Water Heater

Thermo Top Evo Parking Heater

E1
00 0258

Installation Documentation
Mitsubishi Lancer

Validity

Manufacturer	Model	Type	Model year	EG BE No. / ABE
Mitsubishi	Lancer	CX1	From model year 2016	e1 * 2001 / 116 * 0441* ...

Motorisation	Fuel	Emission standard	Transmission type	Output in kW	Displacement in cm^3	Engine code
1.6 B	Petrol	Euro 6	5-speed SG	86	1590	4A92

SG = manual transmission

Left-hand drive vehicle

Verified equipment variants: Automatic air-conditioning
LED daytime running lights
Halogen front fog lights
Automatic Start-Stop system

Not verified: Manual air-conditioning
Headlight washer system
Xenon main headlights

Total installation time: approx. 6.5 hours

Mitsubishi Lancer

Table of Contents

Necessary Components

Description	Order No.:
Basic delivery scope of Thermo Top Evo	In accordance with price list
Installation kit for Mitsubishi Lancer 2016 Petrol	1325200A
In case of Telestart, heater control, as well as indicator lamp in consultation with end customer	In accordance with price list
In case of installation of MultiControl CAR - MultiControl installation frame	9030077_

Webasto Individual Option

Description	Order No.:
Webasto Individual Auxiliary Heating additional kit	1320077_
Webasto Individual Quick additional kit	9030826_
Webasto Individual Select additional kit	9030828_

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.

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).

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 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.

Mitsubishi Lancer

Information on Validity

This installation documentation applies to Mitsubishi Lancer Petrol vehicles - for validity, see page 1 - from model year 2016 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.

Mechanics **Electrics** **Coolant Circuit** **Combustion Air** **Fuel** **Exhaust Gas** **Software**

Special features are highlighted using the following symbols:

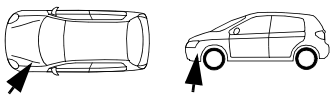
Specific risk of damage to components.

Specific risk due to electrical voltage.

Specific risk of fire or explosion.

Reference to a special technical feature.

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



Reference to the manufacturer's vehicle-specific documents.

Reference to specific installation instructions of Webasto components (demonstrated with the example of the FuelFix).

Reference to general installation instructions of Webasto components.

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

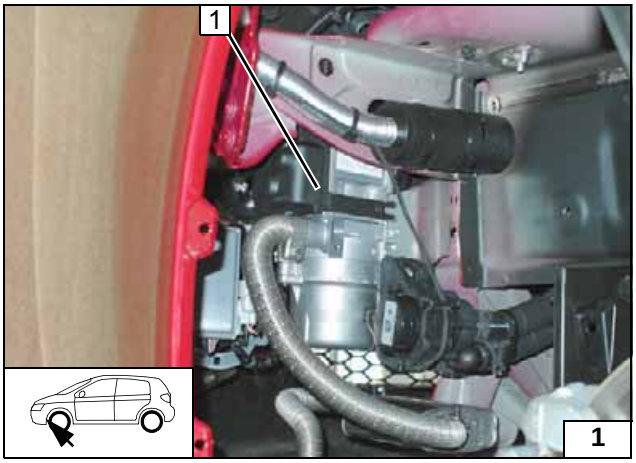
Preliminary Work

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.
- Completely remove the air filter.
- Remove the lower engine cover
- Remove the left front wheel.
- Remove the front wheel well trim on the left.
- Remove the rear bench seat.
- Open the right-hand tank-fitting service lid.
- Remove the fuel tank sending unit in accordance with the manufacturer's instructions.
- Remove the glove box.
- Remove the footwell trim on the left and the right.

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.



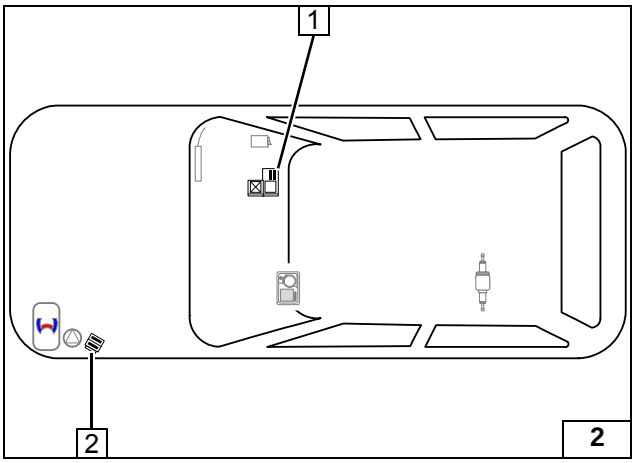
Heater Installation Location

1 Heater

Installation location

Preparing Electrical System

1 Passenger compartment relay and fuse holder
2 Engine compartment fuse holder

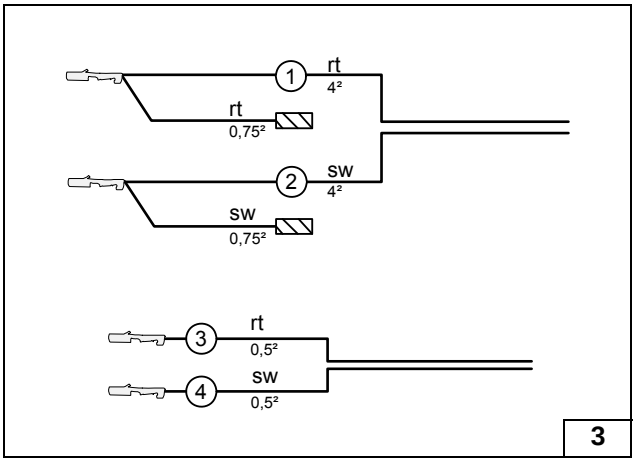


2

Installation overview

Wire sections retain their numbering in the entire document.

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness
③ Red (rt) wire of PWM control system wiring harness
④ Black (sw) wire of PWM control system wiring harness



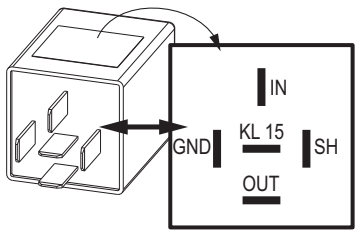
3

Assigning wires

Adjust the PWM Gateway settings as follows!

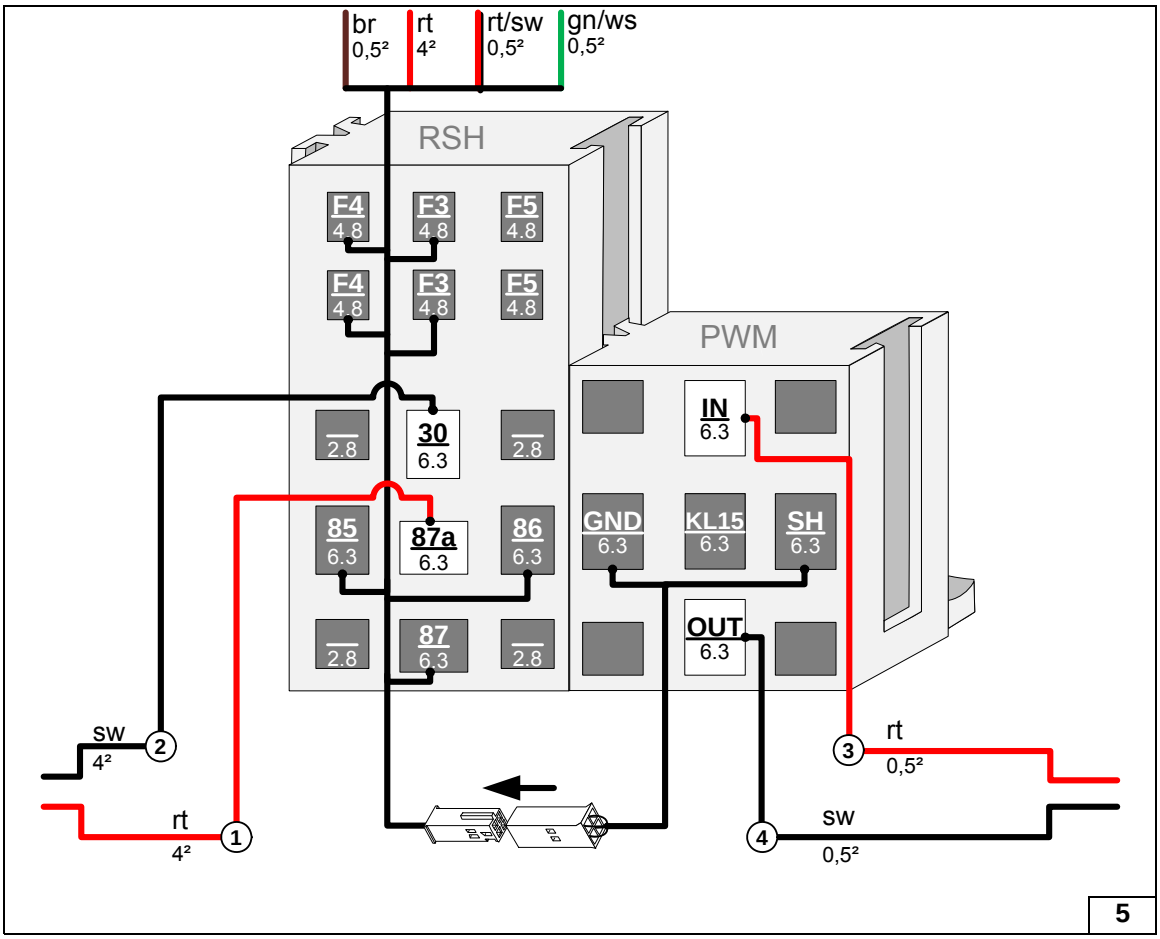
Settings:

Duty cycle: 100% (DC)
Frequency: not relevant
Voltage: 4.3V
Function: High side

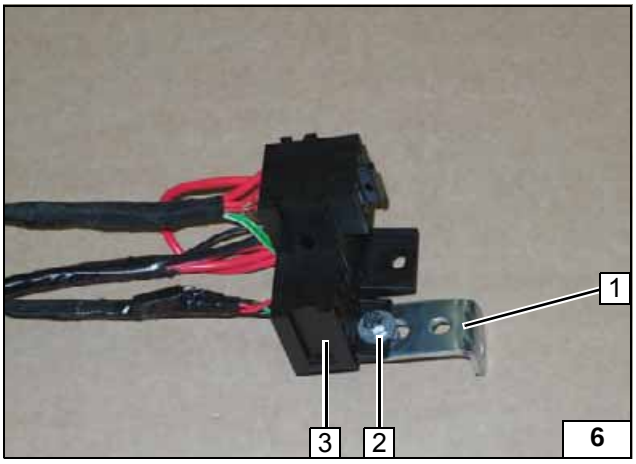


4

View of PWM GW

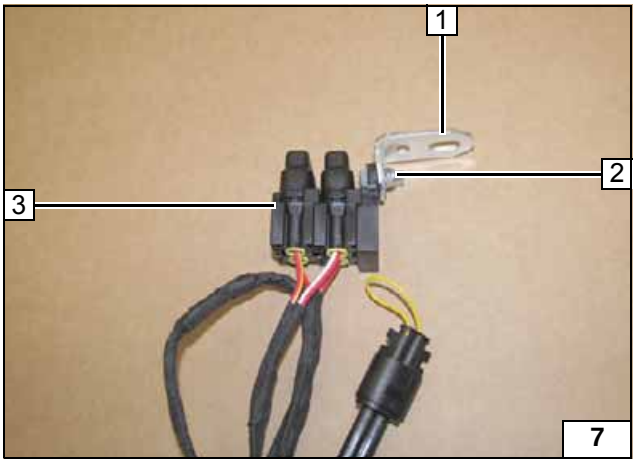


Interlocking PWM GW socket and passenger compartment relay and fuse holder, inserting connector into bushing, connecting wires



1 Angle bracket
2 M5x16 bolt, large diameter washer [2x], nut
3 PWM GW socket

Installing angle bracket



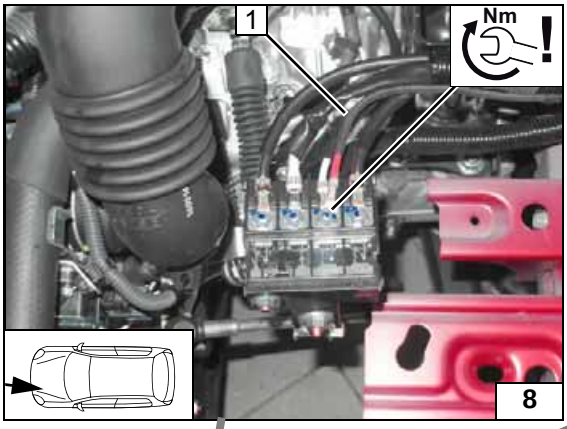
1 Angle bracket
2 M5x16 bolt, large diameter washer [2x], nut
3 Engine compartment fuse holder

Preparing engine compartment fuse holder

Electrical System

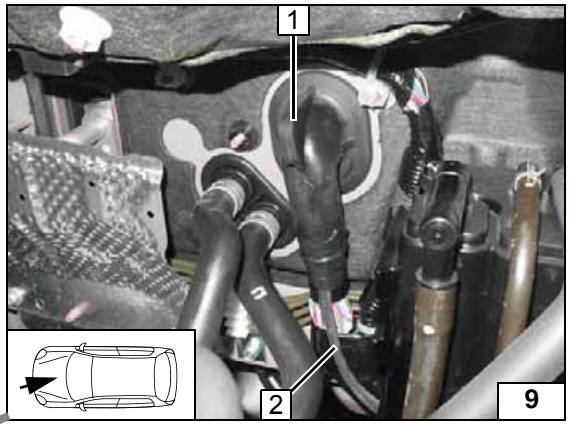
Positive and earth wire

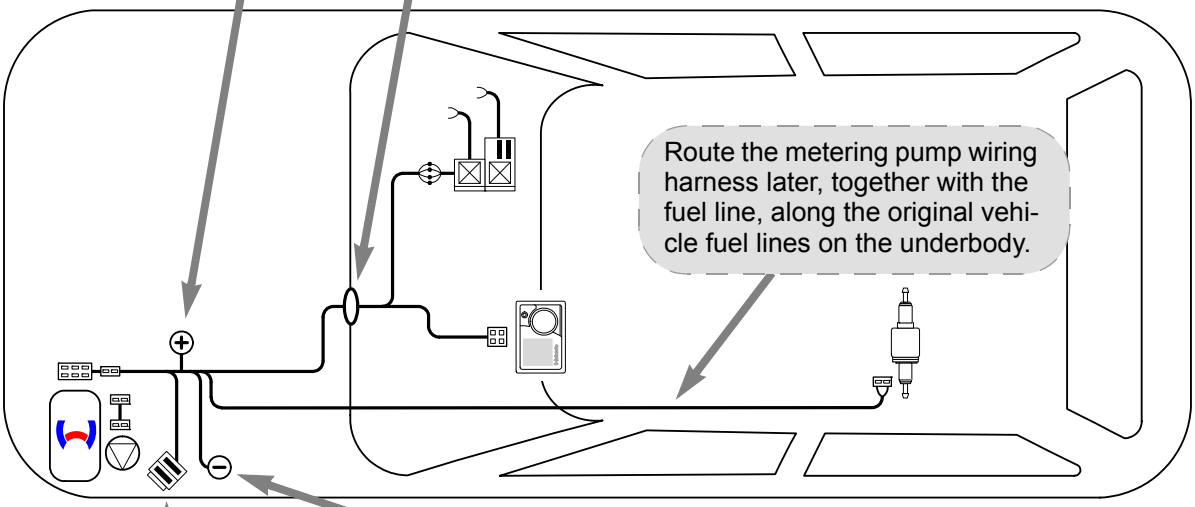
1 Positive wire on positive distributor



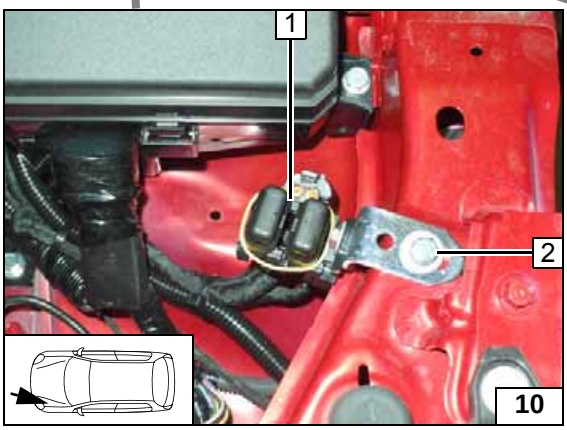
Wiring harness pass through

1 Protective rubber plug
2 Heater wiring harnesses, heater control



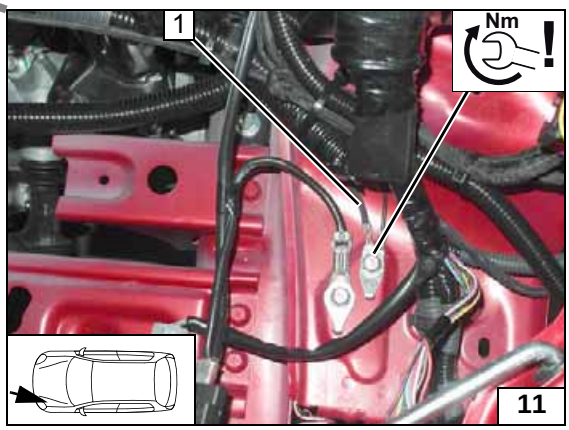


Wiring harness routing diagram



Engine compartment fuse holder

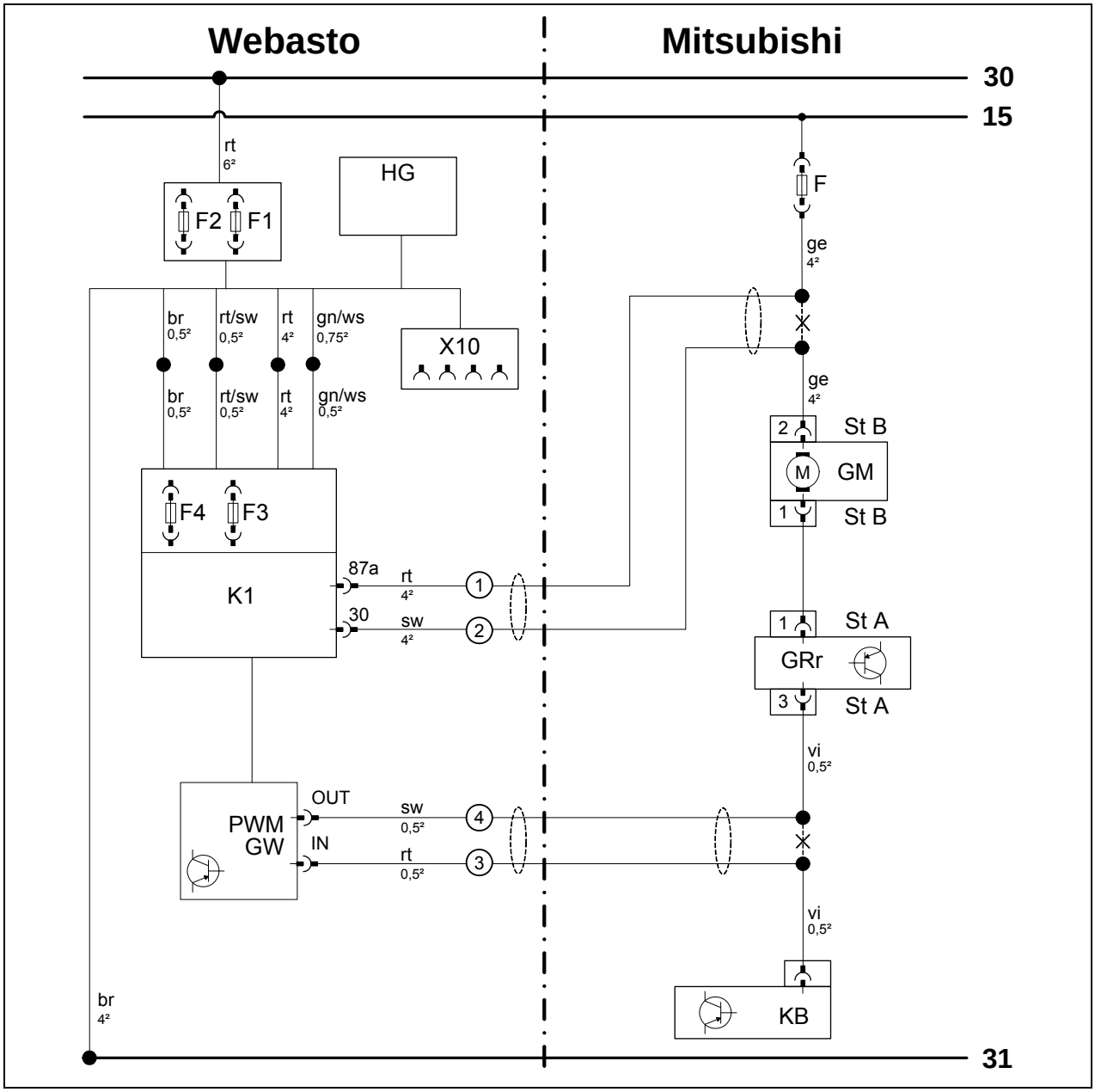
1 Fuses F1-2
2 M6x20 bolt, spring lockwasher, large diameter washer, original vehicle thread



Earth wire

1 Earth wire on original vehicle earth support point

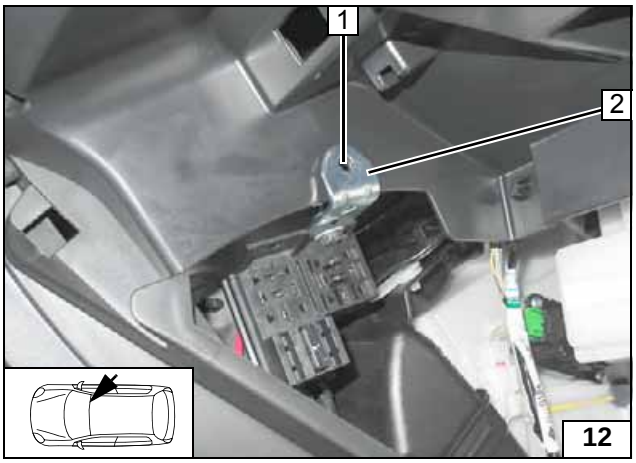
Fan Controller



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F	Fuse	rt	red
F1	20A fuse	GM	Fan motor	sw	black
F2	30A fuse	ST B	2-pin connector of GM	ge	yellow
X10	4-pin socket of heater control	GRr	Fan controller	gn	green
		ST A	4-pin connector GRr	ws	white
F3	1A fuse	KB	A/C control panel	br	brown
F4	25A fuse			vi	violet
K1	Fan relay				
PWM GW	Pulse width modulator				
PWM GW settings:					
Duty cycle:	100% (DC)				
Frequency:	not relevant				
Voltage:	4.3V			**X**	Cutting point
Function:	High side			Wiring colours may vary.	

System wiring diagram

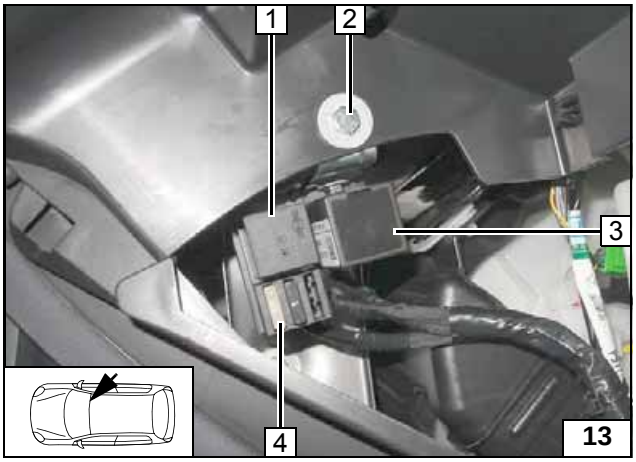
Legend



Position angle bracket **2** of passenger compartment relay and fuse holder and PWM Gateway socket as shown.

1 Hole pattern, 7mm dia hole

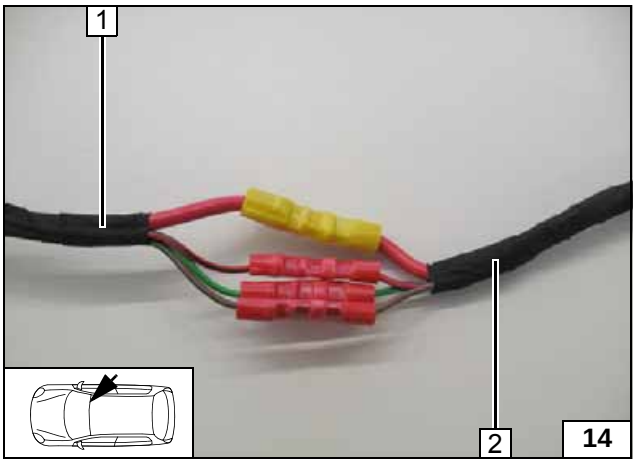
Copying hole pattern



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

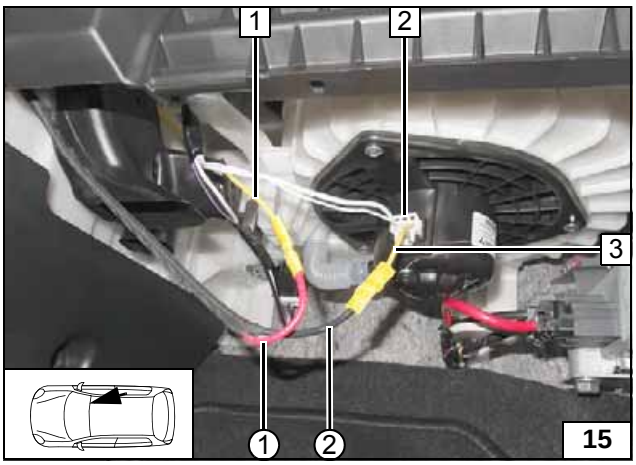
1 Relay K1
2 M6x20 bolt, large diameter washer, flanged nut
3 PWM GW
4 25A fuse F4

Installing relay K1 and PWM GW



1 Passenger compartment relay and fuse holder wiring harness
2 Heater wiring harness

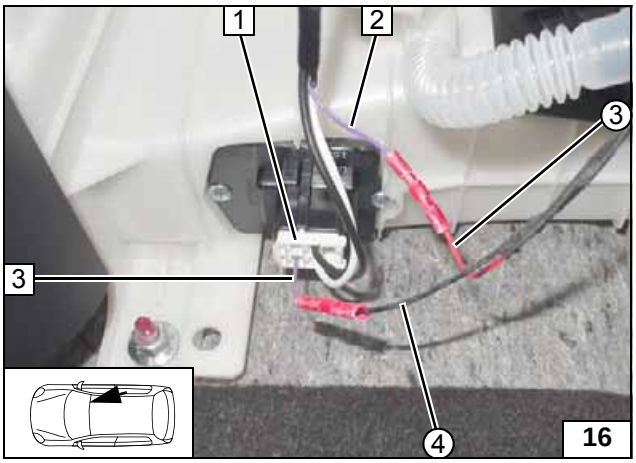
Connecting same colour wires of wiring harnesses



Connection to 2-pin connector ST B **2** from the fan motor.

1 Yellow (ge) wire of fuse F
3 Yellow (ge) wire of connector ST B / pin 2
① Red (rt) wire from K1/87a of fan wiring harness
② Black (sw) wire from K1/30 of fan wiring harness

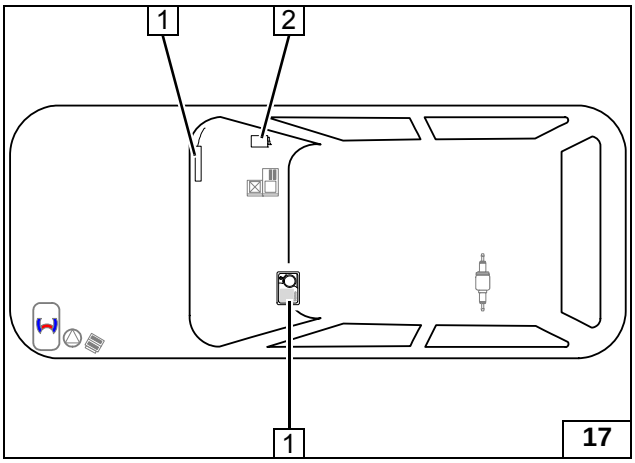
Connecting fan motor



Connection to 4-pin connector ST A **1** from the fan controller.

2 Violet (vi) wire of A/C control panel
3 Violet (vi) wire of connector ST A / pin 3
③ Red (rt) wire from PWM-GW/IN of PWM control wiring harness
④ Black (sw) wire from PWM-GW/OUT of PWM control wiring harness

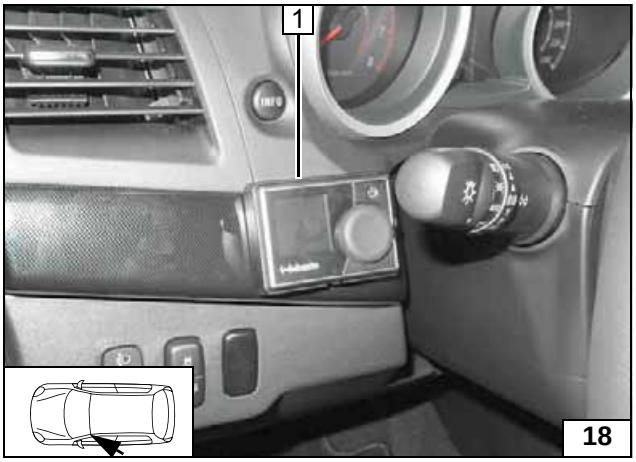
Connecting fan controller



Heater Control Installation

1 Telestart / ThermoCall aerial
2 Telestart / ThermoCall receiver
3 MultiControl CAR

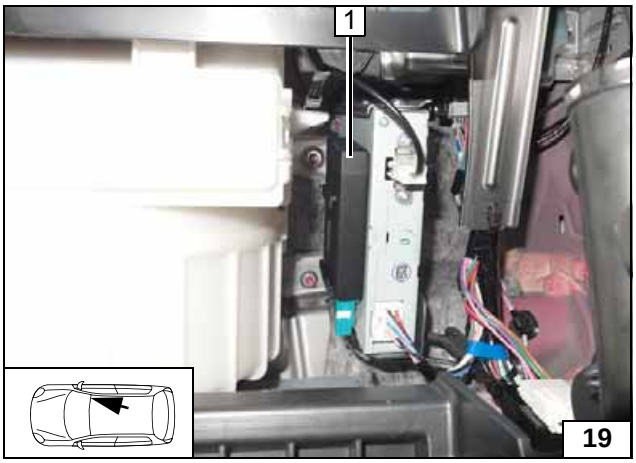
Installation overview



MultiControl CAR Option

1 Installation frame

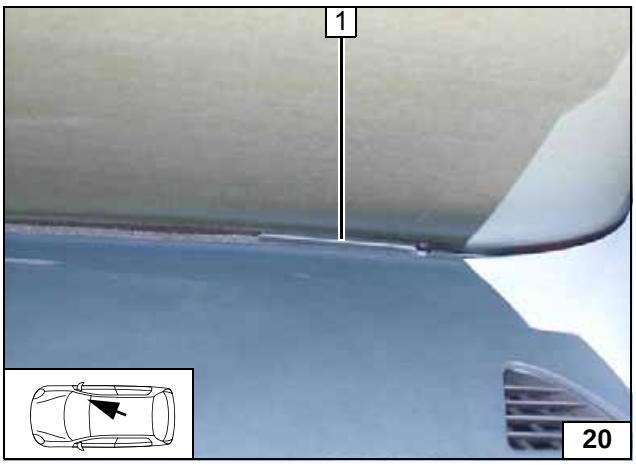
Installing MultiControl CAR



Remote Option (Telestart)

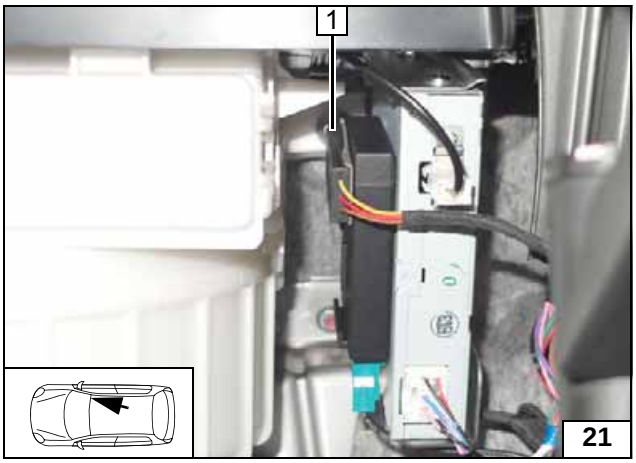
Fasten receiver **1** using double-sided adhesive tape.

Installing receiver



1 Aerial

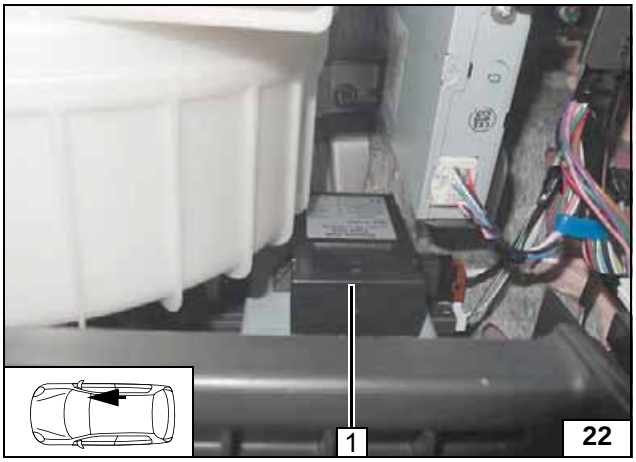
Installing aerial



Temperature sensor T100 HTM

Fasten temperature sensor **1** using double-sided adhesive tape.

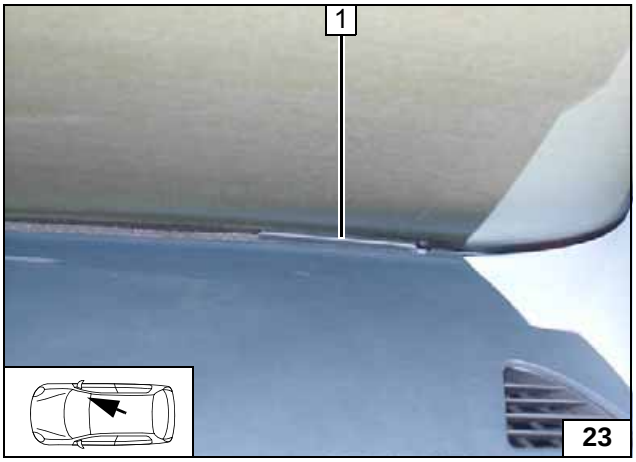
Installing temperature sensor



ThermoCall Option

Fasten receiver **1** using double-sided adhesive tape.

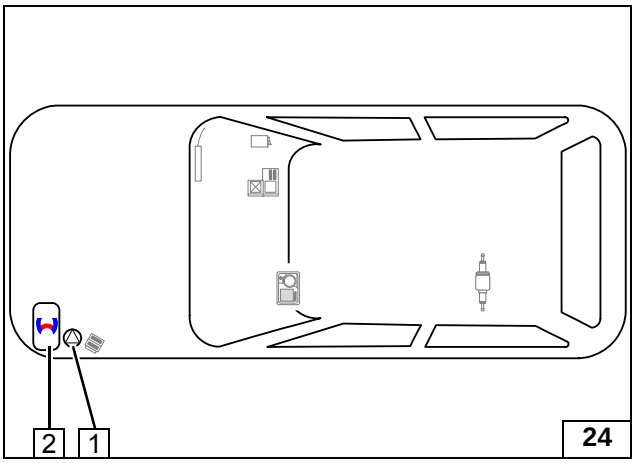
Installing receiver



1 Aerial (optional)

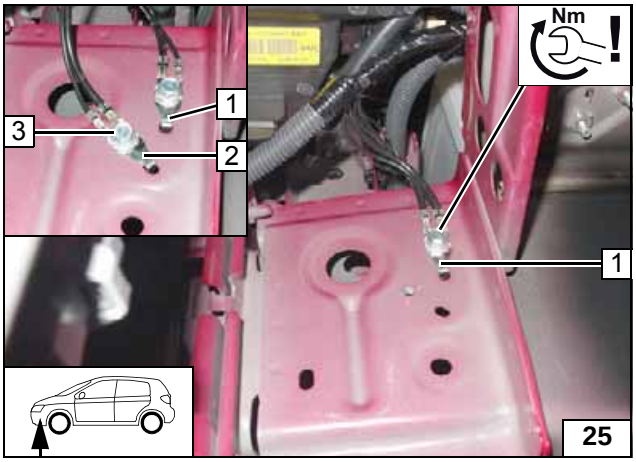
Installing aerial

Preparing Installation Location



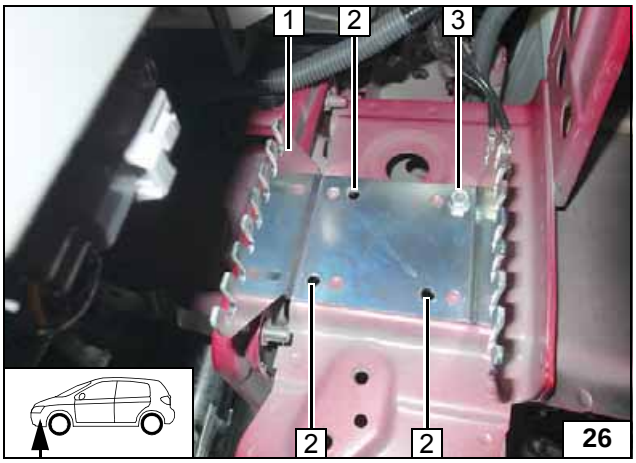
1 Circulating pump
2 Heater

Installation overview



Install earth support point **2** together with earth support point **1**. Original vehicle bolt **3** will be reused.

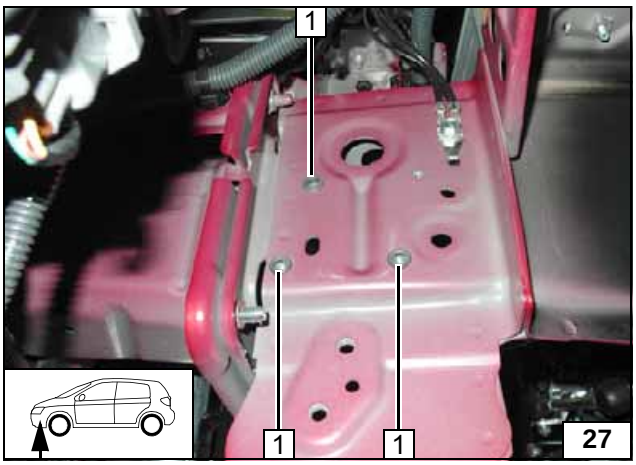
Moving earth support point



Align bracket.

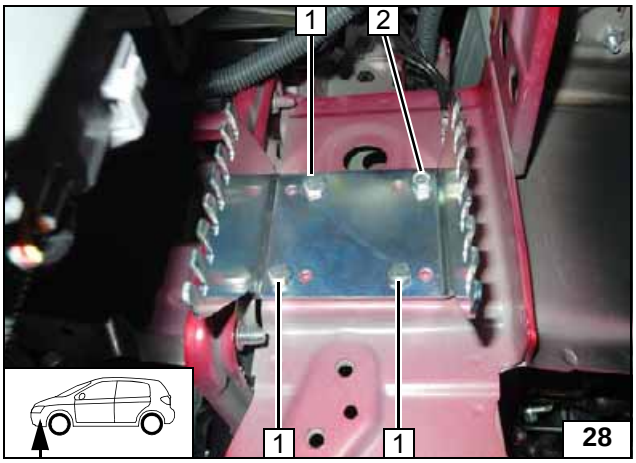
1 Bracket
2 Copy hole pattern [3x]
3 Original vehicle bolt

Copying hole pattern



1 9mm dia. hole; rivet nut [3x]

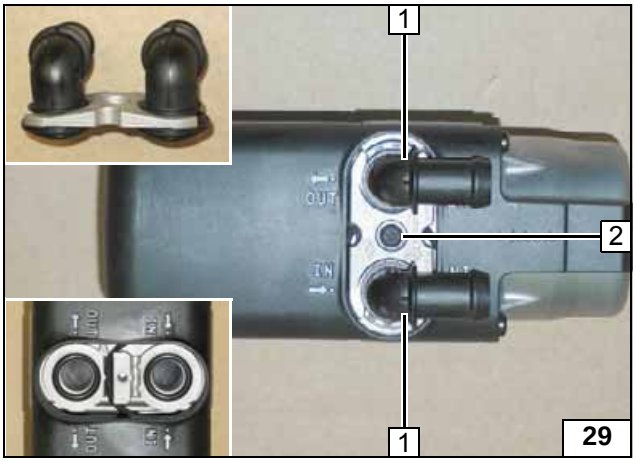
Installing rivet nut



1 M6x20 bolt, spring lockwasher [3x]
2 Original vehicle bolt

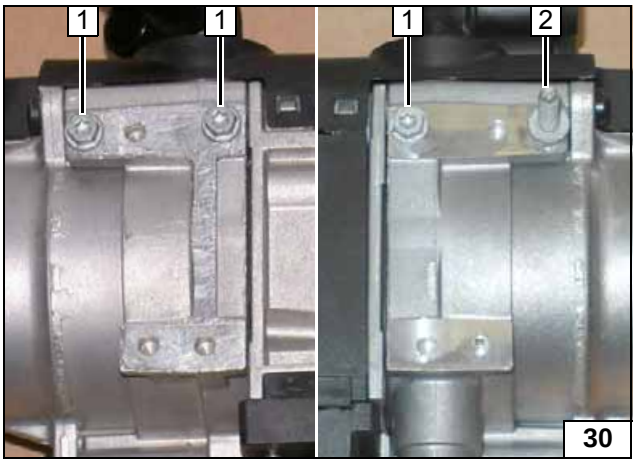
Installing bracket

Preparing Heater



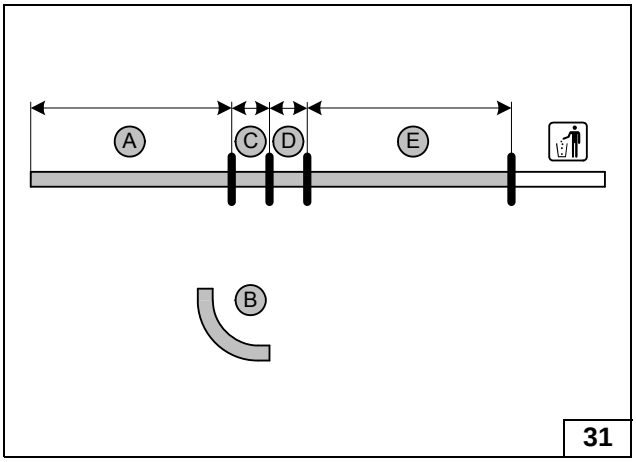
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



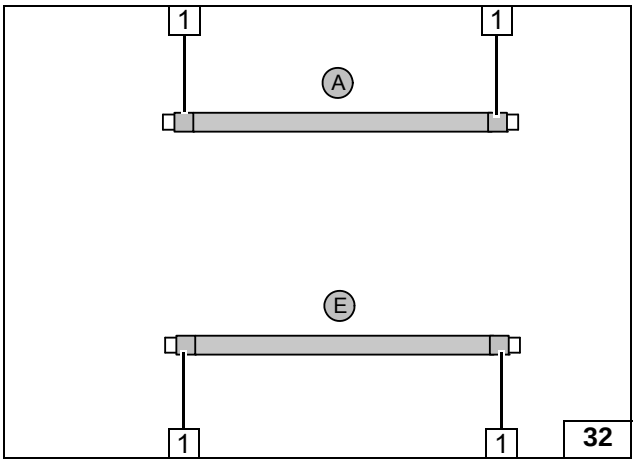
Screw 5x13 self-tapping bolt **1** [3x] and M5 / M6 x25.5 self-tapping stud bolt **2** in existing holes by a maximum of 3 thread turns.

Premounting bolts loosely



A = 710
B =90°, 18mm dia.
C = 80
D = 80
E = 830

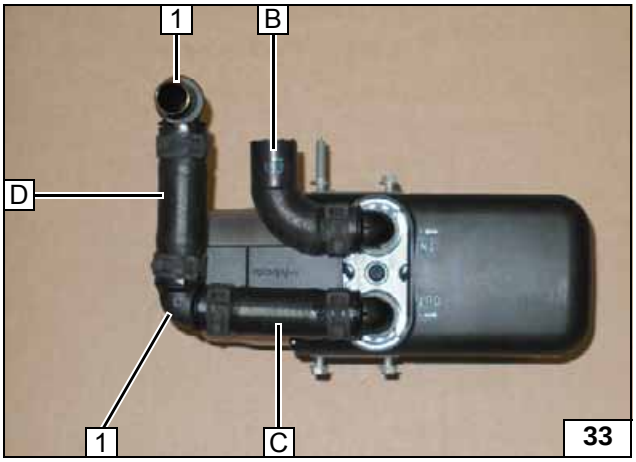
Cutting hoses to length



Push braided protection hose onto hoses **A** and **E** and cut to length. Cut heat shrink plastic tubing to size.

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

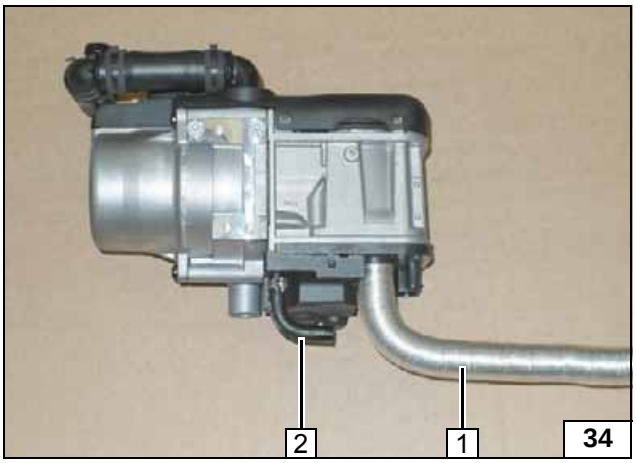
Preparing hoses



All spring clips 25 mm dia.

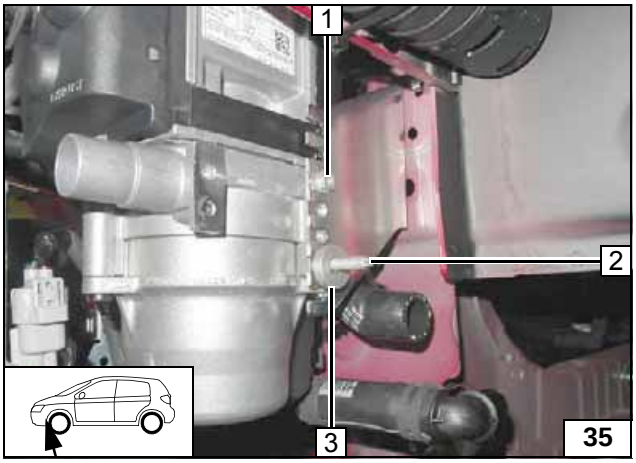
1 90°, 18x18mm dia. connecting pipe [2x]

Premounting hoses



1 Combustion air pipe
2 90° moulded hose, 10 mm dia. clamp

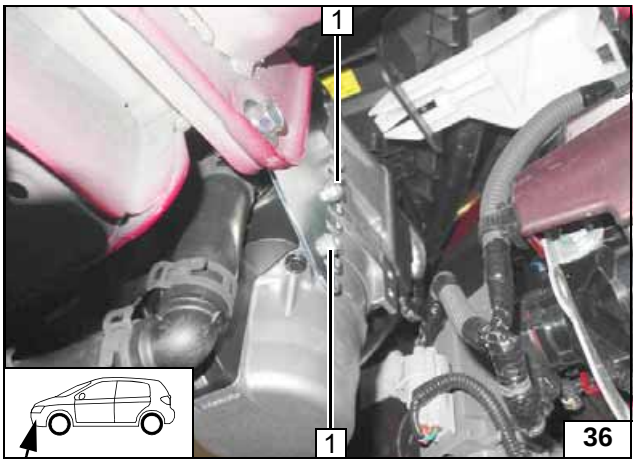
Premounting fuel line and combustion air pipe



Installing Heater

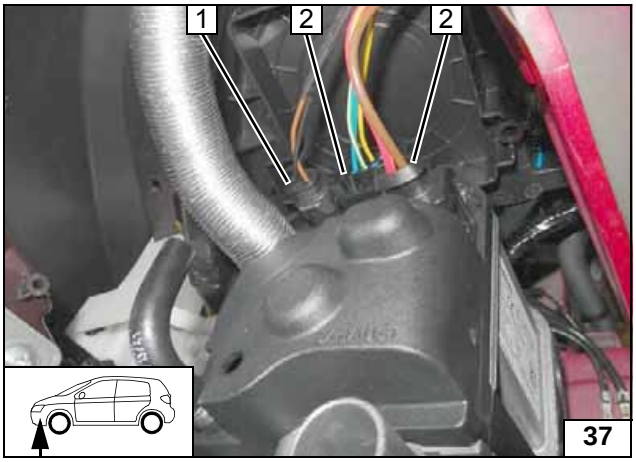
1 Tighten 5x13 self-tapping bolt
2 Tighten M5 / M6 x25.5 self-tapping stud bolt
3 Position 5mm spacer

Installing heater



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

Installing heater



1 Connector of circulating pump wiring harness
2 Heater wiring harness connector [2x]

Installing wiring harnesses

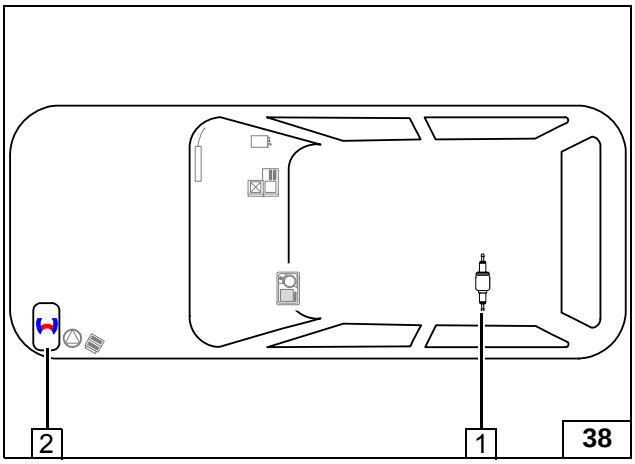
Fuel

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.

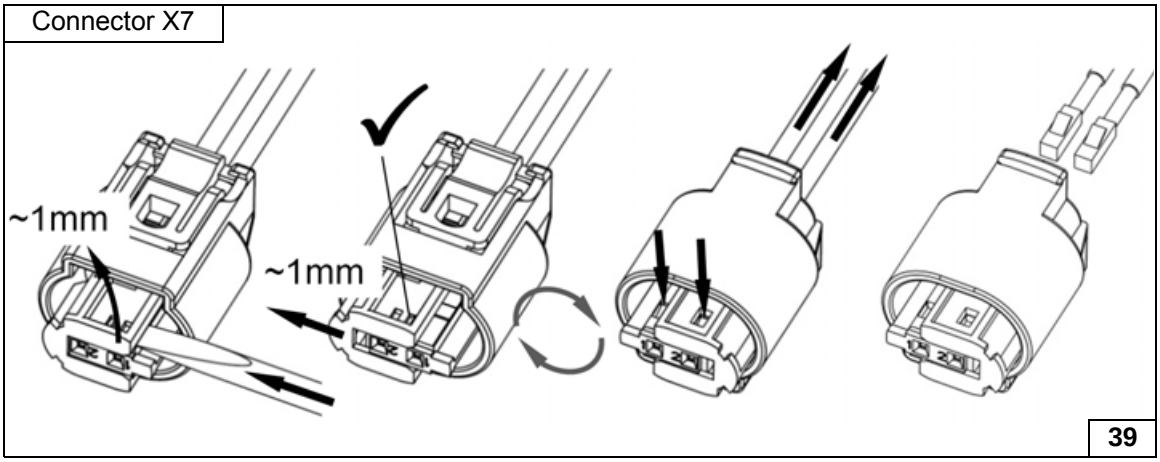
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



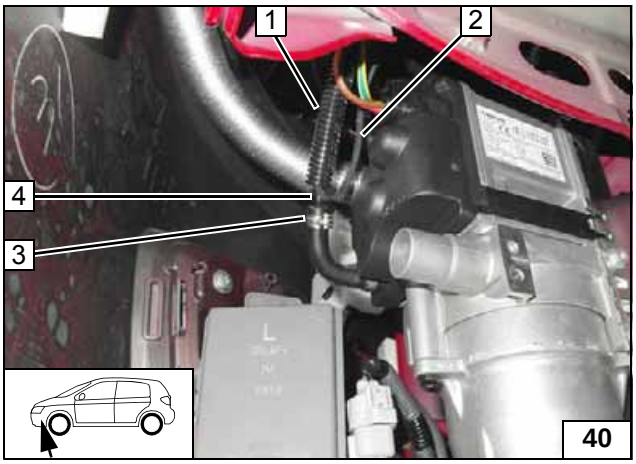
1 Metering pump
2 Heater

Installation overview

Connector X7



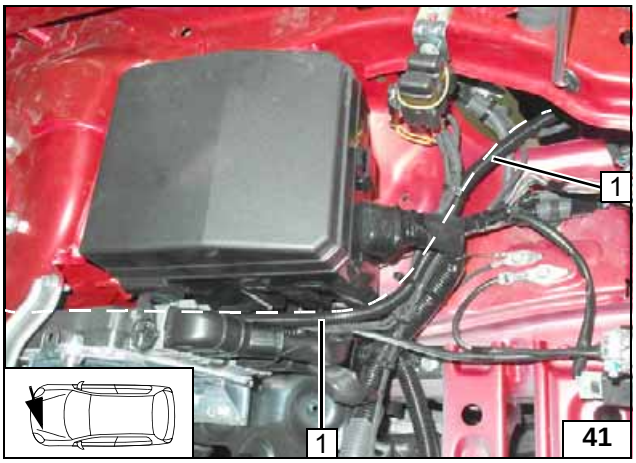
Dismantling metering pump connector



Route metering pump wiring harness **2** and fuel line **4** in corrugated tube **1** to the engine compartment!

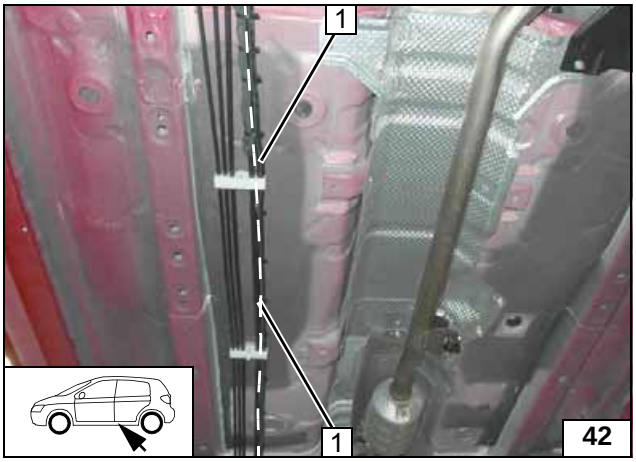
3 10 mm dia. clamp

Connecting heater



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

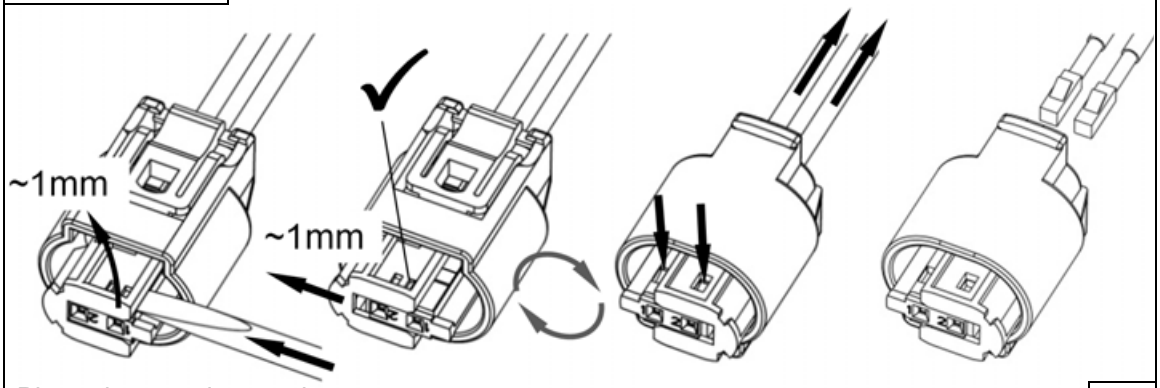
Routing lines



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

Routing lines

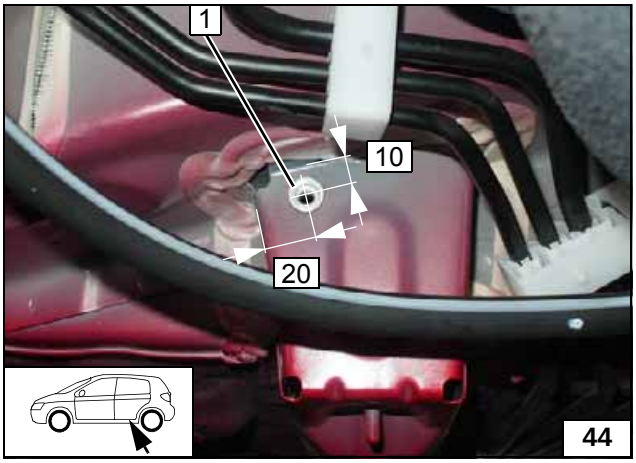
Connector X7



Pin assignment is not relevant.

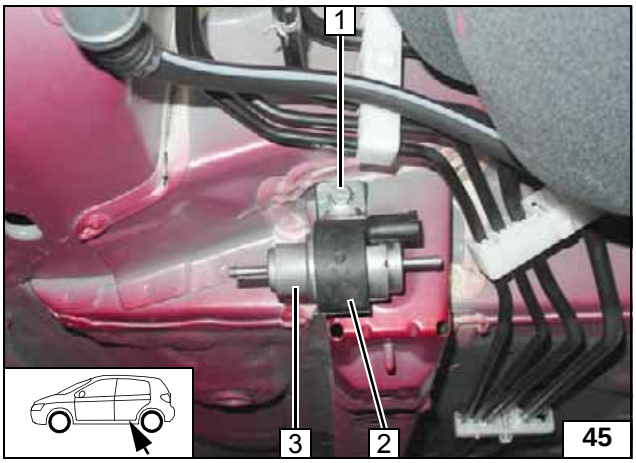
43

Completing metering pump connector



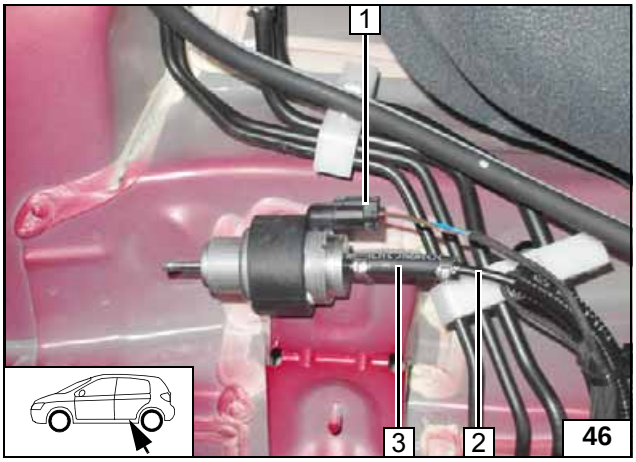
1 Copy hole pattern, 9mm dia. hole, rivet nut

Installing rivet nut



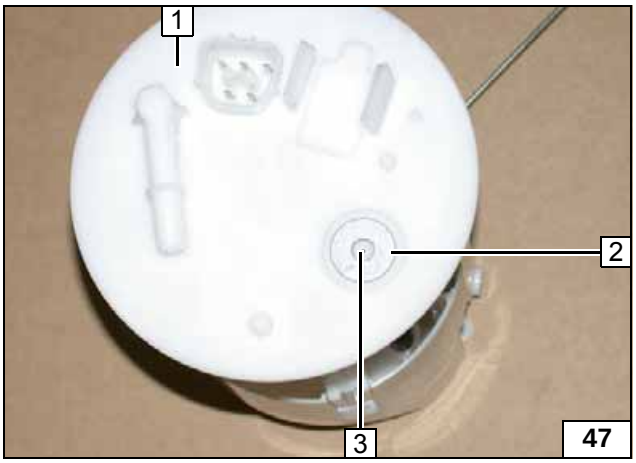
1 M6x25 bolt, support angle bracket
2 Metering pump mount
3 Metering pump

Installing metering pump



1 Metering pump wiring harness, connector X7 mounted
2 Fuel line of heater
3 Hose section, 10mm dia. clamp [2x]

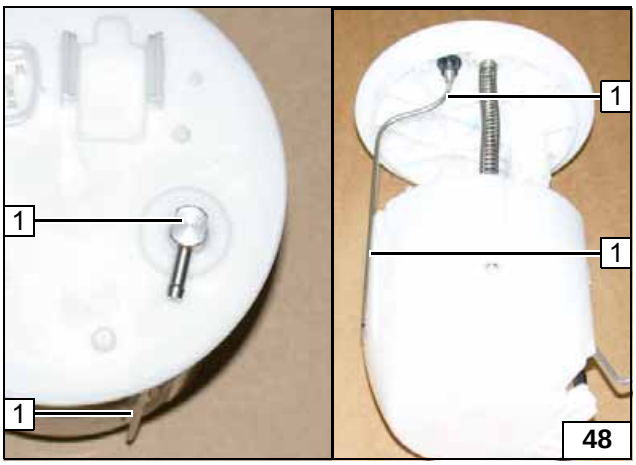
Connecting metering pump



Remove fuel tank sending unit **1** in accordance with manufacturer's instructions.

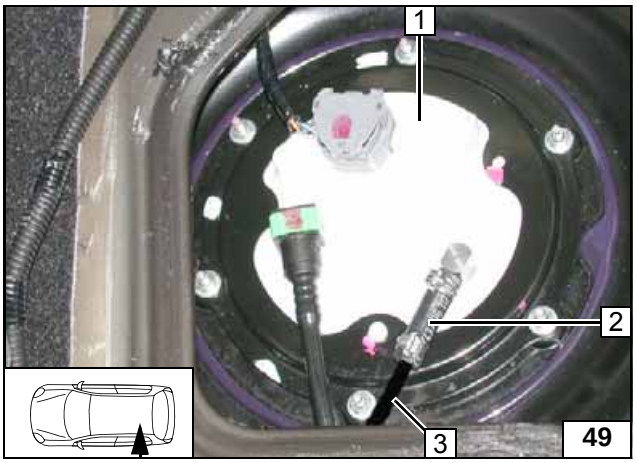
2 Washer with outer dia. d_a = 21.6mm
3 Copy hole pattern, 6mm dia. hole

Fuel extraction



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

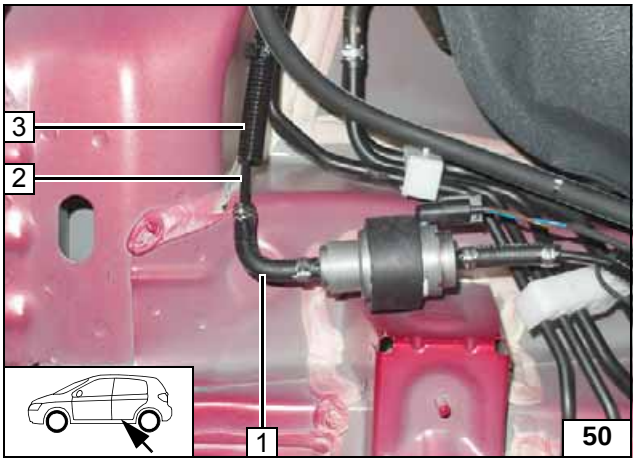
Installing fuel standpipe



Install fuel tank sending unit **1** in accordance with manufacturer's instructions.

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

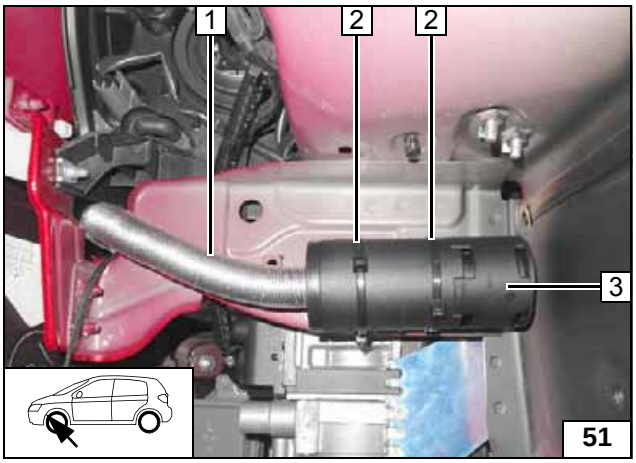
Connecting fuel line



Ensure sufficient distance from neighbouring components, correct if necessary.

1 90° moulded hose, 10mm dia. clamp [2x]
2 Fuel line of fuel standpipe
3Corrugated tube

Connecting metering pump



Combustion Air

1 Combustion air pipe
2 Cable tie in original vehicle hole [2x each]
3 Silencer

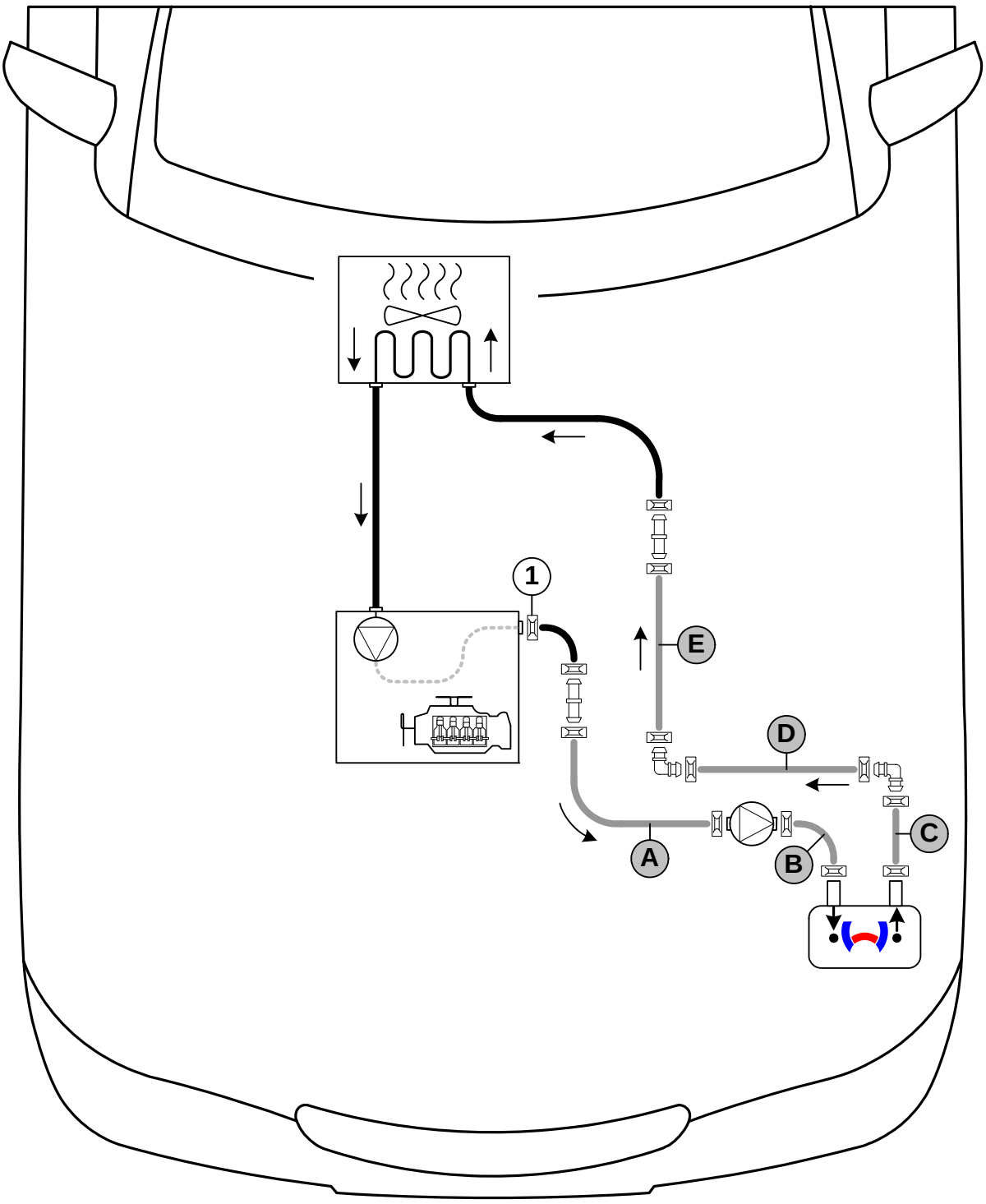
Installing combustion air pipe

Coolant Circuit

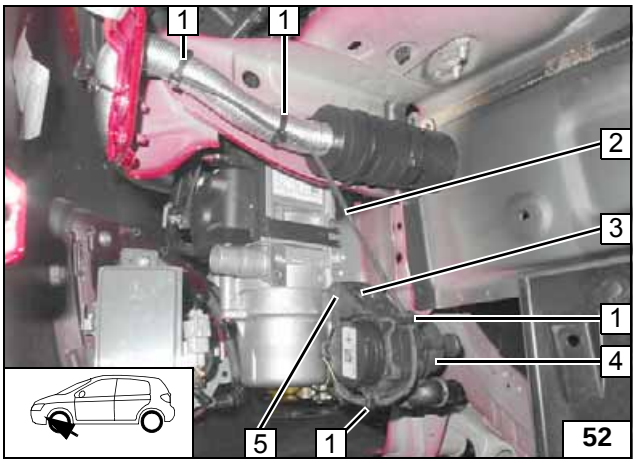
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

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

Hose routing diagram



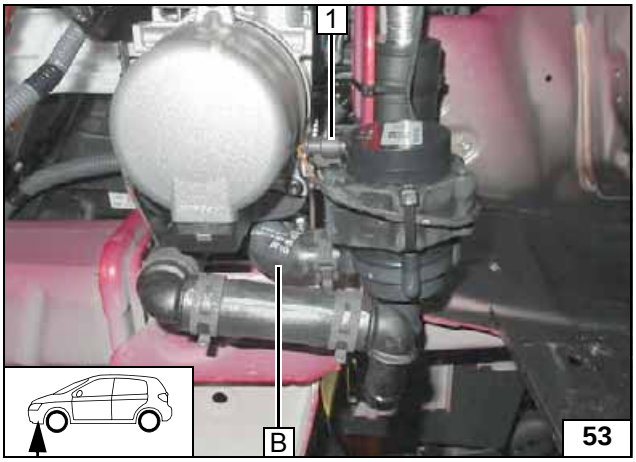
All spring clips without a specific designation = 25 mm dia. All connecting pipes and = 18x18 mm dia.
1 = Original vehicle spring clip.



Route circulating pump wiring harness **2** as shown and fasten using cable ties **1** [2x].

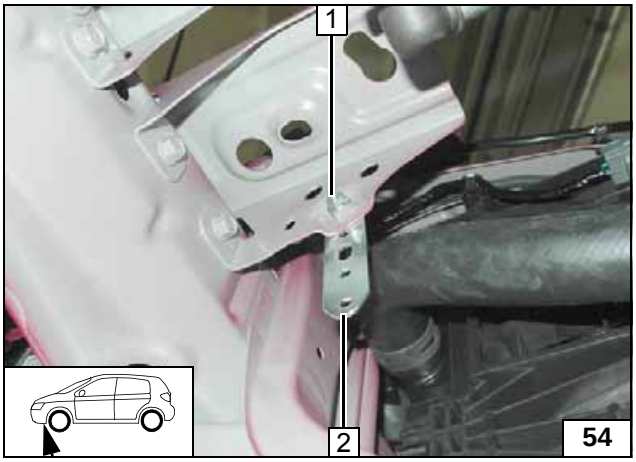
3 Flanged nut
4 Circulating pump
5 Circulating pump mount

Installing circulating pump



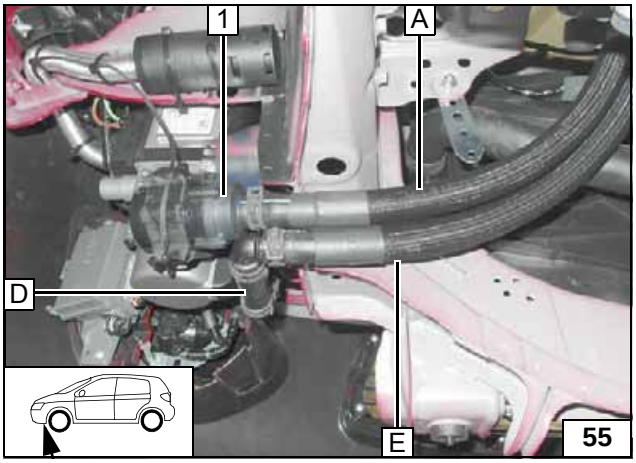
1 Circulating pump wiring harness connector

Connecting hose B



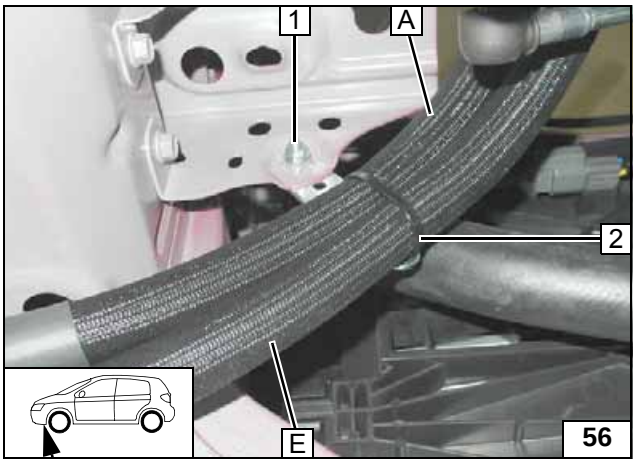
1 Install M6x20 bolt, original vehicle hole, flanged nut loosely
2 Perforated bracket

Installing perforated bracket



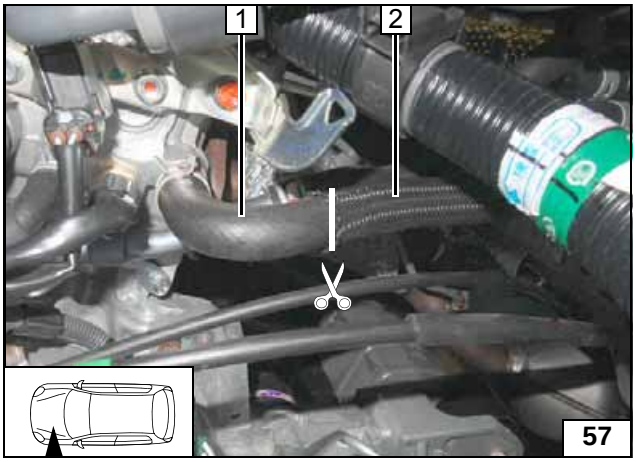
1 Circulating pump

Connecting heater



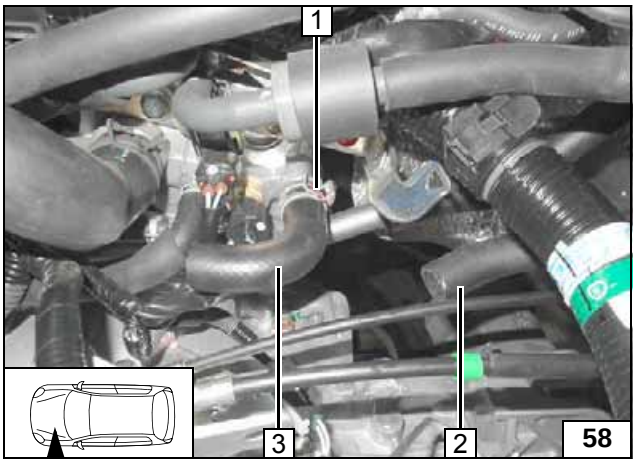
1 Tighten screw connection
2 Cable tie through perforated bracket

Fastening hoses A and E



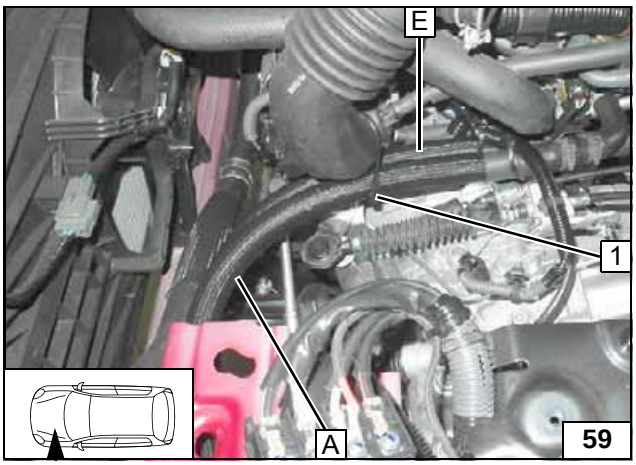
Cut hose of engine outlet / heat exchanger inlet **1** at the marking. Remove braided protection **2**.

Cutting point



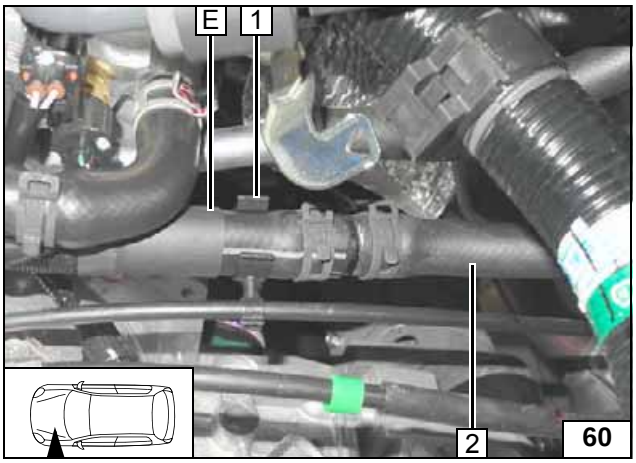
1 Original vehicle spring clip
2 Heat exchanger inlet hose section
3 Hose section on engine outlet, turned

Turning engine outlet hose section



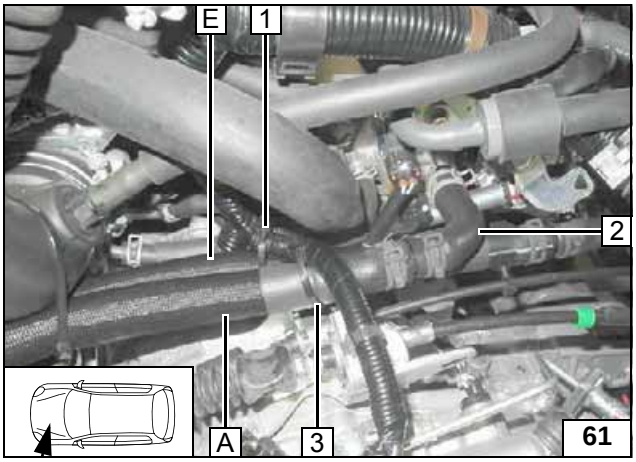
1 Cable tie

Routing in engine compartment



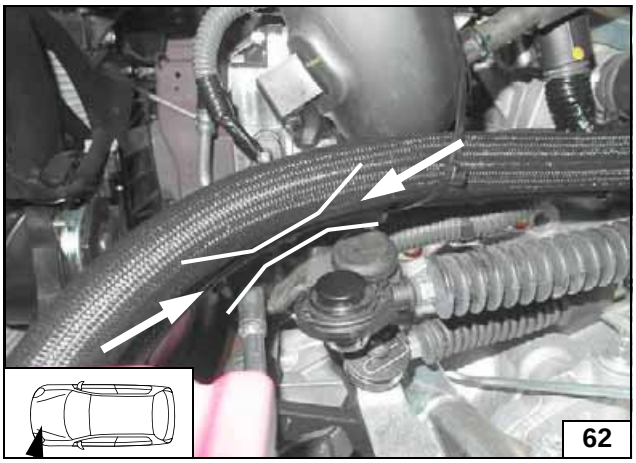
1 Hose bracket
2 Heat exchanger inlet hose section

Connecting heat exchanger inlet



1 Cable tie around hose **E** and original vehicle wiring harness
2 Engine outlet hose section
3 Cable tie around hoses **A**, **E** and original vehicle wiring harness

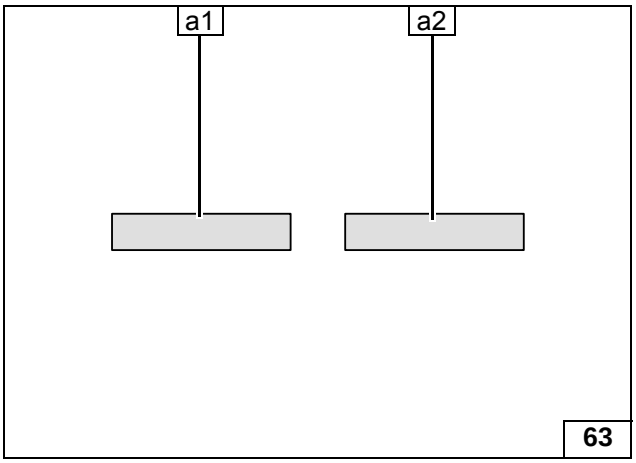
Connecting engine outlet



Shift into reverse gear and ensure sufficient distance between gear and hose **A** as well as hose **E**, correct if necessary.

≥ 20 mm

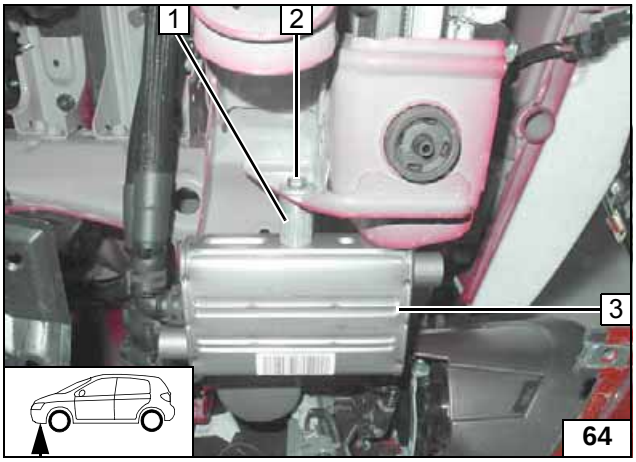
Aligning hoses



Exhaust Gas

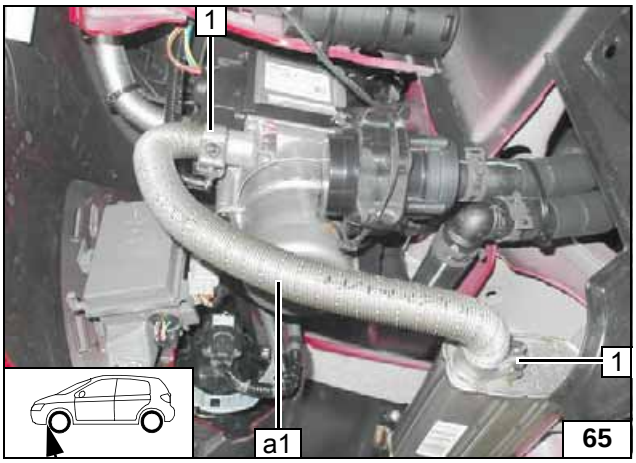
a1 = 380
a2 = 300

Assigning exhaust pipe



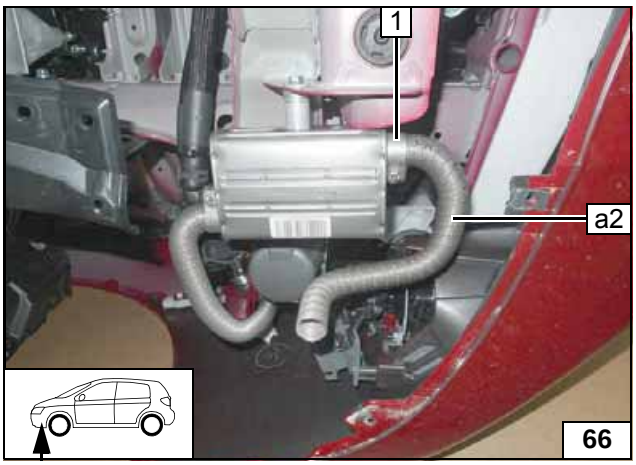
1 30mm spacer
2 M6x40 bolt, spring lockwasher, large diameter washer, original vehicle hole
3 Silencer

Installing silencer



1 Hose clamp [2x]

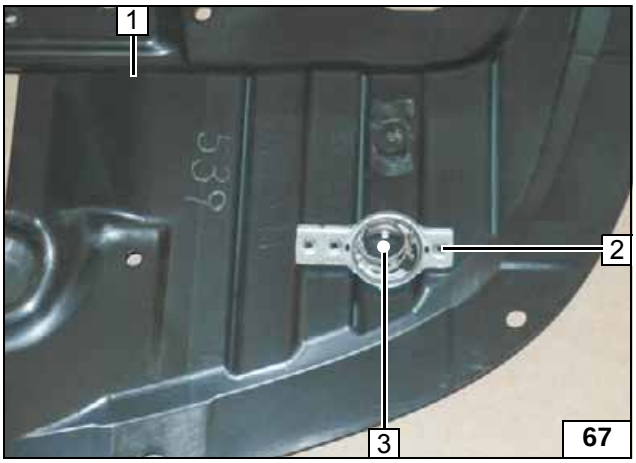
Installing exhaust pipe a1



1 Hose clamp

Installing exhaust pipe a2

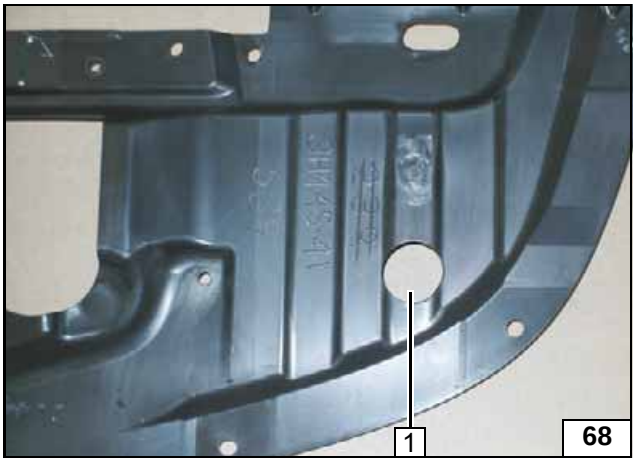
Exhaust End Fastener Installation



Work step E1.

1 Underride protection
2 Exhaust end fastener
3 Hole pattern

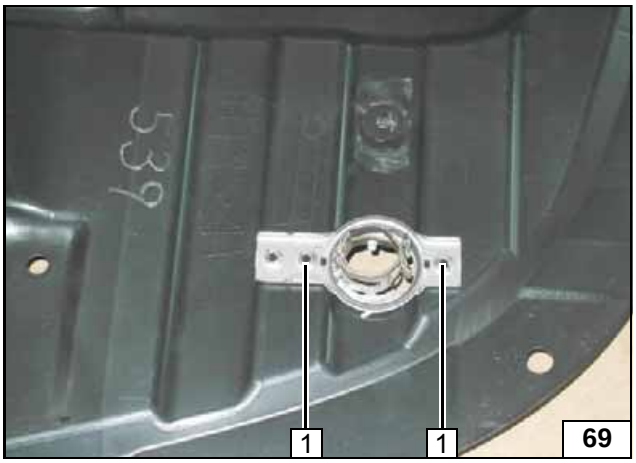
Copying hole pattern



Work step E1.

1 Hole

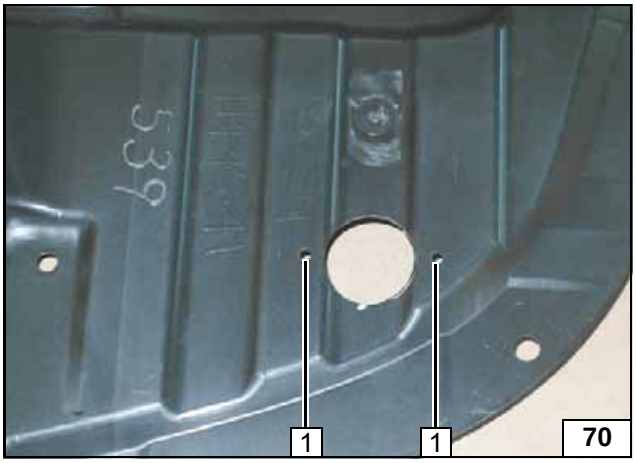
Holes in underride protection



Work step E3.

1 Hole pattern [2x]

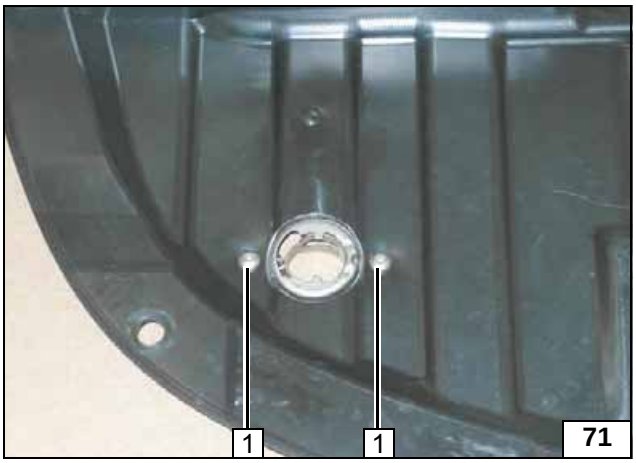
Copying hole pattern



Work step E4.

1 Hole [2x]

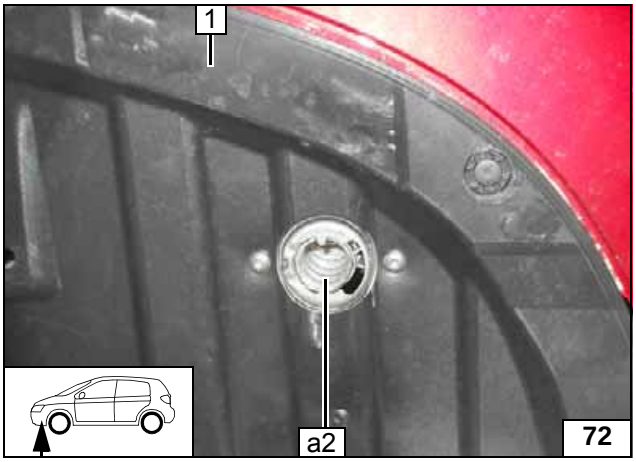
Holes in underride protection



Work step E5.

1 5x13 self-tapping screw [2x]

Installing exhaust end fastener



Install underride protection **1**.

Installing exhaust pipe a2

Work steps E6 - E8.

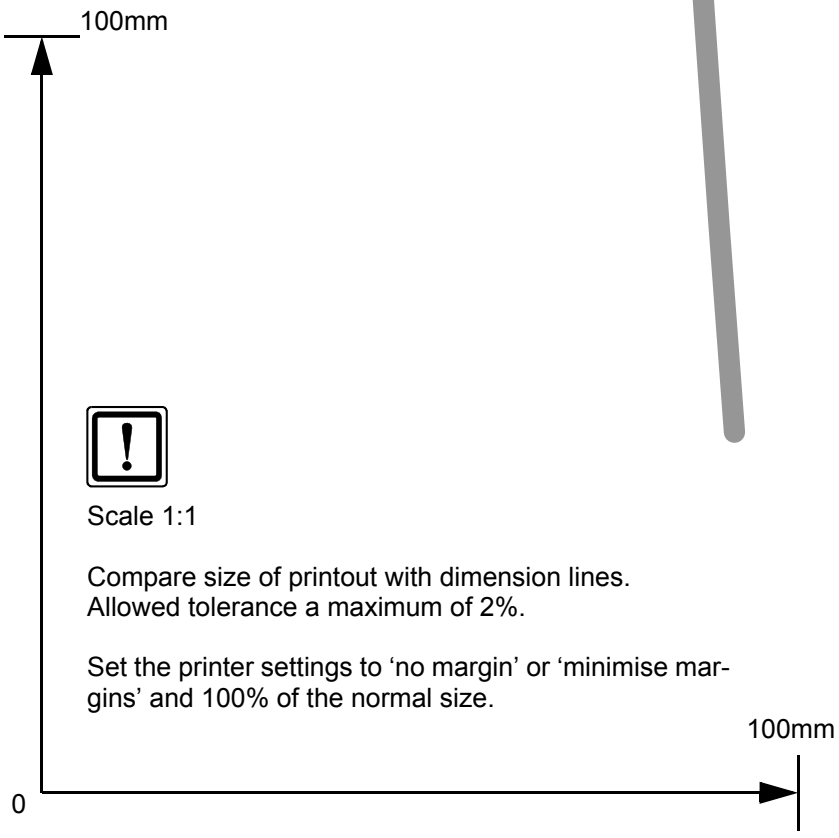
Final Work

Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back loose lines.
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 instructions.**
- **Program MultiControl CAR, teach Telestart transmitter.**
- **For initial startup and function check, please see installation instructions.**
- **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.**

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

Template for Fuel Standpipe



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.

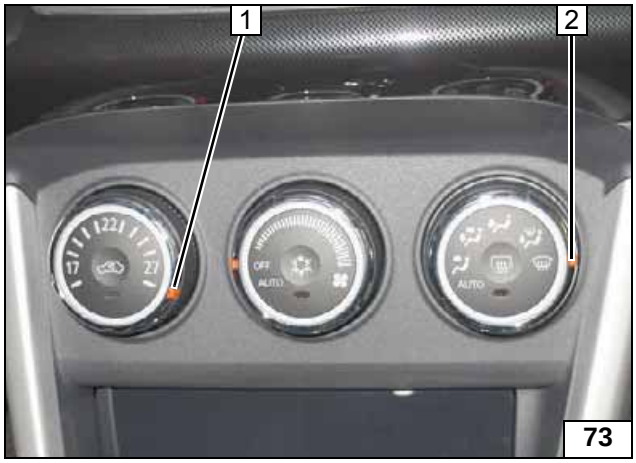
Operating Instructions for Automatic Air-Conditioning

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.

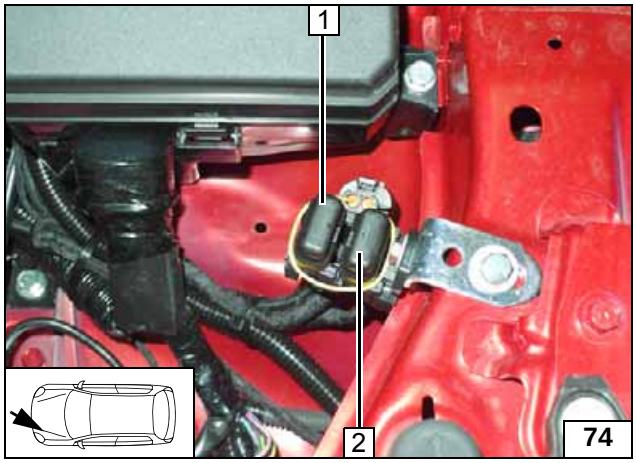
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



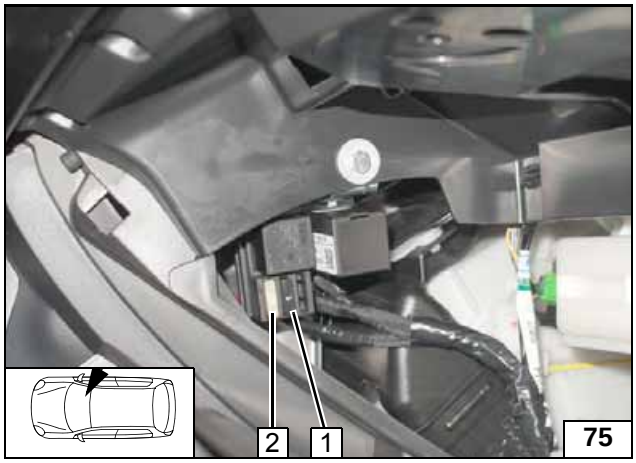
1 Set temperature to 'HI'
2 Air outlet to windscreen

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses