Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

Installation Documentation
Lexus IS 300h

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Lexus	IS 300h	XE2	e11 * 2001 / 116 * 0206 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.5 B Hybrid	Petrol	6-speed AG	133 (162)	2494	2AR-FSE

AG = Automatic transmission

from Model Year 2014
Left-hand drive vehicle

Verified equipment variants: 1 and 2 zone automatic air-conditioning
Front fog light
Xenon with headlight washer system
2 WD

Not verified: Passenger compartment monitoring

Total installation time: about 9 hours

Note:
ONLY let electrotechnically trained personnel (EuP) carry out operations/maintenance on hybrid vehicles
See instructions of the vehicle manufacturer.

Lexus IS 300h

Table of Contents

Necessary Components

- Basic delivery scope of *Thermo Top Evo* based on price list
- Installation kit for Lexus IS 250 and 300h 2014 Petrol: **1322096B**
- To be orderedfrom Lexus as an additional item:

Fuel-tank sending unit assembly parts	**Part No.:**
Seal	77169-47030

Optional	
Battery Full Charge Indicator	DENGS-56380-37
Battery charger MXS 3.8	DENGS-MXS38-37

- 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

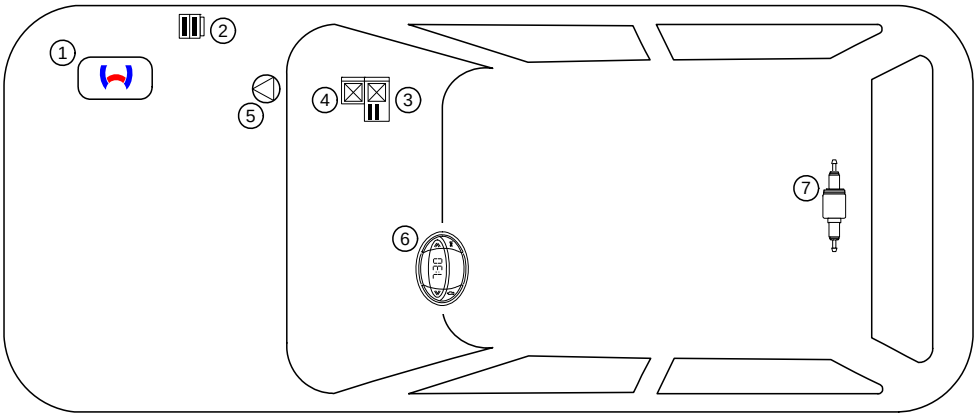
Installation instructions

- Arrange for the vehicle to be delivered with the tank only around ¼ 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 gateway
5. Circulating pump
6. Digital timer
7. 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 227).

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 an PWM-Gateway, the corresponding settings must be checked or adjusted before the installation.

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

For vehicles with an EU permit, no entry in accordance with § 19 Sub-Section 4 of Annex VIII b to the Road Traffic Act is required.

2.1 Excerpt from the directive 2001/56/EC Appendix VII 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.

Lexus IS 300h

Notes on Validity

This installation documentation applies to the Lexus IS 300h Petrol 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

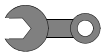
Dimensions
- All dimensions are in mm

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque values of 5x15 bolt of water connection piece retaining plate = 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.

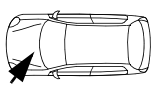
Specific risk of damage to components.

Specific risk of fire and explosion

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

Reference to a special technical feature

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



Lexus IS 300h

Preliminary Work

Vehicle

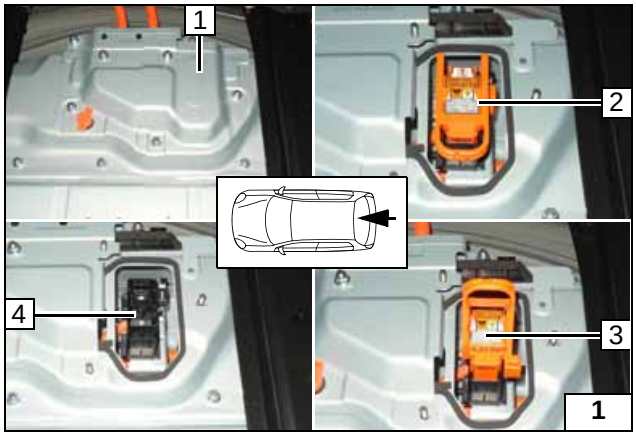
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Remove the engine cover.
- Disconnect the battery.
- Remove the air filter box fully together with the intake pipe.
- Remove the centre heat shield plate.
- Detach the right wheel well trim in the front area.
- Remove the engine underride protection.
- Remove the rear underride protection on the right.
- Remove the right door sill trim.
- Remove the right A-pillar trim.
- Remove the glove compartment.
- Remove the right speaker cover (only in case of Telestart).
- Loosen/remove the airbag.

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

- Remove the rear bench seat.
- Open the tank-fitting service lid on the left.
- 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.



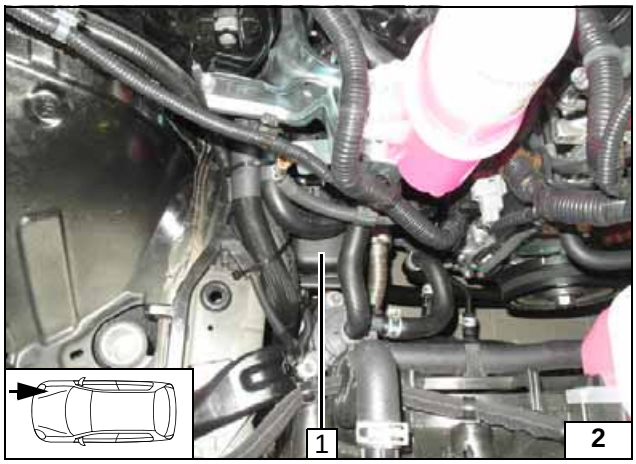
Deactivation of the Hybrid System

See the vehicle manufacturer's instructions.

After disconnecting the 12 V vehicle battery, deactivate the hybrid system in the following sequence:

1 Remove cover (3 bolts)
2 Locate connector
3 Release and lift up bar
4 Bar removed

Deactivating hybrid system



Heater Installation Location

1 Heater

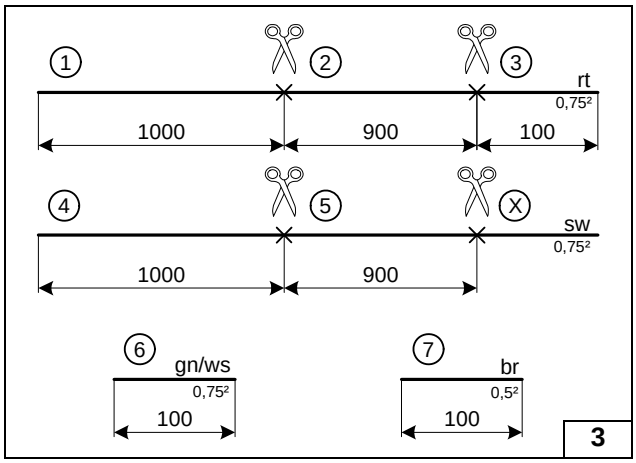
Installation location

Preparing Electrical System

Wire sections retain their numbering throughout the whole document.

Cutting wires to length

Discard section X.
Cut enclosed protective sleeving in half and pull wire sections ① and ④ as well as ② and ⑤ into one protective sleeving each.



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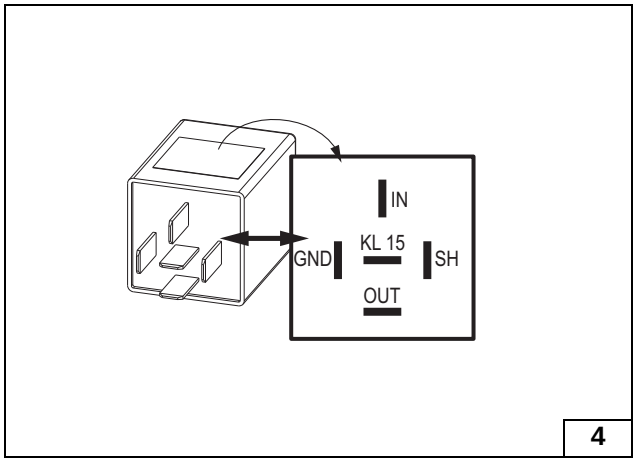
PWM gateway

The PWM gateway supplied with the kit has been preprogrammed with the following settings:

Duty cycle: 65%
Frequency: 400Hz
Voltage: not relevant
Function: Low-side

The settings are to be checked during the function control on the vehicle, and adjusted if necessary.



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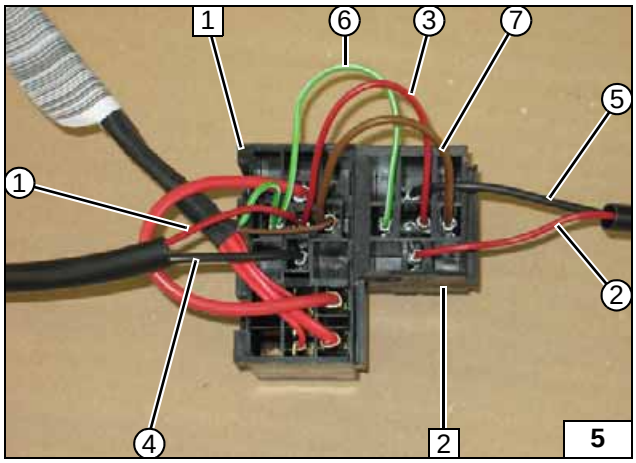
Preparing passenger compartment relay and fuse holder

Latch PWM gateway socket **2** together with passenger compartment relay and fuse holder **1** . Loosen and remove the contacts for K1/85 and K1/86. Install wires as shown in the following connection diagram using the contacts supplied.

① Red (rt) wire of K1/87a
② Red (rt) wire of PWM GW/IN
③ Red (rt) wire of K1/87a and PWM GW/KL 15
④ Black (sw) wire of K1/30
⑤ Black (sw) wire of PWM GW/OUT
⑥ Green/white (gn/ws) wire of K1/86 and PWM GW/SH
⑦ Brown (br) wire of K1/85 and PWM GW/GND



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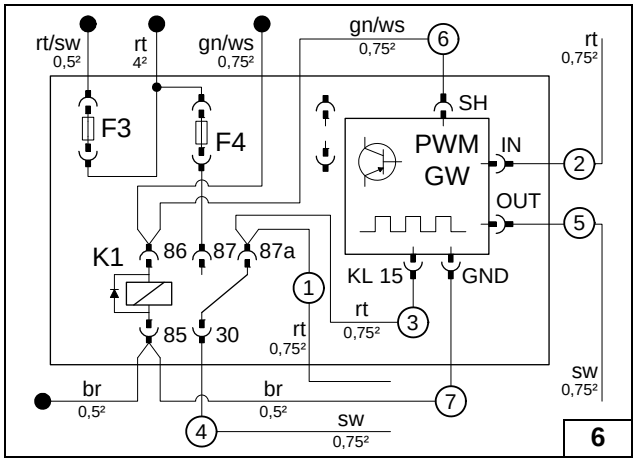
Connection diagram



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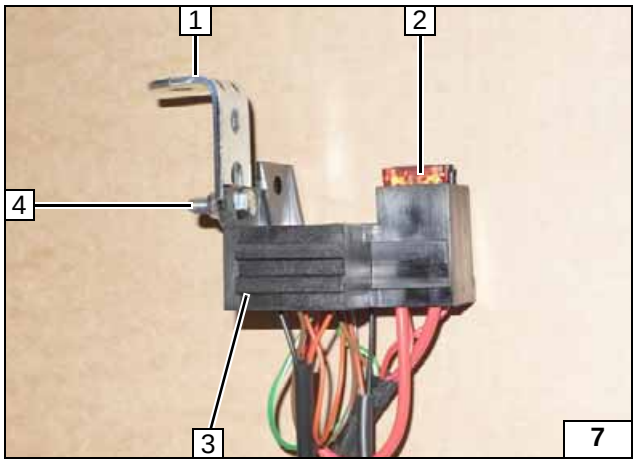

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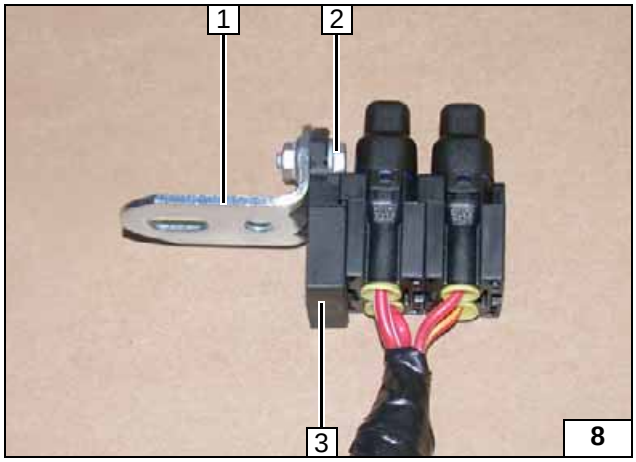
The K1 relay and PWM gateway are inserted following installation of the relay and fuse holder. Insert 10A fuse F4 **2**.

1 Angle bracket
3 PWM gateway socket
4 M5x16 bolt, large diameter washer, nut

Preparing passenger compartment relay and fuse holder



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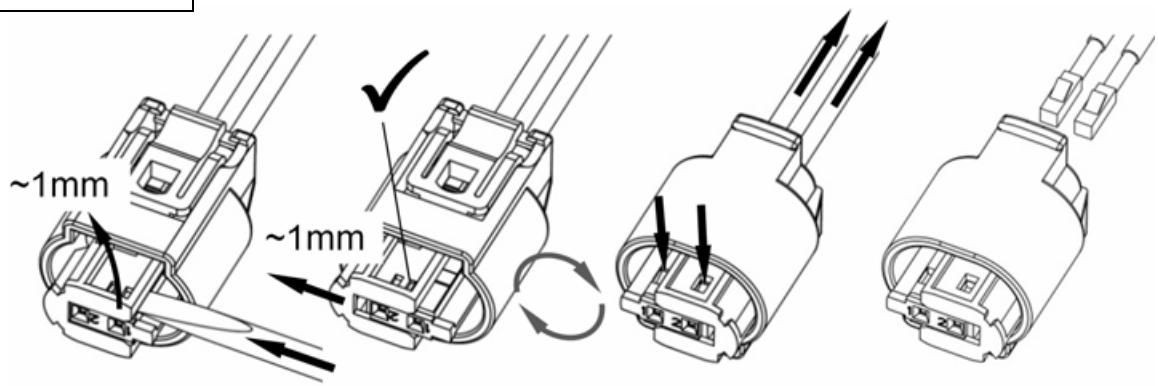
1 Angle bracket
2 M5x16 bolt, large diameter washer [2x], nut
3 Fuse holder retaining plate

Preparing engine compartment fuse holder

Connector X7



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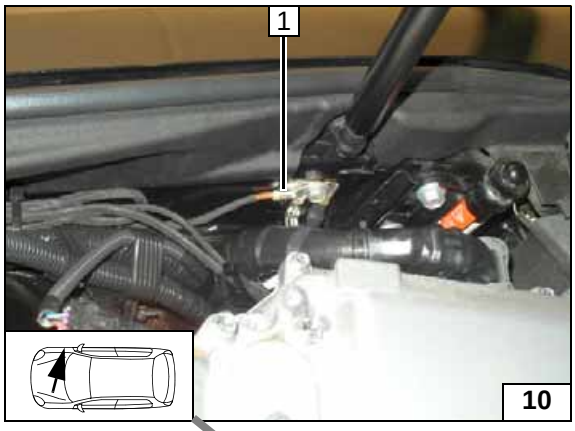
Removing connector metering pump

Electrical System

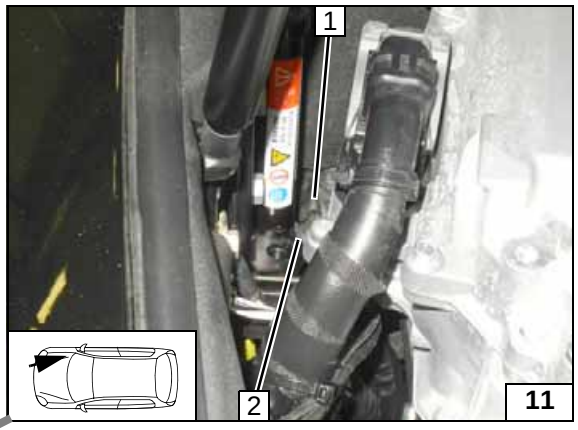
Earth wire

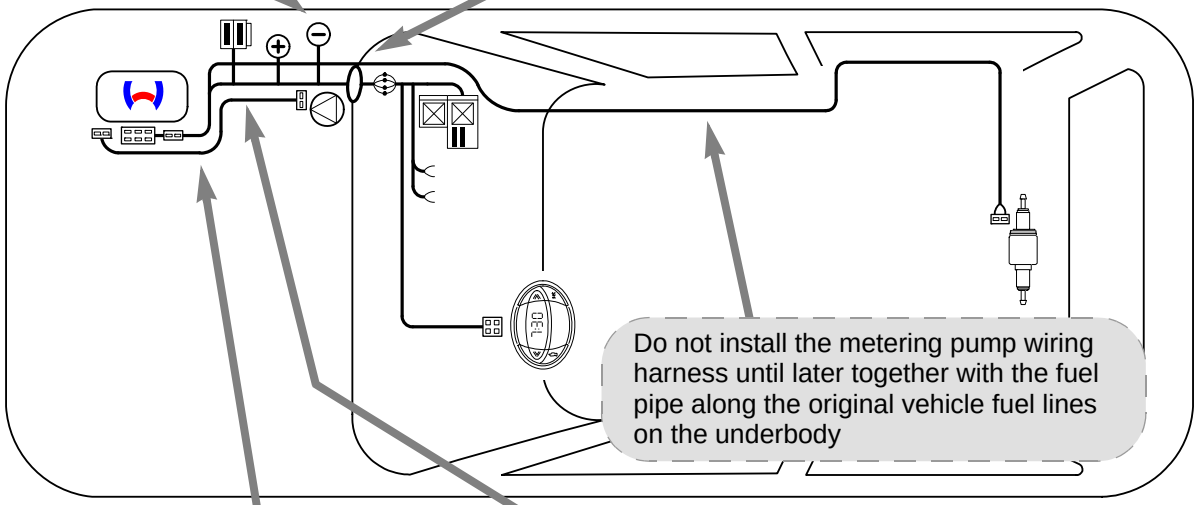
1 Earth wire on original vehicle earth support point



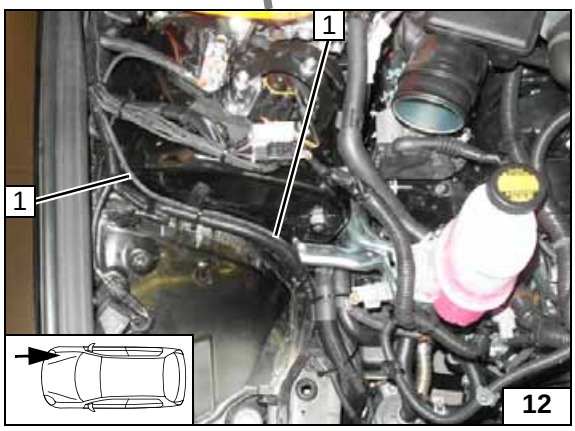
Wiring harness pass through

1 Protective rubber plug
2 Wiring harness for heater and heater control



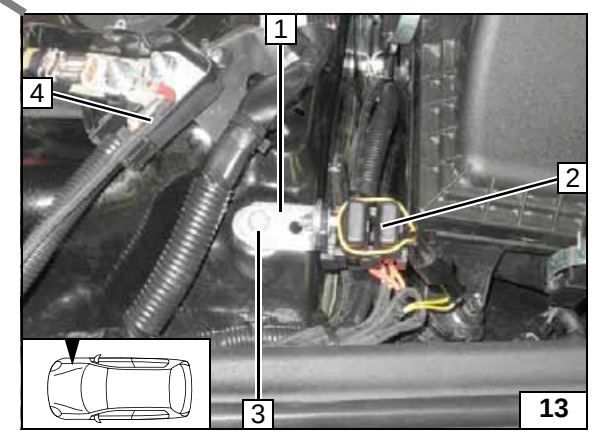


Wiring harness routing diagram



Wiring harness routing

1 Wiring harness of heater

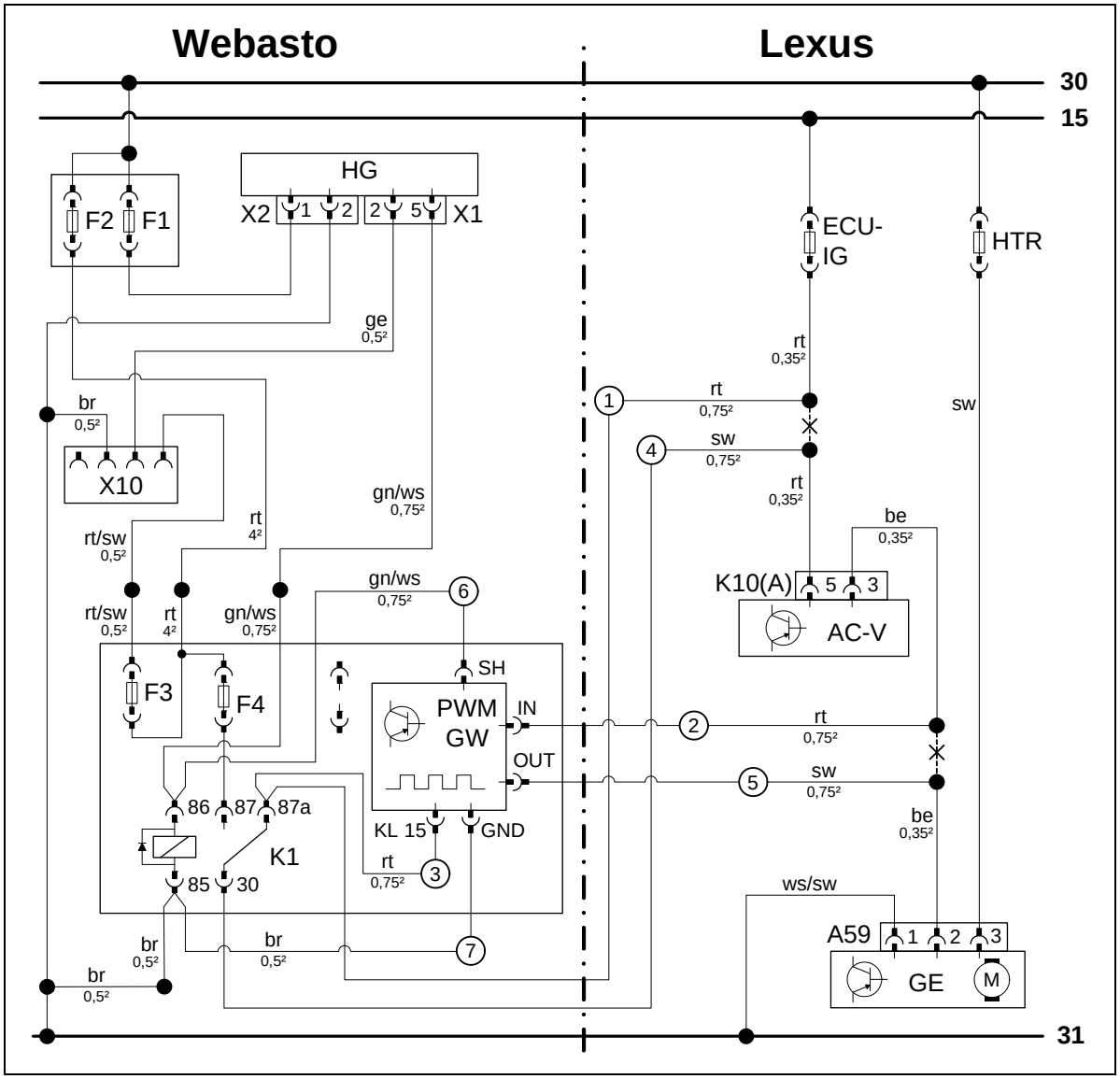


Engine compartment fuse holder, positive wire

1 Angle bracket
2 Fuses F1-2
3 M6x20 bolt, large diameter washer, flanged nut, existing hole
4 Positive wire on original vehicle positive support point

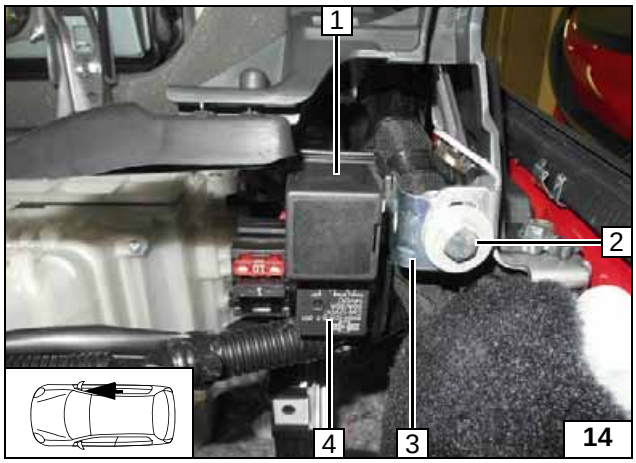
Fan Controller

Wiring diagram



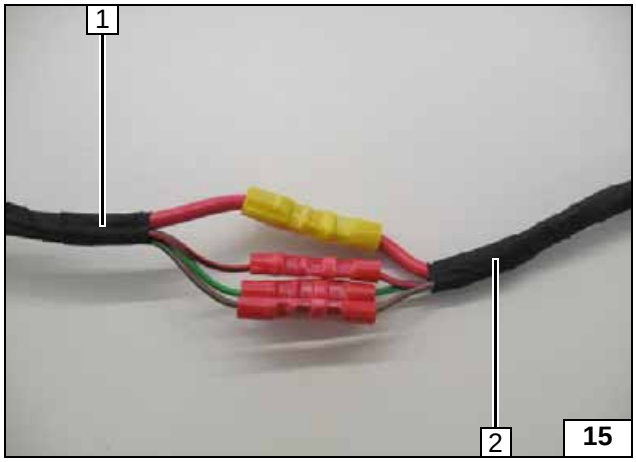
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	ECU-IG	Fuse 10A	rt	red
X1	6-pin heater connector	HTR	Fuse 50A	sw	black
X2	2-pin heater connector	K10 (A)	AC-V connector	ge	yellow
F1	Fuse 20A	AC-V	A/C booster	gn	green
F2	Fuse 30A	A59	GE connector	or	orange
X10	4-pin connector heater control	GE	Fan unit	ws	white
				br	brown
F3	Fuse 1A			be	beige
F4	Fuse 10A				
K1	Fan relay				
PWM GW	PWM gateway				
PWM GW settings:					
Duty cycle:	65%				
Frequency:	400Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low-side			Wiring colours may vary.	

Legend



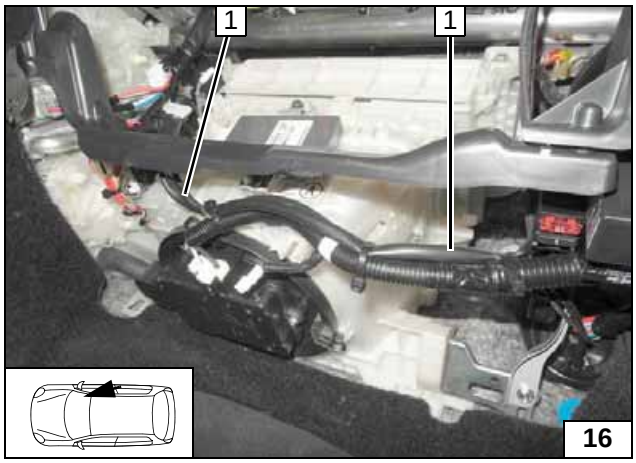
1 PWM gateway connected
2 M6x20 bolt, large diameter washer, flanged nut, existing hole
3 Angle bracket
4 K1 relay connected

Mounting relay and fuse holder of passenger compartment



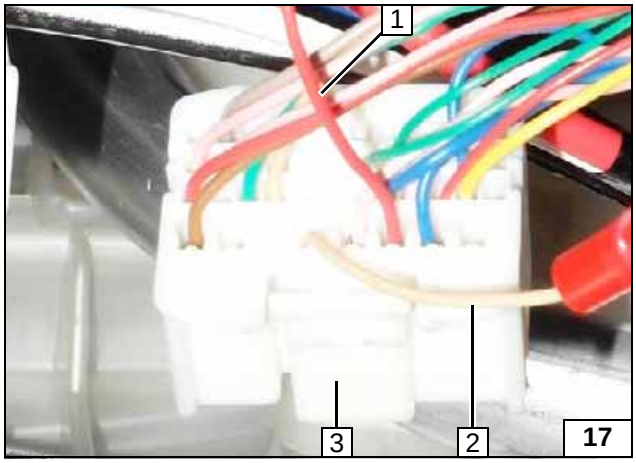
1 Relay and fuse holder wiring harness of passenger compartment
2 Wiring harness of heater

Connecting wiring harnesses using same colour wires



Wire sections ① and ④ as well as ② and ⑤ in the protective sleeving **1** on the original vehicle wiring harness towards the A/C booster.

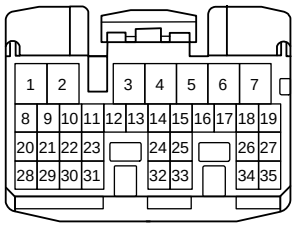
Routing the wiring harness



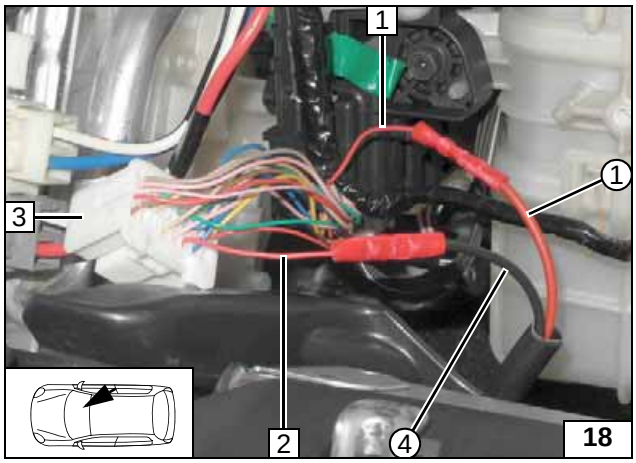
Pull connector K10(A) **3** out of the A/C booster.

1 Red (rt) wire for A/C-V connector pin 5
2 Beige (be) wire for A/C-V connector pin 3

Connector K10 (A), View on contact side



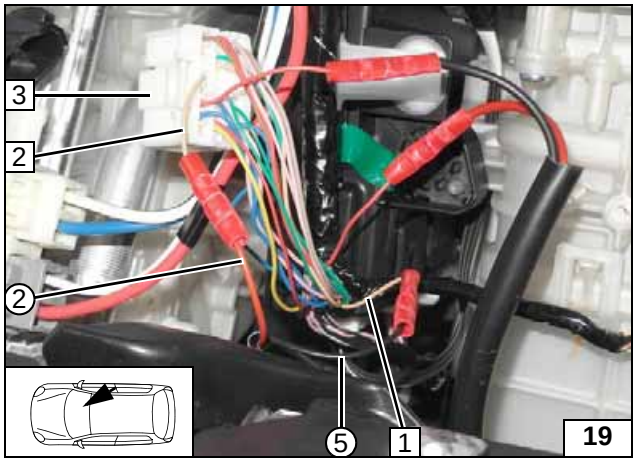
Connection to connector K10(A)



Connection to connector K10(A) **3** of A/C booster. Produce connections as shown in wiring diagram.

1 Red (rt) wire for ECU-IG fuse
2 Red (rt) wire for A/C-V connector pin 5
① Red (rt) wire of K1/87a
④ Black (sw) wire of K1/30

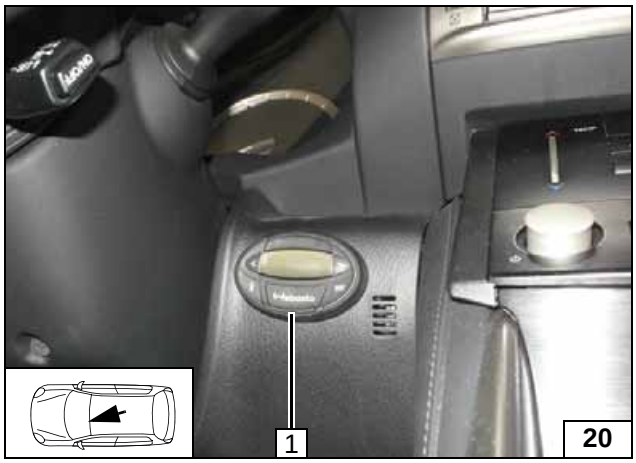
Connecting A/C booster



Connection to connector K10(A) **3** of A/C booster. Produce connections as shown in wiring diagram.

1 Beige (be) wire for connector A59 GE
2 Beige (be) wire for A/C-V connector pin 3
② Red (rt) wire of PWM GW/IN
⑤ Black (sw) wire of PWM GW/OUT

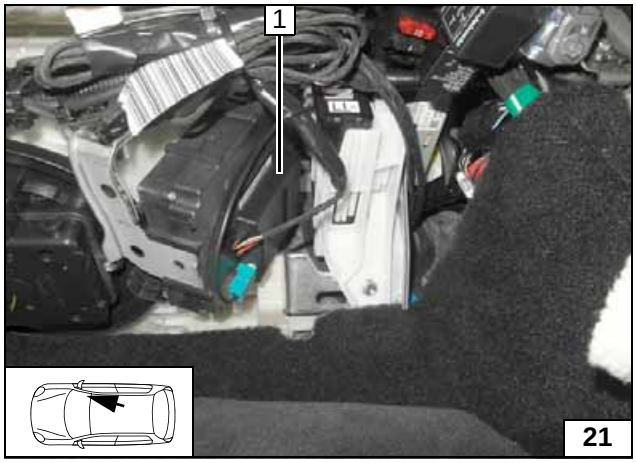
Connecting A/C booster



Digital Timer

1 Digital timer

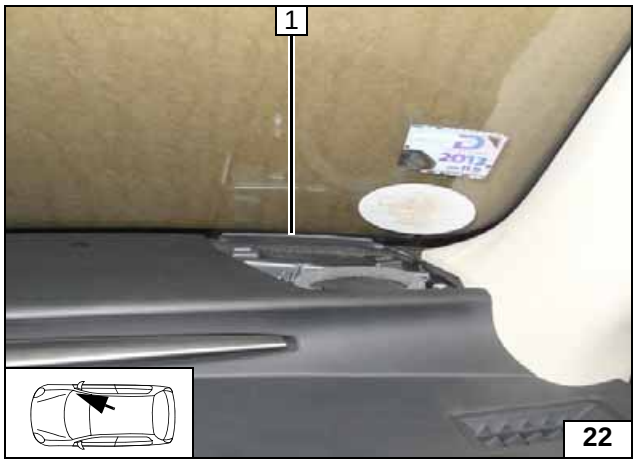
Installing digital timer



Remote Option (Telestart)

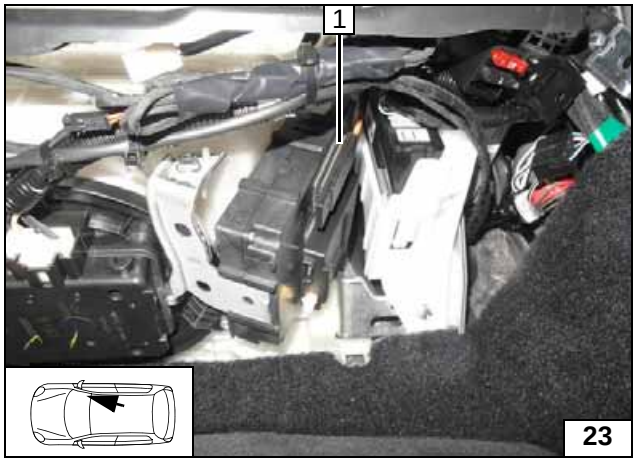
Fasten receiver**1** with adhesive tape.

Installing receiver



1 Antenna

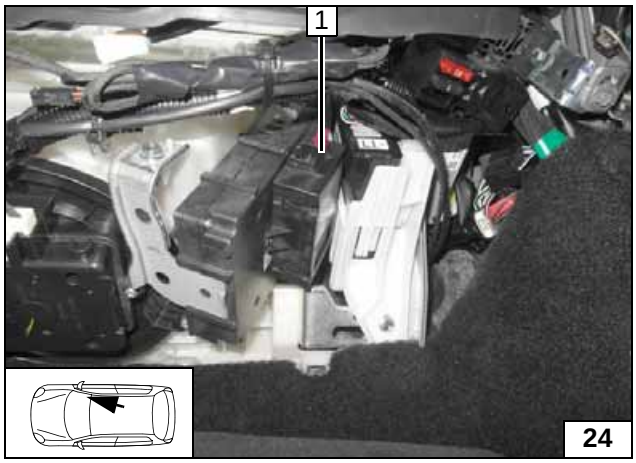
Installing antenna



Temperature sensor T100 HTM

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

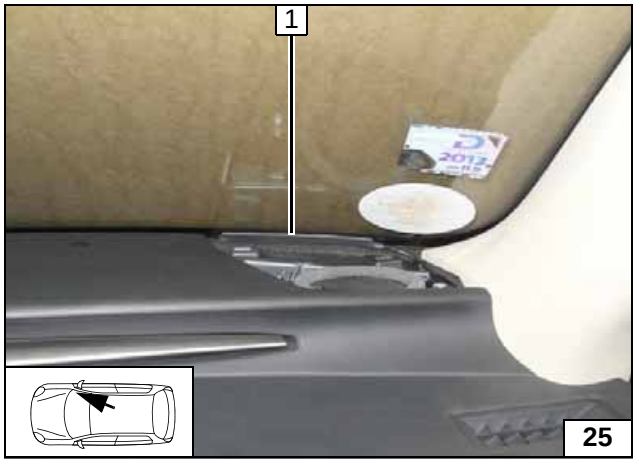
Installing tempera-ture sensor



Remote Option (Thermo Call)

Fasten receiver**1** with adhesive tape.

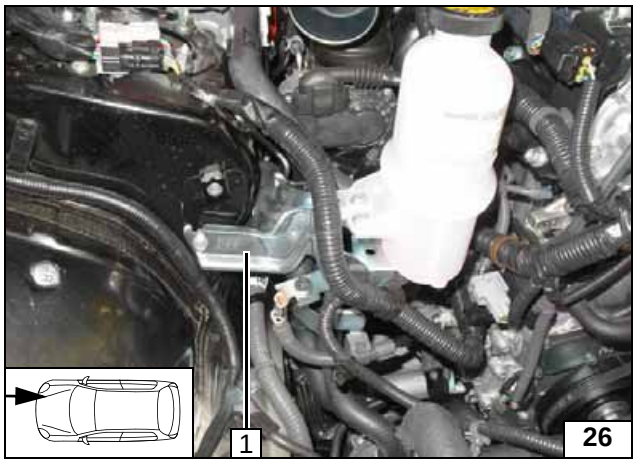
Installing receiver



1 Antenna

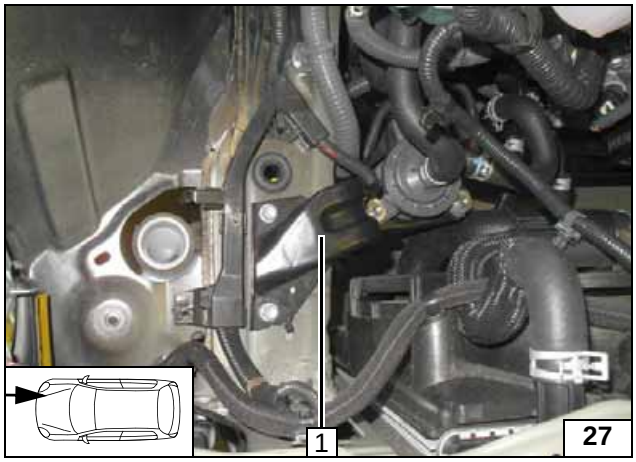
Installing antenna

Preparing Installation Location



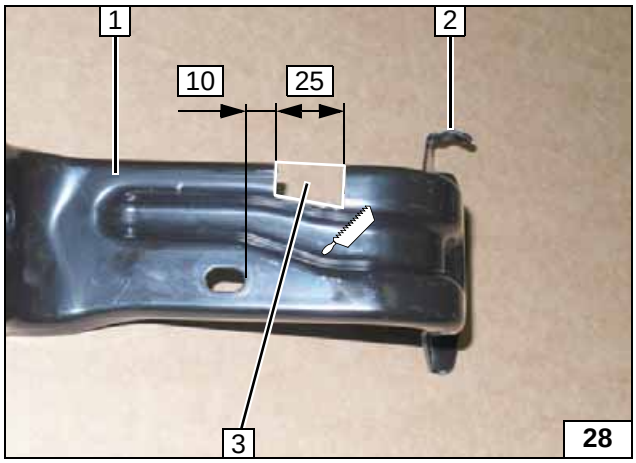
1 Hybrid system expansion tank bracket

Removing bracket



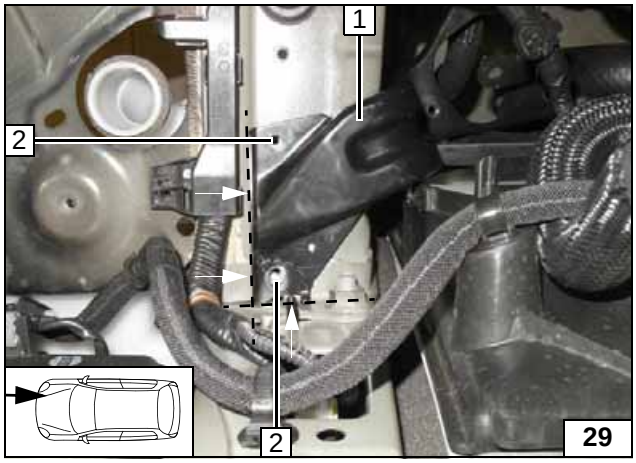
1 Bracket for original vehicle circulating pump of hybrid system

Removing bracket



1 Bracket for original vehicle circulating pump of hybrid system
2 Bend tab
3 Discard section

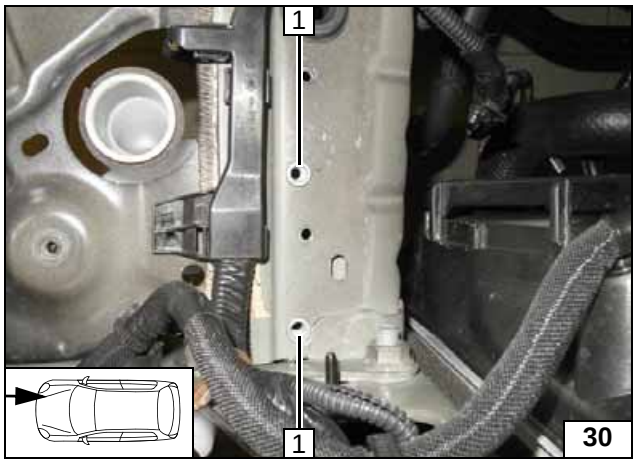
Preparing bracket



Position bracket at the edges (see marking) and align.

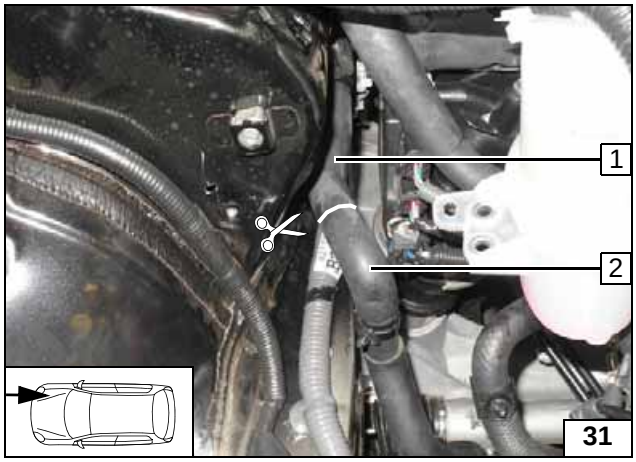
2 Copy the hole pattern [2x]

Copying hole pattern



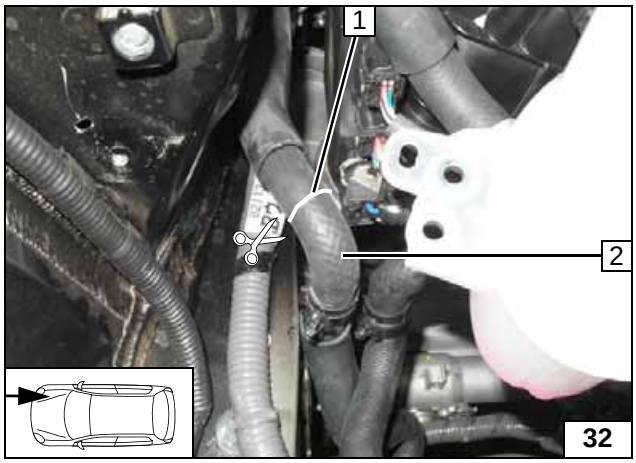
1 9.1mm dia. hole; rivet nut [2x each]

Installing rivet nuts



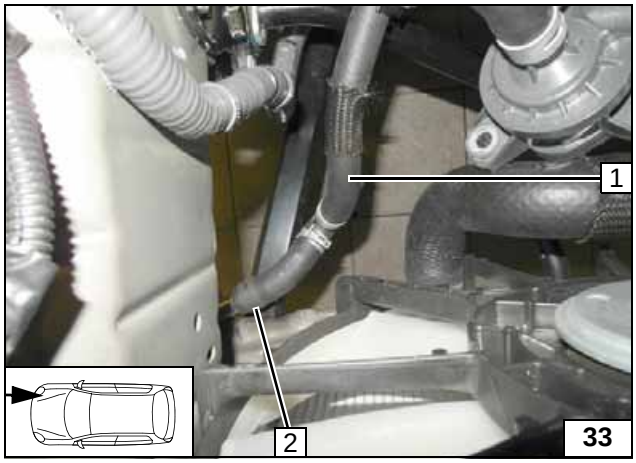
1 Hybrid system coolant hose
2 Remove protective hose

Removing protective hose



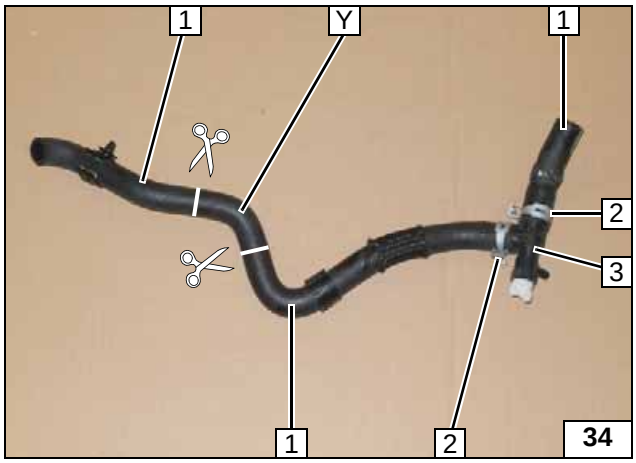
Cut hybrid system coolant hose **2** at marking **1**.

Cutting point



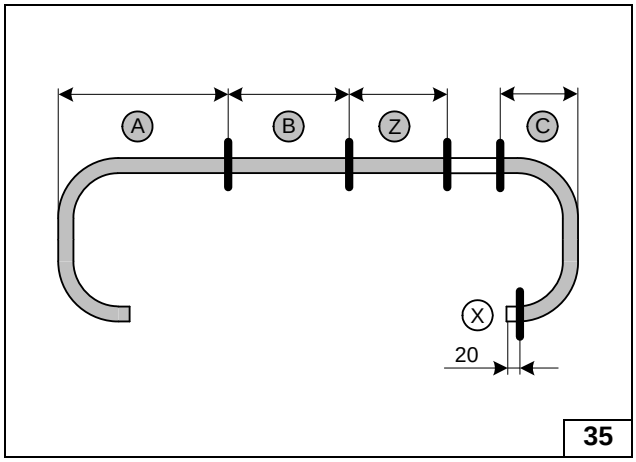
1 Remove hybrid system coolant hose
2 Remove original vehicle spring clip and discard

Removing coolant hose



1 Discard hose section [3x]
2 Original vehicle spring clip [2x] will be re-used
3 Drain valve will be reused
Y Hose section will be reused

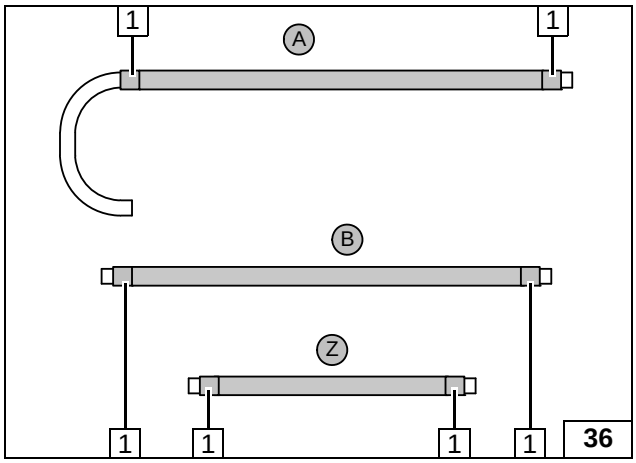
Preparing coolant hose



Discard section **X**.

A = 580
B = 560
C = 80
Z = 440

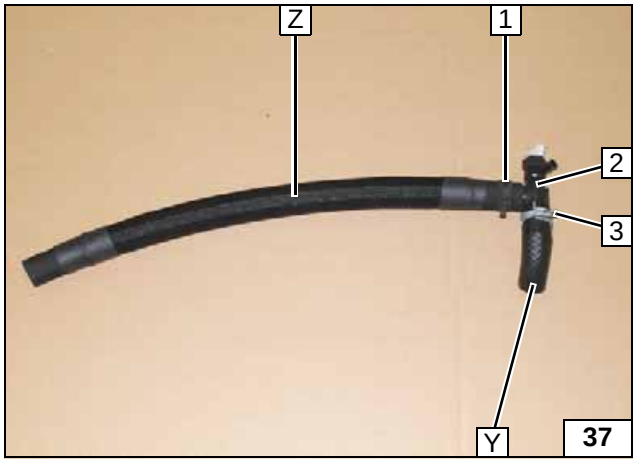
Cutting hoses to length



Push braided protection hoses onto hoses **A**, **B** and **Z** and cut to length. Cut heat shrink plastic tubing to length.

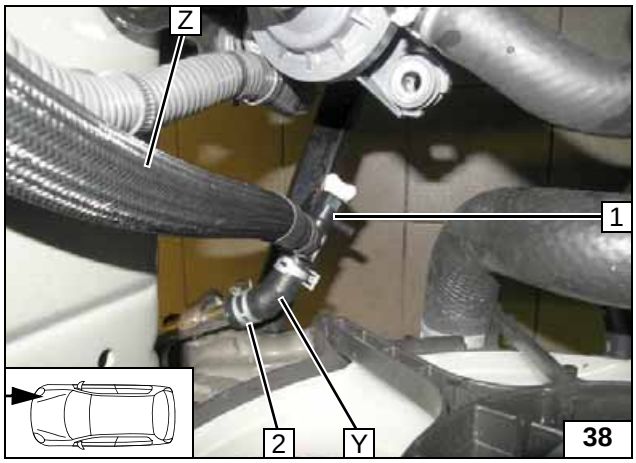
1 Heat shrink plastic tubing, 40 mm long [6x]

Preparing hoses



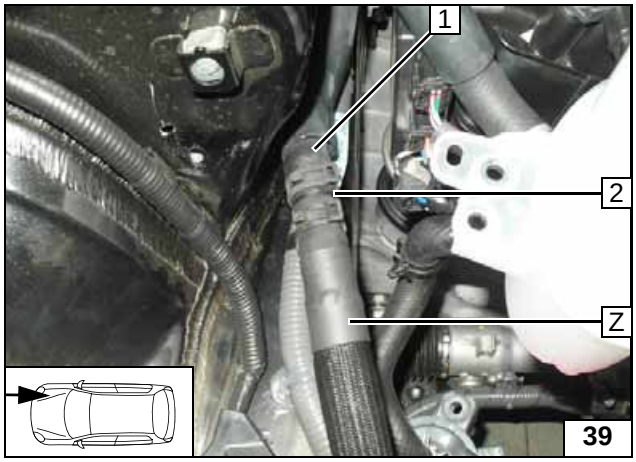
1 25mm dia. spring clip
2 Drain valve
3 Original vehicle spring clip
Y Original vehicle hose section

Premounting hoses Y and Z



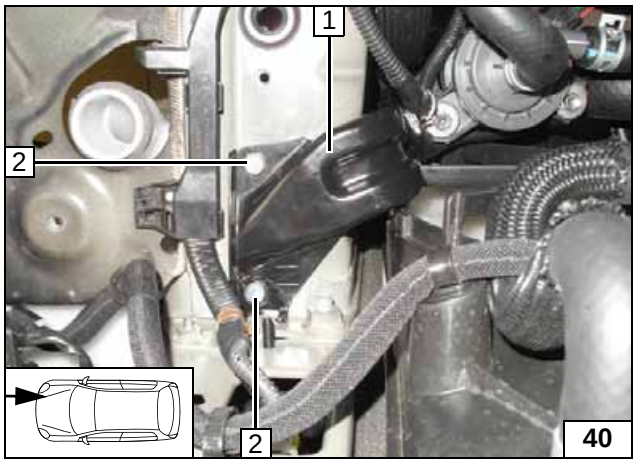
1 Drain valve
2 Original vehicle spring clip

Mounting hoses Y and Z



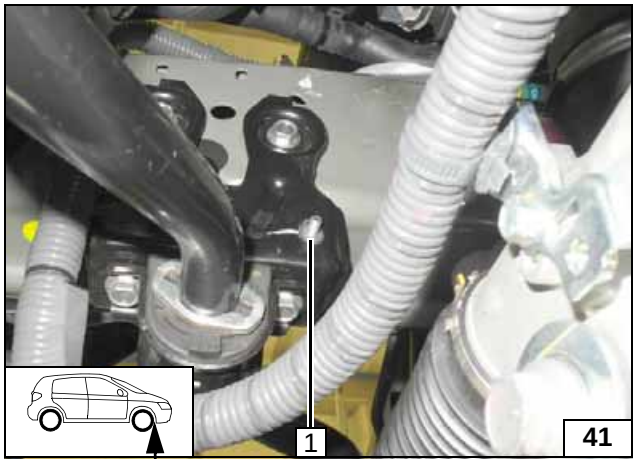
1 Hybrid system coolant hose
2 18x18 mm dia. connecting pipe, 25 mm dia. spring clip [2x]

Mounting hose Z



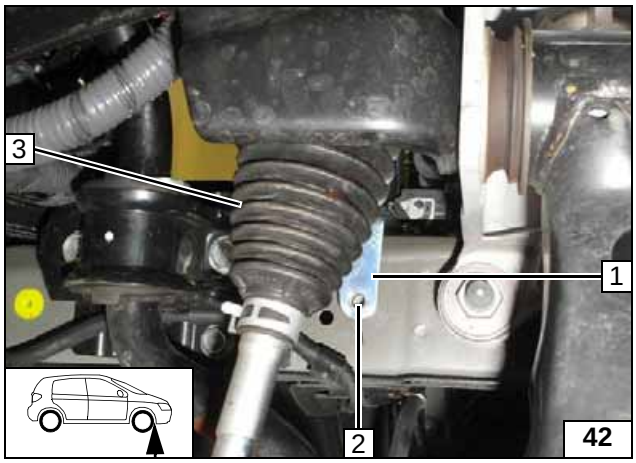
1 Bracket for original vehicle circulating pump of hybrid system
2 M6x20 bolt, spring lockwasher [2x each]

Installing bracket



1 M6x16 bolt, large diameter washer, pin lock, existing hole

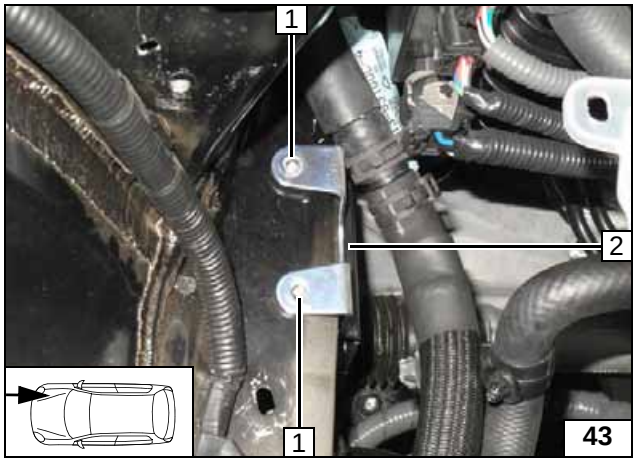
Mounting bolt



Prepare heater bracket **1** according to template and use flanged nut M6 to loosely install at position **3** (concealed) at the preinstalled M6x16 bolt.

1 Align the bracket vertically
2 Copy the hole pattern

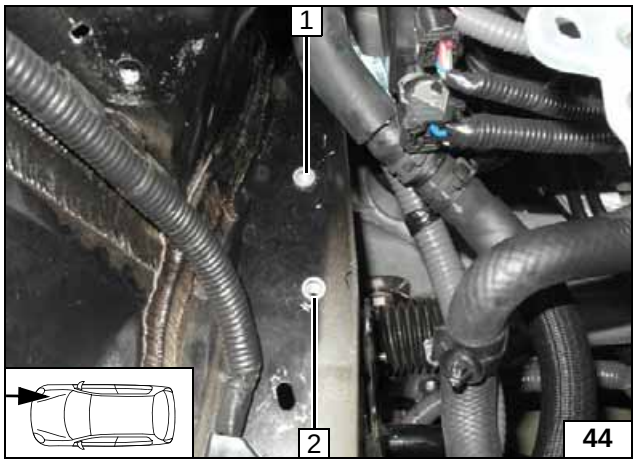
Copying hole pattern



After copying hole pattern, remove bracket **2**.

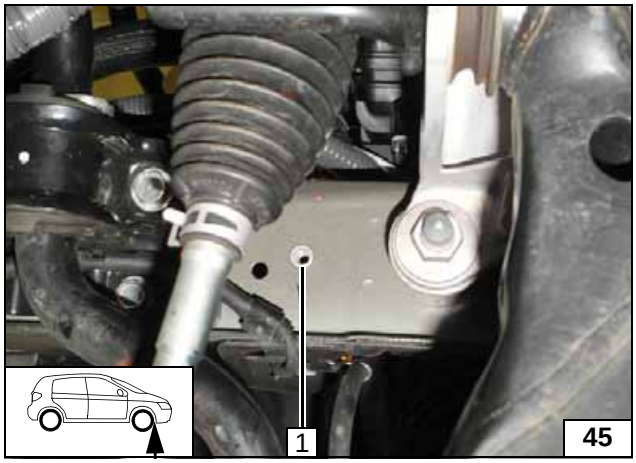
1 Copy the hole pattern [2x]

Copying hole pattern



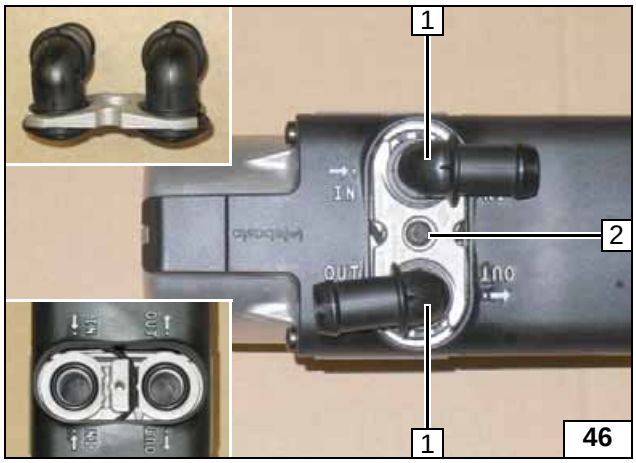
1 9.1mm dia. hole; rivet nut [2x each]

Installing rivet nuts



1 9.1 mm dia. hole; rivet nut

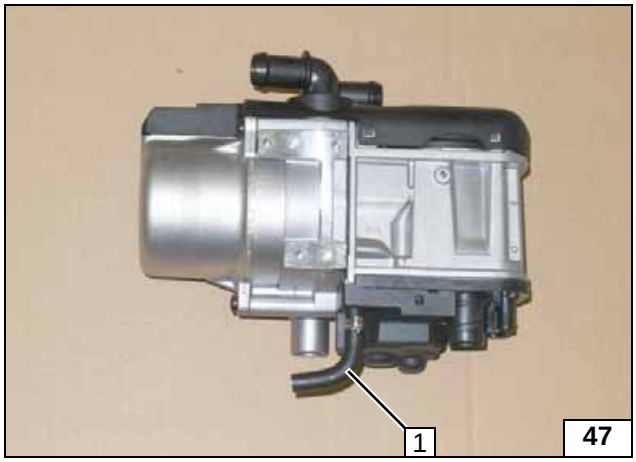
Installing rivet nut



Preparing Heater

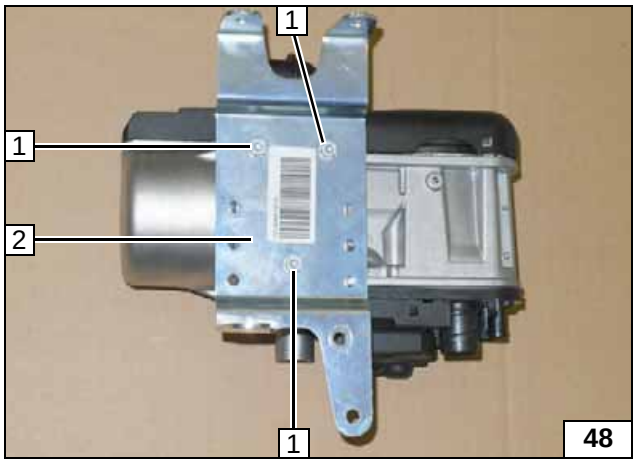
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



1 90° moulded hose, 10 mm dia. clamp

Premounting moulded hose



1 5x13 self-tapping bolt [3x]

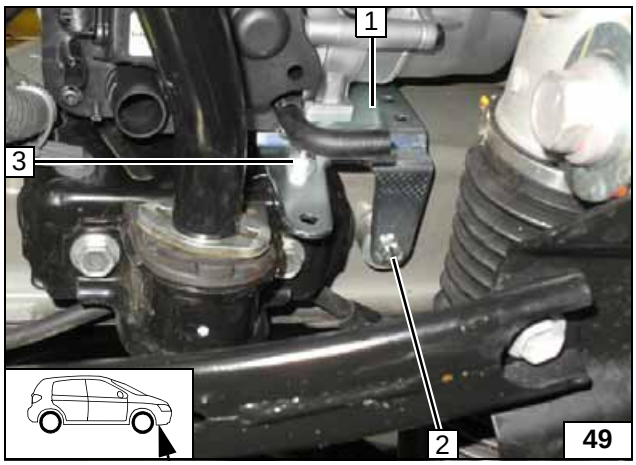
Installing bracket

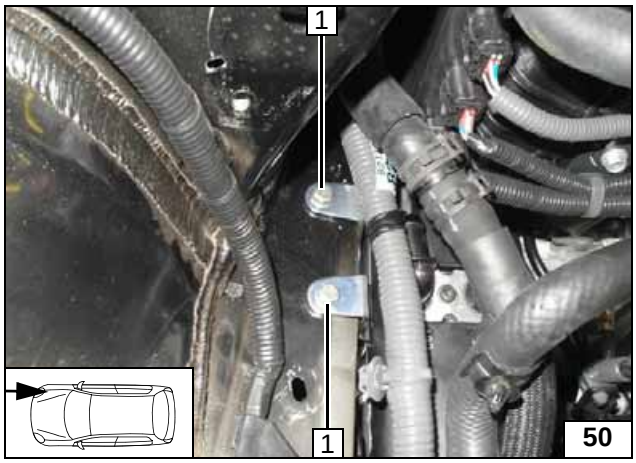
Installing Heater

Insert shim 15 between frame side member and bracket **1**

2 Loosely mount M6x30 bolt, spring lock washer, shim 15
3 Loosely mount flanged nut

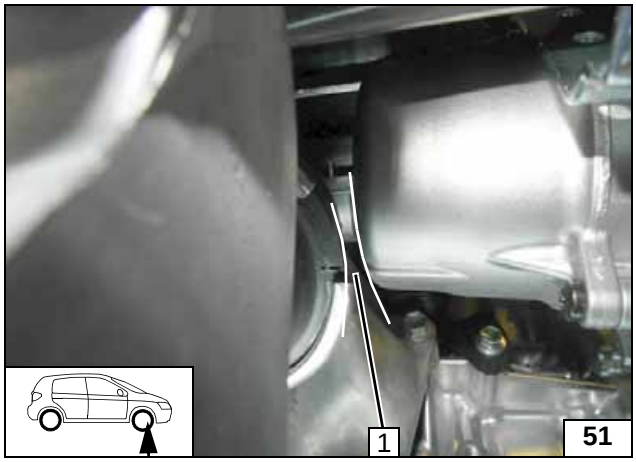
Loosely installing heater





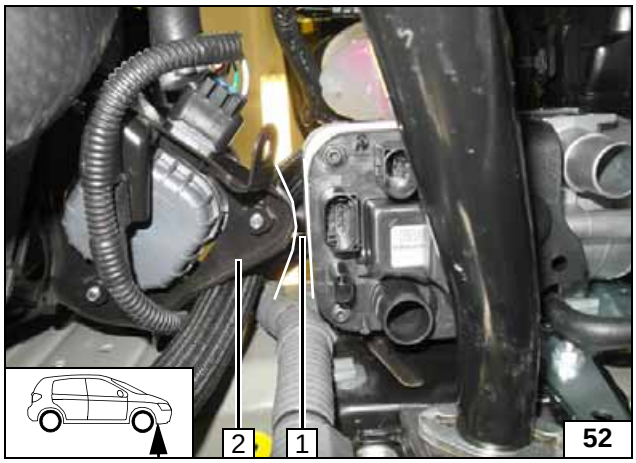
1 Loosely mount M6x20 bolt, spring lock-washer [2x each]

Loosely installing heater



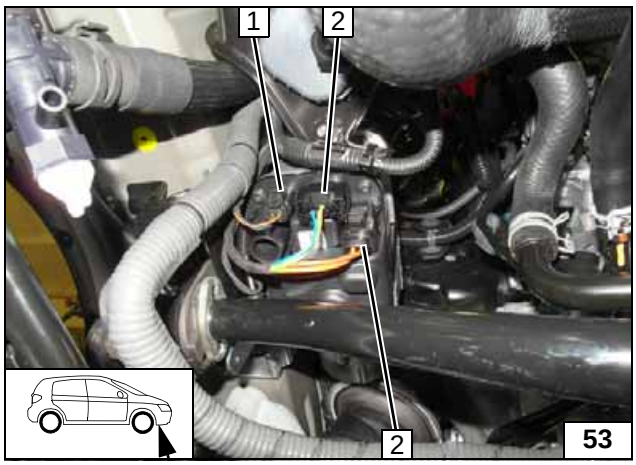
Ensure sufficient space between heater and engine mount (at least 10 mm) at position **1**; align heater if necessary.

Aligning heater



Ensure sufficient space between the heater and the hybrid system circulating pump bracket**2** (at least 10 mm) at position **1**; align bracket **2** if necessary.

Aligning heater



Tighten all loose bolt connections.

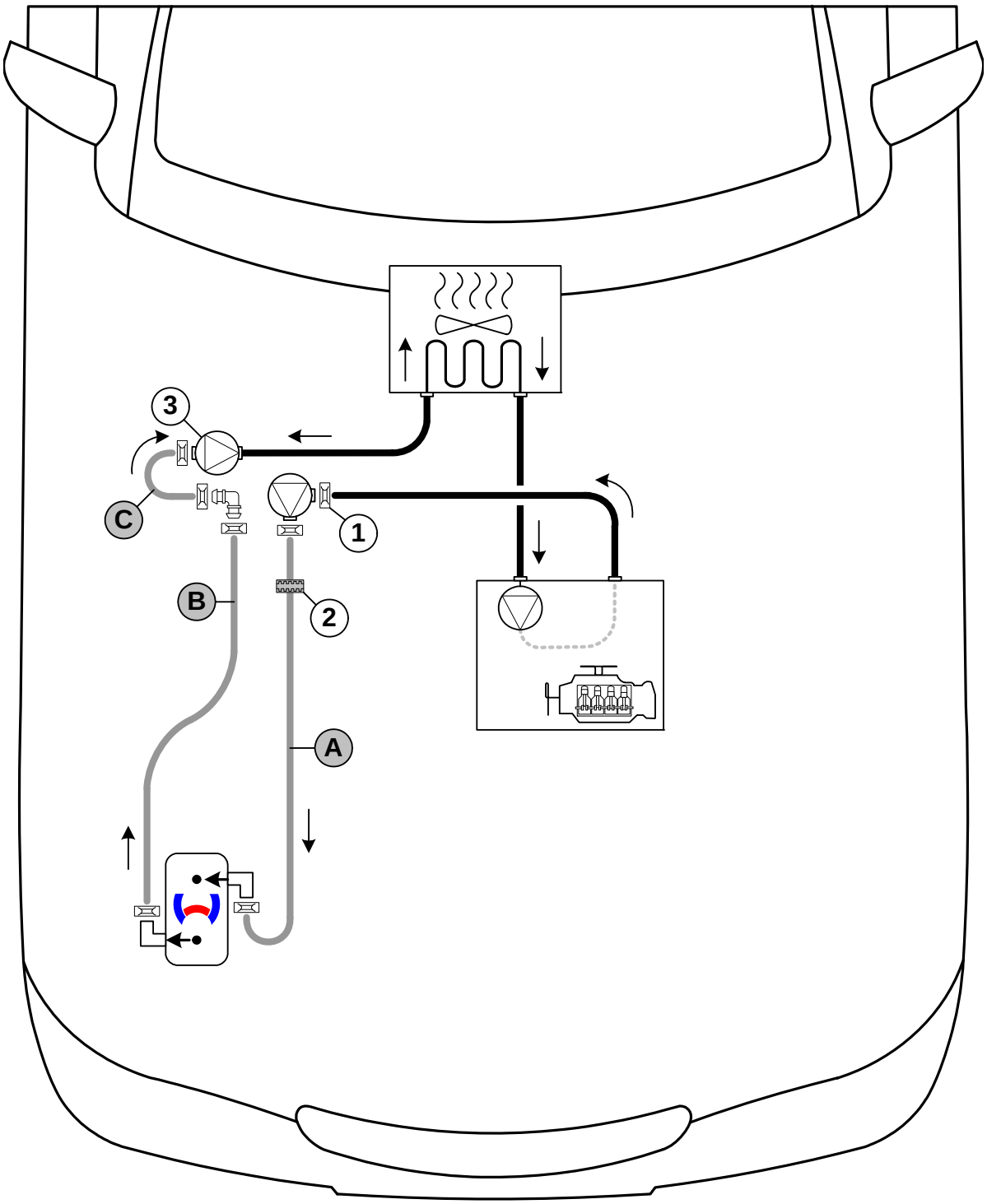
1 Wiring harness of circulating pump
2 Wiring harness of heater [2x]

Installing wiring harnesses

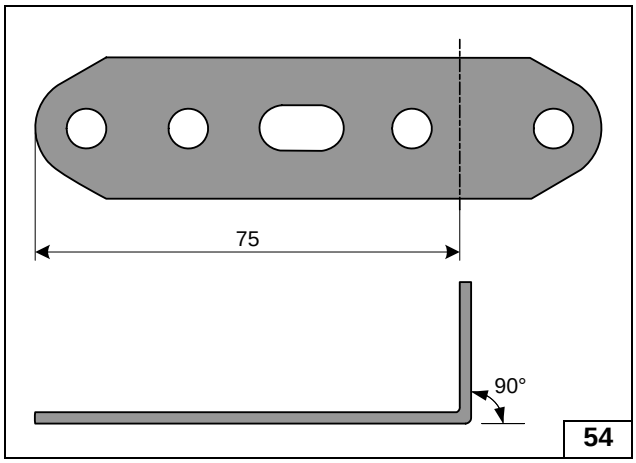
Coolant Circuit

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

Hose routing diagram

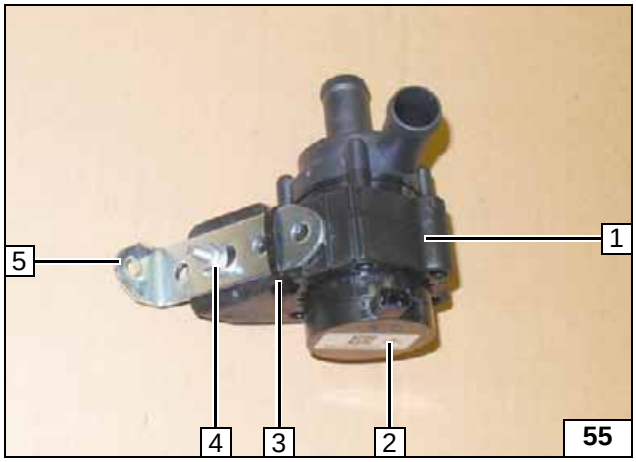


All spring clips without a specific designation = 25mm dia. **1** = Original vehicle spring clip .
2 = Black (sw) rubber isolator **3** = Original vehicle residual heat pump.
Connecting pipe = 18x18 mm dia.



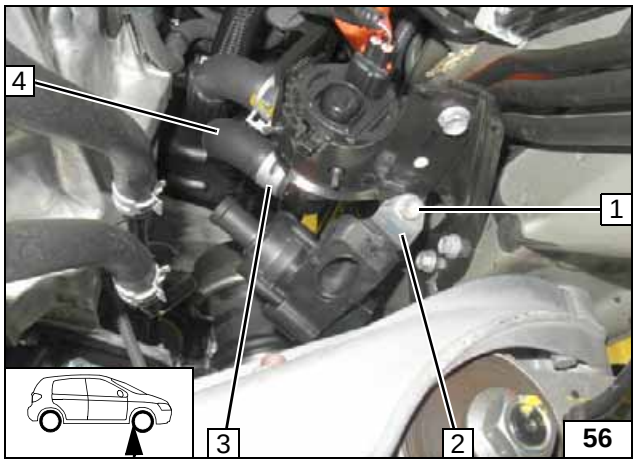
1 Perforated bracket

Preparing perforated bracket



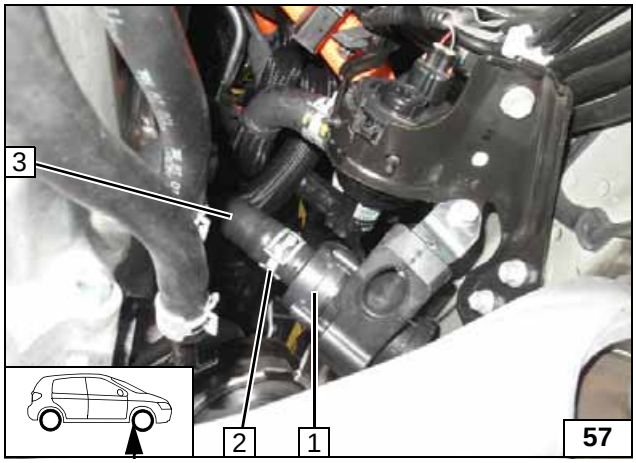
1 Mounting of circulating pump
2 Circulating pump
3 Cable tie
4 M6x25 bolt, flanged nut
5 Perforated bracket

Premounting circulating pump



1 Original vehicle residual heat pump bracket bolt
2 Perforated bracket
3 Original vehicle spring clip will be reused
4 Pull the original vehicle engine outlet hose out of the residual heat pump

Installing circulating pump

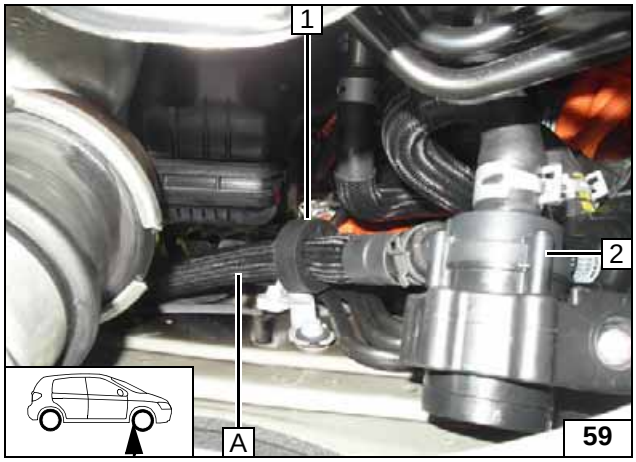


1 Circulating pump
2 Original vehicle spring clip
3 Original vehicle engine outlet hose

Connecting circulating pump

Route wiring harness circulating pump together with hose **A** towards the circulating pump.

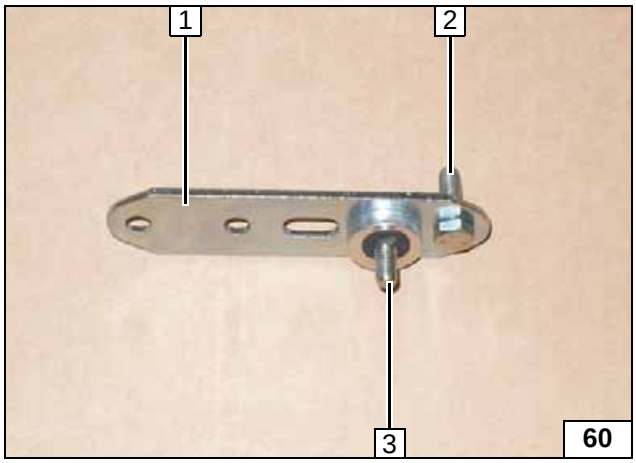
Connecting heater inlet



Attach circulating pump wiring harness to circulating pump.

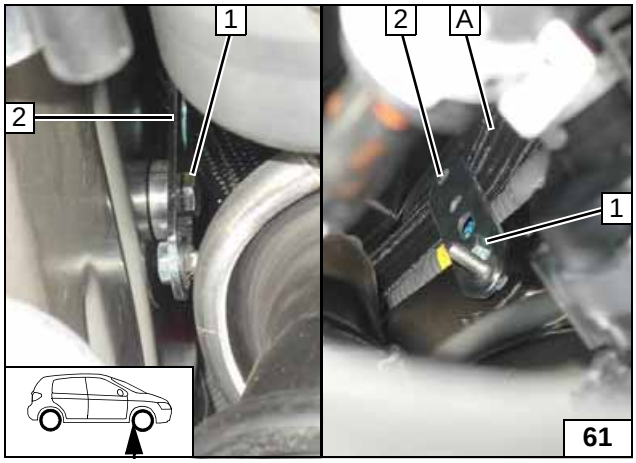
1 Push on the black (sw) rubber isolator and align on the brake line bracket
2 Circulating pump

Connecting circulating pump



1 Perforated bracket
2 M6x20 bolt, pin lock
3 M6x25 bolt, 5 mm shim, pin lock

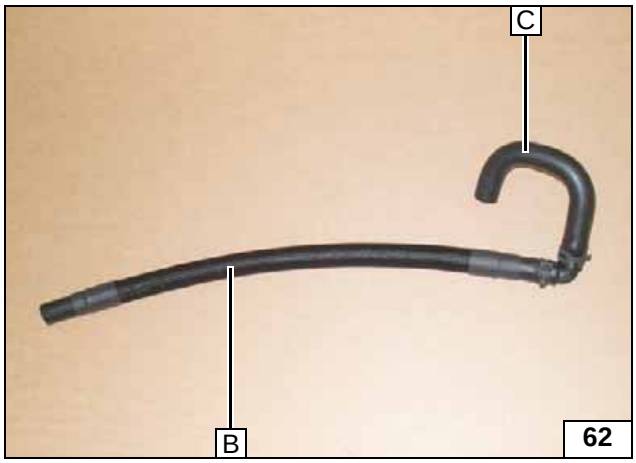
Preparing perforated bracket



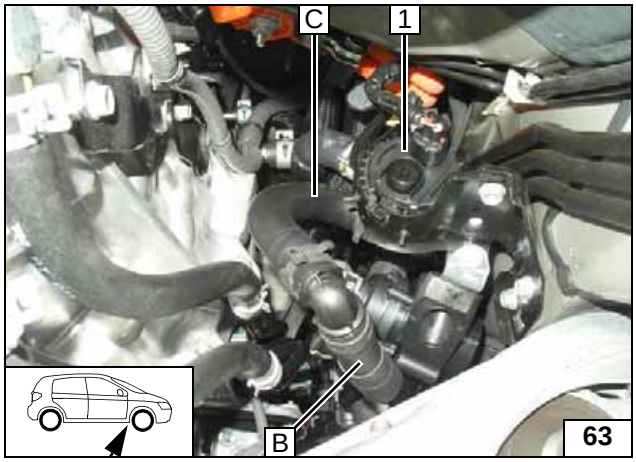
Route hose **A** behind the perforated bracket **2**.

1 M6x25 bolt to original vehicle threaded hole

Mounting perforated bracket



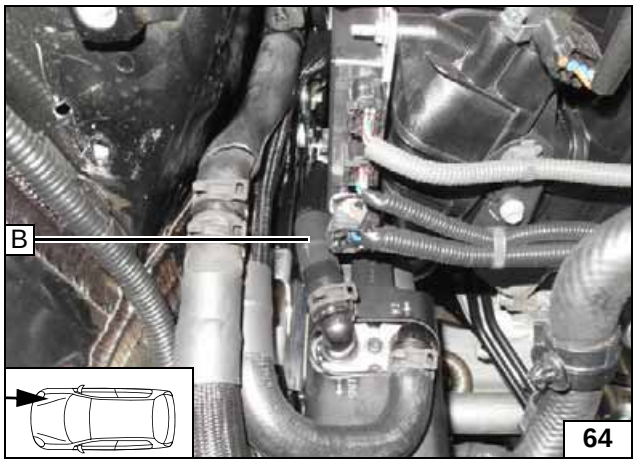
Premounting hoses B and C



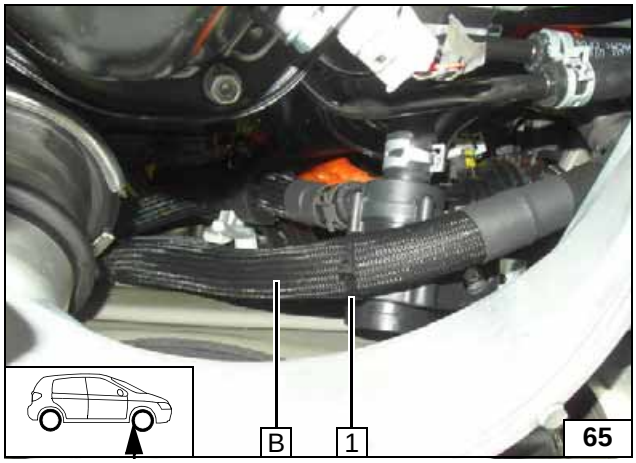
Route hose **B** along hose **A** towards the heater.

1 Original vehicle residual heat pump

Connecting residual heat pump

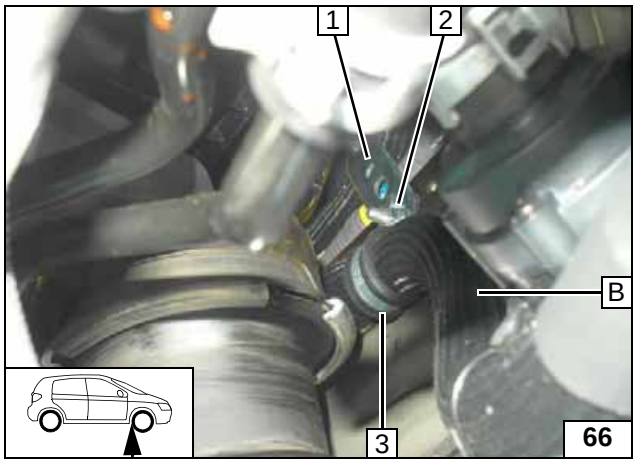


Connecting heater outlet



Cable tie **1** around hose **B** and through circulating pump mounting.

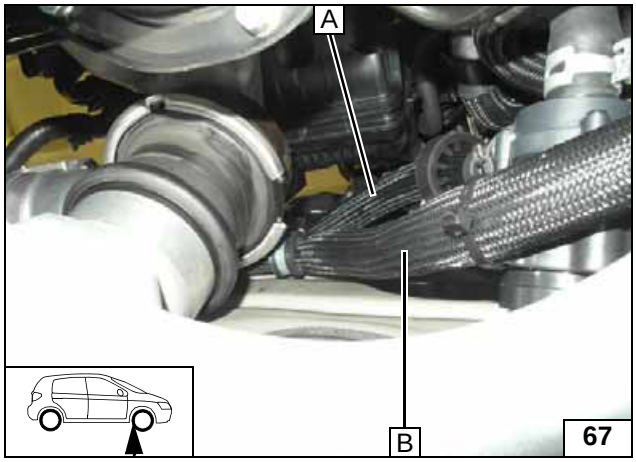
Attaching hose B



Attach hose **B** using 25 mm rubber-coated p-clamp **3** and M6 flanged nut **2** to preinstalled M6x20 bolt.

1 Perforated bracket

Attaching hose B



Ensure sufficient distance to adjacent components, check that they have freedom of movement; correct if necessary.

Aligning hoses

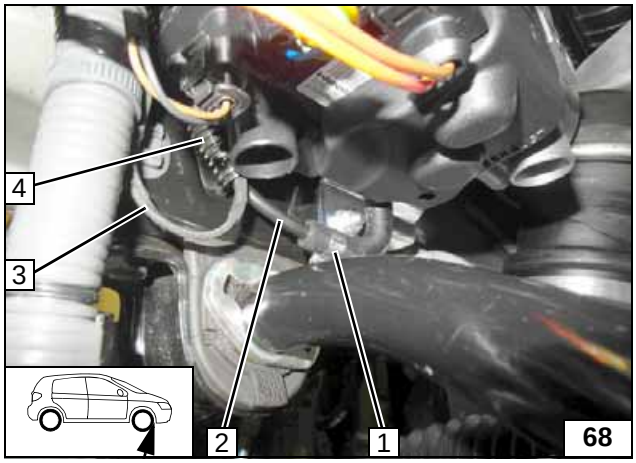
Fuel

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

Catch any fuel running off with an appropriate container.

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

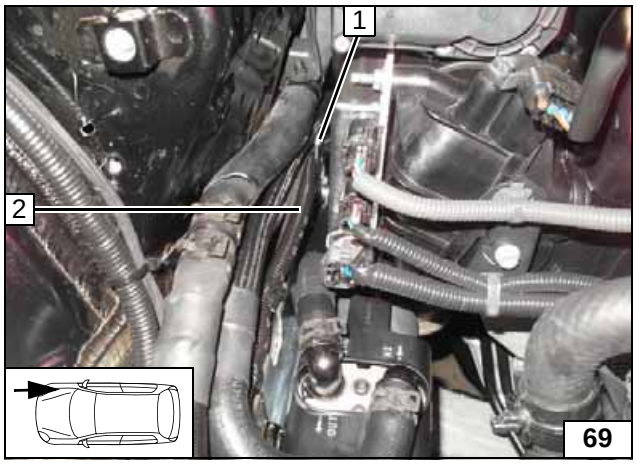
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Pull fuel line **2** and wiring harness of metering pump **3** into 10 mm dia. corrugated tube **4**.

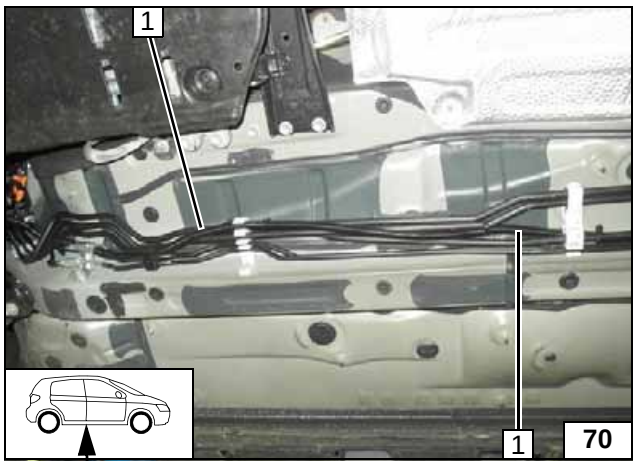
1 10 mm dia. clamp

Connecting heater



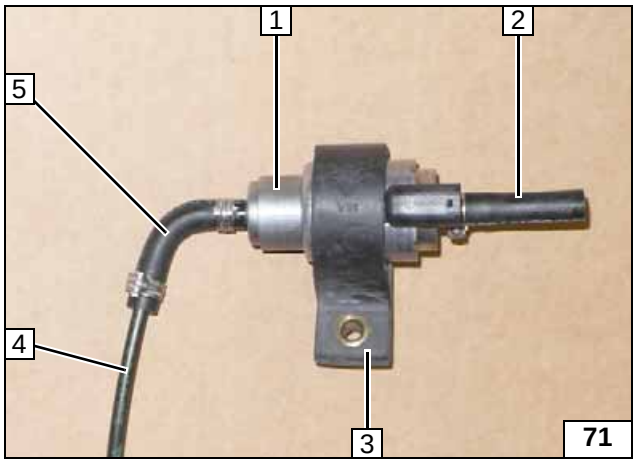
Route fuel line and wiring harness metering pump in 10 mm dia. corrugated tube **2** 2100 mm long, behind perforated bracket **1** to the underbody.

Installing lines



Route fuel line and wiring harness of metering pump in 10 mm dia. corrugated tube **1**, 2100 mm long, along original vehicle lines towards installation location of metering pump.

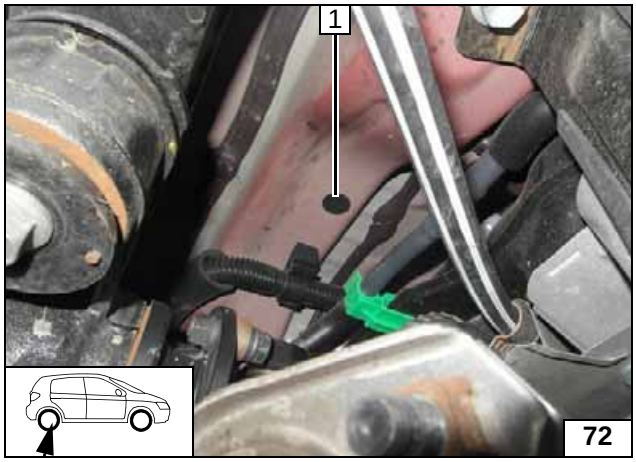
Installing lines



Cut off approx. 500 mm from fuel line, will be required for connecting the fuel standpipe.

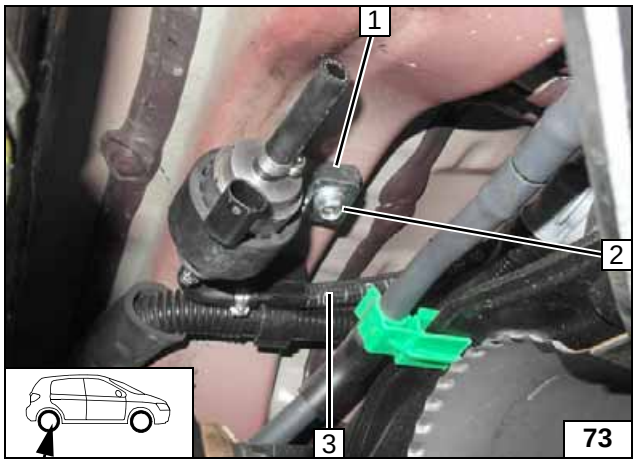
1 Metering pump
2 Hose section, 10mm dia. clamp
3 Receptacle for metering pump
4 500mm fuel line
5 90° moulded hose, 10mm dia. clamp [2x]

Premounting metering pump



1 Sticker, if present

Removing sticker

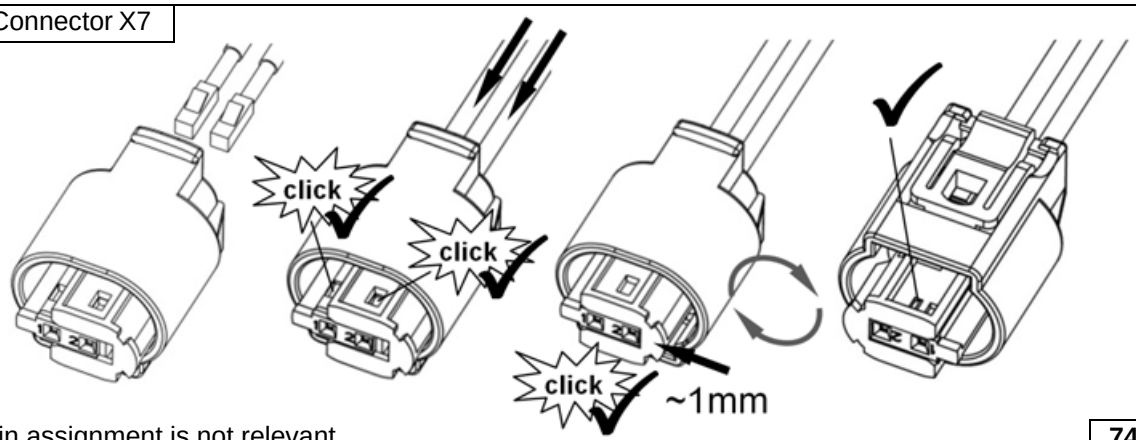


Slide fabric protective hose **3** onto fuel line of fuel standpipe and route to the fuel-tank sending unit on the tank.

1 Receptacle for metering pump
2 M6x25 bolt, support angle bracket, existing threaded hole

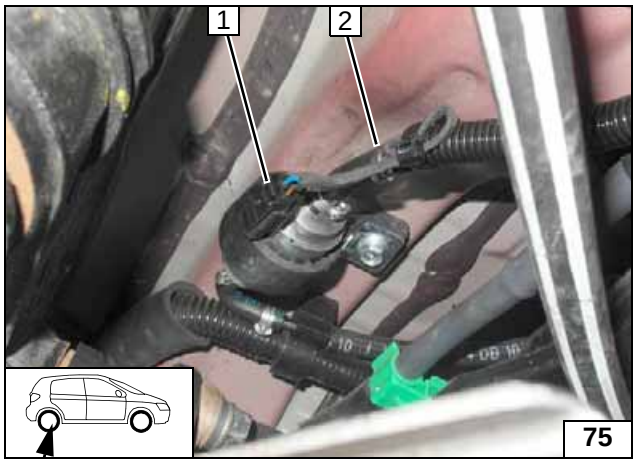
Installing metering pump

Connector X7



Pin assignment is not relevant.

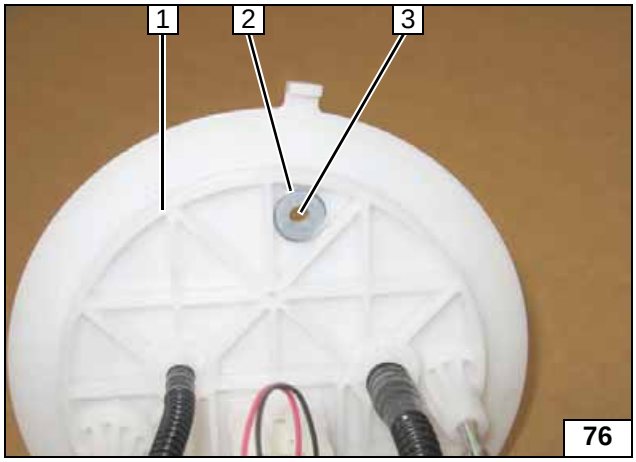
Completing connector of metering pump



Ensure sufficient distance to adjacent components, check that they have freedom of movement; correct if necessary.

1 Wiring harness of metering pump, connector X7 mounted
2 Fuel line, 10mm dia. clamp

Connecting metering pump



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

2 Washer with outer dia. d_a = 14.6 mm
3 Copy hole pattern, 6 mm dia. hole

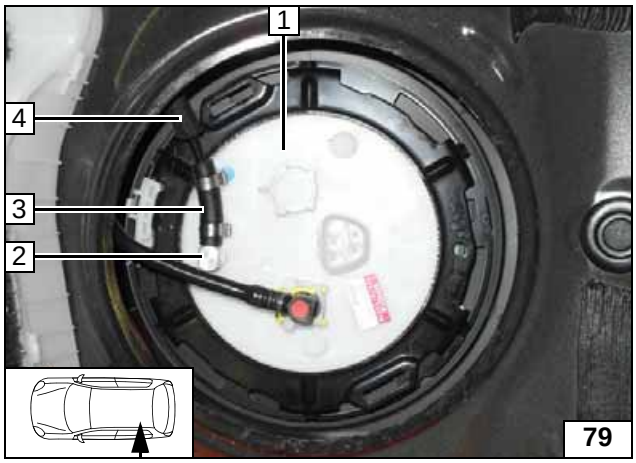
Fuel extraction

Shape fuel standpipe **1** according to template and cut to length.

Mounting fuel standpipe

1 Adjust fuel standpipe to swirl pot

Mounting fuel standpipe

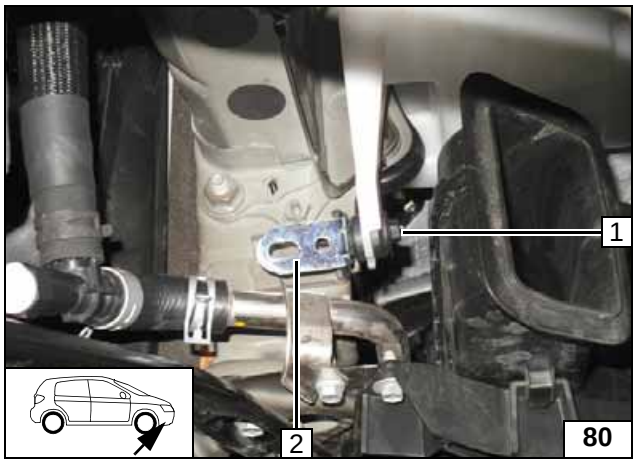


Install fuel-tank sending unit **1** in accordance with manufacturer's instructions.

2 Fuel standpipe
3 Hose section, 10mm dia. clamp [2x]
4 Fabric protective hose on fuel line

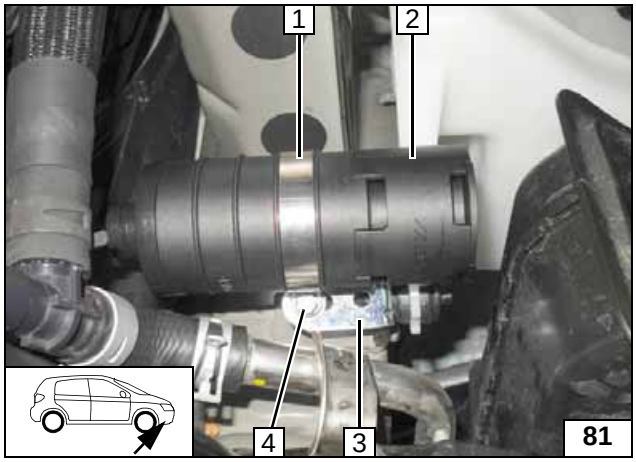
Connecting fuel line

Combustion Air



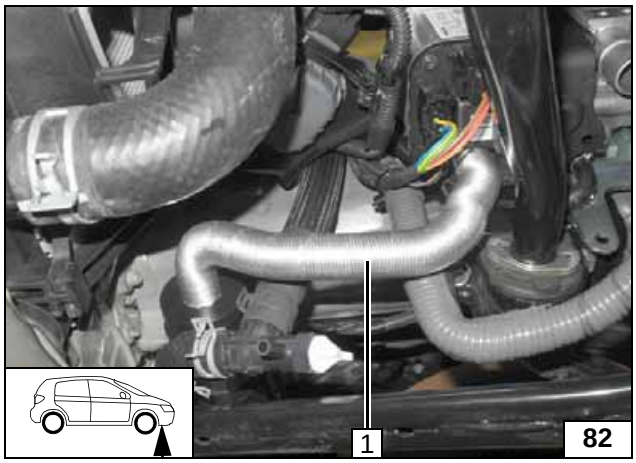
1 Original vehicle resonator bolt
2 Angle bracket

Installing angle bracket



1 51 mm dia. clamp
2 Silencer
3 Angle bracket
4 M5x16 bolt, large diameter washer [2x], flanged nut

Installing silencer



Ensure sufficient distance to neighbouring components.

1 315mm combustion air pipe

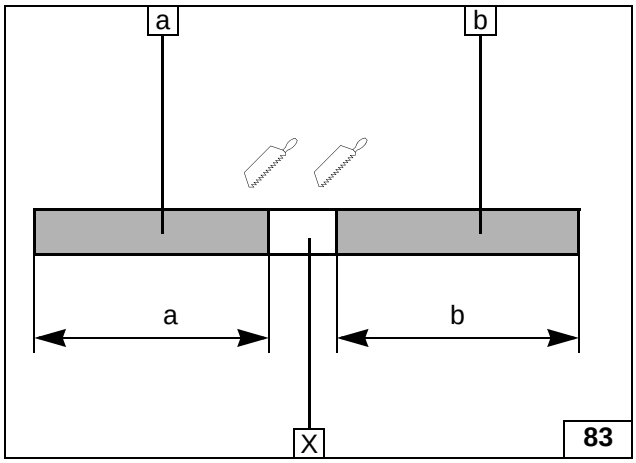
Installing combustion air pipe

Exhaust

Discard section **X**.

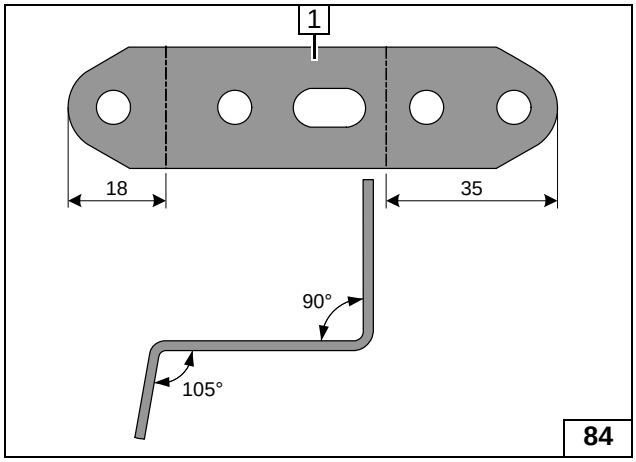
a Exhaust pipe
a = 220 mm
b Exhaust end section
b =280 mm

Preparing exhaust pipe



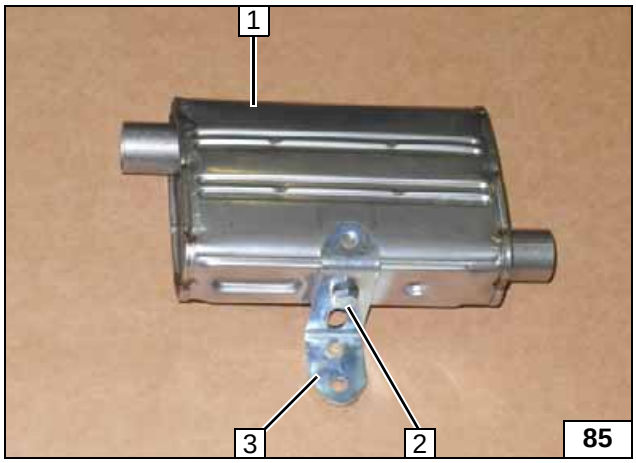
1 Perforated bracket

Preparing perforated bracket



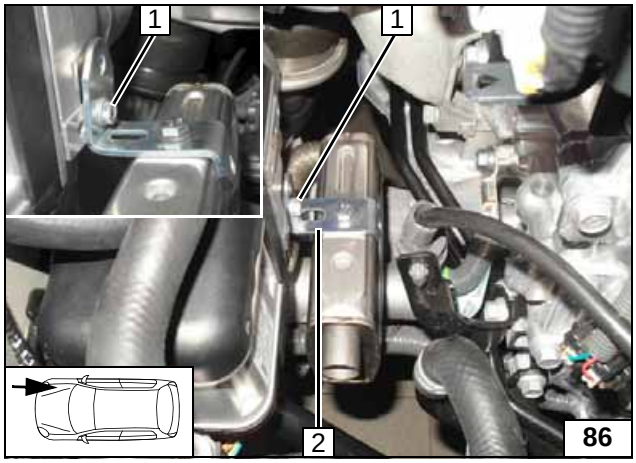
1 Silencer
2 M6x16 bolt, spring lockwasher
3 Perforated bracket

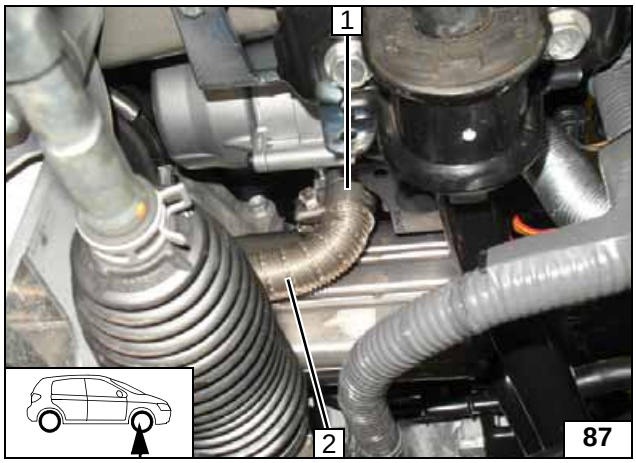
Installing silencer



1 5x13 self-tapping bolt
2 Perforated bracket

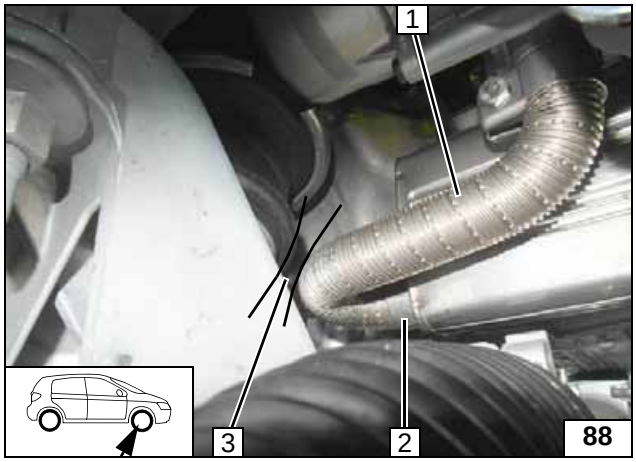
Installing silencer





1 Hose clamp
2 220 mm exhaust pipe a

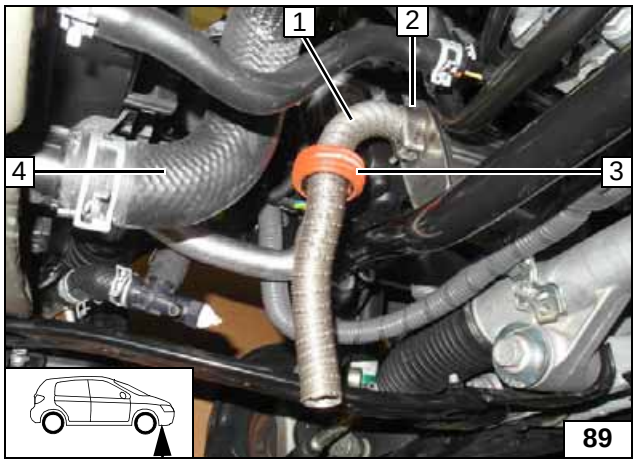
Installing exhaust pipe a



Ensure sufficient space between exhaust pipe a **1** and the engine mount (at least 20 mm) at position **3**; correct if necessary.

2 Hose clamp

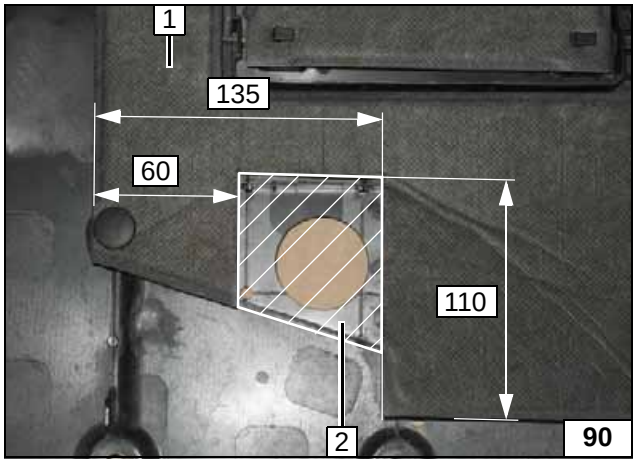
Installing exhaust pipe a



Push on spacer bracket **3** and position with radiator hose **4**. Ensure sufficient distance to adjacent components; correct if necessary.

1 Exhaust end section b 280 mm
2 Hose clamp

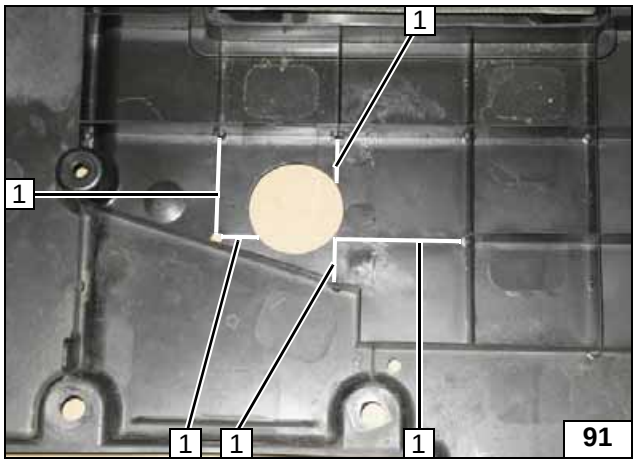
Installing exhaust end section b



Cut out insulation **2** around the marking and discard

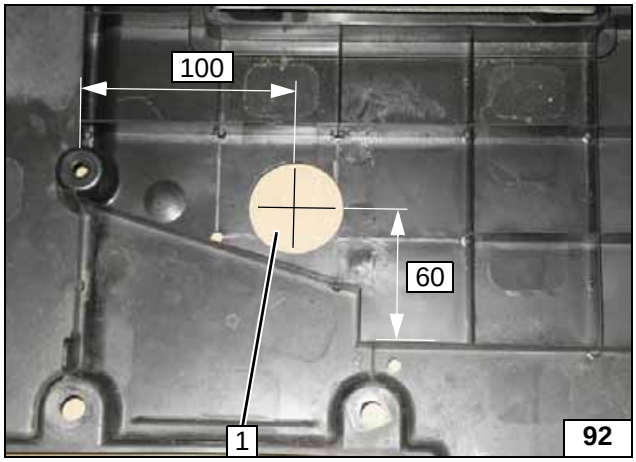
1 Underride protection

Cutting out underride protection



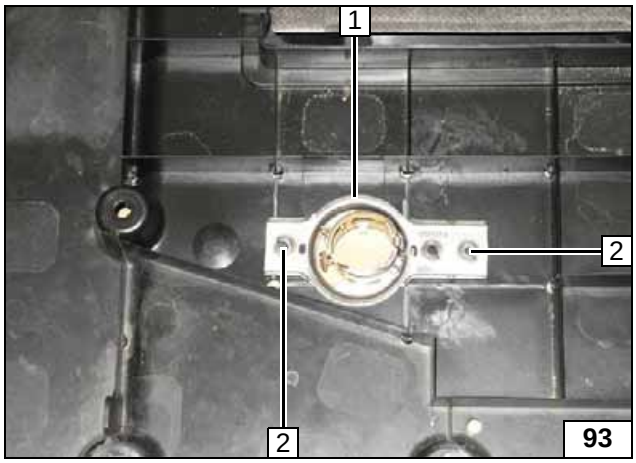
Release the insulation. Cut out the ribs around the markings **1** and discard.

Cutting out underride protection



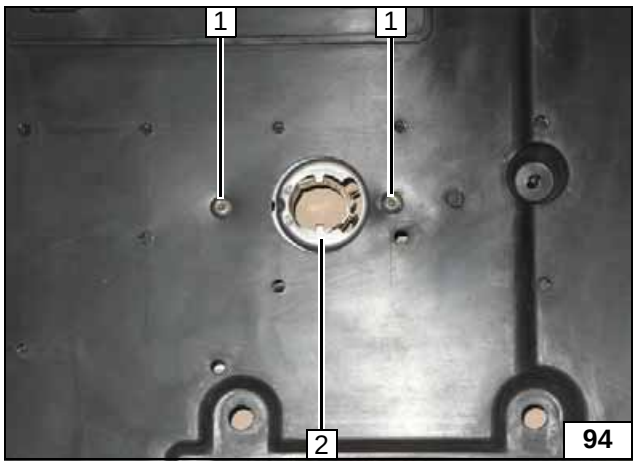
1 43 mm dia. hole

Hole in underride protection



1 Place exhaust end fastener in 43 mm dia. hole as shown
2 Copy the hole pattern, hole dia. 5 mm [2x]

Copying hole pattern

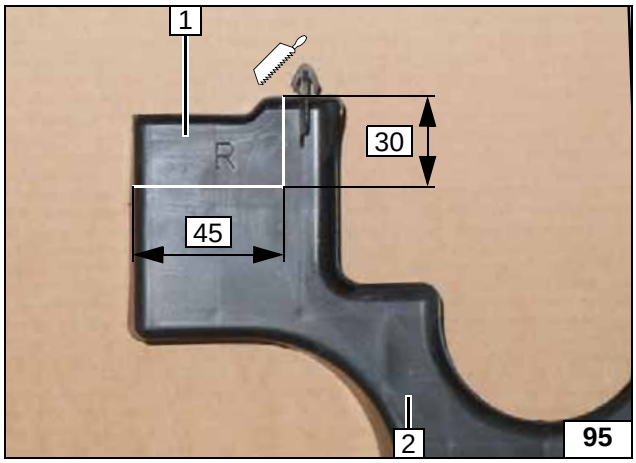


Reposition and secure the insulation.

1 Self-tapping screw 5x13 [2x]
2 Exhaust end fastener

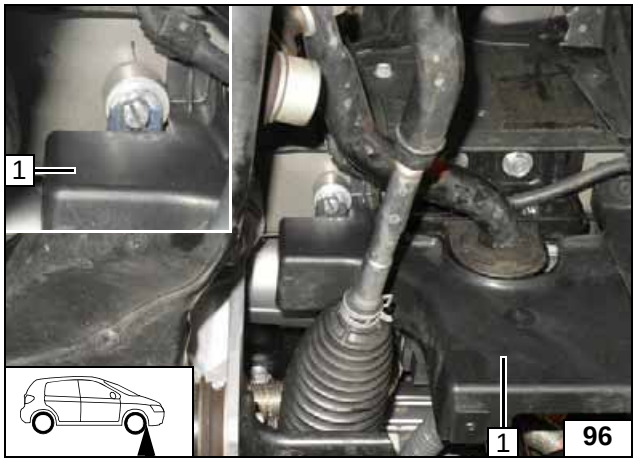
Mounting exhaust end fastener

Final Work



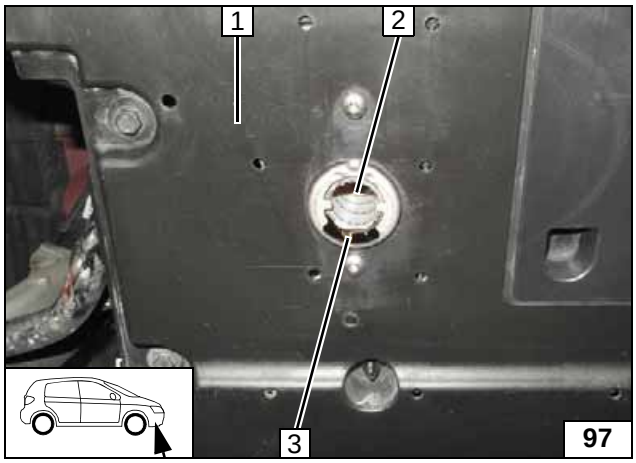
1 Discard section
2 Cover for engine compartment/wheel well trim on right

Cutting out cover



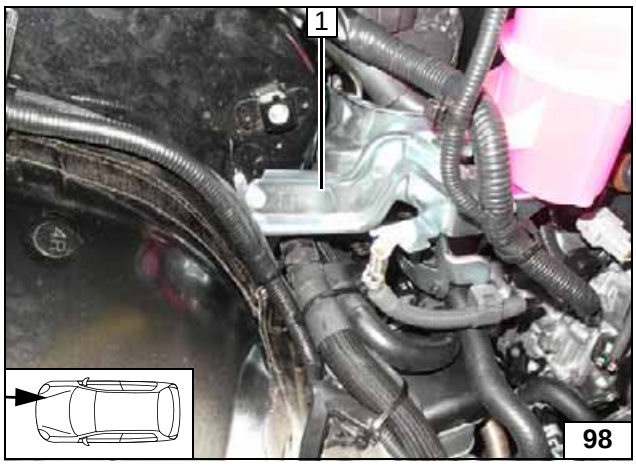
1 Cover for engine compartment/wheel well trim on right

Installing cover



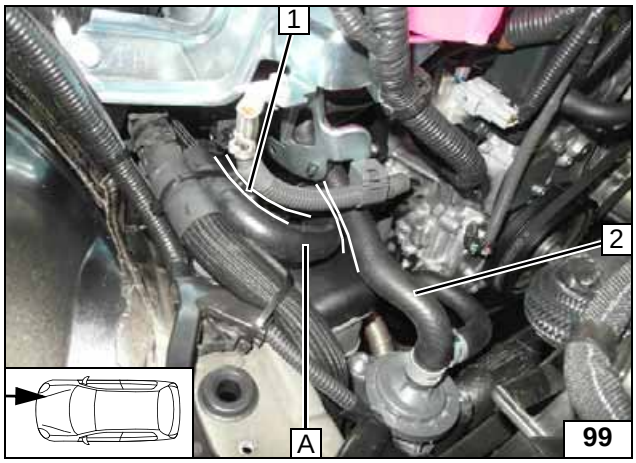
Mount underride protection **1**. Spring clip **3** must be pretensioned by the exhaust end fastener. Position exhaust end section b **2** in the centre from inside the exhaust end fastener; correct if necessary. Release spring clip **3**. Check the space between the radiator hose and the spacer bracket.

Installing exhaust end section b



1 Hybrid system expansion tank bracket

Installing bracket



Ensure sufficient space between the original vehicle earth wire to hose **A** at position **1**; correct if necessary. Ensure sufficient space between original vehicle hose **2** and hose **A**; correct if necessary.

Checking distances

CAUTION!
Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires.
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.**
- **Adjust digital timer, teach Telestart transmitter**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Checking of fan function (PWM gateway):**
  Set fan power to maximum. Afterwards, deactivate ignition and activate parking heater. Upon reaching the start-up temperature of 50°C, the fan speed must correspond to the value predefined by thePWM gatewayof around 1/3 of the maximum speed.
- **Apply the caution label "Switch off parking heater before refilling" in the area of the filler neck.**
- **For initial startup, the Webasto Thermo Test Diagnosis is to be carried out as follows:**

  - Control coolant pump under component test menu, check coolant level
  - Pre-feed fuel for the heater using the line filling menu.
  - Check CO_2-Setting, gather adjustment values from general installation instructions
  - Check all water and fuel connections for seal tightness and firm seating during the trial run
  - Conduct troubleshooting in case of malfunctions.

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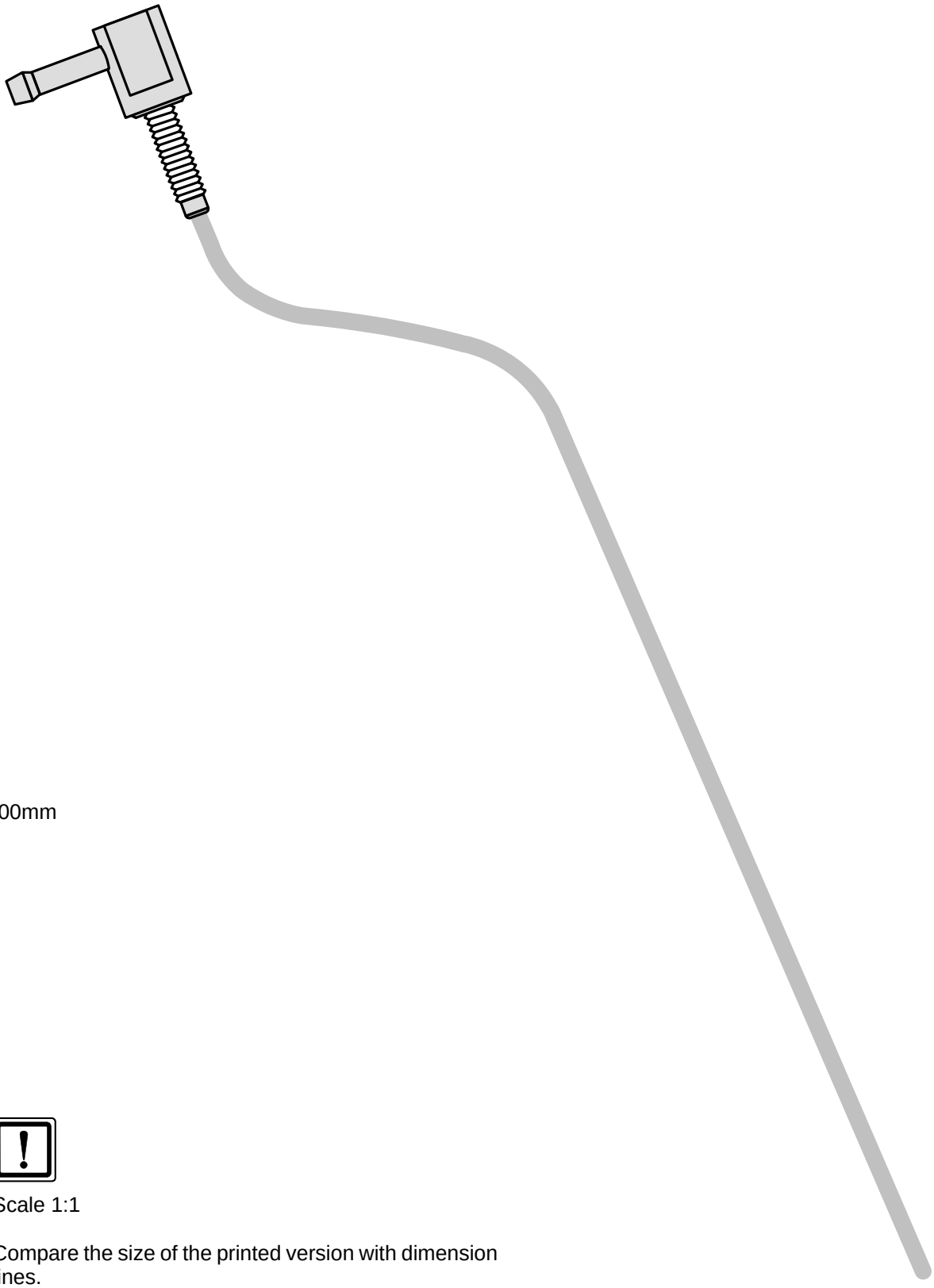
82199 Gilching
Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

Template for Fuel Standpipe

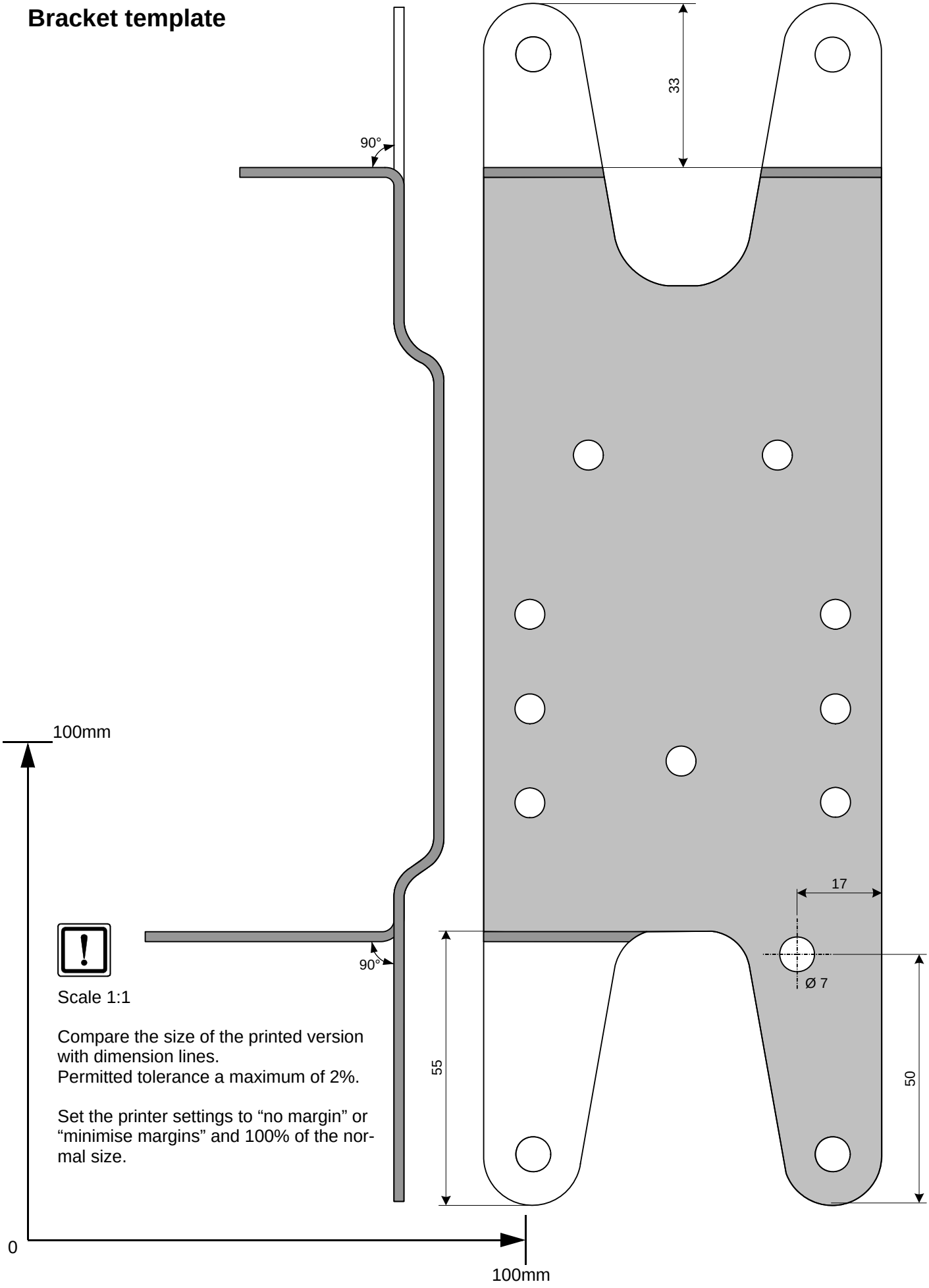


Scale 1:1

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.

Bracket template



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 1 Zone Automatic Air-Conditioning

Please remove page and add to the vehicle operating instructions.

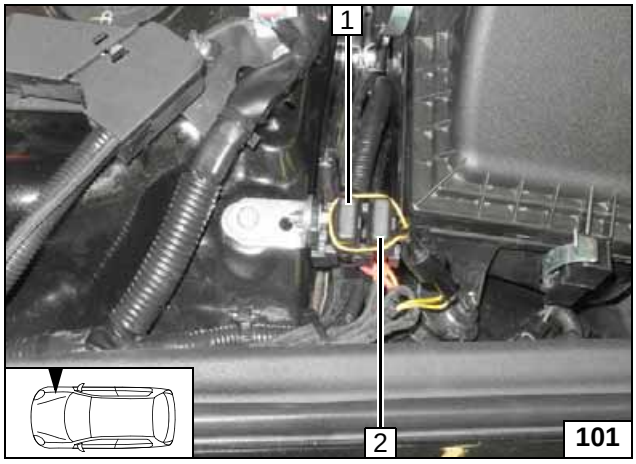
Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to vehicle settings for the heating operation.
Instructions on deactivation can be taken from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

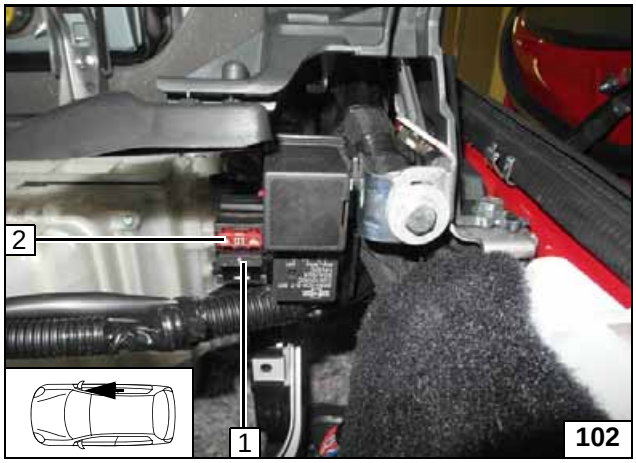
1 Set temperature to "HI"
2 Air outlet to windscreen

1 zone A/C control panel



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

Engine compartment fuses



1 1A fuse F3 of heater control
2 10A fan fuse F4

Passenger compartment fuses

Webasto
Feel the Drive

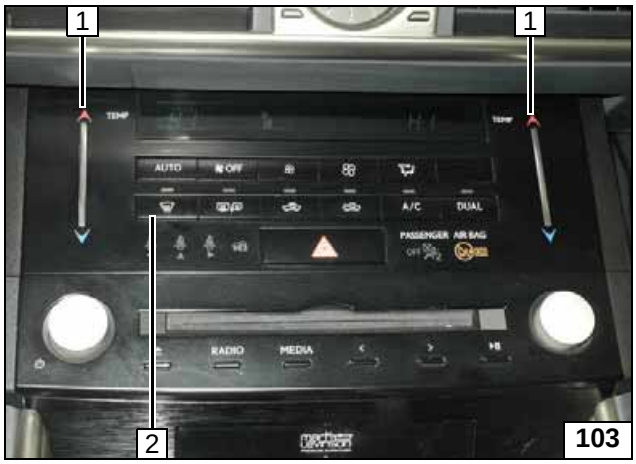
Operating Instructions for 2 Zone Automatic Air-Conditioning

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.

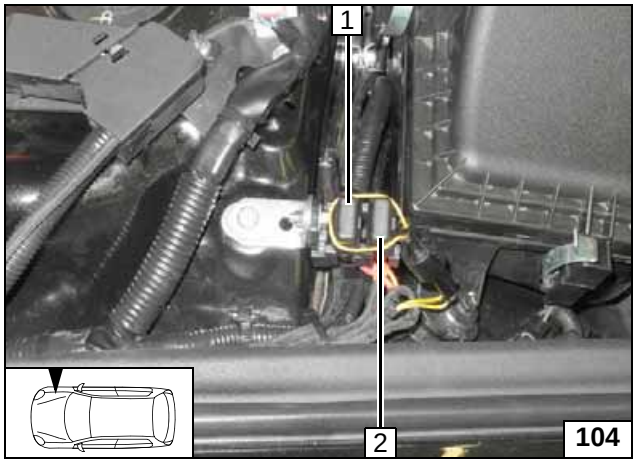
Passenger compartment monitoring, if installed, must be deactivated in addition to vehicle settings for the heating operation.
Instructions on deactivation can be taken from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



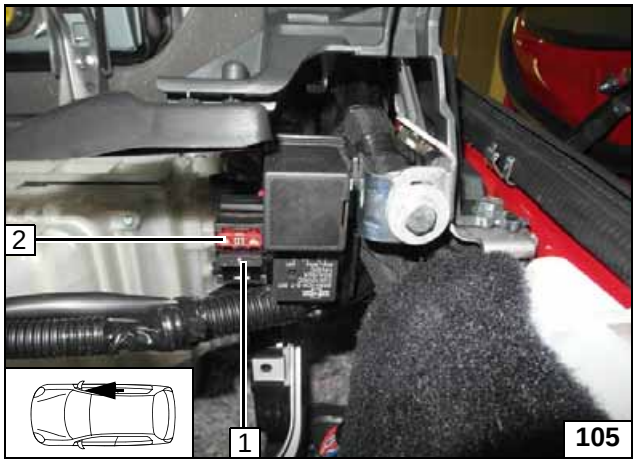
1 Set temperature on both sides to "HI"
2 Air outlet to windscreen

2 zone A/C control panel



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

Engine compartment fuses



1 1A fuse F3 of heater control
2 10A fan fuse F4

Passenger compartment fuses