Water Heater

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

Installation Documentation
Renault Twingo

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Renault	Twingo	AH	e2 * 2007 / 46 * 0457 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.0 P	Petrol	5-speed SG	52	999	H4D

SG = manual transmission

From model year 2014
Left-hand drive vehicle

Verified equipment variants: Manual / automatic air-conditioning system
Front fog lights
LED daytime running lights
Start Stop

Not verified: Alarm system

Total installation time: approx. 7.5 hours

Renault Twingo

Table of Contents

Necessary Components

- Basic delivery scope of *Thermo Top Evo* according to price list
- Installation kit for Renault Twingo 2014 Petrol: **1323649A**
- To be ordered additionally in case of automatic air-conditioning:
  Renault Twingo automatic air-conditioning kit: **1323656**_
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

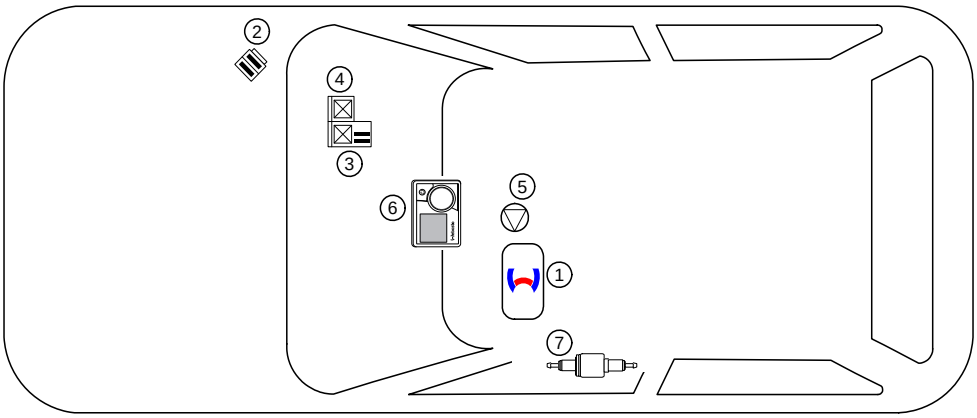
Installation instructions:

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

Installation Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Passenger compartment relay and fuse holder
4. PWM GW (only in case of automatic air-conditioning)
5. Circulating pump
6. MultiControl CAR
7. Metering pump



Information on Total Installation Time

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

Information on Operating and Installation Instructions

1 Important information (not complete)

1.1 Installation and repair

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

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

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

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

1.2 Operation

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

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

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel diesel (DIN EN 590) or petrol (DIN EN 228).

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

1.3 Please note

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

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

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

Important

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

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

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

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

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.

Renault Twingo

Information on Validity

This installation documentation applies to Renault Twingo Petrol vehicles - for validity, see page 1 - from model year 2014 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
- Deep-hole marker
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

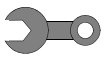
Dimensions
- All dimensions are in mm.

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque 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.

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 due to electrical voltage.

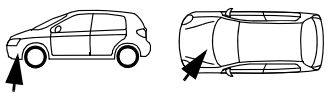
Specific risk of damage to components.

Specific risk of fire and explosion.

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

Reference to a special technical feature.

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



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

Renault Twingo

Preliminary Work

Vehicle

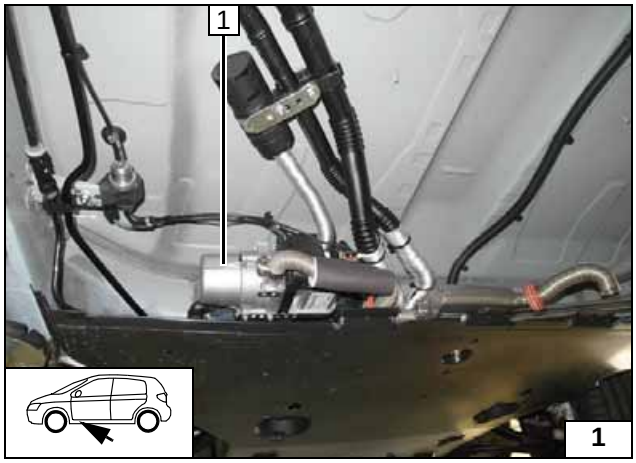
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Take off the front trim / front bonnet (see dismantling instructions).
- Disconnect the battery.
- Remove the storage compartment or glove box on the front passenger's side, depending on the equipment (see dismantling instructions).
- Detach the central electrical box on the front passenger's side.
- Remove the bottom instrument panel trim on the driver's side (only in case of automatic air-conditioning, see dismantling instructions).
- Remove the 3-part underbody trim.

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

- Remove the right rear wheel.
- Remove the right rear wheel well trim.
- Remove the fuel tank in accordance with the manufacturer's instructions (i.a. note that there are 2 screw fittings located close to the filler neck).
- Remove the fuel tank sending unit in accordance with the manufacturer's instructions.

Heater

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



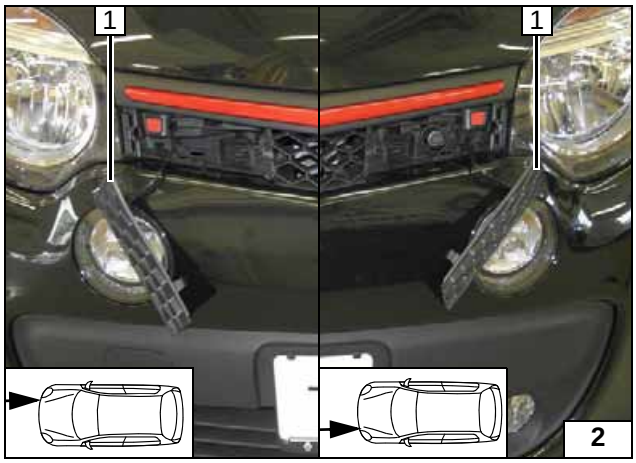
Heater Installation Location

1 Heater

Installation location

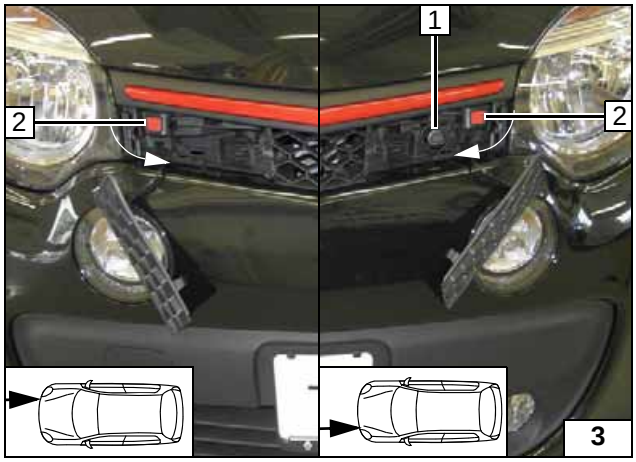
Dismantling Instructions

Remove front trim / front bonnet



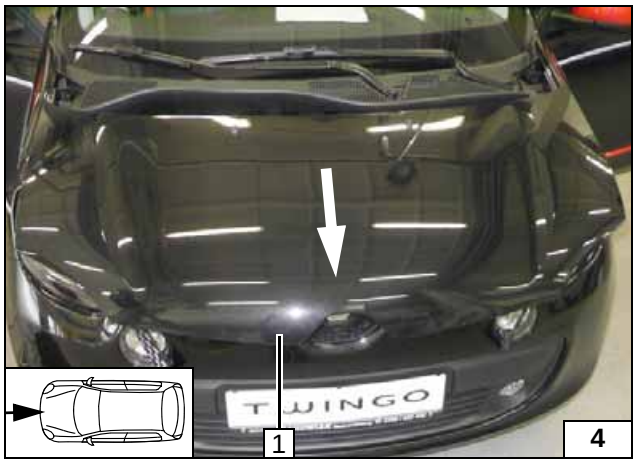
1 Covers

Removing the covers on both sides



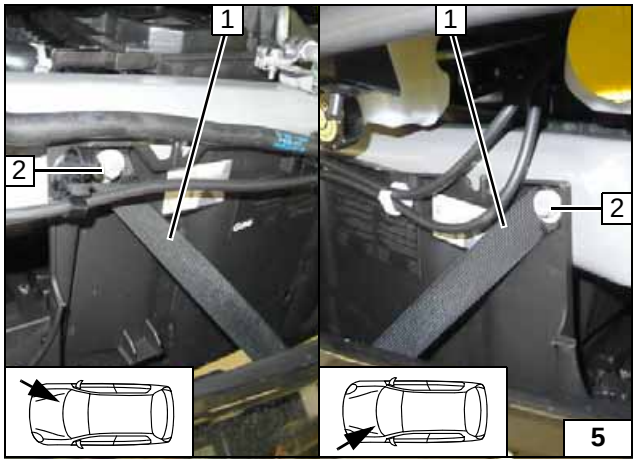
1 Unlock front bonnet with tool
2 Locks

Releasing locks on both sides



1 Front bonnet

Pushing front bonnet forwards



1 Retaining straps
2 Remove original vehicle bolts [2x]

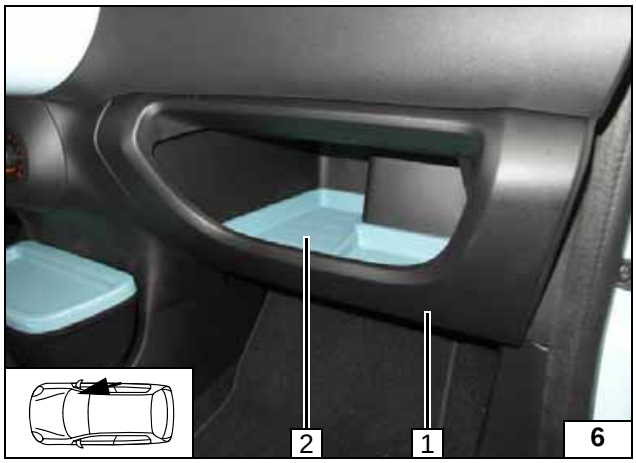
Pull off hose of window washer system and remove front bonnet!

Detaching retaining straps on both sides

Remove storage compartment on front passenger's side / glove box

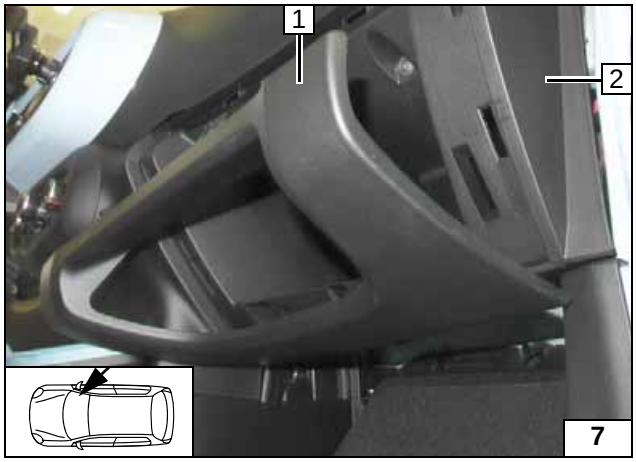
A distinction depending on the vehicle equipment is made between version **1** - storage compartment or version **2** - glove box.

Version 1



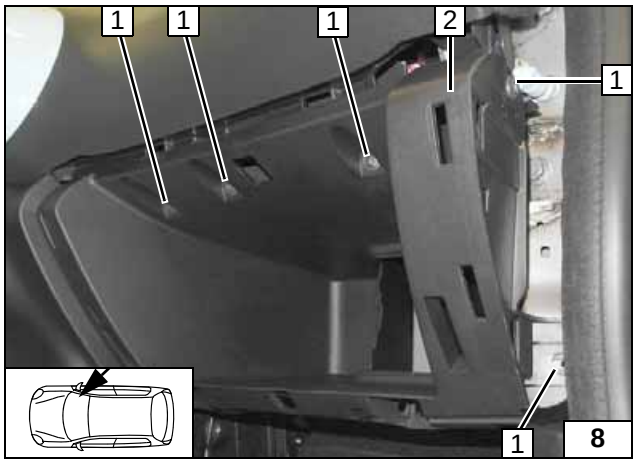
View of storage compartment

1 Storage compartment trim
2 Remove insert



Removing storage compartment trim

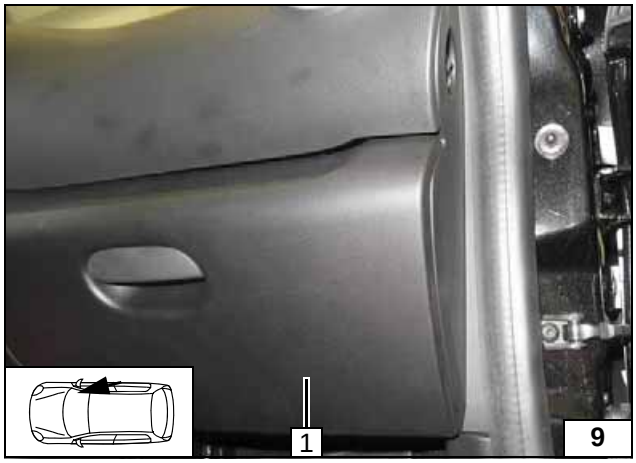
1 Unclip and take out storage compartment trim
2 Unclip lateral trim on the right side



Removing storage compartment

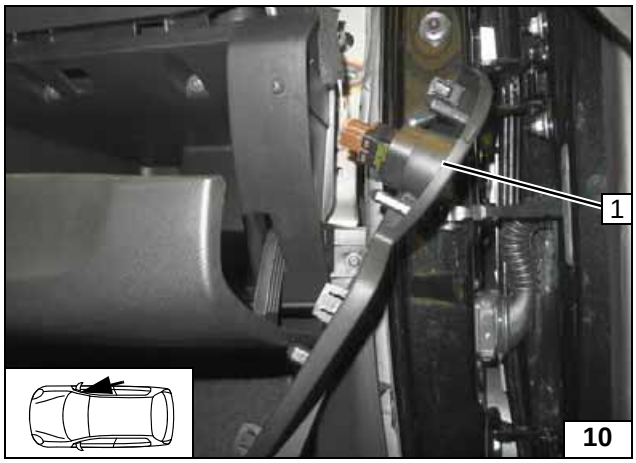
1 Unscrew original vehicle bolt [5x]
2 Storage compartment

Version 2



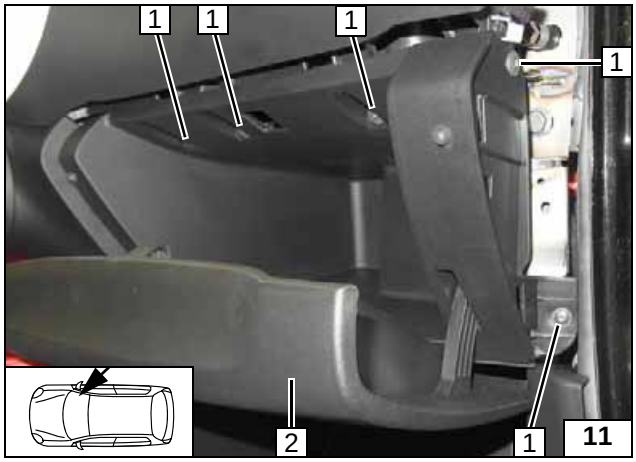
View of glove box

1 Open glove box



1 Unclip lateral trim on the right side

Removing right-hand side lateral trim



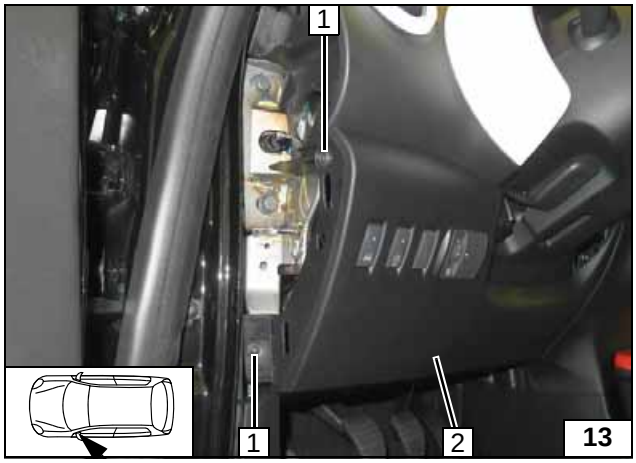
1 Unscrew original vehicle bolt [5x]
2 Remove trim completely

Removing glove box trim

Only with automatic air-conditioning

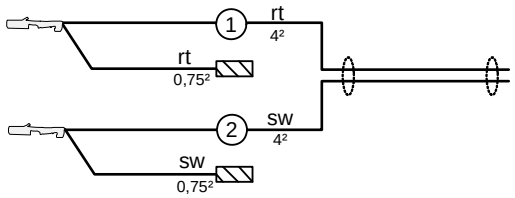
1 Unclip lateral trim on the left side

Removing left-hand side lateral trim



1 Unscrew original vehicle bolt [2x]
2 Remove lower trim

Removing left-hand side lower trim



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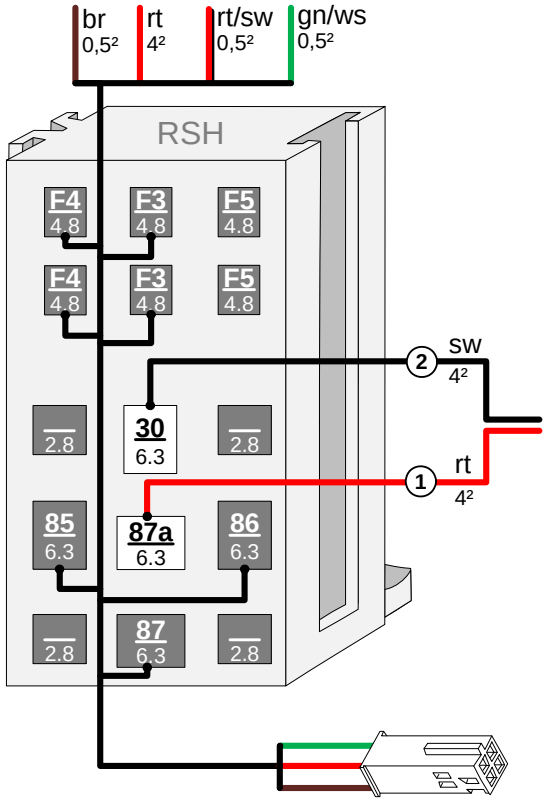
Preparing Electrical System

Wire sections retain their numbering in the entire document.

