EN

K Installation Documentation

for Thermo Top Evo water heater

Opel Crossland X

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Opel	Crossland X	P7 Monocab C	from 2017	e4* 2007/46* 1194*…

Motorisation	Fuel	Emission standard	Transmission type	Out-put[kW]	Displace-ment[cm³]	Engine code
1.2P	Petrol	Euro 6	5-speed SG	60	1199	HM01

Validity	Equipment variants	Model
		Crossland X
Verified equipment variants	Manual air-conditioning	x
	2 zone automatic A/C	x
	LED main headlights	x
	Halogen front fog lights	x
	LED daytime running lights	x
	Automatic Start-Stop system	x
Unverified equipment variants	Start button with keycard	x
	Passenger compartment monitoring	x

Total installation time	Note
9.5 hours	

Contents

1 List of abbreviations

DP Fuel pump

FF FuelFix (tank extracting device)

HG Heater

K2 Additional relay

MCC MultiControl (control element)

PWM Pulse width modulator

RSH Relay and fuse holder of passenger compartment

SG Manual transmission

SH2 Engine compartment fuse holder for F1/F2

UP Coolant pump

2 Installation notes

2.1 Information on Validity

This installation documentation applies to vehicles listed on page 1, 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.

2.2 Components used

Designation	Order number
Basic delivery scope of Thermo Top Evo in accordance with price list	In accordance with price list
Installation kit for Opel Crossland X 2017 petrol and diesel	1326283A
In case of MultiControl CAR installation – installation frame for MultiControl	9030077_
In case of MultiControl CAR installation – timer cable extension	1319724_
In case of Telestart, control element, as well as indicator lamp in consultation with end customer	In accordance with price list

2.3 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.

2.4 Installation recommendations

Arrange for the vehicle to be delivered with the tank only about ¼ full.
For the MultiControl CAR option, the recommended installation locations for the Telestart or ThermoCall push button 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.

3 About this document

Purpose of the document

This installation documentation is part of the product and contains information for the correct vehicle specific installation of the:

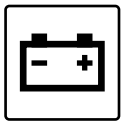
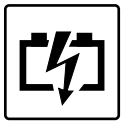
Thermo Top Evo heater

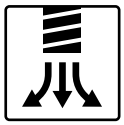
Using this document

- ▶ Before installing the heater, read this installation documentation, the installation instructions of the heater and supplementary sheets provided.
- ▶ Before operating the heater, read the operating instructions.

Work step identification marks

You will find an identification mark on the outside top corner of the respective page in question to provide you with a quick overview of the individual working steps:

Mechanical system	Electrical system	High-voltage	Coolant
			

Combustion air	Fuel	Exhaust gas	Software
			

Explanatory Notes on the Document:

There is an identification mark near the respective work step to allow you to quickly allocate the other applicable documents to the Webasto components to be installed:

Generally valid Webasto documentation	
Vehicle-specific installation documentation	
Webasto Comfort A/C control	
Webasto Standard A/C control	
Fuel standpipe (e.g. FuelFix)	
Exhaust end fastener (EFIX	
Combustion air intake silencer	
Spacer bracket (ASH)	

Use of symbols

DANGER

Type and source of the risk

Consequences: Failure to follow the instructions can result in death

▶ Action to protect yourself from the risk.

WARNING

Type and source of the risk

Consequences: Failure to follow the instructions can lead to serious or even fatal injuries

▶ Actions to protect yourself against risks.

CAUTION

Type and source of the risk

Consequences: Failure to follow the instructions can lead to minor injuries

▶ Actions to protect yourself against risks.

Type and source of the risk

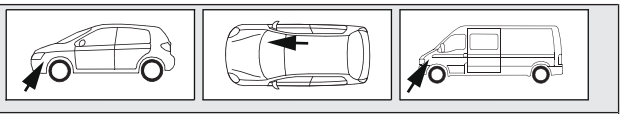
Consequences: Failure to follow the instructions can lead to material damage

▶ Actions to protect yourself against risks.

Reference to the vehicle manufacturer's specific documents.

a note on a special technical feature

Orientation aid



The arrow indicates the position on the vehicle and the viewing angle

Use of highlighting

Highlight	Explanation
✓	Requirements for the necessary action
▶	Necessary action

Highlight	Explanation
⇨	Result of an action
1 / 12 / a1 / Ⓐ	Position numbers for the image descriptions
1 / 12	Position numbers for the image descriptions for electrical wires and wiring harnesses from the installation kit

3.1 Warranty and liability

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 by untrained persons or in the case of a failure to use genuine spare parts.

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

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

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 start-up 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.

3.1.1 Statutory regulations governing installation

The Thermo Top Evo heater has been type-tested and approved in accordance with ECE-R 10 (EMC) and ECE-R 122 (heater). 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.

The heater is licensed in accordance with paragraph 19, section 3, No. 2b of the StVZO (German Road Traffic Licensing Authority).

3.2 Safety

Qualifications of installation personnel

The installation personnel must have the following qualifications:

- Successful completion of Webasto training
- Corresponding qualification for working on technical systems

Regulations and legal requirements

The regulations from the heater's general installation and operating instructions must be observed.

3.2.1 Safety information on installation

Danger posed by live parts

- ▶ Prior to installation, disconnect the vehicle from the voltage supply.
- ▶ Make sure the electrical system is earthed correctly.
- ▶ Always comply with legal requirements.
- ▶ Observe data on type label.

Danger of fire and leaking toxic gases due to improper installation

- ▶ Vehicle parts in the vicinity of the heater must be protected against excessive heating by the following measures:
  - ⇨ Maintain minimum safety distances.
  - ⇨ Ensure adequate ventilation.
  - ⇨ Use fire-resistant materials or heat shields.

Danger due to sharp edges

- Lacerations
- Short circuit due to electrical wire damage

- ▶ Fit protectors on sharp edges.

4 Technical Information

Dimension specifications

- All dimensions specified in mm

Tightening torque specifications

- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm
- Tightening torque values of 5x15 retaining plate of water connection piece bolts = 7Nm
- 5x12 bolt tightening torque of 2-part heater bracket = 6Nm
- Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology

Specified temperature for fabric heat shrink plastic tubing

- Shrink temperature max. 230°C

Necessary special tools

- Hose clamp pliers for self-clamping hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Hose clamping pliers
- Hose cutter
- Automatic wire stripper 0.2 - 6 mm^2
- Crimping pliers for cable lugs 0.5 – 10 mm^2
- Crimping pliers for tab connector 0.14 – 6 mm^2
- Crimping pliers for connector 0.25 – 6 mm^2
- Torque wrench for 2.0 - 10 Nm
- Deep-hole marker
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

5 Preparing measures

5.1 Vehicle preparation

Further information can be found in the vehicle manufacturer's technical documentation.

- ▶ Open the fuel tank cap
- ▶ Ventilate the fuel tank
- ▶ Close the fuel tank cap again
- ▶ Depressurise the cooling system
- ▶ Drain off the coolant
- ▶ Disconnect the battery and remove it with the carrier
- ▶ Remove the windscreen wipers
- ▶ Remove the cowl panel
- ▶ Remove the left front wheel
- ▶ Remove the left wheel-well inner panel
- ▶ Remove the bumper trim
- ▶ Remove the glove box
- ▶ Remove the front centre tunnel trim on the left and right
- ▶ Remove the rear bench seat (version 1 attached with clips)
- ▶ Remove the left rear seat (version 2 attached with screws)
- ▶ Open the tank fitting service lid on the left

5.2 Heater preparation

Observe the general installation instructions of the heater.

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

6 Installation overview

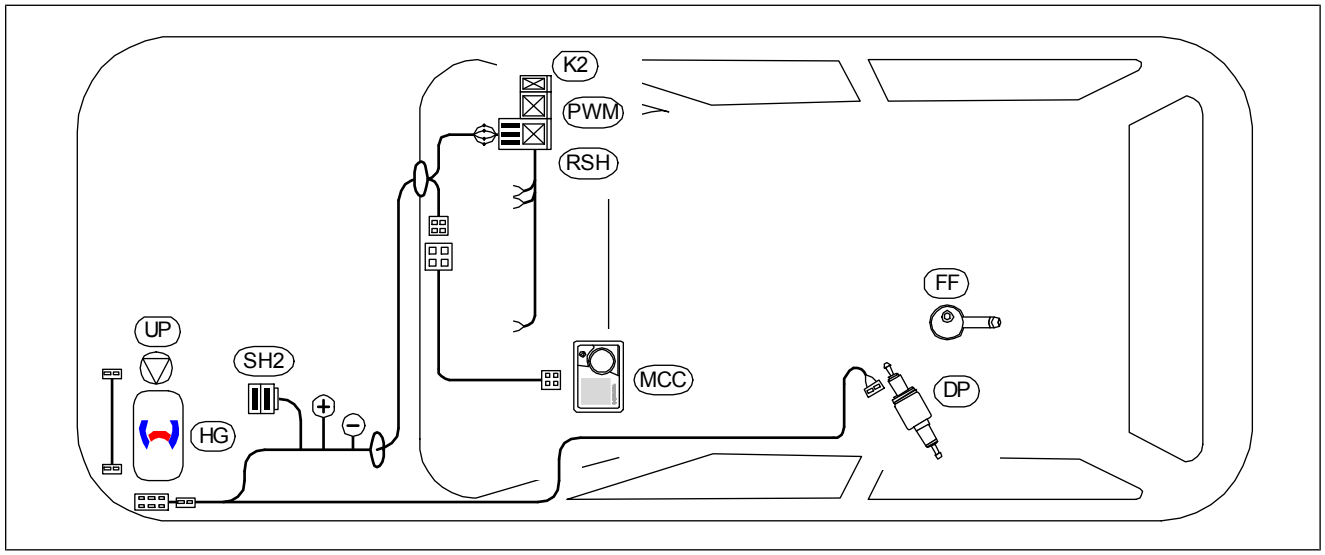


Fig. 1

Legend to installation overview

Abbreviation	Component
DP	Fuel pump
FF	FuelFix
HG	Heater
K2	Relay K2
MCC	MultiControl CAR
PWM	PWM Gateway
RSH	Passenger compartment relay and fuse holder
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump

Heater installation location

Fig. 2

1 Heater

7 Electrical system of engine compartment

Mounting SH2

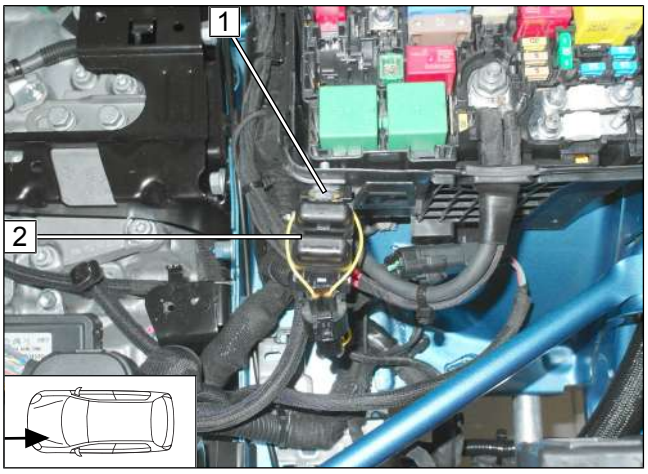


Fig. 3

1 M5x16 bolt, large diameter washer, retaining plate of SH2, 6mm dia. hole, large diameter washer, nut

2 SH2 with fuse F1/F2

Mounting positive wire

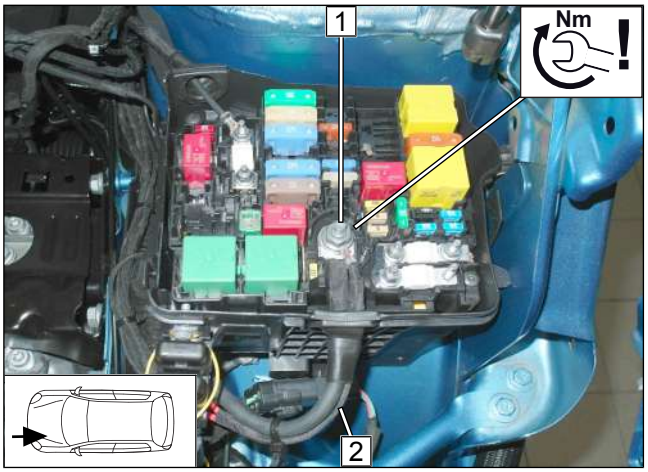


Fig. 4

DANGER

Fire hazard due to insufficient tightening torque

▶ Observe tightening torque

1 Original vehicle positive support point

2 Positive wire

Mounting earth wire

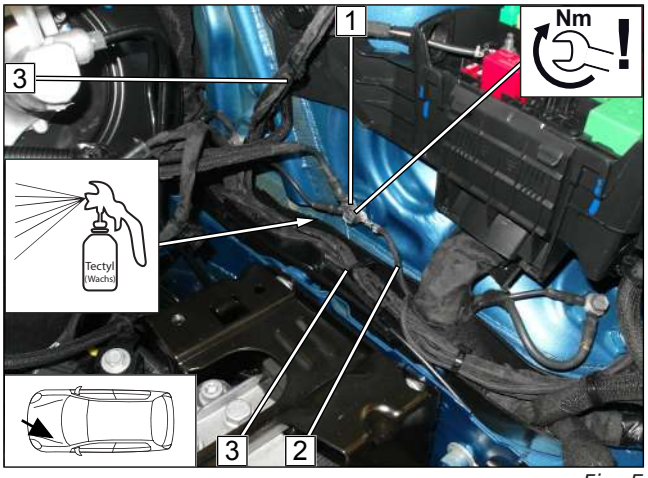


Fig. 5

DANGER

Fire hazard due to insufficient tightening torque

▶ Observe tightening torque

▶ Route passenger compartment and control element wiring harness 3 along original vehicle wiring harness to the protective rubber plug on the coolant reservoir.

1 Original vehicle earth support point

2 Earth wire

Routing wiring harnesses

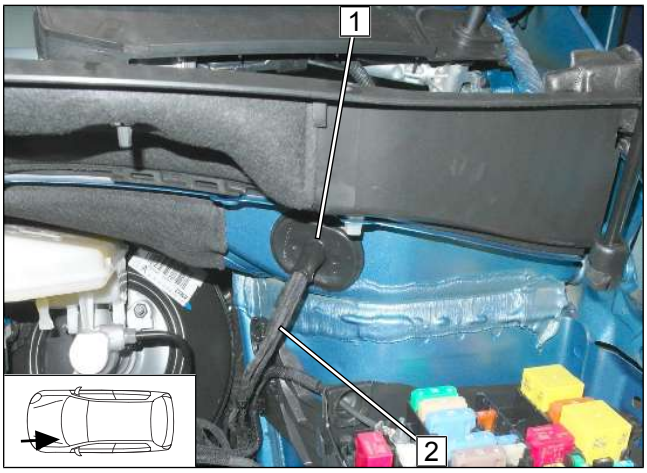


Fig. 6

- ▶ Route the heater wiring harness to the heater installation location.
- ▶ Route passenger compartment and control element wiring harnesses **2** in the coolant reservoir.

1 Coolant reservoir pass through

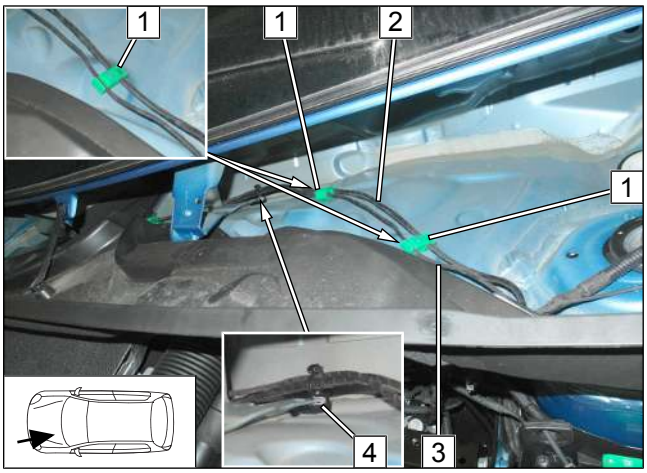


Fig. 7

If the stud bolts are in use at pos. **1**, secure wiring harnesses of passenger compartment **2** and control element **3** to the original vehicle wiring harness.

1 Fastening clip on original vehicle stud bolt
2 Passenger compartment wiring harness
3 Control element wiring harness
4 Edge clip cable tie

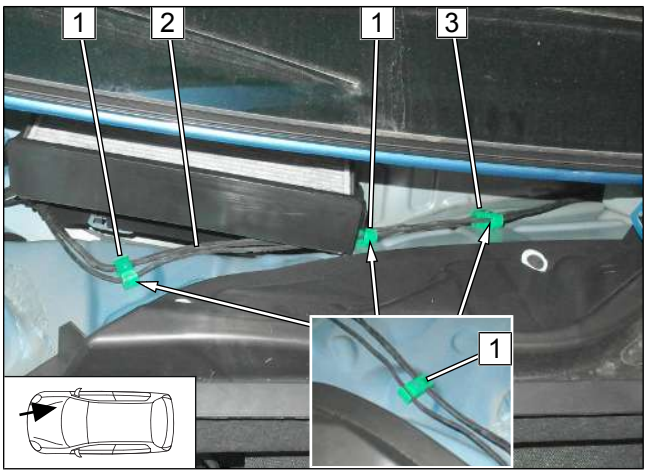


Fig. 8

If the stud bolt is in use at pos. **3** secure wiring harnesses of passenger compartment and and control elements **2** to the original vehicle wiring harness.

- ▶ Route passenger compartment and control element wiring harnesses **2** to the passenger compartment pass through.

1 Fastening clip on original vehicle stud bolt

Passenger compartment wiring harness pass through

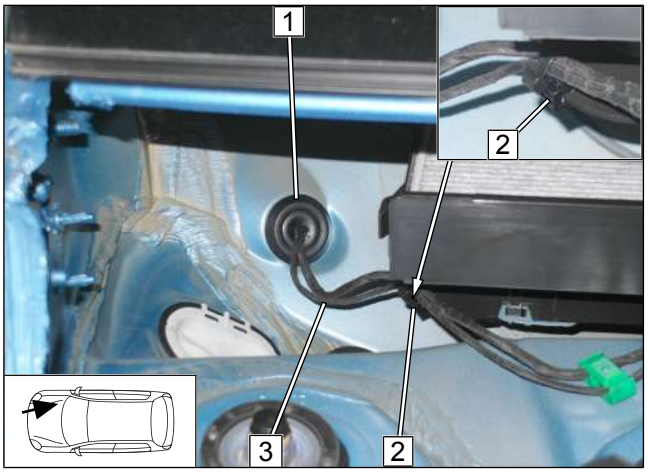


Fig. 9

1 Protective rubber plug
2 Edge clip cable tie
3 Passenger compartment and control element wiring harnesses

8 Mechanical system

8.1 Preparing installation location

Detaching wiring harness

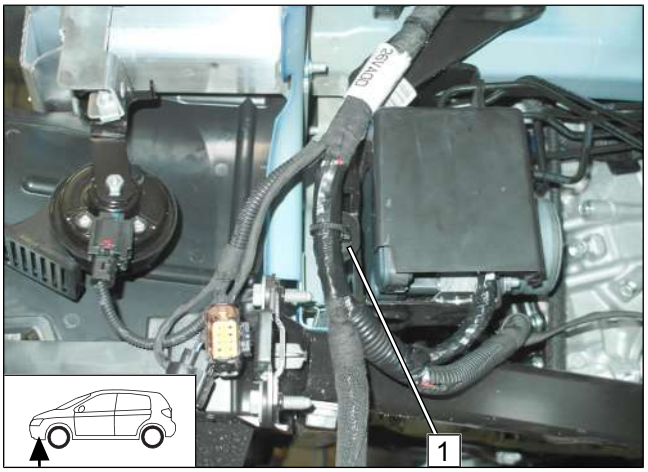


Fig. 10

1 Remove and discard clip-type cable tie

Fastening wiring harness

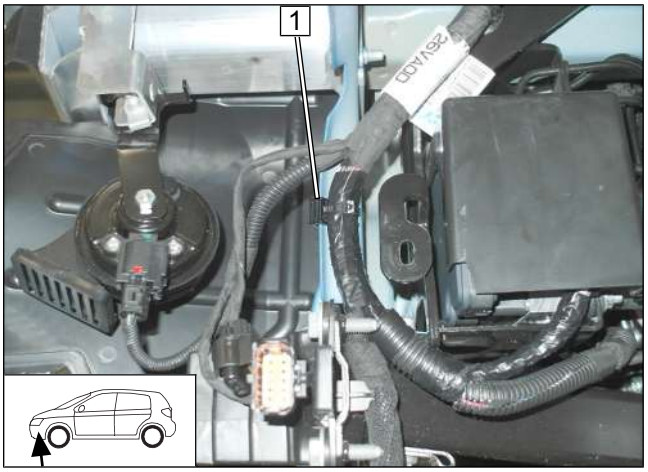


Fig. 11

1 Edge clip cable tie

Removing connector

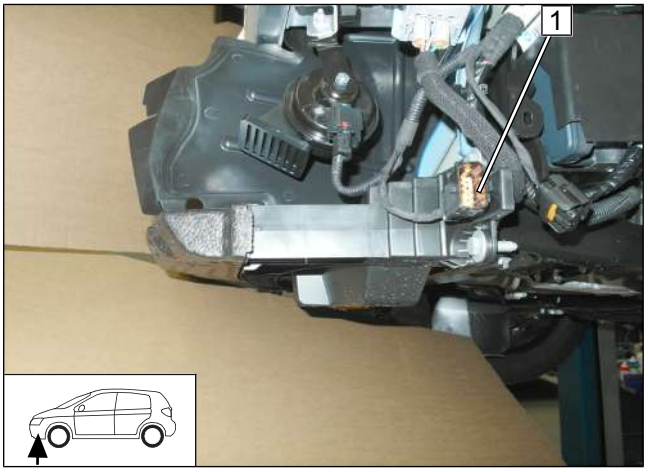


Fig. 12

1 Original vehicle connector

Drilling oblong hole

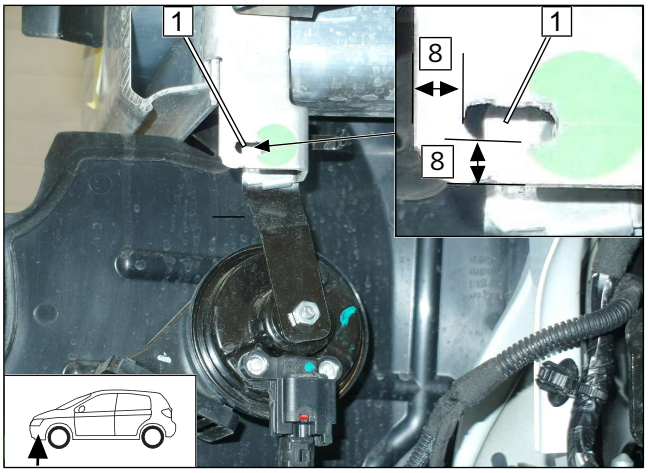


Fig. 13

1 6x12mm oblong hole

Mounting connector

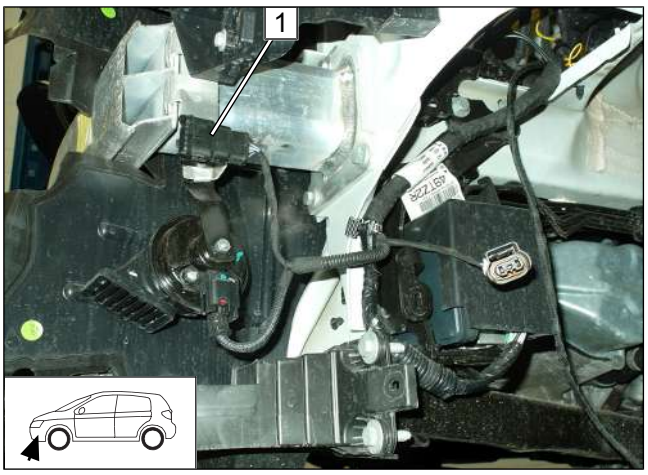


Fig. 14

1 Original vehicle connector

Drilling holes

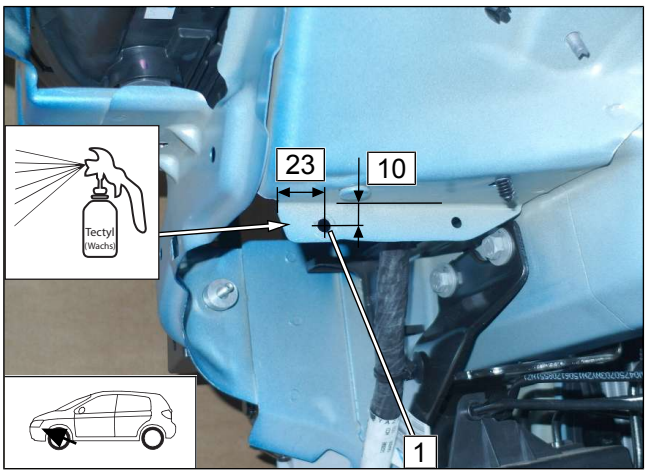


Fig. 15

1 7mm dia. hole

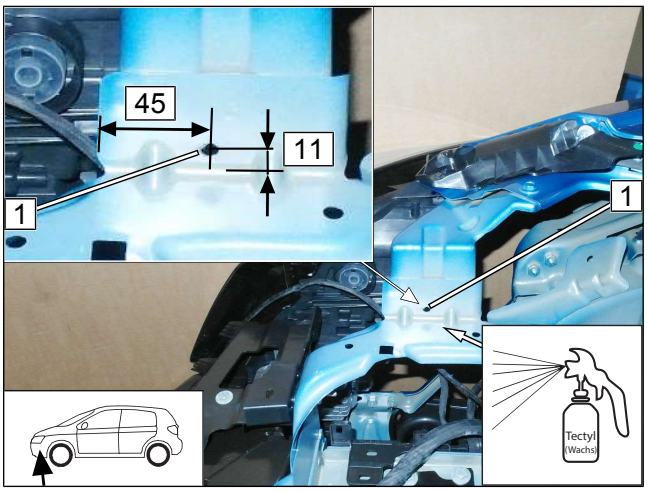


Fig. 16

1 7mm dia. hole

Preparing perforated bracket 1

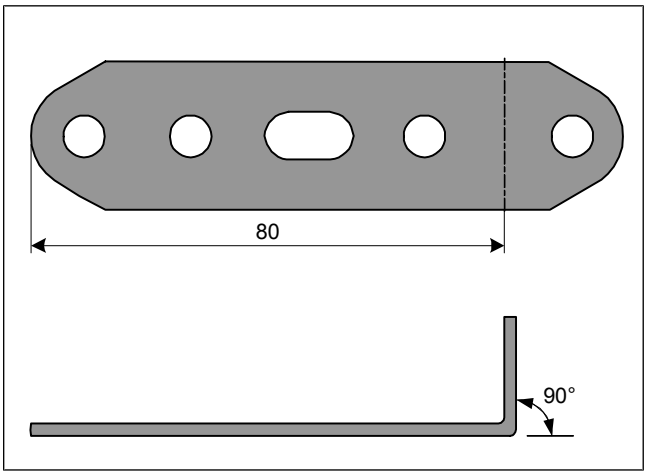


Fig. 17

Mounting perforated bracket 1

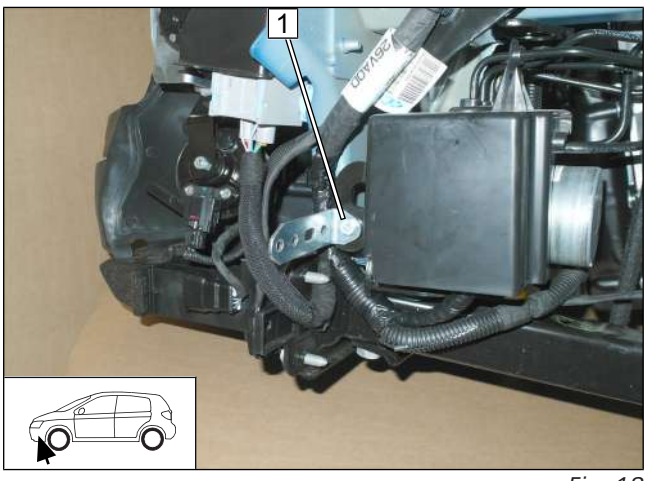


Fig. 18

1 M6x20 bolt, perforated bracket, original vehicle oblong hole, large diameter washer, flanged nut

Preparing perforated bracket 2

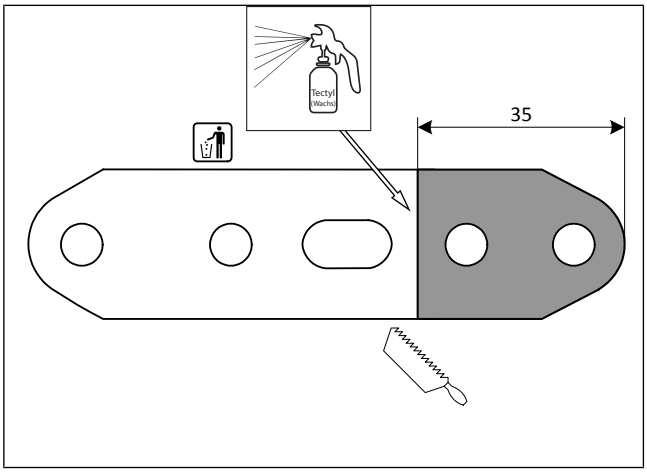


Fig. 19

Premounting bracket A

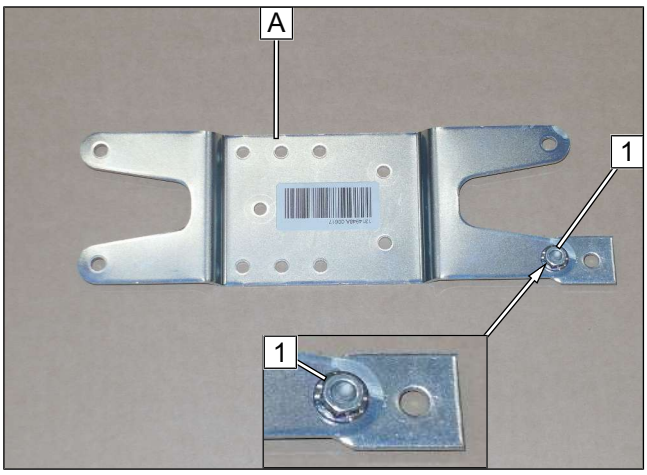


Fig. 20

1 M6x16 bolt, perforated bracket 2, bracket A, flanged nut

Mounting bracket A

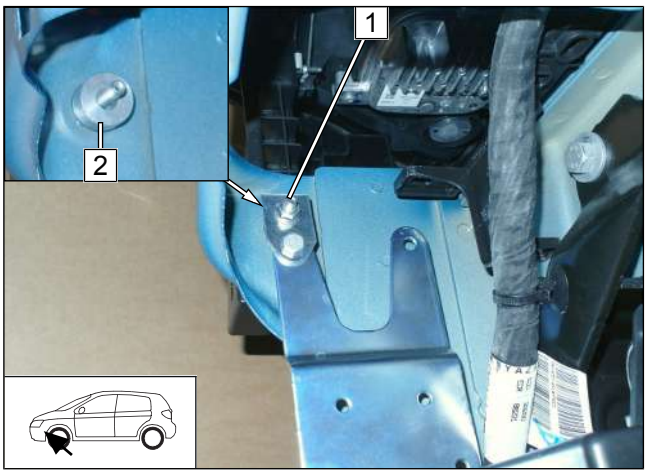


Fig. 21

▶ Replace original vehicle bolt at position **1** with M6x40 bolt.

1 M6x40 bolt, large diameter washer, 10mm spacer, perforated bracket 2, flanged nut

2 10mm spacer

Copying hole pattern, drilling holes

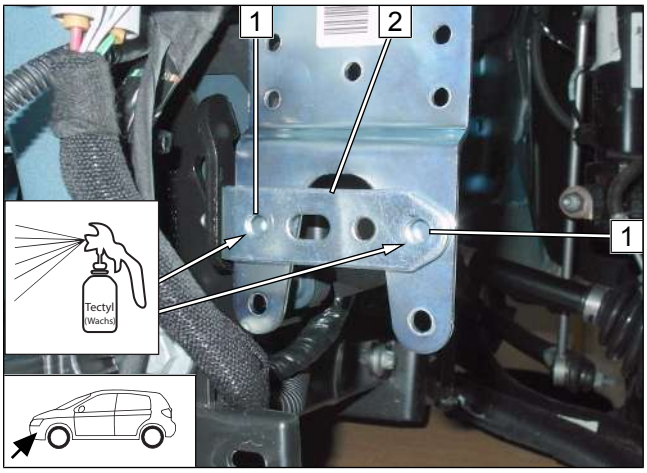


Fig. 22

1 7mm dia. hole
2 Perforated bracket 1

Fastening bracket A

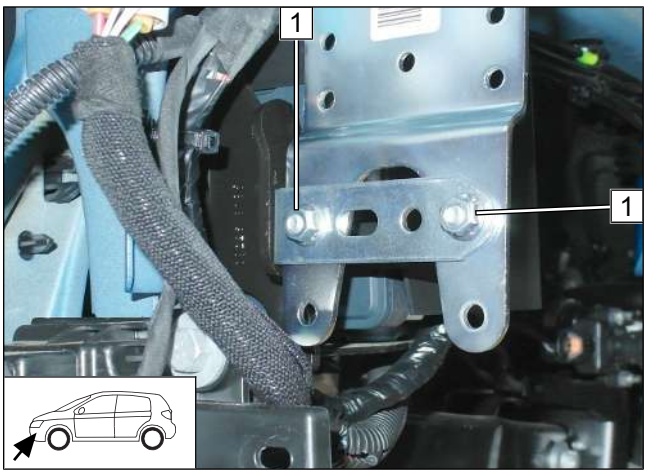


Fig. 23

1 M6x16 bolt, bracket A, perforated bracket 1, flanged nut

Preparing bracket B installation

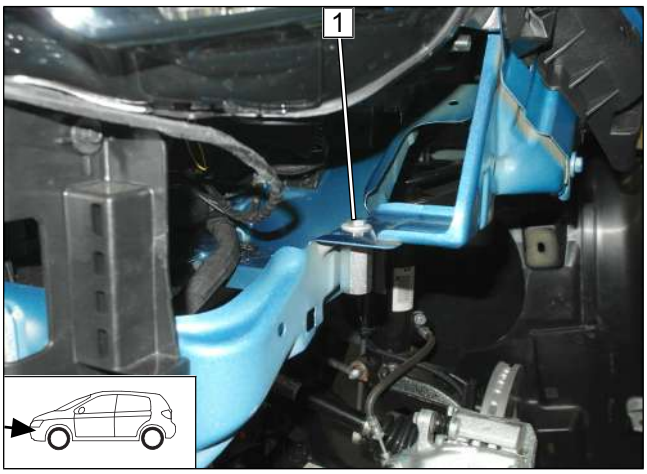


Fig. 24

1 M6x20 bolt, spring lockwasher, large diameter washer, M6x40 spacer nut

Mounting bracket B

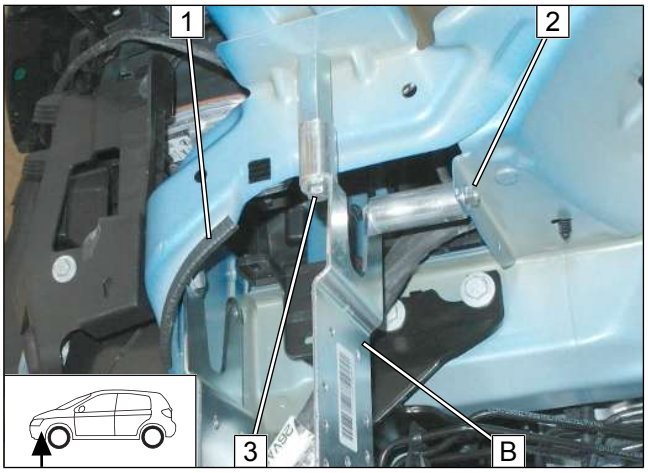


Fig. 25

Bend bracket **B** according to template and cut to length.

1 100mm long edge protection

2 M6x60 bolt, bracket B, 40mm spacer, 10mm spacer, hole, flanged nut

3 M6x40 bolt, spring lockwasher, bracket B, 30mm spacer, spacer nut

8.2 Premounting heater

Mounting water connection piece

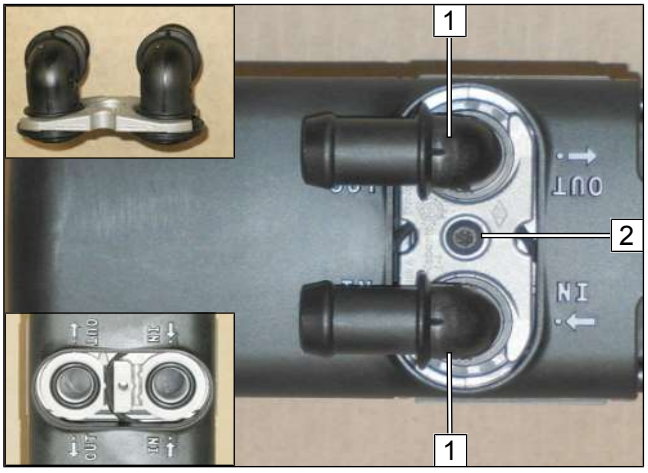


Fig. 26

Observe the general installation instructions of the heater.

1 Water connection piece, seal

2 5x15 self-tapping bolt, water connection piece retaining plate

Cutting hoses to length

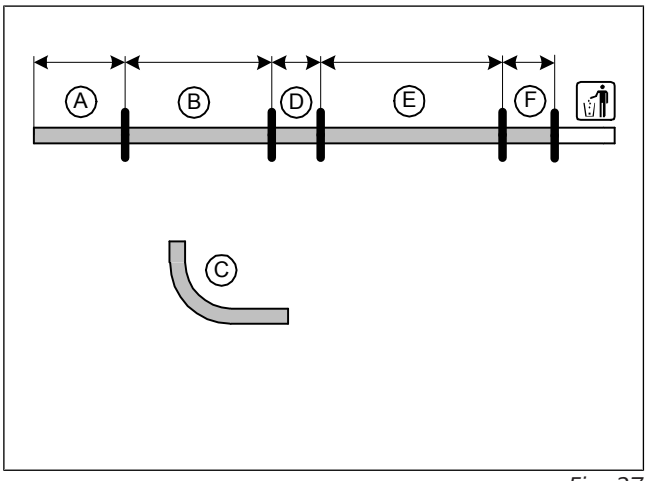


Fig. 27

A	350
B	300
C	90°, 100x145mm
D	170
E	720
F	310

Preparing hoses

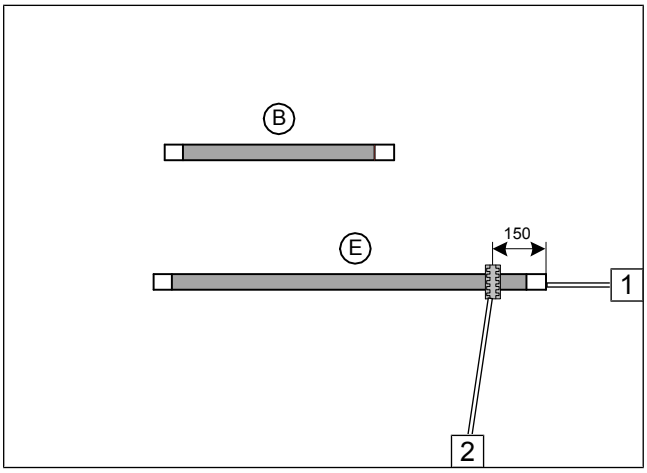


Fig. 28

▶ Push fabric heat shrink tubings onto hoses **B** and **E**, cut to length and shrink.

1 Hose **E**. on heater side

2 Black (sw) rubber isolator with 20mm$_{inner}$ dia.

Mounting hoses

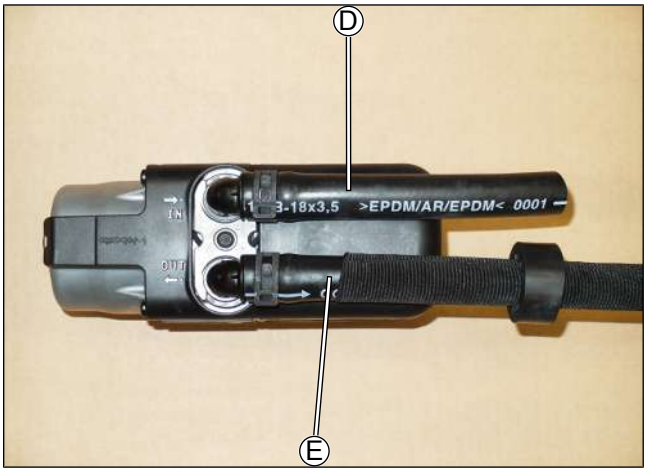


Fig. 29

▶ All spring clips, 25mm dia.

