

80 – Heating

1 Fitting location overview - heating

⇒ "1.1 Fitting location overview - components outside of passenger compartment", page 14

⇒ "1.2 Fitting location overview - components inside of passenger compartment", page 15

1.1 Fitting location overview - components outside of passenger compartment

1 - Exhaust ventilation for passenger compartment

- Check: ⇒ page 150
- Removing and fitting ⇒ page 151

2 - exterior temperature sensor - G17-

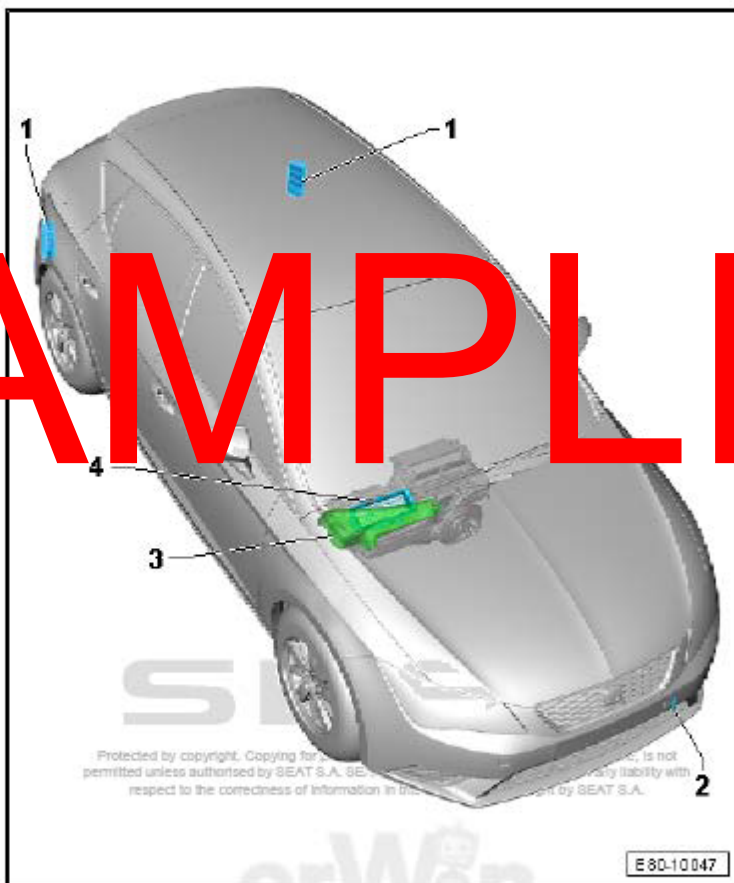
- Removing and fitting ⇒ page 162

3 - Fresh air intake cover

- Removing and fitting ⇒ page 148

4 - Fresh air intake

- Removing and fitting ⇒ page 148



4.4 Components in the engine compartment

1 - Forced de-aeration

- The sealing surface of the de-aeration frame should move freely and close by themselves.
- So that the interior de-aeration can function perfectly, the air flow ducts must not be obstructed by the panelling in the boot.

- Checking

2 - Fresh air intake duct (in the engine compartment)

- The fresh air is taken in through the corresponding duct in the engine compartment.

3 - Temperature sender -G89- in the air intake

The temperature of the air intake is measured by the -G89-. Its electrical connection is on the left of the fan.

4 - Drainage and filling valve

High pressure side for measuring, filling and measuring. Always screw the cap on with the o-ring seal.

5 - Drainage and filling valve

- Low pressure side, only for drainage and measurement

6 - Refrigerant fan control unit -J293-

- It is activated by the Climatronic control unit -J255-. ⇒ Current flow diagrams, Electrical fault finding and Fitting locations
- Connect the different speed steps for the refrigerant liquid fans.
- Different versions are incorporated according to the vehicle equipment. ⇒ Spare parts catalogue
- Check: electric unit, Climatronic self diagnostic ⇒ Vehicle diagnosis, testing and information system VAS 5051; -VAS 5051-, Vehicle self diagnosis

7 - Drying reservoir

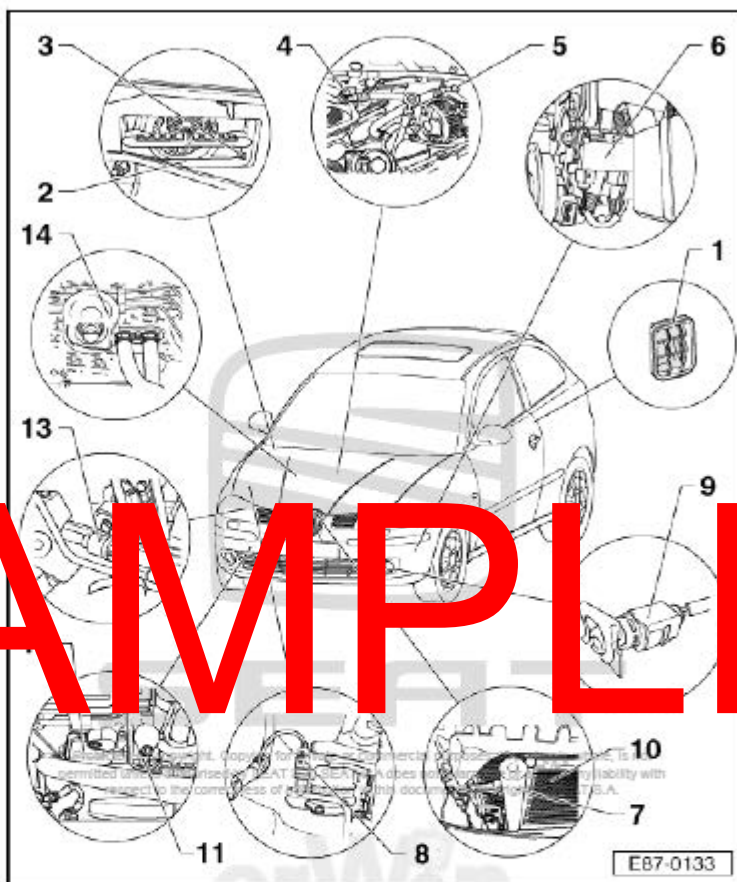
- Only remove when the refrigerant circuit is empty.
- Removing and fitting

8 - High pressure sender for the air conditioning -G65-

- Operation, removing and fitting
- The measurement from the sender can be seen on the control unit and indication in the function "Read measured value block".

9 - Thermistor sensor for outside temperature -G17-

- Removing:
Remove front bumper. ⇒ Bodywork, exterior fitting work; Rep. Gr. 63



1 - Dust cap

2 - Nuts

- 6 Nm

3 - Battery terminal clamp

- For earth wire
- Battery: disconnecting and connecting [⇒ page 15](#)

4 - Cap

- For battery terminal clamp of earth wire

5 - Earth wire

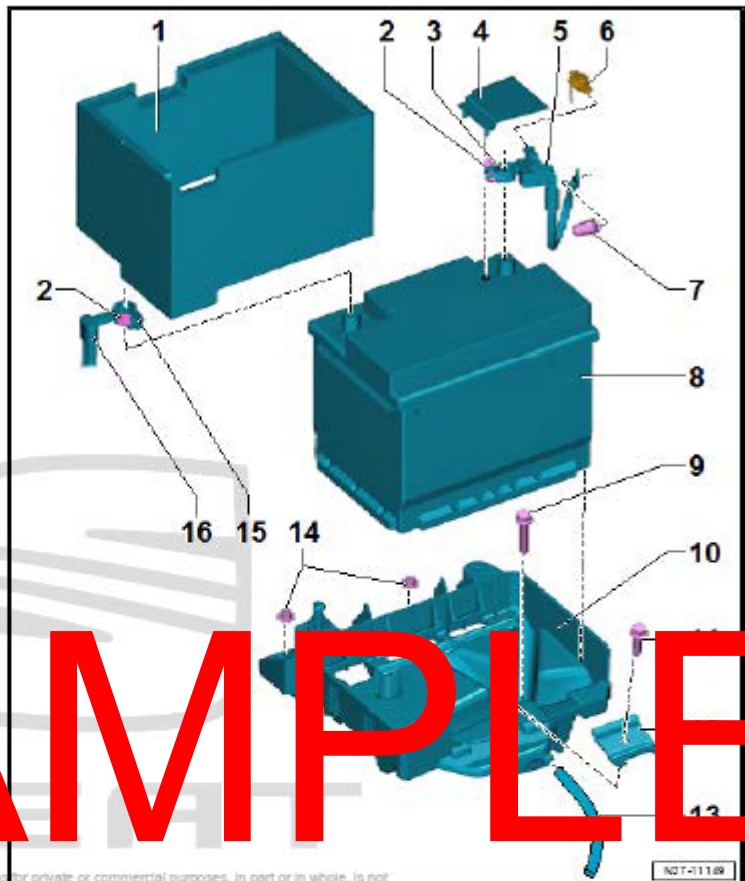
For vehicles with start/stop system:

- Earth wire additionally with battery monitor control unit - J367-
- Removing and installing earth wire with battery monitor control unit - J367- [⇒ page 22](#)
- Adapting battery monitor control unit - J367- [⇒ page 24](#)

6 - Electrical connector

For vehicles with start/stop system:

- For battery monitor control unit - J367-
- Observe work sequence for disconnecting and connecting battery [⇒ page 15](#)



7 - Nuts

- 15 Nm

8 - Battery:

- Removing and installing [⇒ page 9](#)
- Disconnecting and connecting [⇒ page 15](#)
- Checking [⇒ page 21](#)
- Charging [⇒ page 21](#)

9 - Bolt.

- 15 Nm

10 - Battery bracket

- Removing and installing [⇒ page 18](#)

11 - Bolt.

