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Installation documentation

for water heater eThermo Top Eco

'Inline' coolant circuit with engine preheating

Toyota Corolla

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Toyota	Corolla	ZE1HE (EU,M)	from 2019	e6* 2007/46* 0318*…

Motorisation	Fuel	Emission standard	Transmission type	Output [kW]	Displace-ment [cm³]	Engine code
2.0P Hybrid	Petrol	EURO6;WLTP;AG…	E-CVT	112	1987	M20A

Validity	Equipment variants	Model
		Corolla
Verified equipment variants	Manual air-conditioning (AC)	x
	2 zone automatic air-conditioning (AAC)	x
	LED main headlights	x
	Matrix LED main headlights	x
	LED daytime running lights	x
	LED front fog lights	x
	FWD	x

Total installation time	Note
6.5 hours	

Contents

1 List of abbreviations

AAC	Automatic air-conditioning
AC	Manual air-conditioning
E-CVT	Electronically-controlled continuously variable automatic transmission
FWD	Front wheel drive
HG	Heater
PWM	Pulse width modulator
RSH	Relay and fuse holder of passenger compartment
SH2	Engine compartment fuse holder for F1/F2/F3
STD	230V socket outlet
UP	Coolant pump
Veh.	Vehicle
Wire	Cable

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 Note for hybrid vehicles

Only experts in high-voltage systems for vehicles should be authorised to carry out independent work on hybrid vehicles. High-voltage systems must be taken out of operation, secured and reactivated according to the manufacturer's instructions.

2.3 Components used

Designation	Order number
Basic delivery scope of eThermo Top Eco	In accordance with price list
Installation kit for Toyota Corolla 2.0P Hybrid 2019 eTT-Eco	1330147A
Mounting plate for socket outlet	1325974_
Additional 'Webasto Standard' A/C control kit option for Toyota / Lexus **Attention:** do not use the mounting information included in the installation documentation of the additional A/C control kit for the Corolla MY 2019. The assembly will be described in this installation documentation.	1324414_
W-LAN socket outlet	PEA-NX-4458
230V supply cable	In accordance with price list

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:

of the eThermo Top Eco 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

For the eThermo Top Eco heater there is a type approval in accordance with ECE-R 122 (heater).
Webasto Thermo & Comfort SE, as the manufacturer, declares, that the eThermo Top Eco heater complies with the following guidelines:

- 2006/42/EC Machine directive
- 2014/30/EU EMV
- 2011/65/EU RoHS.

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.
- ▶ Observe the special safety and operating instructions from the general installation instructions as an additional precaution against electric chocs.
- ▶ Always comply with legal requirements.
- ▶ Observe data on type label.

Risk of fire due to incorrect 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.

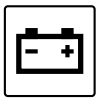
3.4.1 Explanatory Notes on the Document

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:

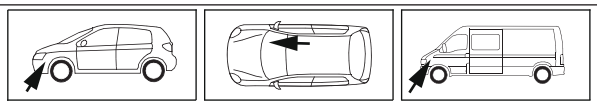
Generally valid Webasto documentation	
Vehicle-specific installation documentation	
Vehicle-specific installation documentation of the cold start kit	
Webasto Comfort A/C control	
Webasto Standard A/C control	

3.4.2 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	Software
				

3.4.3 Orientation aid



The arrow indicates the position on the vehicle and the viewing angle

3.4.4 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

3.4.5 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

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 clamping pliers
– Hose cutter
– Automatic wire stripper 0.2 - 6 mm²
– Crimping pliers for cable lugs 0.5 – 10 mm²
– Crimping pliers for male connector 0.14 – 6 mm²
– Crimping pliers for connector 0.25 – 6 mm²
– Torque wrench for 2.0 - 10 Nm
– Deep-hole marker
– Metric thread-setter kit
– Webasto Thermo Test Diagnosis with current software

5 Preparations

5.1 Vehicle preparation

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

DANGER

Take the high-voltage system out of operation as per the procedure described in the manufacturer's instructions and secure it.

Vehicle area	Components to be removed	Other applicable documents
General	▶ Depressurise the cooling system	
Engine compartment and body	▶ Disconnect the battery ▶ Air filter box ▶ Windscreen wiper and windscreen wiper motor ▶ Water drain chamber and water drain chamber cover ▶ Front wheel on the driver's side ▶ Front wheel well trim on the driver's side and transmission trim ▶ Bumper trim ▶ Front and rear motor protection	
Passenger compartment	▶ Side and lower instrument panel trim on the driver's side ▶ Front of centre tunnel trim on the driver's side ▶ Upper and lower footwell trim on the driver's side ▶ Accelerator pedal ▶ Detach the AC booster connector	

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

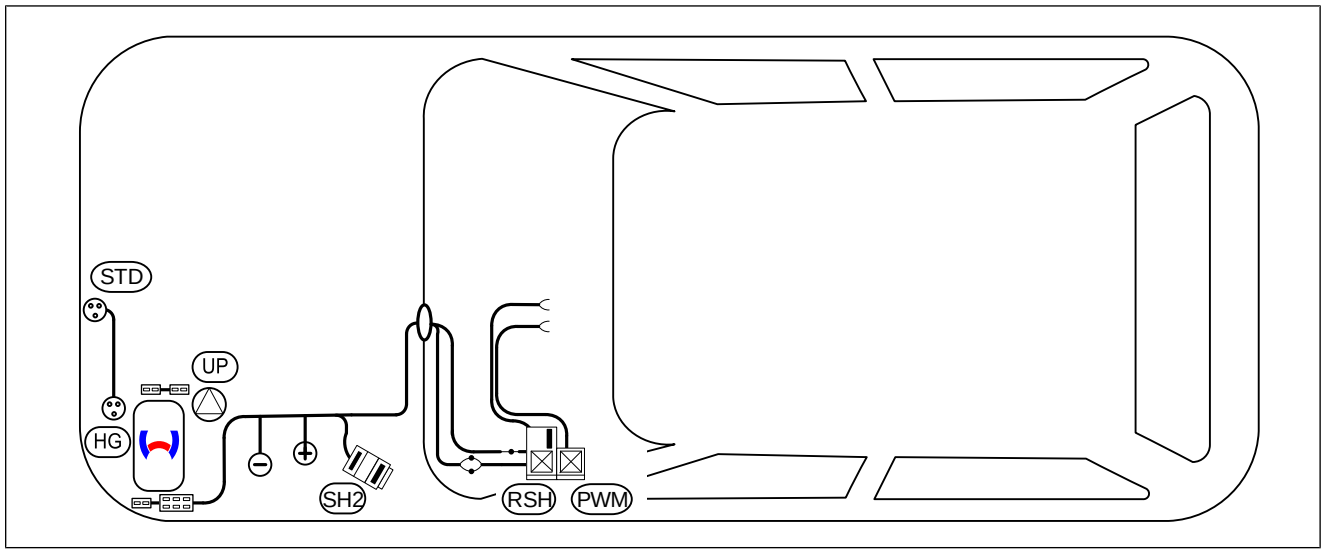


Fig. 1

Legend to installation overview

Abbreviation	Component
HG	Heater
PWM	Pulse width modulator
RSH	Relay and fuse holder of passenger compartment
SH2	Engine compartment fuse holder
STD	230V socket outlet
UP	Coolant pump

Heater installation location

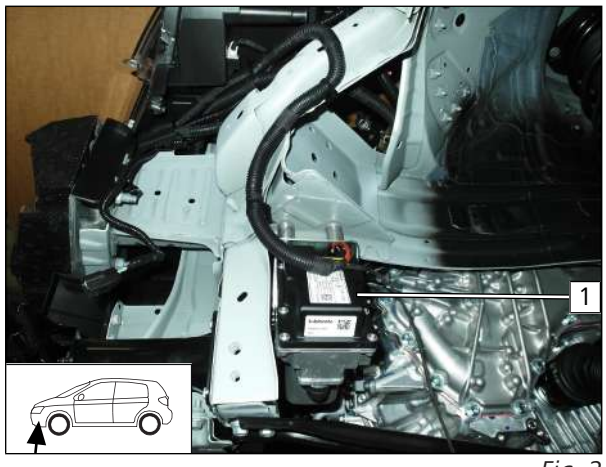


Fig. 2

1 Heater

7 Electrical system of engine compartment

Cutting corrugated tubes to length

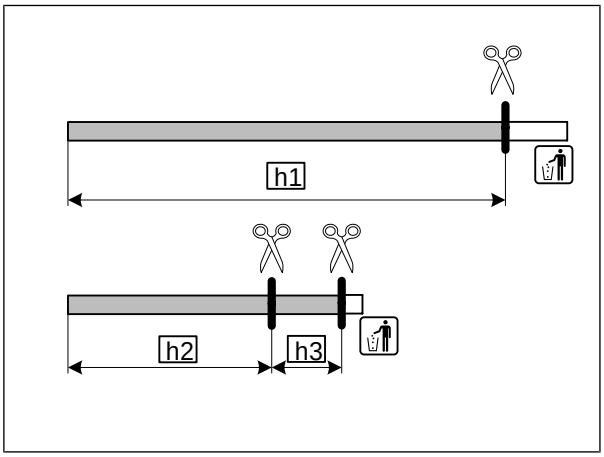


Fig. 3

h1 1900
h2 860
h3 230

Preparing wiring harness

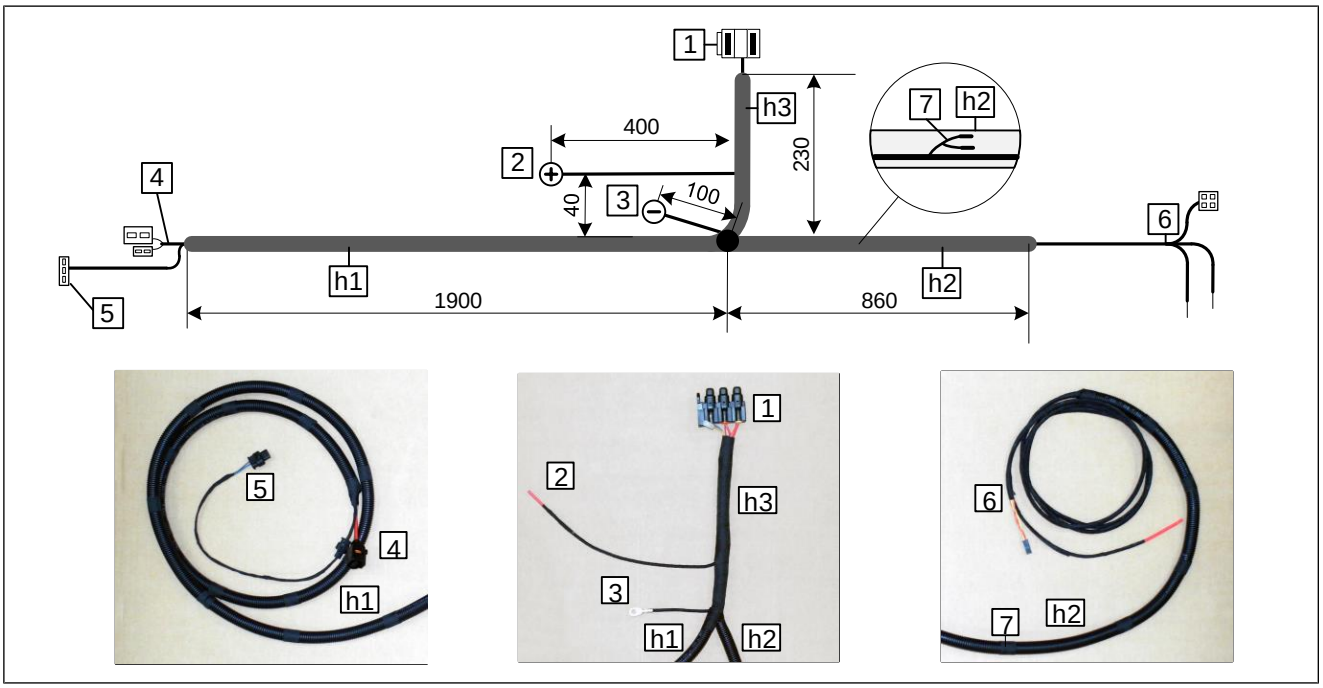


Fig. 4

▶ Wrap corrugated tubes **h1** and **h2** at regular intervals with insulating tape.

▶ Wrap corrugated tube **h3** and the ends of corrugated tubes **h1** and **h2** completely with insulating tape.

1 Engine compartment fuse holder (SH2)
2 Positive wire
3 Earth wire
4 Heater wiring harness
5 Coolant pump wiring harness
6 Passenger compartment wiring harness
7 Red/black (rt/sw) wire and black (sw) wire of accessory wiring harness (insulate and draw into corrugated tube **h2**)

Shortening and bending perforated bracket

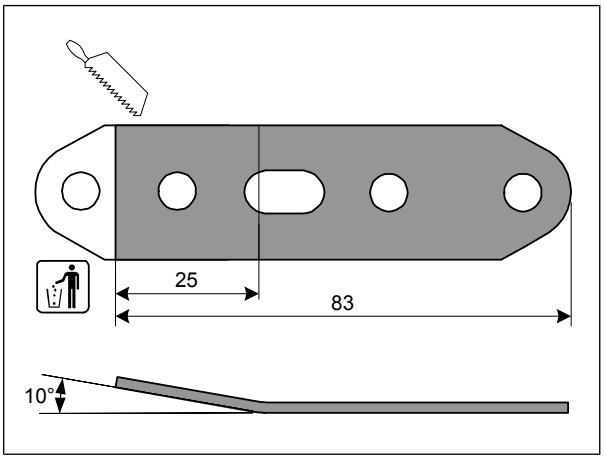


Fig. 5

Premounting SH2

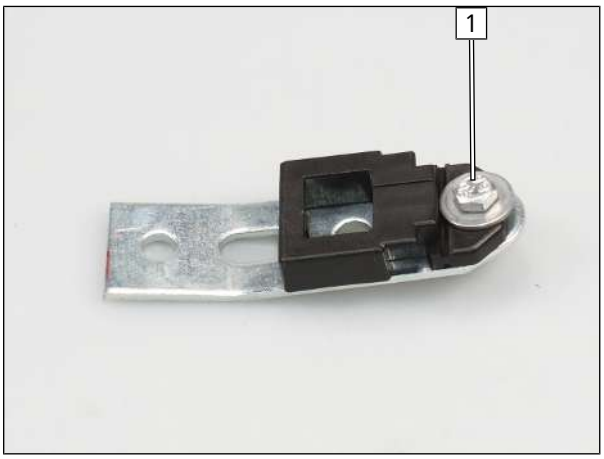


Fig. 6

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

Installing SH2

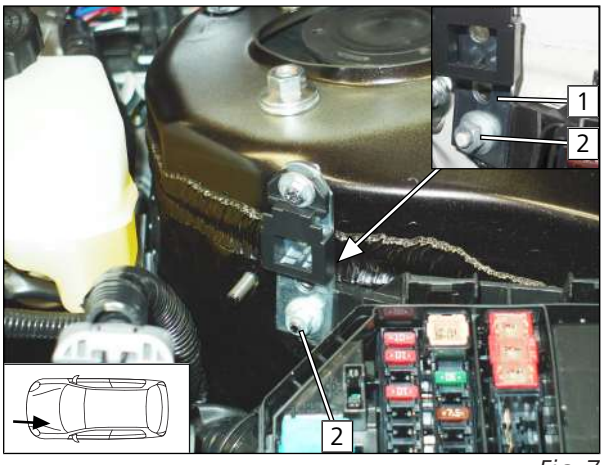


Fig. 7

▶ Remove original vehicle nut **2** and use it to install perforated bracket **1**.

2 Original vehicle stud bolt, housing of engine compartment central electrical box, perforated bracket, original vehicle nut

Fig. 8

[1] Fuses F1 and F2 (removed fuse), F3

Mounting earth wire

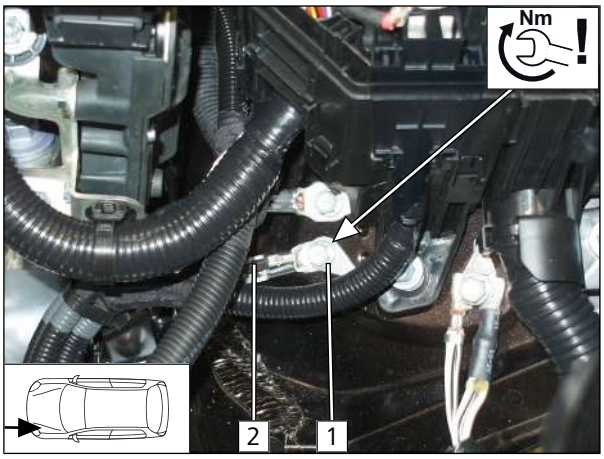


Fig. 9

DANGER

Observe tightening torque

[1] Original vehicle earth support point

[2] Earth wire

Mounting positive wire

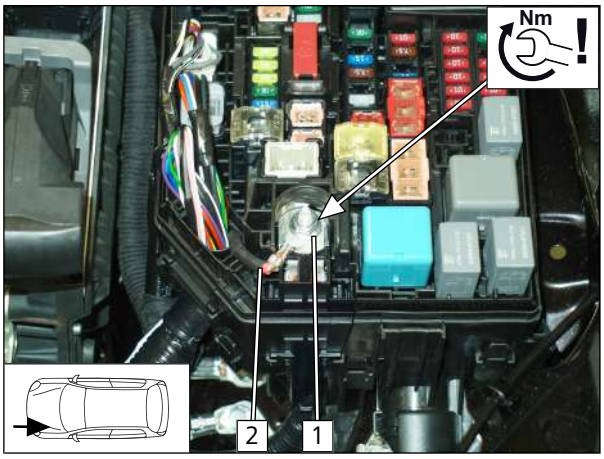


Fig. 10

DANGER

Observe tightening torque

[1] Original vehicle positive support point

[2] Positive wire

Routing heater wiring harness

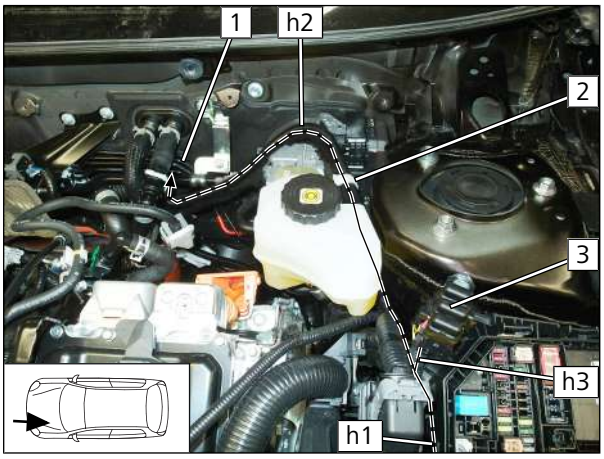


Fig. 11

▶ Draw corrugated tube **h2** through original vehicle clamp **2**.

1 Passenger compartment and control element wiring harnesses to the passenger compartment pass through

3 SH2

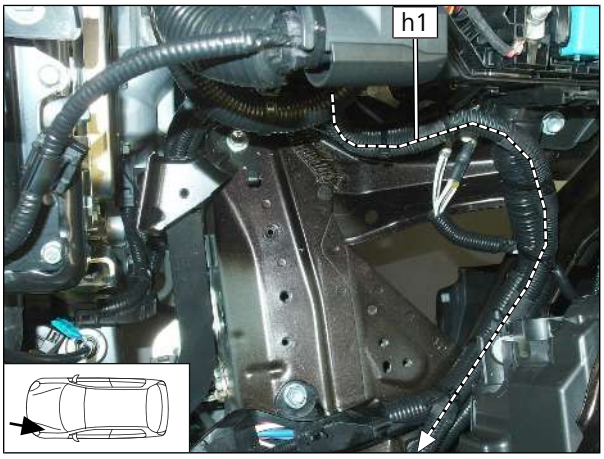


Fig. 12

▶ Route corrugated tube **h1** to the heater installation location.

Passenger compartment wiring harness pass through

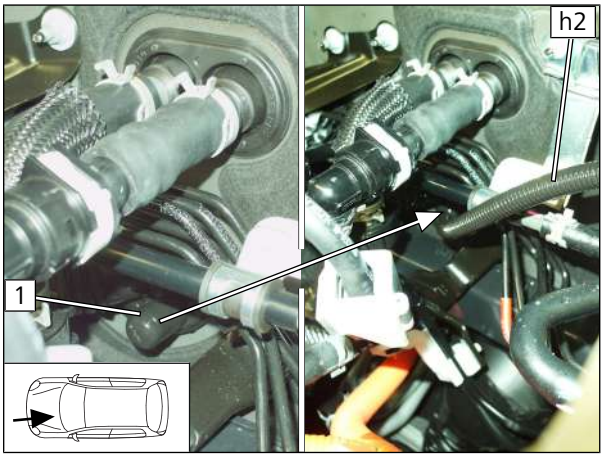


Fig. 13

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.

▶ Open the pass through in the passenger compartment **1**, route the passenger compartment and control element wiring harnesses into the passenger compartment.

8 Mechanical system

8.1 Preparing installation location

Adapting HG bracket

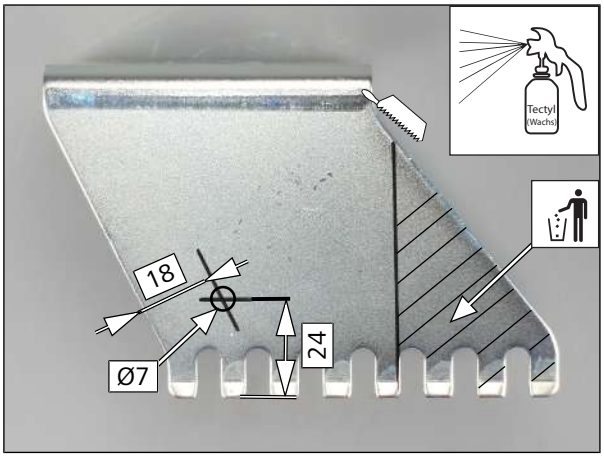


Fig. 14

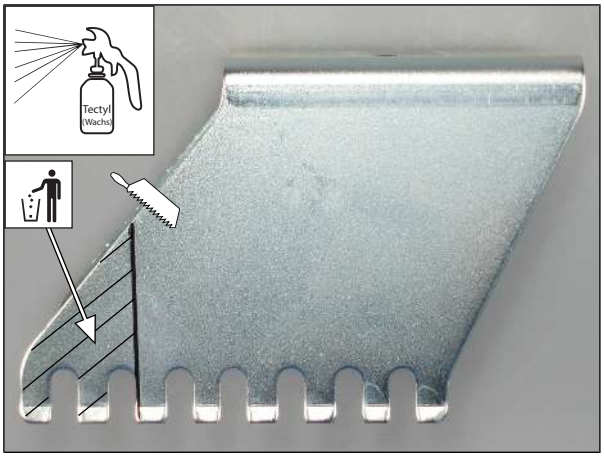


Fig. 15

Enlarging hole, inserting rivet nut

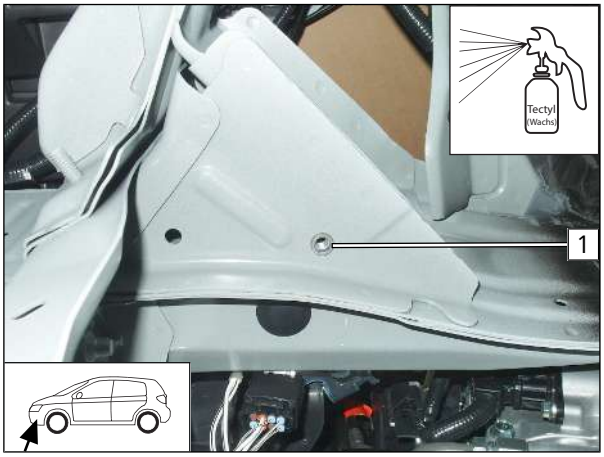


Fig. 16

▶ Enlarge original vehicle hole **1** to Ø9, insert rivet nut.

Copying hole pattern

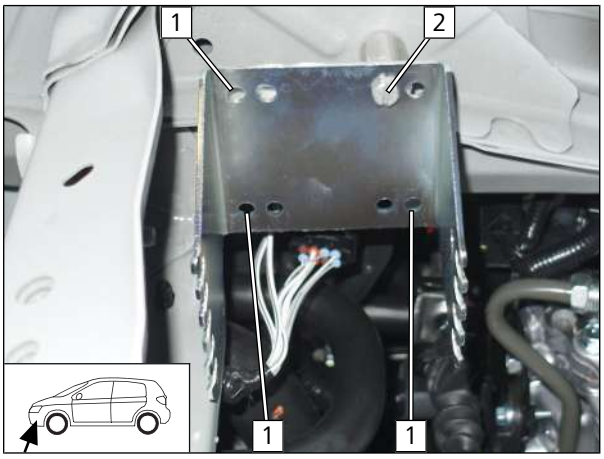


Fig. 17

▶ Mount bracket loosely and align as shown.

1 Hole pattern

2 M6x50 bolt, HG bracket, spacer (5), spacer (20), rivet nut

Drilling hole, inserting rivet nut

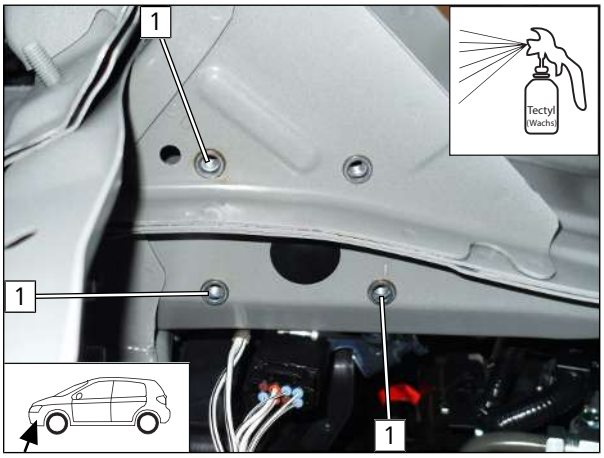


Fig. 18

▶ Remove bracket.

1 Ø9 hole, rivet nut

Mounting heater bracket

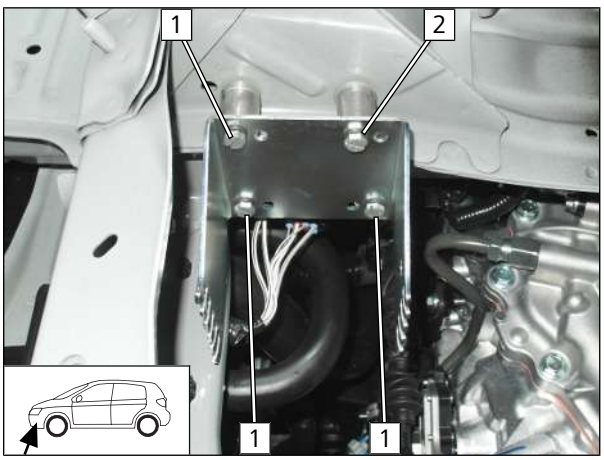


Fig. 19

1 M6x50 bolt, spring lock washer, bracket, spacer (20), spacer (5), rivet nut

2 M6x50 bolt, spring lock washer, bracket, spacer (20), spacer (5), large diameter washer, rivet nut

8.2 Premounting heater

Mounting water connection piece

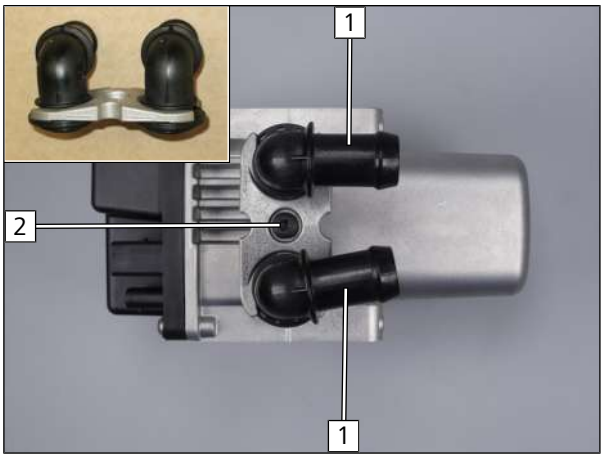


Fig. 20

Observe the general installation instructions of the heater.

1 Water connection piece, seal

2 5x15 self-tapping bolt, water connection piece retaining plate

Premounting bolts

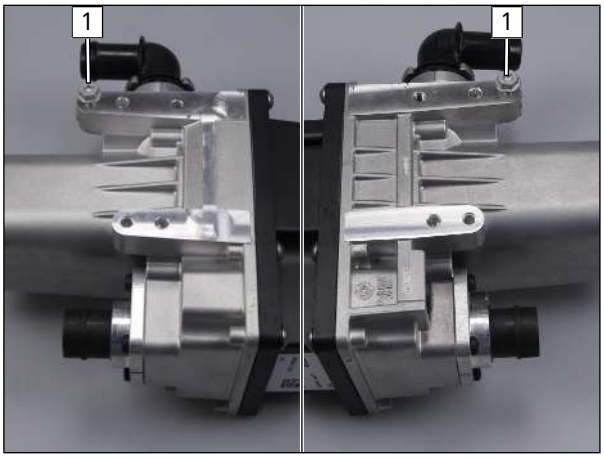


Fig. 21

▶ Screw 5x13 self-tapping bolts 1 into existing holes by a maximum of 3 thread turns.

Cutting hoses to length

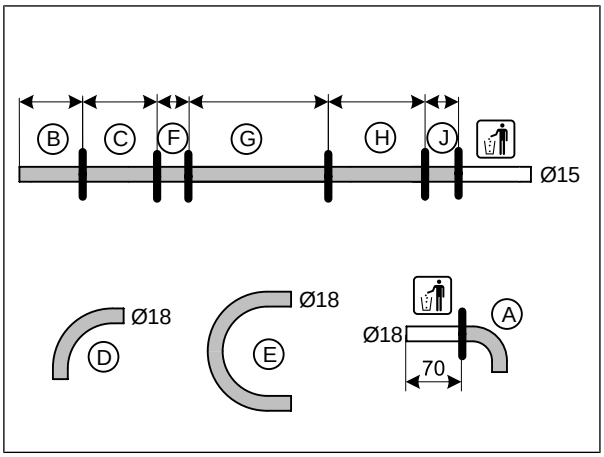


Fig. 22

A	90° moulded hose
B	300
C	460
D	90° moulded hose
E	180° moulded hose
F	65
G	670
H	420
J	80

Mounting fabric heat shrink tubing

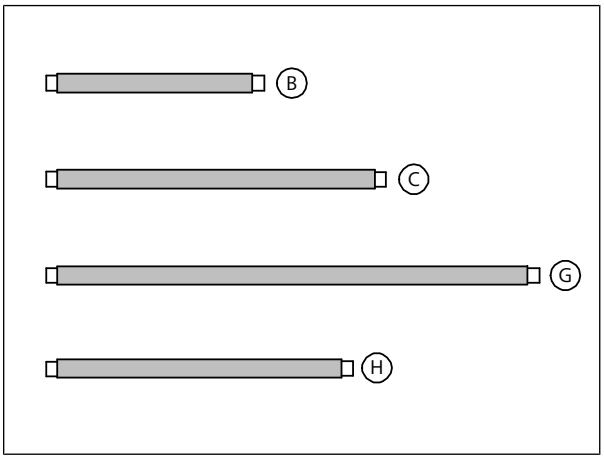


Fig. 23

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

Mounting hoses

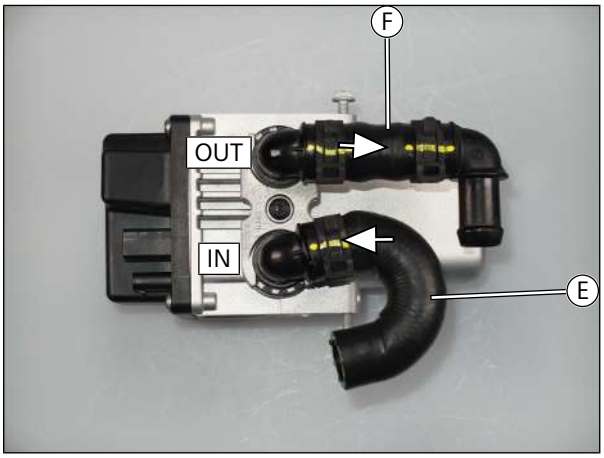


Fig. 24

All spring clips Ø25
Ø18x18/90° connecting pipe

8.3 Heater mounting

Mounting heater

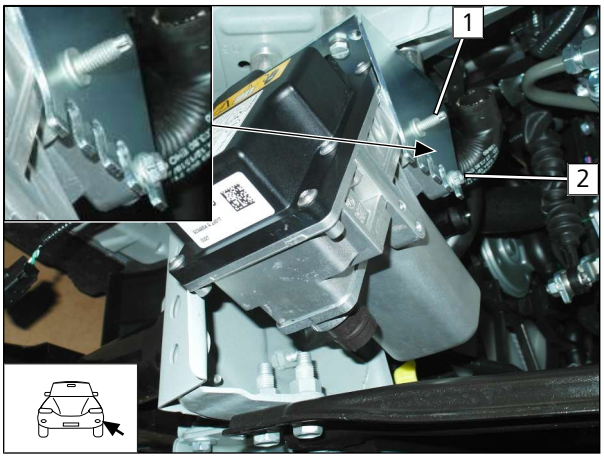


Fig. 25

1 Mount M5/M6x15 self-tapping stud bolt
2 Tighten premounted bolt

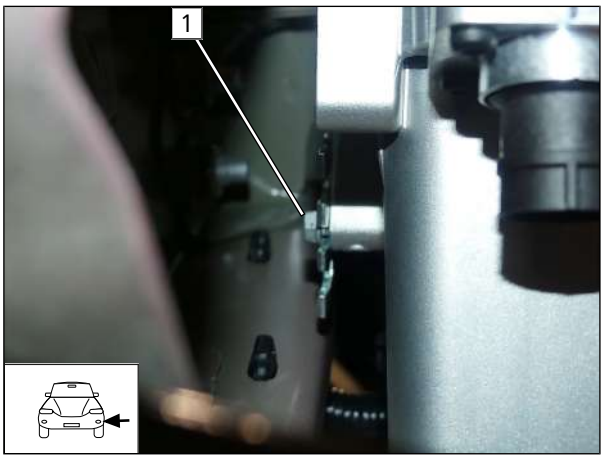


Fig. 26

1 Tighten premounted bolt

Routing, mounting and fastening heater wiring harness

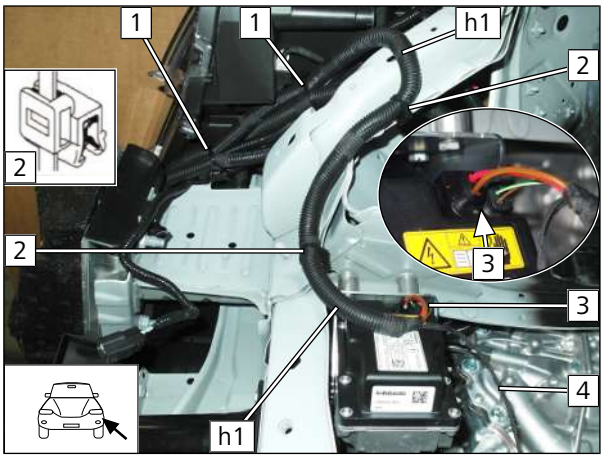


Fig. 27

1 Cable tie
2 Edge clip cable tie
3 Heater wiring harness connector
4 Coolant pump wiring harness connector, will be mounted later

9 Coolant

9.1 Hose routing diagram

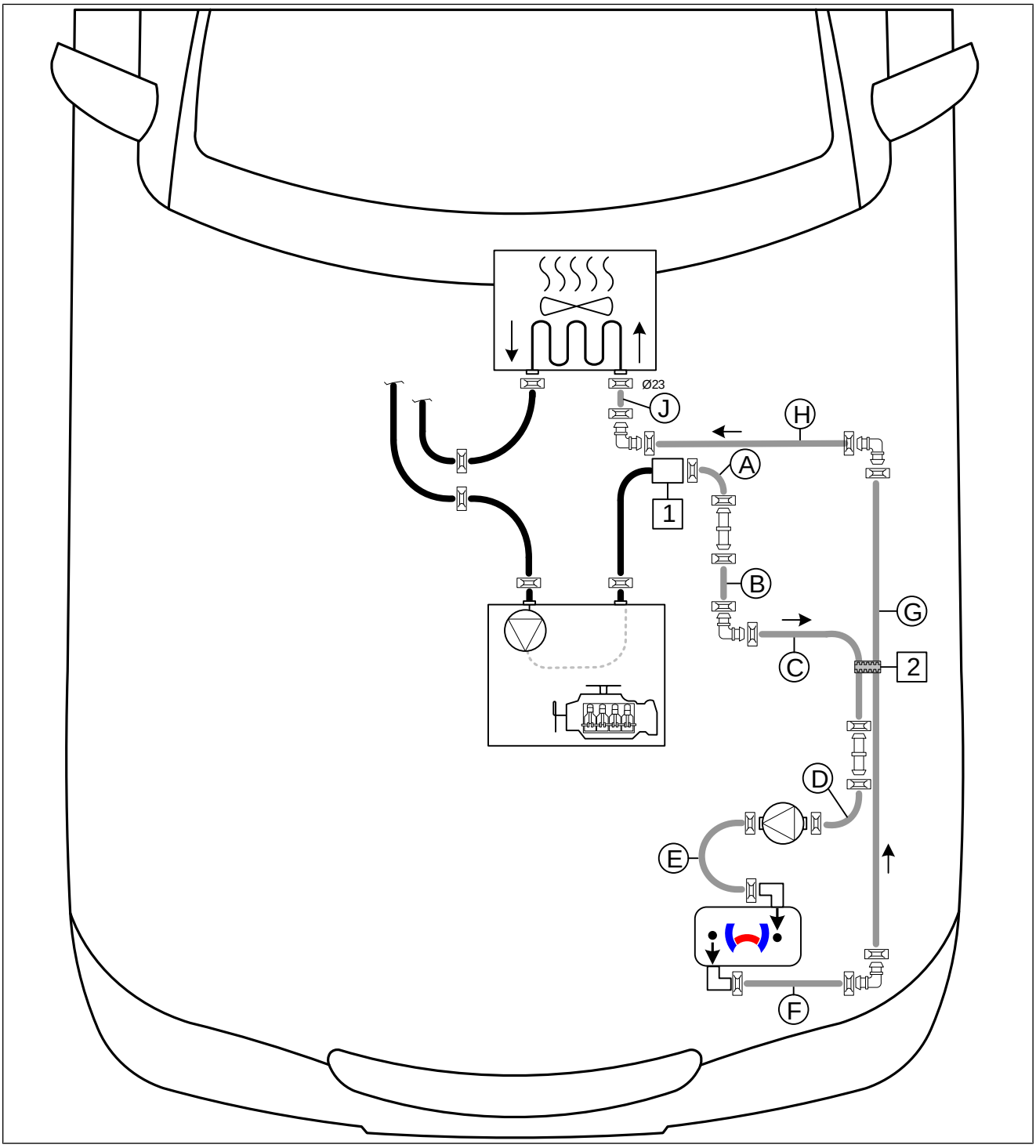


Fig. 28

All spring clips without a specific designation = Ø25

All connecting pipes = Ø18x18 or = Ø18x18/90°

[1] Original vehicle quick-release coupling

[2] Black (sw) rubber isolator

9.2 Coolant circuit preparation

Preparing perforated bracket

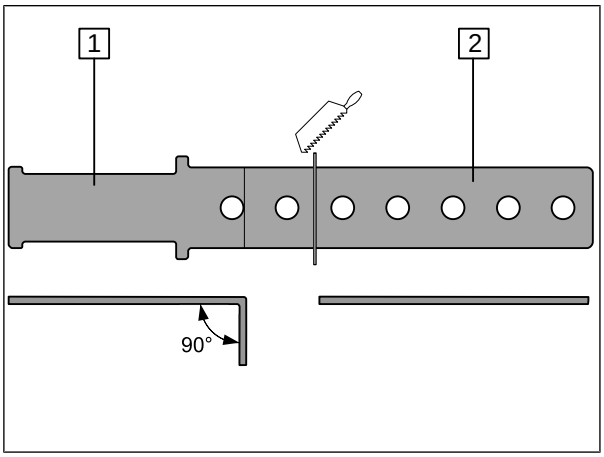


Fig. 29

1 Perforated bracket 1 for fastening the coolant pump

2 Perforated bracket 2 for fastening the coolant hoses

Premounting coolant pump

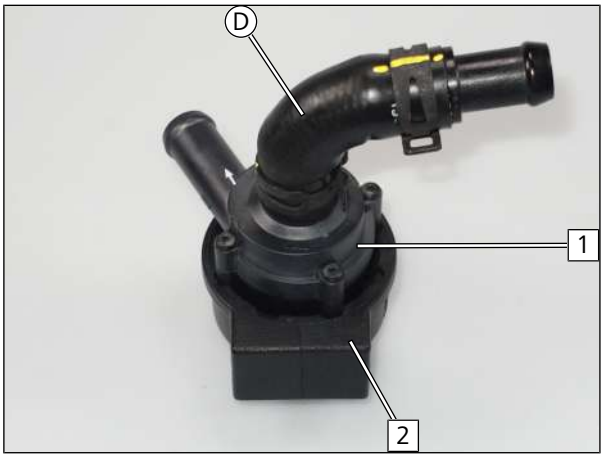


Fig. 30

1 Coolant pump

2 Coolant pump mount

Mounting perforated bracket 1

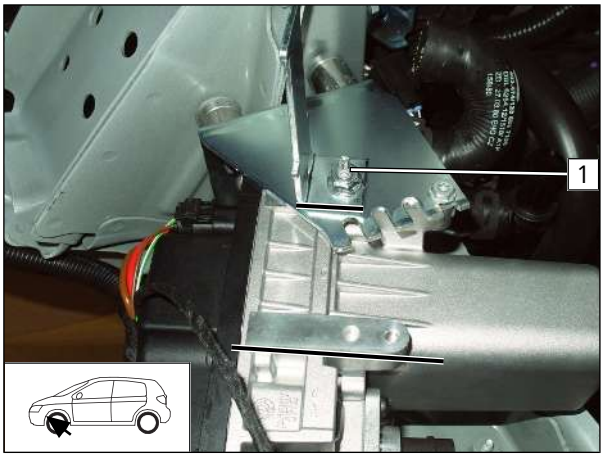


Fig. 31

▶ Align perforated bracket 1 parallel to heater as shown.

1 Stud bolt, perforated bracket 1, flanged nut

Mounting coolant pump, connecting hose (E)

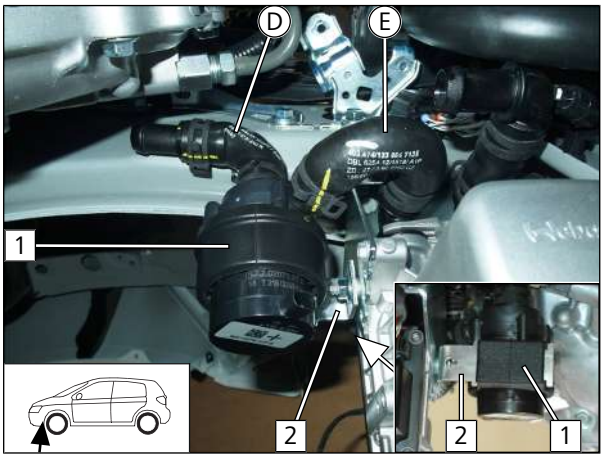


Fig. 32

▶ Position premounted coolant pump [1] onto perforated bracket 1 [2], connect hose (E).

Mounting connector

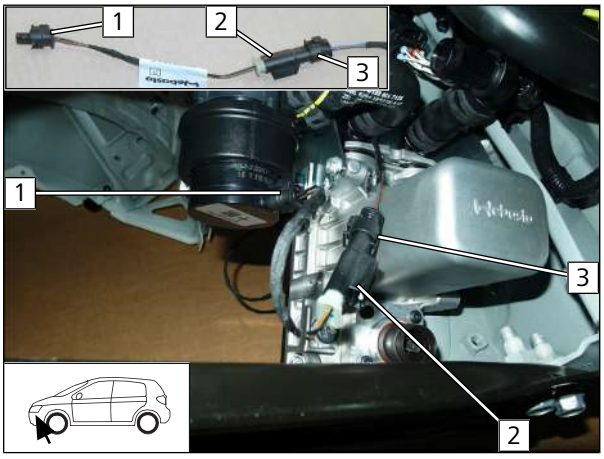


Fig. 33

▶ Connect connector [2] of coolant pump adapter wiring harness to connector [3] of coolant pump wiring harness.

[1] Coolant pump wiring harness connector

Fastening connector

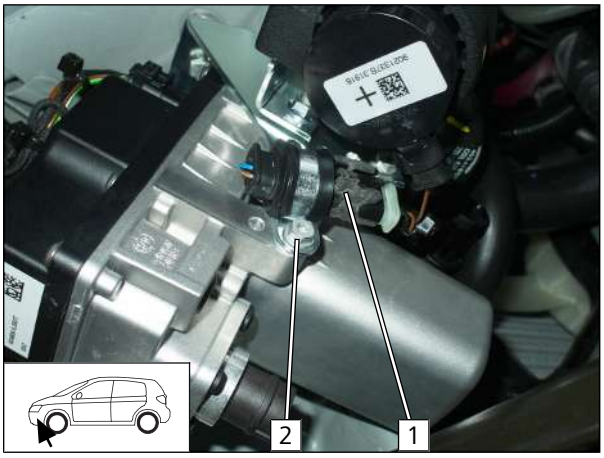


Fig. 34

[1] Connector of coolant pump adapter wiring harness

[2] M5x13 self-tapping bolt, Ø18 rubber-coated p-clamp, hole in heater

Fastening wiring harness

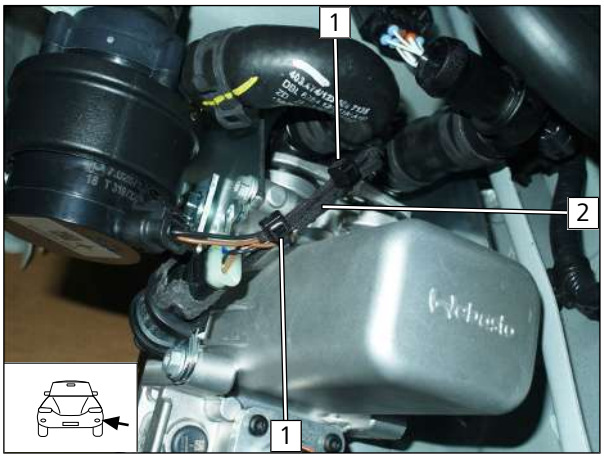


Fig. 35

1 Cable tie around coolant pump wiring harness
2 Rest of coolant pump adapter wiring harness

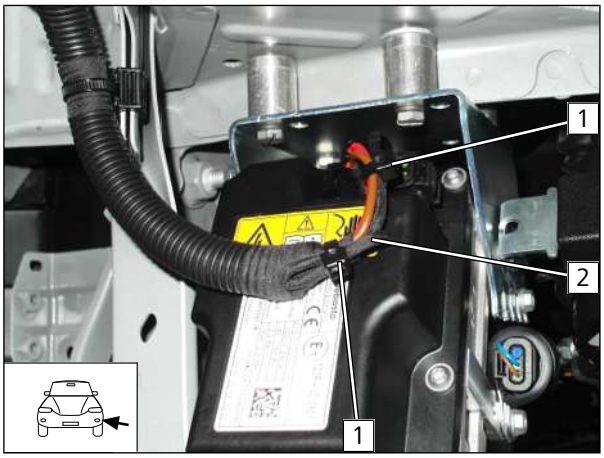


Fig. 36

1 Cable tie around heater wiring harness
2 Rest of coolant pump wiring harness

Drilling hole

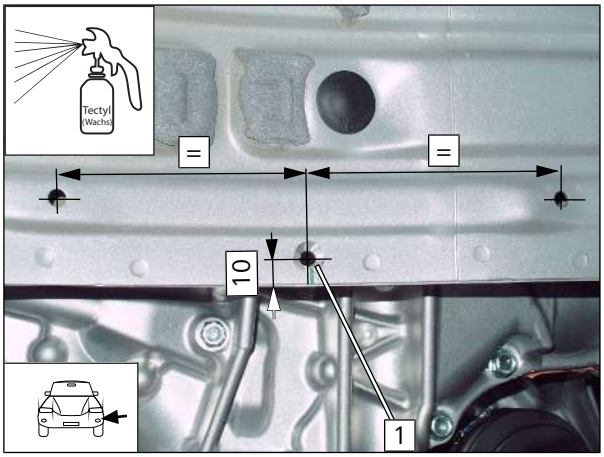


Fig. 37

1 Ø7 hole, countersunk hole for M6x25 countersunk head screw

9.3 Coolant circuit installation

Removing engine outlet / heat exchanger inlet hose

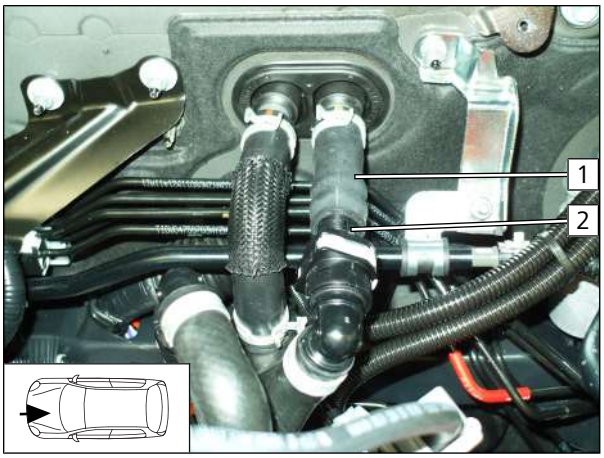


Fig. 38

- ▶ Disconnect engine outlet/heat exchanger inlet hose [1].
- ▶ Remove the heat exchanger inlet hose section carefully from connection piece of quick-release coupling [2] using suitable means. Discard the hose section and spring clip. The connection piece of the heat exchanger inlet quick-release coupling will be reused.

Turning the hose coupling

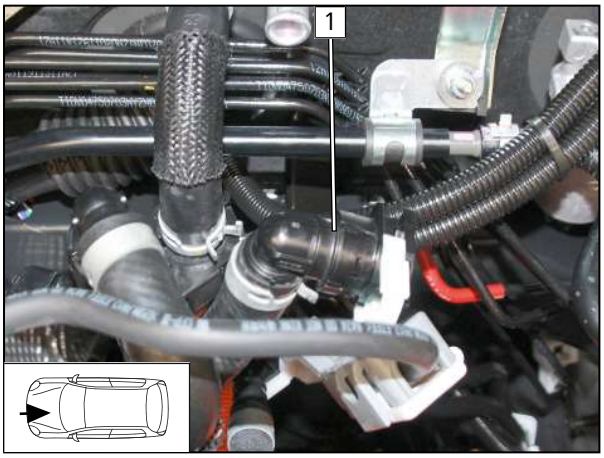


Fig. 39

- ▶ Turn engine outlet hose coupling [1] to the right by 90° as shown.

Preparing hoses Ⓐ and Ⓑ

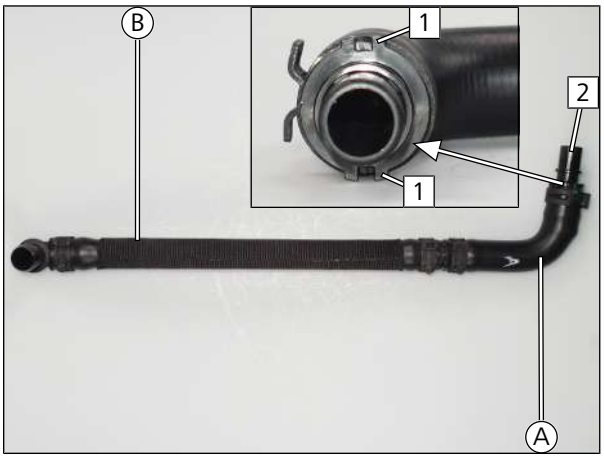


Fig. 40

- ▶ When mounting hose Ⓐ on connection piece of heat exchanger inlet hose coupling [2], pay attention to the position of lug [1].

Preparing hoses Ⓗ and Ⓙ

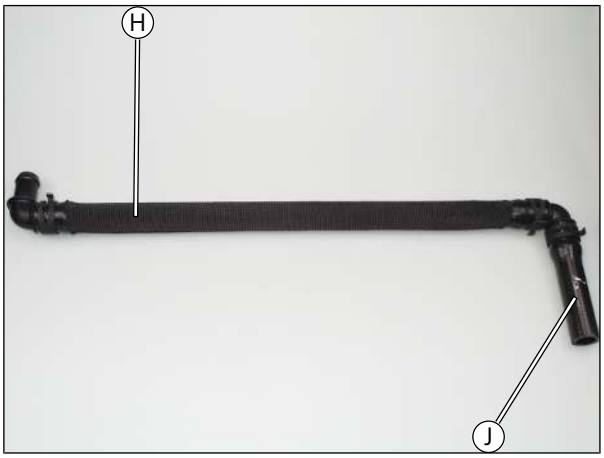


Fig. 41

Completing hose group

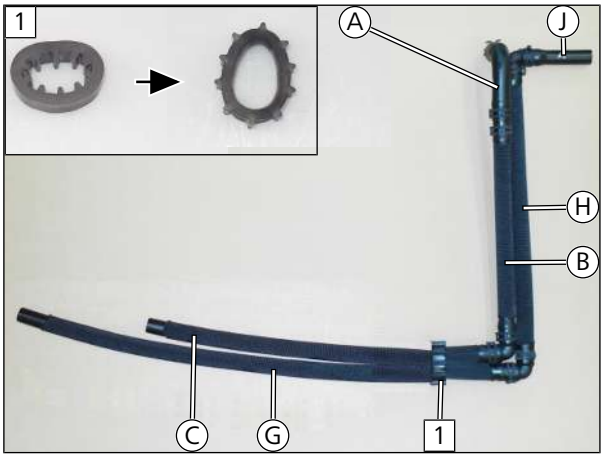


Fig. 42

1 Black (sw) rubber isolator, turned

Connecting hose group

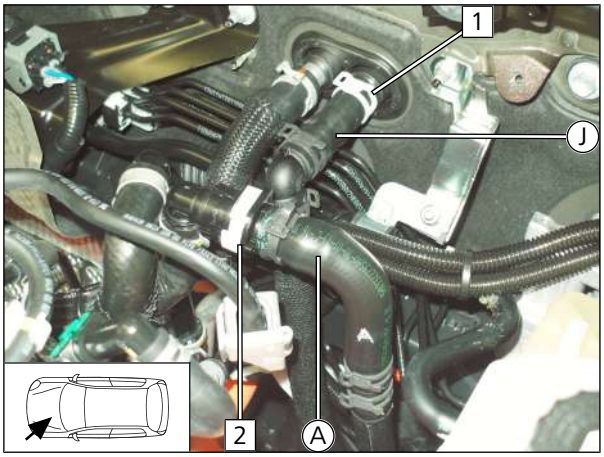


Fig. 43

- ▶ Connect hose Ⓙ on heat exchanger inlet 1.
- ▶ Connect hose Ⓐ to engine outlet quick-release coupling 2.

Connecting hose Ⓒ to hose Ⓓ

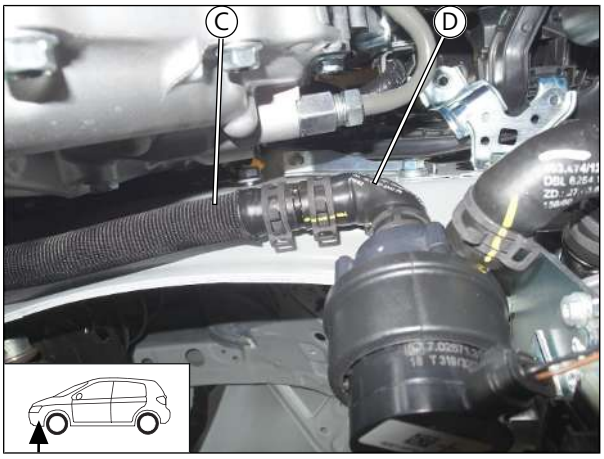


Fig. 44

Connecting hose Ⓖ to hose Ⓕ

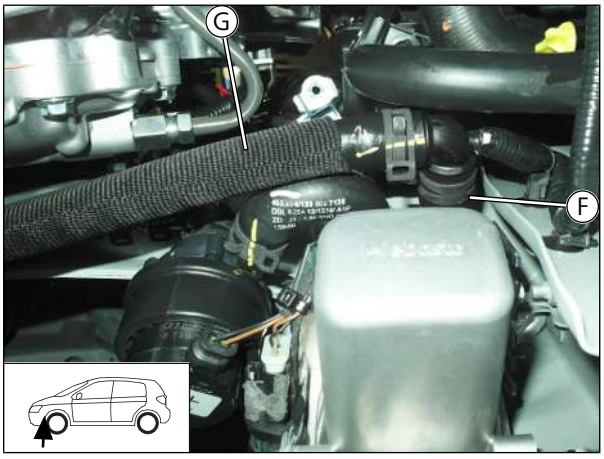


Fig. 45

Mounting perforated bracket 2, fastening hoses Ⓒ and Ⓖ

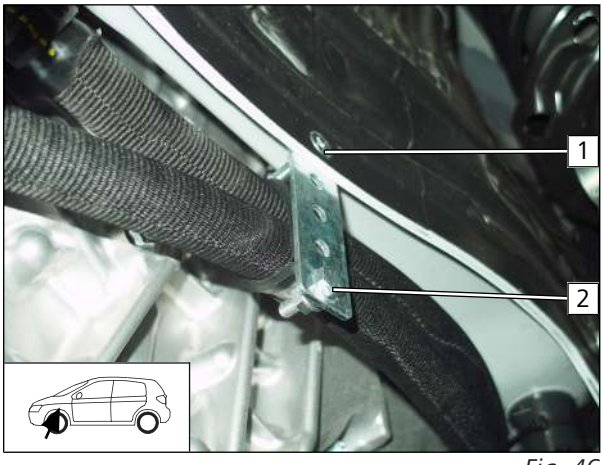


Fig. 46

1 M6x25 countersunk head screw, drilled hole, perforated bracket 2, flanged nut

2 M6x20 bolt, Ø38 rubber-coated p-clamp, flanged nut

Fastening rubber isolator, checking distance

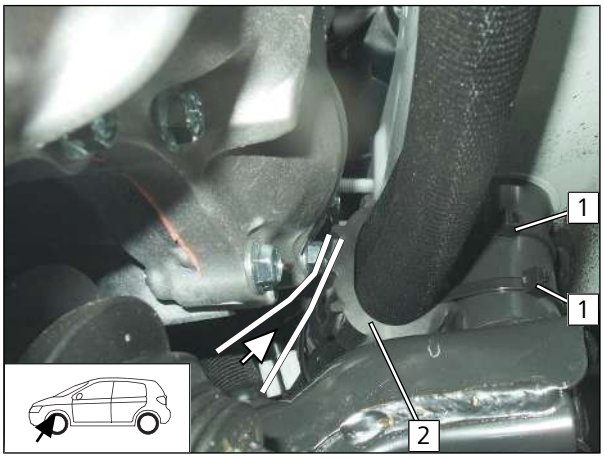


Fig. 47

Danger of damage to components

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

[1] Cable tie through black (sw) rubber isolator [2]

Fastening hoses

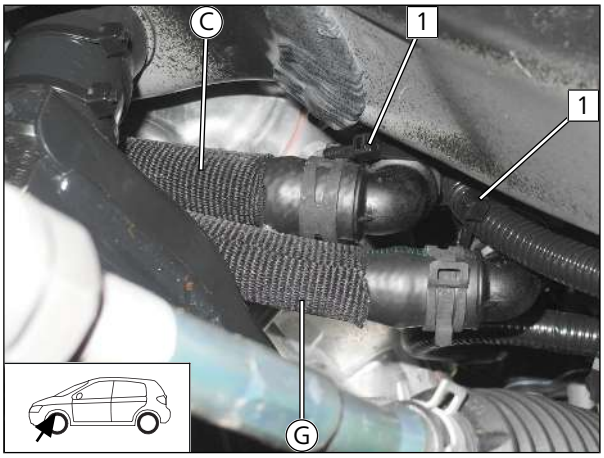


Fig. 48

[1] Cable tie

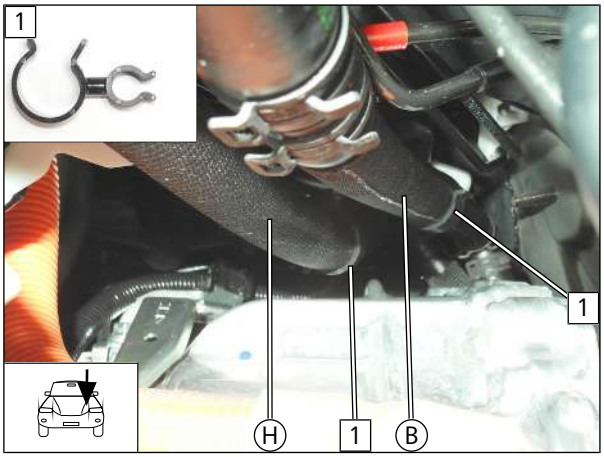


Fig. 49

[1] Hose bracket, for fastening hoses (B) and (H) to original vehicle fuel lines

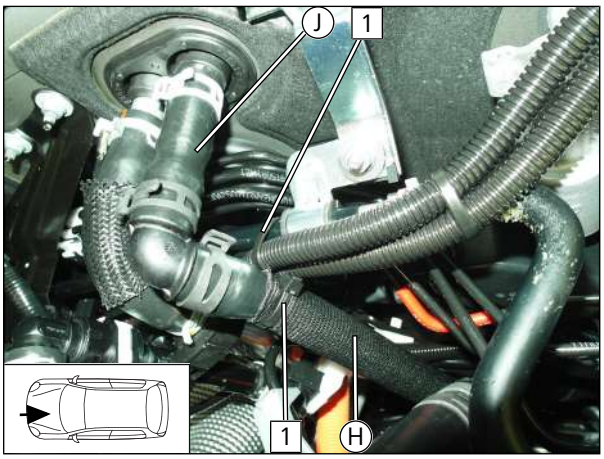


Fig. 50

1 Cable tie

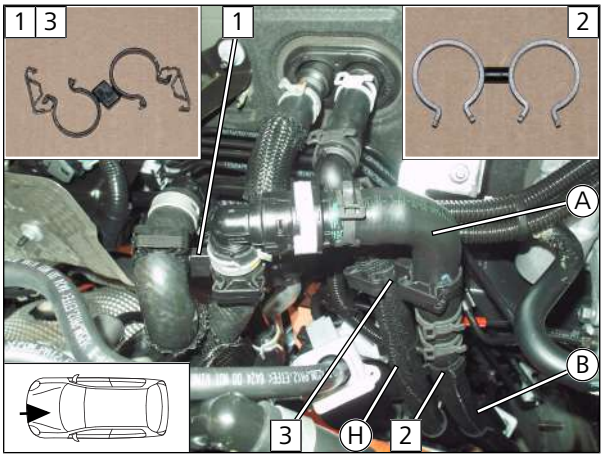


Fig. 51

1 Hose bracket between original vehicle lines
2 Hose bracket between hose (B) and hose (H)
3 Hose bracket between hose (A) and hose (H)

10 Power cable installation

Premounting bracket

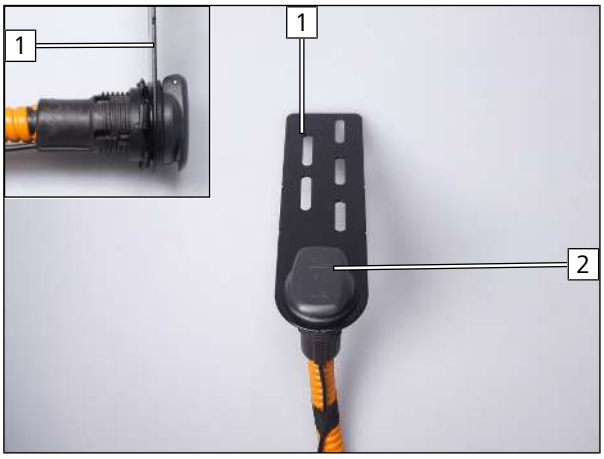


Fig. 52

Observe the power cable installation documentation.

[1] Power plug bracket

[2] Power plug

Fastening earthing cable

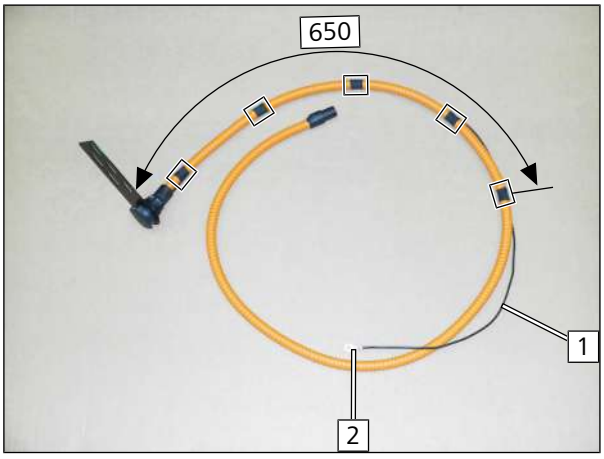


Fig. 53

▶ Attach earthing cable [1] to the power cable at the marked positions using suitable adhesive tape as shown.

[2] Premounted cable lug

Adapting lower radiator trim

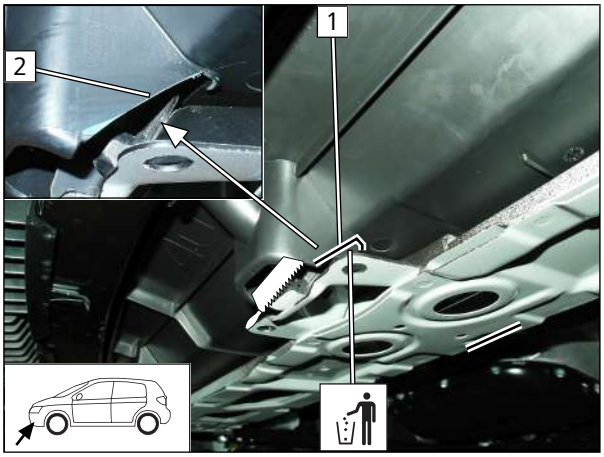


Fig. 54

▶ Cut out section [2] as shown to create an opening to pass the power cable through later.

[1] Cutting line on the lower trim of the radiator

Power cable routing

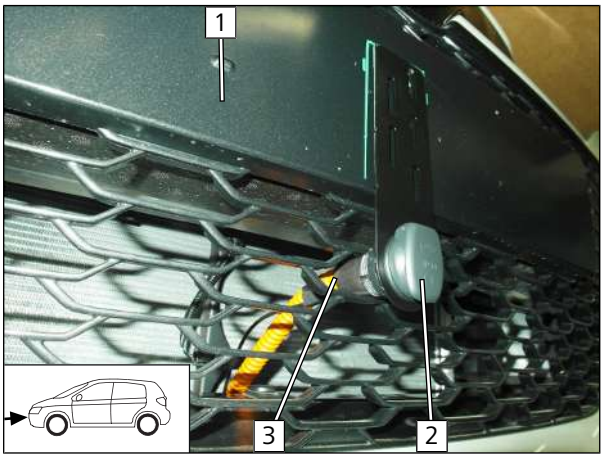


Fig. 55

▶ Draw power cable [3] through radiator grille in bumper [1] as shown in this figure and route it to the underbody as shown in the next figure.

[2] Premounted power cable with bracket

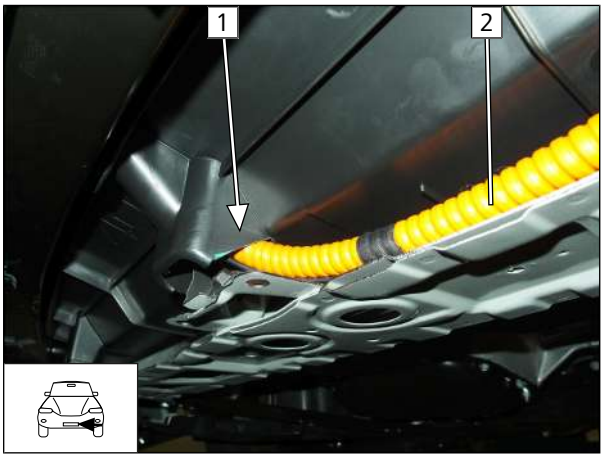


Fig. 56

[1] Created opening in the lower trim of the radiator

[2] Power cable

Drilling holes

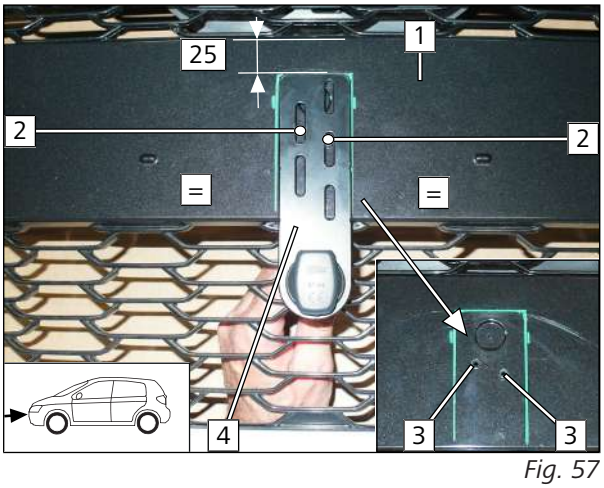
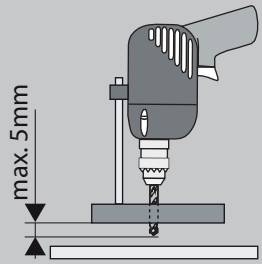


Fig. 57

Danger of damage to components



▶ Align premounted power plug bracket [4] vertically as shown and copy hole pattern [2].

▶ Drill Ø3 hole [3].

[1] Bumper trim

Mounting bracket

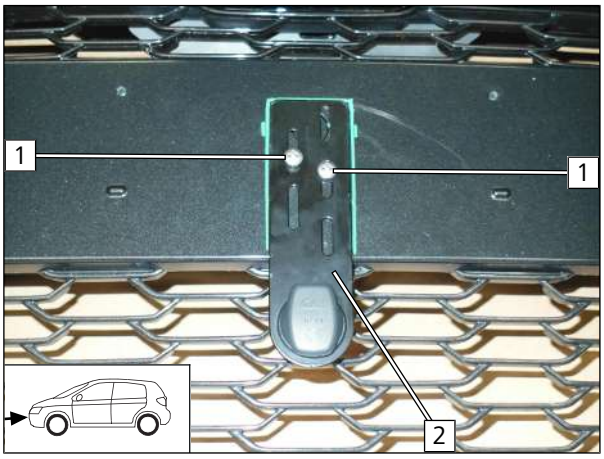


Fig. 58

▶ Align bracket [2] vertically as shown.

[1] 5.5x13 self-tapping screw, large diameter washer, premounted bracket, drilled hole

Mounting licence plate holder

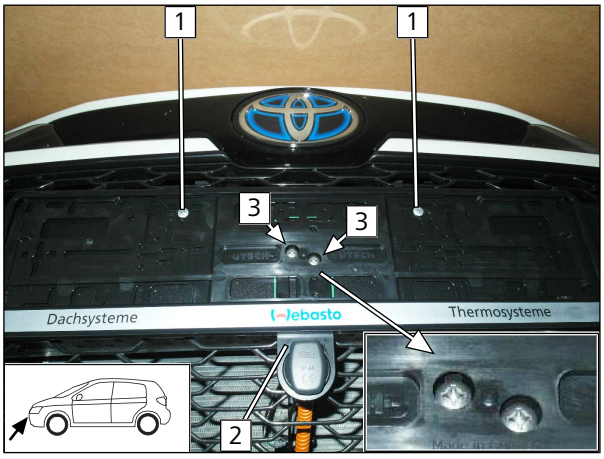


Fig. 59

▶ Mount licence plate holder with original vehicle bolt [1]. For the surface area of the licence plate holder, adapt the holder in accordance with the structural shape around the bracket screws, e.g. by drilling two holes (Ø12) [3].

[2] Power cable

Fastening power cable

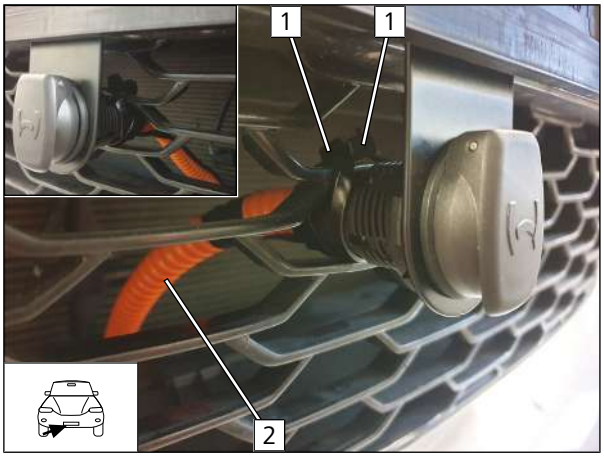


Fig. 60

▶ Fasten power cable [2] to the radiator grille with two cable ties [1] arranged as a cross as shown.

Power cable routing

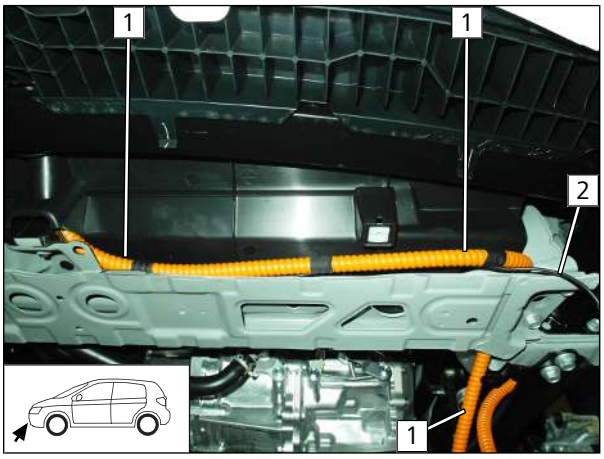


Fig. 61

▶ Route power cable **1** on the engine frame as shown.

2 Earthing cable

Connecting earthing cable

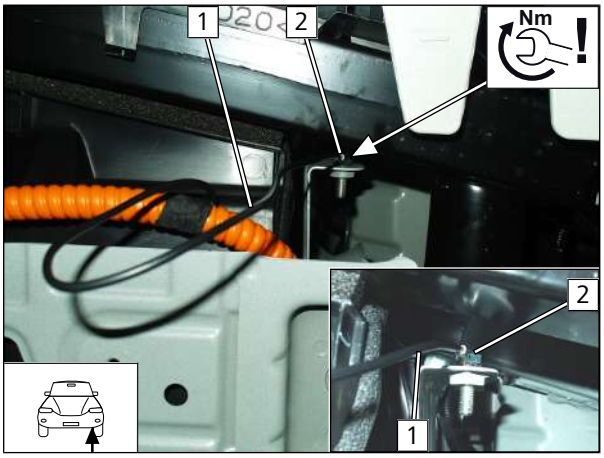


Fig. 62

1 Earthing cable

2 M6x20 bolt, earthing cable lug, toothed washer, original vehicle thread

Fastening power cable

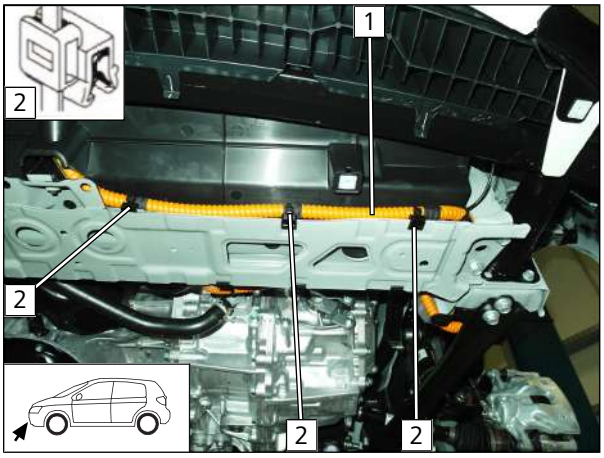


Fig. 63

1 Power cable

2 Edge clip cable tie

Connecting heater

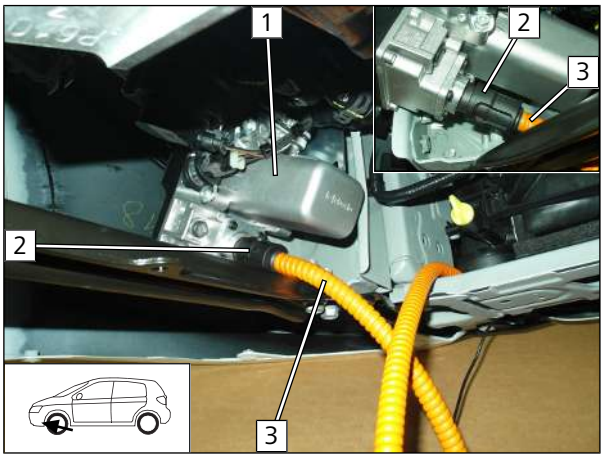


Fig. 64

▶ Route power cable [3] to heater [1] as shown.

[2] Safety interlock

Fastening power cable

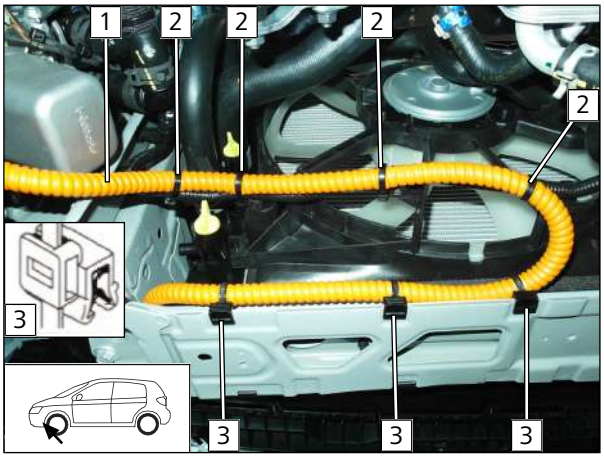


Fig. 65

[1] Power cable

[2] Cable tie on original vehicle wiring harness

[3] Edge clip cable tie

11 Final work in engine compartment

Adapting transmission trim

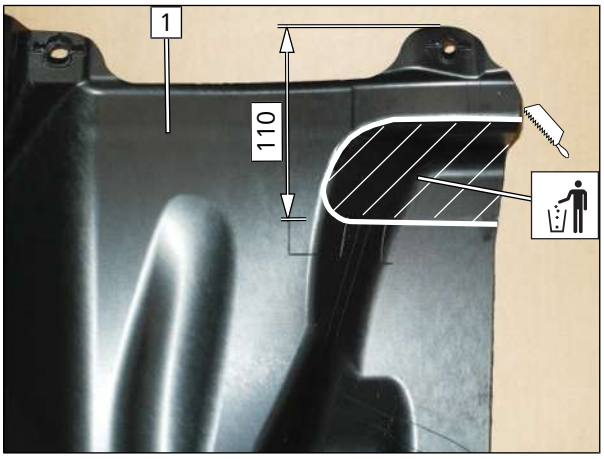


Fig. 66

▶ Adapt transmission trim 1 as shown.

Fitting edge protection

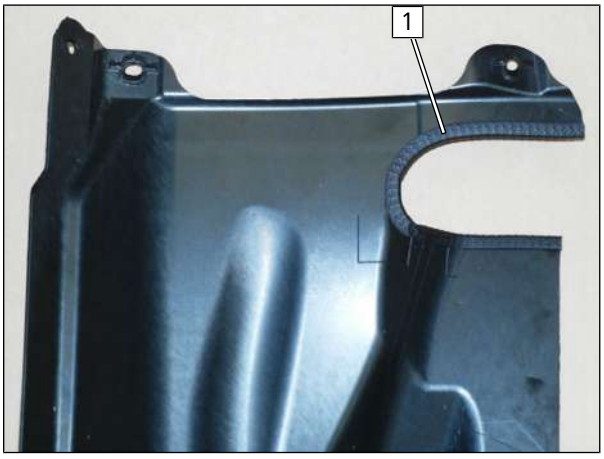


Fig. 67

1 Install edge protection (300) and cut to length

Mounting transmission trim

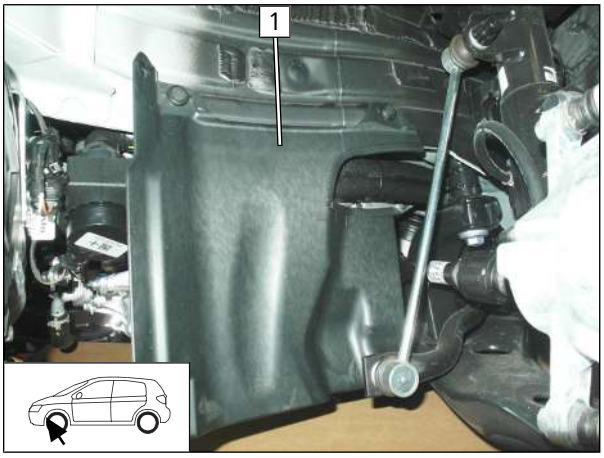


Fig. 68

1 Transmission trim

Checking distance

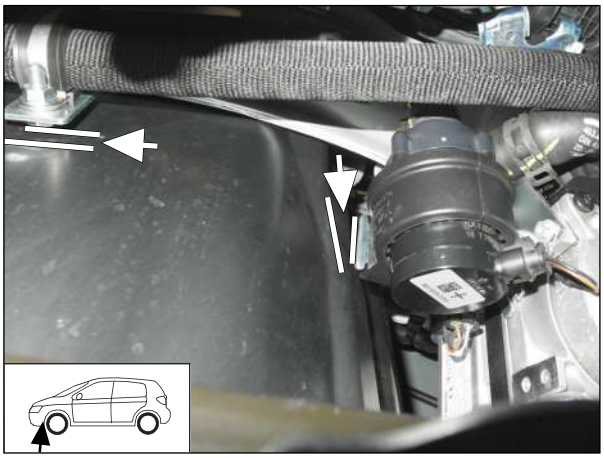


Fig. 69

Danger of damage to components

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

12 Electrical system of passenger compartment option

Attention: do not use the mounting information included in the installation documentation of the additional A/C control kit for the Corolla MY 2019.

The assembly will be described in this installation documentation.

12.1 Electrical system preparation

Preparing / assigning wiring harnesses

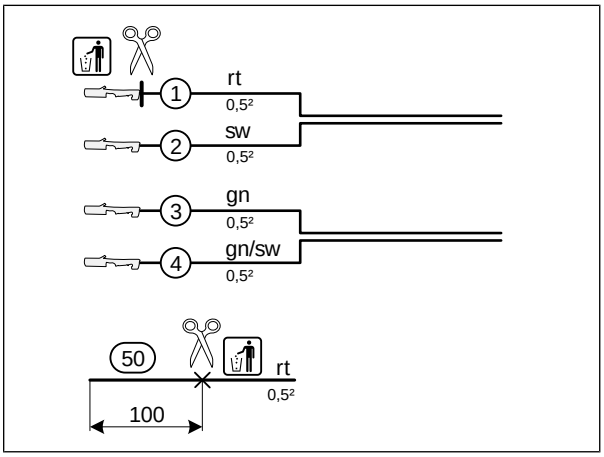


Fig. 70

Wire sections retain their numbering in the entire document.

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

Preparing wiring harness and wires

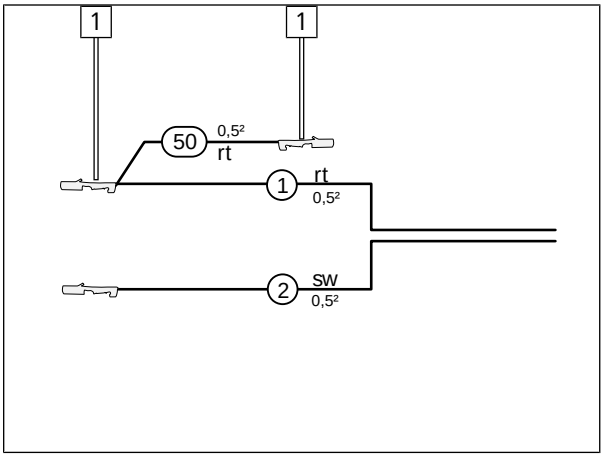


Fig. 71

1 6.3 female connector
① Red (rt) wire of power supply wiring harness
② Black (sw) wire of power supply wiring harness

View of PWM Gateway

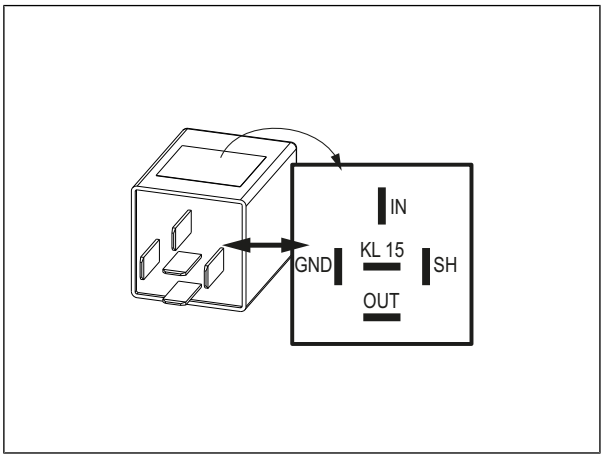


Fig. 72

Check the PWM Gateway settings when starting up the heater and adjust if necessary to 1/3 to 1/2 of the max. fan speed in accordance with the following description. The current consumption of the fan motor must not exceed 4.0 A.

Parameter	Setting
Duty cycle	60%
Frequency	500Hz
Voltage	not relevant
Function	Low side

Adjusting PWM GW settings with WTT Diagnosis

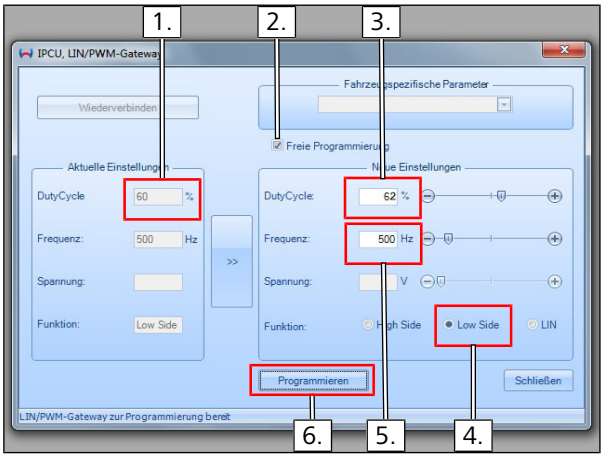


Fig. 73

1. Current setting
2. Enable ‘Free programming’
3. Adjust ‘Duty-Cycle’:
   - for a speed increase - 2%
   - for a speed reduction + 2%.
4. Do not change ‘Function’
5. Do not change ‘Frequency
6. ‘Program’

▶ Install PWM GW and check the speed as well as the current consumption again.

Preparing RSH and PWM Gateway socket

- ▶ Remove fuse F5 (1A)
- ▶ Connect wires.
- ▶ Connect connector and socket.
- ▶ Assemble RSH and PWM GW socket together.

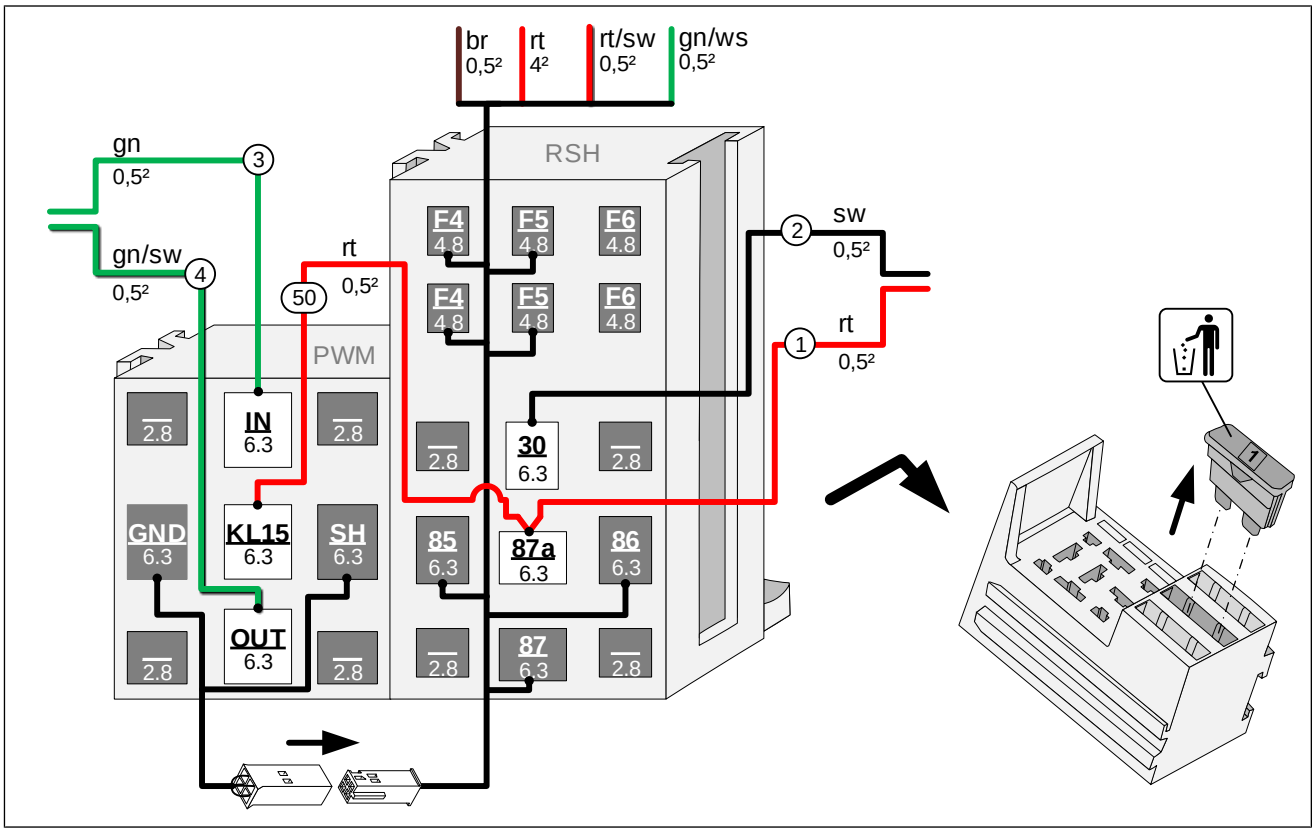


Fig. 74

12.2 AC / AAC system wiring diagram

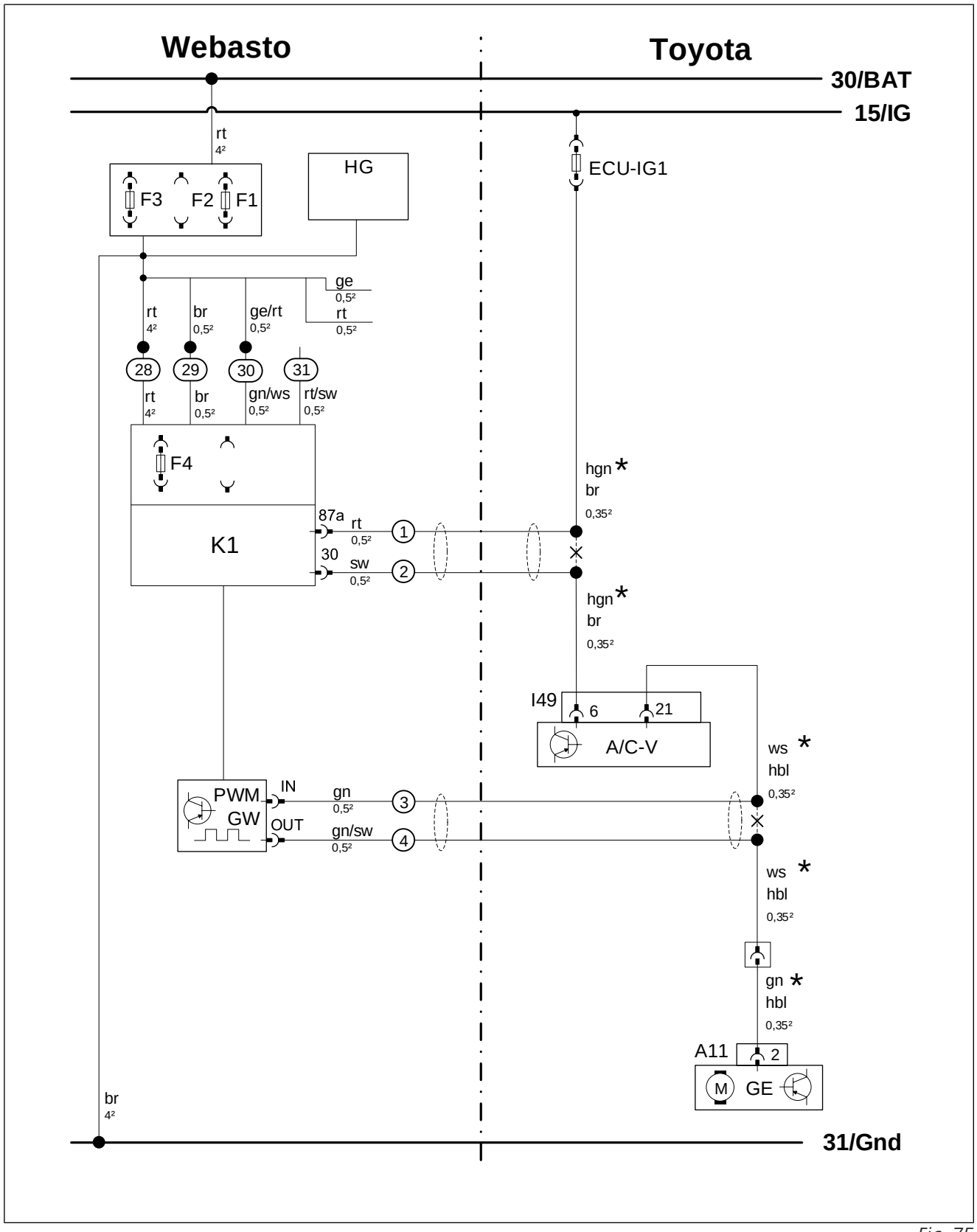


Fig. 75

Legend to wiring diagram

Vehicle components		Symbols	
Abbreviation	Component	Abbreviation	Designation
ECU-IG1	Fuse 10A	X	Cutting point
A/C-V	A/C booster	*	Dependent on equipment
I49	27-pin AC-V connector		
GE	Fan unit		
A11	3-pin connector of GE		

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 / Vehicle fan load current	pk	pink
F2	Passenger compartment fan controller main fuse	ro	Pink
F3	Fan starting signal and coolant pump fuse	rt	red
F4	Passenger compartment fan controller fuse	sw	black
F5	Additional fuse of relay and fuse holder	vi	violet
F6	Additional fuse (option)	ws	white
HG	eThermo Top Eco 20P/30P heater		
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LA	Power adapter		
LIN GW	LIN Gateway		
MV	Solenoid valve		
PWM GW	LIN Gateway / PWM (pulse width modulator)		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	Female plug for control element		

12.3 Fan controller

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

Premounting passenger compartment relay and fuse holder

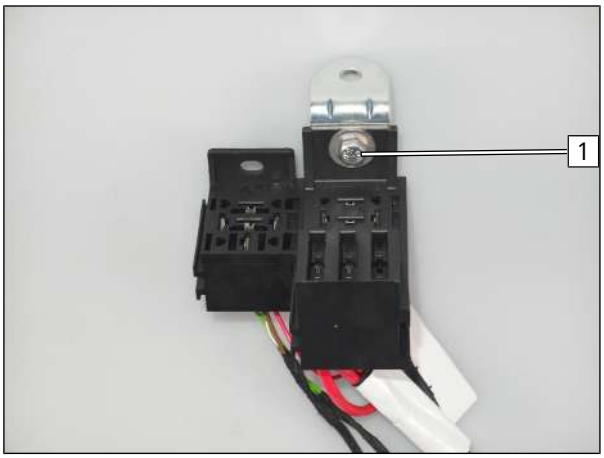


Fig. 76

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

Mounting PWM GW, relay K1 and fuse F4

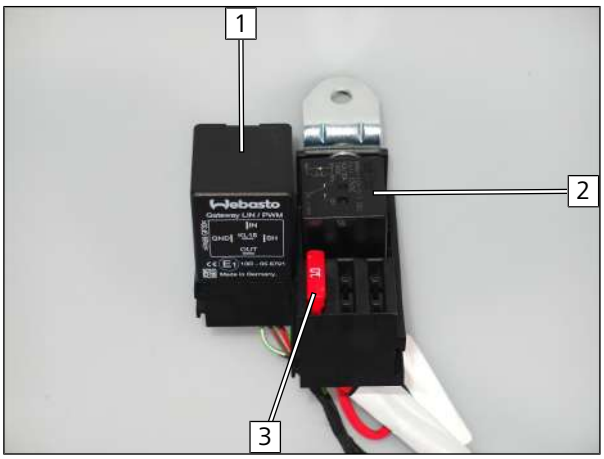


Fig. 77

1 PWM GW
2 Relay K1
3 10A fuse F4

Mounting RSH

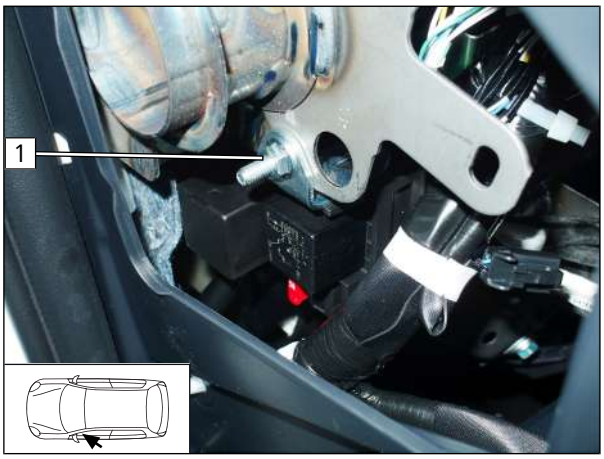


Fig. 78

1 M6x20 bolt, original vehicle hole, premounted angle bracket, flanged nut

Preparing heater wiring harness in passenger compartment

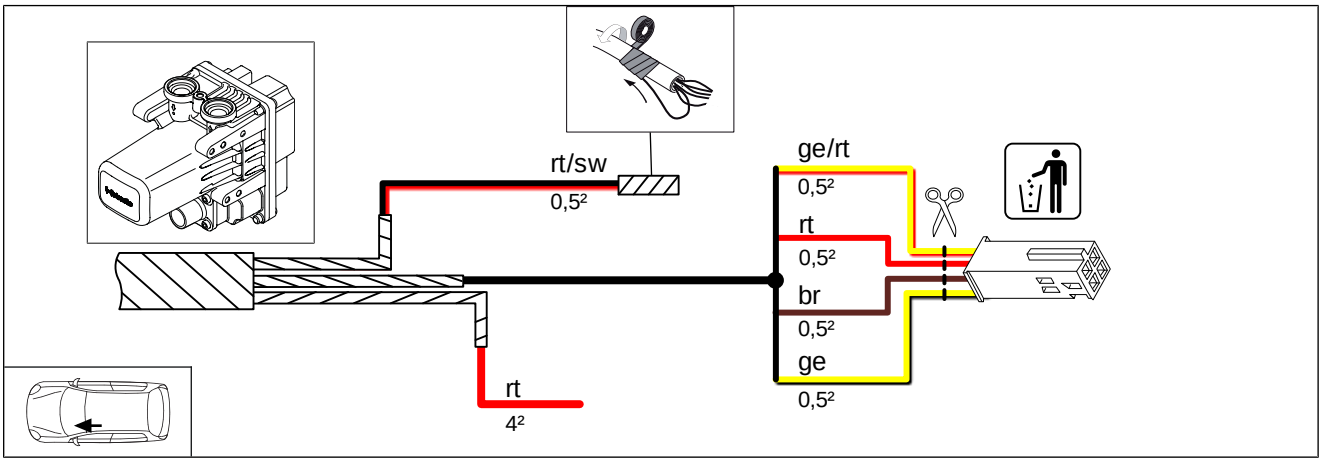


Fig. 79

Connecting wiring harnesses, insulating wires

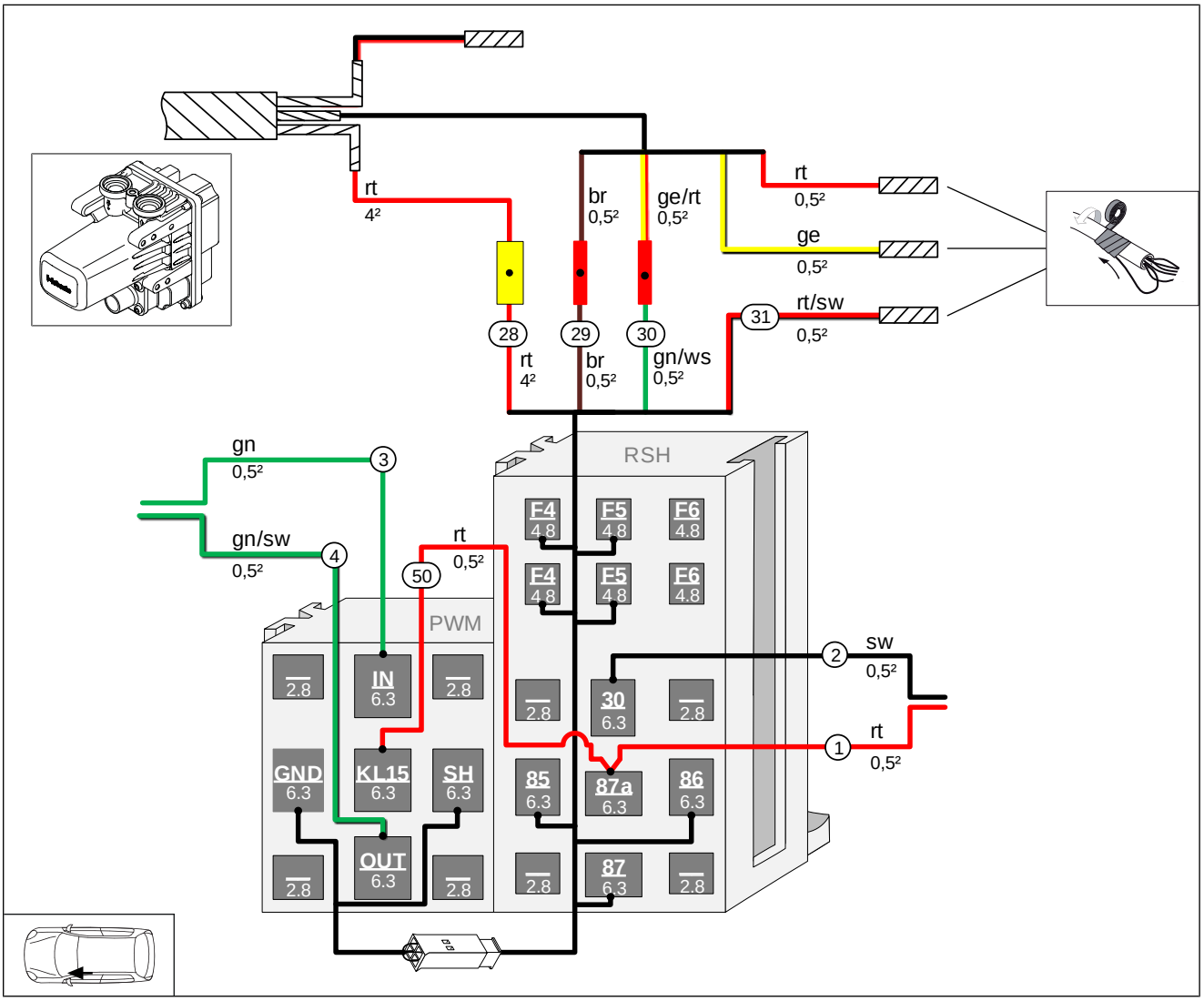


Fig. 80

Detaching wiring harness

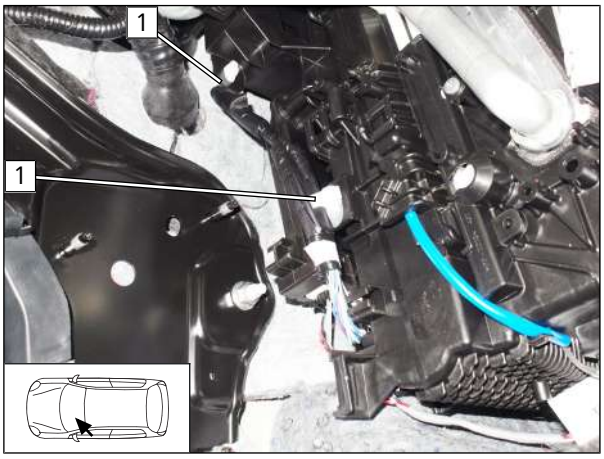


Fig. 81

▶ Release clips 1 of original vehicle wiring harness.

Locating and disconnecting A/C-V connector I49

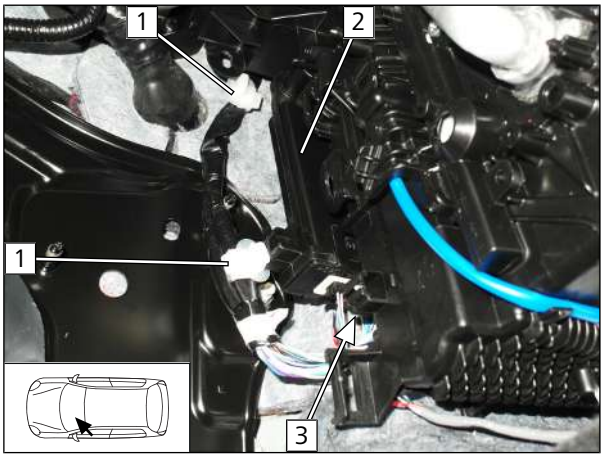


Fig. 82

1 Released clips
2 A/C-V
3 27-pin A/C-V connector I49 (white) (covered)

View of A/C-V connector I49

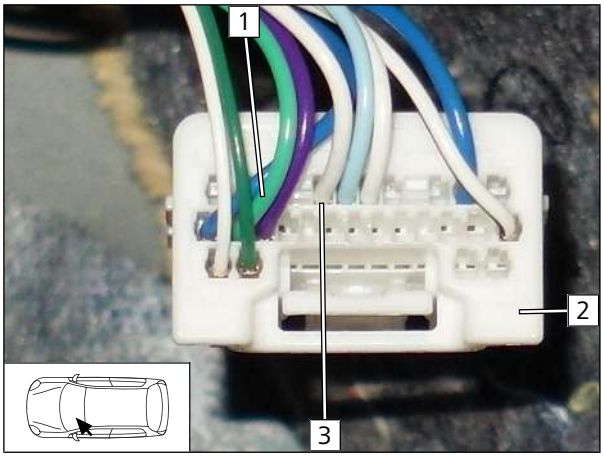
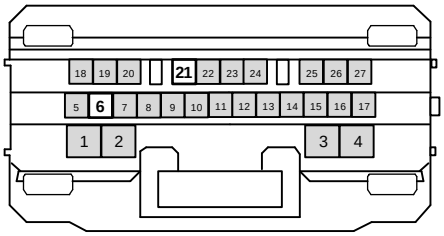


Fig. 83

1 Light green (hgn) or brown (br) wire of A/C-V connector I49 / pin 6
2 27-pin A/C-V connector I49
3 White (ws) wire or light blue (hbl) wire of A/C-V connector I49 / pin 21

View A/C-V connector I49, wiring side:



Connection to A/C booster

Produce all the following electrical connections only with shrinkable butt connectors.

▶ 1. crimp

▶ 2. shrink

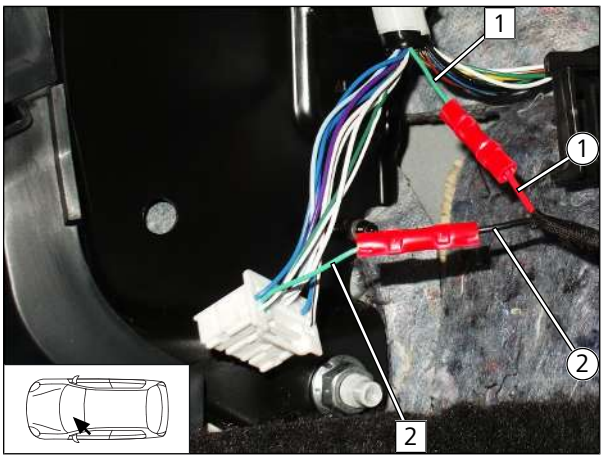


Fig. 84

1 Light green (hgn) or brown (br) wire of ECU-IG1 fuse

2 Light green (hgn) or brown (br) wire of A/C-V connector I49 / pin 6

① Red (rt) wire of K1/ 87a power supply

② Black (sw) wire of K1/ 30 power supply

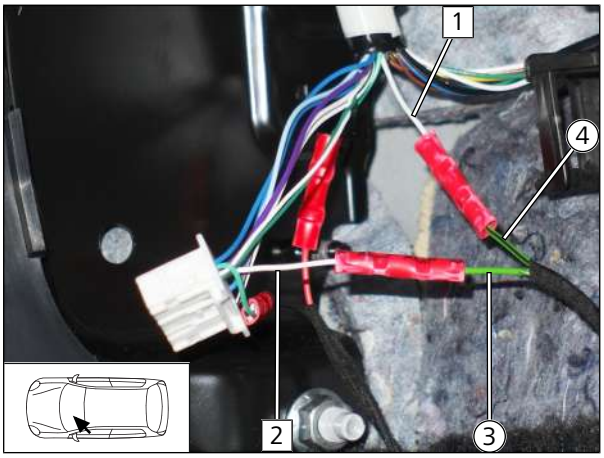


Fig. 85

1 White (ws) or light blue (hbl) wire of GE connector A11/ pin 2

2 White (ws) wire or light blue (hbl) wire of A/C-V connector I49 / pin 21

③ Green (gn) wire of PWM GW/IN wiring harness from PWM control

④ Green/black (gn/sw) wire of PWM GW/OUT wiring harness from PWM control

13 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)

Activation of the hybrid system as per the manufacturer's instructions

Reactivate the hybrid system before connecting the 12V vehicle battery:
1. Activate the hybrid system
2. Connect the battery (12V)

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.

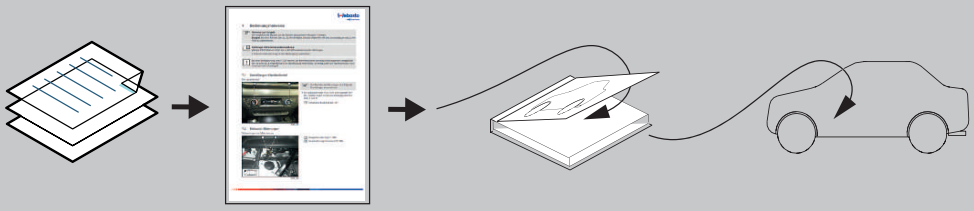
▶ See general installation instructions for notes on initial start-up and function check

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

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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Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany

Company address:
Friedrichshafener Str. 9
82205 Gilching
Germany

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

CE

WWW.WEBASTO.COM

14 Operating instructions for manual air-conditioning

Note for parking heater function

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

14.1 A/C control panel settings

A/C control panel

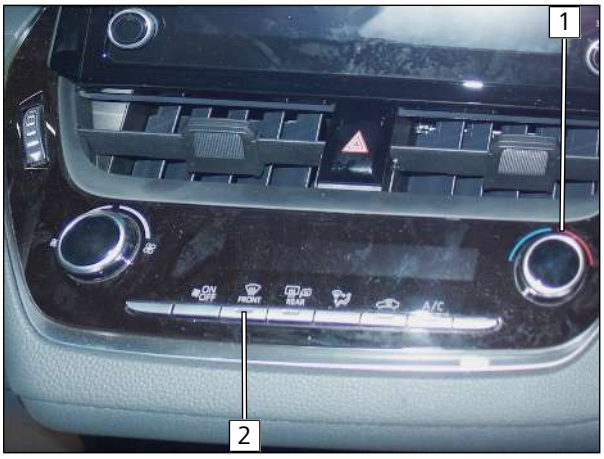

Fig. 86

Before parking the vehicle, make the following settings:

▶ It is not necessary to set the fan speed.

1 Set temperature to 'HI'

2 Air outlet to windscreen

14.2 Installation location of fuses

Fuses in engine compartment

Fig. 87

1 F3 - 5A fan starting signal and coolant pump

2 F2 - not in use

3 F1 - 25A heater / passenger compartment fan controller main fuse

Fuses in passenger compartment

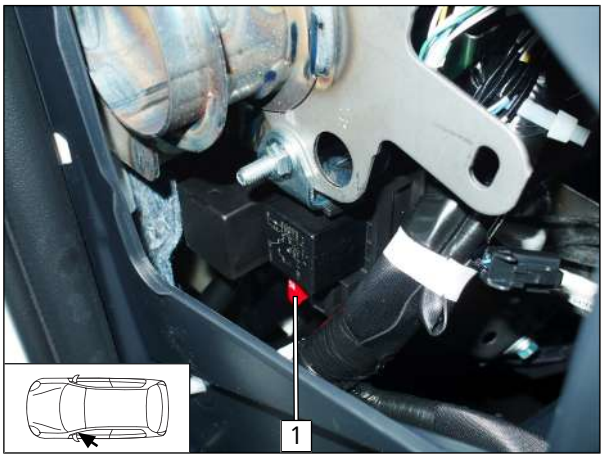

Fig. 88

1 F4 - 10A fan fuse

15 Operating Instructions for 2-zone automatic air-conditioning

Note for parking heater function

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

15.1 A/C control panel settings

A/C control panel

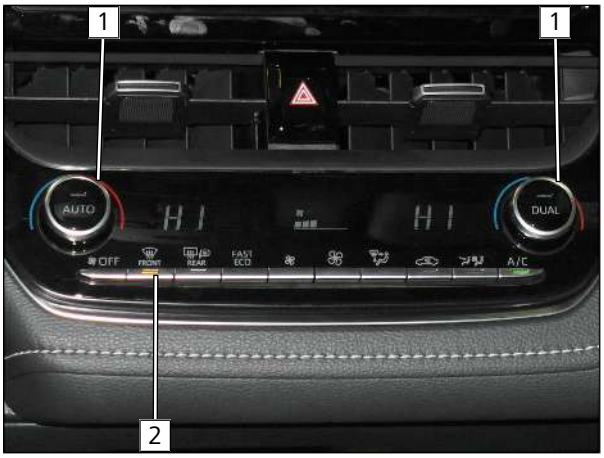

Fig. 89

Before parking the vehicle, make the following settings:

▶ It is not necessary to set the fan speed.

1 Temperature on both sides to 'HI'

2 Air outlet to windscreen

15.2 Installation location of fuses

Fuses in engine compartment

Fig. 90

1 F3 - 5A fan starting signal and coolant pump

2 F2 - not in use

3 F1 - 25A heater / passenger compartment fan controller main fuse

Fuses in passenger compartment

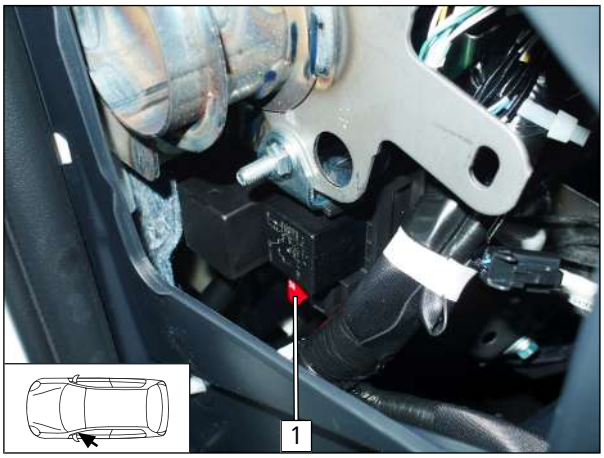

Fig. 91

1 F4 - 10A fan fuse