Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

Installation Documentation
Volvo XC60 / XC70

Validity

Manufacturer	Model	Type	EG-BE No. / ABE
Volvo	XC70	136	e9 * 2001/116 * 0065 * ...
Volvo	XC60	D (156)	e9 * 2001/116 * 0068 * ...

Volvo XC70:

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.0	Petrol	SG / AG	149	1999	B4204T6 (44)
2.0	Petrol	SG / AG	176	1999	B4204T7 (47)
2.0	Petrol	AG	180	1969	B4204T11
3.0	Petrol	SG / AG	210 / 224	2953	B6304T2 (99/90)
3.2	Petrol	SG / AG	175 / 179	3192	B6324S (95/98)
2.0	Diesel	SG / AG	120	1984	D5204T2 (52)
2.0	Diesel	SG / AG	120	1984	D5204T3
2.0	Diesel	SG / AG	133	1969	D4204T5
2.4	Diesel	SG / AG	151	2400	D5244T10 (70)
2.4	Diesel	SG / AG	136	2400	D5244T4 (71)
2.4	Diesel	SG / AG	129	2400	D5244T14 (72)

Volvo XC60:

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.0	Petrol	SG / AG	149	1999	B4204T6 (44)
2.0	Petrol	SG / AG	176	1999	B4204T7 (47)
2.0	Petrol	AG	180	1969	B4204T11
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2.0	Diesel	SG / AG	120	1984	D5204T2 (52)
2.0	Diesel	SG / AG	120	1984	D5204T3
2.0	Diesel	SG / AG	133	1969	D4204T5
2.4	Diesel	SG / AG	120	2400	D5244T5 (69)
2.4	Diesel	SG / AG	151	2400	D5244T10 (70)
2.4	Diesel	SG / AG	136	2400	D5244T4 (71)
2.4	Diesel	SG / AG	129	2400	D5244T14 (72)

SG = Manual transmission
AG = Automatic transmission

Volvo XC60 / XC70

from Model Year 2008
Left-hand drive vehicle

Verified equipment variants:	Automatic air-conditioning 2WD / AWD Front fog light Headlight washer system Start-Stop System
Not verified:	Passenger compartment monitoring
Total installation time for 2WD vehicles:	approx. 9 hours
Total installation time for vehicles with AWD:	approx. 10 hours

Table of Contents

Necessary Components

- Basic delivery scope of *Thermo Top Evo*based on price list
- Installation kit for Volvo XC60 / XC70 2008 Petrol and diesel: **1317440C**
- Heater control in accordance with price list and upon consultation with final customer
- In case of Telestart, indicator lamp in accordance with price list and upon consultation with final customer
- Also required: Contact adhesive for gluing of standpipe (for example Loctite 406)

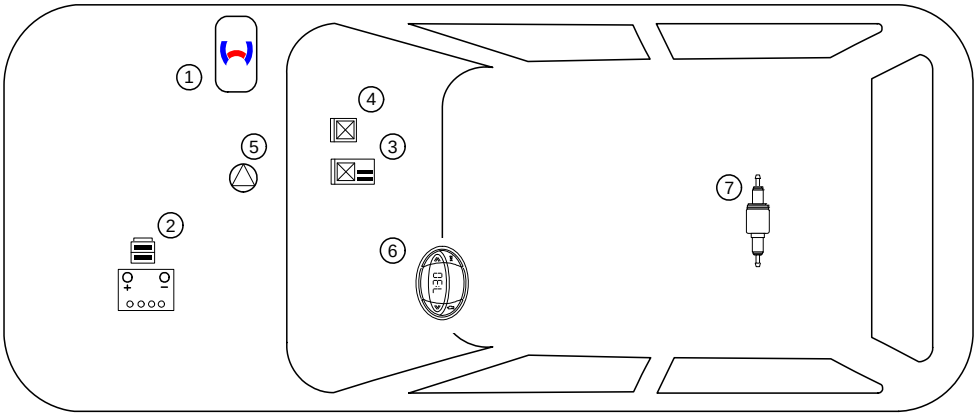
Installation Instructions:

- Arrange for the vehicle to be delivered with the tank only around 1/4 full.
- The push button installation location for Telestart or Thermo Call should be confirmed with the end customer.
- Depending on the available space and manufacturer's instructions, we recommend the use of a vehicle battery with a higher electrical capacity.

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Relay and fuse holder of passenger compartment
4. Pulse relay
5. Circulating pump
6. Digital timer
7. Metering pump



Notes on Total Installation Time

The total installation time includes the time needed for mounting and demounting of the vehicle-specific components, the heater specific installation time and all other times required for the system integration and initial start-up of the heater.
The total installation time may vary for vehicle equipment other than provided.

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

The improper installation or repair of Webasto heating and cooling systems can cause fire or the leakage of deadly carbon monoxide, leading to serious injury or death.

To install and repair Webasto heating and cooling systems you need to have completed a special company training course and have the appropriate technical documentation, special tools and special equipment.

Installation and repair may ONLY be carried out by persons trained and certified in a Webasto training course. NEVER try to install or repair Webasto heating or cooling systems if you have not completed a Webasto training course, you do not have the necessary technical skills and you do not have the technical documentation, tools and equipment available to ensure that you can complete the installation and repair work properly.

Only use genuine Webasto parts. See the Webasto air and water heaters accessories catalogue for this purpose.

1.2 Operation

To ensure safe operation, we recommend having the heater checked every two years by an authorised Webasto dealer, especially when used over a long period and/or under extreme environmental conditions.

Do not operate the heater in closed rooms due to the danger of poisoning and suffocation.

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel Diesel (DIN EN 590) or petrol (DIN EN 227).

The heater may not be cleaned with a high-pressure cleaner.

1.3 Please note

ALWAYS follow all Webasto installation and operating instructions and observe all warnings.

To become familiar with and understand all functions and properties of the heater, the operating instructions must be read carefully and observed at all times.

For proper, safe installation and repair work, the installation instructions with all warnings and safety information must be carefully read and observed at all times. Please always contact a workshop authorised by Webasto for all installation and repair work.

Important

Webasto shall assume no liability for defects, damage and injuries resulting from a failure to observe the installation, repair and operating instructions of the information contained in them.

This liability exclusion particularly applies to improper installations and repairs, installations and repairs by untrained persons or in the case of a failure to use genuine spare parts.

The liability due to culpable disregard to life, limb or health and due to damage or injuries caused by a wilful or reckless breach of duty remain unaffected, as does the obligatory product liability.

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and wiring harnesses to original vehicle lines and wiring harnesses using cable ties. Insulate loose wire ends and tie back. Connectors on electronic components must audibly snap into place during assembly.

Sharp edges should be fitted with rub protection. Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

Observe the instructions and guidelines of the respective vehicle manufacturer for demounting and mounting vehicle specific components!

The initial startup is to be executed with the Webasto Thermo Test Diagnosis.

When installing an PWM-Gateway, the corresponding settings must be checked or adjusted before the installation.

2 Statutory regulations governing installation

Guidelines	Thermo Top Evo
Heating Directive ECE R122	E1 00 0258
EMC Directive ECE R10	E1 04 5627

Note

The regulations of these guidelines are binding in the scope of the Directive 70/156/EEC and/or 2007/46/EC (for new vehicle models from 29/04/2009) and should also be observed in countries in which there are no special regulations.

Important

Failure to follow the installation instructions will result in the invalidation of the type approval for the heater and therefore invalidation of the general **homologation of the vehicle**.

Note

For vehicles with an EU permit, no entry in accordance with § 19 Sub-Section 4 of Annex VIII b to the Road Traffic Act is required.

2.1 Excerpt from the directive 2001/56/EC Appendix VII for the installation of the heater

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

1.7.1. A clearly visible tell-tale in the operator's field of view shall inform when the combustion heater is switched on or off.

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

2.1.1. Subject to paragraph 2.1.2. combustion heaters shall be installed according to the requirements of this Annex.

2.1.2. Vehicles of category O having liquid fuel heaters are deemed to comply with the requirements of this Annex.

2.2. Positioning of heater

2.2.1. Body sections and any other components in the vicinity of the heater must be protected from excessive heat and the possibility of fuel or oil contamination.

2.2.2. The combustion heater shall not constitute a risk of fire, even in the case of overheating. This requirement shall be deemed to be fulfilled if the installation ensures an adequate distance to all parts and suitable ventilation, by the use of fire resistant materials or by the use of heat shields.

2.2.3. In the case of M2 and M3 vehicles, the heater must not be positioned in the passenger compartment. However, an installation in an effectively sealed envelope which also complies with the conditions in paragraph 2.2.2 may be used.

2.2.4. The label referred to in paragraph 1.4 or a duplicate, must be positioned so that it can be easily read when the heater is installed in the vehicle.

2.2.5. Every reasonable precaution should be taken in positioning the heater to minimise the risk of injury and damage to personal property.

2.3. Fuel supply

2.3.1. The fuel filler must not be situated in the passenger compartment and must be provided with an effective cap to prevent fuel spillage.

2.3.2. In the case of liquid fuel heaters, where a supply separate to that of the vehicle is provided, the type of fuel and its filler point must be clearly labelled.

2.3.3. A notice, indicating that the heater must be shut down before refuelling, must be affixed to the fuelling point. In addition a suitable instruction must be included in the manufacturer's operating manual.

2.4. Exhaust system

2.4.1. The exhaust outlet must be located so as to prevent emissions from entering the vehicle through ventilators, heated air inlets or opening windows.

2.5. Combustion air inlet

2.5.1. The air for the combustion chamber of the heater must not be drawn from the passenger compartment of the vehicle.

2.5.2. The air inlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

2.6. Heating air inlet

2.6.1. The heating air supply may be fresh or recirculated air and must be drawn from a clean area not likely to be contaminated by exhaust fumes emitted either by the propulsion engine, the combustion heater or any other vehicle source.

2.6.2. The inlet duct must be protected by mesh or other suitable means.

2.7. Heating air outlet

2.7.1. Any ducting used to route the hot air through the vehicle must be so positioned or protected that no injury or damage could be caused if it were to be touched.

2.7.2. The air outlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

End of excerpt.

In multilingual versions the German language is binding.

Notes on Validity

This installation documentation applies to Volvo XC60 / XC70 Petrol and diesel vehicles - for validity, see page 1 - from model year 2008 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to this installation documentation.

Vehicle and engine types, equipment variants and other specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

Technical Instructions

Special Tools
- Hose clamp pliers for self-clamping hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Automatic wire stripper 0.2 - 6mm²
- Crimping pliers for cable lug / tab connector 0.5 - 6mm²
- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test diagnosis with current software

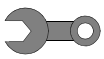
Dimensions
- All dimensions are in mm

Tightening torque values
- Tightening torque values for 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque values of 5x15 retaining plate of water connection piece bolt = 7Nm.
- Tighten other screw connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.

Explanatory Notes on Document

You will find an identification mark on the outside top right corner of the page in question to provide you with a quick overview of the individual working steps.

Mechanical system



Electrical system

Coolant circuit

Combustion air

Fuel

Exhaust gas

Software

Special features are highlighted using the following symbols:

Specific risk of injury or fatal accidents.

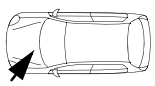
Specific risk of damage to components.

Specific risk of fire and explosion

Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents.

Reference to a special technical feature

The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.



Tightening torque according to the manufacturer's vehicle-specific documents

Volvo XC60 / XC70

Preliminary Work

Vehicle

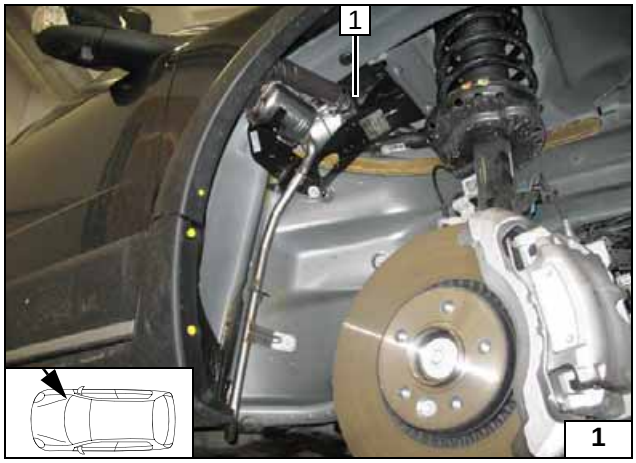
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery.
- Remove additional battery with bracket (only on vehicles with start-stop)
- Remove the windscreen wipers.
- Remove the upper and front coolant reservoir cap.
- Remove the engine control unit.
- Remove the right front wheel.
- Remove the wheel well trim on the right.
- Drain off the coolant according to the manufacturer's instructions.
- Detach the centre console with the A/C control panel.
- Remove the accelerator pedal.
- Remove the glove compartment.

The following work should only be performed during the corresponding installation sequence:

- Remove exhaust system in accordance with manufacturer's instructions (for AWD only)
- Remove the fuel tank according to the manufacturer's instructions.
- Remove the fuel-tank sending unit in accordance with the manufacturer's instructions.

Heater

- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) in the appropriate place inside the engine compartment.
- Attach the caution label "Parking heater/auxiliary heater upgraded" next to the diagnosis connection

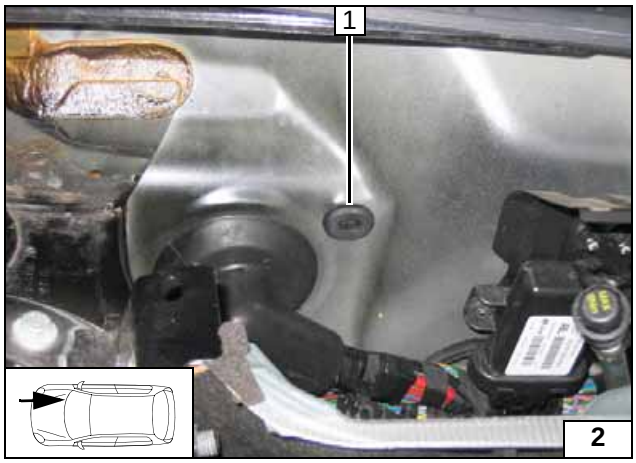


Heater Installation Location

1 Heater

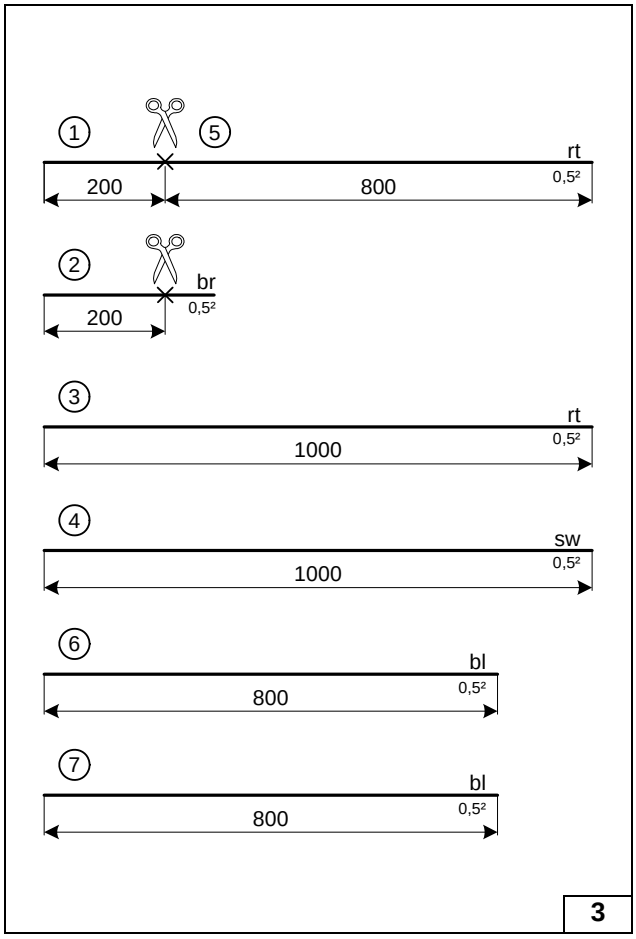
Installation location

Preparing Electrical System



1 Protective rubber plug

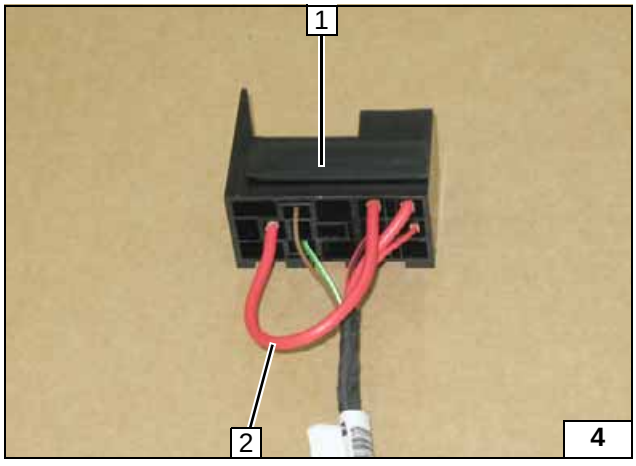
Removing protective rubber plug



Relay and fuse holder of passenger compartment

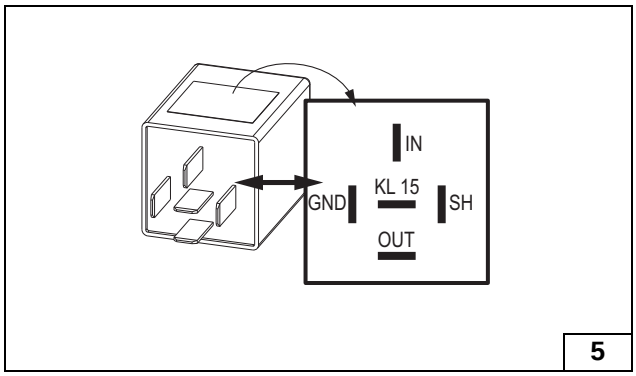
Wire sections retain their numbering in the entire document.

Cutting wires to length



1 Relay and fuse holder of passenger compartment
2 Detach red (rt) 4² wire and discard

Detaching red (rt) wire



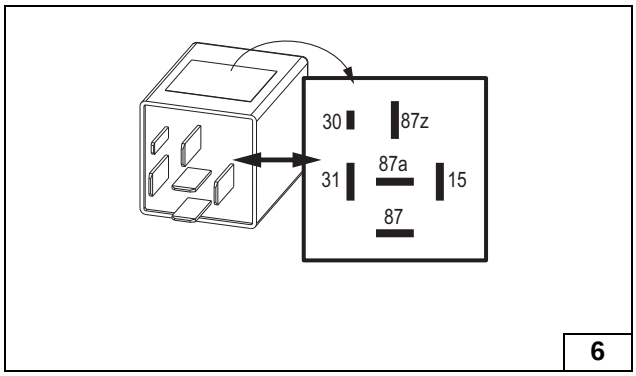
5

Check PWM Gateway settings during heater start-up, adapt if necessary.

Settings:

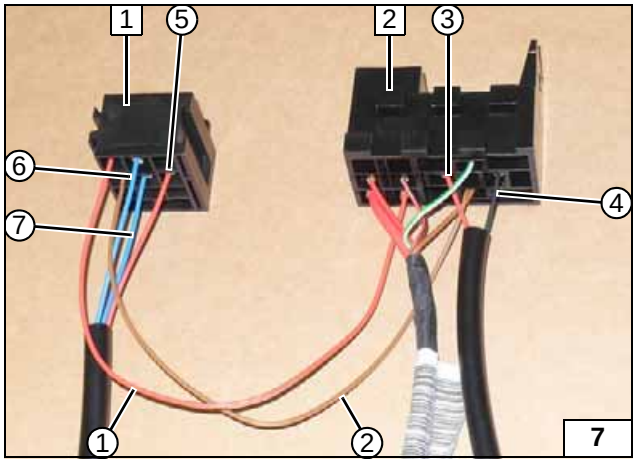
Duty cycle: 56%
Frequency: 400 Hz
Voltage: 3.0 V
Function: High-side

View of PWM Gateway



6

View of pulse relay K2

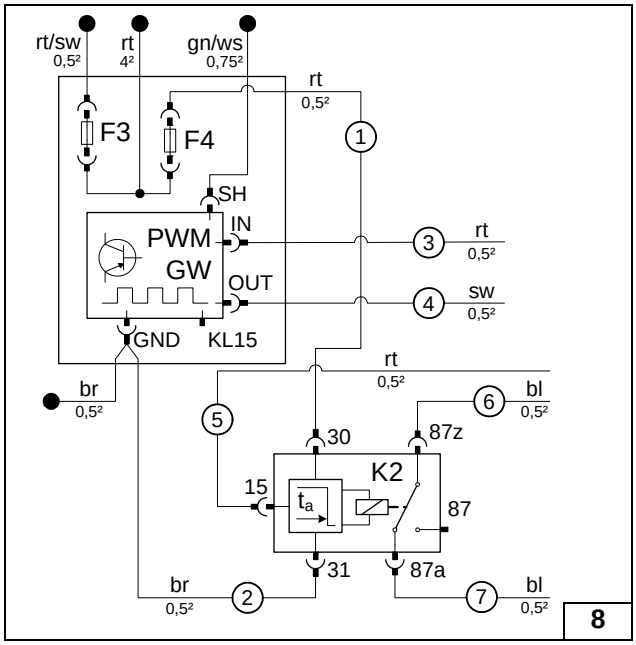


7

Connect wires according to wiring diagram. PWM Gateway and pulse relay K2 will be inserted after installing the relay and fuse holder.

1 Socket pulse relay K2
2 Relay and fuse holder of passenger compartment
① Red (rt) wire of F4 and K2/30
② Brown (br) wire of PWM GW/GND and K2/31
③ Red (rt) wire of PWM GW/IN
④ Black (sw) wire of PWM GW/OUT
⑤ Red (rt) wire of K2/15
⑥ Blue (bl) wire of K2/87z
⑦ Blue (bl) wire of K2/87a

Connecting the wires



8

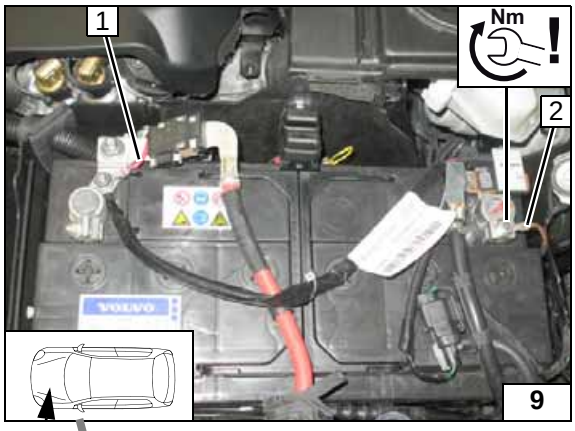
Insert fuse F4 3A. To connect PWM GW/GND, use provided connection.

Connecting the wires

Electrical System in Vehicles with a Large Battery

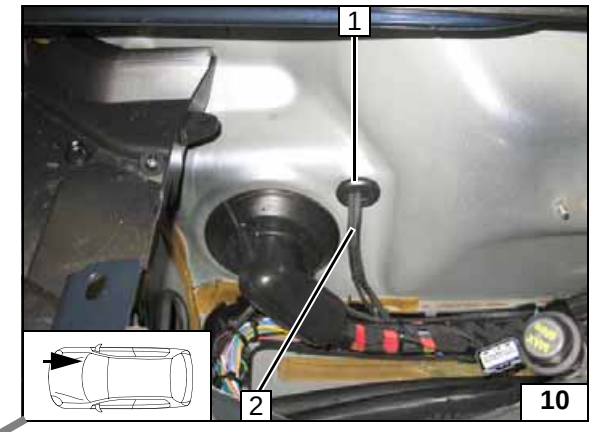
Positive and earth wire

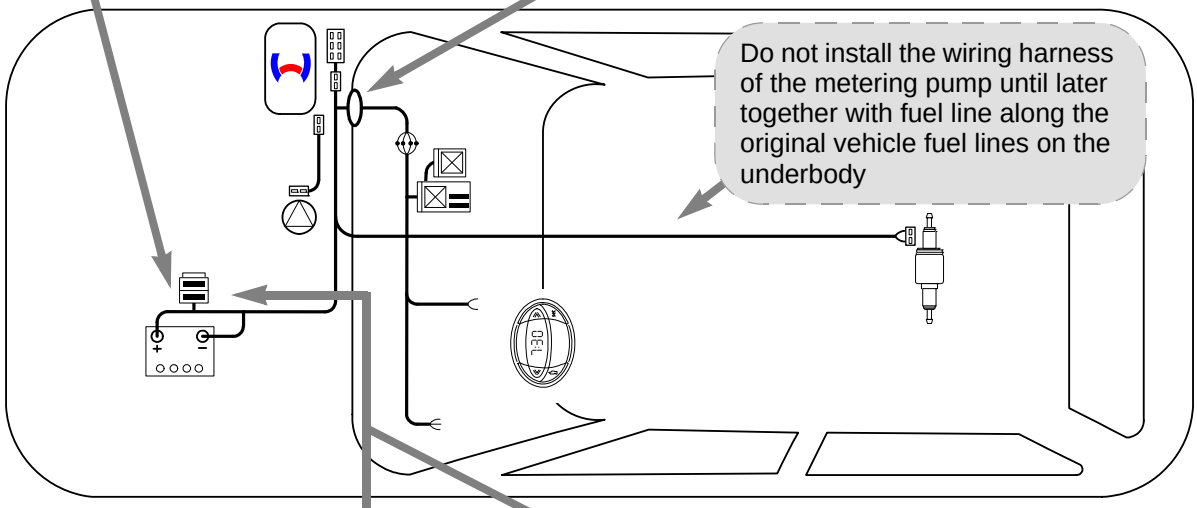
1 Positive wire on positive battery terminal
2 Earth wire on negative battery terminal



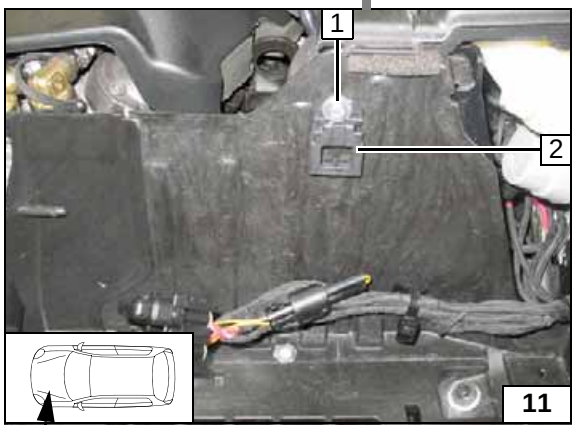
Wiring harness pass through

1 Protective rubber plug
2 Wiring harnesses of heater, heater control





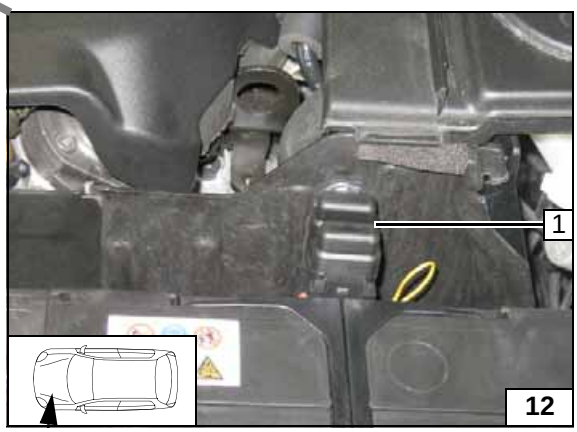
Wiring harness routing diagram



Fuse holder of engine compartment

5.5 mm dia. hole at position **1** in battery box.
See page 12 for wiring harness routing.

1 M5x16 bolt, large diameter washer [2x], nut
2 Retaining plate of fuse holder



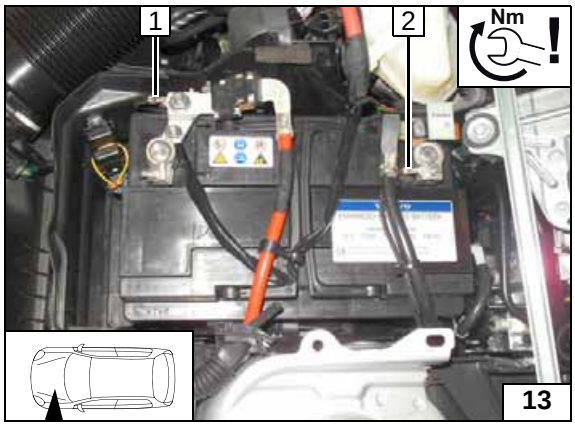
Fuse holder of engine compartment

1 F1-2 fuses

Electrical System in Vehicles with a Small Battery

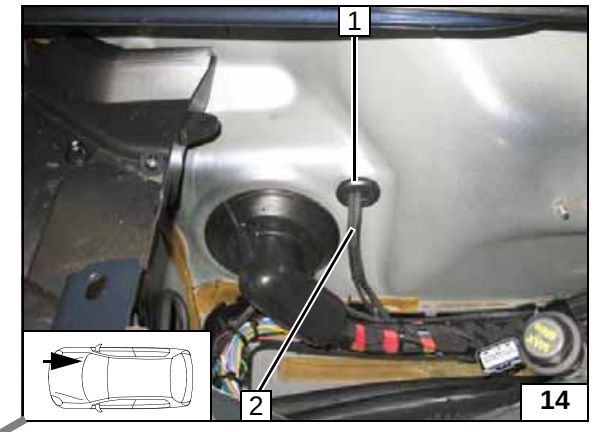
Positive and earth wire

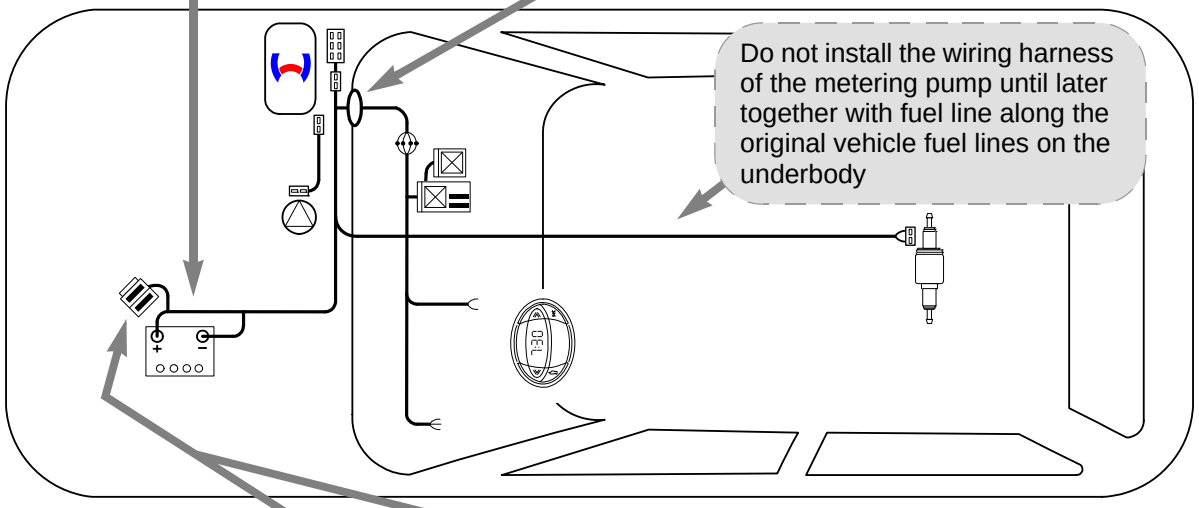
1 Positive wire on positive battery terminal
2 Earth wire on negative battery terminal



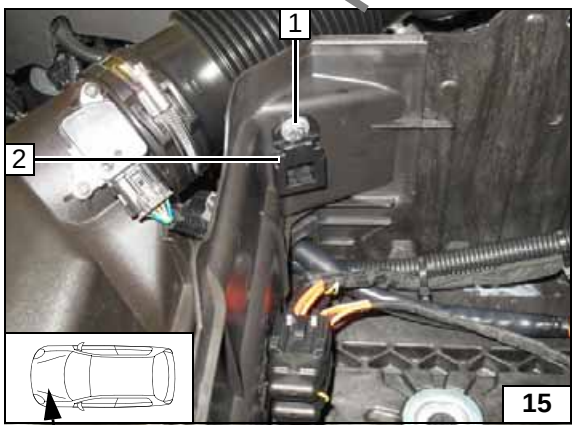
Wiring harness pass through

1 Protective rubber plug
2 Wiring harnesses of heater, heater control





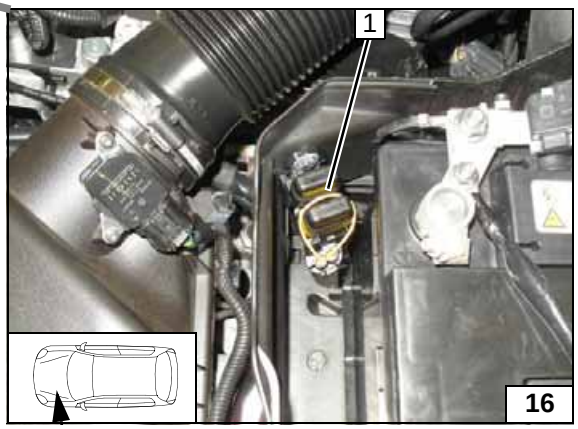
Wiring harness routing diagram



Fuse holder of engine compartment

5.5 mm dia. hole at position **1** in battery box.
See page 12 for wiring harness routing.

1 M5x16 bolt, large diameter washer [2x], nut
2 Retaining plate of fuse holder

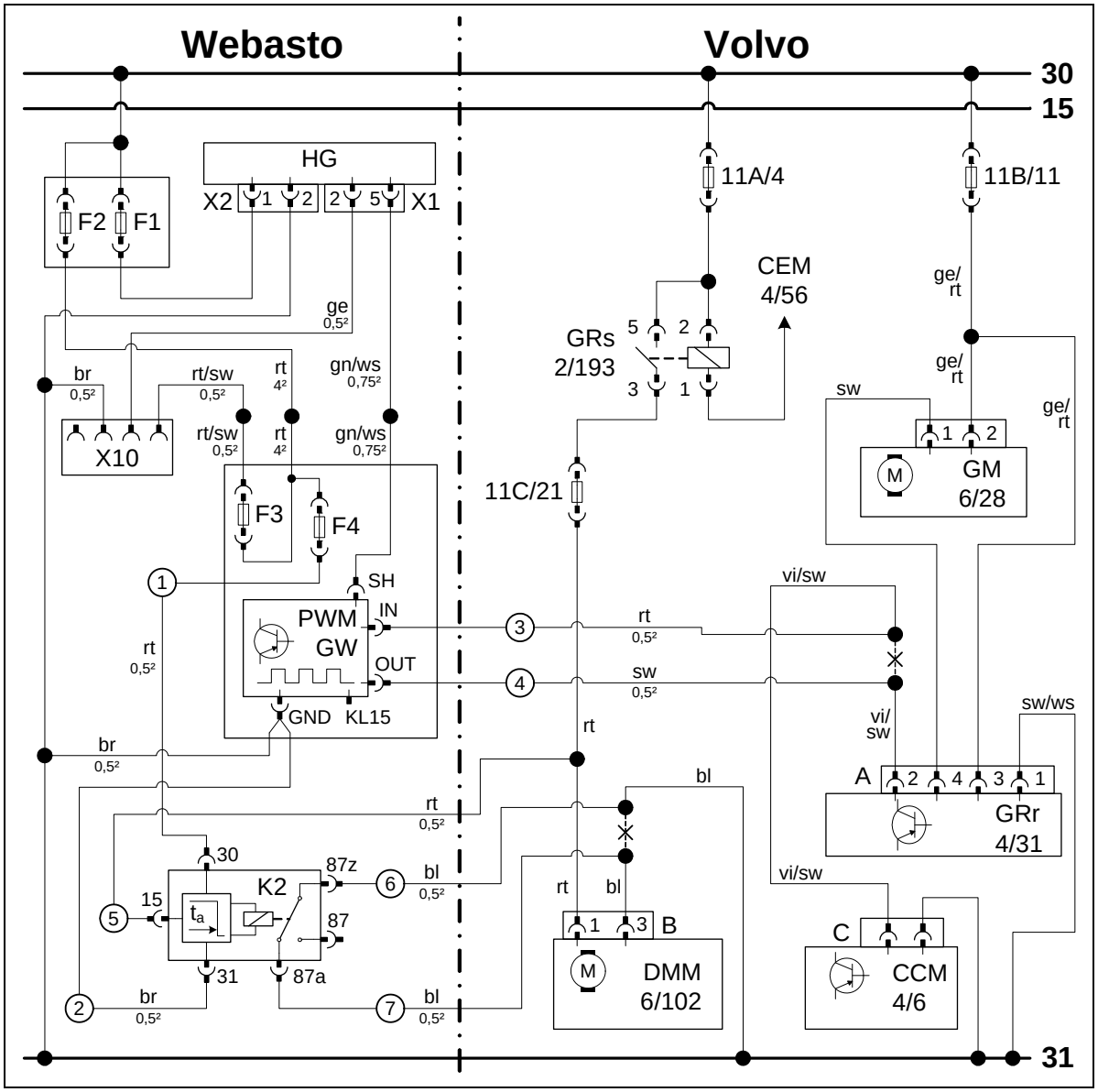


Fuse holder of engine compartment

1 F1-2 fuses

Fan Controller

Wiring diagram



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	11A/4	Fuse	rt	red
X1	6-pin heater connector	11B/11	Fuse	sw	black
X2	2-pin heater connector	CEM	Central electrical box 4/56	ge	yellow
X10	4-pin connector of heater control	GRs	Fan relay 2/193	gn	green
		11C/21	Fuse	or	orange
K2	Delayed pulse relay	GM	Fan motor 6/28	ws	white
F1	20A fuse	A	4-pin connector, GRr	ws	white
F2	30A fuse	GRr	Fan controller 4/31	br	brown
F3	1 A fuse	B	3-pin connector DMM		
F4	3A fuse	DMM	Defroster damper motor		
PWM GW	Pulse width modulator	C	CCM connector		
		CCM	A/C control unit 4/6		
PWM GW settings:					
Duty cycle: 56%					
Frequency: 400 Hz					
Voltage: 3.0 V				**X**	Cutting point
Function: High-side				Wiring colours may vary.	

Legend

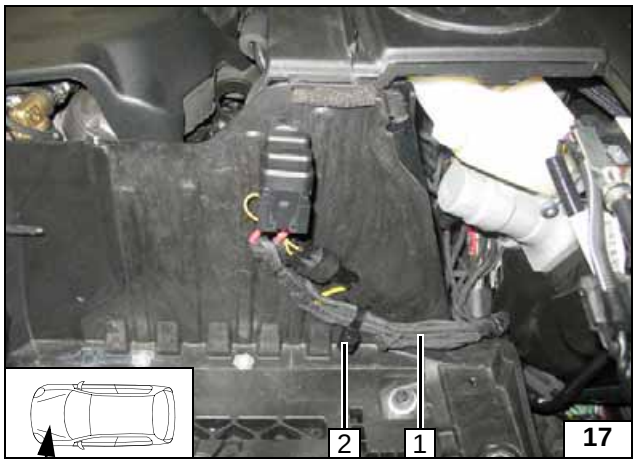


Fig. shows vehicle with a large battery!

1 Wiring harnesses
2 Cable tie

Routing wiring harnesses

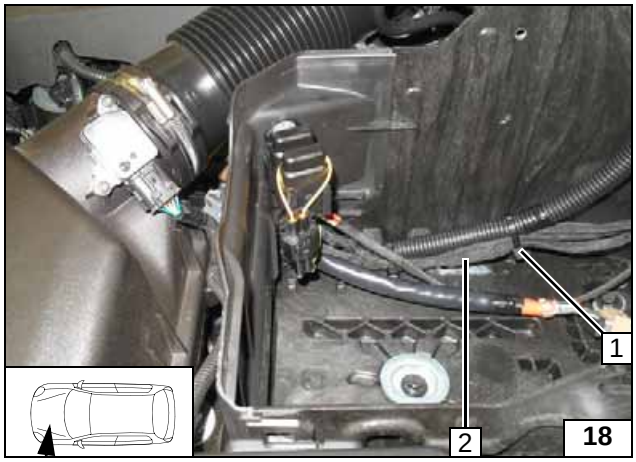
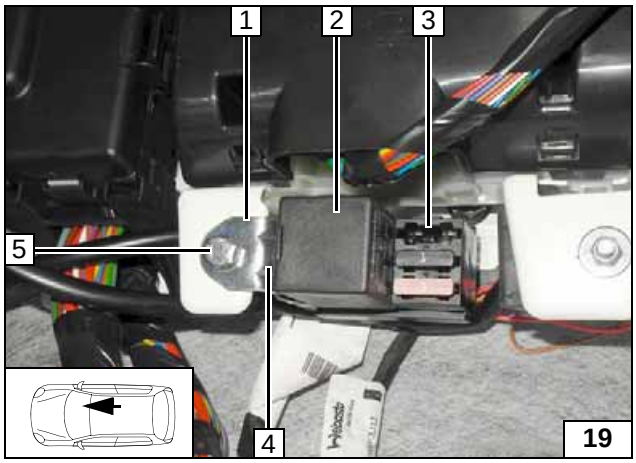


Fig. shows vehicle with a small battery!

1 Cable tie
2 Wiring harnesses

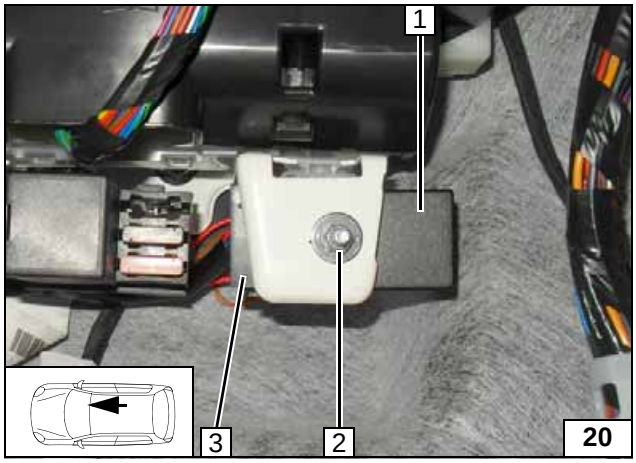
Routing wiring harnesses



Fold back floor covering. 7 mm dia. hole at position **5**. When drilling, pay attention to components located behind!

1 Angle bracket
2 Mount PWM GW
3 Relay and fuse holder of passenger compartment
4 M5x16 bolt, large diameter washer [2x], nut
5 M6x12 bolt, flanged nut

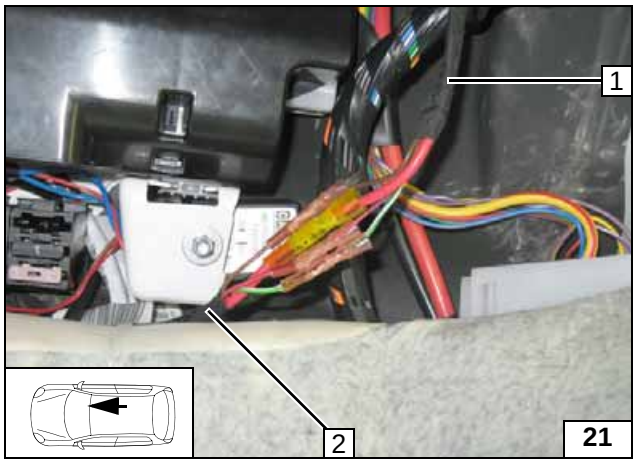
Installing relay and fuse holder of passenger compartment



6mm dia. hole at position **2**. When drilling, pay attention to components located behind. Attach pulse relay K2 **1** after installation.

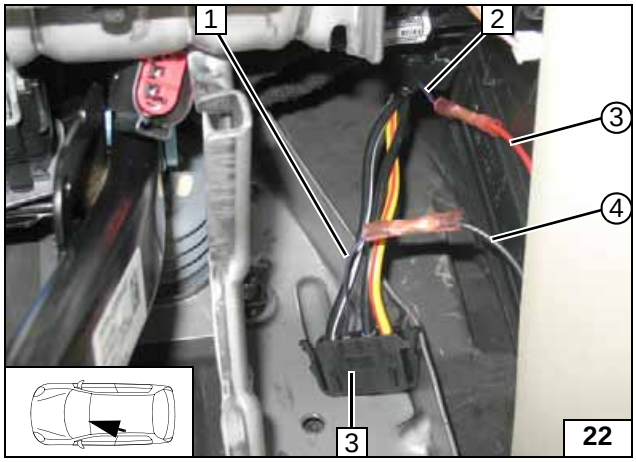
2 M5x16 bolt, large diameter washer [2x], nut
3 Socket pulse relay K2

Installing socket of pulse relay



Connect heater wiring harness **1** to relay and fuse holder wiring harness of passenger compartment **2** according to wiring diagram, so that same colour wires are connected.

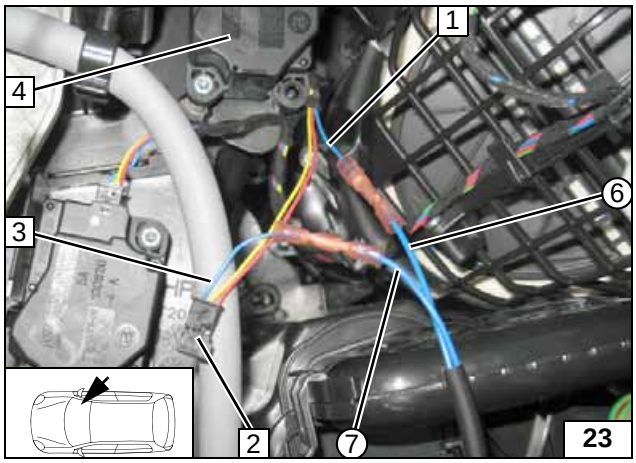
Connecting wiring harnesses



Connection to 4-pin connector **3** from fan controller 4/31. Produce connections as shown in wiring diagram.

1 Violet/black (vi/sw) wire of GRr connector 4/31 Pin 2
2 Violet/black (vi/sw) wire of A/C control unit
③ Red (rt) wire of PWM GW/IN
④ Black (sw) wire of PWM GW/OUT

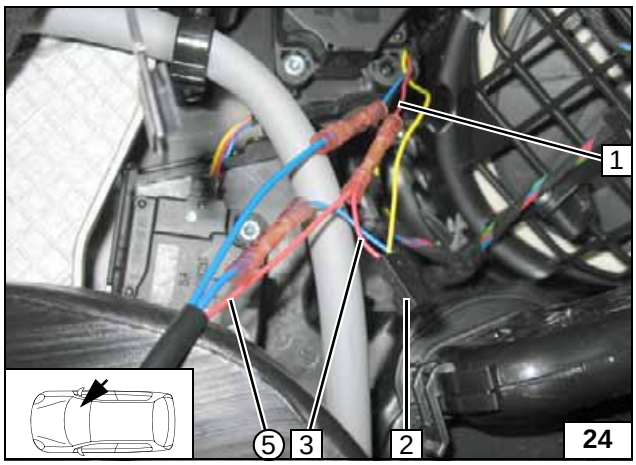
Connecting fan controller



Connection to 3-pin connector **2** from defroster damper motor DMM 6/102 **4**.
Produce connections as shown in wiring diagram.

1 Blue (bl) wire (earth)
3 Blue (bl) wire of DMM 6/102 connector Pin 3
⑥ Blue (bl) wire of K2/87z
⑦ Blue (bl) wire of K2/87a

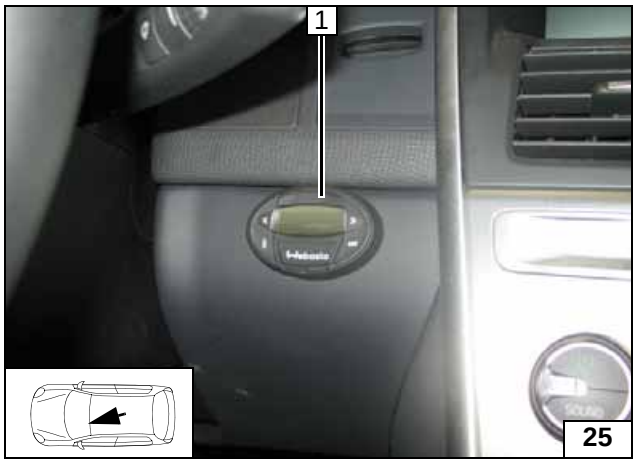
Connecting damper motor



Connection to 3-pin connector **2** from defroster damper motor DMM 6/102.
Produce connections as shown in wiring diagram.

1 Red (rt) wire of fan relay
3 Red (rt) wire of DMM 6/102 connector Pin 1
⑤ Red (rt) wire of K2/15

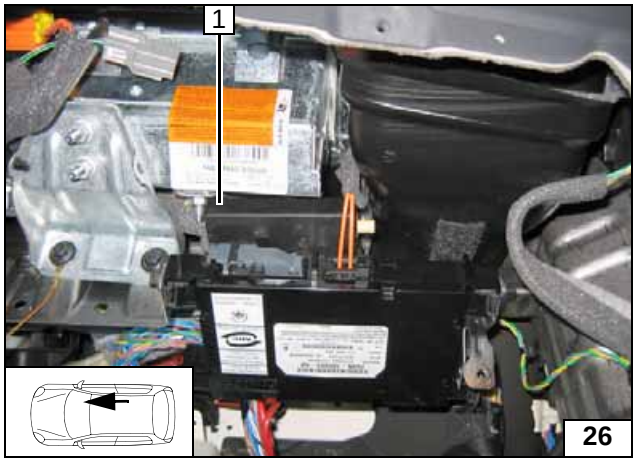
Connecting damper motor



Digital Timer

1 Digital timer

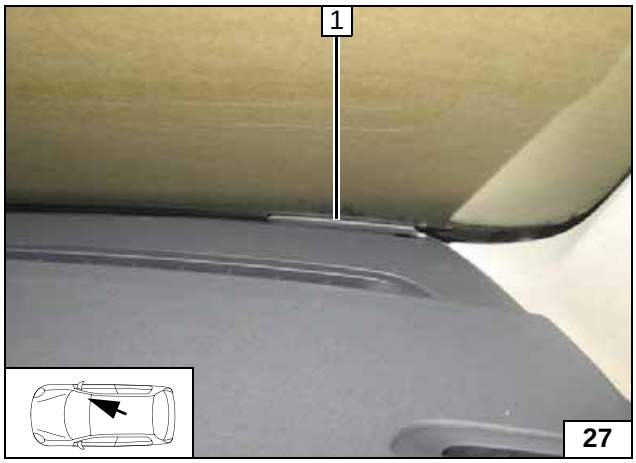
Installing digital timer



Remote Option (Telestart)

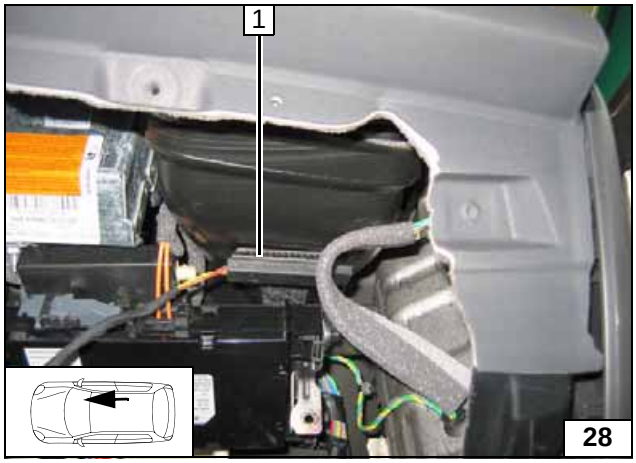
Fasten receiver **1** with adhesive tape.

Installing receiver



1 Antenna

Installing antenna



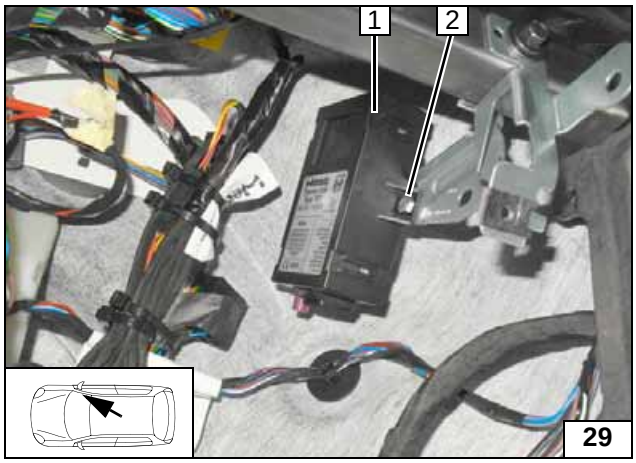
Temperature sensor T100 HTM

Install temperature sensor **1** with adhesive tape.

Installing temperature sensor

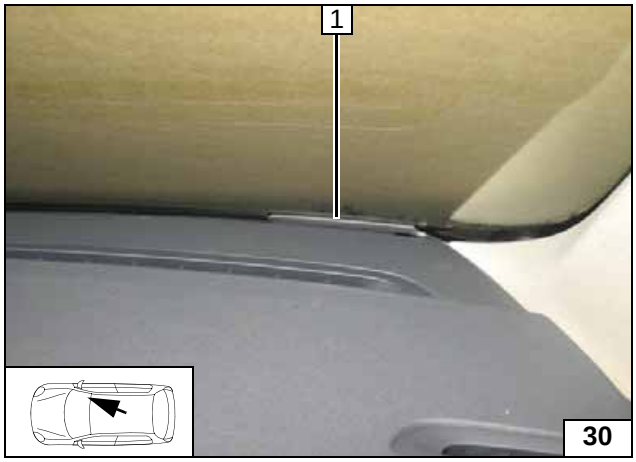
Remote Option (Thermo-Call)

Installing receiver



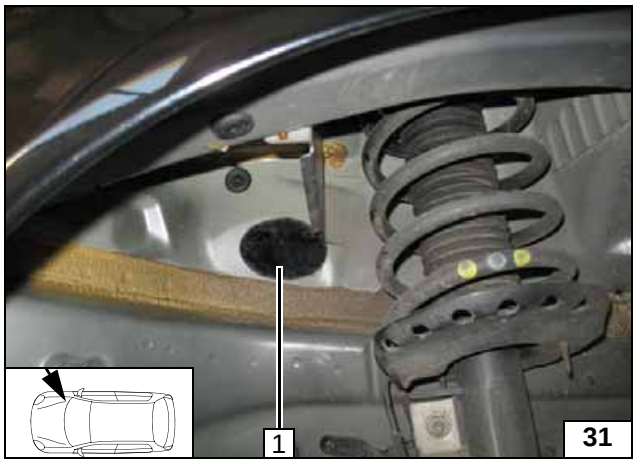
1 Receiver
2 M5x16 bolt, flanged nut, existing hole

Installing antenna



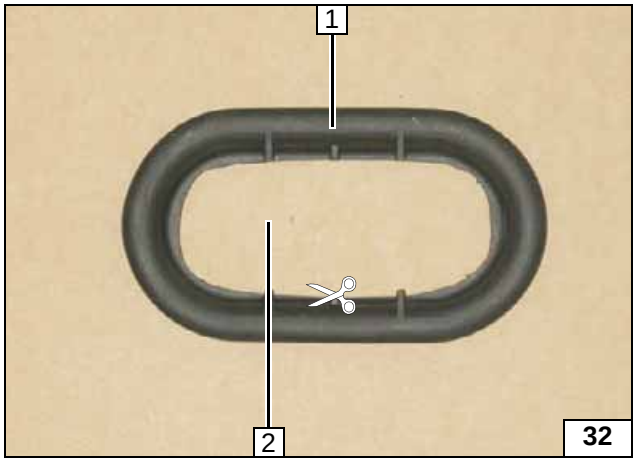
1 Antenna

Preparing Installation Location



Remove cover **1**

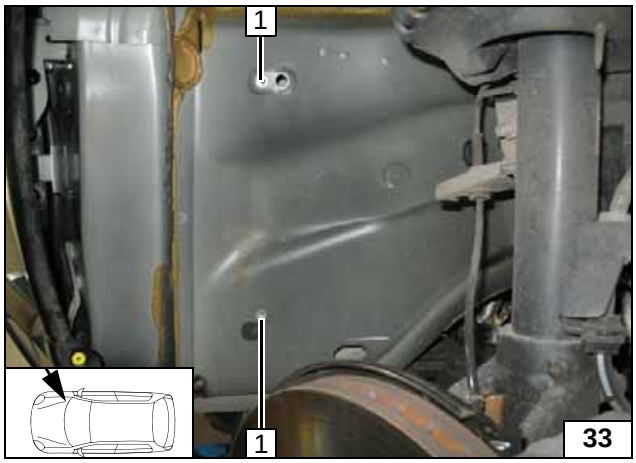
Dismantling cover



Cut out pass through **1** and reinstall.

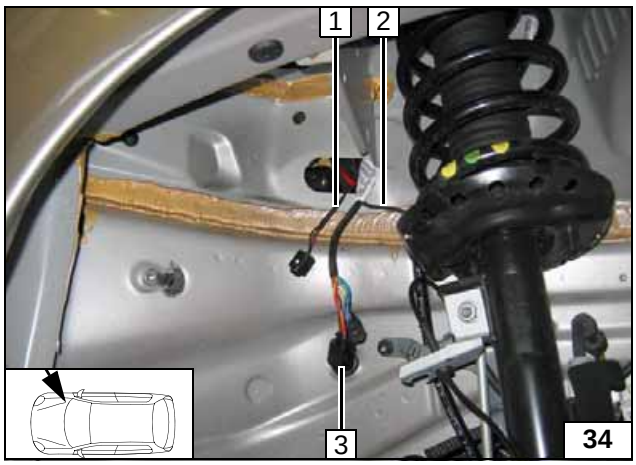
2 Discard section

Cutting out pass through



Install M6 rivet nut **1** [2x] in existing holes.

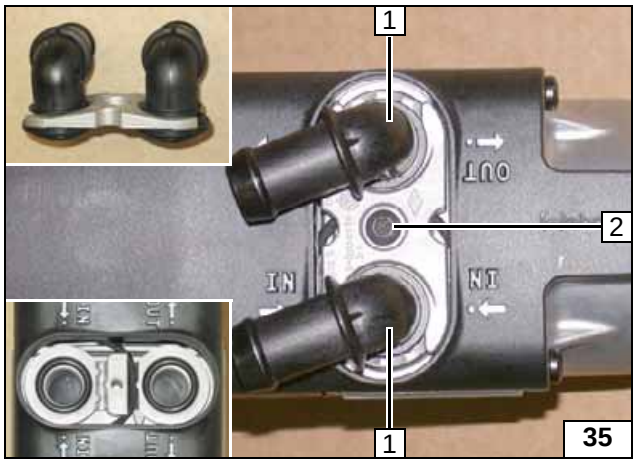
Inserting and tightening rivet nuts



1 Wiring harness of circulating pump
2 Metering pump wiring harness
3 Wiring harness of heater

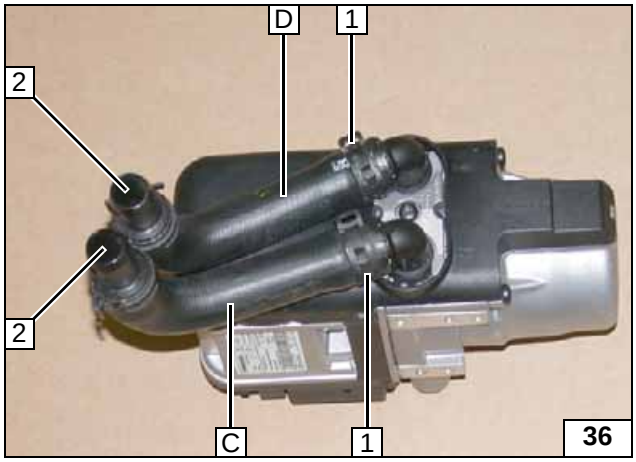
Pulling through lines

Preparing Heater



1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

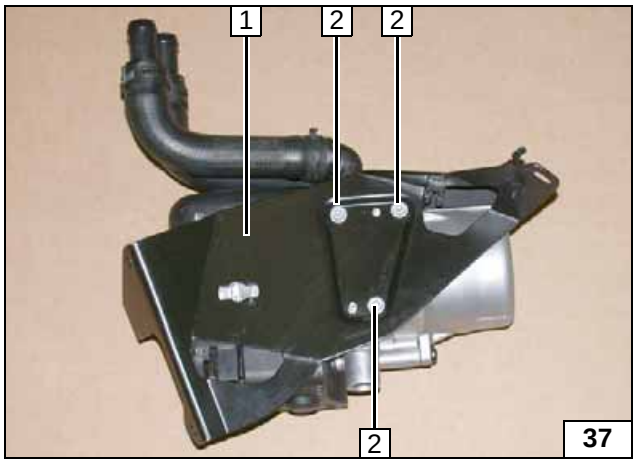
Installing water connection piece



Hose **C** / **D** = 18mm dia., 90° moulded hose.

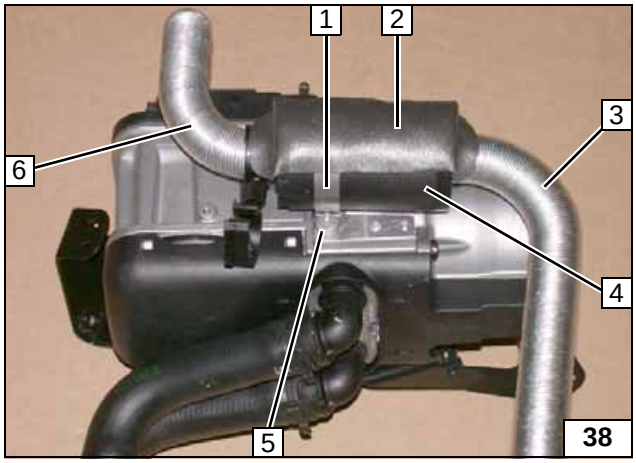
1 25 mm dia. spring clip [2x]
2 18x18mm dia. connecting pipe, 25mm dia. spring clip [2x each]

Premounting hoses



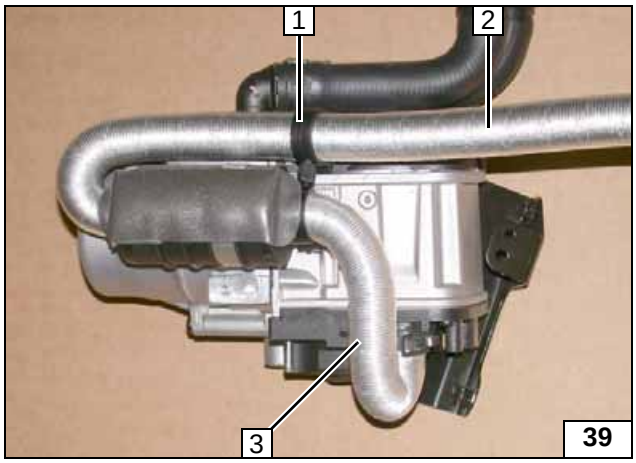
1 Bracket
2 5x13 self-tapping bolt [3x]

Premounting bracket



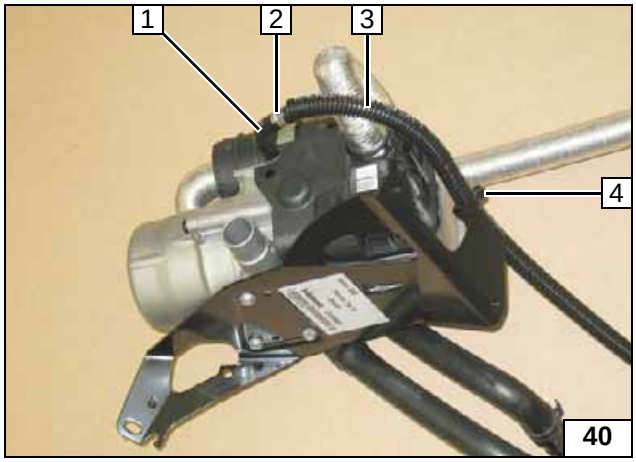
1 51mm dia. clamp
2 Insulation protection strips pasted
3 480mm combustion air pipe
4 Combustion air silencer
5 5x13 self-tapping bolt
6 210mm combustion air pipe

Installing combustion air silencer



1 Spacer bracket
2 480mm combustion air pipe
3 210mm combustion air pipe

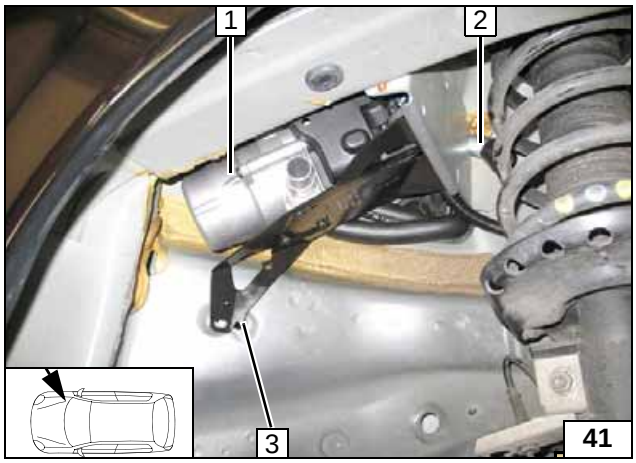
Fastening combustion air pipe



Slide 1130mm corrugated tube **3** onto fuel line (subsequently, draw wiring harness of metering pump into corrugated tube **3**.)

1 90° moulded hose, 10 mm dia. clamp
2 Fuel line, 10mm dia. clamp
4 Cable tie

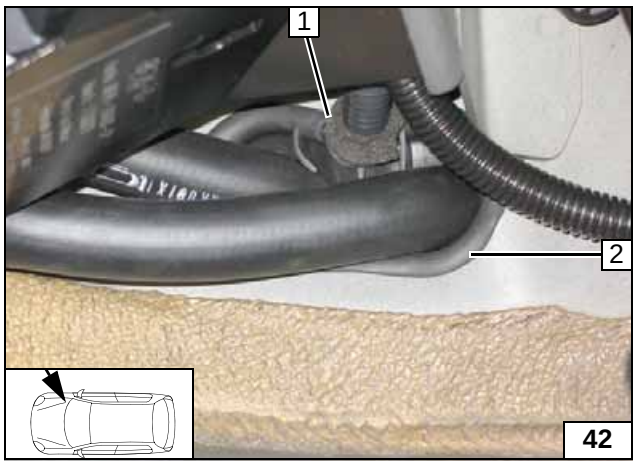
Premounting fuel line



Installing Heater

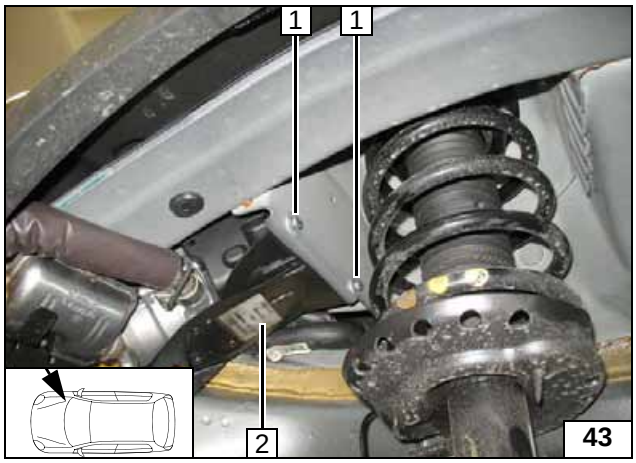
Route combustion air pipe through pass through at position **2**. Mount passed-through wiring harness of heater and wiring harness of circulating pump on heater. Mount heater **1** as shown; hook into original vehicle hole **3**.

Installing heater



1 Wrap wiring harnesses with rub protection
2 Pass through

Aligning pass through

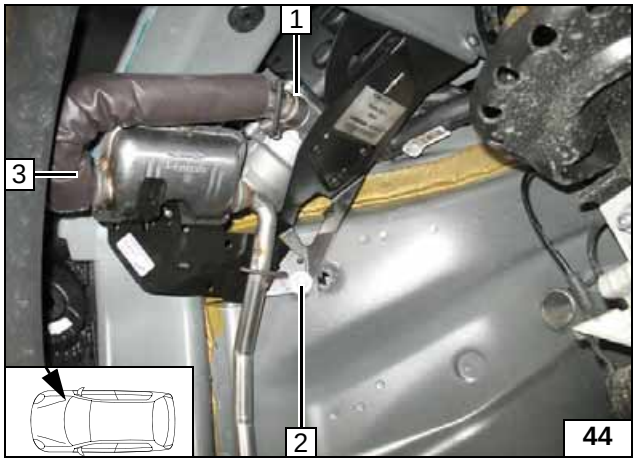


Exhaust Gas

Loosely mount bolts **1** [2x].

1 Existing holes, M6x16 bolt, spring lockwasher, large diameter washer [2x each]
2 Bracket of heater

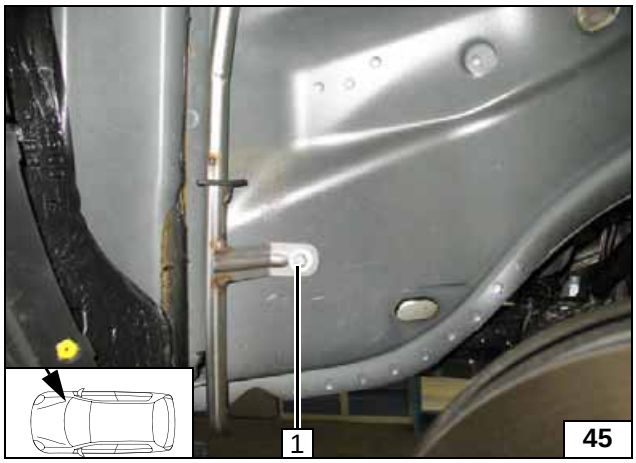
Installing heater



Install bolt **2**.

1 Hose clamp
2 M6x20 bolt, spring lockwasher, large diameter washer, M6 rivet nut
3 Exhaust system

Installing exhaust system

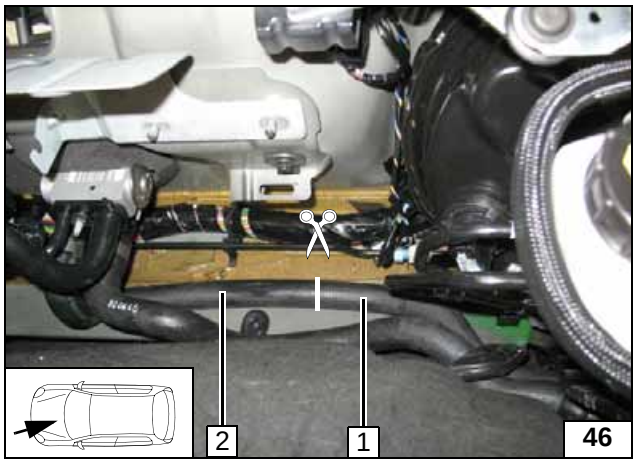


Tighten all loose screw connections.

1 M6x20 bolt, spring lockwasher, large diameter washer, M6 rivet nut

Installing exhaust system

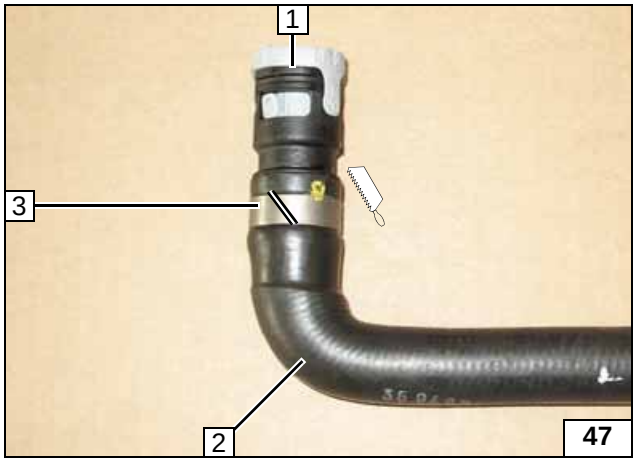
Coolant Circuit



Remove hose section **2** from heat exchanger inlet.

1 Engine outlet hose section

Cutting point

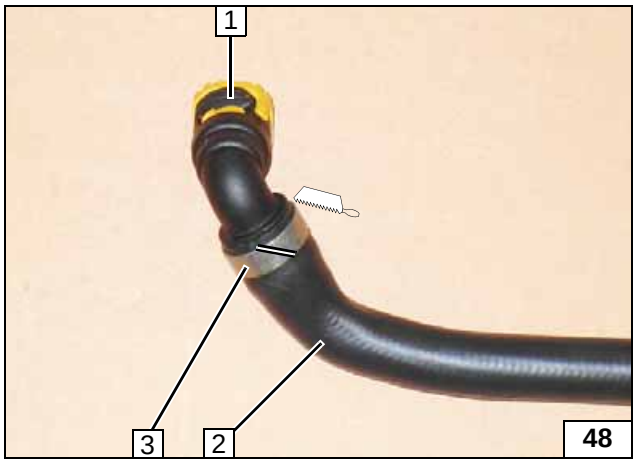


The connection on the heat exchanger depends on the equipment and 2 variants are available.

Variant A

Quick-release coupling **1** (axial) will be reused. Carefully remove clamp **3**, making sure not to damage quick-release coupling. Discard hose section **2**.

Processing hose section



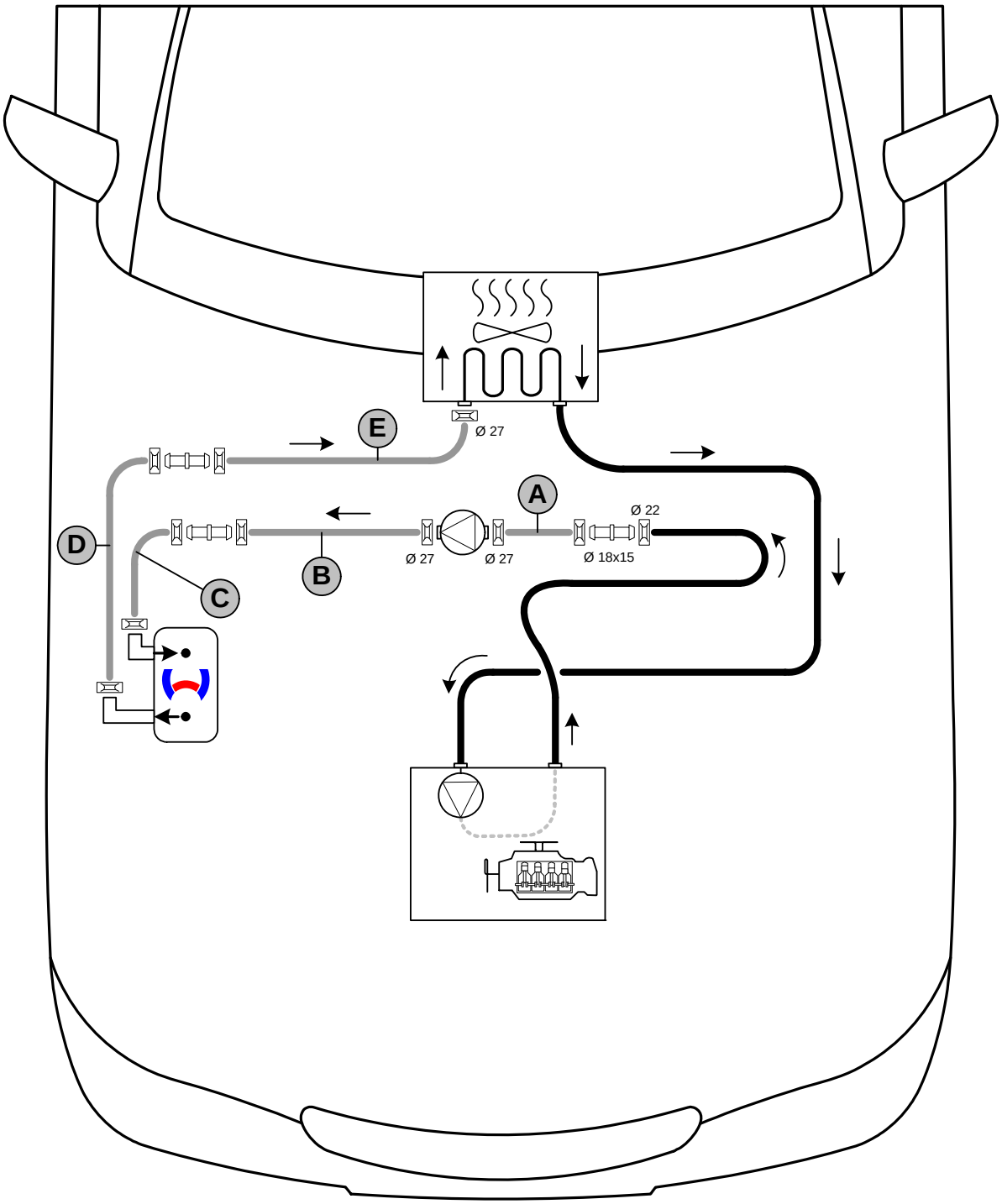
Variant B

Quick-release coupling **1** (90°) will be reused. Carefully remove clamp **3**, making sure not to damage quick-release coupling. Discard hose section **2**.

Processing hose section

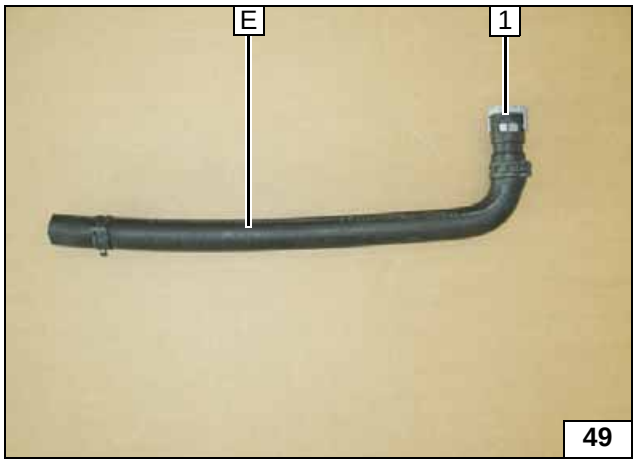
Coolant Circuit Variant A

WARNING!
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged. When installing the hoses, the heater must be filled with coolant.
The connection should be "inline" based on the following diagram:



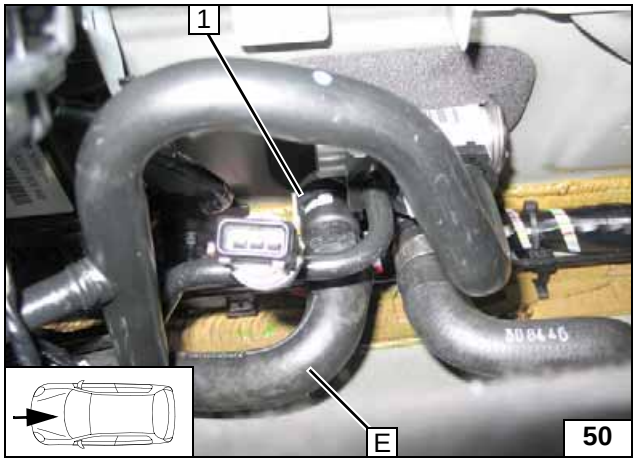
Hose routing diagram

All spring clips without a specific designation = 25 mm dia.
All connecting pipes without a specific designation = 18x18mm dia.



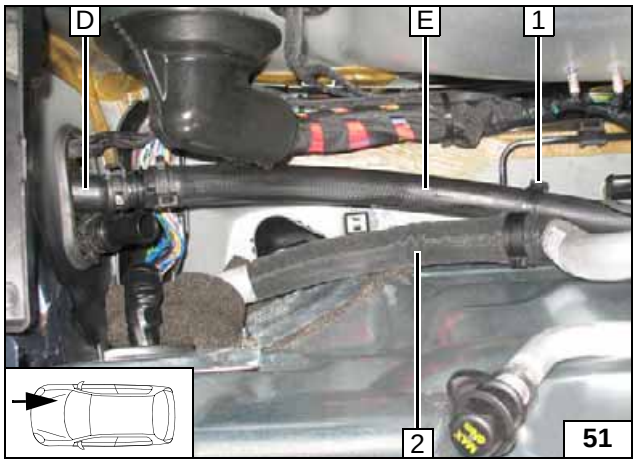
Hose **E** = 18mm dia., 90° moulded hose.
Observe coding of quick-release coupling **1**.

Premounting hose E



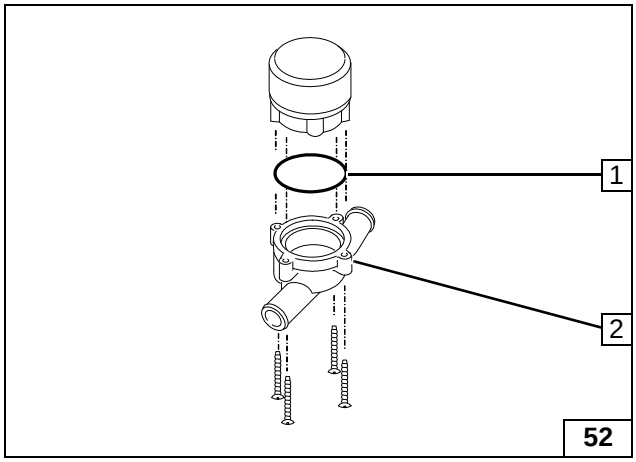
1 Quick-release coupling, heat exchanger inlet

Connecting heat exchanger inlet



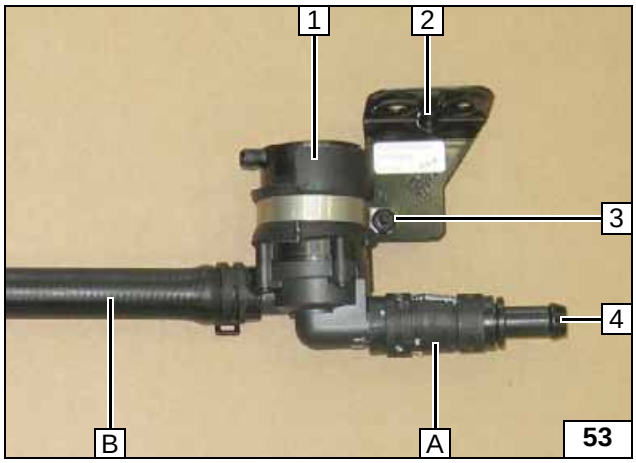
1 20x20 hose bracket
2 A/C line

Connecting heater outlet



Replace cover of circulating pump axially against 193° cover **2** with sealing ring **1**.

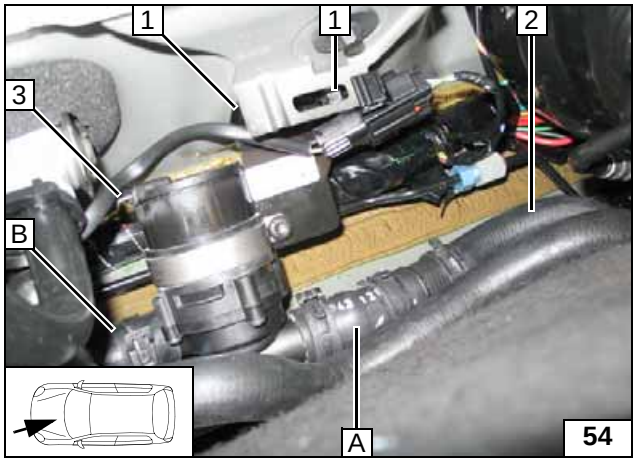
Replacing circulating pump cover



Fasten hose **A** = 18x20mm dia. moulded hose and
Hose **B** = 18mm dia. (430mm long) hose with 27mm dia. spring clip [2x] to circulating pump **1**.

2 Bracket
3 Retaining clip with rubber base, M6x20 pan head screw
4 18x15 connecting pipe, 25mm dia. spring clip

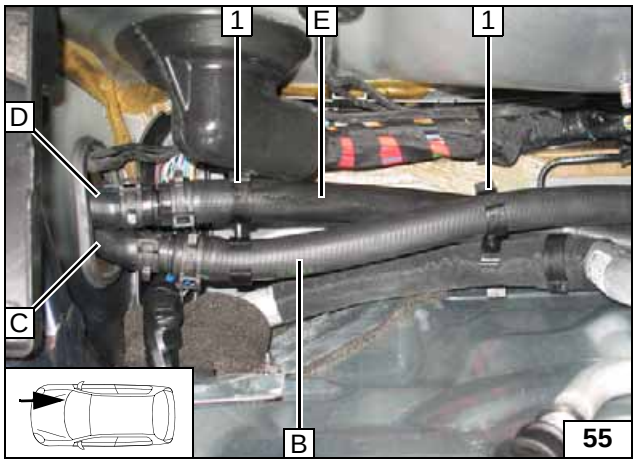
Premounting circulating pump



Install circulating pump on existing stud bolt with plastic nut **1** [2x].

2 Engine outlet hose section
3 Wiring harness of circulating pump mounted

Installing and connecting circulating pump



Align hoses. Ensure sufficient distance to neighbouring components.

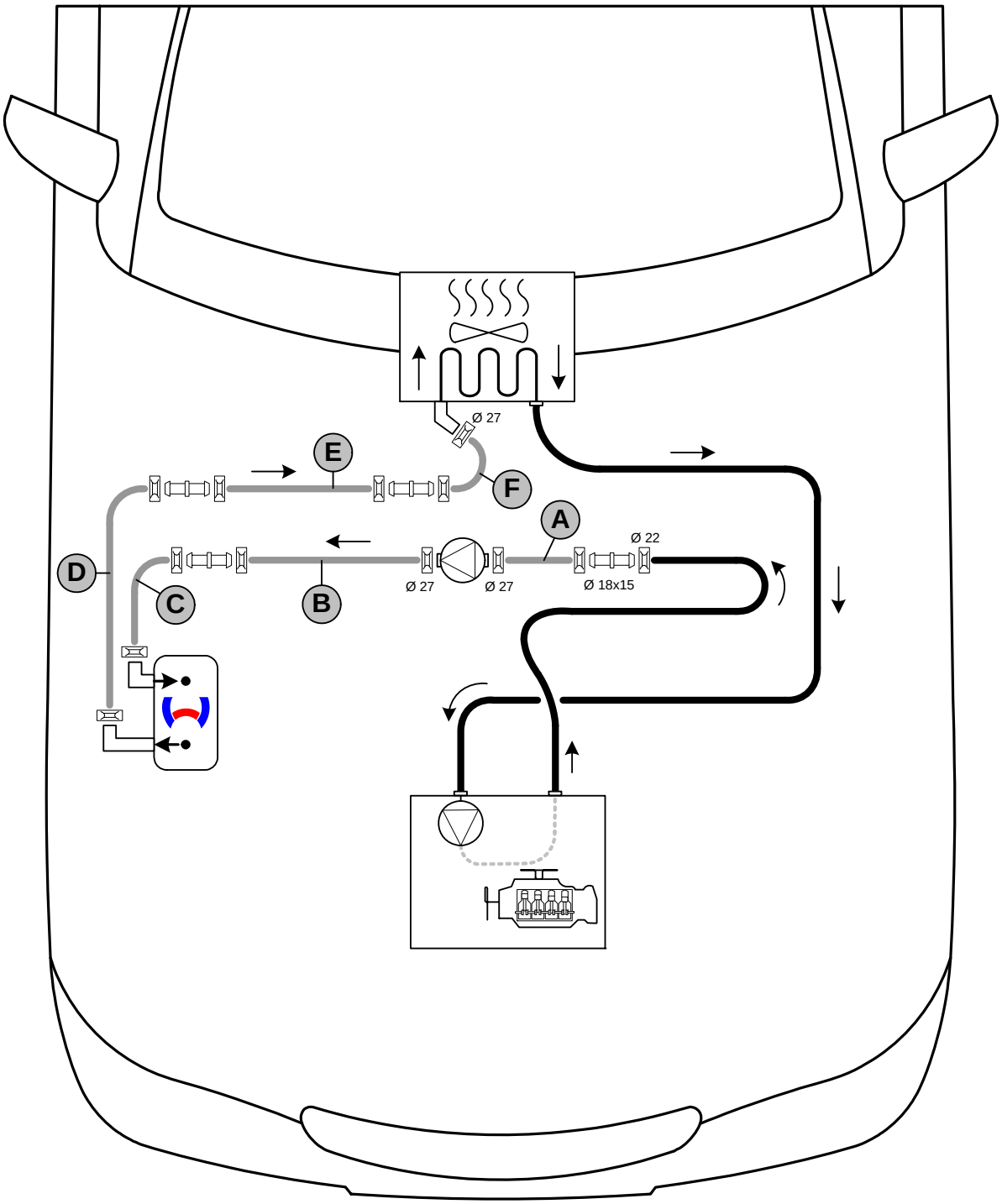
1 20x20 hose bracket [2x]

Connecting heater inlet

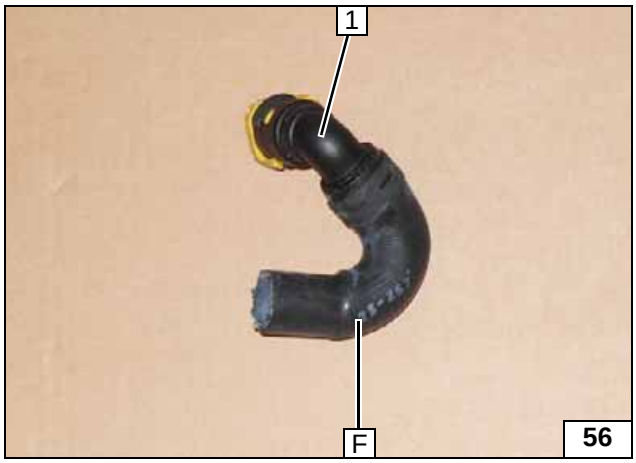
Coolant Circuit Variant B

WARNING!
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged. When installing the hoses, the heater must be filled with coolant.
The connection should be "inline" based on the following diagram:

Hose routing diagram

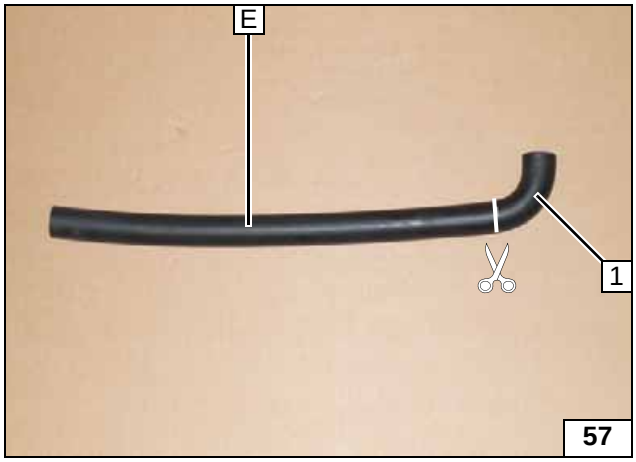


All spring clips without a specific designation = 25 mm dia.
All connecting pipes without a specific designation = 18x18mm dia.



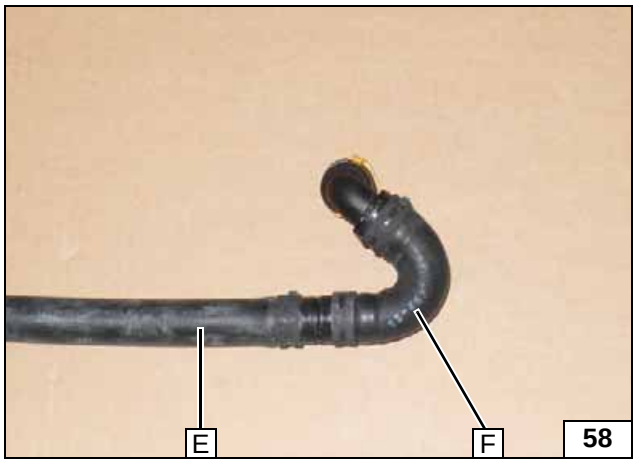
Hose **F** = 135°, 18x20 mm dia. moulded hose.
Observe coding of quick-release coupling **1**.

Premounting hose F

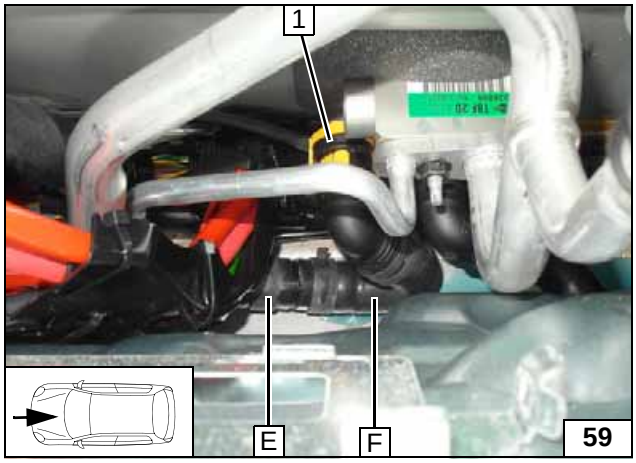


Hose **E** = 90°, 18 mm dia. moulded hose.
Cut off section **1** (90° curve) and discard.

Preparing hose E

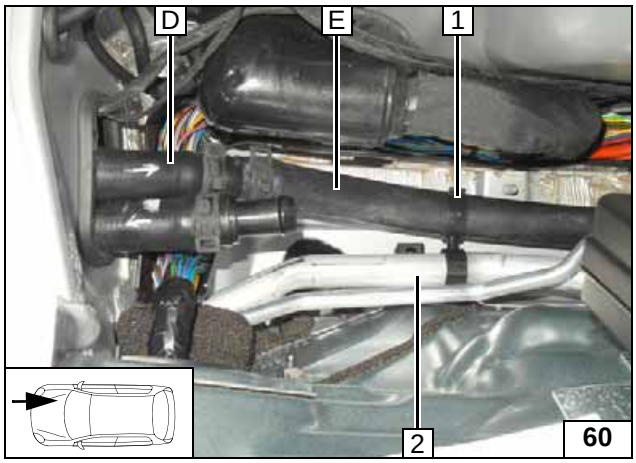


Premounting hose E and F



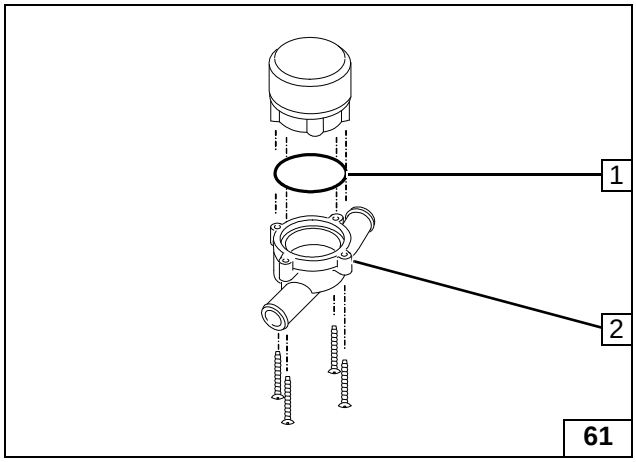
1 Quick-release coupling, heat exchanger inlet

Connecting heat exchanger inlet



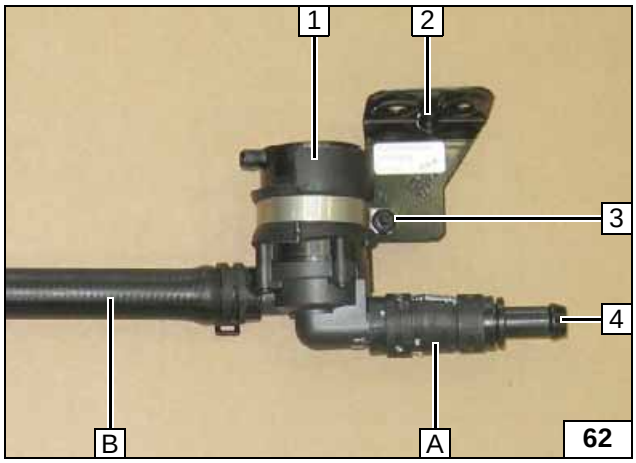
1 20x20 hose bracket
2 A/C line

Connecting heater outlet



Replace cover of circulating pump axially against 193° cover **2** with sealing ring **1**.

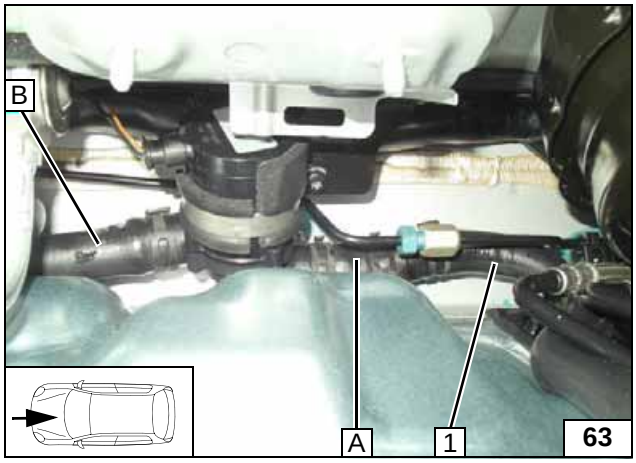
Replacing circulating pump cover



Fasten hose **A** = 18x20mm dia. moulded hose and
Hose **B** = 18mm dia. (430mm long) hose with 27mm dia. spring clip [2x] to circulating pump **1**.

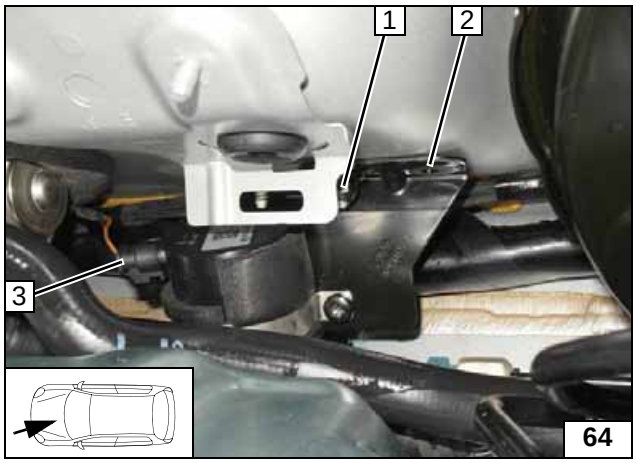
2 Bracket
3 Retaining clip with rubber base, M6x20 pan head screw
4 18x15 connecting pipe, 25mm dia. spring clip

Premounting circulating pump



1 Hose of engine outlet

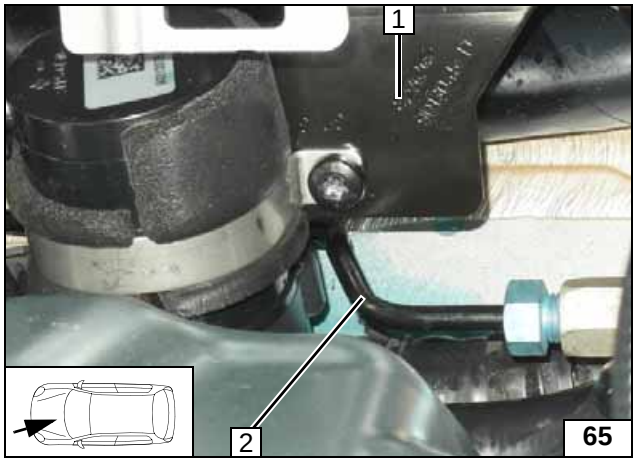
Installing circulating pump



Install circulating pump on existing stud bolt with plastic nut **1**. Hole on bracket **2** is not used.

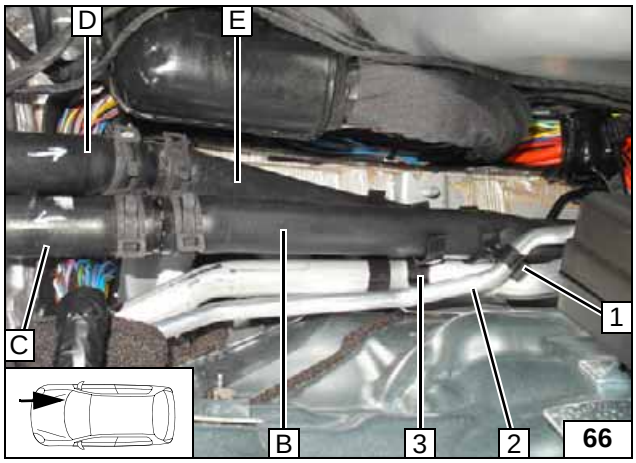
3 Wiring harness of circulating pump mounted

Installing circulating pump



Ensure sufficient distance between brake line **2** and circulating pump bracket **1** , correct if necessary.

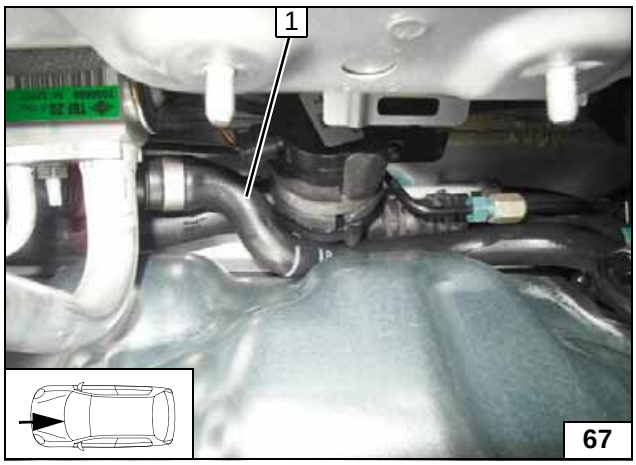
Installing circulating pump



Align hoses. Ensure sufficient distance to neighbouring components.

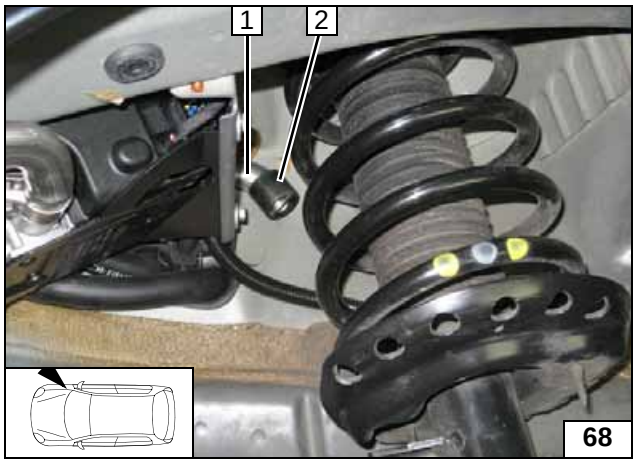
1 10x20 hose bracket
2 A/C line
3 20x20 hose bracket

Connecting heater inlet



Align hose of heat exchanger outlet **1** with circulating pump. Ensure sufficient distance to neighbouring components.

Aligning hose



Combustion Air

Install protective cap **2** on combustion air pipe **1** and align.

Routing combustion air pipe

Fuel

CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the fuel tank cap.

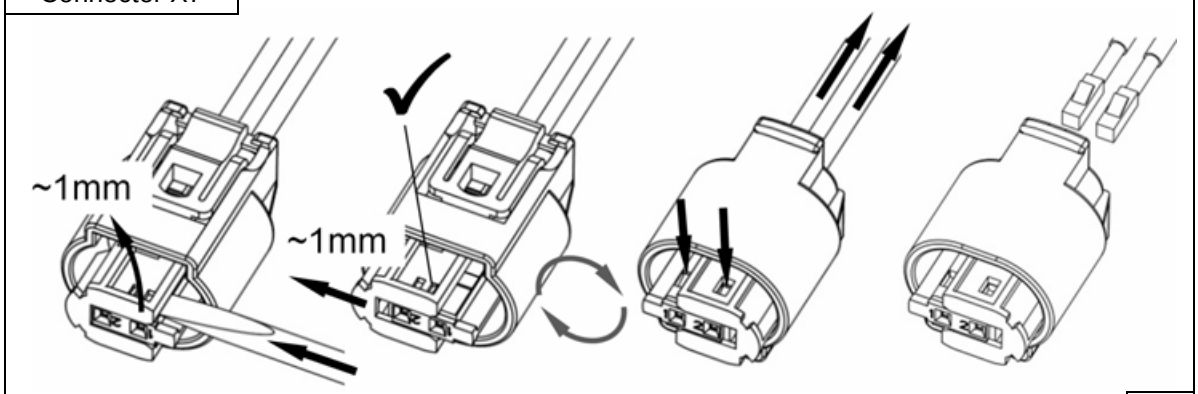
Catch any fuel running off with an appropriate container.

Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

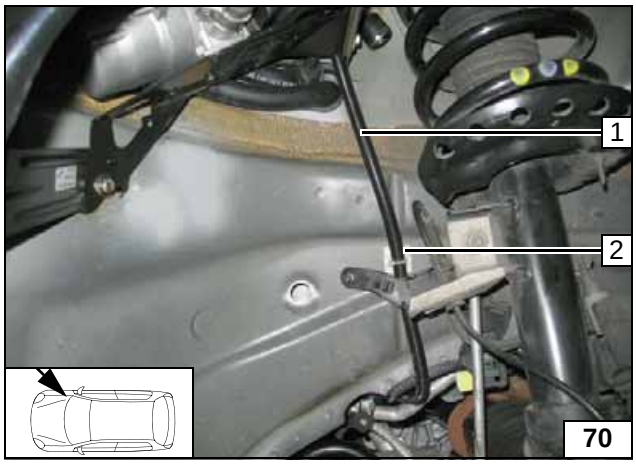
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.

Dismantling metering pump connector

Connector X7



69



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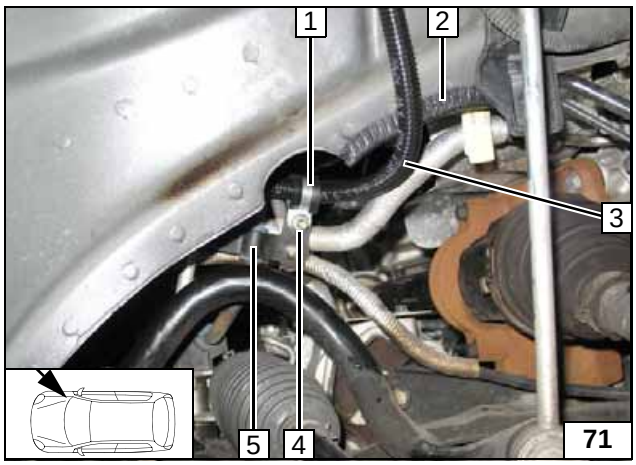
Installing lines

Draw wiring harness of metering pump through 1130mm corrugated tube **1**. Degrease adhesive surface for socket **2**.

1 Fuel line, wiring harness of metering pump in corrugated tube
2 Self-adhesive socket, cable tie



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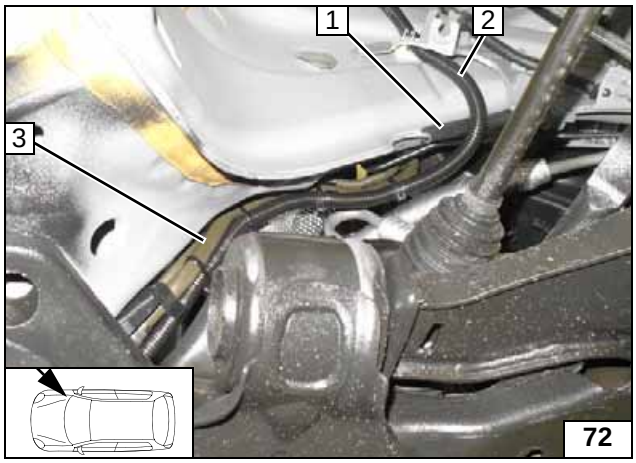
Installing lines

Only on vehicles with bracket in position **5**. If not available, install according to the following diagram.

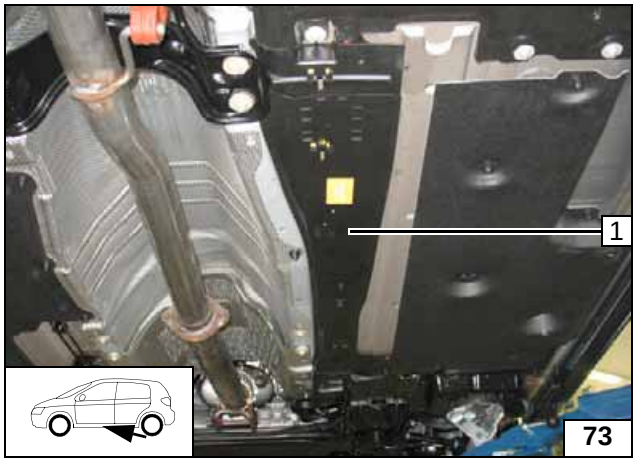
1 15mm dia. rubber-coated p-clamp
2 100mm edge protection
3 Fuel line, wiring harness of metering pump in corrugated tube
4 M6x20 bolt, flanged nut, existing hole



Route fuel line and wiring harness of metering pump in corrugated tube **2** along original vehicle fuel lines **3** and secure using cable ties [4x].

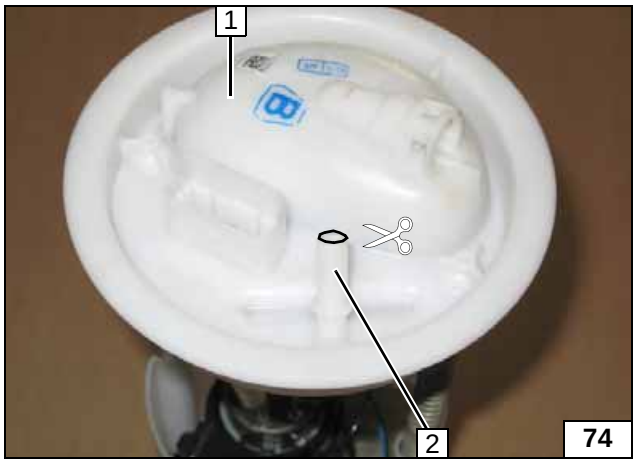
1 100mm edge protection

Installing lines



Route fuel line and wiring harness of metering pump in trim of fuel lines **1**.

Installing lines

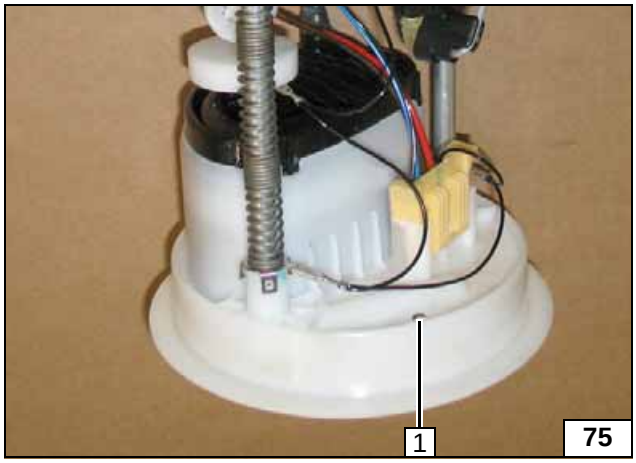


Fuel extraction for petrol engines

Variant 1

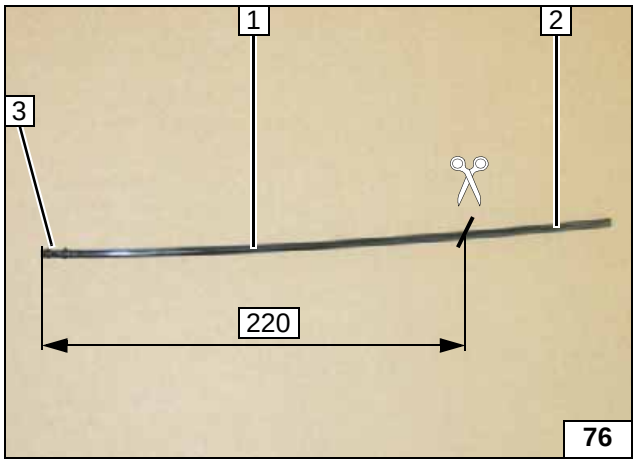
Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



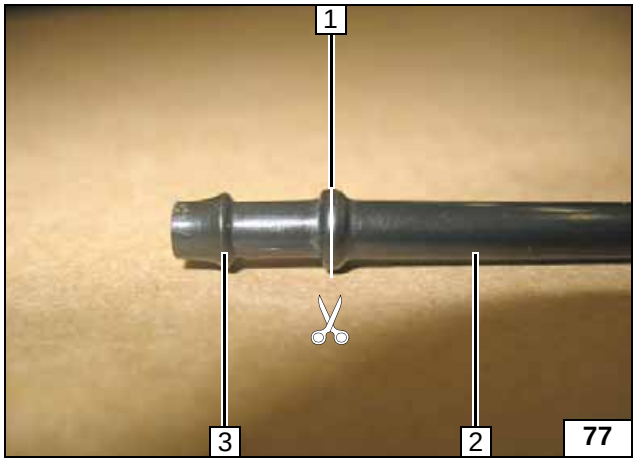
1 Drill 5.1mm dia. hole

Fuel extraction



1 Cut standpipe obliquely to length
2 Discard section
3 Side with bulge

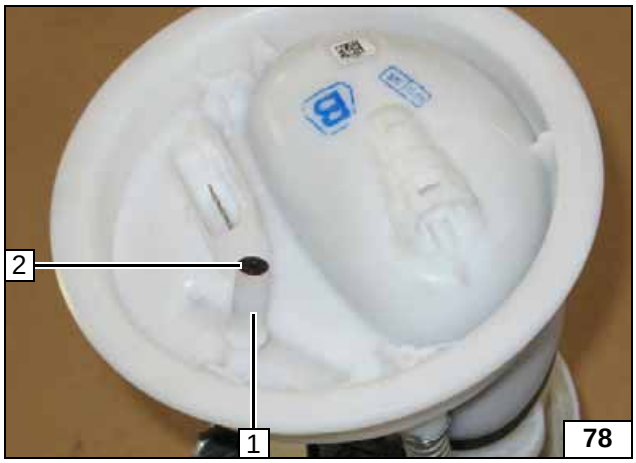
Shortening fuel standpipe



Cut standpipe **2** to length as shown in the middle of the bulge.

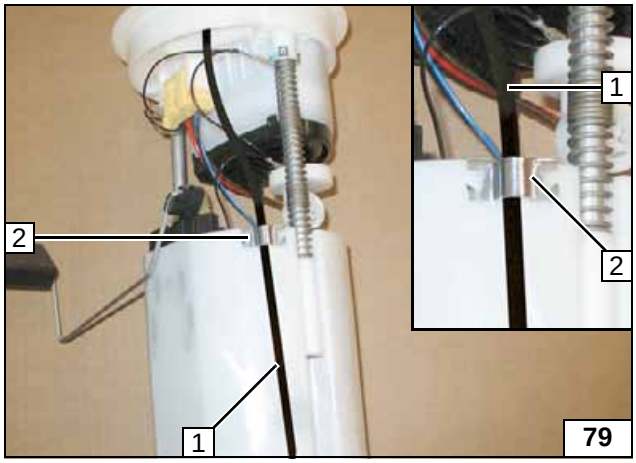
1 Cutting point
3 Discard section

Shortening fuel standpipe



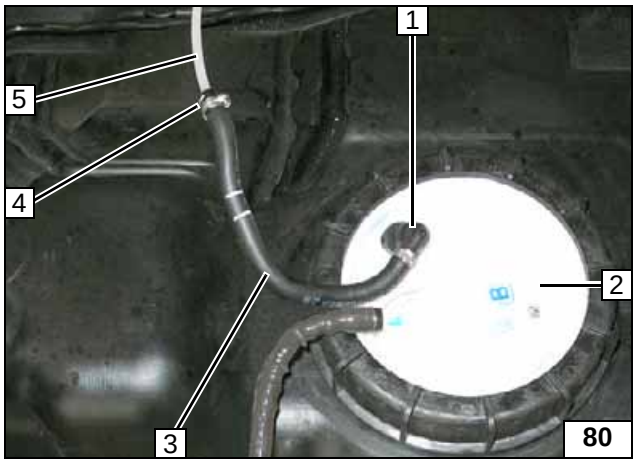
Paste standpipe **2** with suitable contact adhesive in connection piece **1**.

Installing fuel standpipe



1 Standpipe
2 Insert retaining clamp

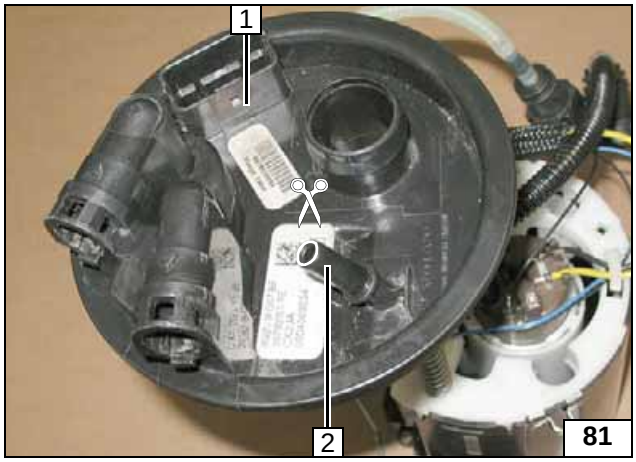
Installing fuel standpipe



Install fuel-tank sending unit **2** in accordance with manufacturer's instructions.
Warning: The presentation of the fuel standpipe refers to an old version of coupling piece **1**. If the new version (separate coupling piece) is contained in the kit, please observe the information provided by the supplied information sheet (see variant 3).
Install coupling piece **1** on connection piece.

3 Moulded hose
4 10mm dia. clamp
5 Fuel line

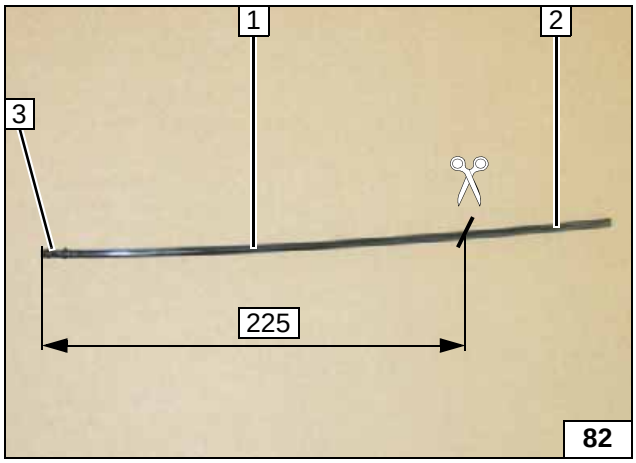
Fuel extraction



Variant 2

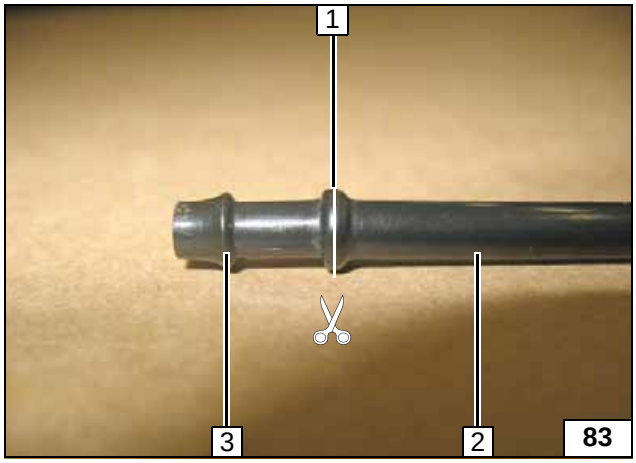
Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



1 Cut standpipe obliquely to length
2 Discard section
3 Side with bulge

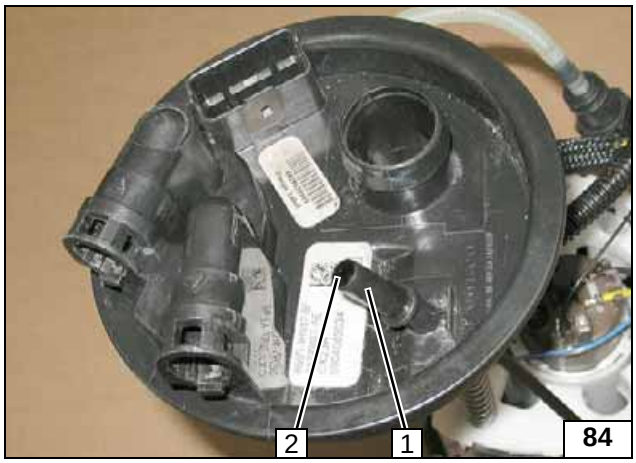
Shortening fuel standpipe



Cut standpipe **2** to length as shown in the middle of the bulge.

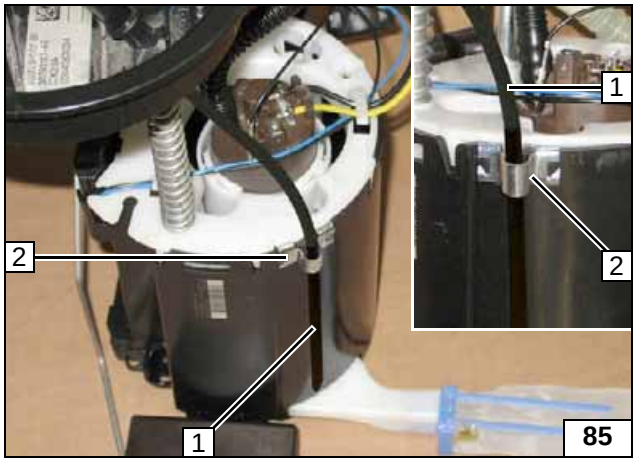
1 Cutting point
3 Discard section

Shortening fuel standpipe



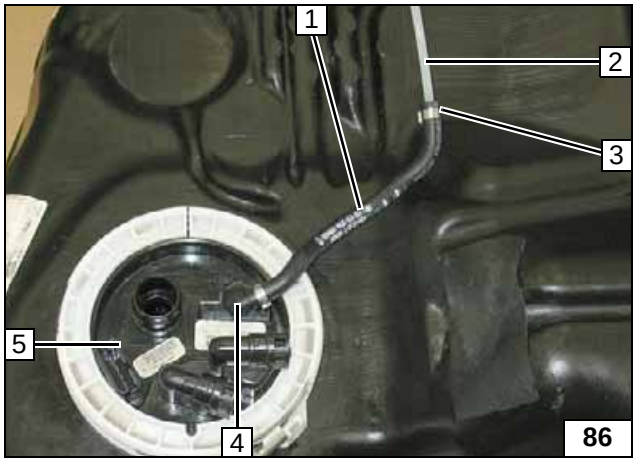
Paste standpipe **2** with suitable contact adhesive in connection piece **1**.

Installing fuel standpipe



1 Standpipe
2 Insert retaining clamp

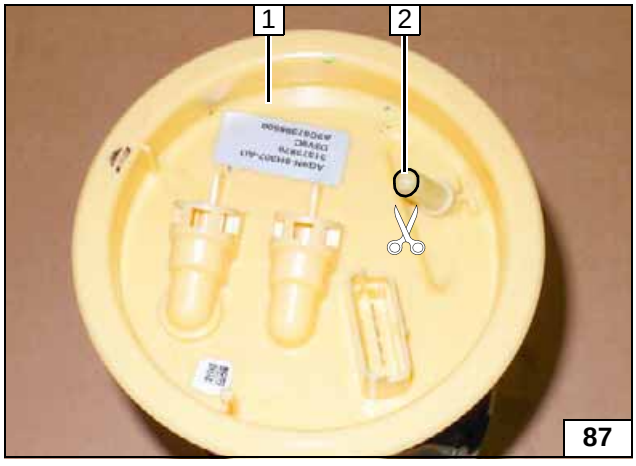
Installing fuel standpipe



Install fuel-tank sending unit **5** in accordance with manufacturer's instructions.
Warning: The presentation of the fuel standpipe refers to an old version of coupling piece **4**. If the new version (separate coupling piece) is contained in the kit, please observe the information provided by the supplied information sheet (see variant 3).
Install coupling piece **4** on connection piece.

1 Moulded hose
2 Fuel line
3 10mm dia. clamp

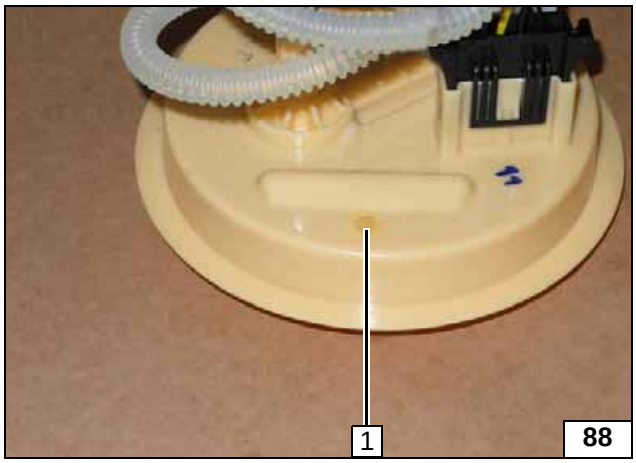
Fuel extraction



Variant 3

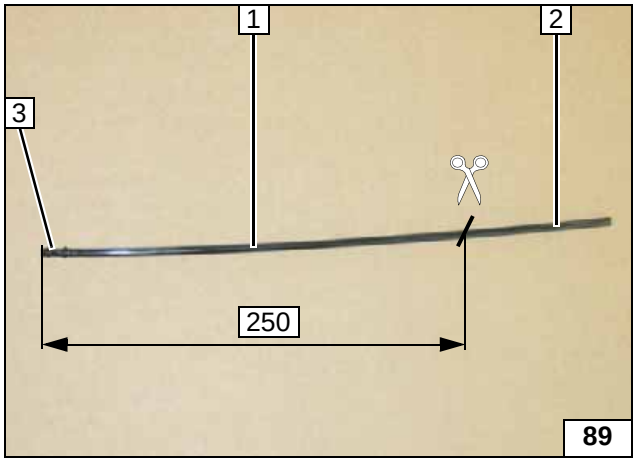
Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



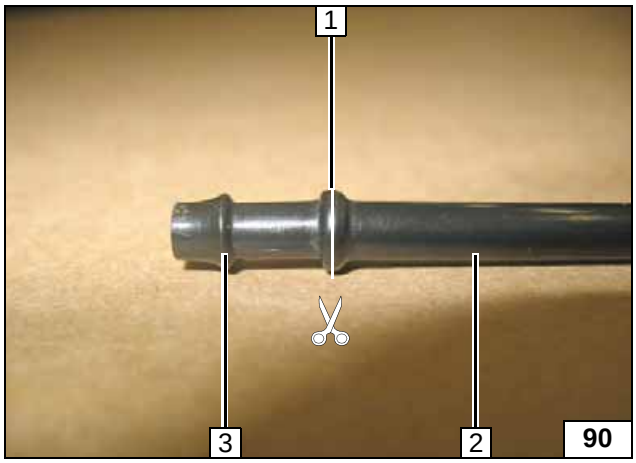
1 Drill 5.1mm dia. hole

Fuel extraction



1 Cut standpipe obliquely to length
2 Discard section
3 Side with bulge

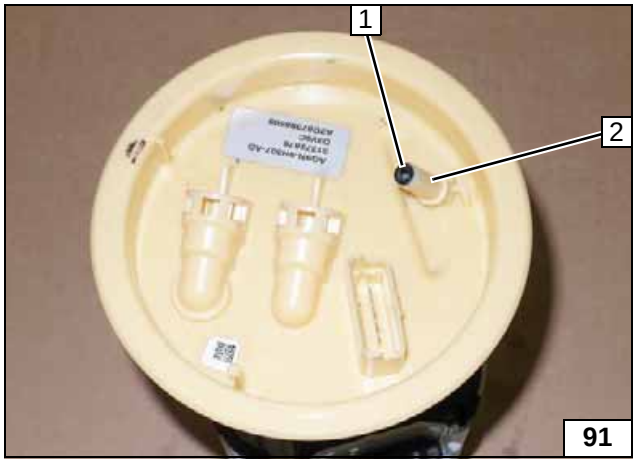
Shortening fuel standpipe



Cut standpipe **2** to length as shown in the middle of the bulge.

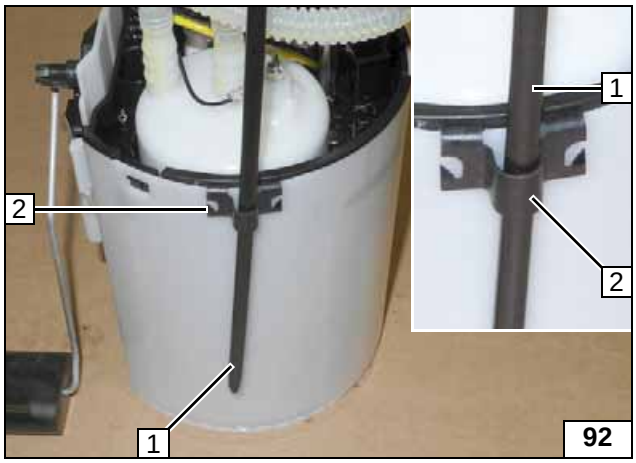
1 Cutting point
3 Discard section

Shortening fuel standpipe



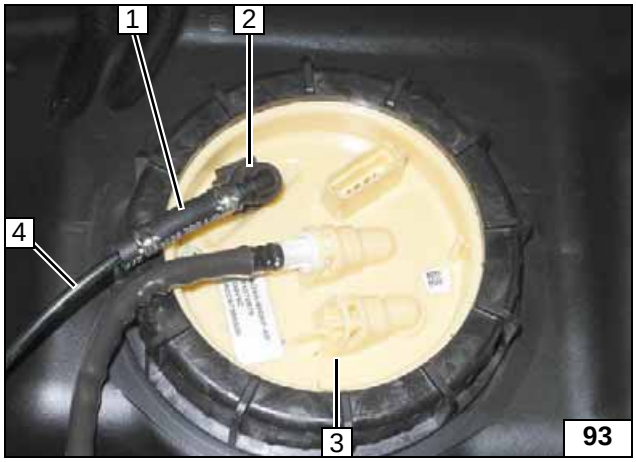
Paste standpipe **1** with suitable contact adhesive in connection piece **2**.

Installing fuel standpipe



1 Standpipe
2 Insert retaining clamp

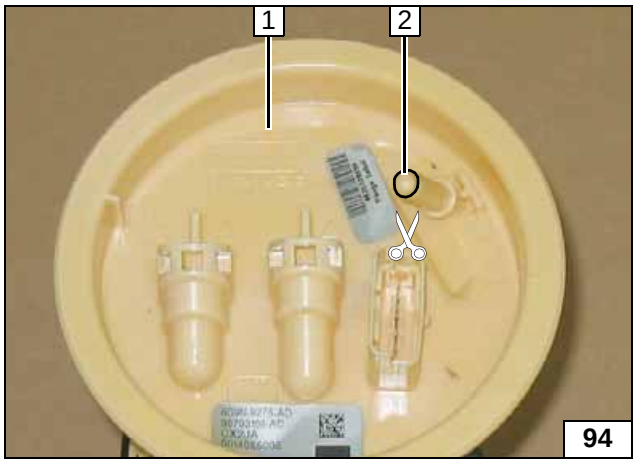
Installing fuel stand-pipe



Install fuel-tank sending unit **3** in accordance with manufacturer's instructions.

1 Hose section, 10 mm dia. clamp [2x]
2 Coupling piece on connection piece
4 Fuel line

Fuel extraction

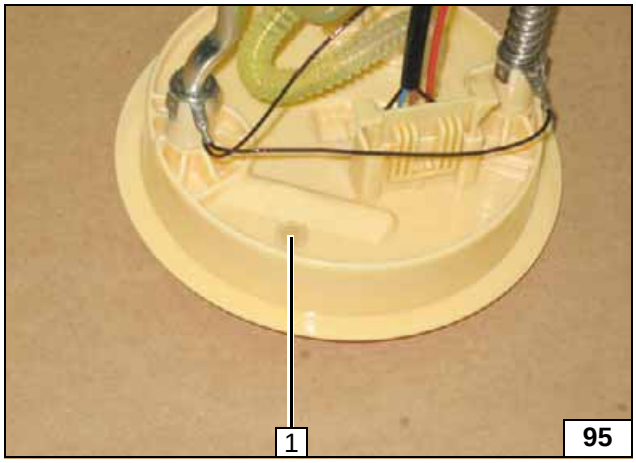


Fuel extraction for diesel engines

Variant 1

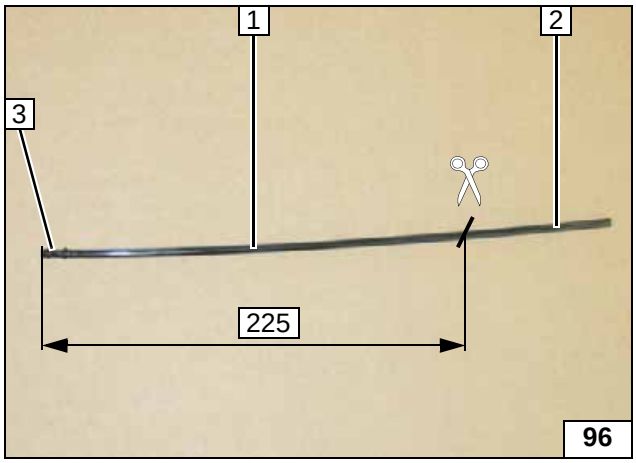
Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



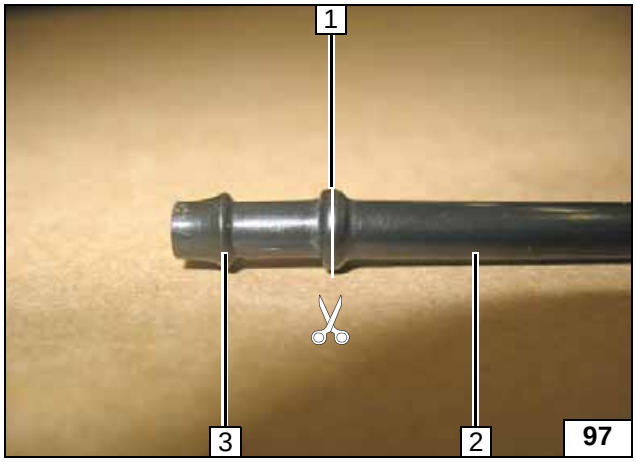
1 Drill 5.1mm dia. hole

Fuel extraction



1 Cut standpipe obliquely to length
2 Discard section
3 Side with bulge

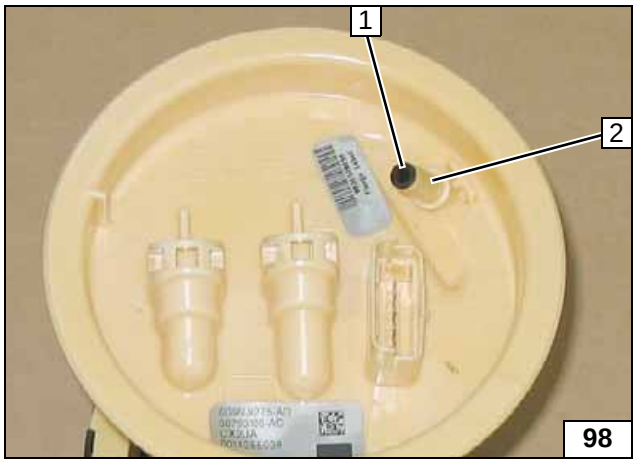
Shortening fuel standpipe



Cut standpipe **2** to length as shown in the middle of the bulge.

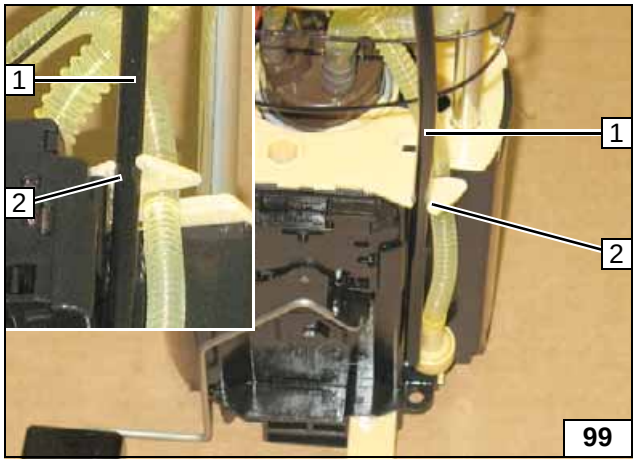
1 Cutting point
3 Discard section

Shortening fuel standpipe



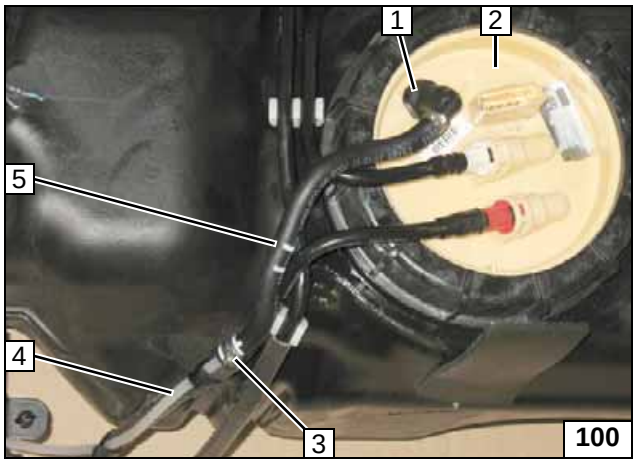
Paste standpipe **1** with suitable contact adhesive in connection piece **2**.

Installing fuel standpipe



Insert standpipe **1** into existing recess **2**.

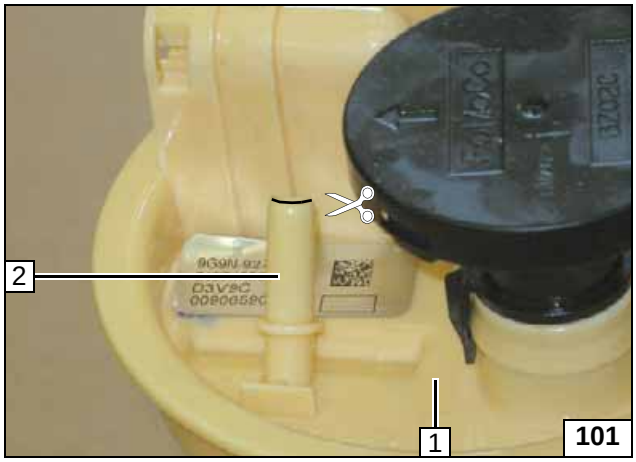
Installing fuel standpipe



Install fuel-tank sending unit **2** in tank in accordance with manufacturer's instructions.
Warning: The presentation of the fuel standpipe refers to an old version of coupling piece **1**. If the new version (separate coupling piece) is contained in the kit, please observe the information provided by the supplied information sheet (see variant 3).
Install coupling piece **1** on connection piece.

Connecting fuel line

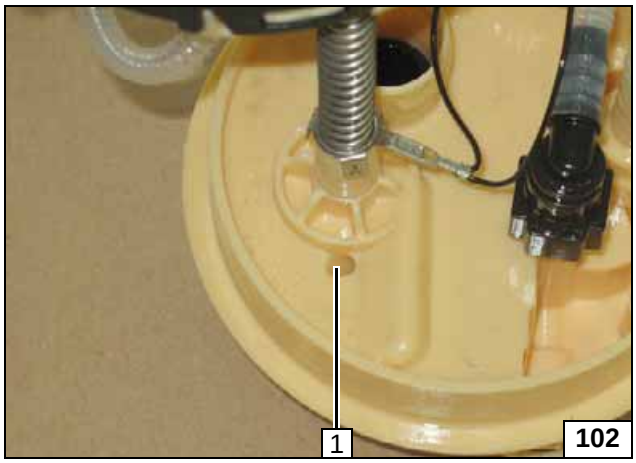
3 10mm dia. clamp
4 Fuel line
5 Moulded hose



Variant 2

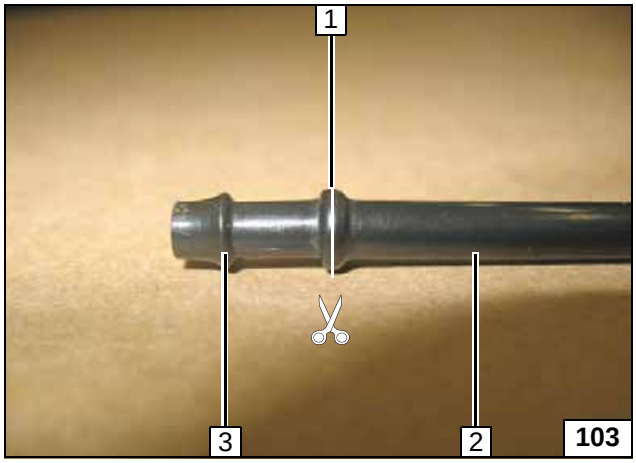
Remove fuel tank according to manufacturer's instructions. Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



1 Drill 5.1mm dia. hole

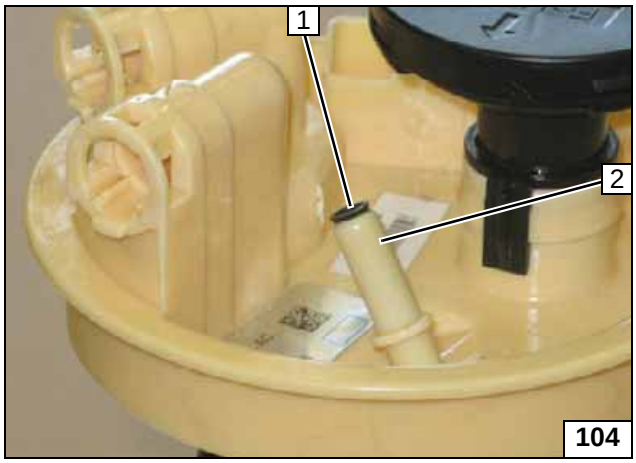
Fuel extraction



Standpipe retains its entire length, cut to length at an angle at the end only (without bulge). Cut standpipe **2** to length as shown in the middle of the bulge.

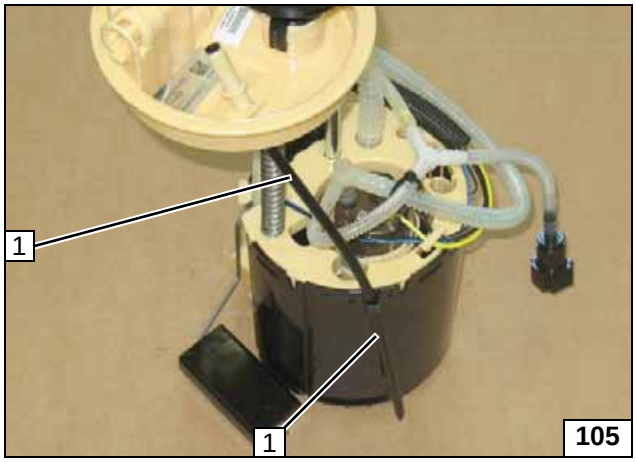
Shortening fuel standpipe

1 Cutting point
3 Discard section



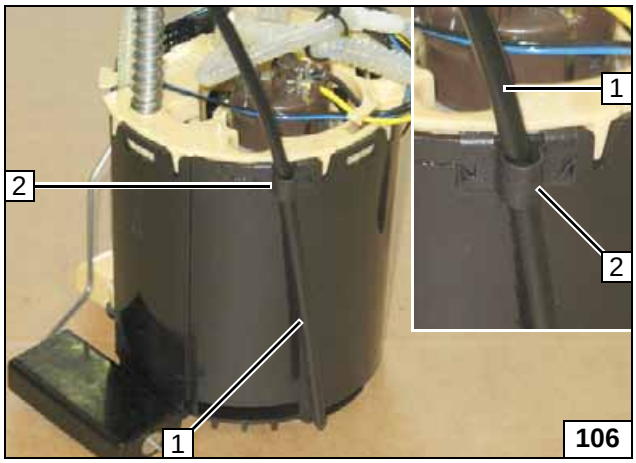
Paste standpipe **1** with suitable contact adhesive in connection piece **2**.

Installing fuel standpipe



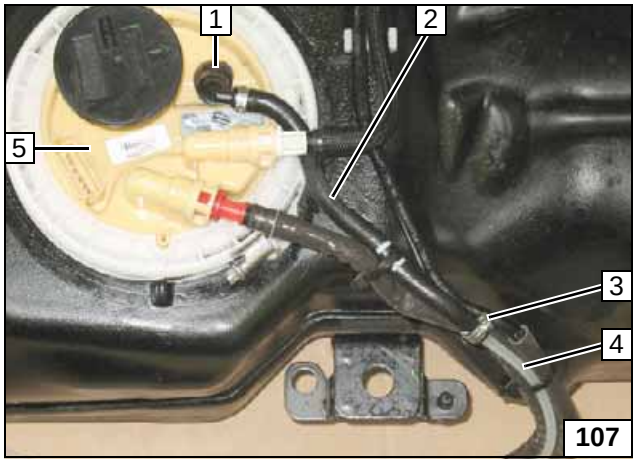
1 Standpipe

Installing fuel standpipe



1 Standpipe
2 Insert retaining clamp

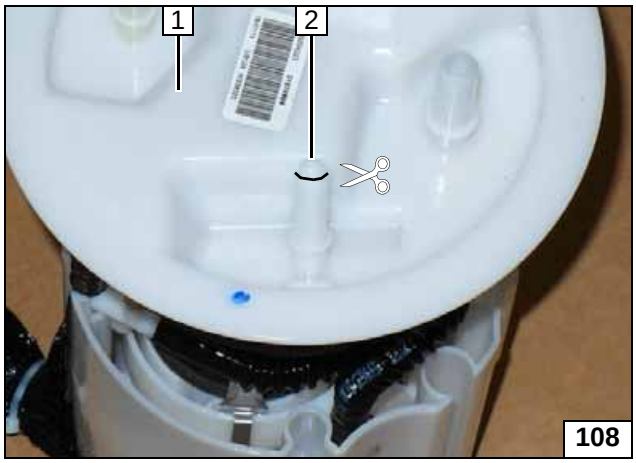
Fixing fuel standpipe



Install fuel-tank sending unit **5** in accordance with manufacturer's instructions.
Warning: The presentation of the fuel standpipe refers to an old version of coupling piece **1**. If the new version (separate coupling piece) is contained in the kit, please observe the information provided by the supplied information sheet (see variant 3).
Install coupling piece **1** on connection piece.

2 Moulded hose
3 10mm dia. clamp
4 Fuel line

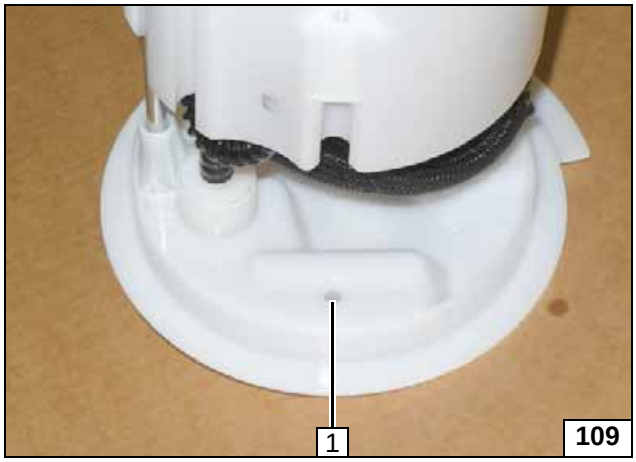
Fuel extraction



Variant 3

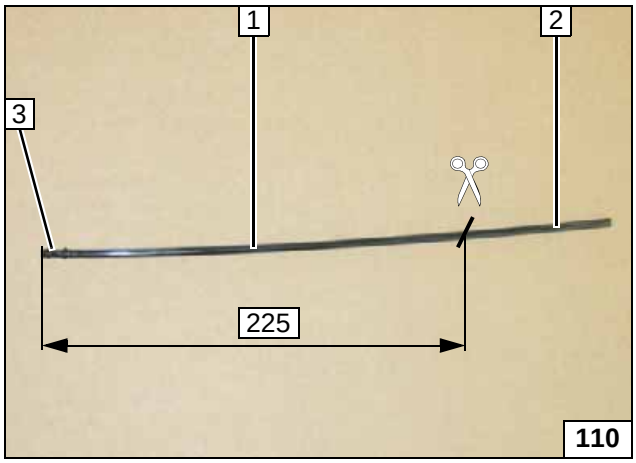
Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut off 5mm at end of connection piece **2** and countersink slightly.

Fuel extraction



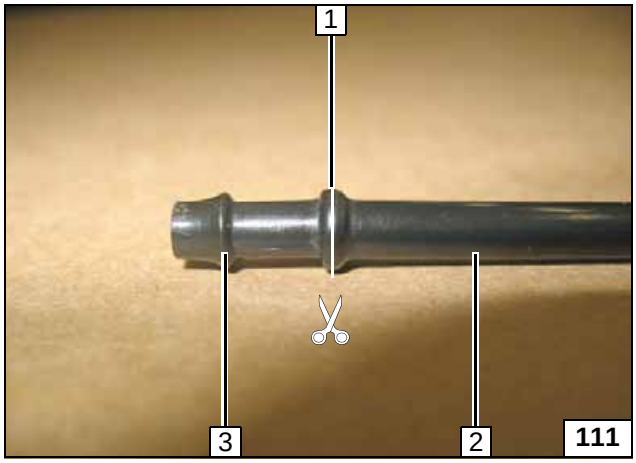
1 Drill 5.1mm dia. hole

Fuel extraction



1 Cut standpipe obliquely to length
2 Discard section
3 Side with bulge

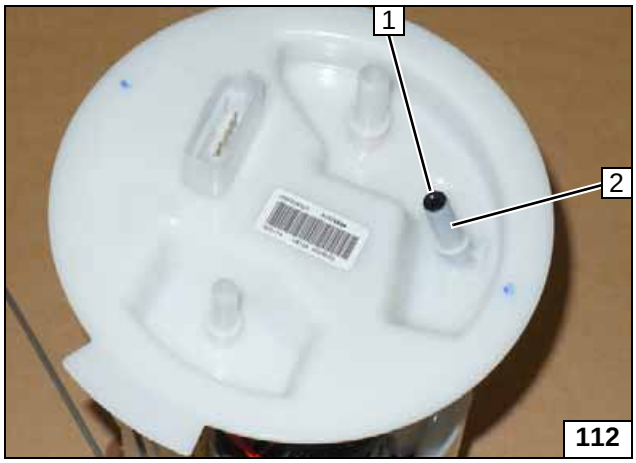
Shortening fuel standpipe



Cut standpipe **2** to length as shown in the middle of the bulge.

1 Cutting point
3 Discard section

Shortening fuel standpipe

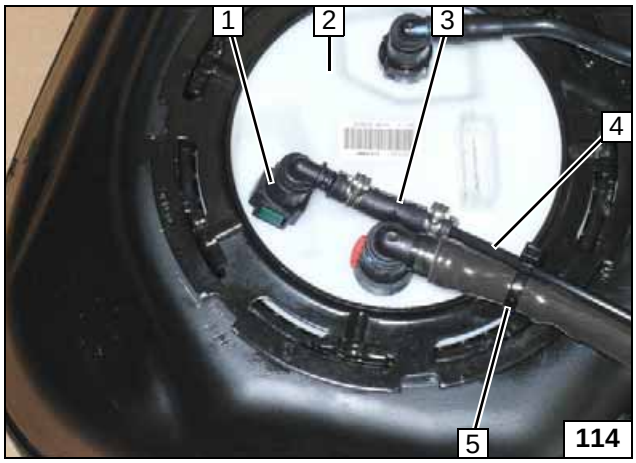


Paste standpipe **1** with suitable contact adhesive in connection piece **2**.

Installing fuel standpipe

1 Standpipe
2 Pass through

Installing fuel standpipe



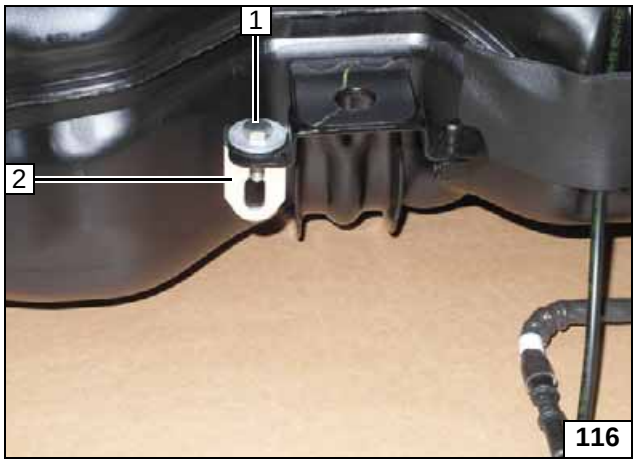
Install fuel-tank sending unit **2** in accordance with manufacturer's instructions.

1 Coupling piece on connection piece
3 Hose section, 10 mm dia. clamp [2x]
4 Fuel line
5 Cable tie

Fuel extraction

Attach fuel line **2** using cable tie **1** to original vehicle fuel line.

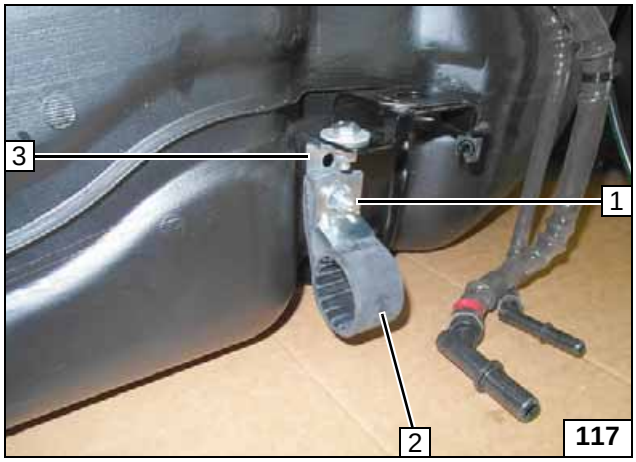
Fuel extraction



All vehicles

1 M6x20 bolt, large diameter washer, flanged nut, existing hole
2 Angle bracket

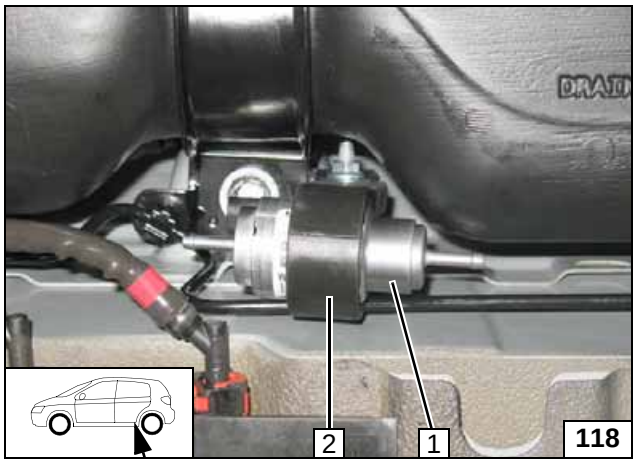
Installing angle bracket



After installation, install fuel tank according to manufacturer's instructions.

1 M6x20 bolt, support angle bracket, flanged nut
2 Metering pump support
3 Angle bracket

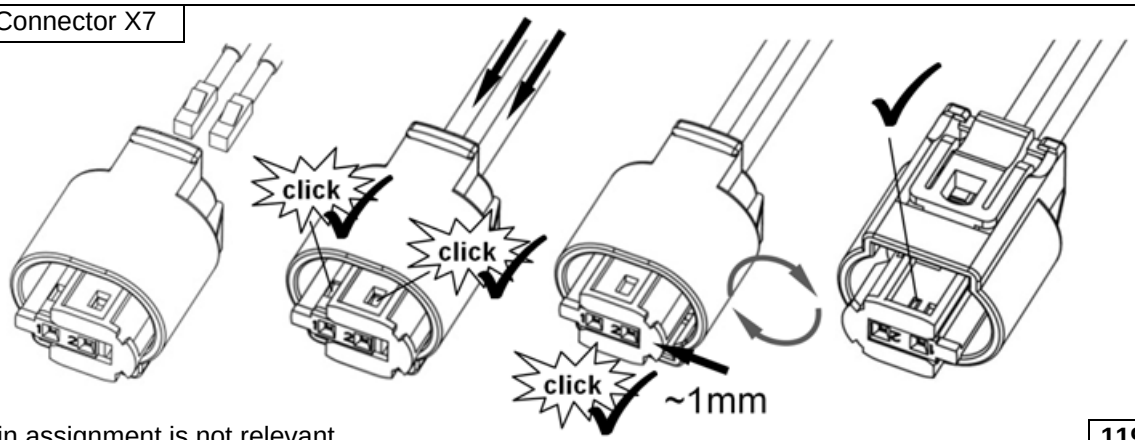
Installing metering pump mount



1 Metering pump
2 Metering pump support

Installing metering pump

Connector X7



Pin assignment is not relevant.

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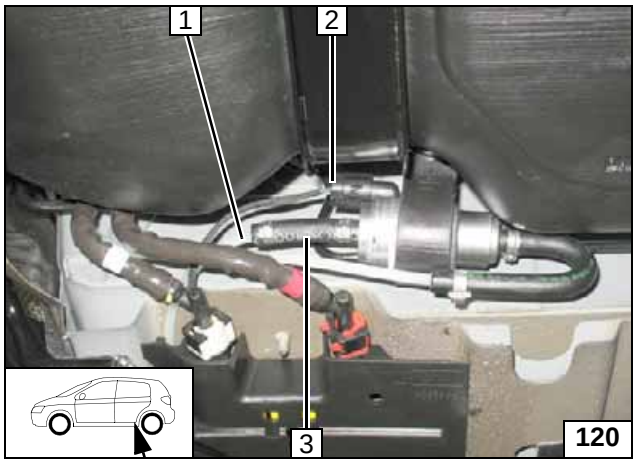
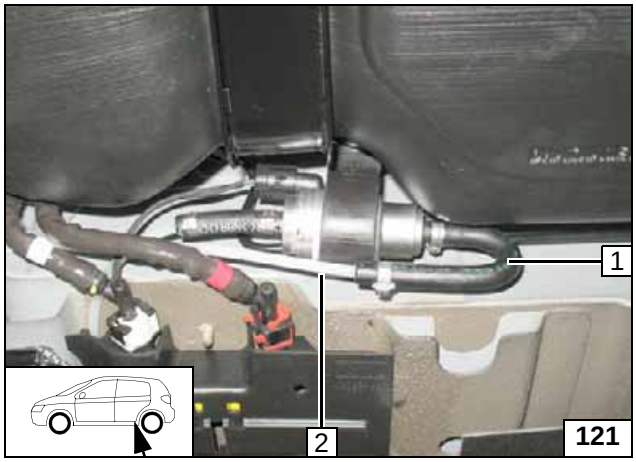
Completing metering pump connector



1 Fuel line of Heater
2 Wiring harness of metering pump, connector X7 mounted
3 Hose section, 10 mm dia. clamp [2x]

Connection of metering pump



Check the position of the components; correct if necessary. Check that they have freedom of movement.

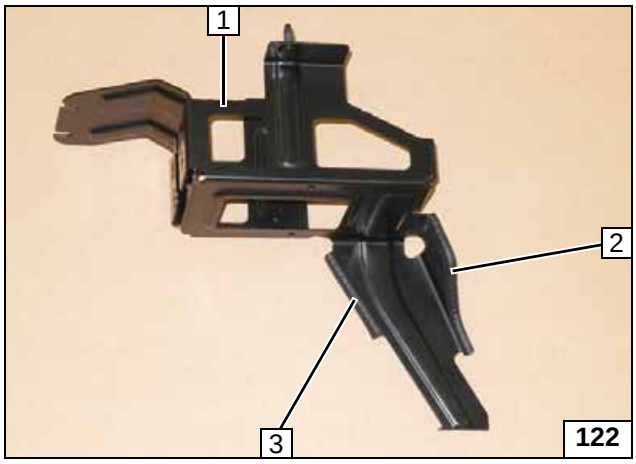
1 180° moulded hose, 10 mm dia. clamp [2x]
2 Fuel line of fuel standpipe

Connection of metering pump

Final Work

WARNING!
Reassemble the disassembled components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires.
Only use manufacturer-approved coolant. Spray heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

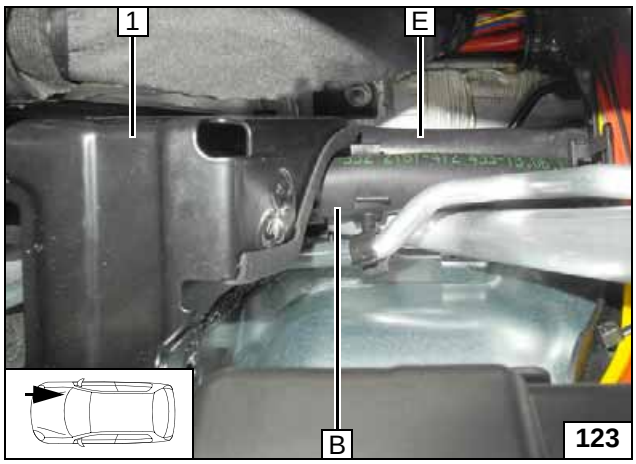
- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's instructions.**
- **Adjust digital timer, teach remote Telestart transmitter.**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer"**
- **Place caution label "Switch off parking heater before refuelling" in the area of the filler neck.**
- **For initial start-up and function check, see installation instructions**



Only on vehicles with start-stop additional battery. Cut edge protection profile to length.

1 Additional battery bracket
2 90 mm edge protection
3 60 mm edge protection

Preparing bracket



Install additional battery bracket **1**. Align hoses.

Installing bracket

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

Webasto
Feel the Drive

Operating Instructions for End Customer

On vehicles with a large battery!

Please remove page and add to the vehicle operating instructions.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

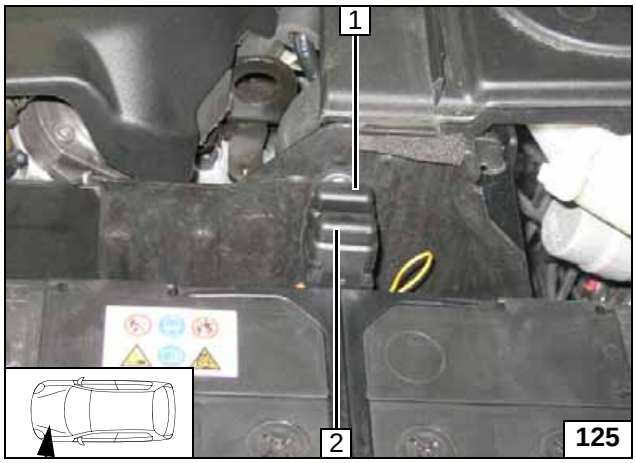
If vehicles have passenger compartment monitoring, this must be deactivated in addition to vehicle settings for the heating operation.
Deactivation instructions can be found in the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

A/C control panel

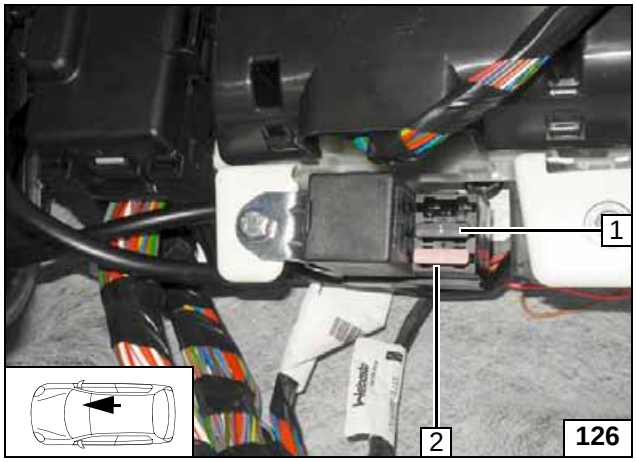
1 Air outlet faces upward
2 Set temperature on both sides to "HI"

Engine compartment fuses



1 30A main fuse F2 of passenger compartment
2 20A heater fuse F1

Passenger compartment fuses



1 1A fuse F3 of heater control
2 3A fan fuse F4

Operating Instructions for End Customer

On vehicles with a small battery!

Please remove page and add to the vehicle operating instructions.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

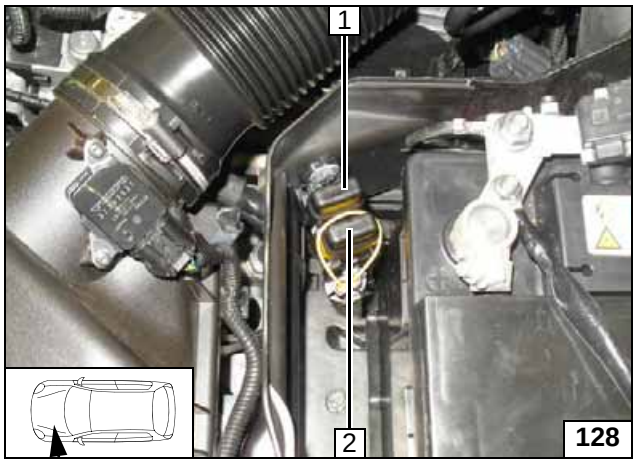
If vehicles have passenger compartment monitoring, this must be deactivated in addition to vehicle settings for the heating operation.
Deactivation instructions can be found in the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

A/C control panel

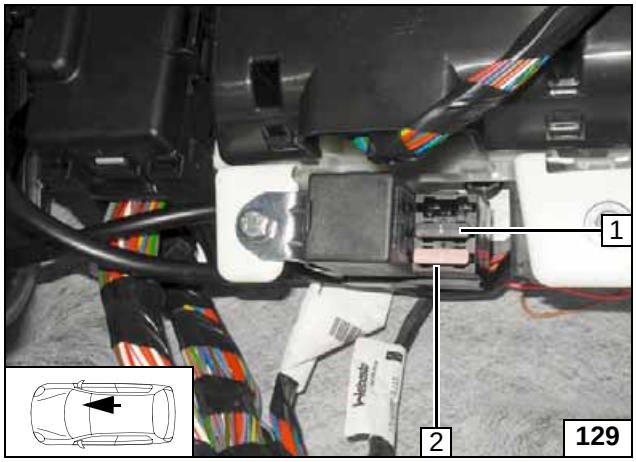
1 Air outlet faces upward
2 Set temperature on both sides to "HI"

Engine compartment fuses



1 30A main fuse F2 of passenger compartment
2 20A heater fuse F1

Passenger compartment fuses



1 1A fuse F3 of heater control
2 3A fan fuse F4