Water Heater

***Thermo Top Evo* Parking Heater** E1 00 0258

Installation Documentation
Hyundai Veloster

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Hyundai	Veloster	VF	e11 * 2007 / 46 * 0194 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.6 GDI	Petrol	SG	103	1591	G4FD

SG = Manual transmission

From Model Year 2011
Left-hand drive vehicle

Verified equipment variants: Manual / automatic air-conditioning system
Front fog light

Not verified: Passenger compartment monitoring
Headlight washer system

Total installation time: approx. 7 hours

Hyundai Veloster

Table of Contents

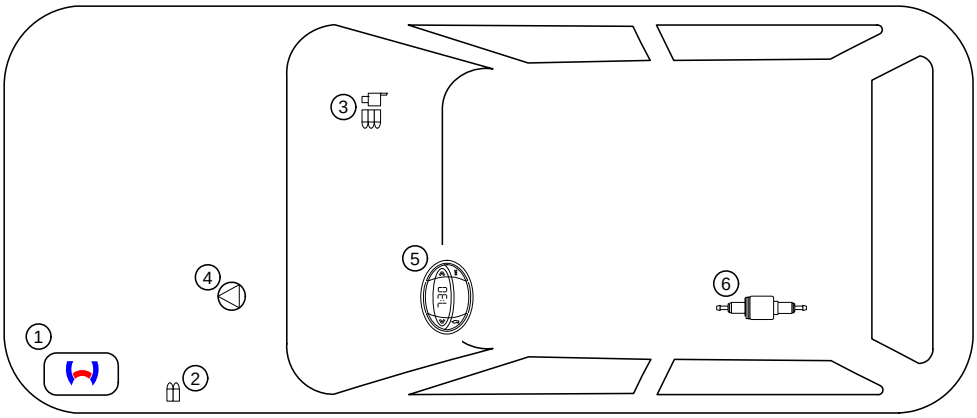
Necessary Components

- Basic delivery scope *Thermo Top Evo* in accordance with price list
- Installation kit for Hyundai Veloster 2011 Petrol **1317548A**
- 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 Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Passenger compartment fuse holder
4. Circulating pump
5. Digital timer
6. Metering pump



Information 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.

Sharp edges should be fitted with rub protection (split-open fuel hose)! 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 IPCU, 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 03 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.

Hyundai Veloster

Information on Validity

This installation documentation applies to Hyundai Veloster Petrol vehicles - for validity, see page 1 - from model year 2011 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 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

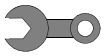
Dimensions
- All dimensions are in mm.

Tightening torque values
- Tightening torque values of 5x13 heater bolts = 8Nm.
- Tightening torque values of 5x15 retaining plate of water connection piece 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.

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

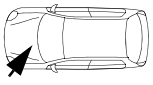
Specific risk of damage to components

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



Hyundai Veloster

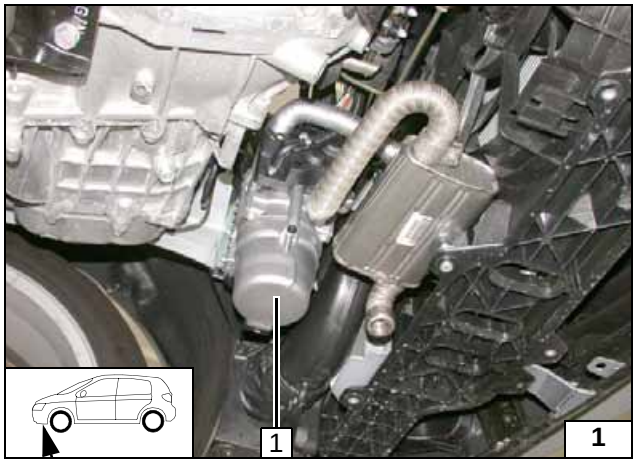
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect and completely remove the battery together with the carrier.
- Remove the engine cover.
- Remove the air filter together with the intake hose.
- Remove the underride protection (if available).
- Remove the glove compartment.
- Remove the A/C control panel in accordance with manufacturer's instructions (only with automatic air-conditioning).
- Remove the A-pillar trim in the footwell on the front passenger's side (only with Telestart).

Heater

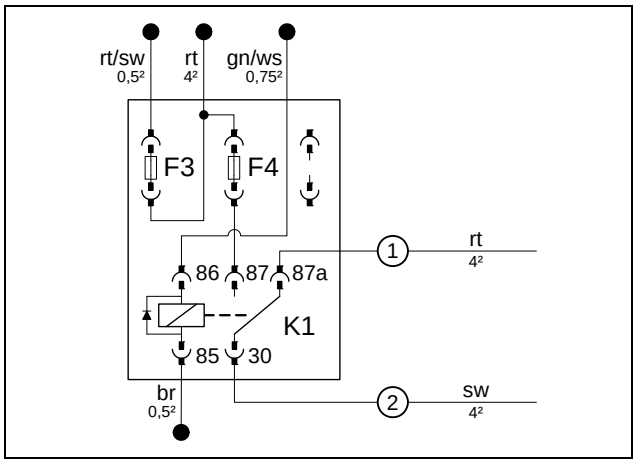
- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) in the appropriate place in the engine compartment.



Heater Installation Location

1 Heater

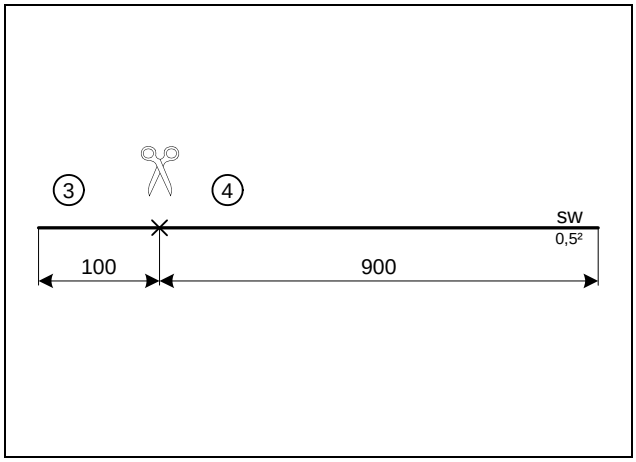
Installation location



Preparing Electrical System

Produce connections as shown in wiring diagram. K1 relay is connected only after the fuse holder is installed.

Installing F4, preparing K1 relay

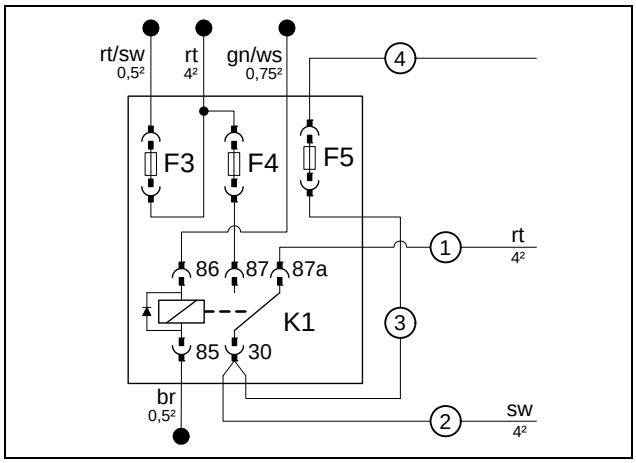


Automatic air-conditioning

Wire sections retain their numbering in the entire document.

Install wire section **4** in protective sleeving provided.

Cutting wires to length



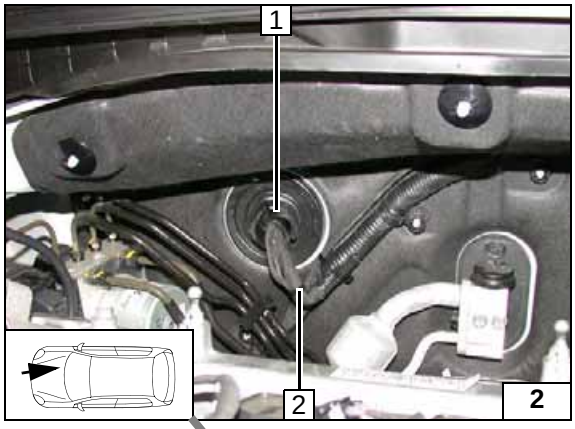
Produce connections as shown in wiring diagram. Insert 10A fuse F5. K1 relay is connected only after the fuse holder is installed.

Preparing K1 relay

Electrical System

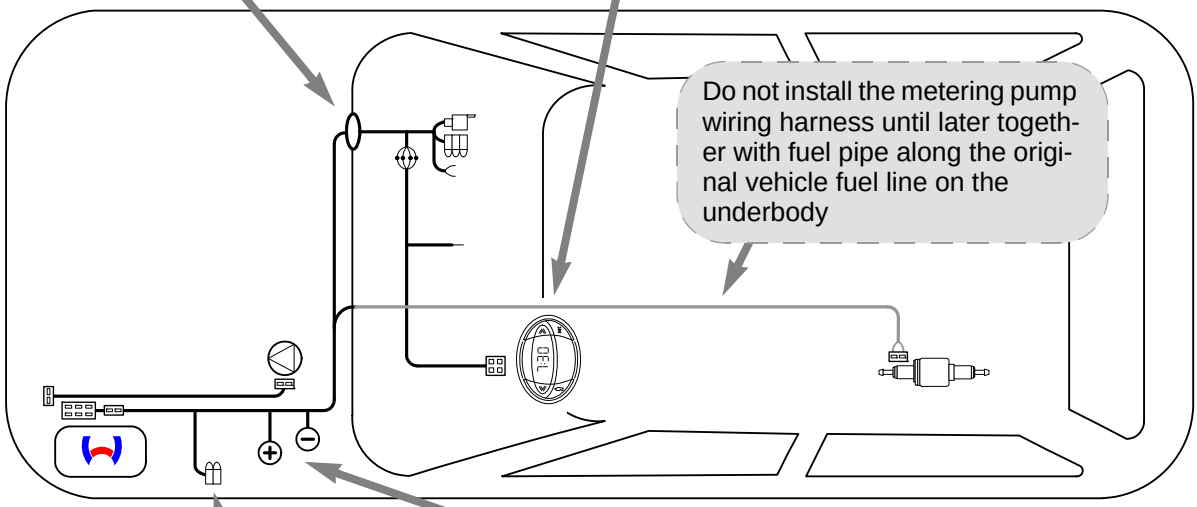
Wiring harness pass through

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

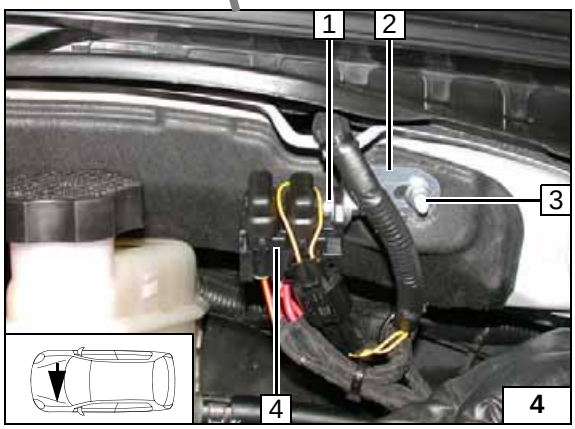


Digital timer

1 Digital timer

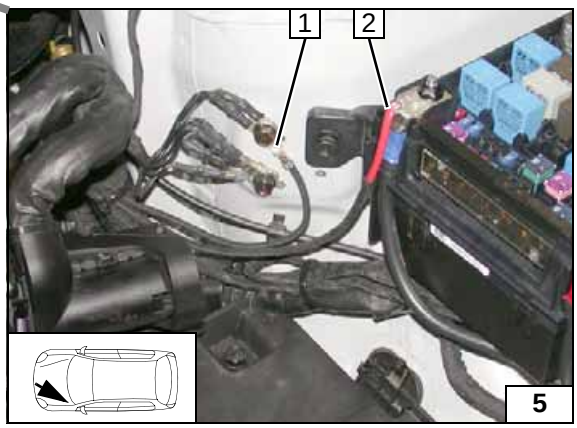


Wiring harness routing diagram



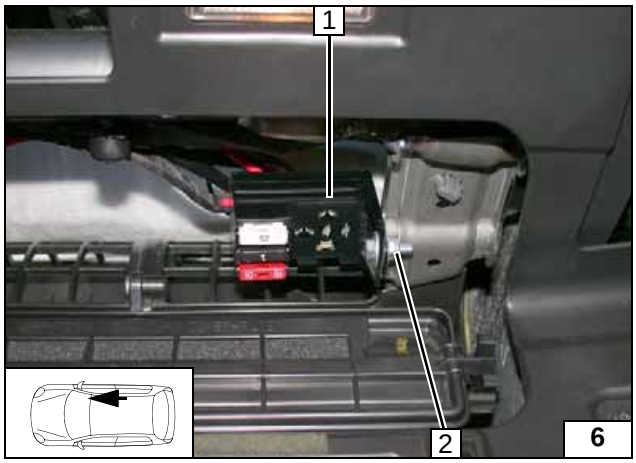
Fuse holder for engine compartment

1 M5x16 bolt, washer [2x], retaining plate, fuse holder, nut
2 Angle bracket
3 Original vehicle bolt, flanged nut
4 Fuses F1-2



Positive and earth wire

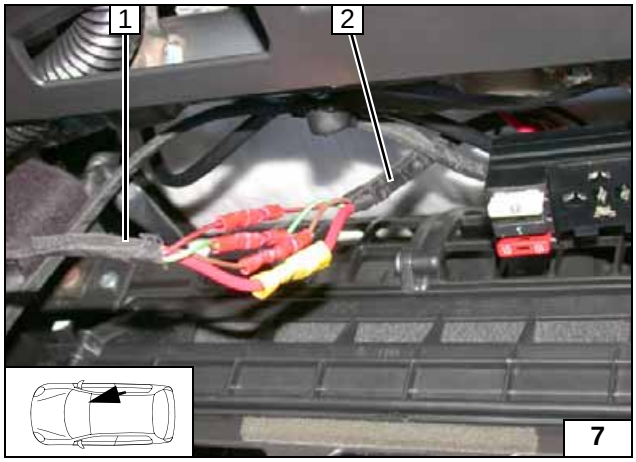
1 Earth wire on original vehicle earth support point
2 Positive wire on original vehicle positive support point



The vehicle shown is a vehicle with automatic air-conditioning.

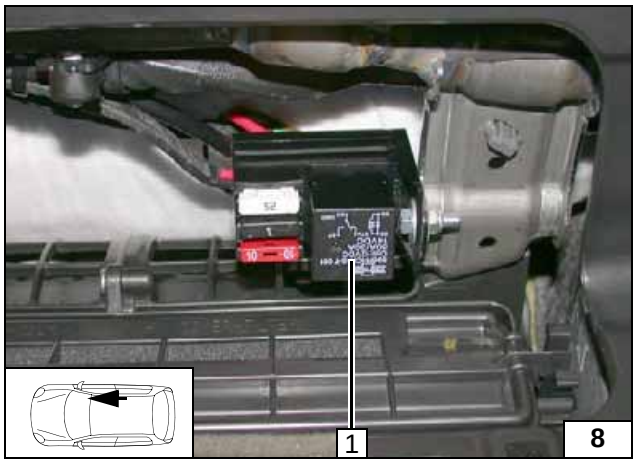
1 Passenger compartment fuse holder
2 M5x16 bolt, large diameter washer [2x], nut, existing hole

Installing fuse holder of passenger compartment



The vehicle shown is a vehicle with automatic air-conditioning.
Connect wiring harness of passenger compartment fuse holder **2** to wiring harness of heater **1** according to wiring diagram, in such a way that the wires of the same colour are connected to each other.

Connecting wiring harnesses



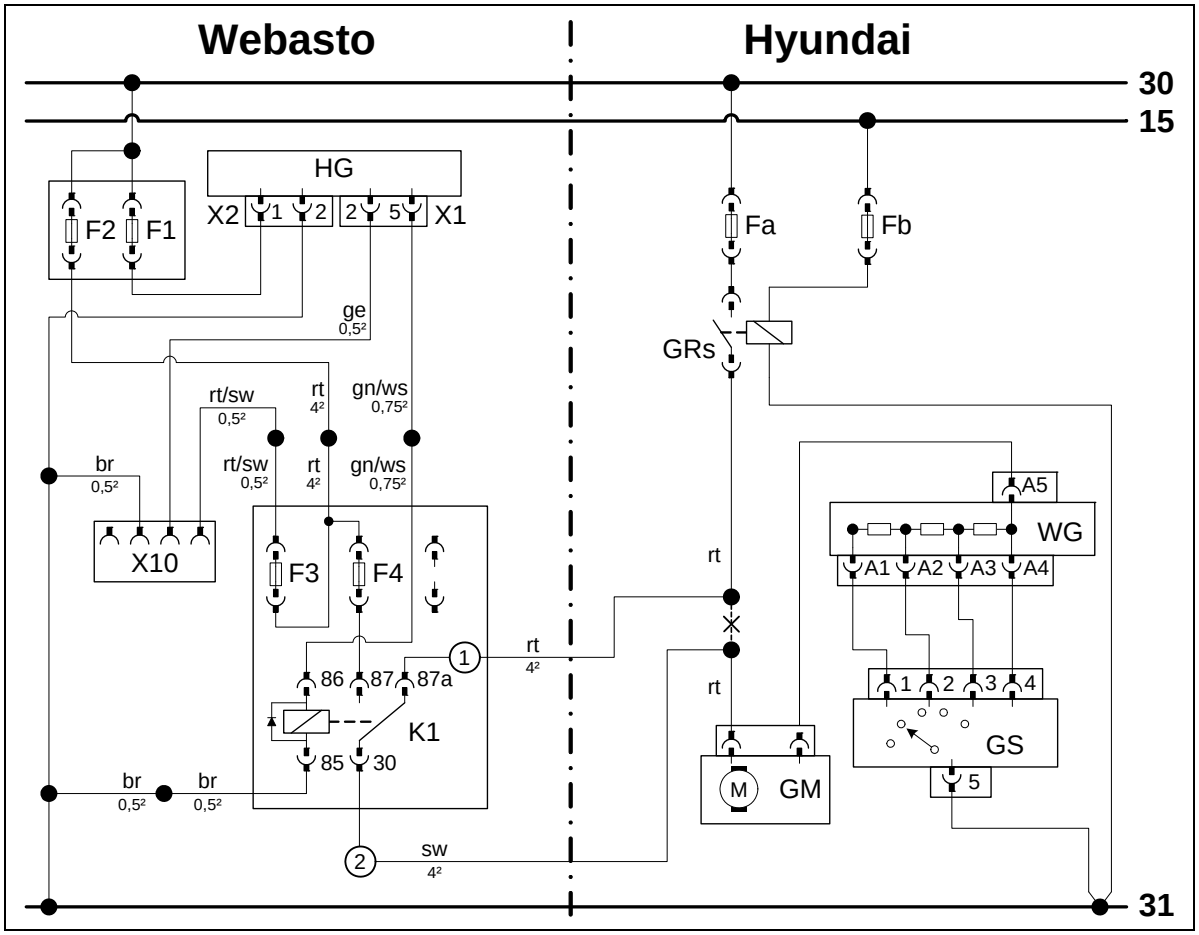
The vehicle shown is a vehicle with automatic air-conditioning.

1 K1 relay

Attaching K1 relay

Fan Controller for Manual Air-Conditioning

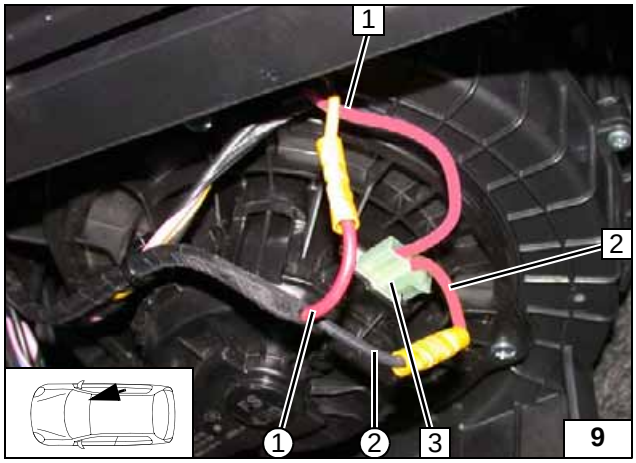
Wiring diagram



Legend

Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	GM	Fan motor	rt	red
X1	6-pin heater connector	GRs	Fan relay	sw	black
X2	2-pin heater connector	GS	Fan switch	ge	yellow
X10	Connector of heater control	WG	Resistor group	gn	green
K1	Fan relay	Fa	GM fuse	br	brown
F1	20A fuse	Fb	GRs fuse		
F2	30A fuse			!	Insulate wire end and tie back
F3	1A fuse				
F4	25A fuse			**X**	Cutting point
				Wiring colours may vary.	