Manual air-conditioning

Assigning wires

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness



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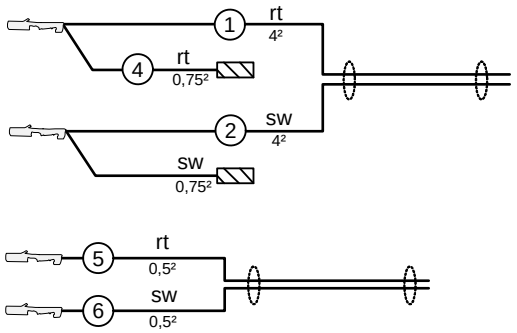
Connecting wires to passenger compartment relay and fuse holder



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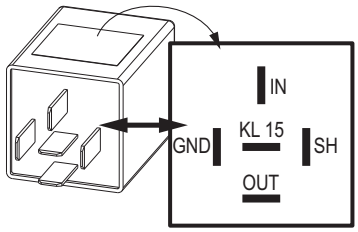
Automatic air-conditioning

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness
⑤ Red (rt) wire of PWM Gateway wiring harness
⑥ Black (sw) wire of PWM Gateway wiring harness

Preparing / assigning wiring harness



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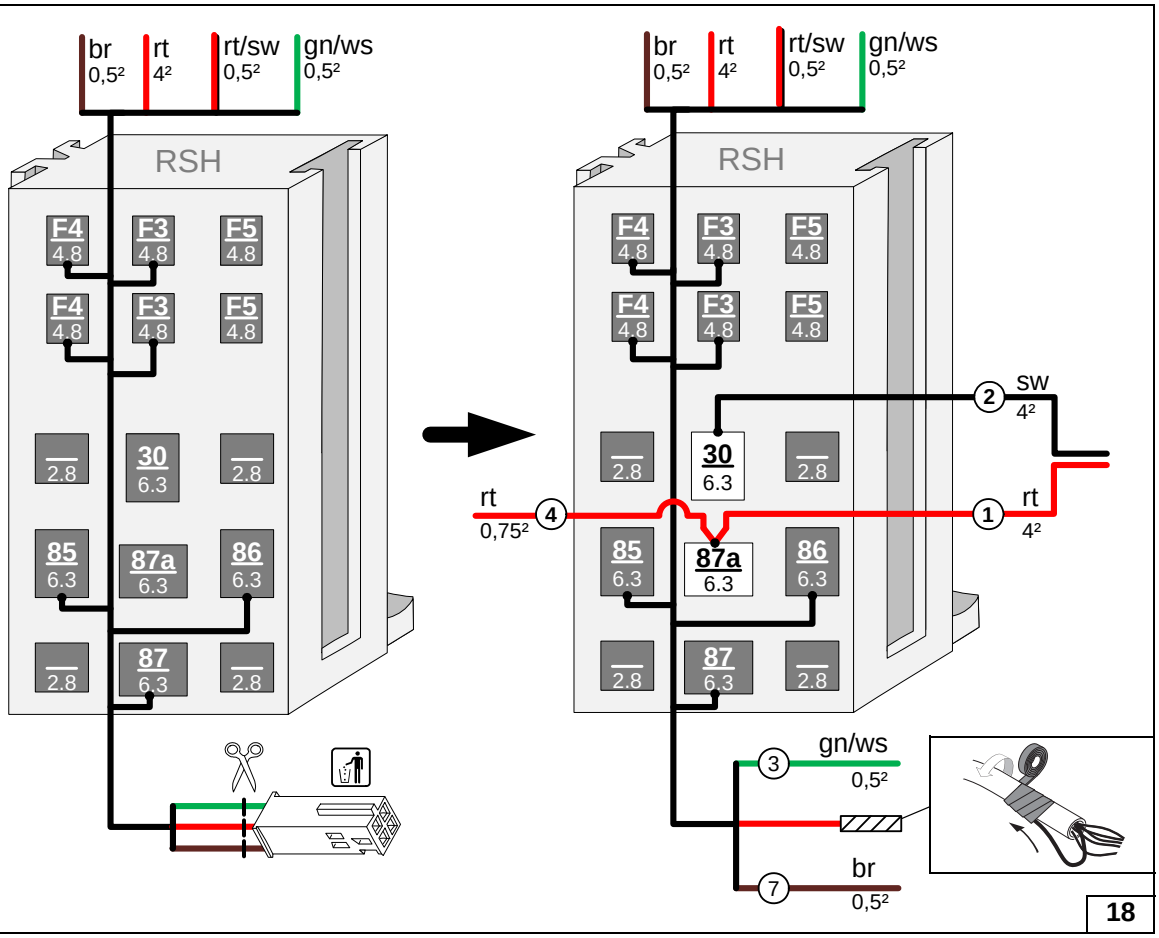
Check the PWM Gateway settings when starting up the heater and adjust if necessary.

Settings:

Duty cycle: 65%
Frequency: 400Hz
Voltage: not relevant
Function: Low side

View of PWM GW



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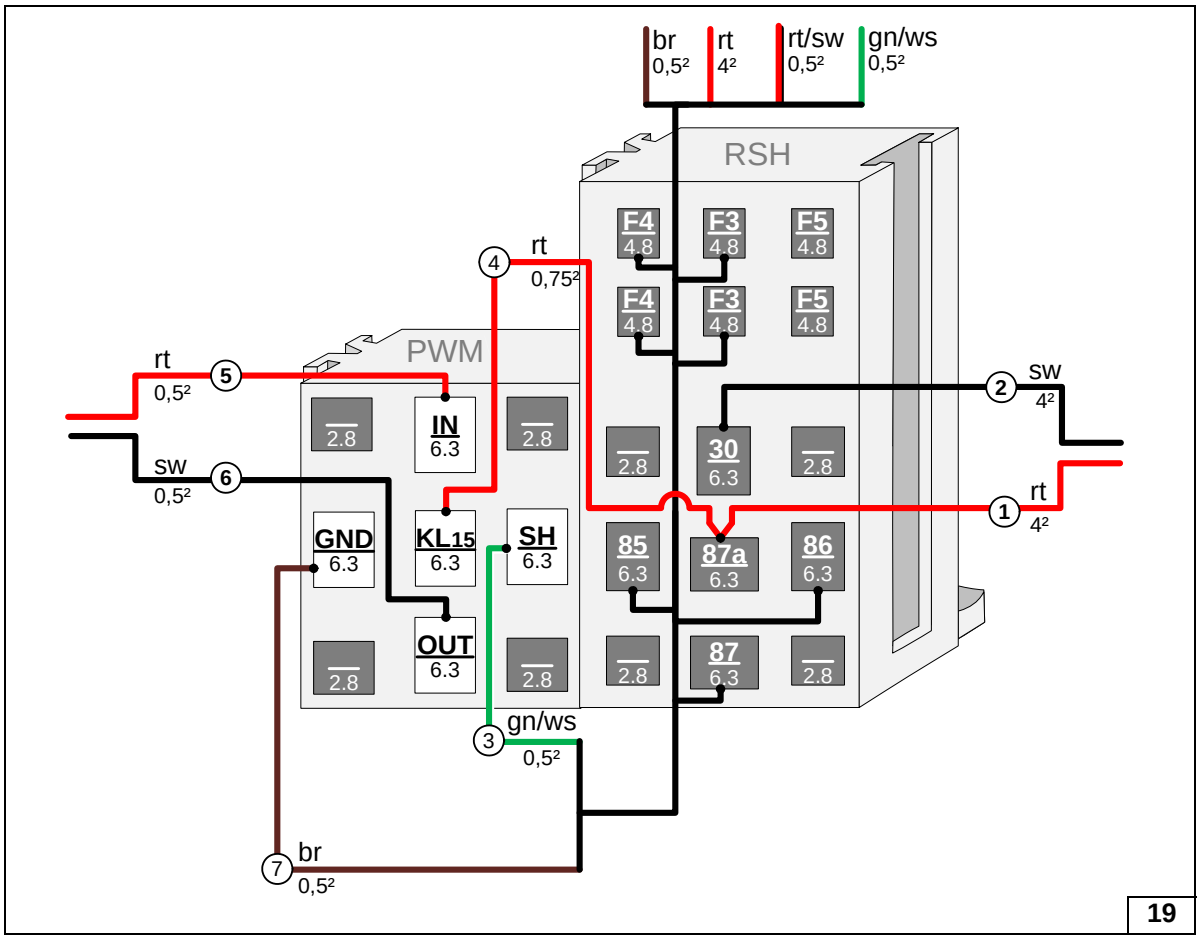
Preparing passenger compartment relay and fuse holder/ connecting/ assigning wires



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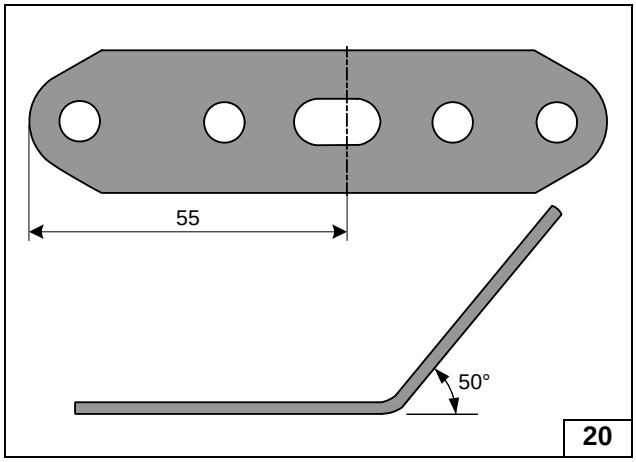
Interlocking PWM GW socket and passenger compartment relay and fuse holder, connecting wires

All vehicles



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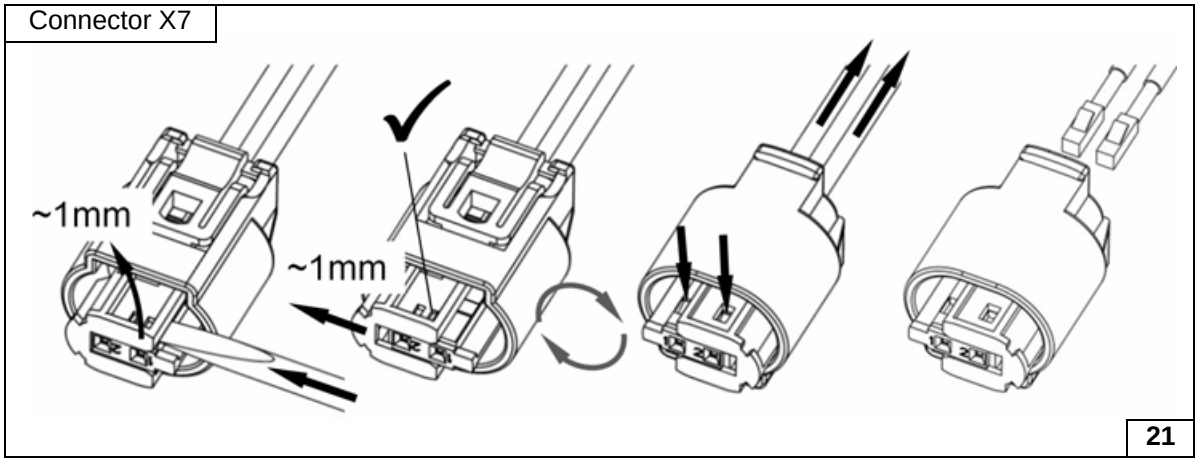
Preparing perforated bracket

Connector X7



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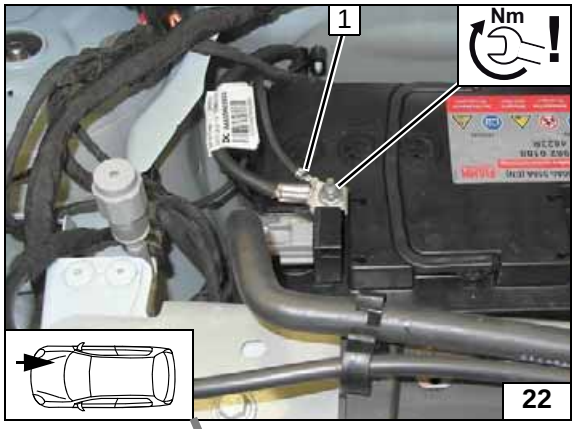
Dismantling metering pump connector

Electrical System

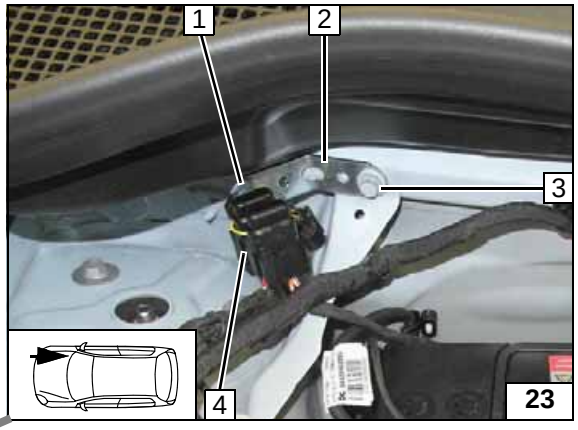
Earth wire

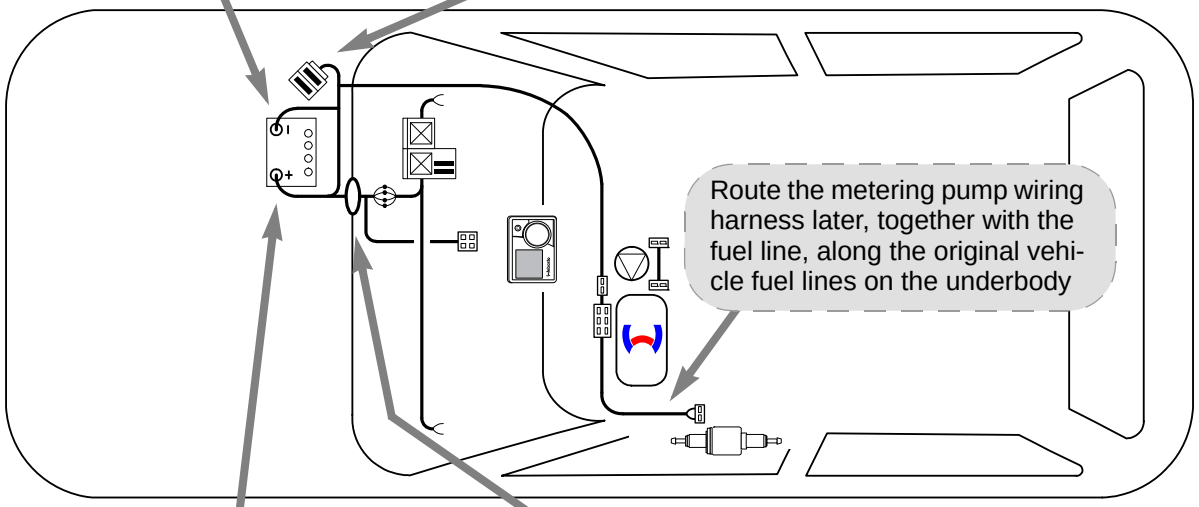
1 Earth wire on negative battery terminal