8.3 Mounting heater

Mounting heater

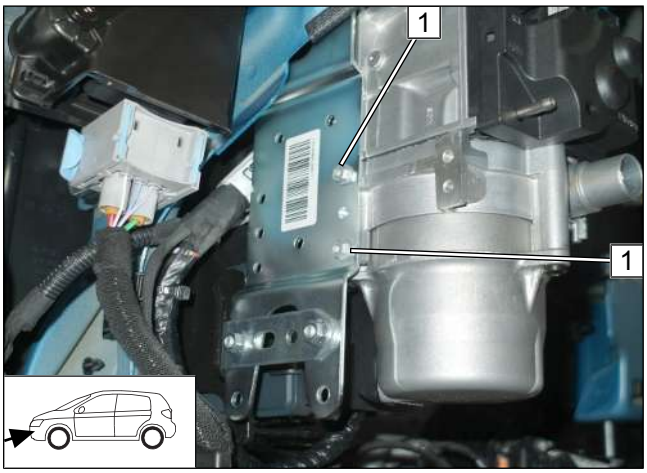


Fig. 30

1 5x13 self-tapping bolt

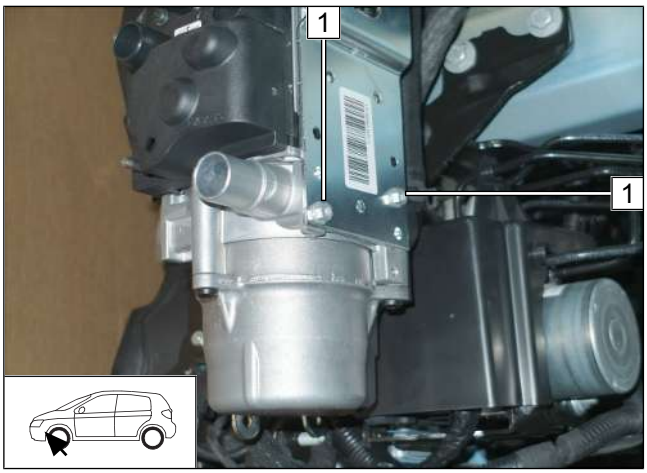


Fig. 31

1 5x13 self-tapping bolt

Mounting heater wiring harness

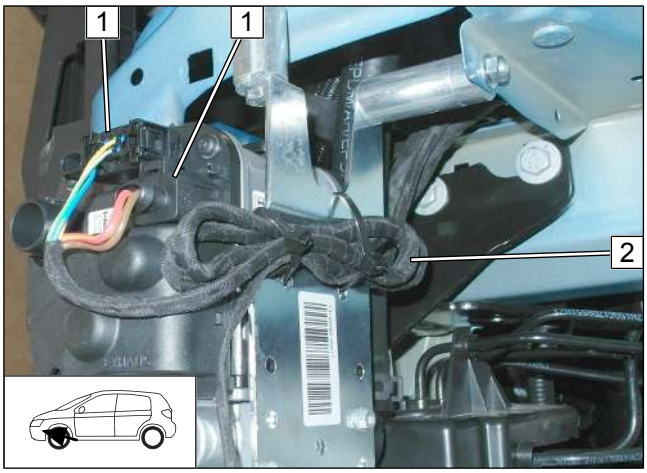


Fig. 32

1 Heater wiring harness connector

2 Fasten remaining section of heater wiring harness using cable ties as shown

9 Fuel

DANGER

Risk of fire and explosion due to leaking fuel and escaping fuel vapours.

The Incorrect installation of the fuel extractor can cause damage and fire.

- ▶ Avoid electrostatic discharges and open fire.
- ▶ When working on the fuel system, ensure sufficient ventilation and bleeding.
- ▶ Open the fuel tank cap of the vehicle.
- ▶ Ventilate the fuel tank
- ▶ Re-close the tank lock.
- ▶ Catch any fuel running off with an appropriate container.

Danger of damage to components

- ▶ Install fuel line and fuel pump wiring harness so that they are protected against stone impact.
- ▶ Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

9.1 Connecting and routing fuel line

Dismantling fuel pump connector

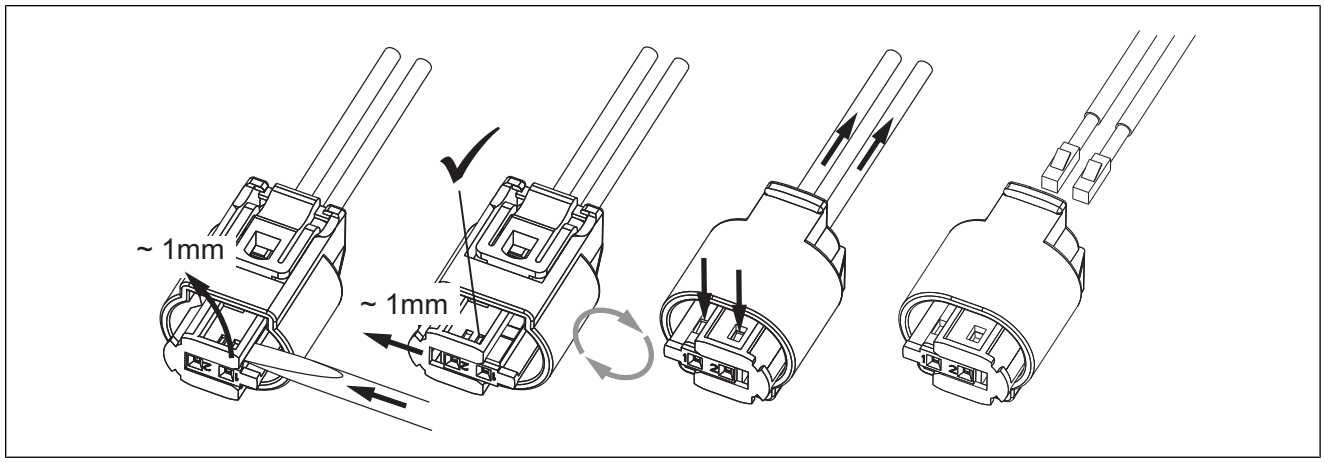


Fig. 33

Connecting heater

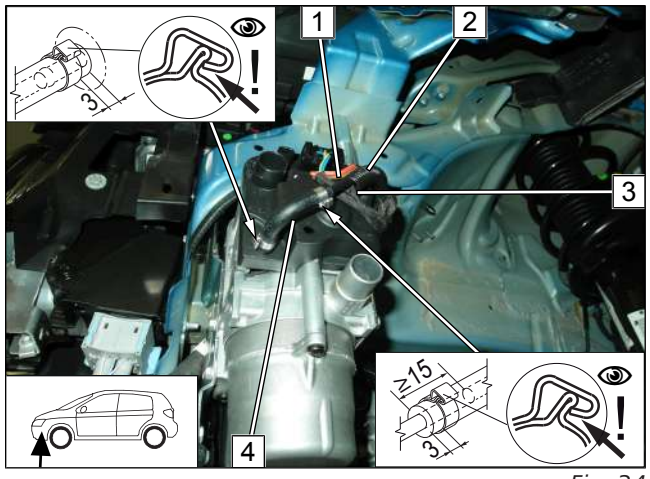


Fig. 34

1 Fuel line in corrugated tube
2 Corrugated tube
3 Fuel pump wiring harness in corrugated tube
4 90° moulded hose, 10mm dia. clamp [2x]

Routing fuel line, fixing with cable ties

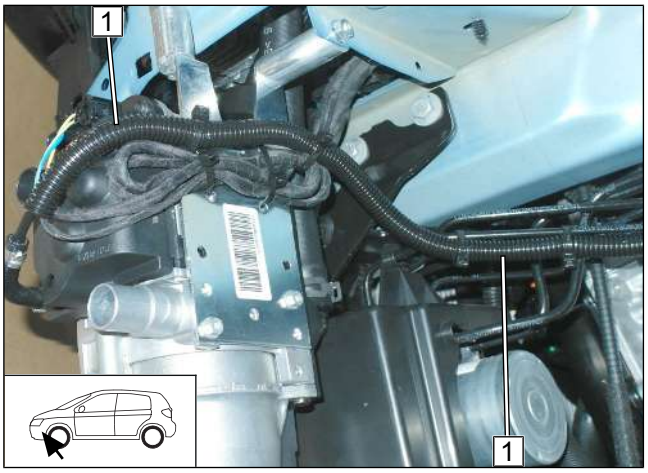


Fig. 35

1 Corrugated tube with fuel pump wiring harness and fuel line

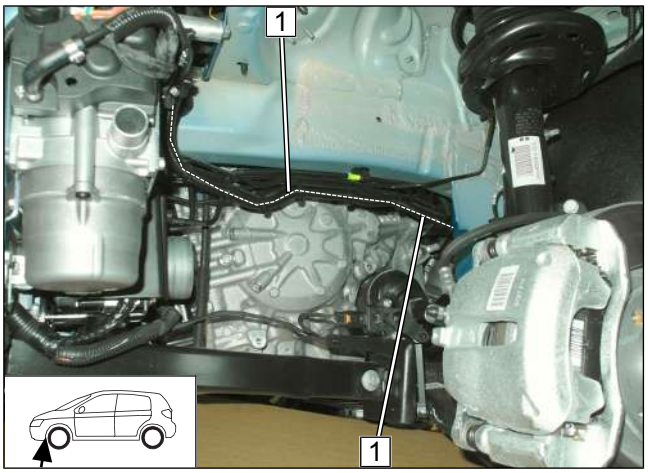


Fig. 36

▶ Route corrugated tube **1** with fuel pump wiring harness and fuel line to the underbody.

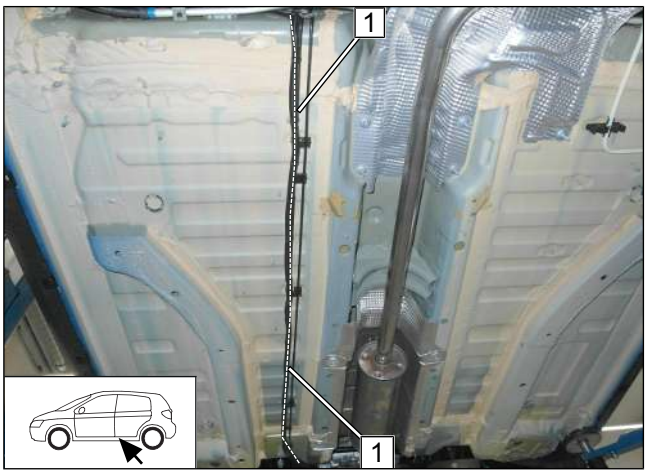


Fig. 37

1 Corrugated tube with fuel pump wiring harness and fuel line

9.2 Mounting fuel pump

Detaching original vehicle wiring harness (if present)

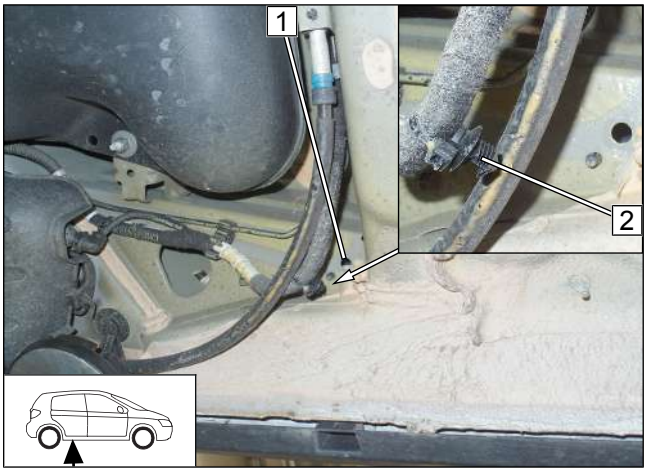


Fig. 38

▶ Remove original vehicle clip 2 from hole 1.

Mounting rivet nut

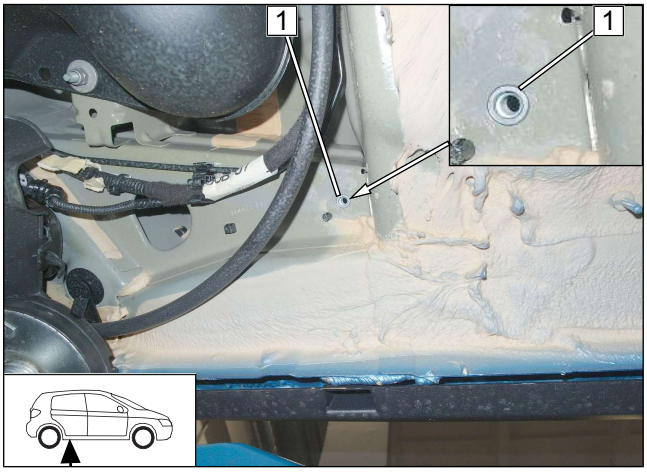


Fig. 39

1 Rivet nut, original vehicle hole

Mounting fuel pump

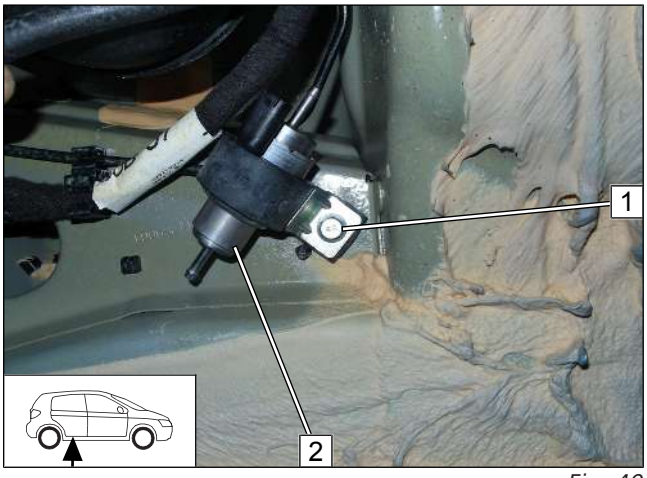


Fig. 40

1 M6x25 bolt, support angle bracket, fuel pump mount, rivet nut

2 Fuel pump

Mounting fuel pump connector

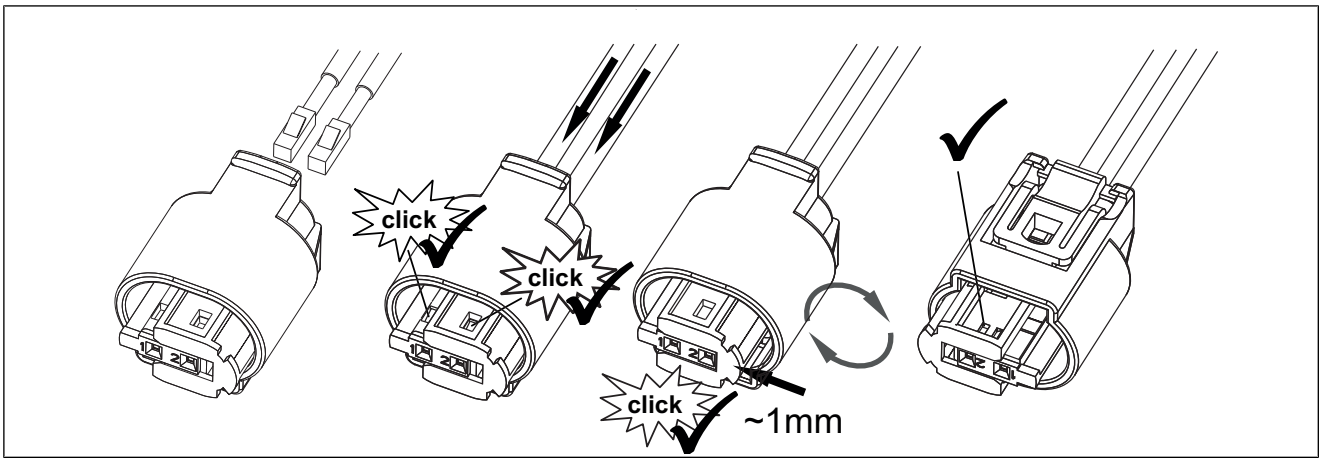


Fig. 41

Connecting fuel line

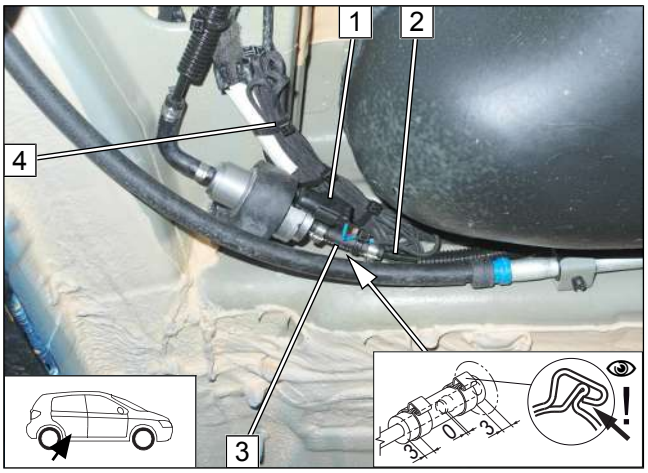


Fig. 42

▶ Fasten original vehicle wiring harness using cable tie **4**.

1 Fuel pump wiring harness, connector X7 mounted

2 Heater fuel line

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

9.3 Installing FuelFix

Removing rear bench seat, version 1

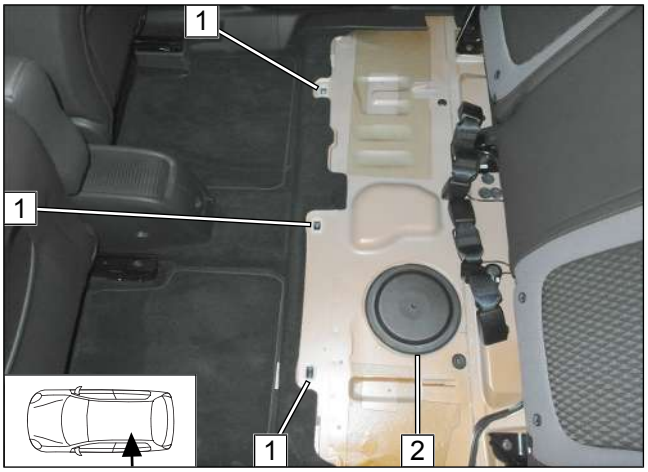


Fig. 43

1 Clips for rear bench seat

2 Open the tank fitting service lid

Removing left rear bench seat, version 2

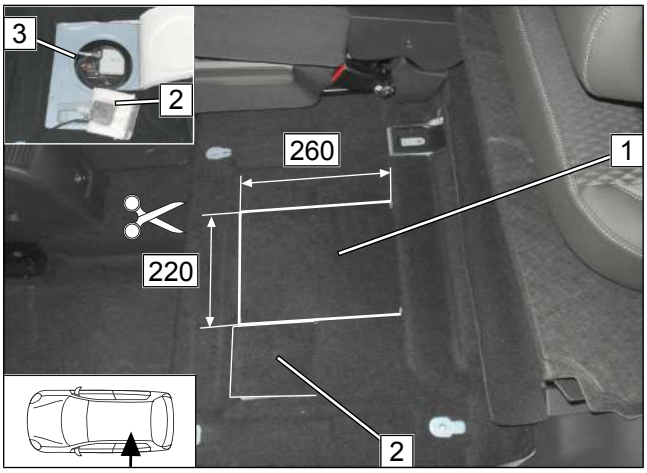


Fig. 44

▶ Cut insulation mat (if present) as shown at position **1**.

2 Original vehicle opening in insulation mat

3 Tank fitting service lid, opened

Preparing drilling template

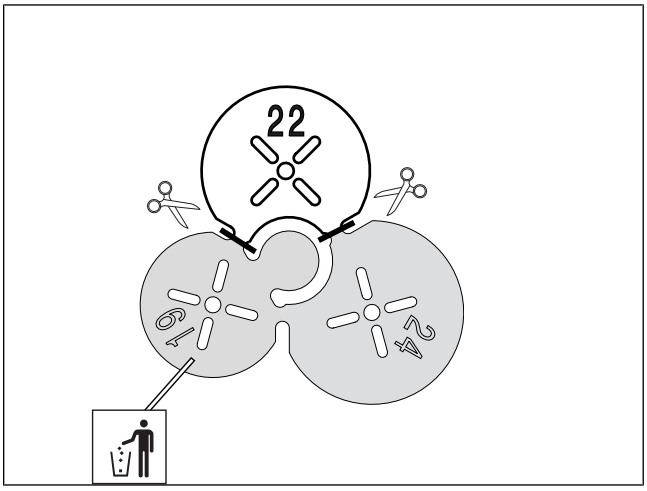


Fig. 45

Copying hole pattern

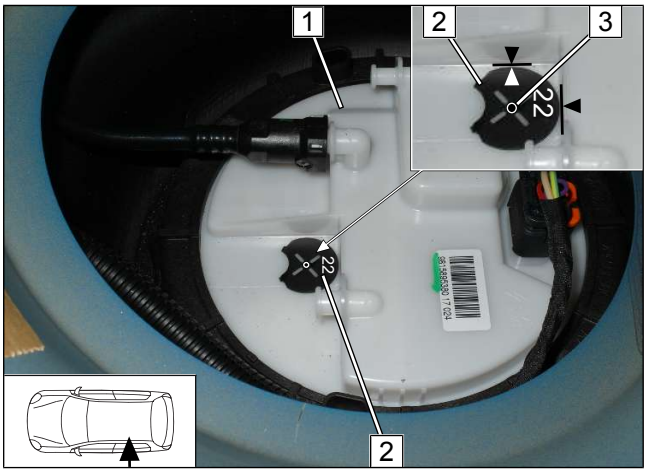


Fig. 46

Observe the installation instructions of the tank extracting device.

▶ Work steps F1, F2

1 Tank fitting

2 Template

3 Hole pattern

Hole for Fuelfix

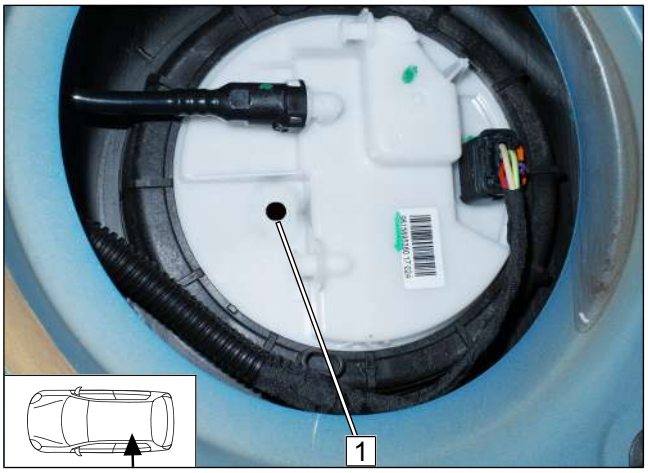


Fig. 47

DANGER

Risk of fire and explosion due to leaking fuel and escaping fuel vapours.

▶ Work step F3

1 Hole made with provided drill

Inserting FuelFix

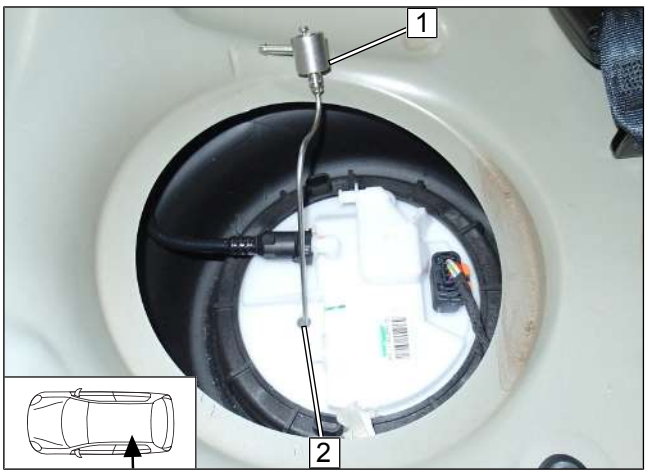


Fig. 48

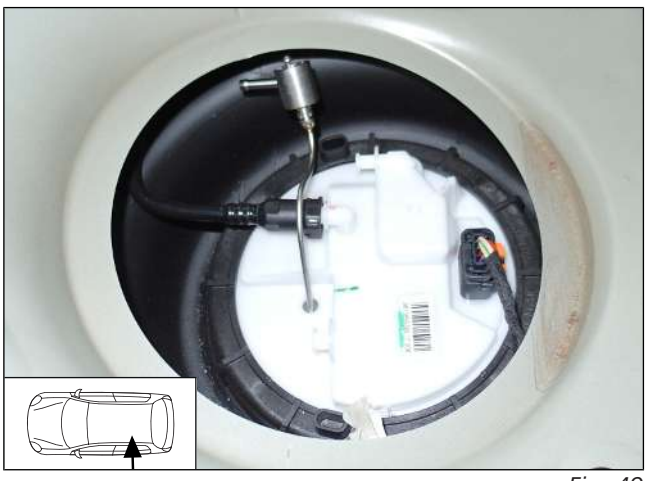


Fig. 49

▶ Work steps F4, F5

▶ Bend FuelFix 1 as shown in template and cut to length. Insert in hole 2.

Fig. 50

Fig. 51

Aligning FuelFix

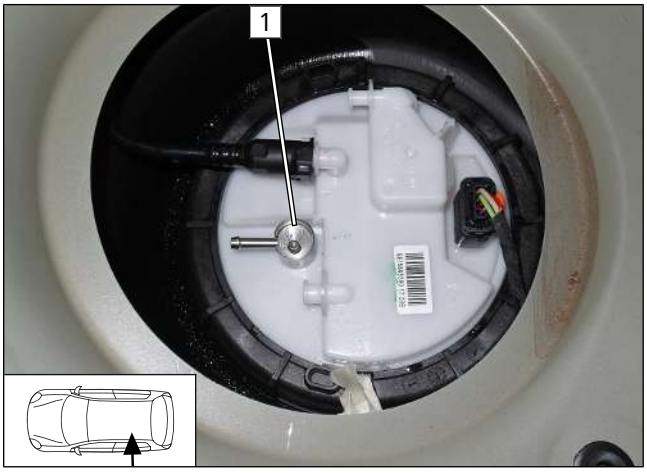


Fig. 52

- ▶ Work steps F5.3, F5.4
- ▶ Align FuelFix **1** as shown.

Connecting fuel line

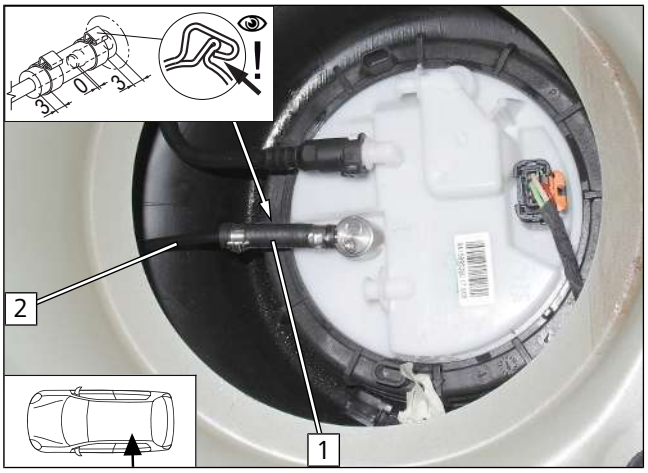


Fig. 53

▶ Work step F6

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

2 Fuel line FuelFix

Mounting Fuelfix

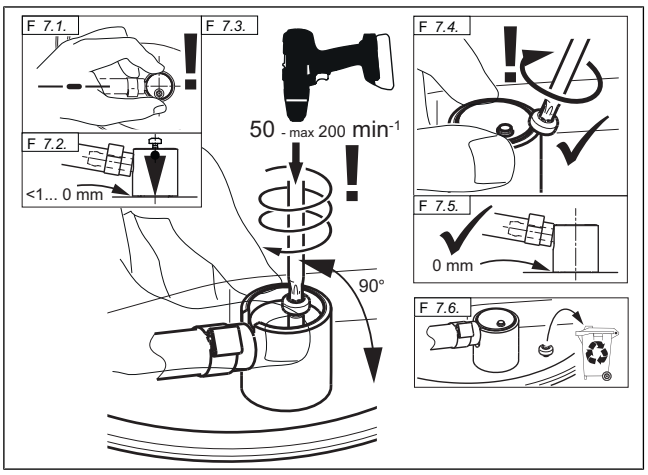


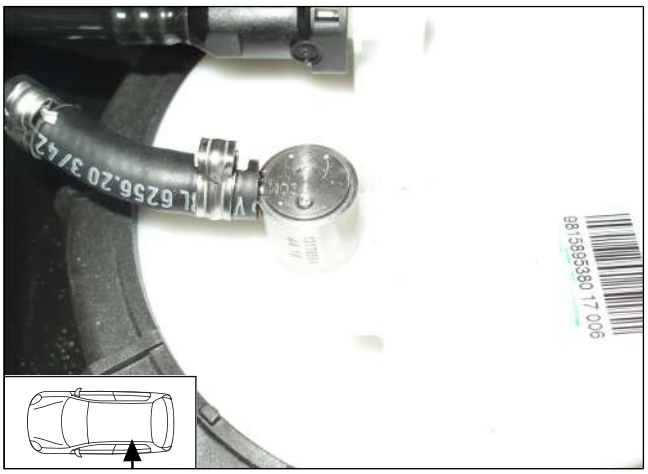
Fig. 54

DANGER

Risk of fire and explosion due to leaking fuel and escaping fuel vapours.

▶ Work step F7

Ensuring firm seating of FuelFix



▶ Work step F8

Securing fuel line

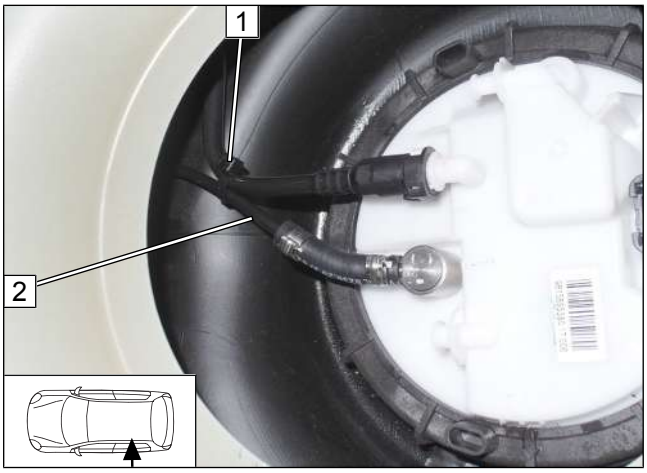


Fig. 55

1 Fuel line FuelFix
2 Cable tie for tension relief

Fuel pump connection

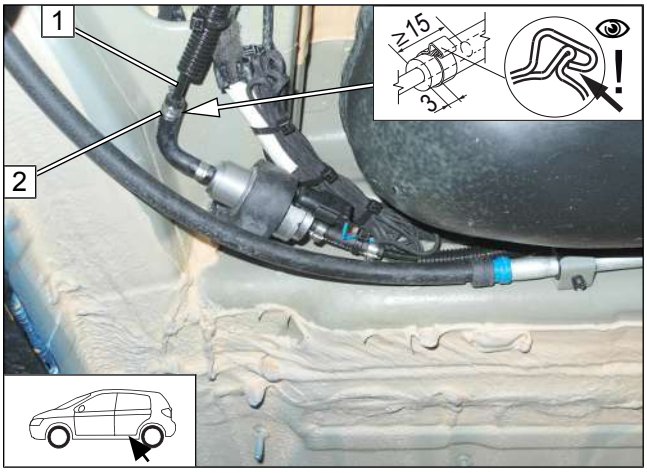
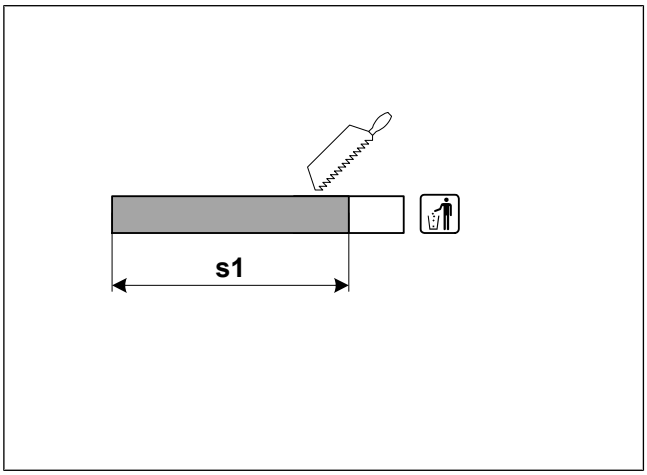


Fig. 56

1 Fuel line FuelFix
2 10mm dia. clamp

10 Combustion air

Cutting combustion air pipe to length



s1	200

Fig. 57

Mounting angle bracket

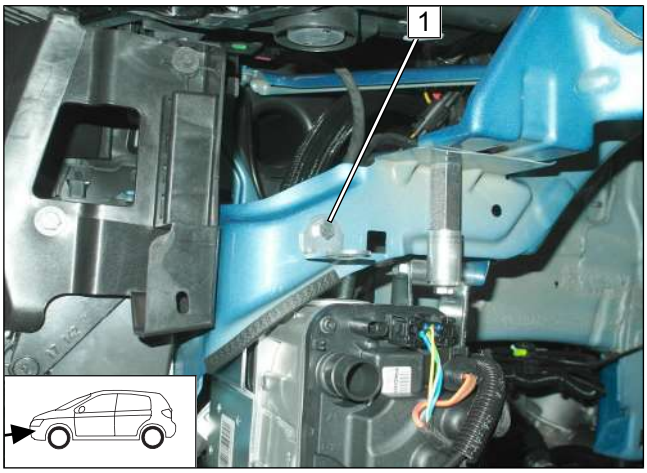


Fig. 58

1 M6x20 bolt, angle bracket, original vehicle hole, flanged nut

Mounting combustion air silencer

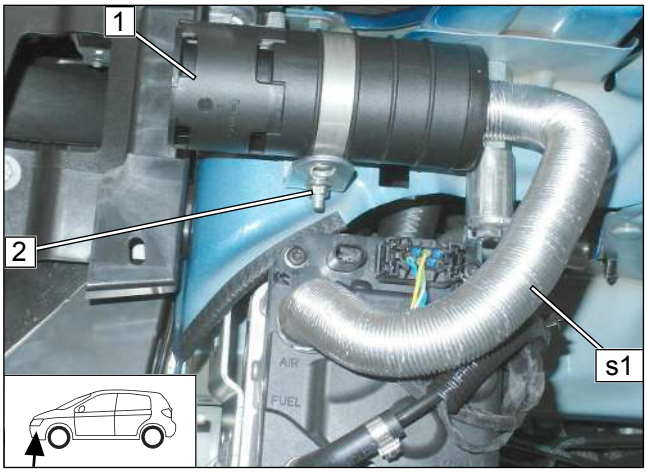


Fig. 59

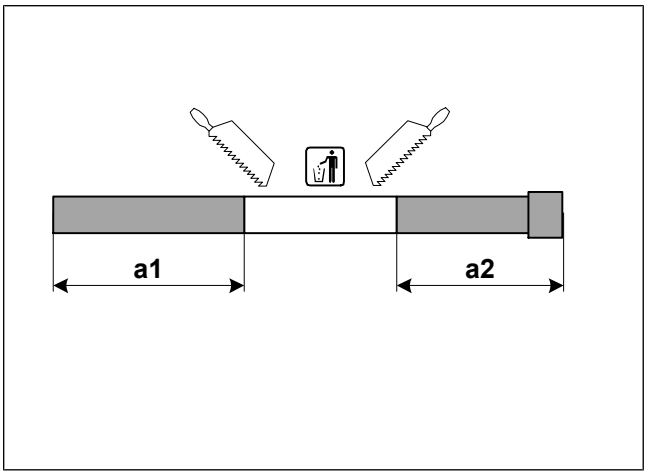
Observe the installation instructions of the combustion air intake silencer.

1 Combustion air silencer

2 M5x16 bolt, 51mm dia. pipe clamp, angle bracket, flanged nut

11 Exhaust

Cutting exhaust pipe to length



a1	360
a2	260

Fig. 60

Preparing exhaust silencer angle bracket

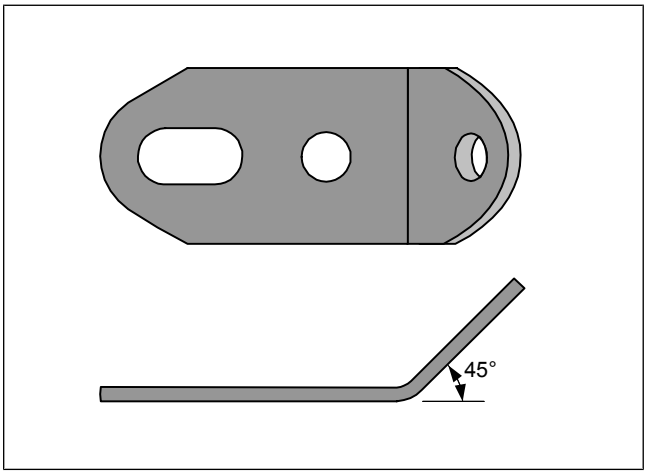


Fig. 61

Premounting angle bracket

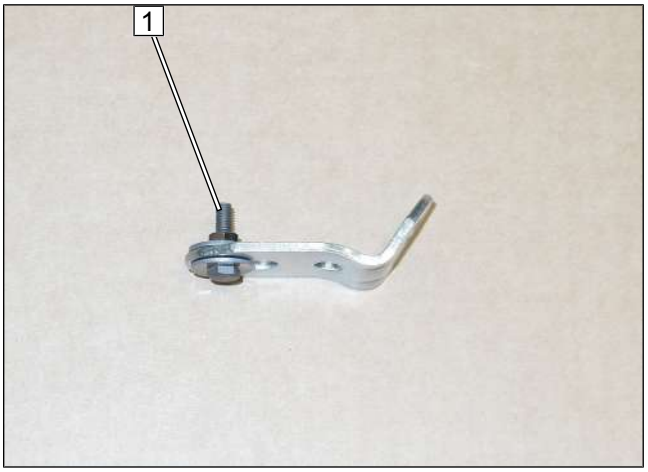


Fig. 62

1 M4x12 bolt, large diameter washer, angle bracket, large diameter washer, spring lock-washer, nut

Premounting exhaust silencer

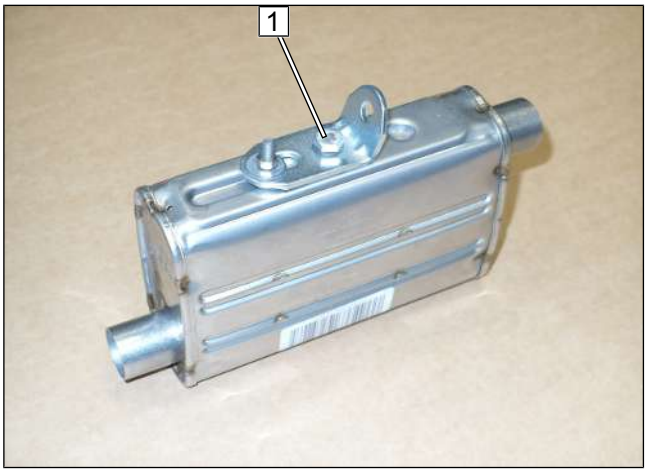


Fig. 63

1 M6x16 bolt, spring lockwasher, prepared angle bracket

Mounting exhaust silencer

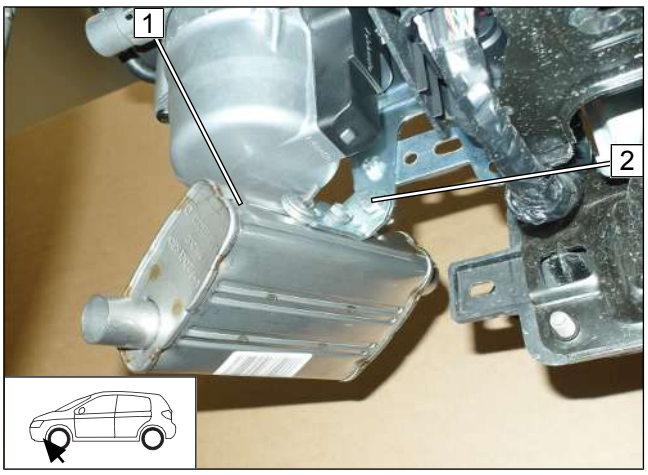


Fig. 64

1 Exhaust silencer

2 M6x16 bolt, prepared angle bracket, bracket A, flanged nut

Mounting exhaust pipe **a1**

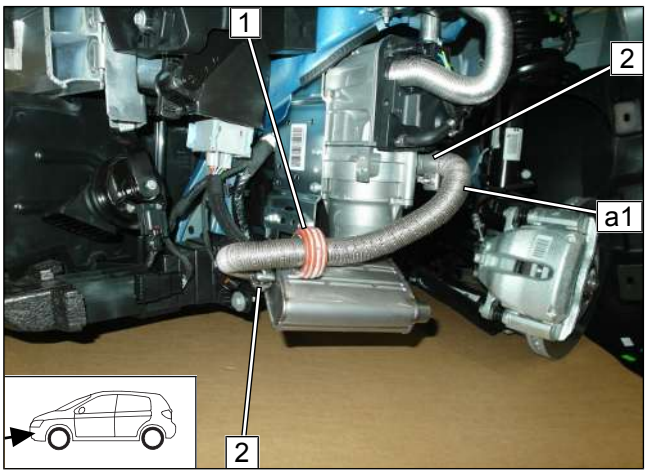


Fig. 65

1 Spacer bracket

2 Hose clamp

Premounting exhaust pipe **a2**

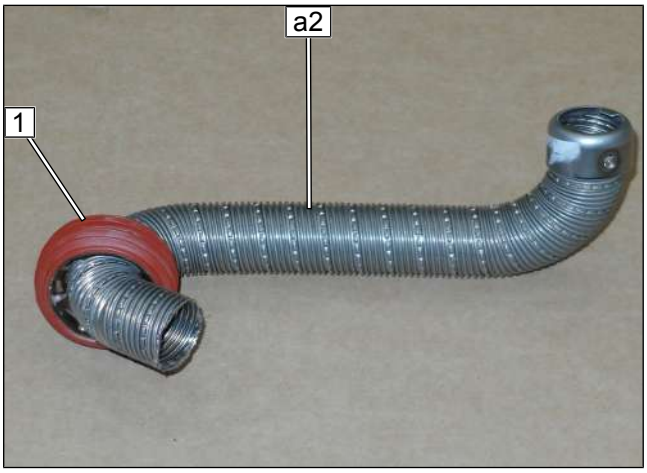


Fig. 66

1 Spacer bracket

Mounting exhaust pipe **a2**

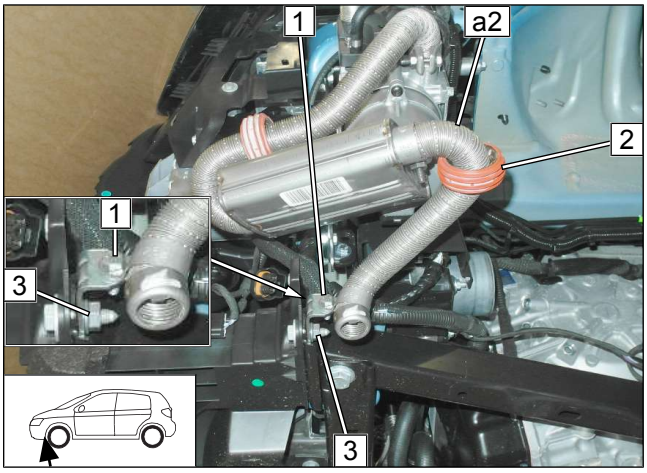


Fig. 67

1 M6x20 bolt, angle bracket, pipe clamp, flanged nut

2 Spacer bracket

3 Original vehicle bolt, angle bracket, M8 flanged nut

12 Coolant

12.1 Mounting coolant pump

Premounting coolant pump

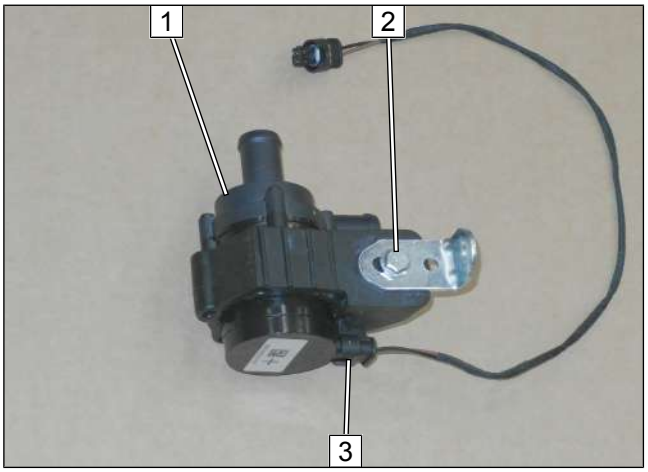


Fig. 68

1 Coolant pump
2 M6x25 bolt, angle bracket, coolant pump mount, flanged nut
3 Coolant pump wiring harness connector

Mounting coolant pump

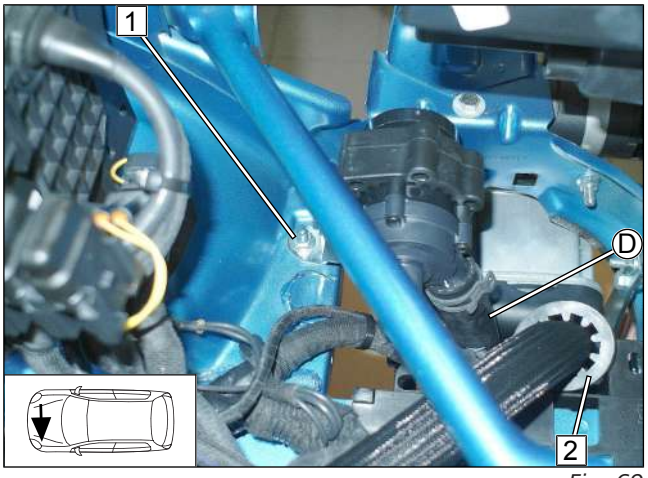


Fig. 69

1 Original vehicle stud bolt, angle bracket, flanged nut
2 Position black rubber isolator

Mounting coolant pump wiring harness

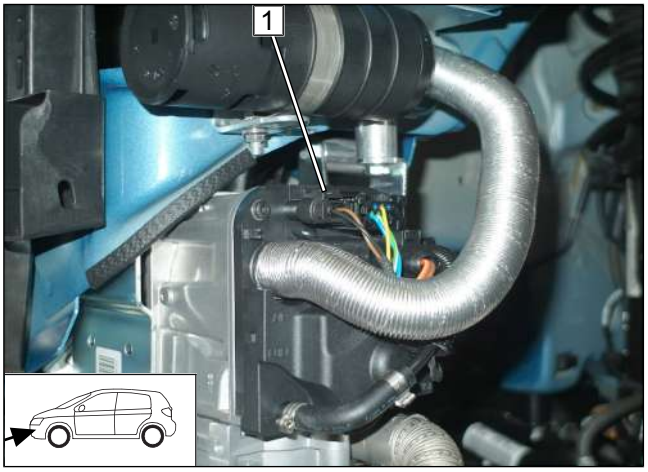


Fig. 70

1 Coolant pump wiring harness connector

12.2 Hose routing diagram

'Inline' coolant circuit

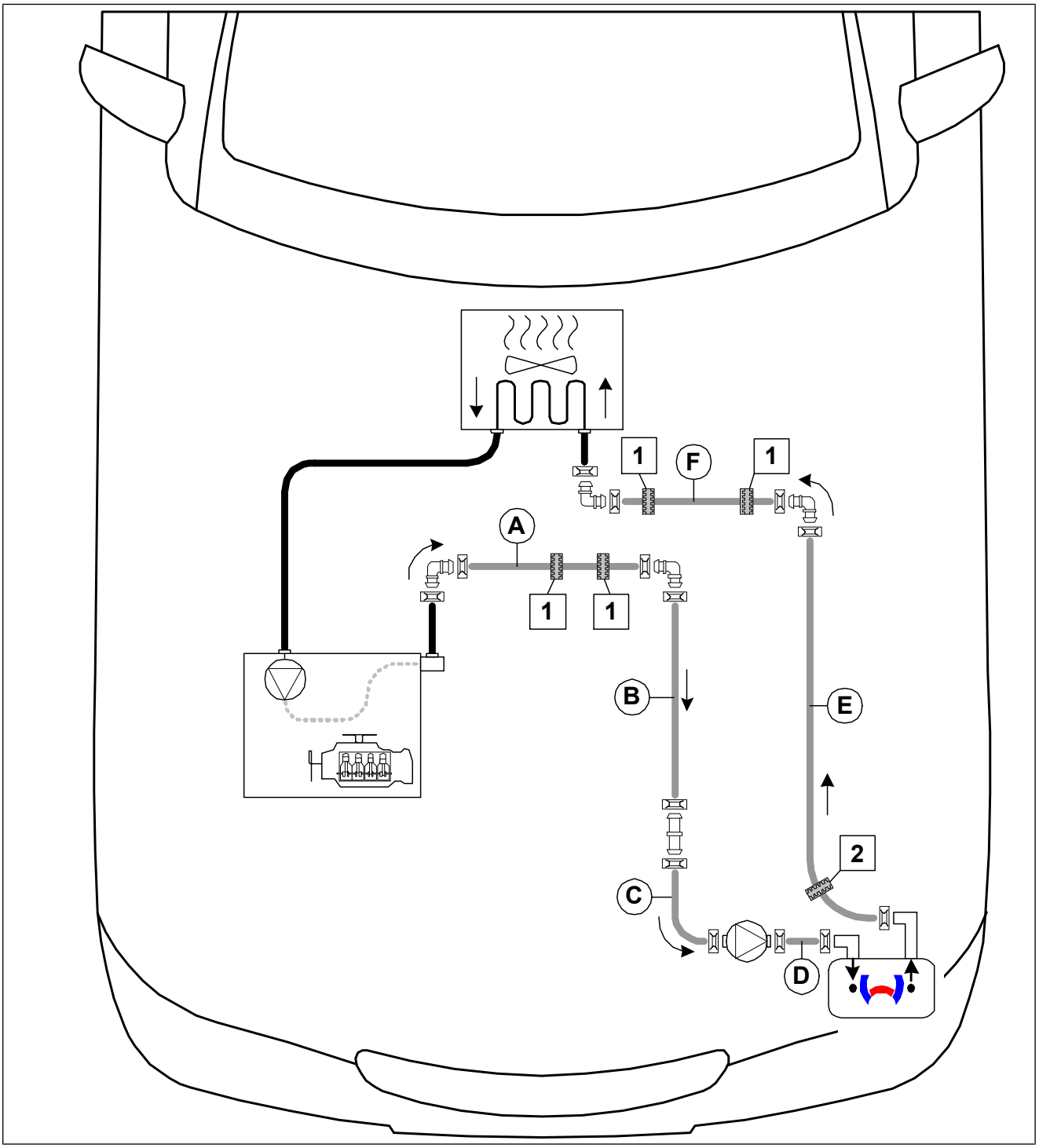


Fig. 71

All spring clips = 25mm dia.

All connecting pipe or = 18x18mm dia.

1 Black (sw) rubber isolator = 18mm $_{inner}$ dia.

2 Black (sw) rubber isolator = 20mm $_{inner}$ dia.

12.3 Coolant circuit installation

Premounting hoses **B** and **C**

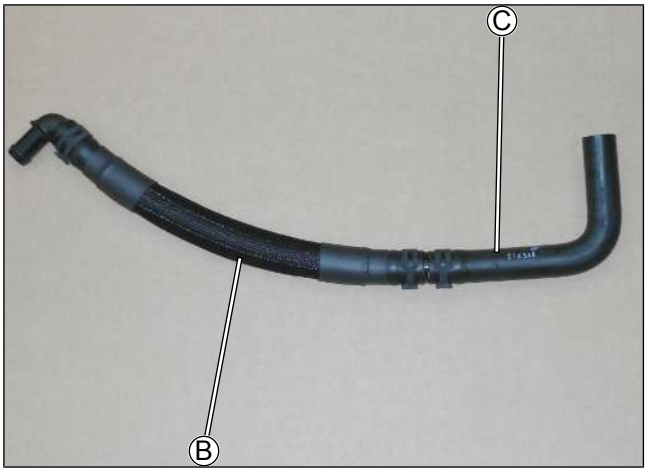


Fig. 72

Cutting point

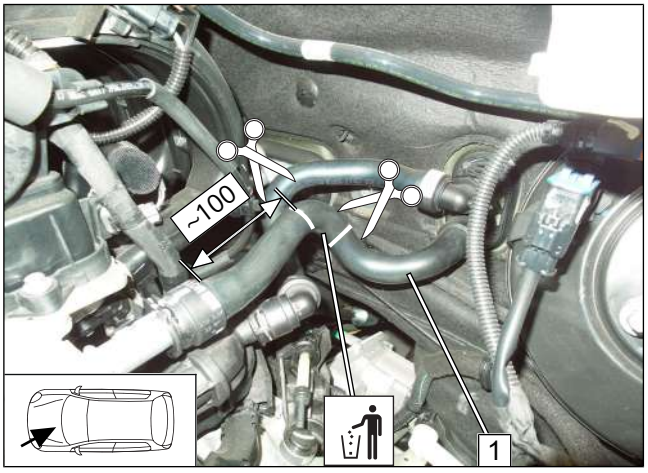


Fig. 73

1 Engine outlet / heat exchanger inlet hose

Mounting hose **C**

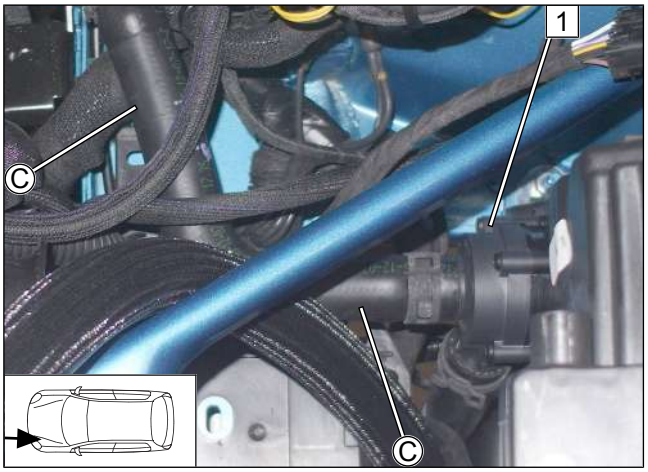


Fig. 74

1 Coolant pump

Preparing engine outlet / heat exchanger inlet hose sections

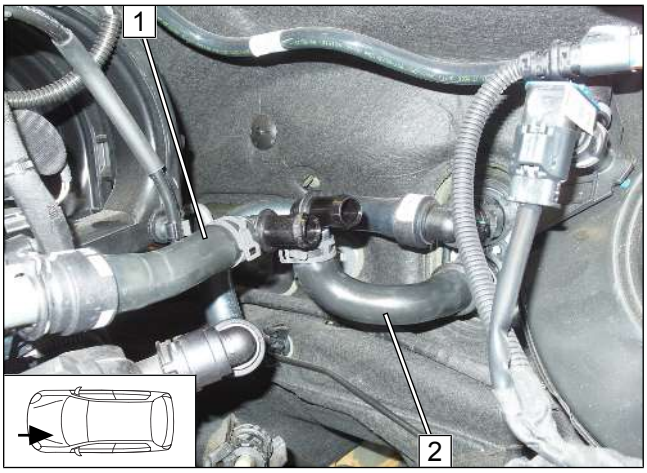


Fig. 75

1 Engine outlet hose section
2 Heat exchanger inlet hose section

Connecting hoses **A** and **B**

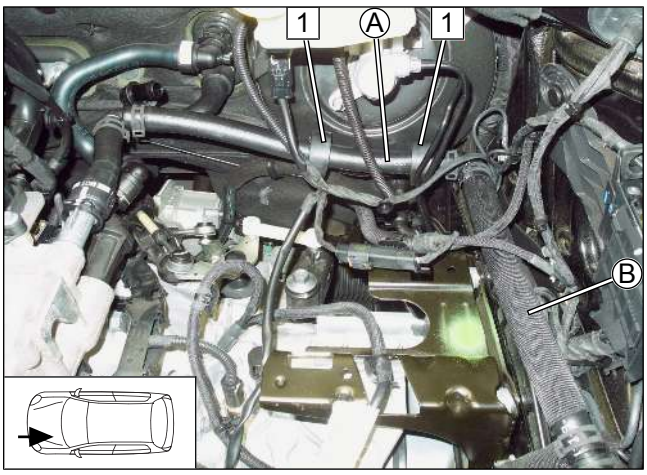


Fig. 76

1 Black (sw) rubber isolator

Engine outlet connection

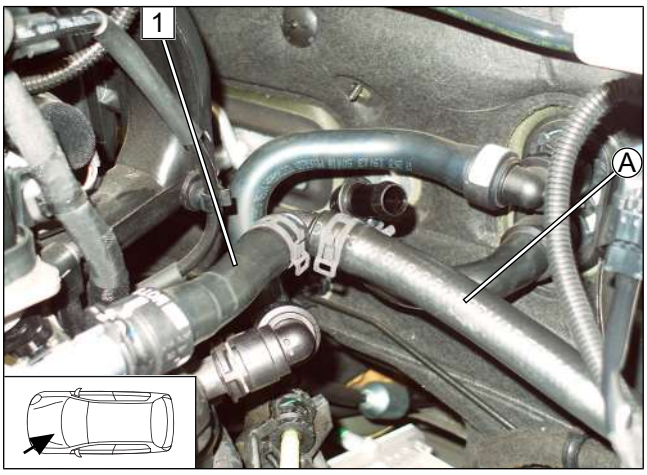


Fig. 77

1 Engine outlet hose section

Routing hose **E**

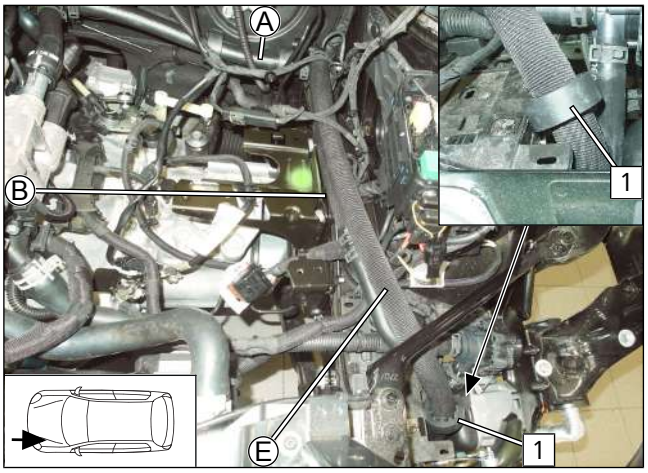


Fig. 78

1 Position black (sw) rubber isolator

Heat exchanger inlet connection

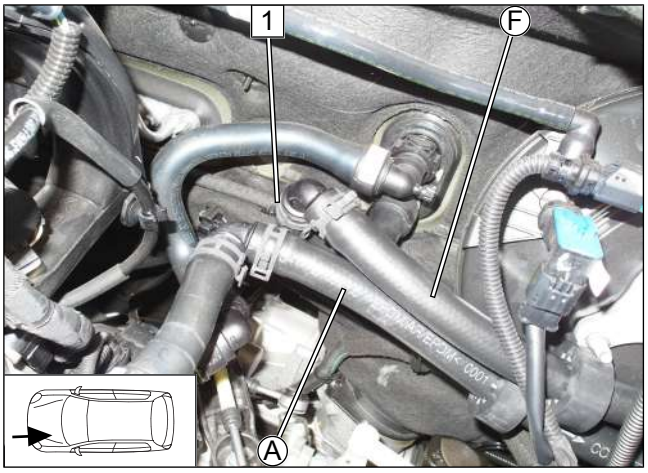


Fig. 79

1 Heat exchanger inlet hose section

Aligning black (sw) rubber isolator

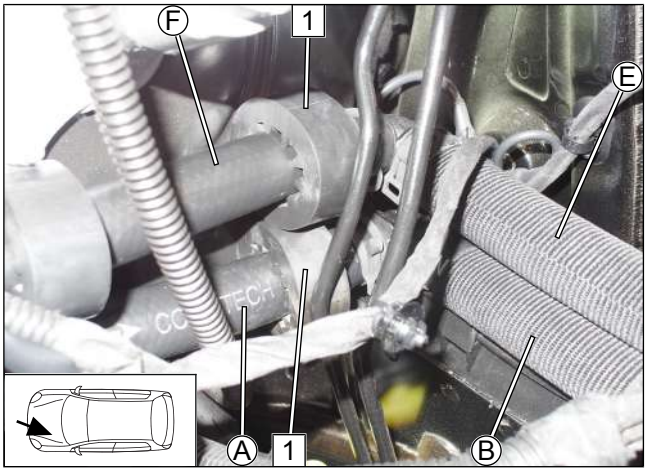


Fig. 80

1 Black (sw) rubber isolator

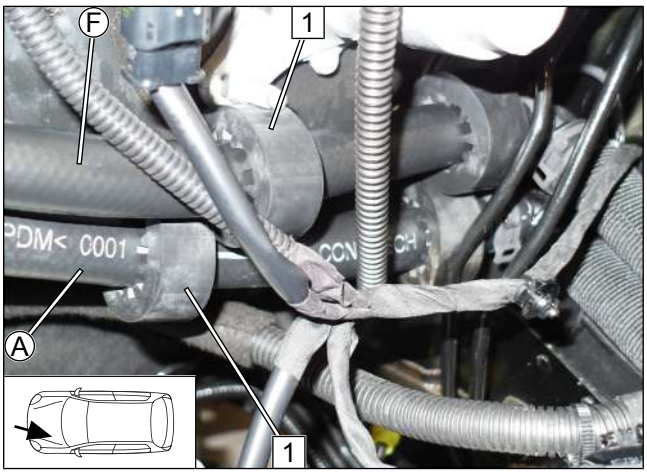


Fig. 81

1 Black (sw) rubber isolator

Mounting hose bracket

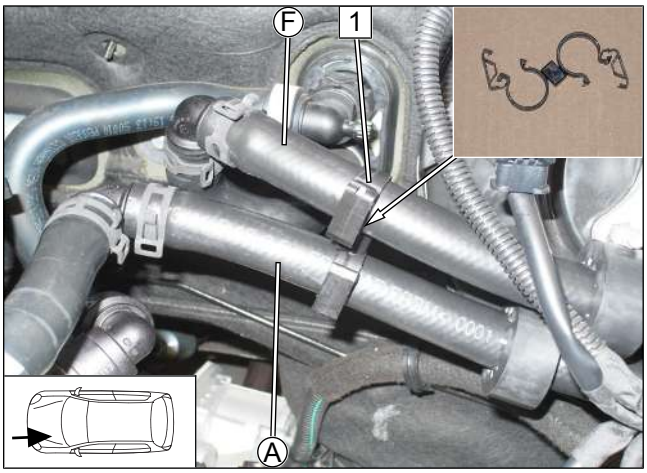


Fig. 82

1 Hose bracket

12.4 Fastening hoses

Mounting rub protection

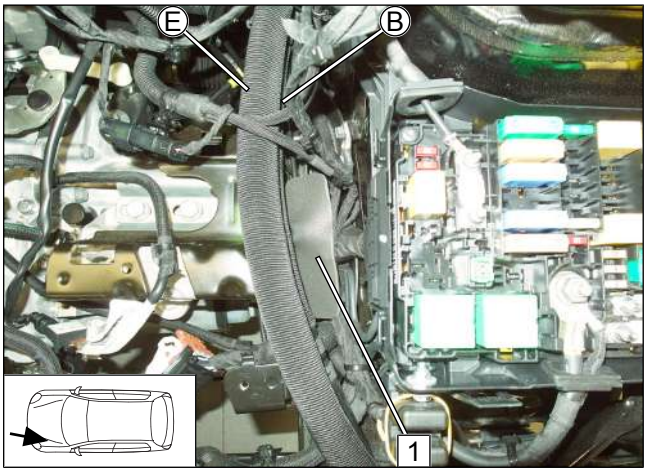


Fig. 83

1 Self-adhesive foam

Fastening hoses **B** and **E**

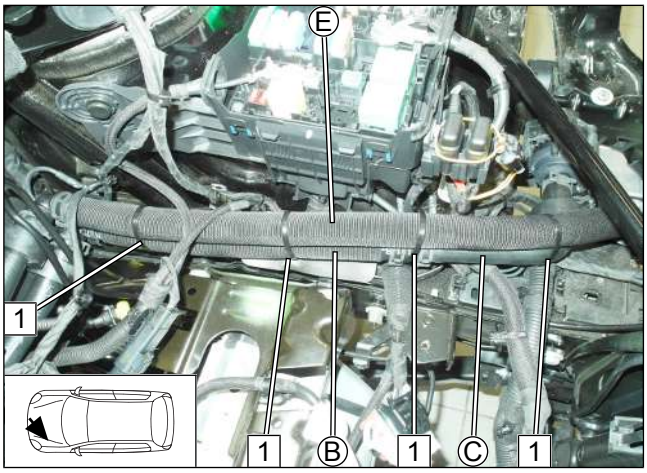


Fig. 84

▶ Fasten hoses **B**, **C** and **E** as shown.

