

K Installation Documentation

for water heater Thermo Top Evo

'Inline' coolant circuit with engine preheating

Dacia Sandero / Sandero Stepway

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Dacia	Sandero	DJF	from 2021	e19* 2007/46* 0026*...
Dacia	Sandero Stepway	DJF	from 2021	e19* 2007/46* 0026*...

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displacement [cm ³]	Engine code
1.0P	Petrol	Euro6;WLTP;AP;...	CVT	67	999	H4D
1.0P	Petrol / LPG	Euro6;WLTP;AP;...	6-speed SG	74	999	H4D

Validity	Equipment variants	Model	
		Sandero	Sandero Stepway
Verified equipment variants	Manual air conditioning	X	X
	Automatic air-conditioning	X	X
	Halogen main headlights (full beam)	X	X
	LED main headlights (dipped beam)	X	X
	LED daytime running lights	X	X
	Halogen front fog lights	X	X
	Automatic Start-Stop system	X	X
	Start button with keycard	X	X
	FWD	X	X

Total installation time	Note
7.5 hours	

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1 List of abbreviations

CVT	Continuously variable automatic transmission
DP	Fuel pump
FWD	Front wheel drive
HG	Heater
LPG	Liquefied petroleum gas
MY	Model year
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
Veh.	Vehicle
X10	Female plug for control element

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
Installation kit for Dacia Sandero 1.0P CVT and 1.0P (LPG) SG MY 2021 TT-Evo	1328873A
Additional automatic air-conditioning kit	1328774A
In case of Telestart, control element, as well as indicator lamp in consultation with end customer	In accordance with price list

2.3 Notes on installation, in coordination with the end customer

- ▶ Arrange for the vehicle to be delivered with the tank only about ¼ full.
- ▶ The installation location of the following elements should be chosen in coordination with the end customer:
 - the push button in case of the Telestart and/or ThermoCall and/or ThermoConnect options
 - the MultiControl CAR option

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.

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	
Vehicle-specific installation documentation of the cold start kit	
Webasto Comfort A/C control	
Webasto Standard A/C control	
Tank extracting device (e.g. FuelFix)	
Exhaust end fastener (EFIX)	
Combustion air intake silencer	
Spacer bracket (ASH)	

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.



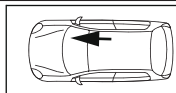
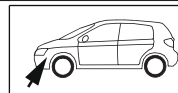
Note on a special technical feature

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
✓	Action
►	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 components as well as 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

Temperature specification for heat shrink plastic tubings

- Fabric heat shrink tubing: shrink temperature max. 230°C
- Standard heat shrink plastic tubing: shrink temperature max. 300°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 mm²
- Crimping pliers for cable lugs 0.5 – 10 mm²
- Crimping pliers for male connector 0.14 – 6 mm²
- Crimping pliers for connector 0.25 – 6 mm²
- Torque wrench for 2.0 - 10 Nm
- Deep-hole marker
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

5 Preparations

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	<ul style="list-style-type: none"> ▶ Open the fuel tank cap ▶ Ventilate the fuel tank ▶ Close the fuel tank cap again ▶ Depressurise the cooling system 	
Engine compartment and body	<ul style="list-style-type: none"> ▶ Battery and battery carrier ▶ Air filter box complete with intake hose ▶ Fuse and relay box cover ▶ Firewall heat shield plate on the front passenger's side ▶ Front wheel on the front passenger's side ▶ Front wheel well trim on the front passenger's side ▶ Bottom engine compartment trim ▶ Underbody trim on the front passenger's side 	
Passenger compartment	<ul style="list-style-type: none"> ▶ Side instrument panel trim on the left ▶ Lower instrument panel trim on the left ▶ Centre console trims in case of manual air-conditioning (see section 'dismantling instructions') ▶ Accelerator pedal in case of automatic air-conditioning variant 1 (see section 'Electrical system of passenger compartment') ▶ Centre console trim on the driver's side in case of automatic air-conditioning variant 2 (see section 'Electrical system of passenger compartment') ▶ Rear bench seat 	



Carry out the following work only during the corresponding installation sequence:



DANGER

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

Vehicle body	▶ Tank fitting in accordance with the manufacturer's instructions	
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5.2 Heater preparation

Engine compartment	<ul style="list-style-type: none"> ▶ 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 	
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6 Installation overview

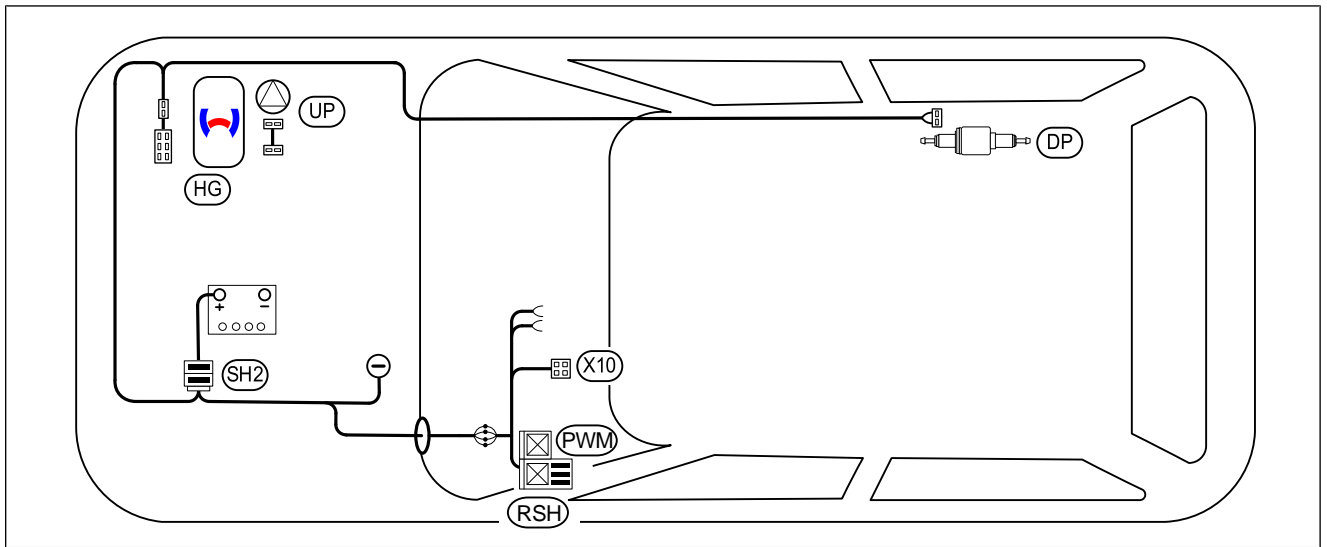
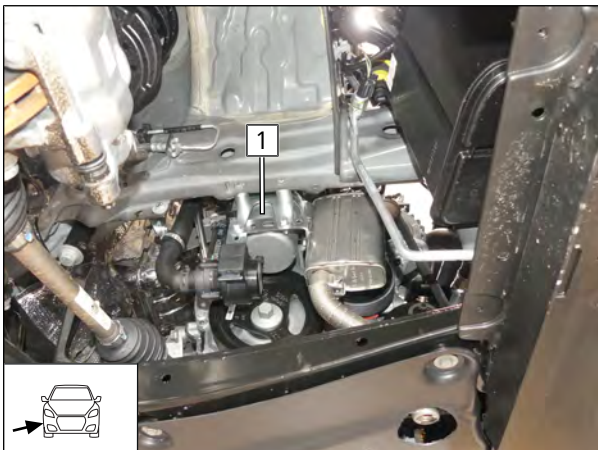


Fig. 1

Legend to installation overview

Abbreviation	Component
DP	Fuel pump
HG	Heater
PWM	Pulse width modulator
RSH	Relay and fuse holder of passenger compartment
SH2	Engine compartment fuse holder
UP	Coolant pump
X10	Female plug for control element

Heater installation location



1 Heater

Fig. 2



7 Electrical system of engine compartment

Removing relay box trim piece 1

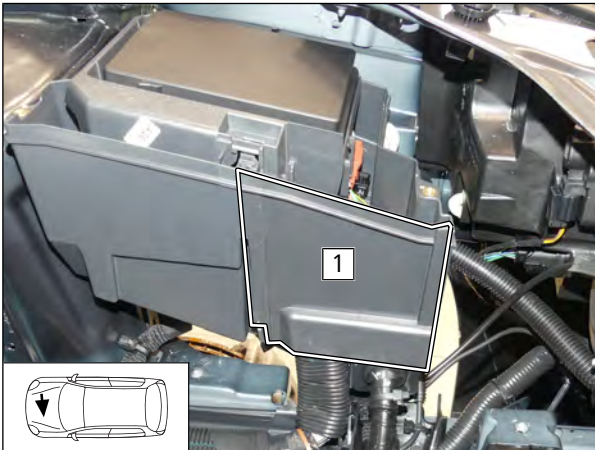


Fig. 3

Drilling hole, mounting retaining plate SH2

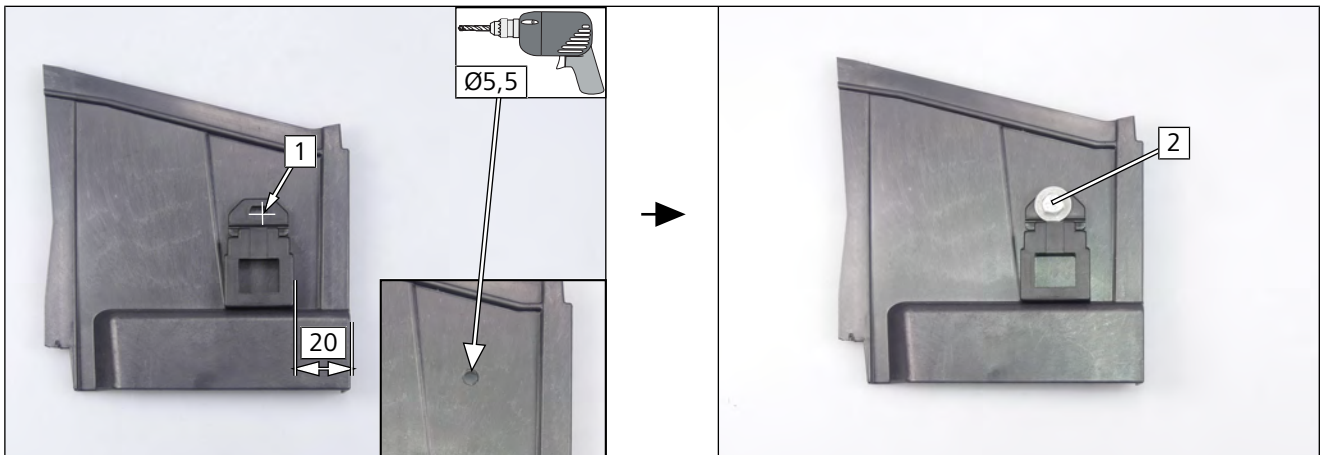


Fig. 4

1 Copying hole pattern, drilling hole

2 M5x16 bolt, large diameter washer, retaining plate SH2, drilled hole, large diameter washer, nut

Mounting relay box trim piece 1

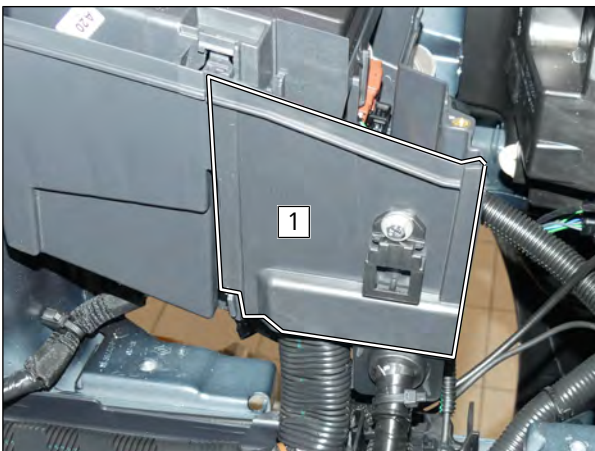


Fig. 5



Wiring harness routing

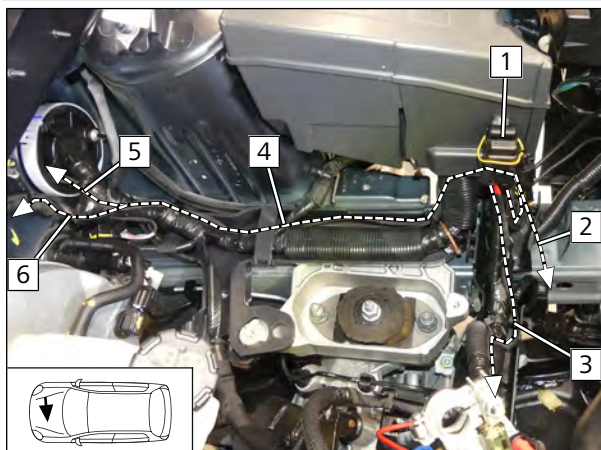


Fig. 6

- 1 Insert SH2
- 2 HG wiring harness to HG installation location
- 3 Positive wire to positive battery terminal
- 4 Passenger compartment and control element wiring harnesses, earth wire
- 5 Passenger compartment and control element wiring harnesses to the passenger compartment pass through
- 6 Earth wire

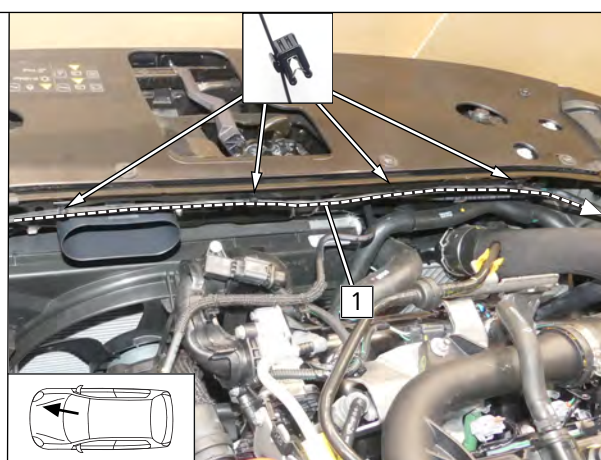
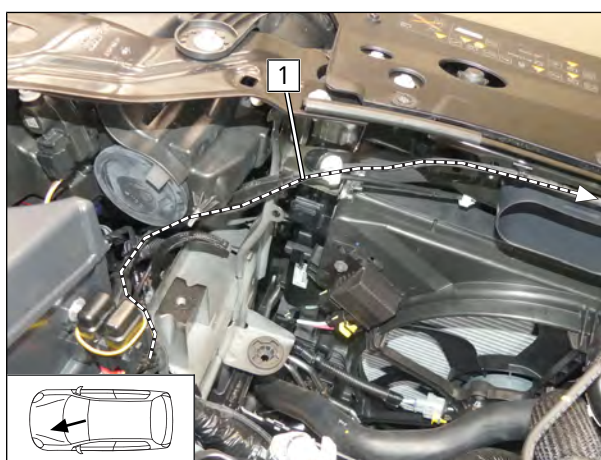


Fig. 7

- Route HG wiring harness 1 along original vehicle lines to HG installation location as shown and fasten with edge clip cable ties.

Wiring harness pass through in passenger compartment, mounting earth wire

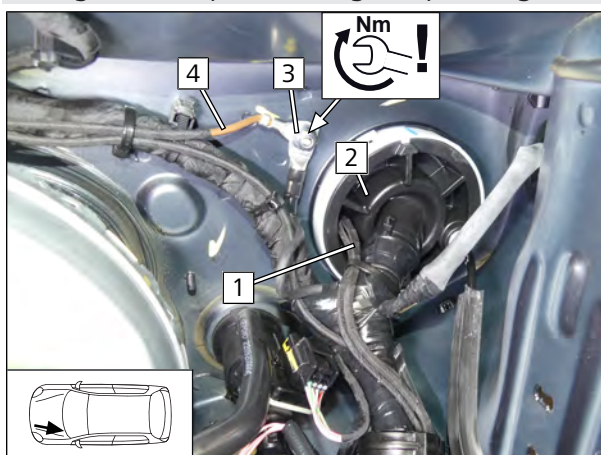



Fig. 8

 To prevent water seeping into the passenger compartment, the wiring harness must be routed upwards to the protective rubber plug and this plug must then be sealed with a suitable sealing compound.

- Route passenger compartment and control element wiring harnesses 1 through protective rubber plug 2 into the passenger compartment and attach with cable tie to original vehicle wiring harness.



DANGER

Observe tightening torque

- 3 Original vehicle earth support point
- 4 Earth wire



Mounting positive wire

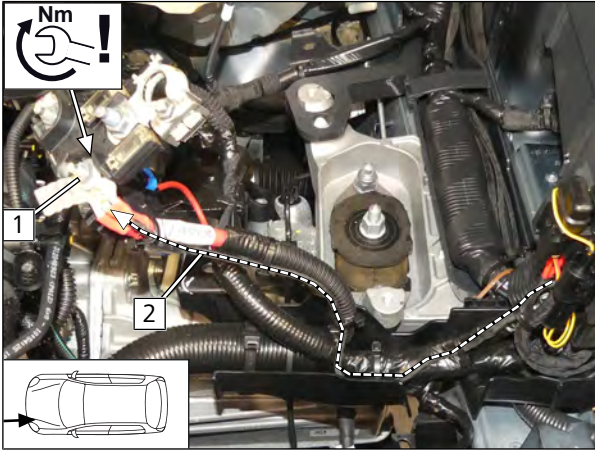


Fig. 9



DANGER

Observe tightening torque



The Fig. shows the installation situation. The battery is connected during the final work phase.

- 1 Positive battery terminal
- 2 Positive wire



8 Mechanical system

8.1 Installation location preparation

Mounting bolts

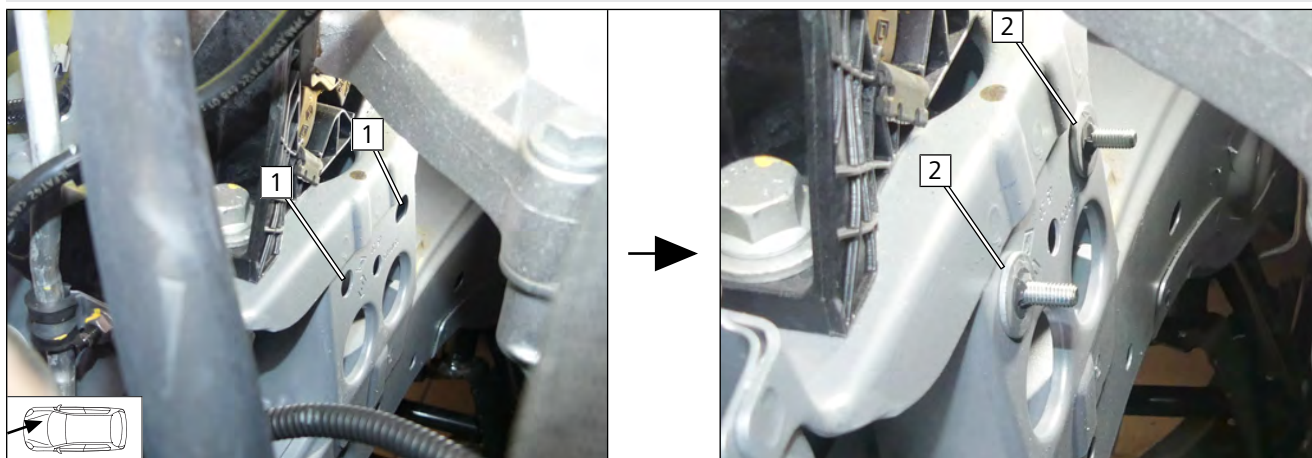


Fig. 10

1 Original vehicle hole

2 M6x20 bolt, large diameter washer with outer d_a22 , original vehicle hole, large diameter washer with outer d_a22 , lock washer

► Insert M6x20 bolt from behind through original vehicle hole.

Drilling holes

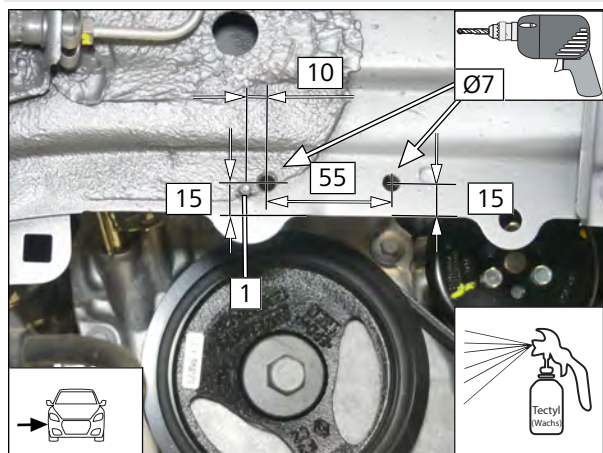


Fig. 11

1 Original vehicle stud bolt



Inserting rivet nut

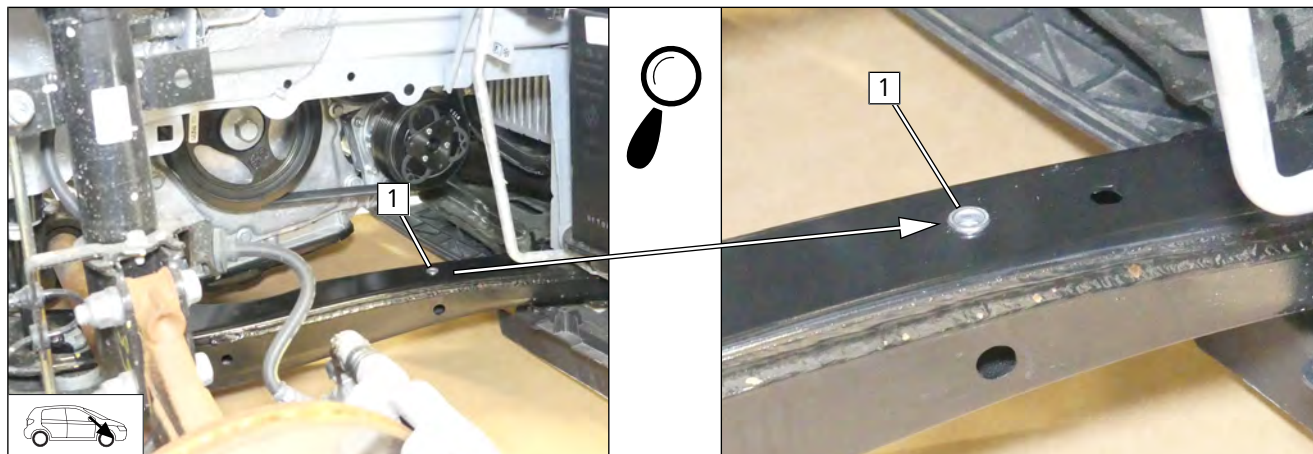


Fig. 12

- 1 Original vehicle hole, steel rivet nut

8.2 Premounting heater

Preparing perforated bracket, mounting on exhaust silencer

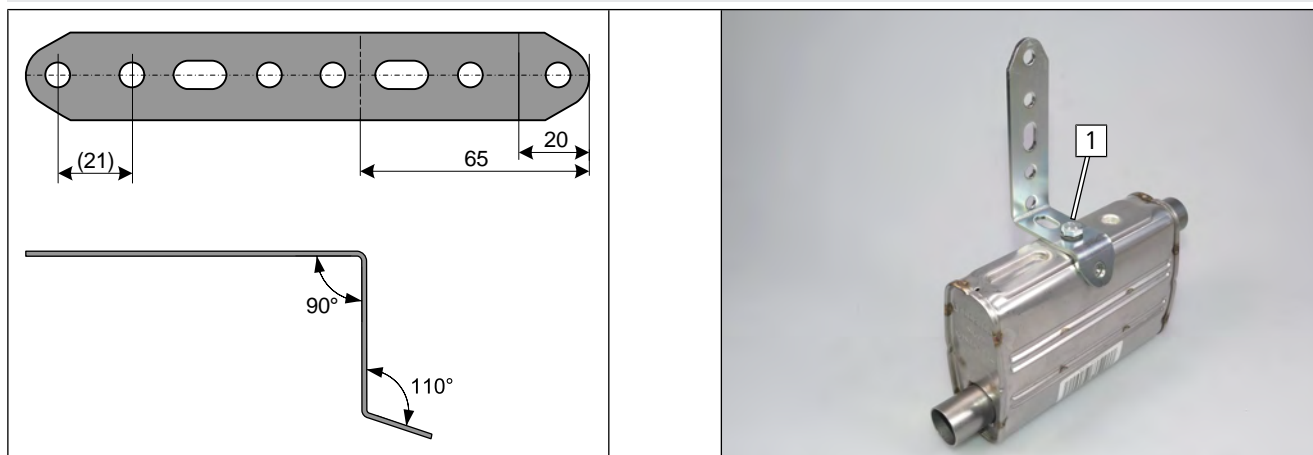


Fig. 13

- 1 M6x16 bolt, spring lock washer, perforated bracket, exhaust silencer

Preparing perforated bracket

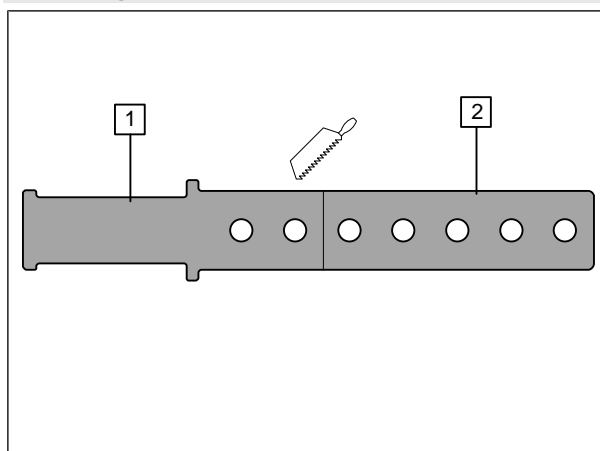


Fig. 14

- 1 Perforated bracket 1
- 2 Perforated bracket 2 (will be mounted as described in chapter 'coolant circuit')



Premounting HG bracket

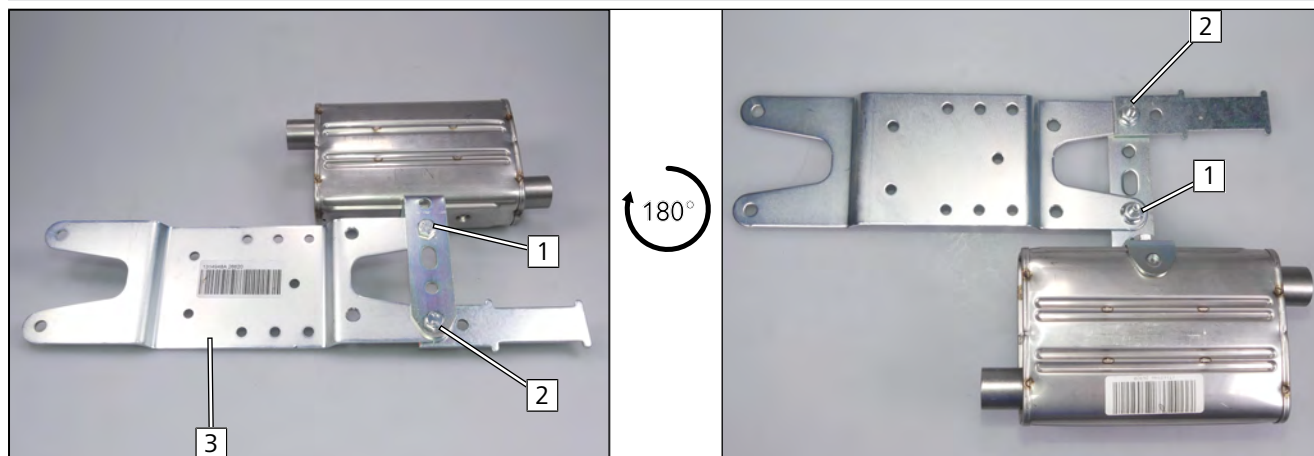


Fig. 15

► Prepare HG bracket **3** in accordance with template.

- 1** M6x20 bolt, exhaust silencer perforated bracket, HG bracket, flanged nut
- 2** M6x20 bolt, exhaust silencer perforated bracket, HG bracket, perforated bracket 1, flanged nut

Mounting, aligning and fastening with 7Nm water connection piece with sealing ring and retaining plate

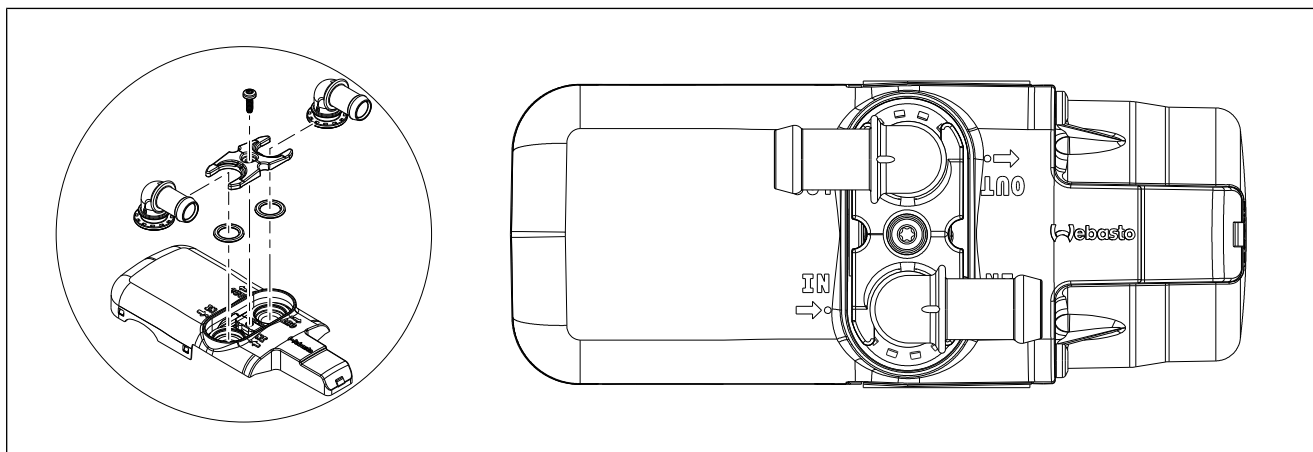


Fig. 16

Positioning premounted bracket flat onto HG and mounting it

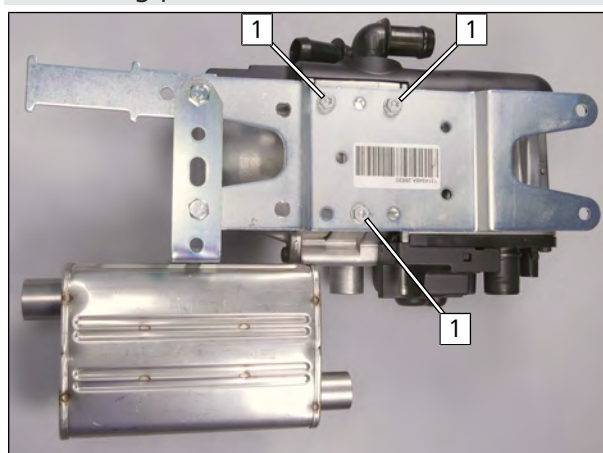
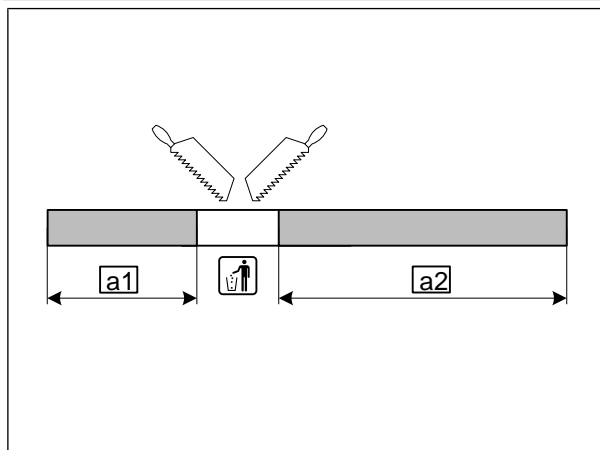


Fig. 17

- 1** M5x13 self-tapping bolt, bracket, HG



Cutting exhaust pipe to length

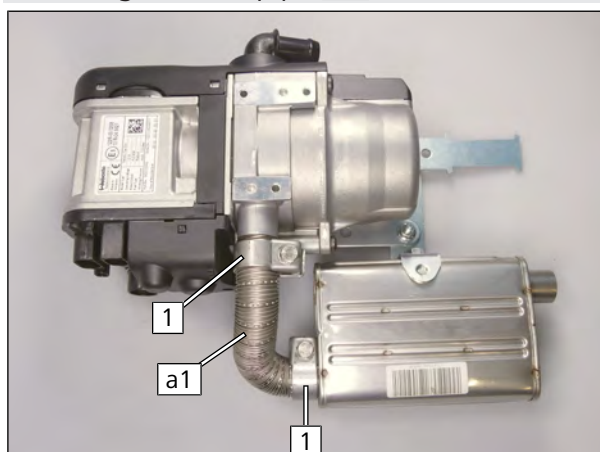


a1 140

a2 240

Fig. 18

Mounting exhaust pipe **a1**



1 Hose clamp

Fig. 19

Preparing perforated bracket

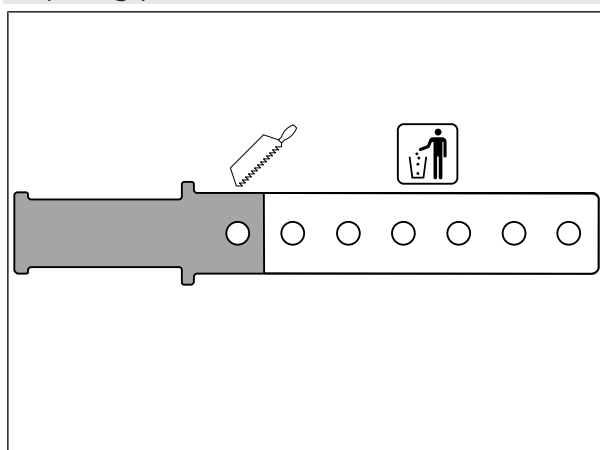


Fig. 20



Premounting and cutting to length combustion air intake pipe and combustion air intake silencer

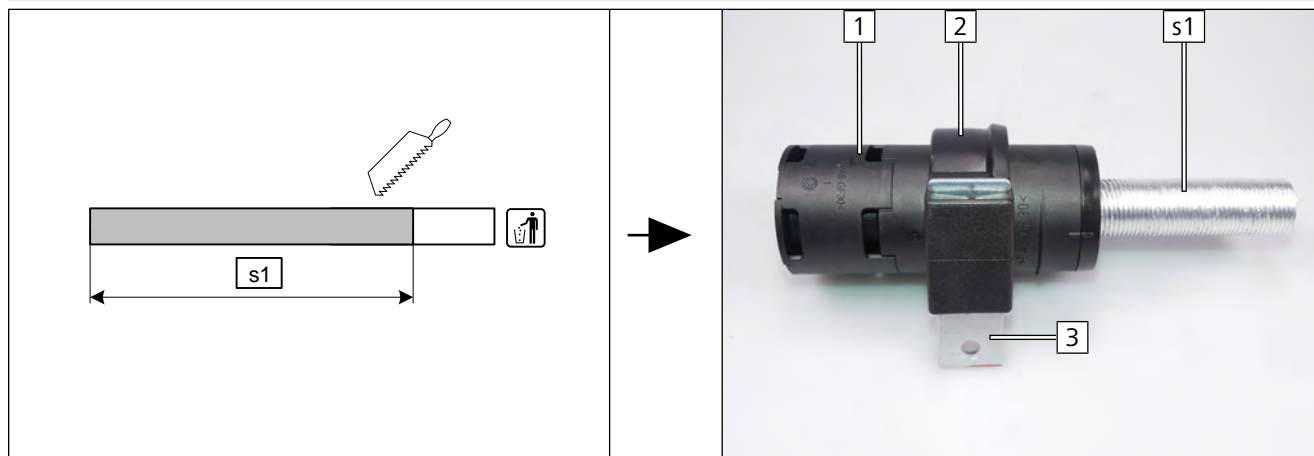


Fig. 21

s1 80

- 1** Combustion air intake silencer
- 2** Combustion air intake silencer mount
- 3** Perforated bracket

Mounting premounted combustion air intake silencer **1** onto HG



Fig. 22



Observe the installation instructions of the combustion air intake silencer.

Mounting fuel line

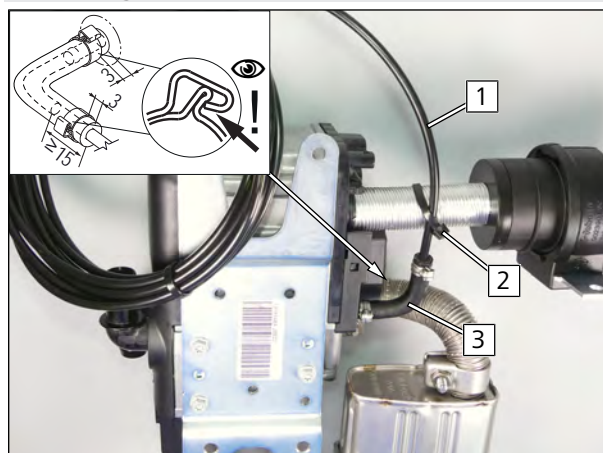
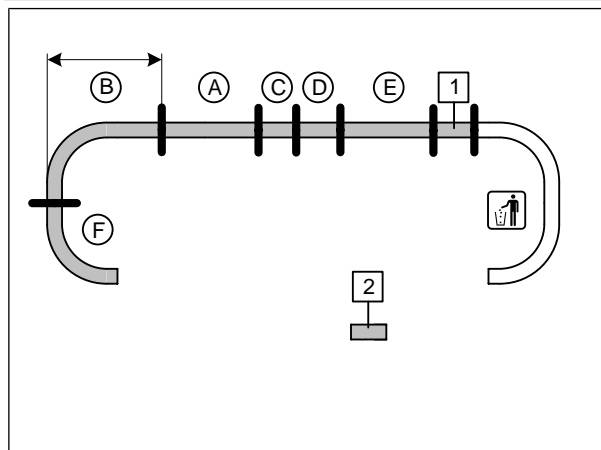


Fig. 23

- 1** Fuel line
- 2** Cable tie around combustion air intake pipe and fuel line
- 3** 90° moulded hose, Ø10 clamp [2x]



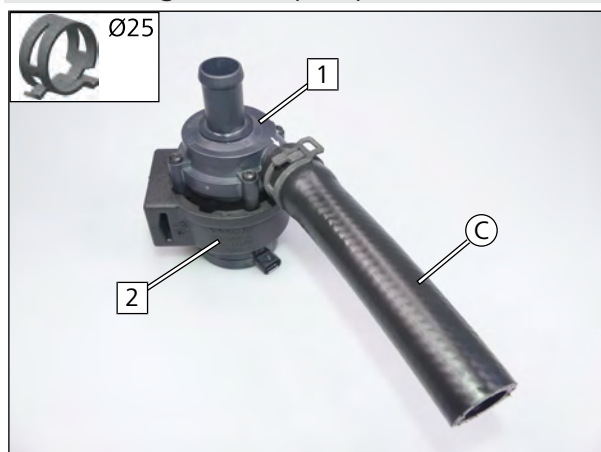
Preparing hoses



(A)	580
(B)	365
(C)	130
(D)	210
(E)	630
(F)	90°
1	200 (will be used as protective hose for original vehicle A/C line)
2	80 (will be used as protective hose for original vehicle A/C line)

Fig. 24

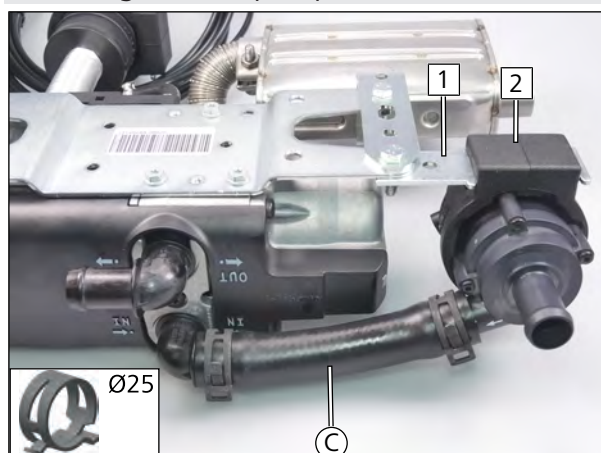
Premounting coolant pump



- 1** Coolant pump
- 2** Coolant pump mount

Fig. 25

Mounting coolant pump on HG



- Push coolant pump mount **2** onto premounted perforated bracket **1**.

Fig. 26



Connecting hose **D** to HG/OUT

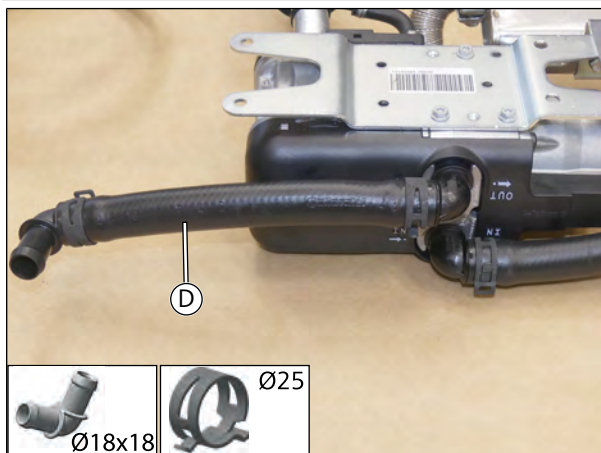


Fig. 27

Connecting hose **B** to coolant pump inlet

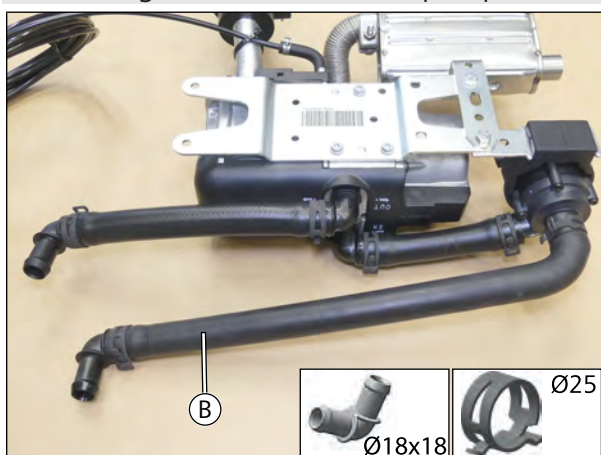


Fig. 28

Mounting rubber-coated p-clamp onto hose **B**

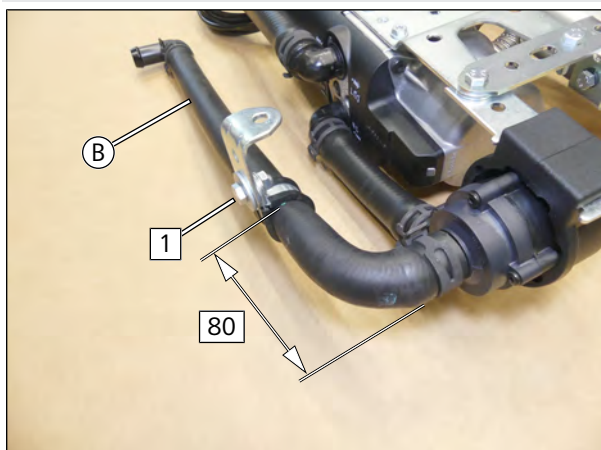


Fig. 29

- 1 M6x16 bolt, large diameter washer with outer \varnothing $d_a 22$, angle bracket, $\varnothing 25$ rubber-coated p-clamp, flanged nut



Mounting hose bracket **1** onto hoses **B** and **D** and closing it

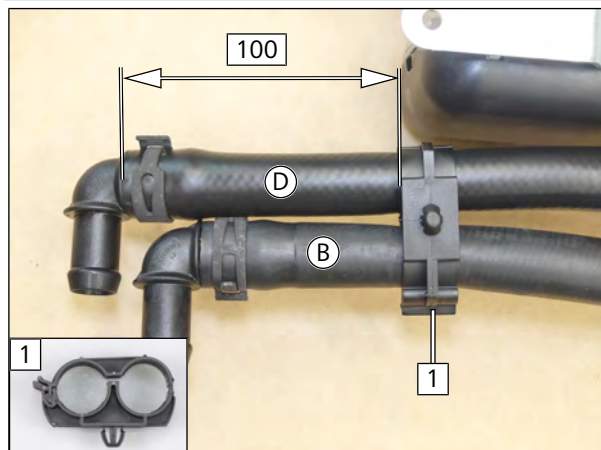


Fig. 30

Mounting and fastening coolant pump wiring harness

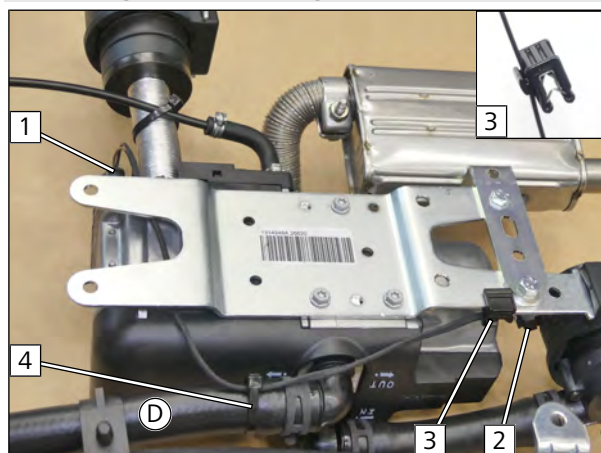


Fig. 31

- 1** Coolant pump wiring harness connector, HG connection
- 2** Coolant pump wiring harness connector, coolant pump connection
- 3** Edge clip cable tie
- 4** Cable tie around hose **D** and coolant pump wiring harness



8.3 Heater installation

Mounting heater

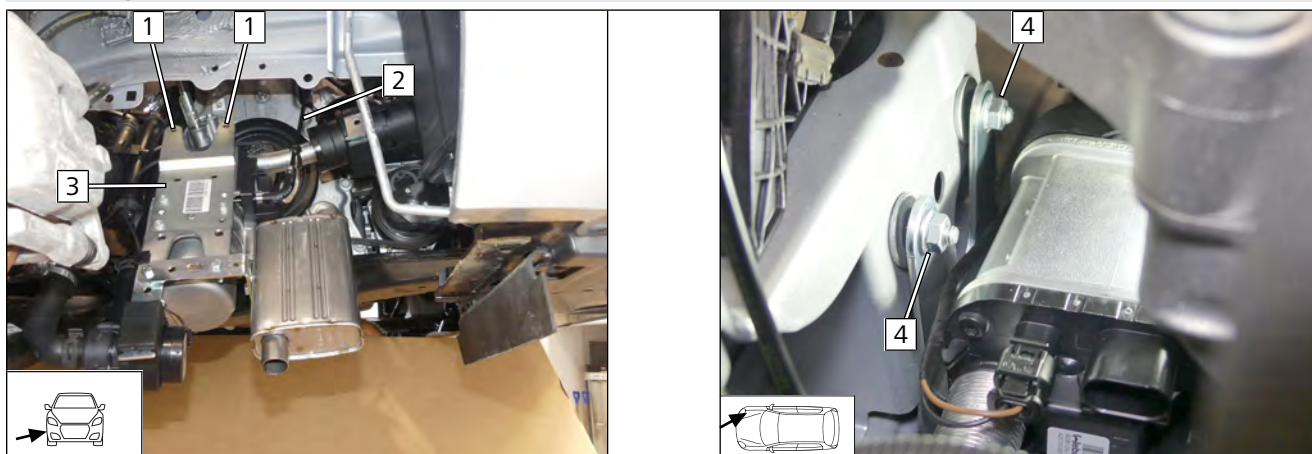


Fig. 32



Observe the general installation instructions of the heater.

- ▶ Move premounted HG **3** from the front passenger's side to the installation location, hook the HG bracket on the prepared bolts using upper holes **1**.
- ▶ Route fuel line **2** upwards into the engine compartment.

- ▶ Mount flanged nuts **4** loosely.

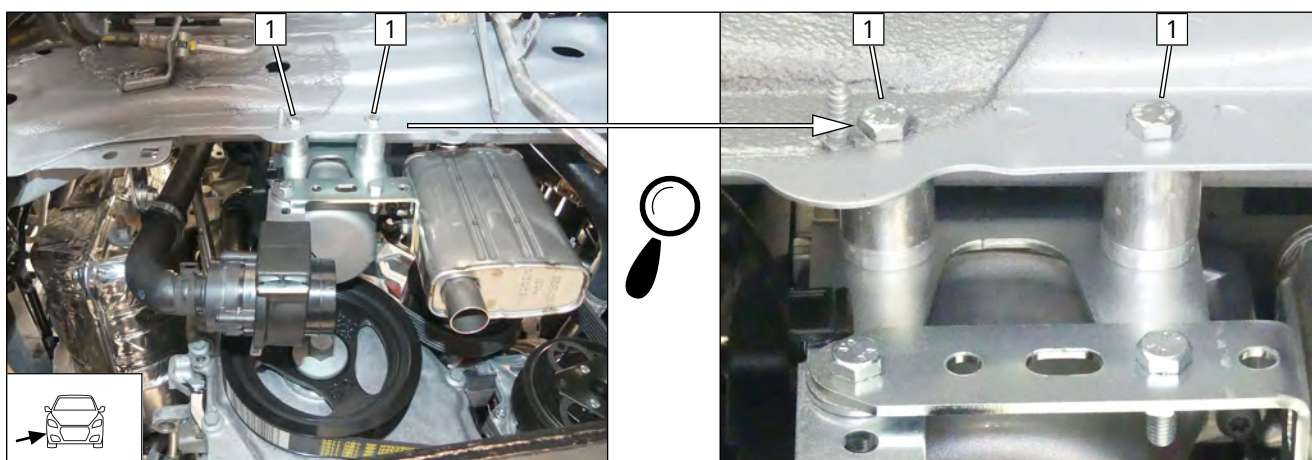


Fig. 33

1 M6x40 bolt, drilled hole, spacer (20), spacer (5), drilled hole in HG bracket, flanged nut

- ▶ Align HG bracket vertically and tighten the bolts.

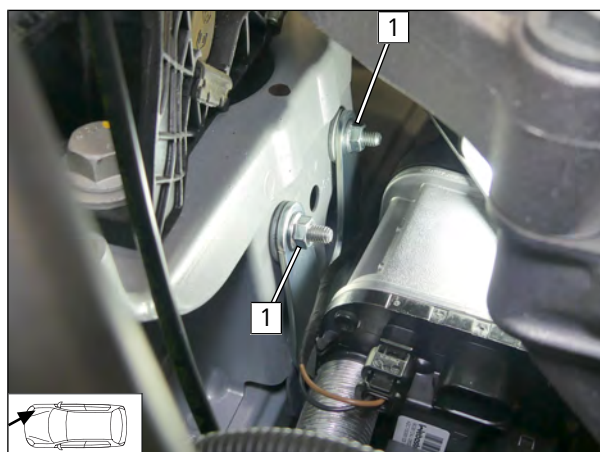


Fig. 34

► Tighten flanged nuts **1**.

Mounting combustion air intake silencer

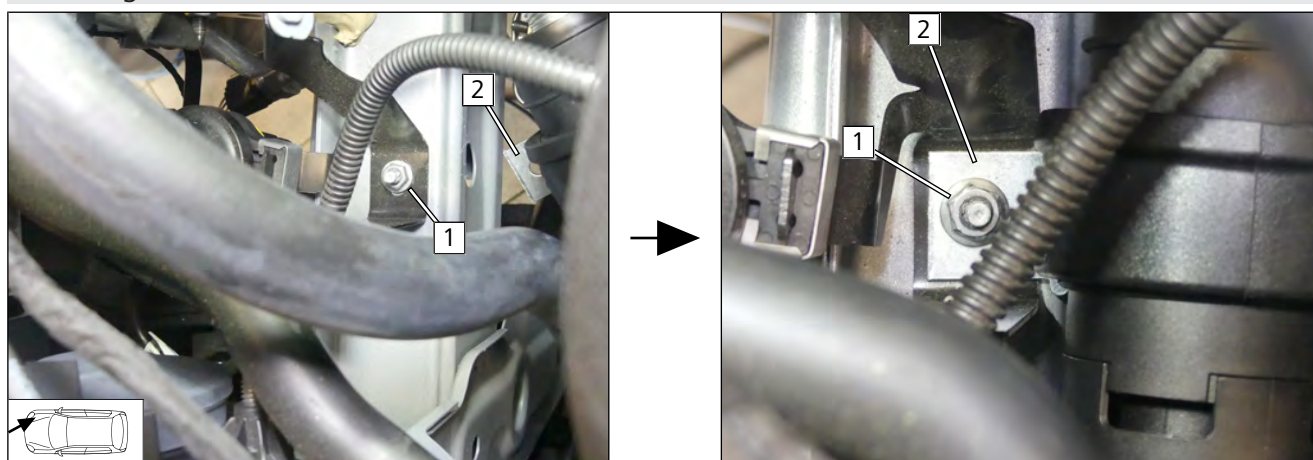


Fig. 35

► Remove original vehicle flanged nut **1**, position perforated bracket **2** of premounted combustion air intake silencer onto original vehicle stud bolt and reinstall using original vehicle flanged nut **1**.

Fastening original vehicle A/C line

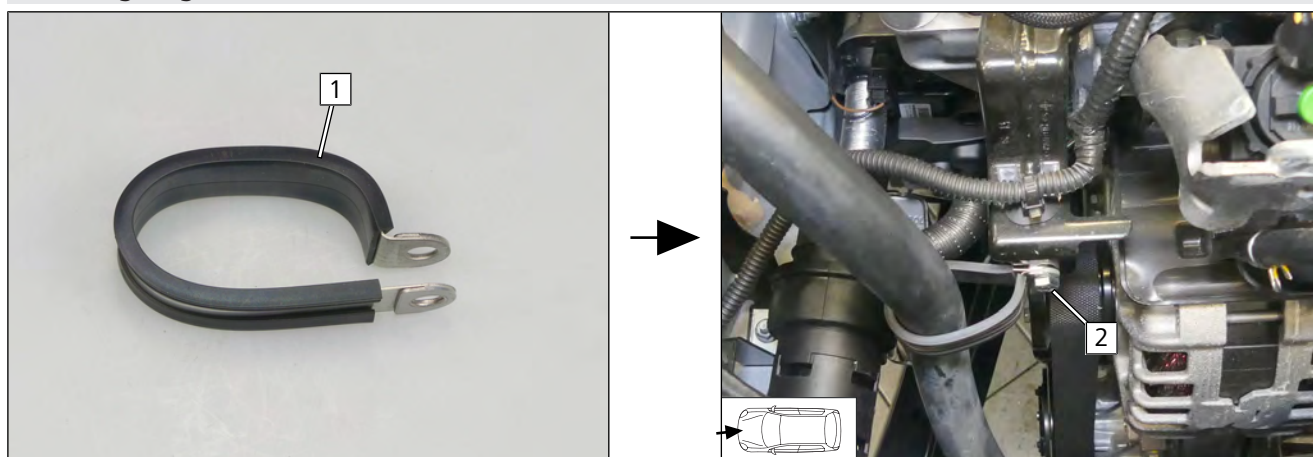


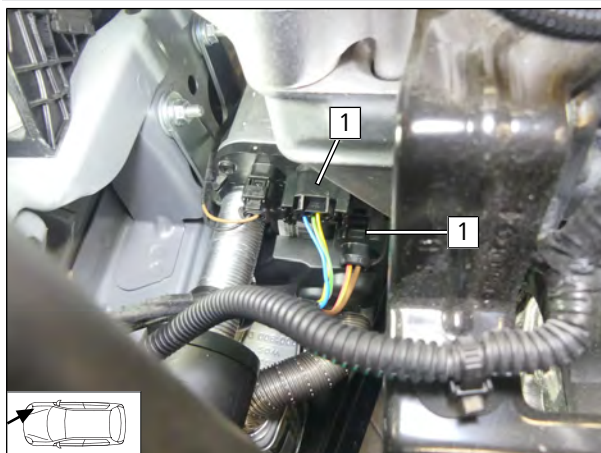
Fig. 36

1 Bend Ø38 rubber-coated p-clamp as shown.

2 M6x16 bolt, Ø38 rubber-coated p-clamp, original vehicle hole, flanged nut



Mounting connectors for wiring harnesses



- 1 Heater wiring harness connector

Fig. 37



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.

Dismantling fuel pump connector X7

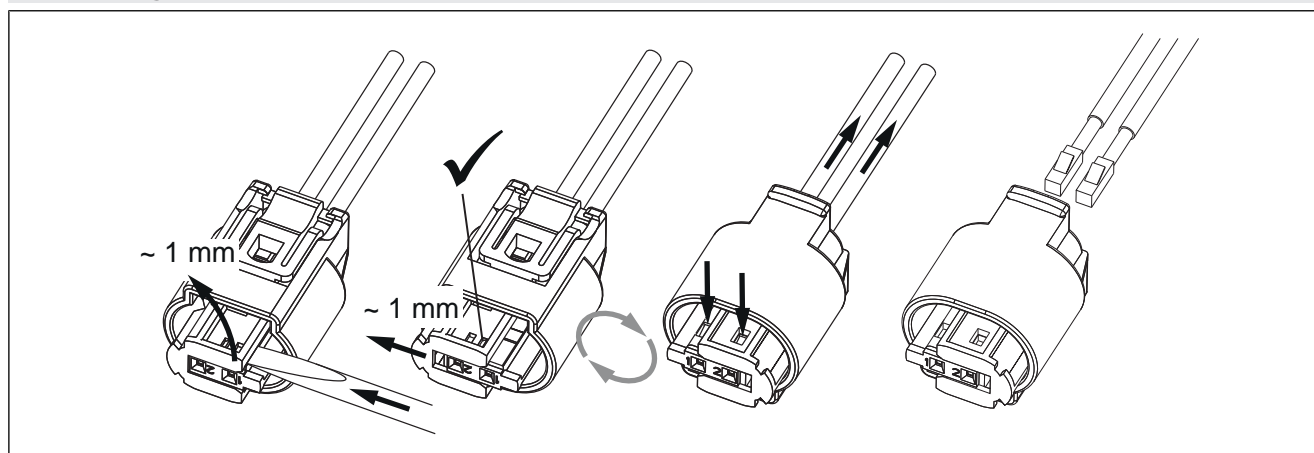


Fig. 38

Fuel line and fuel pump wiring harness routing

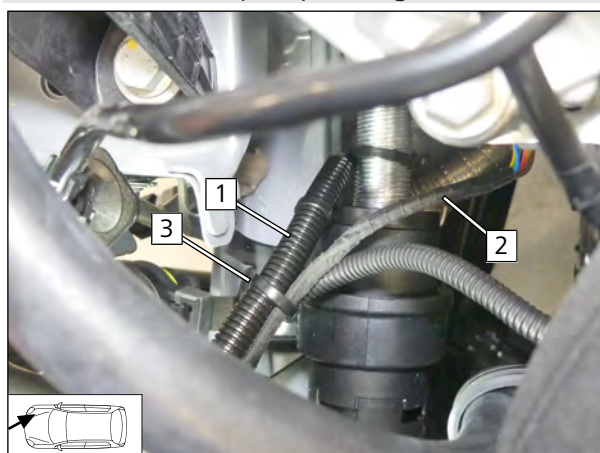


Fig. 39

- ▶ Draw fuel line and fuel pump wiring harness into Ø10 corrugated tube **1**.
- ▶ Fasten corrugated tube **1** and HG wiring harness **2** with cable tie **3** to original vehicle wiring harness.



Overview of routing in engine compartment

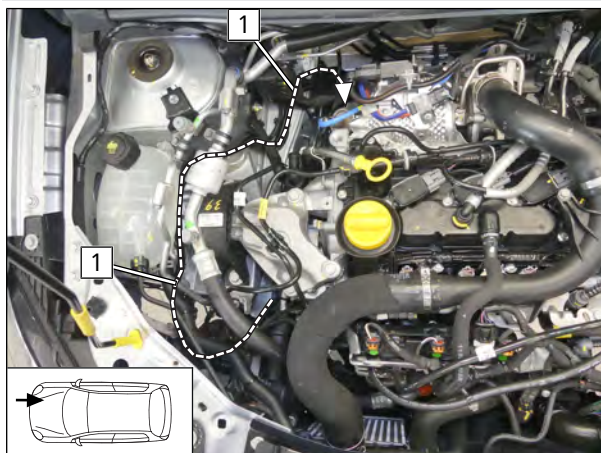


Fig. 40

- ▶ Route corrugated tube with fuel line and fuel pump wiring harness **1** to the firewall and fasten it with cable ties.

Routing on firewall

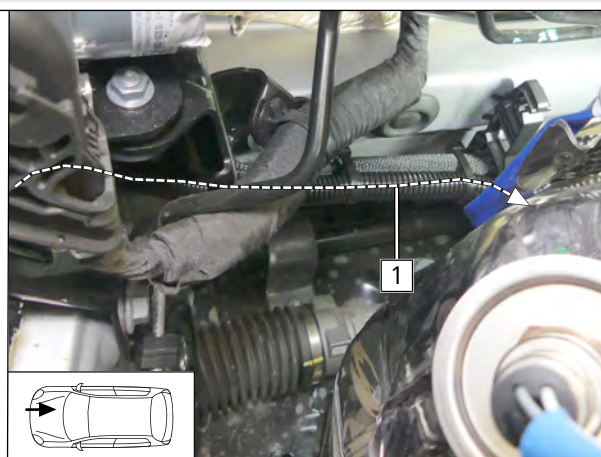
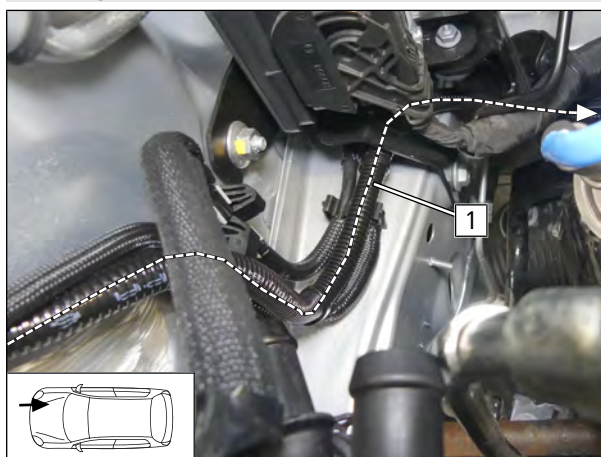


Fig. 41

- ▶ Route corrugated tube with fuel line and fuel pump wiring harness **1** along original vehicle lines and fasten it with cable ties.

Routing to underbody

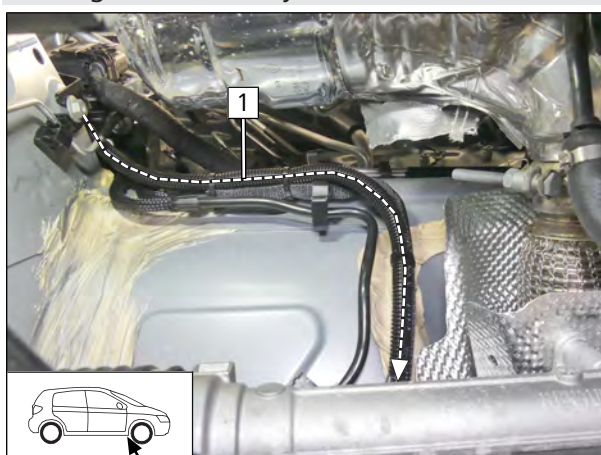


Fig. 42

- ▶ Route corrugated tube with fuel line and fuel pump wiring harness **1** along original vehicle lines and fasten it with cable ties.



Routing on underbody

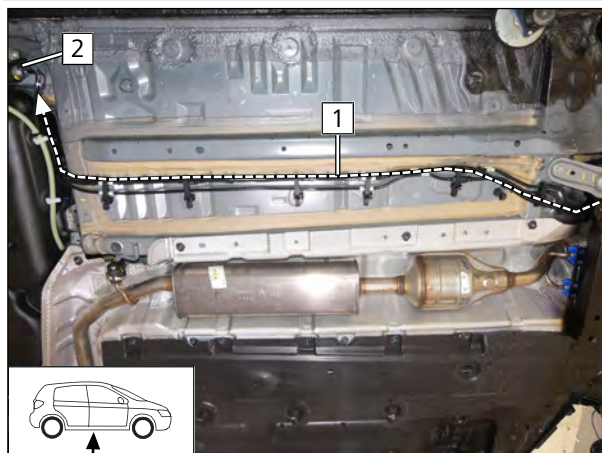


Fig. 43

► Route fuel line and fuel pump wiring harness **1** along original vehicle fuel lines to fuel pump installation location **2** and fasten it with cable ties.

Premounting fuel pump

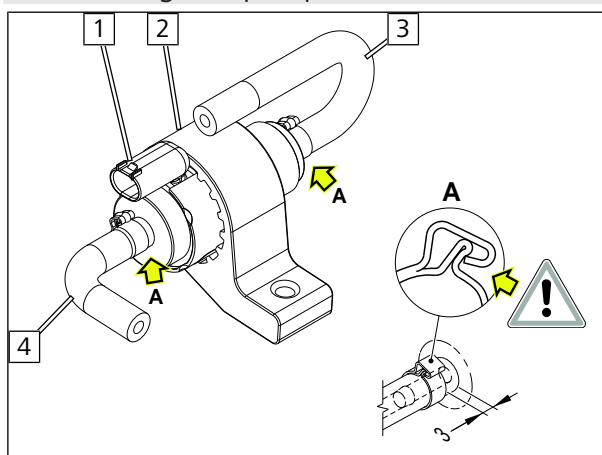


Fig. 44



The alignment of the fuel pump and fuel hoses will be carried out afterwards, during the installation.

- 1** Fuel pump
- 2** Fuel pump mount
- 3** 180° moulded hose, Ø10 clamp
- 4** 90° moulded hose, Ø10 clamp

Mounting fuel pump

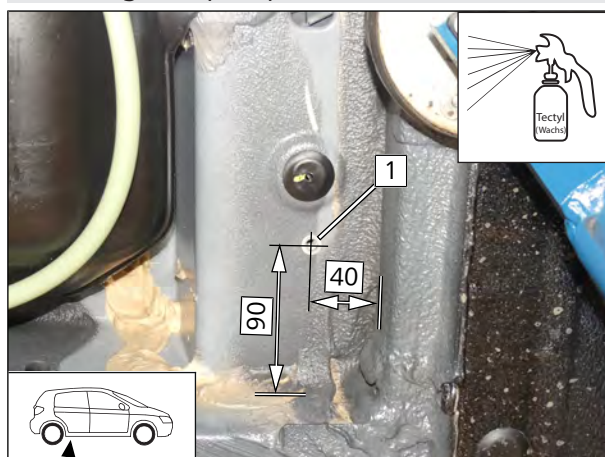


Fig. 45

1 Drill 9mm dia. hole, insert rivet nut

2 M6x25 bolt, support angle bracket, DP mount, rivet nut



Assembling fuel pump connector X7

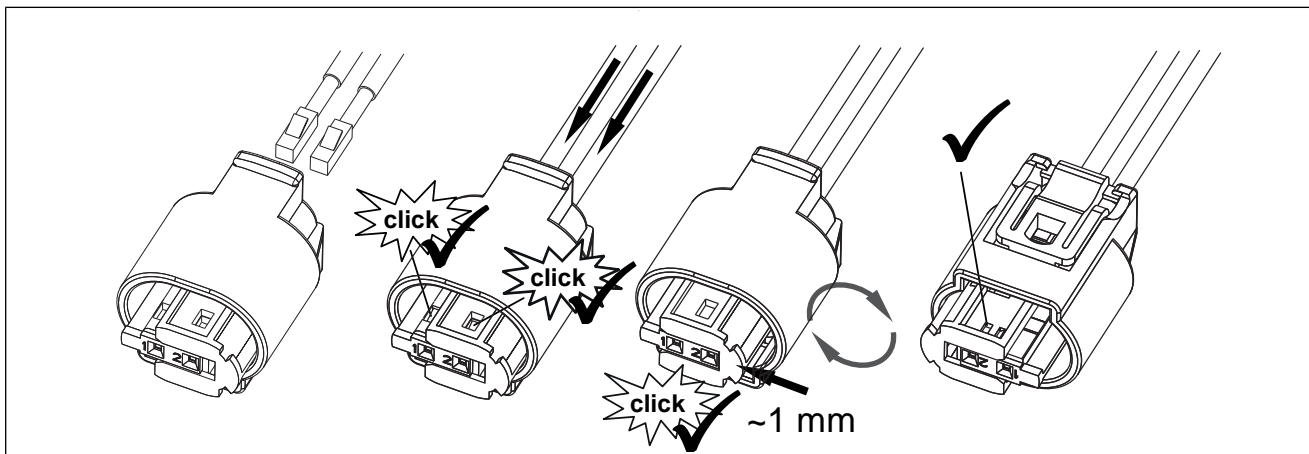


Fig. 46

Fuel pump connection

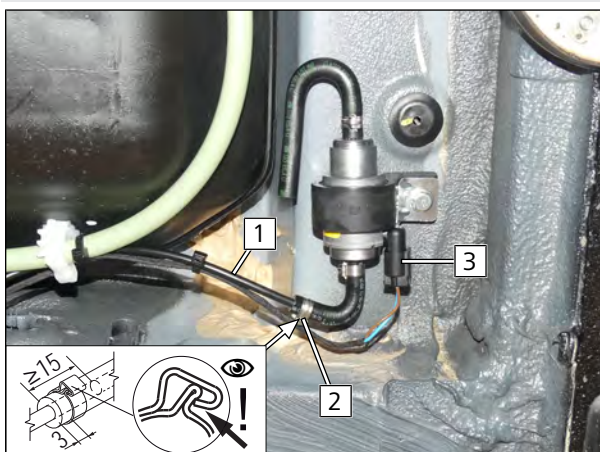


Fig. 47

- 1 Heater fuel line
- 2 Ø10 clamp
- 3 Fuel pump wiring harness, connector X7 mounted

9.1 Installing tank extracting device

Removing tank fitting

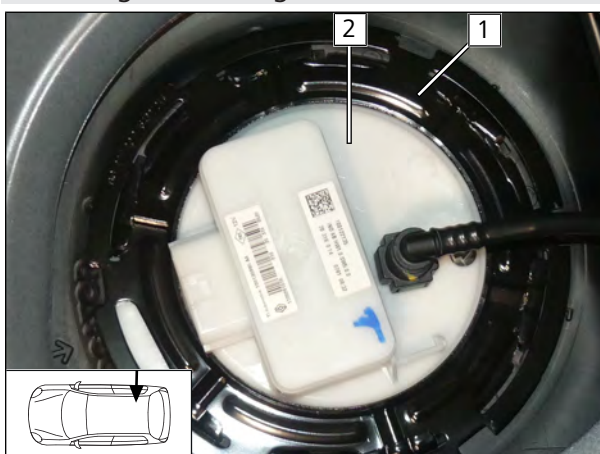



Fig. 48

 Dismantle tank fitting in accordance with manufacturer's instructions.

- Remove ring 1, dismantle tank fitting 2.



Dismantling tank fitting

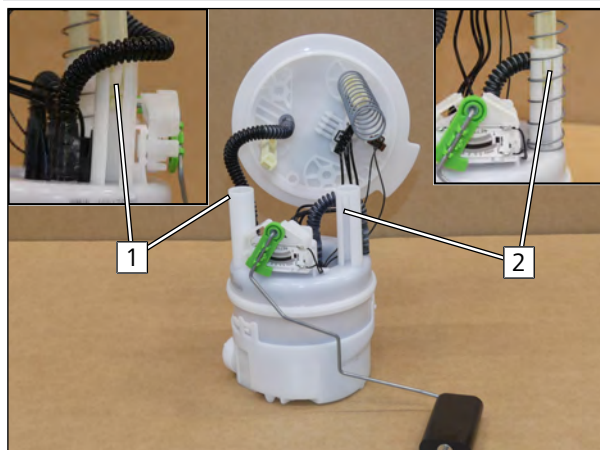


Fig. 49

- ▶ Release locking mechanism **1**.
- ▶ Release locking mechanism **2**.

Hole for tank extracting device

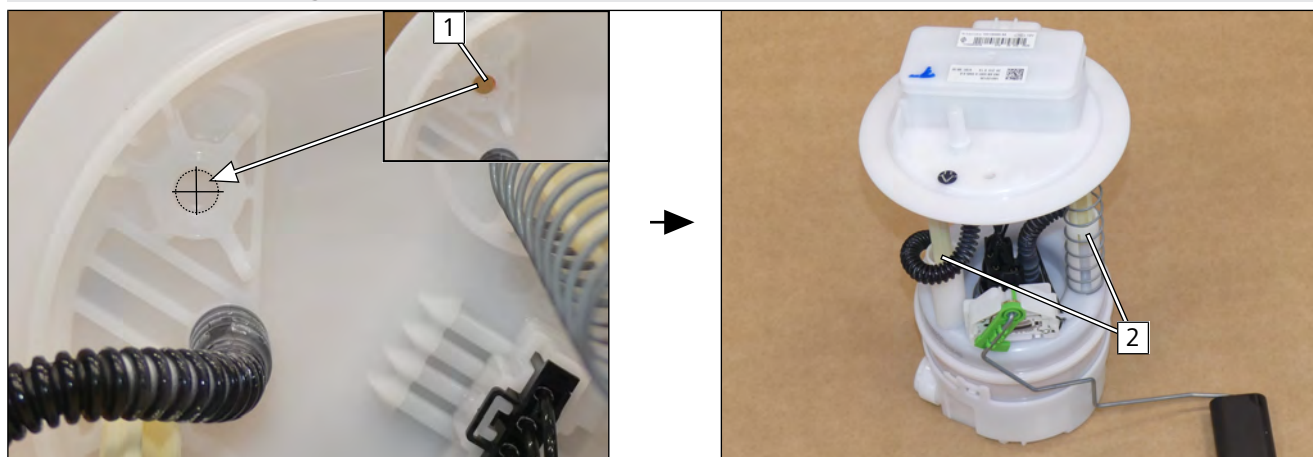


Fig. 50



Observe the installation instructions of the tank extracting device.

1 Drill a $\varnothing 6$ hole in the centre of the hollow.

2 Re-engage the tank fitting.



Inserting and aligning tank extracting device, checking the distances

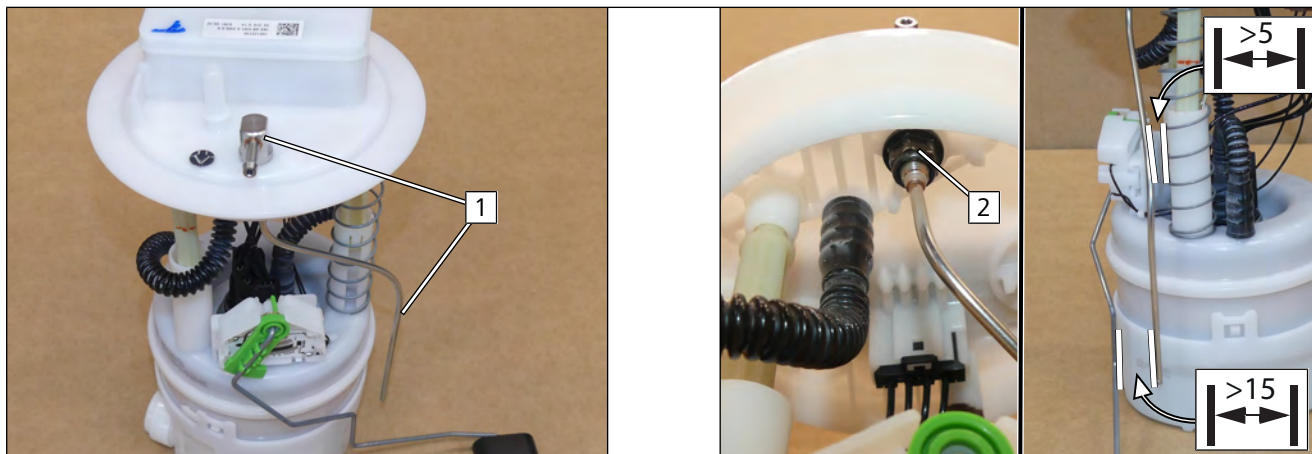



Fig. 51

1 Bend the tank extracting device according to the template, cut it to length and insert it into the hole.

2 Tighten the nut.

 Ensure sufficient distance from neighbouring components, correct if necessary.

Mounting tank fitting

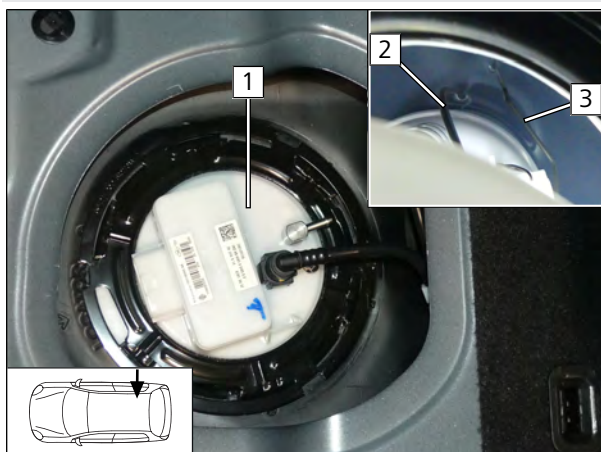


Fig. 52



Mount tank fitting in accordance with manufacturer's instructions.

► Mount tank fitting **1**. During the installation, check the position of tank extracting device **2** and float **3**.