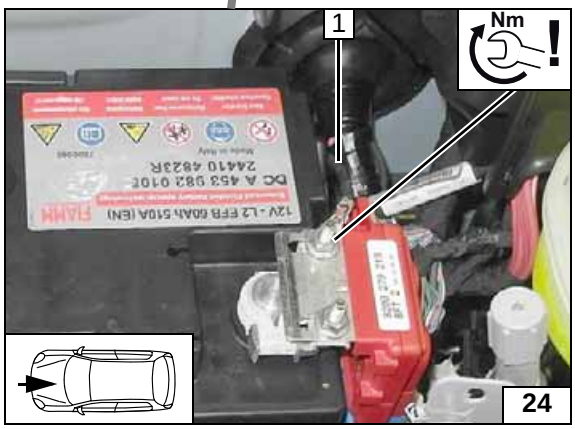
Fuse holder in service compartment

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



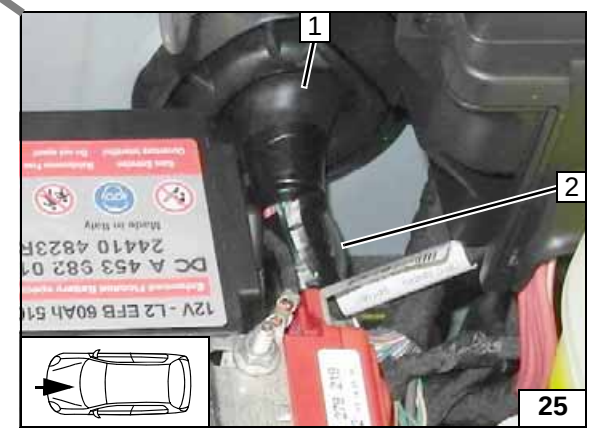


Wiring harness routing diagram



Positive wire

1 Positive wire on positive battery terminal

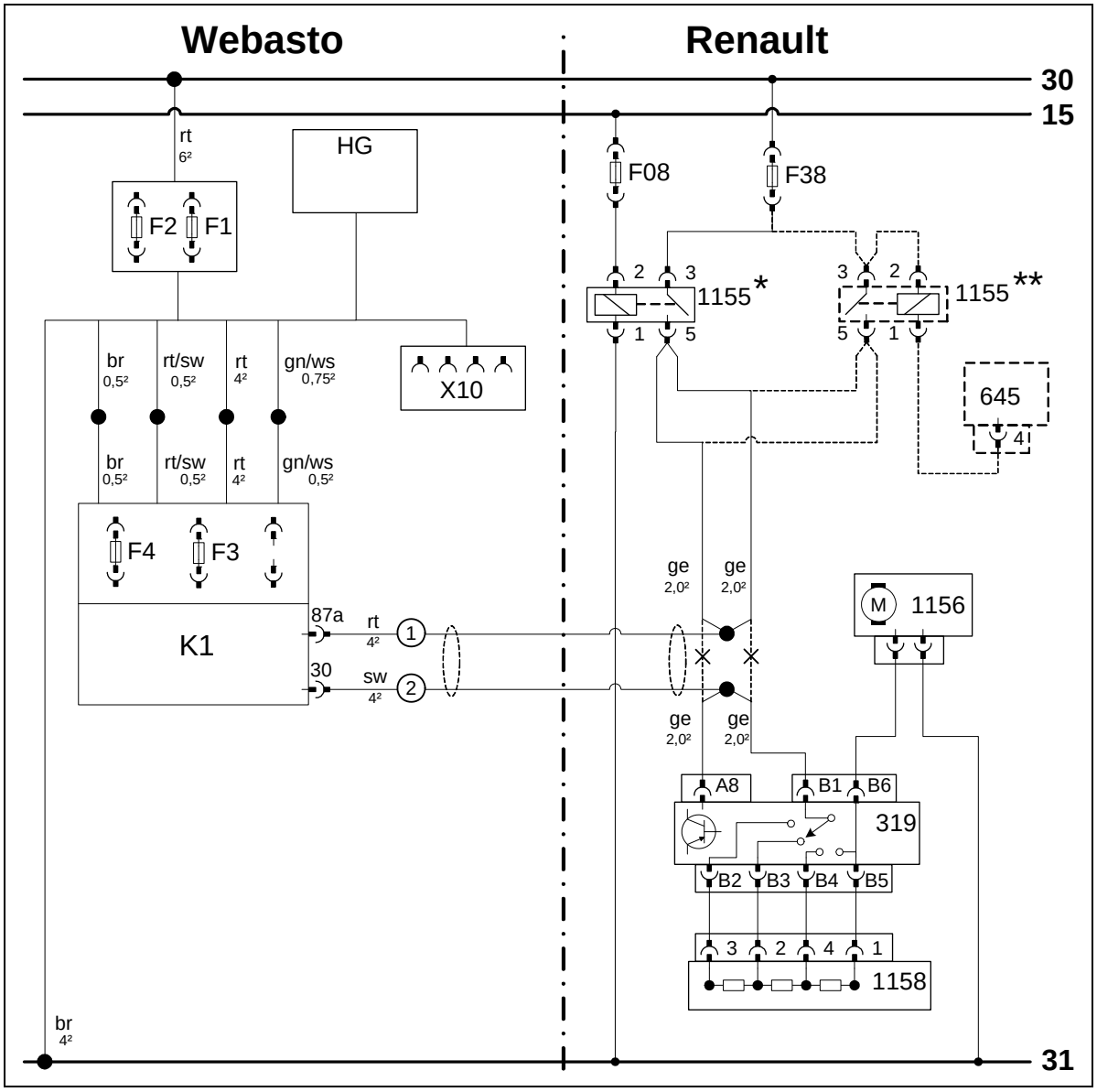


Wiring harness pass through

1 Protective rubber plug
2 Heater wiring harnesses, heater control

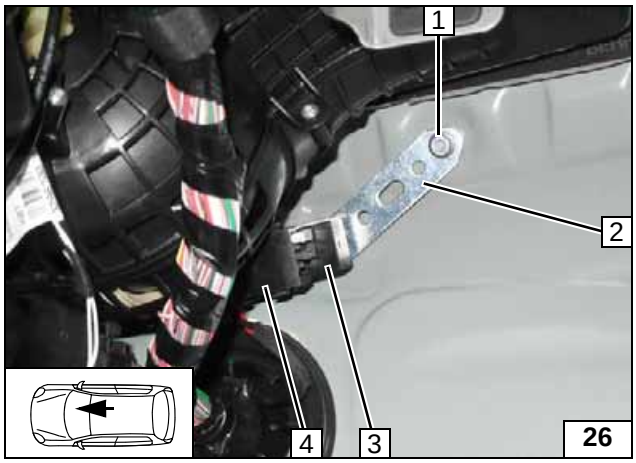
Manual Air-Conditioning Fan Controller

System wiring diagram



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F08	15A fuse	rt	red
F1	20A fuse	F38	40A fuse	sw	black
F2	30A fuse	1155	Fan relay	ge	yellow
X10	4-pin connector of heater control	645	Central electrical box	gn	green
		1156	Fan motor	br	brown
F3	1A fuse	319	A/C control panel	ws	white
F4	25A fuse	1158	Resistor group		
K1	Fan relay			*	without Start/Stop
				**	with Start/Stop
				X	Cutting point
				Wiring colours may vary.	

Legend

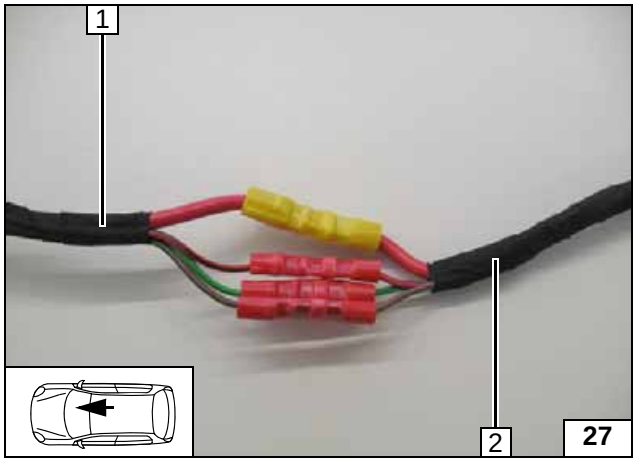


Produce all following electrical connections as shown in the wiring diagram.

Perforated bracket **2** with M5x16 bolt, large diameter washer [2x] and nut. Align passenger compartment relay and fuse holder **4** as shown and install.

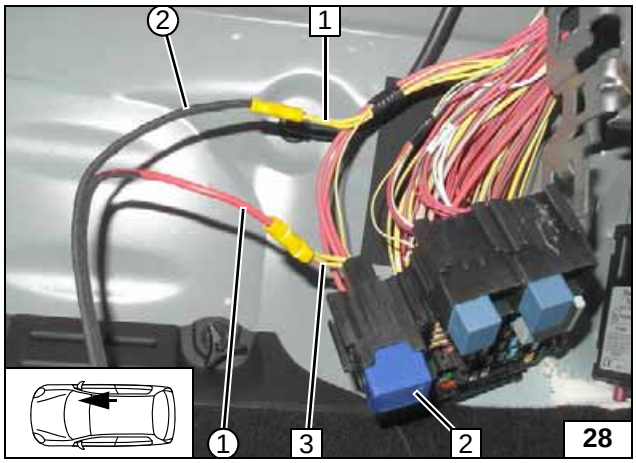
1 M6 flanged nut on original vehicle stud bolt
3 Relay K1

Installing passenger compartment relay and fuse holder



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

Connecting same colour wires of wiring harnesses

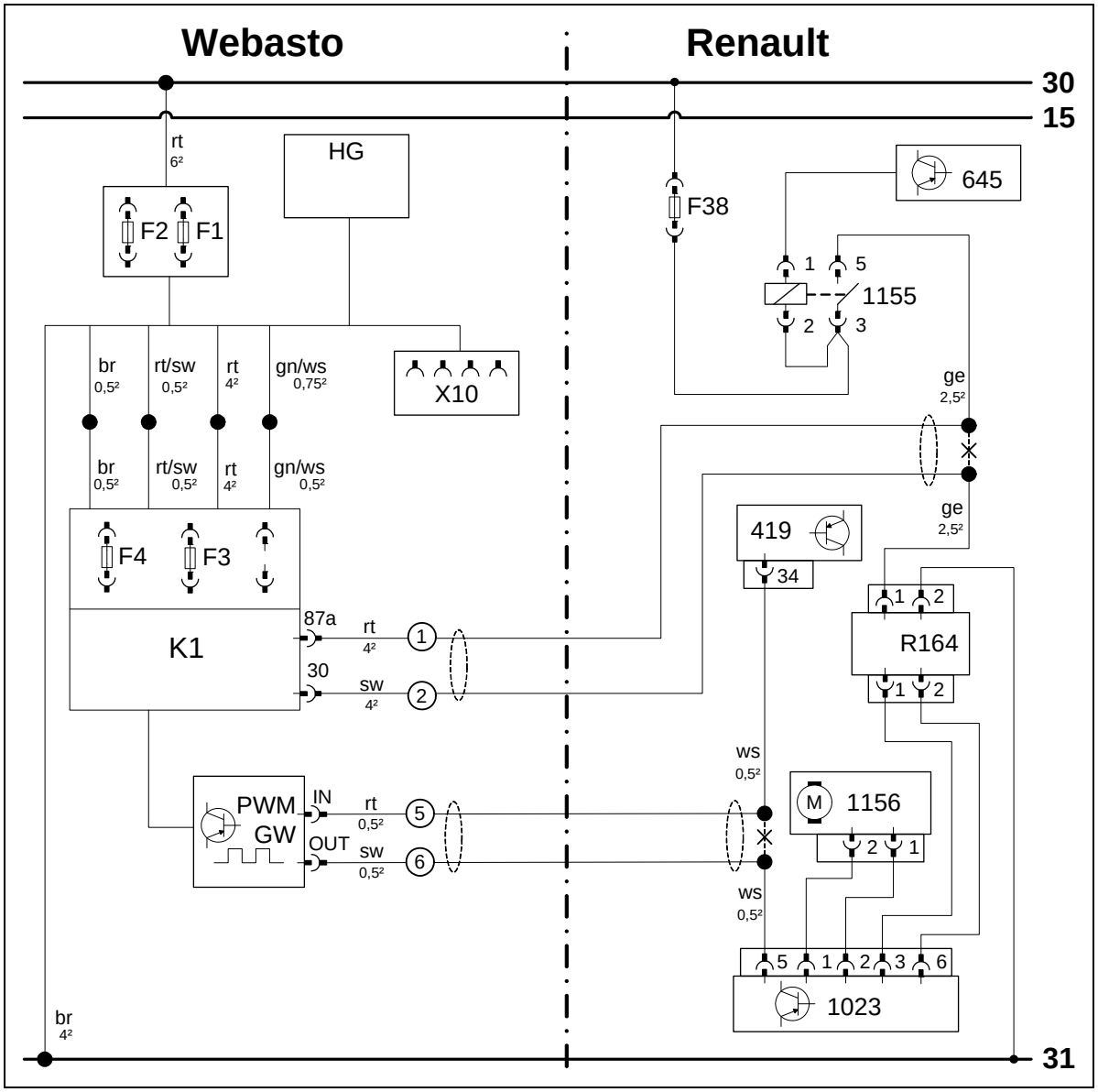


1 Yellow (ge) wire [2x] of A/C control panel
2 Fan relay 1155
3 Yellow (ge) wire [2x] of 1155, pin 5
① Red (rt) wire of K1/87a, fan wiring harness
② Black (sw) wire of K1/30, fan wiring harness

Connecting fan relay

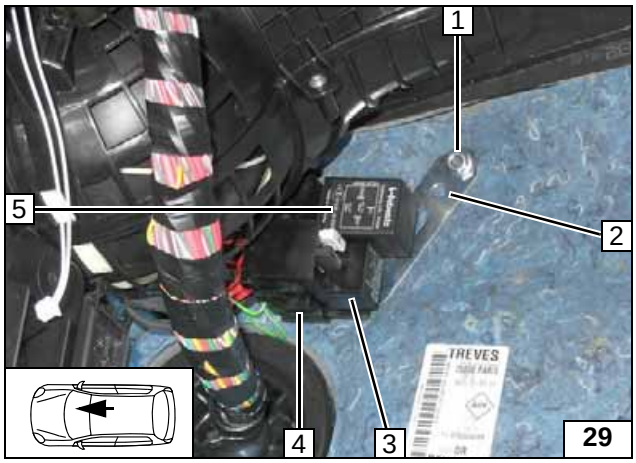
Automatic Air-Conditioning Fan Controller

System wiring diagram



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	645	Central electrical box	rt	red
F1	20A fuse	F38	40A fuse	sw	black
F2	30A fuse	1155	Fan relay	ge	yellow
X10	4-pin connector of heater control	419	A/C control unit	gn	green
		R164	Connector	br	brown
F3	1A fuse	1156	Fan motor	ws	white
F4	25A fuse	1023	Fan controller		
K1	Fan relay				
PWM GW	Pulse width modulator				
PWM GW settings:					
Duty cycle:	65%				
Frequency:	400Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low side			Wiring colours may vary.	

Legend

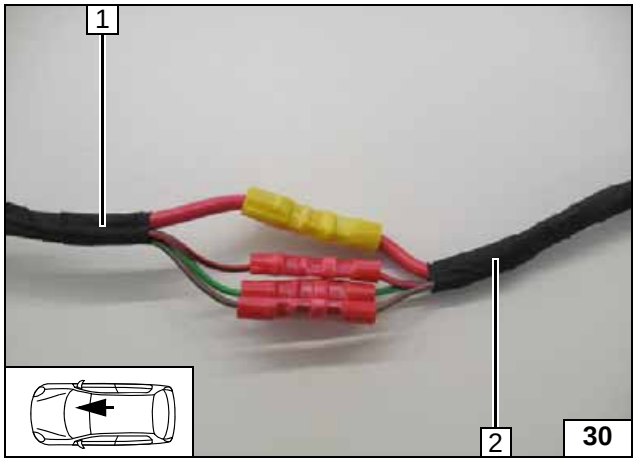


Produce all following electrical connections as shown in the wiring diagram.

Perforated bracket **2** with M5x16 bolt, large diameter washer [2x] and nut. Align passenger compartment relay and fuse holder **4** as shown and install.

