating engine and gearbox - vehicles with dual clutch gearbox 0CW”, page 42](#)

⇒ [“1.2.4 Separating engine and gearbox - vehicles with dual clutch gearbox 0D9”, page 43](#)

1.2.1 Separating engine and gearbox - vehicles with manual gearbox 02S

Special tools and workshop equipment required

- ◆ Hooks - 10-222A/2-

10-222 A/2



W00-11170



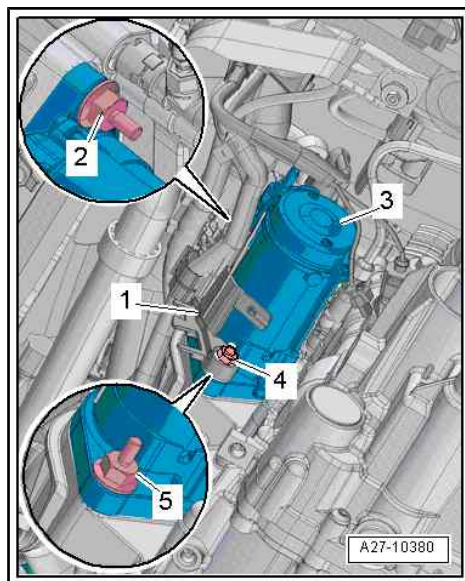
◆ Workshop hoist - VAS 6100-

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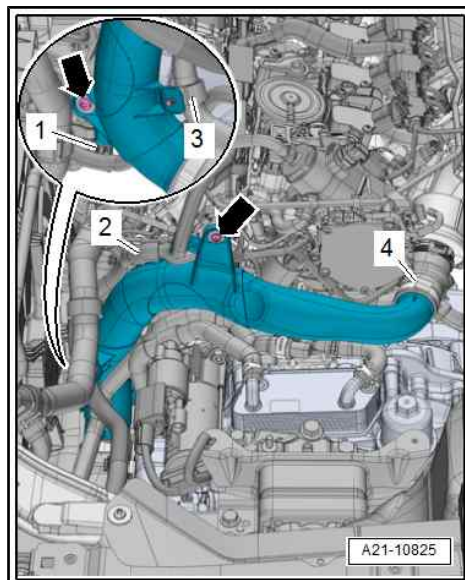


Procedure

- Engine/gearbox assembly removed and attached to engine bracket - T10359A- .
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

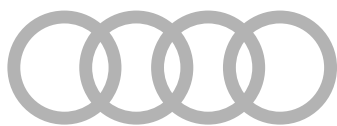


- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.





- Remove bolts -arrows- and detach gearbox support -A- from gearbox.



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



Note

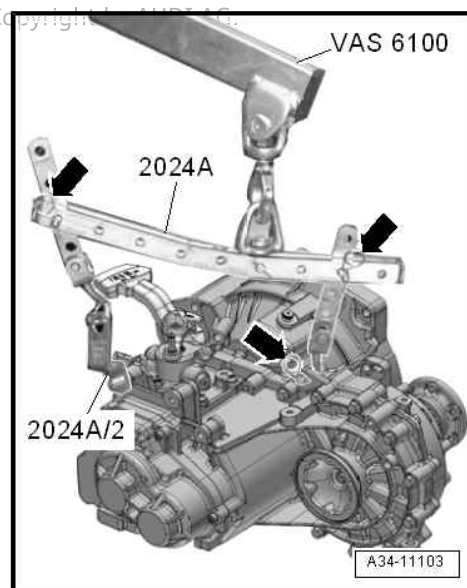
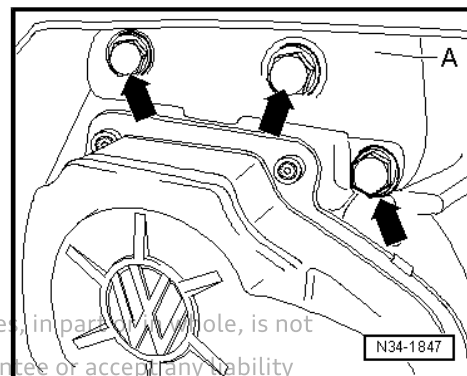
To adjust to the centre of gravity of the assembly, the perforated rails of the support hooks must be positioned as shown.



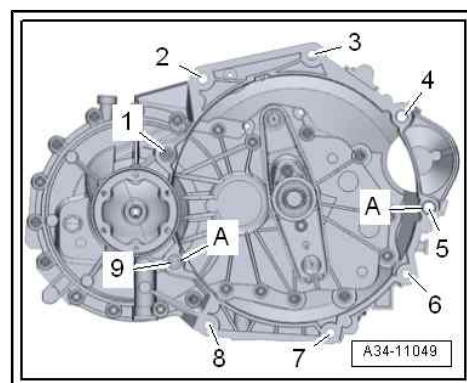
WARNING

Accident risk from loose components of lifting tackle.

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



- Remove bolts -1, 2, 3, 6, 7, 8, 9- securing gearbox to engine.
- Detach gearbox from engine.



1.2.2 Separating engine and gearbox - vehicles with manual gearbox 02Q

Special tools and workshop equipment required



◆ Hooks - 10-222A/2-



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10-222 A/2



W00-11170

◆ Workshop hoist - VAS 6100-

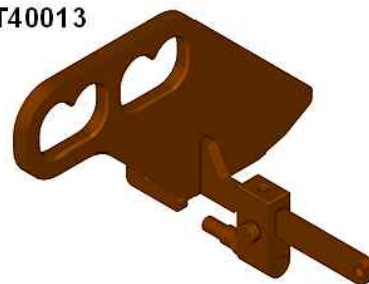
VAS 6100



W00-11307

◆ Lifting tackle - T40013-

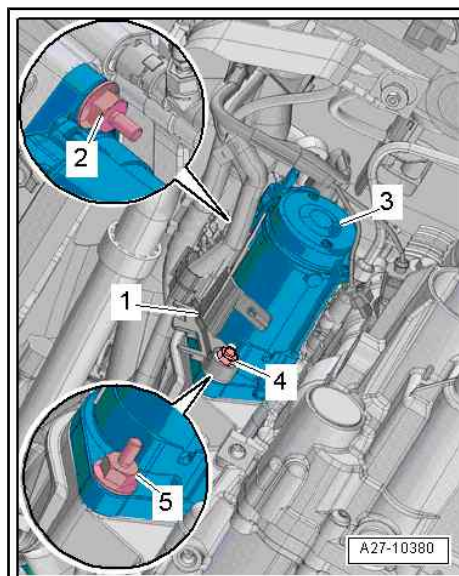
T40013



W00-11304

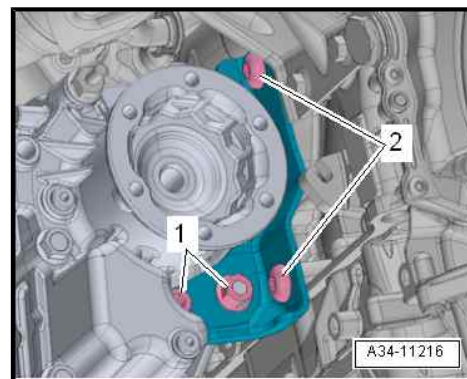
Procedure

- Engine/gearbox assembly removed and attached to engine bracket - T10359A- .
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

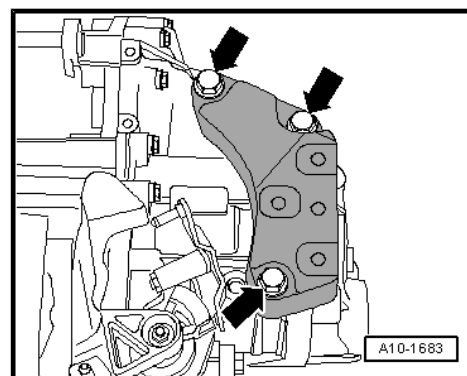




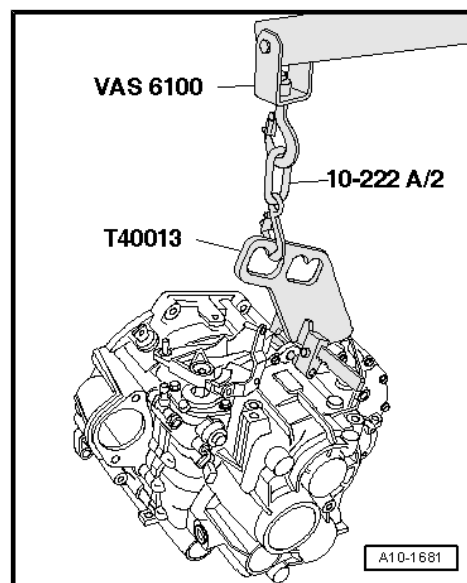
- Remove bolts -1, 2- and detach bracket for bevel box.



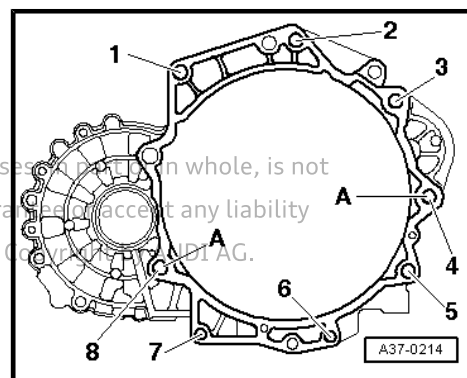
- Remove bolts -arrows- and detach gearbox support.



- Attach lifting tackle - T40013- to gearbox and close lock.
- Attach workshop hoist - VAS 6100- with hooks - 10-222A/2- to the lifting tackle.



- Remove bolts -1, 2, 5, 6, 7, 8- securing gearbox to engine.
- Detach gearbox from engine (pay attention to intermediate plate).



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1.2.3 Separating engine and gearbox - vehicles with dual clutch gearbox 0CW

Special tools and workshop equipment required

- ◆ Shackle - 10-222A/12-

10-222 A/12



W00-11341

- ◆ Workshop hoist - VAS 6100-

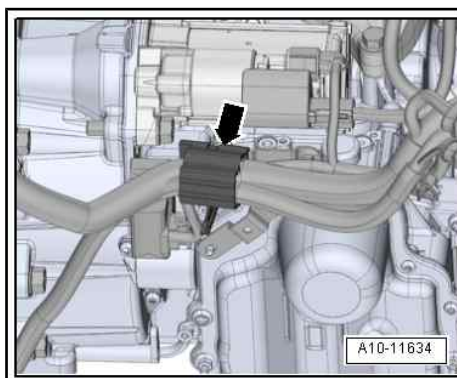
VAS 6100



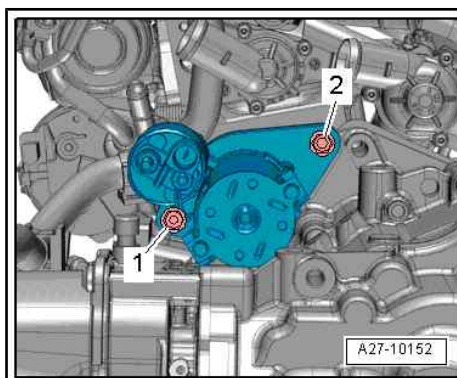
W00-11307

Procedure

- Engine/gearbox assembly removed and attached to engine bracket - T10359A- .
- Move electrical wiring clear at bracket -arrow-.



- Unscrew bolts -1 and 2- and detach starter from gearbox.

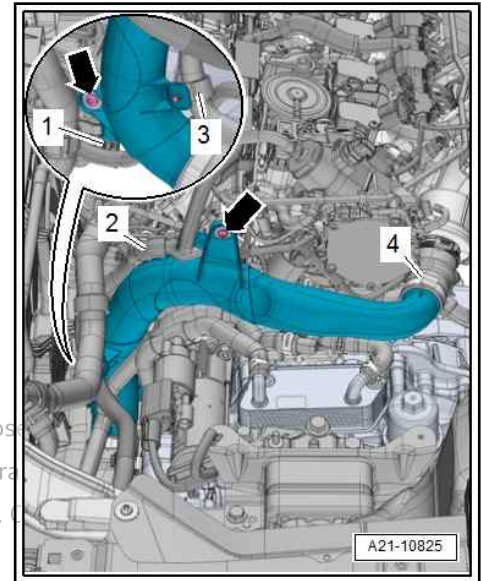




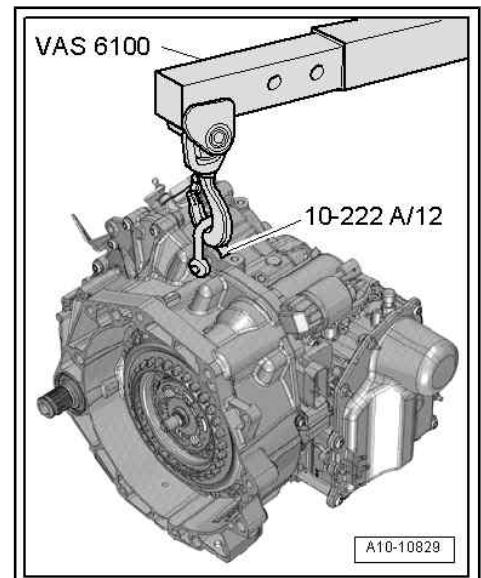
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.



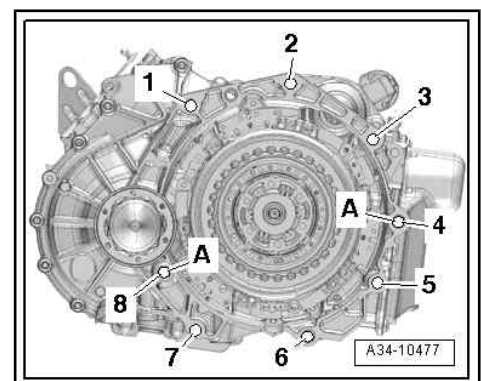
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- Secure gearbox to workshop hoist - 10-222A/12- using shackle - VAS 6100- .



- Remove bolts -1 ... 8- securing gearbox to engine.
- Detach gearbox from engine.

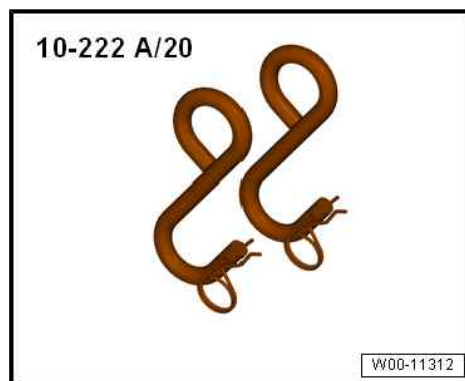


1.2.4 Separating engine and gearbox - vehicles with dual clutch gearbox 0D9

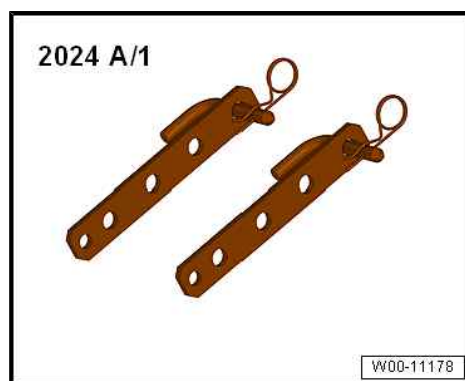
Special tools and workshop equipment required



◆ Adapter - 10-222A/20-



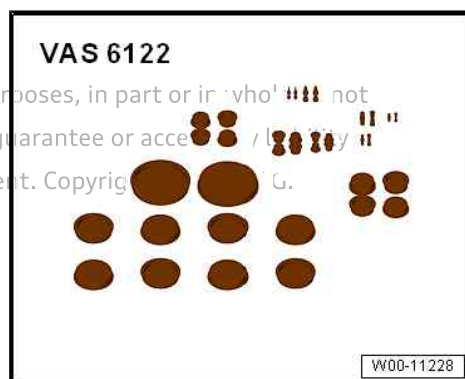
◆ Hook -2024A/1- of lifting tackle - 2024A-



◆ Workshop hoist - VAS 6100-



◆ Engine bung set - VAS 6122-

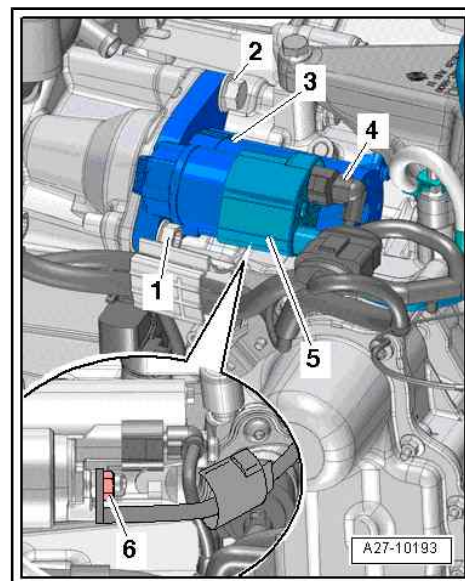


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Procedure

- Engine/gearbox assembly removed and attached to engine bracket - T10359A- .
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

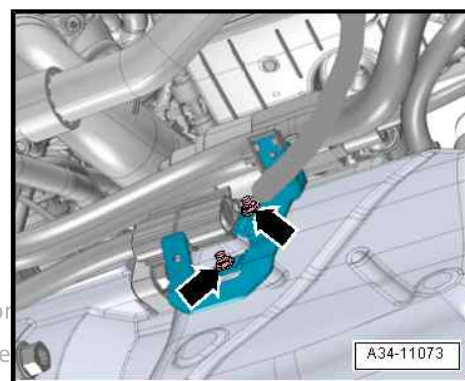


- Remove nuts -arrows- and detach bracket at front of oil pan.



Note

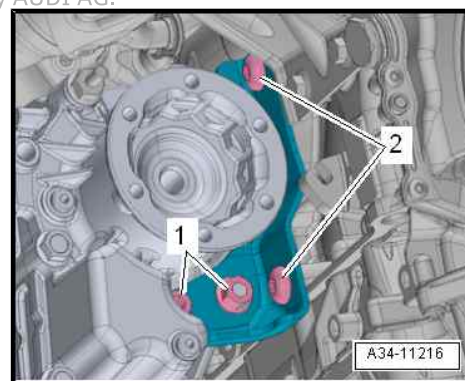
The studs are welded on to the front of the oil pan.



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Vehicles with four-wheel drive:

- Remove bolts -1, 2- and detach bracket for bevel box.





All vehicles (continued):

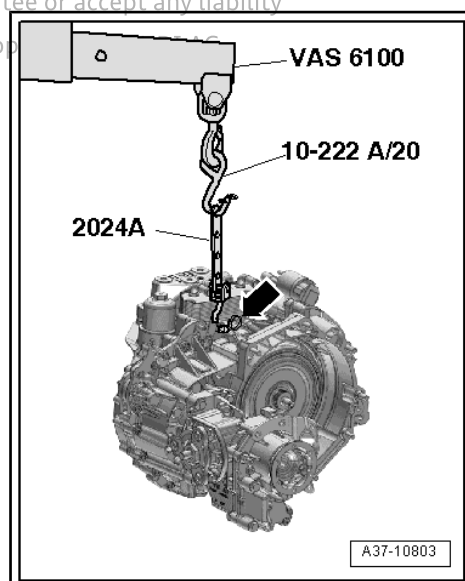
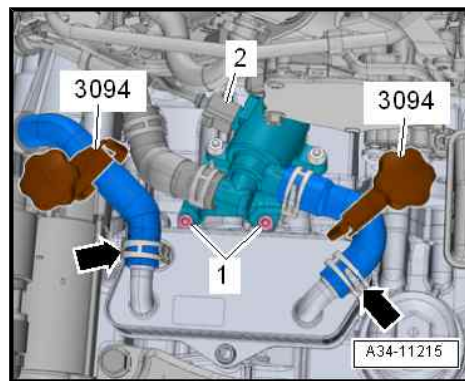
- Unplug electrical connector -2-.



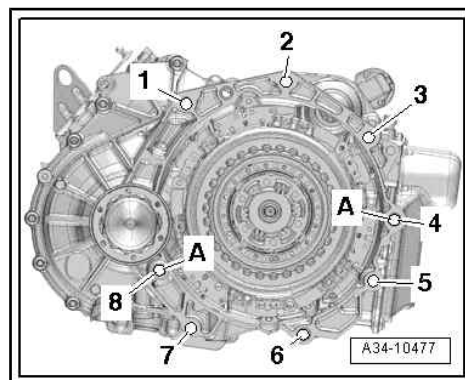
Note

Place a cloth underneath to catch escaping coolant.

- Release hose clips -arrows- and detach coolant hoses from gear oil cooler.
- Remove bolts -1- and move coolant valve for gearbox - N488- clear to one side.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122-
- Engage hook of lifting tackle - 2024A- in gearbox lifting eye and secure with locking pin -arrow-.
- Attach workshop hoist - VAS 6100- to hook -2024A/1- using adapter - 10-222A/20- .



- Remove bolts -1 ... 8- securing gearbox to engine.
- Detach gearbox from engine.



1.3 Securing engine to engine and gearbox support

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

1.4 Installing engine

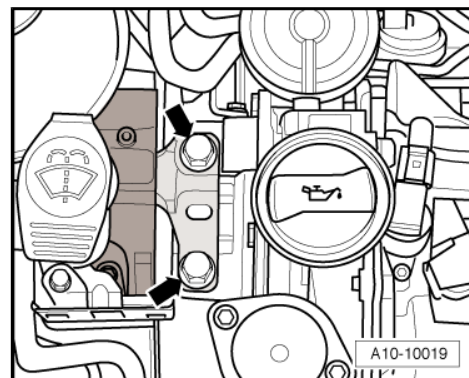
Procedure

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



Note

- ◆ *Vehicles with dual clutch gearbox: The needle bearing in the crankshaft must always be renewed if the engine has been separated from the gearbox ⇒ Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888 Gen. III); Rep. gr. 13 ; Crankshaft; Renewing needle bearing in crankshaft .*
- ◆ *Renew bolts tightened with specified tightening angle.*
- ◆ *Renew self-locking nuts and bolts as well as seals, gaskets and O-rings.*
- ◆ *Hose connections and air pipes/hoses must be free of oil and grease prior to fitting.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Fit all cable ties in the original positions when installing.*
- Fit gearbox to engine ⇒ Gearbox; Rep. gr. 34 ; Removing and installing gearbox; Installing gearbox .
- Take up engine/gearbox assembly with engine bracket - T10359A- .
- Guide engine/gearbox assembly into body.
- Initially screw in bolts -arrows- for engine mounting by hand until they make contact.





Note

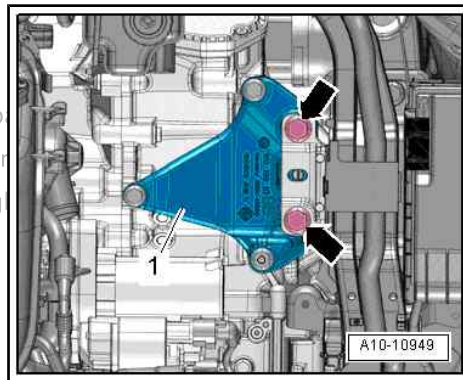
The illustration shows a vehicle with dual clutch gearbox 0CW.

- Initially screw in bolts -arrows- for gearbox mounting -1- by hand until they make contact.



Note

The bolts are tightened to final torque only after adjusting the assembly mountings ⇒ [page 51](#) .



- Remove engine bracket - T10359A- from engine.
- Install drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft .

Vehicles with manual gearbox:

- Install cables with cable support bracket ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Exploded view - selector cables .

Vehicles with manual gearbox 02S:

- Install clutch slave cylinder ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing clutch slave cylinder .

Vehicles with manual gearbox 02Q:

- Attach pipe/hose assembly to bleeder connection ⇒ Gearbox; Rep. gr. 30 ; Clutch mechanism; Removing and installing lines for clutch hydraulics .

Vehicles with dual clutch gearbox:

- Install and adjust selector lever cable ⇒ Gearbox; Rep. gr. 34 ; Selector mechanism; Exploded view - selector mechanism .

Vehicles with four-wheel drive:

- Secure propshaft to bevel box ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Exploded view - propshaft .
- Install heat shield for drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .

All vehicles (continued):

- Install air conditioner compressor ⇒ Heating, air conditioning; Rep. gr. 87 ; Air conditioner compressor; Exploded view - air conditioner compressor drive unit .
- Install poly V-belt ⇒ Servicing 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 subframe ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe without steering rack .
- Adjust assembly mountings ⇒ [page 59](#) .
- Electrical connections and routing ⇒ Electrical system; Rep. gr. 97 ; Relay carriers, fuse carriers, electronics boxes; Overview of fitting locations - relay carriers, fuse carriers, electronics boxes and ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.



- Install battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install coolant pipe ⇒ [page 140](#) .
- Connect fuel line ⇒ Fuel supply system; Rep. gr. 20 ; Plug-in connectors; Disconnecting plug-in connectors .
- Install catalytic converter
⇒ [“2.2 Removing and installing catalytic converter”](#), [page 222](#) .
- Vehicles with particulate filter: Install pressure lines for exhaust gas pressure sensor 1 - G450- ⇒ Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888, Gen. III); Rep. gr. 24 ; Lambda probe; Exploded view - Lambda probe .
- Install air pipes
⇒ [“2.1 Exploded view - charge air system”](#), [page 175](#) .
- Install air cleaner housing and air ducts ⇒ [page 191](#) .
- Install air hoses ⇒ 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 .
- Install washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .
- 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 oil level ⇒ Maintenance ; Booklet 821 .



Caution

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

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

- Connect coolant hoses with plug-in connectors to heat exchanger for heater ⇒ [page 147](#) .
- Fill up with coolant ⇒ [page 107](#) .



Note

Do not reuse coolant.

- After renewing engine, chain elongation must be adapted. To do so, select [01 - Chain elongation adaption diagnosis] in [Guided Functions] mode of ⇒ Vehicle diagnostic tester.
- After renewing engine, misfire adaptations must be reset. To do so, select [01 - Reset adaptations misfires] in [Guided Functions] mode of ⇒ Vehicle diagnostic tester.



Tightening torques



Note

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

Component		Nm
Bolts/nuts	M6	10
	M7	15
	M8	20
	M10	40
	M12	65

- ◆ [⇒ "2.1 Exploded view - assembly mountings", page 51](#)
- ◆ 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 51](#)

⇒ [“2.2 Supporting engine in installation position”, page 54](#)

⇒ [“2.3 Removing and installing engine mountings”, page 55](#)

⇒ [“2.4 Removing and installing gearbox mounting”, page 56](#)

⇒ [“2.5 Removing and installing pendulum support”, page 58](#)

⇒ [“2.7 Checking adjustment of assembly mountings \(engine/gearbox mountings\)”, page 61](#)

⇒ [“2.6 Adjusting assembly mountings”, page 59](#)

2.1 Exploded view - assembly mountings

⇒ [“2.1.1 Exploded view - assembly mountings, vehicles with manual gearbox 02S”, page 51](#)

⇒ [“2.1.2 Exploded view - assembly mountings, vehicles with manual gearbox 02Q or dual clutch gearbox 0CW/0D9”, page 53](#)

2.1.1 Exploded view - assembly mountings, vehicles with manual gearbox 02S

1 - Engine support

- ☐ Removing and installing
⇒ [page 64](#)

2 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 52](#)

3 - Engine mounting

- ☐ With support arm
- ☐ Removing and installing
⇒ [page 55](#)

4 - Bolt

- ☐ Renew
- ☐ 40 Nm +90°

5 - Bolt

- ☐ Renew
- ☐ 20 Nm +90°

6 - Bracket

- ☐ For non-return valve for coolant

7 - Bolt

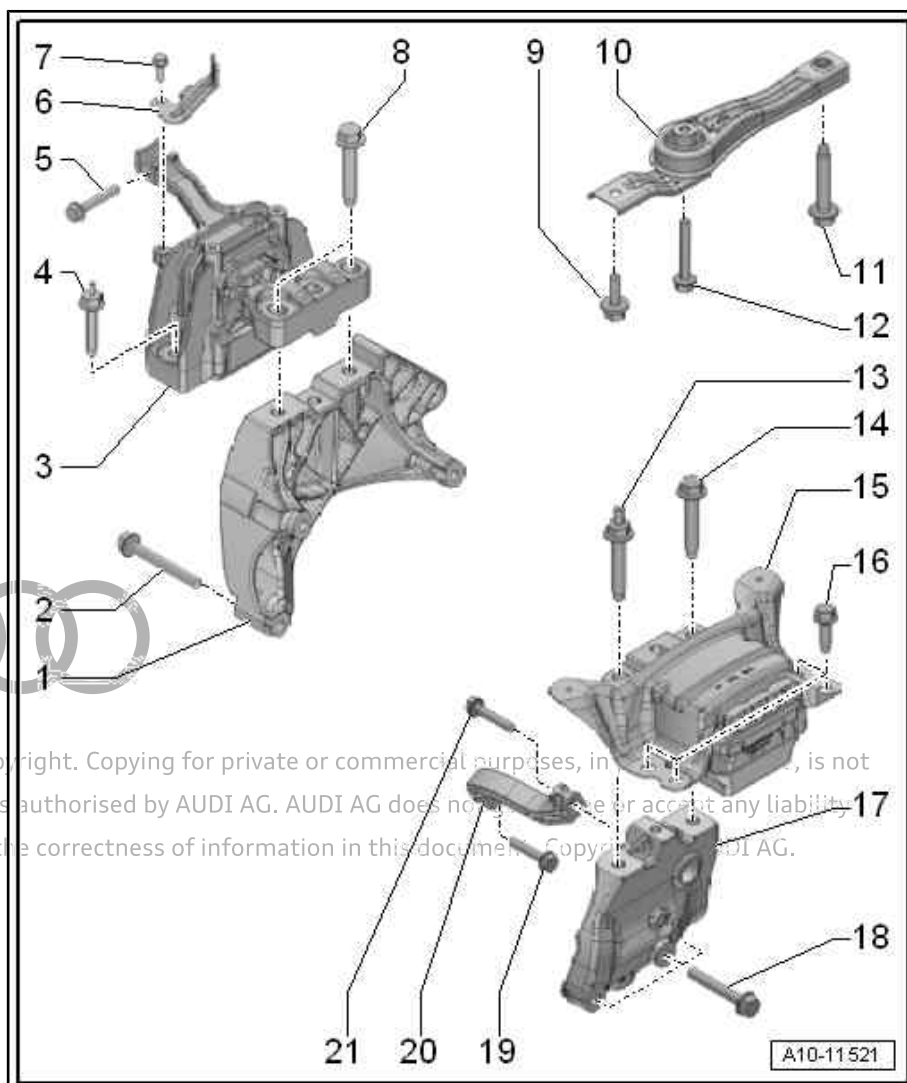
- ☐ 8 Nm

8 - Bolt

- ☐ Renew
- ☐ 60 Nm +90°

9 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 53](#)





10 - Pendulum support

- ❑ Removing and installing ⇒ [page 58](#)

11 - Bolt

- ❑ Renew
- ❑ Tightening torque and sequence ⇒ [page 53](#)

12 - Bolt

- ❑ Renew
- ❑ Tightening torque and sequence ⇒ [page 53](#)

13 - Bolt

- ❑ Renew
- ❑ 60 Nm +90°

14 - Bolt

- ❑ Renew
- ❑ 60 Nm +90°

15 - Gearbox mounting

- ❑ With support arm
- ❑ Removing and installing ⇒ [page 56](#)

16 - Bolt

- ❑ Renew
- ❑ 50 Nm +90°

17 - Gearbox support

18 - Bolt

- ❑ Tightening torque ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

19 - Bolt

- ❑ Tightening torque ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

20 - Support

21 - Bolt

- ❑ Tightening torque ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

Engine support - tightening torque and sequence

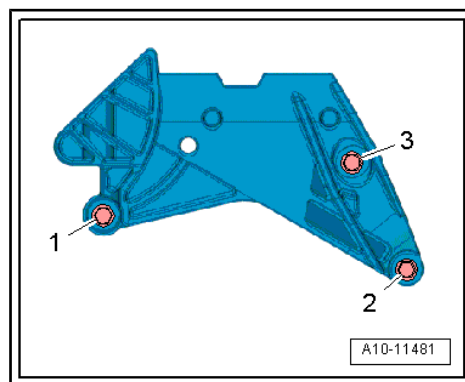


Note

Renew bolts tightened with specified tightening angle.

– Tighten bolts in stages in the sequence shown:

Stage	Bolts	Tightening torque/angle specification
1.	-1 ... 3-	7 Nm
2.	-1 ... 3-	40 Nm
3.	-1 ... 3-	Turn 90° further



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Installing pendulum support

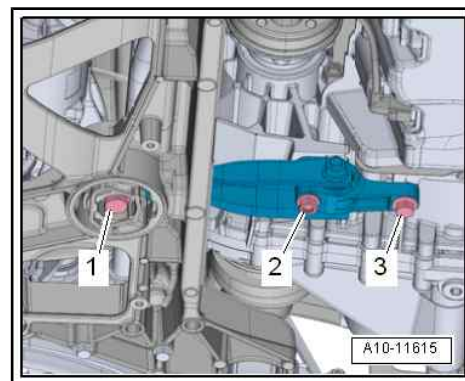


Note

Renew bolts tightened with specified tightening angle.

– Tighten bolts in stages in the sequence shown:

Stage	Bolts	Tightening torque/angle specification
1.	-2, 3-	50 Nm
2.	-1-	130 Nm
3.	-1 ... 3-	Turn 90° further



2.1.2 Exploded view - assembly mountings, vehicles with manual gearbox 02Q or dual clutch gearbox 0CW/0D9

1 - Engine support

- ☐ Removing and installing

⇒ [page 64](#)

2 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 52](#)

3 - Engine mounting

- ☐ With support arm
- ☐ Removing and installing ⇒ [page 55](#)

4 - Bolt

- ☐ Renew
- ☐ 40 Nm +90°

5 - Bolt

- ☐ Renew
- ☐ 20 Nm +90°

6 - Bolt

- ☐ 8 Nm

7 - Bracket

8 - Bolt

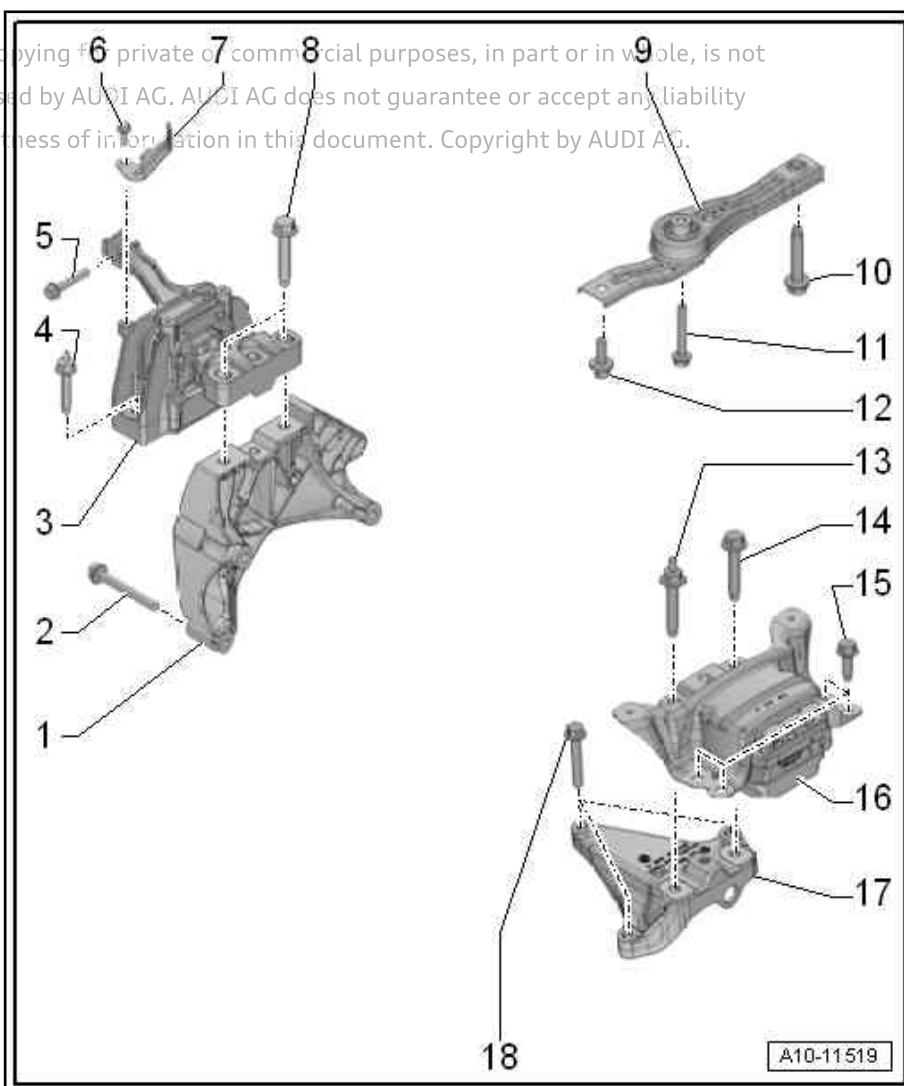
- ☐ Renew
- ☐ 60 Nm +90°

9 - Pendulum support

- ☐ Different versions available; for allocation refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ [page 58](#)

10 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 53](#)





11 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 53](#)

12 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 53](#)

13 - Bolt

- ☐ Renew
- ☐ 60 Nm +90°

14 - Bolt

- ☐ Renew
- ☐ 60 Nm +90°

15 - Bolt

- ☐ Renew
- ☐ 50 Nm +90°

16 - Gearbox mounting

- ☐ With support arm
- ☐ Removing and installing ⇒ [page 56](#)

17 - Gearbox support

- ☐ Different versions available; for allocation refer to ⇒ [Electronic parts catalogue](#)

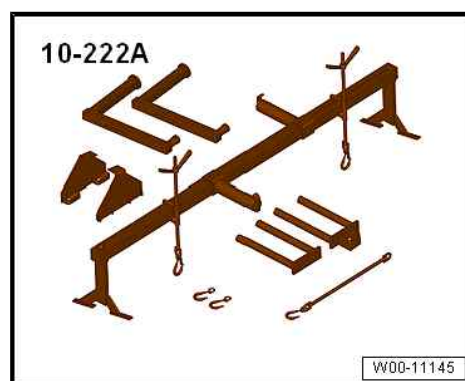
18 - Bolt

- ☐ Tightening torque ⇒ Gearbox; Rep. gr. 34 ; Assembly mountings; Exploded view - assembly mountings

2.2 Supporting engine in installation position

Special tools and workshop equipment required

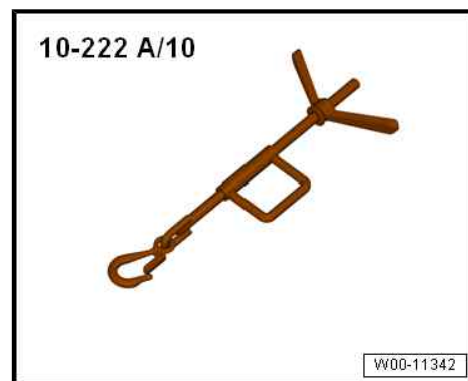
- ◆ Support bracket - 10-222A-



- ◆ Rack - 10-222A/1A-



◆ Hook - 10-222A/10-



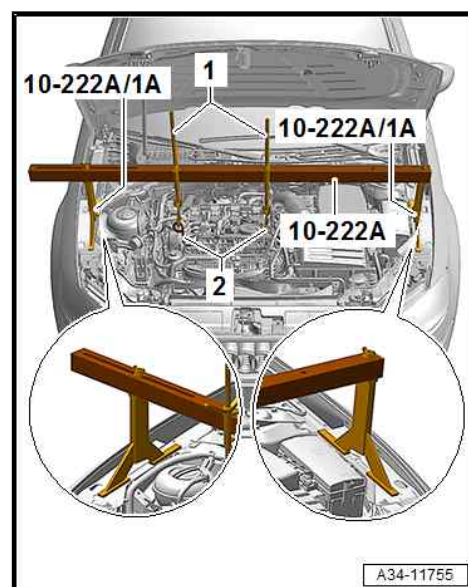
Procedure

- 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 wing mounting flanges (left and right) with hooks - 10-222A/10- -item 1- and support - 10-222A/1A- , as shown.
- Attach snap elements -item 2- of hooks - 10-222A/10- -item 1- to engine lifting eyes.
- Tighten spindle slightly to take up weight of engine/gearbox assembly; do not lift.

Assembling

Assembly is performed in reverse sequence; note the following:

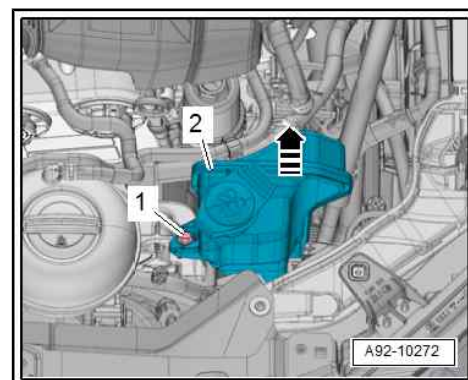
- Detach support bracket - 10-222A- from engine.
- Install engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



2.3 Removing and installing engine mountings

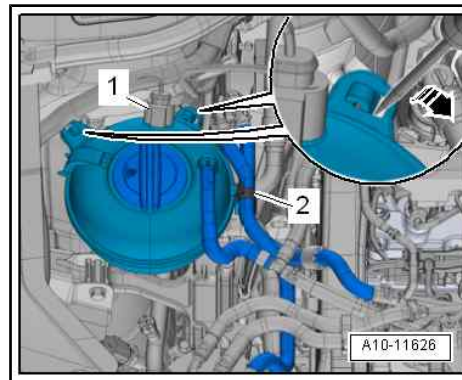
Removing

- ⇒ [“2.2 Supporting engine in installation position”, page 54](#)
- 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 auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .





- Unplug electrical connector -1-.
- Move clear hose -2- from activated charcoal filter.
- Using a screwdriver, release fasteners -arrow- and move coolant expansion tank to one side.

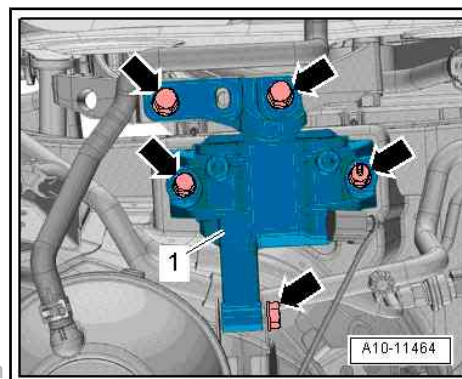


- Remove bolts -arrows- and detach engine mounting -1-.

Installing

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

- Check adjustment of assembly mountings (engine/gearbox mountings) ⇒ [page 61](#).
- Detach support bracket - 10-222A- from engine.
- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



- 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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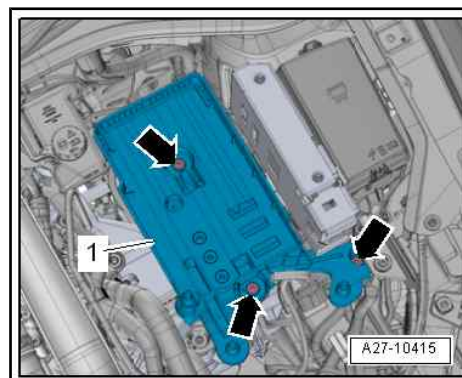
Tightening torques

- ♦ ⇒ [“2.1 Exploded view - assembly mountings”, page 51](#)

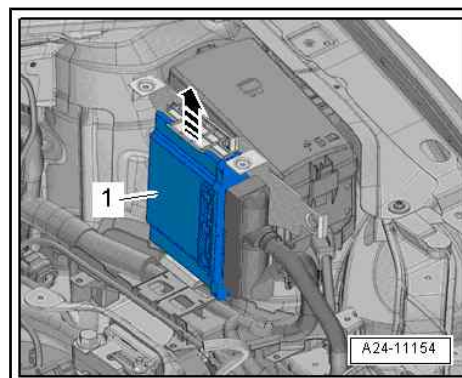
2.4 Removing and installing gearbox mounting

Removing

- Remove battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



- Take engine control unit - J623- out of bracket ⇒ [page 206](#) .



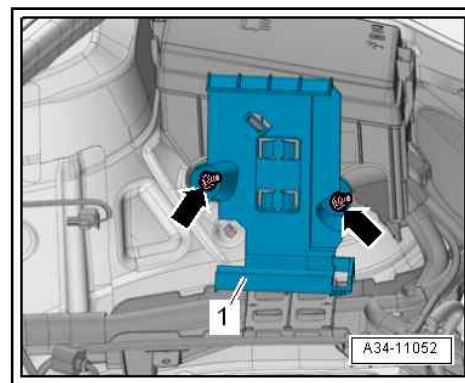


- Remove nuts -arrows- and detach bracket -1-.

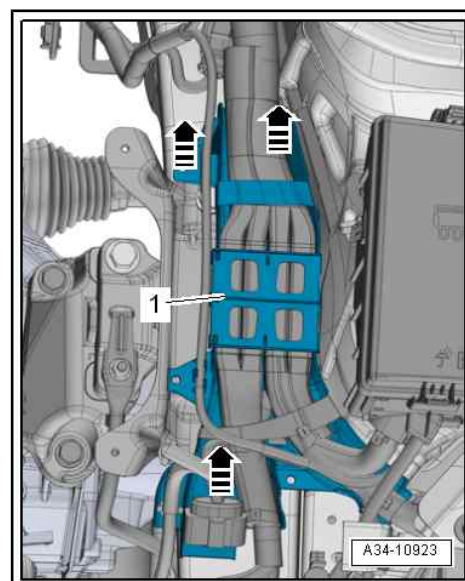


Note

Different types of brackets are fitted depending on version.



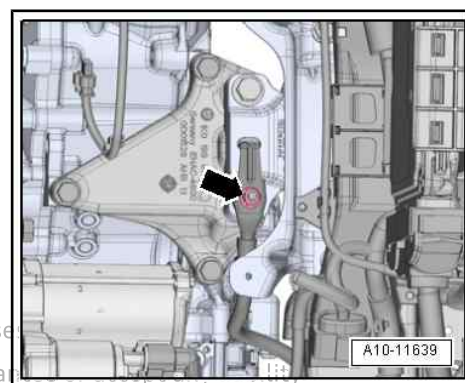
- Unclip wire guide -1- upwards -arrows- and push slightly to one side.



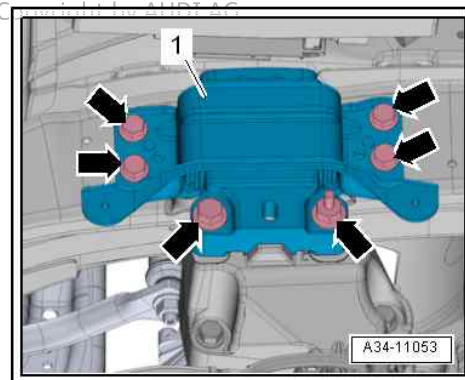
Note

The illustration shows a vehicle with dual clutch gearbox 0CW.

- If fitted, remove nut -arrow- and move earth wire clear.
- Support engine in installation position ➔ [page 54](#) .



- Remove bolts -arrows- and detach gearbox mounting.
- ◆ Gearbox mounting -1- for manual gearbox 02S/dual clutch gearbox 0CW





- ◆ Gearbox mounting -1- for manual gearbox 02Q/dual clutch gearbox 0D9

Installing

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



Note

Renew bolts tightened with specified tightening angle.

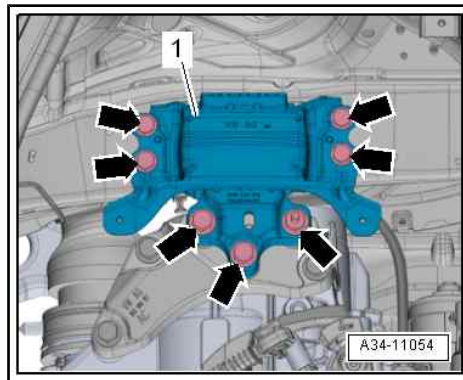
- Secure gearbox mounting on longitudinal member.



Caution

Bolts must be fitted straight to avoid damage to threads in gearbox support.

- ◆ ***Gearbox support and support arm of gearbox mounting must be perfectly parallel to each other before screwing in bolts. If necessary, lift gearbox at rear using trolley jack.***
- ◆ ***Only remove support bracket - 10-222A- when bolts on assembly mounting have been tightened to specified torque.***



- Lift gearbox with spindle of support bracket until gearbox support makes contact with support arm of gearbox mounting.
- Check adjustment of assembly mountings (engine/gearbox mountings) ⇒ [page 61](#) .
- Detach support bracket - 10-222A- from engine ⇒ [page 54](#) .
- Install engine control unit - J623- ⇒ [page 206](#) .
- Install battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - assembly mountings” page 51](#)

2.5 Removing and installing pendulum support

Removing

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



Note

The illustration shows a vehicle with dual clutch gearbox 0D9.

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

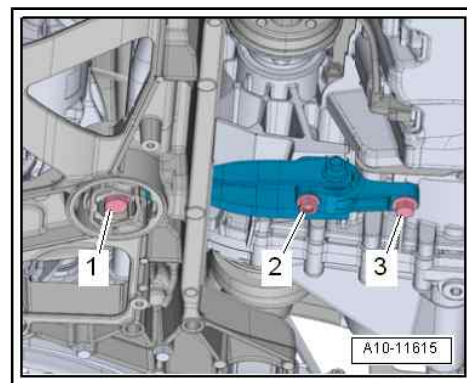
Installing

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



Note

After removing, renew bolts tightened with specified tightening angle.



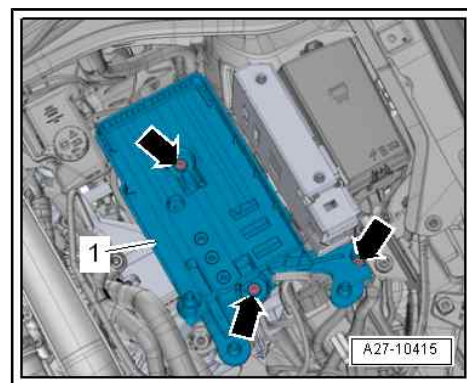
Tightening torques

- ◆ ⇒ Fig. ““Installing pendulum support””, page 53
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

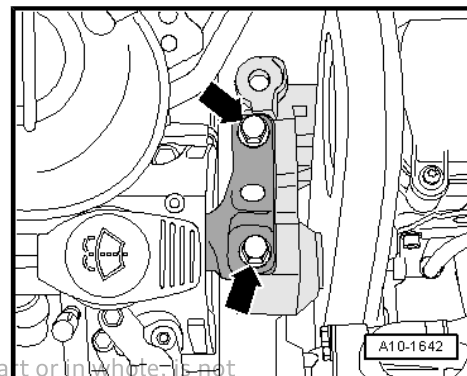
2.6 Adjusting assembly mountings

Procedure

- Remove battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Support engine in installation position ⇒ [page 54](#) .



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



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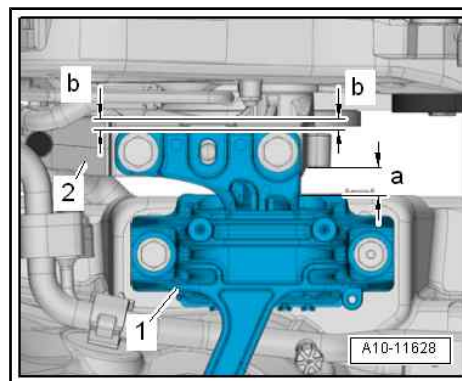


- Using assembly lever, adjust engine/gearbox assembly until specifications listed below are attained:
- There must be a distance of -a- = 10 mm between engine support -2- and engine mounting -1-.
- Side surface of the engine support casting should be located parallel to support arm of engine mounting.
- Distance -b- = distance -b-.



Note

Distance -a- = 10 mm can also be checked with a metal rod of suitable size, or similar.



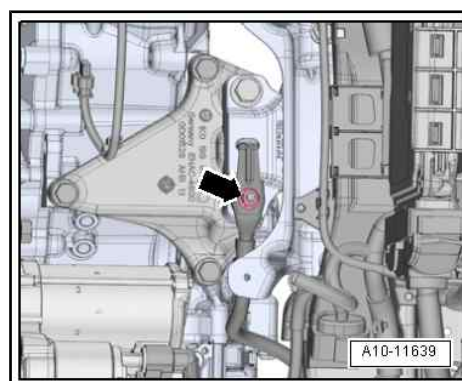
- Tighten bolts for engine mounting.



Note

The illustration shows a vehicle with dual clutch gearbox 0CW.

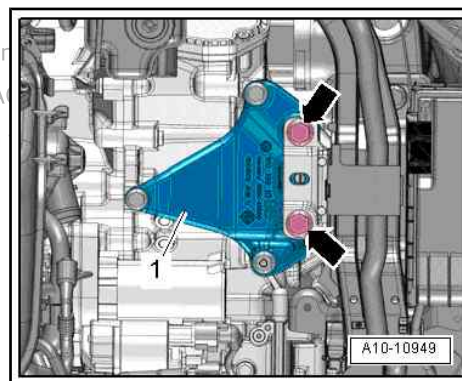
- Remove nut -arrow- and move earth wire clear.



Note

The illustration shows a gearbox mounting with two bolts.

- Remove bolts -arrows- for gearbox mounting -1- one by one and renew (if they were not renewed when installing engine).
- Initially fit bolts hand-tight.



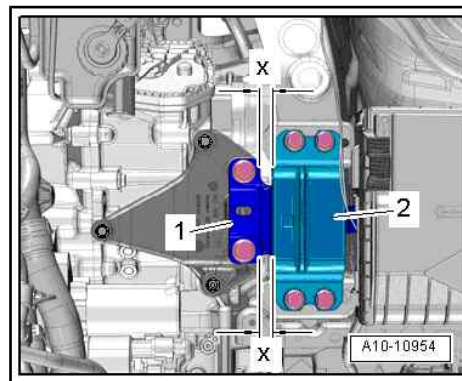
Note

The illustration shows a vehicle with a dual clutch gearbox.

- Ensure that edges of support arm (on gearbox side) -1- and gearbox mounting -2- are parallel.
- Dimension -x- = dimension -x-.
- Tighten bolts for gearbox mounting.

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

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



Tightening torques

- ♦ ⇒ [“2.1 Exploded view - assembly mountings”, page 51](#)



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

Procedure

The following specifications must be obtained:

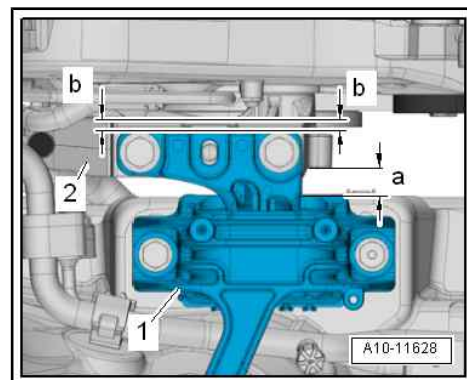
- There must be a distance of -a- = 10 mm between engine support -2- and engine mounting -1-.
- Side surface of the engine support casting should be located parallel to support arm of engine mounting.
- Distance -b- = distance -b-.



Note

Distance -a- = 10 mm can also be checked with a metal rod of suitable size, or similar.

- If the distance measured is too large or small, the assembly mountings must be adjusted ➔ [page 59](#) .



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3 Engine cover panel

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



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13 – Crankshaft group

1 Cylinder block (pulley end)

⇒ [“1.1 Exploded view - cylinder block \(pulley end\)”, page 63](#)

⇒ [“1.2 Removing and installing poly V-belt”, page 63](#)

⇒ [“1.3 Removing and installing poly V-belt tensioner”, page 63](#)

⇒ [“1.4 Removing and installing vibration damper”, page 63](#)

⇒ [“1.5 Removing and installing bracket for ancillaries”, page 64](#)

⇒ [“1.6 Removing and installing engine support”, page 64](#)

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 poly V-belt tensioner

Removing

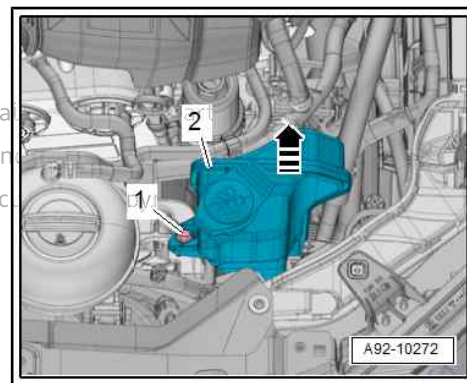
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

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

Installing

Additional work:

- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



1.4 Removing and installing vibration damper

Removing

- Vehicles with auxiliary radiator (left-side): Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .
- Remove wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .

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 washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .

Tightening torques

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

1.5 Removing and installing bracket for ancillaries

Removing

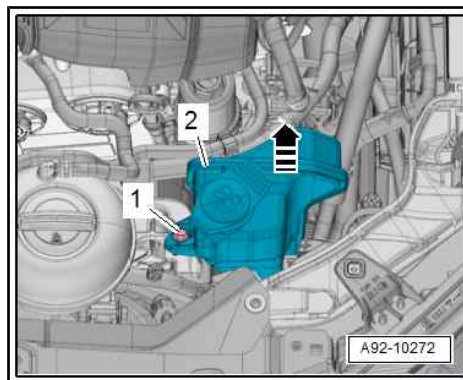
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

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 bracket for ancillaries .

Installing

Additional work:

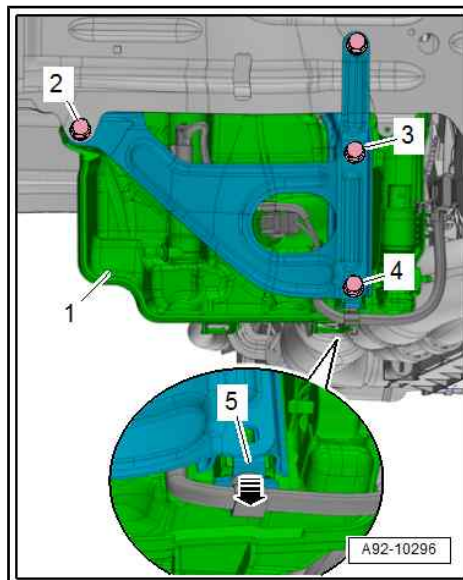
- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



1.6 Removing and installing engine support

Removing

- Remove engine mounting ⇒ [page 55](#) .
- Vehicles with auxiliary radiator (left-side): Remove filler neck and washer fluid reservoir -1- ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

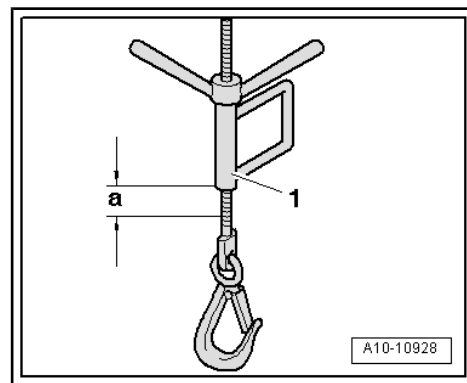


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- Using spindle - 10-222A/11- -item 1-, raise engine through distance -a-.
- Distance -a- = approx. 30 mm.



- Unscrew bolts -1, 2 and 3- and detach engine support.

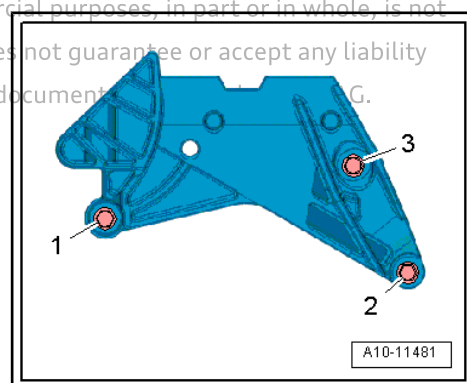
Installing

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

- Install washer fluid reservoir and filler neck ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .
- Install engine mountings ⇒ [page 55](#) .

Tightening torques

- ◆ ⇒ Fig. [““Engine support - tightening torque and sequence””](#), [page 52](#)





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 70](#)

⇒ [“1.2 Removing and installing timing chain cover”, page 70](#)

⇒ [“1.3 Renewing oil seal for vibration damper”, page 72](#)

1.1 Exploded view - timing chain cover

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

1.2 Removing and installing timing chain cover

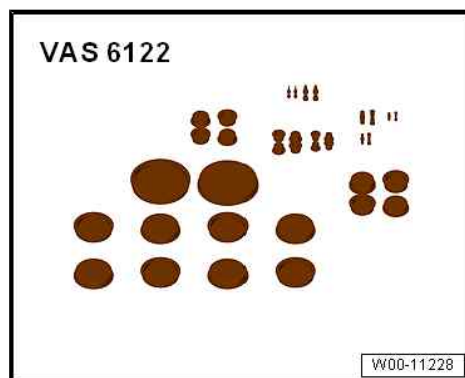
⇒ [“1.2.1 Removing and installing timing chain cover \(top\)”, page 70](#)

⇒ [“1.2.2 Renewing timing chain cover \(bottom\)”, page 71](#)

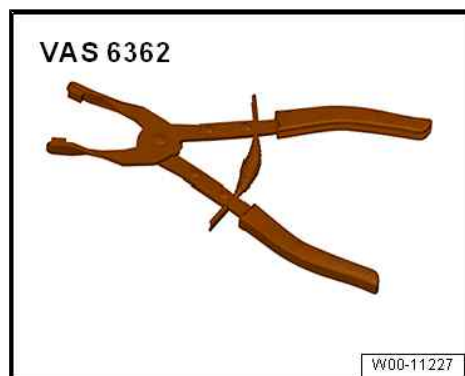
1.2.1 Removing and installing timing chain cover (top)

Special tools and workshop equipment required

◆ Engine bung set - VAS 6122-



◆ Hose clip pliers - VAS 6362-





Removing

- Engine cold.
- Open filler cap -arrow- on coolant expansion tank briefly to relieve residual pressure in cooling system.
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .
- Release hose clip -1-, disconnect coolant hose and push towards right.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Disconnect hose -2- for activated charcoal filter (press release tab on hose) and move hose clear.

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:



Note

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

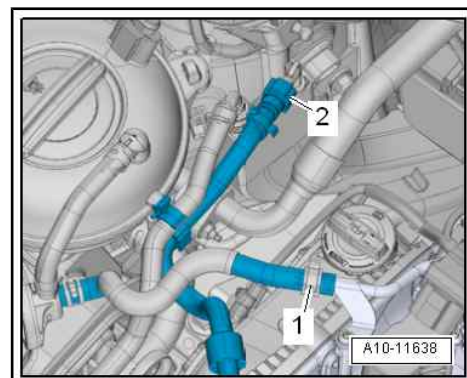
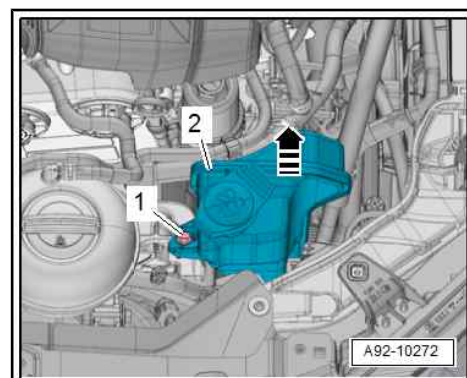
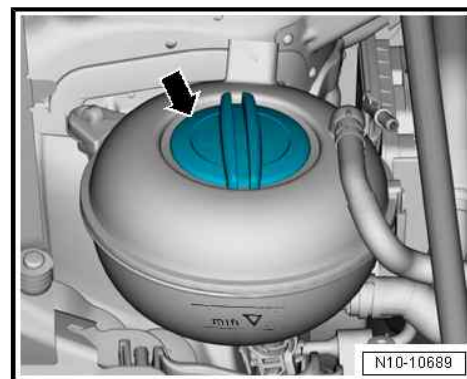
- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .

1.2.2 Renewing timing chain cover (bottom)

Removing

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

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 .





Tightening torques

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

1.3 Renewing oil seal for vibration damper

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

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2 Chain drive

⇒ [“2.1 Exploded view - camshaft timing chains”, page 73](#)

⇒ [“2.2 Exploded view - drive chain for balance shaft”, page 73](#)

⇒ [“2.3 Removing and installing bearing saddle”, page 73](#)

⇒ [“2.4 Removing and installing camshaft timing chain”, page 73](#)

⇒ [“2.5 Removing and installing drive chain for balance shaft”, page 74](#)

⇒ [“2.6 Checking timing chain”, page 74](#)

⇒ [“2.7 Checking valve timing”, page 74](#)

2.1 Exploded view - camshaft timing chains

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

2.2 Exploded view - drive chain for balance shaft

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

2.3 Removing and installing bearing saddle

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

2.4 Removing and installing camshaft timing chain

Removing

- Remove wheel housing liner (front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Vehicles with auxiliary radiator (left-side): Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

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

Installing

Additional work:

- Install washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .

Tightening torques

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



2.5 Removing and installing drive chain for balance shaft

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

2.6 Checking timing chain

Procedure

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

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

Tightening torques

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

2.7 Checking valve timing

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



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3 Cylinder head

⇒ [“3.1 Exploded view - cylinder head”, page 75](#)

⇒ [“3.2 Removing and installing cylinder head”, page 75](#)

⇒ [“3.3 Checking compression”, page 87](#)

3.1 Exploded view - cylinder head

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

3.2 Removing and installing cylinder head

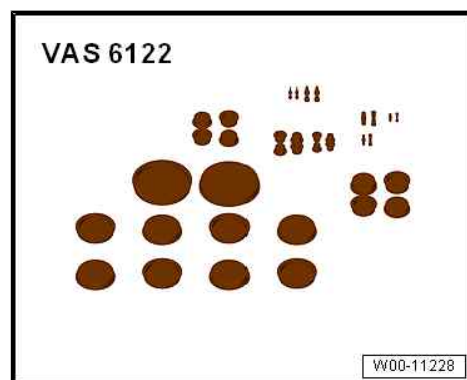
⇒ [“3.2.1 Removing and installing cylinder head - vehicles without
particulate filter”, page 75](#)

⇒ [“3.2.2 Removing and installing cylinder head - vehicles with
particulate filter”, page 81](#)

3.2.1 Removing and installing cylinder head - vehicles without particulate filter

Special tools and workshop equipment required

◆ Engine bung set - VAS 6122-



◆ Hose clip pliers - VAS 6362-



Removing



Note

- ◆ *Fit cable ties in the original positions when installing.*
- ◆ *Cover openings on gearbox with a cloth so that coolant cannot get into the clutch housing.*
- Drain coolant ⇒ [page 105](#) .

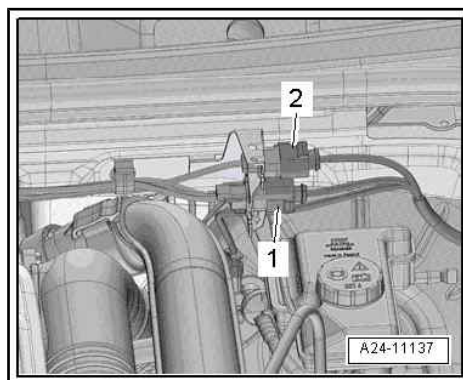


Caution

Risk of damage to valves and piston crowns.

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

- Remove camshafts ➔ [page 88](#).
- Bring engine support and engine mounting into installation position and tighten bolts to 20 Nm.
- Remove engine support bracket.
- Take electrical connector -2- out of bracket, unplug it and move electrical wiring clear.



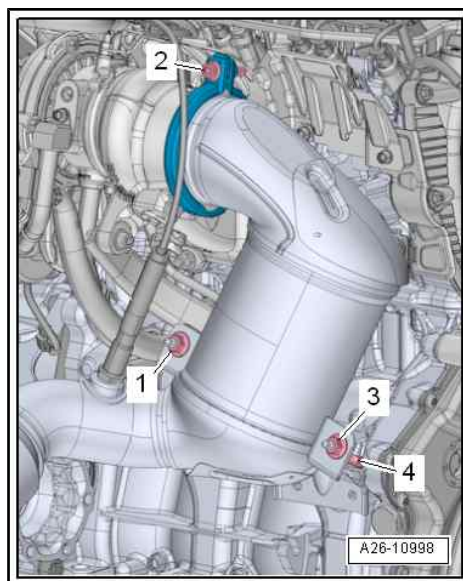
- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1 and 3- and move catalytic converter clear to one side.



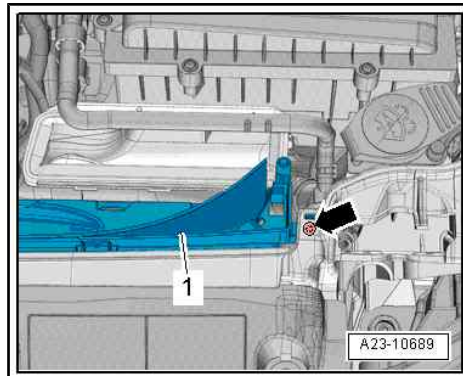
Note

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

- Remove Lambda probe - G39- ➔ [page 204](#) .

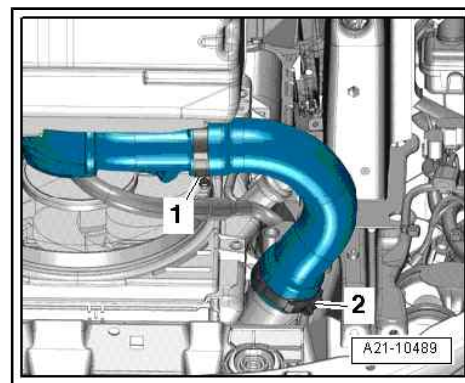


- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.

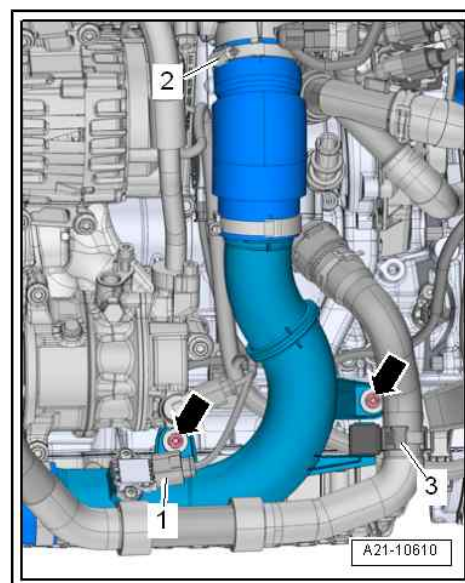




- Release hose clip -2- and detach air hose from charge air cooler.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Release hose clip -2-.
- Move coolant hose -3- clear.
- Remove bolts -arrows-.
- Unplug electrical connector -1- from charge pressure sender - G31- .
- Detach air pipe (right-side).



- Release hose clips -arrows- and disconnect coolant hoses.



Caution

Risk of damage to coolant line

◆ **Do not attempt to bend coolant line to a different shape.**

- Swivel coolant line -1- to side.

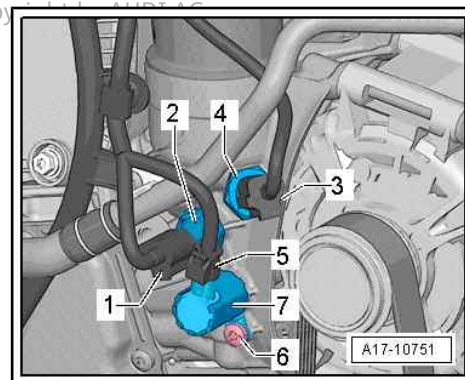
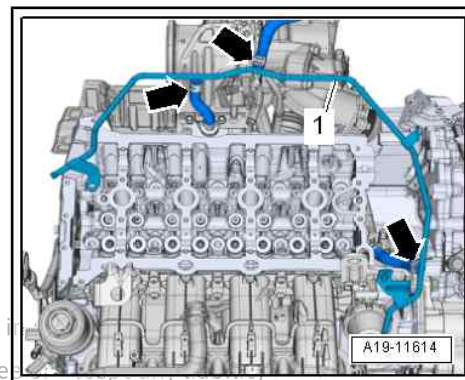
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- Unplug electrical connectors:

1 - For oil pressure switch - F22-

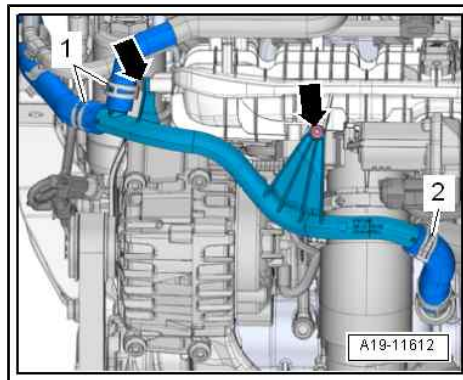
3 - For oil pressure switch for reduced oil pressure - F378-

5 - For piston cooling jet control valve - N522-

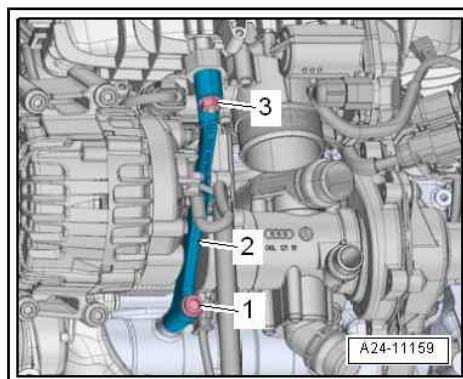




- Remove bolts -arrows- at coolant pipe (front).



- Unscrew bolt -1- and nut -3- and remove bracket -2- for intake manifold.

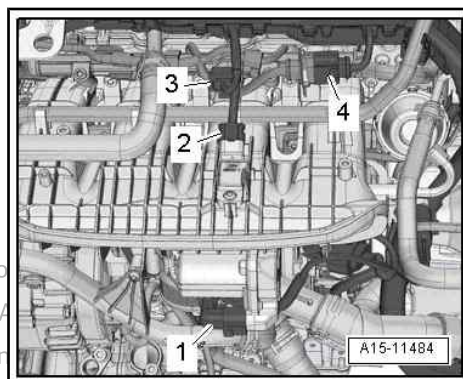


- Unplug electrical connectors:

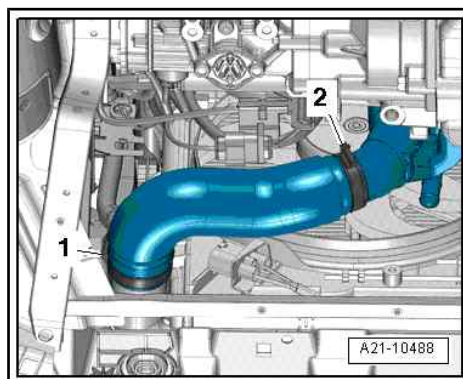
- 1 - For throttle valve module - J338-
- 2 - For intake air temperature sender - G42- / intake manifold pressure sender - G71-
- 3 - Vehicles with MPI engine: for fuel pressure sender for low pressure - G410-

- Detach electrical connector -4- from bracket.

- Move electrical wiring harness clear and press to one side.

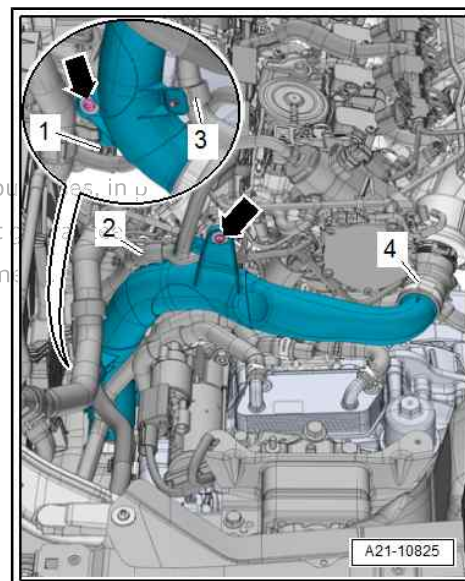


- Release hose clip -1- and detach air hose from charge air cooler.



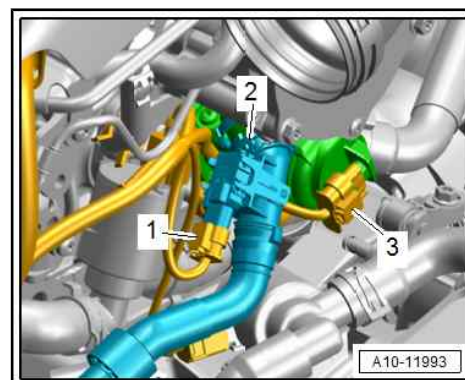


- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.



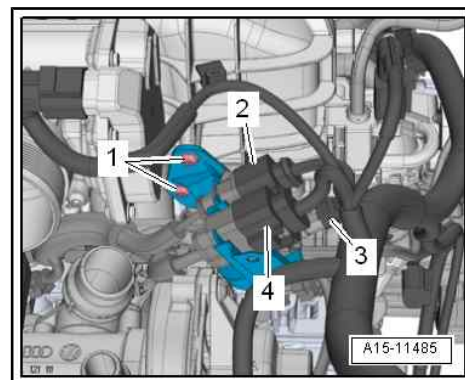
Version with secondary air system:

- Unplug electrical connectors -1, 3-.
- Press release tabs on both sides and disconnect secondary air pipe -2-.

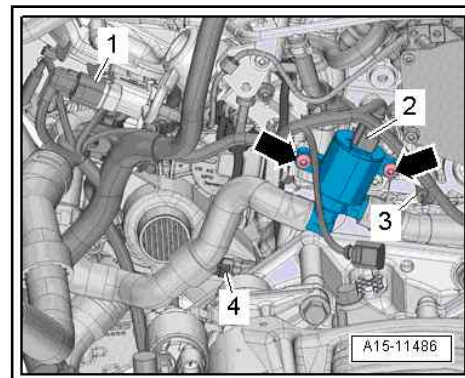


All vehicles (continued):

- Remove electrical connector -3- for knock sensor 1 - G61- from bracket and unplug connector.
- Unplug electrical connectors -2, 4-.

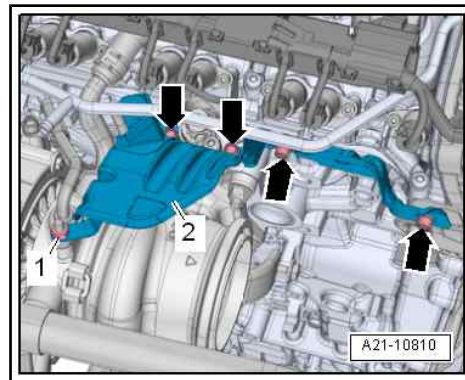


- Unplug electrical connectors and move wiring clear:
 - 1 - For intake manifold flap valve - N316-
 - 2 - For coolant shut-off valve - N82-
 - 3 - For coolant temperature sender - G62-
 - 4 - For stage 3 oil pressure switch - F447-
- Remove bolts -arrows-.





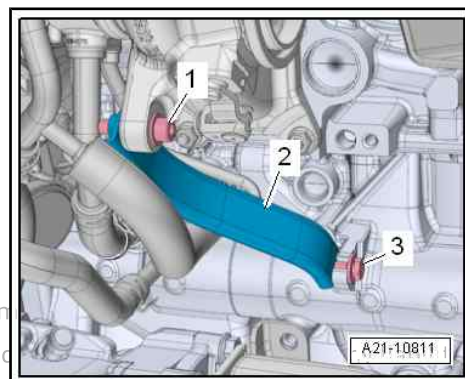
- Remove bolts -arrows- and nut -1-.
- Detach heat shield -2-.



- Remove bolt -1- and loosen bolt -3-.
- Remove bracket -2- for turbocharger.



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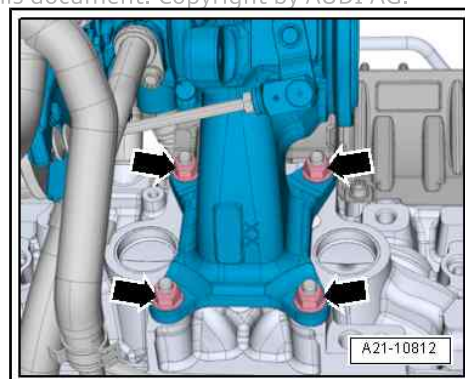
- Remove nuts -arrows-.
- Detach turbocharger from cylinder head and tie up to rear.

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

Installing

Additional work:

- Install front exhaust pipe with catalytic converter
⇒ [“2.2 Removing and installing catalytic converter”, page 222](#) .
- 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 .



Tightening torques

- ◆ ⇒ [“3.3 Exploded view - coolant valves”, page 117](#)
- ◆ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ◆ ⇒ [“1.1 Exploded view - turbocharger”, page 156](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold



3.2.2 Removing and installing cylinder head - vehicles with particulate filter

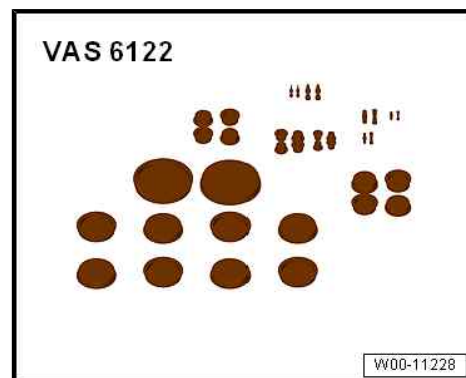
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For vehicles with particulate filter, refer to ➤ **Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888, Gen. III); Rep. gr. 00 ;**

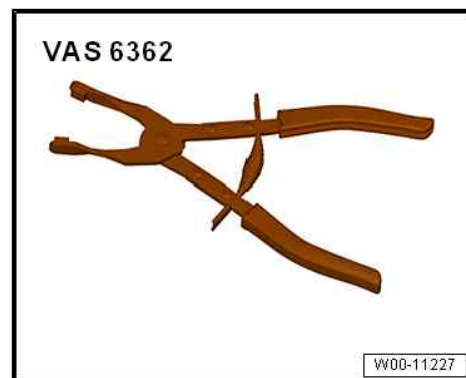
Identification ; Engine versions.

Special tools and workshop equipment required

- ◆ Engine bung set - VAS 6122-



- ◆ Hose clip pliers - VAS 6362-



Removing



Note

- ◆ *Fit cable ties in the original positions when installing.*
- ◆ *Cover openings on gearbox with a cloth so that coolant cannot get into the clutch housing.*
- Drain coolant ➤ [page 105](#) .



Caution

Risk of damage to valves and piston crowns.

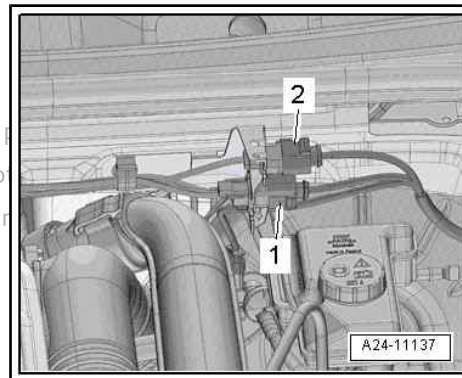
- ◆ ***Do not turn the crankshaft after the camshafts have been removed.***

- Remove camshafts ➤ [page 88](#) .
- Bring engine support and engine mounting into installation position and tighten bolts to 20 Nm.
- Remove engine support bracket.

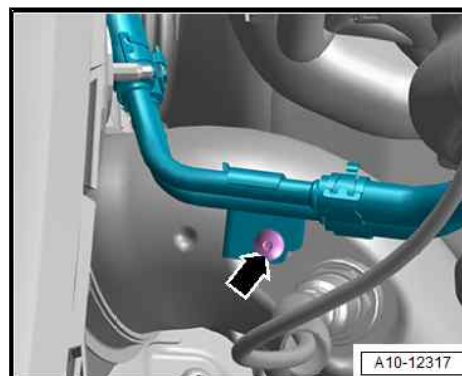


- Take electrical connector -2- out of bracket, unplug it and move electrical wiring clear.

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- Remove bolt -arrow- for pressure lines.
- Move pressure lines clear.



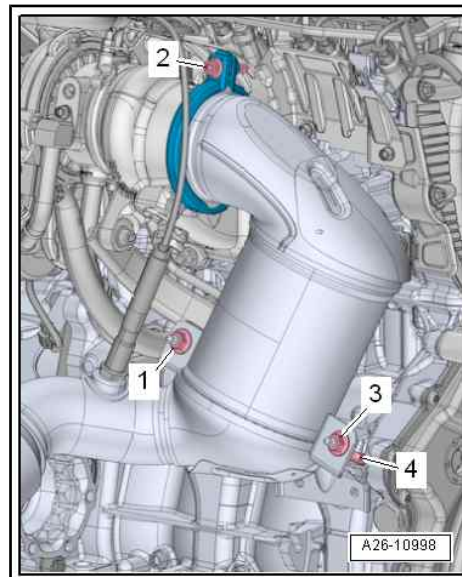
- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1 and 3- and move catalytic converter clear to one side.



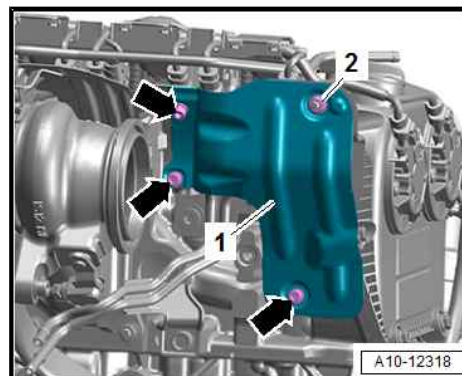
Note

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

- Remove Lambda probe - G39- ➔ [page 204](#) .

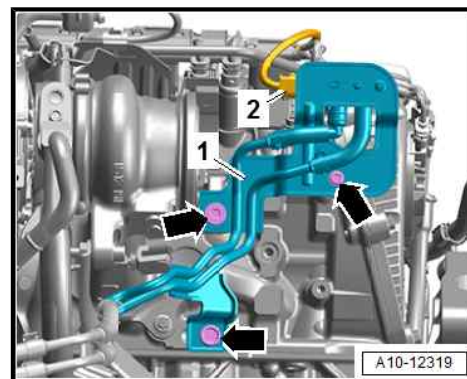


- Unscrew bolts -arrows- and nut -2- and detach heat shield -1-.



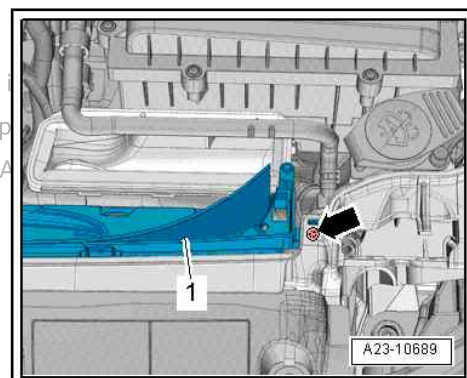


- Unplug electrical connector -2-.
- Remove bolts -arrows- and move pressure lines with exhaust gas pressure sensor 1 - G450- to rear.

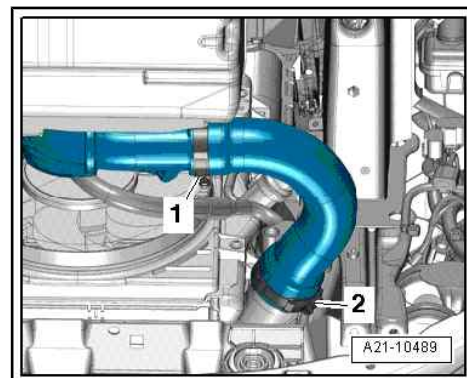


- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.

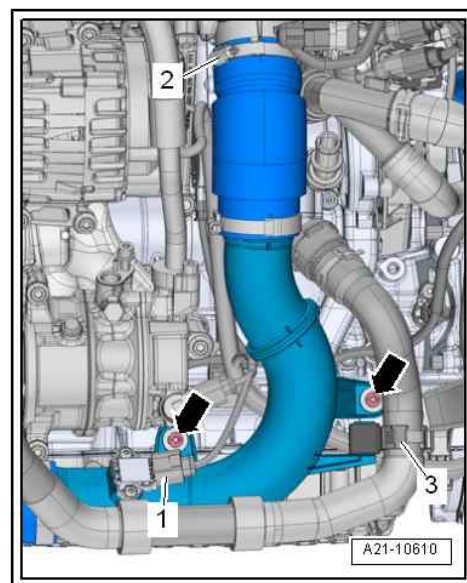
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- Release hose clip -2- and detach air hose from charge air cooler.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



- Release hose clip -2-.
- Move coolant hose -3- clear.
- Remove bolts -arrows-.
- Unplug electrical connector -1- from charge pressure sender - G31- .
- Detach air pipe (right-side).





- Release hose clips -arrows- and disconnect coolant hoses.



Caution

Risk of damage to coolant line

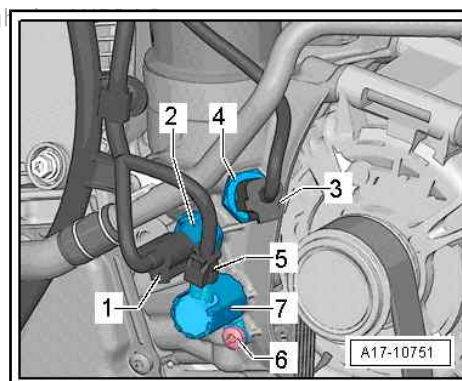
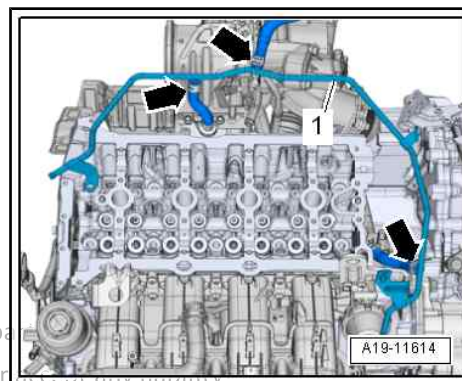
- ◆ *Do not attempt to bend coolant line to a different shape.*

- Swivel coolant line -1- to side.

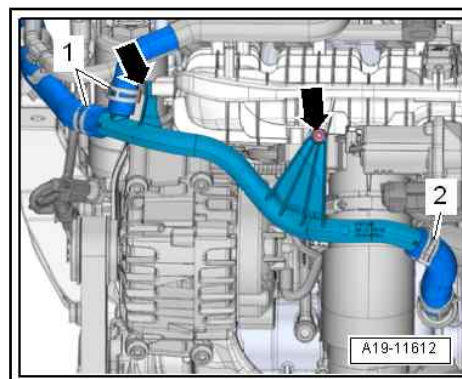
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- Unplug electrical connectors:

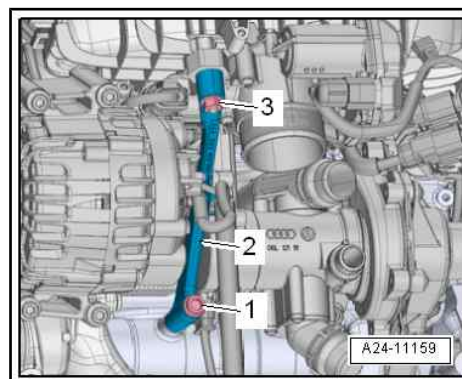
- 1 - For oil pressure switch - F22-
- 3 - For oil pressure switch for reduced oil pressure - F378-
- 5 - For piston cooling jet control valve - N522-



- Remove bolts -arrows- at coolant pipe (front).

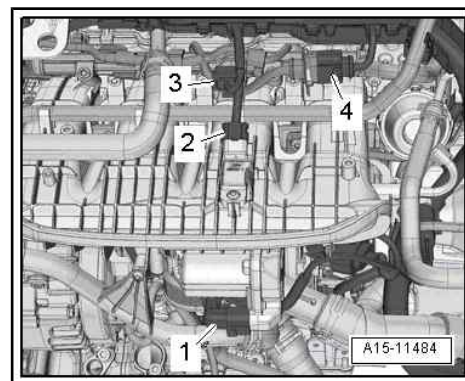


- Unscrew bolt -1- and nut -3- and remove bracket -2- for intake manifold.

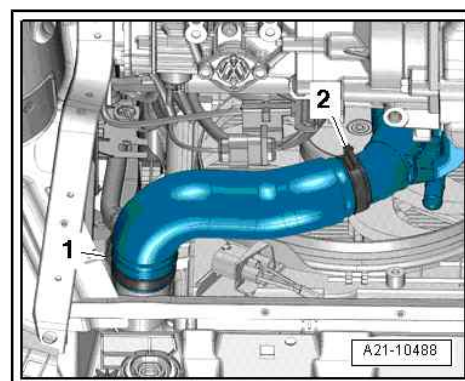




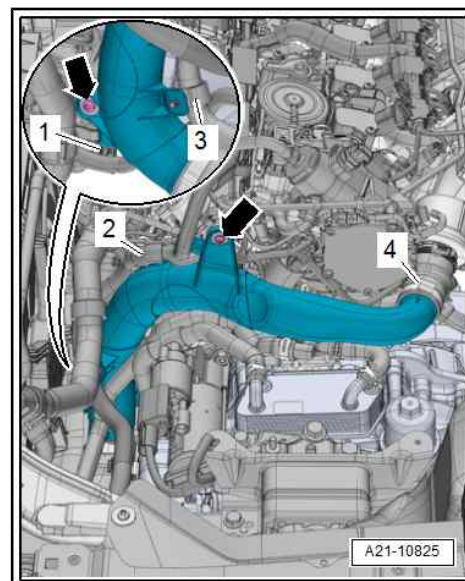
- Unplug electrical connectors:
- 1 - For throttle valve module - J338-
- 2 - For intake air temperature sender - G42- / intake manifold pressure sender - G71-
- 3 - Vehicles with MPI engine: for fuel pressure sender for low pressure - G410-
- Detach electrical connector -4- from bracket.
- Move electrical wiring harness clear and press to one side.



- Release hose clip -1- and detach air hose from charge air cooler.

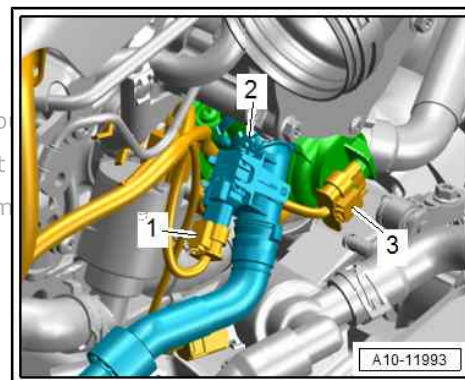


- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.



Version with secondary air system:

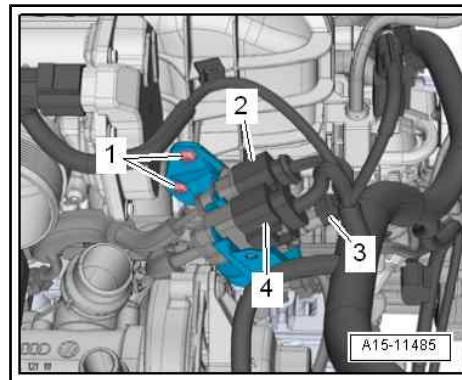
- Unplug electrical connectors -1, 3-.
- Press release tabs on both sides and disconnect secondary air pipe -2-.





All vehicles (continued):

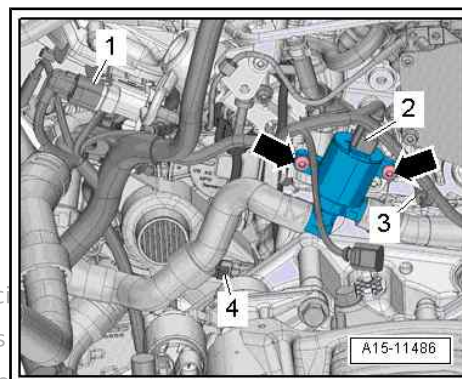
- Remove electrical connector -3- for knock sensor 1 - G61- from bracket and unplug connector.
- Unplug electrical connectors -2, 4-.



- Unplug electrical connectors and move wiring clear:

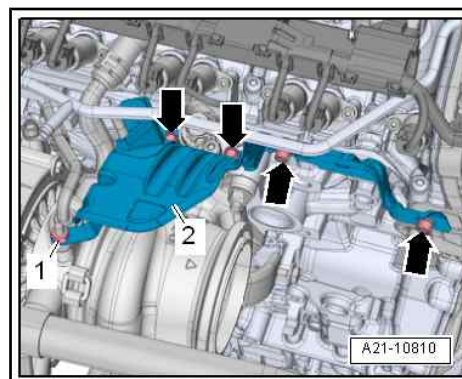
- 1 - For intake manifold flap valve - N316-
- 2 - For coolant shut-off valve - N82-
- 3 - For coolant temperature sender - G62-
- 4 - For stage 3 oil pressure switch - F447-

- Remove bolts -arrows-.

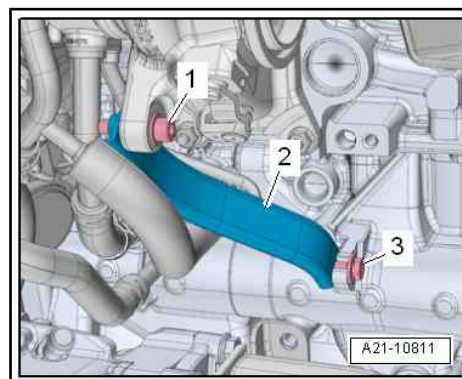


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- Remove bolts -arrows- and nut -1-.
- Detach heat shield -2-.



- Remove bolt -1- and loosen bolt -3-.
- Remove bracket -2- for turbocharger.





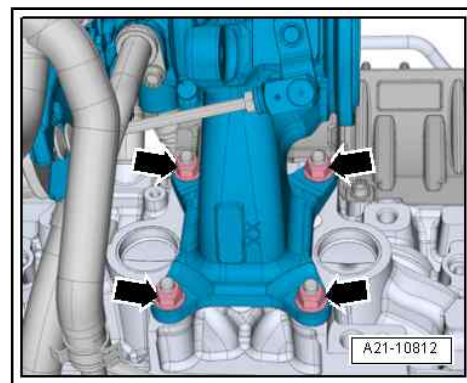
- Remove nuts -arrows-.
- Detach turbocharger from cylinder head and tie up to rear.

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

Installing

Additional work:

- Install front exhaust pipe with catalytic converter
⇒ [“2.2 Removing and installing catalytic converter”, page 222](#) .
- 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 .



Tightening torques

- ◆ ⇒ [“3.3 Exploded view - coolant valves”, page 117](#)
- ◆ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ◆ ⇒ [“1.1 Exploded view - turbocharger”, page 156](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

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 88](#)

⇒ [“4.2 Removing and installing camshaft”, page 88](#)

⇒ [“4.3 Installing ball for slider”, page 90](#)

⇒ [“4.4 Removing and installing actuators for camshaft adjustment”, page 90](#)

⇒ [“4.5 Removing and installing camshaft control valve 1 N205 ”, page 91](#)

⇒ [“4.6 Removing and installing valve stem oil seals”, page 91](#)

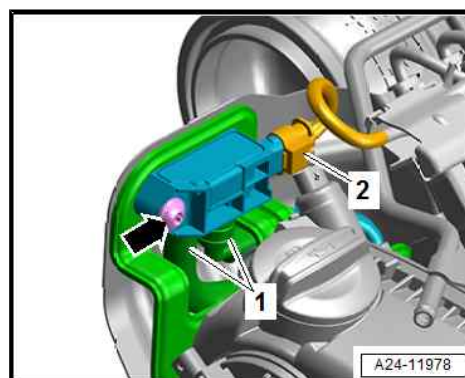
4.1 Exploded view - valve gear

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

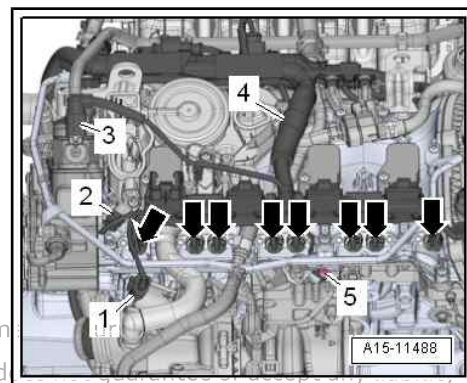
Removing

- Remove air cleaner housing ⇒ [page 191](#) .
- Remove coolant pipe (top) ⇒ [page 142](#) .
- Remove ignition coils ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing ignition coils with output stages .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel housing liner (right-side) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Vehicles with auxiliary radiator (left-side): Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .
- Vehicles with particulate filter: Unplug electrical connector -2- for exhaust gas pressure sensor 1 - G450- .





- Unplug electrical connectors:
 - 1 - For turbocharger air recirculation valve - N249-
 - 2 - For Hall sender 3 - G300-
 - 3 - For fuel pressure regulating valve - N276- / fuel metering valve - N290-
- Unplug electrical connectors -arrows- at actuators for cam-shaft adjustment.
- If fitted, remove bolt -5- and move earth wire clear.
- Move electrical wiring harness clear at clip -4- and swivel it forwards.
- Release fasteners -arrow-, detach wiring duct -4- upwards from bracket and press forwards.

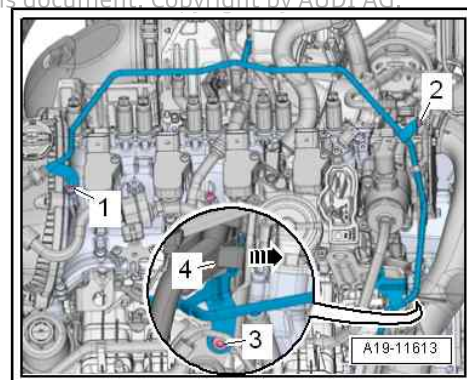


Caution

Risk of damage to coolant line

◆ ***Do not attempt to bend coolant line to a different shape.***

- Remove bolts -1, 2, 3- and carefully swivel coolant line towards rear slightly.



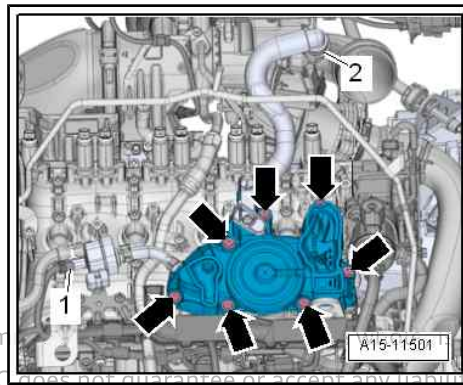


- Unplug electrical connector -1- for activated charcoal filter solenoid valve 1 - N80- and detach solenoid valve from bracket.
- Press release tabs on crankcase breather hose -2- and detach hose.



Note

Due to vehicle registration regulations, the crankcase breather hose cannot be removed without being irreparably damaged on some country-specific versions. The crankcase breather hose must be renewed if it is opened.



- Remove bolts -arrows- and detach oil separator.

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 washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .
- Install ignition coils ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Removing and installing ignition coils with output stages .
- Install coolant pipe (top) ⇒ [page 142](#) .
- Install air cleaner housing ⇒ [page 191](#) .

Tightening torques

- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Crankcase breather; Exploded view - crankcase breather system
- ♦ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ♦ ⇒ 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

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 actuators for camshaft adjustment

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 actuators for camshaft adjustment .



4.5 Removing and installing camshaft control valve 1 - N205-

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

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

4.6 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 .





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 93](#)

⇒ [“1.2 Engine oil”, page 93](#)

⇒ [“1.3 Removing and installing sump \(bottom section\)”, page 93](#)

⇒ [“1.4 Removing and installing oil pump”, page 93](#)

⇒ [“1.5 Removing and installing sump \(top section\)”, page 93](#)

⇒ [“1.6 Removing and installing oil level and oil temperature sender G266”, page 94](#)

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

- ◆ Refer to ⇒ Maintenance ; Booklet 821 for instructions on draining and filling up engine oil, checking oil level, removing and installing oil filter element.
- ◆ Oil capacities, oil specifications and viscosity grades ⇒ Maintenance tables .

1.3 Removing and installing sump (bottom 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 (bottom section) .

1.4 Removing and installing oil pump

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

1.5 Removing and installing sump (top section)

Removing

- Vehicles with auxiliary radiator (left-side): Remove washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

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

Installing

Additional work:

- Install washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



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

⇒ **"4.1 Exploded view - oil filter", page 97**

⇒ **"4.2 Exploded view - oil pressure switches/oil pressure control", page 97**

⇒ **"4.3 Removing and installing oil pressure switch F22", page 97**

⇒ **"4.4 Removing and installing oil pressure switch for reduced oil pressure F378", page 98**

⇒ **"4.5 Removing and installing stage 3 oil pressure switch F447", page 98**

⇒ **"4.6 Removing and installing valve for oil pressure control N428", page 99**

⇒ **"4.7 Removing and installing piston cooling jet control valve N522", page 99**

⇒ **"4.8 Checking oil pressure", page 99**

4.1 Exploded view - oil filter

All components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil filter .

4.2 Exploded view - oil pressure switches/oil pressure control

All components are described in ⇒ Servicing 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 .

4.3 Removing and installing oil pressure switch - F22-

Removing

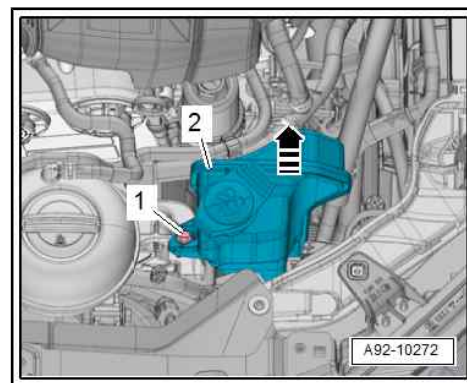
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Removing and installing oil pressure switch - F22- .

Installing

Additional work:

- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .





4.4 Removing and installing oil pressure switch for reduced oil pressure - F378-

Removing

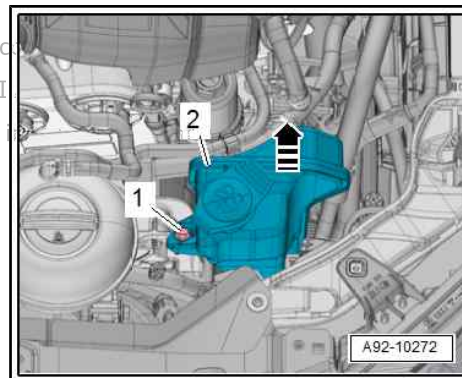
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Removing and installing oil pressure switch for reduced oil pressure - F378- .

Installing

Additional work:

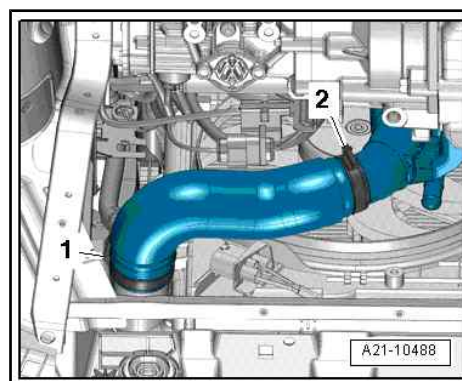
- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



4.5 Removing and installing stage 3 oil pressure switch - F447-

Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove air cleaner housing ⇒ [page 191](#) .
- Release hose clip -1- and detach air hose from charge air cooler.





- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches ; Removing and installing stage 3 oil pressure switch - F447- .

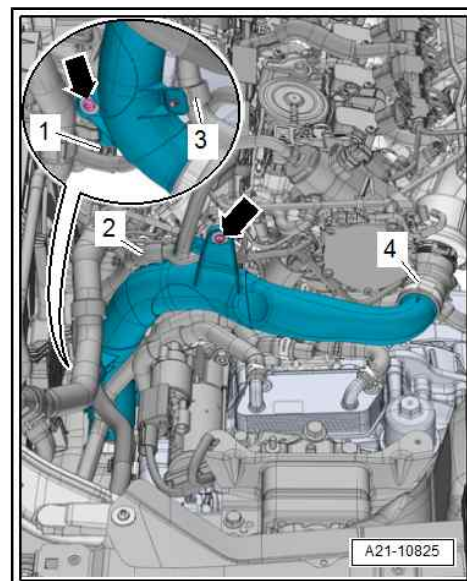
Installing

Additional work:

- Install air cleaner housing ⇒ [page 191](#) .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



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

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Removing and installing valve for oil pressure control - N428- .

4.7 Removing and installing piston cooling jet control valve - N522-

Removing

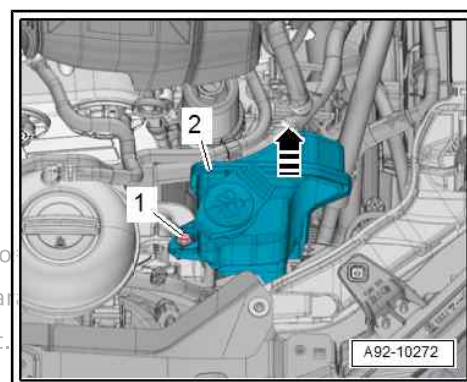
- Vehicles with auxiliary radiator (left-side): Remove filler neck -2- for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Removing and installing washer fluid reservoir .

All further procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Removing and installing piston cooling jet control valve - N522- .

Installing

Additional work:

- Install filler neck for washer fluid reservoir ⇒ Electrical system; Rep. gr. 92 ; Windscreen washer system; Exploded view - windscreen washer system .



4.8 Checking oil pressure

All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Checking oil pressure .



19 – Cooling

1 Cooling system/coolant

⇒ [“1.1 Connection diagram - coolant hoses”, page 100](#)

⇒ [“1.2 Checking cooling system for leaks”, page 105](#)

⇒ [“1.3 Draining and filling cooling system”, page 105](#)

1.1 Connection diagram - coolant hoses

⇒ [“1.1.1 Connection diagram - coolant hoses, vehicles without gear oil cooler”, page 100](#)

⇒ [“1.1.2 Connection diagram - coolant hoses, vehicles with gear oil cooler”, page 102](#)

⇒ [“1.1.3 Connection diagram - coolant hoses, vehicles with auxiliary radiator and gear oil cooler”, page 103](#)

1.1.1 Connection diagram - coolant hoses, vehicles without gear oil cooler

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Note

- ◆ *Blue = Large coolant circuit*
- ◆ *Red = Small coolant circuit*
- ◆ *Brown = Heating circuit*
- ◆ *Arrows show direction of coolant flow.*



1 - Radiator

- ☐ If renewed, refill system with fresh coolant

2 - Radiator outlet coolant temperature sender - G83-

3 - Actuator for engine temperature regulation - N493-

4 - Cylinder head/cylinder block

- ☐ If renewed, refill system with fresh coolant

5 - Restrictor

6 - Auxiliary heater

- ☐ Depending on vehicle equipment

7 - Coolant expansion tank

8 - Filler cap for expansion tank

- ☐ 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

9 - Non-return valve

10 - Exhaust manifold

- ☐ Integrated in cylinder head

11 - Turbocharger

12 - Heat exchanger for heater

- ☐ If renewed, refill system with fresh coolant

13 - Restrictor

14 - Non-return valve

15 - Continued coolant circulation pump - V51-

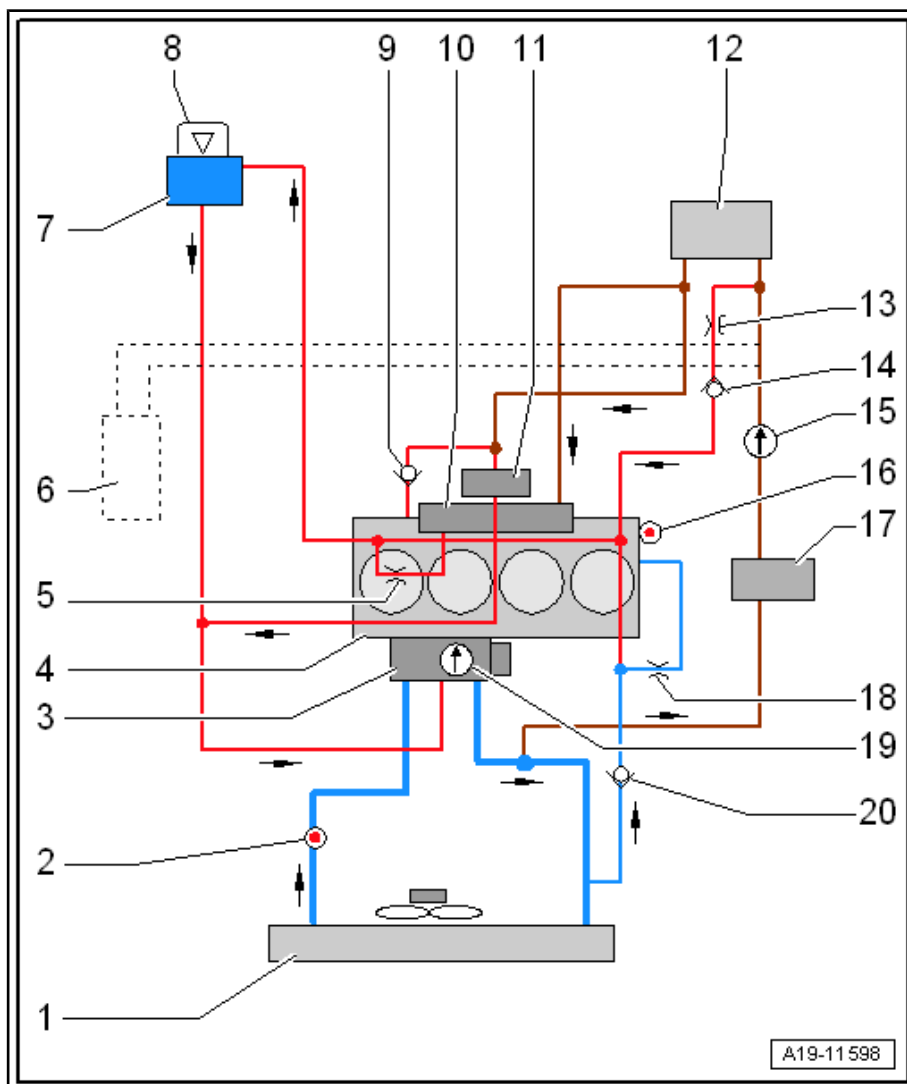
16 - Coolant temperature sender - G62-

17 - Coolant shut-off valve - N82-

18 - Restrictor

19 - Coolant pump

20 - Non-return valve



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1.1.2 Connection diagram - coolant hoses, vehicles with gear oil cooler



Note

- ◆ Blue = Large coolant circuit
- ◆ Red = Small coolant circuit
- ◆ Brown = Heating circuit
- ◆ Yellow = Gear oil coolant circuit.
- ◆ Arrows show direction of coolant flow.

1 - Radiator

- If renewed, refill system with fresh coolant

2 - Radiator outlet coolant temperature sender - G83-

3 - Actuator for engine temperature regulation - N493-

4 - Cylinder head/cylinder block

- If renewed, refill system with fresh coolant

5 - Restrictor

6 - Coolant expansion tank

7 - Filler cap for expansion tank

- 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

8 - Non-return valve

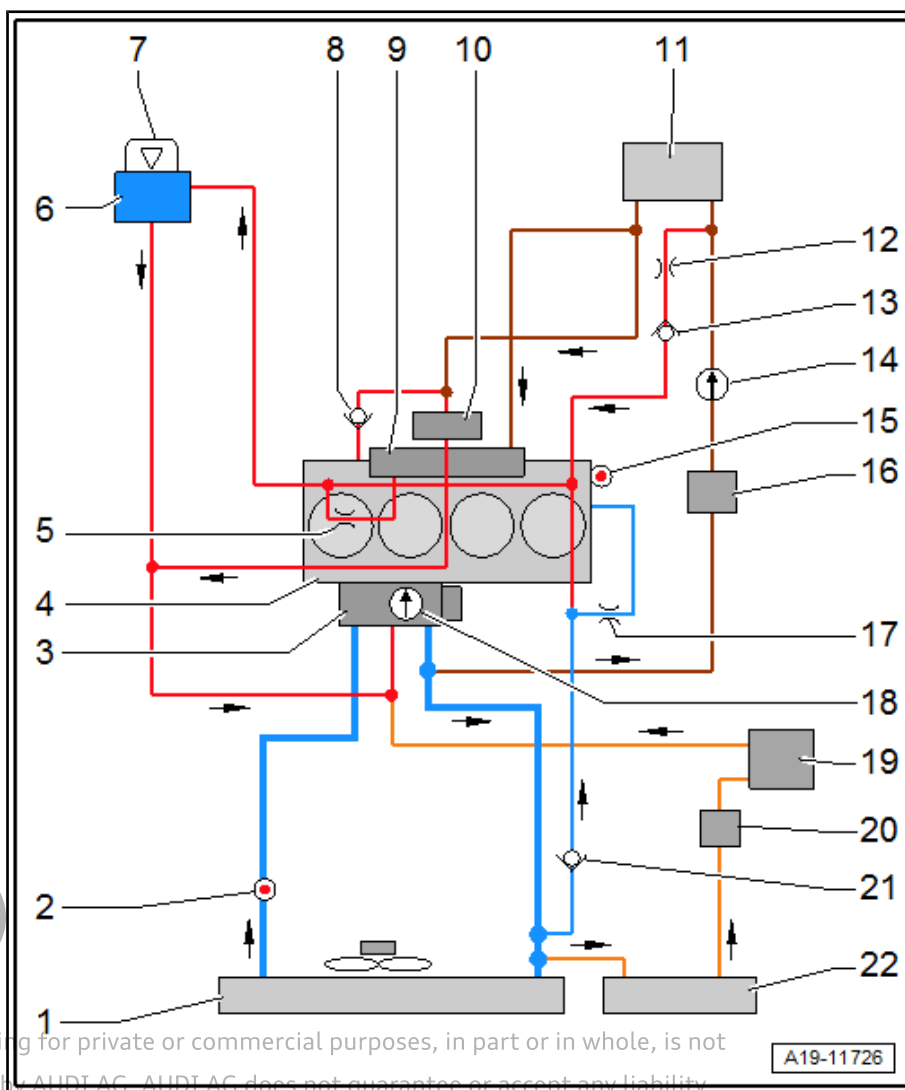
9 - Exhaust manifold

- Integrated in cylinder head

10 - Turbocharger

11 - Heat exchanger for heater

- If renewed, refill system with fresh coolant





- 12 - Restrictor
- 13 - Non-return valve
- 14 - Continued coolant circulation pump - V51-
- 15 - Coolant temperature sender - G62-
- 16 - Coolant shut-off valve - N82-
- 17 - Restrictor
- 18 - Coolant pump
- 19 - Gear oil cooler
- 20 - Coolant valve for gearbox - N488-
- 21 - Non-return valve
- 22 - Auxiliary radiator

1.1.3 Connection diagram - coolant hoses, vehicles with auxiliary radiator and gear oil cooler



Note

- ◆ *Blue = Large coolant circuit*
- ◆ *Red = Small coolant circuit*
- ◆ *Brown = Heating circuit*
- ◆ *Yellow = Gear oil coolant circuit.*
- ◆ *Arrows show direction of coolant flow.*



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1 - Radiator

- ☐ If renewed, refill system with fresh coolant

2 - Auxiliary radiator

- ☐ Depending on version

3 - Radiator outlet coolant temperature sender - G83-

4 - Actuator for engine temperature regulation - N493-

5 - Cylinder head/cylinder block

- ☐ If renewed, refill system with fresh coolant

6 - Restrictor

7 - Coolant expansion tank

8 - Filler cap for expansion tank

- ☐ 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

9 - Non-return valve

10 - Exhaust manifold

- ☐ Integrated in cylinder head

11 - Turbocharger

12 - Heat exchanger for heater

- ☐ If renewed, refill system with fresh coolant

13 - Restrictor

14 - Non-return valve

15 - Continued coolant circulation pump - V51-

16 - Coolant temperature sender - G62-

17 - Coolant shut-off valve - N82-

18 - Restrictor

19 - Coolant pump

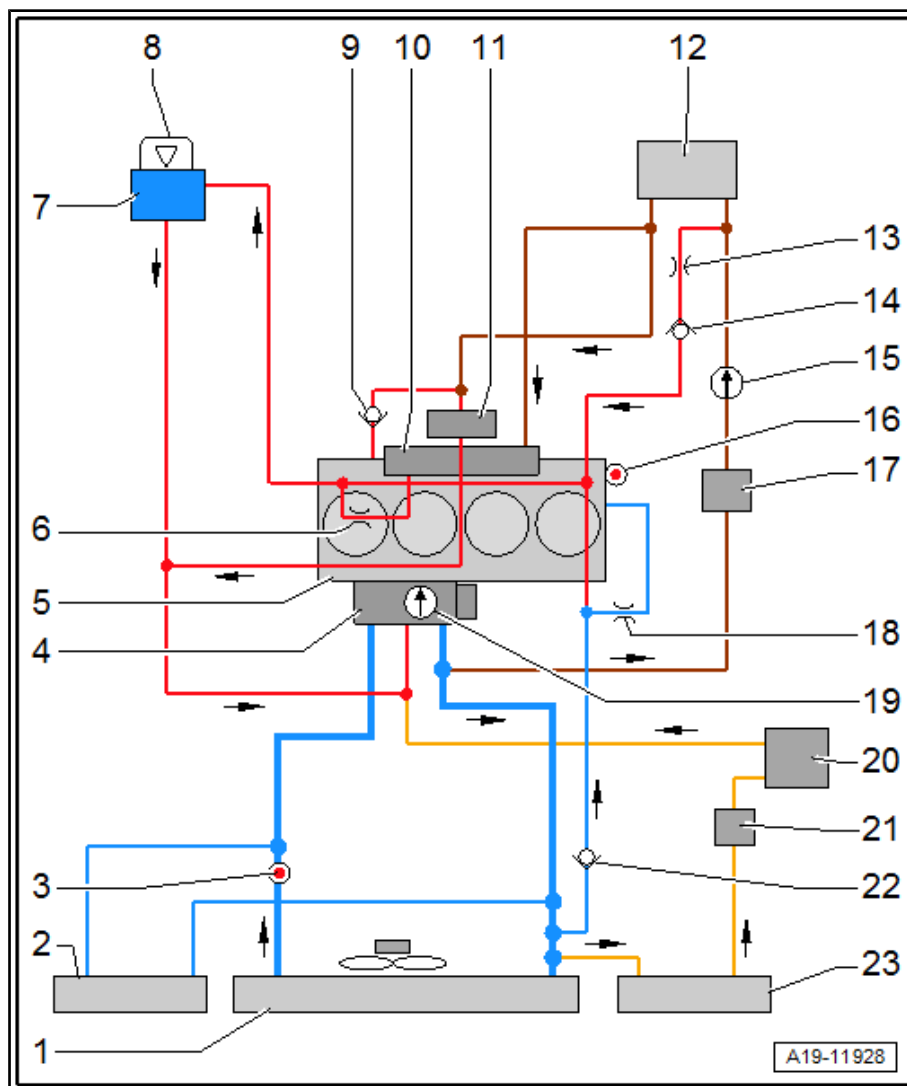
20 - Gear oil cooler

21 - Coolant valve for gearbox - N488-

22 - Non-return valve

23 - Auxiliary radiator

- ☐ For gear oil coolant circuit





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 .

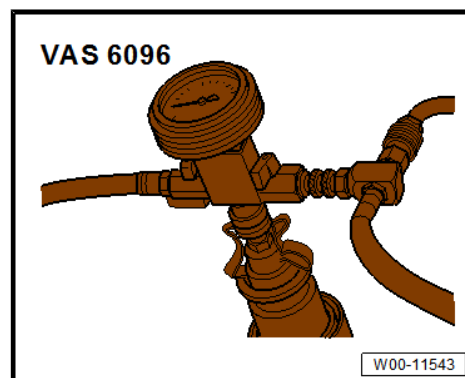
1.3 Draining and filling cooling system

Special tools and workshop equipment required

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



- ◆ Cooling system charge unit - VAS 6096-



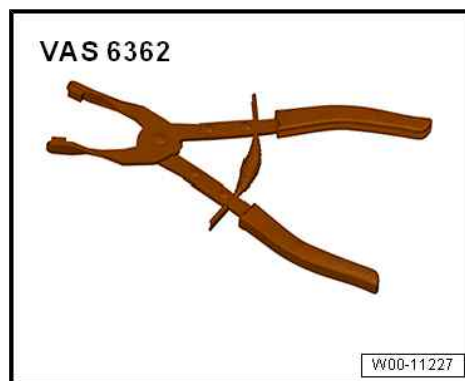
- ◆ Coolant collecting system - VAS 5014- or drip tray for workshop hoist - VAS 6208-



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- ◆ Hose clip pliers - VAS 6362-



- ◆ Refractometer - T10007A-

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- ◆ Protective gloves
- ◆ Safety goggles

Draining



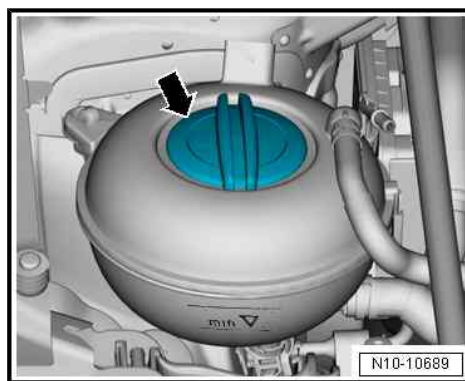
WARNING

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

Danger of scalding skin and other parts of the body.

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

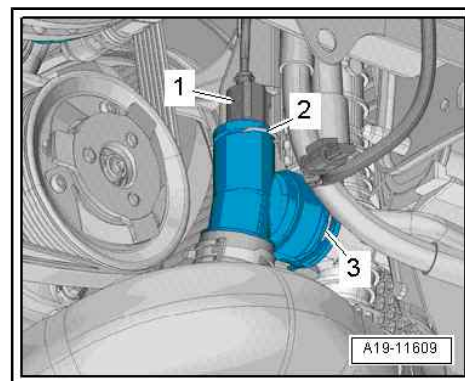
- Open filler cap -arrow- on coolant expansion tank.
- Remove noise insulation => General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Place drip tray for workshop hoist - VAS 6208- underneath.



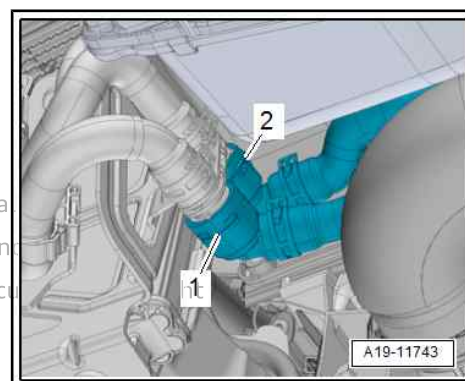


Version

- Lift retaining clip -3-, disconnect coolant hose (bottom right) from radiator and drain off coolant.



- Vehicles with auxiliary radiator (left-side): Lift retaining clips -1, 2-, disconnect coolant hoses and drain off coolant.
- Reconnect coolant hoses with plug-in connector
⇒ [page 147](#).



Coolant specifications

All information can be found in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19 : Cooling system/coolant; Draining and filling cooling system.

Recommended mixture ratio for coolant

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

Filling cooling system

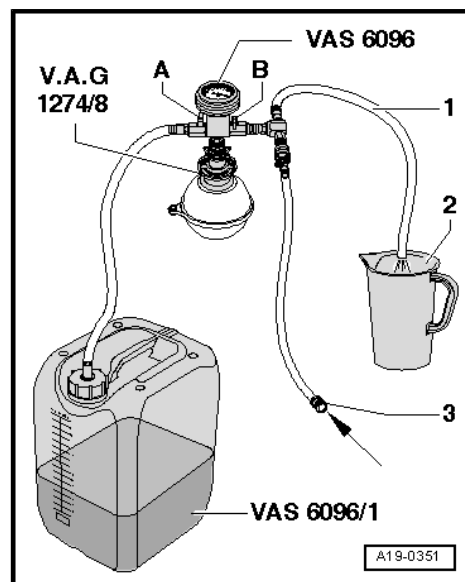
- Fill reservoir of -VAS 6096- with 10 litres of premixed coolant (according to recommended ratio; for recommended ratio see ⇒ [page 107](#)).
- Fit adapter for cooling system tester - V.A.G 1274/8- onto coolant expansion tank.
- Fit cooling system charge unit - VAS 6096- onto adapter for cooling system tester - V.A.G 1274/8- .
- Run vent hose -1- into a small container -2-.



Note

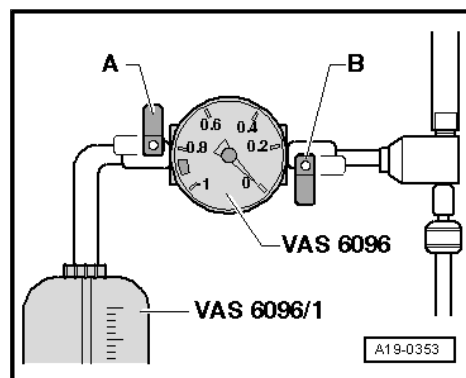
The vented air draws along a small amount of coolant, which should be collected.

- Close both valves -A- and -B- (turn lever at right angles to direction of flow).
- Connect hose -3- to compressed air supply.
- Pressure: 7 ... 10 bar.
- Open valves in coolant circuit; select 01 - Coolant circuit bleeding routine in Guided Functions ⇒ vehicle diagnostic tester .



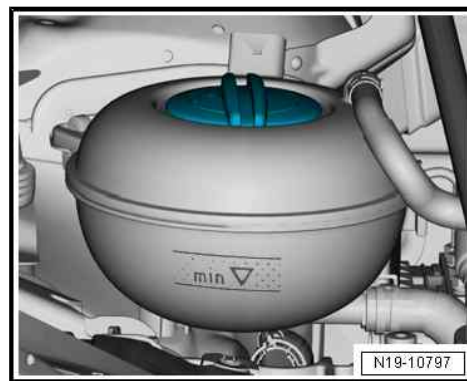


- Open valve -B- by setting lever in direction of flow.
- The suction jet pump generates a partial vacuum in the cooling system; the needle on the gauge should move into the green zone.
- Also briefly open valve -A- (turn lever in direction of flow) so that hose on reservoir of -VAS 6096- can fill with 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.



Note

- ◆ *If the needle does not reach the green zone, repeat the process.*
- ◆ *Check cooling system for leaks if the vacuum is not maintained.*
- Detach compressed air hose.
- Open valve -A-.
- The vacuum in the cooling system causes the coolant to be drawn out of the reservoir of -VAS 6096- ; the cooling system is then filled.
- Detach cooling system charge unit - VAS 6096- from coolant expansion tank.
- Top up coolant to “max” mark.
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Set temperature to “HI”.
- Switch off air conditioner compressor (press **AC** button).
- LED in button should not light up.
- Start engine and run for 2 minutes (maximum) at approx. 1500 rpm.
- Top up coolant to overflow hole on expansion tank with engine running.



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- Tighten filler cap -arrow- on coolant expansion tank (make sure it engages).
- Allow engine to run at idling speed until both large coolant hoses at radiator become warm.
- Switch off engine.

Checking coolant level

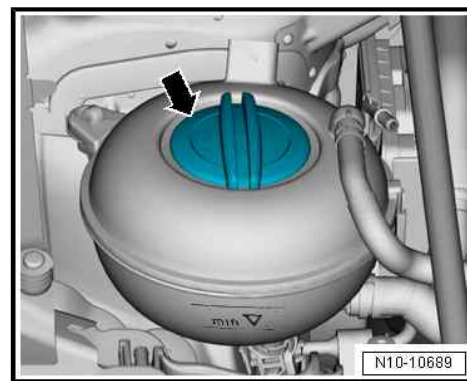


WARNING

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

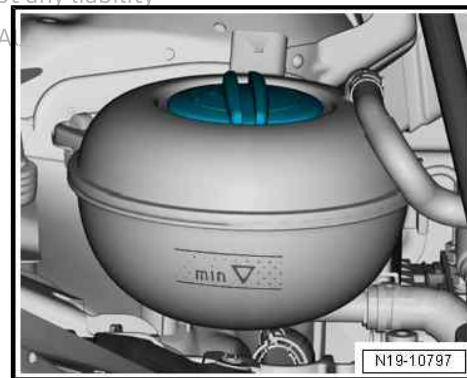
Danger of scalding skin and other parts of the body.

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



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





2 Coolant expansion tank

⇒ ["2.1 Exploded view - coolant expansion tank", page 110](#)

⇒ ["2.2 Removing and installing coolant expansion tank", page 110](#)

2.1 Exploded view - coolant expansion tank

1 - Coolant expansion tank

- ❑ Removing and installing
⇒ ["2.2 Removing and installing coolant expansion tank", page 110](#)

2 - Clamp

3 - Filler cap

4 - Electrical connector

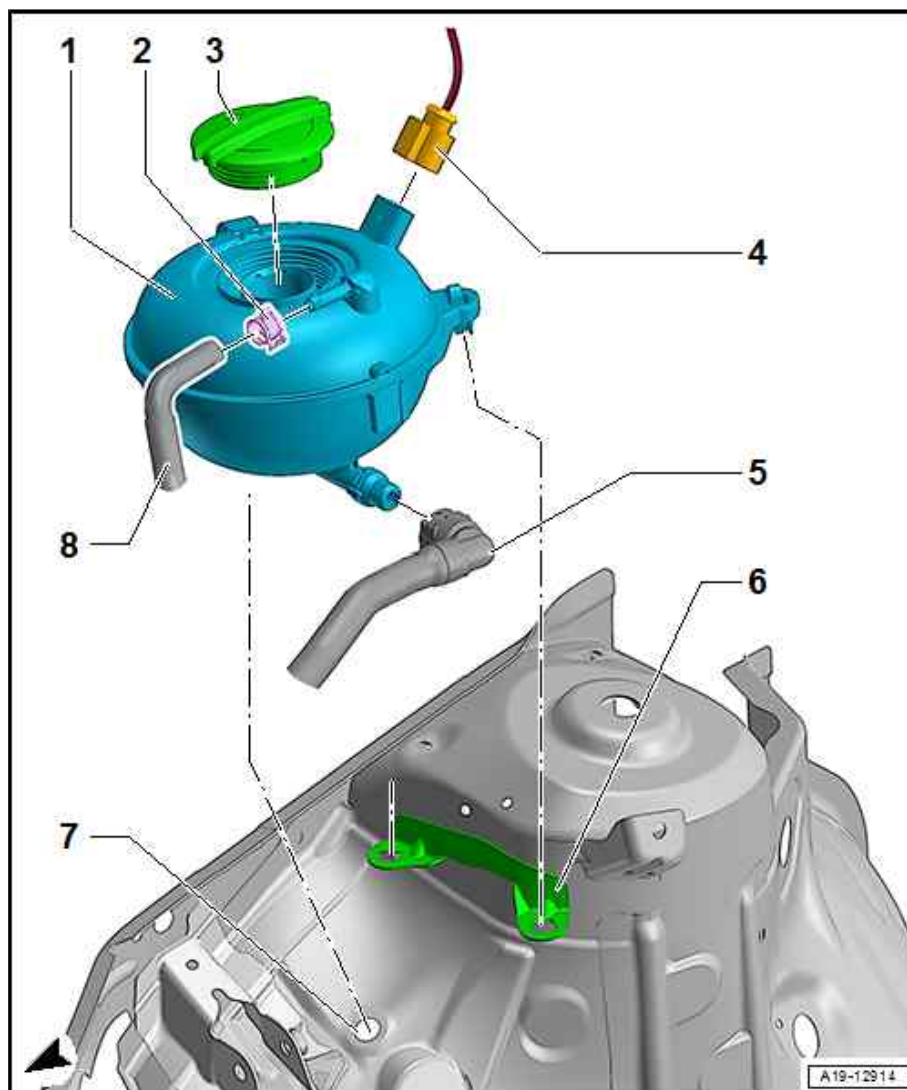
- ❑ For coolant shortage indicator sender - G32-

5 - Coolant hose

6 - Bracket

7 - Opening

8 - Coolant hose



2.2 Removing and installing coolant expansion tank

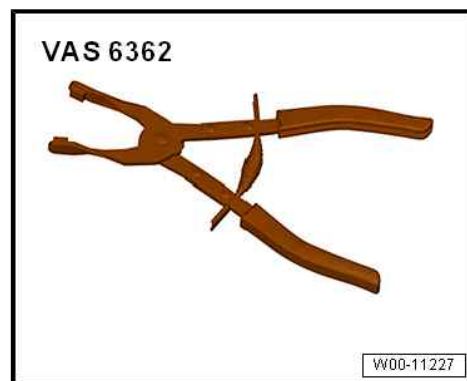
Special tools and workshop equipment required



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◆ Hose clip pliers - VAS 6362-



◆ Hose clamps up to 25 mm - 3094-



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Removing

- Engine cold.



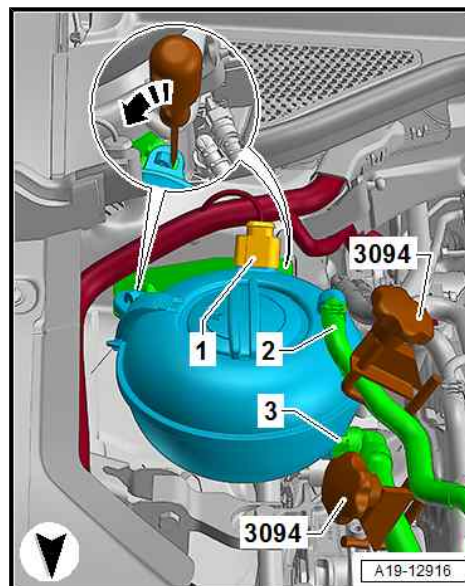
WARNING

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

Danger of scalding skin and other parts of the body.

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

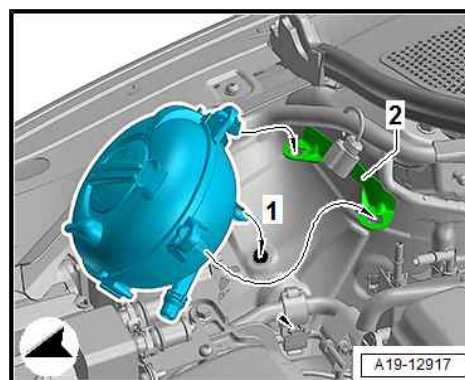
- Move fuel hose and breather line going to activated charcoal filter clear at coolant expansion tank.
- Release and unplug electrical connector -1- at coolant shortage indicator sender - G32- .
- Clamp off breather line -2- with hose clamp, up to 25 mm - 3094- , release hose clip and disconnect breather line from coolant expansion tank.
- Release fasteners -arrow- using a screwdriver, pull off coolant expansion tank upwards and move to one side.
- Place a suitable drip tray under coolant expansion tank to collect coolant.
- Clamp off coolant hose -3- with hose clamp, up to 25 mm - 3094- , release hose clip or remove retaining clip and disconnect coolant hose from coolant expansion tank.
- If necessary, move crankcase breather line clear.
- Detach coolant expansion tank.



Installing

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

- Insert guide piece -1- into opening in vehicle body.
- Pivot coolant expansion tank into bracket -2- on suspension turret, and push down until it engages. Check it is properly engaged by pulling at it.
- Check coolant level and top up coolant if necessary
[⇒ page 109](#) .



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3 Coolant pump/thermostat assembly

⇒ [“3.1 Exploded view - coolant pump/thermostat”, page 113](#)

⇒ [“3.2 Exploded view - electric coolant pump”, page 116](#)

⇒ [“3.3 Exploded view - coolant valves”, page 117](#)

⇒ [“3.4 Exploded view - coolant temperature senders”,
page 120](#)

⇒ [“3.5 Removing and installing electric coolant pump”,
page 120](#)

⇒ [“3.6 Removing and installing coolant pump”, page 126](#)

⇒ [“3.7 Removing and installing toothed belt for coolant pump”,
page 128](#)

⇒ [“3.8 Removing and installing actuator for engine temperature
regulation N493”, page 129](#)

⇒ [“3.9 Removing and installing thermostat housing”, page 129](#)

⇒ [“3.10 Removing and installing coolant temperature sender G62
”, page 132](#)

⇒ [“3.11 Removing and installing radiator outlet coolant tempera-
ture sender G83”, page 133](#)

⇒ [“3.12 Removing and installing coolant valves”, page 134](#)

3.1 Exploded view - coolant pump/thermo- stat

⇒ [“3.1.1 Exploded view - coolant pump/thermostat, engine with
actuator for engine temperature regulation N493”, page 113](#)

⇒ [“3.1.2 Exploded view - coolant pump/thermostat, engine with
mechanical thermostat”, page 113](#)

3.1.1 Exploded view - coolant pump/thermo- stat, engine with actuator for engine temperature regulation - N493-

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

3.1.2 Exploded view - coolant pump/thermostat, engine with mechanical thermo- stat

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1 - Connection

2 - O-ring

- ☐ Renew after removing
- ☐ Lubricate with coolant

3 - Bolt

- ☐ Tightening torque and sequence ➔ [page 115](#)

4 - Centring pin

5 - Gasket

- ☐ Renew after removing

6 - Gasket

- ☐ Renew after removing

7 - Coolant pump

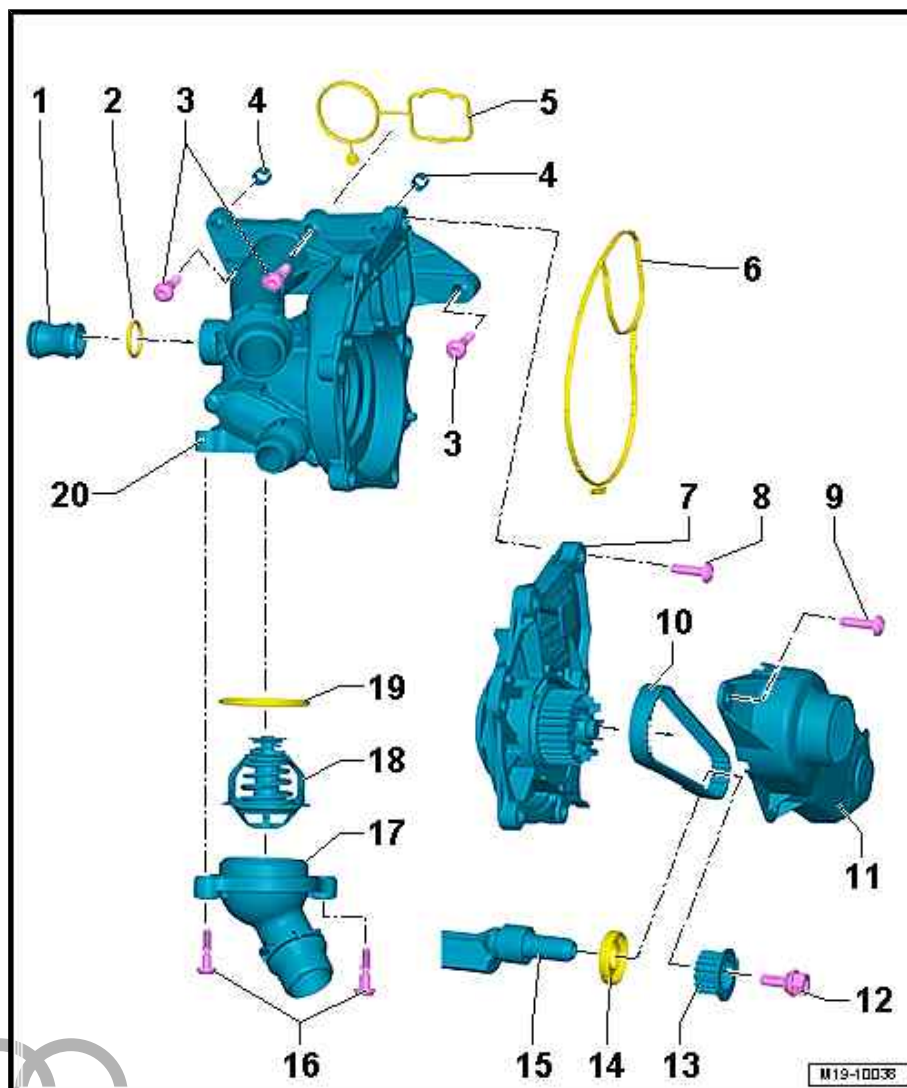
- ☐ Removing and installing ➔ ["3.6 Removing and installing coolant pump", page 126](#)

8 - 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 pump/thermostat

9 - 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 pump/thermostat



10 - Toothed belt

- ☐ For coolant pump
- ☐ Removing and installing ➔ ["3.7 Removing and installing toothed belt for coolant pump", page 128](#)

11 - Toothed belt cover

12 - 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 pump/thermostat

13 - Toothed belt drive sprocket

- ☐ Note installation position

14 - Oil seal

- ☐ For balance shaft (inlet side)
- ☐ Renewing ➔ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 13; Balance shaft; Renewing oil seal for balance shaft (inlet side)

15 - Balance shaft

16 - Bolt

- ☐ 9 Nm



17 - Connection

18 - Thermostat

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

19 - O-ring

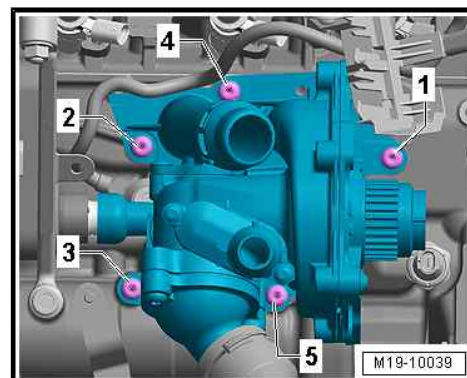
- ❑ Renew after removing

20 - Thermostat housing

- ❑ Removing and installing ⇒ [“3.9 Removing and installing thermostat housing”, page 129](#)

Thermostat - tightening torque and sequence

- Tighten bolts in the sequence -1 ... 5- to 9 Nm.



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3.2 Exploded view - electric coolant pump

⇒ ["3.2.1 Exploded view - continued coolant circulation pump V51", page 116](#)

⇒ ["3.2.2 Exploded view - gearbox oil cooling pump V478", page 117](#)

3.2.1 Exploded view - continued coolant circulation pump - V51-

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1 - Continued coolant circulation pump - V51-

- ☐ With bracket
- ☐ Removing and installing
⇒ ["3.5 Removing and installing electric coolant pump", page 120](#)

2 - Bracket

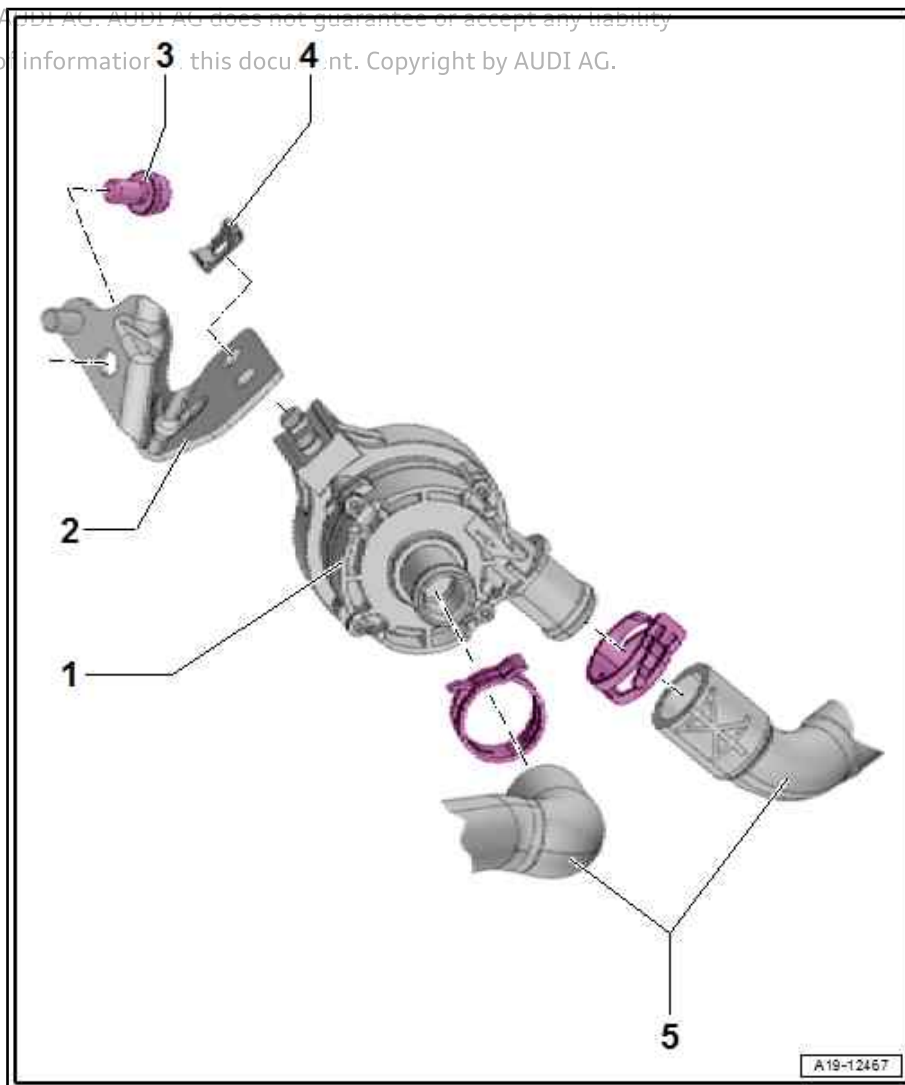
- ☐ For continued coolant circulation pump - V51-

3 - Bolt

- ☐ 20 Nm

4 - Clip

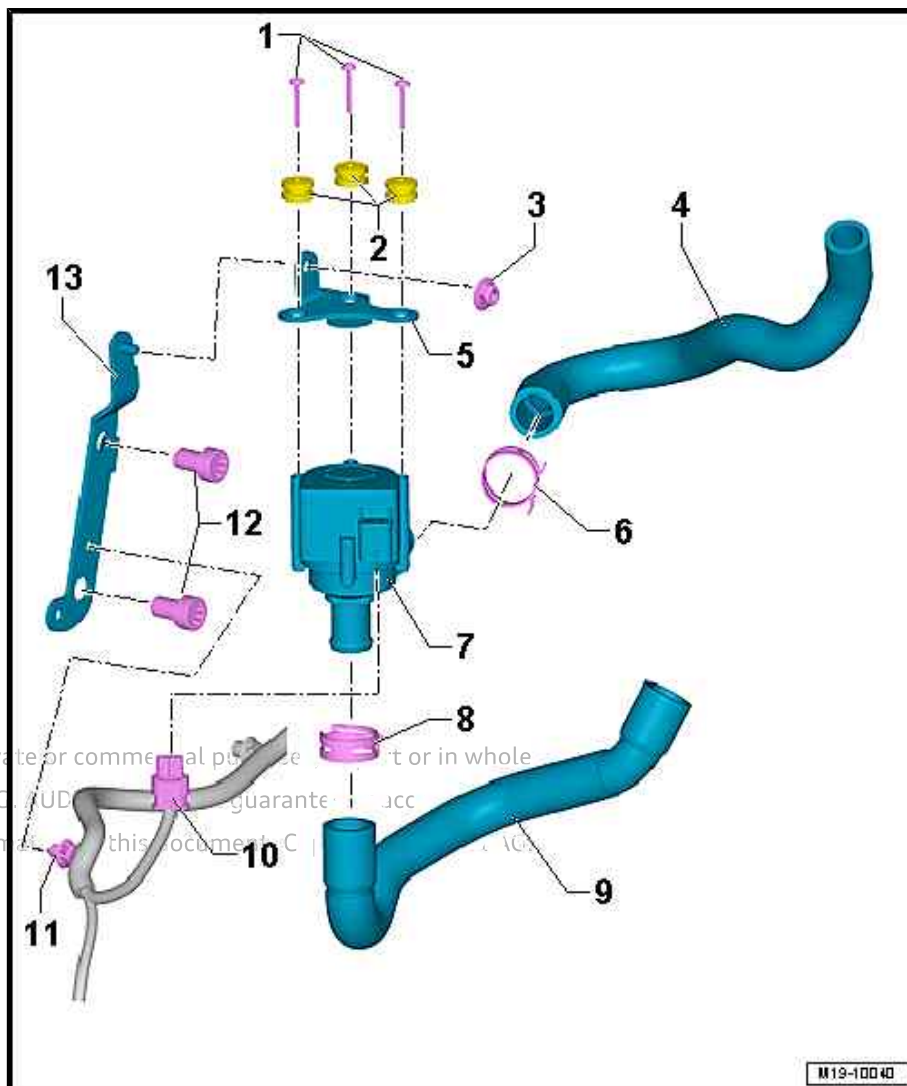
5 - Coolant hoses





3.2.2 Exploded view - gearbox oil cooling pump - V478-

- 1 - Bolt
 - ☐ 5 Nm
- 2 - Plastic bush
- 3 - Nut
 - ☐ 9 Nm
- 4 - Coolant hose
- 5 - Bracket
 - ☐ For gearbox oil cooling pump - V478-
- 6 - Spring-type clip
- 7 - Gearbox oil cooling pump - V478-
 - ☐ With bracket
 - ☐ ➔ [page 120](#)
- 8 - Spring-type clip
- 9 - Coolant hose
- 10 - Electrical connector
 - ☐ Clipped onto bracket
- 11 - Clip
- 12 - Bolt
 - ☐ 20 Nm
- 13 - Bracket
 - ☐ Continued coolant circulation pump - V478- to engine
 - ☐ Must be removed before engine can be removed
 - ☐ Bottom attachment point is used for mounting engine bracket



3.3 Exploded view - coolant valves

Coolant shut-off valve - N82- ➔ [page 117](#)

Coolant valve for gearbox - N488- ➔ [page 118](#)

Coolant shut-off valve - N82-



1 - Coolant hose

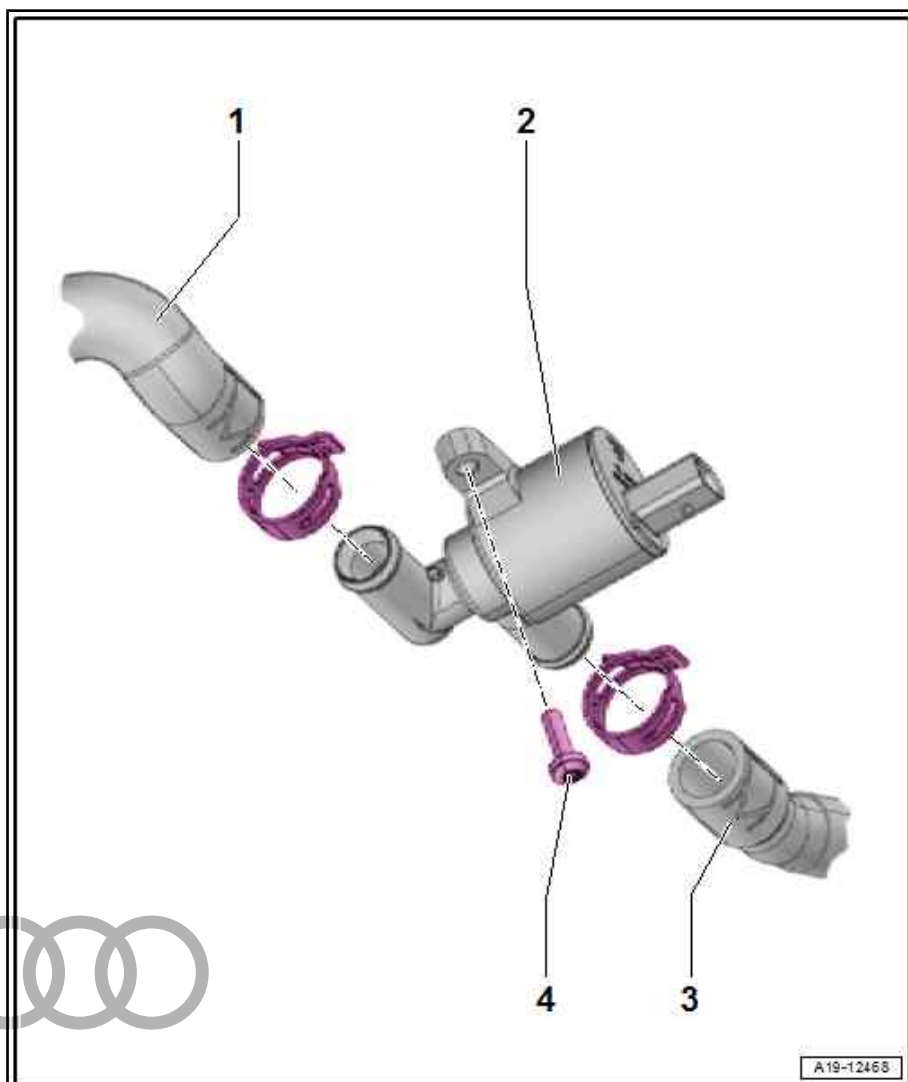
2 - Coolant shut-off valve -
N82-

- ❑ Removing and installing
⇒ [“3.12.1 Removing and
installing coolant shut-
off valve N82”](#),
[page 134](#)

3 - Coolant hose

4 - Bolt

- ❑ 9 Nm



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Coolant valve for gearbox - N488- on vehicles with dual clutch gearbox



1 - Bolt

- ☐ 9 Nm

2 - Coolant hose

3 - Nut

- ☐ 9 Nm

4 - Coolant hose

5 - Coolant valve for gearbox - N488-

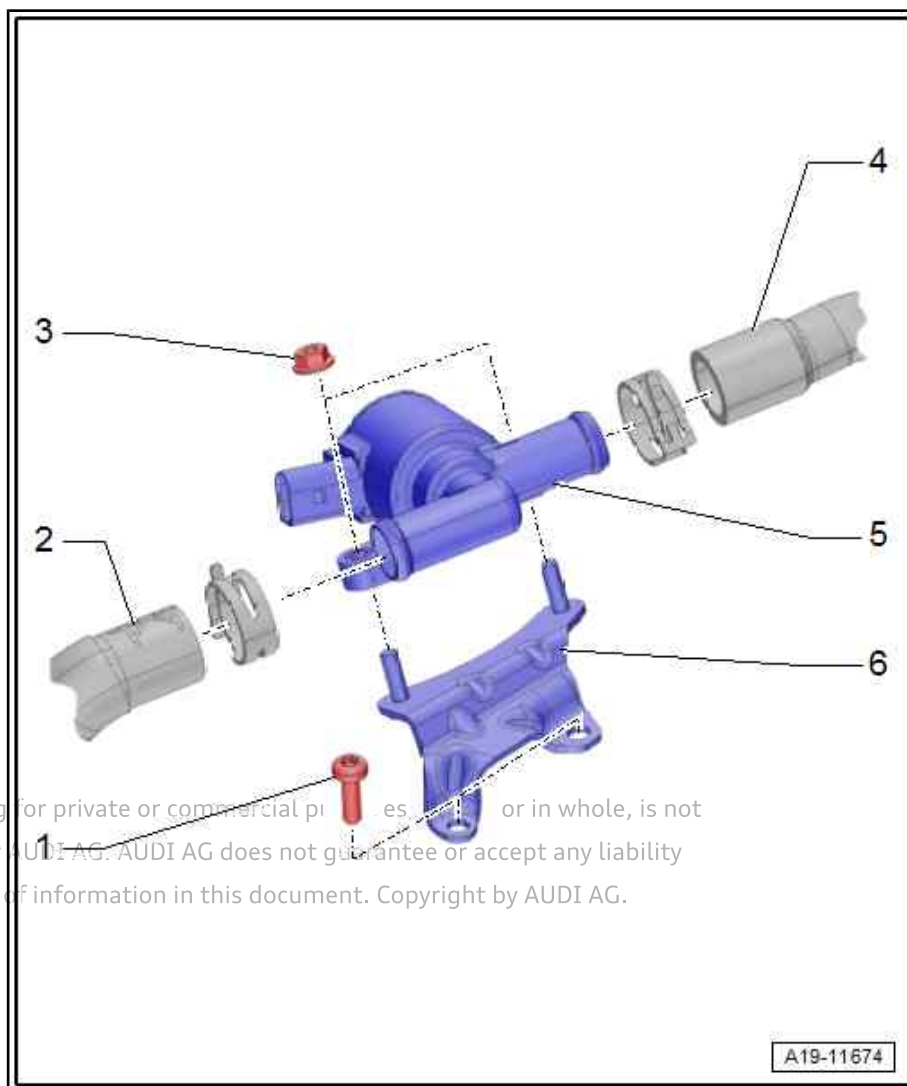
- ☐ Removing and installing
⇒ ["3.12.2 Removing and installing coolant valve for gearbox N488"](#),
[page 136](#)

6 - Bracket

- ☐ For coolant valve for gearbox - N488-



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A19-11674



3.4 Exploded view - coolant temperature senders

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1 - Retaining clip

- ☐ Check for firm attachment

2 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

3 - Radiator outlet coolant temperature sender - G83-

- ☐ Removing and installing
⇒ ["3.11 Removing and installing radiator outlet coolant temperature sender G83", page 133](#)

4 - O-ring

- ☐ 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 - O-ring

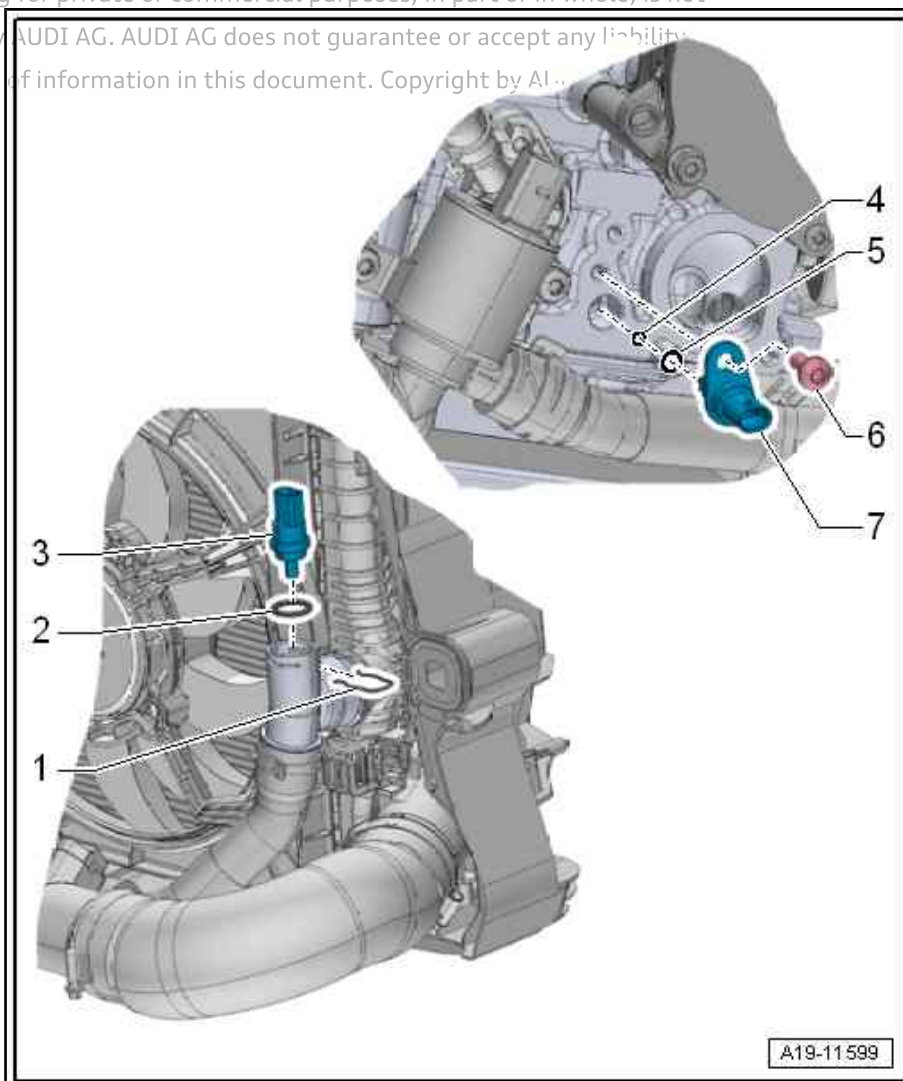
- ☐ Installation instructions
⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 19; Coolant pump/thermostat assembly; Exploded view - coolant temperature senders

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 - Coolant temperature sender - G62-

- ☐ On cylinder head (gearbox end)
- ☐ Removing and installing ⇒ [page 132](#)



3.5 Removing and installing electric coolant pump

⇒ ["3.5.1 Removing and installing continued coolant circulation pump V51", page 120](#)

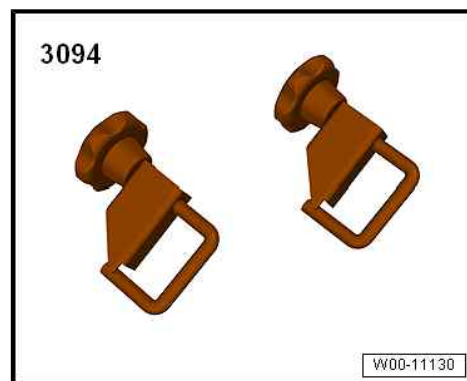
⇒ ["3.5.2 Removing and installing gearbox oil cooling pump V478", page 124](#)

3.5.1 Removing and installing continued coolant circulation pump - V51-

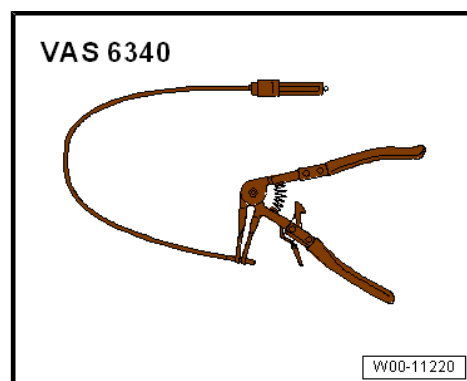
Special tools and workshop equipment required



- ◆ Hose clamps up to 25 mm - 3094-



- ◆ Hose clip pliers - VAS 6340-



- ◆ Hose clip pliers - VAS 6362-



- ◆ Safety goggles
- ◆ Protective gloves

Removing



Note



Fit all heat insulation sleeves in the original position when installing.

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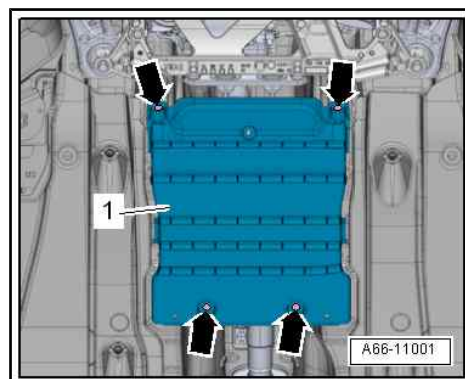
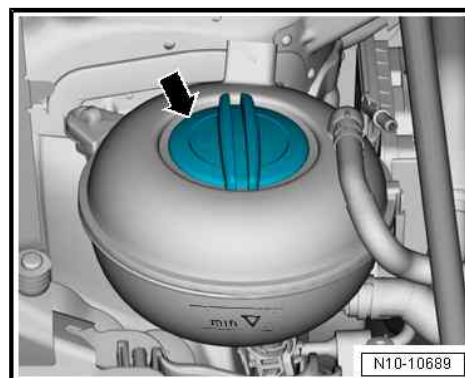
WARNING

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

Danger of scalding skin and other parts of the body.

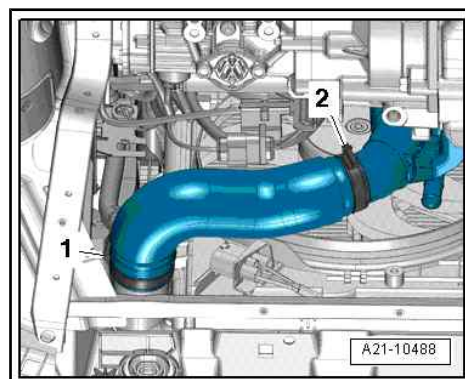
- **Put on protective gloves.**
- **Put on safety goggles.**
- **Cover filler cap on expansion tank with a cloth and open carefully to release pressure.**

- Open filler cap -arrow- on coolant expansion tank.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- If fitted, remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



Vehicles with dual clutch gearbox 0D9:

- Remove air cleaner housing ⇒ [page 191](#) .
- Release hose clip -1- and detach air hose from charge air cooler.

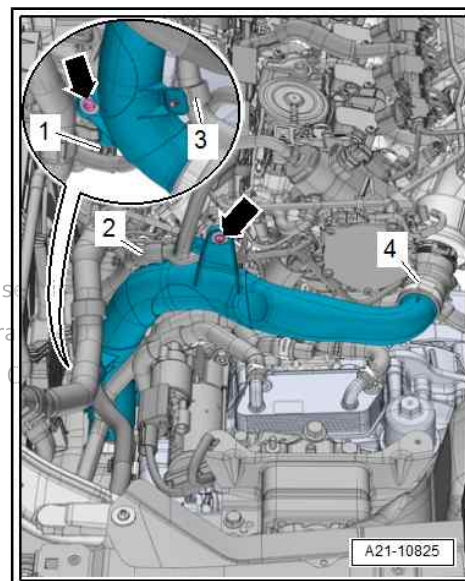




Vehicles with auxiliary radiator (left-side):

- Move coolant hose -3- clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.

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All vehicles (continued):

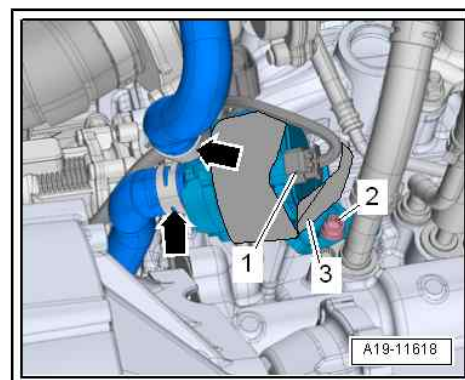
- Open heat insulation sleeve -3-.
- Unplug electrical connector -1-.
- Use hose clamps -3094- to clamp off coolant hoses at continued coolant circulation pump - V51- .



Note

Place a cloth underneath to catch escaping coolant.

- Release hose clips -arrows- and disconnect coolant hoses.
- Remove bolt -2- and detach continued coolant circulation pump - V51- .



Installing

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



Note

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

- Install air cleaner housing ⇒ [page 191](#) .
- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ◆ ⇒ [“3.2 Exploded view - electric coolant pump”, page 116](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



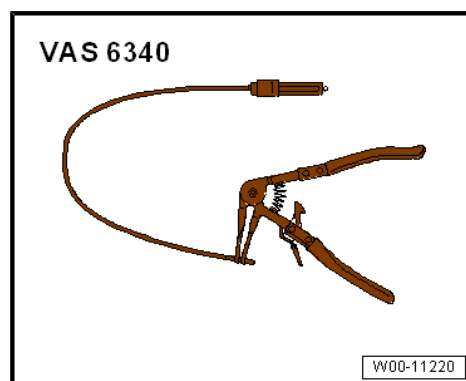
3.5.2 Removing and installing gearbox oil cooling pump - V478-

Special tools and workshop equipment required

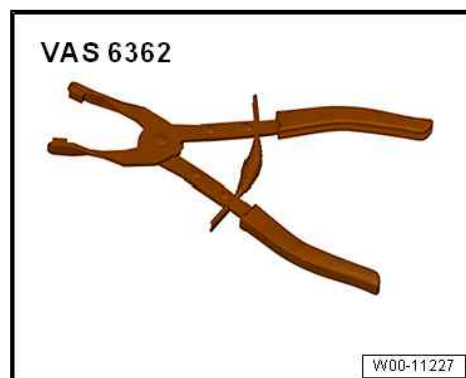
- ◆ Hose clamps up to 25 mm - 3094-



- ◆ Hose clip pliers - VAS 6340-



- ◆ Hose clip pliers - VAS 6362-



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Removing

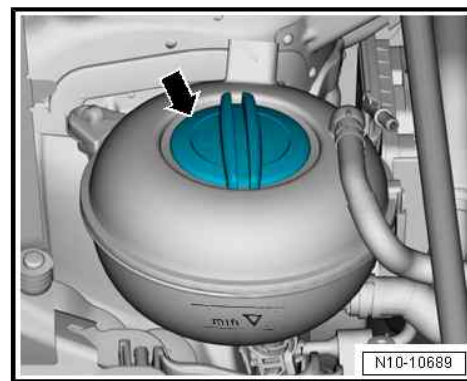


WARNING

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

Danger of scalding skin and other parts of the body.

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

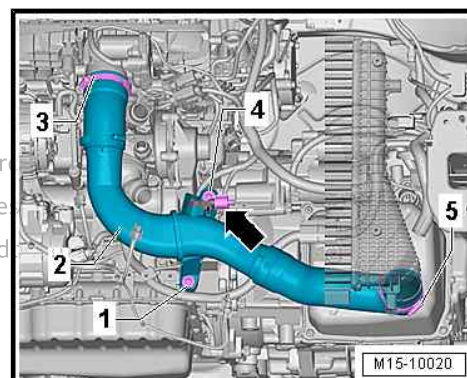


- Open filler cap -arrow- on coolant expansion tank.
- Drain coolant ➔ [page 105](#) .

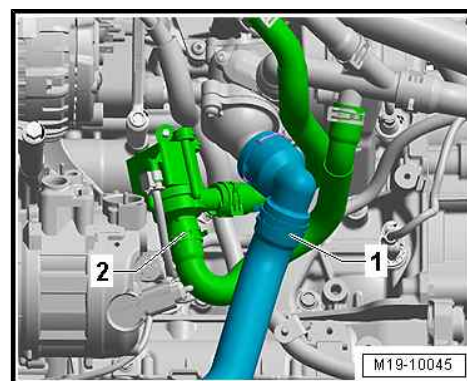
Removing

- Remove engine cover panel.
- Remove air cleaner housing ➔ [page 191](#) .
- Release hose clips -3- and -5-.
- Unplug electrical connector from charge pressure sender - G31- -arrow-.
- Unscrew bolts -1- and -4- and detach air pipe downwards.

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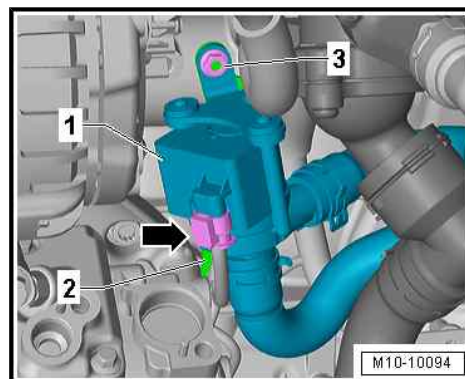


- Detach coolant hose -1- from thermostat.





- Unplug electrical connector -arrow- from gearbox oil cooling pump - V478- -1-.
- Remove nut -3- and detach gearbox oil cooling pump - V478- -1- from bracket -2-.



- Use hose clamps -3094- to clamp off coolant hoses -1- at gearbox oil cooling pump - V478- -2-.
- Release hose clips -arrows- and disconnect coolant hoses -1-.

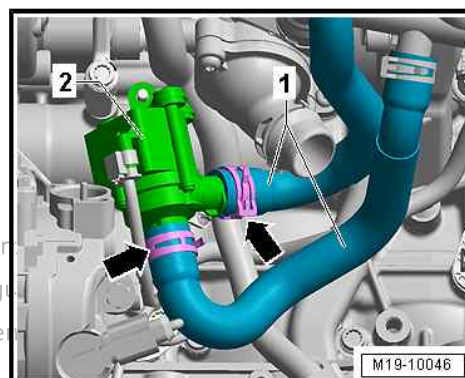
Installing

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



Note

Protected by copyright. Copying for private or commercial purposes is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee with respect to the correctness of information in this document.
Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .

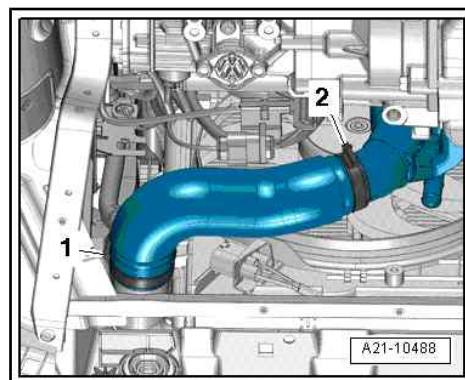


- Install air cleaner housing ⇒ [page 191](#) .
- Check coolant level ⇒ [page 109](#) .
- ♦ ⇒ [“3.2 Exploded view - electric coolant pump”, page 116](#)
- ♦ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

3.6 Removing and installing coolant pump

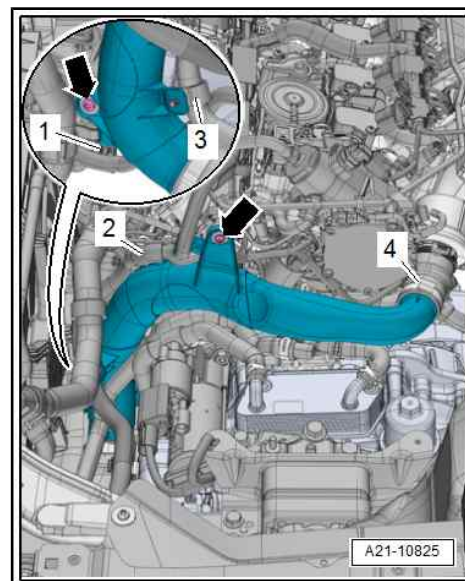
Removing

- Drain coolant ⇒ [page 105](#) .
- Remove air cleaner housing ⇒ [page 191](#) .
- Release hose clip -1- and detach air hose from charge air cooler.

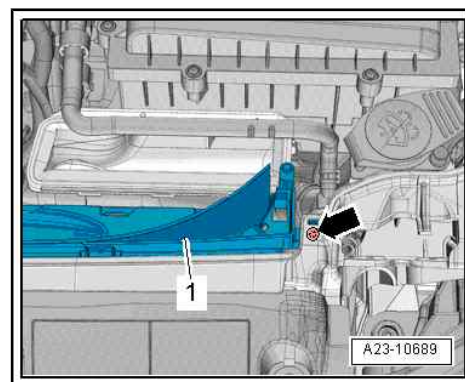




- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.



- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.



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- Lift retaining clip -2-, detach coolant connection and press to 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:



Note

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

- Install air cleaner housing ⇒ [page 191](#) .
- Connect coolant connection with plug-in connector ⇒ [page 147](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 107](#) .

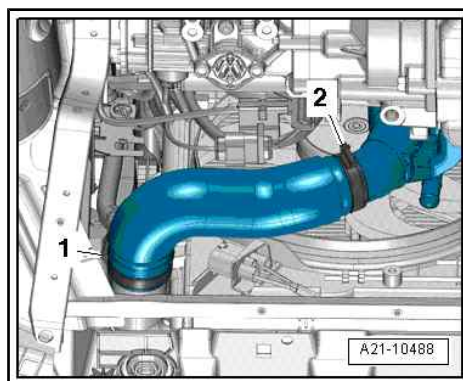
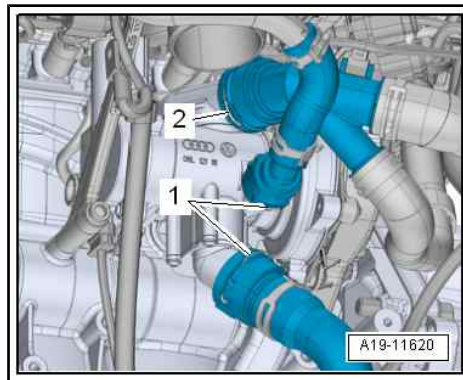
Tightening torques

- ♦ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ♦ ⇒ 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
- ♦ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)

3.7 Removing and installing toothed belt for coolant pump

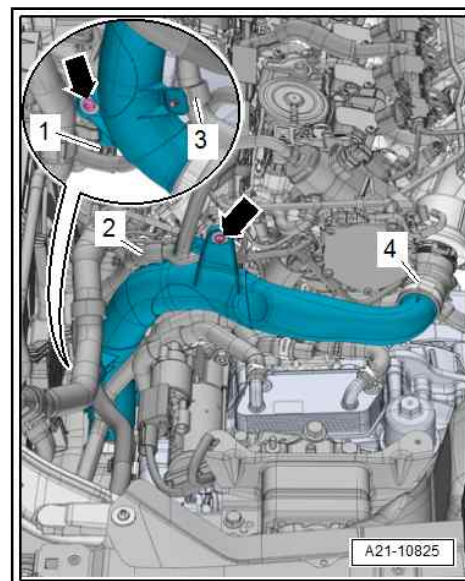
Removing

- Drain coolant ⇒ [page 105](#) .
- Remove air cleaner housing ⇒ [page 191](#) .
- Release hose clip -1- and detach air hose from charge air cooler.





- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.



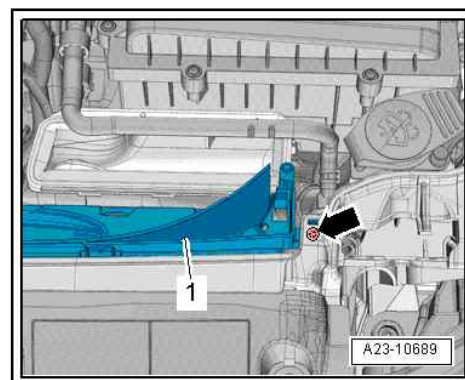
- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.

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

Installing

Additional work:

- Install air cleaner housing ⇒ [page 191](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 107](#) .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)

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

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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 actuator for engine temperature regulation - N493- .

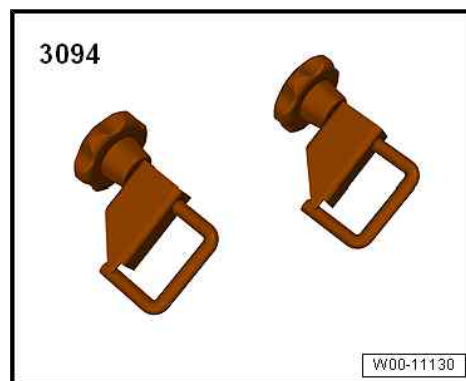
3.9 Removing and installing thermostat housing

This description applies to engines with mechanical thermostat only ⇒ [page 113](#) .

Special tools and workshop equipment required



- ◆ Hose clamps up to 25 mm - 3094-

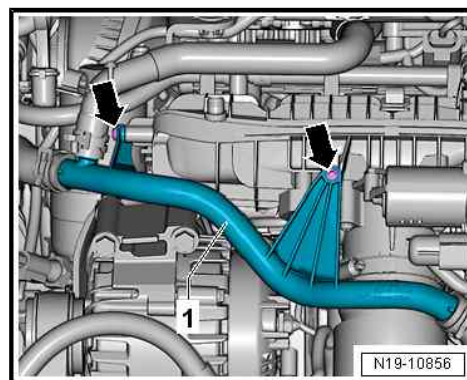


- ◆ Hose clip pliers - VAS 6362-



Removing

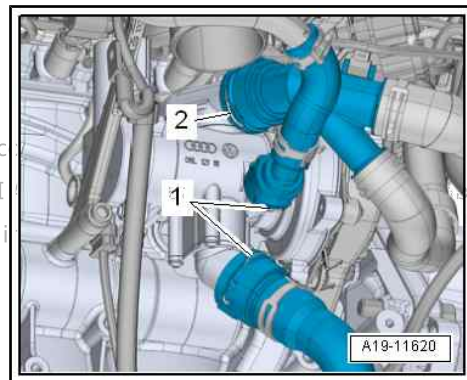
- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Remove bolts -arrows-.
- Remove throttle valve module - J338- ⇒ [page 195](#) .
- Remove coolant pump ⇒ [page 126](#) .



- Lift retaining clips -1- and -2- and disconnect coolant hoses.

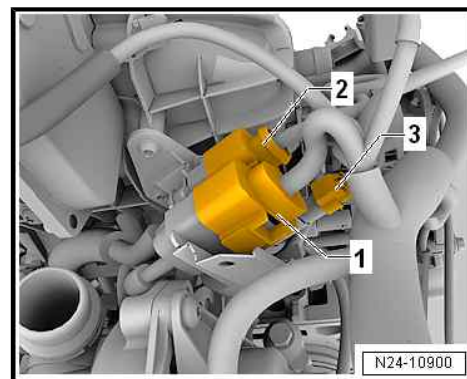


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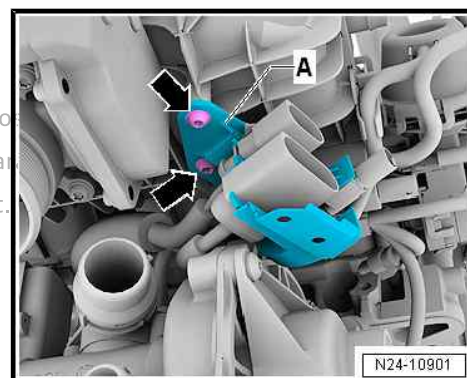


- Unplug electrical connectors -1, 2 and 3- beneath exhaust manifold.

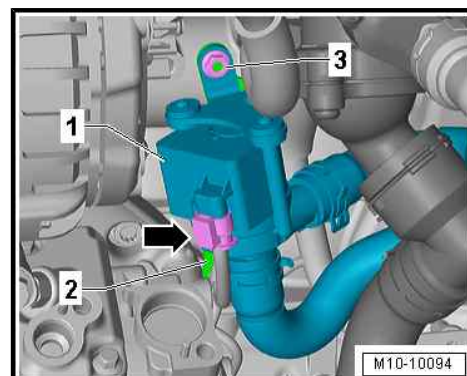


- Remove bolts -arrows- securing bracket -A-.

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- Unplug electrical connector -arrow- from gearbox oil cooling pump - V478- -1-.
- Remove nut -3- and detach gearbox oil cooling pump - V478- -1- from bracket -2-.

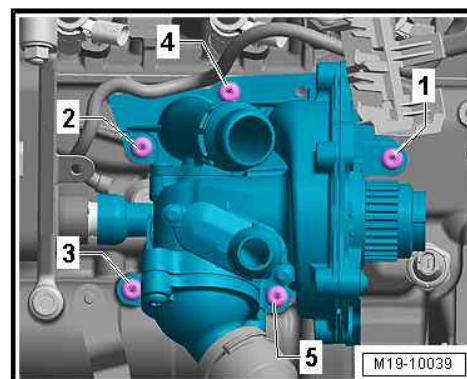


- Push wiring for alternator to the side and unscrew bolt -3- from thermostat housing.
- Remove remaining bolts -1- to -5-.
- Detach thermostat housing from centring pins and pull housing off engine oil cooler.

Installing

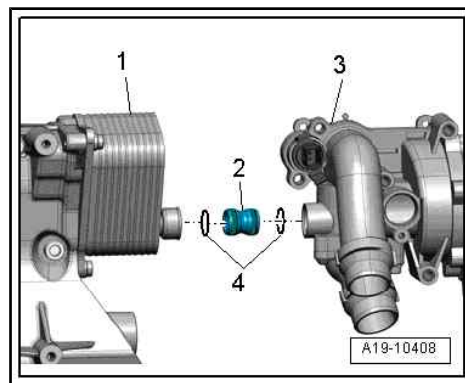
Installation is carried out in reverse order; note the following:

- Renew seals and O-rings.





- Lubricate O-rings -4- with coolant, for coolant refer to ⇒ Electronic parts catalogue .
- Check whether the two centring pins are fitted in the cylinder block; install if necessary.
- Fit connecting piece -2- into engine oil cooler -1-.
- Push thermostat housing -3- onto connecting piece and centring pins in cylinder block.
- Tighten bolts for thermostat housing ⇒ [page 115](#) .
- Install coolant pump ⇒ 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 .
- Install throttle valve module - J338- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing throttle valve module - J338- .
- Secure gearbox oil cooling pump - V478- again.
- Connect coolant hoses with plug-in connector ⇒ [page 147](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 107](#) .
- 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 .

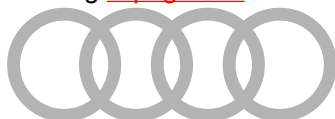
Tightening torques

- ♦ ⇒ [“3.1.2 Exploded view - coolant pump/thermostat, engine with mechanical thermostat”, page 113](#)
- ♦ ⇒ [“3.2 Exploded view - electric coolant pump”, page 116](#)
- ♦ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)

3.10 Removing and installing coolant temperature sender - G62-

Removing

- Remove air cleaner housing ⇒ [page 191](#) .



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- Release hose clip -2-.
- Remove bolt -1- and press air pipe (left-side) towards left slightly.

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- .

Installing

Additional work:

- Install air cleaner housing ⇒ [page 191](#) .

Tightening torques

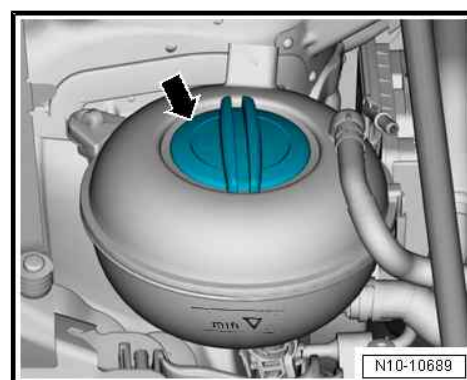
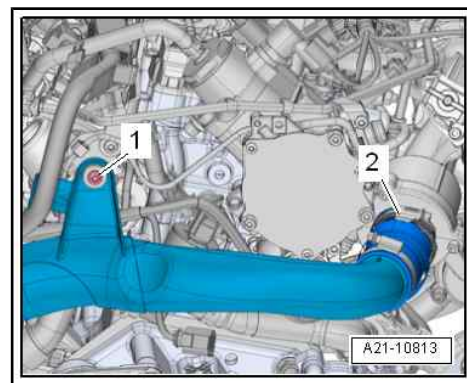
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 21 ; Charge air system; Exploded view - hose connections for charge air system

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

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- To relieve residual pressure in cooling system, open filler cap -arrow- on coolant expansion tank briefly and then close cap again (it should click into place).
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .





- Unplug electrical connector -1-.
- Pull out retaining clip -2- and detach radiator outlet coolant temperature sender - G83- .



Note

- ◆ Place a cloth underneath to catch escaping coolant.
- ◆ Insert new radiator outlet coolant temperature sender - G83- immediately into connection to avoid loss of coolant.

Installing

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

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Note

Fit new O-ring.

- Check coolant level ⇒ [page 109](#) .

Tightening torques

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

3.12 Removing and installing coolant valves

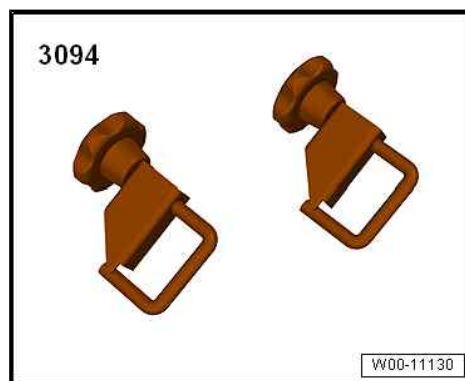
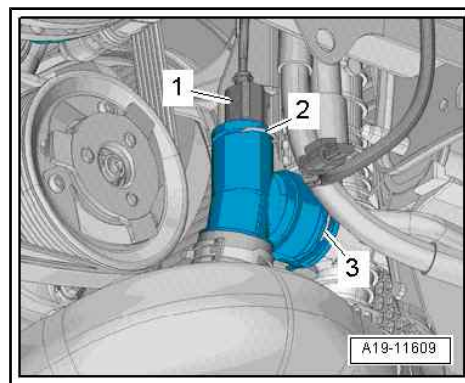
⇒ [“3.12.1 Removing and installing coolant shut-off valve N82”, page 134](#)

⇒ [“3.12.2 Removing and installing coolant valve for gearbox N488”, page 136](#)

3.12.1 Removing and installing coolant shut-off valve - N82-

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-





◆ Hose clip pliers - VAS 6362-

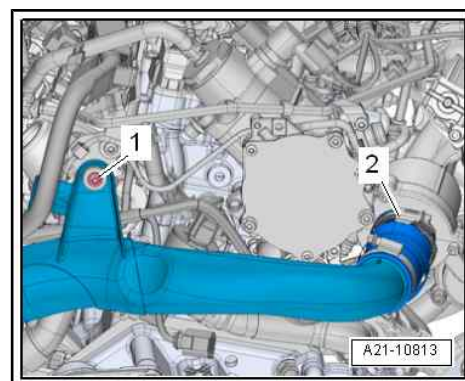


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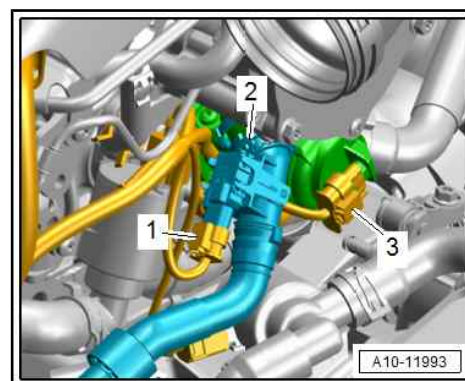
Removing

- Remove air cleaner housing ➔ [page 191](#) .
- Release hose clip -2-.
- Remove bolt -1- and press air pipe (left-side) towards left slightly.



Version with secondary air system:

- Unplug electrical connector -1-.
- Press release tabs on both sides and disconnect secondary air pipe -2-.





All vehicles (continued):

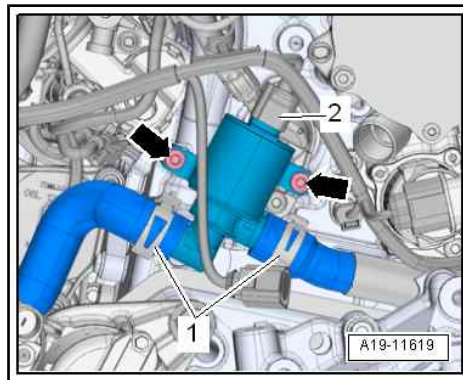
- Unplug electrical connector -2-.
- Use hose clamps -3094- to clamp off coolant hoses on coolant shut-off valve - N82- .



Note

Place a cloth underneath to catch escaping coolant.

- Release hose clips -1- and disconnect coolant hoses.
- Unscrew bolts -arrows- and detach coolant shut-off valve - N82- .



Installing

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

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Note

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

- Install air cleaner housing ⇒ [page 191](#) .
- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ◆ ⇒ [“3.3 Exploded view - coolant valves”, page 117](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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

3.12.2 Removing and installing coolant valve for gearbox - N488-

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-





- ◆ Hose clip pliers - VAS 6362-

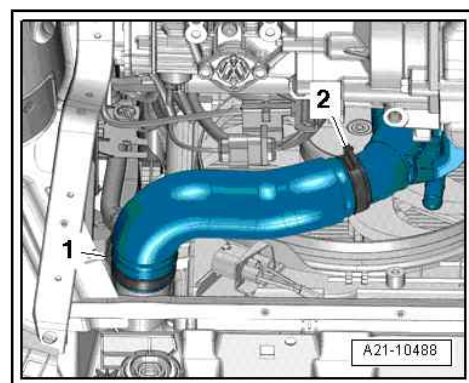


Removing

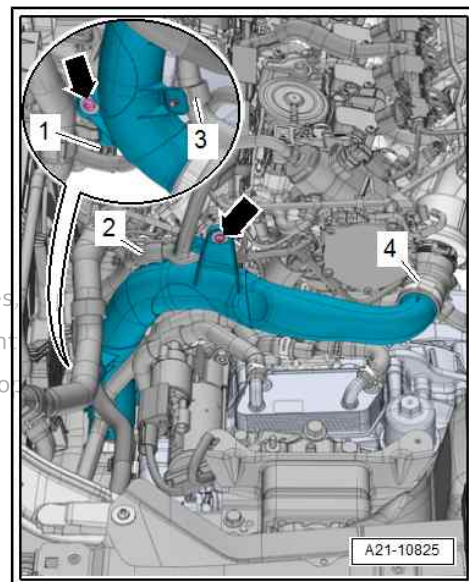
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove air cleaner housing ⇒ [page 191](#) .

Version 1

- Release hose clip -1- and detach air hose from charge air cooler.



- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and detach air pipe.

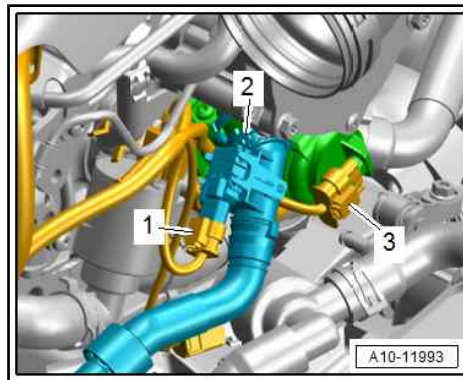


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Version with secondary air system:

- Unplug electrical connector -1-.
- Press release tabs on both sides and disconnect secondary air hose -2-.



All vehicles (continued):

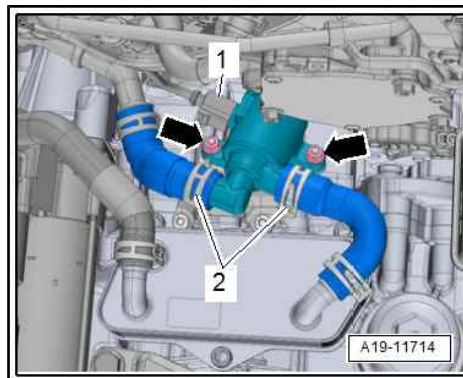
- Unplug electrical connector -1-.
- Use hose clamps -3094- to clamp off coolant hoses on coolant valve for gearbox - N488- .



Note

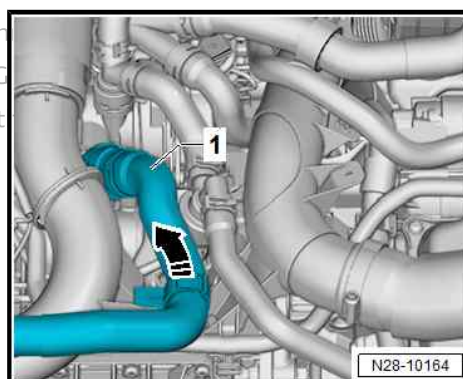
Place a cloth underneath to catch escaping coolant.

- Release hose clips -2- and disconnect coolant hoses.
- Remove nuts -arrows- and detach coolant valve for gearbox - N488- .



Version 2

- Unclip coolant hose -1- from charge air pipe and slide it upwards -arrow-.





- Unplug connector -2- and clamp off coolant hoses with hose clamps up to 25 mm - 3094- .



Note

Place a cloth underneath to catch escaping coolant.

- Release hose clips and detach coolant hoses.
- Unscrew nuts -arrows- and remove coolant valve for gearbox - N488- .

Installing

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



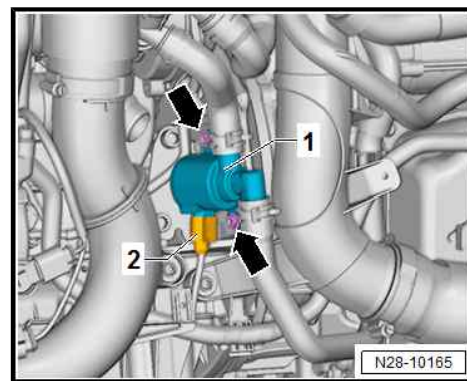
Note

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

- Install air cleaner housing ⇒ [page 191](#) .
- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ◆ ⇒ [“3.3 Exploded view - coolant valves”, page 117](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



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4 Coolant pipes

⇒ ["4.1 Exploded view - coolant pipes", page 140](#)

⇒ ["4.2 Removing and installing coolant pipes", page 141](#)

4.1 Exploded view - coolant pipes

1 - Coolant pipe (front)

- ❑ Removing and installing
⇒ ["4.2.1 Removing and installing coolant pipe \(front\)", page 141](#)

2 - Bolts

- ❑ 6 Nm

3 - Coolant pipe (top)

- ❑ Removing and installing
⇒ ["4.2.2 Removing and installing coolant pipe \(top\)", page 142](#)

4 - Bolts

- ❑ 9 Nm

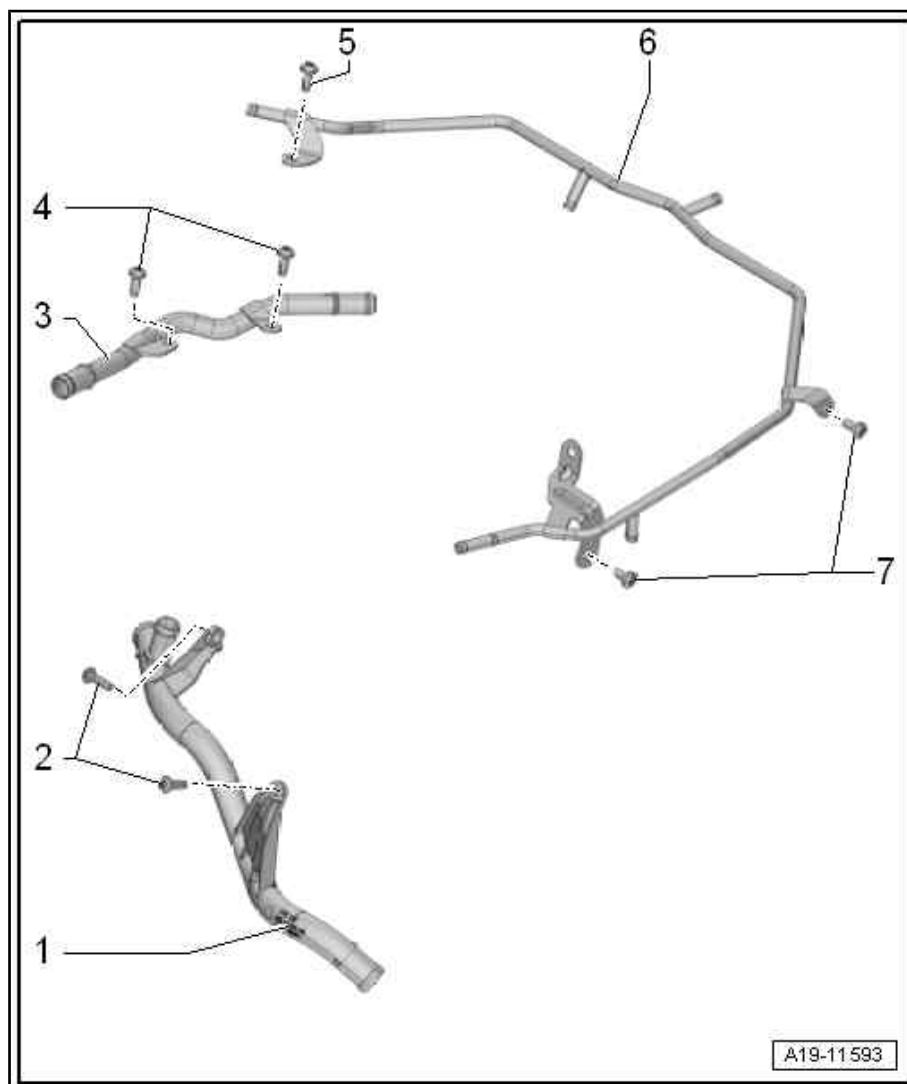
5 - Bolt

- ❑ 9 Nm

6 - Coolant pipe

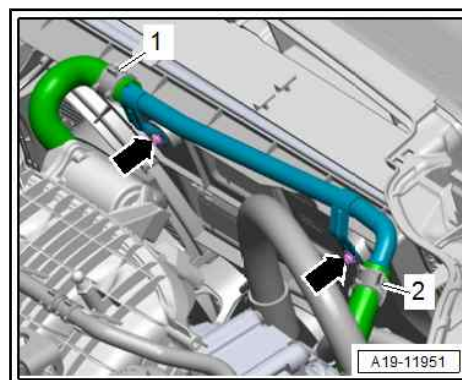
7 - Bolts

- ❑ 9 Nm



Coolant pipe at radiator cowl - tightening torque

- Tighten bolts -arrows- to 5 Nm.





4.2 Removing and installing coolant pipes

⇒ ["4.2.1 Removing and installing coolant pipe \(front\)", page 141](#)

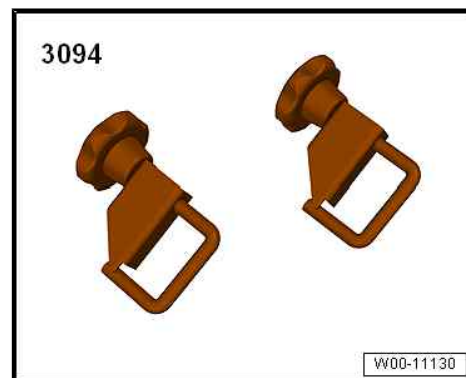
⇒ ["4.2.2 Removing and installing coolant pipe \(top\)", page 142](#)

⇒ ["4.2.3 Removing and installing coolant pipe at radiator cowl", page 144](#)

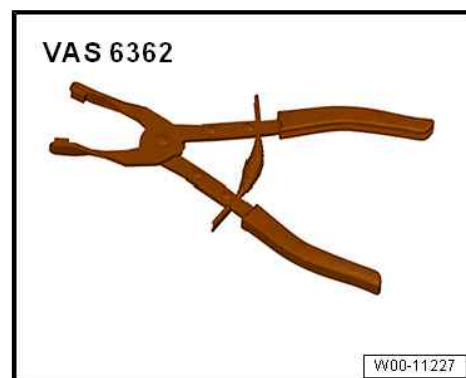
4.2.1 Removing and installing coolant pipe (front)

Special tools and workshop equipment required

◆ Hose clamps up to 25 mm - 3094-

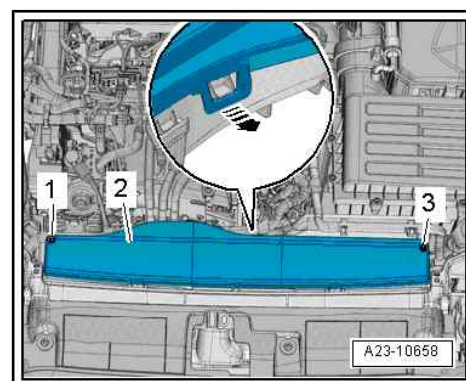


◆ Hose clip pliers - VAS 6362-



Removing

- Remove bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.

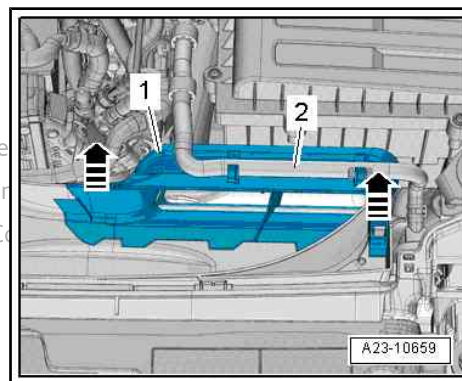


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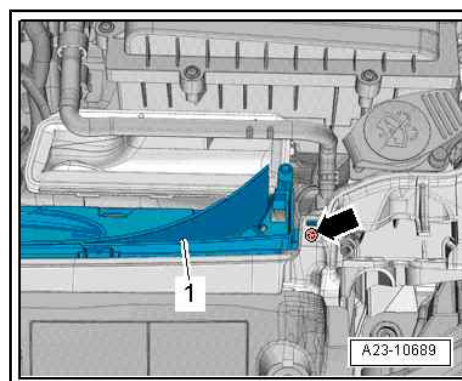


- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.

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- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.



Note

Place a cloth under coolant pipe to catch escaping coolant.

- Clamp off coolant hoses -1, 2- with hose clamps up to 25 mm - 3094- .
- Release hose clips and detach coolant hoses.
- Unscrew bolts -arrows- and remove coolant pipe (front).

Installing

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



Note

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

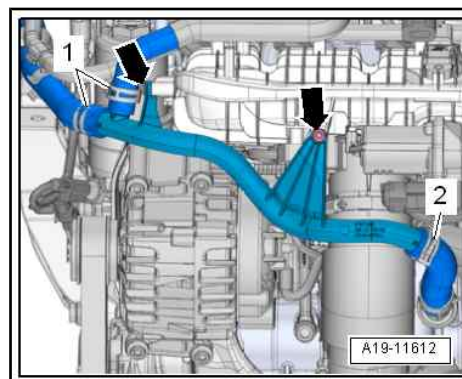
- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ♦ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ♦ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)

4.2.2 Removing and installing coolant pipe (top)

Special tools and workshop equipment required





- ◆ Hose clamps up to 25 mm - 3094-



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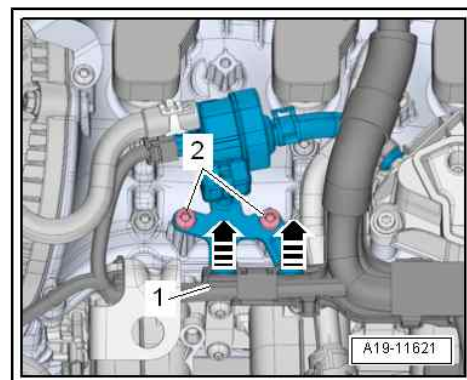
- ◆ Hose clip pliers - VAS 6362-

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Removing

- Remove ignition coil with output stage for cylinder “3” ⇒ 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 .
- Release fasteners -arrows- and detach wiring duct -1- from bracket.





- Clamp off coolant hoses -arrows- with hose clamps up to 25 mm - 3094- .
- Release hose clips and detach coolant hoses.
- Unscrew bolts -1- and remove coolant pipe (top).

Installing

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



Note

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

- Install ignition coil ⇒ 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 .
- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ♦ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)

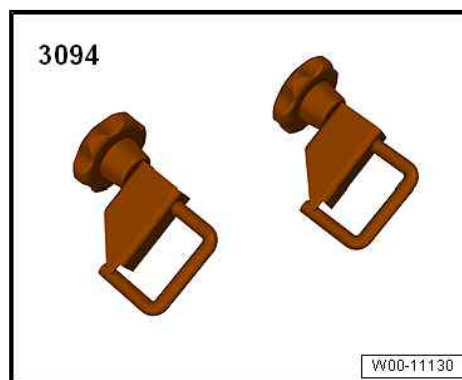
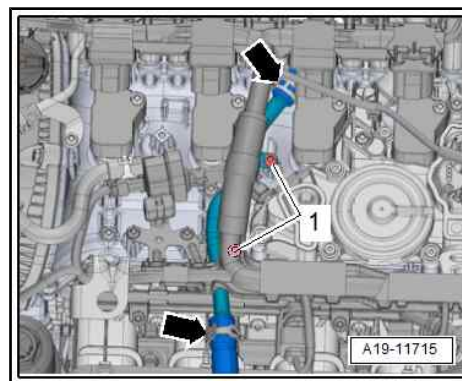
4.2.3

Removing and installing coolant pipe at radiator cowl

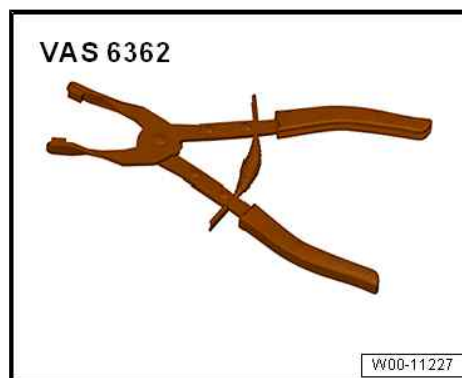
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Special tools and workshop equipment required

- ♦ Hose clamps up to 25 mm - 3094-



- ♦ Hose clip pliers - VAS 6362-





Removing



Note

Place a cloth underneath to catch escaping coolant.

- Clamp off coolant hoses using hose clamps, up to 25 mm - 3094- , release hose clips -1 and 2- and disconnect hoses.
- Unscrew bolts -arrows- and remove coolant pipe.

Installing

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



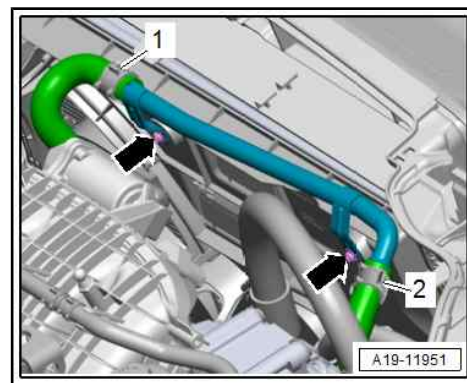
Note

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

- Check coolant level ⇒ [page 109](#) .

Tightening torques

- ◆ ⇒ [Fig. ““Coolant pipe at radiator cowl - tightening torque””](#), [page 140](#)



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5 Radiator/radiator fans

⇒ ["5.1 Exploded view - radiator/radiator fans", page 146](#)

⇒ ["5.2 Exploded view - auxiliary radiator", page 149](#)

⇒ ["5.3 Removing and installing radiator", page 149](#)

⇒ ["5.4 Removing and installing radiator cowl", page 152](#)

⇒ ["5.5 Removing and installing radiator fan V7", page 153](#)

⇒ ["5.6 Removing and installing auxiliary radiator", page 154](#)

5.1 Exploded view - radiator/radiator fans

Radiator

1 - Coolant hose

- ☐ Lift retaining clip to detach
- ☐ Connecting
⇒ [page 147](#)

2 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

3 - Radiator outlet coolant temperature sender - G83-

- ☐ Removing and installing
⇒ ["3.11 Removing and installing radiator outlet coolant temperature sender G83", page 133](#)

4 - Radiator

- ☐ Removing and installing
⇒ ["5.3 Removing and installing radiator", page 149](#)
- ☐ If renewed, refill system with fresh coolant

5 - Coolant hose

- ☐ Lift retaining clip to detach
- ☐ Connecting
⇒ [page 147](#)

6 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

7 - Charge air cooler

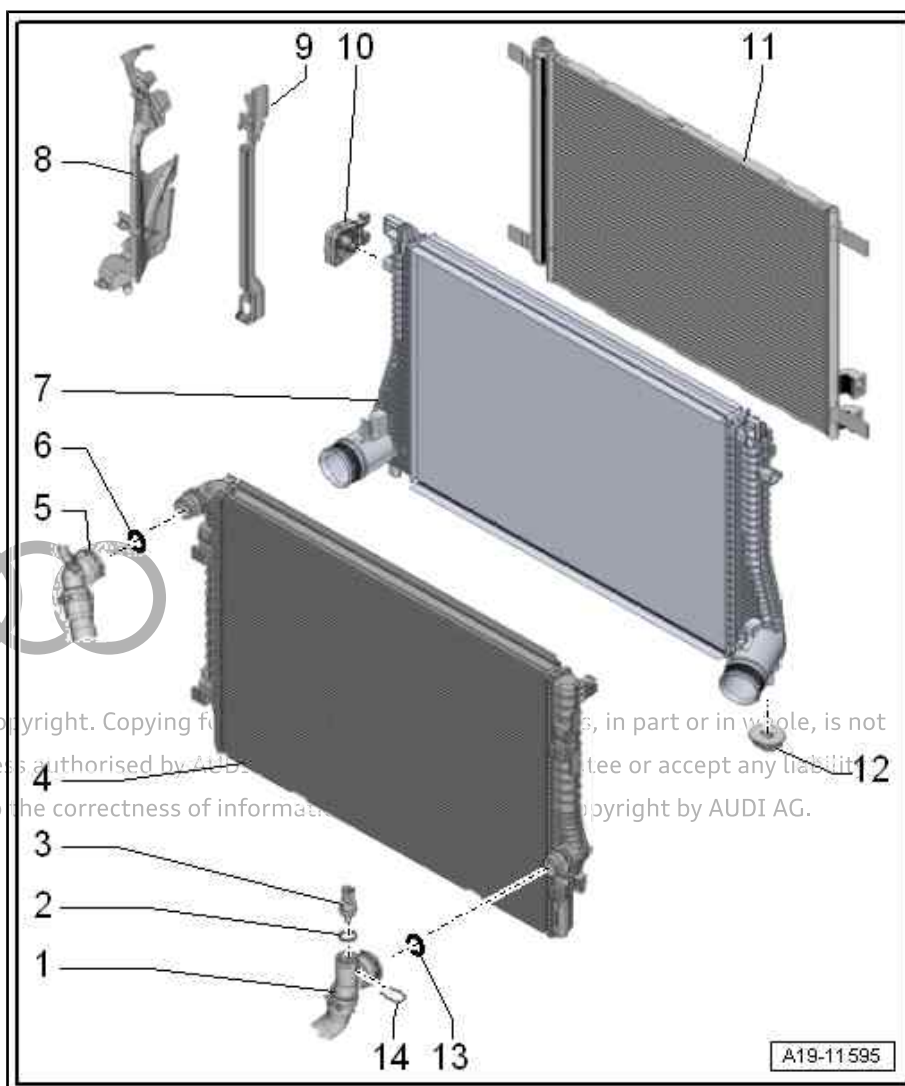
- ☐ Removing and installing
⇒ ["5.3 Removing and installing radiator", page 149](#)

8 - Air duct

9 - Air duct

10 - Rubber bush

- ☐ For charge air cooler





11 - Condenser

- ☐ Removing and installing ⇒ Heating, air conditioning; Rep. gr. 87 ; Refrigerant circuit; Removing and installing condenser

12 - Rubber bush

- ☐ For charge air cooler

13 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

14 - Retaining clip

- ☐ For radiator outlet coolant temperature sender - G83-

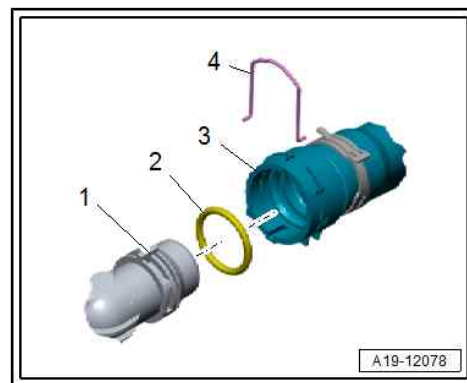
Connecting coolant hose with plug-in connector



Note

If damaged, renew retaining clip -4-.

- Remove old O-ring -2- from coolant hose -3-.
- Lubricate new O-ring lightly with coolant and fit O-ring in coolant hose.
- Press coolant hose onto coolant pipe -1- until it engages with a click.
- Press coolant hose in again and then pull to check that plug-in connector is correctly engaged.



Radiator cowl and radiator fans



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1 - Bolt

- 5 Nm

2 - Radiator cowl

- Removing and installing
⇒ ["5.4 Removing and installing radiator cowl"](#),
[page 152](#)

3 - Bolt

- 5 Nm

4 - Radiator fan - V7-

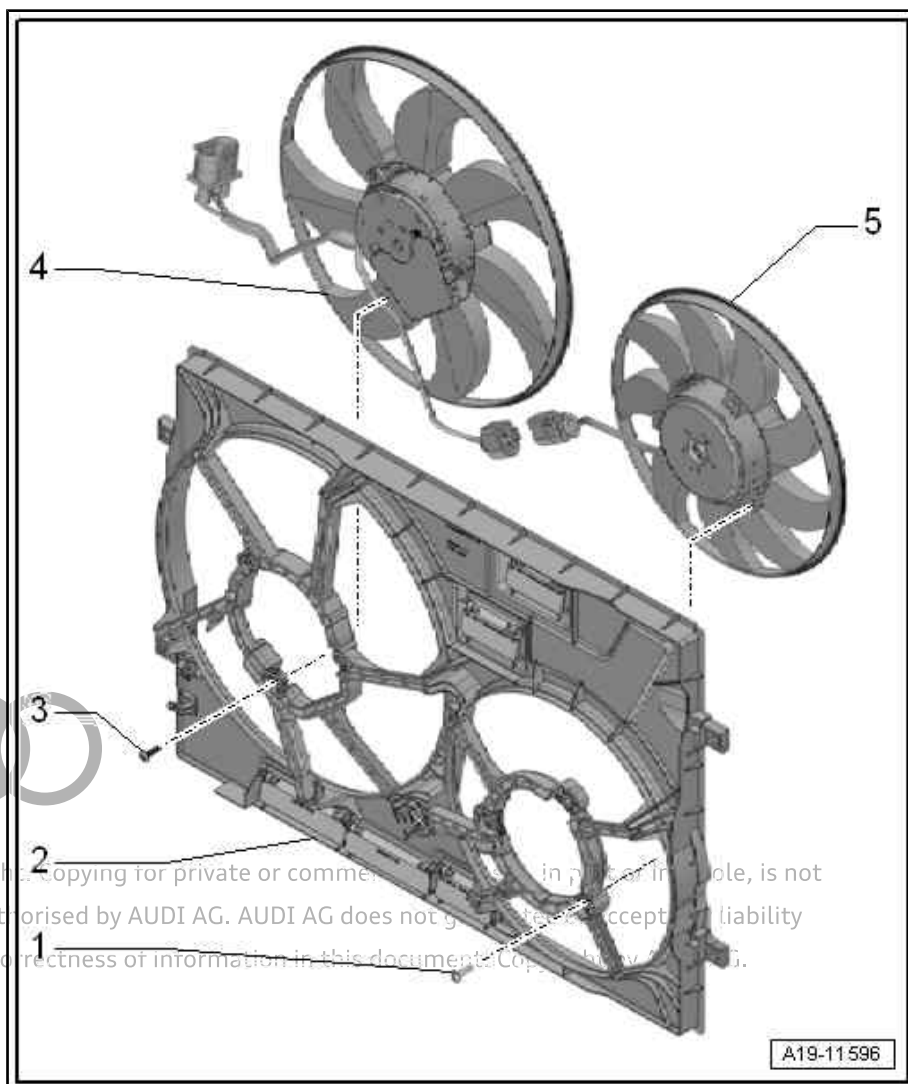
- Removing and installing
⇒ ["5.5.1 Removing and installing radiator fan V7"](#),
[page 153](#)

5 - Radiator fan 2 - V177-

- Removing and installing
⇒ ["5.5.2 Removing and installing radiator fan V177"](#),
[page 153](#)



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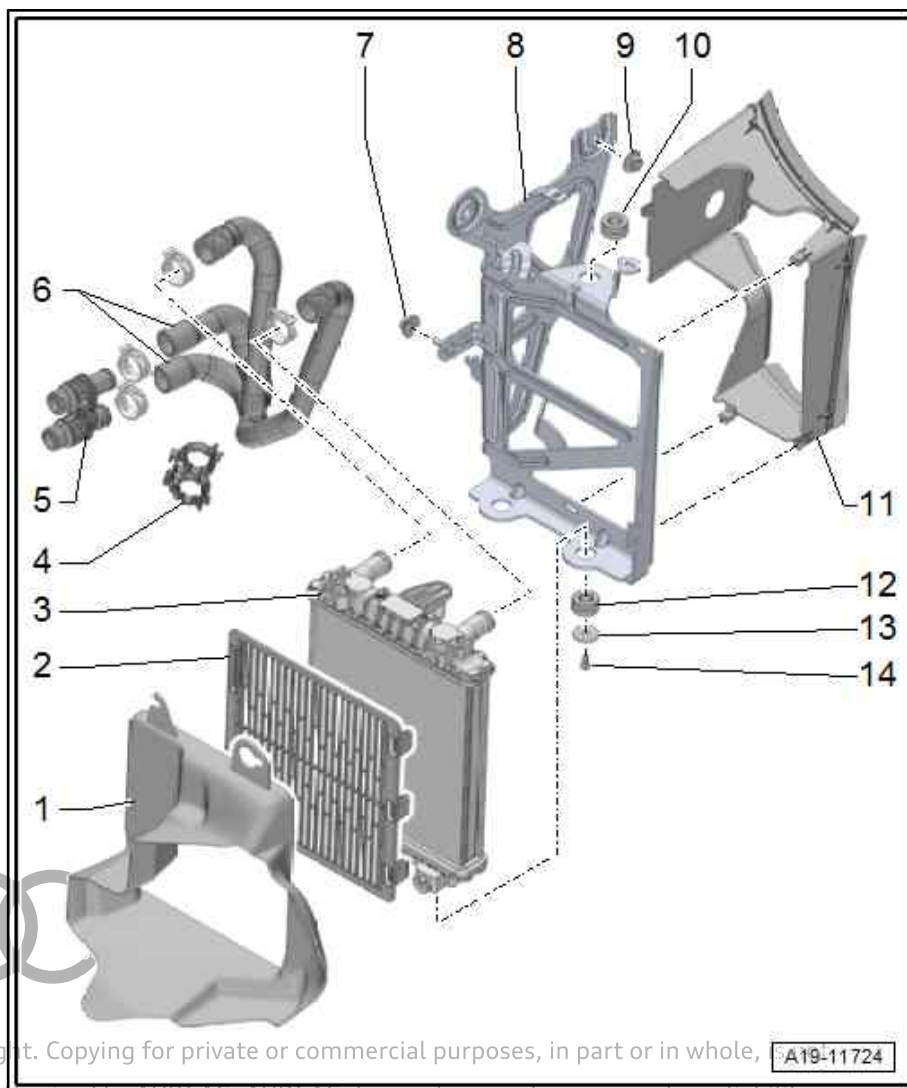
5.2 Exploded view - auxiliary radiator



Note

The illustration shows the auxiliary radiator on the left side; it is similar on the right side.

- 1 - Air duct
- 2 - Protective screen
- 3 - Auxiliary radiator
 - ☐ Removing and installing
⇒ ["5.6 Removing and installing auxiliary radiator"](#), page 154
 - ☐ If renewed, refill system with fresh coolant
- 4 - Hose retainer
- 5 - Connecting piece
- 6 - Coolant hoses
- 7 - Nut
 - ☐ 9 Nm
- 8 - Bracket
 - ☐ For auxiliary radiator
- 9 - Nut
 - ☐ 9 Nm
- 10 - Rubber grommet
 - ☐ For auxiliary radiator
- 11 - Air duct
- 12 - Rubber grommet
 - ☐ For auxiliary radiator
- 13 - Support
- 14 - Bolt
 - ☐ 3.5 Nm



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A19-11724

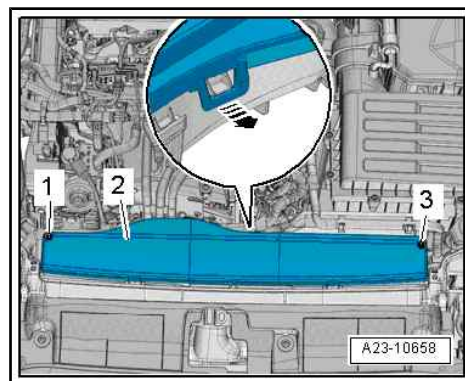
5.3 Removing and installing radiator

Removing

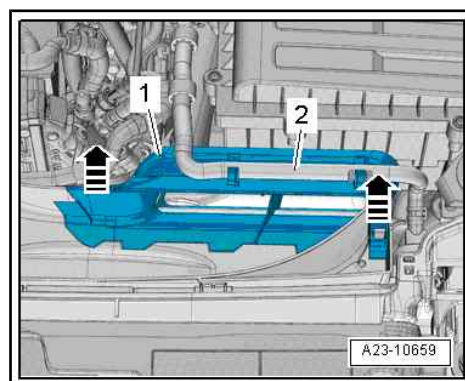
- Drain coolant ⇒ [page 105](#) .
- Remove air cleaner housing ⇒ [page 191](#) .
- Remove radiator cowl ⇒ [page 152](#) .
- Remove bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63 ; Bumper (front); Removing and installing bumper cover .



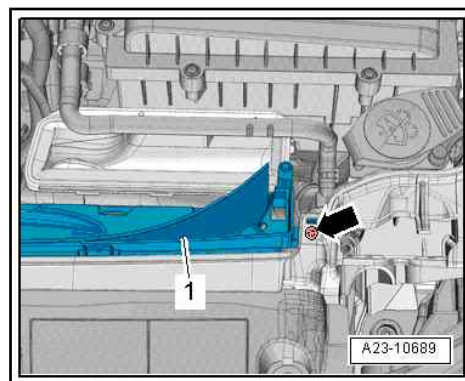
- Remove bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.



- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.



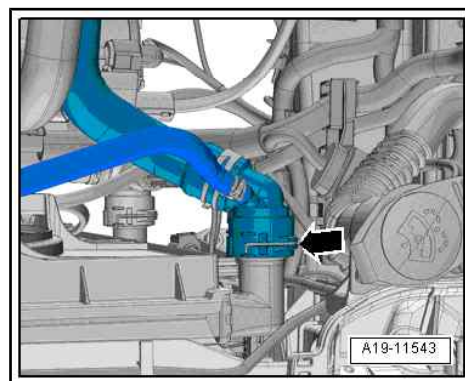
- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.



Note

The illustration shows the radiator for vehicles with a 1.8 ltr. engine; it is similar on other vehicles.

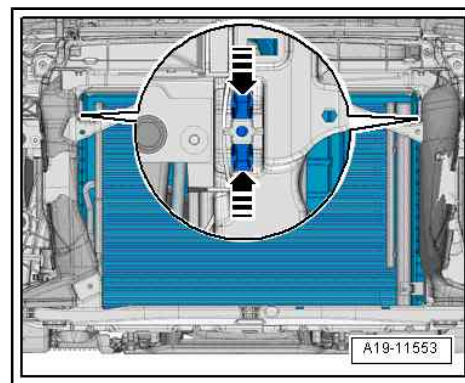
- Lift retaining clip -arrow- and disconnect coolant hose (top left) from radiator.



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- Press catches on both sides -arrows- and push radiator (top) slightly towards rear.



- Press locking tabs on left and right sides of radiator simultaneously -arrow- and detach radiator from charge air cooler.
- Secure charge air cooler.

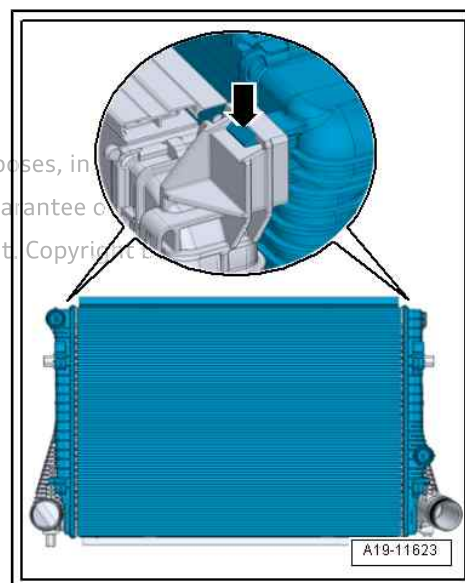
Installing

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



Note

- ◆ *If there are slight impressions on the fins, refer to ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Installing radiators and condensers.*
- ◆ *Renew O-rings.*
- Install bumper cover (front) ⇒ General body repairs, exterior; Rep. gr. 63; Bumper (front); Removing and installing bumper cover.
- Install radiator cowl ⇒ [page 152](#).
- Connect coolant hose with plug-in connector ⇒ [page 147](#).
- Install air cleaner housing ⇒ [page 191](#).



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 107](#).

Tightening torques

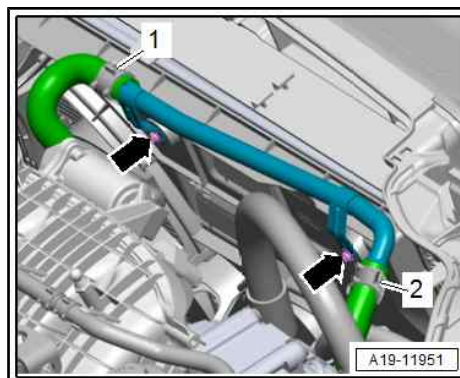
- ◆ ⇒ [“5.1 Exploded view - radiator/radiator fans”, page 146](#)
- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)



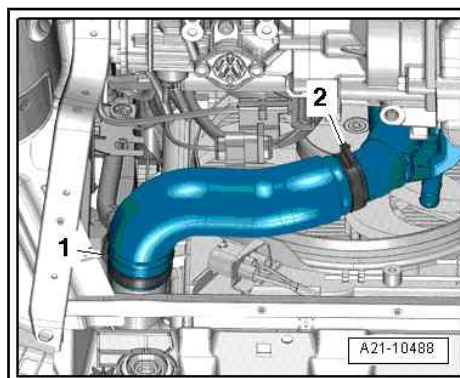
5.4 Removing and installing radiator cowl

Removing

- Vehicles with auxiliary radiator (right-side): Remove bolts -arrows- and press coolant pipe towards rear.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



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

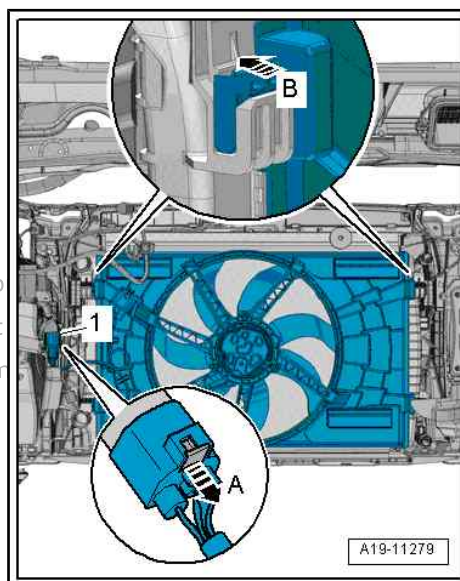


WARNING

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

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

- Unplug electrical connector 1- for radiator fan (push retainer in direction of -arrow A- and press release catch down).
- Press locking tabs on left and right sides of radiator cowl simultaneously -arrow B-, lift radiator cowl off radiator and remove from below.



Installing

Installation is carried out in reverse sequence.

Tightening torques

- ◆ ⇒ [Fig. “Coolant pipe at radiator cowl - tightening torque”](#), page 140
- ◆ ⇒ 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
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



5.5 Removing and installing radiator fan - V7-

⇒ [“5.5.1 Removing and installing radiator fan V7”, page 153](#)

⇒ [“5.5.2 Removing and installing radiator fan V177”, page 153](#)

5.5.1 Removing and installing radiator fan - V7-

Removing



Note

Fit all cable ties in the original positions when installing.

- Remove radiator cowl ⇒ [page 152](#) .
- Unplug electrical connector -arrow-.
- Unscrew bolts -1- and remove radiator fan - V7- .

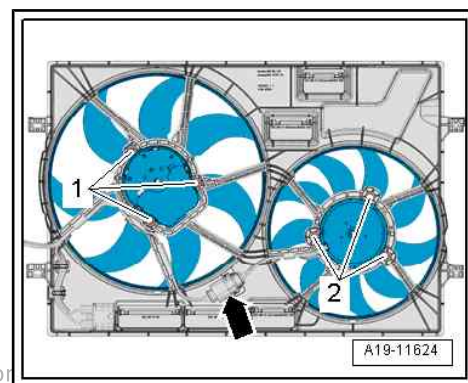
Installing

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

- Install radiator cowl ⇒ [page 152](#) .

Tightening torques

- ◆ ⇒ [“5.1 Exploded view - radiator/radiator fans”, page 146](#)



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5.5.2 Removing and installing radiator fan - V177-

Removing



Note

Fit all cable ties in the original positions when installing.

- Remove radiator cowl ⇒ [page 152](#) .
- Unplug electrical connector -arrow-.
- Unscrew bolts -2- and remove radiator fan - V177- .

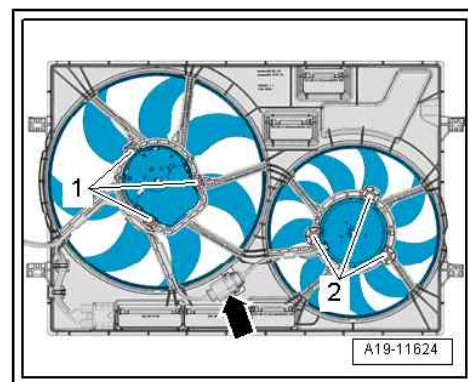
Installing

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

- Install radiator cowl ⇒ [page 152](#) .

Tightening torques

- ◆ ⇒ [“5.1 Exploded view - radiator/radiator fans”, page 146](#)





5.6 Removing and installing auxiliary radiator

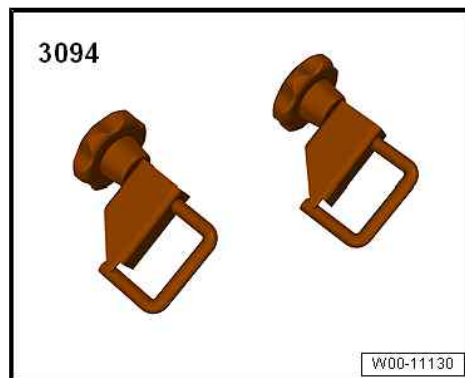


Note

The following description shows the procedure for removing the auxiliary radiator (left-side); the procedure for the right side is similar.

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-

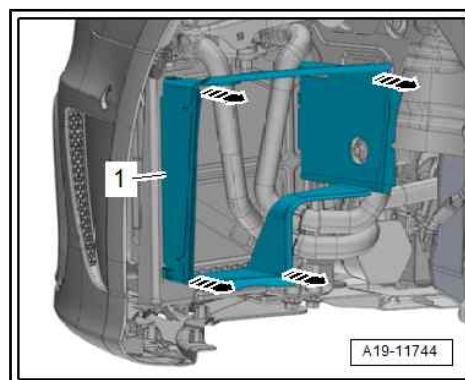


- ◆ Hose clip pliers - VAS 6362-



Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation.
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Unclip air duct -1- -arrows-.

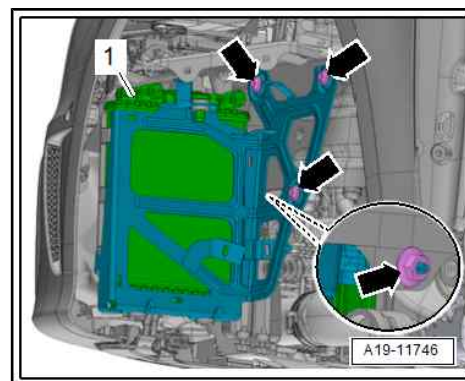
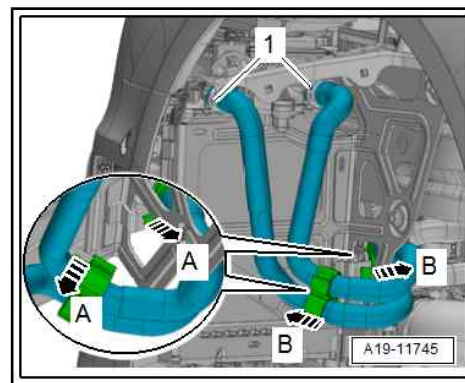




Note

Place a cloth underneath to catch escaping coolant.

- Clamp off coolant hoses -1- with hose clamps -3094- .
- Release hose clips and detach coolant hoses.
- Release catches -arrows A-, disconnect coolant hoses -arrows B- and move clear at bracket.
- Remove nuts -arrows- and detach auxiliary radiator -1- with bracket.



- Detach air duct -1- -arrow-.
- Remove bolts -4- and lift auxiliary radiator -2- off bracket -3-.

Installing

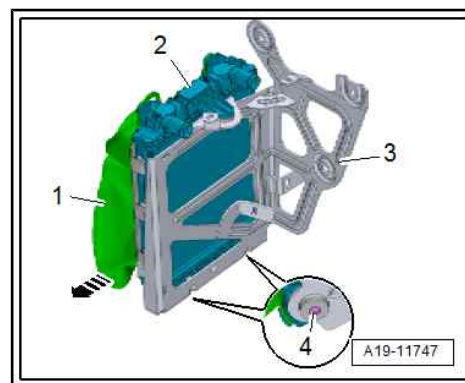
Installation is carried out in reverse order; note the following:



Note

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

- Check coolant level ⇒ [page 109](#) .



Tightening torques

- ◆ ⇒ ["5.2 Exploded view - auxiliary radiator", page 149](#)
- ◆ ⇒ 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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21 – Turbocharging/supercharging

1 Turbocharger

⇒ [“1.1 Exploded view - turbocharger”, page 156](#)

⇒ [“1.2 Removing and installing turbocharger”, page 160](#)

⇒ [“1.3 Removing and installing charge pressure positioner V465”, page 172](#)

⇒ [“1.4 Adjusting charge pressure positioner V465”, page 173](#)

1.1 Exploded view - turbocharger

Part I

Part II ⇒ [page 157](#)

1 - O-ring

- ☐ Renew
- ☐ Lubricate lightly with engine oil

2 - Bolt

- ☐ 9 Nm

3 - Coolant supply line

4 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

5 - Gasket

- ☐ Renew

6 - Nut

- ☐ Renew
- ☐ 25 Nm

7 - Turbocharger

- ☐ Removing and installing
⇒ [page 160](#)

8 - Oil supply line

9 - Heat shield

10 - Bolt

- ☐ 9 Nm

11 - Nut

- ☐ 9 Nm

12 - Bolt

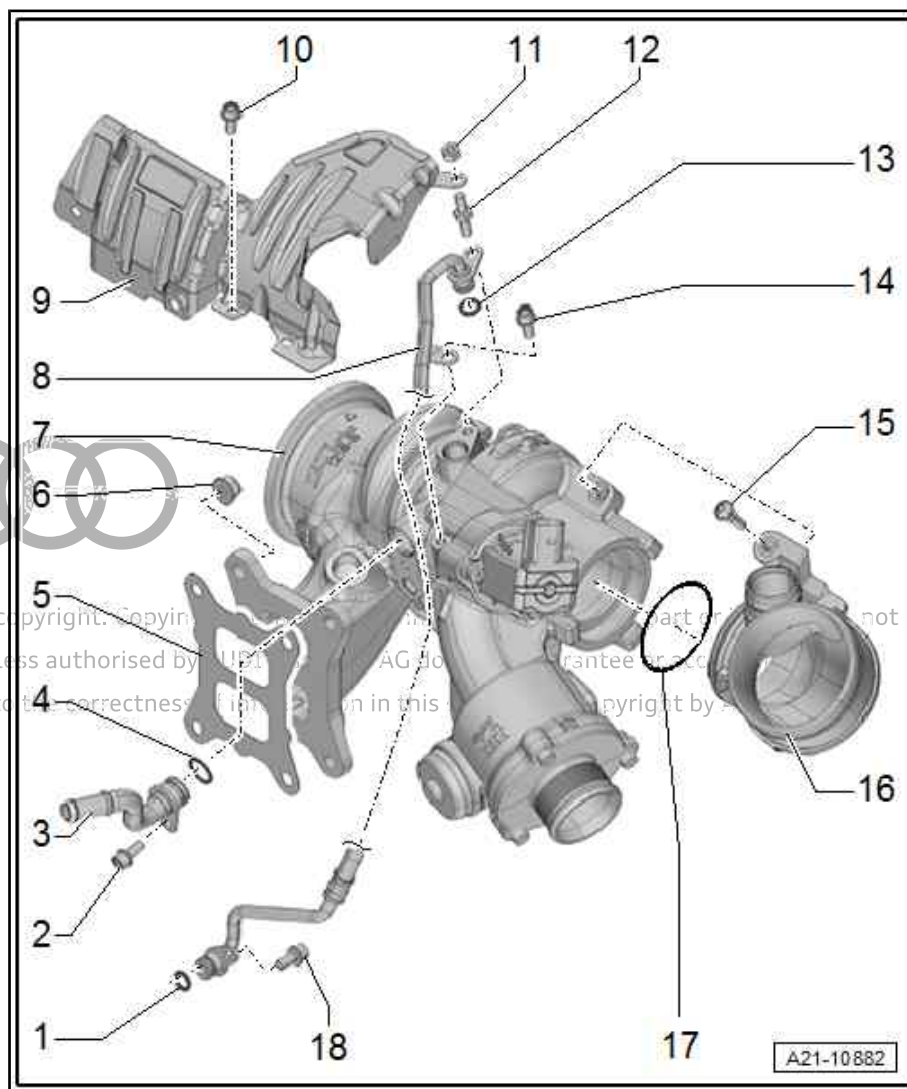
- ☐ 9 Nm

13 - O-ring

- ☐ Renew
- ☐ Lubricate lightly with engine oil

14 - Bolt

- ☐ 9 Nm





15 - Bolt

- ☐ 9 Nm

16 - Connection

17 - O-ring

- ☐ Renew

18 - Bolt

- ☐ 9 Nm

Part II

Part I ➔ [page 156](#)

1 - Bolt

- ☐ 9 Nm

2 - Oil return line

3 - O-ring

- ☐ Renew
- ☐ Lubricate lightly with engine oil

4 - Bolt

- ☐ ➔ [page 158](#)

5 - Charge pressure positioner - V465-

- ☐ ➔ [page 158](#)
- ☐ Removing and installing ➔ ["1.3 Removing and installing charge pressure positioner V465", page 172](#)
- ☐ Adjusting ➔ ["1.4 Adjusting charge pressure positioner V465", page 173](#)

6 - Nut

- ☐ 10 Nm

7 - Bolt

- ☐ 9 Nm

8 - Connection

9 - O-ring

- ☐ Renew

10 - Bolt

- ☐ 9 Nm

11 - Turbocharger air recirculation valve - N249-

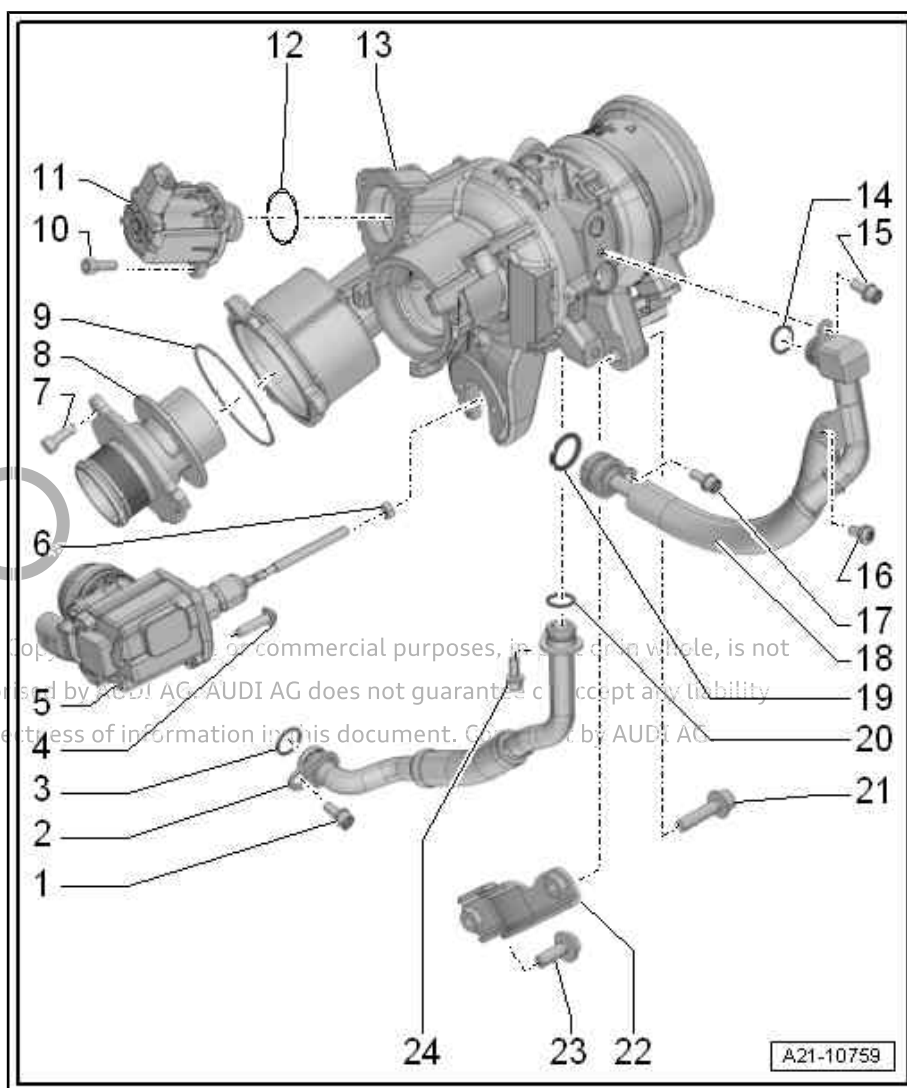
- ☐ Note installation position ➔ [page 158](#)

12 - O-ring

- ☐ Not available as replacement part, supplied together with turbocharger air recirculation valve - N249-

13 - Turbocharger

- ☐ Removing and installing ➔ [page 160](#)





14 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

15 - Bolt

- ☐ 9 Nm

16 - Bolt

- ☐ 9 Nm

17 - Bolt

- ☐ 9 Nm

18 - Coolant return line

19 - O-ring

- ☐ Renew
- ☐ Lubricate with coolant

20 - O-ring

- ☐ Renew
- ☐ Lubricate lightly with engine oil

21 - Bolt

- ☐ Coat thread with high-temperature paste; for high-temperature paste refer to ⇒ Electronic parts catalogue
- ☐ 30 Nm

22 - Bracket

- ☐ For turbocharger

23 - Bolt

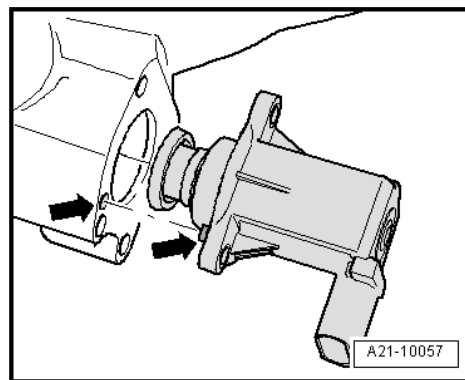
- ☐ Renew
- ☐ 20 Nm + turn 90° further

24 - Bolt

- ☐ 9 Nm

Fitting location of turbocharger air recirculation valve - N249-

- Note installation position -arrows-.



Exploded view - charge pressure positioner



1 - Lock nut

- ☐ 10 Nm

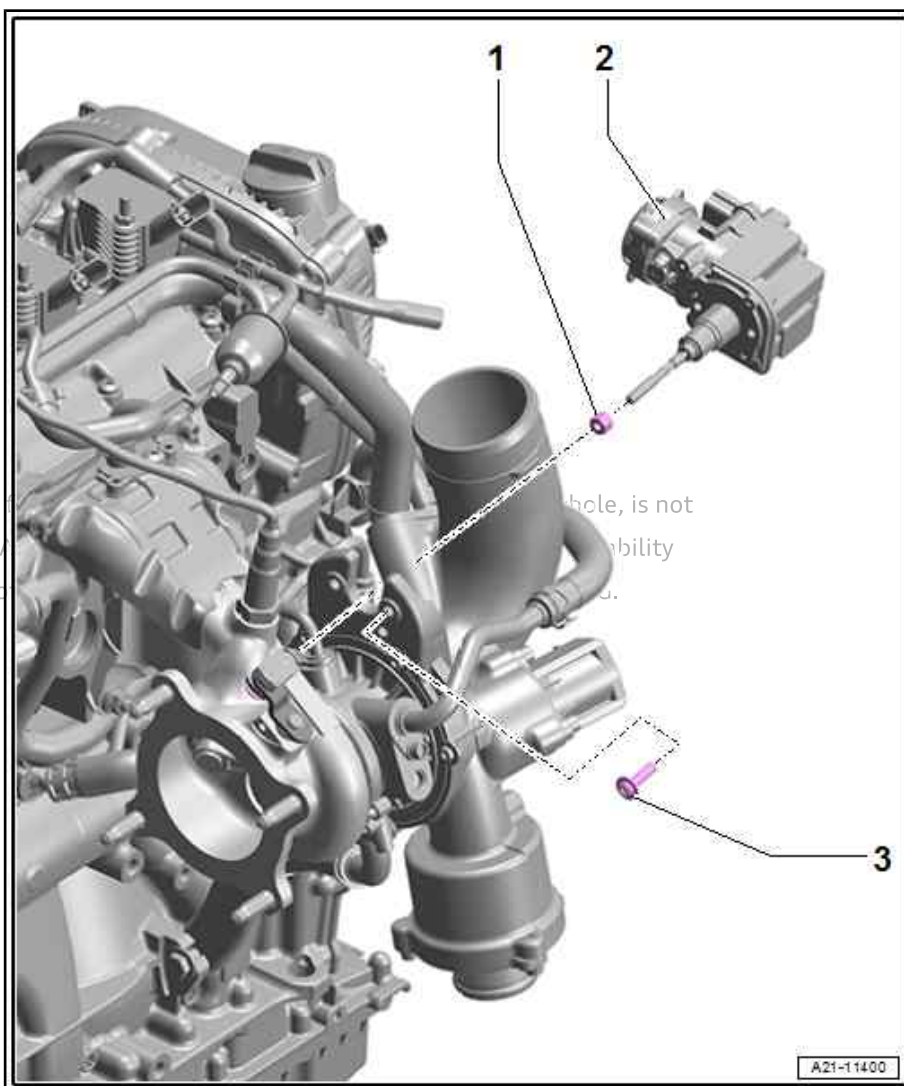
2 - Charge pressure positioner - V465-

- ☐ Before removing charge pressure positioner - V465- , check it is available in ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing
⇒ ["1.3 Removing and installing charge pressure positioner V465", page 172](#)

3 - Bolt

- ☐ 9 Nm

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1.2 Removing and installing turbocharger

⇒ [“1.2.1 Removing and installing turbocharger - vehicles without particulate filter”, page 160](#)

⇒ [“1.2.2 Removing and installing turbocharger - vehicles with particulate filter”, page 165](#)

1.2.1 Removing and installing turbocharger - vehicles without particulate filter



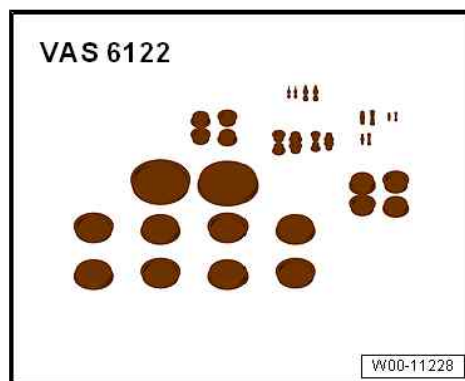
Caution

If the turbocharger has suffered mechanical damage (e.g. damaged compressor wheel), it is not sufficient merely to fit a new turbocharger. The following work must be performed in order to avoid further damage:

- ◆ *Check air cleaner housing, air filter element and air hoses for dirt and foreign particles.*
- ◆ *Check the entire charge air system (including the charge air cooler) for foreign matter.*
- ◆ *If foreign matter is found in the charge air system, clean all relevant ducts and hoses and renew charge air cooler if necessary.*

Special tools and workshop equipment required

- ◆ Engine bung set - VAS 6122-



- ◆ Hose clip pliers - VAS 6362-



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Removing

- Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Repair notes; Rules for cleanliness .
- Drain coolant ⇒ [page 105](#) .



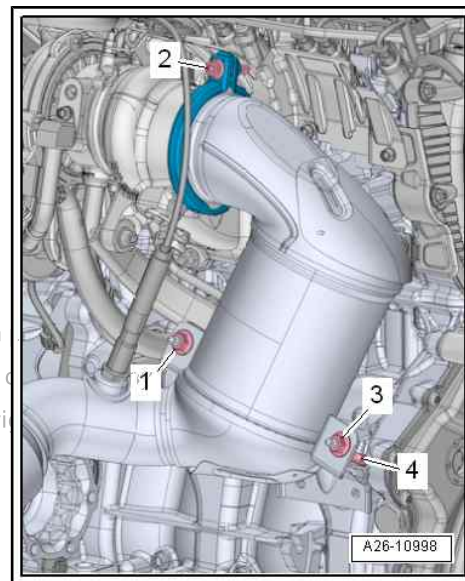
- Remove air cleaner housing ➔ [page 191](#) .
- Remove Lambda probe - G39- ➔ [page 204](#) .
- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1 and 3- and move catalytic converter clear to one side.



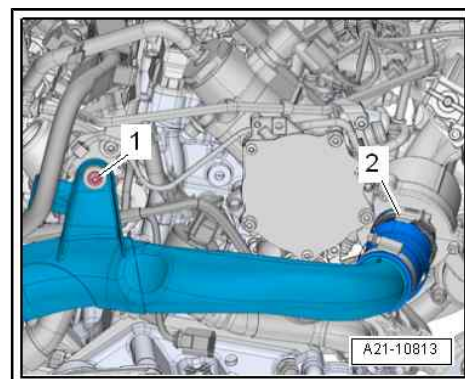
Note

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

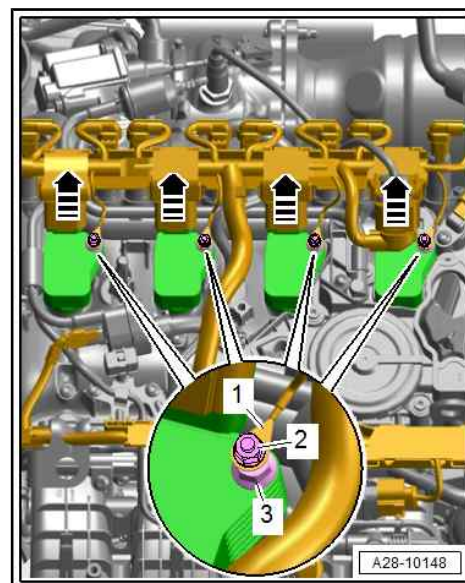
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- Release hose clip -2-.
- Remove bolt -1- and press air pipe (left-side) towards left slightly.

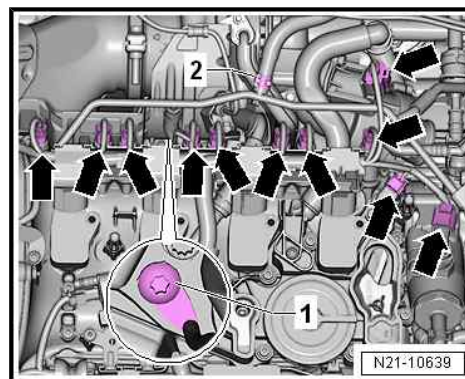


- If fitted, remove nut -2- and move earth wire -1- clear.
- Release electrical connectors and detach simultaneously from ignition coils in direction of -arrows-.

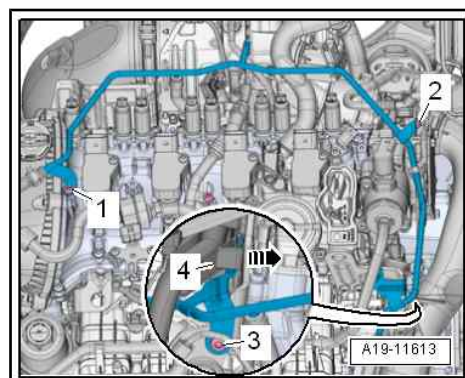




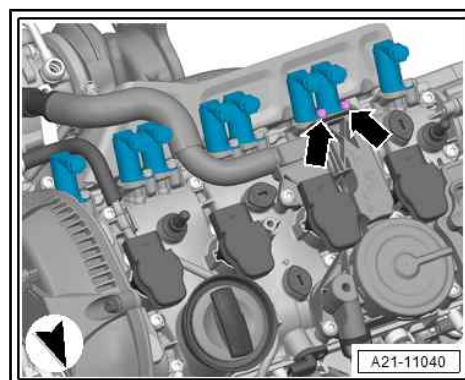
- If fitted, unscrew bolt -1- for earth wire. Disconnect coolant hose -2-.
- Unplug connectors -arrows-.



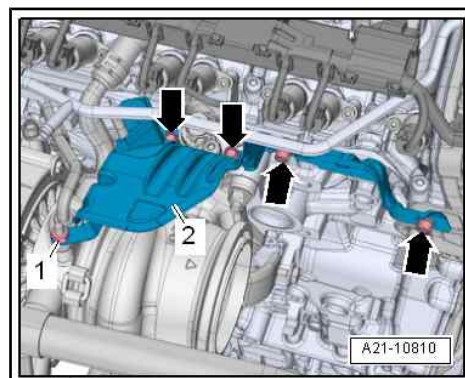
- Release fastener -arrow- and detach wiring duct -4- upwards from bracket.
- Remove bolts -1, 2 and 3-. Swivel coolant pipe to side.



- Unscrew bolts -arrows- and remove actuator 6 for camshaft adjustment - F371- and actuator 7 for camshaft adjustment - F372- .
- Release brake servo vacuum by pressing brake pedal several times.
- Pull vacuum hose out of brake servo.



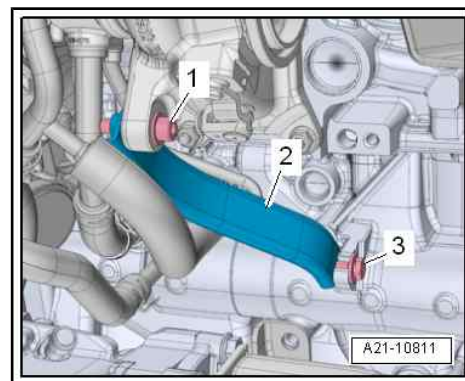
- Remove bolts -arrows- and nut -1-.
- Detach heat shield -2-.



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- Remove bolt -1- and loosen bolt -3-.
- Remove bracket -2- for turbocharger.

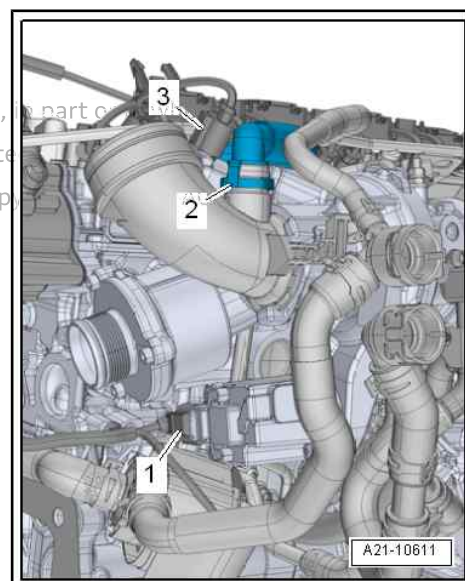


- Unplug electrical connectors -1-.
- Press release tabs on crankcase breather hose -2- and detach hose.

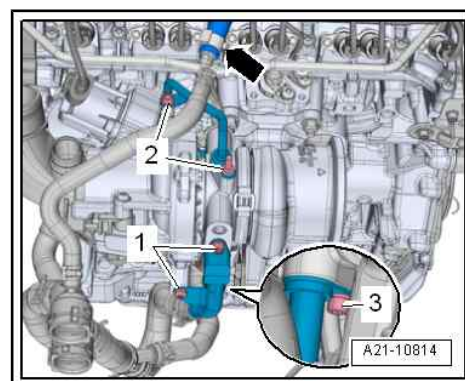


Note

Due to vehicle registration regulations, the crankcase breather hose cannot be removed without being irreparably damaged on some country-specific versions. The crankcase breather hose must be renewed if it is opened.



- Unscrew bolts -1- and detach connection.
- Unscrew bolts -2, 3- and detach oil supply line and oil return line.
- Release hose clip -arrow-.





- Remove nuts -arrows-.
- Detach turbocharger from cylinder head and lift it out.

Installing

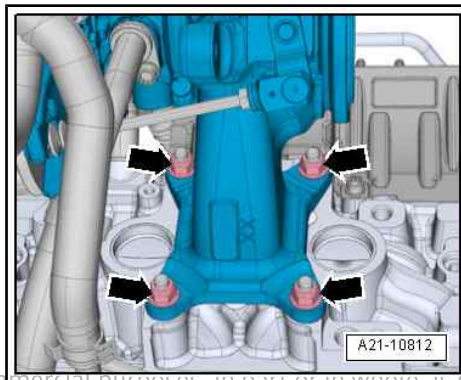
Installation is carried out in reverse order; note the following:



Note



- ◆ *Renew seals, gaskets, O-rings and self-locking nuts.*
- ◆ *Lubricate studs for turbocharger with high-temperature paste. For high-temperature paste refer to ⇒ [Electronic parts catalogue](#) .*
- ◆ *Fill turbocharger with engine oil at connection for oil supply line.*
- ◆ *Hose connections and charge air system hoses must be free of oil and grease prior to fitting.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ [Electronic parts catalogue](#) .*
- Install actuators for camshaft adjustment ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing actuators for camshaft adjustment .
- Install catalytic converter
⇒ [“2.2 Removing and installing catalytic converter”, page 222](#) .
- Align the exhaust system so it is free of stress ⇒ [page 218](#) .
- 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 191](#) .



Note

Do not reuse coolant.

- Fill up with coolant ⇒ [page 107](#) .
- Check oil level ⇒ Maintenance ; Booklet 821 .



Note

After installing turbocharger, allow engine to idle for approx. 1 minute and do not rev up immediately to ensure turbocharger is supplied with oil.

Tightening torques

- ◆ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ◆ ⇒ [“1.1 Exploded view - turbocharger”, page 156](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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



- ◆ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system
- ◆ Earth wire ⇒ Current flow diagrams, Electrical fault finding and Fitting locations

1.2.2 Removing and installing turbocharger - vehicles with particulate filter

For vehicles with particulate filter, refer to ⇒ Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888, Gen. III); Rep. gr. 00 ; Identification ; Engine versions.



Caution

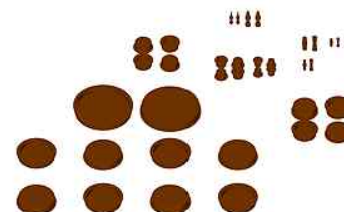
If the turbocharger has suffered mechanical damage (e.g. damaged compressor wheel), it is not sufficient merely to fit a new turbocharger. The following work must be performed in order to avoid further damage:

- ◆ *Check air cleaner housing, air filter element and air hoses for dirt and foreign particles.*
- ◆ *Check the entire charge air system (including the charge air cooler) for foreign matter.*
- ◆ *If foreign matter is found in the charge air system, clean all relevant ducts and hoses and renew charge air cooler if necessary.*

Special tools and workshop equipment required

- ◆ Engine bung set - VAS 6122-

VAS 6122

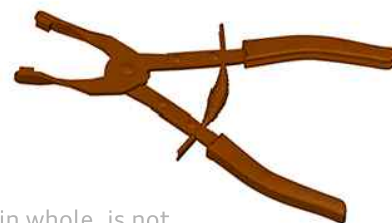


W00-11228

- ◆ Hose clip pliers - VAS 6362-



VAS 6362



W00-11227

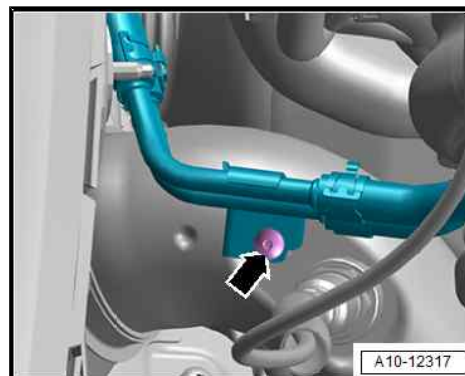
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Removing

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



- Drain coolant ➔ [page 105](#) .
- Remove air cleaner housing ➔ [page 191](#) .
- Remove Lambda probe - G39- ➔ [page 204](#) .
- Remove bolt -arrow- for pressure lines.
- Move pressure lines clear.



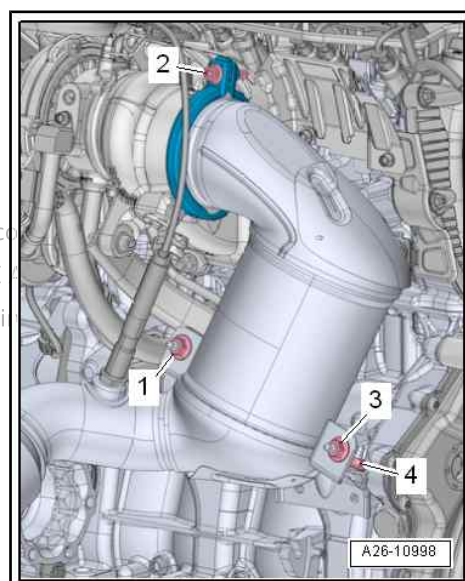
- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1 and 3- and move catalytic converter clear to one side.



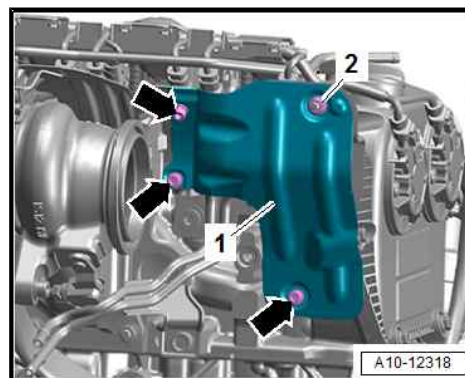
Note

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

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- Unscrew bolts -arrows- and nut -2- and detach heat shield -1-.



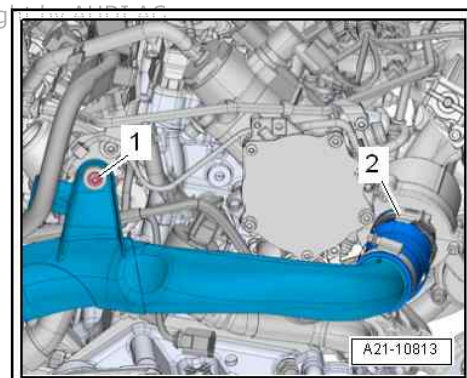
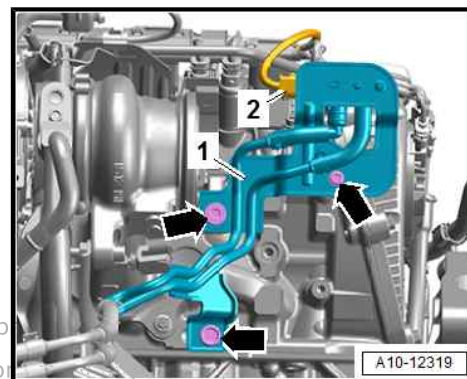


- Unplug electrical connector -2-.
- Remove bolts -arrows- and move pressure lines with exhaust gas pressure sensor 1 - G450- to rear.

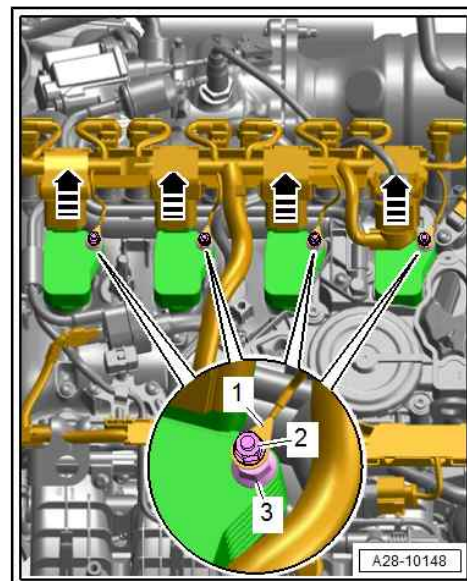


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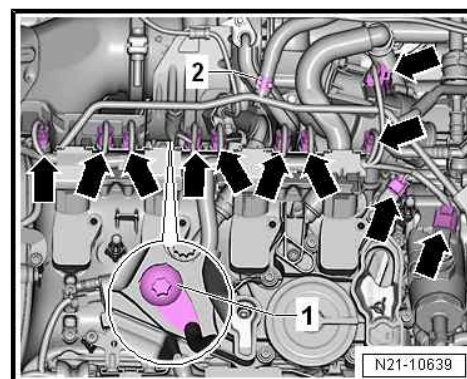
- Release hose clip -2-.
- Remove bolt -1- and press air pipe (left-side) towards left slightly.



- If fitted, remove nut -2- and move earth wire -1- clear.
- Release electrical connectors and detach simultaneously from ignition coils in direction of -arrows-.



- If fitted, unscrew bolt -1- for earth wire. Disconnect coolant hose -2-.
- Unplug connectors -arrows-.

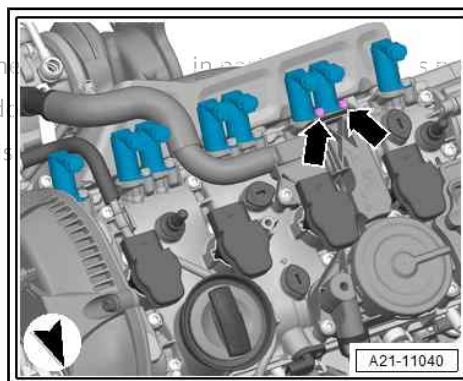
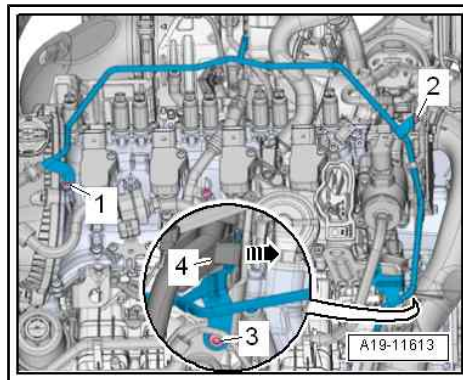




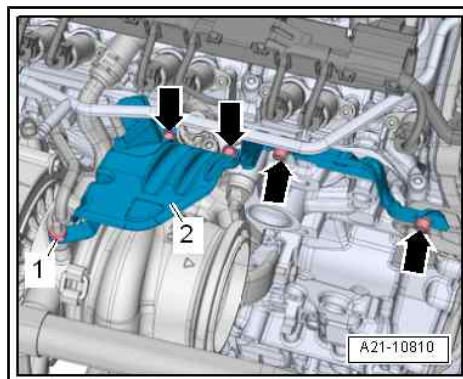
- Release fastener -arrow- and detach wiring duct -4- upwards from bracket.
- Remove bolts -1, 2 and 3-. Swivel coolant pipe to side.



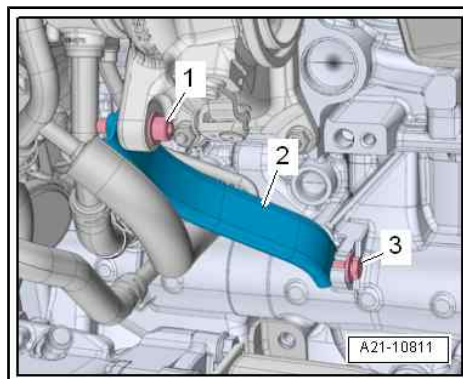
- Unscrew bolts -arrows- and remove actuator 6 for camshaft adjustment - F371- and actuator 7 for camshaft adjustment - F372- .
- Release brake servo vacuum by pressing brake pedal several times.
- Pull vacuum hose out of brake servo.



- Remove bolts -arrows- and nut -1-.
- Detach heat shield -2- (shown on vehicle without particulate filter).



- Remove bolt -1- and loosen bolt -3-.
- Remove bracket -2- for turbocharger.





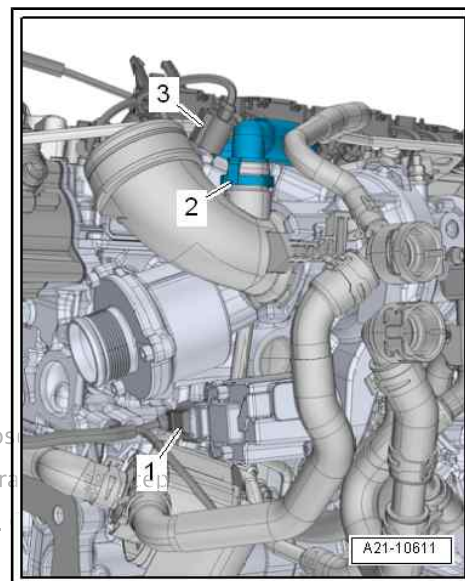
- Unplug electrical connectors -1-.
- Press release tabs on crankcase breather hose -2- and detach hose.



Note

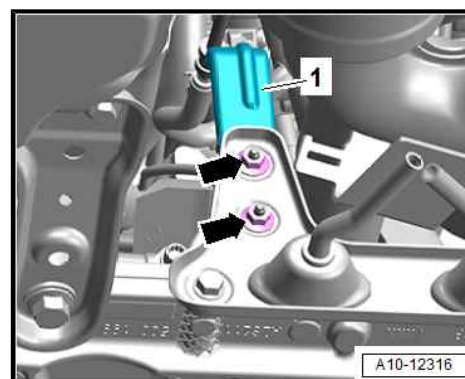
Due to vehicle registration regulations, the crankcase breather hose cannot be removed without being irreparably damaged on some country-specific versions. The crankcase breather hose must be renewed if it is opened.

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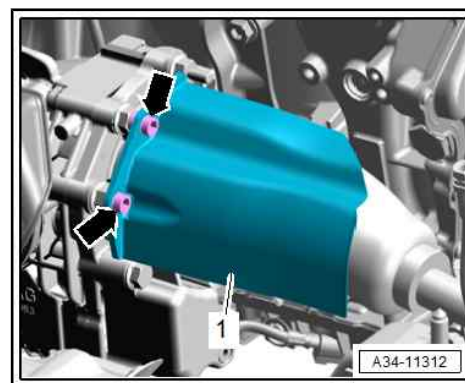


Vehicles with four-wheel drive:

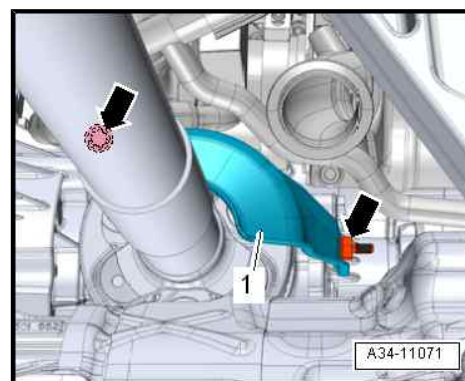
- Remove nuts -arrows-, move bracket -1- for pressure line clear and push to side.



- Remove nuts -arrows- and detach heat shield -1- for drive shaft (right-side).



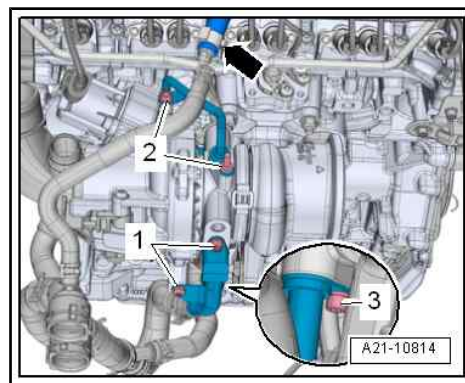
- Remove bolts -arrows- and detach heat shield -1-.





All vehicles (continued):

- Unscrew bolts -1- and detach connection.
- Unscrew bolts -2, 3- and detach oil supply line and oil return line.
- Release hose clip -arrow-.



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- Remove nuts -arrows-.
- Detach turbocharger from cylinder head and lift it out.

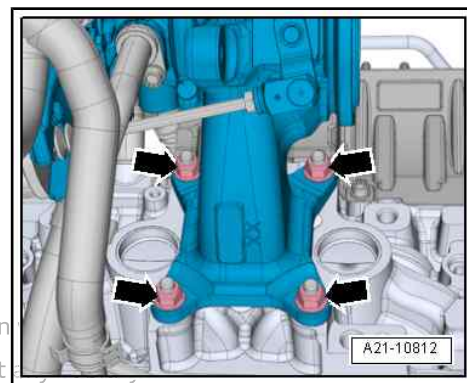
Installing

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



Note

- ◆ *Renew seals, gaskets, O-rings and self-locking nuts.*
- ◆ *Lubricate studs for turbocharger with high-temperature paste. For high-temperature paste refer to ➔ *Electronic parts catalogue*.*
- ◆ *Fill turbocharger with engine oil at connection for oil supply line.*
- ◆ *Hose connections and charge air system hoses must be free of oil and grease prior to fitting.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ➔ *Electronic parts catalogue*.*
- Install actuators for camshaft adjustment ➔ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Removing and installing actuators for camshaft adjustment .
- Install catalytic converter
➔ [“2.2 Removing and installing catalytic converter”, page 222](#) .
- Align the exhaust system so it is free of stress ➔ [page 218](#) .
- 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 191](#) .



Note

Do not reuse coolant.

- Fill up with coolant ➔ [page 107](#) .
- Check oil level ➔ Maintenance ; Booklet 821 .



Note

After installing turbocharger, allow engine to idle for approx. 1 minute and do not rev up immediately to ensure turbocharger is supplied with oil.

Tightening torques

- ◆ ➔ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ◆ ➔ [“1.1 Exploded view - turbocharger”, page 156](#)
- ◆ ➔ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ➔ 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



- ♦ ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI;
Rep. gr. 28 ; Ignition system; Exploded view - ignition system
- ♦ Earth wire ⇒ Current flow diagrams, Electrical fault finding and
Fitting locations

1.3 Removing and installing charge pressure positioner - V465-

Note

Before removing charge pressure positioner - V465- , check it is available in ⇒ Electronic parts catalogue (ETKA) .

Shape of charge pressure positioner - V465- and its position on turbocharger may vary depending on manufacturer. The following removal and installation instructions describe one version as an example; the procedure is similar for all other versions.

Removing

Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888 Gen. III); Rep. gr. 00 ; Repair instructions; Rules for cleanliness .

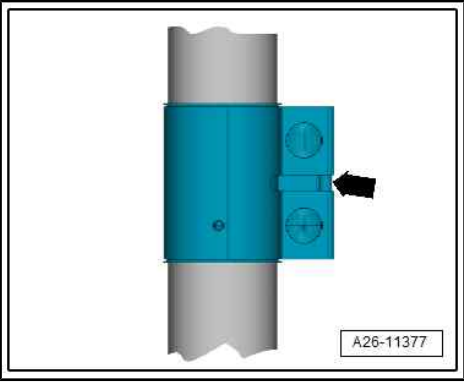
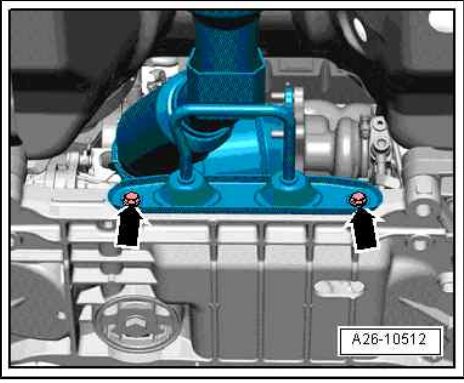
Vehicles with particulate filter

- Remove particulate filter
⇒ ["2.2.2 Removing and installing catalytic converter - vehicles with particulate filter", page 225](#) .
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Four-wheel drive vehicles without particulate filter

- Remove catalytic converter
⇒ ["2.2.1 Removing and installing catalytic converter - vehicles without particulate filter", page 222](#) .

Front-wheel drive vehicles without particulate filter

- Release clamp -arrow-.
- 
- Remove bolts -arrows-.
 - Press catalytic converter to side together with front exhaust pipe.
- 



All vehicles (continued)

- Unplug electrical connector -4-.
- Loosen lock nut -2- by a quarter turn (counterhold at hexagon flats -arrow- on control rod).
- Unscrew control rod from actuating lever -1-, taking care not to turn lock nut.
- Remove bolts -3- and detach charge pressure positioner - V465- .

Installing

- If renewing charge pressure positioner, ensure installation position of lock nut is the same on new charge pressure positioner.
- Place charge pressure positioner - V465- in installation position and tighten bolts -3-.
- Screw control rod into actuating lever -1- until it makes contact with lock nut -2-.
- Plug in electrical connector -4-.
- Learnt values must be adapted after renewing charge pressure positioner - V465- .
- Connect ⇒ Vehicle diagnostic tester.
- Select **Diagnosis** mode and then **Start diagnosis**.
- Choose **Select own test** tab and select following options one after the other:
 - ◆ **Drive train**
 - ◆ **Select engine code and engine**
 - ◆ **@1 - Self-diagnosis compatible systems**
 - ◆ **@1 - Engine electronics**
 - ◆ **@1 - Engine electronics, functions**
 - ◆ **@1 - Set charge pressure adjuster -V465**

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

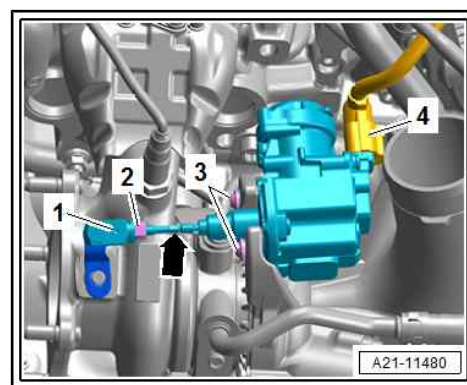
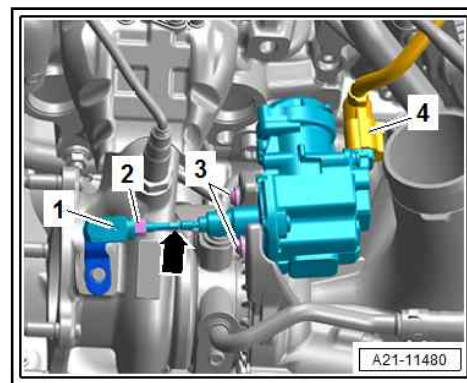
Tightening torques

- ◆ Exploded view - emission control system
⇒ ["2.1 Exploded view - emission control system", page 220](#)
- ◆ Exploded view - charge pressure positioner ⇒ [page 158](#)

1.4 Adjusting charge pressure positioner - V465-

The description only applies to engine code CJXC.

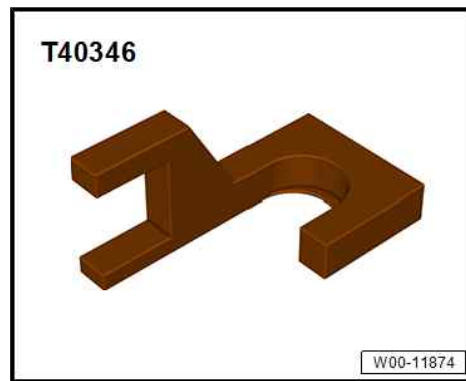
Special tools and workshop equipment required



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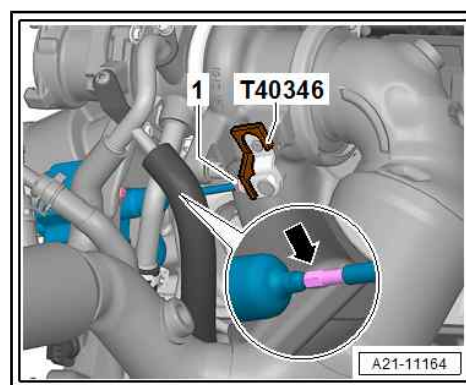
◆ Setting gauge - T40346-



- 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 .
- Position setting gauge - T40346- .
- Adjust charge pressure positioner - V465- ; select 01 - Adjust charge pressure positioner V465 in Guided Functions ⇒ Vehicle diagnostic tester .
- Remove setting gauge - T40346- .
- 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 - turbocharger”, page 156](#)



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2 Charge air system

⇒ [“2.1 Exploded view - charge air system”, page 175](#)

⇒ [“2.2 Exploded view - hose connections for charge air system”, page 176](#)

⇒ [“2.3 Removing and installing charge air cooler”, page 176](#)

⇒ [“2.4 Removing and installing charge pressure sender G31”, page 177](#)

⇒ [“2.5 Checking charge air system for leaks”, page 178](#)

2.1 Exploded view - charge air system



Note

- ◆ Check that all air pipes and hoses and vacuum lines are correctly fitted and that there are no leaks before carrying out tests or repairs.
- ◆ Observe rules for cleanliness ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Rules for cleanliness.

1 - Air pipe

2 - Grommet

3 - Spacer sleeve

4 - Bolt

□ 7 Nm

5 - Air hose

- Installing ⇒ 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

6 - Air duct

7 - Charge air cooler

- Removing and installing
⇒ [page 176](#)



Note

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

8 - Air duct

9 - Rubber mounting

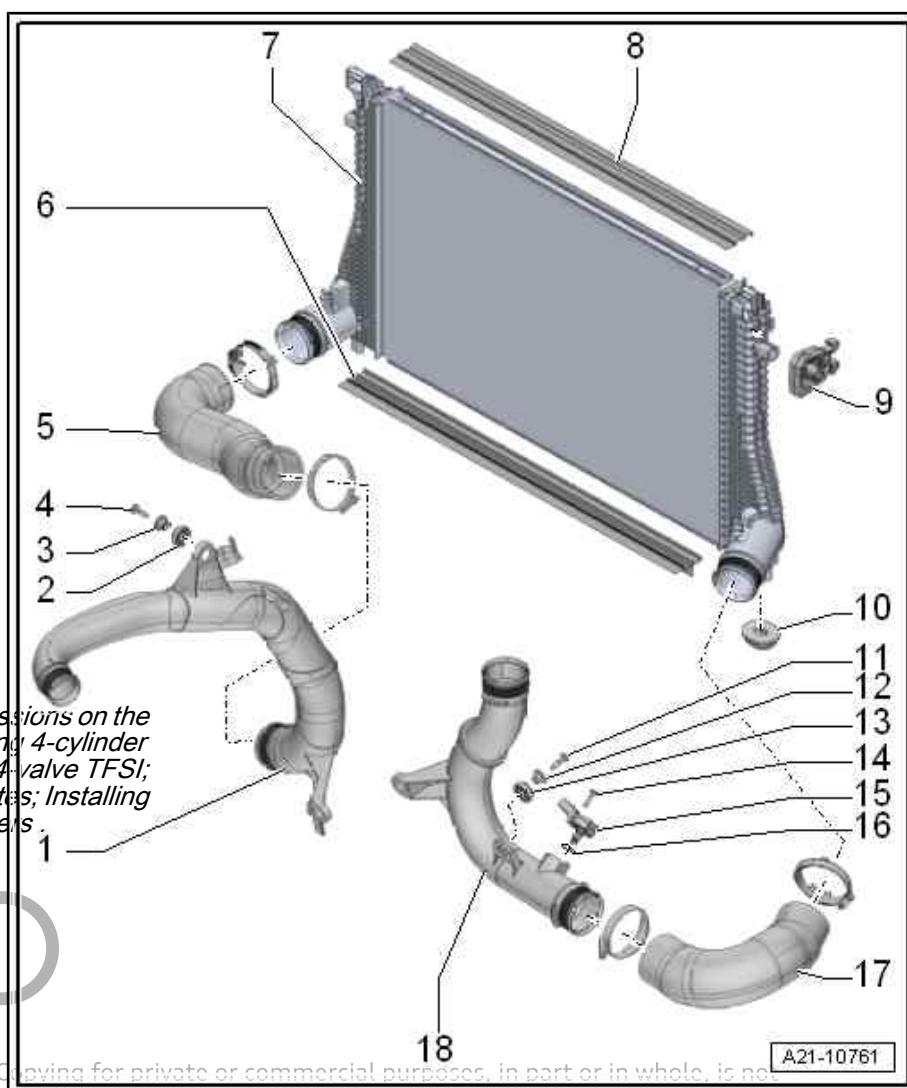
- For charge air cooler

10 - Rubber bush

- For charge air cooler

11 - Bolt

- 7 Nm



A21-10761

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12 - Spacer sleeve

13 - Grommet

14 - Bolt

- 5 Nm

15 - Charge pressure sender - G31-

- Removing and installing ⇒ [page 177](#)

16 - O-ring

- Renew

17 - Air hose

- Installing ⇒ 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

18 - Air pipe

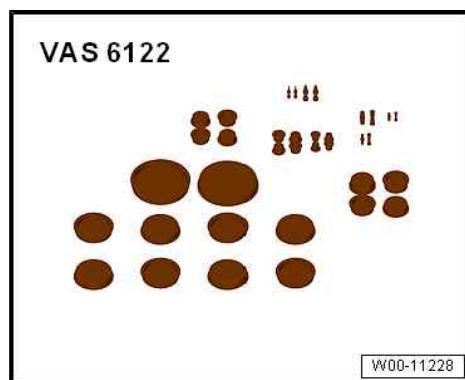
2.2 Exploded view - hose connections for charge air system

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

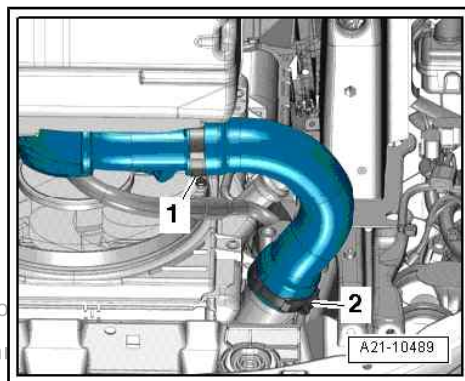
Special tools and workshop equipment required

- ◆ Engine bung set - VAS 6122-



Removing

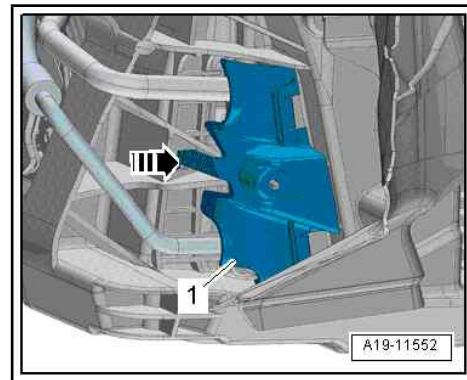
- Remove radiator ⇒ [page 149](#) .
- Release hose clips -1, 2- and remove air hose.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



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- Release fasteners and detach cover -1- towards front.



- Unclip air duct -2- downwards on both sides -arrow B-.
- Release catches on both sides -arrow A- and disengage condenser -3- from charge air cooler -1-.
- Tie up condenser to lock carrier.
- Detach charge air cooler.

Installing

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



Note

- ◆ If there are slight impressions on the fins, refer to ⇒ *Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00; Repair notes; Installing radiators and condensers.*
- ◆ Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ *Electronic parts catalogue.*

- Install radiator ⇒ [page 149](#).

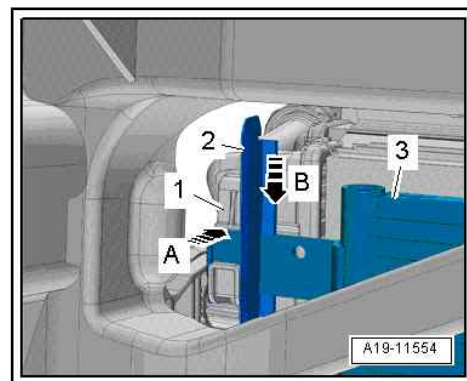
Tightening torques

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

2.4 Removing and installing charge pressure sender - G31-

Removing

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





- Unplug electrical connector -2-.
- Remove bolts -1- and pull charge pressure sender - G31- out of air pipe.

Installing

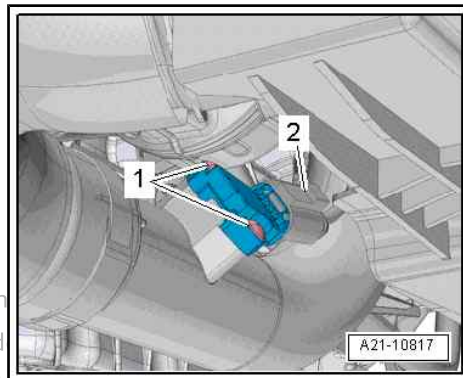
Installation is carried out in reverse order; note the following:



Note

Fit new O-ring.

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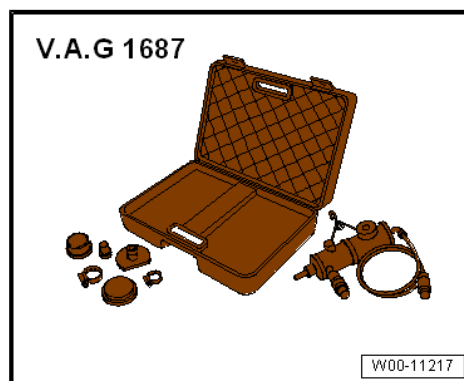
Tightening torques

- ♦ ⇒ ["2.1 Exploded view - charge air system", page 175](#)
- ♦ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.5 Checking charge air system for leaks

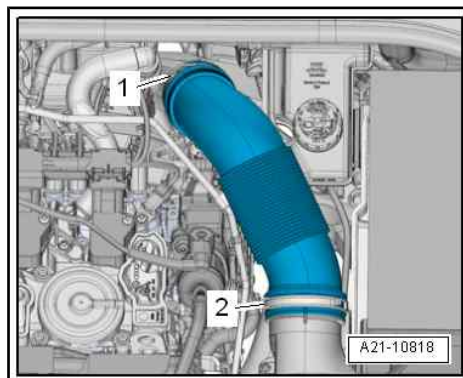
Special tools and workshop equipment required

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



Procedure

- Loosen hose clips -1, 2- and remove air pipe.

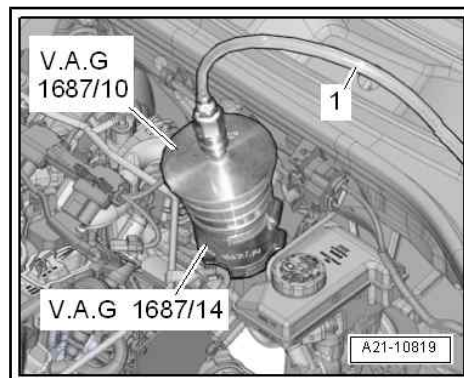


- Connect adapter - V.A.G 1687/10- with -V.A.G 1687/14- to turbocharger.
- Connect charge air system tester - V.A.G 1687- to adapter.

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 .

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





24 – Mixture preparation - injection

1 Injection system

⇒ [“1.1 Overview of fitting locations - injection system”, page 179](#)

1.1 Overview of fitting locations - injection system

Overview of fitting locations - engine compartment

1 - Control unit for structure-borne sound - J869-

- ☐ Exploded view
⇒ [“5.1 Exploded view - actuator for structure-borne sound and control unit for structure-borne sound”, page 199](#)

2 - Actuator for structure-borne sound - R214-

- ☐ Exploded view
⇒ [“5.1 Exploded view - actuator for structure-borne sound and control unit for structure-borne sound”, page 199](#)

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

- ☐ Fitting location
⇒ [page 180](#)

4 - Brake light switch - F- / brake pedal switch - F63-

- ☐ Fitting location
⇒ [page 180](#)

5 - Clutch position sender - G476-

- ☐ Only fitted on vehicles with manual gearbox
- ☐ Fitting location
⇒ [page 181](#)

6 - Engine control unit - J623-

- ☐ Removing and installing
⇒ [page 206](#)

7 - Coolant shut-off valve - N82-

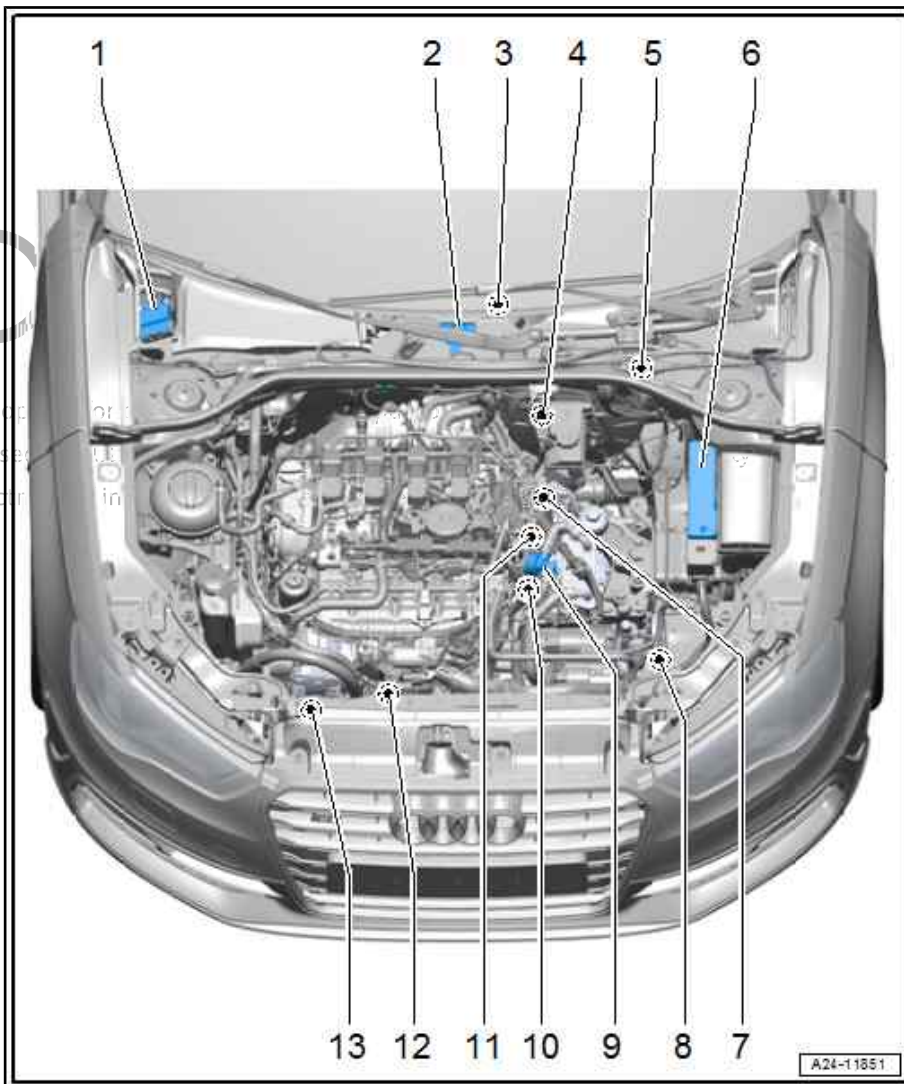
- ☐ Fitting location ⇒ [page 181](#)

8 - Secondary air pump motor - V101-

- ☐ For engines with secondary air system (country-specific version) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions
- ☐ Fitting location ⇒ [page 182](#)

9 - Coolant valve for gearbox - N488-

- ☐ Exploded view ⇒ [“3.3 Exploded view - coolant valves”, page 117](#)



10 - Sender 1 for secondary air pressure - G609-

- ❑ For engines with secondary air system (country-specific version) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions

- ❑ Fitting location ⇒ [page 182](#)

11 - Secondary air inlet valve - N112-

- ❑ For engines with secondary air system (country-specific version) ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions

- ❑ Fitting location ⇒ [page 182](#)

12 - Charge pressure sender - G31-

- ❑ Fitting location ⇒ [page 181](#)

13 - Radiator outlet coolant temperature sender - G83-

- ❑ Fitting location ⇒ [page 181](#)

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

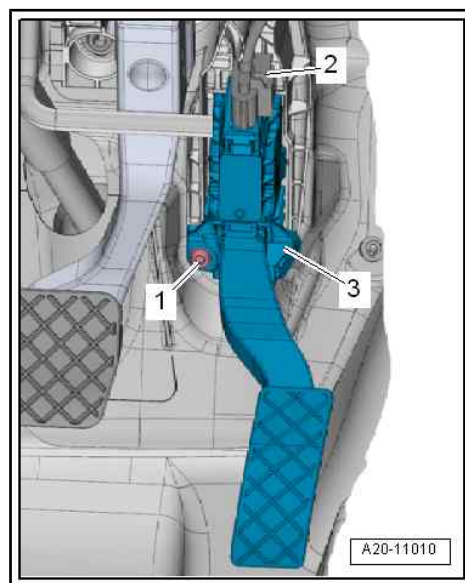
2 - Electrical connector for accelerator pedal module



Note

The accelerator position sender - G79- and accelerator position sender 2 - G185- are integrated in the accelerator pedal module and cannot be renewed individually.

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



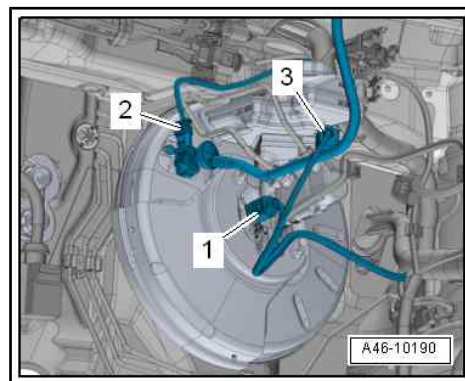
Fitting location of brake light switch - F- / brake pedal switch - F63- and vacuum sender - G608-

- ◆ On brake servo in engine compartment

1 - Brake light switch - F- / brake pedal switch - F63-

2 - Vacuum sender - G608-

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

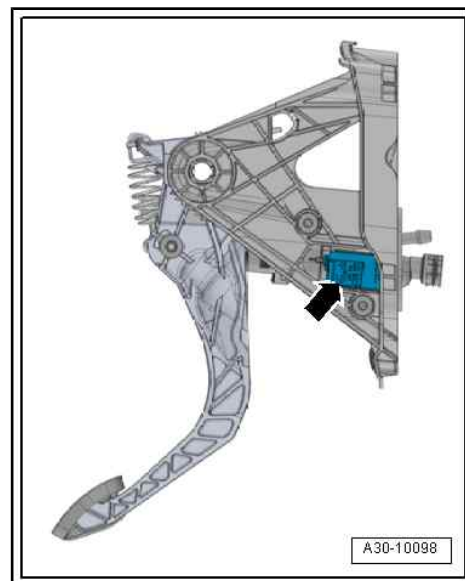




Fitting location of clutch position sender - G476- -2-

- On mounting bracket for clutch pedal -arrow-

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

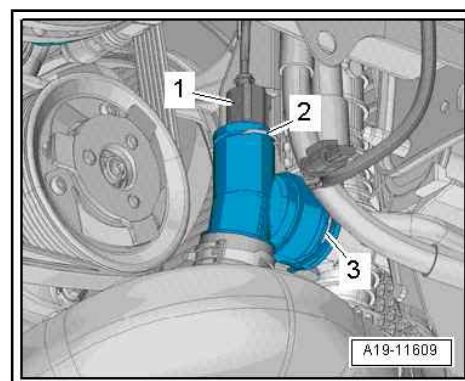


Fitting location of radiator outlet coolant temperature sender - G83-

- ◆ -Item 3- in coolant hose (bottom right)

Exploded view

⇒ ["3.4 Exploded view - coolant temperature senders", page 120](#) .



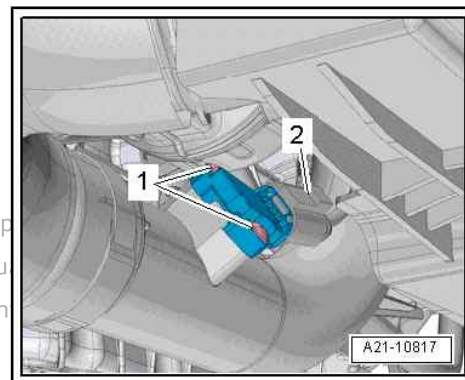
Fitting location of charge pressure sender - G31-

- ◆ In air pipe (front) on engine

2 - Connect electrical connector for charge pressure sender - G31-

Exploded view

⇒ ["2.1 Exploded view - charge air system", page 175](#) .

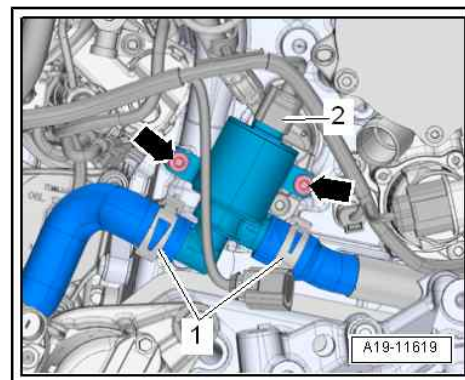


Fitting location of coolant shut-off valve - N82-

- ◆ On left side of cylinder head

Exploded view

⇒ ["3.3 Exploded view - coolant valves", page 117](#) .





Fitting location of sender 1 for secondary air pressure - G609- , secondary air inlet valve - N112-

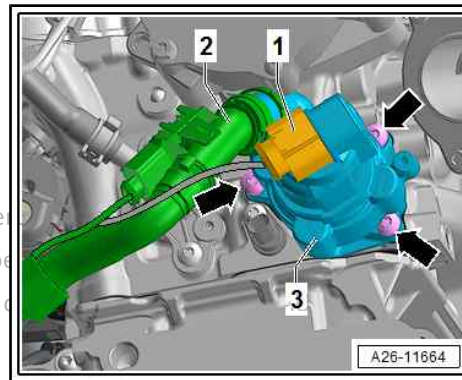
For engines with secondary air system (country-specific version)
⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions

- ◆ On left side of cylinder head

2 - Sender 1 for secondary air pressure - G609-

3 - Secondary air inlet valve - N112-

Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Secondary air system; Exploded view - secondary air system

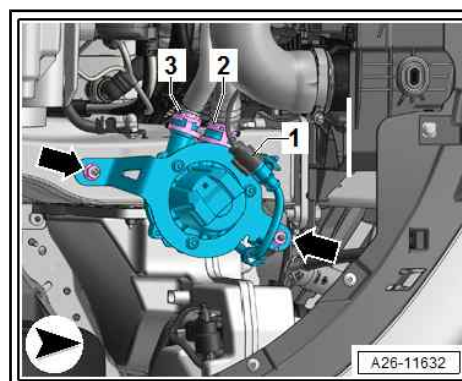


Fitting location of secondary air pump motor - V101-

- ◆ On longitudinal member (left-side)

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

Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Secondary air system; Exploded view - secondary air system



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



1 - 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

2 - 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

3 - Injector, cylinder 1 - N30-

- ❑ For FSI engines
- ❑ Fitting location
⇒ [page 184](#)

4 - Injector, cylinder 2 - N31-

- ❑ For FSI engines
- ❑ Fitting location
⇒ [page 184](#)

5 - Injector, cylinder 3 - N32-

- ❑ For FSI engines
- ❑ Fitting location
⇒ [page 184](#)

6 - Injector, cylinder 4 - N33-

- ❑ For FSI engines
- ❑ Fitting location
⇒ [page 184](#)

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 - 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

9 - Coolant temperature sender - G62-

- ❑ Exploded view ⇒ [“3.4 Exploded view - coolant temperature senders”, page 120](#)

10 - Throttle valve module - J338-

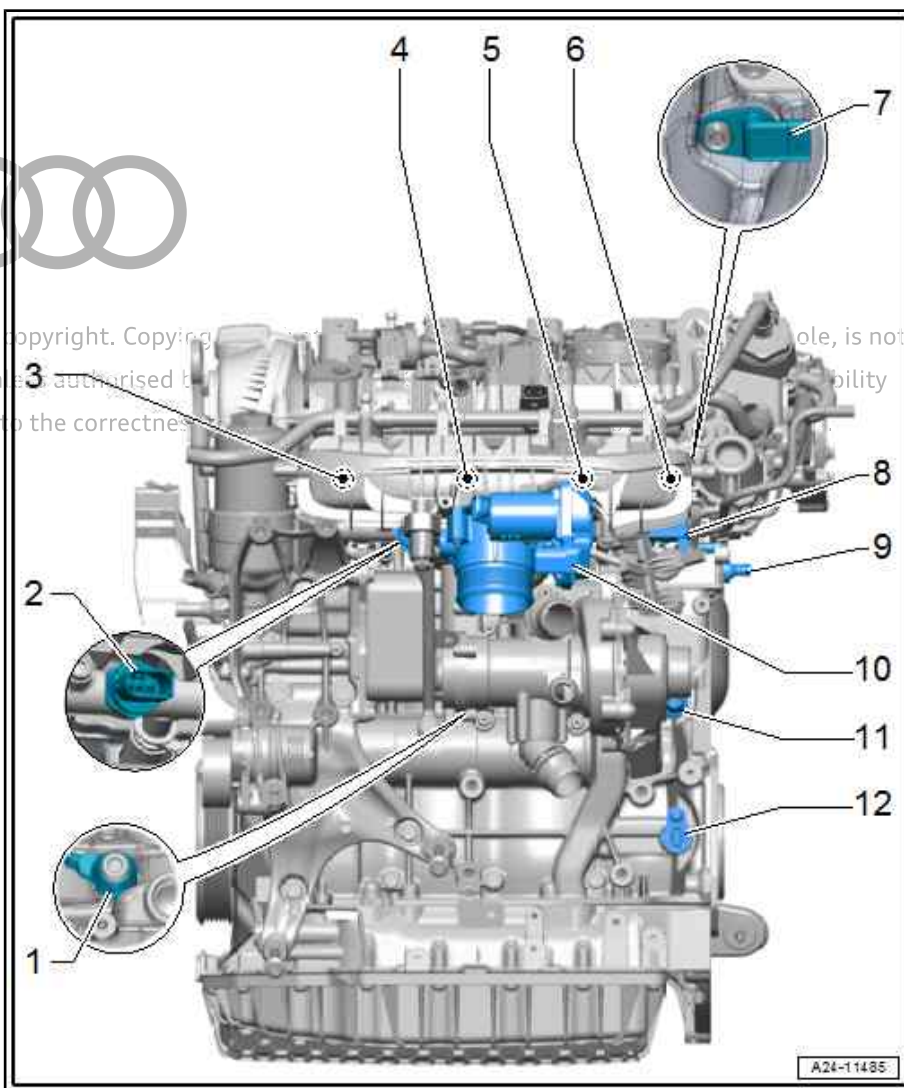
- ❑ With throttle valve drive for electric throttle - G186- , throttle valve drive angle sender - G187- and throttle valve drive angle sender 2 - G188-
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Exploded view - intake manifold

11 - 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

12 - 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

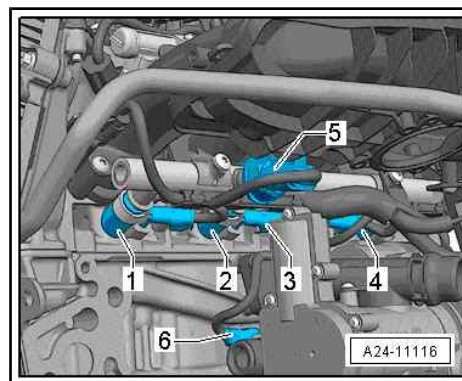




Fitting location of injectors for FSI engines

- 1 - Injector, cylinder 1 - N30-
- 2 - Injector, cylinder 2 - N31-
- 3 - Injector, cylinder 3 - N32-
- 4 - Injector, cylinder 4 - N33-
- 5 - Fuel pressure sender - G247-
- 6 - Knock sensor 1 - G61-

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



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

1 - Continued coolant circulation pump - V51-

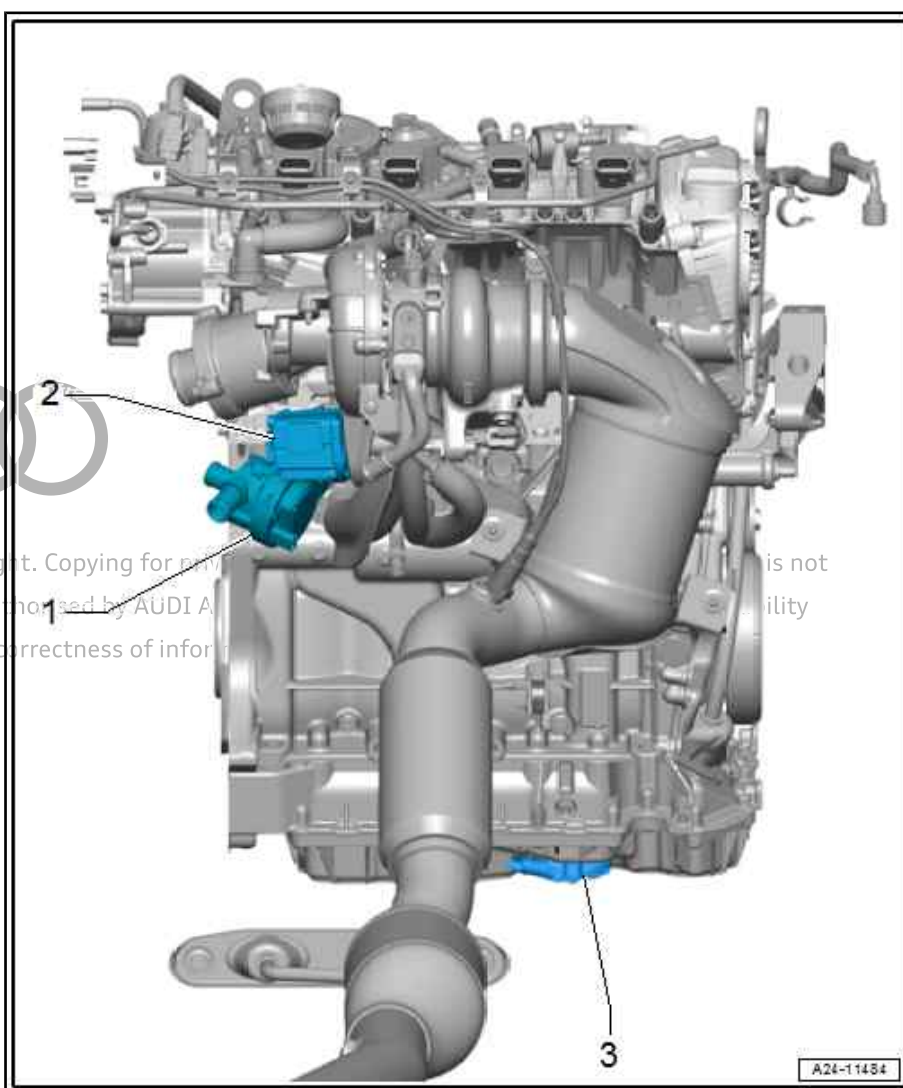
- ❑ Exploded view
⇒ ["3.2 Exploded view - electric coolant pump", page 116](#)

2 - Charge pressure positioner - V465- / position sender for charge pressure positioner - G581-

- ❑ Exploded view
⇒ ["1.1 Exploded view - turbocharger", page 156](#)

3 - 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)



1 - 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

2 - 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

3 - Exhaust gas pressure sensor 1 - G450-

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

4 - Exhaust camshaft control valve 1 - N318-

- ❑ Not for engines with camshaft adjuster ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions

- ❑ 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

5 - 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

6 - 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

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

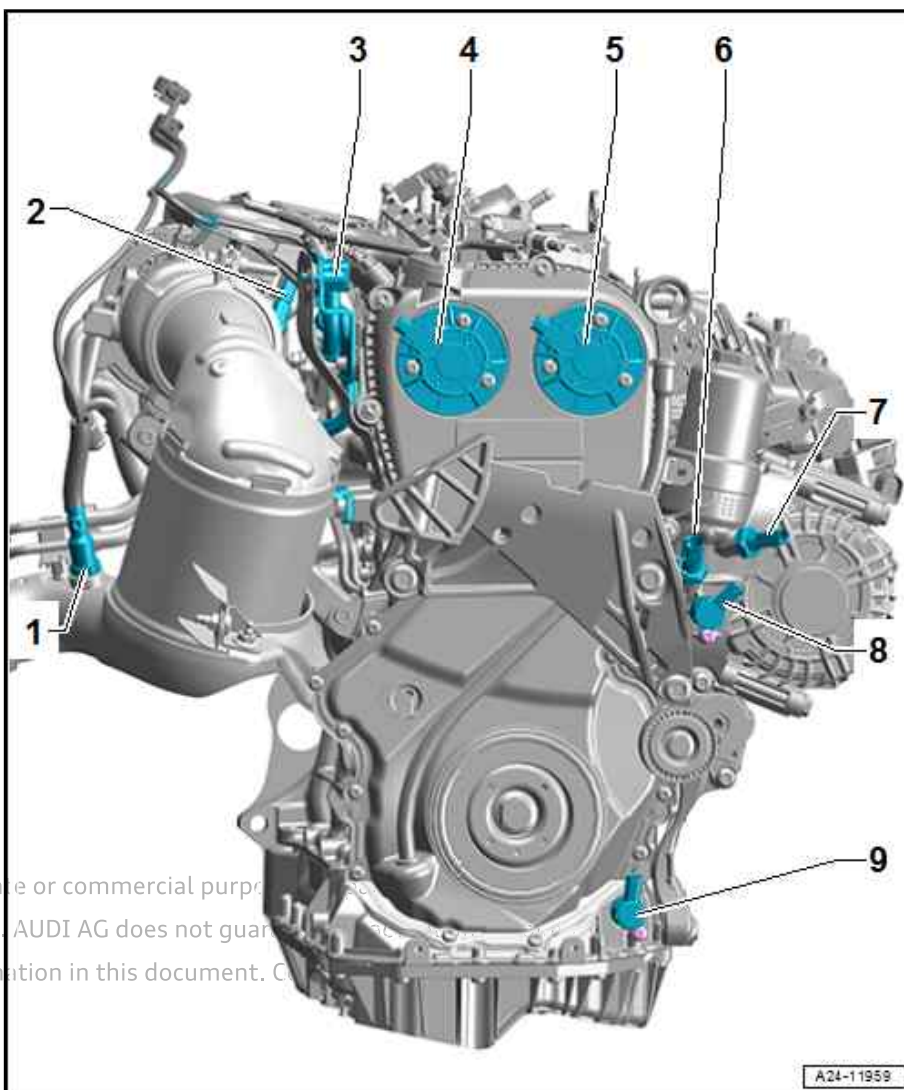
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 17 ; Oil filter/oil pressure switches; Exploded view - oil pressure switches/oil pressure control

8 - 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

9 - 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



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**Overview of fitting locations - engines with additional MPI injection
from above ➤ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve
TFSI; Rep. gr. 00 ; Identification ; Engine versions**

1 - Activated charcoal filter solenoid valve 1 - N80-

2 - Ignition coil 1 with output stage - N70-

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

3 - Actuator 1 for camshaft adjustment - 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

4 - Actuator 2 for camshaft adjustment - 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

5 - Actuator 3 for camshaft adjustment - 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

6 - Actuator 4 for camshaft adjustment - 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 - Actuator 5 for camshaft adjustment - 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

8 - Actuator 6 for camshaft adjustment - F371- (for cylinder No. 3)

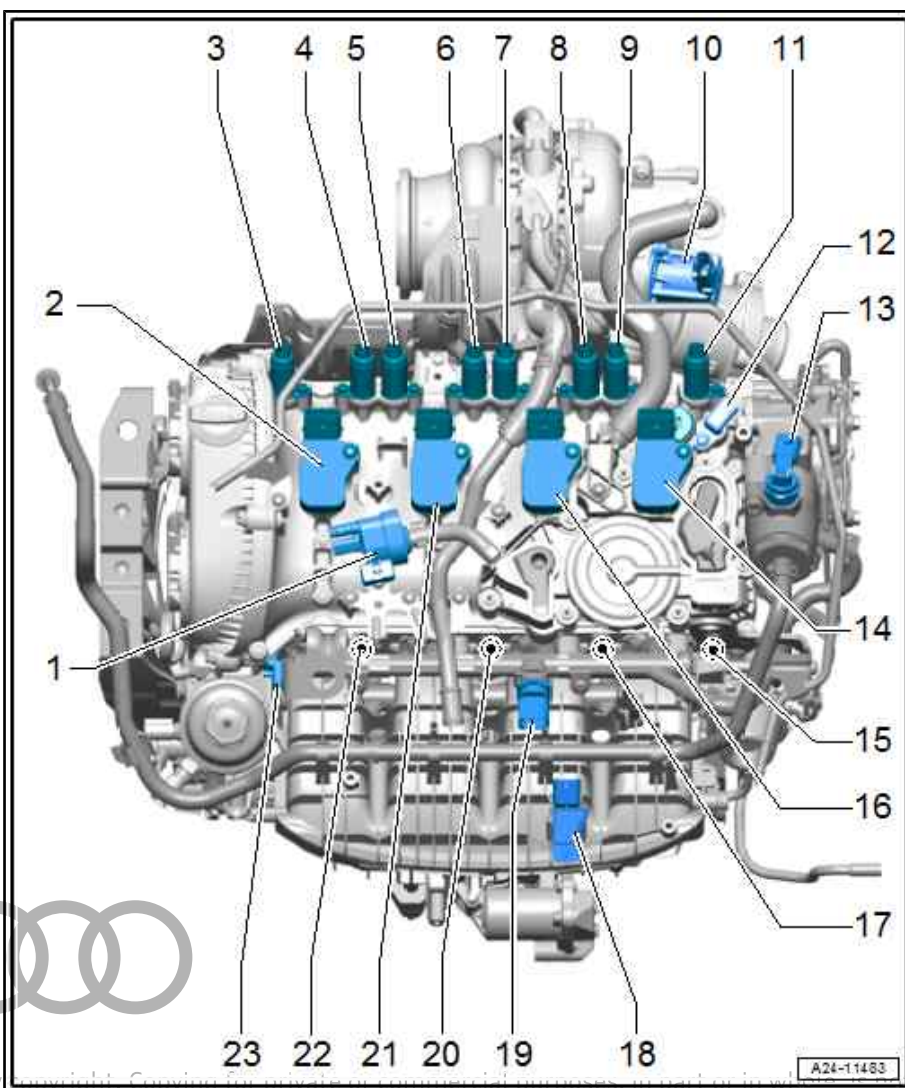
- ❑ Exploded view ➤ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 15 ; Valve gear; Exploded view - valve gear

9 - Actuator 7 for camshaft adjustment - 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

10 - Turbocharger air recirculation valve - N249-

- ❑ Exploded view ➤ ["1.1 Exploded view - turbocharger", page 156](#)



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11 - Actuator 8 for camshaft adjustment - 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

12 - Hall sender 3 - G300-

- ☐ Not for engines with camshaft adjuster ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions
- ☐ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system;
Exploded view - ignition system

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

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

14 - 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

15 - Injector 2, cylinder 4 - N535-

- ☐ For MPI engines
- ☐ Fitting location ⇒ [page 188](#)

16 - 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

17 - Injector 2, cylinder 3 - N534-

- ☐ For MPI engines
- ☐ Fitting location ⇒ [page 188](#)

18 - 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

19 - Fuel pressure sender for low pressure - G410-

- ☐ 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

20 - Injector 2, cylinder 2 - N533-

- ☐ For MPI engines
- ☐ Fitting location ⇒ [page 188](#)

21 - 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

22 - Injector 2, cylinder 1 - N532-

- ☐ For MPI engines
- ☐ Fitting location ⇒ [page 188](#)

23 - Intake manifold flap potentiometer - G336-

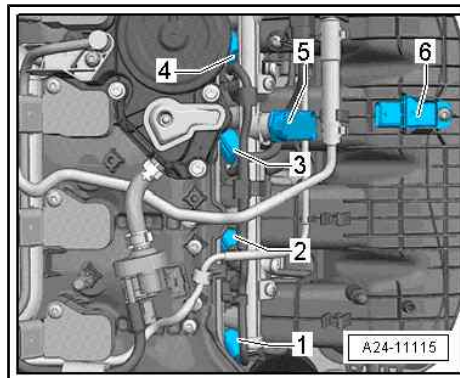
- ☐ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold;
Exploded view - intake manifold



Fitting location of injectors for MPI engines

- 1 - Injector 2, cylinder 1 - N532-
- 2 - Injector 2, cylinder 2 - N533-
- 3 - Injector 2, cylinder 3 - N534-
- 4 - Injector 2, cylinder 4 - N535-
- 5 - Fuel pressure sender for low pressure - G410-
- 6 - 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 ; Injectors; Exploded view - fuel rail with injectors



Overview of fitting locations - engines without MPI injection from above ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 00 ; Identification ; Engine versions

1 - Activated charcoal filter solenoid valve 1 - N80-

2 - Ignition coil 1 with output stage - N70-

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

3 - Ignition coil 2 with output stage - N127-

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

4 - Ignition coil 3 with output stage - N291-

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

5 - Ignition coil 4 with output stage - N292-

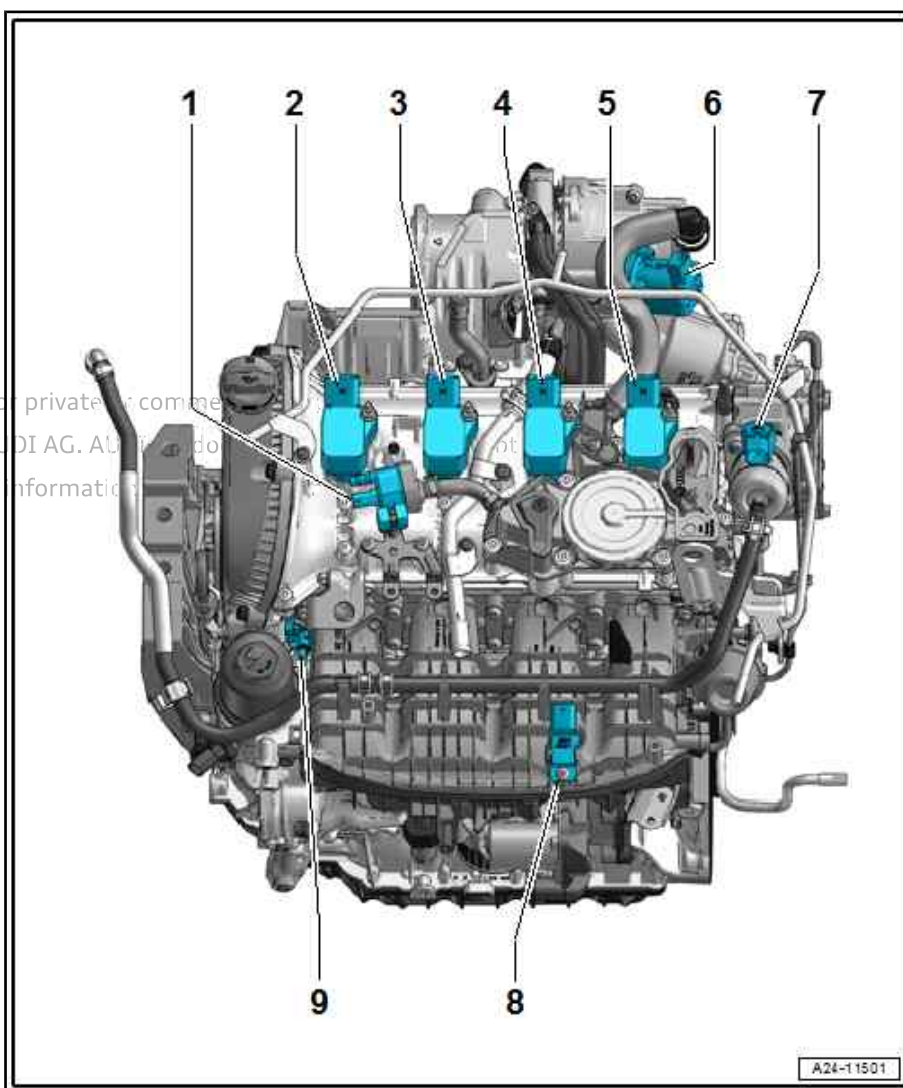
- ❑ Exploded view ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 28 ; Ignition system; Exploded view - ignition system

6 - Turbocharger air recirculation valve - N249-

- ❑ Exploded view ⇒ [“1.1 Exploded view - turbocharger”, page 156](#)

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

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





8 - 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

9 - 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



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2 Air cleaner

⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)

⇒ [“2.2 Removing and installing air cleaner housing”, page 191](#)

2.1 Exploded view - air cleaner housing

1 - Air duct

- ☐ On air cleaner (bottom section)

2 - Air duct (bottom section)

- ☐ On lock carrier

3 - Bolt

- ☐ 2 Nm

4 - Air duct (top section)

- ☐ On lock carrier

5 - Cover

- ☐ For air duct

6 - Bolt

- ☐ 1.5 Nm

7 - Breather hose

8 - Hose

- ☐ For version with secondary air system

9 - O-ring

- ☐ For version with secondary air system
- ☐ Renew after removing

10 - Air cleaner (top section)

- ☐ Remove any salt residue, dirt and leaves

11 - Air hose

12 - Bolt

- ☐ 1.5 Nm

13 - Air filter element

- ☐ Use genuine air filter element ⇒ Electronic parts catalogue
- ☐ Change intervals ⇒ Maintenance tables
- ☐ Removing and installing ⇒ Maintenance ; Booklet 821

14 - Insert

- ☐ For air cleaner (bottom section)

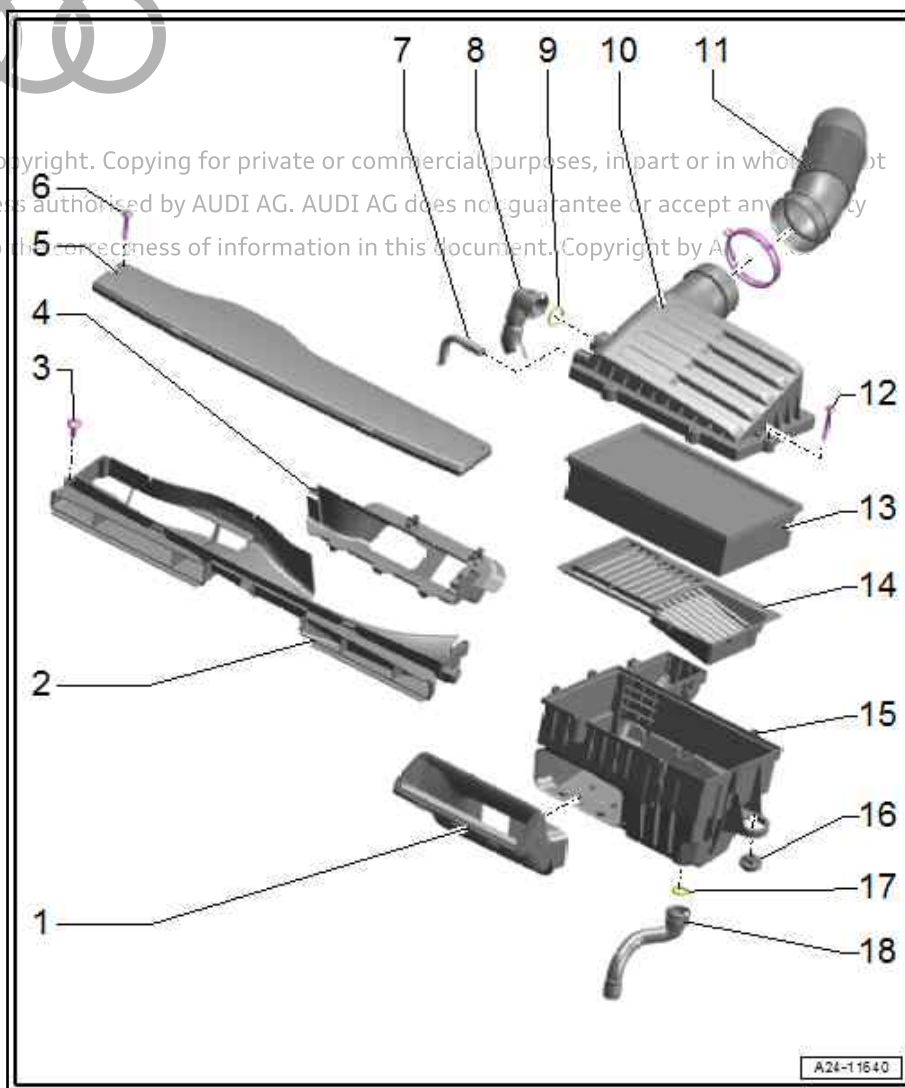
15 - Air cleaner housing

- ☐ Remove any salt residue, dirt and leaves
- ☐ Removing and installing ⇒ [page 191](#)

16 - Rubber buffer

17 - O-ring

- ☐ Check for damage
- ☐ Supplied with ⇒ [Item 18 \(page 191\)](#)





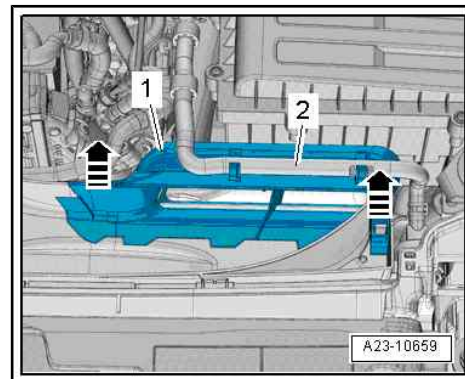
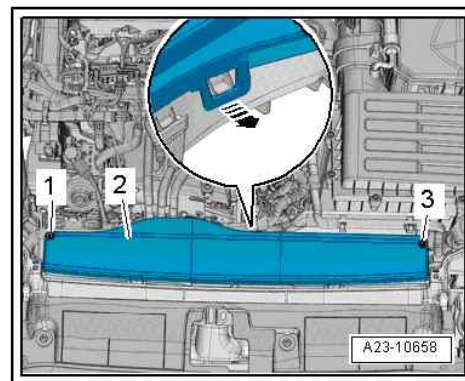
18 - Water drain hose

- ☐ With valve
- ☐ Clean

2.2 Removing and installing air cleaner housing

Removing

- Remove bolts -1, 3-.
- Release catch -arrow- and detach cover -2-.
- Move coolant hose -2- clear.
- Release catches -arrows- and detach air duct (top section) -1-.



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- Disconnect vacuum hose -1-.
- On versions with secondary air system: disconnect hose -2-.
- Release hose clip -3- and detach air hose.
- Detach air cleaner housing -4- from retaining pins and remove.

Installing



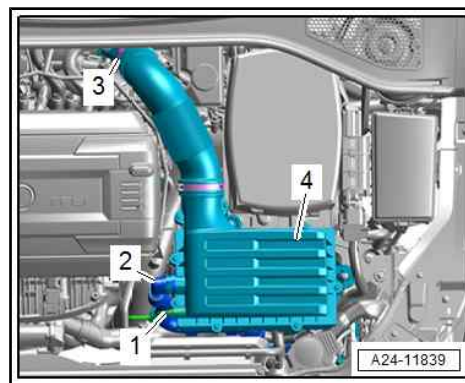
Note

- ◆ *Use a silicone-free lubricant when installing the air hose.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Parts catalogue .*
- Check for salt residue, dirt and leaves in air hose (engine intake side).
- Check for dirt in intake duct leading to air filter element.
- Install air cleaner housing.



Note

The water drain hose must be routed straight downwards without kinks.



Tightening torques

- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)



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3 Intake manifold

⇒ [“3.1 Exploded view - intake manifold”, page 193](#)

⇒ [“3.2 Removing and installing intake manifold”, page 193](#)

⇒ [“3.3 Removing and installing throttle valve module J338”, page 195](#)

⇒ [“3.4 Cleaning throttle valve module”, page 196](#)

⇒ [“3.5 Checking intake manifold change-over function”, page 196](#)

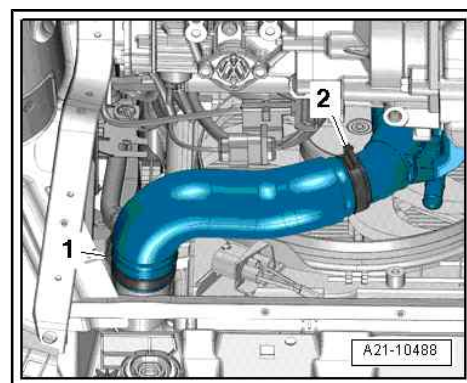
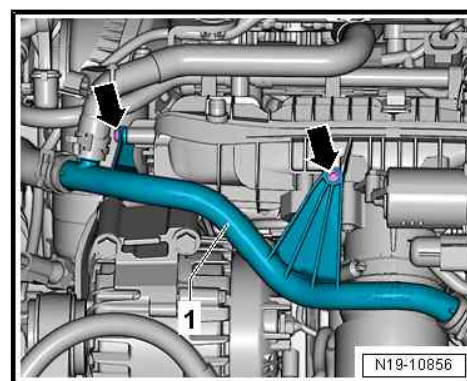
3.1 Exploded view - intake manifold

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

Removing

- Remove air cleaner housing ⇒ [page 191](#) .
- Remove throttle valve module - J338- ⇒ [page 195](#) .
- Remove bolts -arrows- at coolant pipe (front).
- Release hose clip -1- and detach air hose from charge air cooler.

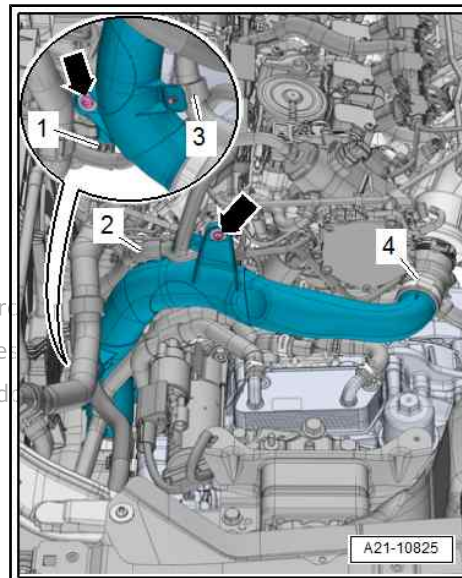


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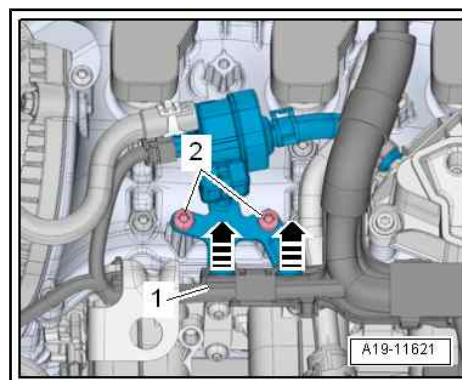


- Depending on version: Move secondary air hose -3- (or coolant hose) clear.
- Move electrical wiring harnesses -1, 2- clear at air pipe.
- Loosen screw-type clip -4-.
- Remove bolts -arrows- and press air pipe towards left slightly.

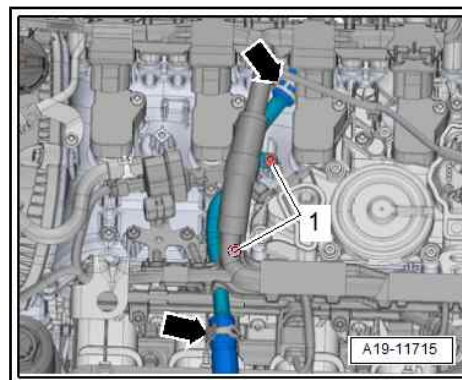
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- Release fasteners -arrows- and detach wiring duct -1- from bracket.



- Remove bolts -1- for coolant pipe (top).





- Remove bolts -arrows- and push coolant pipe down slightly.

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

- Install throttle valve module - J338- ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Intake manifold; Removing and installing throttle valve module - J338- .
- Install air cleaner housing ⇒ [page 191](#) .

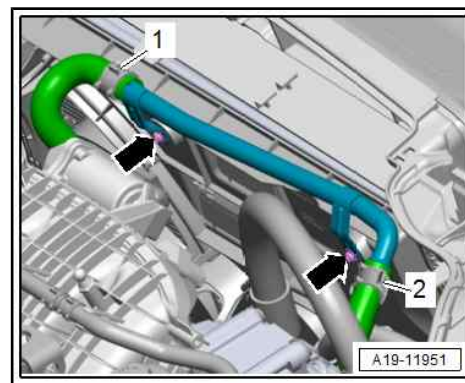
Tightening torques

- ◆ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)
- ◆ ⇒ [Fig. ““Coolant pipe at radiator cowl - tightening torque””, page 140](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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

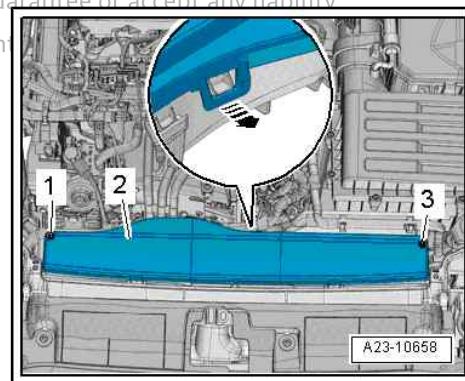
3.3 Removing and installing throttle valve module - J338-

Removing

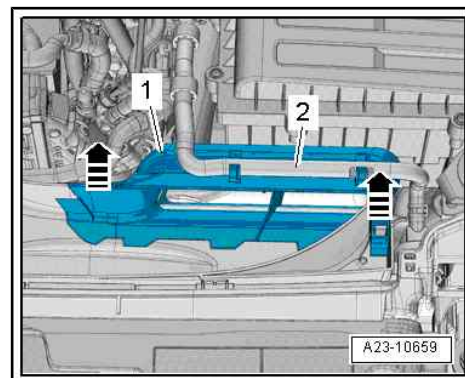
- Remove bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.



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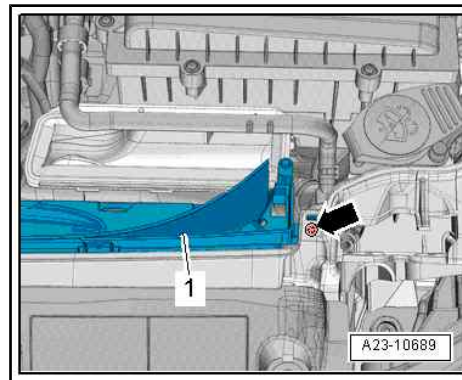


- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.

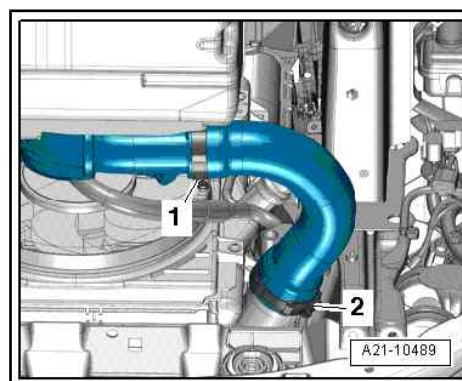




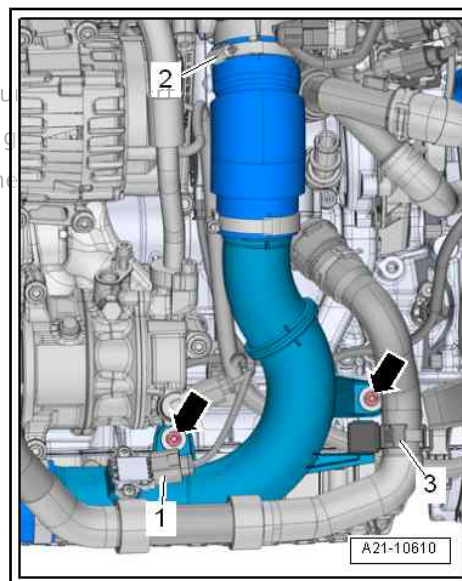
- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .



- Release hose clip -2- and detach air hose from charge air cooler.



- Release hose clip -2-.
- Move coolant hose -3- clear.
- Remove bolts -arrows-.
- Unplug electrical connector -1- from charge pressure sender - G31- .
- Detach air pipe (right-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- .

Tightening torques

- ◆ ⇒ [“2.1 Exploded view - air cleaner housing”, page 190](#)
- ◆ ⇒ [“2.1 Exploded view - charge air system”, page 175](#)
- ◆ ⇒ 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
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

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 197](#)

⇒ [“4.2 Removing and installing fuel rail”, page 197](#)

⇒ [“4.3 Removing and installing injectors”, page 197](#)

⇒ [“4.4 Cleaning injectors”, page 198](#)

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 .

4.2 Removing and installing fuel rail

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

⇒ [“4.3.1 Removing and installing injectors - vehicles with FSI engine”, page 197](#)

⇒ [“4.3.2 Removing and installing injectors - vehicles with MPI engine”, page 197](#)

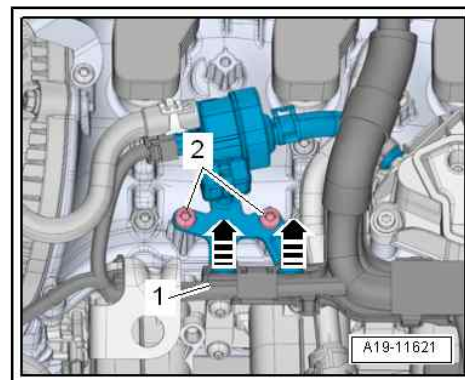
4.3.1 Removing and installing injectors - vehicles with FSI engine

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 .

4.3.2 Removing and installing injectors - vehicles with MPI engine

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 .
- Release fasteners -arrows- and detach wiring duct -1- from bracket.





- Remove bolts -1- for coolant pipe (top).

All further 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 .

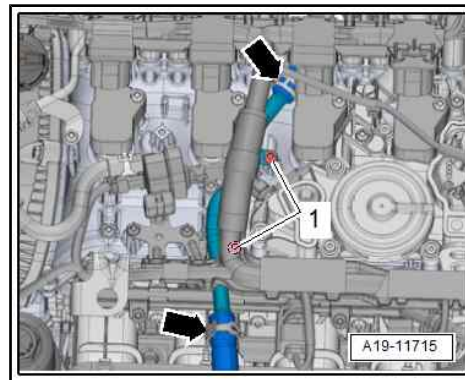
Installing

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

- ◆ ⇒ [“4.1 Exploded view - coolant pipes”, page 140](#)



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 .



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5 Senders and sensors

⇒ ["5.1 Exploded view - actuator for structure-borne sound and control unit for structure-borne sound", page 199](#)

⇒ ["5.2 Removing and installing control unit for structure-borne sound J869 and actuator for structure-borne sound R214 ", page 200](#)

⇒ ["5.3 Removing and installing intake air temperature sender G42 / intake manifold pressure sender G71 ", page 200](#)

⇒ ["5.4 Removing and installing fuel pressure sender G247 ", page 201](#)

⇒ ["5.5 Checking fuel pressure sender G247 ", page 201](#)

⇒ ["5.6 Removing and installing fuel pressure sender for low pressure G410 ", page 202](#)

5.1 Exploded view - actuator for structure-borne sound and control unit for structure-borne sound

1 - Mounting bracket

- For control unit for structure-borne sound - J869-

2 - Control unit for structure-borne sound - J869-

- Removing and installing
⇒ [page 200](#)

3 - Electrical connector

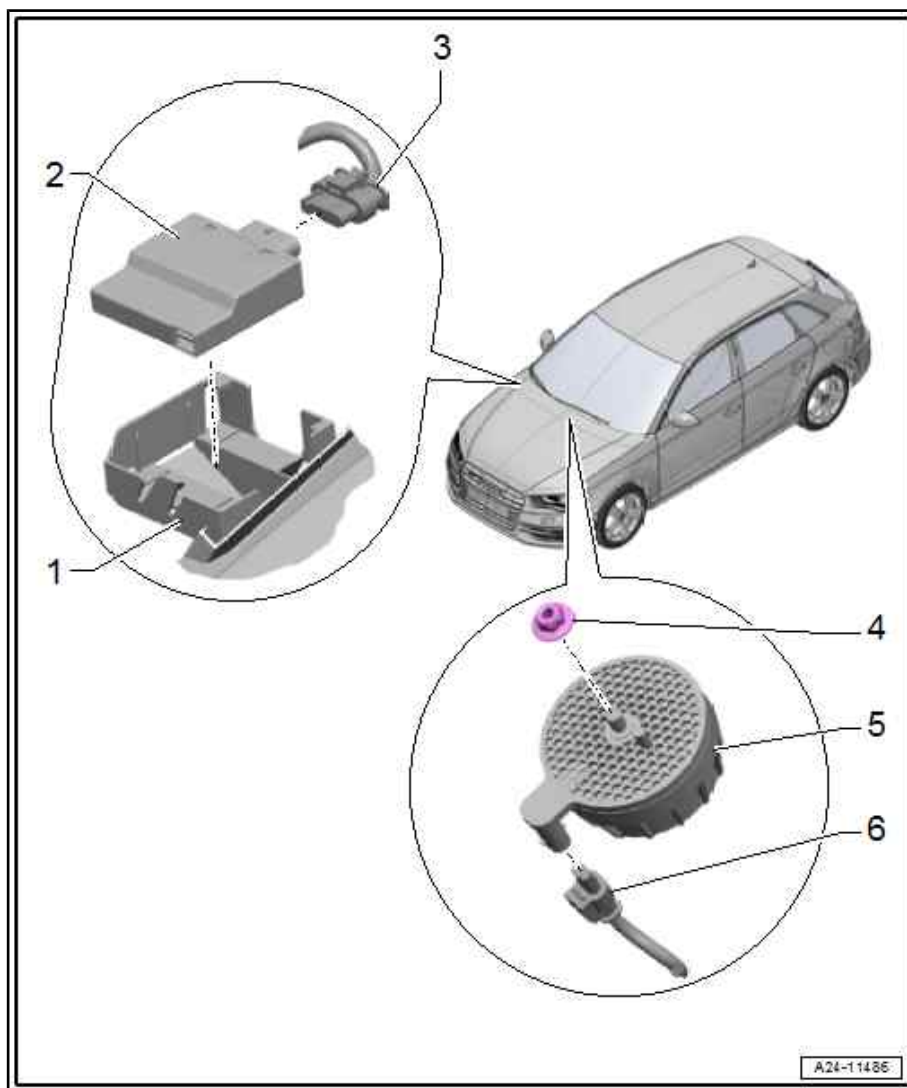
4 - Nut

- 5 Nm

5 - Actuator for structure-borne sound - R214-

- Removing and installing
⇒ [page 200](#)

6 - Electrical connector

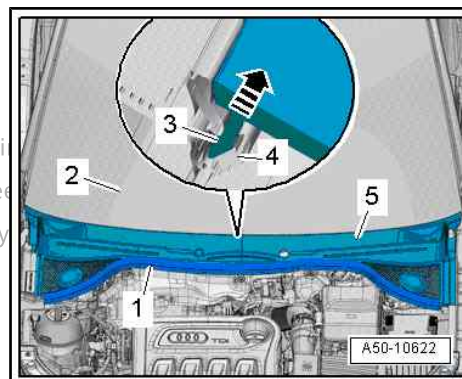




5.2 Removing and installing control unit for structure-borne sound - J869- and actuator for structure-borne sound - R214-

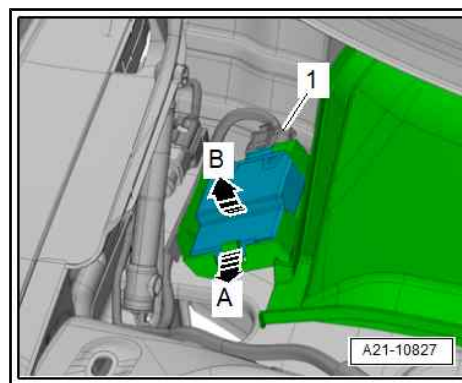
Removing

- Remove plenum chamber cover -5- ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover .
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Control unit for structure-borne sound - J869- :

- Unplug electrical connector -1-.
- Release fastener -arrow A- and detach control unit for structure-borne sound - J869- from bracket -arrow B-.



Actuator for structure-borne sound - R214- :

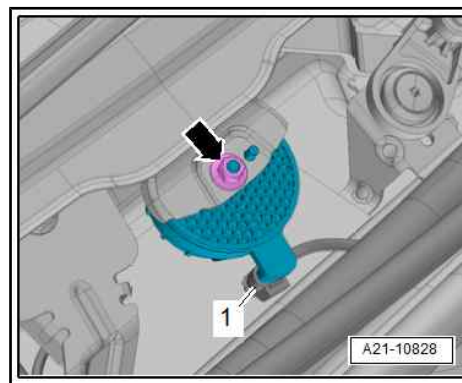
- Remove nut -arrow-.
- Detach actuator for structure-borne sound - R214- and disconnect electrical connector -1-.

Installing

Installation is carried out in reverse sequence.

Tightening torques

- ⇒ [“5.1 Exploded view - actuator for structure-borne sound and control unit for structure-borne sound”, page 199](#)



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

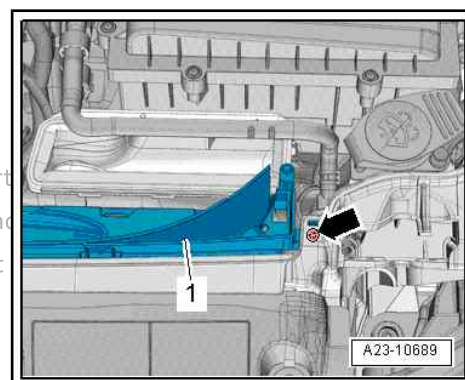
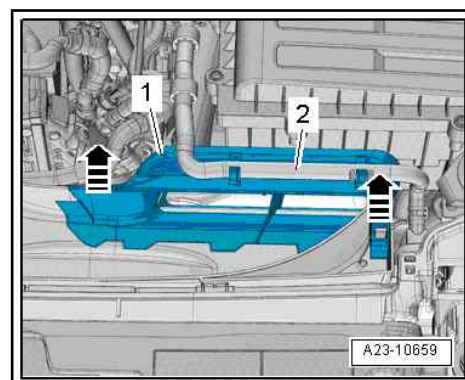
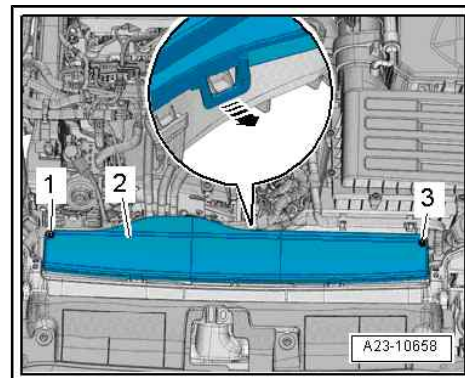
All procedures are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 24 ; Senders and sensors; Removing and installing intake air temperature sender - G42- / intake manifold pressure sender - G71- .



5.4 Removing and installing fuel pressure sender - G247-

Removing

- Remove bolts -1, 3-.
- Release fastener -arrow- and remove cover -2-.
- Move coolant hose -2- clear.
- Release fasteners -arrows- and detach air duct (top section) -1-.
- Remove bolt -arrow- on both sides.
- Unclip air duct (bottom section) -1- and detach.

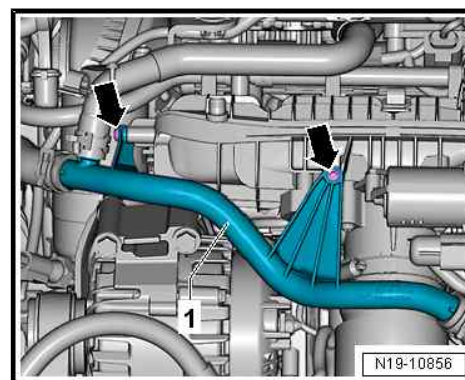


- Remove bolts -arrows- at coolant pipe (front).

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- .

Tightening torques

- ◆ ⇒ ["4.1 Exploded view - coolant pipes", page 140](#)
- ◆ ⇒ ["2.1 Exploded view - air cleaner housing", page 190](#)



5.5 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- .



5.6 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- .

5.7 Removing and installing exhaust gas pressure sensor 1 - G450-

All procedures are described in ⇒ Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI (EA 888, Gen. III); Rep. gr. 24 ; Senders and sensors ; Removing and installing exhaust gas pressure sensor 1 - G450- .

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6 High-pressure pump

⇒ [“6.1 Exploded view - high-pressure pump”, page 203](#)

⇒ [“6.2 Removing and installing high-pressure pump”, page 203](#)

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

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 air cleaner housing ⇒ [page 191](#) .
- Unscrew bolt -1- and push air pipe clear to left side.

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 .

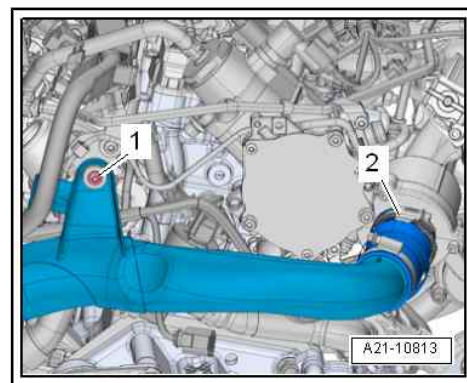
Installing

Additional work:

- Install air cleaner housing ⇒ [page 191](#) .
- 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 - charge air system”, page 175](#)



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7 Lambda probe

⇒ "7.1 Exploded view - Lambda probe", page 204

⇒ "7.2 Removing and installing Lambda probe", page 204

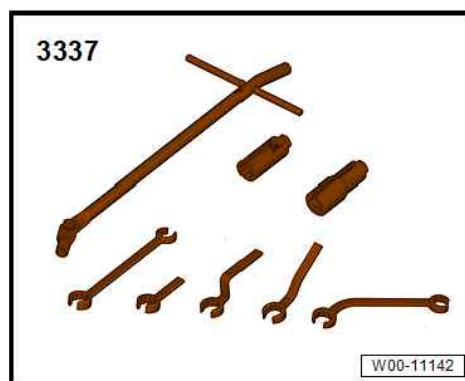
7.1 Exploded view - Lambda probe

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

7.2 Removing and installing Lambda probe

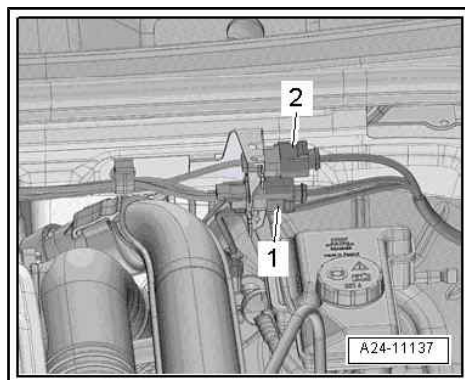
Special tools and workshop equipment required

- ♦ Lambda probe open ring spanner set - 3337-



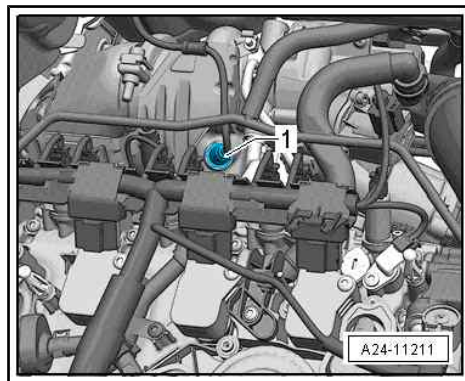
Removing

- Remove engine cover panel ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Unplug electrical connector:
 - 1 - For Lambda probe after catalytic converter - G130- and Lambda probe heater 1 after catalytic converter - Z29-
 - 2 - For Lambda probe - G39- and Lambda probe heater - Z19-



Lambda probe - G39- :

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



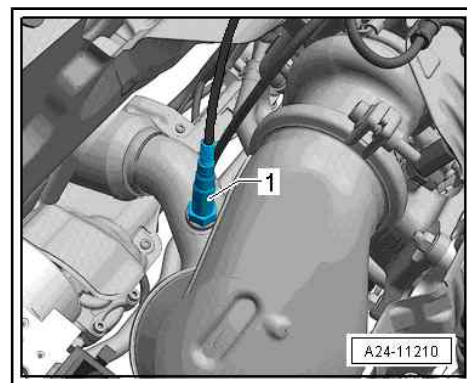


Lambda probe after catalytic converter - G130- :

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

Installing

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



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8 Engine control unit

⇒ **"8.1 Removing and installing engine/motor control unit J623 ", page 206**

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

⇒ **"8.1.1 Removing and installing engine control unit J623 without protective housing", page 206**

⇒ **"8.1.2 Removing and installing engine control unit J623 with protective housing", page 207**

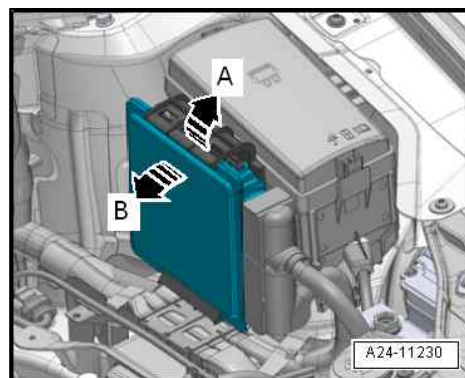
8.1.1 Removing and installing engine control unit - J623- without protective housing

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester

Removing

- When renewing engine control unit, select diagnosis object "Replace engine control unit" in "Guided Functions" mode of ⇒ Vehicle diagnostic tester.
- Switch off ignition and remove ignition key.
- Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Release retainer -arrow A- and take out engine control unit - J623- -arrow B-.
- Release and unplug connectors for engine control unit - J623- .



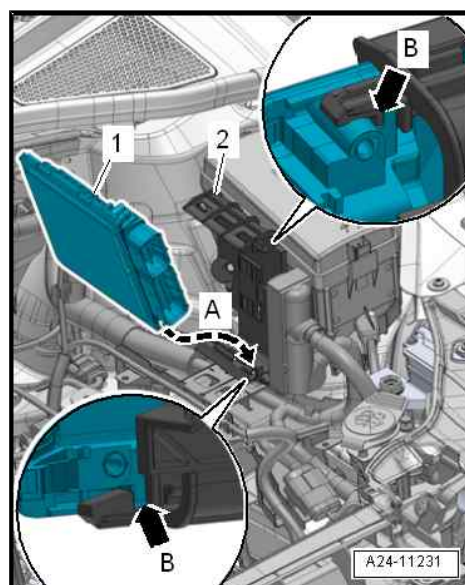
Installing

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

- Insert engine control unit - J623- bottom edge first into bracket -arrow A- and lock at top edge.
- Lugs on engine control unit must engage in notches at top and bottom of bracket -arrows B-.
- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

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

- Activate engine control unit in Guided Functions mode, Replace engine control unit ⇒ Vehicle diagnostic tester.

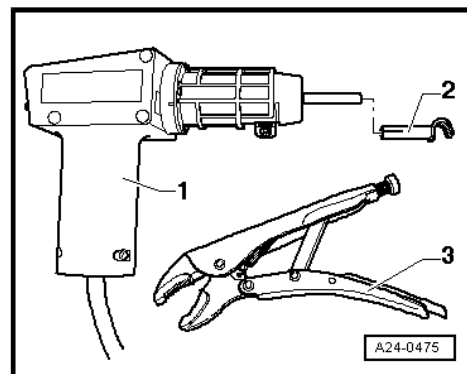




8.1.2 Removing and installing engine control unit - J623- with protective housing

Special tools and workshop equipment required

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



- ◆ Small grinder (commercially available)
- ◆ Vehicle diagnostic tester

Removing

- When renewing engine control unit, select diagnosis object “Replace engine control unit” in “Guided Functions” mode of ⇒ Vehicle diagnostic tester.
- Switch off ignition and remove ignition key.
- Remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

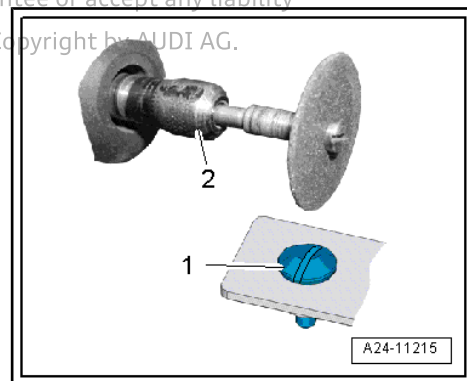
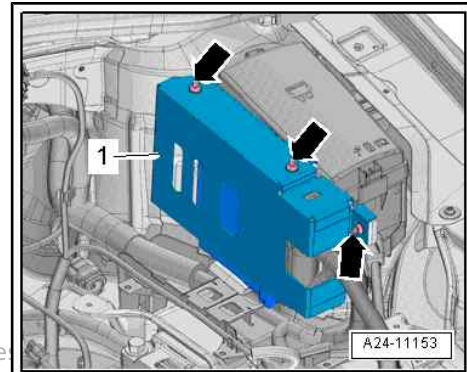
To remove protective housing -1-, unscrew shear bolts -arrows- as follows:



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- Make groove (for a screwdriver) in head of shear bolt -1- using a small grinder -2-.





Note

The threads of the shear bolts are secured with locking fluid. To unscrew these bolts, the threads must therefore be heated with the hot air blower.

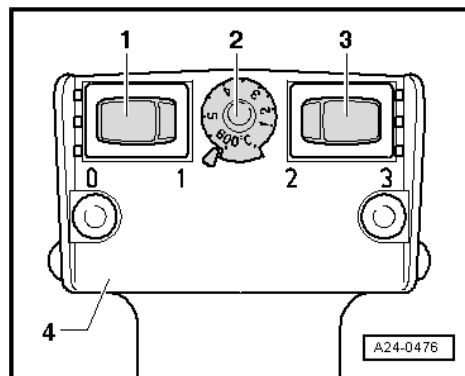
- Select settings on hot air blower as shown in illustration, i.e. set temperature potentiometer -2- to maximum heat output and two-stage air flow switch -3- to position 3.



WARNING

Risk of burns from hot air blower.

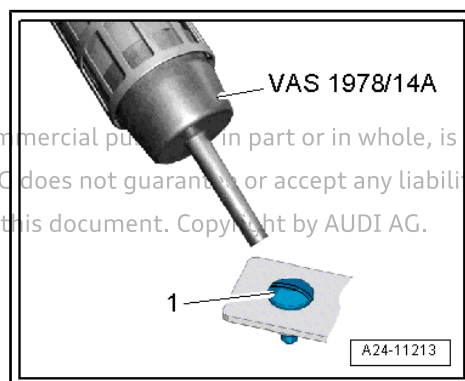
- ◆ **Parts of the protective housing will become very hot as a result of heating the threads. It is also important to ensure that only the thread is heated and none of the surrounding components if at all possible. These should be covered if necessary.**



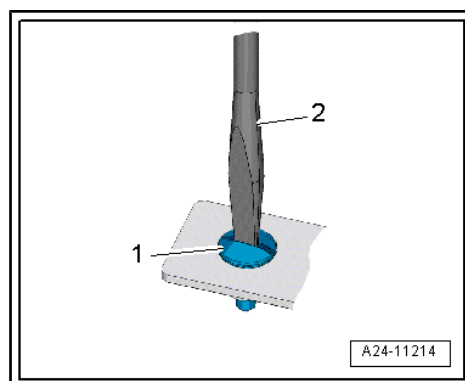
- Heat head of shear bolt -1- for approx. 20 to 30 seconds.



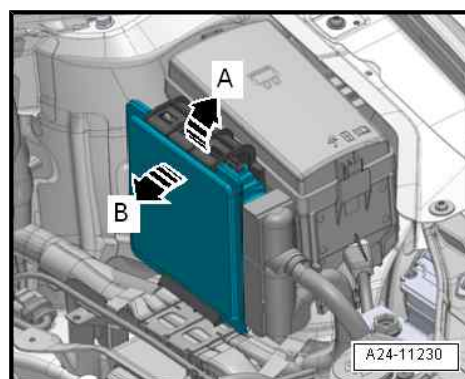
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- Unscrew shear bolt -1- using screwdriver -2-.
- Detach protective housing from engine control unit - J623- .



- Release retainer -arrow A- and take out engine control unit - J623- -arrow B-.
- Release and unplug connectors for engine control unit - J623- .





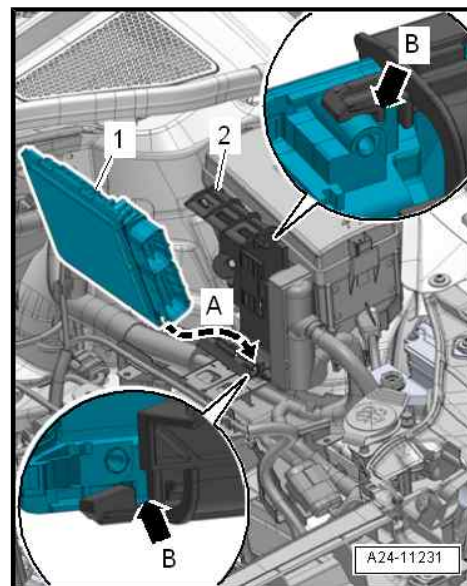
Installing

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

- Insert engine control unit - J623- bottom edge first into bracket -arrow A- and lock at top edge.
- Make sure you fit protective housing back on engine control unit - J623- .
- Clean threaded holes for shear bolts to remove any residue from locking fluid. This can be done using a thread tap.
- Always use new shear bolts.
- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

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

- Activate engine control unit in Guided Functions mode, Replace engine control unit ⇒ Vehicle diagnostic tester.



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26 – Exhaust system

1 Exhaust pipes/silencers

⇒ [“1.1 Exploded view - silencers”, page 210](#)

⇒ [“1.2 Separating exhaust pipes/silencers”, page 213](#)

⇒ [“1.3 Removing and installing silencers”, page 216](#)

⇒ [“1.4 Stress-free alignment of exhaust system”, page 218](#)

⇒ [“1.5 Checking exhaust system for leaks”, page 219](#)

1.1 Exploded view - silencers

⇒ [“1.1.1 Exploded view - silencers, vehicles with front-wheel drive”, page 210](#)

⇒ [“1.1.2 Exploded view - silencers, vehicles with four-wheel drive”, page 212](#)

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

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1 - Rear silencer

- ☐ Combined in one unit with centre silencer as original equipment. Can be renewed separately for repair purposes
- ☐ Removing and installing
⇒ [page 216](#)
- ☐ Cutting point
⇒ [page 213](#)
- ☐ Align exhaust system so it is free of stress
⇒ [page 218](#)

2 - Bolt

- ☐ 20 Nm

3 - Bracket

4 - Rubber mounting

- ☐ Renew if damaged

5 - Clamp (rear)

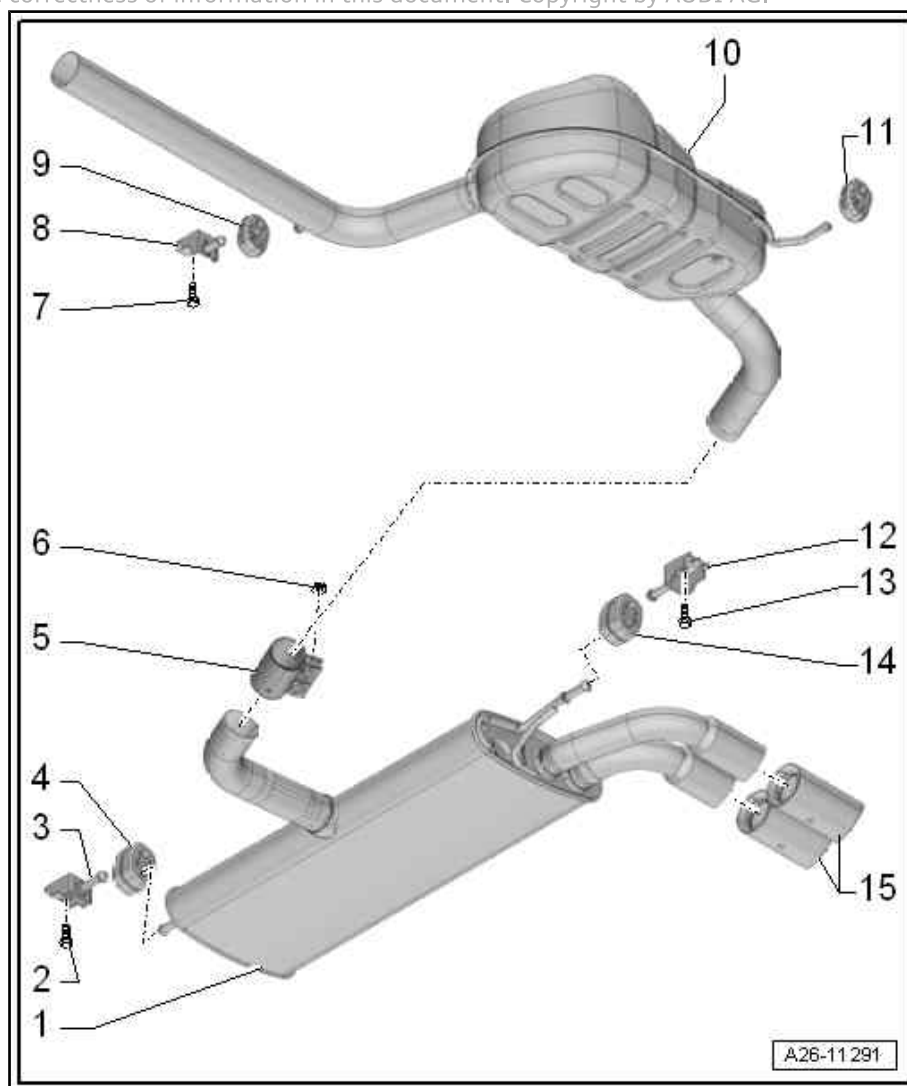
- ☐ Before tightening, align exhaust system so it is free of stress
⇒ [page 218](#)
- ☐ Installation position
⇒ [page 213](#)
- ☐ Tighten bolted connections evenly

6 - Nut

- ☐ 20 Nm

7 - Bolt

- ☐ 20 Nm





8 - Bracket

9 - Rubber mounting

- ☐ Renew if damaged

10 - Centre silencer

- ☐ Combined in one unit with rear silencer as original equipment. Can be renewed separately for repair purposes
- ☐ Removing and installing ⇒ [page 216](#)
- ☐ Cutting point ⇒ [page 213](#)
- ☐ Align exhaust system so it is free of stress ⇒ [page 218](#)

11 - Rubber mounting

- ☐ Renew if damaged

12 - Bracket

13 - Bolt

- ☐ 20 Nm

14 - Rubber mounting

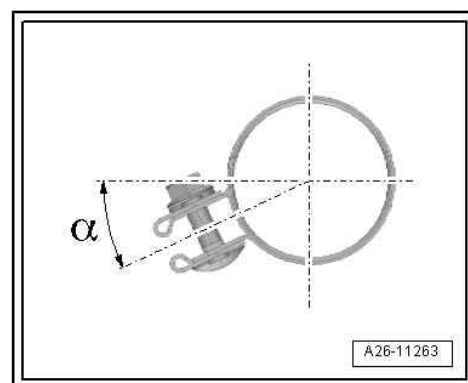
- ☐ Renew if damaged

15 - Trim

- ☐ For tailpipes

Installation position of rear clamp

- Fit clamp in position shown.
- Angle α = approx. 20°
- Bolt connections face to rear.
- Nuts facing upwards





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

1 - Bolt

- ❑ 20 Nm

2 - Bracket

3 - Rubber mounting

- ❑ Renew if damaged

4 - Rubber mounting

- ❑ Renew if damaged

5 - Clamp (rear)

- ❑ Before tightening, align exhaust system so it is free of stress
⇒ [page 218](#)
- ❑ Installation position
⇒ [page 211](#)
- ❑ Tighten bolted connections evenly

6 - Nut

- ❑ 20 Nm

7 - Centre silencer

- ❑ Combined in one unit with rear silencer as original equipment. Can be renewed separately for repair purposes
- ❑ Removing and installing
⇒ [page 216](#)
- ❑ Cutting point
⇒ [page 213](#)
- ❑ Align exhaust system so it is free of stress
⇒ [page 218](#)

8 - Rubber mounting

- ❑ Renew if damaged

9 - Bracket

10 - Bolt

- ❑ 20 Nm

11 - Rubber mounting

- ❑ Renew if damaged

12 - Bracket

13 - Bolt

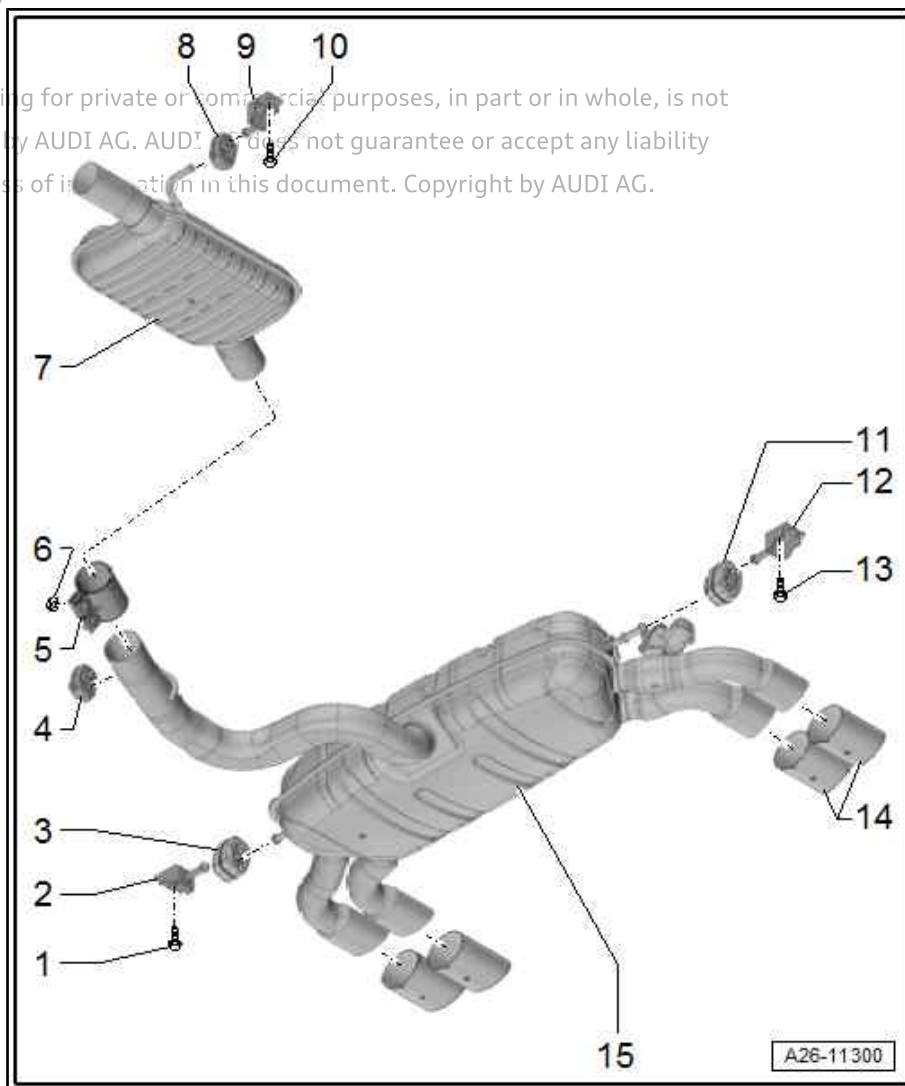
- ❑ 20 Nm

14 - Trim

- ❑ For tailpipes

15 - Rear silencer

- ❑ Different versions available; for allocation refer to ⇒ Electronic parts catalogue
- ❑ Vehicles with 2.0 ltr. engine: with exhaust flap control unit -J883- / -J945-
- ❑ Combined in one unit with centre silencer as original equipment. Can be renewed separately for repair purposes

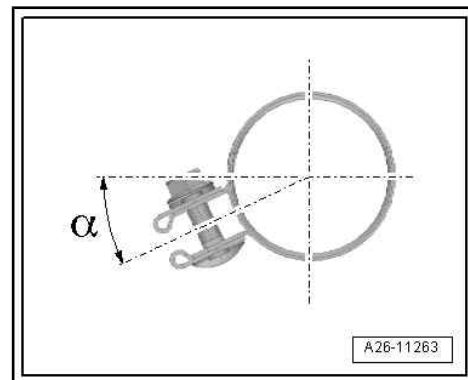




- ❑ Cutting point ➔ [page 213](#)
- ❑ Removing and installing rear silencer ➔ [page 216](#)
- ❑ Removing and installing exhaust flap control unit ➔ [page 231](#)
- ❑ Align exhaust system so it is free of stress ➔ [page 218](#)

Installation position of rear clamp

- Fit clamp in position shown.
- Angle α = approx. 20°
- Bolt connections face to left
- Nuts facing upwards



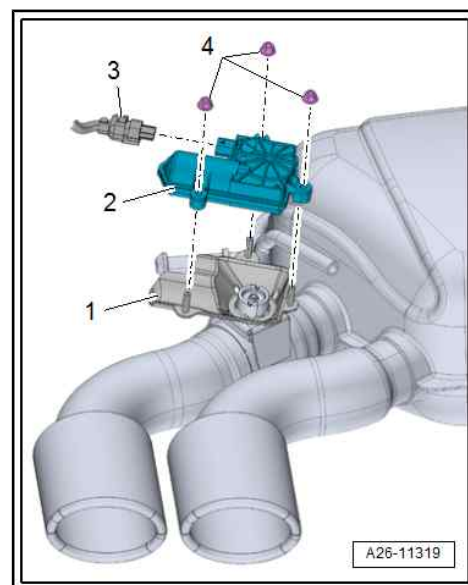
Exhaust flap control unit - tightening torque



Note

Renew nuts.

- Tighten nuts -4- to 3 Nm.



1.2 Separating exhaust pipes/silencers

➔ ["1.2.1 Separating exhaust pipes/silencers - vehicles with front-wheel drive", page 213](#)

➔ ["1.2.2 Separating exhaust pipes/silencers - vehicles with four-wheel drive", page 214](#) -

1.2.1 Separating exhaust pipes/silencers - vehicles with front-wheel drive

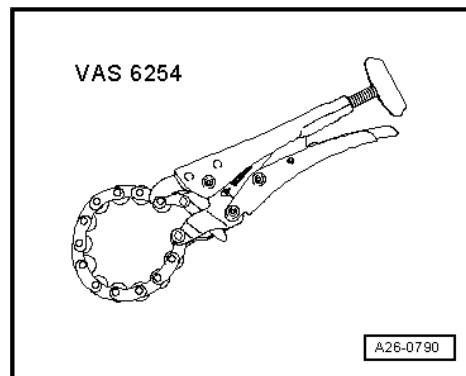
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- ◆ The connecting pipe can be cut through at the cutting location in order to renew the centre and rear silencers separately.
- ◆ The cutting point is marked by an indentation on the circumference of the exhaust pipe.

Special tools and workshop equipment required

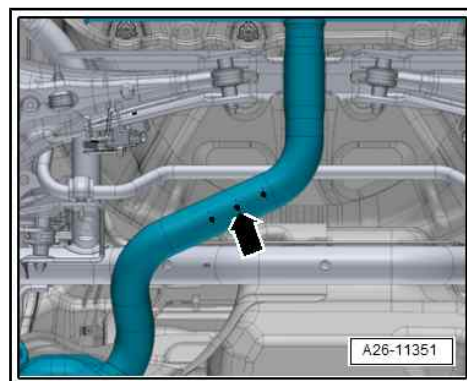


◆ Chain pipe cutter - VAS 6254-

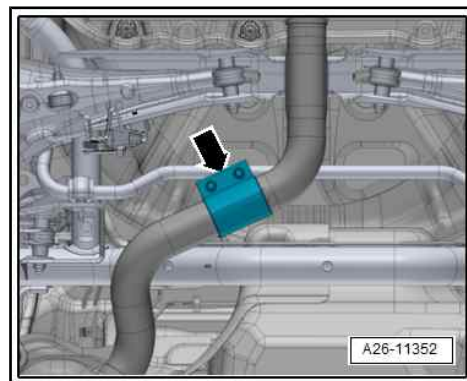


Procedure

- Cut through exhaust pipe at right angles at the position marked -arrow- using chain pipe cutter - VAS 6254- .



- When installing, position centre of clamp -arrow- over cutting location.
- Fit rear clamp ⇒ [page 211](#) .
- Align the exhaust system so it is free of stress ⇒ [page 218](#) .



1.2.2 Separating exhaust pipes/silencers - vehicles with four-wheel drive

- ◆ 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.

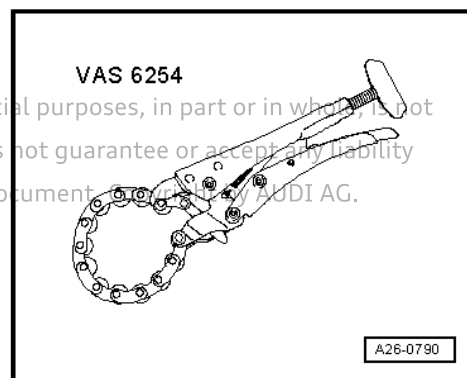
Special tools and workshop equipment required

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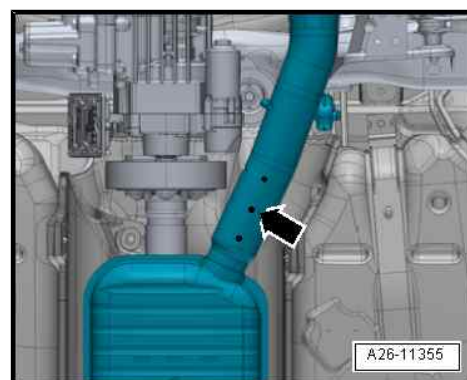
◆ Chain pipe cutter - VAS 6254-

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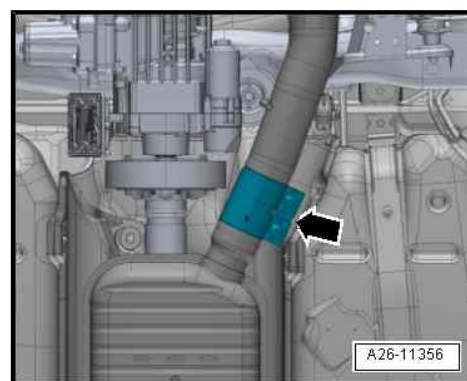


Procedure

- Cut through exhaust pipe at right angles at the position marked -arrow- using chain pipe cutter - VAS 6254- .



- When installing, position centre of clamp -arrow- over cutting location.
- Fit rear clamp ⇒ [page 213](#) .
- Align the exhaust system so it is free of stress ⇒ [page 218](#) .





1.3 Removing and installing silencers

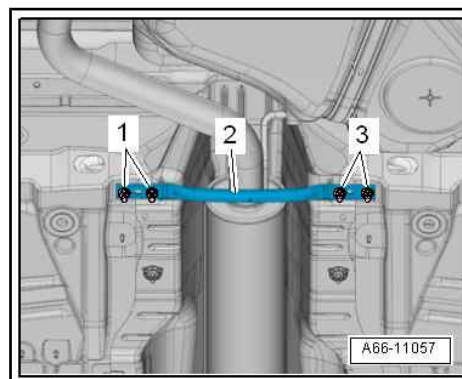
⇒ "1.3.1 Removing and installing silencers - vehicles with front-wheel drive", page 216

⇒ "1.3.2 Removing and installing silencers - vehicles with four-wheel drive", page 217

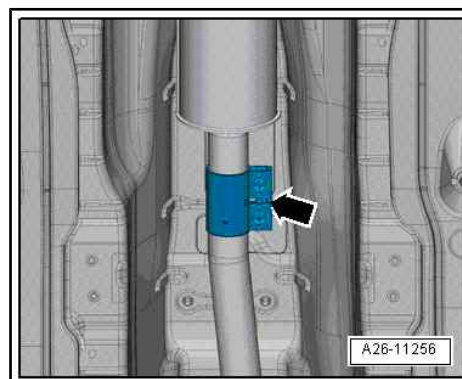
1.3.1 Removing and installing silencers - vehicles with front-wheel drive

Removing

- Remove tunnel cross-piece (rear) -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



- Loosen clamp -arrow- and push towards rear.



- Disengage mounting -2- at exhaust system (rear).

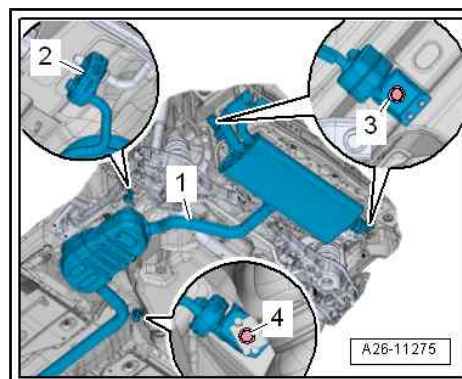


WARNING

Risk of accident caused by weight of silencers.

- ♦ *A second mechanic is required for removal of the rear silencer.*

- Remove bolt -3- (left and right) and bolt -4- and detach silencers -1-.



Installing

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

- Align the exhaust system so it is free of stress ⇒ [page 218](#) .

Tightening torques

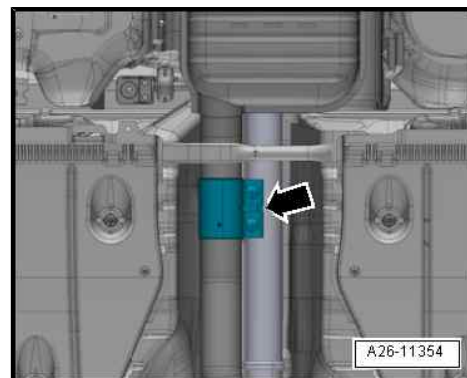
- ♦ ⇒ "1.1 Exploded view - silencers", page 210
- ♦ Tunnel cross-piece ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim



1.3.2 Removing and installing silencers - vehicles with four-wheel drive

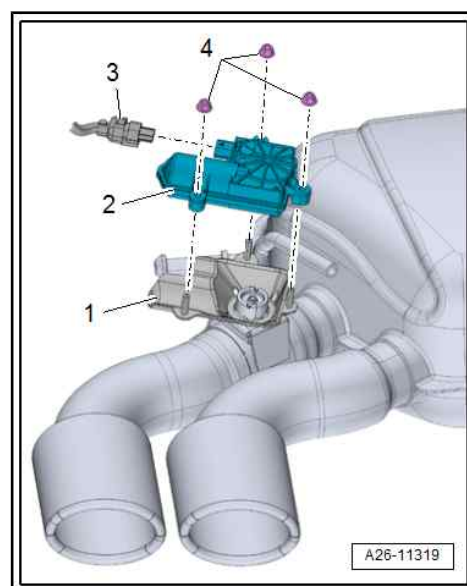
Removing

- Loosen bolt connections for front clamp -arrow-.



Vehicles with 2.0 ltr. engine:

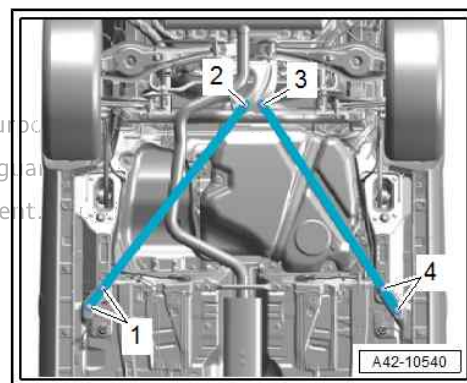
- Unplug electrical connectors (left and right) -3- at exhaust flap control unit -2-.



A3 Cabriolet:

- Remove relevant diagonal strut ➔ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe .

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All vehicles (continued):

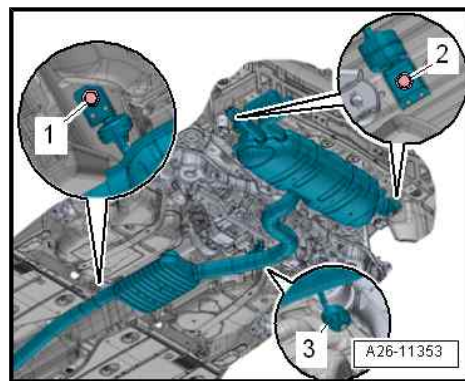
- Disengage mounting -3- at exhaust system (rear).



WARNING

Risk of accident caused by weight of silencers.

- ◆ *A second mechanic is required for removal of the rear silencer.*



- Unscrew bolts -1, 2- and remove silencers.

Installing

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

- Align the exhaust system so it is free of stress ⇒ [page 218](#) .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - silencers", page 210](#)
- ◆ Diagonal strut ⇒ Running gear, axles, steering; Rep. gr. 42 ; Subframe; Exploded view - subframe

1.4 Stress-free alignment of exhaust system

⇒ ["1.4.1 Stress-free alignment of exhaust system", page 218](#)

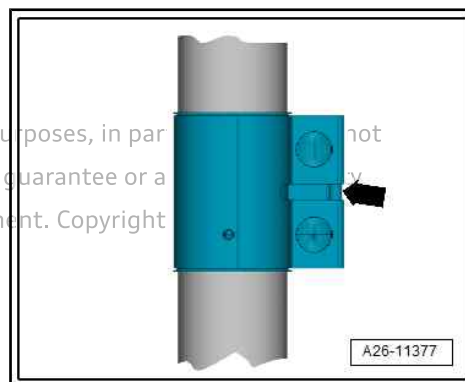
⇒ ["1.4.2 Aligning tailpipes", page 219](#)

1.4.1 Stress-free alignment of exhaust system

Procedure

- The exhaust system must be aligned when it is cool.
- Loosen bolt connections for front clamp -arrow-.

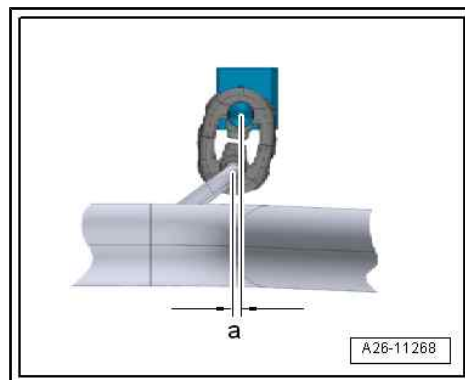
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- Push exhaust system towards front of vehicle until preloading at mounting for exhaust pipe -a- = 5 mm.
- Fit front clamp ⇒ [page 221](#) .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - silencers", page 210](#)





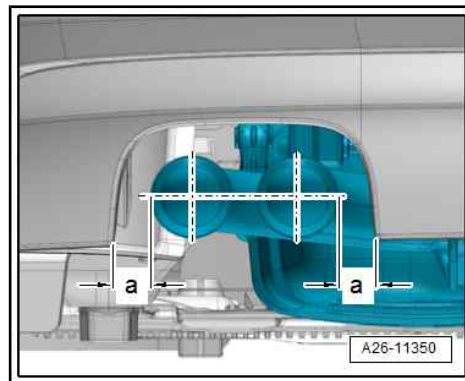
1.4.2 Aligning tailpipes

Procedure

- Adjust rear silencer so that there is an even distance between bumper cut-out and tailpipes.

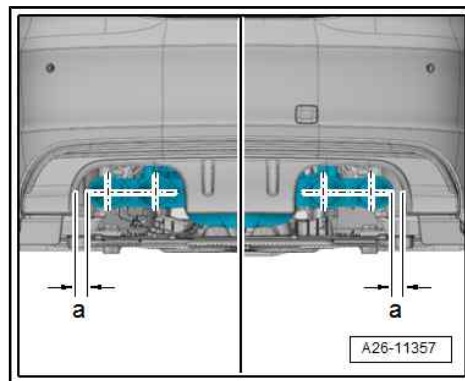
Vehicles with 1.8 ltr. engine:

- -a- = -a-



Vehicles with 2.0 ltr. engine:

- -a- = -a-
- Unfasten rear silencer mounting to align tailpipes.



1.5 Checking exhaust system for leaks

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

Checking exhaust system for leaks

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2 Emission control system

⇒ [“2.1 Exploded view - emission control system”, page 220](#)

⇒ [“2.2 Removing and installing catalytic converter”, page 222](#)

⇒ [“2.3 Removing and installing exhaust flap control unit J883”, page 231](#)

2.1 Exploded view - emission control system

1 - Bolt

- ❑ 20 Nm

2 - Bracket

- ❑ Different versions available; for allocation refer to ⇒ [Electronic parts catalogue](#)
- ❑ Renew if damaged

3 - Bolt

Tightening torque and sequence ⇒ [page 221](#)

4 - Nut

Tightening torque and sequence ⇒ [page 221](#)

5 - Bracket

- ❑ For catalytic converter

6 - Catalytic converter

- ❑ With front exhaust pipe
- ❑ Protect catalytic converter from damage by knocks and impact
- ❑ Removing and installing ⇒ [“2.2 Removing and installing catalytic converter”, page 222](#)
- ❑ Align exhaust system so it is free of stress ⇒ [page 218](#)

7 - Screw-type clip

- ❑ Renew
- ❑ 15 Nm
- ❑ Installation position ⇒ [page 221](#)
- ❑ Tightening torque and sequence ⇒ [page 221](#)

8 - Seal

- ❑ Renew

9 - Turbocharger

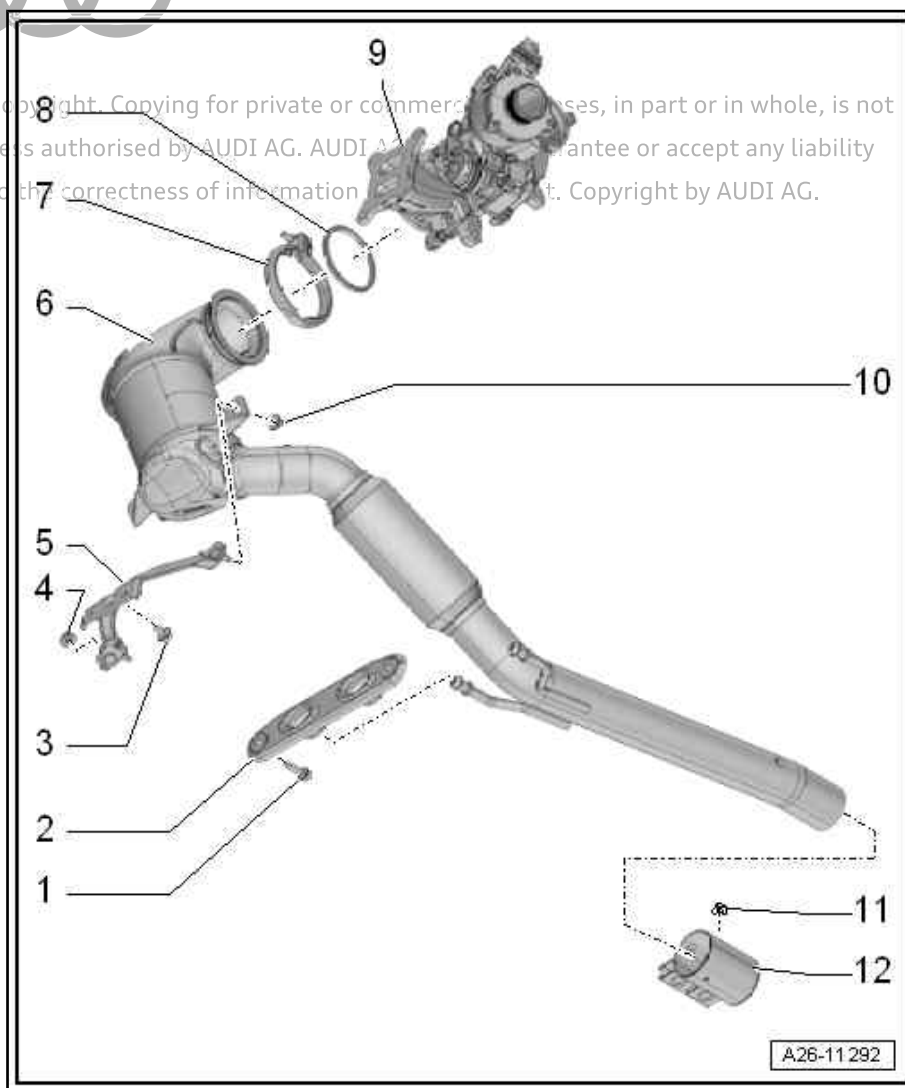
- ❑ Removing and installing ⇒ [page 156](#)

10 - Nut

Tightening torque and sequence ⇒ [page 221](#)

11 - Nut

- ❑ 23 Nm



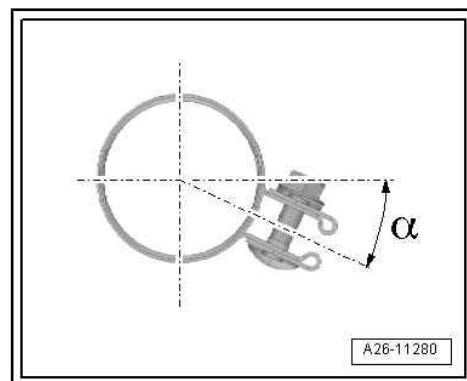


12 - Clamp (front)

- ❑ Before tightening, align exhaust system so it is free of stress ➔ [page 218](#)
- ❑ Installation position ➔ [page 221](#)
- ❑ Tighten bolted connections evenly

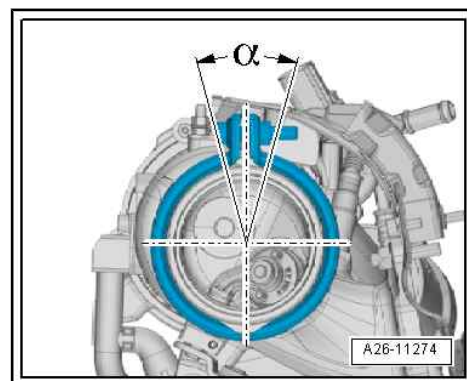
Installation position of front clamp

- Fit clamp in position shown.
- Angle α = approx. 20°
- Bolted connection facing towards right
- Nuts facing upwards



Installation position of screw-type clip for catalytic converter

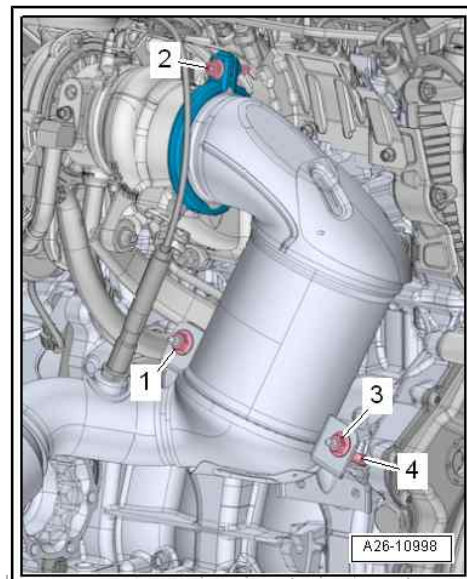
- Angle α = 30°



Catalytic converter - tightening torque and sequence

- Tighten bolted connections in stages in the sequence shown:

Stage	Screw-type clip/ nuts	Tightening torque
1.	-1, 3, 4-	Screw in by hand until contact is made • It must still be possible to move catalytic converter and bracket
2.	-2-	Tighten screw-type clip to 15 Nm
3.	-1, 3, 4-	Tighten to 20 Nm



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2.2 Removing and installing catalytic converter

⇒ [“2.2.1 Removing and installing catalytic converter - vehicles without particulate filter”, page 222](#)

⇒ [“2.2.2 Removing and installing catalytic converter - vehicles with particulate filter”, page 225](#)

2.2.1 Removing and installing catalytic converter - vehicles without particulate filter



Note

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

Special tools and workshop equipment required

- ♦ High-temperature paste ⇒ Electronic parts catalogue

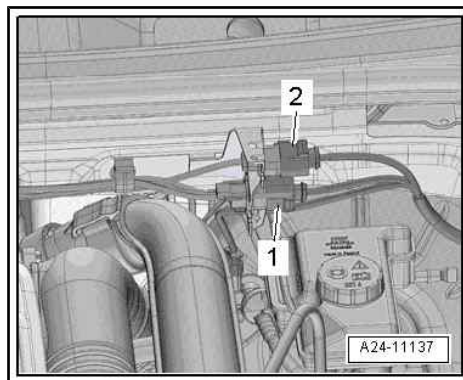
Removing



Note

Fit all cable ties in the original positions when installing.

- Take electrical connector -2- out of bracket, unplug it and move electrical wiring clear.

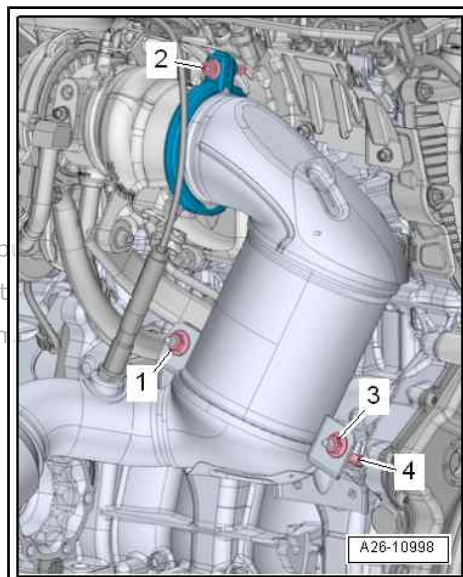


- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1, 3-.



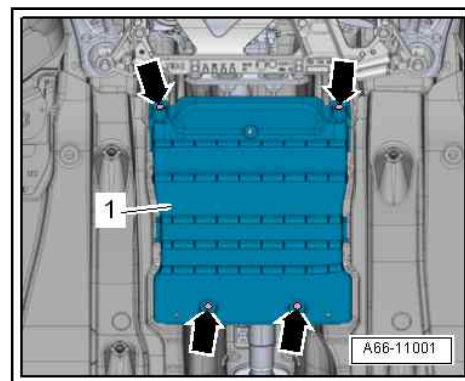
Note

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



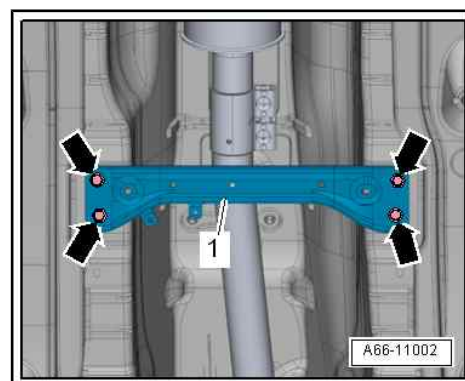


- If fitted, remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



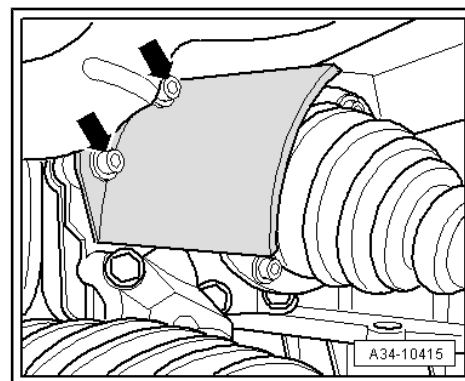
Vehicles with front-wheel drive:

- Remove tunnel cross-piece (front) -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .



Vehicles with four-wheel drive:

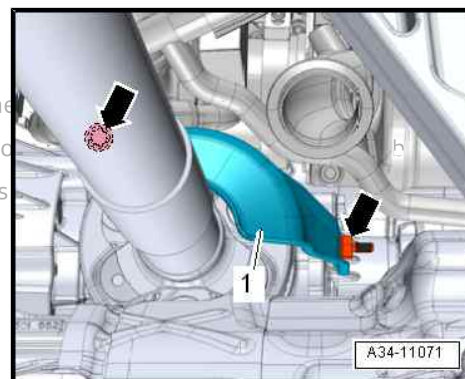
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove nuts -arrows- and detach heat shield -1- for drive shaft (right-side).
- Remove Lambda probe after catalytic converter - G130- ⇒ [page 204](#) .



- Remove bolts -arrows- and detach heat shield -1-.

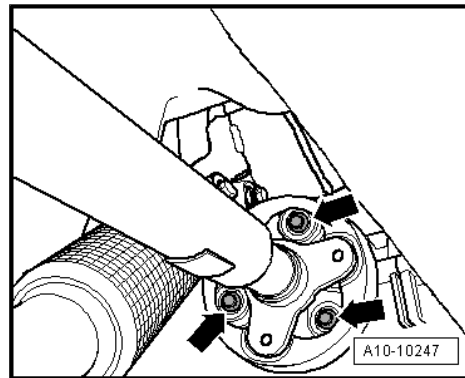


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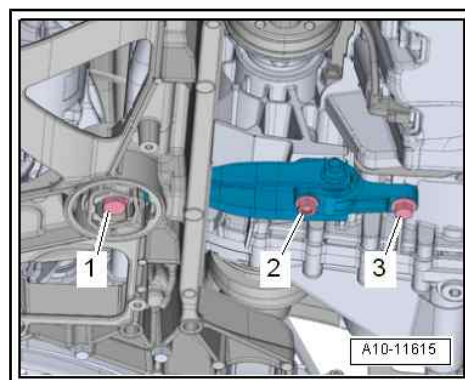




- Mark position of flexible coupling and flange for bevel box in relation to each other for re-installation.
- Unbolt propshaft at bevel box -arrows- (counterhold using a suitable lever at triangular flange).



- Remove bolts -2, 3-.



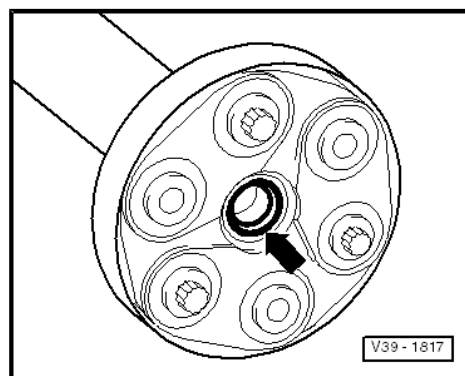
- Push engine/gearbox assembly forward slightly (towards front end) and pull propshaft off bevel box.



Caution

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

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

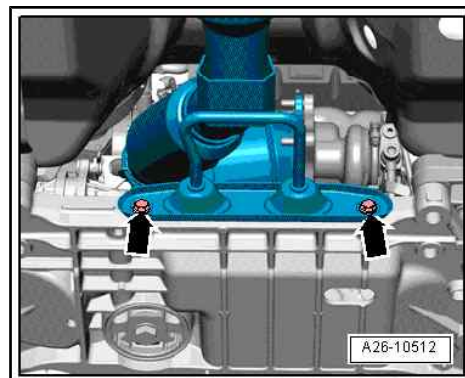


Note

The propshaft must be renewed if the oil seal is damaged.

All vehicles (continued):

- Remove bolts -arrows-.



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- Loosen clamp -arrow- and push towards rear.
- Detach catalytic converter with front exhaust pipe.

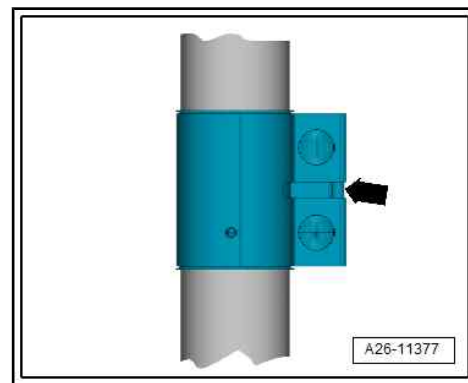
Installing

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



Note

- ◆ *Renew seals, gaskets and self-locking nuts.*
- ◆ *Coat exhaust manifold studs with high-temperature paste; for high-temperature paste refer to ⇒ [Electronic parts catalogue](#) .*
- 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 propshaft to bevel box ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Exploded view - propshaft .
- Fit catalytic converter to turbocharger and attach screw-type clip loosely without tightening it.
- Tighten nuts and screw-type clip ⇒ [page 221](#) .
- Align the exhaust system so it is free of stress ⇒ [page 218](#) .



Tightening torques

- ◆ ⇒ [Fig. ““Installing pendulum support””, page 53](#)
- ◆ ⇒ [“2.1 Exploded view - emission control system”, page 220](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.2.2 Removing and installing catalytic converter - vehicles with particulate filter

For vehicles with particulate filter, refer to ⇒ [Servicing 4-cylinder engine, 2.0 ltr. 4-valve TFSI \(EA 888, Gen. III\); Rep. gr. 00 ; Identification ; Engine versions.](#)



Note

The catalytic converter is removed together with the particulate filter.



Special tools and workshop equipment required

- ◆ High-temperature paste ⇒ [Electronic parts catalogue](#)

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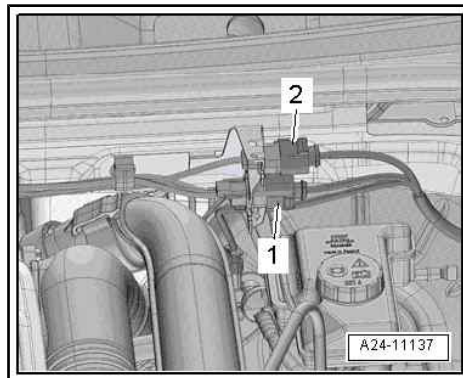
Removing



Note

Fit all cable ties in the original positions when installing.

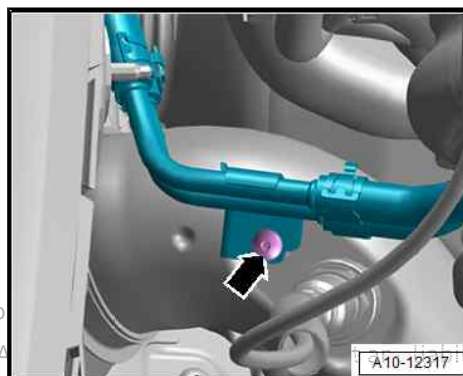
- Take electrical connector -2- out of bracket, unplug it and move electrical wiring clear.



- Remove bolt -arrow- for pressure lines.
- Move pressure lines clear.

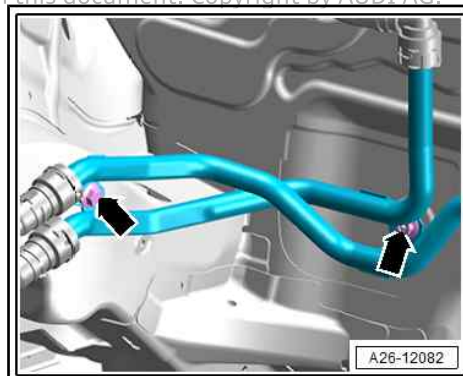


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Vehicles with auxiliary heater:

- Unscrew nuts -arrows-.



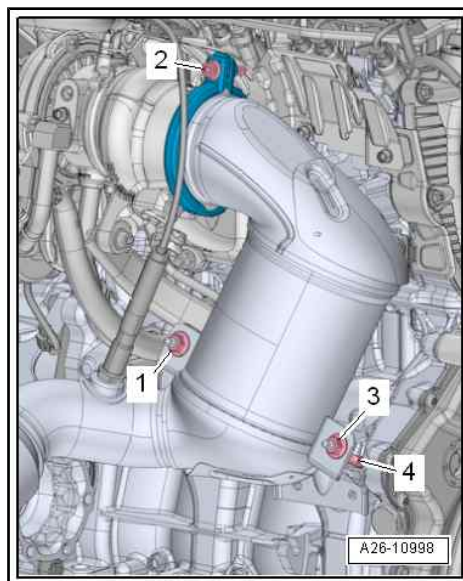
All vehicles (continued):

- Unscrew bolt -2- and remove screw-type clip.
- Remove nuts -1, 3-.



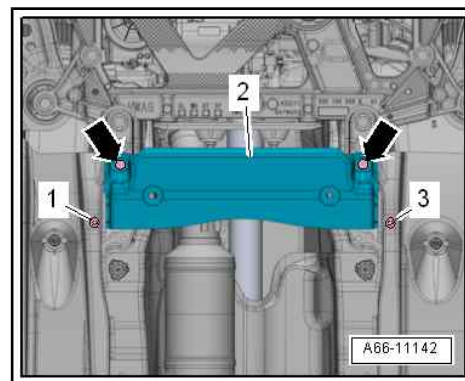
Note

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

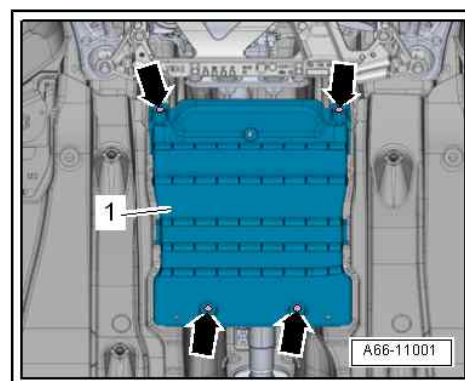




- If fitted, remove noise insulation -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



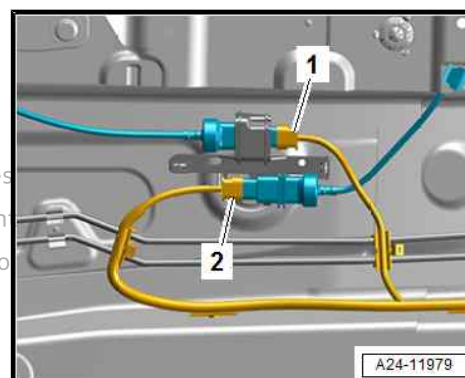
- If fitted, remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Unfasten underbody trim (centre left) in direction of exhaust system and press downwards slightly ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim .



- Detach electrical connectors -1 and 2- from bracket, unplug and move electrical wiring clear.

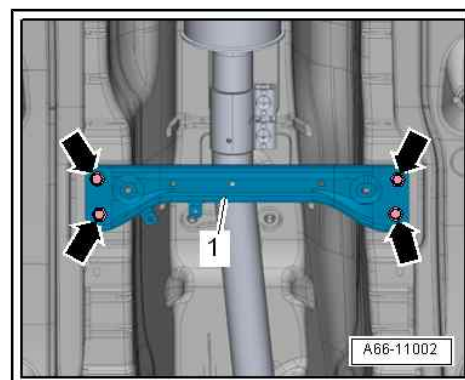


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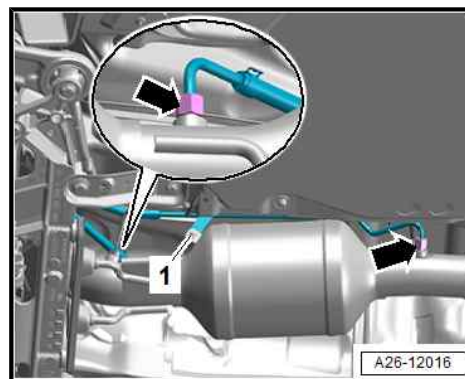
Vehicles with front-wheel drive:

- Remove tunnel cross-piece (front) -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing tunnel cross-piece .



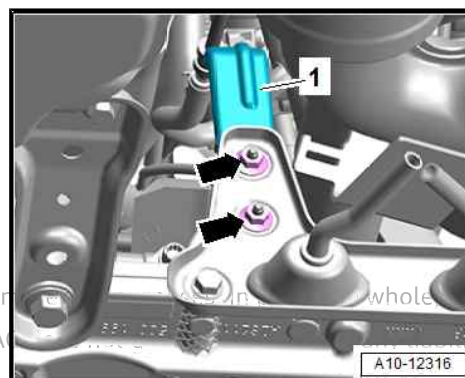


- Remove bolt -1- and union nuts -arrows- for pressure lines.
- Move pressure lines clear.

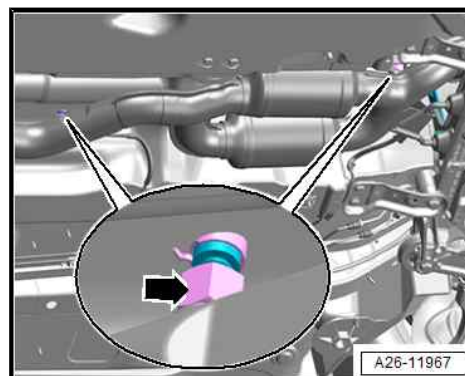


Vehicles with four-wheel drive:

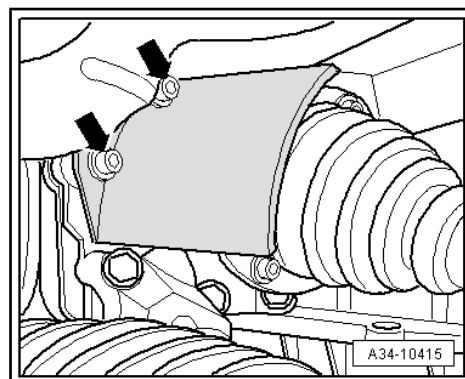
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove nuts -arrows-, move bracket -1- for pressure line clear and push to side.



- Remove union nut -arrow- for pressure lines and move pressure lines clear.

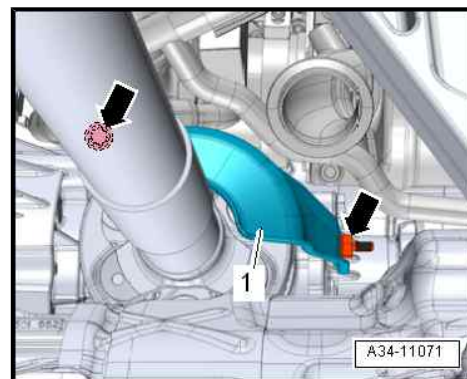


- Remove nuts -arrows- and detach heat shield -1- for drive shaft (right-side).
- Remove Lambda probe after catalytic converter - G130-
⇒ [page 204](#) .



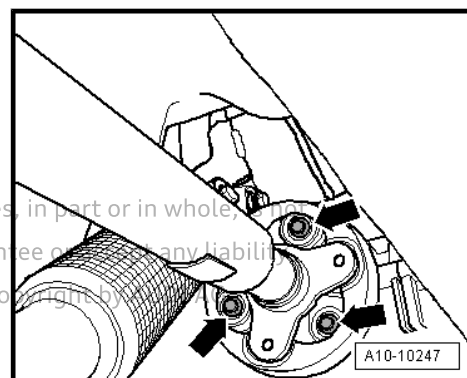


- Remove bolts -arrows- and detach heat shield -1-.

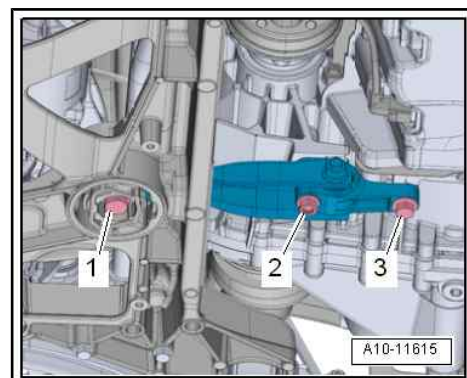


- Mark position of flexible coupling and flange for bevel box in relation to each other for re-installation.
- Unbolt propshaft at bevel box -arrows- (counterhold using a suitable lever at triangular flange).

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- Remove bolts -2, 3-.



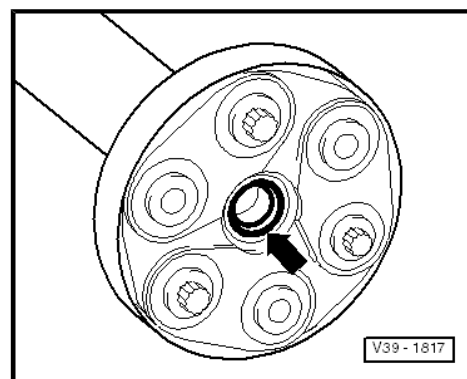
- Push engine/gearbox assembly forward slightly (towards front end) and pull propshaft off bevel box.



Caution

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

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



Note

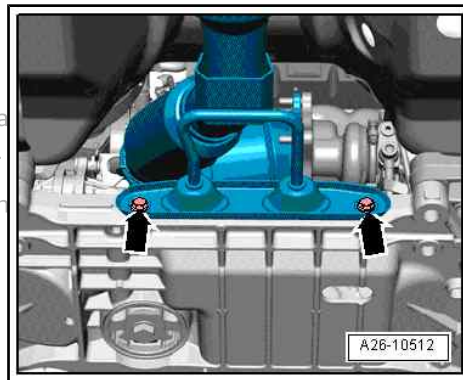
The propshaft must be renewed if the oil seal is damaged.



All vehicles (continued):

- Remove bolts -arrows-.

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- Loosen clamp -arrow- and push towards rear.
- Remove catalytic converter together with particulate filter.

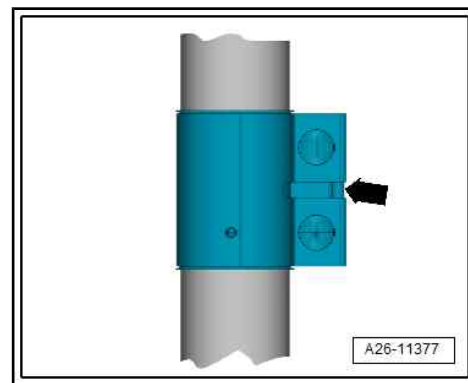
Installing

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



Note

- ◆ *Renew seals, gaskets and self-locking nuts.*
- ◆ *Coat exhaust manifold studs with high-temperature paste; for high-temperature paste refer to ⇒ [Electronic parts catalogue](#) .*
- 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 propshaft to bevel box ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Exploded view - propshaft .
- Fit catalytic converter to turbocharger and attach screw-type clip loosely without tightening it.
- Tighten nuts and screw-type clip ⇒ [page 221](#) .
- Align the exhaust system so it is free of stress ⇒ [page 218](#) .



Note

If the catalytic converter with 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. “Installing pendulum support”](#) , [page 53](#)
- ◆ ⇒ [“2.1 Exploded view - emission control system”](#) , [page 220](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.3 Removing and installing exhaust flap control unit - J883-



Note

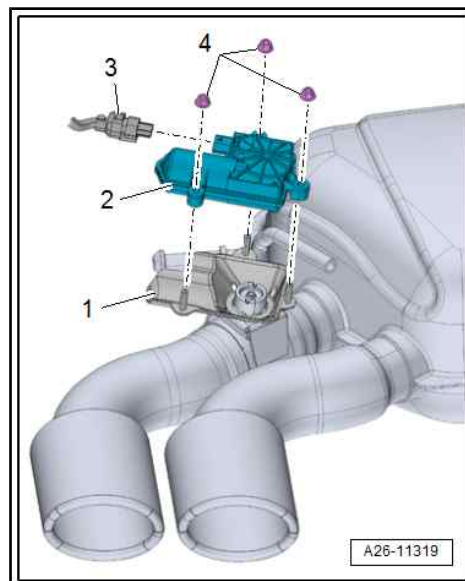
The following procedure applies to both sides of the vehicle.

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Removing

- Lower rear exhaust system -1-.
- Unplug electrical connector -3-.
- Remove nuts -4- and detach exhaust flap control unit -2-.



Installing

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

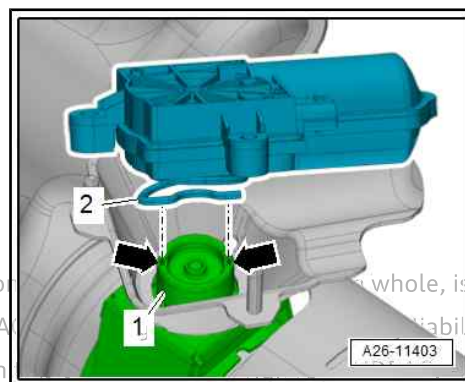


Note

Renew nuts.



- Move exhaust flap control unit -J883- into installation position.
- Spring -2- must engage in grooves -arrows- on exhaust flap -1-.



Tightening torques

- ♦ ⇒ Fig. ““Exhaust flap control unit - tightening torque””, page 213



3 Exhaust gas temperature control

All procedures and components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ; Exhaust gas temperature control .



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4 Secondary air system

All procedures and components are described in ⇒ Servicing 4-cylinder engine, 1.8 ltr., 2.0 ltr. 4-valve TFSI; Rep. gr. 26 ;
Secondary air system .



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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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