- 20 Nm

12 - Clamping plate

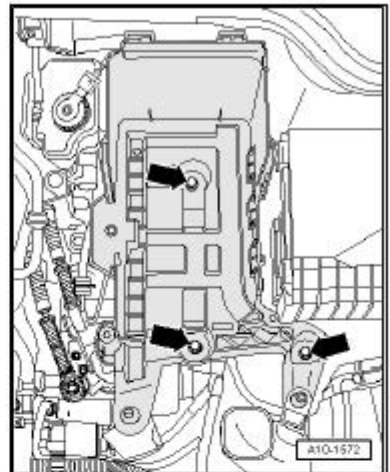
13 - Water drain hose



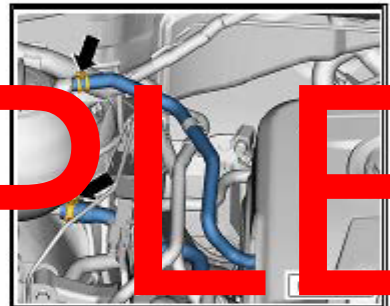
Not fitted on all battery trays

Route free of kinks when installing

- Remove battery carrier, unscrew securing bolts -arrows- for this.
- Remove the engine cover ⇒ [page 3](#)
- Remove fuel filter ⇒ [page 187](#) .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Body - front; Assembly overview - noise insulation .
- Drain coolant ⇒ [page 152](#) .
- Extract air conditioning refrigerant ⇒ Heating, air conditioning; Rep. gr. 87 .
- Remove lock carrier ⇒ General body repairs, exterior; Rep. gr. 50 .

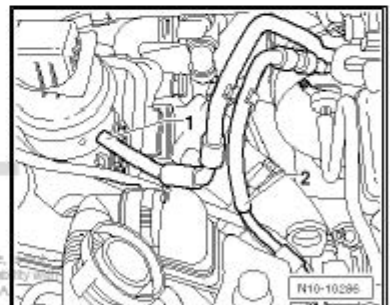


- Open the clamp -arrows- and detach the coolant hoses from the coolant expansion tank.

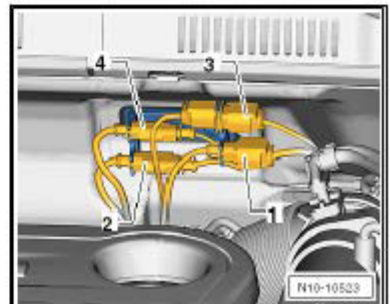


SAMPLE

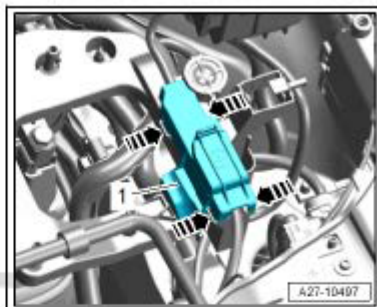
- Pull off vacuum hoses -1- and -2- for charge air control.



- Separate connectors for exhaust temperature sender 1 - G235- -1-, for Lambda probe -G39- -3- as well as for exhaust temperature sender 3 -G495- -2- and for exhaust temperature sender 4 -G648- -4-.
- Cut through cable tie of the cables.
- Remove the line from the bracket on the front side of the plenum chamber and from the exhaust gas turbocharger.



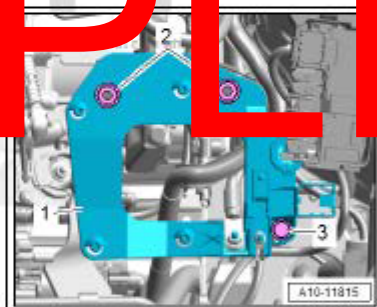
- Disengage catches -arrows-.
- Remove cap -1-.



- Unbolt battery positive tap -6-.
- Remove wire -7-, and lay it to one side.
- Remove the cover -2-, by levering.
- Remove nuts -1 and 5-.
- Remove wires -3 and 4-, and lay them to one side.



- Remove nuts -2-.
- Unscrew the bolt -3-.
- Slightly lift mounting.
- Disconnect electrical connector.
- Release the cable harness.
- Remove mounting.



Installation

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

- Connect battery ⇒ [page 15](#).

Specified torques

- ♦ ⇒ ["2.1 Assembly overview: jump start point"](#), [page 25](#)



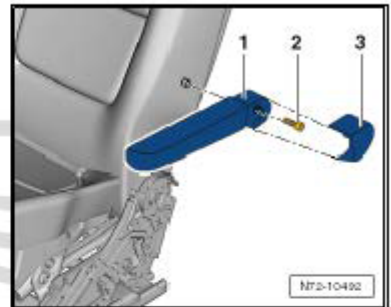
6.7 Removing and installing

Removal:

- Pull cap -3- off the arm rest.
- Remove bolt -2- (20 Nm) and remove armrest.

Installation

- Installation is carried out in reverse order.



6.8 Removing and installing trim of backrest operating lever

Removal:

- Press backrest operating lever forwards and undo screws -2- (1.5 Nm).

- Remove the trim of backrest operating lever -1- forward from the backrest panel.

Installation

- Installation is carried out in reverse order.



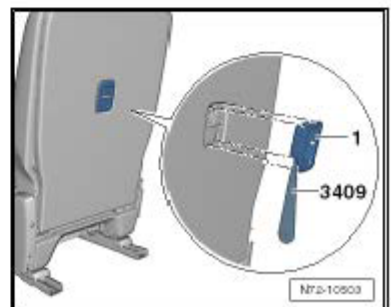
6.9 Removing and installing backrest cover panel

Removal:



Removal and installation can be carried out with the seat installed.