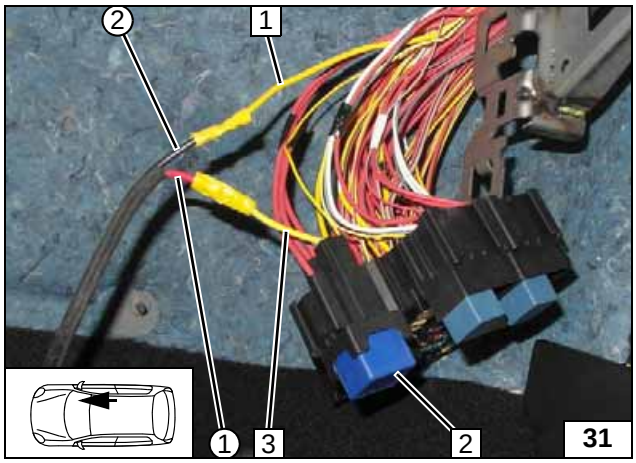
1 M6 flanged nut on original vehicle stud bolt
3 Relay K1
5 PWM GW

Installing passenger compartment relay and fuse holder



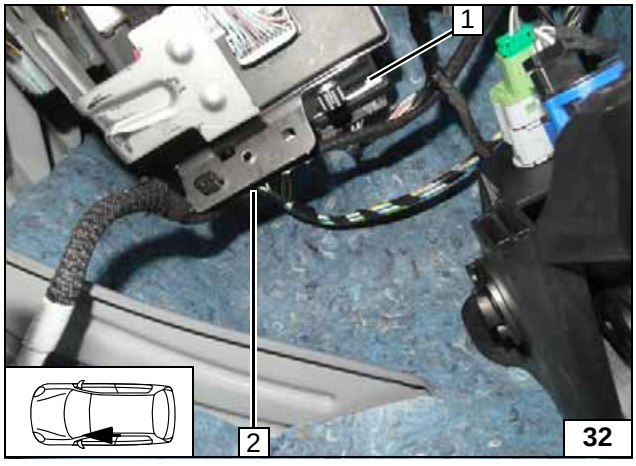
1 Passenger compartment relay and fuse holder wiring harness
2 Heater wiring harness

Connecting same colour wires of wiring harnesses



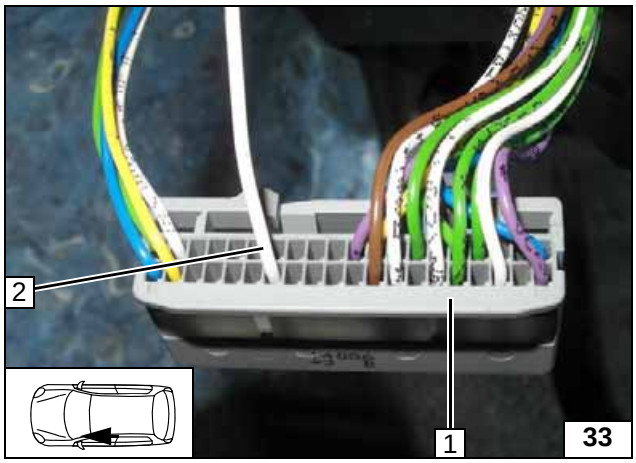
1 Yellow (ge) wire of connector R164 (fan controller pin 3)
2 Fan relay 1155
3 Yellow (ge) wire of 1155 pin 5
① Red (rt) wire of K1/87a, fan wiring harness
② Black (sw) wire of K1/30, fan wiring harness

Connecting fan relay



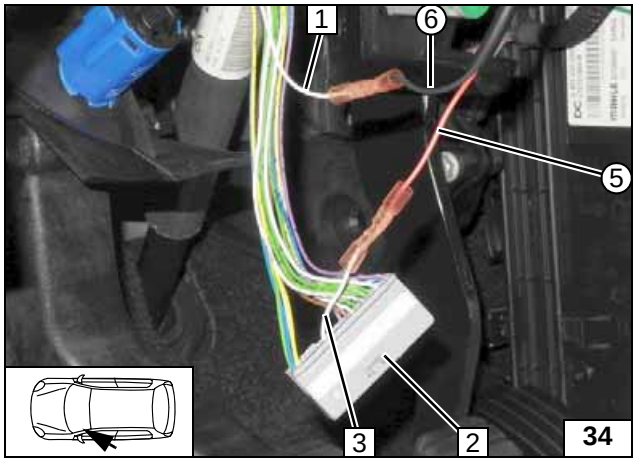
1 A/C control unit
2 Pull off grey (gr) 40-pin connector

Installation location of A/C control unit



1 Grey (gr) 40-pin connector of A/C control unit
2 White (ws) wire of pin 34

Grey connector of A/C control unit

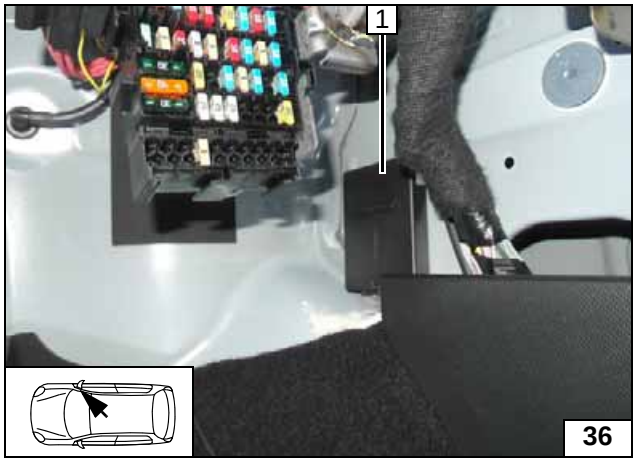


1 White (ws) wire of fan controller pin 5
2 Grey (gr) 40-pin connector
3 White (ws) wire of pin 34
⑤ Red (rt) wire from PWM GW/IN of PWM control wiring harness
⑥ Black (sw) wire from PWM GW/OUT of PWM control wiring harness

Connecting A/C control unit

MultiControl CAR Option

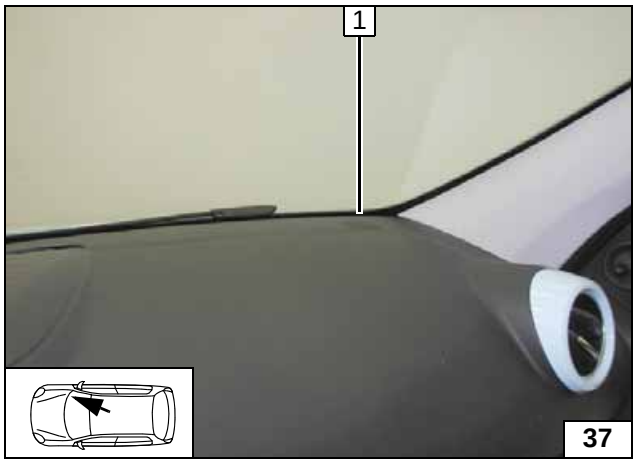
Installing MultiControl CAR



Remote Option (Telestart)

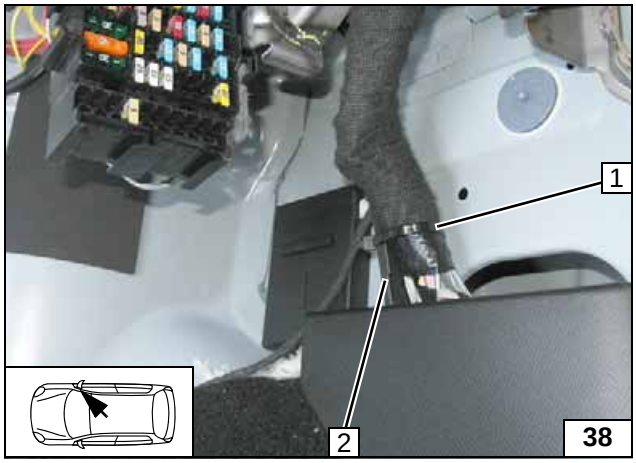
Secure receiver **1** using double-sided adhesive tape.

Installing receiver



1 Aerial

Installing aerial



Temperature sensor T100 HTM

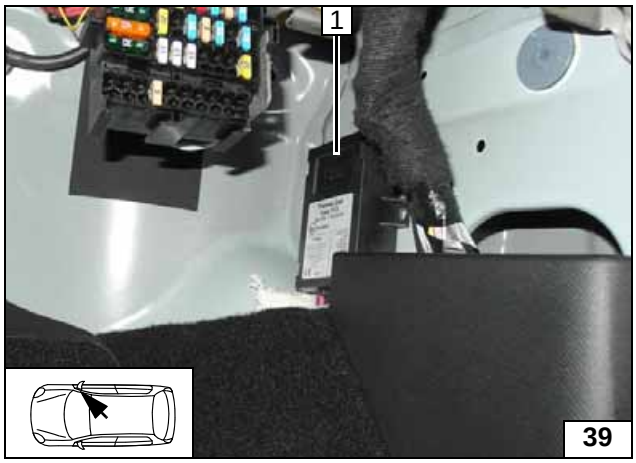
Fasten temperature sensor **2** with cable tie **1** to original vehicle wiring harness.

Installing temperature sensor

ThermoCall Option

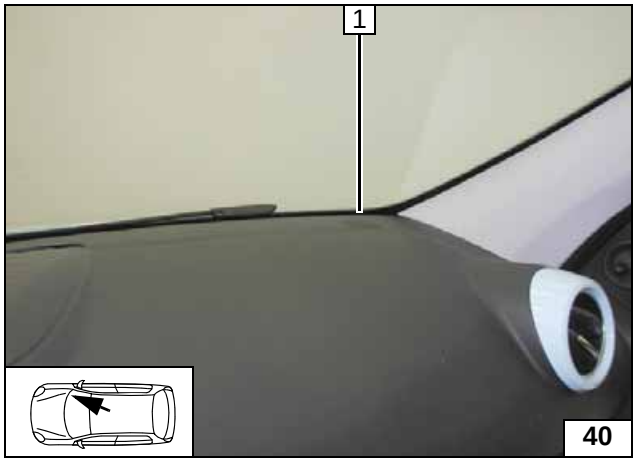
Secure receiver **1** using double-sided adhesive tape.

Installing receiver

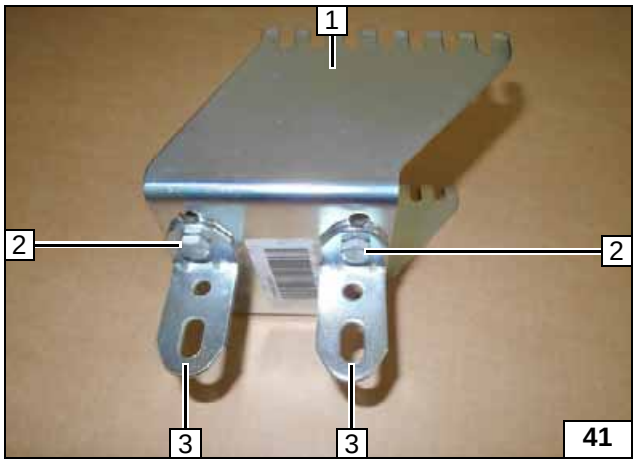


1 Aerial (optional)

Installing aerial

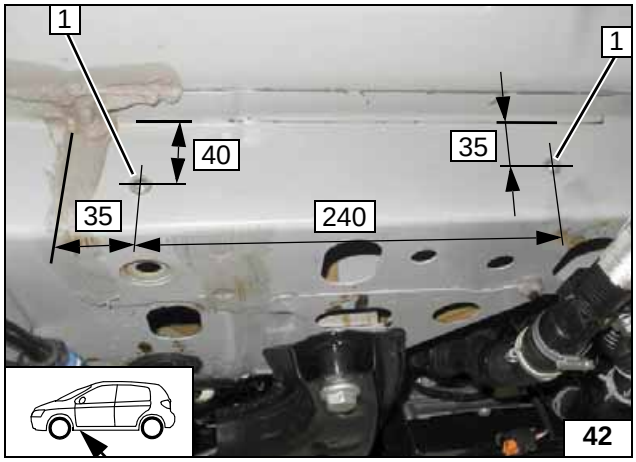


Preparing Installation Location



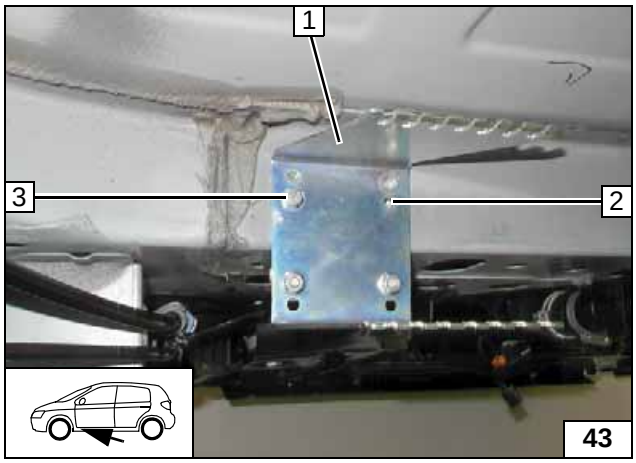
1 Bracket
2 M6x12 bolt, flanged nut [2x each]
3 Angle bracket [2x]

Premounting bracket



1 9.1 mm dia. hole, rivet nut [2x each]

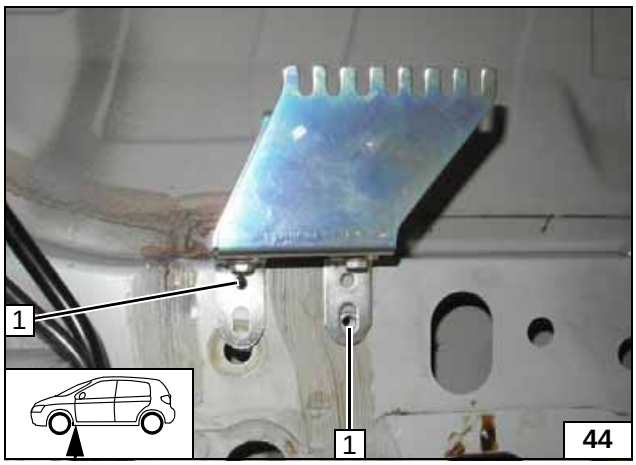
Installing rivet nuts



Align bracket **1** with both angle brackets on the underside of the cross member and install loosely.

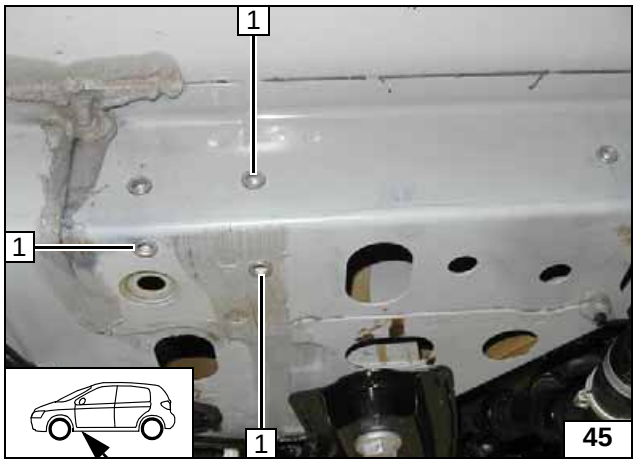
2 Copy hole pattern
3 M6x20 mm bolt

Copying hole pattern



1 Copy hole pattern [2x]

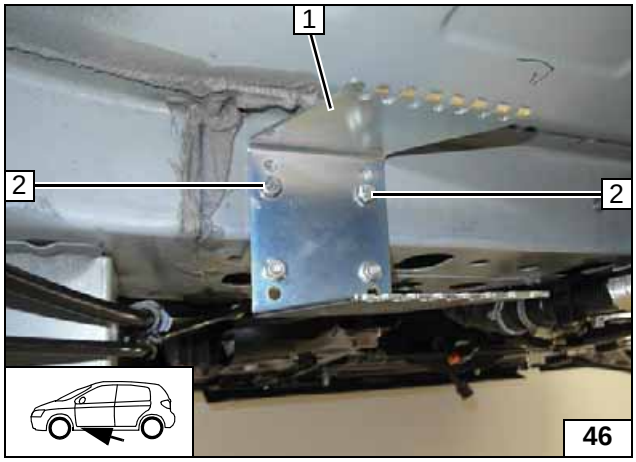
Copying hole pattern



Remove bracket.

