Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

Installation Documentation
Opel Astra

Validity

Manufacturer	Model	Type	EG-BE-No. / ABE
Opel	Astra	P-J	e1 * 2007 / 46 * 0141 * ...
Opel	Astra	P-J	e4 * 2007 / 46 * 0204 *...
Opel	Astra	P-J	e4 * 2007 / 46 * 0308 *...
Opel	Astra	P-J	e4 * 2007 / 46 * 0309 *...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.4	Petrol	5-speed SG	74	1398	A14XER (LDD)
1.4T	Petrol	6-speed SG	88	1364	A14NEL (LUJ)
1.4T	Petrol	6-speed SG	103	1364	A14NET (LUJ)
1.6	Petrol	6-speed AG	85	1598	A16XER (LDE)
1.6T	Petrol	6-speed SG	125	1598	A16XHT (LVP)
1.6T	Petrol	6-speed SG	132	1598	A16LET (LLU)

SG = Manual transmission
AG = Automatic transmission

From Model Year 2010
Left-hand drive vehicle

Verified equipment variants: Manual air-conditioning
Front fog light
Xenon
Headlight washer system
Daytime running lights
Start / Stop
Euro 5

Not verified: Passenger compartment monitoring
Electric auxiliary heater "Quickheat"
Solar protect windscreen

Exclusion: Automatic air-conditioning

Total installation time: approx. 8 hours

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Table of Contents

Necessary Components

- Basic delivery scope *Thermo Top Evo* based on price list
- Installation kit for Opel Astra 2010 Petrol: **1315901C**
- To be ordered aditionally for vehicles with a plastic coolant reservoir drain:
  Rubber coolant reservoir drain - Opel Part No.: 1451084
- 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

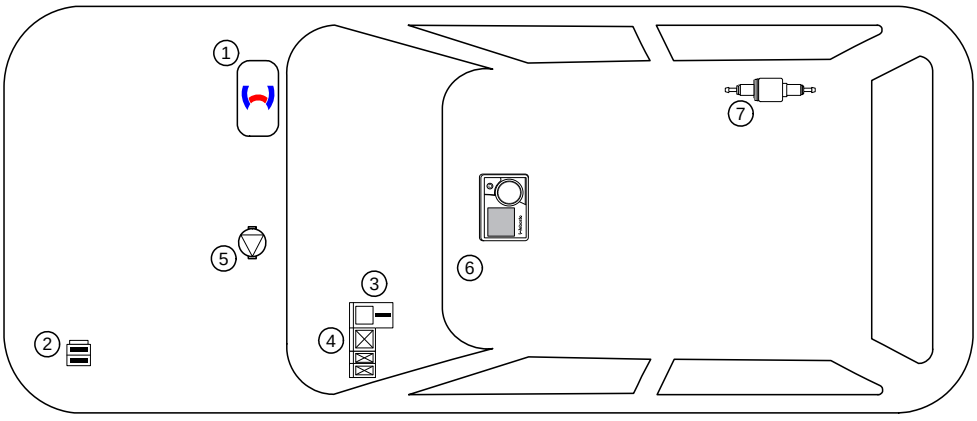
Installation instructions:

- 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 available space and manufacturer's instructions, we recommend the use of a vehicle battery with more electrical capacity.

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Passenger compartment fuse holder
4. IPCU
5. Circulating pump
6. MultiControl
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 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.

Opel Astra

Notes on Validity

This installation documentation applies to the Opel Astra Petrol vehicles - for validity, see page 1 - from model year 2010 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

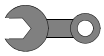
Dimensions
- All dimensions are in mm

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque 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.

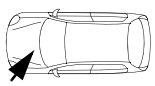
Specific risk of damage to components.

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.



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

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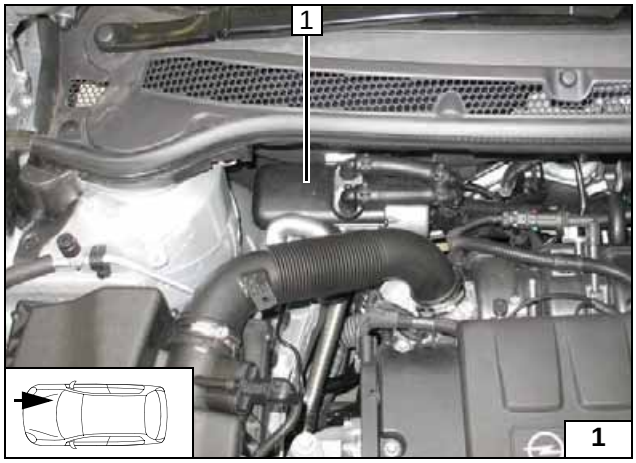
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Completely remove the battery.
- Remove the air filter box
- Remove the coolant reservoir cap.
- Remove the coolant reservoir.
- Disconnect the coolant expansion tank and lay it aside.
- Remove the front underride protection on the right.
- Remove the fuel tank in accordance with the manufacturer's instructions.
- Remove the footwell trim on the driver's side.
- Remove the lower instrument panel trim on the driver's side.
- Remove the glove compartment.
- Remove the footwell trim on the front passenger's side.
- Remove the fan motor of the passenger compartment (see "Preparing installation location)
- Remove the A-pillar trim on the driver's side.
- Remove the control panel of the centre console.
- Remove monitor screen.
- Remove radio / CD-changer.
- Remove the A/C control unit in accordance with the manufacturer's instructions.

Heater

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



Heater Installation Location

Figure shows 1.4!

1 Heater

Installation location

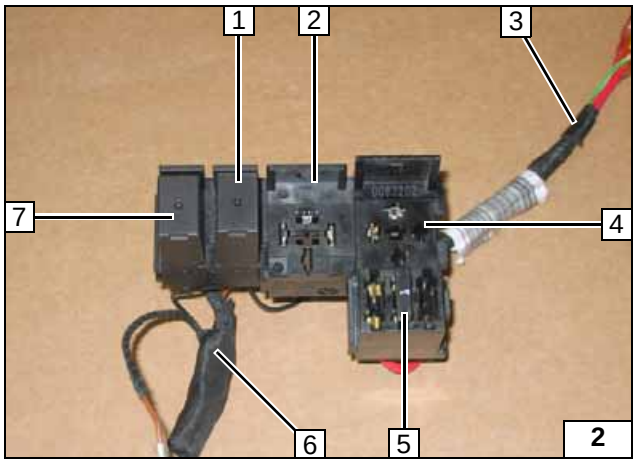
Preparing Electrical System

Wire sections retain their numbering in the entire document.

Interlock sockets.

1 K1 relay
2 IPCU socket
3 Wiring harness of fuse holder
4 Fuse holder
5 F3 1A fuse
6 IPCU wiring harness
7 K2 relay

Preparing fuse holder of passenger compartment



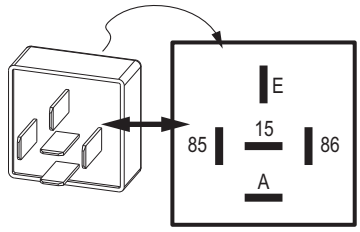
2

Check the IPCU settings when starting up the heater and adjust if necessary.

Settings:

Duty cycle: 70%
Frequency: 100Hz
Voltage: not relevant
Function: Low-side

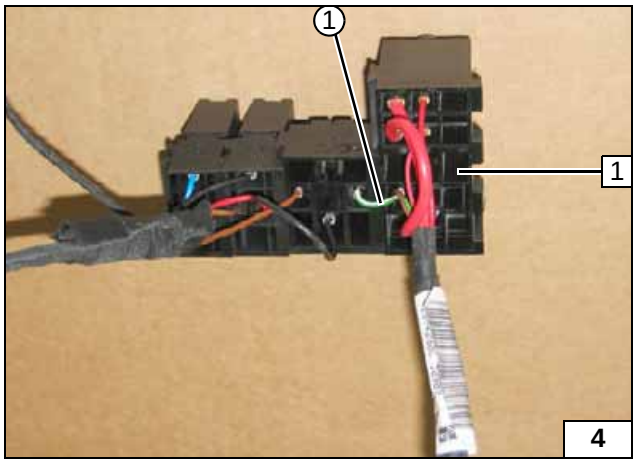
IPCU view



3

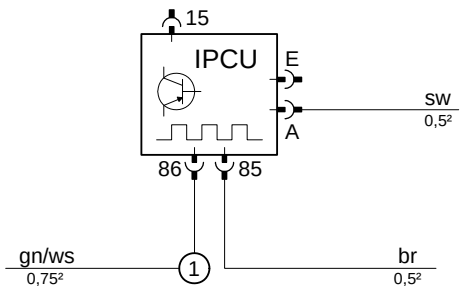
Detach green/white (gn/ws) wire ① from socket of passenger compartment fuse holder **1** and insert in socket of IPCU/86 (see connection diagram).

Preparing IPCU



4

IPCU connection diagram



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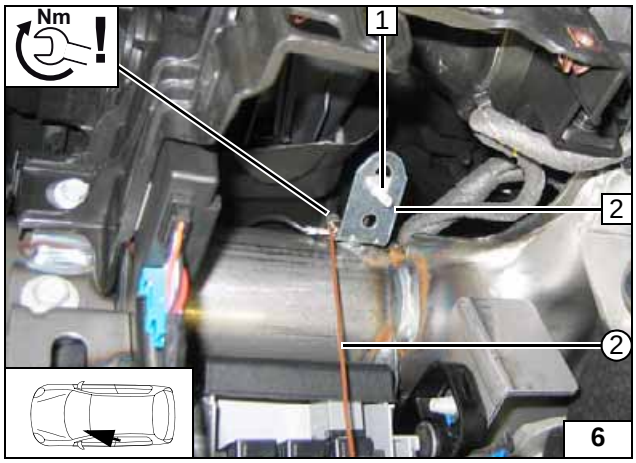
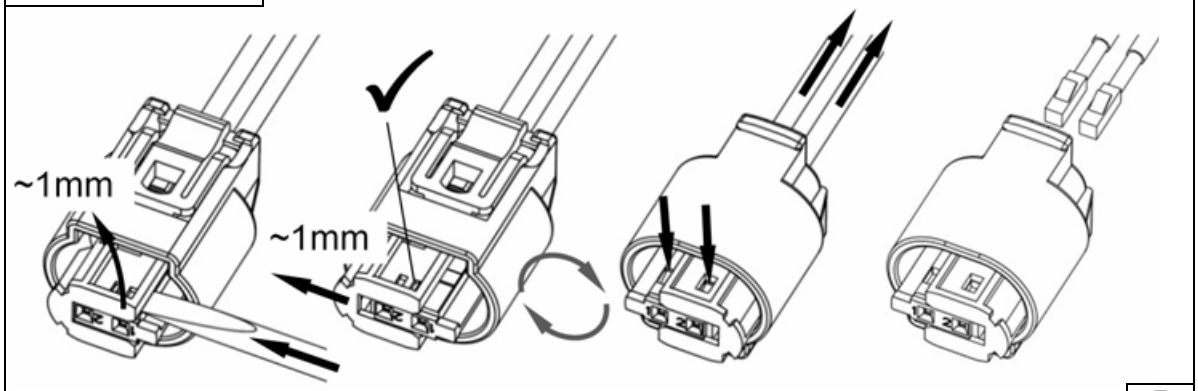


Fasten angle **2** and brown (br) earth wire ② of K2/85 **3** with original vehicle nut to original vehicle earth point.

1 M5x16 bolt, large diameter washer

Installing angle bracket

Connector X7

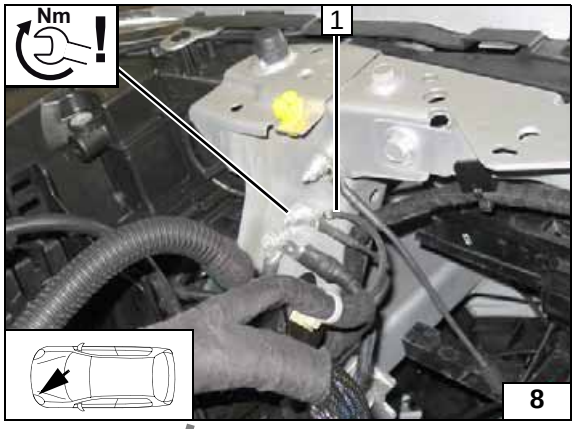


Dismantling connector of metering pump

Electrical System

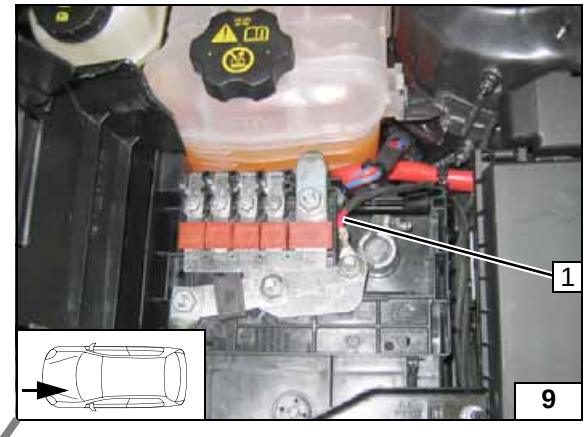
Earth wire

1 Earth wire at original vehicle earth support point

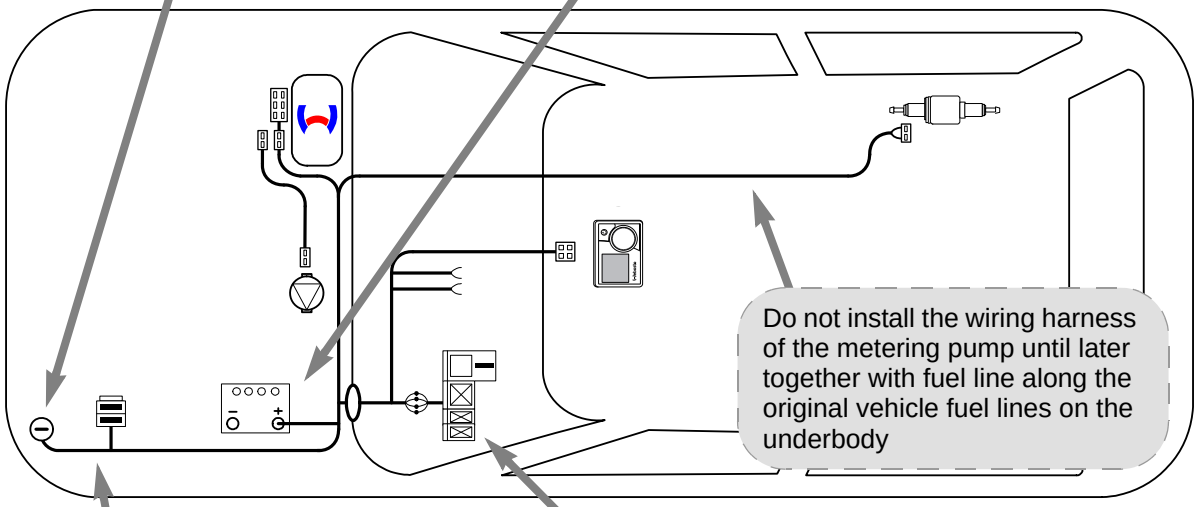


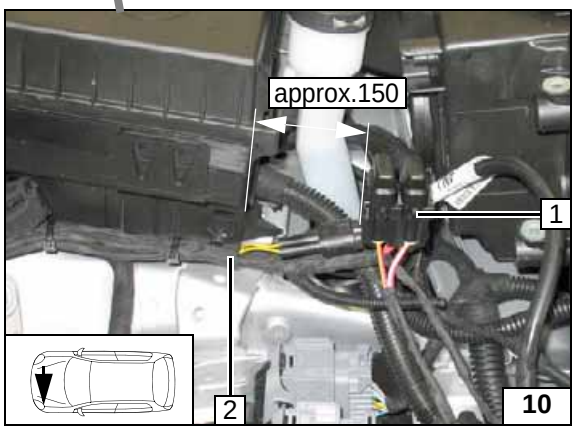
Positive wire

1 Positive wire



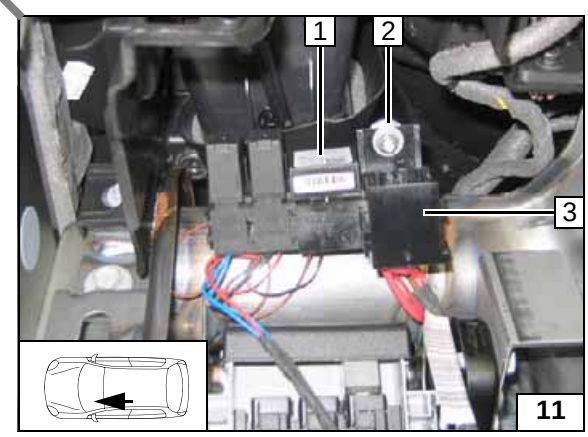
Wiring harness routing diagram





Engine compartment fuse holder

Fasten wiring harness of fuse holder **2** with cable tie. Ensure adequate distance from fuses F1 and F2 **1**, because the battery carrier is installed later. For routing, see next page!



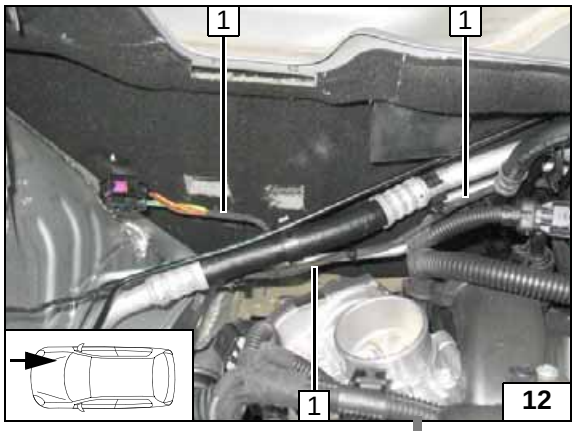
Passenger compartment fuse holder

1 IPCU
2 Large diameter washer, M5 flanged nut
3 Fuse holder

Follow sequence!

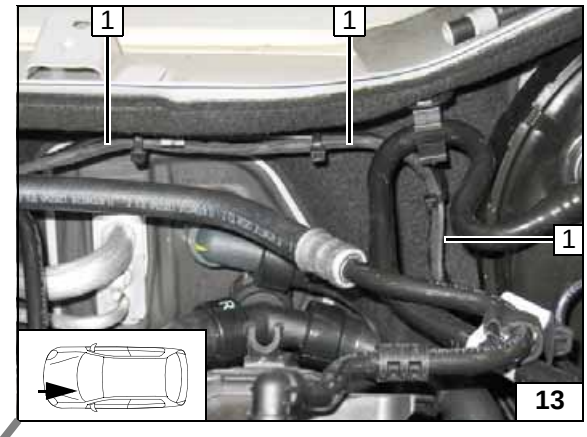
4. Routing wiring harness of heater

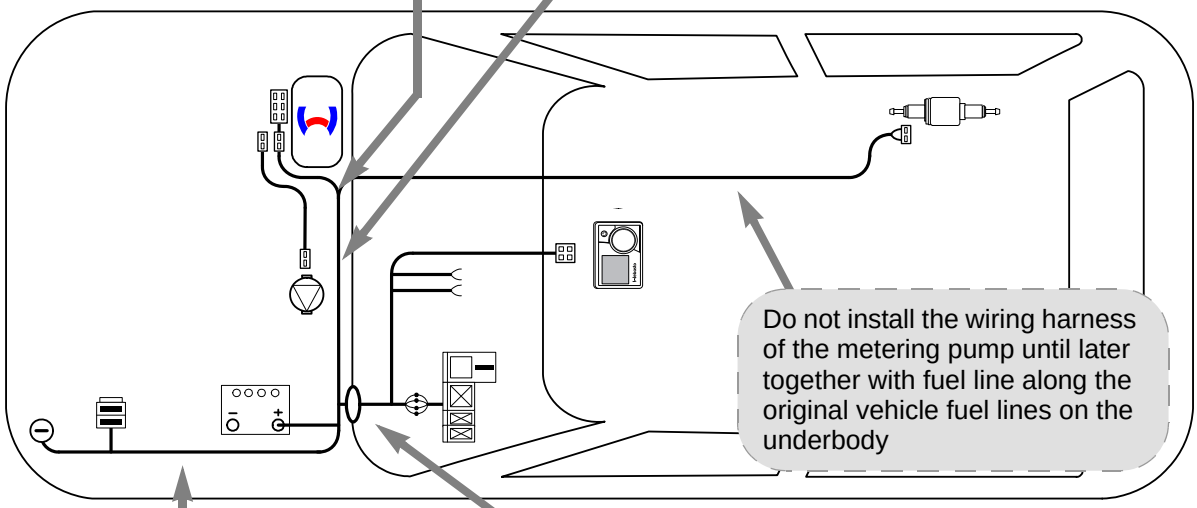
1 Wiring harness of heater to A/C line



3. Routing wiring harness of heater

1 Wiring harness of heater to brake lines

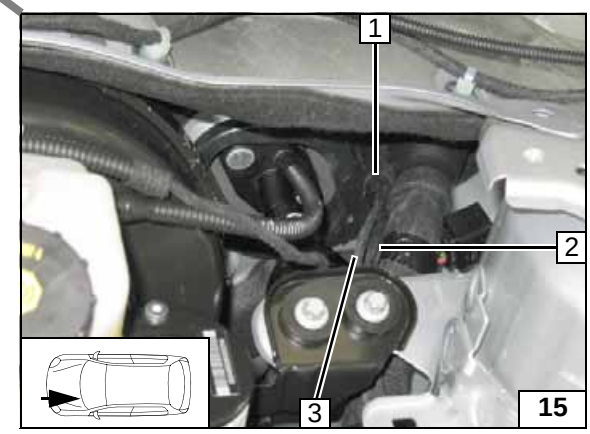




Wiring harness routing diagram

1. Routing wiring harness of fuse holder

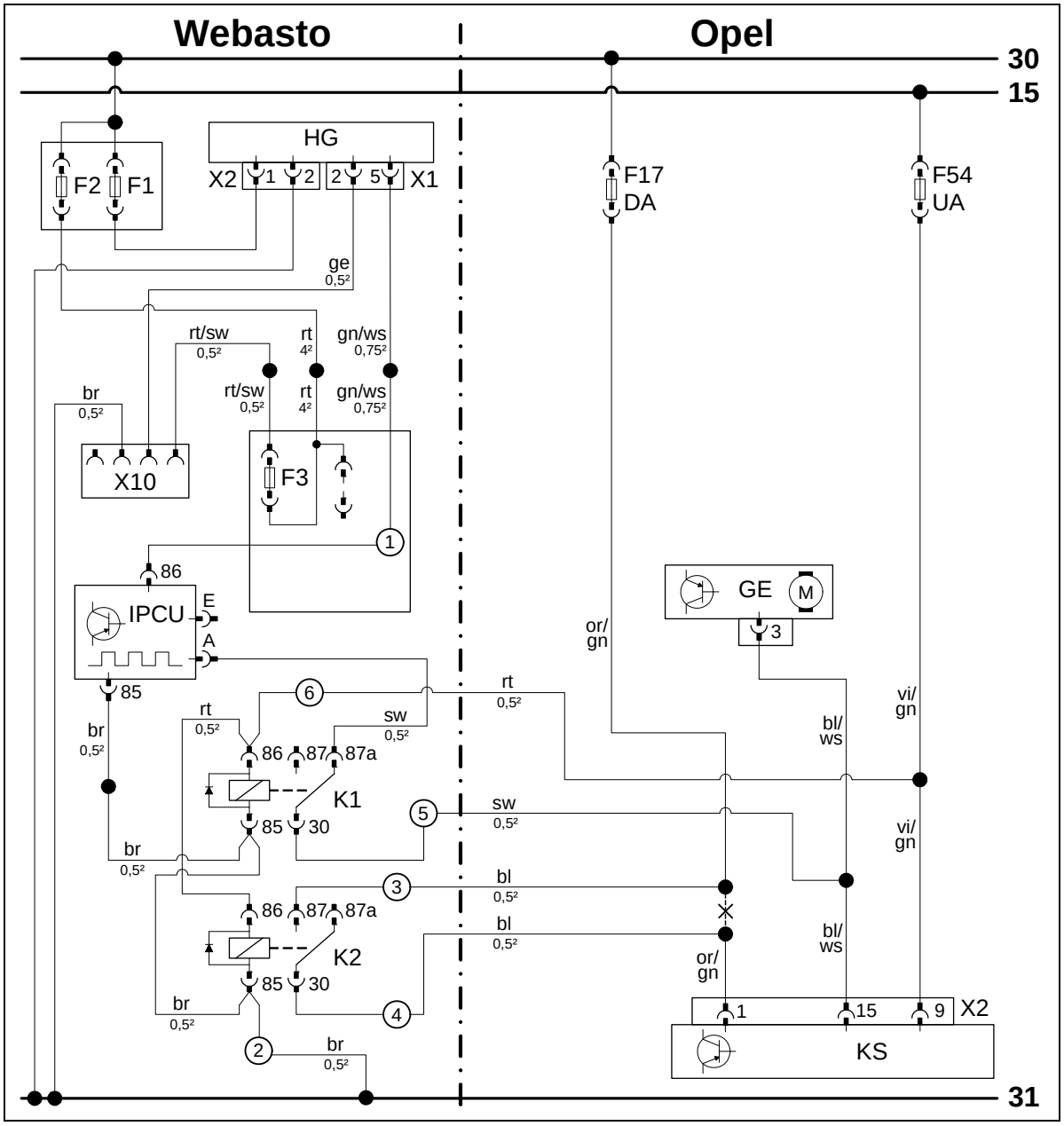
1 Wiring harness of heater to original vehicle wiring harness of electrical steering
2 Wiring harness of engine compartment fuse holder



2. Wiring harness pass through

1 Protective rubber plug
2 Wiring harness of heater control
3 Wiring harness of passenger compartment fuse holder

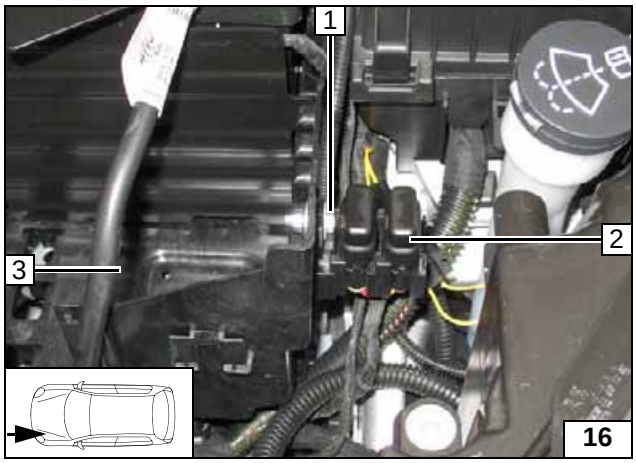
Fan Controller



Wiring diagram for manual air-conditioning system

Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F17DA	Fuse 10A	rt	red
X1	6-pin heater connector	F54UA	Fuse 7.5A	ws	white
X2	2-pin heater connector	GE	Fan unit	sw	black
X10	4-pin connector of heater control	X2	20-pin connector brown (br)	br	brown
		KS	Air-conditioning control unit	gn	green
K1	Fan relay			bl	blue
K2	Additional relay			vi	violet
F1	Fuse 20A			bl	blue
F2	Fuse 30A			or	orange
F3	Fuse 1A				
IPCU settings:					
Duty cycle:	70%				
Frequency:	100Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low-side			Wiring colours may vary.	

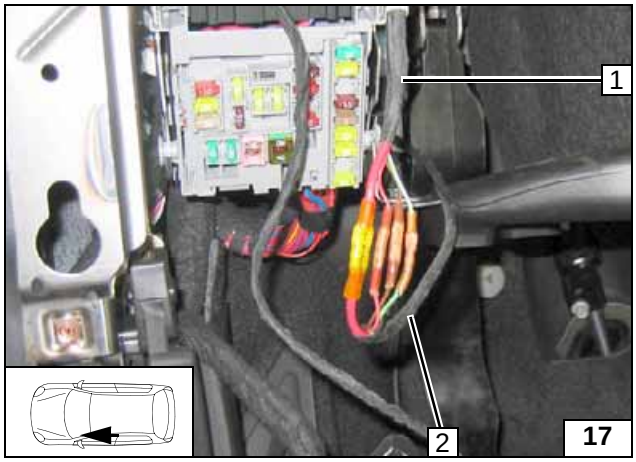
Legend



Install battery carrier **3**.

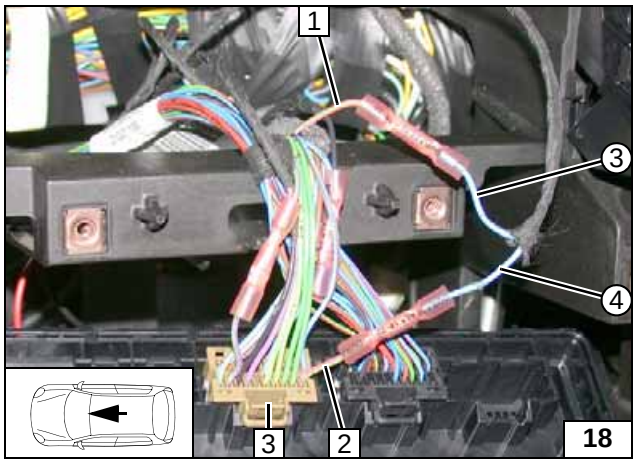
1 Mount M5x16 bolt, large diameter washer [2x], retaining plate of fuse holder, flanged nut, existing hole
2 F1, F2 fuses mounted

Mounting fuse holder



1 Wiring harness of passenger compartment fuse holder
2 Additional wiring harness

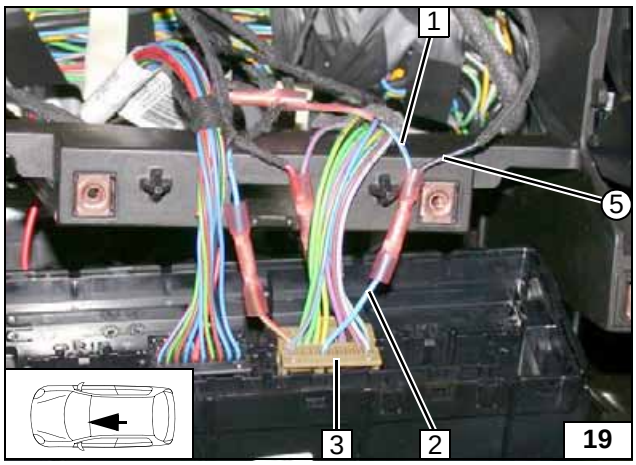
Connecting wiring harnesses using same colour wires



Connection to 20-pin, brown (br) X2 connector **3** from the air conditioning control unit. Produce connections as shown in wiring diagram.

1 Orange/green wire (or/gn) of Terminal 30
2 Orange/green (or/gn) wire of 20-pin brown (br) connector Pin 1
③ Blue (bl) wire K2/87
④ Blue (bl) wire K2/30

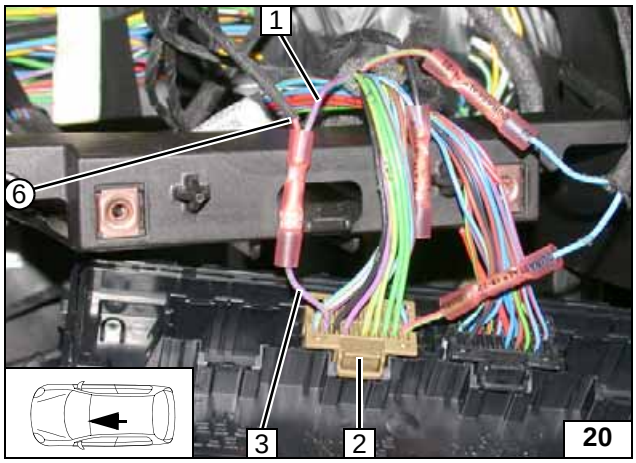
Connecting K2 relay



Connection to 20-pin, brown (br) X2 connector **3** from the air conditioning control unit. Remove connector from black (sw) wire ⑤ . Produce connections as shown in wiring diagram.

1 Blue/white (bl/ws) wire of 6-pin yellow (ge) connector, pin 3
2 Blue/white (bl/ws) wire of 20-pin brown (br) connector, pin 15
⑤ Black (sw) wire of K1/30

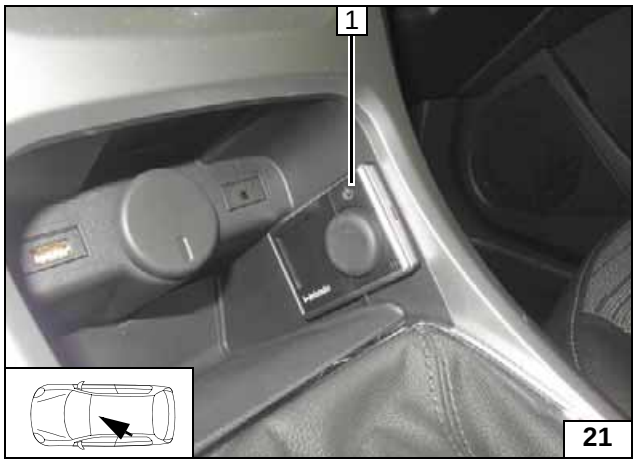
Connecting K1 relay



Connection to 20-pin, brown (br) X2 connector **2** from the air conditioning control unit. Produce connections as shown in wiring diagram.

1 Violet/green wire (vi/gn) wire of Terminal 15
3 Violet/green (vi/gn) wire of 20-pin brown (br) connector, pin 9
⑥ Red (rt) wire of K1/86

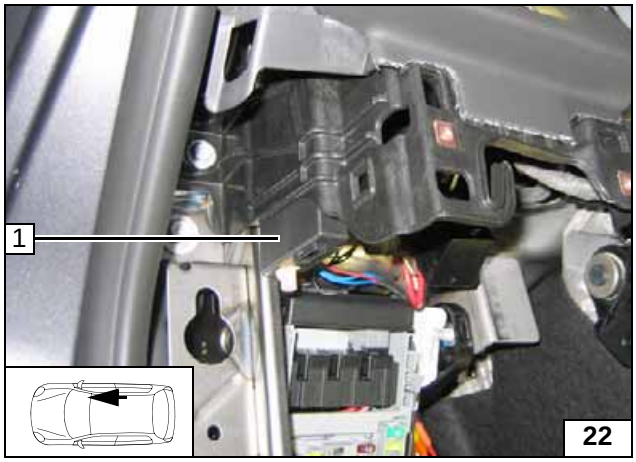
Connecting K1 relay



MultiControl Option

1 MultiControl

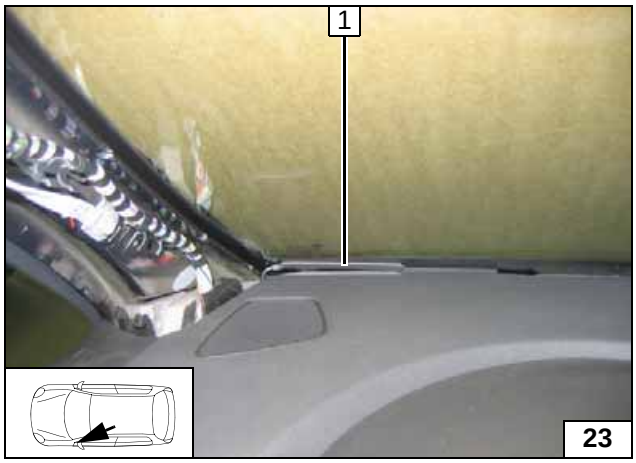
Installing MultiControl



Remote Option (Telestart)

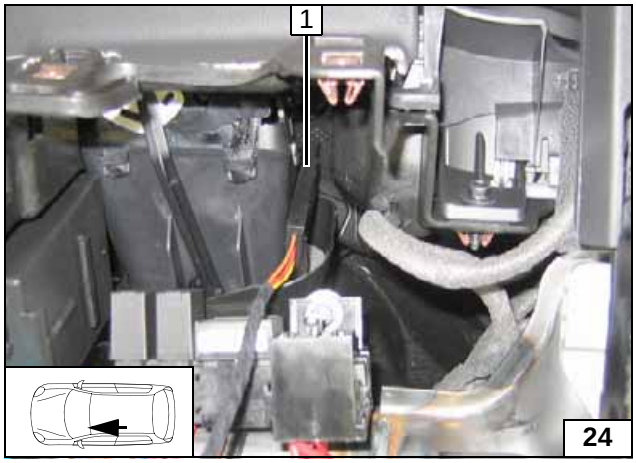
Fasten receiver **1** with adhesive tape.

Mounting receiver



1 Antenna

Mounting antenna

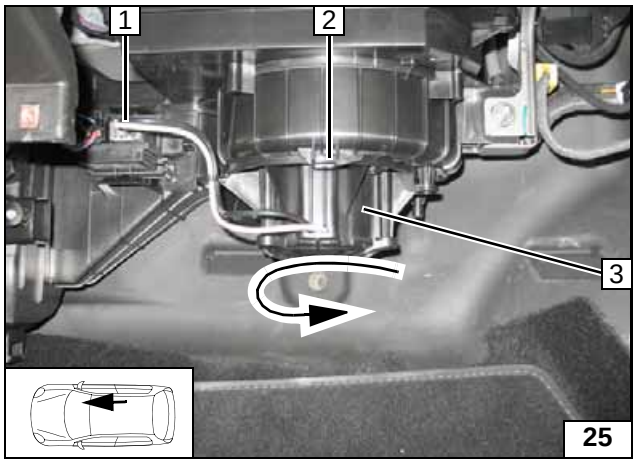


Installing T100 HTM temperature sensor

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

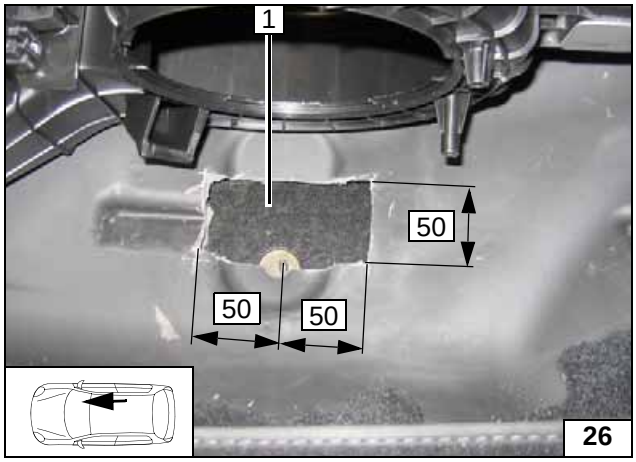
Installing temperature sensor

Preparing Installation Location



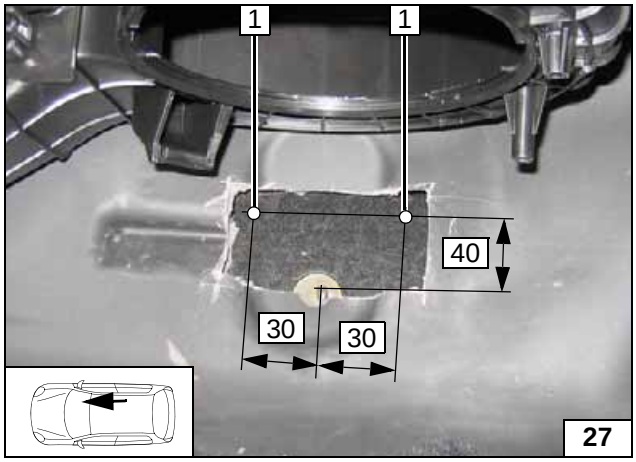
Pull out connector **1** from fan controller. Press tab **2** downwards, and turn fan motor **3** to the right.

Removing fan motor



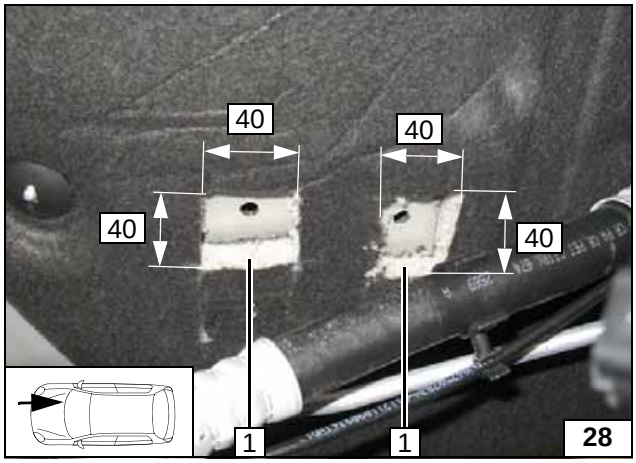
Cut out insulation **1** and discard!

Cutting out insulation in passenger compartment



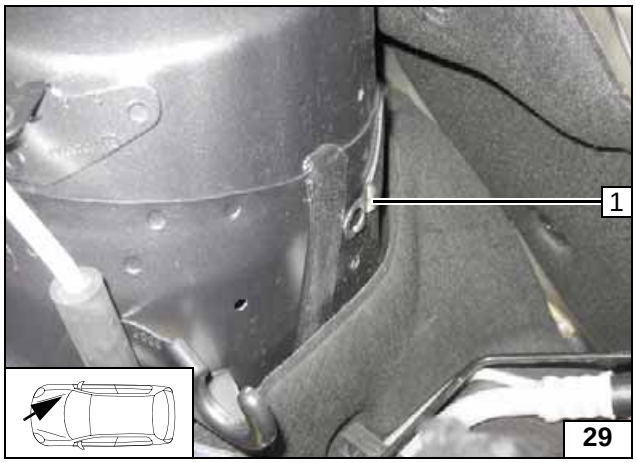
1 7mm dia. hole [2x]

Hole in firewall



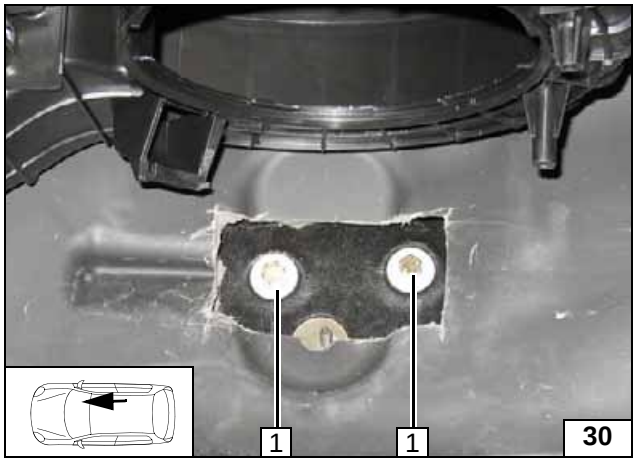
Cut out insulation in the area of the holes **1**. Provide holes with corrosion protection.

Cutting out insulation of engine compartment



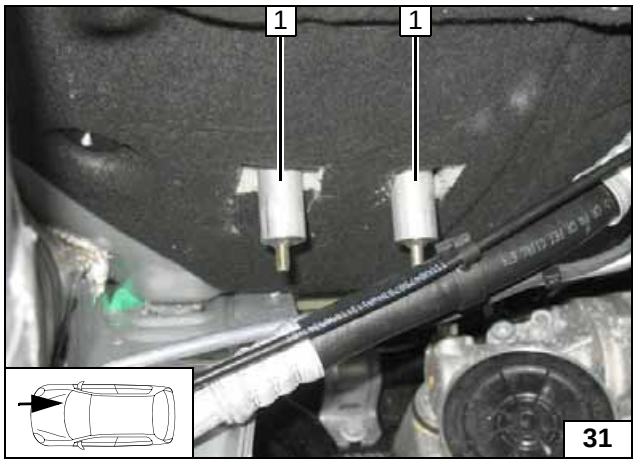
Angle down tab **1** by 90° on the strut tower.

Angling down tab



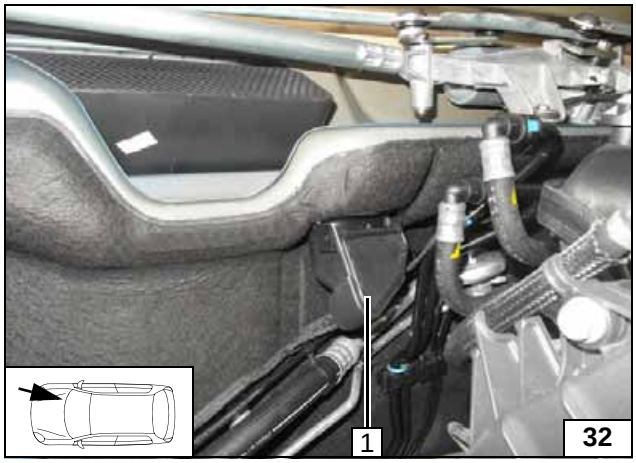
1 M6x55 bolt, large diameter washer [2x each]

Inserting bolts



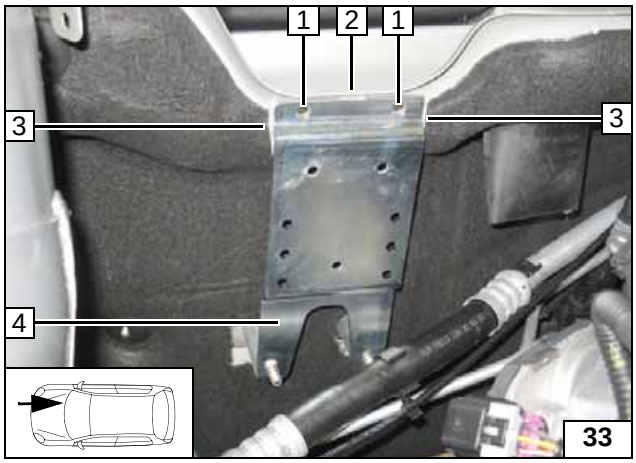
1 40mm spacer sleeve, pin lock [2x each]

Sliding shim on



Replace plastic coolant reservoir drain **1** with rubber (Opel Part No. 1451084).

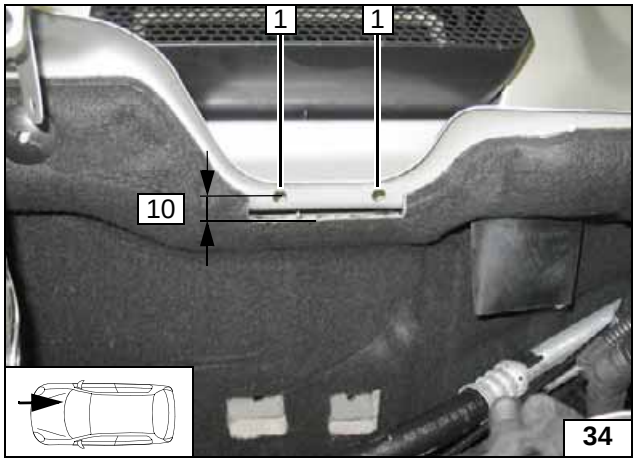
Replacing water drain



Prepare bracket according to template. Mount bracket **4** on bolts and place on upper edge **2**. Make markings **3** on the insulation at the left and right of the bracket!

1 Copy hole pattern [2x]

Copying hole pattern

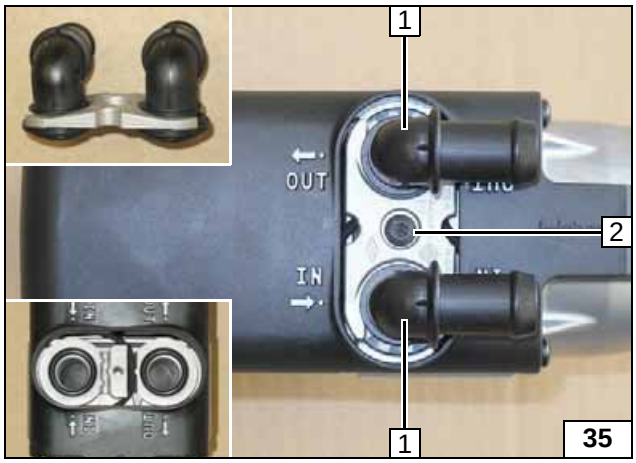


Cut out insulation in the area of the holes **1** up to the markings at the left and right. Provide holes with corrosion protection.

1 7mm dia. hole [2x]

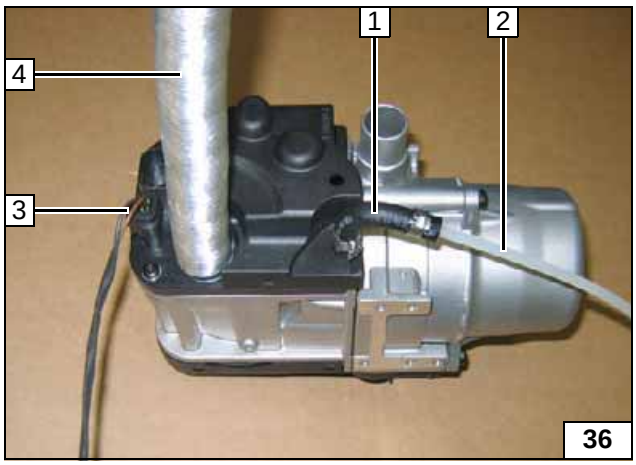
Holes in the coolant reservoir

Preparing Heater



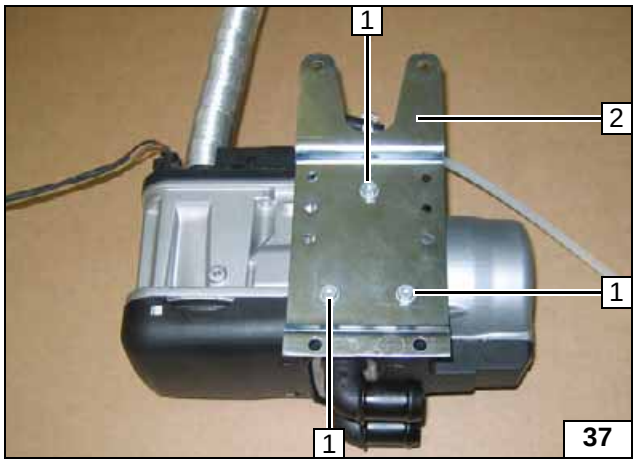
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection pieces

Installing water connection pieces



1 90° moulded hose, 10 mm dia. clamp [2x]
2 Fuel line
3 Insert connector of circulating pump wiring harness
4 Combustion air pipe

Preparing heater

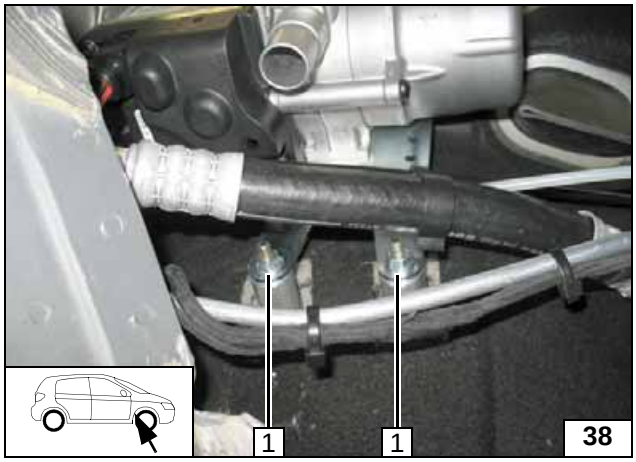


1 5x13 self-tapping bolt [3x]
2 Bracket

Mounting bracket

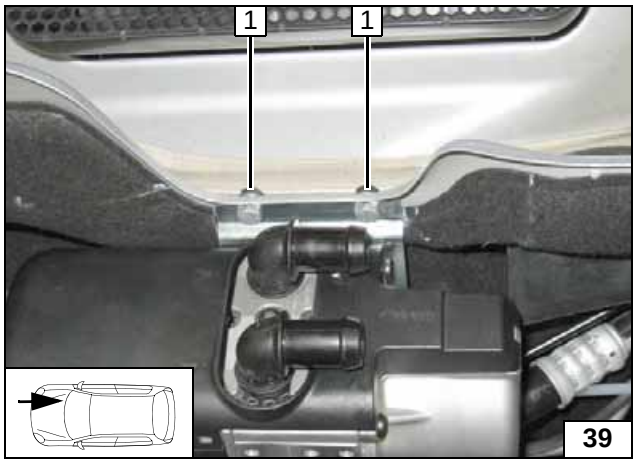
Installing Heater

Mount connector of heater wiring harness [2x] on heater.



