Wasser Heater

Thermo Top Evo Parking Heater

E1
00 0258

Installation Documentation
Mazda 3

Validity

Manufacturer	Model	Type	EG-BE-No. / ABE	VIN
Mazda	3	BL	e11 * 2001 / 116 *0262 * 10..	JMZ**BM**...
Mazda	3	BL	e11 * 2001 / 116 *0262 * 12..	3MZ**BM**...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.5 (G100)	Petrol	6-speed MT	74	1496	P5
2.0 (G120)	Petrol	6-speed MT	88	1998	PE
2.0 (G120)	Petrol	6-speed AT	88	1998	PE
2.0 (G165)	Petrol	6-speed MT	121	1998	PE

MT = Manual transmission
AT = Automatic transmission

From Model Year 2013
Left-hand drive vehicle

Verified equipment variants:
Manual air-conditioning (7-speed)
Automatic air-conditioning (dual type)
Front fog light
Xenon with headlight washer system
i-Stop (Start-Stop)
Daytime Running Lights in headlight
iEloop (G165)

Exclusion:
Theft Deterrent System. (Intrusion Sensor could trigger the alarm unintentionally)
Manual air-conditioning (4-speed)

Total installation time:
about 8 hours

Mazda 3

Table of Contents

Necessary Components

- Basic delivery scope *Thermo Top Evo* in accordance with price list
- Installation kit for Mazda 3 from 2013 Petrol: Mazda Order No.: **4100-78-714B**
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

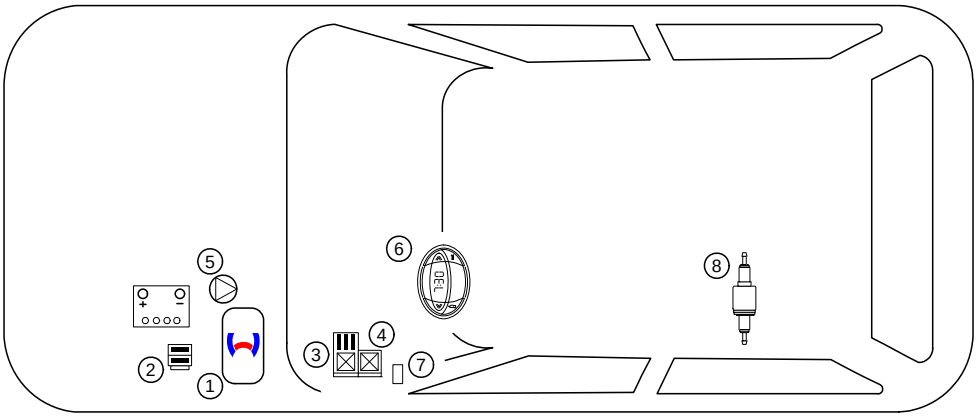
Installation instructions:

- 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
5. Circulating pump
6. Digital timer option
7. Receiver Remote control and/or Thermo call option
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 3 BM Petrol vehicles - for validity, see page 1 - from model year 2013 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

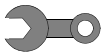
Dimensions

- All dimensions are in mm.

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 injury or fatal accidents.

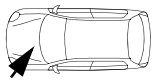
Specific risk of damage to components.

Specific risk of fire and explosion

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

Reference to a specific technical feature

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



Mazda 3

Preliminary Work

Prior to installation of heater:

Incorrect implementation of electrical connections can cause a fire!

Warning:

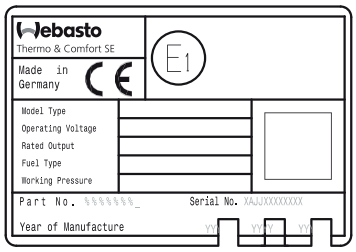
On the Mazda 3, a special battery is used for the i-Stop System (STOP&START).
You must check the battery **before** installing the heater. Check battery condition in accordance with workshop manual refer to MESI "BATTERY INSPECTION" (acid density check in every battery cell). If the acid density is below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

Vehicle

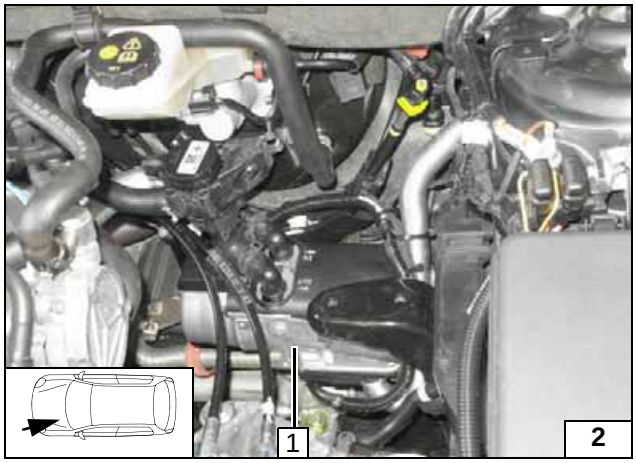
- Disconnect the battery and remove them completely with the carrier. Refer to MESI "BATTERY REMOVAL/ INSTALLATION"
- Remove upper engine cover. Refer to MESI "ENGINE COVER REMOVAL/INSTALLATION“
- Open fuel tank cap
- Ventilate the fuel tank
- Close the fuel tank cap again
- Remove air cleaner housing. Refer to MESI "INTAKE-AIR SYSTEM REMOVAL/INSTALLATION"
- Remove the front Under Cover. Refer to MESI "Front Under Cover No.2 Removal/Installation"
- Remove the floor under cover No.1 and 2. Refer to MESI "FLOOR UNDER COVER REMOVAL/INSTALLATION"
- Depressure the cooling system and drain engine coolant. Refer to MESI "Engine Coolant Replacement"
- Remove exhaust system insulator 2. Refer to MESI "EXHAUST SYSTEM REMOVAL/INSTALLATION"
- Remove rear lower seat cushion. Refer to MESI "REAR SEAT CUSHION REMOVAL/INSTALLATION"
- Remove the fuel tank service hole cover. Refer to MESI "FUEL TANK REMOVAL/INSTALLATION"
- Remove the front scuff plate on the driver's side. Refer to MESI "FRONT SCUFF PLATE REMOVAL/INSTALLATION"
- Remove the lower front left side trim. Refer to MESI "FRONT SIDE TRIM REMOVAL/INSTALLATION"
- Remove the lower panel on driver side. Refer to MESI "LOWER PANEL REMOVAL/INSTALLATION"
- Remove the loudspeaker cover on the left, upper instrument panel trim (only for Telestart and/or Thermo Call). Refer to MESI "SPEAKER GRILLE REMOVAL/INSTALLATION"
- Loosen and pull off carefully the left side of the DRIVER-SIDE LOWER PANEL. Refer to MESI "CLUSTER SWITCH REMOVAL/INSTALLATION"
- Remove the glove compartment. Refer to MESI "GLOVE COMPARTMENT REMOVAL/INSTALLATION“

Heater

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



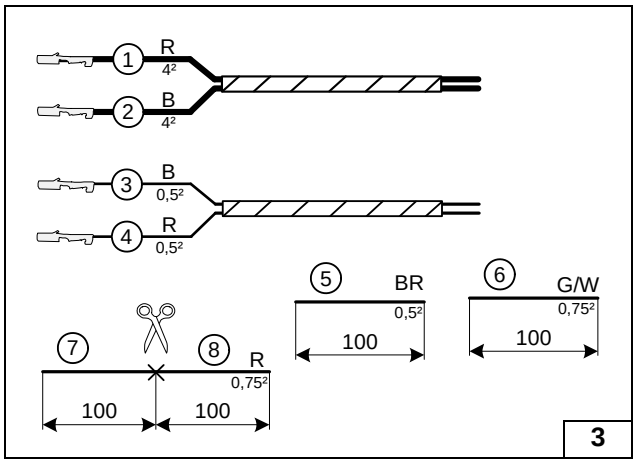
Attach duplicate label



Heater Installation Location

1 Heater

Installation location



Preparing Electrical System

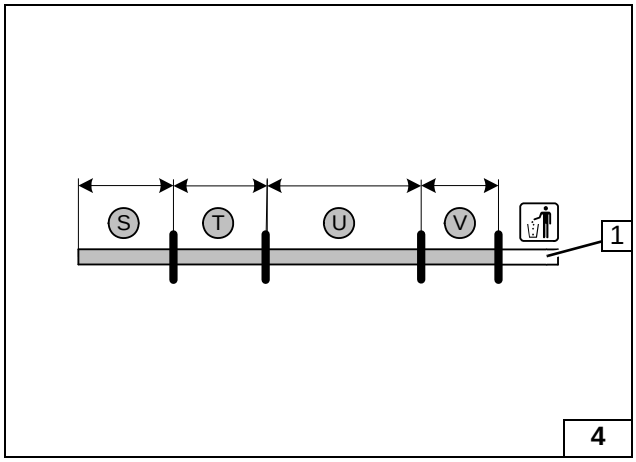
Wire sections retain their numbering through the entire document.

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

Cutting to length/ assigning wires

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

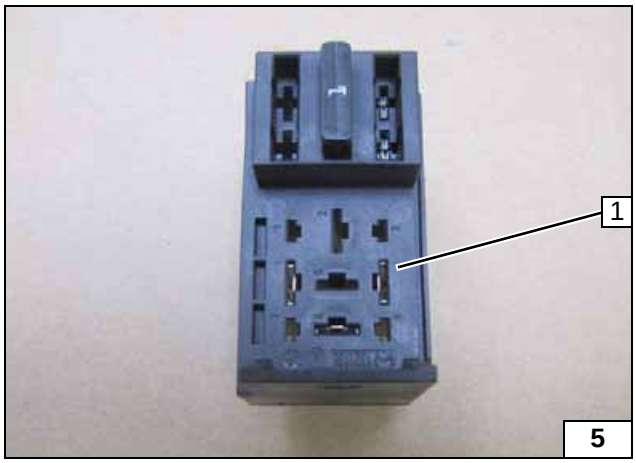


1 Corrugated tube Ø 10

S = 400
T = 350
U = 900
V = 250

Cutting Corrugate tube and Protective sleeving to length

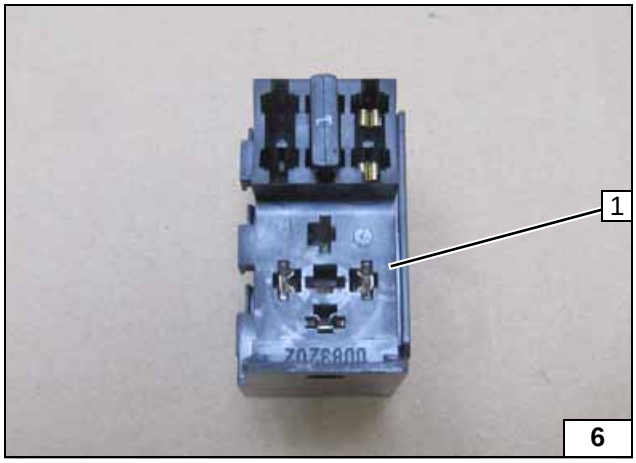
Version 1



1 9-pole relay socket

View relay and fuse holder (passenger compartment) Version 1

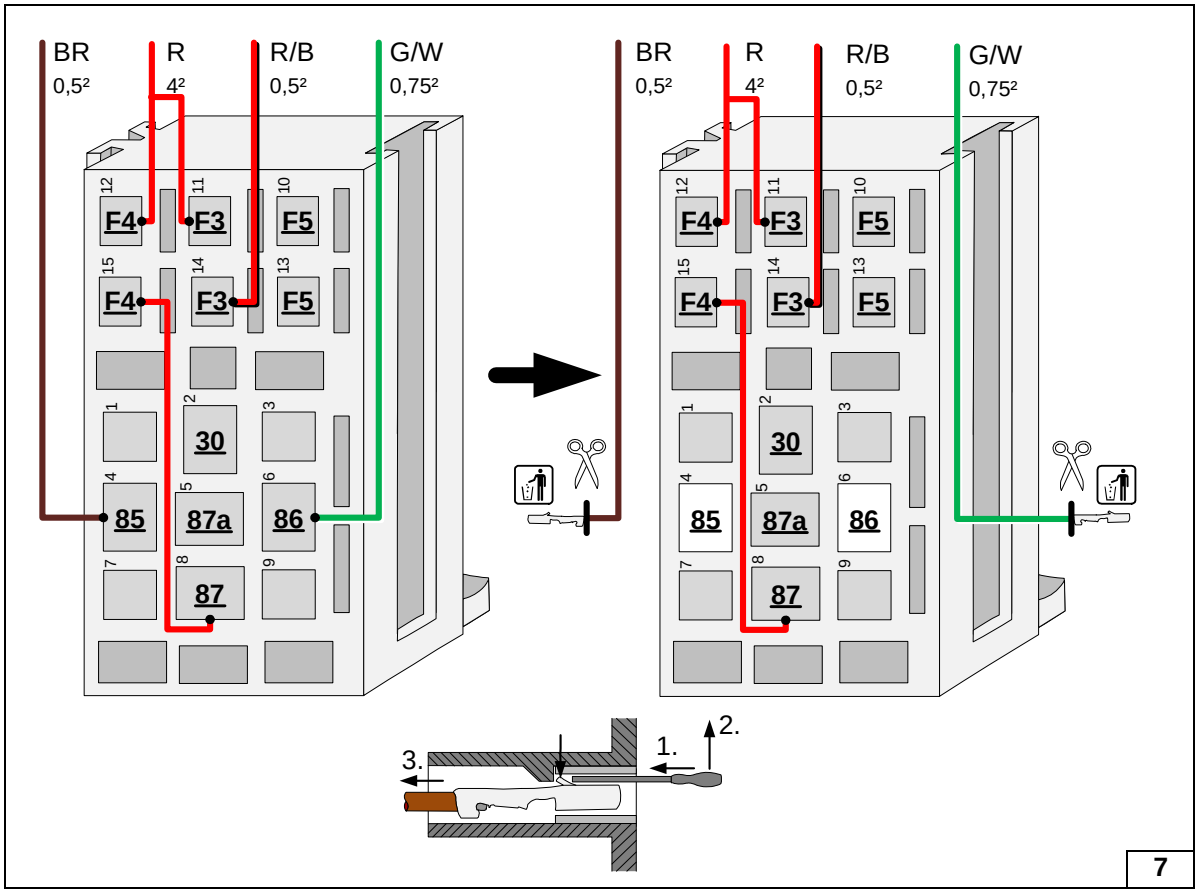
Version 2



1 5-pole relay socket

View relay and fuse holder (passenger compartment) Version 2

Version 1 (9-pole relay socket)



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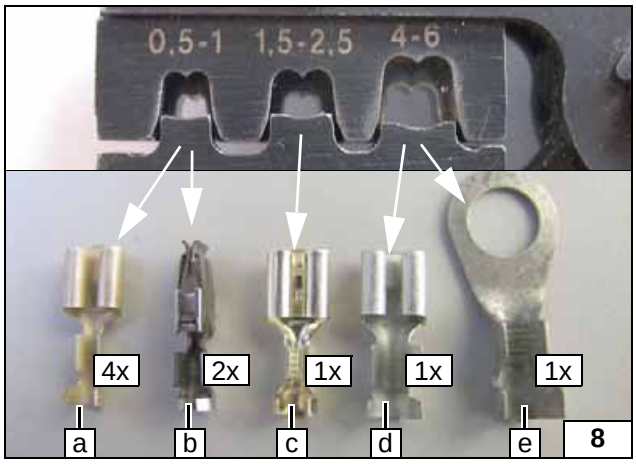
Detach contacts Relay and fuse holder in passenger compartment / Version 1



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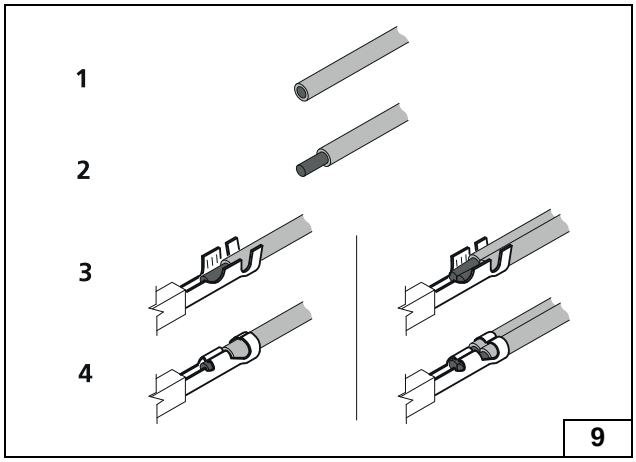
a Contact 6.3 wire range 0,5 - 1 mm²
b Contact 4.8 (fuse) wire range 0,5 - 1 mm²
c Contact 6.3 wire range 1,5 - 2,5 mm²
d Contact 6.3 wire range 4,0 - 6,0 mm²
e Cable lug Ø 8 wire range 4,0 - 6,0 mm²

List contact



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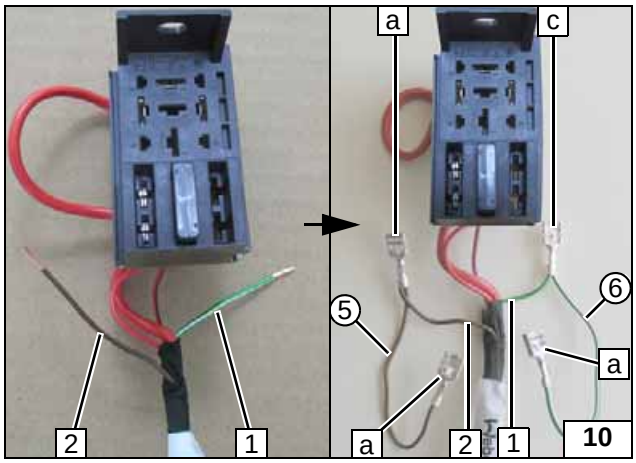
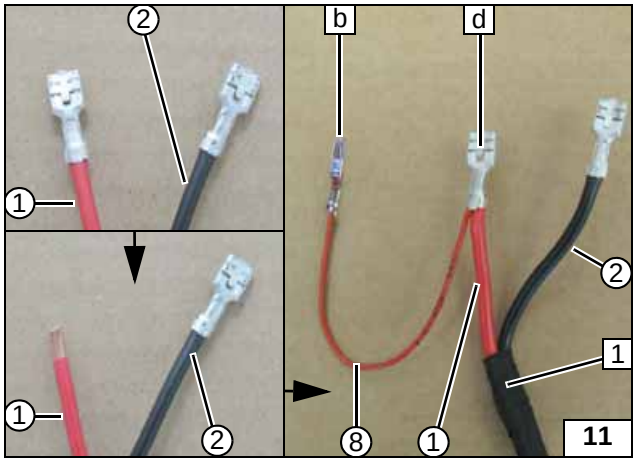
Instruction connect contacts



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

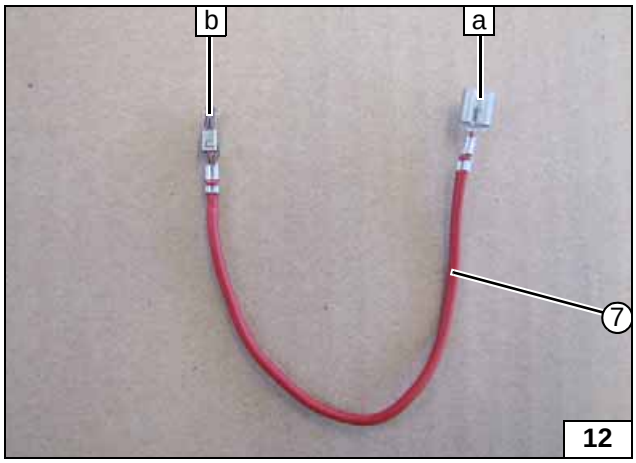
Preparing wires for Relay and fuse holder in passenger compartment



Remove contact of wire R ① blower wiring harness. Connect wire at 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



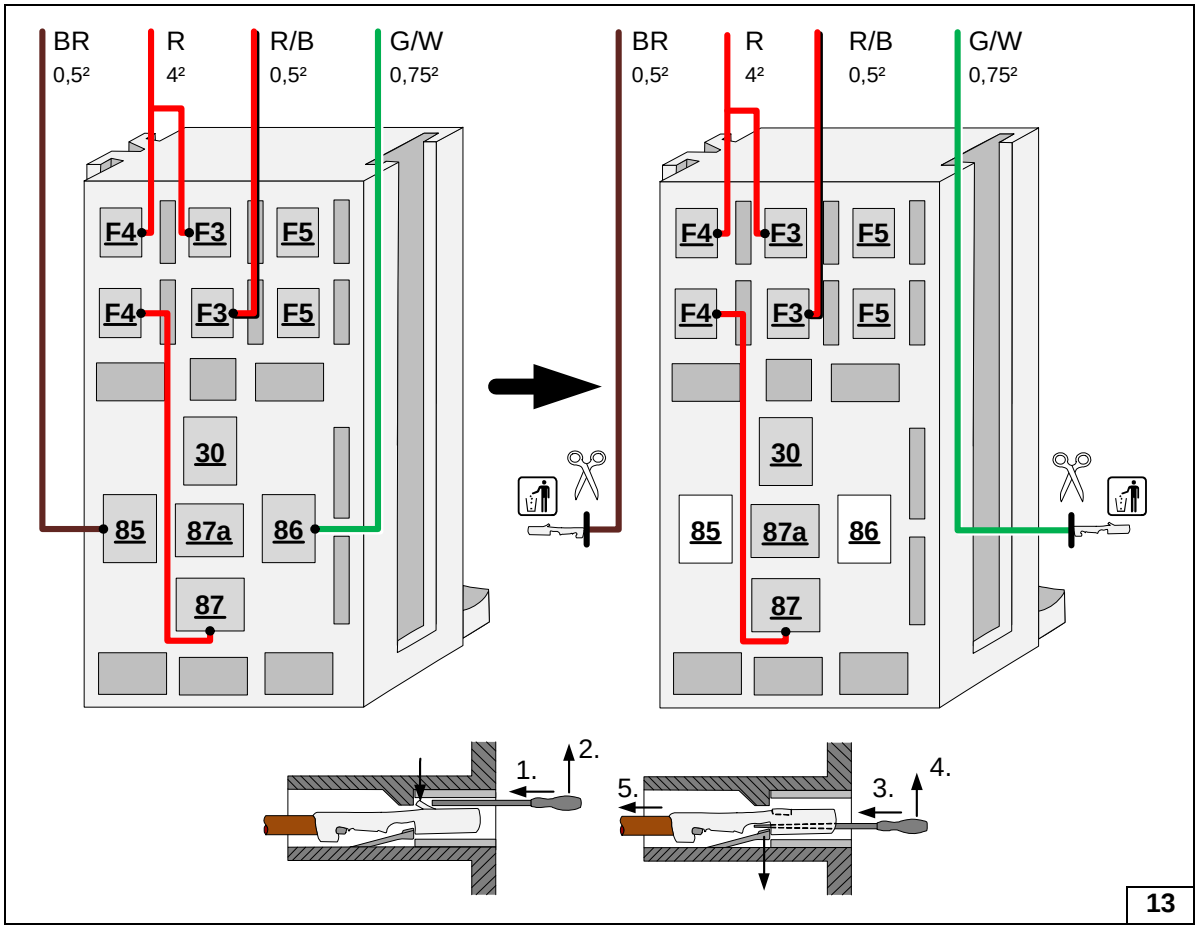
Connect wire at contact **b** and **a.**

⑦ Wire R from fuse F5 to PWM GW/KL15

Preparing wire ⑦

Version 2 (5-pole relay socket)

Detach contacts Relay and fuse holder in passenger compartment / Version 2



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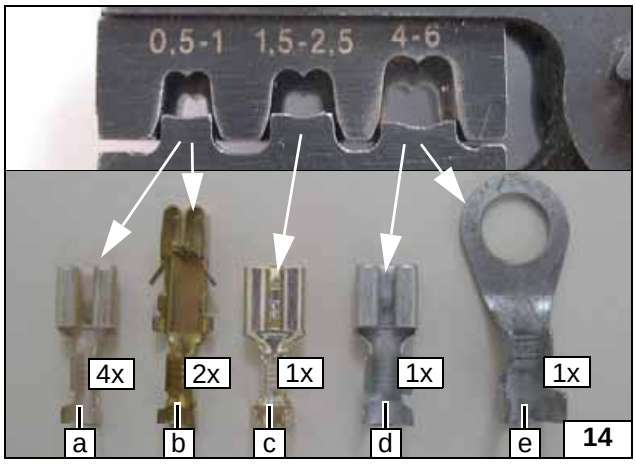
List contact



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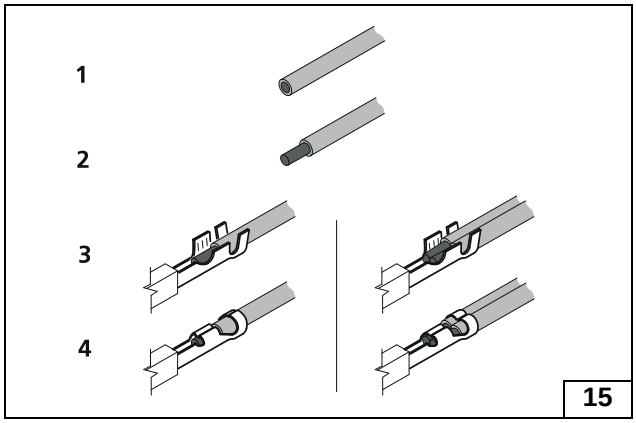
a Contact 6.3 wire range 0,5 - 1 mm²
b Contact 4.8 (fuse) wire range 0,5 - 1 mm²
c Contact 6.3 wire range 1,5 - 2,5 mm²
d Contact 6.3 wire range 4,0 - 6,0 mm²
e Cable lug Ø 8 wire range 4,0 - 6,0 mm²

Instruction connect contacts



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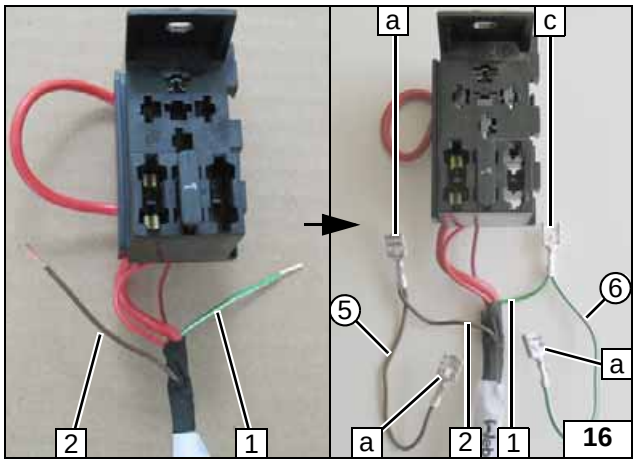

Remove contacts of wire BR **2** and wire G/W **1.** Connect wires with contact **a** and **c.**

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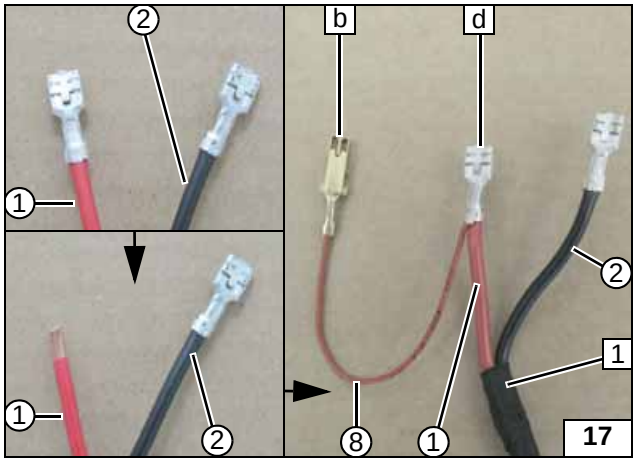
⑤ Wire BR for PWM GW/GND
⑥ Wire G/W for PWM GW/SH

Preparing wires for Relay and fuse holder in passenger compartment



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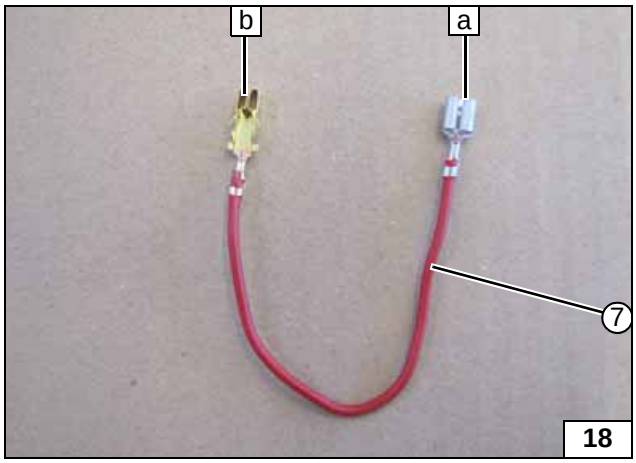
② Wire B 4mm² blower wiring harness for K1/30
⑧ Wire R from K1/87a to fuse F5

Preparing blower wiring harness

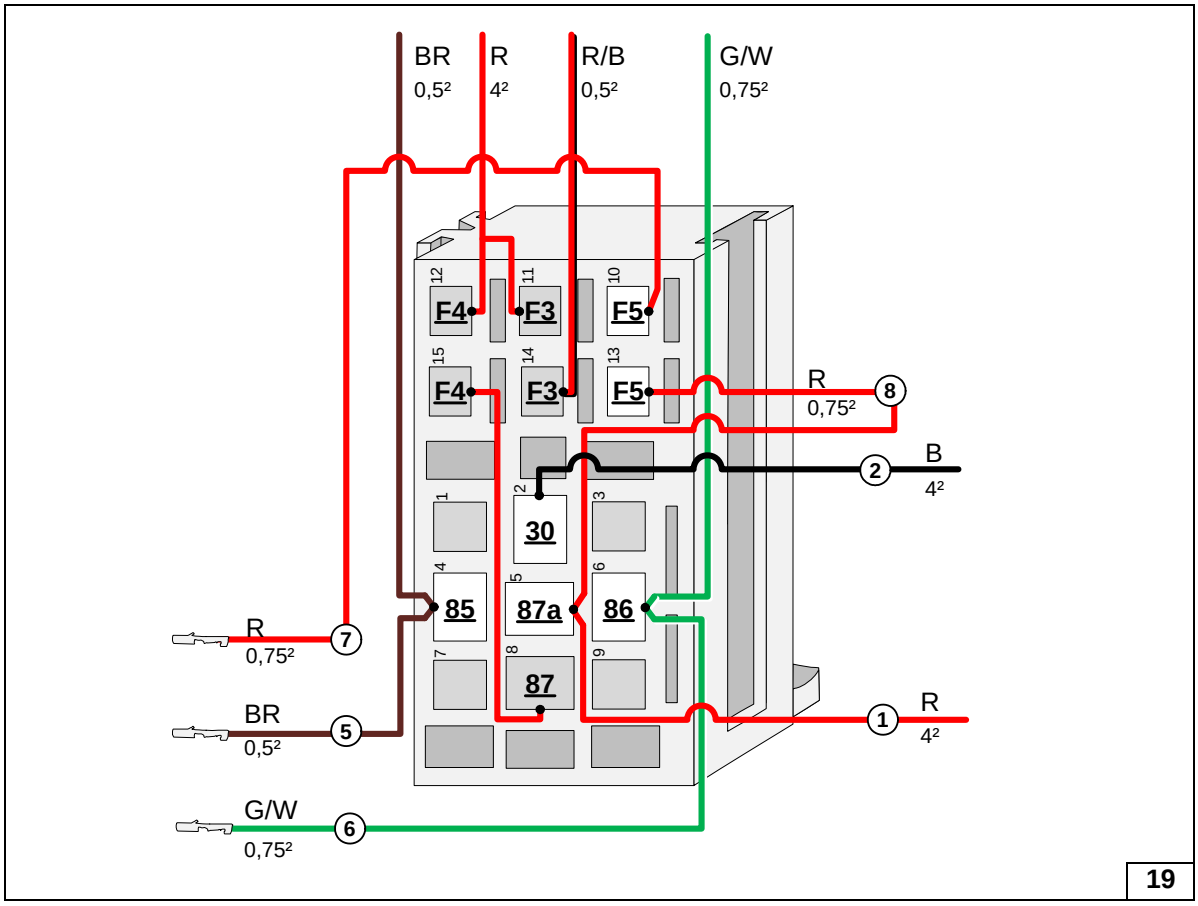


Connect wire at contact **b** and **a.**

⑦ Wire R from fuse F5 to PWM GW/KL15

Preparing wire ⑦

All Versions



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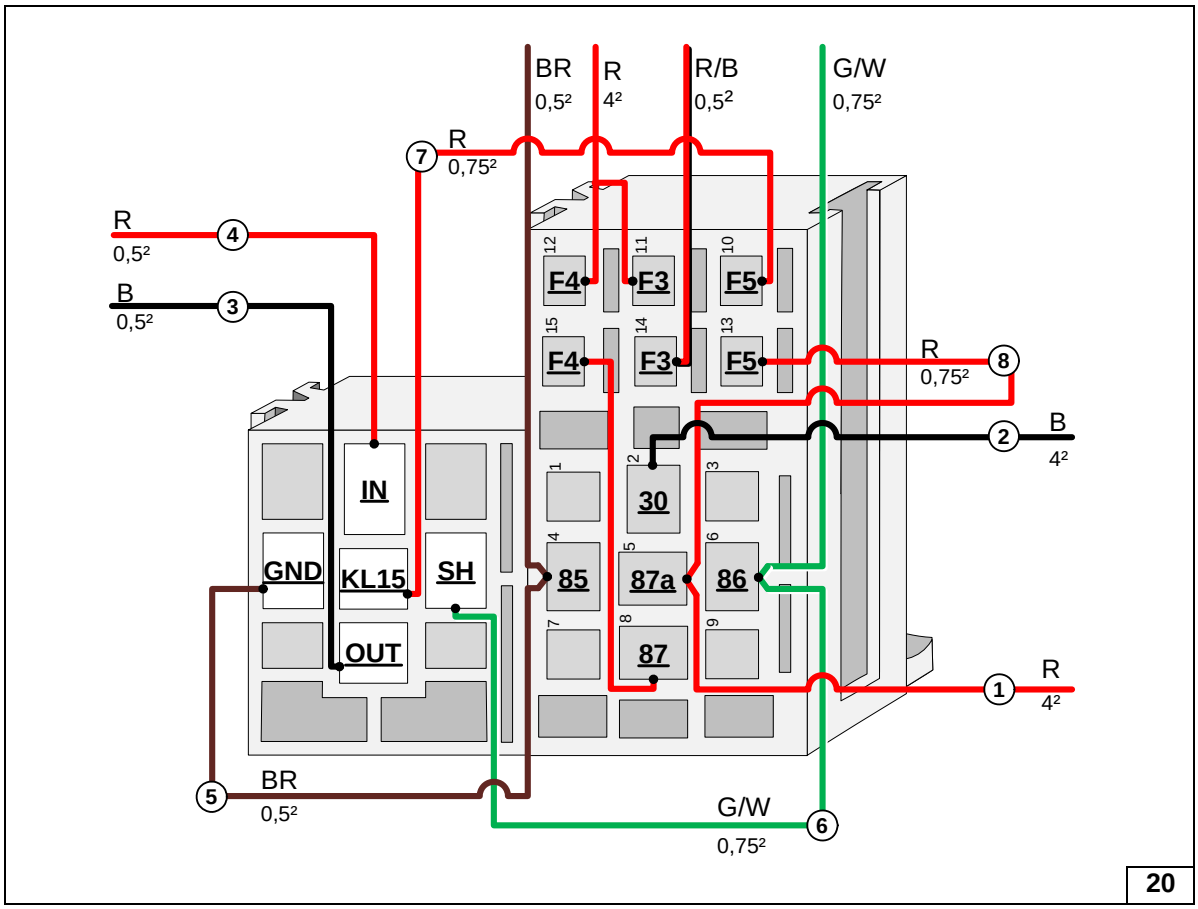
Connecting wires to Relay and fuse holder (passenger compartment) / All Versions



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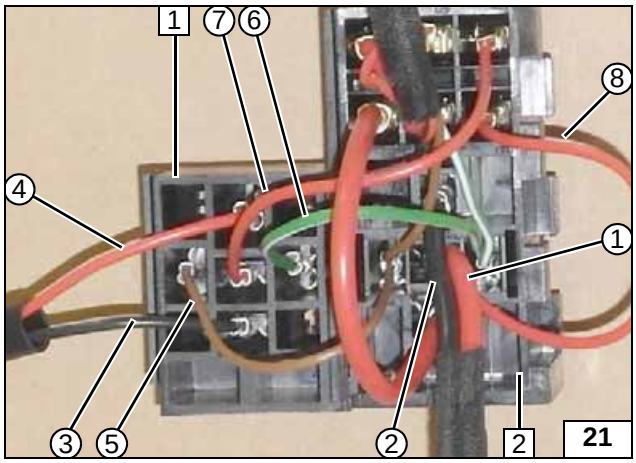
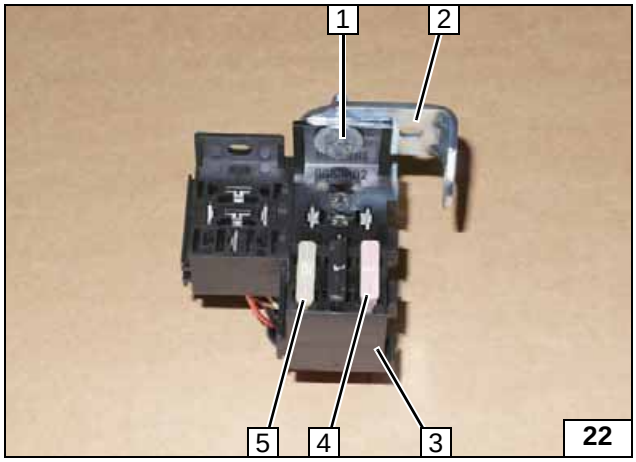
Interlocking socket PWM GW and relay and fuse holder (passenger compartment)/ connecting wires to socket PWM GW / All Versions



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

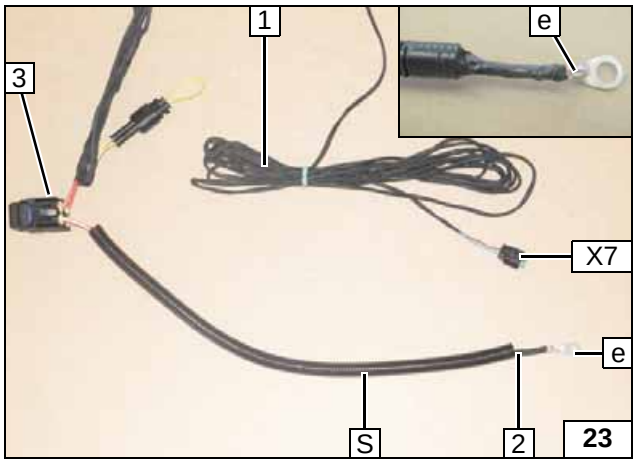
View relay and fuse holder (passenger compartment)



PWM GW and K1 relay will be inserted after the installation of the relay and fuse holder in passenger compartment.

1 M5x16 bolt, large diameter washer [2x], nut (5-6Nm)
2 Angle bracket
3 Relay and fuse holder (passenger compartment)
4 3A fuse F5 attached
5 25A fuse F4 attached

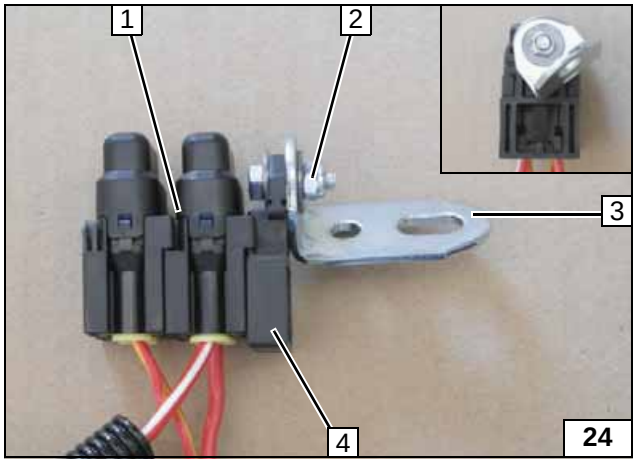
Preparing relay and fuse holder (passenger compartment)



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

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

Preparing the wiring harness



1 Fuses F1-2
2 M5x12 bolt, large diameter washer [2x], nut (5-6 Nm)
3 Angle bracket
4 Retaining plate of fuse holder

Preparing plate of fuse holder

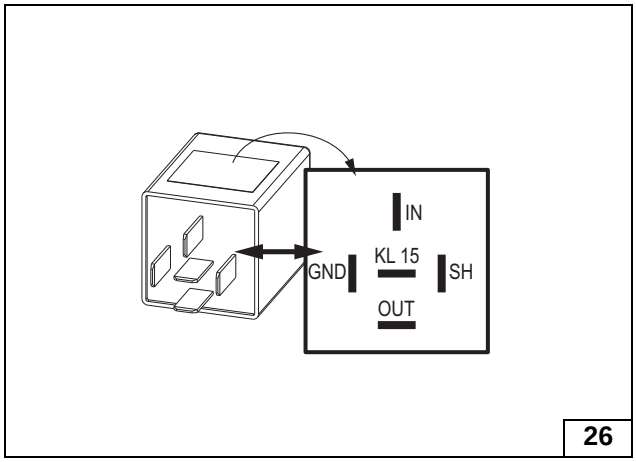
25

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



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Settings:

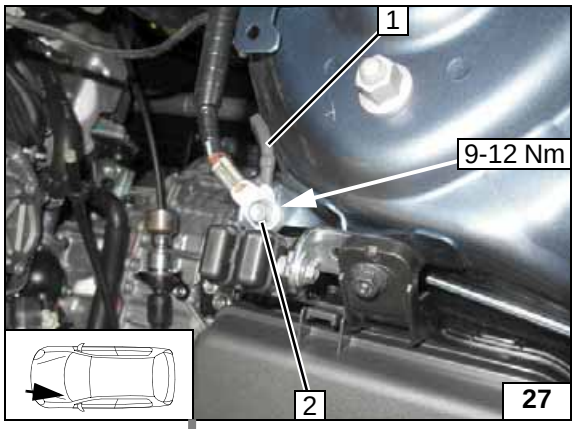
Duty-Cycle: 70%
Frequency: 500Hz
Voltage: not relevant
Function: Low-side

View PWM GW

Electrical System

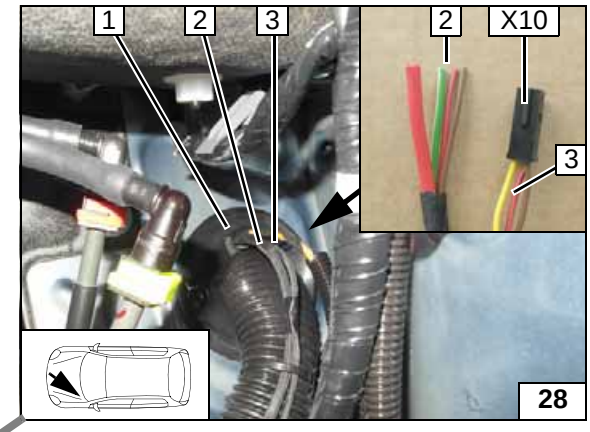
Earth wire

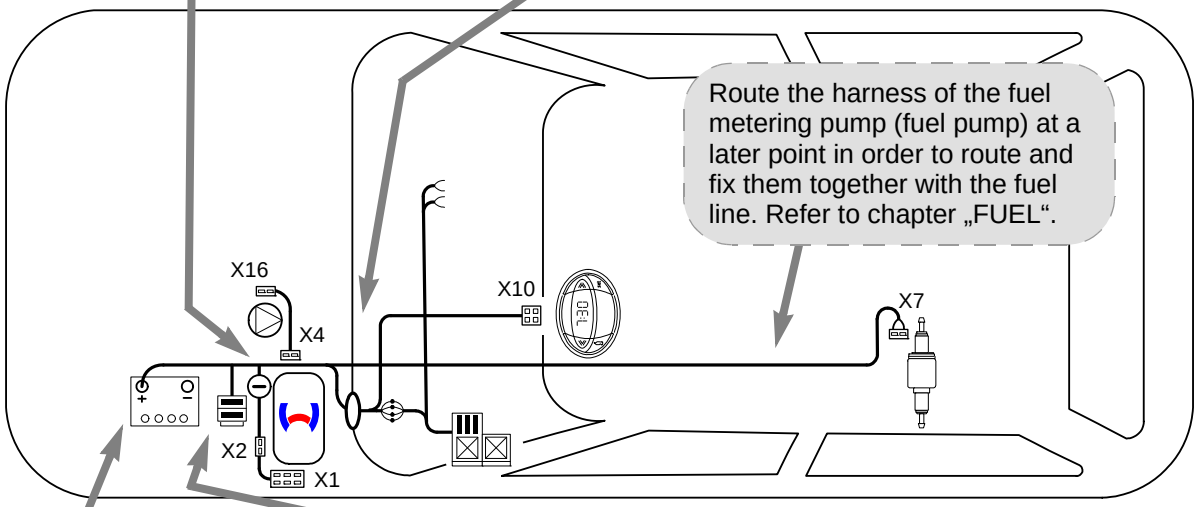
1 Earth wire on earth support point
2 Original vehicle earth support point



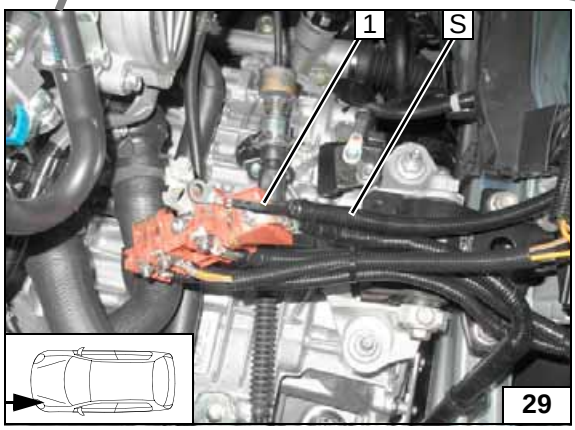
Wiring harness pass through

1 Vehicle grommet
2 Cable harnesses for the blower control
3 Cable harnesses for the heater control



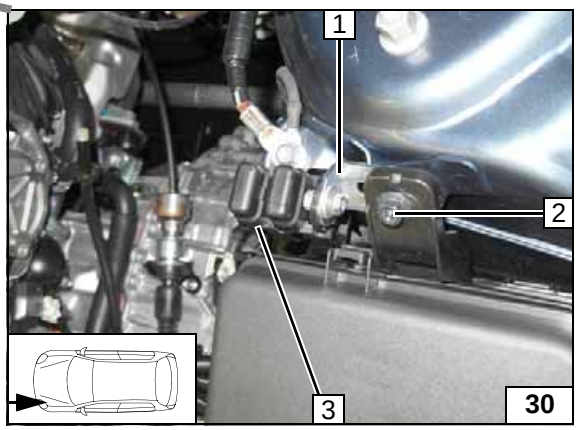


Wiring harness routing diagram



Positive wire

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

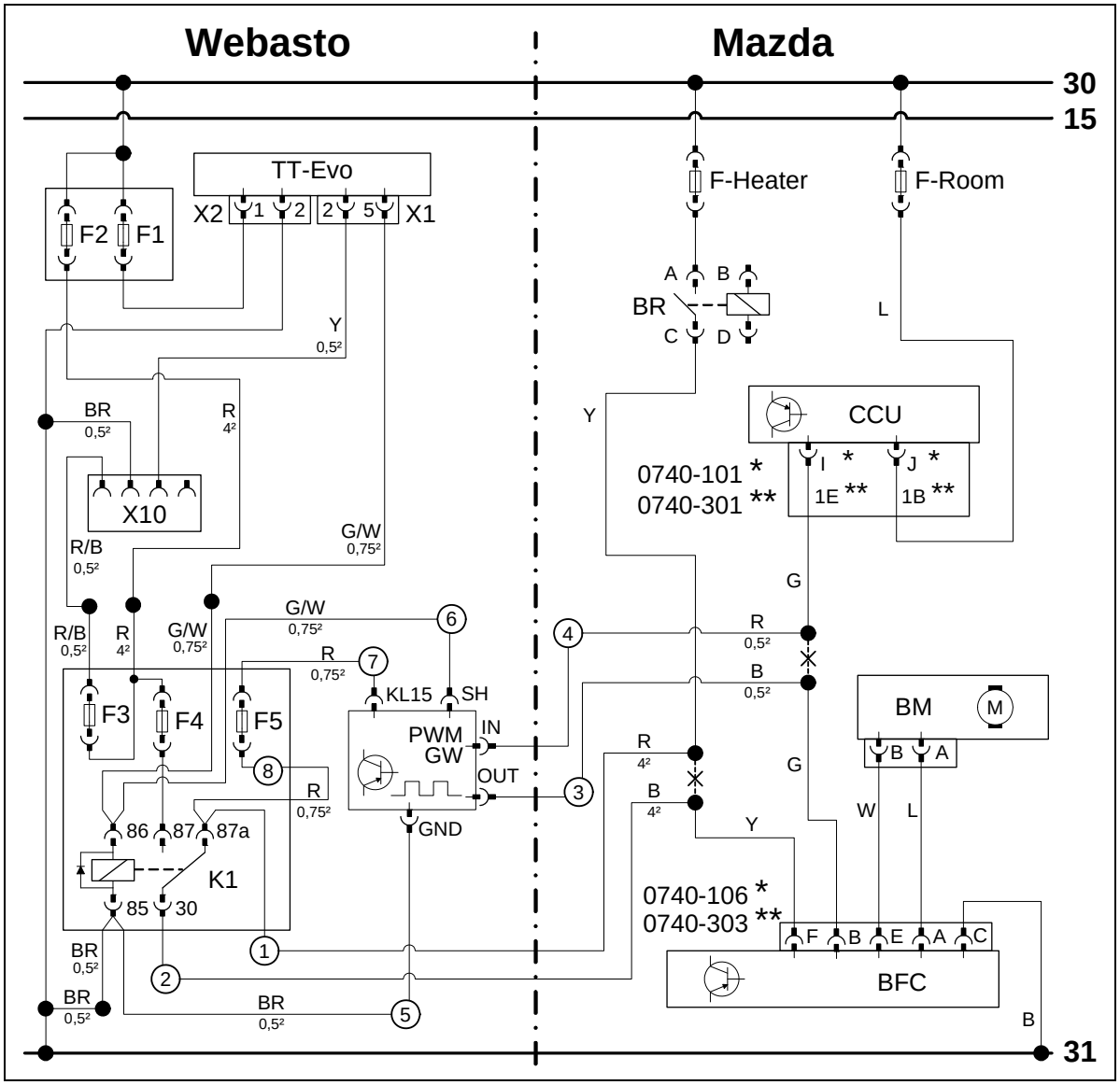


Fuse holder in engine compartment

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

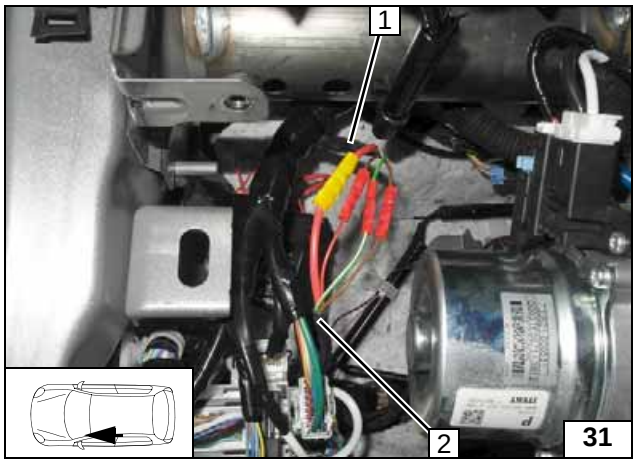
Blower Fan Control

Wiring diagram MANUAL AC (AC) and AUTO AC (AAC)



Webasto components		Vehicle components		Colours and symbols	
TT-Evo	Heater TT-Evo	F- Heater	40A fuse	R	red
X1	6-pin heater connector	F- Room	15A fuse	B	black
X2	2-pin heater connector	BR	Blower Relay	Y	yellow
F1	20A fuse	CCU	Climate Control Unit	G	green
F2	30A fuse	0740-101	Connector CCU A/C (7-speed)	BR	brown
X10	4-pin heater control connector			W	white
		0740-301	Connector CCU AAC (dual type)	L	blue
F3	1A fuse				
F4	25A fuse	BM	Blower Motor		
F5	3A fuse	BFC	Blower Fan Controller		
PWM GW	PWM Gateway	0740-106	6-pin connector BFC A/C (7-speed)		
K1	Blower relay	0740-303	6-pin connector BFC AAC (dual type)	*	MANUAL AC
PWM GW settings:				**	AUTO AC
Duty-Cycle:	70%				
Frequency:	500Hz				
Voltage:	not relevant			X	Cutting point
Function:	Low-side			Wiring colours may vary.	

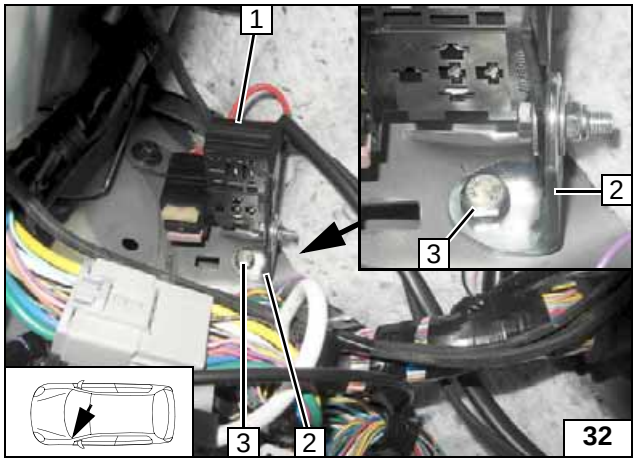
Legend



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)

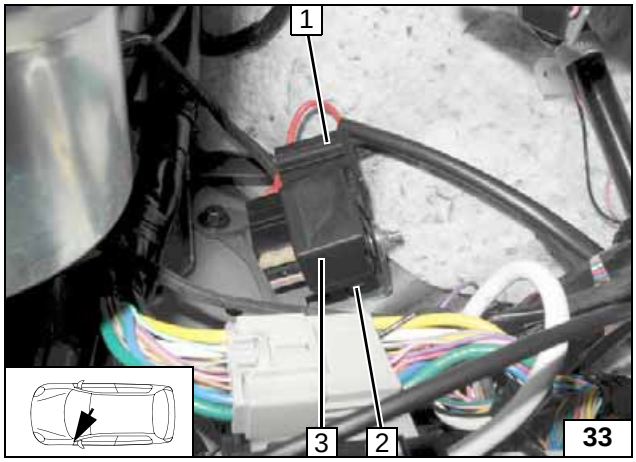
1 Wiring harness of relay and fuse holder (passenger compartment)
2 Wiring harness of heater

Connecting wiring harnesses, ensuring that the colours match



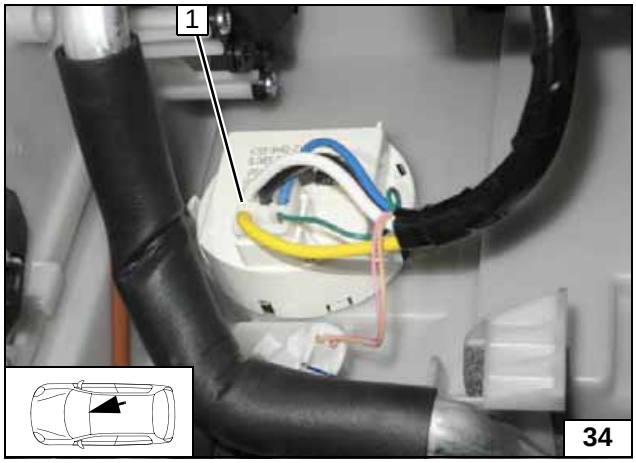
1 Relay and fuse holder (passenger compartment)
2 Perforated angle
3 Bolt M6x20, spring lockwasher, existing threaded hole (8-10Nm)

Installing relay and fuse holder (passenger compartment)



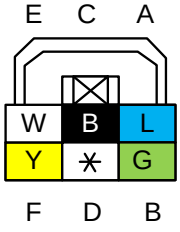
1 Relay and fuse holder (passenger compartment)
2 K1 relay (concealed behind relay and fuse holder (passenger compartment))
3 PWM GW

Installing relay K1 and PWM GW

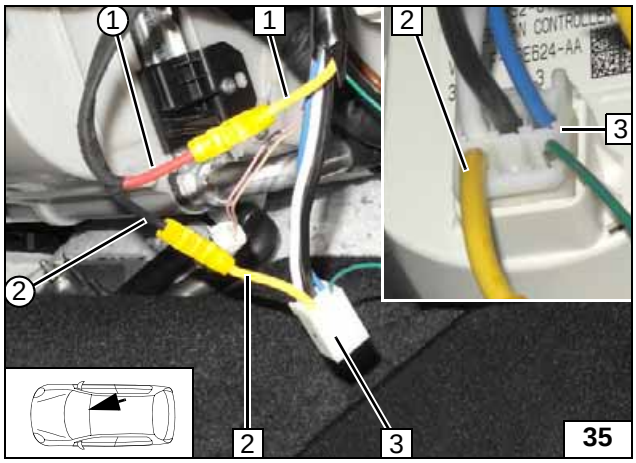


Air-channel removed for documentation!

1 6-pin connector Blower Fan Controller:
- 0740-106 (A/C 7-speed)
- 0740-303 (AAC dual type)



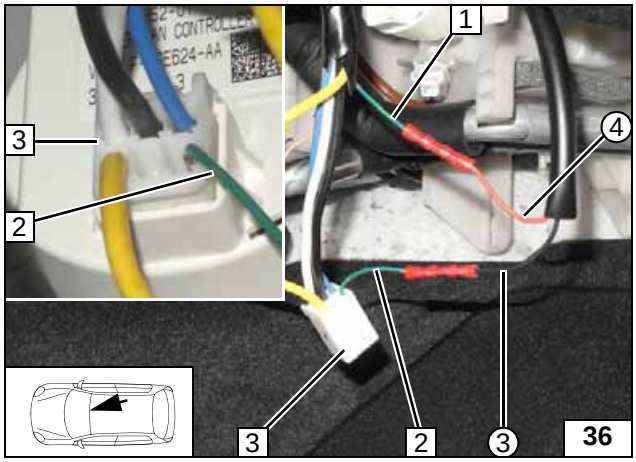
Connector Blower Fan Controller



Connection on 6-pin connector **3** from Blower Fan Controller.

1 Wire Y from Blower relay pin C
2 Wire Y to 6-pin connector Blower Fan Controller pin F
① Wire R from K1/87a blower wiring harness
② Wire B from K1/30 blower wiring harness

Connecting of Blower Fan Controller



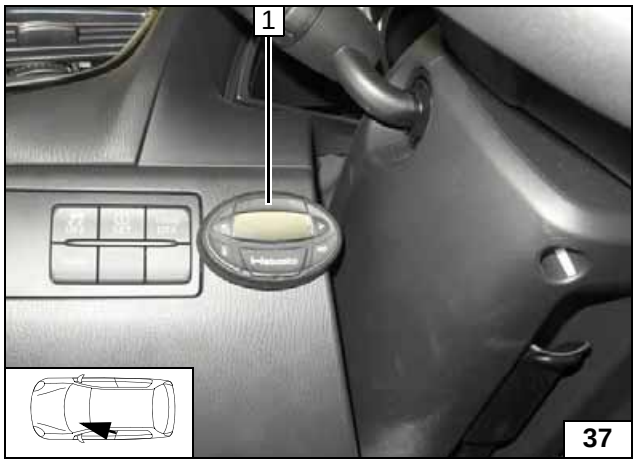
Connection on 6-pin connector **3** from Blower Fan Controller.

1 Wire G from CCU/ pin I/1E:
- 0740-101 (A/C 7-speed)
- 0740-301 (AAC dual type

2 Wire G to connector BFC/ pin B:
- 0740-106 (A/C 7-speed)
- 0740-303 (AAC dual type

③ Wire B from PWM GW/OUT wiring harness PWM GW control
④ Wire R from PWM GW/IN wiring harnessPWM GW control

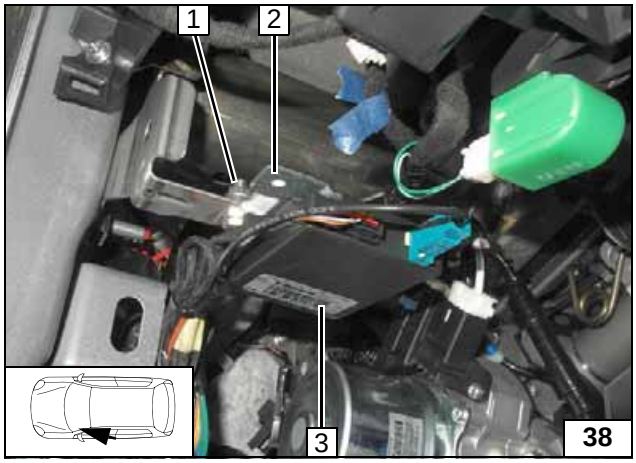
Connecting of Blower Fan Controller



Digital Timer

1 Digital timer

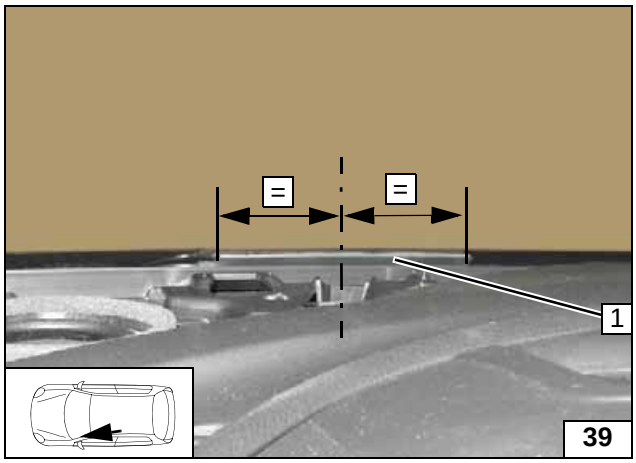
Mounting digital timer



Remote Control Option (Telestart)

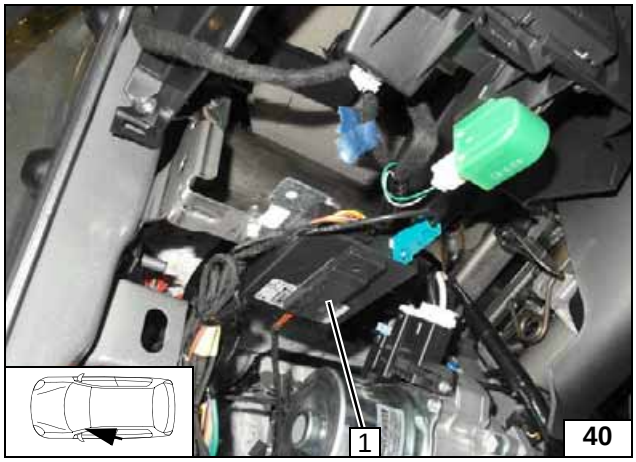
1 Bolt M6x20, flanged nut, existing hole (8-10Nm)
2 Holder receiver
3 Receiver

Mounting receiver



1 Antenna

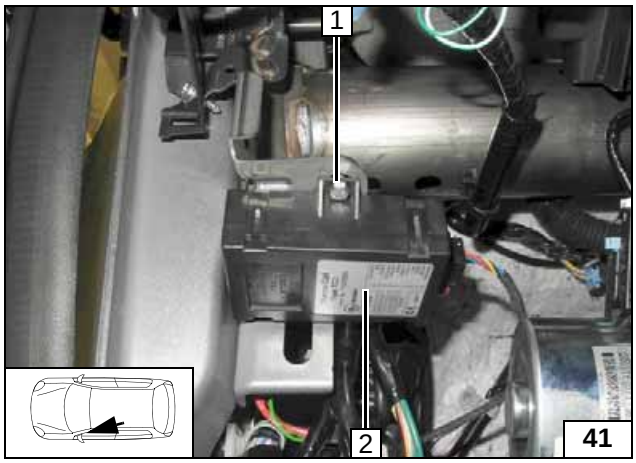
Mounting antenna



Temperature sensor, only T100 HTM

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

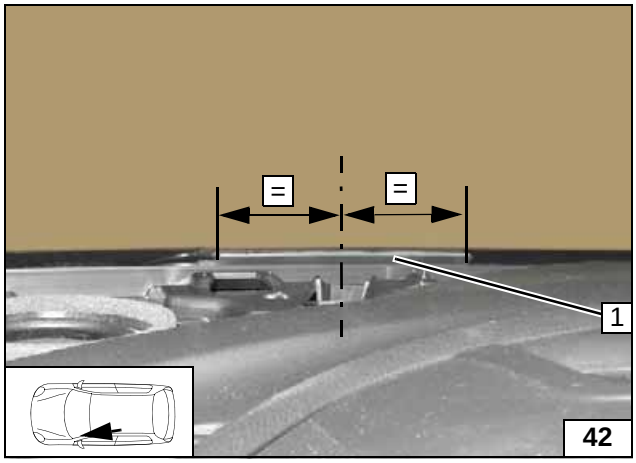
Installing temperature sensor



Thermo Call Option

1 Bolt M5x16, flanged nut, existing hole (6-8 Nm)
2 Receiver

Mounting receiver



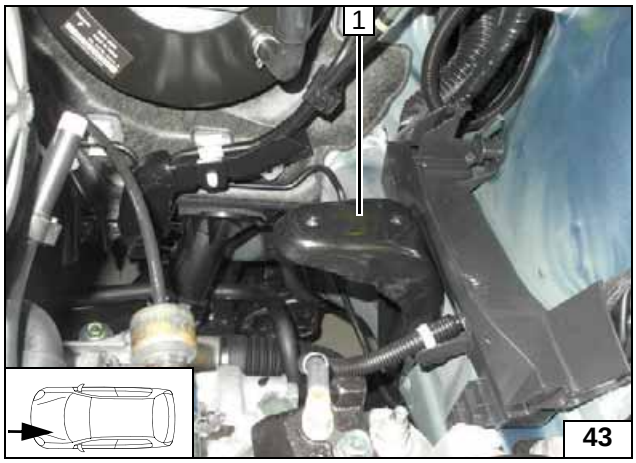
1 Antenna

Mounting antenna

Preparing Installation Location

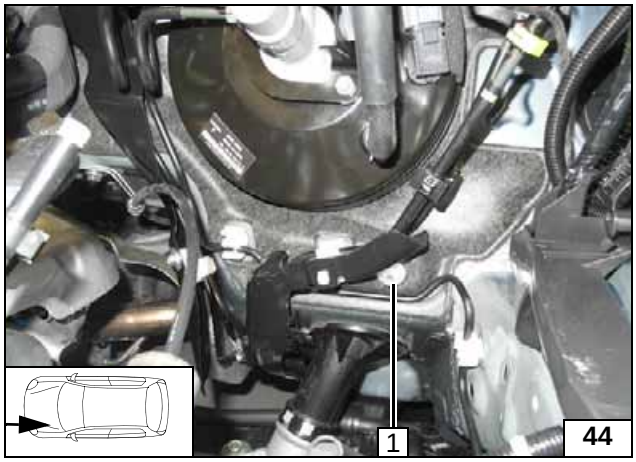
Remove holder **1**.
Holder **1** and bolts are later assembled here again.

Removing holder



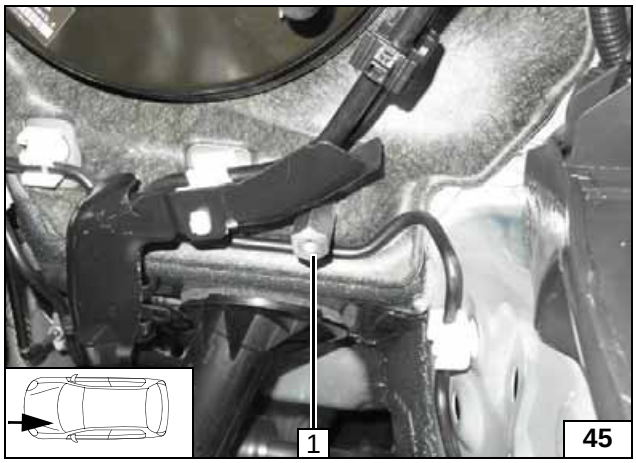
1 Remove and discard plastic nut

Removing plastic nut



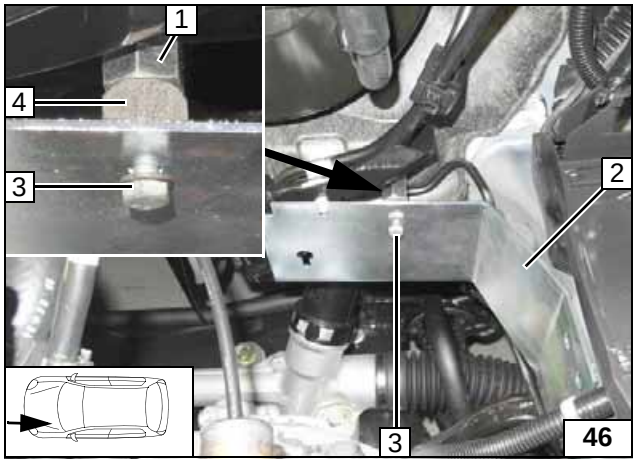
1 Spacer nut M6x40 at original vehicle bolt (8-10Nm)

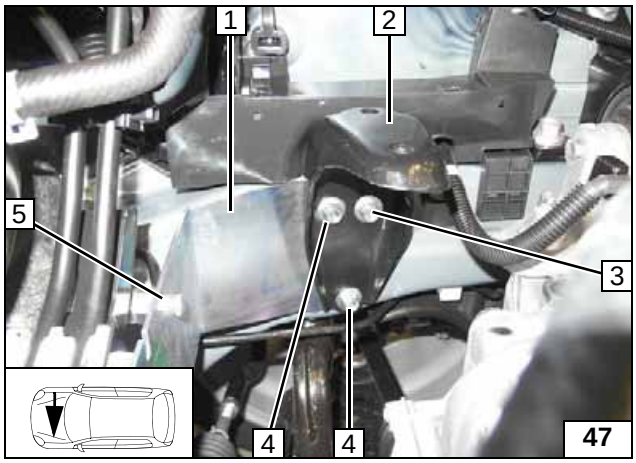
Mounting spacer nut



1 Spacer nut M6x40
2 Holder heater
3 M6x30 bolt, spring lockwasher, distance washer 15 (**4**) to spacer nut M6x40 loosely mount
4 Distance washer M6x15

Mounting holder

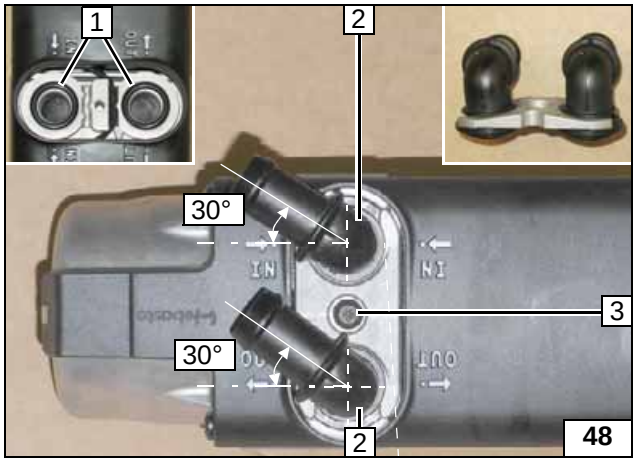




1 Holder heater
2 Original vehicle holder
3 Original vehicle bolt loosely mount
4 Original vehicle bolt [2x] (25Nm)
5 Bolt tighten (8-10Nm)

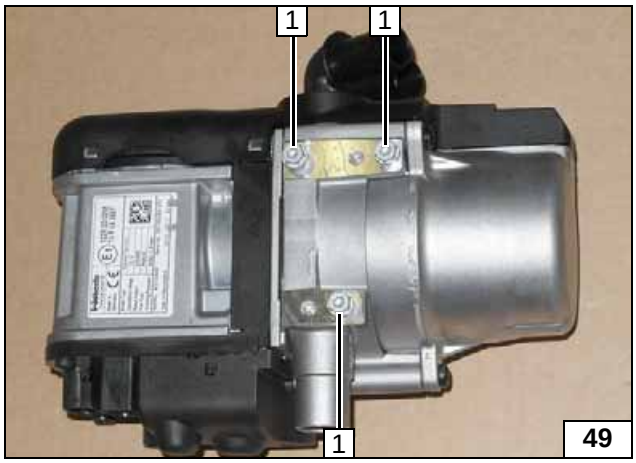
Mounting holder

Preparing Heater



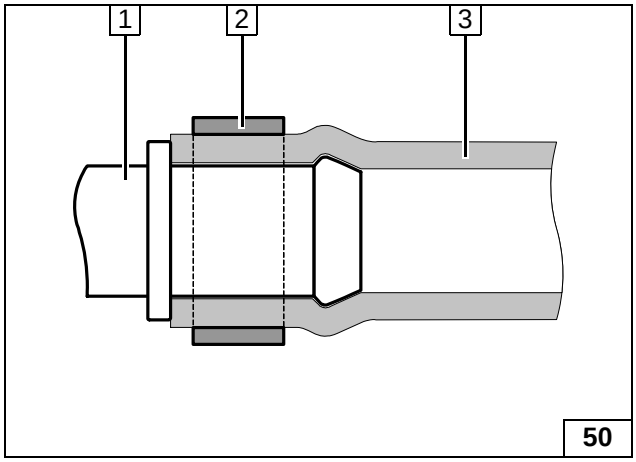
1 Sealing ring [2x]
2 Water connection piece [2x]
3 5x15 self-tapping bolt, retaining plate of water connection piece (7Nm)

Mounting water connection piece



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

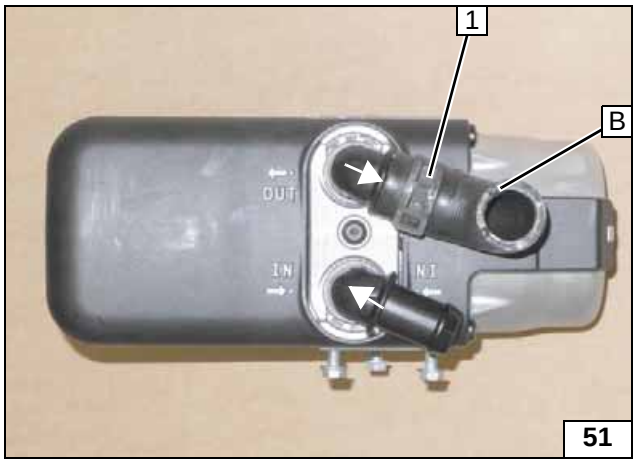
Premount heater



Generally mounting of water connection piece, hose and clamp.

1 Water connection piece
2 Spring clamp
3 Hose

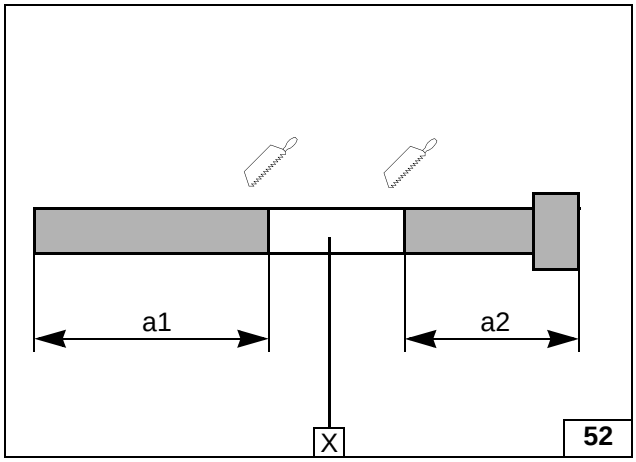
Note mounting hose



Mark direction with arrows as shown!
Hose **B** = moulded hose 90° Ø18

1 spring clamp Ø 25

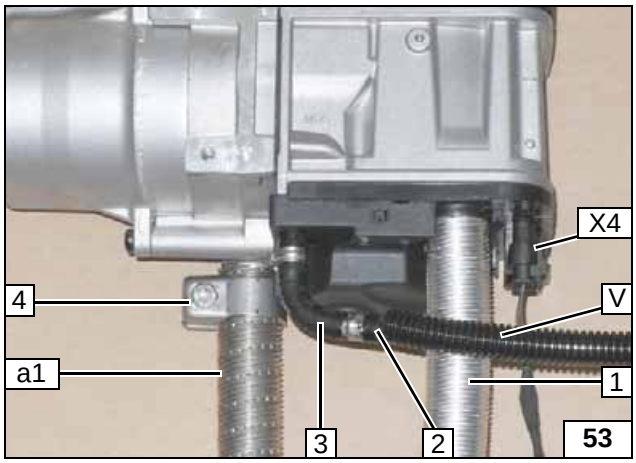
Mounting hose B



a1 = 360
a2 = 210

X =

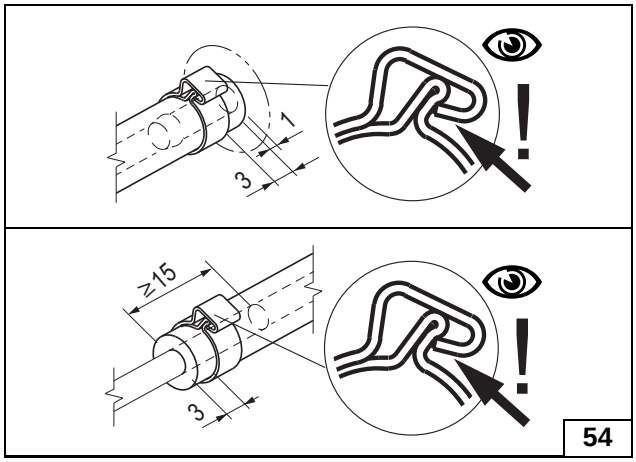
Preparing exhaust pipes



Mounting fuel line and moulded hose see the following figure.
Route fuel line **2** in corrugated tube Ø10 **V**!

1 Combustion air pipe
2 Fuel line
3 Moulded hose 90° Ø 4,5, clamps Ø 10 [2x]
4 Hose clamp
X4 Connector of the coolant circulating pump

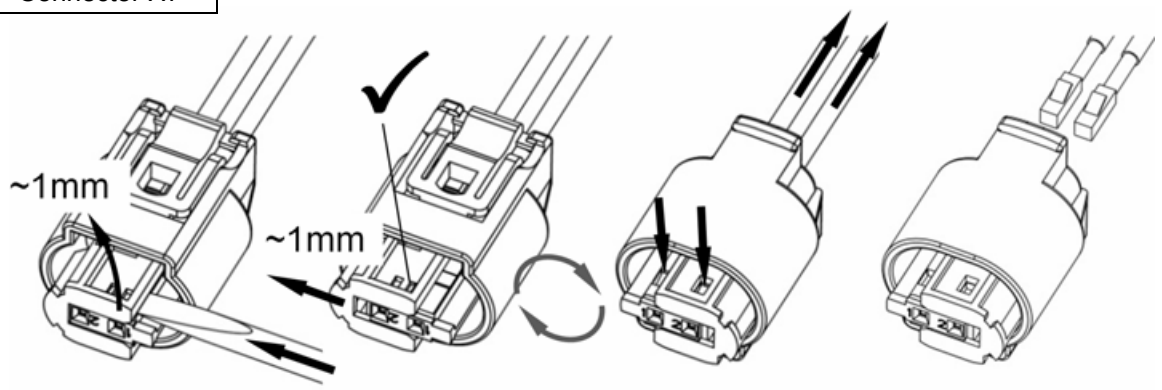
Premount heater



Mounting moulded hose

Disassembling metering pump connector

Connector X7



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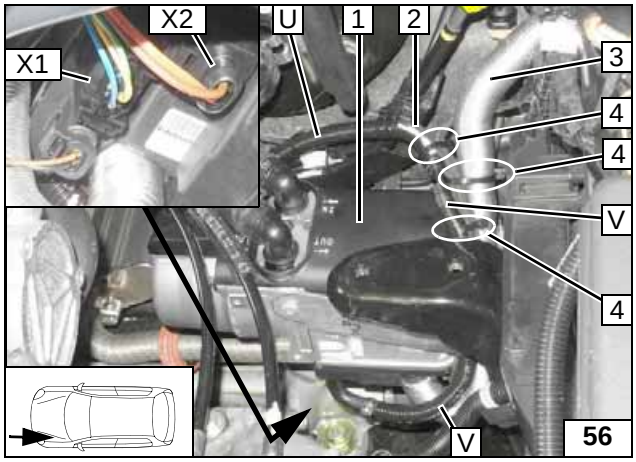
Attaching wiring harness and mounting heater



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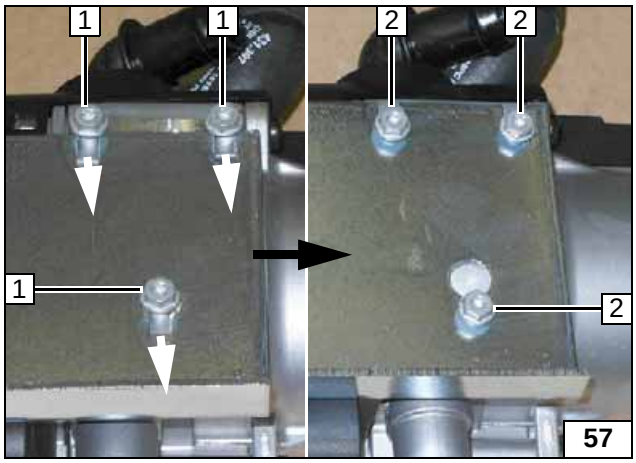
Place the heater close to the installation location and connect connector **X1** / **X2** with heater **1**.
Fix heater to the holder as shown in following steps.
Route wiring harness of fuel metering pump and fuel line in corrugated tube Ø10 **U** along original vehicle fuel line to the underbody.

2 Wiring harness of circulating pump
3 Combustion air pipe
4 Cable tie [3x]
X1 6-pin connector wiring harness heater
X2 2-pin connector wiring harness heater

Mounting heater



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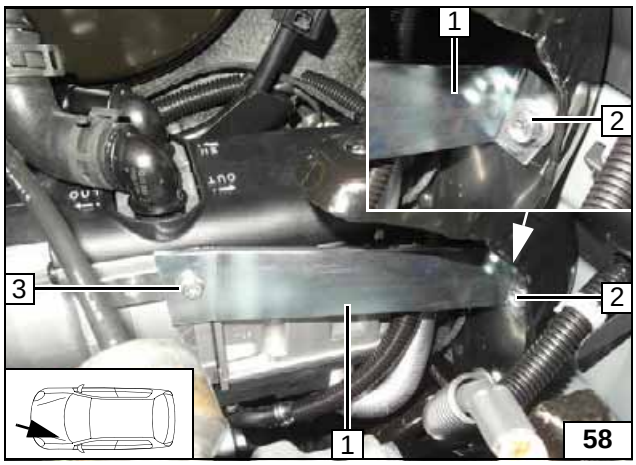
1 Loosley assembled 5x13 self-tapping bolts [3x]
2 Tighten 5x13 self-tapping bolts [3x] (8Nm)

Mounting heater



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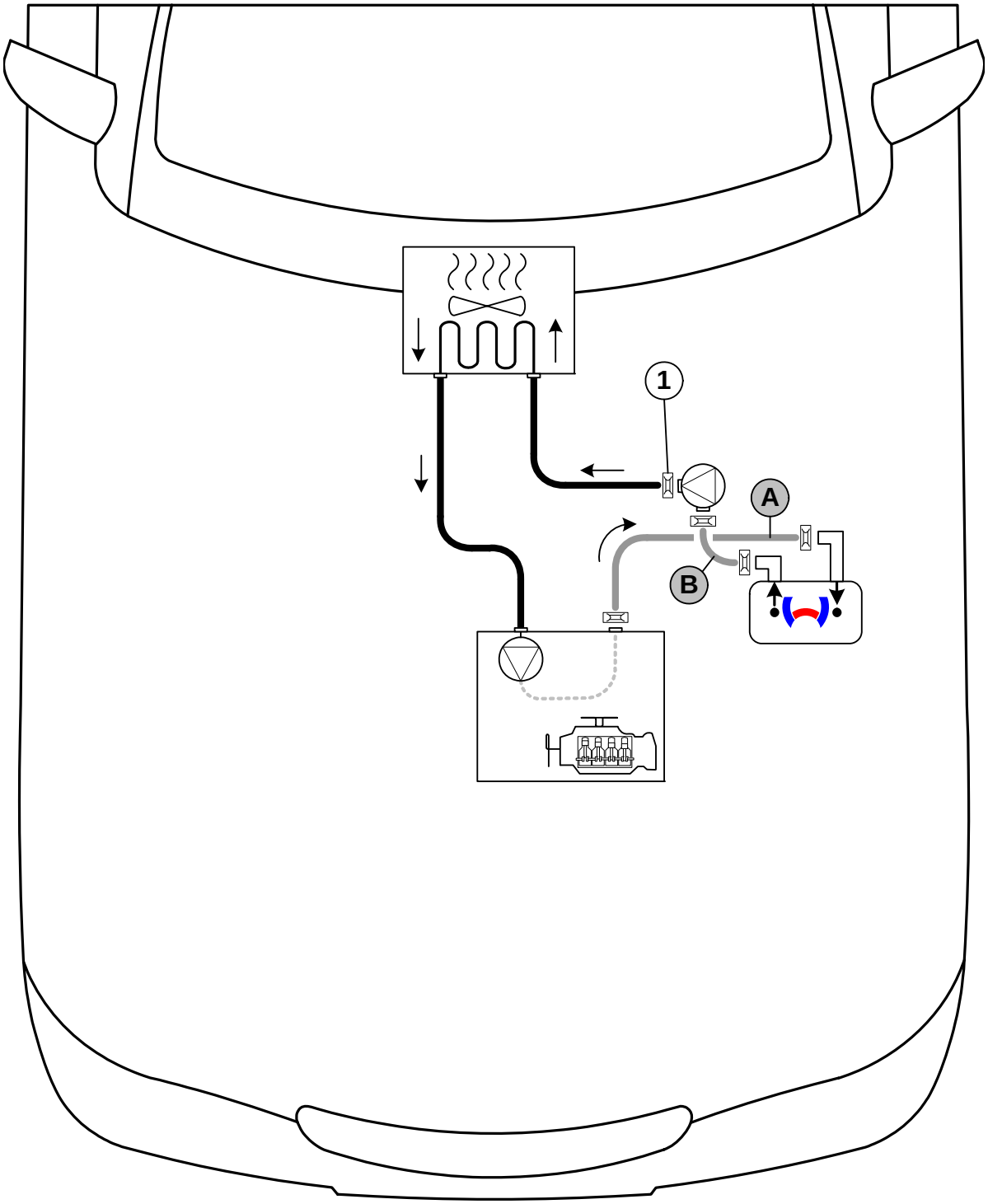
1 Holder
2 Original vehicle bolt (25Nm)
3 5x13 self-tapping bolt (8Nm)

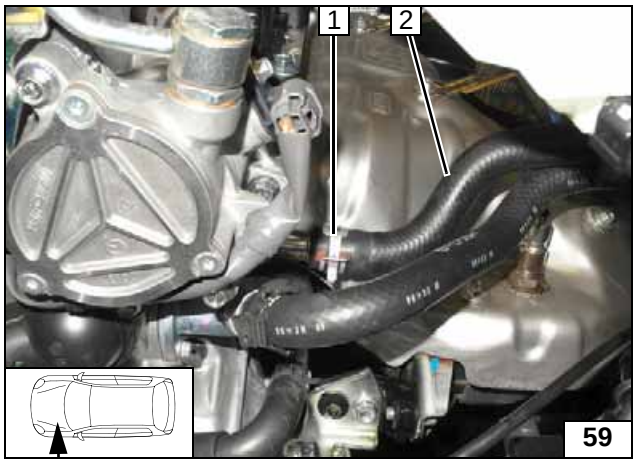
Coolant Circuit

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



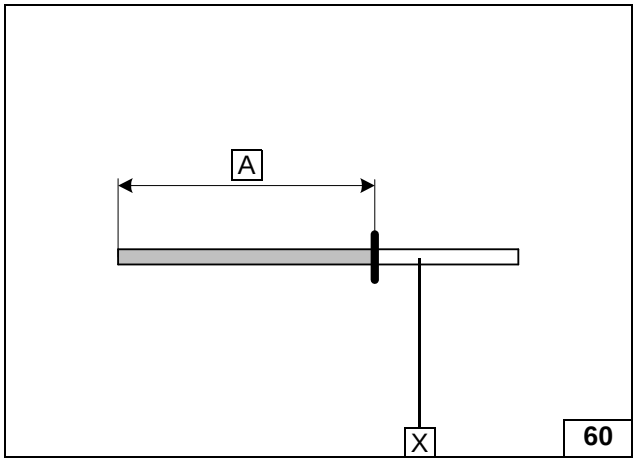
All not designated spring clamps = Ø 25!
1 = Original vehicle spring clamp!



Remove hose of engine outlet / heat exchanger inlet **2** from the nozzle at engine outlet.

1 Spring clamp will be re-used

Remove hose

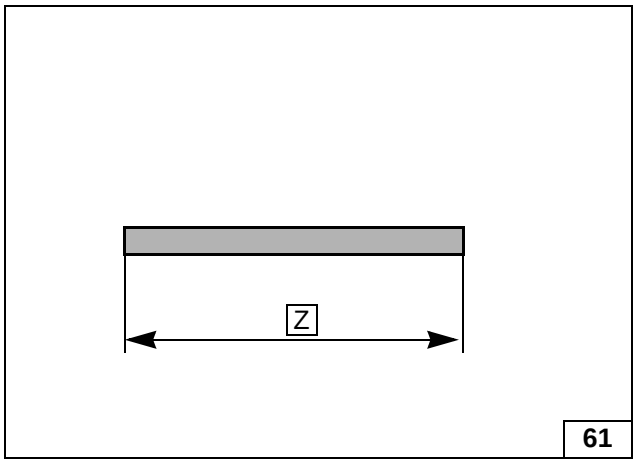


Water hose **A** = Ø18

A = 350

X =

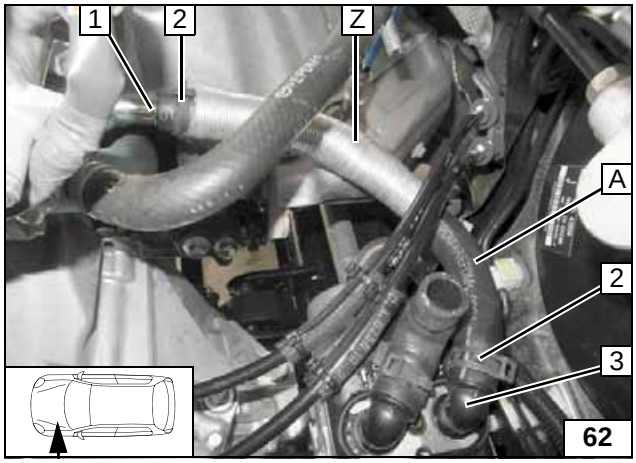
Cutting hoses to length



Heat protection hose **Z** = Ø 28

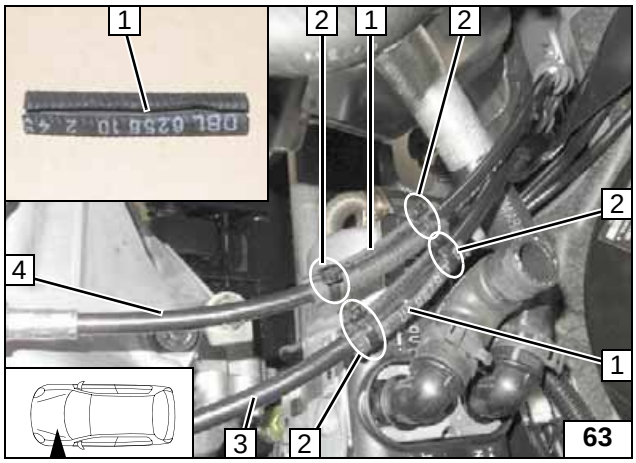
Z = 200

Note heat protection hose



1 Nozzle engine outlet
2 Spring clamp Ø 25 [2x]
3 Nozzle heater inlet

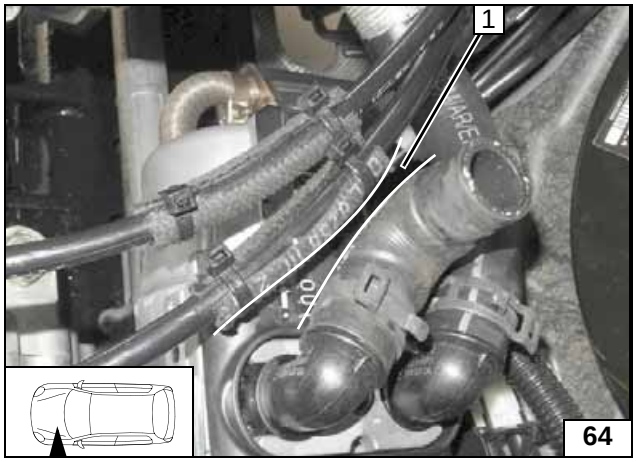
Connecting engine outlet



Cut braided hose **1** [2x] and mounting on shift cable **3** and **4**.

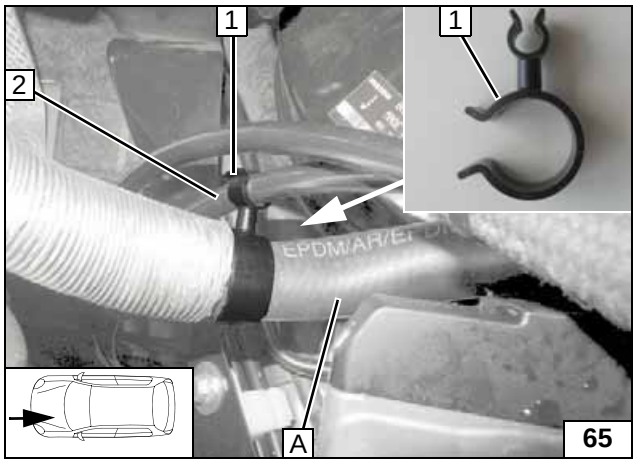
2 Cable tie [4x]

Mounting braided hose



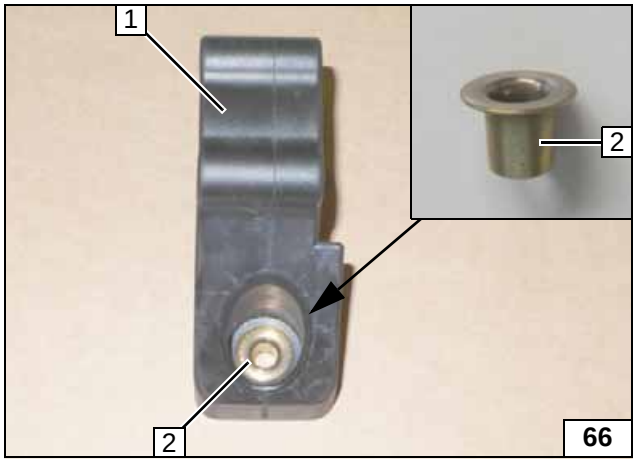
Ensure sufficient distance from adjacent components (min. 5mm) at position **1**; correct if necessary.

Check distance



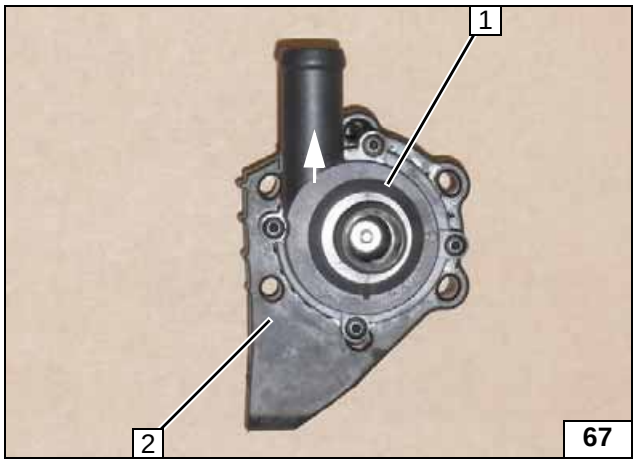
Mounting hose bracket 9x23 **1** between hose **A** and shift cable **2**.

Mounting hose bracket



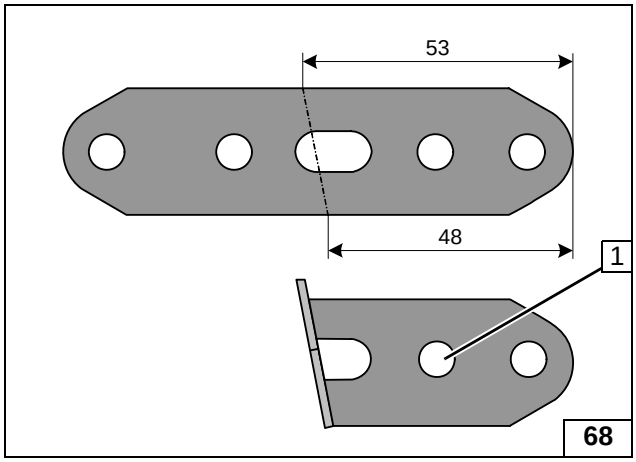
1 Rubber support of circulating pump
2 Support rivet

Mounting support rivet



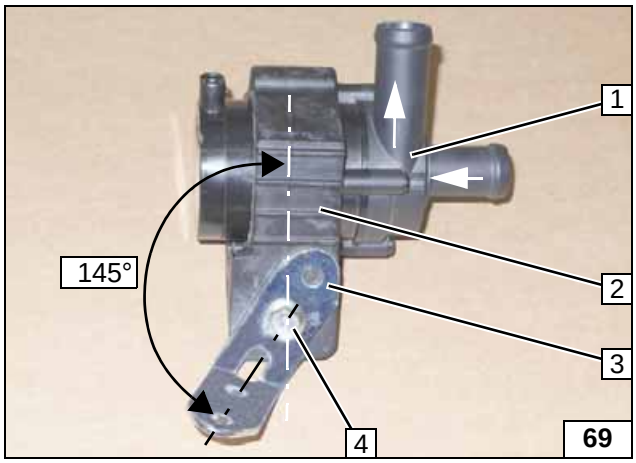
1 Circulating pump
2 Rubber support of circulating pump

Premounting rubber support



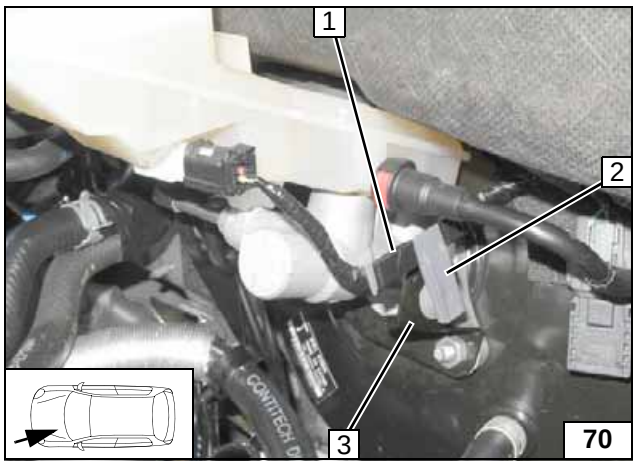
1 Rubber support fixation point

Bending perforated bracket about 90°



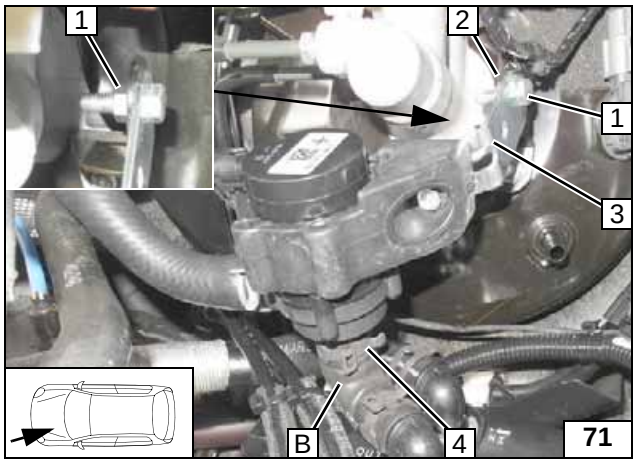
1 Circulating pump
2 Rubber support of circulating pump
3 Perforated bracket
4 M6x25 bolt, flanged nut

Premounting circulating pump



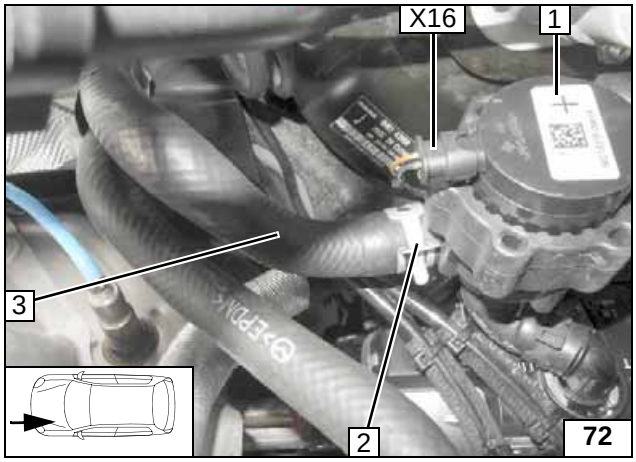
Release plastik clip **2** of vehicle wiring harness **1** from holder **3**. Discard plastik clip **2.**

Release wiring harness



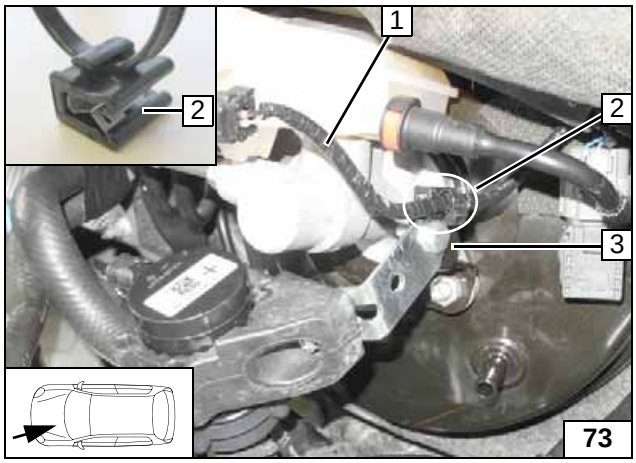
1 M6x20 bolt, flanged nut (8-10Nm)
2 Original vehicle holder
3 Perforated bracket circulating pump
4 Spring clamp Ø 25

Mounting circulating pump and connection heater outlet



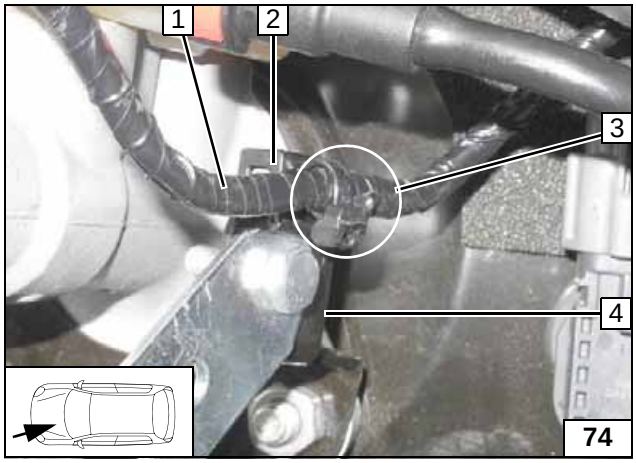
1 Circulating pump
2 Original vehicle spring clamp
3 Hose of heat exchanger inlet
X16 Connector of the coolant circulating pump

Connecting circulating pump



Remount vehicle harness **1** to original vehicle holder **3** with clip cable tie **2**. Details see the following figure.

Mounting wiring harness



1 Vehicle harness
2 Cable clip
3 Cable tie
4 Original vehicle holder

Mounting wiring harness

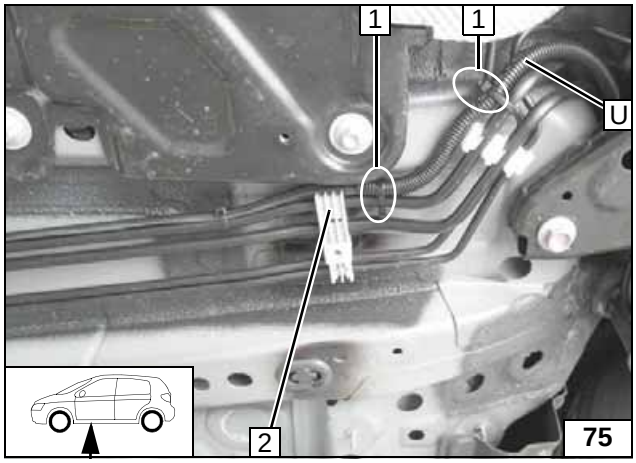
Fuel

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 fuel 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.

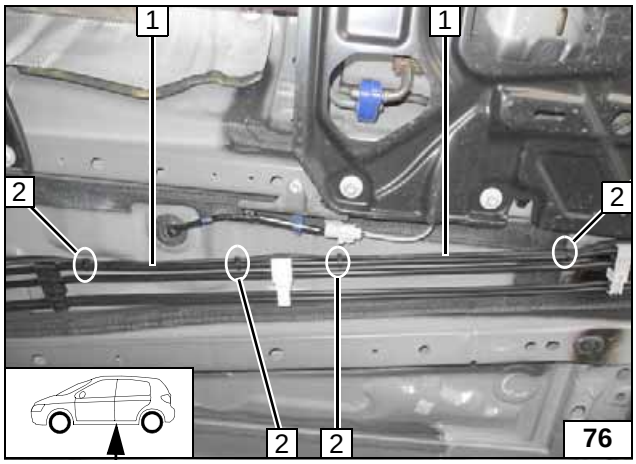
WARNING!
The fuel line and wiring harness are routed to the fuel metering pump as shown in the wiring harness routing diagram.



Route fuel line and wiring harness of fuel metering pump in corrugated tube Ø 10 **U** along the original vehicle fuel lines to the holder **2**.

1 Cable tie [2x]

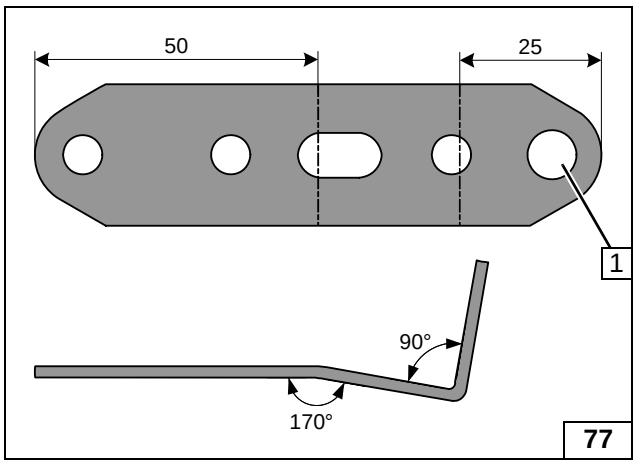
Routing lines



Route fuel line and wiring harness of fuel metering pump **1** along original vehicle fuel lines to the installation location of the fuel metering pump.

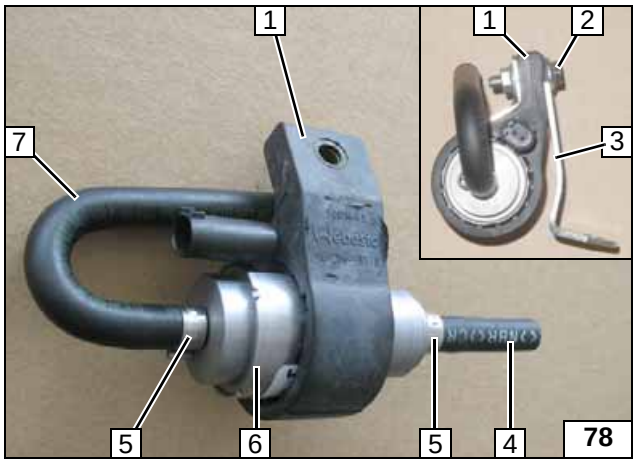
2 Cable tie [4x]

Routing lines

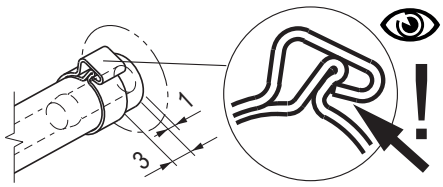


1 Enlarge hole Ø 8

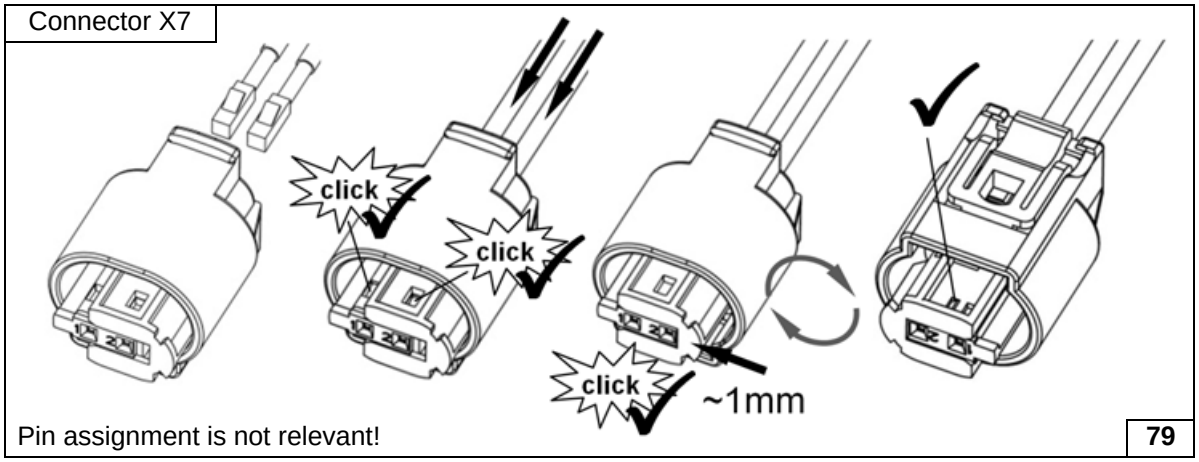
Bending perforated bracket



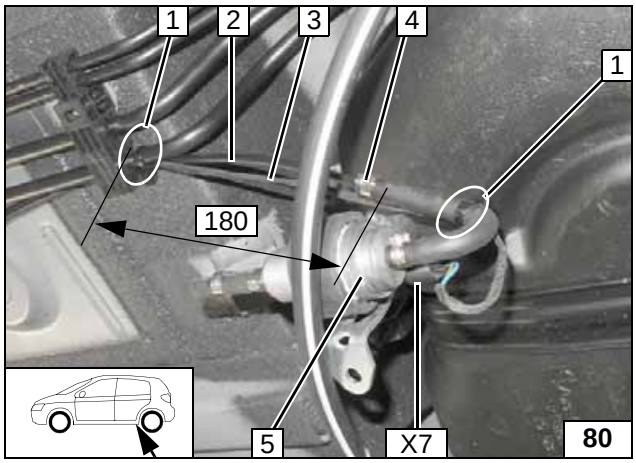
1 Rubber support of fuel metering pump
2 M6x25 bolt, Support angle bracket, flanged nut
3 Perforated bracket
4 Hose section
5 Clamp Ø 10 [2x]
6 Fuel metering pump
7 180° moulded hose Ø 4,5



Premounting fuel metering pump

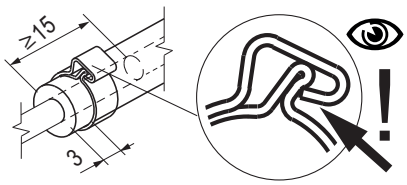


Completing fuel metering pump connector

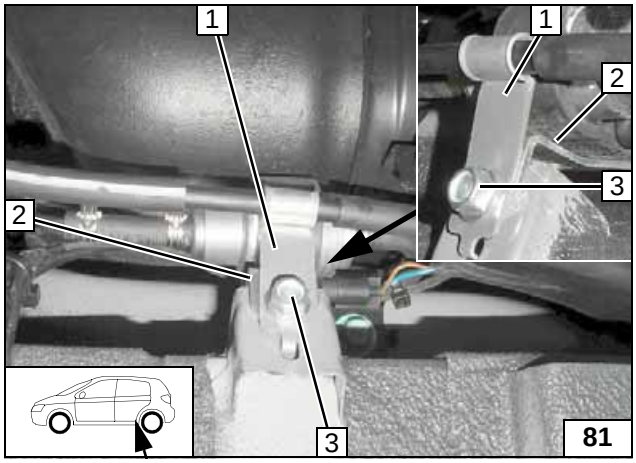


Cut the fuel line in accordance to the figure.

1 Cable tie [2x]
2 Fuel line
3 Wiring harness of fuel metering pump
4 Clamp Ø 10
5 Fuel metering pump
X7 Connector fuel metering pump

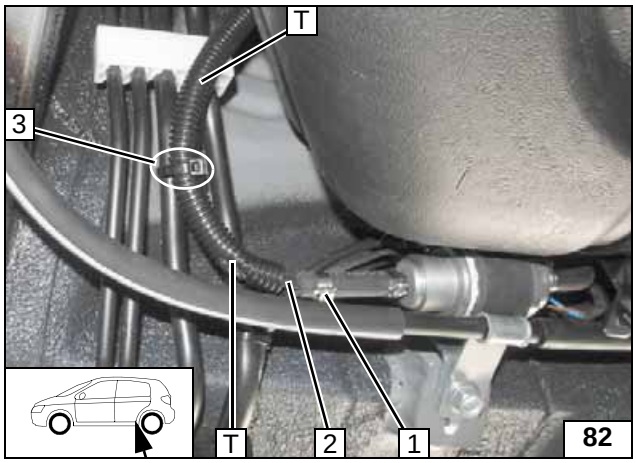


Connecting wiring harness and fuel line to fuel metering pump



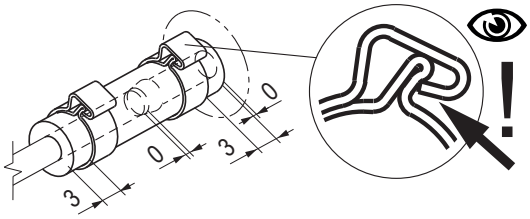
1 Holder hand brake cable
2 Perforated bracket
3 Original vehicle bolt (25Nm)

Mounting fuel metering pump

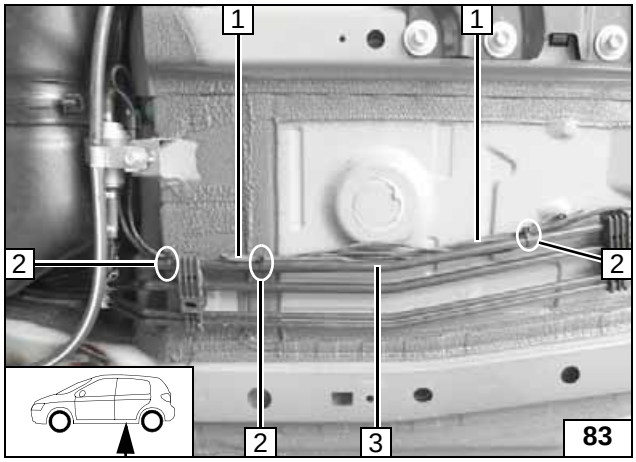


Route fuel line **2** into corrugated tube Ø 10 **T** to the fuel-tank sending.

1 Clamp Ø 10
2 Fuel line
3 Cable tie



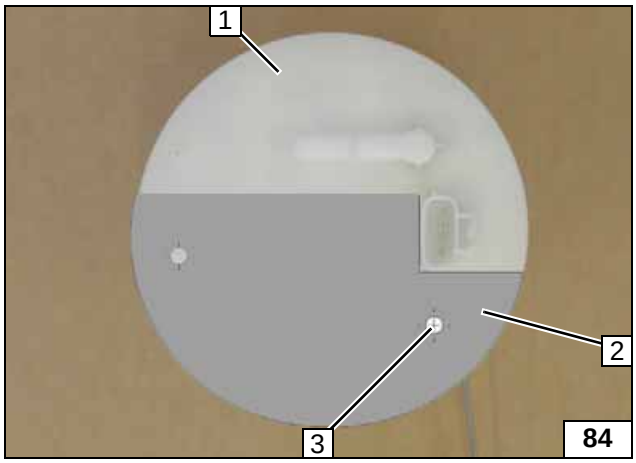
Mounting fuel line



Fixation of remaining cable overlength **1** along original vehicle fuel lines **3**.

2 Cable tie [3x]

Routing lines

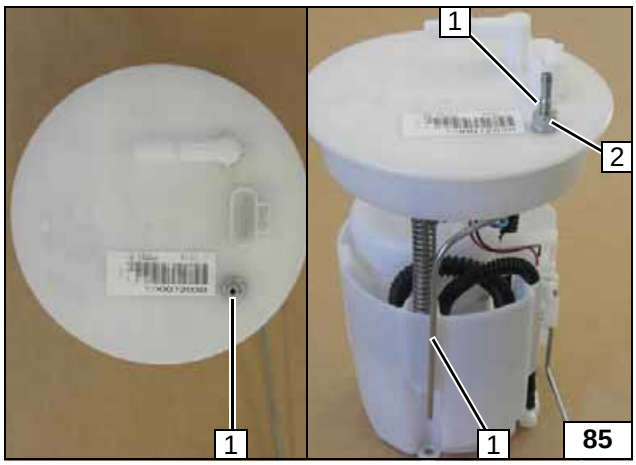


Mounting fuel standpipe VIN:
JMZBM...

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

3 Drill hole Ø 6 carefully

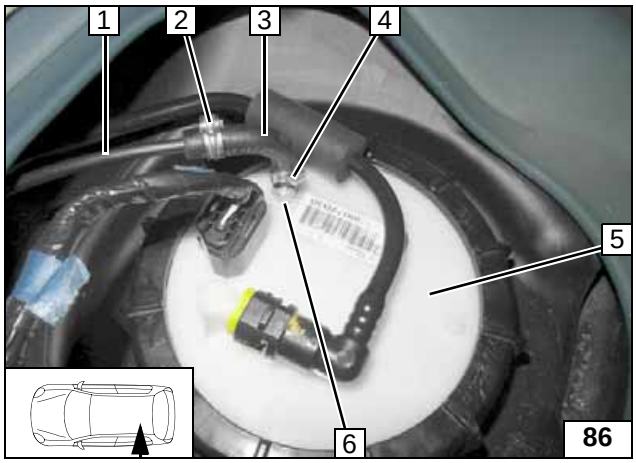
Drilling holl in fuel-tank sending



Shape fuel standpipe **1** according to template and cut to length.
Carefully follow seperate standpipe installation instruction!

2 Sealing nut

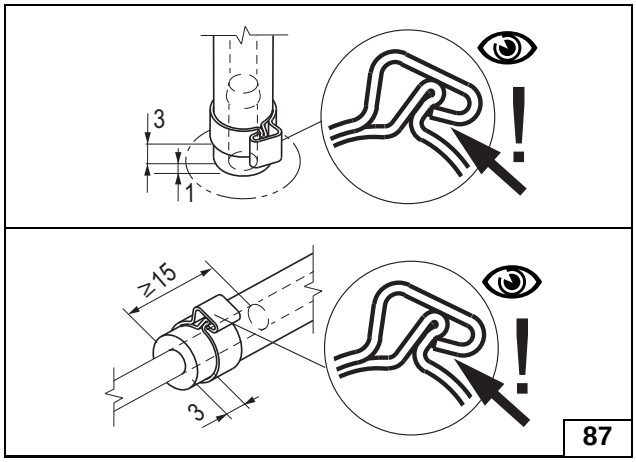
Installing fuel standpipe



Install fuel-tank sending unit **5** according to manufacturer's instructions (MESI).
Mounting fuel line and moulded hose see the following figure.
Connect the 90° moulded hose with Ø 3,5 at the standpipe and with Ø 4,5 at the fuel line.

1 Fuel line
2 Clamp Ø 10
3 90° moulded hose Ø 3,5 x Ø 4,5
4 Clamp Ø 9
5 Fuel-tank sending
6 Fuel standpipe

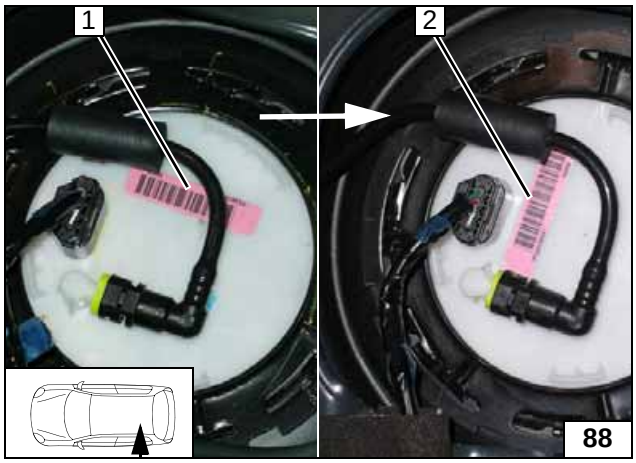
Installing fuel-tank sending and connecting fuel line



Clamp Ø 9

Clamp Ø 10

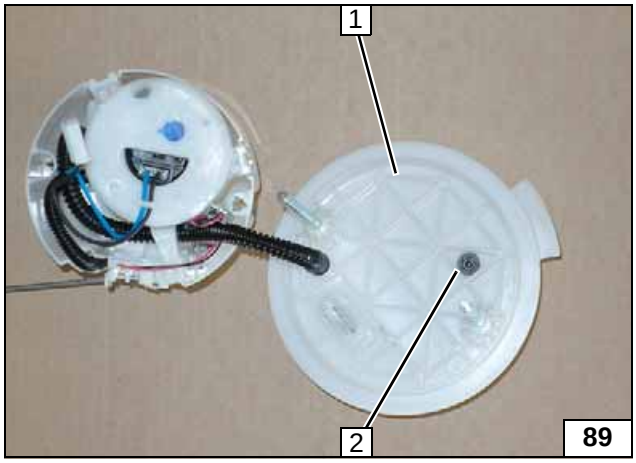
Mounting fuel line and moulded hose



Mounting fuel standpipe VIN:
3MZBM...

1 Label old position
2 Label new position

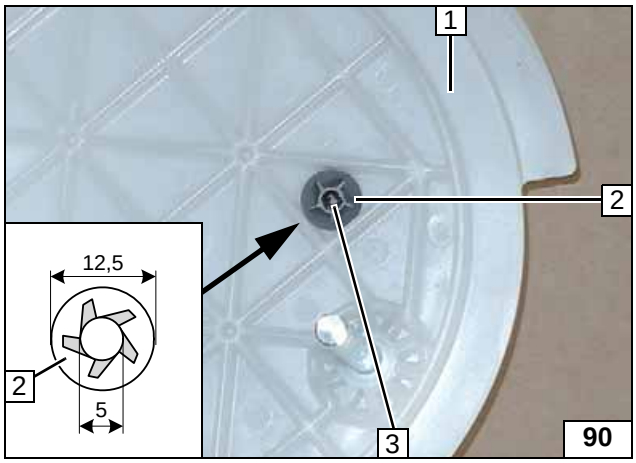
Moving Label



Remove and disassemble fuel-tank sending unit **1** according to manufacturer's instructions (MESI).

2 Transfer hole pattern (see follow picture)

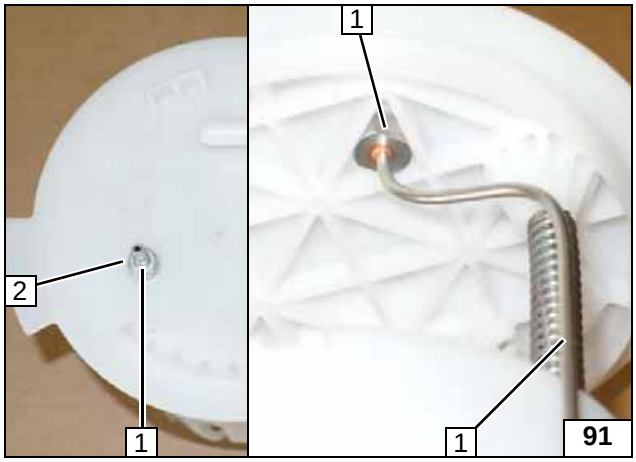
Transfer hole pattern



Place pin lock **2** between the bars as shown! Transfer hole pattern. Remove pin lock.

1 Fuel-tank sending (inside)
3 Drill hole Ø 6 carefully

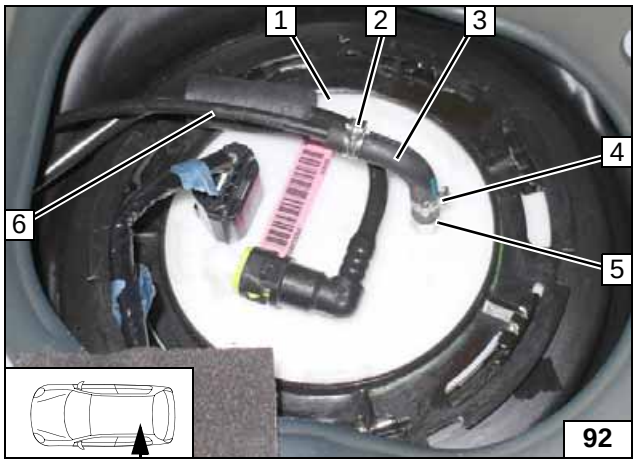
Drilling holl in fuel-tank sending



Shape fuel standpipe **1** according to template and cut to length.
Carefully follow seperate standpipe installation instruction!

2 Sealing nut

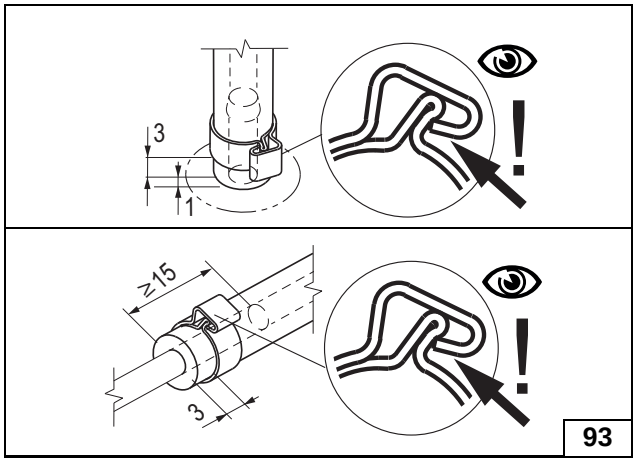
Installing fuel standpipe



Install fuel-tank sending unit **1** according to manufacturer's instructions (MESI).
Connect the 90° moulded hose with Ø 3,5 at the standpipe and with Ø 4,5 at the fuel line.
Mounting fuel line and moulded hose see the following figure.

2 Clamp Ø 10
3 90° moulded hose Ø 3,5 x Ø 4,5
4 Clamp Ø 9
5 Fuel-tank sending
6 Fuel line

Installing fuel-tank sending and connecting fuel line

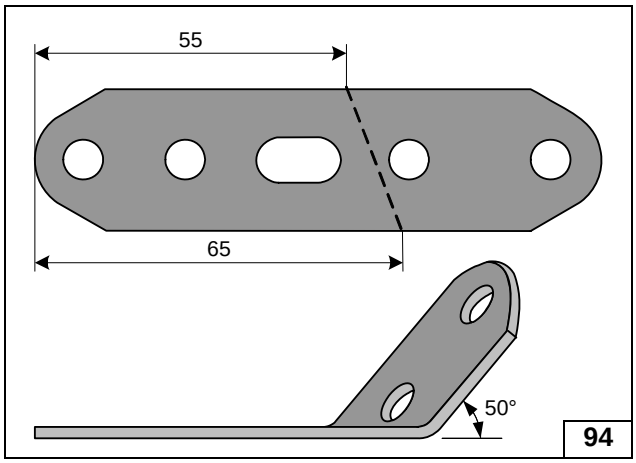


Clamp Ø 9

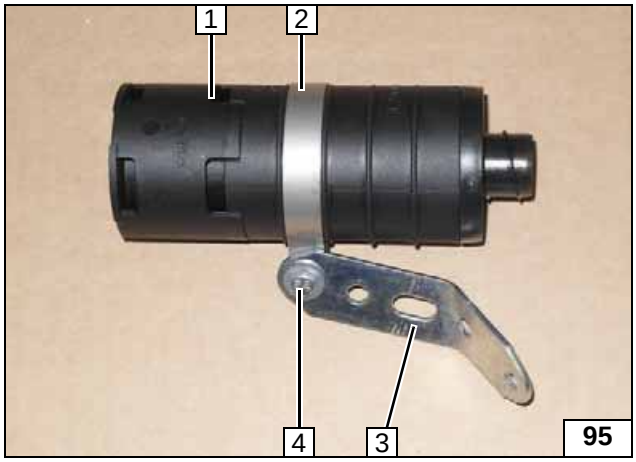
Clamp Ø 10

Mounting fuel line and moulded hose

Combustion Air

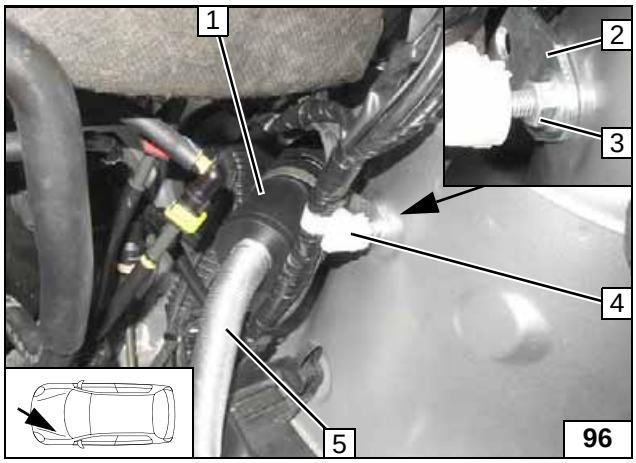


Bending perforated bracket



1 Silencer
2 Clamp Ø 51
3 Perforated bracket
4 Bolt M5x16, large diameter washer, flanged nut (5-6Nm)

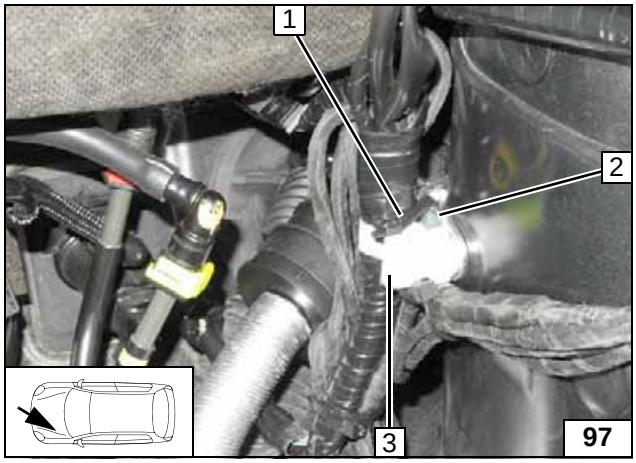
Premounting silencer



Remove clip-holder **4** from the bolt.

1 Silencer
2 Perforated bracket
3 Flanged nut M6 on bolt (8-10Nm)
5 Combustion air pipe

Mounting combustion air pipe

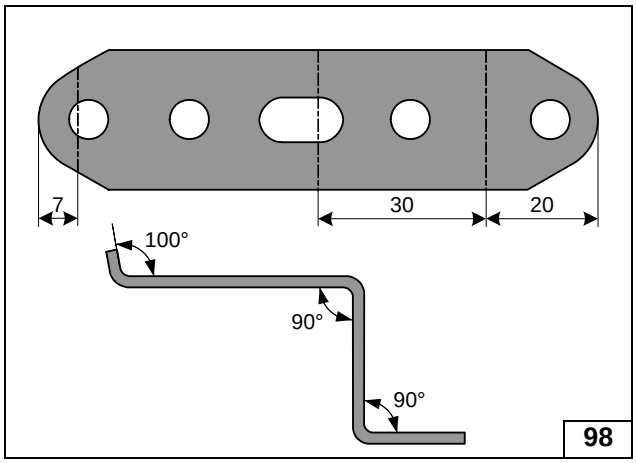


Mount clip-holder **3** from the bolt.

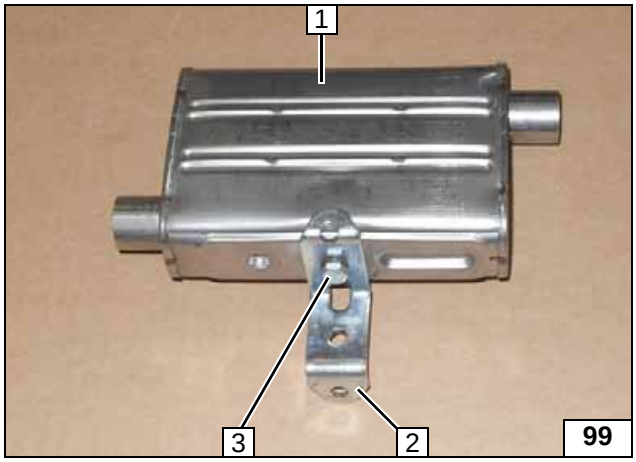
1 Cable tie
2 Perforated bracket

Mounting clip holder

Exhaust Gas

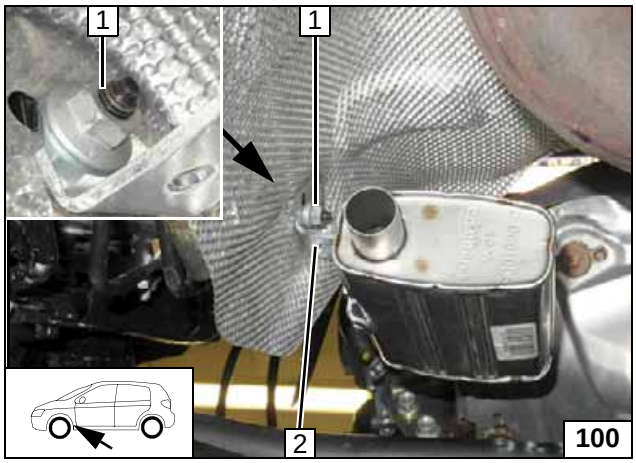


Bending perforated bracket



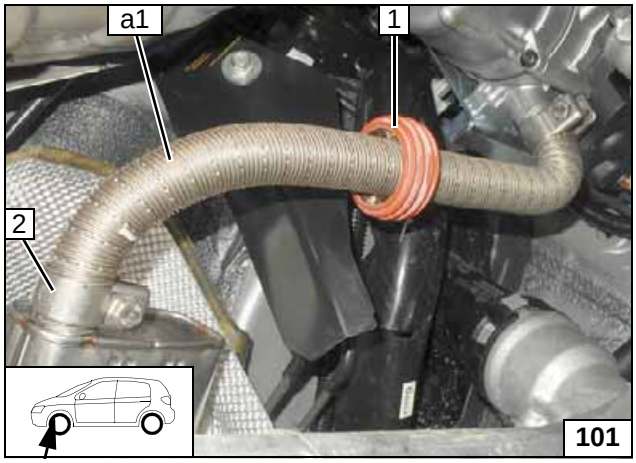
1 Exhaust silencer
2 Perforated bracket
3 M6x16 bolt, spring lockwasher (8-10Nm)

Premounting exhaust silencer



1 Original vehicle bolt and flanged nut (8-10Nm)
2 Perforated bracket

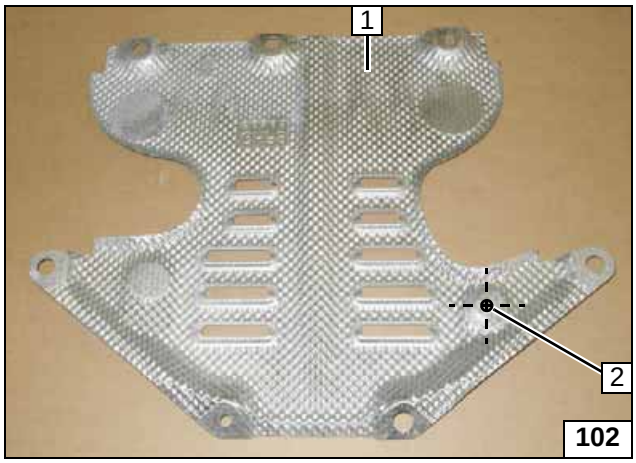
Mounting exhaust silencer



Ensure sufficient distance around the exhaust pipe **a1** and the position of the spacer bracket, correct if necessary.

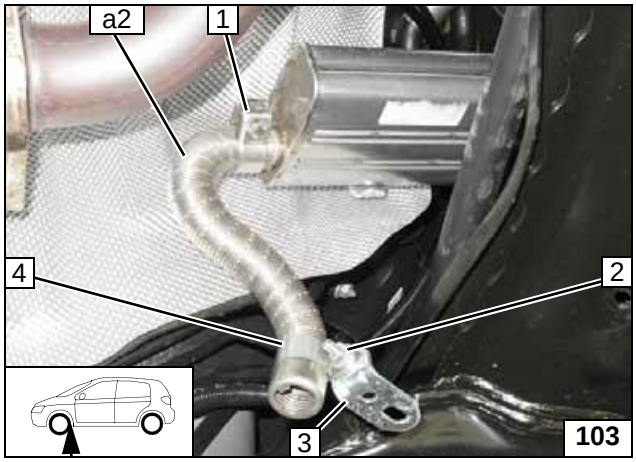
1 Spacer bracket
2 Hose clamp

Mounting exhaust pipe a1



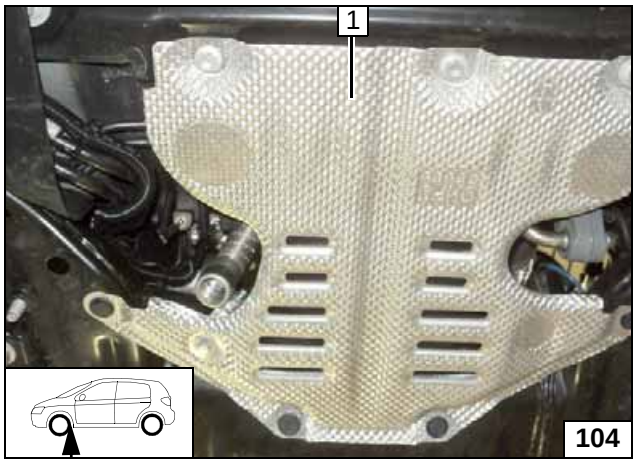
1 Heat shield
2 Drill hole Ø 6

Holes in heat shield



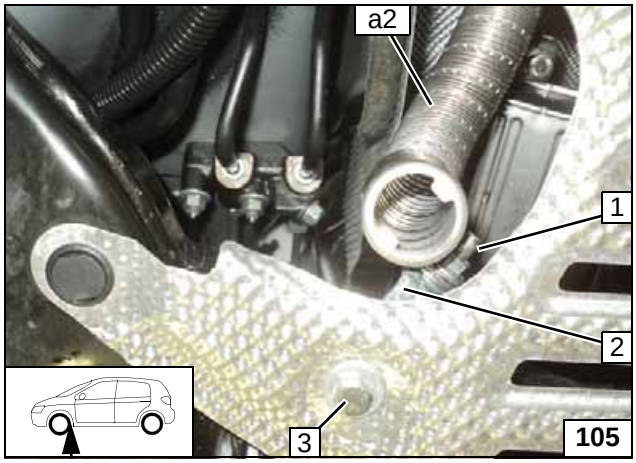
1 Hose clamp
2 M6x20 bolt, flanged nut loosely mount
3 Angle bracket
4 Clamp

Installing exhaust pipe a2



1 Heat shield

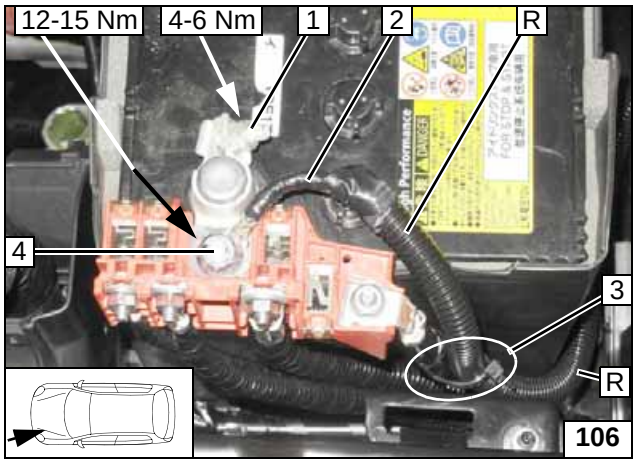
Mounting heat shield



Ensure sufficient distance from adjacent components; correct if necessary.

1 M6x20 bolt, flanged nut (8-10Nm)
2 Angle bracket
3 M6x20 bolt, large diameter washer, flanged nut (8-10Nm)

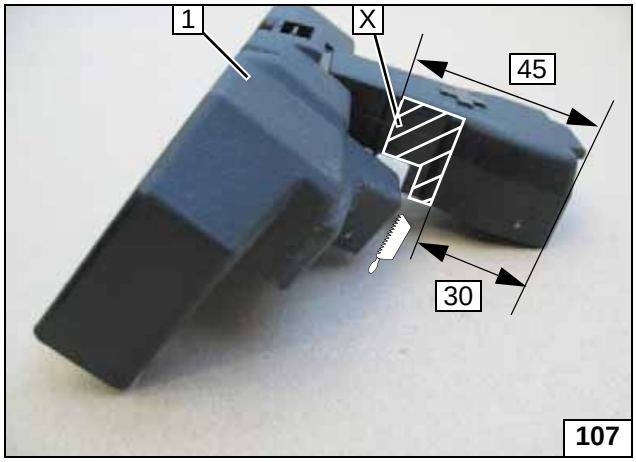
Installing exhaust pipe a2



Final Work

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

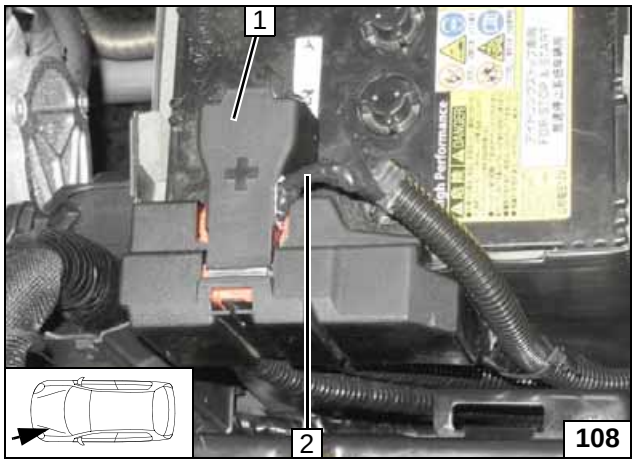
Connection for positive battery terminal



1 Cover positive battery terminal

X = 

Preparing Cover



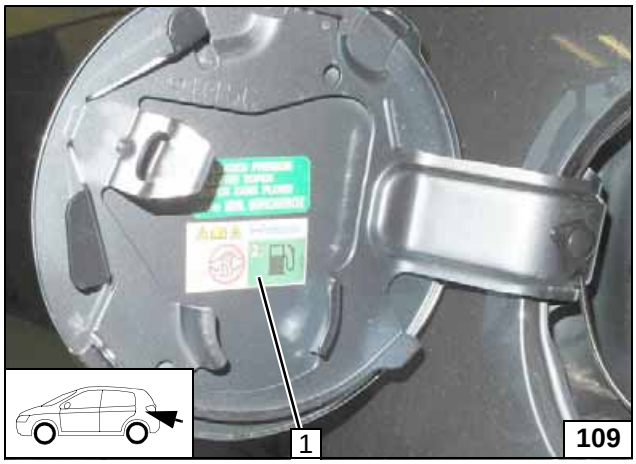
1 Cover positive battery terminal
2 Positive wire R in corrugated tube Ø 10 **R**

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).

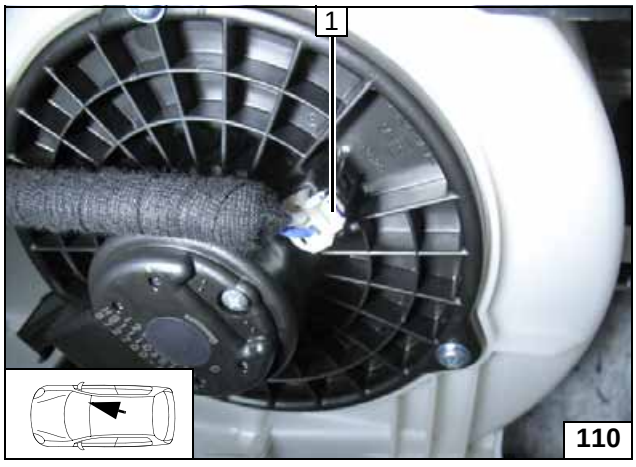
- **Only install instrument panel trim after checking the PWM GW value.**
- **Connect battery, carrying out/following the prescribed measures in accordance with MESI "BATTERY REMOVAL/INSTALLATION [SKYACTIV - G 1.5, SKYACTIV - G 2.0].**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Adjust digital timer, teach telestart remote option.**
- **Make settings on A/C control unit according to the „Operating Instructions for End Customer".**



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

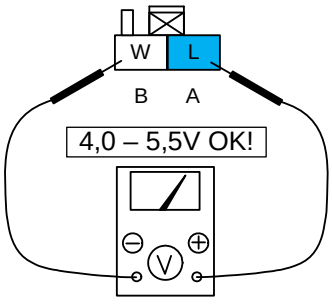
Place caution label

- **For initial startup and function test, see installation instructions of TT-Evo**
- **Check the voltage at the Blower motor in parking heating mode (see settings for the end customer). Target value 4,0 - 5,5V (corresponds approximately to level 3 when driving)!**



Measure voltage between both pins.

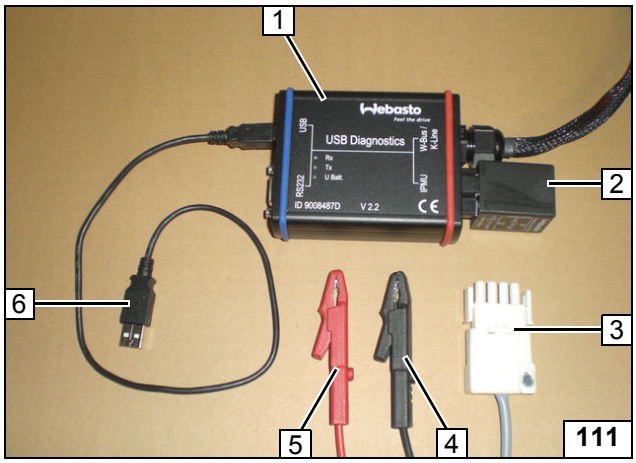
1 2-pin connector of Blower motor



Measure voltage at 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 (see following section).**

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

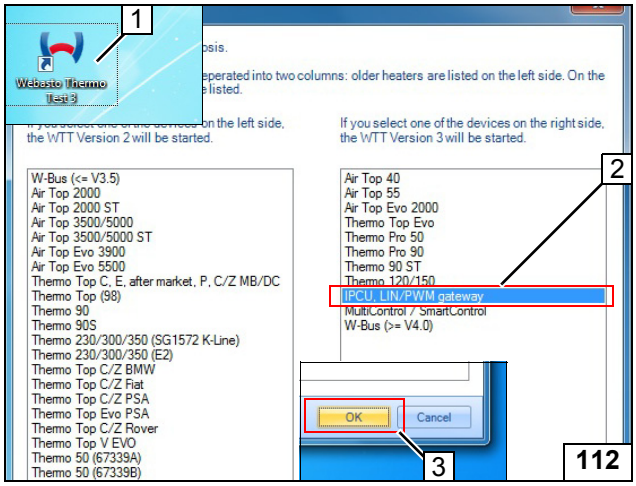


Readjustment blower speed

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

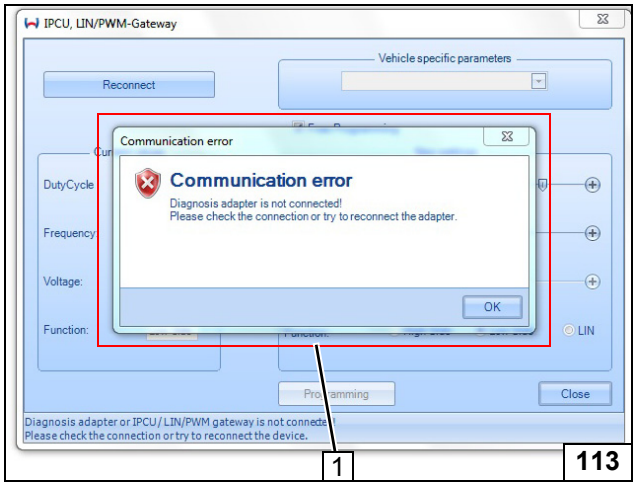
1 Diagnostics box
2 PWM GW
3 White (ws) connector is not required
4 Connection for positive battery terminal
5 Connection for negative battery terminal
6 USB connection for PC



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

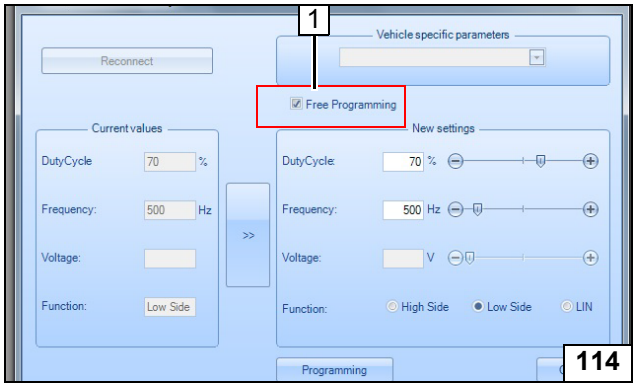
Selecting PWM GW

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



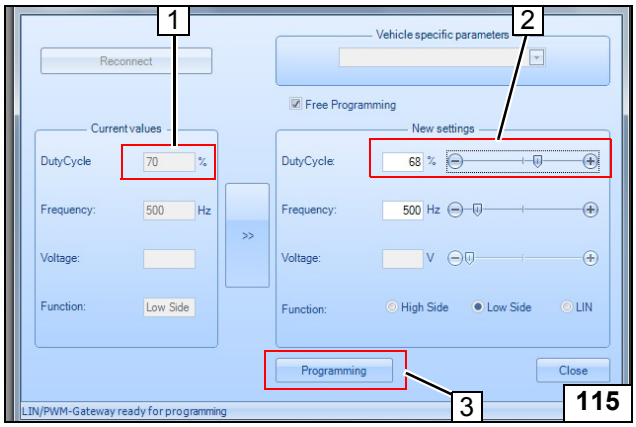
If the „Communication error“ **1** fault message appears, briefly interrupt the power supply to the diagnosis adapter and re-start PWM GW programming.

Fault message



1. Activate “Free Programming“

Select “Free Programming“



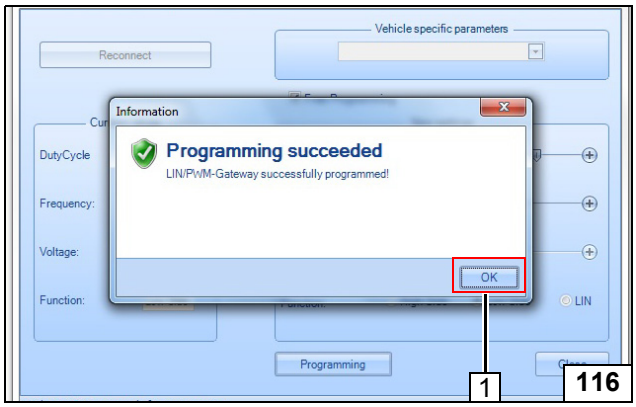
Current settings are displayed on the left. Change duty cycle in 2% increments. Enter new duty cycle on the right:

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

Do not change the presettings for frequency and function!

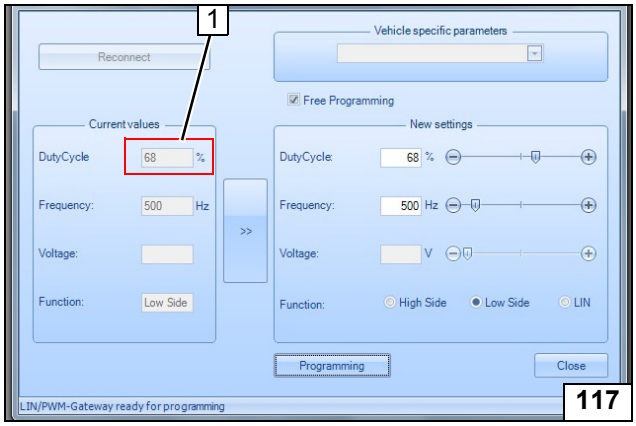
Selecting the duty cycle

1. Duty cycle 70% preset
2. Duty cycle 68% selected
3. Click “Programming“



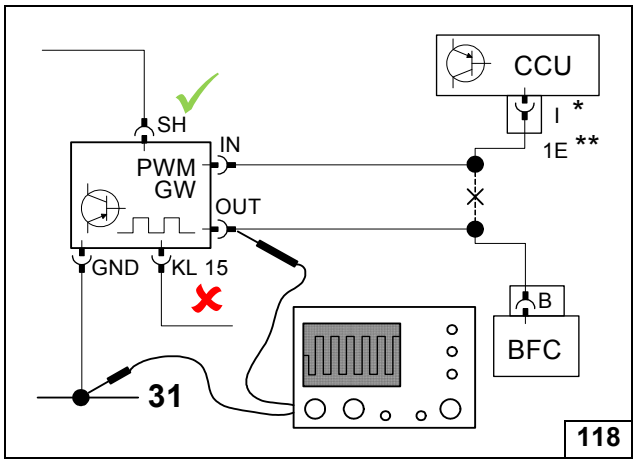
1 Click „OK“ to confirm.

Programming PWM GW

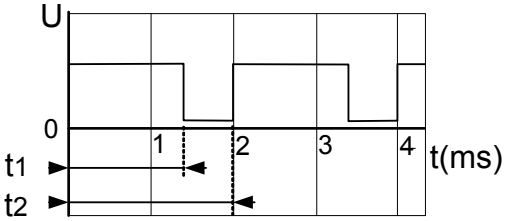


Start PWM GW diagnosis again. The new settings **1** are displayed on the left. Install PWM GW and check the voltage (target value 4,0 - 5,5V) across the connector of the Blower motor again. In case of deviations, carry out further adjustments.

Checking settings



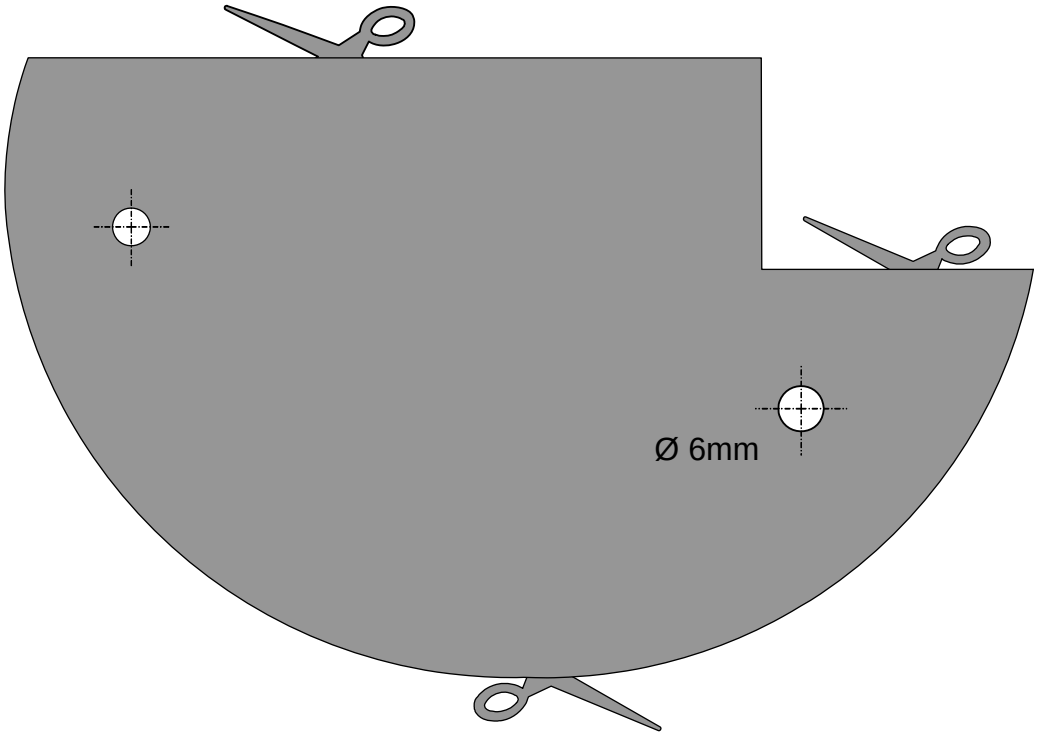
Condition:
- Parking heater: **ON**
- Coolant temperature: **> 55 °C**
- Ignition: **OFF**

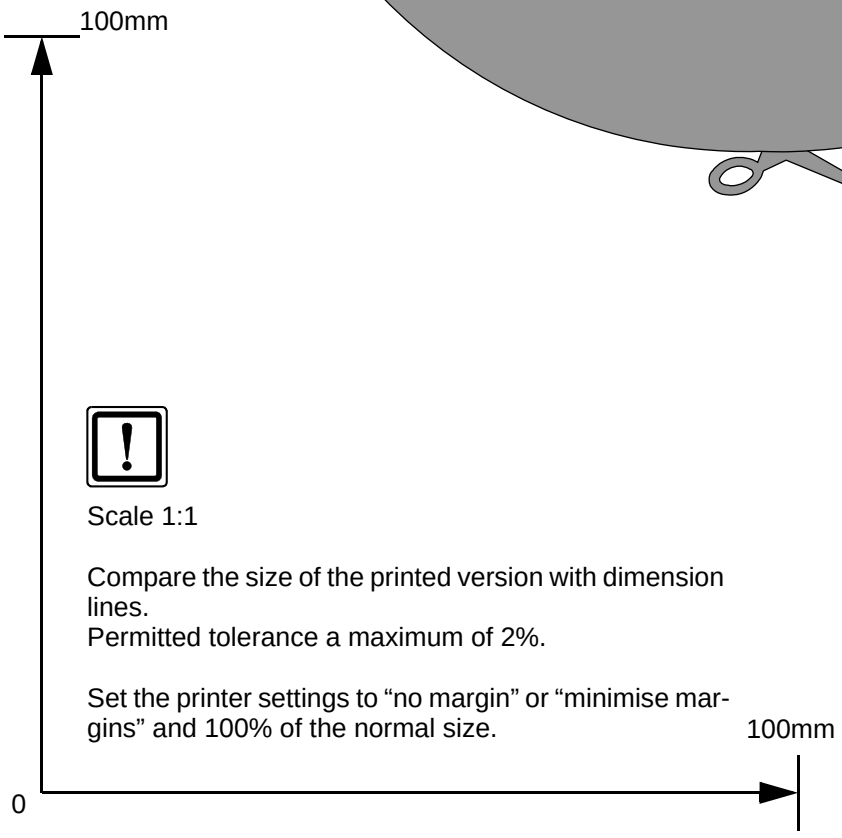


Duty Cycle = t1 / t2 x 100 = 70% (or readjusted value)
Frequency = 1 / t2 = 500 Hz

Checking function with oscilloscope

Template for Fuel-tank sending VIN: JMZBM...



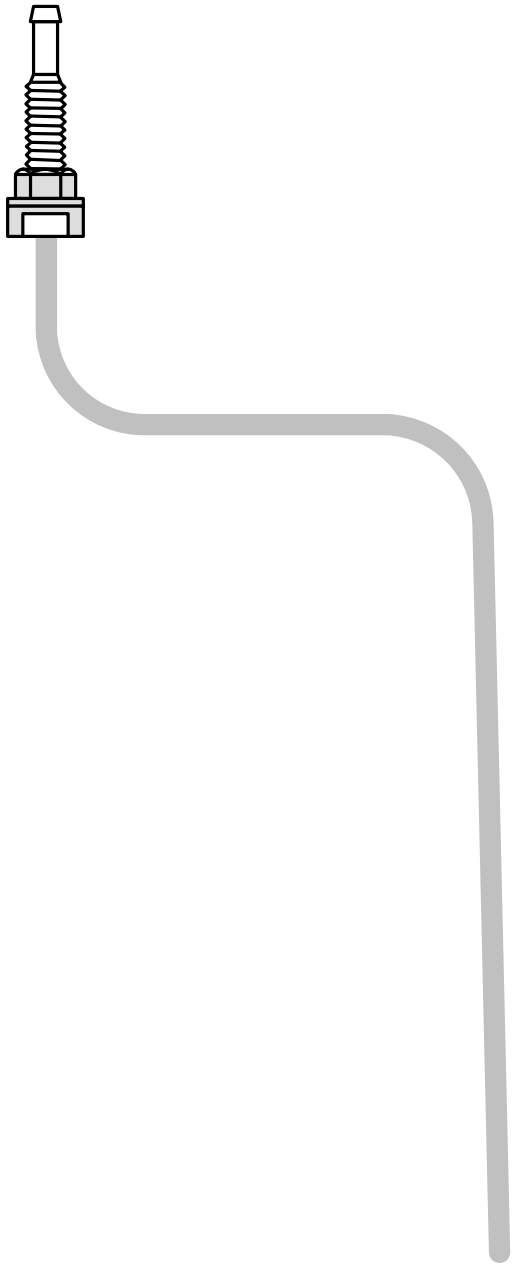


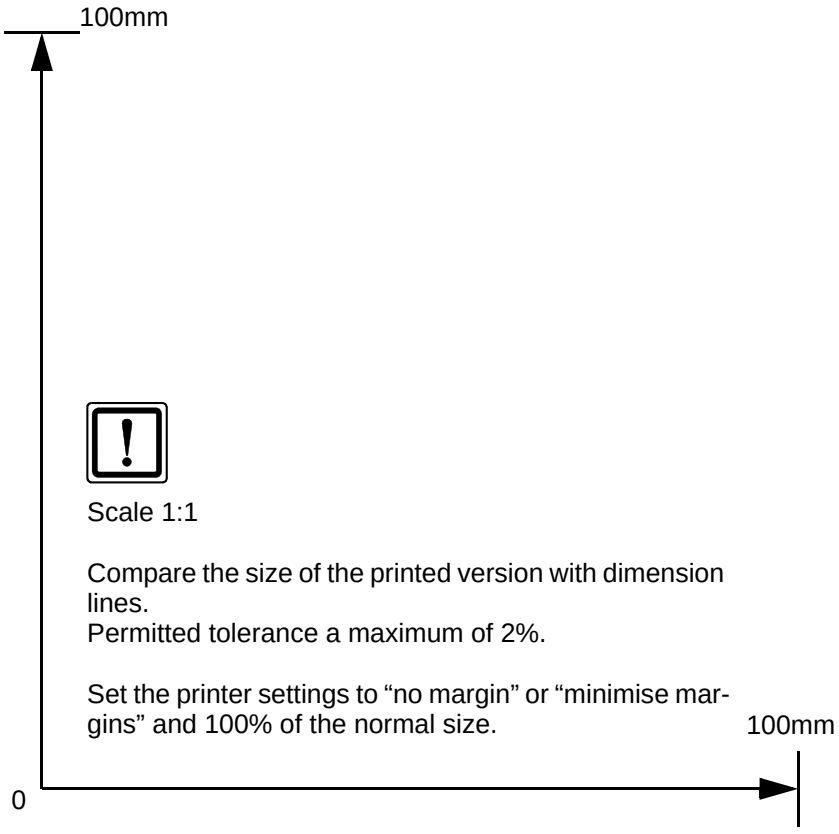
Scale 1:1

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 VIN: JMZBM...



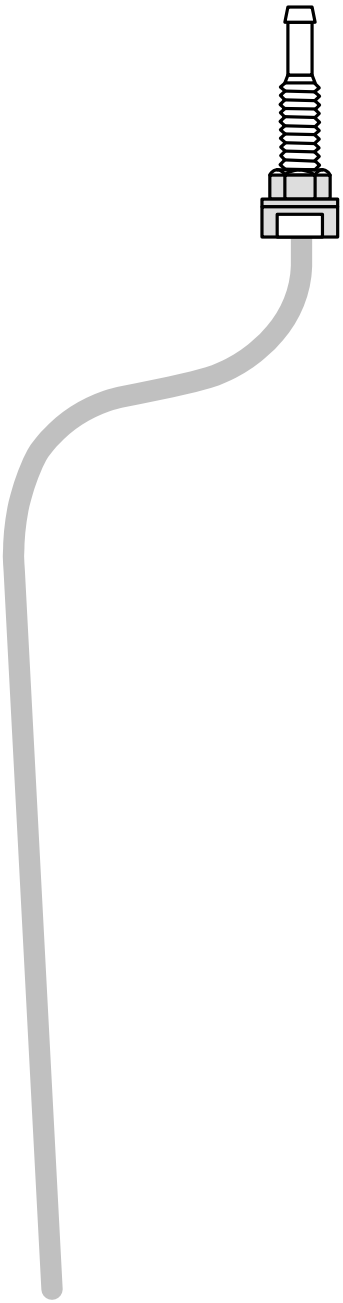


Scale 1:1

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 VIN: 3MZBM...



100mm

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.

100mm

0

Webasto
Feel the Drive

Operating Instructions for manual A/C (7-speed)

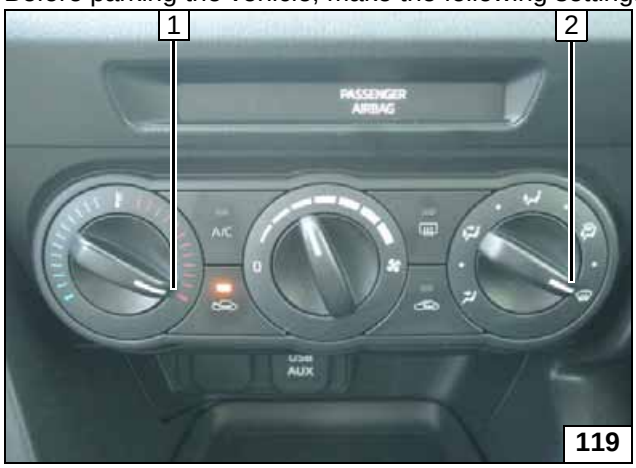
Please remove page and add to the vehicle operating instructions.

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.

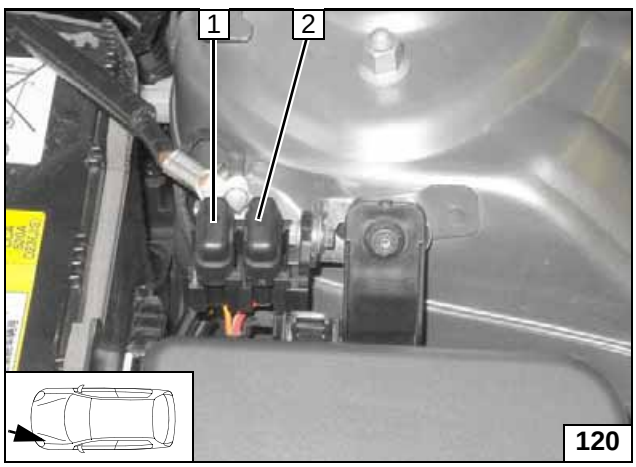
Note on i-stop:
The i-stop function does not operate when the battery power is depleted. The length of time required before i-stop functions again could be longer after heater operation.
This is no malfunction and the system works as designed.
Depending on vehicle use it might be necessary to recharge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

Before parking the vehicle, make the following settings:



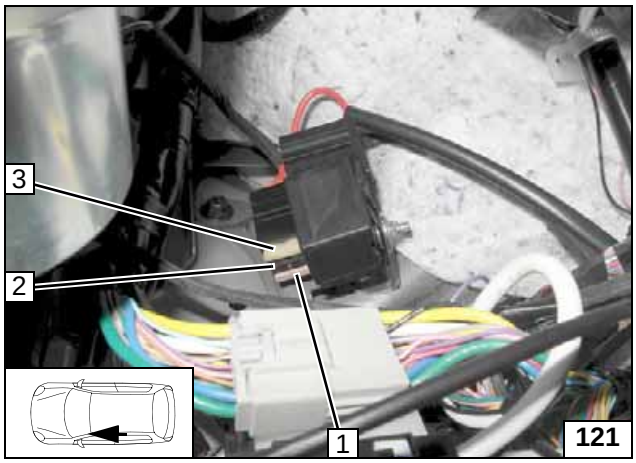
1 Set temperature to „max.“
2 Air outlet to windscreen

AC control unit



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

Fuses of engine compartment



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

Fuses of passenger compart-ment

Webasto
Feel the Drive

Operating Instructions for auto A/C (Dual type)

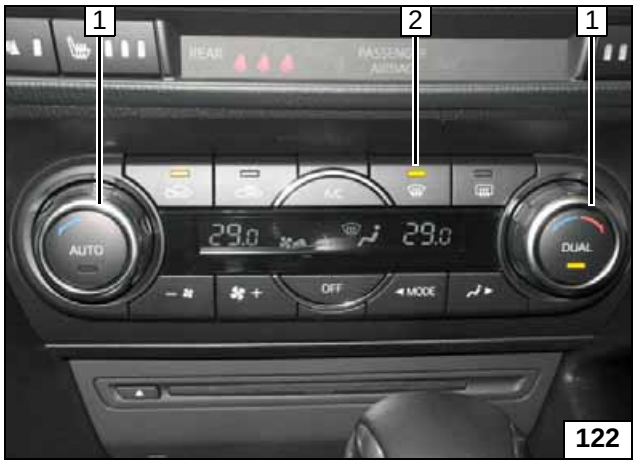
Please remove page and add to the vehicle operating instructions.

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.

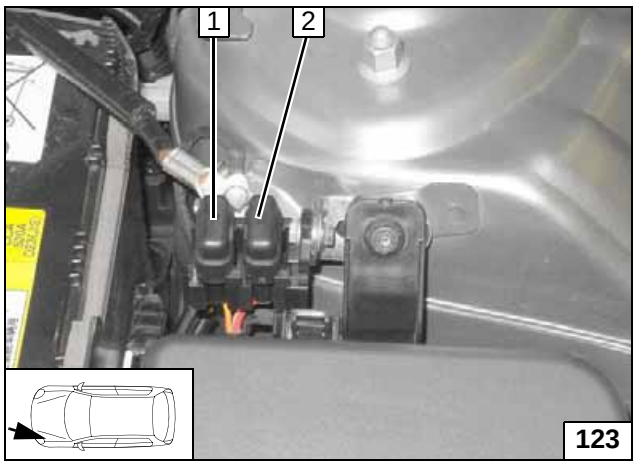
Note on i-stop:
The i-stop function does not operate when the battery power is depleted. The length of time required before i-stop functions again could be longer after heater operation.
This is no malfunction and the system works as designed.
Depending on vehicle use it might be necessary to recharge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

Before parking the vehicle, make the following settings:



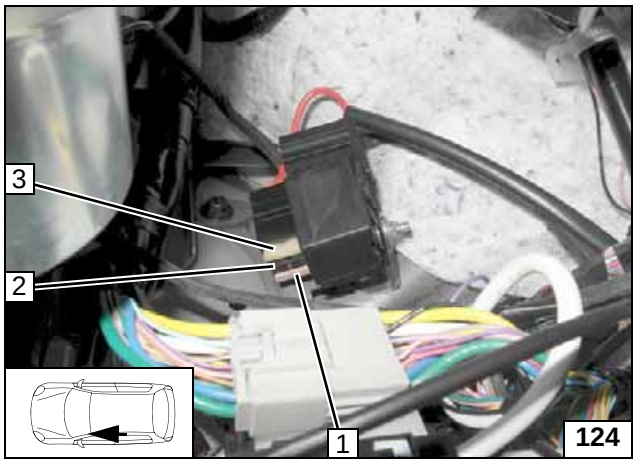
1 Set temperature on both sides to „max.“
2 Air outlet to windscreen

AAC control unit



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

Fuses of engine compartment



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

Fuses of passenger compart-ment