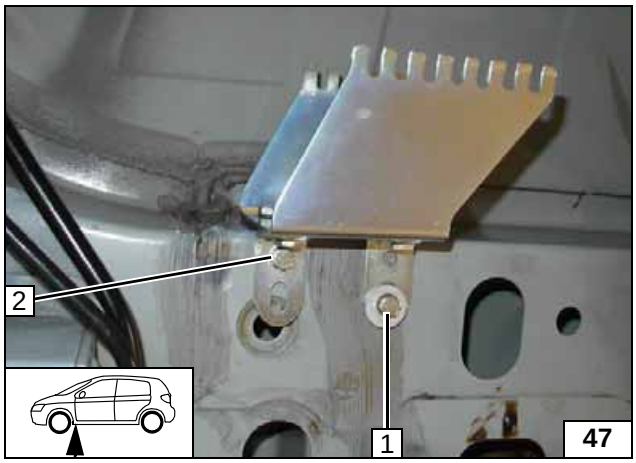
1 Hole, rivet nut [3x each]

Installing rivet nuts



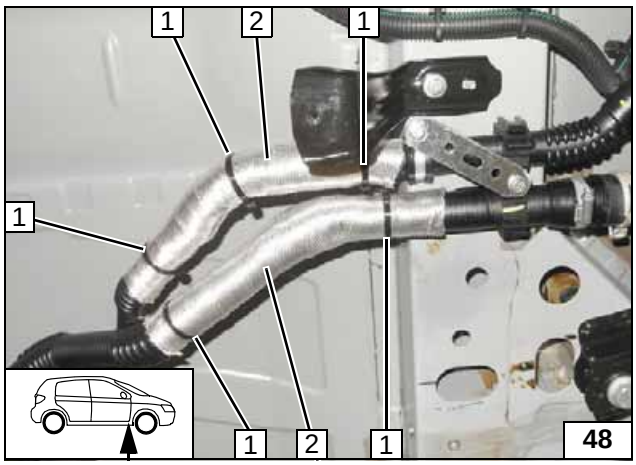
1 Bracket
2 M6x20 bolt, spring lockwasher on rivet nut [2x each]

Installing bracket



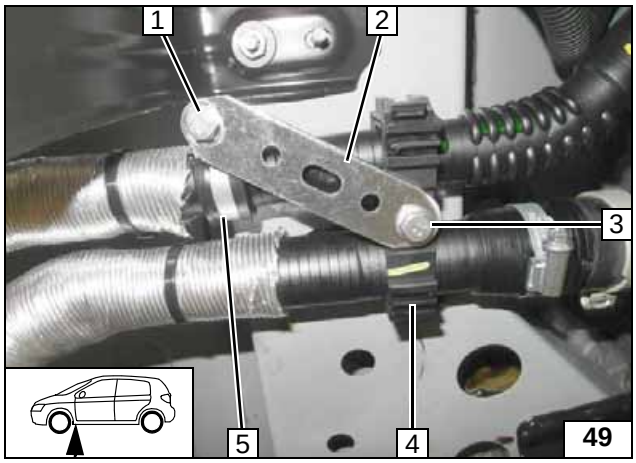
1 M6x20 bolt, spring lockwasher, large diameter washer on rivet nut
2 M6x20 bolt, spring lockwasher on rivet nut

Installing bracket



Cut the heat protection hose in the middle. Install heat protection hoses **2** (cut-open) one each around original vehicle water pipes and secure these using cable ties **1** [5x].

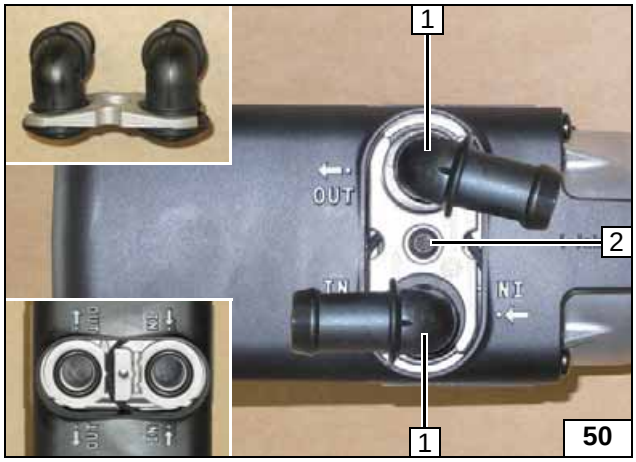
Installing heat protection hoses



Remove original vehicle bolt in position **3** and discard. Insert a 5 mm shim between original vehicle hose bracket **4** and perforated bracket **2** in position **3**.

1 M6x20 bolt, flanged nut
3 M6x60 mm bolt
5 29 mm dia. rubber-coated p-clamp

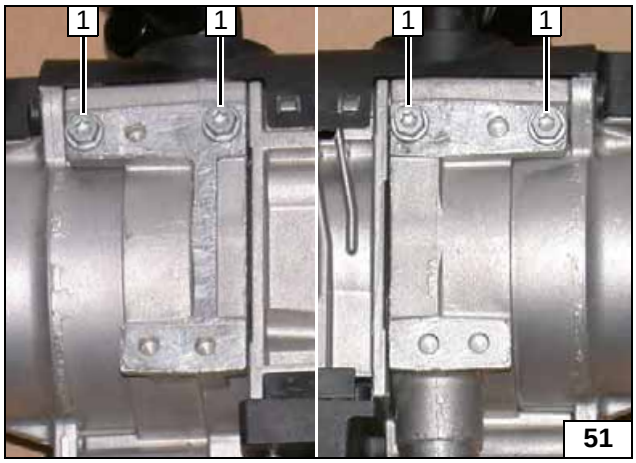
Fastening water pipe



Preparing Heater

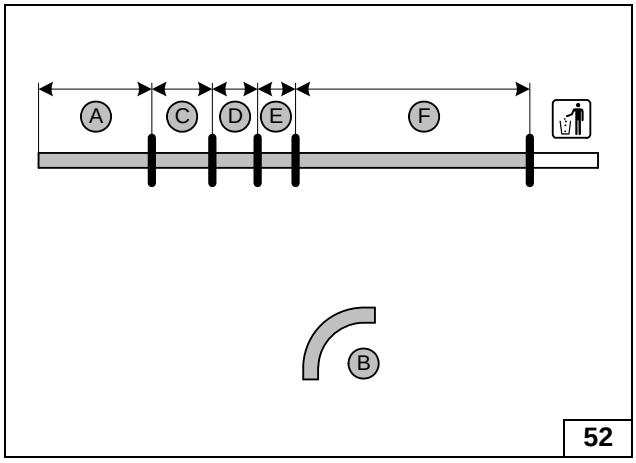
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



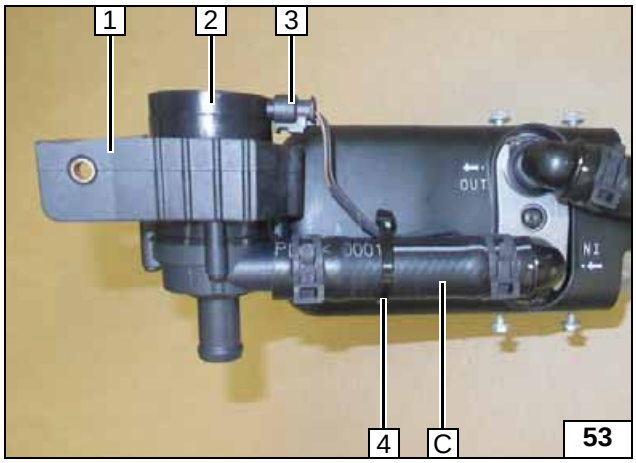
Screw 5x13 self-tapping bolts **1** [4x] into existing holes by a maximum of 3 thread turns.

Premounting bolts loosely



A = 370
B = 90°, 18mm dia.
C = 105
D = 85
E = 60
F = 680

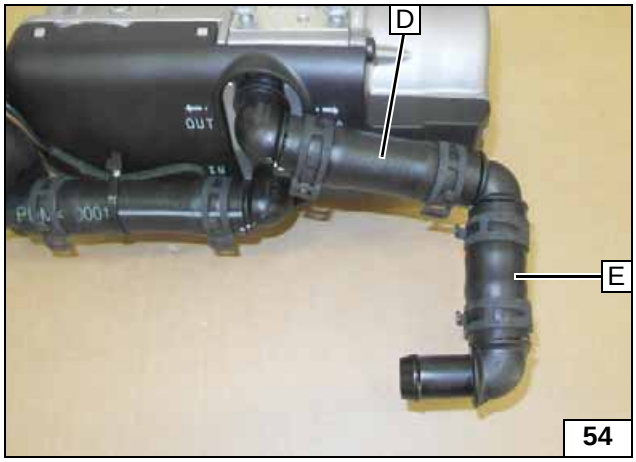
Cutting hoses to length



All spring clips = 25 mm dia.

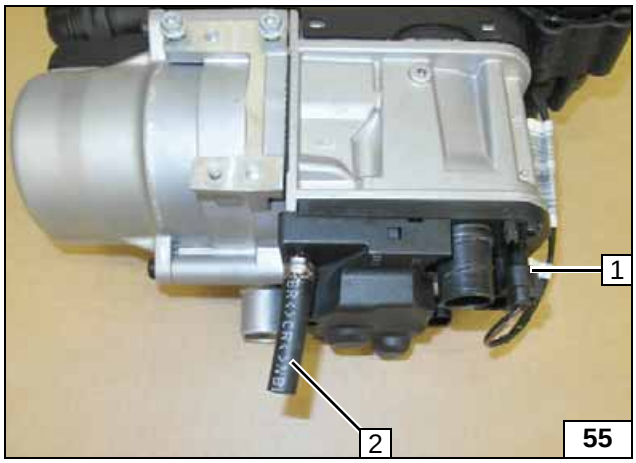
1 Circulating pump mount
2 Circulating pump
3 Connector of circulating pump wiring harness
4 Cable tie

Connecting circulating pump and heater inlet



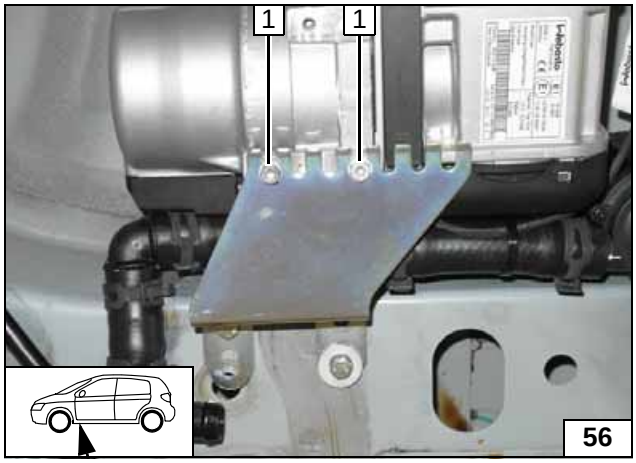
All spring clips = 25 mm dia.
All connecting pipes = 90° 18x18 mm dia.

Connecting heater outlet



1 Connector of circulating pump wiring harness
2 Hose section, 10mm dia. clamp

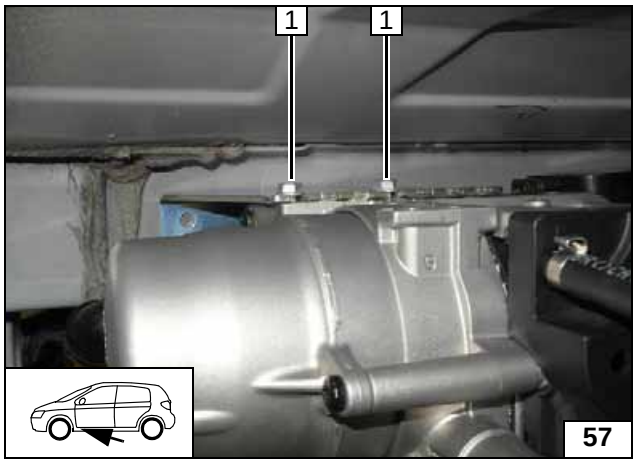
Installing hose section



Installing Heater

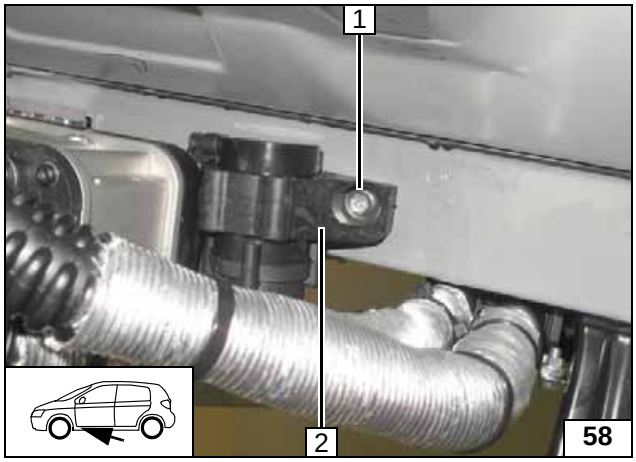
1 Tighten 5x13 self-tapping bolt [2x]

Installing heater



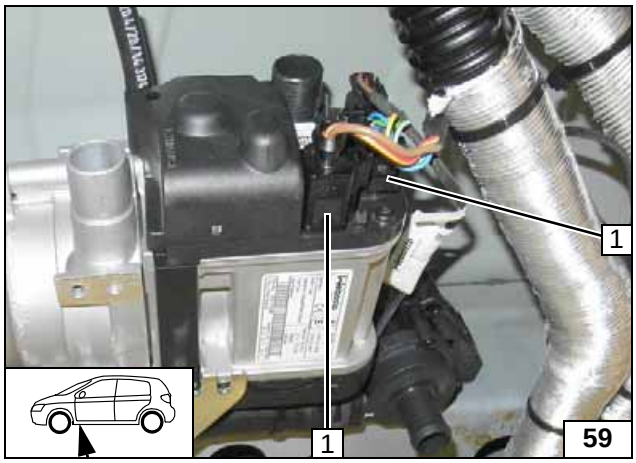
1 Tighten 5x13 self-tapping bolt [2x]

Installing heater



1 M6x25 bolt on rivet nut
2 Circulating pump mount

Fastening circulating pump

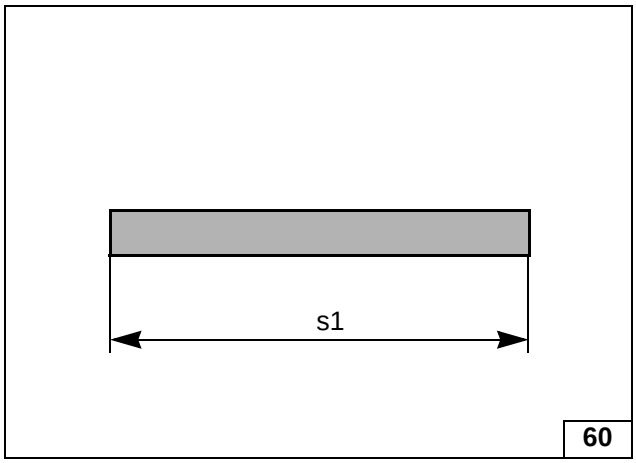


1 Heater wiring harness connector [2x]

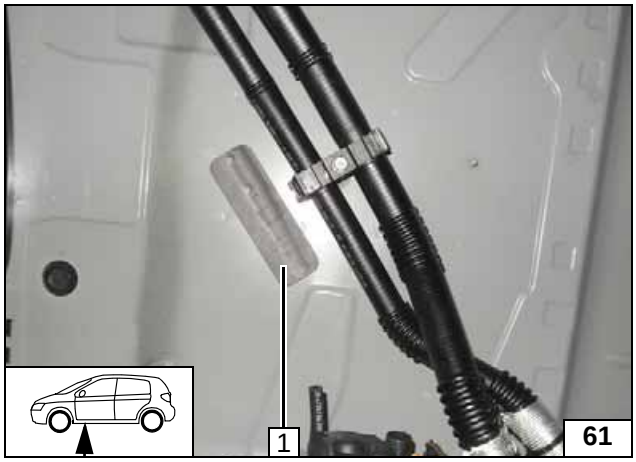
Installing heater

Combustion Air

s1 = 210

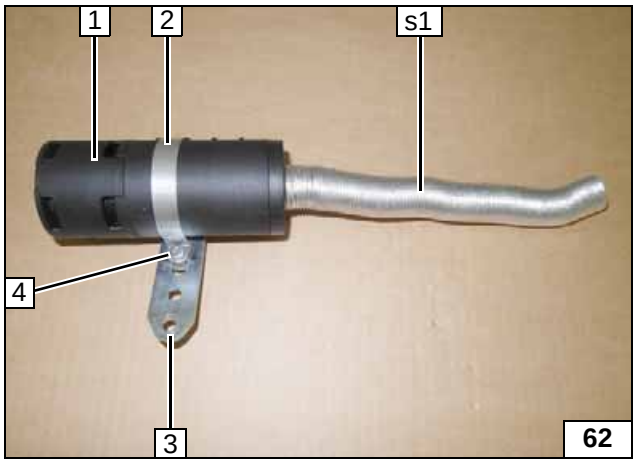


Combustion air pipe



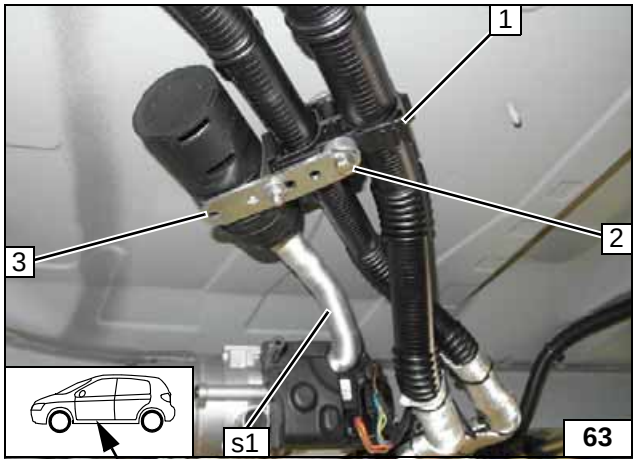
1 Insulation protection strips

Gluing insulation protection strips



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

Premounting silencer and combustion air pipe



Remove original vehicle bolt in position **2** and discard. Insert a 10mm shim between original vehicle hose bracket **1** and perforated bracket **3** in position **2**.

2 M6x60 bolt, spring lockwasher

Installing silencer

Fuel

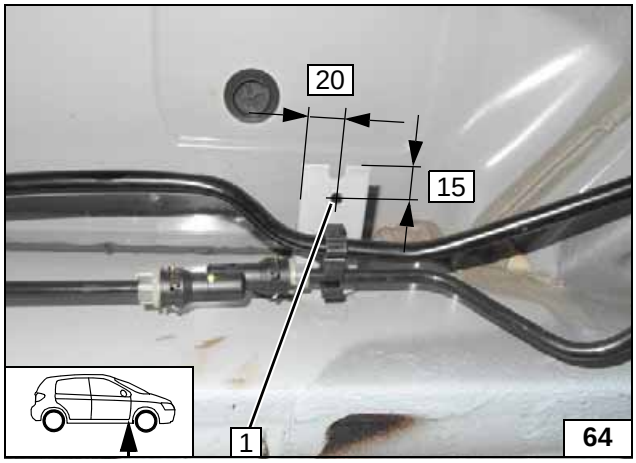
CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off in an appropriate container.

Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

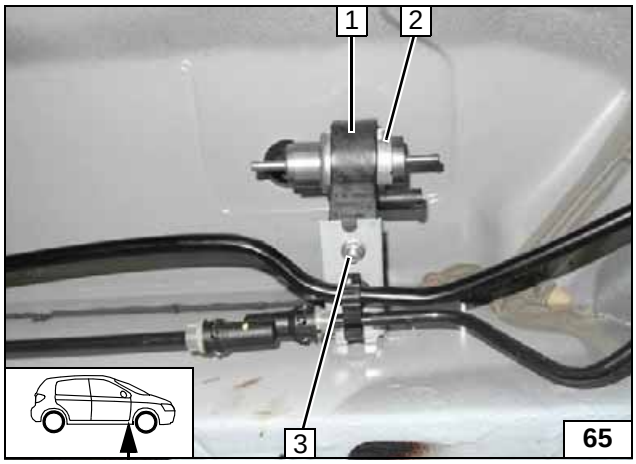
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.

Hole for metering pump



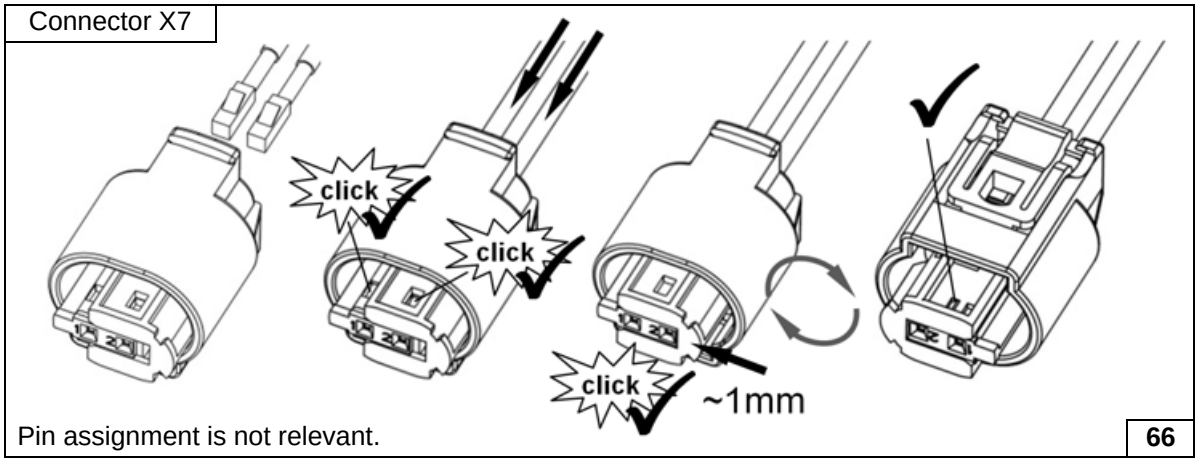
1 7 mm dia. hole

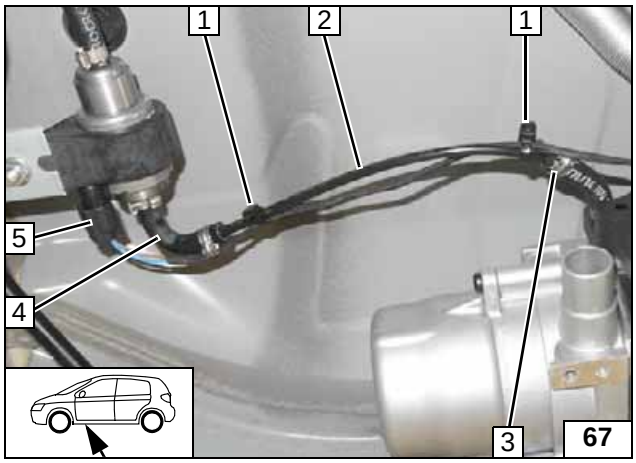
Installing metering pump



1 Metering pump mount
2 Metering pump
3 M6x25 bolt, flanged nut

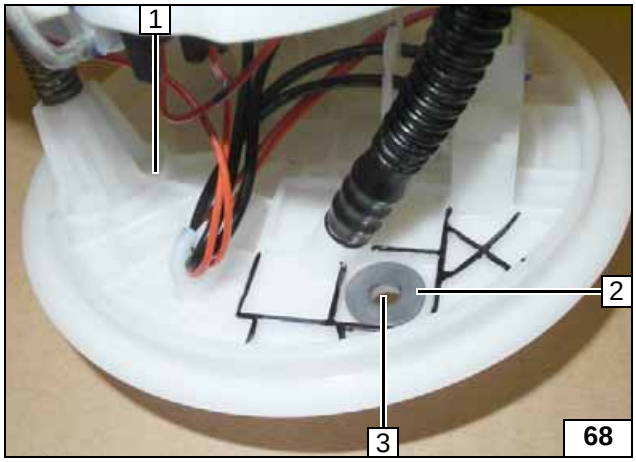
Completing metering pump connector





1 Cable tie [2x]
2 Fuel line
3 10 mm dia. clamp
4 90° moulded hose, 10mm dia. clamp [2x]
5 Metering pump wiring harness, connector X7 mounted

Connecting heater / metering pump



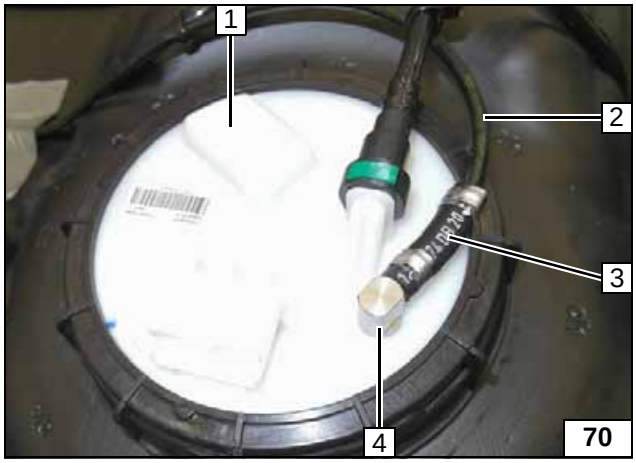
Remove the fuel tank according to the manufacturer's instructions. Remove fuel tank sending unit **1** according to the manufacturer's instructions.

2 Outer dia. d_a of washer = 15 mm (as shown)
3 Copy hole pattern, 6 mm dia. hole

Fuel extraction

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

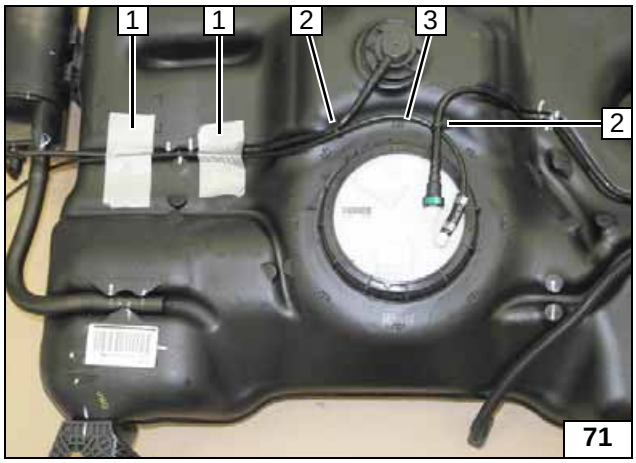
Installing fuel standpipe



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

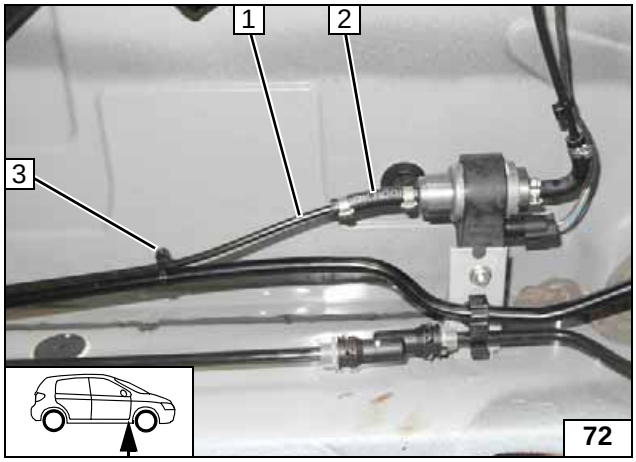
2 Fuel line
3 Hose section, 10mm dia. clamp [2x]
4 Fuel standpipe

Connecting fuel line



Secure fuel line **3** using cable tie **2** and adhesive tape **1**. Mount the tank in accordance with manufacturer's instructions after installation.

Routing fuel line



Ensure sufficient distance from neighbouring components, correct if necessary.

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

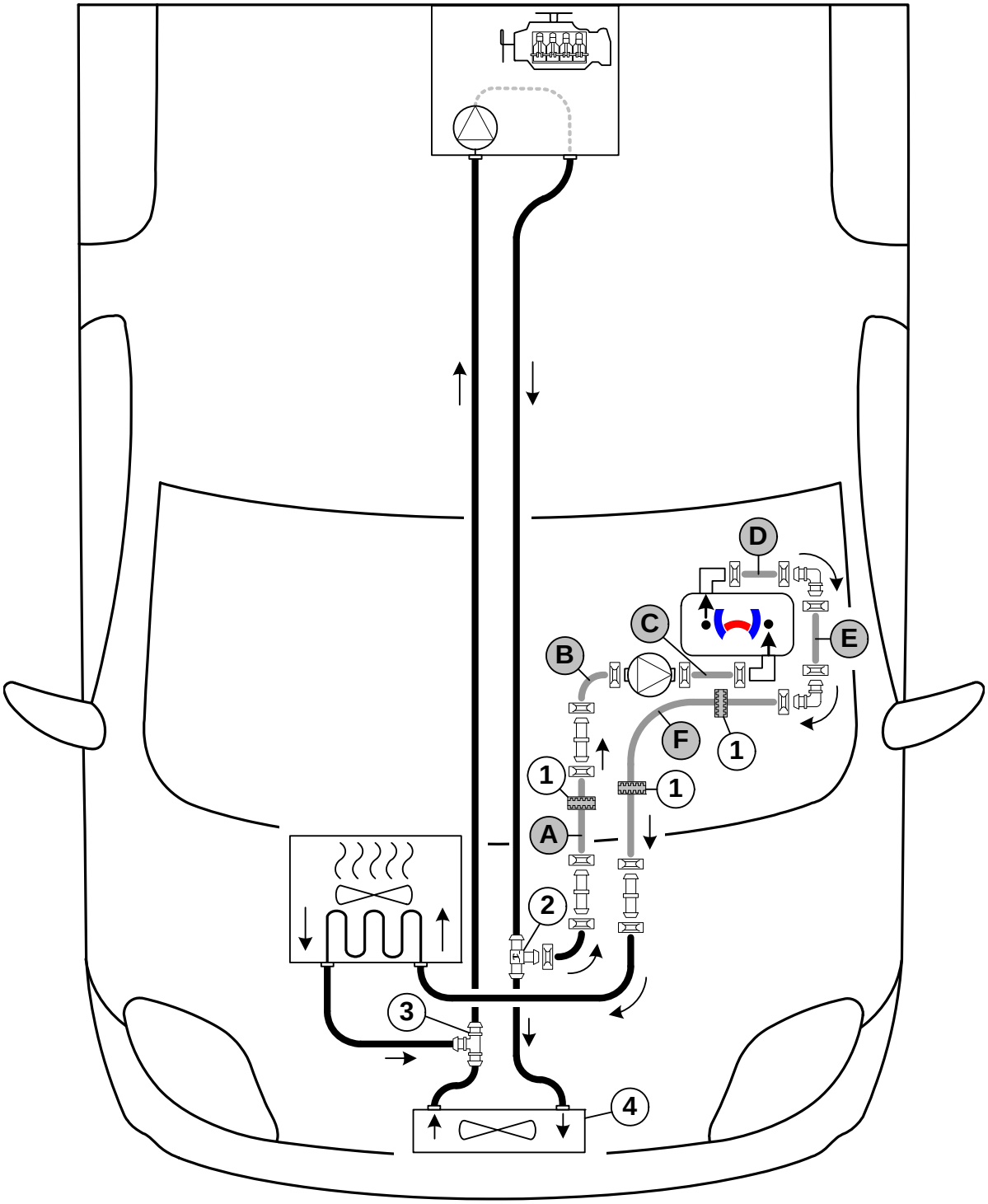
Connecting metering pump

Coolant Circuit

WARNING!
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged.

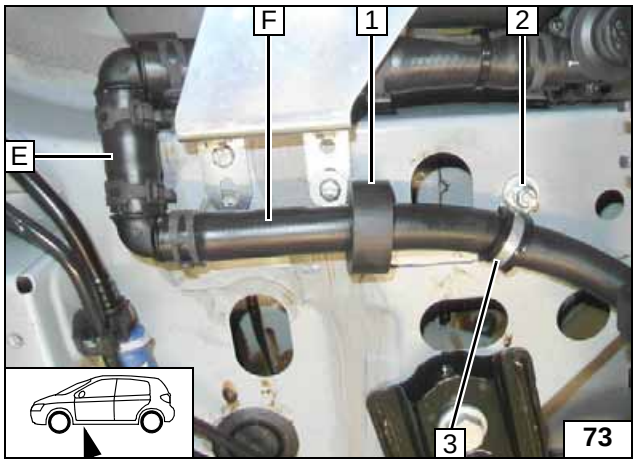
The connection should be modelled on an 'inline' circuit and based on the following diagram:

Hose routing diagram



1 = Black (sw) rubber isolator . **2** = Original vehicle thermostat **3** = Original vehicle T-piece **4** = Radiator

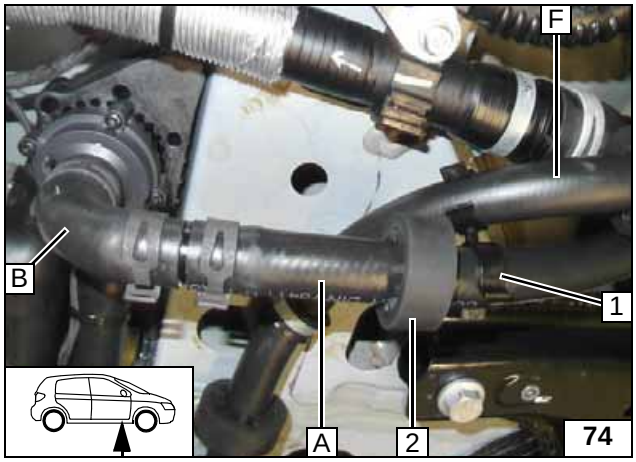
All spring clips = 25 mm dia. All connecting pipes and = 18x18 mm dia.



Slide black (sw) rubber isolator **1** onto hose **F**.

2 M6x20 bolt, large diameter washer [2x], flanged nut, existing hole
3 25 mm dia. rubber-coated p-clamp

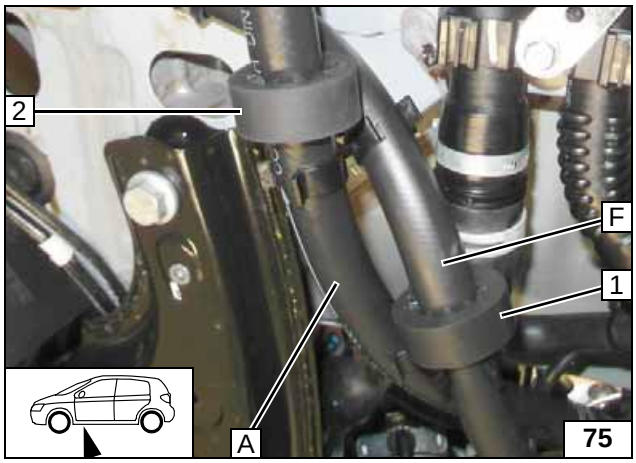
Connecting heater outlet



Slide black (sw) rubber isolator **2** onto hose **A**.