Connecting and securing fuel line

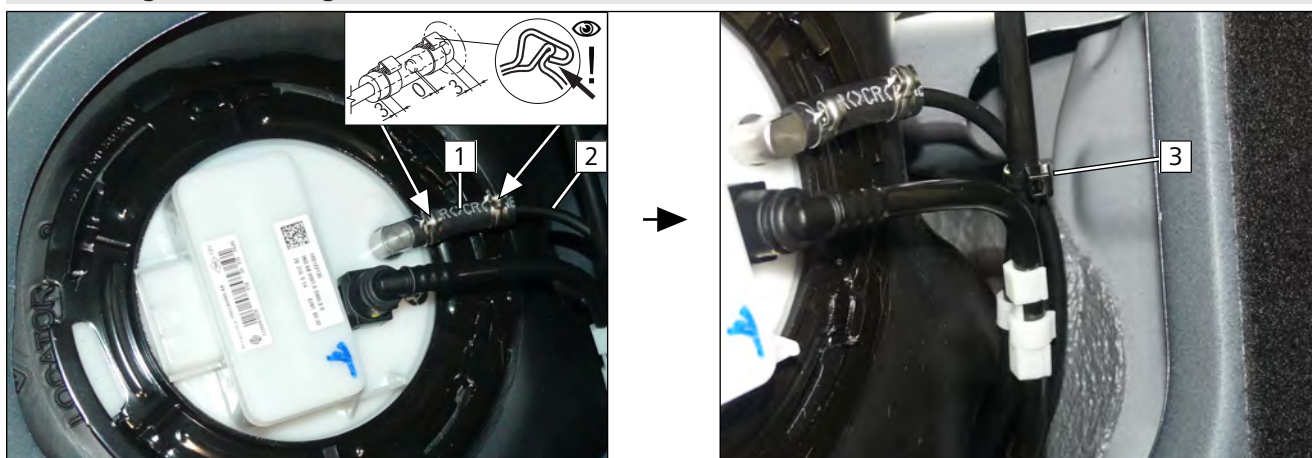


Fig. 53

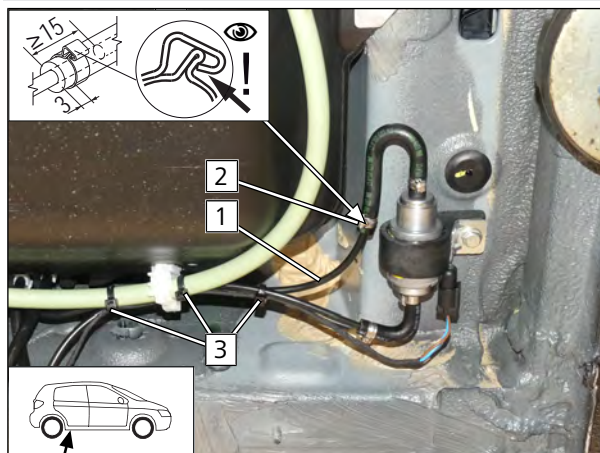
1 Hose section, Ø10 clamp [2x]

2 Fuel line of tank extracting device

3 Cable tie around fuel line and original vehicle line for tension relief



Fuel pump connection



- 1 Fuel line of tank extracting device
- 2 Ø10 clamp
- 3 Cable tie

Fig. 54



10 Coolant

10.1 Preliminary work on vehicle

Fastening angle bracket

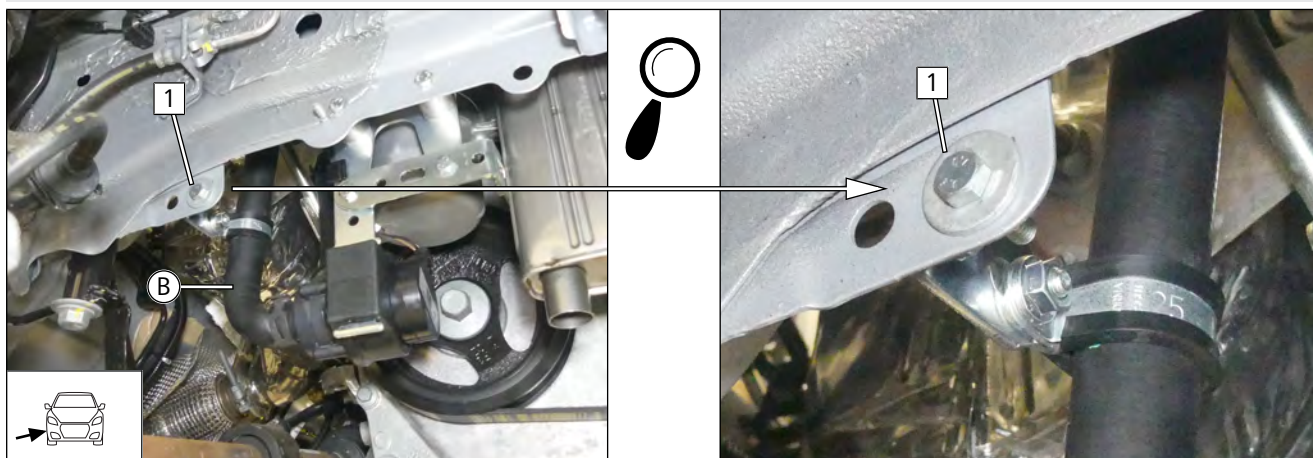


Fig. 55

- 1 M6x16 bolt, large diameter washer with outer $\varnothing d_s 22$, original vehicle hole, angle bracket, flanged nut

Mounting protective hoses

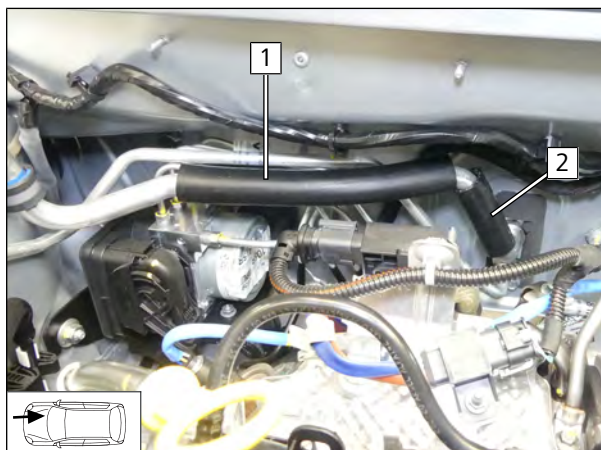


Fig. 56

- Cut 200 long 1 and 80 long 2 protective hose lengthwise and place around original vehicle A/C line as shown.

Premounting rubber-coated pipe clamp



Fig. 57

- 1 M6x16 bolt, prepared perforated bracket 2, $\varnothing 38$ rubber-coated p-clamp, lock washer



Installing spacer nut

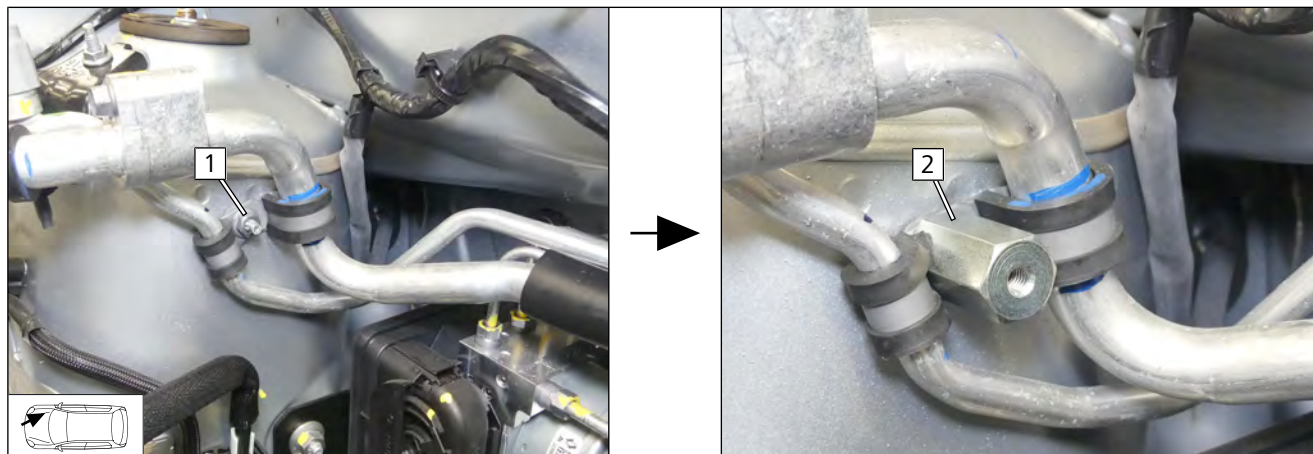


Fig. 58

1 Remove original vehicle flanged nut, it will be reused.

2 Spacer nut (30)

Installing perforated bracket

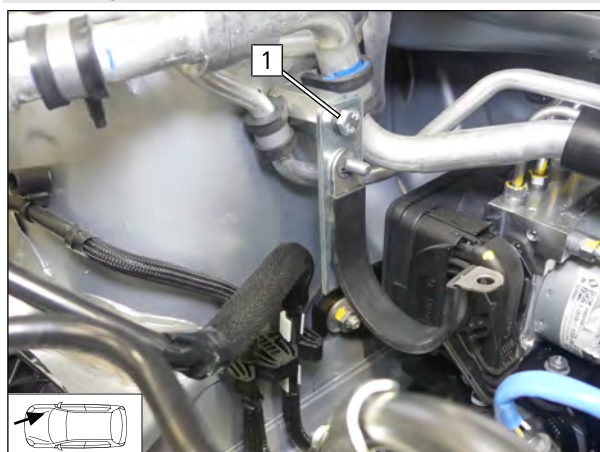


Fig. 59

1 M6x16 bolt, spring lock washer, premounted perforated bracket 2, spacer nut (30)



10.2 Hose routing diagram - vehicles with 67 kW and CVT

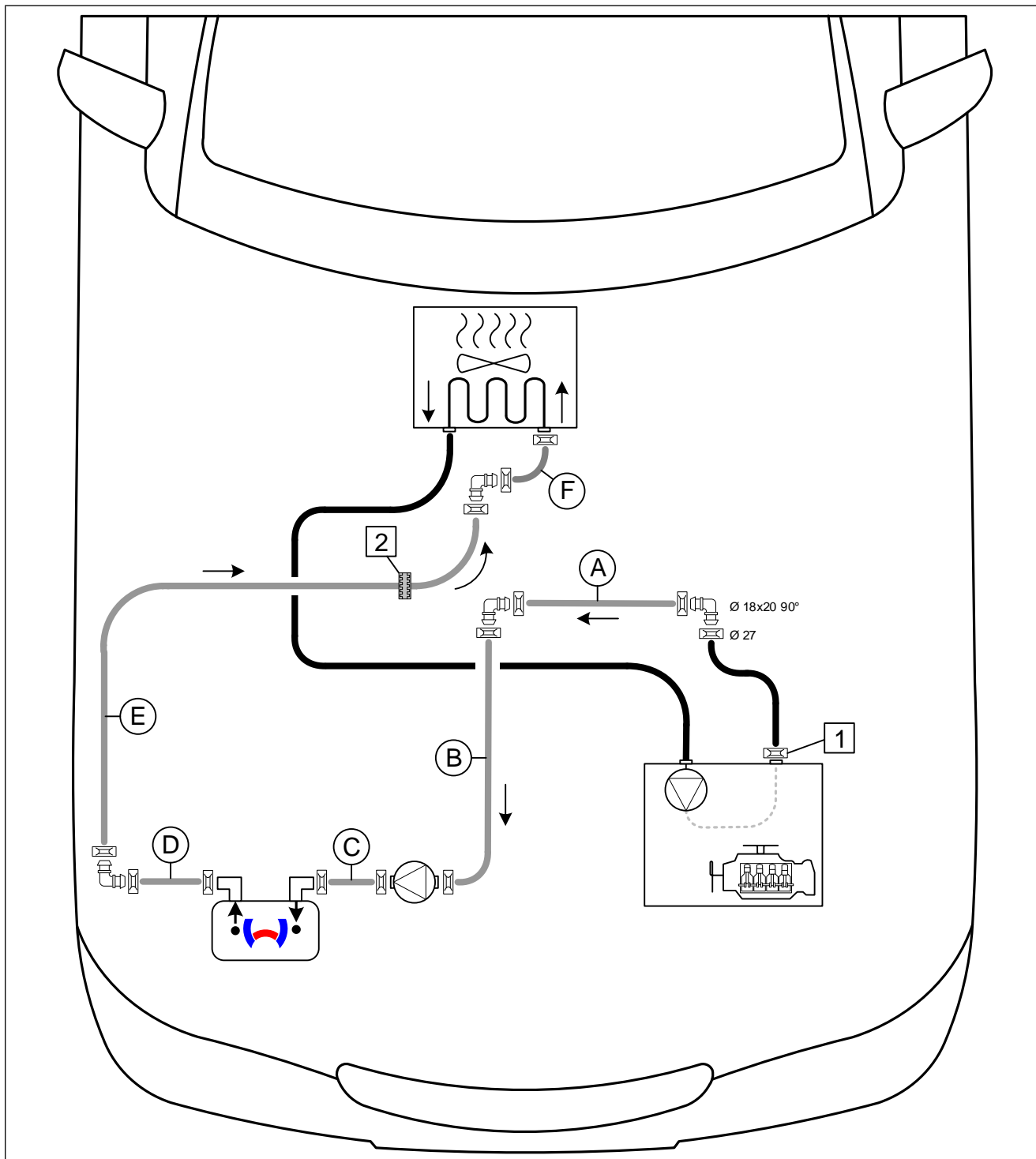


Fig. 60

All spring clips without a specific designation  = Ø25

All connecting pipes without a specific designation  = Ø18x18

1 Original vehicle spring clip; **2** Rubber isolator



10.3 Coolant circuit installation - vehicles with 67 kW and CVT

Removing original vehicle hose

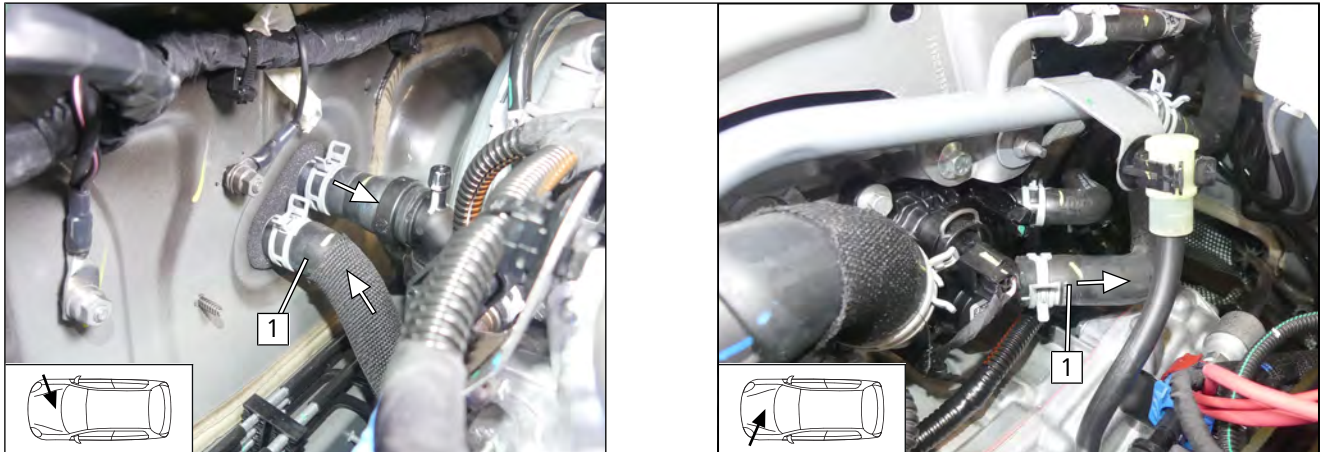


Fig. 61

- 1 Remove heat exchanger inlet/engine outlet hose, spring clip on engine outlet connection will be reused.

Removing braided protection

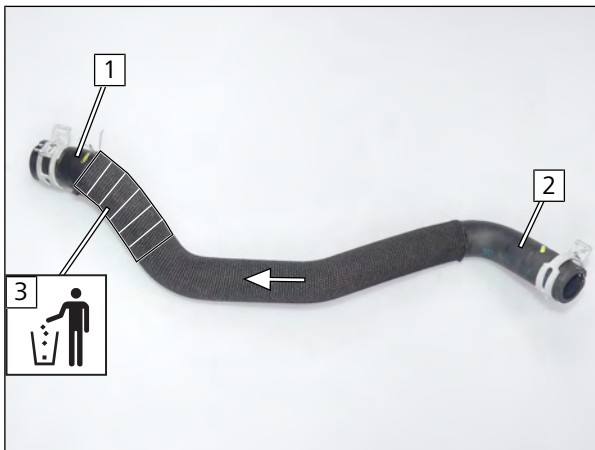


Fig. 62

► Remove marked section of braided protection 3 as shown.

- 1 Heat exchanger inlet connection
- 2 Engine outlet connection

Cutting point

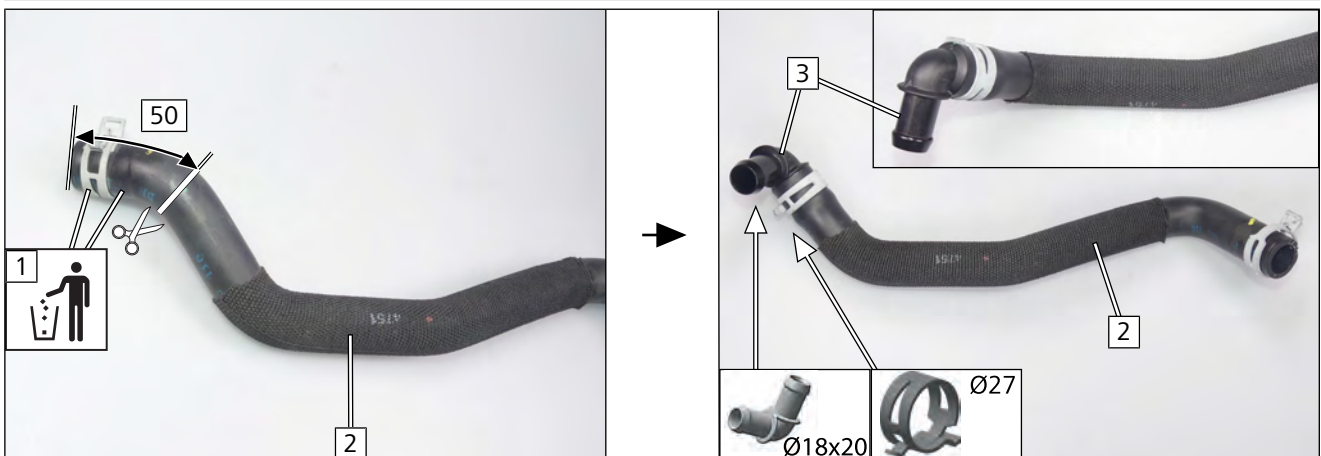


Fig. 63

- 1 Heat exchanger inlet hose section
 - 2 Engine outlet hose section
- Align 18/20, 90° connecting pipe 3 as shown.



Premounting and mounting hose **F**

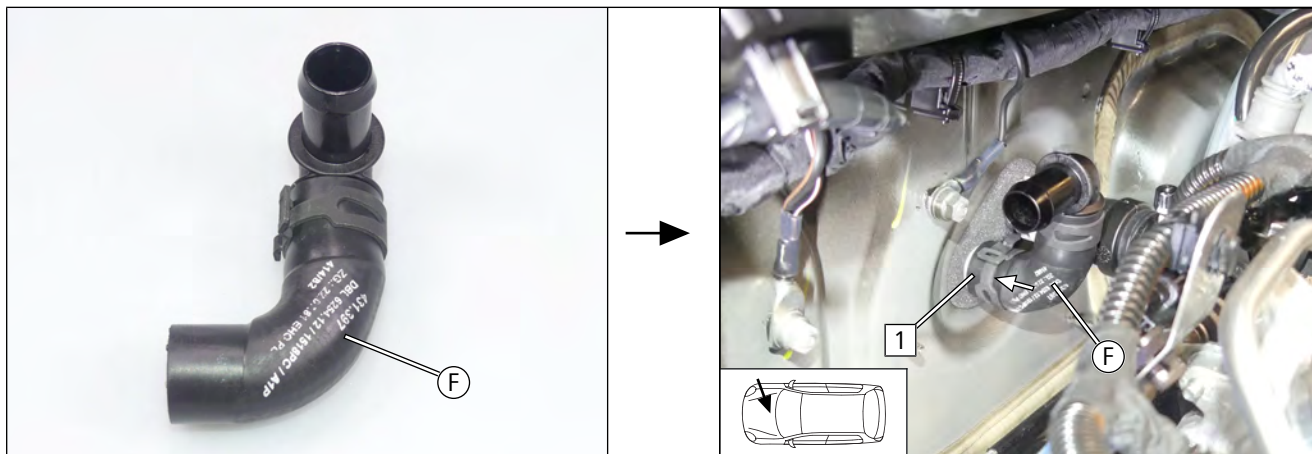


Fig. 64

- Connect premounted hose **F** to heat exchanger inlet connection piece **1**.

Mounting engine outlet hose section **1** on engine outlet connection piece

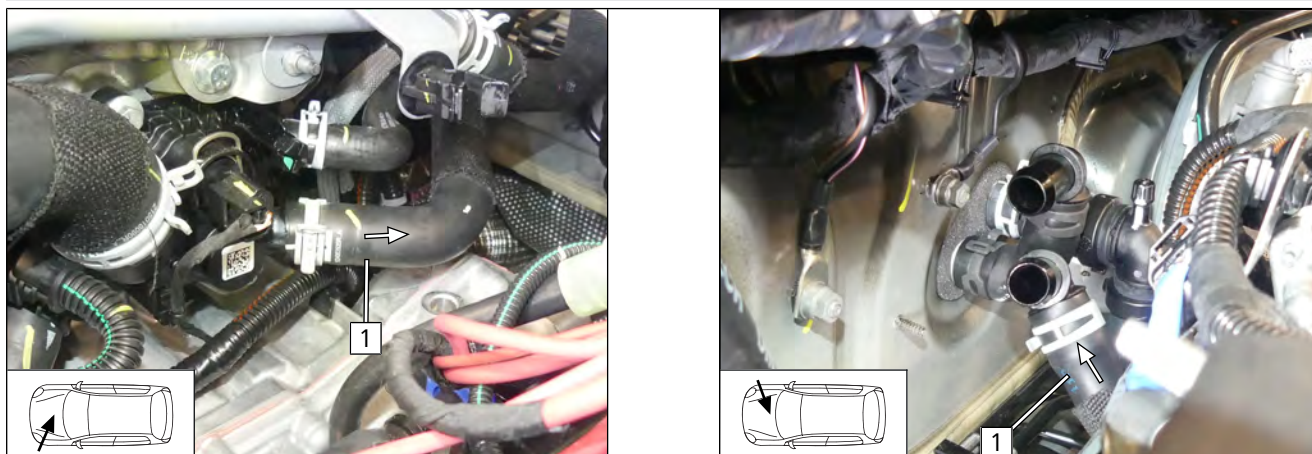


Fig. 65

Connecting hose **A** to engine outlet hose section **1**

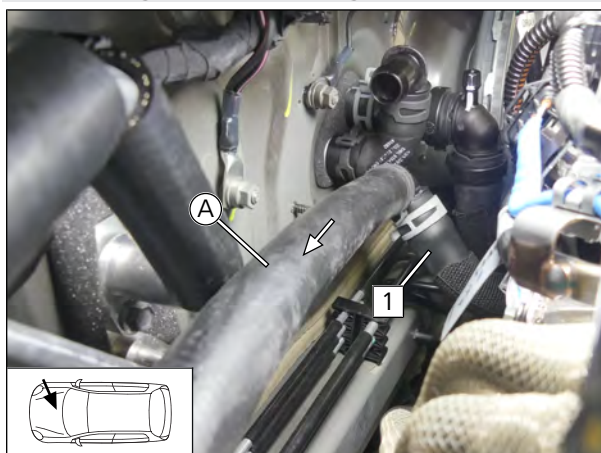


Fig. 66



Connecting hose **A** to hose **B**

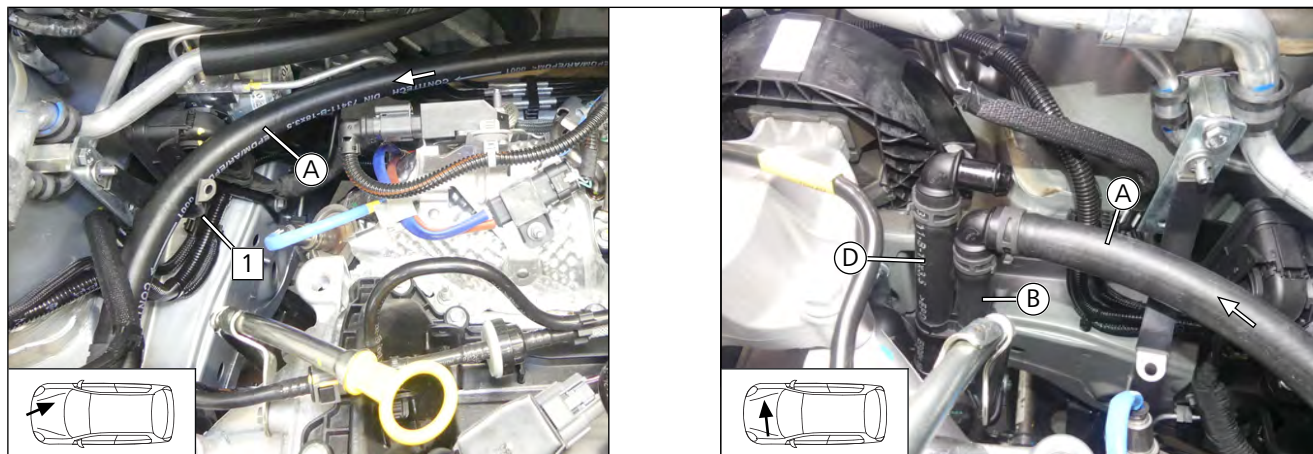


Fig. 67

- ▶ Route hose **A** through premounted rubber-coated p-clamp **1**.

Connecting hose **E** to hose **D**

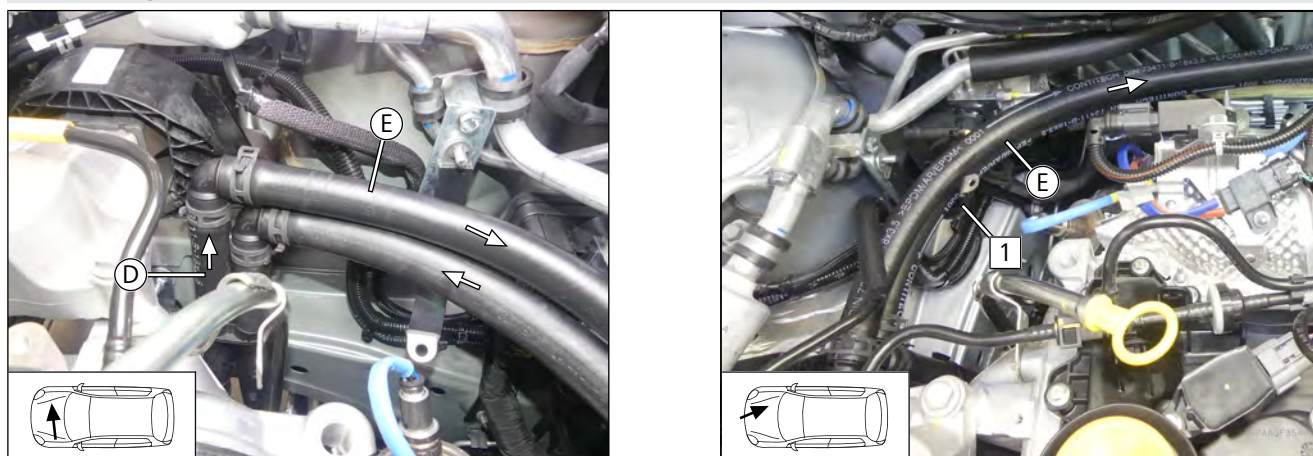


Fig. 68

- ▶ Route hose **E** through premounted rubber-coated p-clamp **1**.

Connecting hose **E** to hose **F**



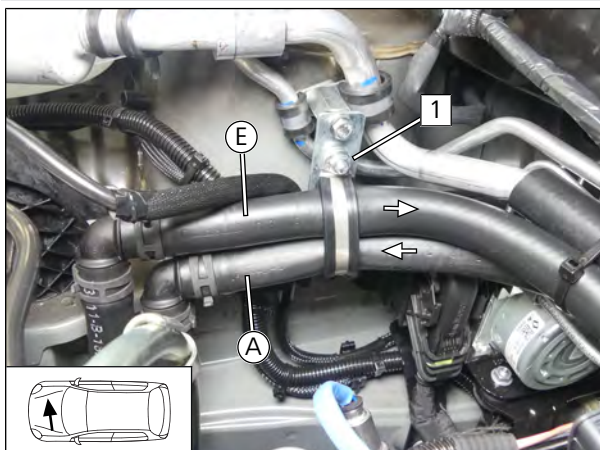
Fig. 69

- 1** Rubber isolator

- ▶ Align rubber isolator **1** as shown.

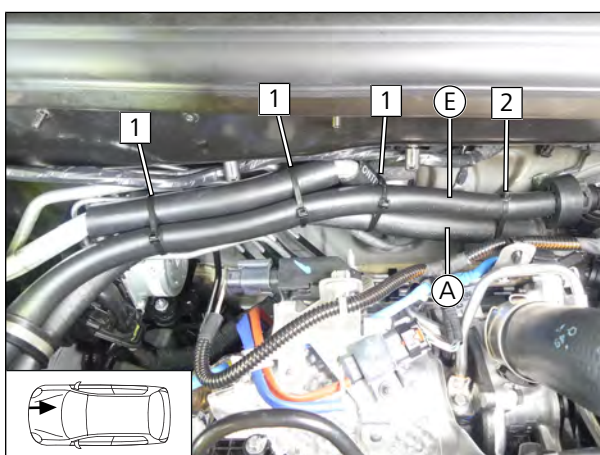


Fastening hoses



► Close premounted rubber-coated p-clamp around hoses (A) and (E) and tighten original vehicle nut **1**.

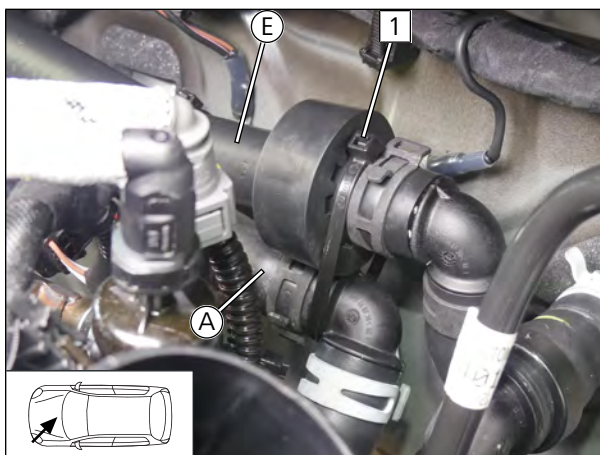
Fig. 70



1 Cable tie around hoses (A), (E) and original vehicle A/C line

2 Cable tie around hoses (A) and (E)

Fig. 71



1 Cable tie around hoses (A) and (E)

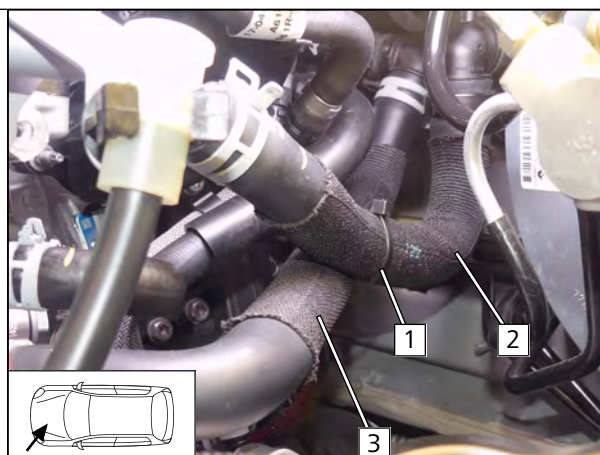


Fig. 72

1 Cable tie around heat exchanger outlet hose **2** and engine outlet hose section **3**

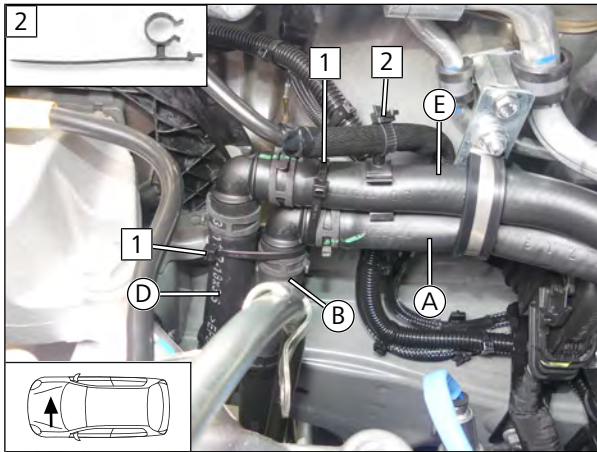


Fig. 73



Danger of damage to components

► Ensure sufficient distance from neighbouring components, correct if necessary.

- 1 Cable tie around hoses **A** and **E** as well as around hoses **B** and **D**
- 2 Hose bracket between hose **E** and original vehicle fuel line

Mounting heat protection 1

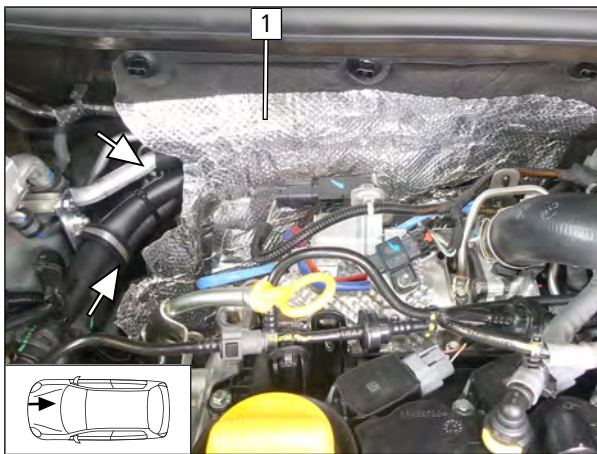


Fig. 74



Danger of damage to components

► Ensure sufficient distance between heat protection **1** and coolant hoses, correct if necessary.



10.4 Hose routing diagram - vehicles with 74 kW petrol/LPG and SG

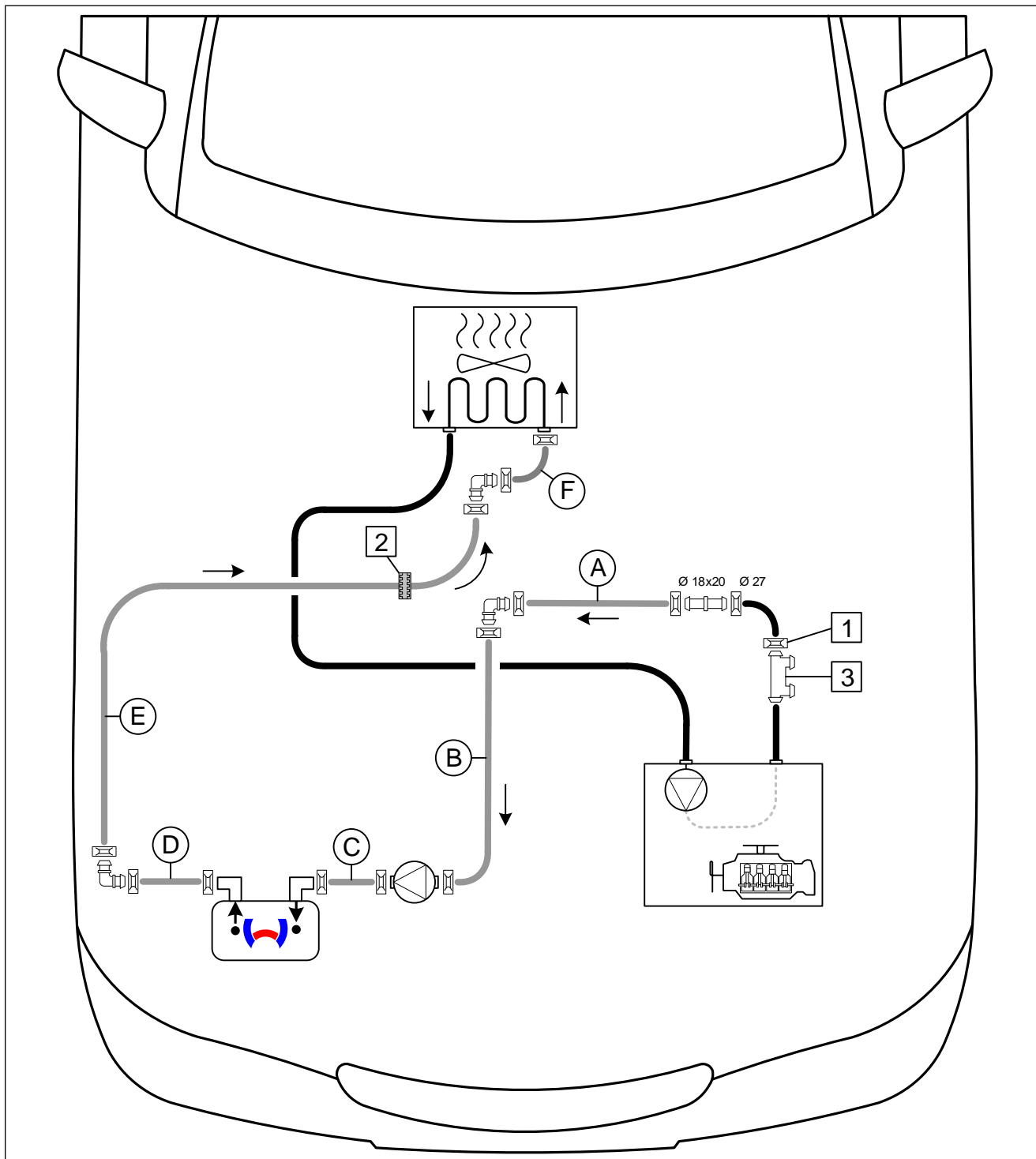


Fig. 75

All spring clips without a specific designation  = Ø25

All connecting pipes without a specific designation  = Ø18x18

1 Original vehicle spring clip; **2** Rubber isolator; **3** Original vehicle water pipe distributor LPG



10.5 Coolant circuit installation- vehicles with 74 kW petrol/LPG and SG

Removing original vehicle hose

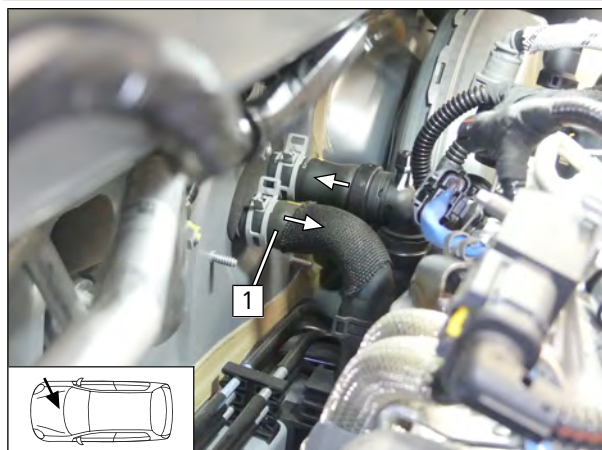


Fig. 76

► Remove heat exchanger inlet/engine outlet hose **1**, the spring clip on the engine outlet connection will be reused.

Cutting point

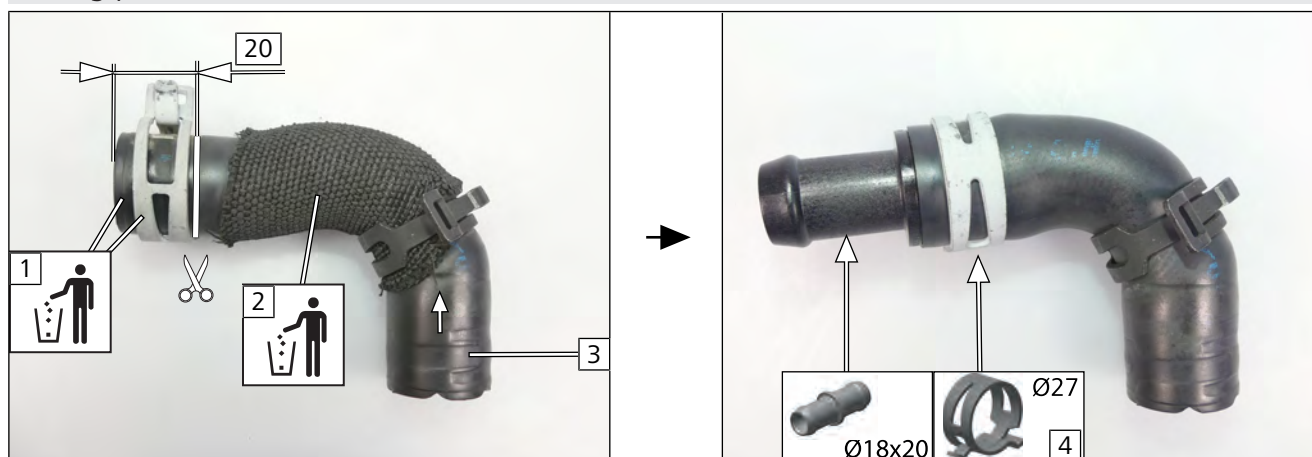


Fig. 77

- 1** Heat exchanger inlet hose section
- 2** Braided protection
- 3** Engine outlet hose section

► Align the Ø27 spring clip fastener **4** as shown.



Premounting and mounting hose **F**

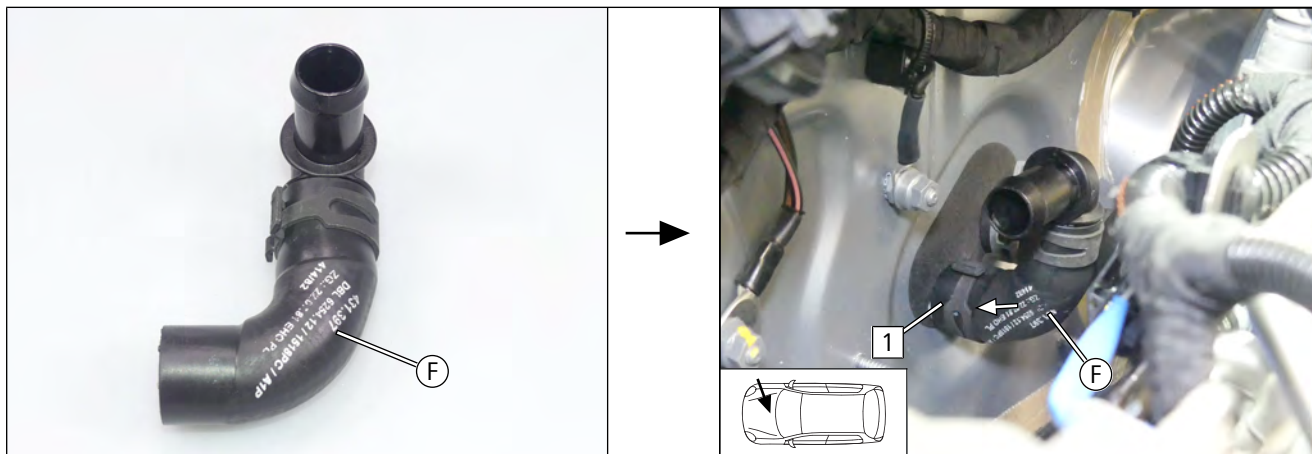


Fig. 78

- Connect premounted hose **F** to heat exchanger inlet connection piece **1**.

Mounting engine outlet hose section **1** on engine outlet connection piece

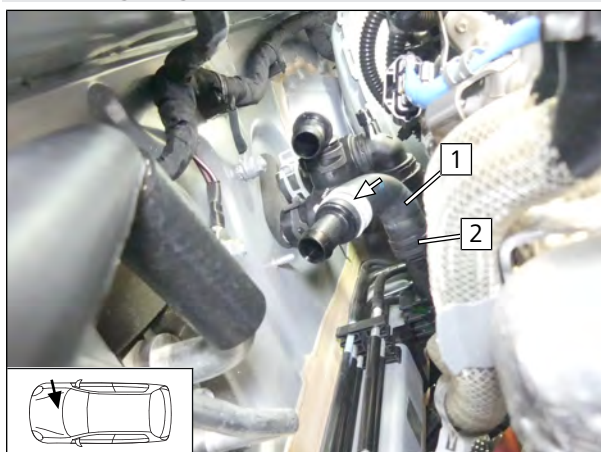


Fig. 79

- 2** Original vehicle spring clip

Connecting hose **A** to engine outlet hose section **1**

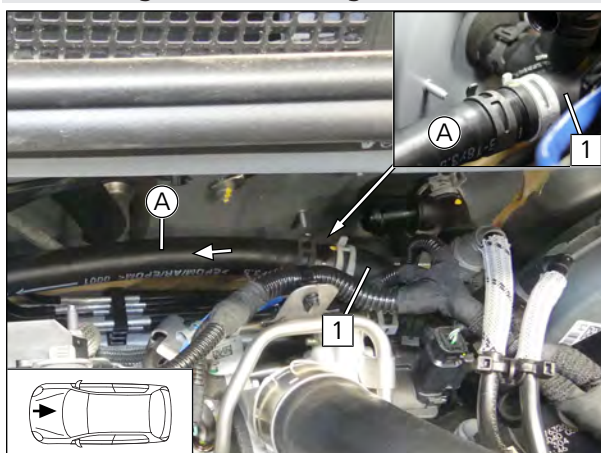


Fig. 80



Connecting hose (A) to hose (B)

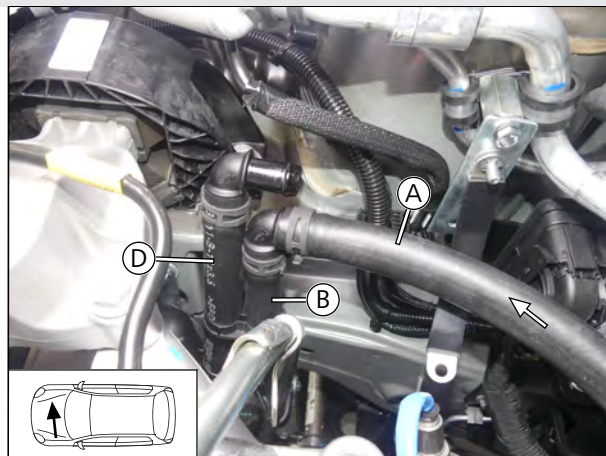
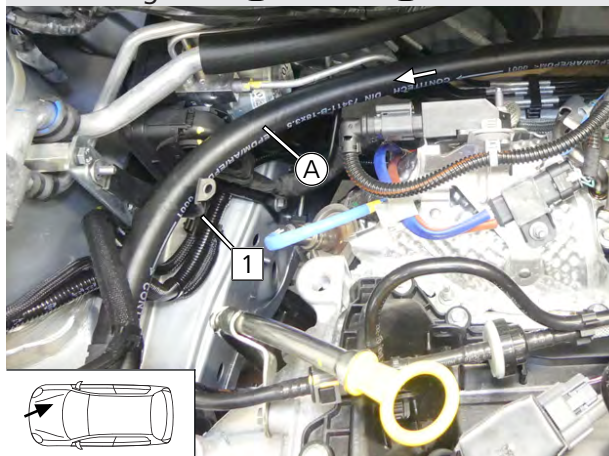


Fig. 81

► Route hose (A) through premounted rubber-coated p-clamp **1**.

Connecting hose (E) to hose (D)

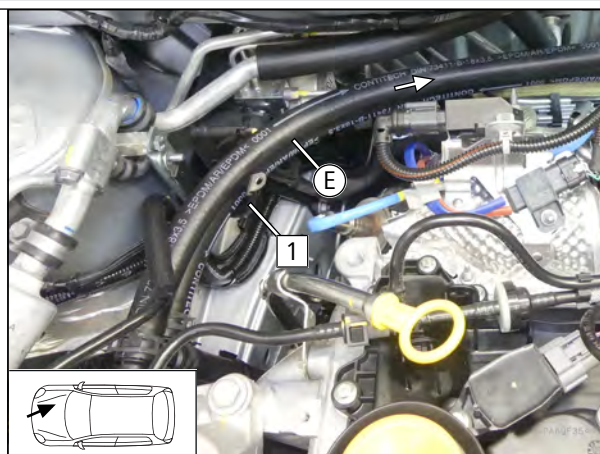
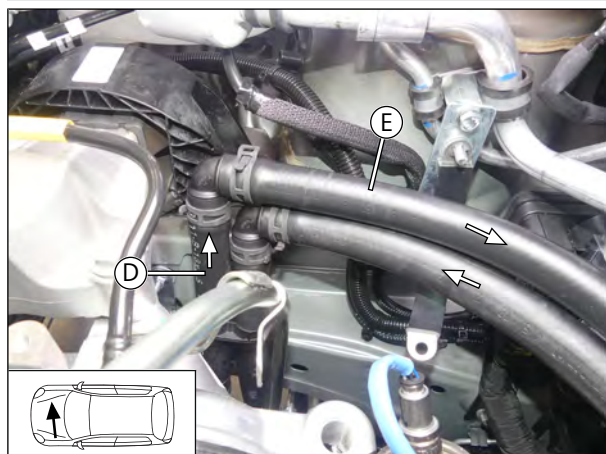


Fig. 82

► Route hose (E) through premounted rubber-coated p-clamp **1**.

Connecting hose (E) to hose (F)

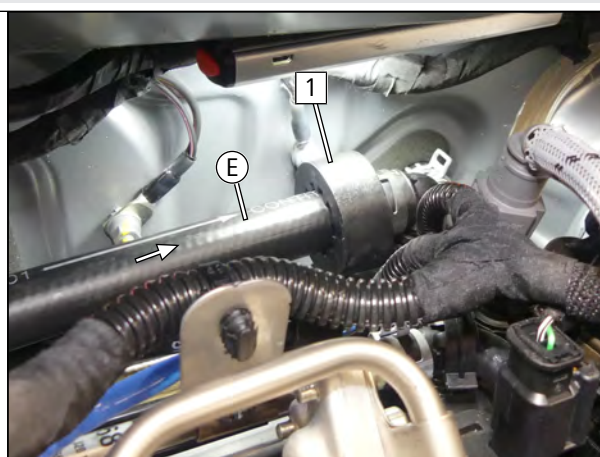
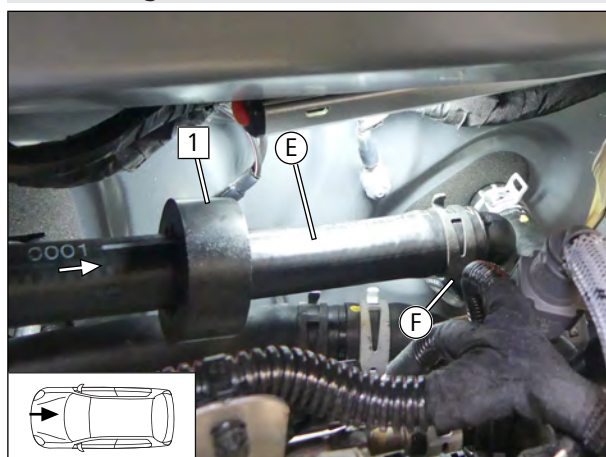


Fig. 83

1 Rubber isolator

► Align rubber isolator **1** as shown.



