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Installation documentation

for water heater Thermo Top Evo

'Inline' coolant circuit with engine preheating

Nissan Navara

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Nissan	Navara	D231	from 2019	e9* 2007/46* 6364*…

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displace-ment [cm³]	Engine code
2.3D	Diesel	Euro 6;WLTP;CI…	6-speed SG	120	2298	YS23
2.3D	Diesel	Euro 6;WLTP;CI…	6-speed SG	140	2298	YS23
2.3D	Diesel	Euro 6;WLTP;CI…	7-speed AG	140	2298	YS23

Validity	Equipment variants	Model
		Navara
Verified equipment variants	Manual air-conditioning type B*	x
	2 zone automatic air-conditioning	x
	LED main headlights	x
	LED daytime running lights	x
	Halogen front fog lights	x
	Start button with keycard	x
	AWD	x
	Headlight washer system	x
Exclusion	Manual air-conditioning type A*	x

* See the section 'Manual air-conditioning overview' [▶ 9] for the difference between manual air-conditioning type A and type B

Total installation time	Note
7.5 hours	

Contents

1 List of abbreviations

AG	Automatic transmission
AWD	All-wheel drive
DP	Fuel pump
EFIX	Exhaust end fastener
HG	Heater
PWM	Pulse width modulator
RSH	Relay and fuse holder of passenger compartment
SG	Manual transmission
SH2	Engine compartment fuse holder for F1/F2
UP	Coolant pump
Veh.	Vehicle
Wire	Cable
X10	Female plug for control element

2 Installation notes

2.1 Information on Validity

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

2.2 Components used

Designation	Order number
Basic delivery scope of Thermo Top Evo	In accordance with price list
Installation kit for Nissan Navara diesel 2019	1327749B
MultiControl installation frame, for installation of MultiControl CAR	9030077_
In case of Telestart, control element, as well as indicator lamp in consultation with end customer	In accordance with price list

2.3 Notes on installation, in coordination with the end customer

▶ Arrange for the vehicle to be delivered with the tank only about ¼ full.

▶ The installation location of the following elements should be chosen in coordination with the end customer:

- the push button in case of the Telestart and/or ThermoCall and/or ThermoConnect options
- the MultiControl CAR option

2.4 Information on Total Installation Time

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

3 About this document

3.1 Purpose of the document

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

Thermo Top Evo heater

3.2 Warranty and liability

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

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

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

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

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

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

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

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

3.2.1 Statutory regulations governing installation

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

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

3.3 Safety

Qualifications of installation personnel

The installation personnel must have the following qualifications:

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

Regulations and legal requirements

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

3.3.1 Safety information on installation

Danger posed by live parts

▶ Prior to installation, disconnect the vehicle from the voltage supply.

▶ Make sure the electrical system is earthed correctly.

▶ Always comply with legal requirements.

▶ Observe data on type label.

Danger of fire and leaking toxic gases due to improper installation

▶ Vehicle parts in the vicinity of the heater must be protected against excessive heating by the following measures:

  ⇨ Maintain minimum safety distances.

  ⇨ Ensure adequate ventilation.

  ⇨ Use fire-resistant materials or heat shields.

Danger due to sharp edges

- Lacerations
- Short circuit due to electrical wire damage

▶ Fit protectors on sharp edges.

3.4 Using this document

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

3.4.1 Explanatory Notes on the Document

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

Generally valid Webasto documentation	
Vehicle-specific installation documentation	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

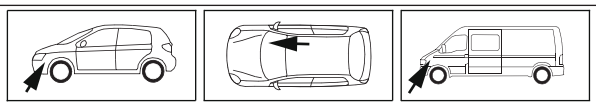
3.4.3 Work step identification marks

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	▶ Battery complete with battery carrier ▶ Air filter complete with intake hose ▶ Bumper	
Passenger compartment	▶ Glove box ▶ Glove box trim ▶ Instrument panel trim under the steering wheel	

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 Manual air-conditioning overview

Manual air-conditioning type A

The fan controller was **not tested** in the case of manual air-conditioning type A.

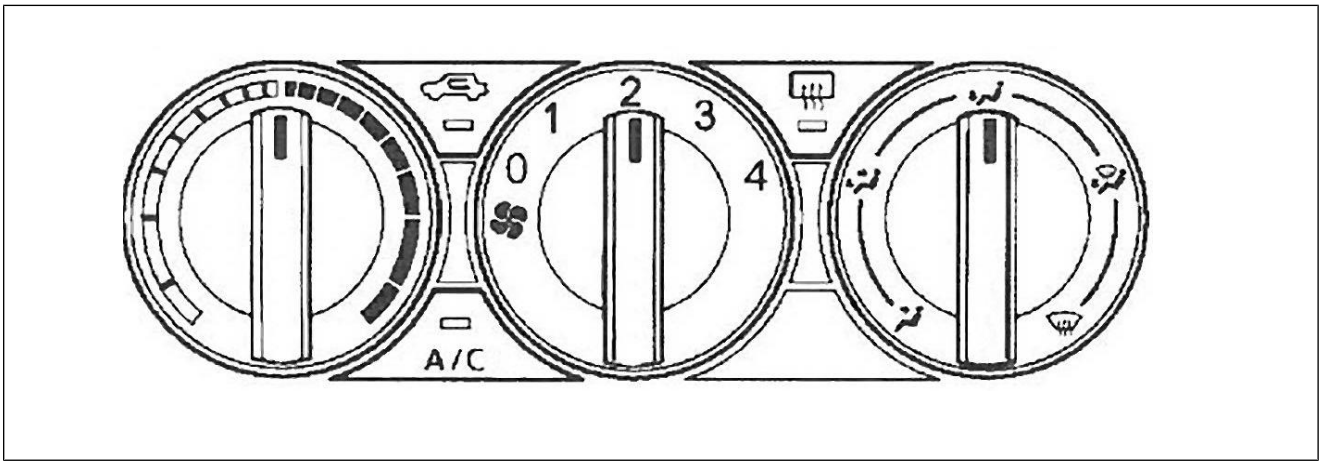


Fig. 1

Manual air-conditioning type B

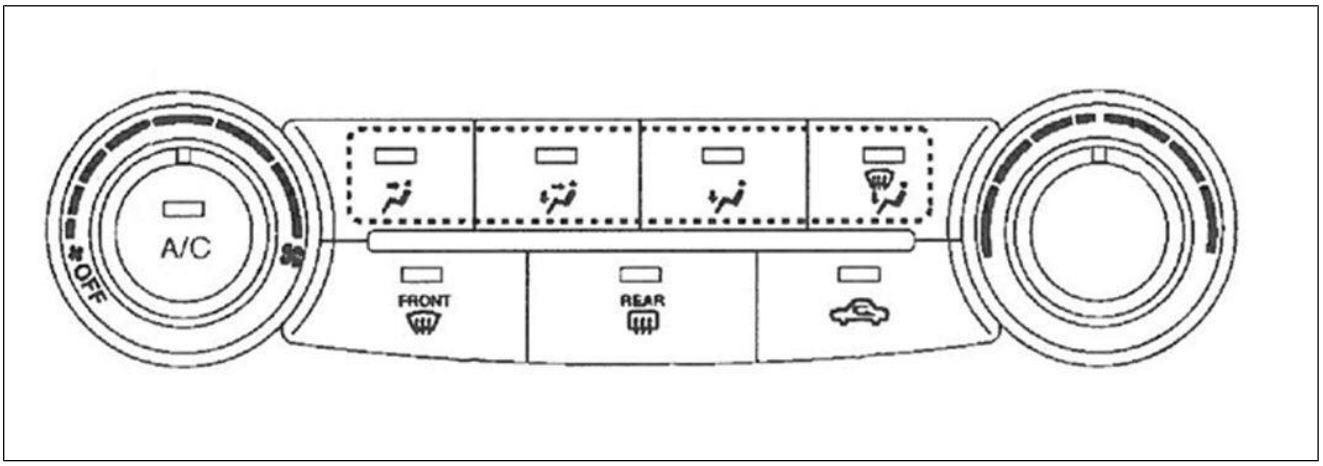


Fig. 2

7 Installation overview

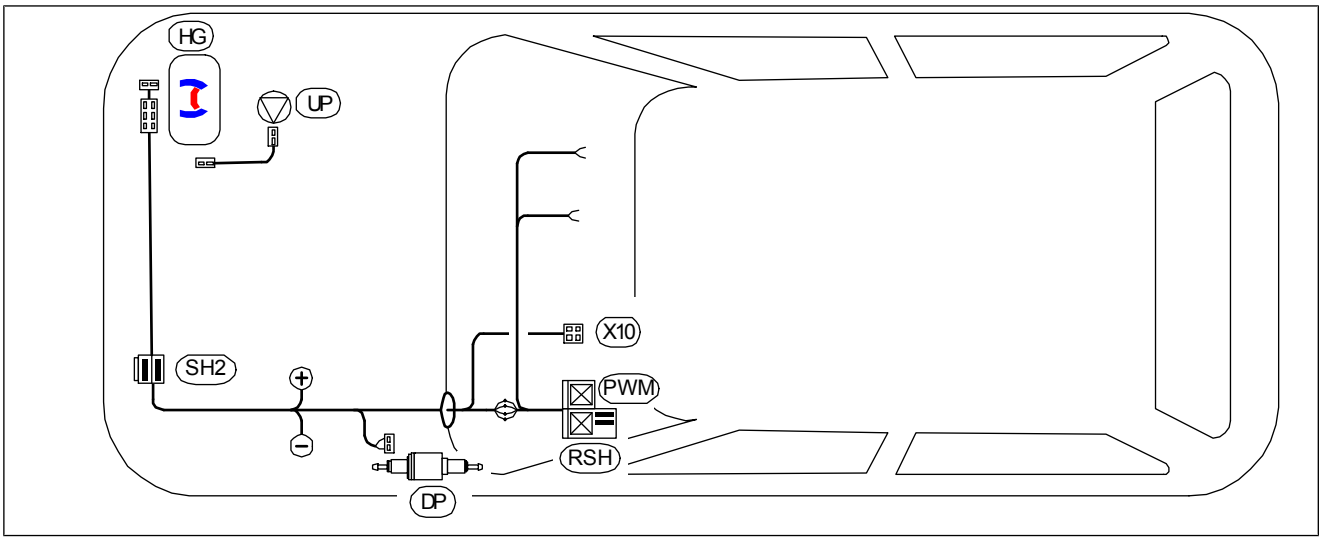


Fig. 3

Legend to installation overview

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

Heater installation location

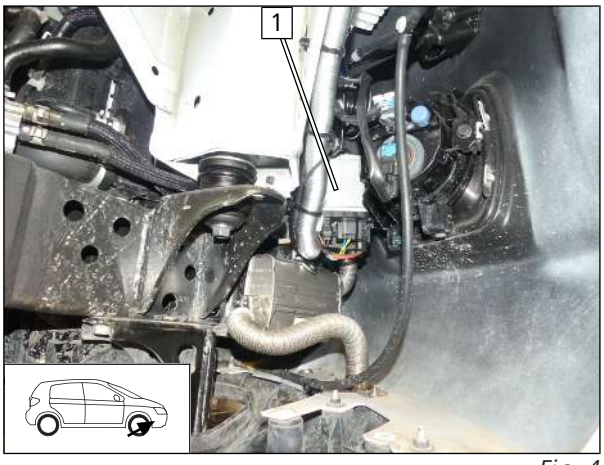


Fig. 4

1 Heater

8 Electrical system of engine compartment

Installing SH2

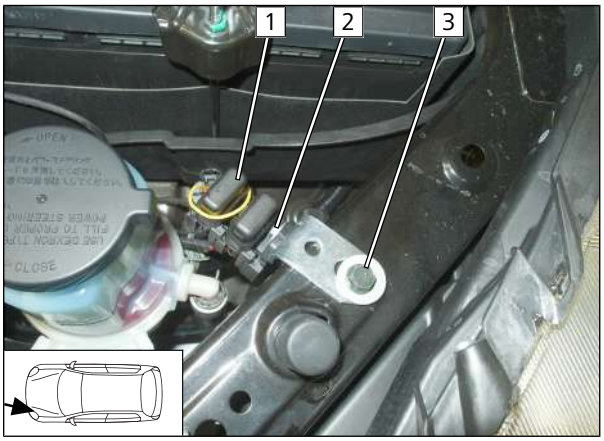


Fig. 5

[1] SH2

[2] M5x16 bolt, large diameter washer, retaining plate of SH2, angle bracket, large diameter washer, nut

[3] M6x20 bolt, spring lockwasher, large diameter washer, original vehicle thread

Routing HG wiring harness

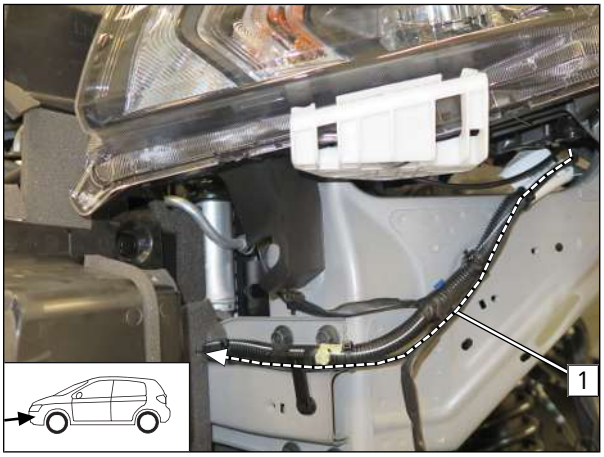


Fig. 6

▶ Route HG wiring harness [1] along original vehicle wiring harness and fasten with cable ties.

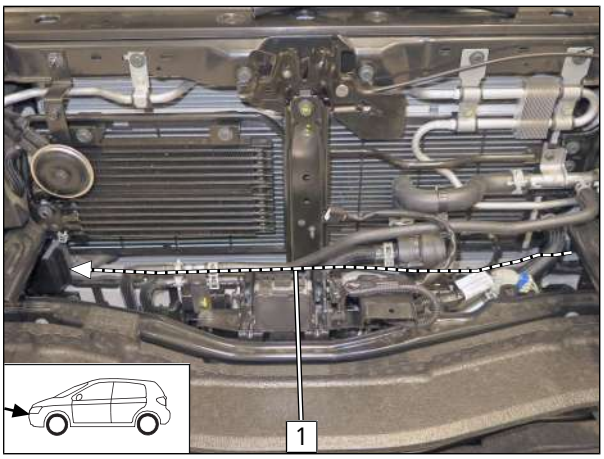


Fig. 7

▶ Route HG wiring harness [1] along original vehicle lines to the front passenger's side and fasten with cable ties.

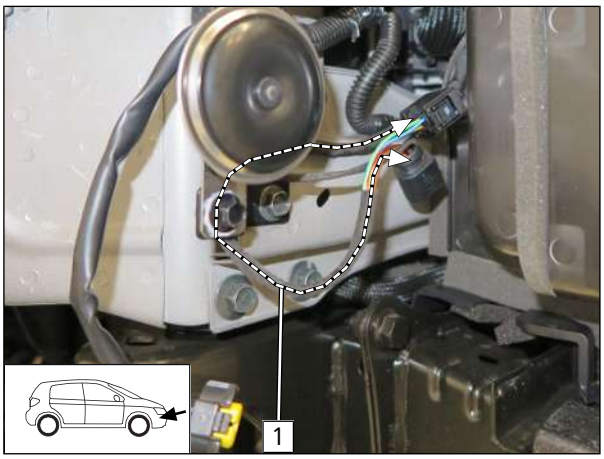


Fig. 8

▶ Route HG wiring harness [1] to HG installation location.

Mounting positive wire

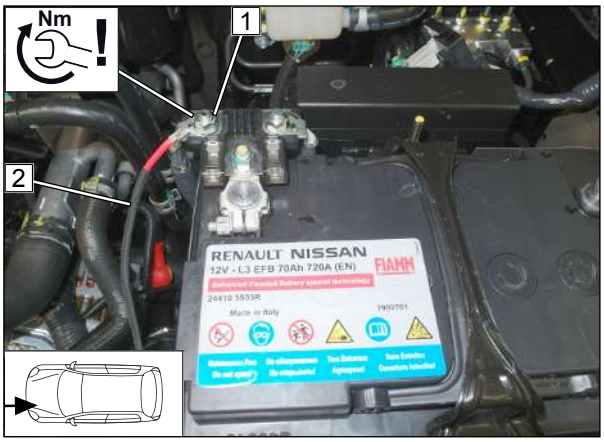


Fig. 9

DANGER

Observe tightening torque

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

[1] Original vehicle positive support point
[2] Positive wire

Mounting earth wire

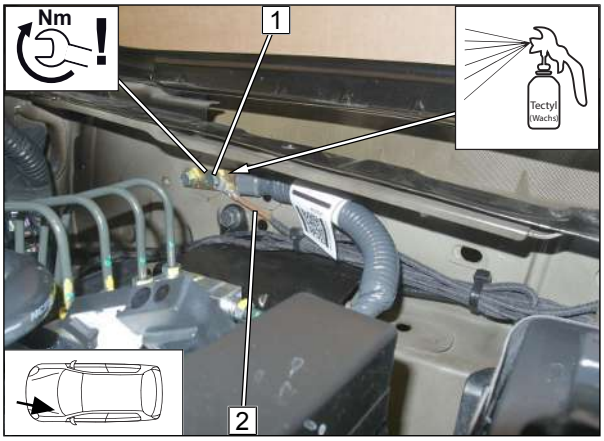


Fig. 10

DANGER

Observe tightening torque

[1] Original vehicle earth support point
[2] Earth wire

Passenger compartment wiring harness pass through

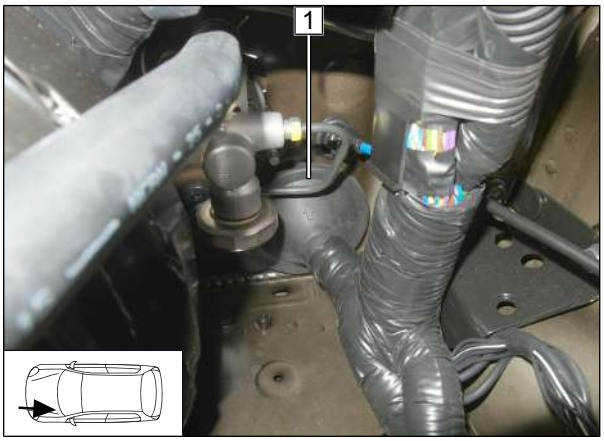


Fig. 11

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

9 Mechanical system

9.1 Preparing installation location

Removing relay

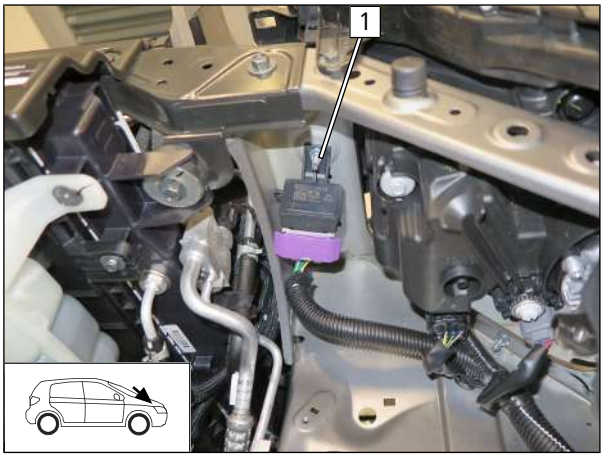


Fig. 12

▶ Remove original vehicle relay [1] and put it aside.

Drilling hole, inserting rivet nut

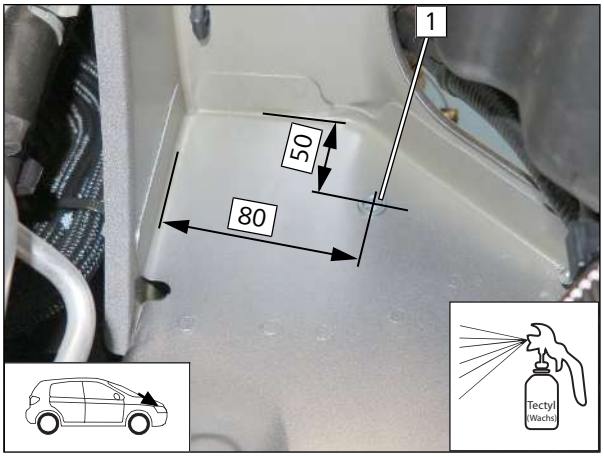


Fig. 13

[1] Ø9 hole, M6 rivet nut

Fitting edge protection

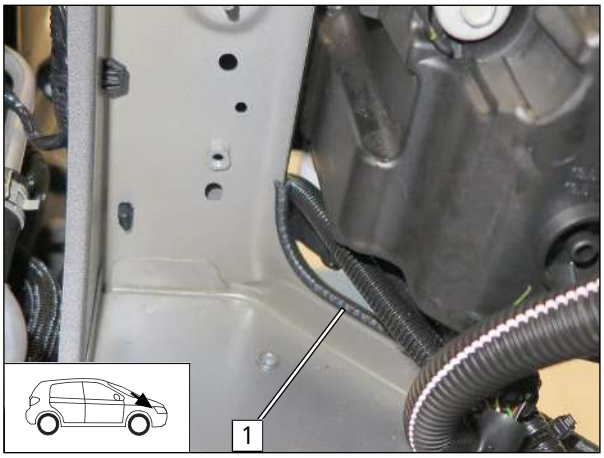


Fig. 14

[1] 200 long, narrow edge protection

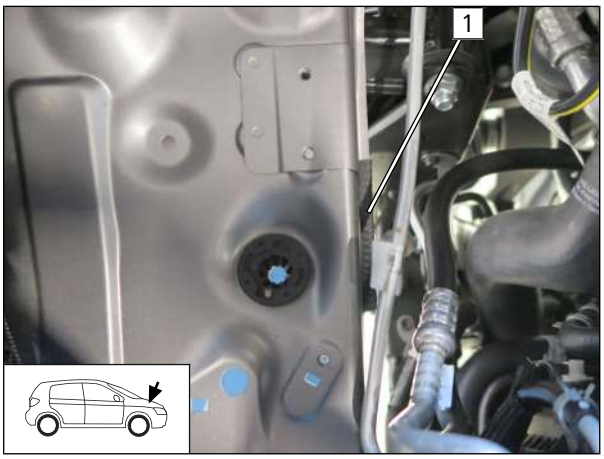


Fig. 15

1 100 long, narrow edge protection

Bending perforated bracket

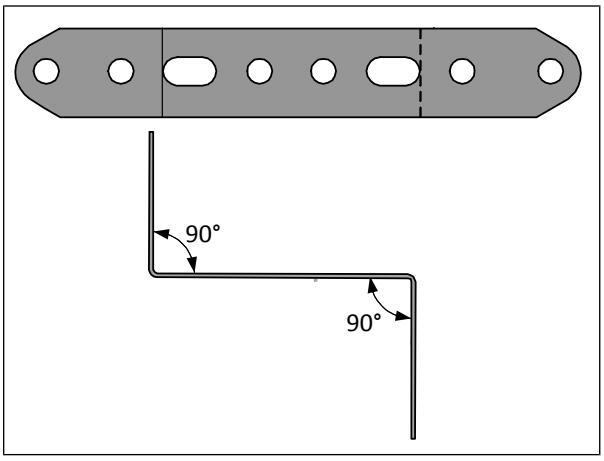


Fig. 16

Installing perforated bracket

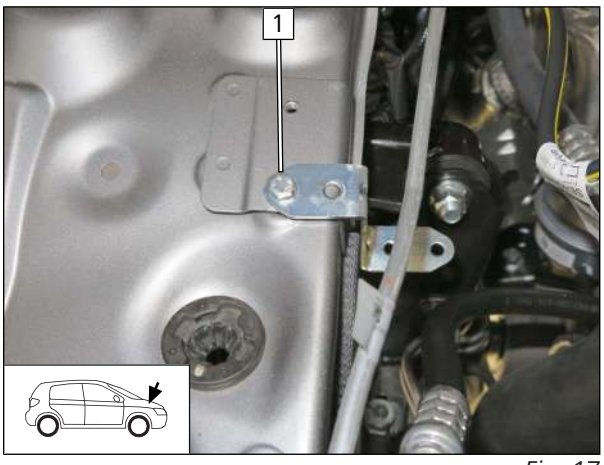


Fig. 17

1 M6x16 bolt, spring lock washer, perforated bracket, original vehicle threaded hole

Shortening bolt, mounting angle bracket

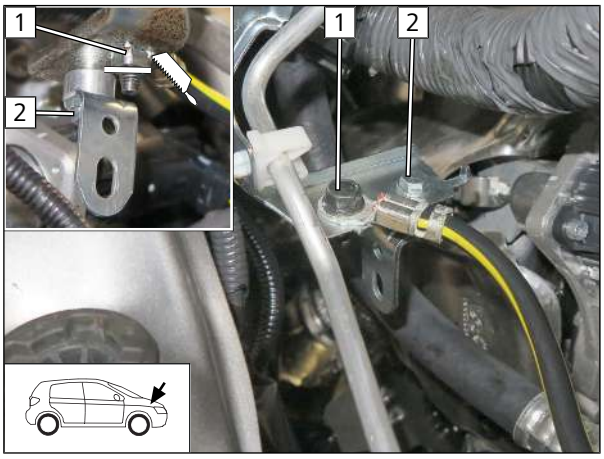


Fig. 18

[1] Shortening bolt of earth wire bündig kürzen

[2] M6x25 bolt, original vehicle hole, spacer (10), angle bracket, flanged nut

Dismantling original vehicle parts

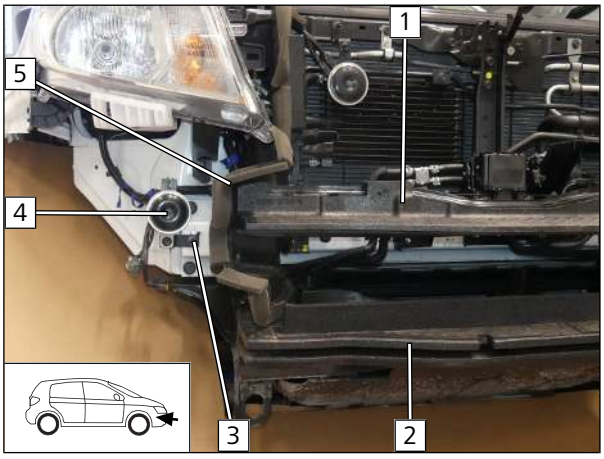


Fig. 19

[1] Upper styrofoam part

[2] Lower styrofoam part

[3] Original vehicle bolt, discard

[4] Horn

[5] Wind deflector

Adapting cross member

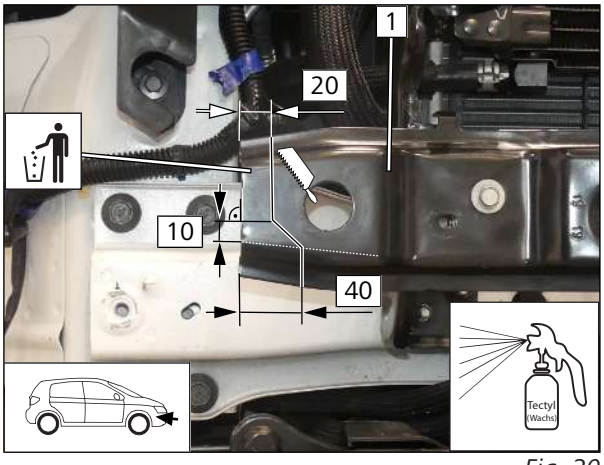


Fig. 20

▶ Adapt cross member [1] as shown.

Fitting edge protection

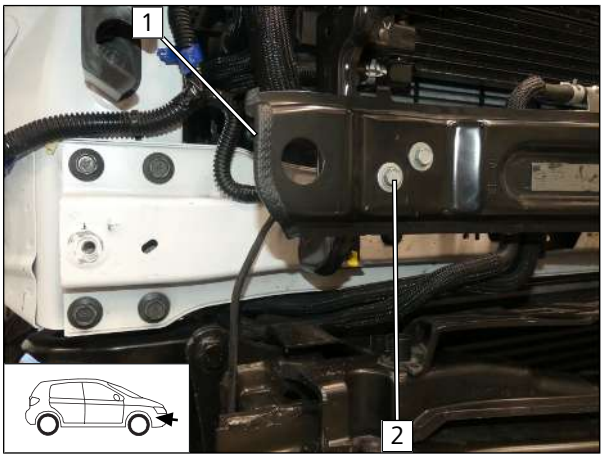


Fig. 21

1 120 long, wide edge protection

2 Remove original vehicle bolt (it will be reused)

Drilling hole and inserting rivet nut

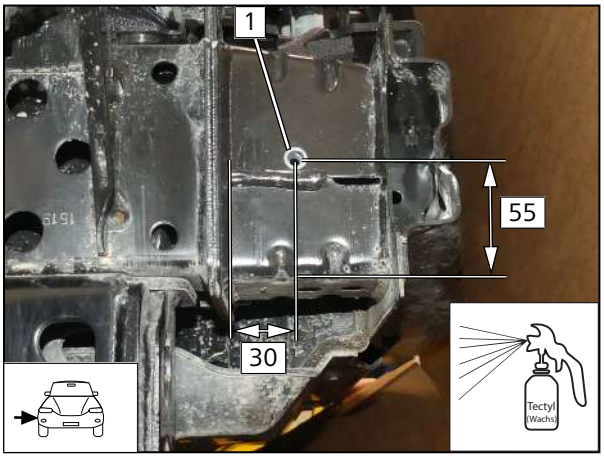


Fig. 22

1 Ø9 hole

9.2 Mounting bracket

Bending perforated bracket A

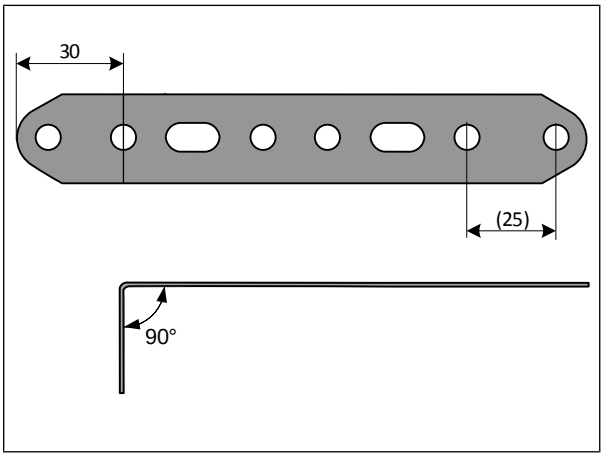


Fig. 23

Bending perforated bracket B

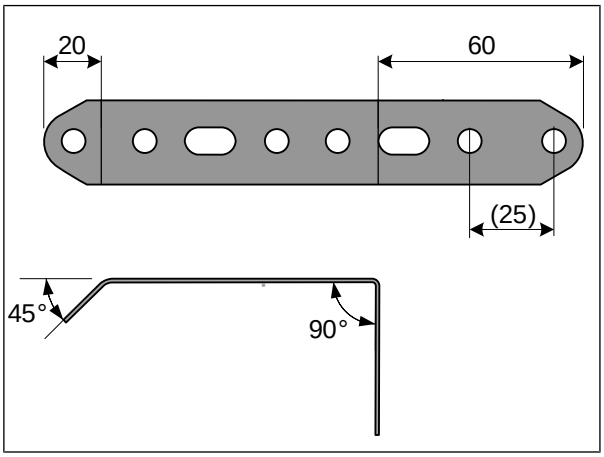


Fig. 24

Premounting bracket

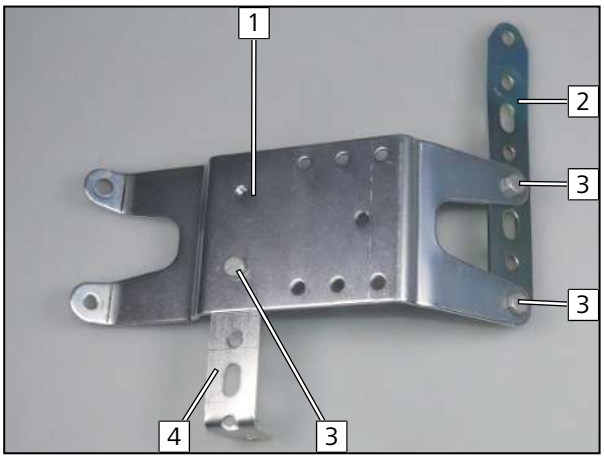


Fig. 25

▶ Bend bracket **1** and drill hole according to provided template.

▶ Mount all screw connections **3** loosely.

2 Perforated bracket C
3 M6x12 bolt, flanged nut
4 Perforated bracket A

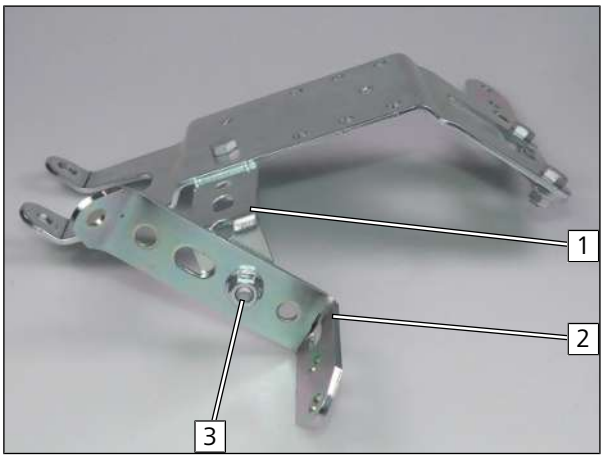


Fig. 26

▶ Mount all screw connections **3** loosely.