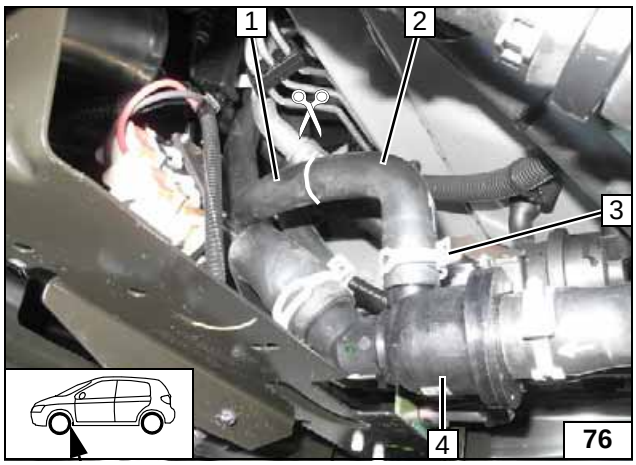
1 25x25 hose bracket between hose **A** and hose **F**

Connecting heater inlet



Push black (sw) rubber isolator **1** onto hose **F** and align. Align black (sw) rubber isolator **2** with hose **F**.

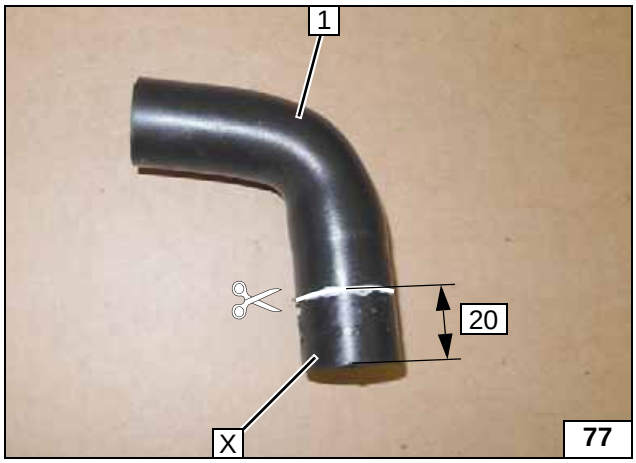
Hose routing



Cut heat exchanger inlet hose on thermostat **4** at the marking. Remove original vehicle hose **2**. Discard spring clip **3**.

1 Heat exchanger inlet hose section

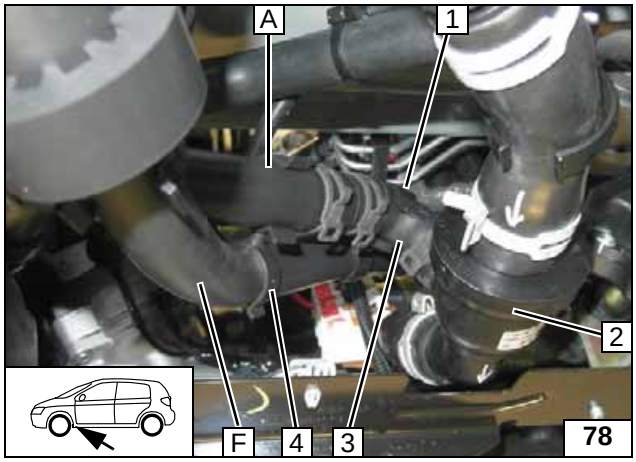
Cutting point



1 Original vehicle hose

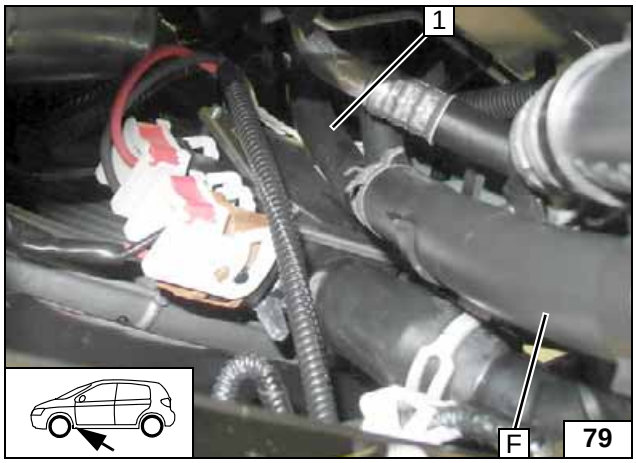
X = 

Shortening hose



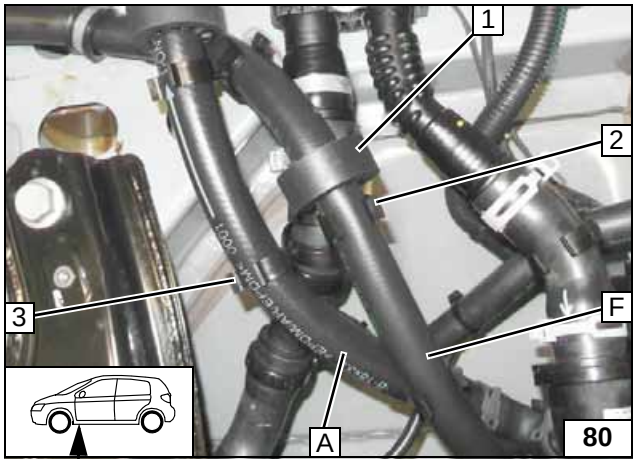
1 25x25 hose bracket between original vehicle hose **3** und hose **F**
2 Thermostat
4 25x25 hose bracket between hose **A** and hose **F**

Connecting thermostat



1 Hose of heat exchanger inlet

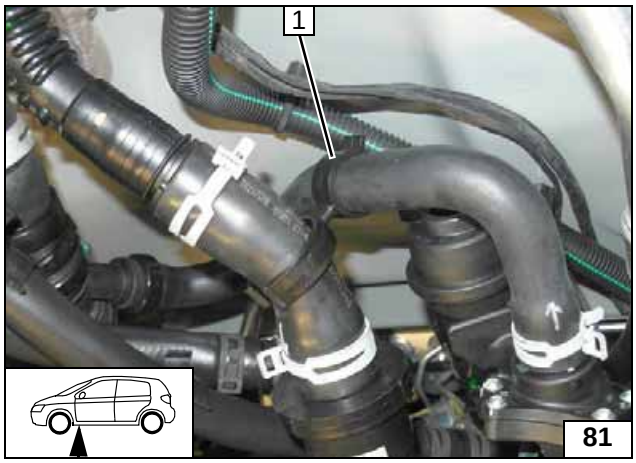
Connecting heat exchanger inlet



Align black (sw) rubber isolator **1** with original vehicle water pipe.

2 25x37 hose bracket between hose **F** and original vehicle water pipe
3 25x37 hose bracket between hose **A** and original vehicle water pipe

Installing hose bracket



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

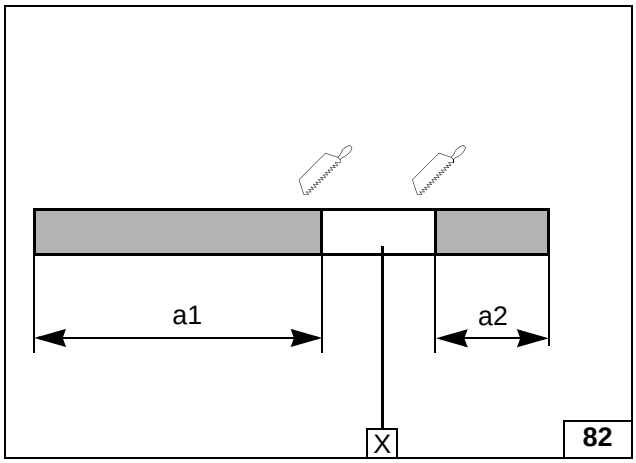
1 25x37 hose bracket between original vehicle hoses for stabilisation

Installing hose bracket

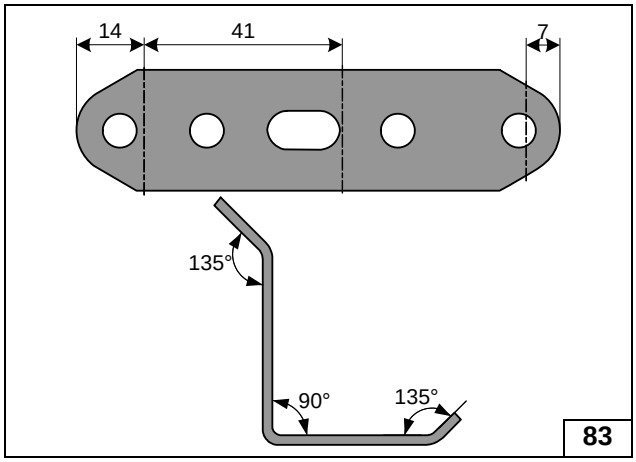
Exhaust Gas

a1 = 355
a2 = 185

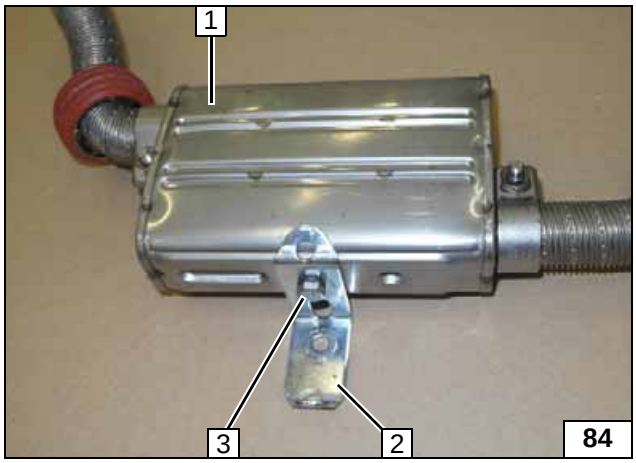
X =



Preparing exhaust pipe

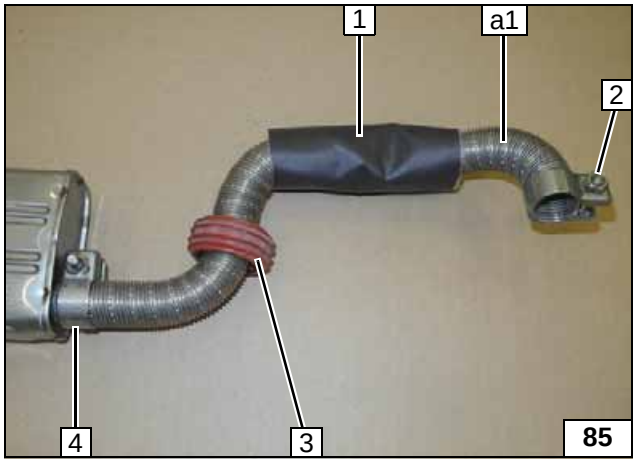


Preparing perforated bracket



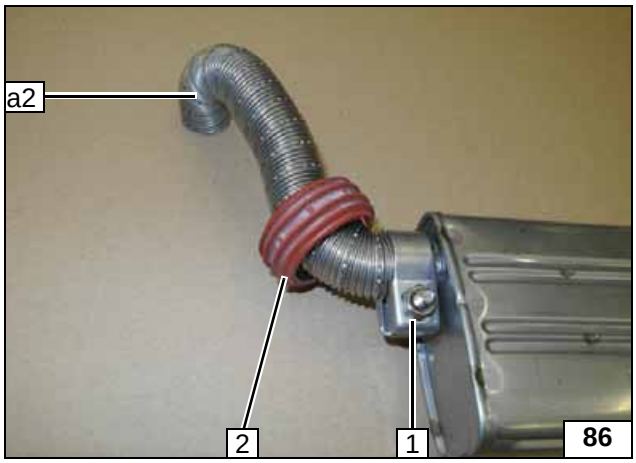
1 Silencer
2 Perforated bracket
3 M6x16 bolt, spring lockwasher

Premounting silencer



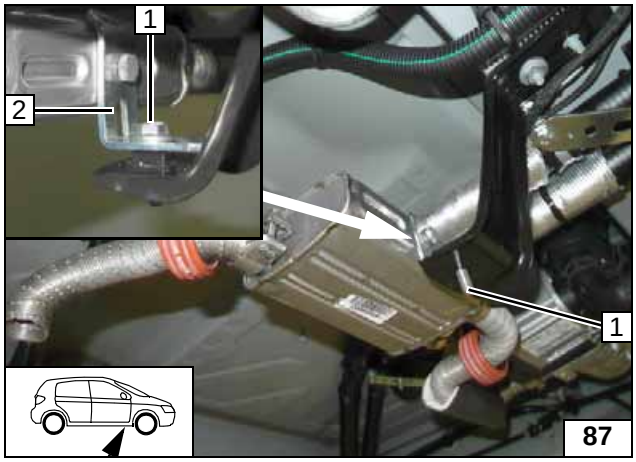
1 Exhaust insulation
2 Hose clamp, mounted loosely
3 Spacer bracket
4 Hose clamp

Premounting exhaust pipe a1



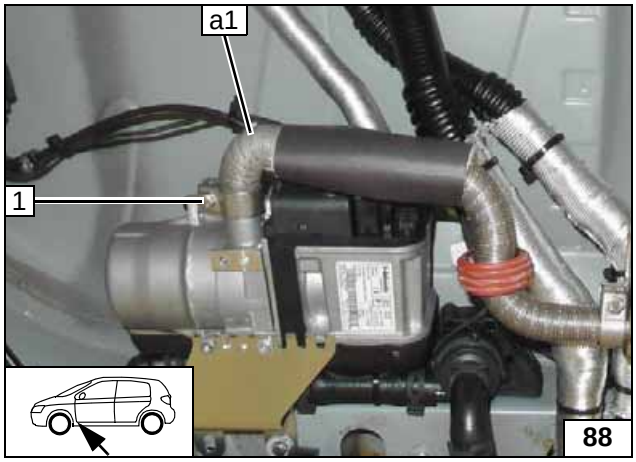
1 Hose clamp
2 Spacer bracket

Premounting exhaust pipe a2



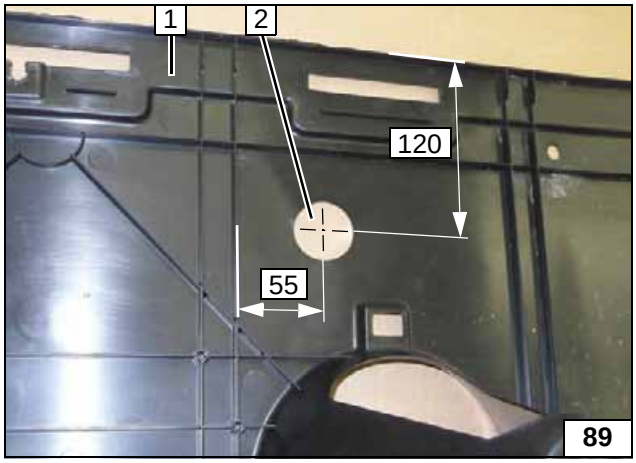
1 M6x25 bolt in original vehicle threaded hole

Mounting exhaust system



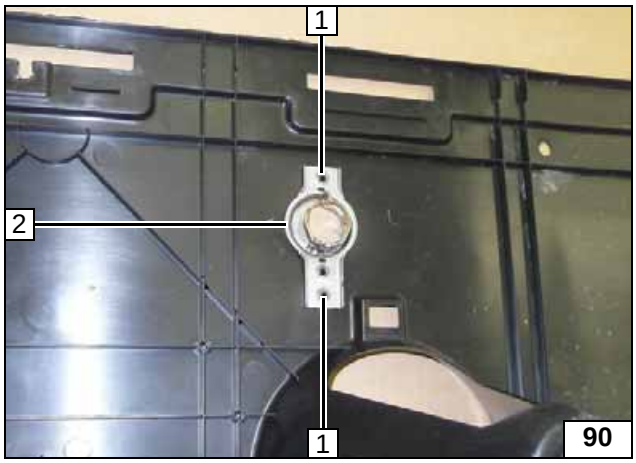
1 Tighten hose clamp

Installing exhaust pipe a1



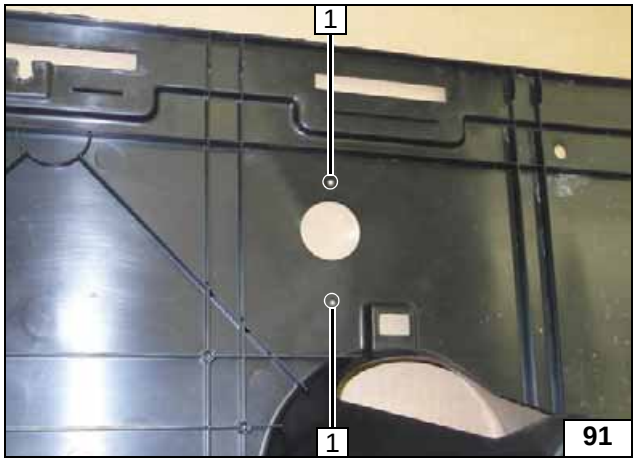
1 Middle underbody trim
2 Hole (as per work step 1 of the installation instructions)

Hole in underbody trim



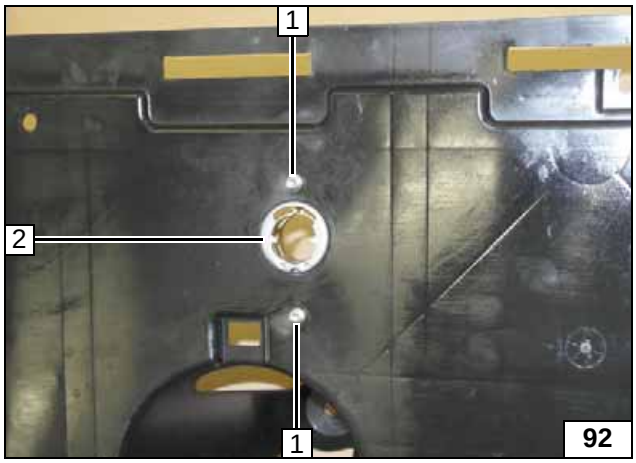
Position exhaust end fastener **2** as per work step 3 of the installation instructions nad copy hole pattern **1** [2x].