1 Cable tie

Mounting edge protection

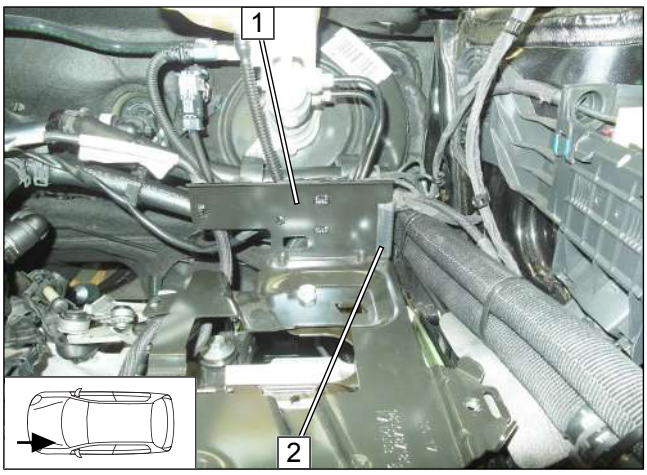


Fig. 85

▶ Mount battery carrier **1**.

▶ Mount 50mm long edge protection **2**.

13 Final work for exhaust system

Sticking on heat protection film

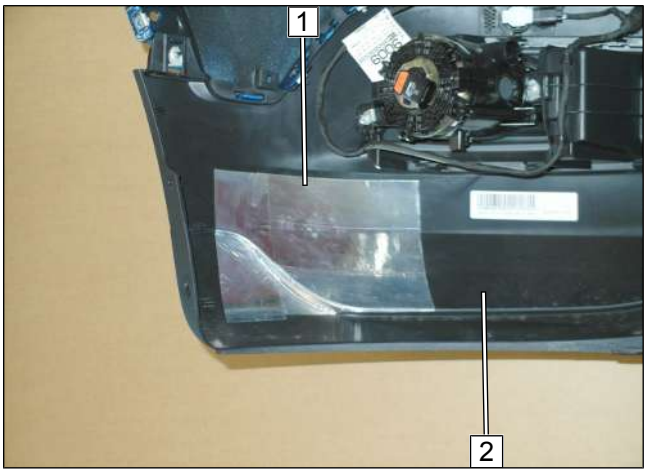


Fig. 86

1 Heat protection film
2 Bumper trim

Detaching wiring harness

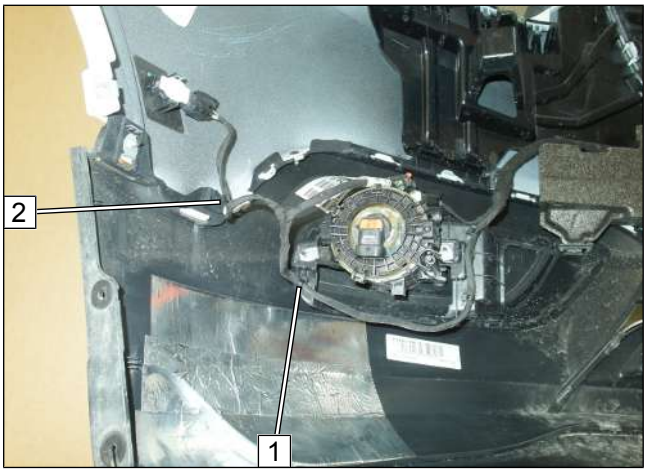


Fig. 87

1 Remove and discard clip-type cable tie
2 Remove and discard clip-type cable tie (if available)

Routing and fastening wiring harness again

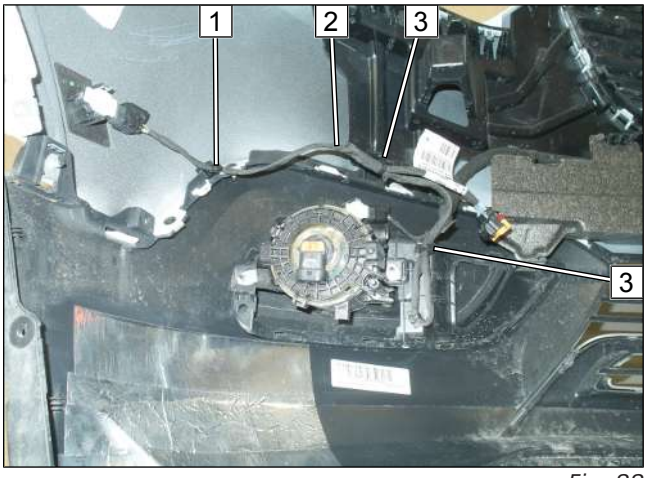


Fig. 88

▶ Route and fasten original vehicle wiring harness **2** as shown.

1 Edge clip cable tie
3 Cable tie

Mounting bumper

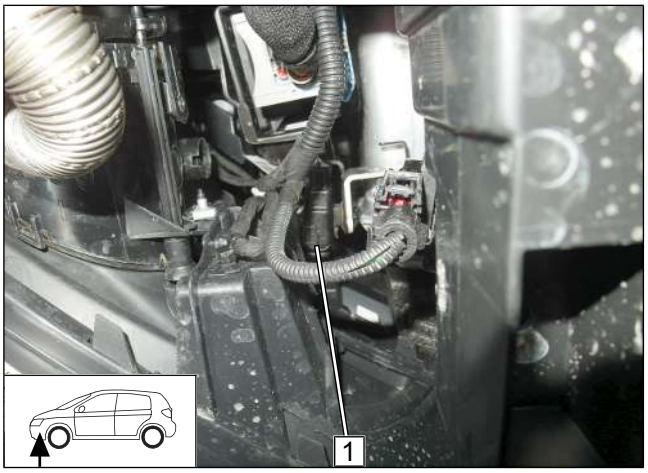


Fig. 89

▶ Mount connector 1 when attaching the bumper.

Checking distances

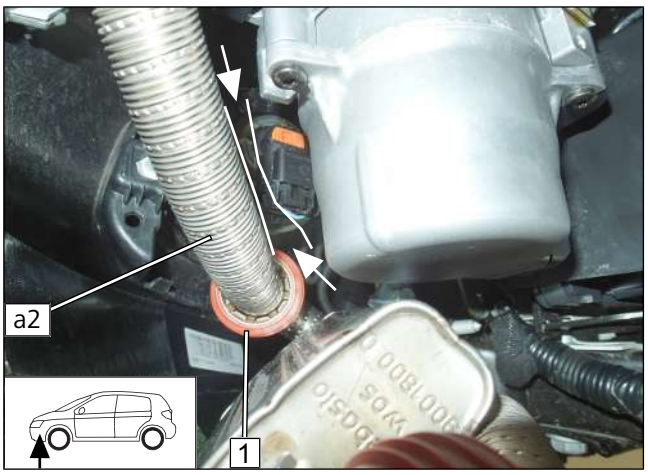


Fig. 90

Ensure sufficient distance from neighbouring components, correct if necessary.

>15

1 Position spacer bracket

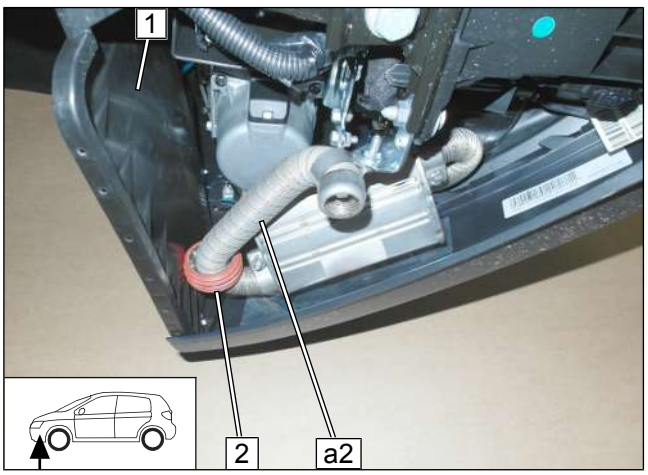


Fig. 91

1 Wheel-well inner panel
2 Position spacer bracket

14 Electrical system of passenger compartment

14.1 Preliminary work

Preparing / assigning wires

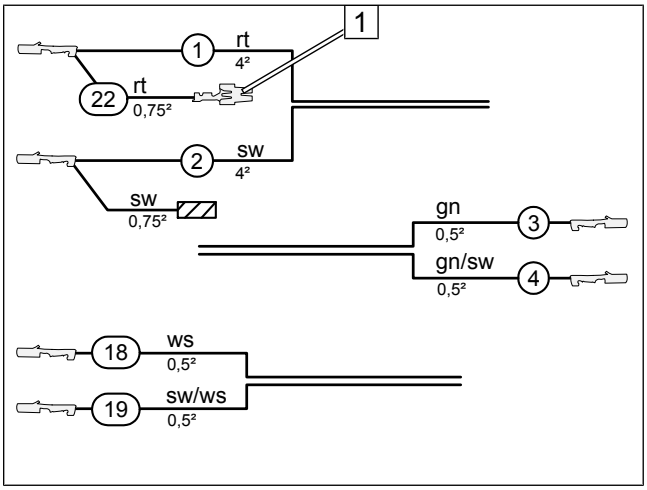


Fig. 92

Wire sections retain their numbering in the entire document.

1 Flat spring contact
- **1** Red (rt) wire of fan wiring harness
- **2** Black (sw) wire of fan wiring harness
- **3** Green (gn) wire of PWM control wiring harness
- **4** Green/black (gn/sw) wire of PWM control wiring harness
- **18** White (ws) wire of power supply wiring harness
- **19** Black/white (sw/ws) wire of power supply wiring harness

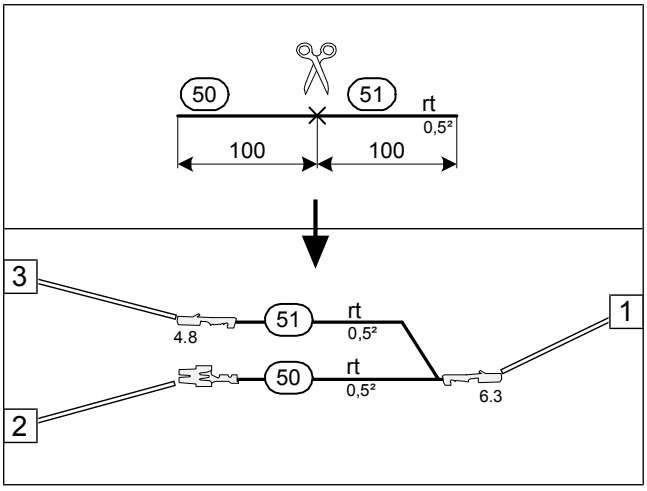


Fig. 93

1 6.3mm blade receptacle
2 Flat spring contact
3 4.8mm blade receptacle

View of PWM Gateway

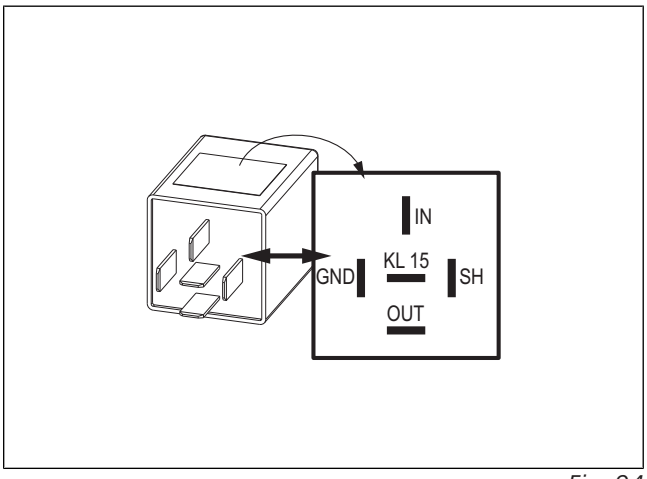


Fig. 94

▶ Check PWM Gateway settings when starting-up the heater, adjust if necessary.

Parameters	Setting
Duty cycle	70% [DC]
Frequency	400Hz
Voltage	not relevant
Function	Low-side

Assembling RSH and PWM GW sockets, connecting wires

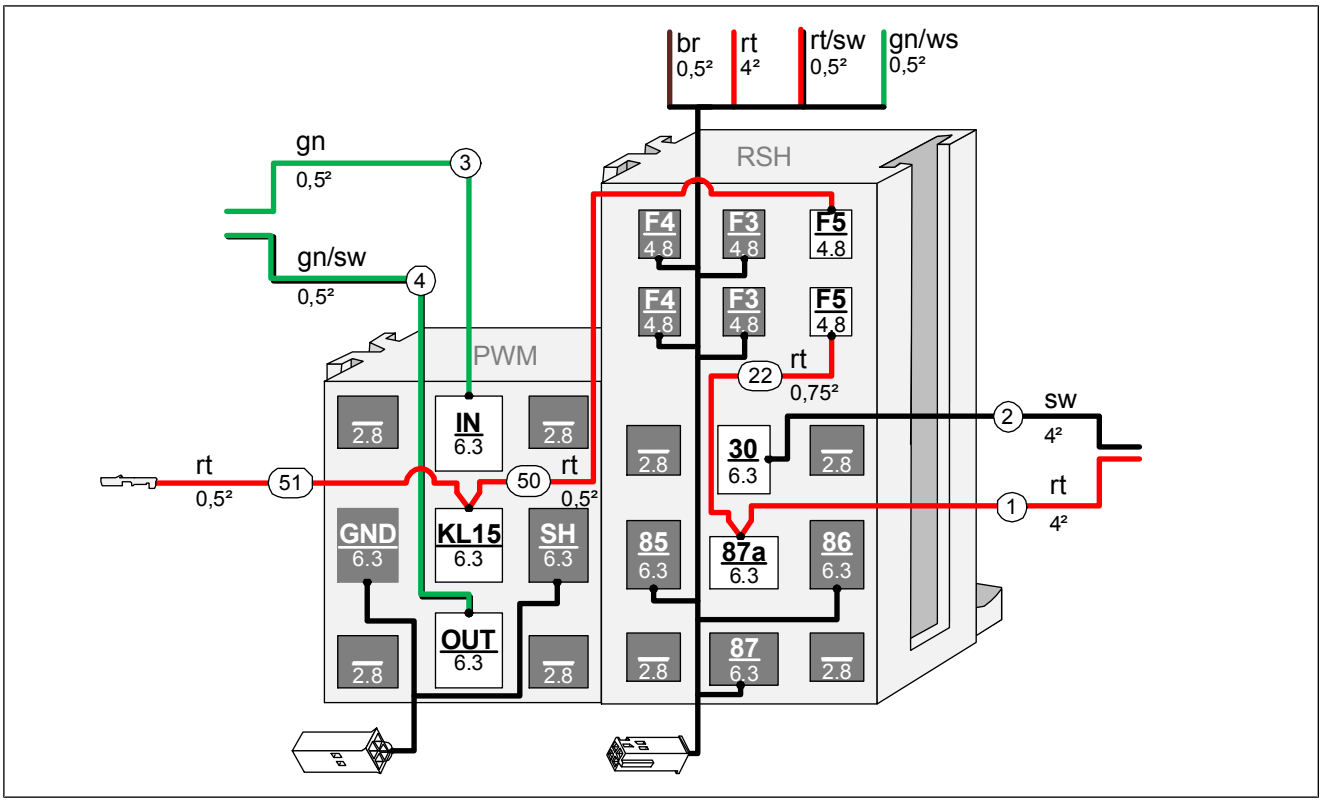


Fig. 95

Preparing relay K2 socket

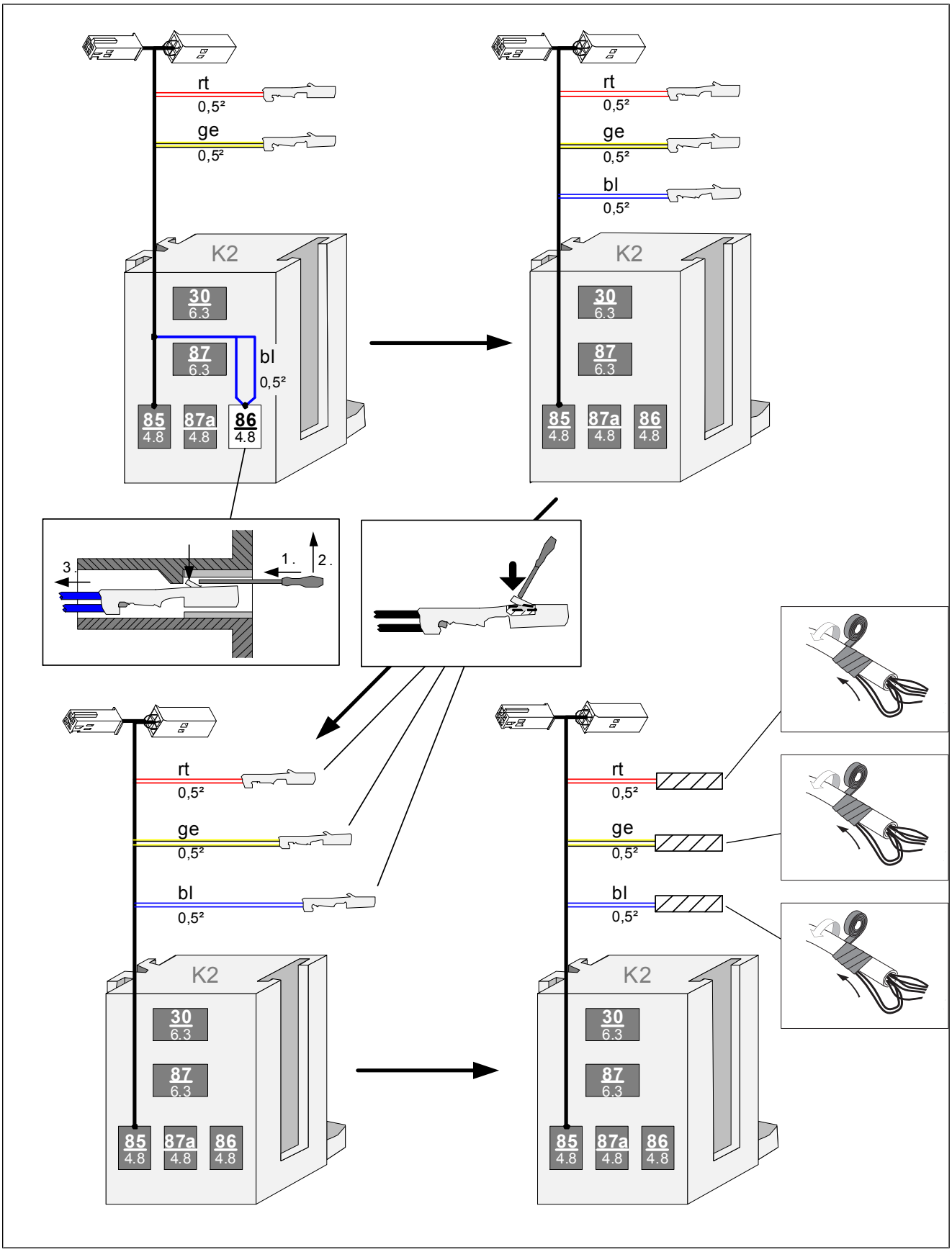


Fig. 96

Assembling PWM GW and relay K2 sockets, connecting wires

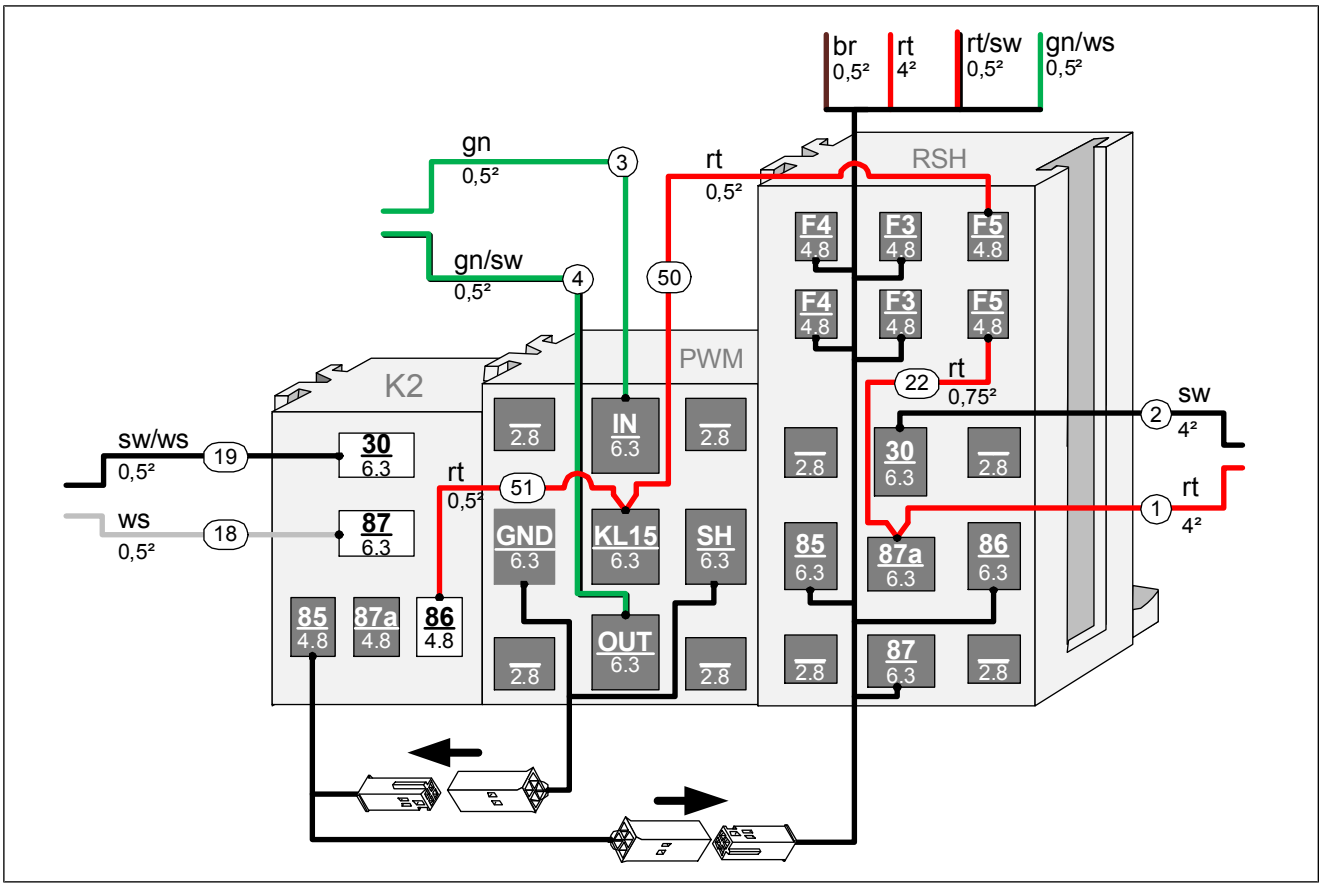


Fig. 97

Mounting perforated bracket

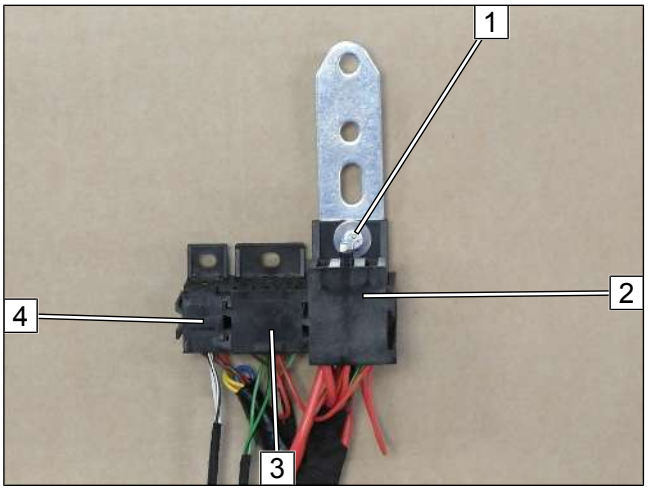


Fig. 98

1. M5x16 bolt, large diameter washer, RSH socket, perforated bracket, large diameter washer, nut
2. RSH socket
3. PWM GW socket
4. Relay K2 socket

Completing premounted socket

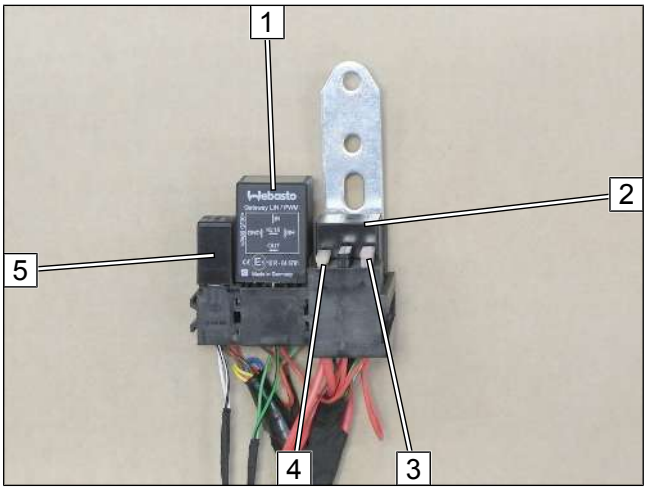


Fig. 99

1 PWM GW
2 Relay K1
3 3A fuse F5
4 25A fuse F4
5 Relay K2

14.2 System wiring diagram for manual air-conditioning and 2-zone automatic A/C

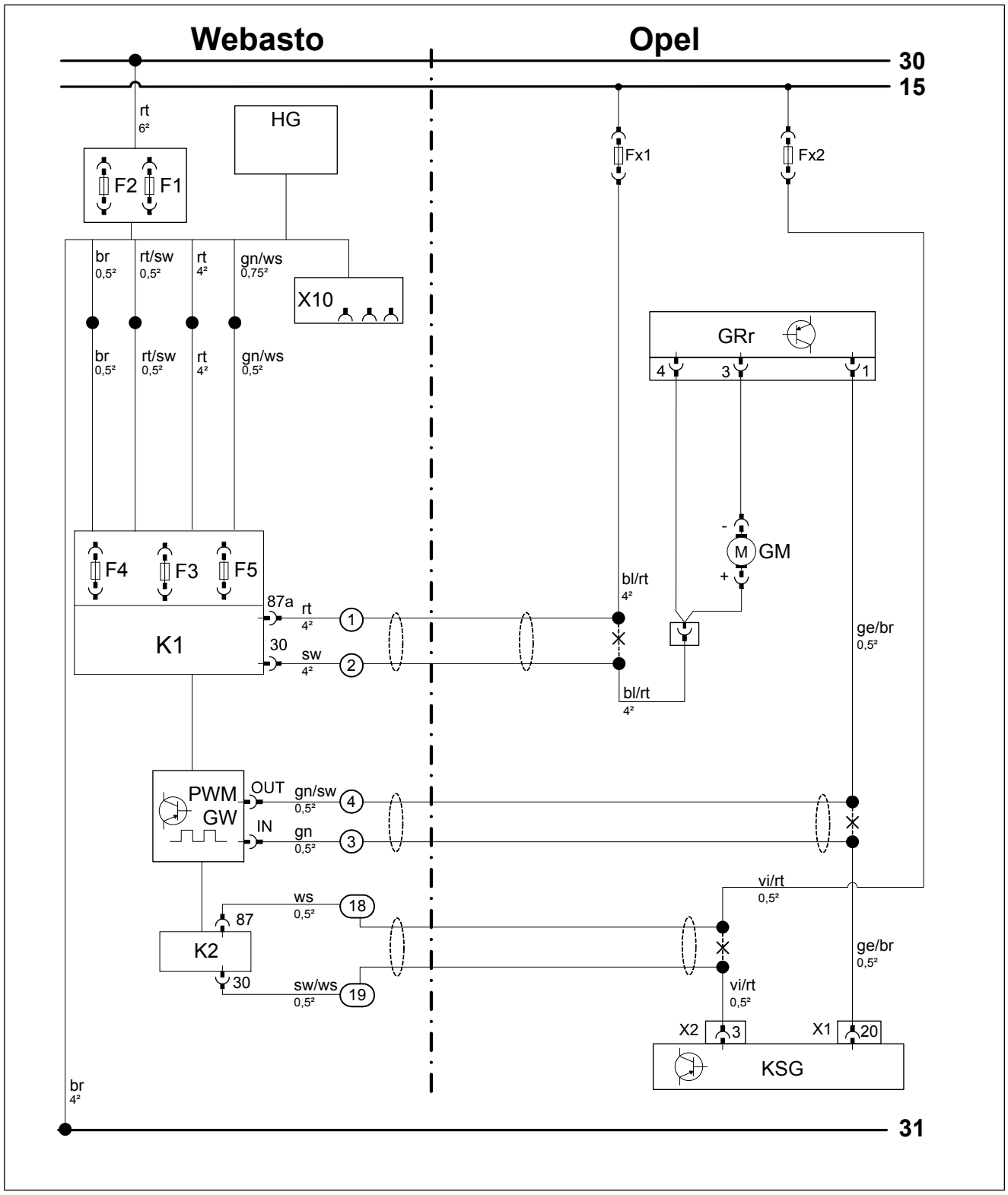


Fig. 100

Legend to wiring diagram

Vehicle components		Symbols	
Abbreviation	Component	Abbreviation	Designation
Fx1	40A fuse F1UA	X	Cutting point
Fx2	10A fuse F13DB		
GM	Fan motor		
GRr	Fan controller		
KSG	Air-conditioning control unit		
X2	KSG connector		
X1	KSG connector		

Webasto components		Cable colours	
Abbreviation	Component	Abbreviation	Colour
A	Connector of CLR module wiring harness	br	brown
B	Socket of CLR module wiring harness	bg	beige
CCL GW	CAN CAN LIN Gateway	dbl	dark blue
CL GW	CAN LIN Gateway	dgn	dark green
CLR	Cold start module	ge	yellow
D1	Diode	gn	green
D2	Diode group	gr	grey
F0	Additional fuse for power supply	hbl	light blue
F1	Heater main fuse	hgn	light green
F2	Passenger compartment fan controller main fuse	or	orange
F3	Heater control fuse	pk	pink
F4	Fan controller fuse	rt	red
F5	Additional fuse	sw	black
HG	Heater TT-Evo	vi	violet
K1	Relay K1	ws	white
K2	Relay K2		
K3	Relay K3		
LIN GW	LIN Gateway		
PWM GW	Pulse width modulator gateway		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	4-pin socket of heater control		

14.3 Fan controller

Mounting RSH

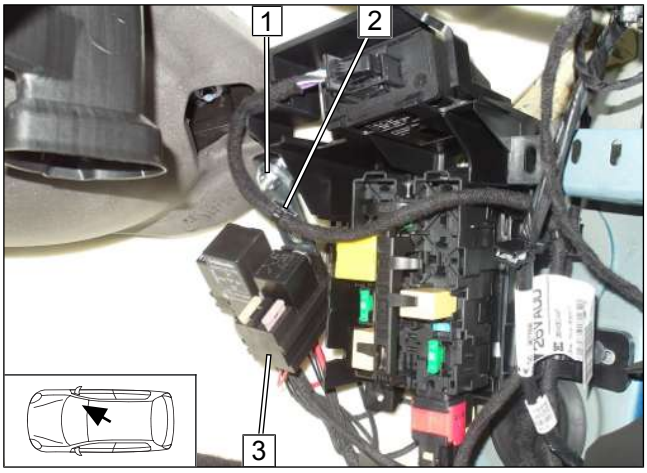


Fig. 101

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

▶ Remove original vehicle clip-type cable tie 2 at position 1 and remount it at position 2.

1 M6x20 bolt, original vehicle hole, perforated bracket, flanged nut

3 Premounted socket

Connecting same colour wires of wiring harnesses

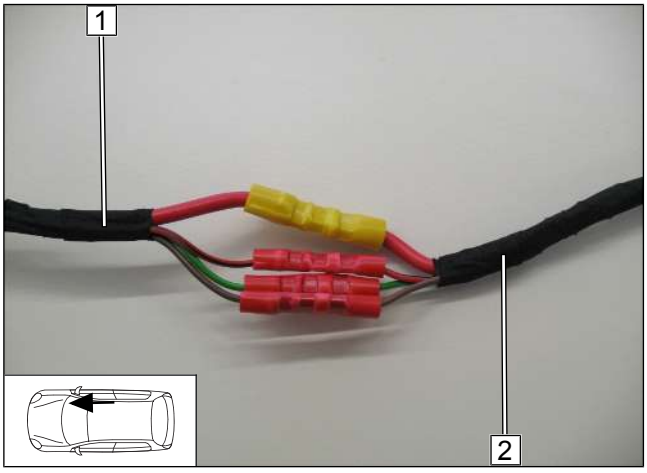


Fig. 102

1 Wiring harness of passenger compartment relay and fuse holder

2 Heater wiring harness

Fastening wiring harness

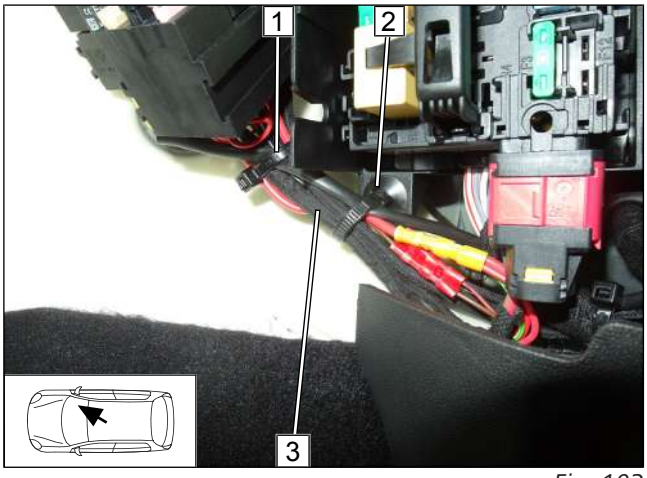


Fig. 103

1 Cable tie

2 Clip-type cable tie, original vehicle hole

3 Wiring harnesses

View of KSG connector

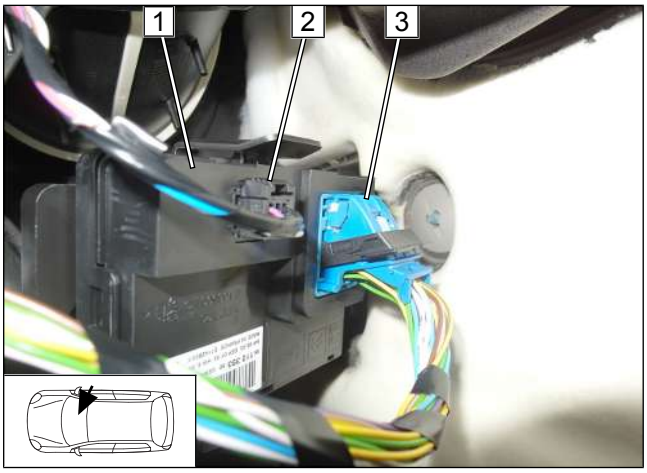


Fig. 104

1 KSG
2 6-pin KSG connector
3 40-pin KSG connector

Relay K2 connection

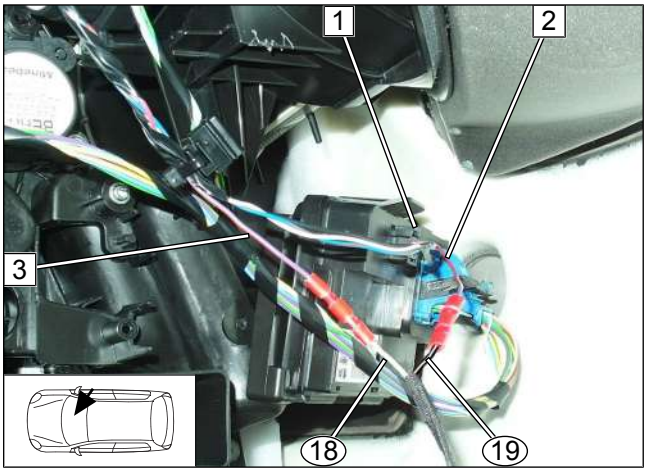


Fig. 105

1 6-pin KSG connector X2
2 Violet/red (vi/rt) wire from pin 3 of 6-pin KSG connector
3 Violet/red (vi/rt) wire of Fx2 fuse
18 White (ws) wire of power supply wiring harness
19 Black/white (sw/ws) wire of power supply wiring harness

PWM GW connection

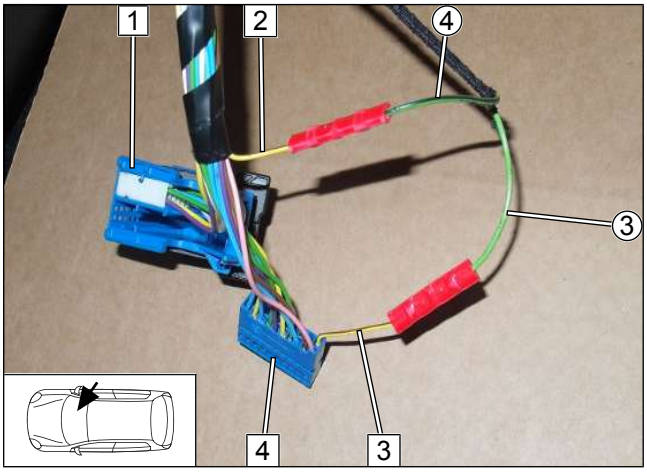


Fig. 106

1 40-pin KSG connector X1 housing
2 Yellow/brown (ge/br) wire from pin 1 of GRr
3 Yellow/brown (ge/br) wire from pin 20 of 40-pin KSG connector
4 Half of 40-pin KSG connector (pin 1-20)
3 Green (gn) wire of PWM control wiring harness
4 Green/black (gn/sw) wire of PWM control wiring harness

Fan motor connection

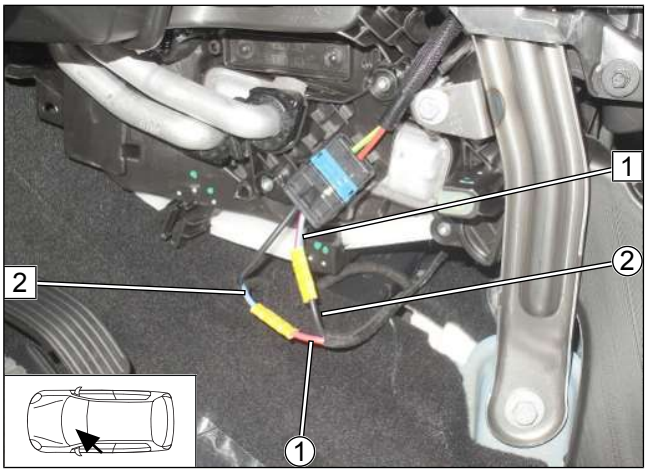


Fig. 107

1 Blue/red (bl/rt) wire of GM
2 Blue/red (bl/rt) wire of fuse Fx1
1 Red (rt) wire of fan wiring harness
2 Black (sw) wire of fan wiring harness

15 Electrical system of control elements

15.1 MultiControl CAR option

Mounting MultiControl CAR

Fig. 108

Observe the MultiControl CAR installation documentation.

