Water Heater

Thermo Top Evo Parking Heater

E1
00 0258

With FuelFix

Installation Documentation
Smart forfour BR 453

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Smart	forfour	W453	e1 * 2001 / 116 * 0413 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
0.9 P Turbo	Petrol / R3	5-speed SG	66	899	M281.910
0.9 P Turbo	Petrol / R3	AG	66	899	M281.910
1.0 P	Petrol / R3	5-speed SG	52	999	M281.920

SG = manual transmission
AG = automatic transmission / Twinamic

From model year 2015
Left-hand drive vehicle

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

Not verified: Alarm system

Total installation time: approx. 7.5 hours

Table of Contents

Necessary Components

- Basic delivery scope of Thermo Top Evo according to price list
- Installation kit with FuelFix Smart forfour BR 453 2015 Petrol: **1323825B**
- To be ordered additionally in case of automatic air-conditioning: 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

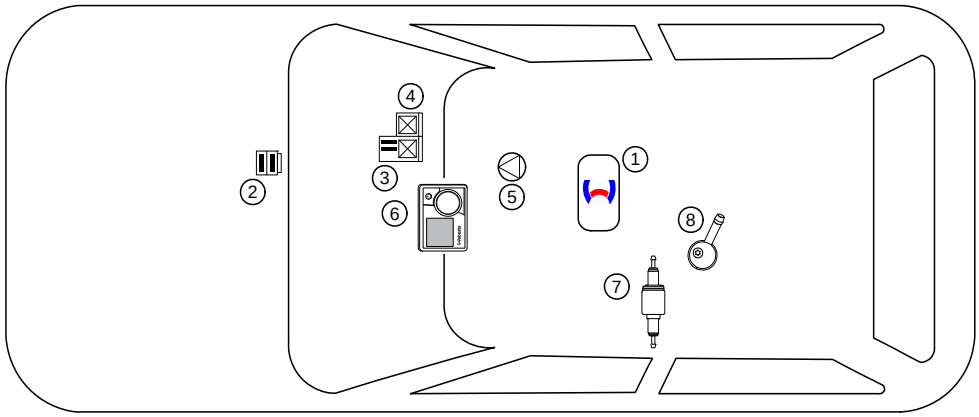
Installation instructions:

- 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 available space and manufacturer's instructions, we recommend the use of a vehicle battery with more electrical capacity.

Installation Overview

Legend:

1. Heater
2. Service compartment fuse holder
3. Passenger compartment relay and fuse holder
4. PWM Gateway
5. Circulating pump
6. MultiControl CAR
7. Metering pump
8. FuelFix



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.

Information on Validity

This installation documentation applies to Smart forfour BR 453 Petrol vehicles - for validity, see page 1 - from model year 2015 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

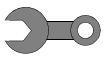
Dimensions
- All dimensions are in mm.

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 work steps.

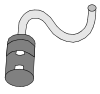
Mechanical System



Electrical System

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.

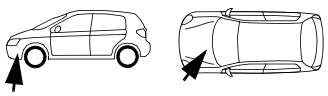
Specific risk of injury or fatal accidents.

Specific risk of fire or explosion.

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

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.

Preliminary Work

Vehicle

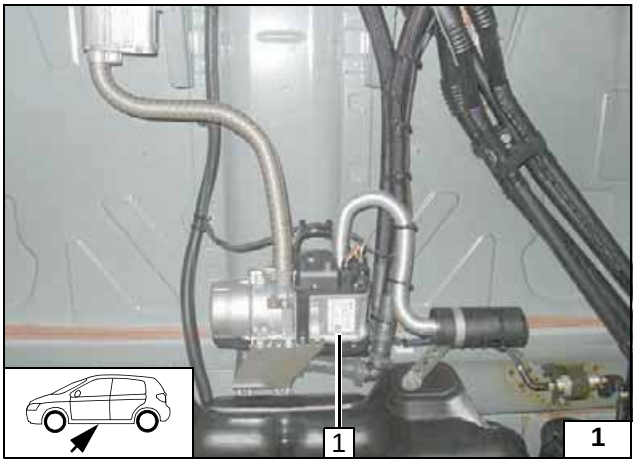
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Remove the front cover / bonnet according to the manufacturer's instructions.
- Disconnect and remove the battery.
- Remove the three parts of the underbody trim.

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 according to the manufacturer's instructions (i.a. notice that there are 2 screw fittings in the area around the filler neck).

Heater

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



Heater Installation Location

1 Heater

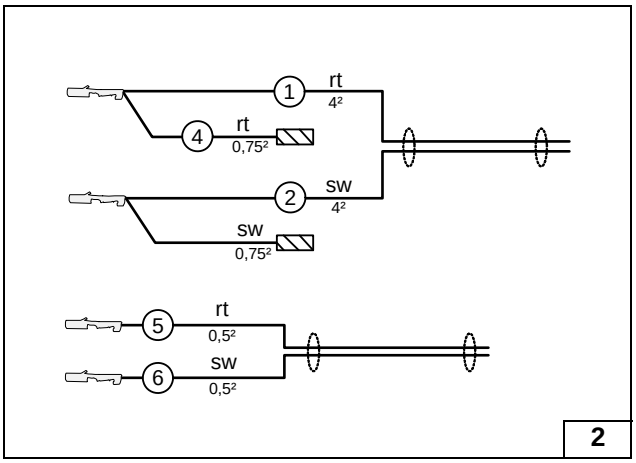
Installation location

Preparing Electrical System

Wire sections retain their numbering in the entire document.

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

Cutting to length / assigning wires



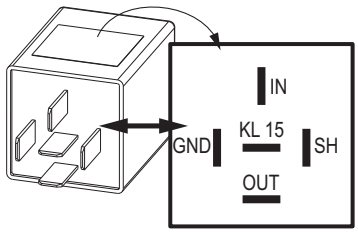
2

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

Settings:

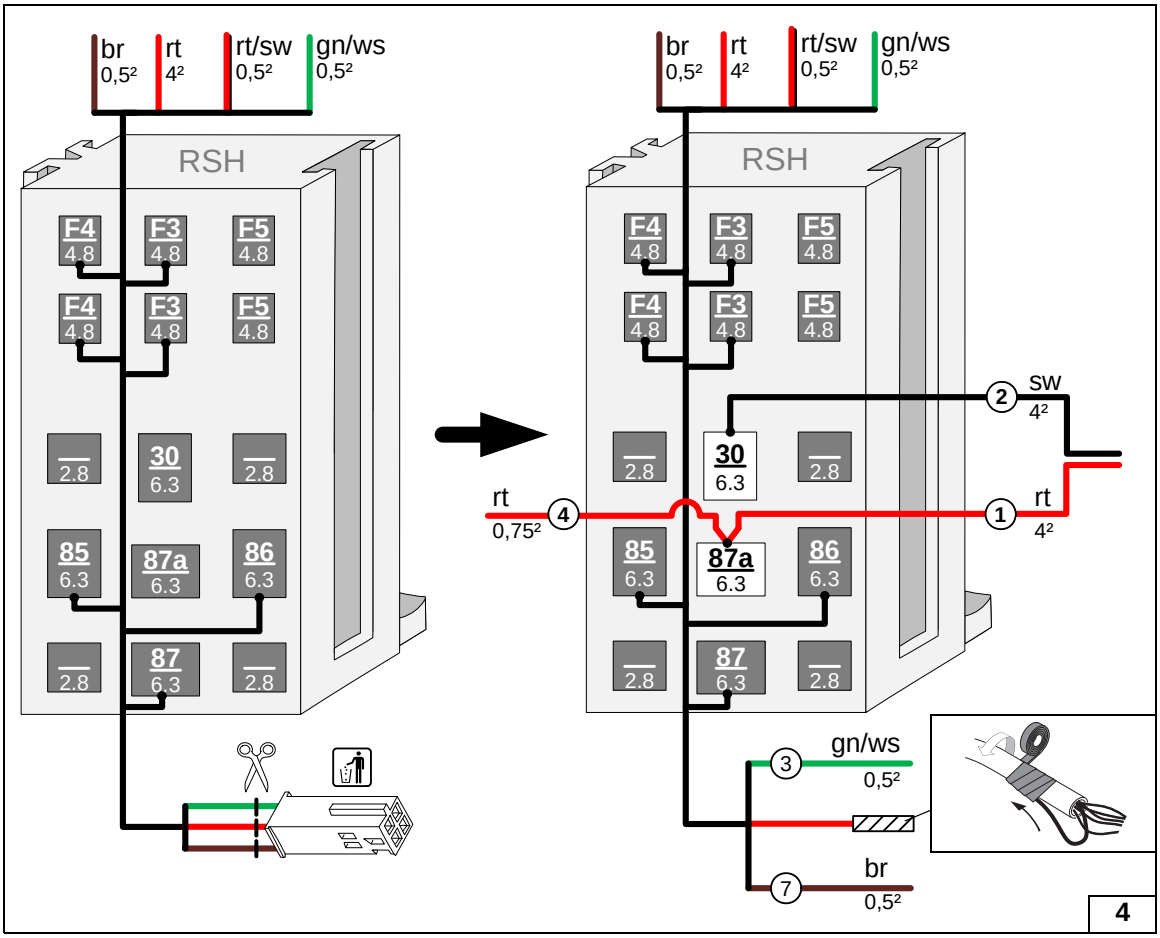
Duty cycle: 65%
Frequency: 400 Hz
Voltage: not relevant
Function: Low side

View of PWM GW



3

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



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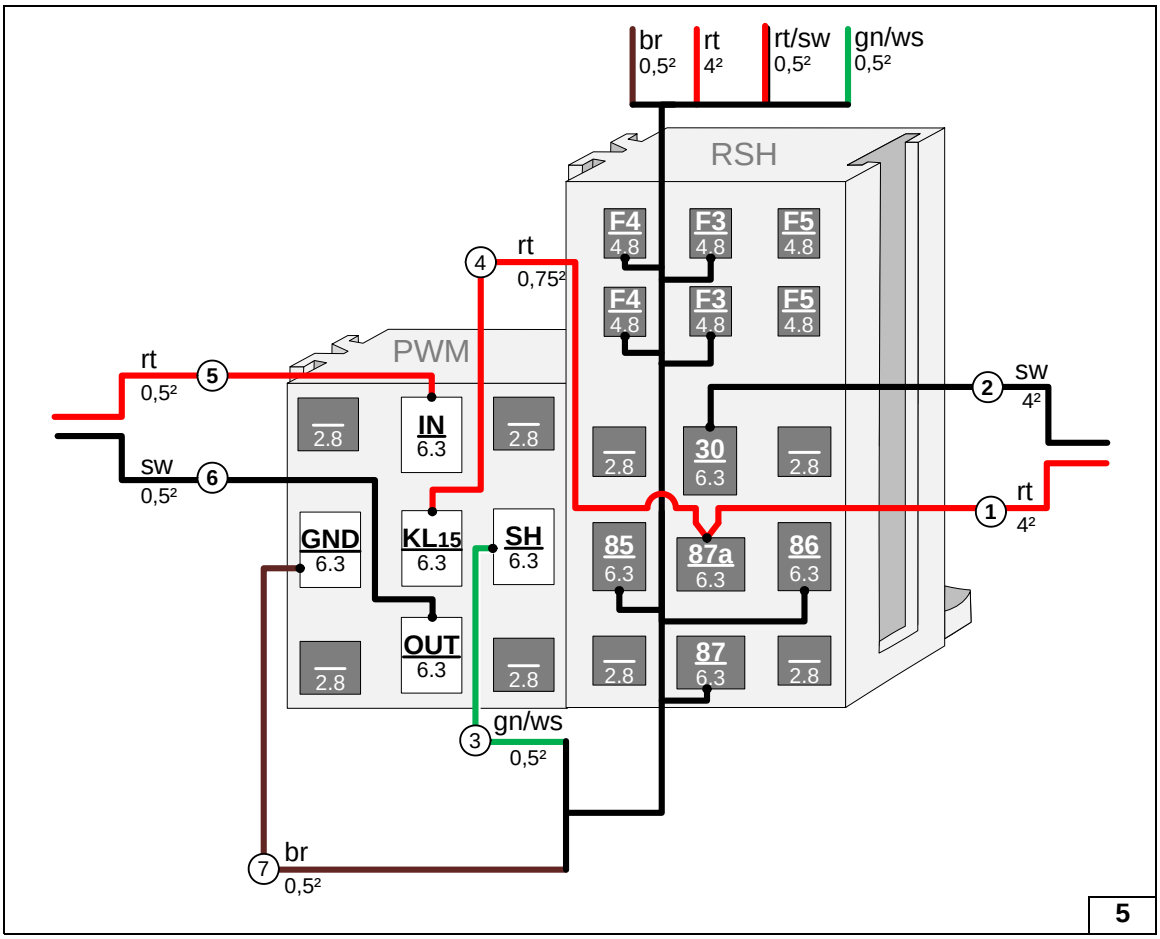
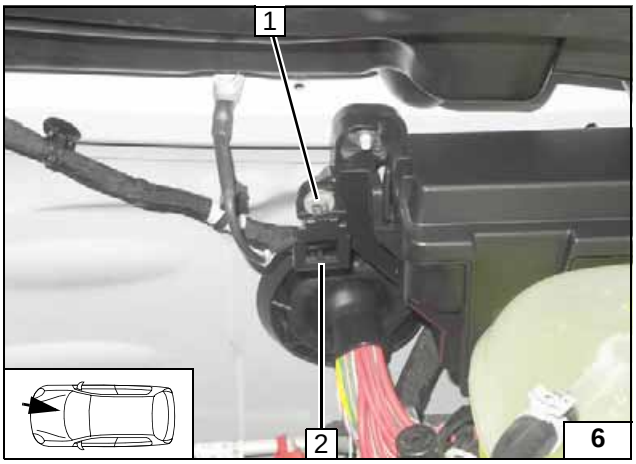


5

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

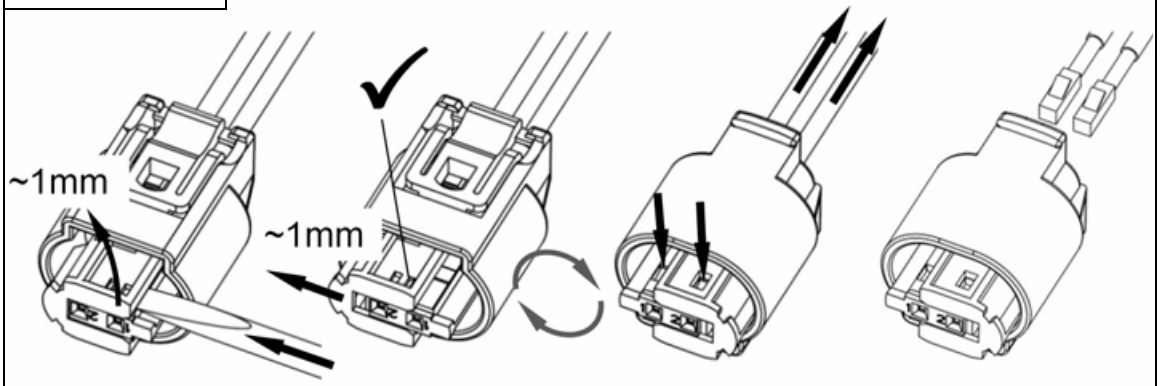


6

1 M5x16 bolt, large diameter washer [2x], flanged nut, existing hole
2 Retaining plate of fuse holder in service compartment

Installing retaining plate of fuse holder

Connector X7



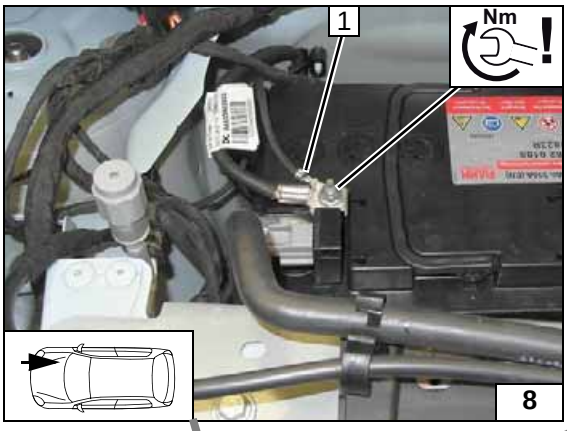
7

Dismantling metering pump connector

Electrical System

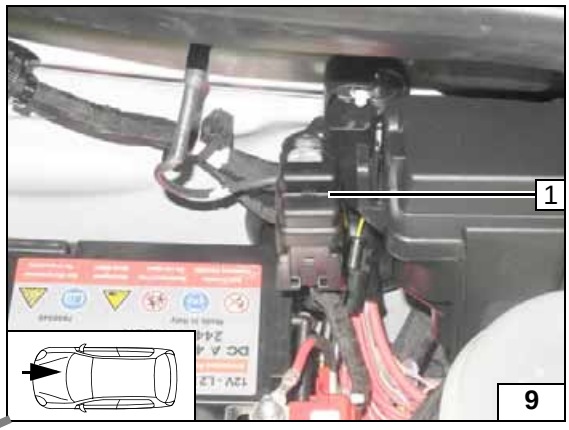
Earth wire

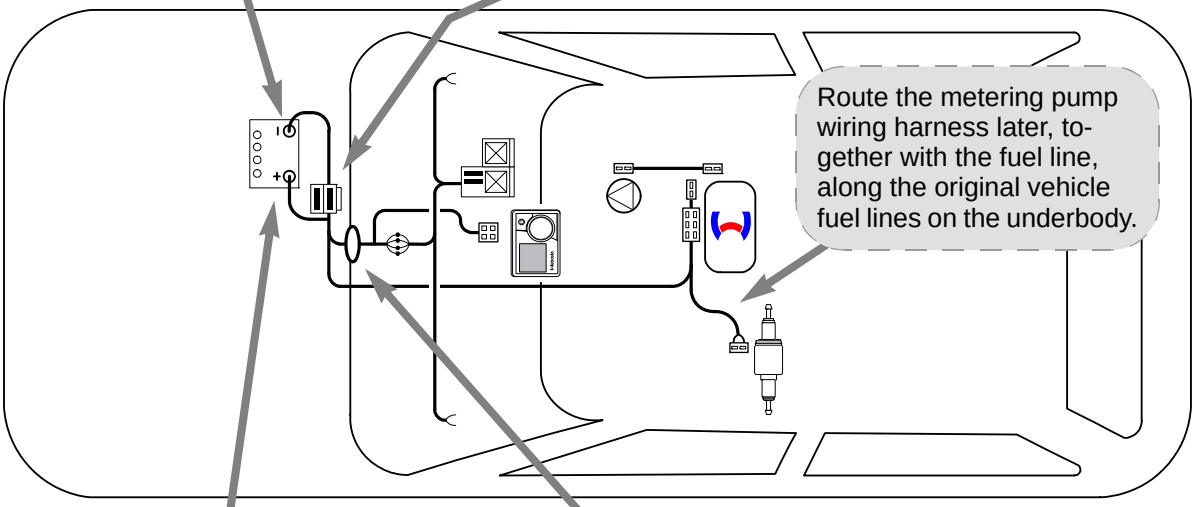
1 Earth wire on negative battery terminal



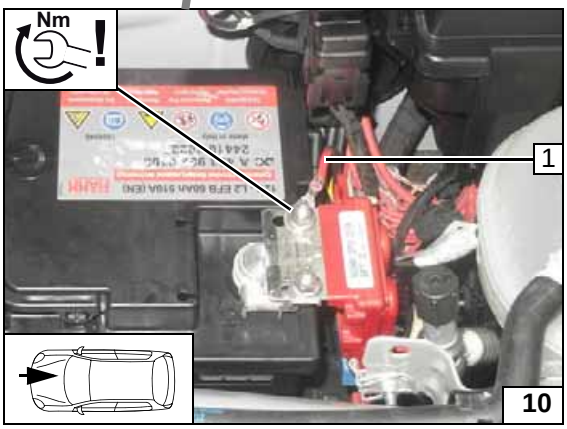
Fuse holder in service compartment

Install fuses F1-2 **1** onto retaining plate of fuse holder.