Copying hole pattern



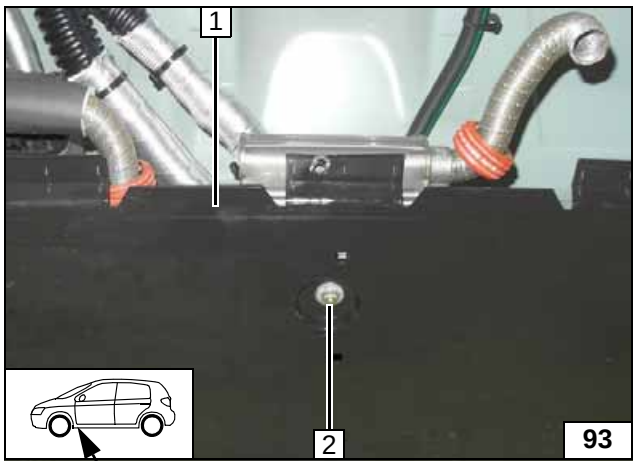
Hole **1** [2x] as per work step 4 of the installation instructions.

Holes in underbody trim



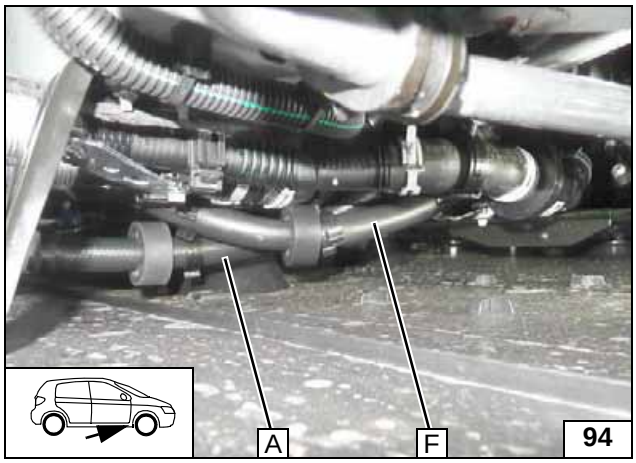
1 5x13 self-tapping screw [2x] as per work step 5 of the installation instructions
2 Exhaust end fastener

Installing exhaust end fastener



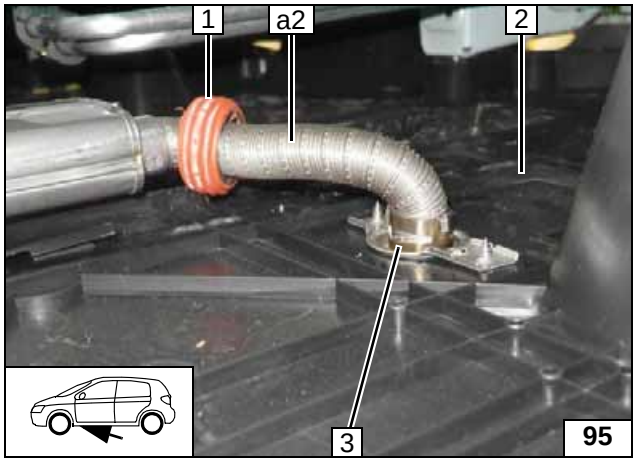
1 Front underbody trim
2 Large diameter washer with outer dia. d_a = 21.6 mm; flanged nut on M6x25 detent edged bolt

Installing underbody trim



Ensure sufficient distance to neighbouring components, adjust hoses and rubber isolators if necessary.

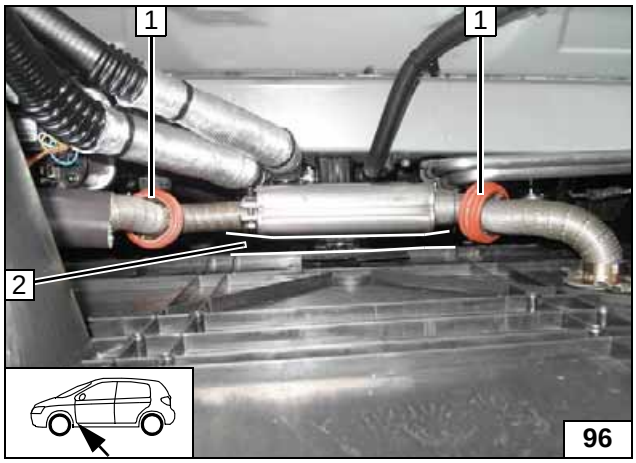
Checking water hoses alignment



Install middle underbody trim **2**.
Install exhaust pipe **a2** as per work steps 6 - 8 of the installation instructions.

1 Position spacer bracket
3 Exhaust end fastener

Installing exhaust pipe a2



Align spacer bracket **1** [2x] with the edges of the middle underbody trim. Ensure sufficient distance from silencer at position **2** (at least 20 mm), correct silencer if necessary.

Checking silencer distance

Final Work

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

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

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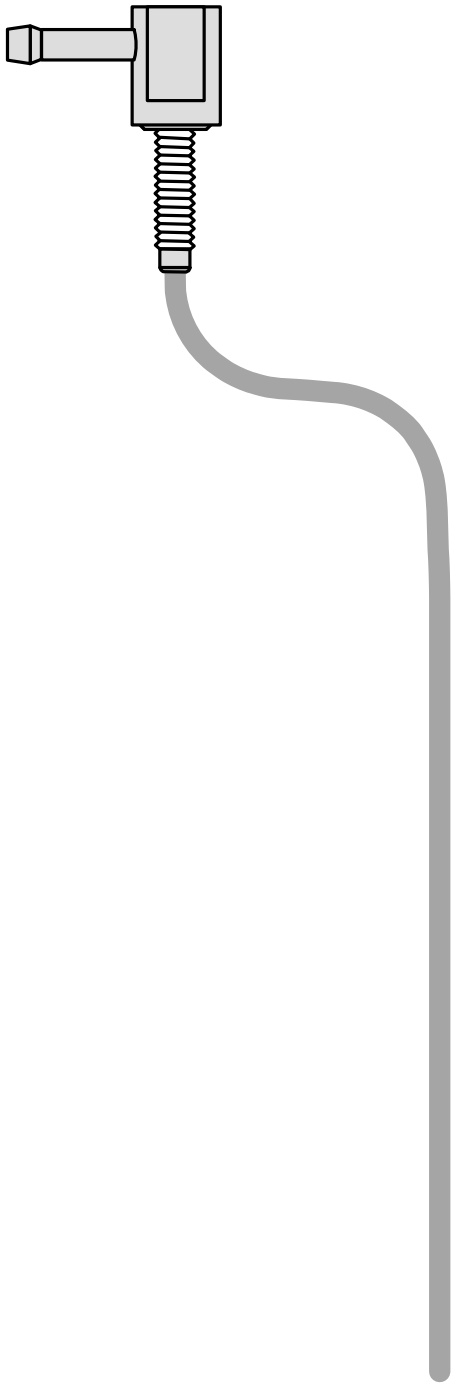
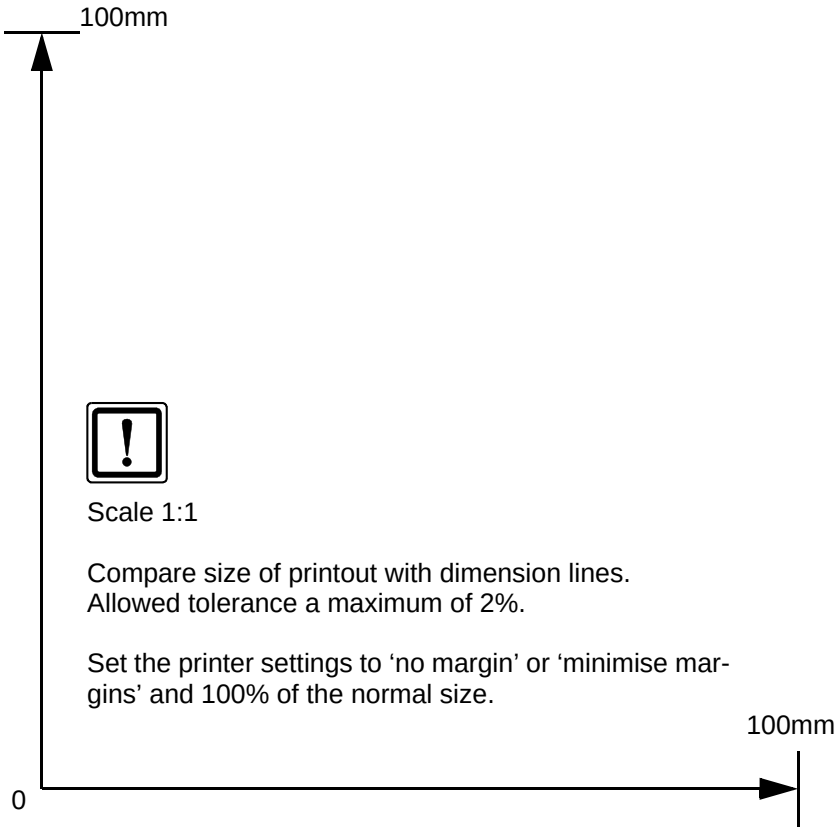
82199 Gilching
Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

Fuel Standpipe Template





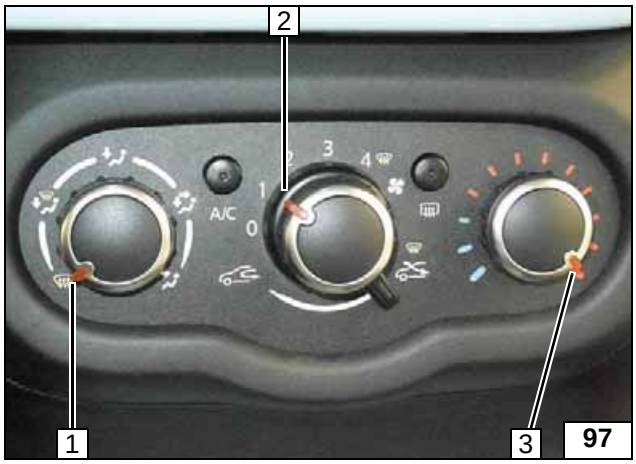
Operating Instructions for Manual Air-Conditioning

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.

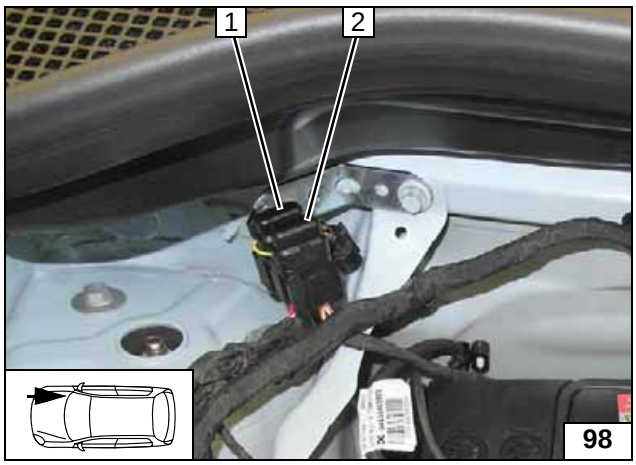
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



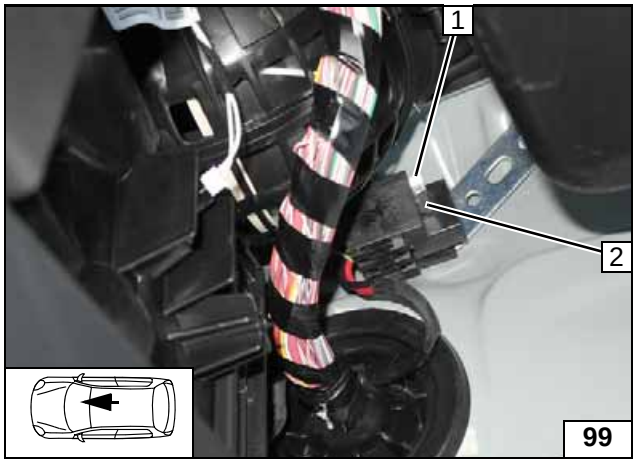
1 Air outlet to windscreen
2 Set fan to level ‘1’, or max. ‘2’
3 Set temperature to ‘max.’

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses

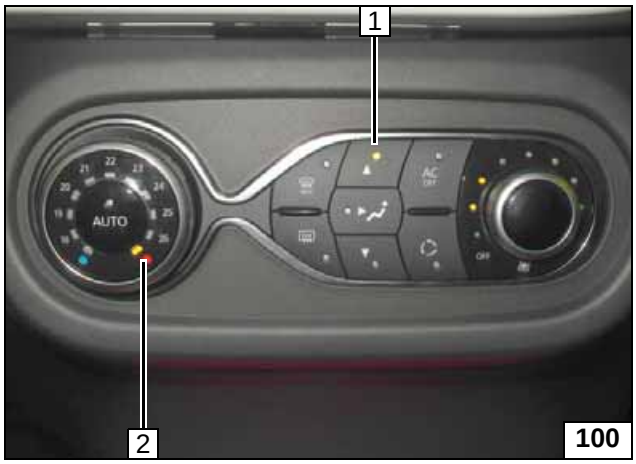
Operating Instructions for Automatic A/C

Please remove page and add to the vehicle operating instructions.

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

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

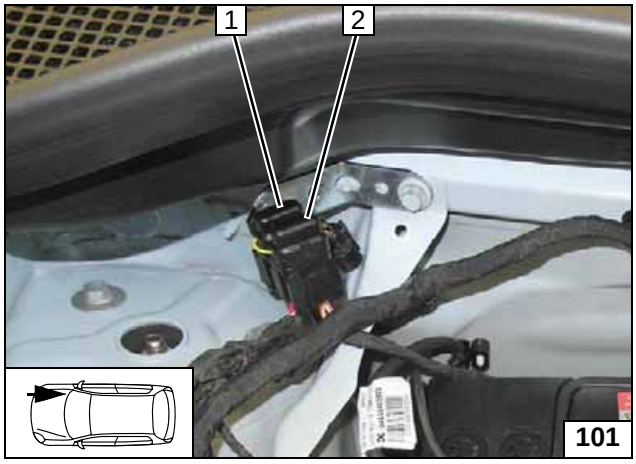
Before parking the vehicle, make the following settings:



Adjustment of fan speed not necessary, will be automatically set to approx. 1/3!

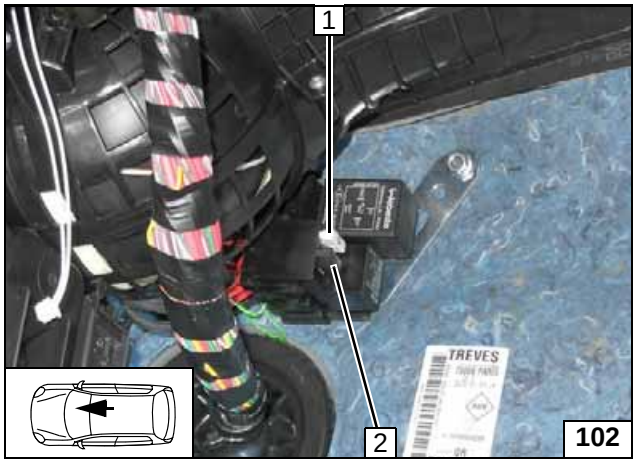
1 Air outlet to windscreen
2 Set temperature to ‘max.’

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses