EN

K

# Installation documentation

## Thermo Top Evo water heater

## Kühlmittelkreislauf "Inline" mit Motorvorwärmung

Mercedes Benz X Class BR 470

Left-hand drive vehicle

| Manufacturer | Model | Type | Model year | EG-BE-No. / ABE |
|---|---|---|---|---|
| Mercedes Benz | X Class | 470 | from 2019 | e9* 2007/46* 6531*… |

| Motorisation | Fuel | Emission standard | Transmission type | Output [kW] | Displace-ment [cm³] | Engine code |
|---|---|---|---|---|---|---|
| 350d | Diesel | Euro 6d Temp | AG | 190 | 2987 | OM 642 |

| Validity | Equipment variants | Model |
|---|---|---|
| | | X Class |
| Verified equipment variants | Automatic air-conditioning | x |
| | LED main headlights | x |

| Total installation time | Note |
|---|---|
| 7.4 hours | |

# Contents

# 1 List of abbreviations

| | |
|---|---|
| AG | Automatic transmission |
| DP | Fuel pump |
| HG | Heater |
| MCC | MultiControl (control element) |
| PWM | Pulse width modulator |
| RSH | Relay and fuse holder of passenger compartment |
| 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 Information on the fording depth limitation of the vehicle

**Danger of damage to the heater:**

Please note that the installation location of the heater should be situated within the fording depth indicated by the vehicle manufacturer.

## 2.3 Components used

| Designation | Order number |
|---|---|
| Basic delivery scope of Thermo Top Evo | In accordance with price list |
| Installation kit for Mercedes Benz X Class BR 470 diesel 2019 | 1327207A |
| MultiControl installation frame, for installation of MultiControl CAR | 9030077_ |
| Timer cable extension, in case of MultiControl CAR installation | 1319724_ |
| In case of control element as well as Telestart indicator lamp in consultation with end customer | In accordance with price list |

## 2.4 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.

## 2.5 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

## 3.1 Purpose of the document

This installation documentation is part of the product and contains all the information required to ensure professional vehicle specific installation of the:

| Thermo Top Evo heater |
|---|

## 3.2 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.

### 3.2.1 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).

## 3.3 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.

### 3.3.1 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.

## 3.4 Using this document

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

### 3.4.1 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 | K |
| Vehicle-specific installation documentation of the cold start kit | M |
| Webasto Comfort A/C control | H |
| Webasto Standard A/C control | G |
| Tank extracting device (e.g. FuelFix) | F |
| Exhaust end fastener (EFIX) | E |
| Combustion air intake silencer | L |
| Spacer bracket (ASH) | S |

### 3.4.2 Use of symbols

**DANGER**

Type and source of the risk

Consequences: Failure to follow the instructions can result in death

▶ Actions to protect yourself against risks.

**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

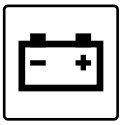
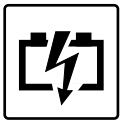
▶ Actions to protect yourself against risks.

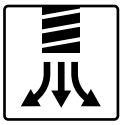
Reference to the vehicle manufacturer's specific documents.

Note on a special technical feature

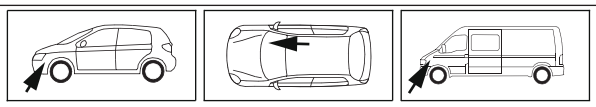
### 3.4.3 Work step identification marks

The ongoing work step is indicated on the outside top corner of the page:

| Mechanical system | Electrical system | High-voltage | Coolant |
|---|---|---|---|
|  |  |  |  |

| Combustion air | Fuel | Exhaust | Software |
|---|---|---|---|
|  |  |  |  |

### 3.4.4 Orientation aid



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

### 3.4.5 Use of highlighting

| Highlight | Explanation |
|---|---|
| ▶ | Necessary action |
| ⇨ | 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 coolant hose sections |

# 4 Technical Information

| Dimension specifications |
|---|
| – All dimensions specified in mm |
| – Perforated brackets and mounting angles are shown to scale |
| – Observe data regarding scale on the templates |

| 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 tubing |
|---|
| – Shrink temperature max. 230°C |

| Necessary special tools |
|---|
| – Hose clamp pliers for auto-tightening 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 male 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.

| Vehicle area | Components to be removed | Other applicable documents |
|---|---|---|
| General | ▶ Open the fuel tank cap<br>▶ Ventilate the fuel tank<br>▶ Close the fuel tank cap again<br>▶ Depressurise the cooling system<br>▶ Drain off the coolant | K |
| Engine compartment and body | ▶ Transmission trim | K |
| Passenger compartment | ▶ Glove box<br>▶ Glove box trim<br>▶ Instrument panel trim under steering wheel<br>▶ A-pillar trim on the driver's side | K<br>G |

## 5.2 Heater preparation

| | | |
|---|---|---|
| Engine compartment | ▶ Remove years that do not apply from the type and duplicate label<br>▶ Attach the duplicate label (type label) in the appropriate place in the engine compartment | |

# 6 Installation overview

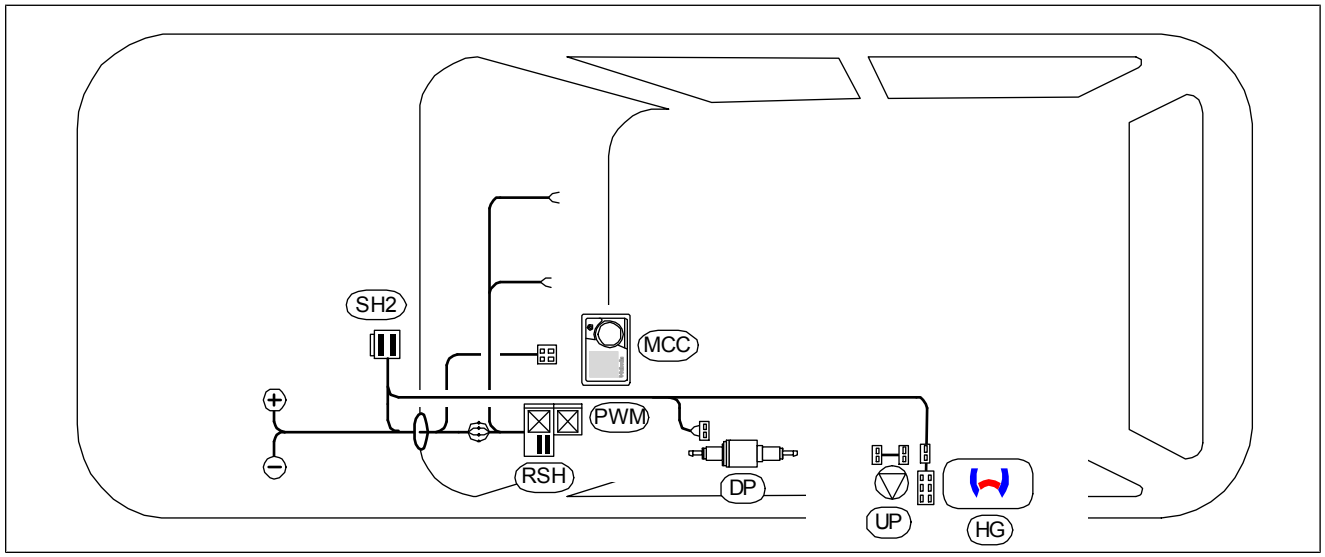



*Fig. 1*

## Legend to installation overview

| Abbreviation | Component |
|---|---|
| DP | Fuel pump |
| HG | Heater |
| MCC | MultiControl CAR |
| RSH | Relay and fuse holder of passenger compartment |
| PWM | Pulse width modulator |
| SH2 | Engine compartment fuse holder for F1/F2 |
| UP | Coolant pump |

## Heater installation location

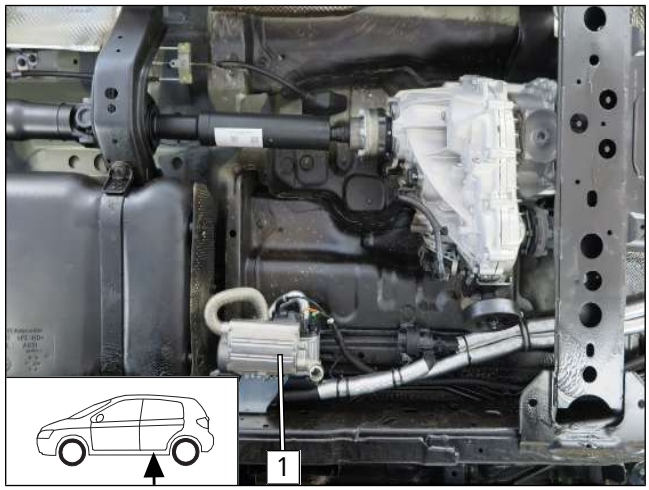



*Fig. 2*

1 Heater

# 7 Electrical system of engine compartment

## Premounting SH2 socket

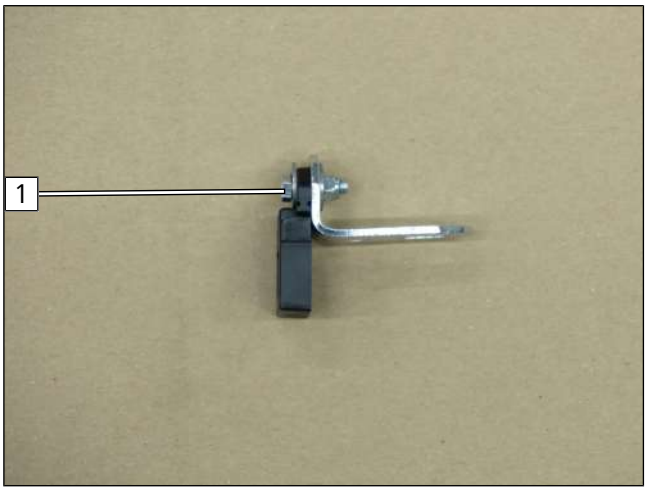



*Fig. 3*

**1** M5x16 bolt, large diameter washer, retaining plate of SH2, angle bracket, large diameter washer, nut

## Mounting SH2 socket

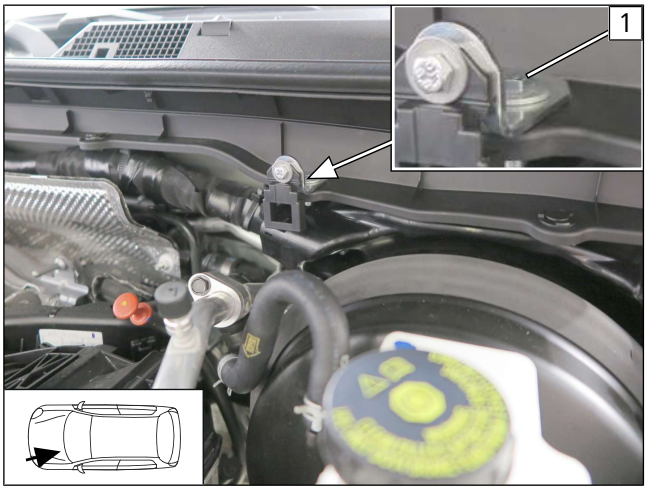



*Fig. 4*

**1** M6x20 bolt, large diameter washer, angle bracket, nut

## Preparing heater wiring harness

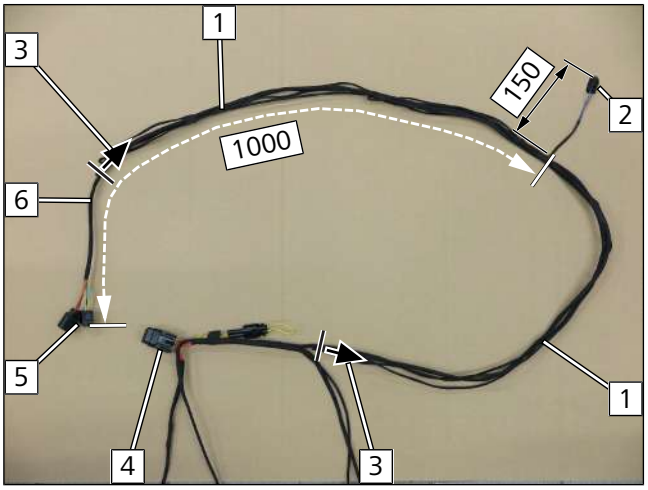



*Fig. 5*

▶ Reroute fuel pump wiring harness **1** several times along the heater wiring harness between the marking points **3**.

**2** Connector X7 of fuel pump wiring harness
**4** SH2
**5** Heater wiring harness connector
**6** Heater wiring harness

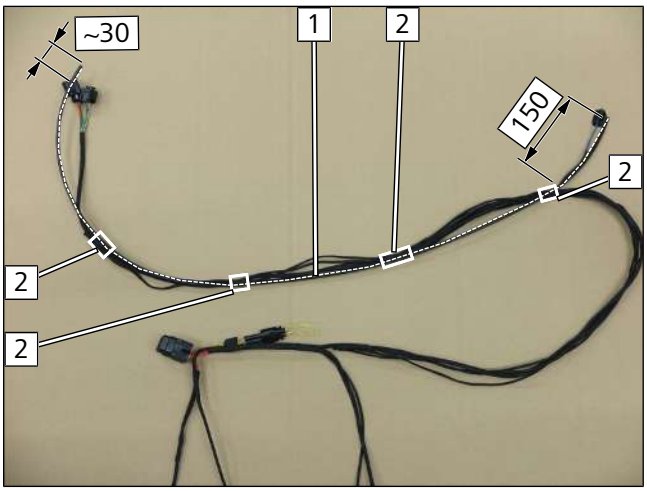



*Fig. 6*

▶ Route fuel line [1] along the heater wiring harness and fix with insulating tape [2] as shown.

