EN

K

Installation documentation

for Thermo Top Evo water heater

Hyundai i20

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Hyundai	i20	GB	from 2018	e11* 2007/46* 1600*…

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displace-ment [cm³]	Engine code
1.0 T-Gdi	Petrol	Euro 6d-TEMP	AG	74	999	G3LC
1.2 MPi	Petrol	Euro 6d-TEMP	SG	55	1248	G4LA

Validity	Equipment variants	Model
		i20
Verified equipment variants	Manual air-conditioning	x
	Halogen main headlights	x
	Halogen daytime running lights	x
	Halogen front fog lights	x
	Automatic Start-Stop system	x
Unverified equipment variants	Automatic air-conditioning	x
	Passenger compartment monitoring	x
	Alarm system	x
	Start button with keycard	x
	LED daytime running lights	x

Total installation time	Note
6.2 hours	

Contents

1 List of abbreviations

AG	Automatic transmission
DP	Fuel pump
EFIX	Exhaust end fastener
FF	FuelFix (tank extracting device)
Fig.	Figure
HG	Heater
MCC	MultiControl (control element)
RSH	Relay and fuse holder of passenger compartment
SG	Manual transmission
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump

2 Installation notes

2.1 Information on Validity

This installation documentation applies to vehicles listed on page 1, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to this installation documentation. Vehicle and engine types, equipment variants and other specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

2.2 Components used

Designation	Order number
Basic delivery scope for Thermo Top Evo (see Installation recommendations)	In accordance with price list
Installation kit for Hyundai i20 petrol 2018	1327118A
In case of control element as well as Telestart indicator lamp in consultation with end customer	In accordance with price list
MultiControl installation frame, for installation of MultiControl CAR	9030077_

2.3 Information on Total Installation Time

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

2.4 Installation Recommendations

Arrange for the vehicle to be delivered with the tank only about ¼ full.
For the MultiControl CAR option, the recommended installation locations for the Telestart or ThermoCall push button should be confirmed with the end customer.
Depending on the space required and the vehicle manufacturer's instructions, we recommend the use of a vehicle battery with a higher electrical capacity.

We recommend installing a Thermo Top Evo 4. The heater is integrated into the coolant circuit as an ‘island’ and heats up the vehicle passenger compartment. There is no engine pre-heating.

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

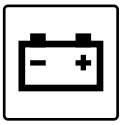
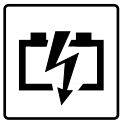
▶ Actions to protect yourself against risks.

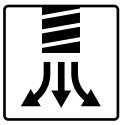
Reference to the vehicle manufacturer's specific documents.

Note on a special technical feature

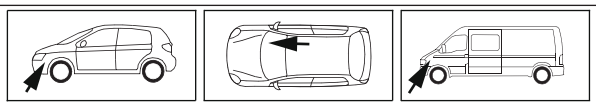
3.4.3 Work step identification marks

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 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 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 ▶ Ventilate the fuel tank ▶ Close the fuel tank cap again ▶ Depressurise the cooling system	
Engine compartment and body	▶ Battery ▶ Air filter box and hoses to the engine ▶ Engine control unit with bracket ▶ Front wheel on the front passenger's side ▶ Front wheel well trim on the front passenger's side ▶ Engine underride protection ▶ Underbody trim on the driver's side	
Passenger compartment	▶ Rear bench seat ▶ Side instrument panel trim on the driver's side ▶ Lower instrument panel trim on the driver's side ▶ Passenger compartment central electrical box ▶ Tank fitting service lid	

5.2 Heater preparation

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

6 Installation overview

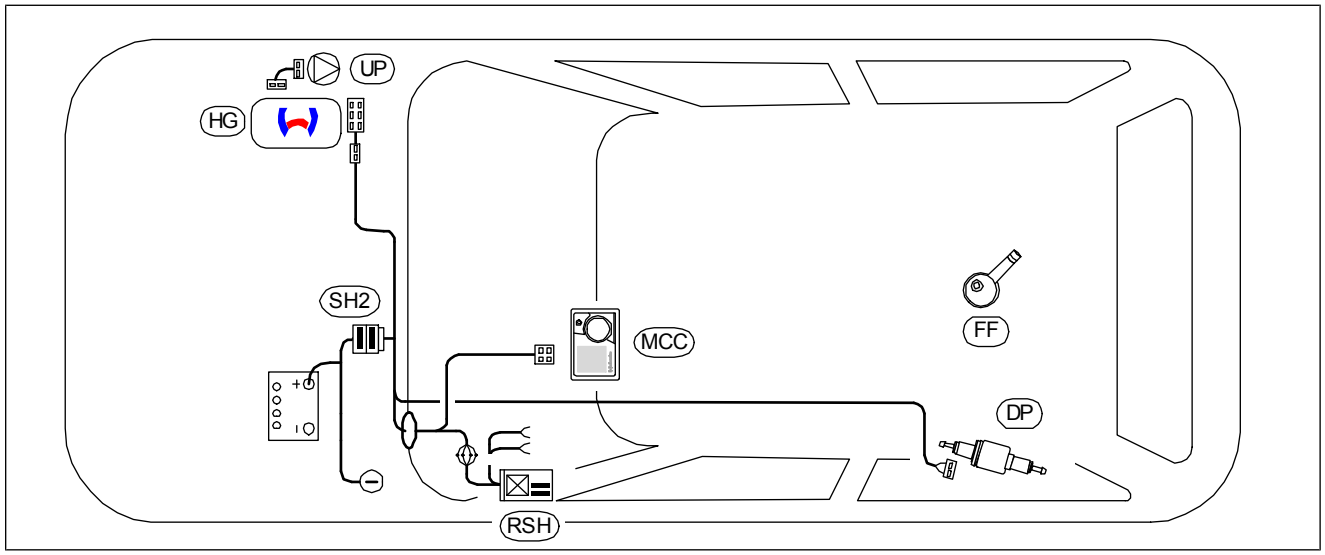


Fig. 1

Legend to installation overview

Abbreviation	Component
DP	Fuel pump
FF	FuelFix
HG	Heater
MCC	MultiControl CAR
RSH	Relay and fuse holder of passenger compartment
SH2	Fuse holder of engine compartment
UP	Coolant pump

Heater installation location

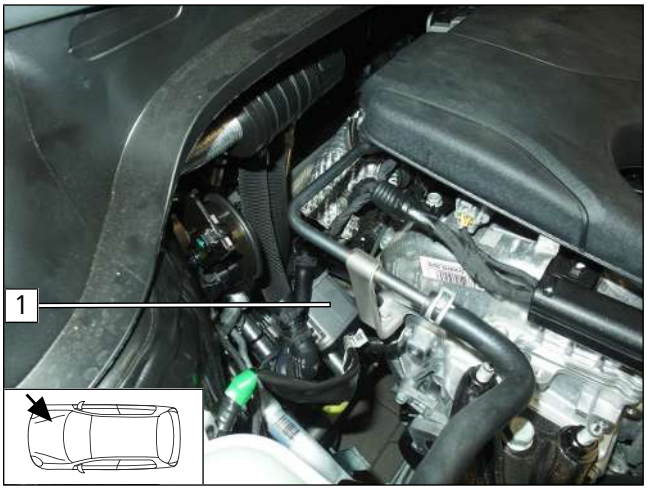


Fig. 2

1 Heater

7 Electrical system of engine compartment

Premounting retaining plate SH2

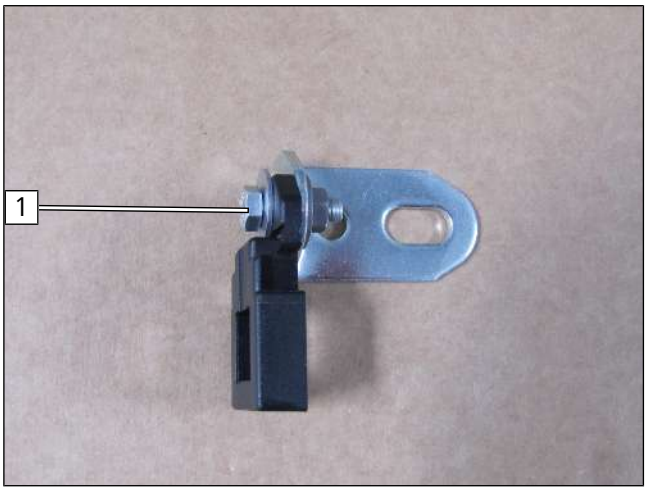


Fig. 3

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

Mounting SH2, routing wiring harness

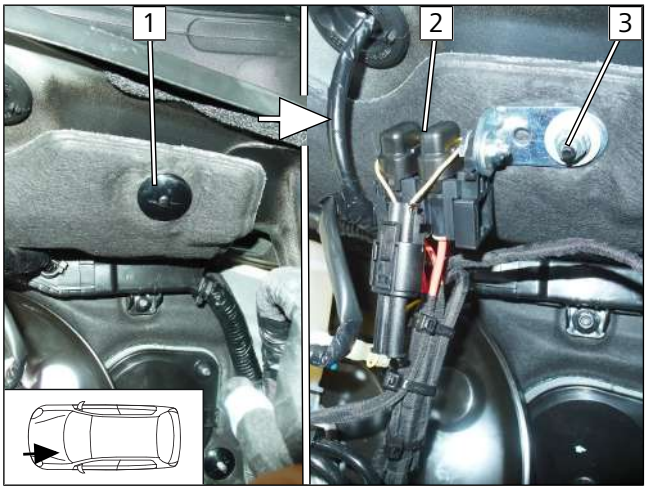


Fig. 4

▶ Route the heater wiring harness along the firewall to the installation location of the heater, it will be fastened later as explained in section 'Fuel'.

1 Remove plastic disc

2 Fuses F1 and F2

3 Original vehicle stud bolt, premounted angle bracket, washer, flanged nut

Connecting positive wire

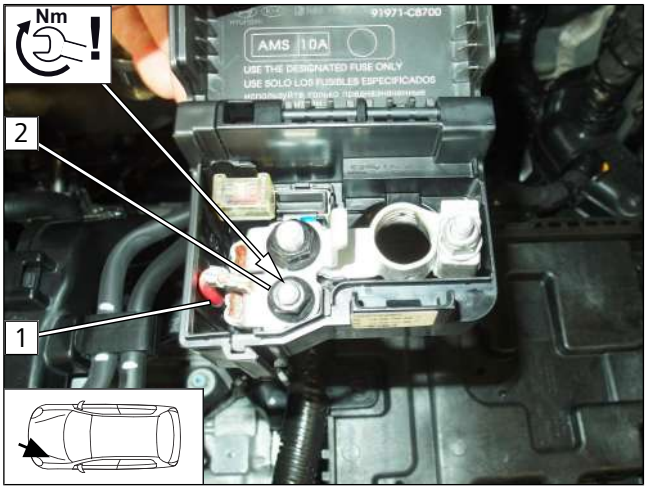


Fig. 5

1 Positive wire

2 Original vehicle positive support point

Connecting earth wire

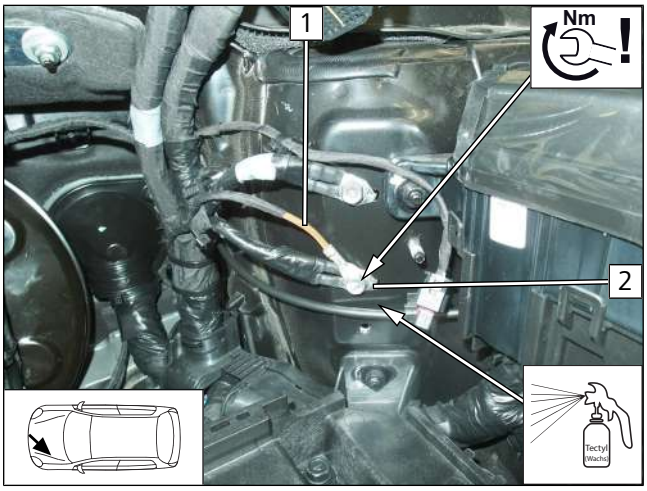


Fig. 6

1 Earth wire
2 Original vehicle earth support point

Passenger compartment wiring harness pass through

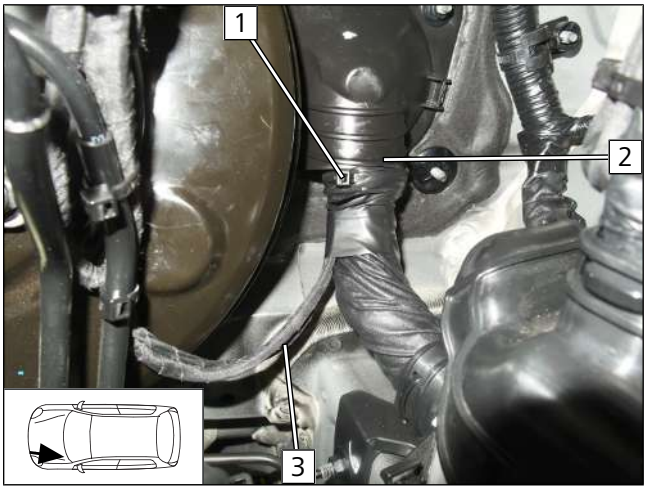


Fig. 7

1.0 T-GDi

1 Cable tie
2 Protective rubber plug
3 Heater and control element wiring harnesses

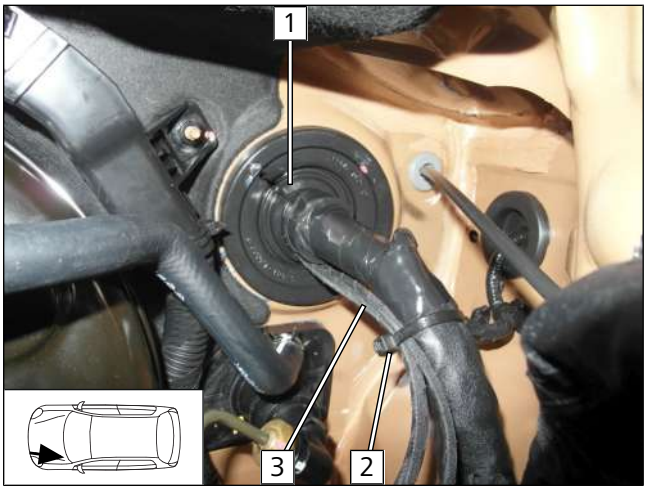


Fig. 8

1.2 MPi

1 Protective rubber plug
2 Cable tie
3 Heater and control element wiring harnesses

8 Mechanical system

8.1 Preparing installation location

Disconnecting earth wire

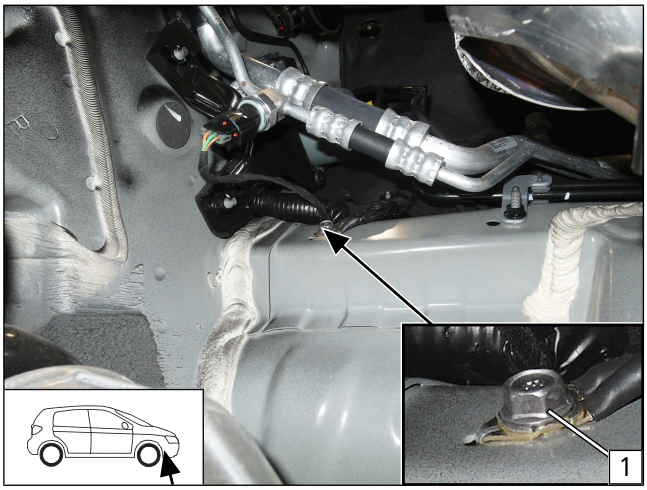


Fig. 9

- ▶ Remove original vehicle bolt [1].
- ▶ Remove earth wire, will be mounted again later.

Preparing perforated bracket 1

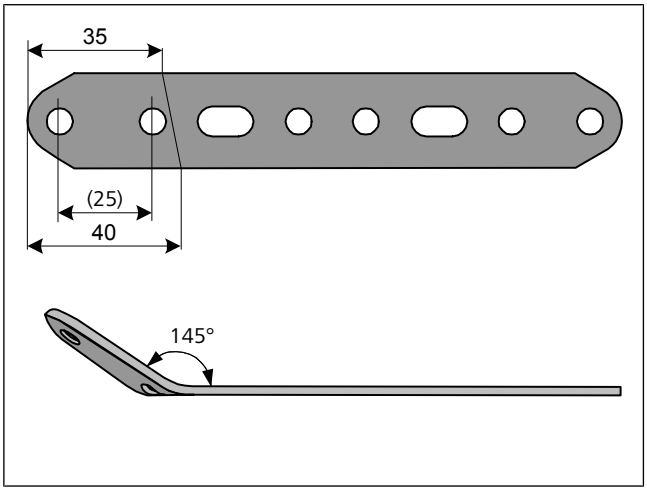


Fig. 10

Preparing perforated bracket 2

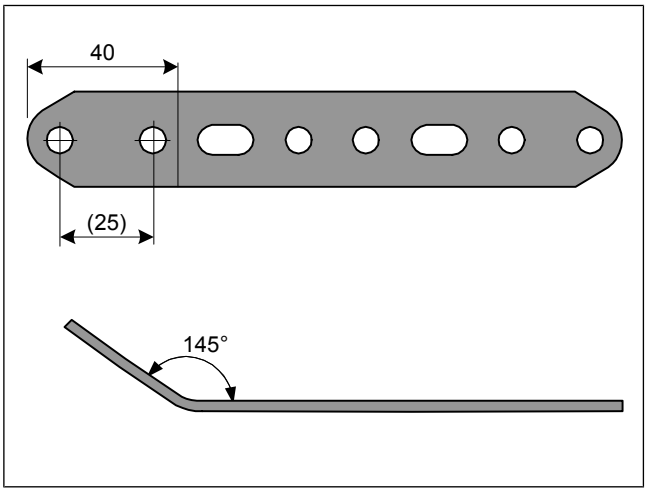


Fig. 11

Premounting heater bracket

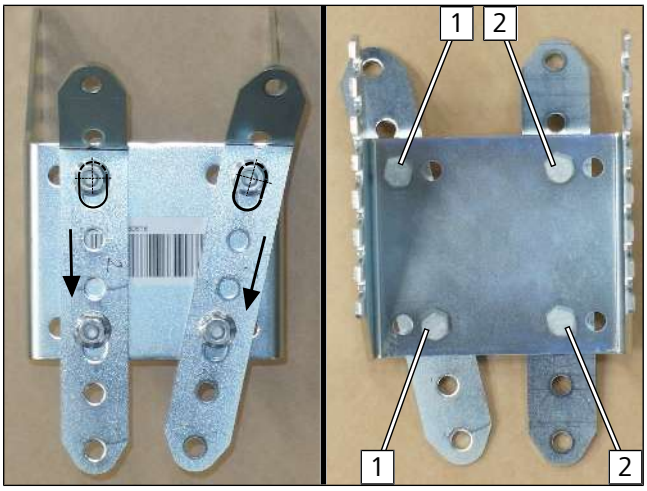


Fig. 12

Move perforated brackets 1 and 2 in the direction of the arrow until stopped by the bolts in the oblong holes and tighten the bolts.

1 M6x12 bolt, heater bracket, perforated bracket 1, flanged nut

2 M6x12 bolt, heater bracket, perforated bracket 2, flanged nut

Copying hole pattern

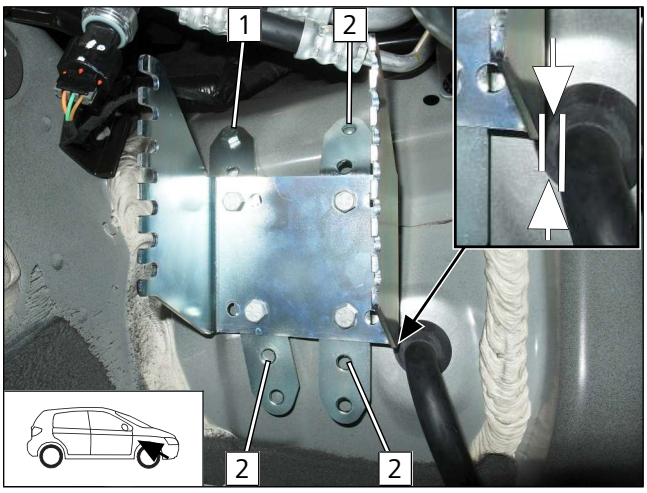
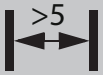


Fig. 13

▶ Mount heater bracket.

Ensure sufficient distance between heater bracket and hose, correct if necessary.



1 Original vehicle threaded hole, M6x20 bolt

2 Hole pattern

Drilling holes, inserting rivet nuts

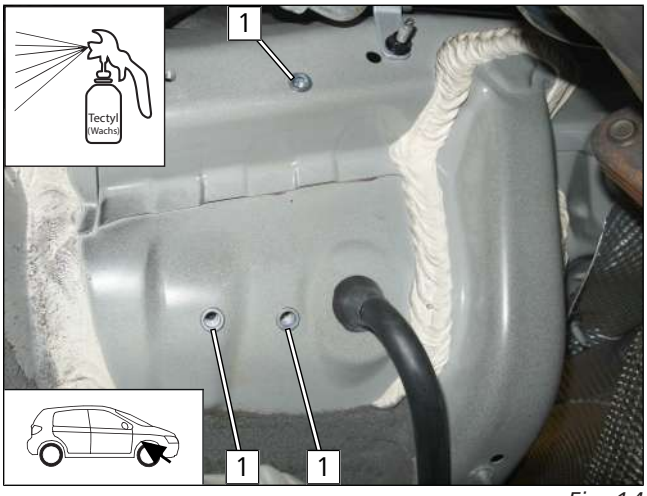
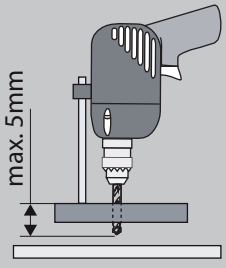


Fig. 14

▶ Remove heater bracket again.

Danger of damage to components



1 Ø9 hole; M6 rivet nut

Adapting earth wire

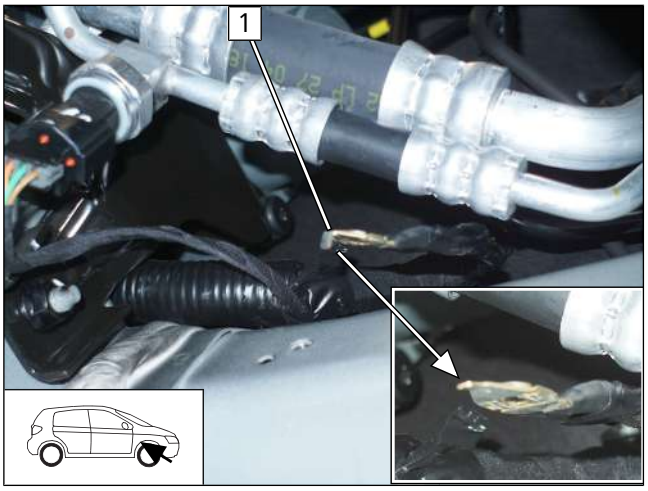


Fig. 15

▶ Bend lug 1 by 90° as shown.

Sealing rivet nuts

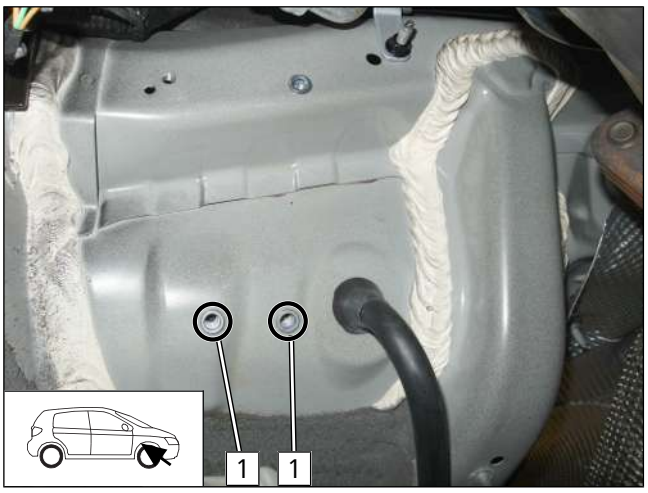


Fig. 16

▶ Apply sealant (e.g. silicone) at pos. 1.

Mounting heater bracket

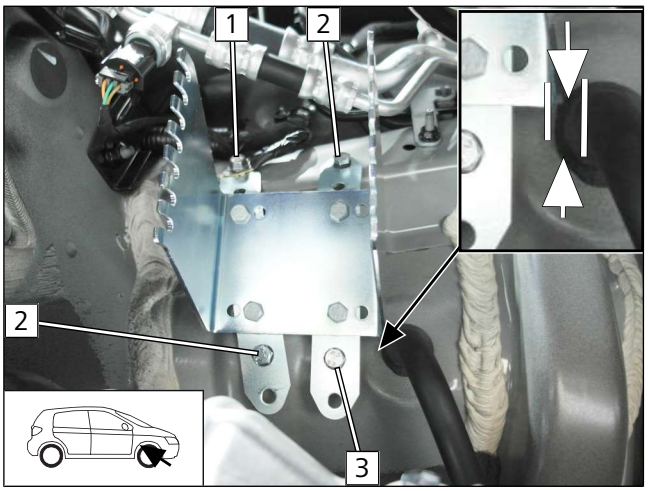
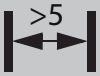


Fig. 17

Ensure sufficient distance between heater bracket and hose, correct if necessary.



1 Original vehicle bolt, toothed washer A6, earth wire, perforated bracket 1, original vehicle thread

2 M6x20 bolt, spring lock washer, perforated bracket 1 or 2, rivet nut

3 M6x25 bolt, spring lock washer, perforated bracket 2, spacer (8), rivet nut

Cutting hoses to length

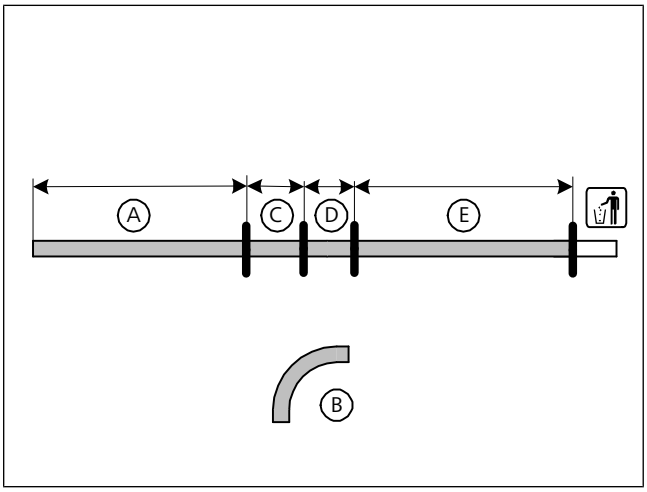


Fig. 18

	1.0 T-Gdi	1.2 MPi
Ⓐ	600	630
Ⓑ	90° moulded hose	90° moulded hose
Ⓒ	120	120
Ⓓ	110	110
Ⓔ	700	720

Preparing hoses

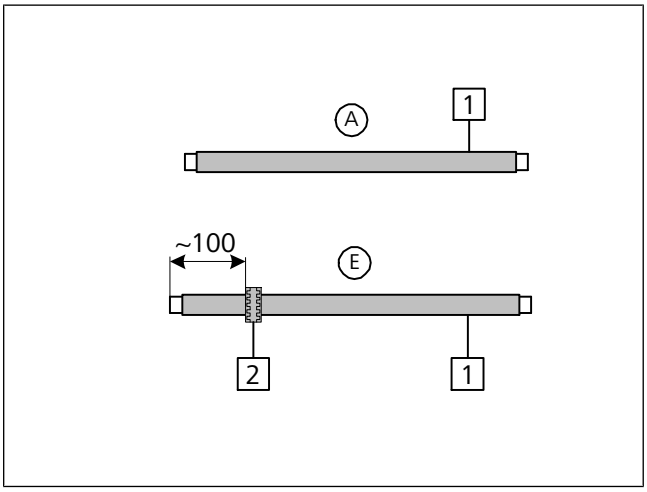


Fig. 19

▶ Slide fabric heat shrink tubings onto hoses Ⓐ and Ⓔ, cut to length and shrink.

1 Fabric heat shrink tubings
2 Black (sw) rubber isolator

Shortening coolant pump perforated bracket, enlarging hole

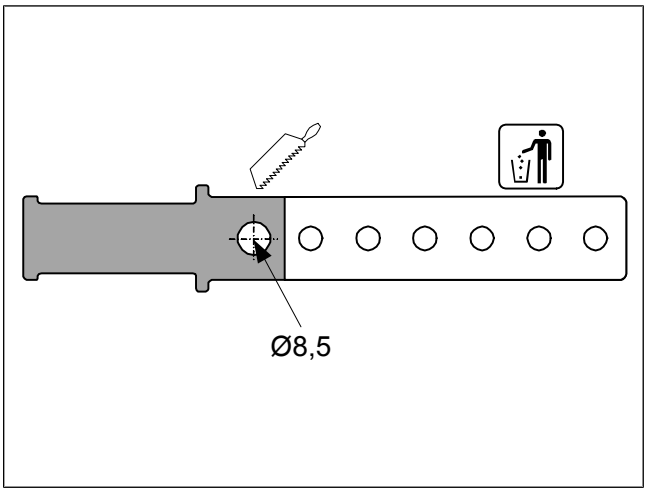


Fig. 20

Premounting coolant pump

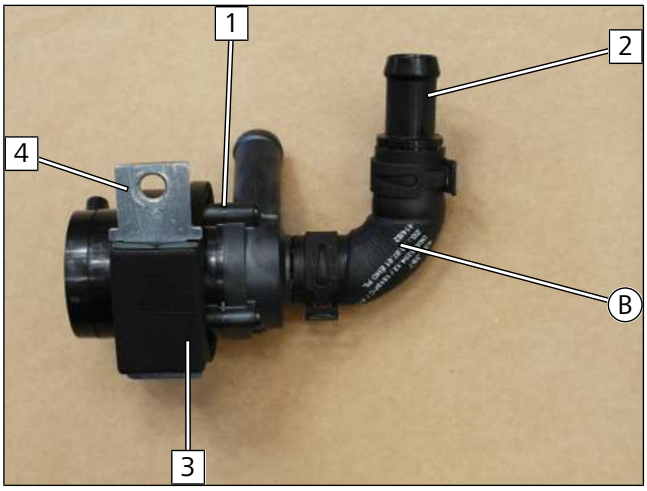


Fig. 21

All spring clips Ø25

1 Coolant pump
2 Ø18x18 connecting pipe
3 Coolant pump mount
4 Perforated bracket

Mounting coolant pump

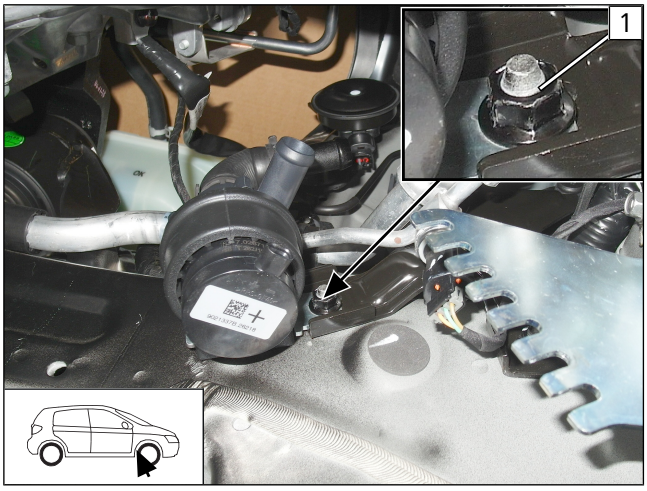


Fig. 22

1 Original vehicle stud bolt, perforated bracket, original vehicle flanged nut

8.2 Premounting heater

Mounting water connection piece

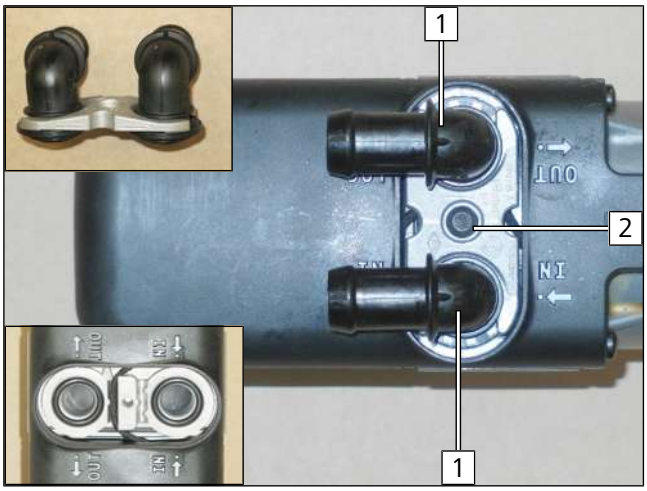


Fig. 23

Observe the general installation instructions of the heater.

1 Ø18/90° water connection piece, seal
2 5x15 self-tapping bolt, water connection piece retaining plate

Premounting bolts

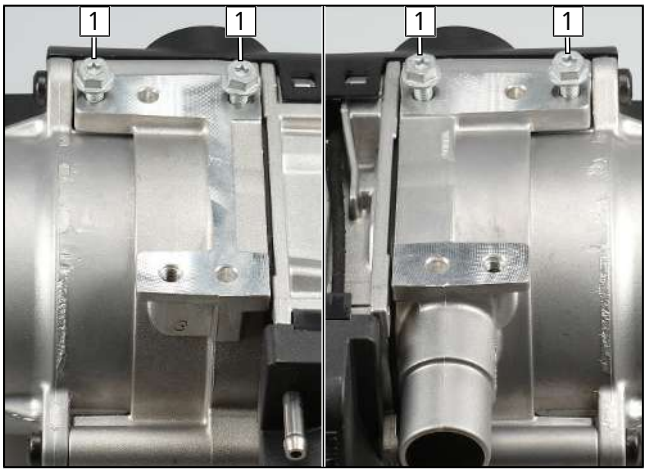


Fig. 24

▶ Screw 5x13 self-tapping bolt **1** inwards by approx. 3 threads.

Shortening fuel hose

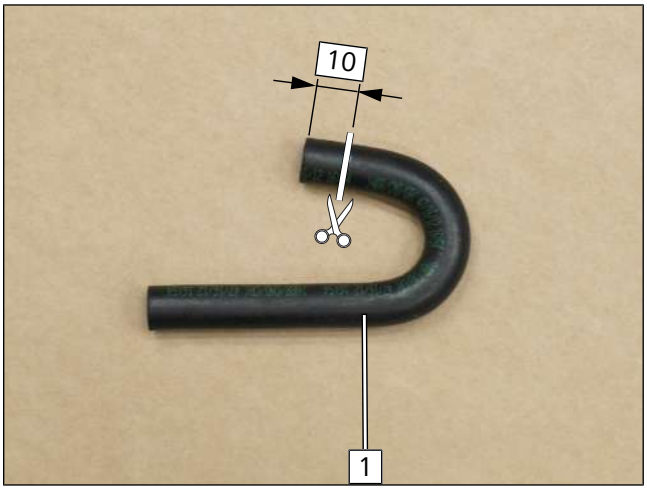


Fig. 25

1 180° moulded hose

Connecting fuel hose

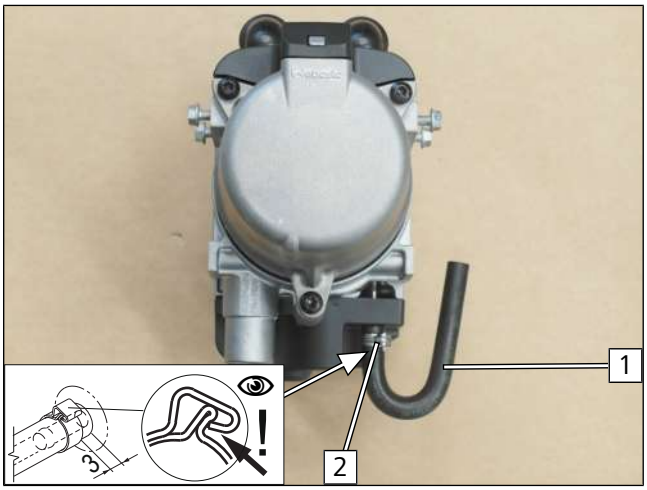


Fig. 26

▶ Connect the shortened side to the heater.

1 180° moulded hose

2 Ø10 clamp

Mounting hoses

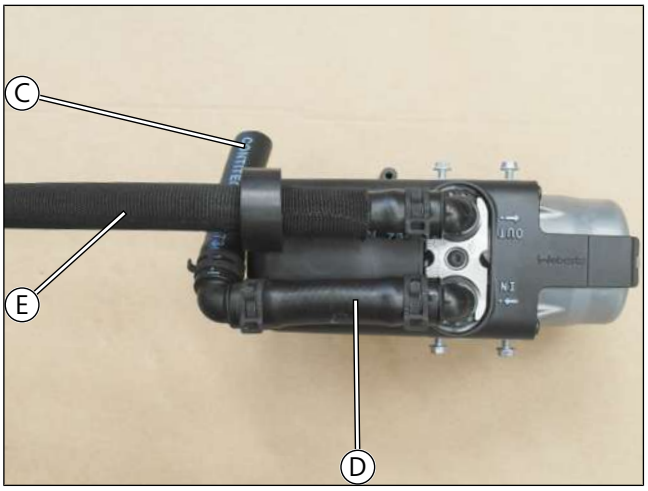


Fig. 27

All spring clips Ø25, Ø18x18/90° connecting pipe

8.3 Heater mounting

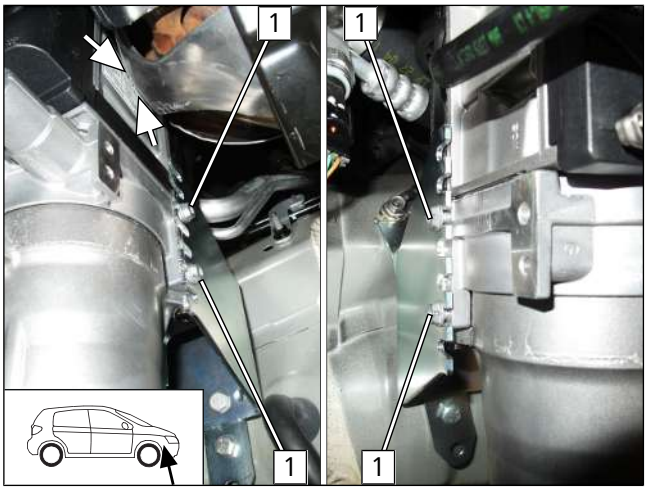


Fig. 28

Observe the general installation instructions of the heater.

Ensure sufficient distance from exhaust system, correct if necessary.

▶ Tighten 5x13 self-tapping bolt 1.

Connection of hose Ⓒ to coolant pump outlet

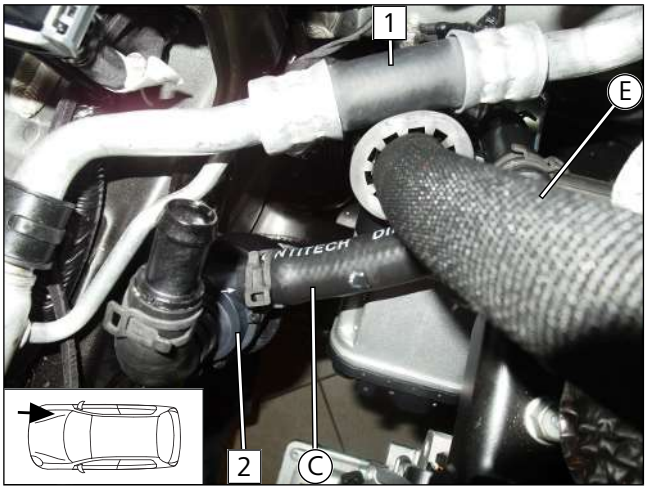


Fig. 29

▶ To route hose Ⓔ, bend A/C line 1 slightly.

2 Coolant pump

Mounting wiring harnesses

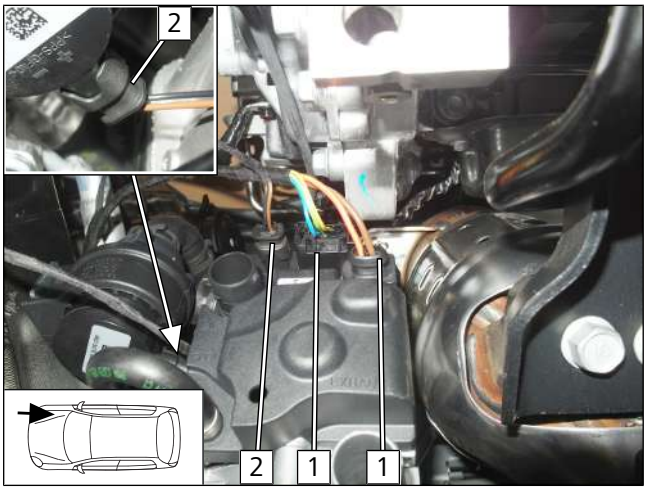


Fig. 30

1 Heater wiring harness connector
2 Coolant pump wiring harness connector

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

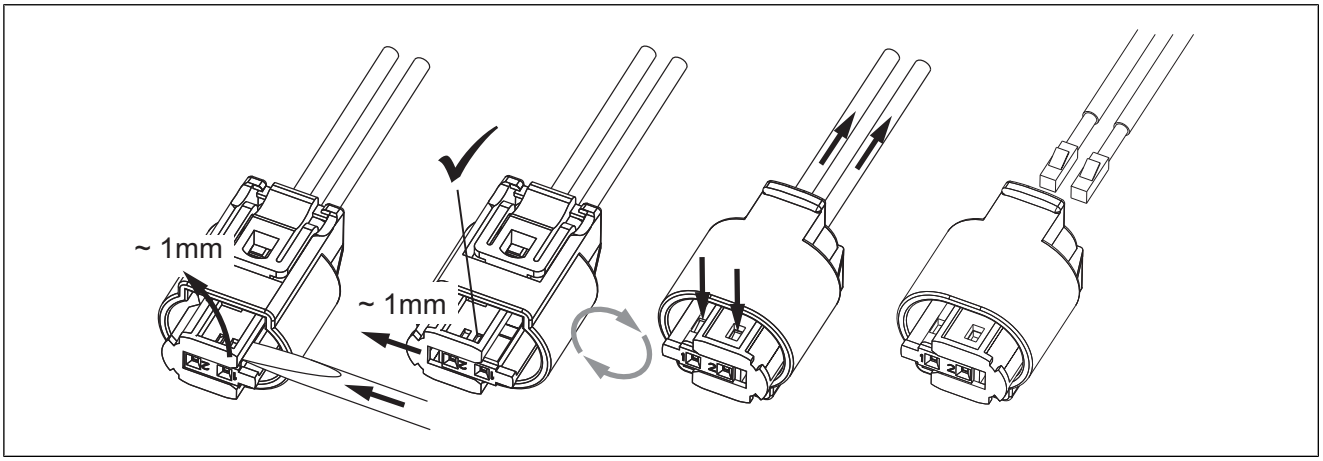


Fig. 31

9.1 Routing fuel line

Mounting spacer

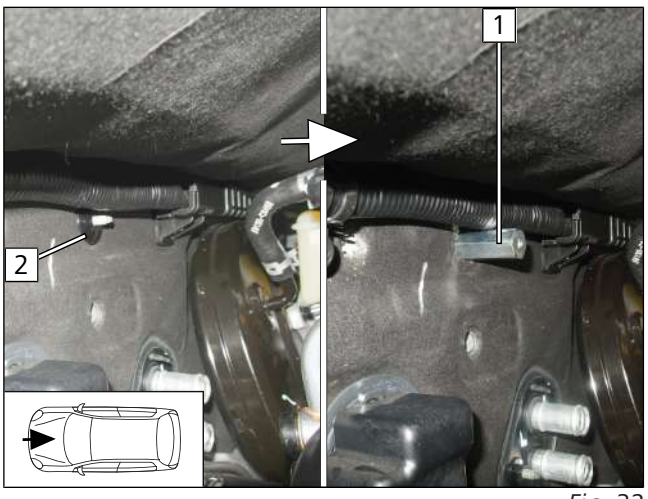


Fig. 32

- ▶ Remove original vehicle plastic disc **2**.
- ▶ Mount spacer (40) **1** onto original vehicle stud bolt.

Connection to heater

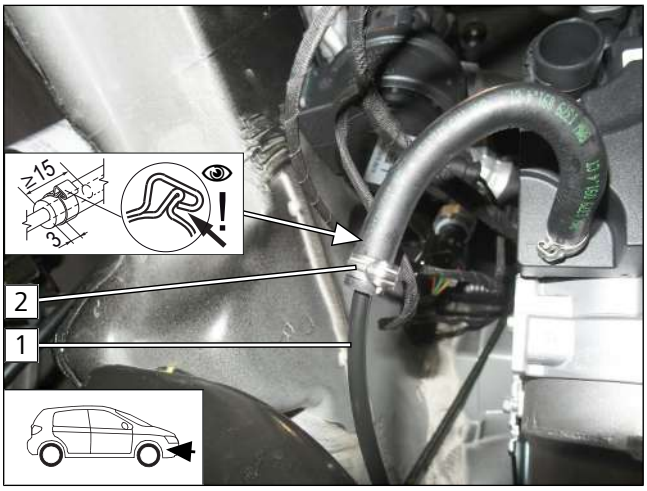


Fig. 33

1 Fuel line
2 Ø10 clamp

Routing line

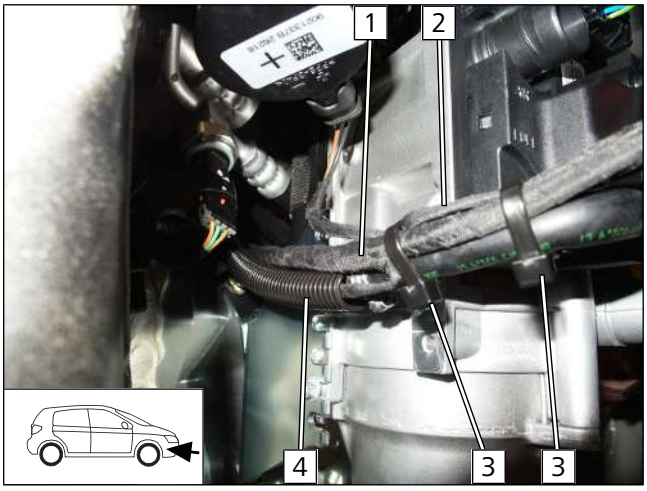


Fig. 34

- Draw fuel line and fuel pump wiring harness into Ø10 corrugated tube 4 and route upwards in the engine compartment.
- Attach heater wiring harness 1 and coolant pump wiring harness 2 with cable tie 3.

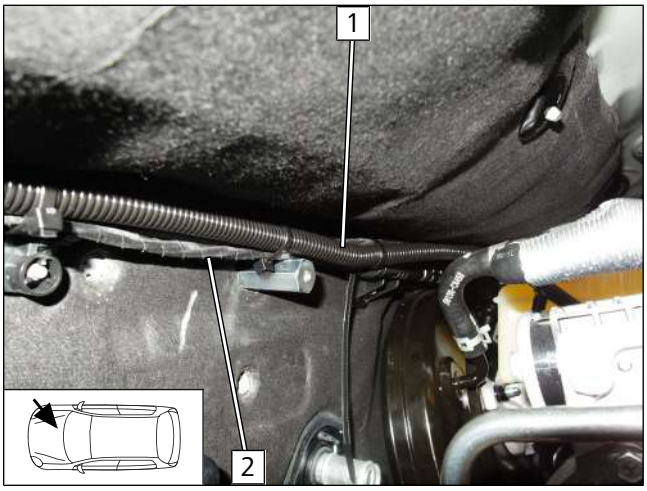


Fig. 35

- Route corrugated tube 1 with fuel line and fuel pump wiring harness on original vehicle lines to the driver's side.
- Attach corrugated tube 1 and heater wiring harness 2 with cable tie to original vehicle lines.

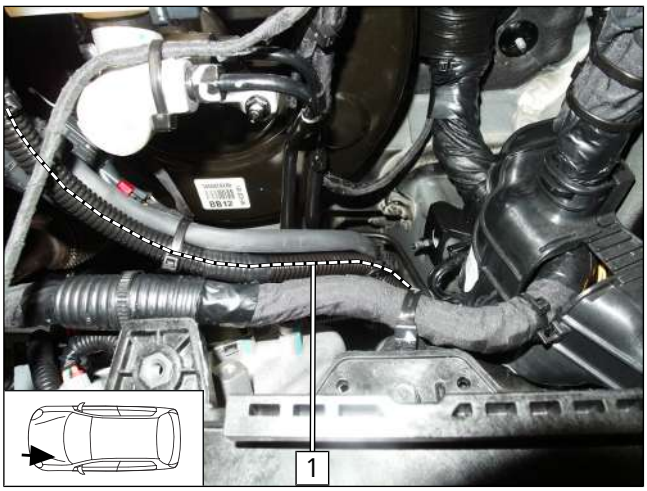


Fig. 36

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

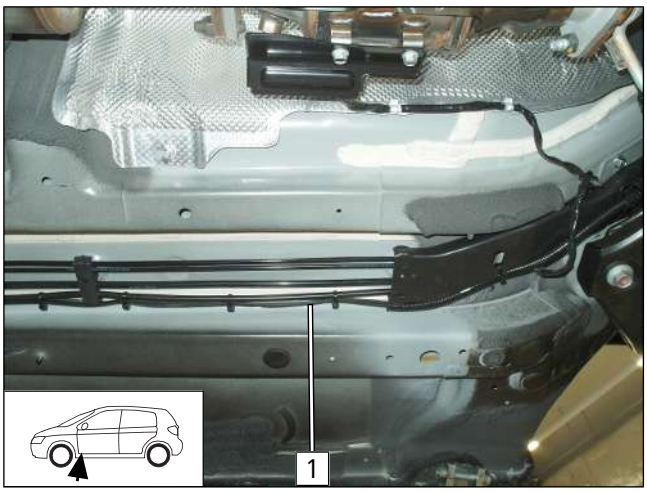


Fig. 37

▶ Route fuel line and fuel pump wiring harness **1** along the original vehicle fuel lines to the installation location of the fuel pump and attach using cable ties.

Premounting fuel pump

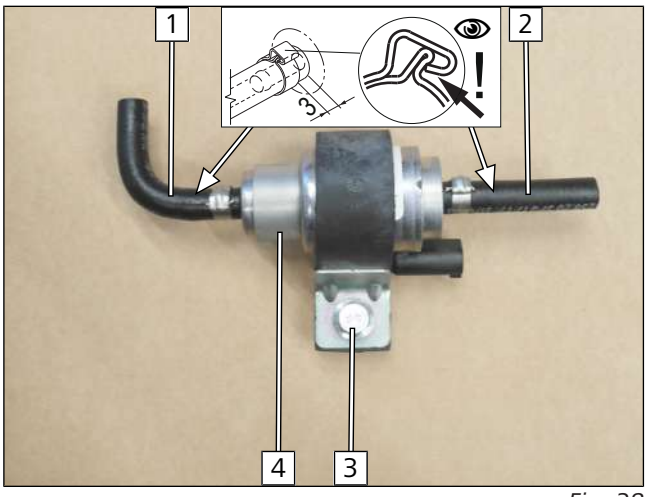


Fig. 38

1 90° moulded hose, Ø10 clamp
2 Hose section, Ø10 clamp
3 M6x25 bolt, support angle bracket, fuel pump mount, flanged nut
4 Fuel pump

Inserting rivet nut

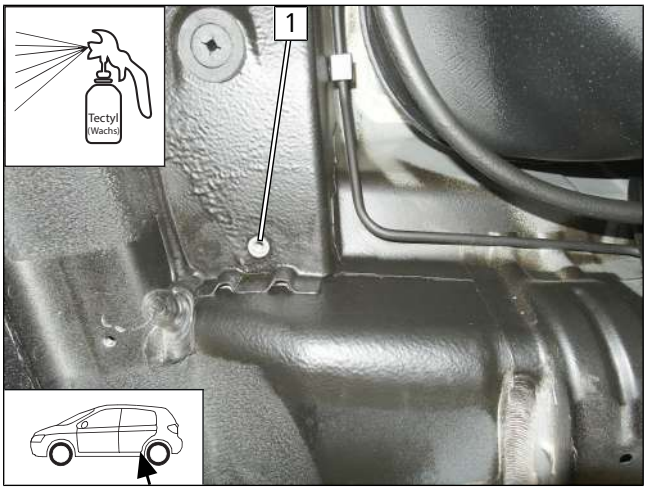


Fig. 39

1 Original vehicle hole, M6 rivet nut

Mounting fuel pump

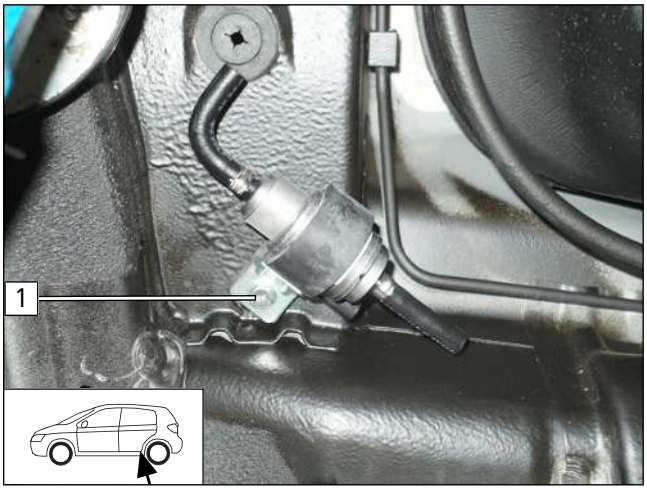


Fig. 40

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

Assembling fuel pump connector X7

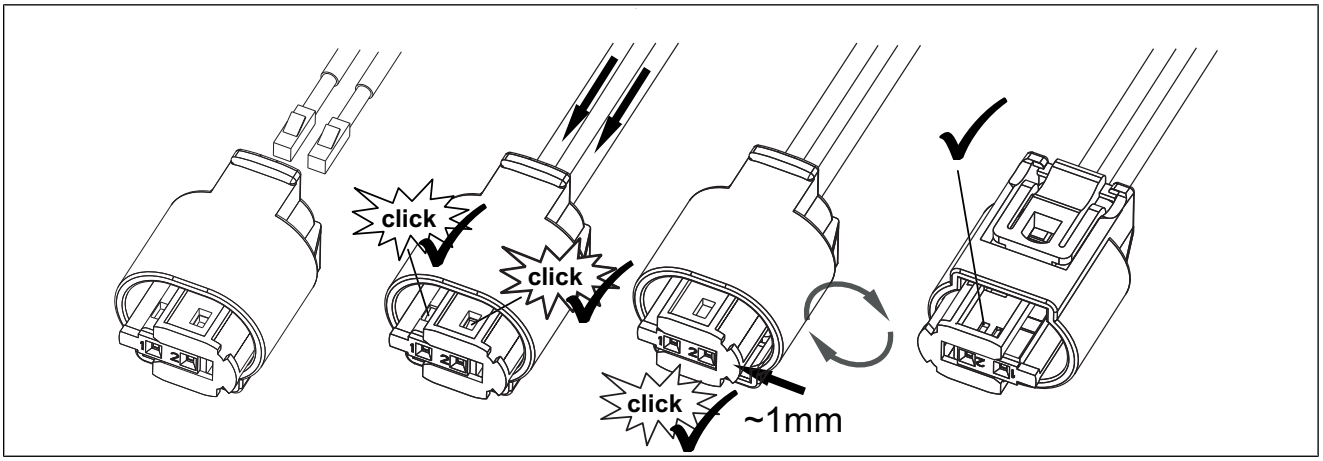


Fig. 41

Connecting fuel pump

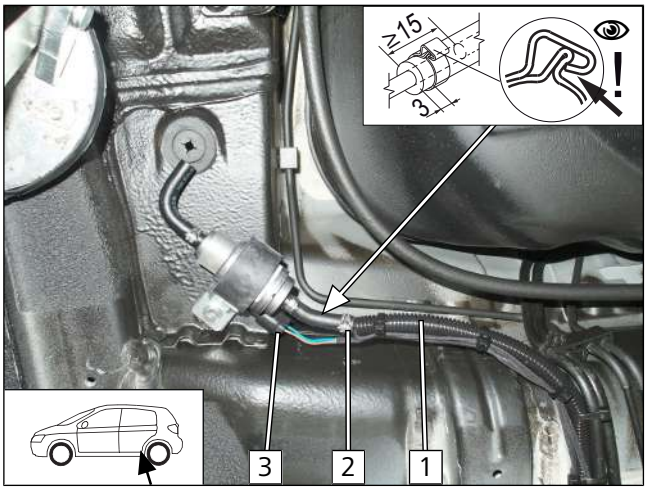


Fig. 42

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

9.2 Installing FuelFix

Preparing drilling template

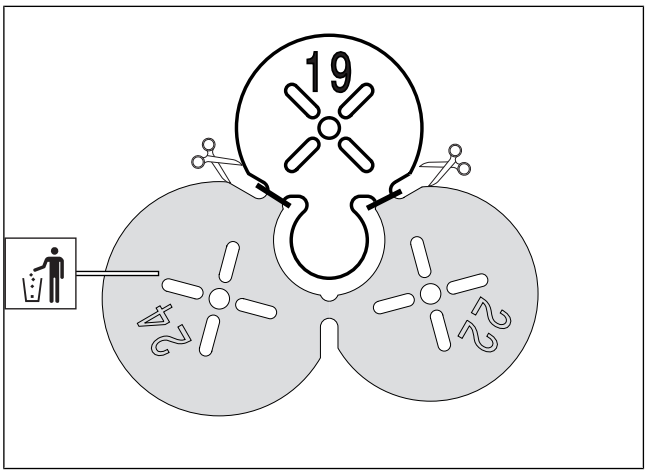


Fig. 43

Removing sticker

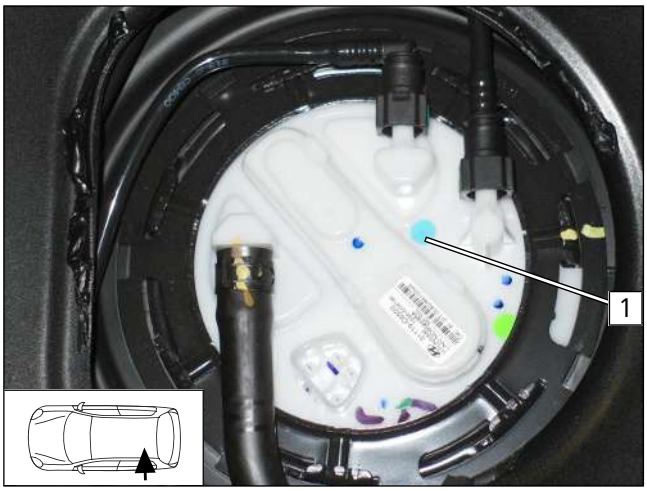


Fig. 44

1 Sticker

Work steps F1, F2

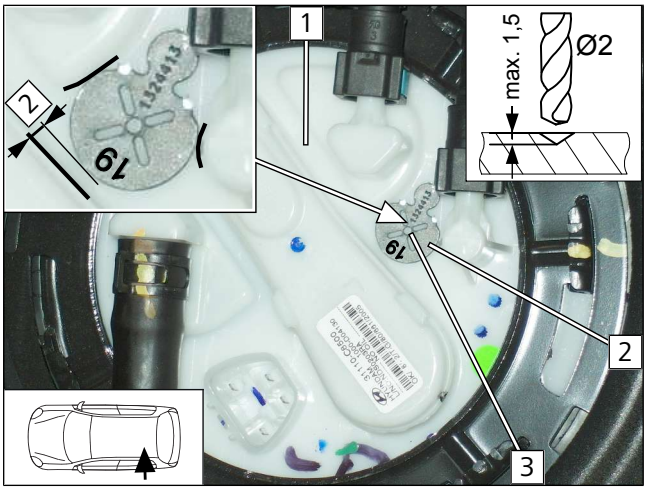


Fig. 45

Observe the installation instructions of the tank extracting device.

1 Tank fitting
2 Position Ø19 drilling template as shown in fig.
3 Ø2 centring hole

Work step F3

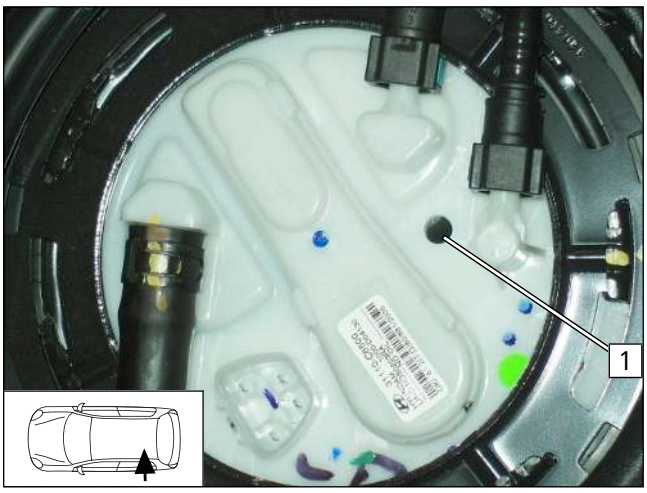


Fig. 46

DANGER

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

1 Hole made with provided drill

Work steps F4, F6.1

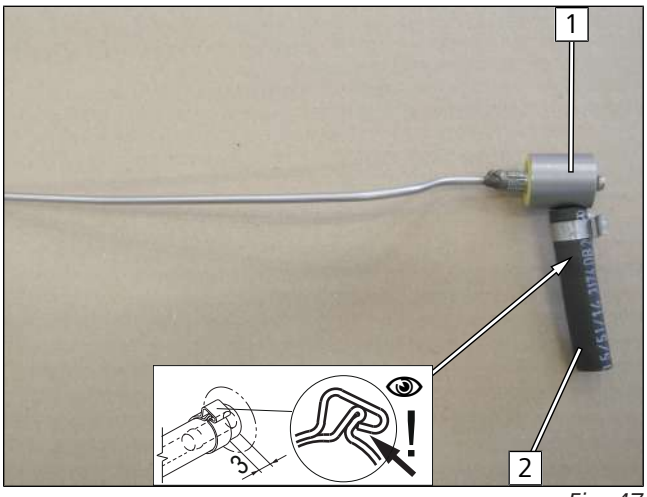


Fig. 47

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

2 Hose section, Ø10 clamp

Work step F5

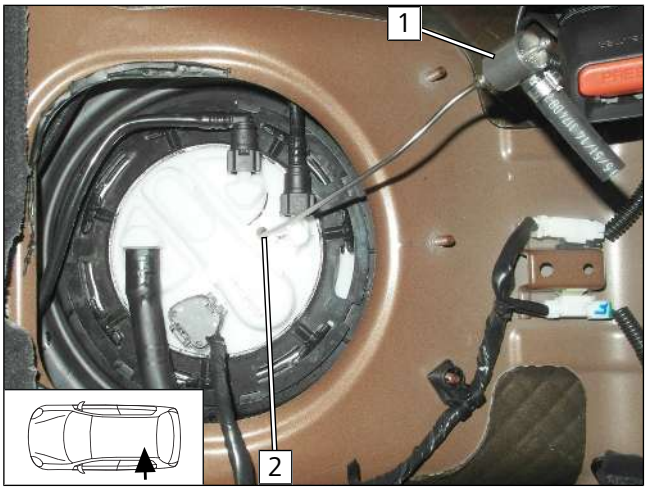


Fig. 48

▶ Insert FuelFix [1] in hole [2].

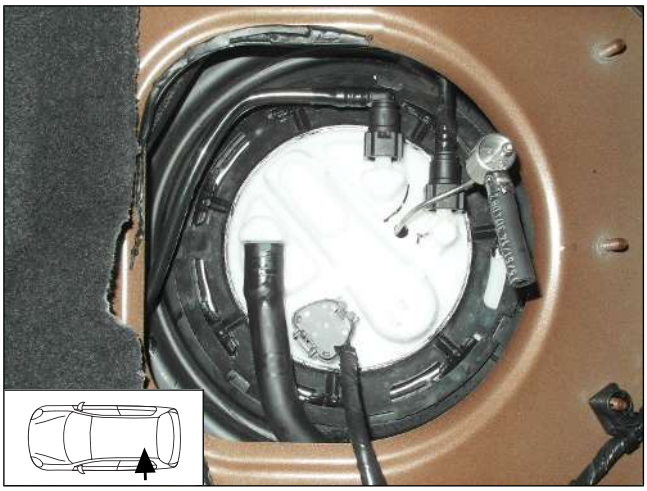


Fig. 49

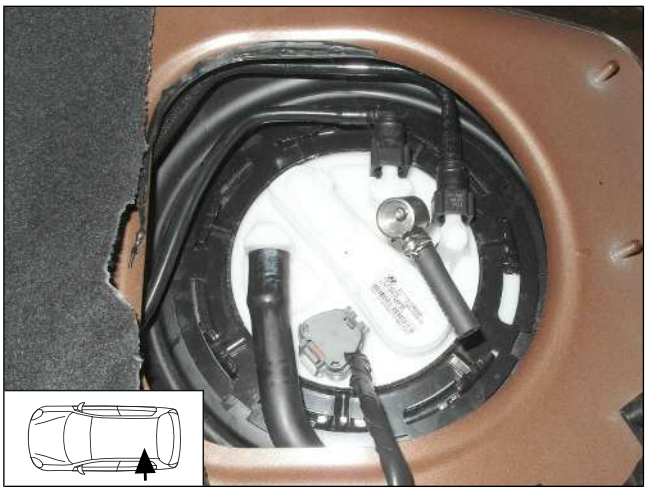


Fig. 50

Work step F5.4

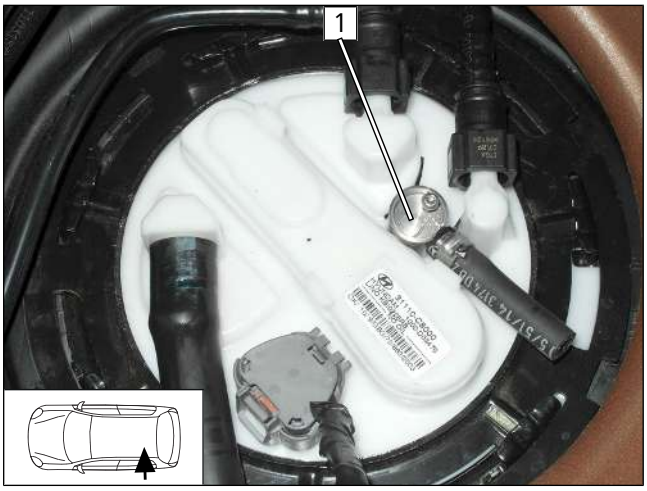


Fig. 51

▶ Align FuelFix [1] as shown in figure.

Work step F6

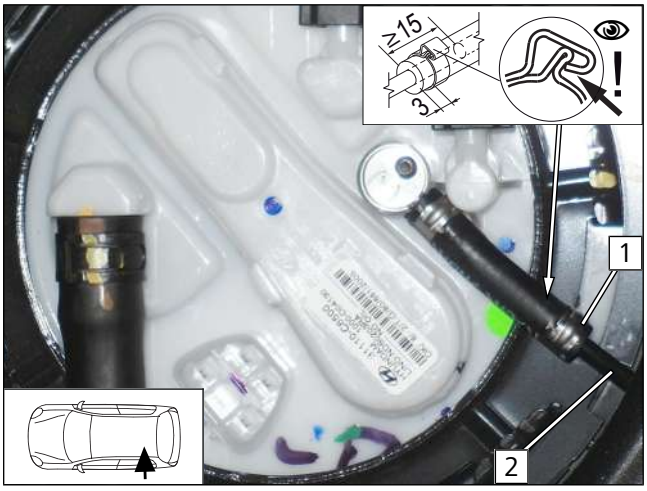


Fig. 52

[1] Ø10 clamp
[2] Fuel line

Work step F7

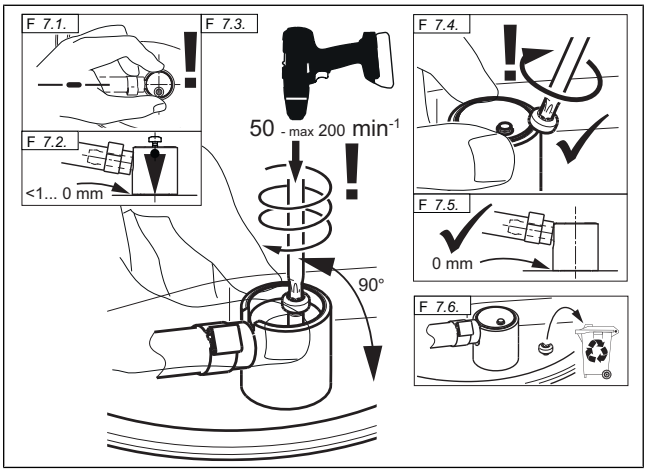


Fig. 53

DANGER

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

Work step F8

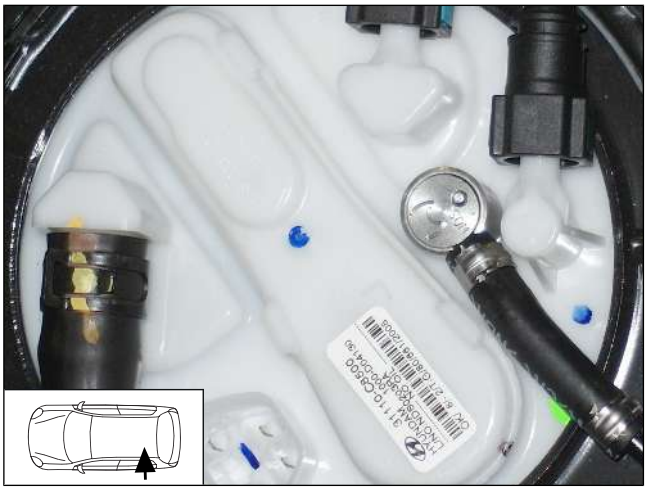


Fig. 54

Securing fuel line

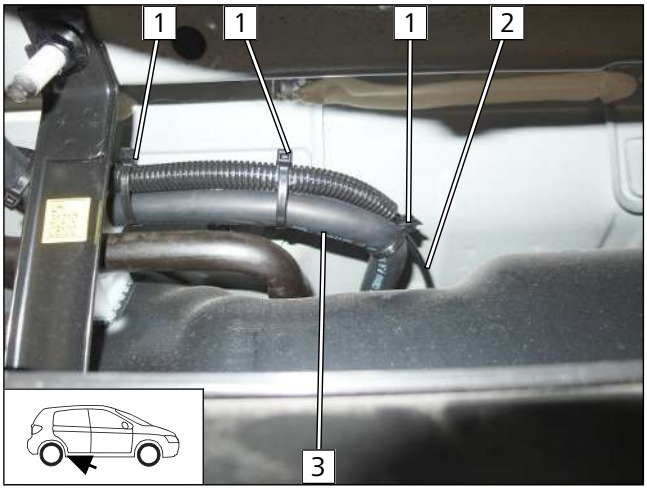


Fig. 55

1 Cable tie for tension relief
2 Fuel line
3 Original vehicle hose

9.3 Fuel pump connection

Connecting fuel line of FuelFix

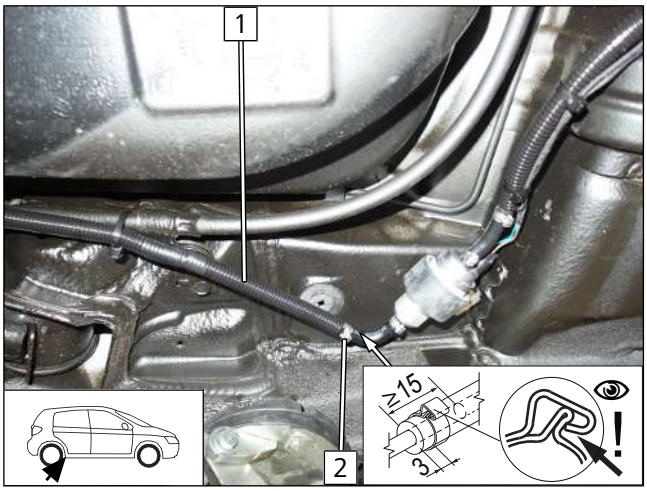


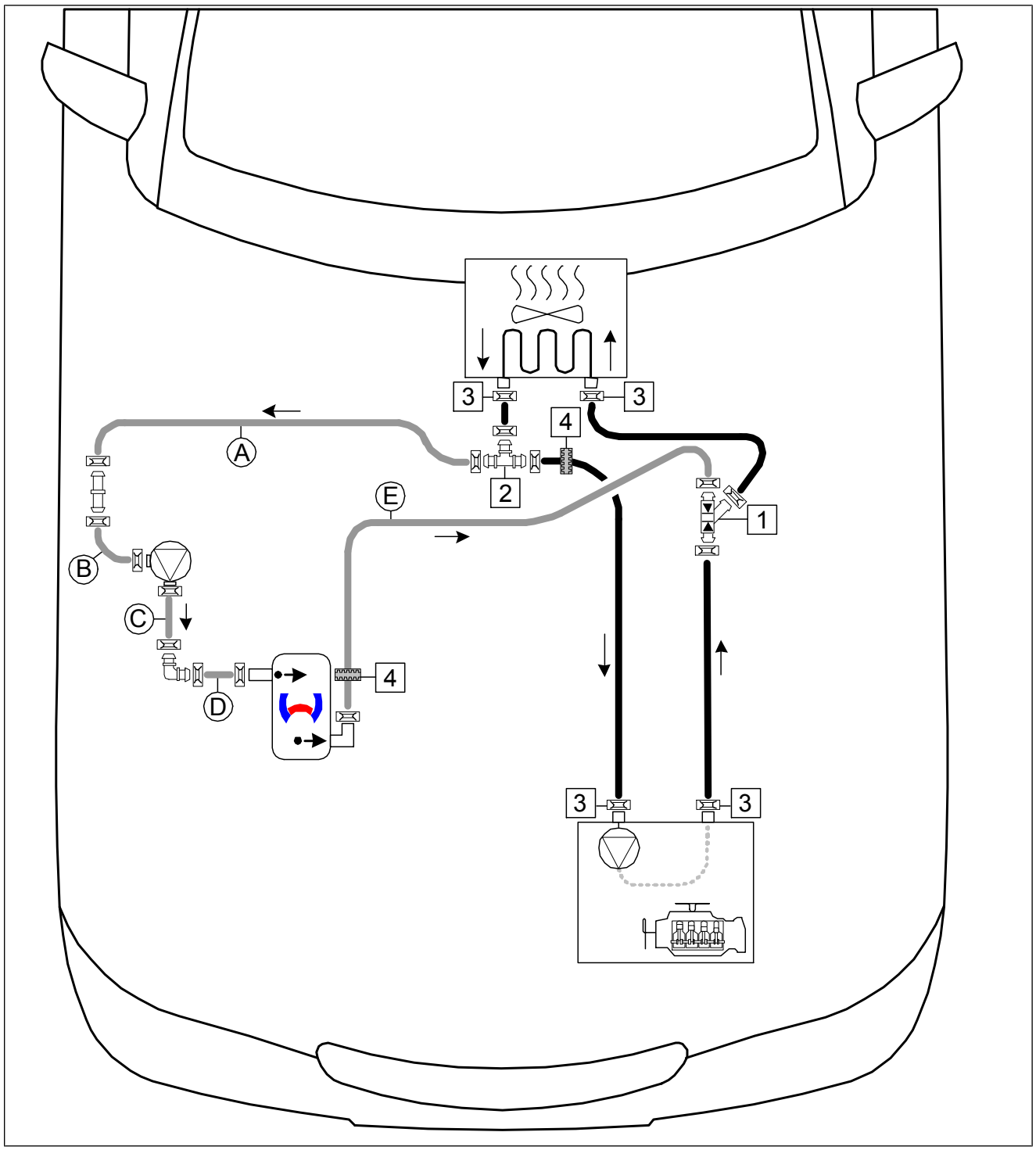
Fig. 56

1 FuelFix fuel line in corrugated tube
2 Ø10 clamp

10 Coolant

10.1 Hose routing diagram

'Island' coolant circuit



All spring clips without a specific designation = Ø25

All connecting pipes = Ø18x18/90° or =Ø18x18

[1] Double non-return valve; [2] T-piece; [3] original vehicle spring clip; [4] Black (sw) rubber profile

10.2 Coolant circuit installation for 1.0 T-GDi

Dismantling hoses

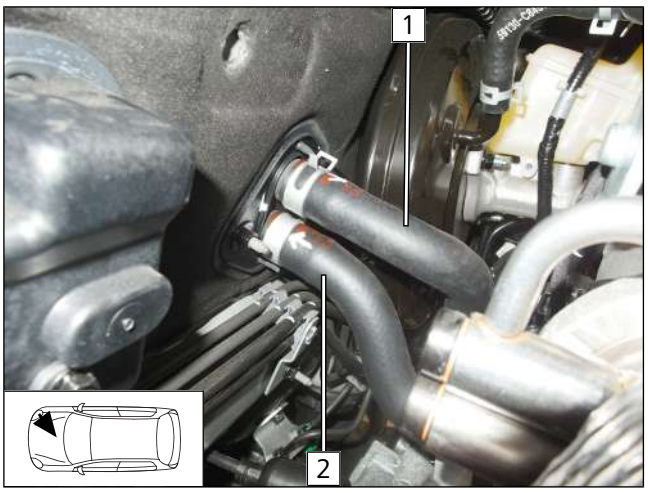


Fig. 57

▶ Remove hose of heat exchanger outlet/engine inlet **1** and hose of heat exchanger inlet/engine outlet **2**. Original vehicle spring clips will be reused.

Cutting point 1

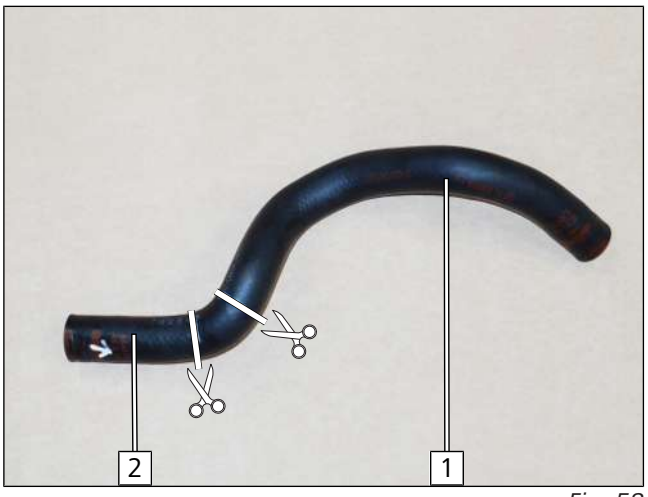


Fig. 58

▶ Cut out 45° elbow as shown.

1 Engine inlet hose section
2 Heat exchanger outlet hose section

Preparing hose group 1

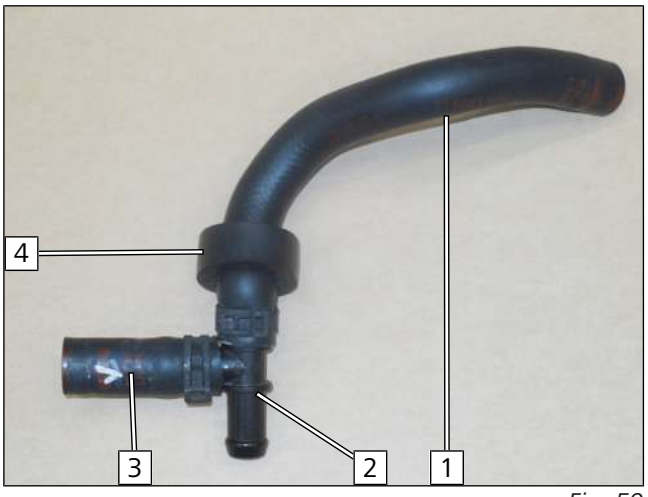


Fig. 59

1 Engine inlet hose section
2 T piece
3 Heat exchanger outlet hose section
4 Black (sw) rubber profile

Cutting point 2

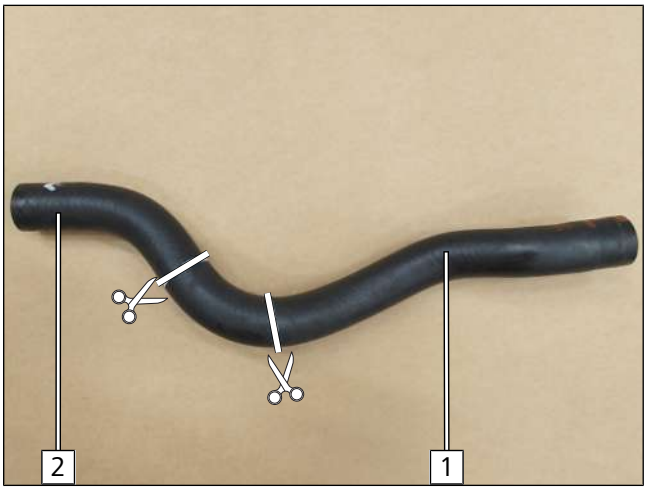


Fig. 60

▶ Cut out 45° elbow as shown.

1 Engine outlet hose section
2 Heat exchanger inlet hose section

Preparing hose group 2

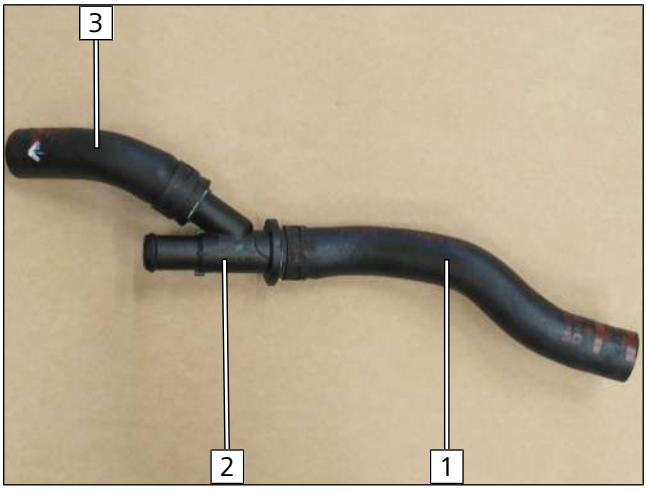


Fig. 61

1 Engine outlet hose section
2 Double non-return valve
3 Heat exchanger inlet hose section

Mounting hose group 2

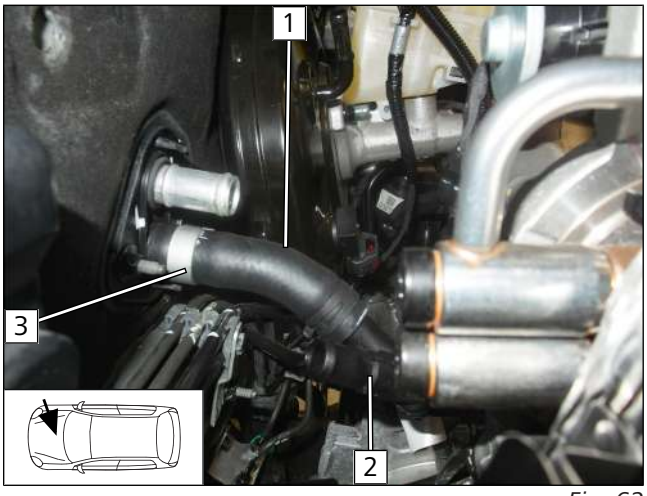


Fig. 62

1 Heat exchanger inlet hose section
2 Double non-return valve
3 Original vehicle spring clip

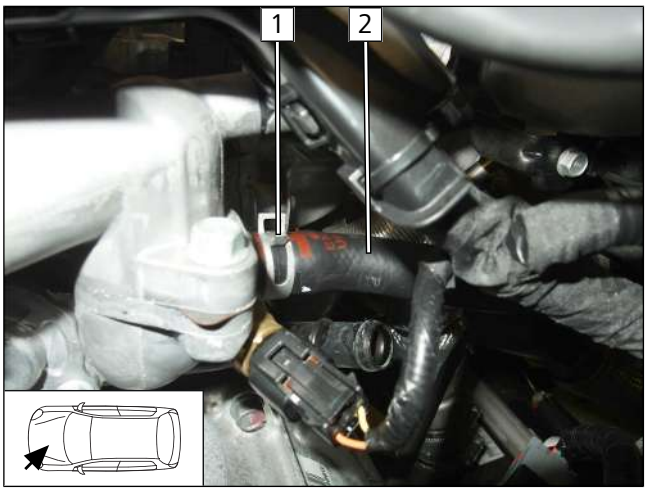


Fig. 63

[1] Original vehicle spring clip
[2] Engine outlet hose section

Mounting hose Ⓔ

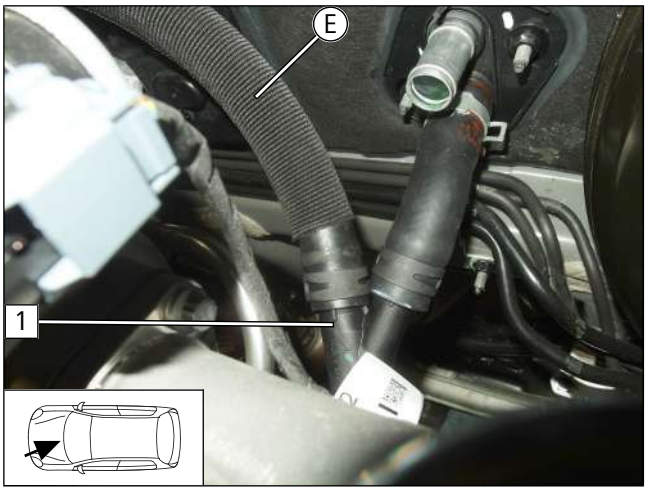


Fig. 64

[1] Double non-return valve

Routing hose Ⓔ

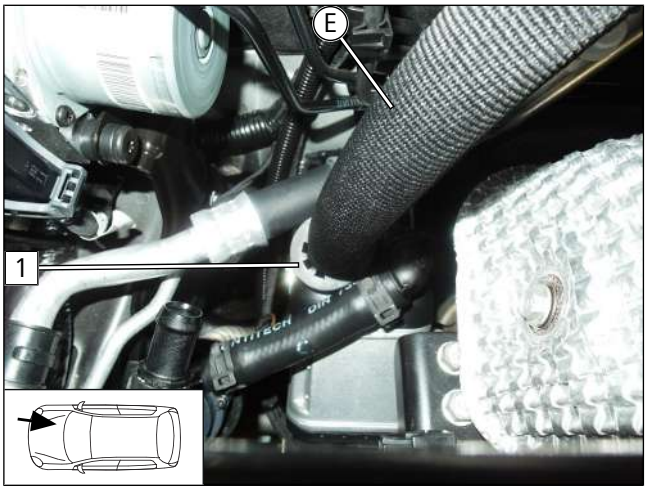


Fig. 65

▶ Align black (sw) rubber isolator [1] with A/C line.

Mounting hose group 1

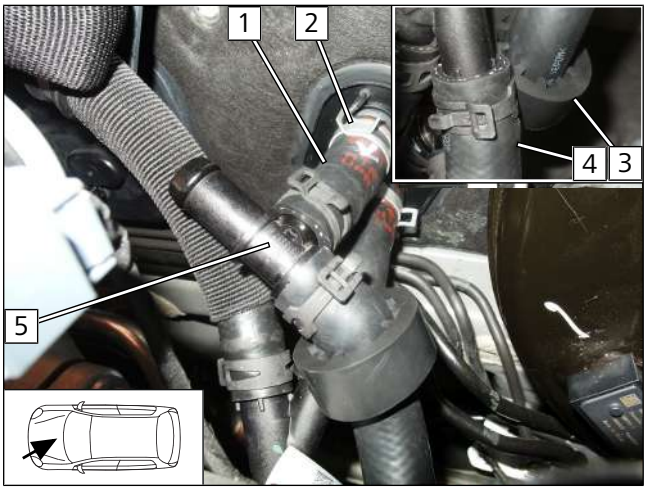


Fig. 66

▶ Align black (sw) rubber profile [3] with heat exchanger inlet hose section [4].

[1] Heat exchanger outlet hose section
[2] Original vehicle spring clip
[5] T piece

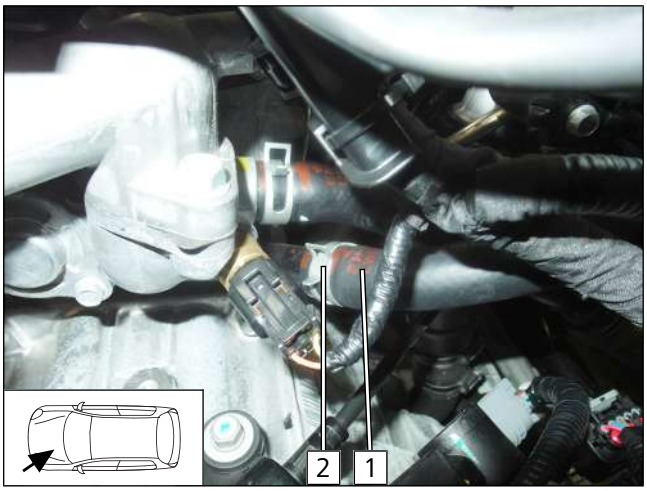


Fig. 67

[1] Engine inlet hose section
[2] Original vehicle spring clip

Mounting hose Ⓐ onto T-piece

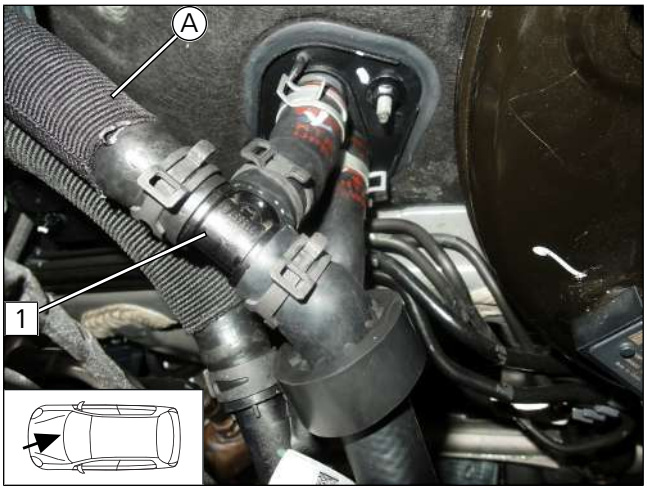


Fig. 68

[1] T piece

Mounting hose Ⓐ onto hose Ⓑ

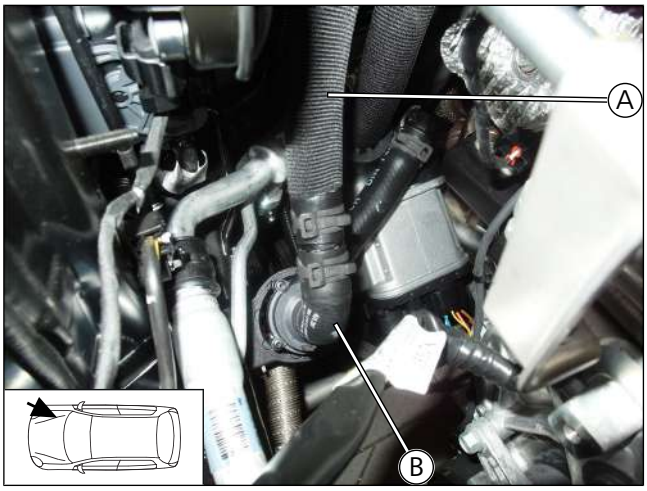


Fig. 69

Fastening hoses

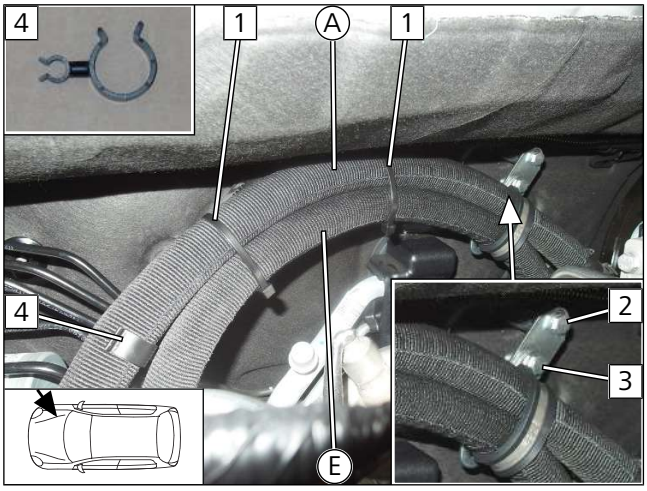


Fig. 70

1 Cable tie

2 M6x20 bolt, spring lock washer, perforated bracket, spacer

3 M6x20 bolt, rubber-coated p-clamp, perforated bracket, flanged nut

4 4.3x19 hose bracket between hose Ⓐ and brake line

Checking distance

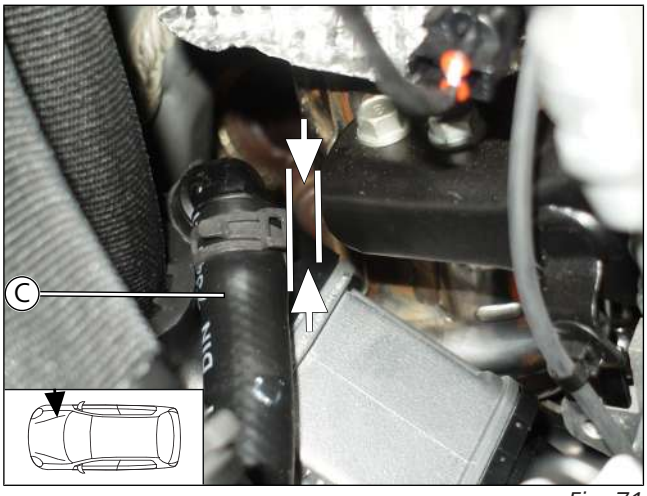


Fig. 71

Danger of damage to components

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

10.3 Coolant circuit installation for 1.2 MPi

Dismantling hoses

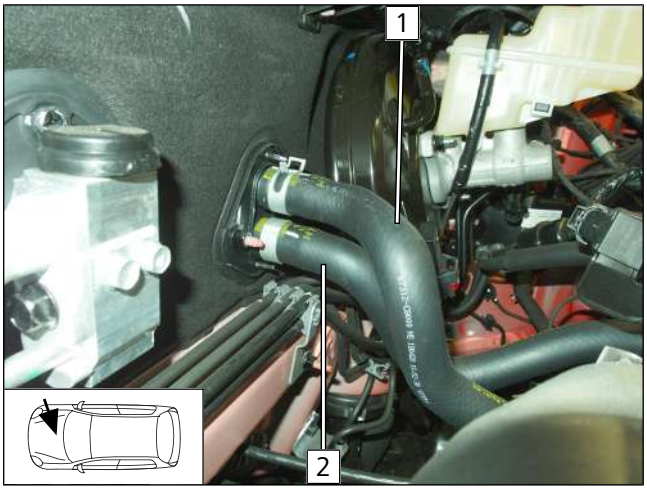


Fig. 72

▶ Remove hose of heat exchanger outlet/engine inlet **1** and hose of heat exchanger inlet/engine outlet **2**. Original vehicle spring clips will be reused.

Cutting point 1

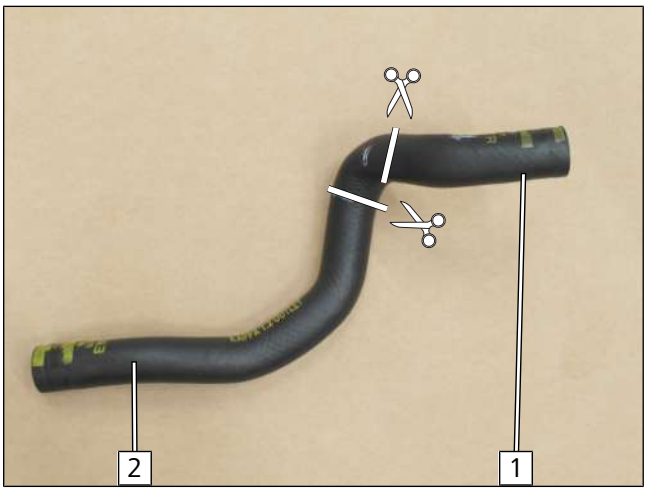


Fig. 73

▶ Cut 90° elbow out of heat exchanger outlet/engine inlet hose as shown.

1 Heat exchanger outlet hose section
2 Engine inlet hose section

Preparing hose group 1

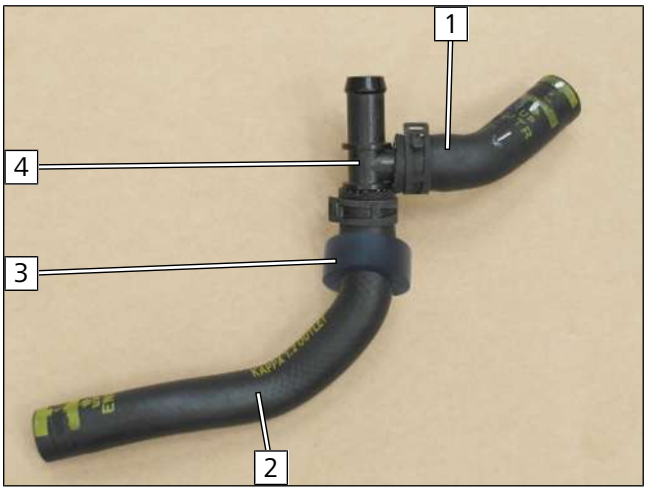


Fig. 74

1 Heat exchanger outlet hose section
2 Engine inlet hose section
3 Black (sw) rubber profile
4 T piece

Cutting point 2

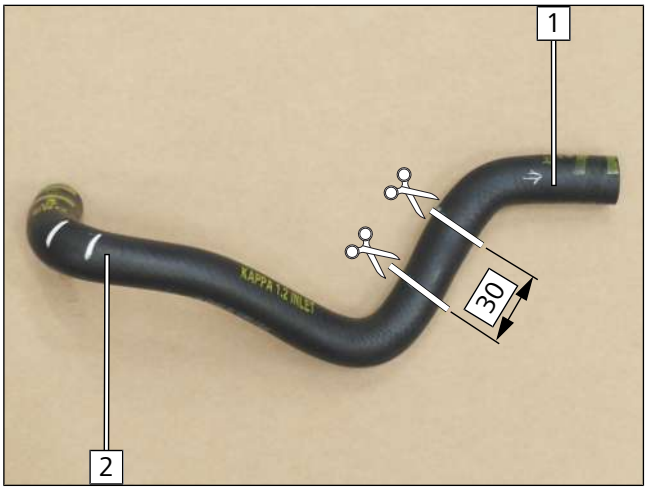


Fig. 75

▶ Cut heat exchanger inlet/engine outlet hose as shown.

1 Heat exchanger inlet hose section
2 Engine outlet hose section

Preparing hose group 2

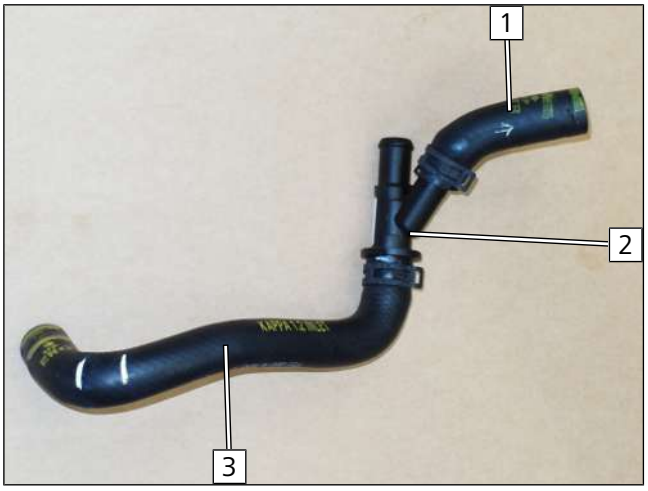


Fig. 76

1 Heat exchanger inlet hose section
2 Double non-return valve
3 Engine outlet hose section

Mounting hose group 2

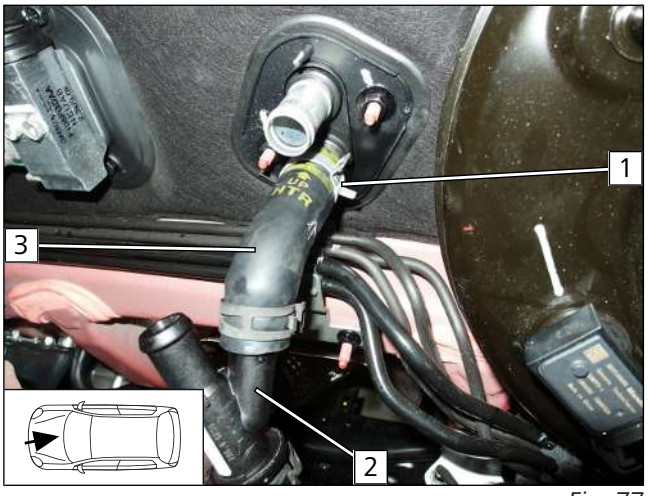


Fig. 77

1 Original vehicle spring clip
2 Double non-return valve
3 Heat exchanger inlet hose section

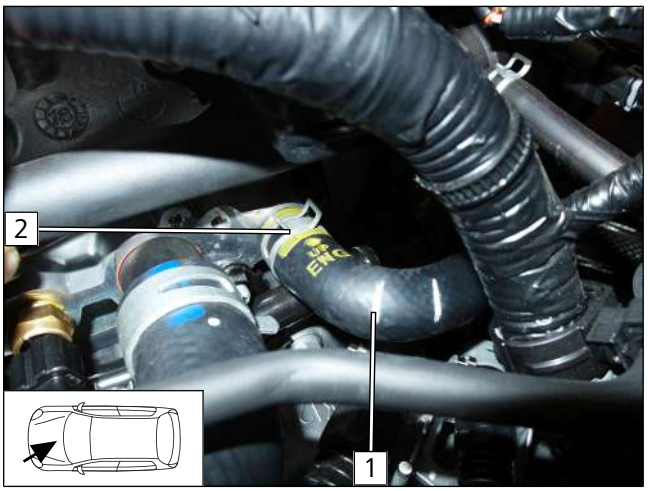


Fig. 78

1 Engine outlet hose section
2 Original vehicle spring clip

Mounting hose (E)

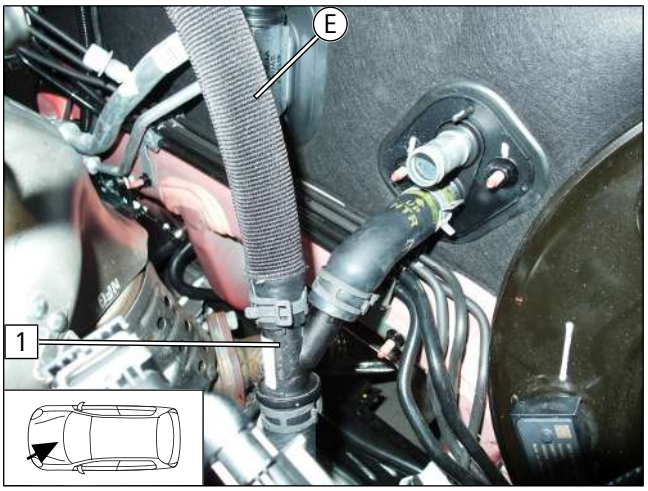


Fig. 79

1 Double non-return valve

Routing hose (E)

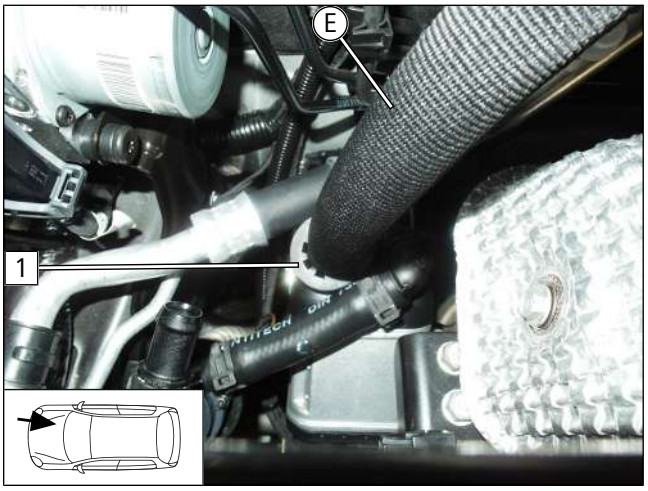


Fig. 80

▶ Align black (sw) rubber isolator 1 with A/C line.

Mounting hose group 1

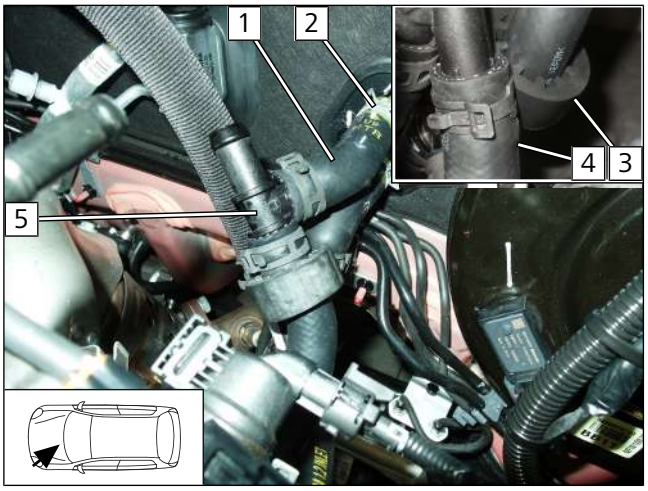


Fig. 81

▶ Align black (sw) rubber profile [3] with heat exchanger inlet hose section [4].

[1] Heat exchanger outlet hose section
[2] Original vehicle spring clip
[5] T piece

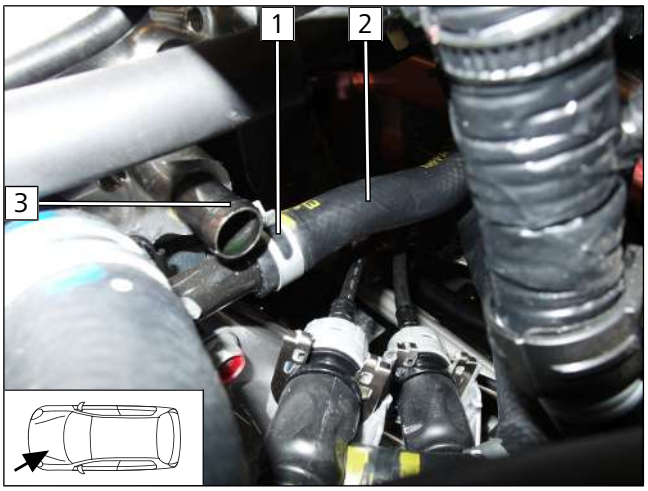


Fig. 82

▶ The engine outlet hose section at pos. [3] was removed to better illustrate the installation of the engine inlet hose section.

[1] Original vehicle spring clip
[2] Engine inlet hose section

Mounting hose Ⓐ onto T-piece

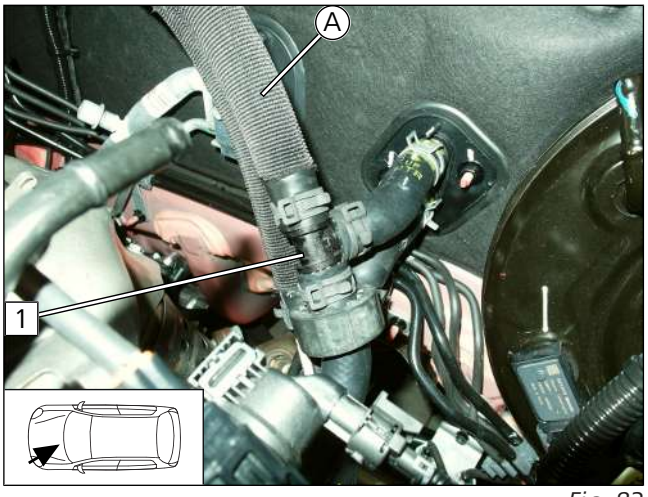


Fig. 83

[1] T piece

Mounting hose Ⓐ onto hose Ⓑ

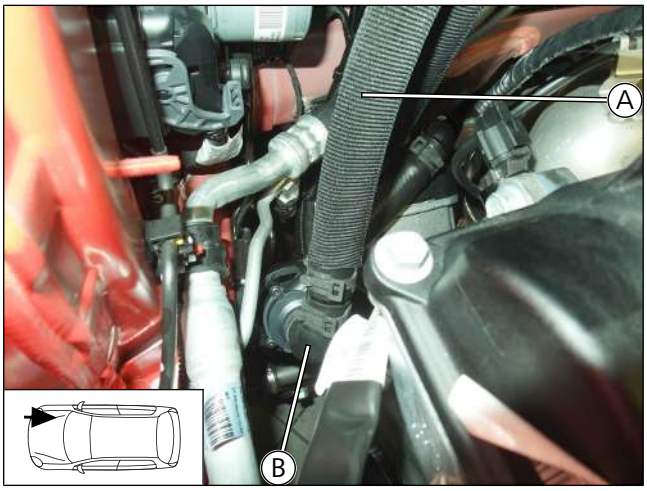


Fig. 84

Fastening hoses

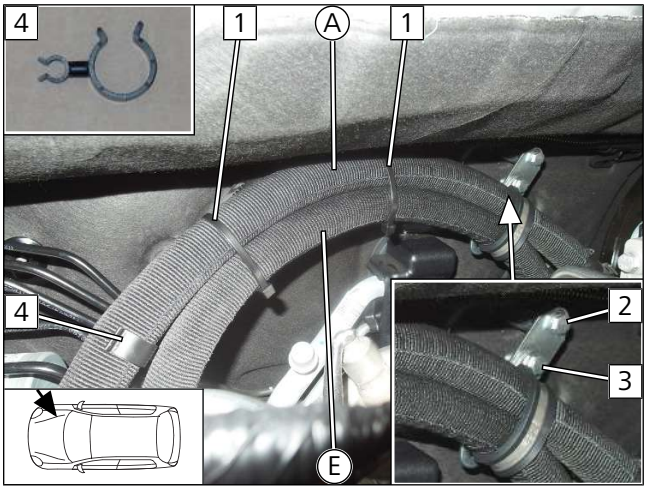


Fig. 85

1 Cable tie

2 M6x20 bolt, spring lock washer, perforated bracket, spacer

3 M6x20 bolt, rubber-coated p-clamp, perforated bracket, flanged nut

4 4.3x19 hose bracket between hose Ⓐ and brake line

Checking distance

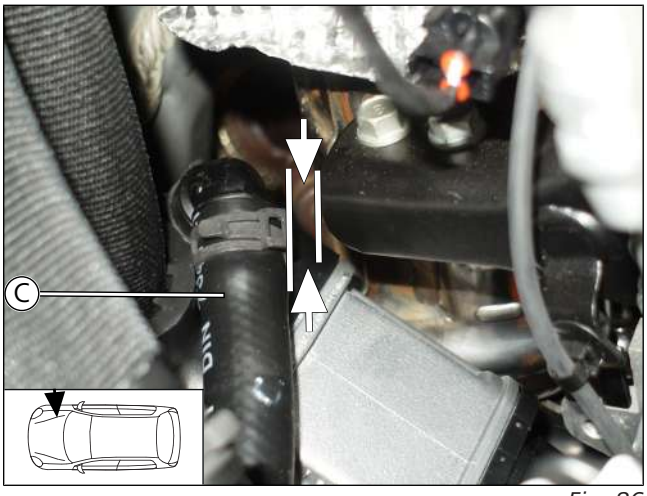


Fig. 86

Danger of damage to components

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

11 Exhaust

11.1 Mounting exhaust silencer

Preparing installation location

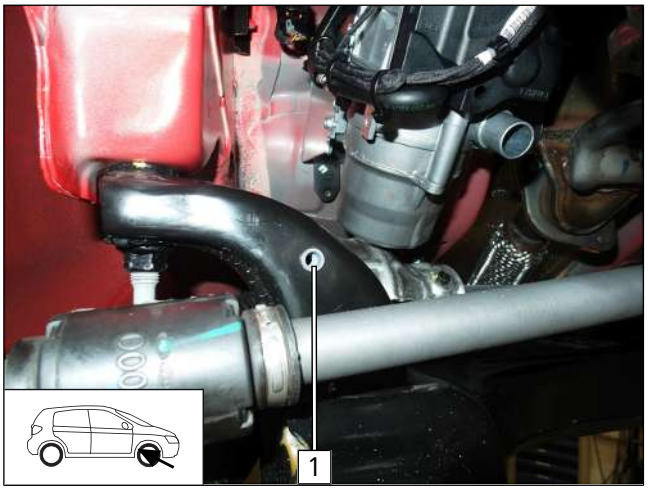


Fig. 87

1 M6 rivet nut in original vehicle hole

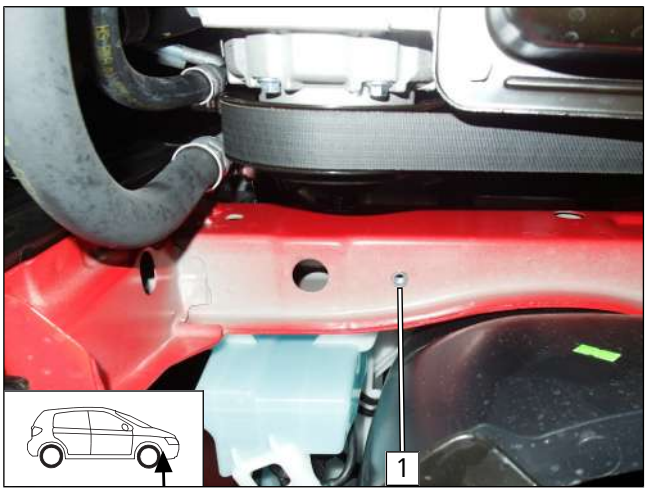


Fig. 88

1 M6 rivet nut in original vehicle hole

Preparing perforated bracket

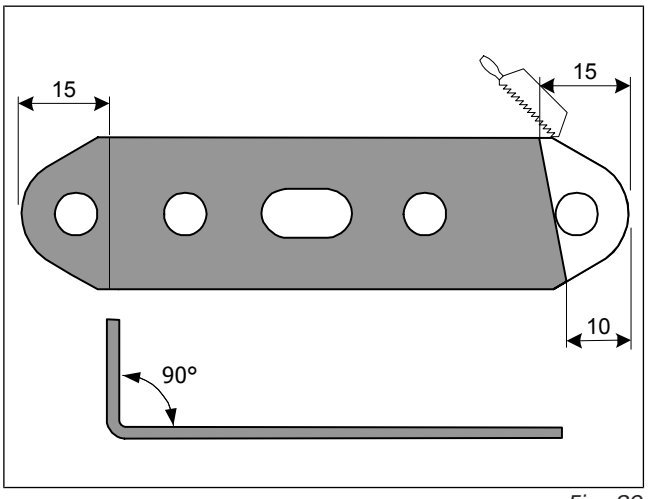


Fig. 89

Premounting exhaust silencer

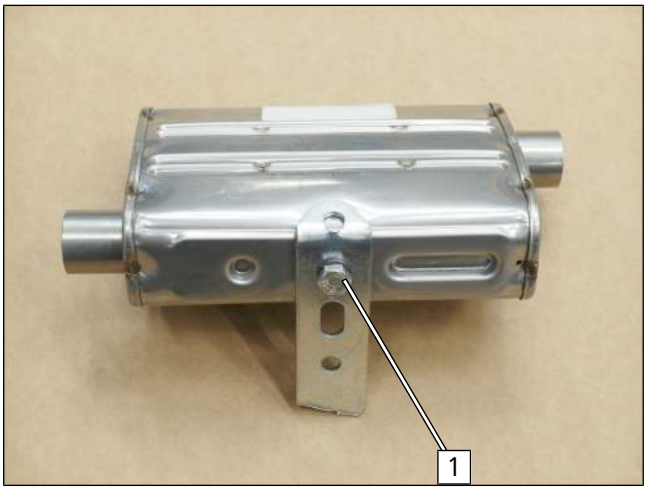


Fig. 90

1 M6x16 bolt, spring lockwasher, perforated bracket, exhaust silencer

Mounting exhaust silencer

Fig. 91

1 M6x20 bolt, spring lockwasher, perforated bracket, rivet nut

Shortening exhaust elbow

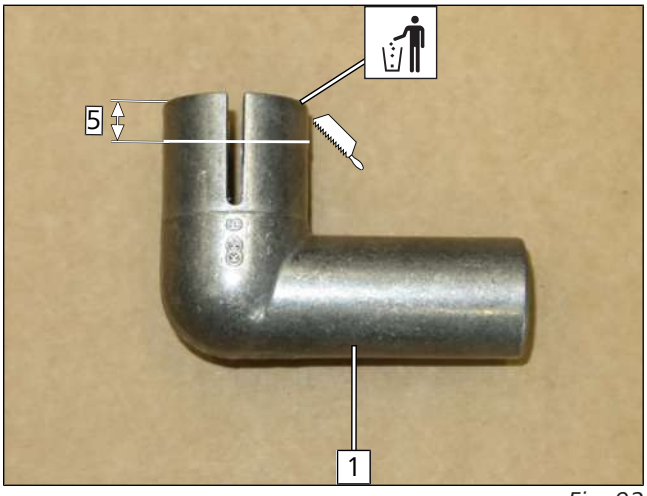


Fig. 92

1 Exhaust elbow

Mounting exhaust elbow

Fig. 93

1 Exhaust elbow
2 Hose clamp

Premounting angle bracket 1

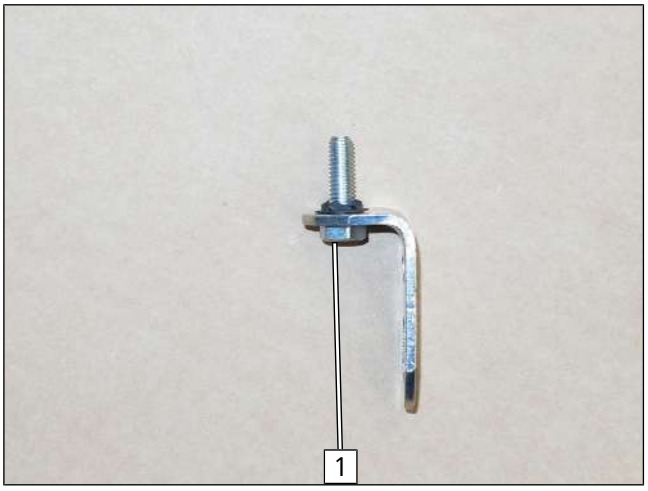


Fig. 94

1 M6x20 bolt, angle bracket, lock washer

Mounting angle bracket 1

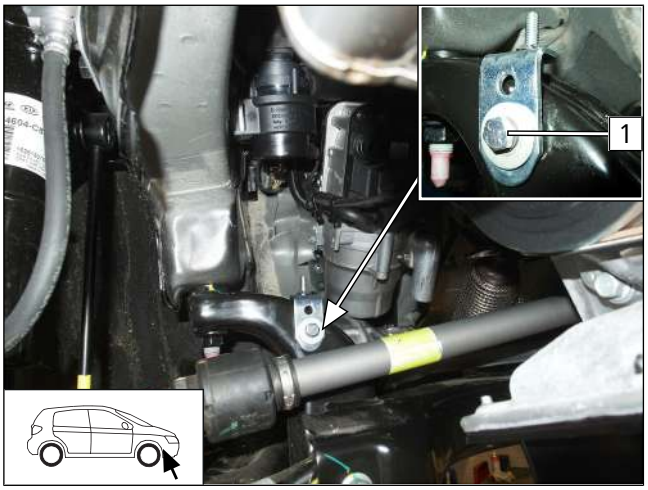


Fig. 95

1 Mount M6x20 bolt, spring lock washer, large diameter washer, angle bracket, rivet nut loosely

Mounting angle bracket 2

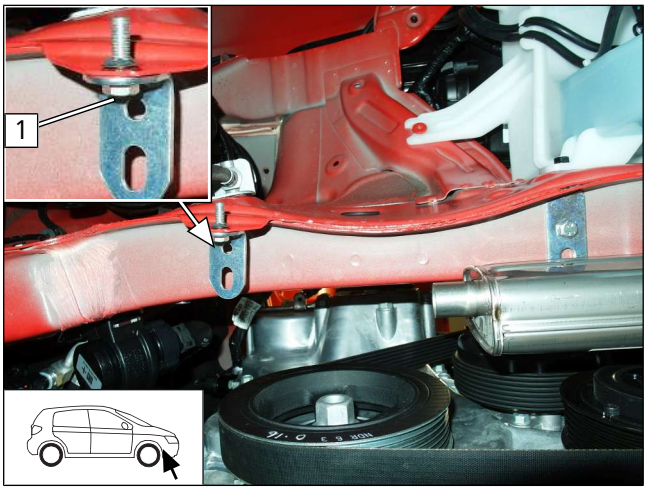


Fig. 96

1 M6x20 bolt, angle bracket, original vehicle hole, lock washer

Cutting exhaust pipe to length

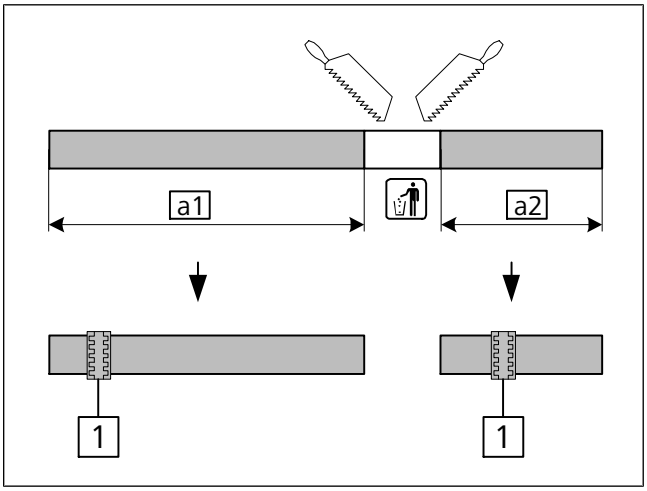


Fig. 97

1 Spacer bracket
a1 600
a2 260

Mounting exhaust pipe **a1**

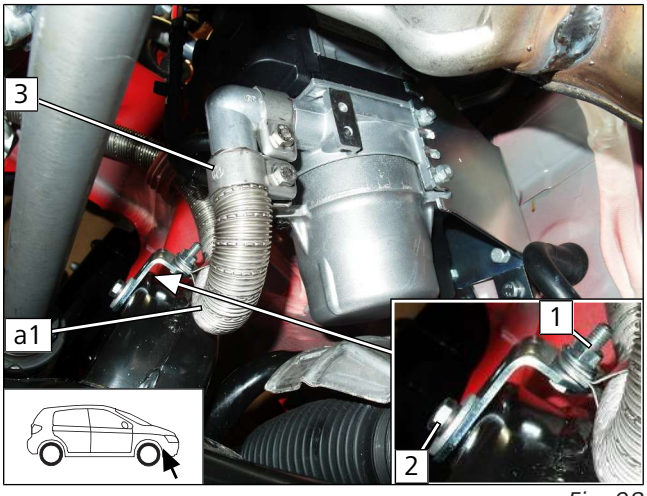


Fig. 98

1 Premounted bolt of angle bracket 1, pipe clamp (25), flanged nut
2 Tighten M6x20 bolt
3 Hose clamp

Routing and fastening exhaust pipe **a1**

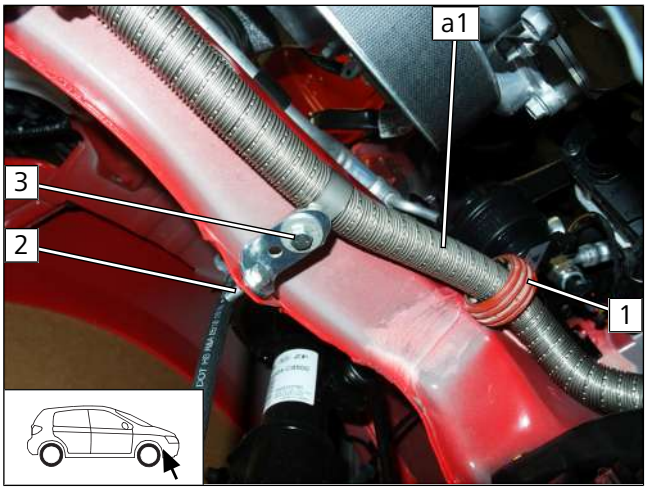


Fig. 99

▶ The bolt at pos. **2** will be used later to fix the wheel-well inner panel.

1 Spacer bracket, align with coolant pump

3 M6x20 bolt, large diameter washer, angle bracket, pipe clamp (25), flanged nut

Mounting exhaust pipe **a2**

Fig. 100

1 Hose clamp

Checking distance

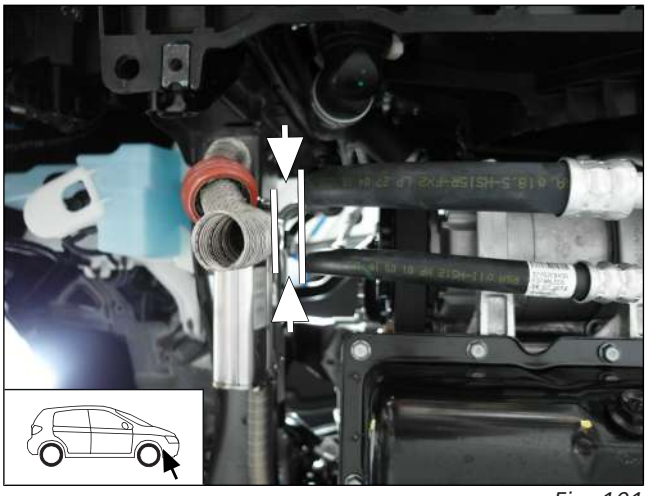


Fig. 101

Ensure sufficient distance between exhaust pipe and A/C line, correct if necessary.

11.2 Mounting exhaust end fastener

Preparing underride protection

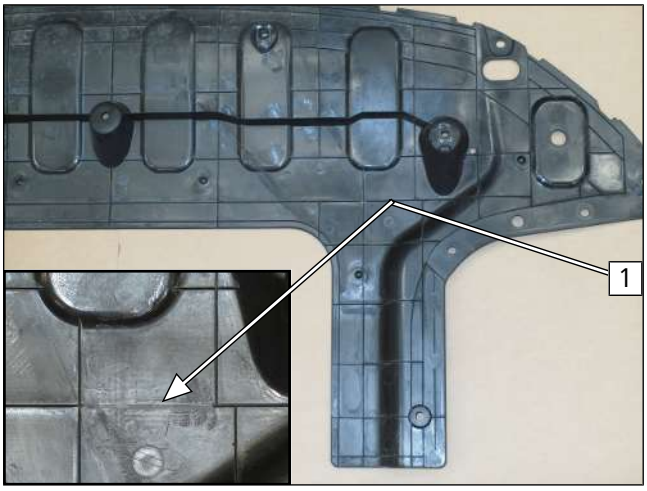


Fig. 102

1 Smooth the edges

Work steps E1/E2

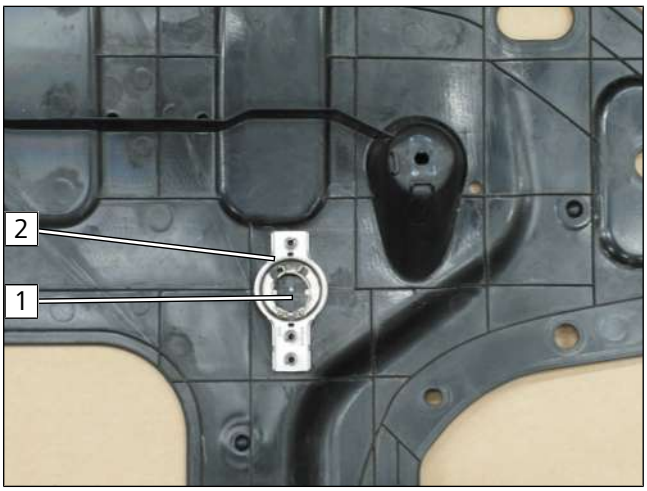


Fig. 103

Observe the EFIX installation instructions.

▶ Align EFIX **2** as shown in figure.

1 Hole pattern

Fig. 104

1 Hole

Work step E3

Fig. 105

1 Hole pattern

Work step E4

Fig. 106

1 Hole

Work step E5

Fig. 107

1 5x13 bolt

Work step E6-8

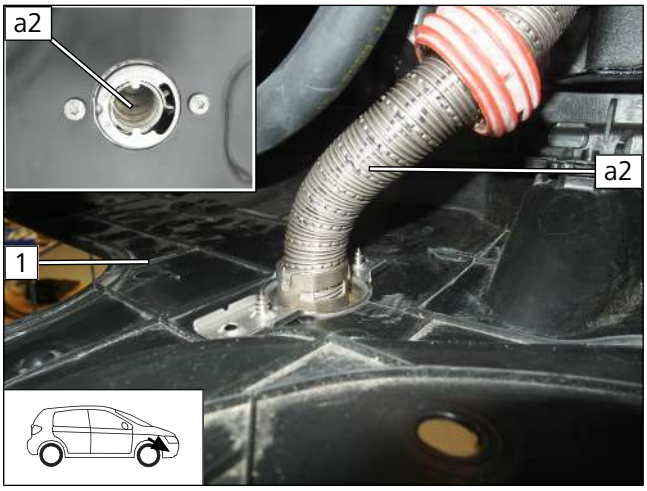


Fig. 108

- ▶ Mount underride protection **1**.
- ▶ Align exhaust pipe **a2**.

12 Combustion air

Preparing installation location

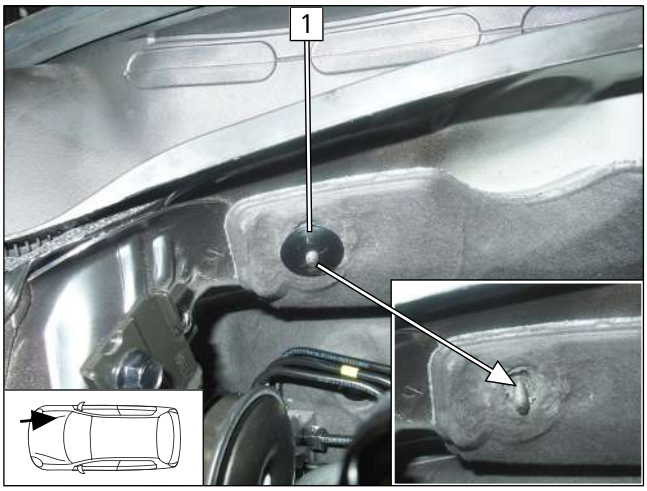


Fig. 109

1 Remove plastic disc

Mounting angle bracket

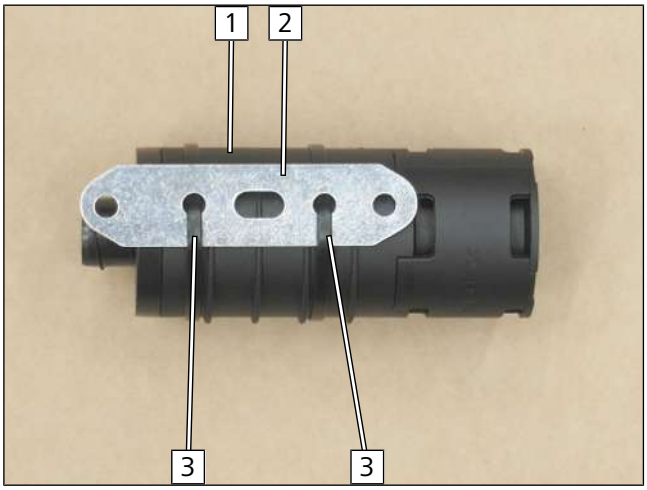


Fig. 110

1 Combustion air intake silencer
2 Perforated bracket
3 Cable tie

Mounting combustion air pipe onto HG

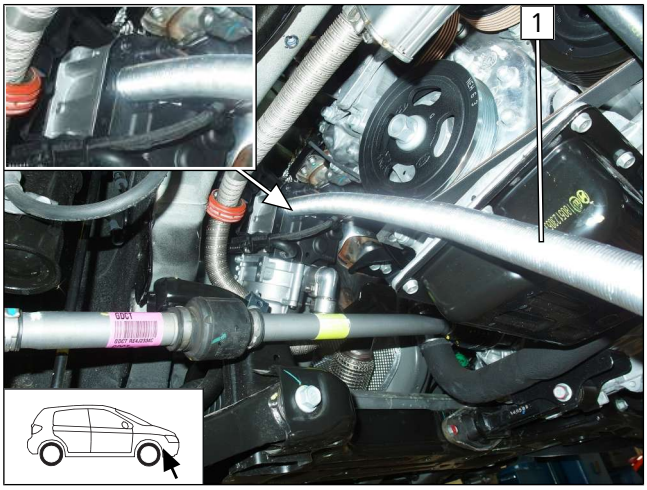


Fig. 111

Observe the installation instructions of the combustion air intake silencer.

1 Combustion air pipe

Routing combustion air pipe

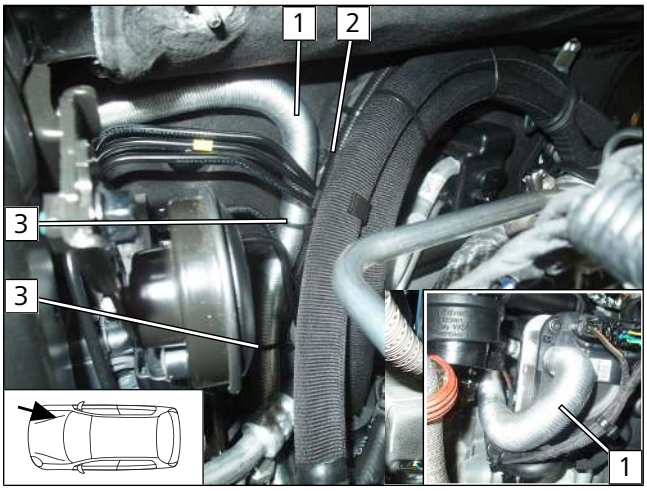


Fig. 112

▶ Route combustion air pipe [1] from HG along the fuel line in corrugated tube [2] to the firewall as shown and fasten with cable ties [3].

Mounting combustion air intake silencer

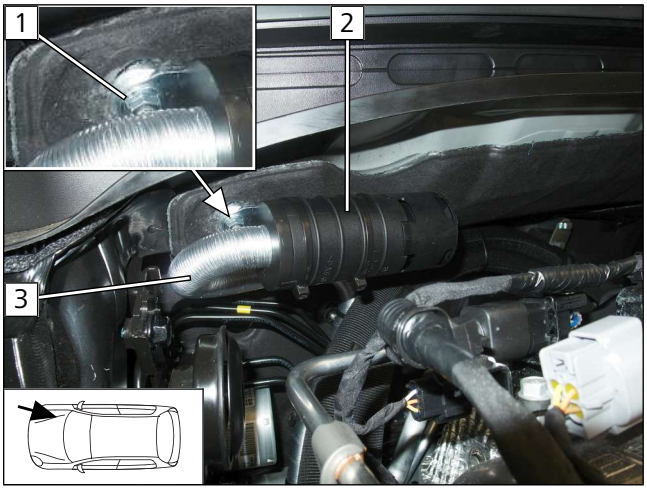


Fig. 113

[1] Original vehicle stud bolt, spacer (8), perforated bracket, M6 flanged nut

[2] Combustion air intake silencer

[3] Combustion air pipe

Securing combustion air pipe

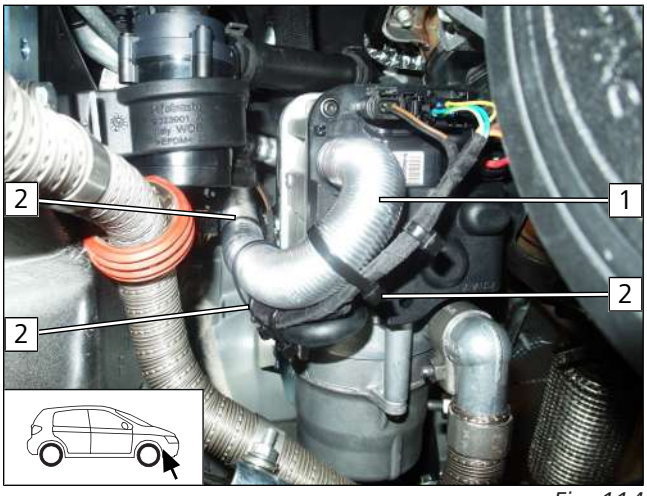


Fig. 114

▶ Fasten combustion air pipe [1] to wiring harnesses with cable tie [2].

13 Electrical system

13.1 Electrical system preparation

Preparing wiring harness

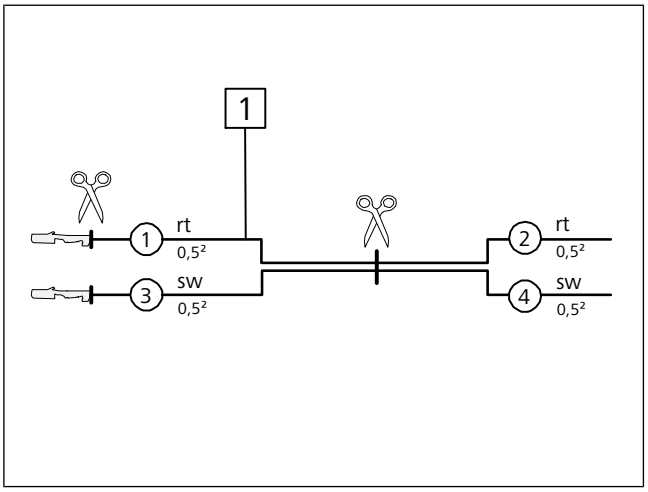


Fig. 115

1 Power supply wiring harness

Premounting wiring harness section

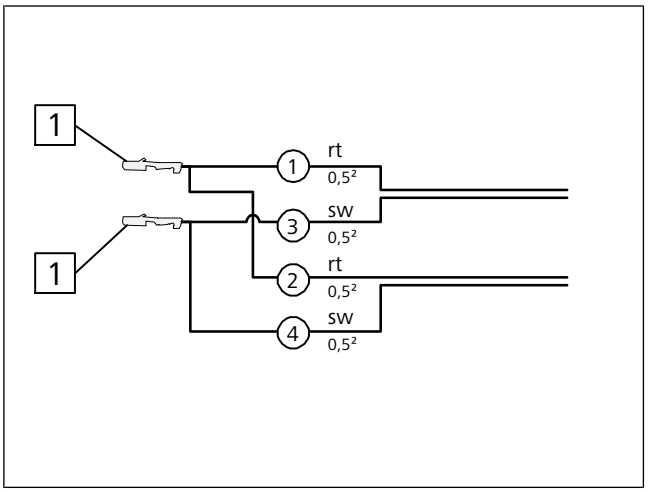


Fig. 116

Wire sections retain their numbering in the entire document.

1 6.3 female connector

Connecting wires to passenger compartment relay and fuse holder

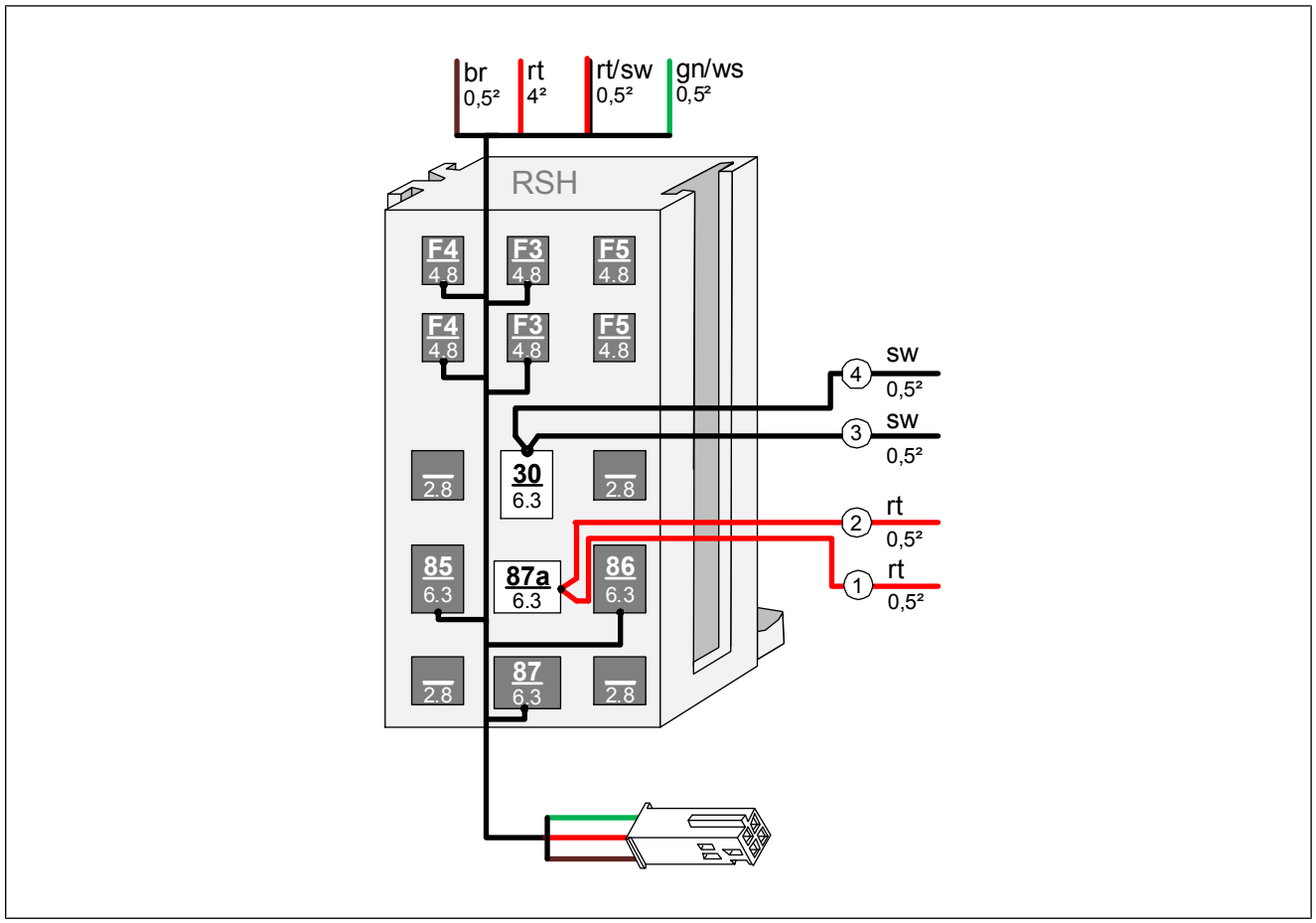


Fig. 117

Premounting RSH

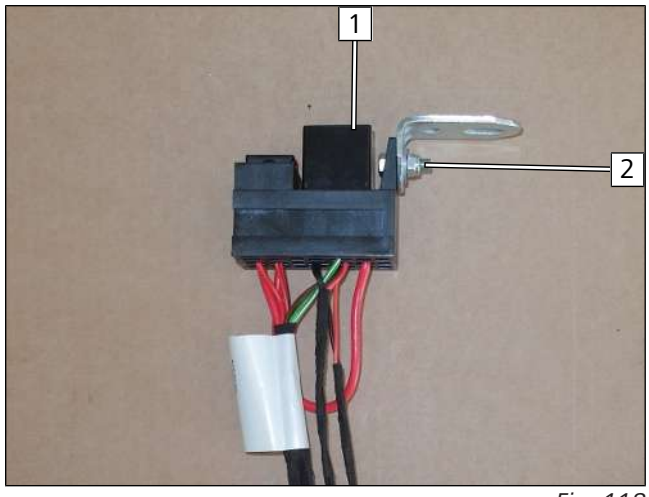


Fig. 118

1 Relay K1

2 M5x16 bolt, large diameter washer, RSH, angle bracket, large diameter washer, nut

13.2 Wiring diagram

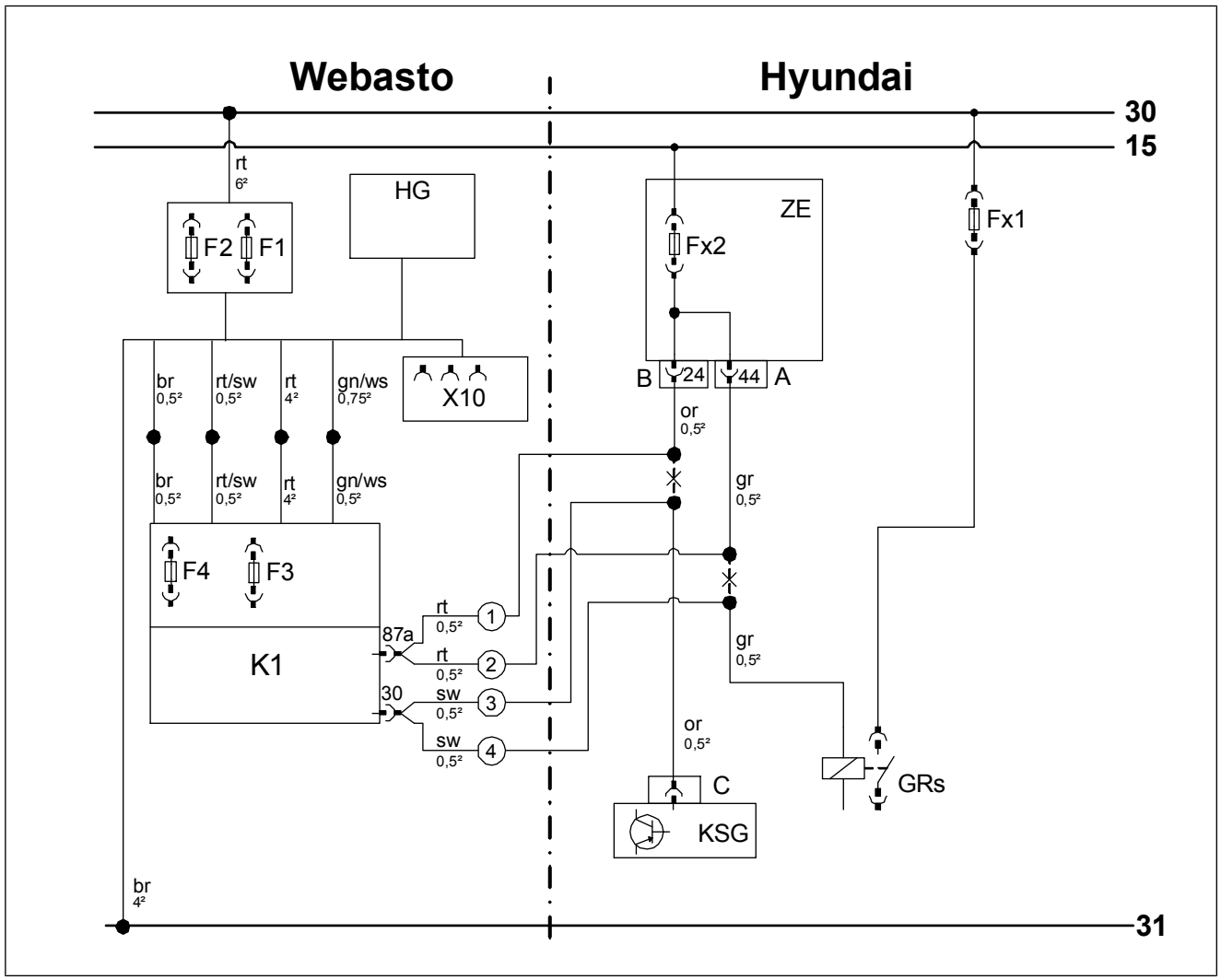


Fig. 119

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	Designation
Fx1	Fuse 40A	X	Cutting point
Fx2	Fuse 10A		
GRs	Fan relay		
ZE	Passenger compartment central electrical box		
A	Passenger compartment central electrical box connector		
B	Passenger compartment central electrical box connector		
KSG	Air-conditioning control unit		
C	Air-conditioning control unit 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		

13.3 Fan controller

Installing passenger compartment relay and fuse holder

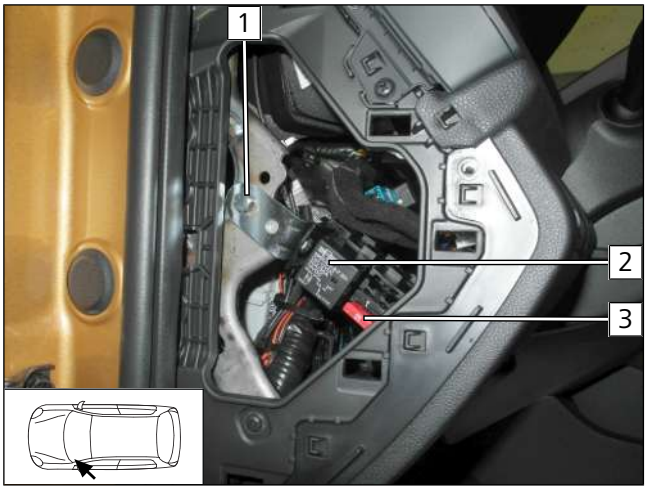


Fig. 120

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

1 M6x20 bolt, spring lockwasher, large diameter washer, angle bracket, original vehicle thread

2 Relay K1

3 10A fuse F4

Connecting same colour wires of wiring harnesses

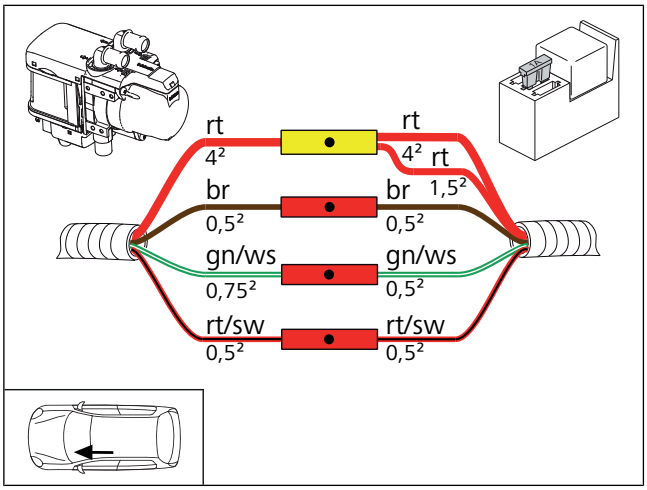


Fig. 121

View of connector B

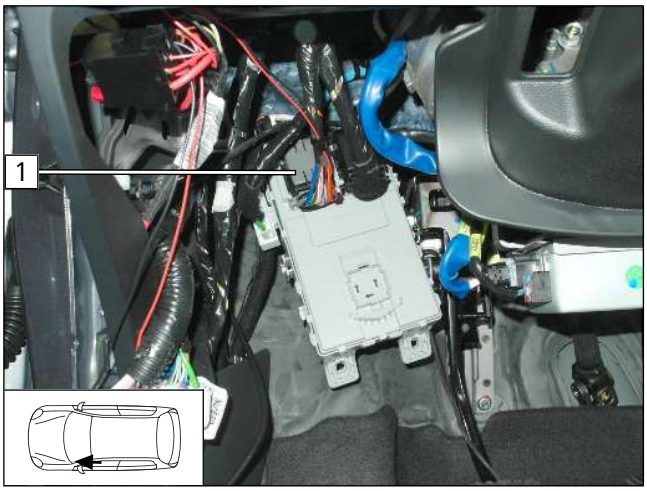


Fig. 122

1 Connector B at back of ZE

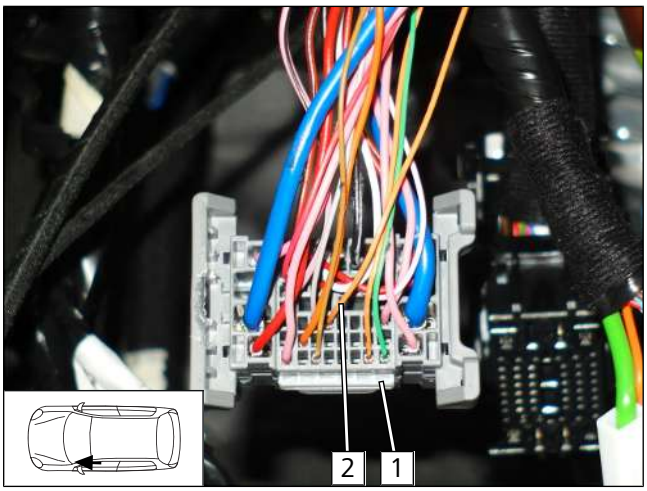


Fig. 123

1 Connector B at back of ZE, removed
2 Orange (or) wire, pin 24

Connection to ZE

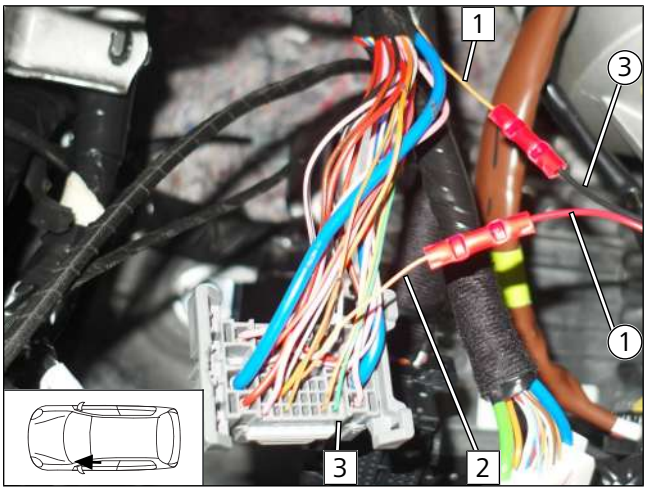


Fig. 124

1 Orange (or) wire from connector C of KSG
2 Orange (or) wire of connector B/pin 24
3 ZE connector B
① Red (rt) wire of K1/87a
③ Black (sw) wire of K1/30

View of connector A

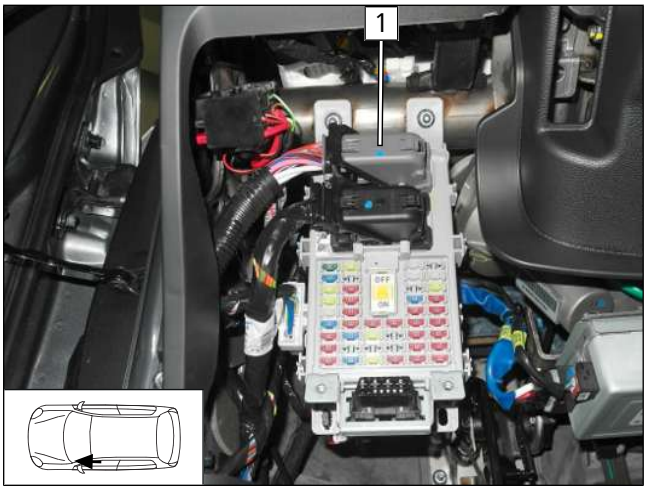


Fig. 125

1 Connector A at front of ZE

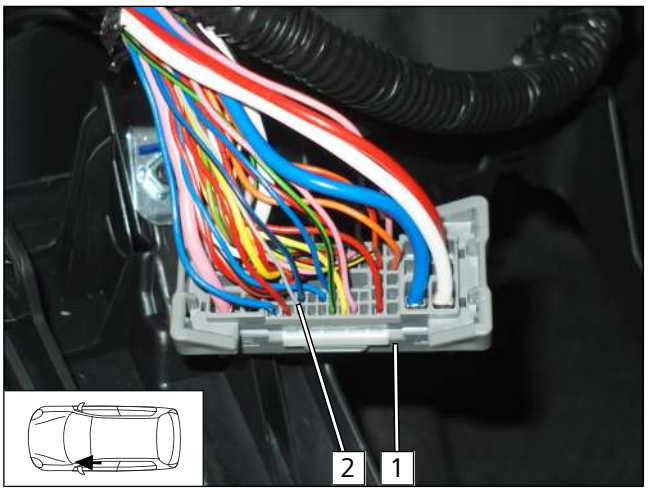


Fig. 126

1 Connector A at front of ZE, removed
2 Grey (gr) wire, pin 44

Connection to ZE

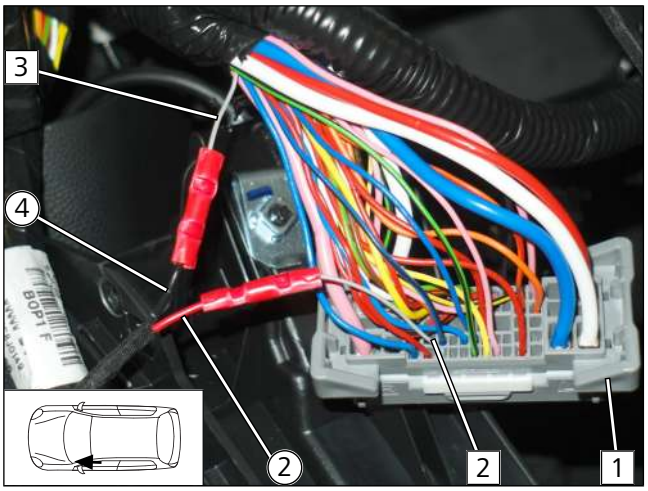


Fig. 127

1 Connector A at front of ZE
2 Grey (gr) wire, pin 44
3 Grey (gr) wire of GRs
② Red (rt) wire of K1/87a
④ Black (sw) wire of K1/30

14 Electrical system of control elements

14.1 MultiControl CAR option

Mounting MultiControl CAR

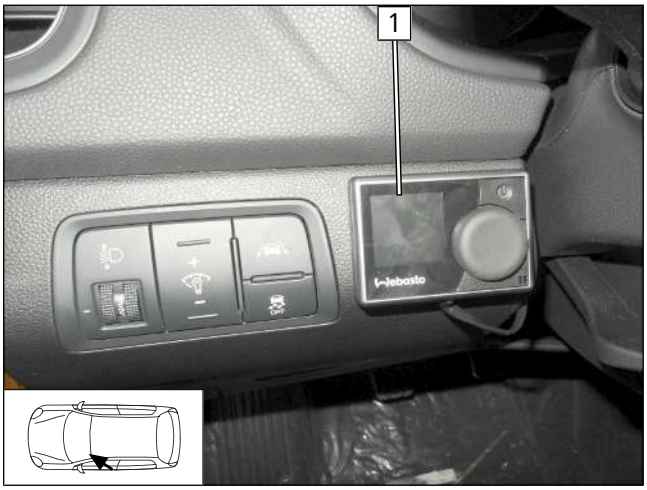


Fig. 128

Observe the MultiControl CAR installation documentation.

1 MultiControl CAR with installation frame

14.2 Telestart option

Preparing bracket

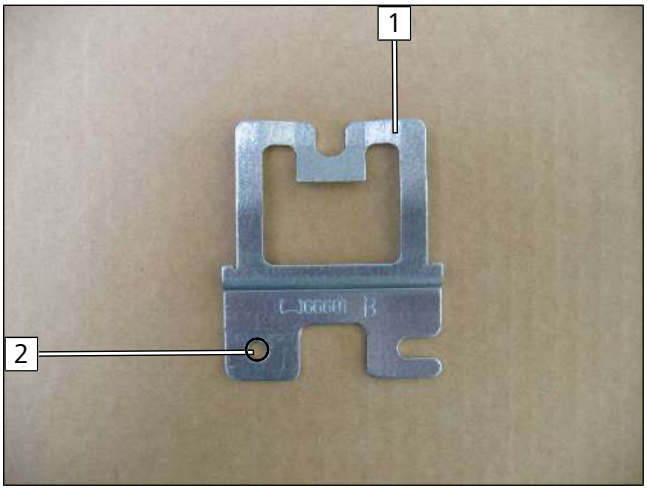


Fig. 129

1 Receiver bracket
2 Drill out hole to Ø6.5

Mounting receiver

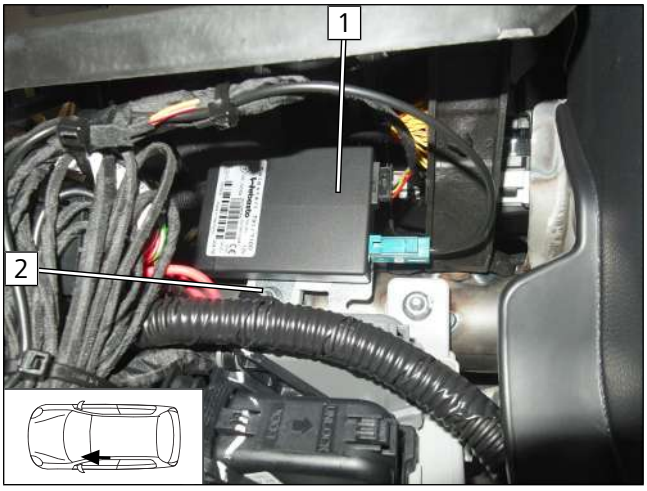


Fig. 130

Observe the Telestart installation documentation.

1 Receiver
2 Original vehicle stud bolt, receiver bracket, original vehicle nut

Mounting temperature sensor, only in case of T100 HTM

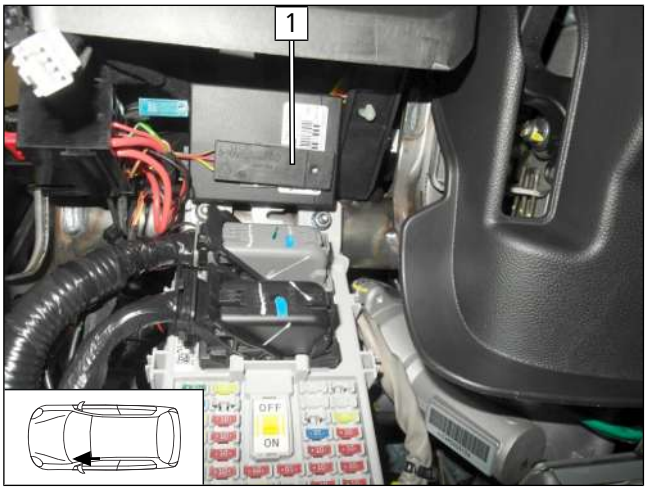


Fig. 131

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

Mounting aerial

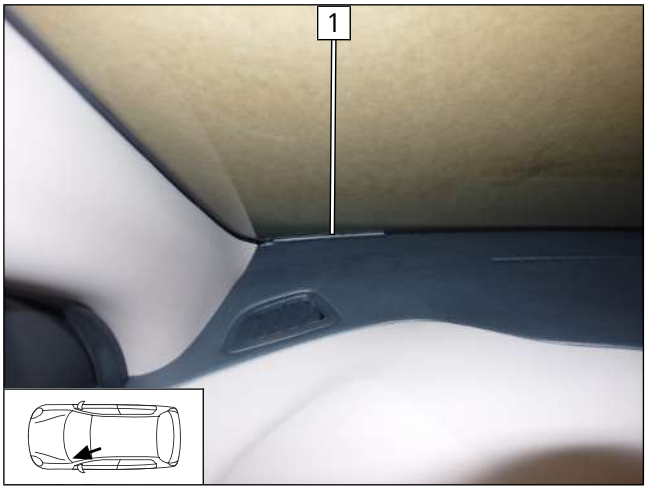


Fig. 132

1 Aerial

14.3 ThermoCall option

Mounting receiver

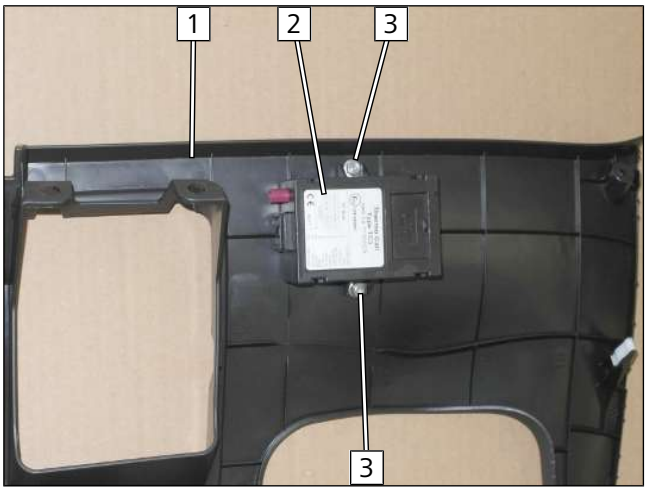


Fig. 133

Observe the ThermoCall installation documentation.

1 Trim under the steering column
2 Receiver
3 Ø5.5 hole, M5x16 bolt, washer, flanged nut

Mounting aerial (optional)

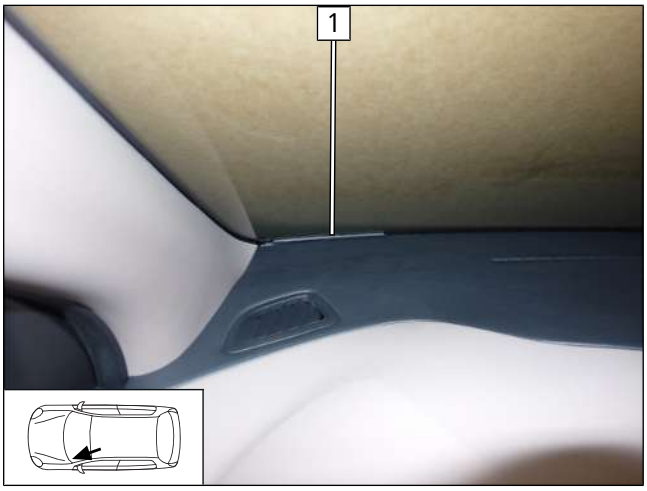


Fig. 134

1 Aerial

15 Final work in engine compartment

Cutting heat protection film in half

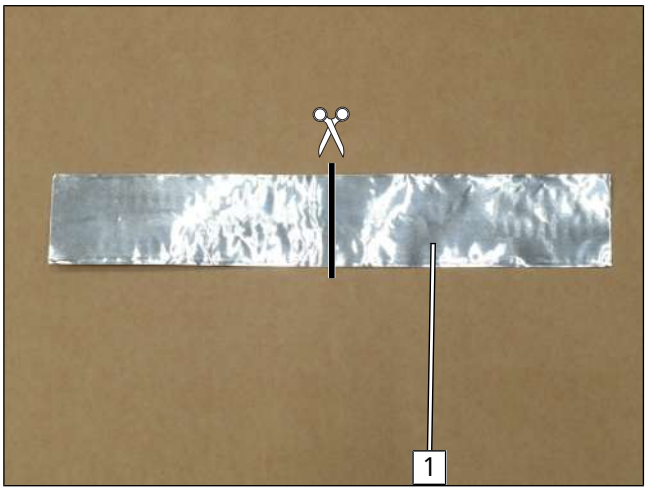


Fig. 135

[1] Heat protection film

Sticking on heat protection film

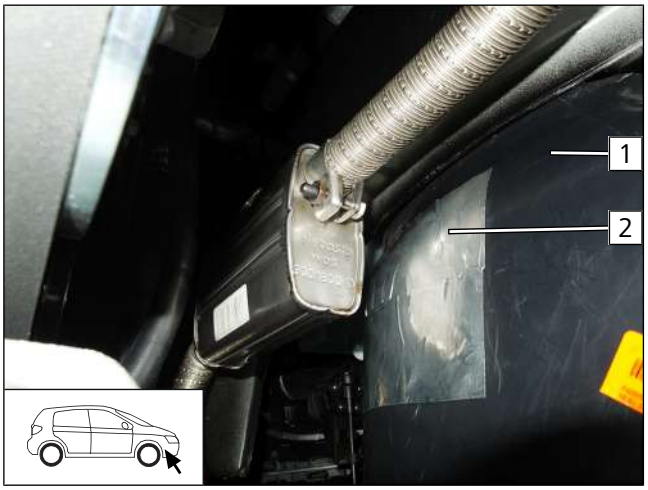


Fig. 136

▶ Glue both halves of heat protection film [2] onto wheel-well inner panel [1] as shown.

Wheel-well inner panel attachment

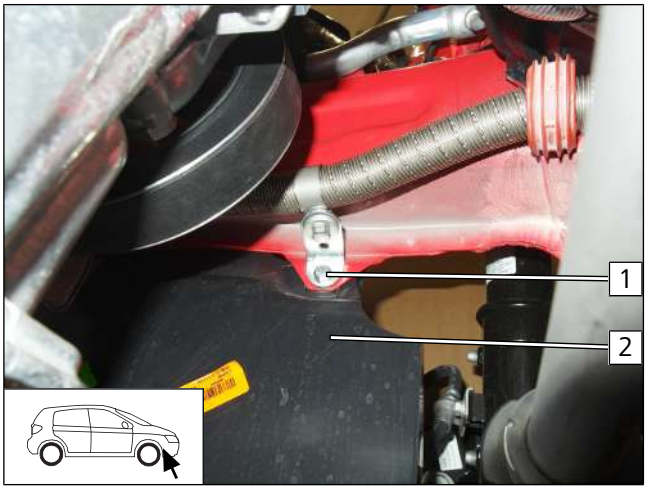


Fig. 137

▶ Mount wheel-well inner panel [2] using premounted bolt [1] and flanged nut.

Aligning exhaust pipe **a2**

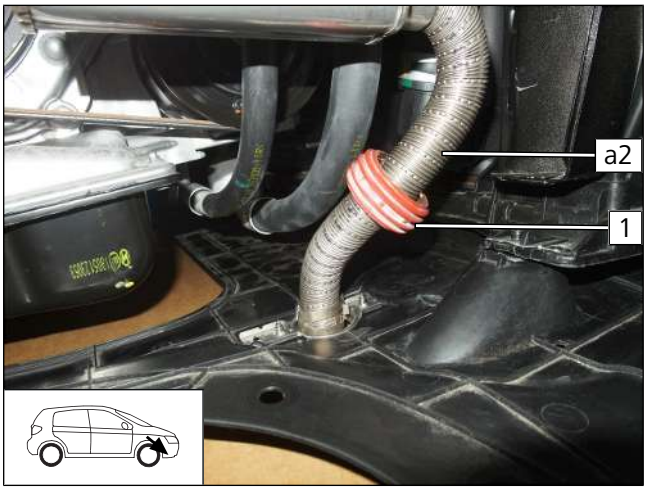


Fig. 138

▶ Align spacer bracket **1** with A/C line.

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.

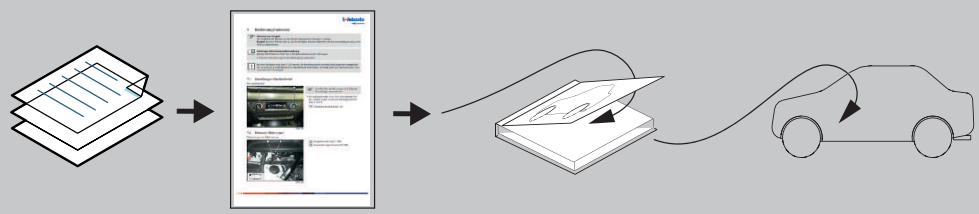
Further information can be found in the general installation and operating instructions of the Webasto components.

▶ 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.

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany

Company address:
Friedrichshafener Str. 9
82205 Gilching
Germany

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

CE

WWW.WEBASTO.COM

17 FuelFix template

100mm

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

0

100mm

18 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 preheating unit. There is **no** engine pre-heating.

18.1 A/C control panel settings

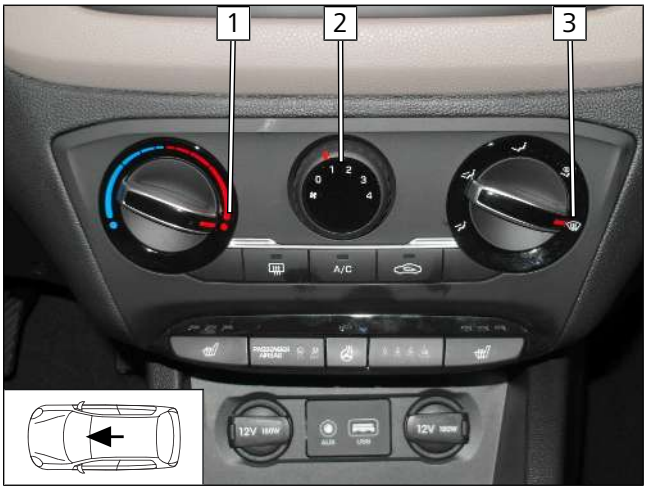


Fig. 139

Before parking the vehicle, make the following settings:

1 Set temperature to 'max.'
2 Set fan to speed level '1', max. '2'
3 Air outlet to windscreen

18.2 Installation location of fuses

Fuses in engine compartment

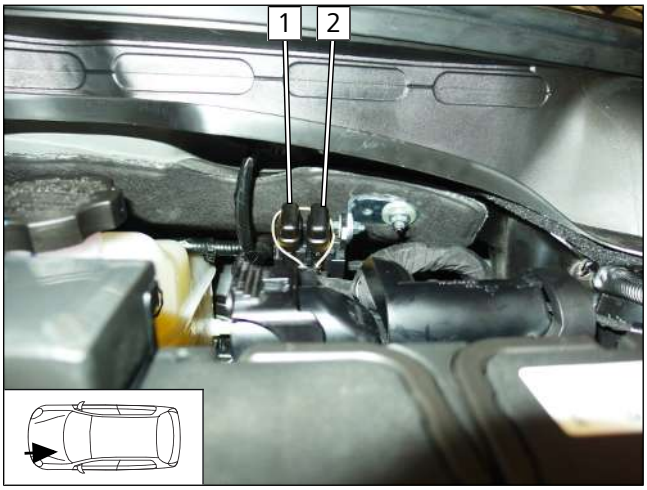


Fig. 140

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

Fuses in passenger compartment

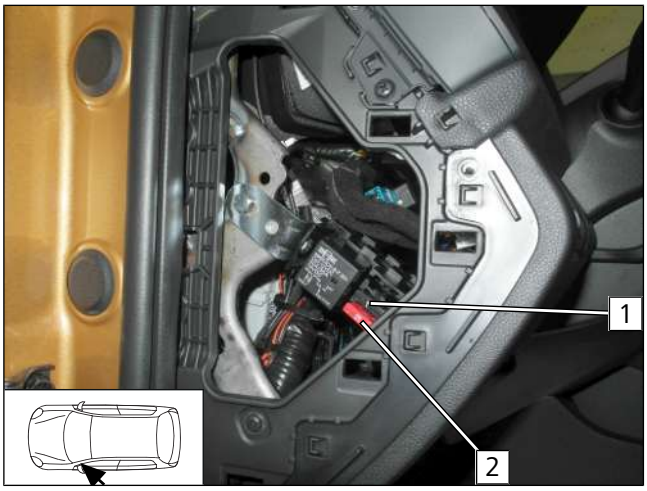


Fig. 141

1 F3 - 1A control element fuse
2 F4 - 10A fan controller fuse