Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

Installation Documentation
Kia Soul

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Kia	Soul	AM	e4 * 2001 / 116 *0139 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.6 CRDi	Diesel	SG	94	1582	D4FB

SG = Manual transmission

From Model Year 2013
Left-hand drive vehicle

Verified equipment variants:	Manual air-conditioning
	Front fog light
	Diesel particulate filter
	Electrical auxiliary heater
Not verified:	Passenger compartment monitoring
	Automatic air-conditioning
	Headlight washer system
Total installation time:	approx. 6 hours

© Webasto Thermo & Comfort SE

Kia Soul

Table of Contents

Necessary Components

- Basic delivery scope of *Thermo Top Evo* in accordance with price list
- Installation kit for Kia Soul 2013 Diesel: **1322339A**
- 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

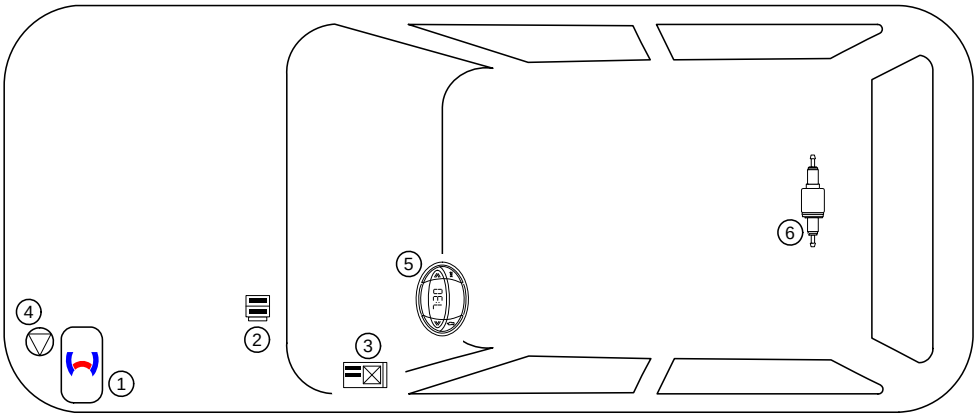
Installation instructions:

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

Installation Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Passenger compartment relay and 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.

 © Webasto Thermo & Comfort SE

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

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

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

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

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

1.2 Operation

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

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

Always switch off the heater before refuelling.

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

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

1.3 Please note

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

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

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

Important

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

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

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

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

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

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

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

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

2 Statutory regulations governing installation

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

Note

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

Important

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

Note

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

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

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

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

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

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

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

2.2. Positioning of heater

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

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

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

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

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

2.3. Fuel supply

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

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

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

2.4. Exhaust system

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

2.5. Combustion air inlet

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

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

2.6. Heating air inlet

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

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

2.7. Heating air outlet

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

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

End of excerpt.

In multilingual versions the German language is binding.

Kia Soul

Information on Validity

This installation documentation applies to Kia Soul Diesel vehicles - for validity, see page 1 - from model year 2013 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

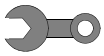
Dimensions
- All dimensions are in mm.

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud 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.

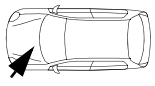
Specific risk of damage to components.

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.



Kia Soul

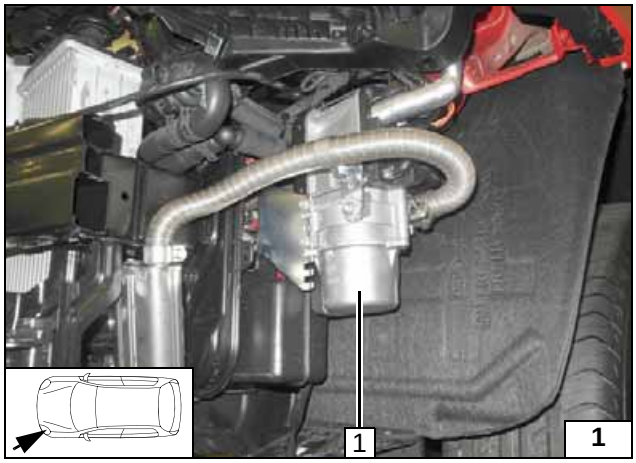
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery and remove it completely, including the carrier.
- Remove the air filter together with the intake hose.
- Detach the fuel filter.
- Detach the wheel well trim on the right and left.
- Remove the bumper trim.
- Remove the lower instrument panel trim on the driver's side.
- Remove lateral instrument panel trim on the driver's side

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

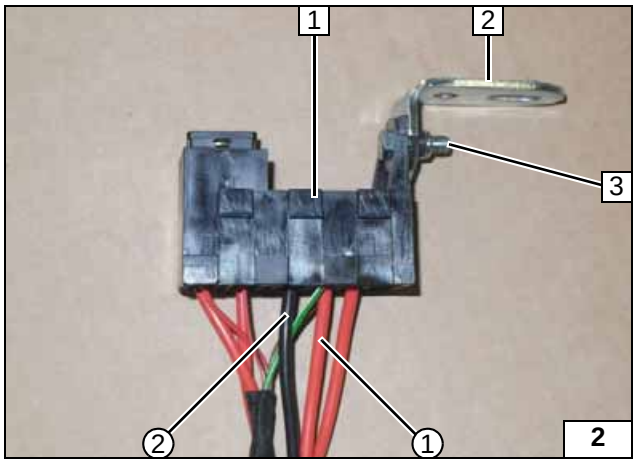
1 Heater

Installation location

Preparing Electrical System

Wire sections retain their numbering in the entire document.

Produce connections as shown in wiring diagram, see following image.

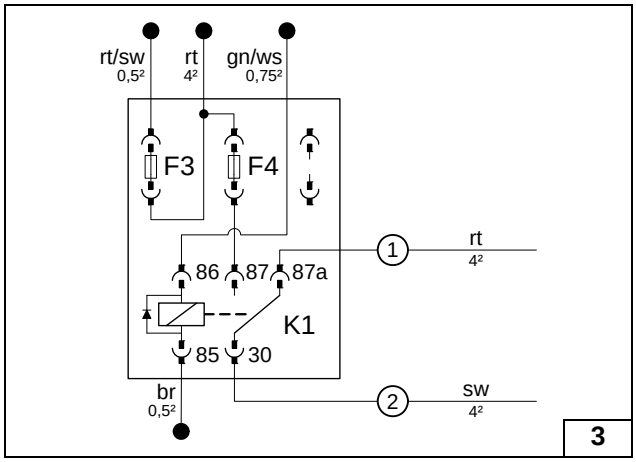


2

Preparing relay and fuse holder

1 Passenger compartment relay and fuse holder
2 Angle bracket
3 M5x16 bolt, large diameter washer [2x], nut
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

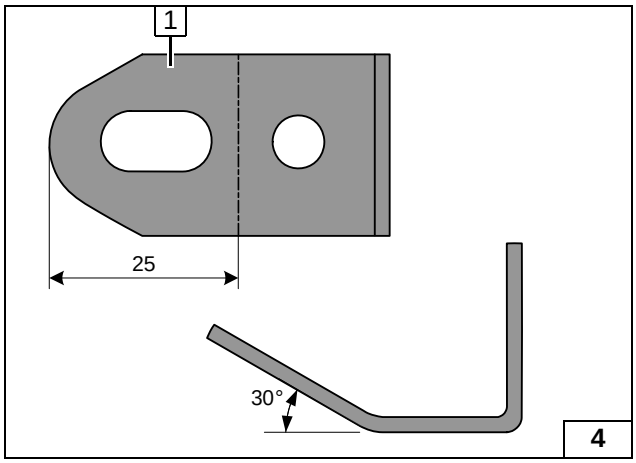
Insert wires in socket of K1 relay. Insert 25A fuse F4.



3

Inserting 25A F4, preparing K1 relay

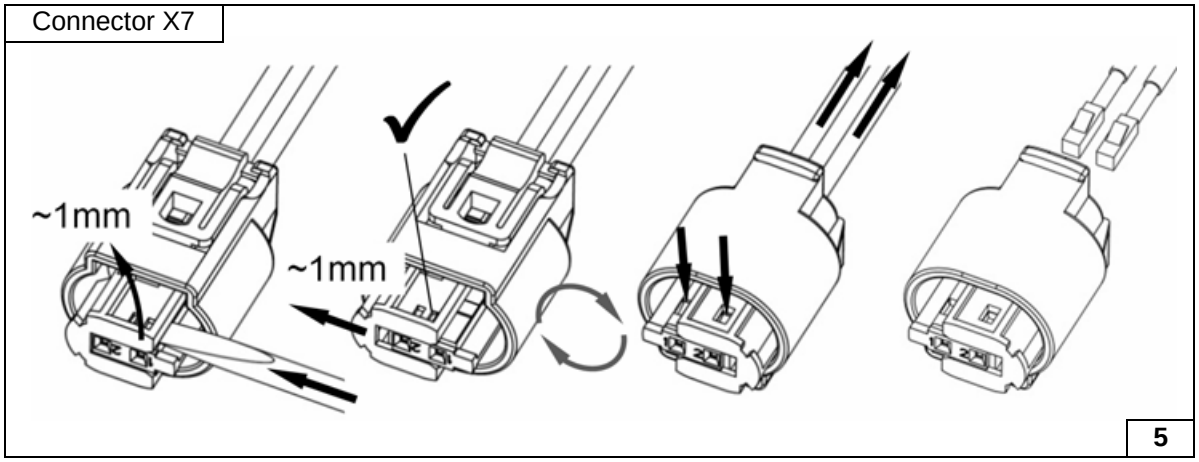
1 Angle bracket for engine compartment fuse holder



4

Preparing angle bracket

Connector X7



5

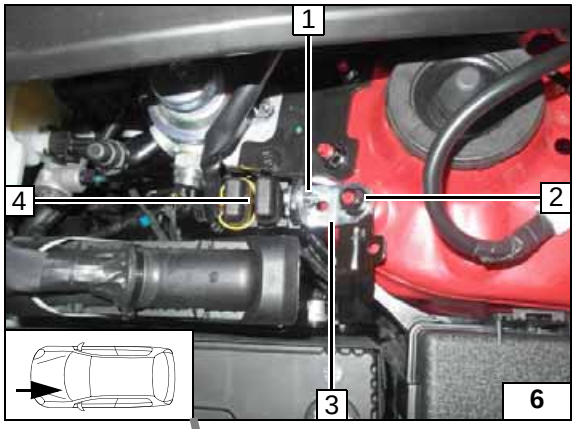
Dismantling connector of metering pump

 © Webasto Thermo & Comfort SE

Electrical System

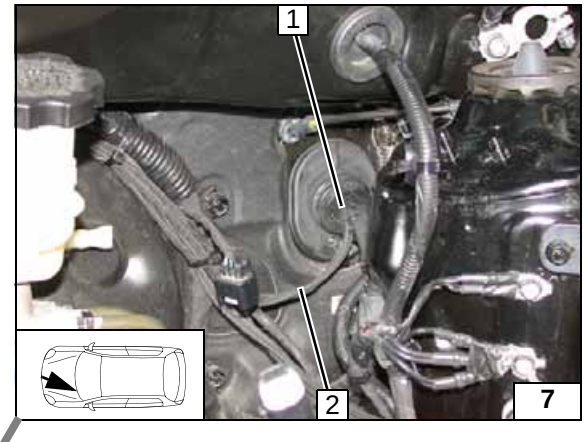
Fuse holder for engine compartment

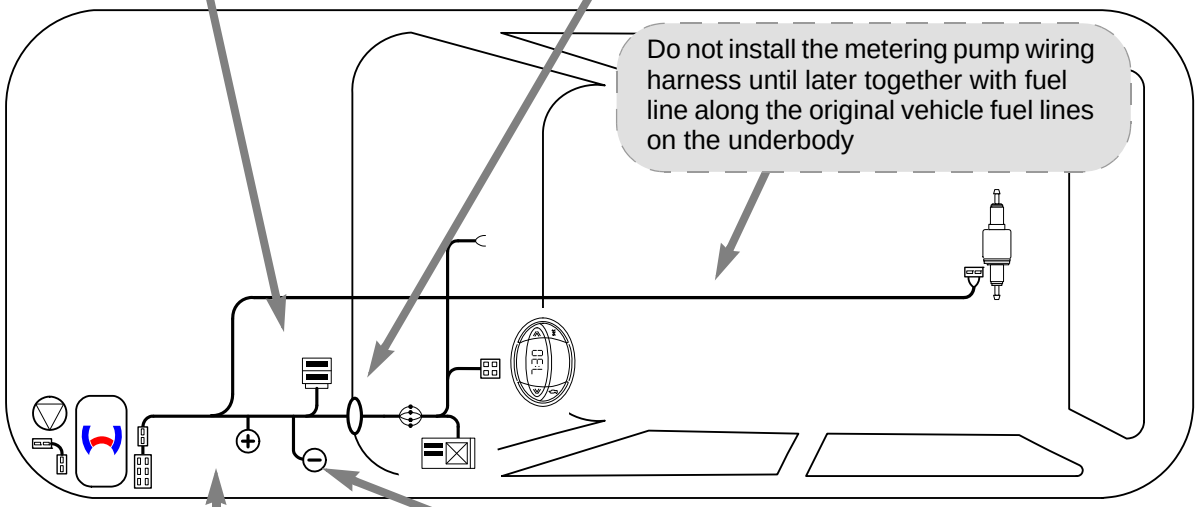
1 M5x16 bolt, large diameter washer [2x], retaining plate for fuse holder, nut
2 Original vehicle bolt
3 Angle bracket
4 Fuses F1-2



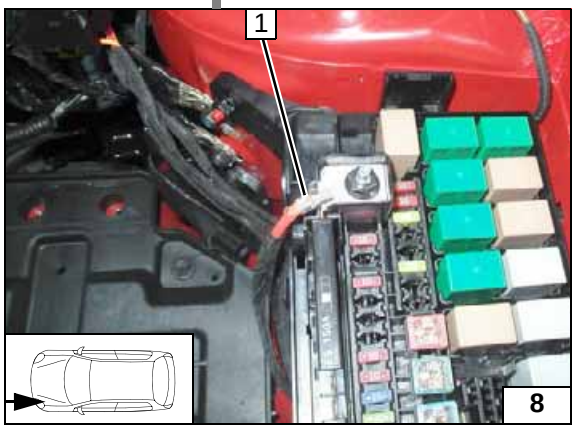
Wiring harness pass through

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



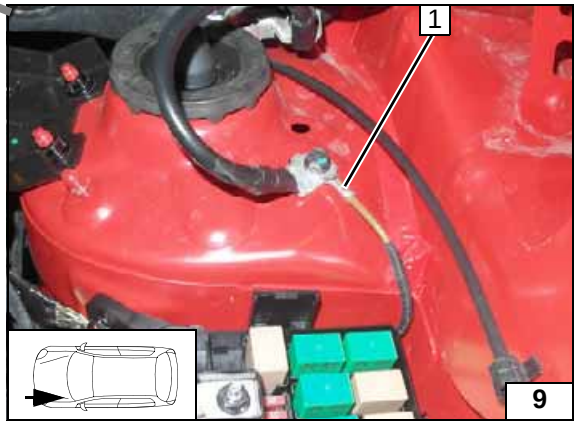


Wiring harness routing diagram



Positive wire

1 Positive wire on original vehicle positive support point



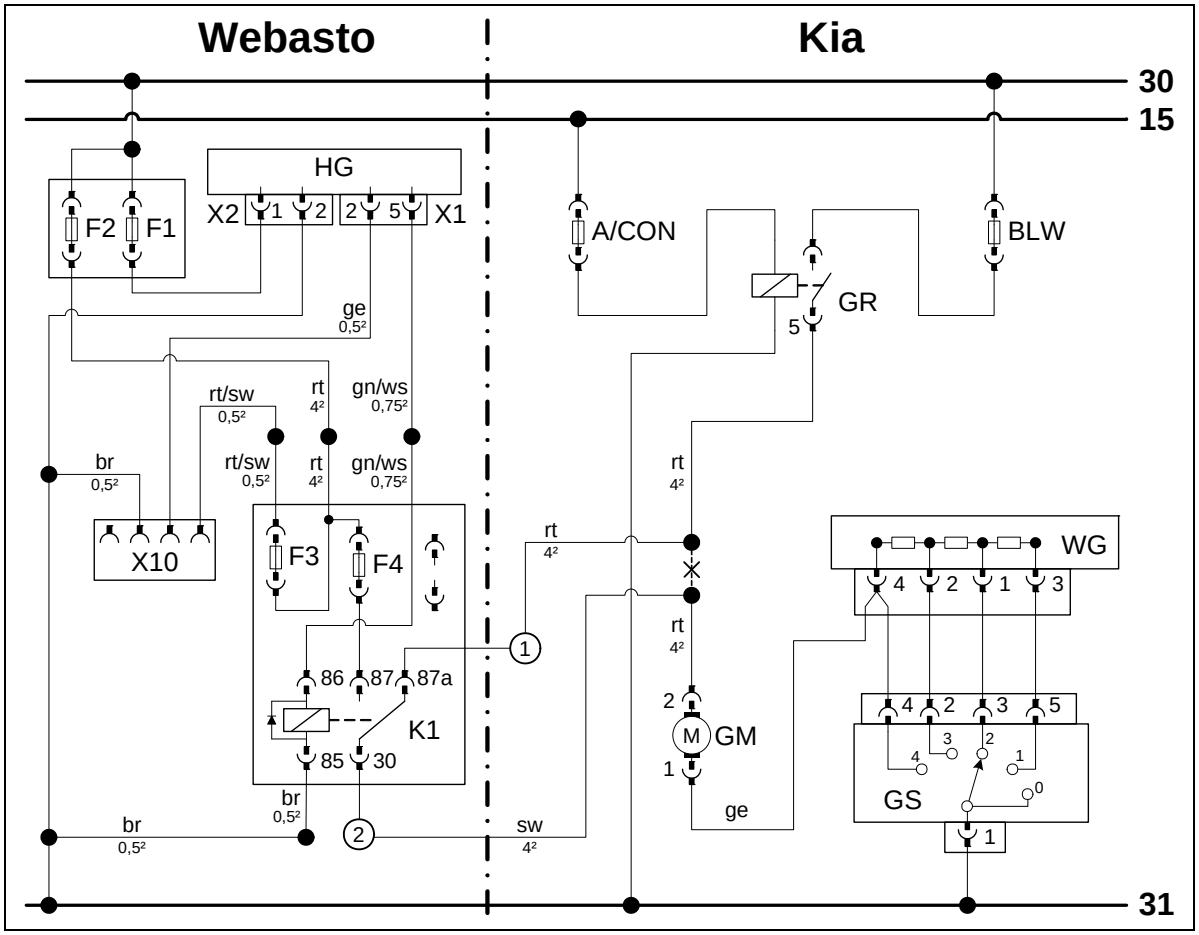
Earth wire

1 Earth wire on original vehicle earth support point

 © Webasto Thermo & Comfort SE

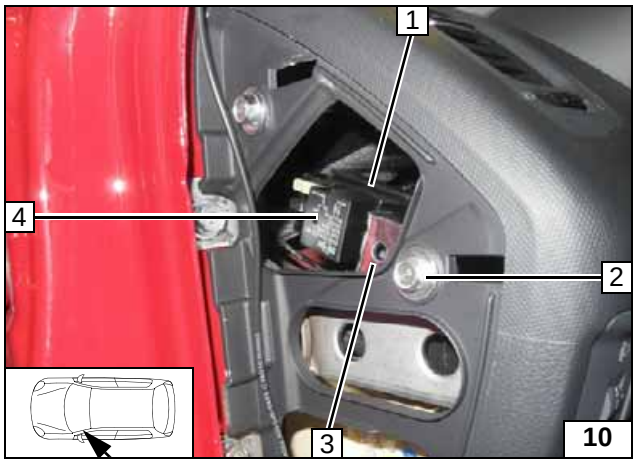
Fan Controller

Wiring diagram



Legend

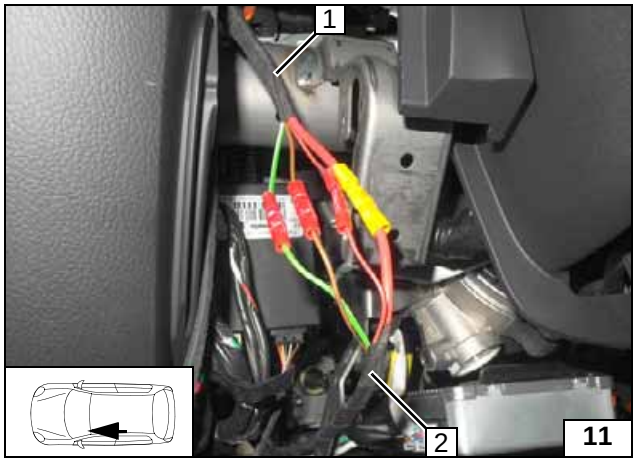
Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-Evo	A/CON	10A fuse	rt	red
X1	6-pin heater connector	BLW	40A fuse	sw	black
X2	2-pin heater connector	GR	Fan relay	ge	yellow
F1	20A fuse	WG	Resistor group	gn	green
F2	30A fuse	GM	Fan motor	br	brown
X10	4-pin connector of heater control	GS	Fan switch	ws	white
F3	1A fuse				
F4	25A fuse				
K1	Fan relay				
				X	Cutting point
				Wiring colours may vary.	



Mount angle bracket **3** between instrument panel trim and frame.

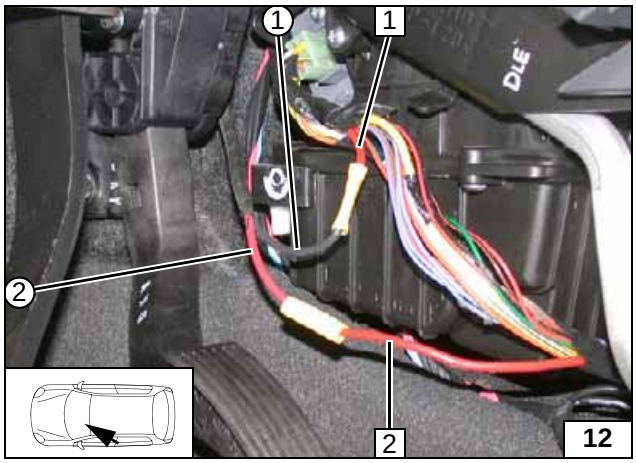
1 Passenger compartment relay and fuse holder
2 Original vehicle bolt
4 K1 relay attached

Mounting passenger compartment fuse holder



1 Wiring harness of passenger compartment relay and fuse holder
2 Wiring harness on heater

Connecting wiring harnesses using same colour wires



Disconnect wiring harness. Measure red (rt) wire of fan relay to fan motor. Produce connections as shown in wiring diagram.

1 Red (rt) wire of fan motor
2 Red (rt) wire of fan relay
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

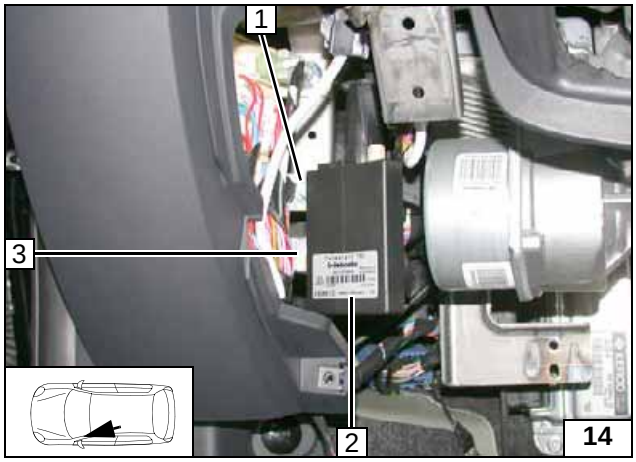
Connecting fan motor

 © Webasto Thermo & Comfort SE

Digital Timer

1 Digital timer

Installing digital timer

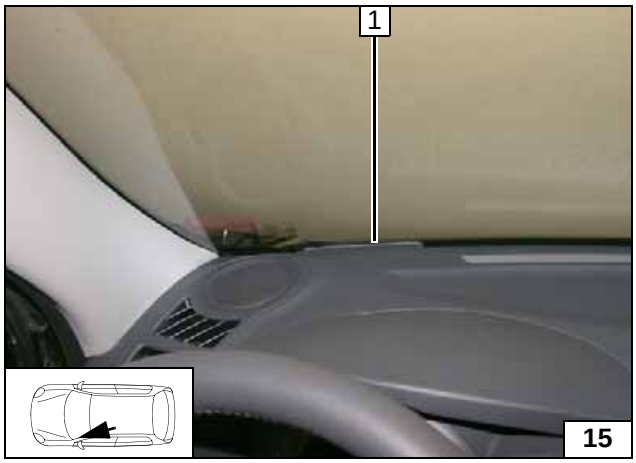


Remote Option (Telestart)

Drill bracket of receiver **3** at position **1** to 6.5 mm dia.

1 Original vehicle bolt, existing threaded hole
2 Receiver

Mounting receiver



1 Antenna

Mounting antenna

Temperature sensor T100 HTM

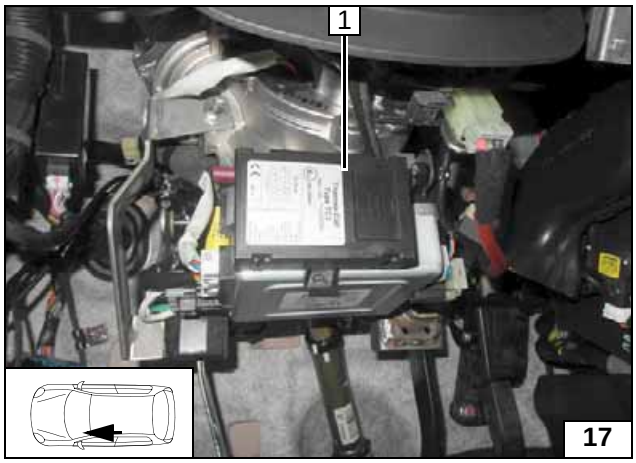
Fasten temperature sensor **1** with adhesive tape.

Mounting temperature sensor

Remote option (Thermo Call)

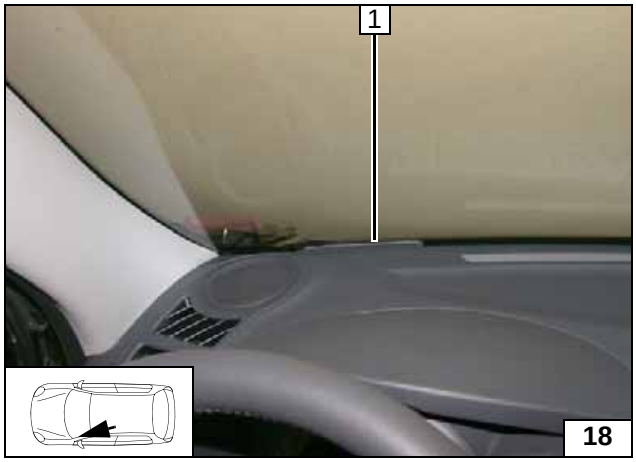
Mounting receiver

Fasten receiver **1** with adhesive tape.

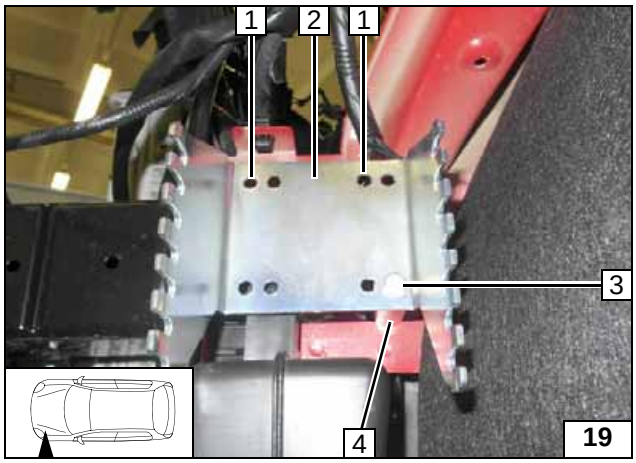


1 Antenna

Mounting antenna



 © Webasto Thermo & Comfort SE

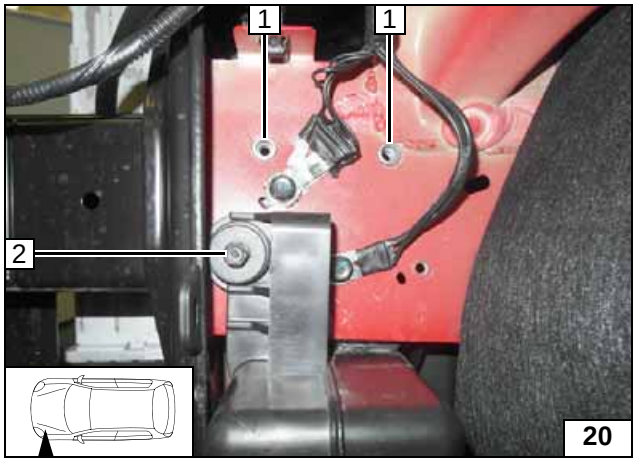


Preparing Installation Location

Premount bracket **2** loosly and align perpendicularly. Insert 40mm shim **4** between bracket and frame side member.

1 Copy hole pattern [2x]
3 M6x60 bolt, spring lockwasher, 40mm shim, original vehicle threaded hole

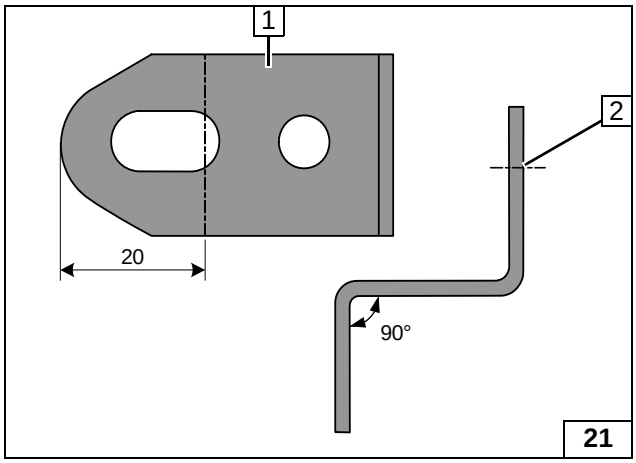
Copying hole pattern



Remove bracket **1**.

1 9.1mm dia. hole; rivet nut [2x]
2 Remove and discard bolt

Installing rivet nut

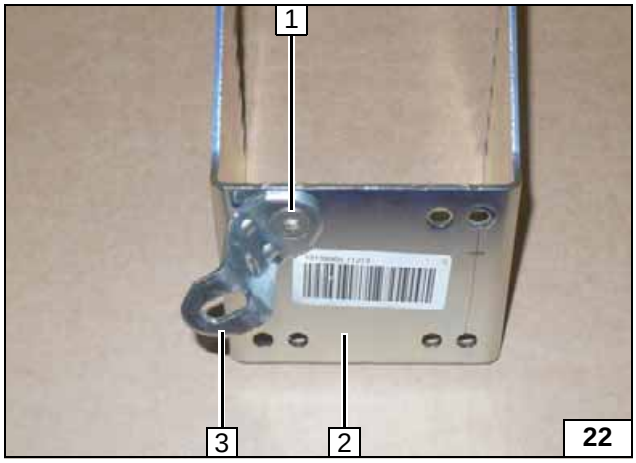


Installing Bracket

Countersink hole using a 12mm dia. drill at position **2**.

1 Angle bracket for heater bracket

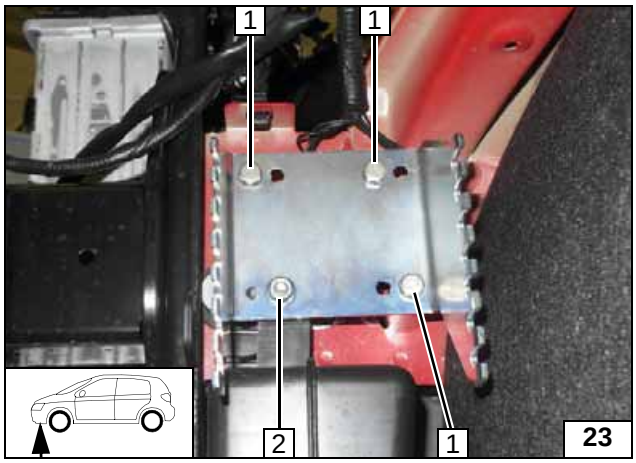
Preparing angle bracket



1 M6x12 countersunk head screw, flanged nut
2 Bracket
3 Premount angle bracket loosely

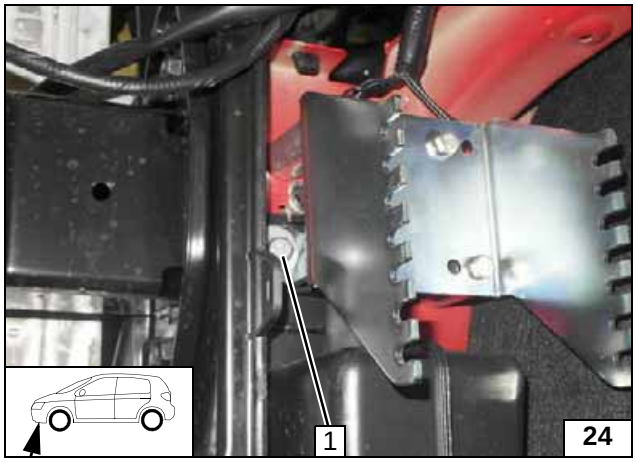
Premounting bracket

 © Webasto Thermo & Comfort SE



1 M6x60 bolt, spring lockwasher, 40 mm shim [3x each]
2 Tighten nut

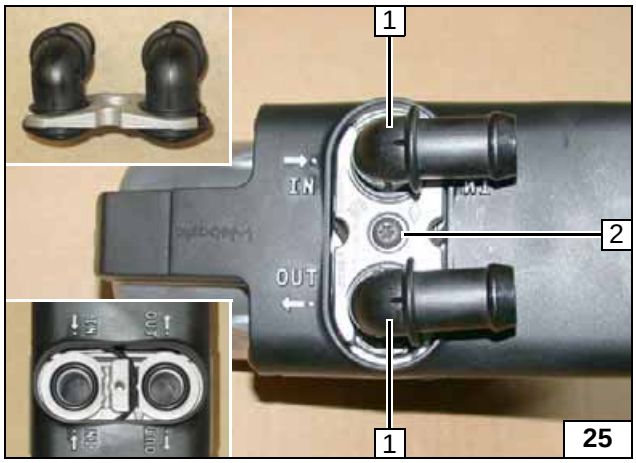
Installing bracket



1 M6x30 bolt, spring lockwasher, large diameter washer, original vehicle threaded hole

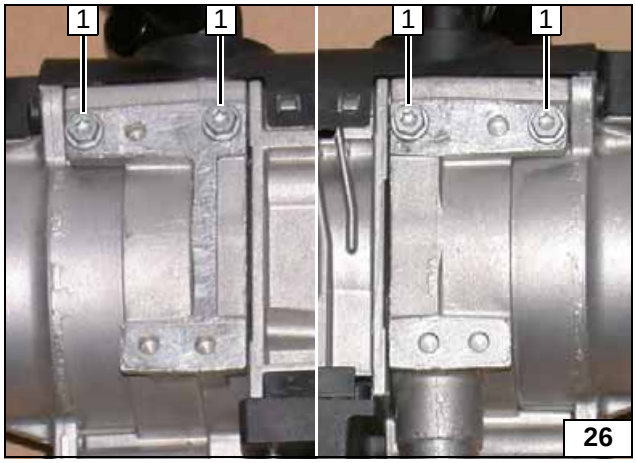
Installing bracket

Preparing Heater



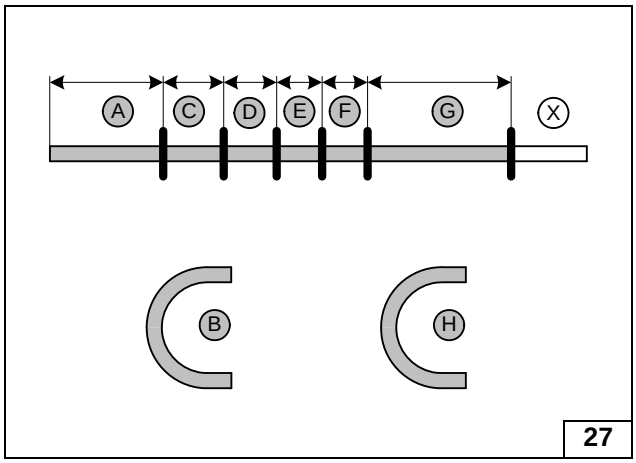
1 Water connection pieces, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection pieces

Mounting water connection pieces



Insert 5x13 self-tapping bolts **1** [4x] in existing holes, screw in a max. of 3 threads.

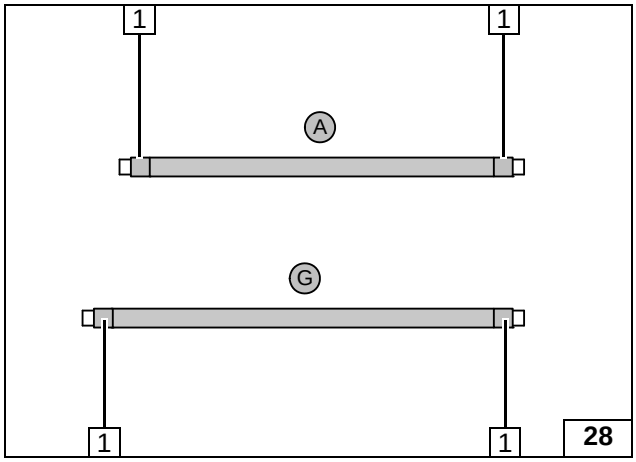
Premounting bolts loosely



Discard section **X**.
Hose **B** =180°, 18 mm dia. moulded hose
Hose **H** =180°, 18 mm dia. moulded hose

A = 550
C = 125
D = 90
E = 60
F = 60
G = 580

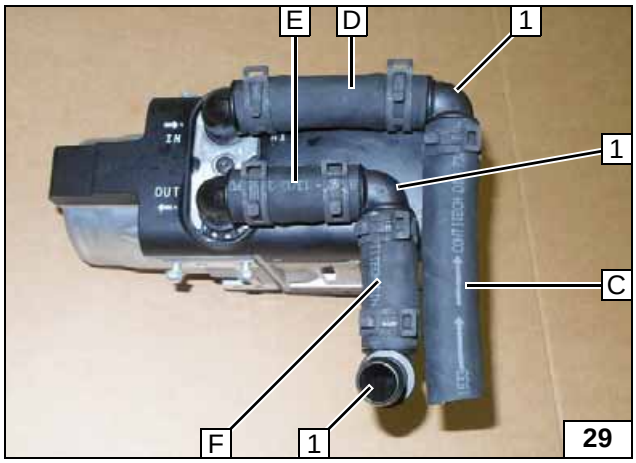
Cutting hoses to length



Slide braided protection hoses onto hose **A** and **G** and cut to length. Cut heat shrink plastic tubing to length.

1 Heat shrink plastic tubing, 50mm length [4x]

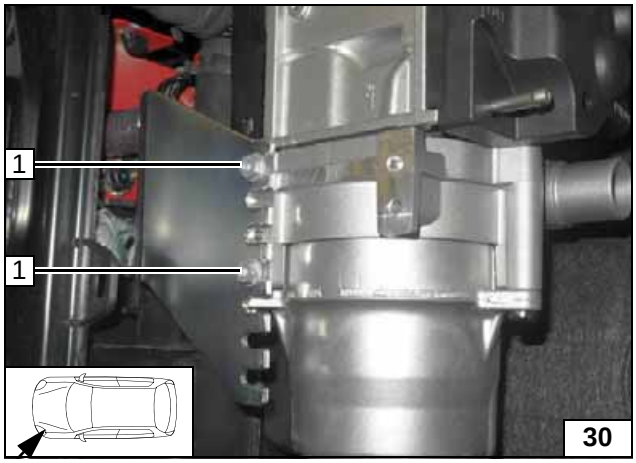
Preparing hoses



All spring clips = 25 mm dia.

1 90°, 18x18mm dia. connecting pipe [3x]

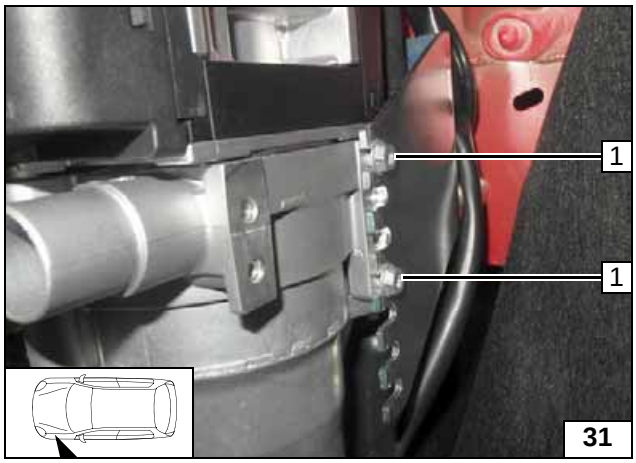
Premounting hoses



Installing Heater

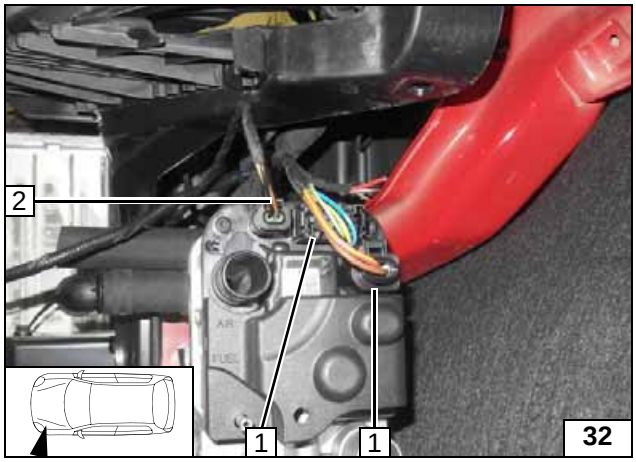
1 5x13 self-tapping bolt [2x]

Mounting heater



1 5x13 self-tapping bolt [2]

Mounting heater



1 Wiring harness of heater [2x]
2 Wiring harness of circulating pump

Attaching wiring harness to heater

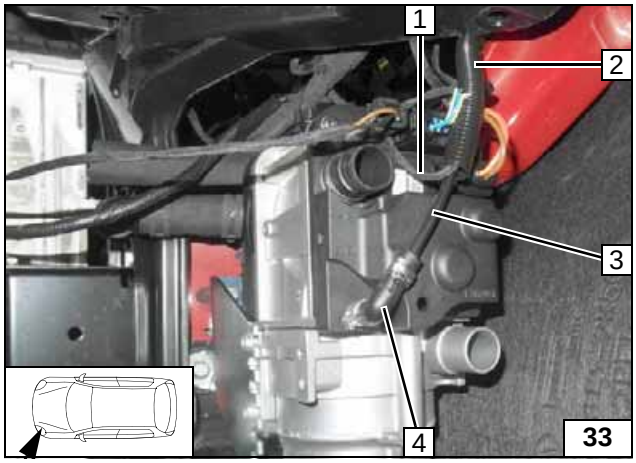
Fuel

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

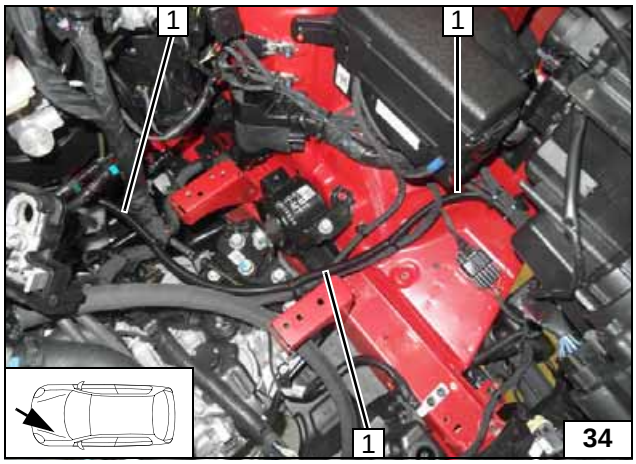
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Pull fuel line **3** and wiring harness of metering pump **1** into 10mm dia. corrugated tube **2** and route in the engine compartment.

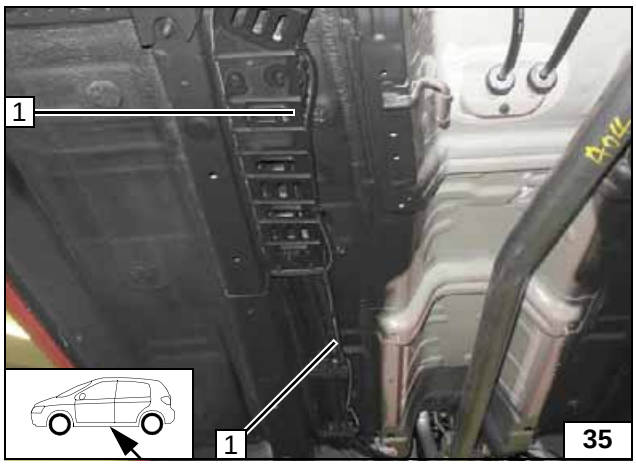
4 90° moulded hose, 10 mm dia. clamp [2x]

Connecting heater



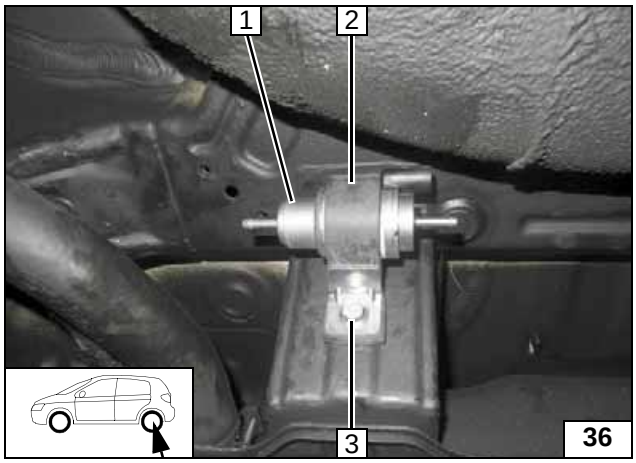
Route fuel line and wiring harness of metering pump in 10mm corrugated tube **1** to firewall and further along original vehicle lines to underbody.

Routing lines



Route wiring harness of metering pump and fuel line in 10mm dia. corrugated tube **1** to the installation location of the metering pump along original vehicle lines.

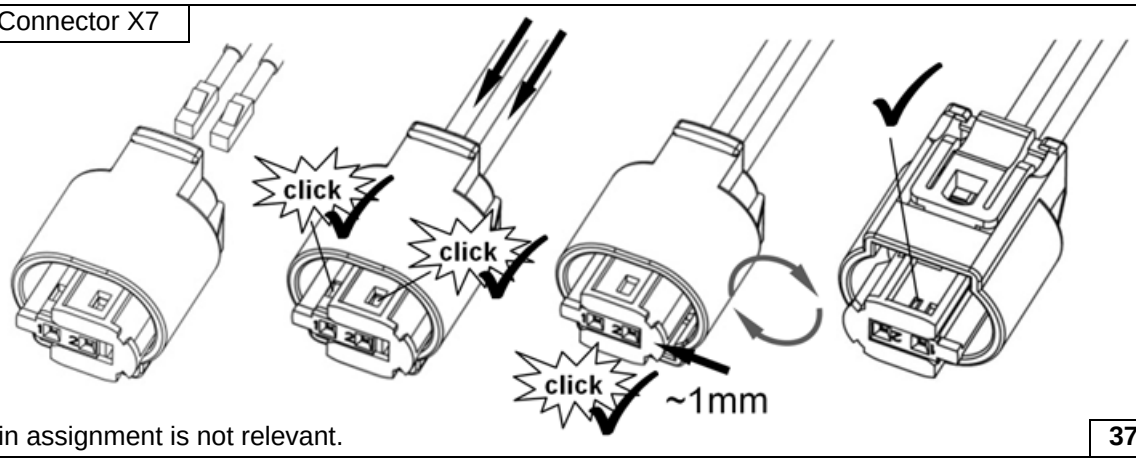
Routing lines



1 Metering pump
2 Mounting of metering pump
3 M6x25 bolt, support angle bracket, flanged nut, original vehicle hole

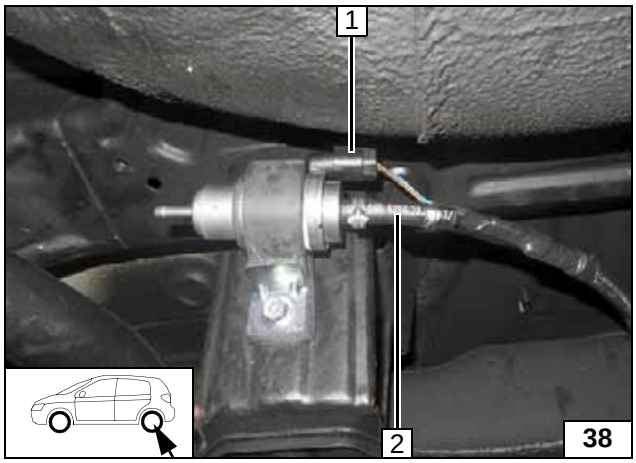
Mounting metering pump

Connector X7



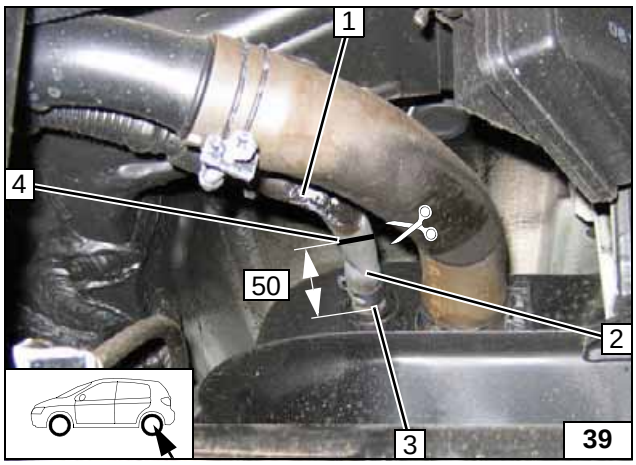
Pin assignment is not relevant.

Completing metering pump connector



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

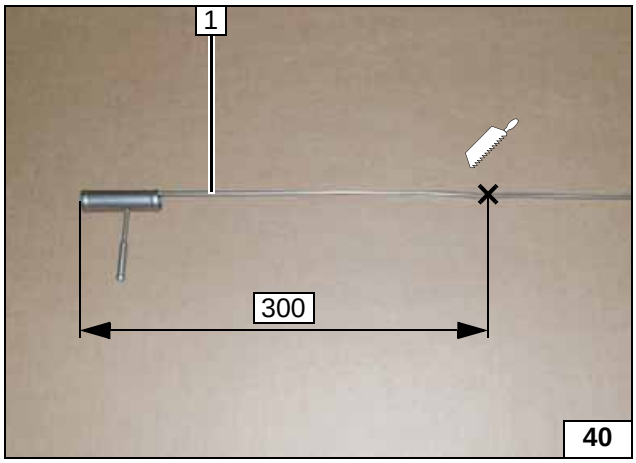
Connecting metering pump



Separate fuel-tank vent line **1** approx. 50mm before the fuel tank connection piece. Remove hose section of ventilation line **2**, will be reused. Original vehicle clamp **3** will be reused.

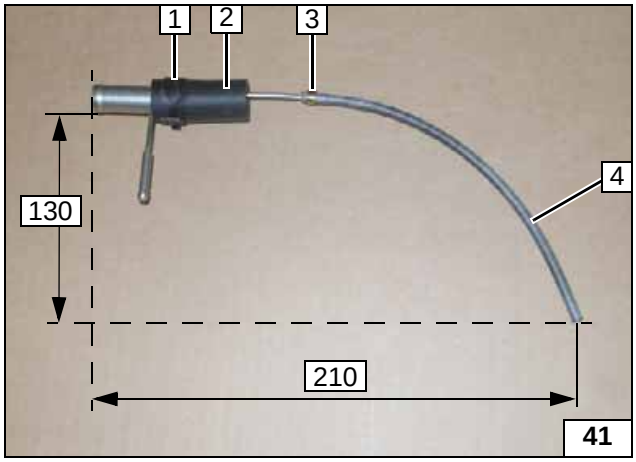
1 Ventilation line
4 Cutting point

Fuel extraction



1 Fuel standpipe

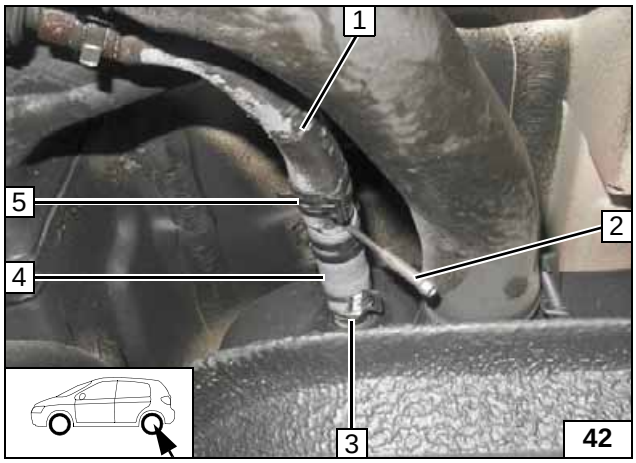
Cutting fuel standpipe to length



Slide fuel hose **4** onto fuel standpipe (projection at end is 2mm) and fasten with 6.6mm dia. one-ear clamp (Oetiker) **3**.

1 22mm dia. spring clip
2 Hose section of ventilation line

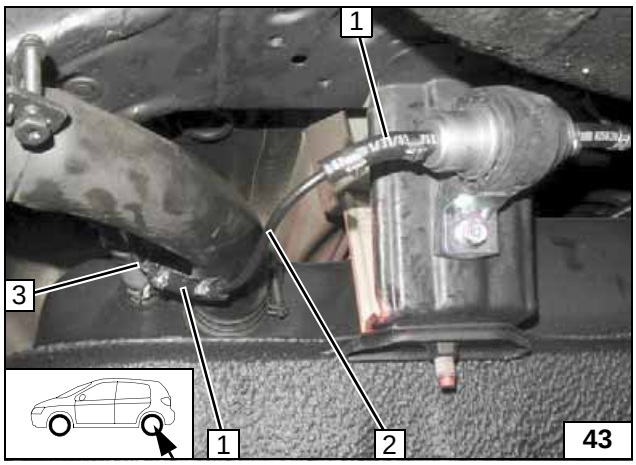
Preparing fuel standpipe



Insert fuel standpipe **2** in the ventilation line **1** carefully. Route fuel standpipe **2** through hole in baffle plate and align to fuel tank floor.

3 Original vehicle spring clip
4 Hose section of ventilation line
5 22mm dia. spring clip

Installing fuel standpipe



Ensure sufficient distance from neighbouring components, correct if necessary.

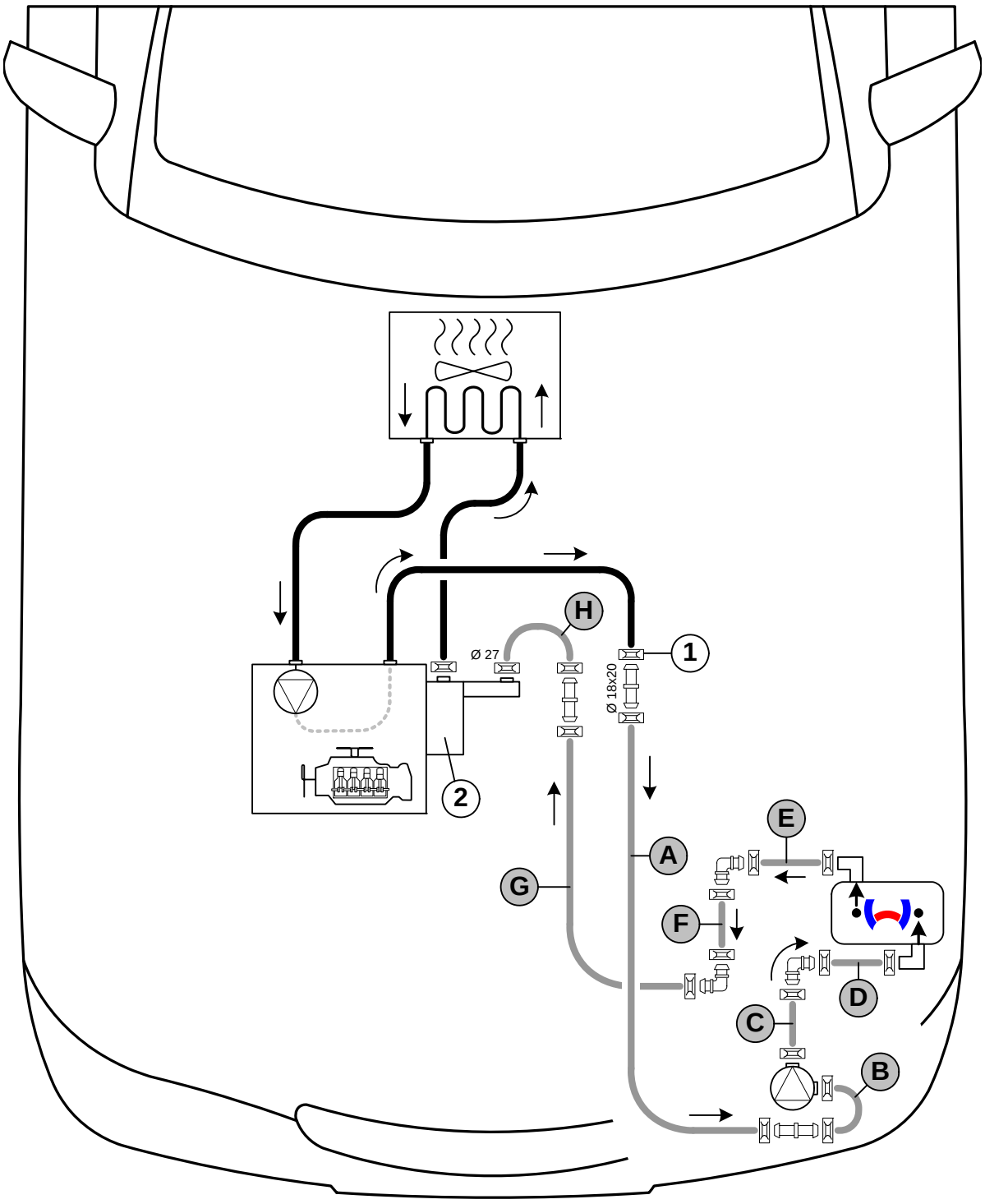
1 Hose section [2x], 10mm dia. clamp [4x]
2 Fuel line of fuel standpipe
3 Fuel standpipe

Connecting fuel standpipe and metering pump

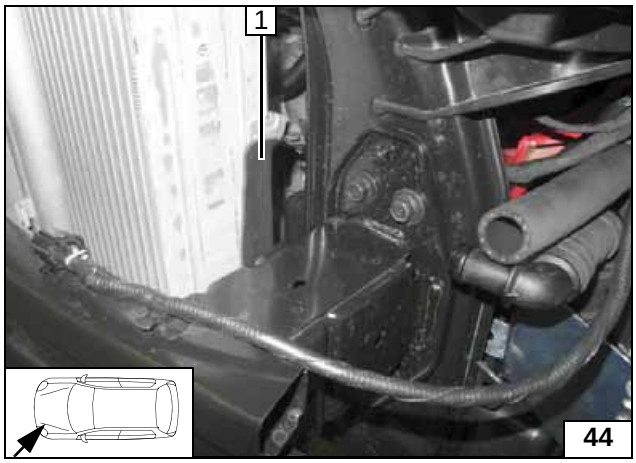
Coolant Circuit

WARNING!
Any coolant running off should be collected in 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

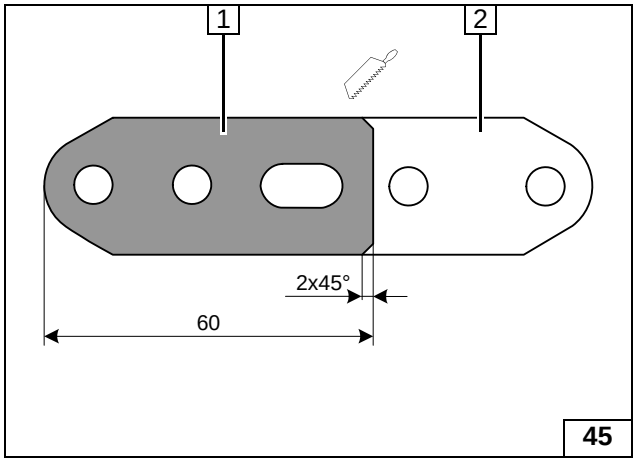


All spring clips without a specific designation = 25 mm dia. **1** = original vehicle spring clip !
All connecting pipes without a specific designation and = 18x18mm dia. **2** = EGR!



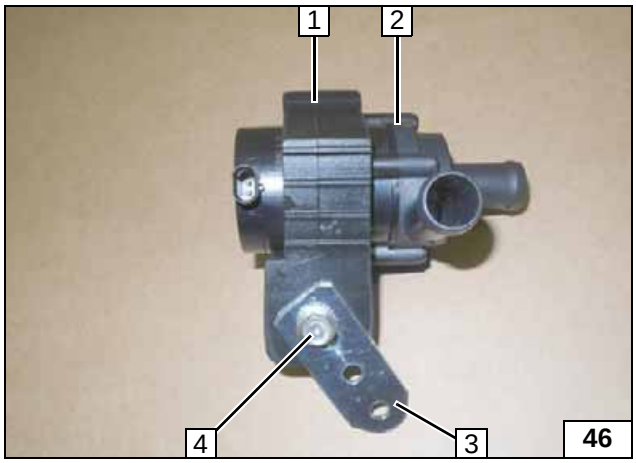
1 Rub protection strips

Pasting rub protection



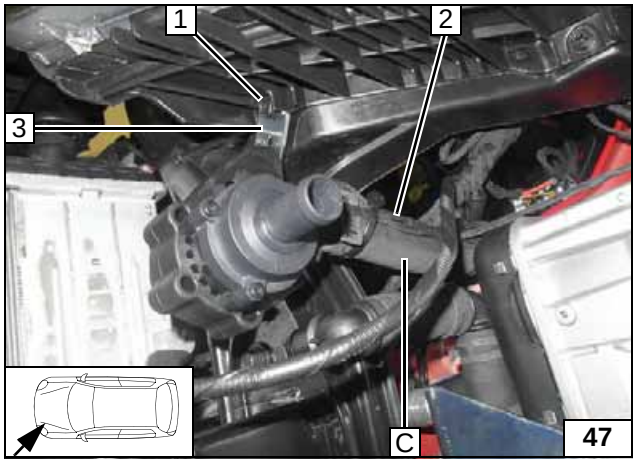
1 Perforated bracket
2 Discard section

Preparing perforated bracket



1 Mounting of circulating pump
2 Circulating pump
3 Perforated bracket
4 M6x25 bolt, flanged nut

Premounting circulating pump

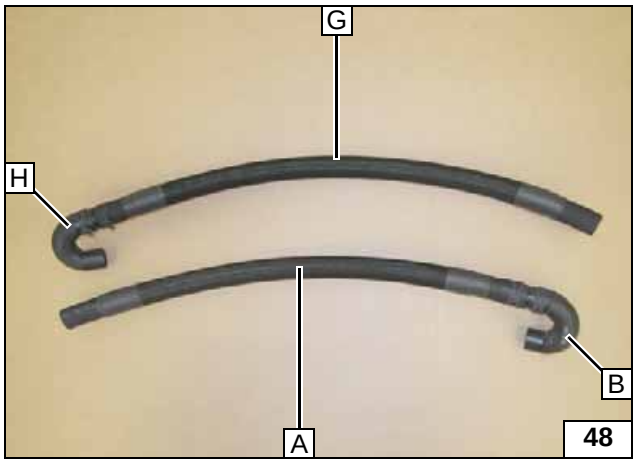


Insert between perforated bracket 3 and plastic carrier a washer with outer dia. d_a = 11.6mm at position **1**. Mount hose **C** on circulating pump. Mount wiring harness of circulating pump **2**.

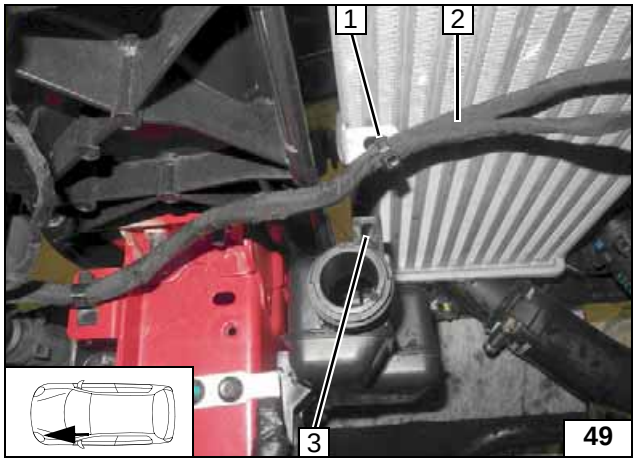
1 Original vehicle bolt

Mounting circulating pump

 © Webasto Thermo & Comfort SE

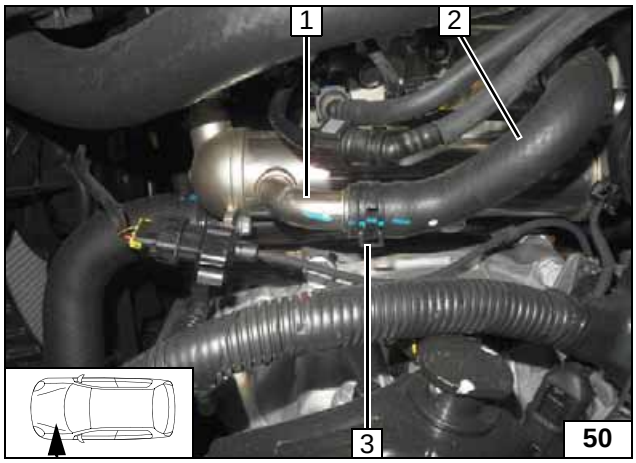


Premounting hoses



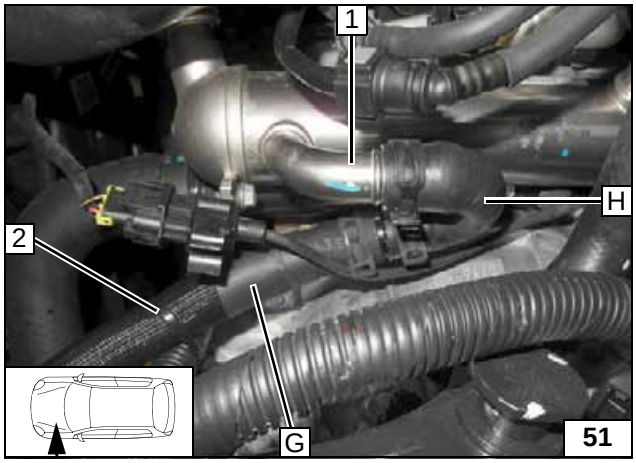
Detach original vehicle wiring harness **2** at position **3** and fasten again with cable tie at position **1**.

Moving wiring harness



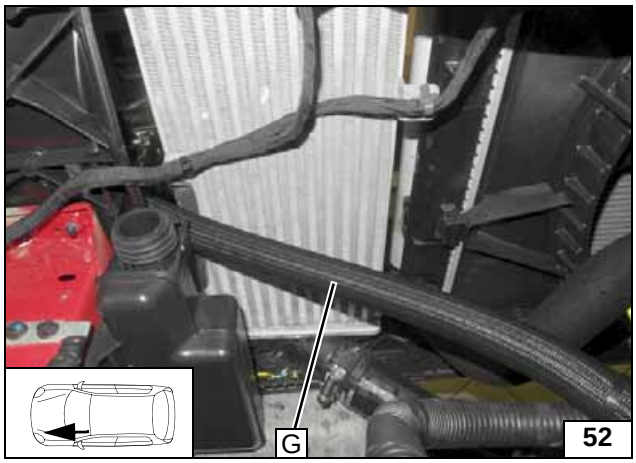
Remove engine outlet hose **2** on EGR connection piece **1**. Spring clip **3** will be reused.

Cutting point

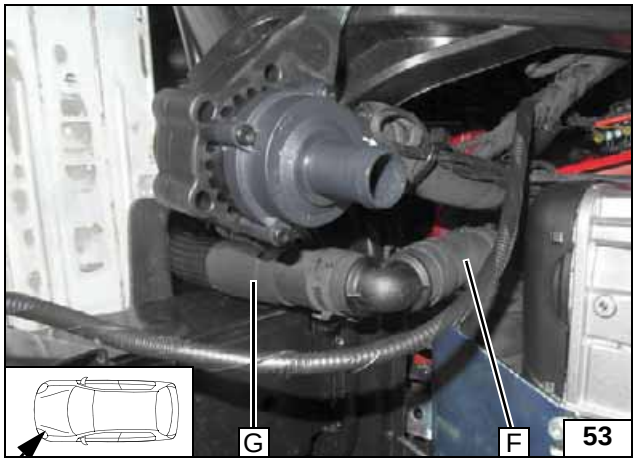


1 EGR connection piece
2 Cable tie

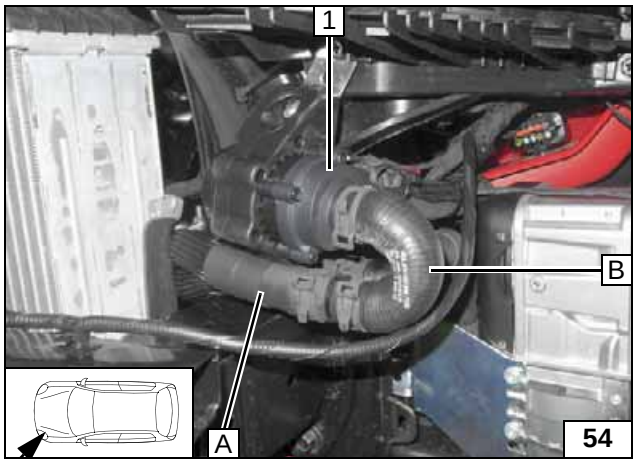
Connecting heat exchanger inlet



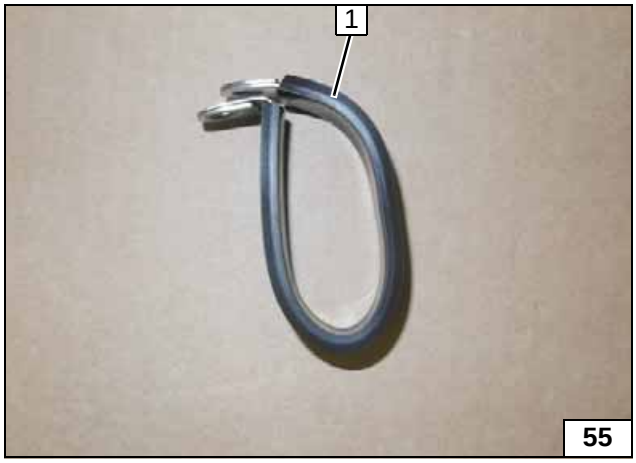
Routing in engine compartment



Connecting heater outlet

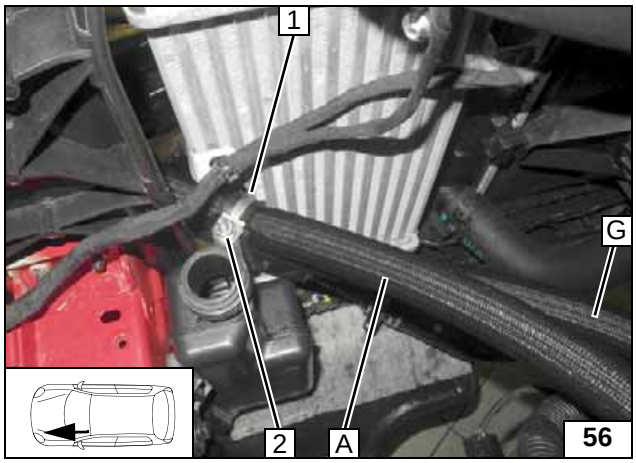


Connecting circulating pump



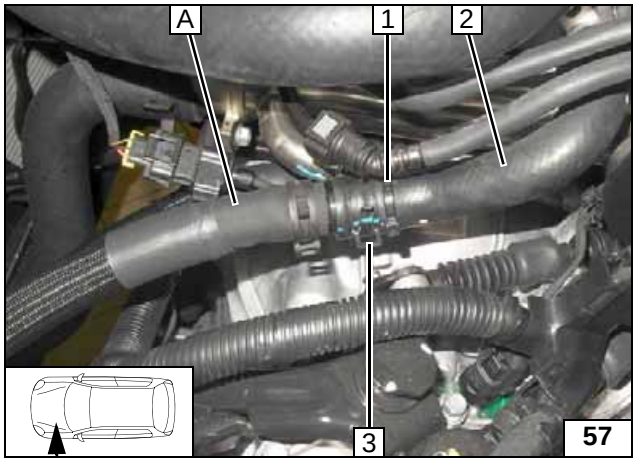
1 38mm dia. rubber-coated p-clamp

Shaping rubber-coated p-clamp



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

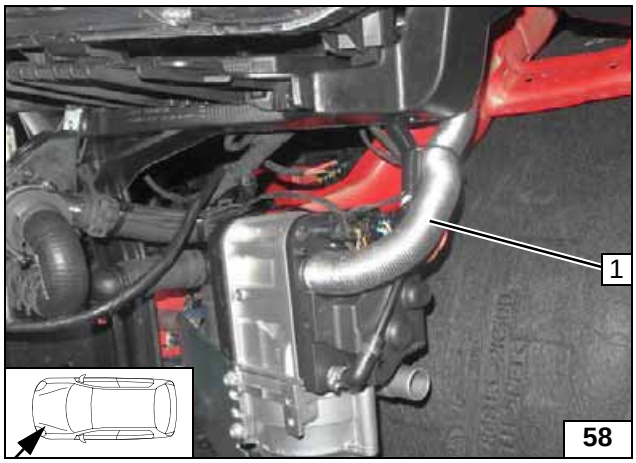
Routing in engine compartment



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

1 Cable tie
2 Hose of engine outlet
3 Original vehicle spring clip

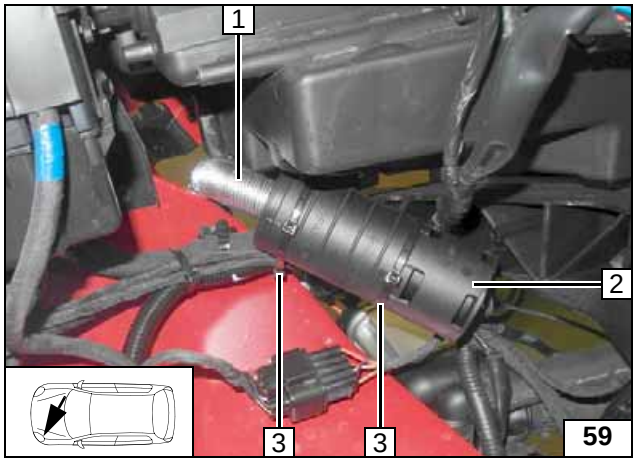
Connecting engine outlet



Combustion Air

1 Combustion air pipe

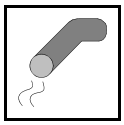
Installing combustion air pipe

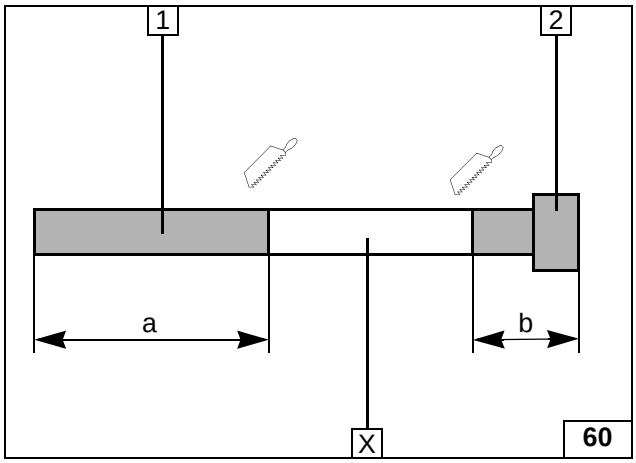


Fasten silencer **2** with cable tie **3** [2x] onto original vehicle wiring harness.

1 Combustion air pipe

Mounting silencer



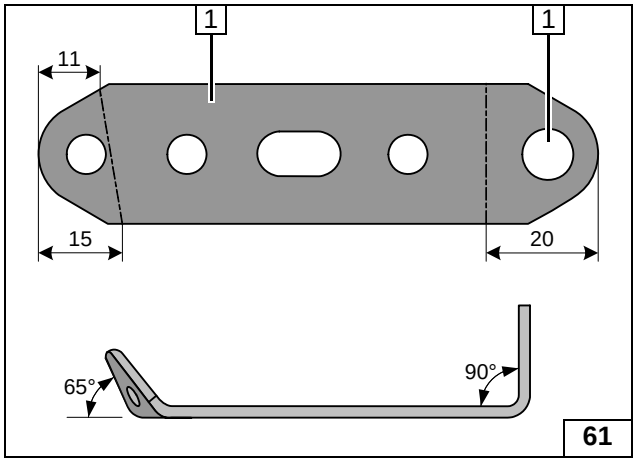


Exhaust Gas

Discard section **X**.

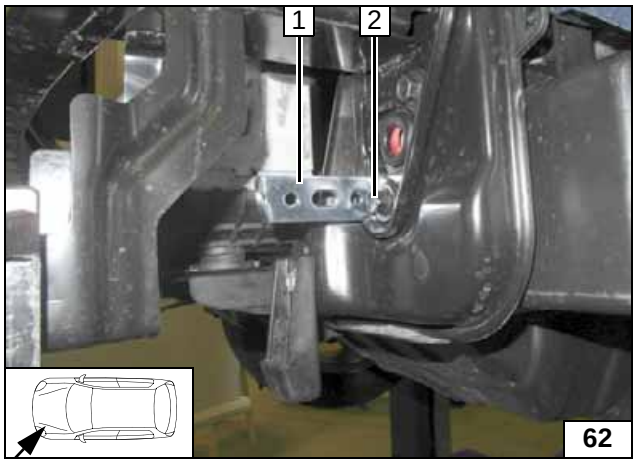
1 Exhaust pipe
a = 460
2 Exhaust end section
b = 50

Preparing exhaust pipe



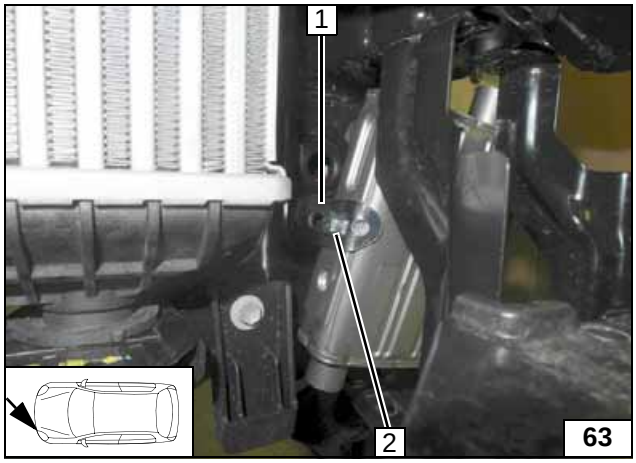
1 Perforated bracket
2 Drill hole up to 8.5 mm dia.

Preparing perforated bracket



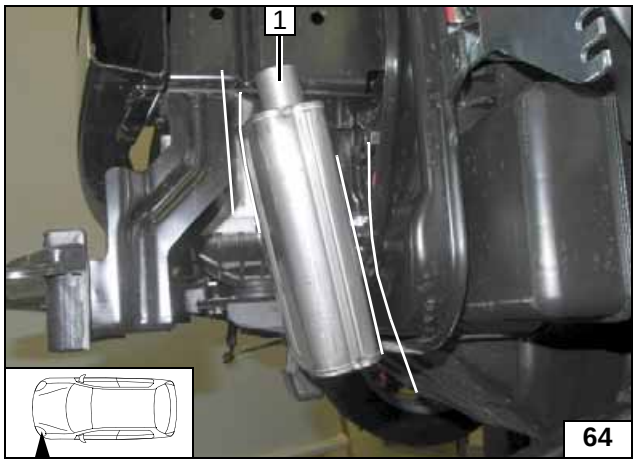
1 Perforated bracket
2 Original vehicle bolt

Installing perforated bracket



1 Perforated bracket
2 M6x16 bolt, spring lockwasher

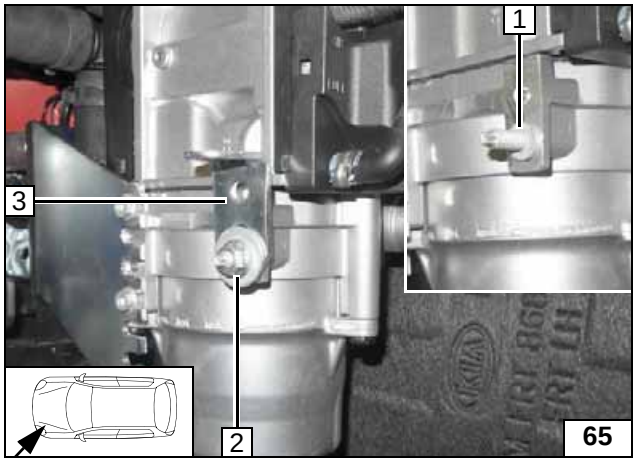
Mounting silencer



Ensure sufficient distance from neighbouring components, correct if necessary.

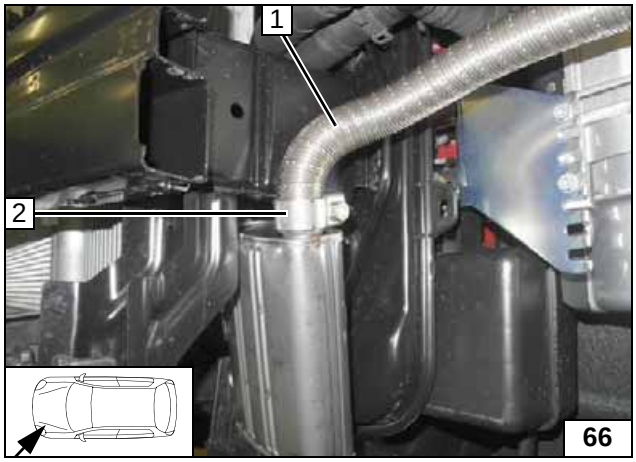
1 Silencer

Aligning silencer



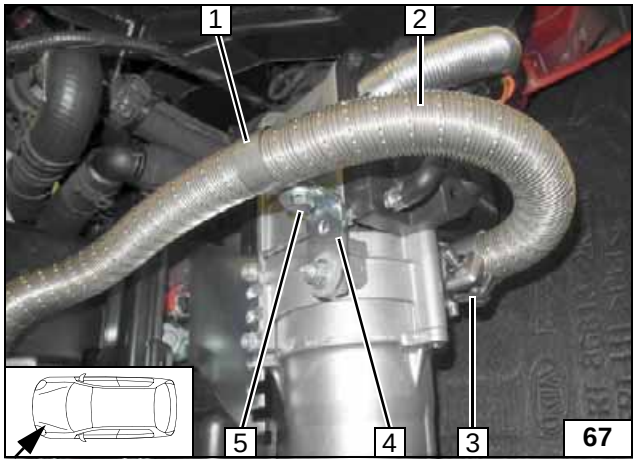
1 Stud bolt
2 Large diameter washer, M6 flanged nut
3 Angle bracket

Installing angle bracket



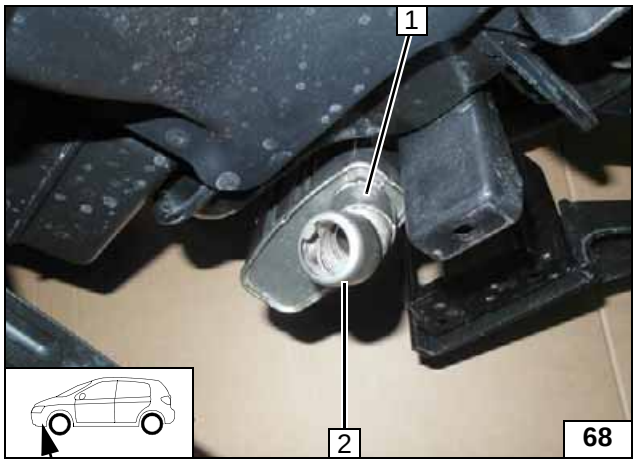
1 Exhaust pipe
2 Hose clamp

Installing exhaust pipe



1 P-clamp
2 Exhaust pipe
3 Hose clamp
4 Angle bracket
5 M6x20 bolt, flanged nut

Installing exhaust pipe



Ensure sufficient distance from neighbouring components, correct if necessary.

1 Hose clamp
2 Exhaust end section

Installing exhaust end section

Final Work

WARNING!
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate all loose lines and tie back.
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 the digital timer, teach telestart transmitter**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place caution label "Switch off parking heater before refuelling" in the area of the filler neck**
- **See installation instructions for initial start-up and function test**

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

 © Webasto Thermo & Comfort SE

Webasto
Feel the Drive

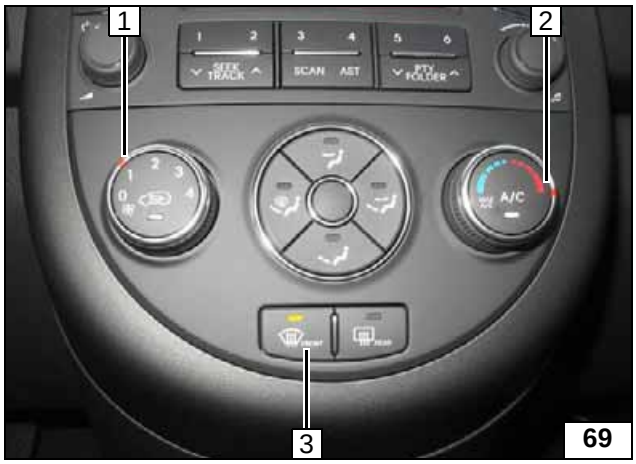
Operating Instructions for End Customer

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.

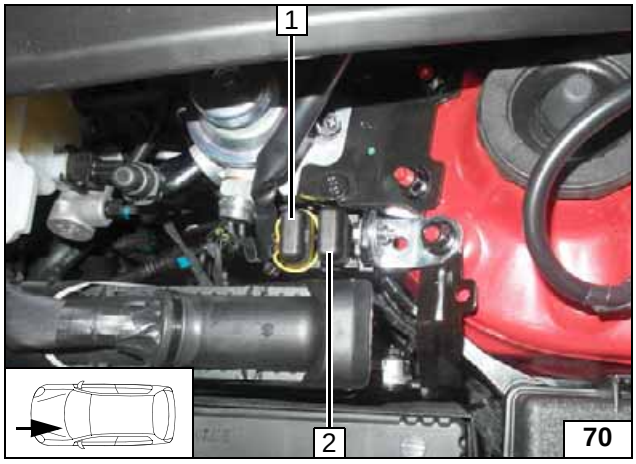
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for de-activation may be obtained from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



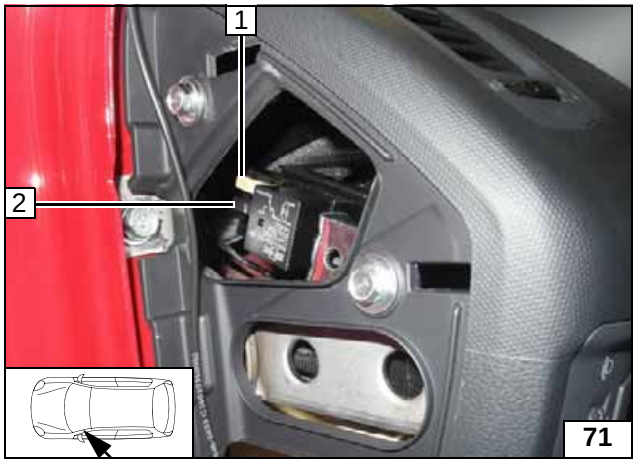
1 Set fan to level "1", or max. "2"
2 Set temperature to "max."
3 Air outlet to windscreen

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses