Wasser Heater

Thermo Top Evo **Parking Heater** E1 00 0258

Installation Documentation
Mazda CX-3

Validity

Manufacturer	Model	Type	EG-BE-No. / ABE	VIN
Mazda	CX-3	DJ1	e1 * 2007 / 46 *1335 * 03..	JMZ**DK********100001...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.0 (G 120)	Petrol	6-speed MT 2WD	88	1998	PE
2.0 (G 120)	Petrol	6-speed AT 2WD	88	1998	PE
2.0 (G 150)	Petrol	6-speed MT 4WD	110	1998	PE
2.0 (G 150)	Petrol	6-speed AT 4WD	110	1998	PE

MT = Manual transmission
AT = Automatic transmission

From Model Year 2015
Left-hand drive vehicle

Verified equipment variants:
Manual air-conditioning
Automatic air-conditioning
LED front fog light
Halogen headlight
LED headlights with option adaptive front lighting system (AFS)
i-Stop (Start-Stop)
Regenerative brake system (i-ELOOP)
Halogen and LED daytime running lights

Exclusion: Theft deterrent / burglar alarm system

Total installation time: about 9 hours

Mazda CX-3

Table of Contents

Validity	1	Preparing Installation Location	24
Table of Contents	2	Preparing Heater	24
Necessary Components	2	Installing Heater	26
Installation Overview	2	Coolant Circuit	27
Notes on Total Installation Time	2	Fuel	38
Information on Operating and Installation Instructions	3	Combustion Air	46
Notes on Validity	4	Exhaust Gas	47
Technical Instructions	4	Final Work	50
Explanatory Notes on Document	4	Readjustment blower speed (FULL AUTO A/C only)	53
Preliminary Work	5	Template for Fuel-tank sending	55
Heater Installation Location	6	Template for Fuel Standpipe	56
Preparing Electrical System	7	Operating Instructions for MANUAL A/C	57
Electrical System	15	Operating Instructions for FULL AUTO A/C	59
Blower Fan Controller MANUAL A/C	16		
Blower Fan Controller FULL-AUTO A/C	19		
Remote Control Option (Telestart)	22		
ThermoCall Option	23		

Necessary Components

- Basic delivery scope *Thermo Top Evo* in accordance with price list
- Installation kit for Mazda CX-3 Petrol: Mazda Order No.: **4100-78-734**
- Heater operation device in accordance with price list and upon consultation with end customer

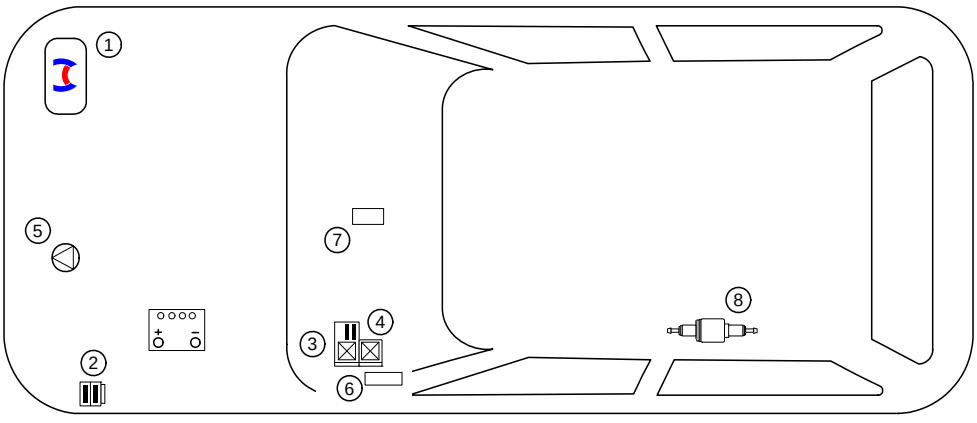
Installation instructions:

- Have the vehicle delivered with the tank only about one quarter full!
- The installation location of the push button in the case of Telestart or Thermo Call should be confirmed with the end customer.

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Relay and fuse holder of passenger compartment
4. PWM GW (only ACC)
5. Circulating pump
6. Opitional Remote control receiver
7. Optional Thermo Call receiver
8. Fuel metering pump



Notes on Total Installation Time

The total installation time includes the time needed for mounting and demounting of 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.

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

The improper installation or repair of Webasto heating and cooling systems can cause fire or the leakage of deadly carbon monoxide, leading to serious injury or death.

To install and repair Webasto heating and cooling systems you need to have completed a special company training course and have the appropriate technical documentation, special tools and special equipment.

Installation and repair may ONLY be carried out by persons trained and certified in a Webasto training course. NEVER try to install or repair Webasto heating or cooling systems if you have not completed a Webasto training course, you do not have the necessary technical skills and you do not have the technical documentation, tools and equipment available to ensure that you can complete the installation and repair work properly.

Only use genuine Webasto parts. See the Webasto air and water heaters accessories catalogue for this purpose.

1.2 Operation

To ensure safe operation, we recommend having the heater checked every two years by an authorised Webasto dealer, especially when used over a long period and/or under extreme environmental conditions.

Do not operate the heater in closed rooms due to the danger of poisoning and suffocation.

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel Diesel (DIN EN 590) or petrol (DIN EN 228).

The heater may not be cleaned with a high-pressure cleaner.

1.3 Please note

ALWAYS follow all Webasto installation and operating instructions and observe all warnings.

To become familiar with and understand all functions and properties of the heater, the operating instructions must be read carefully and observed at all times.

For proper, safe installation and repair work, the installation instructions with all warnings and safety information must be carefully read and observed at all times. Please always contact a workshop authorised by Webasto for all installation and repair work.

Important

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, 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.

Sharp edges should be fitted with rub protection. 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 startup 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.

2 Statutory regulations governing installation

Guidelines	Thermo Top Evo
Heating Directive ECE R122	E1 00 0258
EMC Directive ECE R10	E1 04 5627

Note

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.

Important

Failure to follow the installation instructions will result in the invalidation of the type approval for the heater and therefore invalidation of the general **homologation of the vehicle**.

Note

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

2.1 Excerpt from the directive ECE-R 122 point 5 (part I) for the installation of the heater

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

1.7.1. A clearly visible tell-tale in the operator's field of view shall inform when the combustion heater is switched on or off.

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

2.1.1. Subject to paragraph 2.1.2. combustion heaters shall be installed according to the requirements of this Annex.

2.1.2. Vehicles of category O having liquid fuel heaters are deemed to comply with the requirements of this Annex.

2.2. Positioning of heater

2.2.1. Body sections and any other components in the vicinity of the heater must be protected from excessive heat and the possibility of fuel or oil contamination.

2.2.2. The combustion heater shall not constitute a risk of fire, even in the case of overheating. This requirement shall be deemed to be fulfilled if the installation ensures an adequate distance to all parts and suitable ventilation, by the use of fire resistant materials or by the use of heat shields.

2.2.3. In the case of M2 and M3 vehicles, the heater must not be positioned in the passenger compartment. However, an installation in an effectively sealed envelope which also complies with the conditions in paragraph 2.2.2 may be used.

2.2.4. The label referred to in paragraph 1.4 or a duplicate, must be positioned so that it can be easily read when the heater is installed in the vehicle.

2.2.5. Every reasonable precaution should be taken in positioning the heater to minimise the risk of injury and damage to personal property.

2.3. Fuel supply

2.3.1. The fuel filler must not be situated in the passenger compartment and must be provided with an effective cap to prevent fuel spillage.

2.3.2. In the case of liquid fuel heaters, where a supply separate to that of the vehicle is provided, the type of fuel and its filler point must be clearly labelled.

2.3.3. A notice, indicating that the heater must be shut down before refuelling, must be affixed to the fuelling point. In addition a suitable instruction must be included in the manufacturer's operating manual.

2.4. Exhaust system

2.4.1. The exhaust outlet must be located so as to prevent emissions from entering the vehicle through ventilators, heated air inlets or opening windows.

2.5. Combustion air inlet

2.5.1. The air for the combustion chamber of the heater must not be drawn from the passenger compartment of the vehicle.

2.5.2. The air inlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

2.6. Heating air inlet

2.6.1. The heating air supply may be fresh or recirculated air and must be drawn from a clean area not likely to be contaminated by exhaust fumes emitted either by the propulsion engine, the combustion heater or any other vehicle source.

2.6.2. The inlet duct must be protected by mesh or other suitable means.

2.7. Heating air outlet

2.7.1. Any ducting used to route the hot air through the vehicle must be so positioned or protected that no injury or damage could be caused if it were to be touched.

2.7.2. The air outlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

End of excerpt.

In multilingual versions the German language is binding.

Notes on Validity

This installation documentation applies to Mazda CX-3 Petrol vehicles - for validity, see page 1 - from model year 2015 and later, 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.

Technical Instructions

Special Tools
- Hose clamp pliers for auto-tightening hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Automatic wire stripper 0.2 - 6mm²
- Crimping pliers for cable lug / tab connector 0.5 - 6mm²
- Torque wrench for 2.0 - 20 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Deep hole marker
- Webasto Thermo Test Diagnosis with current software

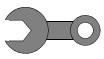
Dimensions
- All dimensions are in mm.

Tightening torque values
- Tightening torque values of 5x13 heater bolts and heater stud bolts = 8Nm.
- Tightening torque values of 5x15 retaining plate of water connection piece bolts = 7Nm.
- Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.
- Any other torque values specified are those given by the vehicle manufacturer.

Explanatory Notes on Document

You will find an identification mark on the outside top right corner of the page in question to provide you with a quick overview of the individual working steps.

Mechanical System

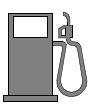


Electrical System

Coolant Circuit

Combustion Air

Fuel



Exhaust Gas

Software

Special features are highlighted using the following symbols:

Specific risk of damage to components.

Specific risk due to electrical voltage.

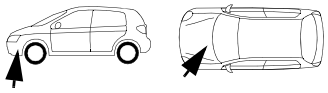
Specific risk of injury or fatal accidents.

Specific risk of fire or explosion.

Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents (MESI)..

Reference to a special technical feature.

The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.



Tightening torque according to the manufacturer's vehicle-specific documents.

Mazda CX-3

Preliminary Work

Prior to installation of heater:

Incorrect implementation of electrical connections may cause a fire!

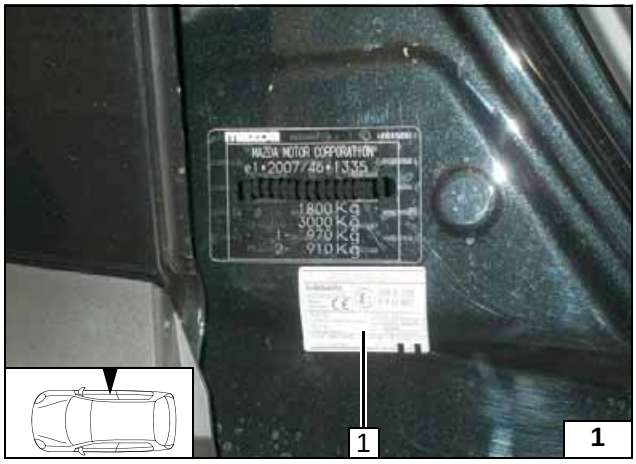
Warning:

On the Mazda CX-3, a special battery is used for the i-Stop System (STOP&START).
You must check the battery **before** installing the heater. Check battery condition in accordance with workshop manual refer to MESI "BATTERY INSPECTION" (acid density check in every battery cell). If the acid density is below specification, replace the battery with an original battery.

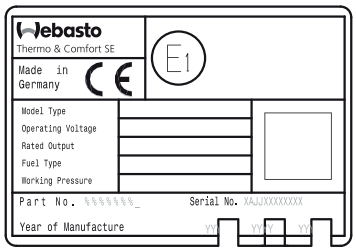
Vehicle

- Disconnect the battery and remove them completely with the carrier.
  Refer to MESI "BATTERY REMOVAL/INSTALLATION".
- Remove upper engine cover.
  Refer to MESI "PUG HOLE PLATE REMOVAL/INSTALLATION".
- Remove air cleaner housing.
  Refer to MESI "INTAKE AIR SYSTEM REMOVAL/INSTALLATION".
- Remove the engine under cover.
  Refer to MESI "FRONT UNDER COVER No2 REMOVAL/INSTALLATION".
- Remove front right Splash Shield.
  Refer to MESI "FRONT SPLASH SHEELD REMOVAL/INSTALLATION".
- Remove the Front Bumper.
  Refer to MESI "FRONT BUMPER REMOVAL".
- Remove left hand side Floor Under Covers.
  Refer to MESI "FLOOR UNDER COVER REMOVAL/INSTALLATION".
- Depressurize the cooling system and drain engine coolant.
  Refer to MESI "ENGINE COOLANT REPLACEMENT".
- Remove the front left scuff plate.
  Refer to MESI "FRONT SCUFF PLATE REMOVAL/INSTALLATION".
- Remove front left leg room panel.
  Refer to MESI "FRONT SIDE TRIM REMOVAL/INSTALLATION".
- Remove driver side lower panel.
  Refer to MESI "DRIVER-SIDE LOWER PANEL REMOVAL/INSTALLATION".
- Remove left A-pillar trim panel.
  Refer to MESI "A-PILLAR TRIM REMOVAL/INSTALLATION".
- Remove left & right centre console side trim panels.
  Refer to MESI "SIDE WALL REMOVAL/INSTALLATION".
- Remove glove box.
  Refer to MESI "GLOVE COMPARTMENT REMOVAL/INSTALLATION“:
- Remove glove box under panel:
  Refer to MESI "DASHBOARD UNDER COVER REMOVAL INSTALLATION".
- Remove rear lower seat cushion.
  Refer to MESI "REAR SEAT CUSHION REMOVAL/INSTALLATION".
- Remove the fuel pump service hole cover.
  Refer to MESI "FUEL PUMP UNIT REMOVAL/INSTALLATION".
- Open the fuel tank filler cap short before fuel pump removal.
  Refer to the chapter "FUEL" of this installation documentation.
- Ventilate the fuel tank.
- Close the fuel tank filler cap.
- Remove fuel pump unit.
  Refer to MESI "FUEL PUMP UNIT REMOVAL/INSTALLATION".

Heater



Remove years that do not apply from the type and duplicate label.
Attach the duplicate label **1** on B-pillar.

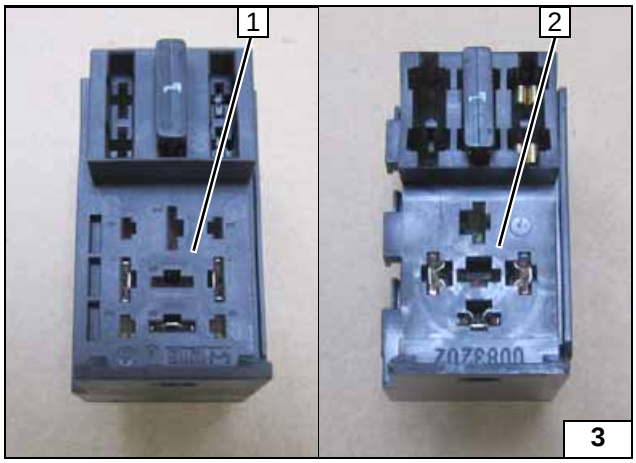


Attach duplicate label

Heater Installation Location

1 Heater

Installation location



3

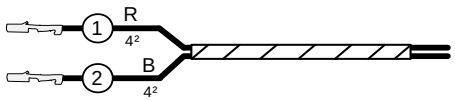
Preparing Electrical System

Relay and fuse holder (passenger compartment)

1 With 9-pole relay socket

2 With 5-pole relay socket

Selection relay and fuse holder (passenger compartment)



4

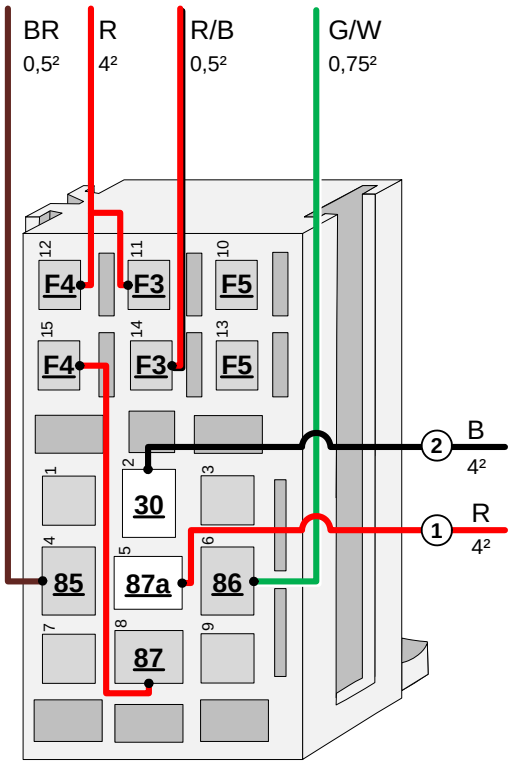
Manual air-conditioning

Wire sections retain their numbering through the entire document.

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

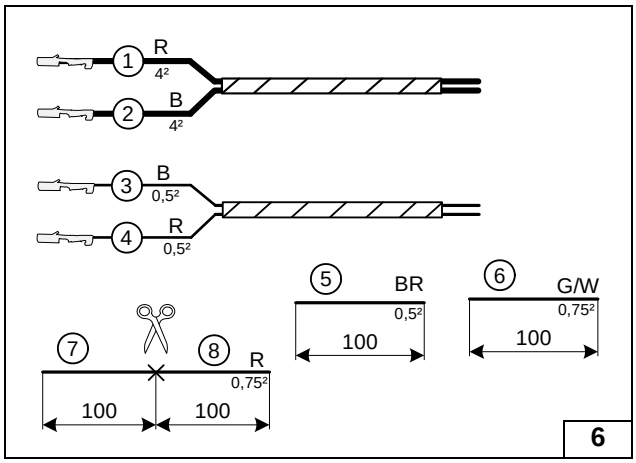
① Ltg. R blower wiring harness
② Ltg. B blower wiring harness

Cutting to length/ assigning wires



5

Connecting wires to Relay and fuse holder (passenger compartment)



6

Automatic air-conditioning

Wire sections retain their numbering through the entire document.

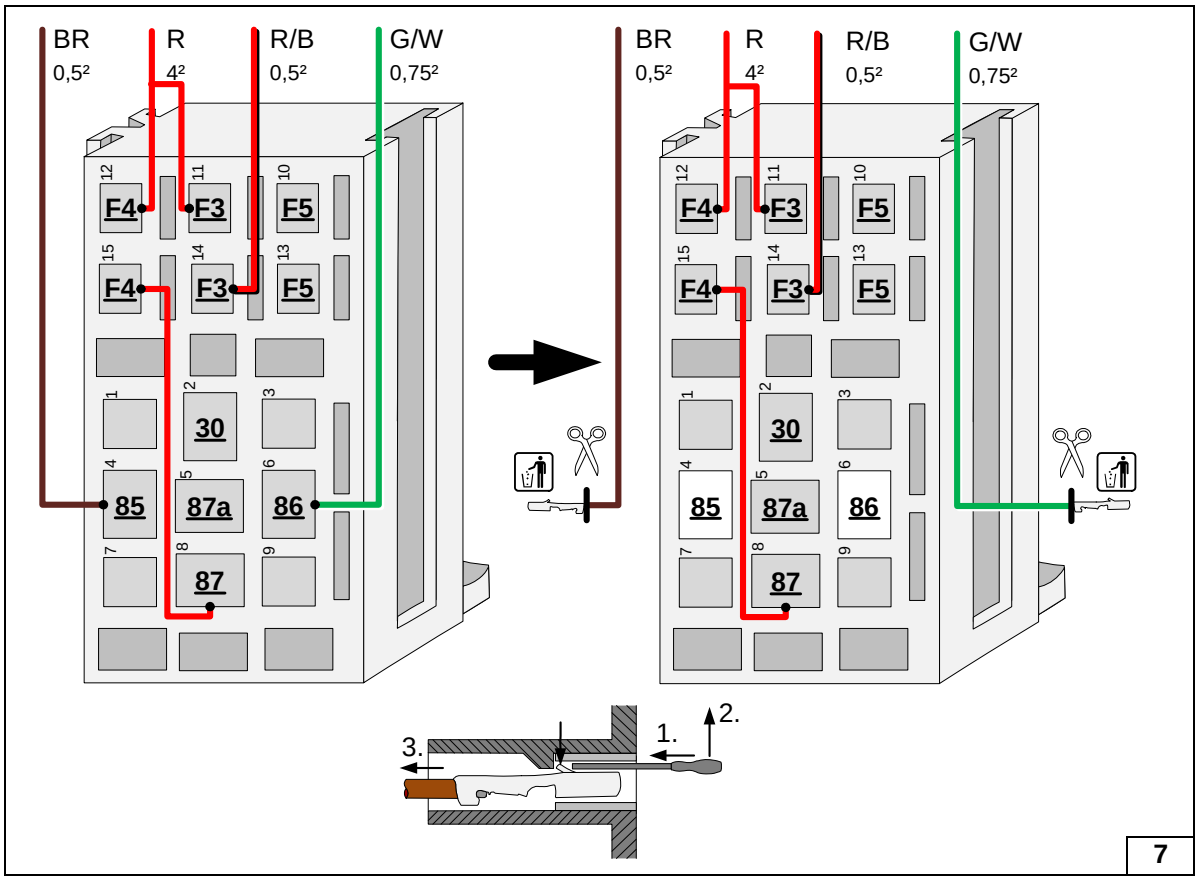
Produce all following electrical connections as shown in the wiring diagram.

① Ltg. R blower wiring harness
② Ltg. B blower wiring harness

③ Ltg. B wiring harness PWM GW control
④ Ltg. R wiring harness PWM GW control

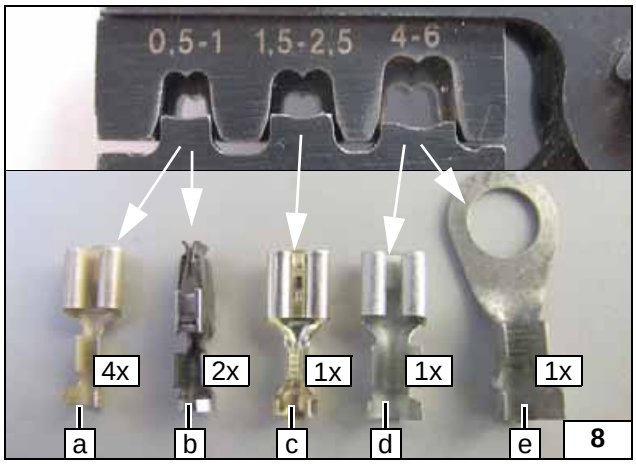
Cutting to length/ assigning wires

Preparation 9-pole relay socket



7

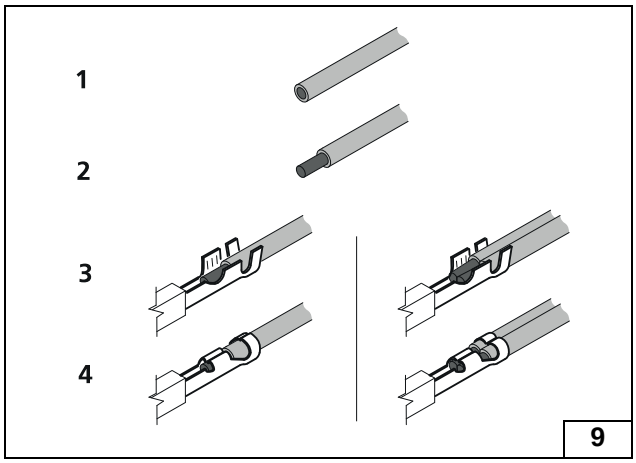
Detach contacts at the 9-pole relay socket from relay and fuse holder (passenger compartment)



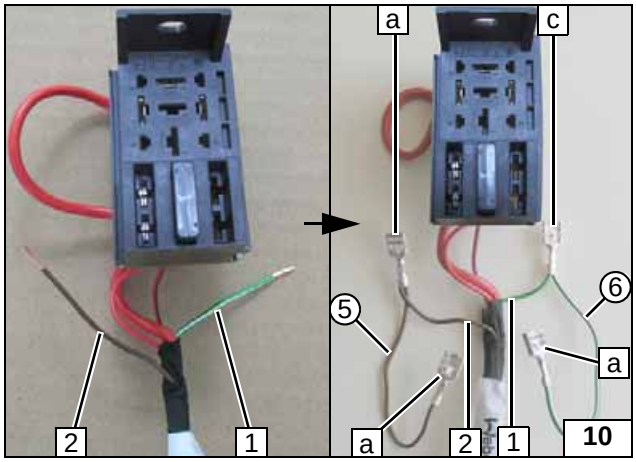
8

a Contact 6.3 wire range 0,5 - 1 mm²
b Contact 4.8 (fuse) wire range 0,5 - 1 mm²
c Contact 6.3 wire range 1,5 - 2,5 mm²
d Contact 6.3 wire range 4,0 - 6,0 mm²
e Cable lug Ø 8 wire range 4,0 - 6,0 mm²

List contact



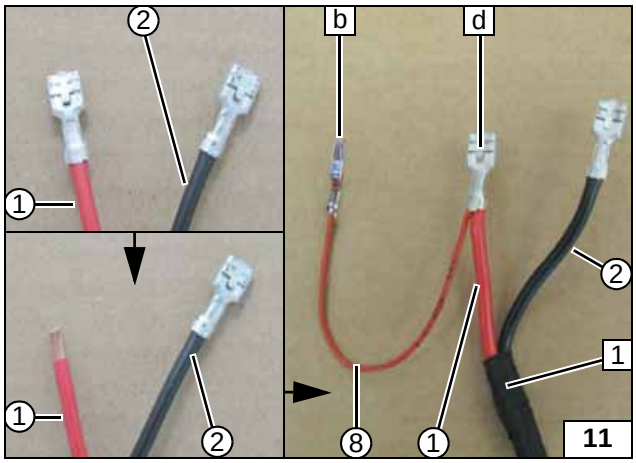
Instruction connect contacts



Remove contacts of wire BR **2** and wire G/W **1.** Connect wires with contact **a** and **c.**

1 Wire G/W from wiring harness relay and fuse holder (passenger compartment) K1/86
2 Wire BR from wiring harness relay and fuse holder (passenger compartment) K1/85
⑤ Wire BR for PWM GW/GND
⑥ Wire G/W for PWM GW/SH

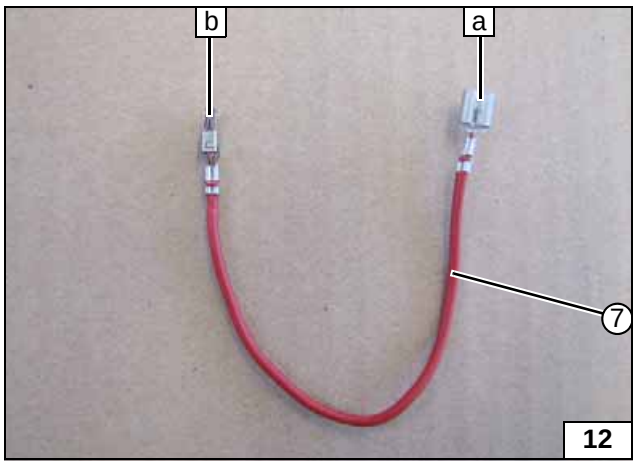
Preparing wires for relay and fuse holder (passenger compartment)



Remove contact of wire R ① blower wiring harness. Connect wire with contact **b** and **d.**

1 Blower wiring harness
① Wire R 4mm² blower wiring harness for K1/87a
② Wire B 4mm² blower wiring harness for K1/30
⑧ Wire R from K1/87a to fuse F5

Preparing blower wiring harness

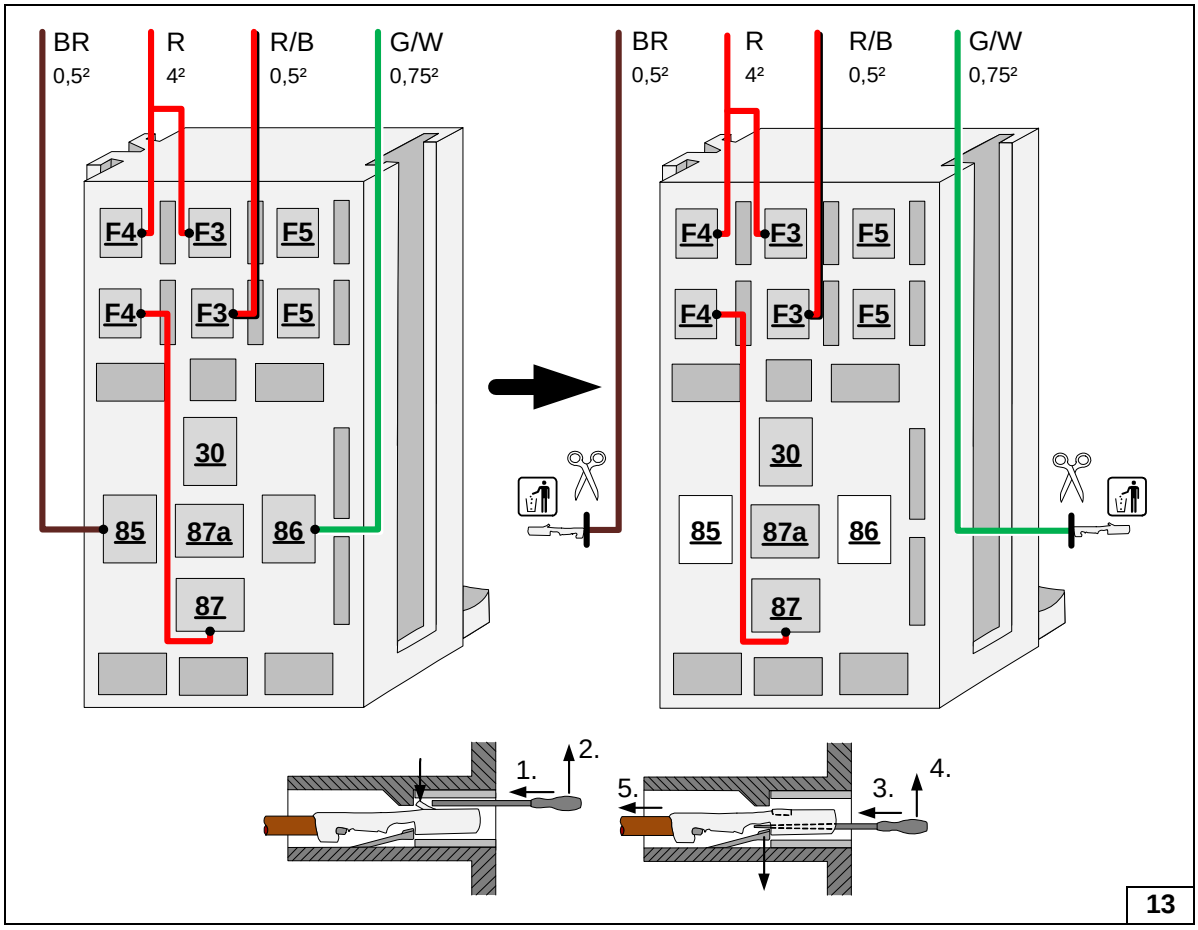


Connect wire at contact **b** and **a.**

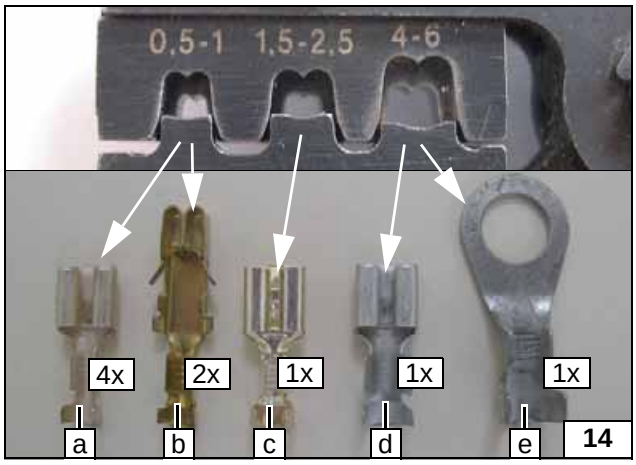
⑦ Wire R from fuse F5 to PWM GW/KL15

Preparing wire ⑦

Preparation 5-pole relay socket

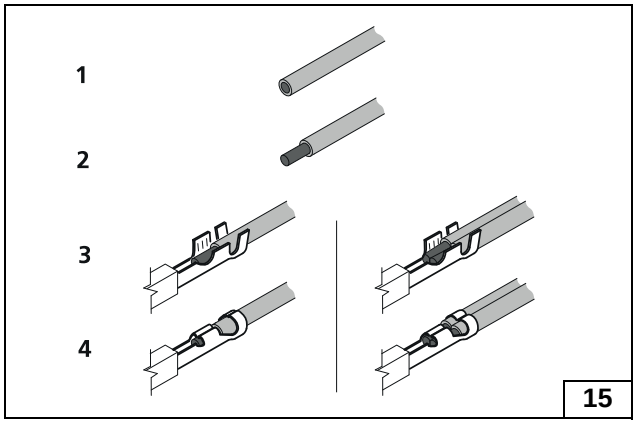


Detach contacts at the 5-pole relay socket from relay and fuse holder (passenger compartment)

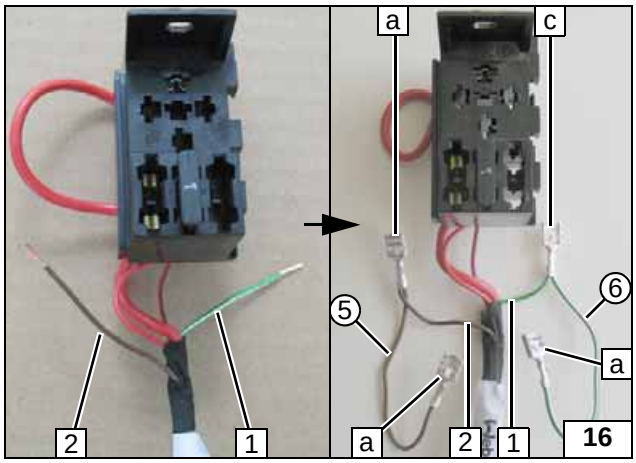


a Contact 6.3 wire range 0,5 - 1 mm²
b Contact 4.8 (fuse) wire range 0,5 - 1 mm²
c Contact 6.3 wire range 1,5 - 2,5 mm²
d Contact 6.3 wire range 4,0 - 6,0 mm²
e Cable lug Ø 8 wire range 4,0 - 6,0 mm²

List contact



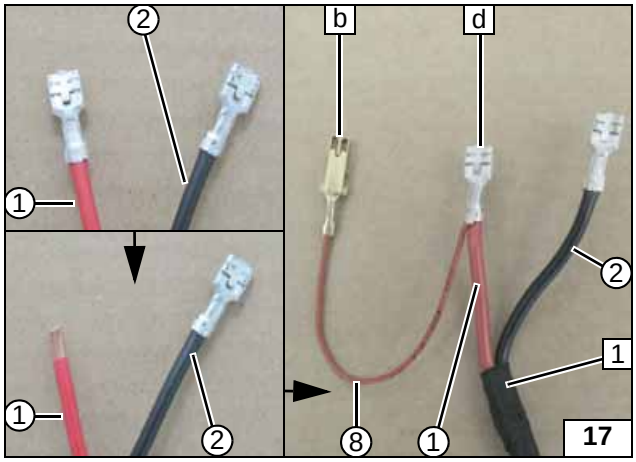
Instruction connect contacts



Remove contacts of wire BR **2** and wire G/W **1.** Connect wires with contact **a** and **c.**

1 Wire G/W from wiring harness relay and fuse holder (passenger compartment) K1/86
2 Wire BR from wiring harness relay and fuse holder (passenger compartment) K1/85
⑤ Wire BR for PWM GW/GND
⑥ Wire G/W for PWM GW/SH

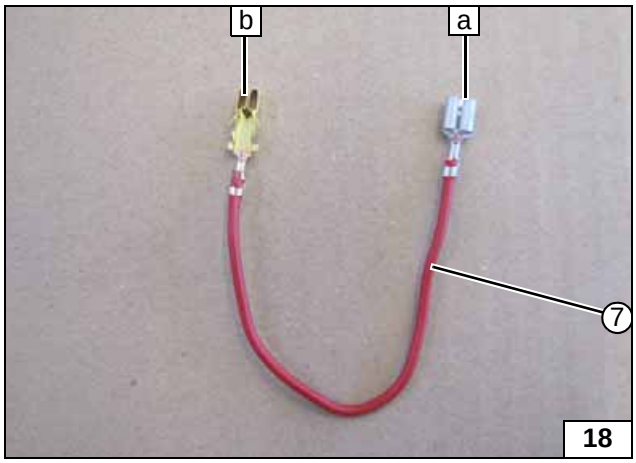
Preparing wires for relay and fuse holder (passenger compartment)



Remove contact of wire R ① blower wiring harness. Connect wire with contact **b** and **d.**

1 Blower wiring harness
① Wire R 4mm² blower wiring harness for K1/87a
② Wire B 4mm² blower wiring harness for K1/30
⑧ Wire R from K1/87a to fuse F5

Preparing blower wiring harness

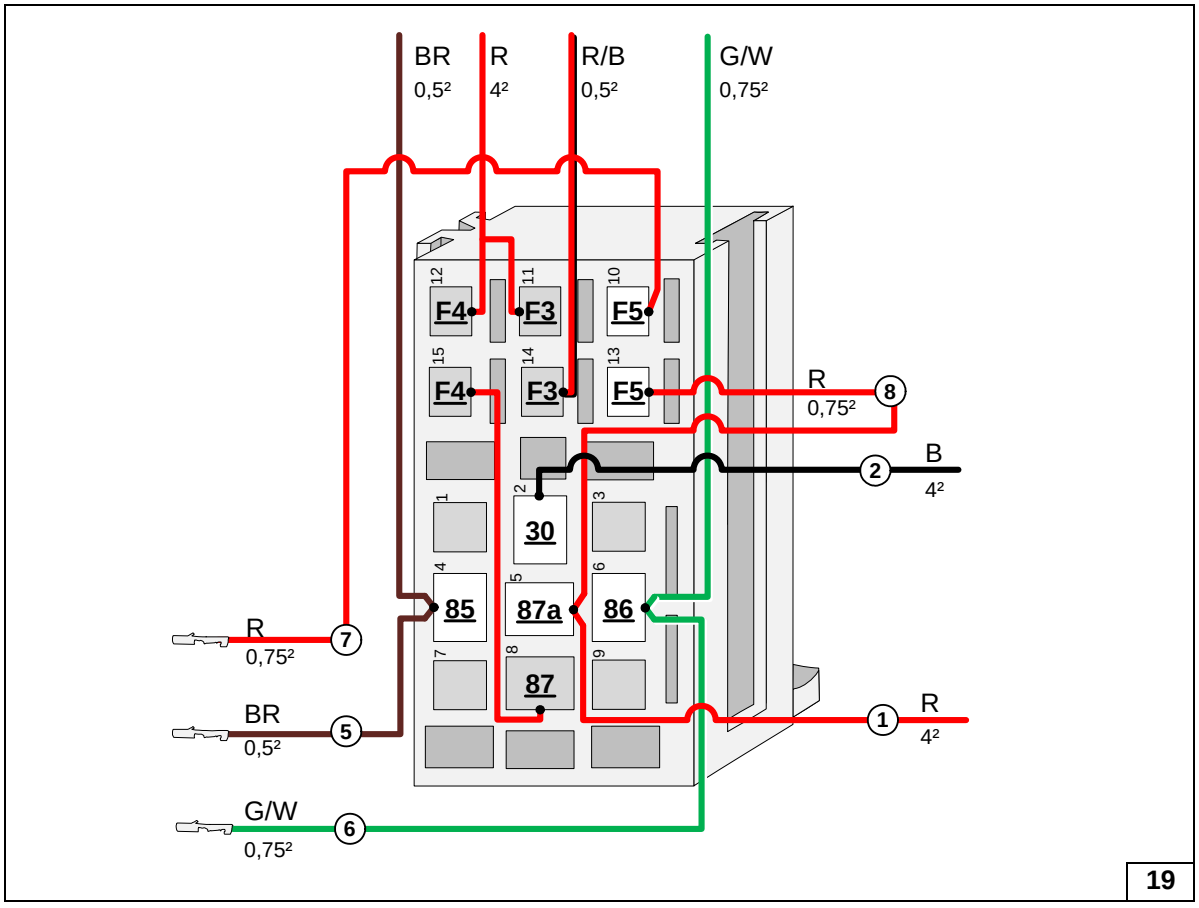


Connect wire at contact **b** and **a.**

⑦ Wire R from fuse F5 to PWM GW/KL15

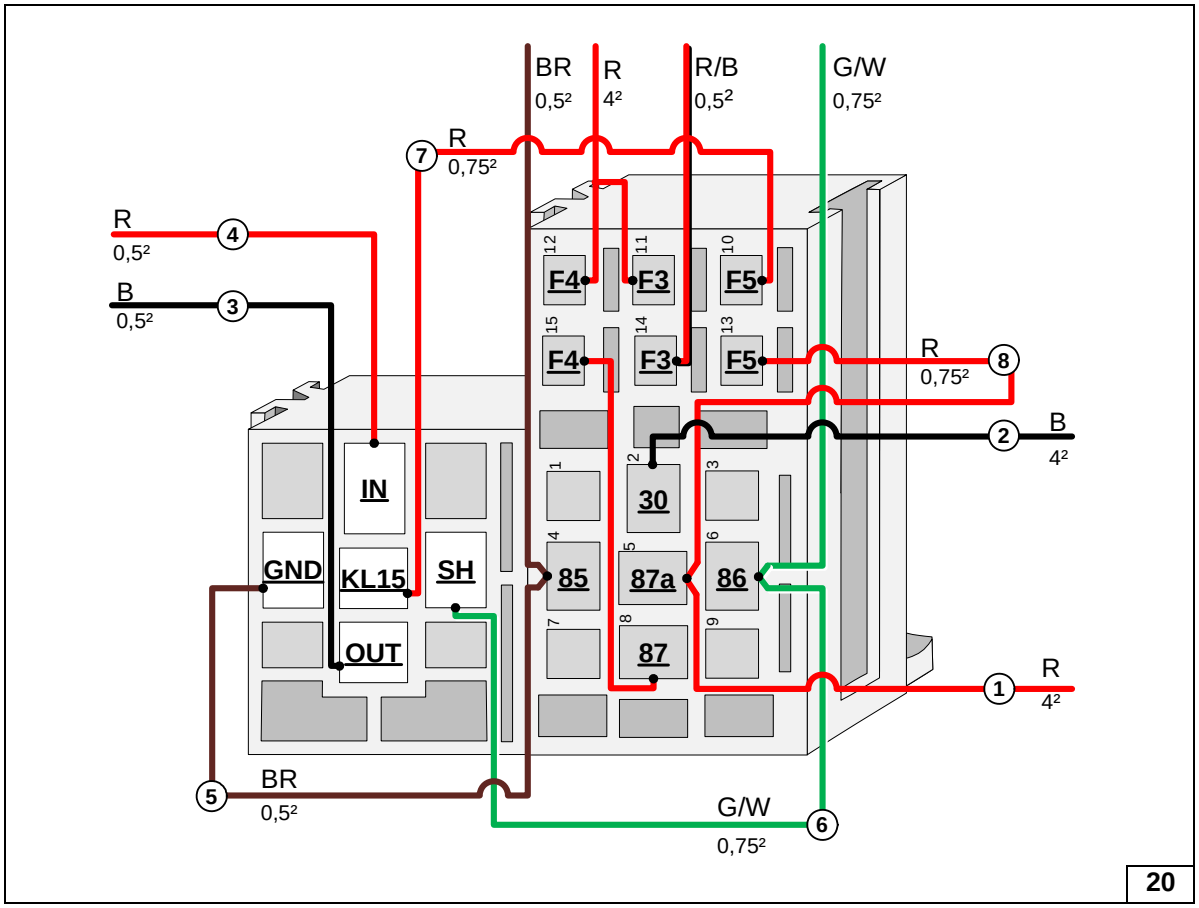
Preparing wire ⑦

All relay and fuse holder



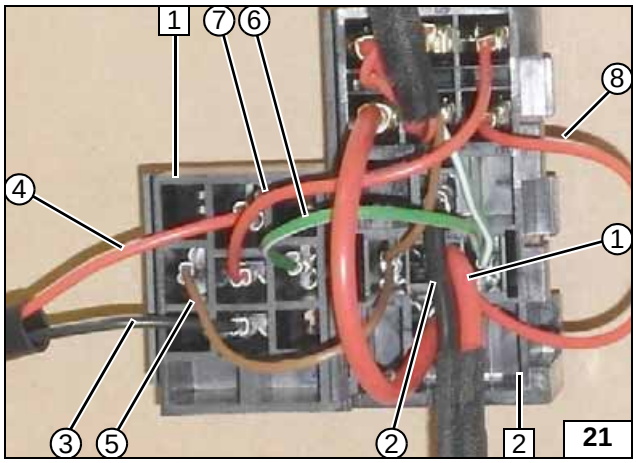
19

Connecting wires to relay and fuse holder (passenger compartment)



20

Interlocking socket PWM GW and relay and fuse holder (passenger compartment)/ connecting wires to socket PWM GW



21

1 Relay and fuse holder (passenger compartment)
2 PWM GW socket
① Wire R from K1/87a blower wiring harness
② Wire B from K1/30 blower wiring harness
③ Wire B wiring harness PWM GW/OUT
④ Wire R wiring harness PWM GW/IN
⑤ Wire BR from K1/85 and PWM GW/GND
⑥ Wire G/W from K1/86 and PWM GW/SH
⑦ Wire R from fuse F5 and PWM GW/KL15
⑧ Wire R from K1/87a and fuse F5

View relay and fuse holder (passenger compartment)

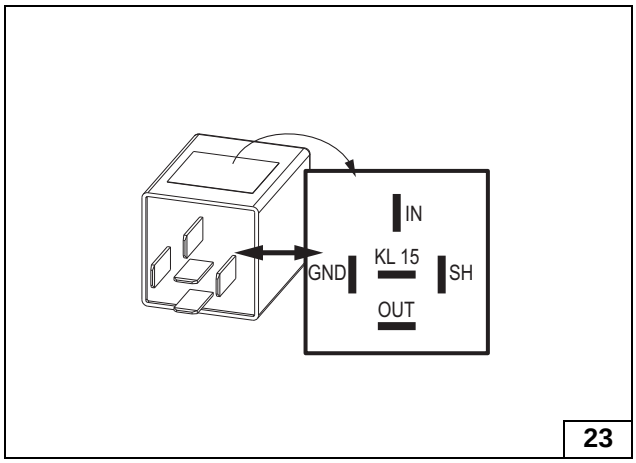
22

PWM GW

PWM GW = Pulse Width Module Gateway

The PWM GW is pre-programmed for blower level 3. However, the speed of the blower on the vehicle may differ for technical reasons. In case of a too low / high blower power, the PWM GW can be reprogrammed using the Webasto diagnosis. See “Final Work“.

View of PWM GW

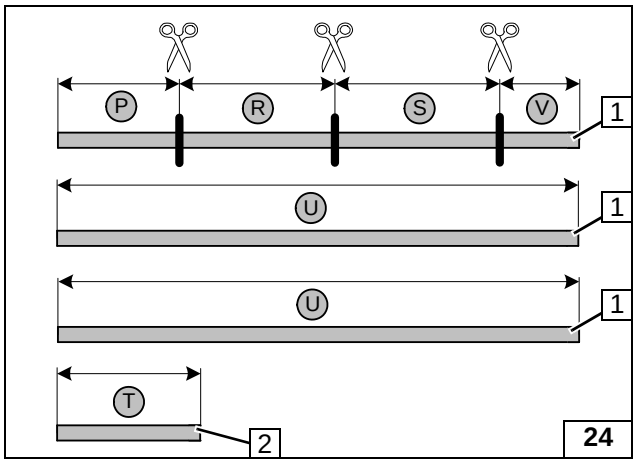


23

Settings:

Duty-Cycle: 60%
Frequency: 500Hz
Voltage: not relevant
Function: Low-side

View PWM GW



All vehicles

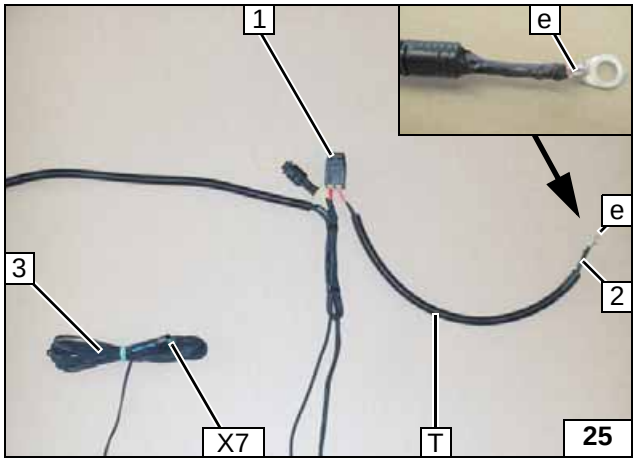
1 Corrugated tube Ø 10, length 2100 [3x]

P = 400
R = 700
S = 700
U = 2100
U = 2100
V = 300

2 Corrugated tube Ø 10, length 430

T = 430

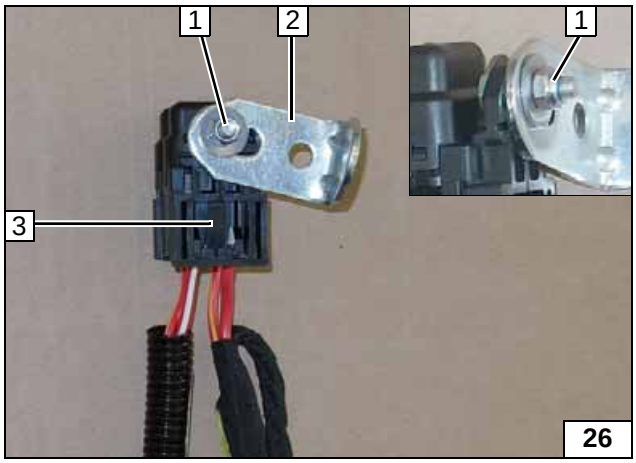
Cutting Corrugate tube to length



Mount corrugated tube Ø 10 **T** to protect B+ wire R.
Cable lug **e** on positive wire R **2**.

1 Fuse holder in engine compartment
2 B+ wire R
3 Wiring harness of metering fuel pump
X7 Connector wiring harness of metering pump

Preparing the wiring harness



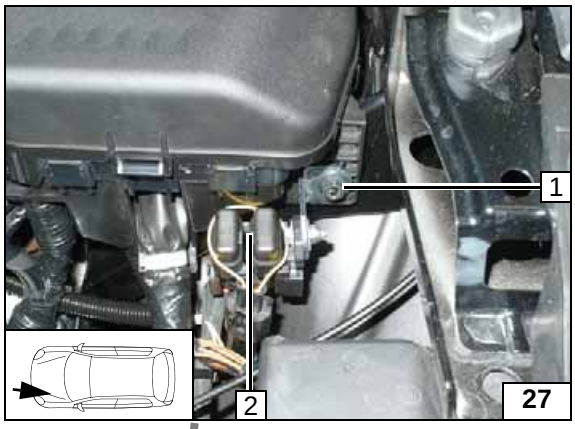
1 M5x16 bolt, washer [2x], nut (5-6Nm)
2 Angle bracket
3 Retaining plate of fuse holder

Preparing Retaining plate of fuse holder

Electrical System

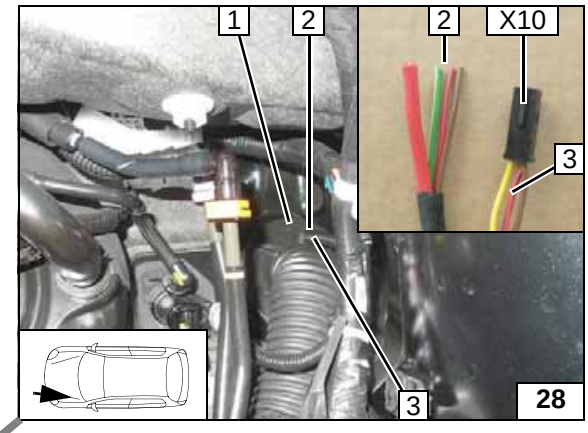
Fuse holder in engine compartment

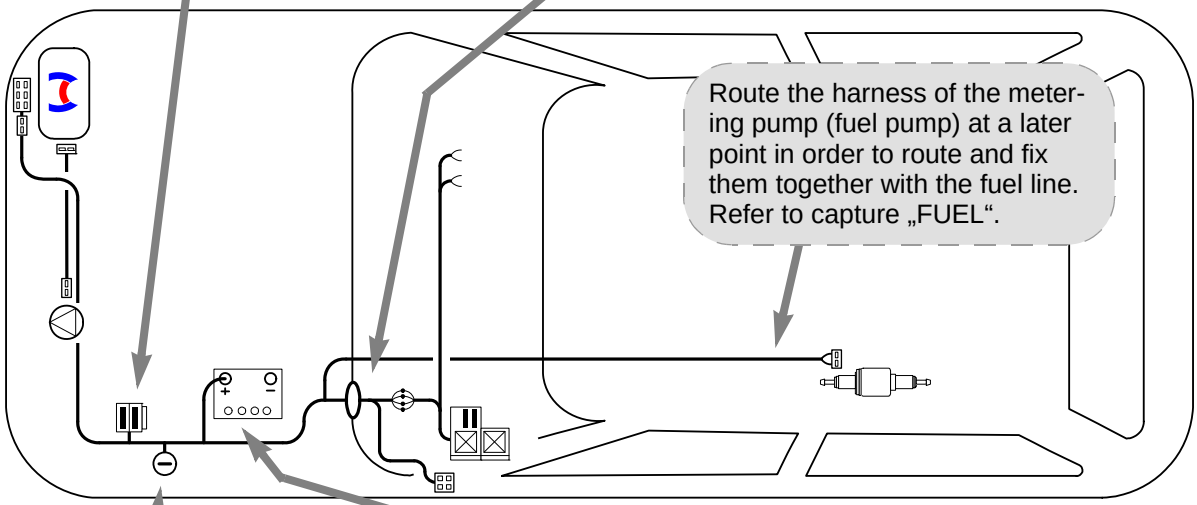
1 Original vehicle bolt (8-10Nm)
2 Fuses F1-2



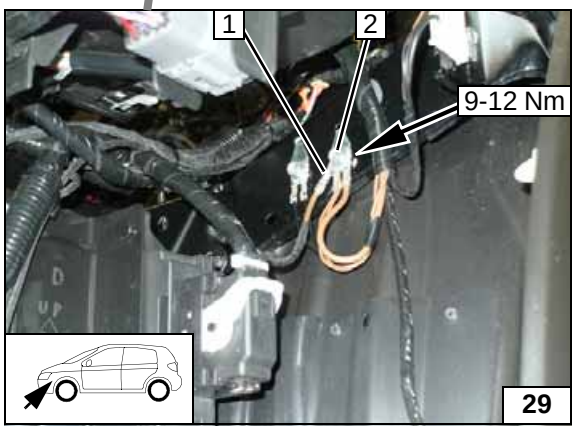
Wiring harness pass through

1 Protective rubber plug
2 Cable harnesses for the blower control
3 Cable harnesses for the heater control



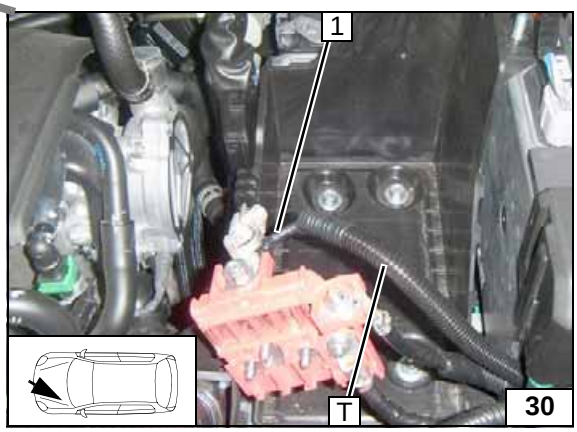


Wiring harness routing diagram



Earth wire

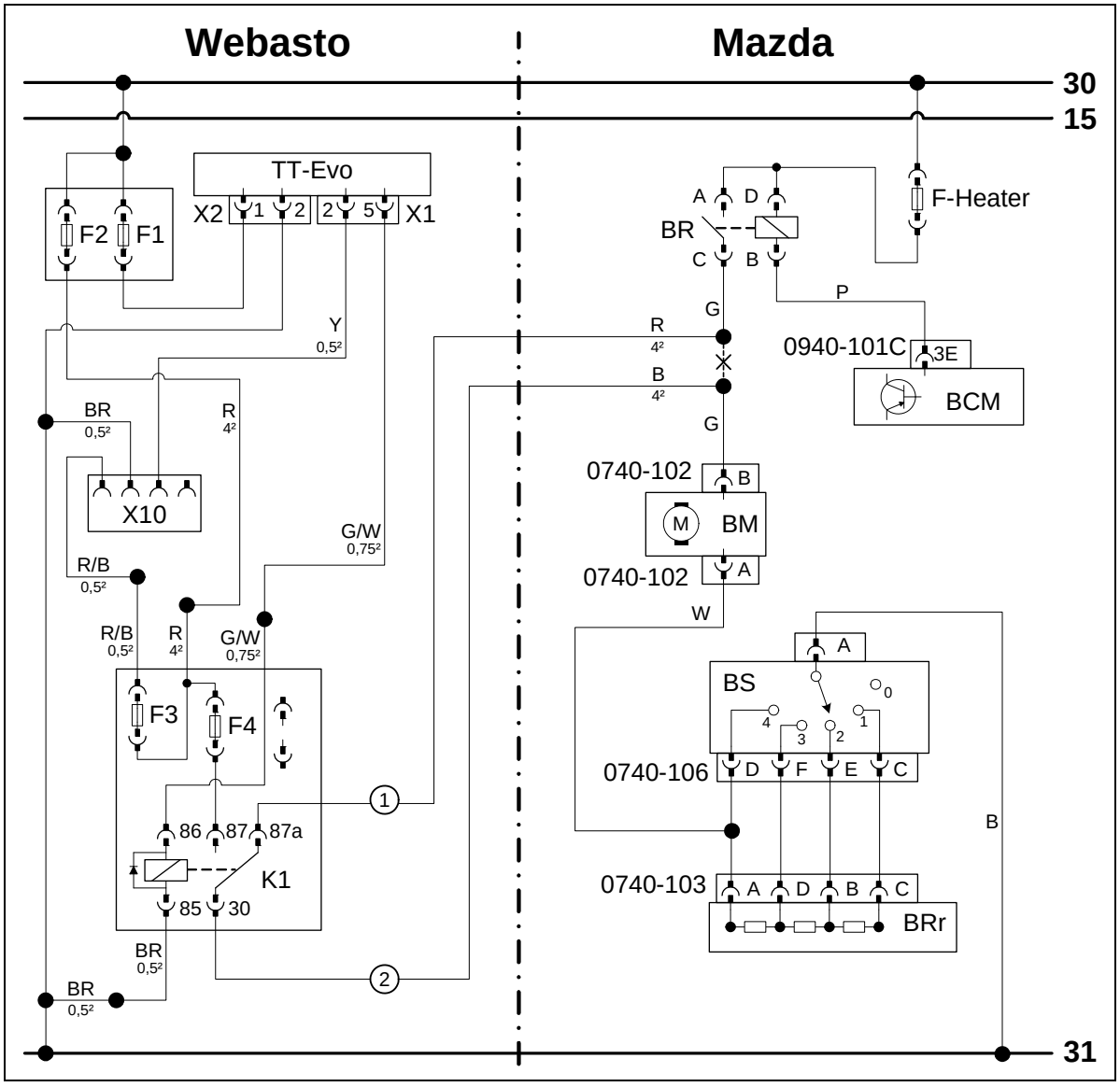
1 Earth wire on earth support point
2 Original vehicle earth support point



Positive wire

1 Positive wire R in corrugated tube Ø 10 **T** (for connection to positive battery terminal, see section “Final Work“)

Blower Fan Controller MANUAL A/C

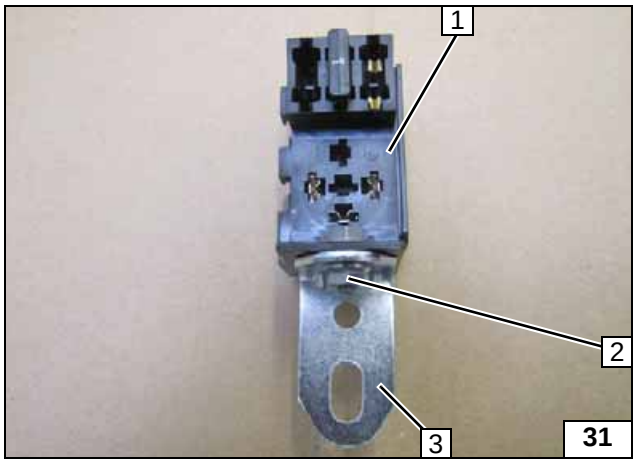


Webasto components		Vehicle components		Colours and symbols	
TT-Evo	Heater TT-Evo	F- Heater	40A fuse	R	red
X1	6-pin heater connector	BR	Blower Relay	B	black
X2	2-pin heater connector	BCM	Body Control Modul	Y	yellow
F1	20A fuse	0940-101C	Connector BCM	G	green
F2	30A fuse	BM	Blower Motor	BR	brown
X10	4-pin heater control connector	0740-102	2-pin connector BM	W	white
		BS	Blower switch	L	blue
F3	1A fuse	0740-106	Connector BS	P	pink
F4	25A fuse	BRs	Blower resistors		
K1	Blower relay	0740-103	Connector BRs		
				X	Cutting point
				Wiring colours may vary.	

Wiring diagram MANUAL A/C

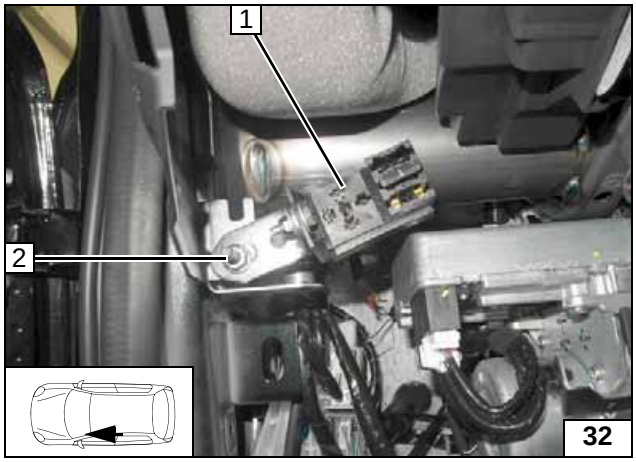
Legend

Manual A/C



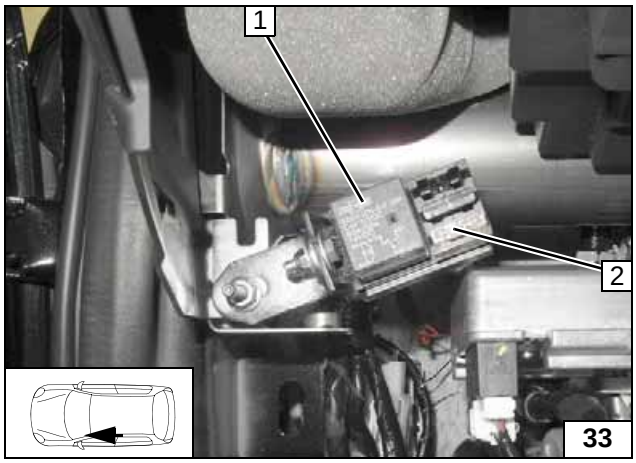
1 Relay and fuse holder (passenger compartment)
2 M5x16 bolt, large diameter washer [2x], nut (5-6Nm)
3 Angle bracket

Preparing relay and fuse holder (passenger compartment)



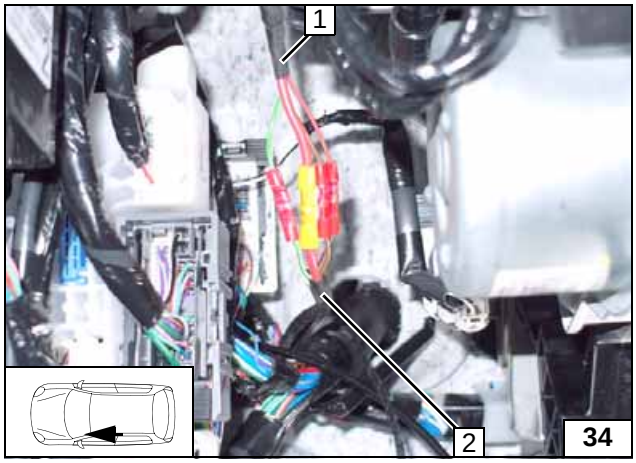
1 Relay and fuse holder (passenger compartment)
2 Original vehicle bolts, large diameter washer, flanged nut (8-10Nm)

Installing relay and fuse holder (passenger compartment) and socket PWM GW



1 K1 relay
2 Fuse F4 25A

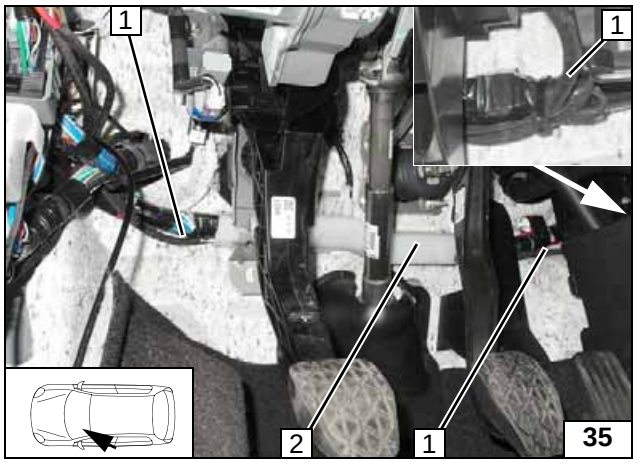
Installing K1 relay and fuse F4



Cable R (4,0mm²) with R (4,0mm²)
Cable R/B (0,5mm²) with R/B (0,5mm²)
Cable G/W (0,75mm²) with G/W (0,75mm²)
Cable BR (0,5mm²) with BR (0,5mm²)

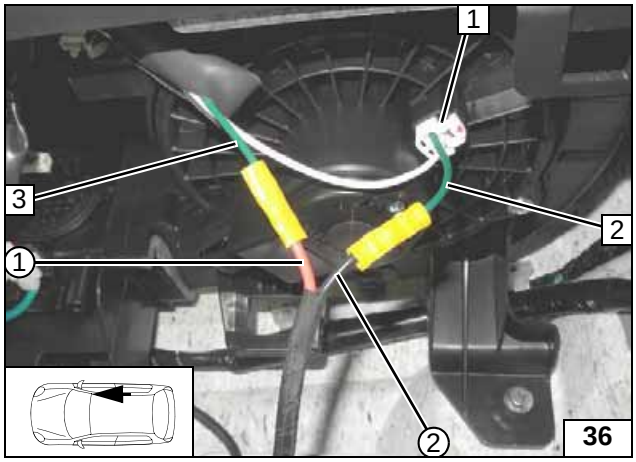
1 Wiring harness of relay and fuse holder (passenger compartment)
2 Wiring harness of heater

Connecting wiring harnesses, ensuring that the colours match



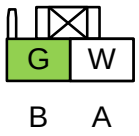
Route blower wiring harness **1** through cable duct **2** to passenger side.

Routing wiring harness



Air-duct removed for documentation.
Connection on 2-pin connector **1** from Blower Fan Controller!

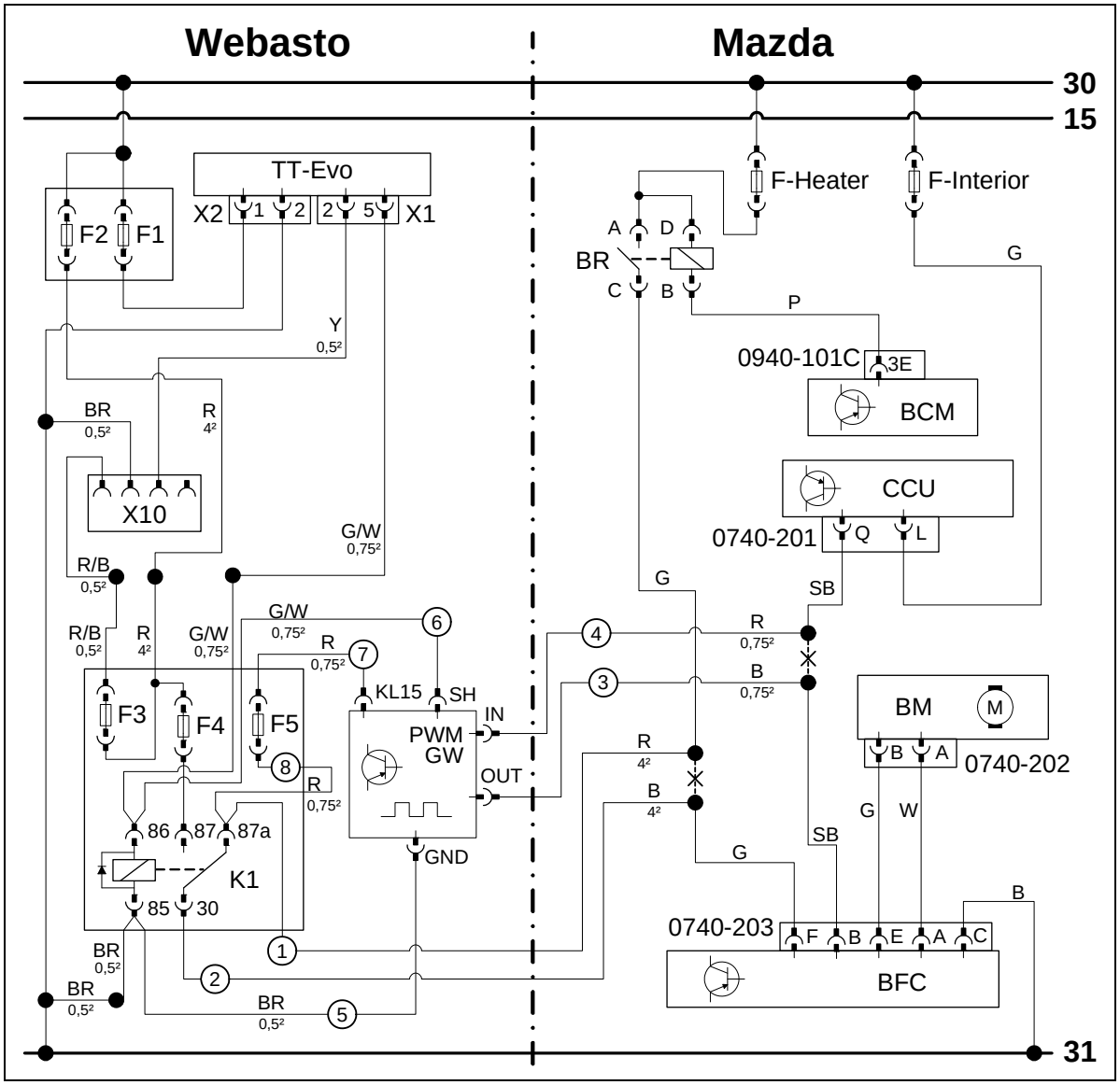
- **2** Wire G to 2-pin connector (Blower motor)/ pin B
- **3** Wire G from blower relay pin C
- ① Wire R from K1/87a blower wiring harness
- ② Wire B from K1/30 blower wiring harness



Connecting blower motor

Blower Fan Controller FULL-AUTO A/C

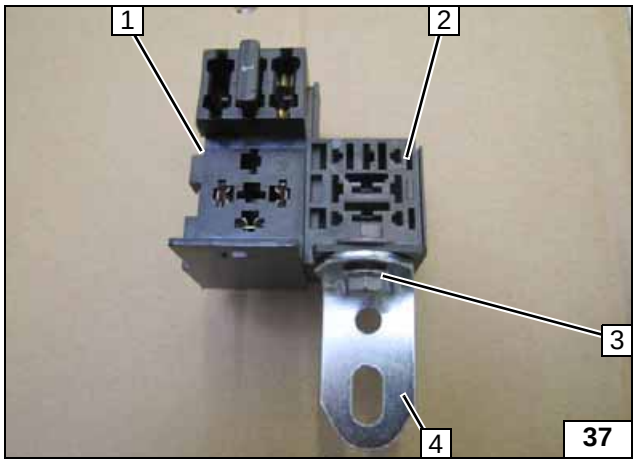
Wiring diagram Full-Auto A/C



Webasto components		Vehicle components		Colours and symbols	
TT-Evo	Heater TT-Evo	F- Heater	40A fuse	R	red
X1	6-pin heater connector	F- Interior	15A fuse	B	black
X2	2-pin heater connector	BR	Blower Relay	Y	yellow
F1	20A fuse	BCM	Body Control Modul	G	green
F2	30A fuse	0940-101C	Connector BCM	BR	brown
X10	4-pin heater control connector	CCU	Climate Control Unit	W	white
		0740-201	Connector CCU Full-Auto A/C	SB	sky blue
F3	1A fuse			P	pink
F4	25A fuse	BM	Blower Motor		
F5	5A fuse	0740-202	2-pin connector BM		
PWM GW	PWM Gateway	BFC	Blower Fan Controller		
		0740-203	6-pin connector BFC		
K1	Blower relay				
PWM GW settings:					
Duty-Cycle:	60%				
Frequency:	500Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low-side			Wiring colours may vary.	

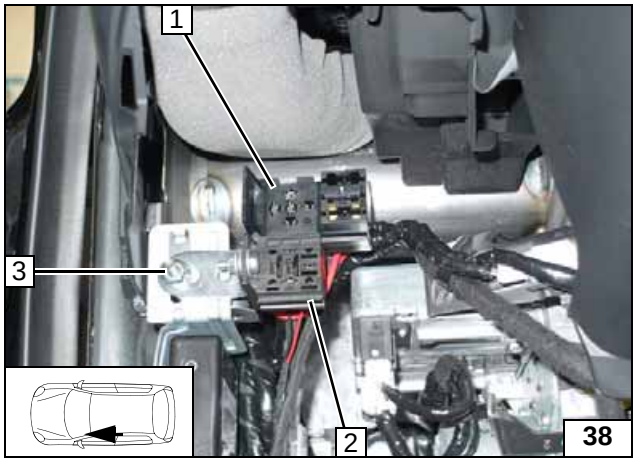
Legend

FULL-AUTO A/C



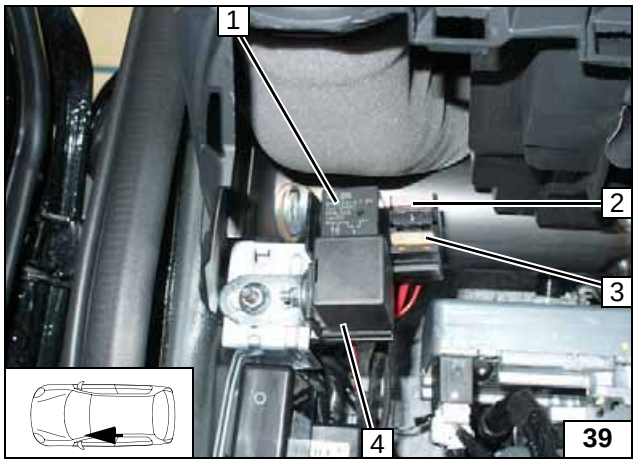
1 Relay and fuse holder (passenger compartment)
2 PWM GW socket
3 M5x16 bolt, large diameter washer [2x], nut (5-6Nm)
4 Angle bracket

Preparing relay and fuse holder (passenger compartment)



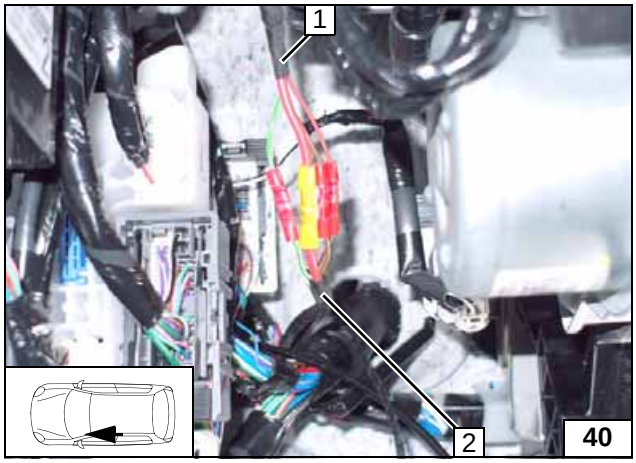
1 Relay and fuse holder (passenger compartment)
2 Socket PWM GW
3 Original vehicle bolts, large diameter washer, flanged nut (8-10Nm)

Installing relay and fuse holder (passenger compartment) and Socket PWM GW



1 K1 relay
2 Fuse F5 5A
3 Fuse F4 25A
4 PWM GW

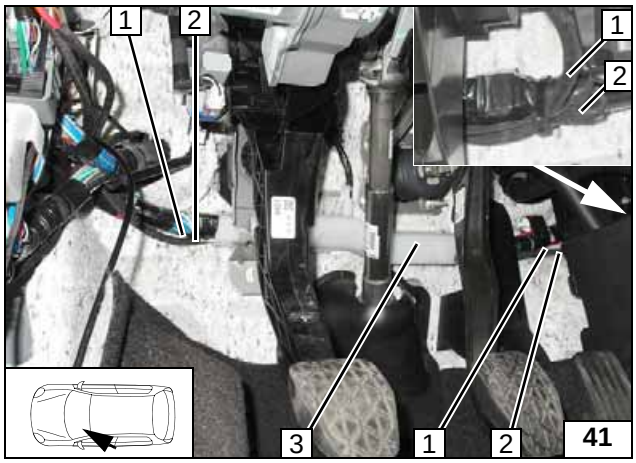
Installing K1 relay and fuse F4 / F5



Cable R (4,0mm²) with R (4,0mm²)
Cable R/B (0,5mm²) with R/B (0,5mm²)
Cable G/W (0,75mm²) with G/W (0,75mm²)
Cable BR (0,5mm²) with BR (0,5mm²)

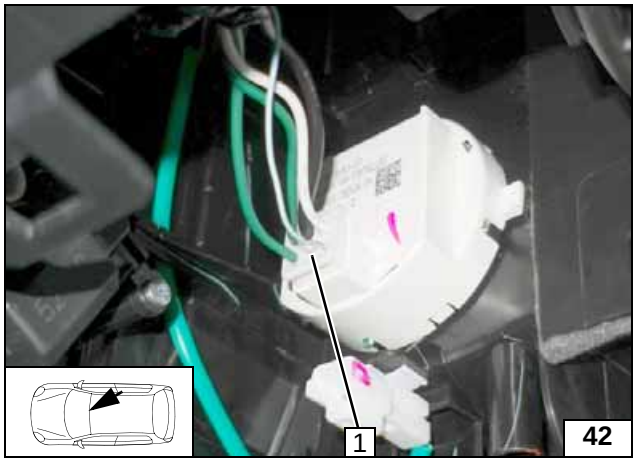
1 Wiring harness of relay and fuse holder (passenger compartment)
2 Wiring harness of heater

Connecting wiring harnesses, ensuring that the colours match



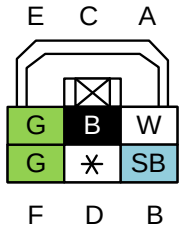
Route blower wiring harness **1** and wiring harness PWM GW **2** through cable duct **3** to passenger side.

Routing wiring harness

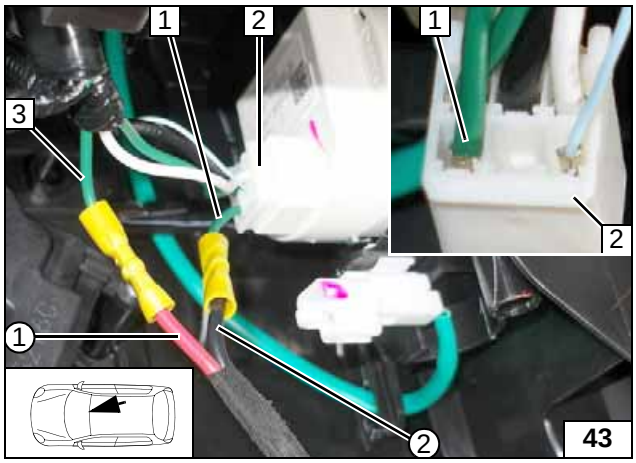


Air-duct removed for documentation!

1 6-pin connector Blower Fan Controller:
- 0740-203 (Full-Auto A/C)



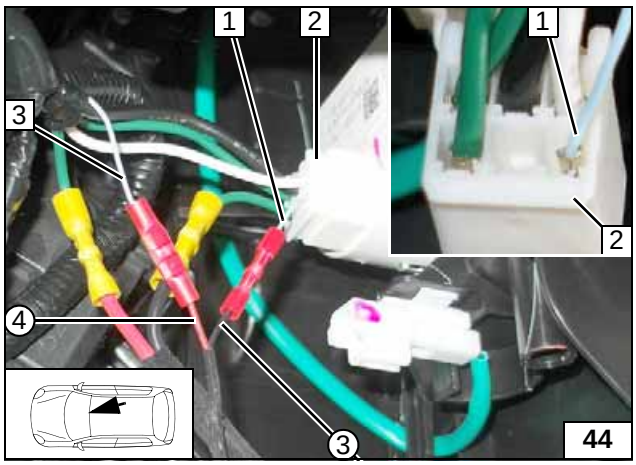
Connector Blower Fan Controller



Connection on 6-pin connector **2** from blower fan controller.

1 Wire G to 6-pin connector blower fan controller / pin F
3 Wire G from Blower relay pin C
① Wire R from K1/87a blower wiring harness
② Wire B from K1/30 blower wiring harness

Connecting of Blower Fan Controller

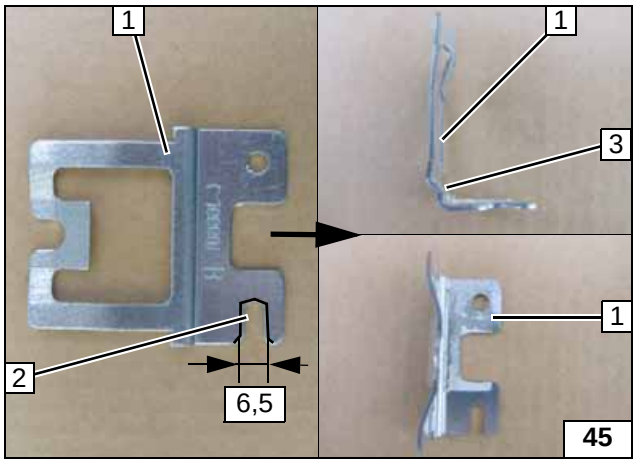


Connection on 6-pin connector **2** from blower fan controller.

1 Wire SB to 6-pin connector blower fan controller/ pin B
3 Wire SB from CCU/ pin Q
③ Wire B from PWM GW/OUT wiring harness PWM GW control
④ Wire R from PWM GW/IN wiring harness PWM GW control

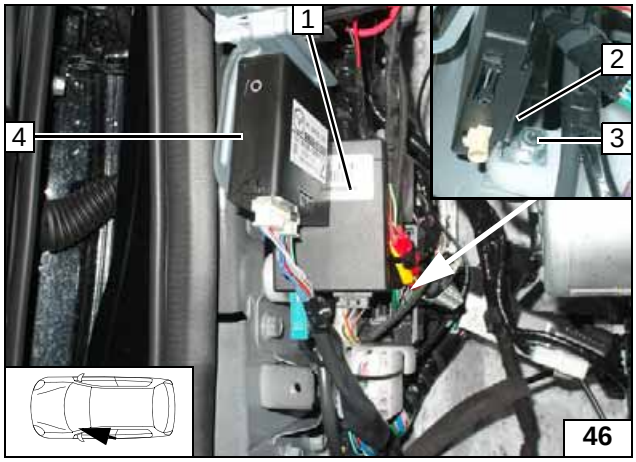
Connecting of Blower Fan Controller

Remote Control Option (Telestart)



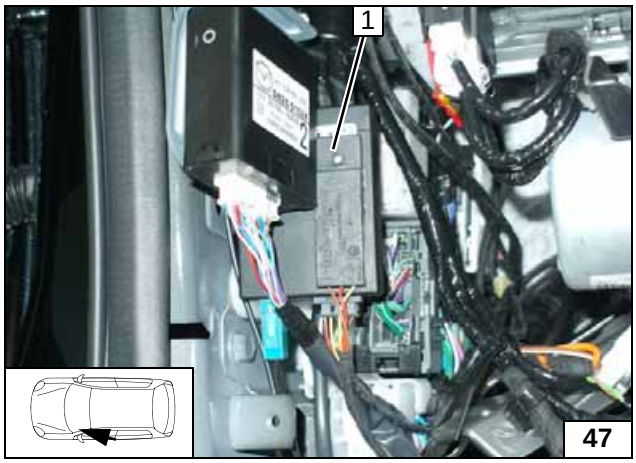
1 Holder receiver
2 Expand slot to Ø 6,5
3 Bending 90°

Preparing holder



1 Receiver
2 Holder receiver
3 Original vehicle bolts, flanged nut (8-10Nm)
4 AFS control unit (only option)

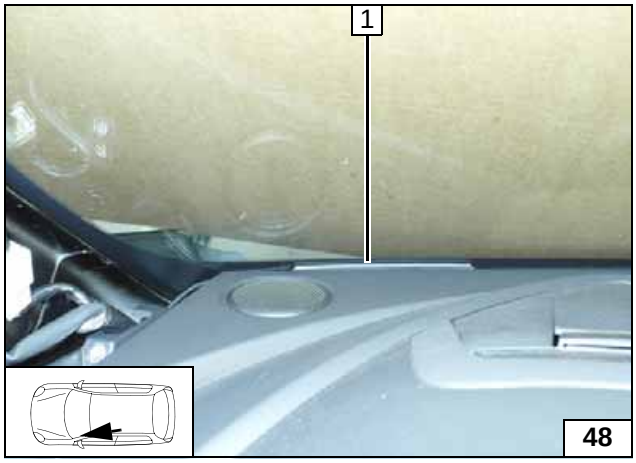
Mounting receiver



Temperature sensor T100 HTM

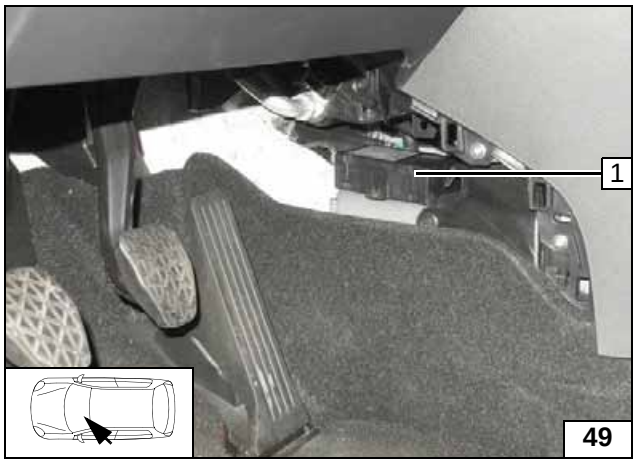
Fasten temperature sensor **1** with adhesive tape.

Installing tempera-ture sensor



1 Antenna

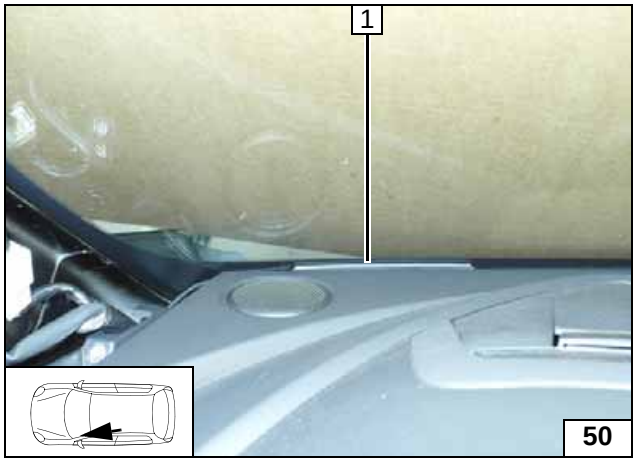
Mounting antenna



ThermoCall Option

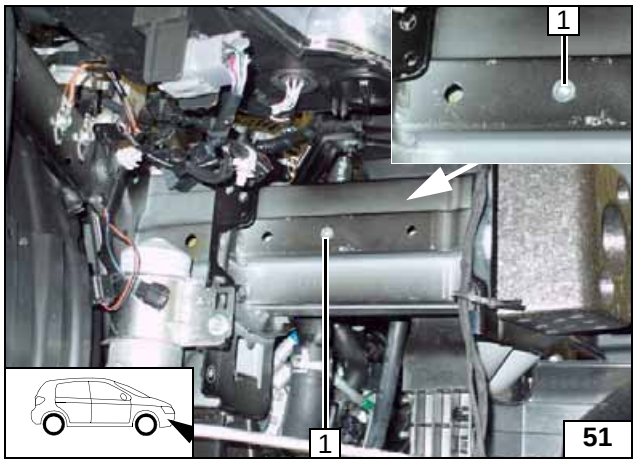
Fasten recceiver **1** with adhesive tape [2x].

Mounting receiver



1 Antenna

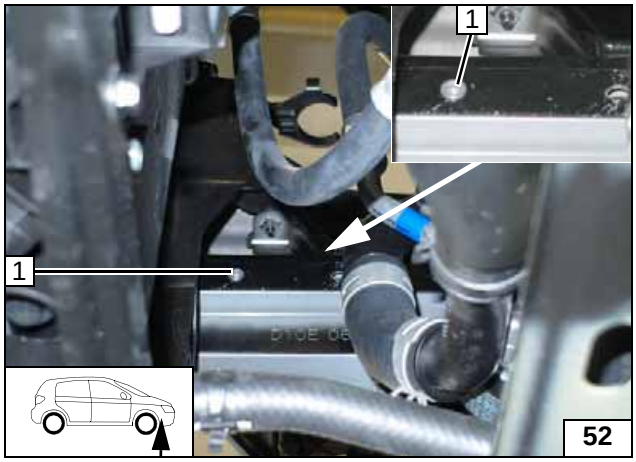
Mounting antenna



Preparing Installation Location

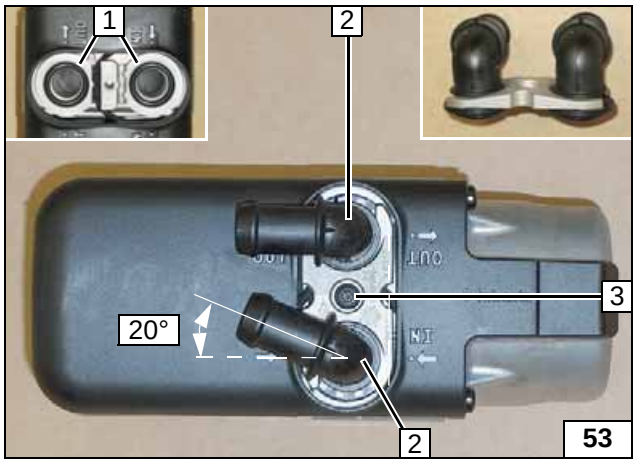
1 Rivet nut M6, existing hole

Mounting rivet nut



1 Rivet nut M6, existing hole

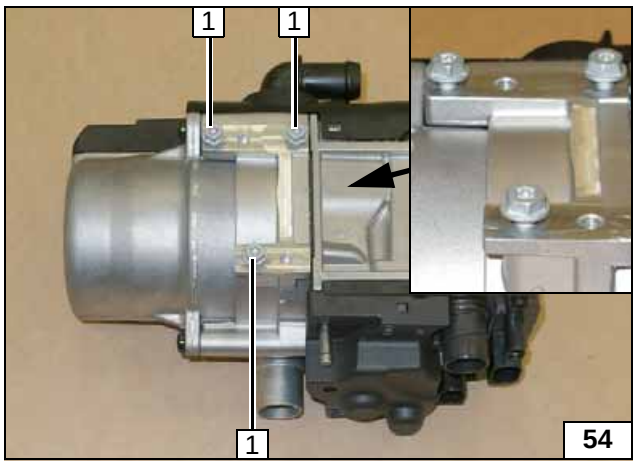
Mounting rivet nut



Preparing Heater

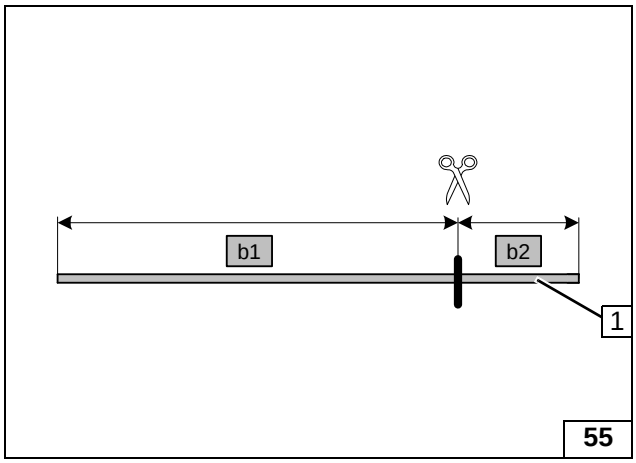
1 Sealing ring [2x]
2 Water connection piece [2x]
3 5x15 self-tapping bolt, retaining plate of water connection piece (7Nm)

Mounting water connection piece



5x13 self-tapping bolt [3x] to existing holes assemble loosely, only with 3 turns.

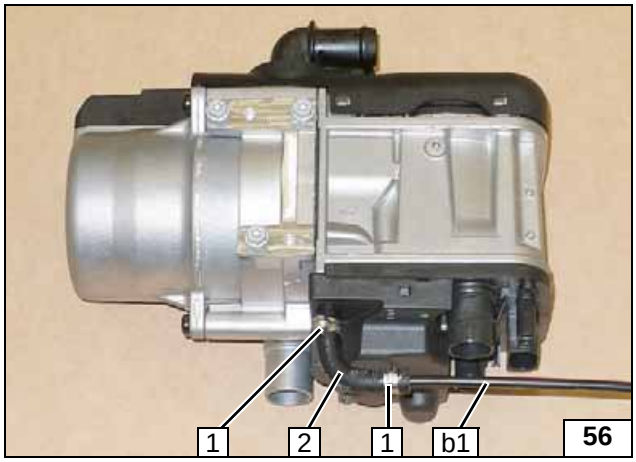
Premount heater



1 Fuel line, length 6000

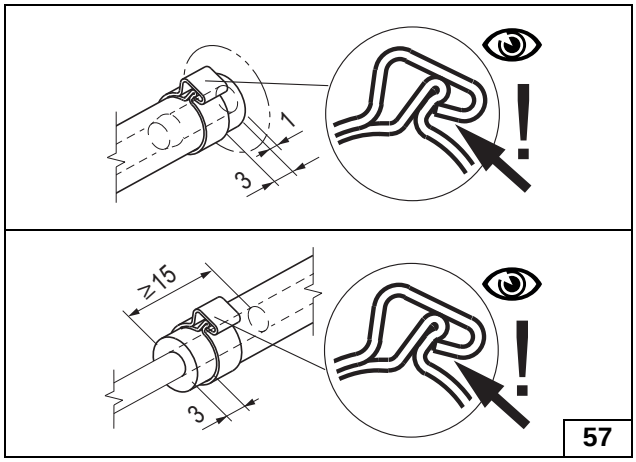
b1 = 5250
b2 = 750

Cutting fuel line to length

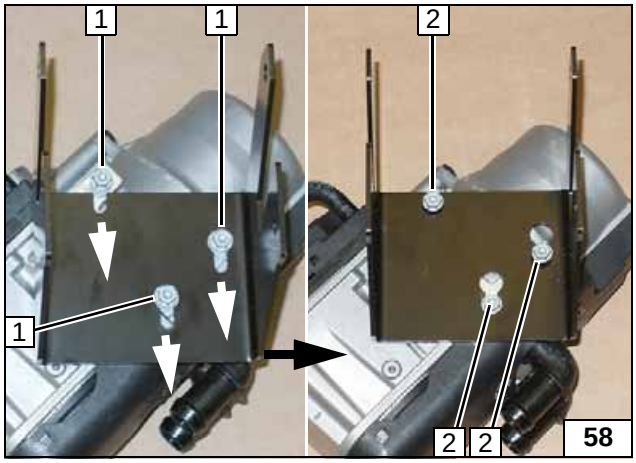


1 Clamps Ø 10 [2x]
2 Moulded hose 90° Ø 4,5

Mounting fuel line b1



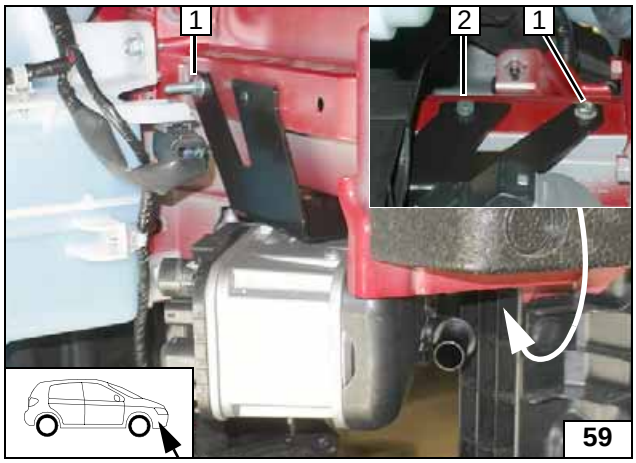
Mounting moulded hose and fuel line



1 Loosley assembled 5x13 self-tapping bolts [3x]
2 Tighten 5x13 self-tapping bolts [3x] (8Nm)

Mounting holder

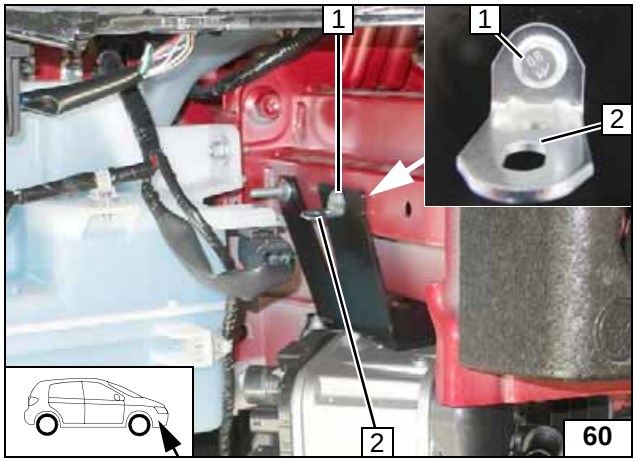
Installing Heater



1 M6x120 bolt, flanged nut (8-10Nm)
2 M6x20 bolt, spring lockwasher (8-10Nm)

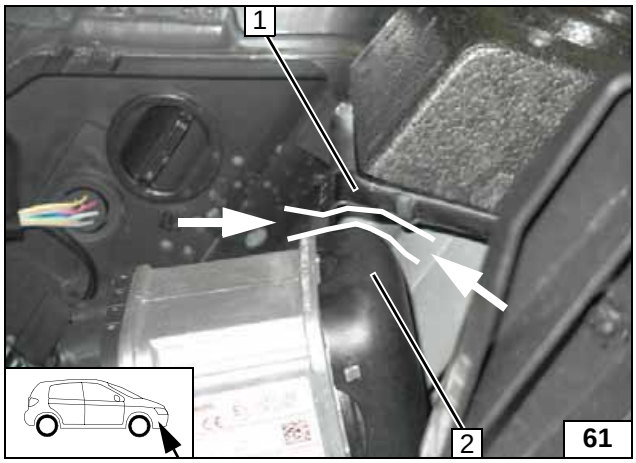
Mounting heater

Aligning see the following figure.

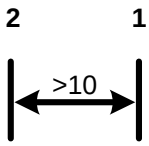


1 M6x25 bolt (8-10Nm)
2 Angle bracket for silencer (combustion air)

Mounting heater and angle bracket



1 Bumper reinforcement
2 Heater

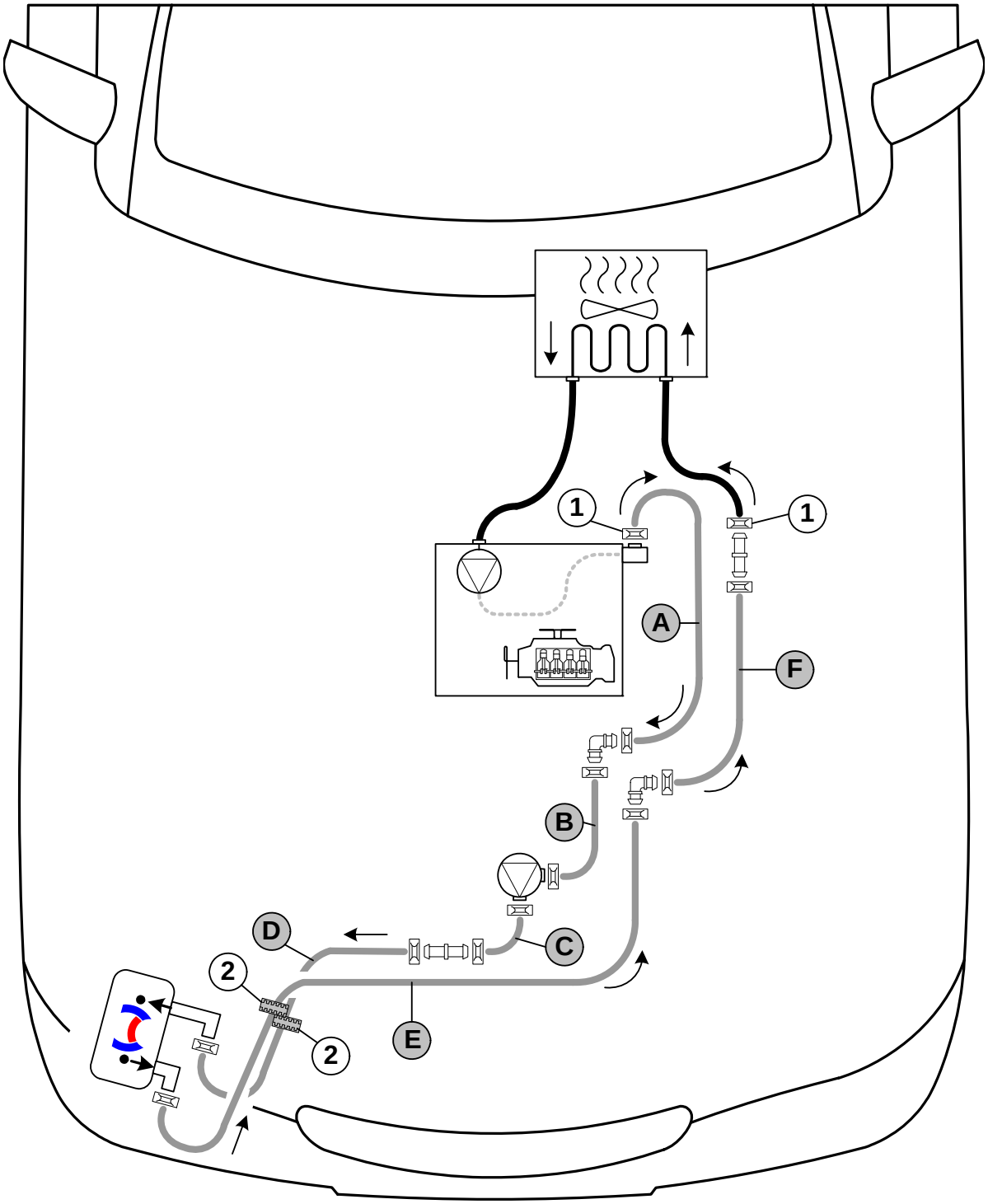


Check position

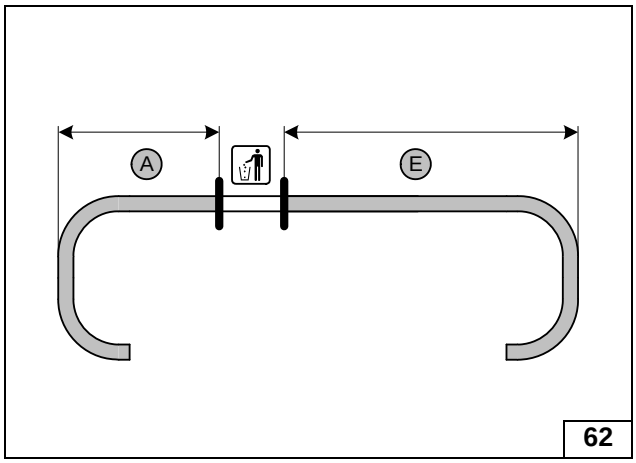
Coolant Circuit

WARNING!
Any coolant running off should be collected using an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.
The connection should be „inline“ based on the following diagram:

Hose routing diagram

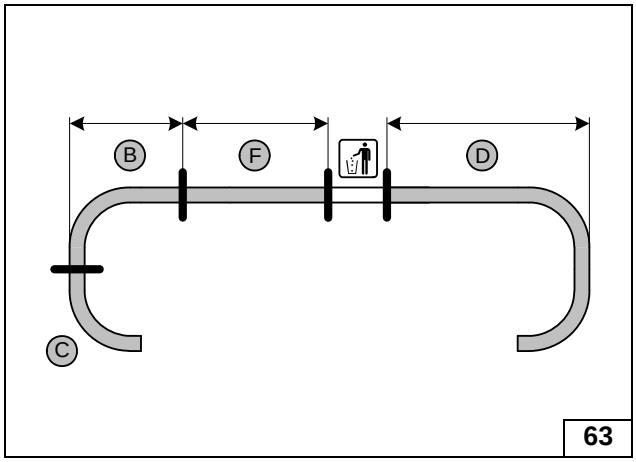


All spring clamps = Ø 25! All connecting pipes and = Ø 18x18!
1 = original vehicle spring clamps!
2 = rubber ring black!



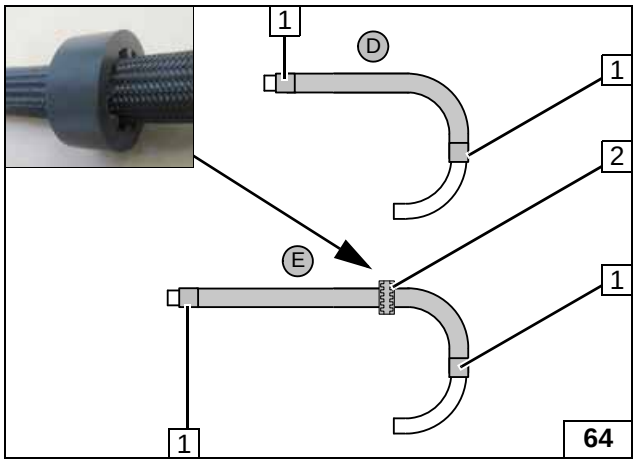
A = 550
E = 1140

Cutting hoses to length



B = 330
D = 710
F = 510

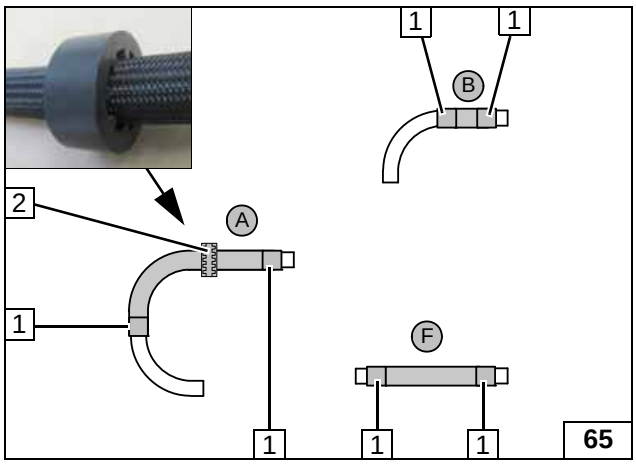
Cutting hoses to length



Cut both shrink tubes L=250 each into 2x5 equal pieces of L=50
Slide braided protection hose 1050 onto hose **D.**
Slide braided protection hose 1500 onto hose **E**.

1 Heat shrink plastic tubing [4x]
2 Rubber ring black premounting

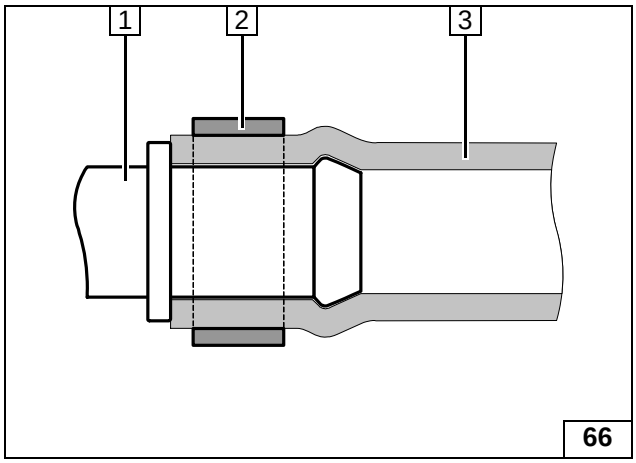
Preparing hoses



Slide braided protection hoses 2000 onto hose **A**, **B** and **F** and cut to length.

1 Heat shrink plastic tubing [6x]
2 Rubber ring black premounting

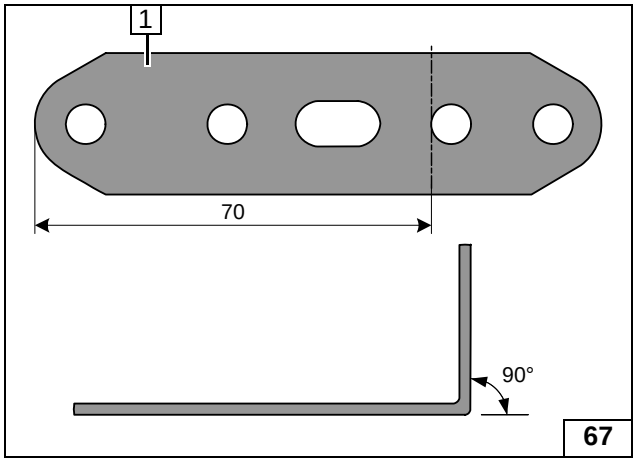
Preparing hoses



Generally mounting of connecting pipes, hoses and clamps!

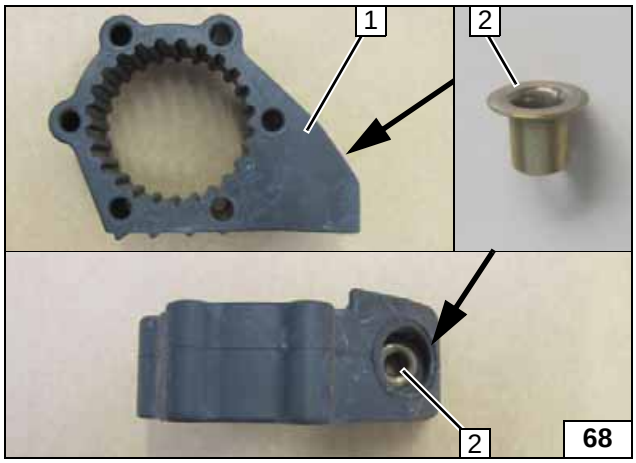
1 Connecting pipes
2 Spring clamps
3 Hose

Note mounting hose



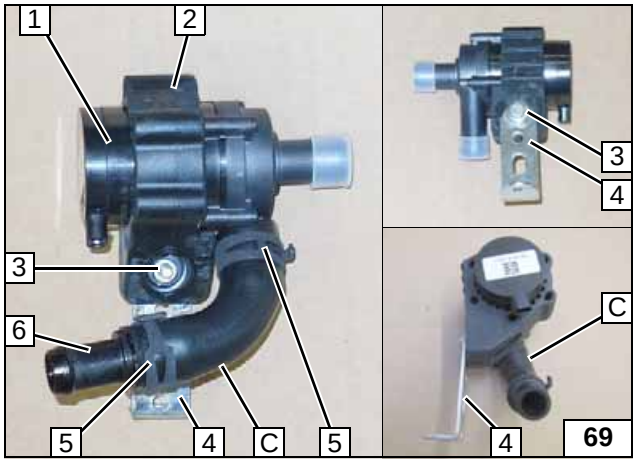
1 Perforated bracket for circulating pump

Bending down perforated bracket



1 Rubber support of circulating pump
2 Support rivet

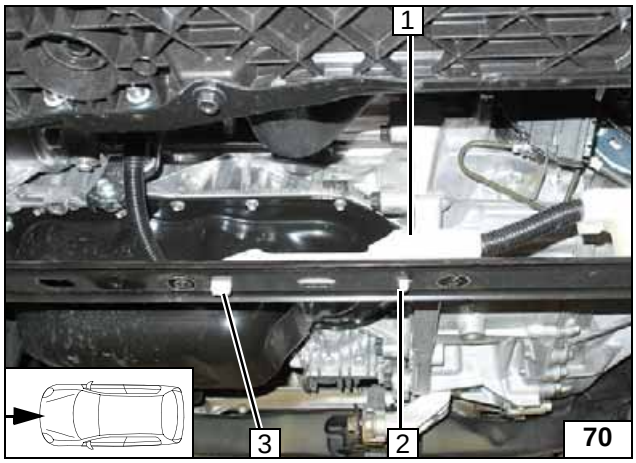
Mounting support rivet



Connect hose **C** with short side at circulation pump.

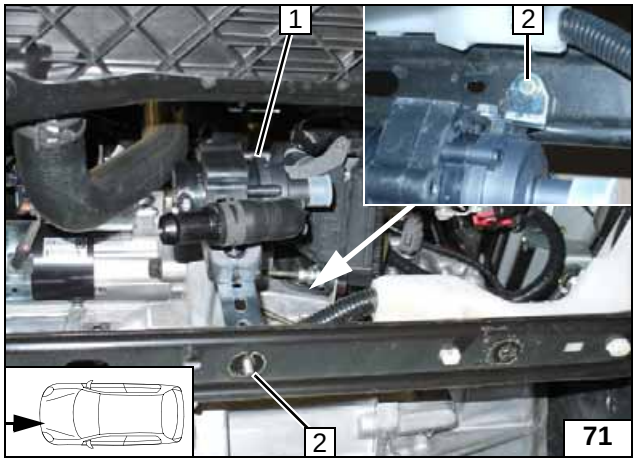
1 Circulating pump
2 Rubber support of circulating pump
3 M6x25 bolt, flanged nut (8-10Nm)
4 Perforated bracket
5 Spring clamps Ø 25 [2x]
6 Connecting pipe Ø 18

Premounting circulating pump



Cable duct isn‘t available in all car version!
Release cable duct **1** on position **2** and **3**.

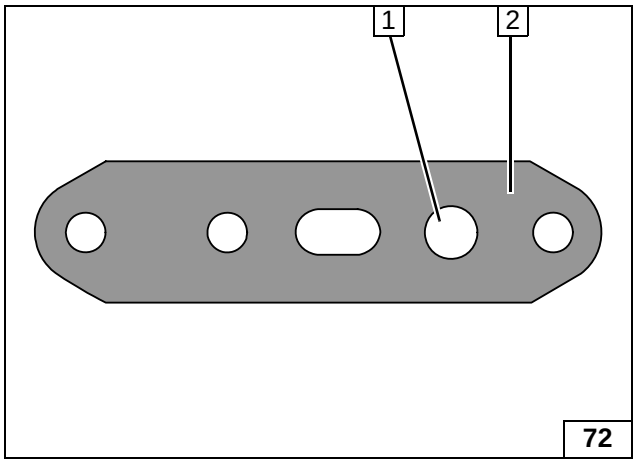
Removing cable duct



Bolt at position **2** will be fixed together with undercover later.

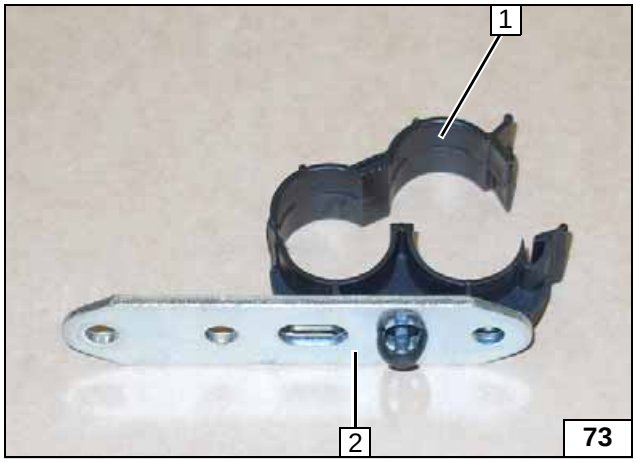
1 Circulating pump (premounted)
2 M6x20 bolt (Screw head from above, 8-10Nm)

Mounting circulation pump



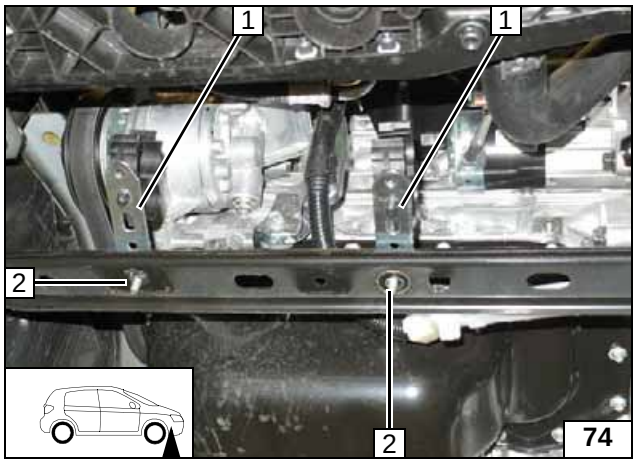
1 Drill hole to Ø 8 [2x]
2 Perforated bracket [2x]

Preparing perforated bracket



1 Hose bracket 25x25 [2x]
2 Perforated bracket [2x]

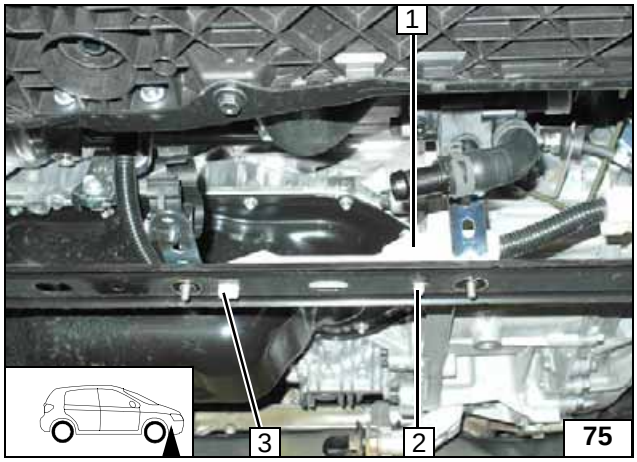
Premounting perforated bracket



Bolt at position **2** [2x] will be fixed together with undercover later.

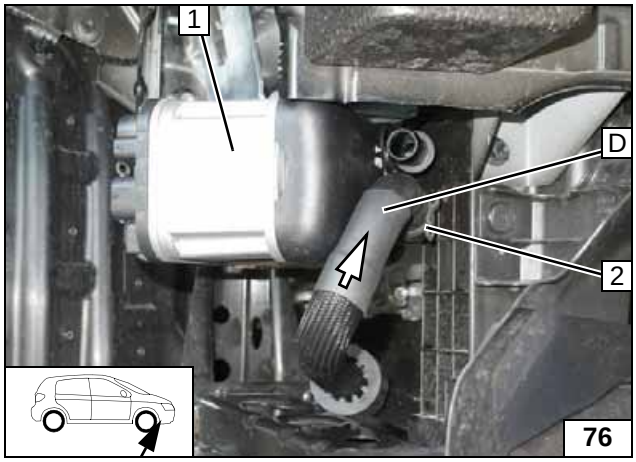
1 Perforated bracket (premounted) [2x]
2 M6x20 bolt (Screw head from above, 8-10Nm) [2x]

Mounting hose bracket



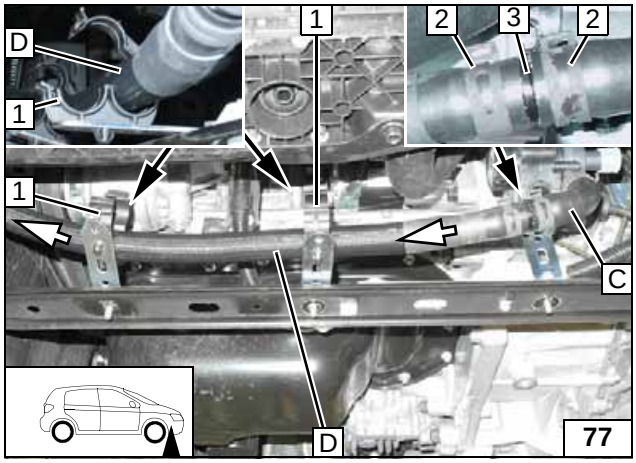
Re-install cable duct **1** at position **2** and **3**.

Re-install cable duct



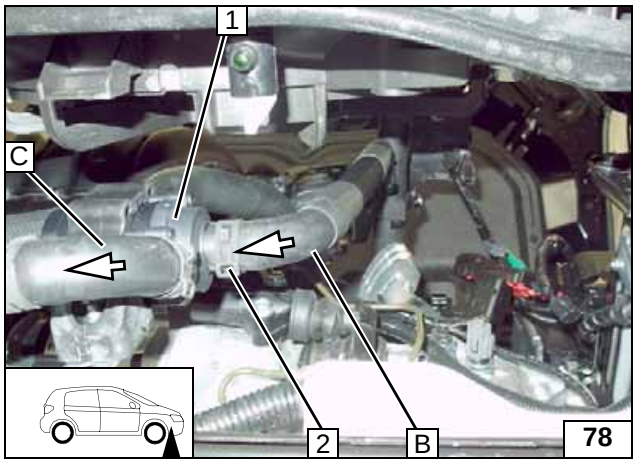
1 Heater
2 Spring clamp Ø 25

Mounting hose D on the heater inlet



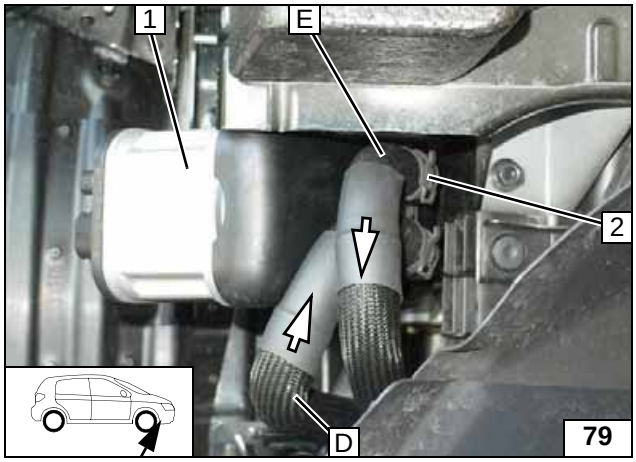
1 Hose bracket 25x25 [2x], (still opened)
2 Spring clamps Ø 25 [2x]
3 Connecting pipe Ø 18

Routing hose D in engine compartment



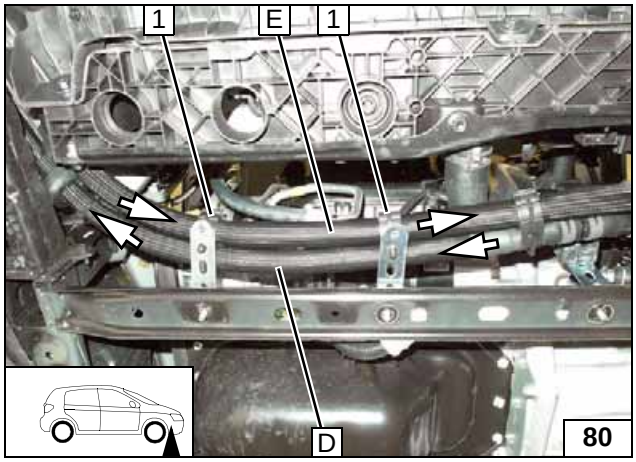
1 Circulating pump
2 Spring clamp Ø 25

Mounting hose B



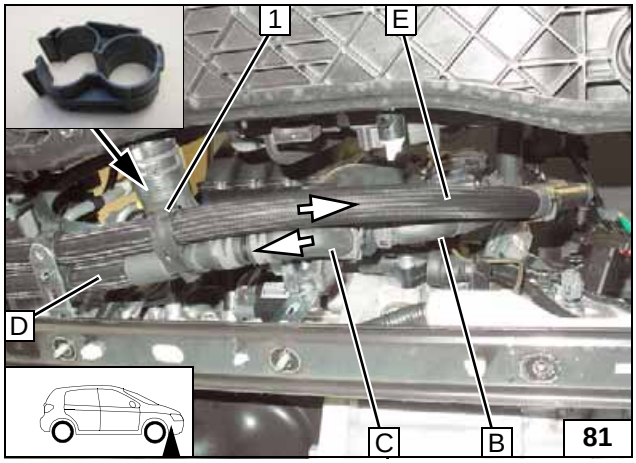
1 Heater
2 Spring clamp Ø 25

Mounting hose E on the heater outlet



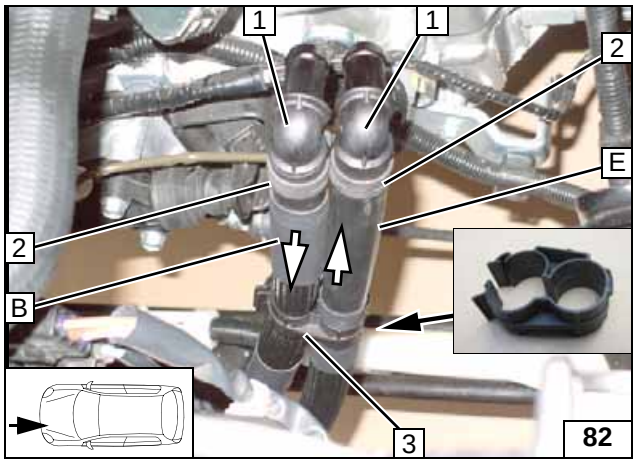
1 Hose bracket 25x25 [2x] (still open)

Routing hose E in engine compartment



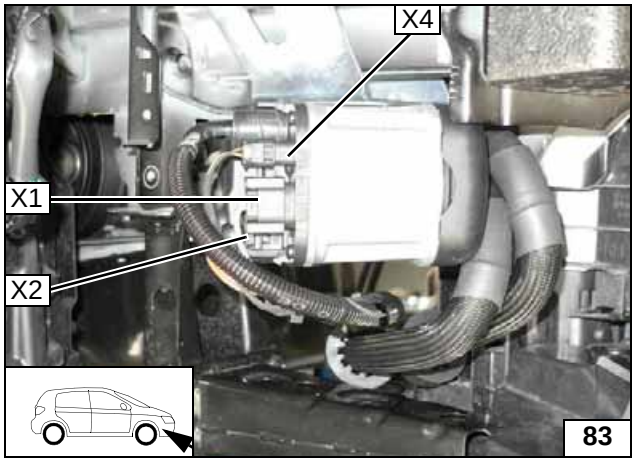
1 Hose bracket 25x25 (still open)

Routing hose E in engine compart-ment



1 Connecting pipes 90° Ø 18 [2x]
2 Spring clamps Ø 25 [2x]
3 Hose bracket 25x25

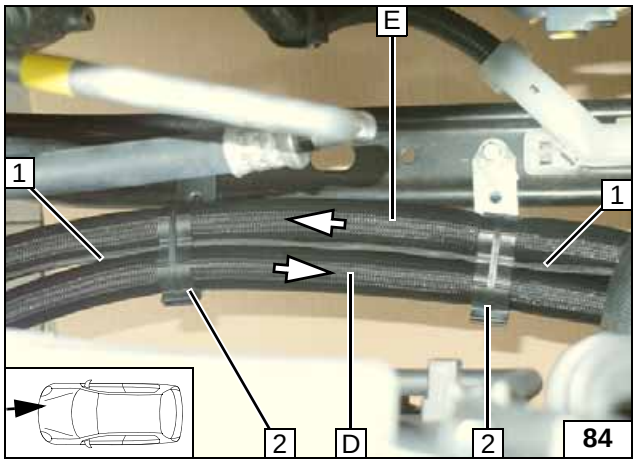
Routing hose E an B in engine compart-ment



Fixing wiring harness will be along corrugated tube later.

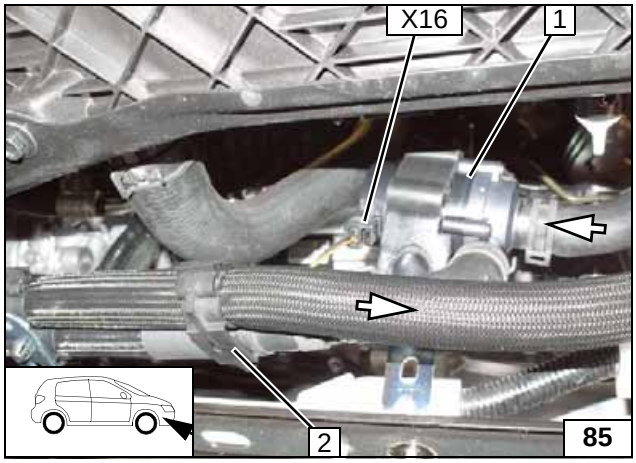
X1 6-pin connector wiring harness of heater
X2 2-pin connector wiring harness of heater
X4 2-pin connector wiring harness of circu-lating pump

Attaching wiring harnesses



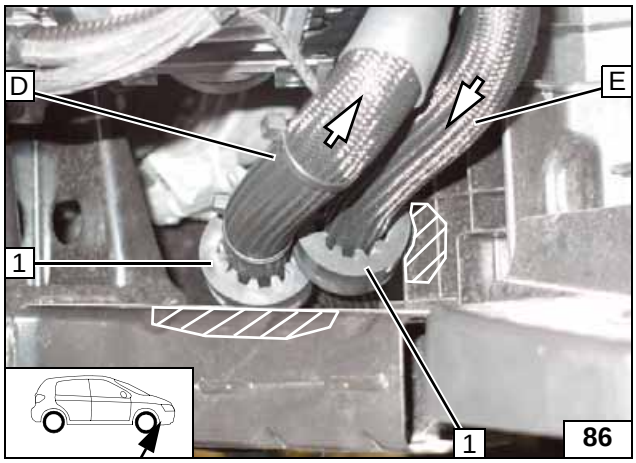
1 Wiring harness of circulating pump
2 Hose bracket 25x25 [2x] closed

Routing wiring harnes of circulating pump



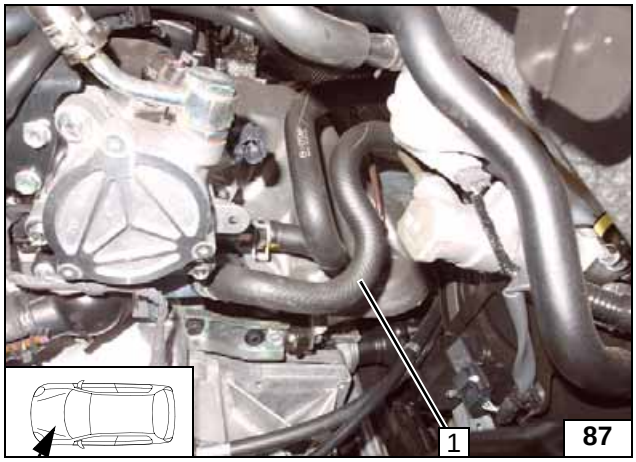
1 Circulating pump
2 Hose bracket 25x25 closed
X16 2-pin connector wiring harness of circu-lating pump

Mounting wiring harnes of circulating pump



1 Rubber ring black [2x]

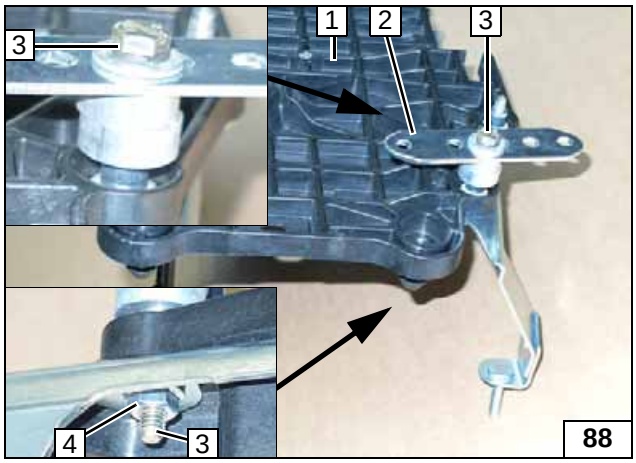
Align rubber ring black



Hose and original vehicle spring clamp will be re-used.

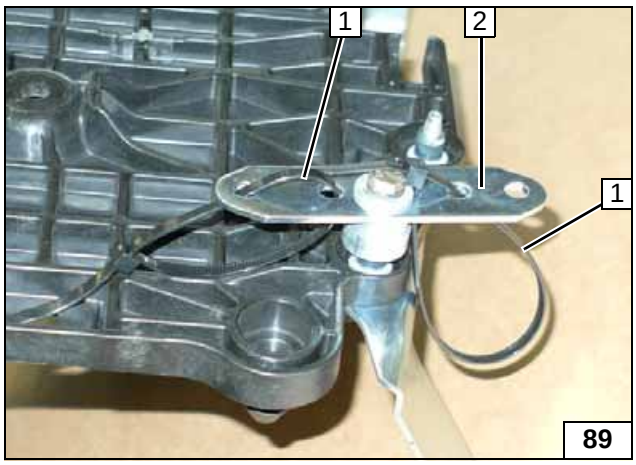
1 Hose of engine outlet / heat ex-changer inlet

Remove hose



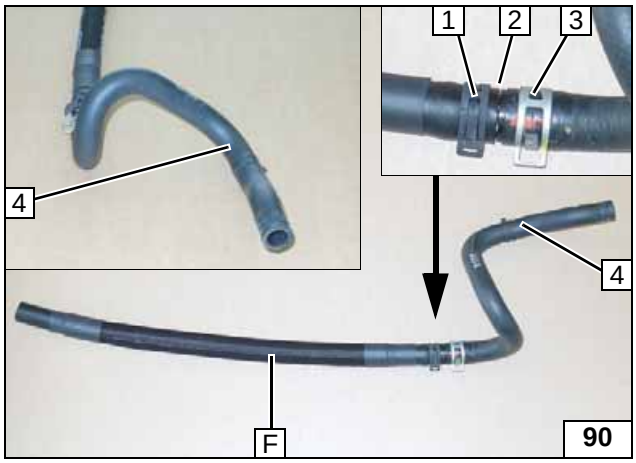
1 Battery tray
2 Perforated bracket
3 Bolt M6x50, Distance washer 8, Distance washer 5
4 Nut (8-10Nm)

Premounting battery tray



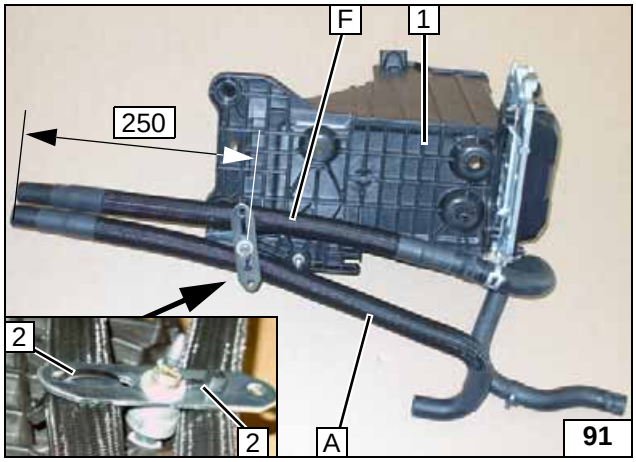
1 Cable tie loosely mount [2x]
2 Perforated bracket

Premounting cable tie



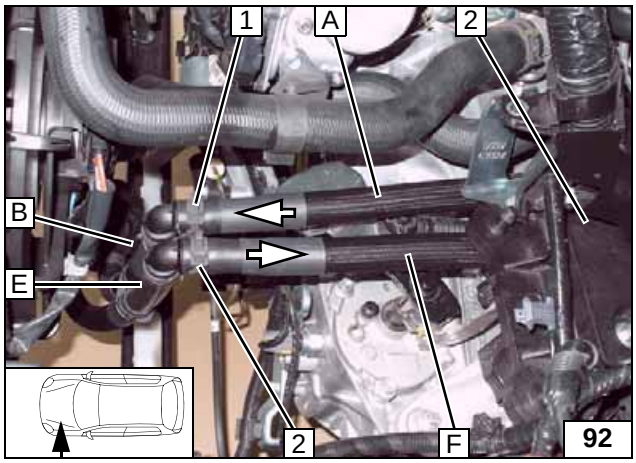
1 Spring clamp Ø 25
2 Connecting pipe Ø 18x18
3 Original vehicle spring clamp
4 Hose coming from engine outlet / heat ex-changer inlet

Premounting hose



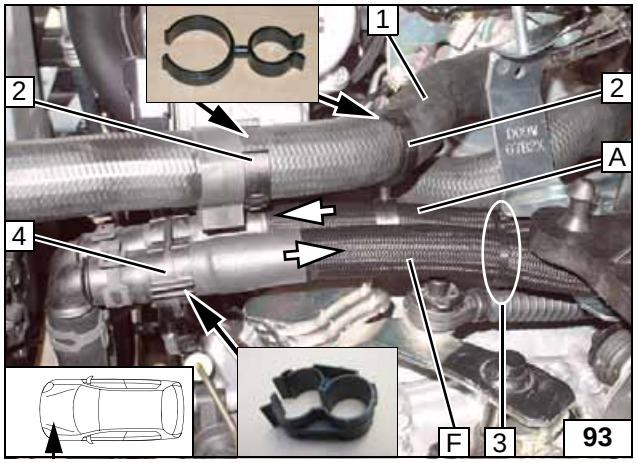
1 Battery tray
2 Tighten cable tie [2x]

Mounting hose



1 Spring clamp Ø 25 [2x]
2 Battery tray

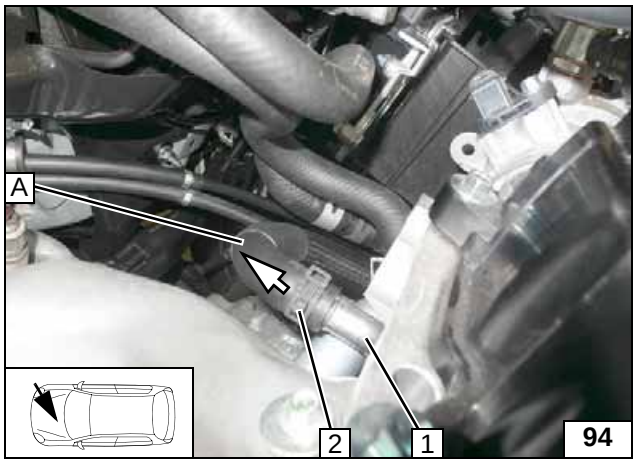
Mounting battery tray with hose A and F



Picture is showing manual transmission. Mounting hose bracket **2** between vehicle hose **2** and hose **A**.

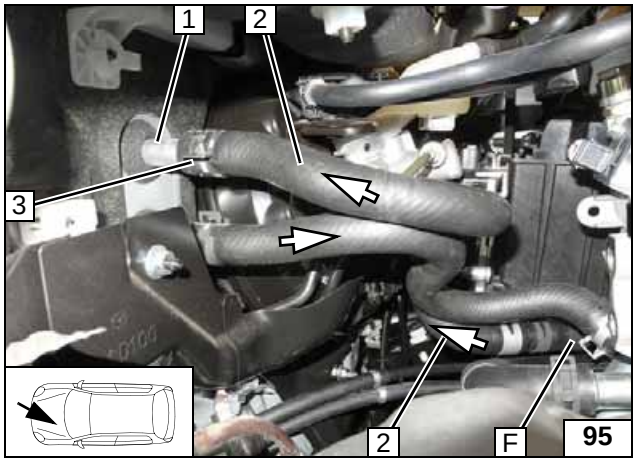
1 Hose bracket 37x25 [2x]
3 Cable tie
4 Hose bracket 25x25

Mounting hose bracket



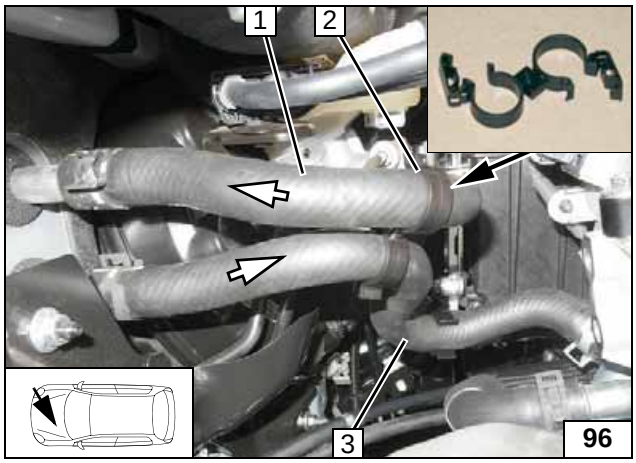
1 Connection piece engine outlet
2 Original vehicle spring clamp Ø 25

Mounting hose A at engine outlet



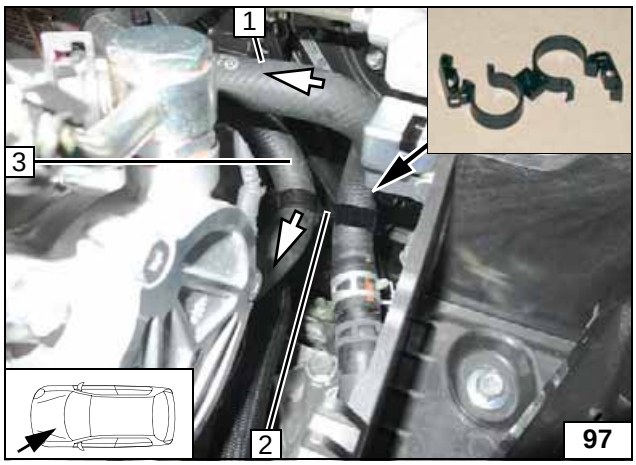
1 Connection piece heat ex-changer inlet
2 Hose heat ex-changer inlet
3 Original vehicle spring clamp Ø 25

Mounting hose ex-changer inlet



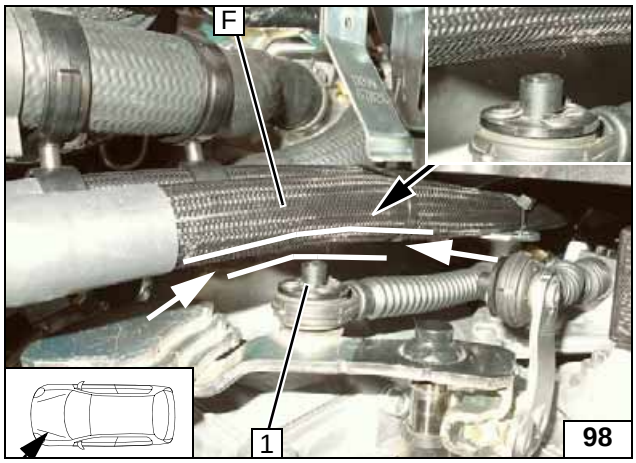
1 Hose heat ex-changer inlet
2 Hose bracket 25x25 between hose **1** and **3**
3 Hose heat ex-changer outlet

Mounting hose bracket



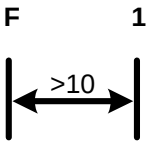
1 Hose heat ex-changer inlet
2 Hose bracket 25x25 between hose **1** and **3**
3 Hose heat ex-changer outlet

Mounting hose bracket

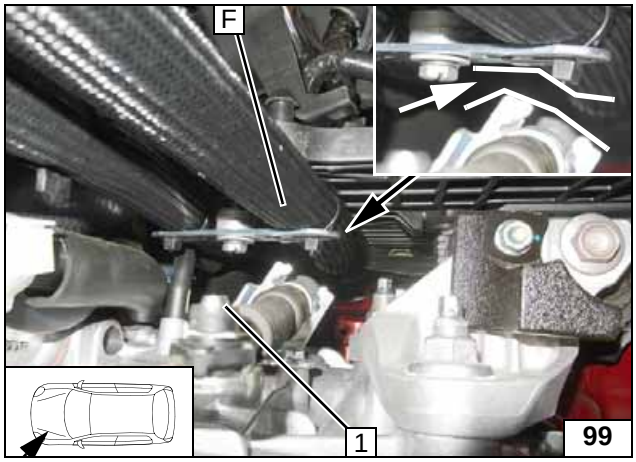


Manual transmission

1 Shift linkage (reverse gear position)

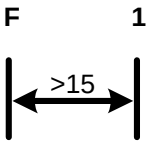


Align hose



Automatic transmission

1 Shift linkage



Align hose

Fuel

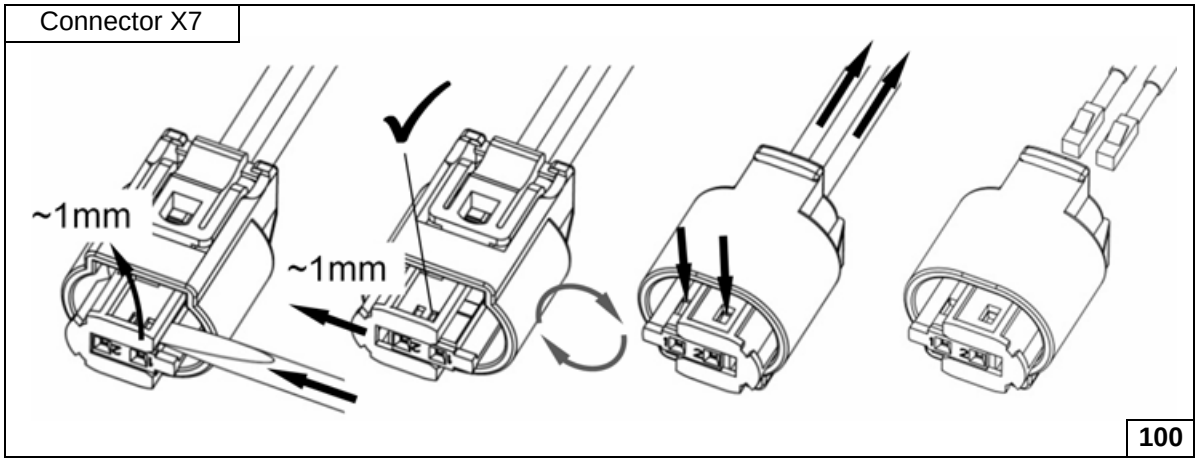
CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off with an appropriate container.

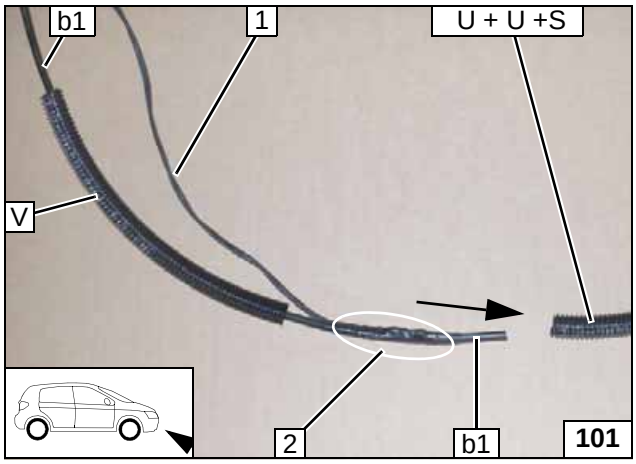
Install fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.

Disassembling metering pump connector

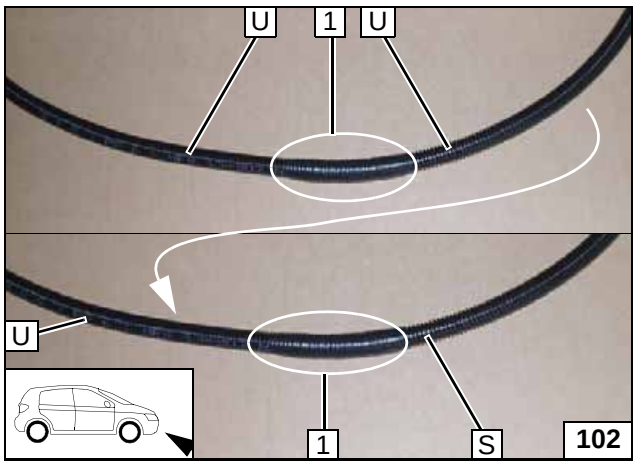


Premounting fuel line b1 and wiring harness



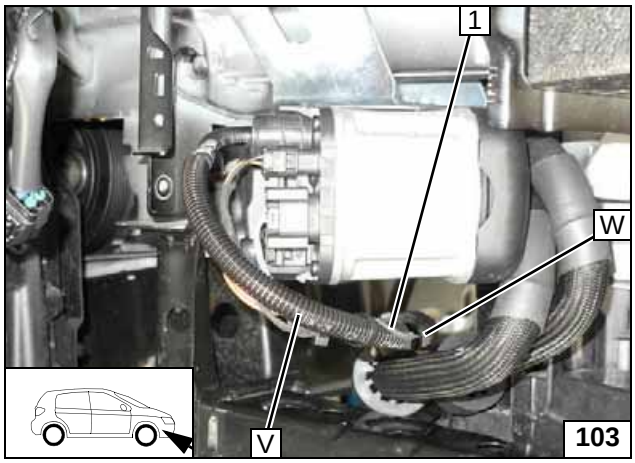
Pull fuel line **b1** into corrugated tube Ø 10 **V.**
Fix the end of wiring harness of metering pump at fuel line **b1** with insulation tape **2**.
Pull fuel line **b1** and wiring harness of metering pump **1** into corrugated tube Ø 10 **U** + **U** + **S**.

Premounting corrugated tube



Wrap round contact points between corrugated tube Ø 10 **U** + **U** + **S** with insulation tape **1** [2x].

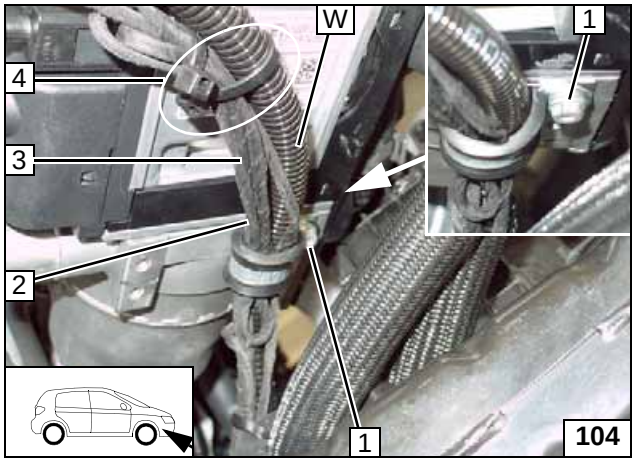
Referred to corrugated tube U + U + S become in the further as corrugated tub W.



Routing fuel line into corrugated tube Ø 10 **V** and **W** to the engine compartment.

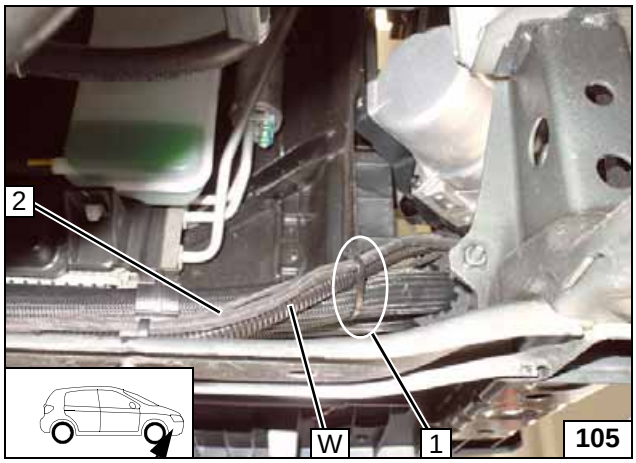
1 Wiring harness of metering pump

Routing fuel line



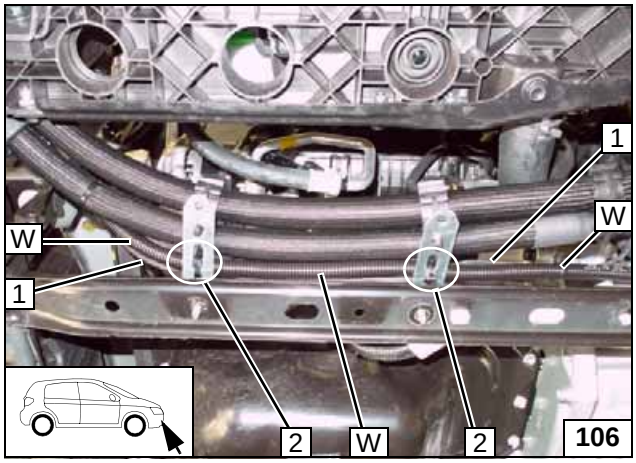
1 5x13 self-tapping bolt, rubber-coated p-clamp Ø 18, existing holes on heater
2 Wiring harness of heater
3 Remaining cable overlength of wiring harness circulation pump
4 Cable tie

Fixing wiring harness and corrugate tube W



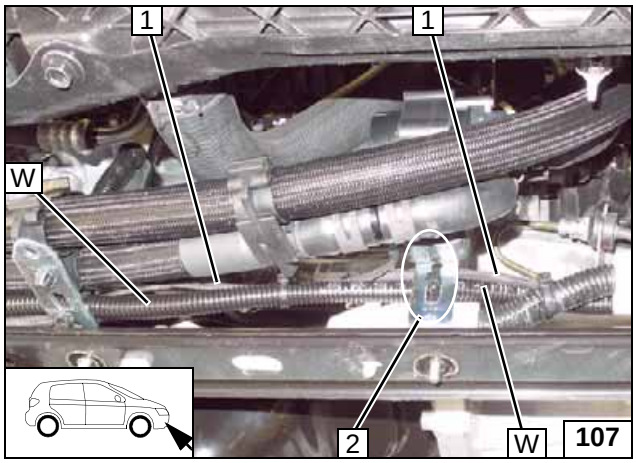
1 Cable tie
2 Wiring harness of heater and circulating pump

Routing wiring harness and corrugate tube W



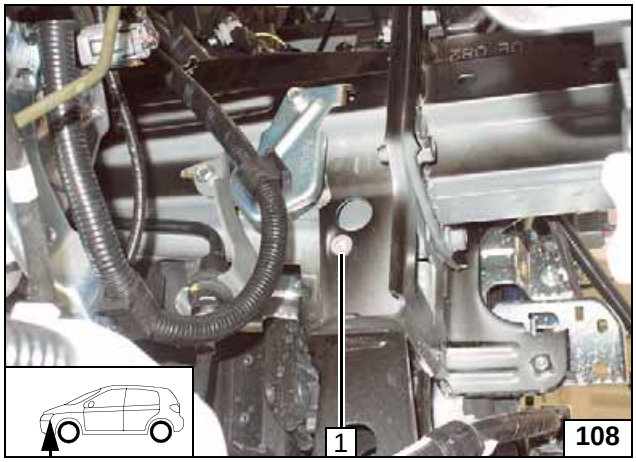
1 Wiring harness of heater
2 Cable tie [2x]

Routing wiring harness and corrugate tube W



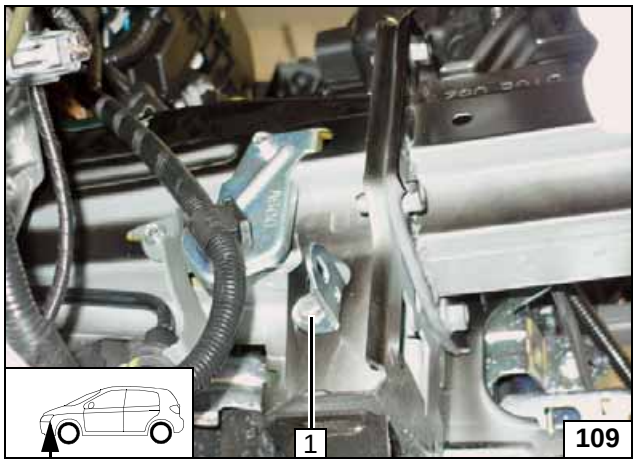
1 Wiring harness of heater
2 Cable tie

Routing wiring harness heater and corrugate tube W



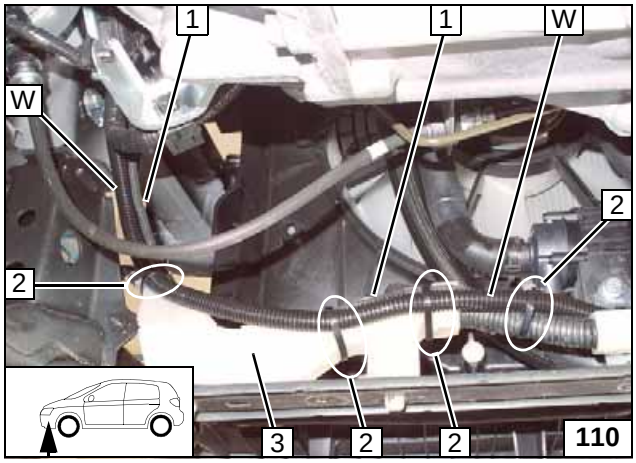
1 Rivet nut, existing hole

Installing rivet nut



1 M6x20 bolt, spring lockwasher, large diameter washer, angle bracket (8-10Nm)

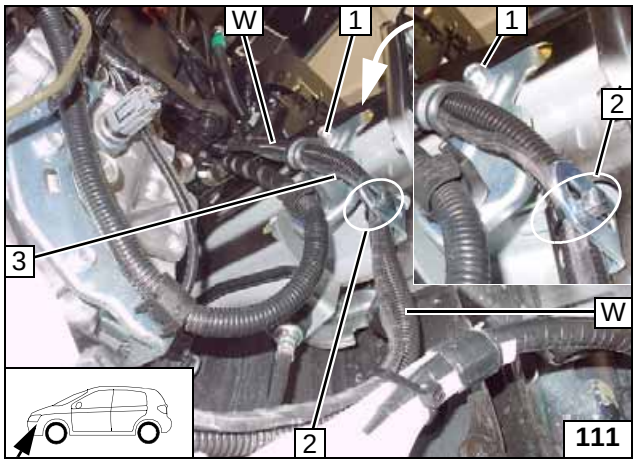
Mounting angle bracket



Version with cable duct (position **3**).

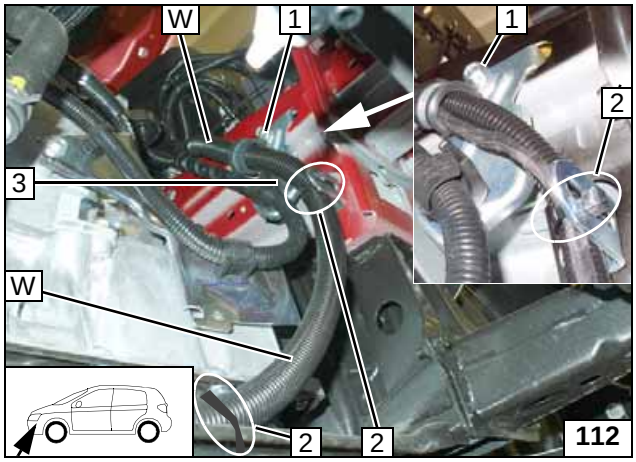
1 Wiring harness of heater
2 Cable tie [4x]

Routing wiring harness heater and corrugate tube W



1 Original vehicle bolt, rubber-coated p-clamp Ø 18 (8-10Nm)
2 Cable tie
3 Wiring harness of heater

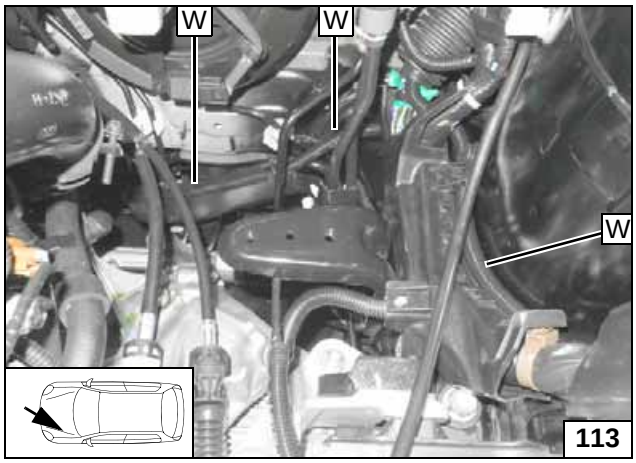
Routing wiring harness heater and corrugate tube W



Version without cable duct

1 Original vehicle bolt, rubber-coated p-clamp Ø 18 (8-10Nm)
2 Cable tie [2x]
3 Wiring harness of heater

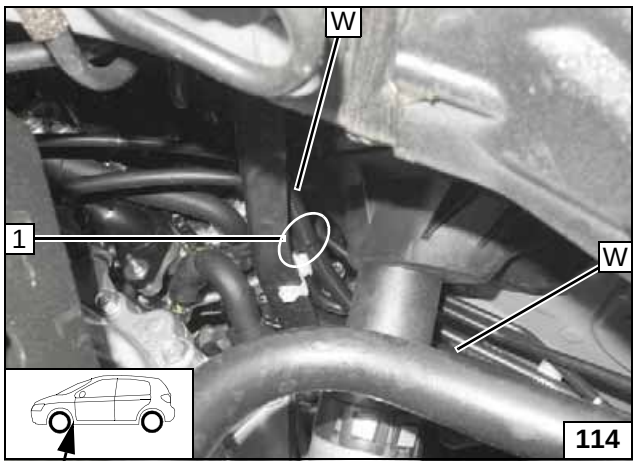
Routing wiring harness heater and corrugate tube W



All vehicle

Route corrugated tube Ø 10 **W** along original vehicle wiring harness to the firewall.

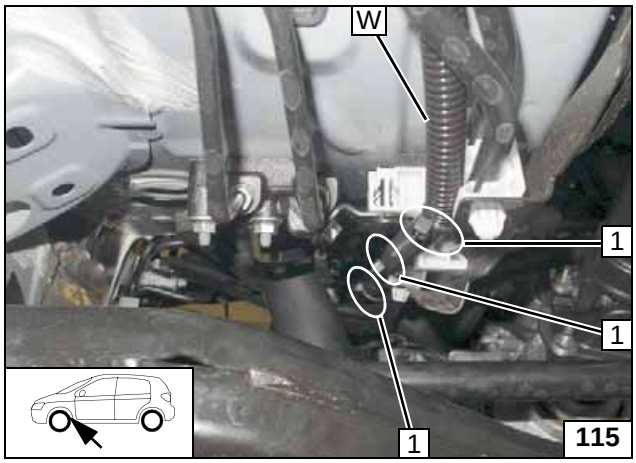
Routing corrugate tube W



Route corrugated tube Ø 10 **W** along original vehicle fuel lines to the underbody.
Ensure sufficient distance from steering shaft, correct if necessary.

1 Cable tie

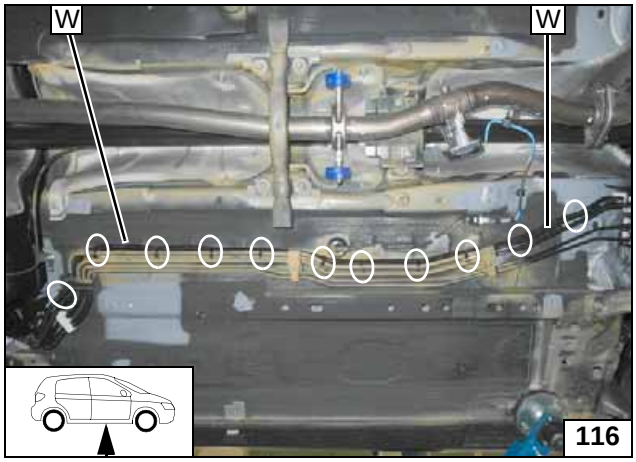
Routing corrugate tube W



Route corrugated tube Ø 10 **W** along the original vehicle fuel lines.

1 Cable tie [3x]

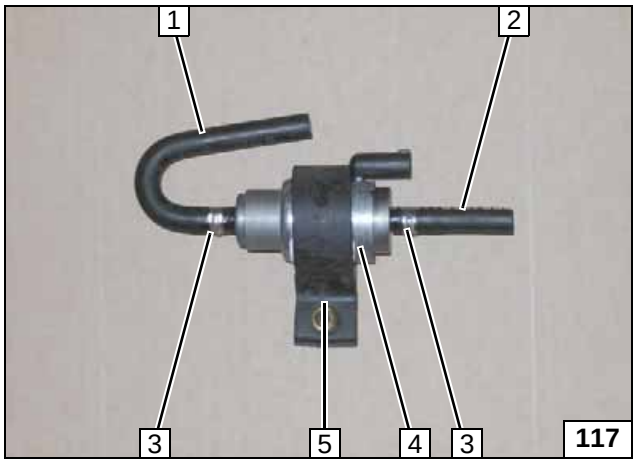
Routing corrugate tube W



Route corrugated tube Ø 10 **W** along the original vehicle fuel lines to the installation location of the metering pump.

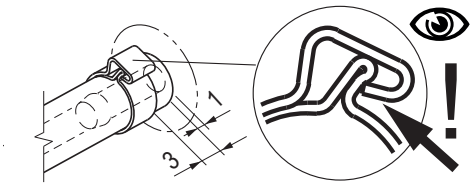
○ Cable tie

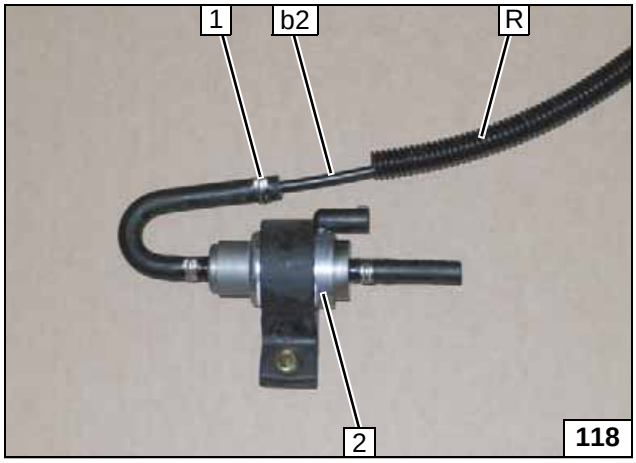
Routing corrugate tube W



1 Moulded hose 180°
2 Hose section
3 Clamp Ø 10 [2x]
4 Metering pump
5 Intake of metering pump

Premounting metering pump

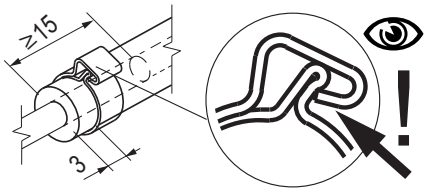


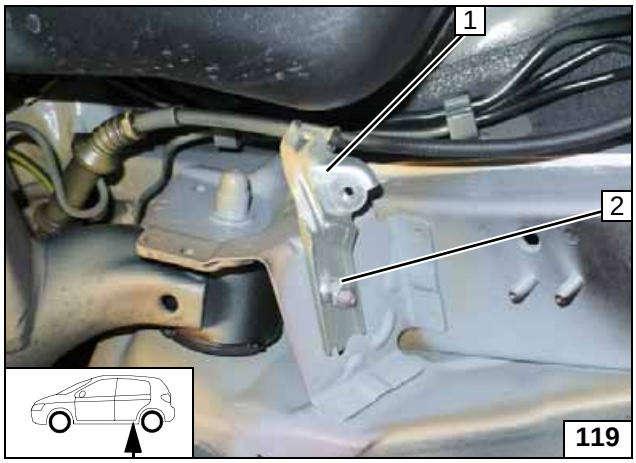


Route fuel line **b2** in corrugated tube Ø 10 **R**.

1 Clamp Ø 10
2 Metering pump

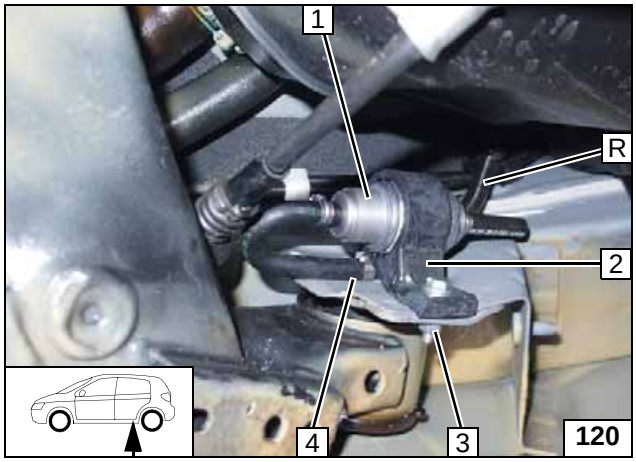
Mounting fuel line b2





Loosen handbrake cable **1** from position **2**.

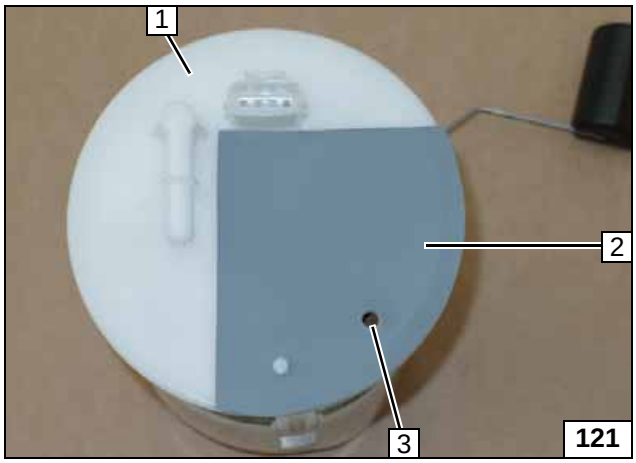
Loosen handbrake cable



Route fuel line **b2** in corrugated tube Ø 10 **R** to the fuel pump unit.
Position moulded hose 180° **4** as shown.

1 Metering pump
2 Support angle bracket
3 M6x25 bolt, flanged nut, existing hole (8-10Nm)

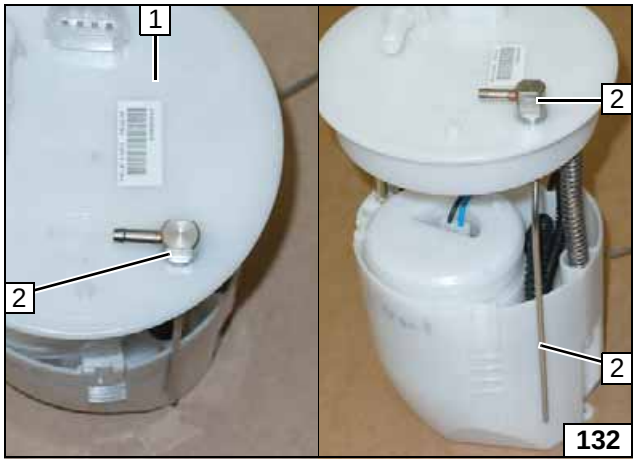
Mounting metering pump



Remove fuel pump unit **1** according to manufacturer's instructions (MESI).
Cut out template **2** and transfer hole pattern **3**.

3 Drill hole Ø 6 carefully

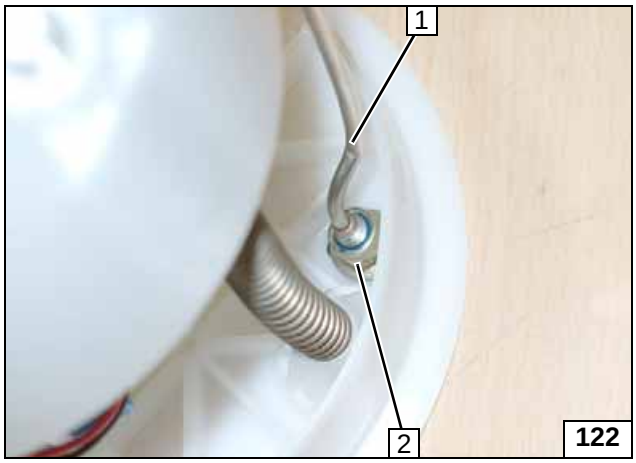
Fuel extraction



Shape fuel standpipe **2** according to template and cut to length (see follow picture also).
Carefully follow seperate standpipe installation instruction!

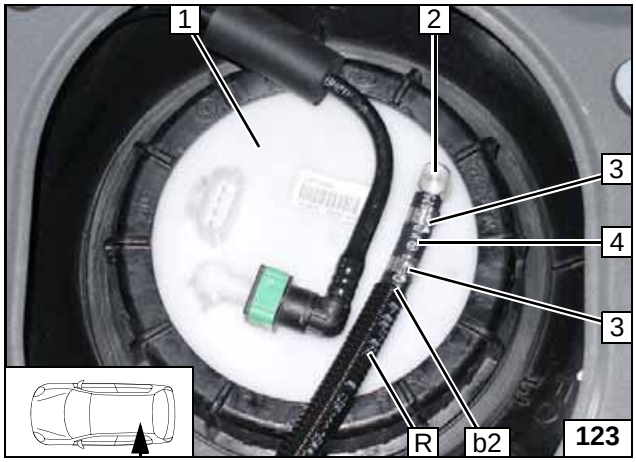
1 Fuel pump unit

Installing fuel standpipe



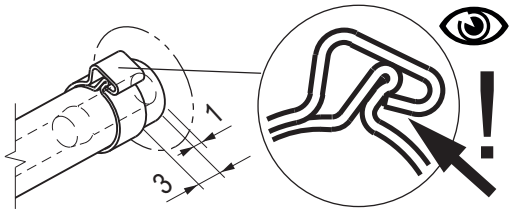
1 Fuel standpipe
2 Flanged nut

Installing fuel standpipe



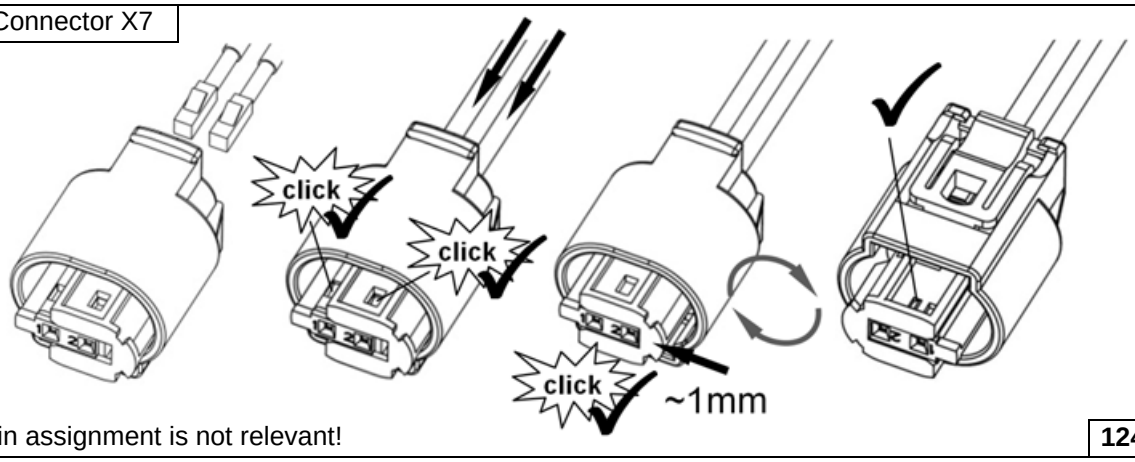
Install fuel pump unit **1** according to manufacturer's instructions (MESI).

2 Fuel standpipe
3 Clamp Ø 10 [2x]
4 Hose section



Connecting fuel line

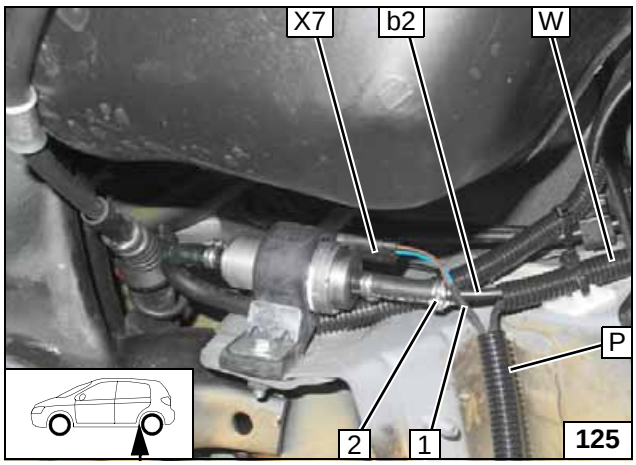
Connector X7



Pin assignment is not relevant!

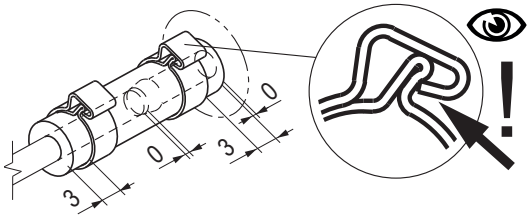
124

Completing metering pump connector

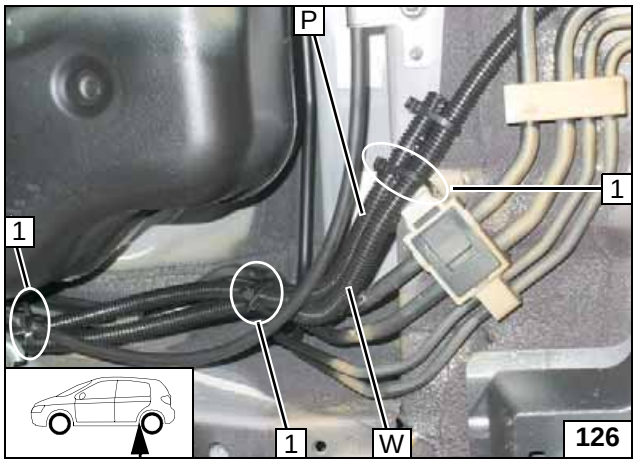


Pull remaining cable overlength **1** in corrugated tube Ø 10 **P.**

1 Wiring harness of metering pump
2 Clamp Ø 10
X7 Connector fuel metering pump



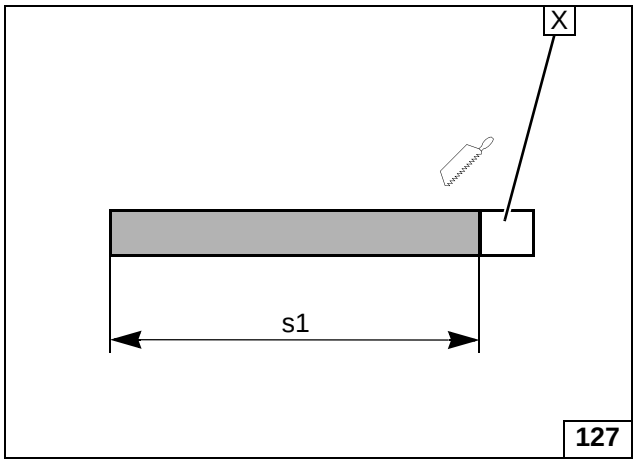
Connecting metering pump



Fixation corrugated tube Ø 10 **P** and **W** along original vehicle fuel lines.
Ensure sufficient distance from adjacent components, correct if necessary.

1 Cable tie [3x]

Routing wiring harness

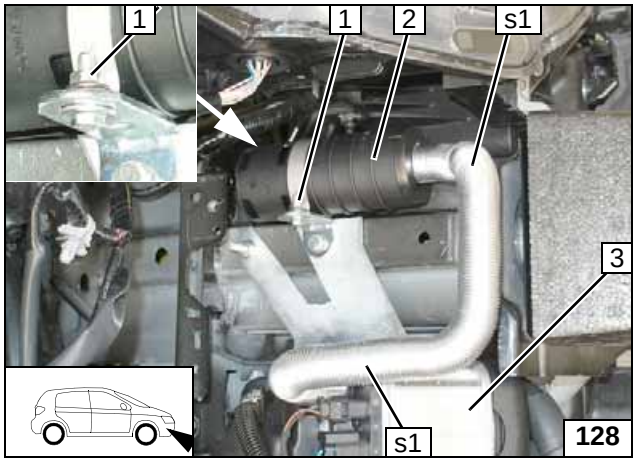


Combustion Air

s1 = 380

X =

Cut combustion air pipe



1 M5x16 bolt, large diameter washer, Clamp Ø 51, flanged nut (5-6Nm)
2 Silencer
3 Heater

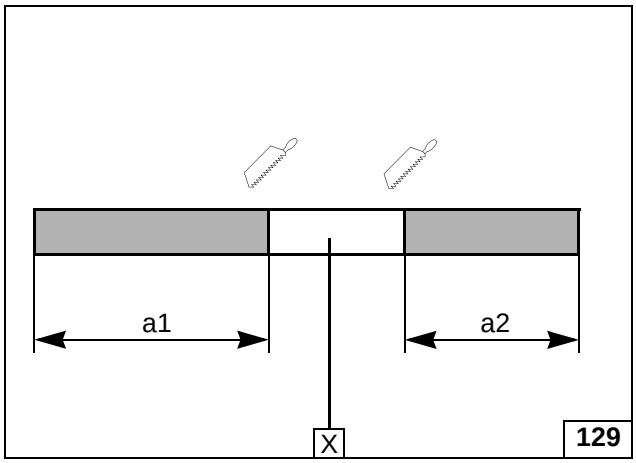
Mounting silencer and combustion air pipe s1

Exhaust Gas

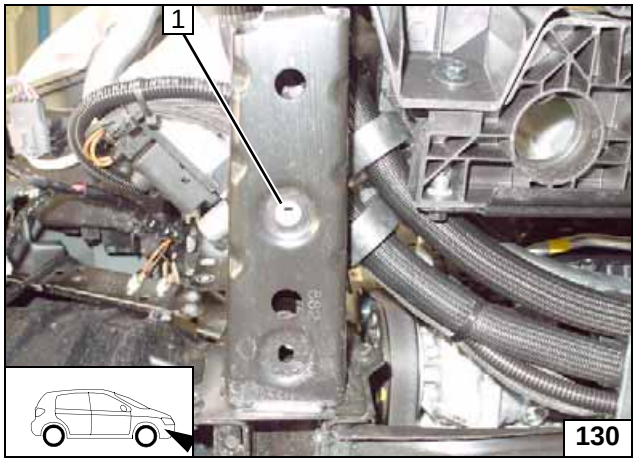
Mark exhaust pipes with **a1** and **a2**.

a1 = 170
a2 = 250

X =

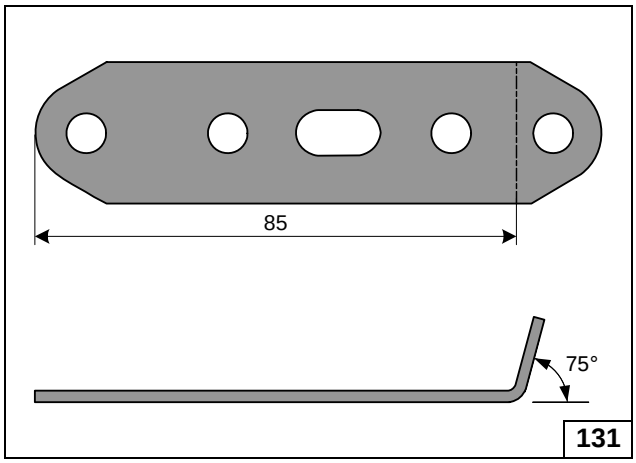


Preparing exhaust pipe

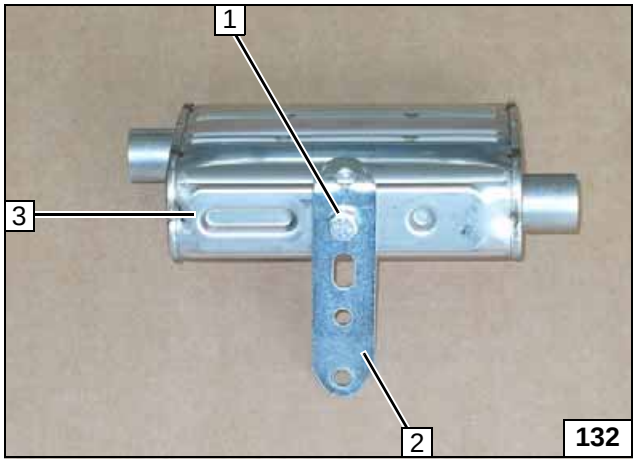


1 Rivet nut, existing hole

Installing rivet nut

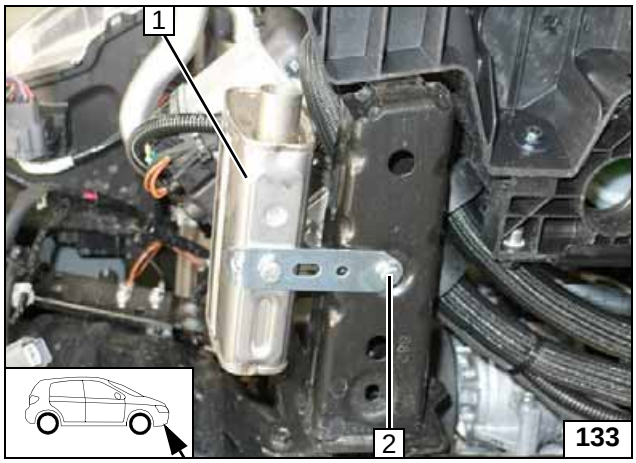


Bending down perforated bracket



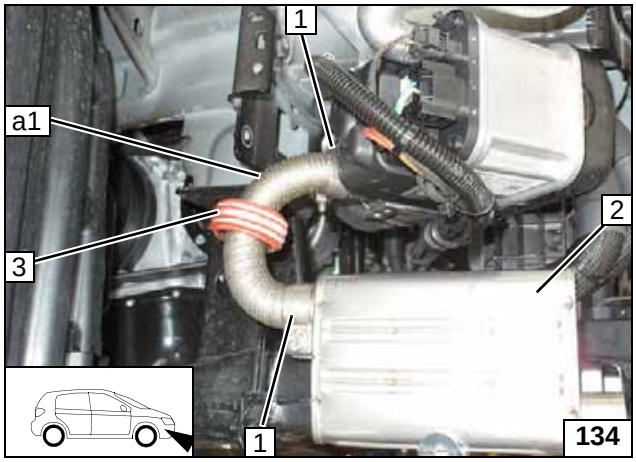
1 M6x16 bolt, spring lockwasher (8-10Nm)
2 Perforated bracket
3 Exhaust silencer

Premounting exhaust silencer



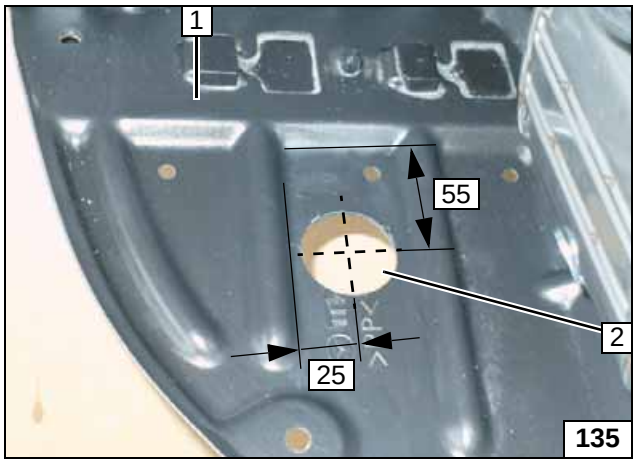
1 Exhaust silencer
2 M6x20 bolt, spring lockwasher (8-10Nm)

Mounting exhaust silencer



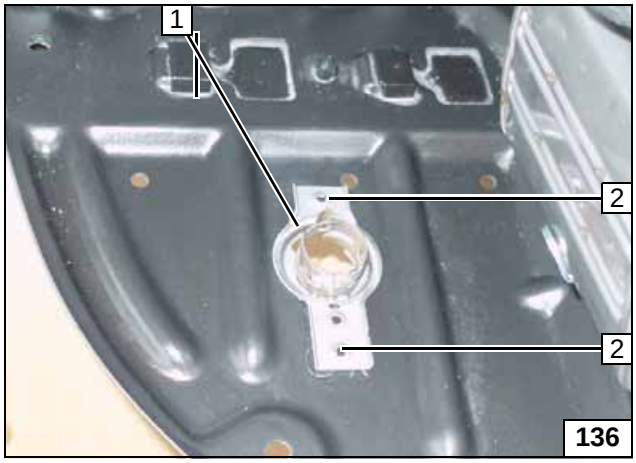
1 Hose clamp (8-10Nm) [2x]
2 Exhaust silencer
3 Slide on spacer ring

Mounting exhaust pipe a1



1 Right-hand wheel well trim
2 Hole Ø 43

Holes in wheel well trim



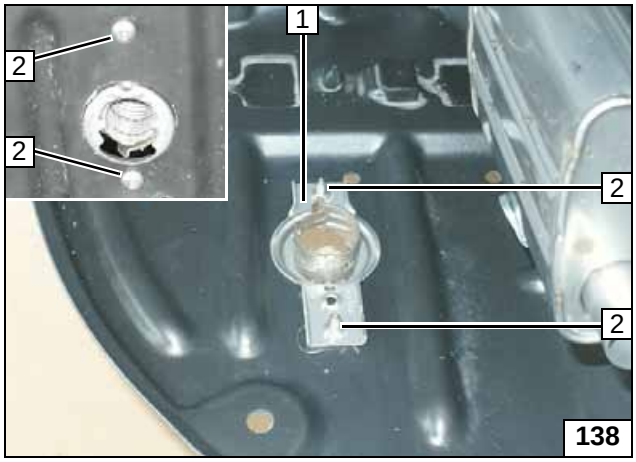
Place exhaust end fastening **1** to the hole as shown.

2 Copy hole pattern [2x]

Copying hole pattern

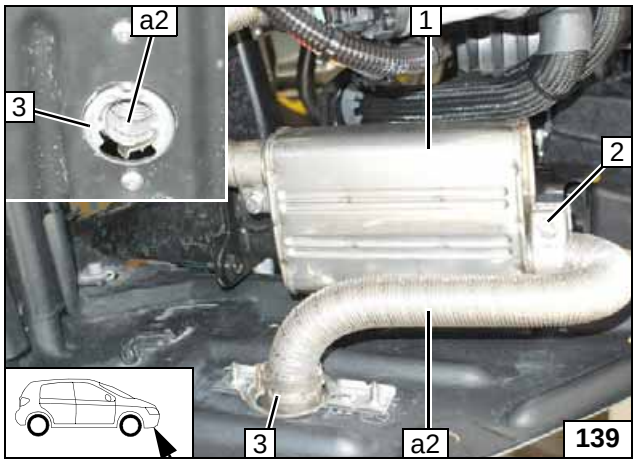
1 Hole Ø 6 [2x]

Holes in wheel well trim



1 Exhaust end fastening
2 5x13 self-tapping screw [2x] (3Nm)

Mounting exhaust end fastening

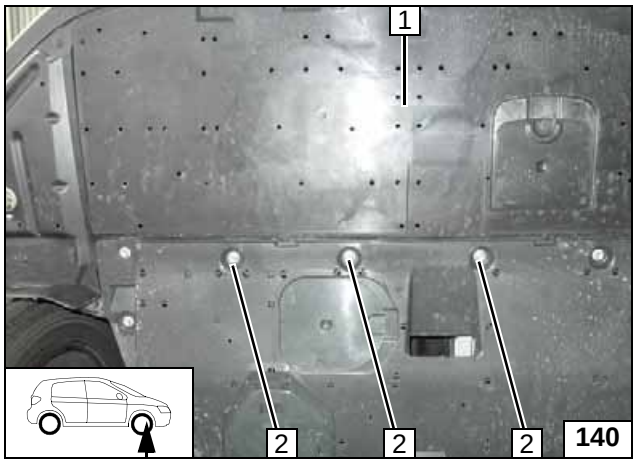


1 Exhaust silencer
2 Hose clamp
3 Exhaust end fastening

Mounting exhaust pipe a2

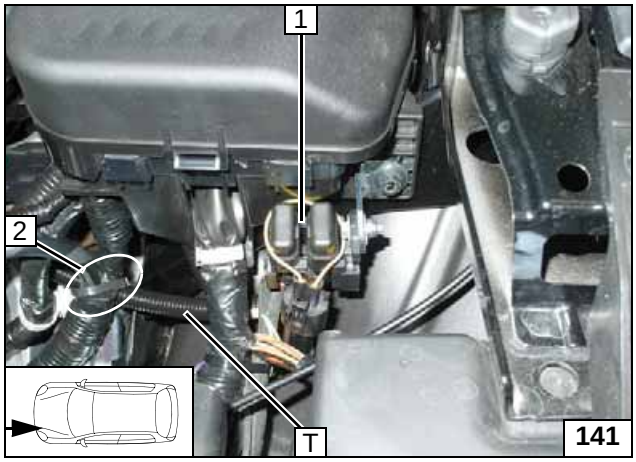
Final Work

Re-install bumper.
Install undercover **1**.



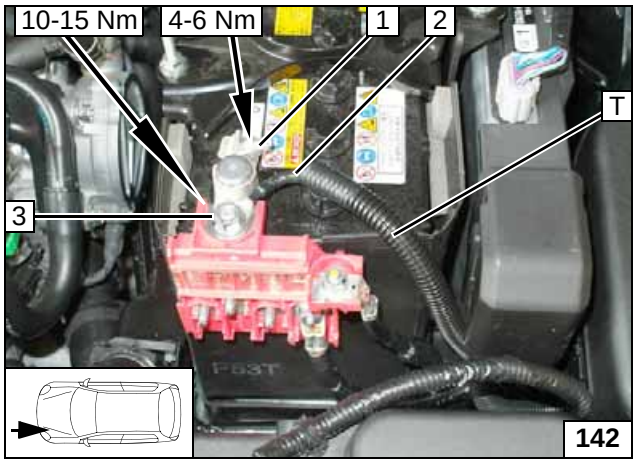
2 Flanged nut M6, large diameter washer (8-10Nm), premounted bolts [3x each]

Mounting undercover



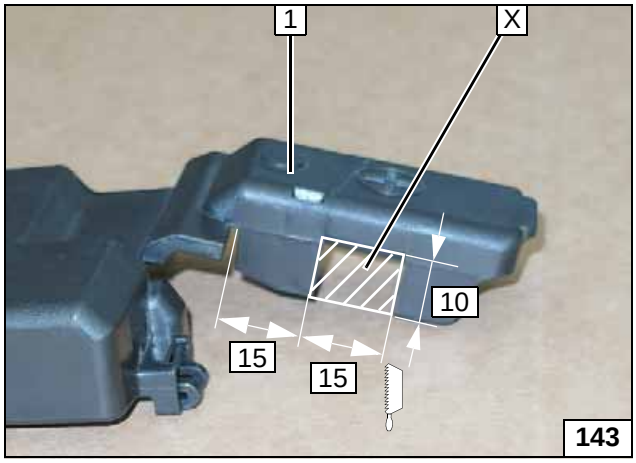
1 Fuses F1-2
2 Cable tie

Routing corrugated tube T



1 Original vehicle bolt, positive battery terminal
2 Positive wire R insulated, connected to postive battery terminal
3 Original vehicle nut

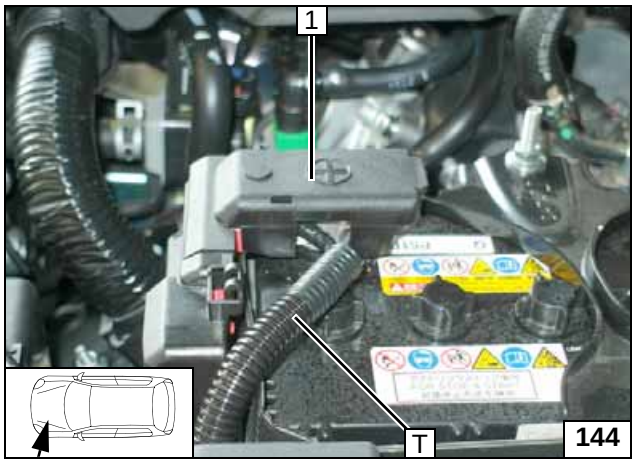
Connection for positive battery terminal



1 Cover postive battery terminal

X =

Preparing Cover



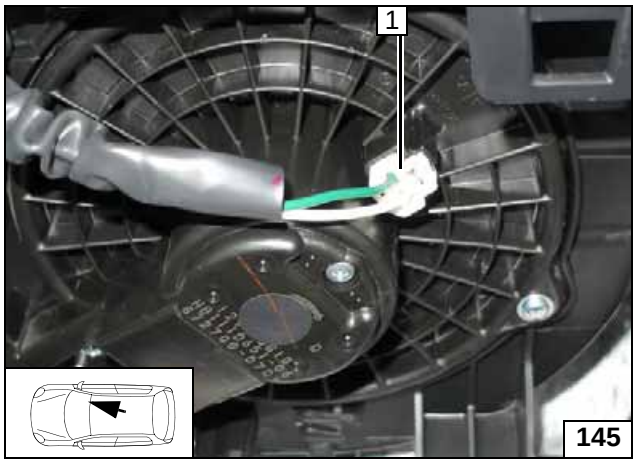
1 Cover postive battery terminal

Install cover

WARNING!
Mount removed parts in reverse order by refering to MESI. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires.
Only use manufacturer-approved coolant.

Spray heater components with anti-corrosion wax (MAZDA Underbody Protection Wax).

- **Install instrument trim panel after checking the PWM GW values.**
- **Connect battery, in accordance to MESI “BATTERY CONDITION INITIALIZATION SETTING (i-stop SETTING) [SKYACTIV - G 2.0]“.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer’s specifications.**
- **Adjust telestart remote/ Thermo Call see separate installation/ operation instructions**
- **Make settings on A/C control panel according to the „Operating Instructions for End Customer“.**
- **For initial startup and function test, see installation instructions of TT-Evo**



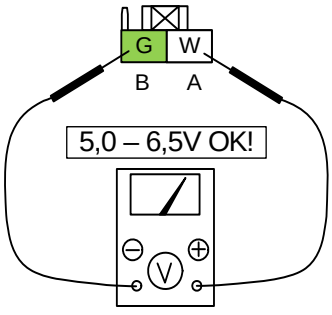
Only for FULL-AUTO A/C

Check the voltage at the blower motor in parking heating mode (see settings for the end customer). Target value 5,0 - 6,5V (corresponds approximately to level 3 when driving).

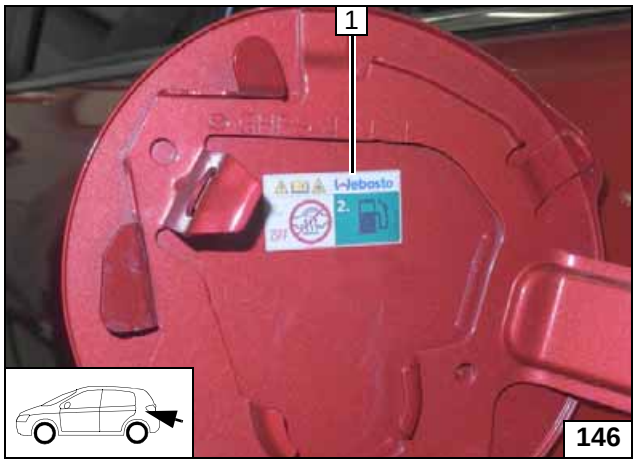
Measure voltage between both pins.

Measure voltage

1 2-pin connector of Blower motor:



- **Only in case of deviation from the nominal value:**
  Change the PWM GW duty cycle value using the Webasto diagnosis in 2% increments, refer to chapter “Readjustment blower speed (FULL-AUTO A/C only)“



All Vehicle

Place the caution label „Switch off parking heater before re-fuelling“ **1** in the area of the filler lid.

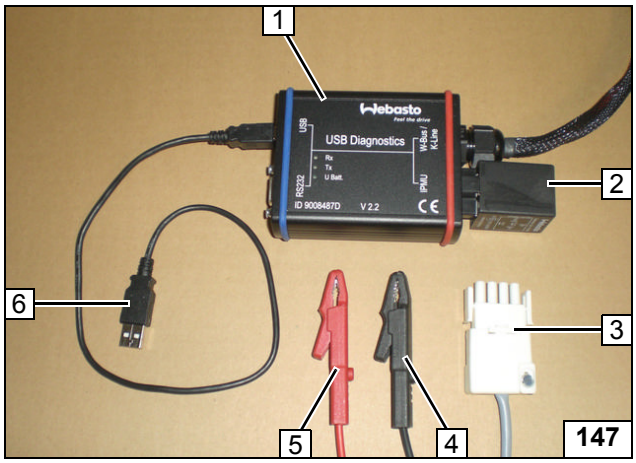
Place caution label

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

Readjustment blower speed (FULL AUTO A/C only)

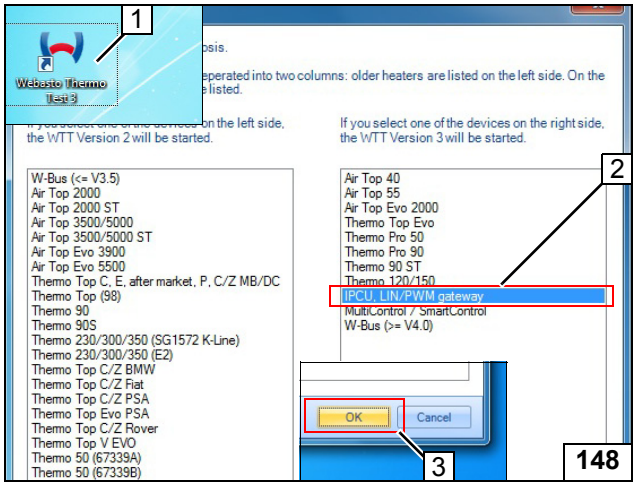
Thermo Test Diagnostics,
Mazda Order No.: 4100-77-725
(Software version V3.1 or higher);
free update from www.dealers.webasto.com;
support via hotline.gcs@webasto.com

Thermo Test Diagnosis



1 Diagnostics box
2 PWM GW
3 White (ws) connector is not required
4 Connection for positive battery terminal
5 Connection for negative battery terminal
6 USB connection for PC

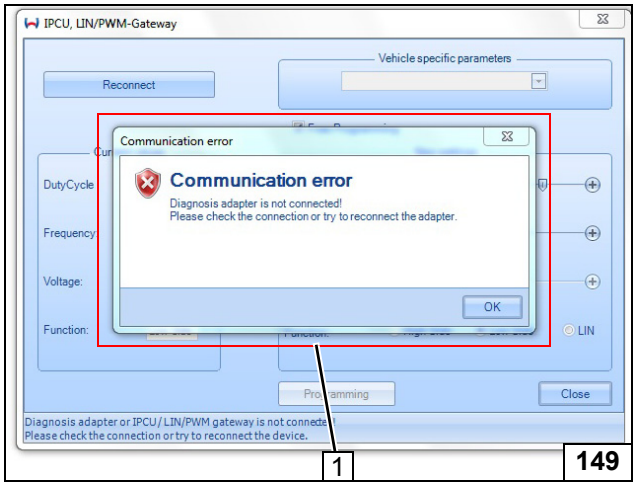
Establish all connections.
Start up the Webasto Thermo Test **1**.



Selecting PWM GW

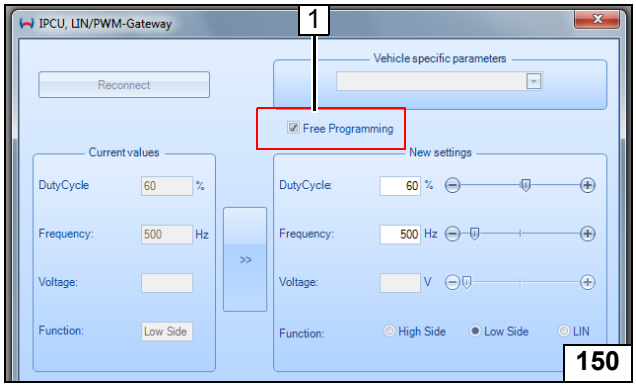
2. Select “IPCU. LIN/PWM gateway“
3 Click “OK“ to confirm.

If the „Communication error“ **1** fault message appears, briefly interrupt the power supply to the diagnosis adapter and re-start PWM GW programming.

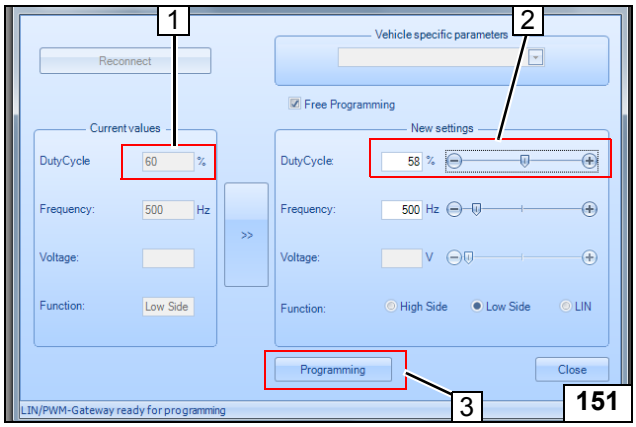


Fault message

1. Activate “Free Programming“



Select “Free Programming“



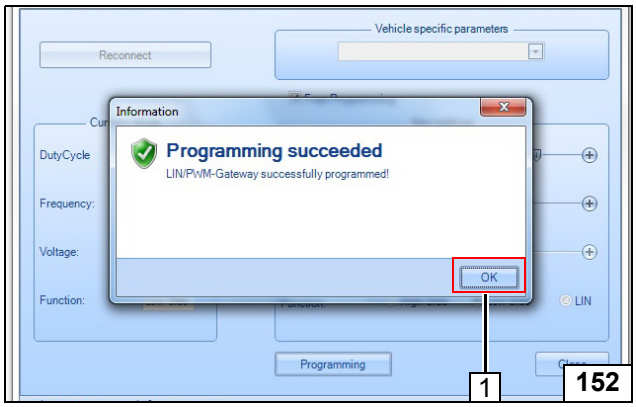
Current settings are displayed on the left. Change duty cycle in 2% increments. Enter new duty cycle on the right:

- 2% for a speed increase
+ 2% for a reduction in speed

Do not change the presettings for frequency and function!

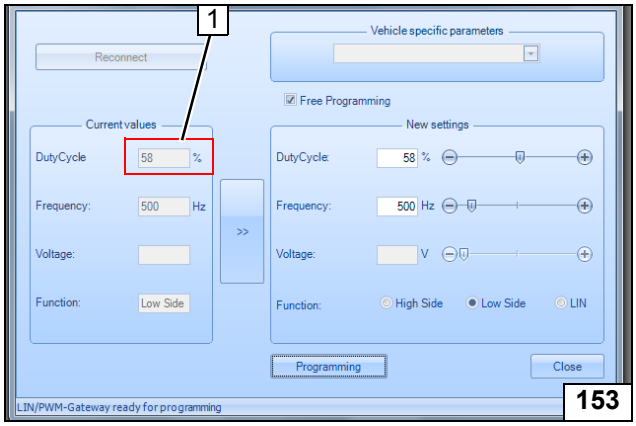
Selecting the duty cycle

1. Duty cycle 60% preset
2. Duty cycle 58% selected
3. Click “Programming“



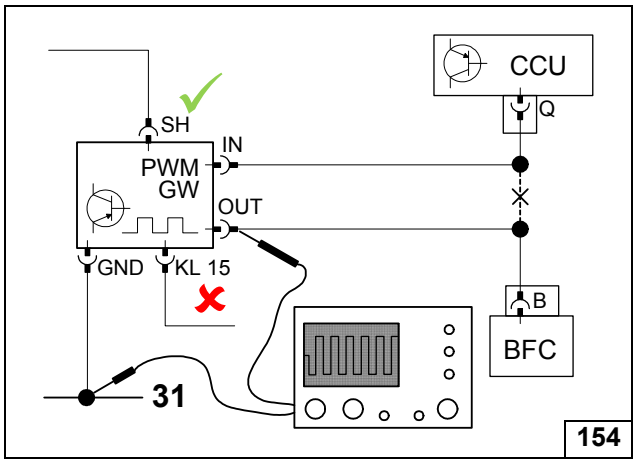
1 Click „OK“ to confirm.

Programming PWM GW

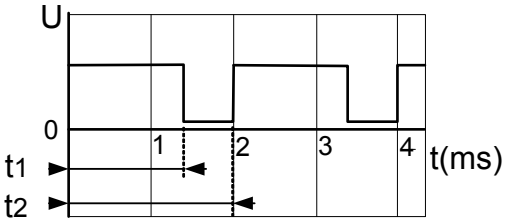


Start PWM GW diagnosis again. The new settings **1** are displayed on the left. Install PWM GW and check the voltage (target value 5,0 - 6,5V) across the connector of the Blower motor again. In case of deviations, carry out further adjustments.

Checking settings



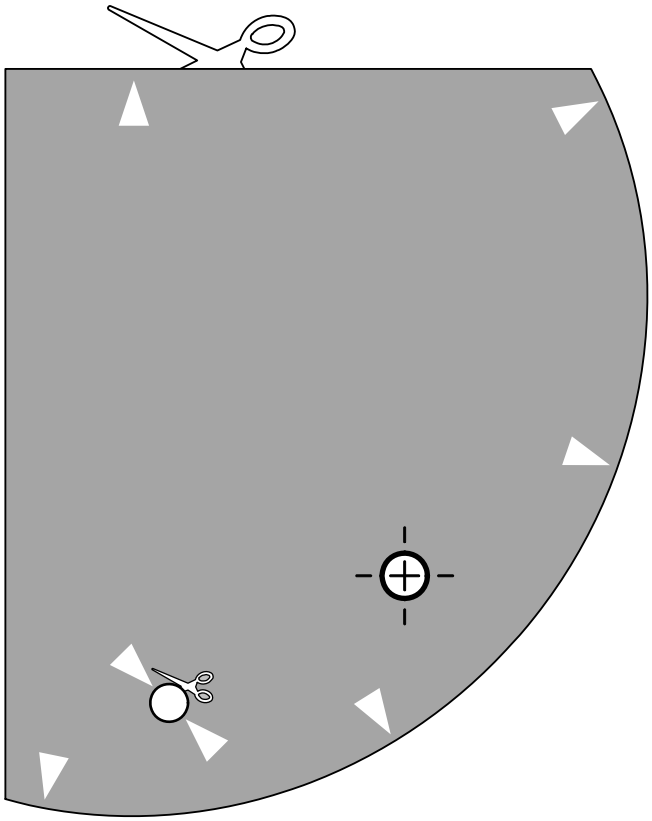
Condition:
- Parking heater: **ON**
- Collant temperature: **> 55 °C**
- Ignition: **OFF**

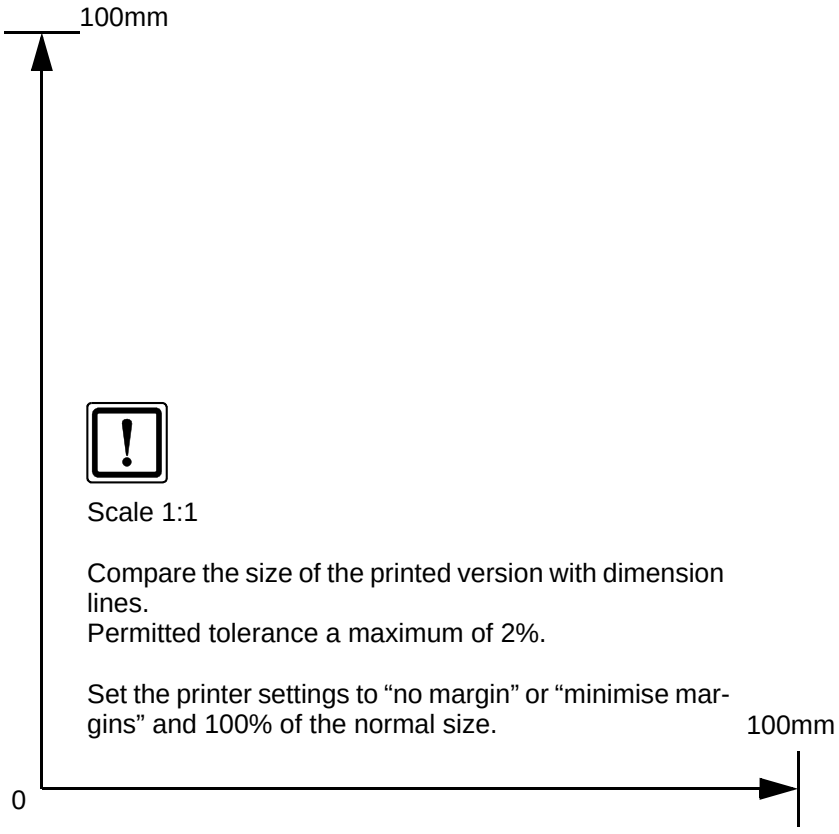


Duty Cycle = t1 / t2 x 100 = 60% (or readjusted value)
Frequency = 1 / t2 = 500 Hz

Checking function with oscilloscope

Template for Fuel-tank sending



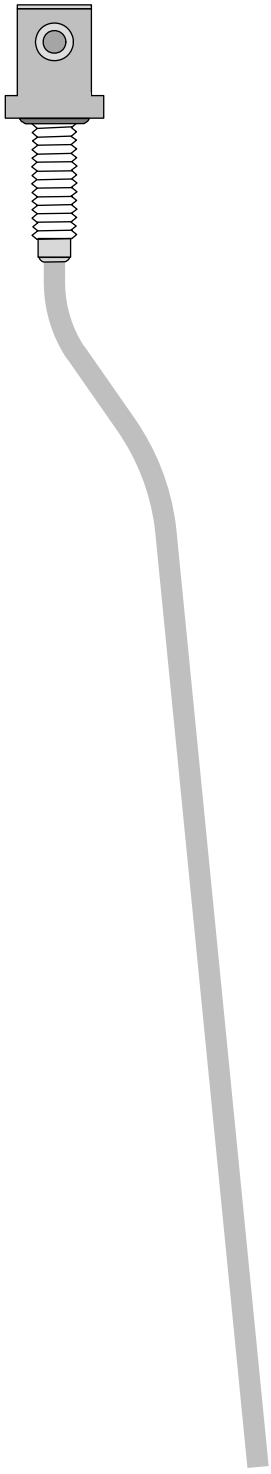


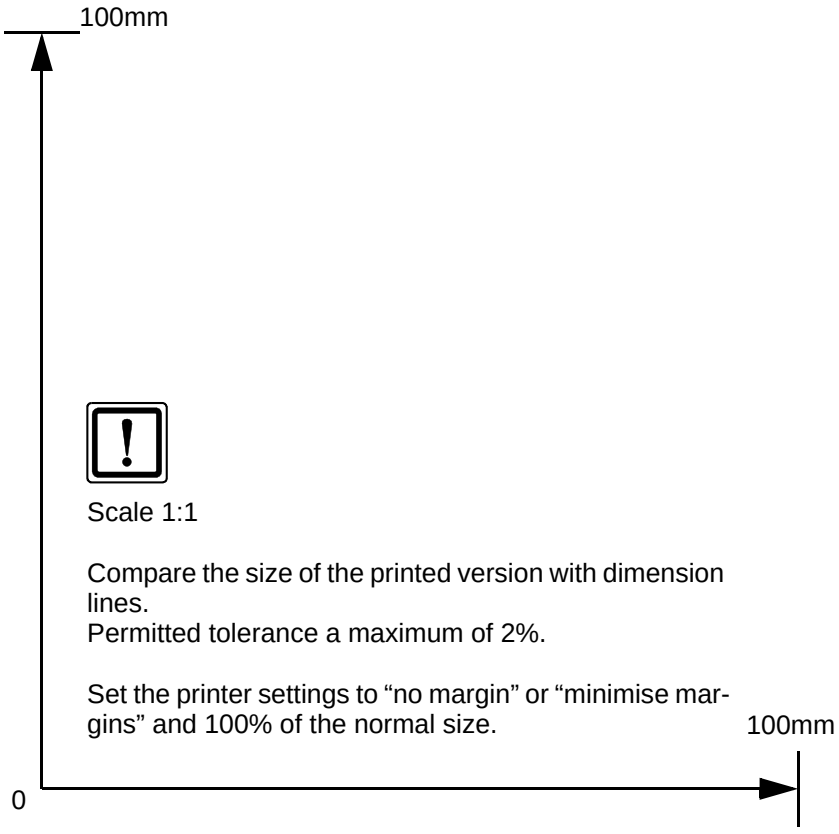
Scale 1:1

Compare the size of the printed version with dimension lines.
Permitted tolerance a maximum of 2%.

Set the printer settings to “no margin” or “minimise margins” and 100% of the normal size.

Template for Fuel Standpipe





Webasto
Feel the Drive

Operating Instructions for MANUAL A/C

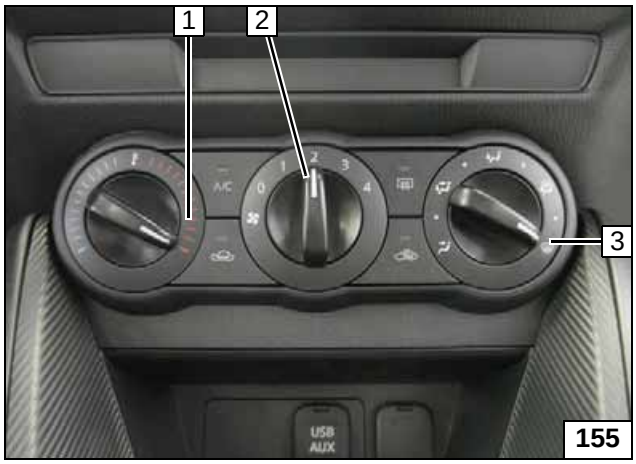
Please remove page and add to the vehicle operating instructions.

The heater operates independently from the engine in conjunction with the heating / ventilation system and can be used stationary or while driving.
The heater system is operated with fuel from the vehicle tank. This can lead to a deviation in fuel level and remaining distance displayed in the instrument cluster before and after heater operation.
To protect the vehicle battery, the heater system should not be used repeatedly without driving the vehicle in between.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 minutes, we recommend not to exceed the heating time of 20 minutes.

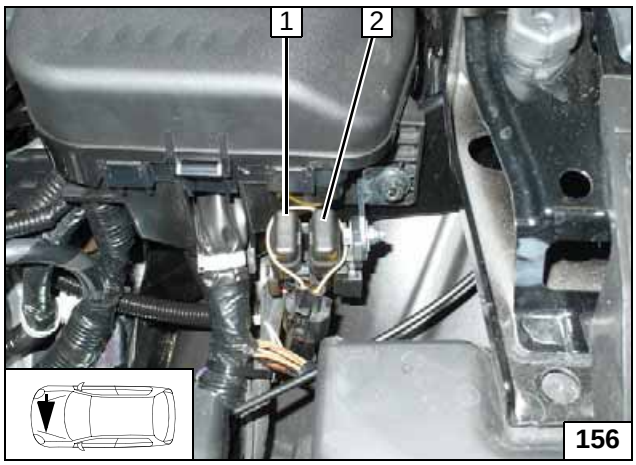
Note on i-stop:
The i-stop function does not operate when the battery power is depleted. The length of time required before i-stop functions again could be longer after heater operation.
This is no malfunction and the system works as designed.
Depending on vehicle use it might be necessary to recharge the vehicle battery from time to time.

Before parking the vehicle, make the following settings:



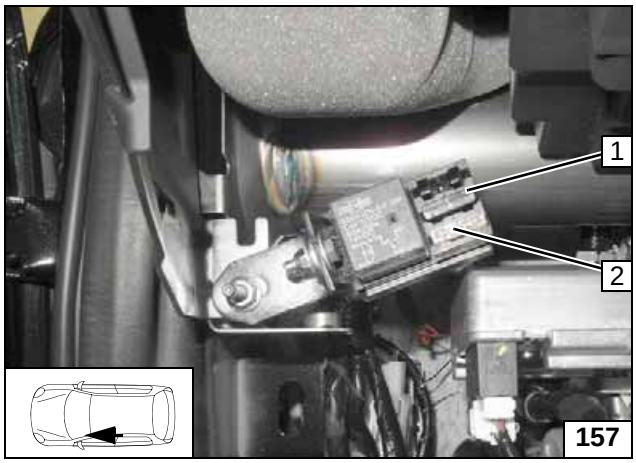
1 Set temperature to „max.“
2 Set fan to level “1“, or max. “2“
3 Air outlet to windscreen

AC control unit



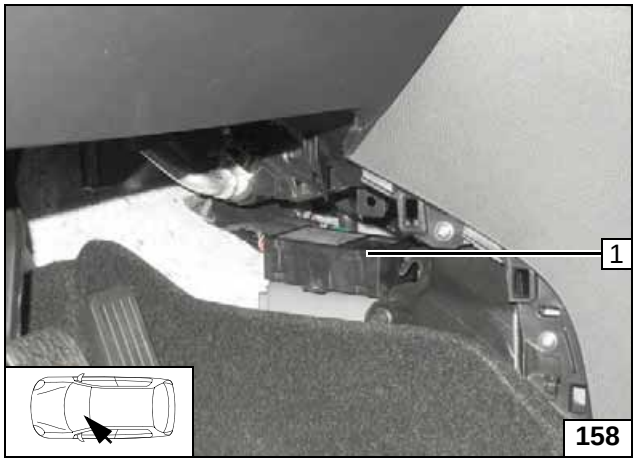
1 20A heater fuse F1
2 30A main fuse F2 of passenger compartment

Fuses of engine compart-ment



1 1A fuse F3 of heater control
2 25A fuse F4 of blower motor

Fuses of passenger compartment



If a ThermoCall is installed and a SIM card needs to be inserted or removed then refer to related owners manual or contact your authorised Mazda dealer.
Before removing SIM card, interupt power supply.

1 Receiver ThermoCall

Receiver ThermoCall

Webasto
Feel the Drive

Operating Instructions for FULL AUTO A/C

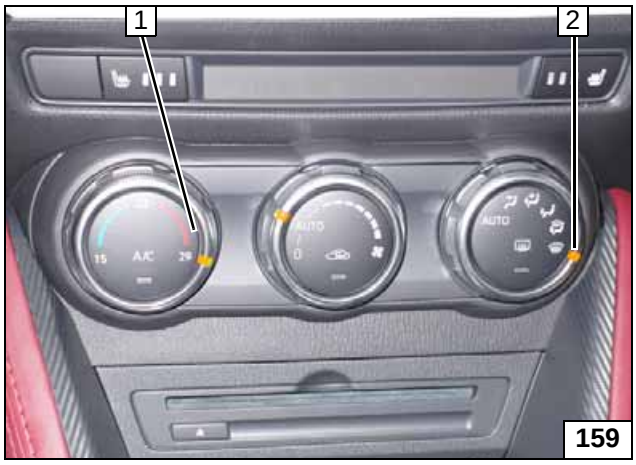
Please remove page and add to the vehicle operating instructions.

The heater operates independently from the engine in conjunction with the heating / ventilation system and can be used stationary or while driving.
The heater system is operated with fuel from the vehicle tank. This can lead to a deviation in fuel level and remaining distance displayed in the instrument cluster before and after heater operation.
To protect the vehicle battery, the heater system should not be used repeatedly without driving the vehicle in between.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 minutes, we recommend not to exceed the heating time of 20 minutes.

Note on i-stop:
The i-stop function does not operate when the battery power is depleted. The length of time required before i-stop functions again could be longer after heater operation.
This is no malfunction and the system works as designed.
Depending on vehicle use it might be necessary to recharge the vehicle battery from time to time.

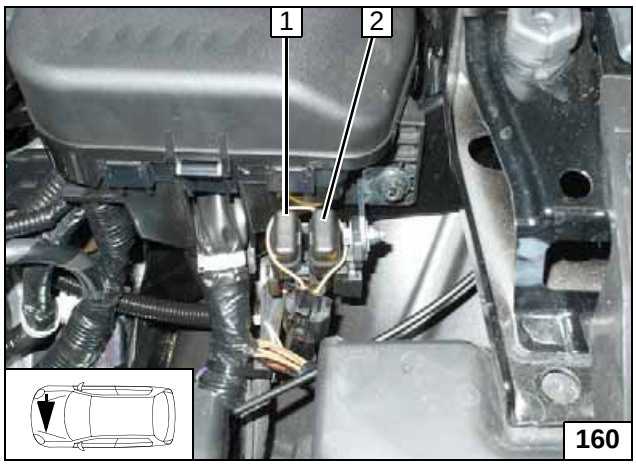
Before parking the vehicle, make the following settings:



The blower speed doesn‘t need to be adjusted.

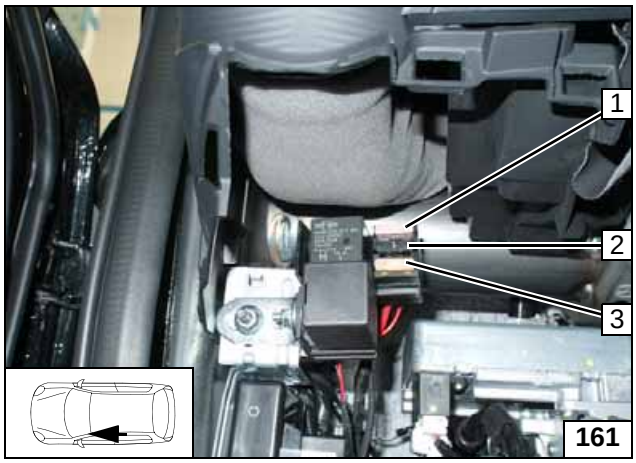
1 Set temperature to „max.“
2 Air outlet to windscreen

AAC control unit



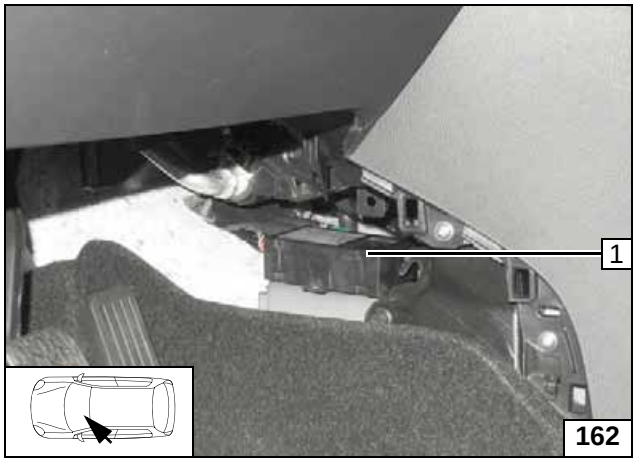
1 20A heater fuse F1
2 30A main fuse F2 of passenger compartment

Fuses of engine compart-ment



1 5A fuse F5 of blower control
2 1A fuse F3 of heater control
3 25A fuse F4 of blower motor

Fuses of passenger compartment



If a ThermoCall is installed and a SIM card needs to be inserted or removed then refer to related owners manual or contact your authorised Mazda dealer.
Before removing SIM card, interupt power supply.

1 Receiver ThermoCall

Receiver ThermoCall