Fastening hoses

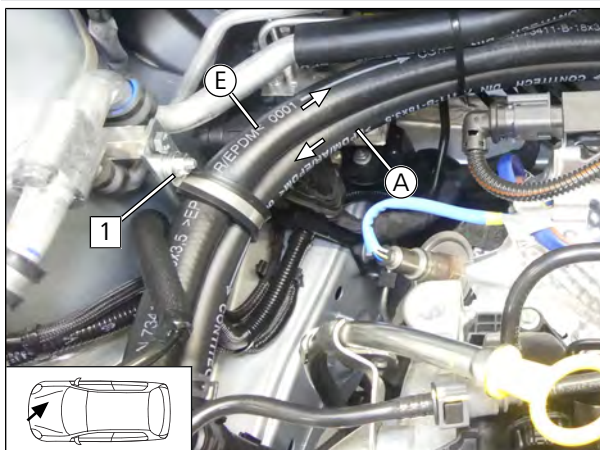


Fig. 84

- ▶ Close premounted rubber-coated p-clamp around hoses (A) and (E) and tighten original vehicle nut **1**.

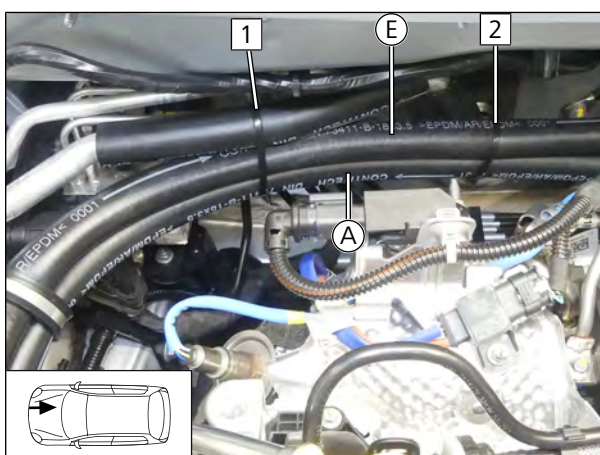


Fig. 85

- 1** Cable tie around hoses (A), (E) and original vehicle A/C line
- 2** Cable tie around hoses (A) and (E)

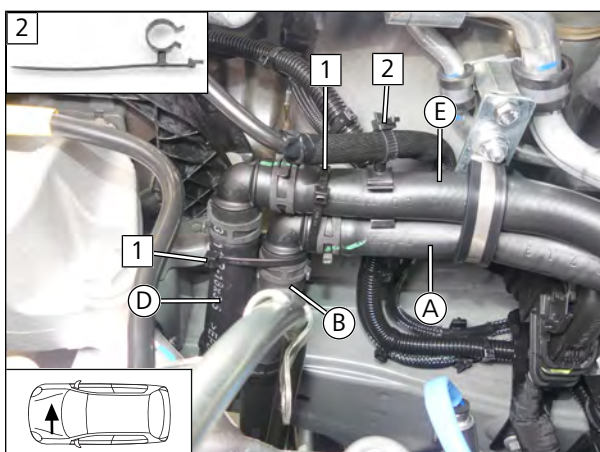


Fig. 86



Danger of damage to components

- ▶ Ensure sufficient distance from neighbouring components, correct if necessary.

- 1** Cable tie around hoses (A) and (E) as well as around hoses (B) and (D)
- 2** Hose bracket between hose (E) and original vehicle fuel line



Mounting heat protection **1**

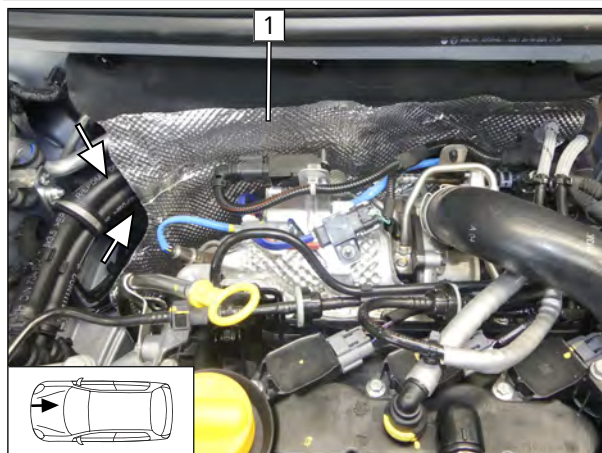


Fig. 87



Danger of damage to components

- ▶ Ensure sufficient distance between heat protection **1** and coolant hoses, correct if necessary.



11 Exhaust

Preparing perforated bracket

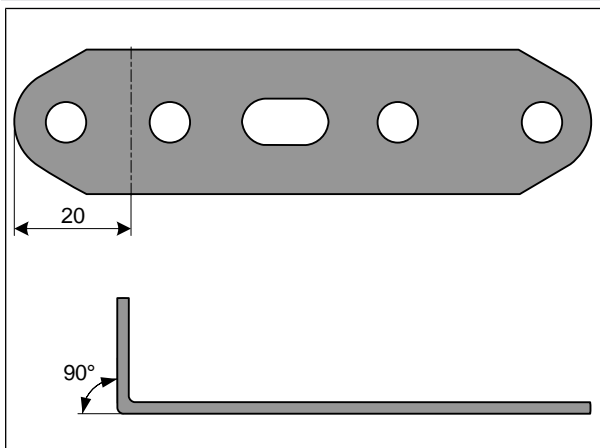


Fig. 88

Mounting exhaust pipe **a2**

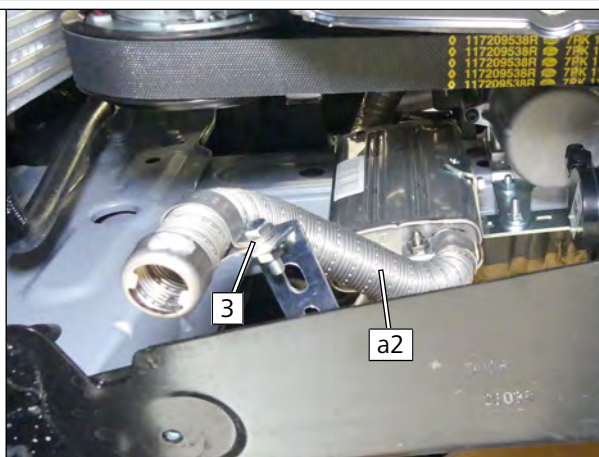
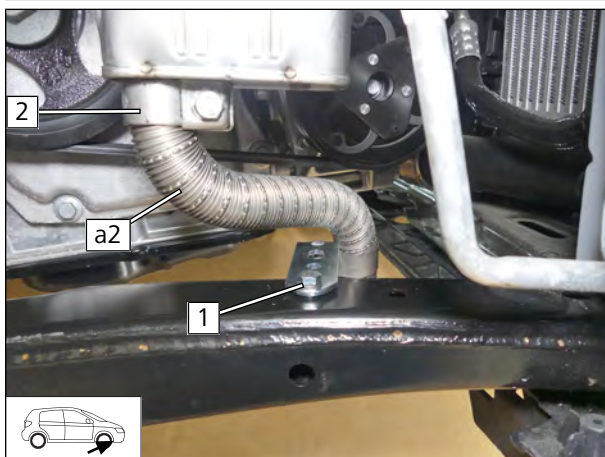


Fig. 89

- 1** Mount M6x20 bolt, spring lock washer, perforated bracket, rivet nut loosely
- 2** Hose clamp

- 3** M6x20 bolt, Ø25 pipe clamp, perforated bracket, flanged nut

View of underbody trim **1**



Fig. 90

- 2** Drill hole as shown in next figure



Drilling hole in underbody trim



Fig. 91

- ▶ Draw $\varnothing 60$ hole pattern **1** using the middle of the rivet as centre point.
- ▶ Drill out and discard rivet **1**.

- ▶ Drill hole **2**.

Adapting insulation mat



Fig. 92

- ▶ Remove and discard insulation mat in marked area **1**.

Fixing insulation mat



Fig. 93

- ▶ Glue aluminium adhesive tape **2** around the edge of the cut and fasten with clips to insulation mat **1**.
- ▶ **3** Rivet, underbody trim, folded aluminium adhesive tape around insulation mat, large diameter washer (5.3)



12 Final work for underbody

Checking distance

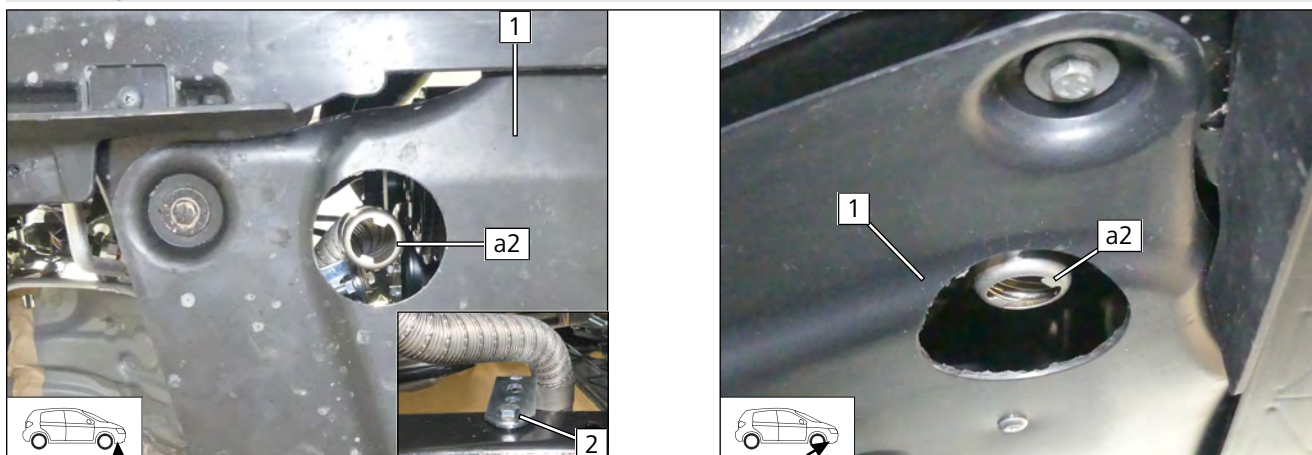


Fig. 94

- ▶ Mount underbody trim **1**.



Align exhaust pipe **a2** with the centre of the drilled hole and position it flush with underbody trim **1**, correct if necessary.

- ▶ Tighten M6x20 bolt **2** of perforated bracket.



Ensure sufficient distance from neighbouring components, correct if necessary.





13 Electrical system of passenger compartment

13.1 Manual air conditioning

13.1.1 Electrical system preparation

Assigning wires

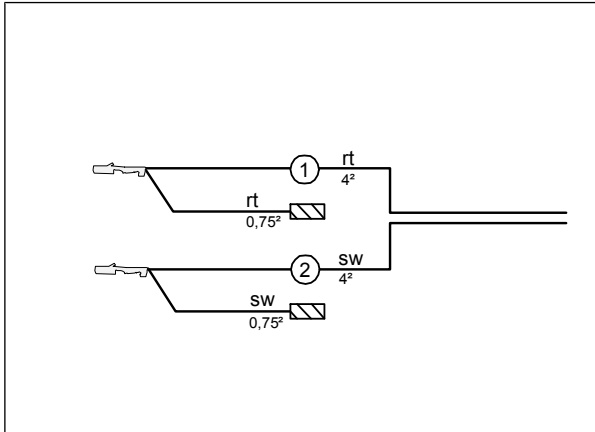


Fig. 95



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

Connecting lines to RSH

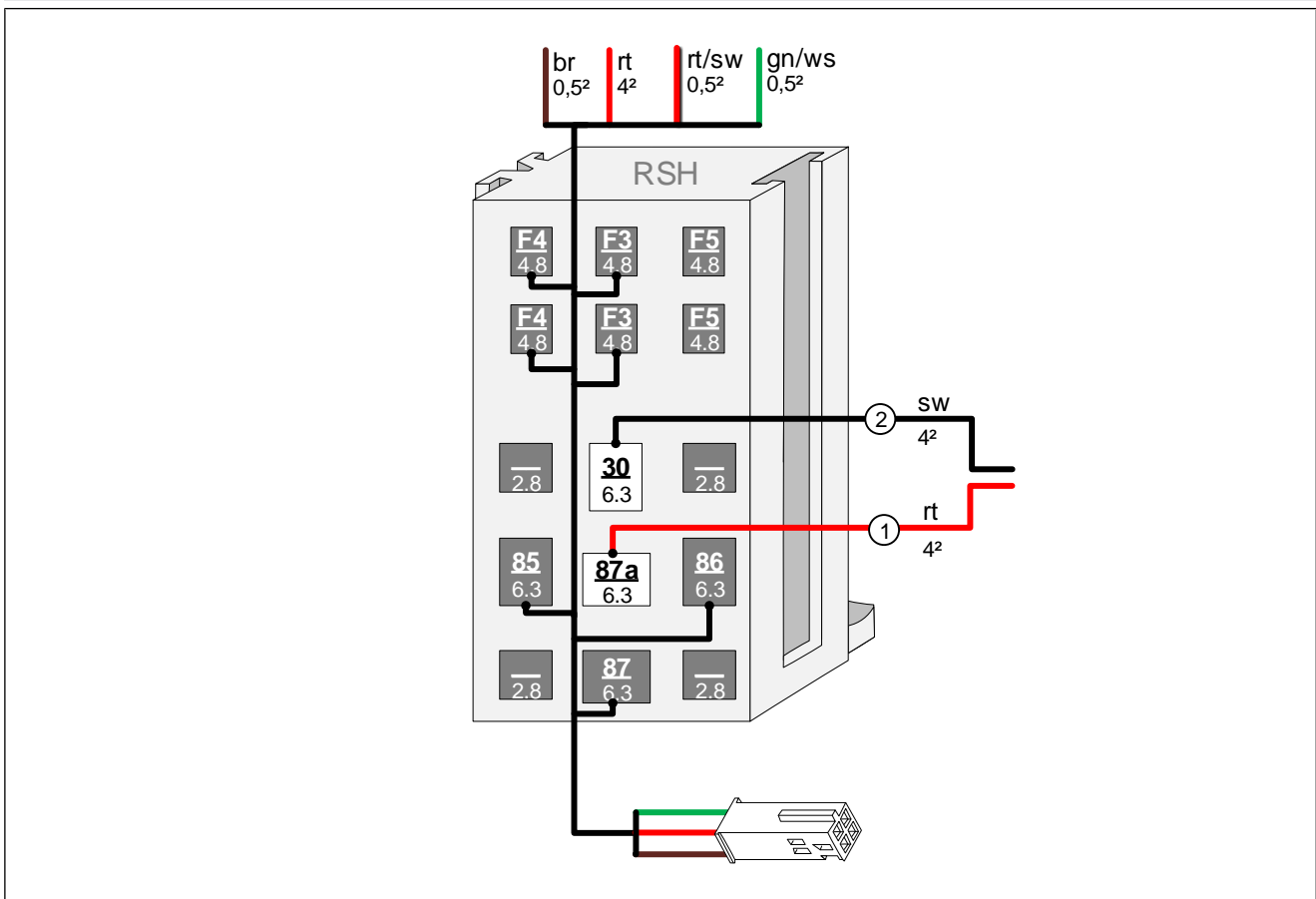


Fig. 96



Preparing perforated bracket, premounting RSH socket

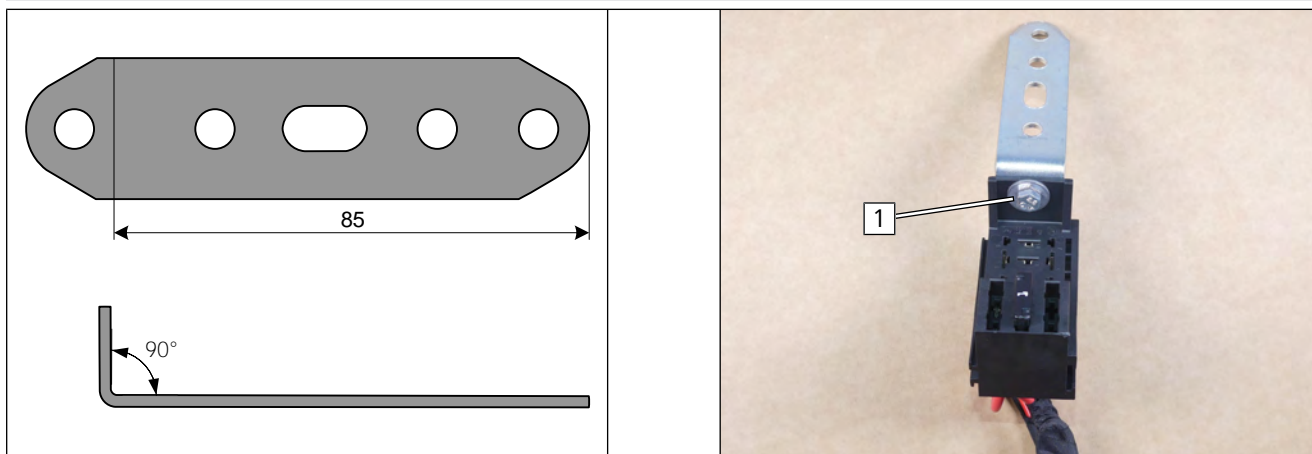


Fig. 97

- 1 M5x16 bolt, large diameter washer, RSH socket, perforated bracket, large diameter washer, nut

Mounting relay K1 and fuse

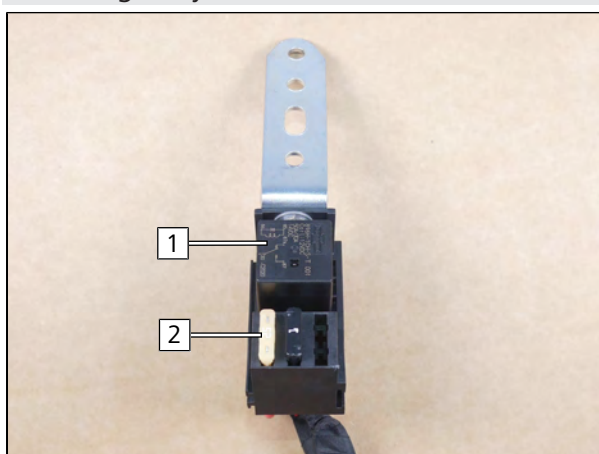


Fig. 98

- 1 Relay K1
- 2 25A fuse F4



13.1.2 RSH installation

Mounting RSH

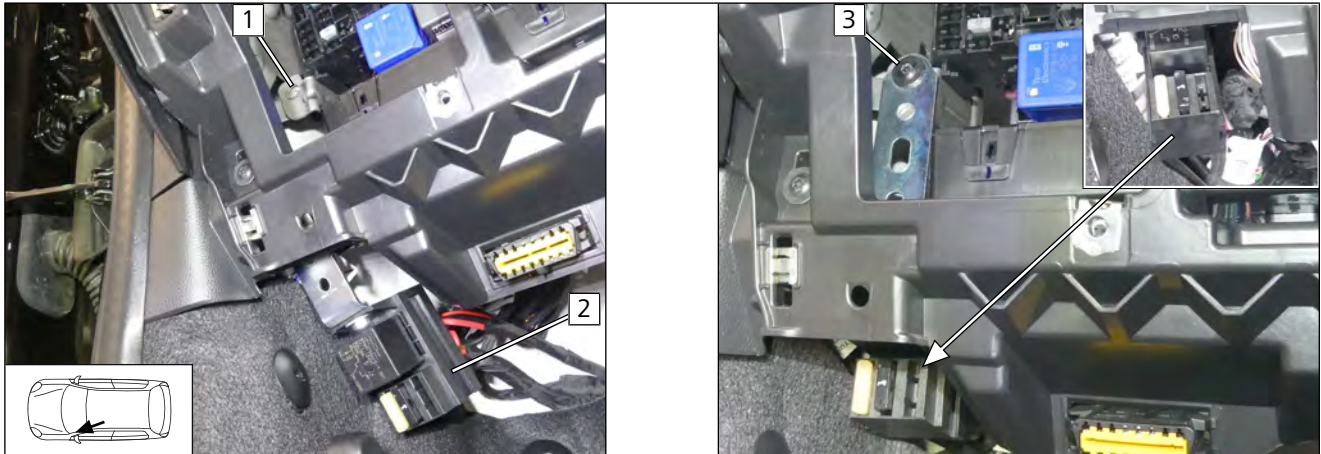


Fig. 99

- 1 Remove original vehicle bolt, it will be reused.
Move the premounted RSH from below into the installation position.
- 2

- 3 Original vehicle bolt, perforated bracket, original vehicle threaded hole



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

Connecting same colour wires of wiring harnesses

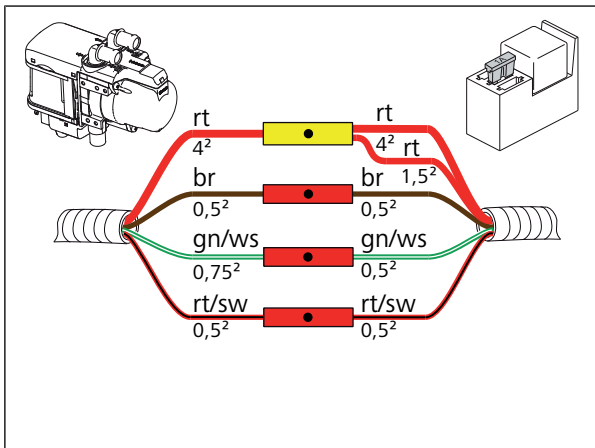


Fig. 100



13.1.3 Trim dismantling instructions

Detaching trim piece with shift boot 1



Fig. 101

Detaching trim piece 1



Fig. 102

Dismantling centre console side trim on driver's side

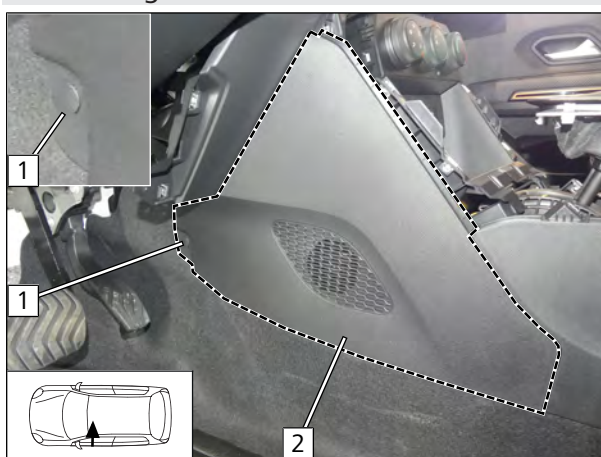


Fig. 103

- 1 Detach retaining clip
- 2 Detach trim piece



Removing storage compartment **1** under the A/C control panel

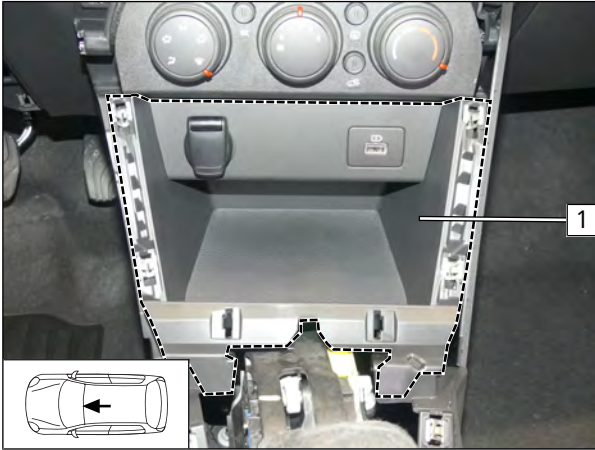
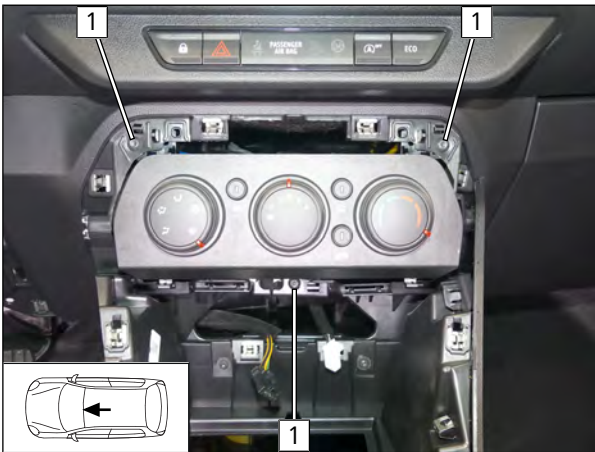


Fig. 104

Loosening A/C control panel



1 Loosen screw

Fig. 105



13.1.4 System wiring diagram for manual air-conditioning



Interactive system wiring diagram with WD Code **8341** at <https://my.webasto.com/download/System-schaltplan>

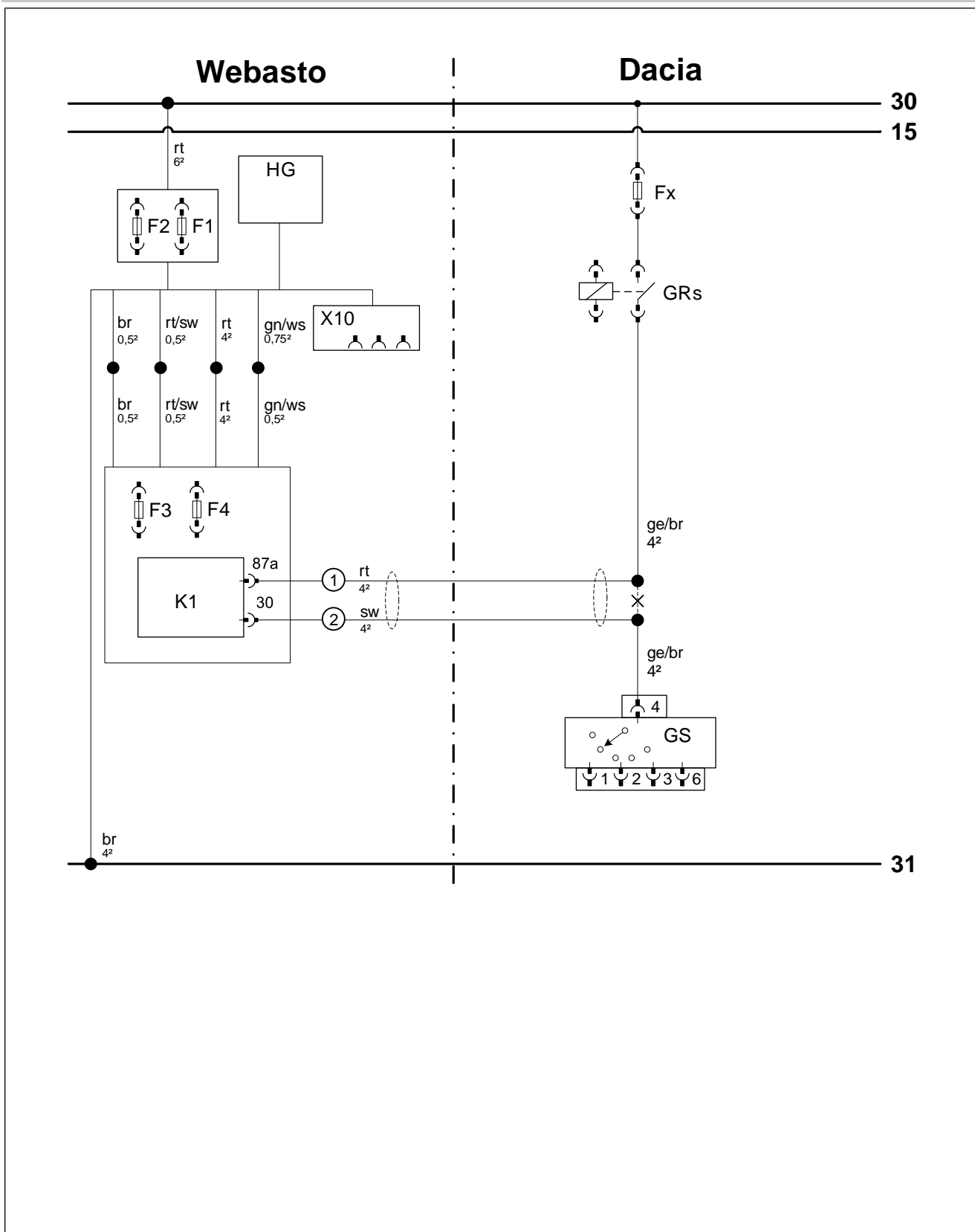


Fig. 106



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
Fx	Fuse	X	Cutting point
GRs	Fan relay		
GM	Fan motor		
A	2-pin GM 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	Micro Gateway CAN CAN LIN	gn	green
CL GW	Micro SPS CAN / WBus (Gateway CAN LIN)	gr	grey
CLR	CAN LIN Rxx (cold start module)	hbl	light blue
D1	Diode	hgn	light green
D2	Diode group	la	salmon
F0	Additional fuse for power supply	or	orange
F1	Heater main fuse	pk	pink
F2	Passenger compartment fan controller main fuse	ro	Pink
F3	Control element fuse	rt	red
F4	Fan controller fuse	sw	black
F5	Additional fuse	vi	violet
HG	Heater TT-Evo	ws	white
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LA	Power adapter		
LIN GW	LIN Gateway		
MV	Solenoid valve		
PWM GW	LIN Gateway / PWM (pulse width modulator)		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	Female plug for control element		



13.1.5 Fan controller

Detaching fan switch connector

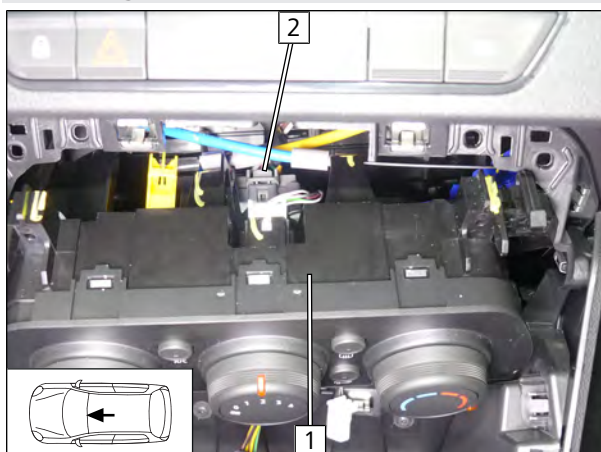


Fig. 107

- ▶ Detach control panel **1** carefully, pay attention to the Bowden cable.
- ▶ Unplug grey, 6-pin fan switch connector **2** of control panel **1**.

View of fan switch connector

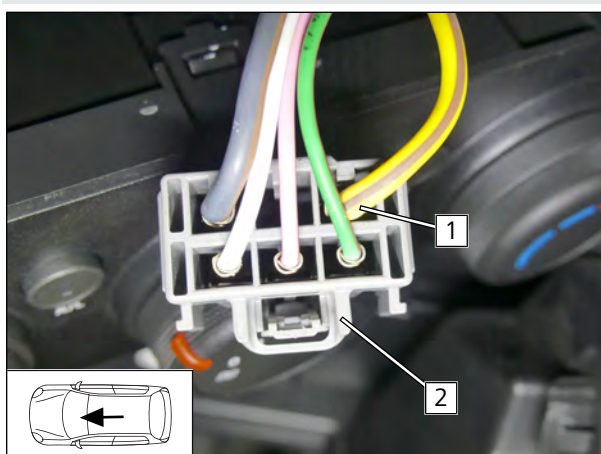


Fig. 108

- 1** Yellow/brown (ge/br) wire of GS connector / pin 4
- 2** 6-pin GS connector

Connecting fan switch

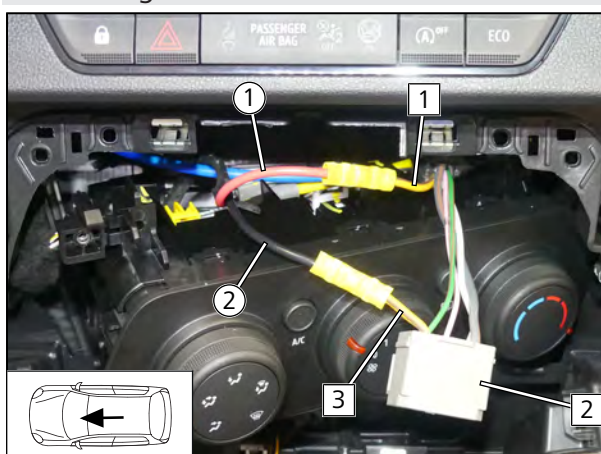


Fig. 109

- 1** Yellow/brown (ge/br) wire of fuse Fx
- 2** 6-pin GS connector
- 3** Yellow/brown (ge/br) wire of GS connector / pin 4
- 1** Red (rt) wire of K1/87a fan wiring harness
- 2** Black (sw) wire of K1/30 fan wiring harness



13.2 Automatic air-conditioning

13.2.1 Electrical system preparation

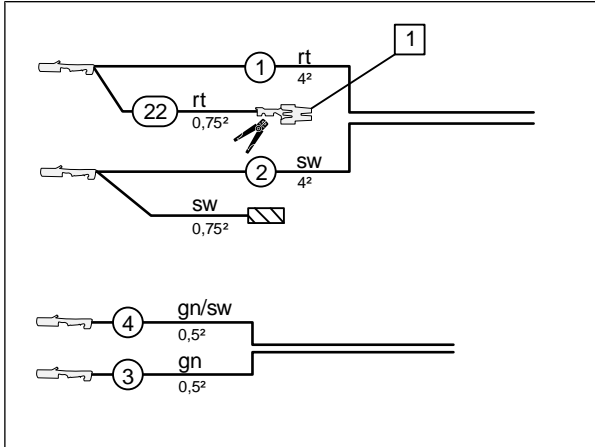


Fig. 110



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

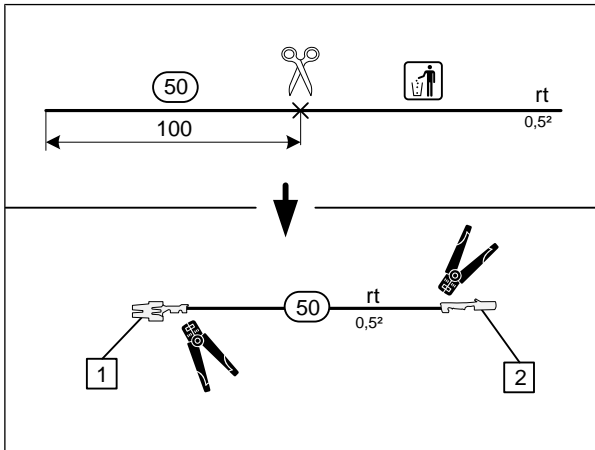


Fig. 111

- 1 4.8 flat spring contact
- 2 6.3 female connector



Preparing perforated bracket, premounting RSH socket

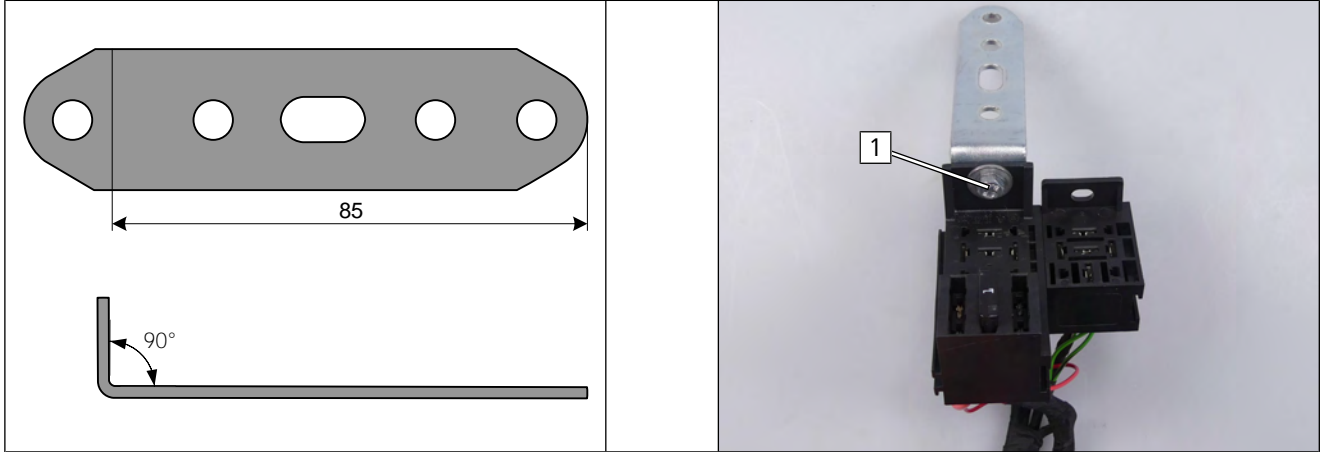


Fig. 114

- 1 M5x16 bolt, large diameter washer, RSH socket, perforated bracket, large diameter washer, nut

Mounting relay K1, PWM GW and fuses

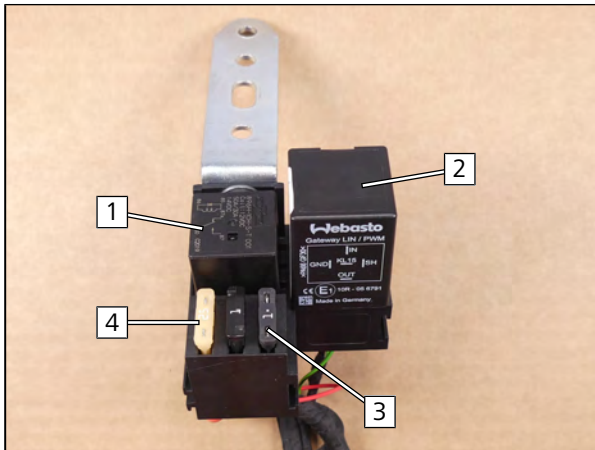


Fig. 115

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



13.2.2 RSH installation

Mounting RSH

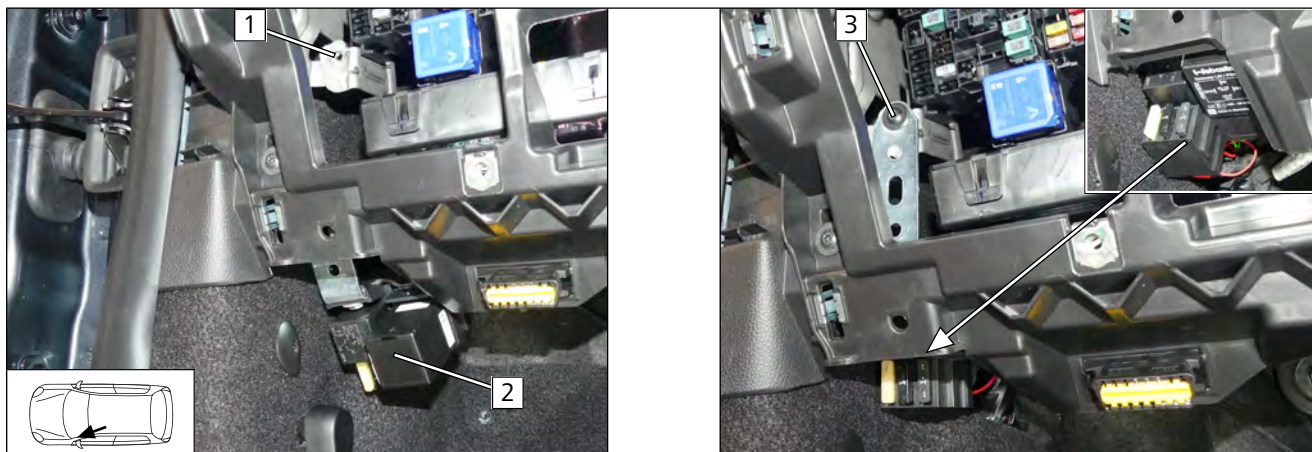


Fig. 116

- 1** Remove original vehicle bolt, it will be reused.
Move the premounted RSH from below into the installation position.
- 2** Move the premounted RSH from below into the installation position.
- 3** Original vehicle bolt, perforated bracket, original vehicle threaded hole



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

Connecting same colour wires of wiring harnesses

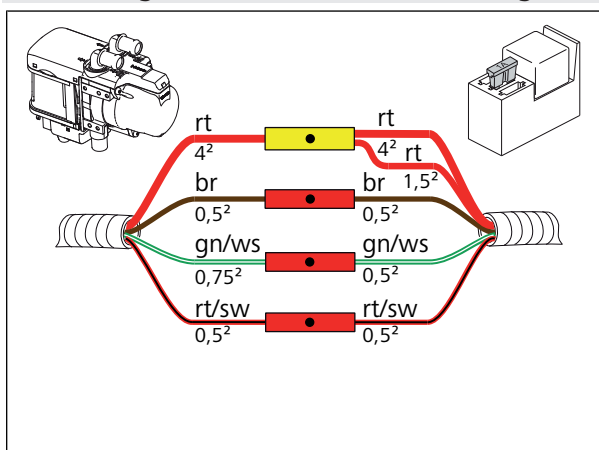


Fig. 117



13.2.3 View of fan controller variant 1 and variant 2

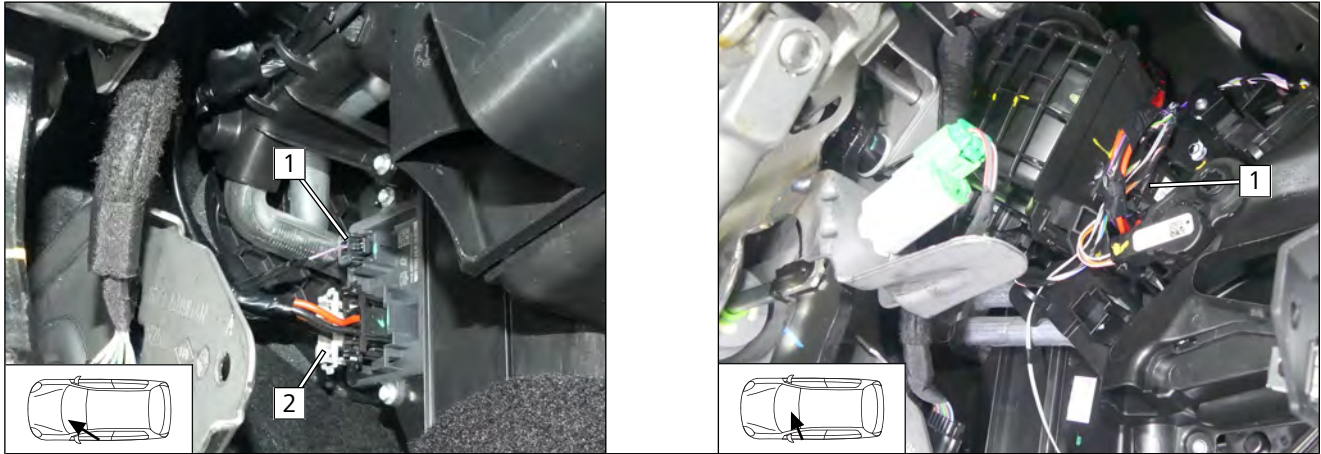


Fig. 118

View of fan controller variant 1

- 1 Black, 2-pin connector of fan controller
- 2 Grey, 2-pin connector of fan controller

View of fan controller variant 2

- 1 Black connector of fan controller



13.2.4 System wiring diagram for automatic air-conditioning - variant 1



Interactive wiring diagram with WD Code **71829** at <https://my.webasto.com>

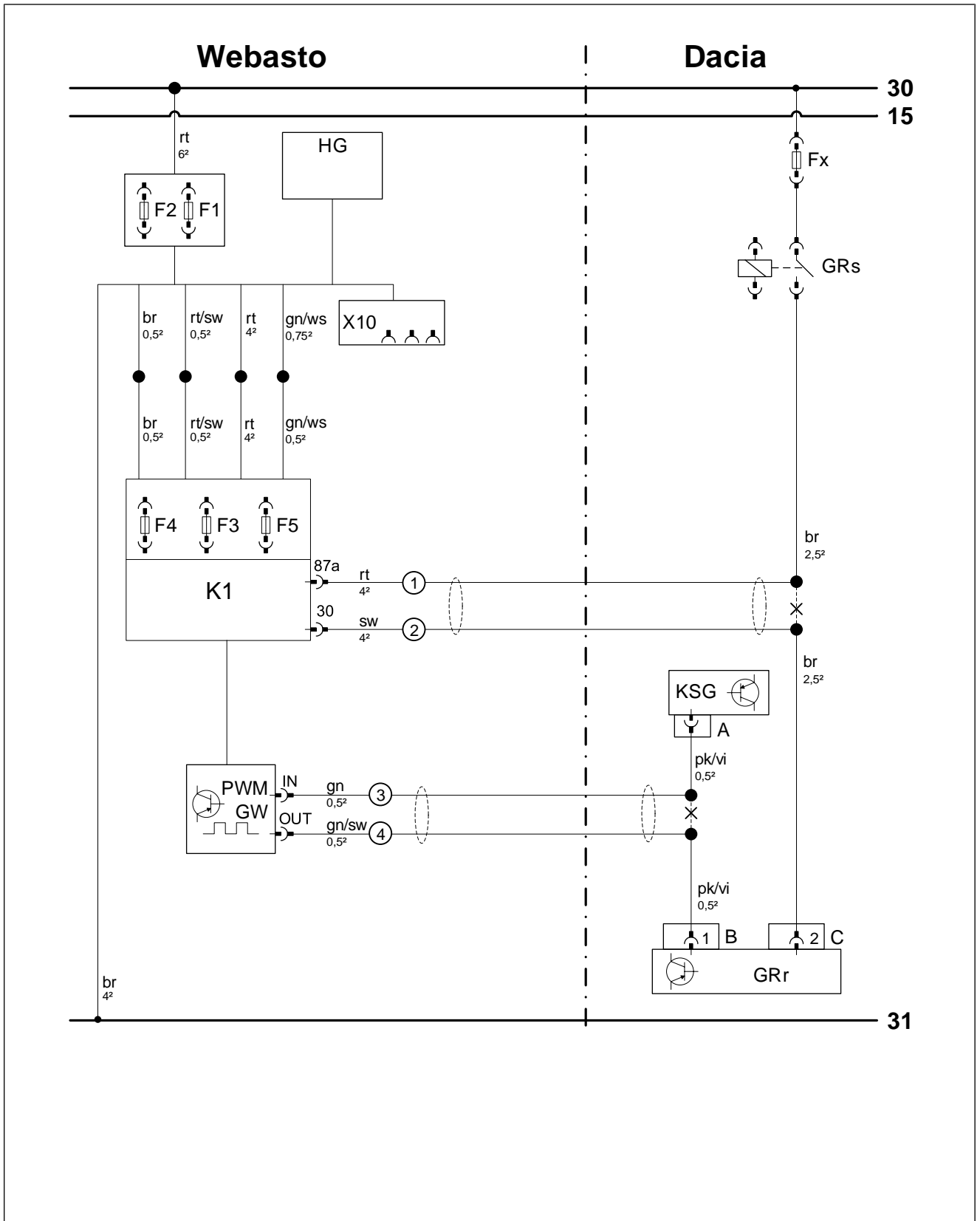


Fig. 119



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	Explanation
Fx	Fuse	X	Cutting point
GRs	Fan relay		
KSG	Air-conditioning control unit		
A	KSG connector		
GRr	Fan controller		
B	Black, 2-pin GRr connector		
C	Grey, 2-pin GRr 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	Micro Gateway CAN CAN LIN	gn	green
CL GW	Micro SPS CAN / WBus (Gateway CAN LIN)	gr	grey
CLR	CAN LIN Rxx (cold start module)	hbl	light blue
D1	Diode	hgn	light green
D2	Diode group	la	salmon
F0	Additional fuse for power supply	or	orange
F1	Heater main fuse	pk	pink
F2	Passenger compartment fan controller main fuse	ro	Pink
F3	Control element fuse	rt	red
F4	Fan controller fuse	sw	black
F5	Additional fuse	vi	violet
HG	Heater TT-Evo	ws	white
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LA	Power adapter		
LIN GW	LIN Gateway		
MV	Solenoid valve		
PWM GW	LIN Gateway / PWM (pulse width modulator)		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	Female plug for control element		



13.2.5 Fan controller – variant 1

Unplugging connectors 1 and 2

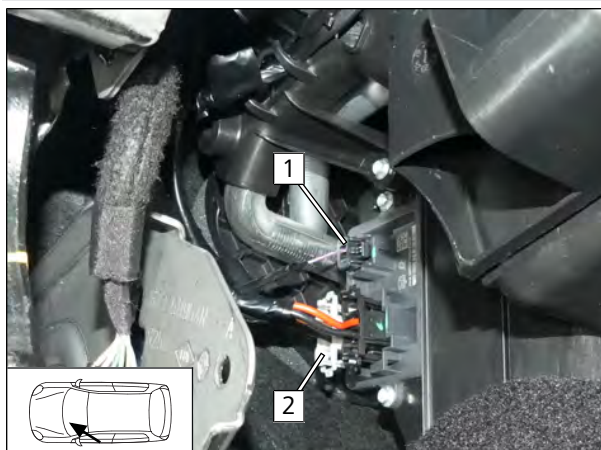


Fig. 120

Connection to fan controller

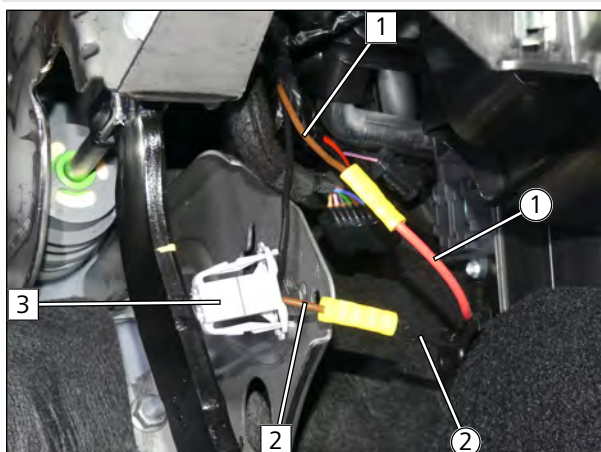


Fig. 121

- 1 Brown (br) wire of GRs
- 2 Brown (br) wire of connector C/pin 2
- 3 Connector C of GRr
- 1 Red (rt) wire of K1/87a fan wiring harness
- 2 Black (sw) wire of K1/30 fan wiring harness

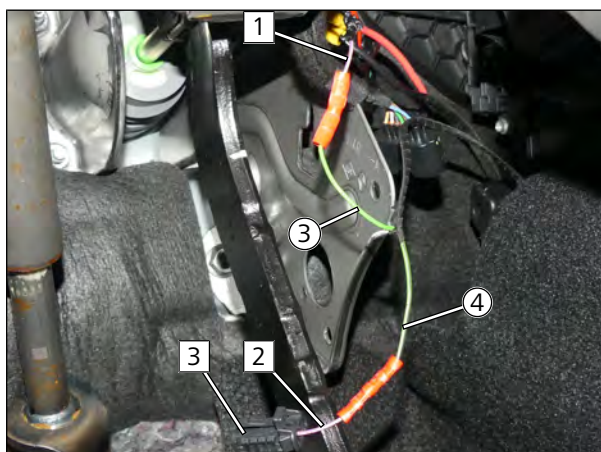


Fig. 122

- 1 Pink/violet (pk/vi) wire of KSG connector A
- 2 Pink/violet (pk/vi) wire of connector B/pin 1
- 3 GRr connector B
- 3 Green (gn) wire of PWM GW/IN wiring harness from PWM control
- 4 Green/black (gn/sw) wire of PWM GW/OUT wiring harness from PWM control



13.2.6 System wiring diagram for automatic air-conditioning - variant 2



Interactive wiring diagram with WD Code **71829** at <https://my.webasto.com>

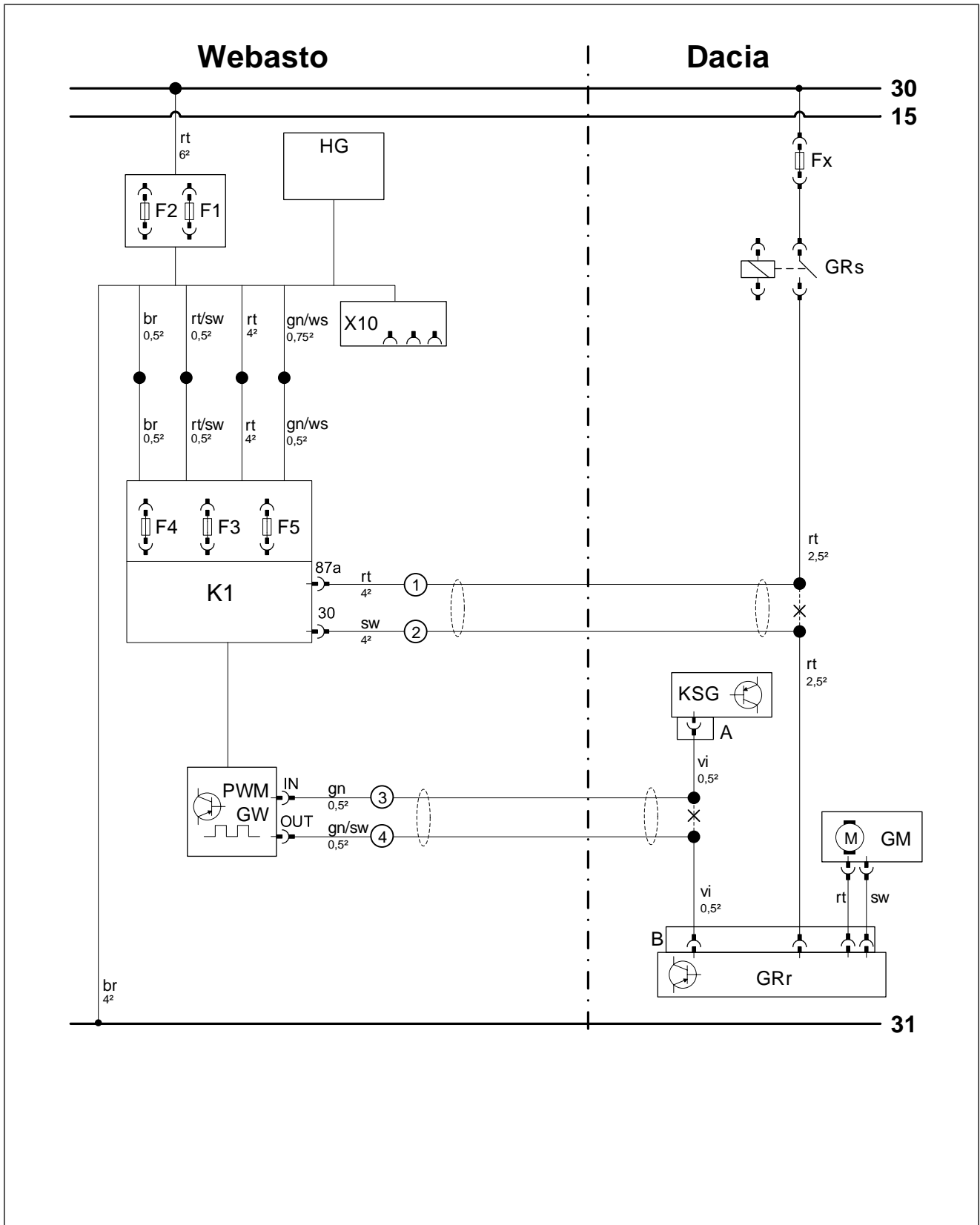


Fig. 123



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	Explanation
Fx	Fuse	X	Cutting point
GRs	Fan relay		
KSG	Air-conditioning control unit		
A	KSG connector		
GRr	Fan controller		
B	Black connector of GRr		
GM	Fan motor		

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	Micro Gateway CAN CAN LIN	gn	green
CL GW	Micro SPS CAN / WBus (Gateway CAN LIN)	gr	grey
CLR	CAN LIN Rxx (cold start module)	hbl	light blue
D1	Diode	hgn	light green
D2	Diode group	la	salmon
F0	Additional fuse for power supply	or	orange
F1	Heater main fuse	pk	pink
F2	Passenger compartment fan controller main fuse	ro	Pink
F3	Control element fuse	rt	red
F4	Fan controller fuse	sw	black
F5	Additional fuse	vi	violet
HG	Heater TT-Evo	ws	white
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LA	Power adapter		
LIN GW	LIN Gateway		
MV	Solenoid valve		
PWM GW	LIN Gateway / PWM (pulse width modulator)		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	Female plug for control element		



13.2.7 Fan controller – variant 2

Removing insulation, locating wires

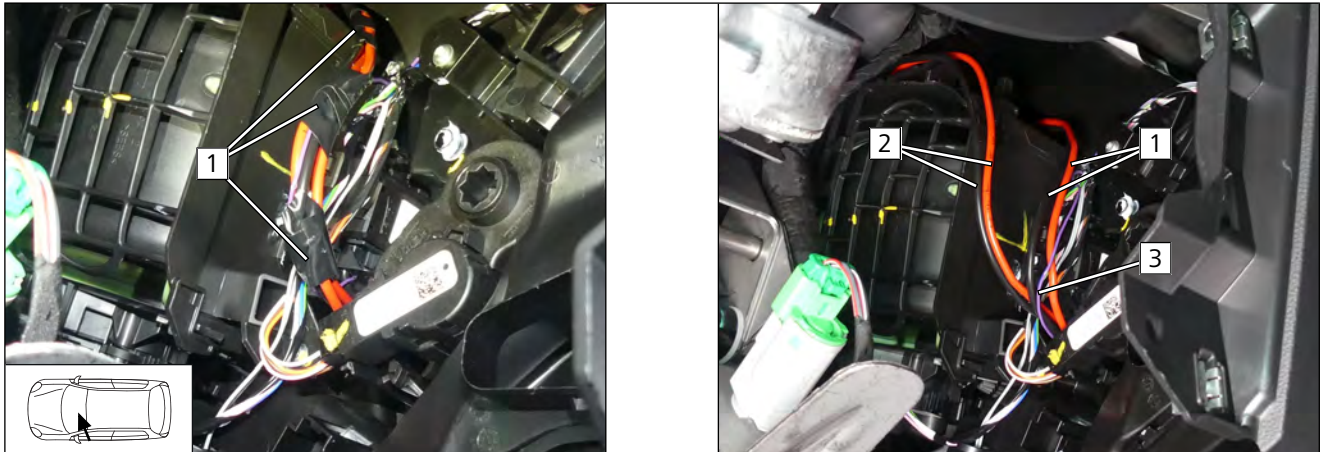


Fig. 124

► Remove insulation of GRr wiring harness **1**, re-insulate after the connection of relay K1 and PWM module.

- 1** Red (rt) and black (sw) wires of GRr to GM to the front passenger's side (wires will not be cut)
- 2** Red (rt) and black (sw) wires from GRs to GRr (connection is made to red (rt) wire)
- 3** Violet (vi) wire of KSG to GRr

Connection to fan controller

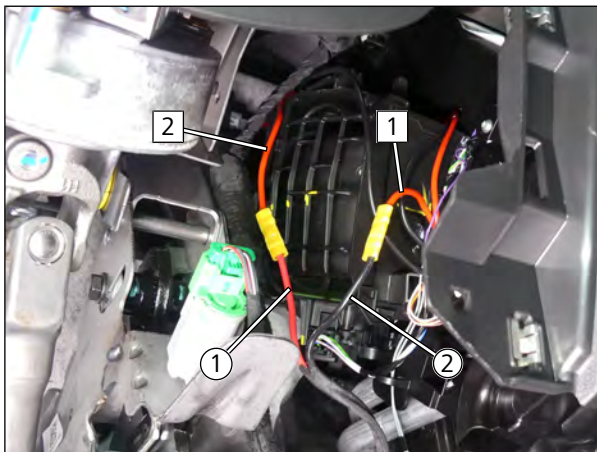


Fig. 125

- 1** Red (rt) wire of GRr connector B
- 2** Red (rt) wire of GRs
- 3** Red (rt) wire of K1/87a fan wiring harness
- 4** Black (sw) wire of K1/30 fan wiring harness

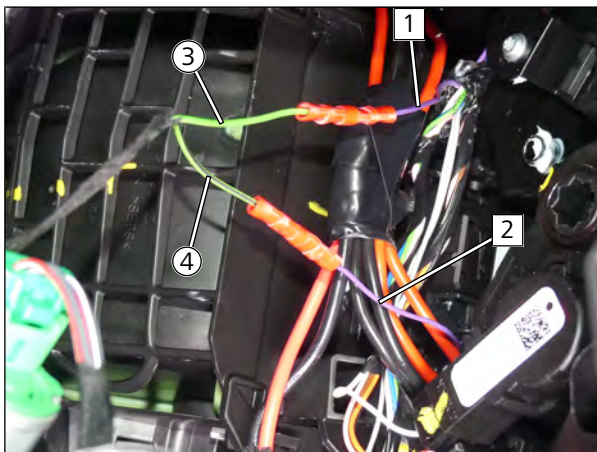


Fig. 126

- 1** Violet (vi) wire of KSG connector A
- 2** Violet (vi) wire of GRr connector B
- 3** Green (gn) wire of PWM GW/IN wiring harness from PWM control
- 4** Green/black (gn/sw) wire of PWM GW/OUT wiring harness from PWM control



13.3 Control element installation



Install the control element in accordance with the provided relevant general installation documentation. The installation location of the optional control element MultiControl or the push button of the Telestart or ThermoCall/ThermoConnect options should be confirmed with the end customer and should comply with the installation conditions.



14 Final Work



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

- ▶ Reassemble the components 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, pair Telearstart transmitter.

▶ Make settings on A/C control panel according to the 'operating instructions'.

▶ Perform the initial start-up and function check.

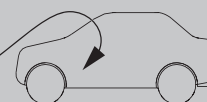
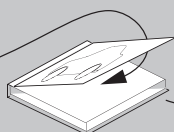
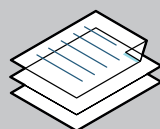
▶ Affix 'Switch off parking heater before refueling' caution label in area of filler neck.



Vehicle event log after parking heating mode

- ✓ Components of the original vehicle air conditioning system are activated during parking heating mode. Other vehicle components remain inactive, which in some circumstances may be interpreted as an error and can be filed as such in the event log. An increased power consumption (quiescent current) may also be registered for some vehicles.

▶ If an incorrect installation can be excluded, these entries are exclusively related to the parking heating mode situation and have no effect on the vehicle functions in driving mode.



This is a translation from the original German installation instructions.
To request this Installation Documentation in another language, please locate and contact your local Webasto dealer.
You can find your nearest dealer at: <https://dealerlocator.webasto.com/en-int>.

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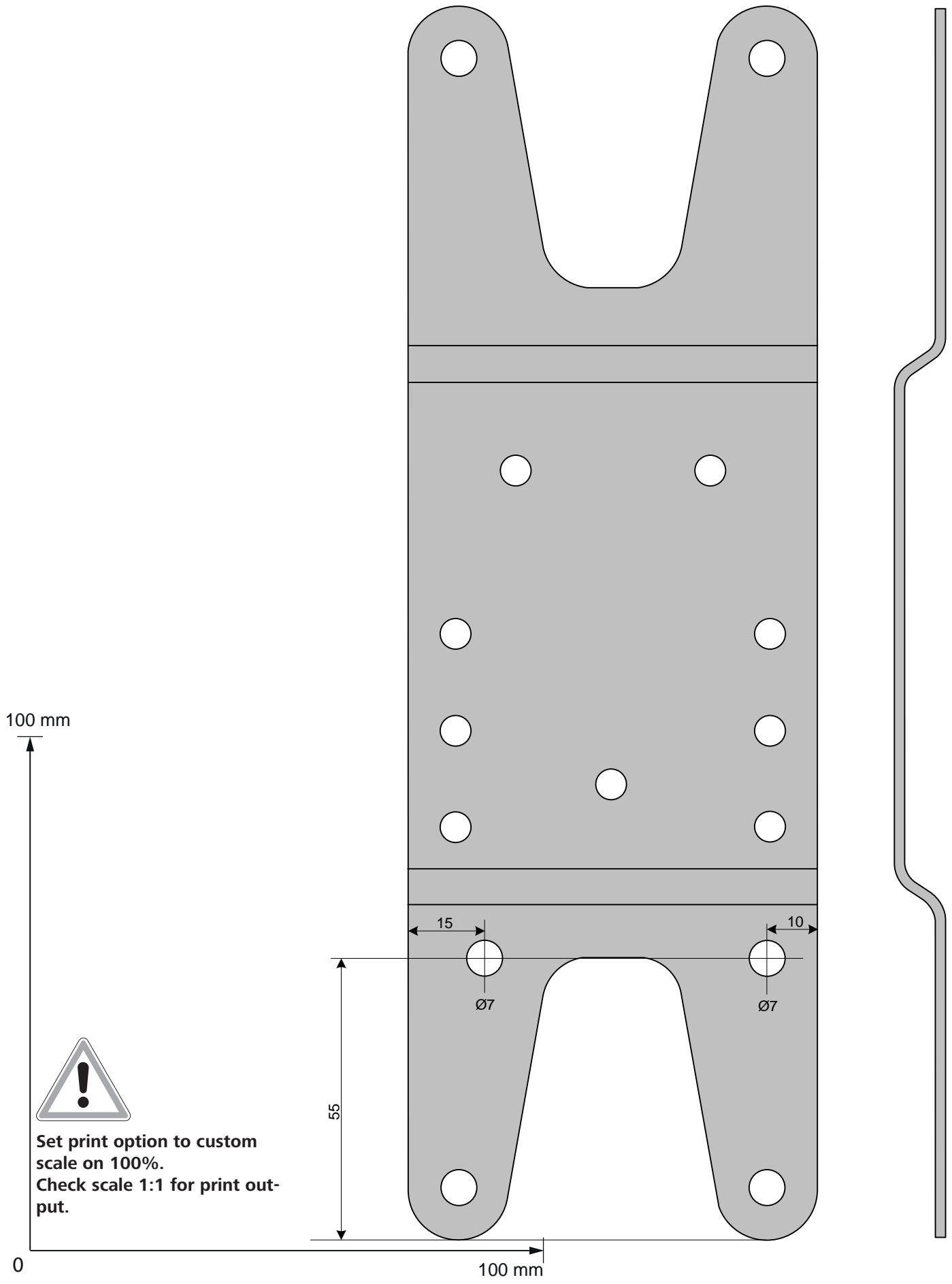
Technical Extranet: <https://dealers.webasto.com>



WWW.WEBASTO.COM



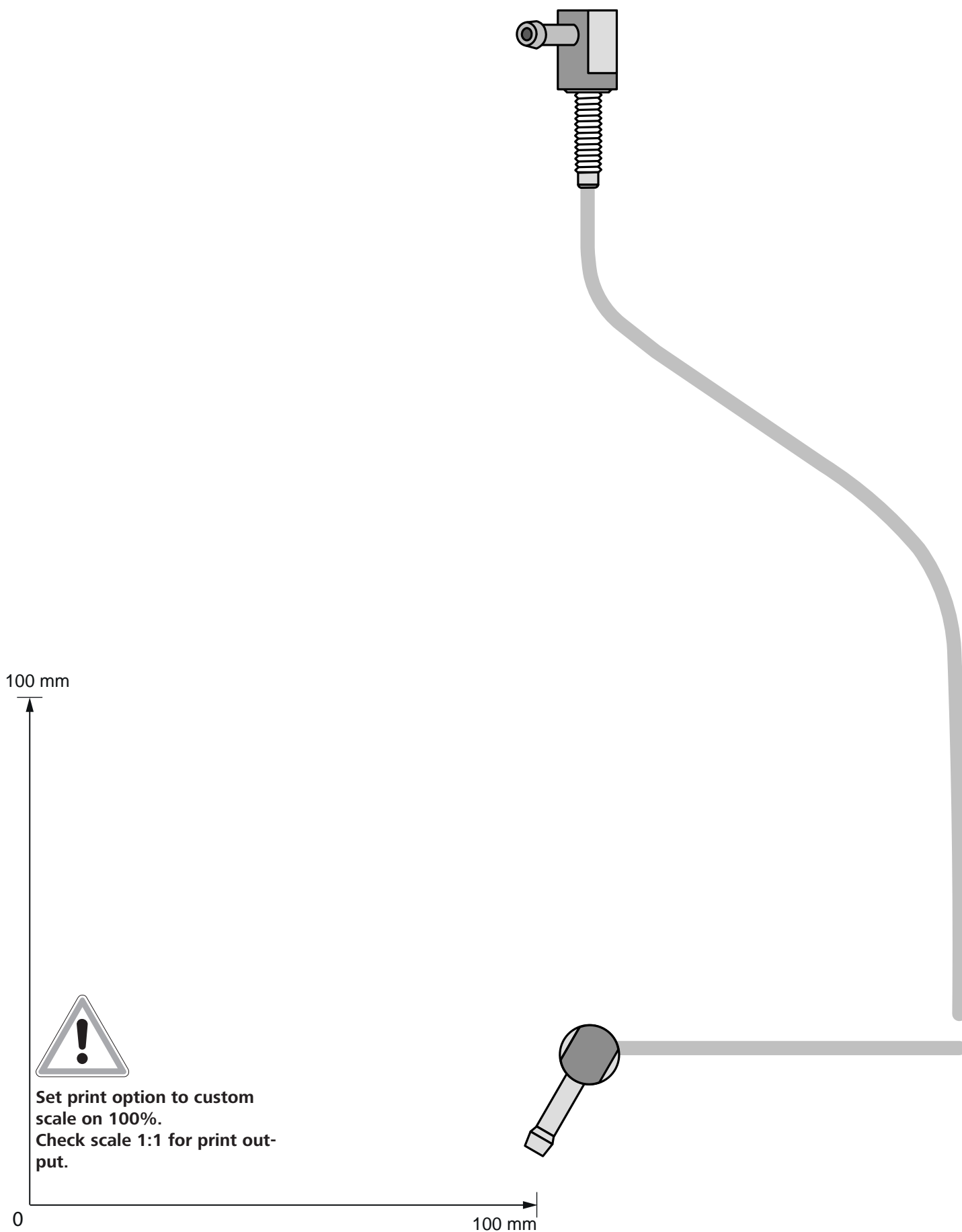
15 Heater bracket template



**Set print option to custom scale on 100%.
Check scale 1:1 for print output.**



16 Tank extracting device template



17 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



Note for parking heater function

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



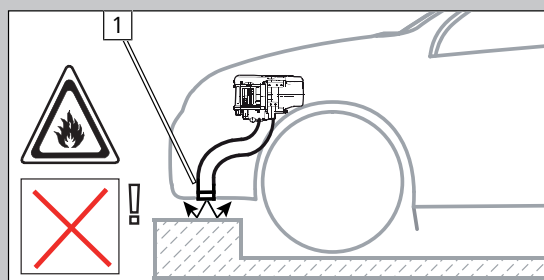
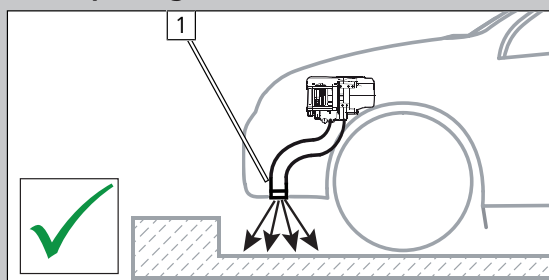
Note for current consumption in case of parking heating mode

Depending on the vehicle model, there may be an increased quiescent current consumption message in the vehicle information system during or directly after operation in parking heating mode.

- ▶ This is not an error that can affect the vehicle on a technical level.



Notes on parking heater exhaust outlet **1**



17.1 A/C control panel settings

Manual air-conditioning control panel

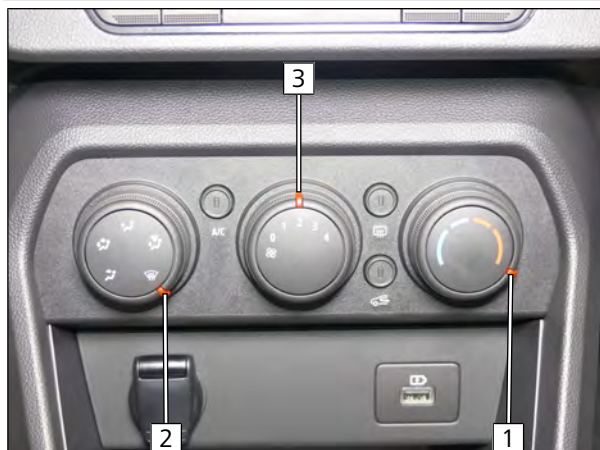


Fig. 127



Before parking the vehicle, make the following settings:

- 1 Set temperature to 'HI'
- 2 Air outlet to windscreen
- 3 Set fan to level "1", max. "2"

17.2 Installation location of fuses

Fuses in engine compartment

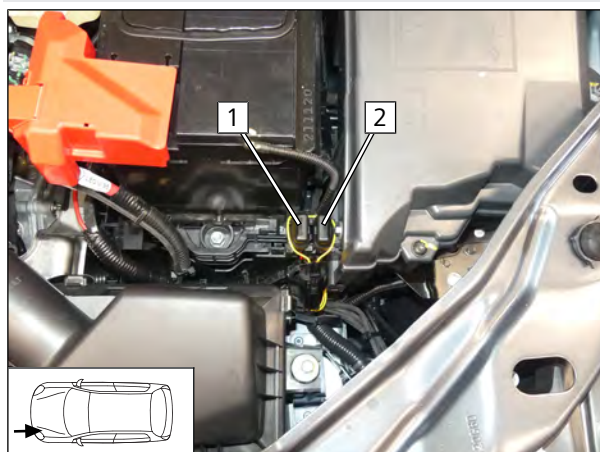


Fig. 128

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

Fuses in passenger compartment

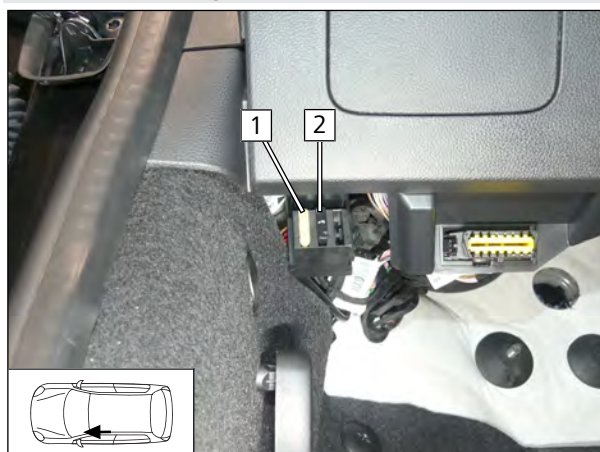


Fig. 129

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

18 Operating instructions for 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



Note for parking heater function

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



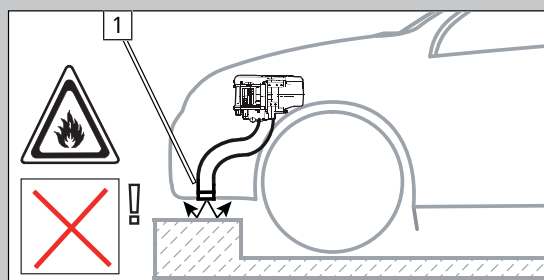
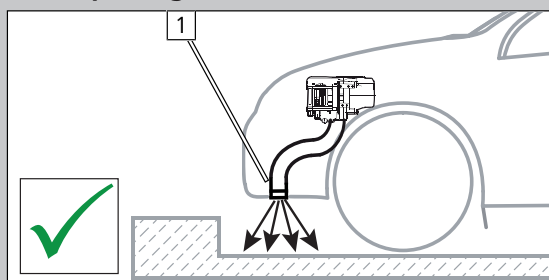
Note for current consumption in case of parking heating mode

Depending on the vehicle model, there may be an increased quiescent current consumption message in the vehicle information system during or directly after operation in parking heating mode.

- ▶ This is not an error that can affect the vehicle on a technical level.



Notes on parking heater exhaust outlet **1**




18.1 A/C control panel settings


Automatic A/C control panel



Fig. 130

 Before parking the vehicle, make the following settings:

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

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

18.2 Installation location of fuses

Fuses in engine compartment

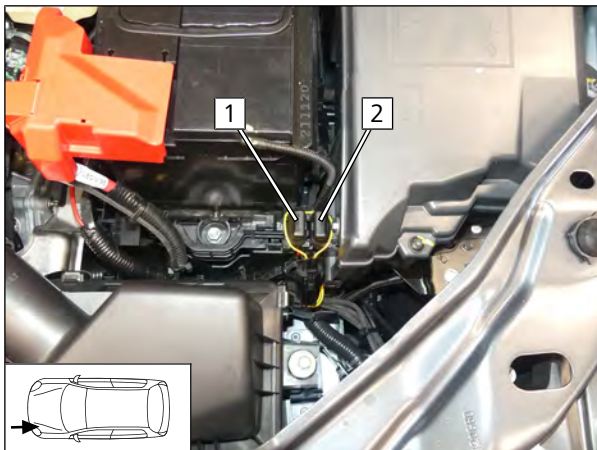


Fig. 131

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

Fuses in passenger compartment

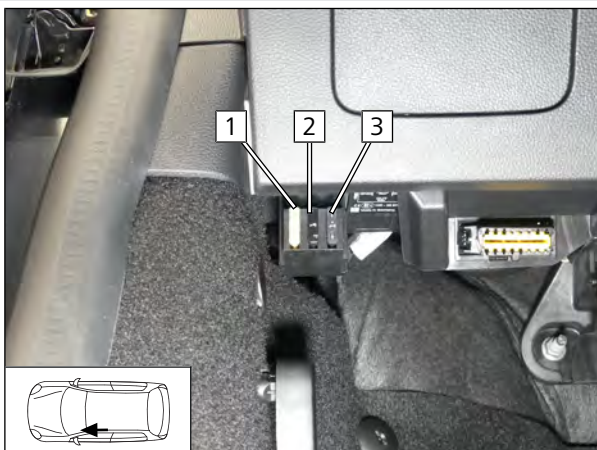


Fig. 132

- 1** F4 - 25A fan controller fuse
- 2** F3 - 1A control element fuse
- 3** F5 - 1A additional fuse