- Release top-tether hider -1- with removal wedge - VAS 3409- and top and bottom and pull out.



80 – Heating

1 Heating: repairs

1.1 Heating of the vehicle interior



WARNING

Before working on the electrical system, disconnect the battery earth strap.



Note

- ◆ Before disconnecting the battery, check the radio anti-theft code. Disconnecting the battery ⇒ Electrical system; Rep. Gr. 27; Battery: disconnecting and connecting
- ◆ If the battery is re-connected, the vehicle equipment must be checked (radio, clock, electrical comfort system etc.), following the instructions in the Repair Manual and/or Owner's Manual.

1 - Deicing vent

- Removing the windscreen de-icing vent
- Removing a de-icing vent ⇒ Bodywork, interior fitting work; Rep. Gr. 70; dashboard dashboard removing

Pushing of intermediate piece between heater unit and air duct in instrument panel on installing instrument panel will result in irregular or inadequate air flow to windscreen. ⇒ Bodywork, interior fitting work; Rep. Gr. 70; dashboard dashboard removing

2 - instrument panel nozzle, central

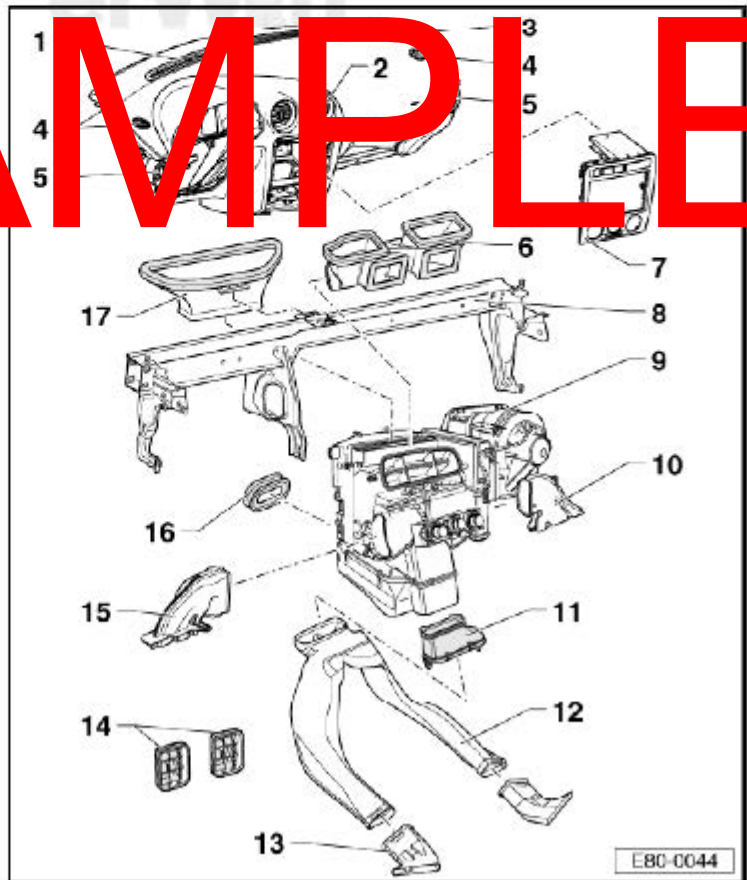
- Removal and installation ⇒ page 4

3 - Instrument panel

- Removal and installation ⇒ Bodywork, interior fitting work; Rep. Gr. 70

4 - Side window nozzle

- Carefully remove it by levering with the remov-



EBC-0044



End

1.4 Step 4 (There are no metal particles in fuel delivery unit and fuel tank)

- Fill fuel tank with 5 litres of diesel fuel.
- Completely empty fuel tank again as described above
⇒ [page 7](#) .



Caution

When the fuel metering valve - N290- is removed, there is the risk of damage to the high-pressure pump by the ingress of dirt from the outside. Scrupulous cleanliness must therefore be ensured.

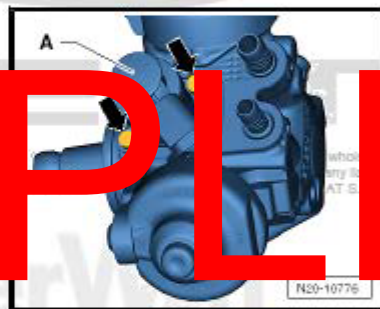
- Carefully clean high-pressure pump in vicinity of fuel metering valve - N290- .
- Detach connector from valve.
- Unscrew bolts -arrows- and carefully remove fuel metering valve - N290- .
- Clean fuel metering valve - N290- and high-pressure pump
swart.

Were metal particles found?

Yes

⇒ "1.5 Step 4 (There are metal particles in high-pressure pump)", [page 14](#) .

⇒ "1.5 Step 6 (There are no metal particles in high-pressure pump)", [page 15](#) .

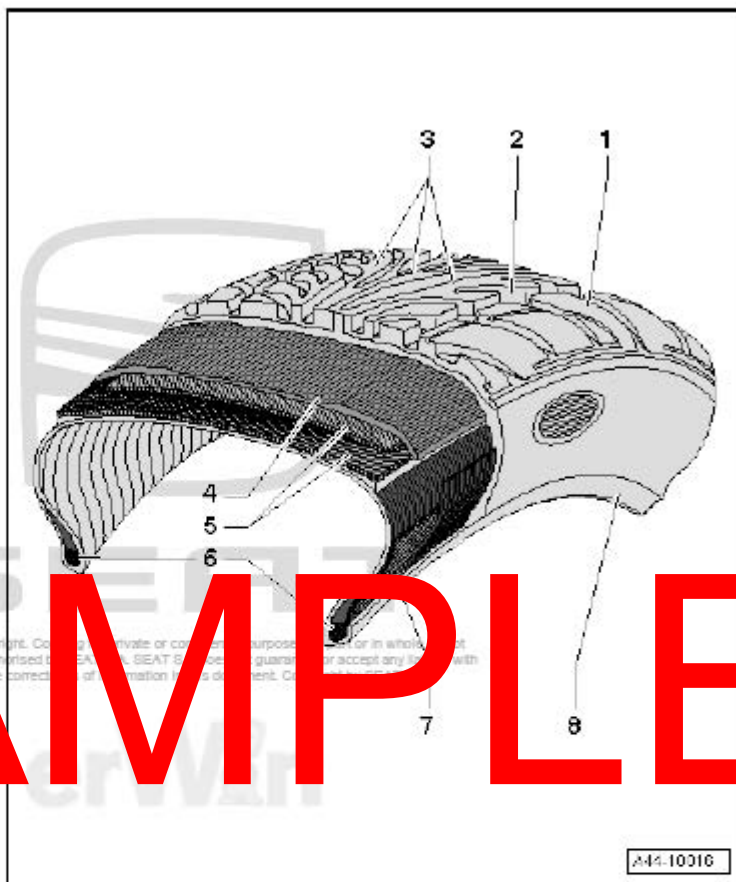


1.5 Step 5 (There are metal particles in high-pressure pump)

- Renew following high-pressure components:
 - ♦ High-pressure pump ⇒ Rep. gr. 23 ; High-pressure pump: Removing and installing high-pressure pump .
 - ♦ High-pressure lines ⇒ Rep. gr. 23 ; Injectors/high-pressure accumulator (fuel rail): Removing and installing high-pressure lines .
 - ♦ High-pressure accumulator (fuel rail) including fuel pressure regulating valve - N276- and fuel pressure sender - G247- ⇒ Rep. gr. 23 ; Injectors/high-pressure accumulator (fuel rail): Removing and installing high-pressure accumulator
 - ♦ Injector ⇒ Rep. gr. 23 ; Injectors/high-pressure accumulator (fuel rail): Removing and installing injectors .
 - ♦ Injector ⇒ Rep. gr. 23 ; Injectors/high-pressure accumulator (fuel rail): Removing and installing injectors .
- Fuel filter ⇒ [page 49](#)
- Fill up vehicle.
- Bleed fuel system ⇒ Rep. gr. 23 ; Injection system; Filling/bleeding fuel system .



- 1 - Tread block
- 2 - Tread groove
- 3 - Tread
- 4 - Nylon wheel ring
- 5 - Layers of belt
 - generally steel
- 6 - Bead
 - Formed of steel cables vulcanised on the compound
 - They ensure secure seating of the tyre on the rim.
- 7 - Bead reinforcement
- 8 - Rim contour guard
 - This provides protection against wear to the rim and tyre from chafing against the curb, etc.



Tyres with rim guards
for the letters 'S'

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A44-10016

The nylon ring -4-, the layers of belt -5-, the bead -6- and the bead reinforcement -7- form the carcass. The carcass is the "frame" which supports the tyre.

10.3 Damage from impacts

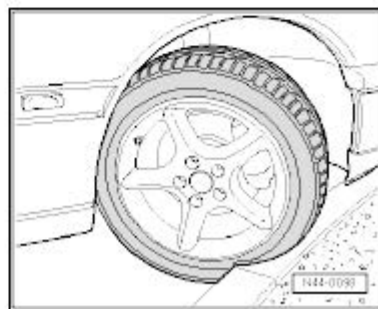
Bulging on the tyre sidewalls is generally a sign of a break in the steel cables on the interior of the tyre.

The usual cause of this type of damage is a knock at a sharp angle against a curb, for example.

Tyre carcasses flattened in this way may be damaged.

In these cases, the interior part of the tyre is strained until some of the carcass threads break.

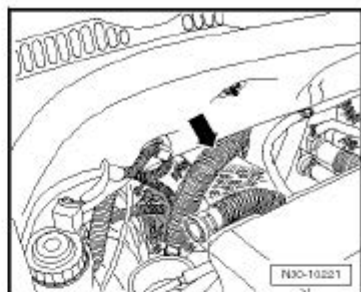
The severity of the damage depends upon the speed of collision, the angle of collision, the tyre pressure, the axle load and the type of obstacle.



Right-hand drive vehicles

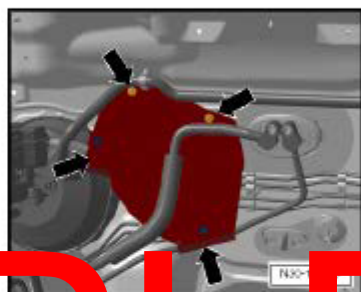
In some vehicles, master cylinder is located behind a line for air conditioning system -arrow-.

An insulation mat is installed in conjunction with some engines. Appearance may be different from that illustrated.



- Remove the insulating element -arrows-.

Continuation for all vehicles

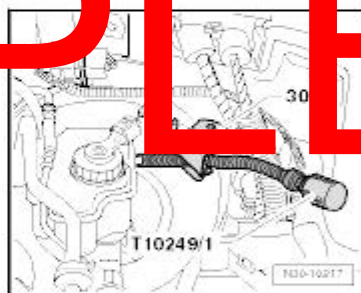


SAMPLE

Note

- ◆ During the following work, ensure that no brake fluid ends up on the loading member or gearbox. This does not open, clean the master cylinder thoroughly.

- ◆ Place a lint-free cloth under the master cylinder.
- Clamp off supply hose to master cylinder using hose clamp -3094-.
- Disconnect supply hose -1- from master cylinder.
- In addition, for disconnecting, you can close it with the sealing tool - T10249/1- (→ figure above).
- Disengage the safety fastener -2- with a screwdriver or tipped object, and uncouple the pipe and hose assembly -3- from the clutch master cylinder.



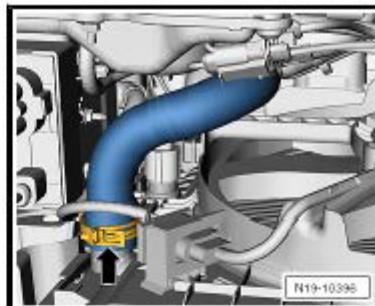
Note

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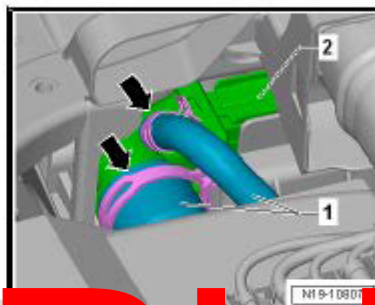
With several master cylinders, the securing clip -2- can also be pulled out to the side.



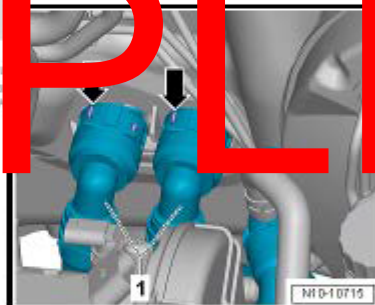
- Open spring-type clip -arrow- and pull off coolant hose downwards.



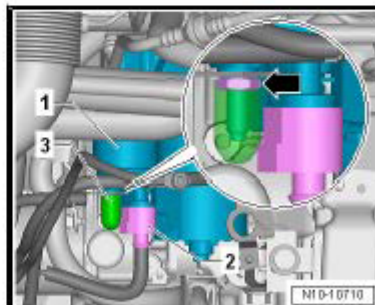
- Open spring-type clips -arrows-.
- Pull coolant hose -1- off radiator -2-.



- Release retaining clips -arrows-.
- Pull coolant hoses -1- off heat exchanger or water unit.



- Release and pull off connector -2- on starter -1-.
- Pull off protective cap -3-.
- Unscrew nut -arrow- and remove line from starter -1-.



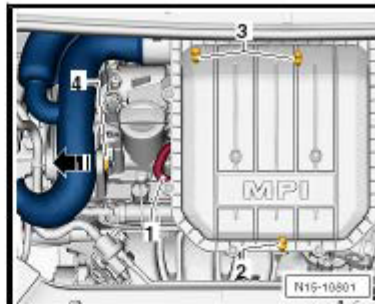
SAMPLE



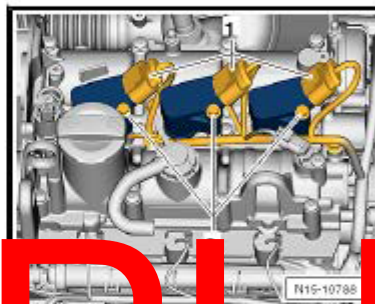
- Pull air filter housing upwards off studs at positions -2- and -3-.
- Press the air filter housing with intake connecting pipe from the mount -4- in the -direction of the arrow-.
- Remove air filter housing from the engine compartment.

Note

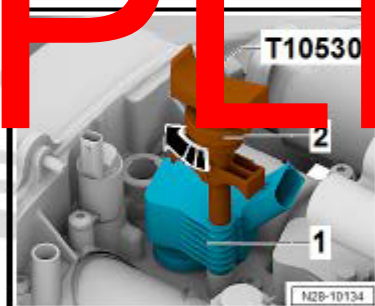
Always observe
 ⇒ "2.5 Safety precautions when working on ignition system", page 5.



- Release push-fit connector -1- and pull off.
- Loosen bolts -2-.



- Push T10530- into hole in ignition coil - to stop.
- Tighten knurled knob - in direction of arrow.

