3 Repair instructions

⇒ “3.1 Rules for cleanliness”, page 6

⇒ “3.2 Foreign particles in engine”, page 6

⇒ “3.3 Contact corrosion”, page 6

⇒ “3.4 Routing and attachment of pipes, hoses and wiring”, page 7

⇒ “3.5 Installing radiators and condensers”, page 7

⇒ “3.6 Checking vacuum system”, page 7

3.1 Rules for cleanliness

Even small amounts of dirt can cause malfunctions. For this reason, please observe the following rules when working on the fuel supply system, injection system and turbocharger:

- Carefully clean connection points and the surrounding area with engine cleaner or brake cleaner and dry thoroughly before opening.
- Immediately seal open lines and connections with clean plugs, for example from engine bung set - VAS 6122- .
- Place parts that have been removed on a clean surface and cover them over. Use only lint-free cloths.
- Carefully cover or seal open components if repairs cannot be carried out immediately.
- Only install clean components; replacement parts should only be unpacked immediately prior to installation. Do not use parts that have not been stored in their packing (e.g. in tool boxes etc.).
- When the system is open, do not work with compressed air and do not move the vehicle.
- Make sure that no fuel runs onto the fuel hoses. Should this occur, the fuel hoses must be cleaned again immediately.
- Protect unplugged electrical connectors against dirt and moisture and make sure connections are dry when attaching.

3.2 Foreign particles in engine

- When performing assembly work on the engine, all open passages in the intake and exhaust systems must be sealed with suitable plugs (e.g. from engine bung set - VAS 6122-) to prevent foreign particles from entering the engine.

Note

If the turbocharger has suffered mechanical damage
⇒ page 230

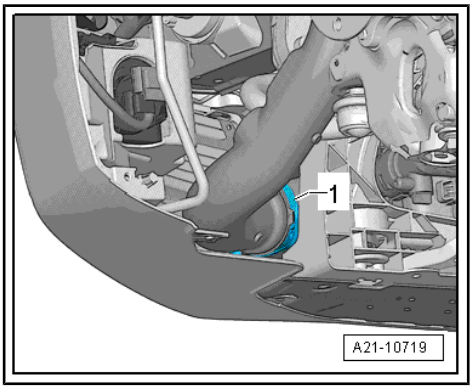
3.3 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used (e.g. bolts, nuts, washers, etc.).

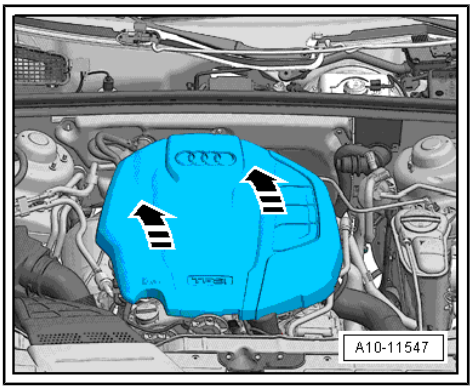
For this reason, only fasteners with a special surface coating are used.

Additionally, all rubber and plastic parts and all adhesives are made of non-conductive materials.

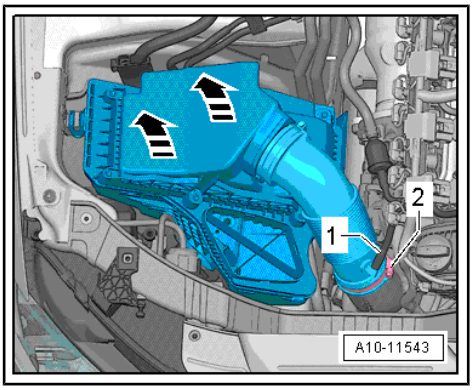
– Open hose clip -1- and detach air hose.
– Set service position ⇒ General body repairs, exterior; Rep. gr. 50 ; Lock carrier; Setting service position and returning to normal position .
– Remove front silencer ⇒ page 291 .



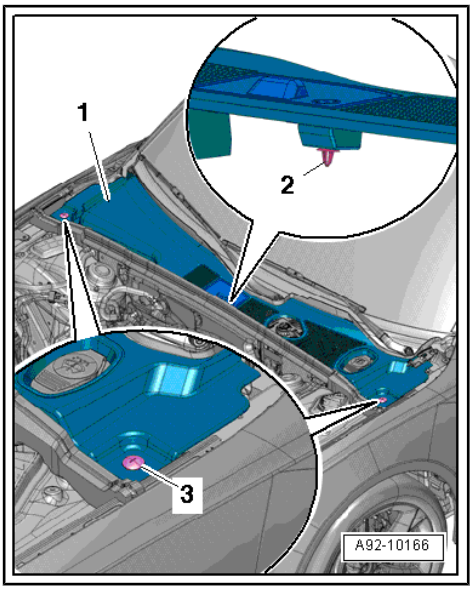
– Remove engine cover panel -arrows-.



– Disconnect hose -1- from air cleaner.
– Disconnect air intake hose -2-.
– Pull air cleaner housing upwards -arrows-.
– Seal off turbocharger connection with sealing plug from engine bung set - VAS 6122- .



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



17 - Rubber buffer

18 - Radiator bracket

19 - Bolt

- ❑ 5.5 Nm

20 - Radiator fan 2 - V177-

- ❑ Not fitted if fan runs with 400 W
- ❑ Removing and installing ⇒ page 166

21 - Bolt

- ❑ 5 Nm

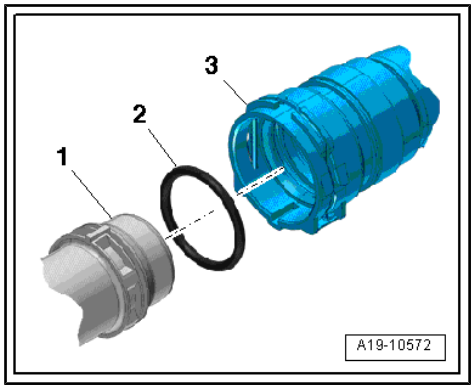
Connecting coolant hose with plug-in connector to coolant pipe

– Remove old O-ring -2- from coolant hose -3-.

– Lubricate new O-ring with coolant additive 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.



3.2 Removing and installing radiator

WARNING

Hot steam/hot coolant can escape - risk of scalding.

The cooling system is under pressure when the engine is hot.

Cover filler cap on coolant expansion tank with a cloth and open carefully to dissipate pressure.

WARNING

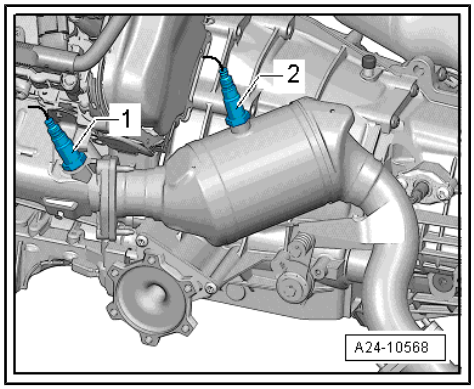
Risk of injury as the radiator fans may start up automatically.

- *Unplug electrical connectors before starting to work in the area of radiator cowl.*

Note

- *The cooling system is under pressure when the engine is hot. If necessary, relieve pressure before commencing repair work.*
- *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Parts catalogue .*
- *Hose clip pliers - V.A.G 1921- or hose clip pliers - VAS 6340- are recommended for use when installing spring-type clips.*
- *Renew gaskets and seals.*
- *The arrow markings on coolant pipes and on ends of hoses must align.*

– Unscrew Lambda probe 2 - G108- -1- using tool from Lambda probe open ring spanner set - 3337- .



Note

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

Installing

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

- Tightening torque: refer to overview of Lambda probes ⇒ page 356 .

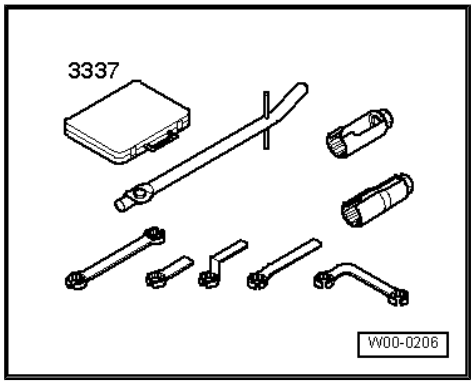
Note

- *New Lambda probes are coated with an assembly paste.*
- *If reinstalling the old Lambda probes, coat the threads with high-temperature paste ⇒ Electronic parts catalogue .*
- *The assembly paste/high-temperature paste must not get into the slots on the Lambda probe body.*
- *When installing, the Lambda probe wire must always be reattached at the same locations to prevent it from coming into contact with the exhaust pipe.*
- *Fit all cable ties in the original positions when installing.*

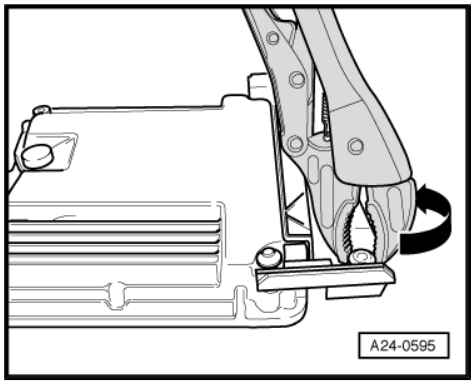
8.2.4 Removing and installing Lambda probe 2 after catalytic converter - G131- - bank 2 (left-side)

Special tools and workshop equipment required

- Lambda probe open ring spanner set - 3337-



– The two shear bolts screwed into the engine control unit do not need to be heated. They should be removed without being heated.
– Detach locking plate from control unit connectors.
– Release connectors on engine control unit and unplug connectors.
– Take out old engine control unit - J623- and install new engine control unit - J623- .



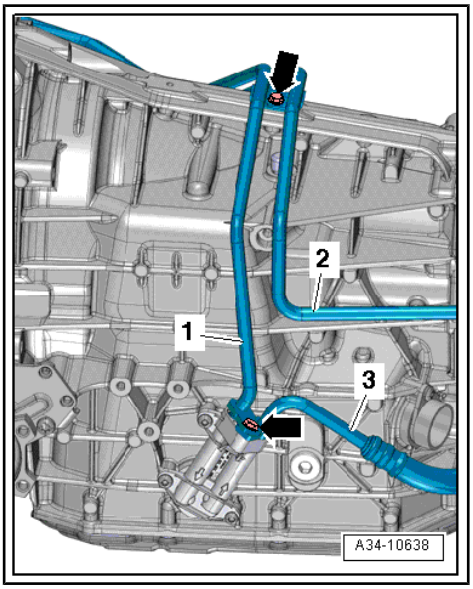
Installing

Installation is performed in the reverse sequence.

– It is important that the locking plates be re-fitted on the control unit (if locking plates were fitted previously).
– Clean threaded holes for shear bolts to remove any residue from locking fluid. This can be done using a thread tap.
– Always use new shear bolts.
• Tightening torque for bolts securing lid of electronics box: 3.5 Nm.
– After the engine control unit - J623- has been renewed, the “Injector delivery calibration” and the “Injector voltage calibration” must also be re-adapted in the engine control unit (these functions influence engine power and exhaust emissions).
– On vehicles with particulate filter the current mileage (km) reading must be stored in the engine control unit - J623- via an adaption procedure.

The procedure required after connecting the new engine control unit is described in the Guided Fault Finding or Guided Functions. Use vehicle diagnostic tester .

– Tie up ATF lines -1- and -2-.

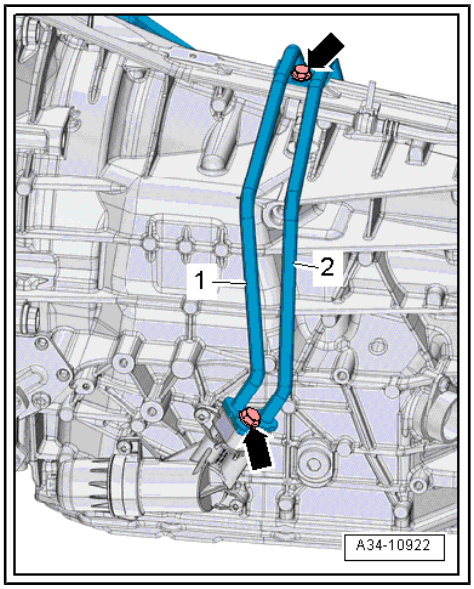


Note

-Item 3- can be disregarded.

– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

Vehicles with exchangeable ATF filter:

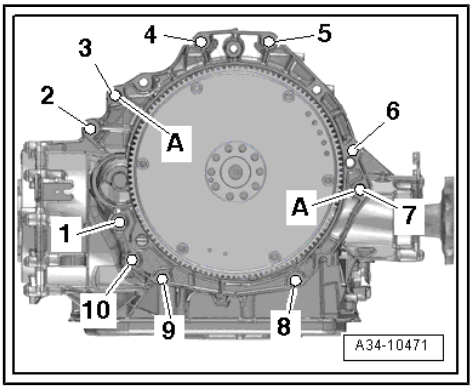


Note

Place a cloth below the connection to catch escaping ATF.

– Remove bolts -arrows-, detach ATF lines -1, 2- from ATF filter housing and tie up.
– Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

Continued for all vehicles:



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

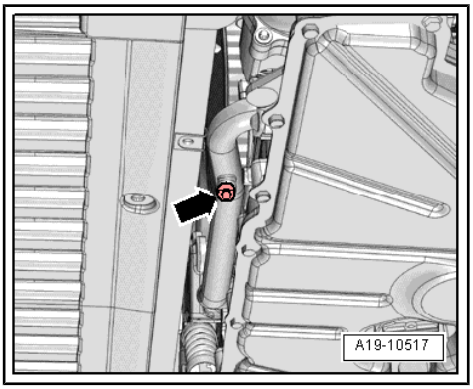
Note

Item -A- can be disregarded.

Removing

– Drain coolant from coolant pipe (front) -arrow- ⇒ page 213 .

– Pull off engine cover panel ⇒ page 63 .



Removing

– Move crankcase breather hose -2- clear at air pipe.

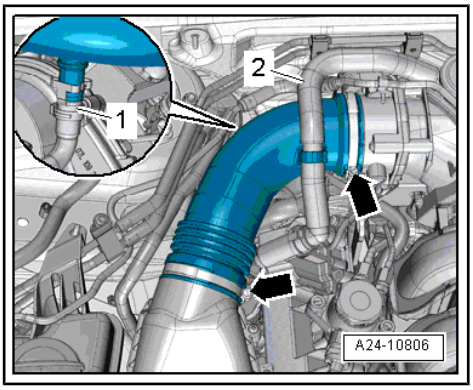
Crankcase breather with separate hose:

– Disconnect crankcase breather hose -1- from air pipe by pressing release tabs.

– Release hose clips -arrows- and remove air pipe.

Crankcase breather with permanently connected hose:

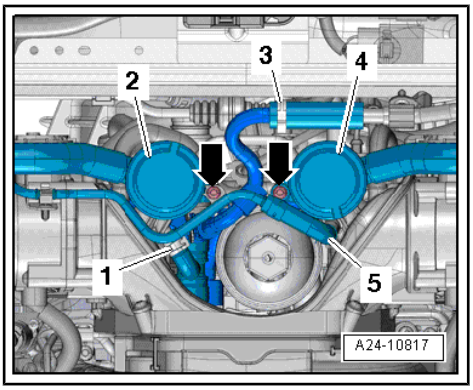
– Remove air pipe; to do so, loosen hose clips -arrows- and move air pipe clear to one side (hose -1- remains connected).



All vehicles (continued):

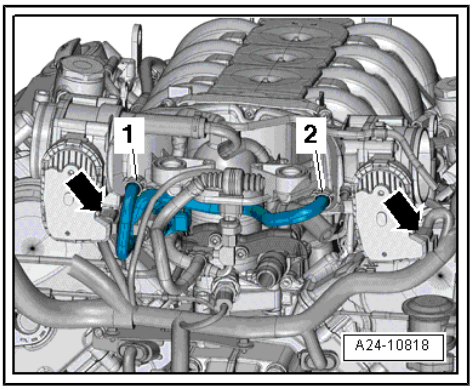
– Unscrew bolts -arrows- and move pressure control valves -2- and -4- for crankcase breather system clear to one side.

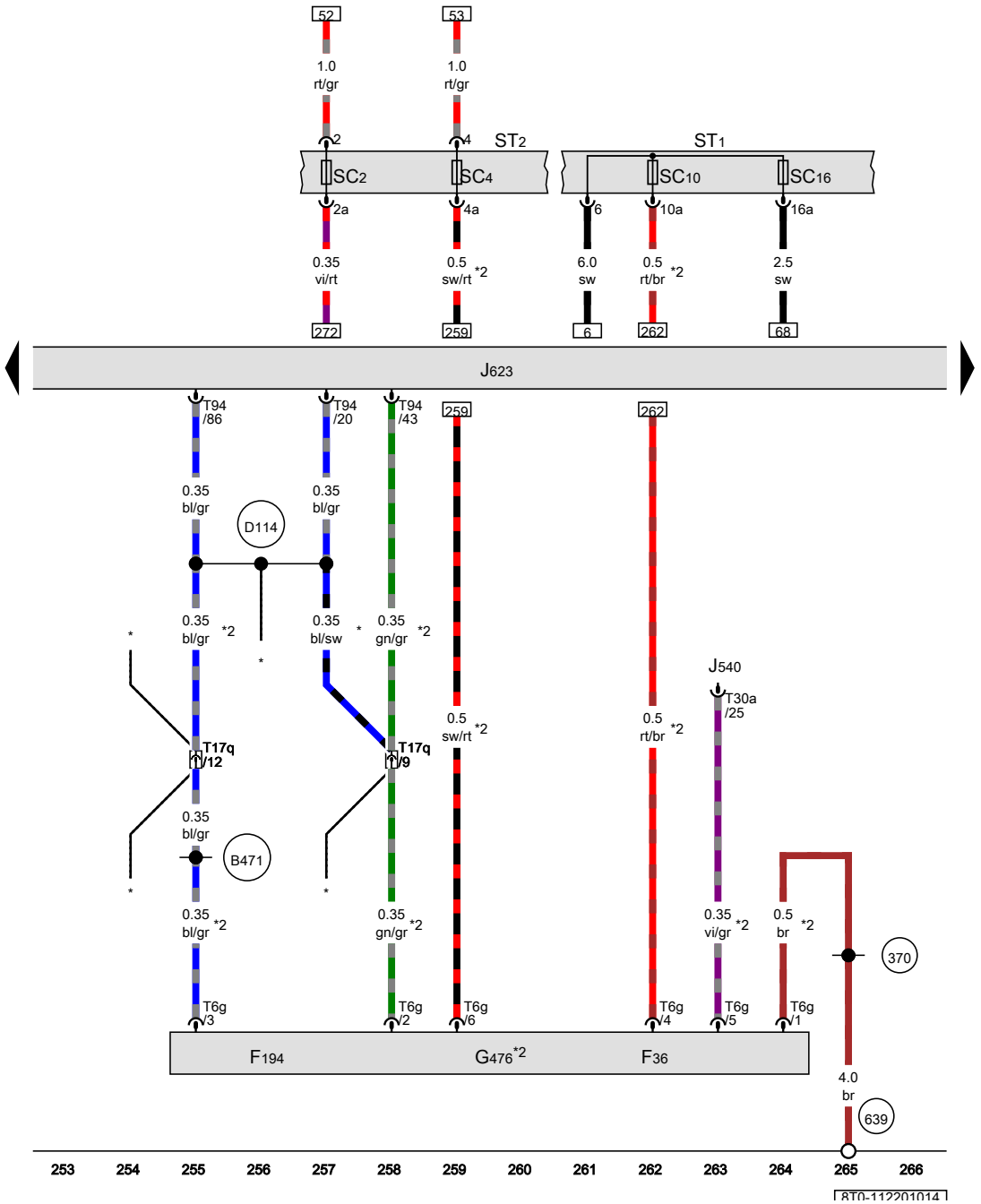
– Release hose clips -1, 3 and 5- and disconnect coolant hoses and vacuum hose.



– Unplug electrical connectors -arrows- at throttle valve modules.

– Release hose clips -1- and -2- and detach hoses coming from activated charcoal filter.



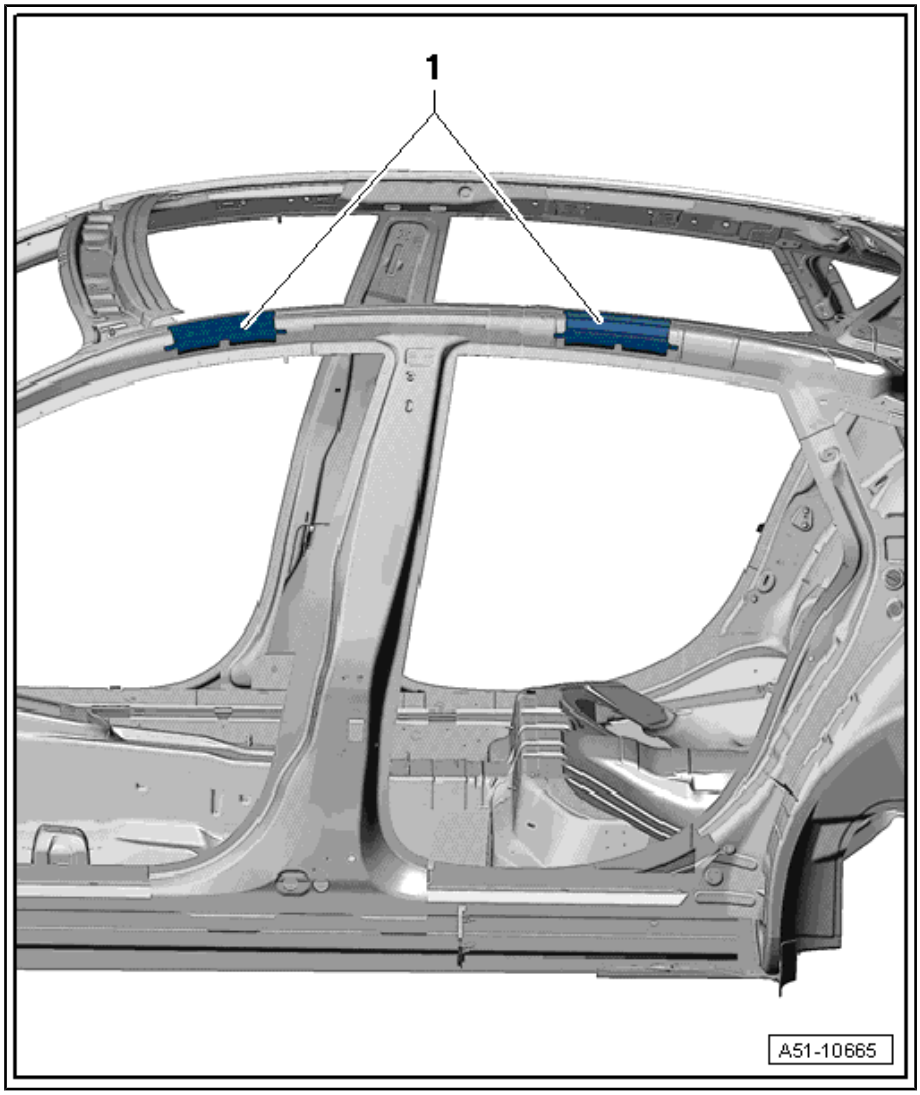


Clutch position sender

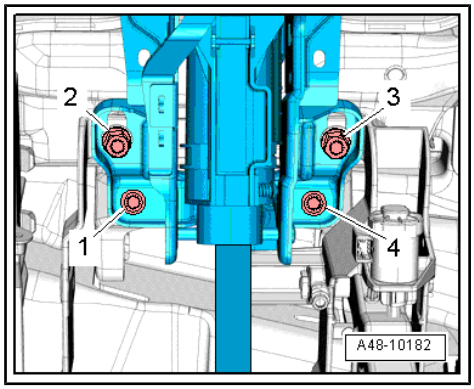
F36	Clutch pedal switch
F194	Clutch pedal switch for engine start
G476	Clutch position sender
J540	Control unit for electromechanical parking brake
J623	Engine control unit
ST1	Fuse carrier 1
ST2	Fuse carrier 2
SC2	Fuse 2 on fuse holder C
SC4	Fuse 4 on fuse holder C
SC10	Fuse 10 on fuse holder C
SC16	Fuse 16 on fuse holder C
T6g	6-pin connector
T17q	17-pin connector, red
T30a	30-pin connector
T94	94-pin connector
370	Earth connection 5, in main wiring harness
639	Earth point, left A-pillar
B471	Connection 7, in main wiring harness
D114	Connection 12 in engine compartment wiring harness
*	see applicable current flow diagram for automatic gearbox
*2	Only models with manual gearbox

ws	=	white
sw	=	black
ro	=	red
rt	=	red
br	=	brown
gn	=	green
bl	=	blue
gr	=	grey
li	=	purple
vi	=	purple
ge	=	yellow
or	=	orange
rs	=	pink

1 - Moulded foam inserts



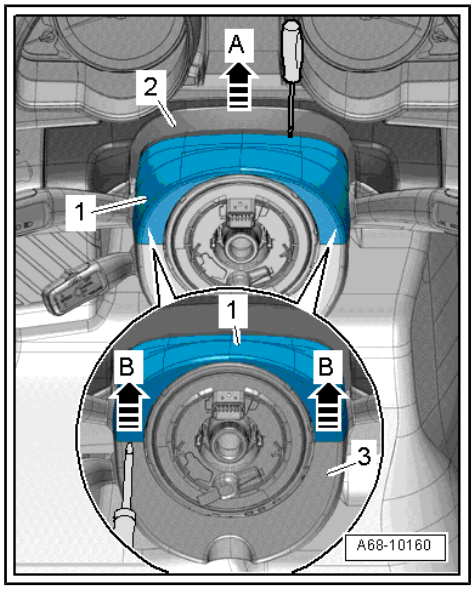
– Remove bottom bolts -2 to 4- for steering column and mounting bracket.



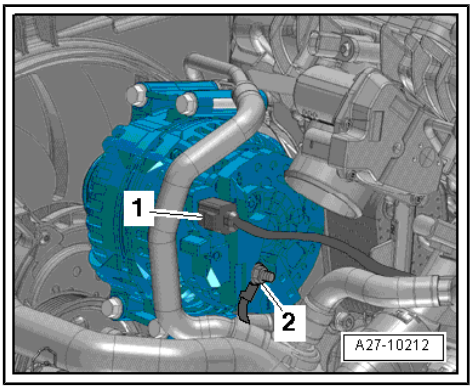
– Unclip trim cover -2- from top of trim -1- for steering column switch module (SMLS) -arrow A-.
– Detach wiring guides from steering column.

Note

Shown in illustration without steering wheel. Steering wheel and dash panel insert do not have to be removed.



– Unplug electrical connector -1-.
– Unscrew terminal 30/B+ -item 2-.
– Take out alternator.



Installing

- Tightening torques
  ⇒ "2.1.1 Exploded view - alternator without sliding bushes", page 21

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

Note

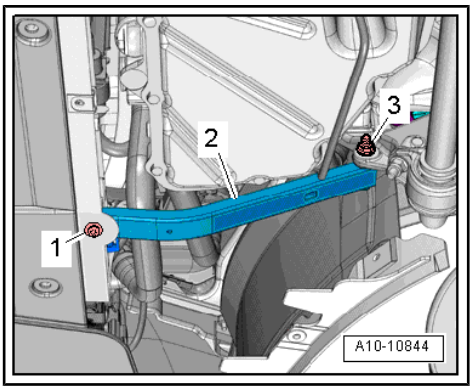
Renew aluminium bolts.

– Install poly V-belt ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Connect battery. Steps required ⇒ page 16 .
– Start engine and check that poly V-belt runs properly.

2.2.2 Removing and installing alternator - vehicles with 3.0 ltr. TFSI and 3.2 ltr. FSI engine

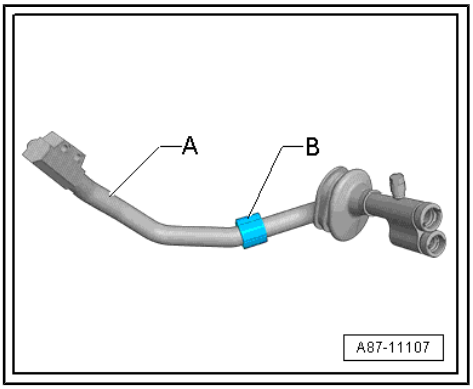
Removing

– With ignition switched off, disconnect earth cable at battery ⇒ page 14 .
– Vehicles with 3.0 ltr. TFSI engine: Remove poly V-belt for supercharger ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Detach poly V-belt from alternator pulley ⇒ Rep. gr. 13 ; Cylinder block (pulley end); Removing and installing poly V-belt .
– Remove bolt -1- and nut -3-.
– Detach strut -2- for lock carrier (right-side).



Note

From model year 2010 onwards, certain vehicle versions are fitted with refrigerant lines with internal heat exchanger -A- with an additional weight (damper) -B- to reduce noise (depending on the engine). When installing the refrigerant lines with internal heat exchanger -A- and the plenum chamber partition panel, make sure that the weight -B- and the refrigerant lines -A- are not too close to or do not make contact with other components.

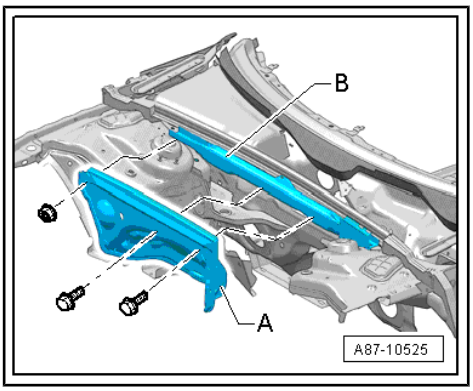


– Detach refrigerant line from quick-release couplings ⇒ page 190 .

Note

Seal open lines and connections at refrigerant line with suitable caps (to prevent ingress of dirt and moisture).

– Unfasten plenum chamber partition panel -A- from vehicle ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Exploded view - bulkhead .

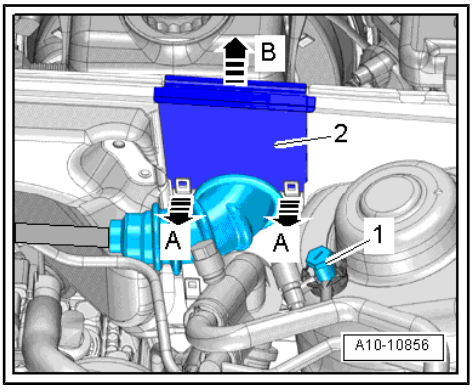


Note

- *On vehicles with a petrol engine or 4-cyl. TDI engine, the two coolant hoses to the heat exchanger are routed through the plenum chamber partition panel -A-. On these vehicles, detach grommet at both coolant hoses and move partition panel to one side (this avoids having to open the coolant circuit).*
- *When unfastening the plenum chamber partition panel, pay attention to the vacuum line to the brake servo to avoid damaging it.*

– On vehicles with 6-cyl. TDI engine, remove plenum chamber partition panel -A- ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Exploded view - bulkhead .

– Release fasteners -arrows A- and lift off top section of pipe gland -2- -arrow B-.

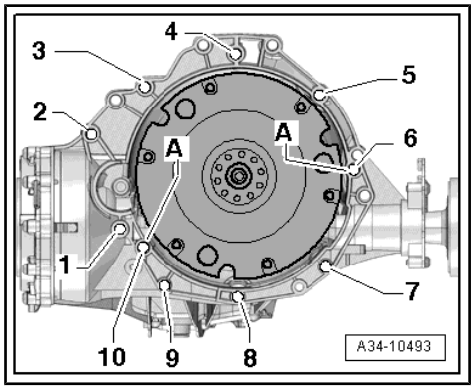


Note

Disregard -item 1-.

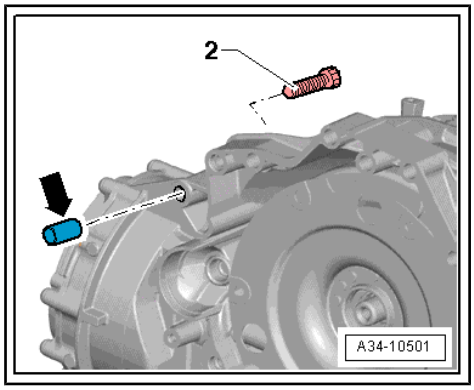
– Unfasten wiring harness from bottom section of pipe lead-through -2- and remove bottom section.

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

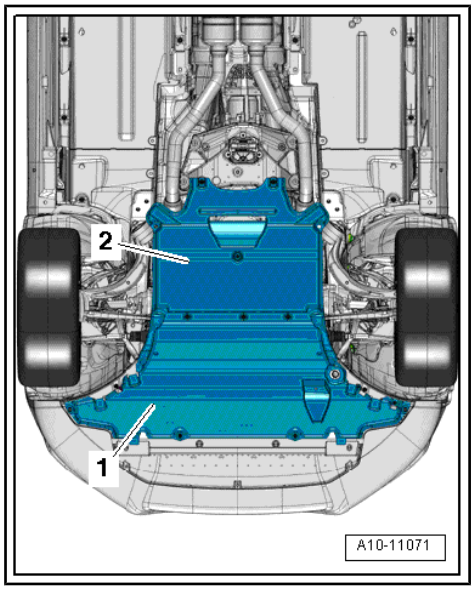


Note

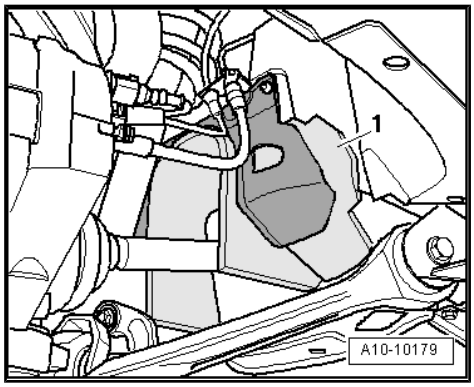
- *Bolt -2- also secures the bracket for wiring.*
- *Bolt -2- secures the starter to the gearbox and has an additional spacer sleeve -arrow-.*



– Remove noise insulation -1- and -2- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

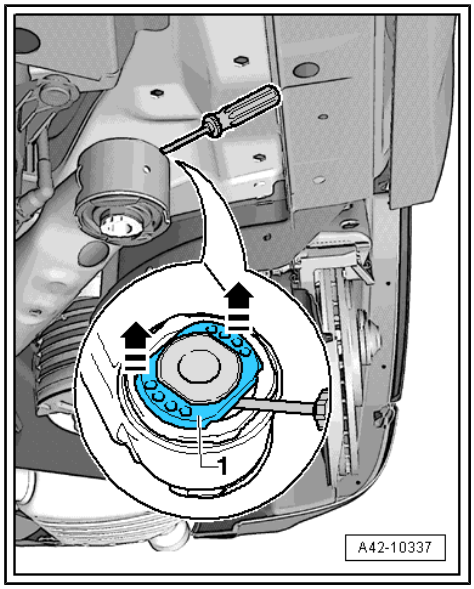


– Remove cover -1- for drive shaft from wheel housing (both sides).



Applies to hydraulic bonded rubber bush:

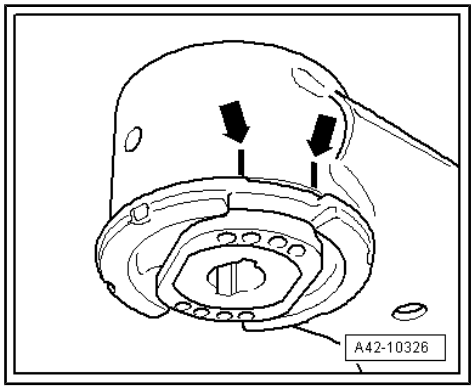
– Lift out plastic insert -1-, as shown in illustration.



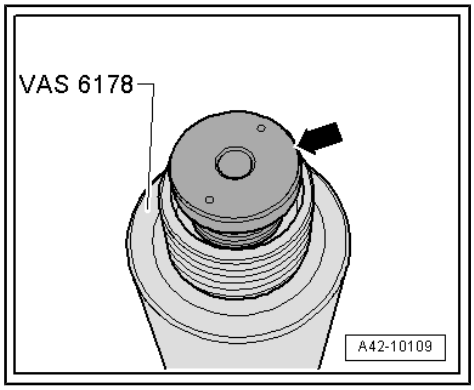
Applies to all versions:

– Mark installation position of bonded rubber bush in relation to subframe -arrows- using a felt-tip pen or similar.

The illustration shows a hydraulic bonded rubber bush. On conventional bonded rubber bushes, the recesses on the rubber beads are displaced by 90°.



– If necessary, unscrew small-diameter support -arrow- from hydraulic press - VAS 6178- and screw in support - T10205/13- in its place.



00 – Technical data

1 Technical data

⇒ „1.1 Running gear“, page 1

⇒ „1.2 Steering“, page 3

1.1 Running gear

Front axle	Five-link front suspension with top and bottom transverse links, anti-roll bar and twin-tube, gas-filled shock absorbers
Rear axle	Track-controlled independent suspension, top and bottom transverse links, anti-roll bar, twin-tube gas-filled shock absorbers with coil springs

		Front-wheel drive / four-wheel drive			
		Coupé			
		Standard running gear 1BA [1] Running gear with electronic damping control 1BL [1]	Sports running gear 1BE [1] Sports running gear 1BD [1]	Sports running gear 1BV [2]	Sports running gear 2MS/2MC (RS 5)[3]
Wheelbase	mm	approx. 2755	approx. 2755	approx. 2756	approx. 2756
Track width (front)	mm	approx. 1591	approx. 1591	approx. 1589	approx. 1599
Track width (rear)	mm	approx. 1580	approx. 1580	approx. 1578	approx. 1597
Maximum steering angle at inside wheel	Degrees	39° 57'	39° 57'	39° 57'	39° 57'

1) Front/rear track width only applicable to tyre size 225/50/R17 ET28 (ET= rim offset).

2) Front/rear track width only applicable to tyre size 245/40/R18 ET29 (ET= rim offset).

3) Front/rear track width only applicable to tyre size 265/35/R19 ET28 (ET= rim offset).

Note

- *These specifications are applicable for all engines.*
- *Different track width figures will apply if wheels with different rim offset are installed.*

		Front-wheel drive / four-wheel drive		
		Cabriolet		
		Standard running gear 1BA [4] Running gear with electronic damping control 1BL [4]	Sports running gear 1BE [4] Sports running gear 1BD [4]	Sports running gear 1BV [5]
Wheelbase	mm	approx. 2754	approx. 2754	approx. 2754
Track width (front)	mm	approx. 1591	approx. 1591	approx. 1589