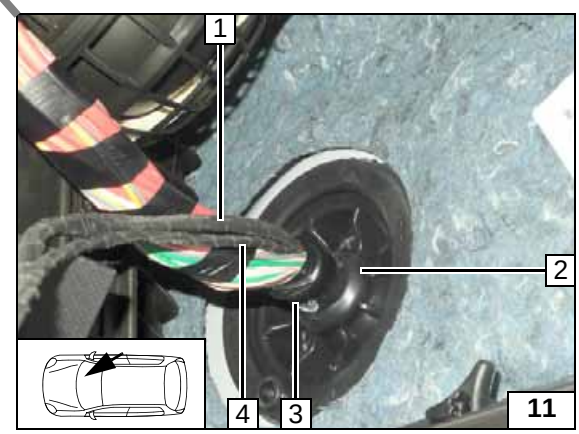


Wiring harness routing diagram



Positive wire

1 Positive wire on positive battery distributor

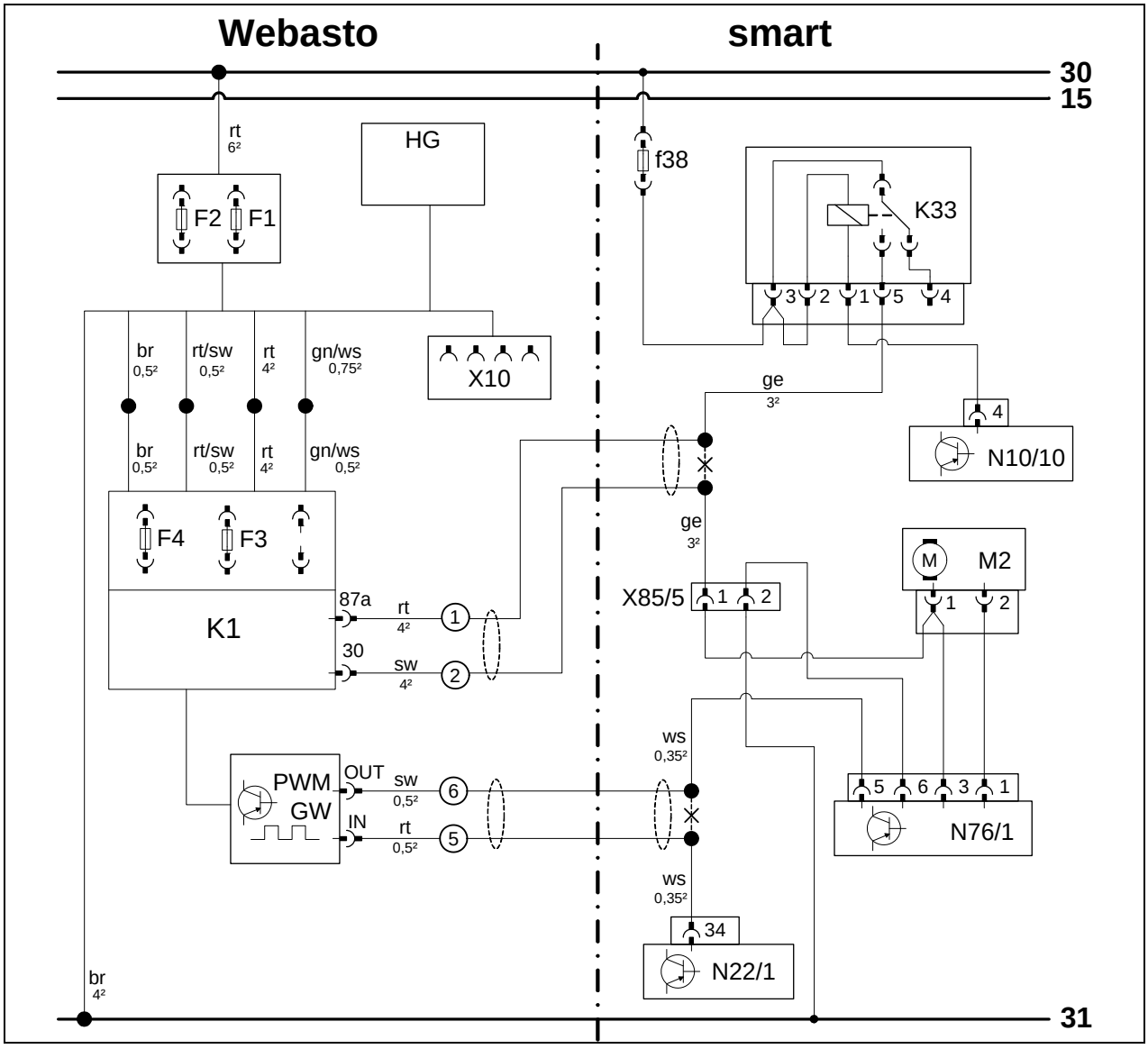


Wiring harness pass through of passenger compartment

Remove original vehicle cable tie form protective rubber plug **2** at position **3**.

1 Heater wiring harness
4 Heater control wiring harness

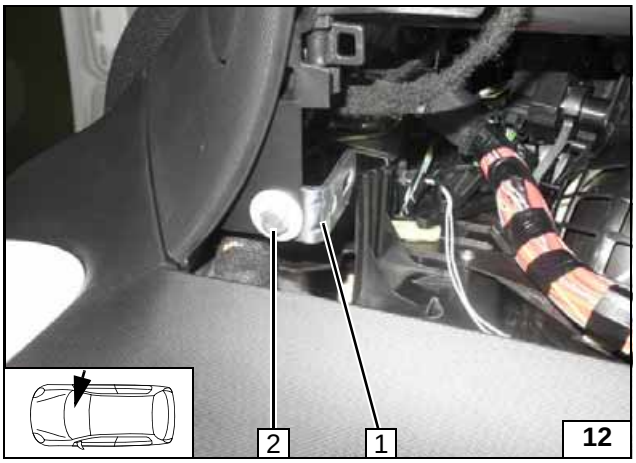
Fan Controller



Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	f38	Fuse 38	rt	red
F0	30A additional fuse	K33	Fan relay	sw	black
F1	20A fuse	N10/10	SAM control unit	ge	yellow
F2	30A fuse	M2	Fan motor	gn	green
X10	4-pin connector of heater control	X85/5	Connector	br	brown
		N76/1	Fan controller	ws	white
F3	1A fuse	N22/1	A/C control unit		
F4	25A fuse				
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.	

System wiring diagram

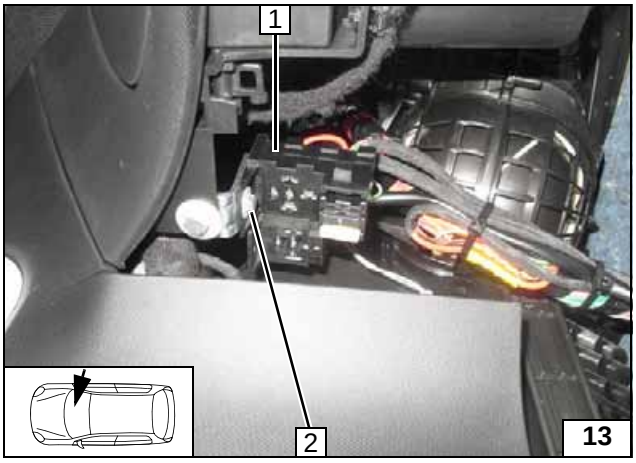
Legend



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

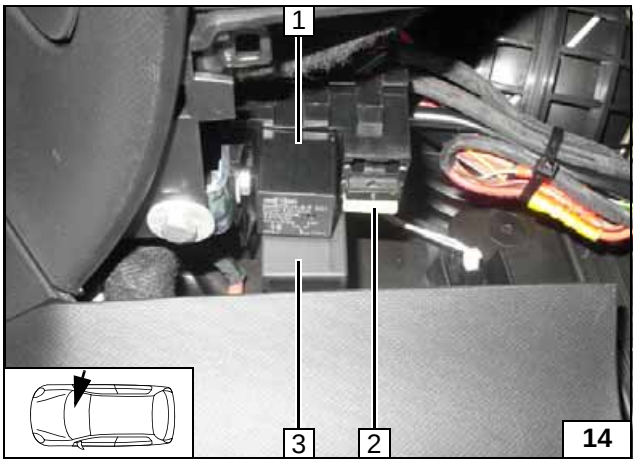
1 Angle bracket
2 M6x20 bolt, large diameter washer, flanged nut, existing hole

Installing angle bracket



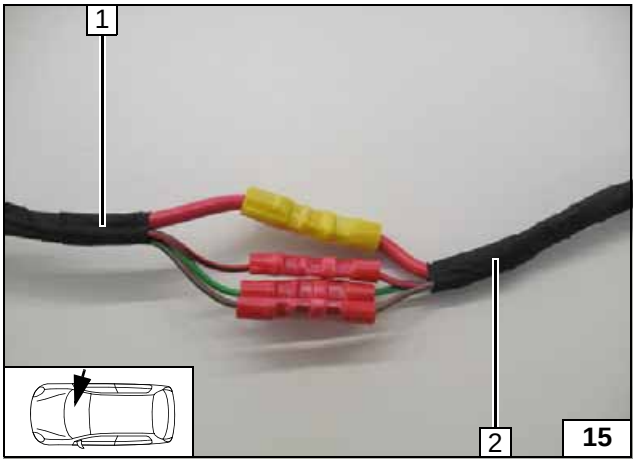
1 Passenger compartment relay and fuse holder
2 M5x16 bolt, large diameter washer [2x], nut

Installing passenger compartment relay and fuse holder



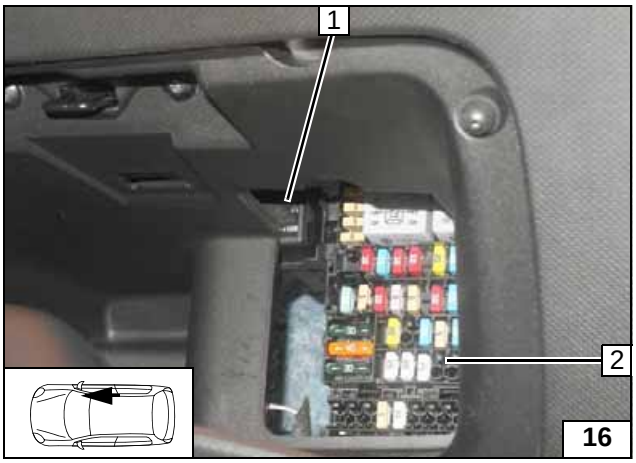
1 Relay K1
2 25A fuse F4
3 PWM GW

Installing relay K1, fuse F4 and PWM GW



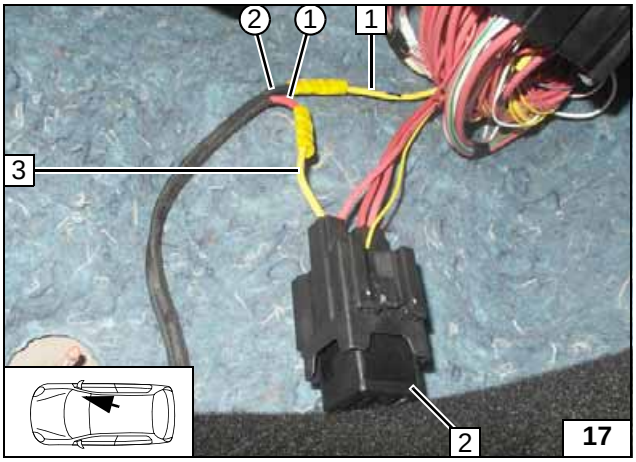
1 Passenger compartment relay and fuse holder wiring harness
2 Heater wiring harness

Connecting same colour wires of wiring harnesses



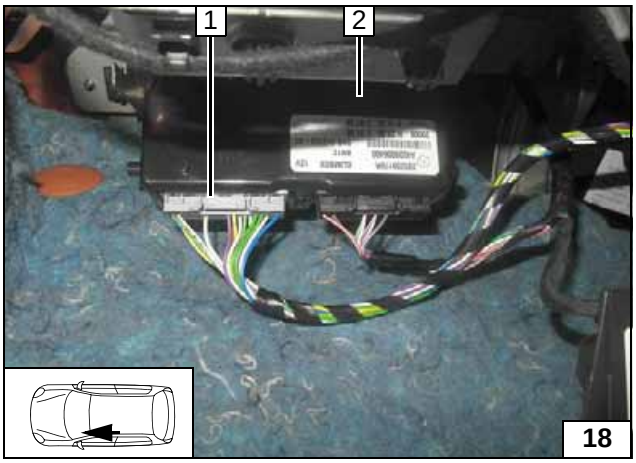
Detach socket of fan relay K33 **1** from passenger compartment fuse and relay module **2**.

Detaching fan relay



1 Yellow (ge) wire to fan motor M2, pin 1
2 Fan relay K33
3 Yellow (ge) wire of fan relay, pin 5
① Red (rt) wire of K1/87a, fan wiring harness
② Black (sw) wire of K1/30, fan wiring harness

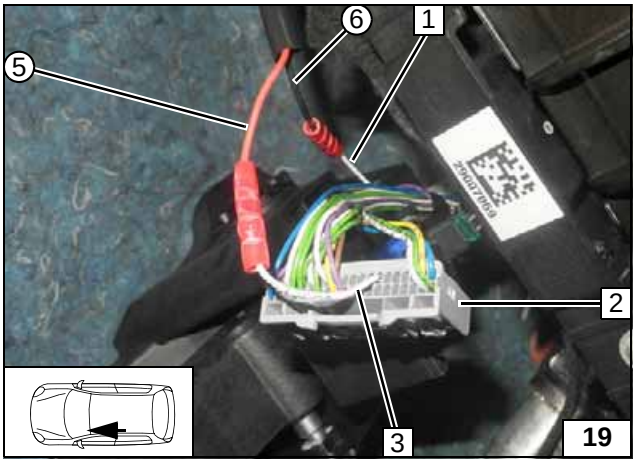
Connecting fan relay K33



Route PWM Gateway wiring harness to the left side of the vehicle.

1 Disconnect 40-pin grey connector
2 A/C control unit N22/1

A/C control unit connector

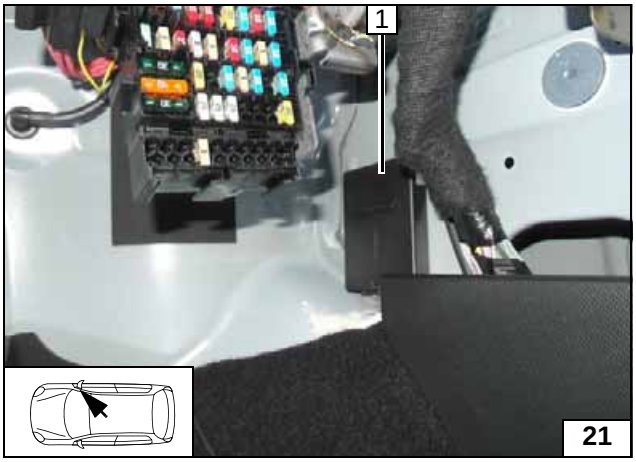


1 White (ws) wire of fan controller, Pin 5
2 40-pin grey connector
3 White (ws) wire of grey connector N22/1, pin 34
⑤ Red (rt) wire of PWM GW/IN from wiring harness for PWM control
⑥ Black (sw) wire of PWM GW/OUT from wiring harness for PWM control

Connecting A/C control unit

MultiControl CAR Option

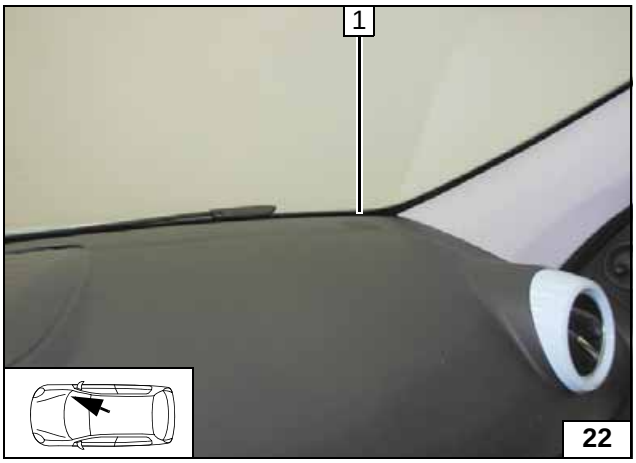
Installing MultiControl CAR



Remote Option (Telestart)

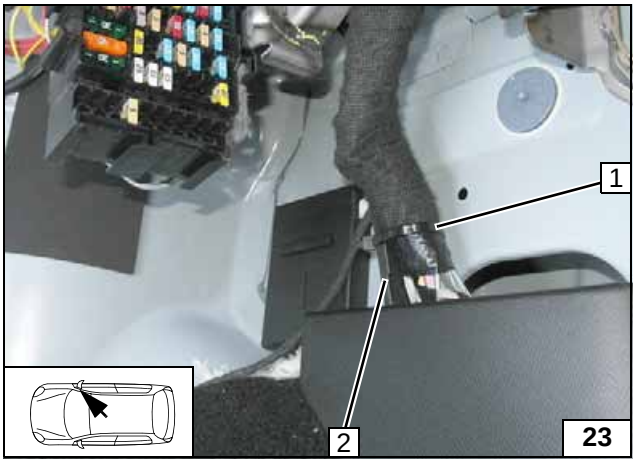
Fasten receiver **1** with double-sided adhesive tape.

Installing receiver



1 Aerial

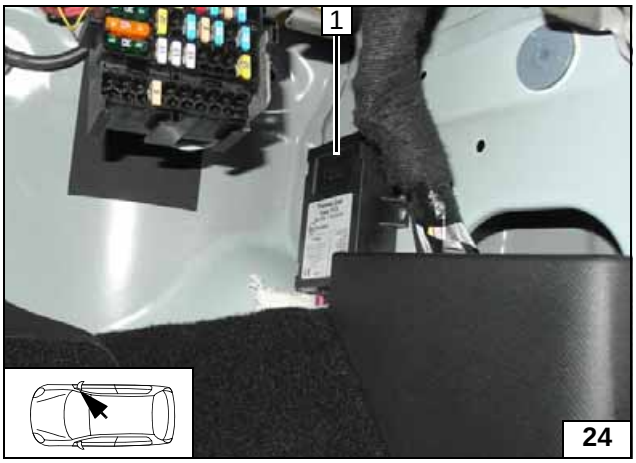
Installing aerial



Temperature sensor T100 HTM

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

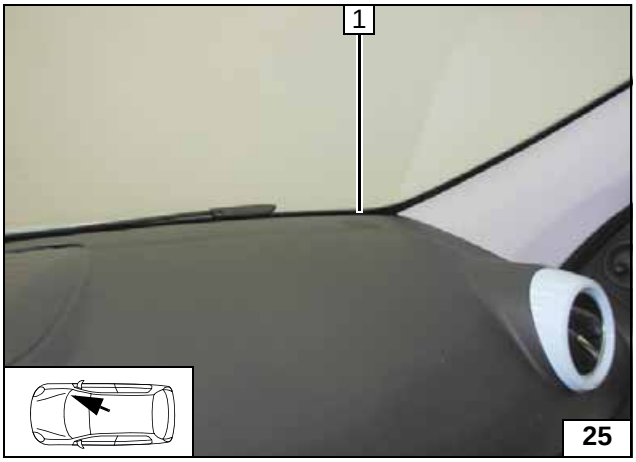
Installing temperature sensor



ThermoCall Option

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

Installing receiver



1 Aerial (optional)

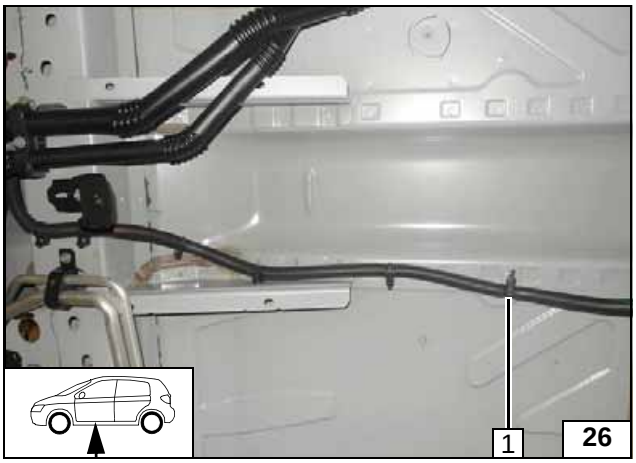
Installing aerial

Preparing Installation Location

Remove the fuel tank according to the manufacturer's instructions.

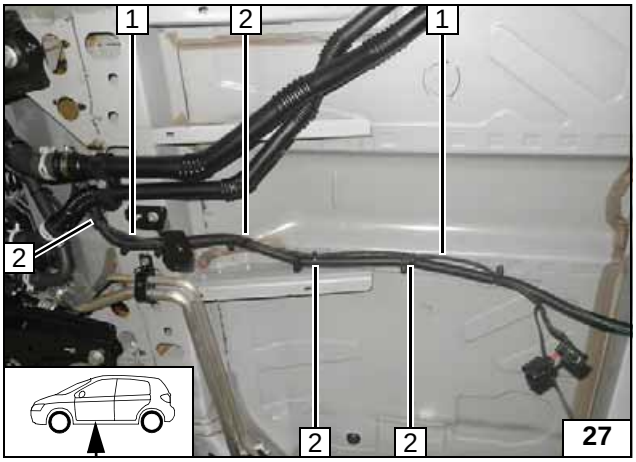
Detach original vehicle retaining clip **1** and reinstall on original vehicle stud bolt as shown.

Moving retaining clip



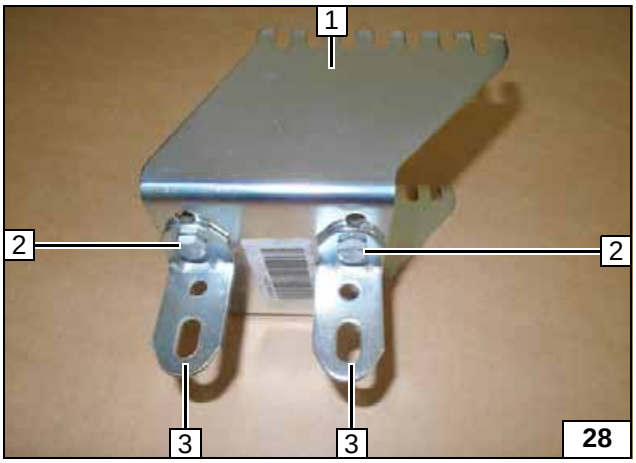
Fasten wiring harness of heater **1** on original vehicle corrugated tube using cable tie **2** [4x].

Routing wiring harness of heater



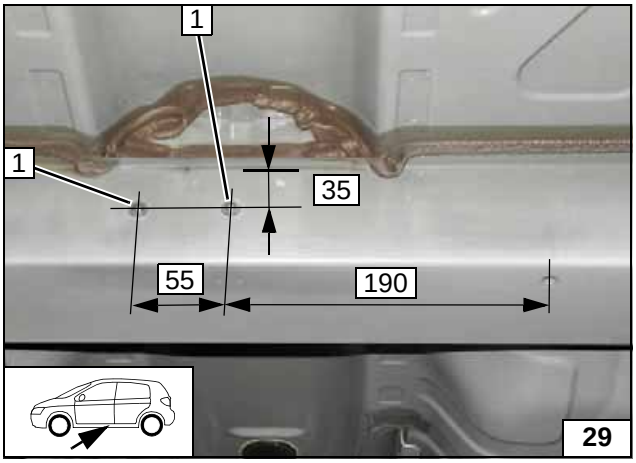
1 Bracket
2 M6x12 bolt, flanged nut [2x each]
3 Angle bracket [2x]

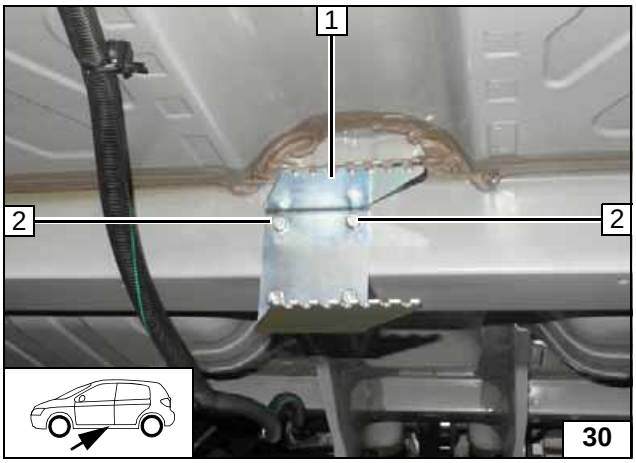
Premounting bracket



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

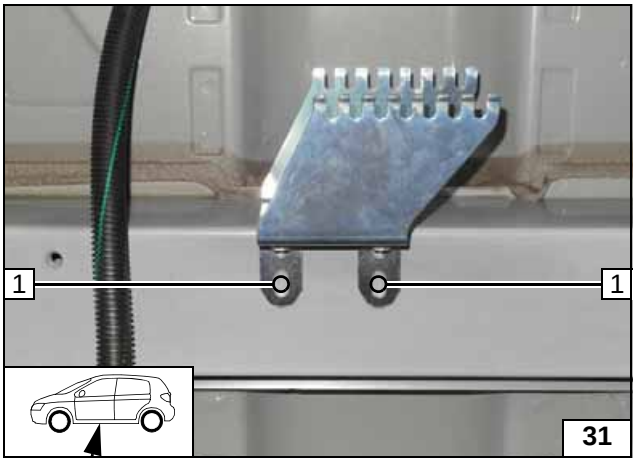
Installing rivet nut





1 Bracket
2 M6x20 bolt [2x]

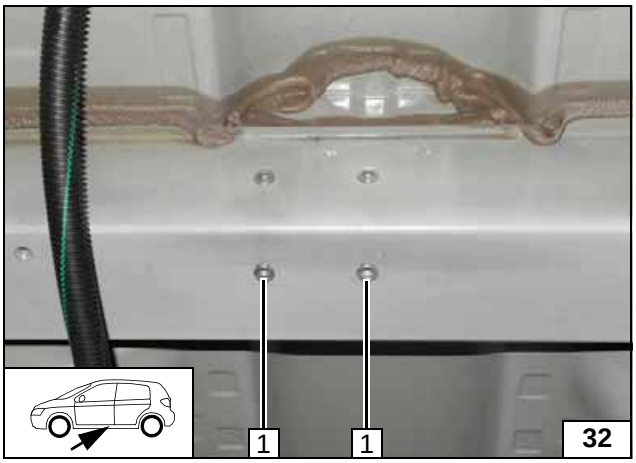
Installing bracket loosely



Align bracket with both angles on the lower edge of the cross member.

1 Hole pattern [2x]

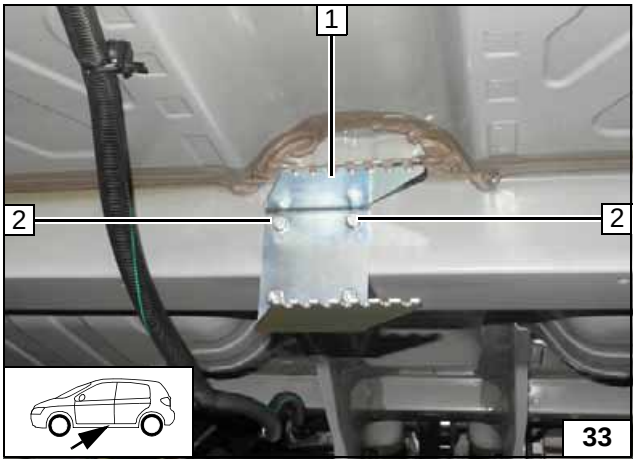
Copying hole pattern



Remove bracket.

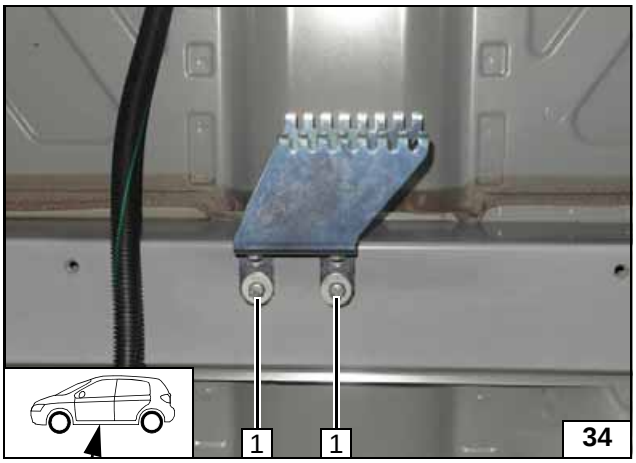
1 9.1 mm dia. hole, rivet nut [2x each]

Installing rivet nut



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

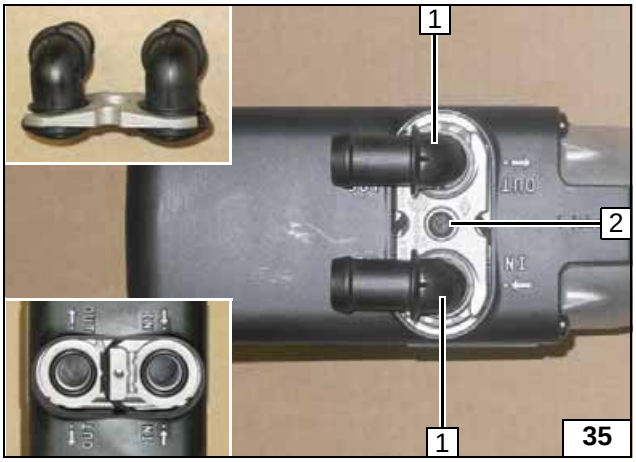
Installing bracket



1 M6x20 bolt, spring lockwasher, large diameter washer [2x each]

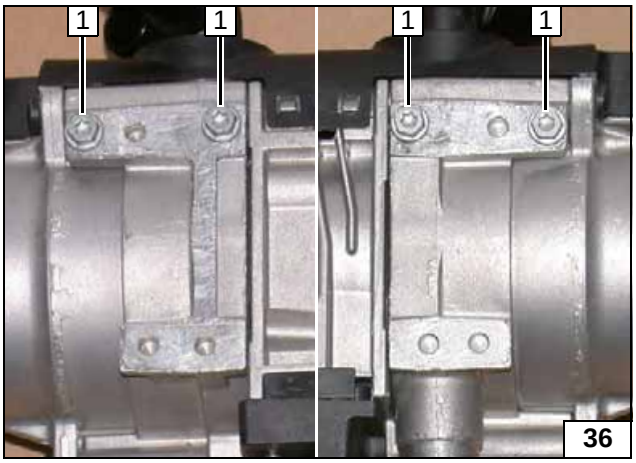
Installing bracket

Preparing Heater



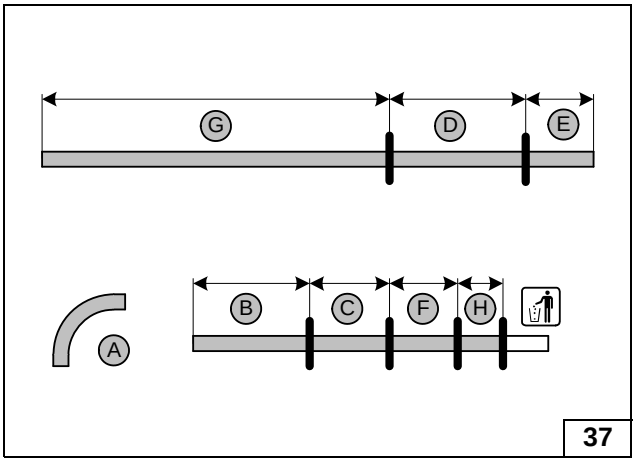
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



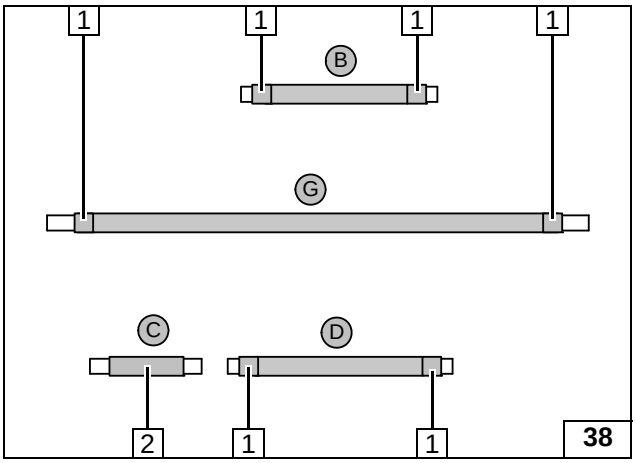
Screw 5x13 self-tapping bolts **1** [4x] into existing holes by a maximum of 3 thread turns.

Premounting bolts loosely



A = 90°, 18mm dia.
B = 420
C = 120
D = 670
E = 110
F = 110
G = 1220
H = 70

Cutting hoses to length



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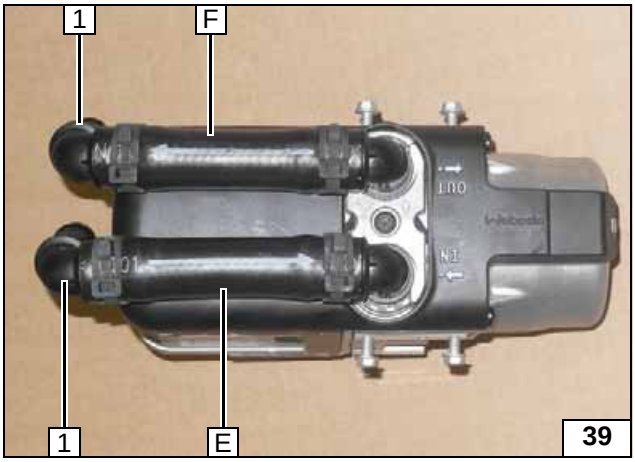
Slide braided protection hose onto hoses **B**, **D** and **G** and cut to length. Cut heat shrink plastic tubing to size.

1 Heat shrink plastic tubing, 60mm long [6x]
2 Heat shrink plastic tubing, 80mm long

Preparing hoses

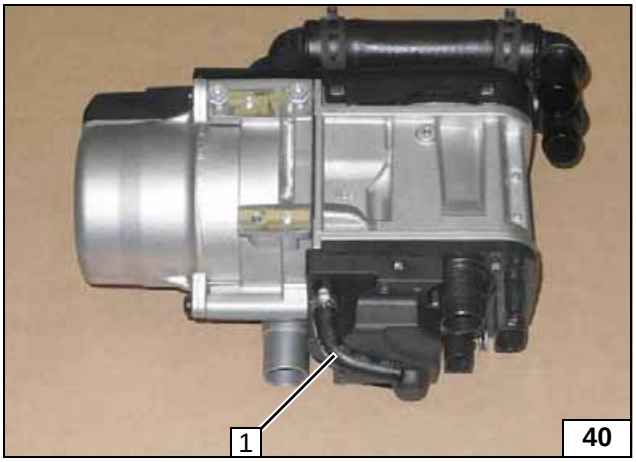


39

All spring clips = 25 mm dia.

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

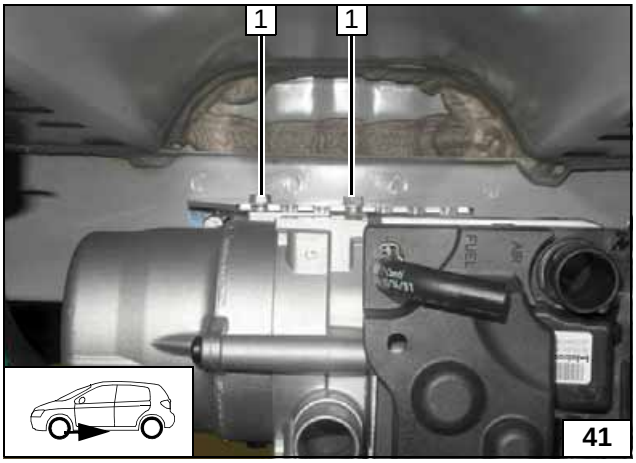
Premounting hoses



40

1 90° moulded hose, 10mm dia. clamp

Premounting 90° moulded hose

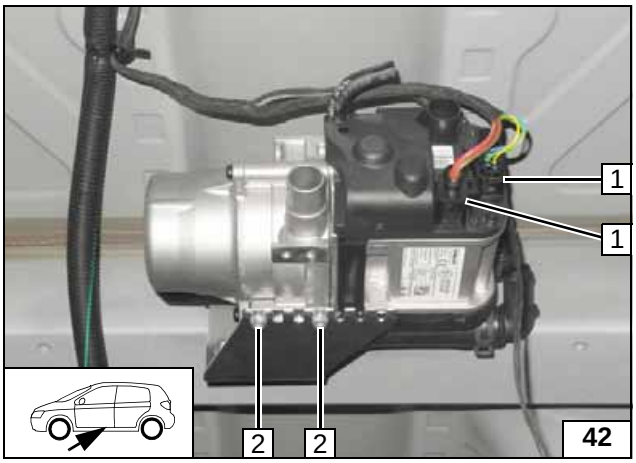


41

Installing Heater

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

Installing heater



1 Heater wiring harness connector [2x]
2 Tighten 5x13 self-tapping bolt [2x]

Fuel

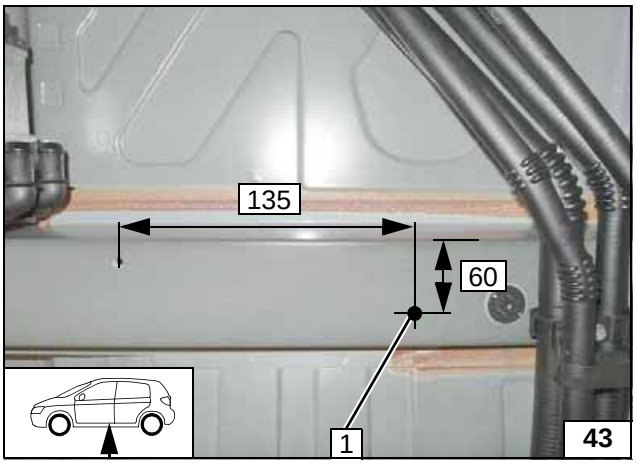
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

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.

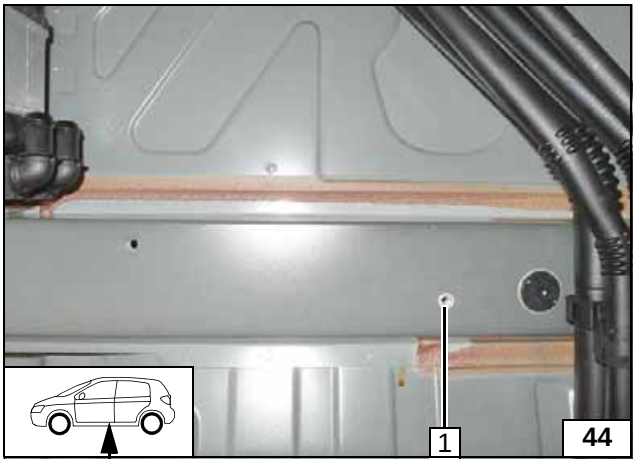
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.

Copying hole pattern



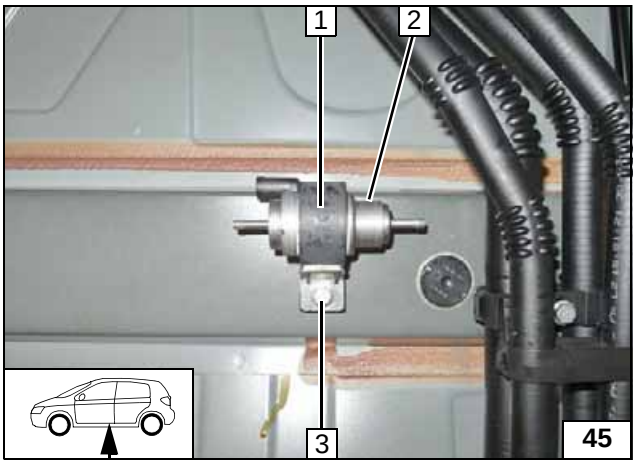
1 Hole pattern

Installing rivet nut

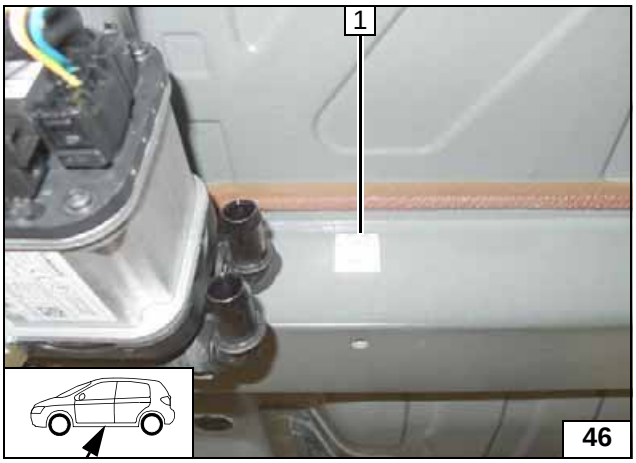


1 9 mm dia. hole, rivet nut

Installing metering pump



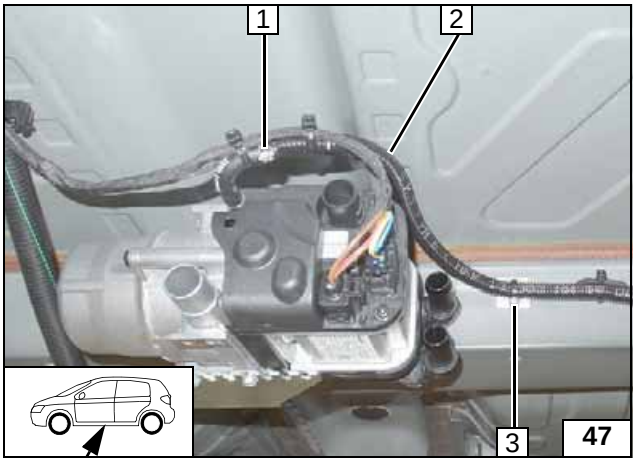
1 Metering pump mount
2 Metering pump
3 M6x25 bolt



Degrease bonding surfaces.

1 Adhesive base

Installing adhesive base

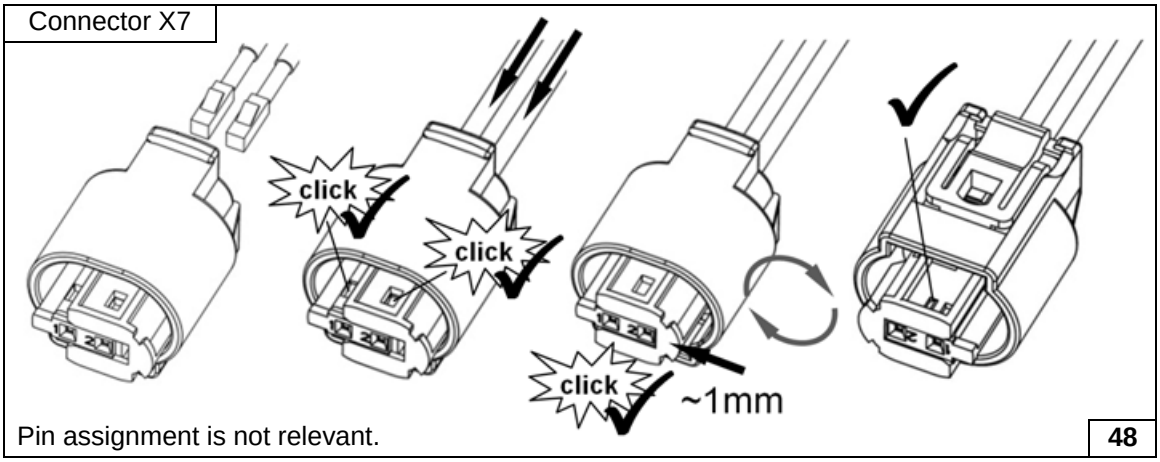


Cut approx. 2000mm from fuel line and route together with wiring harness of metering pump **2** in 10mm dia. corrugated tube **2** to metering pump.

1 Fuel line, 10mm dia. clamp
3 Cable tie through adhesive base

Connecting heater

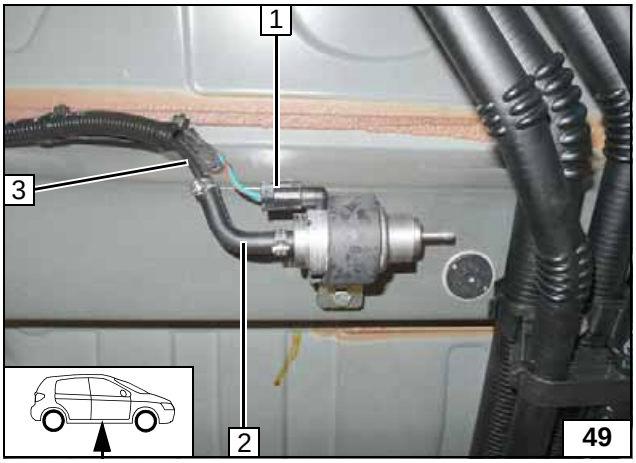
Connector X7



Pin assignment is not relevant.

48

Completing metering pump connector

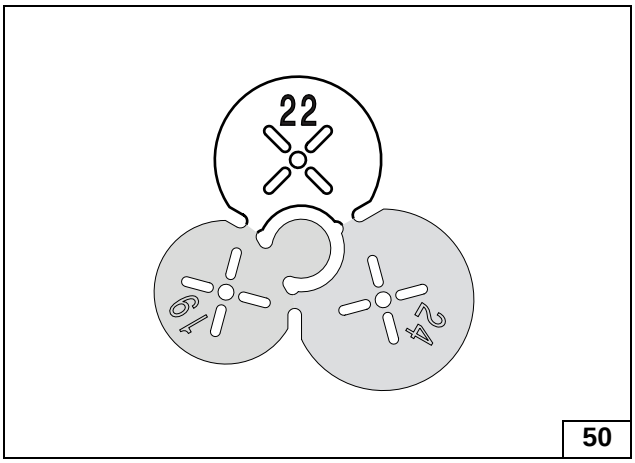


1 Metering pump wiring harness, connector X7 mounted
2 90° moulded hose, 10mm dia. clamp [2x]
3 Fuel line of heater

Connecting metering pump

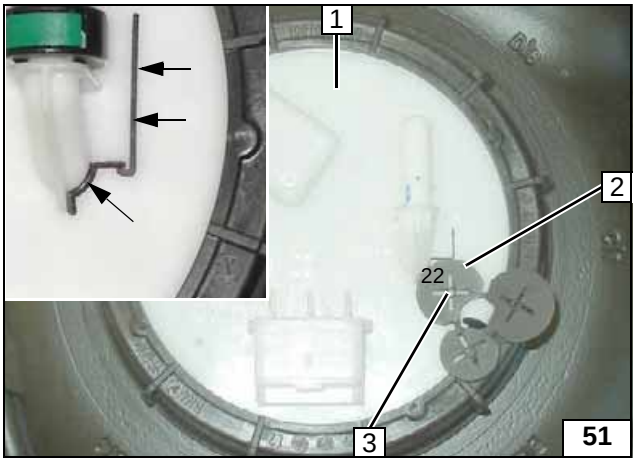
FuelFix Installation

Drilling template



50

Copying hole pattern



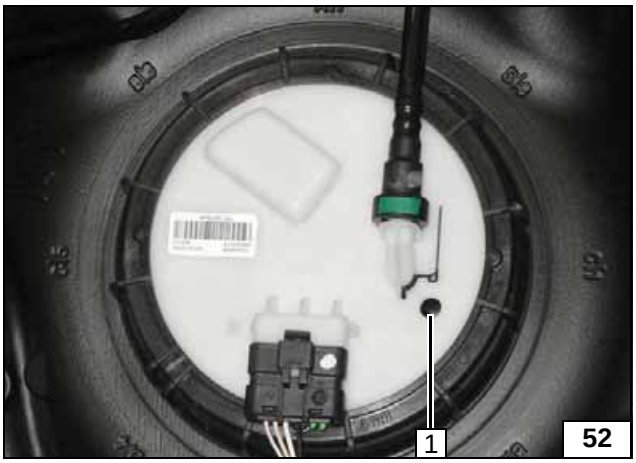
51

Work steps F1 and F2.

Remove the fuel tank according to the manufacturer's instructions.

1 Fuel tank sending unit
2 Position 22mm dia. template at the markings
3 Hole pattern

Hole for FuelFix

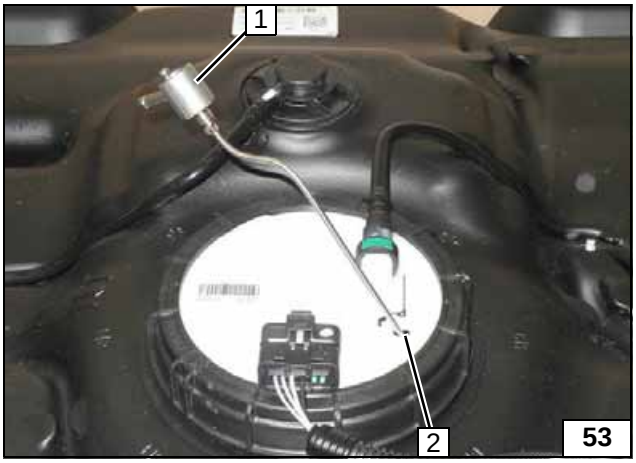


52

Work step F3.

1 Hole made with provided drill

Preparing FuelFix



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Work steps F4 and F5.

Bend FuelFix **1** according to template and cut to length.
Insert into hole **2**.

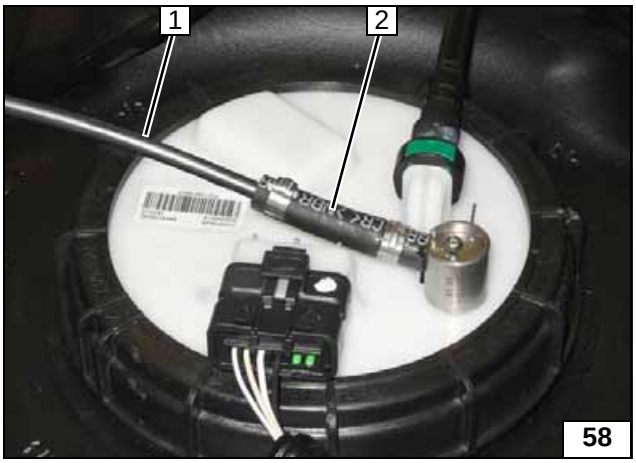
Work step F5.

Inserting FuelFix

Inserting FuelFix

Inserting FuelFix

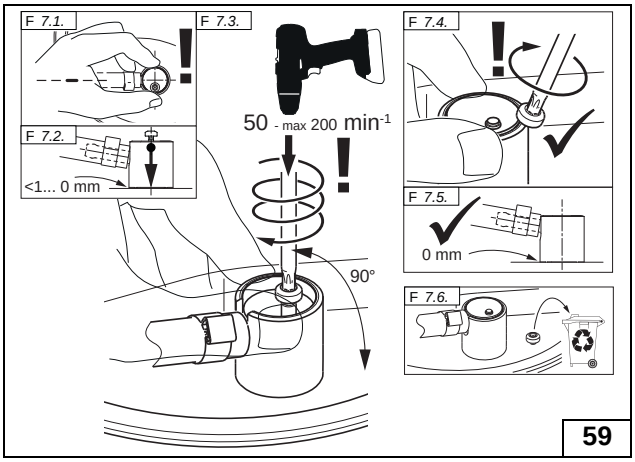
Inserting FuelFix



Work step F6.

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

Connecting fuel line

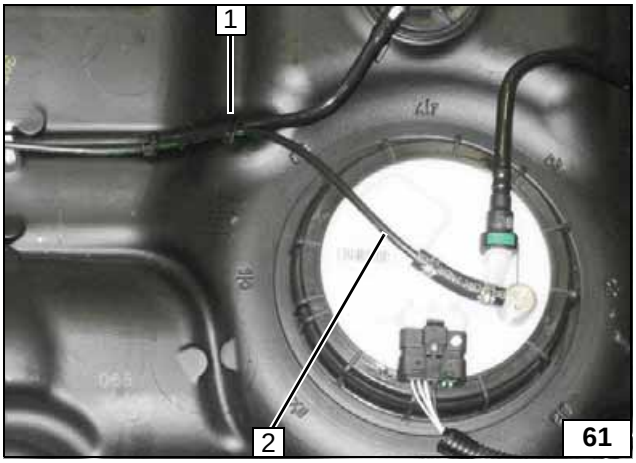


Work step F7.

Installing FuelFix

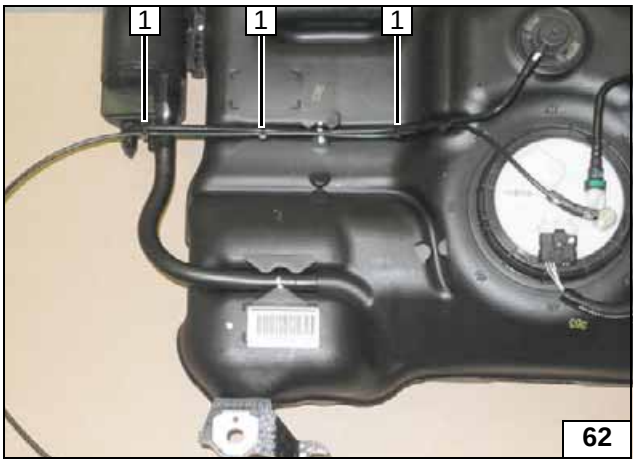
Work step F8.

Checking firm seating of FuelFix



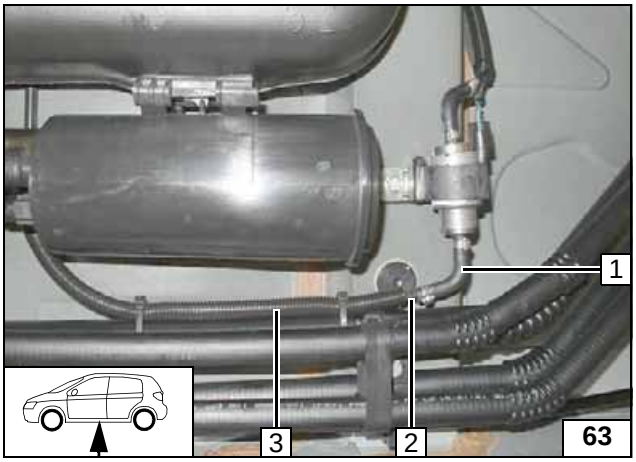
1 Cable tie as tension relief
2 Fuel line of FuelFix

Securing fuel line



1 Cable tie [3x] on original vehicle line

Securing fuel line



Install fuel tank in accordance with manufacturer's instructions.
Ensure sufficient distance from neighbouring components, correct if necessary.

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

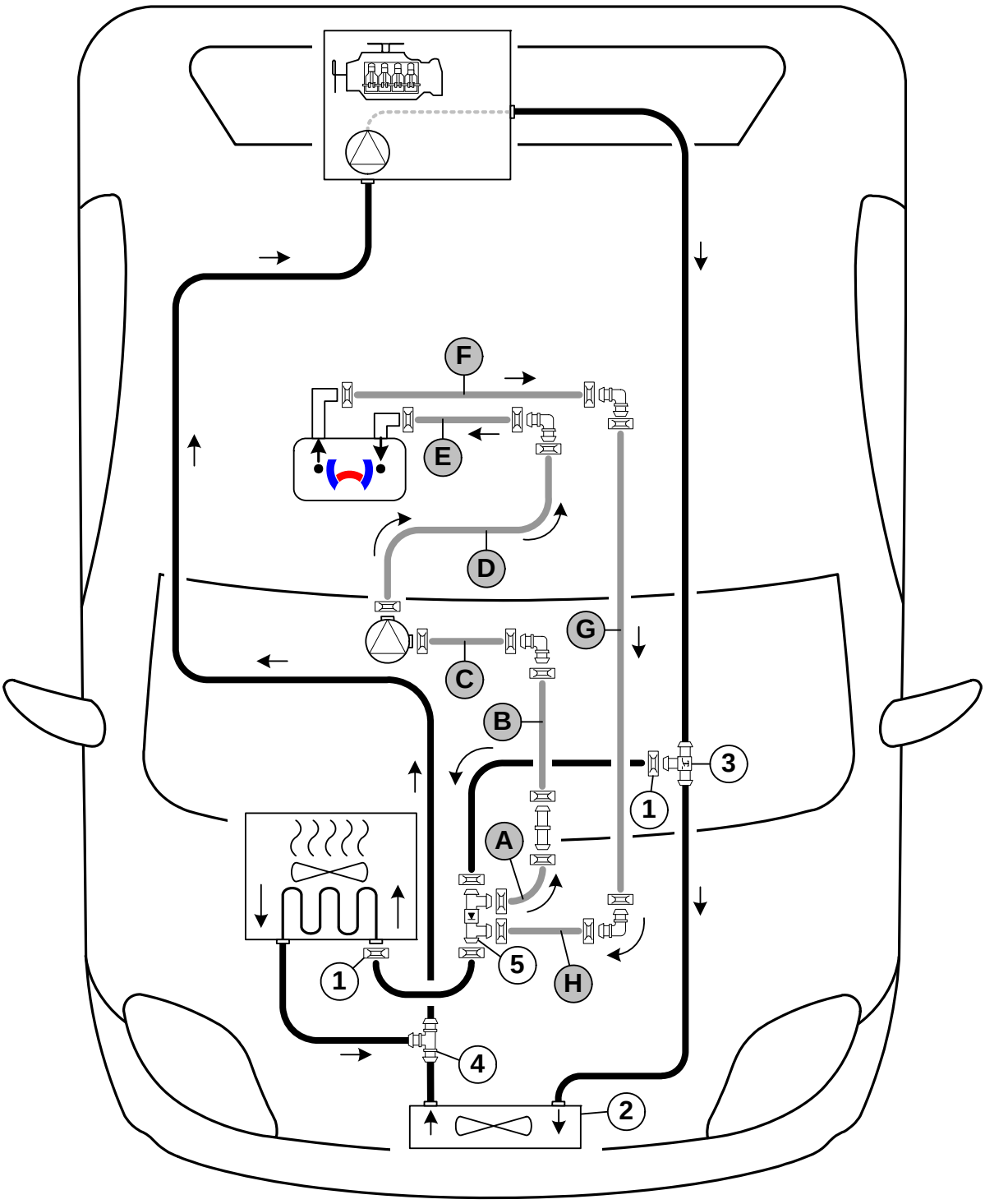
Connecting metering pump

Coolant Circuit for 0.9 Petrol Vehicles

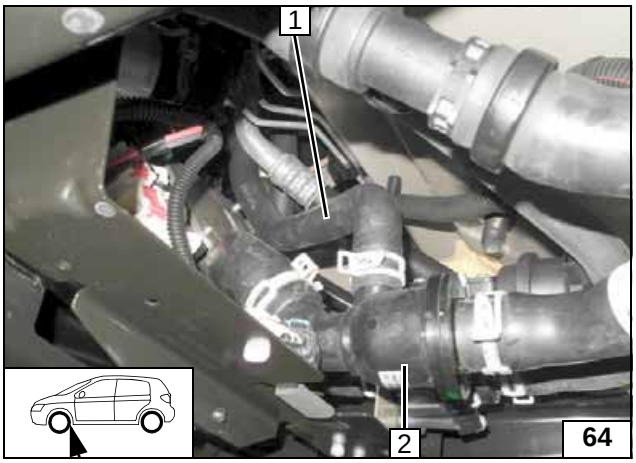
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

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

Hose routing diagram



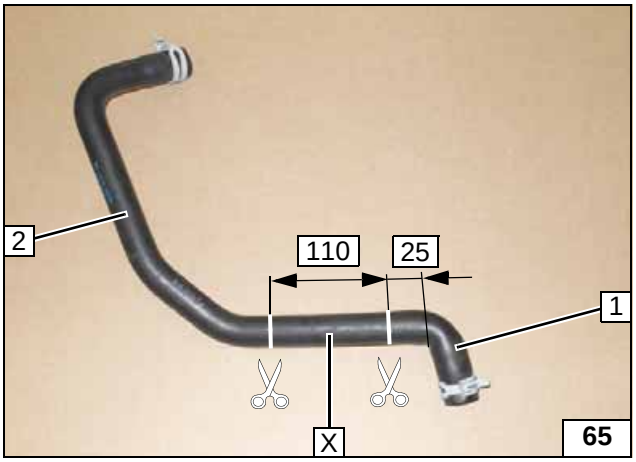
All spring clips without a specific designation = 25mm dia. All connecting pipes and = 18x18mm dia.
1 = Original vehicle spring clip. **2** = Radiator. **3** = Original vehicle thermostat .
4 = Original vehicle T-piece. **5** = Check valve .



Remove hose from heat exchanger inlet **1**. Spring clips will be reused!

2 Thermostat

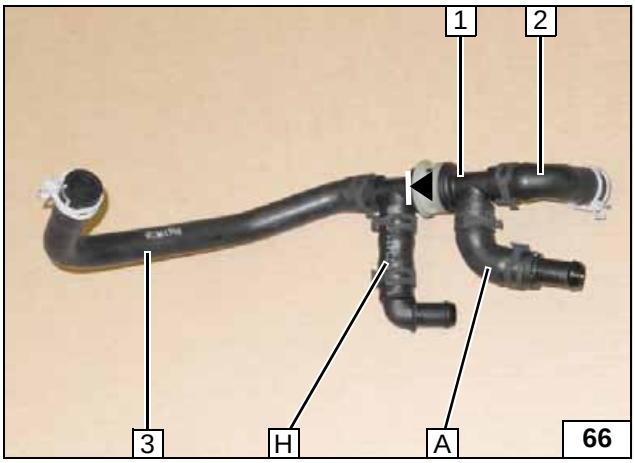
Cutting point



1 Thermostat hose section
2 Heat exchanger inlet hose section

X =

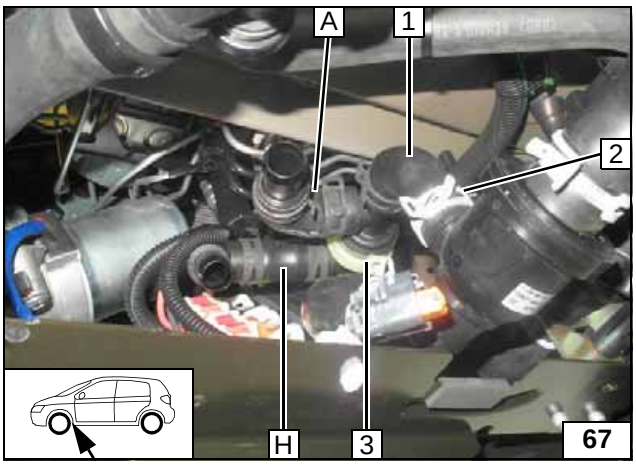
Cutting point



Check the direction of flow of check valve **1**!

2 Thermostat hose section
3 Heat exchanger inlet hose section

Premounting check valve

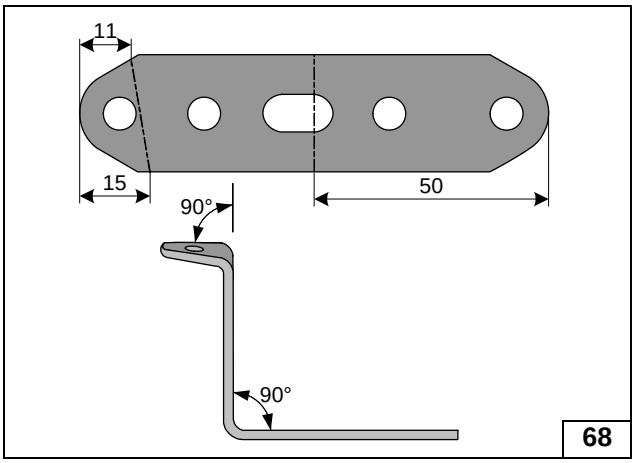


Install hose section of heat exchanger inlet on connection piece of heat exchanger inlet and thermostat using original vehicle spring clip. Align hoses **A** and **H** as shown.

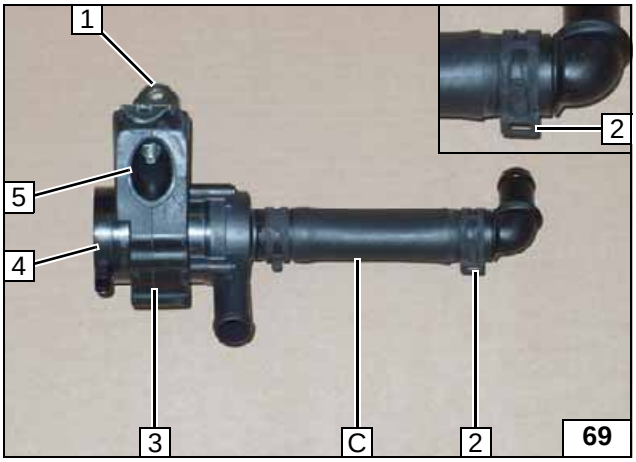
1 Thermostat hose section
2 Original vehicle spring clip
3 Thermostat

Installing check valve

Preparing perforated bracket



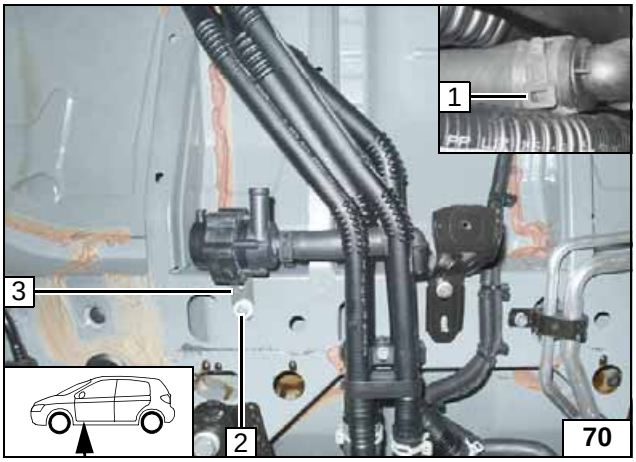
Premounting circulating pump



Install spring clip **2** as shown.

- **1** Perforated bracket
- **3** Circulating pump mount
- **4** Circulating pump
- **5** M6x25 bolt, flanged nut

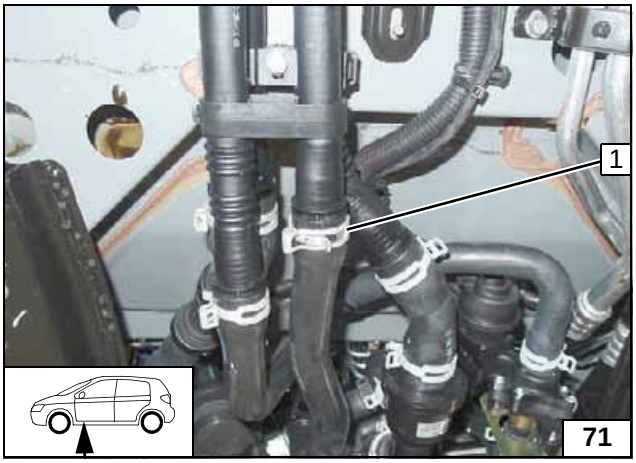
Installing circulating pump



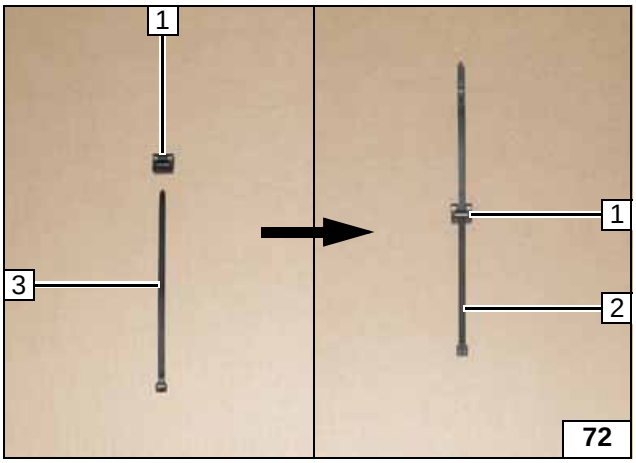
Check that spring clip **1** is positioned as shown, correct if necessary

- **2** M6x20 bolt, large diameter washer, flanged nut, existing hole
- **3** Perforated bracket

Turning spring clip

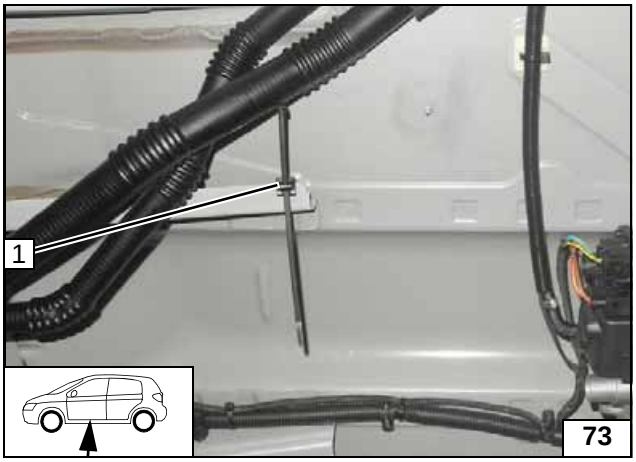


Turn original vehicle spring clip **1** as shown.



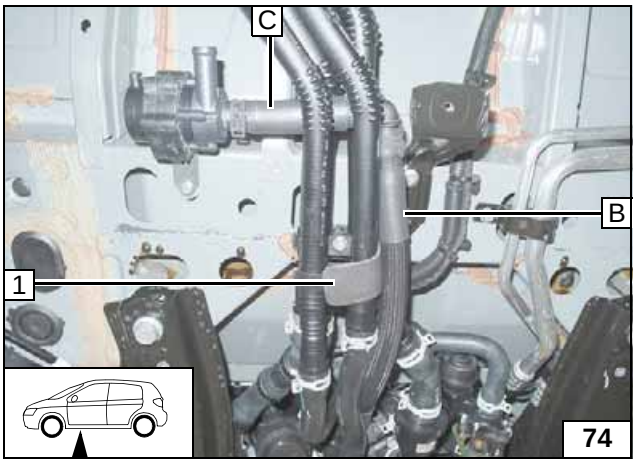
Discard cable tie **3**. Insert 200mm long cable tie **2** in retaining clip **1** [3x]!

Premounting retaining clip



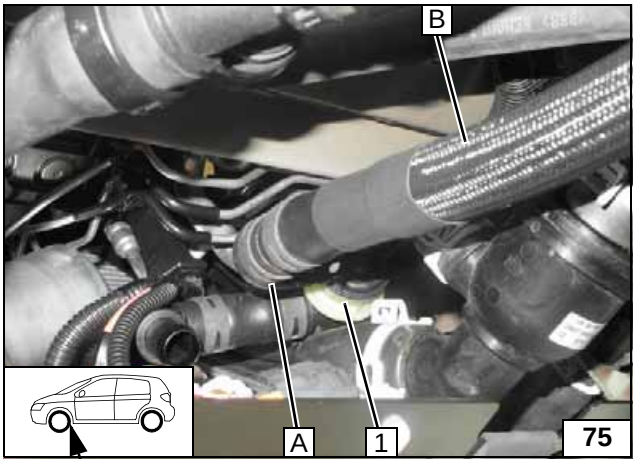
1 Prepared retaining clip

Installing retaining clip



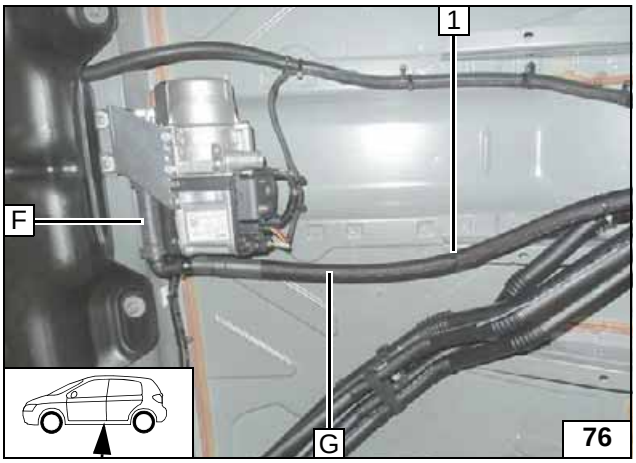
1 Self-adhesive foam

Connection / routing of hose B



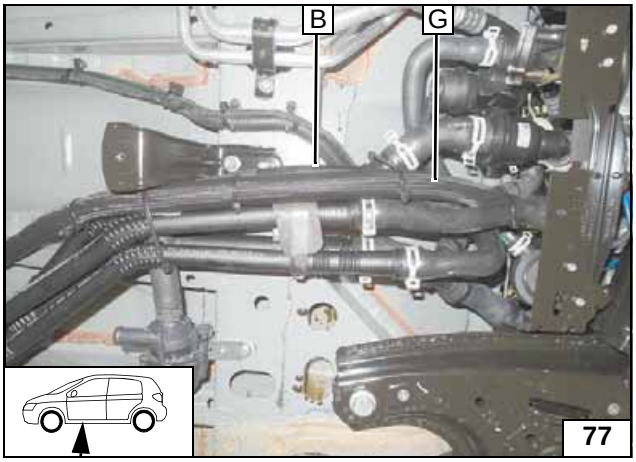
1 Check valve

Connecting check valve



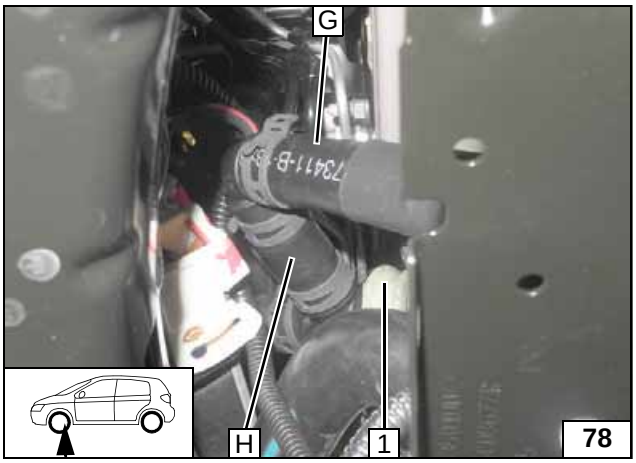
Route hose **G** through cable tie of retaining clip **1**. Close cable tie!

Connection / routing of hose G



Secure hose **G** using a cable ties as shown.

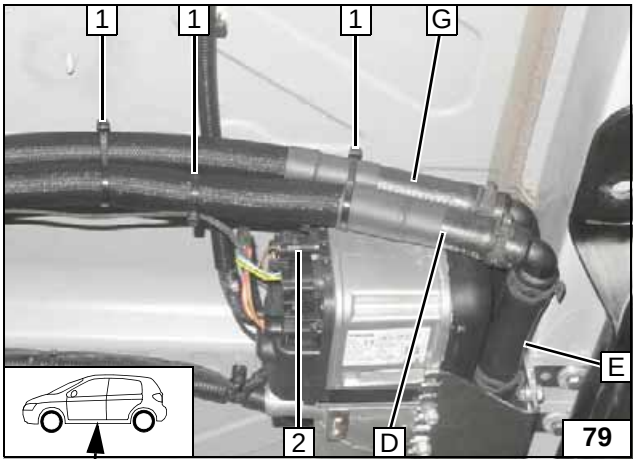
Routing of hose G



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

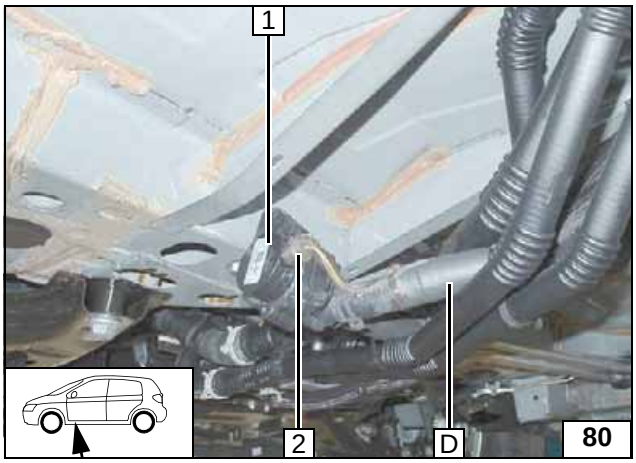
1 Check valve

Connecting check valve



1 Cable tie [3x]
2 Connector of circulating pump wiring harness

Connection / routing of hose D



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

1 Circulating pump
2 Connector of circulating pump wiring harness

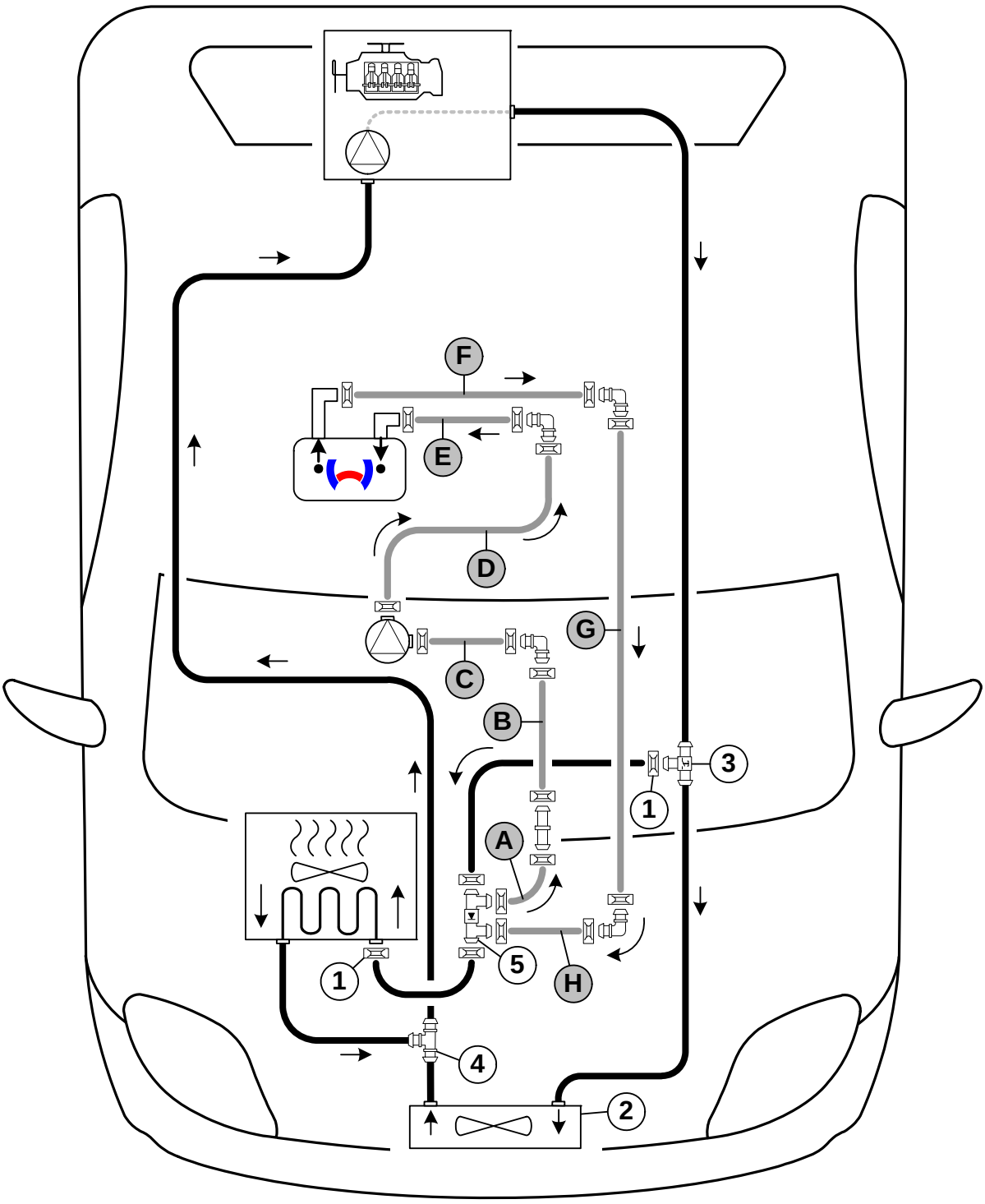
Connecting circulating pump

Coolant Circuit for 1.0 Petrol Vehicles

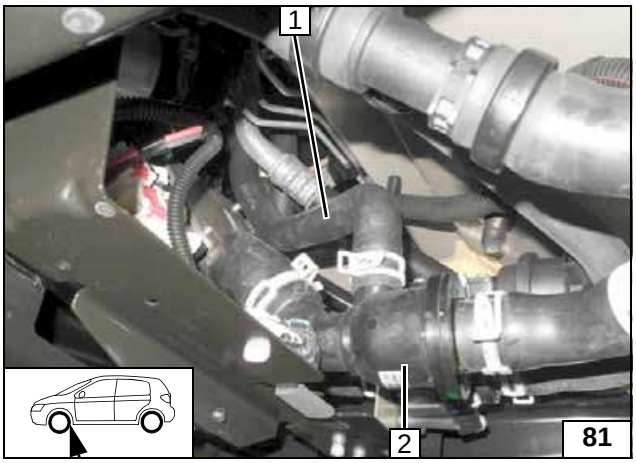
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

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

Hose routing diagram



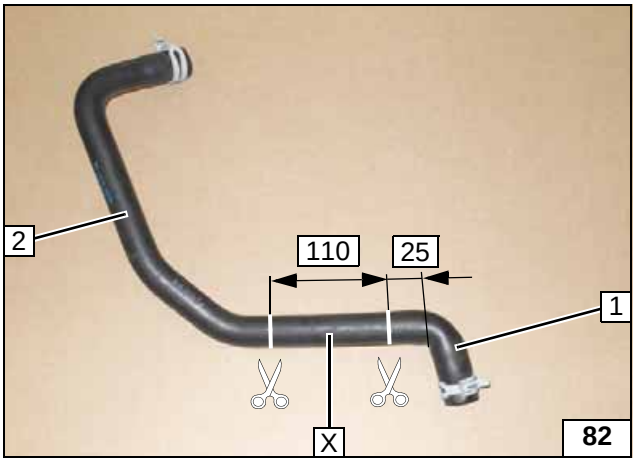
All spring clips without a specific designation = 25mm dia. All connecting pipes and = 18x18mm dia.
1 = Original vehicle spring clip. **2** = Radiator. **3** = Original vehicle thermostat .
4 = Original vehicle T-piece. **5** = Check valve .



Remove hose from heat exchanger inlet **1**. Spring clips will be reused!

2 Thermostat

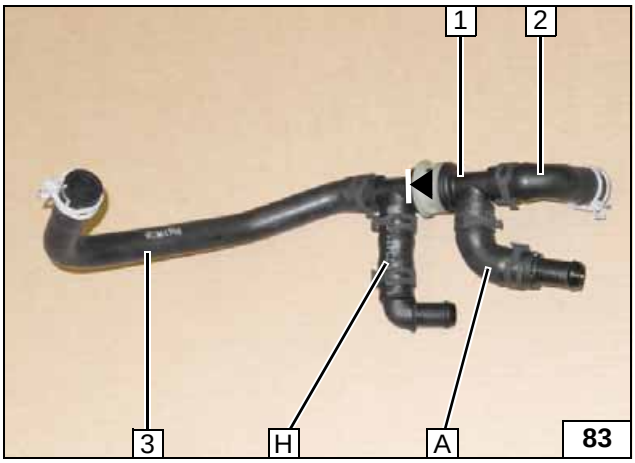
Cutting point



1 Thermostat hose section
2 Heat exchanger inlet hose section

X = 

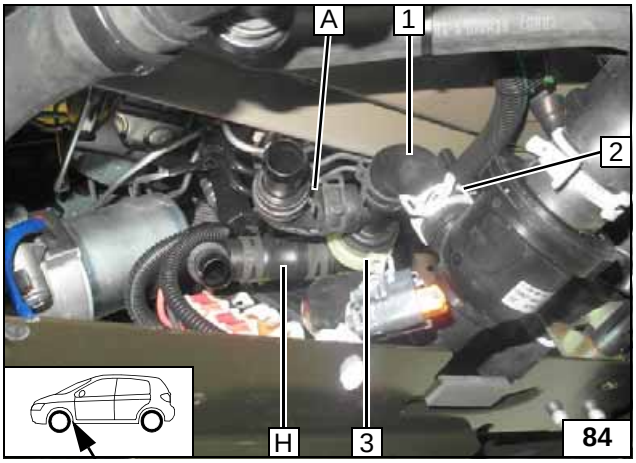
Cutting point



Check the direction of flow of check valve **1**!

2 Thermostat hose section
3 Heat exchanger inlet hose section

Premounting check valve

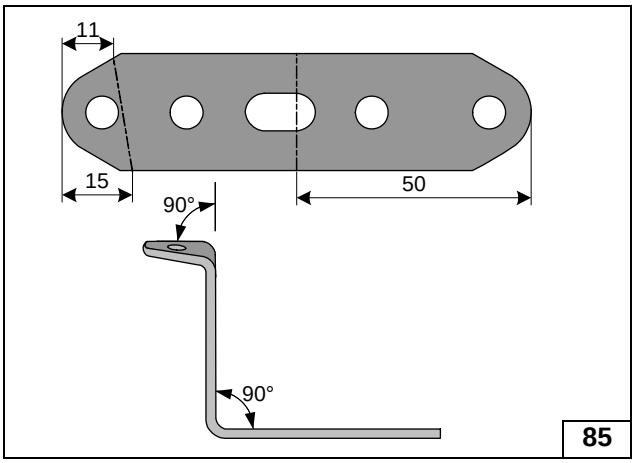


Install hose section of heat exchanger inlet on connection piece of heat exchanger inlet and thermostat using original vehicle spring clip. Align hoses **A** and **H** as shown.

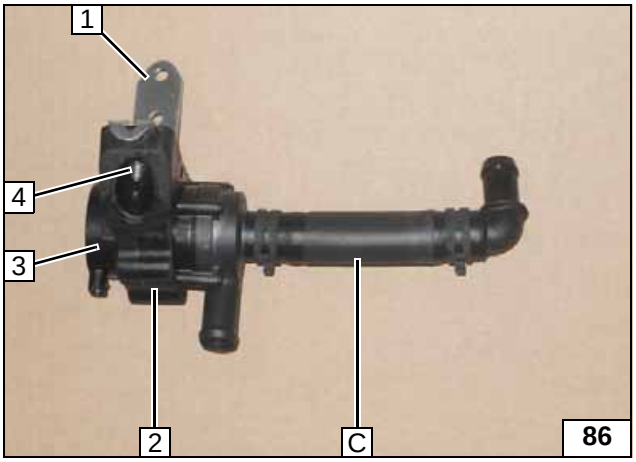
1 Thermostat hose section
2 Original vehicle spring clip
3 Thermostat

Installing check valve

Preparing perforated bracket 1

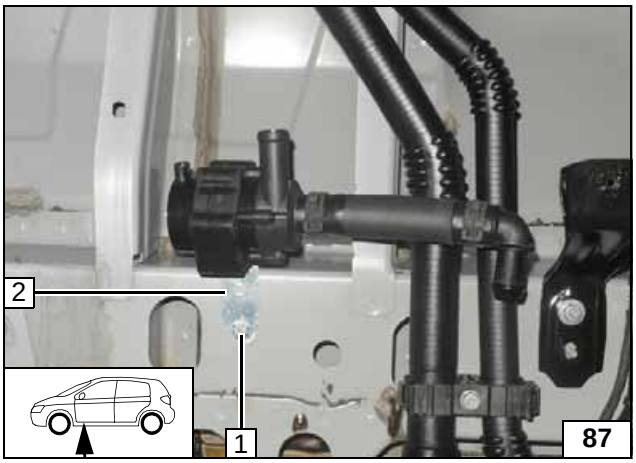


Premounting circulating pump



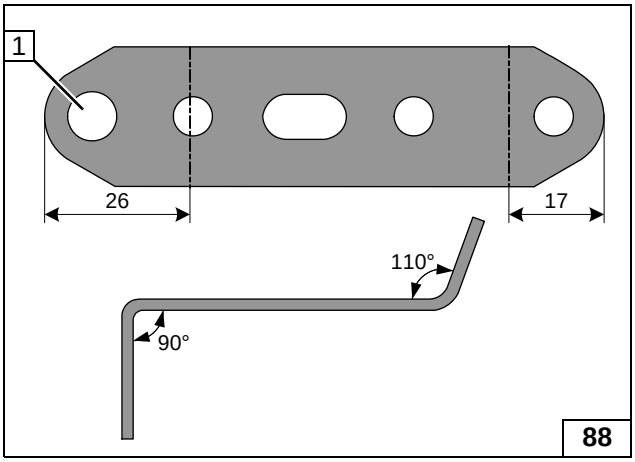
1 Perforated bracket
2 Circulating pump mount
3 Circulating pump
4 M6x25 bolt, flanged nut

Installing circulating pump

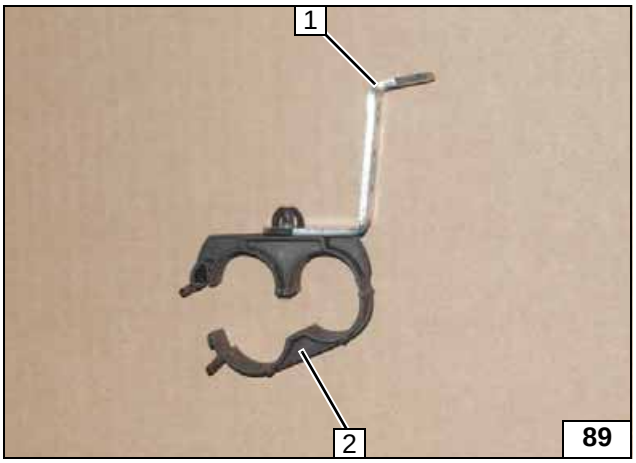


1 M6x20 bolt, large diameter washer, flanged nut, existing hole
2 Perforated bracket 1

Preparing perforated bracket 2

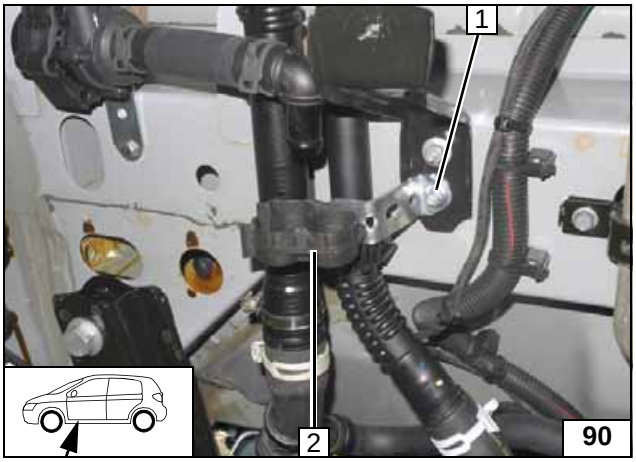


1 Drill out hole to 8 mm dia.



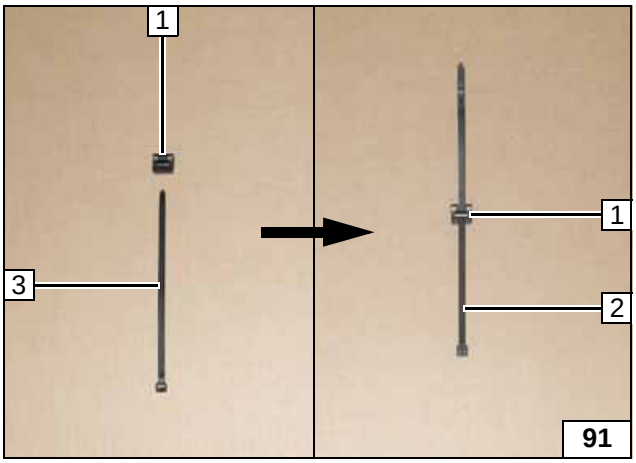
1 Perforated bracket 2
2 Lockable double hose bracket in 8mm dia. hole

Premounting hose bracket



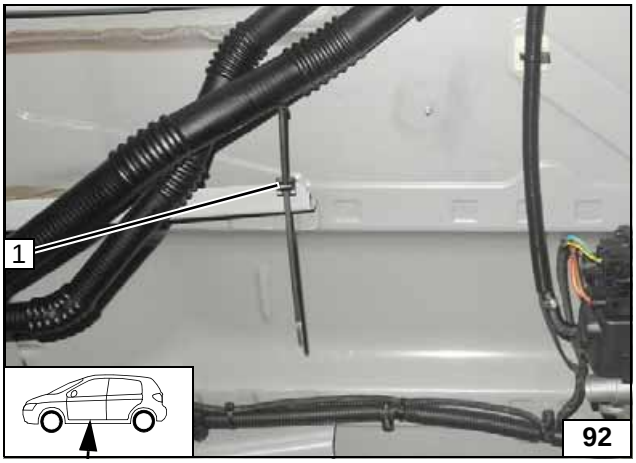
1 M6 flanged nut on original vehicle stud bolt
2 Lockable double hose bracket

Installing perforated bracket



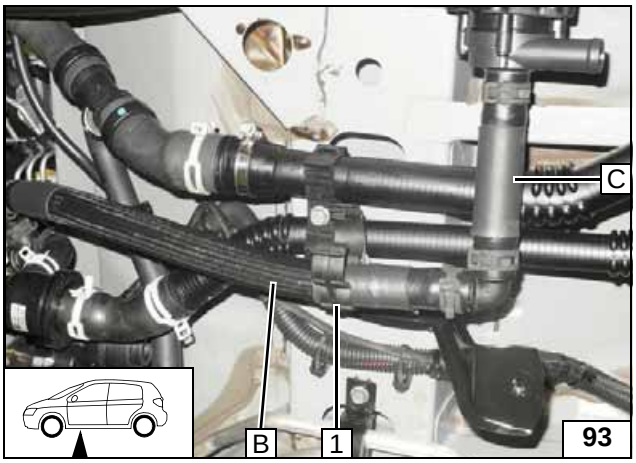
Discard cable tie **3**. Insert 200mm long cable tie **2** in retaining clip **1** [3x]!

Premounting retaining clip



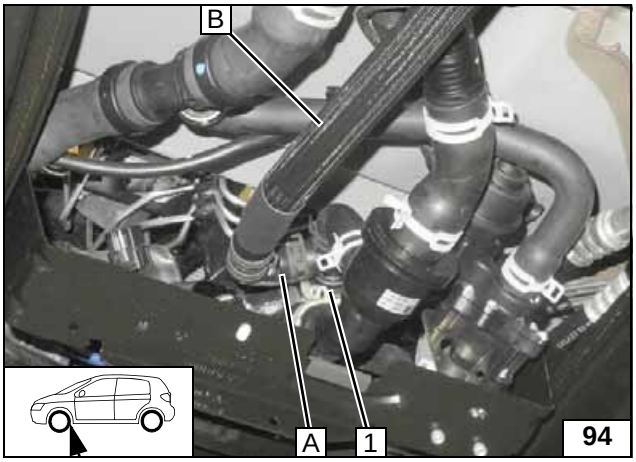
1 Prepared retaining clip

Installing retaining clip



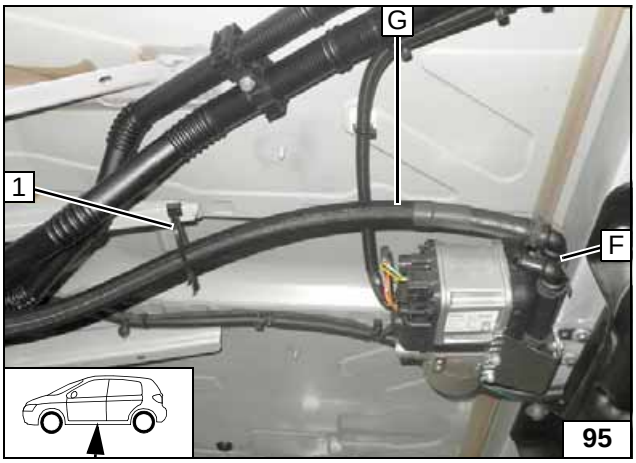
Route hose **B** through lockable double hose bracket **1**.

Connection / routing of hose B



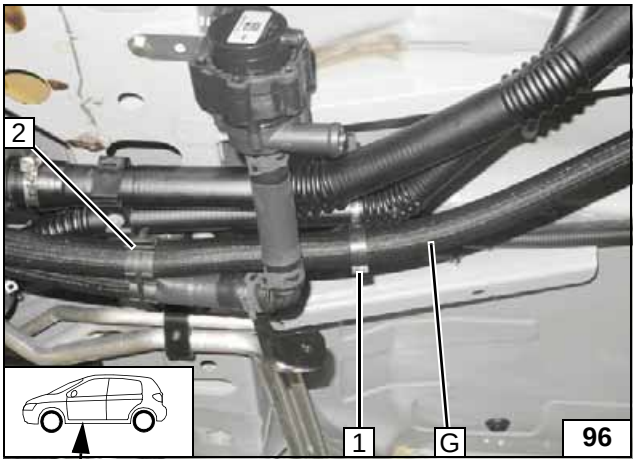
1 Check valve

Connecting check valve



Route hose **G** through cable tie of retaining clip **1**. The cable tie will be closed later.

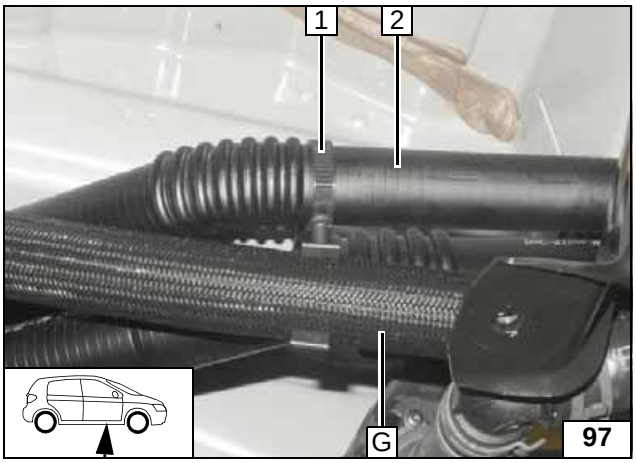
Connection / routing of hose G



Route hose **G** through lockable double hose bracket **2**. Close locking device.

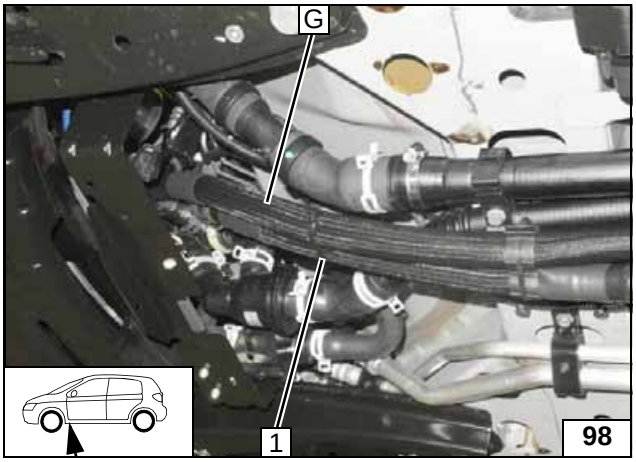
1 Hose bracket between hose **G** and original vehicle hose (see next figure)

Routing of hose G



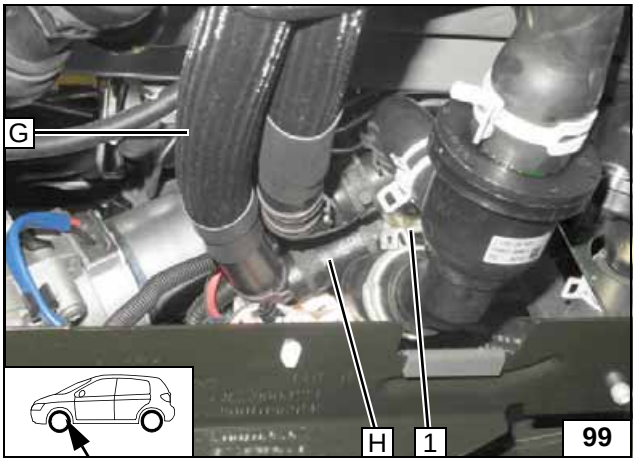
1 Align hose bracket
2 Original vehicle hose

Routing of hose G



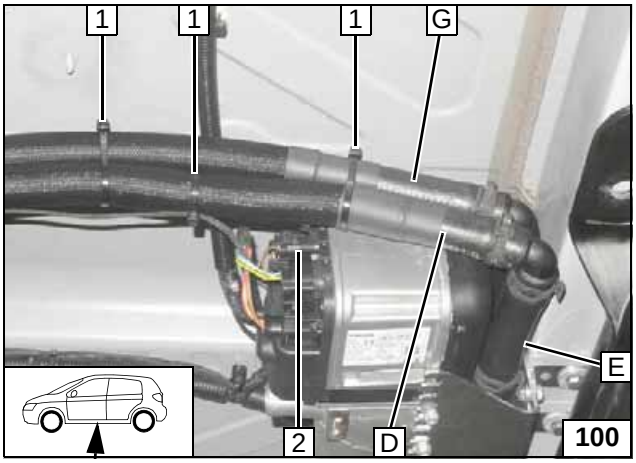
1 Cable tie

Routing of hose G



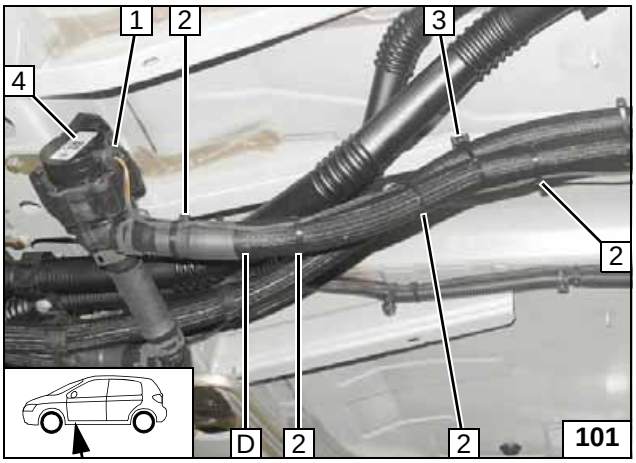
1 Check valve

Connecting check valve



1 Cable tie [3x]
2 Connector of circulating pump wiring harness

Connection / routing of hose D

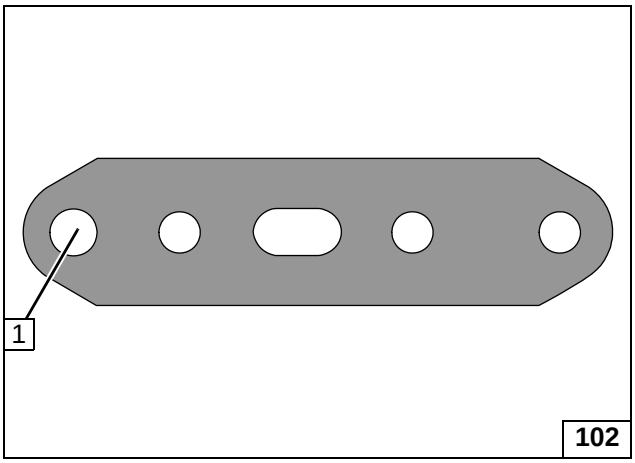


Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

1 Connector of circulating pump wiring harness
2 Cable tie [4x]
3 Close cable tie of retaining clip
4 Circulating pump

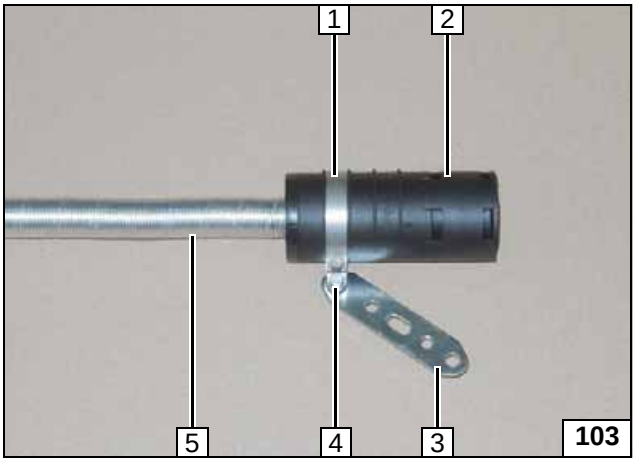
Connecting circulating pump

Combustion Air



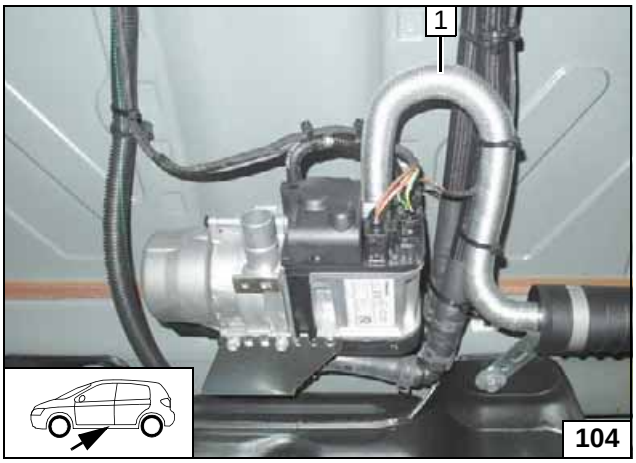
1 Drill out hole to 8.5 mm dia.

