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Installation documentation

Fot Water heating Thermo Top Evo

'Island' coolant circuit without engine preheating

Hyundai Tucson

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Hyundai	Tucson	NX4e	from 2021	e5* 2018/858* 00001*…

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displace-ment [cm³]	Engine code
1.6 T-GDi	Petrol	Euro 6d Temp	SG	110	1598	G4FU
1.6 T-GDi	Petrol	Euro 6d Temp	DCT	110	1598	G4FU
1.6 T-GDi 48V	Petrol	Euro 6d Temp	DCT	132	1598	G4FU

Validity	Equipment variants	Model
		Tucson
Verified equipment variants	Automatic air-conditioning	x
	LED headlight	x
	LED daytime running lights	x
	Start button	x
	Automatic Start-Stop system	x
	Keyless Go	x
	Alarm system	x
	DCT with mechanical gear stick	x
	DCT with electrical gear stick	x
	FWD	x
	AWD	x

Total installation time	Note
7.6 hours	

Contents

1 List of abbreviations

AAC	Automatic air-conditioning
AWD	All-wheel drive
DCT	Dual clutch transmission
DP	Fuel pump
EFIX	Exhaust end fastener
FF	FuelFix (tank extracting device)
Fig.	Figure
FWD	Front wheel drive
HG	Heater
MCC	MultiControl (control element)
MY	Model year
RSH	Relay and fuse holder of passenger compartment
SG	Manual transmission
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump
Veh.	Vehicle

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.

2.2 Components used

Designation	Order number
Basic delivery scope of Thermo Top Evo (see 'Notes on installation')	In accordance with price list
Installation kit for Hyundai Tucson petrol MY 2021 island TT-Evo	1328447A
In case of Telestart, control element, as well as indicator lamp in consultation with end customer	In accordance with price list

2.3 Components used

Designation	Order number
Scope of delivery for Hyundai Tucson petrol MY 2021 Thermo Top Evo incl. Telestart T99	1328444B
Scope of delivery for Hyundai Tucson petrol MY 2021 Thermo Top Evo incl. Telestart T100 HTM	1328445B
Scope of delivery for Hyundai Tucson petrol MY 2021 Thermo Top Evo incl. ThermoCall TC4	1328446B

2.4 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

2.5 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	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

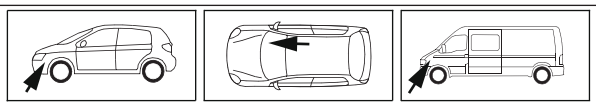
3.4.3 Work step identification marks

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
✓	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 mm^2
- Crimping pliers for cable lugs 0.5 – 10 mm^2
- Crimping pliers for male connector 0.14 – 6 mm^2
- Crimping pliers for connector 0.25 – 6 mm^2
- Torque wrench for 2.0 - 10 Nm
- Deep-hole marker
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

5 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	▶ Open the fuel tank cap ▶ Ventilate the fuel tank ▶ Close the fuel tank cap again ▶ Depressurise the cooling system	
Engine compartment and body	▶ Disconnect the battery ▶ Entire air filter housing ▶ Intake hose ▶ Battery ▶ Battery carrier with engine control unit ▶ Charge-air hose between intercooler and throttle valve ▶ Relay and fuse box cover ▶ Engine underride protection ▶ Underride protection on the driver's side ▶ Drain the engine coolant	
Passenger compartment	▶ Footwell trim on the front passenger's side ▶ Centre console trim on the driver's and front passenger's side in the footwell ▶ Glove box cover ▶ AAC control unit ▶ Rear bench seat ▶ Open the 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

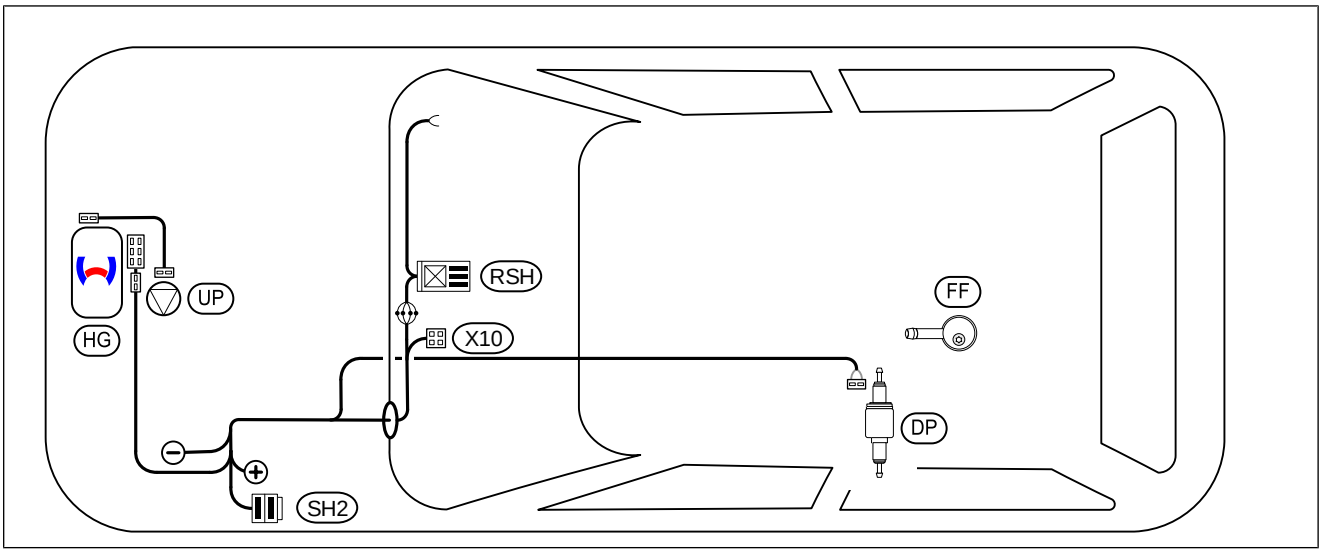


Fig. 1

Legend to installation overview

Abbreviation	Component
DP	Fuel pump
FF	FuelFix
HG	Heater
RSH	Relay and fuse holder of passenger compartment
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump
X10	Female plug for control element

Heater installation location

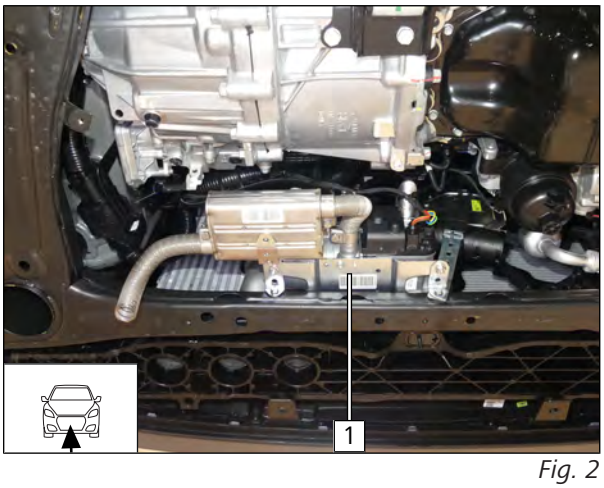


Fig. 2

1 Heater

7 Electrical system of engine compartment

Preparing fuse holder of engine compartment

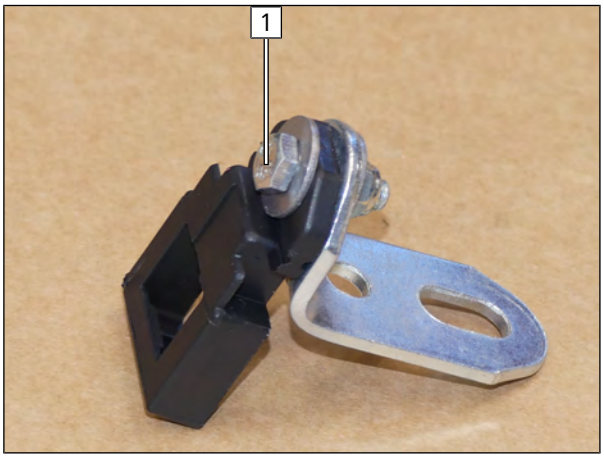


Fig. 3

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

Mounting SH2

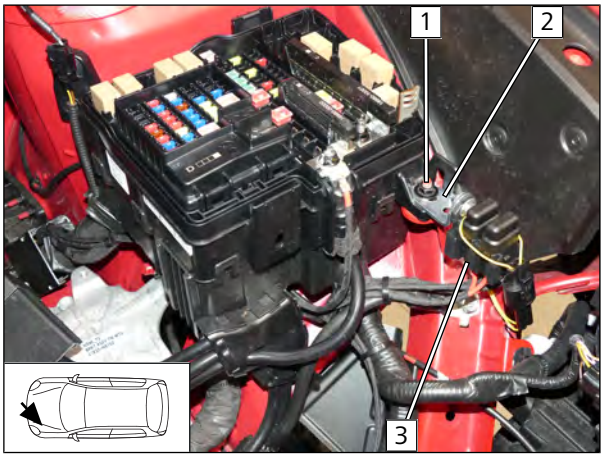


Fig. 4

1 Original vehicle stud bolt
2 Premounted angle bracket, original vehicle nut
3 SH2 with F1/F2

Mounting positive wire

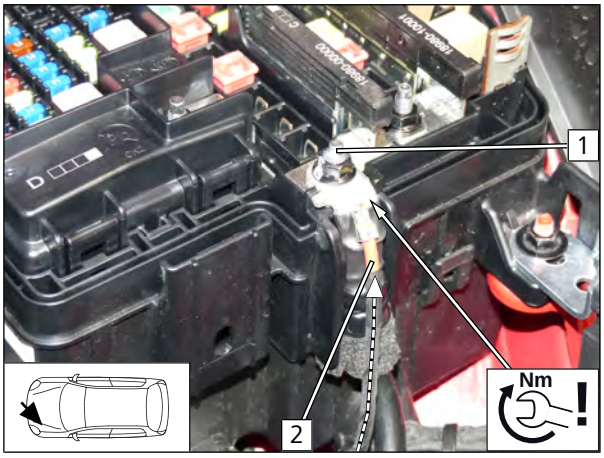


Fig. 5

DANGER

Observe tightening torque

1 Original vehicle positive support point
2 Positive wire

Mounting earth wire

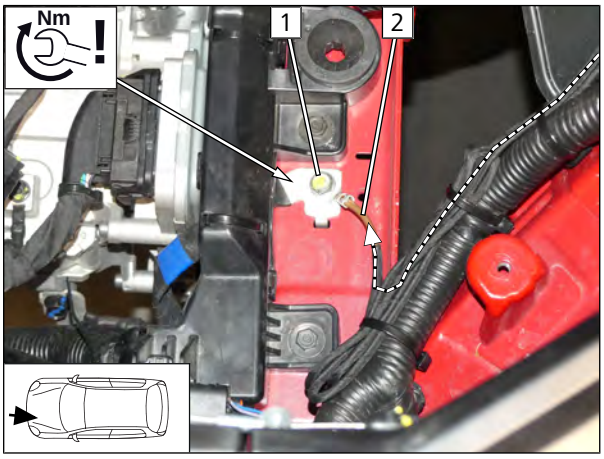


Fig. 6

DANGER

Observe tightening torque

1 Original vehicle earth point

2 Earth wire

Wiring harness routing to passenger compartment

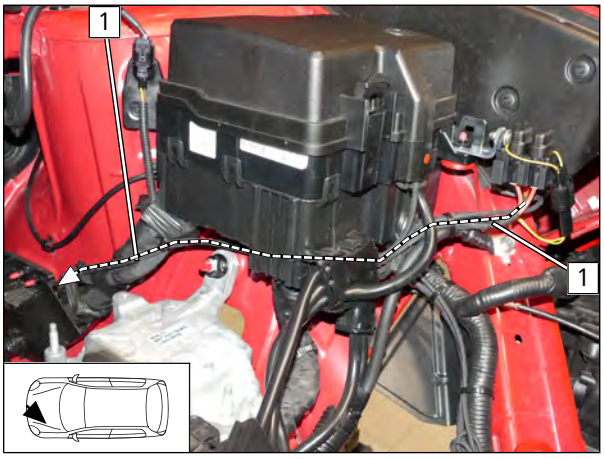


Fig. 7

1 Passenger compartment and control element wiring harnesses

Passenger compartment wiring harness pass through

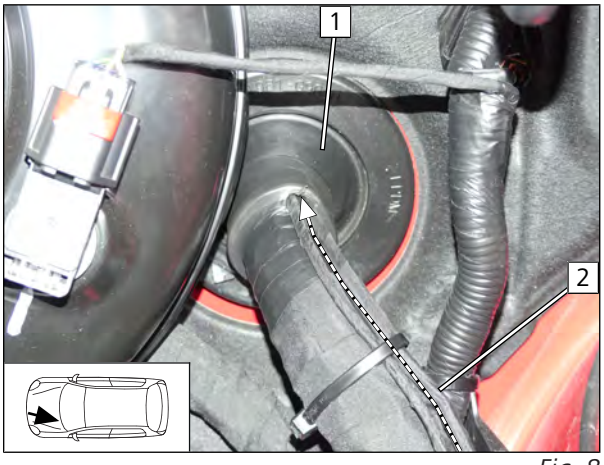


Fig. 8

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.

1 Protective rubber plug

2 Passenger compartment and control element wiring harnesses

HG wiring harness routing

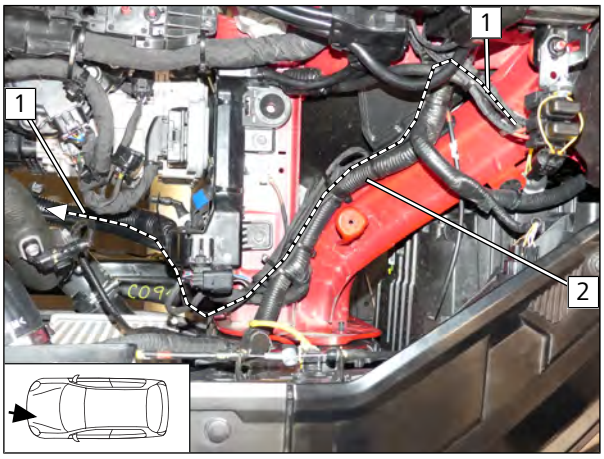


Fig. 9

1 Heater wiring harness
2 Original vehicle wiring harness

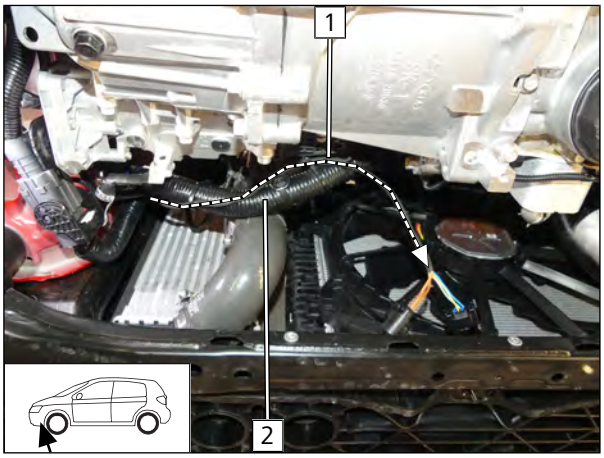


Fig. 10

1 Heater wiring harness
2 Original vehicle wiring harness

8 Mechanical system

8.1 Preparing installation location

Intercooler

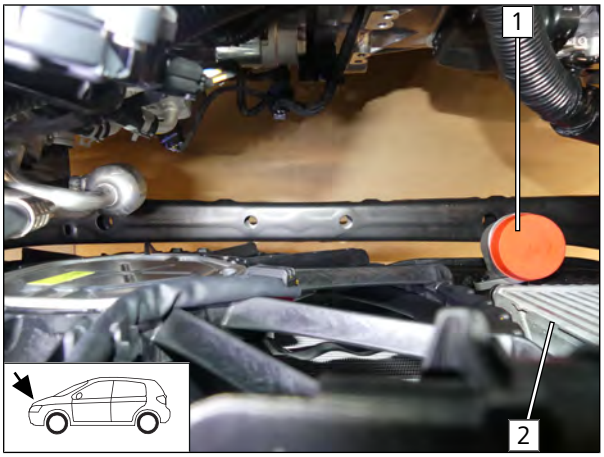


Fig. 11

▶ Cover the intercooler outlet using suitable means 1.

2 Intercooler

Drilling hole and inserting rivet nut

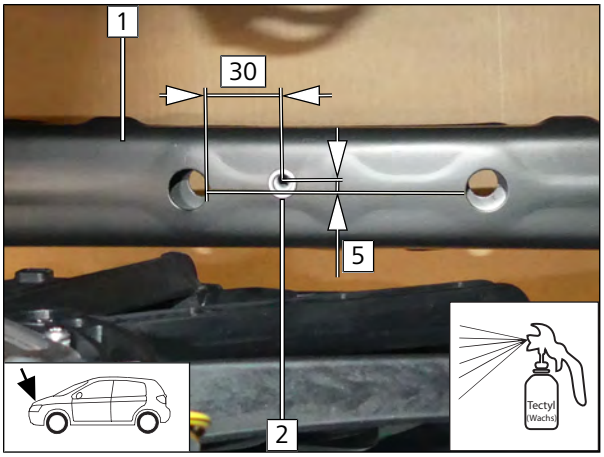


Fig. 12

1 Cross member

2 Ø9 hole, rivet nut

Premounting HG bracket

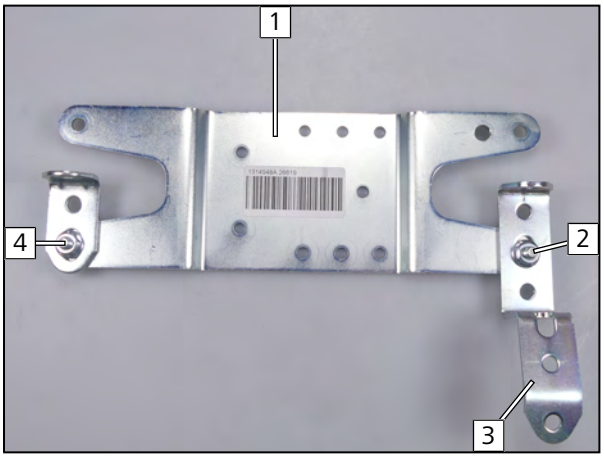


Fig. 13

▶ Drill hole in HG bracket 1 according to the template.

▶ Bend perforated bracket 3 according to the template.

1 Heater bracket

2 Mount M6x16 bolt, bracket, perforated bracket, flanged nut loosely

4 Mount M6x16 bolt, bracket, angle bracket, flanged nut loosely

Mounting bracket and copying hole pattern

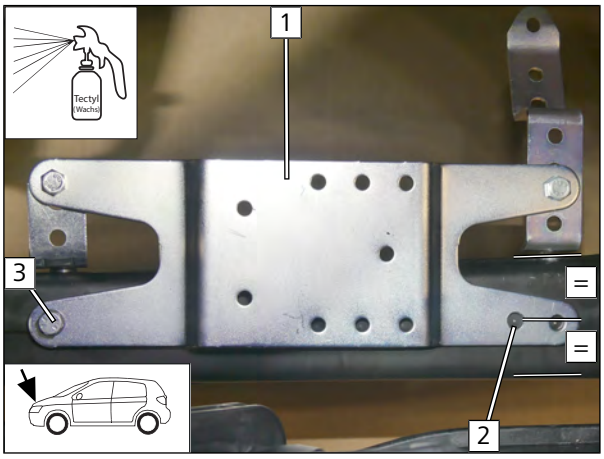


Fig. 14

1 Premounted bracket
2 Copy hole pattern
3 M6x20 bolt, spring lock washer, HG bracket, rivet nut

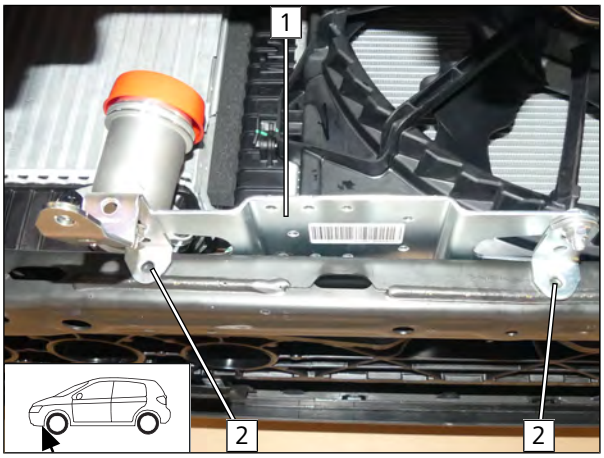


Fig. 15

1 Premounted bracket
2 Copy hole pattern

▶ Remove the bracket again.

Inserting rivet nut

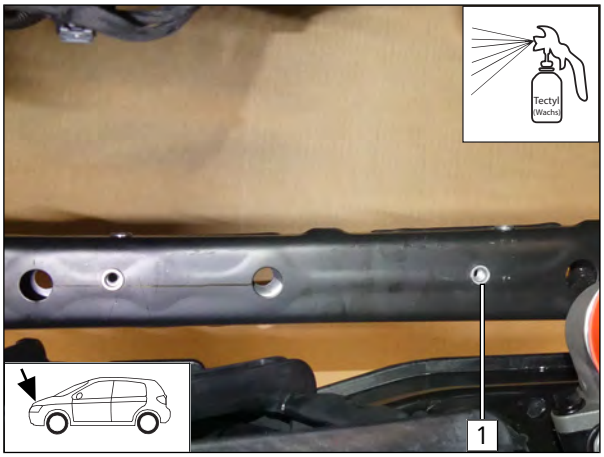
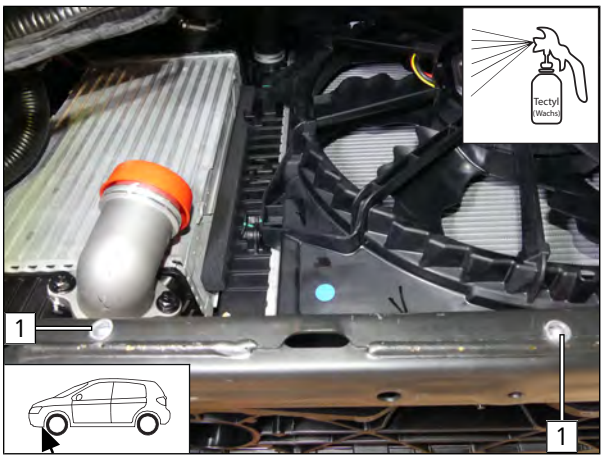


Fig. 16

1 Ø9 hole, rivet nut



1 Ø9 hole, rivet nut

Fig. 17

Adapting radiator fan shroud

▶ Adapt radiator fan shroud as shown.

