

Water Heater

Thermo Top Evo Parking Heater



Installation Documentation Subaru Forester



Validity

Manufacturer	Model	Type	EG BE No. / ABE
Subaru	Forester	SJ	e13 * 2007 / 46 * 1305 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm ³	Engine code
2.0	Petrol	6-speed SG	110	1995	FB20
2.0	Petrol	CVT	110	1995	FB20
2.0	Petrol	CVT	177	1998	FA20
2.0	Diesel	6-speed SG	108	1998	EE20
2.0	Diesel	CVT	108	1998	EE20

SG = manual transmission

CVT = Lineartronic transmission

Petrol vehicles from model year 2013

Diesel vehicles from model year 2015

Left-hand drive vehicle

Verified equipment variants: 1 and 2 zone automatic air-conditioning

Front fog lights

keyless access

4WD

Headlight washer system with / without Xenon

Rear level regulation

LED daytime running lights

Standard / sport bumper

Euro 5 Emission Standard (petrol)

Euro 6 Emission Standard (petrol / diesel)

Automatic Stop & Go system (petrol only)

Total installation time: approx. 9 hours (petrol)
approx. 8 hours (diesel)

Subaru Forester

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Necessary Components

- Basic delivery scope of Thermo Top Evo based on price list
Subaru petrol vehicle part number: **1165**
Subaru diesel part number: **1166**
- Installation kit for Subaru Forester 2013 Petrol / 2015 diesel: **1320607B**
Subaru Kit number: **1165-06**
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

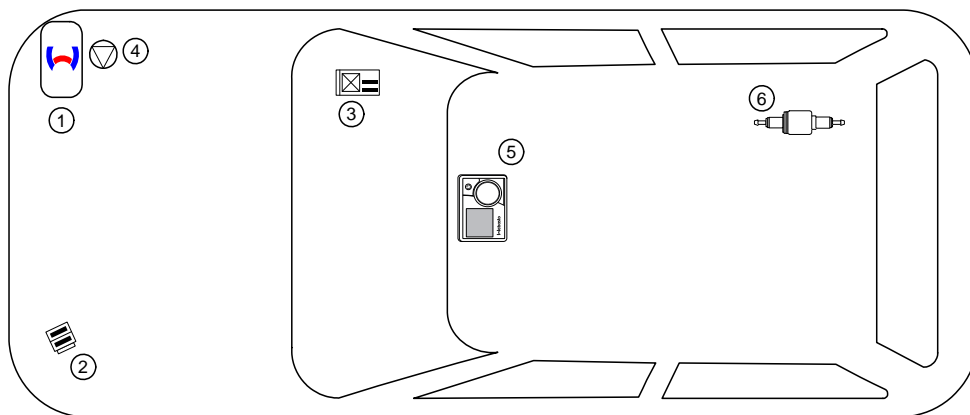
Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about ¼ full.
- The installation location of the push button in case of Telestart or ThermoCall should be confirmed with the end customer.
- Depending on the space required and the vehicle manufacturer's instructions, we recommend the use of a vehicle battery with a higher electrical capacity.

Installation Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Passenger compartment relay and fuse holder
4. Circulating pump
5. MultiControl CAR
6. Metering pump



Information on Total Installation Time

The total installation time includes the time needed for mounting and demounting 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 228).

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 a programmable control module (e.g. a PWM Gateway), the corresponding settings must be checked or adjusted.

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

The heater is licensed in accordance with paragraph 19, section 3, No. 2b of the StVZO (German Road Traffic Licensing Authority).

2.1 Excerpt from ECE regulation 122 (heating system) paragraph 5 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 gas outlet must be located so as to prevent emissions from entering the vehicle through ventilators, heated air intakes 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.

Subaru Forester

Information on Validity

This installation documentation applies to Subaru Forester Petrol and diesel vehicles - for validity, see page 1 - from model year 2013 (petrol) and 2015 (diesel) 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 Information

Special Tools

- Hose clamp pliers for auto-tightening 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
- Deep-hole marker
- Webasto Thermo Test Diagnosis with current software

Dimensions

- All dimensions are in mm.

Tightening torque values

- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque value of 5x15 water connection piece retaining plate bolt = 7Nm.
- Tighten other bolt 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.

Special features are highlighted using the following symbols:

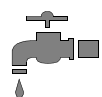
Mechanical System



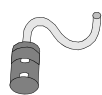
Electrical System



Coolant Circuit



Combustion Air



Fuel



Exhaust Gas



Software



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



Specific risk of fire and explosion.



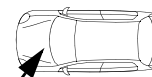
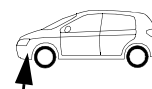
Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents.



Reference to a special technical feature.



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



Subaru Forester

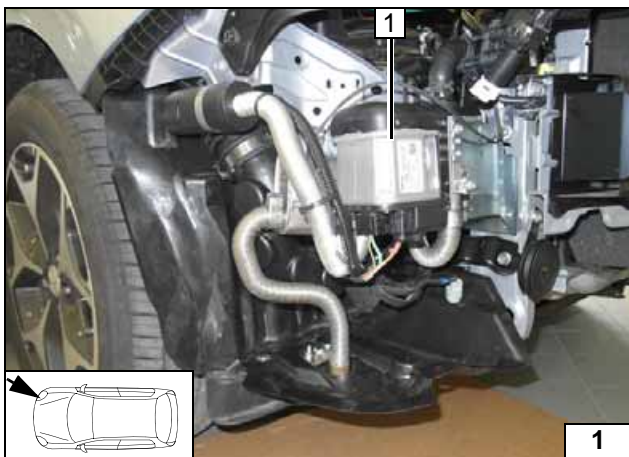
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery.
- Remove the air intake pipe (only for 110 kW petrol vehicle).
- Remove plenum and intercooler (108 kW diesel and 177 kW petrol only).
- Remove the bumper.
- Remove the front underride protection (metal) (petrol vehicles only).
- Drain and collect the engine coolant.
- Remove the right fuel tank underride protection.
- Remove the right front and rear door sill trims.
- Remove the rear bench seat.
- Completely remove the glove box.
- Remove the A/C control panel in accordance with the manufacturer's instructions.
- Open the right-hand tank-fitting service lid.
- Remove the fuel tank sending unit in accordance with the manufacturer's instructions.

Heater

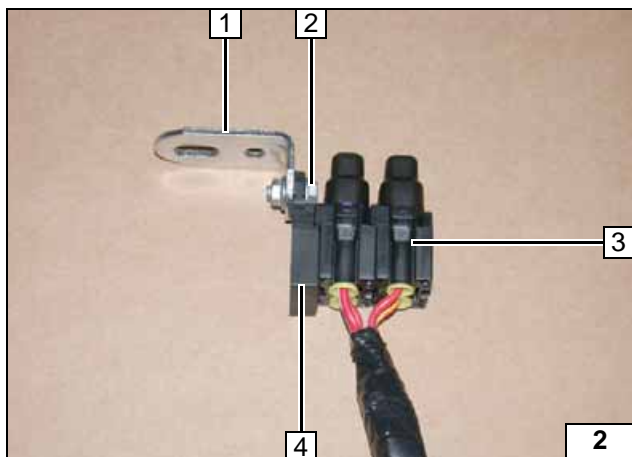
- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) visibly in the appropriate place in the engine compartment.



Heater Installation Location

1 Heater

Installation
location



Preparing Electrical System

Wire sections retain their numbering in the entire document.

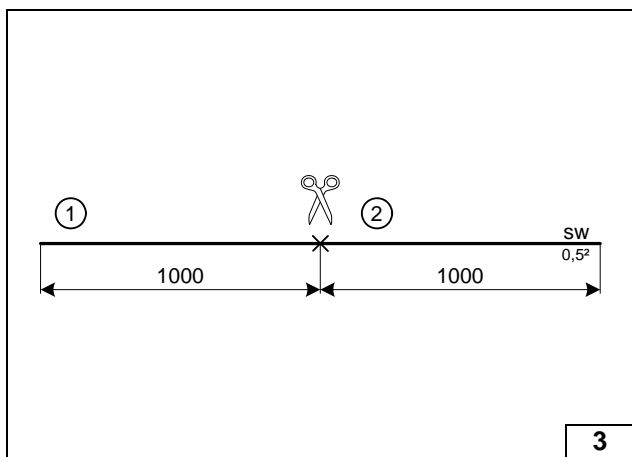
Produce all following electrical connections as shown in the wiring diagram.

Engine compartment fuse holder

- 1 Angle bracket
- 2 M5x16 bolt, washer [2x], nut
- 3 Fuses F1 - 2
- 4 Retaining plate of fuse holder



Preparing engine compartment fuse holder

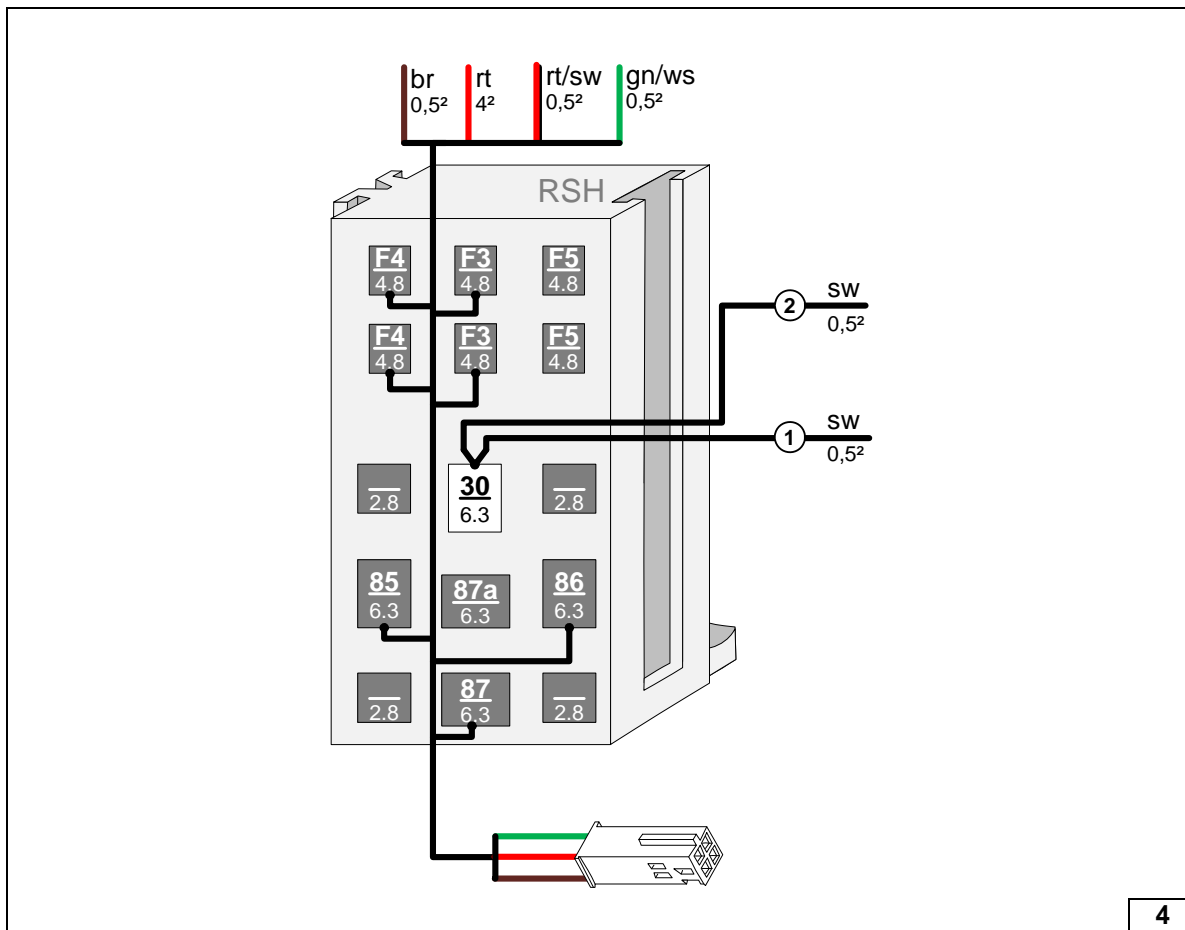


Passenger compartment relay and fuse holder

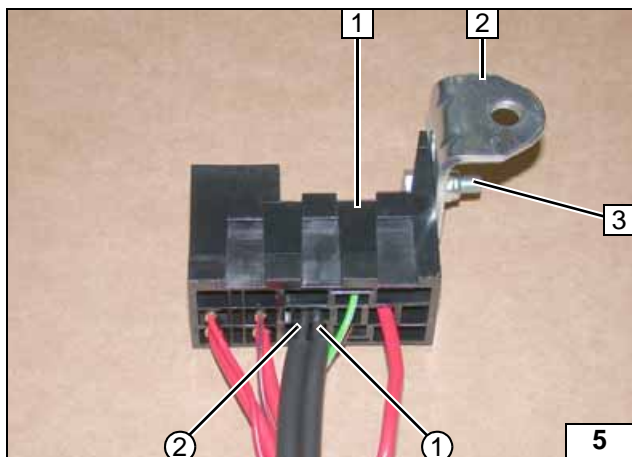
Pull wire section 1 and 2 into one protective sleeving each.



Cutting wire to length

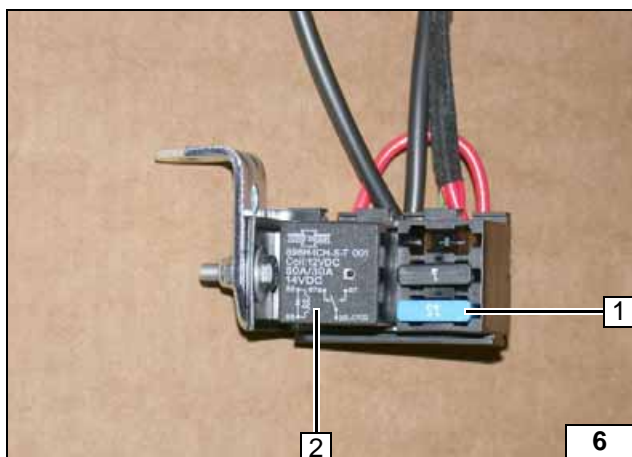


Connecting wires to passenger compartment relay and fuse holder socket



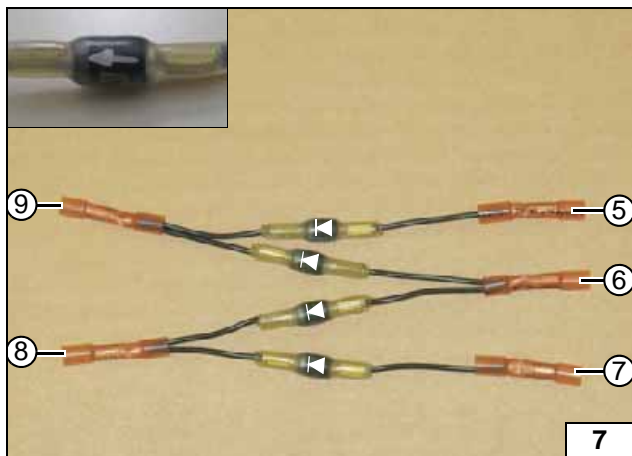
- 1 Passenger compartment relay and fuse holder
- 2 Angle bracket
- 3 M5x16 bolt, washer [2x], nut

Preparing passenger compartment relay and fuse holder



- 1 15A fuse F4
- 2 Relay K1

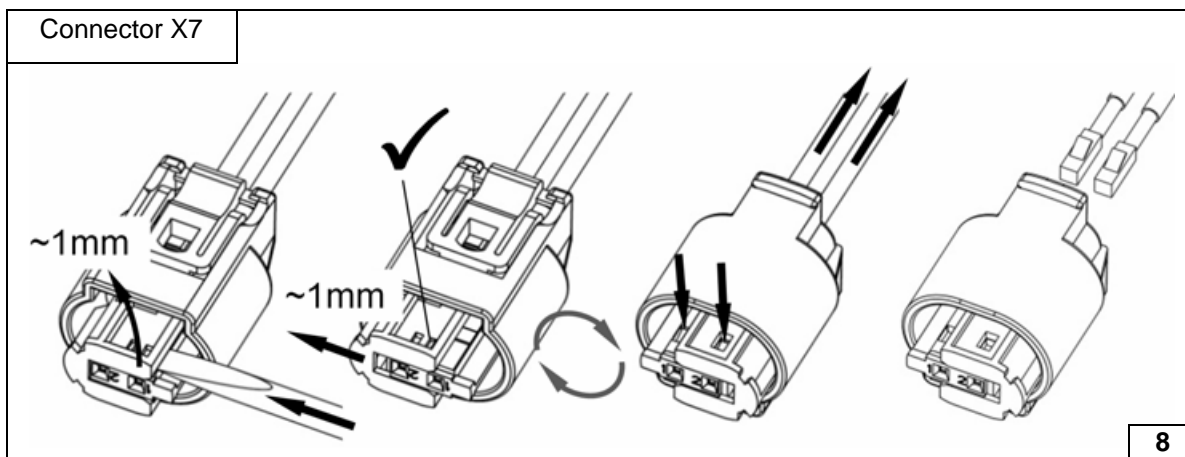
Inserting fuse F4 and relay K1



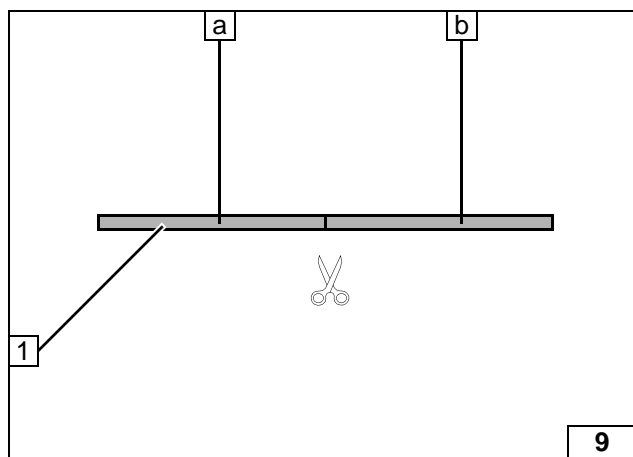
Premount four diodes with connectors to diode group D1 as shown. Watch direction of flow of diodes.



Premounting / assigning diode group



Dismantling metering pump connector



- 1 10mm dia., 2100mm long corrugated tube
a = 900mm for wiring harness of heater (cut lengthwise)
b = 1200mm for fuel line

**Cutting
corrugated
tube to
length**



Electrical System

Wiring harness routing

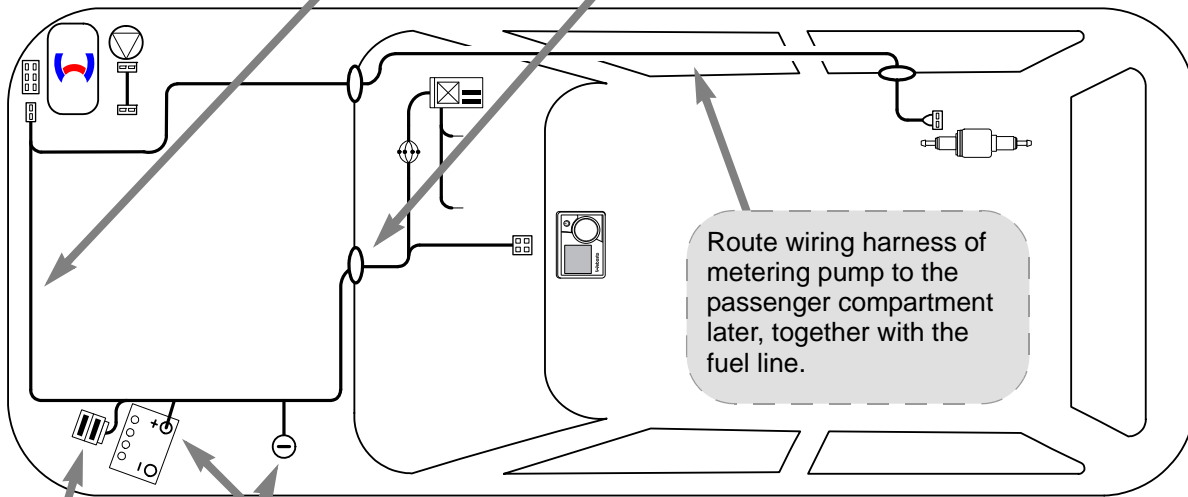
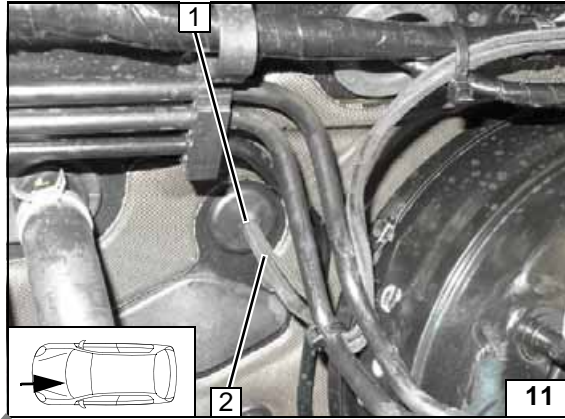
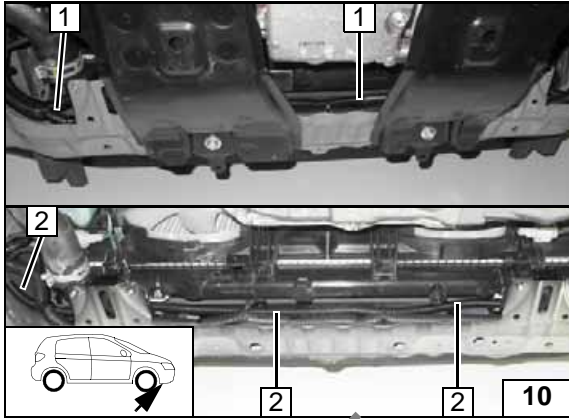
Route heater wiring harness in corrugated tube along original vehicle wiring harness.

- 1 Figure shows 177 kW petrol vehicle
- 2 Figure shows 110 kW petrol vehicle and 108 kW diesel vehicle

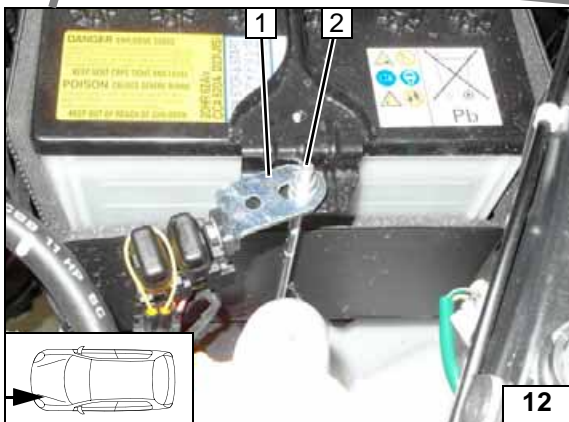
Wiring harness pass through

Punch 5mm dia. hole into protective rubber plug at position 1.

- 2 Wiring harnesses of heater, heater control

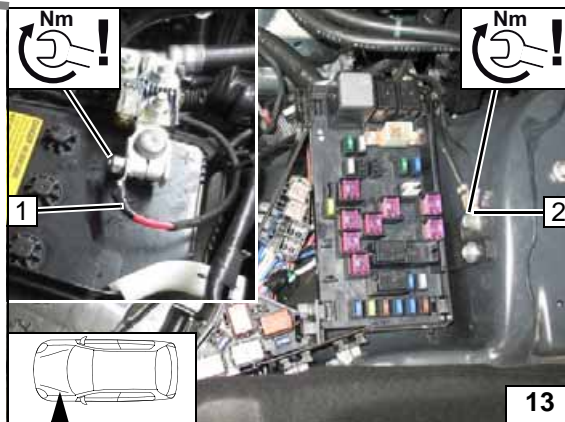


Wiring harness routing diagram



Engine compartment fuse holder

- 1 Angle bracket
- 2 Fastening bolts of battery, M6 flanged nut



Positive and earth wire

- 1 Positive wire on positive battery terminal
- 2 Earth wire on original vehicle earth support point

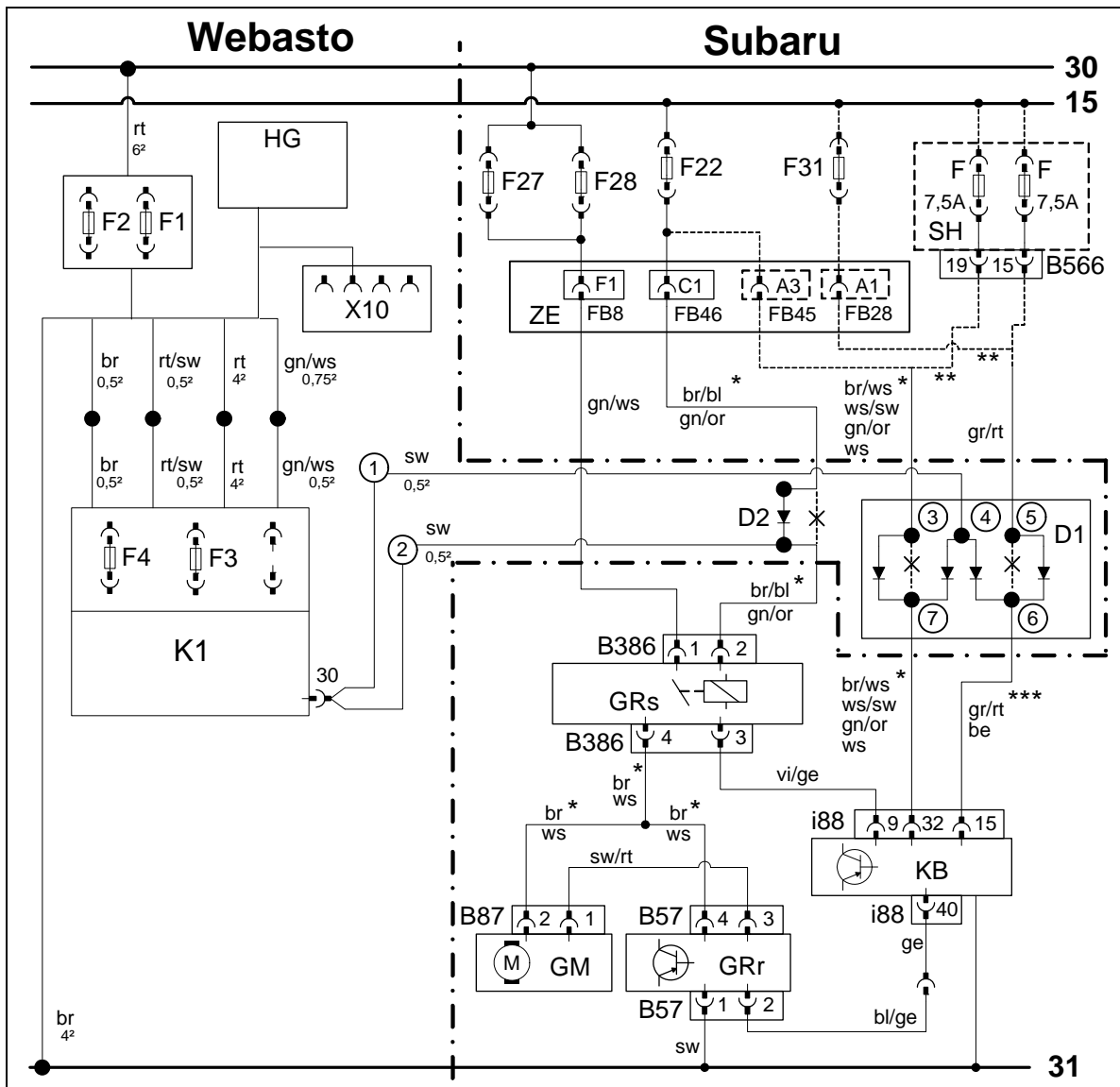




1 and 2 Zone Automatic Air-Conditioning Fan Controller

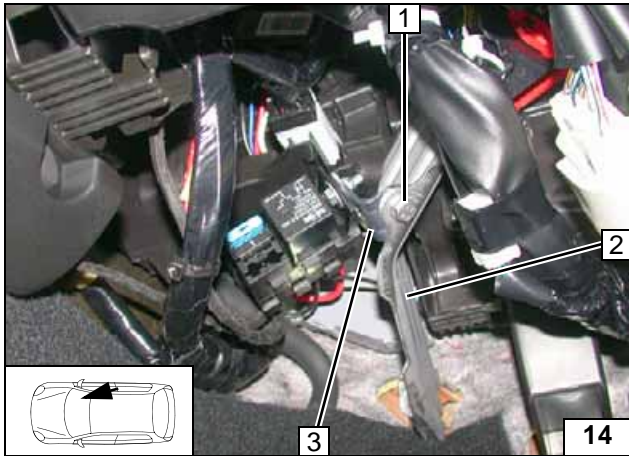
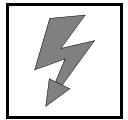


System wiring diagram



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F22	10A fuse	rt	red
F1	20A fuse	F27	15A fuse	ws	white
F2	30A fuse	F28	15A fuse	sw	black
X10	4-pin connector of heater control	F31	7.5A fuse	br	brown
F3	1A fuse	SH	Fuse holder	gn	green
F4	15A fuse	B566	25-pin connector of SH	vi	violet
K1	Fan relay	ZE	Central electrical box	bl	blue
D2	3A diode	C1	24-pin connector C B52 of central electrical box, pin 1	ge	yellow
D1	Diode group (4x3A)	GRs	Fan relay	or	orange
		B386	5-pin connector of GRs	be	beige
		KB	A/C control panel	*	Wiring colours, depending on equipment
		i88	40-pin connector of KB	**	Connection A/C control panel, depending on equipment
		GM	Fan motor	***	Wire colours depend on the model year
		B87	Connector of GM	X	Cutting point
		GRr	Fan controller		
		B57	Connector of GRr		
					Wiring colours may vary.

Legend

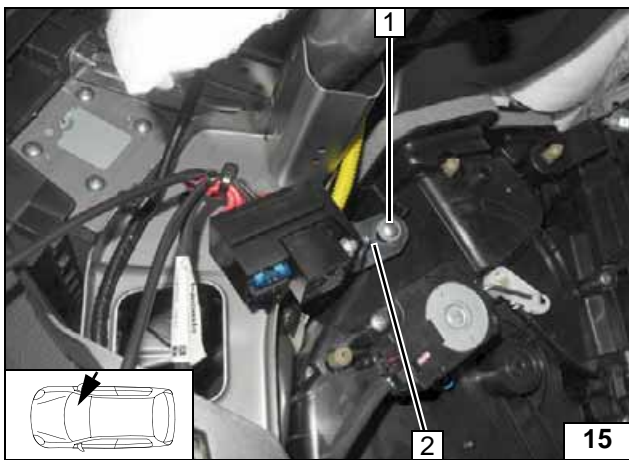


Installation of passenger compartment relay and fuse holder depends on the equipment. Strut 2 is not present on all vehicles.

Version 1

- 1 M6x20 bolt, flanged nut, existing hole
- 3 Angle bracket

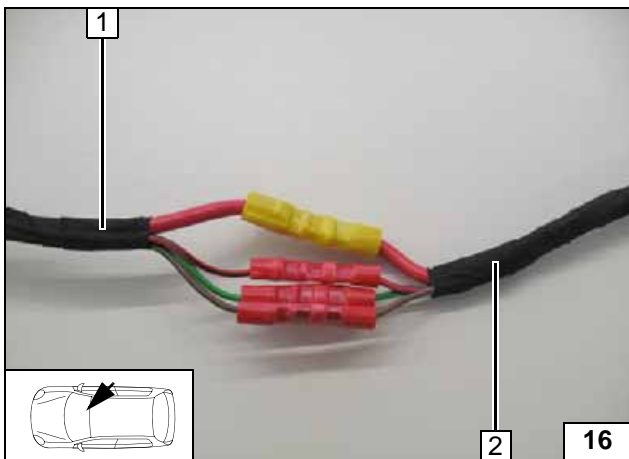
Installing passenger compartment relay and fuse holder



Version 2

- 1 Original vehicle bolt
- 2 Angle bracket

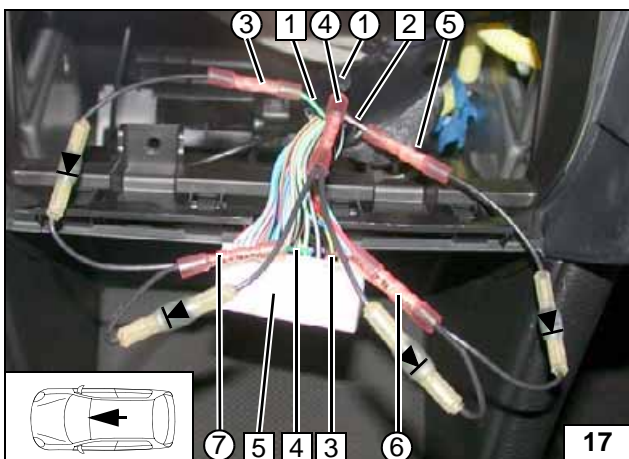
Installing passenger compartment relay and fuse holder



All vehicles

- 1 Passenger compartment relay and fuse holder wiring harness
- 2 Wiring harness of heater

Connecting same colour wires of wiring harnesses

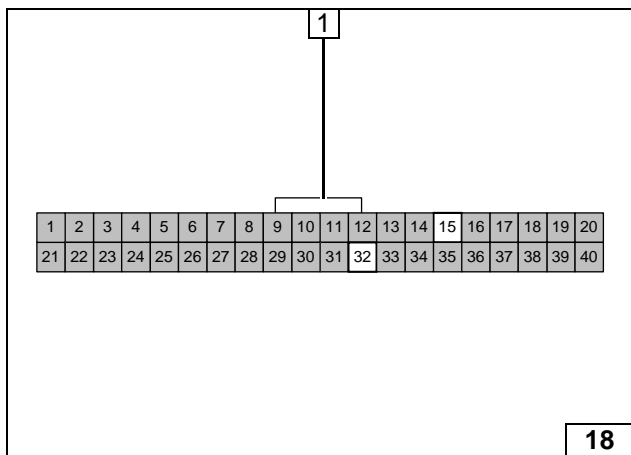


Connection to 40-pin connector i88 (see next figure) 5, pin 15 and 32 of A/C control panel.

- 1 Brown/white (br/ws) wire (white/black (ws/sw); green/orange (gn/or); white (ws)), terminal 15
- 2 Grey/red (gr/rt) wire of terminal 15
- 3 Grey/red (gr/rt) wire of connector i88/ pin 15
- 4 Brown/white (br/ws) wire (white/black (ws/sw); green/orange (gn/or); white (ws)) of connector i88/ pin 32
- ① Black (sw) wire of K1/30
- ③ Black (sw) wire of D1
- ④ Black (sw) wire of D1
- ⑤ Black (sw) wire of D1
- ⑥ Black (sw) wire of D1
- ⑦ Black (sw) wire of D1

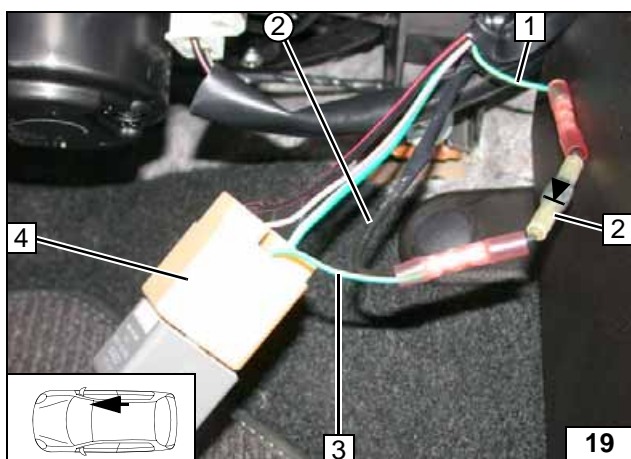


Connecting A/C control panel



1 40-pin connector i88, on contact side

Connector i88 of A/C control panel

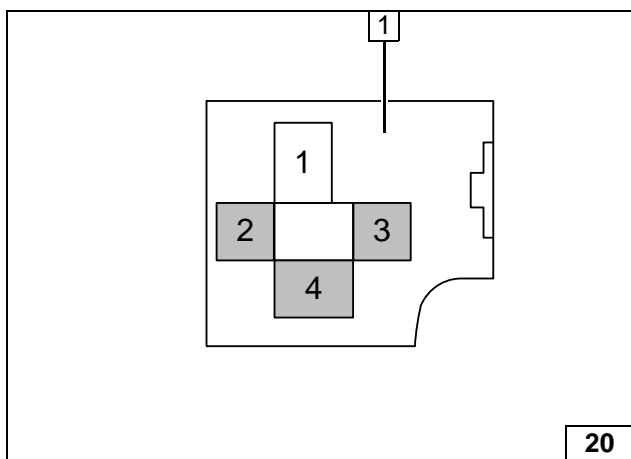


Watch direction of flow of diode D2 2.



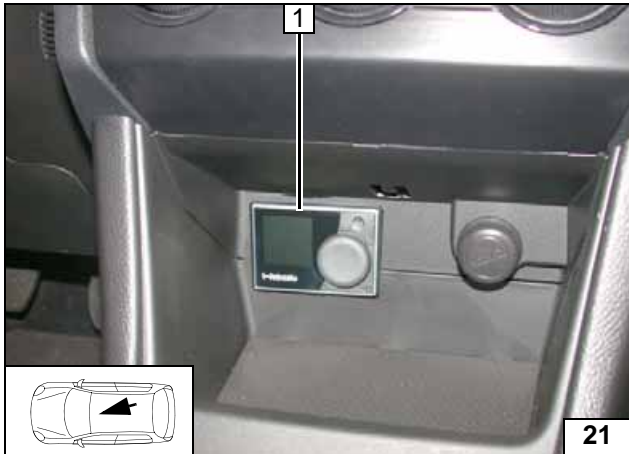
- 1 Brown/blue (br/bl) wire of connector C, pin 1 (FB46) ZE
- 3 Brown/blue (br/bl) wire of connector B386 of fan relay, pin 2
- 4 5-pin connector B386 / PIN 2 of fan relay
- ② Black (sw) wire of K1/30

Connecting fan relay



1 5-pin connector B386, on contact side

Connector B386 of fan relay

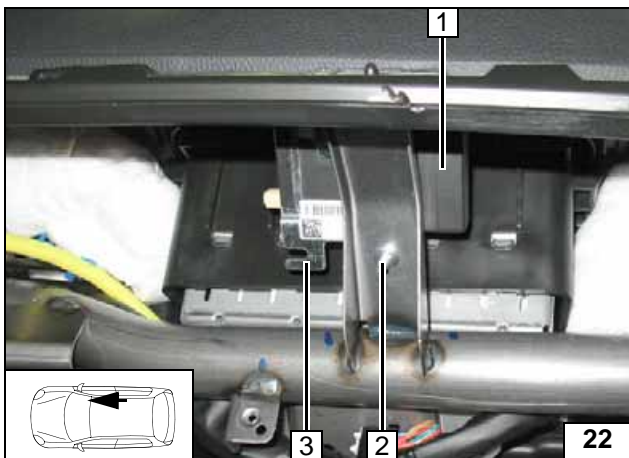


MultiControl CAR

- 1 MultiControl CAR



Installing
MultiControl
CAR

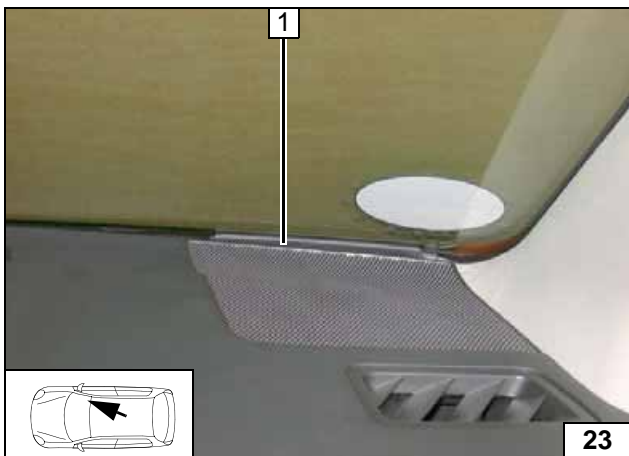


Remote Option (Telestart)

- 1 Receiver
- 2 M5x16 bolt, flanged nut, existing hole
- 3 Bracket

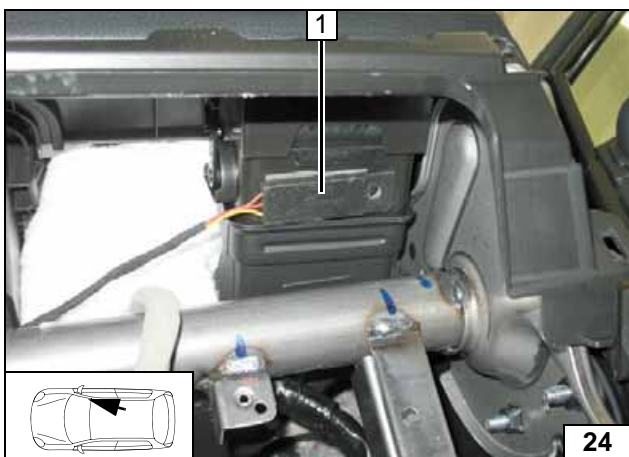


Installing
receiver



- 1 Aerial

Installing
aerial



Temperature sensor T100 HTM

Fasten temperature sensor 1 with double-sided adhesive tape.



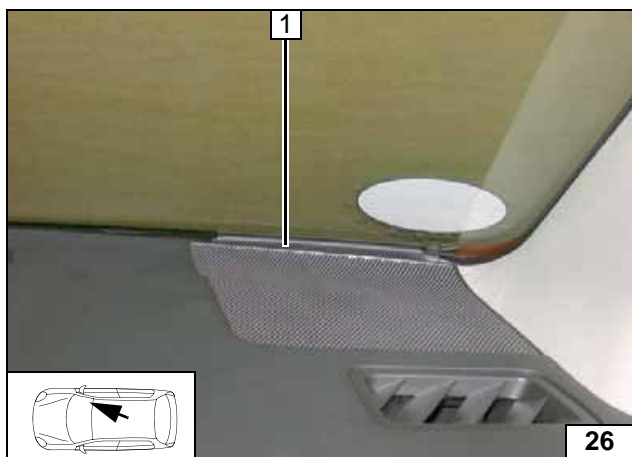
Installing
temperature
sensor



ThermoCall Option

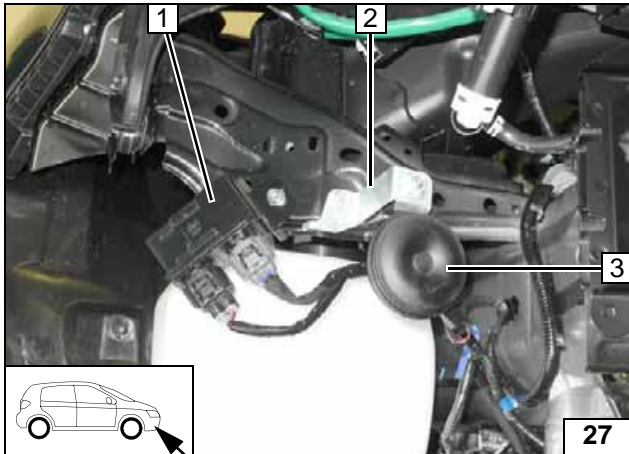
- 1 Receiver
- 2 M5x16 bolt, flanged nut, existing hole

Installing receiver



- 1 Aerial (optional)

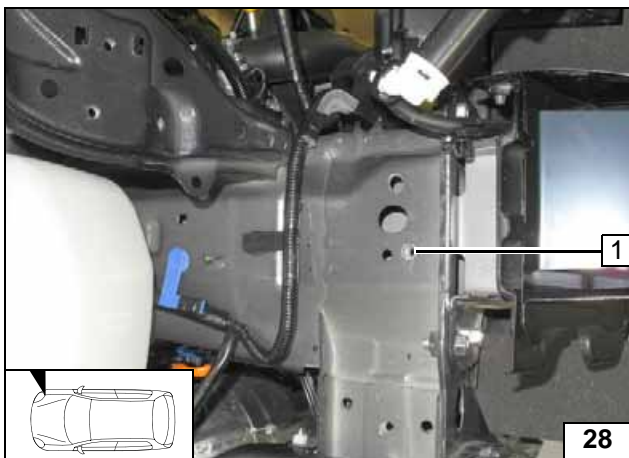
Installing aerial



Preparing Installation Location

- 1 Remove relay for windscreen wiper with bracket, original vehicle bolt will be re-used.
- 2 Dismantle bracket, discard original vehicle bolts [2x]
- 3 Horn

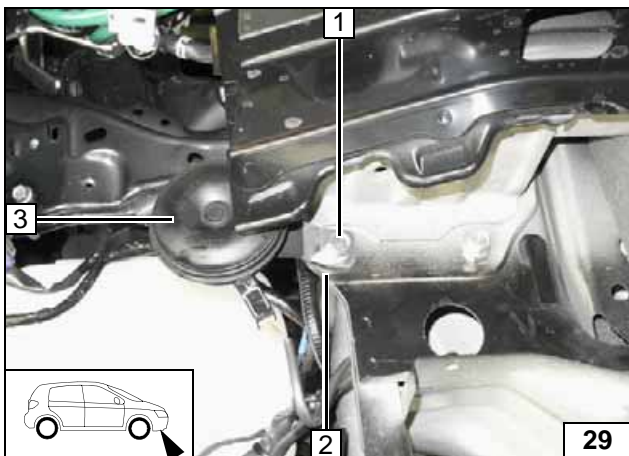
Removing relay and horn



- 1 Drill out hole to 9.1mm, rivet nut



Installing rivet nut

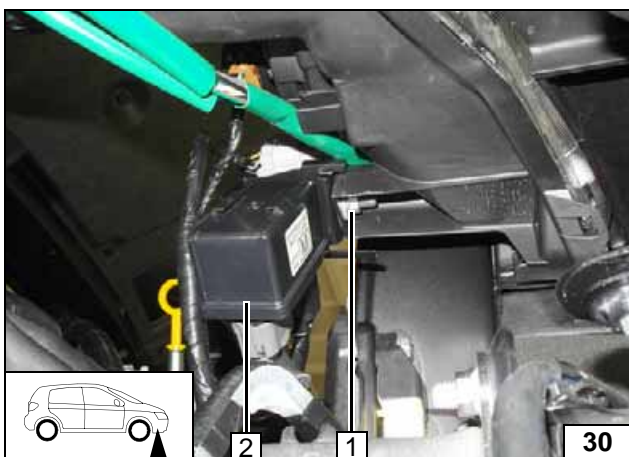


Insert 5 mm shim 2 between horn bracket and body.