Preparing perforated bracket



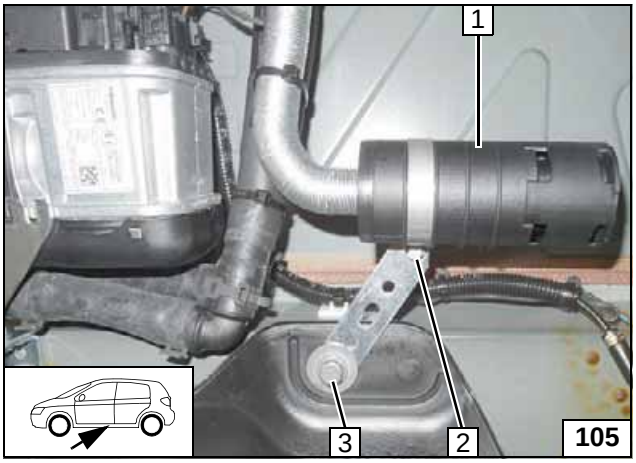
1 51mm dia. clamp
2 Silencer
3 Perforated bracket
4 Loosely mount M5x16 bolt, flanged nut
5 Combustion air pipe

Premounting silencer



1 Combustion air pipe

Installing combustion air pipe



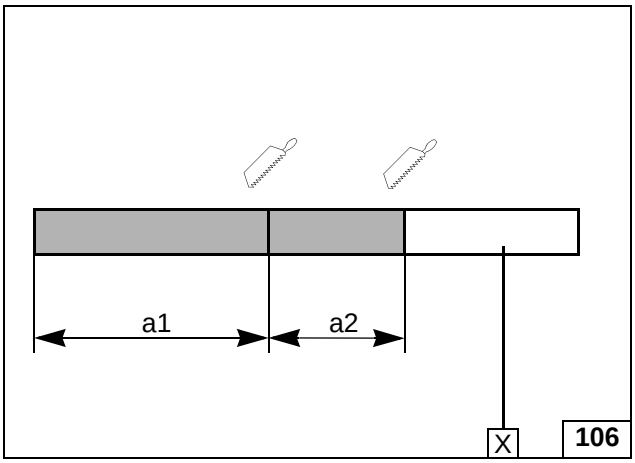
1 Align silencer
2 Tighten M5x16 bolt
3 Original vehicle bolt, original vehicle large diameter washer

Aligning / securing silencer

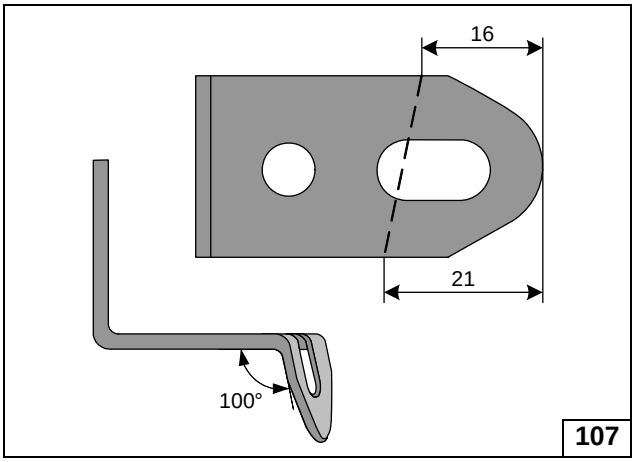
Exhaust Gas

a1 = 470
a2 = 190

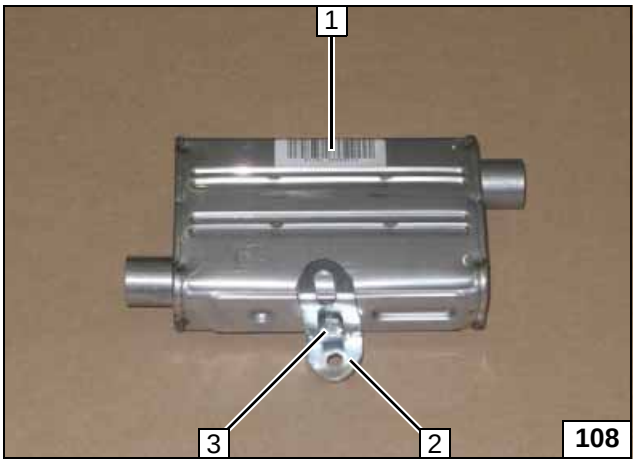
X =



Preparing exhaust pipe

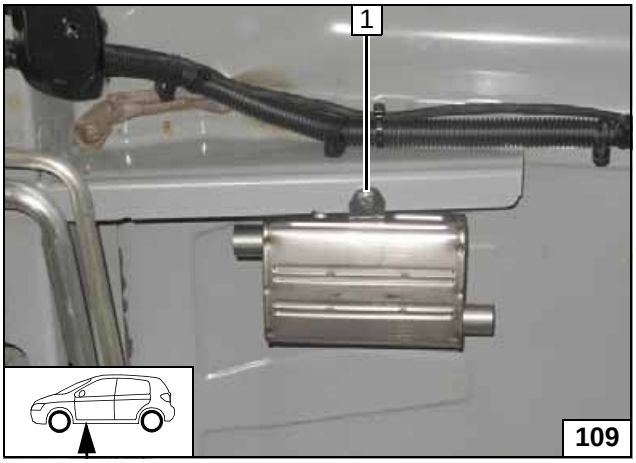


Preparing angle bracket



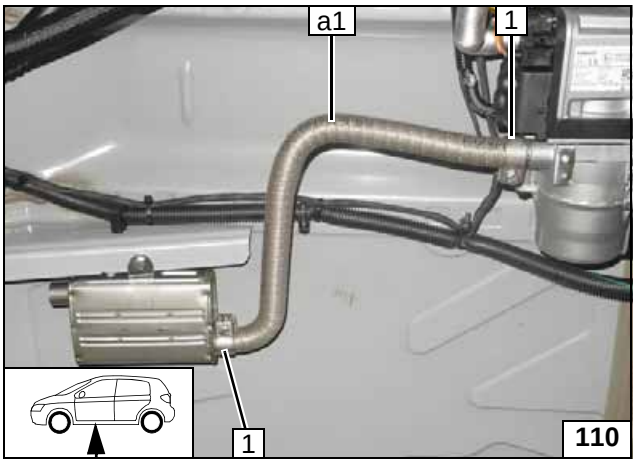
1 Silencer
2 Angle bracket
3 M6x16 bolt, spring lockwasher

Installing silencer



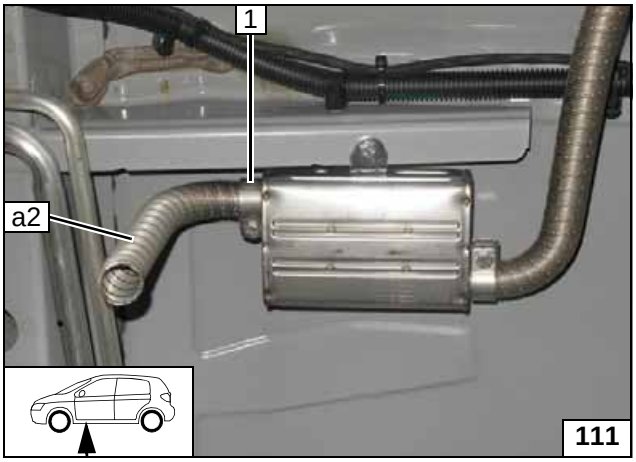
1 M6x20 bolt, flanged nut

Installing silencer



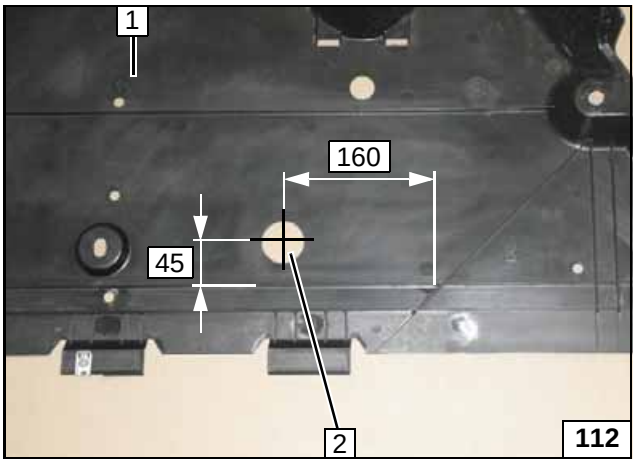
1 Hose clamp [2x]

Installing exhaust pipe a1



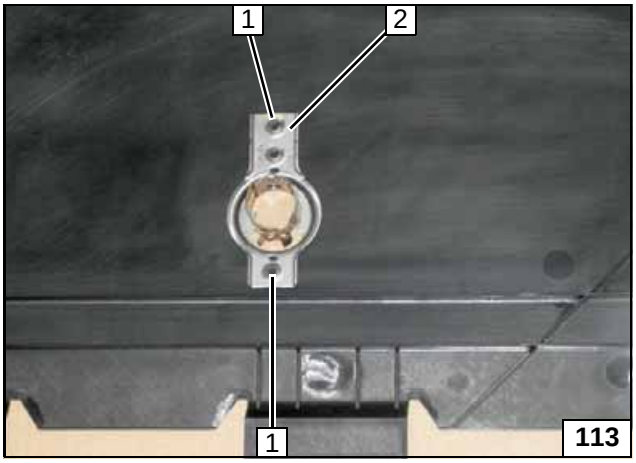
1 Hose clamp

Installing exhaust pipe a2



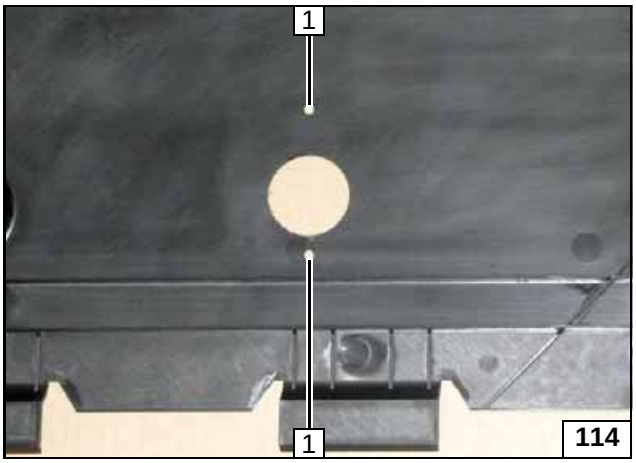
1 Underride protection
2 Hole (as per work step 1 of the installation instructions)

Hole in underride protection



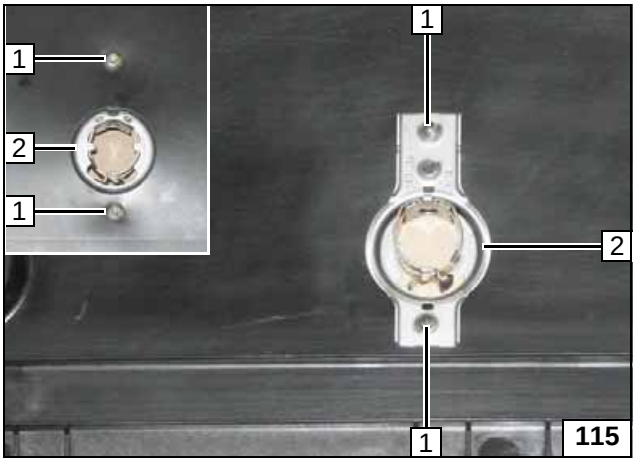
Position exhaust end fastener **2** as per work step 3 of the installation instructions and copy hole pattern **1** [2x].

Copying hole pattern



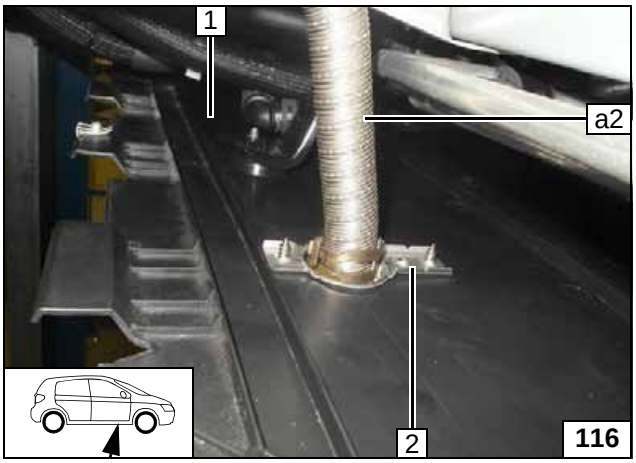
Hole **1** [2x] as per work step 4 of the installation instructions.

Holes in underride protection



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

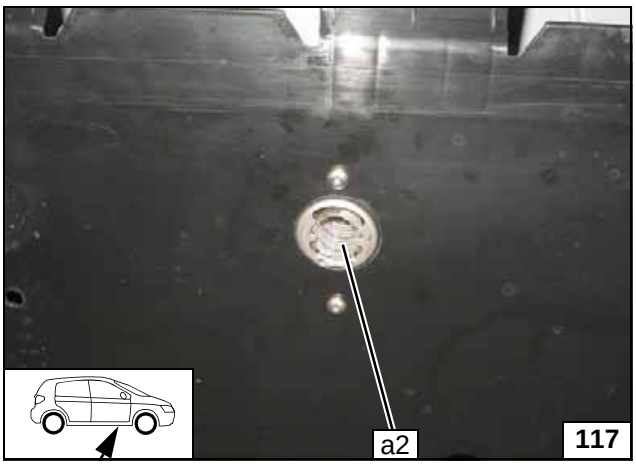
Installing exhaust end fastener



Install underride protection **1**. Install exhaust pipe **a2** as per work steps 6 - 7 of the installation instructions.

2 Exhaust end fastener

Installing exhaust pipe a2



Install exhaust pipe **a2** as per work step 8 of the installation instructions.

Installing exhaust pipe a2

Final Work

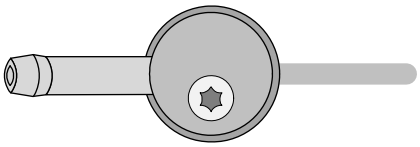
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate loose wire ends and tie back.
Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K).

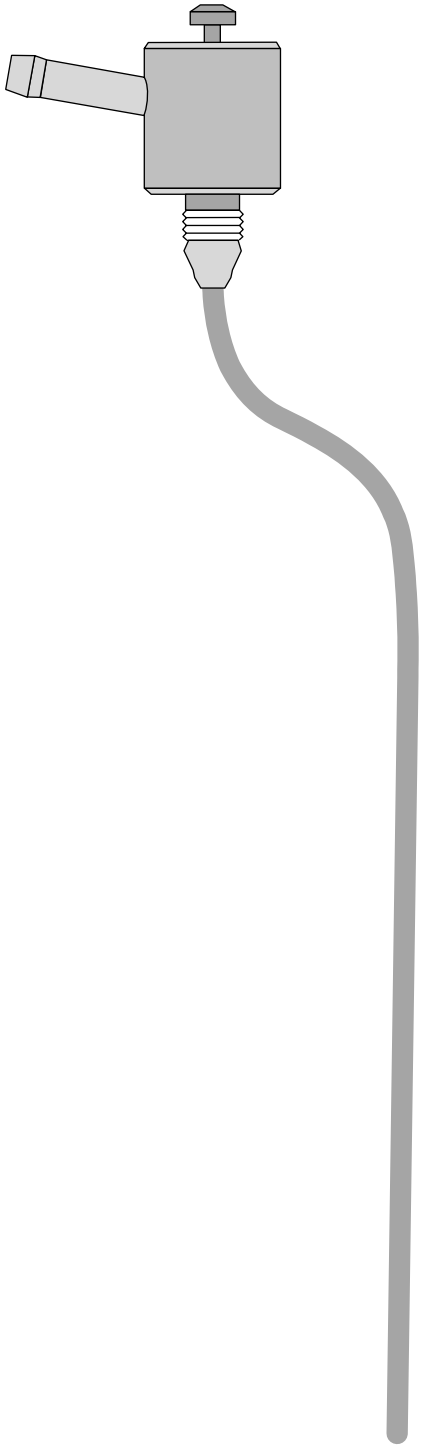
- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Program MultiControl CAR, teach Telestart transmitter.**
- **Make settings on the A/C control panel according to the 'Operating Instructions'.**
- **Place the 'Switch off parking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

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

FuelFix Template

Top View





100mm

Scale 1:1

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

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

100mm

0

Webasto
Feel the Drive

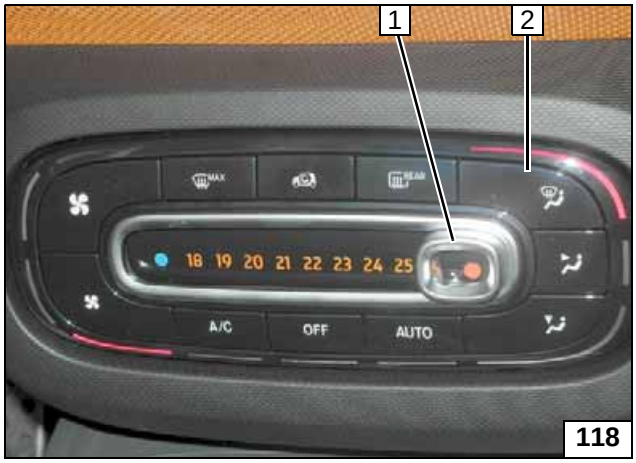
Operating Instructions for Automatic Air-Conditioning

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.

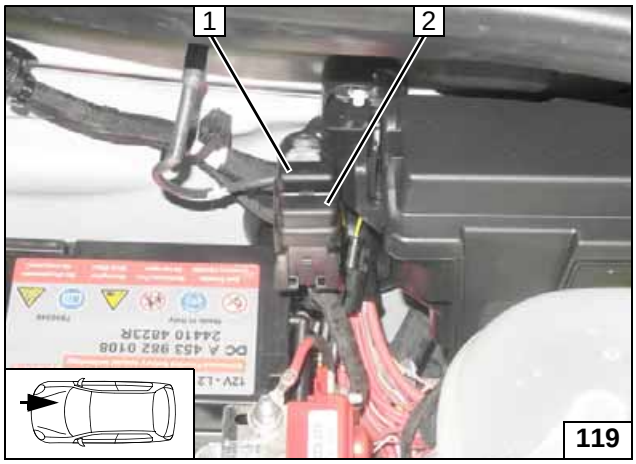
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



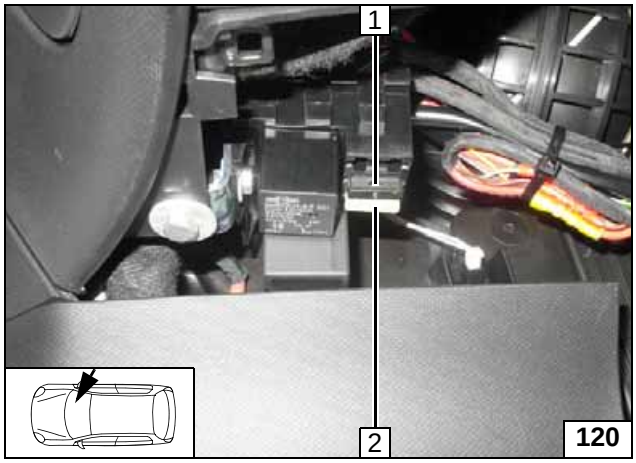
1 Thermostat on ‘Warm’
2 Air outlet to windscreen

A/C control panel



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

Service compartment fuse



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

Passenger compartment fuses