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Installation documentation

for Thermo Top Evo water heater

Volvo XC40

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Volvo	XC40	X	from 2018	e9* 2007/46* 3146*…

Motorisation	Fuel	Emission standard	Transmission type	Out-put[kW]	Displace-ment [cm³]	Engine code
1.5P T3	Petrol	Euro 6d Temp	SG	114	1477	B3154T14
2.0P T4	Petrol	Euro 6d Temp	AG	140	1969	B4204T47
2.0P T5	Petrol	Euro 6d Temp	AG	182	1969	B4204T14

Validity	Equipment variants	Model
		Volvo XC40
Verified equipment variants	1 zone automatic air-conditioning	x
	2 zone automatic air-conditioning	x
	LED main headlights	x
Unverified equipment variants	Manual air-conditioning	x
	Alarm system with passenger compartment monitor-ing	x

Total installation time	Note
7.2 hours	

Contents

1 List of abbreviations

AG	Automatic transmission
ASH	Spacer bracket
CCL	CCL Gateway
DP	Fuel pump
EFIX	Exhaust end fastener
EPT	Telestart receiver
FF	FuelFix (tank extracting device)
Fig.	Figure
HG	Heater
KSG	Air-conditioning control unit
PWM	Pulse width modulator
SG	Manual transmission
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump

2 Installation notes

2.1 Information on Validity

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

2.2 Components used

Designation	Order number
Basic delivery scope of Thermo Top Evo	In accordance with price list
Installation kit for Volvo XC40 petrol and diesel 2018 TT-Evo	1326725A
In case of control element, as well as Telestart indicator lamp in consultation with end customer	In accordance with price list
In case of MultiControl CAR installation - installation frame for MultiControl	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.

3 About this document

3.1 Purpose of the document

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

Thermo Top Evo heater

3.2 Warranty and liability

Webasto shall assume no liability for defects, damage and injuries resulting from a failure to observe the installation, repair and operating instructions of the information contained in them.

This liability exclusion particularly applies to improper installations and repairs by untrained persons or in the case of a failure to use genuine spare parts.

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

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

Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K).

Observe the instructions and guidelines of the respective vehicle manufacturer for demounting and mounting vehicle specific components.

The initial start-up is to be executed with the Webasto Thermo Test Diagnosis.

When installing a programmable control module (e.g. a PWM Gateway), the corresponding settings must be checked or adjusted.

3.2.1 Statutory regulations governing installation

The Thermo Top Evo heater has been type-tested and approved in accordance with ECE-R 10 (EMC) and ECE-R 122 (heater). The regulations of these guidelines are binding in the scope of the Directive 70/156/EEC and/or 2007/46/EC (for new vehicle models from 29/04/2009) and should also be observed in countries in which there are no special regulations.

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

3.3 Safety

Qualifications of installation personnel

The installation personnel must have the following qualifications:

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

Regulations and legal requirements

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

3.3.1 Safety information on installation

Danger posed by live parts

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

Danger of fire and leaking toxic gases due to improper installation

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

Danger due to sharp edges

- Lacerations
- Short circuit due to electrical wire damage

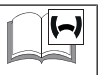
- ▶ Fit protectors on sharp edges.

3.4 Using this document

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

3.4.1 Explanatory Notes on the Document

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

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

3.4.2 Use of symbols

DANGER

Type and source of the risk

Consequences: Failure to follow the instructions can result in death

▶ Actions to protect yourself against risks.

WARNING

Type and source of the risk

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

▶ Actions to protect yourself against risks.

CAUTION

Type and source of the risk

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

▶ Actions to protect yourself against risks.

Type and source of the risk

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

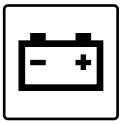
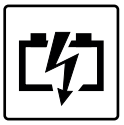
▶ Actions to protect yourself against risks.

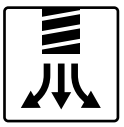
Reference to the vehicle manufacturer's specific documents.

a note on a special technical feature

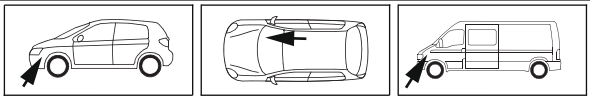
3.4.3 Work step identification marks

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 gas	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

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

Specified temperature for fabric heat shrink tubing
– Shrink temperature max. 230°C

Necessary special tools
– Hose clamp pliers for auto-tightening hose clamps
– Hose clamp pliers for Clic hose clamps of type W
– Hose clamping pliers
– Hose cutter
– Automatic wire stripper 0.2 - 6 mm^2
– Crimping pliers for cable lugs 0.5 – 10 mm^2
– Crimping pliers for male connector 0.14 – 6 mm^2
– Crimping pliers for connector 0.25 – 6 mm^2
– Torque wrench for 2.0 - 10 Nm
– Deep-hole marker
– Metric thread-setter kit
– Nibbler for sheet steel Knipex 90 55 280 EAN
– 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 and battery carrier ▶ Engine design cover ▶ Air filter box with the intake hose ▶ Engine underride protection ▶ Left underride protection ▶ Tank underride protection on the left ▶ Turbo hose under the vehicle (only for 2.0P)	
Passenger compartment	▶ Remove the side instrument panel trim on the front passenger's side ▶ Remove the glove compartment ▶ Remove the rear bench seat	

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

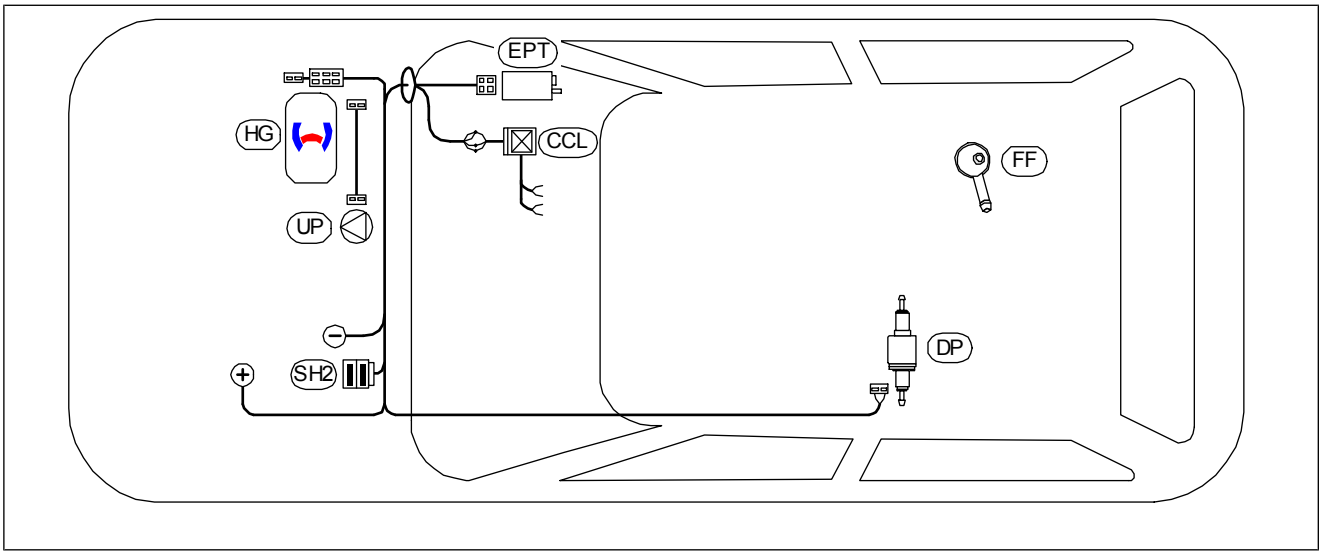


Fig. 1

Legend to installation overview

Abbreviation	Component
CCL	CCL Gateway
DP	Fuel pump
EPT	Telestart receiver
FF	FuelFix
HG	Heater
PWM	Pulse width modulator
SH2	Fuse holder of engine compartment
UP	Coolant pump

Heater installation location

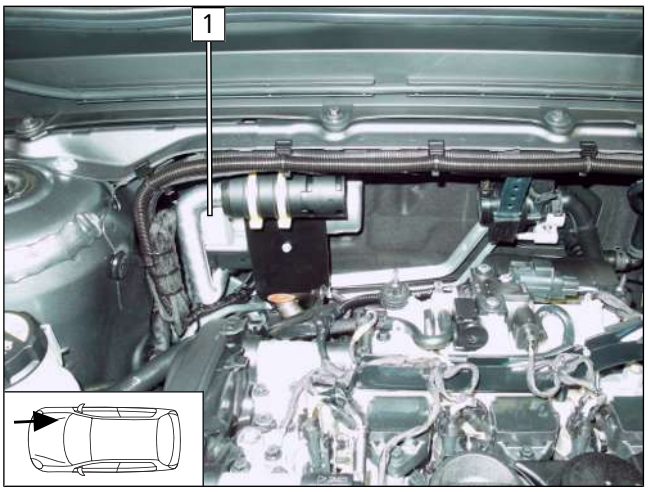


Fig. 2

1 Heater

7 Electrical system of engine compartment

Premounting fuse holder retaining plate

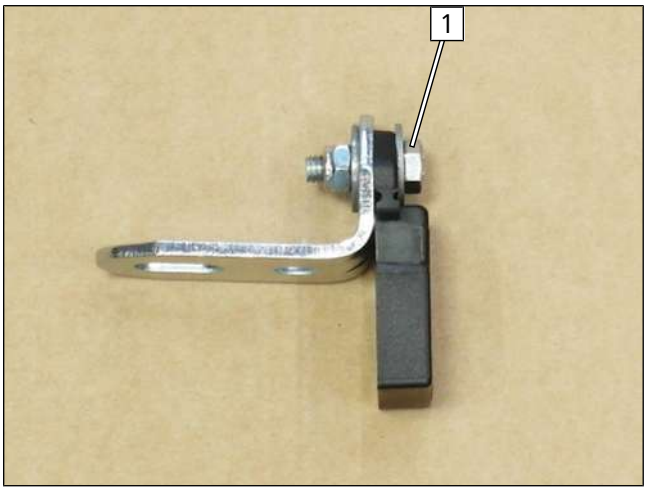


Fig. 3

1 M5x16 bolt, large diameter washer, fuse holder retaining plate, angle bracket, large diameter washer, nut

Preparing fuse holder retaining plate assembly

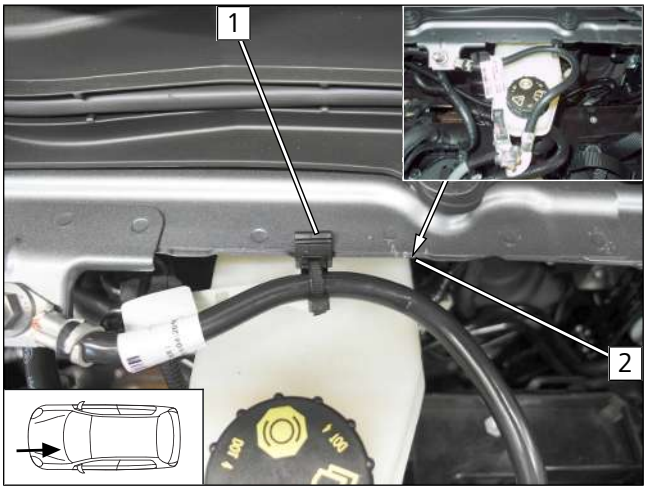


Fig. 4

▶ Detach original vehicle edge clip cable tie **1** from original vehicle earth wire as shown, move it to the left and re-assemble it.

2 Old position of edge clip cable tie

Mounting fuse holder retaining plate

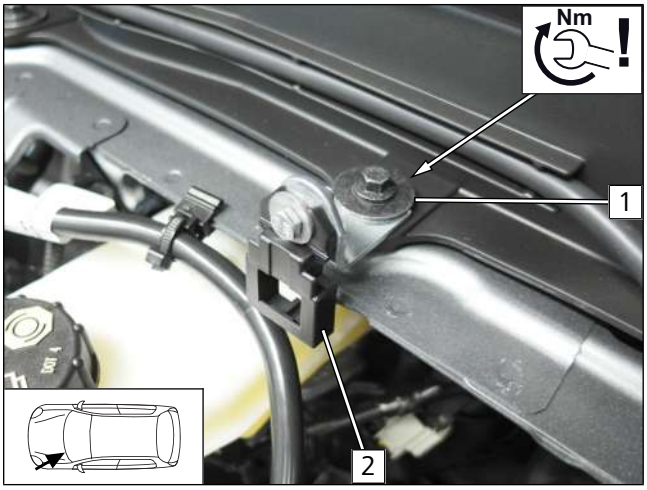


Fig. 5

1 Original vehicle bolt, premounted angle bracket

2 Premounted fuse holder retaining plate

Replacing passenger compartment main fuse

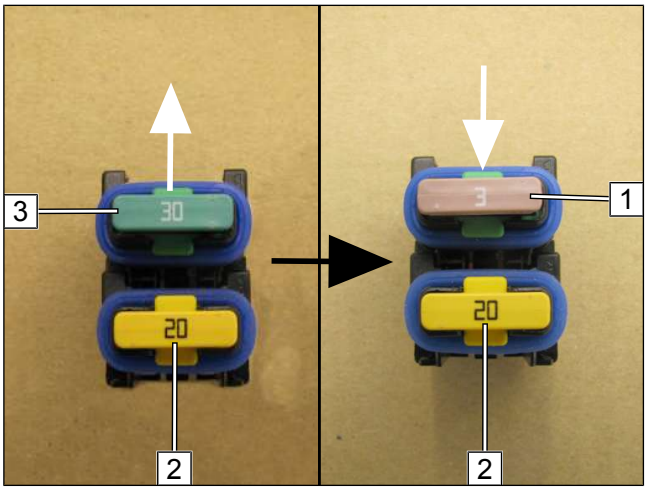


Fig. 6

▶ Replace 30A passenger compartment main fuse F2 [3] with 3A fuse [1].

[2] Fuse F1: 20A

Mounting engine compartment fuse holder F1/F2

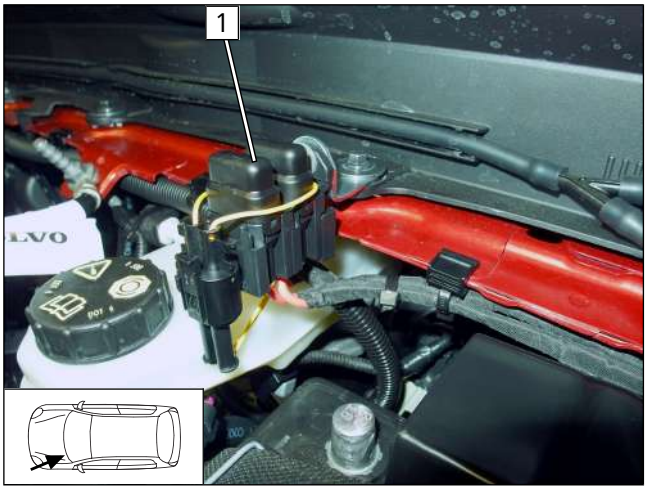


Fig. 7

[1] Fuse F1: 20A and F2: 3A

Cutting slit corrugated tube to length

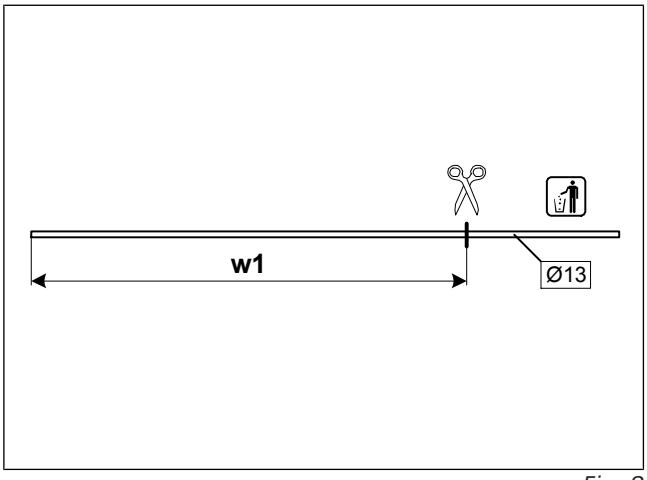


Fig. 8

w1	900

Wiring harness routing

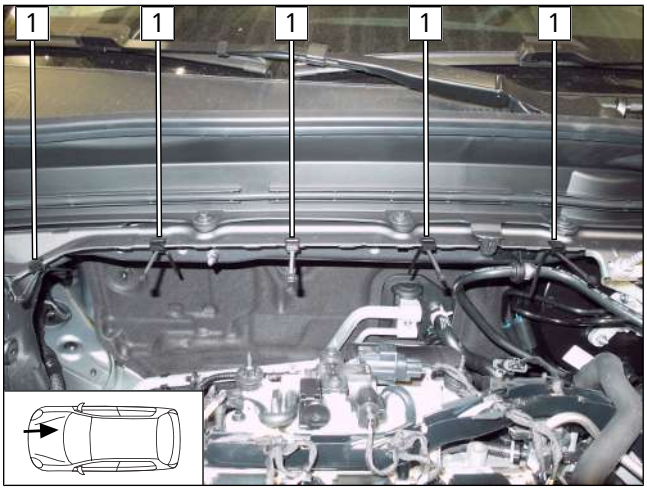


Fig. 9

1 Edge clip cable tie for heater wiring harnesses, control element, passenger compartment

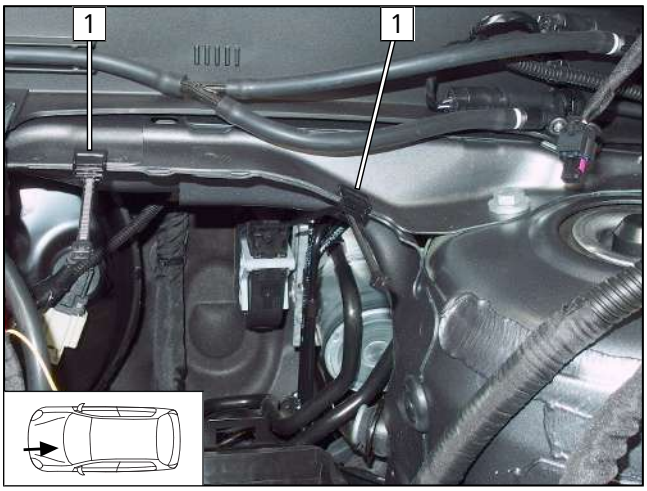


Fig. 10

1 Edge clip cable tie for positive wire of HG

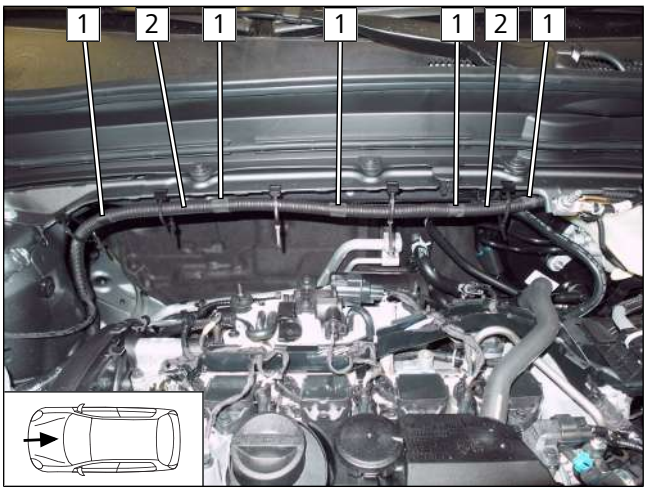


Fig. 11

- ▶ Secure slit corrugated tube **2** between the edge clip cable ties using insulating tape **1**.
- ▶ Loosely premounted edge clip cable ties, will be tightened later.

2 13mm dia., 900mm long, slit corrugated tube with heater, control element, and passenger compartment wiring harnesses

Passenger compartment wiring harness pass through

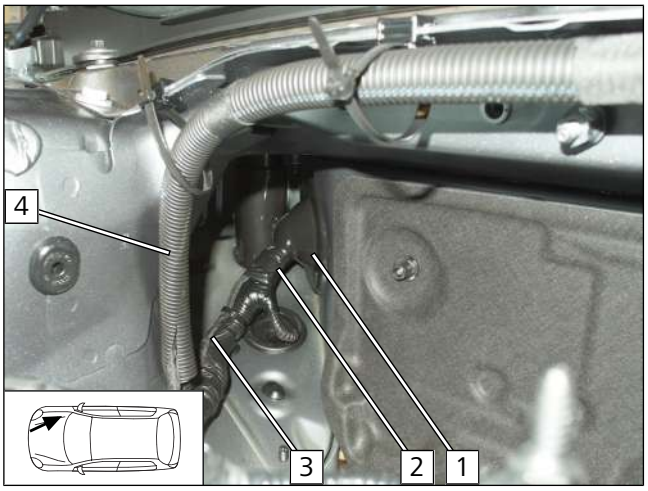


Fig. 12

- ▶ Route passenger compartment wiring harness [3] through protective rubber plug [1] into the passenger compartment.
- ▶ Fasten passenger compartment wiring harness [3] to the original vehicle wiring harness using cable tie / insulating tape [2].

[4] 13mm dia. slit corrugated tube

Mounting earth wire

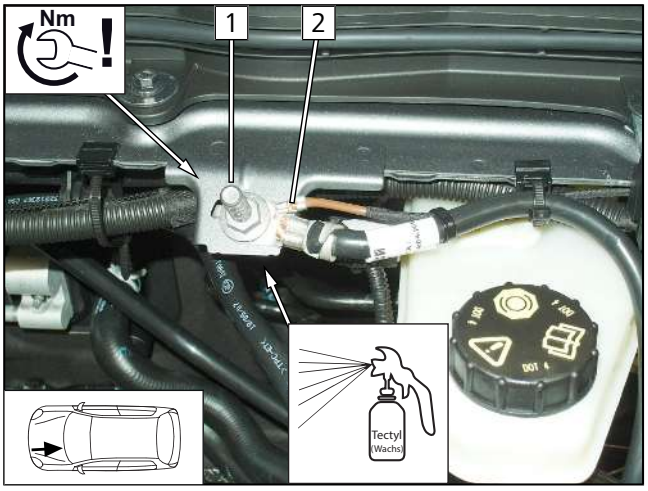


Fig. 13

DANGER

Fire hazard due to insufficient tightening torque

- ▶ Observe tightening torque

[1] Original vehicle earth point

[2] Earth wire with 8mm dia. cable lug

Mounting positive wire

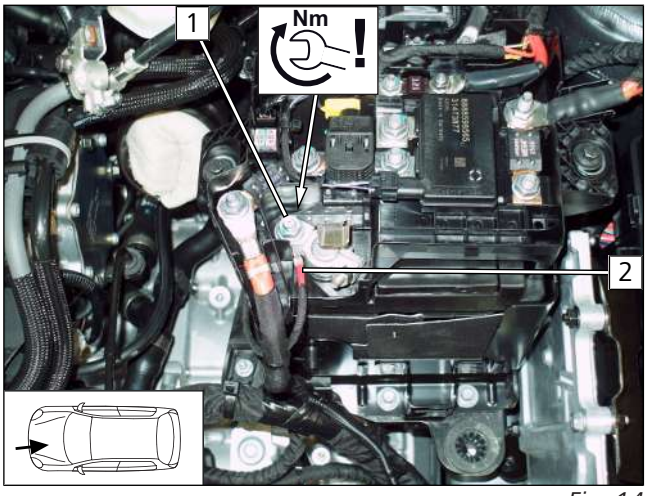


Fig. 14

Danger of damage to the electrical components

- ▶ The positive wire is connected after the battery is installed.

DANGER

Fire hazard due to insufficient tightening torque

- ▶ Observe tightening torque

[1] Original vehicle positive support point

[2] Positive wire

Routing positive wire

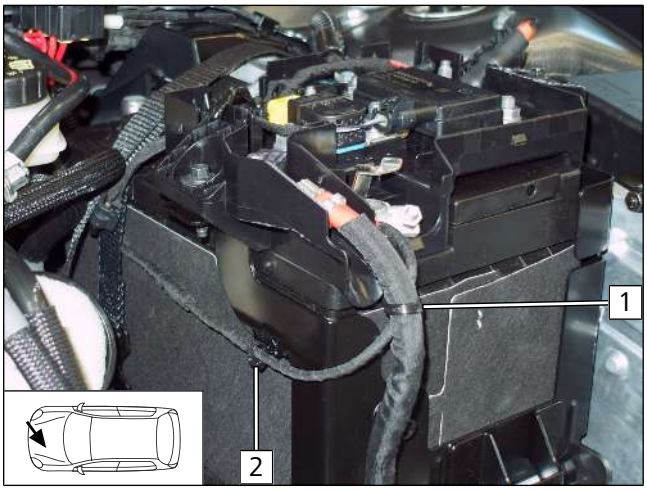


Fig. 15

1 Cable tie
2 Edge clip cable tie

8 Mechanical system

8.1 Preparing installation location

Inserting rivet nut

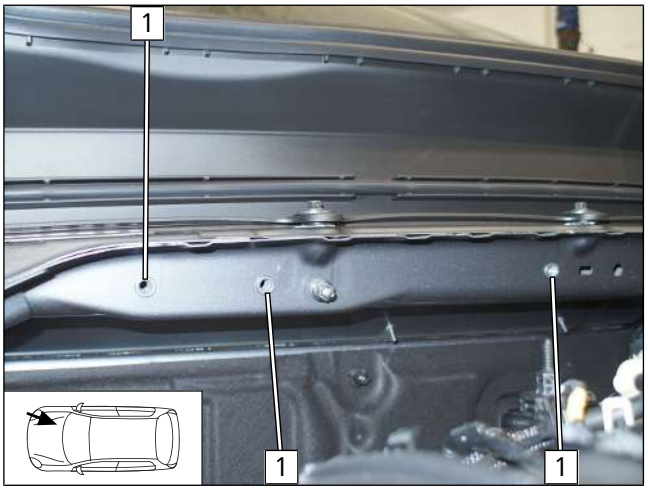


Fig. 16

1 Original vehicle hole, steel rivet nut

Moving original vehicle pipe bracket

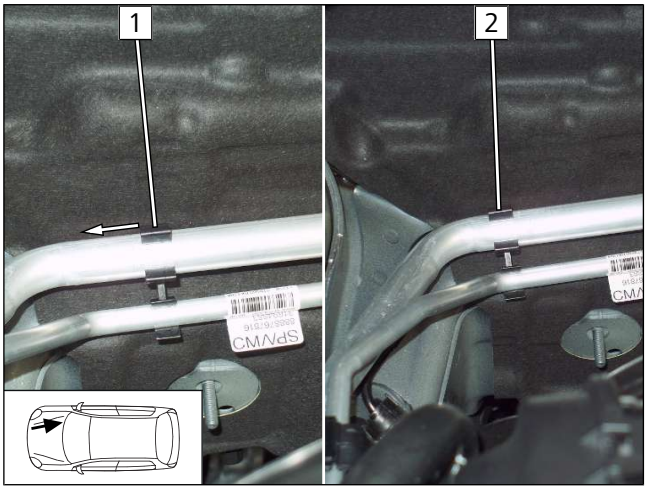


Fig. 17

1 Original vehicle pipe bracket, original
2 Original vehicle pipe bracket, moved

8.2 Premounting heater

Mounting water connection piece

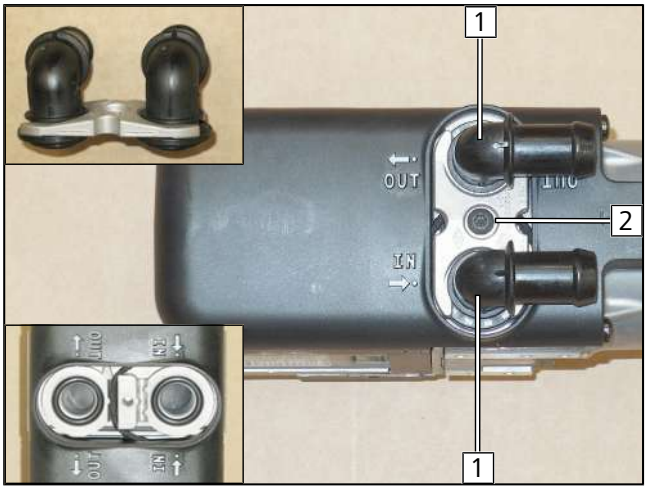
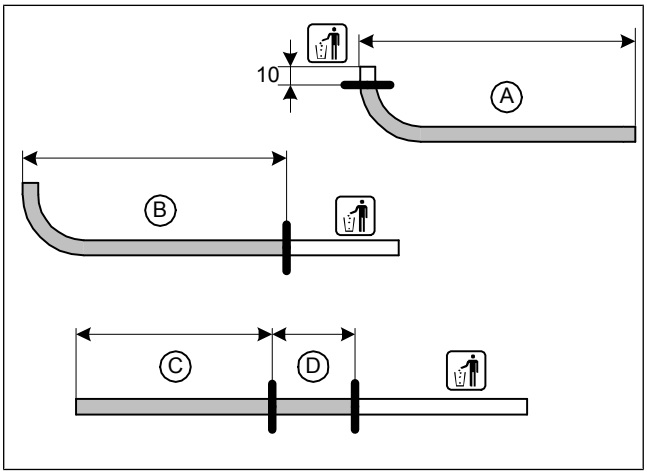


Fig. 18

Observe the general installation instructions of the heater.

1 Water connection piece 90°, sealing ring
2 5x15 self-tapping bolt, water connection piece retaining plate

Cutting water hoses to length



Ⓐ	18mm dia., 90°, 215mm
Ⓑ	18mm dia., 90°, 300mm
Ⓒ	440mm
Ⓓ	140mm

Fig. 19

Mounting hoses Ⓑ and Ⓒ

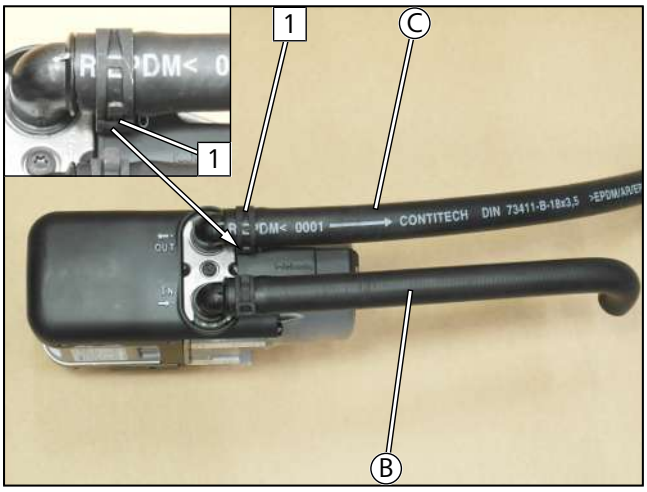


Fig. 20

All spring clips Ø25

▶ Position spring clip lock **1** as shown.

Preparing exhaust pipe

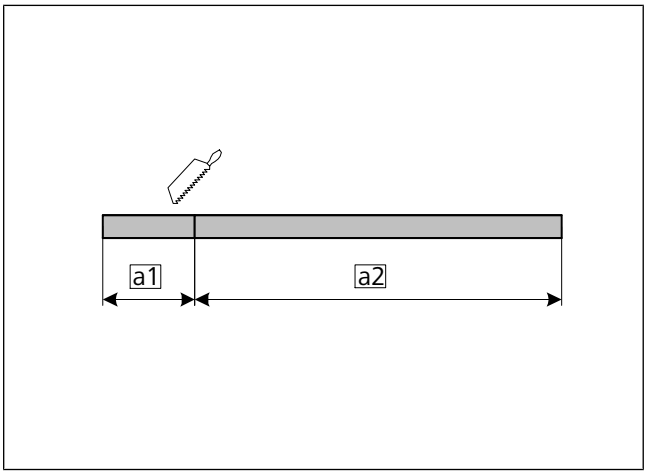


Fig. 21

a1 200mm
a2 800mm

Mounting exhaust pipe **a1**

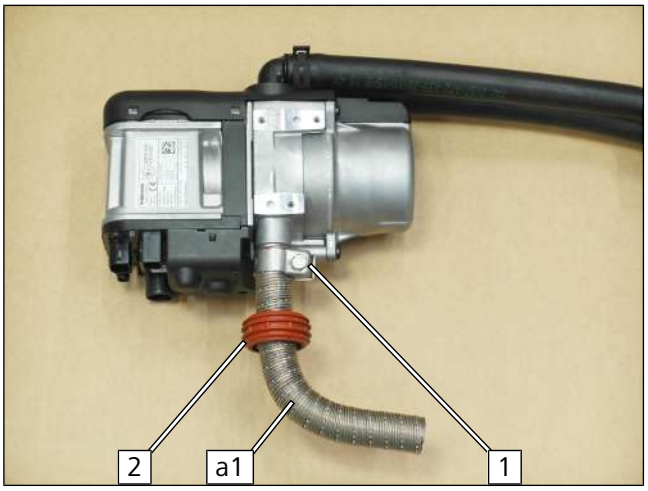


Fig. 22

1 Hose clamp
2 ASH

Installing fuel line

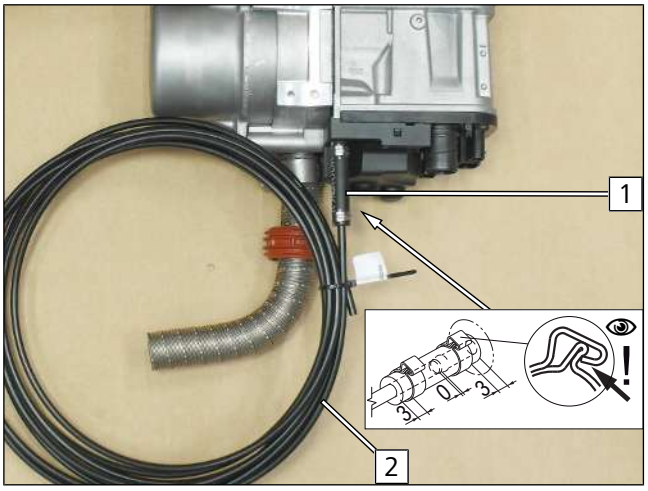


Fig. 23

Observe the general installation instructions of the heater.

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

Preparing bracket

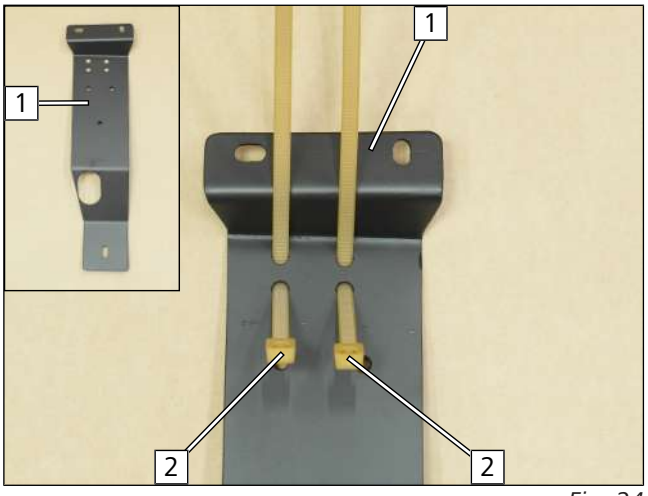


Fig. 24

1 Heater bracket
2 Large cable tie

Mounting bracket

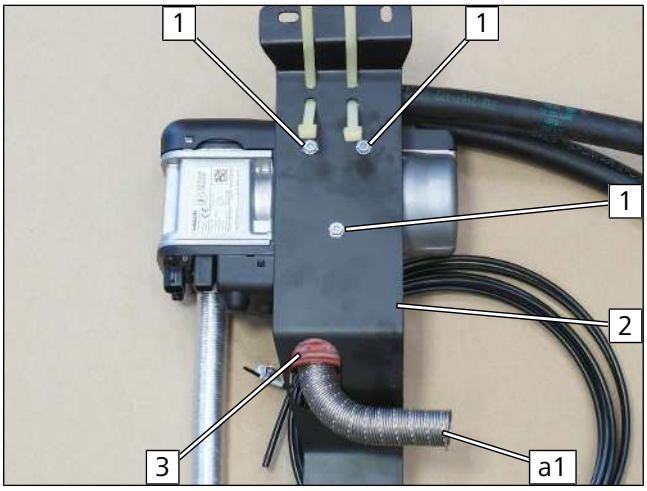


Fig. 25

▶ Route exhaust pipe **a1**, as shown, through the opening of bracket **2** to position **3** and position ASH**3**.

1 5x13 self-tapping bolt

Preparing combustion air intake pipe

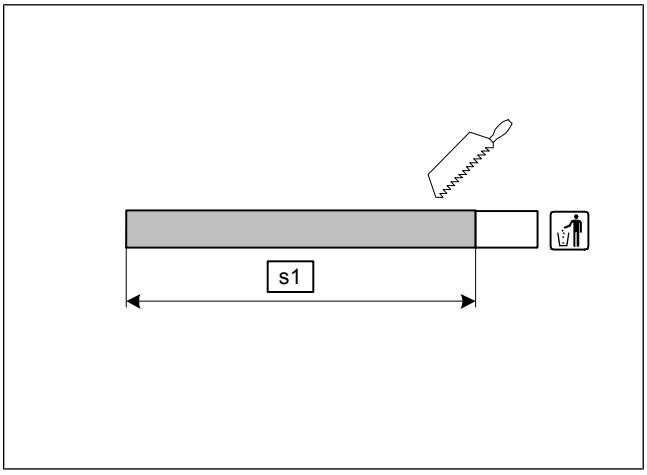


Fig. 26

s1 360mm

Mounting combustion air intake pipe **s1**

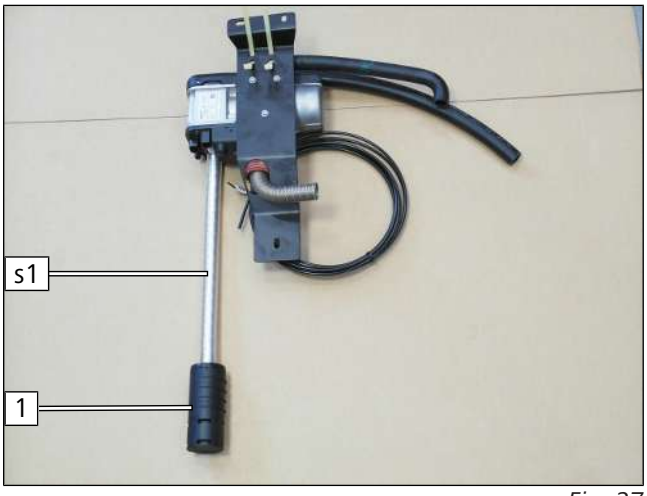


Fig. 27

Observe the installation instructions of the combustion air intake silencer.

▶ Mount combustion air intake silencer **1** loosely.

Bending combustion air intake pipe

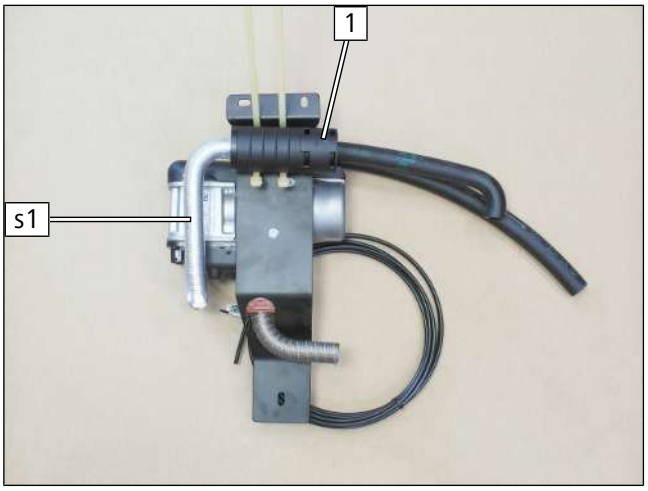


Fig. 28

- ▶ Bend combustion air intake pipe **s1** as shown.
- ▶ Position combustion air intake silencer **1** by tightening it so that the guide grooves face out.

Mounting combustion air intake silencer

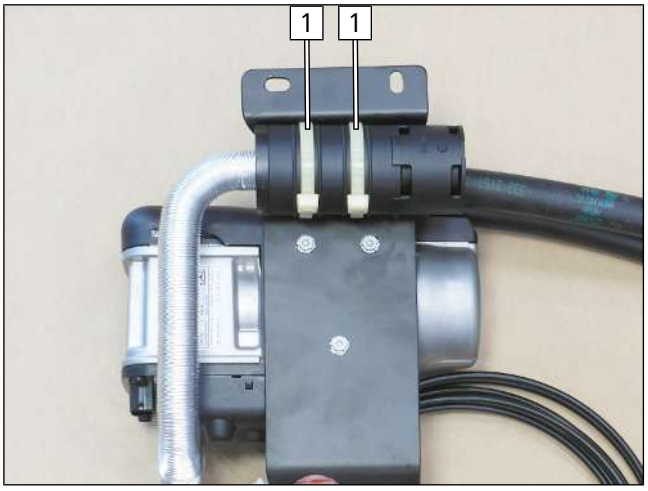


Fig. 29

- ▶ Tighten and shorten cable tie **1**.

Mounting edge protection and ASH

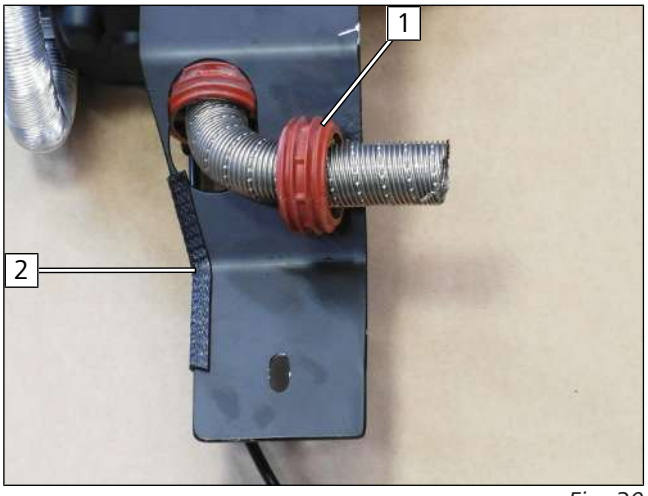


Fig. 30

- **1** Position ASH
- **2** Edge protection

8.3 Heater mounting

Premounting heater

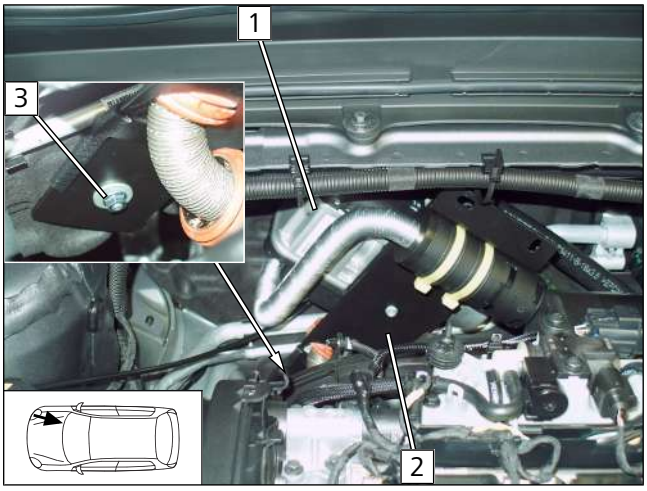


Fig. 31

Observe the general installation instructions of the heater.

▶ Position premounted heater 1 as shown in Fig. and loosely mount the bracket 2 at position 3 on original vehicle stud bolt.

3 Original vehicle stud bolt, heater bracket, large diameter washer, flanged nut

Mounting wiring harnesses

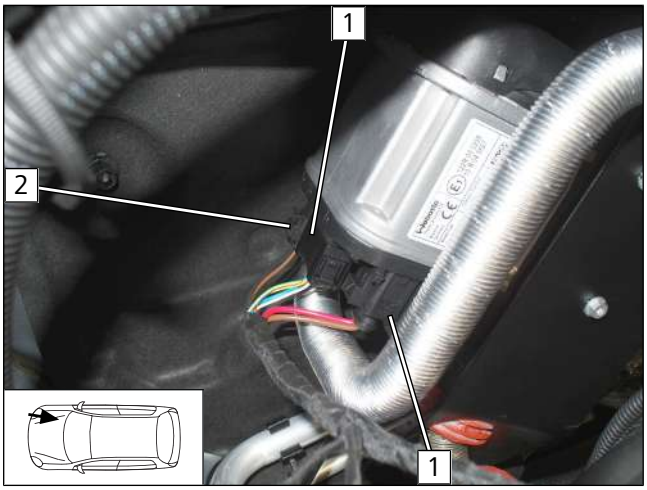


Fig. 32

1 Heater wiring harness connector

2 Coolant pump wiring harness connector

Mounting heater bracket

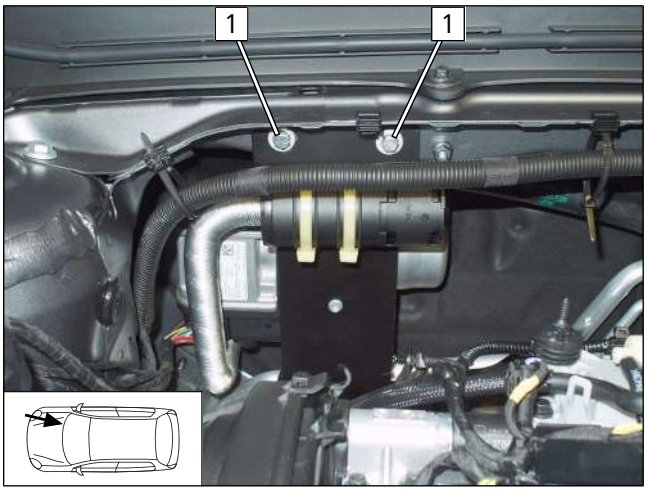


Fig. 33

1 M6x20 bolt, spring lockwasher, large diameter washer, heater bracket, steel rivet nut

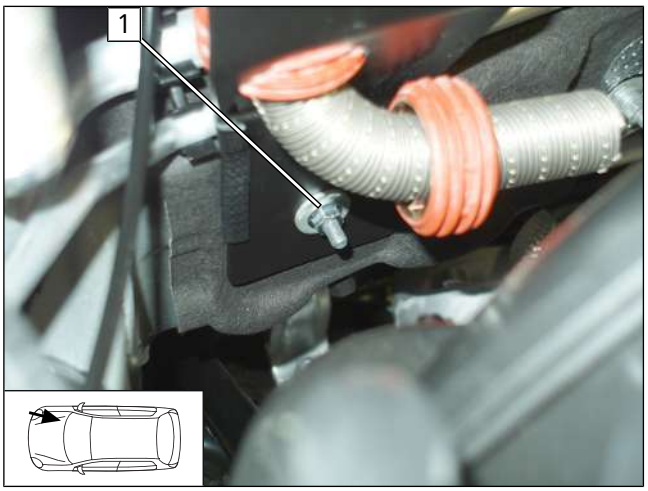


Fig. 34

1 Tighten premounted flanged nut

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

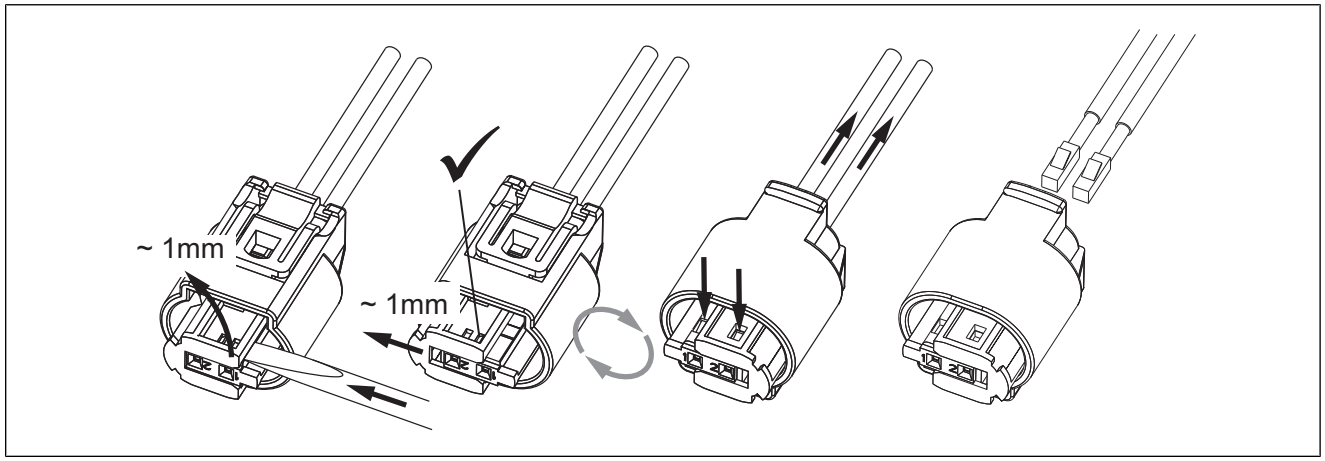


Fig. 35

9.1 Routing fuel line

Drawing fuel line and heater wiring harness into corrugated tube

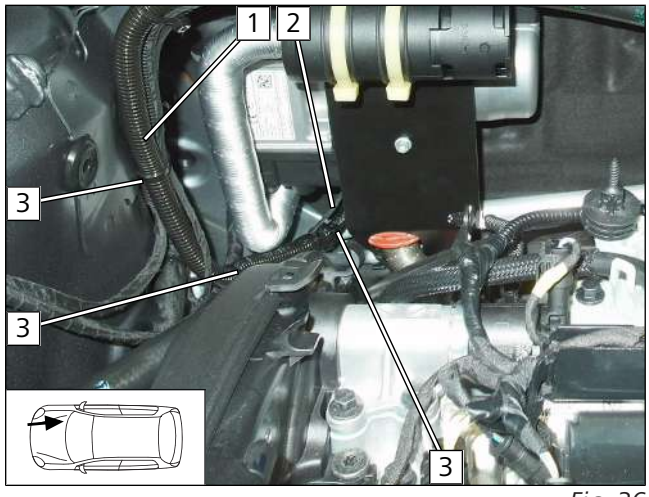


Fig. 36

1. 10mm dia. 1500mm long corrugated tube with fuel line and fuel pump wiring harness
2. Coolant pump wiring harness
3. Cable tie

Routing corrugated tube with fuel line and heater wiring harness

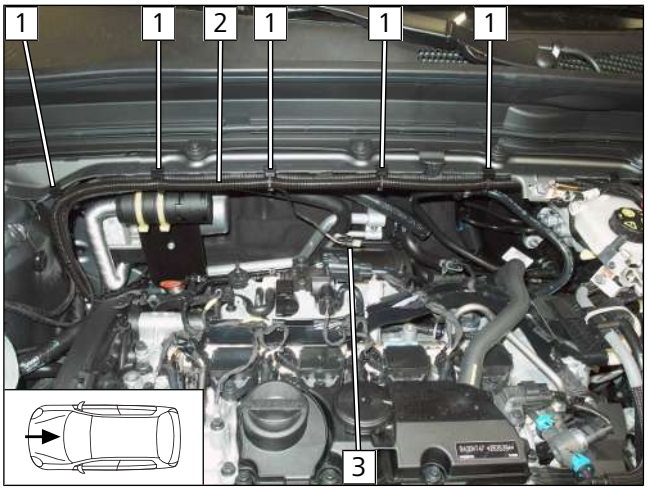


Fig. 37

1 Closing edge clip cable tie
2 10mm dia. 1500mm long corrugated tube with fuel line and fuel pump wiring harness
3 Coolant pump wiring harness

Fastening heater wiring harness

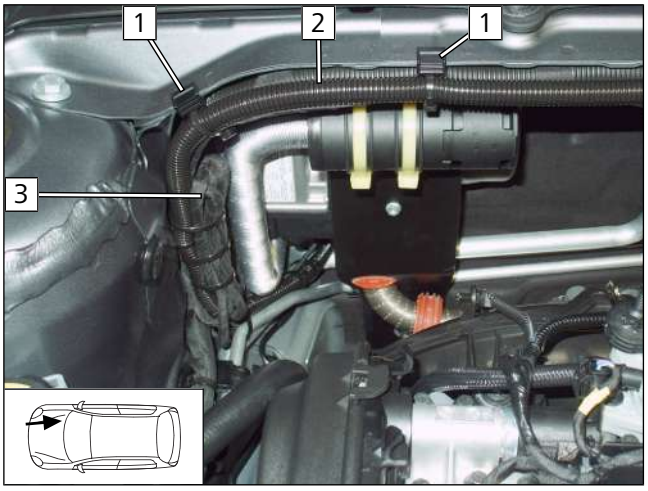


Fig. 38

▶ Fasten the rest of heater wiring harness 3 using cable ties as shown.

1 Edge clip cable tie
2 10mm dia. 1500mm long corrugated tube with fuel line and fuel pump wiring harness

Routing in engine compartment

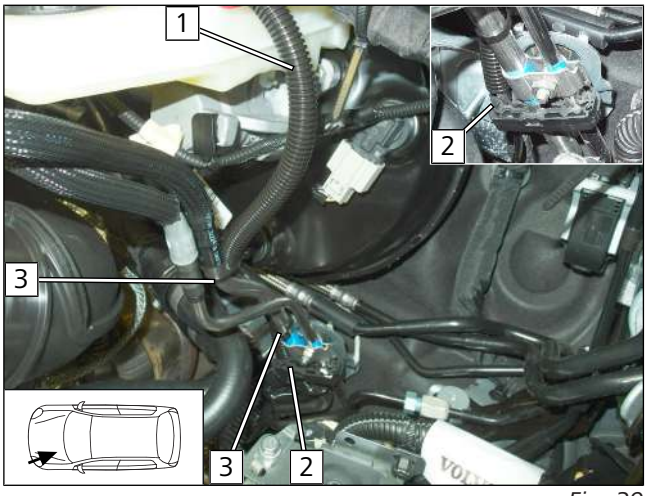


Fig. 39

▶ Route fuel line and fuel pump wiring harness into 10mm dia. corrugated tube 1 1500 lg. further into the engine compartment to the original vehicle clamp 2 as shown.
▶ Place the fuel line and fuel pump wiring harness into the clamp and fasten.

3 Cable tie

Routing to the underbody

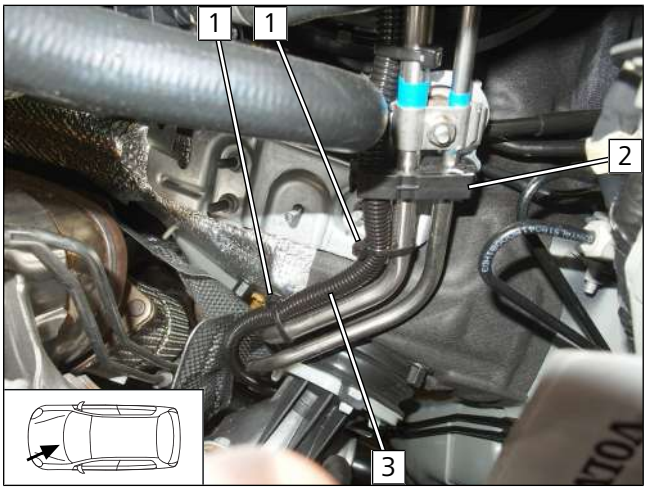


Fig. 40

1 Cable tie
2 Original vehicle clamp
3 10mm dia. 420mm long corrugated tube with fuel line and fuel pump wiring harness, routed to the next clamp

Routing on underbody

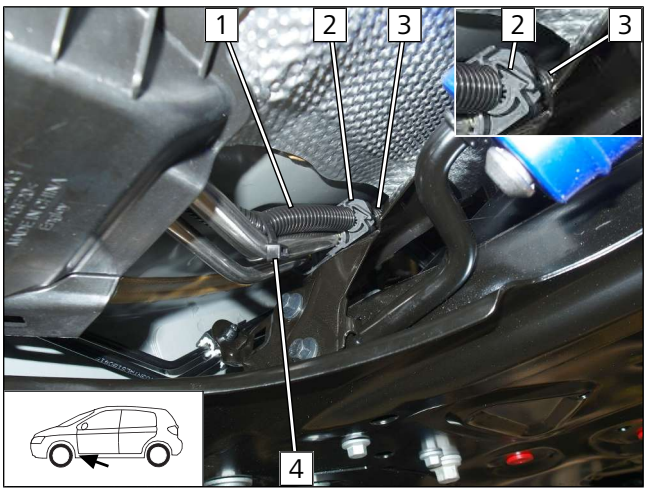


Fig. 41

1 10mm dia., 240mm long corrugated tube with fuel line and fuel pump wiring harness
2 Fuel line and fuel pump wiring harness in original vehicle clamp
3 10mm dia., 420mm long corrugated tube with fuel line and fuel pump wiring harness
4 Cable tie

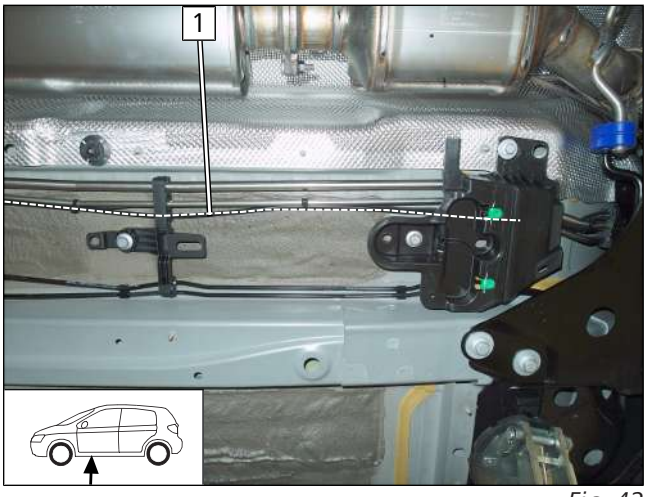


Fig. 42

▶ Fasten fuel line and fuel pump wiring harness to original vehicle line using cable tie 1.

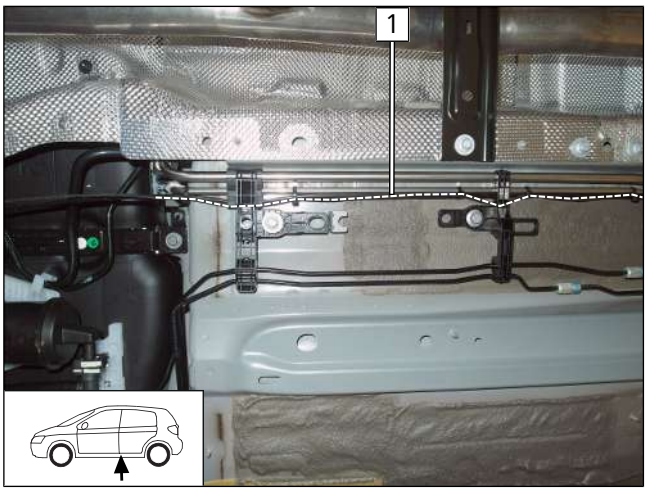


Fig. 43

▶ Fasten fuel line and fuel pump wiring harness to original vehicle line using cable tie 1.

9.2 Mounting fuel pump

Premounting fuel pump

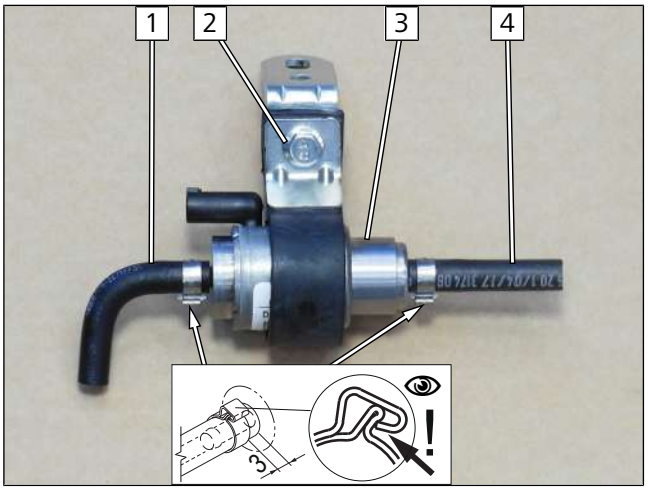


Fig. 44

1 90° moulded hose, 10mm dia. clamp
2 M6x25 bolt, support angle bracket, fuel pump mount, angle bracket, flanged nut
3 Fuel pump
4 Hose section, 10mm dia. clamp

Mounting fuel pump

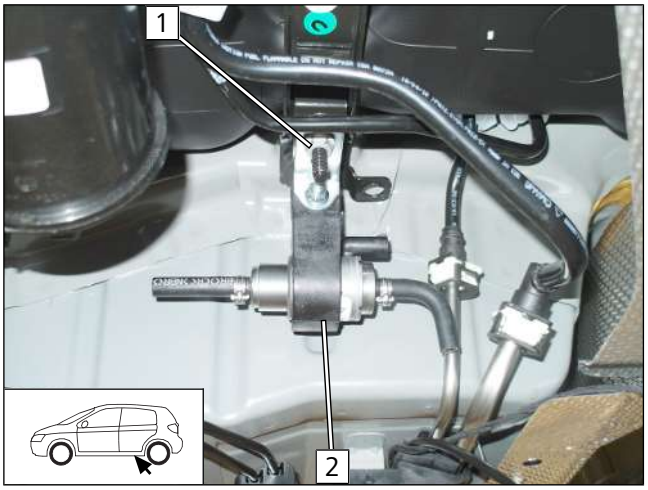


Fig. 45

Observe the general installation instructions of the heater.

1 Original vehicle stud bolt, flanged nut
2 Premounted fuel pump

Mounting fuel pump connector X7

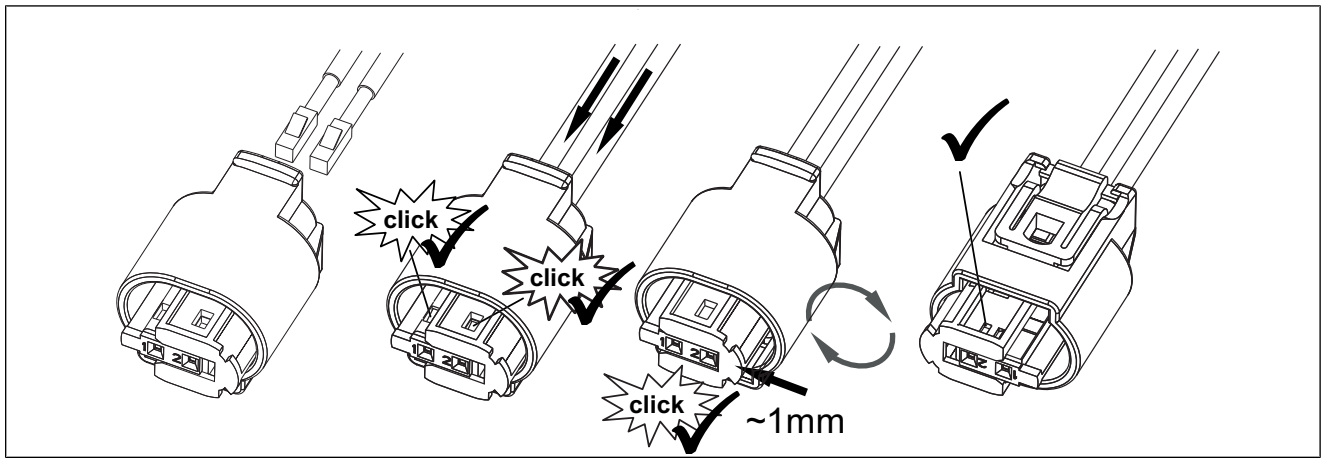


Fig. 46

Connecting fuel pump

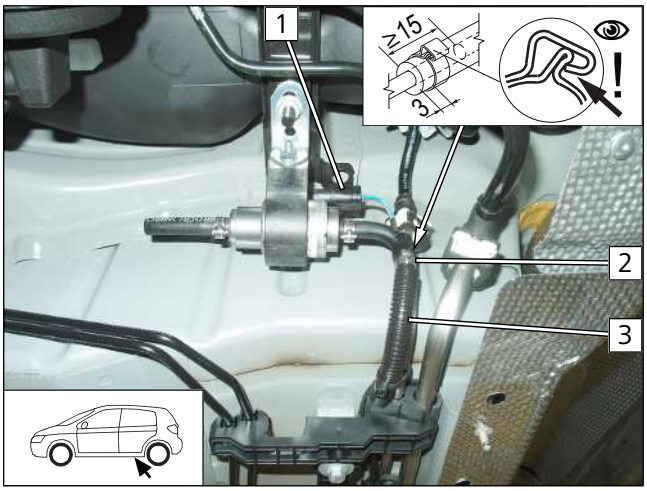


Fig. 47

1 Fuel pump wiring harness, connector X7 mounted

2 10mm dia. clamp

3 10mm dia. corrugated tube with fuel line

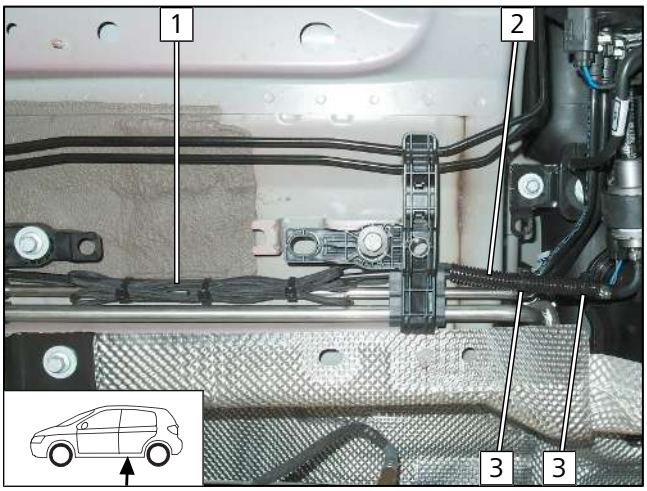


Fig. 48

▶ Fasten the rest of the fuel pump wiring harness with cable tie as shown in Fig..

2 10mm dia. corrugated tube with fuel line

3 Cable tie

9.3 Installing FuelFix

Exposing tank fitting

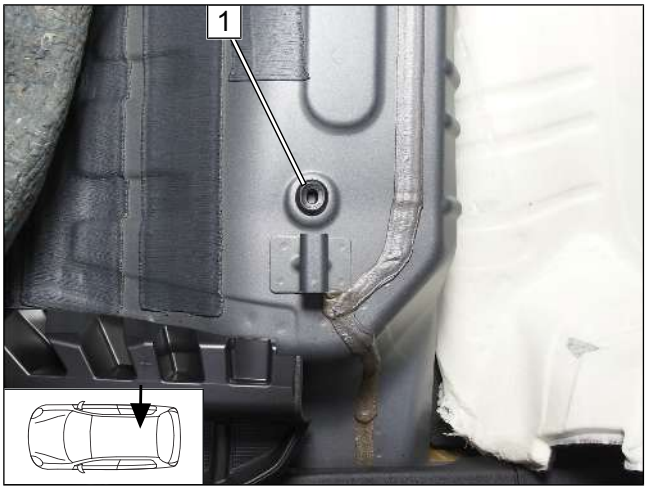


Fig. 49

▶ Remove and discard original vehicle rubber plug **1**.

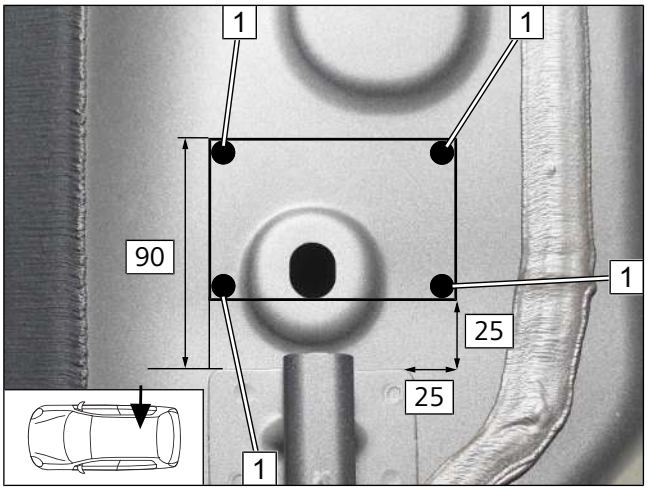
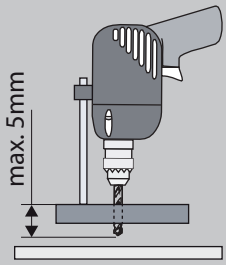


Fig. 50

Danger of damage to components



▶ Drill 6mm dia. **1** auxiliary hole with depth stop. Enlarge to 12mm dia. with stepped drill bit.

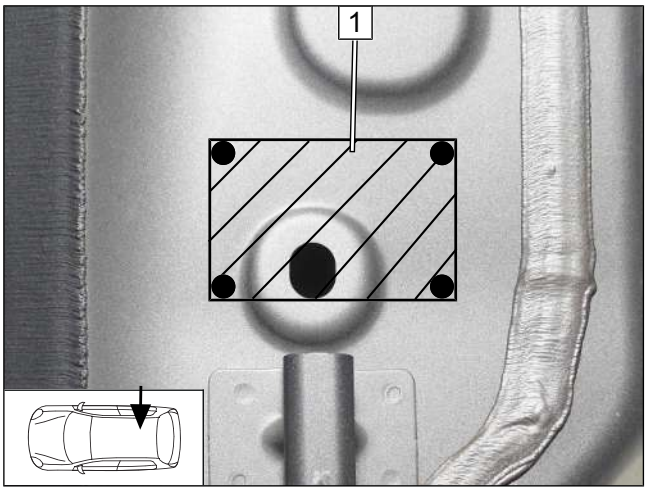


Fig. 51

Danger of damage to components

▶ When drilling, be careful not to damage any components that may be located behind.

▶ Cut out marked area **1** with special tools (nibbler for sheet steel) and discard.

Preparing drilling template

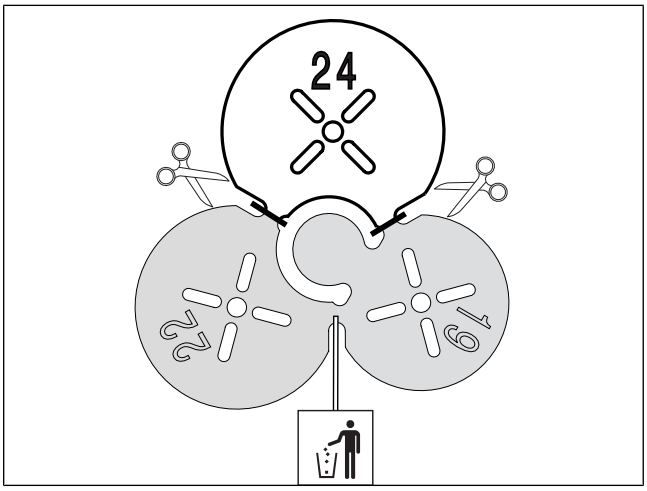


Fig. 52

Removing metal shavings

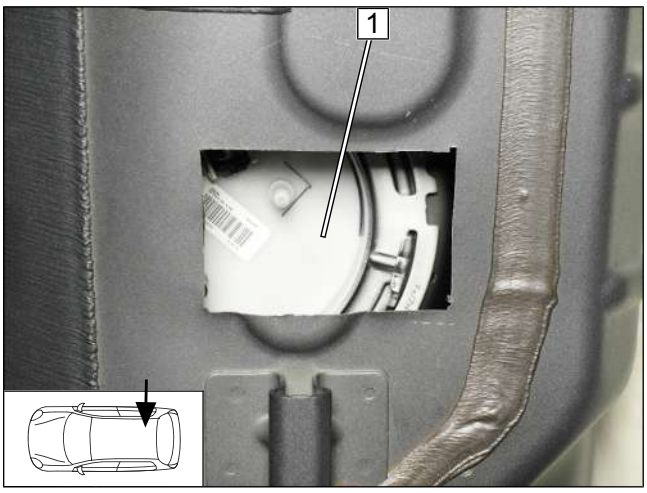


Fig. 53

Fire hazard due to tank fitting leaks

- ▶ Vacuum / remove resulting metal shavings in the area of tank fitting [1] using a vacuum cleaner and magnetic rod.

Copying hole pattern

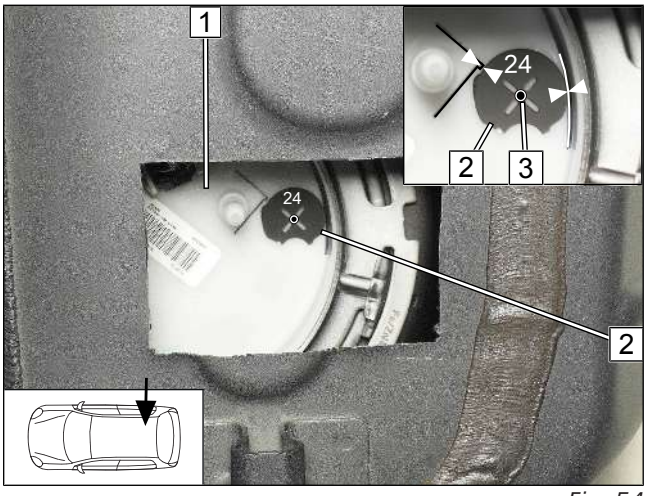


Fig. 54

Observe the installation instructions of the tank extracting device.

Sketched contour of embossed area.

- ▶ Work steps F1, F2
- ▶ Position 24mm dia. drilling template [2] between the sketched contour and outer edge of the tank fitting as shown.

[1] Tank fitting

[3] Hole pattern

Hole for FuelFix

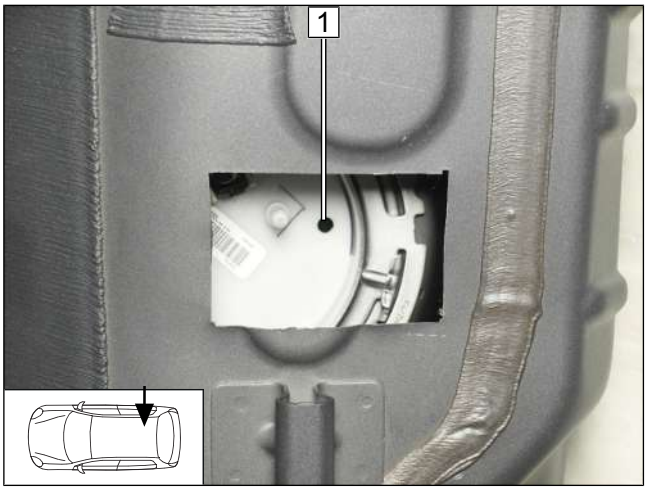


Fig. 55

DANGER

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

▶ Work step F3

1 Hole made with provided drill

Premounting FuelFix

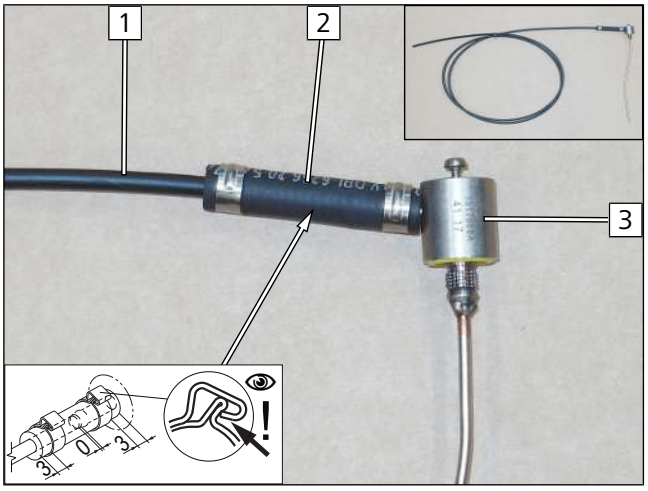


Fig. 56

▶ Work steps F4, F6

▶ Bend FuelFix **3** as shown in template and cut to length. Connect fuel line **1**.

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

Routing fuel line

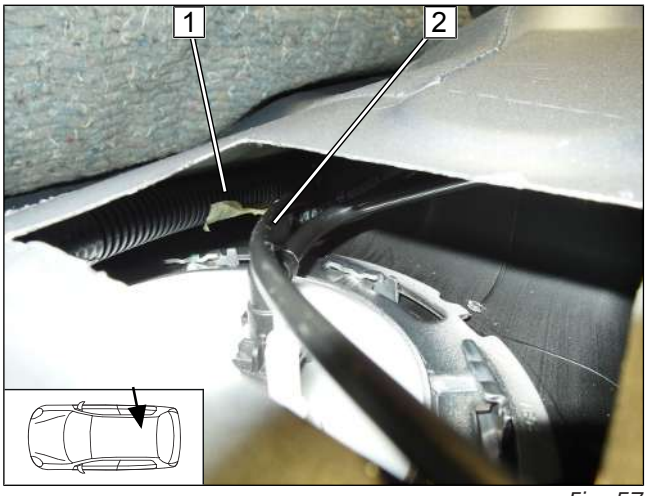


Fig. 57

▶ Push fuel line FuelFix **2** along original vehicle cable **1** as shown.

Inserting FuelFix

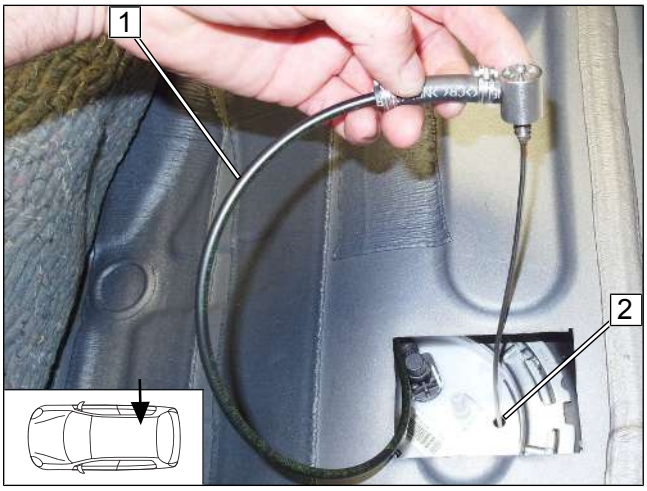


Fig. 58

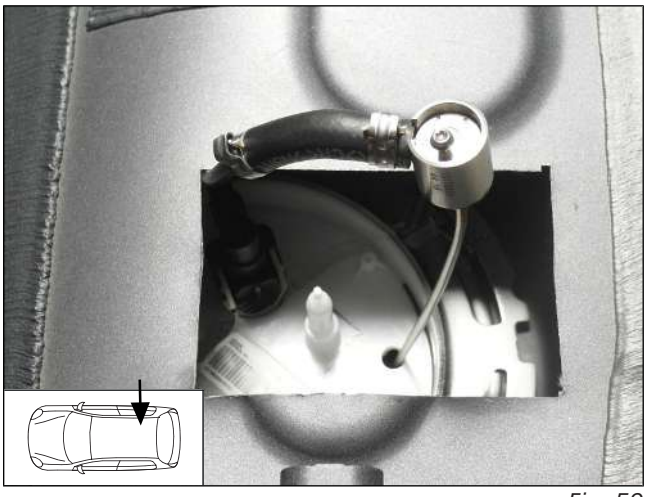


Fig. 59

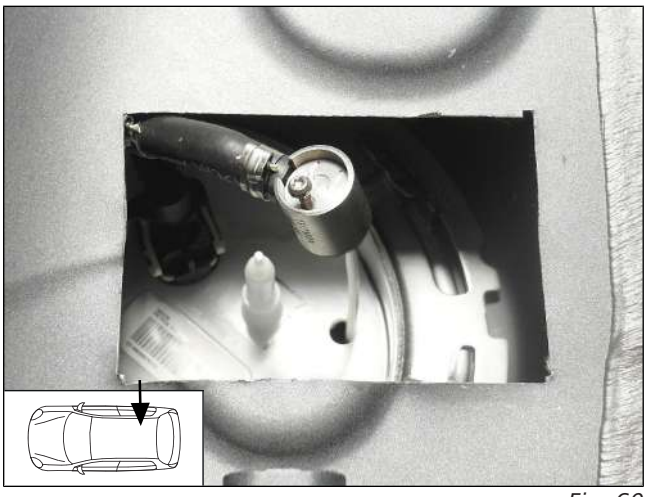


Fig. 60

- ▶ Work step F5
- ▶ Insert premounted FuelFix **1** into hole **2**.

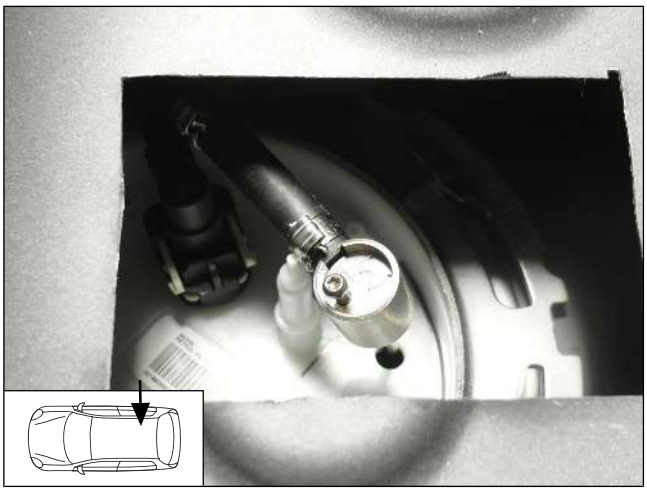


Fig. 61

Aligning FuelFix

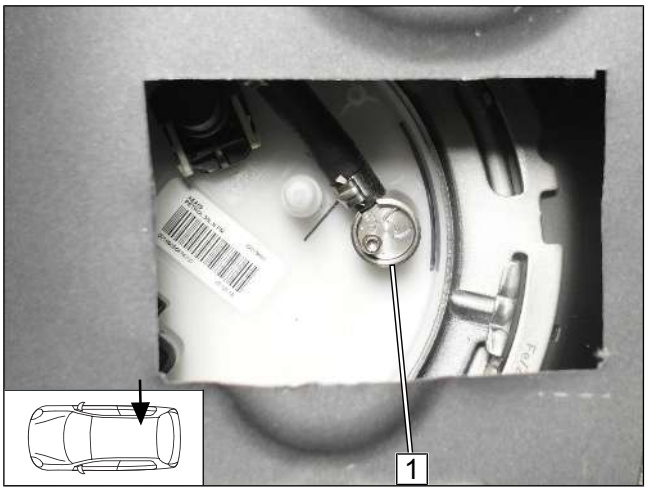


Fig. 62

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

Mounting FuelFix

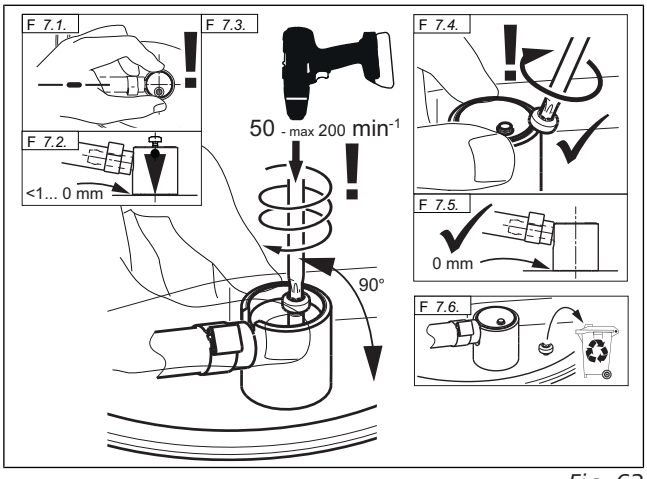


Fig. 63

DANGER

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

- ▶ Work step F7

Checking firm seating of FuelFix

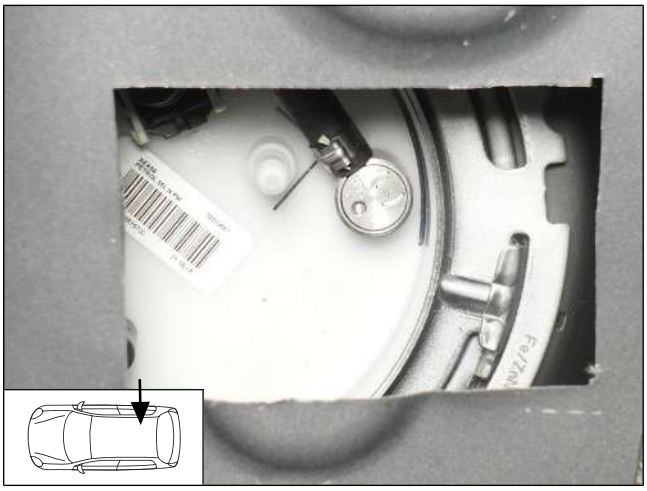


Fig. 64

▶ Work step F8

Securing fuel line

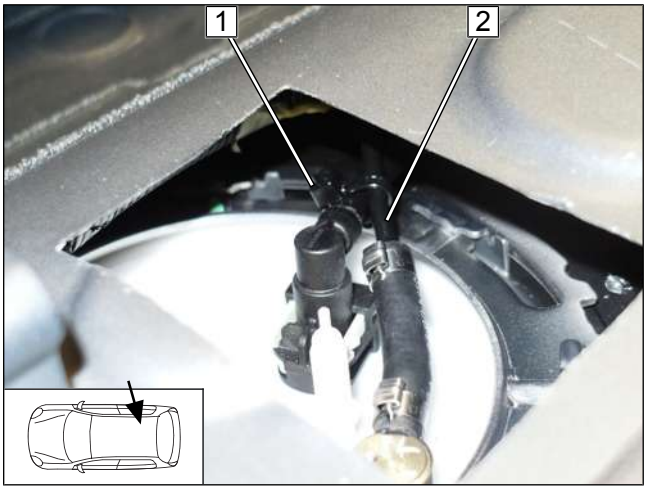


Fig. 65

1 Cable tie for tension relief
2 Fuel line FuelFix

9.4 Connecting fuel pump

Sliding on fabric-reinforced fuel line

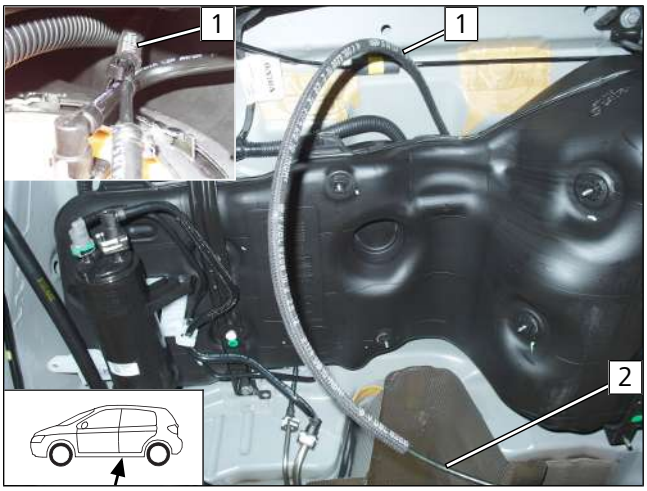


Fig. 66

▶ Slide the fabric-reinforced fuel line 1 onto the fuel line 2 up to FuelFix cable tie. If necessary, slightly loosen the fuel tank brackets for this.

Routing fuel line

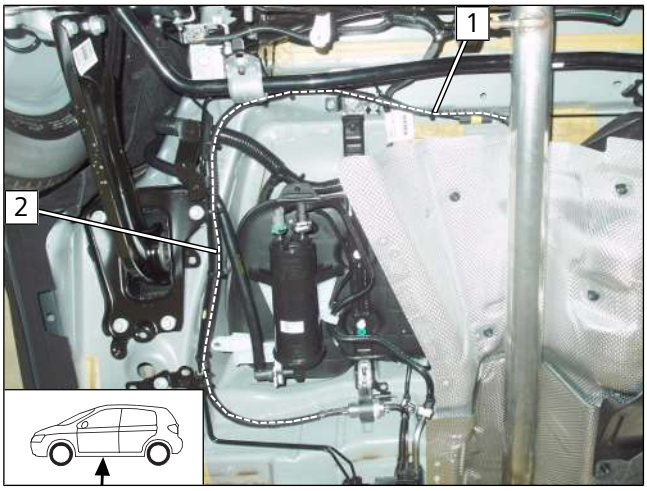


Fig. 67

1 Fuel line in fabric-reinforced fuel line

2 Fuel line in 10mm dia., 1000mm long corrugated tube up to DP

Fuel pump connection

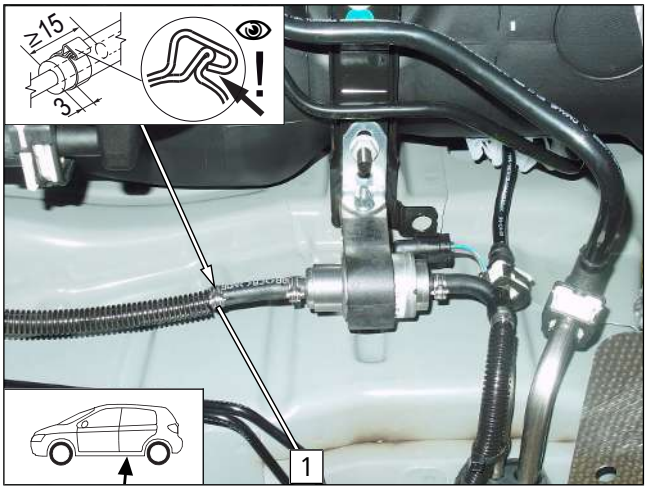


Fig. 68

1 10mm dia. clamp

9.5 Mounting tank fitting cover plate

Preparing cover plate installation

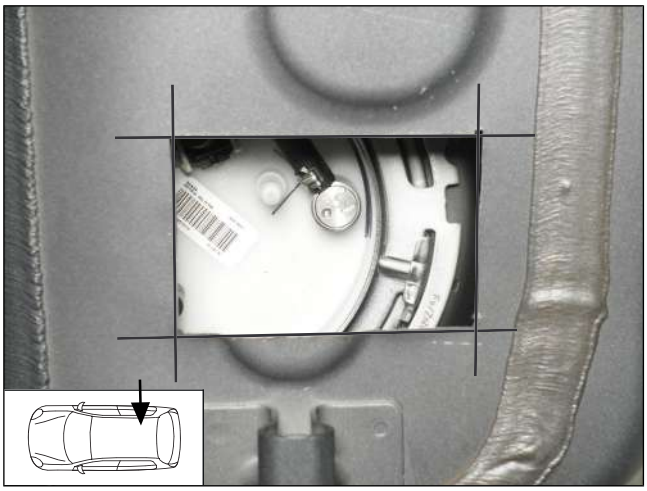


Fig. 69

▶ Draw guide lines.

Copying hole pattern

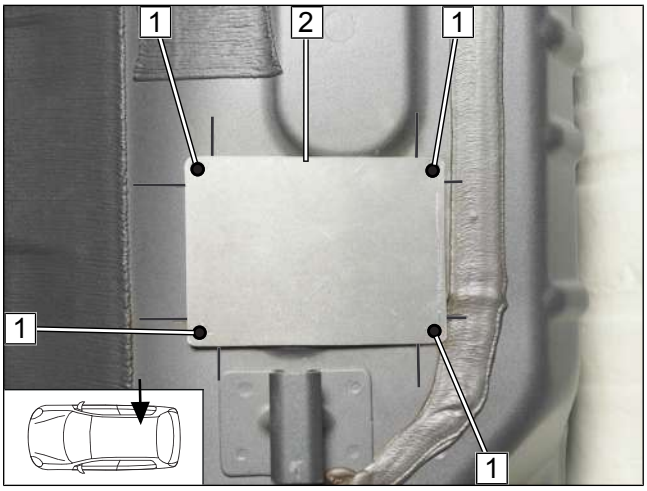


Fig. 70

1 Hole pattern
2 Cover plate

Drilling hole

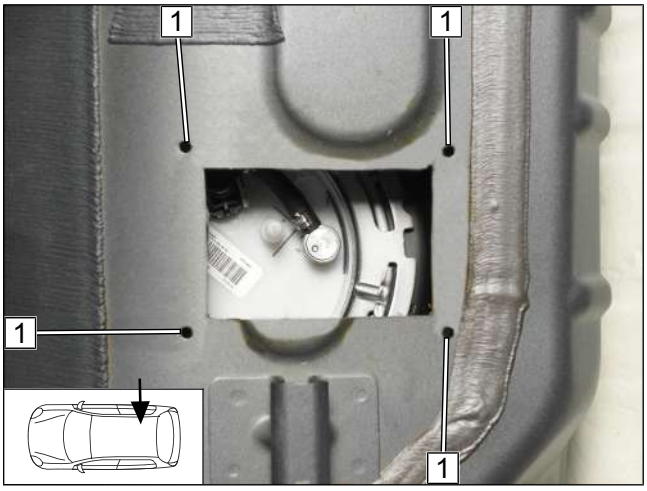
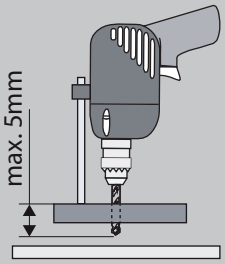


Fig. 71

Danger of damage to components



▶ Drill 5.5mm dia. hole 1 with depth stop.

Applying corrosion protection

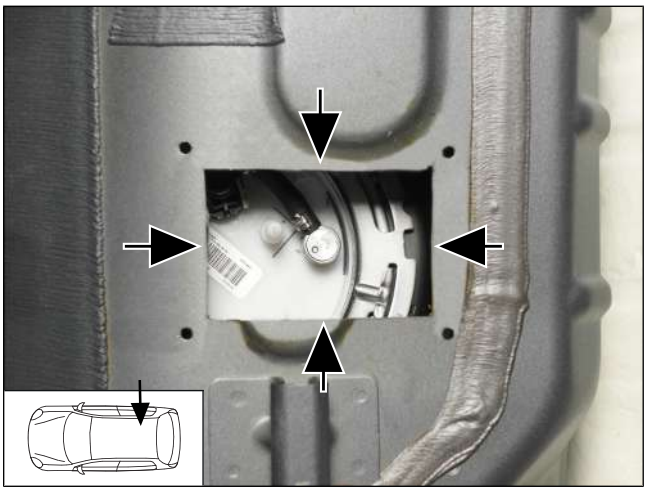
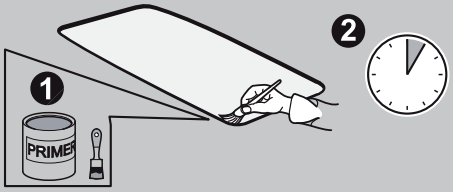


Fig. 72

Danger of damage to components

▶ Protect cutting edges / holes against corrosion by suitable means.



Applying sealing compound

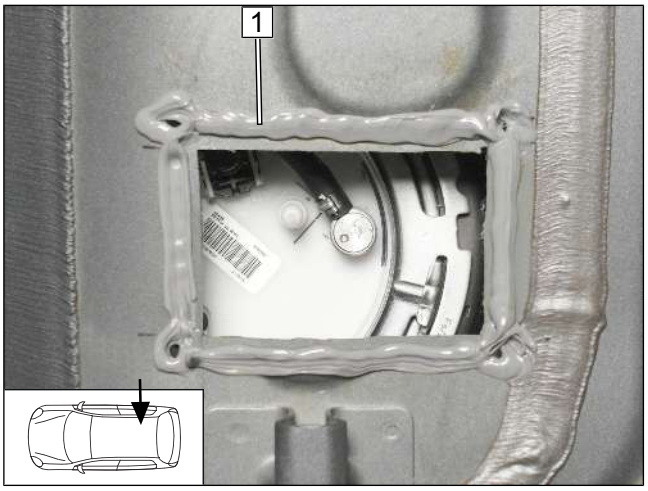


Fig. 73

Use sealing and adhesive compound according to the specifications of the vehicle manufacturer.

1 Sealing compound

Riveting cover plate

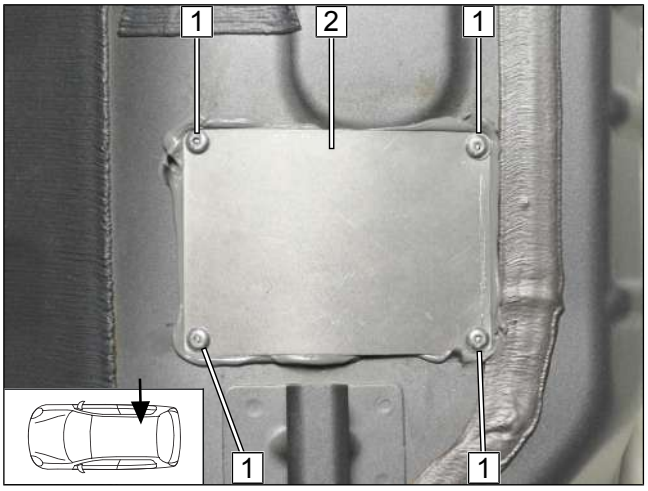


Fig. 74

1 4.8x15 body-bound rivet
2 Cover plate

Sealing cover plate

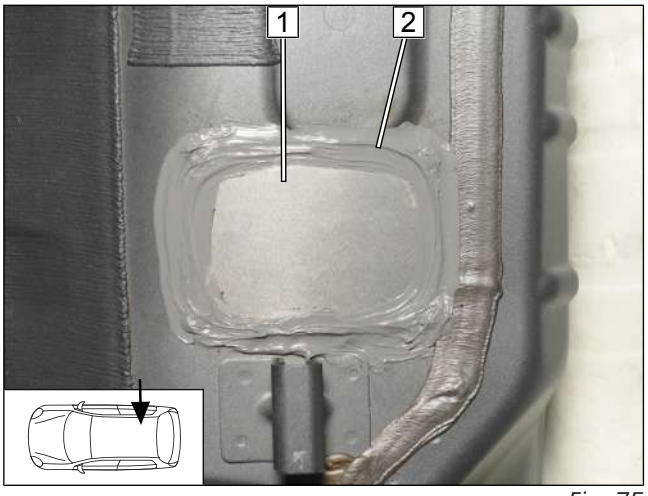


Fig. 75

1 Cover plate
2 Sealing compound

10 Coolant

10.1 Hose routing diagram

'Inline' coolant circuit

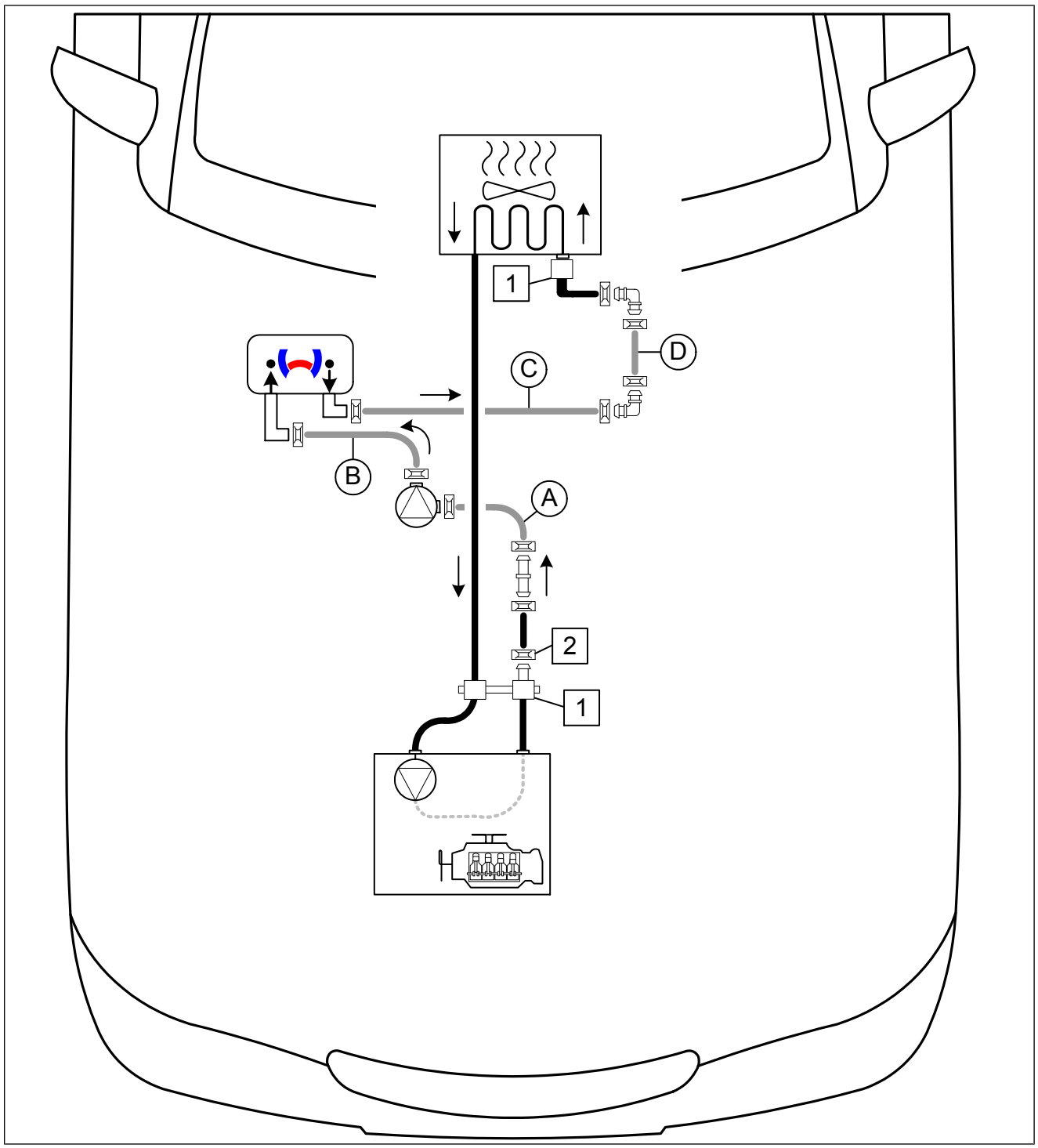


Fig. 76

All spring clips without a specific designation = 25mm dia.

All connecting pipe or = 18x18mm dia.

1 Original vehicle hose coupling

2 Original vehicle spring clip

10.2 Coolant circuit installation

Dismantling original vehicle hoses

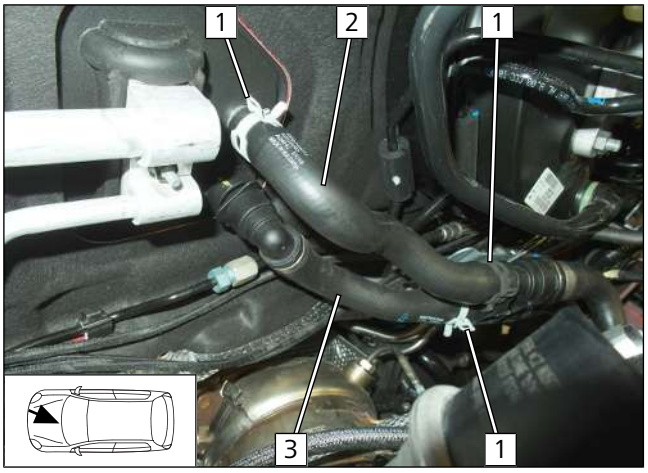


Fig. 77

For better assembly, also remove the heat exchanger outlet / engine inlet hose [2]. All original vehicle spring clips [1] will be reused.

[3] Engine outlet / heat exchanger inlet hose

Cutting point

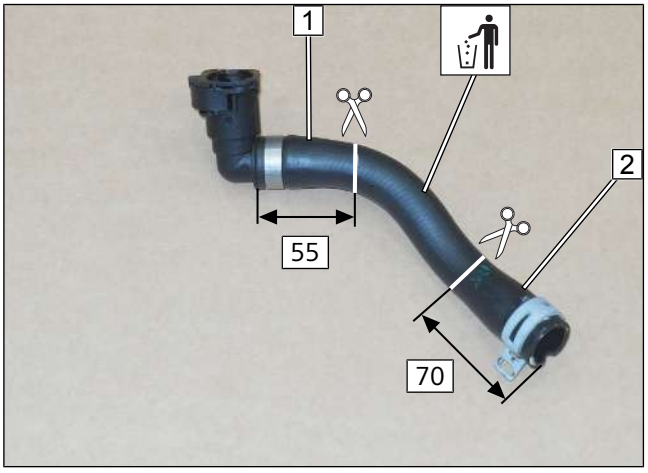


Fig. 78

[1] Heat exchanger inlet hose section
[2] Engine outlet hose section

Preparing heat exchanger inlet hose section

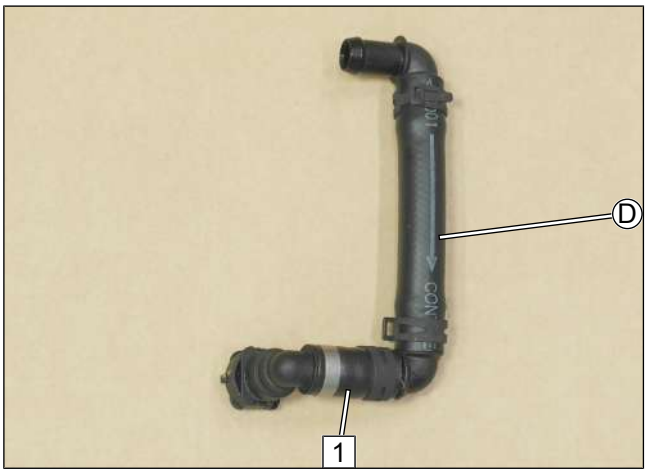


Fig. 79

[1] Heat exchanger inlet hose section

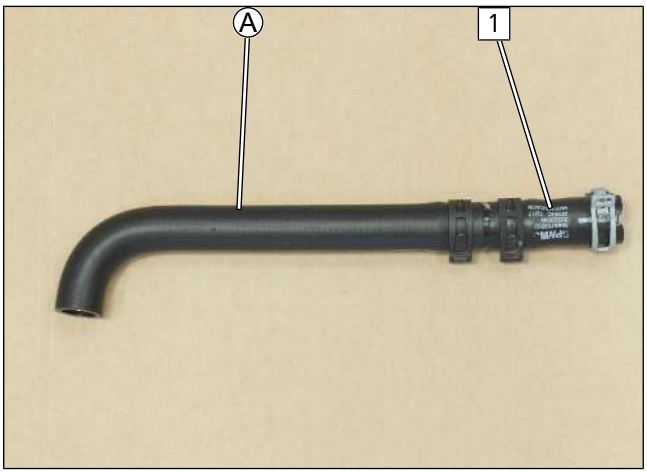


Fig. 80

1 Engine outlet hose section

Preparing coolant pump bracket

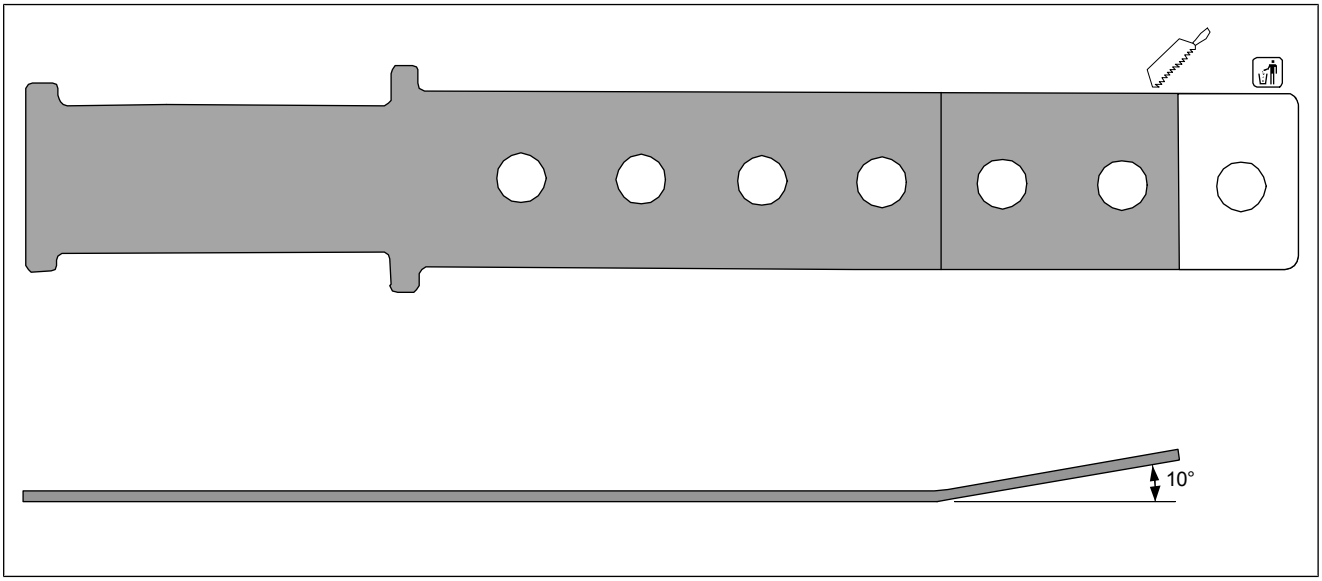


Fig. 81

Premounting coolant pump

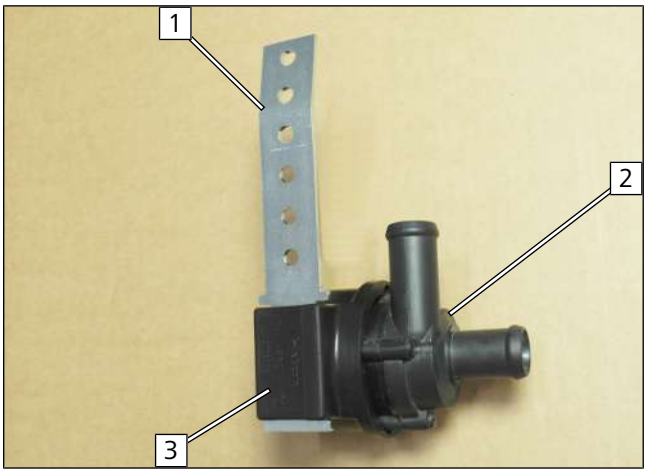


Fig. 82

1 Coolant pump bracket
2 Coolant pump
3 Coolant pump mount

Mounting coolant pump

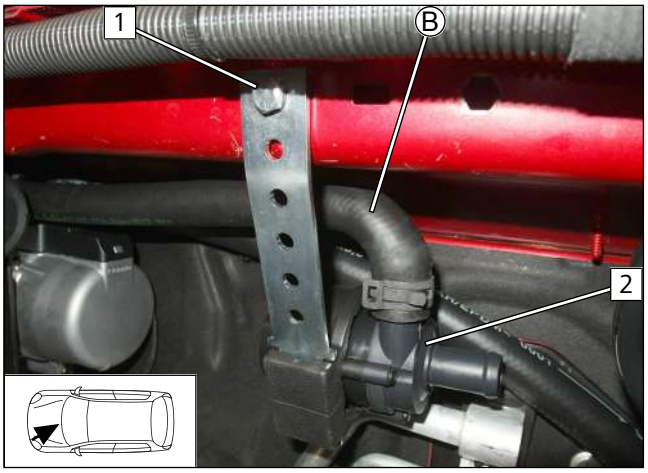


Fig. 83

1 M6x20 bolt, spring lockwasher, coolant pump bracket, premounted rivet nut

2 Premounted coolant pump

Connecting coolant pump wiring harness

Fig. 84

1 Coolant pump

2 Mounted coolant pump connector

Fastening coolant pump wiring harness

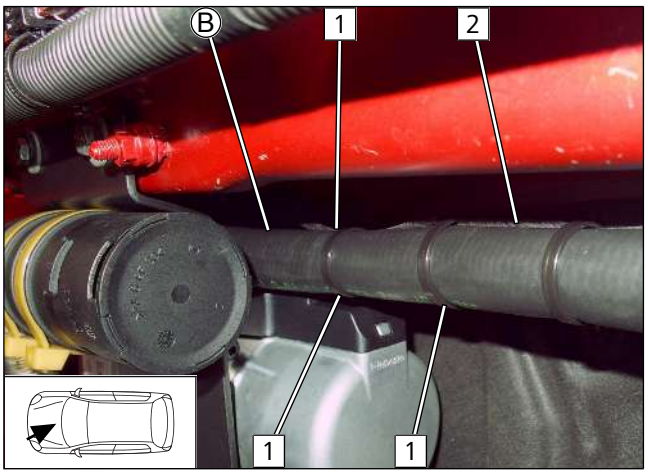


Fig. 85

1 Cable tie

2 Coolant pump wiring harness

Connecting heat exchanger inlet

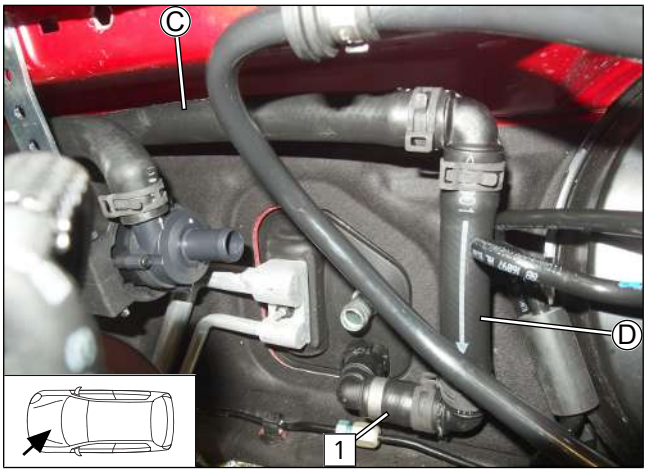


Fig. 86

1 Heat exchanger inlet hose section

Connecting engine outlet

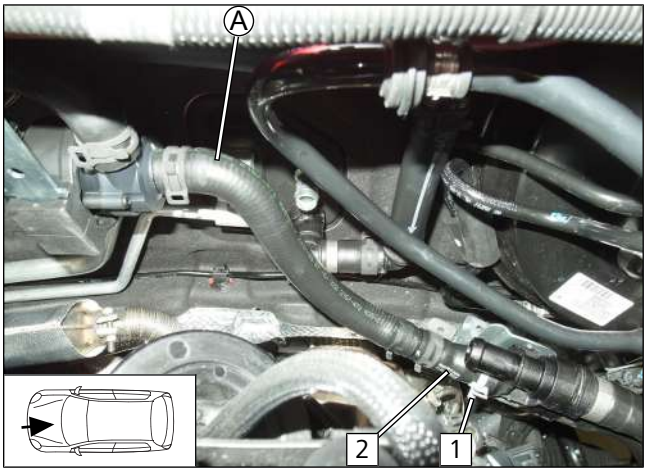


Fig. 87

1 Original vehicle spring clip
2 Engine outlet hose section

Mounting heat exchanger outlet / engine inlet hose

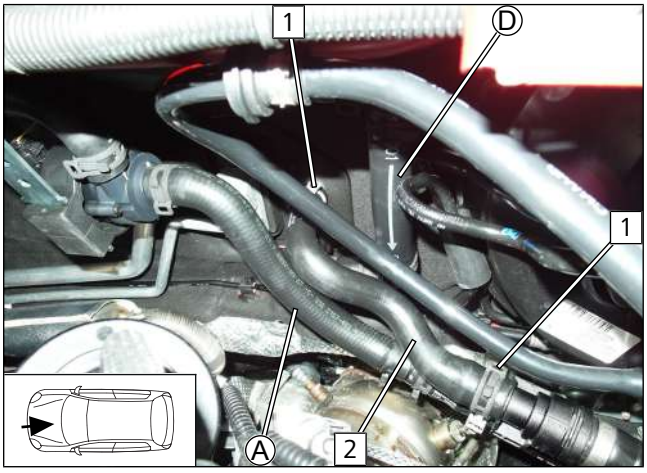


Fig. 88

1 Original vehicle spring clip
2 Heat exchanger outlet / engine inlet hose

Fastening hose Ⓓ

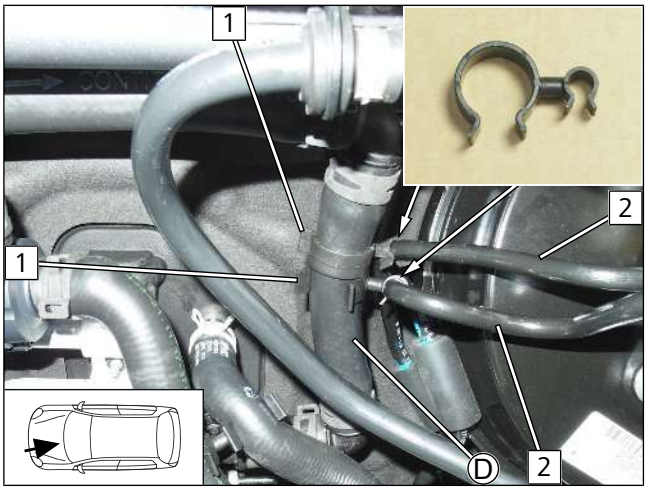


Fig. 89

1 22x8 hose bracket
2 Original vehicle line

Fastening hose Ⓐ

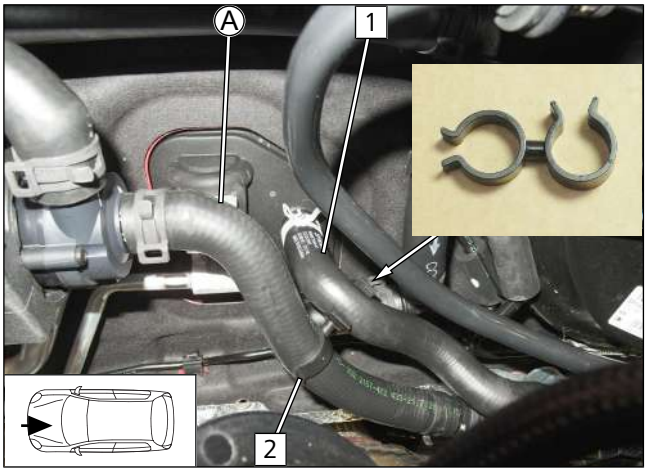


Fig. 90

1 Heat exchanger outlet / engine inlet hose
2 20x20 hose bracket

11 Exhaust

Bending perforated bracket

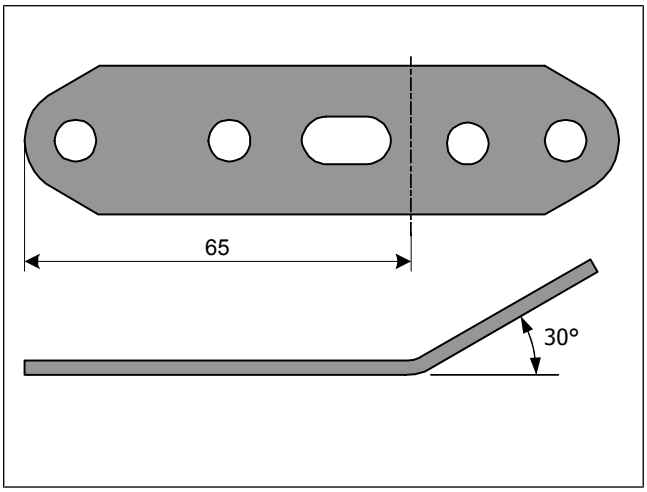


Fig. 91

Premounting exhaust silencer

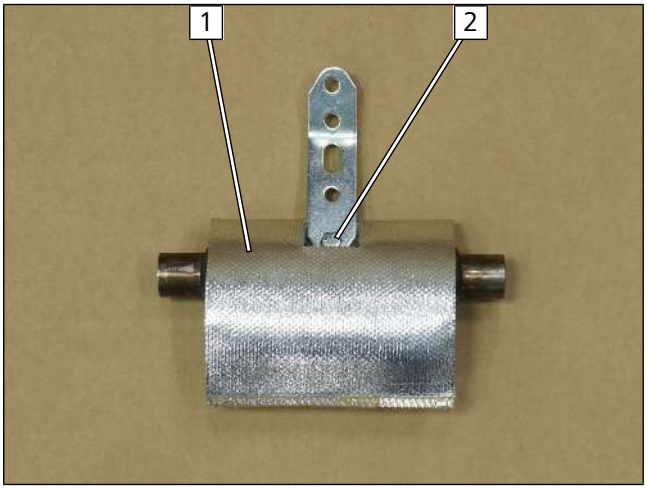


Fig. 92

1 Exhaust silencer in thermal protection sleeve
2 M6x16 bolt, perforated bracket, flanged nut

Mounting exhaust silencer

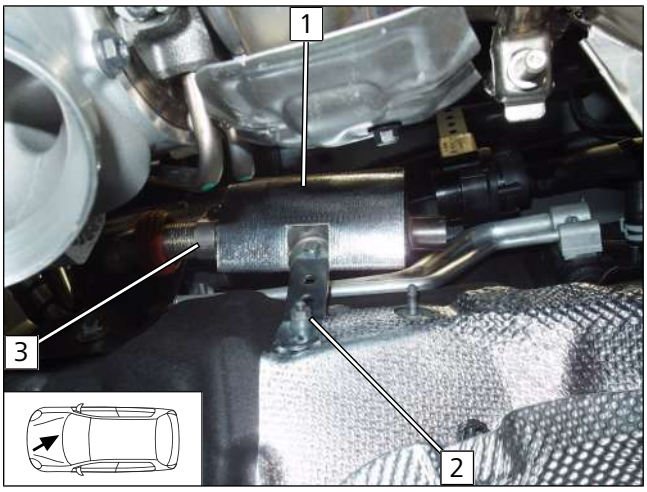


Fig. 93

- ▶ Position hose clamp 3 on exhaust pipe a1.
- ▶ Slide exhaust pipe a1 onto the exhaust silencer.

1 Exhaust silencer in thermal protection sleeve
2 Original vehicle stud bolt, perforated bracket, original vehicle flanged nut

Mounting exhaust pipe **a1** onto exhaust silencer

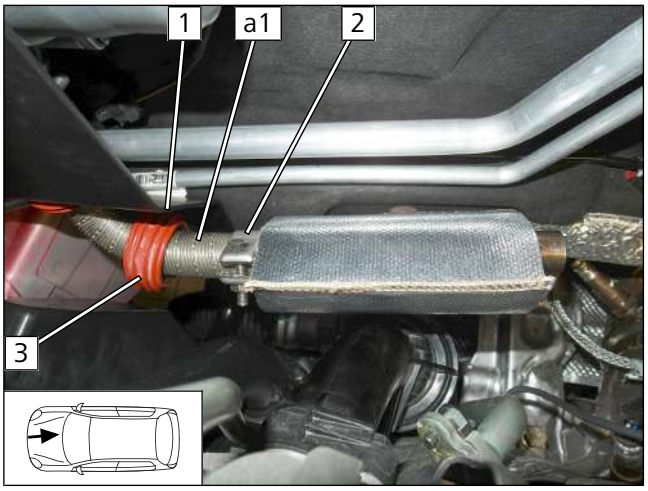


Fig. 94

Danger of damage to components

- ▶ Ensure sufficient distance between exhaust pipe **a1** and neighbouring components, correct if necessary.

- ▶ Align spacer bracket 3 with heater bracket 1 as shown.

  2 Tighten hose clamp

Enlarging hole in subframe

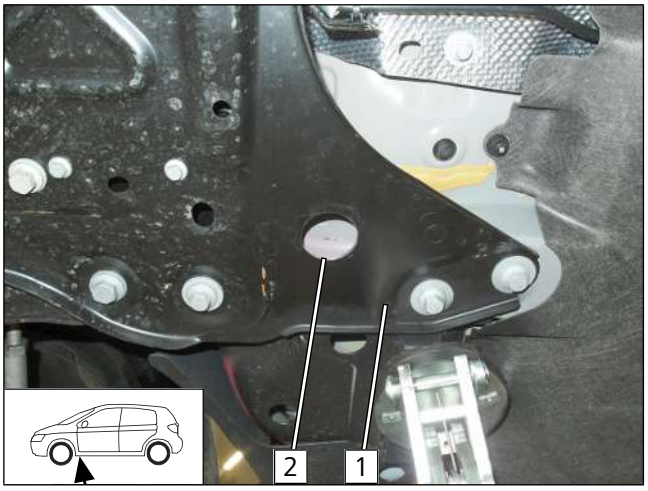


Fig. 95

Observe the EFIX installation instructions.

- ▶ Work steps E1.2 / E2

  1 Subframe
  2 Original vehicle hole

Copying hole pattern

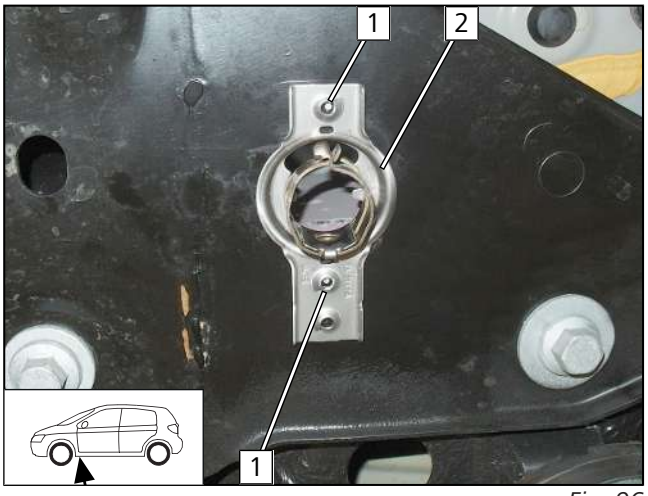


Fig. 96

- ▶ Work step E3

  1 Hole pattern
  2 EFIX

Holes in underride protection

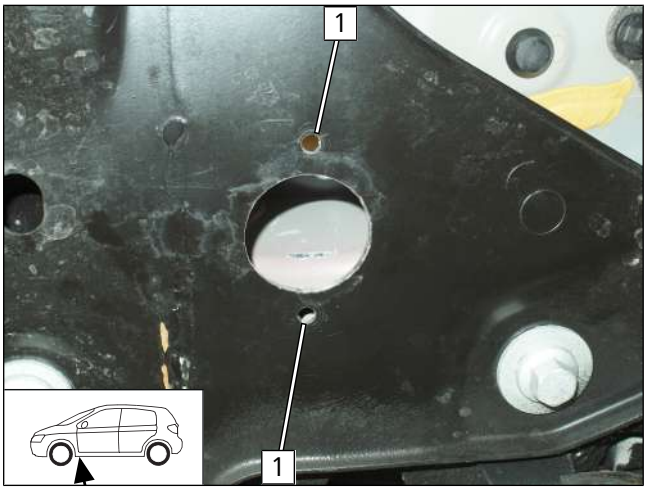


Fig. 97

▶ Work step E4

1 Hole

Mounting EFIX

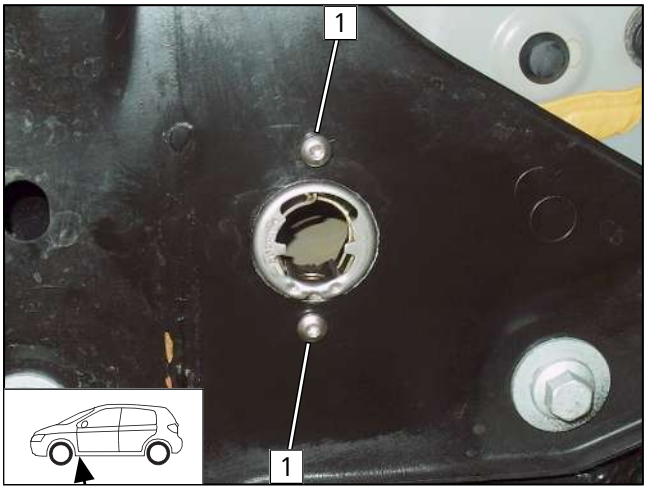


Fig. 98

▶ Work step E5

1 5x13 self-tapping screw

Bending angle bracket

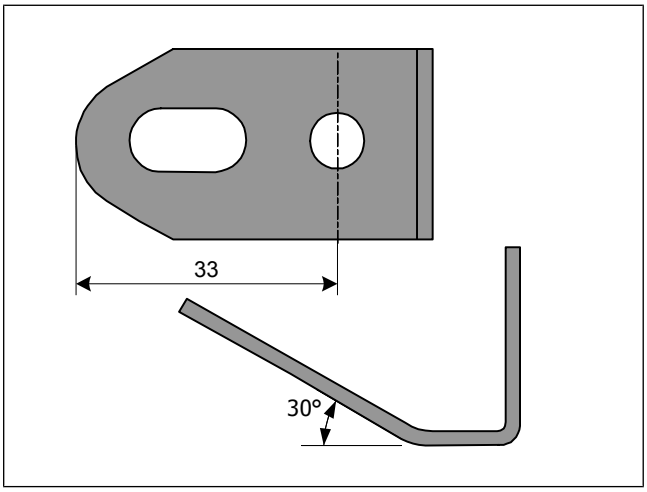


Fig. 99

Premounting exhaust pipe **a2**

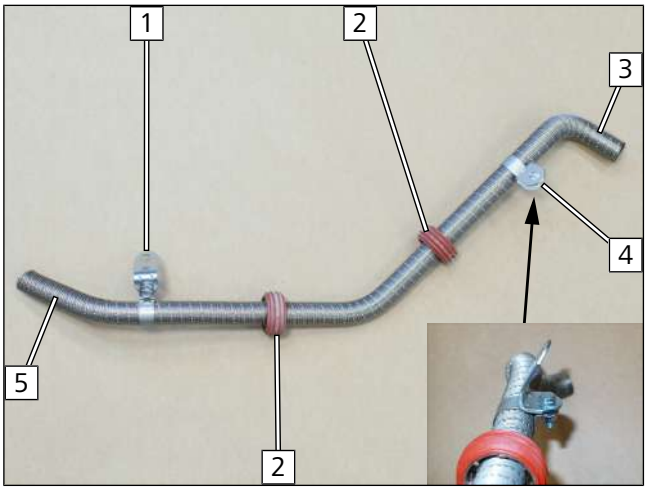


Fig. 100

1. Mount M6x20 bolt, p-clamp, angle bracket, flanged nut loosely
2. Spacer bracket
3. EFIX connection side
4. Mount M6x20 bolt, angle bracket with 30° bend, pipe clamp, flanged nut loosely
5. Exhaust silencer connection side

Mounting exhaust pipe **a2**

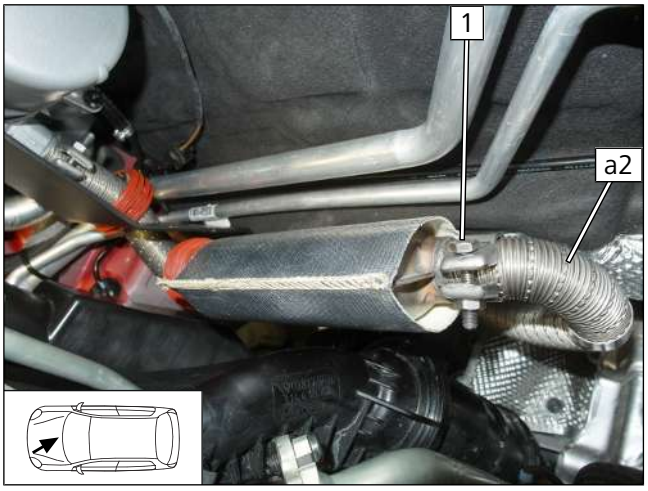


Fig. 101

1. Tighten hose clamp

Mounting angle bracket

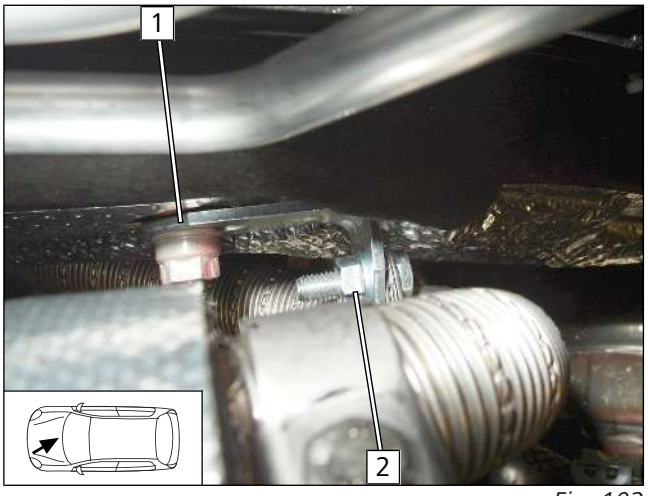


Fig. 102

1. Original vehicle stud bolt, angle bracket, original vehicle flanged nut
2. Tighten flanged nut

Mounting angle bracket

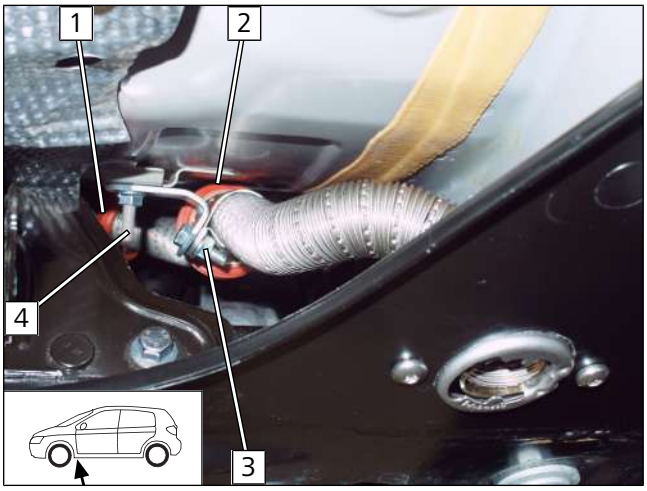


Fig. 103

▶ Align spacer bracket 1 with insulation mat.

▶ Align spacer bracket 2 with body.

3 Tighten flanged nut

4 Original vehicle stud bolt, angle bracket with 30° bend, flanged nut

Mounting exhaust pipe a2

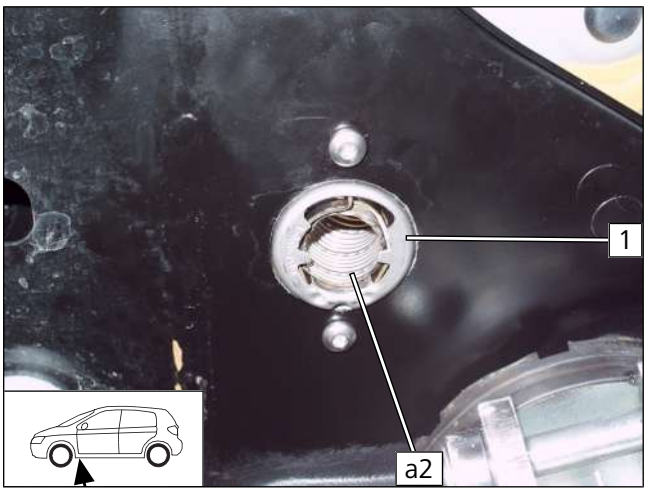


Fig. 104

▶ Work steps E6-8

Danger of damage to components

▶ Ensure sufficient distance between exhaust pipe a2 and neighbouring components, correct if necessary.

1 EFIX

12 Electrical system of passenger compartment

12.1 Electrical system preparation

Assigning wiring harness

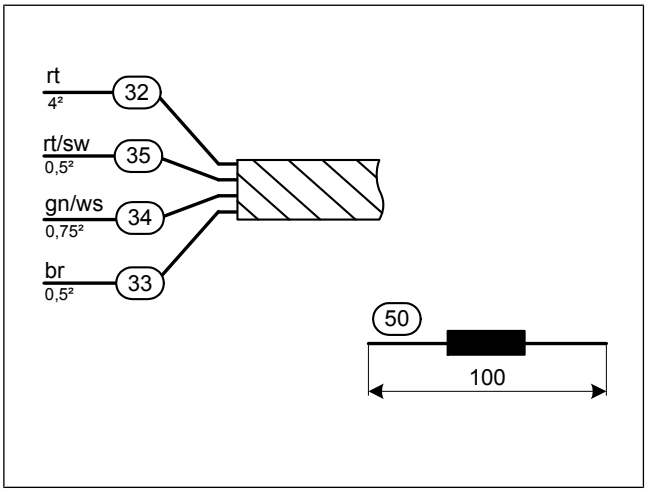


Fig. 105

Wire sections retain their numbering in the entire document.

- **32** Red (rt) wire of heater wiring harness, F2
- **33** Brown (br) wire of heater wiring harness, earth 31
- **34** Green/white (gn/ws) wire of heater wiring harness, X1/5
- **35** Red/black (rt/sw) wire of heater wiring harness X10
- **50** Resistor

Mounting resistor **50**

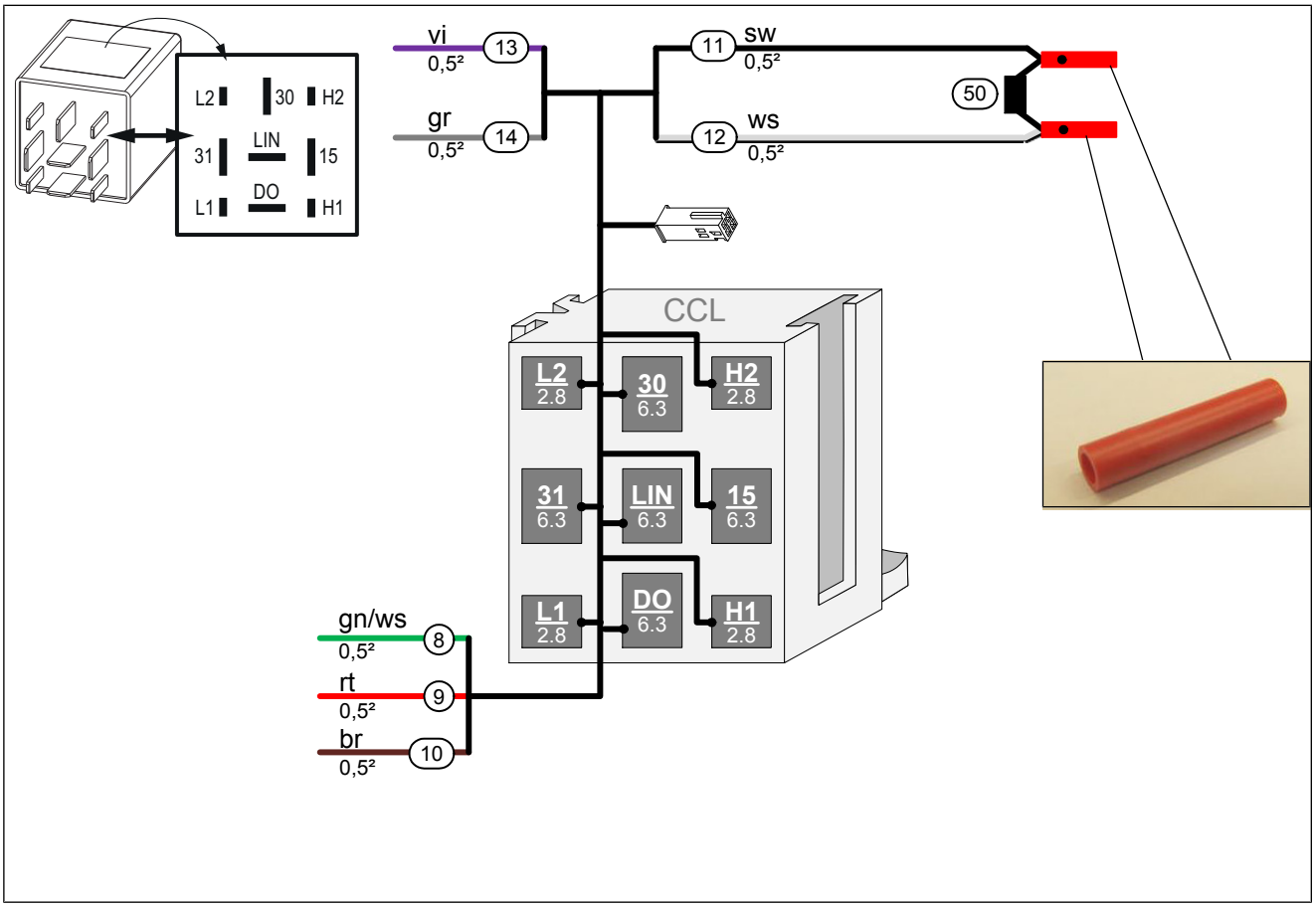


Fig. 106

Premounting CCL GW socket

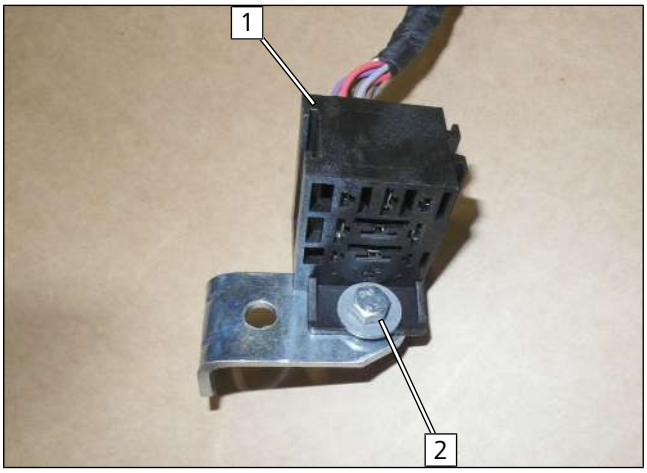


Fig. 107

1 CCL GW socket

2 M5x16 bolt, large diameter washer, CCL GW socket, angle bracket, large diameter washer, nut

Inserting CCL GW into socket

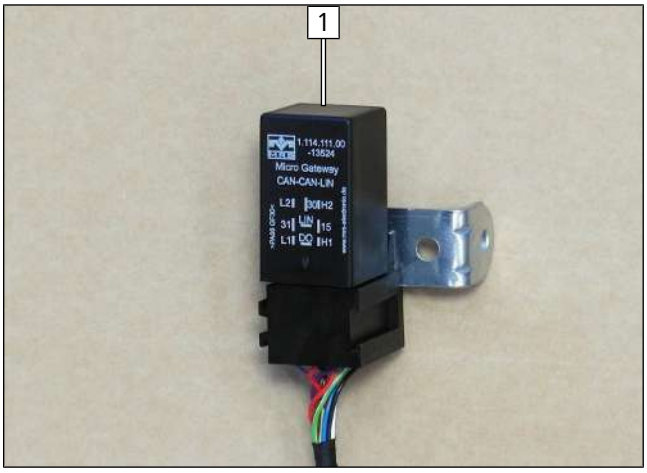


Fig. 108

1 CCL GW

12.2 CCL GW installation

Mounting CCL GW

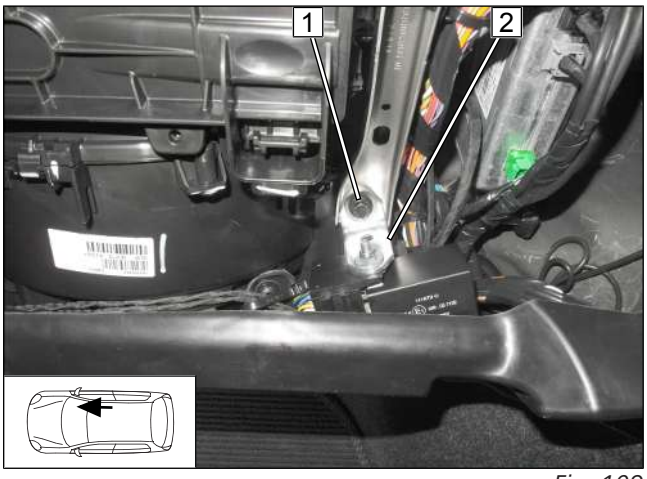


Fig. 109

1 Original vehicle bolt

2 Premounted CCL GW

12.3 Wiring diagram

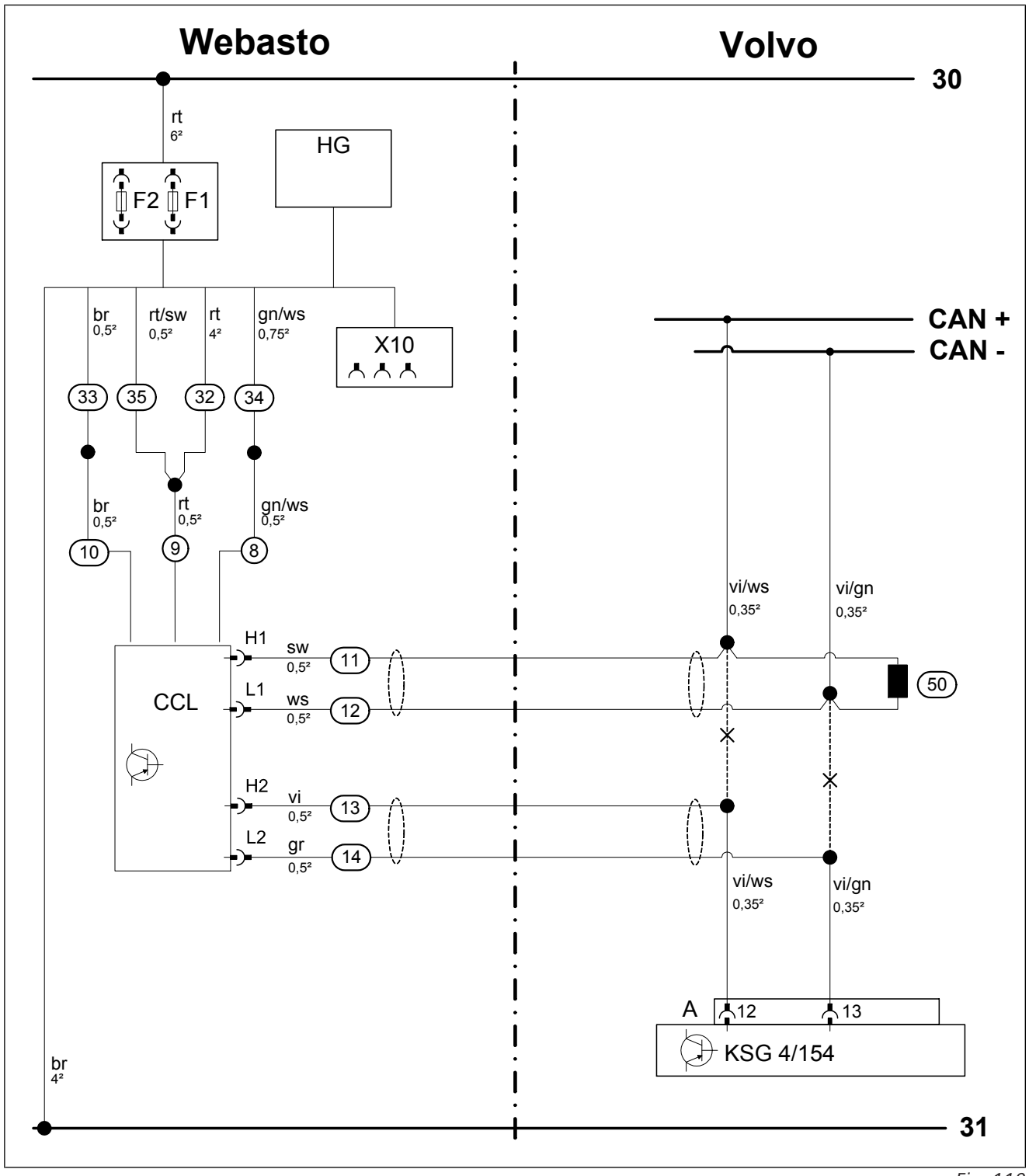


Fig. 110

12.4 Legend to the system wiring diagrams

Vehicle components		Symbols	
Abbreviation	Component	Abbreviation	Explanation
KSG 4/154	Air-conditioning control unit	X	Cutting point
A	18-pin KSG connector		

Webasto components		Cable colours	
Abbreviation	Component	Abbreviation	Colour
A	Connector of CLR module wiring harness	bg	beige
B	Socket of CLR module wiring harness	bl	blue
C	Adapter wiring harness connector	br	brown
D	Adapter wiring harness socket	dbl	dark blue
CCL GW	CAN CAN LIN Gateway	dgn	dark green
CL GW	CAN LIN Gateway	ge	yellow
CLR	Cold start module	gn	green
D1	Diode	gr	grey
D2	Diode group	hbl	light blue
F0	Additional fuse for power supply	hgn	light green
F1	Heater main fuse	or	orange
F2	Passenger compartment fan controller main fuse	pk	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		
LIN GW	LIN Gateway		
PWM GW	Pulse width modulator gateway		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	4-pin socket of control element		
Y	Power adapter		

12.5 Connecting wiring harnesses

Connecting HG and CCL GW wiring harness wires

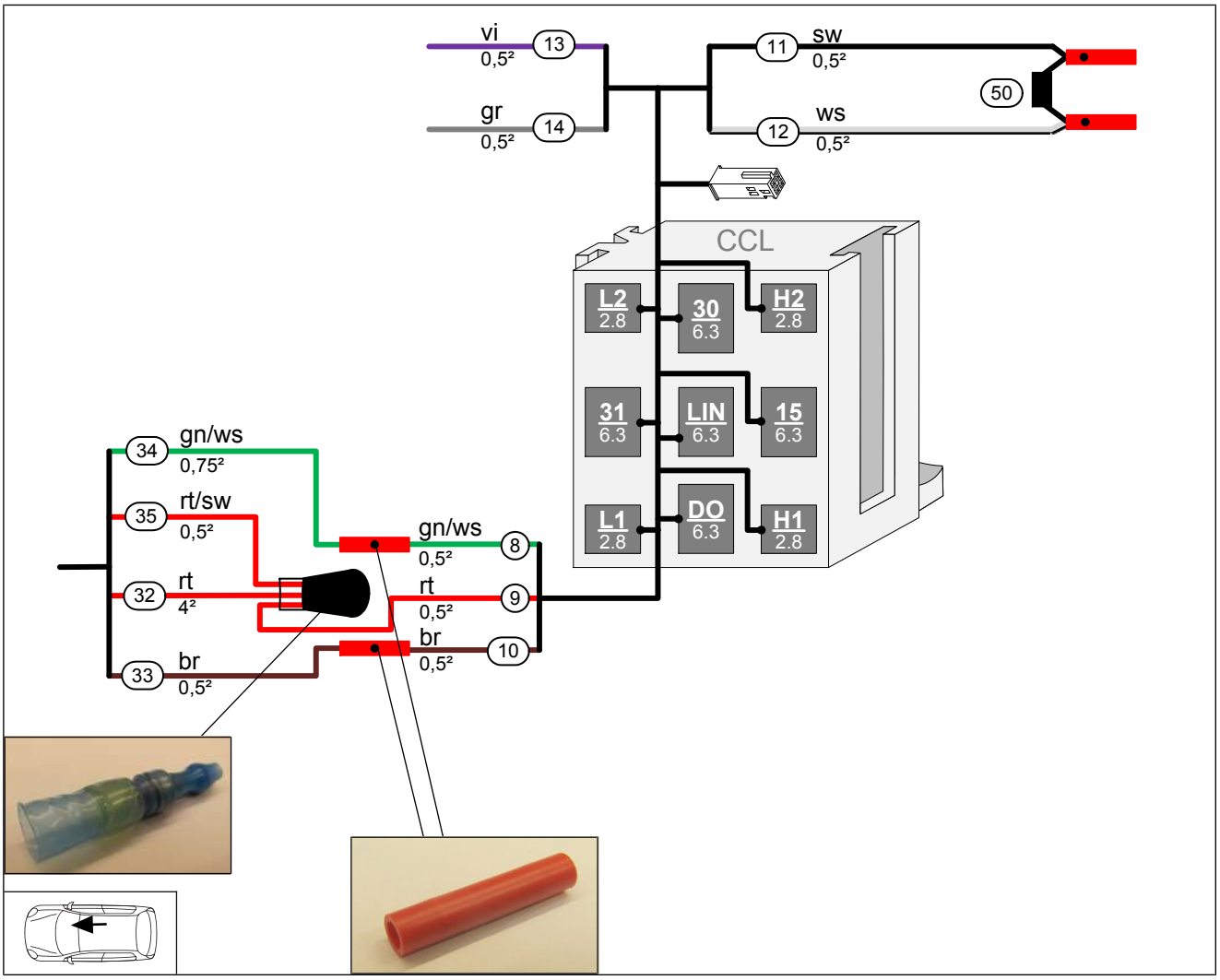


Fig. 111

12.6 Fan controller

Locating KSG connector A

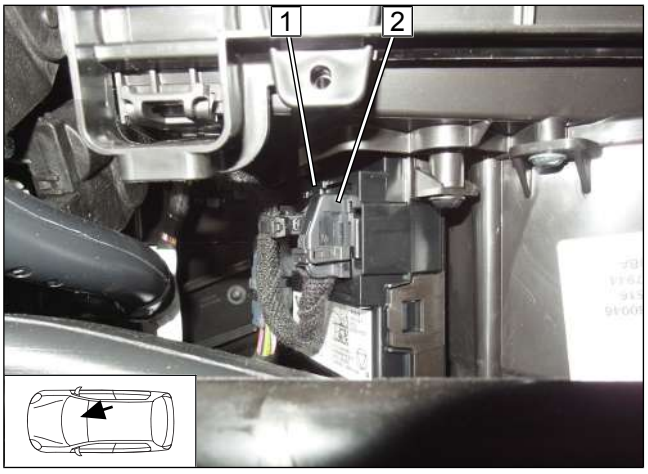


Fig. 112

1 KSG
2 KSG connector A

Preparing KSG connector A

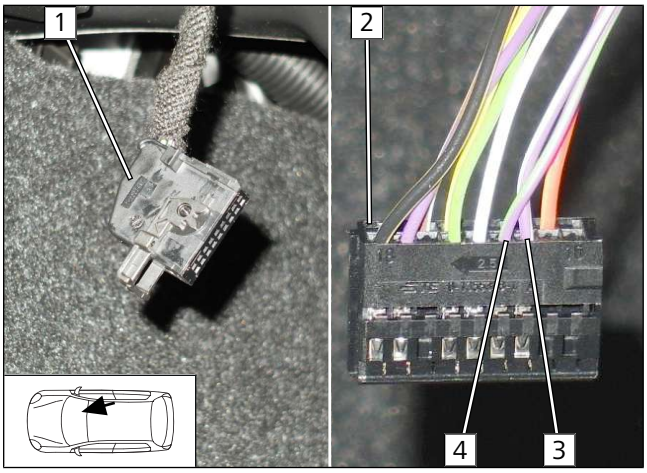


Fig. 113

▶ Remove cap 1 from KSG connector A.

2 KSG connector A, dismantled
3 Pin 12
4 Pin 13

Connection to air-conditioning control unit

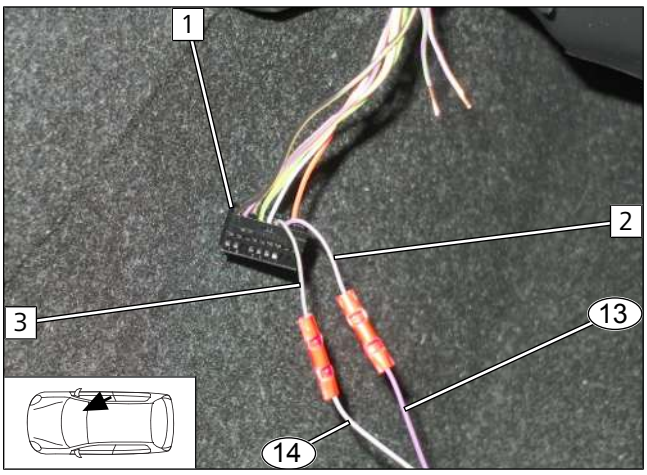


Fig. 114

1 KSG connector A
2 Violet/white (vi/ws) wire of KSG connector A / pin 12
3 Violet/green (vi/gn) wire of KSG connector A / pin 13
13 Violet (vi) wire of CCL GW / H2
14 Grey (gr) wire of CCL GW / L2

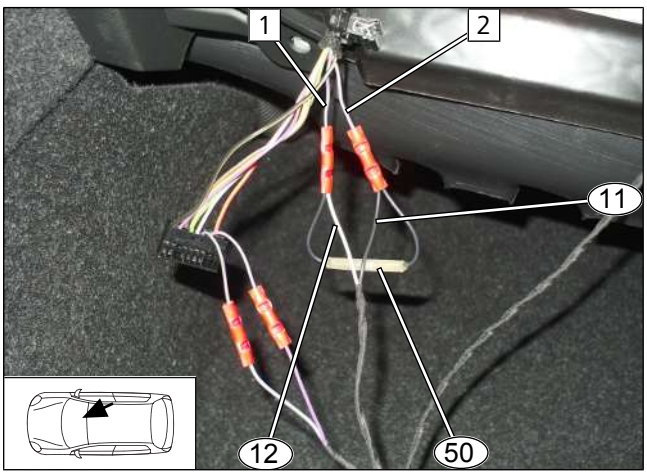


Fig. 115

1 Violet/green (vi/gn) wire of CAN-
2 Violet/white (vi/ws) wire of CAN+
11 Black (sw) wire of CCL GW / H1
12 White (ws) wire of CL GW / L1
50 Premounted resistor

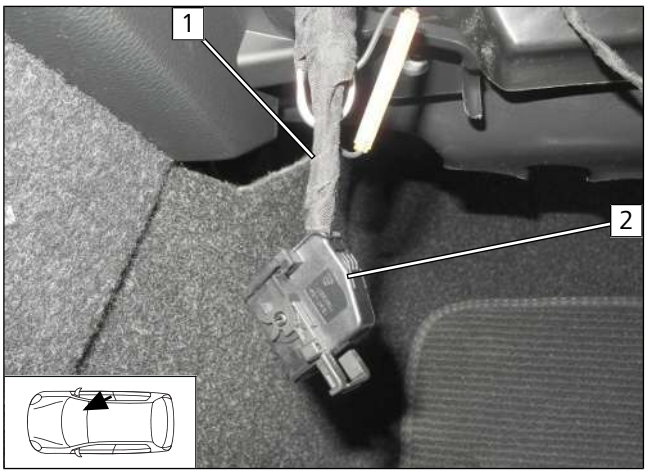


Fig. 116

- ▶ Wrap insulating tape around wiring harness **1** as shown.
- ▶ Complete KSG connector A **2**.

13 Electrical system of control element

13.1 Telestart option

Preparing receiver bracket

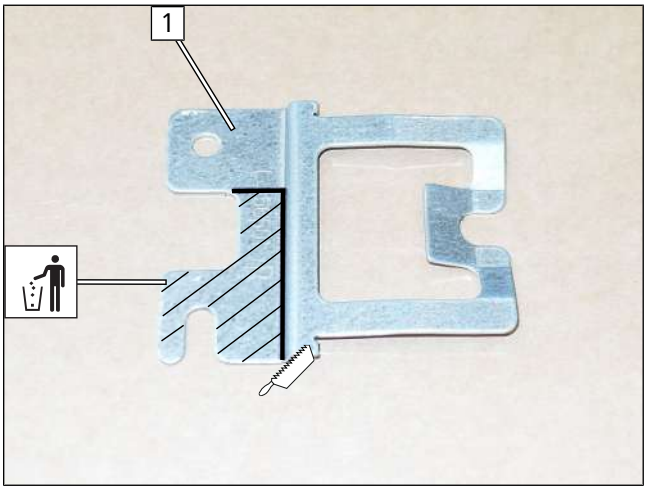


Fig. 117

1 receiver bracket

Preparing receiver installation location

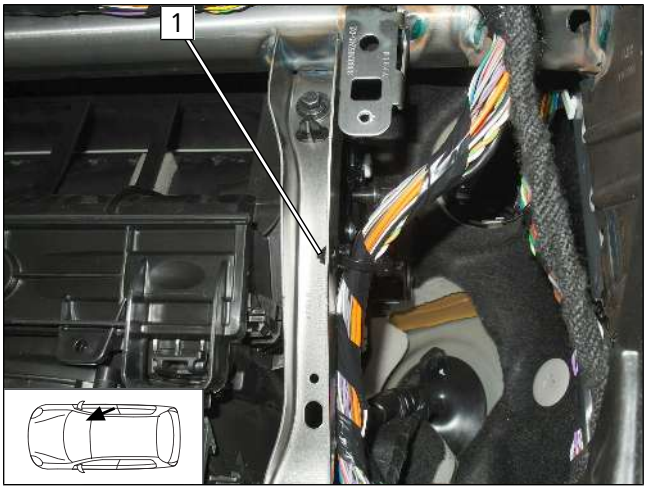


Fig. 118

▶ Remove original vehicle eyelet cable tie at position 1.

Mounting receiver

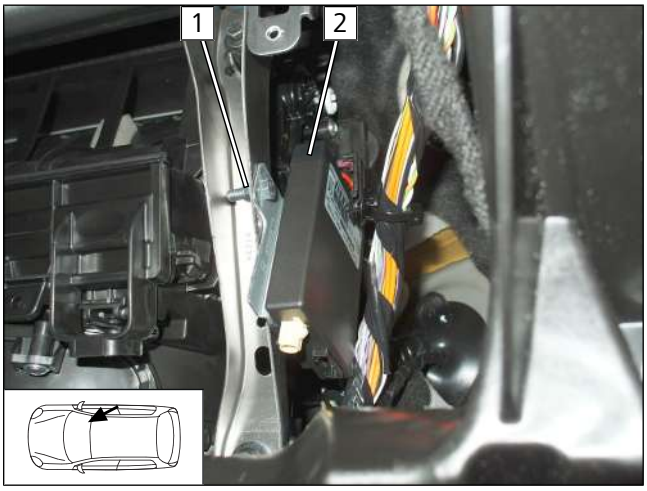


Fig. 119

Observe the Telestart installation documentation.

1 M5x16 bolt, receiver bracket, original vehicle hole, flanged nut

2 Receiver

Mounting temperature sensor, only in case of T100 HTM

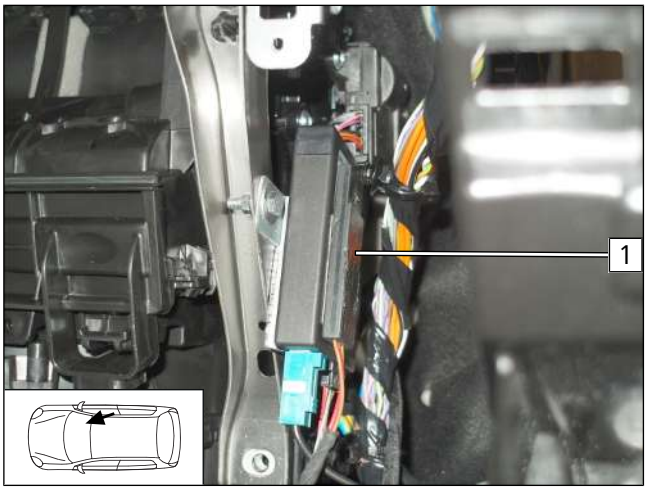


Fig. 120

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

Mounting aerial

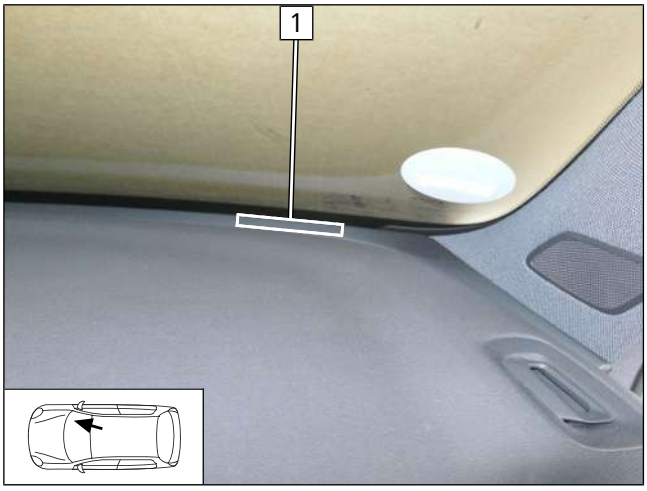


Fig. 121

[1] Aerial

13.2 ThermoCall option

Mounting receiver

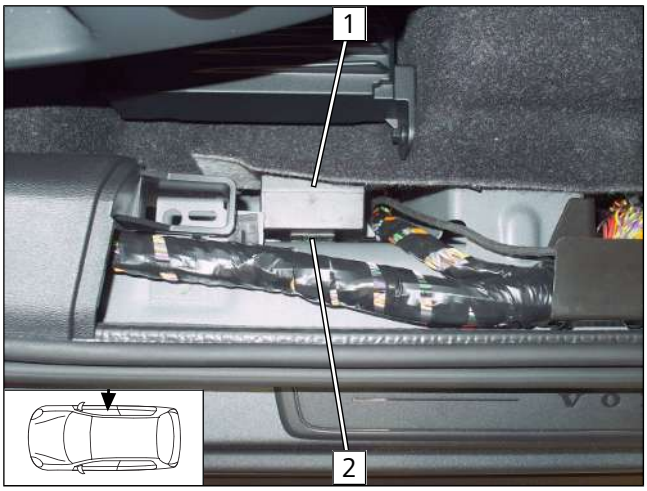


Fig. 122

Observe the ThermoCall installation documentation.

▶ Fasten receiver [1] with double-sided self-adhesive hook and loop fastening [2] as shown.

Mounting aerial (optional)

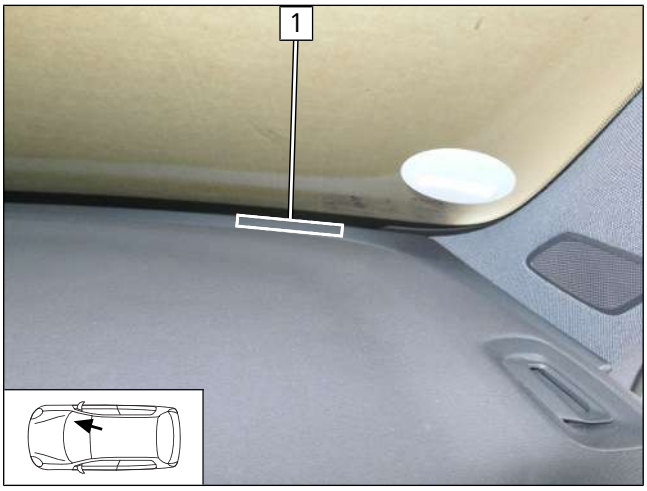


Fig. 123

1 Aerial

14 Final Work

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

- ▶ Mount removed parts in reverse order.

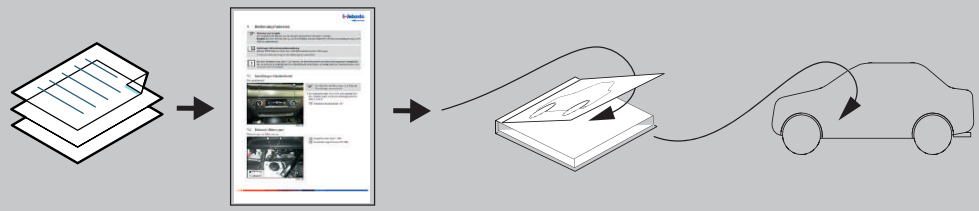
- ▶ Check all hoses, clamps and all electrical connections for firm seating.
- ▶ Insulate and tie back loose lines
- ▶ Spray heater and electrical components with anti-corrosion wax (Tectyl 100K).
- ▶ Connect the battery.

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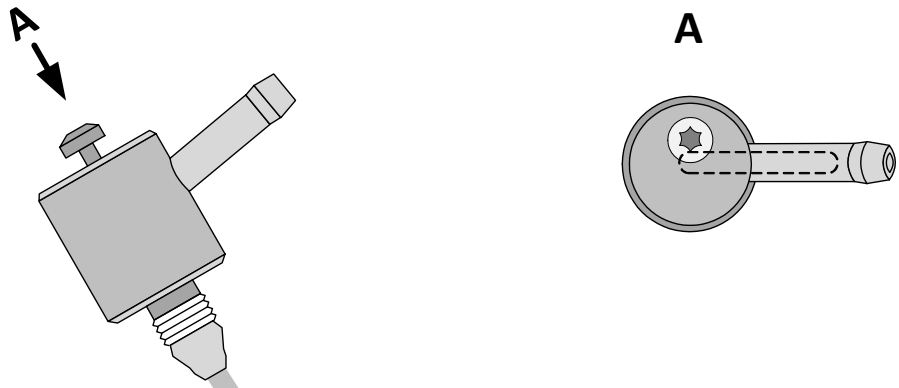
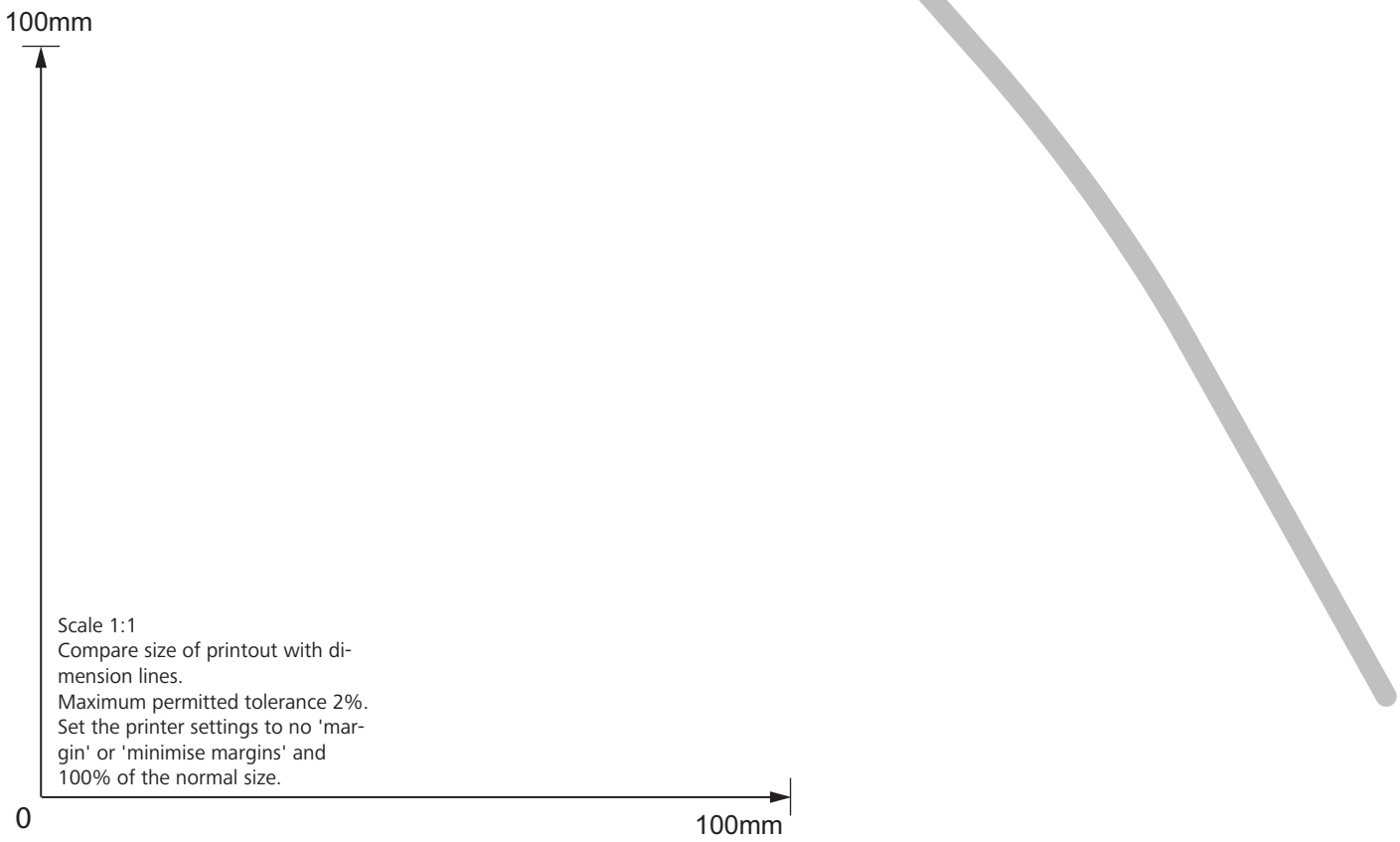
Technical Extranet: https://dealers.webasto.com

CE

WWW.WEBASTO.COM

15 FuelFix template





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.

16 Operating instructions for automatic air-conditioning

Information regarding the heating time:

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

Vehicles with passenger compartment monitoring:

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

▶ Deactivate passenger compartment monitoring for the heating operation

Notes about the A/C control panel presettings

Your vehicle is equipped with a comfort air-conditioning control. As a result, **no** settings are required on the A/C control panel when switching off the vehicle. All necessary presettings, such as fan speed, temperature and flap positions are set automatically.

Notes about the active parking heating mode

The vehicle fan is deactivated when the vehicle is opened and is available again once the ignition is switched on.
After the vehicle is closed again, it can take several minutes for it to be active again.

Note for parking heater function

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

16.1 Installation location of fuses

Fuses in engine compartment

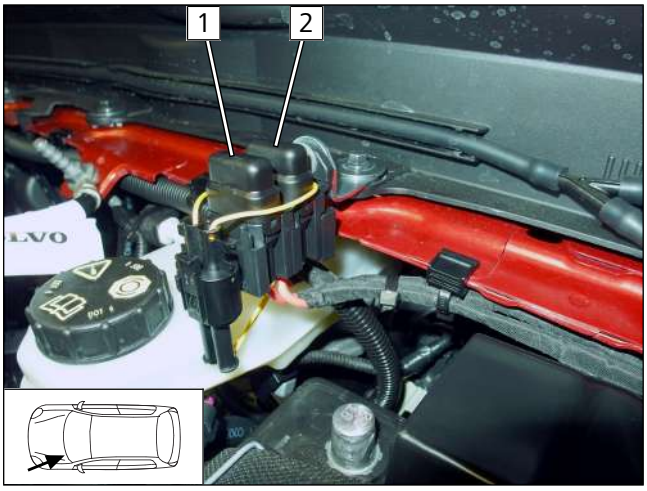


Fig. 124

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