# Water Heater

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

# Installation Documentation
# Nissan X-Trail

## Validity

| Manufacturer | Model | Type | EG-BE No. / ABE |
|---|---|---|---|
| Nissan | X-Trail | T32 | e13 * 2007 / 46 * 1456 * ... |

| Motorisation | Fuel | Transmission type | Output in kW | Displacement in cm³ | Engine code |
|---|---|---|---|---|---|
| 1.6 D | Diesel | 6-speed SG | 96 | 1598 | R9M |
| 1.6 D | Diesel | Xtronic | 96 | 1598 | R9M |

SG = Manual transmission
Xtronic = Continuously variable automatic transmission

**From Model Year 2014**
**Left-hand drive vehicle**

**Verified equipment variants:** Manual air-conditioning
2 zone automatic air-conditioning
2WD / 4WD
Intelligent key (start button)
LED daytime running lights
Full LED headlight
Start / Stop
Euro 5b+

**Not verified:** Passenger compartment monitoring

**Total installation time:** approx. 7.5 hours

## Nissan X-Trail

## Table of Contents



## Necessary Components

- Basic delivery scope *Thermo Top Evo* based on price list
- Installation kit for Nissan X-Trail 2014 Diesel: **1323283A**
- 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 upon consultation with end customer

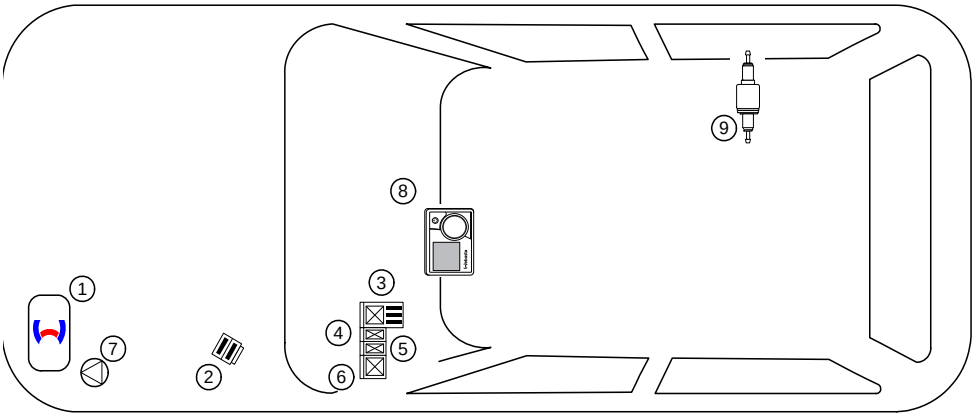
## Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about ¼ full!
- The installation location of the push button in the case of Telestart or Thermo Call should be confirmed with the end customer.
- Depending on the space required and the manufacturer's instructions on the vehicle, we recommend the use of a vehicle battery with a higher electrical capacity!
- The vehicle owner's preferred settings for the A/C control panel in the case of normal operation are to be requested and must be adjusted before the battery is disconnected from the A/C control panel. Further details can be found in the sections "Preliminary Work" and "Final Work"!

## Installation Overview

**Legend:**

**1**. Heater
**2**. Fuse holder of engine compartment
**3**. Relay and fuse holder of passenger compartment
**4**. K2 relay
**5**. K3 relay
**6**. PWM GW
**7**. Circulating pump
**8**. MultiControl CAR
**9**. 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, Order No. 111329).**

**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 ECE regulation 122 (heating system) paragraph 5 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 Nissan X-Trail Diesel vehicles - for validity, see page 1 - from model year 2014 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 self-clamping 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 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test diagnosis with current software

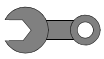
**Dimensions**
- All dimensions are in mm

**Tightening torque values**
- Tightening torque values for 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque of 5x15 retaining plate of water connection piece bolt = 7Nm.
- Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.

## 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 due to electrical voltage**

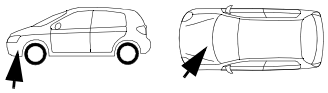
**Specific risk of damage to components**

**Specific risk of fire or explosion**

**Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents**

**Reference to a special technical feature**

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



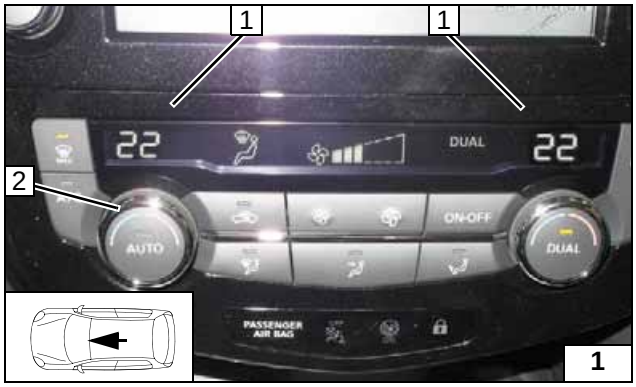
**Tightening torque according to the manufacturer's vehicle-specific documents**

## Preliminary Work

### On the vehicle

- The vehicle owner's preferred settings for the A/C control panel in the case of normal operation must be requested before the vehicle battery is disconnected and they must be adjusted as follows:

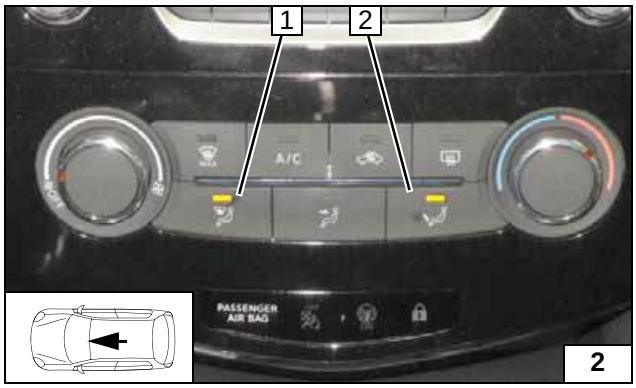



**Automatic air-conditioning**

Example:

**1** Set temperature on both sides to "22ºC"
**2** Button "Auto" activated

**Adjusting pre-settings on A/C control panel**




**Manual air-conditioning**

Example:

**1** Button "air outlet towards windscreen" activated
**2** Button "air outlet towards footwell" activated

Fan speed and temperature presettings are not required!

**Adjusting pre-settings on A/C control panel**

- Then switch off the ignition!
  **Note**:
  these values will be the basic settings in the future for normal operation after switching on the ignition!

### Vehicle

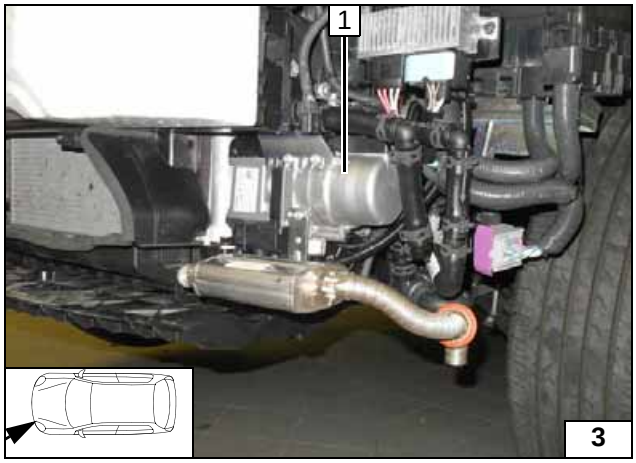
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect and remove the battery.
- Remove the air filter.
- Remove the left-hand wheel well trim and detach the right-hand wheel well trim.
- Remove the bumper.
- Remove the lateral instrument panel trim on the driver's side.
- Remove the lower instrument panel trim on the driver's side.
- Remove the centre console trim on the left.
- Remove the centre console trim on the right (only in case of automatic air-conditioning).
- Remove the A/C control panel (only in case of manual air-conditioning), clipped on.

The following work should only be performed during the corresponding installation sequence:

- Remove the rear bench seat on the right (see removal instructions).
- Open the tank-fitting service lid of fuel-tank sending unit.
- Remove the fuel-tank sending unit in accordance with the manufacturer's instructions.

### Heater

- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) in the appropriate place inside the engine compartment.



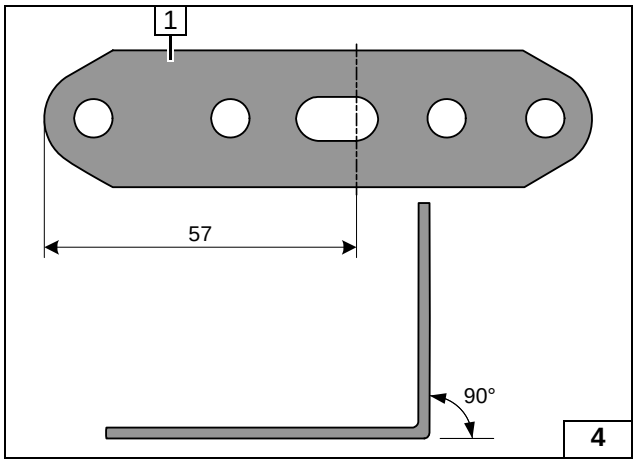

## Heater Installation Location

**1** Heater

**Installation location**

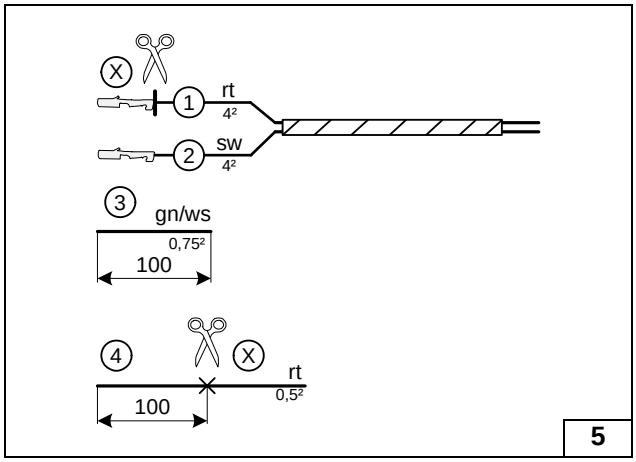
  

## Preparing Electrical System




**1** Perforated bracket for engine compartment fuse holder

**Preparing perforated bracket**



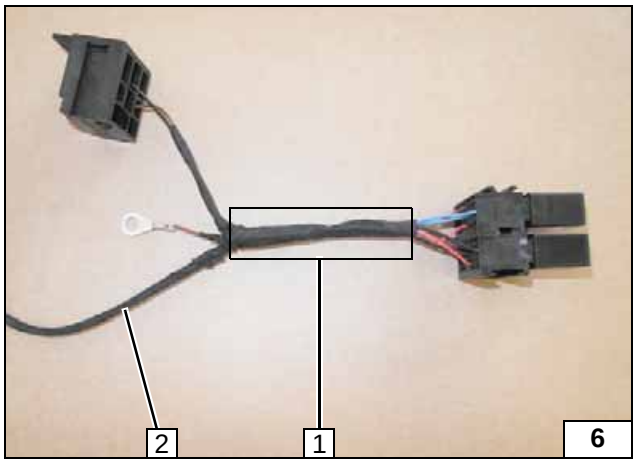

Wire sections retain their numbering in the entire document.

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

Discard sections **X**.

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness

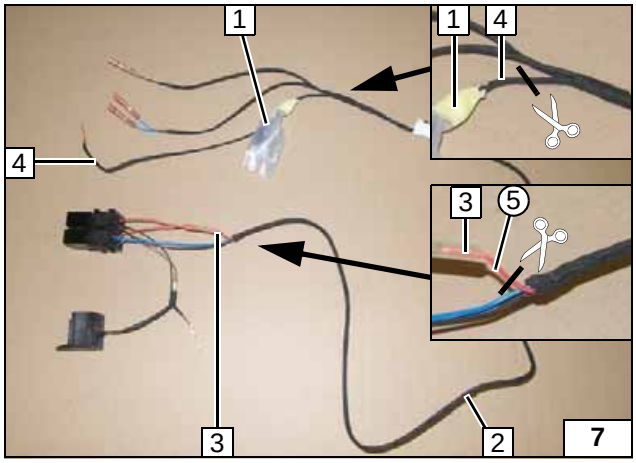
**Cutting to length/assigning wires**




Carefully remove the insulation of the provided additional wiring harness in marked area **1**!

**2** Additional wiring harness

**Preparing additional wiring harness**

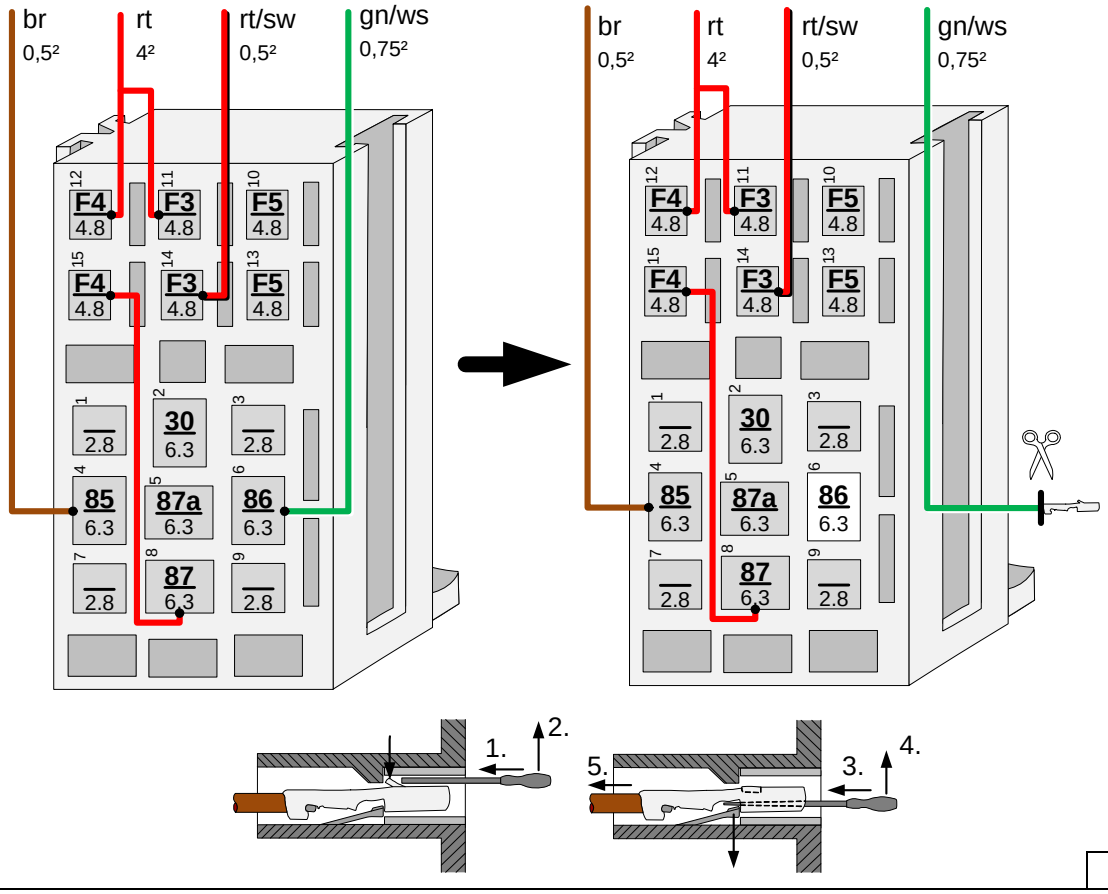



Cut red (rt) wire **4** as shown and discard together with accessories bag **1**!
Cut red (rt) wire **3** as shown!

**2** Additional wiring harness
⑤ red (rt) wire of K2/86 and K3/86

**Preparing additional wiring harness**

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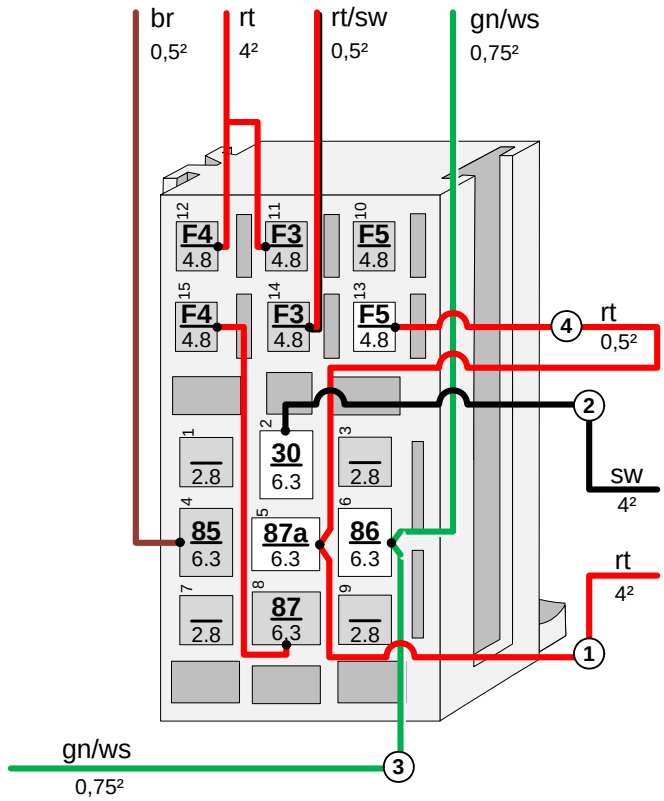
**Preparing relay and fuse holder of passenger compartment**

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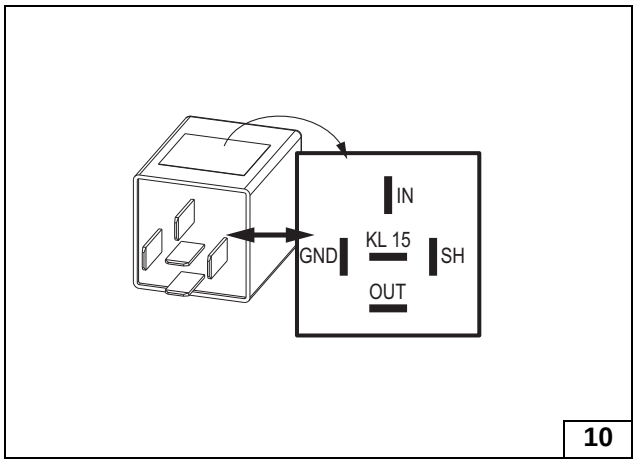
**Connecting wires to passenger compartment relay and fuse holder**

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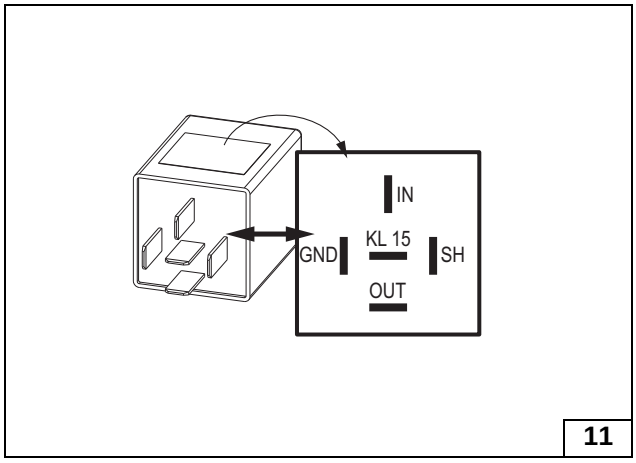
View of PWM GW

## Automatic air-conditioning

Check the PWM Gateway settings when starting up the heater and adjust if necessary (see "Final Work")!

Settings:

Duty cycle: 70%
Frequency: 400Hz
Voltage: not relevant
Function: Low-side

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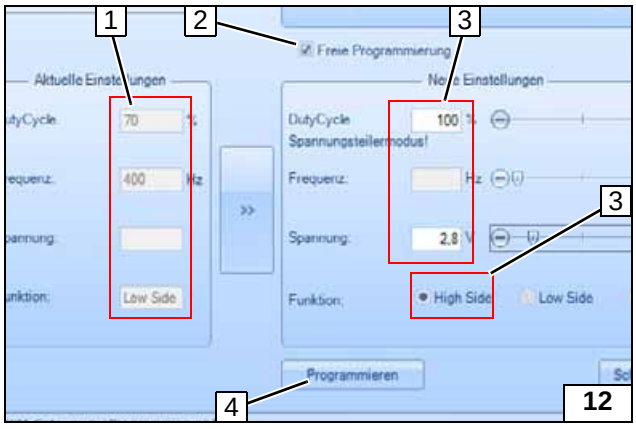
Reprogramming PWM-GW

## Manual air-conditioning

The pre-programmed settings of the provided PWM GW must be changed to the following values using the Webasto Thermo Test Diagnosis (WTT) (see also the next figure):

Duty cycle: 100%
Frequency: not relevant
Voltage: 2.8V
Function: High-side

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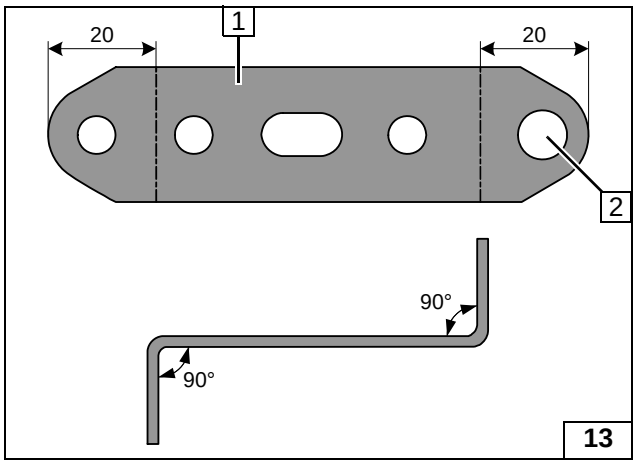
Reprogramming PWM-GW with WTT

Valid for WTT, software version V2.16 and higher! Free update via: www.dealers.webasto.com
Support via: technikcenter@webasto.com

1 Current settings
2 Activate "Free programming"
3 Enter the new settings
4 After adjusting the settings, click on the button "Program"

Check the PWM Gateway settings when starting up the heater and adjust if necessary (see "Final Work")!

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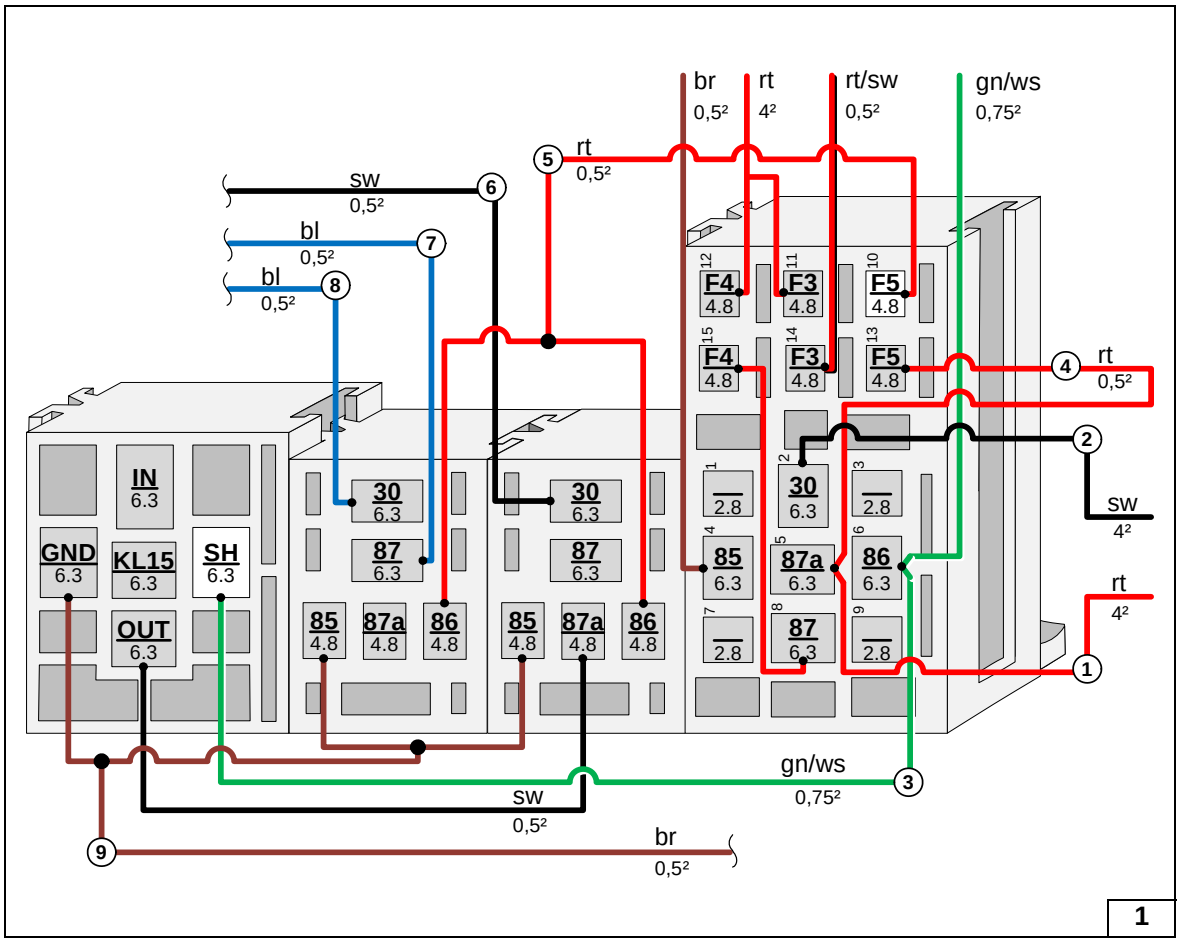
Preparing perforated bracket

## All vehicles

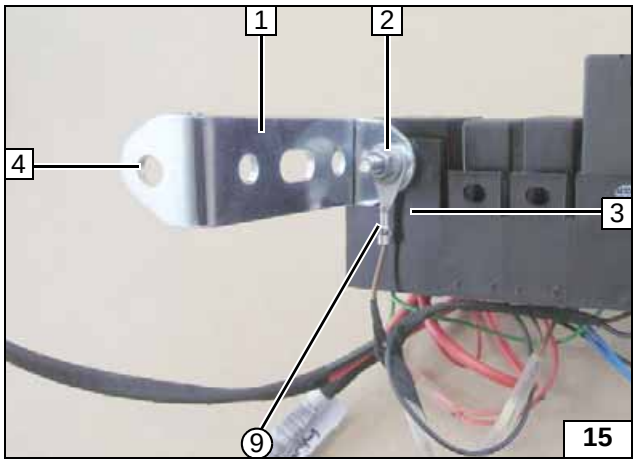
1 Perforated bracket
2 8.5 mm dia. hole




1

**Interlocking PWM GW, K2 relay and K3 relay socket with passenger compartment relay and fuse holder, connecting wires**

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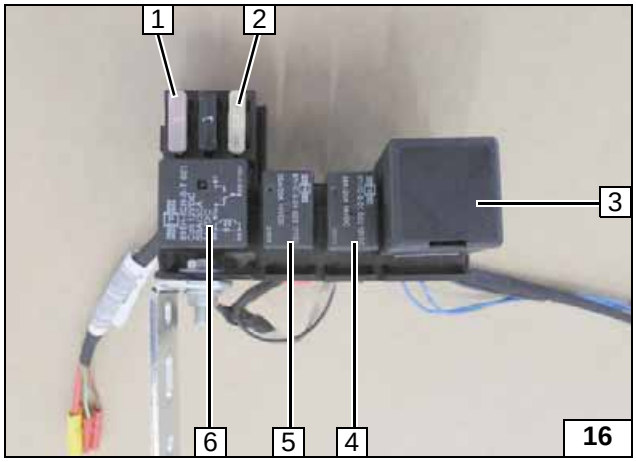
1 Perforated bracket
2 M5x16 bolt, large diameter washer [2x], nut
3 Relay and fuse holder of passenger compartment
4 Prepared 8.5 mm dia. hole
⑨ Brown (br) wire of additional wiring harness

**Installing perforated bracket**

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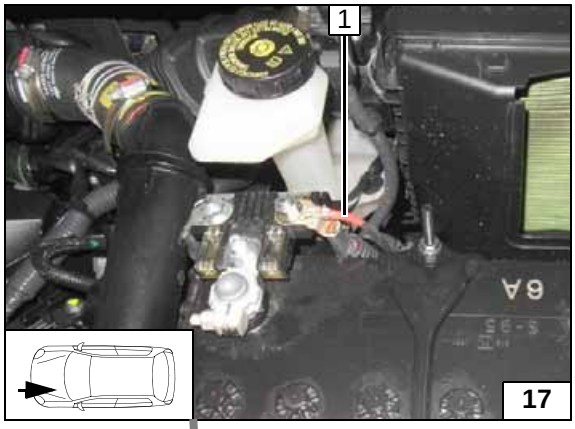
1 Fuse F5 3A
2 25A fuse F4
3 PWM GW
4 K3 relay
5 K2 relay
6 K1 relay

**Inserting PWM GW, relays and fuses**

## Electrical System

### Positive wire

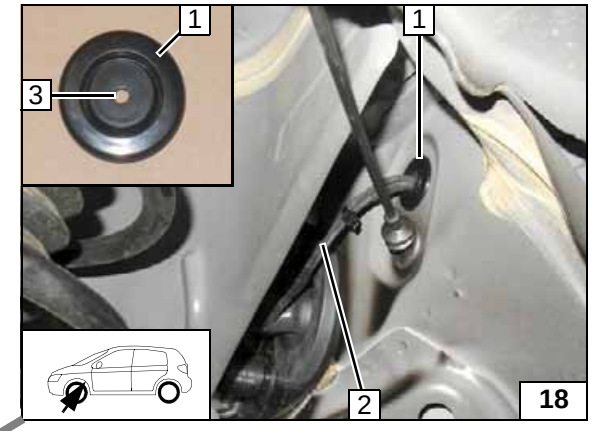
**1** Positive wire on positive battery terminal



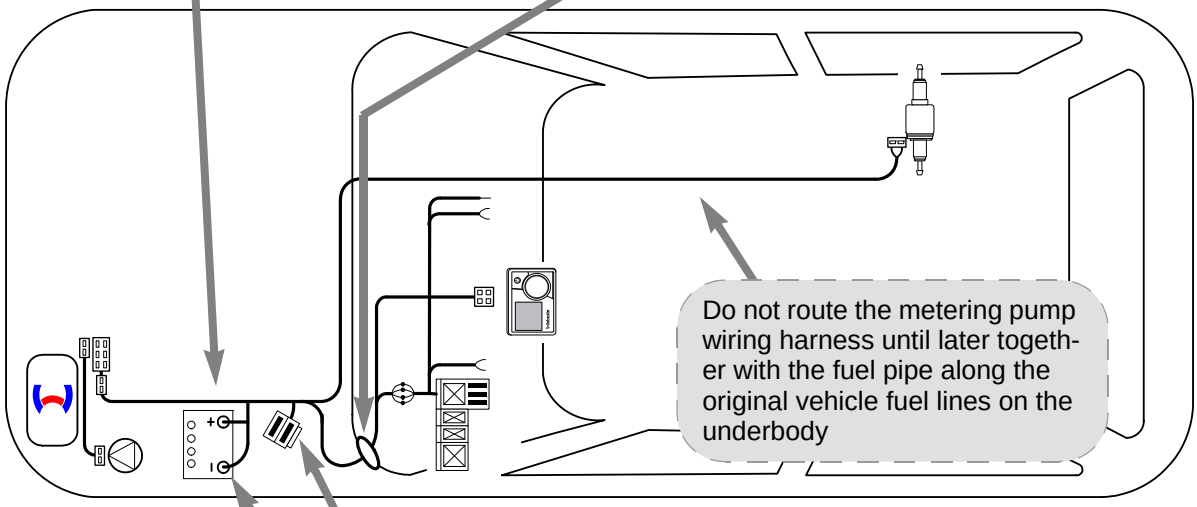

### Wiring harness pass through

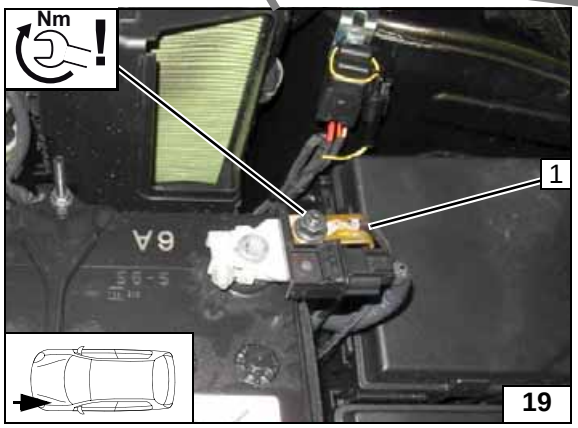
Take out protective rubber plug **1**, punch 5mm dia. hole **3** in the middle and install again.

**2** Wiring harnesses of heater, heater control



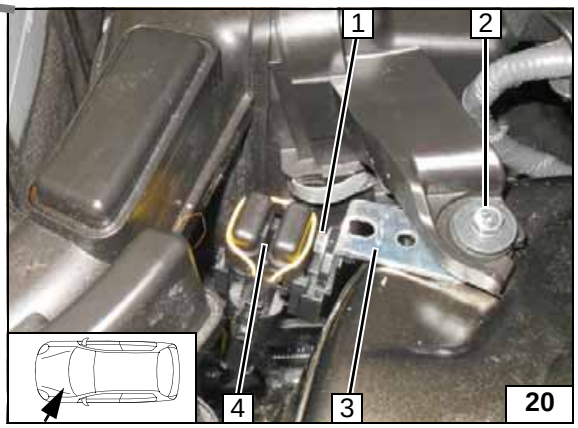

**Wiring harness routing diagram**




### Earth wire

**1** Earth wire on negative battery terminal

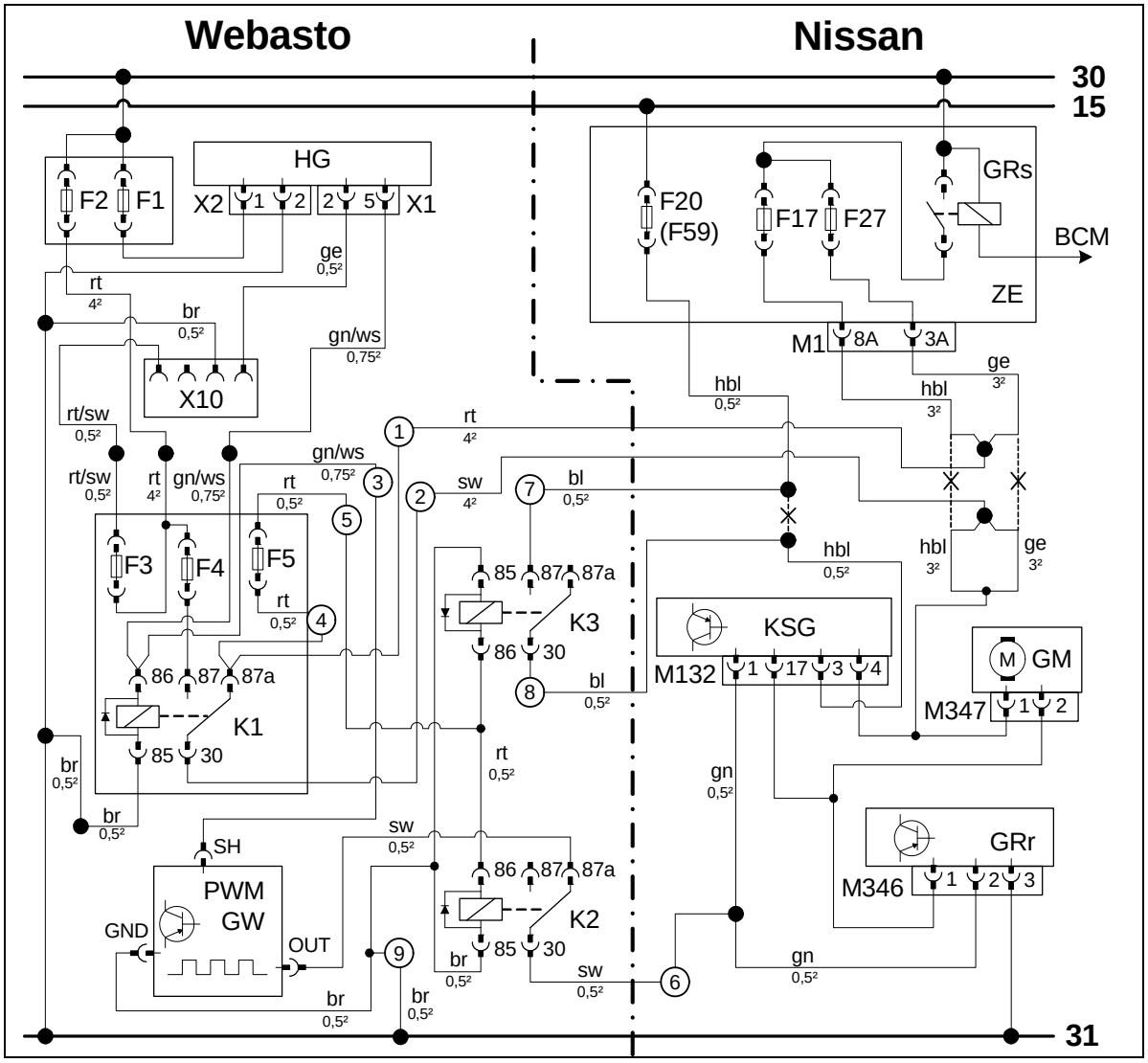



### Fuse holder of engine compartment

**1** M5x16 bolt, large diameter washer [2x], retaining plate of fuse holder, nut
**2** Original vehicle bolt
**3** Prepared perforated bracket
**4** F1-2 fuses

## Wiring Diagram for Manual Air-Conditioning

Wiring diagram



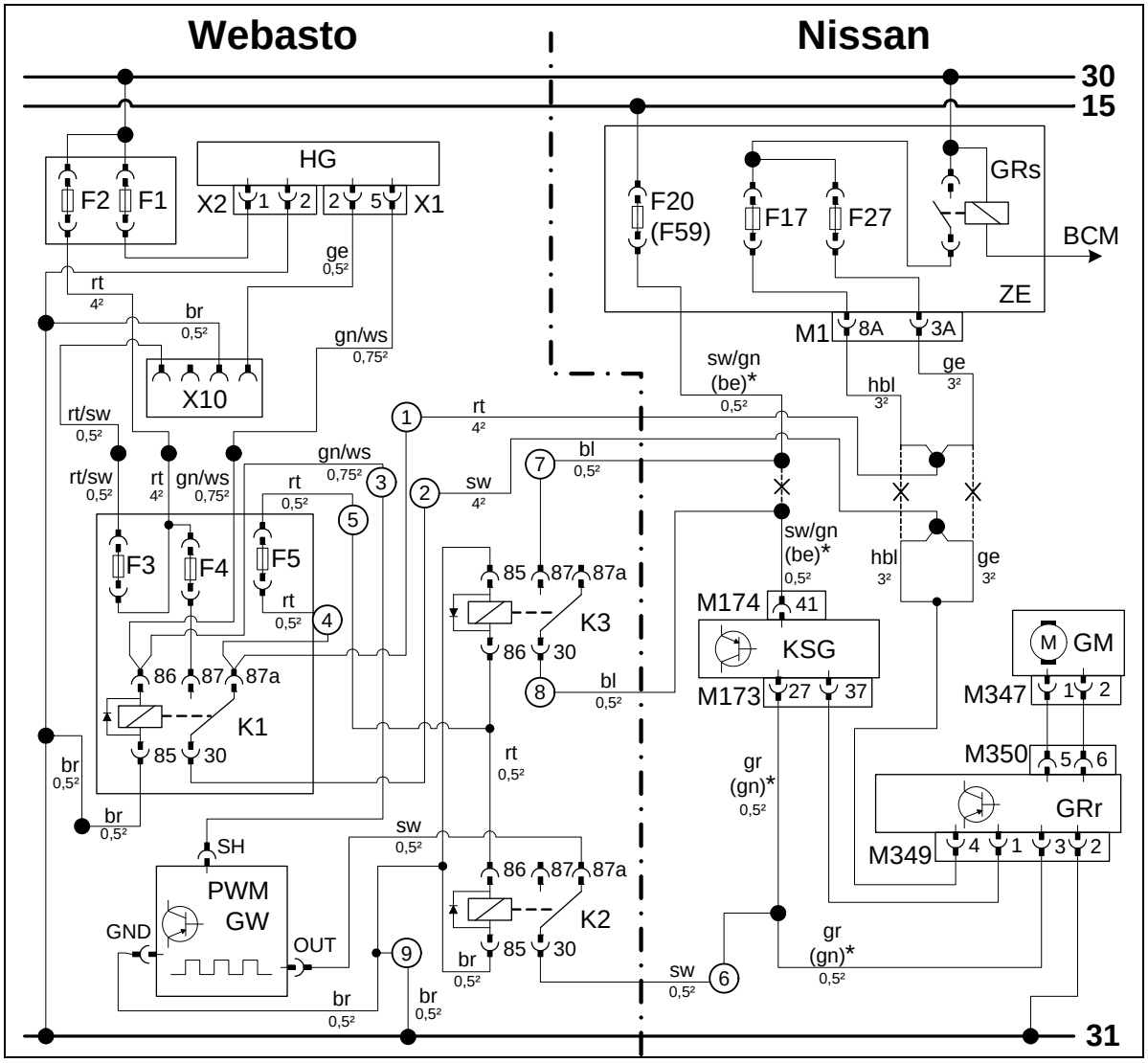

| Webasto components | | Vehicle components | | Colours and symbols | |
|---|---|---|---|---|---|
| HG | TT-Evo heater | ZE | Fuse box of passenger compartment | rt | red |
| X1 | 6-pin heater connector | | | sw | black |
| X2 | 2-pin heater connector | GRs | Fan relay | ge | yellow |
| F1 | 20A fuse | F20 | 10A fuse (vehicle without Start/Stop) | gn | green |
| F2 | 30A fuse | | | ws | white |
| X10 | 4-pin connector of heater control | F59 | 10A fuse (vehicle with Start/Stop) | br | brown |
| | | | | gr | grey |
| F3 | 1A fuse | F17 | 15A fuse | bl | blue |
| F4 | 25A fuse | F27 | 15A fuse | hbl | light blue |
| F5 | 3A fuse | M1 | 8-pin ZE connector | | |
| K3 | Isolating relay | KSG | A/C control unit | | |
| K1 | Fan relay | M132 | 32-pin connector KSG | | |
| PWM GW | Pulse width modulator | GM | Fan motor | | |
| K2 | Additional relay | M347 | 2-pin connector GM | | |
| **PWM GW settings:** | | GRr | Fan controller | | |
| Duty cycle: | 100% | M346 | 3-pin connector, GRr | | |
| Frequency: | not relevant | | | **X** | Cutting point |
| Voltage: | 2.7 - 2.8V | | | Wiring colours may vary. | |
| Function: | High-side | | | | |

Legend

## Wiring Diagram for Automatic Air-Conditioning

Wiring diagram




| Webasto components | | Vehicle components | | Colours and symbols | |
|---|---|---|---|---|---|
| HG | TT-Evo heater | ZE | Fuse box of passenger compartment | rt | red |
| X1 | 6-pin heater connector | | | sw | black |
| X2 | 2-pin heater connector | GRs | Fan relay | ge | yellow |
| F1 | 20A fuse | F20 | 10A fuse (vehicle without Start/Stop) | gn | green |
| F2 | 30A fuse | | | ws | white |
| X10 | 4-pin connector of heater control | F59 | 10A fuse (vehicle with Start/Stop) | br | brown |
| | | | | gr | grey |
| F3 | 1A fuse | F17 | 15A fuse | bl | blue |
| F4 | 25A fuse | F27 | 15A fuse | hbl | light blue |
| F5 | 3A fuse | M1 | 8-pin ZE connector | be | beige |
| K3 | Isolating relay | KSG | A/C control unit | | |
| K1 | Fan relay | M173 | 40-pin connector KSG | | |
| PWM GW | Pulse width modulator | M174 | 40-pin connector KSG | | |
| K2 | Additional relay | GM | Fan motor | | |
| **PWM GW settings:** | | M347 | 2-pin connector GM | * | Wiring colours may vary. |
| Duty cycle: | 70% | GRr | Fan controller | | |
| Frequency: | 400Hz | M349 | 4-pin connector, GRr | X | Cutting point |
| Voltage: | not relevant | M350 | 2-pin connector, GRr | Wiring colours may vary. | |
| Function: | Low-side | | | | |

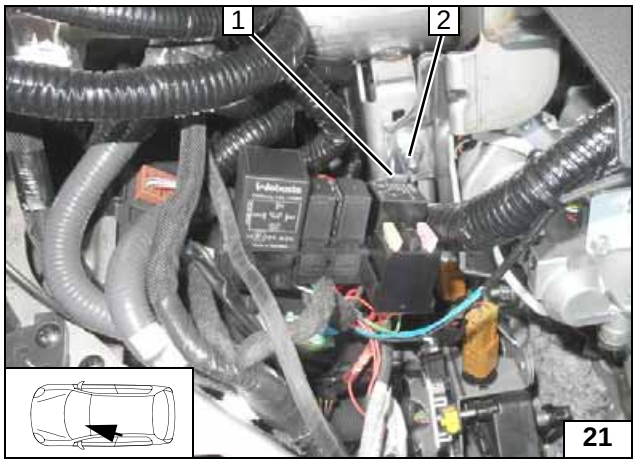
Legend

## Fan Controller

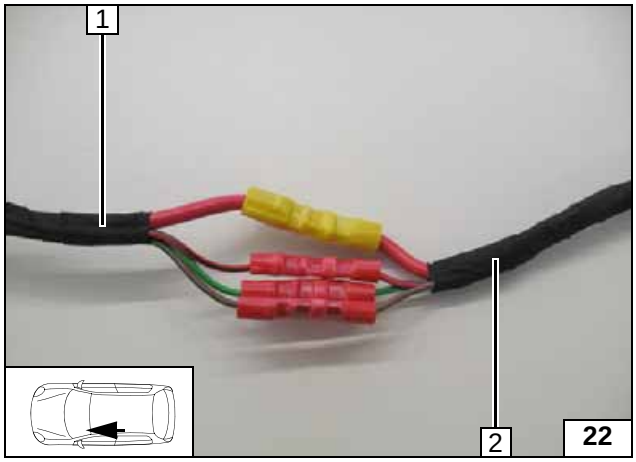
### All vehicles

**Warning**: before disconnecting the battery, please consult the information in the section "Preliminary Work".

**Installing relay and fuse holder of passenger compartment**

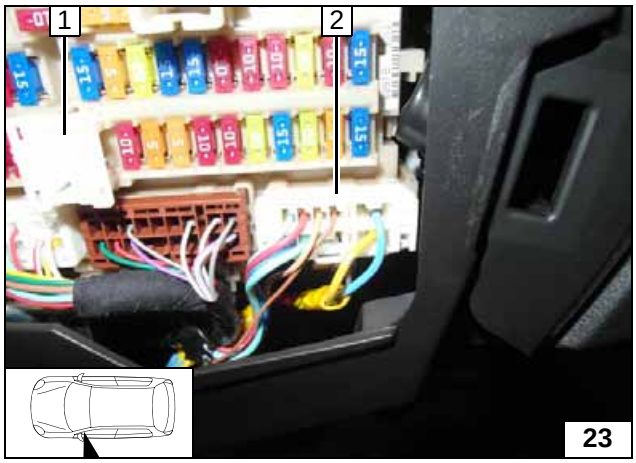



**1** Premounted perforated bracket
**2** Original vehicle bolt and flanged nut




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

**Connecting wiring harnesses using same colour wires**

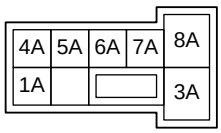


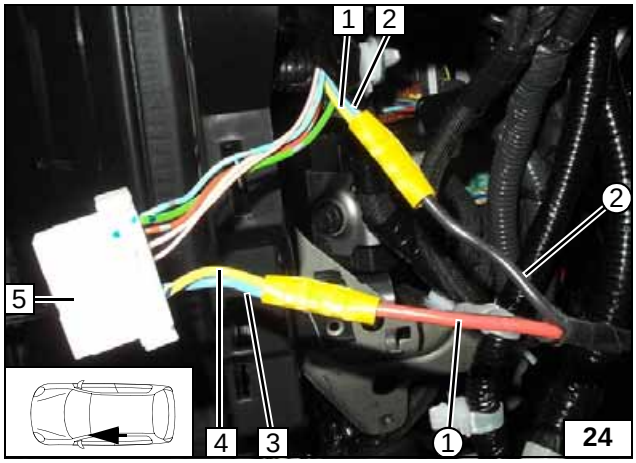

Connection to fuse box in passenger compartment **1**!

**2** Remove 8-pin connector M1

**Removing connector M1**

Connector M1 on wiring side



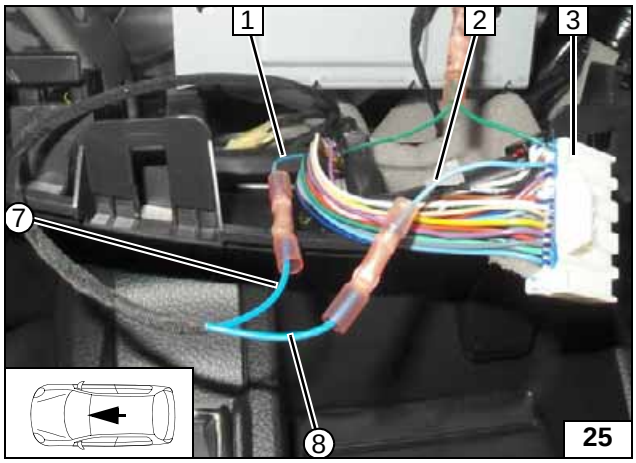

Connection to 8-pin connector M1 **5** of passenger compartment fuse box.

**Connecting fuse box in passenger compartment**

**1** Yellow (ge) wire,
- in case of manual A/C, fan motor pin 1 and A/C control unit pin 4
- in case of automatic A/C, fan controller pin 4

**2** Light blue (hbl) wire,
- in case of manual A/C, fan motor pin 1 and A/C control unit pin 4
- in case of automatic A/C, fan controller pin 4

**3** Light blue (hbl) wire of 8-pin connector M1/8A
**4** Yellow (ge) wire of 8-pin connector M1/3A
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

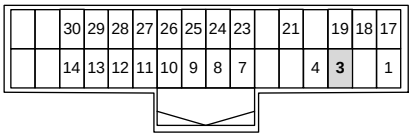



**Manual air-conditioning**

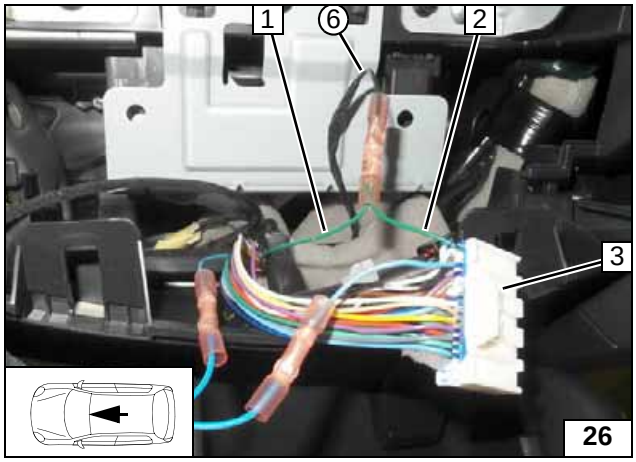
Connection to 32-pin connector M132 **3** from A/C control unit / A/C control panel.

**1** Light blue (hbl) wire of terminal 15
**2** Light blue (hbl) wire of 32-pin connector M132/3
⑦ Blue (bl) wire of K3/87
⑧ Blue (bl) wire of K3/30

Connector M132 on wiring side



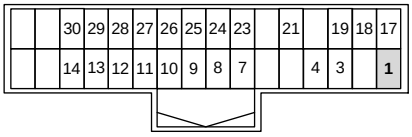

**Connection to A/C control unit**



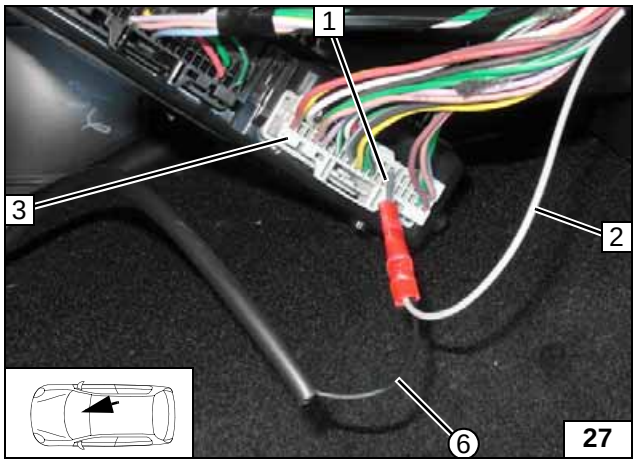

Connection to 32-pin connector M132 **3** from A/C control unit / A/C control panel.

**1** Green (gn) wire of fan controller M346/2
**2** Green (gn) wire of 32-pin connector M132/1
⑥ Black (sw) wire of K2/30

Connector M132 on wiring side




**Connection to A/C control unit**

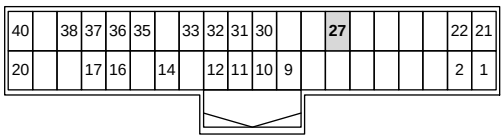



**Automatic air-conditioning**

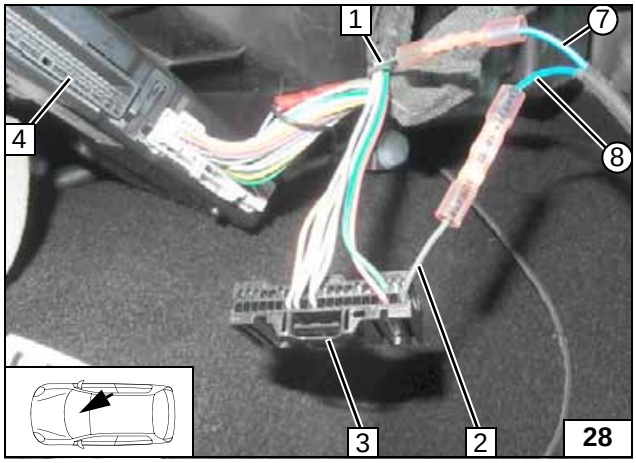
Connection to 40-pin connector M173 **3** from A/C control unit / centre console on the right.

**1** Grey (gr) or green (gn) wire of 40-pin connector M173/27
**2** Grey (gr) or green (gn) wire of fan controller M349/3
⑥ Black (sw) wire of K2/30

Connector M173 on wiring side



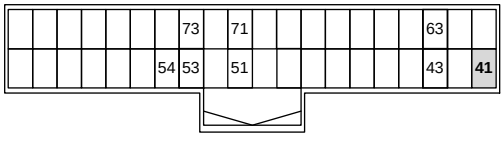

**Connection to A/C control unit**



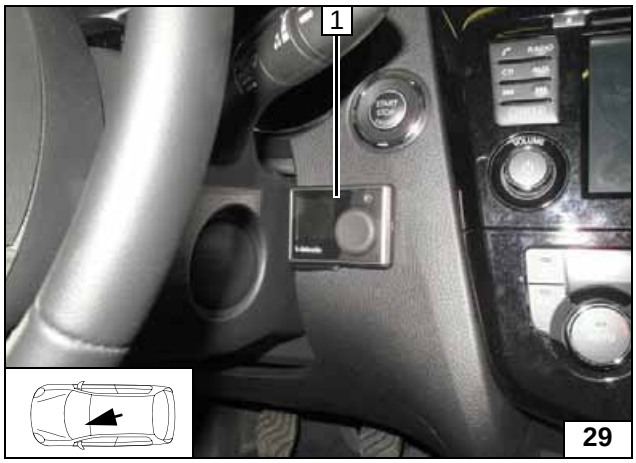

Connection to 40-pin connector M174 **3** from A/C control unit / centre console on the right.

**1** Black/green (sw/gn) or beige (be) wire of terminal 15
**2** Black/green (sw/gn) or beige (be) wire of connector M174/41
**4** Socket of connector M174
⑦ Blue (bl) wire of K3/87
⑧ Blue (bl) wire of K3/30

Connector M174 on wiring side



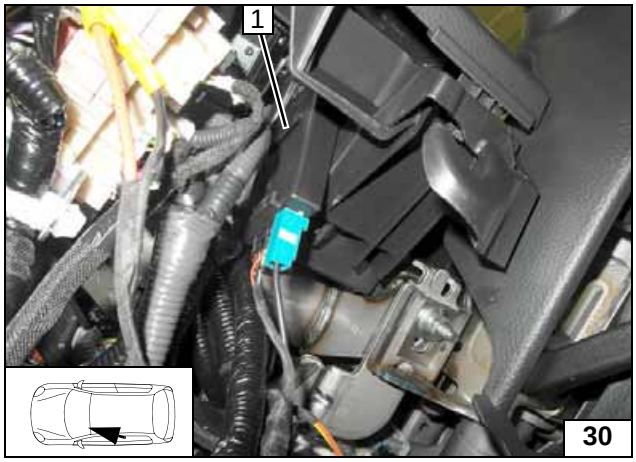

**Connection to A/C control unit**




## MultiControl CAR Option

**1** MultiControl CAR

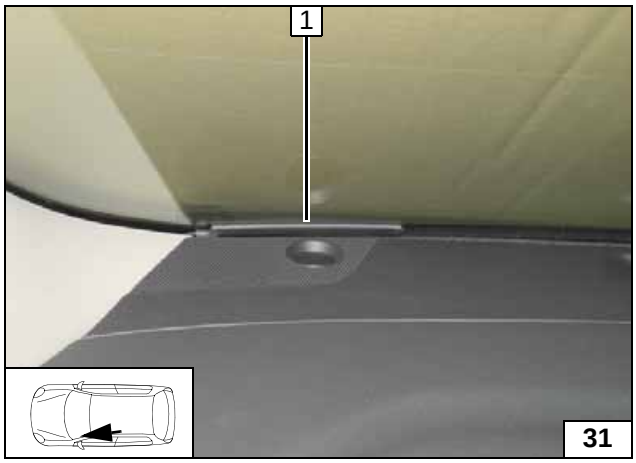
**Installing MultiControl CAR**




## Remote Option (Telestart)

Fasten receiver **1** with adhesive tape as shown in the image.

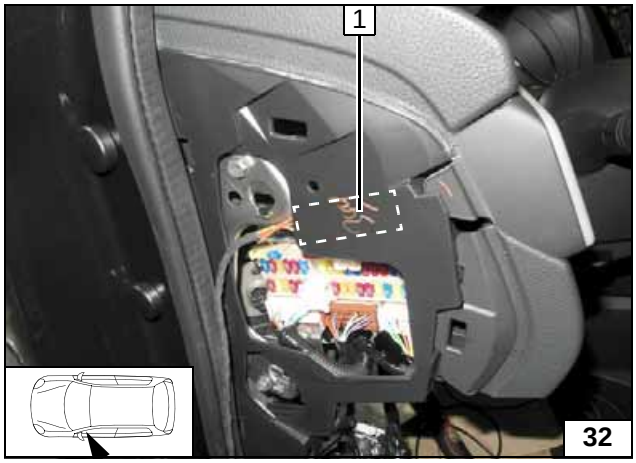
**Installing receiver**




For windscreens with a special coating or heater, use only the area recommended by the manufacturer to assemble antenna.

**1** Antenna

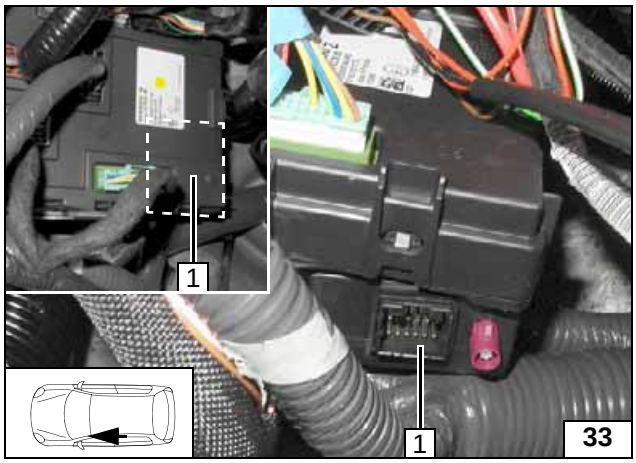
**Mounting antenna**




**Temperature sensor T100 HTM**

Secure temperature sensor **1** behind trim at the marking using adhesive tape.

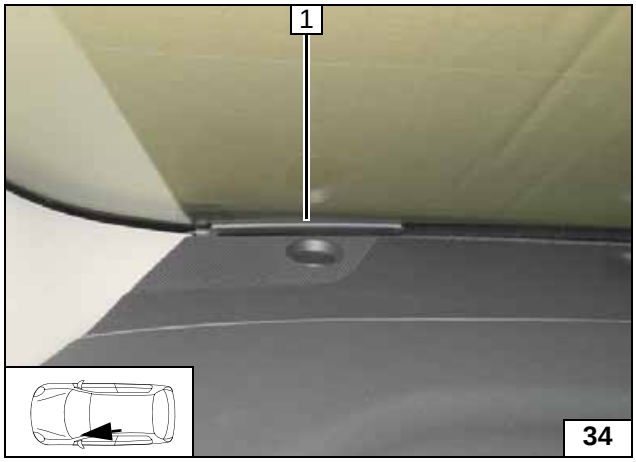
**Mounting temperature sensor**




## Remote Option Thermo Call

Secure receiver **1** behind the control unit at the marking using adhesive tape.

**Installing receiver**




For windscreens with a special coating or heater, use only the area recommended by the manufacturer to assemble antenna.

**1** Antenna

**Mounting antenna**

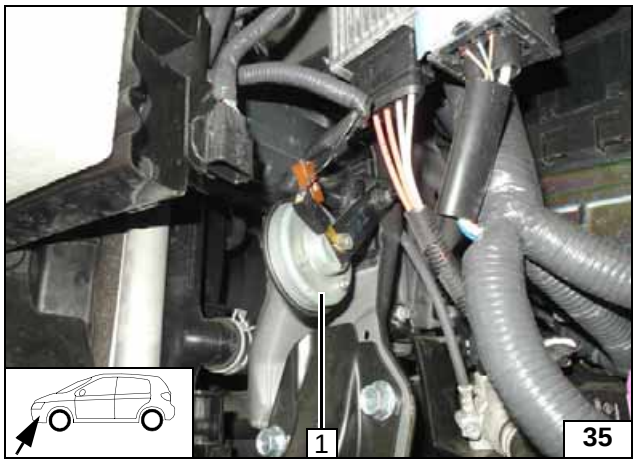
  

## Preparing Installation Location

### All vehicles except for Xtronic

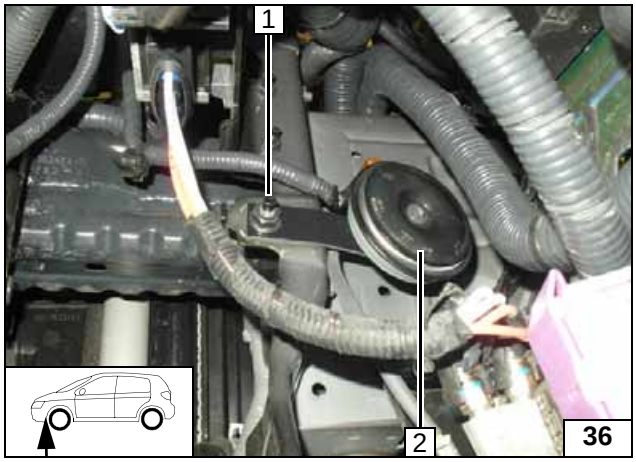
**1** Remove horn with bracket

**Removing horn**




**1** Original vehicle bolt, original vehicle flanged nut
**2** Horn with bracket

**Installing horn**

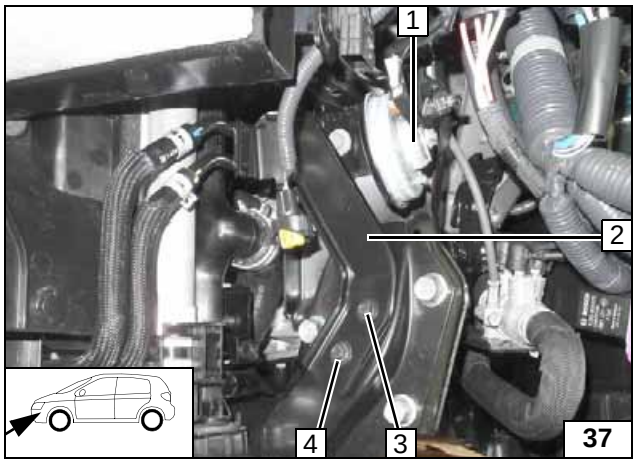



### Only in case of Xtronic

Detach the original vehicle bracket for the oil cooler lines **2**!

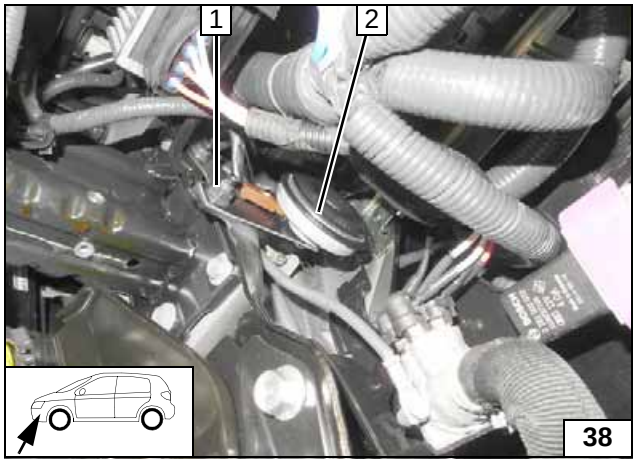
**1** Remove horn with bracket
**3** Remove original vehicle bolt, will be re-used
**4** Remove and discard original vehicle bolt

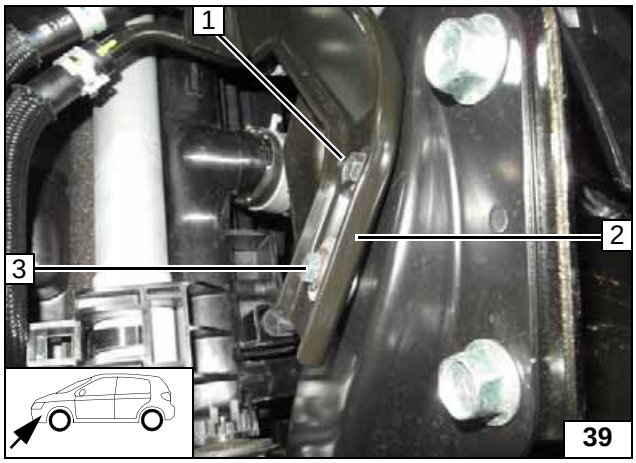
**Removing horn and original vehicle bracket**




**1** Original vehicle bolt, original vehicle flanged nut
**2** Horn with bracket

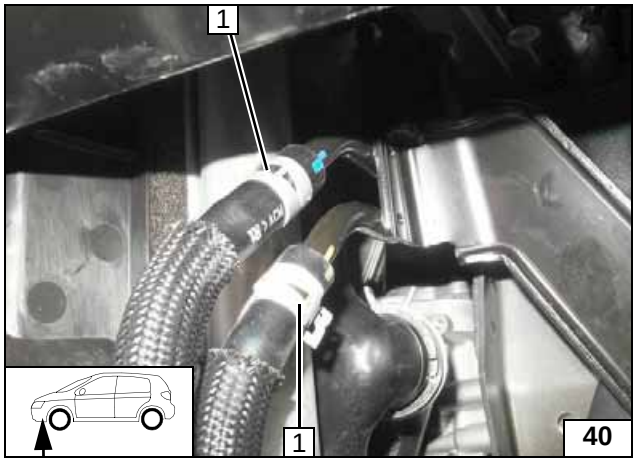
**Installing horn**





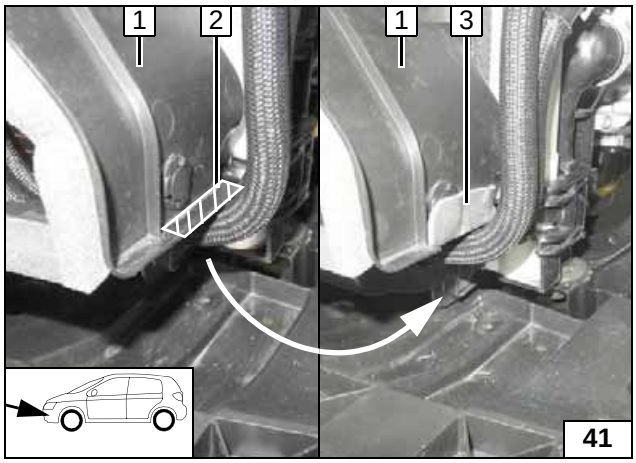

**1** Original vehicle bolt
**2** Original vehicle bracket for oil cooler lines
**3** M6x30 bolt, spring lockwasher, large diameter washer, original vehicle bracket, 5mm shim

**Installing original vehicle bracket**



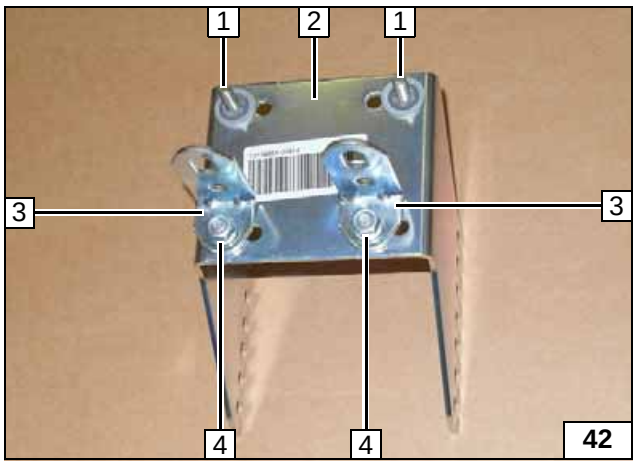

Align original vehicle clamps**1** [2x] of oil cooler lines as shown!

**Aligning clips**




Remove marked section **2** of air ducting **1** and stick on foam **3**!

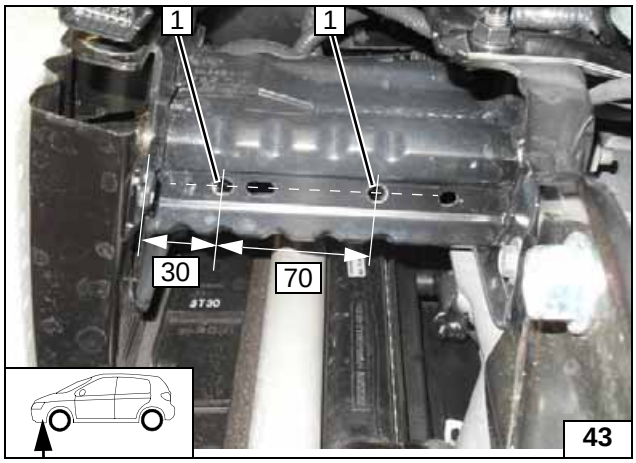
**Installing rub protection**




**All vehicles**

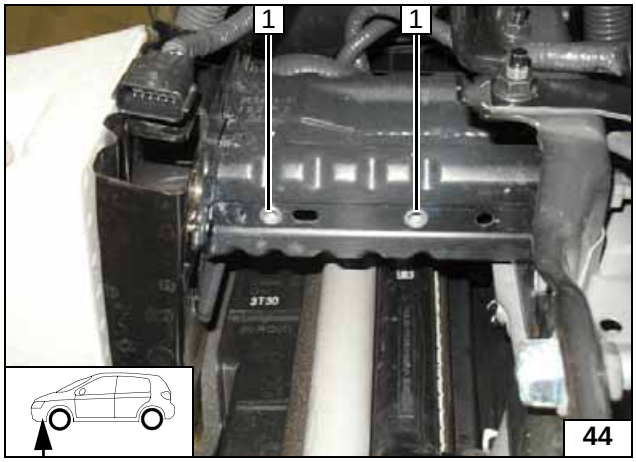
**1** M6x20 bolt, spring lockwasher, large diameter washer with outer dia. $d_a$ = 17.6mm; pin lock [2x each]
**2** Bracket
**3** Angle bracket [2x]
**4** M6x12 bolt, flanged nut [2x each]

**Preparing bracket**



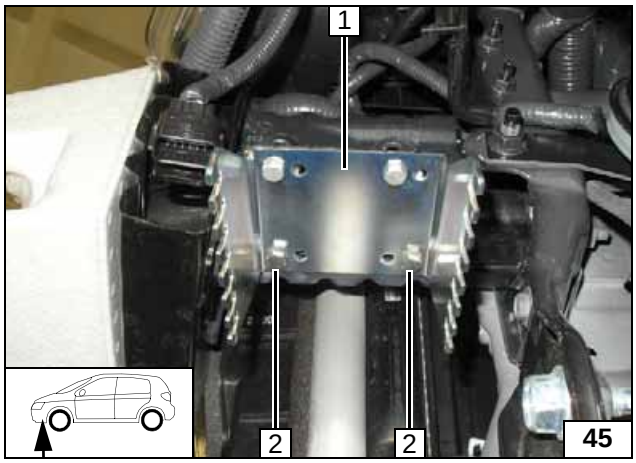

**1** 9.1 mm dia. hole [2x]

**Holes in frame side member**



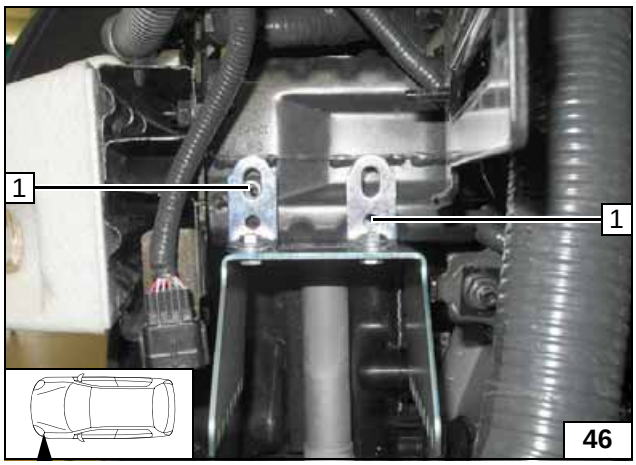

**1** Rivet nut [2x]

**Installing rivet nut**




**1** Bracket
**2** Premounted M6x20 bolts

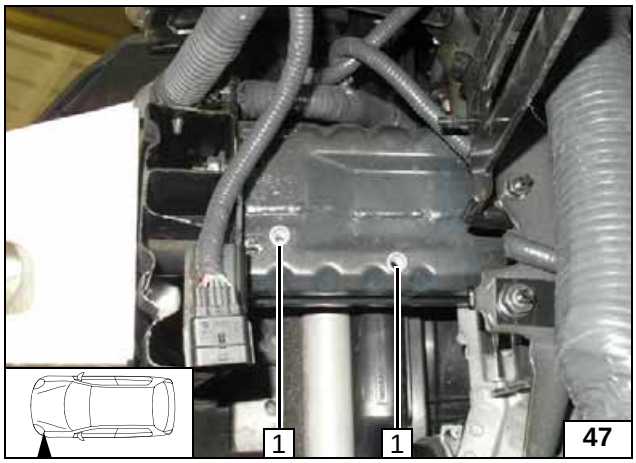
**Mounting bracket loosely**




**1** Copy hole pattern [2x]

**Copying hole pattern**

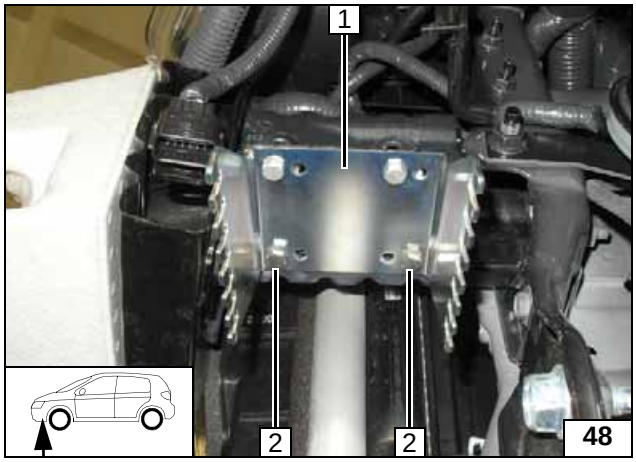
  




Remove bracket!

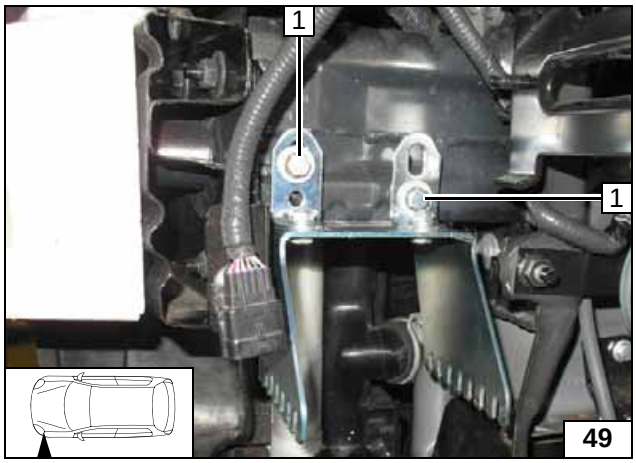
**1** 9.1 mm dia. hole; rivet nut [2x each]

**Installing rivet nut**




**1** Bracket
**2** Tighten premounted M6x20 bolts

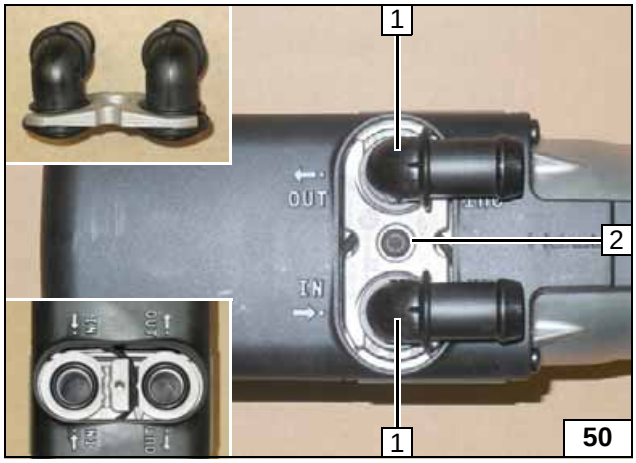
**Installing bracket**




Add for each position a 8mm shim between the angle bracket and the frame side member!

**1** M6x30 bolt, spring lockwasher, large diameter washer with outer dia. $d_a$ = 17.6mm; 8mm shim [2x each]

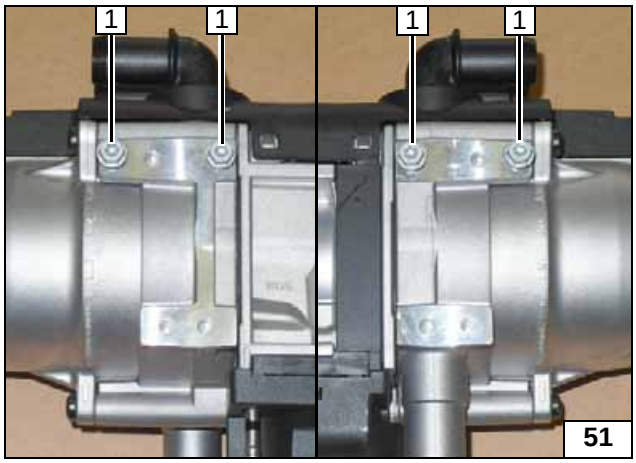
**Installing bracket**




## Preparing Heater

**1** Water connection piece, sealing ring [2x each]
**2** 5x15 self-tapping bolt, retaining plate of water connection piece

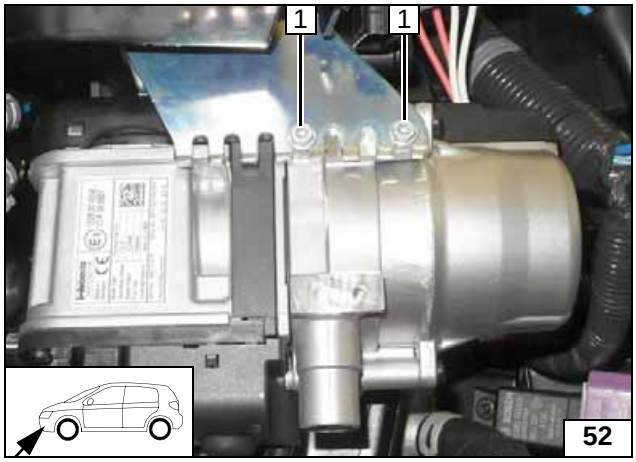
**Installing water connection piece**




Screw 5x13 self-tapping bolts **1** [4x] into existing holes by a maximum of 3 thread turns.

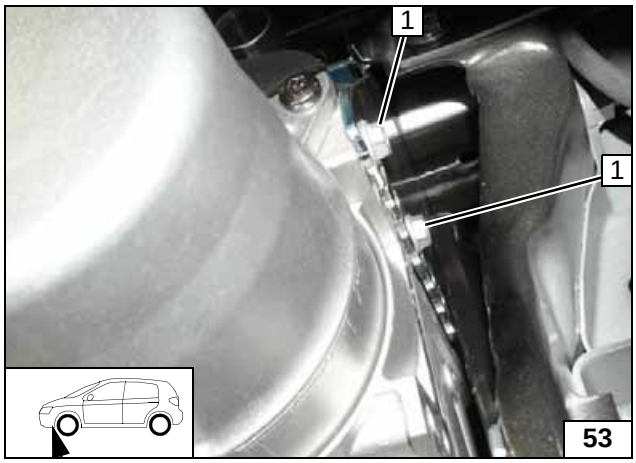
**Loosely premounting bolts**

## Installing Heater



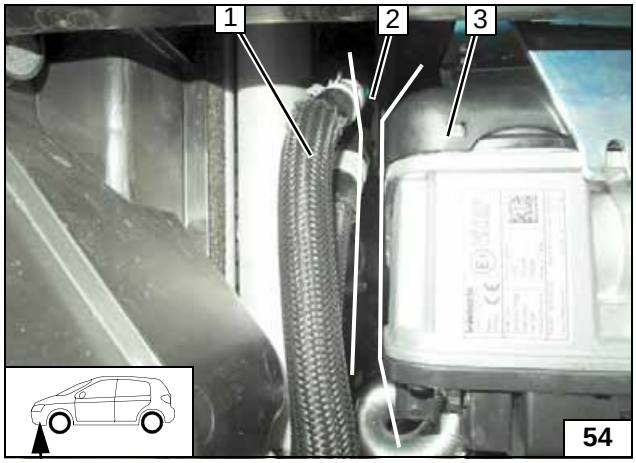

**1** Tighten 5x13 self-tapping bolt [2x]

**Installing heater**




**1** Tighten 5x13 self-tapping bolt [2x]

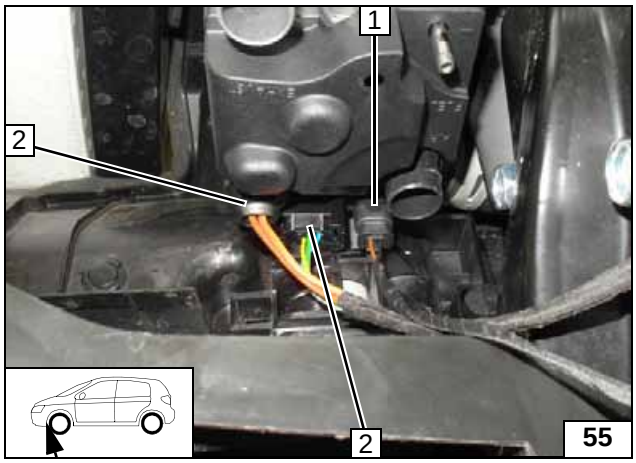
**Installing heater**




Ensure sufficient distance (at least 5mm) from neighbouring components in position **2**, correct if necessary!

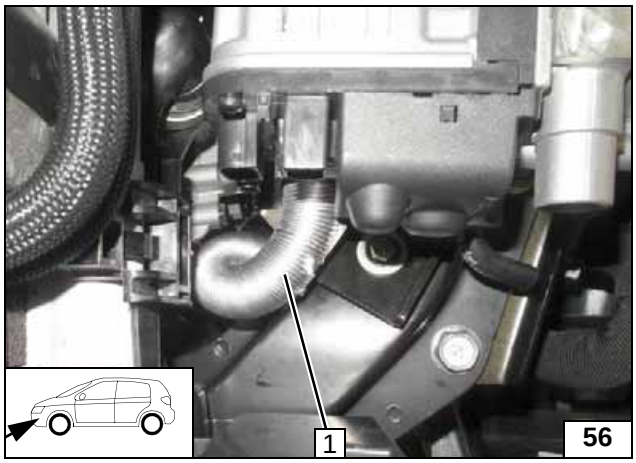
**1** Oil cooler lines (if present)
**3** Heater

**Checking / correcting distance**




**1** Connector of circulating pump wiring harness
**2** Connector for wiring harness of heater [2x]

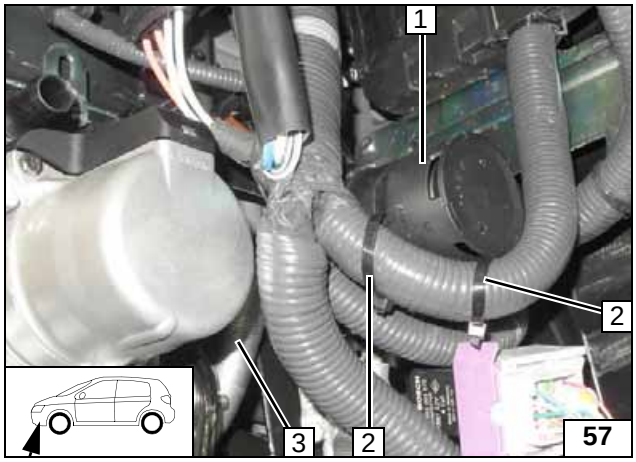
## Installing heater wiring harness




## Combustion Air

Route combustion air pipe **1** to the installation location of the silencer (see next figure)!

**Installing combustion air pipe**




**1** Silencer
**2** Cable tie [2x]
**3** Combustion air pipe

**Mounting silencer**

## Fuel

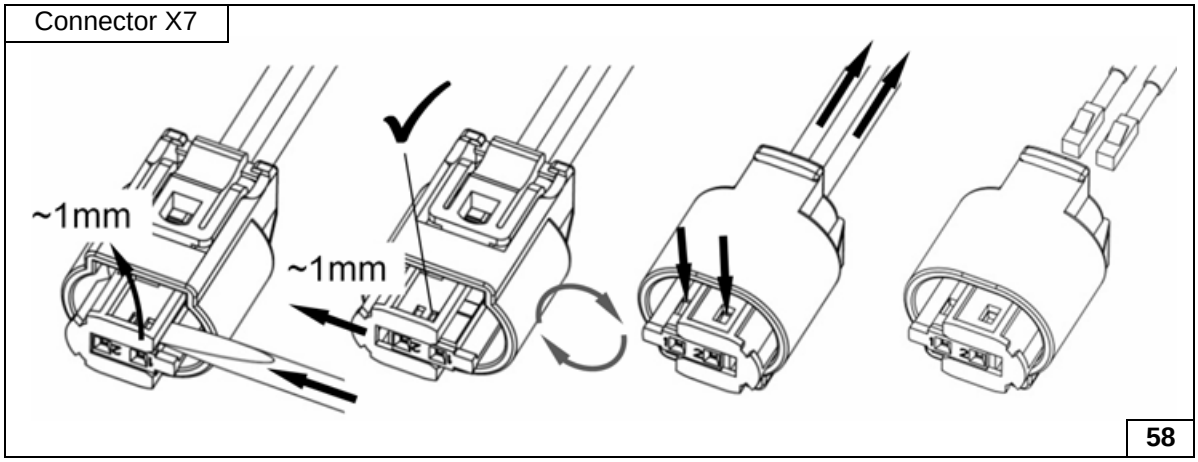
**CAUTION!**
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the fuel tank cap.

Catch any fuel running off in an appropriate container.

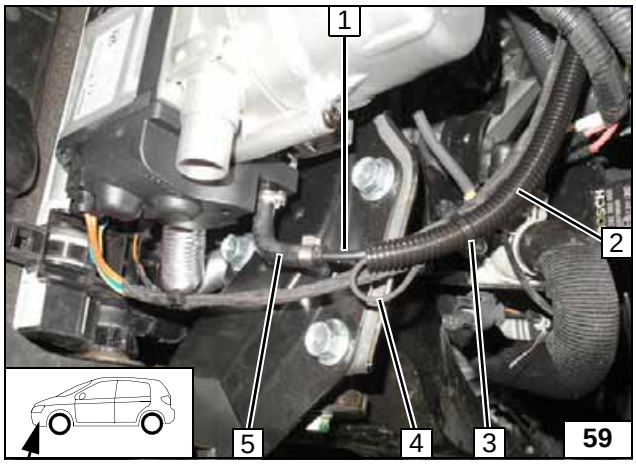
Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

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

**Removing metering pump connector**



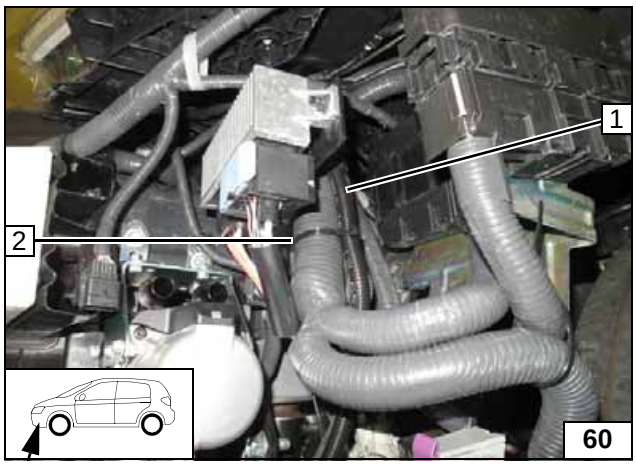

**Connecting heater**



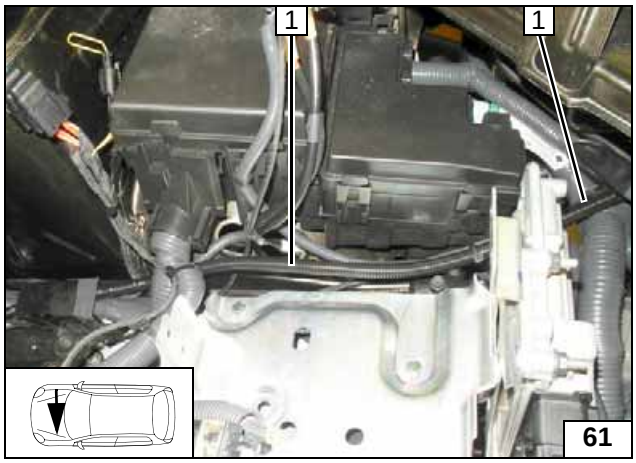

Pull fuel line **1** and wiring harness of metering pump **4** into 10mm dia. corrugated tube **2**.

**3** Cable tie
**5** 90° moulded hose, 10 mm dia. clamp [2x]

**Routing lines**

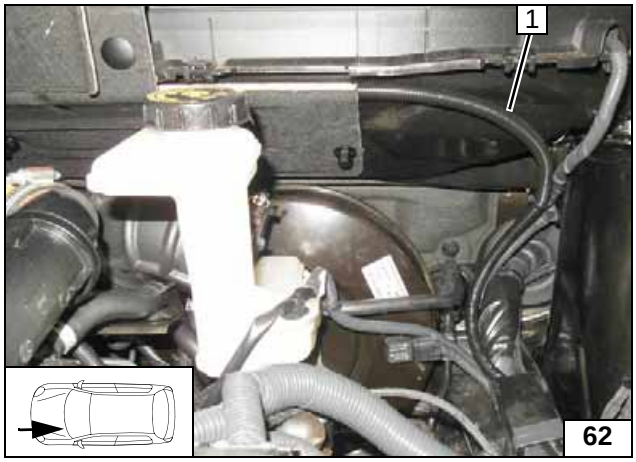



Route fuel line and wiring harness of metering pump in 10mm dia. corrugated tube **1** in the engine compartment and secure it using cable tie **2** to the original vehicle wiring harness!



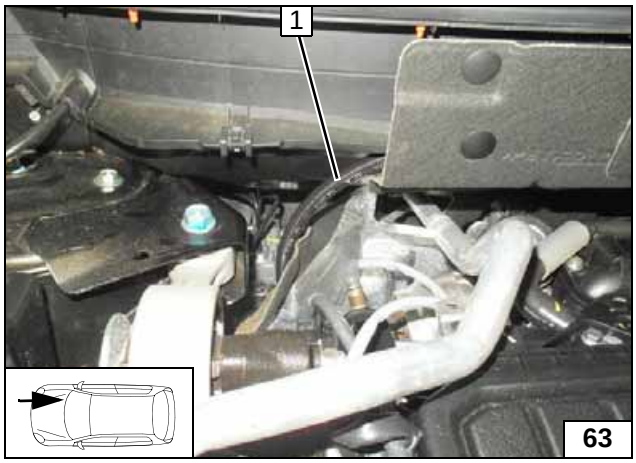

Route fuel line and wiring harness of metering pump in 10mm dia. corrugated tube **1** along original vehicle lines to the firewall and secure them using cable ties!

**Routing lines**



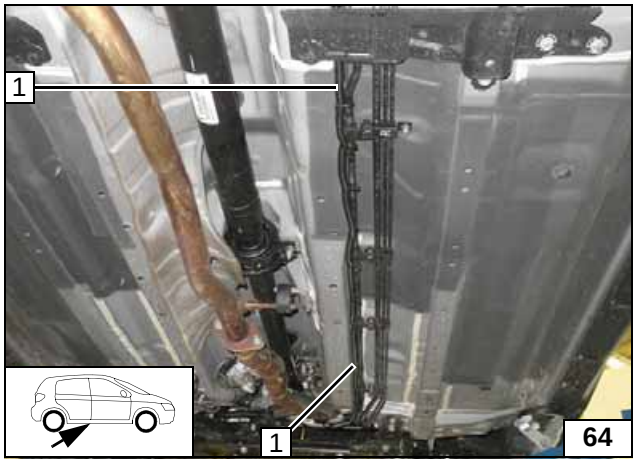

Route fuel line and wiring harness of metering pump in 10mm dia. corrugated tube **1** behind the insulation to the right vehicle side.

**Routing lines**




Route fuel line and wiring harness of metering pump in 10 mm dia. corrugated tube **1** along original vehicle lines to underbody.

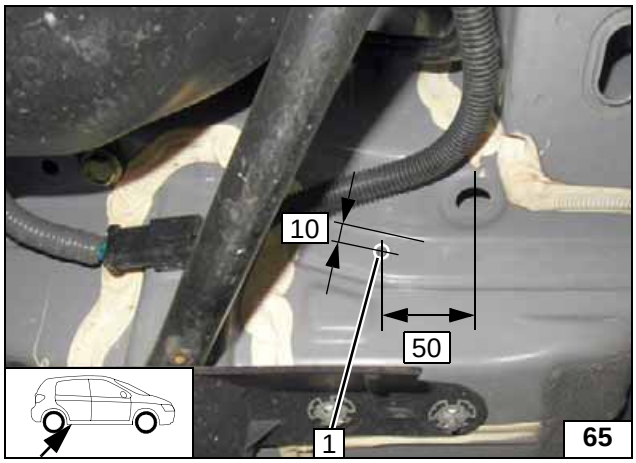
**Routing lines**




Route fuel line and wiring harness of metering pump in 10 mm dia. corrugated tube **1** along original vehicle fuel lines to the rear.

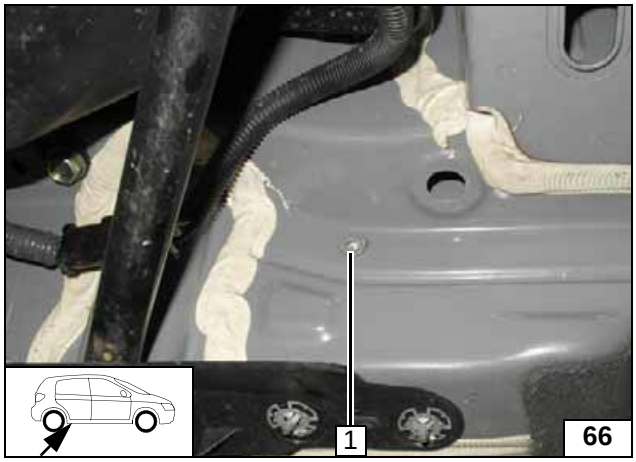
**Routing lines**



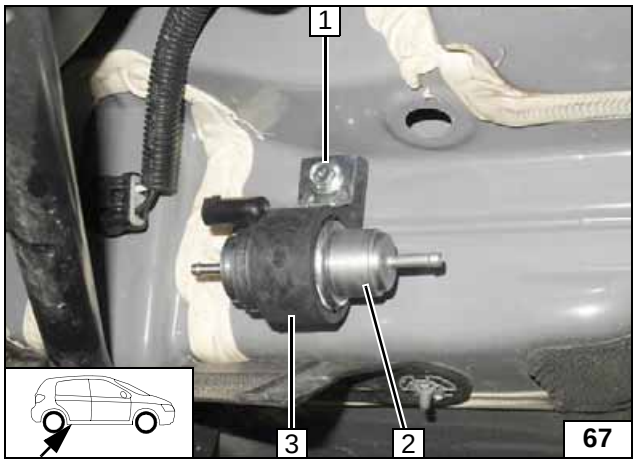

**1** 9.1 mm dia. hole

**Hole for metering pump**




**1** Rivet nut

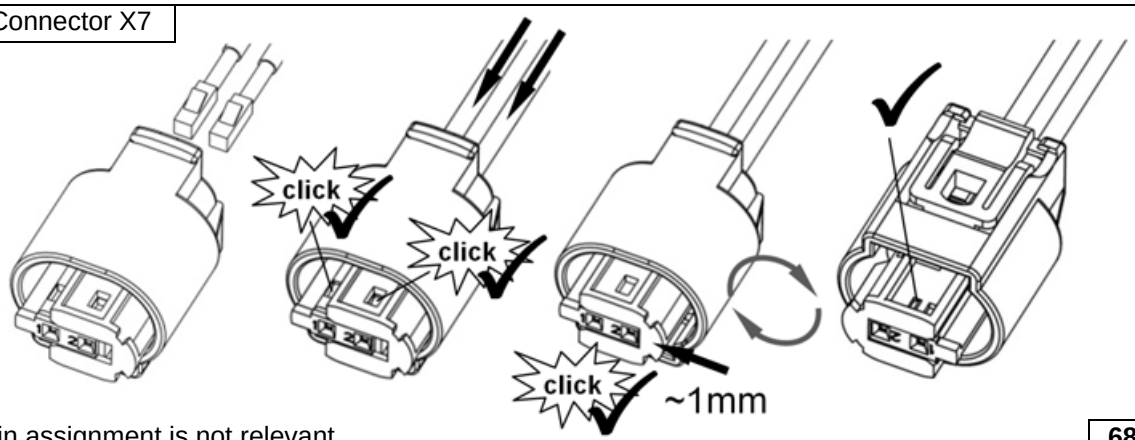
**Installing rivet nut**




**1** M6x25 bolt, support angle bracket on rivet nut
**2** Metering pump
**3** Metering pump mounting bracket

**Installing metering pump**

Connector X7




Pin assignment is not relevant.

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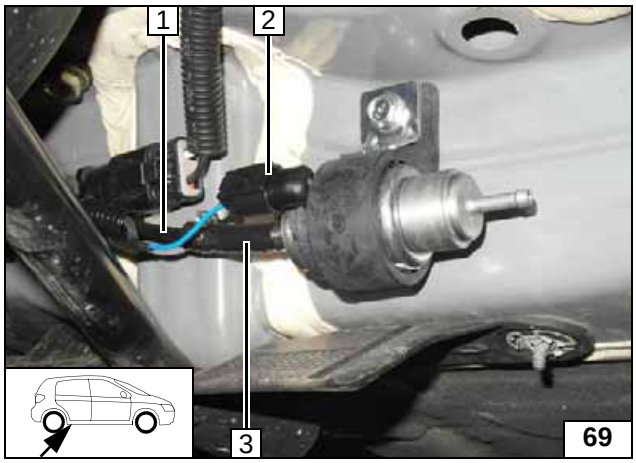
**Completing metering pump connector**




**1** Fuel line of Heater
**2** Wiring harness of metering pump, connector X7 mounted
**3** Hose section, 10 mm dia. clamp [2x]

**Connecting metering pump**

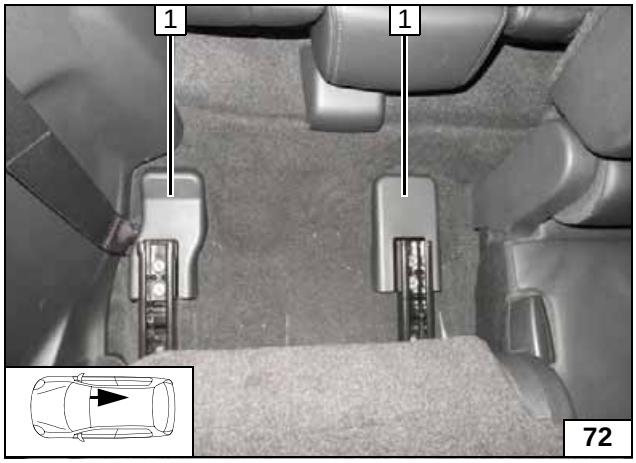

**Right-hand rear bench seat removal instructions**

**1** Cover [2x]

**Removing cover**


**1** Remove bolts [2x]

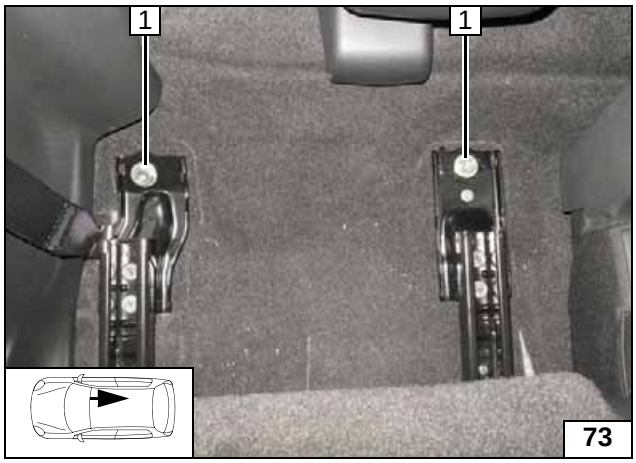
**Detaching front screw fitting**




Slide the rear bench seat forward. Fold the backrest forward!

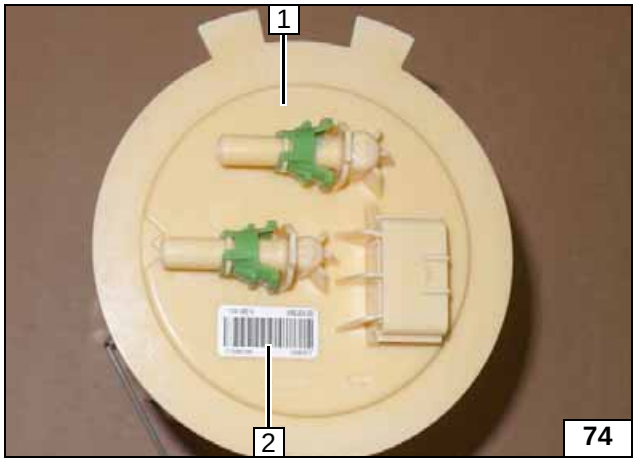
**1** Cover [2x]

**Removing cover**




**1** Remove bolts [2x]

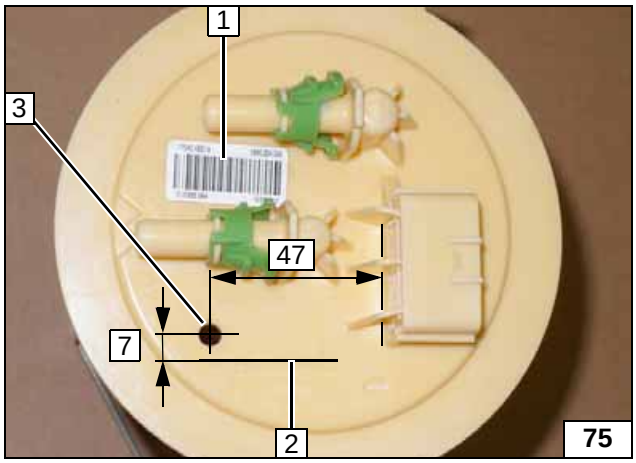
**Detaching back screw fitting**




Remove fuel-tank sending unit **1** according to manufacturer's instructions.

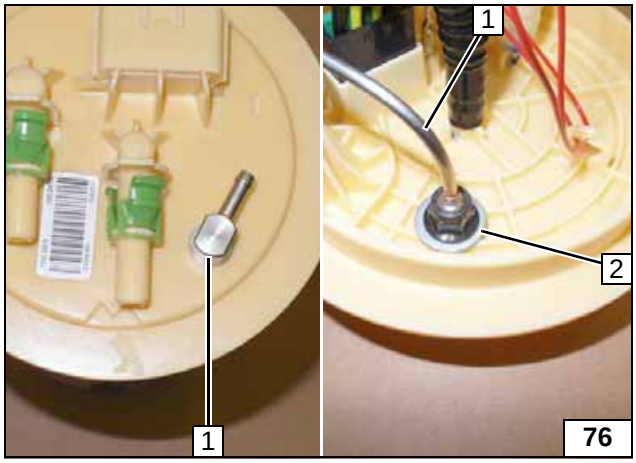
**2** Remove sticker, will be reapplied later

**Fuel extraction**



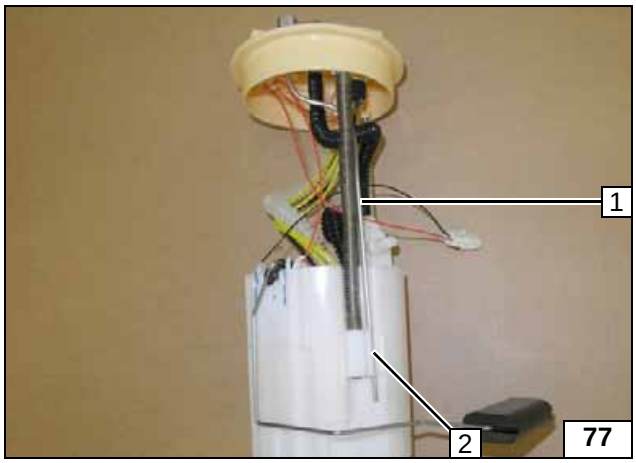

**1** Affix the sticker
**2** Existing formed ridge
**3** Copy hole pattern, 6 mm dia. hole

**Fuel extraction**



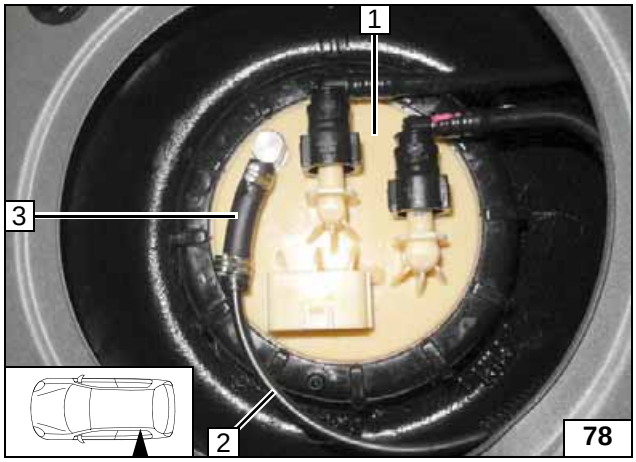

Shape fuel standpipe **1** according to template and cut to length. Insert large diameter washer with outer dia. $d_a$ = 17.6mm **2** between fuel-tank sending unit and fuel standpipe **1**. For the alignment of the fuel standpipe, see the next figure!

**Installing fuel standpipe**




Engage fuel standpipe **1** in existing groove at position **2**!

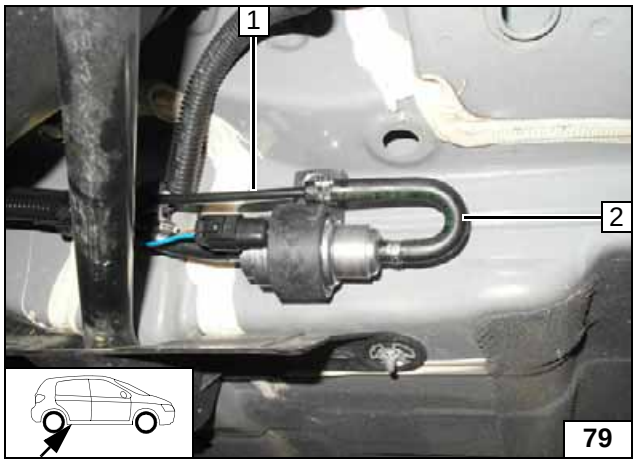
**Installing fuel stand-pipe**




Install fuel-tank sending unit **1** and connect in accordance with manufacturer's instructions.

**2** Fuel line
**3** Hose section, 10mm dia. clamp [2x]

**Connect-ing fuel line**



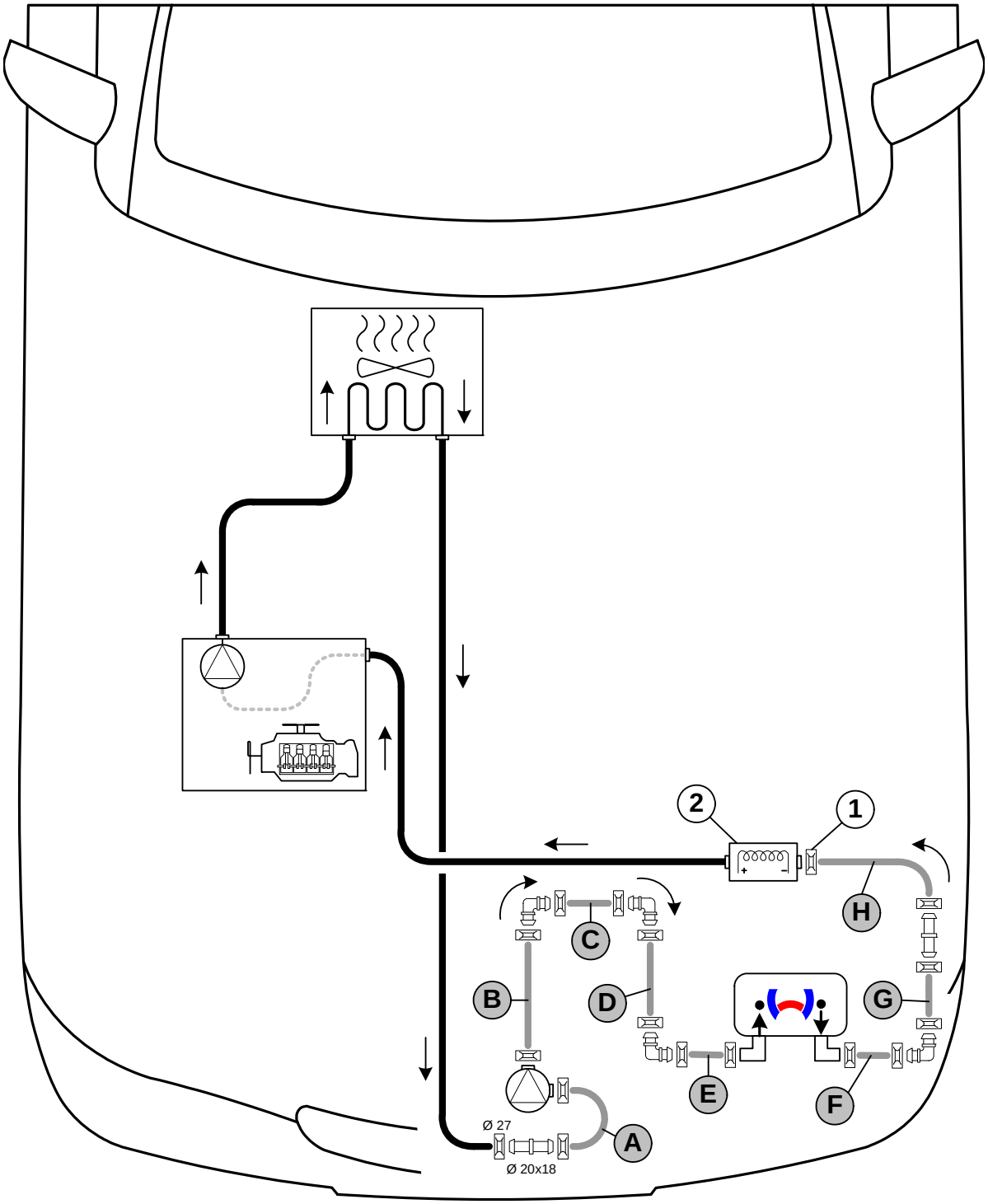

**1** Fuel line of fuel standpipe
**2** 180° moulded hose, 10 mm dia. clamp [2x]

**Connect-ing meter-ing pump**

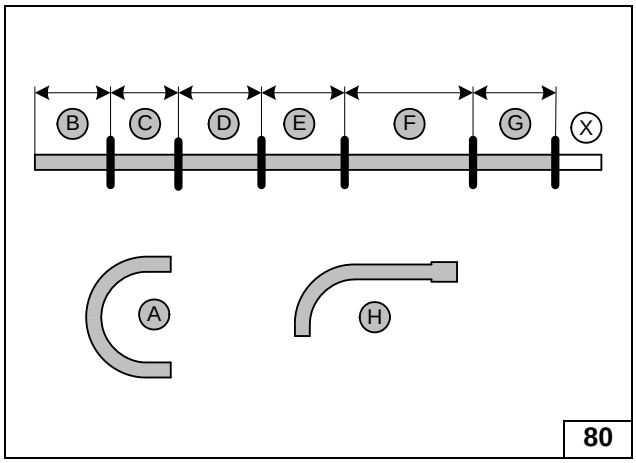
## Coolant Circuit

**WARNING!**
Any coolant running off should be collected in an appropriate container. Route hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hoses can be damaged. When installing the hoses, the heater must be filled with coolant.
The connection should be modelled on an "inline" circuit and based on the following diagram:

**Hose routing diagram**




All spring clips without a specific designation = 25mm dia. **1** = Original vehicle spring clip .
All connecting pipes = 18x18mm dia. **2** = Electric auxiliary heater



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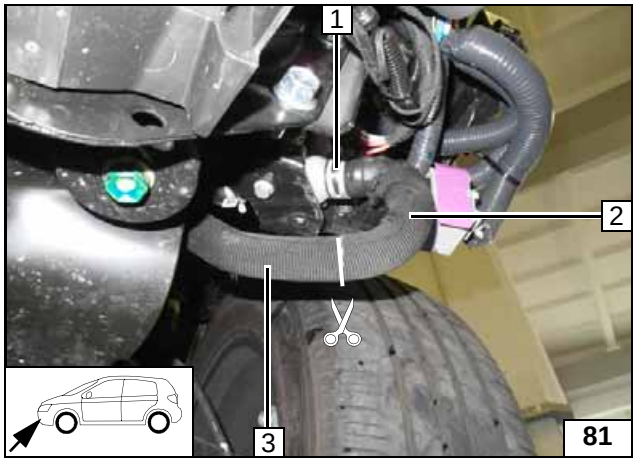
Discard section **X**.
Hose **A** = 180°, 18x18mm dia. moulded hose
Hose **H** = 90°, 18x20mm dia. moulded hose

**B** = 60
**C** = 80
**D** = 120
**E** = 110
**F** = 150
**G** = 90

**Cutting hoses to length**



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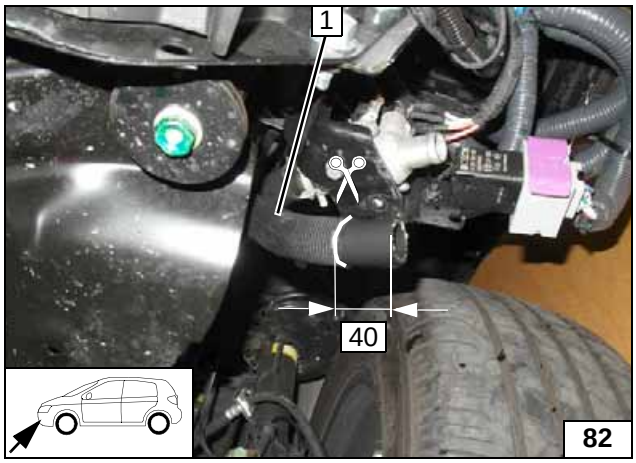
Cut heat exchanger outlet / electric auxiliary heater inlet hose at the marking. Remove and discard hose on electric auxiliary heater inlet **2**. Spring clip **1** will be reused.

**3** Hose section on heat exchanger outlet

**Cutting point**



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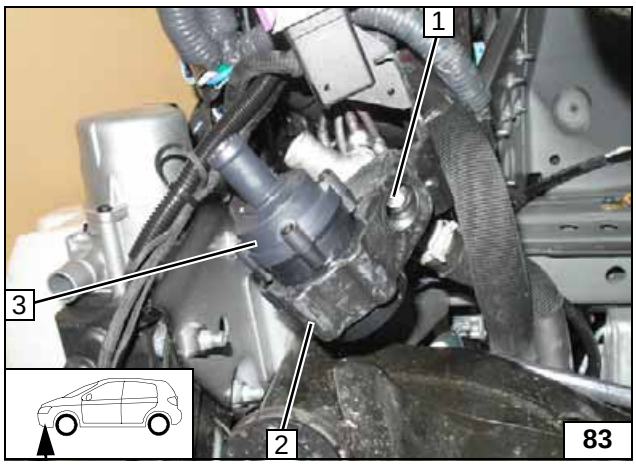
Remove protective hose of heat exchanger outlet hose **1**!

**Removing protective hose**



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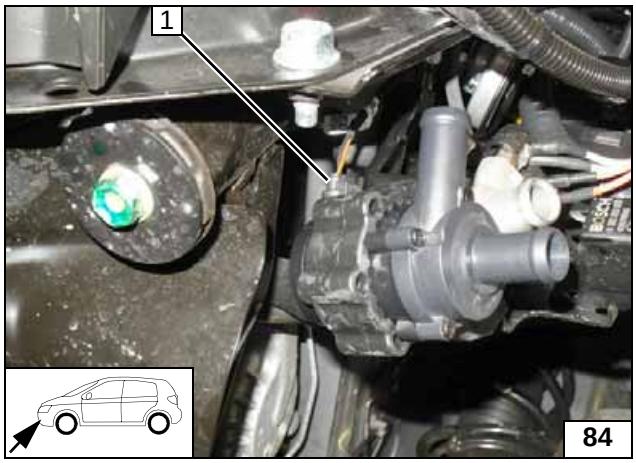
Remove and discard original vehicle bolt of electric auxiliary heater bracket at position **1**!

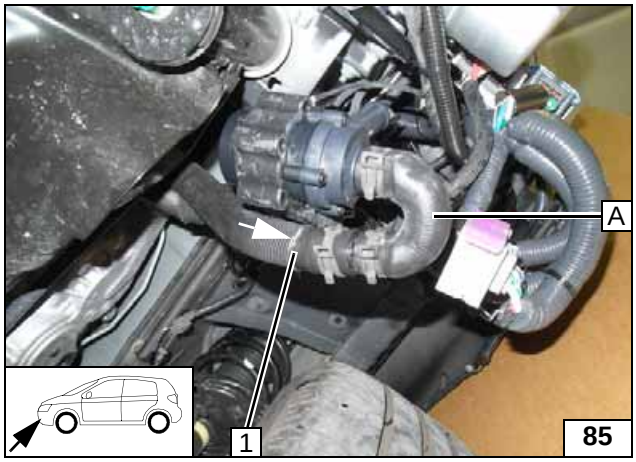
**1** M6x25 bolt, original vehicle threaded hole
**2** Circulating pump mounting bracket
**3** Circulating pump

**Installing circulating pump**



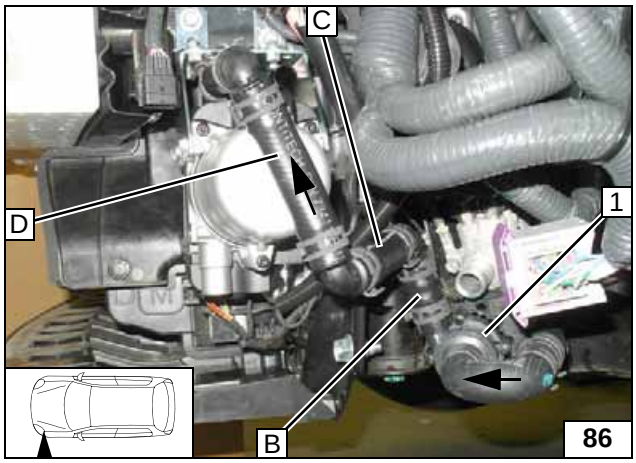

**1** Connector of circulating pump wiring harness

**Mounting wiring harness**



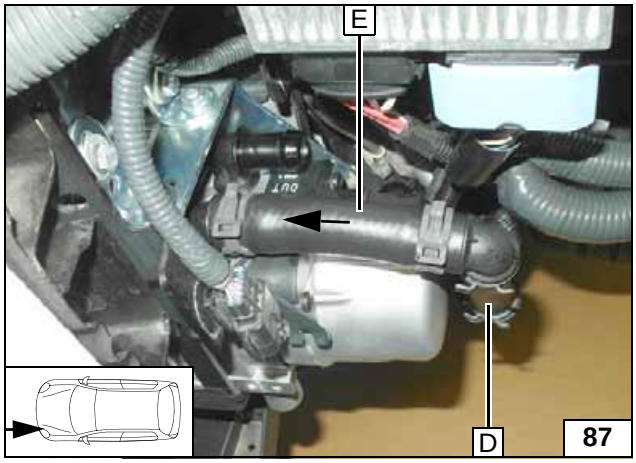

**1** Hose on heat exchanger outlet

**Connecting circulating pump**

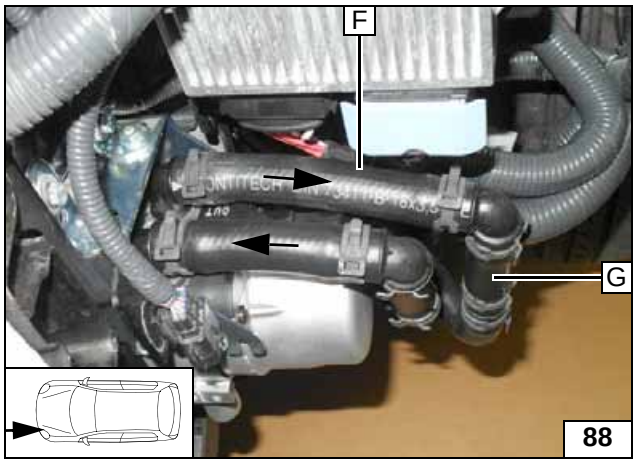



**1** Circulating pump

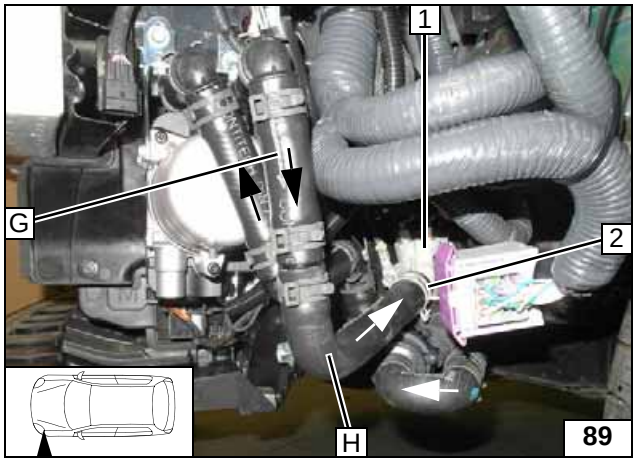
**Connecting circulating pump**




**Connecting heater inlet**




## Connecting heater outlet



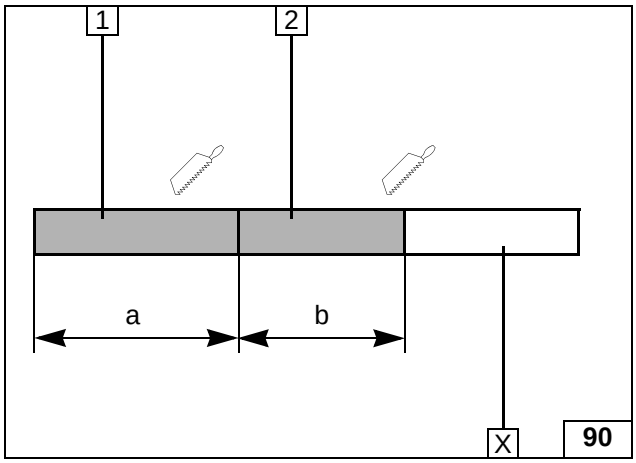

Align hoses. Ensure sufficient distance to neighbouring components, adjust if necessary.

**1** Electric auxiliary heater
**2** Original vehicle spring clip

## Electric auxiliary heater connection

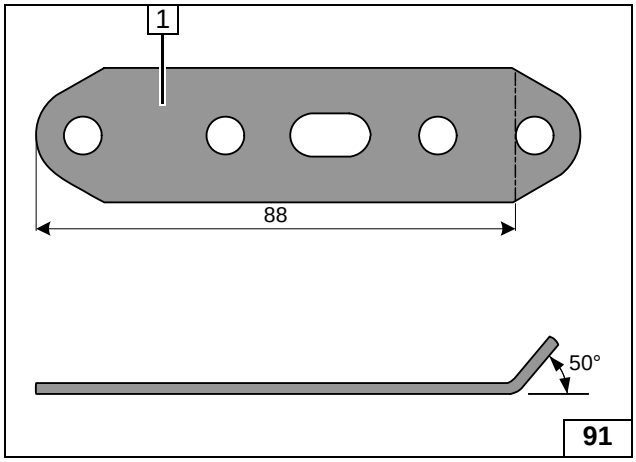
## Exhaust Gas

Discard section **X**.



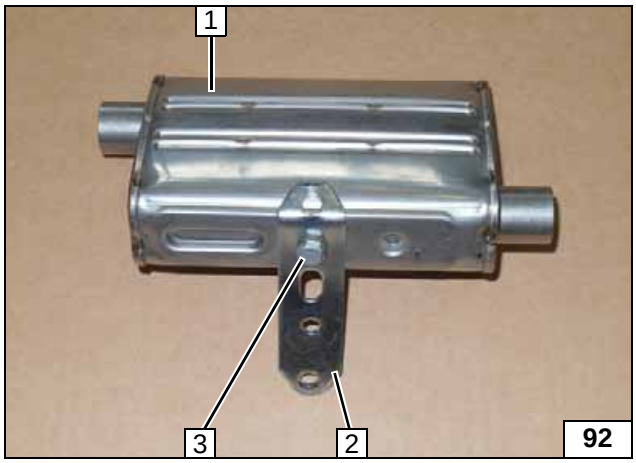

**1** Exhaust pipe
a = 280
**2** Exhaust end section
b = 250

**Preparing exhaust pipe**



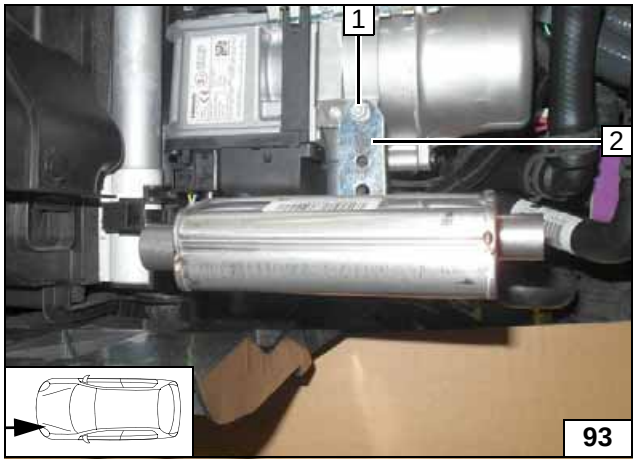

**1** Perforated bracket

**Preparing perforated bracket**




**1** Silencer
**2** Perforated bracket
**3** M6x16 bolt, spring lockwasher

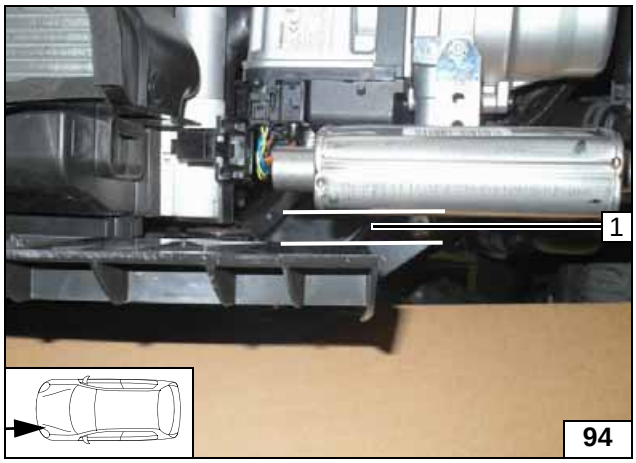
**Premount-ing silencer**




**1** 5x13 self-tapping bolt
**2** Perforated bracket

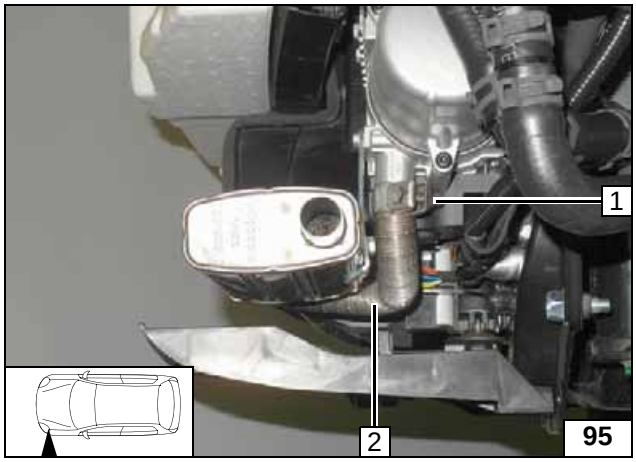
**Mounting silencer**



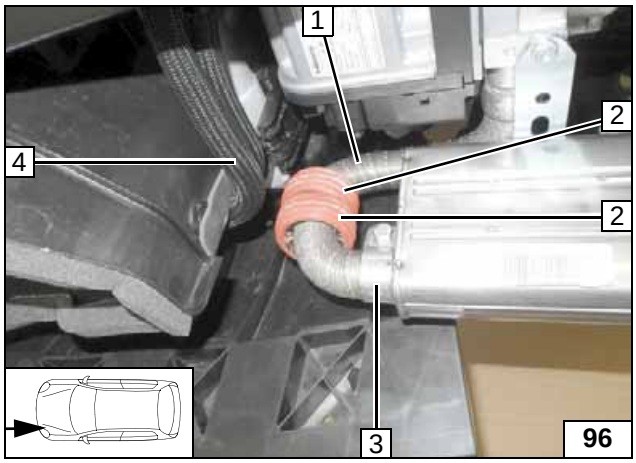

Ensure sufficient distance (at least 20mm) at position **1** between exhaust silencer and underride protection, adjust silencer if necessary!

**Aligning silencer**




**1** Hose clamp
**2** Exhaust pipe

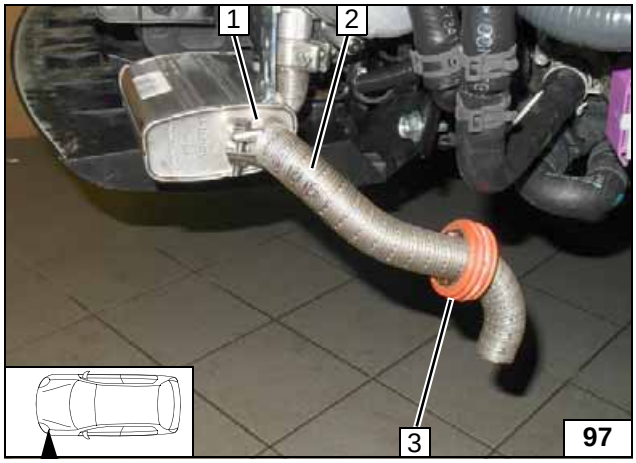
**Mounting exhaust pipe**




Align spacer bracket **2** with original vehicle oil cooler lines **4** (if present)!

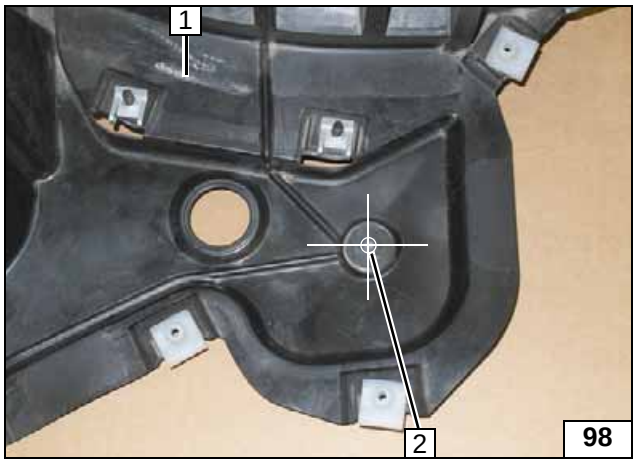
**1** Exhaust pipe
**2** Spacer bracket [2x]
**3** Hose clamp

**Installing / aligning exhaust pipe**



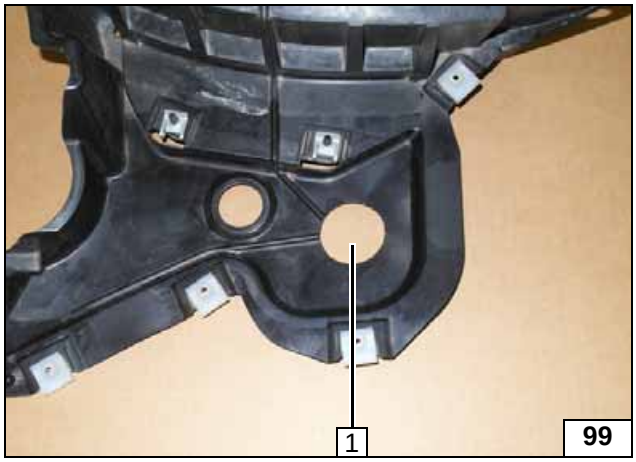

**1** Hose clamp
**2** Exhaust end section
**3** Slide on spacer bracket

**Mounting exhaust end section**



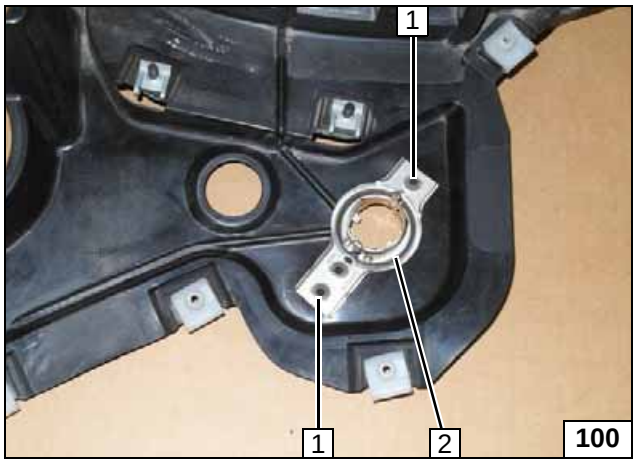

**1** Wheel well trim
**2** Copy hole pattern in the middle of the embossing

**Copying hole pattern**



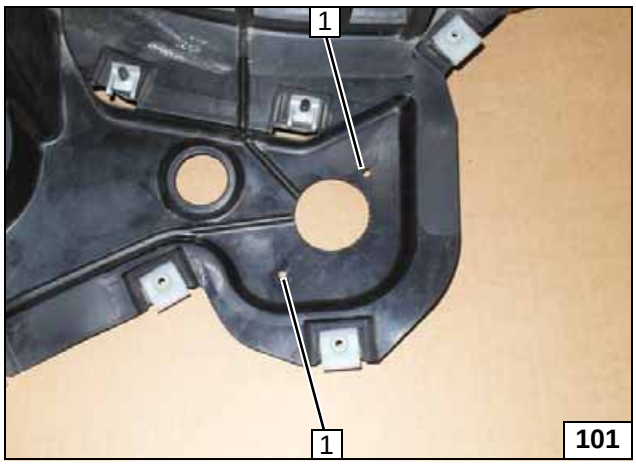

**1** Hole (as per work step 1 of the installation instructions)

**Hole in wheel well trim**



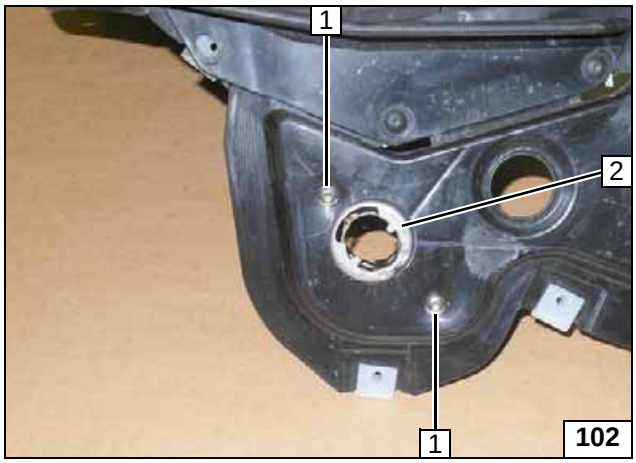

Position exhaust end fastener **2** as per work step 3 of the installation instructions and copy hole pattern **1** [2x]!

**Copying hole pattern**



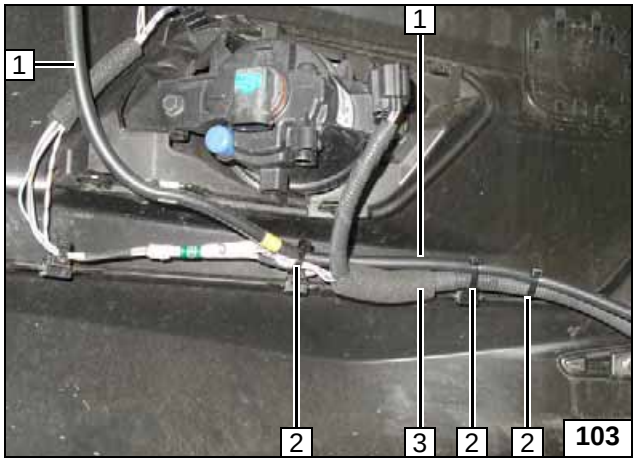

Hole **1** [2x] as per work step 4 of the installation instructions!

**Holes in wheel well trim**




**1** 5x13 self-tapping screw [2x] as per work step 5 of the installation instructions
**2** Exhaust end fastener

**Mounting exhaust end fastener**




Inside view of bumper, left side!

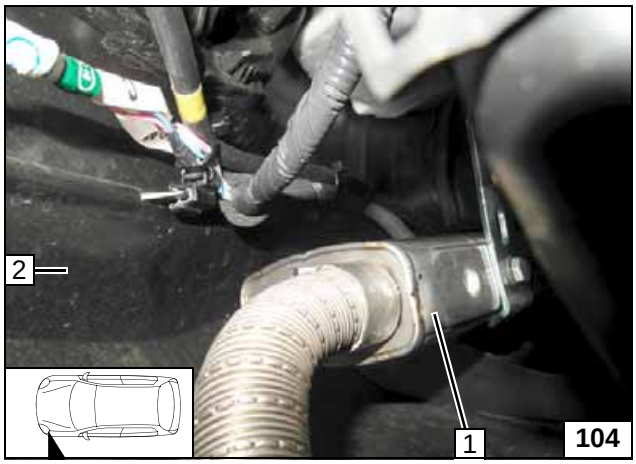
Secure hose of headlight washer system **1** onto original vehicle wiring harness **3** using cable tie **2** [3x]!

**Preparing bumper**

## Final Work

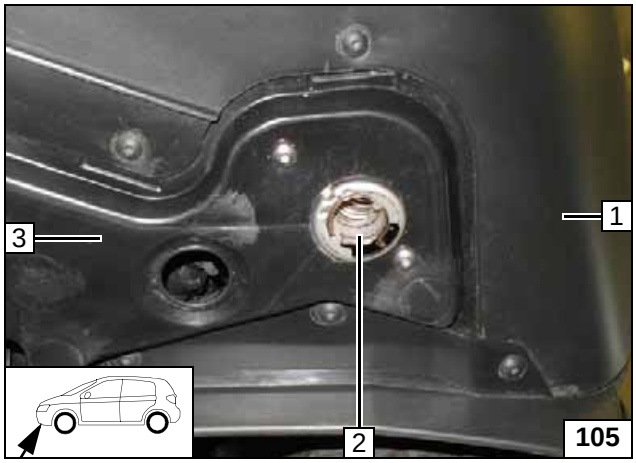
**WARNING!**
Reassemble the disassembled components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate all loose lines and tie back.
Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications**
- **Program MultiControl CAR, teach Telestart transmitter**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Apply the caution label "Switch off parking heater before refilling" in the area of the filler neck**
- **See installation instructions for initial start-up and function check**
- **Check the fan speed in parking heating mode. Target value of approx. 1/3 of the maximum speed.**
  **If required, the programming of the PWM-Gateway must be adjusted using the Webasto Thermo Test Diagnosis (WTT).**
- **Switch on the ignition and check if the settings for normal operation chosen in consultation with the vehicle owner are shown on the A/C control panel (see section "Preliminary Work")!**




Install bumper **2**. Ensure sufficient distance (at least 20mm) between exhaust system and original vehicle hoses, lines and plastic parts, correct if necessary!

**Distance check**



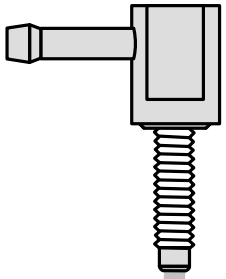

Install wheel well trim **3**. Install exhaust end section **2** as per work steps 6 - 8 of the installation instructions. Align spacer bracket with wheel well trim!

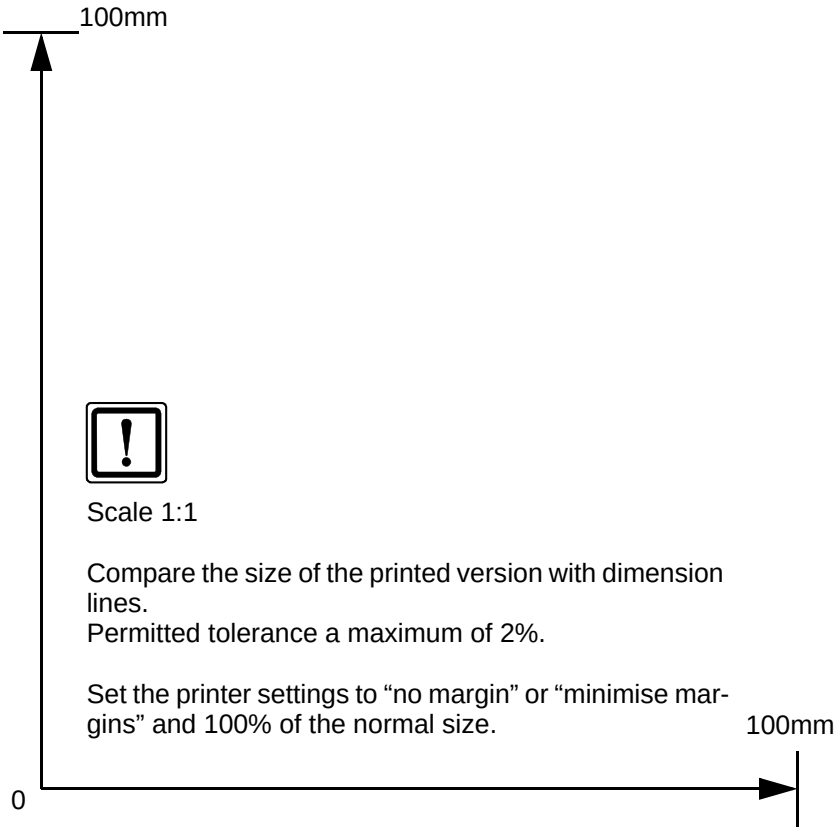
**1** Bumper

**Mounting exhaust end section**

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

## Template for Fuel Standpipe






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.

Webasto
Feel the Drive

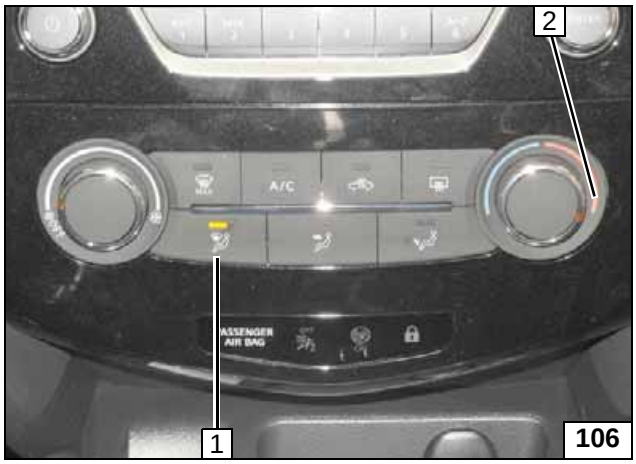
## Operating Instructions for Manual Air-Conditioning

Please remove page and add to the vehicle operating instructions.

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

Passenger compartment monitoring, if installed, must be deactivated in addition to vehicle settings for the heating cycle.
Deactivation instructions can be found in the operating instructions of the vehicle.

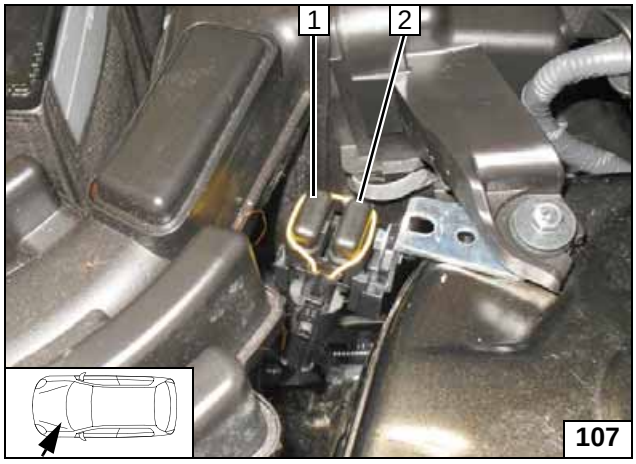
Before parking the vehicle, make the following settings:




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

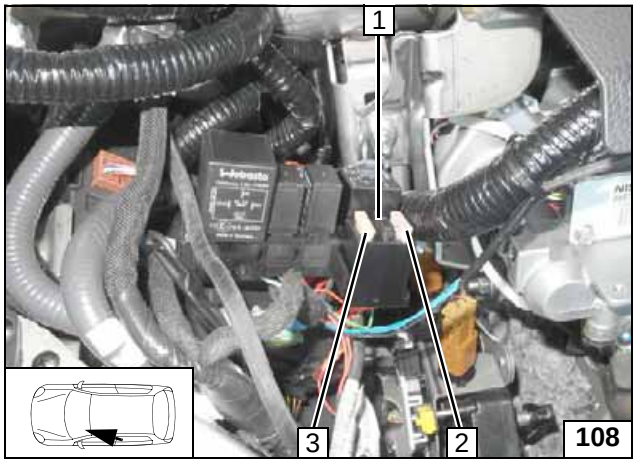
**1** Air outlet to windscreen
**2** Set temperature to "HI“

**A/C control panel**




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

**Engine compartment fuses**




**1** 1A fuse F3 of heater control
**2** 3A fan fuse F5
**3** 25 A fan fuse F4

**Passenger compartment fuses**

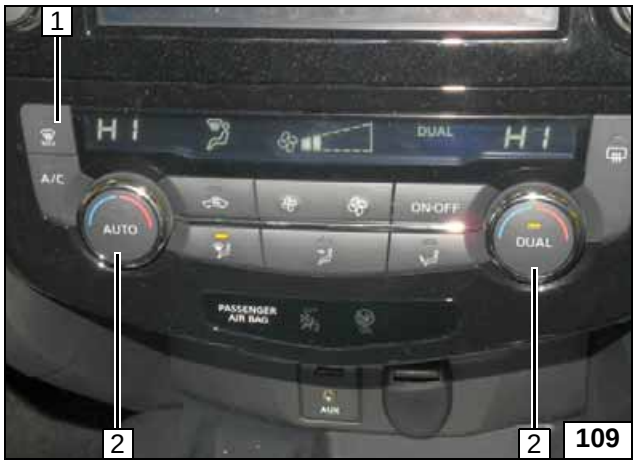
# Operating Instructions for Automatic Air-Conditioning

Please remove page and add to the vehicle operating instructions.

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

Passenger compartment monitoring, if installed, must be deactivated in addition to vehicle settings for the heating cycle.
Deactivation instructions can be found in the operating instructions of the vehicle.

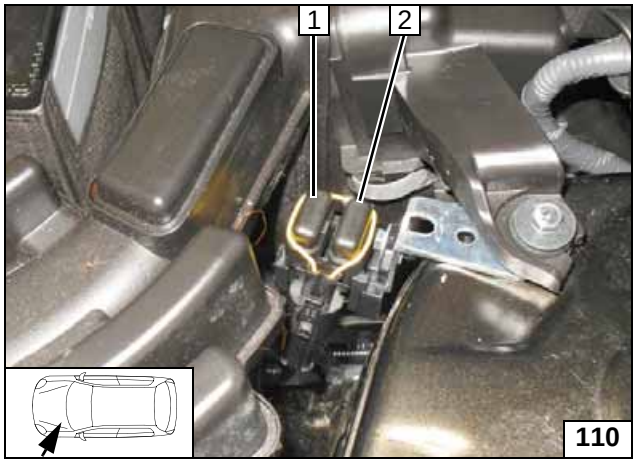
Before parking the vehicle, make the following settings:




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

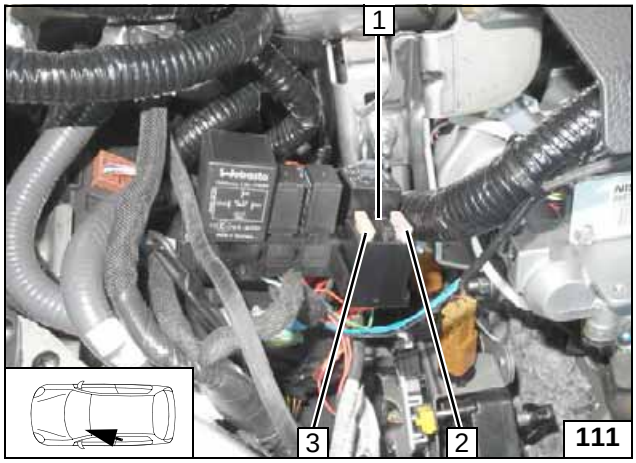
**1** Air outlet to windscreen
**2** Set temperature on both sides to "HI"

**A/C control panel**




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

**Engine compartment fuses**




**1** 1A fuse F3 of heater control
**2** 3A fan fuse F5
**3** 25 A fan fuse F4

**Passenger compartment fuses**