- 1 Original vehicle bolt
- 3 Horn

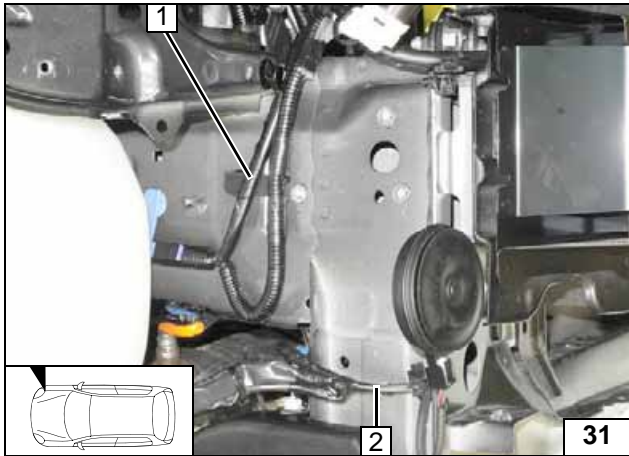


Installing horn



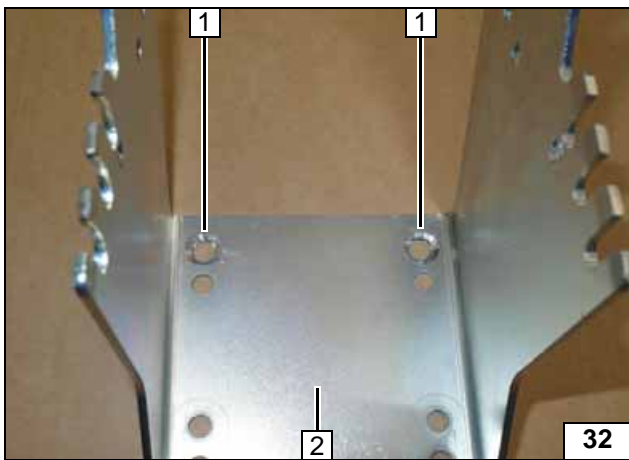
- 1 Original vehicle bolt
- 2 Relay of windscreen wiper

Installing relay



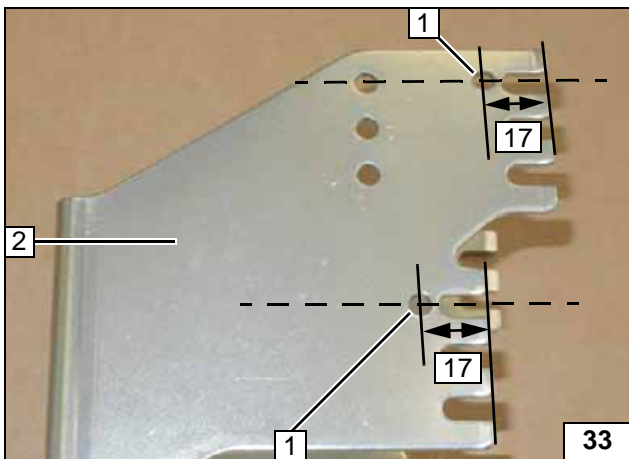
- 1 Wiring harness of windscreen wiper relay
- 2 Wiring harness of horn

Routing wiring harnesses



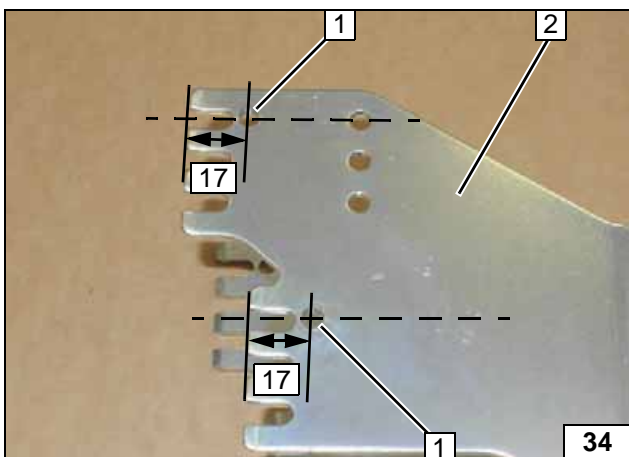
- 1 Countersink 12mm dia. borehole with drill [2x]
- 2 Bracket

Preparing bracket



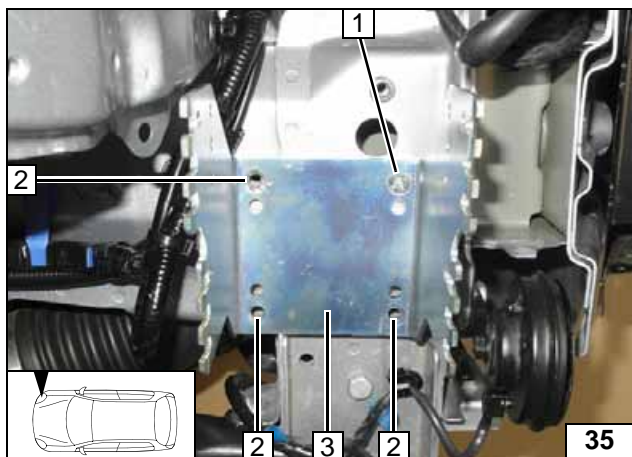
- 1 7mm dia. hole [2x]
- 2 Bracket

Preparing bracket



- 1 7mm dia. hole [2x]
- 2 Bracket

Preparing bracket

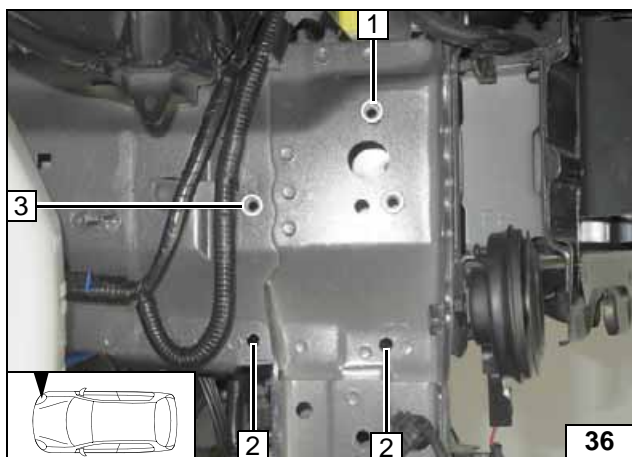


Install bracket 3 loosely and align perpendicularly.

- 1 Loosely mount M6x25 countersunk head screw
- 2 Copy hole pattern [3x]



Copying hole pattern

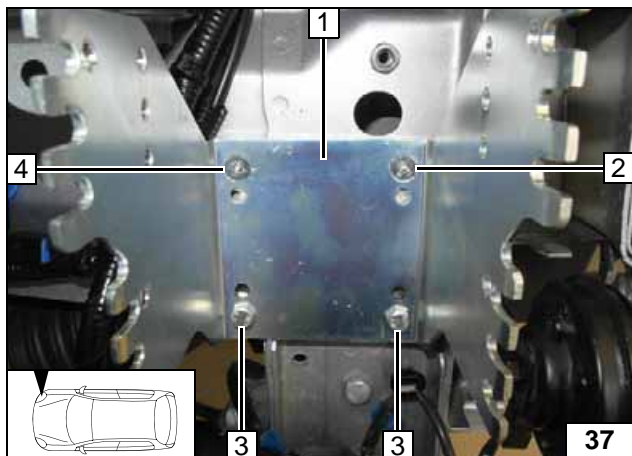


Remove bracket.

- 1 Drill out hole (oblong hole) with suitable tools to 9.1 mm dia., install rivet nut.
- 2 7 mm dia. hole [2x]
- 3 9.1 mm dia. hole; insert rivet nut



Holes in frame side member

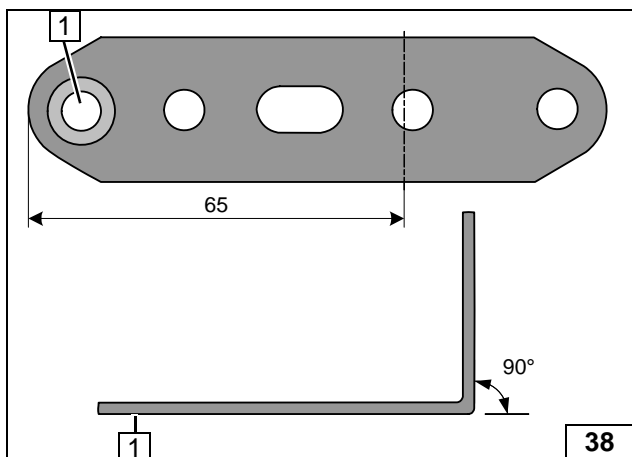


Insert shims between bracket 1 and frame side member.

- 2 M6x25 countersunk head screw
- 3 M6x35 bolt, 20mm shim, flanged nut [2x each]
- 4 M6x25 countersunk head screw, 5mm shim

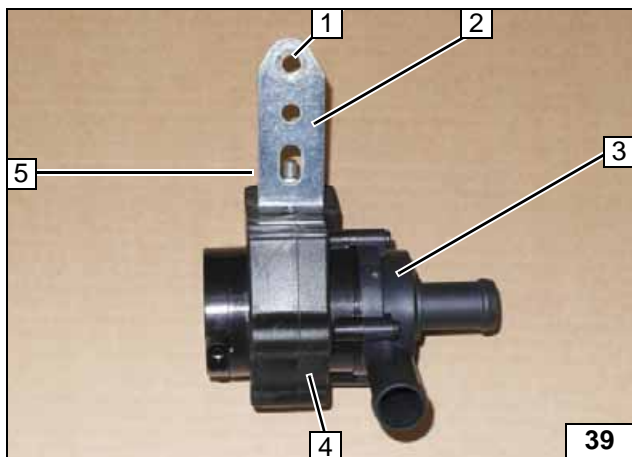


Installing bracket



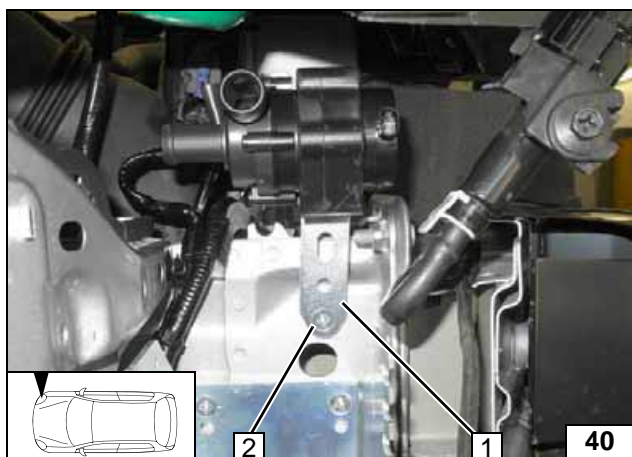
- 1 Countersink hole with drill, 12mm dia.

Angling down perforated bracket



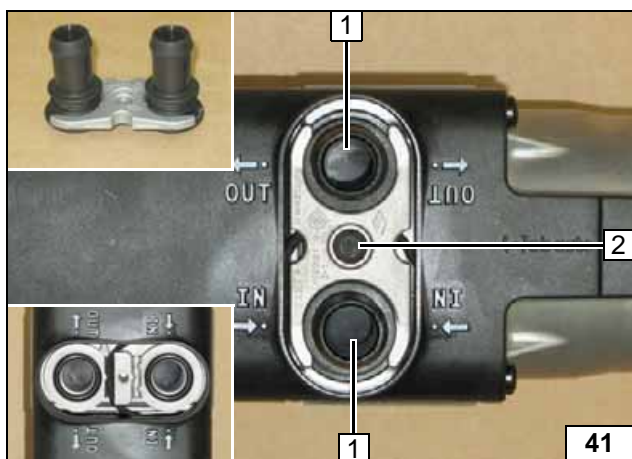
- 1 Hole, countersunk
- 2 Perforated bracket
- 3 Circulating pump
- 4 Circulating pump mount
- 5 M6x25 bolt, flanged nut (hidden)

Premounting circulating pump



- 1 Perforated bracket
- 2 M6x25 countersunk head screw

Installing circulating pump

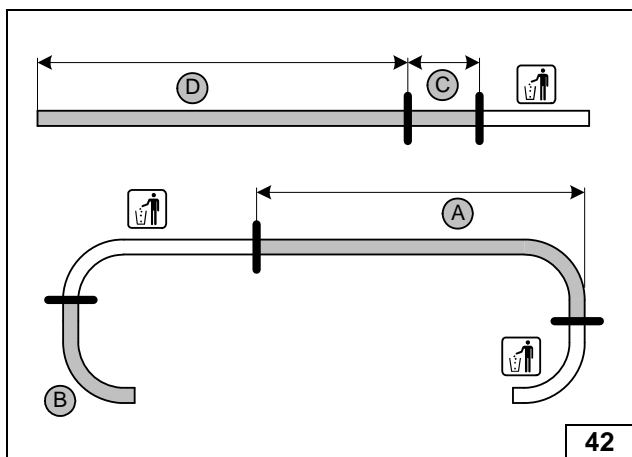


Preparing Heater

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



Installing water connection piece



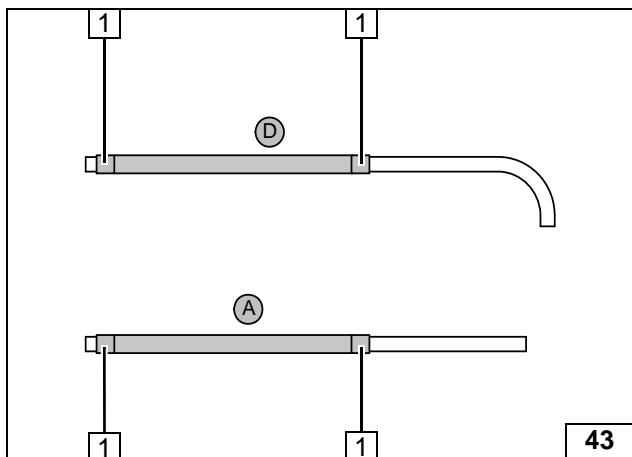
110 kW petrol vehicle

Hose **B** with long 90° elbow.

- A = 1360
- C = 70
- D = 1300



Cutting hoses to length

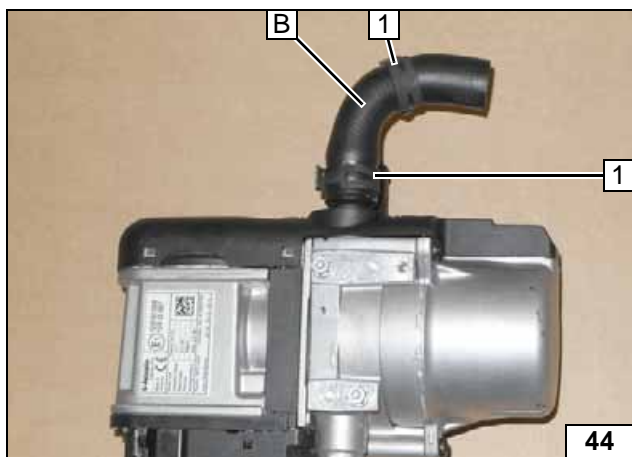


Cut provided braided protection hose in the middle and push onto hoses **A** and **D**. Cut heat shrink plastic tubing to size.

- 1 25 mm long heat shrink plastic tubing [4x]



Preparing water hoses

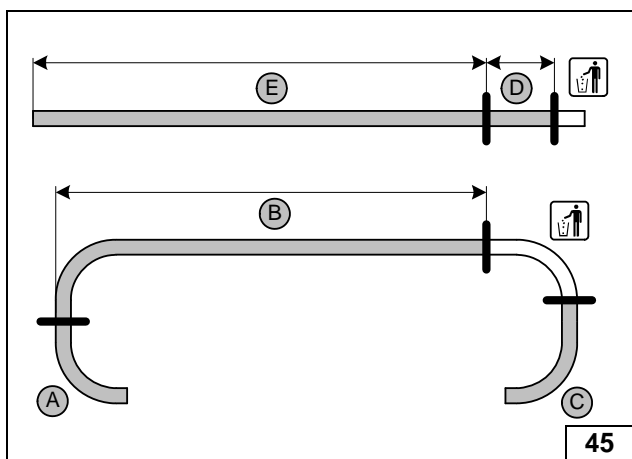


Hose **B** with long 90° elbow on heater inlet.

- 1 Spring clip 25 mm dia [2x]



Premounting hose B



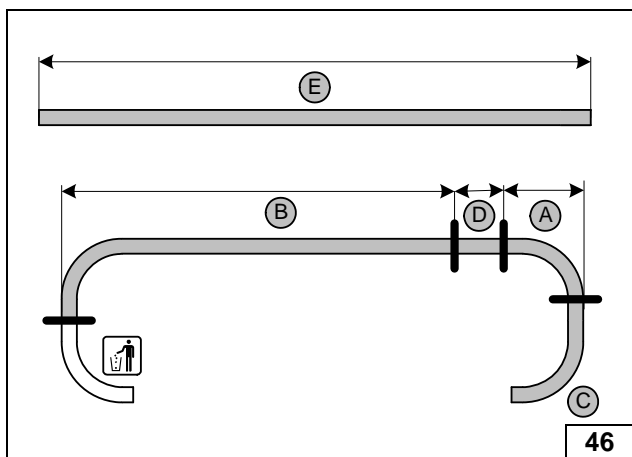
177 kW petrol vehicle

Hose **C** with long 90° elbow.

- B** = 1600
- D** = 70
- E** = 1500



Cutting hoses to length



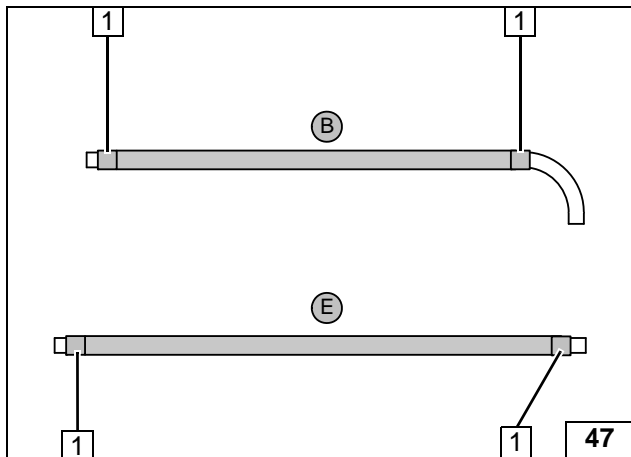
108 kW diesel vehicle

Hose **C** with long 90° elbow.

- A** = 170
- B** = 1550
- D** = 70
- E** = 1600



Cutting hoses to length



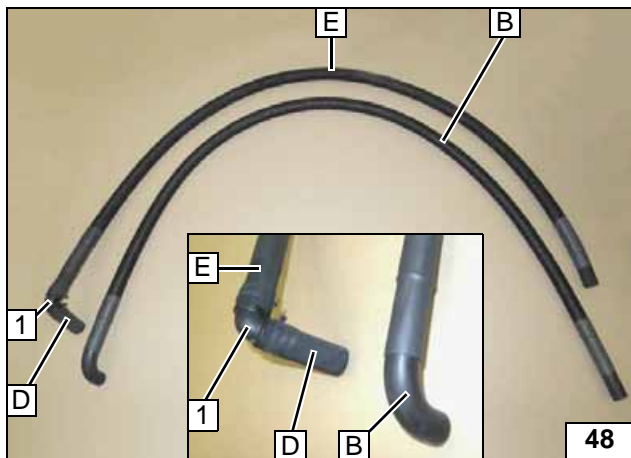
177 kW petrol vehicle and 108 kW diesel vehicle

Slide one braided protection hose each onto hose **B** and **E** and cut to length. Cut heat shrink plastic tubing to size.

- 1 25 mm long heat shrink plastic tubing [4x]

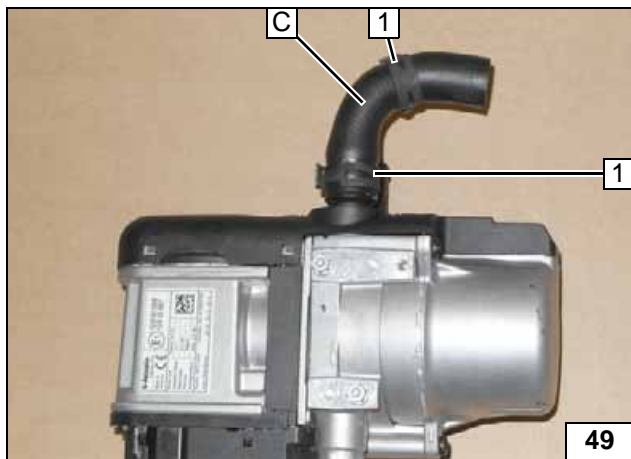


Preparing water hoses



- 1 18x18 mm dia. connecting pipe, 25 mm dia. spring clip [2x]

Preparing water hoses

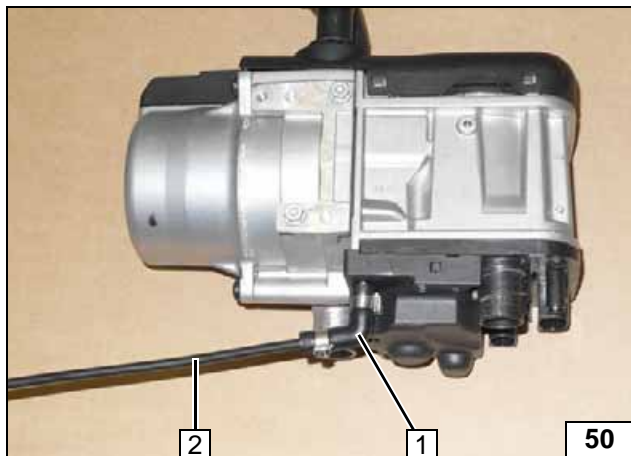


Hose **C** with long 90° elbow on heater inlet.

- 1 Spring clip 25 mm dia [2x]



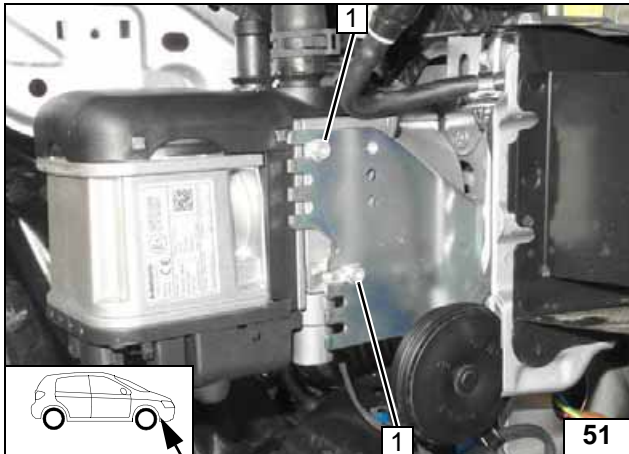
Premounting hose C



All vehicles

- 1 90° moulded hose, 10 mm dia. clamp [2x]
- 2 Fuel line

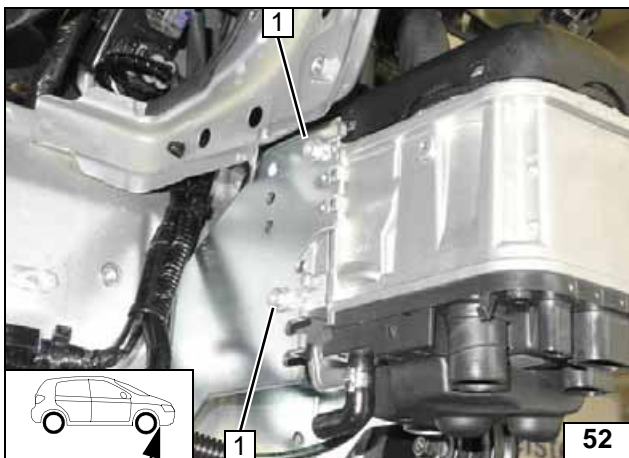
Premounting fuel line



Installing Heater

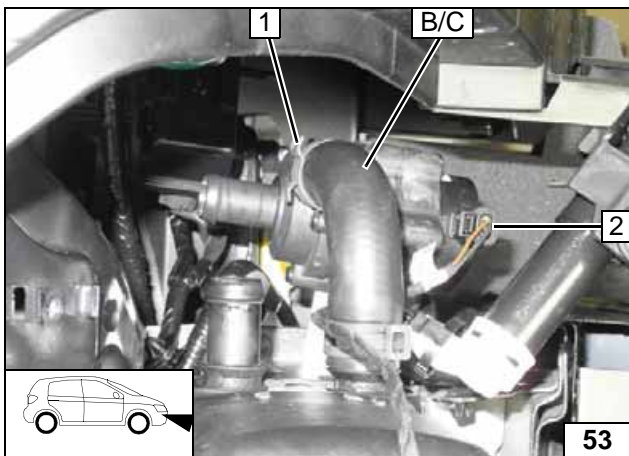
- 1 5x13 self-tapping bolts, hole [2x each]

Installing heater



- 1 5x13 self-tapping bolts, hole [2x each]

Installing heater

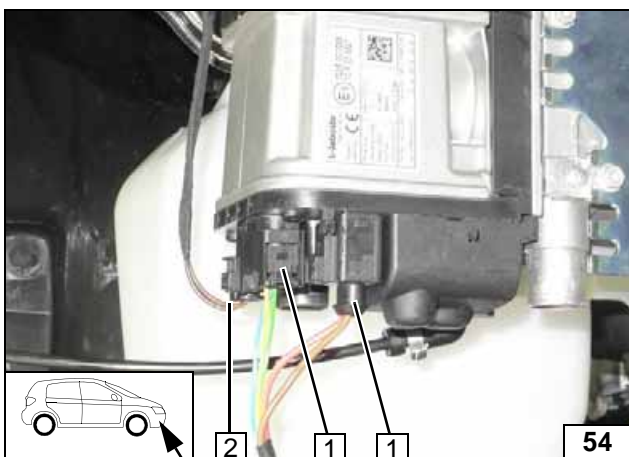


Hose **B** = 110 kW petrol vehicle
 Hose **C** = 177 kW petrol vehicle/ 108 kW diesel vehicle

- 1 25 mm dia. spring clip
- 2 Circulating pump wiring harness



Connect-
ing circu-
lating
pump



- 1 Heater wiring harness [2x]
- 2 Circulating pump wiring harness

Installing
wiring har-
nesses

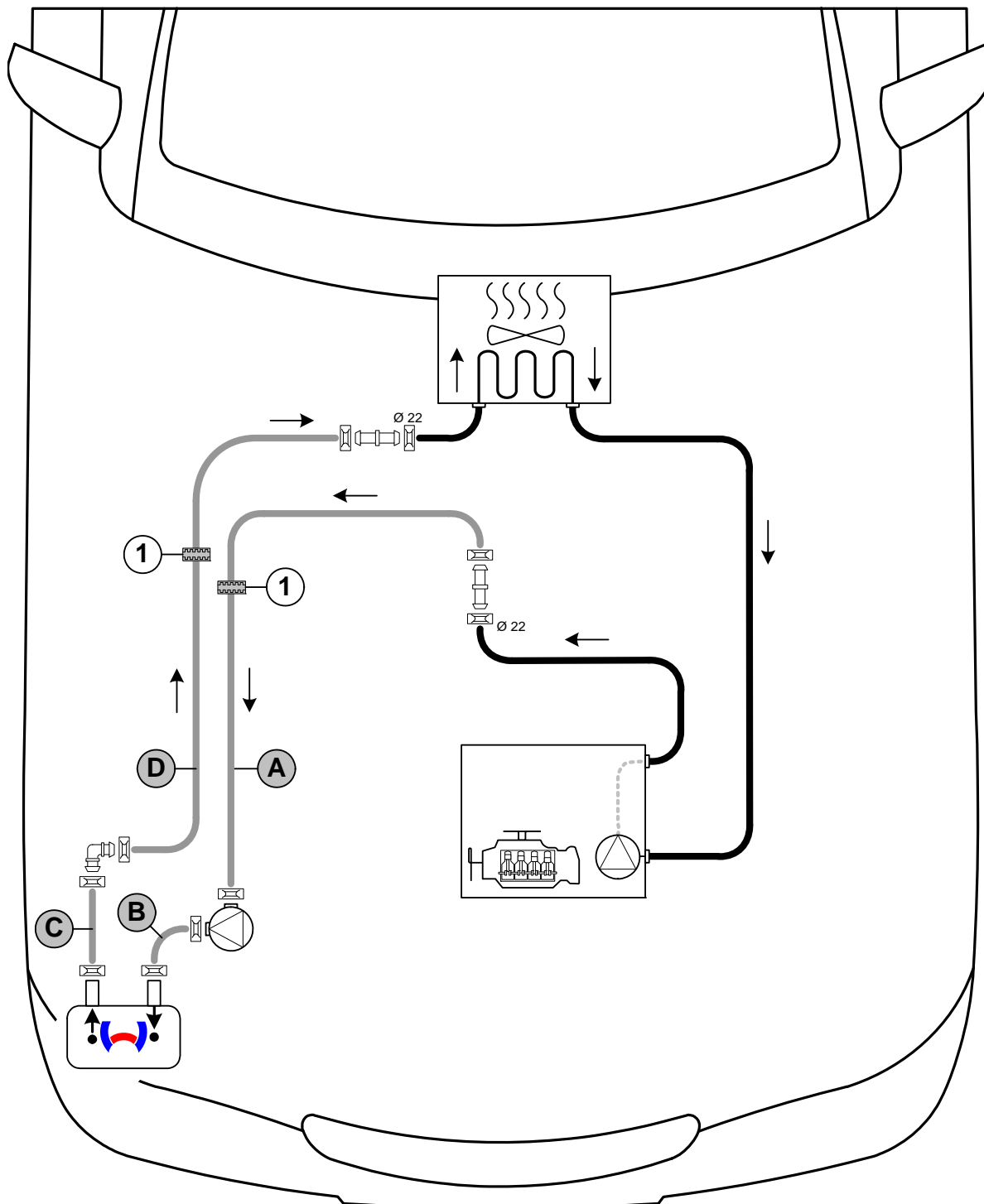


Coolant Circuit of 110 kW Petrol Vehicle





WARNING!

Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

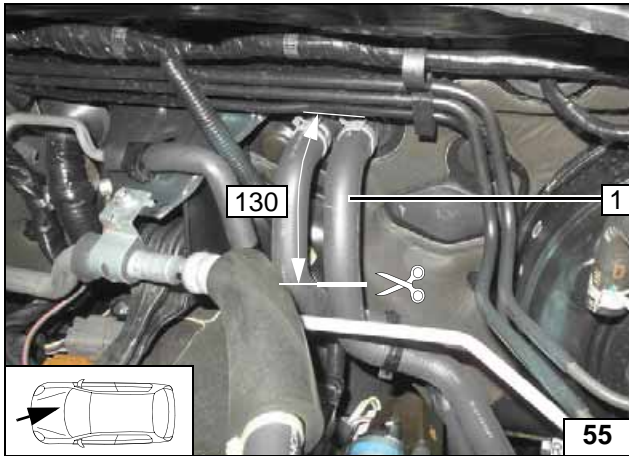
The connection should be modelled on an 'inline' circuit and based on the following diagram:



Hose routing diagram

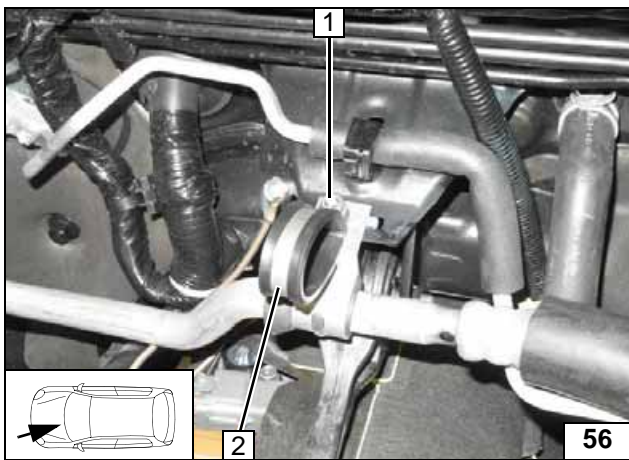
All spring clips without a specific designation  = 25 mm dia. **1** = Black (sw) rubber isolator 
 Connecting pipe  = 18x18mm dia. All connecting pipes  = 15x18 mm dia.





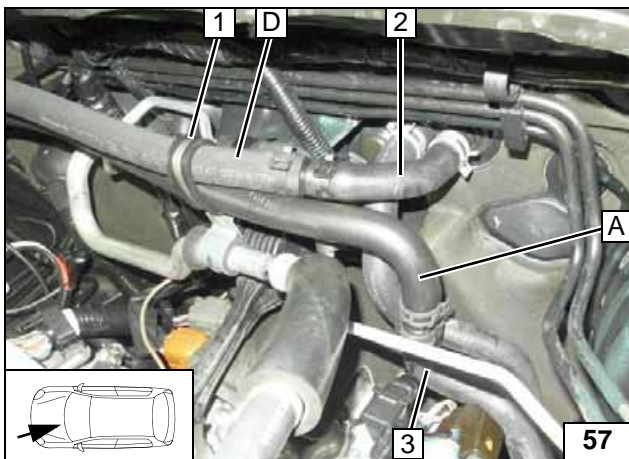
Cut hose of engine outlet / heat exchanger inlet **1** at the marking (flat length from hose end 130mm).

Cutting point



- 1 Original vehicle bolt
- 2 Loosely mount 38 mm dia. rubber-coated p-clamp

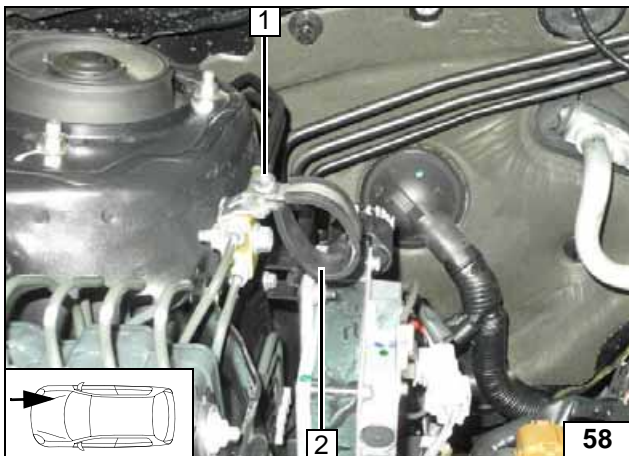
Installing rubber-coated p-clamp



Route hoses **A** and **D** through rubber-coated p-clamp **1**. Align rubber-coated p-clamp **1** as shown. Tighten bolts. Turn hose section of heat exchanger inlet **2** by approx. 90° to the right.

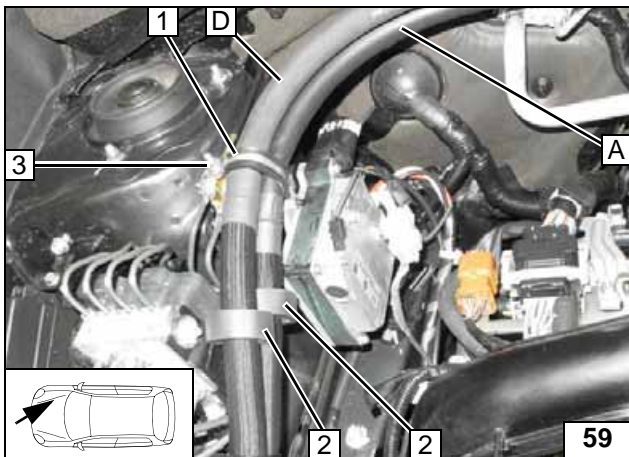
- 3 Engine outlet hose section

Connection on engine outlet and heat exchanger inlet



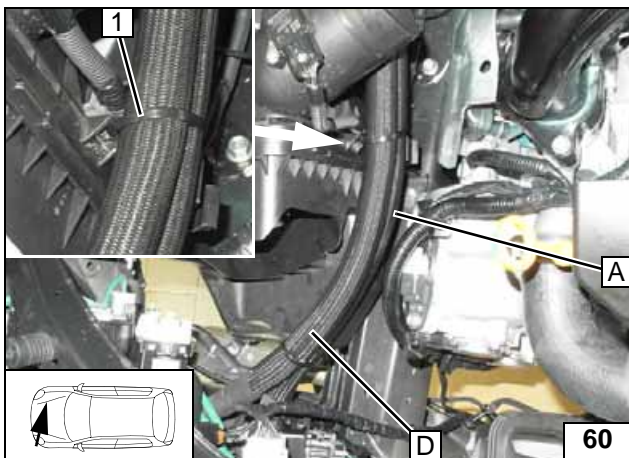
- 1 M6x16 bolt, flanged nut, existing hole
- 2 Loosely mount 38 mm dia. rubber-coated p-clamp

Installing rubber-coated p-clamp



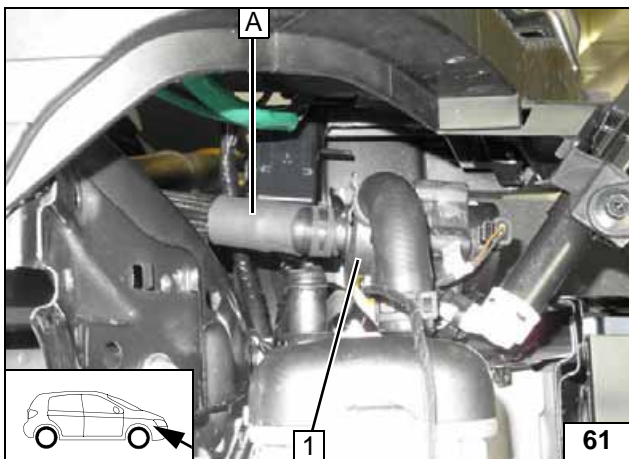
Route hoses **A** and **D** through rubber-coated p-clamp **1**. Slide one black (sw) rubber isolator **2** each onto hose **A** and **D**. Align rubber-coated p-clamp **1** as shown. Tighten bolt **3**.

Routing in engine compartment



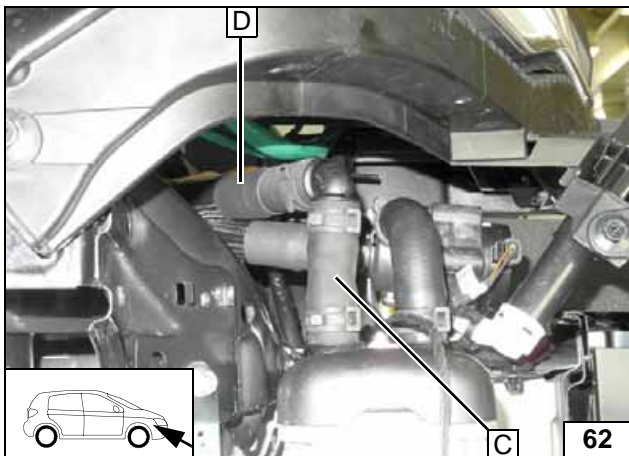
1 Cable tie, existing hole

Routing in engine compartment



1 Circulating pump

Connecting circulating pump



Align hoses. Ensure sufficient distance from adjacent components, correct if necessary.



Connecting heater outlet

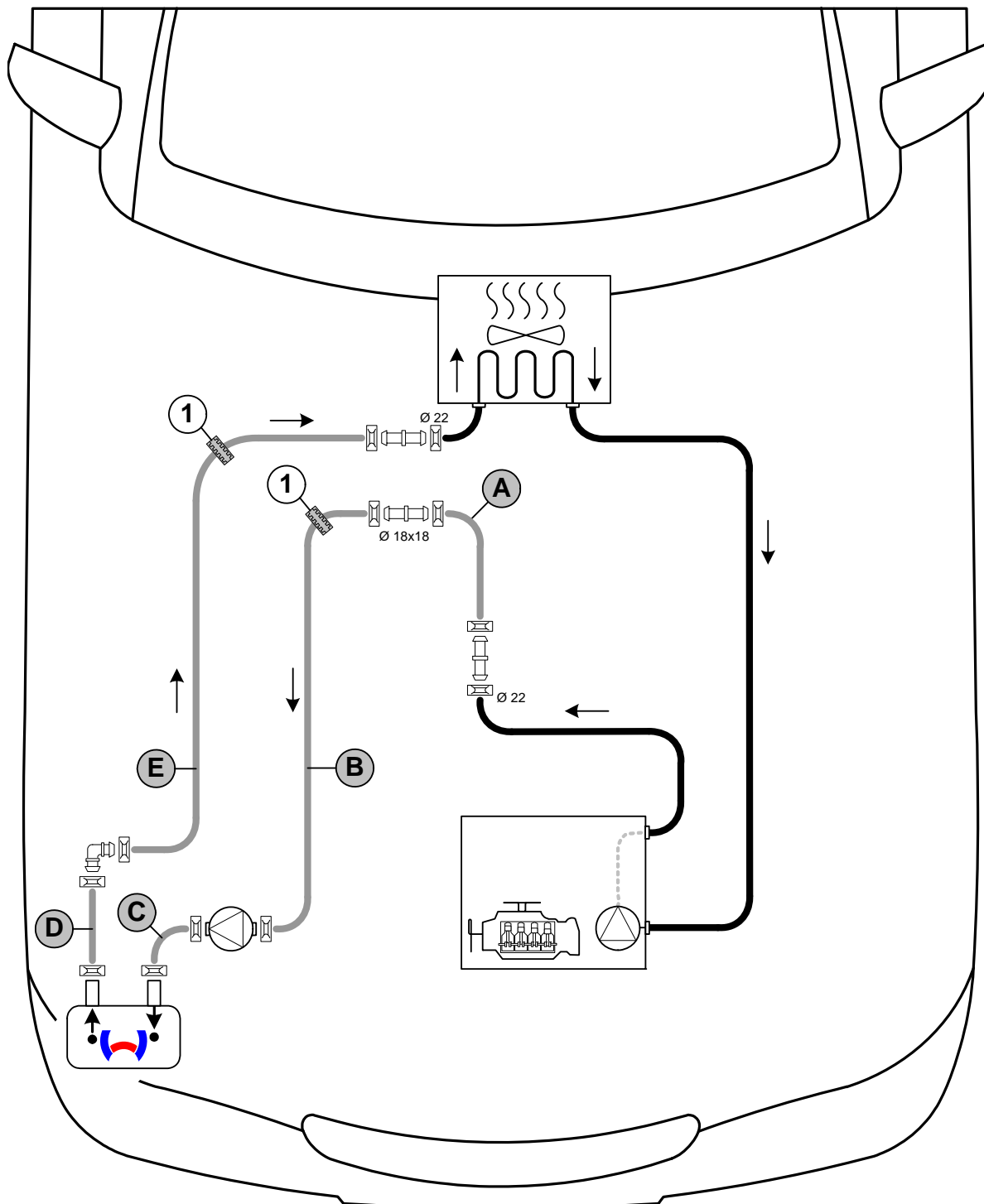


Coolant Circuit for 177 kW Petrol Vehicle / 108 kW Diesel Vehicle





WARNING!

Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

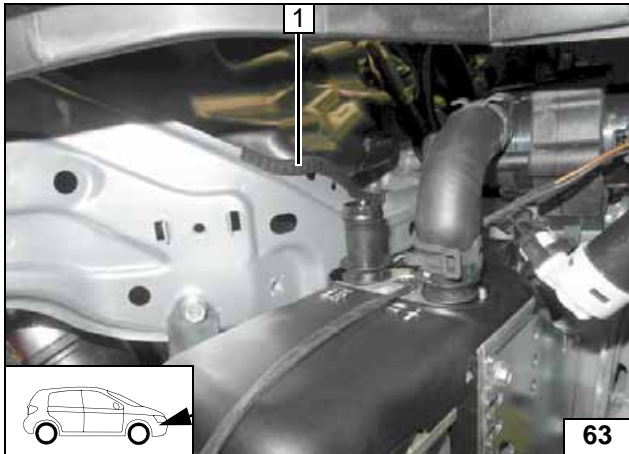
The connection should be modelled on an 'inline' circuit and based on the following diagram:



Hose routing diagram

All spring clips without a specific designation  = 25 mm dia. **1** = Black (sw) rubber isolator 
 Connecting pipe  = 18x18mm dia. All connecting pipes without a specific designation  = 15x18mm dia.

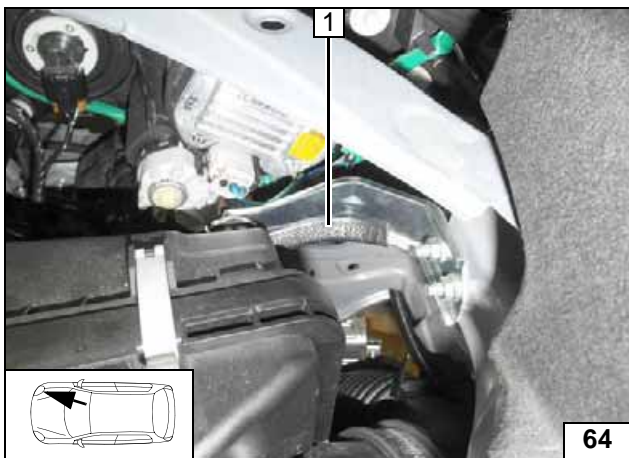




177 kW petrol vehicle

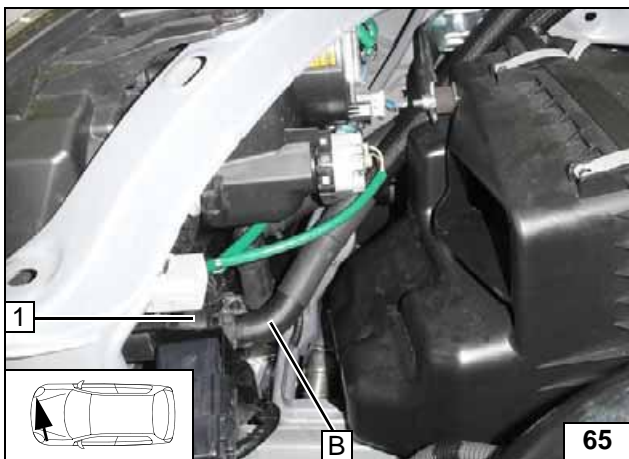
- 1 Narrow edge protection

Installing edge protection



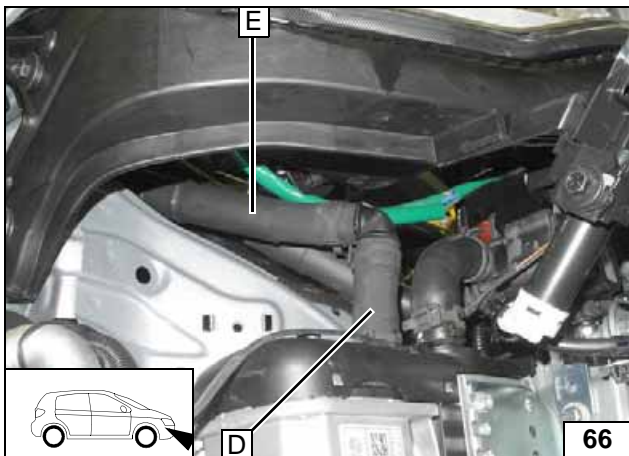
- 1 100 mm wide edge protection

Installing edge protection

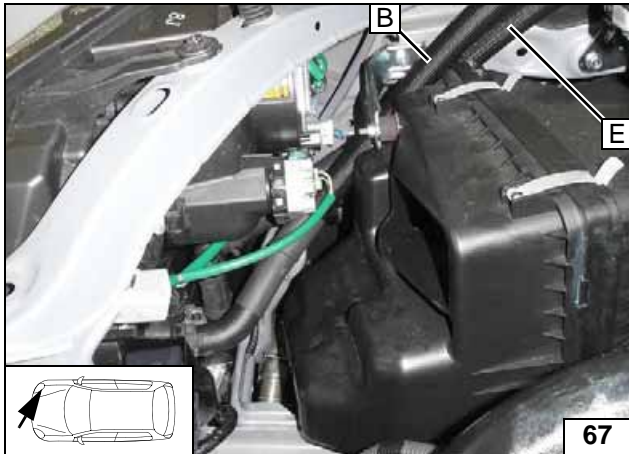


- 1 Circulating pump

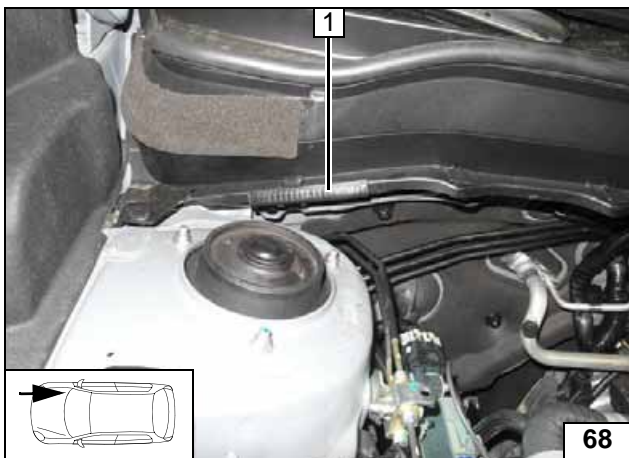
Connecting circulating pump



Connecting heater outlet

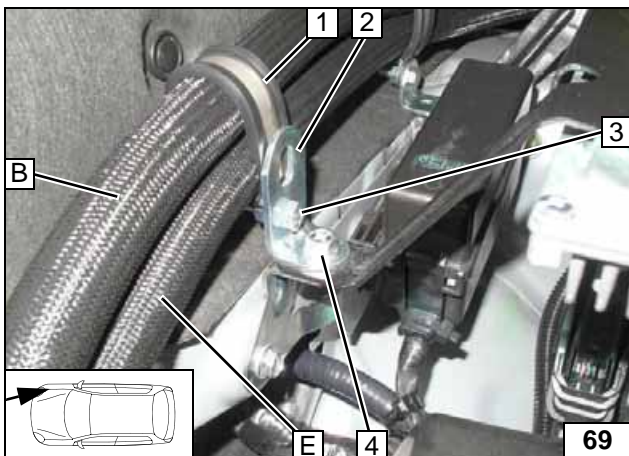


Routing in engine compartment



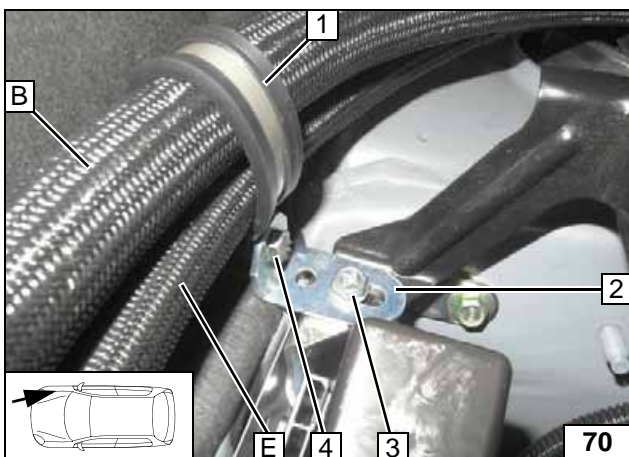
1 100 mm wide edge protection

Installing edge protection



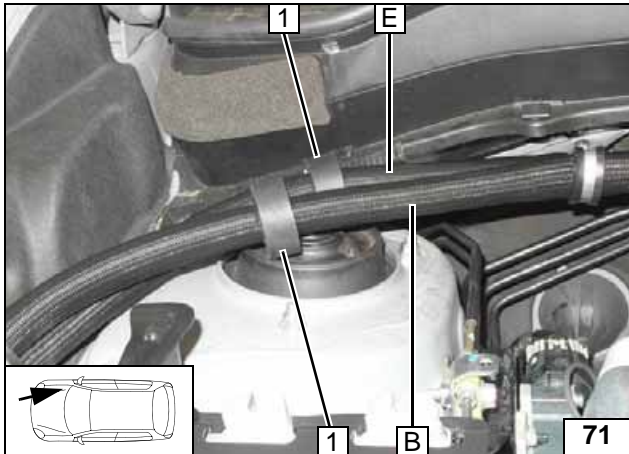
1 38 mm dia. rubber-coated p-clamp
2 Angle bracket
3 M6x20 bolt, flanged nut
4 Original vehicle bolt

