

G Installation documentation

"Webasto Standard" A/C control for Thermo Top Evo water heater

Lexus RX450H / RX450HL

Left-hand drive vehicle

Manufacturer	Model	Type	Model year	EG-BE-No. / ABE
Lexus	RX450H / RX450HL	AL2	from 2016	e6* 2007/46* 0163*...

Validity	Equipment variants	Model
		Lexus RX450H / RX450HL
Verified equipment variants	2 zone automatic air-conditioning	x
	3 zone automatic air-conditioning	x
	Passenger compartment monitoring	x
Exclusion	Manual air-conditioning	x

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1 List of abbreviations

K2	Additional relay
KSG	Air-conditioning control unit
PWM	Pulse width modulator
RSH	Relay and fuse holder of passenger compartment
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 Components used

Designation	Order number
Additional 'Webasto Standard' A/C control kit for Lexus RX450H / RX450HL 2016	1326931A

2.3 Validity Notes

This installation documentation applies only in combination with:

Designation	Order number
Installation kit for Lexus RX450H 2016 petrol	1324886_
Installation documentation for Lexus RX450H 2016 petrol	1324887_

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:

'Webasto Standard' air-conditioning control installation kit

3.2 Warranty and liability

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

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

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

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

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

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

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

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

3.2.1 Statutory regulations governing installation

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

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

3.3 Safety

Qualifications of installation personnel

The installation personnel must have the following qualifications:

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

Regulations and legal requirements

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

3.3.1 Safety information on installation

Danger posed by live parts

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

Danger of fire and leaking toxic gases due to improper installation

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

Danger due to sharp edges

- Lacerations
- Short circuit due to electrical wire damage
- ▶ Fit protectors on sharp edges.

3.4 Using this document

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

3.4.1 Explanatory Notes on the Document

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

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

3.4.2 Use of symbols



DANGER

Type and source of the risk

Consequences: Failure to follow the instructions can result in death

► Actions to protect yourself against risks.



WARNING

Type and source of the risk

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

► Actions to protect yourself against risks.



CAUTION

Type and source of the risk

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

► Actions to protect yourself against risks.



Type and source of the risk

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

► Actions to protect yourself against risks.



Reference to the vehicle manufacturer's specific documents.



a note on a special technical feature

3.4.3 Work step identification marks

The ongoing work step is indicated on the outside top corner of the page:

Mechanical system	Electrical System	High-voltage	Coolant
Combustion air	Fuel	Exhaust gas	Software

3.4.4 Orientation aid

--	--	--

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

3.4.5 Use of highlighting

Highlight	Explanation
►	Necessary action
⇒	Result of an action
1 / 12 / a1	Position numbers for the image descriptions

Highlight	Explanation
① / ⑫ / ①	Position numbers for the image descriptions for electrical wires and coolant hose sections

4 Technical Information

Dimension specifications

- All dimensions specified in mm

Tightening torque specifications

- Tighten all screw connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology

Necessary special tools

- Automatic wire stripper 0.2 - 6 mm²
- Crimping pliers for cable lugs 0.5 – 10 mm²
- Crimping pliers for tab connector 0.14 – 6 mm²
- Crimping pliers for connector 0.25 – 6 mm²
- Torque wrench for 2.0 - 10 Nm
- Deep-hole marker

5 Preparing measures

5.1 Vehicle preparation



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

Vehicle area	Components to be removed	Other applicable documents
Engine compartment and body	<ul style="list-style-type: none"> ▶ Disconnect the battery 	
Passenger compartment	<ul style="list-style-type: none"> ▶ Detach the shift lever trim of the centre console ▶ Remove the lower A-pillar trim on the driver's side ▶ Remove the upper floor trim ▶ Remove the rear air outlet trim ▶ Detach the rear centre tunnel storage compartment ▶ Remove the centre tunnel trim on the driver's side and front passenger's side ▶ Remove the 'Remote Touch controller' of the operating console ▶ Remove the centre air outlet strip ▶ Remove the shift gate trim with cup holder ▶ Remove the footwell trim of the centre tunnel on the driver's side ▶ Remove the door sill trim on the driver's side ▶ Remove the side instrument panel trim on the driver's side 	

6 Installation overview

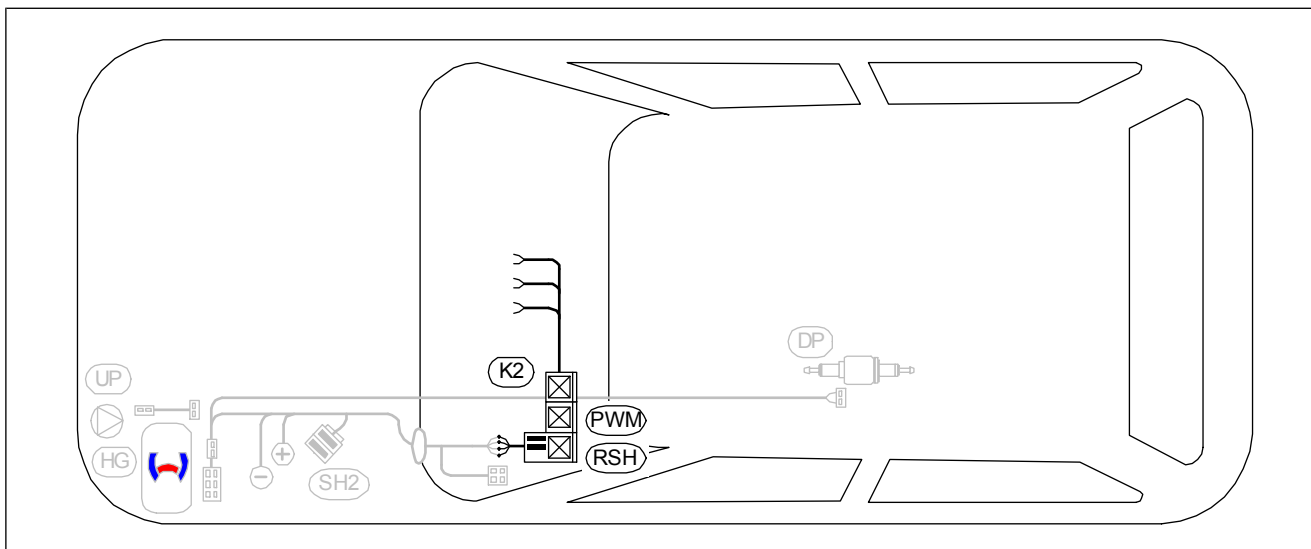


Fig. 1

Legend to installation overview

Abbreviation	Component
K2	Relay K2 (only for 3 zone automatic air-conditioning)
PWM	PWM GW
RSH	Relay and fuse holder of passenger compartment



7 Electrical system of passenger compartment

7.1 Electrical system preparation

Preparing / assigning wiring harnesses

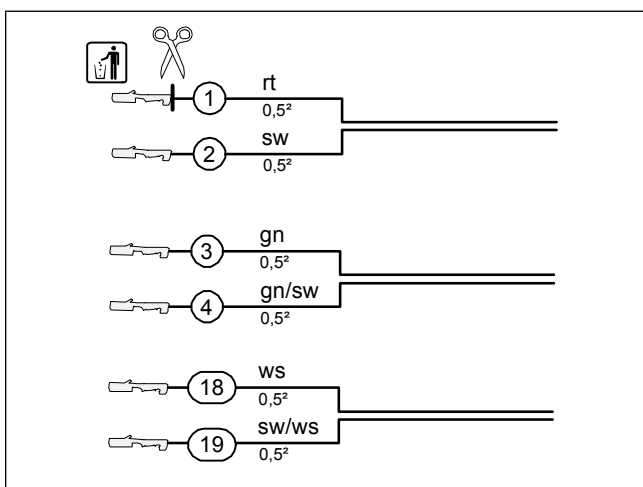


Fig. 2



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 from wiring harness of PWM control
- ④ Green/black (gn/sw) wire from wiring harness of PWM control
- ⑱ White (ws) wire of isolating relay wiring harness (only for 3 zone automatic air-conditioning)
- ⑲ Black/white (sw/ws) wire of isolating relay wiring harness (only for 3 zone automatic air-conditioning)

Preparing and assigning wiring harness and wires

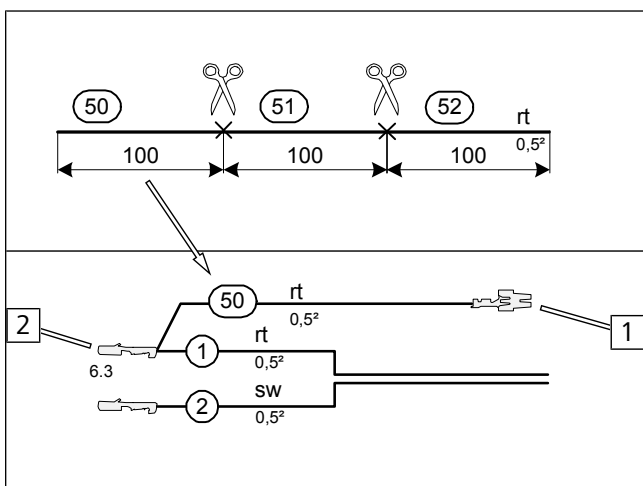


Fig. 3

- ① Flat spring contact
- ② 6.3mm blade receptacle
- ① Red (rt) wire of fan wiring harness
- ② Black (sw) wire of fan wiring harness
- ⑤① Red (rt) wire (for all vehicles)
- ⑤② Red (rt) wire (only in case of 3 zone automatic air-conditioning)

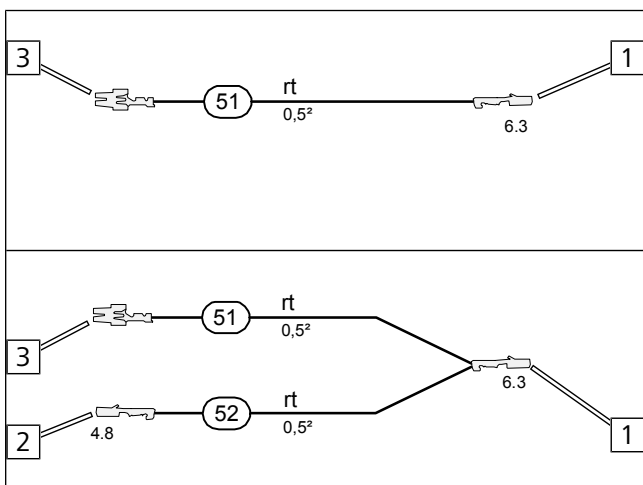


Fig. 4



Figure above: only for 2 zone automatic A/C
Figure below: only for 3 zone automatic A/C

- ① 6.3mm blade receptacle
- ② 4.8mm blade receptacle
- ③ Flat spring contact



View of PWM Gateway

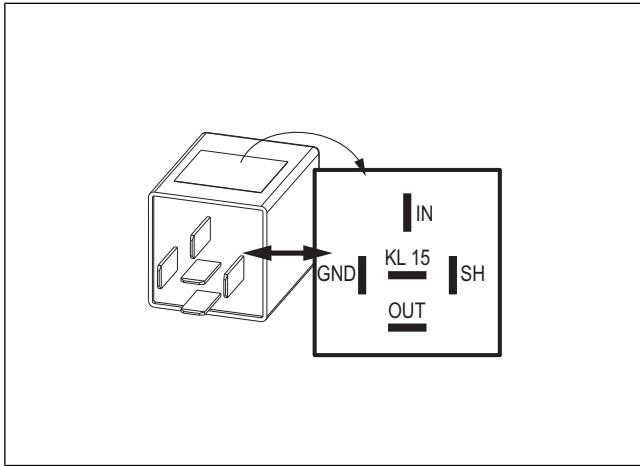


Fig. 5

► Check PWM Gateway settings when starting-up the heater, adjust if necessary.

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

Connecting wires to PWM GW socket

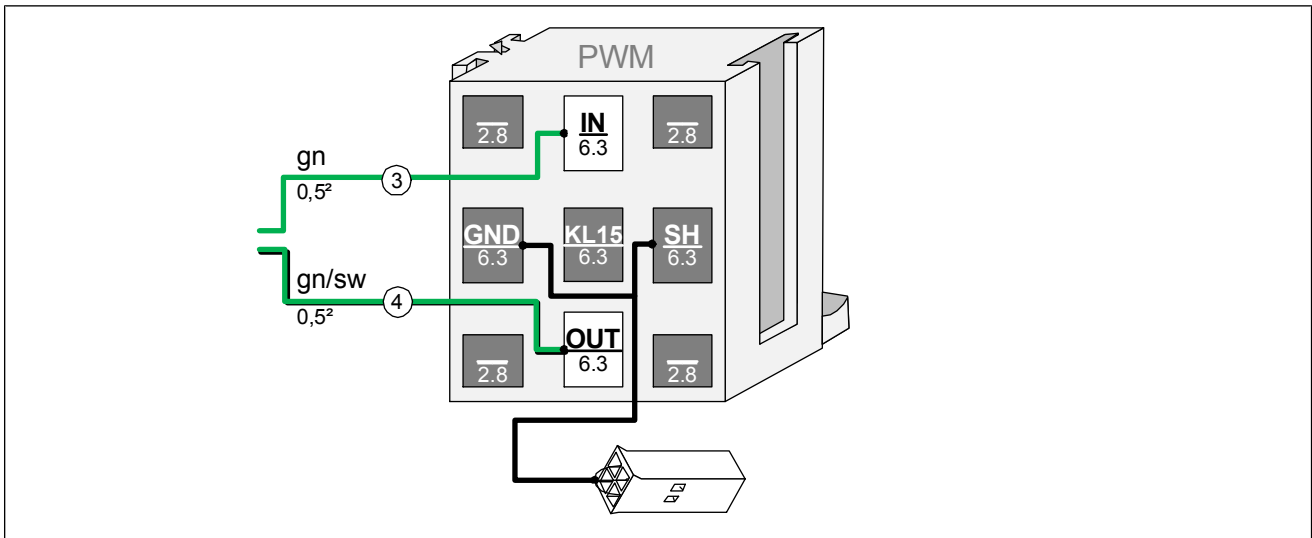


Fig. 6



7.1.1 2 zone automatic air-conditioning

Preparing RSH and PWM Gateway socket

- ▶ Connect wires.
- ▶ Connect connector and socket.
- ▶ Assemble RSH and PWM GW socket together.

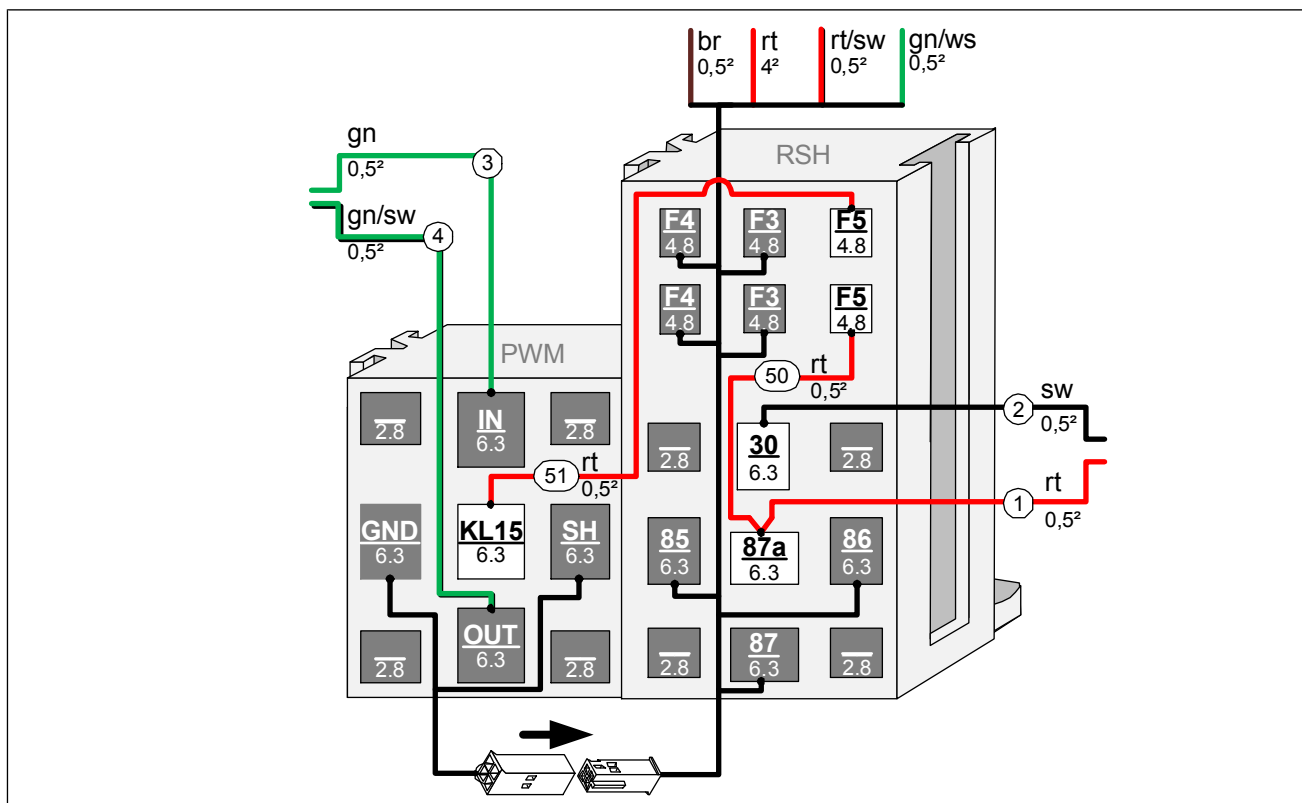


Fig. 7



7.1.2 3 zone automatic air-conditioning

Preparing relay K2

- ▶ Uncrimp blue (bl) wires with blade receptacle from socket of terminal 86.
- ▶ Secure open blade receptacles either by using the provided receptacle housings or by insulating them individually with insulating tape as shown.

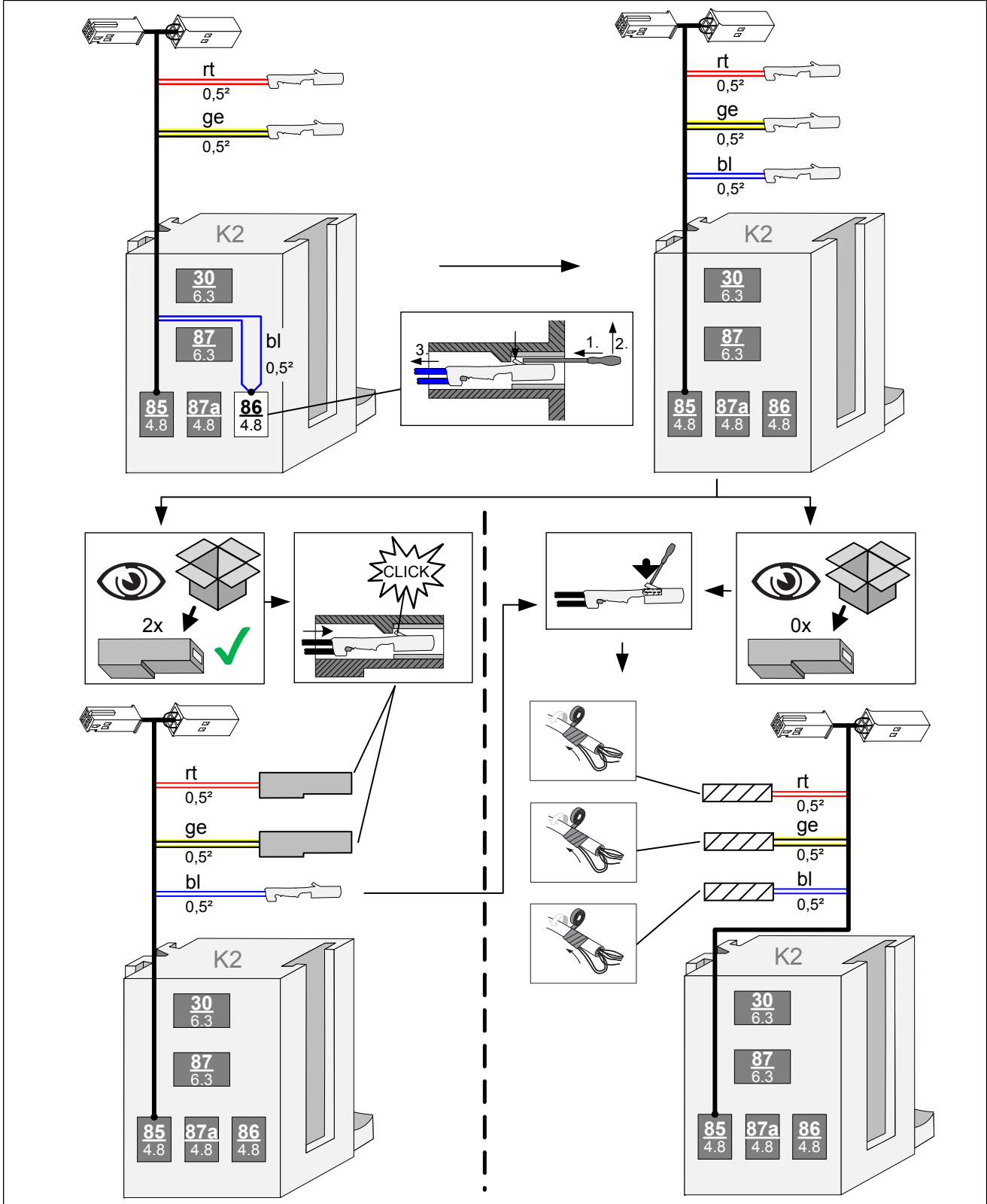


Fig. 8



Mounting wires

- ▶ Connect wires to relay K2 socket

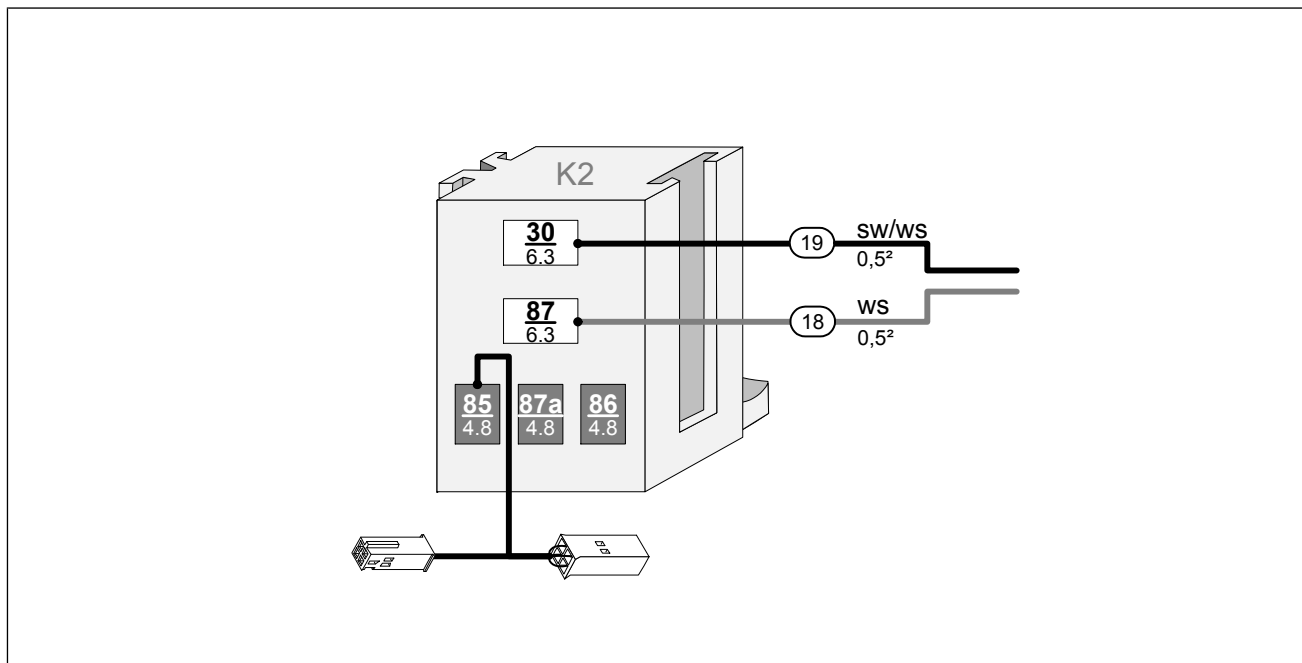


Fig. 9

Preparing RSH, relay K2 socket and PWM Gateway socket

- ▶ Connect wires.
- ▶ Connect connectors and sockets.
- ▶ Assemble RSH , relay K2 socket and PWM GW socket together.

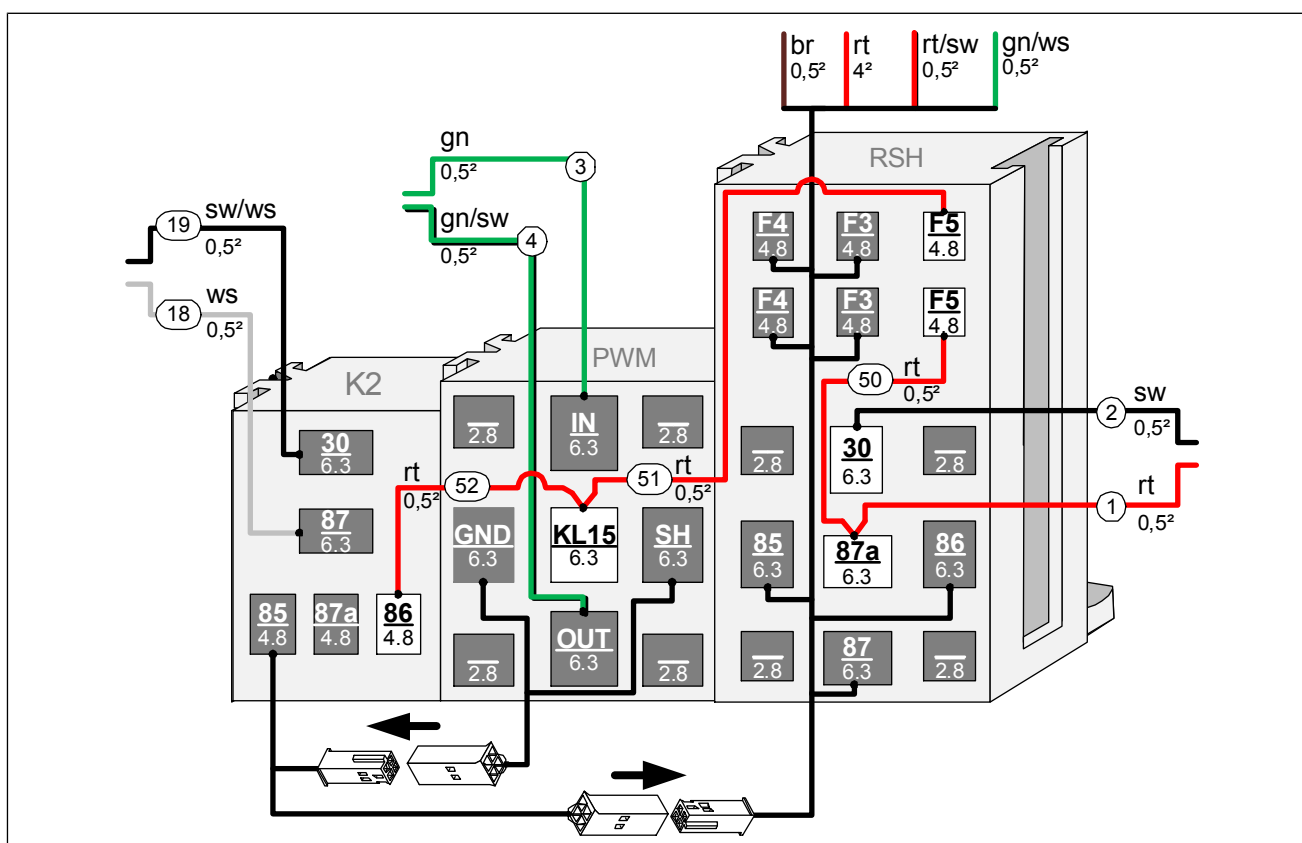


Fig. 10



7.2 System wiring diagrams

7.2.1 System wiring diagram for 2 zone automatic air-conditioning

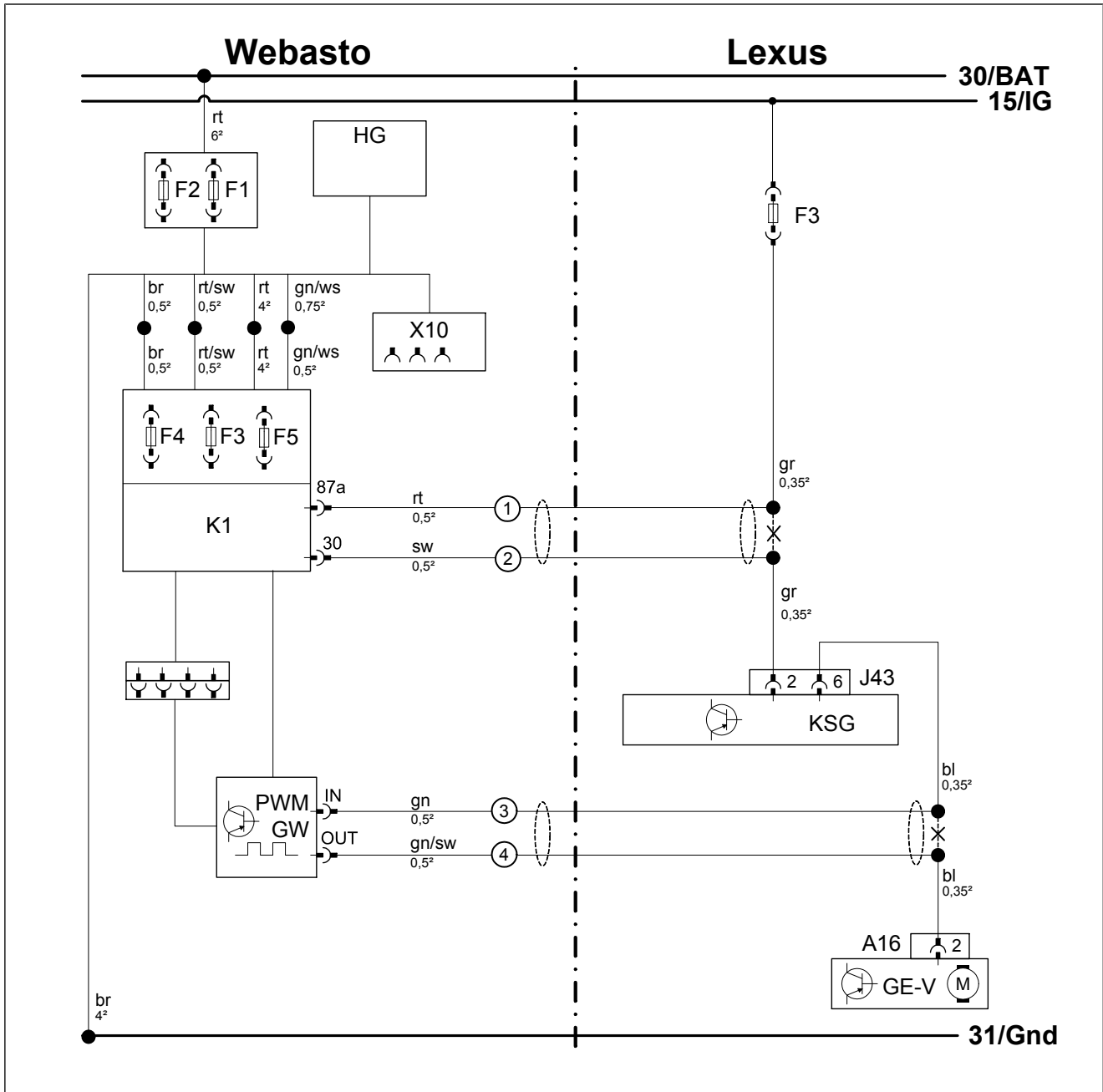


Fig. 11



7.2.2 System wiring diagram for 3 zone automatic air-conditioning

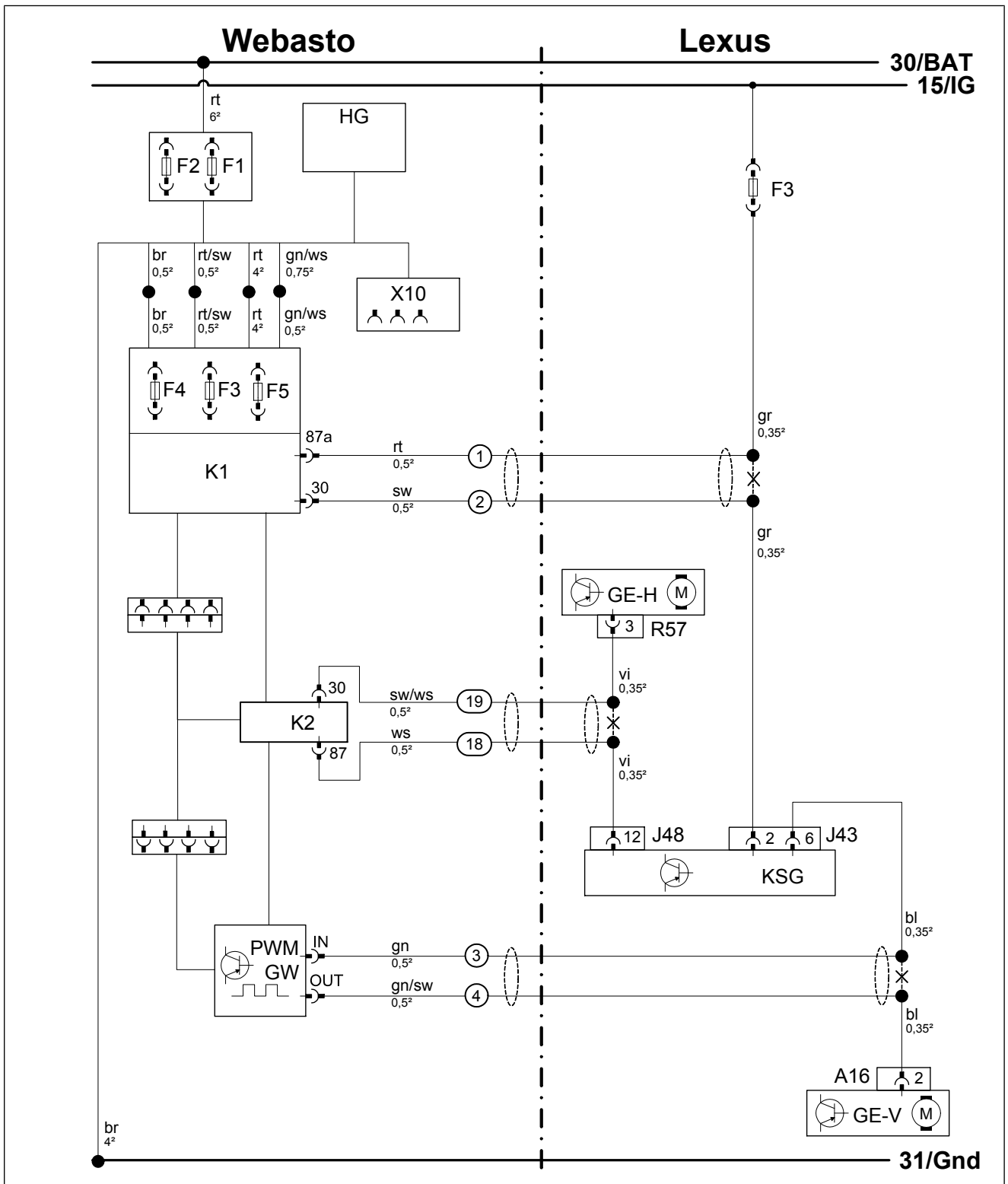


Fig. 12



7.2.3 Legend to the system wiring diagrams

Vehicle components		Symbols	
Abbreviation	Component	Abbreviation	Designation
F3	Fuse	X	Cutting point
GE-H	Fan unit for rear area		
R57	GE-H connector		
KSG	Air-conditioning control unit		
J43	KSG connector		
J48	KSG connector		
GE-V	Fan unit for front area		
A16	GE-V connector		

Webasto components		Cable colours	
Abbreviation	Component	Abbreviation	Colour
A	Connector of CLR module wiring harness	bg	beige
B	Socket of CLR module wiring harness	bl	blue
C	Adapter wiring harness connector	br	brown
D	Adapter wiring harness socket	dbl	dark blue
CCL GW	CAN CAN LIN Gateway	dgn	dark green
CL GW	CAN LIN Gateway	ge	yellow
CLR	Cold start module	gn	green
D1	Diode	gr	grey
D2	Diode group	hbl	light blue
F0	Additional fuse for power supply	hgn	light green
F1	Heater main fuse	or	orange
F2	Passenger compartment fan controller main fuse	pk	pink
F3	Control element fuse	rt	red
F4	Fan controller fuse	sw	black
F5	Additional fuse	vi	violet
HG	Heater TT-Evo	ws	white
K1	Relay K1		
K2	Relay K2		
K3	Relay K3		
LIN GW	LIN Gateway		
PWM GW	Pulse width modulator gateway		
RSH	Relay and fuse holder of passenger compartment		
RTD	Temperature sensor		
X10	4-pin socket of control element		
Y	Power adapter		



7.3 Fan controller

Bending perforated bracket

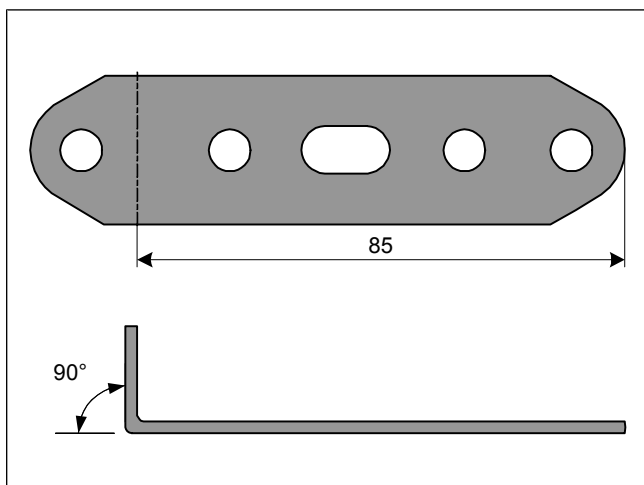


Fig. 13

Installing perforated bracket

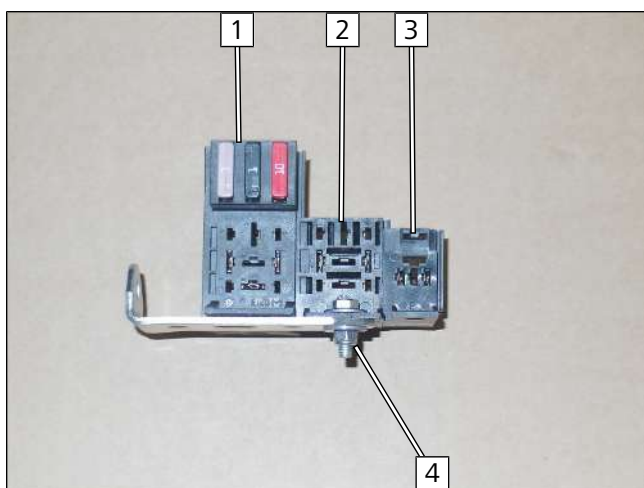


Fig. 14



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



The figure shows a vehicle with a 3 zone automatic air-conditioning but it applies to all vehicles.

- 1 RSH
- 2 PWM GW socket
- 3 Relay K2 socket (only for 3 zone automatic air-conditioning)
- 4 M5x16 bolt, large diameter washer, PWM GW socket, prepared perforated bracket, large diameter washer, nut

Installing passenger compartment relay and fuse holder

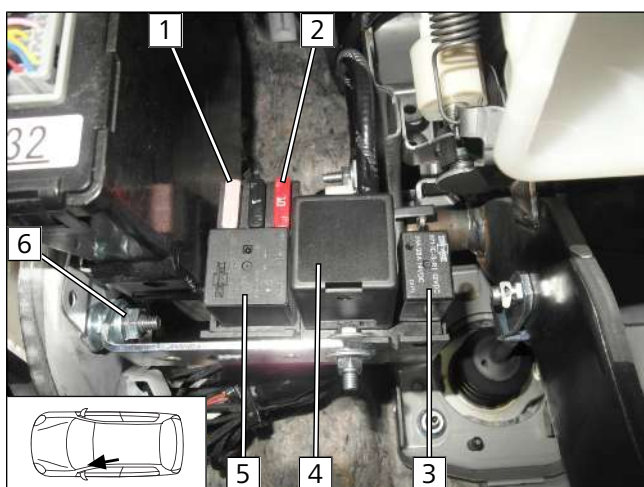


Fig. 15

- 1 3A fuse F5
- 2 10A fuse F4
- 3 Relay K2 (only in case of 3 zone automatic air-conditioning)
- 4 PWM GW
- 5 Relay K1
- 6 Original vehicle bolt with flanged nut, premounted perforated bracket, flanged nut



Connecting same colour wires of wiring harnesses

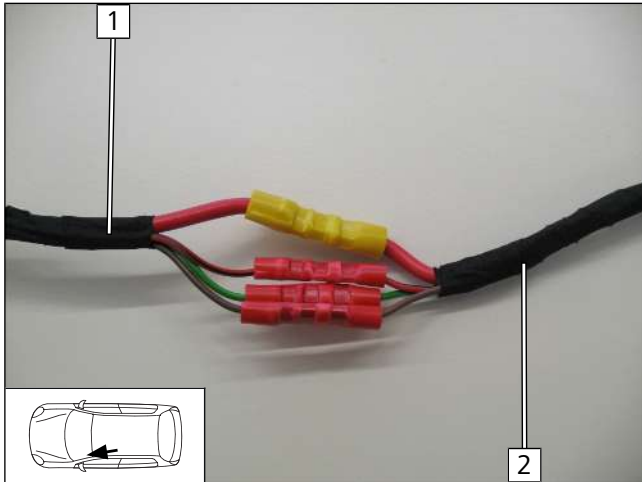


Fig. 16

- 1 Wiring harness of passenger compartment relay and fuse holder
- 2 Heater wiring harness

Removing air-conditioning control unit connector

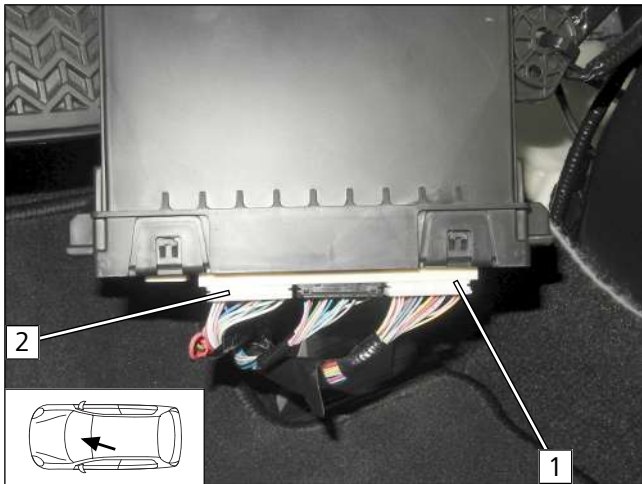


Fig. 17

- 1 KSG connector J48 (only for 3 zone automatic air-conditioning)
- 2 KSG connector J43

Connection to air-conditioning control unit



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

- ▶ 1. crimp
- ▶ 2. shrink

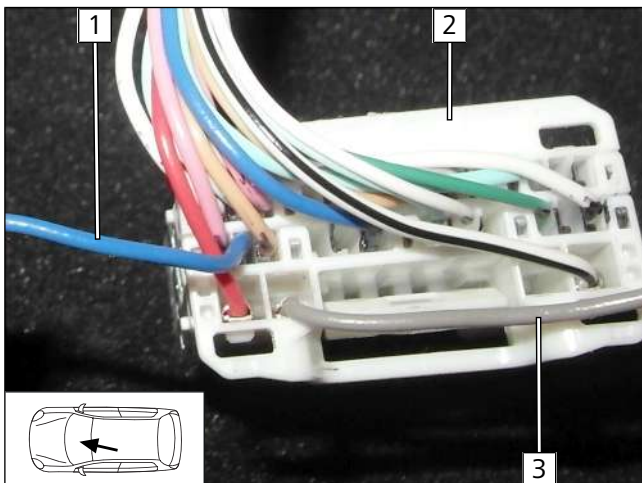
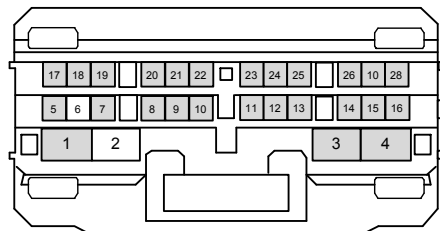


Fig. 18

View of KSG connector J43 on wiring side:



- 1 Blue (bl) wire of KSG connector J43 / pin 6
- 2 Air-conditioning control unit connector J43 a
- 3 Grey (gr) wire of KSG connector J43 / pin 2

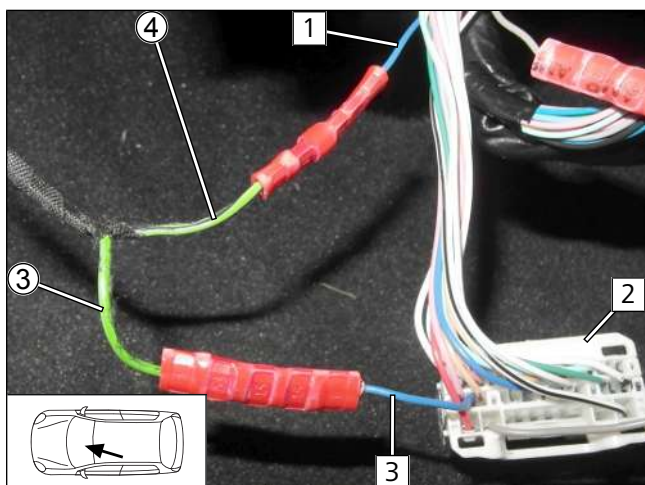


Fig. 19

- 1 Blue (bl) wire of GE-V connector A16 / pin 2
- 2 KSG connector J43
- 3 Blue (bl) wire of KSG connector J43 / pin 6
- 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

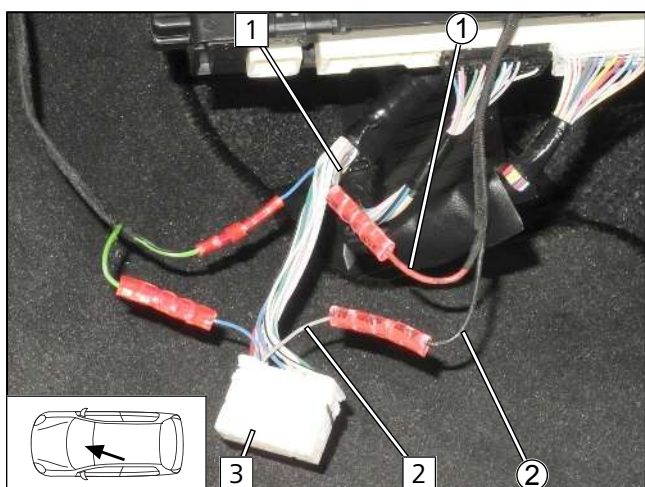


Fig. 20

- 1 Grey (gr) wire of fuse F3
- 2 Grey (gr) wire of KSG connector J43 / pin 2
- 3 KSG connector J43
- 1 Red (rt) wire of K1/87a fan wiring harness
- 2 Black (sw) wire of K1/30 fan wiring harness

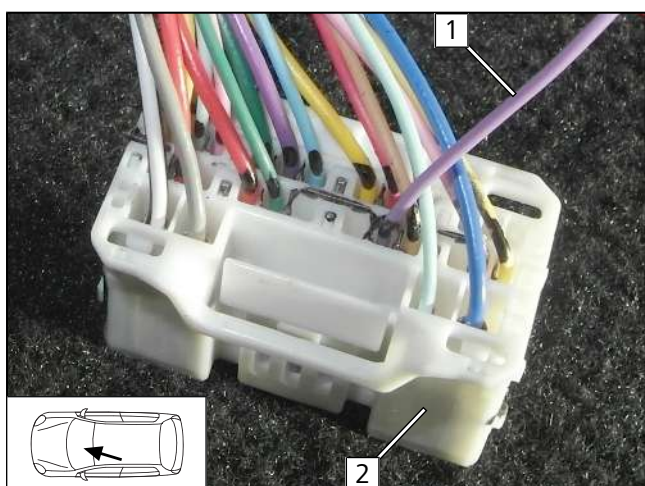
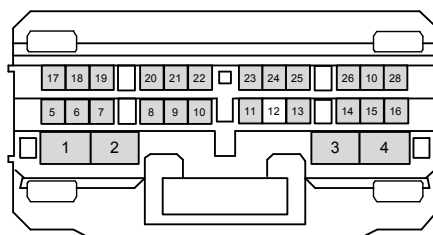


Fig. 21



Only for 3 zone automatic air-conditioning

View of KSG connector J48 on wiring side:



- 1 Violet (vi) wire of KSG connector J48 / pin 12
- 2 KSG connector J48

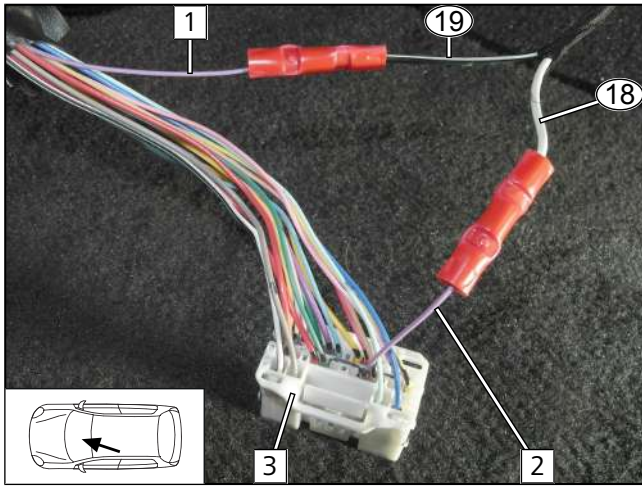


Fig. 22



Only for 3 zone automatic air-conditioning

- 1 Violet (vi) wire of GE-H connector R57 / pin 3
- 2 Violet (vi) wire of KSG connector J48 / pin 12
- 3 KSG connector J48
- 18 White (ws) wire of K2/87 from isolating relay wiring harness
- 19 Black/white (sw/ws) wire of K2/30 from isolating relay wiring harness



8 Final work



- ▶ Final work is not carried out until the installation of the heater in the vehicle has been completed
- ▶ Check all electrical connections for firm seating
- ▶ Insulate and tie back loose lines



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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WWW.WEBASTO.COM

9 Operating Instructions for 2-Zone 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.



Note for parking heater function

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

9.1 A/C control panel settings

A/C control panel



Fig. 23



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

9.2 Installation location of fuses

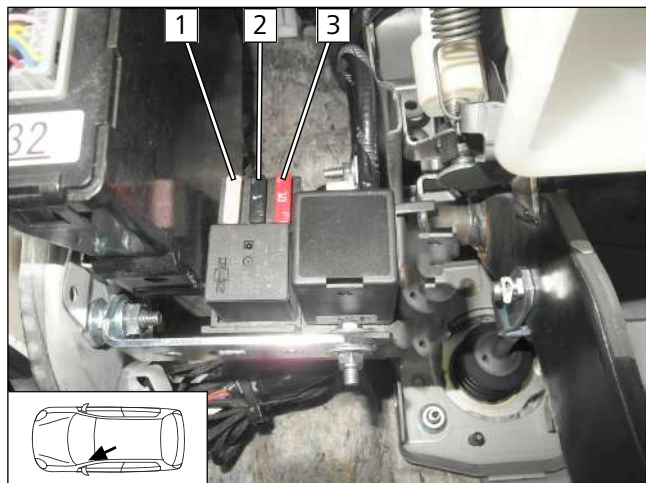
Fuses in engine compartment



Fig. 24

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

Fuses in passenger compartment



- 1 F5 – 3A additional fuse
- 2 F3 - 1A control element fuse
- 3 F4 - 10A fan fuse

Fig. 25

10 Operating Instructions for 3-Zone 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.



Note for parking heater function

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

10.1 A/C control panel settings

A/C control panel



Fig. 26



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

10.2 Installation location of fuses

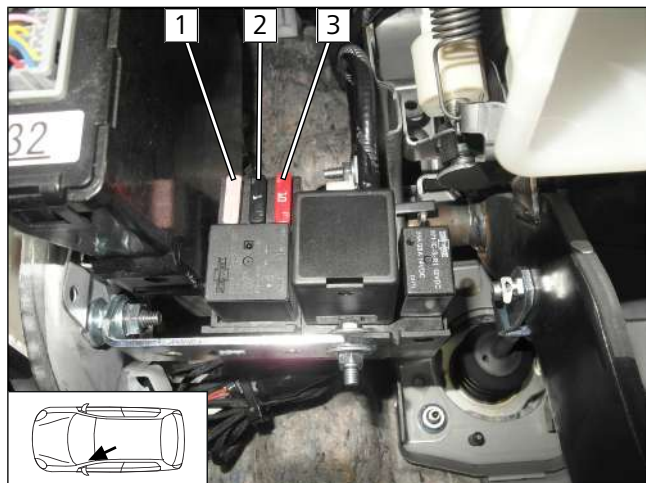
Fuses in engine compartment



Fig. 27

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

Fuses in passenger compartment



- 1 F5 – 3A additional fuse
- 2 F3 - 1A control element fuse
- 3 F4 - 10A fan fuse

Fig. 28