1 Installation frame

15.2 Telestart option

Mounting receiver

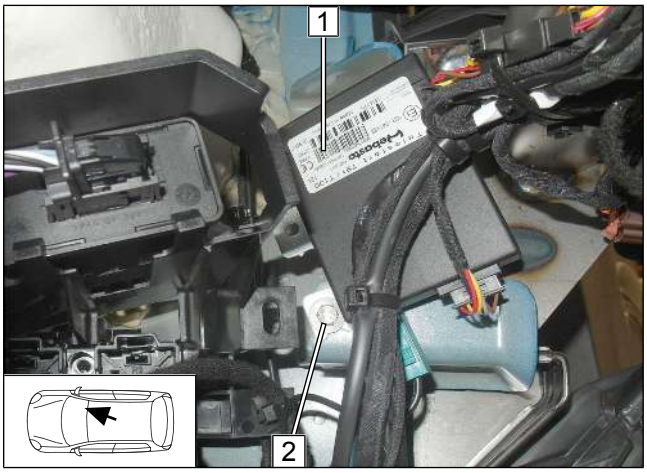


Fig. 109

Observe the Telestart installation documentation.

1 Receiver

2 M6x20 bolt, large diameter washer, receiver bracket, original vehicle hole, flanged nut

Mounting temperature sensor T100 HTM

Fig. 110

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

Mounting aerial

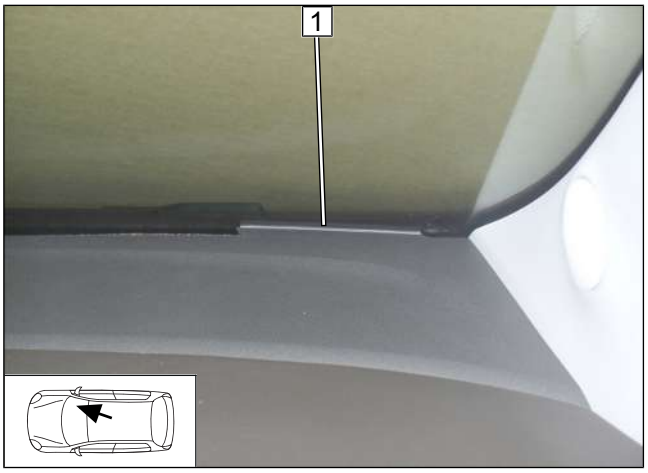


Fig. 111

1 Aerial

15.3 ThermoCall option

Mounting receiver

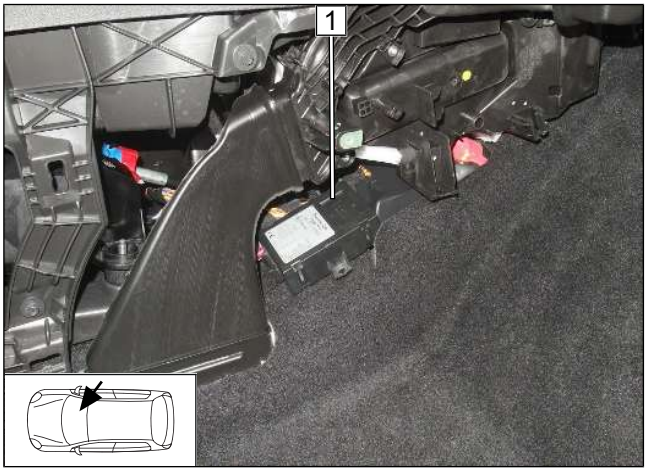


Fig. 112

Observe the ThermoCall installation documentation.

▶ Fasten receiver 1 using self-adhesive hook and loop fastening.

Mounting aerial (optional)

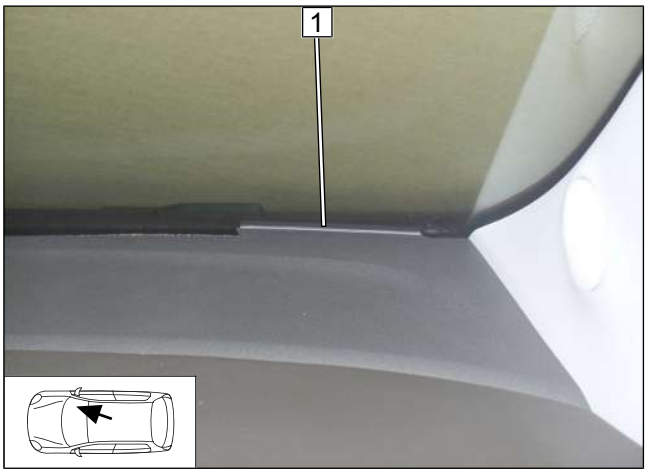


Fig. 113

1 Aerial

16 Final Work

Further information can be found in the vehicle manufacturer's technical documentation.

- ▶ Mount removed parts in reverse order.

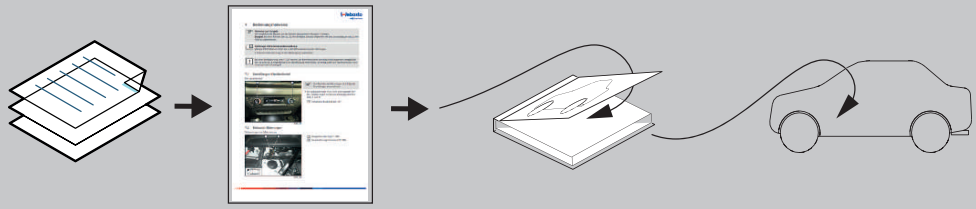
- ▶ Check all hoses, clamps and all electrical connections for firm seating.
- ▶ Insulate and tie back loose lines
- ▶ Spray heater and electrical components with anti-corrosion wax (Tectyl 100K).
- ▶ Connect the battery.

Only use manufacturer-approved coolant.

- ▶ Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.

Further information can be found in the general installation and operating instructions of the Webasto components.

- ▶ Program MultiControl CAR, teach Telestart transmitter
- ▶ Make settings on A/C control panel according to the 'Operating Instructions'.
- ▶ Initial operation and functional test
- ▶ Affix 'Switch off parking heater before refueling' caution label in area of filler neck



These are the original instructions. The German language is binding.
You can request your language if it is missing. The telephone number of each country can be found in the Webasto service centre leaflet or the website of the respective Webasto representative of your country.

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Only within Germany
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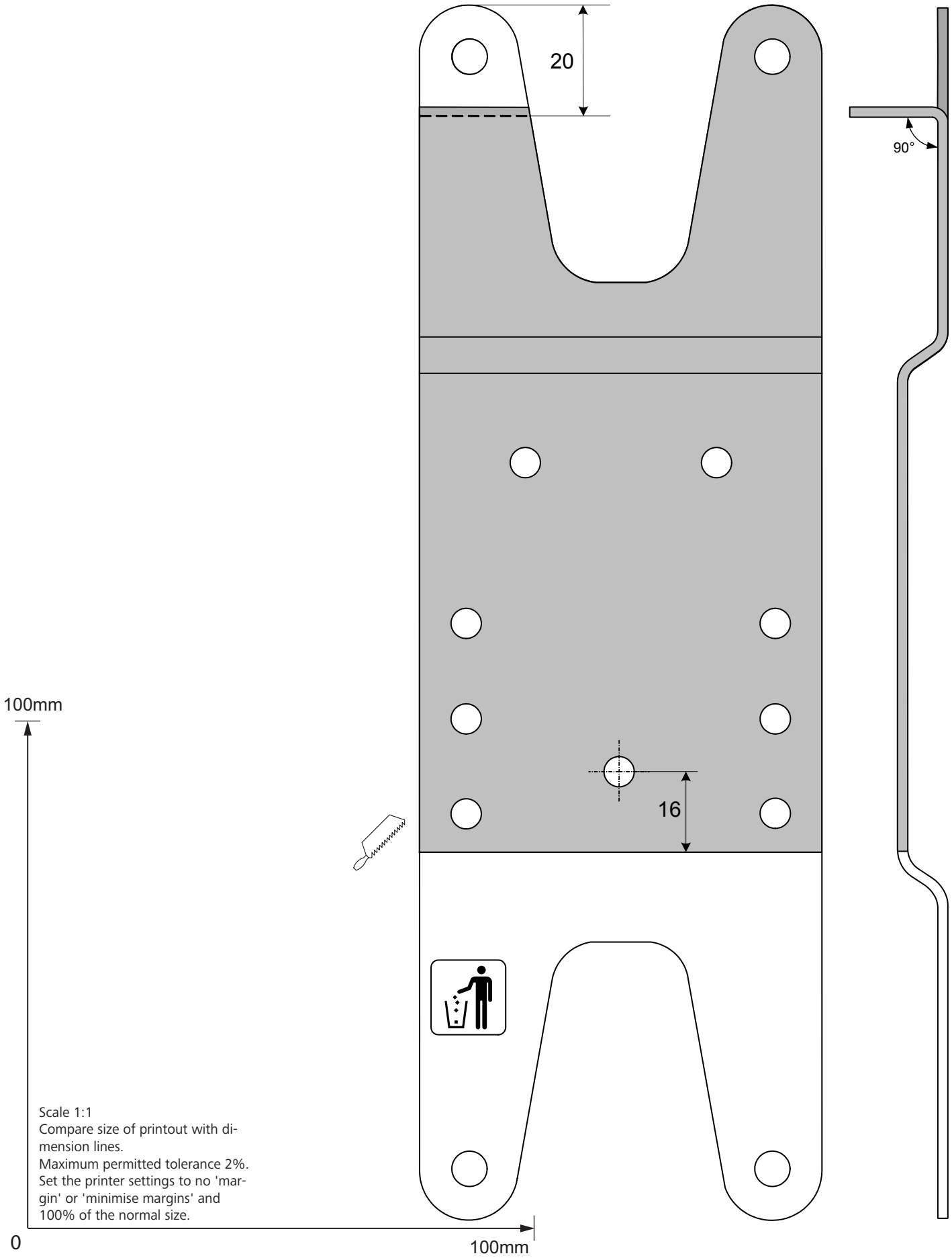
E-mail: technikcenter@webasto.com

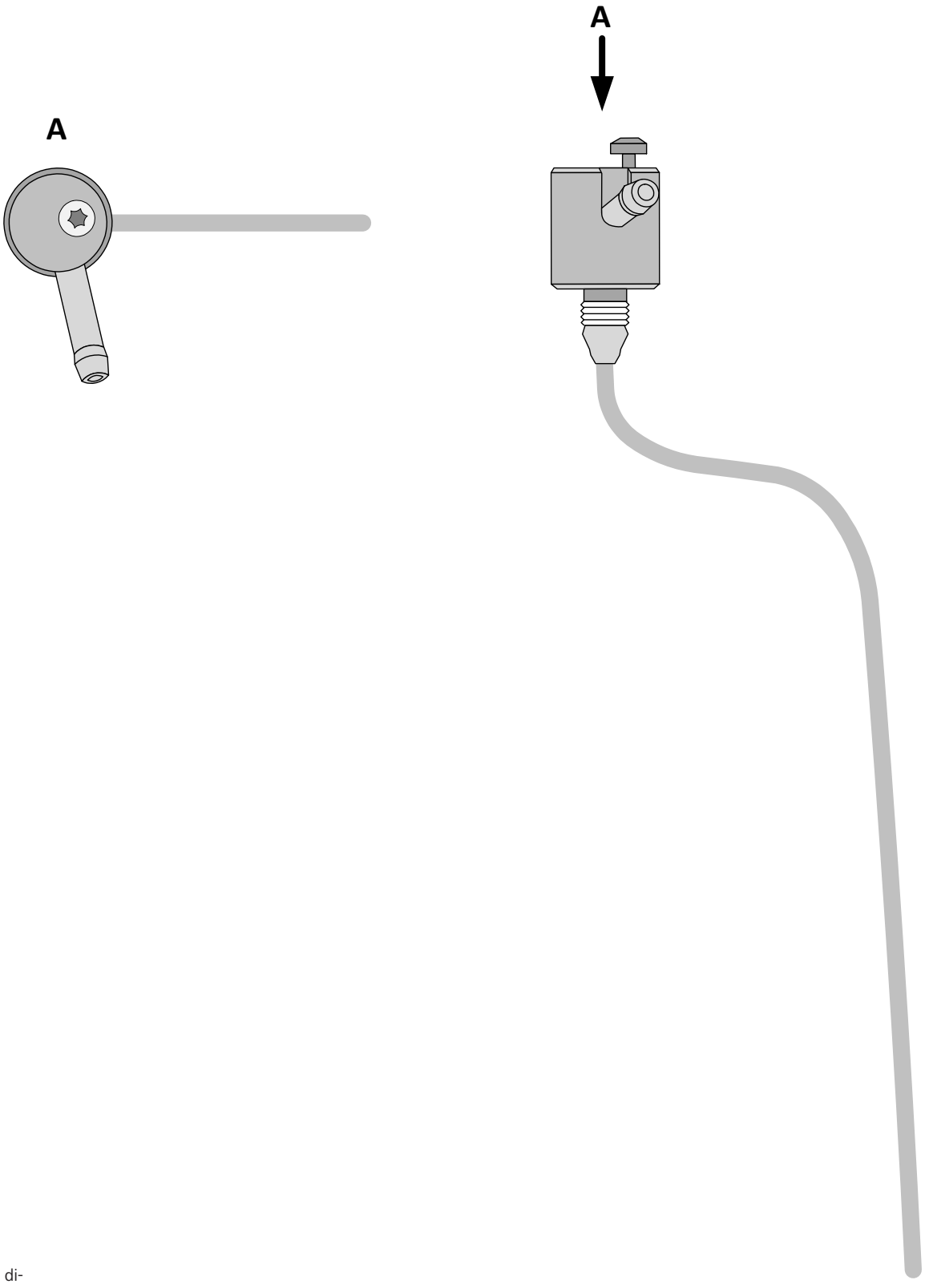
CE

WWW.WEBASTO.COM

17 Bracket B template



18 FuelFix template



100mm

Scale 1:1
Compare size of printout with dimension lines.
Maximum permitted tolerance 2%.
Set the printer settings to no 'margin' or 'minimise margins' and 100% of the normal size.

0

100mm

19 Operating instructions for manual air-conditioning

Information regarding the heating time:

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.

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions.

▶ Deactivate passenger compartment monitoring for the heating operation

19.1 A/C control panel settings

Manual air-conditioning control panel

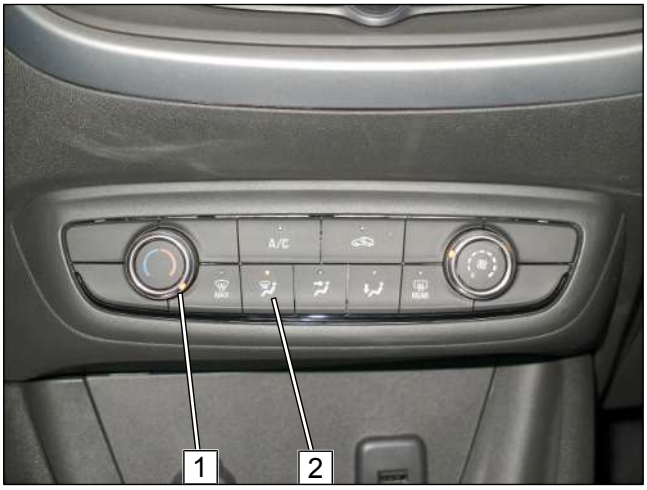


Fig. 114

Before parking the vehicle, make the following settings:

1 Set temperature to 'max.'
2 Air outlet to windscreen

Setting the fan speed is not required, it will automatically be set to approx. 1/3.

19.2 Installation location of fuses

Fuses in engine compartment

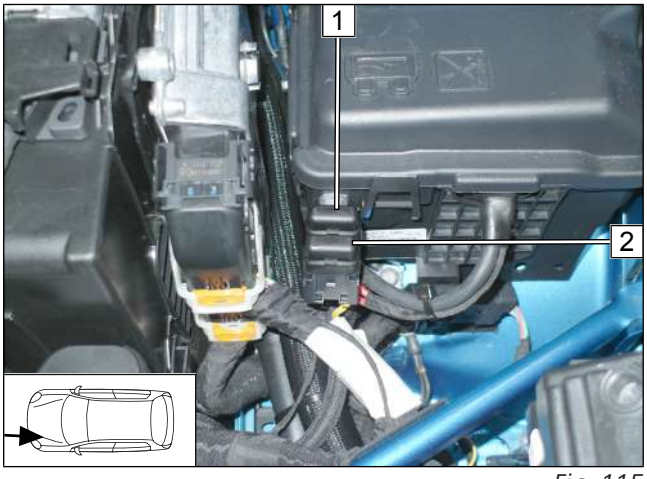


Fig. 115

1 F2 - 30A passenger compartment main fuse (light green)
2 F1 - 20A heater main fuse (yellow)

Fuses in passenger compartment

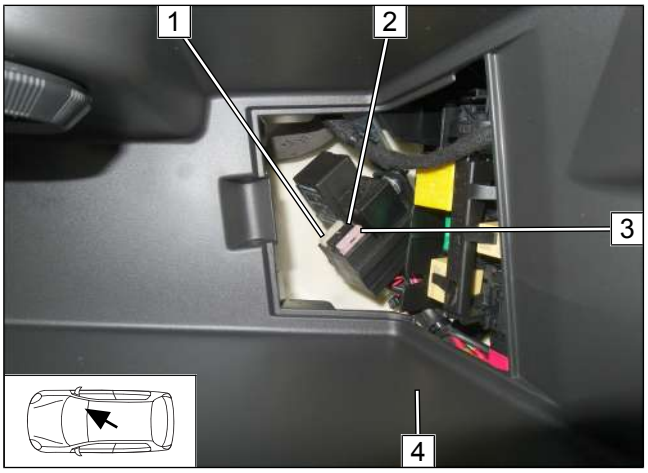


Fig. 116

1. F4 - 25A fan controller fuse (white or transparent)
2. F3 - 1A control element fuse (black)
3. F5 – Additional 3A fuse (violet)
4. Glove box

20 Operating Instructions for 2-Zone Automatic Air-Conditioning

Information regarding the heating time:

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.

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions.

▶ Deactivate passenger compartment monitoring for the heating operation

20.1 A/C control panel settings

Automatic A/C control panel

Fig. 117

Before parking the vehicle, make the following settings:

1 Temperature on both sides to 'HI'
2 Air outlet to windscreen

Setting the fan speed is not required, it will automatically be set to approx. 1/3.

20.2 Installation location of fuses

Fuses in engine compartment

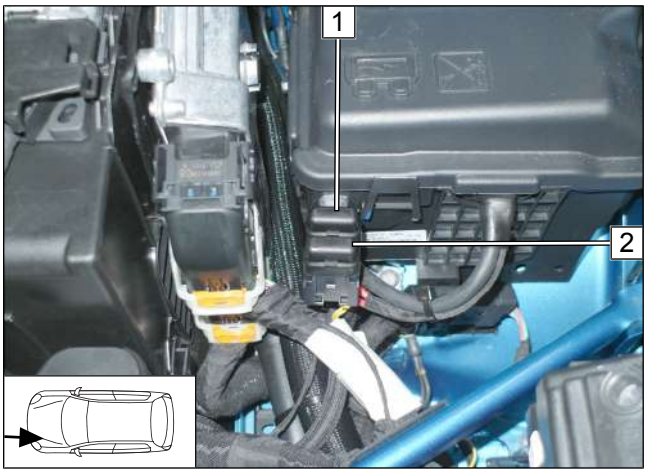


Fig. 118

1 F2 - 30A passenger compartment main fuse (light green)
2 F1 - 20A heater main fuse (yellow)

Fuses in passenger compartment

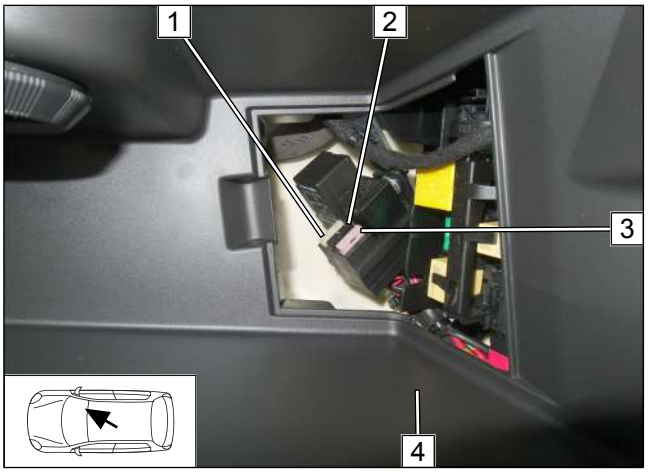


Fig. 119

1 F4 - 25A fan controller fuse (white or transparent)

2 F3 - 1A control element fuse (black)

3 F5 – Additional 3A fuse (violet)

4 Glove box