Routing in engine compartment



1 38 mm dia. rubber-coated p-clamp
2 Angle bracket
3 Original vehicle bolt
4 M6x20 bolt, flanged nut

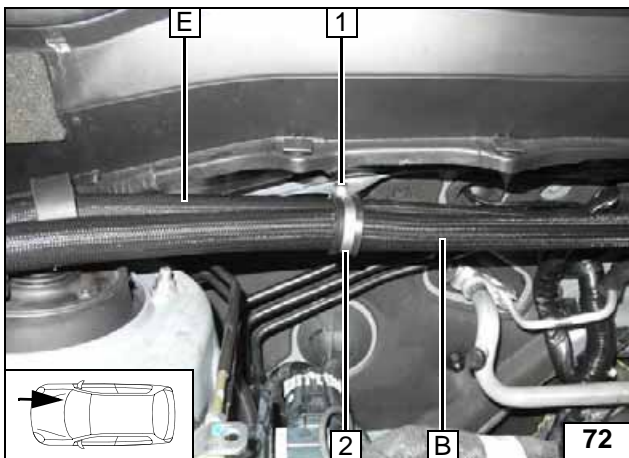
Routing in engine compartment



Slide one black (sw) rubber isolator 1 each onto hose B and hose E and align. Prevent hoses from covering each other.

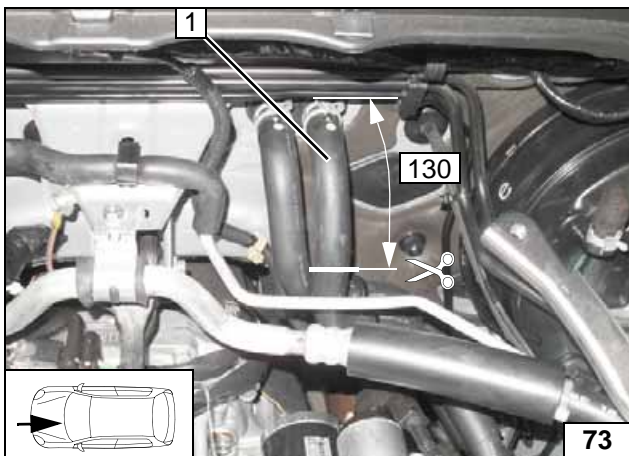


Routing in engine compartment



- 1 M6x20 bolt, flanged nut, existing hole
- 2 38 mm dia. rubber-coated p-clamp

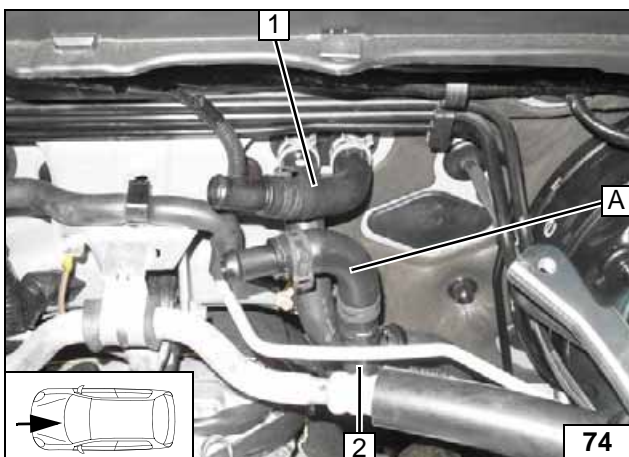
Routing in engine compartment



Cut hose of engine outlet / heat exchanger inlet 1 at the marking (flat length from hose end 130mm).



Cutting point

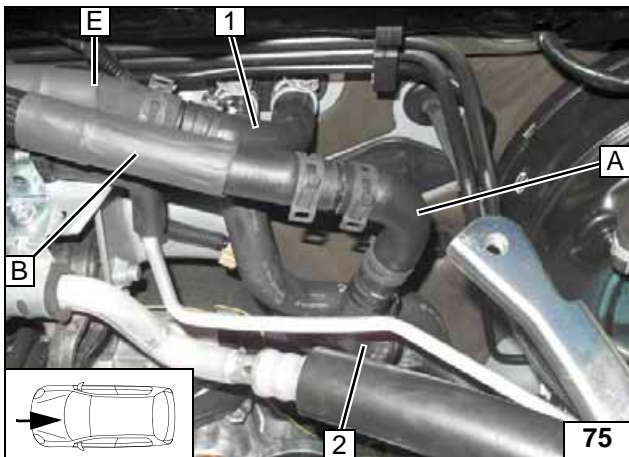


Turn hose section of heat exchanger inlet 1 by approx. 90° to the right.



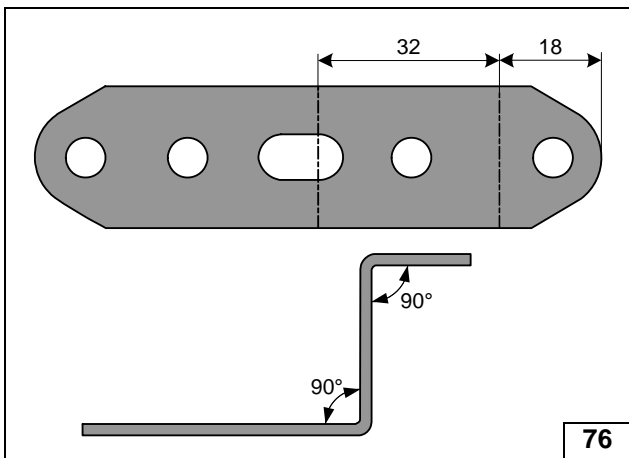
- 2 Engine outlet hose section

Premounting hoses

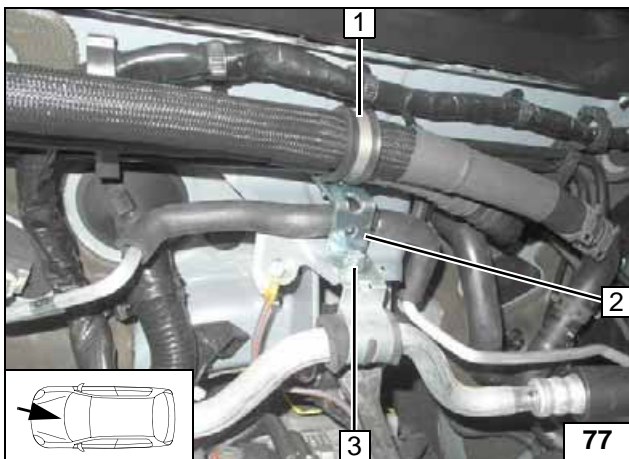


- 1 Heat exchanger inlet hose section
- 2 Engine outlet hose section

Con-
nec-
tion on en-
gine out-
let and heat
exchanger
inlet



Prepar-
ing per-
forated
bracket

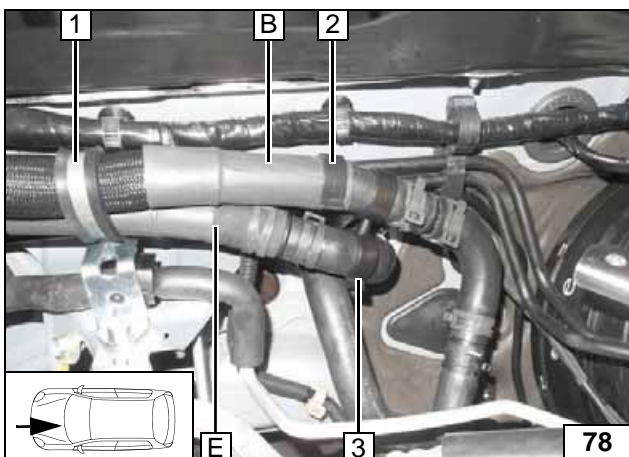


Route hoses **B** and **E** through rubber-coated p-clamp **1**.



- 1 38 mm dia. rubber-coated p-clamp
- 2 Perforated bracket
- 3 Original vehicle bolt

Routing in
engine
compart-
ment

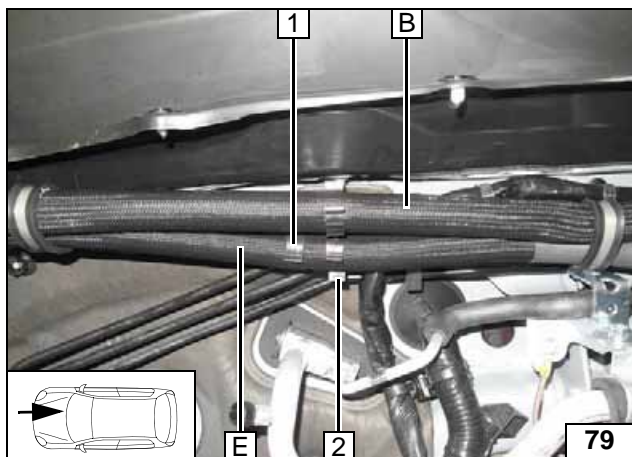


Align rubber-coated p-clamp **1** upwards.



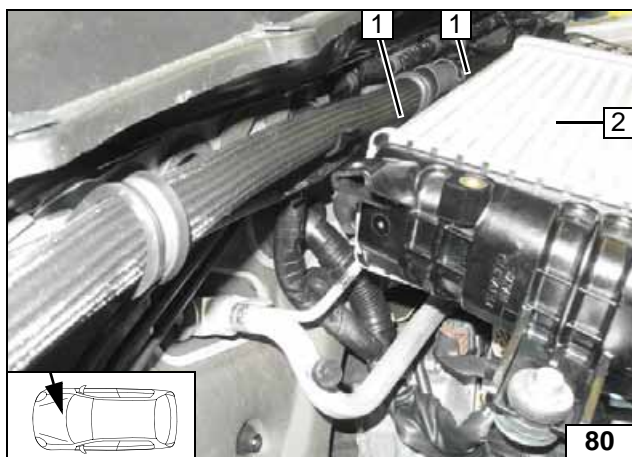
- 2 9x24 hose bracket between original vehicle line and hose **B**
- 3 22x22 hose bracket between hose of heat exchanger inlet and hose **B**

Routing in
engine
compart-
ment



- 1 9x24 hose bracket between original vehicle line and hose **E**
- 2 22x22 hose bracket between hose **B** and hose **E**

Inserting hose bracket



Ensure sufficient distance between intercooler and water hoses at position 1, correct if necessary.



- 2 Intercooler installed

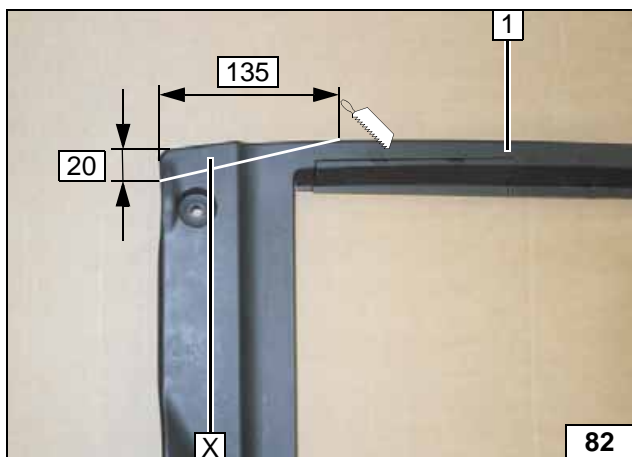
Aligning hoses



Ensure sufficient distance from adjacent components, correct if necessary.



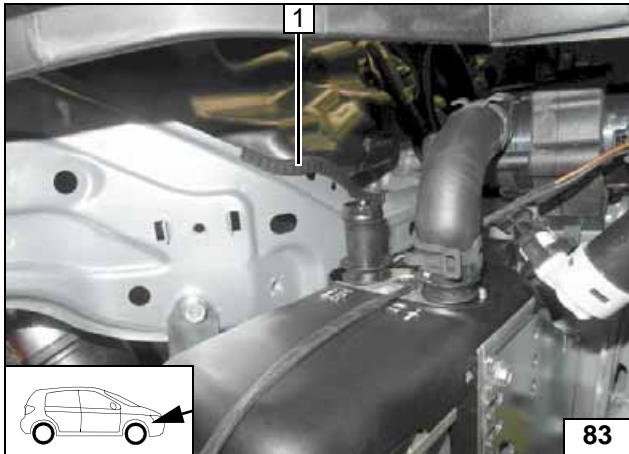
Aligning hoses



- 1 Engine design cover

X =

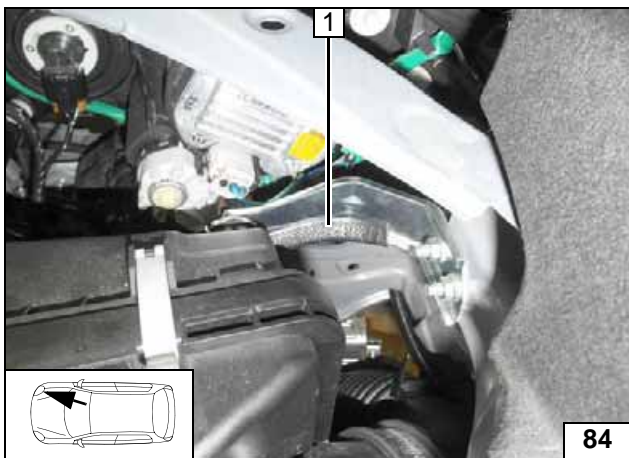
Preparing engine design cover



108 kW diesel vehicle

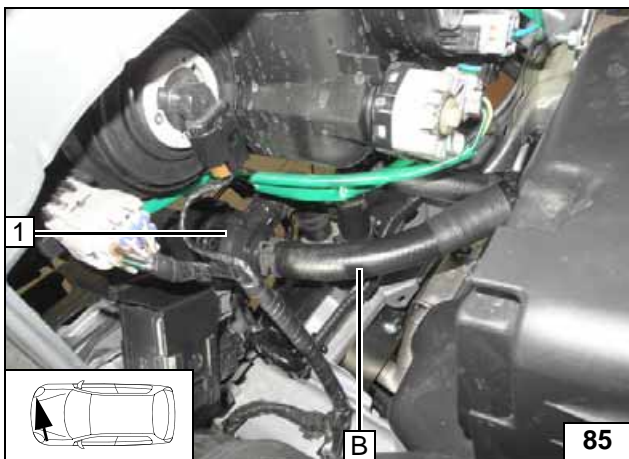
1 Narrow edge protection

Installing edge protection



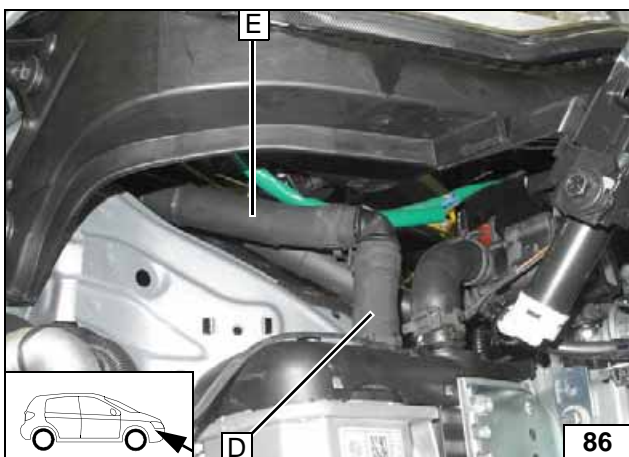
1 100 mm wide edge protection

Installing edge protection

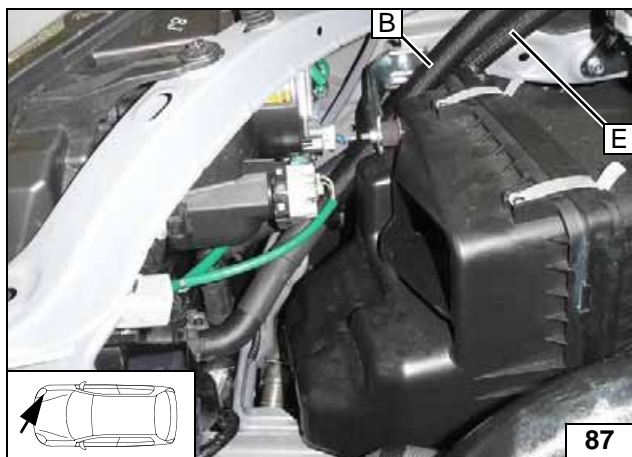


1 Circulating pump

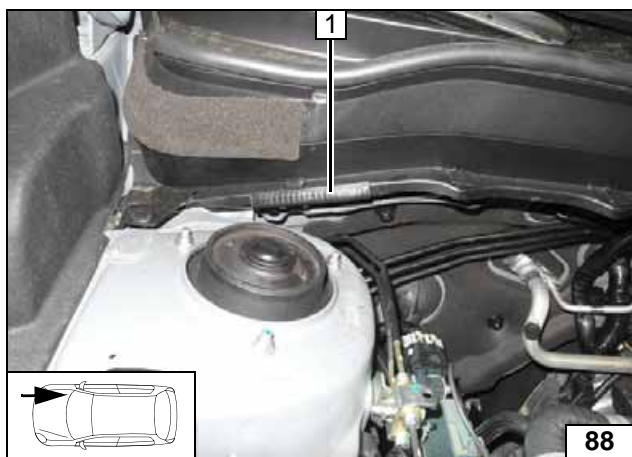
Connecting circulating pump



Connecting heater outlet

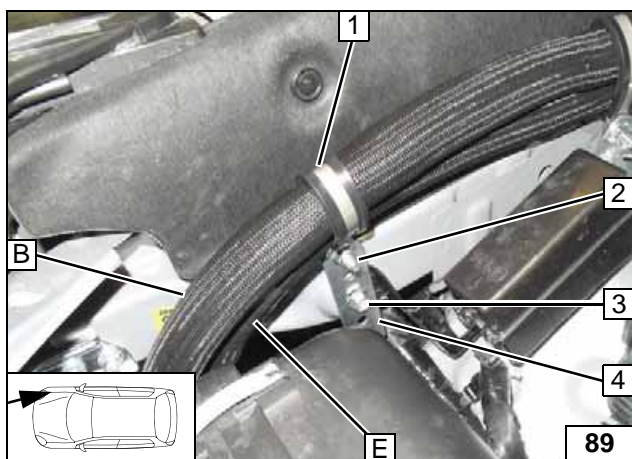


Routing in engine compartment



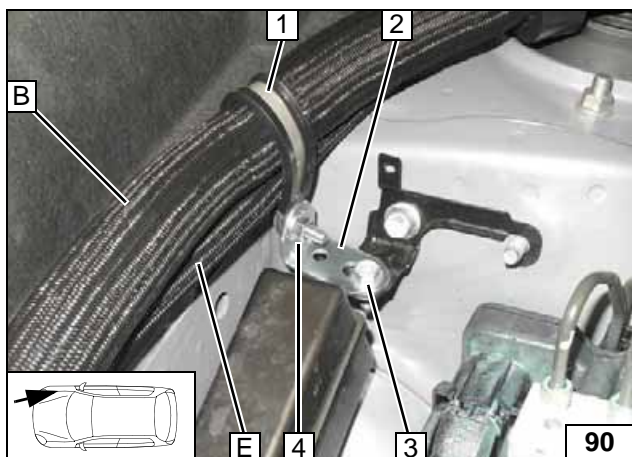
1 100 mm wide edge protection

Installing edge protection



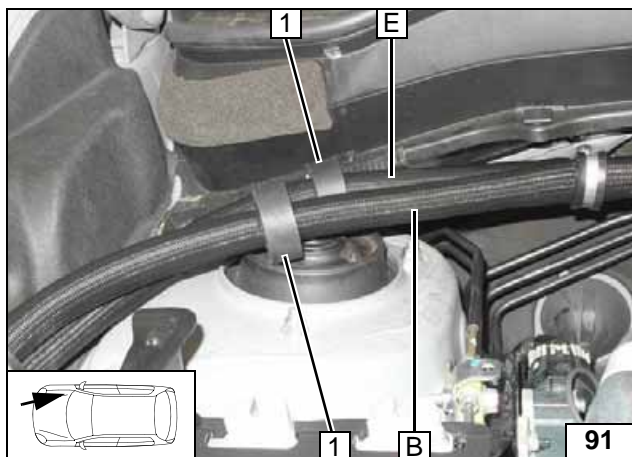
- 1 38 mm dia. rubber-coated p-clamp
- 2 M6x20 bolt, flanged nut
- 3 Original vehicle bolt
- 4 Perforated bracket

Routing in engine compartment



- 1 38 mm dia. rubber-coated p-clamp
- 2 Angle bracket
- 3 Original vehicle bolt
- 4 M6x20 bolt, flanged nut

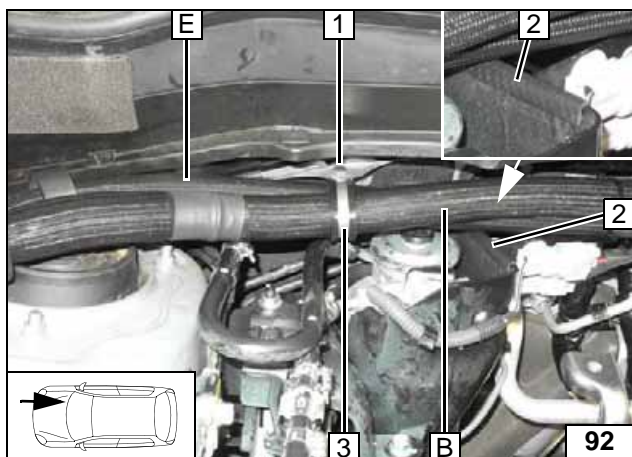
Routing in engine compartment



Slide one black (sw) rubber isolator 1 each onto hose B and hose E and align. Prevent hoses from covering each other.