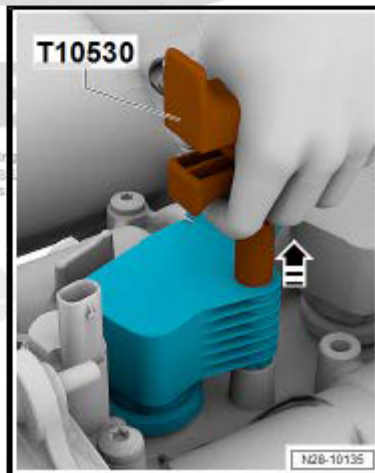


- Pull ignition coil out of camshaft housing in -direction of arrow- using puller - T10530- .

fitting

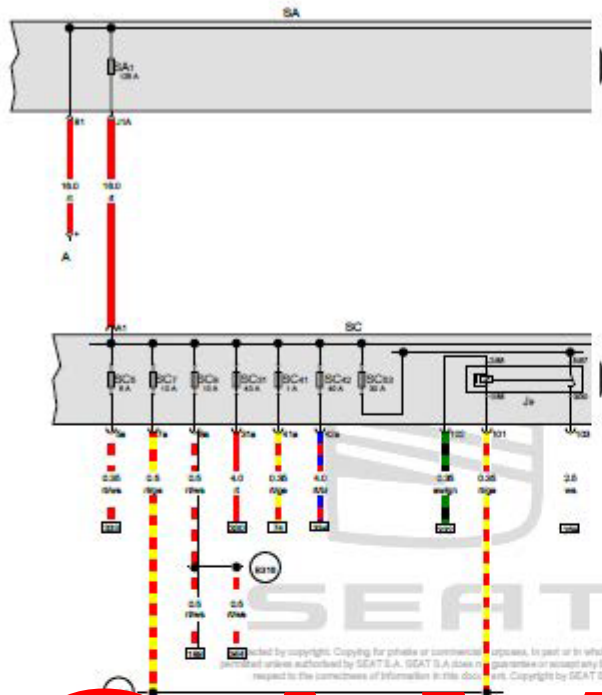
Installation is in the reverse sequence of removal. The following must be taken into account:

- Fit all ignition coils loosely into spark plug holes.
- Align the ignition coils with their connectors, and connect all the connectors to the ignition coils at the same time.
- Press ignition coils onto spark plugs by hand evenly (do not use tool).
- Tighten securing bolt with the torque wrench - VAS 6854- and specified torque ⇒ [page 256](#) .



Specified torques

Component	Torque setting
Securing bolts for ignition coil with output stage	8 Nm



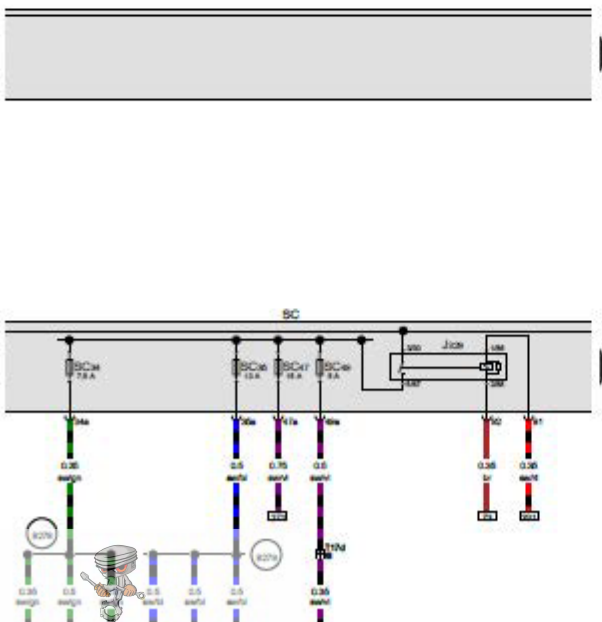
Heated rear window relay, Fuse holder A, Fuse holder C

- A Battery
- J9 Heated rear window relay
- SA Fuse holder A
- SA1 Fuse 1 on fuse holder A
- SC Fuse holder C
- SC5 Fuse 5 on fuse holder C
- SC7 Fuse 7 on fuse holder C
- SC8 Fuse 8 on fuse holder C
- SC31 Fuse 31 on fuse holder C
- SC41 Fuse 41 on fuse holder C
- SC42 Fuse 42 on fuse holder C
- SC53 Fuse 53 on fuse holder C

B315 Positive connection 1 (30a) in main wiring harness

B316 Positive connection 2 (30a) in main wiring harness

SAMPLE



Terminal 15 voltage supply relay, Fuse holder C

- J320 Terminal 15 voltage supply relay
- SC Fuse holder C
- SC34 Fuse 34 on fuse holder C
- SC35 Fuse 35 on fuse holder C
- SC47 Fuse 47 on fuse holder C
- SC49 Fuse 49 on fuse holder C
- T17d 17-pin connector, blue

B278 Positive connection 2 (15a) in main wiring harness

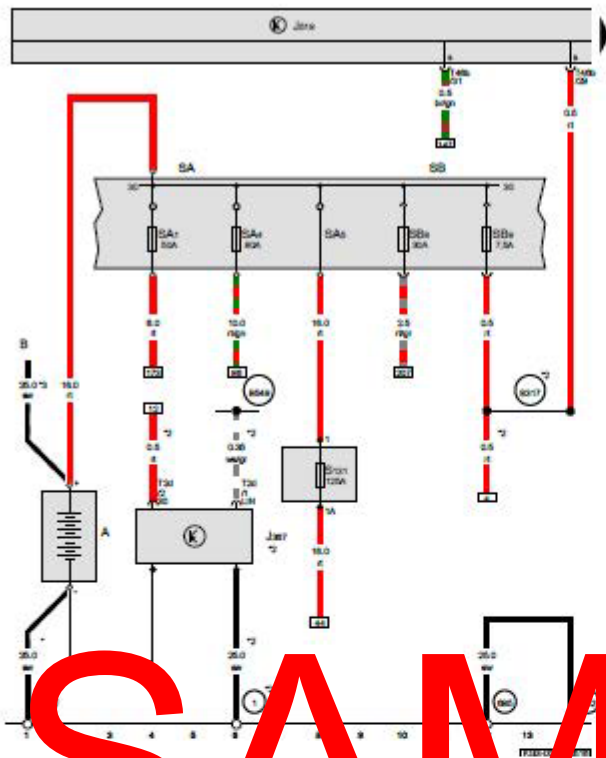
B279 Positive connection 3 (15a) in main wiring harness



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- wb = white
- sw = black
- ro = red
- re = red
- br = brown
- gn = green
- bl = blue
- gr = grey
- vl = purple
- or = orange
- fs = black





Battery, Battery monitor control unit, Fuse holder A, Fuse holder B

- A Battery
- B Starter
- J367 Battery monitor control unit
- J510 Onboard supply control unit
- J519 Onboard supply control unit
- SA Fuse holder A
- SA1 Fuse 1 on fuse holder A
- SA4 Fuse 4 on fuse holder A
- SA5 Fuse 5 on fuse holder A
- SB Fuse holder B
- SB8 Fuse 8 on fuse holder B
- SB9 Fuse 9 on fuse holder B
- S131 Fuse 1, in main wiring harness
- T2d 2-pin connector
- T49b 48-pin connector, brown

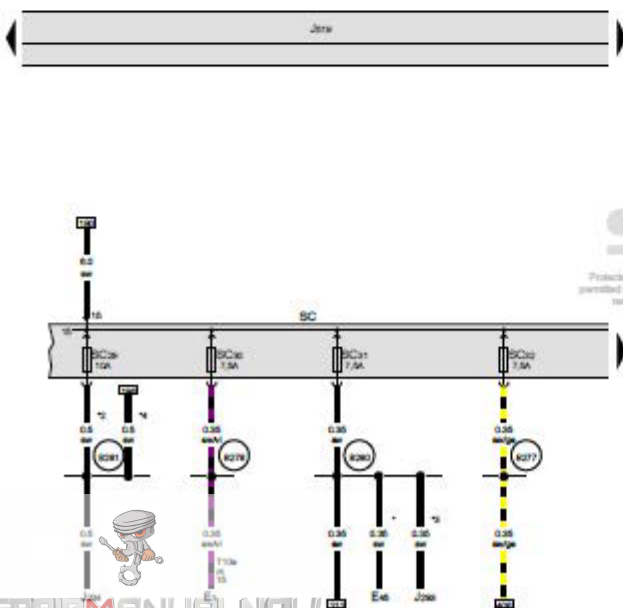
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- 652 Earth point, engine and gearbox earth
- 685 Earth point 1, on front of right longitudinal member
- B317 Positive connection 3 (30a) in main wiring harness
- B540 Connection 2 (LIN bus) in main wiring harness
- * Only models with no start/stop system
- *2 Only models with start/stop system
- *3 see applicable current flow diagram for engine

- wh = white
- sw = black
- ro = red
- rt = red
- br = brown
- gn = green
- bl = blue
- li = light blue
- vl = violet
- gr = grey
- or = orange
- rs = red/black

SAMPLE

05.2016



Fuse holder C

- E1 Light switch
- E45 Cruise control system switch
- J254 Airbag control unit
- J593 Radiator fan control unit
- J510 Onboard supply control unit
- SC Fuse holder C
- SC29 Fuse 29 on fuse holder C
- SC30 Fuse 30 on fuse holder C
- SC31 Fuse 31 on fuse holder C
- SC32 Fuse 32 on fuse holder C
- T10e 10-pin connector
- B277 Positive connection 1 (15a) in main wiring harness
- B276 Positive connection 2 (15a) in main wiring harness
- B280 Positive connection 4 (15a) in main wiring harness
- B281 Positive connection 5 (15a) in main wiring harness

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- * Only models with cruise control system (CCS)
- *2 Only models with entry and start authorisation
- *3 According to equipment
- *4 Only models with no entry and start authorisation

- wh = white
- sw = black
- ro = red
- rt = red
- br = brown
- gn = green
- bl = blue
- gr = grey
- li = light blue
- vl = violet
- gr = grey
- li = light blue
- vl = violet
- gr = grey
- li = light blue
- vl = violet