1 Perforated bracket A
2 Perforated bracket B
3 M6x12 bolt, flanged nut

Mounting bracket

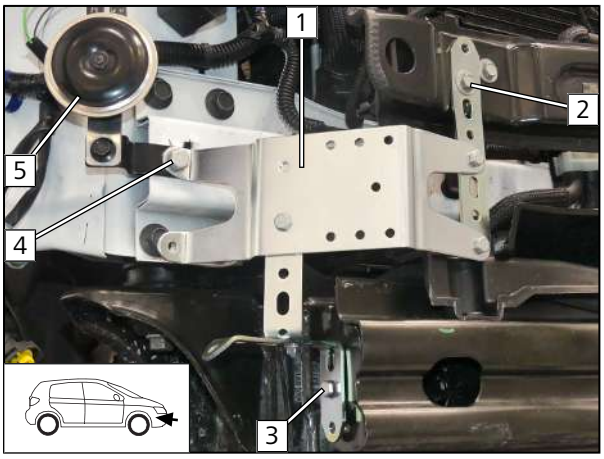


Fig. 27

1 Premounted bracket
2 Original vehicle bolt of cross member
3 M6x20 bolt, spring lock washer, perforated bracket B, rivet nut
4 M8x20 bolt
5 Horn

Align bracket 1 and tighten all loose screw connection.

9.3 Mounting heater

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

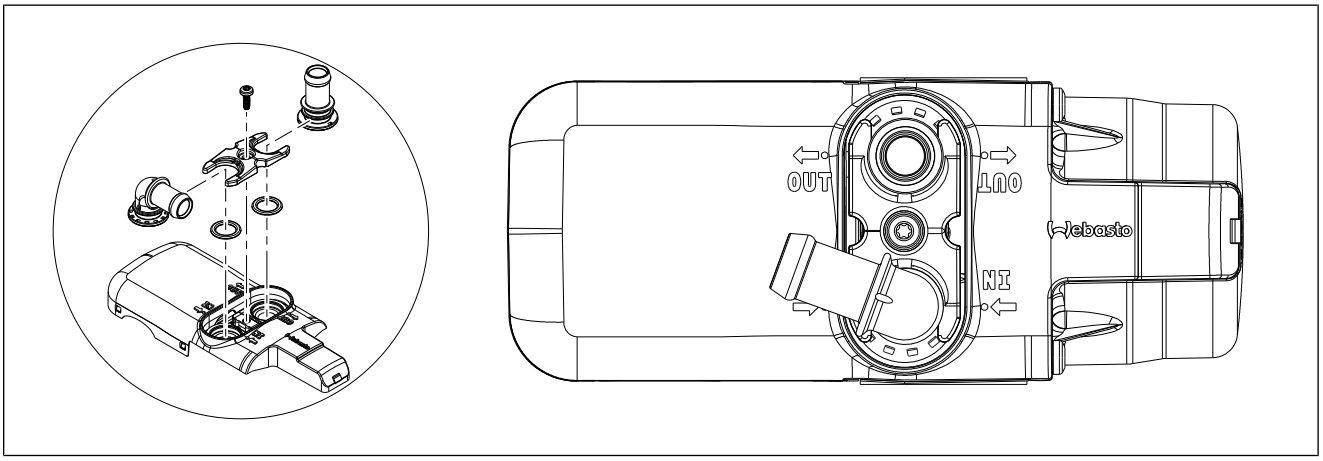


Fig. 28

Cutting combustion air intake pipe to length

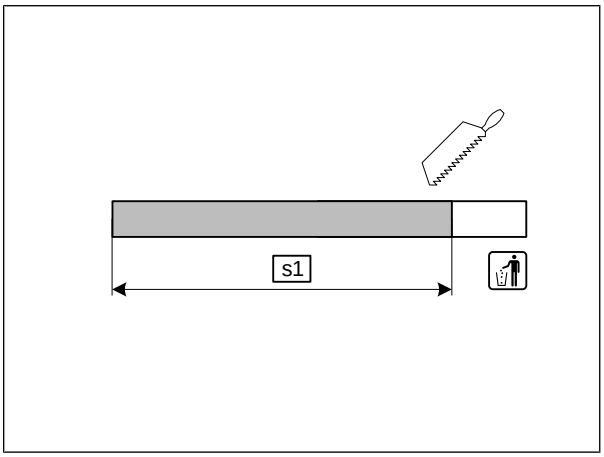


Fig. 29

s1 650

Cutting fuel line to length

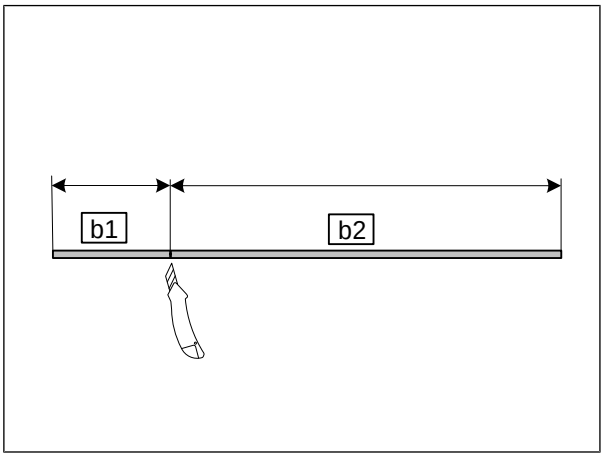


Fig. 30

b1 420

b2 4580

Mounting fuel line and combustion air intake pipe on HG

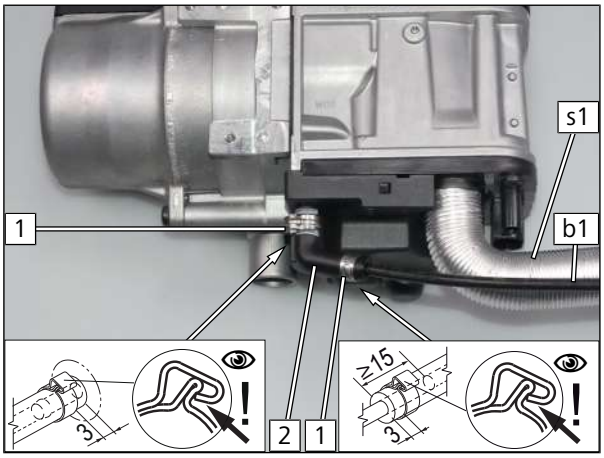


Fig. 31

Observe the installation instructions of the combustion air intake silencer.

1 Ø10 clamp

2 90° moulded hose (small radius and short side towards the heater)

Mounting heater

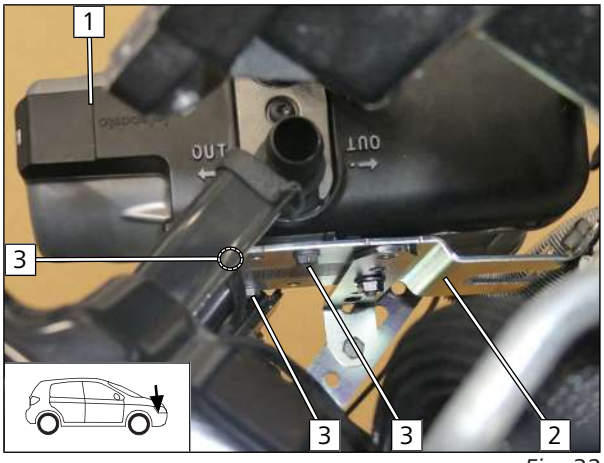


Fig. 32

1 Premounted HG

2 Premounted bracket

3 5x13 self-tapping bolt

Aligning horn

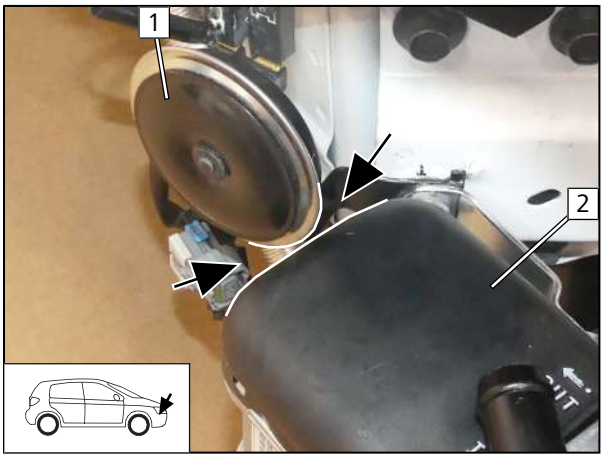


Fig. 33

Ensure sufficient distance from neighbouring components, correct if necessary.

>5

[1] Horn
[2] HG

Checking distance

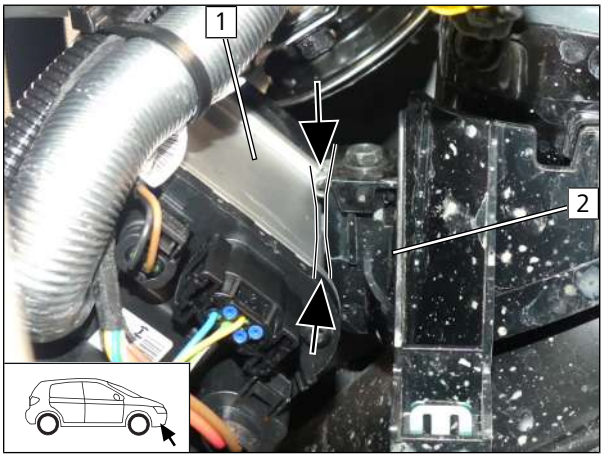


Fig. 34

▶ Mount bumper [2] for a test.

Ensure sufficient distance between bumper [2] and heater [1], correct if necessary.

>5

10 Combustion air

Mounting combustion air intake pipe **s1**

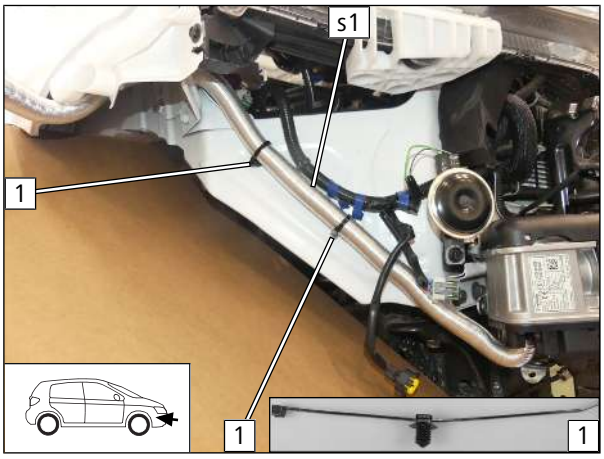


Fig. 35

Observe the installation instructions of the combustion air intake silencer.

▶ Insert eyelet cable tie **1** into original vehicle hole.

Shortening perforated bracket

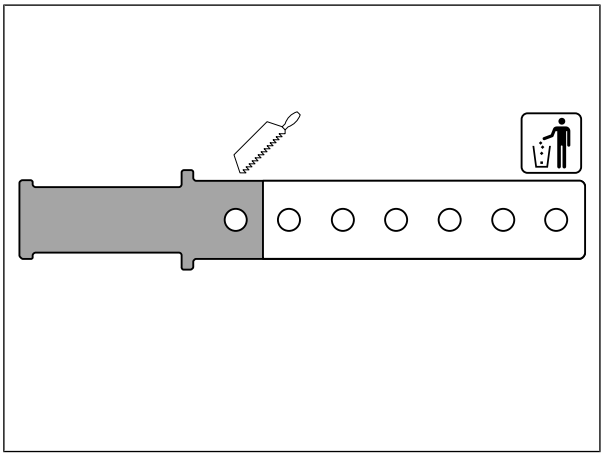


Fig. 36

Premounting combustion air intake silencer mount

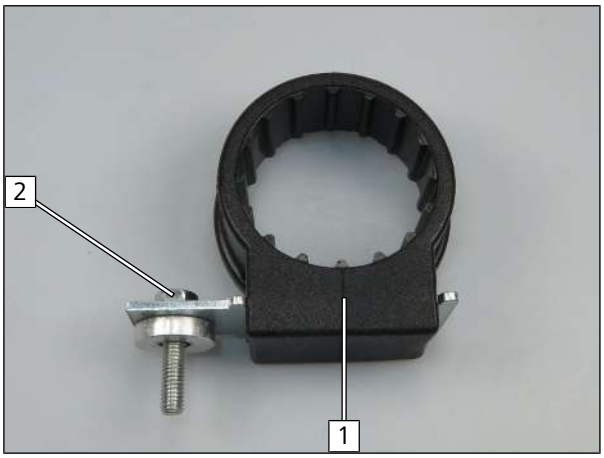


Fig. 37

1 Combustion air intake silencer mount

2 M5x20 bolt, large diameter washer, perforated bracket, spacer (5)

Installing combustion air intake silencer mount

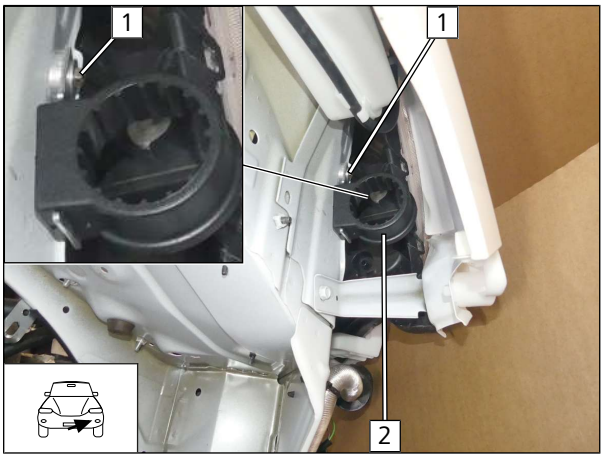


Fig. 38

1 M5x20 bolt, large diameter washer, perforated bracket, premounted spacer (5), original vehicle hole, flanged nut

2 Combustion air intake silencer mount

Mounting combustion air intake silencer

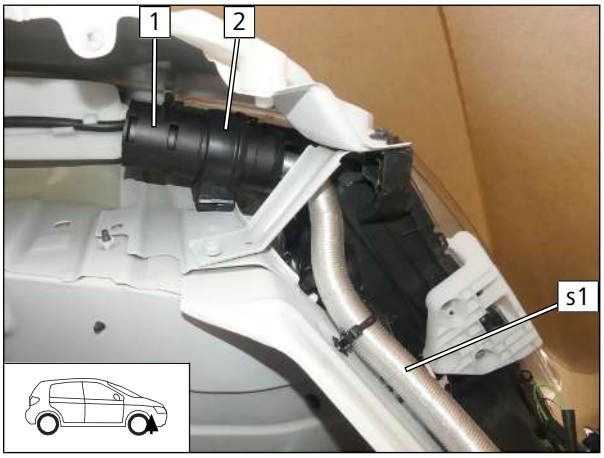


Fig. 39

▶ Insert combustion air intake silencer **1** into mount **2**.

11 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

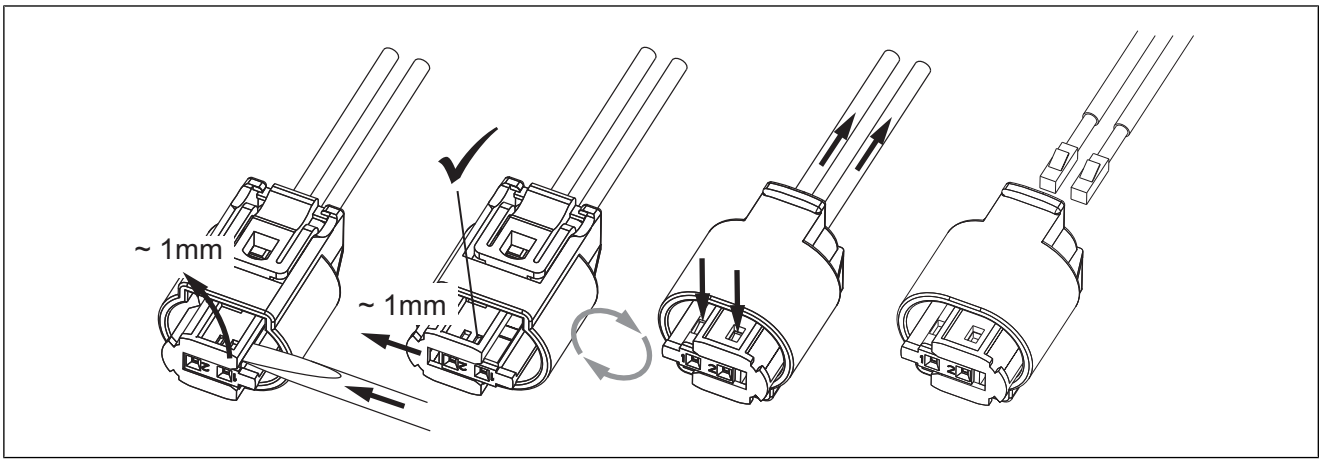
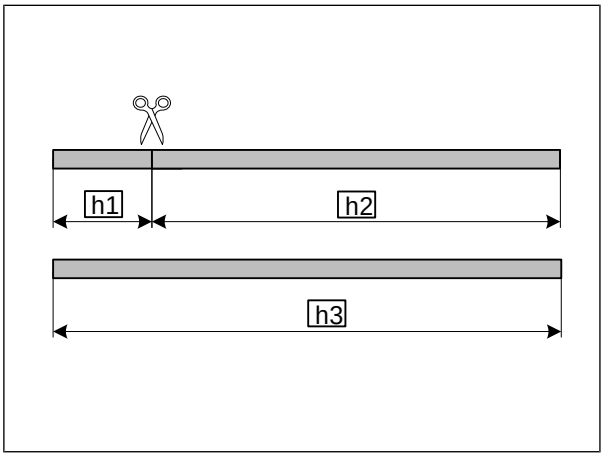


Fig. 40

11.1 Routing fuel line

Cutting to length/ assigning Ø10 corrugated tube



h1 380
h2 1720
h3 2100

Fig. 41

Routing fuel line and fuel pump wiring harness

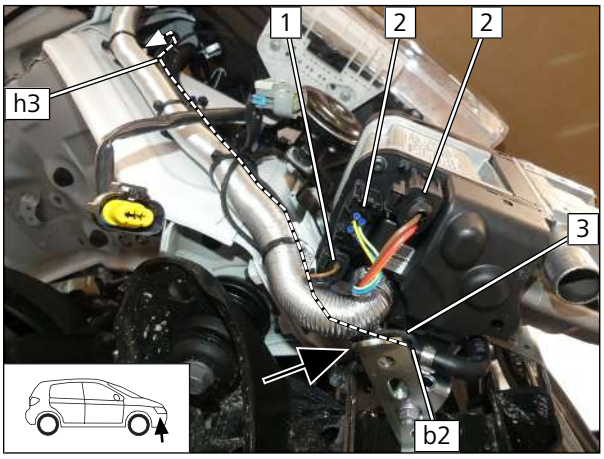


Fig. 42

Ensure sufficient distance from perforated bracket B, correct if necessary.

>15

▶ Draw fuel line **b2** and fuel pump wiring harness **3** into corrugated tube **h3** and route into the engine compartment.

1 Fuel pump wiring harness connector

2 Heater wiring harness connector [2x]

Securing corrugated tube

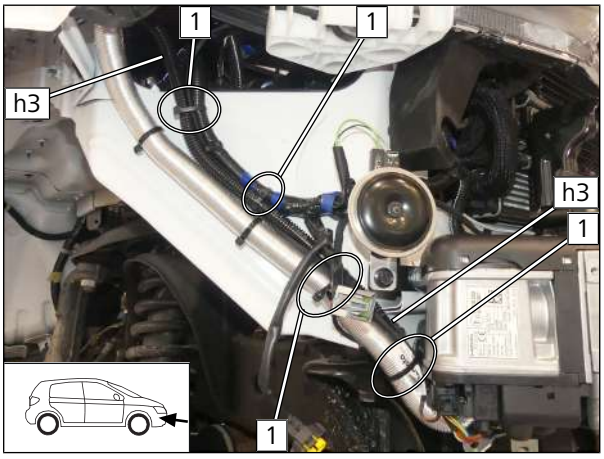


Fig. 43

▶ Route coolant pump wiring harness to coolant pump installation location and attach together with corrugated tube **h3** to original vehicle wiring harness and combustion air intake pipe using cable tie **1** as shown.

Routing in engine compartment

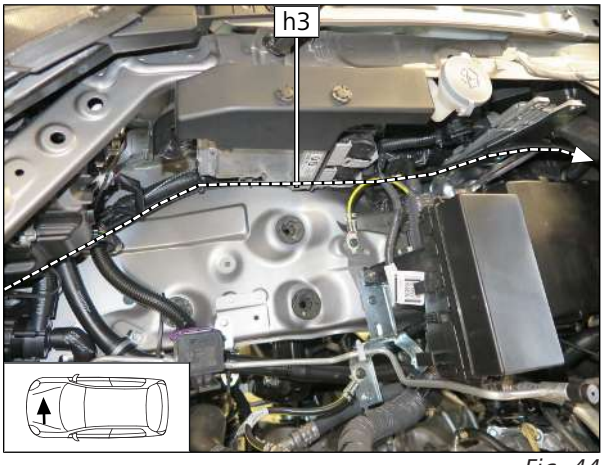


Fig. 44

▶ Route corrugated tube **h3** to firewall.

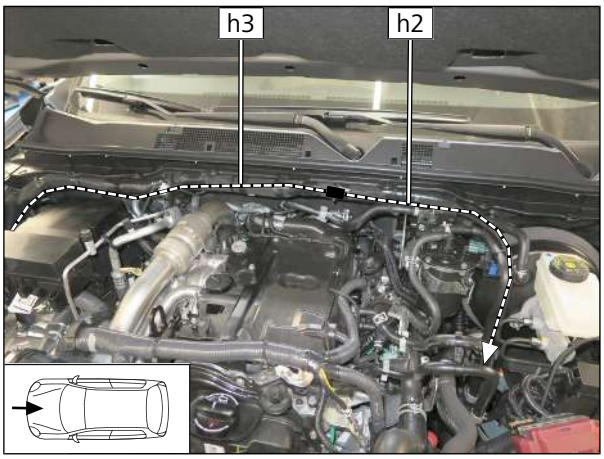


Fig. 45

- ▶ Draw fuel line **b2** into corrugated tube **h2**.
- ▶ Wrap the joint between corrugated tubes **h3** and **h2** with insulating tape.
- ▶ Route corrugated tubes **h3** and **h2** along the firewall to the wheel well and attach with cable tie to original vehicle lines.

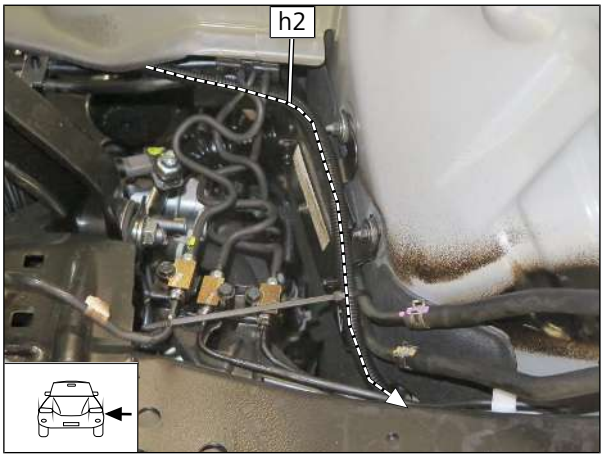


Fig. 46

- ▶ Route corrugated tube **h2** along original vehicle lines to the fuel pump installation location and fasten with cable ties.

Premounting fuel pump

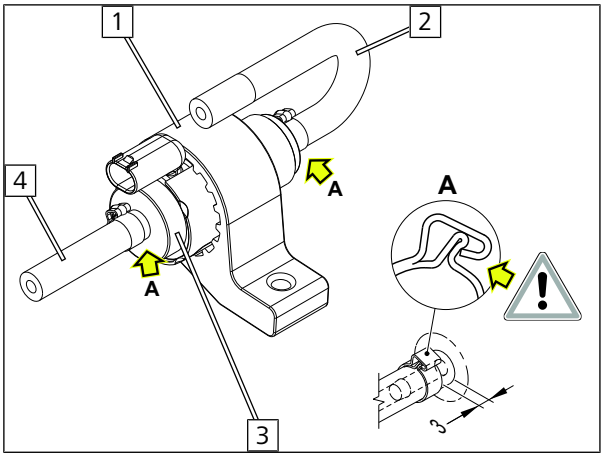


Fig. 47

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

1. Fuel pump mount
2. 180° moulded hose, Ø10 clamp
3. Fuel pump
4. Hose section, Ø10 clamp

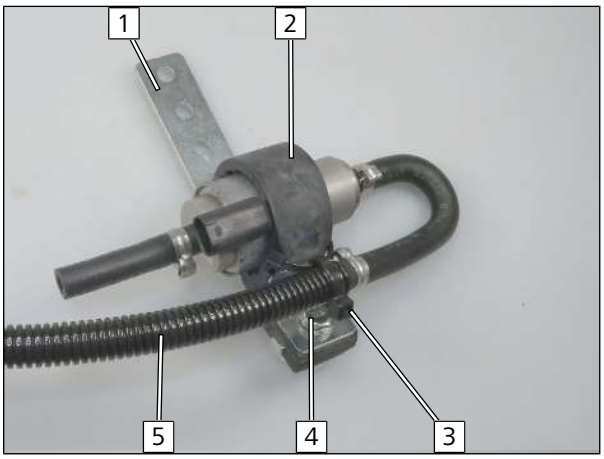


Fig. 48

1 Fuel pump bracket
2 Premounted fuel pump
3 2 interlaced cable ties used to fasten corrugated tube to fuel pump mount
4 M6x25 bolt, support angle bracket, fuel pump mount, perforated bracket, flanged nut
5 Fuel line **b1** in corrugated tube **h1**

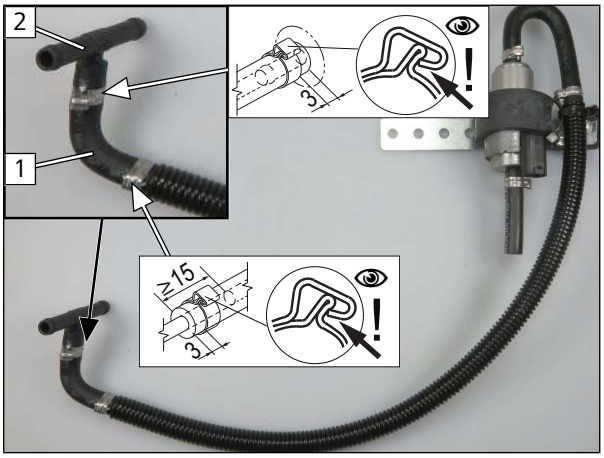


Fig. 49

1 90° moulded hose (large radius), Ø10 clamp [2x]
2 8x5x8 T-piece of fuel extractor

Mounting fuel pump

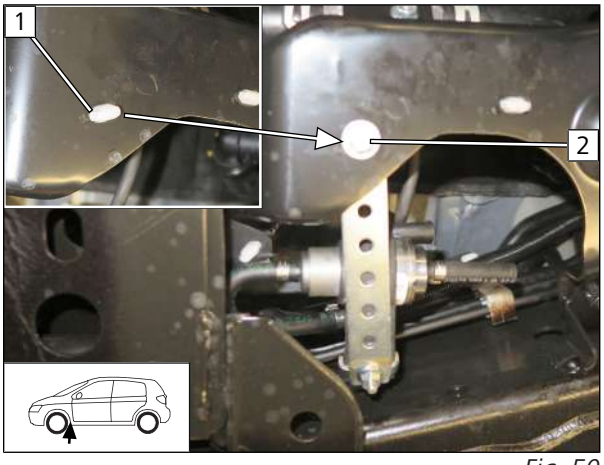


Fig. 50

1 Remove and discard original vehicle clip
2 M6x20 bolt, large diameter washer, original vehicle hole, fuel pump bracket, flanged nut

Assembling fuel pump connector X7

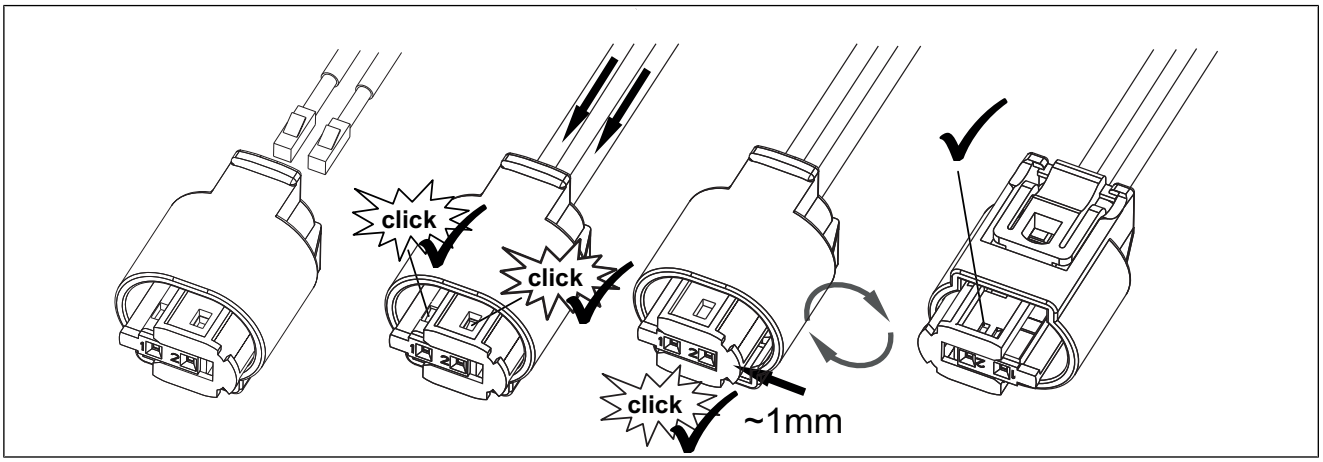


Fig. 51

Connecting fuel pump

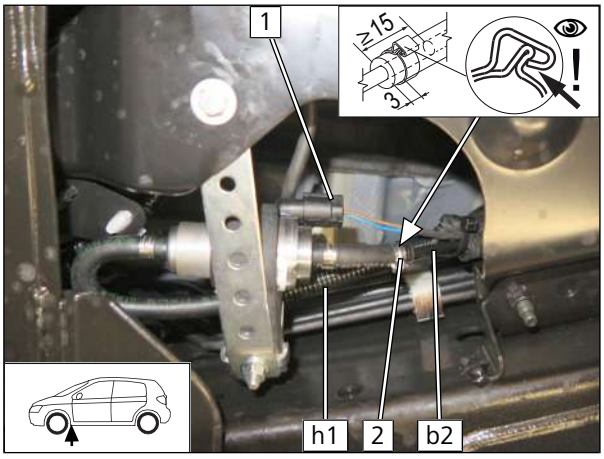


Fig. 52

▶ Routing corrugated tube **h1** to wheel well.

1 Fuel pump wiring harness, connector X7 mounted
2 Ø10 clamp

Cutting original vehicle fuel return line

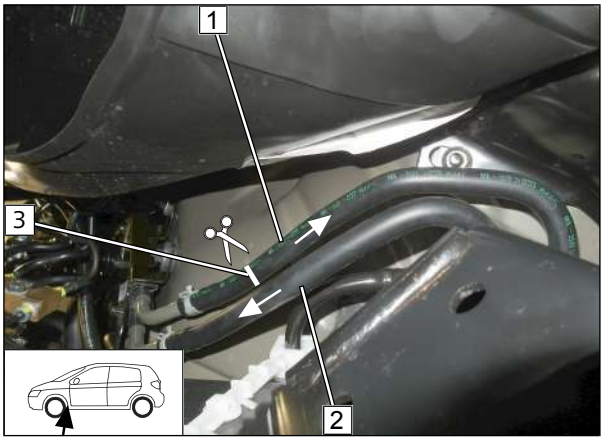


Fig. 53

1 Fuel return line
2 Fuel supply line
3 Cutting point

Connecting fuel extractor

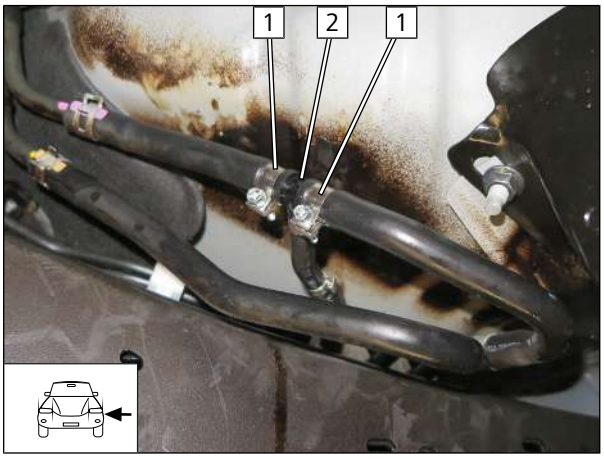


Fig. 54

1 Ø14 clamp
2 T-piece of fuel extractor

12 Coolant

12.1 Hose routing diagram

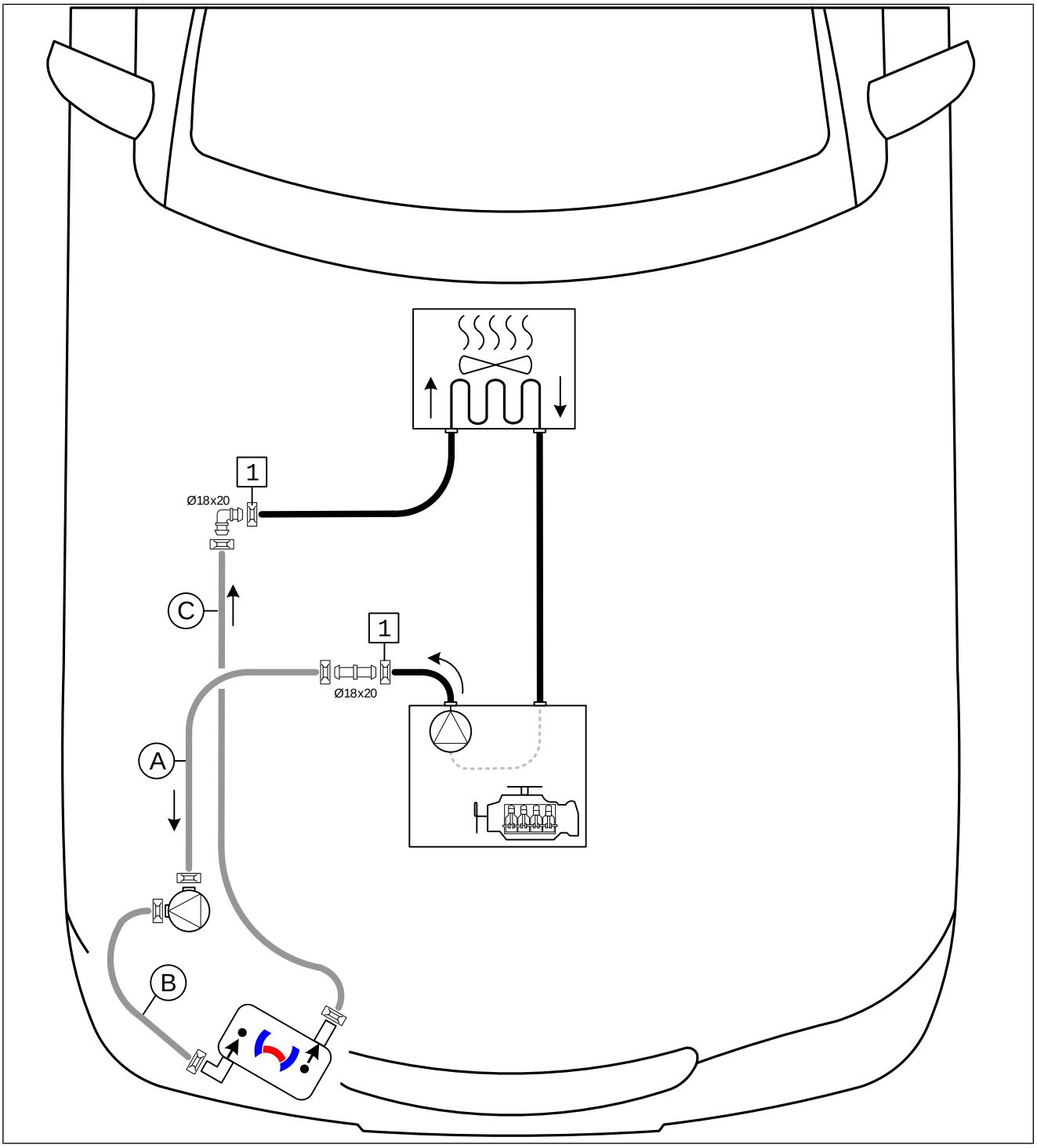


Fig. 55

All spring clips without a specific designation = Ø25

1 Ø27 spring clip

12.2 Coolant circuit installation

Preparing hoses

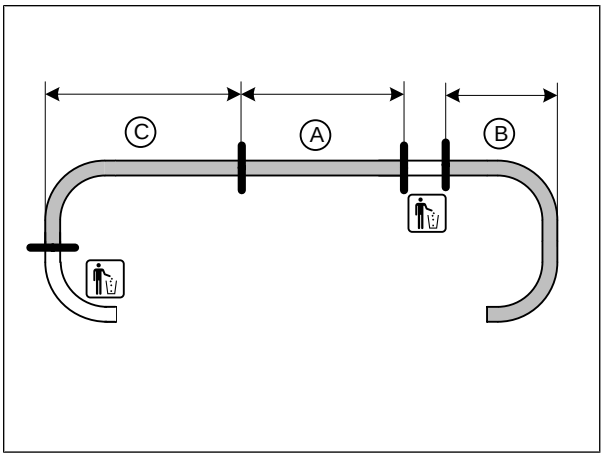


Fig. 56

Ⓐ	700
Ⓑ	310
Ⓒ	950

Mounting fabric heat shrink tubings

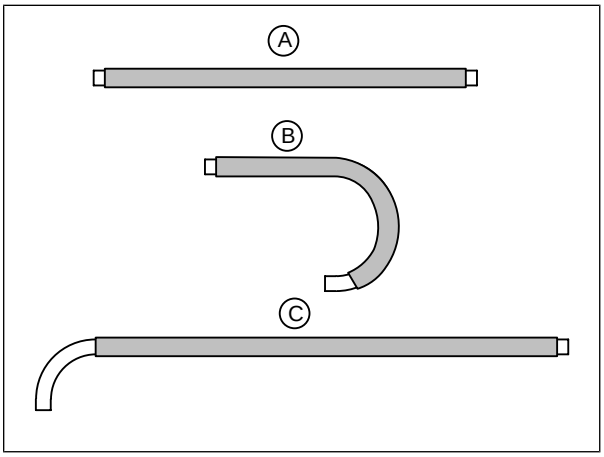


Fig. 57

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

Premounting hose Ⓒ

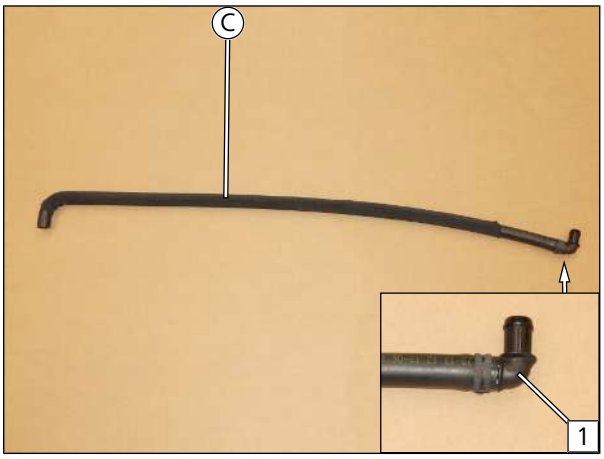


Fig. 58

1 18/20, 90° connecting pipe

Cutting point

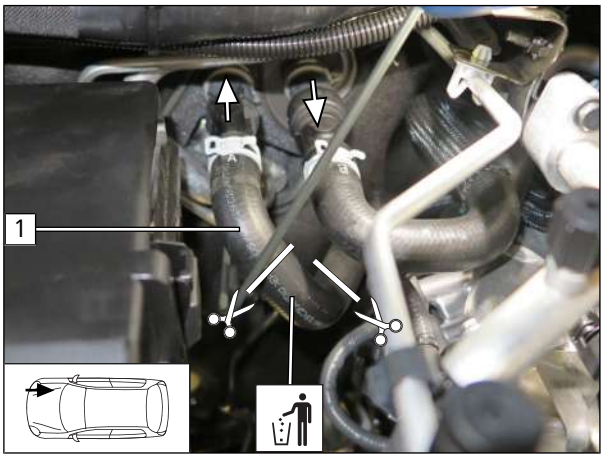


Fig. 59

▶ Cut engine outlet / heat exchanger inlet hose **1** at the markings.

Shortening perforated bracket

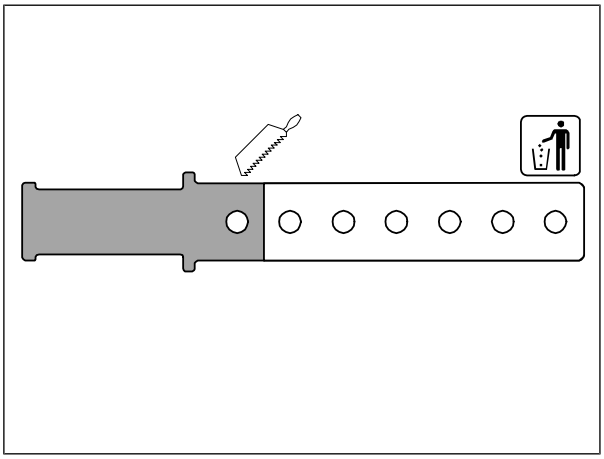


Fig. 60

Premounting coolant pump mount

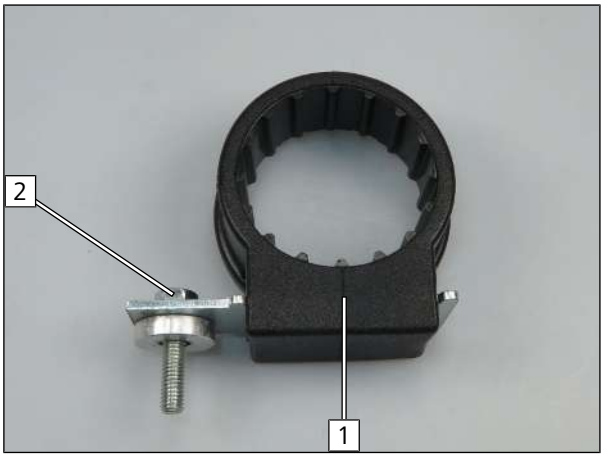


Fig. 61

1 Coolant pump mount

2 M6x25 bolt, perforated bracket, spacer (5)

Installing coolant pump mount

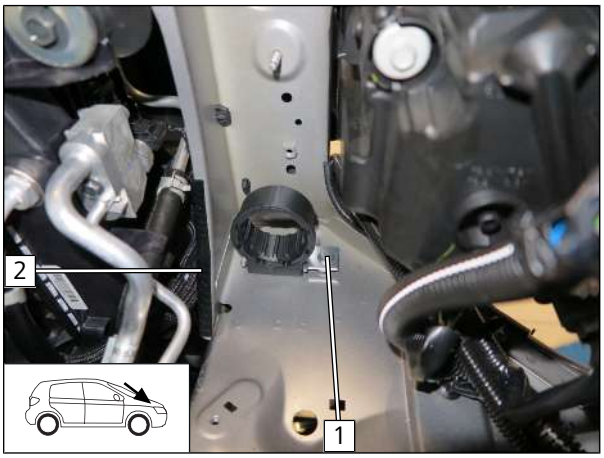


Fig. 62

1 Premounted coolant pump mount in rivet nut
2 80 lg. edge protection

Premounting hose Ⓐ and coolant pump

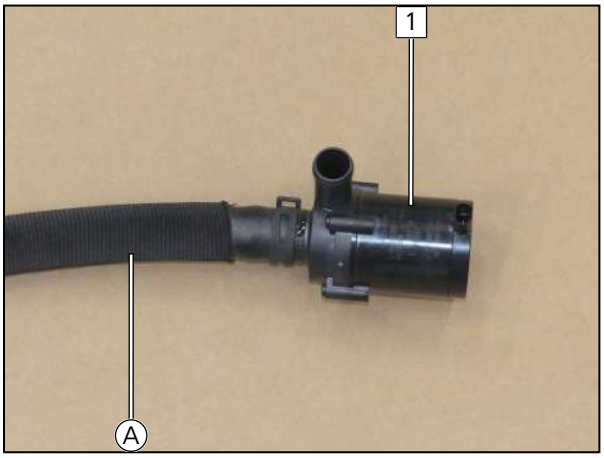


Fig. 63

1 Coolant pump

Mounting coolant pump

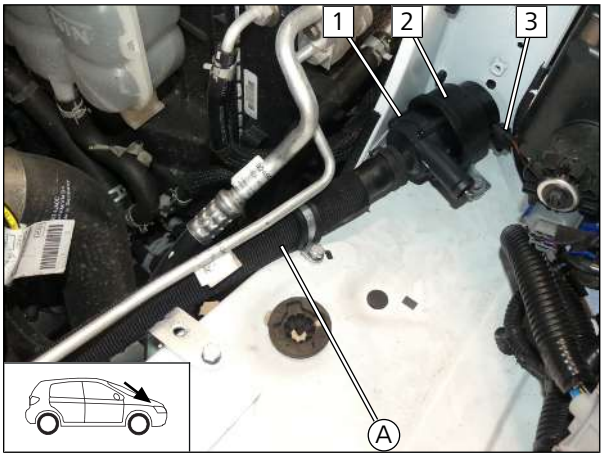


Fig. 64

1 Premounted coolant pump
2 Premounted coolant pump mount
3 Coolant pump wiring harness connector

Fastening hose Ⓐ

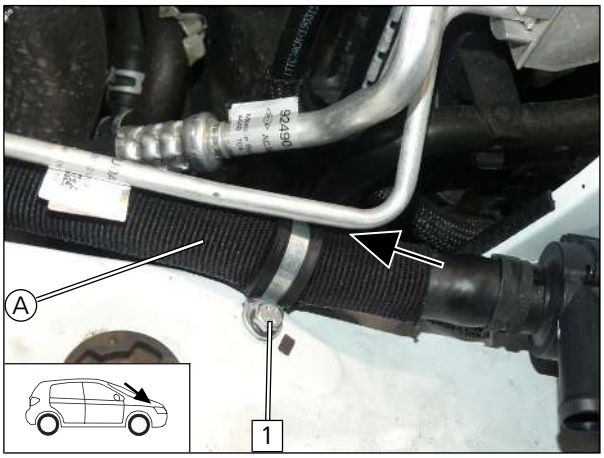
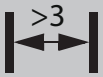


Fig. 65

Ensure sufficient distance between original vehicle A/C line and rubber-coated p-clamp as well as hose Ⓐ, correct if necessary.



1 M6x16 bolt, spring lock washer, Ø25 rubber-coated p-clamp, original vehicle threaded hole

Installing relay

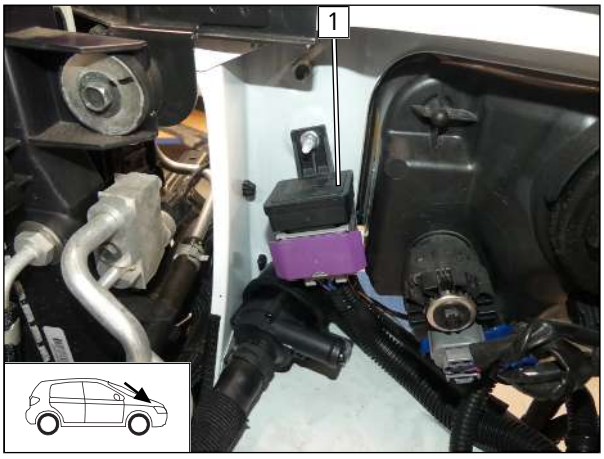


Fig. 66

1 Original vehicle relay

Connecting hose Ⓑ to coolant pump outlet

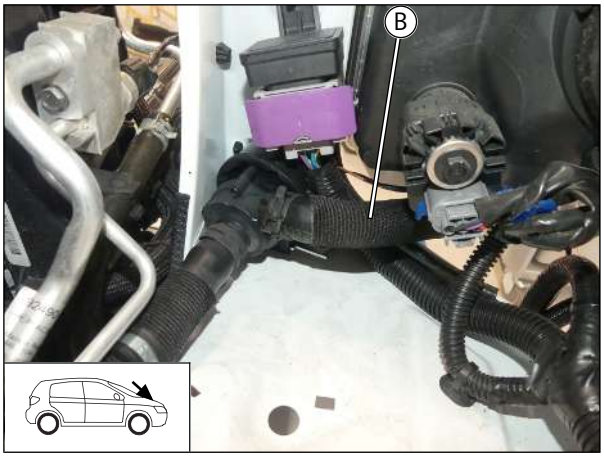


Fig. 67

Connecting hose Ⓑ to HG/IN

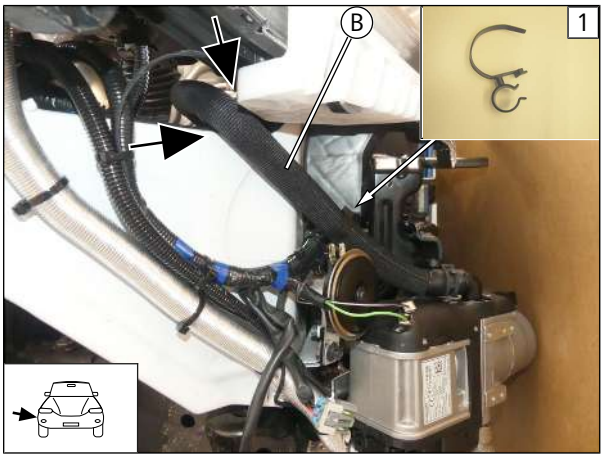


Fig. 68

Danger of damage to components

▶ Ensure sufficient distance between hose Ⓑ and neighbouring components, correct if necessary.

1 Spacer bracket, for the installation see the next figure

Mounting hose bracket

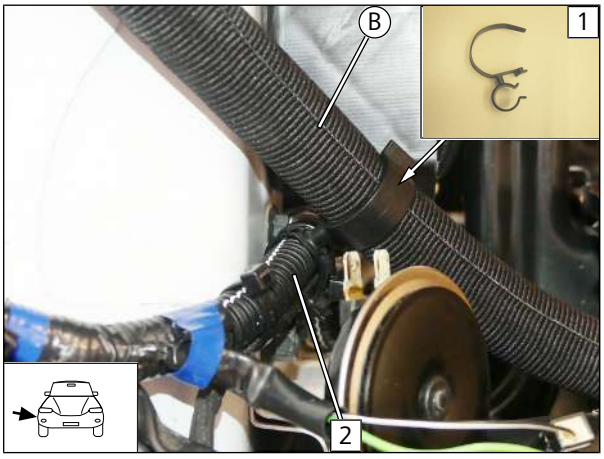


Fig. 69

1 Spacer bracket

2 Original vehicle wiring harness

Connecting hose Ⓒ to HG/OUT

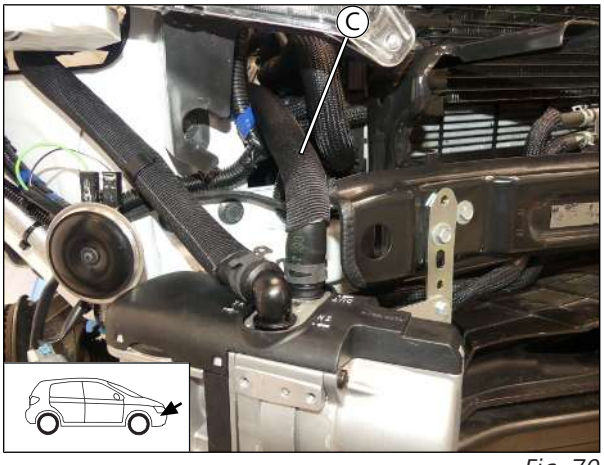


Fig. 70

Fastening hoses Ⓐ and Ⓒ

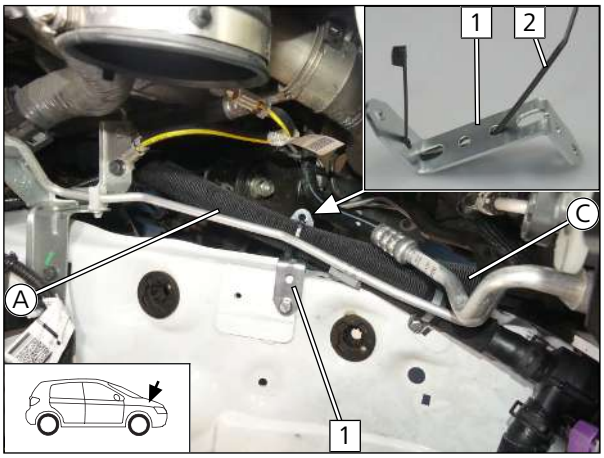


Fig. 71

1 Premounted perforated bracket
2 Cable tie around hoses Ⓐ and Ⓒ

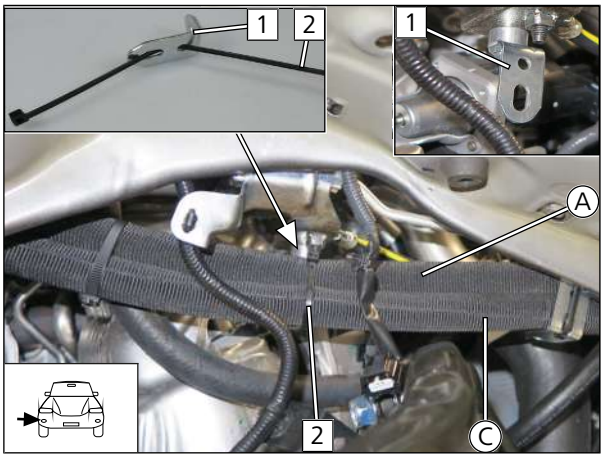


Fig. 72

1 Premounted angle bracket
2 Cable tie around hoses Ⓐ and Ⓒ

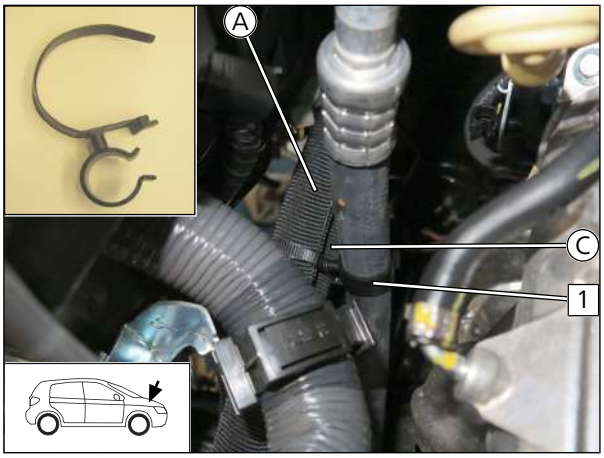


Fig. 73

1 Hose bracket between hoses Ⓐ, Ⓒ and A/C line

Connecting hose Ⓐ to engine outlet

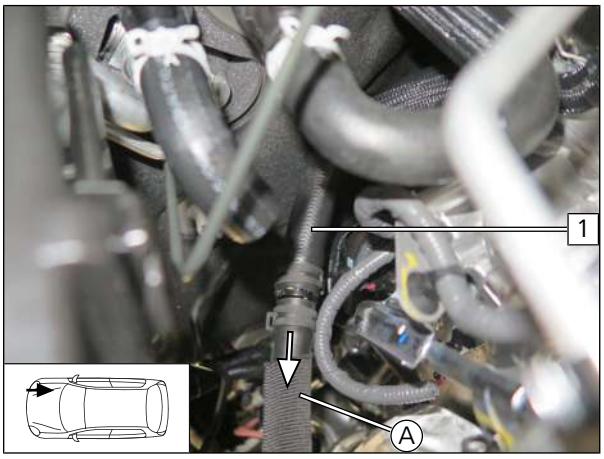


Fig. 74

1 Engine outlet hose section

Connecting hose Ⓒ to heat exchanger inlet

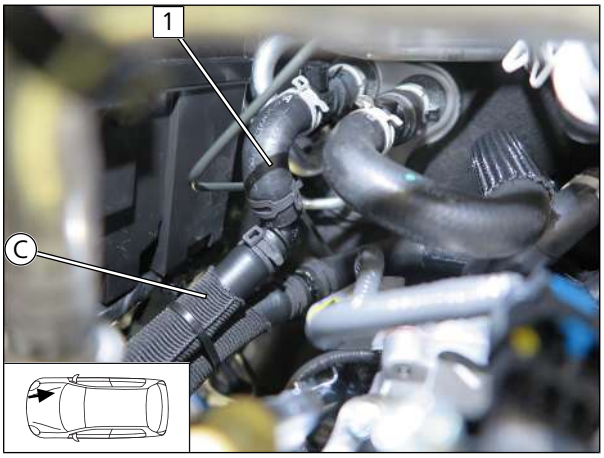


Fig. 75

1 Heat exchanger inlet hose section

13 Exhaust

Cutting exhaust pipe to length

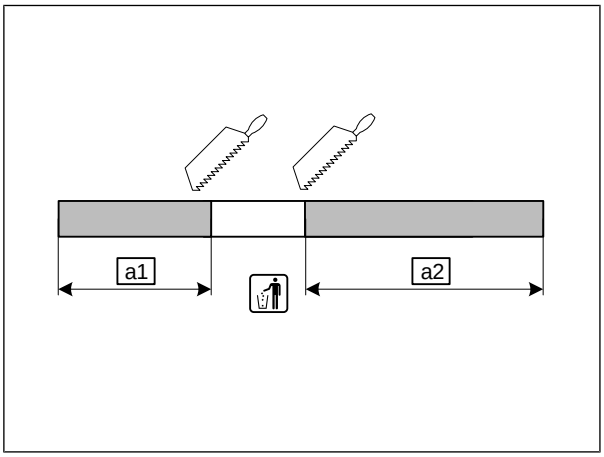


Fig. 76

a1 100
a2 280

Premounting exhaust silencer

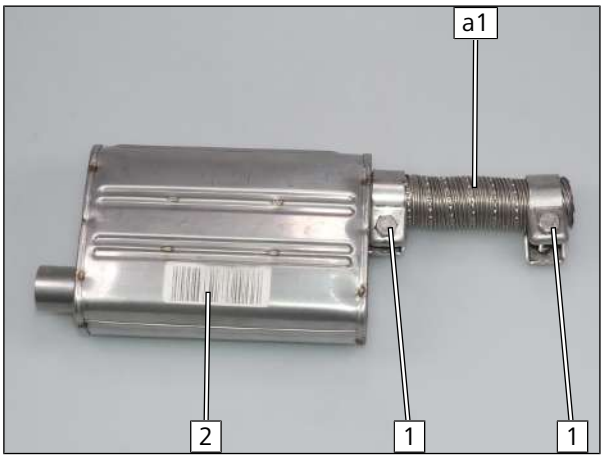


Fig. 77

1 Hose clamp, mount loosely
2 Exhaust silencer

Adapting wind deflector

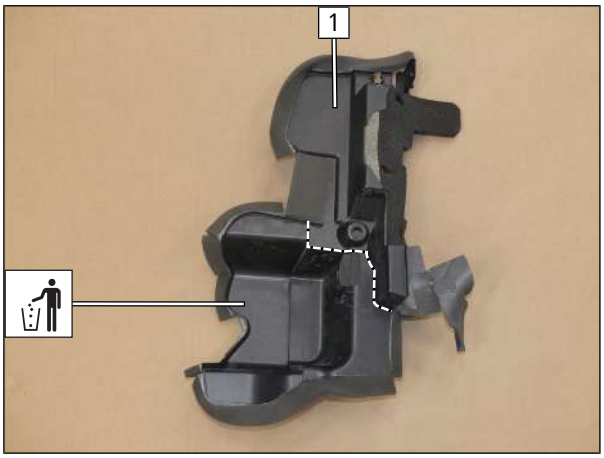


Fig. 78

1 Wind deflector

Adapting upper styrofoam part

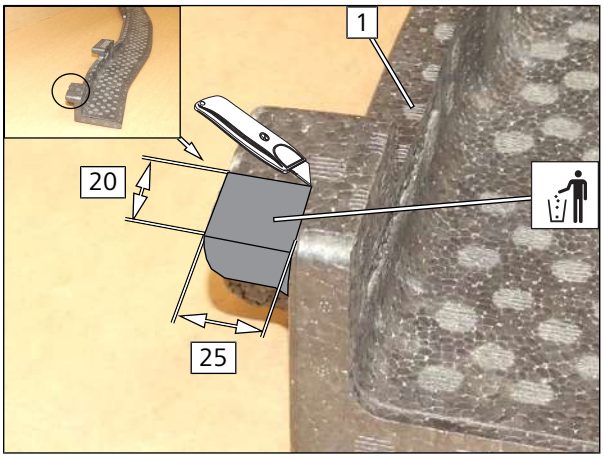


Fig. 79

[1] Upper styrofoam part of cross member

Mounting wind deflector and styrofoam part of cross member

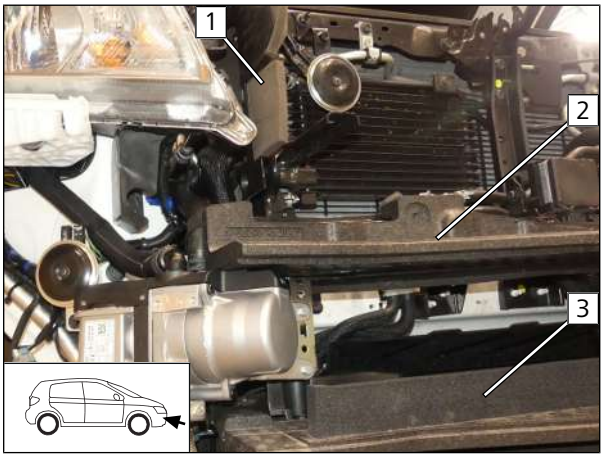


Fig. 80

[1] Wind deflector
[2] Upper styrofoam part of cross member
[3] Lower styrofoam part of cross member

Distance check

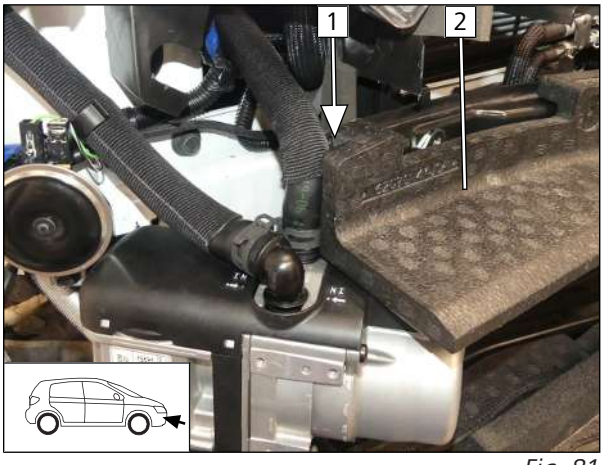


Fig. 81

Ensure sufficient distance between styrofoam part [2] and coolant hoses at position [1], rework styrofoam carrier accordingly if necessary.

[2] Upper styrofoam part of cross member

Mounting exhaust silencer with exhaust pipe **a1**

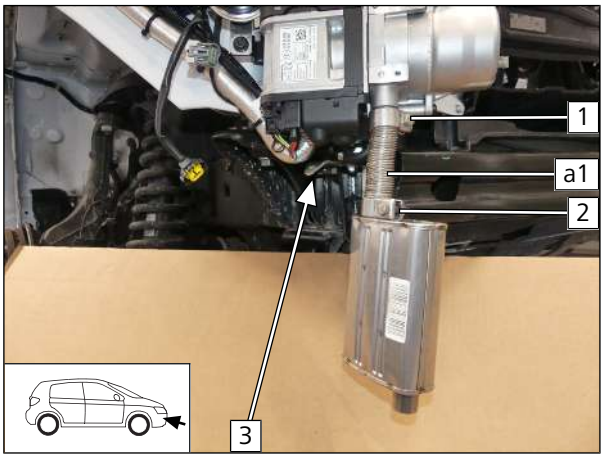


Fig. 82

- ▶ Mount premounted exhaust pipe **a1** with hose clamp **1** on HG loosely.
- ▶ Align the exhaust silencer, in relation to the fastening point, with premounted perforated bracket **3** (see next fig.).

2 Hose clamp, mounted loosely

Mounting exhaust silencer

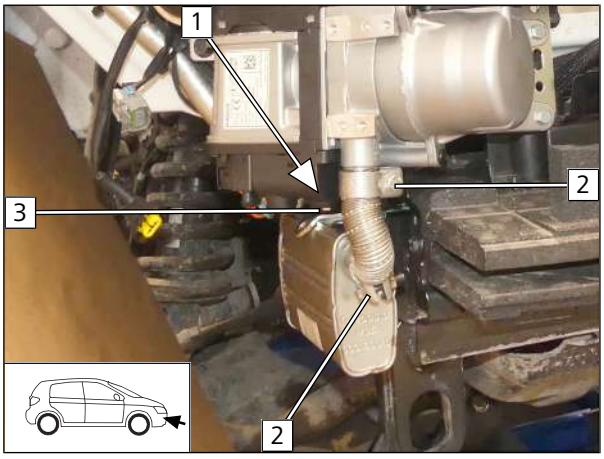


Fig. 83

Ensure sufficient distance between fuel hose and exhaust silencer at position **1** (covered), correct if necessary.

2 Tighten hose clamps

3 M6x16 bolt, spring lock washer, premounted perforated bracket B, exhaust silencer

13.1 Mounting exhaust end fastener

Work steps E1, E2

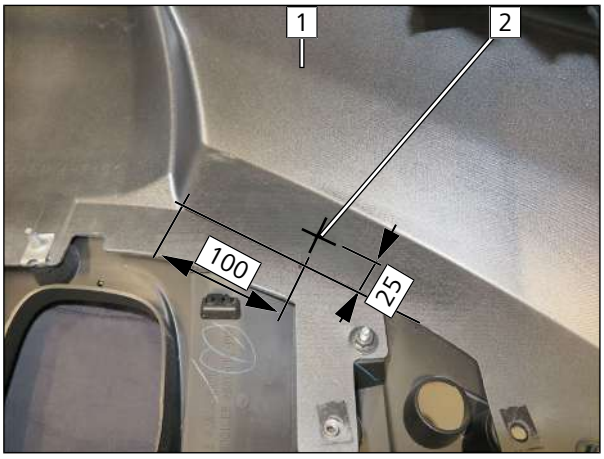


Fig. 84

Observe the EFIX installation instructions.

1 Bumper

2 Drill hole

Work steps E3, E4

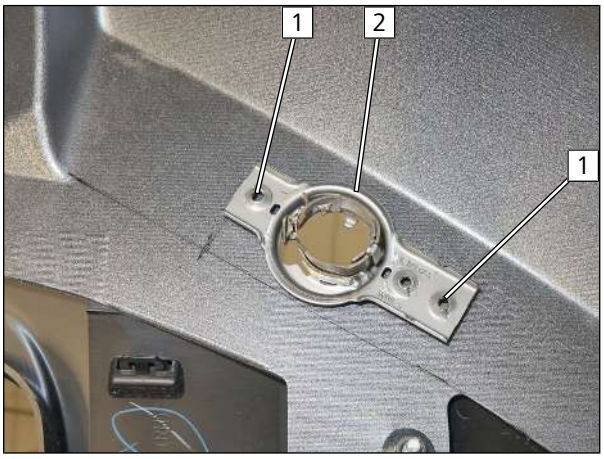


Fig. 85

1 Hole pattern
2 EFIX

Work step E5

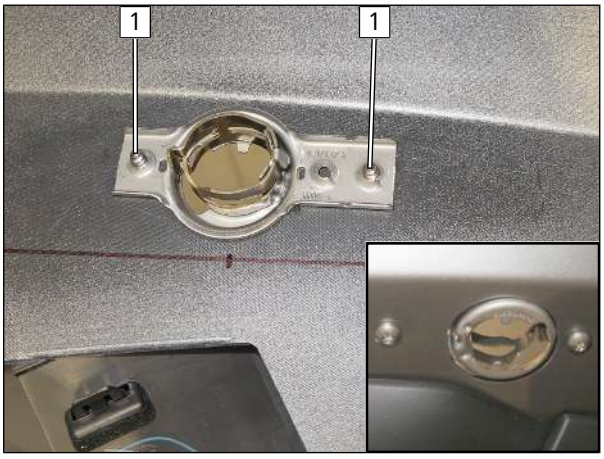


Fig. 86

1 5x13 self-tapping screw

Routing headlight washer system line

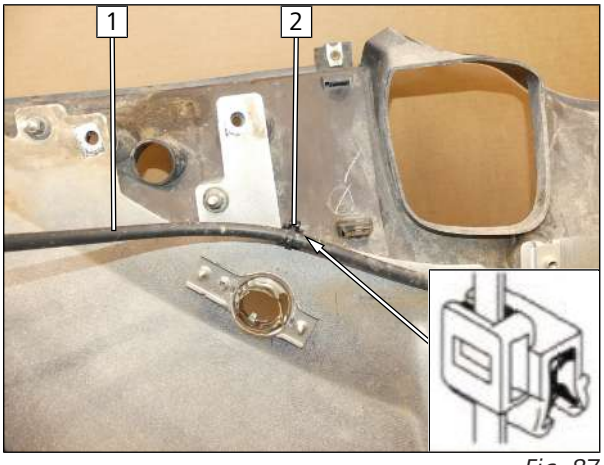


Fig. 87

1 Headlight washer system hose
2 Edge clip cable tie

Mounting exhaust pipe **a2**

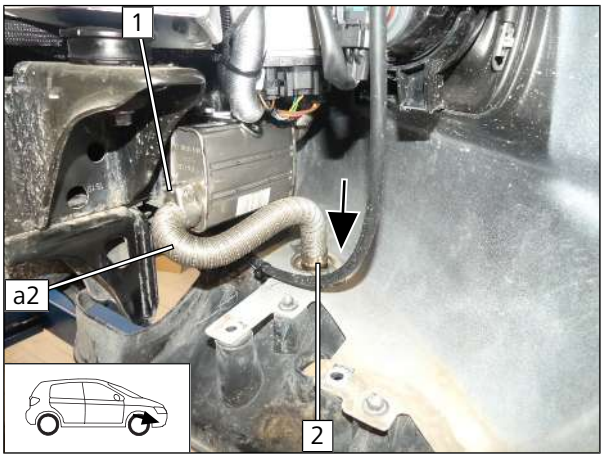


Fig. 88

▶ Install bumper.

Ensure sufficient distance between exhaust pipe **a2** and headlight washer system hose, correct if necessary.

1 Hose clamp

2 EFIX

14 Final work in engine compartment

Checking distance, fastening wiring harness

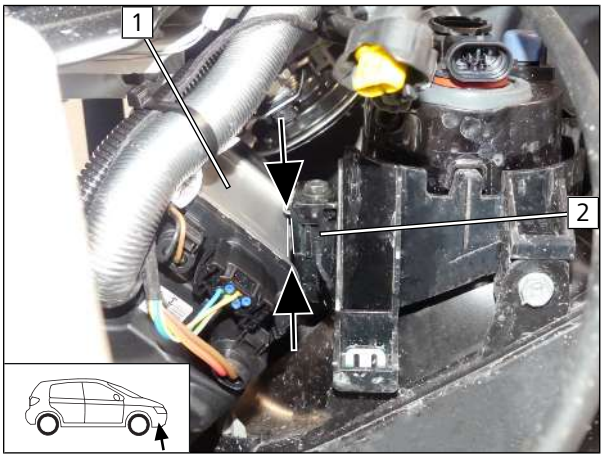


Fig. 89

Danger of damage to components

Ensure sufficient distance between HG 1 and front fog lights housing 2, correct if necessary.

Preparing wheel-well inner panel

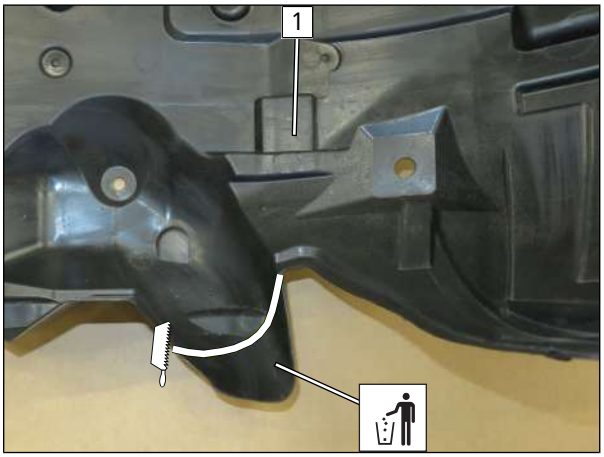


Fig. 90

▶ Adapt wheel-well inner panel 1 as shown.

15 Electrical system of passenger compartment

15.1 Preliminary work

Preparing / assigning wires

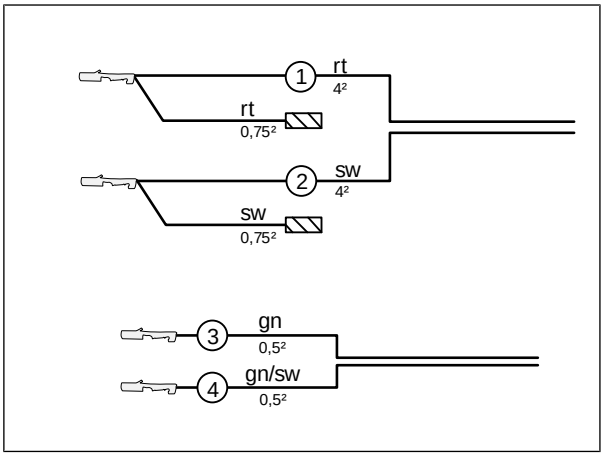


Fig. 91

Wire sections retain their numbering in the entire document.

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

View of PWM Gateway

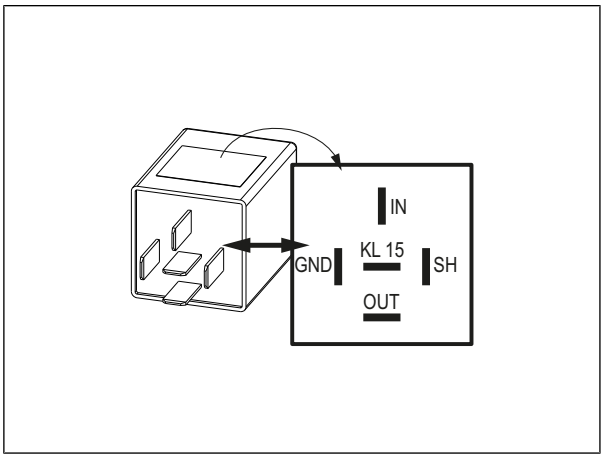


Fig. 92

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

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

Assembling RSH and PWM Gateway sockets, mounting wires

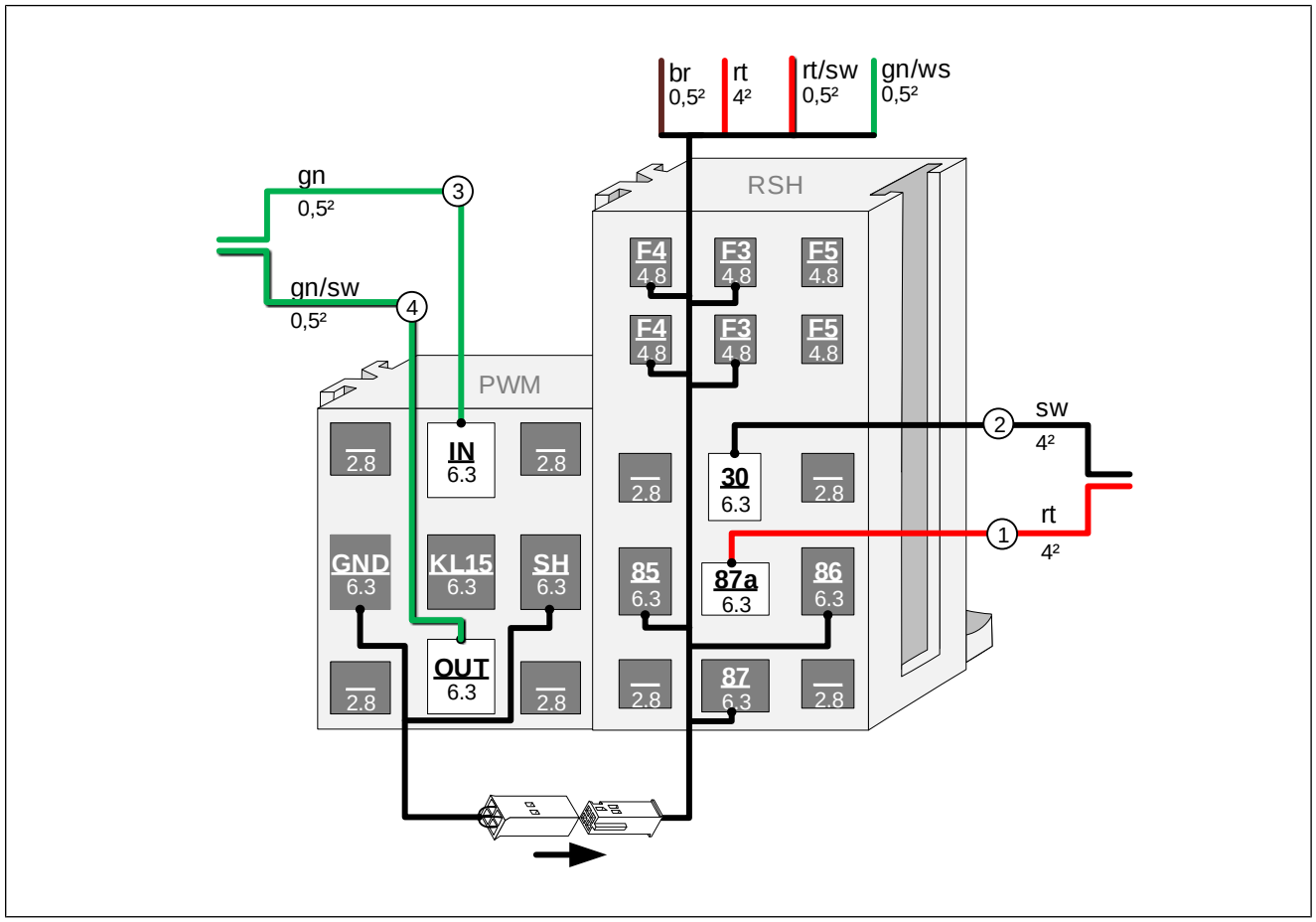


Fig. 93

15.2 Wiring diagram

WD Code **7777** at https://my.webasto.com/download/Systemschaltplan

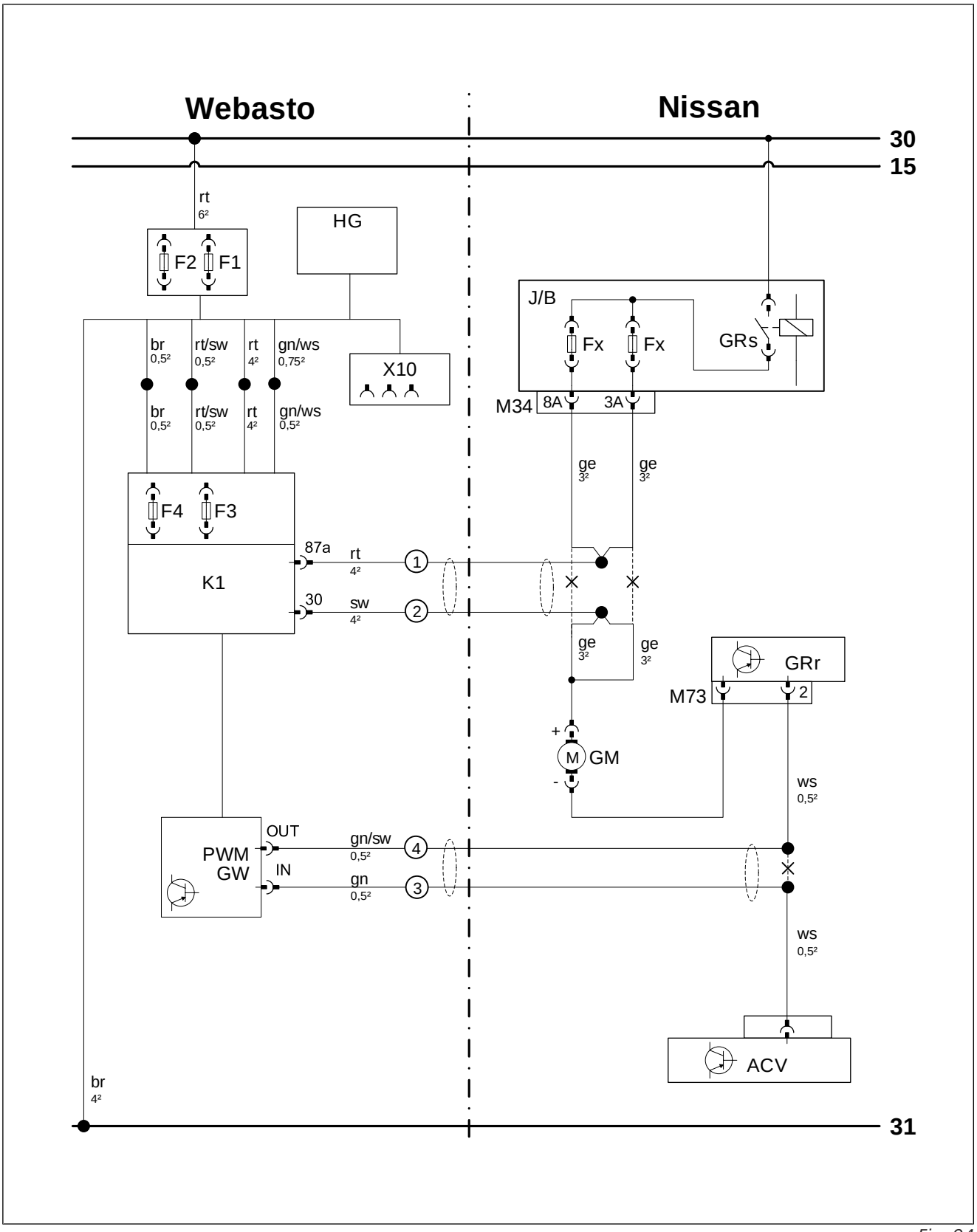


Fig. 94

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
J/B	Fuse block	X	Cutting point
GRs	Fan relay		
Fx	Vehicle fuse		
M34	8-pin J/B connector		
GRr	Fan controller		
M73	4-pin GRr connector		
GM	Fan motor		
ACV	AC booster		

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		

15.3 Fan controller

Mounting RSH

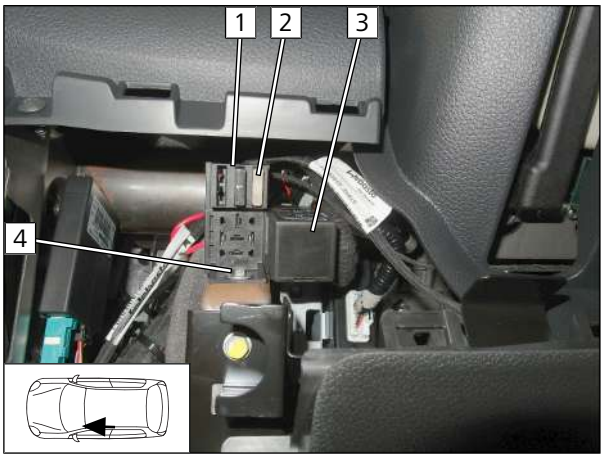


Fig. 95

1 RSH
2 25A fuse F4
3 PWM Gateway
4 M5x16 bolt, large diameter washer, original vehicle hole, large diameter washer, nut

Mounting relay K1

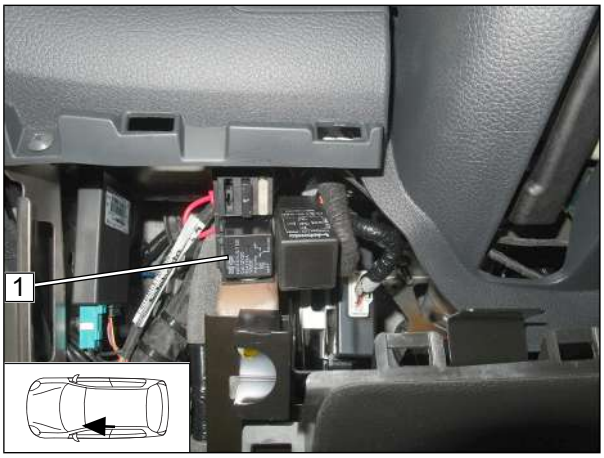


Fig. 96

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

1 Relay K1

Connecting same colour wires of wiring harnesses

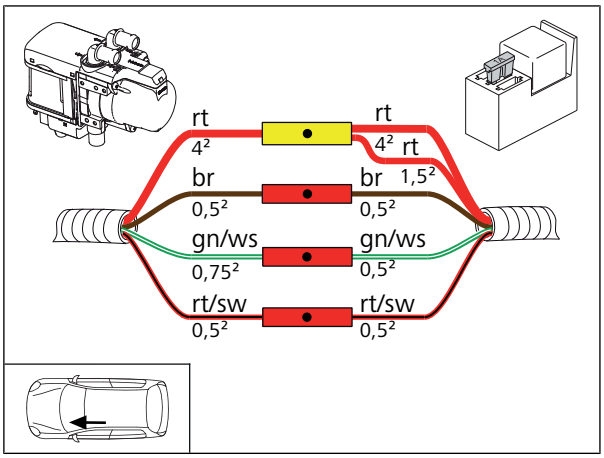


Fig. 97

Detaching connectors M34 and M73

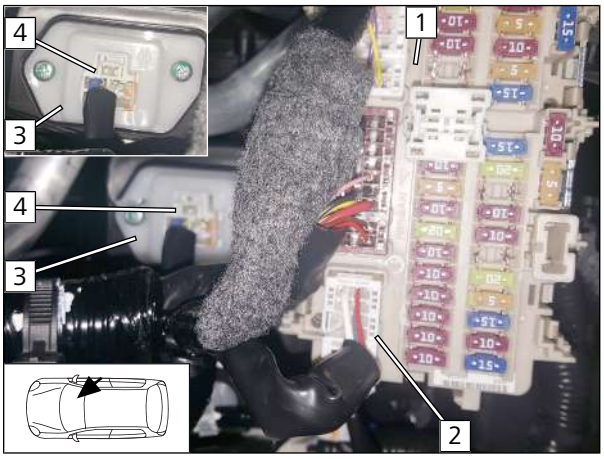


Fig. 98

1 Fuse block J/B
2 8-pin connector M34
3 Fan controller GRr
4 4-pin connector M73 of GRr

Connector M34 connection

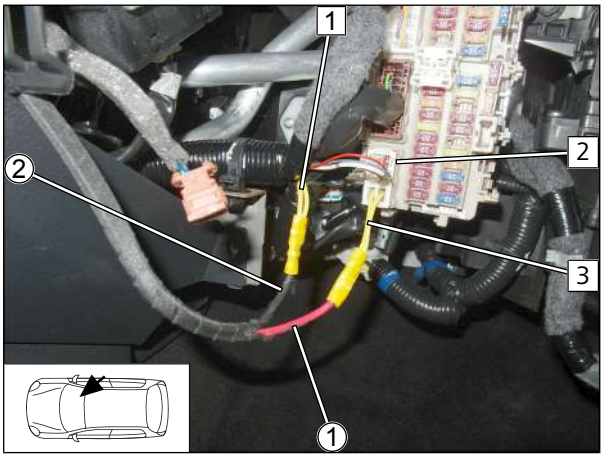


Fig. 99

1 Yellow (ge) wire of GM
2 8-pin J/B connector M34
3 Yellow (ge) wire from M34 connector/ pin 3A and 8A
① Red (rt) wire of K1/87a fan wiring harness
② Black (sw) wire of K1/30 fan wiring harness

Connector M73 connection

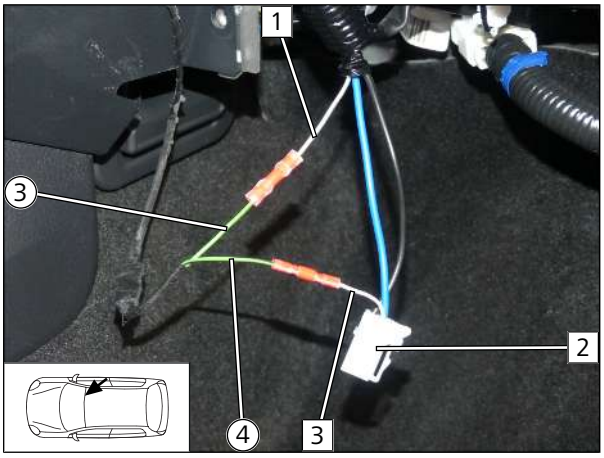


Fig. 100

1 White (ws) wire of ACV
2 4-pin GRr connector M73
3 White (ws) wire of connector M73/pin 2
③ Green (gn) wire of PWM control wiring harness
④ Green/black (gn/sw) wire of PWM control wiring harness

15.4 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.

16 Final Work

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

▶ Mount removed parts in reverse order.

▶ Check all hoses, clamps and all electrical connections for firm seating.

▶ Insulate and tie back loose lines

▶ Spray heater and electrical components with anti-corrosion wax (Tectyl 100K).

▶ Connect the battery.

Only use manufacturer-approved coolant.

▶ Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.

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

▶ Program MultiControl CAR, teach Telestart transmitter

▶ Make settings on A/C control panel according to the 'Operating Instructions'.

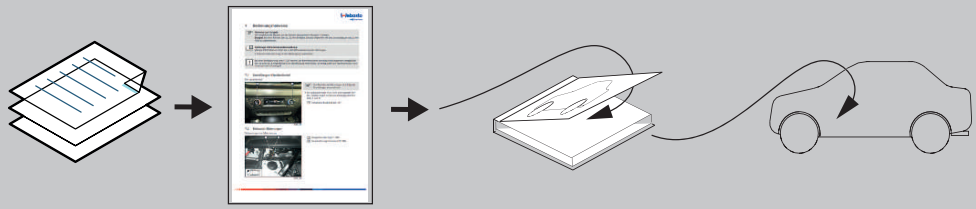
▶ Initial operation and functional test

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

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.



These are the original instructions. The German language is binding.
You can request your language if it is missing. The telephone number of each country can be found in the Webasto service centre leaflet or the website of the respective Webasto representative of your country.

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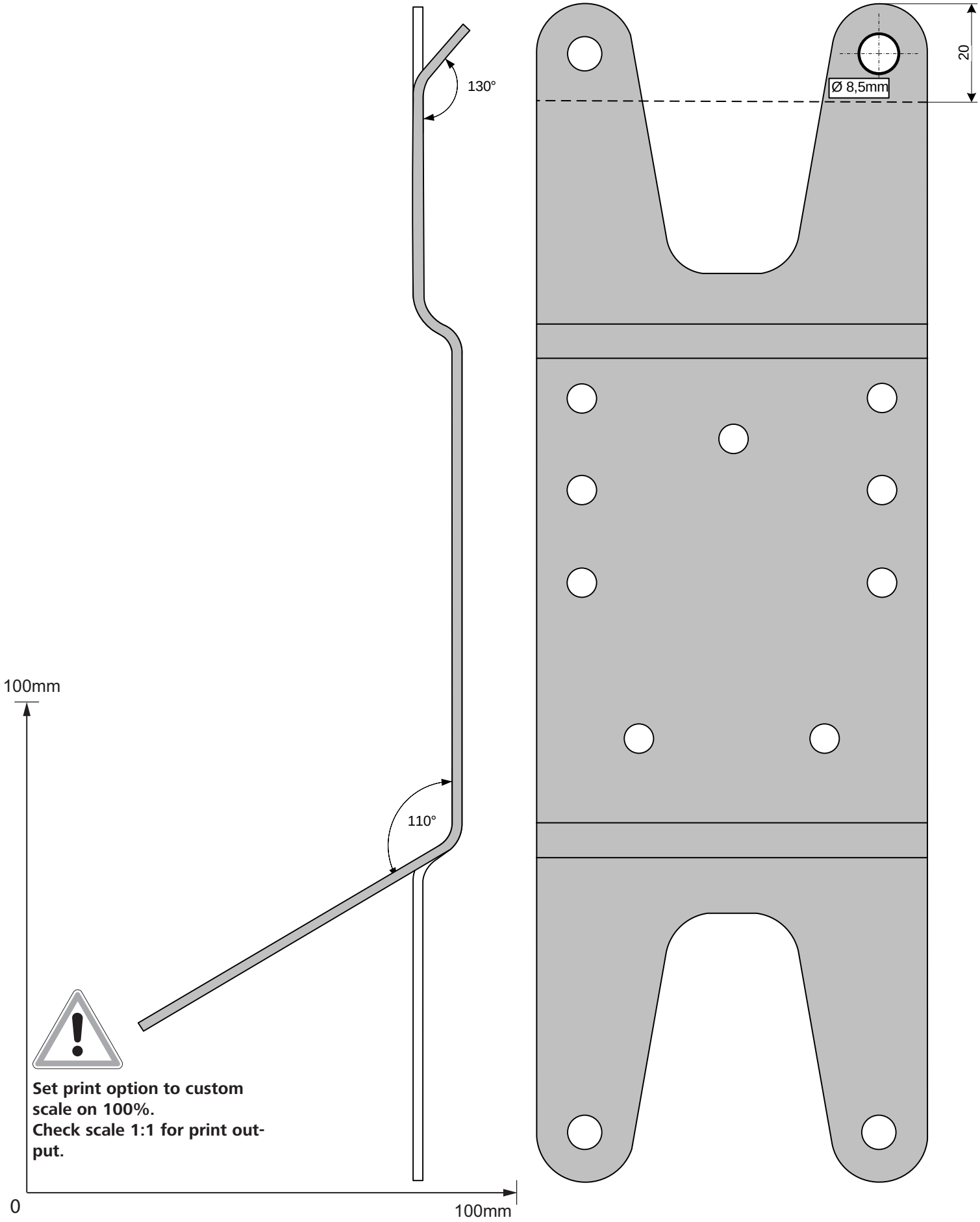
17 Heater bracket template



18 Operating instructions for manual air-conditioning

Information regarding the heating time:

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

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions.

▶ Deactivate passenger compartment monitoring for the heating operation

Note for current consumption in case of parking heating mode

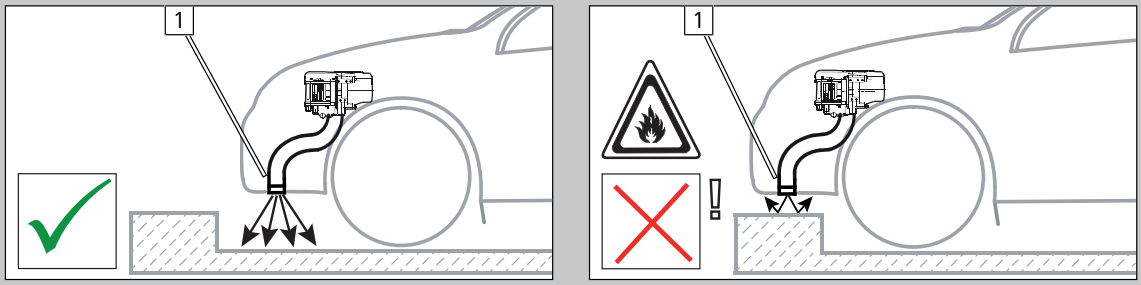
Depending on the vehicle model, there may be an increased quiescent current consumption message in the vehicle information system during or directly after operation in parking heating mode.

▶ 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 and engine preheating unit.

Notes on parking heater exhaust outlet 1



18.1 A/C control panel settings

Manual air-conditioning type B control panel

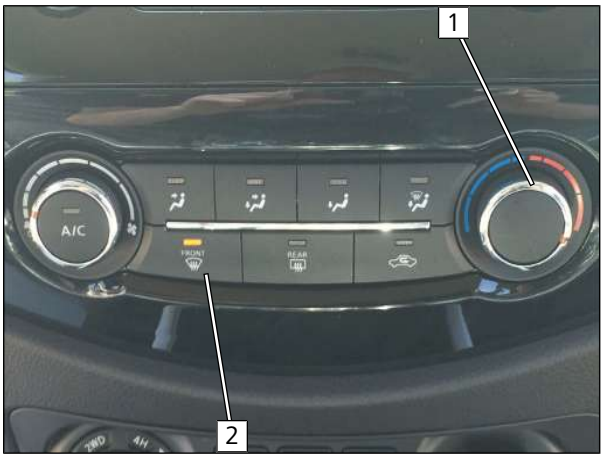


Fig. 102

Before parking the vehicle, make the following settings:

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

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

18.2 Installation location of fuses

Fuses in engine compartment

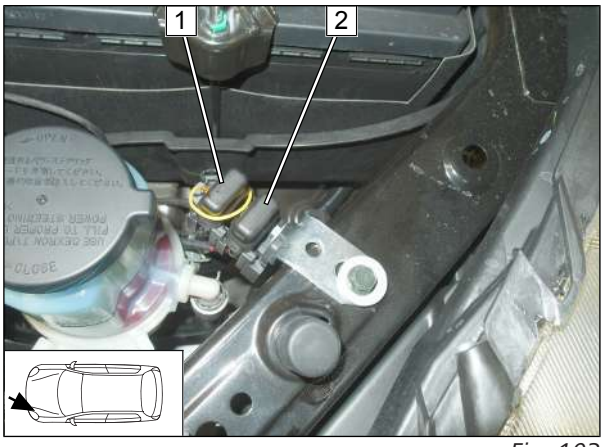


Fig. 103

1 F1 – 20A heater main fuse

2 F2 - 30A passenger compartment main fuse

Fuses in passenger compartment

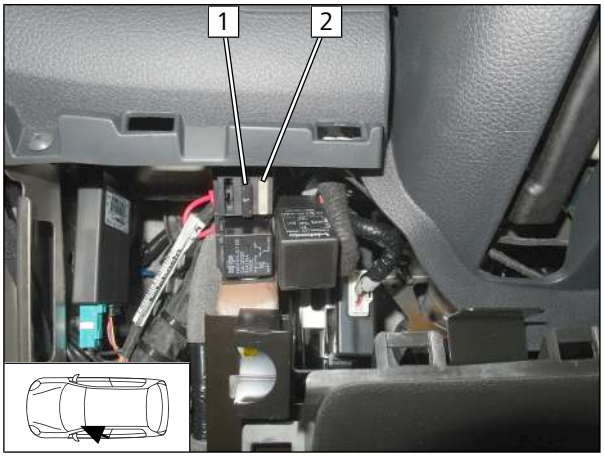


Fig. 104

1 F3 - 1A control element fuse

2 F4 - 25A fan controller fuse

19 Operating instructions for automatic air-conditioning

Information regarding the heating time:

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

Vehicles with passenger compartment monitoring:

Further information can be found in the vehicle operating instructions.

▶ Deactivate passenger compartment monitoring for the heating operation

Note for parking heater function

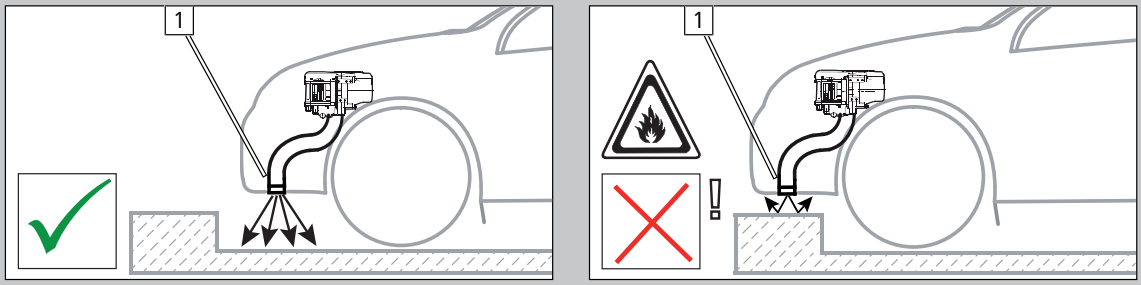
Your vehicle is equipped with a passenger compartment and engine preheating unit.

Note for current consumption in case of parking heating mode

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

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

Notes on parking heater exhaust outlet 1



19.1 A/C control panel settings

Automatic A/C control panel

Fig. 105

Before parking the vehicle, make the following settings:

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

1 Temperature on both sides to 'HI'
2 Air outlet to windscreen

19.2 Installation location of fuses

Fuses in engine compartment

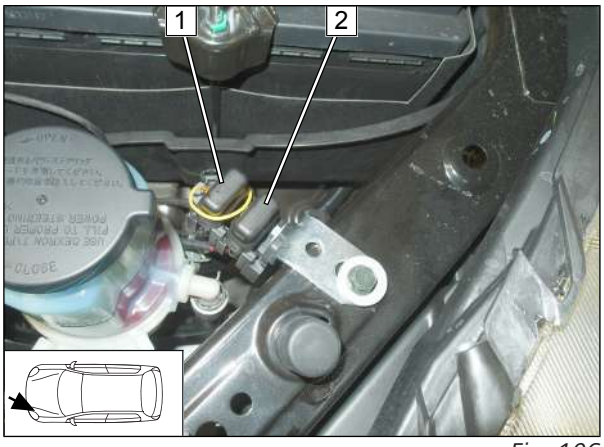


Fig. 106

1 F1 - 20A heater main fuse

2 F2 - 30A main fuse of passenger compartment

Fuses in passenger compartment

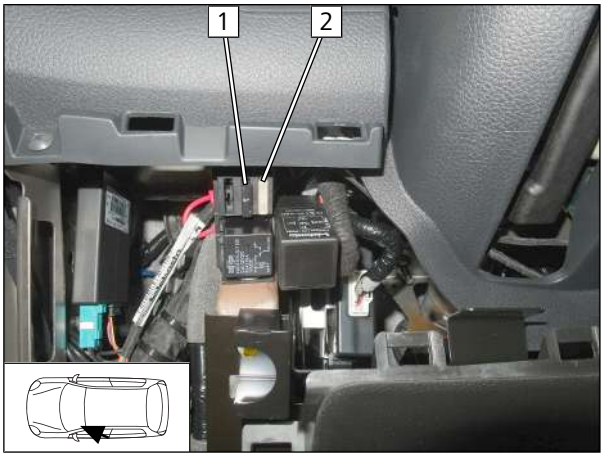


Fig. 107

1 F3 - 1A control element fuse

2 F4 - 25A fan controller fuse