[1] 1180 long fuel line

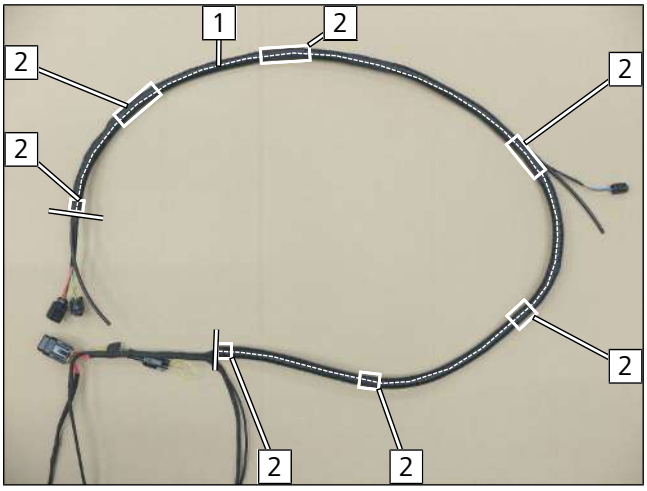



*Fig. 7*

▶ Draw heater wiring harness and fuel line into corrugated tube [1] as shown and fix with insulating tape [2].

[1] Ø13, 1600 long slit corrugated tube

## Installing SH2


*Fig. 8*

[1] Fuse F1/F2

## Installing lines

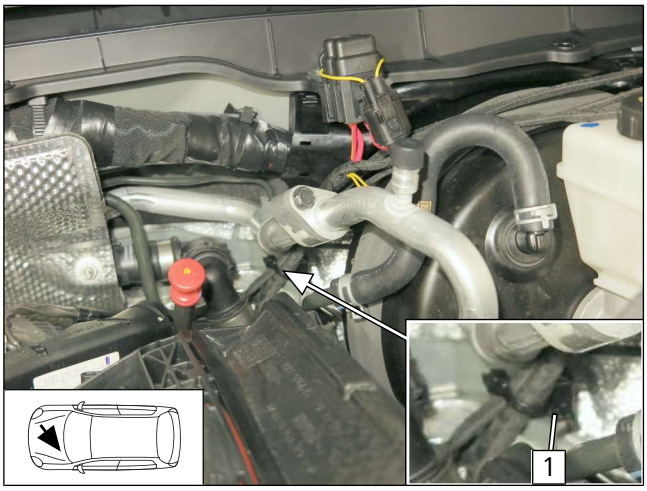



*Fig. 9*

▶ Attach heater wiring harness to original vehicle retaining plate using edge clip cable tie [1] and route further to the underbody.

## Mounting positive wire

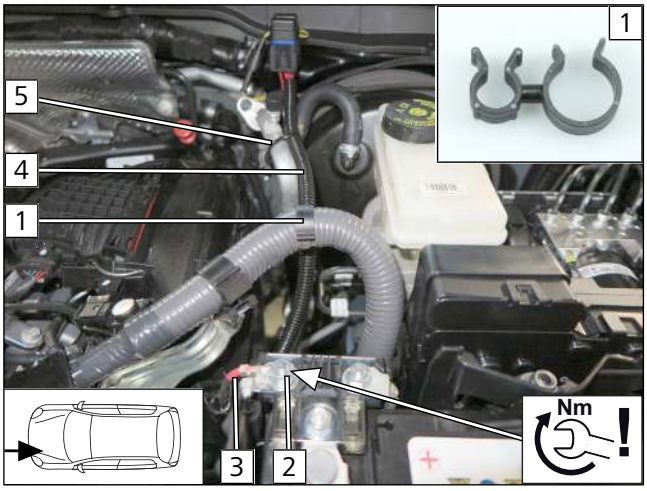



*Fig. 10*

**DANGER**

Fire hazard due to insufficient tightening torque

▶ Observe tightening torque

[1] Ø13/22 hose bracket
[2] Original vehicle positive support point
[3] Positive wire
[4] Positive wire in Ø10/400 long corrugated tube
[5] Cable tie around corrugated tube and A/C line

## Mounting earth wire

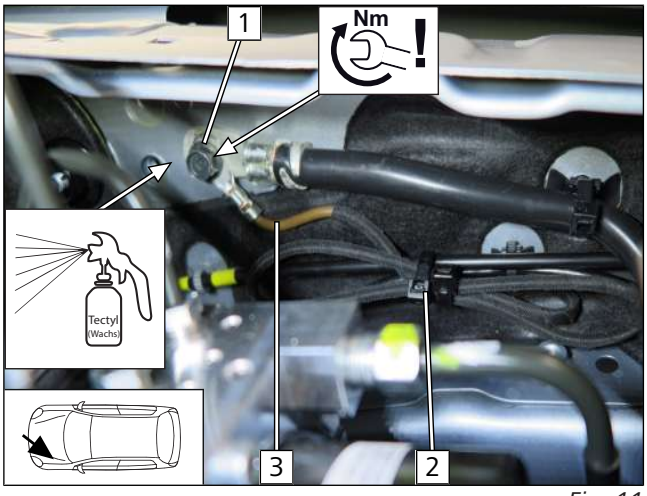



*Fig. 11*

**DANGER**

Fire hazard due to insufficient tightening torque

▶ Observe tightening torque

[1] Original vehicle earth support point
[2] Cable tie around earth wire and original vehicle line
[3] Earth wire

## Passenger compartment wiring harness pass through

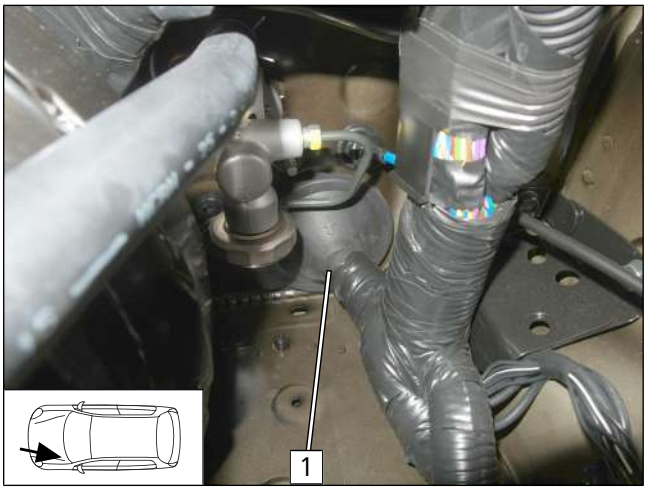



*Fig. 12*

[1] Protective rubber plug, passenger compartment and control element wiring harnesses

## Installing lines

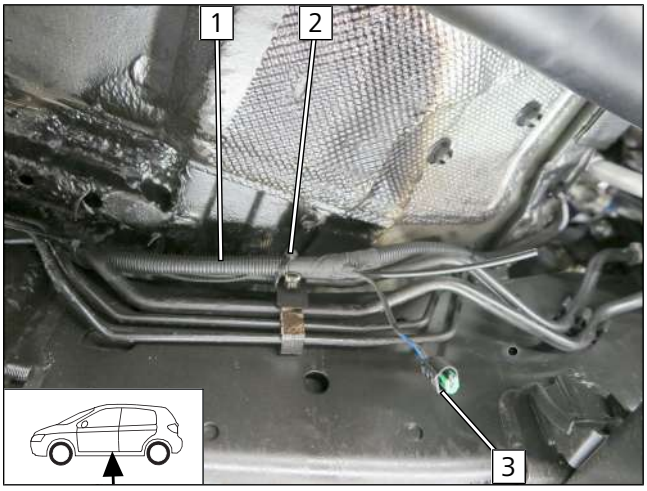



*Fig. 13*

▶ Attach corrugated tube [1] to original vehicle bracket [2] with cable ties and route further to the heater installation location.

[3] Connector X7 of fuel pump wiring harness

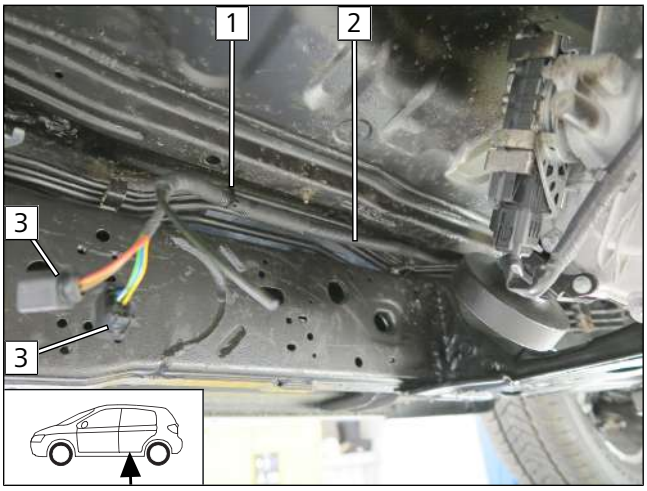



*Fig. 14*

▶ Attach corrugated tube [2] to original vehicle lines with cable tie [1].

[3] Heater wiring harness connector

# 8 Mechanical system

## 8.1 Preparing installation location

### Inserting rivet nut


*Fig. 15*

1 Rivet nut in original vehicle hole

### Copy hole pattern

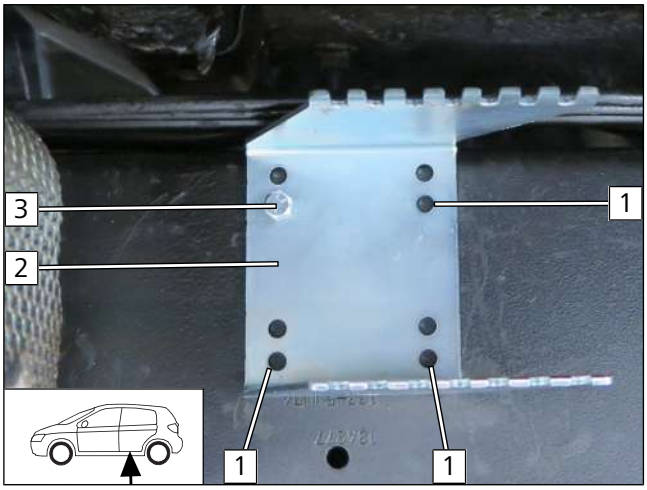



*Fig. 16*

▶ Align bracket 2 horizontally with frame and mount.

1 Hole pattern

3 M6x20 bolt, spring lock washer, bracket, rivet nut

### Drilling holes, inserting rivet nuts

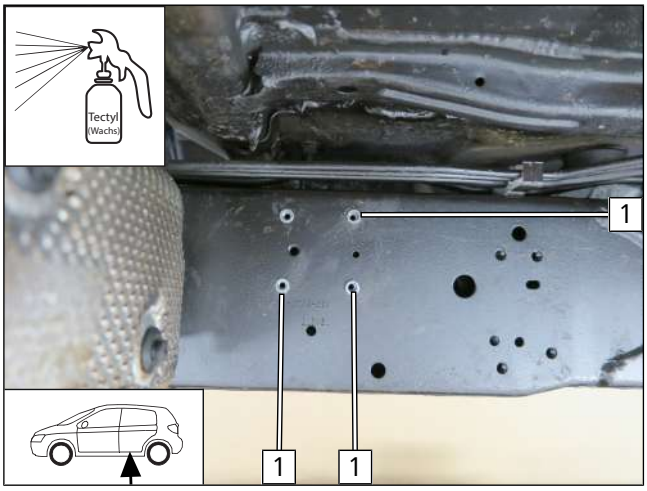



*Fig. 17*

▶ Remove bracket.

1 Ø9 hole, rivet nut

Mounting bracket

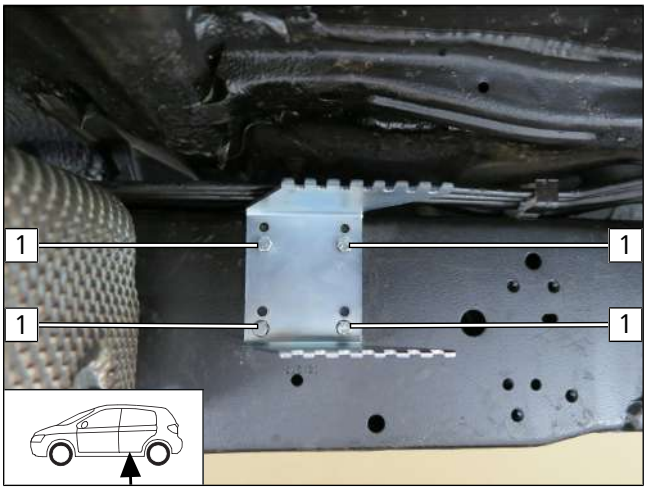



*Fig. 18*

1 M6x20 bolt, spring lock washer, bracket, rivet nut

## 8.2 Premounting heater

Mounting water connection piece

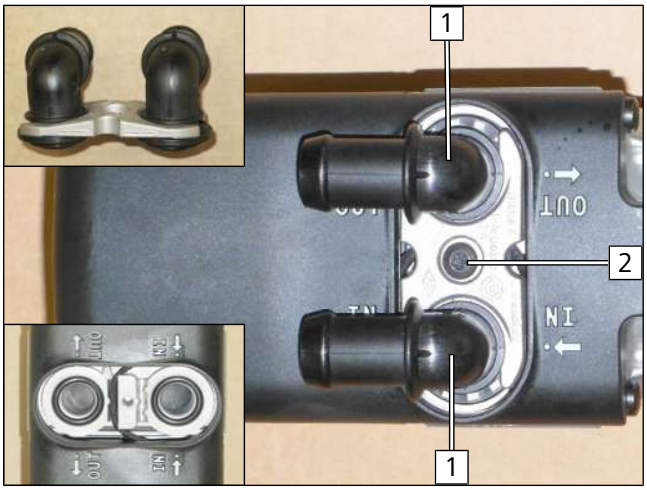



*Fig. 19*

Observe the general installation instructions of the heater.

1 Water connection piece, seal

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

Mounting fuel hose

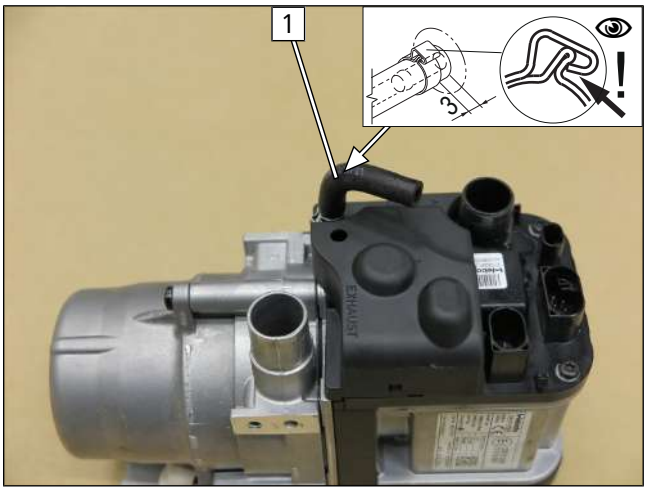



*Fig. 20*

1 90° moulded hose, Ø10 clamp

## Premounting bolts

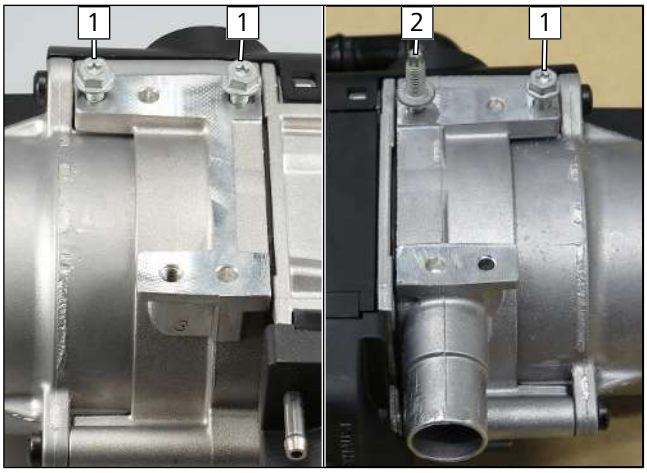



*Fig. 21*

▶ Screw 5x13 self-tapping bolt [1] and M5/M6x15.5 self-tapping stud bolt [2] inwards by approx. 3 threads.

## Cutting hoses to length

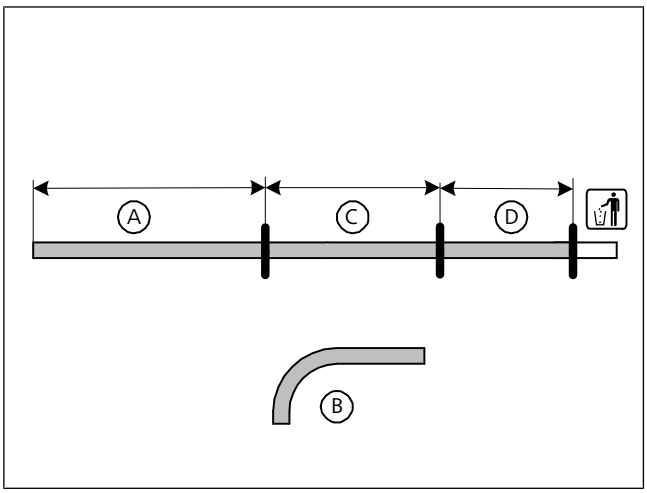



*Fig. 22*

| | |
|---|---|
| **A** | 1300 |
| **B** | 90° moulded hose |
| **C** | 1000 |
| **D** | 600 |

## Cutting to length / assigning heat protection hose

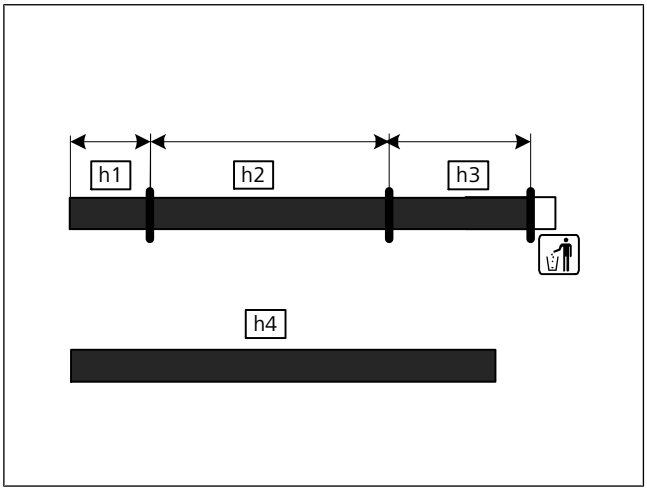



*Fig. 23*

| | |
|---|---|
| **h1** | 210 |
| **h2** | 800 |
| **h3** | 450 |
| **h4** | 1200 |

Mounting hoses

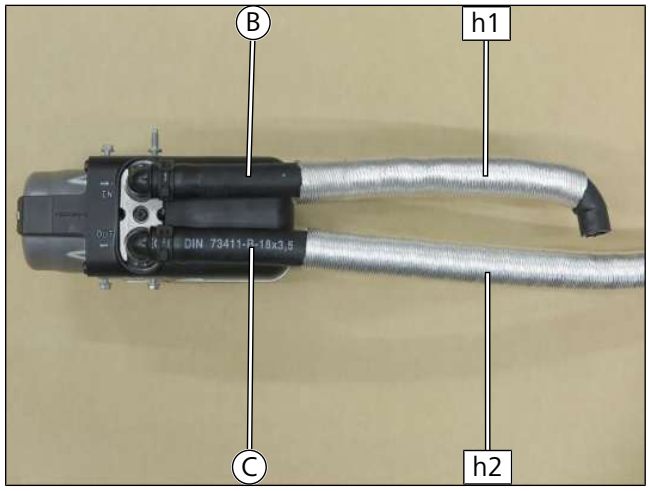



*Fig. 24*

All spring clips Ø25

## 8.3 Mounting heater

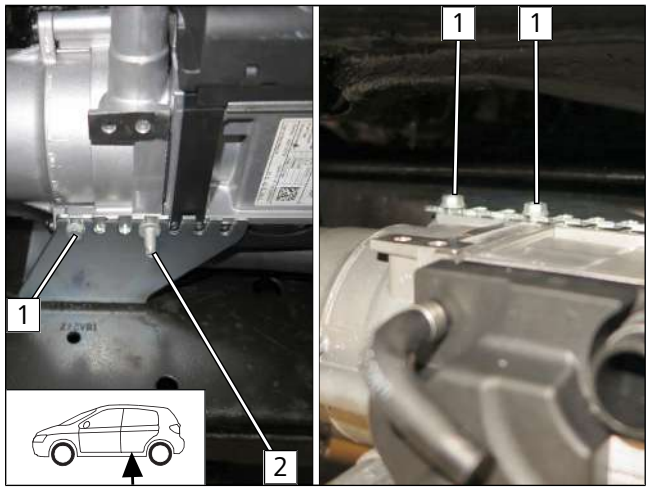



*Fig. 25*

Observe the general installation instructions of the heater.

▶ Tighten 5x13 self-tapping bolt 1 and M5/M6x15.5 self-tapping stud bolt 2.

Mounting heater wiring harness and fuel line

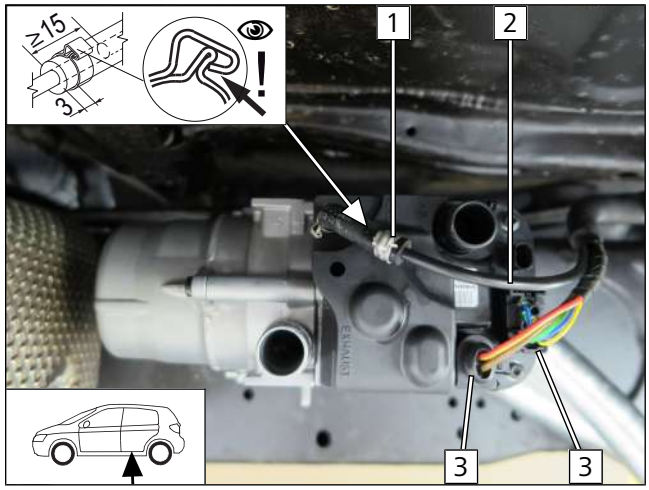



*Fig. 26*

1 Ø10 clamp
2 Fuel line
3 Heater wiring harness connector

# 9 Coolant pump

Premounting coolant pump

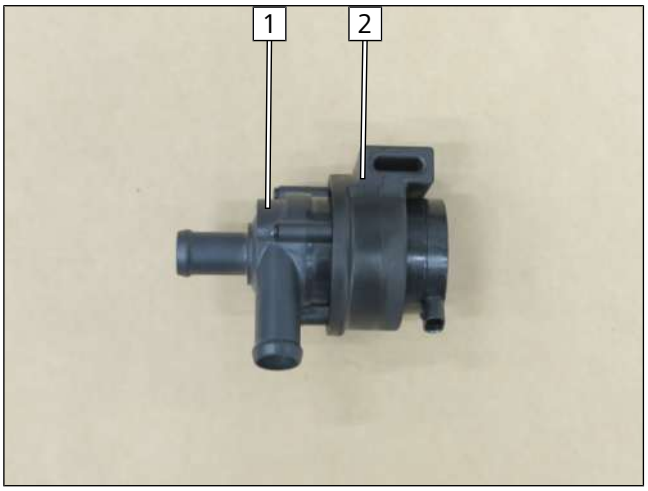



*Fig. 27*

1 Coolant pump
2 Coolant pump mount

Preparing perforated bracket

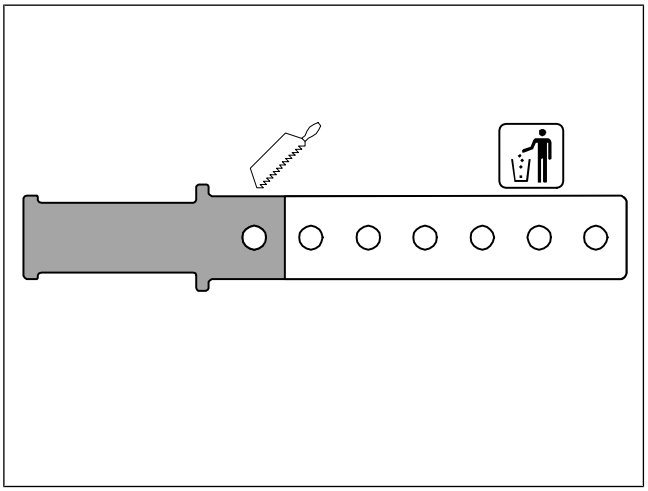


*Fig. 28*

Installing perforated bracket

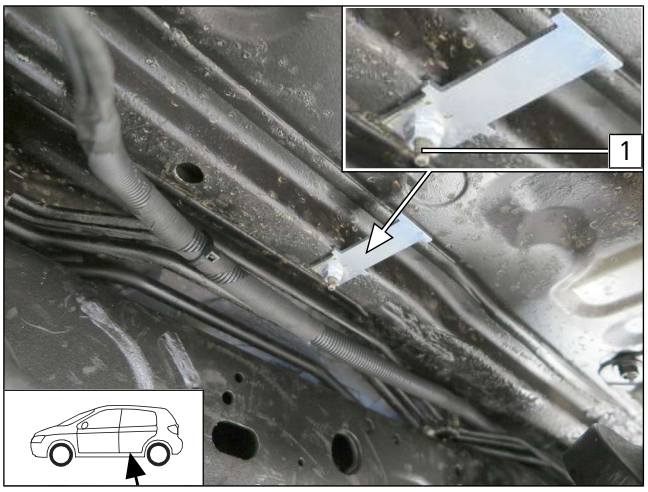



*Fig. 29*

1 Original vehicle stud bolt, perforated bracket, flanged nut

## Mounting coolant pump


*Fig. 30*

▶ Push premounted coolant pump 1 onto perforated bracket.

## Mounting and fastening hoses and coolant pump wiring harness

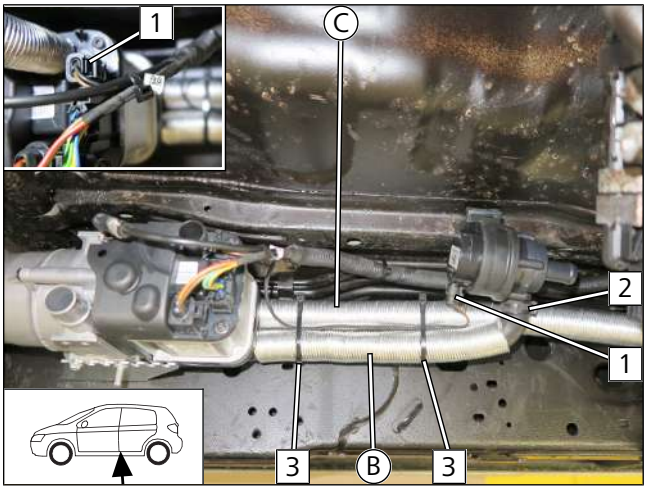



*Fig. 31*

1 Coolant pump wiring harness connector
2 Ø25 spring clip
3 Cable tie

# 10 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

## 10.1 Fuel extraction

Premounting fuel pump

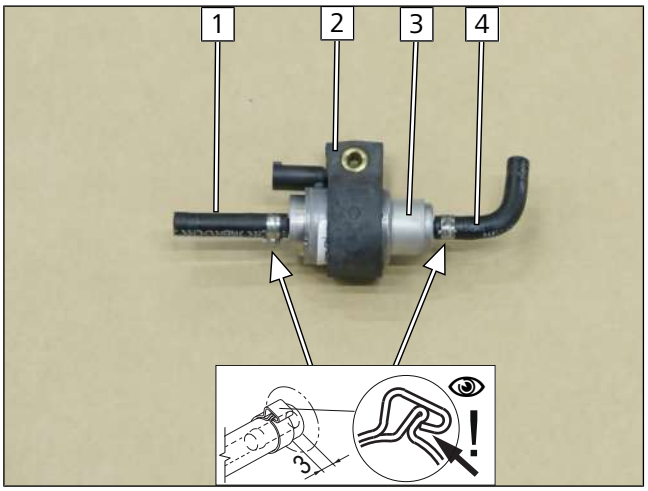



*Fig. 32*

1 Hose section, Ø10 clamp
2 Fuel pump mount
3 Fuel pump
4 90° moulded hose, Ø10 clamp

## Inserting rivet nut

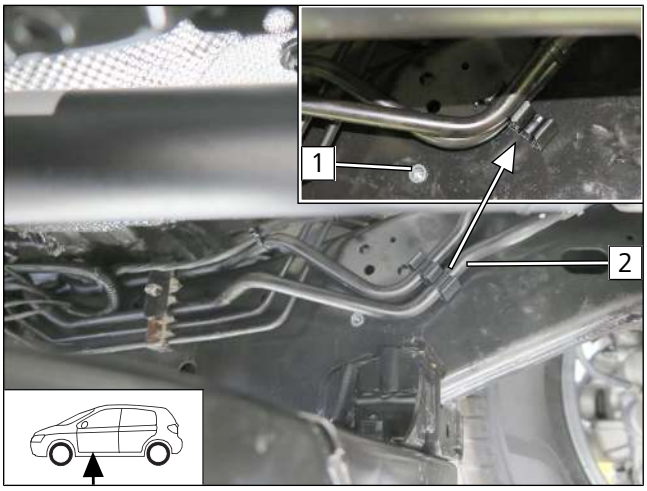



*Fig. 33*

▶ Remove return line [2] from clip.

[1] M6 rivet nut in original vehicle hole

## Mounting fuel pump

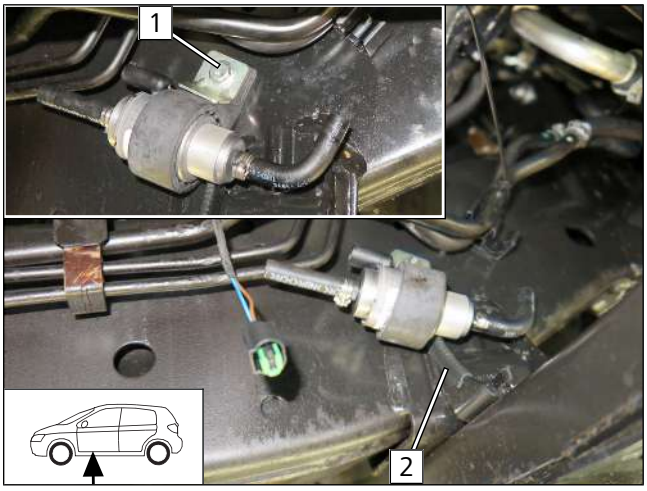



*Fig. 34*

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

[2] 50 long edge protection

## Connecting fuel pump

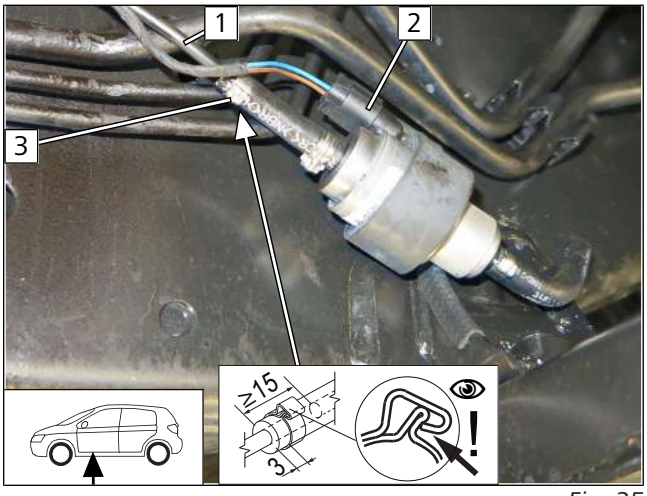



*Fig. 35*

[1] Heater fuel line

[2] Fuel pump wiring harness, connector X7 mounted

[3] Ø10 clamp

## Premounting tank extracting device

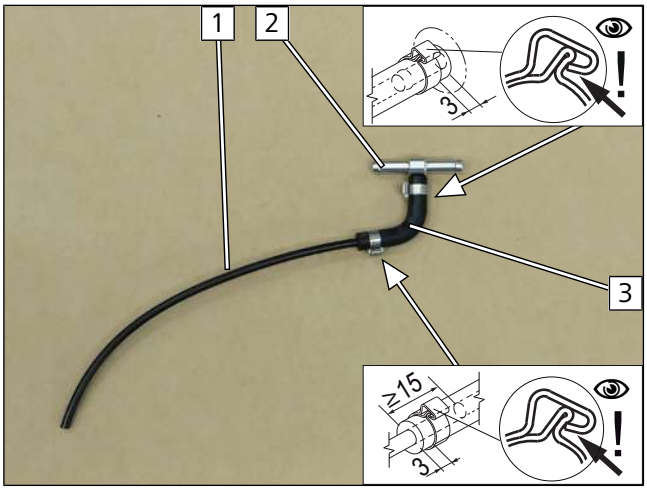



*Fig. 36*

1 230 long tank extracting device fuel line
2 Ø10x5x10 tank extracting device
3 90° moulded hose, Ø10 clamp [2x]

## Cutting point

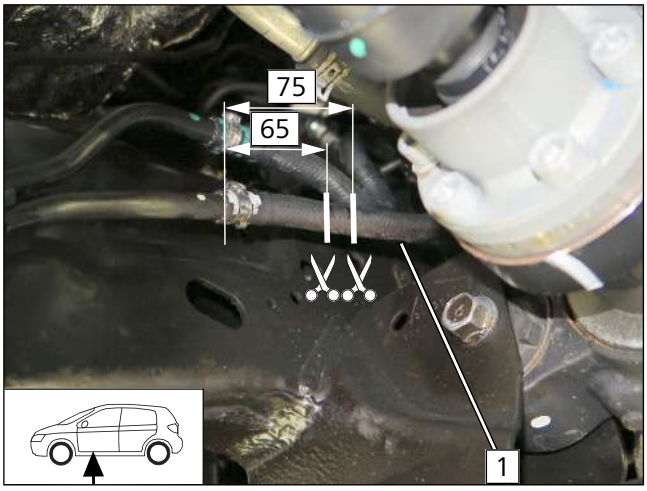



*Fig. 37*

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

1 Return line

## Mounting tank extracting device

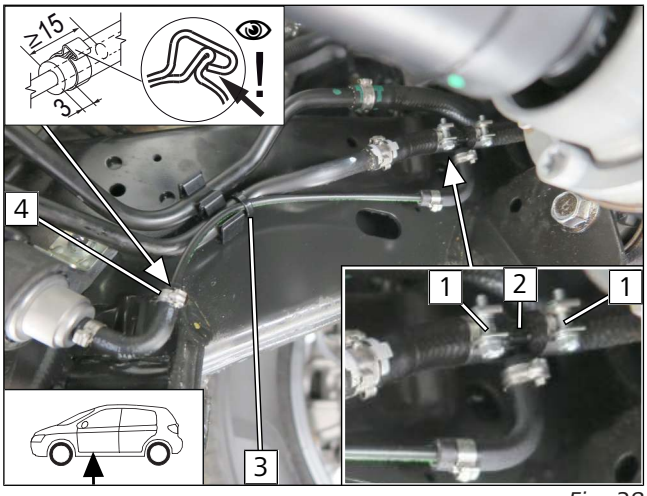



*Fig. 38*

▶ Attach return line using the clip.

1 Ø14 screw clamp
2 Tank extracting device
3 Cable tie around fuel line and return line
4 Ø10 clamp

# 11 Combustion air

## Cutting combustion air pipe to length

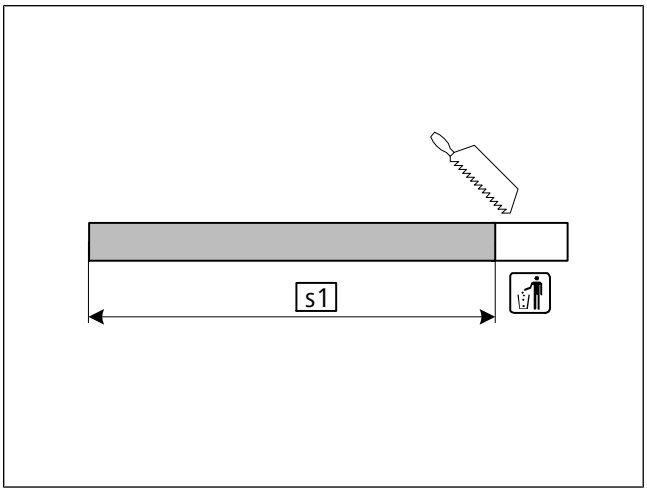



*Fig. 39*

**s1** 600

## Premounting combustion air intake silencer

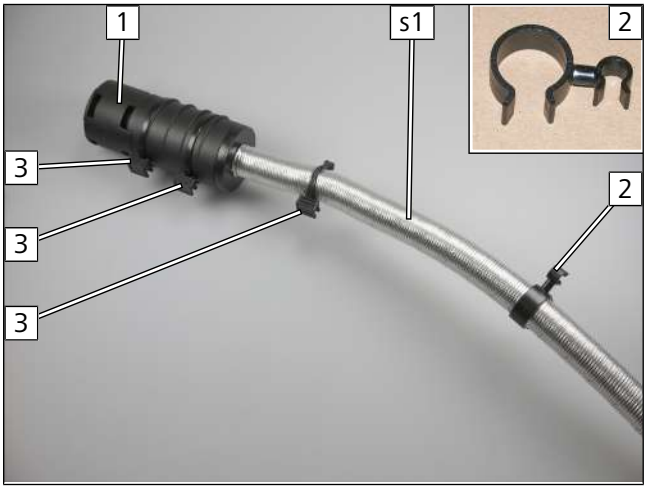



*Fig. 40*

Observe the installation instructions of the combustion air intake silencer.

**1** Combustion air intake silencer
**2** Hose bracket
**3** Edge clip cable tie

## Installing combustion air pipe

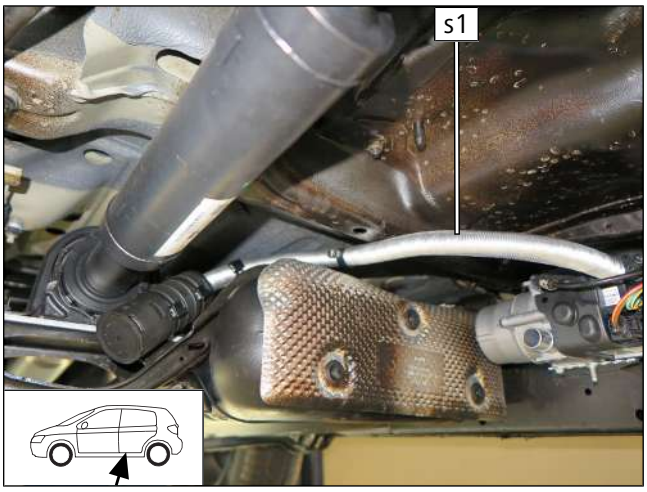



*Fig. 41*

▶ Connect combustion air pipe **s1** to heater.

Fastening combustion air intake silencer

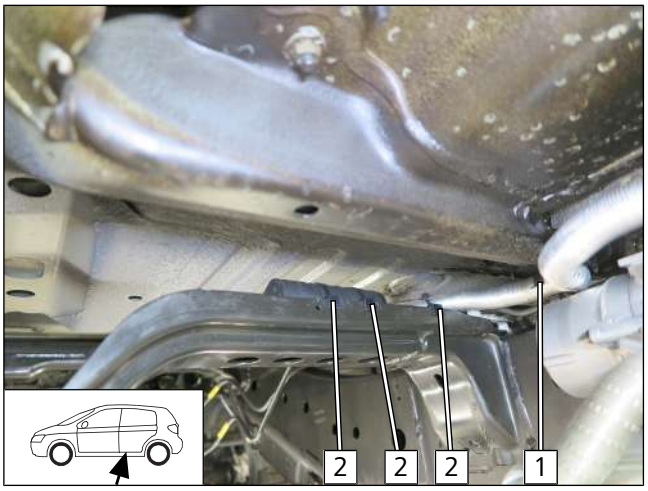



*Fig. 42*

Tank removed for a better view.

1 Hose bracket fastened to brake line
2 Edge clip cable tie fastened to carrier

# 12 Exhaust

Preparing angle bracket

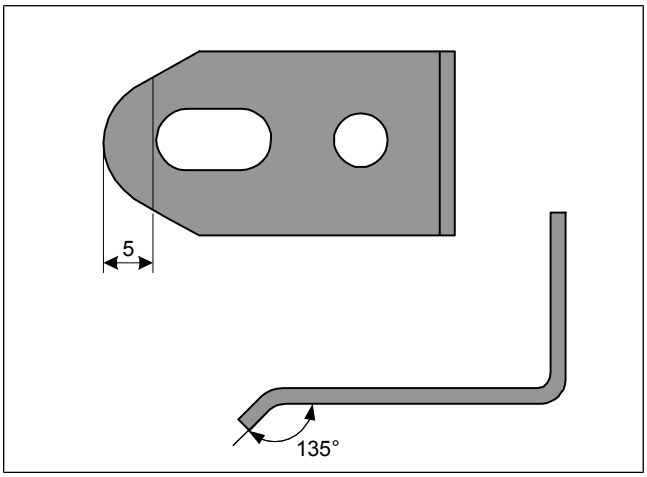
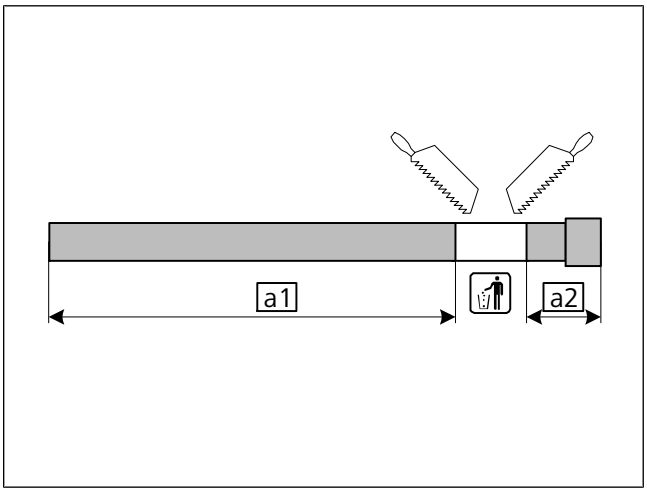



*Fig. 43*

Premounting exhaust silencer




**a1** 250
**a2** 80

*Fig. 44*

Premounting exhaust silencer

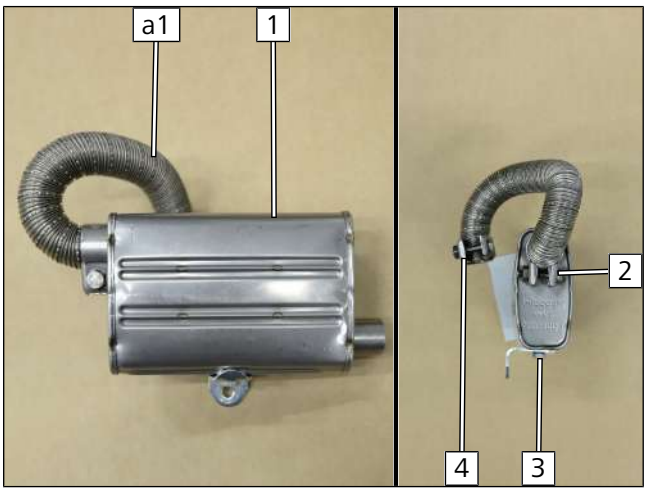



*Fig. 45*

▶ Bend exhaust pipe **a1** as shown.

**1** Exhaust silencer
**2** Hose clamp
**3** M6x16 bolt, spring lockwasher, angle bracket
**4** Hose clamp, mounted loosely

## Mounting exhaust silencer

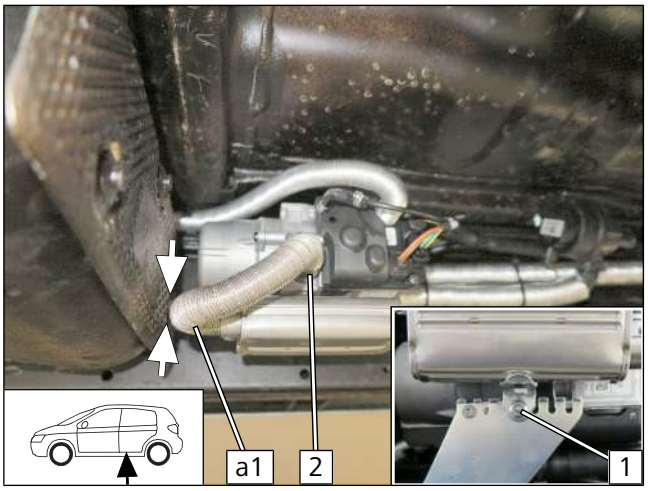



*Fig. 46*

Ensure sufficient distance from neighbouring components, correct if necessary.

>20

1 Stud bolt on HG, angle bracket, nut

2 Tighten hose clamp

## Mounting exhaust pipe a2

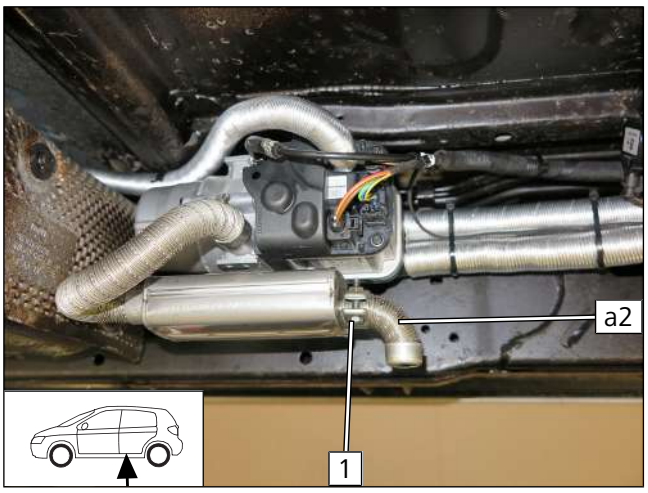



*Fig. 47*

▶ Bend exhaust pipe **a2** by 90°.

1 Hose clamp

# 13 Coolant

## 13.1 Hose routing diagram

'Inline' coolant circuit

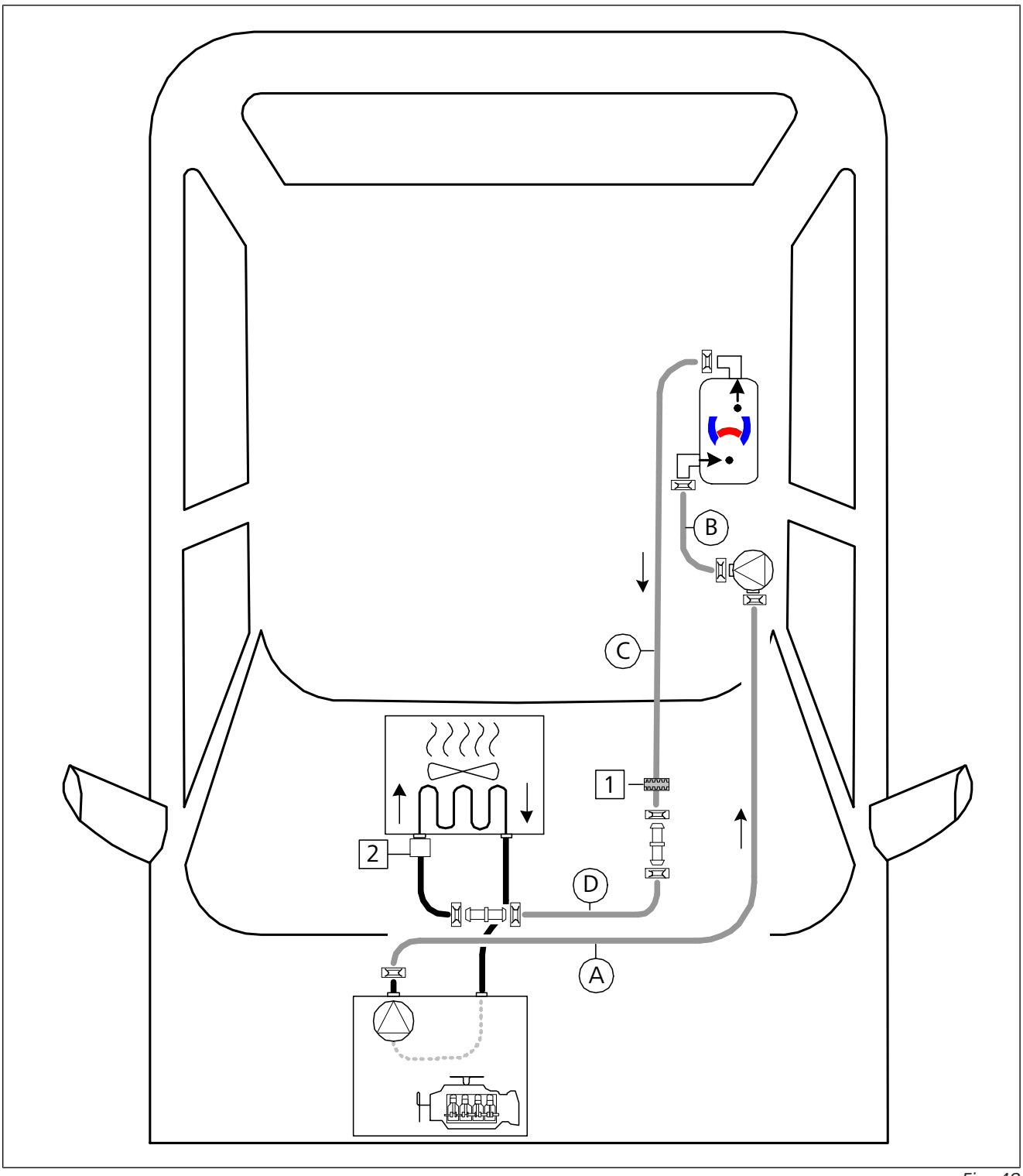



*Fig. 48*

All spring clips = Ø25

Connecting pipe = Ø18x18

1 Black (sw) rubber isolator

2 Original vehicle quick-release coupling

## 13.2 Coolant circuit installation

### Removing engine outlet / heat exchanger inlet hose

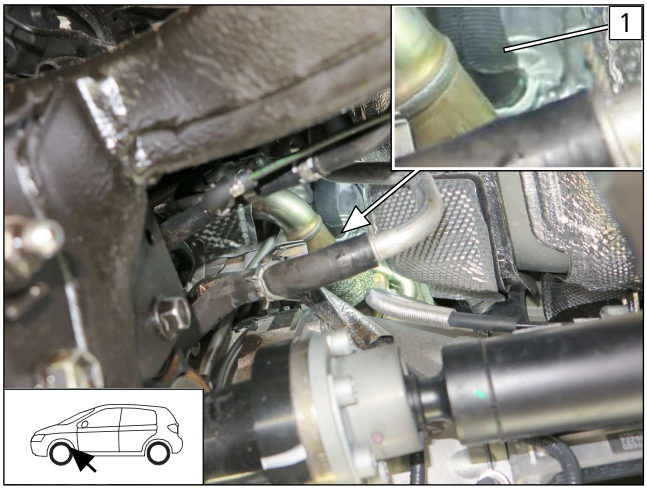



*Fig. 49*

▶ Disconnect engine outlet/heat exchanger inlet hose [1] from engine outlet connection piece.

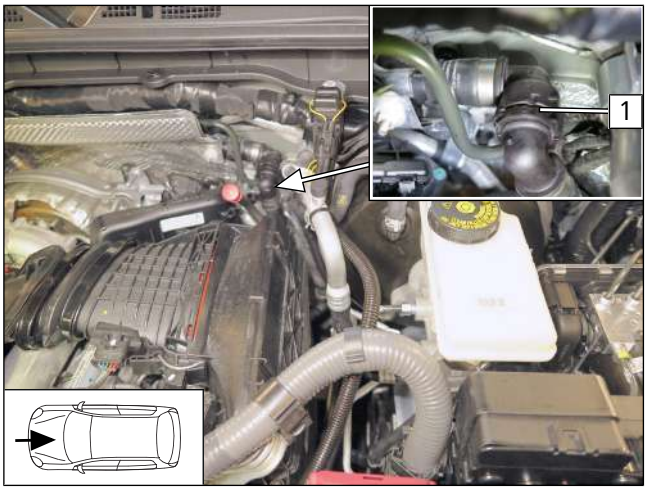



*Fig. 50*

▶ Disconnect engine outlet/heat exchanger inlet hose with quick-release coupling [1] from heat exchanger inlet connection piece.

### Preparing heat exchanger inlet hose section

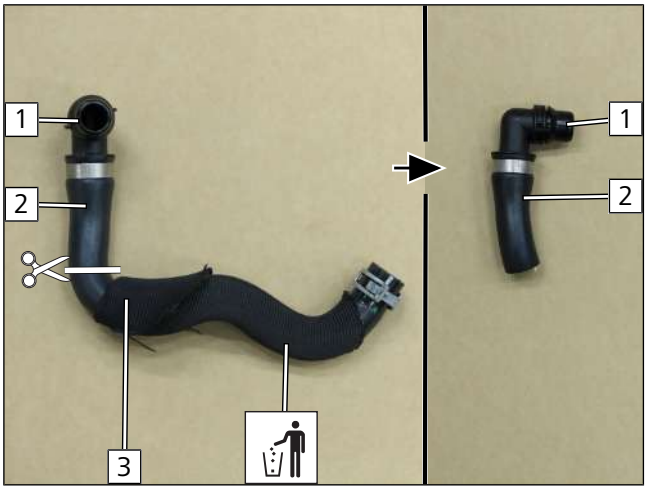



*Fig. 51*

▶ Remove fabric protective hose [3] in the area of the cutting point as shown.

[1] Quick-release coupling

[2] Heat exchanger inlet hose section

## Preparing hose Ⓓ

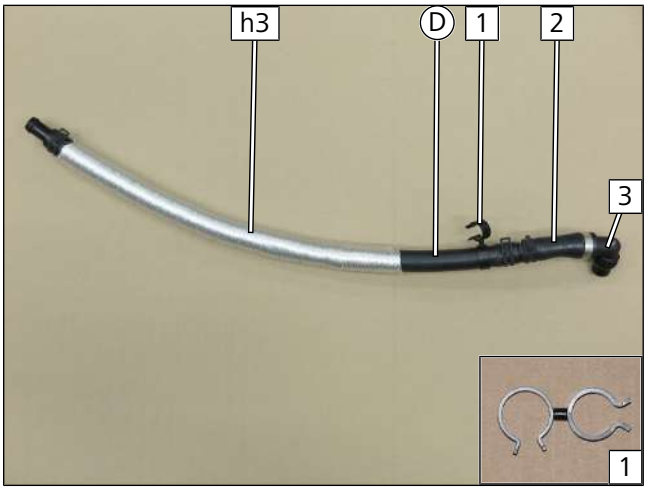



*Fig. 52*

All spring clips Ø25
All connecting pipes Ø18x18

1 Ø20/22 hose bracket
2 Heat exchanger inlet hose section
3 Quick-release coupling

## Preparing hose Ⓐ


*Fig. 53*

## Connecting hose Ⓐ to engine outlet

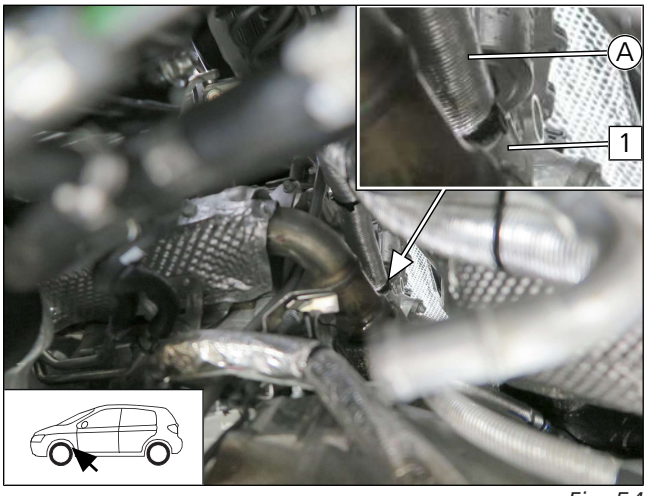



*Fig. 54*

1 Engine outlet connection piece

## Heat exchanger inlet connection

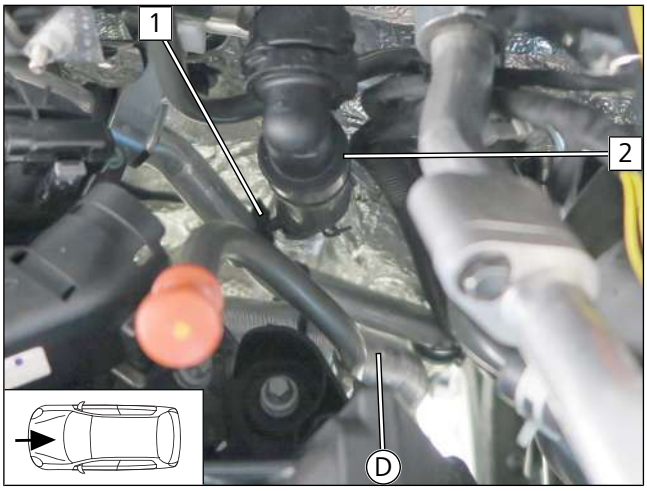



*Fig. 55*

▶ Route hose Ⓓ behind original vehicle pipe on the firewall to the underbody.

1 Fasten hose bracket to original vehicle pipe

2 Quick-release coupling

## Routing hoses Ⓐ and Ⓓ

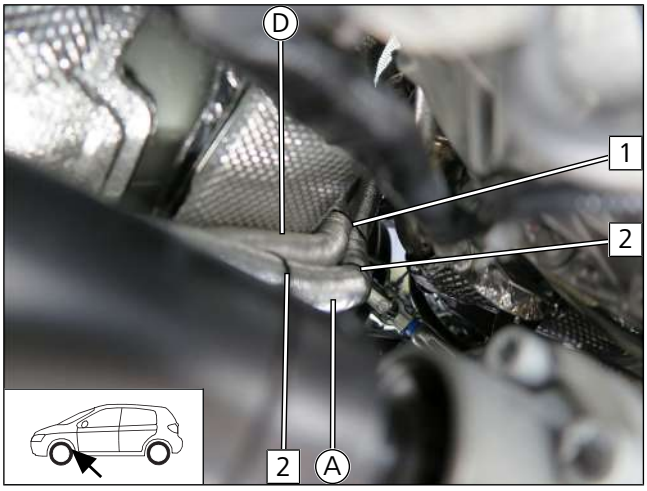



*Fig. 56*

▶ Route hose Ⓓ between firewall and hose Ⓐ to the underbody.

1 Cable tie around hoses Ⓐ and Ⓓ

2 Cable tie around hose Ⓐ and original vehicle pipe

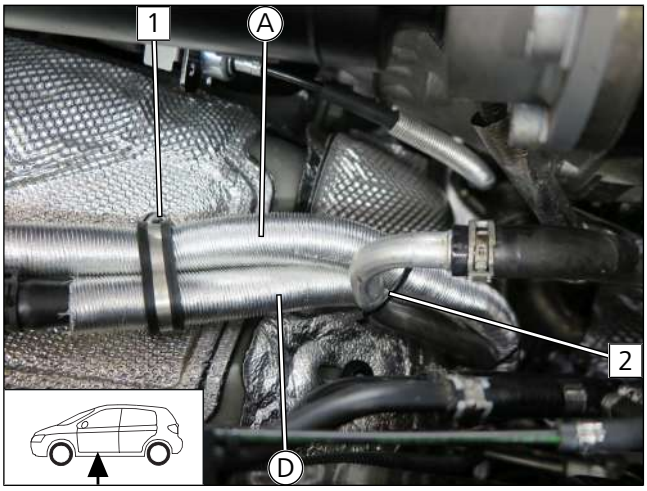



*Fig. 57*

1 Original vehicle stud bolt, Ø48 rubber-coated p-clamp, M6 flanged nut (replaces original vehicle plastic nut)

2 Cable tie around hoses Ⓐ, Ⓓ and original vehicle pipe

Pushing rubber isolator onto hose Ⓒ

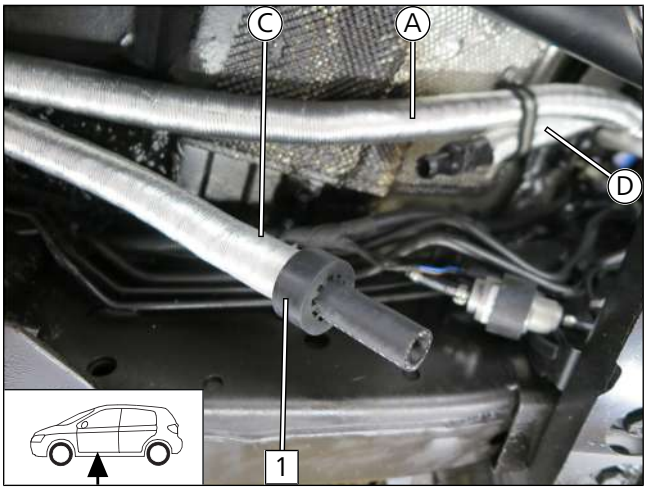



*Fig. 58*

1 Black (sw) rubber isolator

Connecting hose Ⓒ to hose Ⓓ

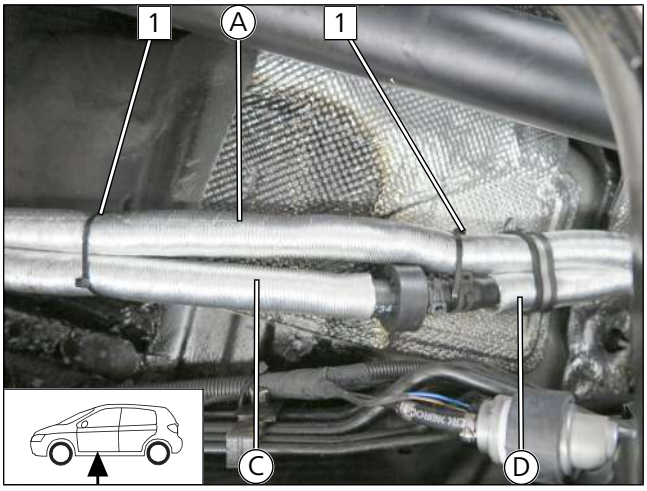



*Fig. 59*

1 Cable tie around hoses Ⓐ and Ⓒ respectively Ⓐ and Ⓓ

2 Cable tie around hoses Ⓐ, Ⓓ and original vehicle pipe

Mounting hose Ⓐ on coolant pump

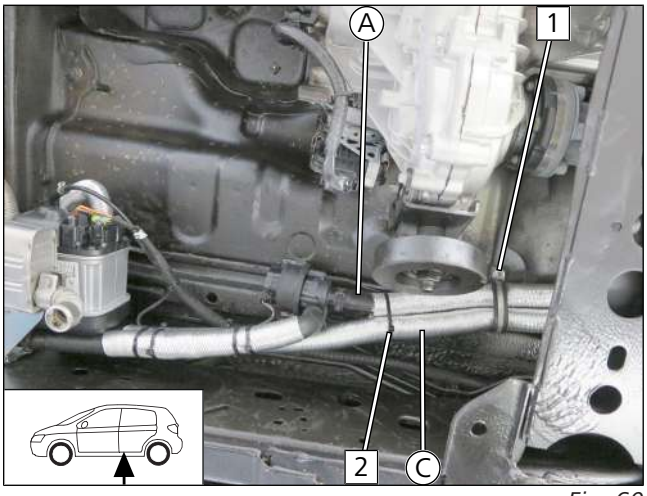



*Fig. 60*

1 Original vehicle stud bolt, Ø48 rubber-coated p-clamp, M6 flanged nut (replaces original vehicle plastic nut)

2 Cable tie around hoses Ⓐ and Ⓒ

# 14 Electrical system of passenger compartment

## 14.1 Preliminary work

Preparing / assigning wires

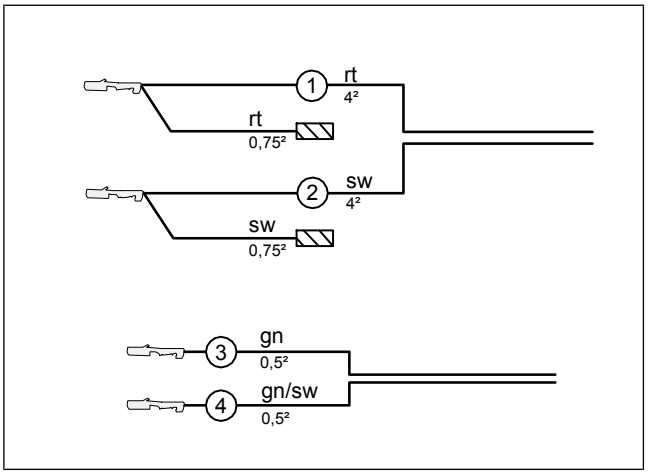



*Fig. 61*

Wire sections retain their numbering in the entire document.

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness
③ Green (gn) wire from wiring harness of PWM control
④ Green/black (gn/sw) wire from wiring harness of PWM control

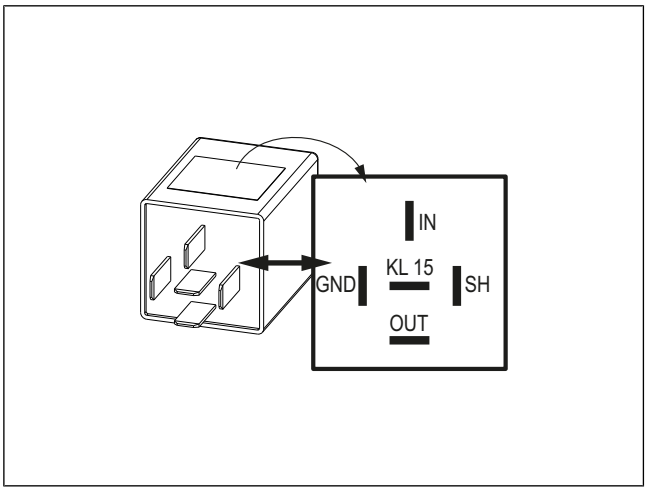



*Fig. 62*

▶ Check PWM Gateway settings when starting-up the heater, adjust if necessary to 1/3 of the fan capacity.

| Parameters | Setting |
|---|---|
| Duty cycle | 100% (DC) |
| Frequency | not relevant |
| Voltage | 2.7 V |
| Function | High side |

## Preparing RSH and PWM gateway socket

▶ Assemble RSH and PWM GW sockets, connect wires and connect sockets.