Connection of fan motor

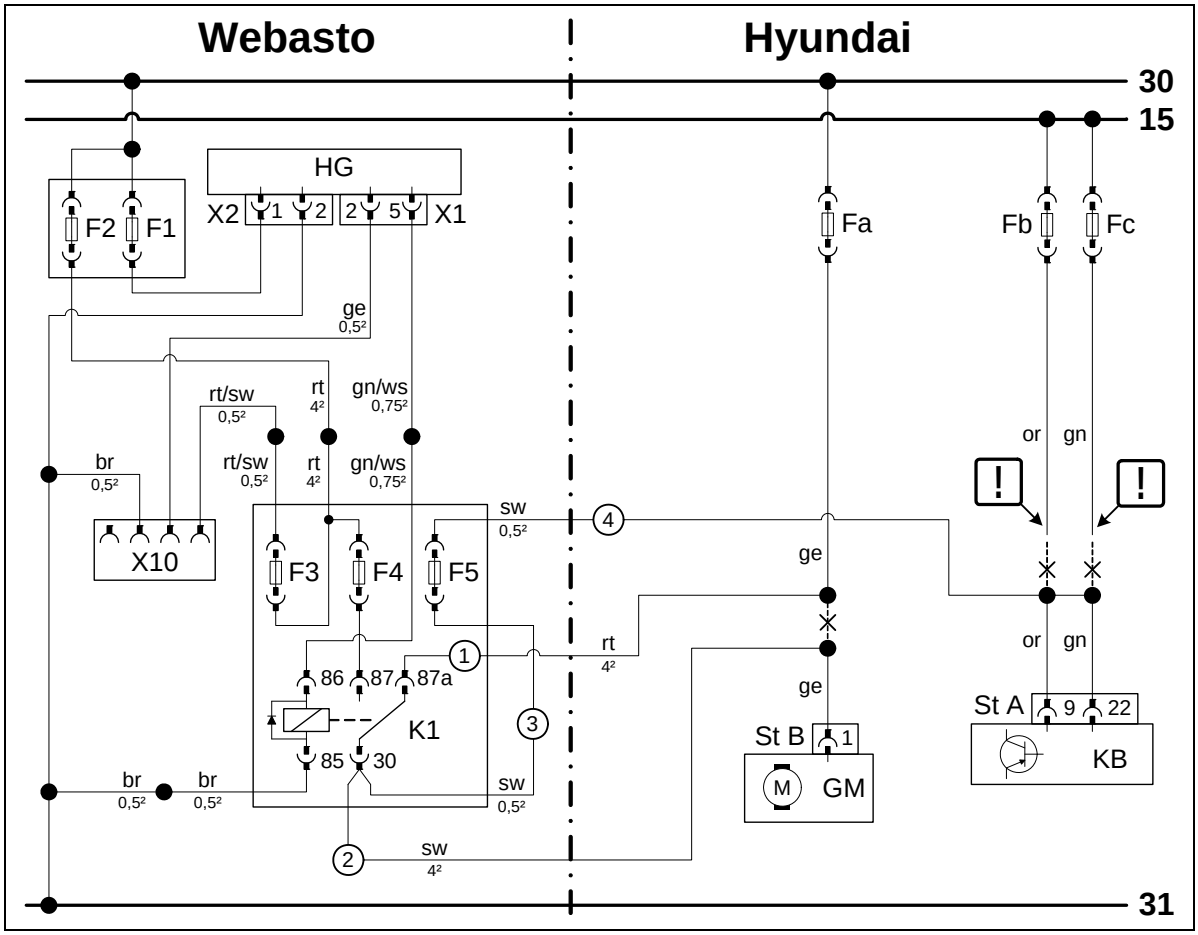


Connection to 2-pin connector **3** from the fan motor. Produce connections as shown in wiring diagram.

1 Red (rt) wire of fuse
2 Red (rt) wire of GM connector pin 1
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

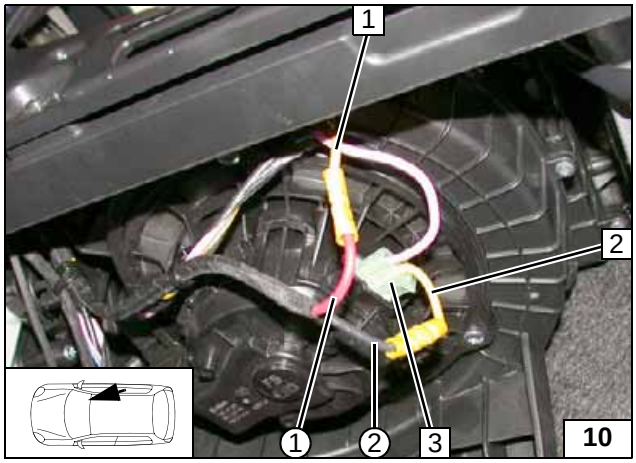
Fan Controller for Automatic Air-Conditioning

Wiring diagram



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	GM	Fan motor	rt	red
X1	6-pin heater connector	St B	2-pin GM connector	sw	black
X2	2-pin heater connector	KB	A/C control unit	ge	yellow
X10	Connector of heater control	St A	24-pin connector of KB	gn	green
K1	Fan relay	Fa	GM fuse	or	orange
F1	20A fuse	Fb	KB fuse	br	brown
F2	30A fuse	Fc	KB fuse	!	Insulate wire end and tie back
F3	1A fuse				
F4	25A fuse			X	Cutting point
F5	10A fuse			Wiring colours may vary.	

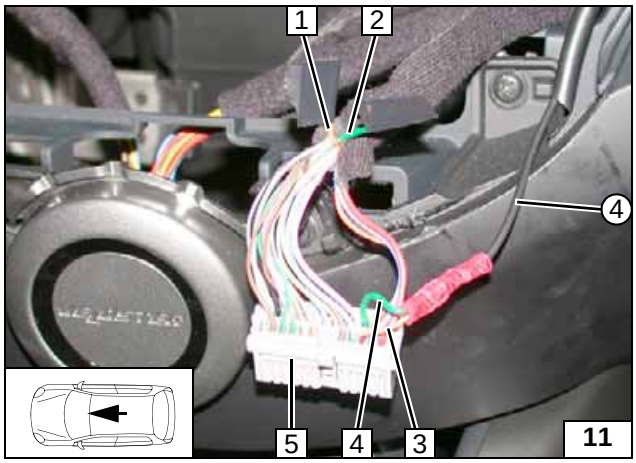
Legend



Connection to 2-pin connector **3** from the fan motor. Produce connections as shown in wiring diagram.

1 Yellow (ge) wire of fuse
2 Yellow (ge) wire of GM connector pin 1
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

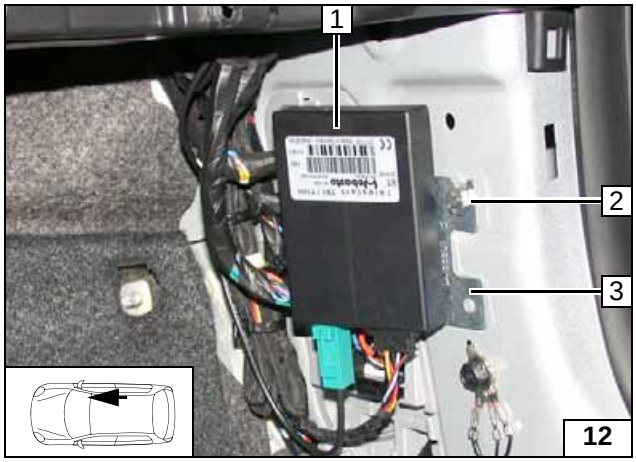
Connection of fan motor



Connection on grey (gr) 24-pin connector **5** of A/C control unit. Insulate and tie back orange (or) wire **1** and green (gn) wire **2**. Produce connections as shown in wiring diagram.

3 Orange (or) wire of KB connector pin 9
4 Green (gn) wire of KB connector pin 22
④ Black (sw) wire from fuse F5

Connecting A/C control unit

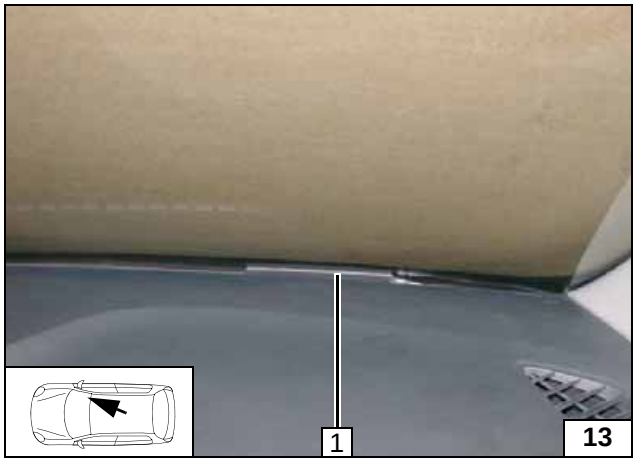


Remote Option (Telestart)

Pull in rivet nut in existing hole at position **2** before installation.

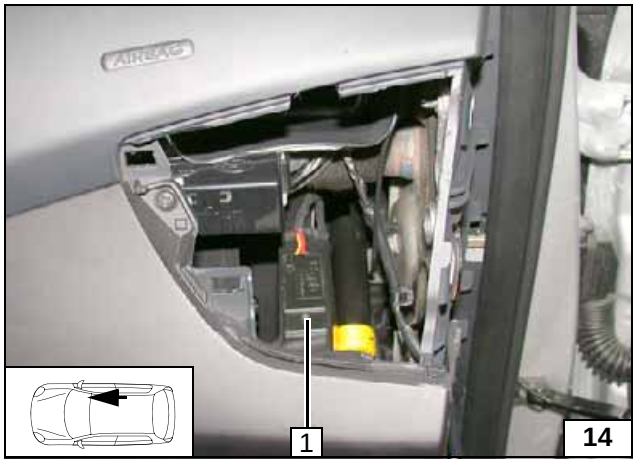
1 Receiver
2 M6x20 bolt
3 Bracket

Installing receiver



1 Antenna

Installing antenna



Temperature sensor T100 HTM

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

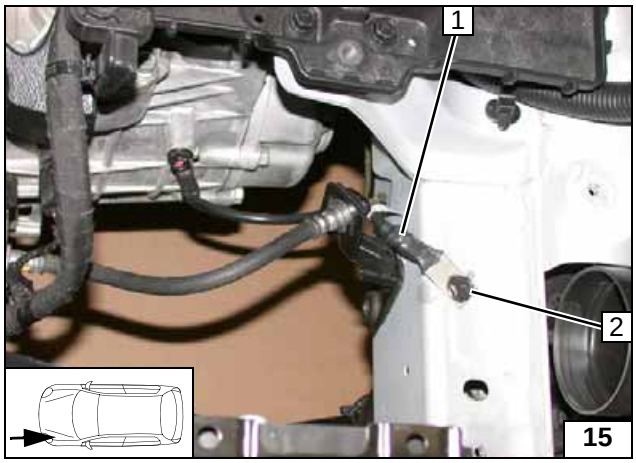
Installing temperature sensor

Preparing Installation Location

Route and align earth wire **1** as shown.

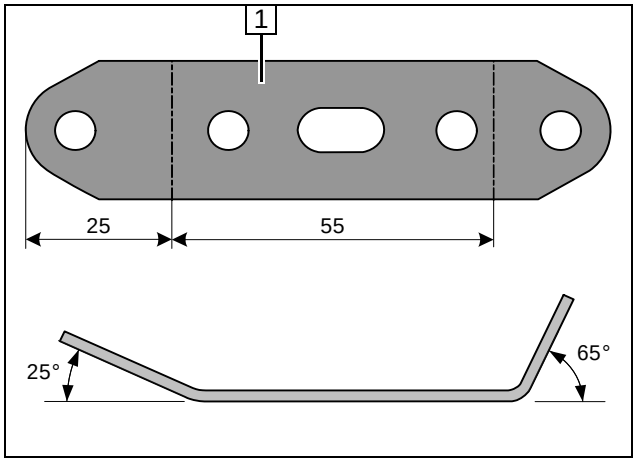
2 Original vehicle bolt

Relocating earth wire



1 Perforated bracket

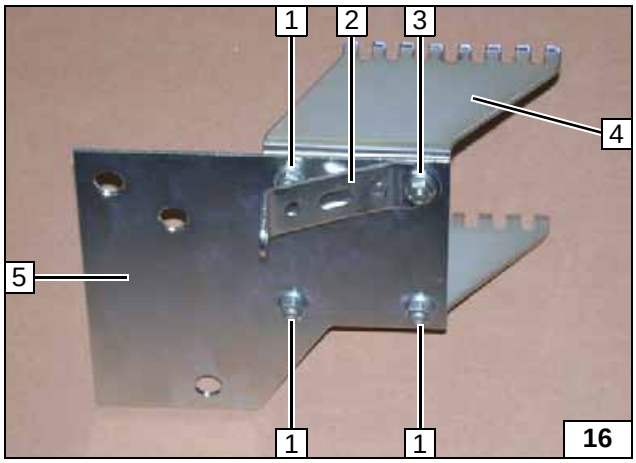
Preparing perforated bracket



Mount perforated bracket **2** with the 25mm angled-down side at position **3**.

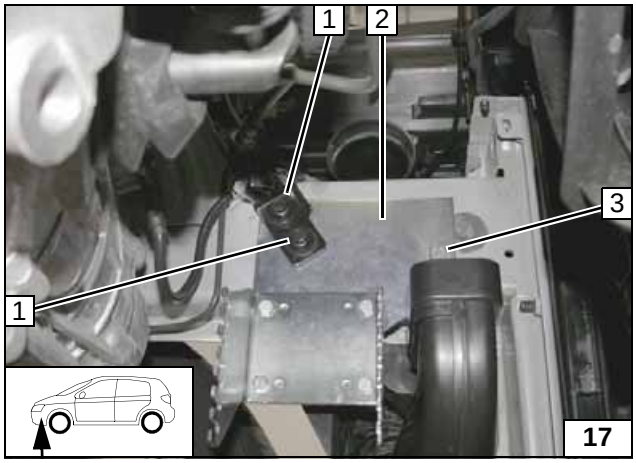
1 M6x12 bolt, flanged nut [3x]
3 M6x16 bolt, flanged nut
4 Bracket
5 Retaining plate

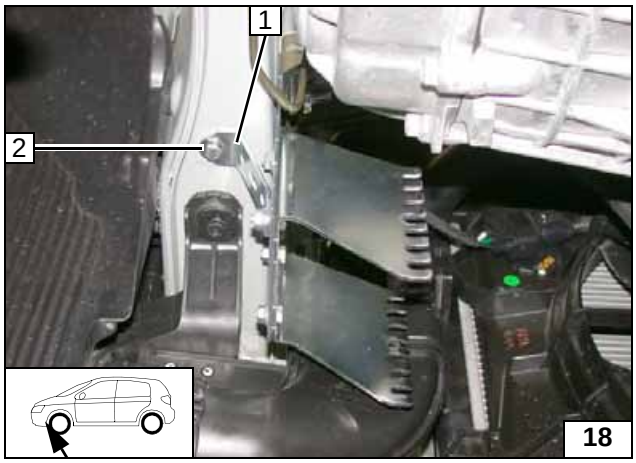
Premounting bracket



1 Original vehicle bolt [2x]
2 Retaining plate
3 M8x20 bolt, spring lockwasher, existing threaded hole

Mounting bracket / retaining plate

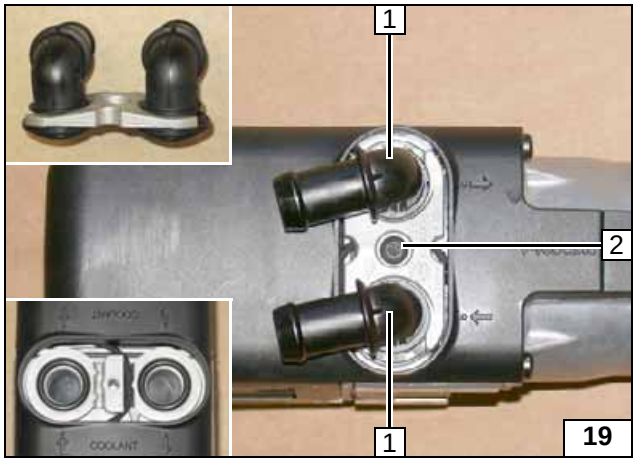




1 Perforated bracket
2 M6x20 bolt, spring lockwasher, existing threaded hole

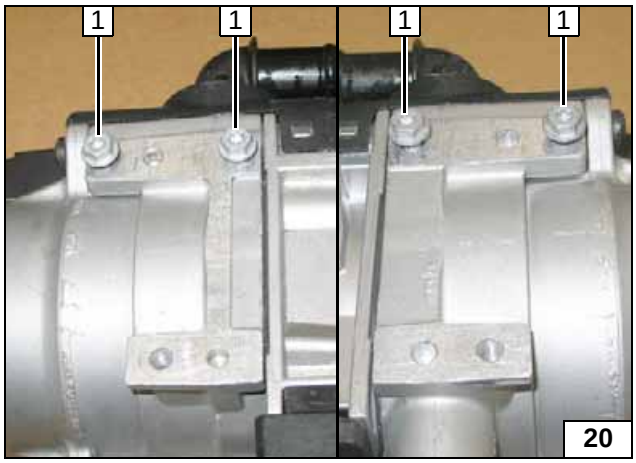
Mounting bracket / retaining plate

Preparing Heater



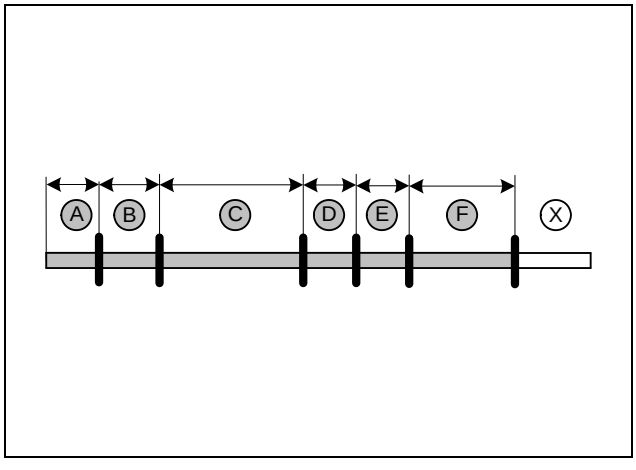
1 Water connection piece, sealing ring [2x]
2 Self-tapping bolt 5x15, retaining plate of water connection piece

Mounting water connection piece



Tap threads with 5x13mm self-tapping bolts **1** [4x] and install loosely (screw in a max. of 3 threads).

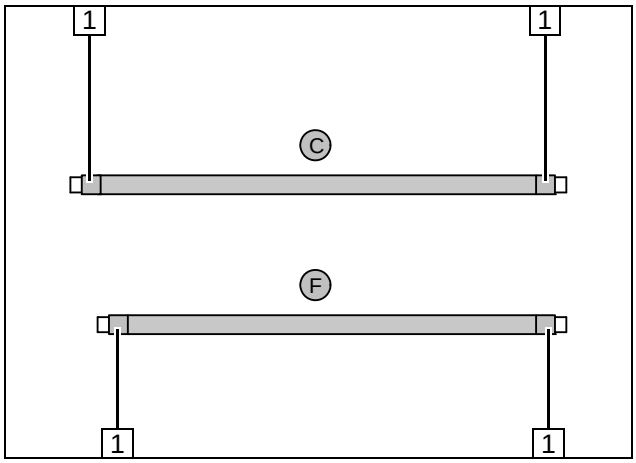
Loosely premounting bolts



Discard section **X**.

A = 120
B = 80
C = 650
D = 125
E = 125
F = 580

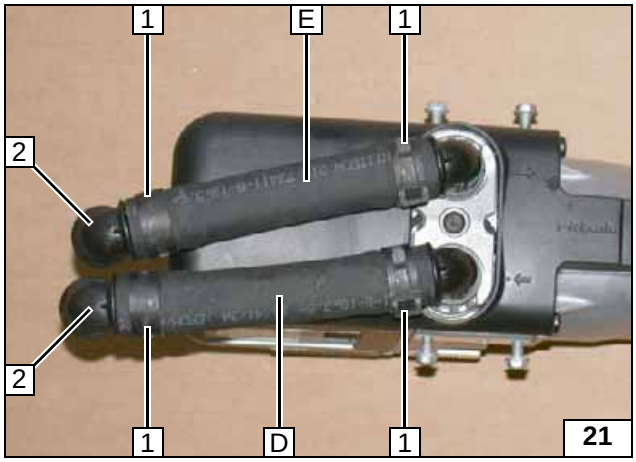
Cutting hoses to length



Push braided protection hoses onto hose **C** and **F** and cut to length.
Cut heat shrink plastic tubing to length.

1 50 mm long heat shrink plastic tubing [4x]

Preparing hoses



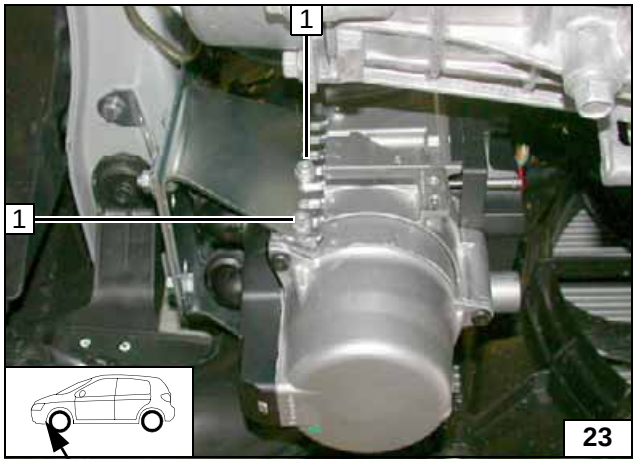
1 Spring clip 25 mm dia. [4x]
2 18x18mm dia., 90° connecting pipe [2x]

Premounting hoses

Installing Heater

1 Tighten 5x13 self-tapping bolt [2x]

Mounting heater



1 Tighten 5x13 self-tapping bolt [2x]

Mounting heater

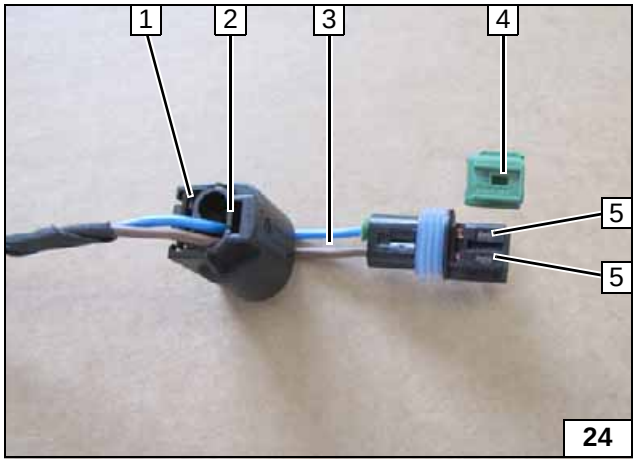
Fuel

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

Catch any fuel running off in a suitable container.

Install 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.

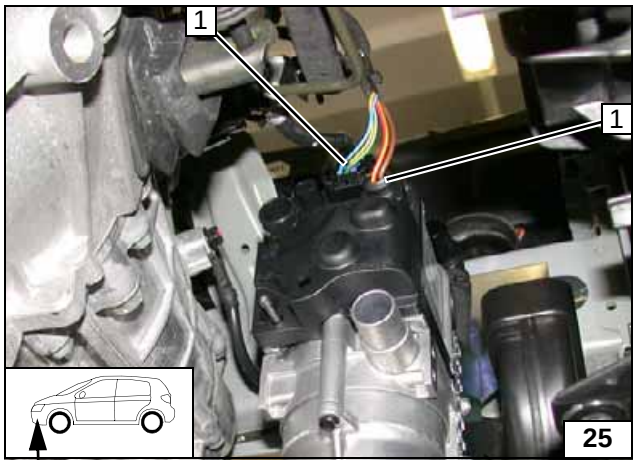
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Dismantling connector

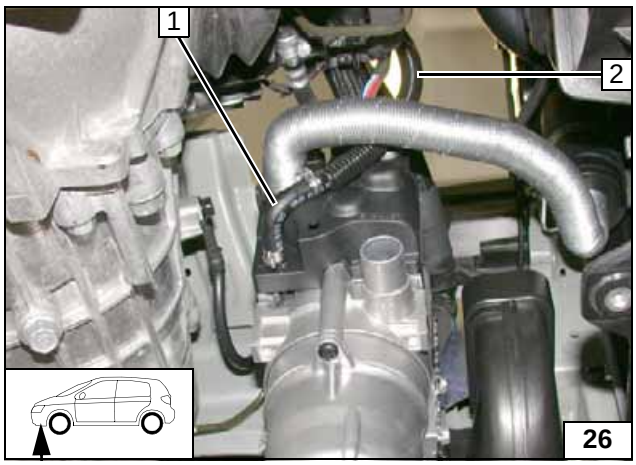
Complete connector of metering pump again after routing. Pin assignment is not relevant.

1 Connector housing
2 Lock
3 Blue / brown (bl / br) wires
4 Coding
5 Timer lock



Attaching wiring harness

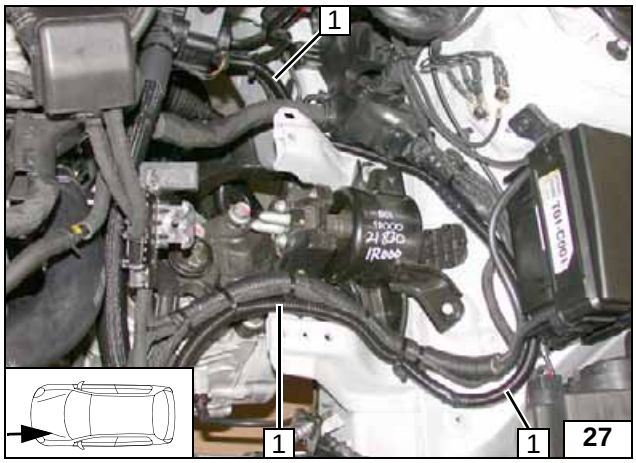
1 Wiring harness of heater [2x]



Connecting heater

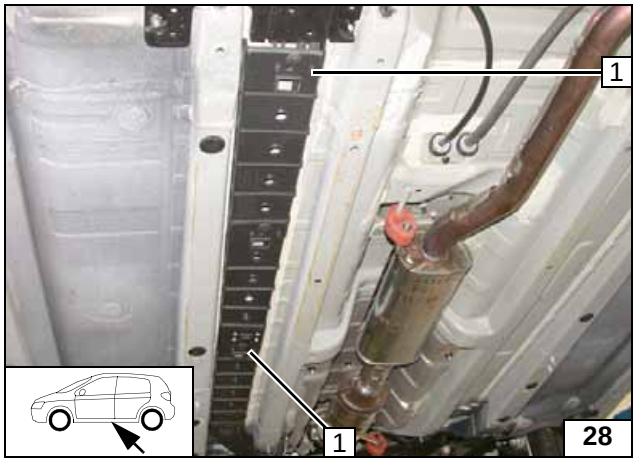
Draw fuel line and wiring harness of metering pump into corrugated tube **2**.

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



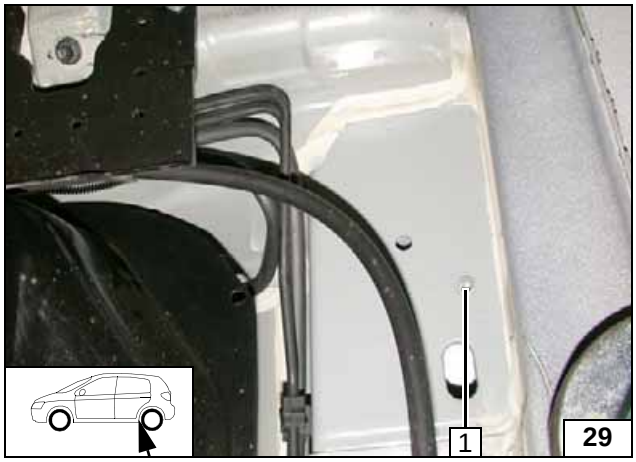
Route fuel line and wiring harness of metering pump through corrugated tube **1** to firewall.

Routing lines



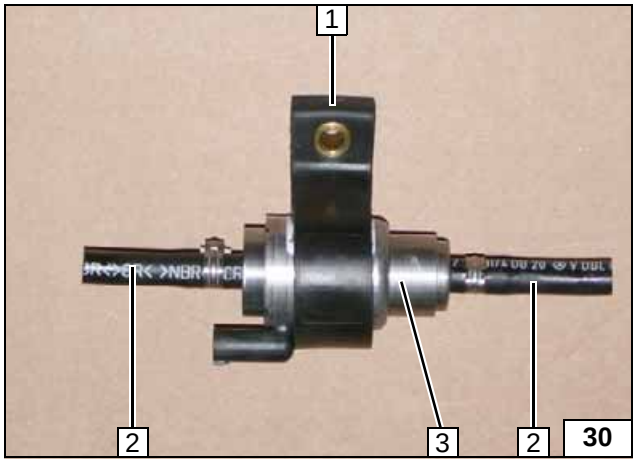
Route fuel line and wiring harness of metering pump in original vehicle line duct **1** to installation location of metering pump.

Routing lines



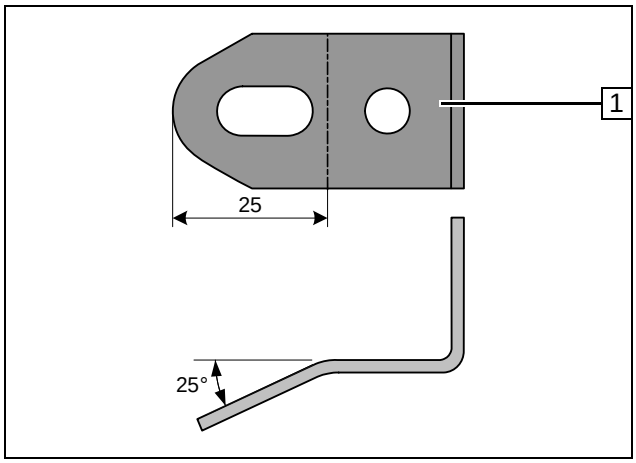
1 Rivet nut, existing hole

Installing rivet nut



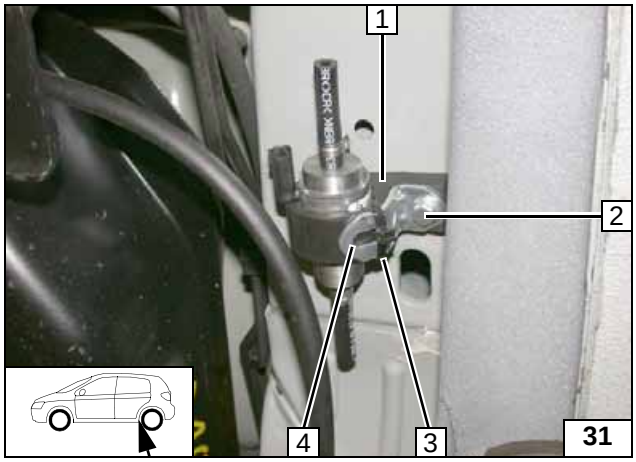
1 Mounting of metering pump
2 Hose section, 10 mm dia. clamp [2x each]
3 Metering pump

Premounting metering pump



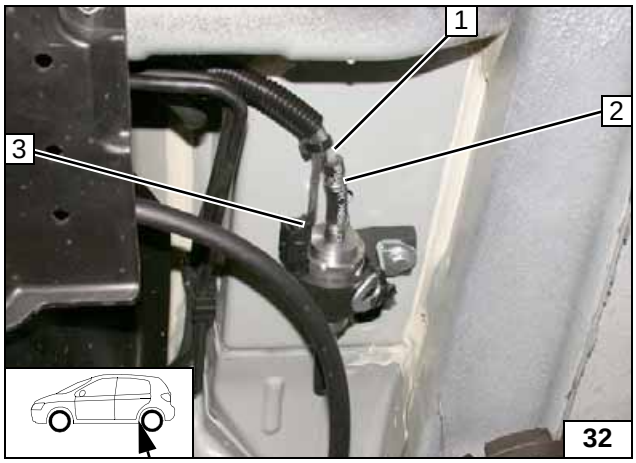
1 Angle bracket

Bending angle bracket



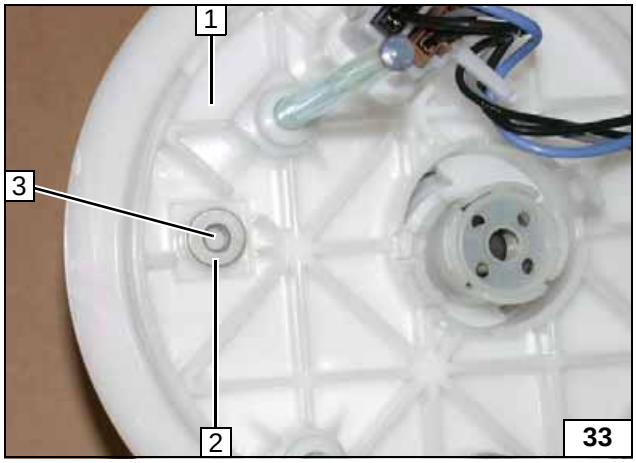
1 Mounting of metering pump
2 M6x25 bolt
3 Cable tie
4 Angle bracket

Mounting metering pump



1 Fuel line of heater
2 10 mm dia. clamp
3 Wiring harness of metering pump, connector mounted

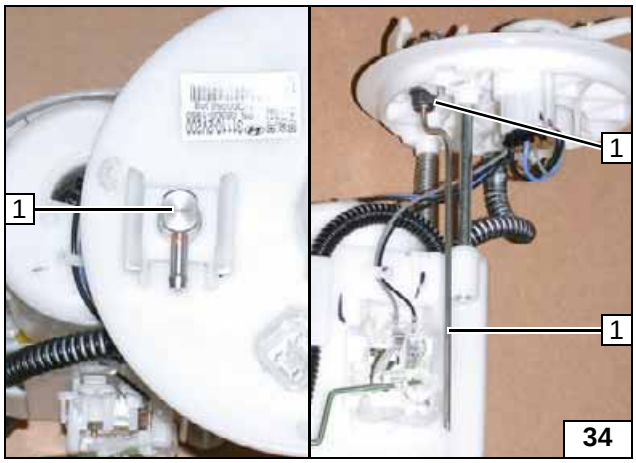
Connecting metering pump



Remove and detach fuel-tank sending unit **1** according to manufacturer's instructions. Insert M5 flanged nut **2** in recess.

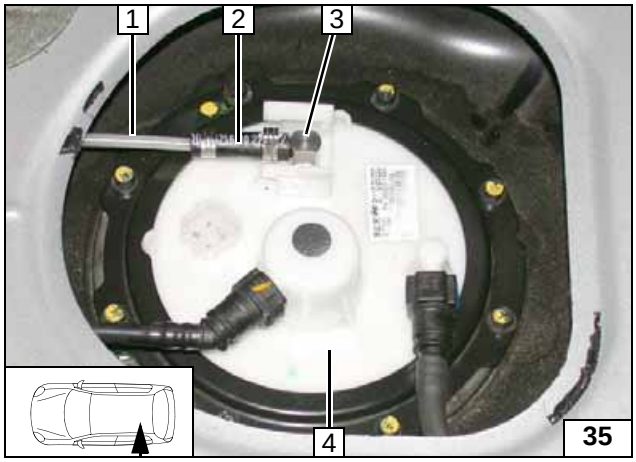
3 Copy hole pattern, 6 mm dia. hole

Fuel extraction



Shape fuel standpipe **1** according to template, cut to length and install. Completing fuel-tank sending unit.

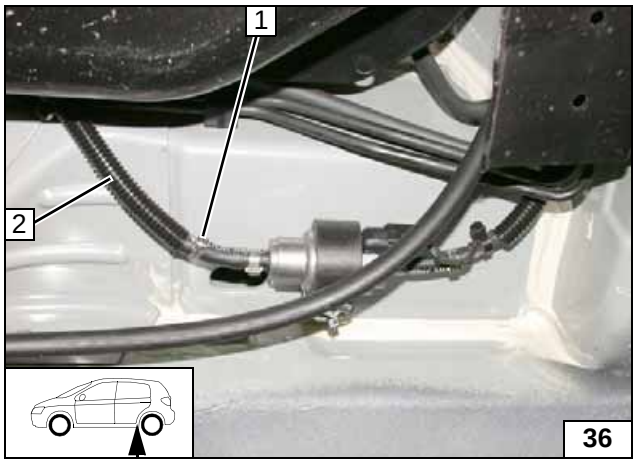
Inserting fuel standpipe



Install fuel-tank sending unit **4** in accordance with manufacturer's instructions.

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

Connecting fuel line



Slide corrugated tube **2** on to fuel line of fuel standpipe. Check the position of the components; adjust if necessary. Check that they have freedom of movement.

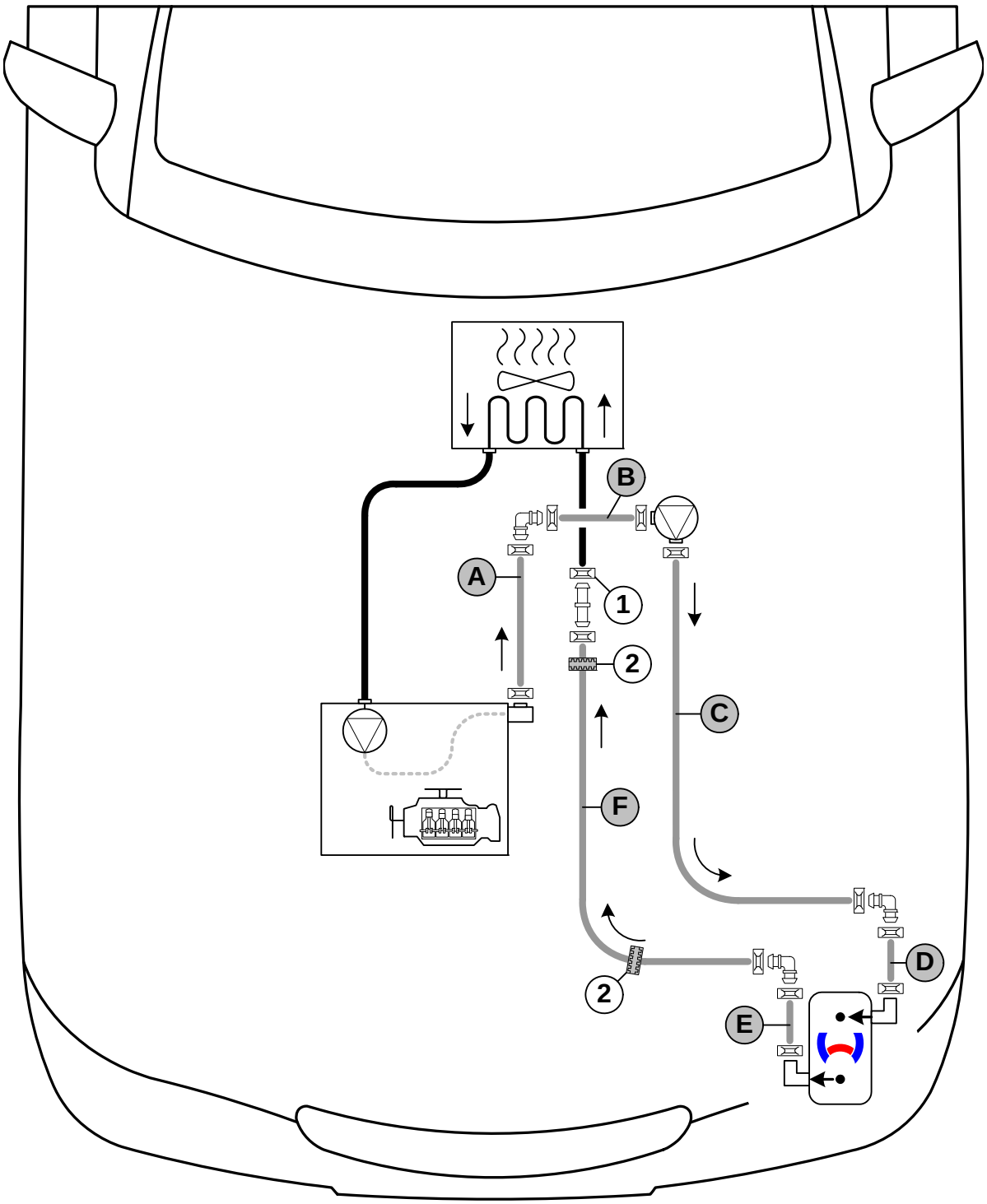
1 10 mm dia. clamp

Connecting metering pump

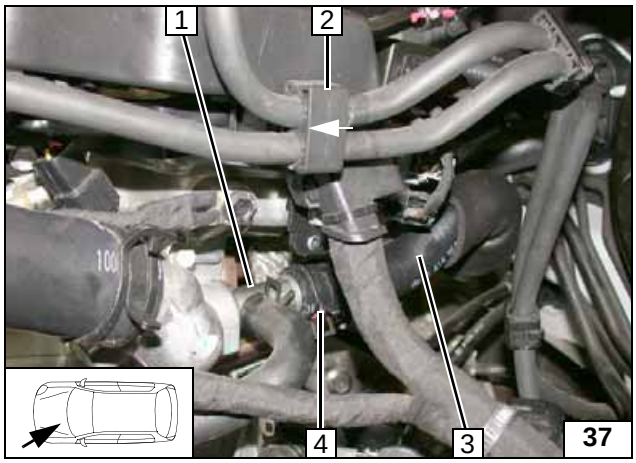
Coolant Circuit

WARNING!
Any coolant running off should be collected using a suitable container. Install hoses so that they are 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 "inline" based on the following diagram:

Hose installation diagram



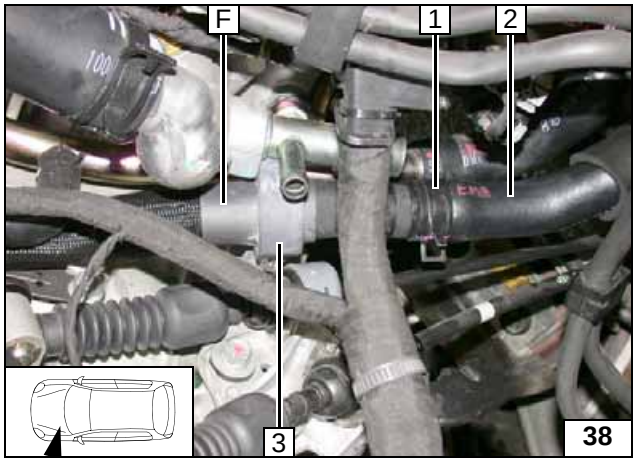
All spring clips without a specific designation = 25 mm dia.
1 = Original vehicle spring clip .
2 = Black (sw) rubber isolator .
All connecting pipes and = 18x18mm dia.



Detach hose on engine outlet / heat exchanger inlet from the engine outlet connection piece **1**. Spring clip **4** will be reused.
Open clamp **2**, shift fuel lines in the direction of arrow by 15mm and fasten.

3 Hose section of heat exchanger inlet

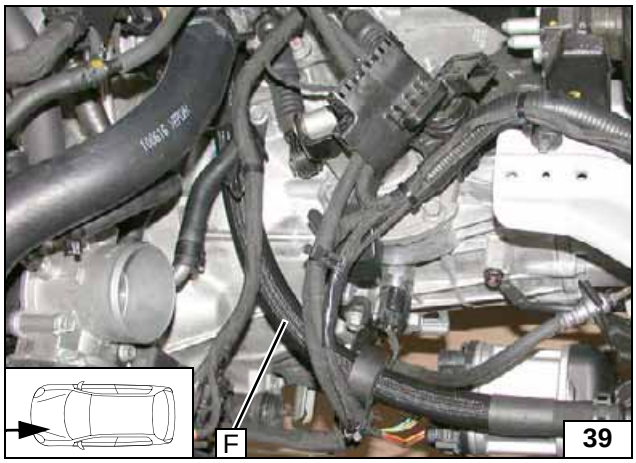
Cutting point



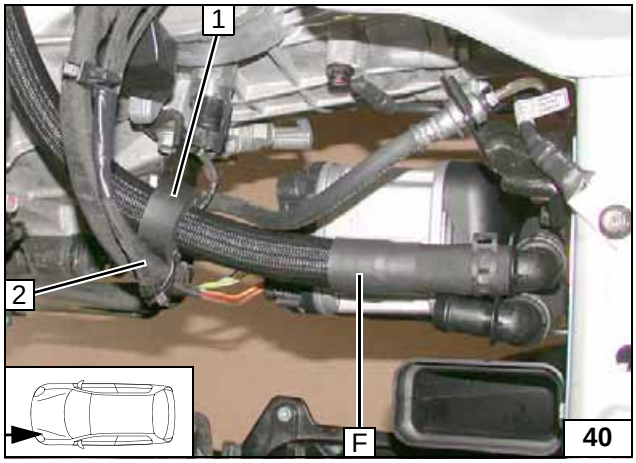
Slide black (sw) rubber isolator **3** on to hose **F** and align to connection piece of engine outlet.

1 Original vehicle spring clip
2 Hose on heat exchanger inlet

Connecting heat exchanger inlet

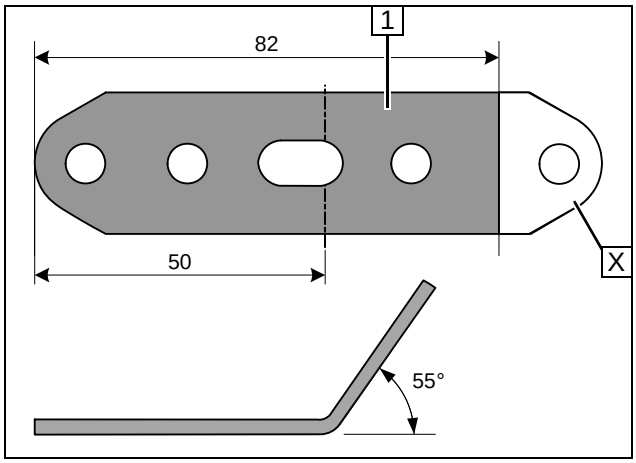


Routing in engine compartment



Slide black (sw) rubber isolator **1** on to hose **F** and fasten to original vehicle wiring harness **2** with cable tie.

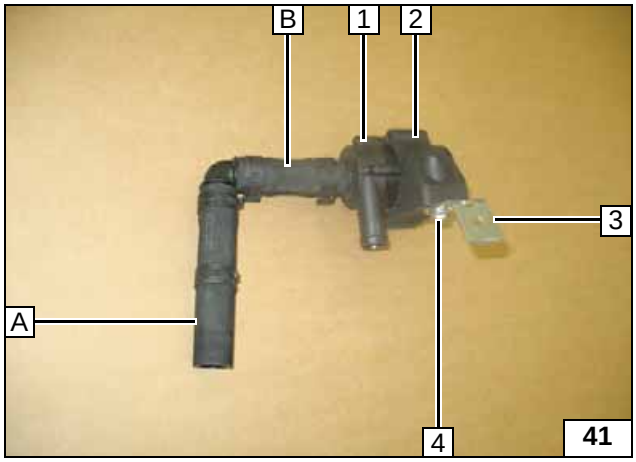
Connection of heat exchanger outlet



Discard section **X**.

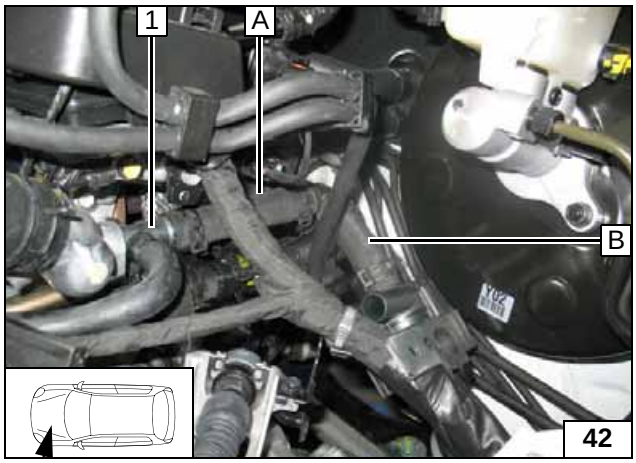
1 Perforated bracket

Preparing perforated bracket



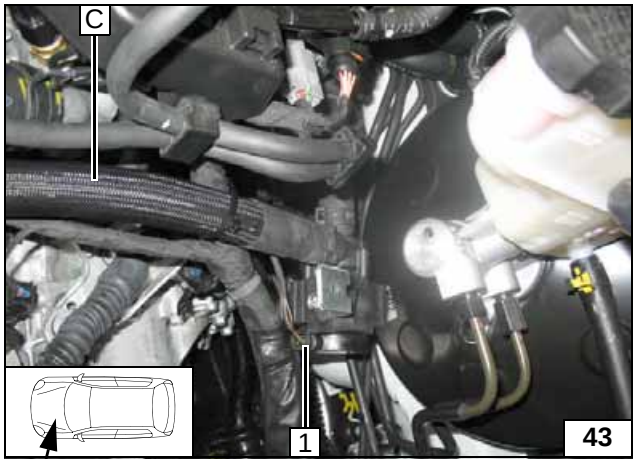
1 Circulating pump
2 Mounting for circulating pump
3 Perforated bracket
4 M6x25 bolt, hollow rivet, flanged nut

Premounting circulating pump



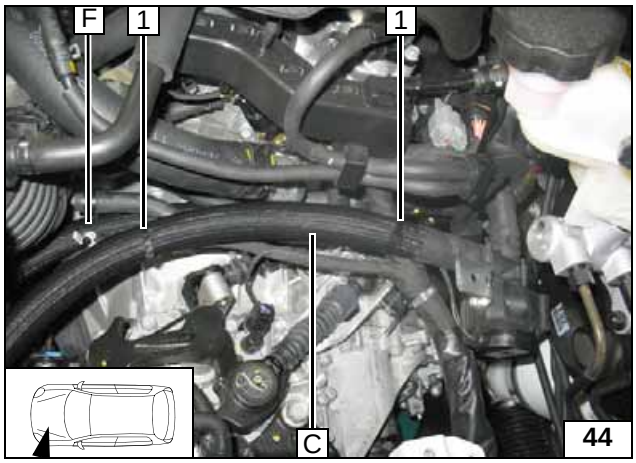
1 Engine outlet

Mounting Hose A



Mount wiring harness **1** on circulating pump and route to hose **C** of heater.

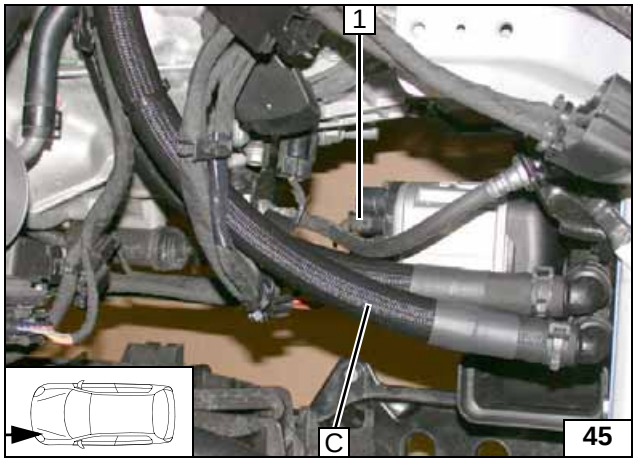
Circulating pump connection



Ensure sufficient distance from neighbouring components.

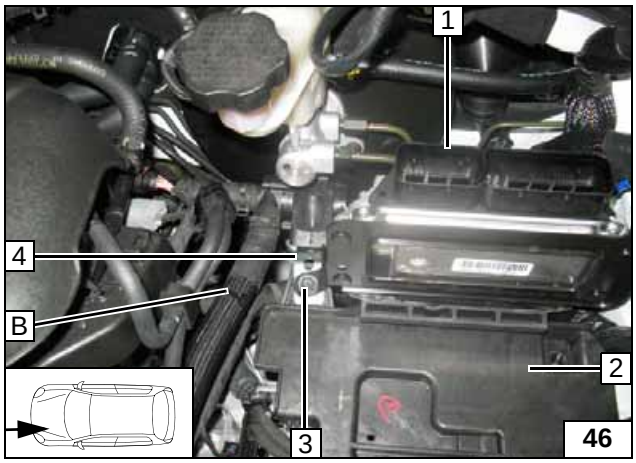
1 Cable tie [2x]

Aligning hoses



1 Mount wiring harness of circulating pump

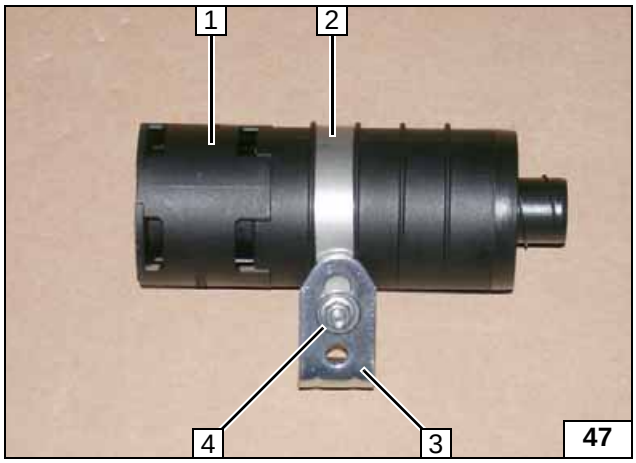
Connection of heater inlet



Ensure sufficient distance from neighbouring components.

1 Engine control unit with bracket
2 Battery carrier
3 Original vehicle bolt
4 Perforated bracket with circulating pump

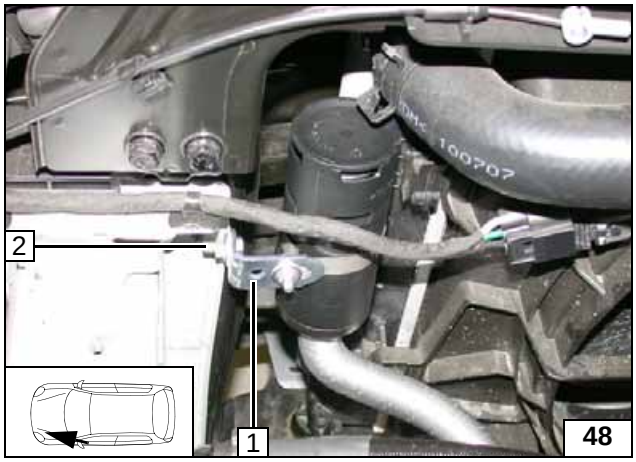
Mounting battery carrier



Combustion Air

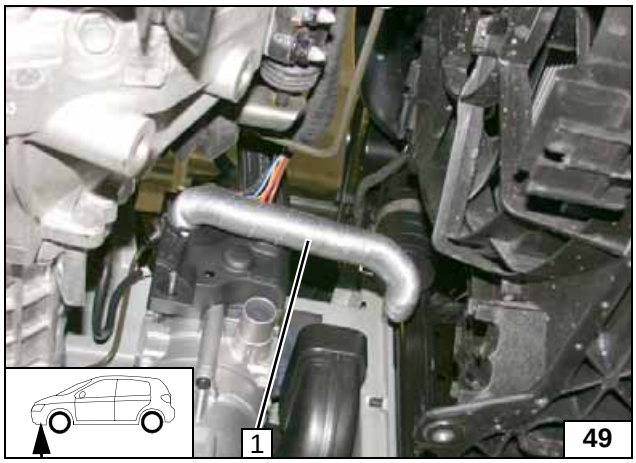
1 Silencer
2 51 mm dia. clamp
3 Angle bracket
4 M5x16 bolt, large diameter washer, flanged nut

Premounting silencer



1 Silencer
2 M6x16 bolt, flanged nut, existing hole

Mounting silencer

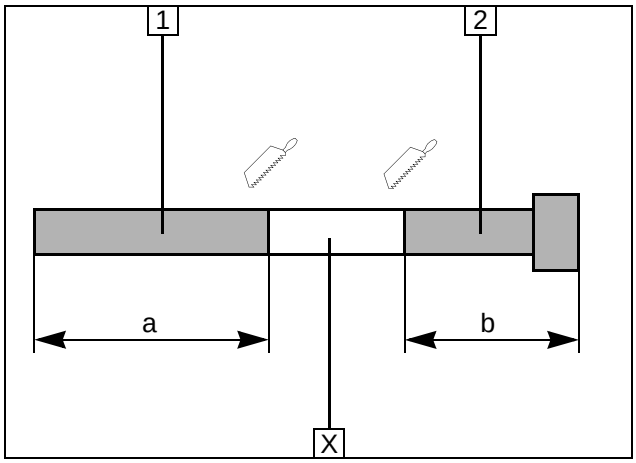


1 Combustion air pipe

Mounting combustion air pipe

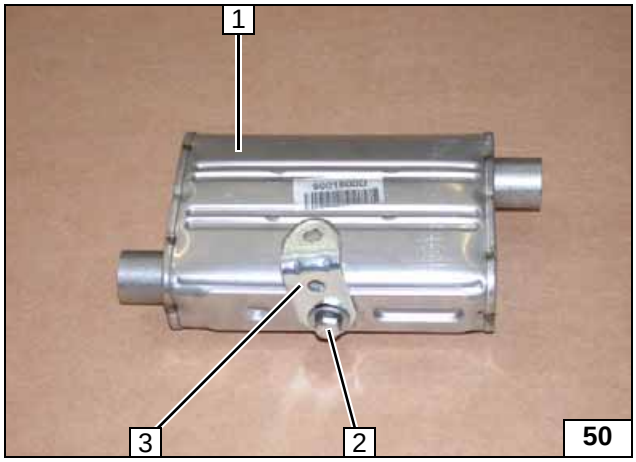
Exhaust Gas

Discard section **X**.



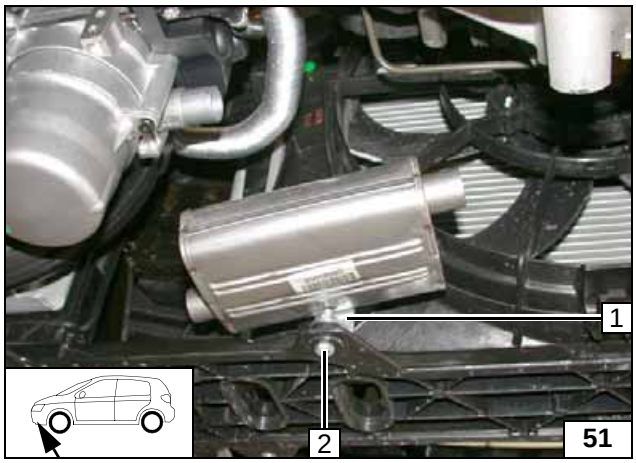
1 Exhaust pipe
a = 310
2 Exhaust end section
b = 70

Preparing exhaust pipe



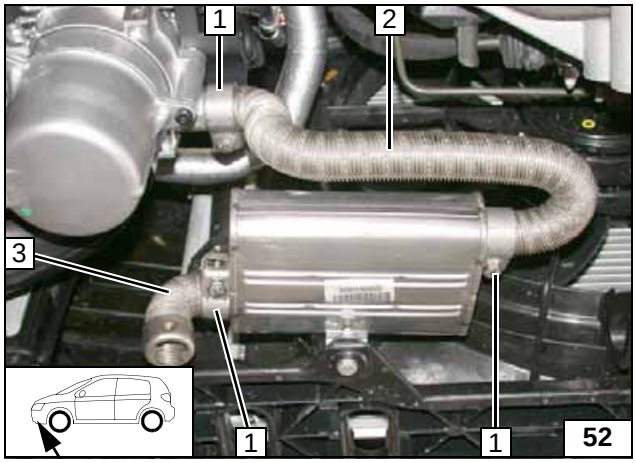
1 Silencer
2 M6x16 bolt, spring lockwasher, large diameter washer
3 Angle bracket

Premounting silencer



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

Mounting silencer



1 Hose clamp [3x]
2 Exhaust pipe
3 Exhaust end section

Mounting exhaust pipe and end section

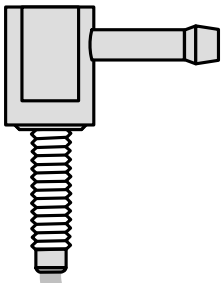
Final Work

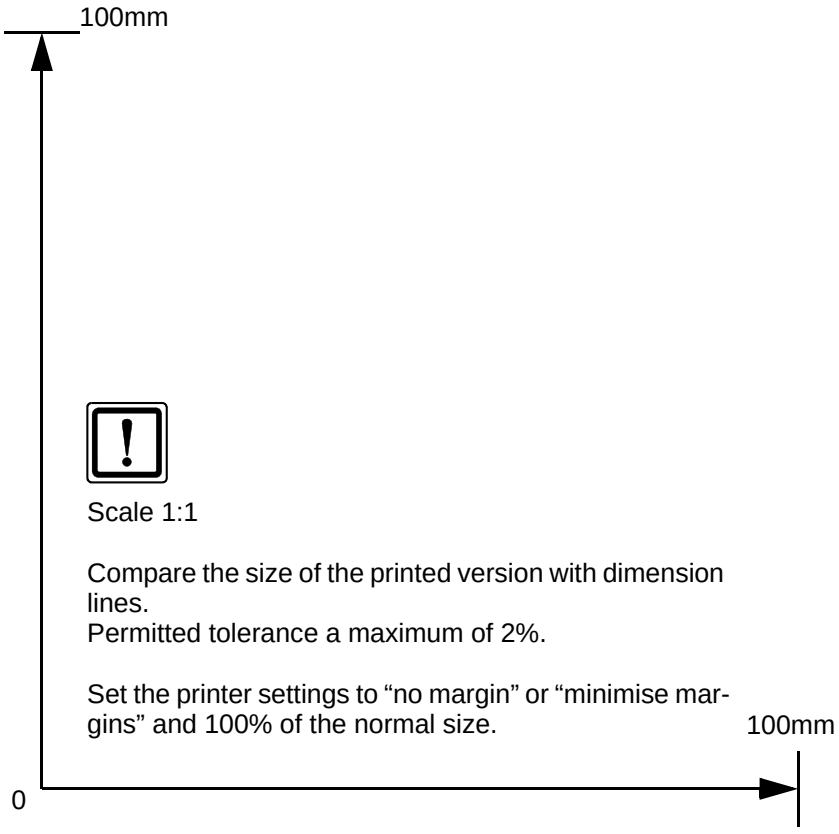
WARNING!
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose lines.
Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Set digital timer, teach telestart transmitter.**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place the "Switch off parking heater before refueling" signboard near the filler neck.**
- **See installation instructions for initial start-up and function check.**

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

Template for Fuel Standpipe





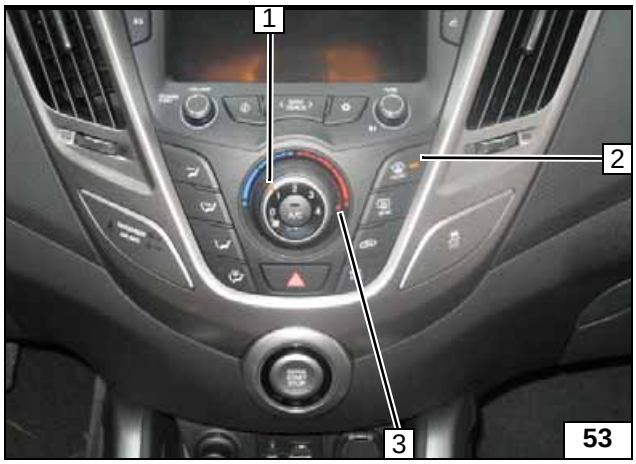
Operating Instructions for Manual Air-Conditioning

Please remove this page in case of manual air-conditioning and add it 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.

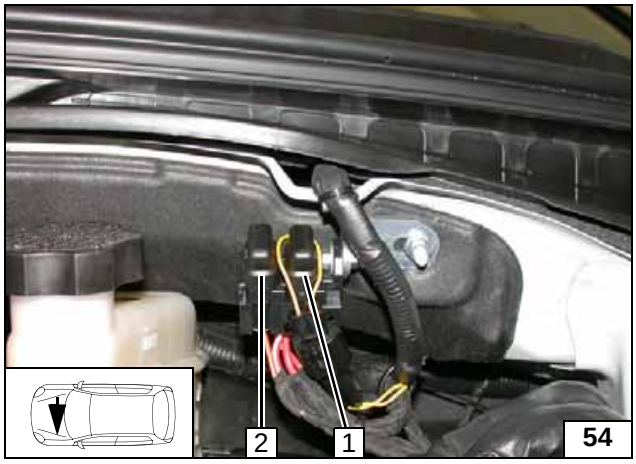
If the vehicle has passenger compartment monitoring this must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for de-activation may be obtained from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



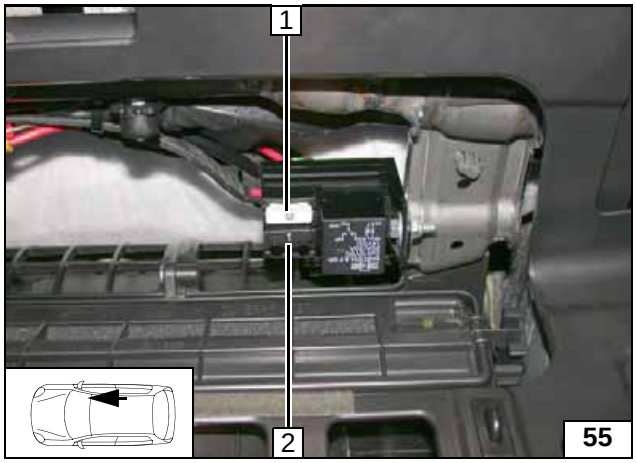
1 Set fan to level "1", max. "2"
2 Air outlet to windscreen
3 Set temperature to "max"

A/C control panel



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

Fuses of engine compartment



1 25A fan fuse F4
2 1A fuse F3 of heater control

Fuses of passenger compartment

Operating Instructions for Automatic Air-Conditioning

Please remove this page in case of automatic air-conditioning and add it 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.

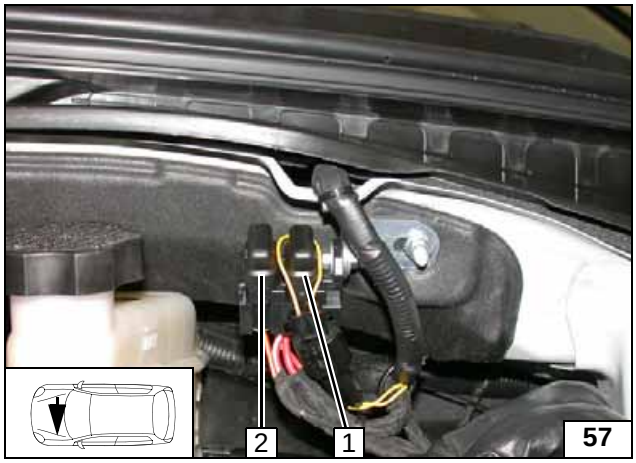
If the vehicle has passenger compartment monitoring this must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for de-activation may be obtained from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

A/C control panel

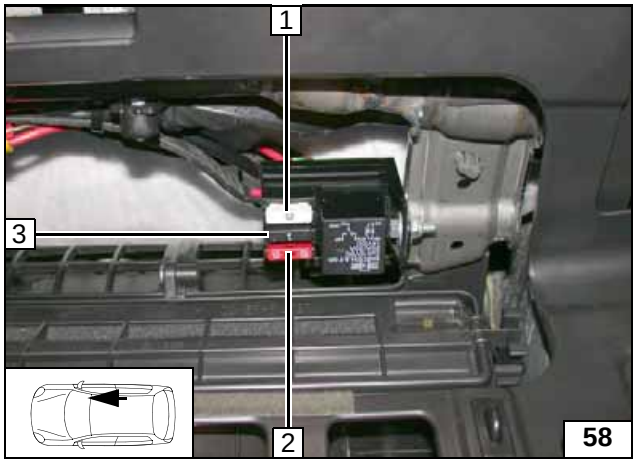
1 Air outlet to windscreen
2 Set temperature to "30.0 °C"
3 Set fan to level "1", max. "2"

Fuses of engine compartment



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

Fuses of passenger compartment



1 25A fan fuse F4
2 10A additional fuse F5
3 1A fuse F3 of heater control