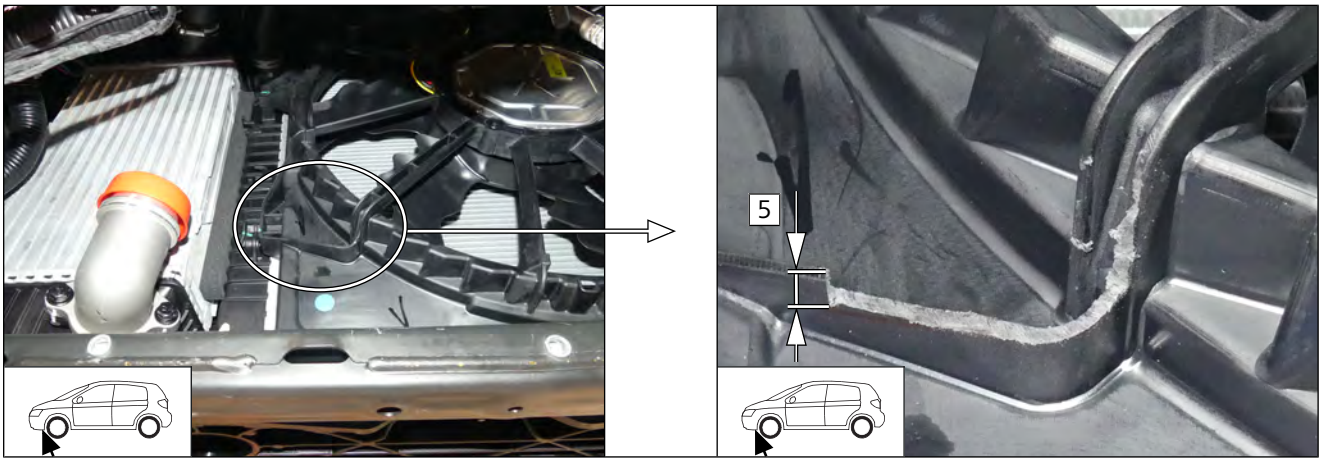


Fig. 18

8.2 Premounting heater

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

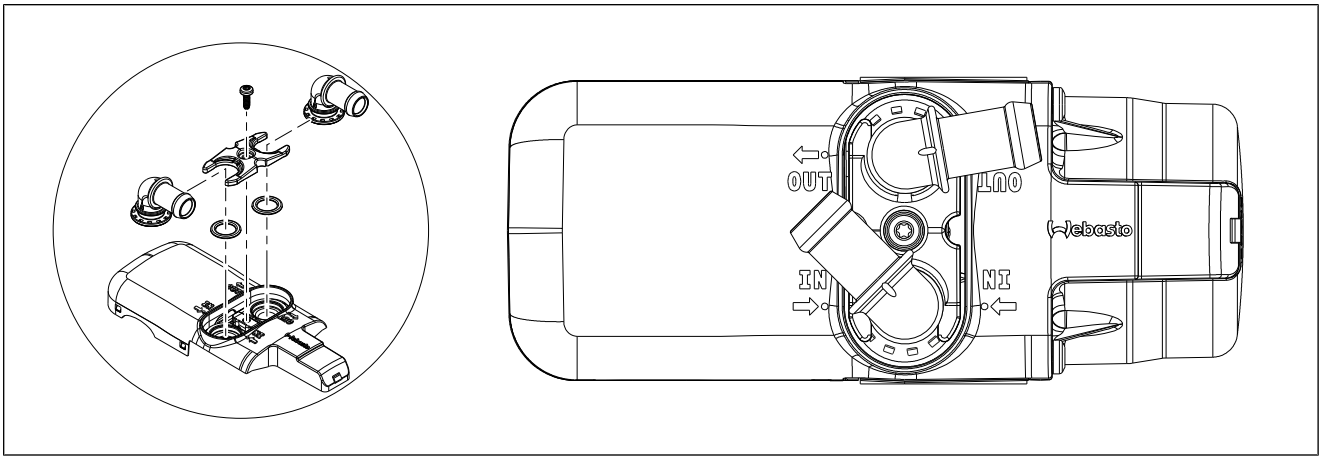


Fig. 19

Mounting bracket

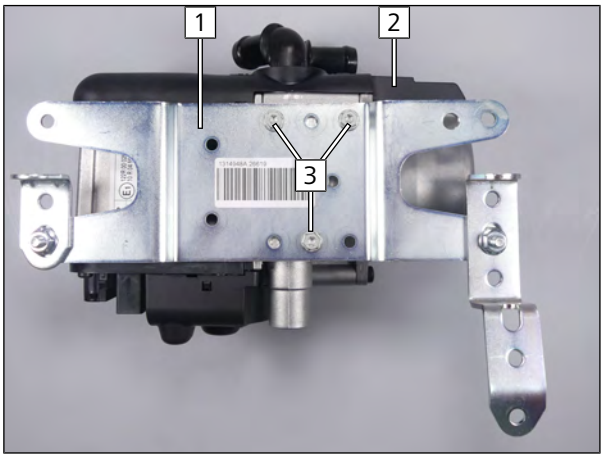


Fig. 20

1 Premounted bracket
2 HG
3 5x13 self-tapping bolt

Mounting stud bolt

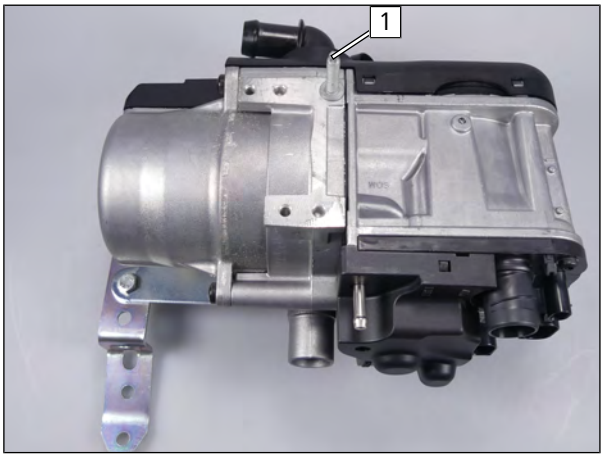


Fig. 21

1 Stud bolt

Assigning and cutting to length hoses

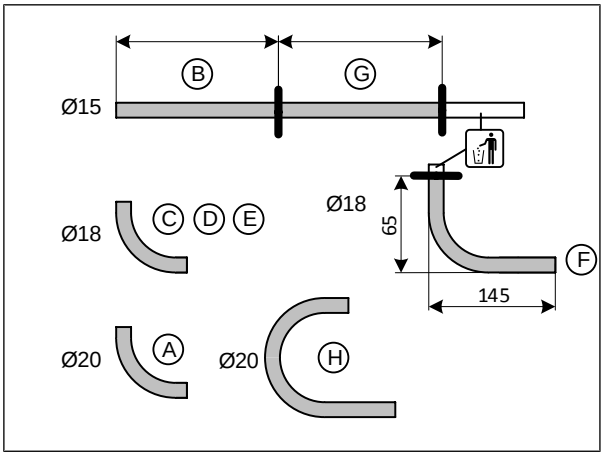


Fig. 22

A	90°
B	810
C	90°
D	90°
E	90°
F	90°
G	640
H	180°

Mounting hoses Ⓓ , Ⓔ and Ⓕ

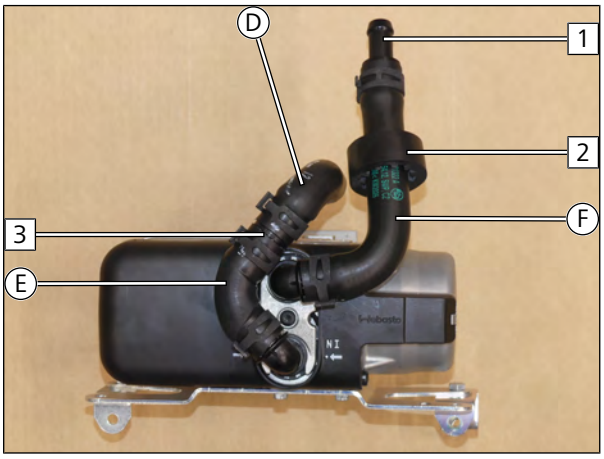


Fig. 23

All spring clips Ø25

1. Ø18/15 connecting pipe
2. Rubber isolator
3. Ø18/18 connecting pipe

Premounting mount and tubular rivet on coolant pump

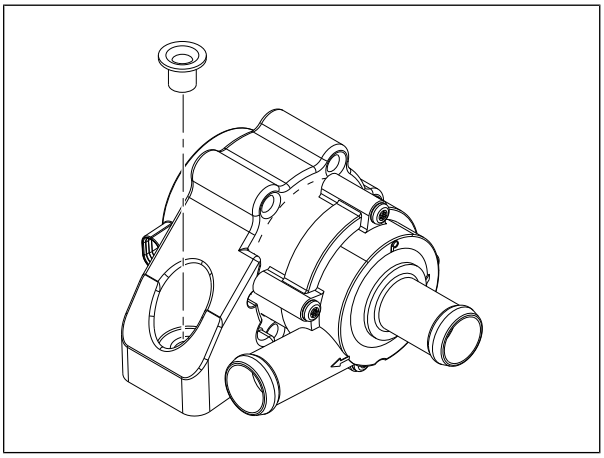


Fig. 24

Premounting coolant pump

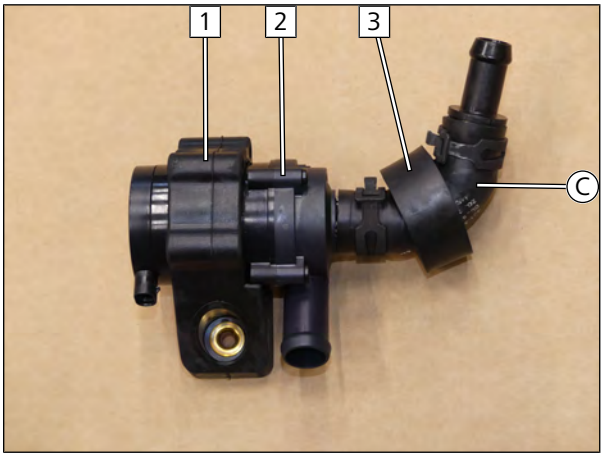


Fig. 25

All spring clips Ø25

All connecting pipes without a specific designation Ø18/15

1. Coolant pump mount
2. Coolant pump
3. Rubber isolator

Mounting coolant pump

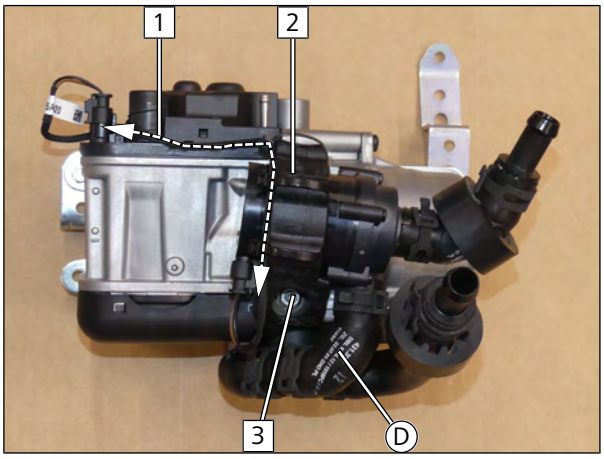


Fig. 26

1 Coolant pump wiring harness
2 Premounted coolant pump
3 Flanged nut

Fixing rubber isolator onto hose Ⓒ

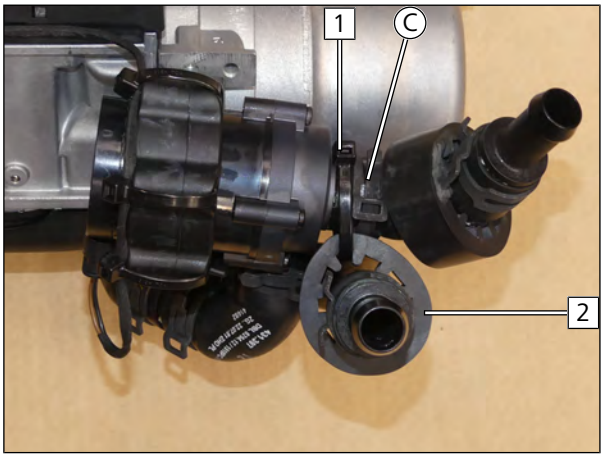


Fig. 27

1 Cable tie
2 Rubber isolator

Cutting exhaust pipe to length

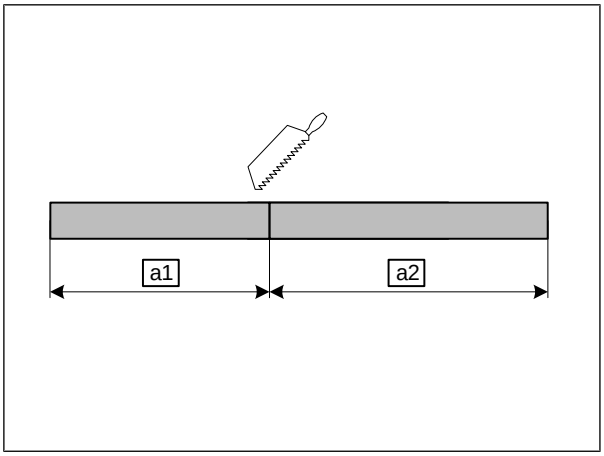


Fig. 28

a1 150
a2 200

Mounting exhaust pipe a1 and exhaust silencer

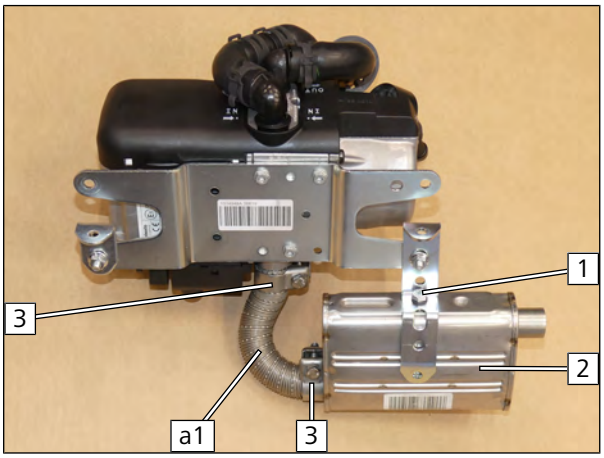


Fig. 29

1. M6x16 bolt, spring lockwasher, perforated bracket
2. Exhaust silencer
3. Hose clamp

Cutting fuel moulded hose to length

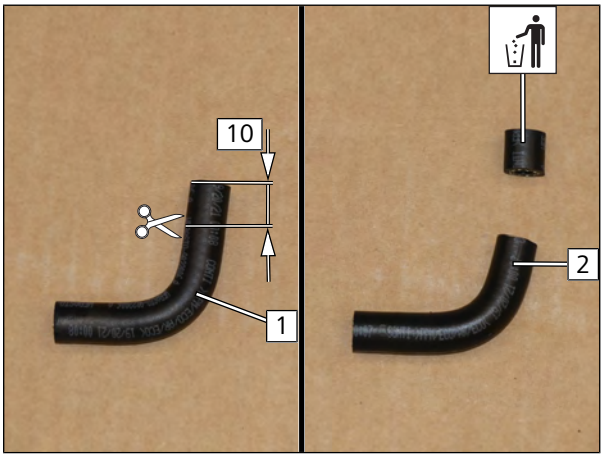


Fig. 30

1. 90° fuel moulded hose
2. Shortened 90° fuel moulded hose

Mounting fuel line

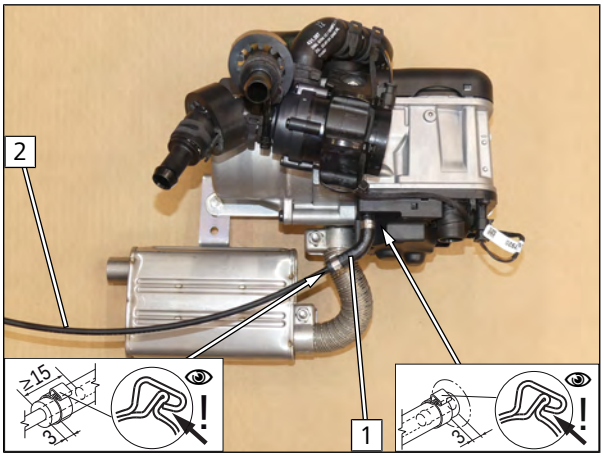


Fig. 31

1. 90° fuel moulded hose (shortened side on HG), Ø10 clamp
2. Fuel line

Premounting **s1** combustion air intake pipe

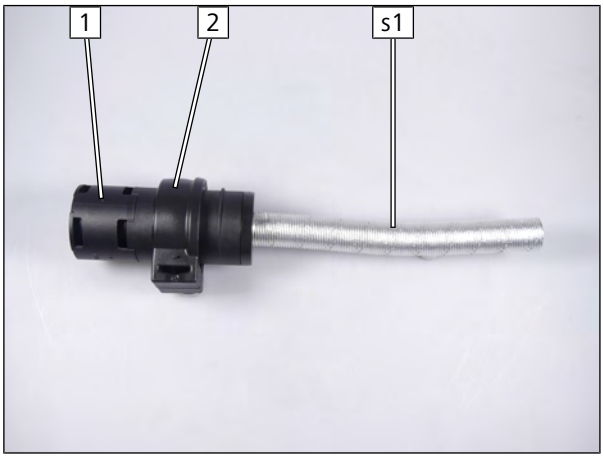


Fig. 32

Observe the installation instructions of the combustion air intake silencer.

1 Combustion air intake silencer

2 Mount

Mounting combustion air intake pipe **s1**

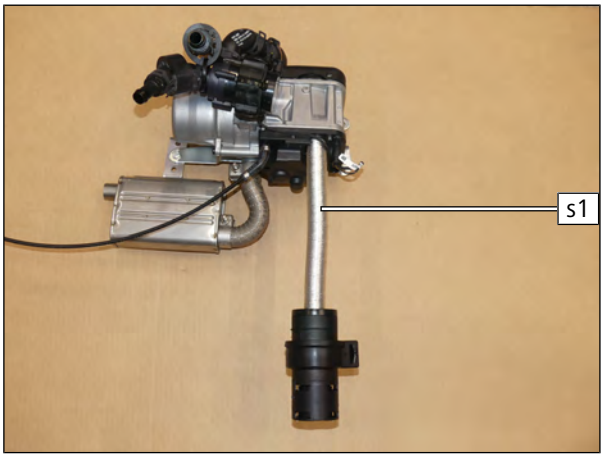


Fig. 33

Preparing combustion air intake silencer perforated bracket

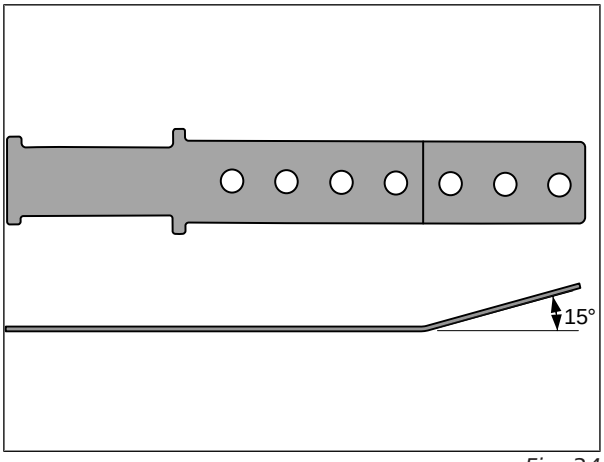


Fig. 34

8.3 Heater mounting

Mounting heater

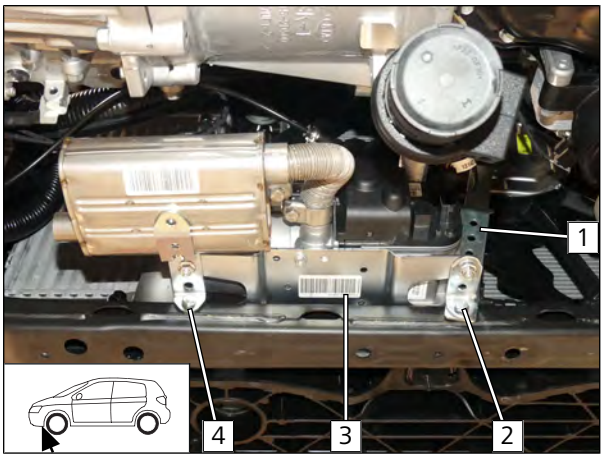


Fig. 35

1 Perforated bracket for combustion air intake silencer

2 Mount M6x20 bolt, spring lock washer, angle bracket, combustion air intake silencer perforated bracket, rivet nut loosely

3 Premounted HG

4 Mount M6x20 bolt, spring lock washer, perforated bracket, rivet nut loosely

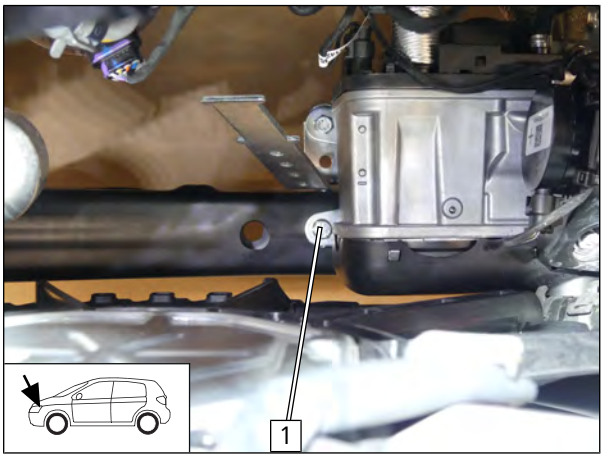


Fig. 36

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

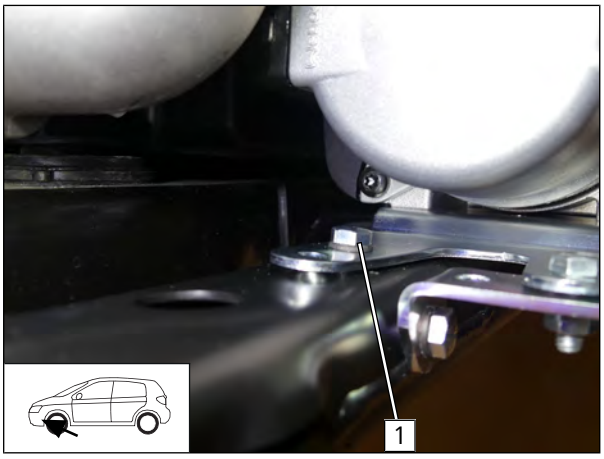


Fig. 37

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

Tighten all loose screw connections.

Checking distances

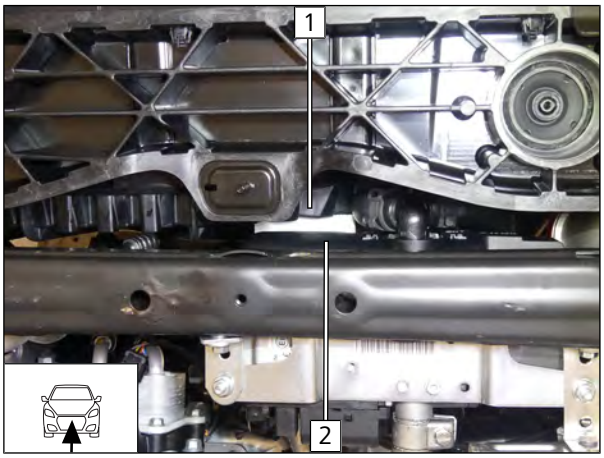


Fig. 38

Ensure sufficient distance from neighbouring components, correct if necessary.

>5

1 Radiator fan shroud

2 HG

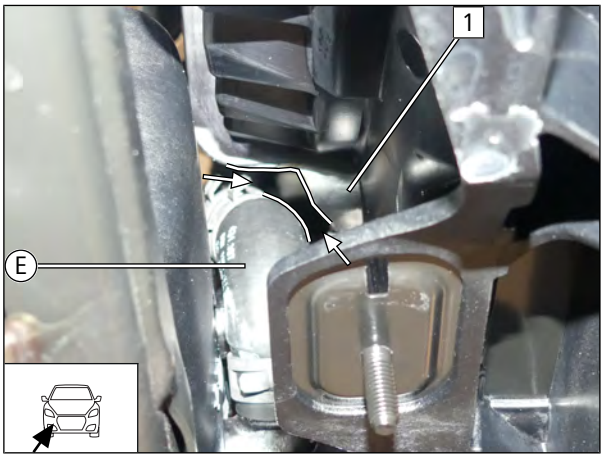


Fig. 39

Ensure sufficient distance from neighbouring components, correct if necessary.

>5

1 Radiator fan shroud

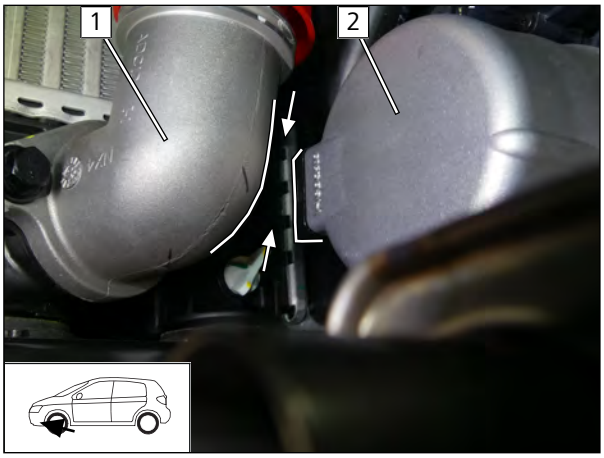


Fig. 40

Ensure sufficient distance from neighbouring components, correct if necessary.

>10

1 Intercooler

2 HG

Mounting combustion air intake silencer

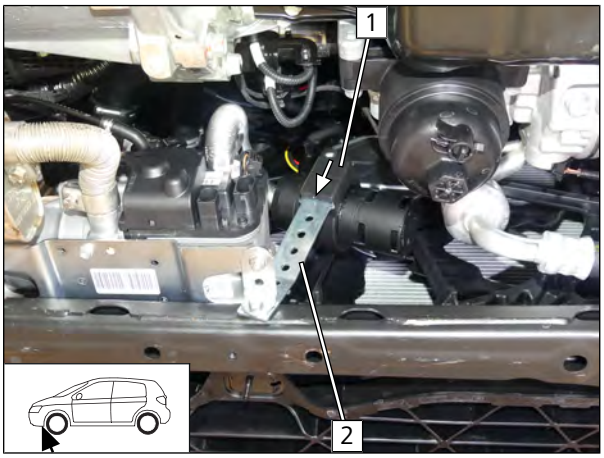


Fig. 41

Observe the installation instructions of the combustion air intake silencer.

▶ Push combustion air intake silencer mount **1** onto premounted perforated bracket **2** as shown.

Mounting HG wiring harness connector

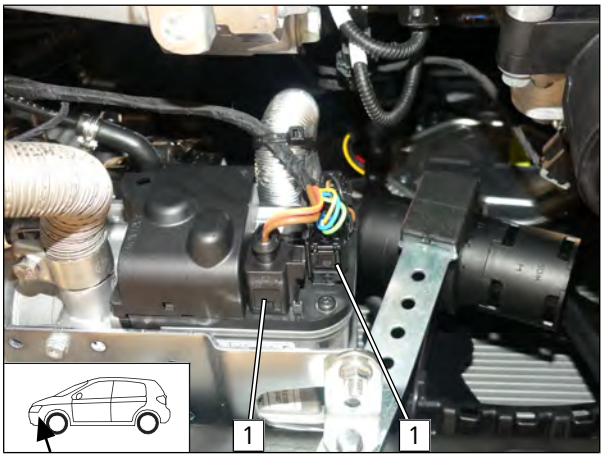


Fig. 42

1 Heater 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

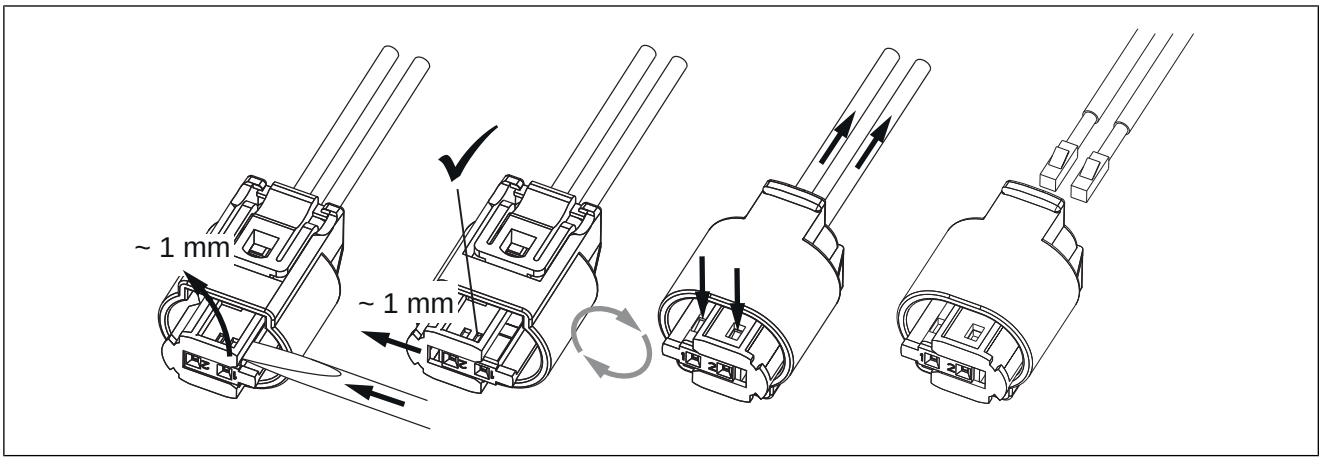


Fig. 43

9.1 Routing fuel line

Cutting corrugated tube to length

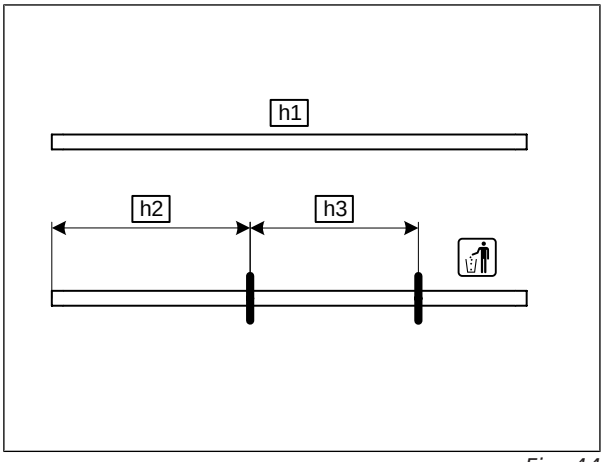


Fig. 44

h1 2100
h2 900
h3 810

Installing lines

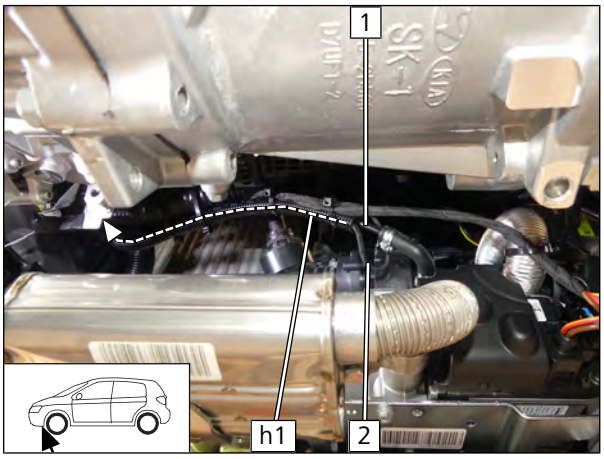


Fig. 45

▶ Draw fuel pump wiring harness [2] and fuel line [1] into Ø10 corrugated tube [h1], route as shown in the next fig. and fasten with cable ties.

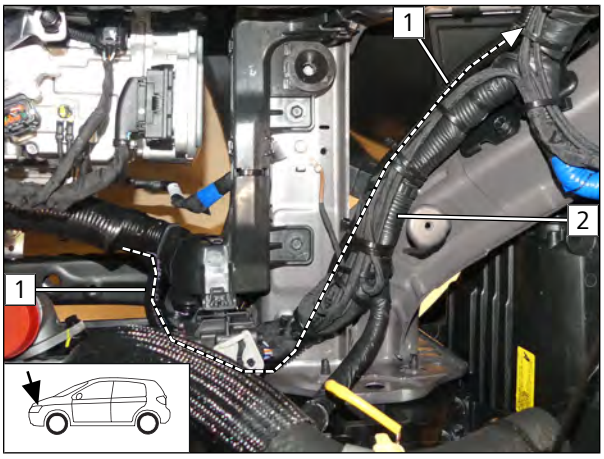


Fig. 46

▶ Route fuel line and fuel pump wiring harness in Ø10 corrugated tube [h1] and secure with cable ties.

[2] Original vehicle wiring harness

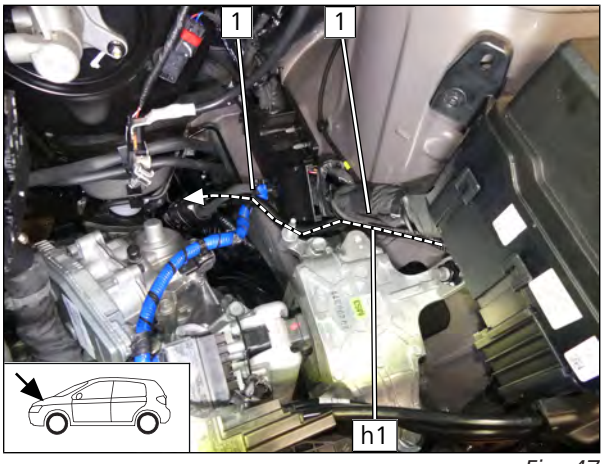


Fig. 47

▶ Route fuel line and fuel pump wiring harness in Ø10 corrugated tube [h1] along original vehicle fuel lines to the underbody and secure with cable ties.

[1] Original vehicle wiring harness, cable tie

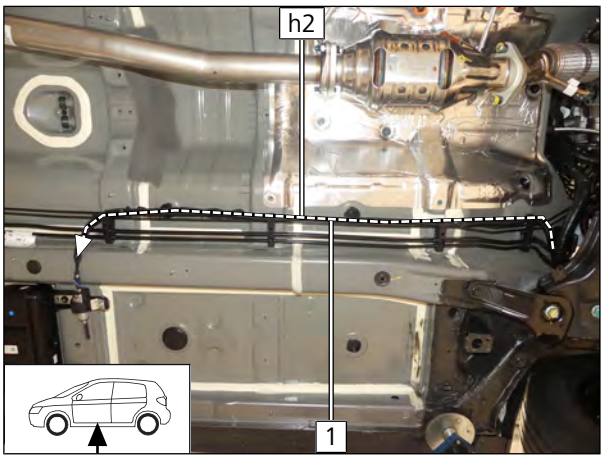


Fig. 48

▶ Route fuel line and fuel pump wiring harness in Ø10 corrugated tube **h2** along original vehicle fuel lines **1** to fuel pump installation location and secure with cable ties.

Premounting fuel pump

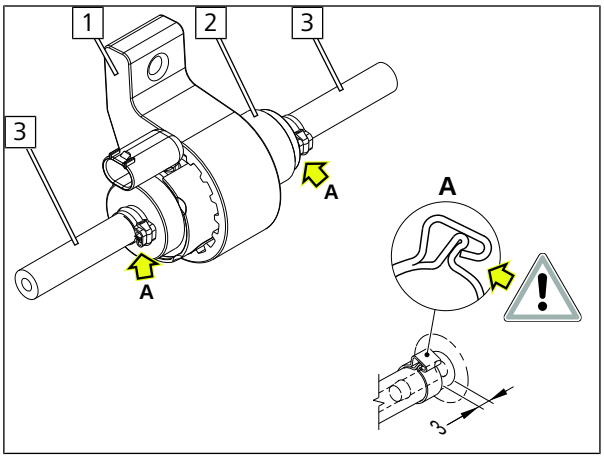


Fig. 49

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

1 Fuel pump mount
2 Fuel pump
3 Hose section, Ø10 clamp

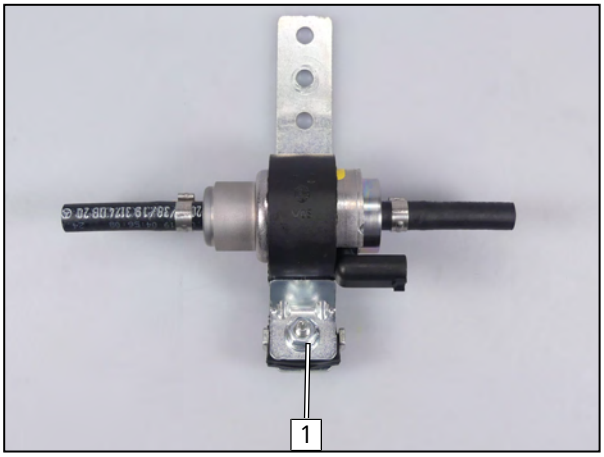


Fig. 50

1 M6x25 bolt, fuel pump perforated bracket, fuel pump mount, support angle bracket, flanged nut

Mounting fuel pump

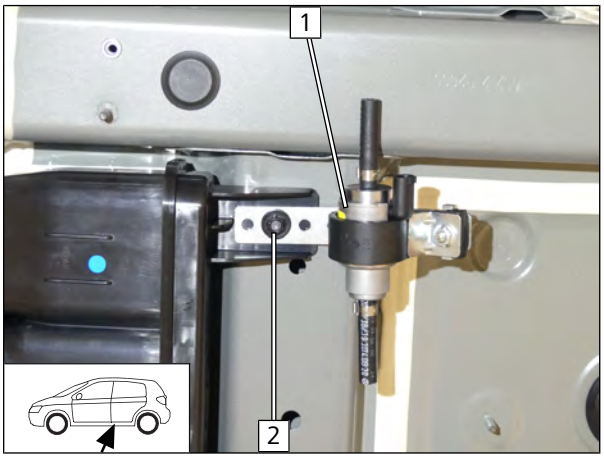


Fig. 51

1 Premounted fuel pump

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

Assembling fuel pump connector X7

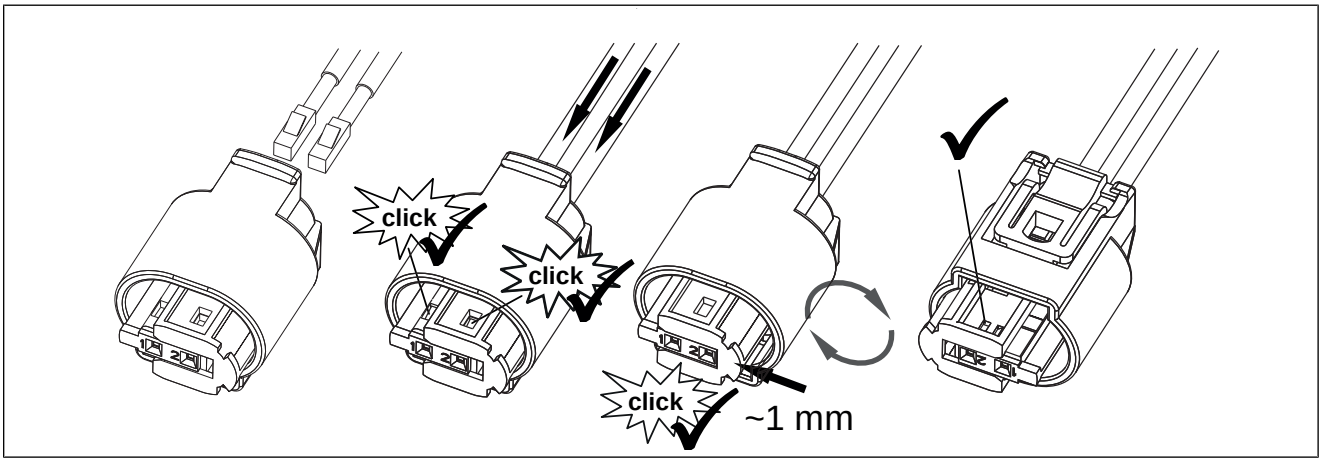


Fig. 52

Fuel pump connection

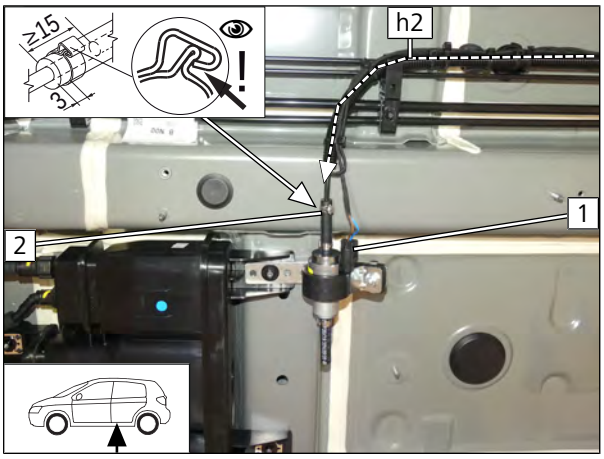


Fig. 53

1 Fuel pump wiring harness, connector X7 mounted

2 Ø10 clamp

9.2 Installing FuelFix

Preparing drilling template

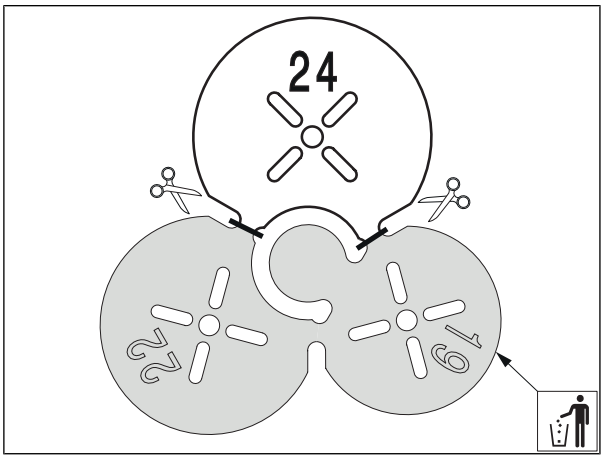


Fig. 54

Work step F2

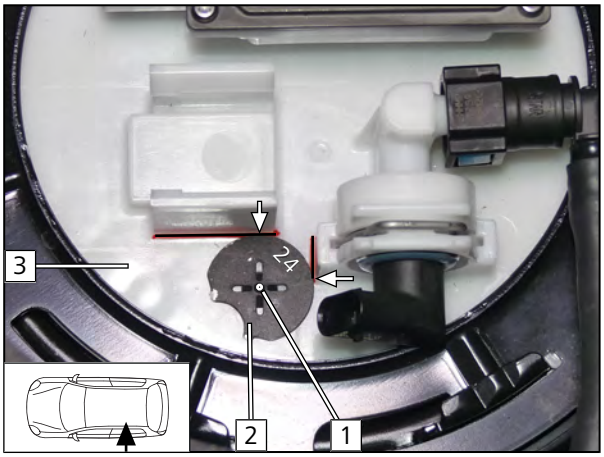


Fig. 55

Observe the installation instructions of the tank extracting device.

1 Copy hole pattern
2 Position Ø24 drilling template as shown in fig.
3 Tank fitting

Work step F3

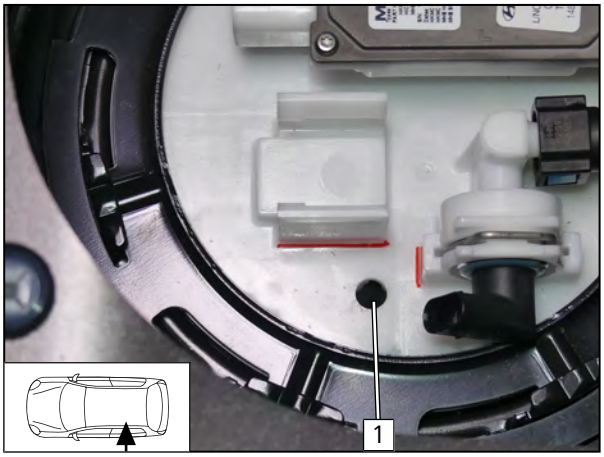


Fig. 56

DANGER

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

1 Hole made with provided drill

Work steps F4, F5

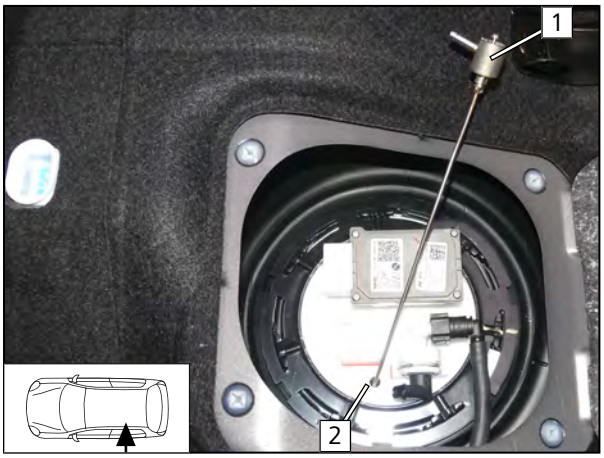


Fig. 57

▶ Bend FuelFix [1] according to template and cut to length. Insert in hole [2].

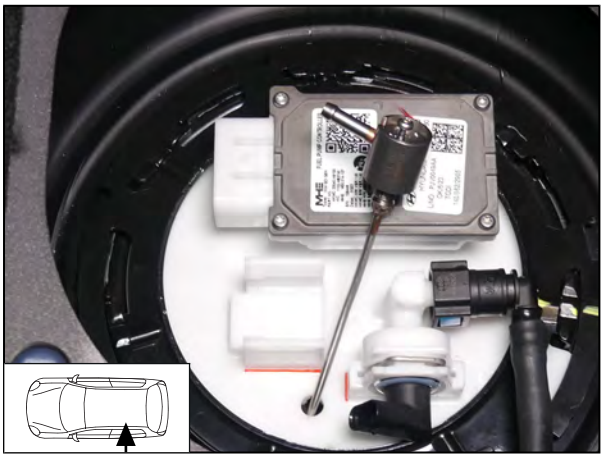


Fig. 58

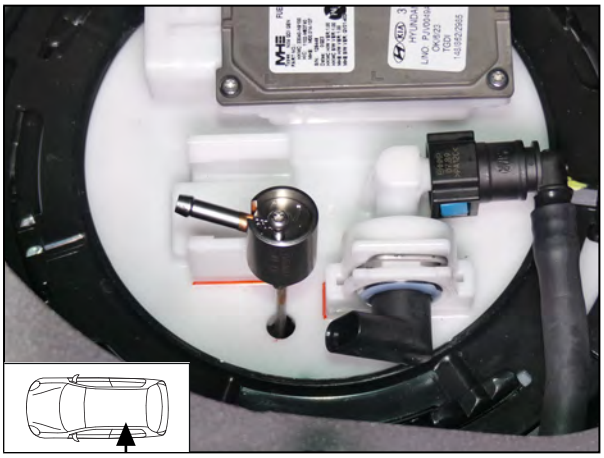


Fig. 59

Work steps F5.3, F5.4

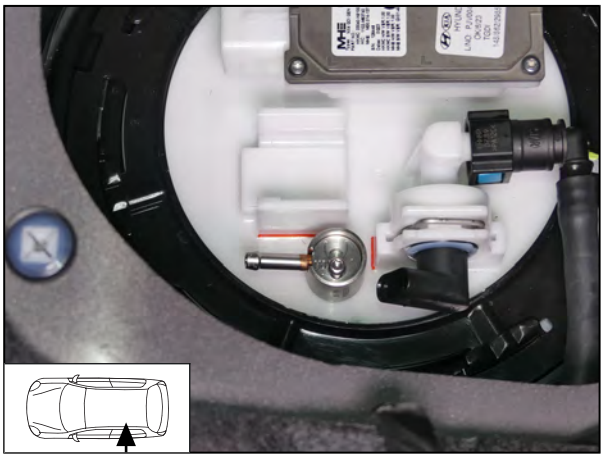


Fig. 60

▶ Align FuelFix as shown.

Work step F6

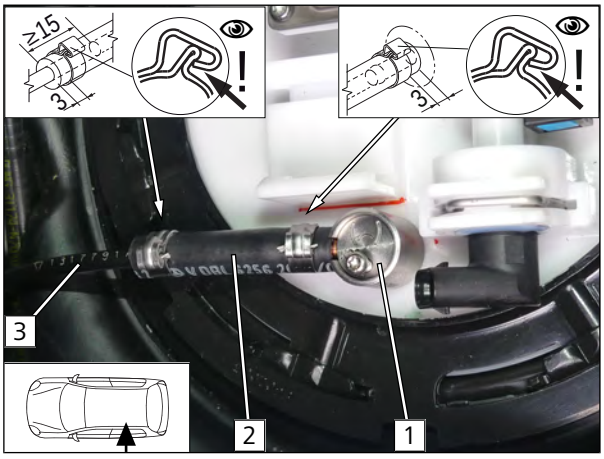


Fig. 61

1 FuelFix
2 Hose section, Ø10 clamp [2x]
3 Fuel line of FuelFix

Work step F7

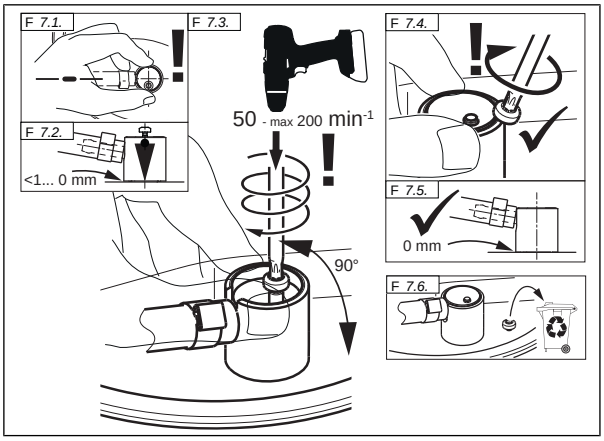


Fig. 62

DANGER

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

Work step F8

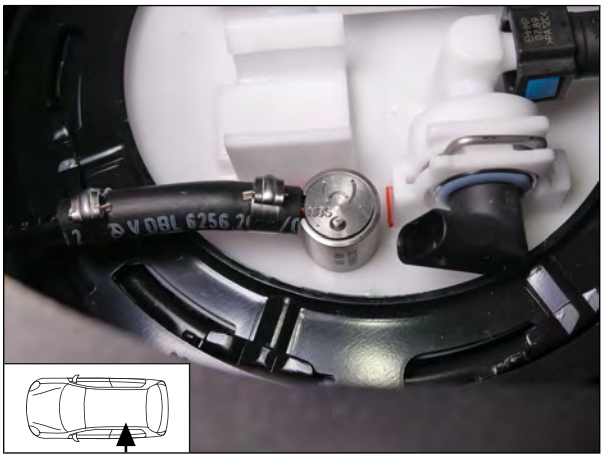


Fig. 63

▶ Check if FuelFix is firmly mounted.

Securing fuel line

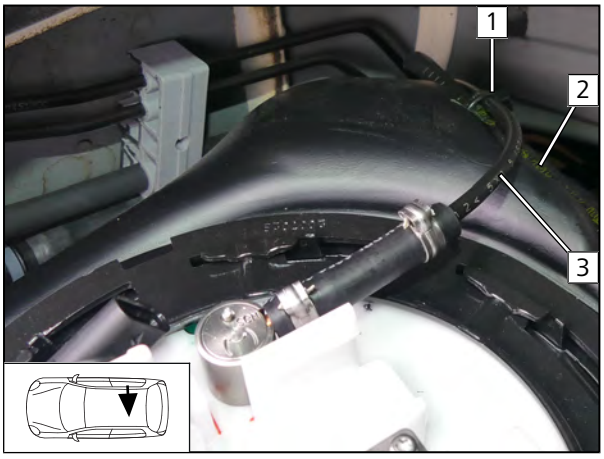


Fig. 64

▶ Route fuel line 2 to fuel pump installation location.

- 1 Cable tie for tension relief
- 2 Original vehicle line
- 3 Fuel line of FuelFix

Routing FuelFix fuel line

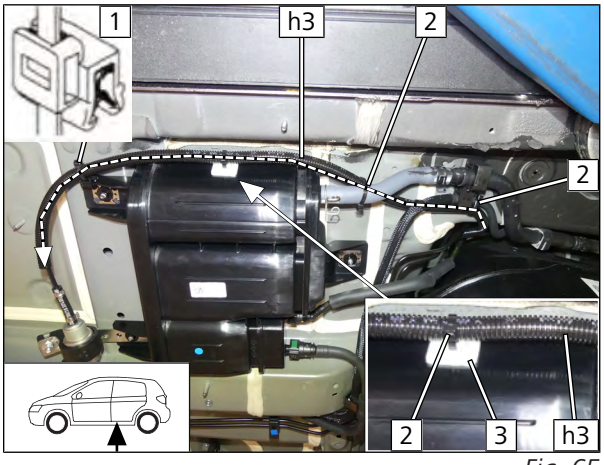


Fig. 65

Degrease the bonding surfaces before the installation.

- 1 Edge clip cable tie
- 2 Cable tie
- 3 Adhesive base
- h3 Fuel line in Ø10 corrugated tube

Fuel pump connection

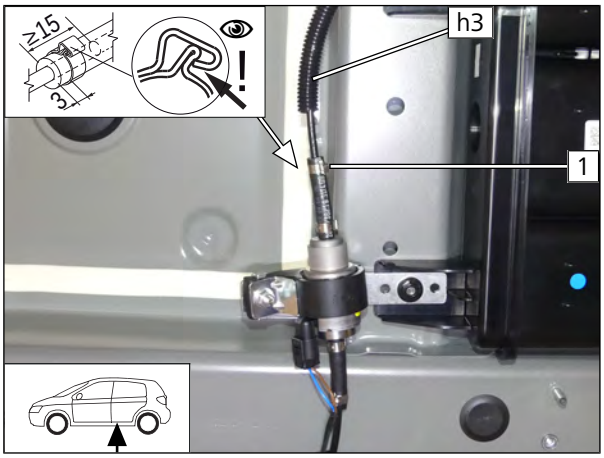


Fig. 66

h3 Fuel line in Ø10 corrugated tube

1 Ø10 clamp

10 Coolant

10.1 Hose routing diagram

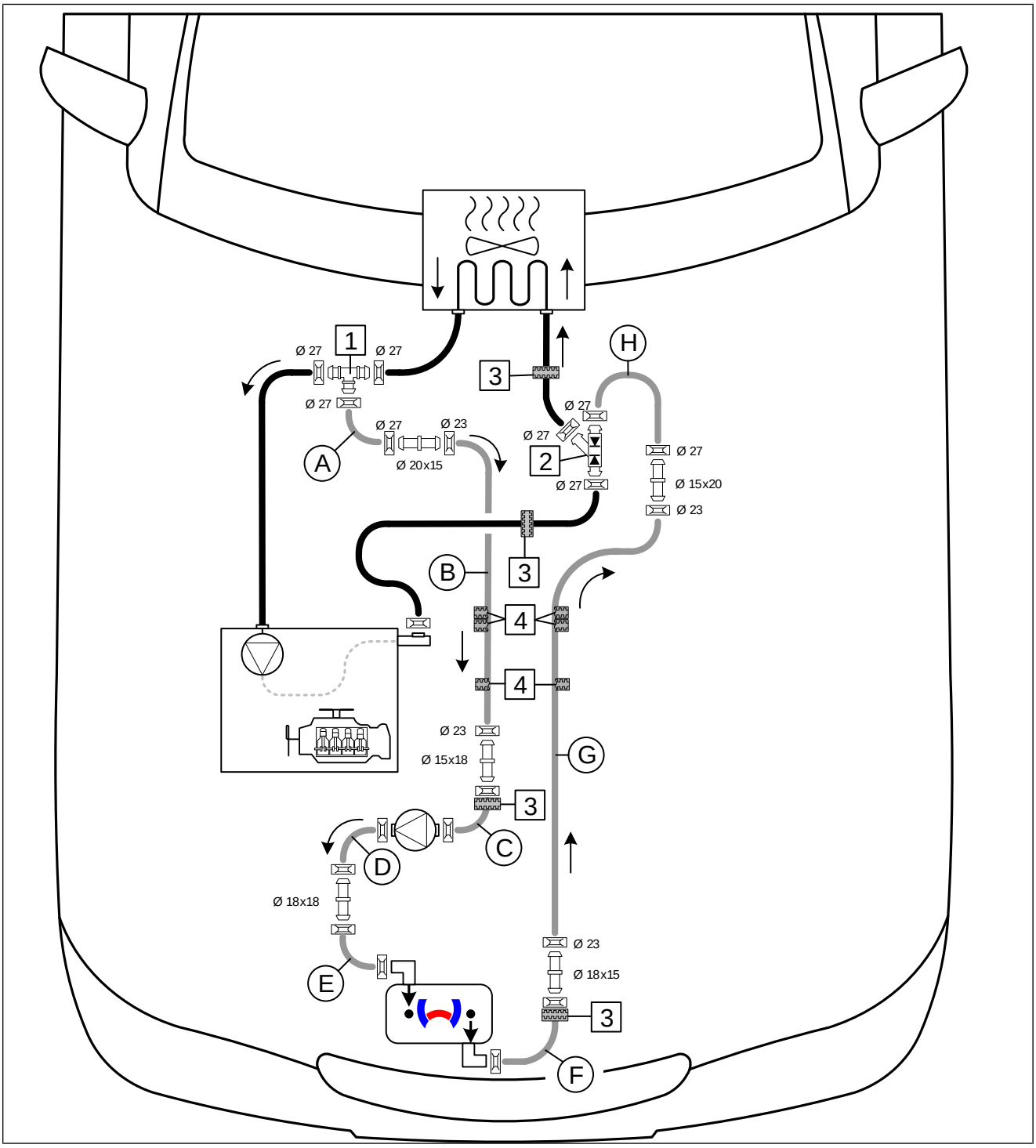


Fig. 67

All spring clips without a specific designation = Ø25

All spring clips without a specific designation = Ø18x18

1 3x Ø20 T-piece; 2 3x Ø20 double non-return valve; 3 Rubber isolator;

4 Rubber isolator around hoses (B) and (G)

10.2 Coolant circuit installation - veh. with manual transmission

Premounting hoses Ⓑ and Ⓖ

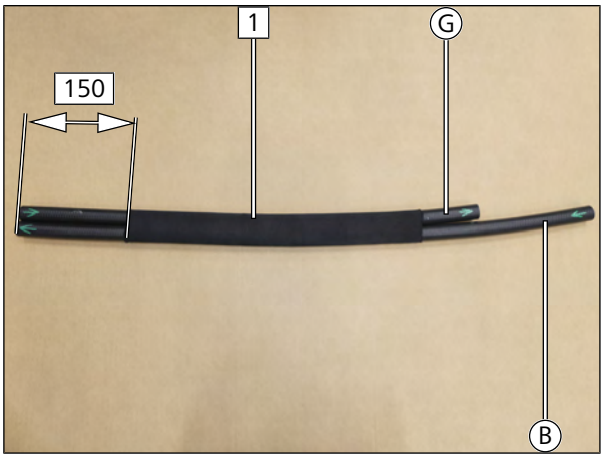


Fig. 68

Tag hoses to prevent any mix up.

▶ Slide fabric heat shrink tubing 1 onto hoses Ⓑ and Ⓖ as shown and shrink.

▶ 1. Slide on and cut to length
▶ 2. Shrink, use at most 230 °C

Preparing rubber isolator, 3x

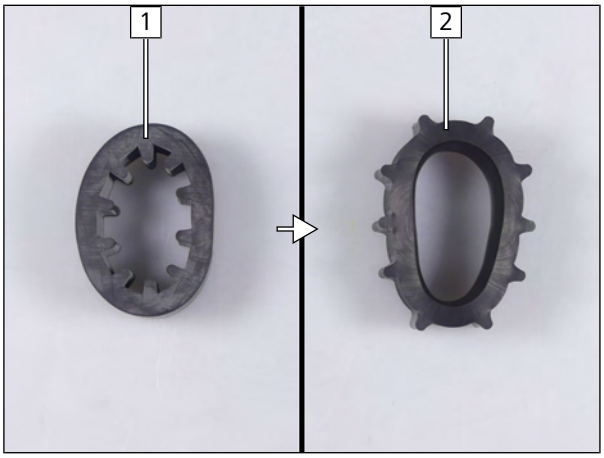


Fig. 69

Mounting rubber isolator

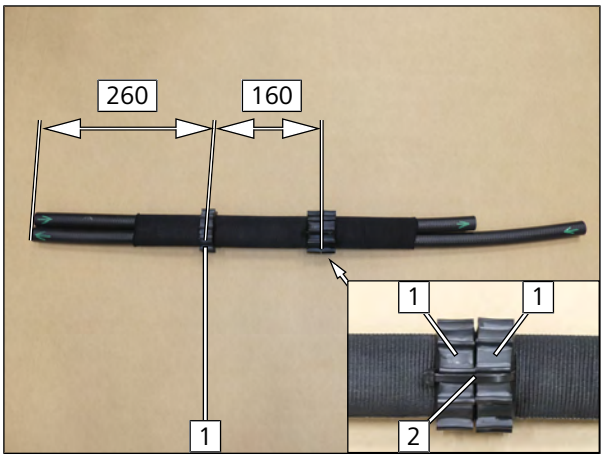


Fig. 70

▶ Align rubber isolator 1 as shown.

2 Cable tie, on both sides 1x

Preparing perforated bracket

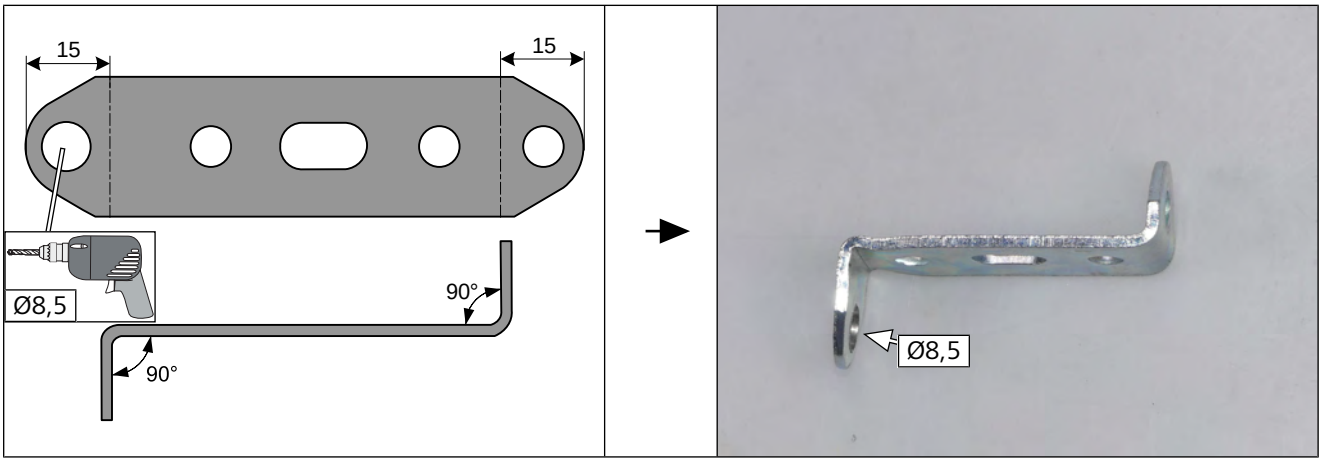


Fig. 71

Premounting perforated bracket

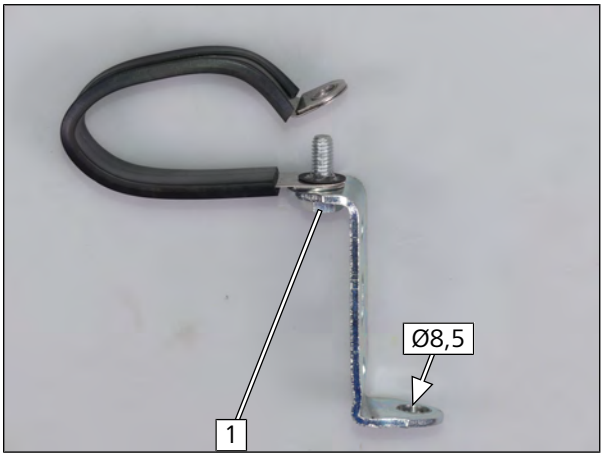


Fig. 72

1 M6x20 bolt, perforated bracket, Ø38 rubber-coated p-clamp, lock washer

Installing perforated bracket

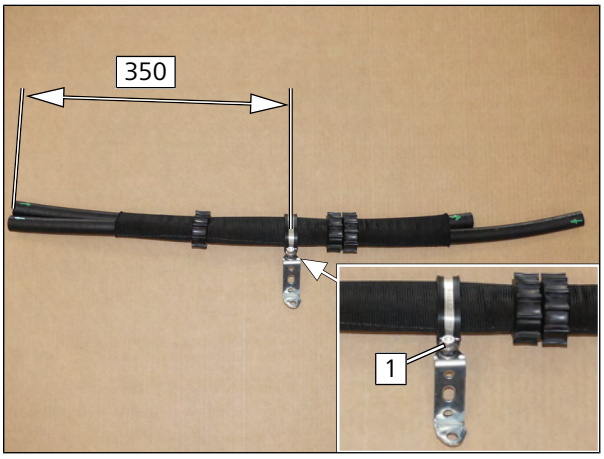


Fig. 73

▶ Align perforated bracket as shown.

1 Premounted M6x20 bolt, perforated bracket, rubber-coated p-clamp, M6 flanged nut

Dismantling original vehicle hoses

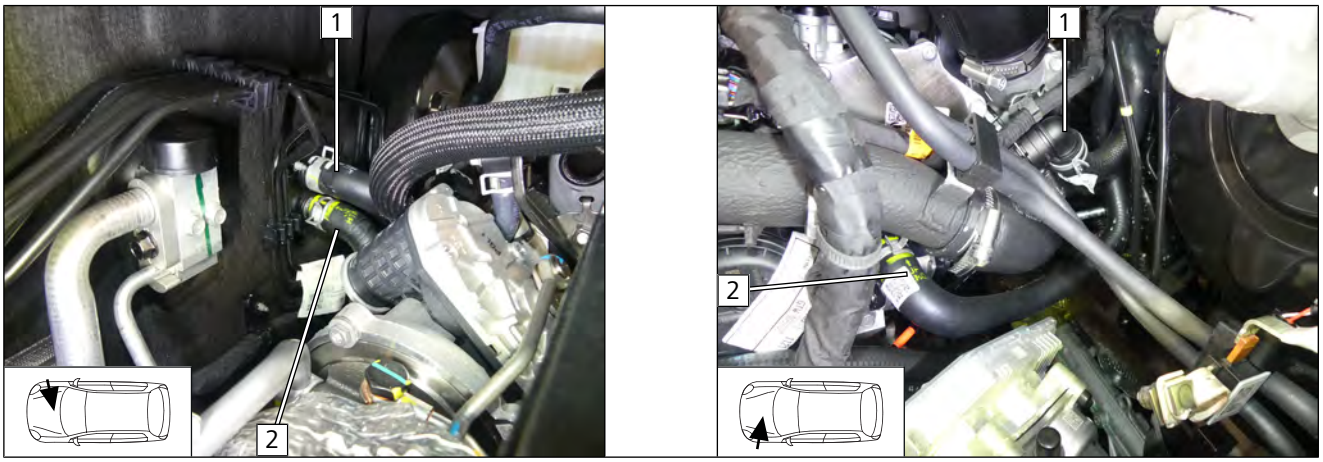


Fig. 74

1 Heat exchanger outlet / engine inlet hose

2 Engine outlet / heat exchanger inlet hose

Aligning original vehicle spring clip

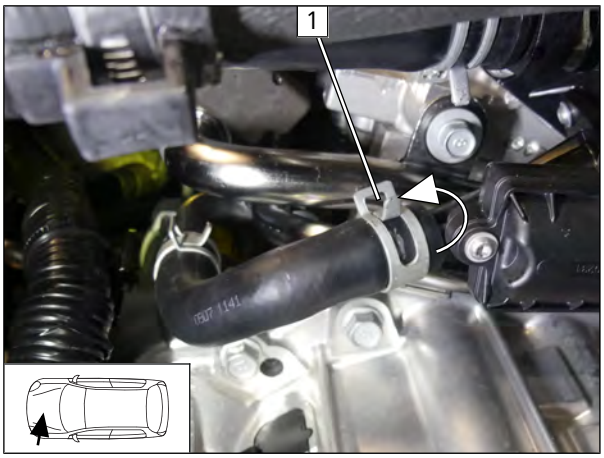


Fig. 75

▶ Align original vehicle spring clip **1** as shown.

Placing hoses Ⓑ and Ⓖ in engine compartment

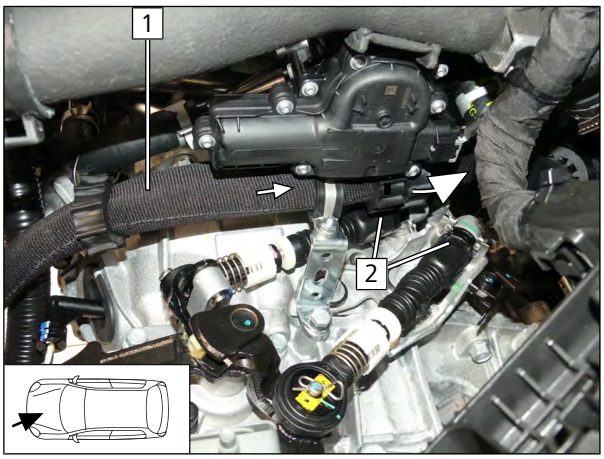


Fig. 76

▶ Route hose group **1** (premounted hoses Ⓑ and Ⓖ) above the gearshift cable **2** as shown.

Installing perforated bracket

Fig. 77

1 M8x20 bolt, spring lock washer, premounted perforated bracket, spacer (5), original vehicle thread

Connecting hoses Ⓑ, Ⓒ and Ⓕ, Ⓖ

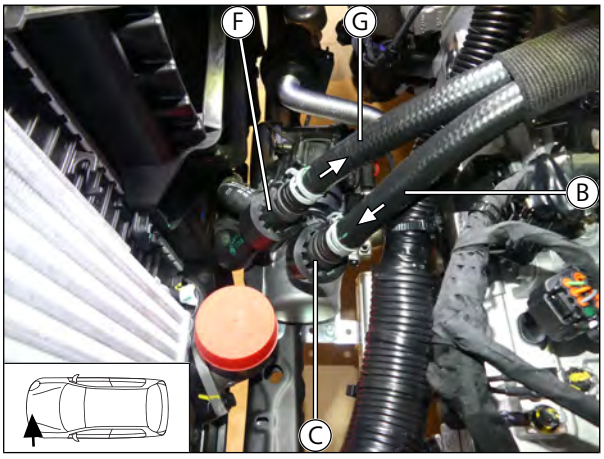


Fig. 78

Mounting hose bracket

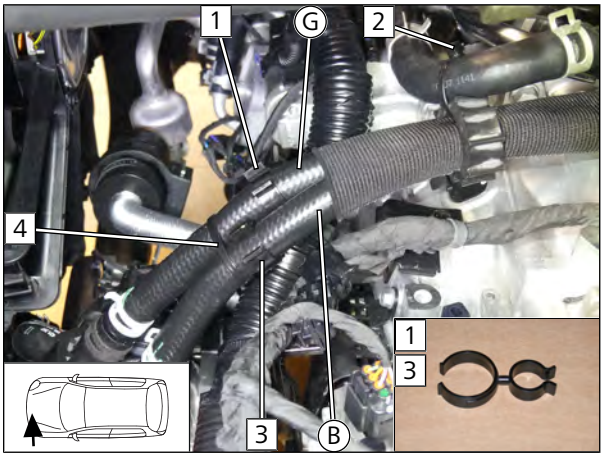


Fig. 79

1 Ø25/37 hose bracket between hose Ⓖ and original vehicle wiring harness

2 Cable tie through rubber isolator and around original vehicle hose

3 Ø25/37 hose bracket between hose Ⓑ and original vehicle wiring harness

4 Cable tie around hose B and hose G

Heat exchanger outlet/engine inlet hose cutting point

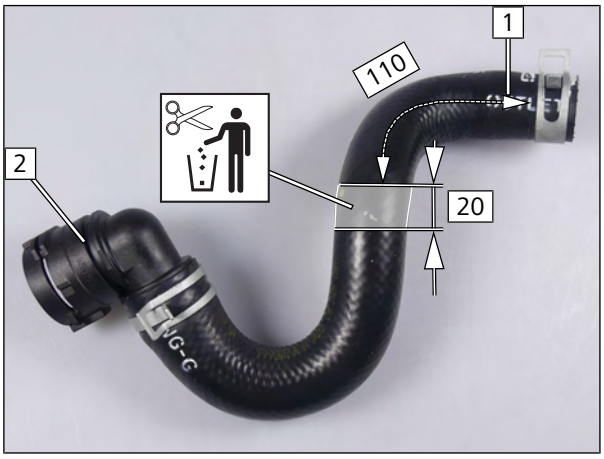


Fig. 80

Original vehicle spring clip will be reused.

1 Heat exchanger outlet hose section
2 Engine inlet hose section with coupling

Premounting T-piece hose group

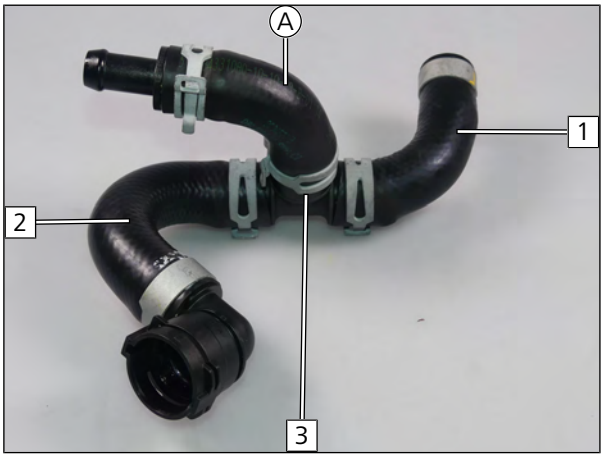


Fig. 81

1 Heat exchanger outlet hose section
2 Engine inlet hose section with coupling
3 T piece

Engine outlet / heat exchanger inlet hose cutting point

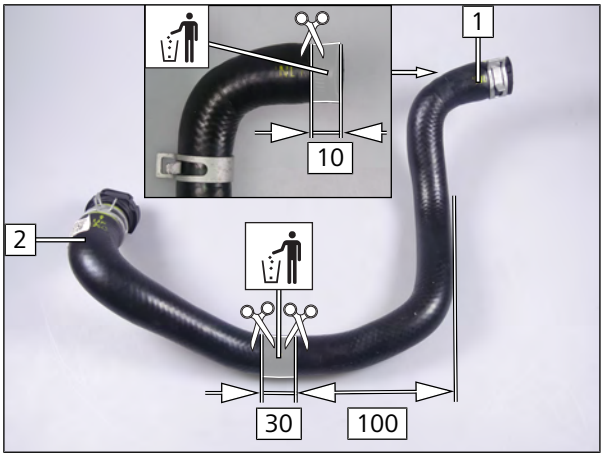


Fig. 82

Original vehicle spring clip will be reused.

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling

Premounting double non-return valve hose group

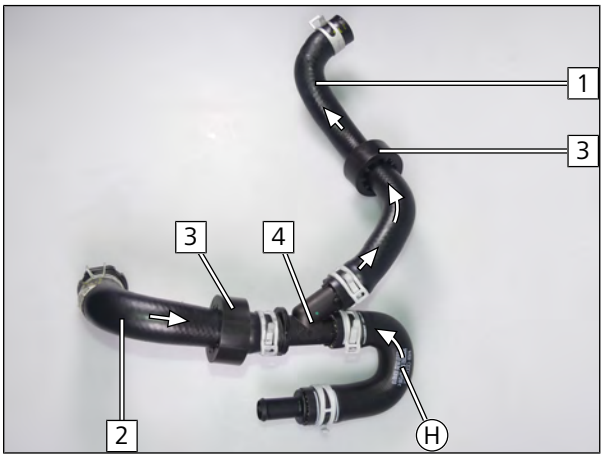


Fig. 83

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling
3 Rubber isolator
4 Double non-return valve

Mounting hose group with double non-return valve

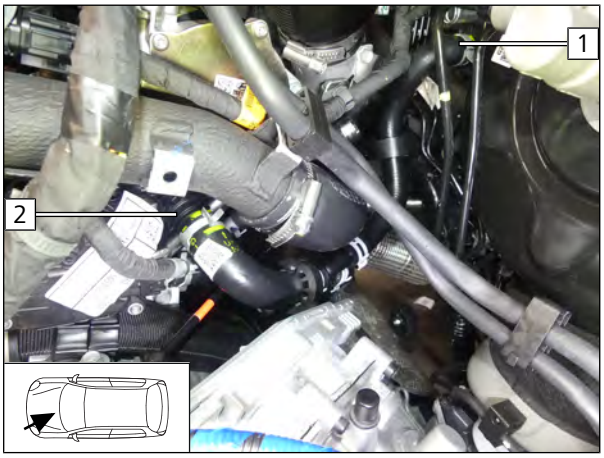


Fig. 84

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling

Mounting T-piece hose group

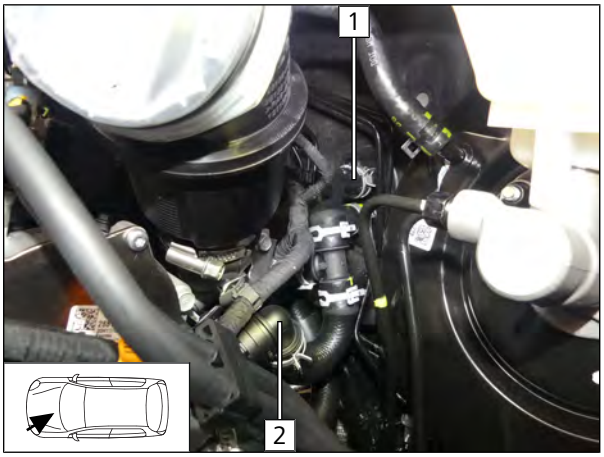


Fig. 85

1 Heat exchanger outlet hose section
2 Engine inlet hose section

Connecting hoses Ⓖ and Ⓗ

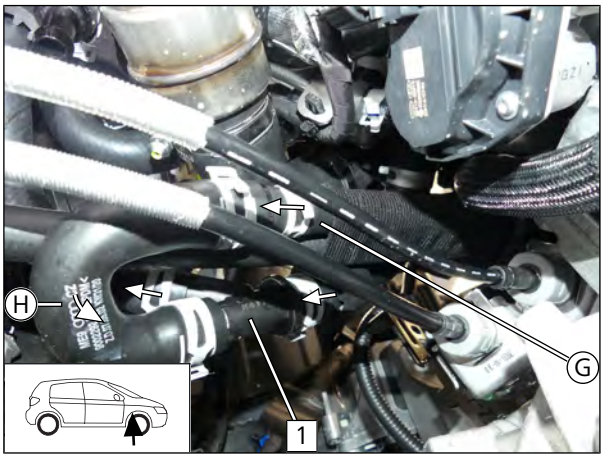


Fig. 86

1 Double non-return valve, premounted

Connecting hoses Ⓐ and Ⓑ

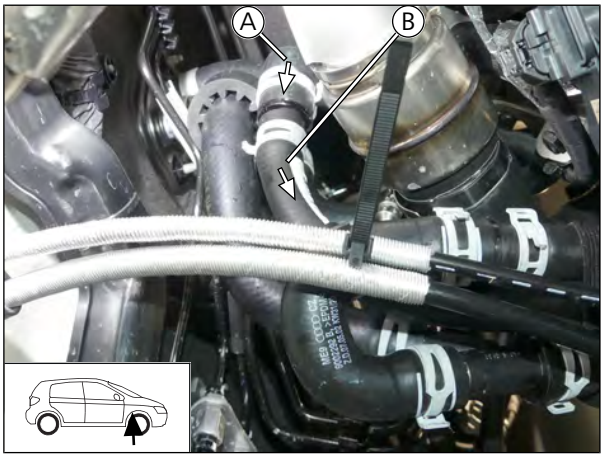


Fig. 87

Fastening hoses

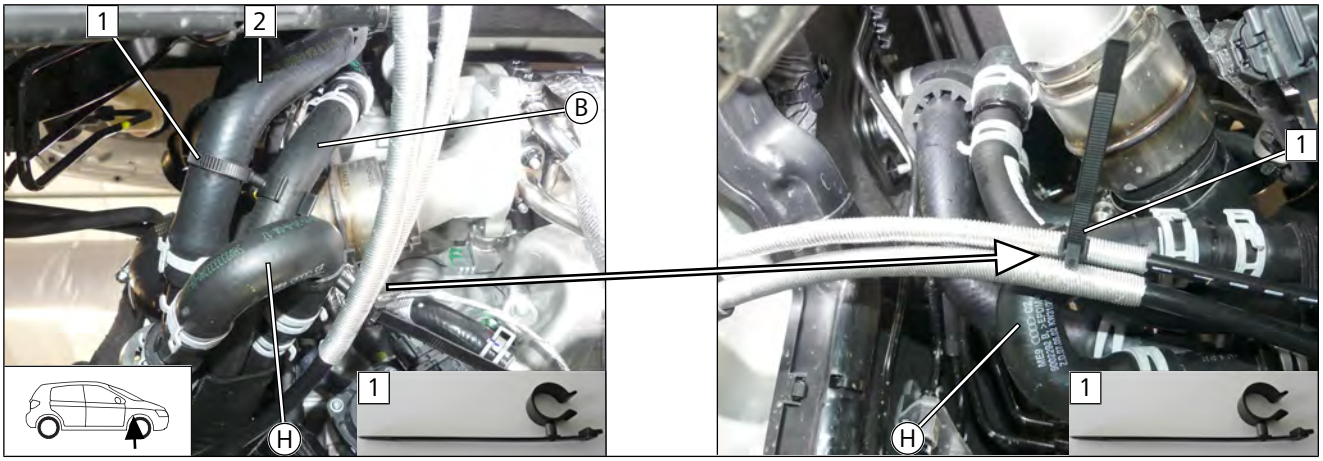


Fig. 88

1 Hose bracket on hose Ⓑ and around heat exchanger inlet hose

2 Heat exchanger inlet hose section

1 Hose bracket on hose Ⓗ and around gearshift cable

Checking distance

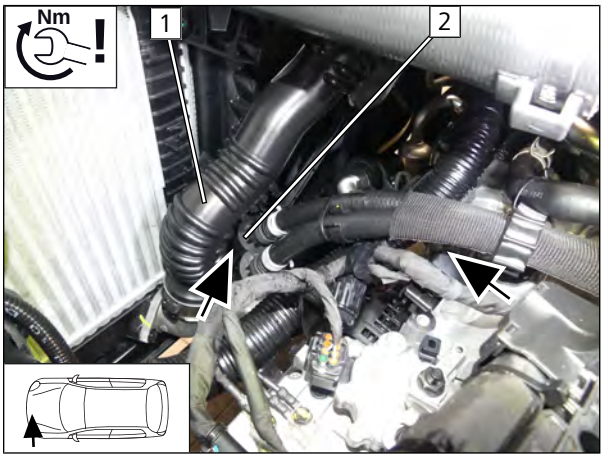


Fig. 89

Ensure sufficient distance from neighbouring components, correct if necessary.

>20

1 Mount charge-air tube
2 Rubber isolator

10.3 Coolant circuit installation - veh. with dual clutch transmission

Premounting hoses Ⓑ and Ⓖ

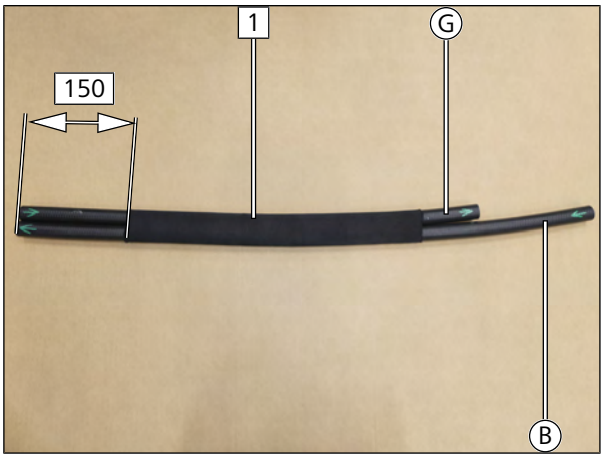


Fig. 90

Tag hoses to prevent any mix up.

▶ Slide fabric heat shrink tubing 1 onto hoses Ⓑ and Ⓖ as shown and shrink.

▶ 1. Slide on and cut to length

▶ 2. Shrink, use at most 230 °C

Preparing rubber isolator, 3x

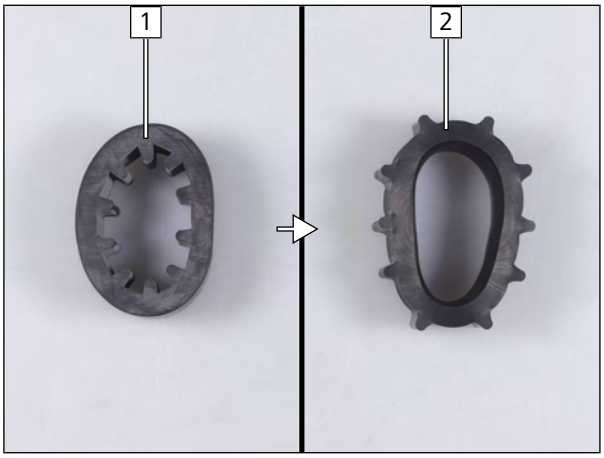


Fig. 91

Mounting rubber isolator

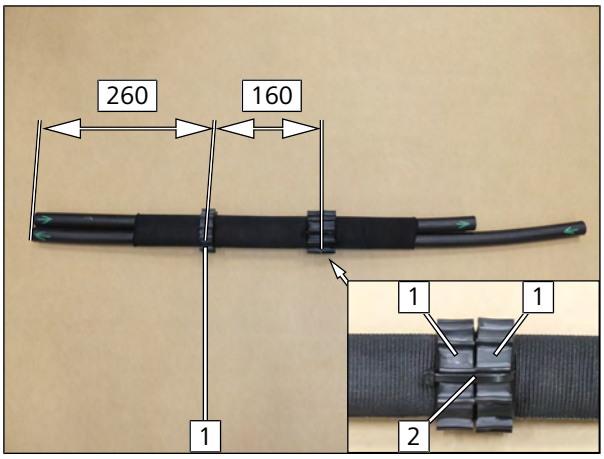


Fig. 92

▶ Align rubber isolator 1 as shown.

2 Cable tie, on both sides 1x

Premounting perforated bracket

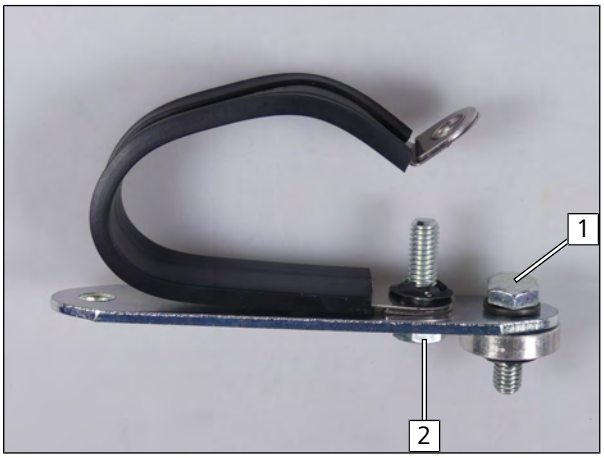


Fig. 93

1 M6x20 bolt, spring lock washer, perforated bracket, spacer (5), lock washer

2 M6x20 bolt, perforated bracket, Ø38 rubber-coated p-clamp, lock washer

Installing perforated bracket

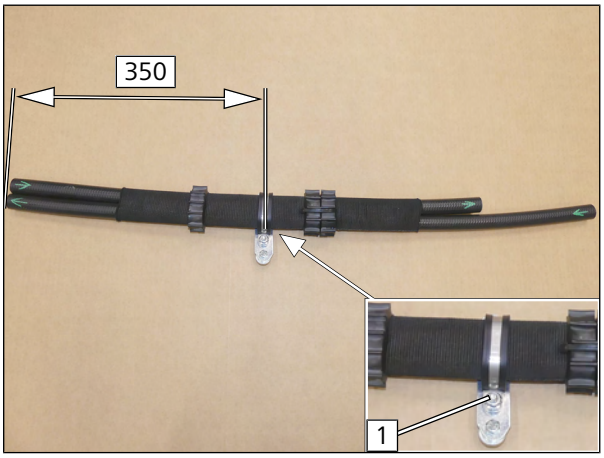


Fig. 94

▶ Align premounted perforated bracket **1** as shown.

1 Premounted M6x20 bolt, rubber-coated p-clamp, M6 flanged nut

Dismantling original vehicle hoses

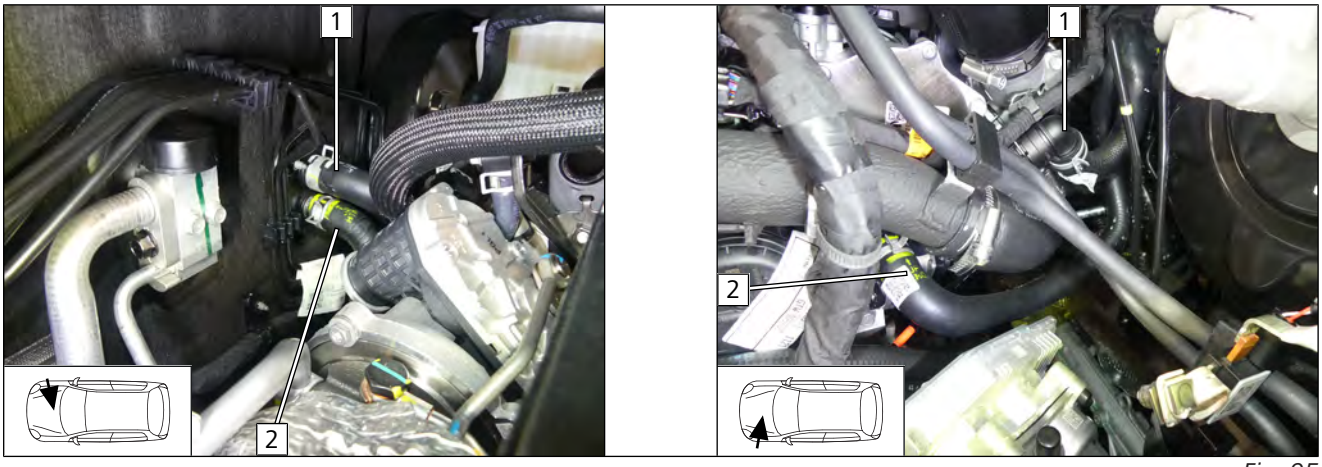


Fig. 95

1 Heat exchanger outlet / engine inlet hose

2 Engine outlet / heat exchanger inlet hose

Aligning original vehicle spring clip

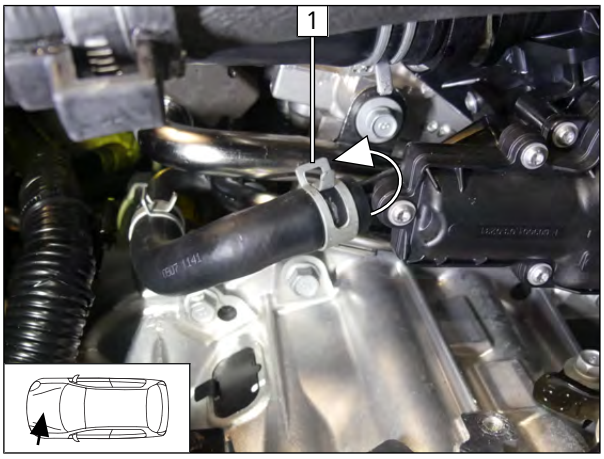


Fig. 96

▶ Align original vehicle spring clip 1 as shown.

Placing hoses Ⓑ and Ⓖ in engine compartment

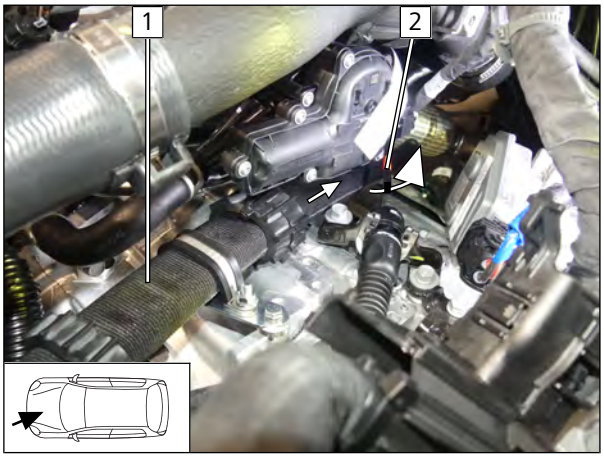


Fig. 97

▶ Place premounted hoses Ⓑ and Ⓖ as shown.

1 Premounted hoses Ⓑ,Ⓖ

2 Gearshift cable (if present)

Installing perforated bracket

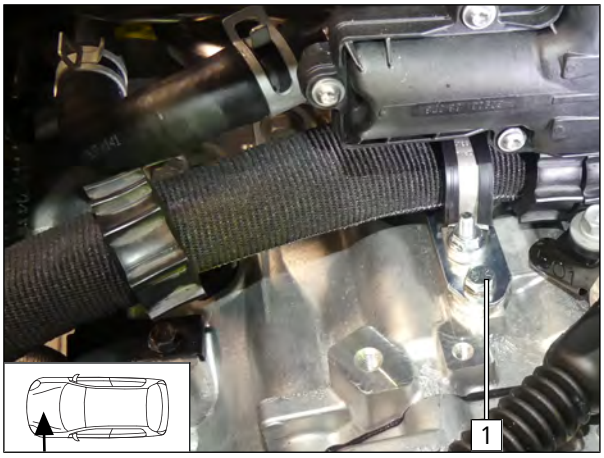


Fig. 98

1 Premounted M6x20 bolt, original vehicle thread

Connecting hoses Ⓑ, Ⓒ and Ⓕ, Ⓖ

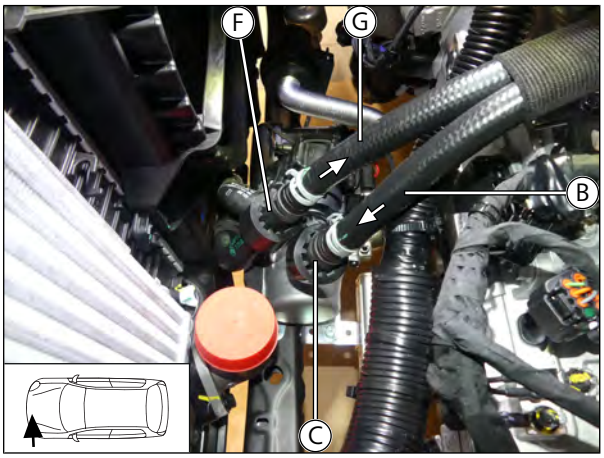


Fig. 99

Mounting hose bracket

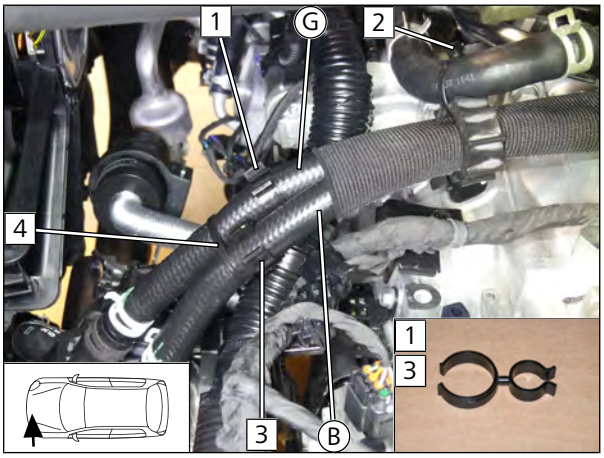


Fig. 100

1 Ø25/37 hose bracket between hose Ⓖ and original vehicle wiring harness

2 Cable tie through rubber isolator and around original vehicle hose

3 Ø25/37 hose bracket between hose Ⓑ and original vehicle wiring harness

4 Cable tie around hose B and hose G

Heat exchanger outlet/engine inlet hose cutting point

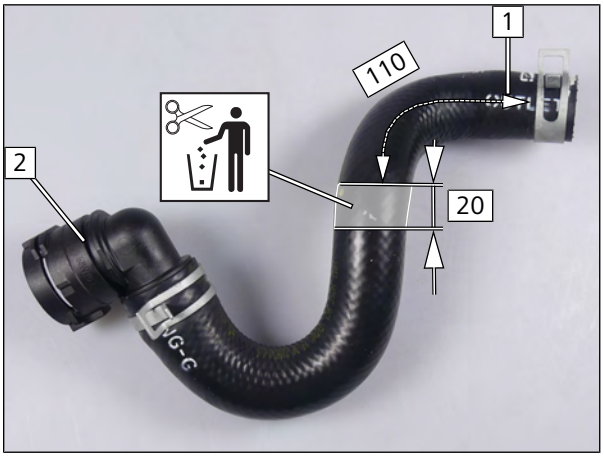


Fig. 101

Original vehicle spring clip will be reused.

1 Heat exchanger outlet hose section

2 Engine inlet hose section with coupling

Premounting T-piece hose group

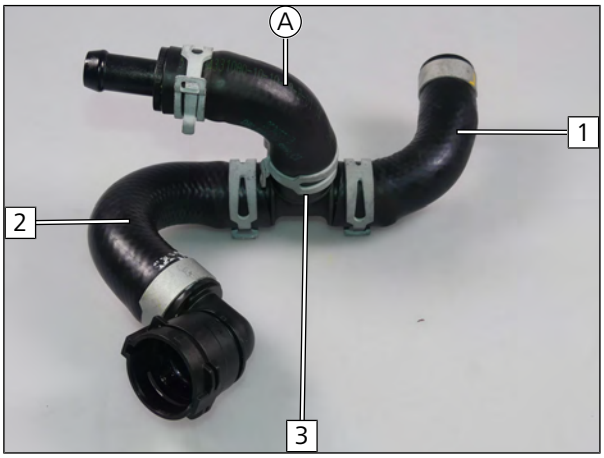


Fig. 102

1 Heat exchanger outlet hose section
2 Engine inlet hose section with coupling
3 T piece

Engine outlet / heat exchanger inlet hose cutting point

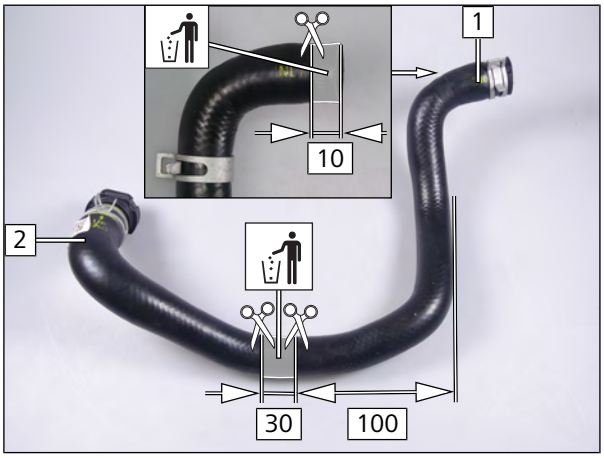


Fig. 103

Original vehicle spring clip will be reused.

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling

Premounting double non-return valve hose group

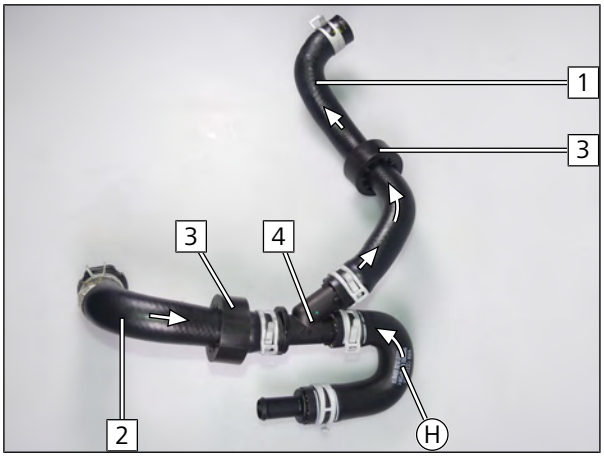


Fig. 104

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling
3 Rubber isolator
4 Double non-return valve

Mounting hose group with double non-return valve

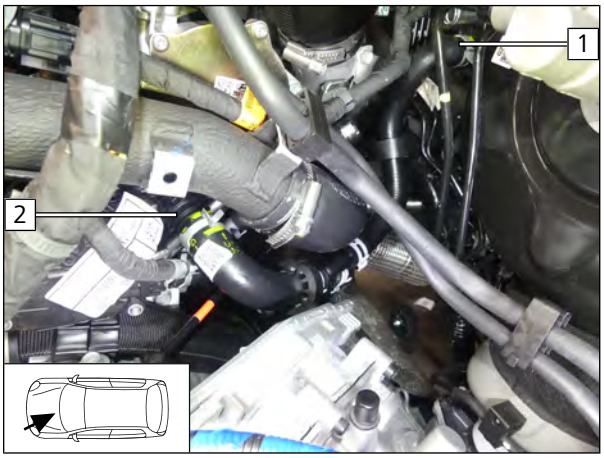


Fig. 105

1 Heat exchanger inlet hose section
2 Hose section with engine outlet coupling

Mounting T-piece hose group

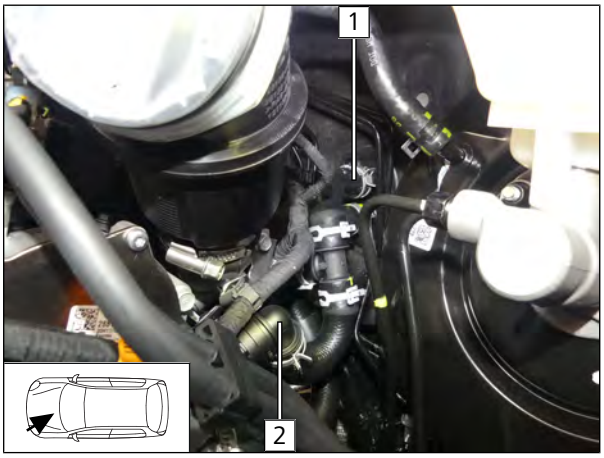


Fig. 106

1 Heat exchanger outlet hose section
2 Engine inlet hose section

Connecting hoses Ⓖ and Ⓗ

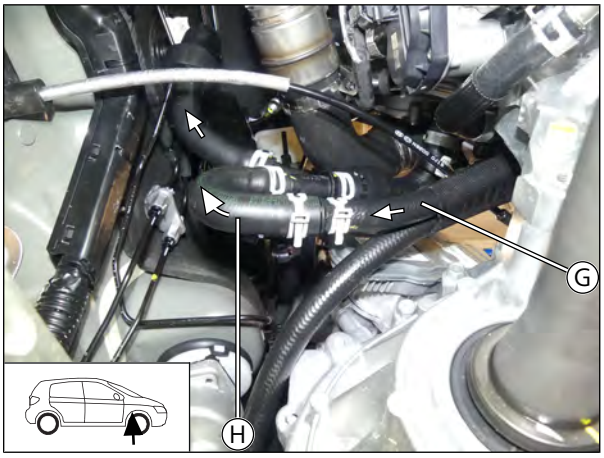


Fig. 107

Connecting hoses Ⓐ and Ⓑ

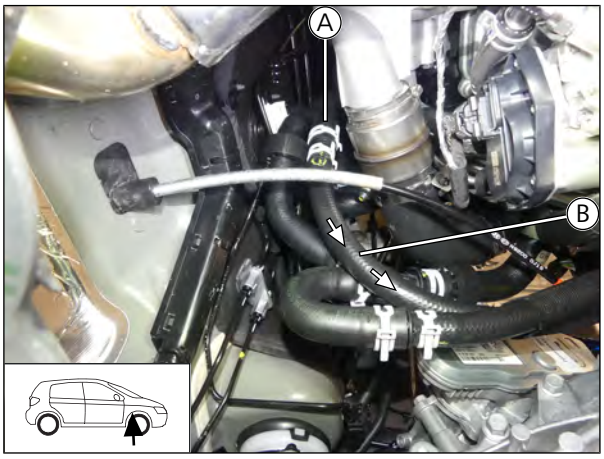


Fig. 108

Fastening hoses

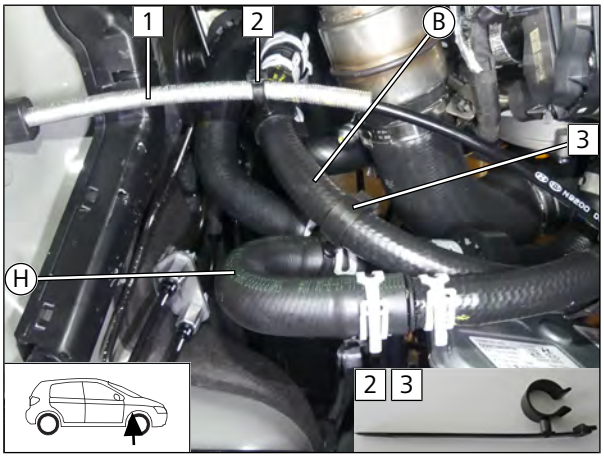


Fig. 109

1 Gearshift cable

2 Hose bracket between hose Ⓑ and original vehicle gearshift cable (if present)

3 Hose bracket between hose Ⓑ and hose Ⓗ

Checking distance

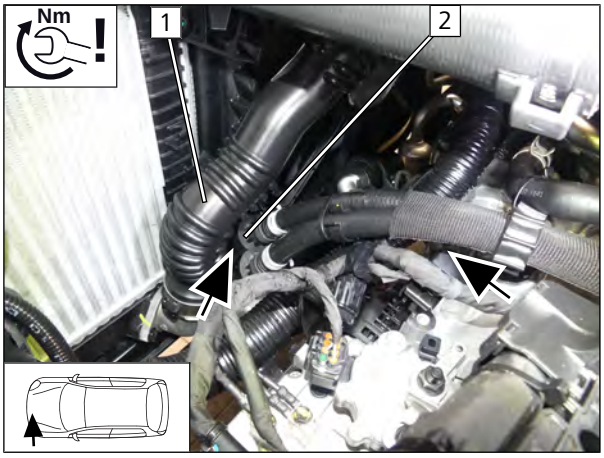


Fig. 110

Ensure sufficient distance from neighbouring components, correct if necessary.

>20

1 Mount charge-air tube

2 Rubber isolator

11 Exhaust

Mounting exhaust pipe a2

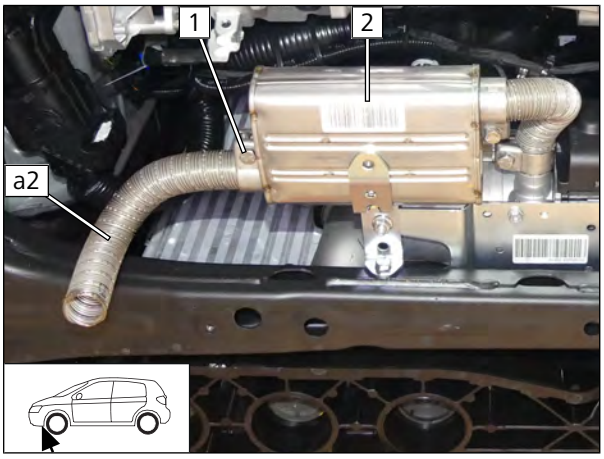


Fig. 111

1 Hose clamp
2 Exhaust silencer

Copy hole pattern

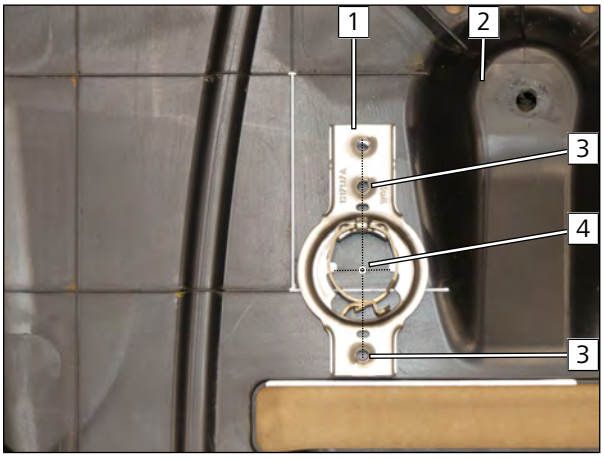


Fig. 112

Observe the EFIX installation instructions.

▶ Position EFIX 1 as shown and copy hole patterns 3 and 4.

2 Engine underride protection

Drilling hole, work steps E2 and E4

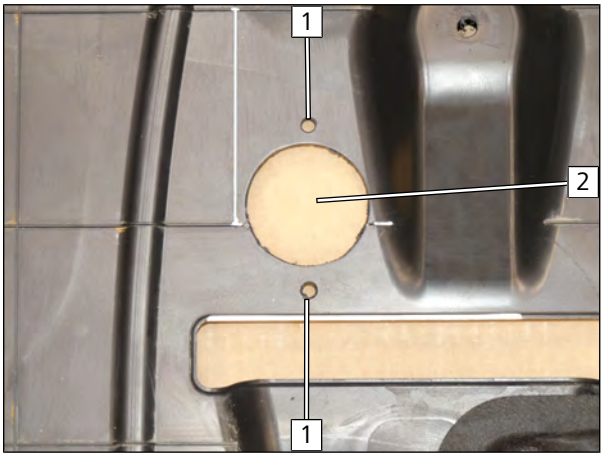


Fig. 113

1 Hole
2 Hole

Shortening raised part

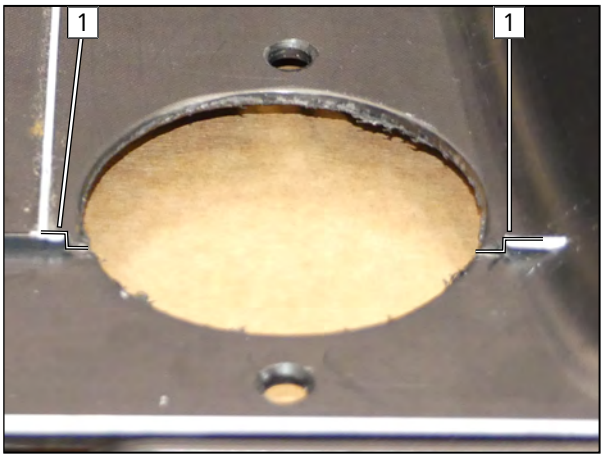


Fig. 114

▶ Shorten rib **1** in the area around the EFIX.

Mounting EFIX, work steps E5 – E6

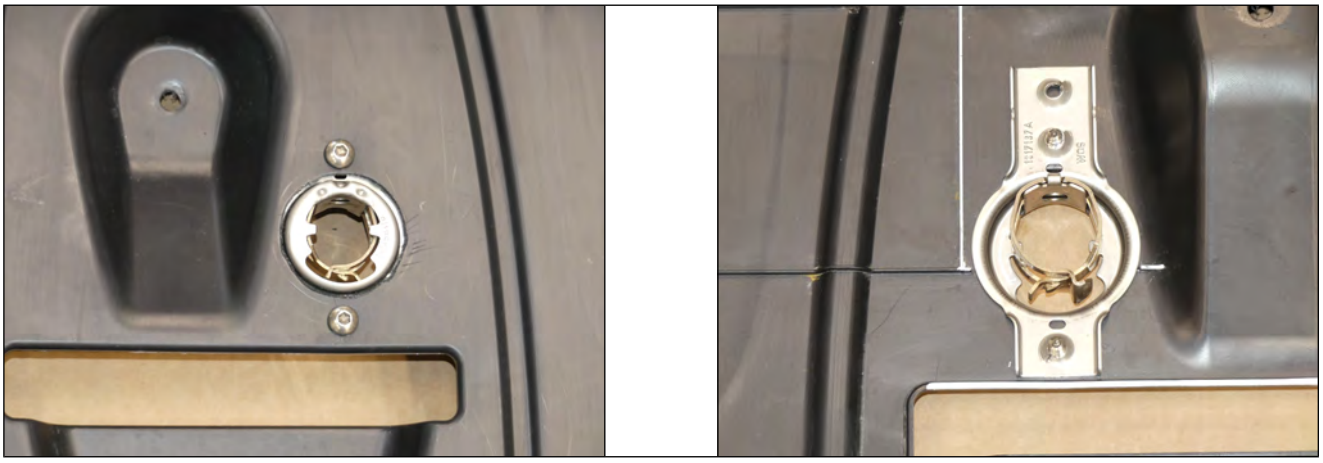


Fig. 115

Mounting exhaust pipe **a2**, work steps E7 – E8

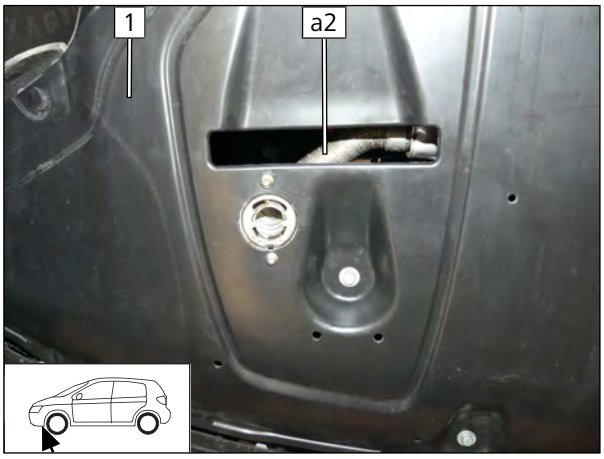


Fig. 116

▶ Mount engine underride protection **1**.

12 Electrical system of passenger compartment

12.1 Electrical system preparation

Preparing / assigning wires

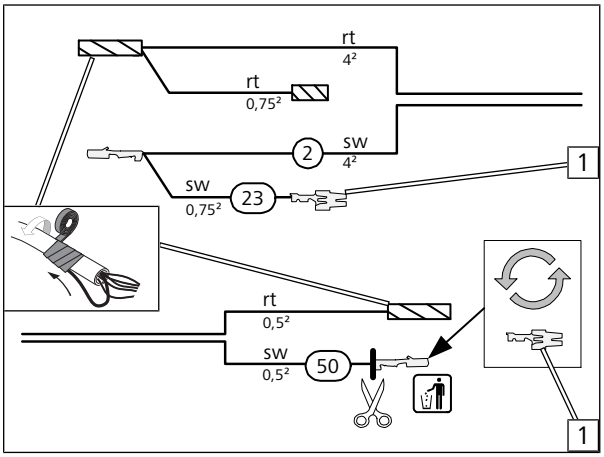


Fig. 117

Wire sections retain their numbering in the entire document.

▶ Insulate and tie back 4² red (rt) wire.

- 1 Flat spring contact
- 2 Black (sw) wire of fan wiring harness
- 23 Black (sw) wire of available additional line outlet
- 50 Black (sw) wire of power supply wiring harness

Connecting wires to RSH

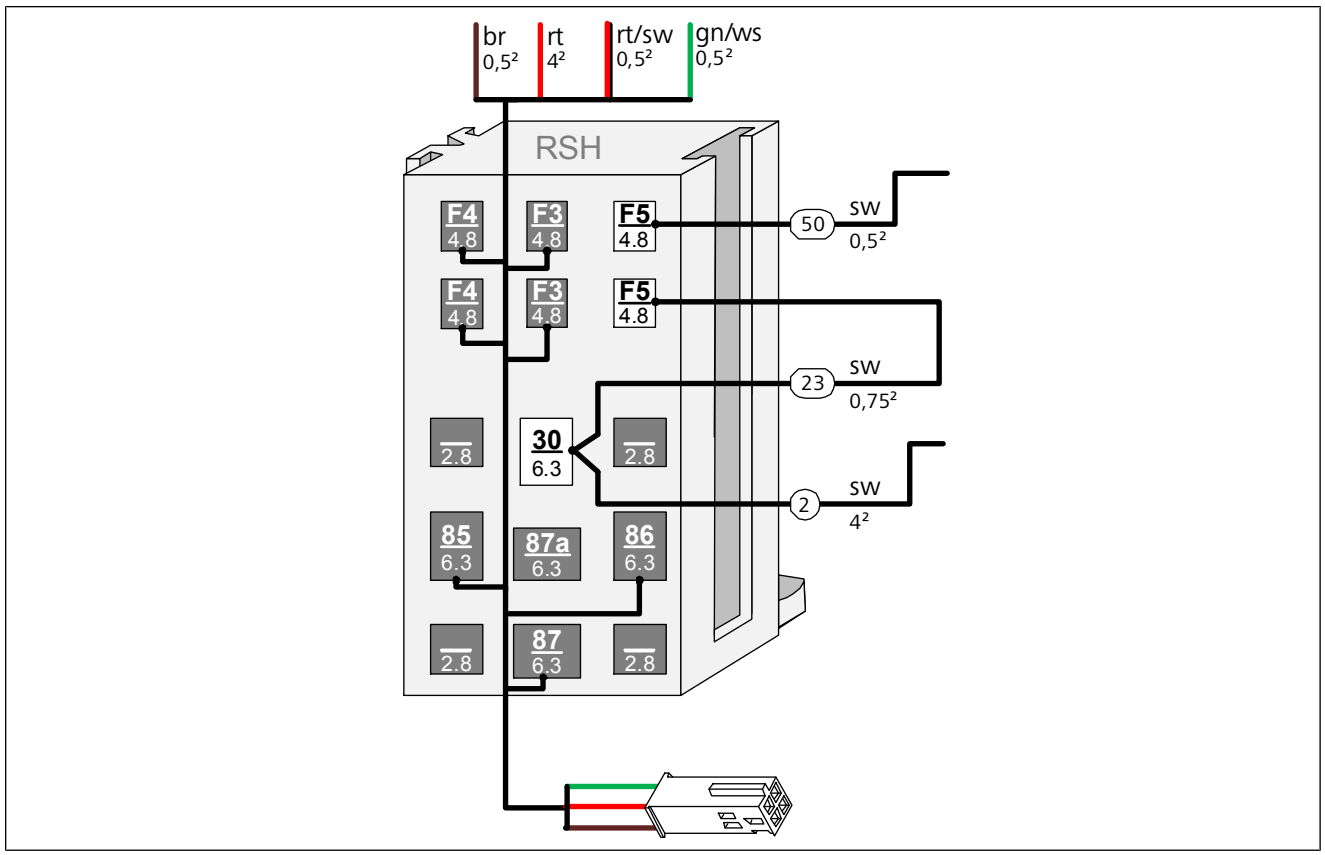


Fig. 118

Premounting RSH

Fig. 119

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

Mounting relay K1 and fuse F4/F5

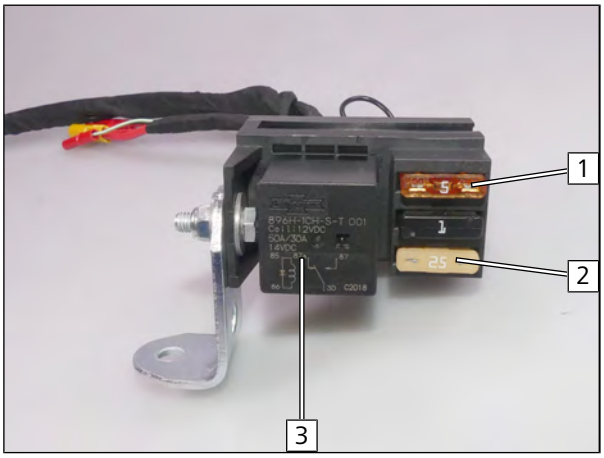


Fig. 120

1 5A fuse F5

2 25A fuse F4

3 Relay K1

12.2 Wiring diagram

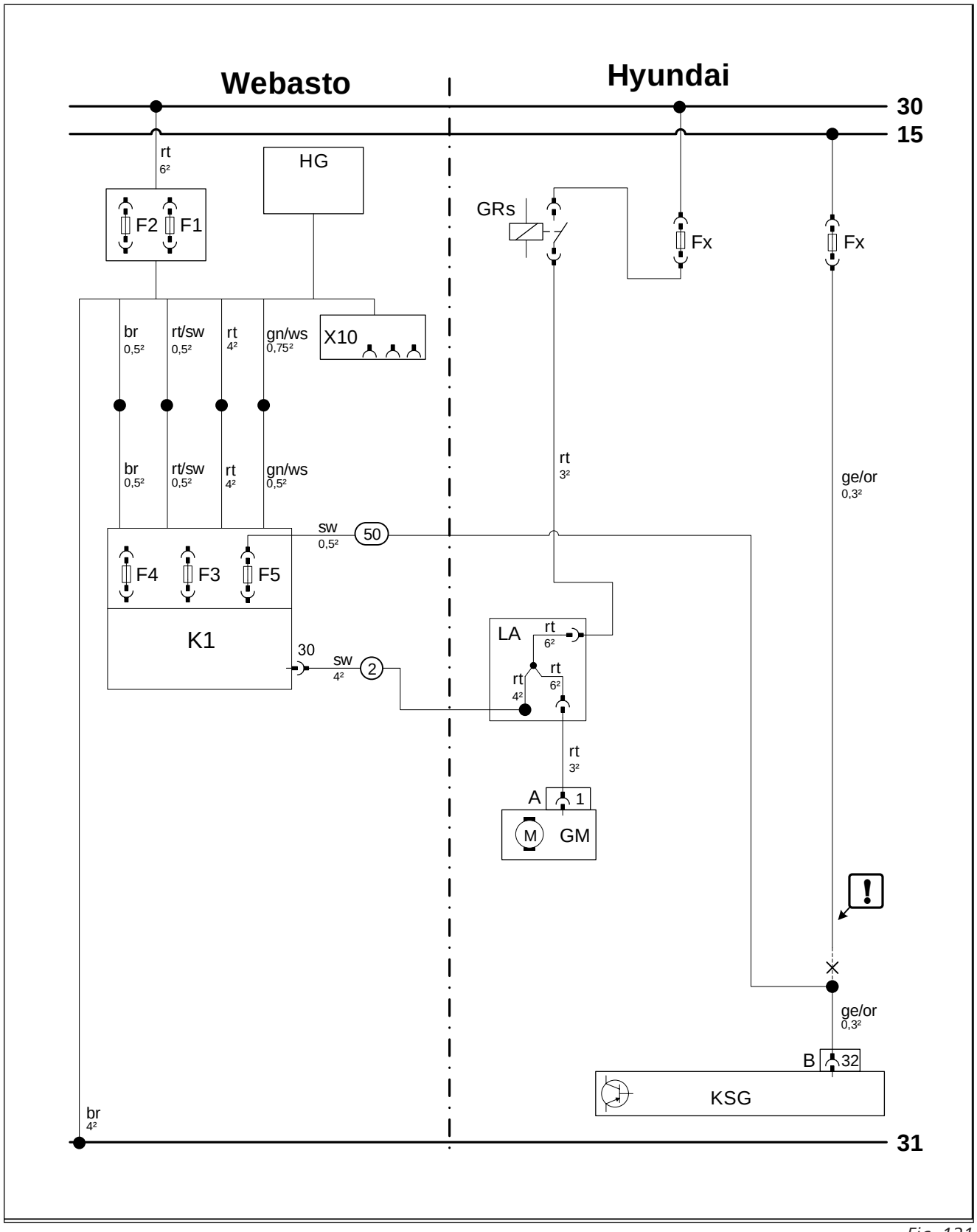


Fig. 121

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		insulate and tie back
GM	Fan motor		
A	2-pin GM connector		
KSG	Air-conditioning control unit		
B	32-pin KSG connector		

Webasto components		Cable colours	
Abbreviation	Component	Abbreviation	Colour
A	Male plug for CLR module wiring harness	bg	beige
B	Female plug for CLR module wiring harness	bl	blue
C	Male plug for adapter wiring harness	br	brown
D	Female plug for adapter wiring harness	dbl	dark blue
E	Male plug for Plug&Play wiring harness	dgn	dark green
F	Female plug for Plug&Play wiring harness	ge	yellow
CCL GW	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		

12.3 Fan controller

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

Connecting same colour wires of wiring harnesses

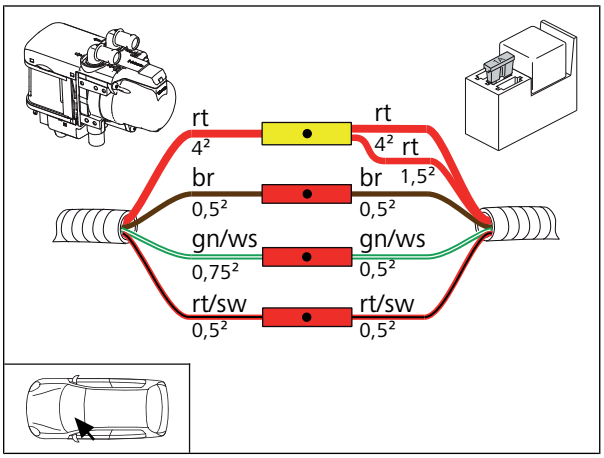


Fig. 122

Position of RSH fastening point

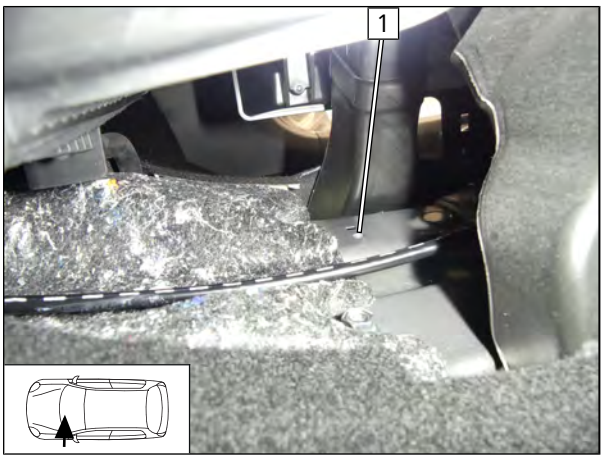


Fig. 123

1 Original vehicle thread

Mounting RSH

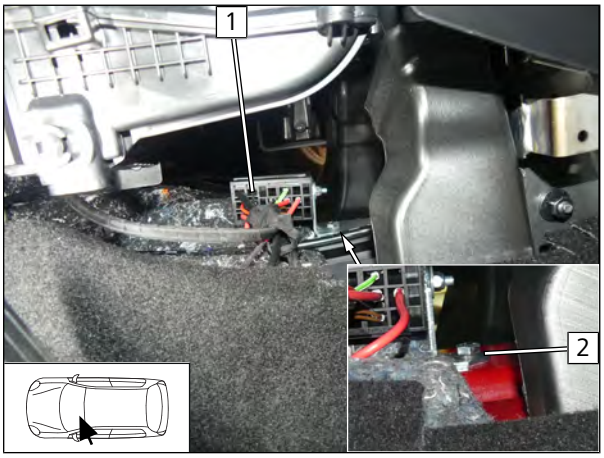


Fig. 124

1 RSH

2 M6x16 bolt, spring lockwasher, angle bracket, original vehicle thread

Dismantling A/C control unit

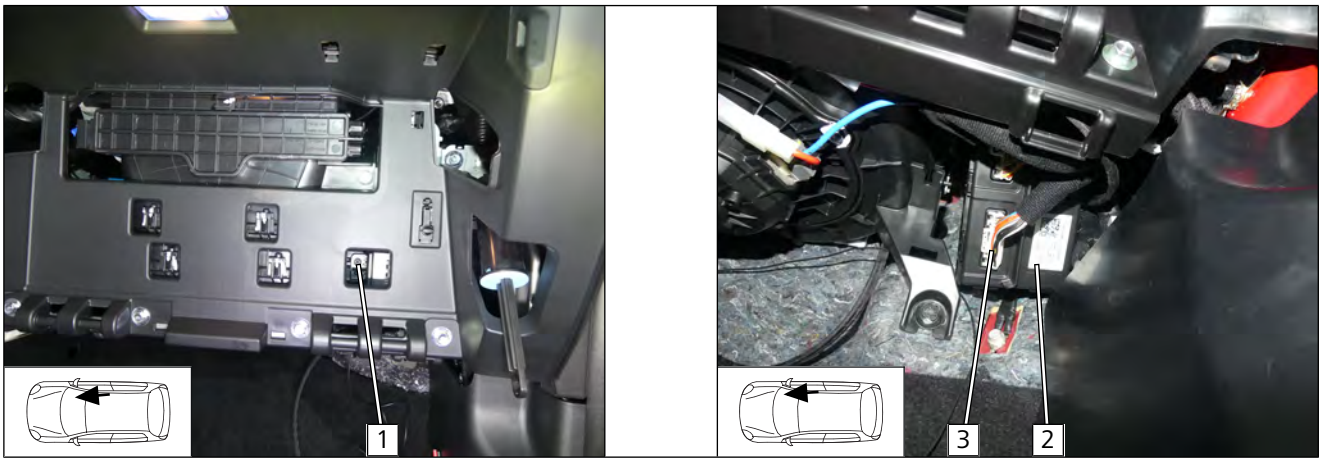


Fig. 125

[1] Original vehicle bolt

[2] Air-conditioning control unit

[3] 32-pin KSG connector

Connecting air-conditioning control unit

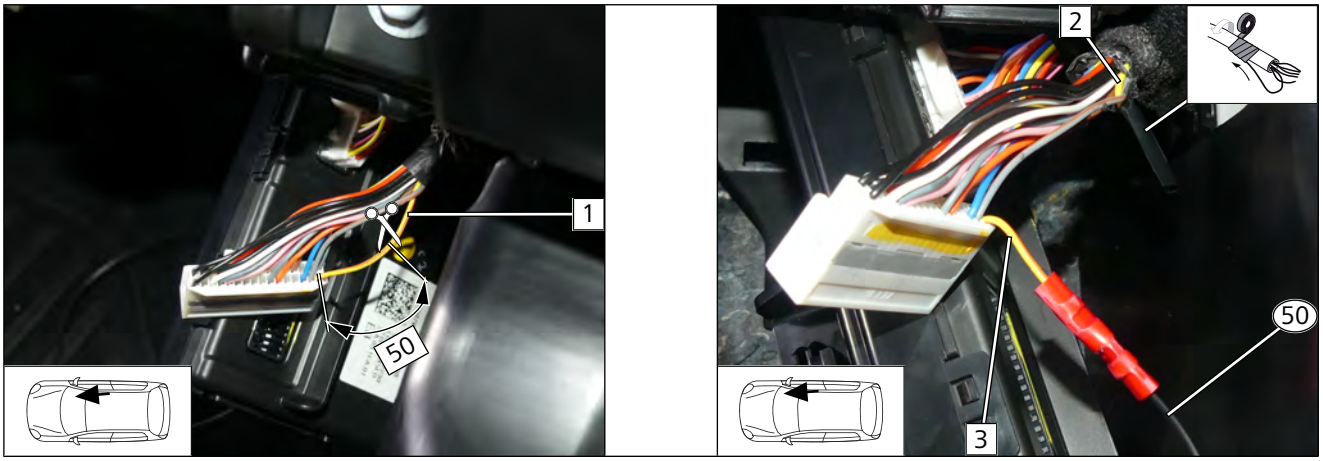


Fig. 126

▶ Cut yellow/orange (ge/or) wire of 32-pin KSG connector / pin 32 [1] as shown.

[2] Insulate and tie back yellow/orange (ge/or) wire

[3] Yellow/orange (ge/or) wire of 32-pin KSG connector / pin 32

(50) Black (sw) wire of fuse F5

Fan motor connection, cutting wire

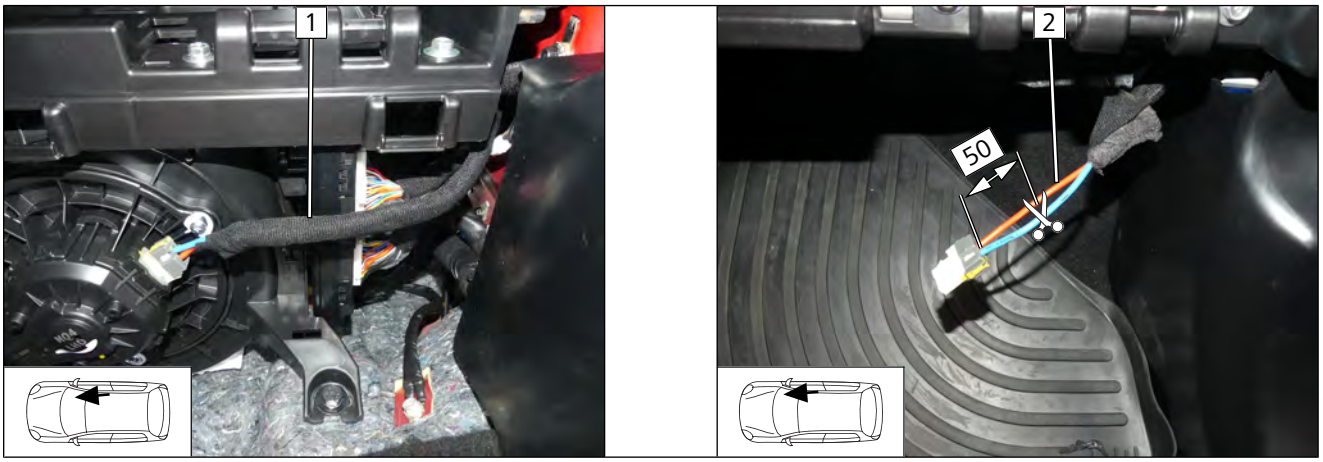


Fig. 127

1 Fan motor wiring harness

2 Red (rt) wire of 2-pin GM connector / pin 1

Fan motor connection, preparing and connecting wire

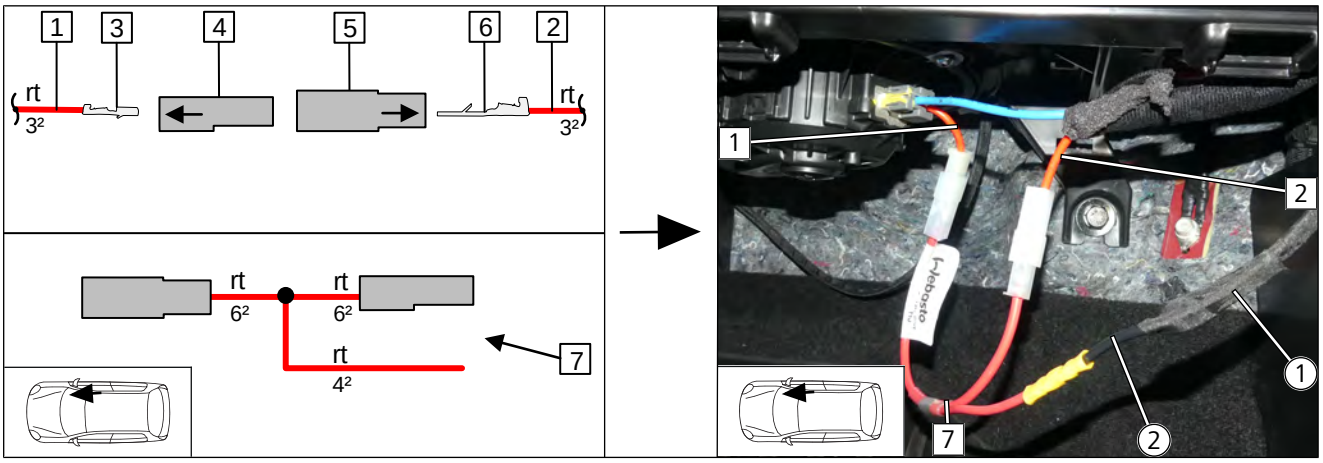


Fig. 128

1 Red (rt) wire of 2-pin GM connector / pin 1
2 Red (rt) wire
3 Female connector
4 Male connector housing
5 Male connector housing
6 Male connector
7 Power adapter

1 Red (rt) wire of 2-pin GM connector / pin 1
2 Red (rt) wire
7 Power adapter
① Insulate and tie back red (rt) wire of fan wiring harness
② Black (sw) wire of K1/30 fan wiring harness

12.4 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.

13 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'.

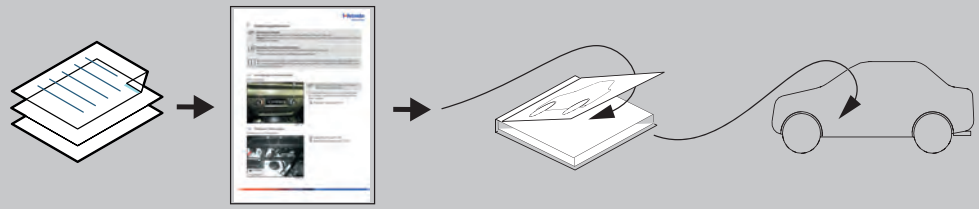
▶ Initial operation and functional test

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

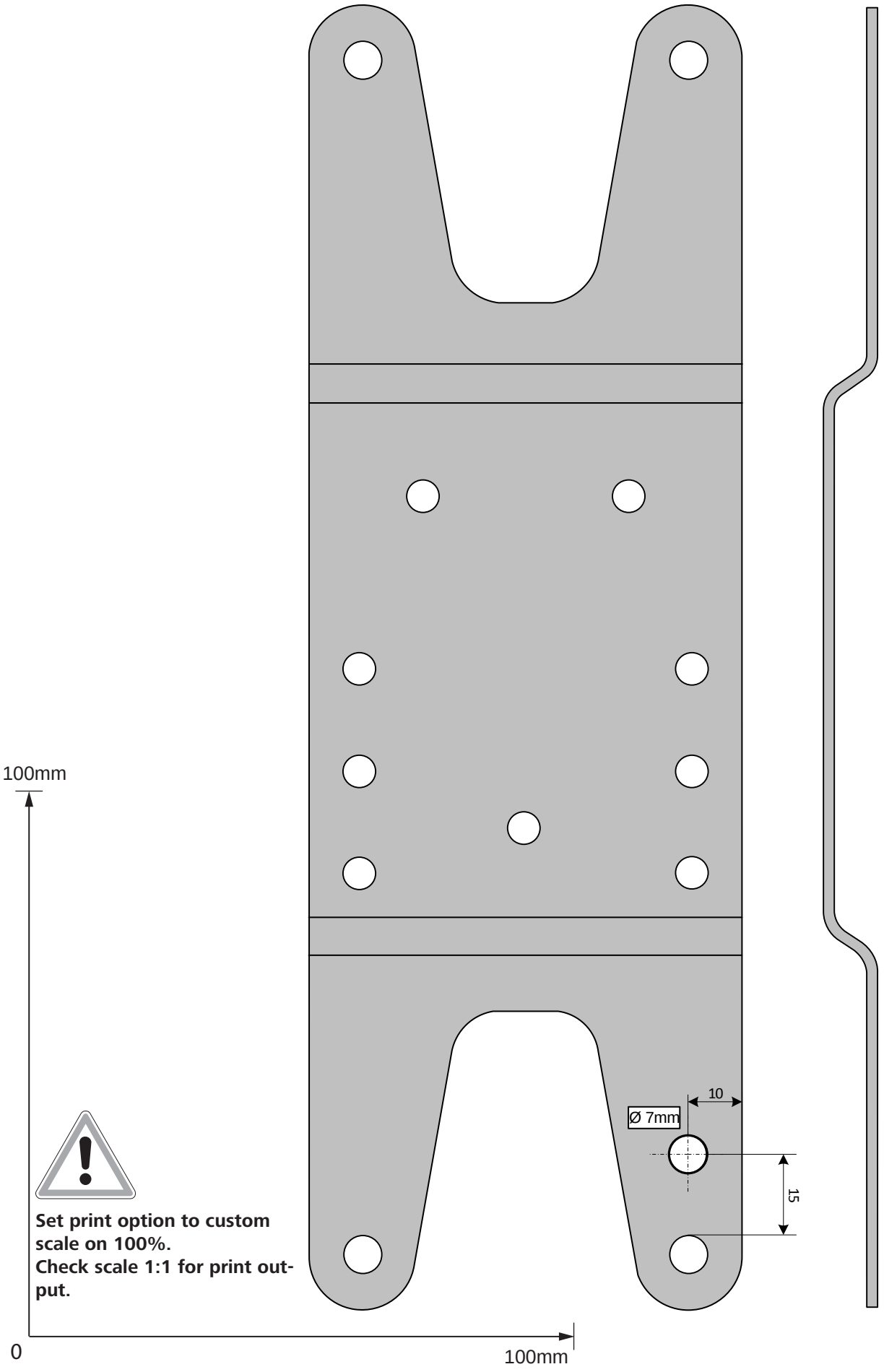
Vehicle event log after parking heating mode

✓ 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.

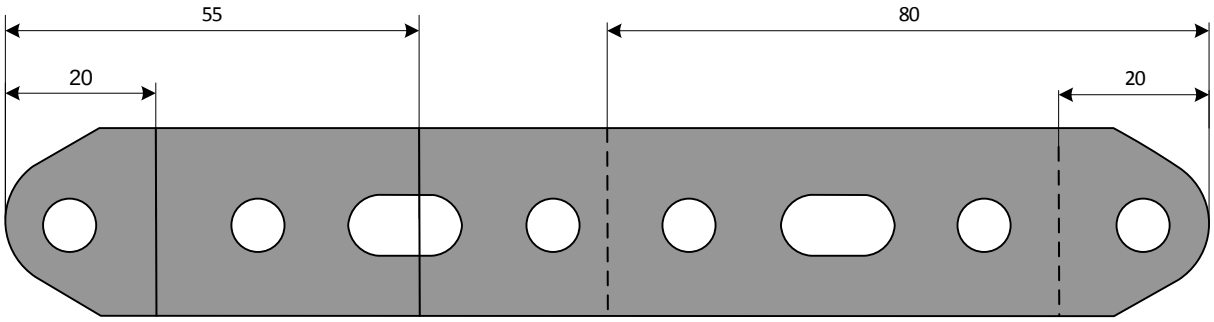


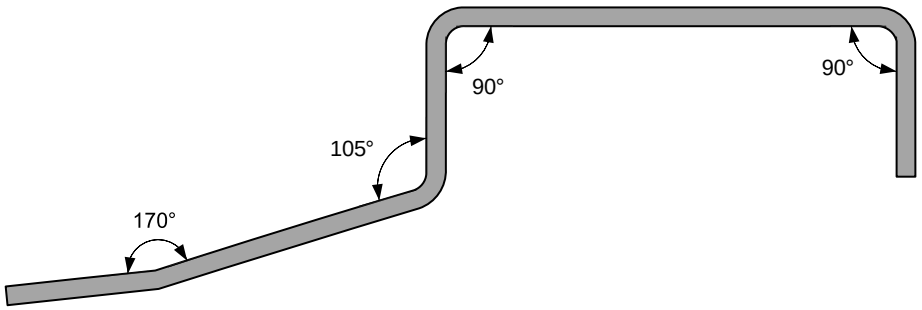
14 Heater bracket template



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

15 Template for perforated bracket





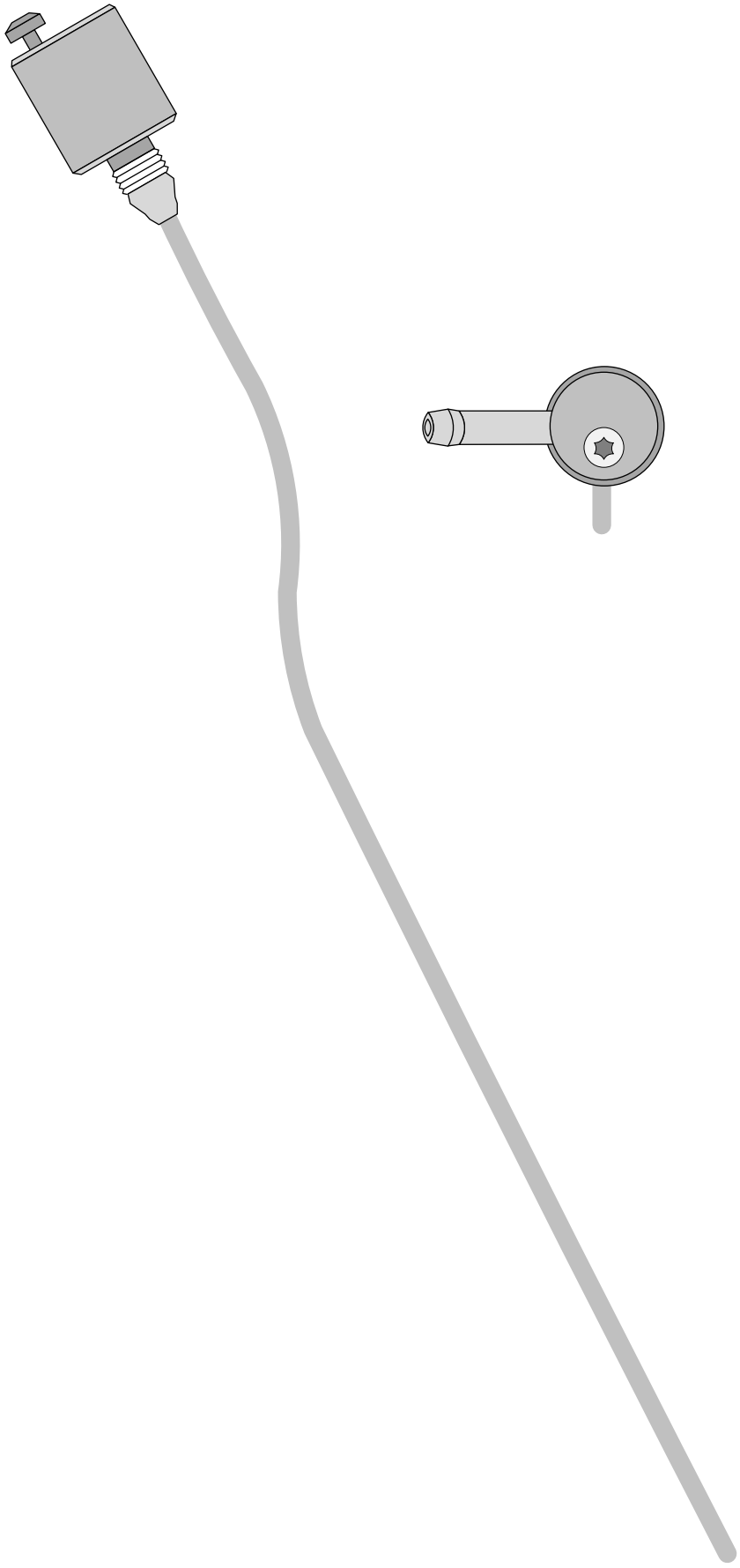
100mm

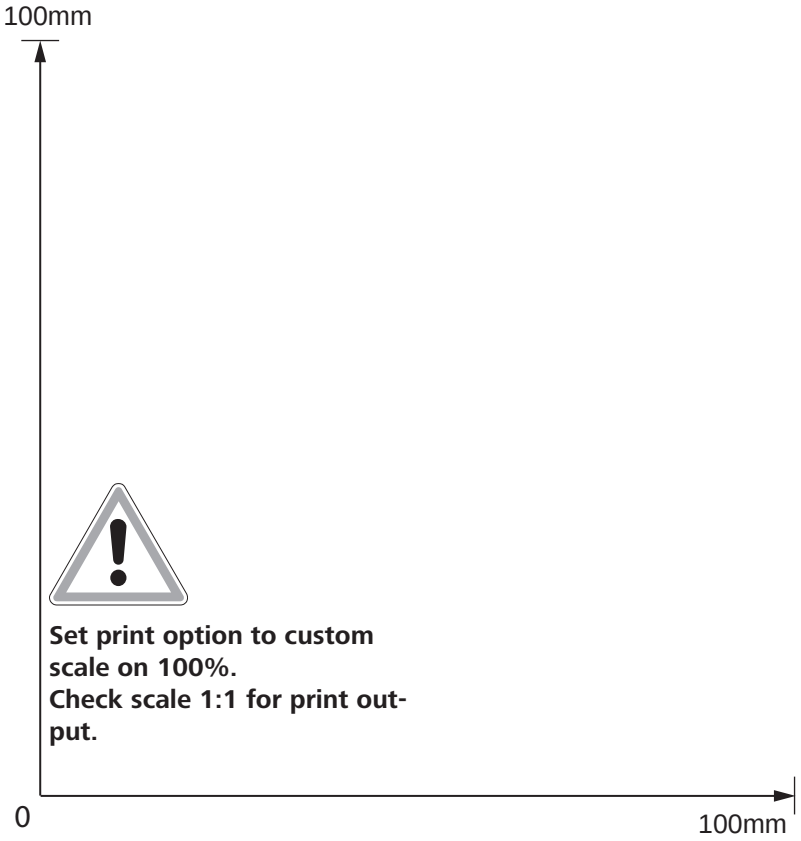
Set print option to custom scale on 100%.
Check scale 1:1 for print output.

0

100mm

16 FuelFix template





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

17 Operating instructions

Information regarding the heating time:

We recommend matching the heating time to the driving time (heating time = driving time)
Example: for a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions**.**

▶ Deactivate passenger compartment monitoring for the heating operation

Note for current consumption in case of parking heating mode

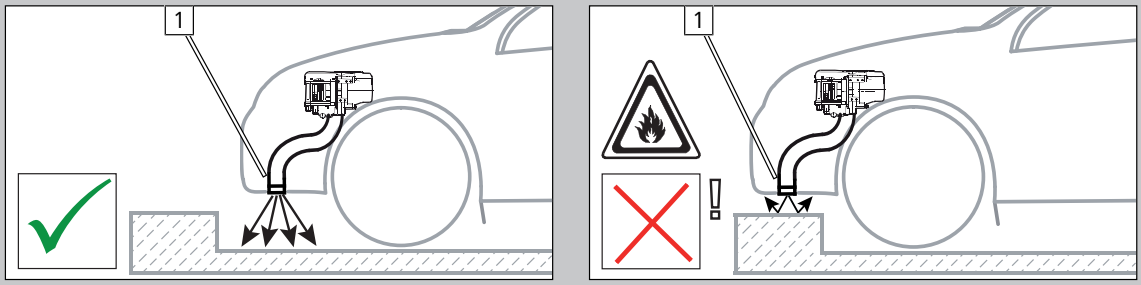
Depending on the vehicle model, there may be an increased quiescent current consumption message in the vehicle information system during or directly after operation in parking heating mode.

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

Note for parking heater function

Your vehicle is equipped with a passenger compartment preheating unit. There is **no** engine pre-heating.

Notes on parking heater exhaust outlet 1



17.1 A/C control panel settings

Automatic A/C control panel

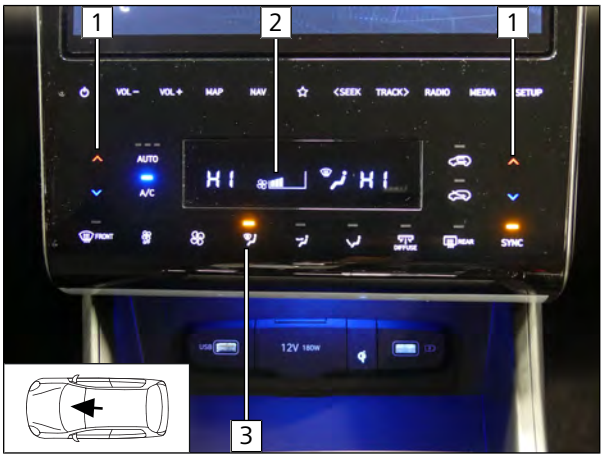


Fig. 129

Before parking the vehicle, make the following settings:

1 Set temperature to ‘HI’
2 Set fan to level ‘2’ to ‘3’
3 Air outlet to windscreen

17.2 Installation location of fuses

Fuses in engine compartment

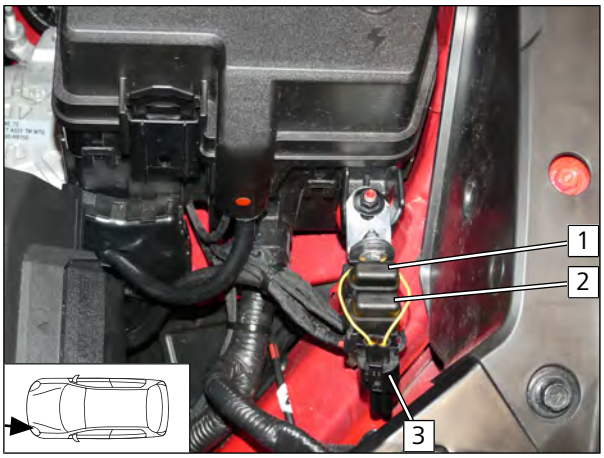


Fig. 130

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

Fuses in passenger compartment

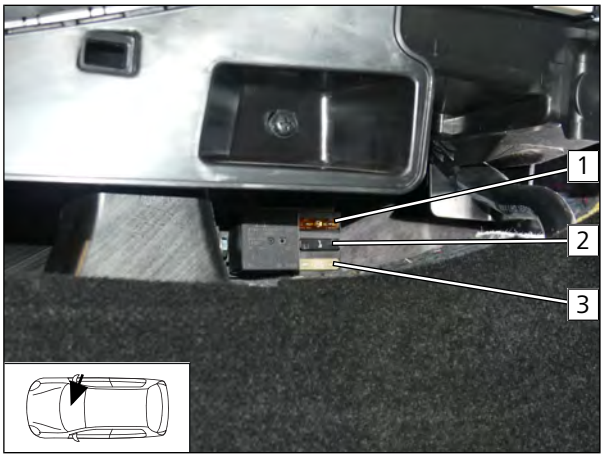


Fig. 131

1 F5 - 5A A/C control panel fuse
2 F3 - 1A control element fuse
3 F4 - 25A fan fuse