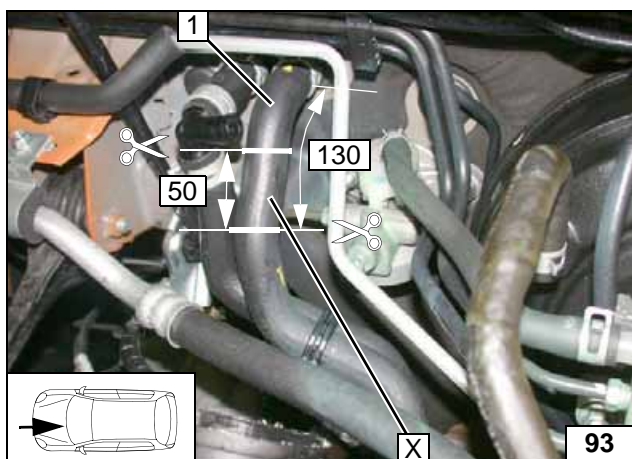


Routing in engine compartment



- 1 M6x20 bolt, flanged nut, existing hole
- 2 100 mm edge protection
- 3 38 mm dia. rubber-coated p-clamp

Routing in engine compartment

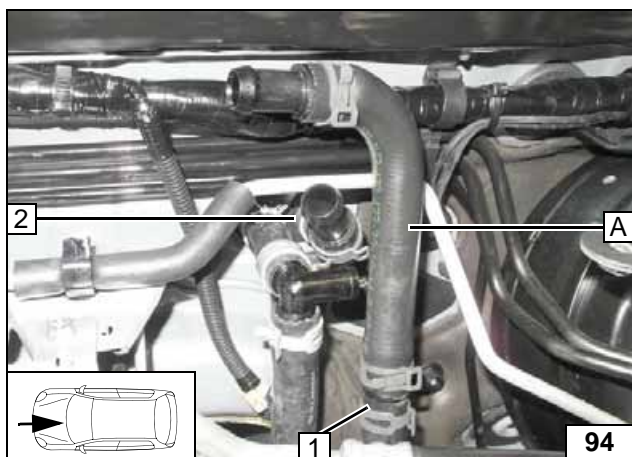


Cut hose of engine outlet / heat exchanger inlet 1 at the marking (flat length from hose end 130mm).



Cutting point

Discard section X.

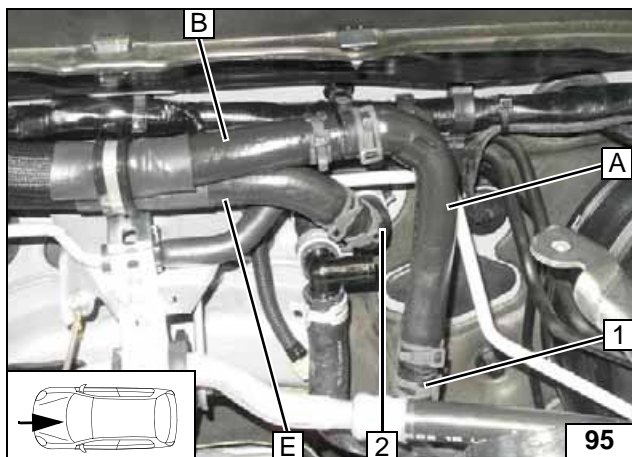


Align hose section of heat exchanger inlet 2 upwards to the right.



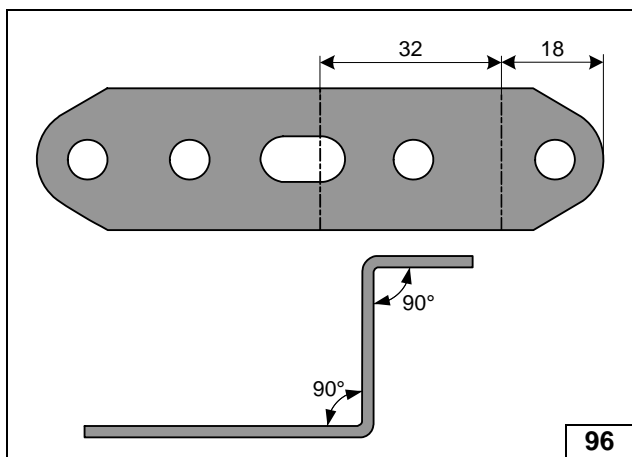
Premounting hoses

- 1 Engine outlet hose section

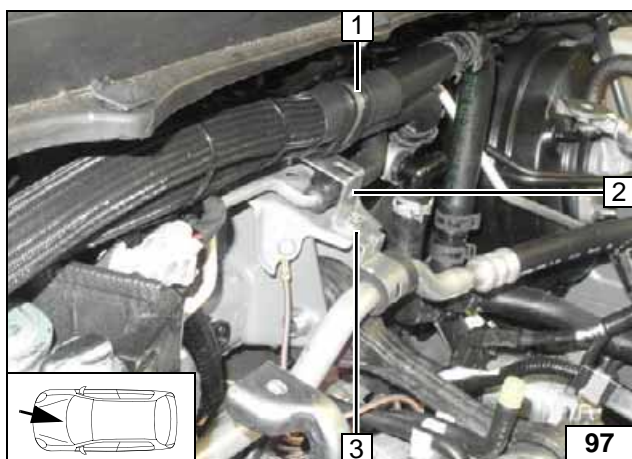


- 1 Engine outlet hose section
- 2 Heat exchanger inlet hose section

Connecting engine outlet / heat exchanger inlet



Preparing perforated bracket

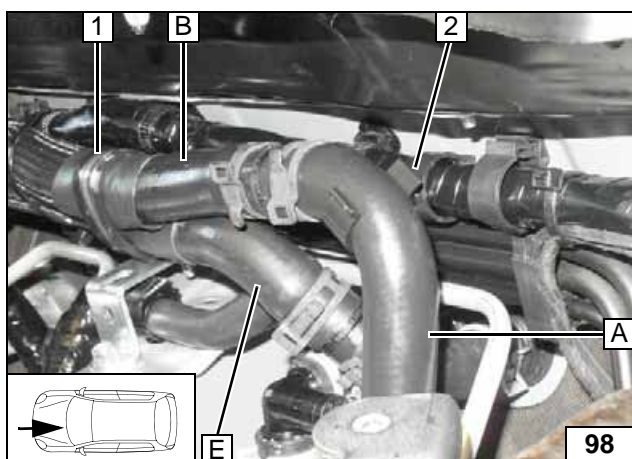


Route hoses **B** and **E** through rubber-coated p-clamp **1**.



- 1 38 mm dia. rubber-coated p-clamp
- 2 Perforated bracket
- 3 Original vehicle bolt

Routing in engine compartment

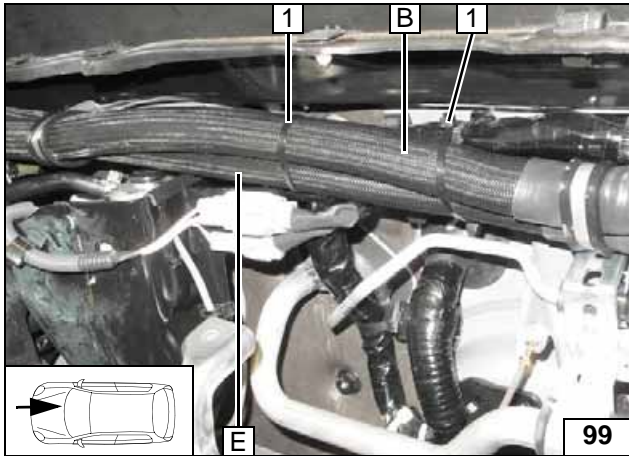


Align rubber-coated p-clamp **1** upwards.



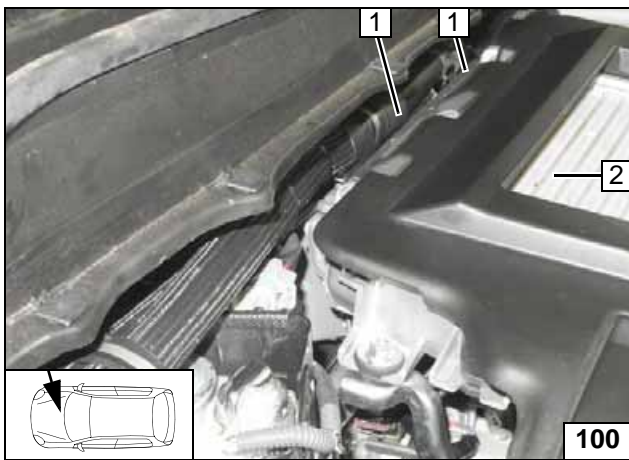
- 2 20x22 hose bracket between hose **A** and original vehicle wiring harness

Routing in engine compartment



1 Cable tie [2x]

Securing hoses



Ensure sufficient distance between intercooler and water hoses at position 1, correct if necessary.



2 Intercooler installed

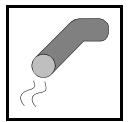
Aligning hoses



Ensure sufficient distance from adjacent components, correct if necessary.



Aligning hoses

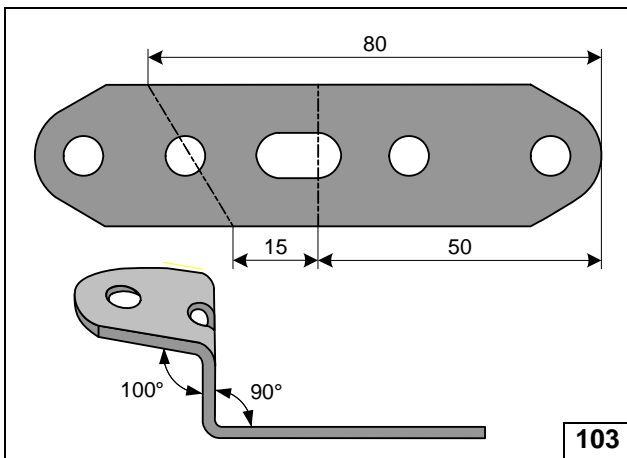
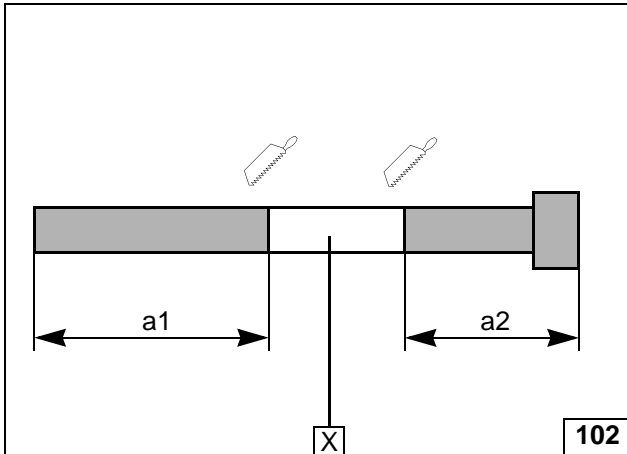


Exhaust Gas

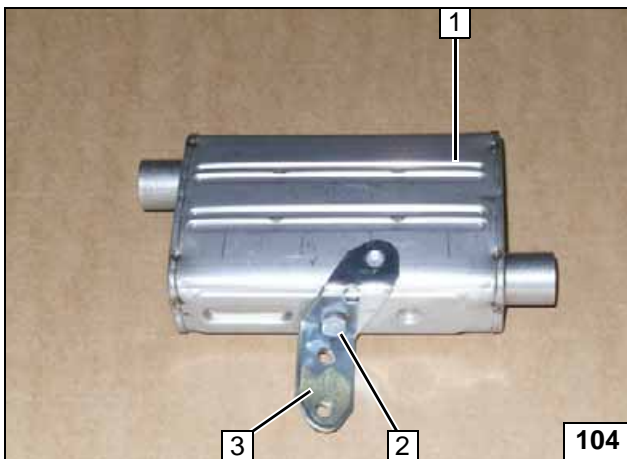
a1 = 240
a2 = 350

X =

Preparing exhaust pipe

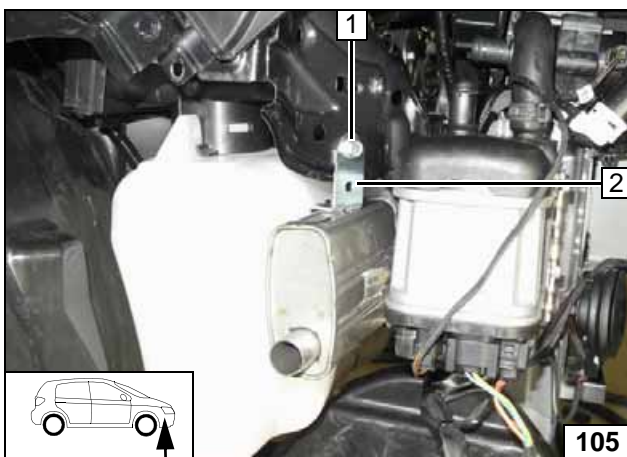


Preparing perforated bracket



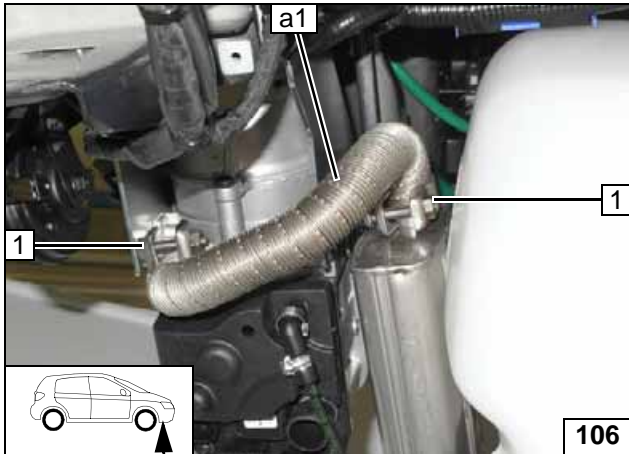
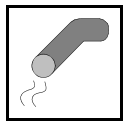
- 1 Silencer
- 2 M6x16 bolt, spring lockwasher
- 3 Perforated bracket

Premounting silencer



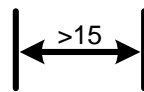
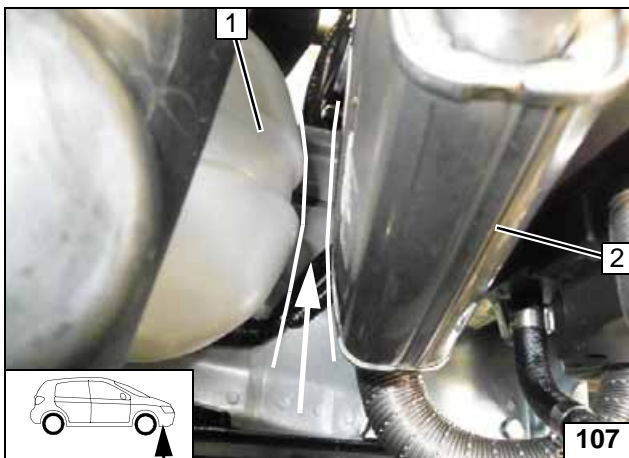
- 1 Original vehicle bolt
- 2 Perforated bracket

Installing silencer



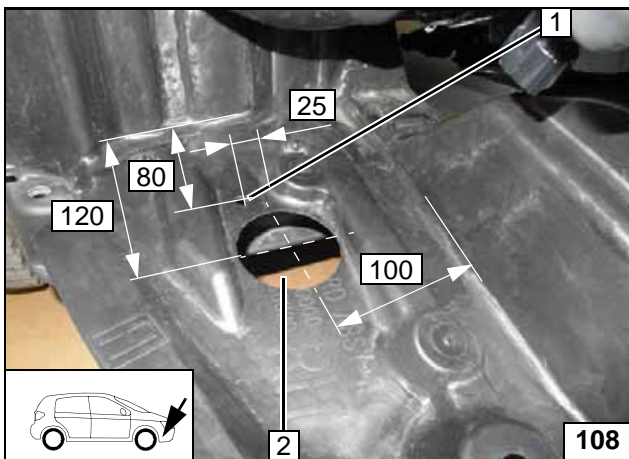
1 Hose clamp [2x]

Installing exhaust pipe a1



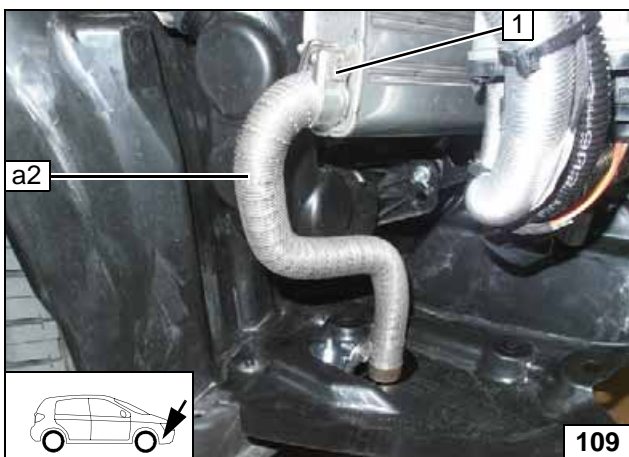
1 Resonator
2 Exhaust silencer

Checking the distance



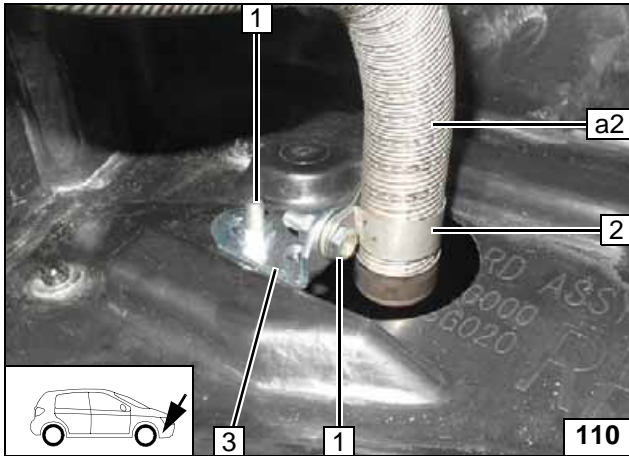
1 7 mm dia. hole
2 60 mm dia. hole

Holes in wheel well trim



1 Hose clamp

Installing exhaust pipe a2

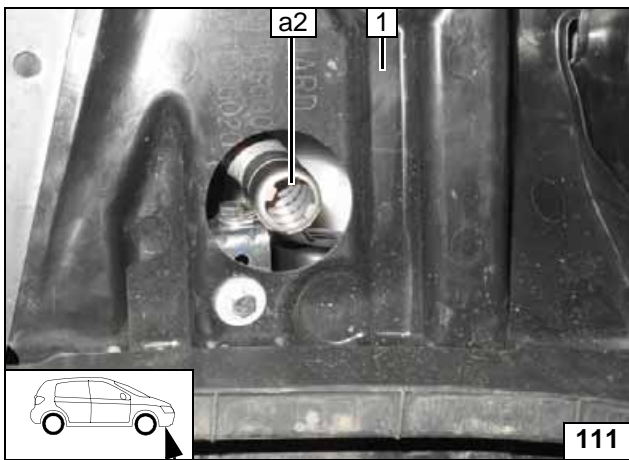


Ensure sufficient distance from adjacent components, correct if necessary.



- 1 M6x20 bolt, large diameter washer, flanged nut [2x each]
- 3 P-clamp
- 3 Angle bracket

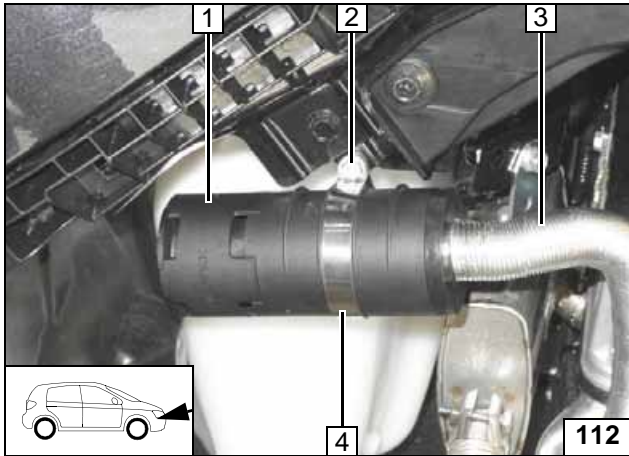
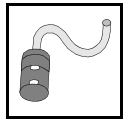
Fastening exhaust pipe a2



Align exhaust pipe a2 with centre of hole and flush with wheel well trim 1.



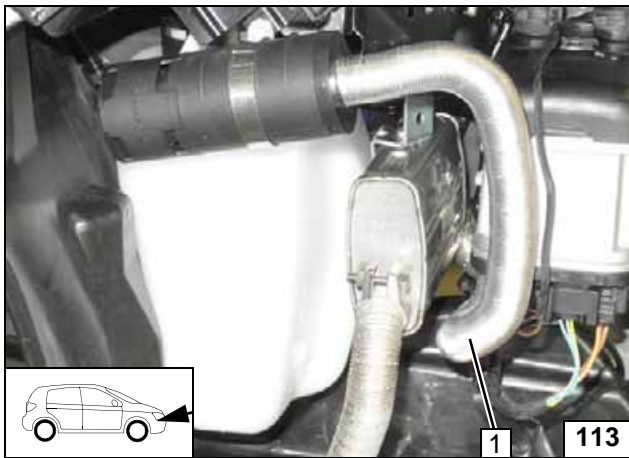
Aligning exhaust pipe a2



Combustion Air

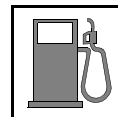
- 1 Silencer
- 2 M5x16 bolt, flanged nut, existing hole
- 3 Combustion air pipe
- 4 51 mm dia. clamp

Installing silencer



- 1 Combustion air pipe

Installing combustion air pipe



Fuel

CAUTION!

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

Catch any fuel running off in 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.

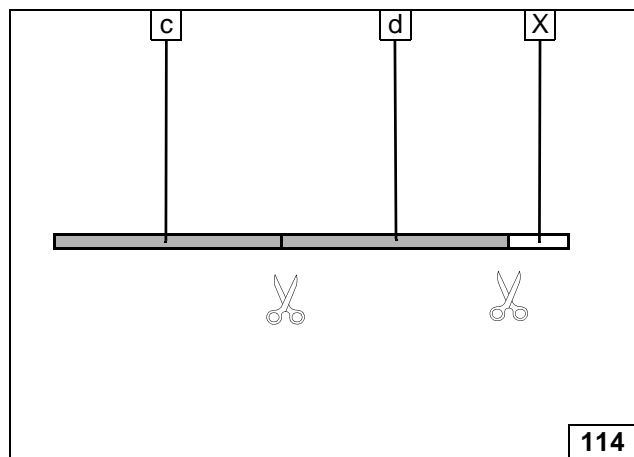
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

WARNING!

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



Cutting corrugated tube to length

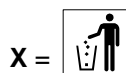


All vehicles

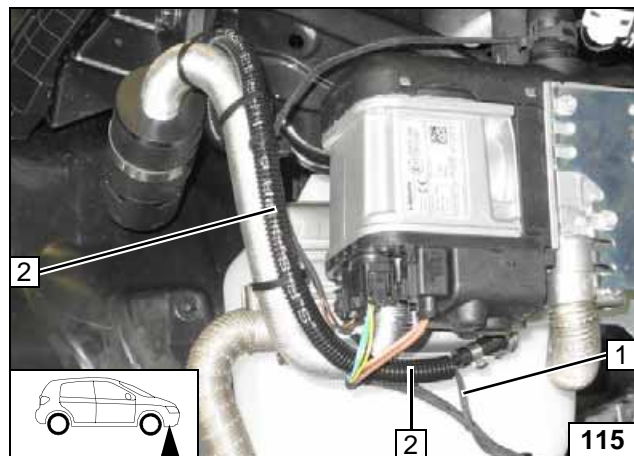
Cut 10mm dia., 1800mm long corrugated tube to length.

c = 750

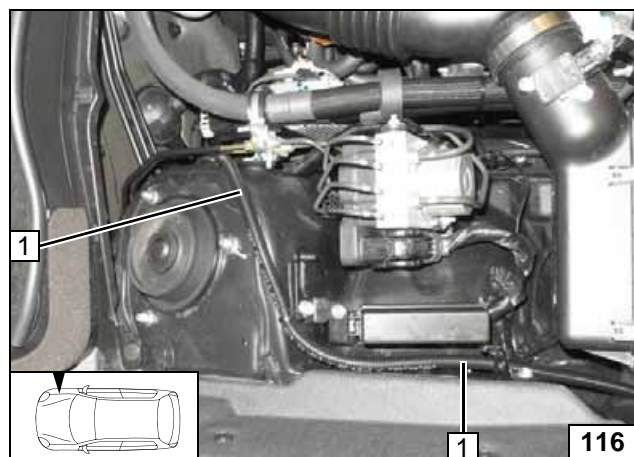
d = 750



Connecting heater



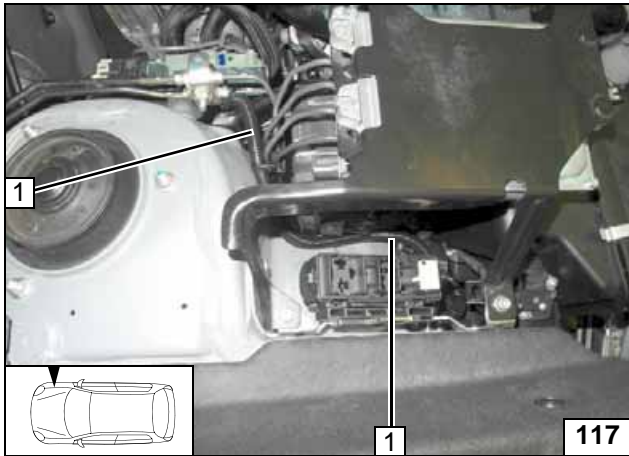
Pull fuel line and wiring harness of metering pump 1 in corrugated tube b 2. Route corrugated tube 2 in engine compartment and fasten to combustion air pipe with cable ties.



110 kW petrol vehicle

1 Fuel line and metering pump wiring harness in 10 mm dia. corrugated tube b

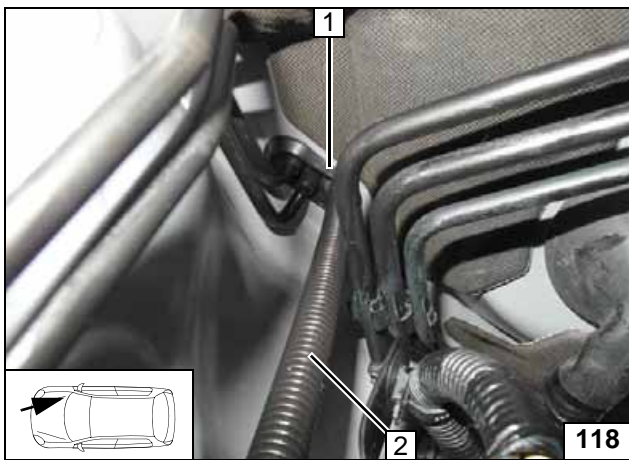
Routing lines



177 kW petrol vehicle

- 1 Fuel line and metering pump wiring harness in 10 mm dia. corrugated tube

Routing lines



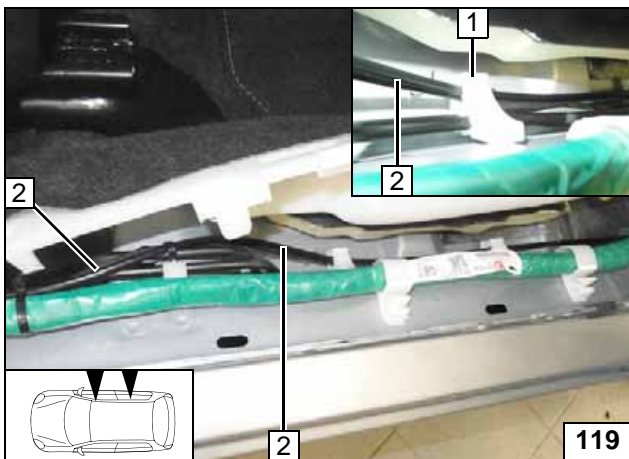
110 kW / 177 kW petrol vehicle

Route fuel line and wiring harness of metering pump through original vehicle pass through 1 into the passenger compartment.

- 2 10 mm dia. corrugated tube



Routing lines

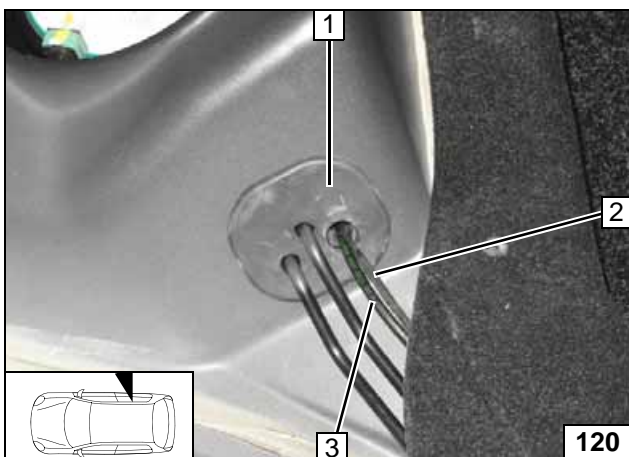


Route fuel line and wiring harness of metering pump 2 in the passenger compartment (front and rear) to the rear within cable duct along original vehicle fuel lines.

- 1 Mounting/bracket of fuel lines



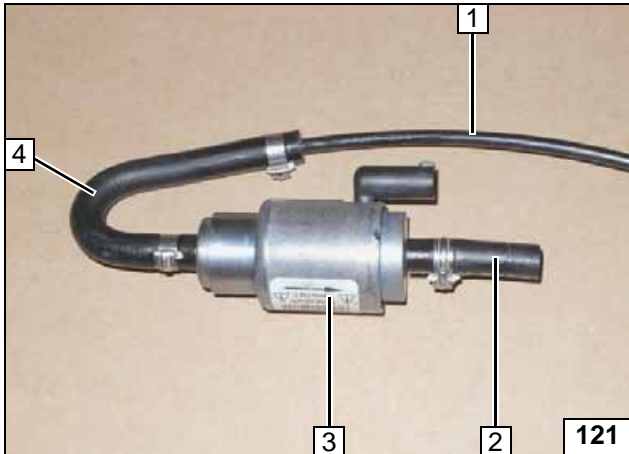
Routing lines



Route fuel line 3 and metering pump wiring harness 2 through protective rubber plug 1 to the underbody.



Routing lines

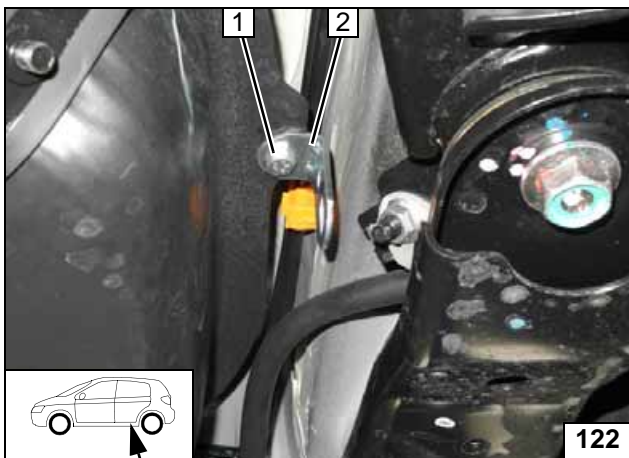


Cut off 1000mm from fuel line.

- 1 1000 mm long fuel line of fuel standpipe
- 2 Hose section, 10 mm dia. clamp
- 3 Metering pump
- 4 180° moulded hose, 10 mm dia. clamp [2x]

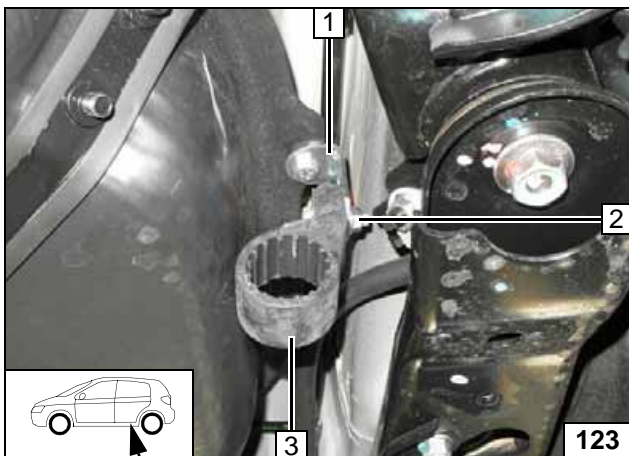


Premounting metering pump



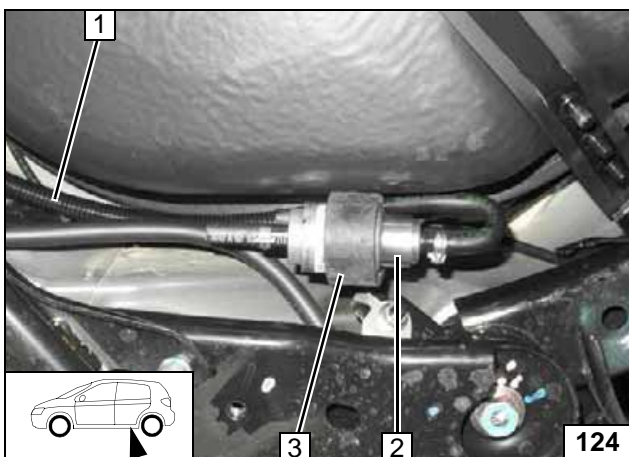
- 1 M6x20 bolt, flanged nut, existing hole
- 2 Angle bracket

Installing angle bracket



- 1 Angle bracket
- 2 M6x25 bolt, flanged nut
- 3 Metering pump mount

Installing metering pump mounting

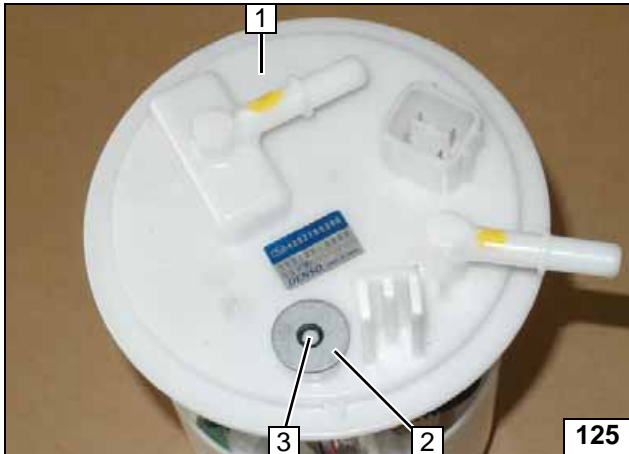


Push corrugated tube c 1 onto fuel line of fuel standpipe.

- 2 Metering pump
- 3 Metering pump mount



Installing metering pump

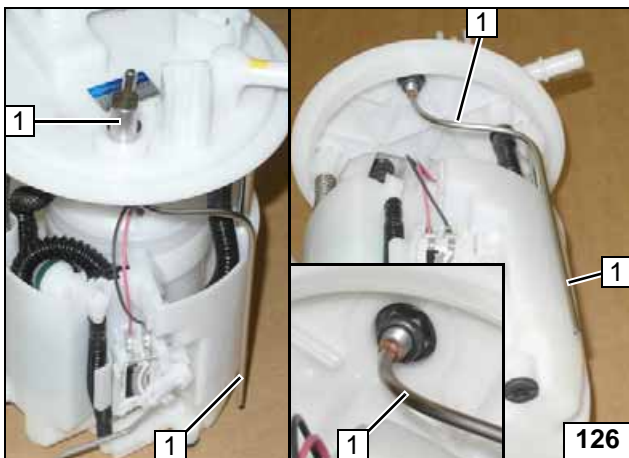


Remove fuel tank sending unit on right **1** according to manufacturer's instructions.

- 2** Large diameter washer with outer dia. $d_a = 21.6$ mm in centre of recess
- 3** Copy hole pattern, 6 mm dia. hole



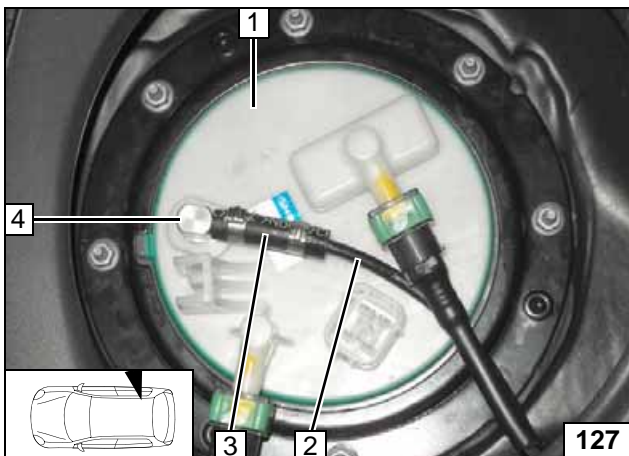
Preparing fuel extraction



Bend fuel standpipe **1** according to template and cut to length.



Installing fuel standpipe

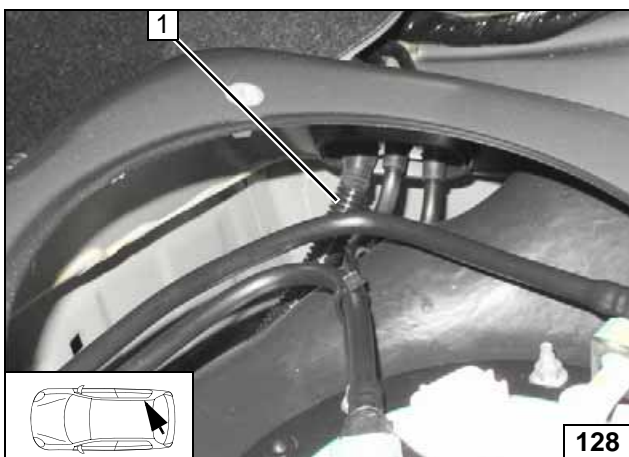


Install fuel tank sending unit **1** according to manufacturer's instructions.

- 2** Fuel line of fuel standpipe
- 3** Hose section, 10 mm dia. clamp [2x]
- 4** Fuel standpipe



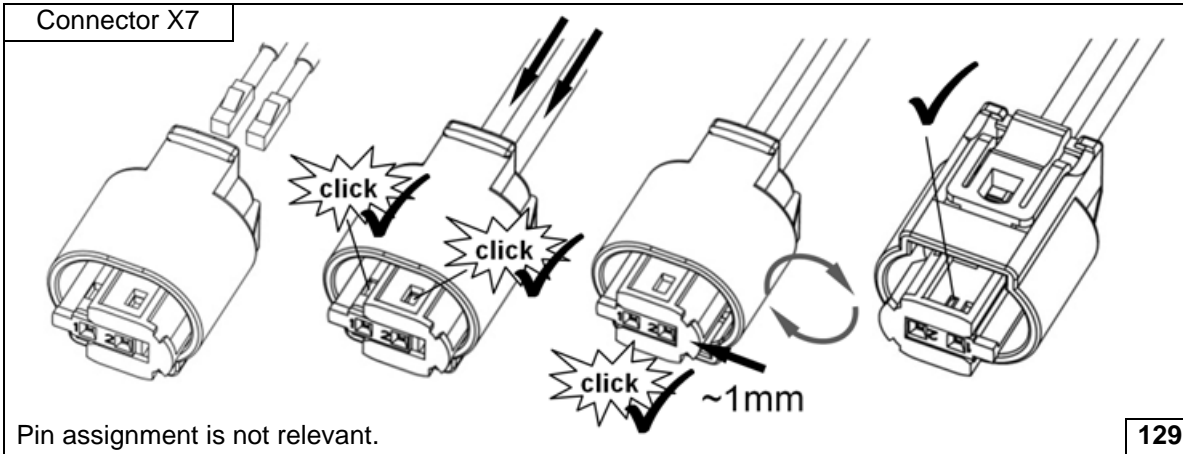
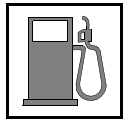
Connecting fuel line



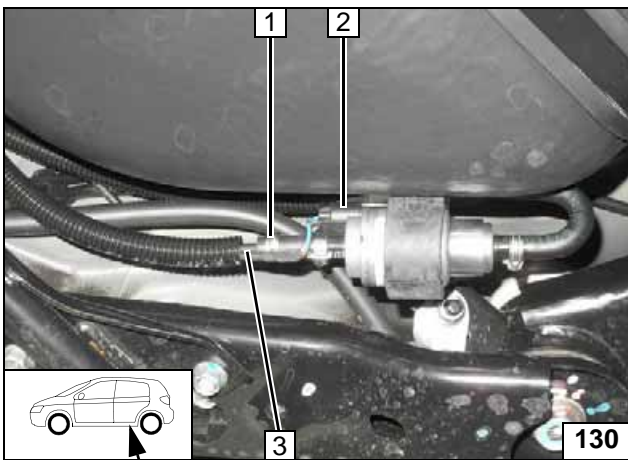
Route fuel line of heater and wiring harness of metering pump to the metering pump in corrugated tube **1**.



Routing fuel line



Completing metering pump connector

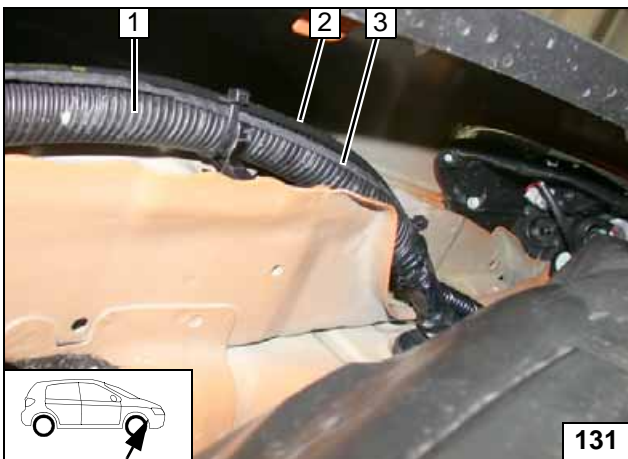


Check the position of the components; correct if necessary. Check that they have freedom of movement.



- 1 10 mm dia. clamp
- 2 Metering pump wiring harness, connector X7 mounted
- 3 Fuel line of heater

Connecting metering pump

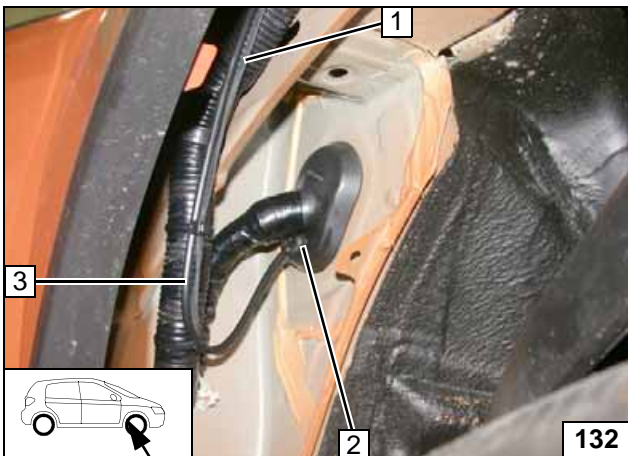


108 kW diesel vehicle

Route fuel line 2 and metering pump wiring harness 3 to the rear of the wheel well along original vehicle wiring harness 1.



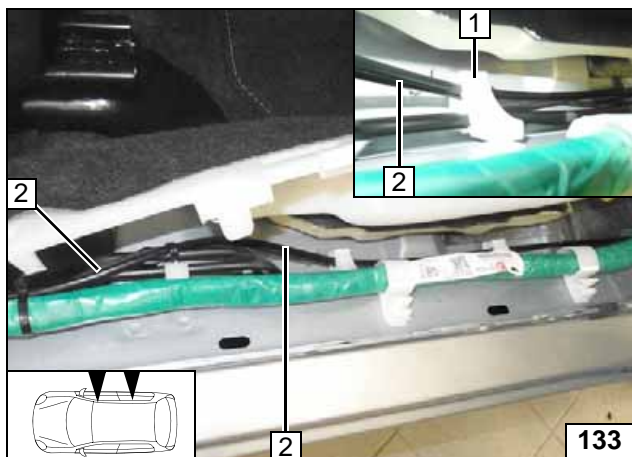
Routing lines



Route fuel line 3 and metering pump wiring harness 1 through original vehicle pass through 2 into passenger compartment.



Routing lines

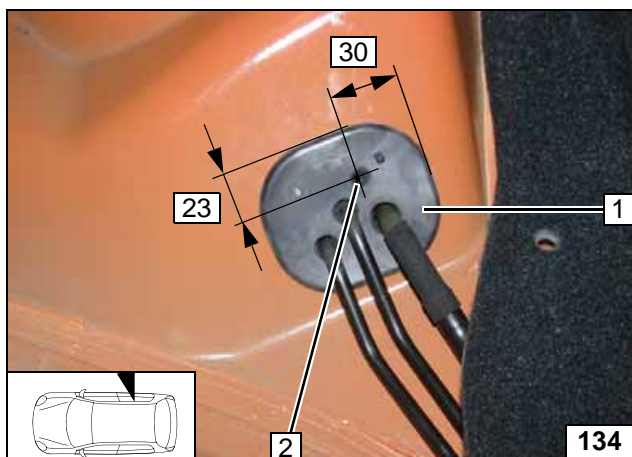


Route fuel line and wiring harness of metering pump 2 in the passenger compartment (front and rear) to the rear within cable duct along original vehicle fuel lines.

- 1 Mounting/bracket of fuel lines

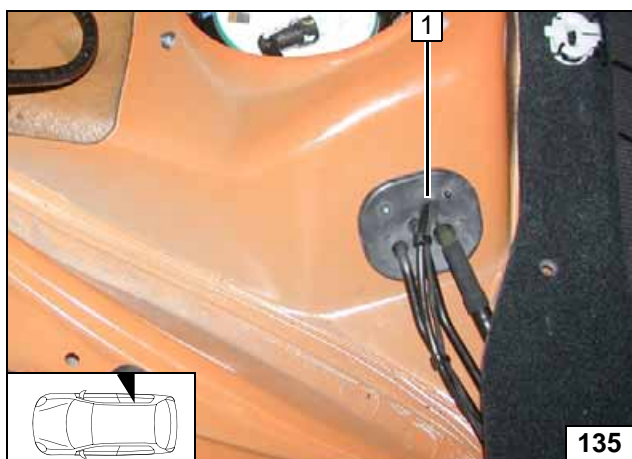


Routing lines



- 1 Protective rubber plug
- 2 7 mm dia. hole

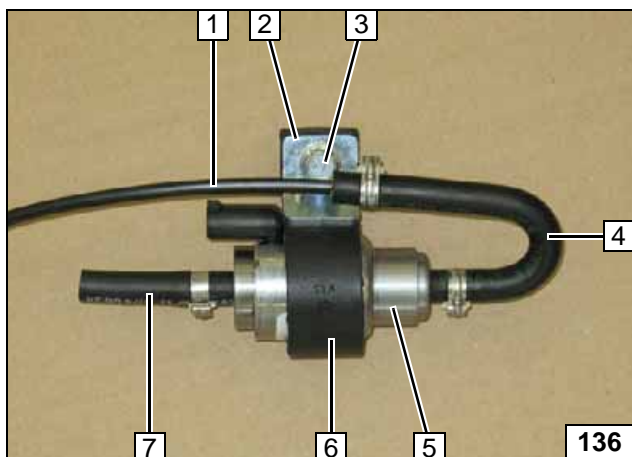
Hole in protective rubber plug



Route fuel line and metering pump wiring harness to the underbody through hole in protective rubber plug 1.



Routing lines

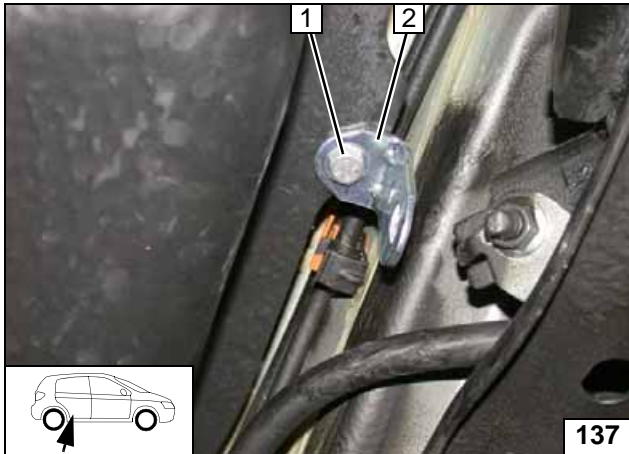


Cut off 1000mm from fuel line.

- 1 1000 mm long fuel line
- 2 Support angle bracket
- 3 Insert M6x25 bolt
- 4 180° moulded hose, 10 mm dia. clamp [2x]
- 5 Metering pump
- 6 Metering pump mount
- 7 Hose section, 10 mm dia. clamp

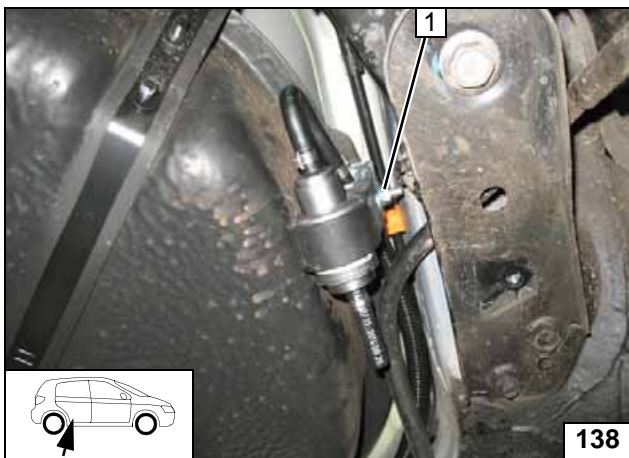


Premounting metering pump



- 1 M6x20 bolt, flanged nut, existing hole
- 2 Angle bracket

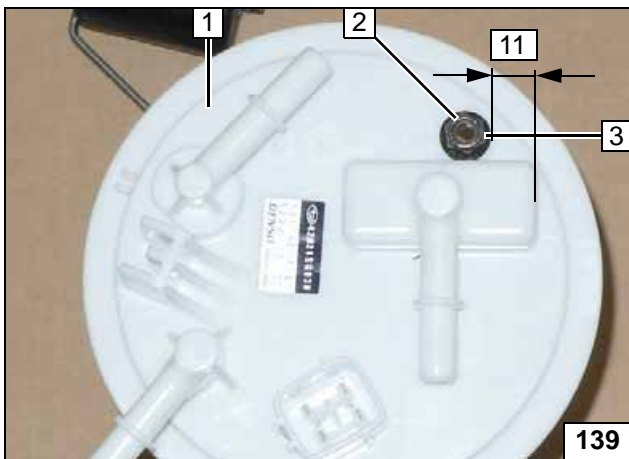
Installing angle bracket



- 1 Flanged nut on M6x25 bolt



Installing metering pump



Remove fuel tank sending unit on right 1 according to manufacturer's instructions.

- 2 Flanged nut
- 3 Copy hole pattern, 6 mm dia. hole



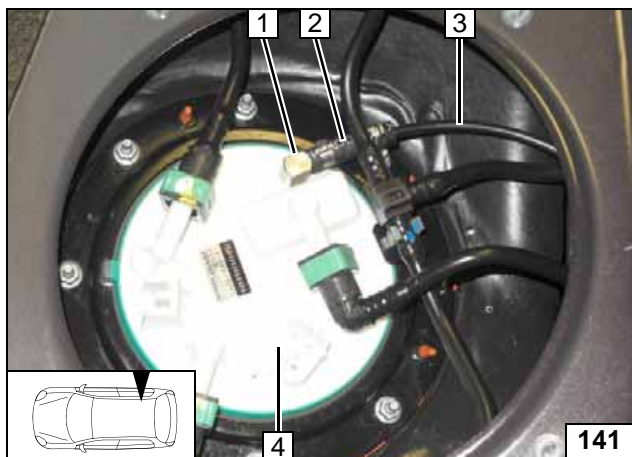
Preparing fuel extraction



Bend fuel standpipe 1 according to template and cut to length.



Installing fuel standpipe

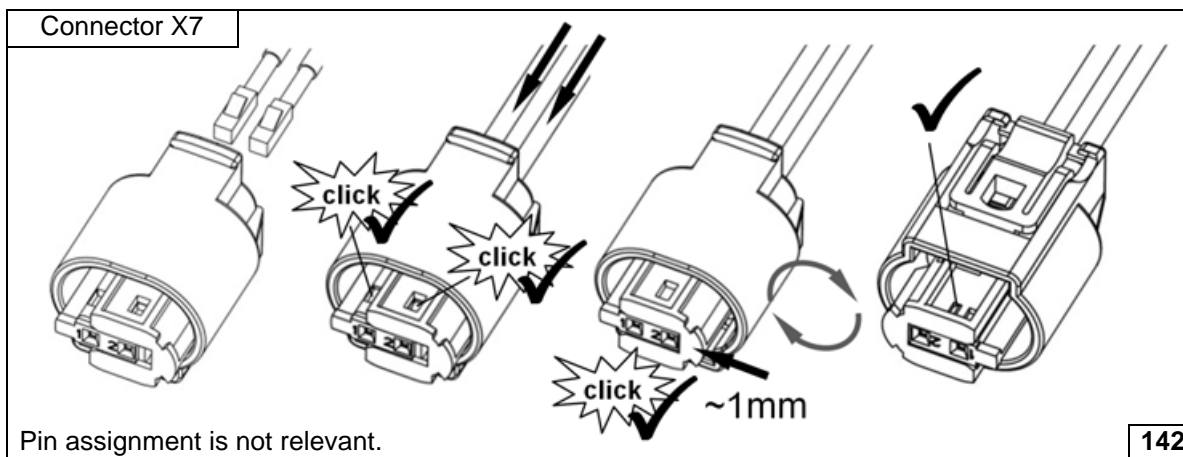


Install fuel tank sending unit **4** according to manufacturer's instructions.

- 1 Fuel standpipe
- 2 Hose section, 10 mm dia. clamp [2x]
- 3 Fuel line of fuel standpipe



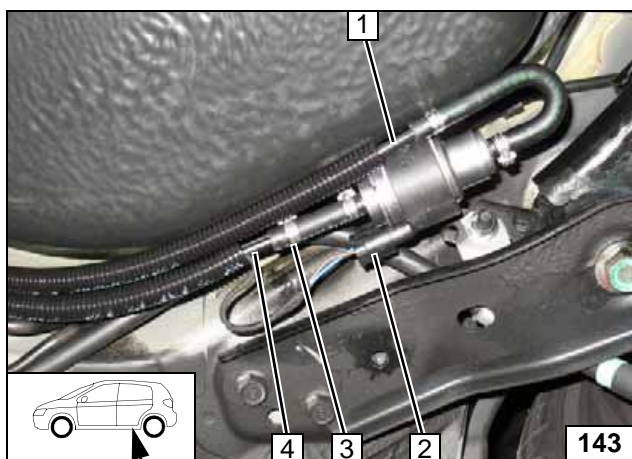
**Connect-
ing fuel line**



**Completing me-
tering pump
connector**

Pin assignment is not relevant.

142

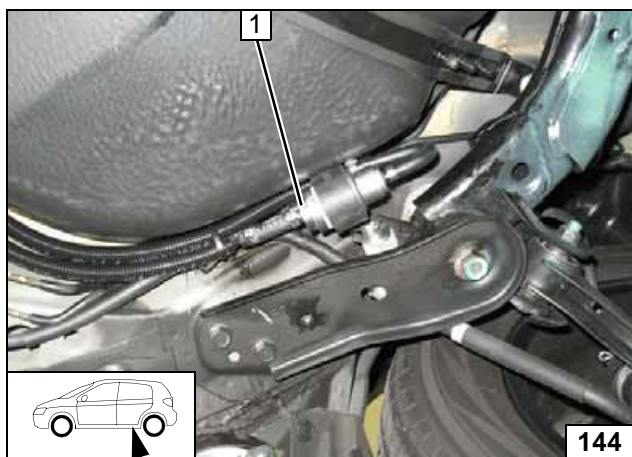


Push one 750 mm long, 10 mm dia. corrugated tube each onto fuel line of fuel standpipe **1** and fuel line of heater **4**.

- 2 Metering pump wiring harness, connector X7 mounted
- 3 10 mm dia. clamp [2x]



**Connect-
ing meter-
ing pump**



Twist connector of metering pump **1** upwards. Check the position of the components; correct if necessary. Check that they have freedom of movement.



**Aligning
metering
pump**



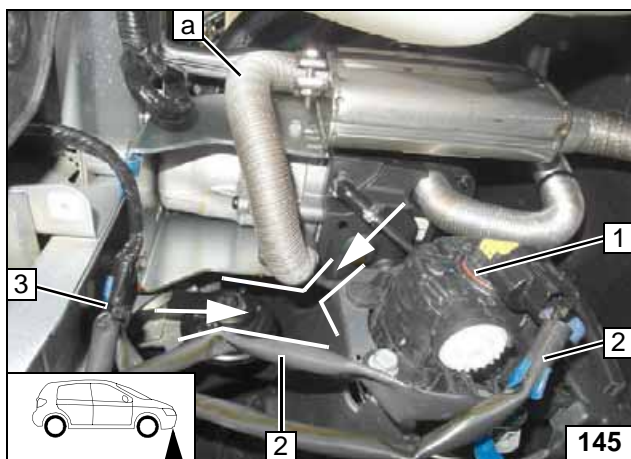
Final Work

WARNING!

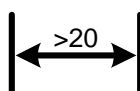
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate loose wire ends and tie back. Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K).



- Connect the battery.
- Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.
- Program MultiControl CAR, teach Telestart transmitter.
- Make settings on the A/C control panel according to the 'operating instructions'.
- Place the 'Switch off parking heater before refuelling' caution label near the filler neck.
- For initial startup and function check, please see installation instructions.



After bumper installation:



- 1 Front fog light
- 2 Wiring harness of front fog light [2x]
- 3 Cable tie



Fastening wiring harness



177 kW petrol vehicle

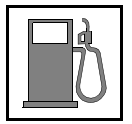
Ensure sufficient distance from water hoses, correct if necessary.

- 1 Engine design cover mounted



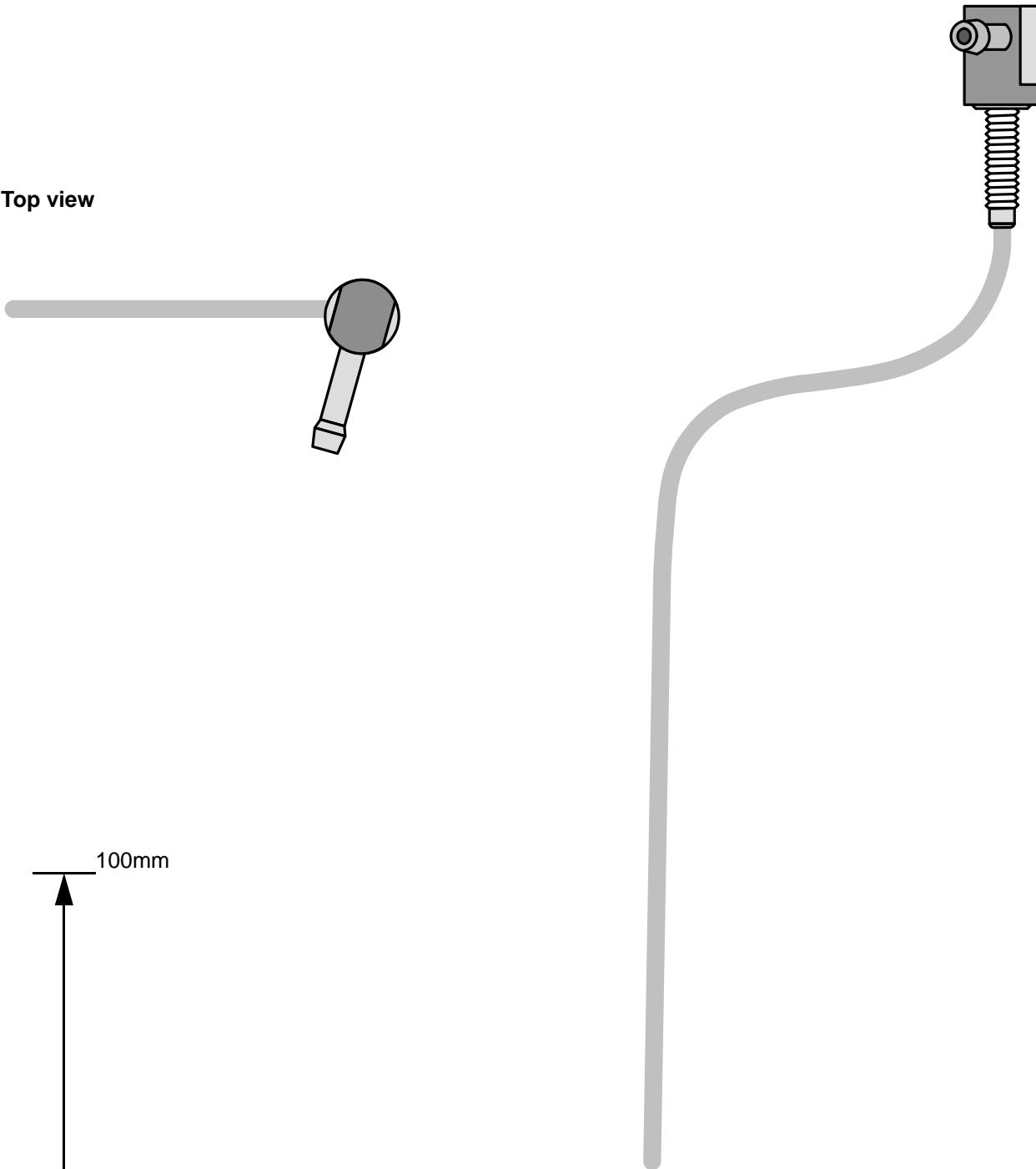
Installing engine design cover

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



Fuel Standpipe Template for Petrol Vehicles

Top view



100mm



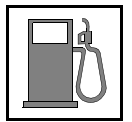
Scale 1:1

Compare size of printout with dimension lines.
Allowed tolerance a maximum of 2%.

Set the printer settings to 'no margin' or 'minimise margins' and 100% of the normal size.

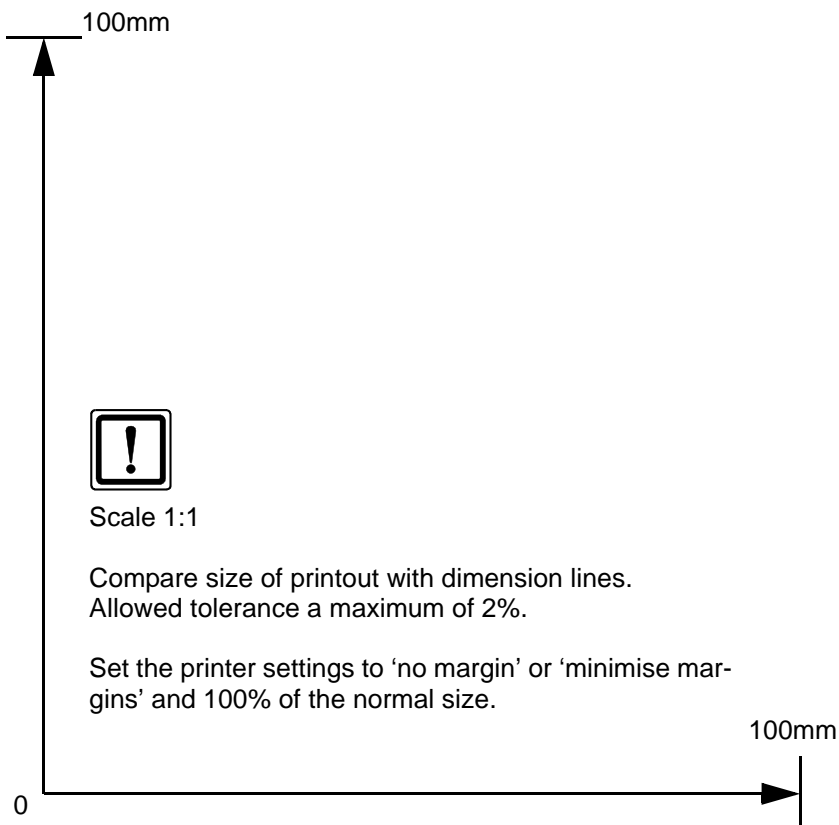
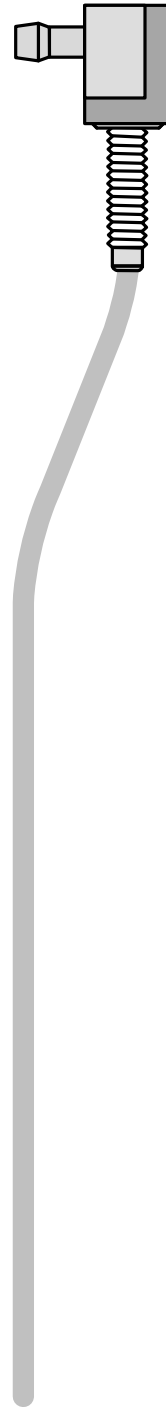
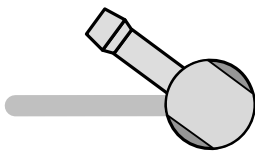
100mm

0



Fuel Standpipe Template for Diesel Vehicles

Top view



Operating Instructions for 1-Zone Automatic A/C

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

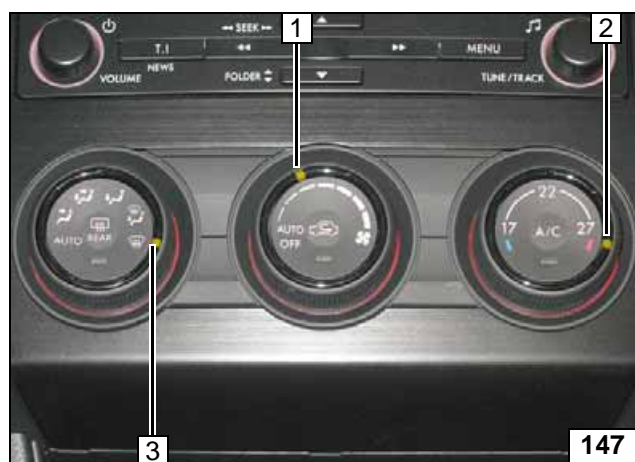
Example:

For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.

For instructions on deactivation, please refer to the operating instructions of the vehicle.

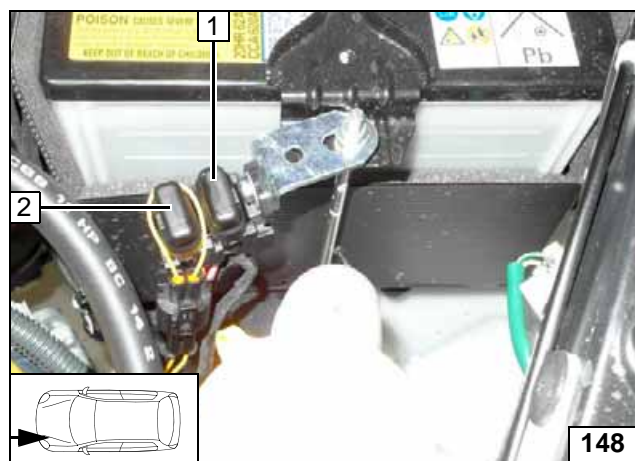
Before parking the vehicle, make the following settings:



- 1 Set fan to level '2', or max. '3'
- 2 Temperature to 'max.'
- 3 Air outlet to windscreen

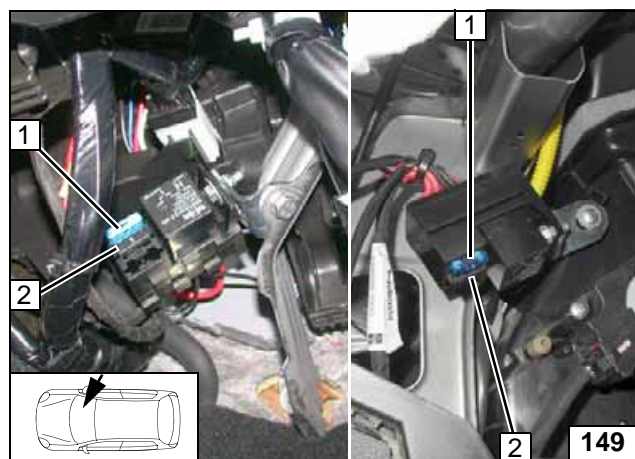


A/C control panel



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

Engine compartment fuses



The installation location of the fuses depends on the equipment and is shown in the left or right figure.

- 1 15A fan fuse F4
- 2 1A heater control fuse F3



Passenger compartment fuses

Operating Instructions for 2-Zone Automatic A/C

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.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.

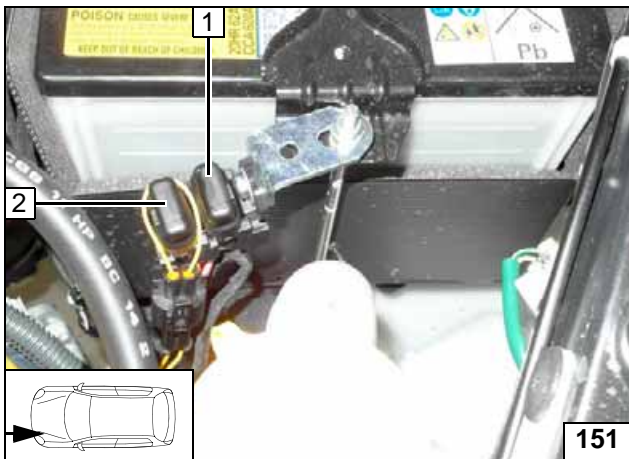
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



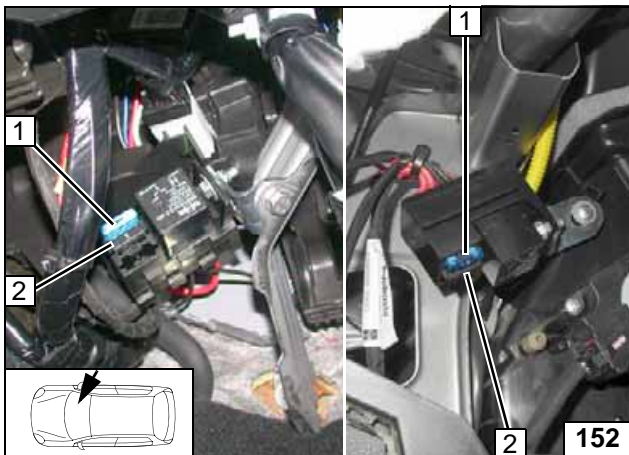
- 1 Air outlet to windscreen
- 2 Set fan to level '2'
- 3 Set temperature on both sides to 'HI'

A/C control panel



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

Engine compartment fuses



The installation location of the fuses depends on the equipment and is shown in the left or right figure.

- 1 15A fan fuse F4
- 2 1A heater control fuse F3

Passenger compartment fuses