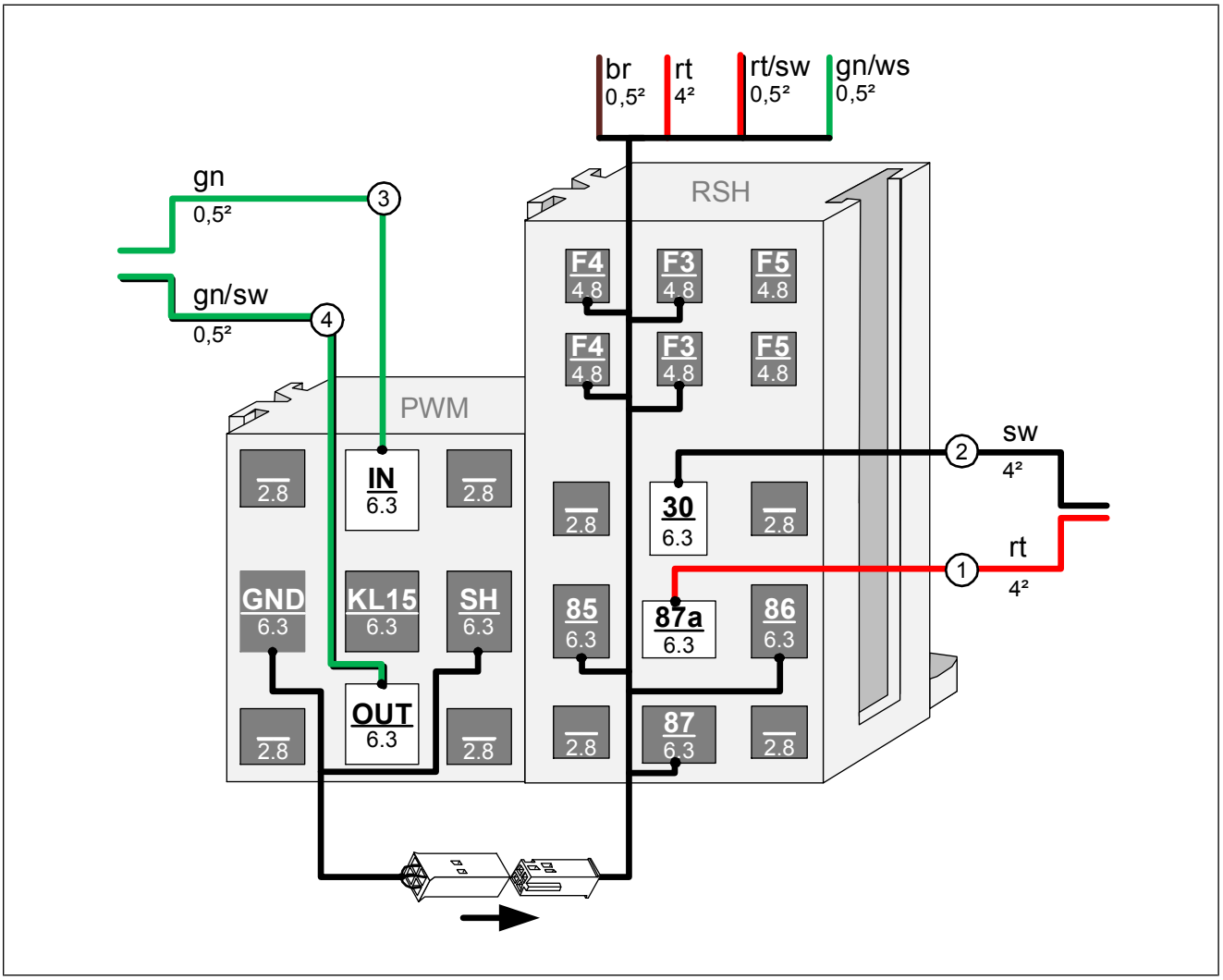



*Fig. 63*

## Mounting RSH

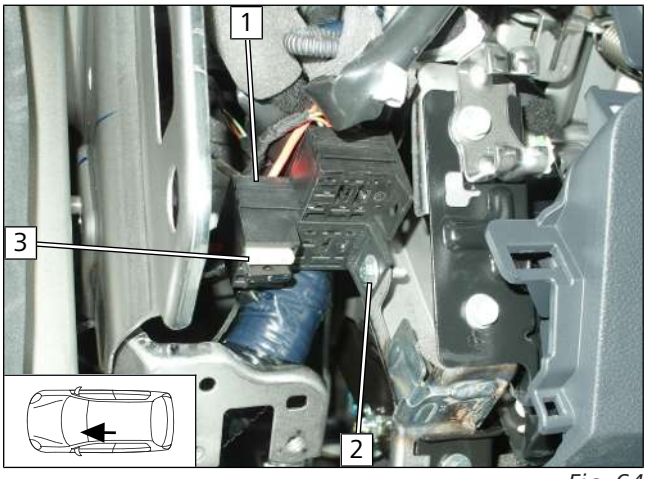



*Fig. 64*

1 RSH

2 M5x16 bolt, large diameter washer, RSH, original vehicle hole, large diameter washer, nut

3 25A fuse F4

## Mounting K1 relay and PWM gateway

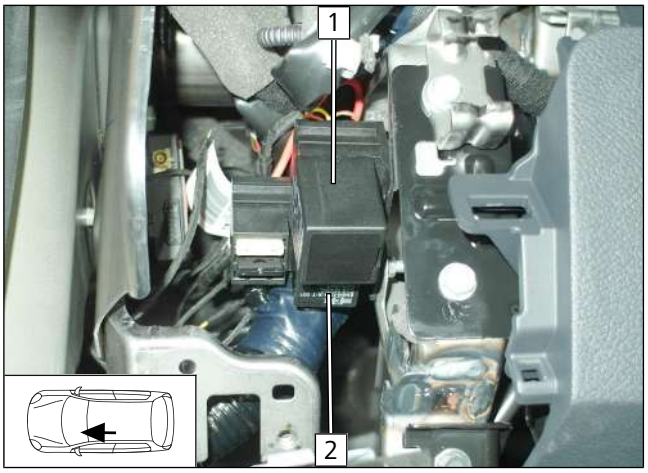



*Fig. 65*

1 PWM Gateway
2 Relay K1

## Connecting same colour wires of wiring harnesses

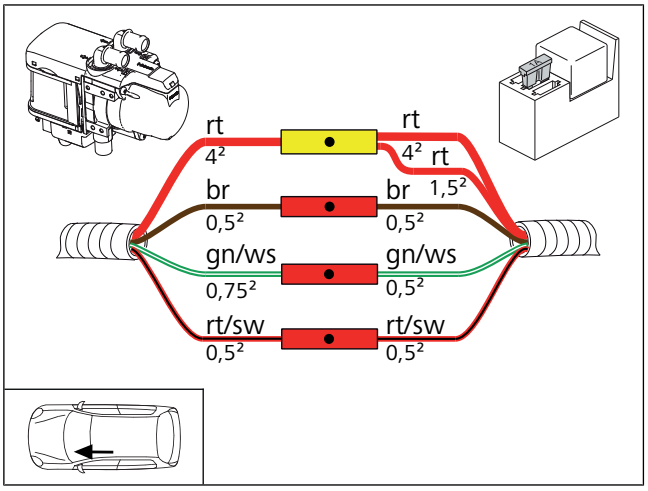



*Fig. 66*

## 14.2 Wiring diagram

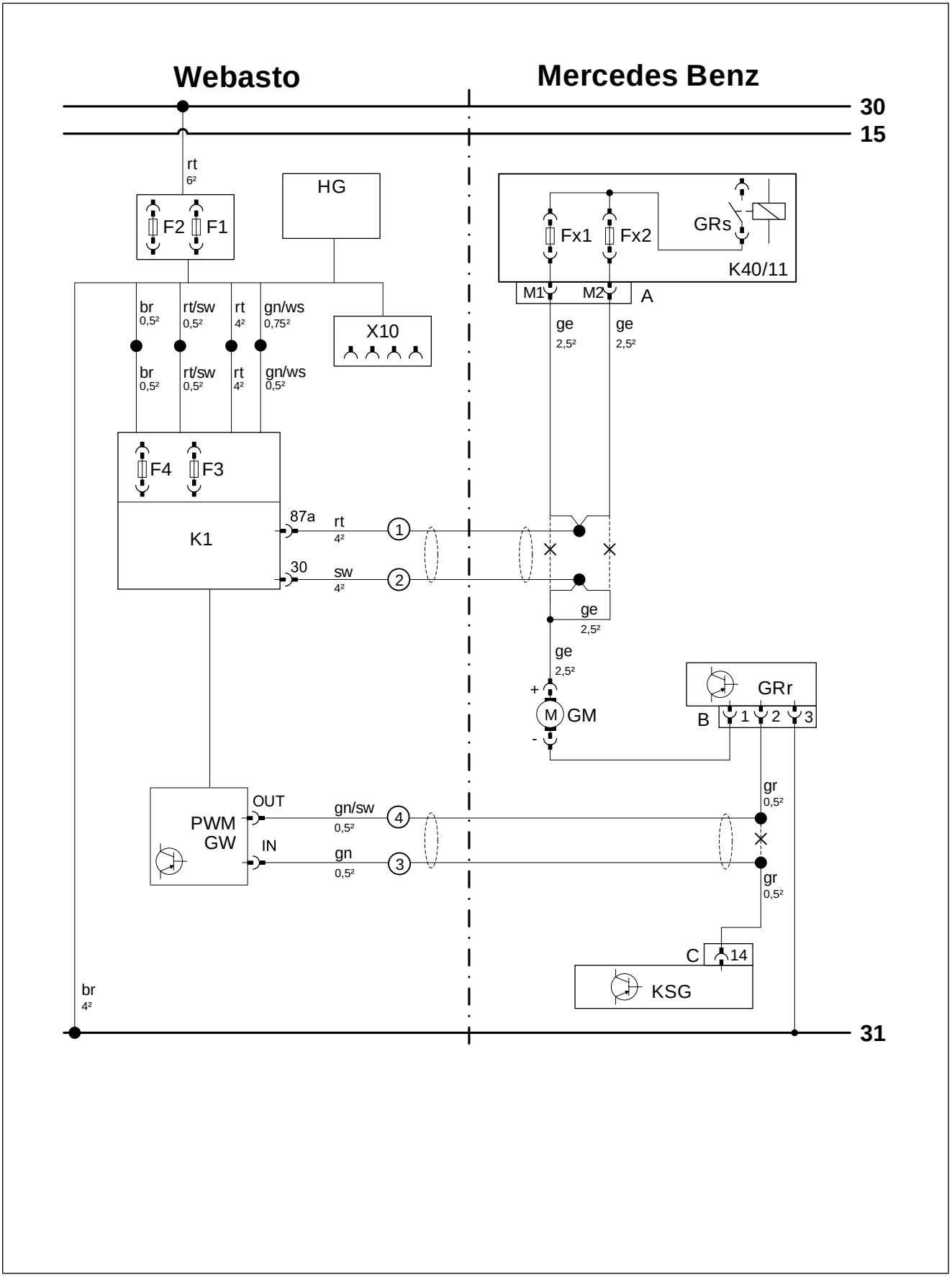



*Fig. 67*

## Legend to wiring diagram

The vehicle connector and component designations are freely chosen by Webasto.
Cable colours may vary.

| Vehicle components | | Symbols | |
|---|---|---|---|
| Abbreviation | Component | Abbreviation | Designation |
| K40/11 | Fuse and relay module at bulkhead | X | Cutting point |
| GRs | Fan relay | | |
| Fx1 | Fuse 15A | | |
| Fx2 | Fuse 15A | | |
| A | 8-pin K40/11 connector | | |
| GRr | Fan controller | | |
| B | 4-pin GRr connector | | |
| GM | Fan motor | | |
| KSG | Air-conditioning control unit | | |
| C | KSG connector | | |

| Webasto components | | Cable colours | |
|---|---|---|---|
| Abbreviation | Component | Abbreviation | Colour |
| A | Male plug for CLR module wiring harness | bg | beige |
| B | Female plug for CLR module wiring harness | bl | blue |
| C | Male plug for adapter wiring harness | br | brown |
| D | Female plug for adapter wiring harness | dbl | dark blue |
| E | Male plug for Plug&Play wiring harness | dgn | dark green |
| F | Female plug for Plug&Play wiring harness | ge | yellow |
| CCL GW | CAN CAN LIN Gateway | gn | green |
| CL GW | CAN LIN Gateway | gr | grey |
| CLR | Cold start module | hbl | light blue |
| D1 | Diode | hgn | light green |
| D2 | Diode group | or | orange |
| F0 | Additional fuse for power supply | pk | pink |
| F1 | Heater main fuse | rt | red |
| F2 | Passenger compartment fan controller main fuse | sw | black |
| F3 | Control element fuse | vi | violet |
| F4 | Fan controller fuse | ws | white |
| F5 | Additional fuse | | |
| HG | Heater TT-Evo | | |
| K1 | Relay K1 | | |
| 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 | Female plug for control element | | |
| Y | Power adapter | | |

## 14.3 Fan controller

### Loosening connector

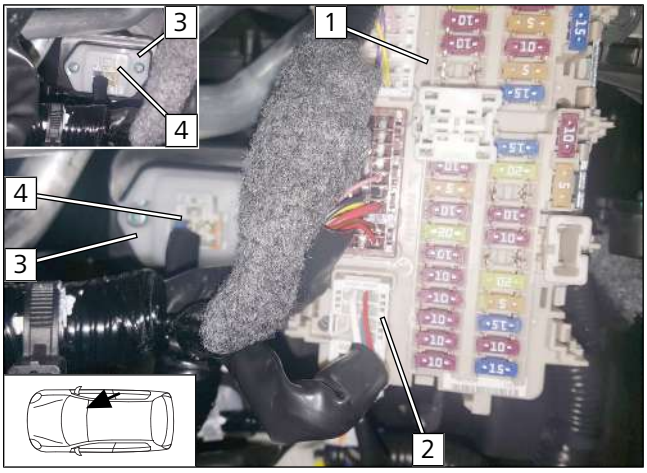



*Fig. 68*

1 Fuse and relay module K40/11
2 8-pin connector A K40/11
3 Fan controller GRr
4 4-pin connector B of GRr

### Connecting fan motor

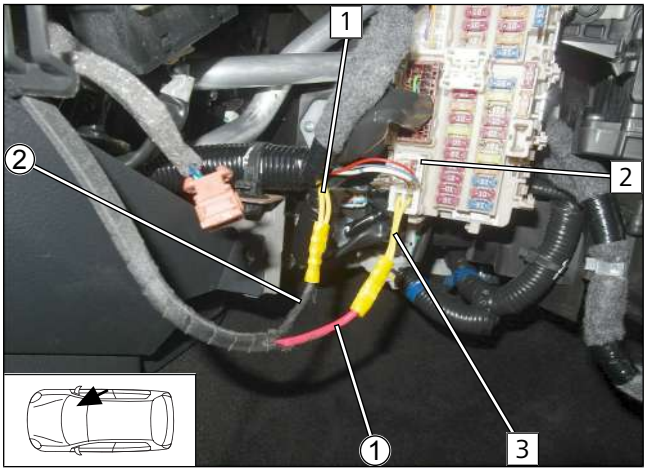



*Fig. 69*

1 Yellow (ge) wire of GM
2 8-pin connector A K40/11
3 Yellow (ge) wires from connector A pin M1 and M2
① Red (rt) wire of K1/87a fan wiring harness
② Black (sw) wire of K1/30 fan wiring harness

### Connecting fan controller

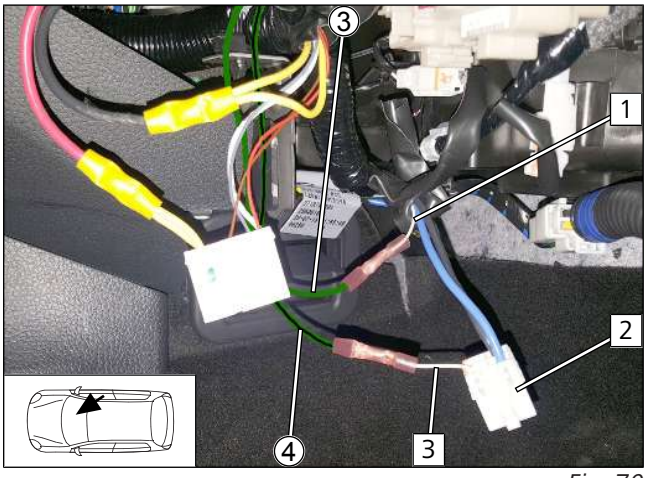



*Fig. 70*

1 Grey (gr) wire of KSG connector C, pin 14
2 4-pin GRr connector B
3 Grey (gr) wire of connector B, pin 2
③ Green (gn) wire from wiring harness of PWM control
④ Green/black (gn/sw) wire from wiring harness of PWM control

# 15 Electrical system of control elements

## 15.1 MultiControl CAR option

Mounting MultiControl CAR

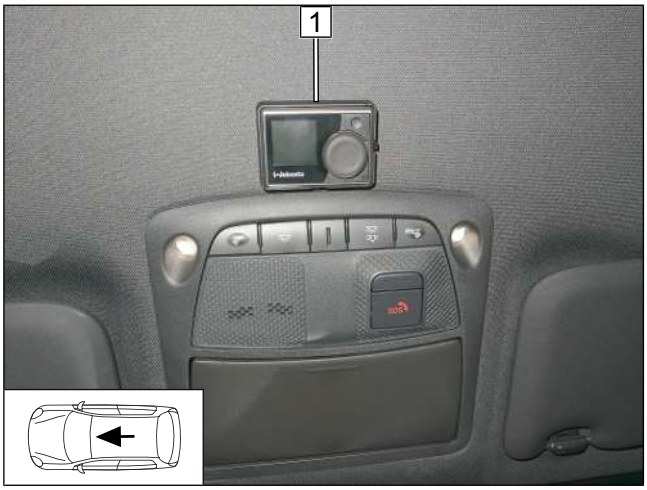



*Fig. 71*

Observe the MultiControl CAR installation documentation.

1 Installation frame

## 15.2 Telestart option

Preparing receiver installation

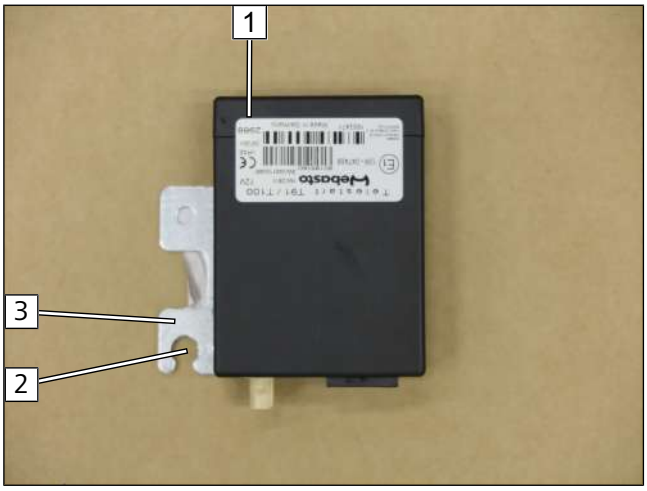



*Fig. 72*

Observe the Telestart installation documentation.

▶ Drill out Telestart receiver bracket 3 at position 2 to 8.5mm dia.

1 Telestart receiver

Positioning spacer


*Fig. 73*

1 5mm spacer, original vehicle bolts

## Mounting receiver

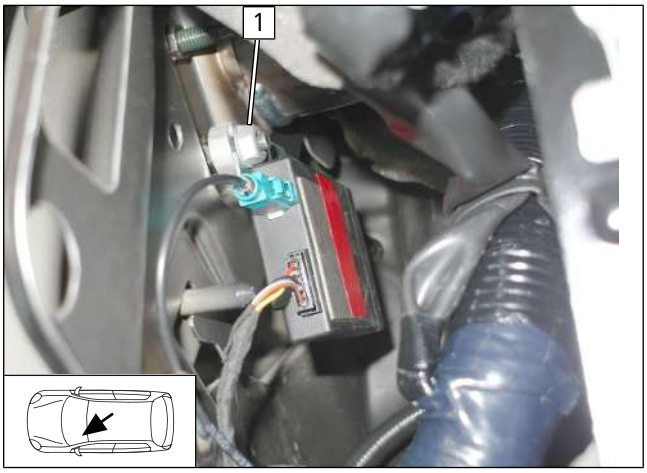



*Fig. 74*

1 M8 flanged nut

## Mounting temperature sensor, only in case of T100 HTM


*Fig. 75*

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

## Mounting aerial

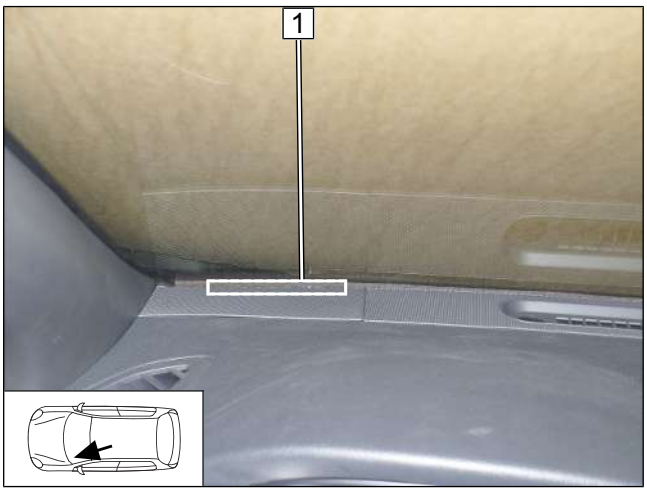



*Fig. 76*

1 Aerial

## 15.3 ThermoCall option

Mounting receiver

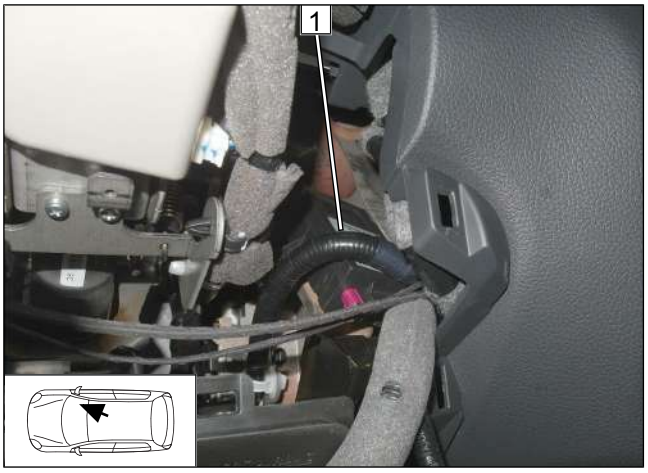



*Fig. 77*

Observe the ThermoCall installation documentation.

▶ Fasten receiver 1 using double-sided adhesive tape.

Mounting aerial (optional)

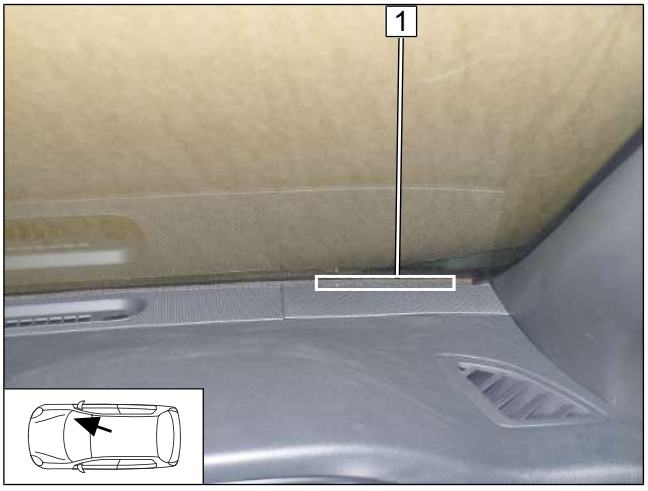



*Fig. 78*

1 Aerial

# 16 Final Work

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

- ▶ Mount removed parts in reverse order.

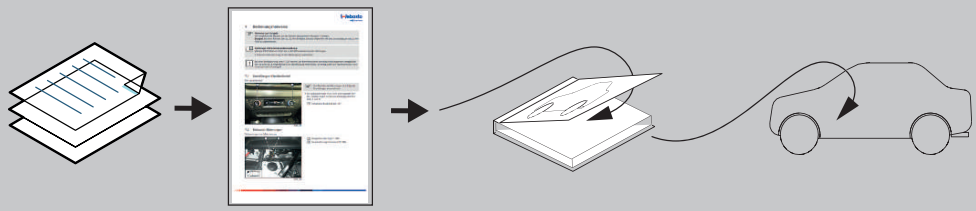
- ▶ Check all hoses, clamps and all electrical connections for firm seating.
- ▶ Insulate and tie back loose lines
- ▶ Spray heater and electrical components with anti-corrosion wax (Tectyl 100K).
- ▶ Connect the battery.


**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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Company address:
Friedrichshafener Str. 9
82205 Gilching
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Technical Extranet: https://dealers.webasto.com

CE

WWW.WEBASTO.COM

# 17 Operating instructions

**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

**Note for parking heater function**

Your vehicle is equipped with a passenger compartment and engine preheating unit.

**Danger of damage to the heater:**

Please note that the installation location of the heater should be situated within the fording depth indicated by the vehicle manufacturer.

## 17.1 A/C control panel settings

A/C control panel


*Fig. 79*

Before parking the vehicle, make the following settings:

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

1 Temperature to 30°C

2 Air outlet to windscreen and footwell

## 17.2 Installation location of fuses

Fuses in engine compartment

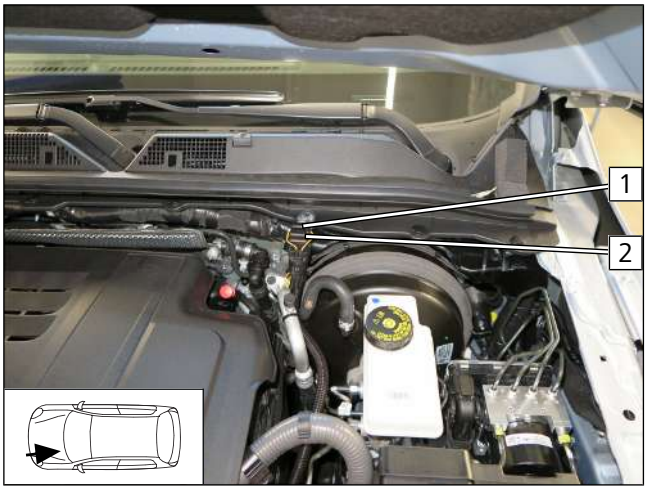


*Fig. 80*

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

Fuses in passenger compartment

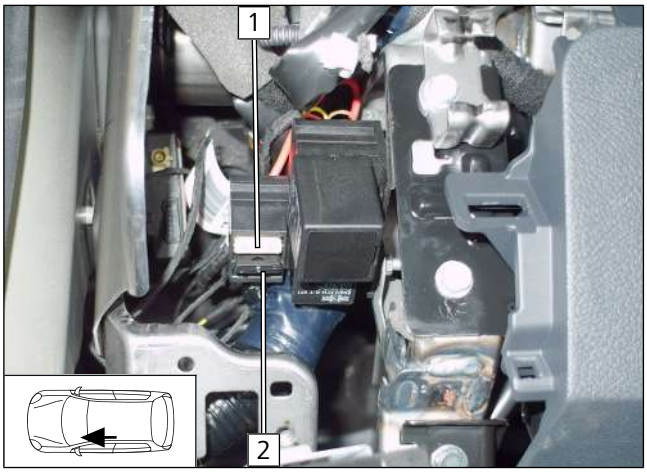


*Fig. 81*

1 F4 - 25A fan controller fuse
2 F3 - 1A control element fuse