1 Flanged nut [2x]

Mounting heater



1 M6x12 bolt, flanged nut [2x each]

Mounting heater

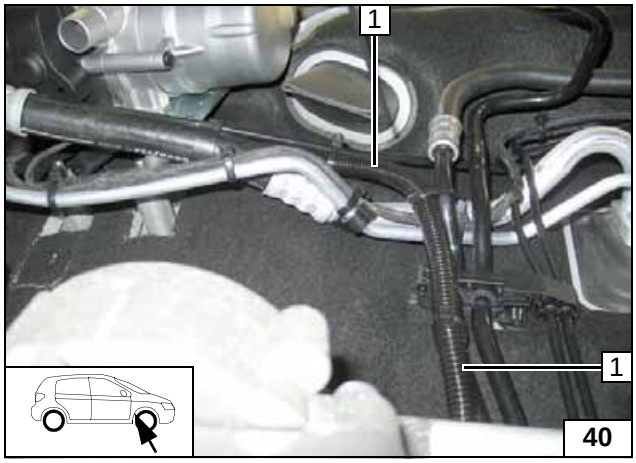
Fuel

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.

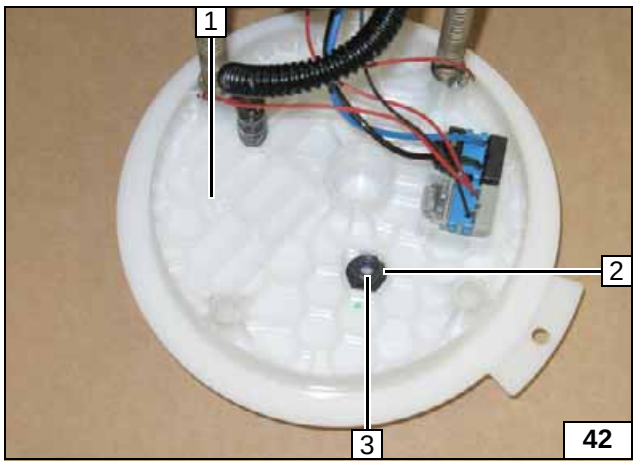


Slide corrugated tube **1** over the fuel line and wiring harness of the metering pump and route together to the original vehicle lines on the underbody.

Routing lines

Route fuel line and wiring harness of metering pump in corrugated tube **1** along original vehicle lines to installation location of metering pump!

Routing lines

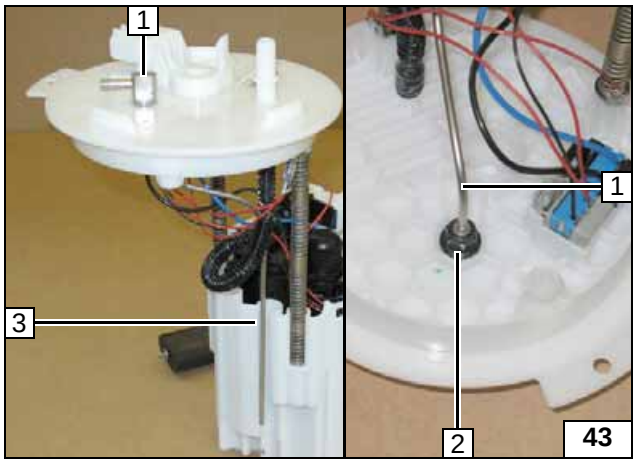


All vehicles except for 1.4 with 88kW

Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Install flanged nut of fueltank standpipe in honeycomb pattern at position **2**.

3 Copy hole pattern, 6mm dia. hole

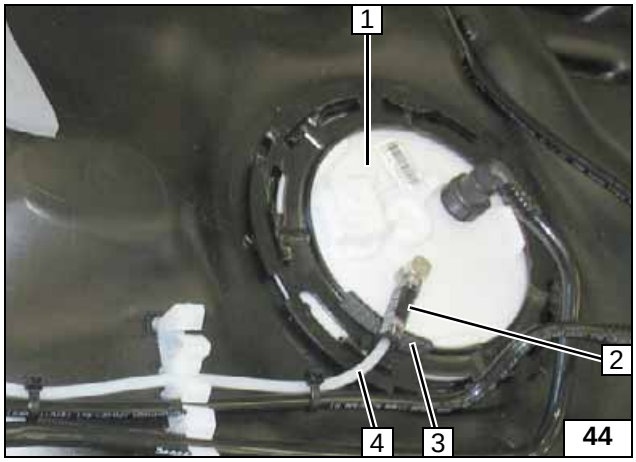
Fuel extraction



Shape fuel standpipe **1** according to template and cut to length. Insert three plain washers at position **2** as height compensation. Align fuel standpipe **1** in ducting to position **3**!

2 Washer with outer dia. d_a=12mm [3x], flanged nut

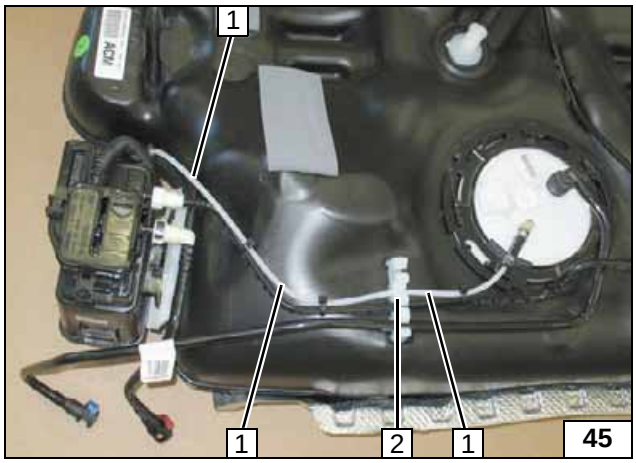
Installing fuel standpipe



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

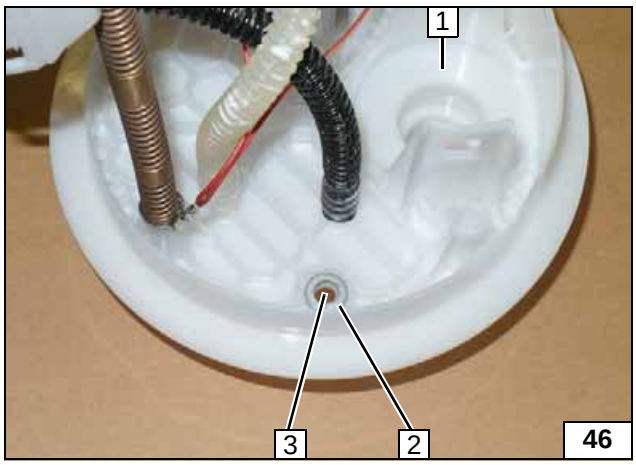
2 Hose section, 10mm dia. clamp [2x]
3 50 mm edge protection
4 Fuel line

Connecting fuel line



Install fuel line **1** in retaining clip **2**. Secure fuel line **1** with cable tie to fuel line. Install fuel-tank according to manufacturer's instructions.

Routing fuel line

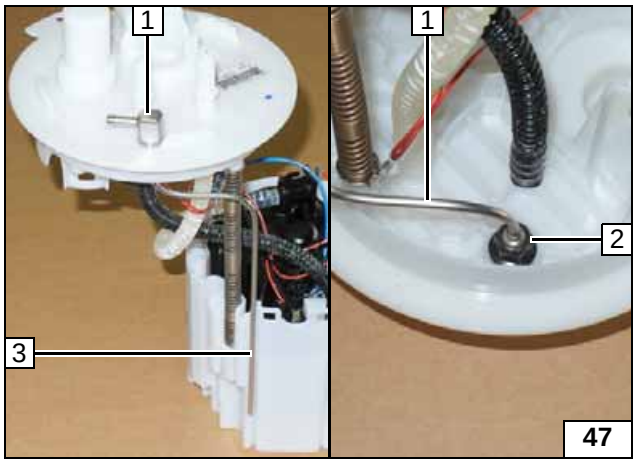


1.4 with 88kW

Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Insert plain washer outer dia. d_a = 12mm in honeycomb pattern at position **2**.

3 Copy hole pattern, 6 mm dia. hole

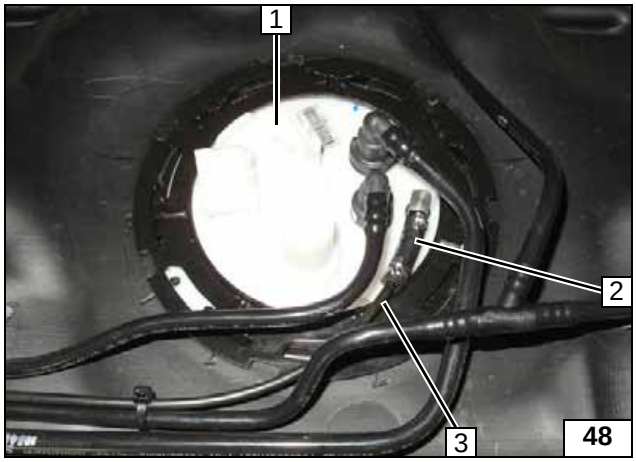
Fuel extraction



Shape fuel standpipe **1** according to template and cut to length. Insert three plain washers at position **2** as height compensation. Align fuel standpipe **1** in ducting to position **3**!

2 Washer with outer dia. d_a=12mm [3x], flanged nut

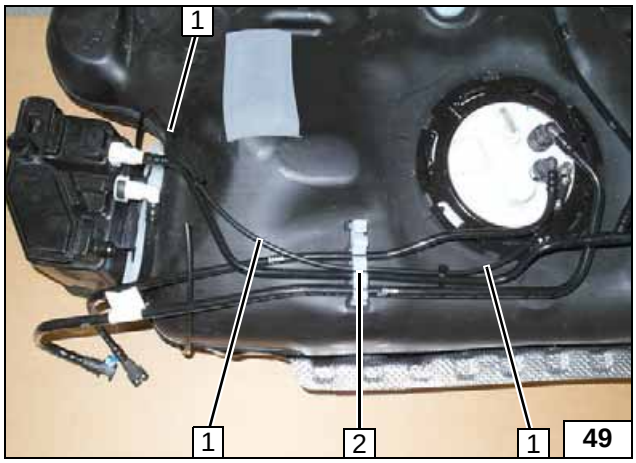
Installing fuel standpipe



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

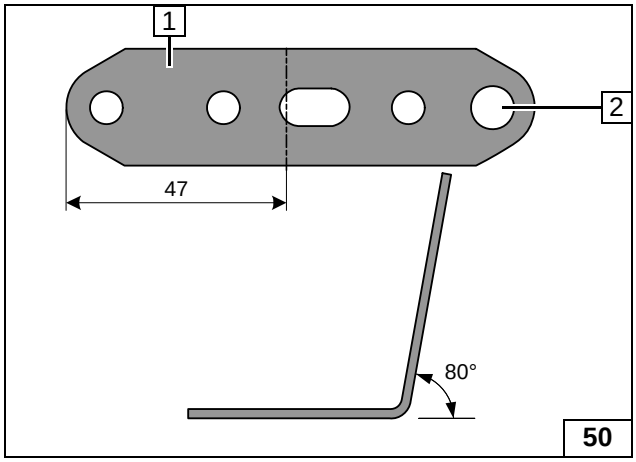
2 Hose section, 10 mm dia. clamp [2x]
3 Fuel line

Connecting fuel line



Install fuel line **1** in retaining clip **2**. Secure fuel line **1** with cable tie to fuel line. Install fuel-tank according to manufacturer's instructions.

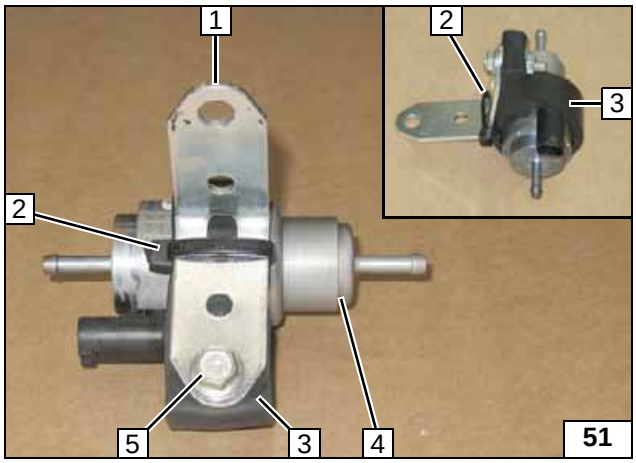
Routing fuel line



All vehicles

1 Perforated bracket
2 Drill out hole to 8.5 mm dia.

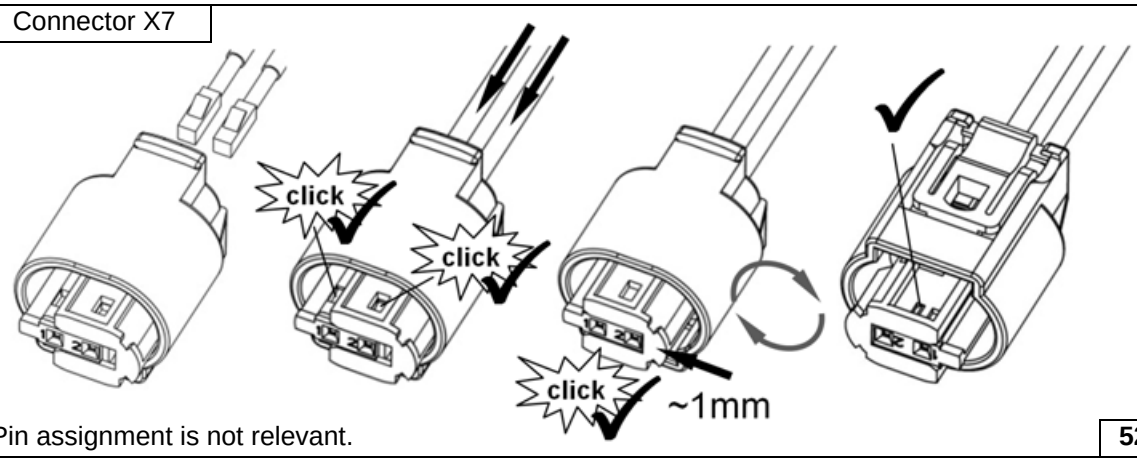
Preparing perforated bracket



1 Perforated bracket
2 Cable tie
3 Mounting of metering pump
4 Metering pump
5 M6x25 bolt, support angle bracket, flanged nut

Premounting metering pump

Connector X7



Pin assignment is not relevant.

52

Completing metering pump connector

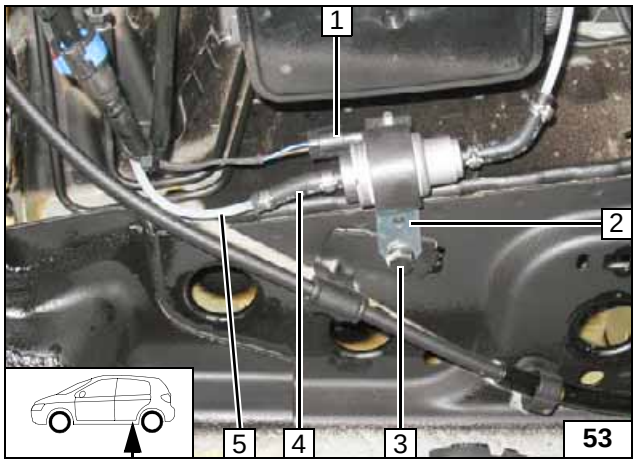
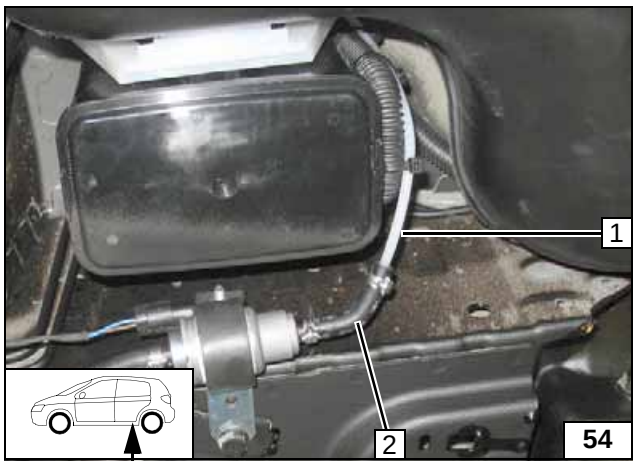


Figure shows vehicle with electric hand brake!

1 Wiring harness of metering pump, connector X7 mounted
2 Perforated bracket
3 Original vehicle bolt of handbrake cable bracket (use M8x20 bolt and spring lockwasher for vehicles with electric hand brake.)
4 Hose section, 10 mm dia. clamp [2x]
5 Fuel line of heater

Mounting metering pump



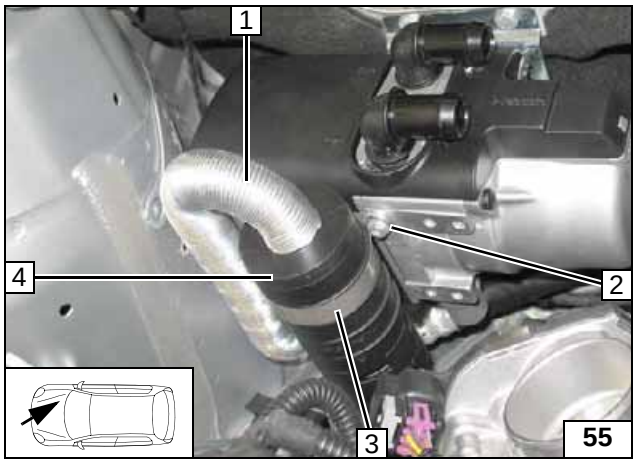
Check the position of the components; adjust if necessary. Check that they have freedom of movement.

1 Fuel line of fuel standpipe
2 90° moulded hose, 10 mm dia. clamp [2x]

Connecting metering pump

Combustion Air

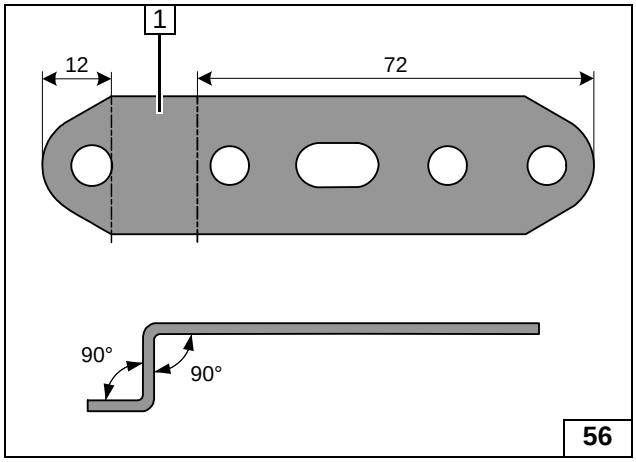
All vehicles except for 1.6 with 85kW



1 Combustion air pipe
2 5x13 self-tapping bolt
3 51 mm dia. clamp
4 Silencer

Installing silencer

1.6 with 85kW

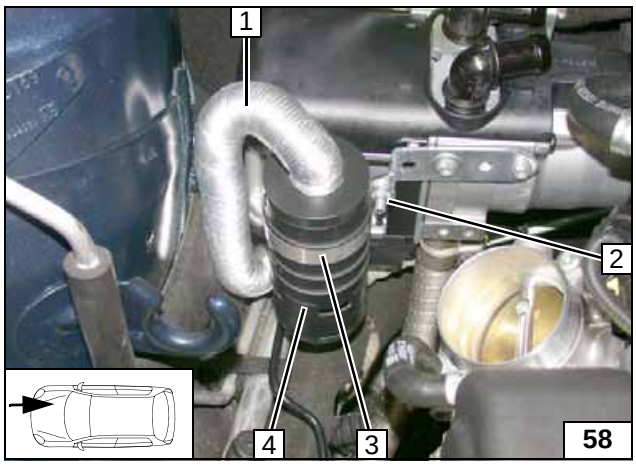


1 Perforated bracket

Preparing perforated bracket

1 5x13 self-tapping bolt
2 Perforated bracket
3 5x13 self-tapping bolt, large diameter washer

Mounting perforated bracket



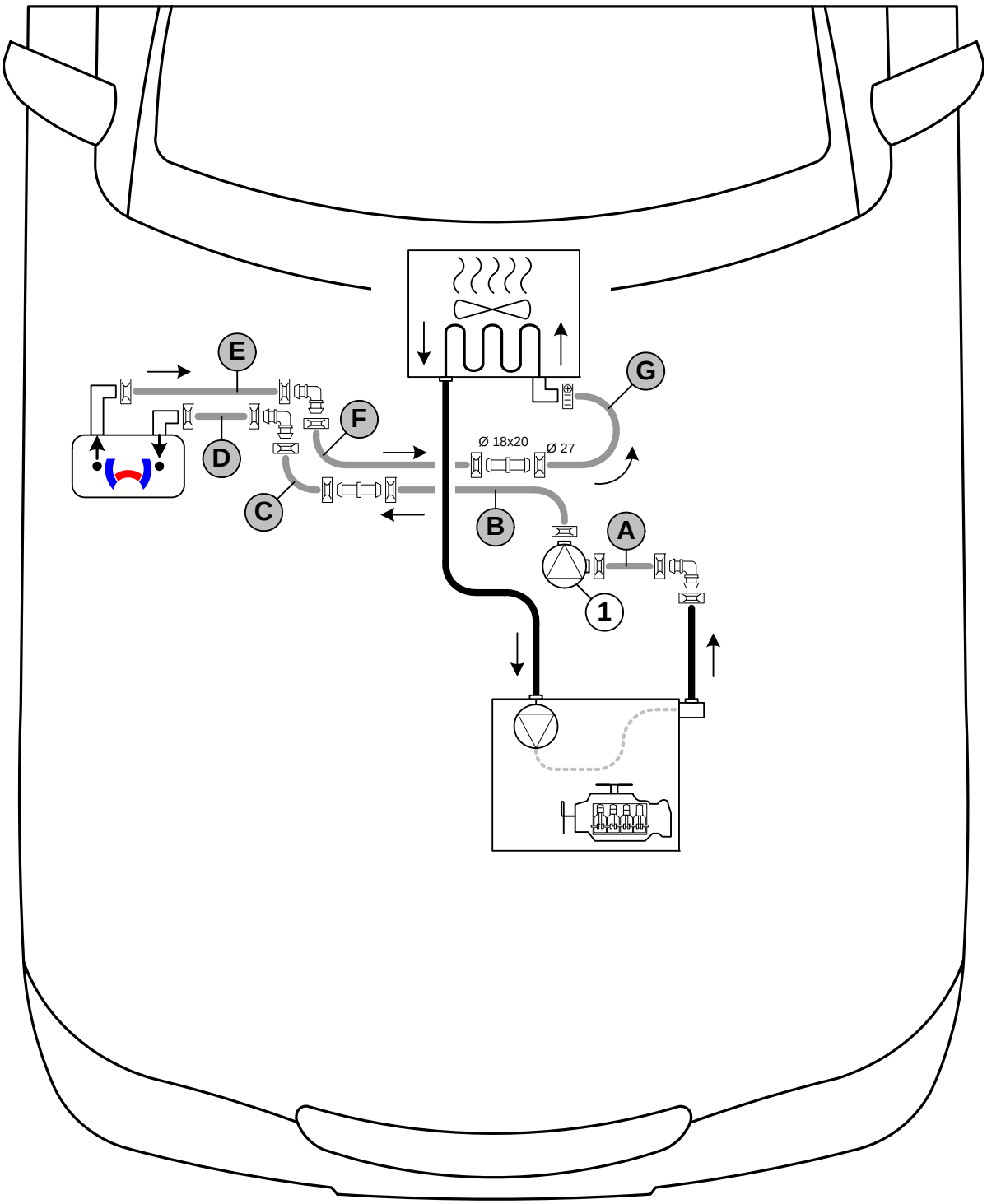
1 Combustion air pipe
2 M5x16 bolt, flanged nut
3 51 mm dia. clamp
4 Silencer

Installing silencer

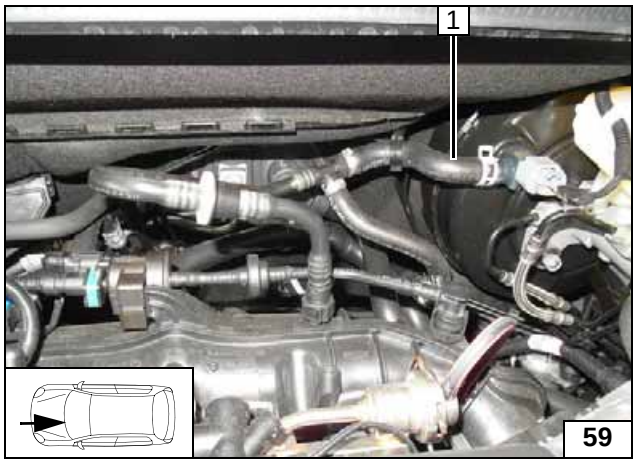
Coolant Circuit 1.4

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

Hose installation diagram



All spring clips without a specific designation = 25 mm dia. Hose clamp = 20-27mm dia.
1 = circulating pump. All connecting pipes without a specific designation and = 18x18mm dia.

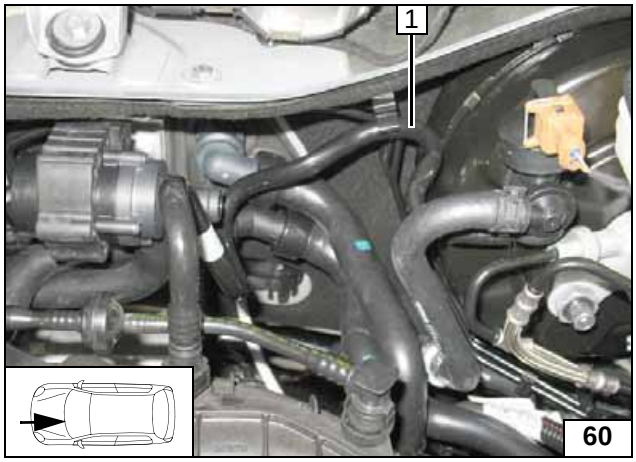


The hose lengths in case of 103 kW depend on the respective vacuum hose on the brake booster.

Variant 1

1 Vacuum hose on brake booster

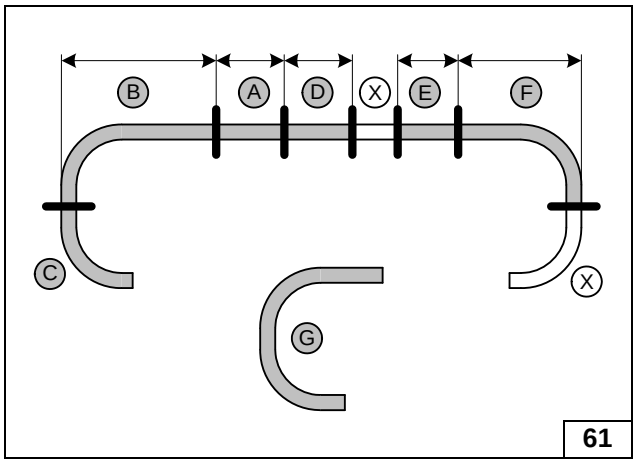
Vacuum hose 103 kW, variant 1



Variant 2

1 Vacuum hose on brake booster

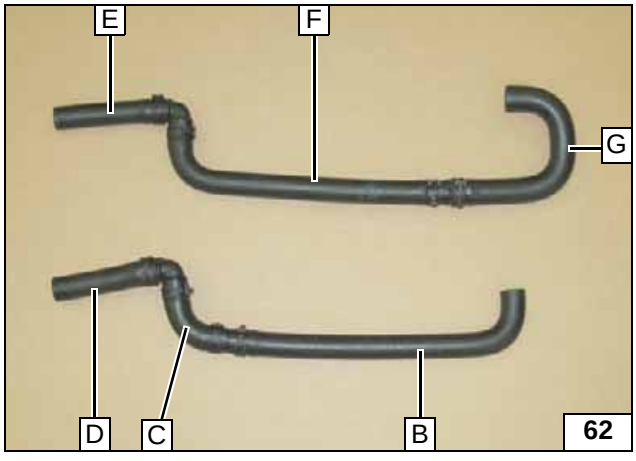
Vacuum hose 103 kW, variant 2



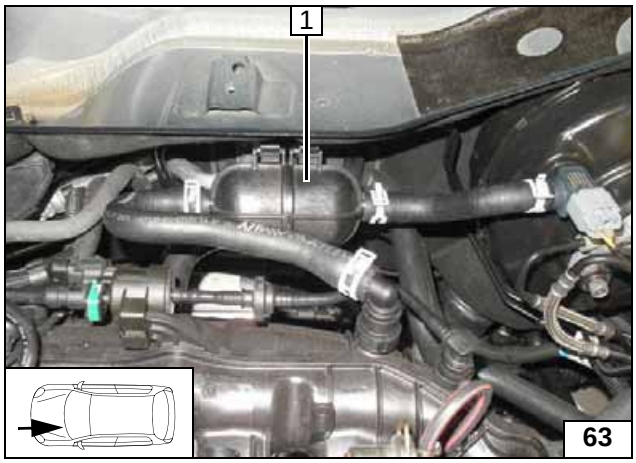
Discard section **X**.
Hose **A-F** = 18mm dia. moulded hose
Hose **G** = 180°, 20mm dia. moulded hose

	74 / 88 kW and 103kW, variant 1	103kW variant 2
A =	55	115
B =	290	230
D =	110	110
E =	110	110
F =	310	310

Cutting hoses to length



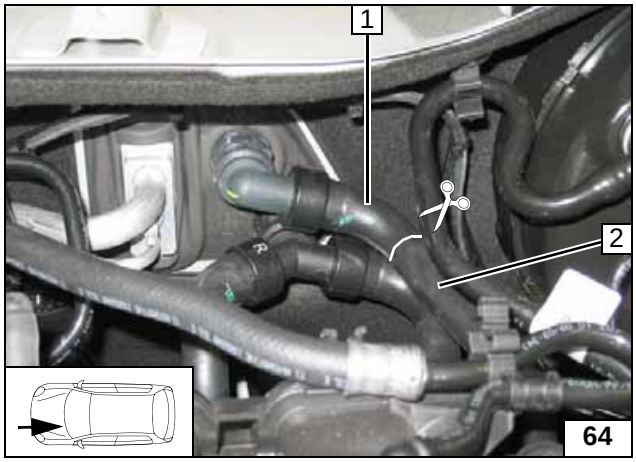
Premounting hoses



Only 1.4 with 88kW

Remove vacuum container **1** with hoses, will be remounted later!

Removing vacuum container

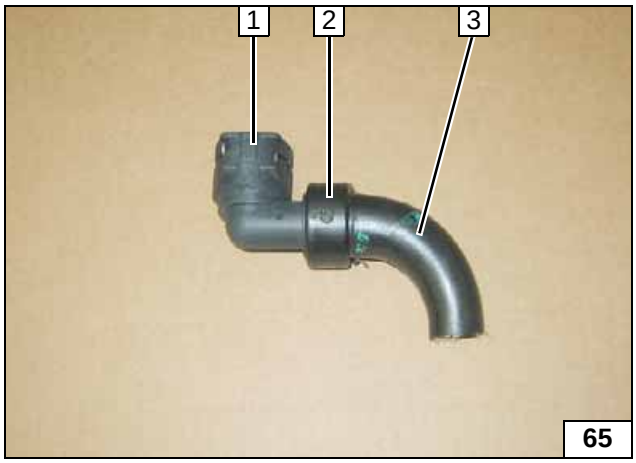


All 1.4

This and all the following figures show 74kW. Remove hose section of heat exchanger inlet **1**.

2 Engine outlet hose section

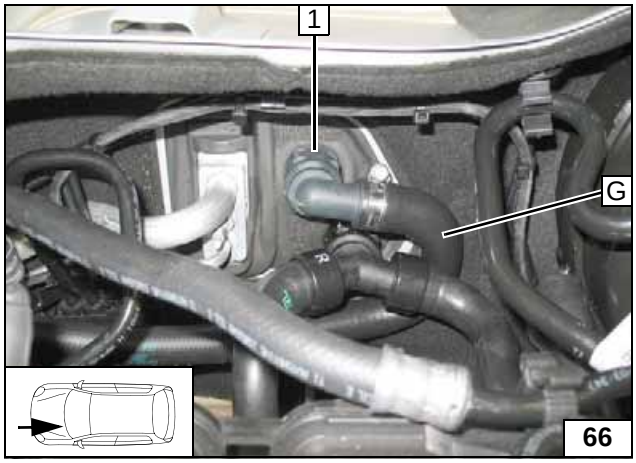
Cutting point



Remove hose section. Cut out ring **2** carefully. Do not damage the coupling, it will be reused. Discard ring **2** und 90° elbow **3** .

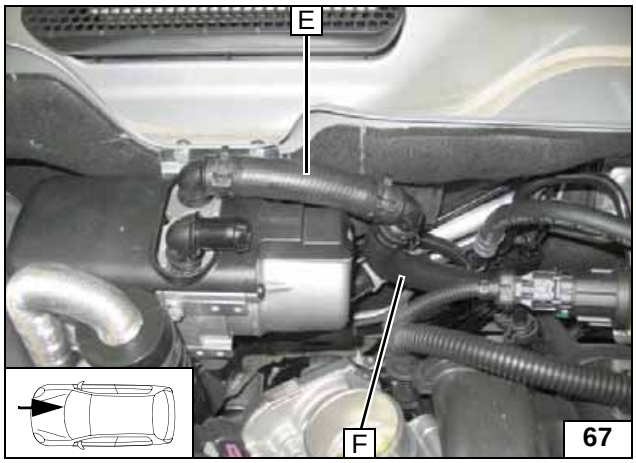
1 Coupling of heat exchanger inlet

Preparing connection of heat exchanger inlet

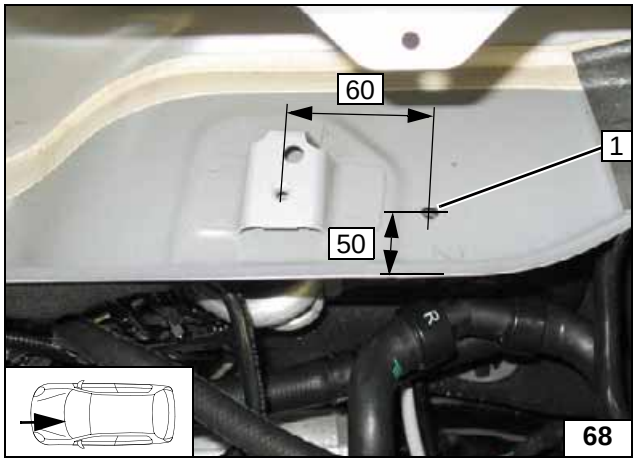


1 Coupling of heat exchanger inlet

Connecting heat exchanger inlet

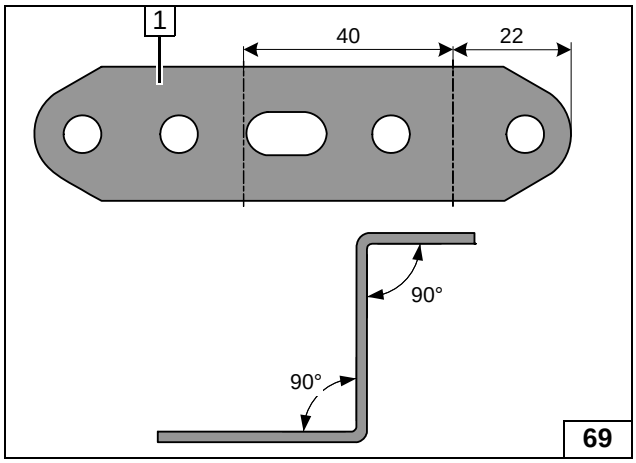


Connecting heater outlet



1 7mm dia. hole

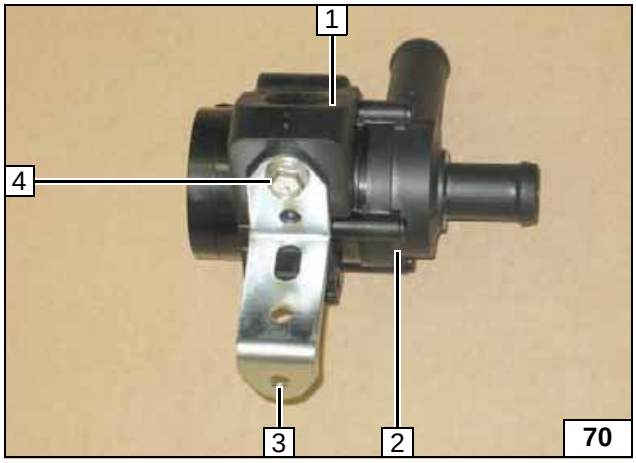
Holes in the coolant reservoir



74 / 88 kW and 103 kW variante 1

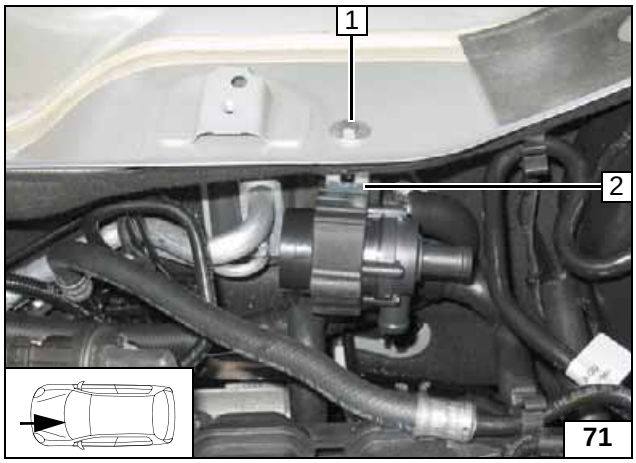
1 Perforated bracket

Preparing perforated bracket



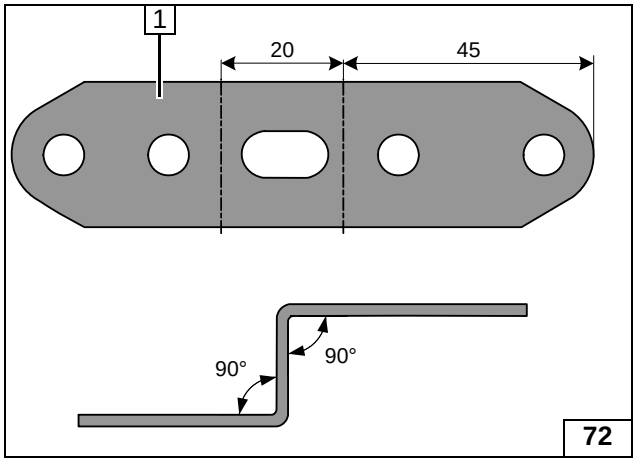
1 Mounting of circulating pump
2 Circulating pump
3 Perforated bracket
4 M6x25 bolt, flanged nut

Premounting circulating pump



1 M6x20 bolt, large diameter washer, flanged nut
2 Perforated bracket

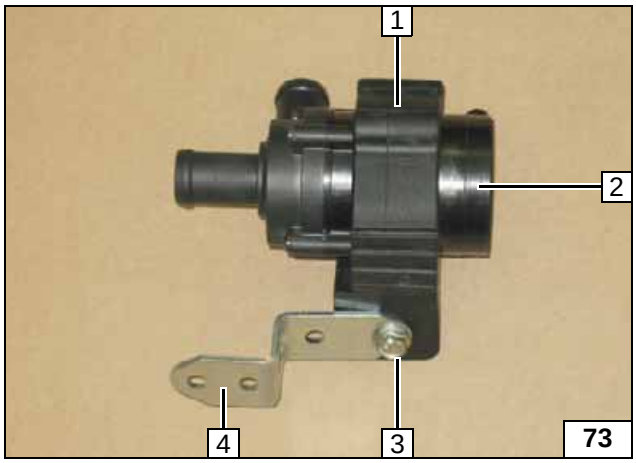
Installing circulating pump



103kW variant 2

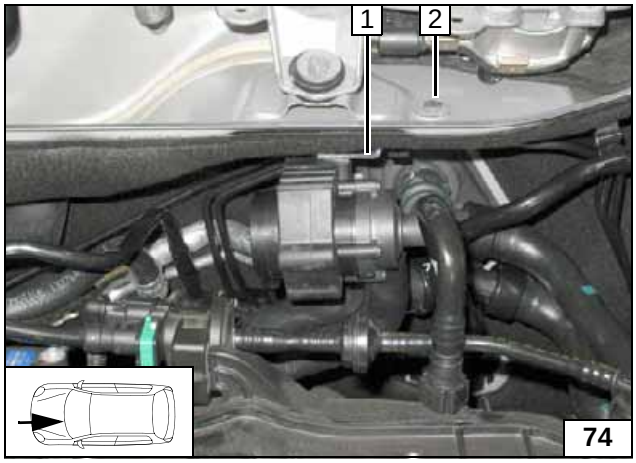
1 Perforated bracket

Preparing perforated bracket



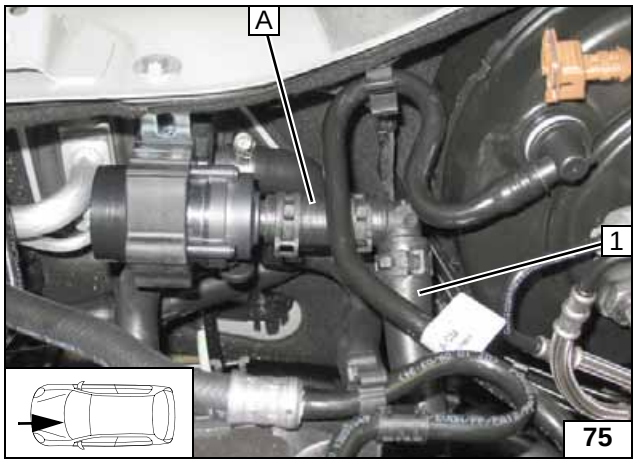
1 Mounting of circulating pump
2 Circulating pump
3 M6x25 bolt, flanged nut
4 Perforated bracket

Premounting circulating pump



1 Perforated bracket
2 M6x20 bolt, large diameter washer, flanged nut

Installing circulating pump

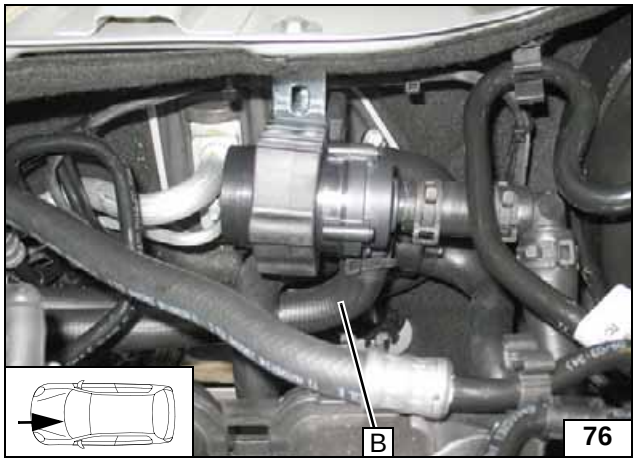


All 1.4

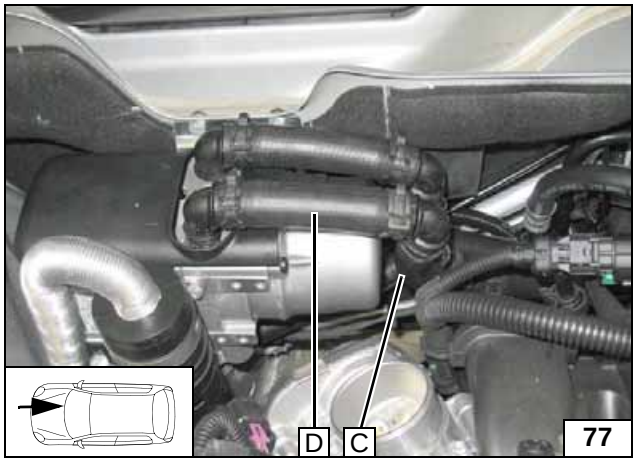
This and all the following figures show 74kW.

1 Hose of engine outlet

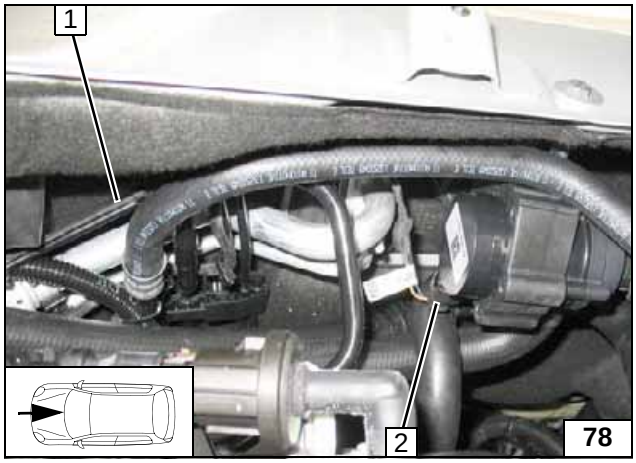
Connecting engine outlet



Connecting circulating pump

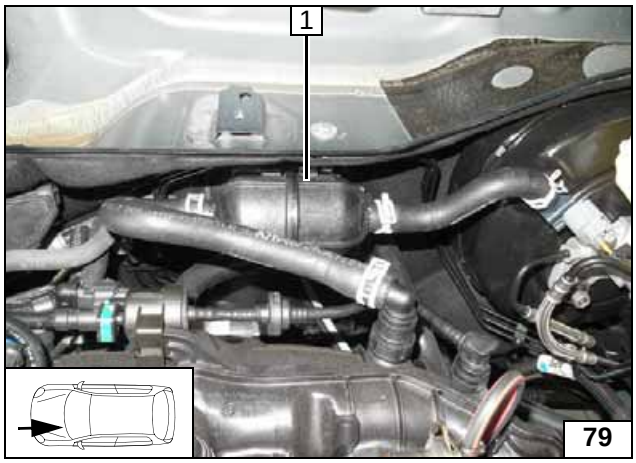


Connecting heater inlet



Mount connector of circulating pump wiring harness **2** on circulating pump and secure to brake line **1**. Align hoses. Ensure sufficient distance from adjacent components; correct if necessary.

Routing wiring harness of circulating pump



Only 1.4 with 88kW

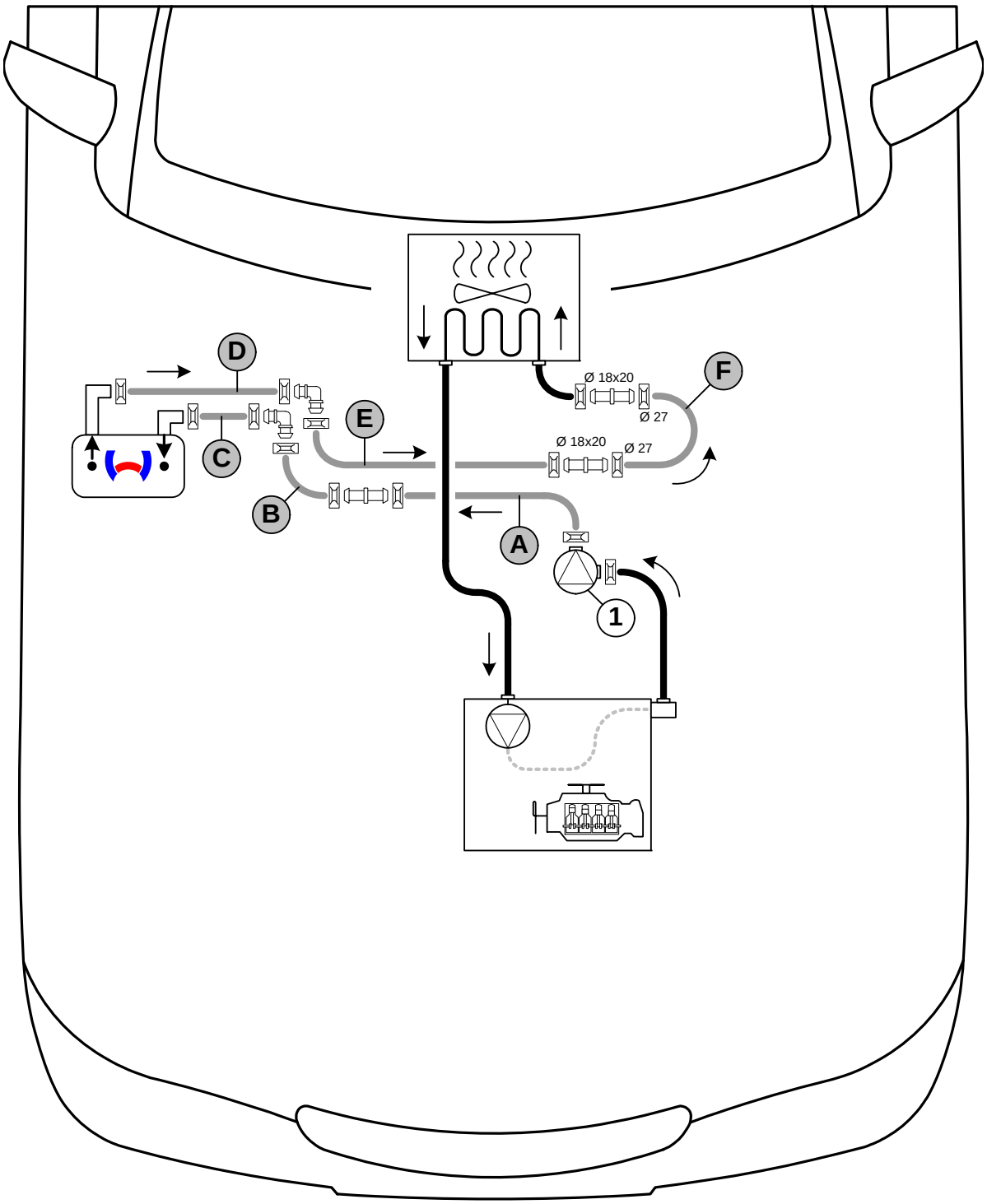
Mount vacuum container **1** with hoses.

Mounting vacuum container

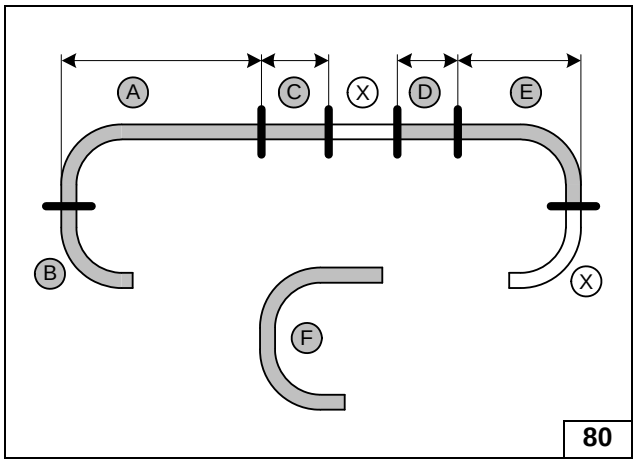
Coolant Circuit 1.6 with 125kW

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

Hose installation diagram



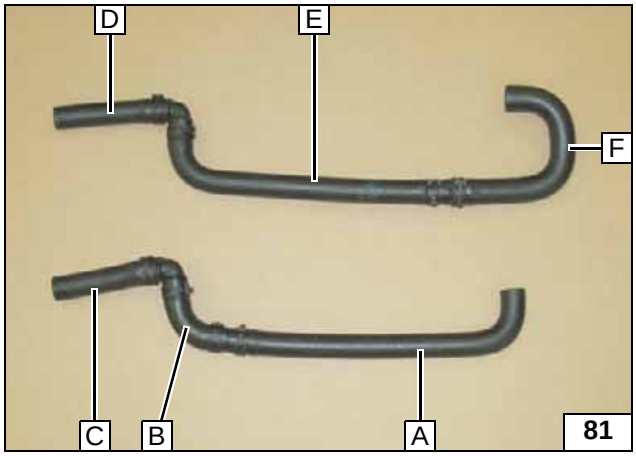
All spring clips without a specific designation = 25 mm dia. **1**= Circulating pump
All connecting pipes without a specific designation and = 18x18mm dia.



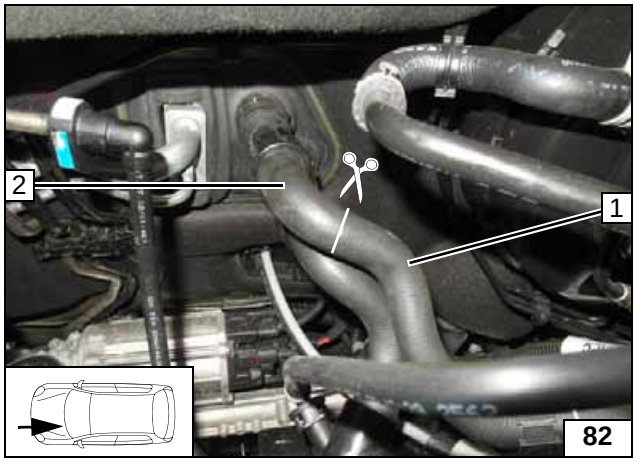
Discard section **X**.
Hose **A-E** = 18mm dia. moulded hose
Hose **F** = 180°, 20mm dia. moulded hose

A = 290
C = 110
D = 110
E = 310

Cutting hoses to length



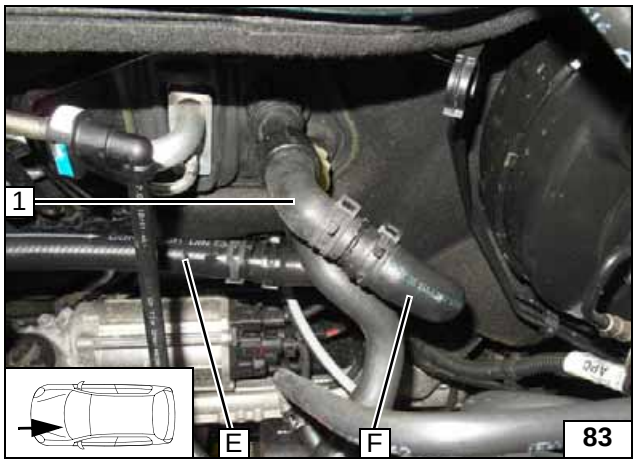
Premounting hoses



Cut off hose on engine outlet/heat exchanger inlet at marking.

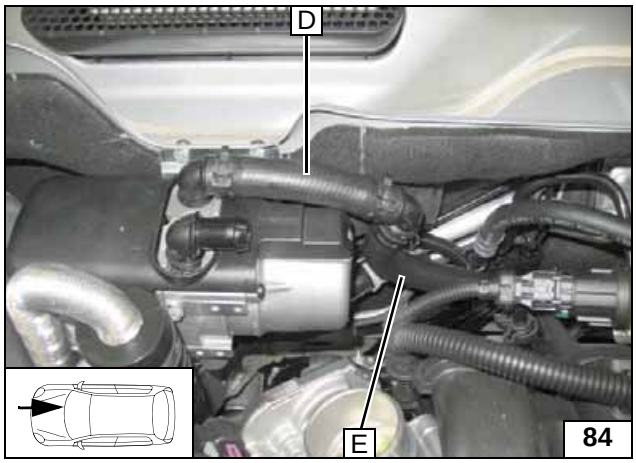
1 Engine outlet hose section
2 Hose section of heat exchanger inlet

Cutting point

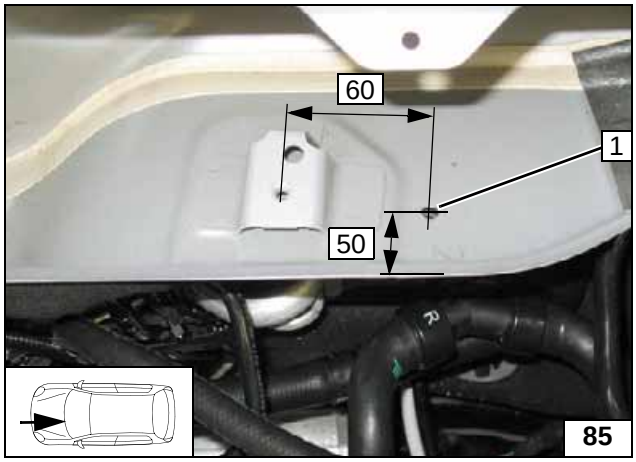


1 Hose on heat exchanger inlet

Connecting heat exchanger inlet

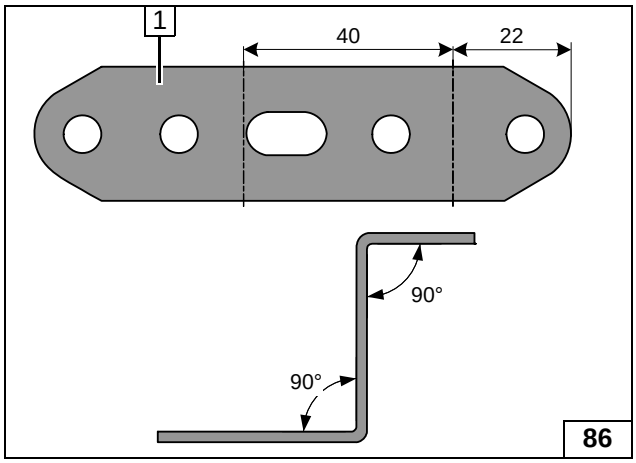


Connecting heater outlet



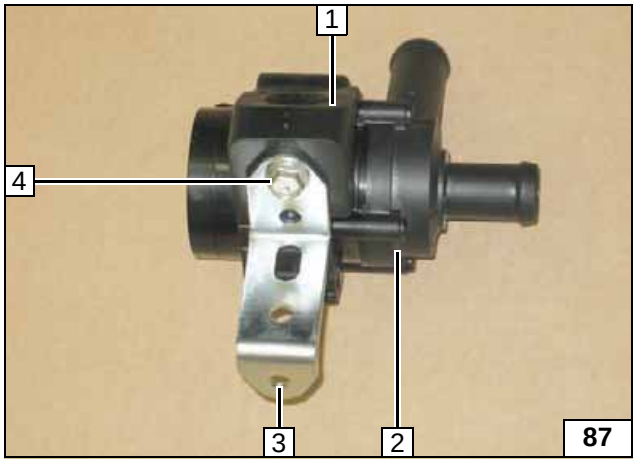
1 7mm dia. hole

Hole in the coolant reservoir



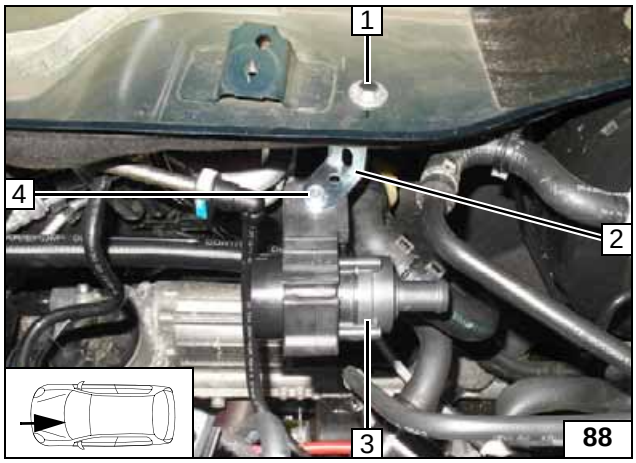
1 Perforated bracket

Preparing perforated bracket



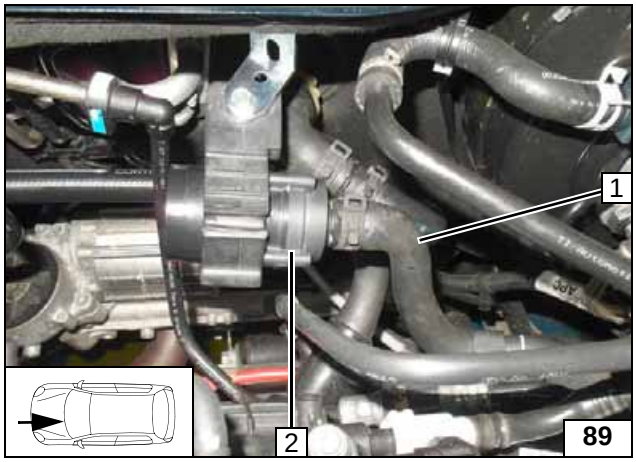
1 Mounting of circulating pump
2 Circulating pump
3 Perforated bracket
4 Install loosely M6x25 bolt, flanged nut

Premounting circulating pump



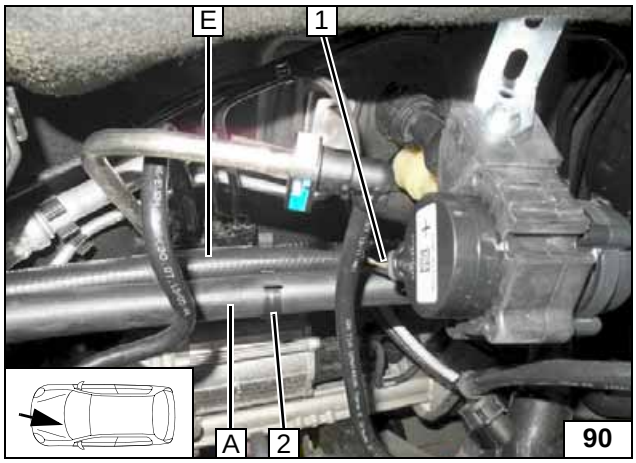
1 M6x20 bolt, large diameter washer, flanged nut
2 Perforated bracket
3 Align circulating pump
4 Tighten bolt

Installing circulating pump



1 Hose of engine outlet
2 Circulating pump

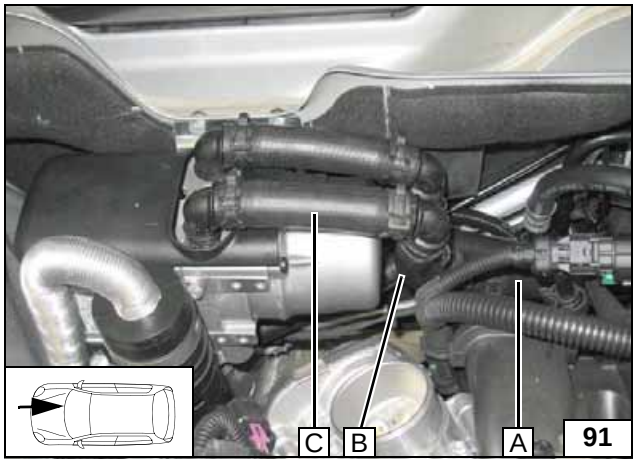
Connecting engine outlet



Connect hose **A** with 90° elbow and 25mm dia. spring clip to circulating pump (hidden).

1 Connector for wiring harness of circulating pump
2 Hose bracket between hose **A** and **E**

Connecting circulating pump



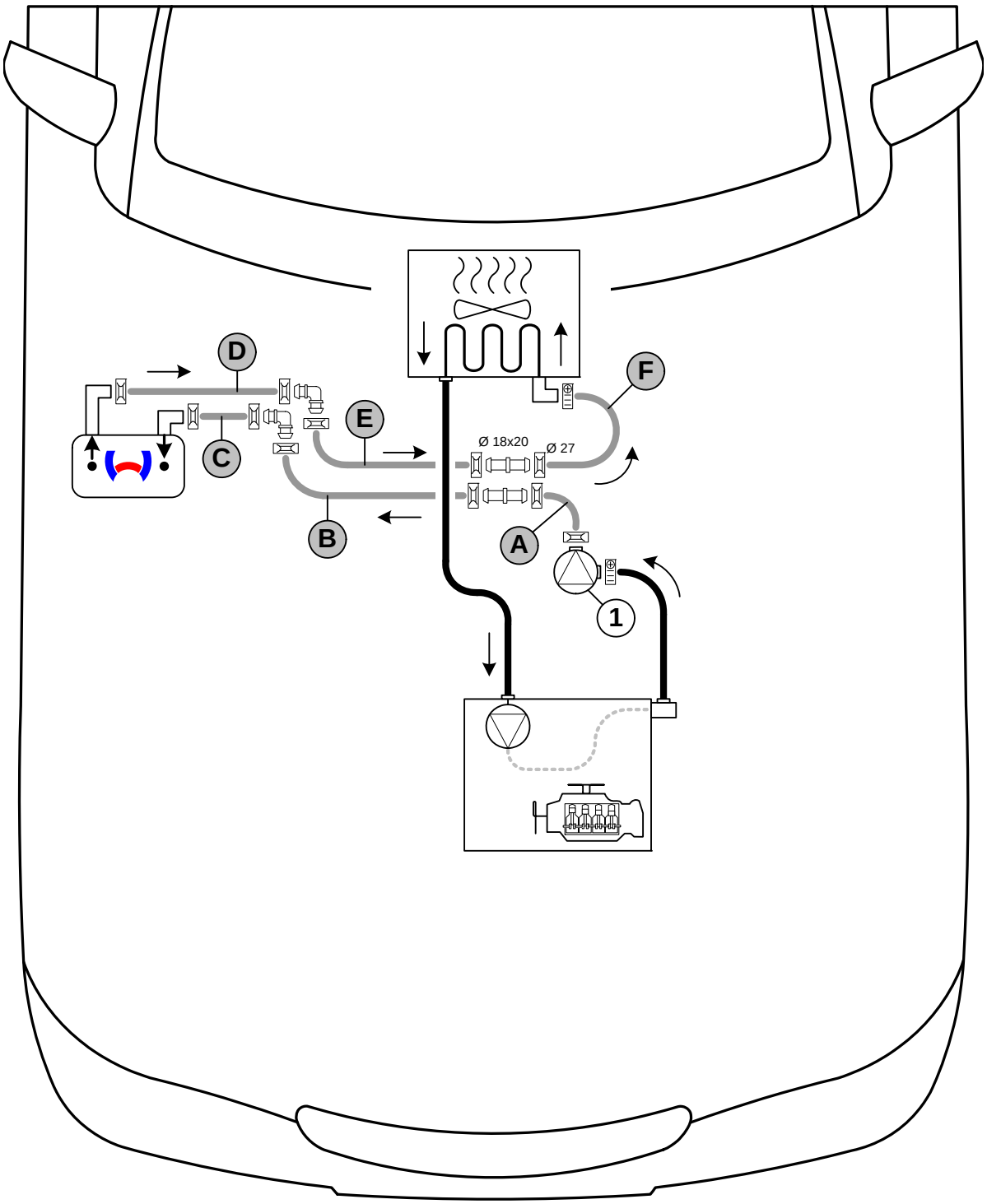
Align hoses. Ensure sufficient distance from adjacent components; correct if necessary.

Connecting heater inlet

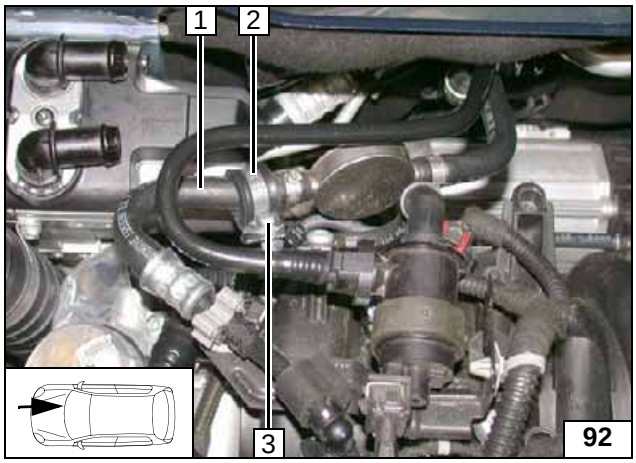
Coolant Circuit 1.6 With 85 / 132kW

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

Hose installation diagram



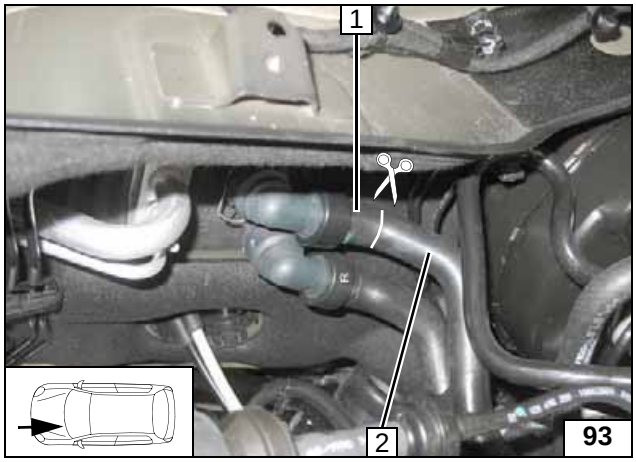
All spring clips without a specific designation = 25 mm dia. All hose clamps = 20-27mm dia.
1 = circulating pump. All connecting pipes without a specific designation and = 18x18mm dia.



1.6 with 85kW

1 Original vehicle wire of bubble separator
2 18 mm dia. rubber-coated p-clamp
3 M6x20 bolt, flanged nut, existing hole

Fastening wire

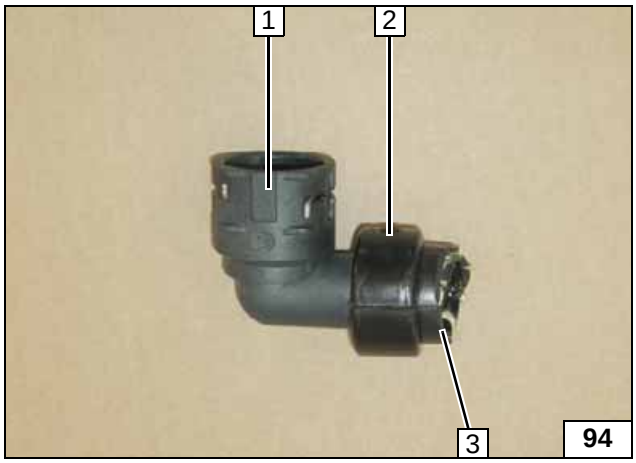


1.6 with 85 / 132kW

Figure shows 132kW.
Remove hose section of heat exchanger inlet **1**.

2 Engine outlet hose section

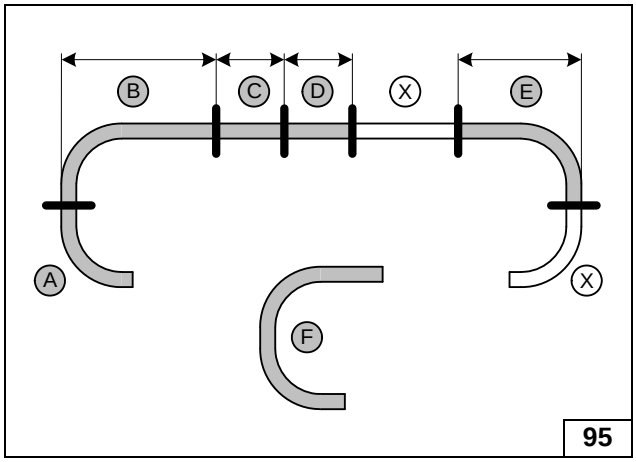
Cutting point



Remove hose section. Cut out ring **2** carefully. Do not damage the coupling, it will be reused. Discard ring and remaining hose **3**.

1 Coupling of heat exchanger inlet

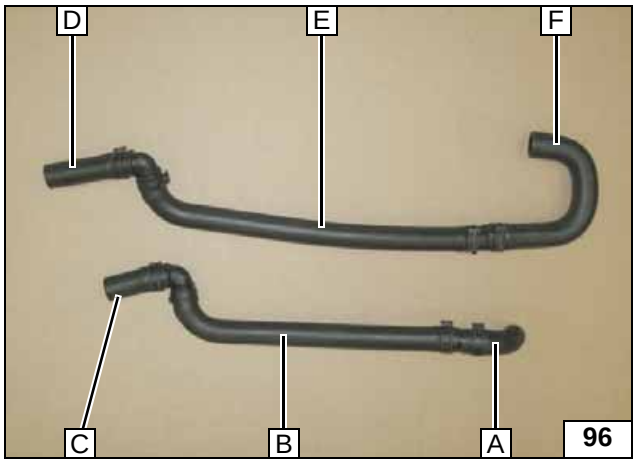
Preparing connection of heat exchanger inlet



Discard section **X**.
Hose **A-E** = 18mm dia. moulded hose
Hose **F** = 180°, 20mm dia. moulded hose

	85kW	132kW
B =	290	290
C =	95	65
D =	95	95
E =	330	330

Cutting hoses to length



Premounting hoses

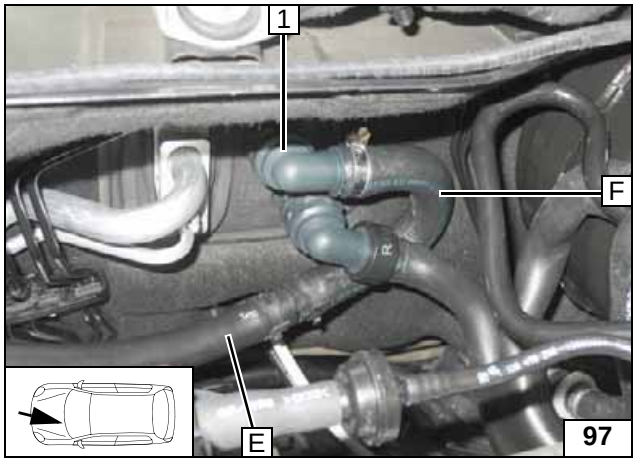


Figure shows 132kW.

1 Coupling of heat exchanger inlet

Connecting heat exchanger inlet

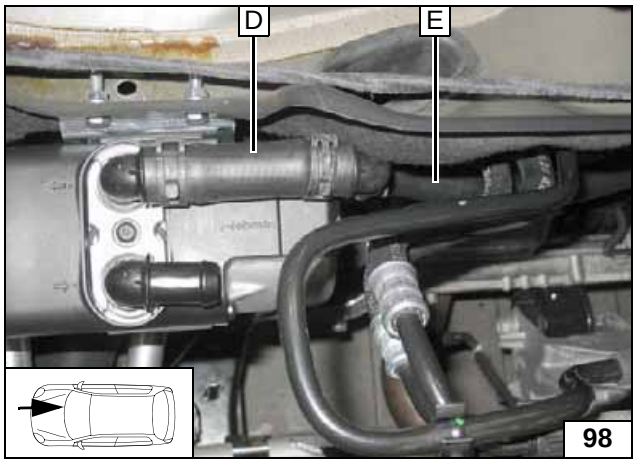
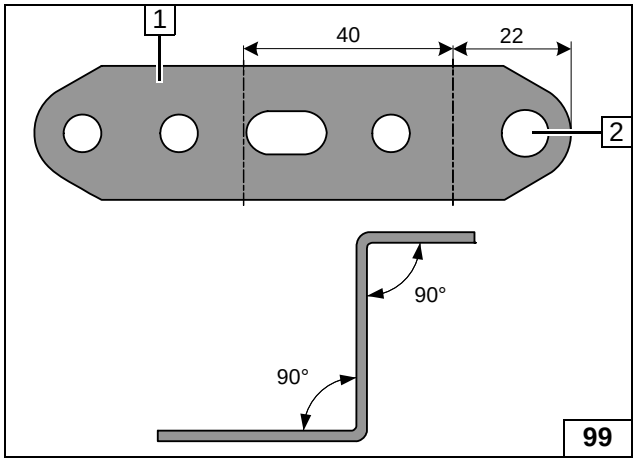


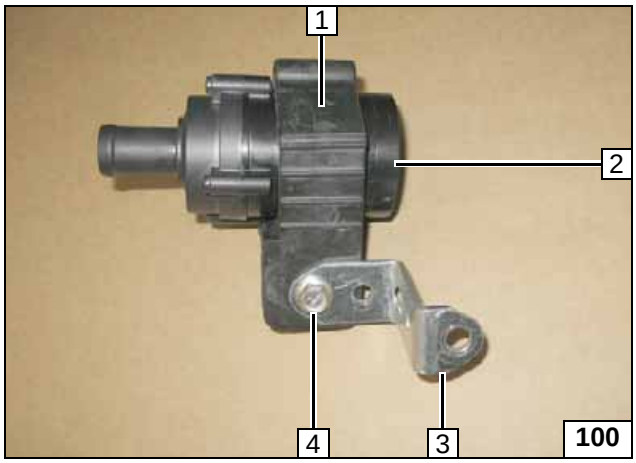
Figure shows 132kW.

Connecting heater outlet



1 Perforated bracket
2 Drill out hole to 8.5 mm dia.

Preparing perforated bracket



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

Premounting circulating pump

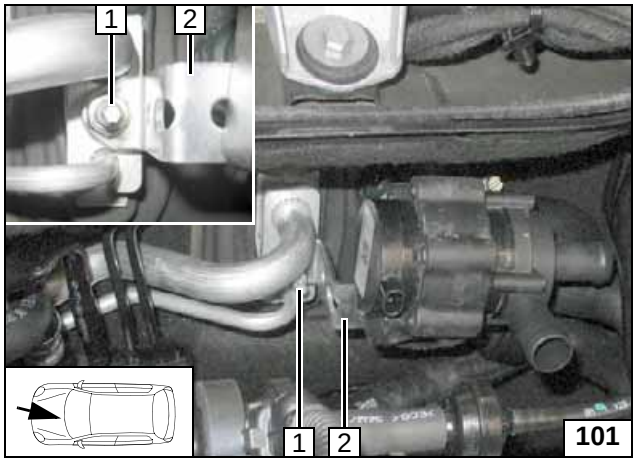
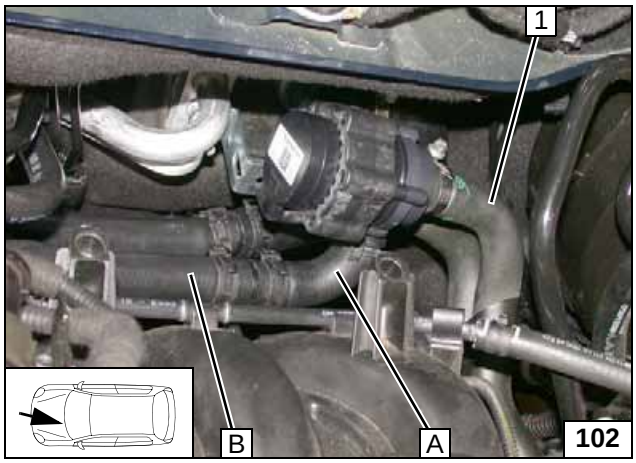


Figure shows 132kW.

1 Original vehicle stud bolt, M8 flanged nut
2 Perforated bracket

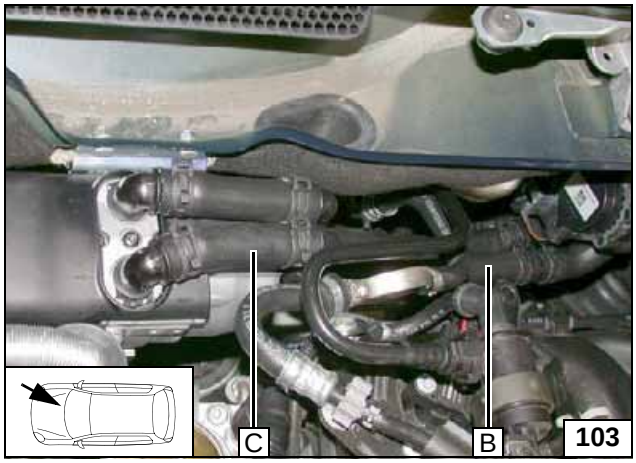
Installing circulating pump



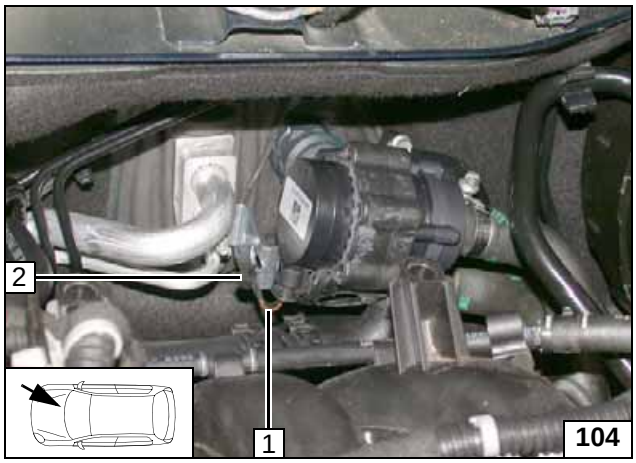
1.6 with 85kW

1 Hose of engine outlet

Connecting circulating pump



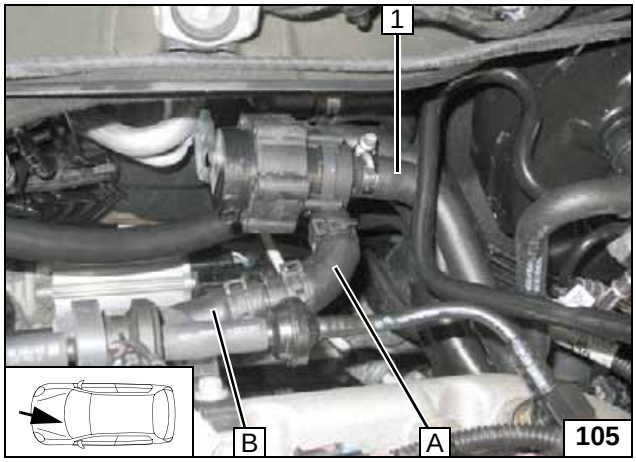
Connecting heater inlet



Mount connector of circulating pump wiring harness **1** on circulating pump. Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

2 Cable tie

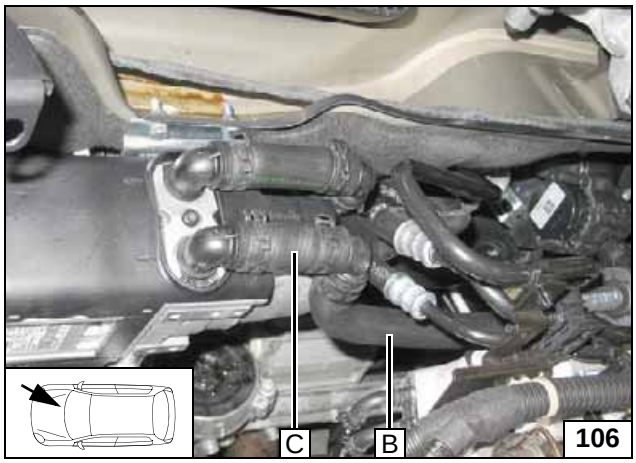
Routing wiring harness of circulating pump



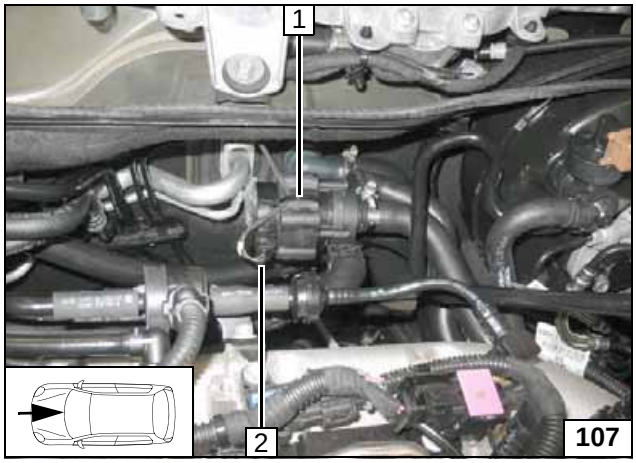
1.6 with 132kW

1 Hose of engine outlet

Connecting circulating pump



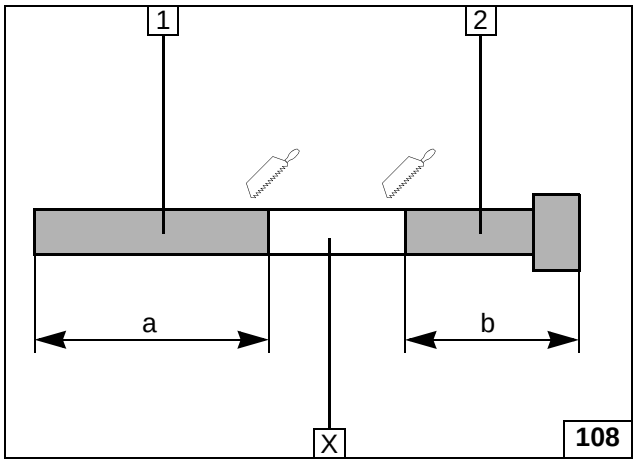
Connecting heater inlet



Mount connector of circulating pump wiring harness **2** on circulating pump. Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

1 Cable tie

Routing wiring harness of circulating pump

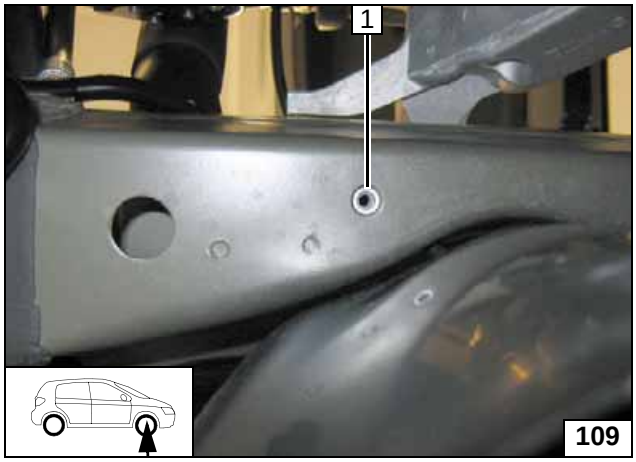


Exhaust Gas

Discard section **X**.

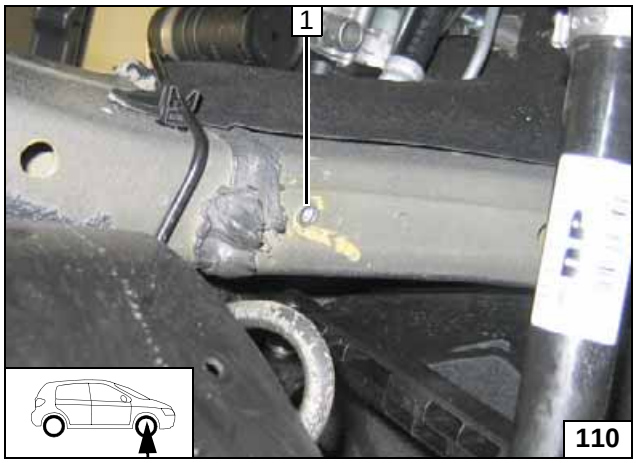
1 Exhaust pipe
a = 550
2 Exhaust end section
b = 280

Preparing exhaust pipe



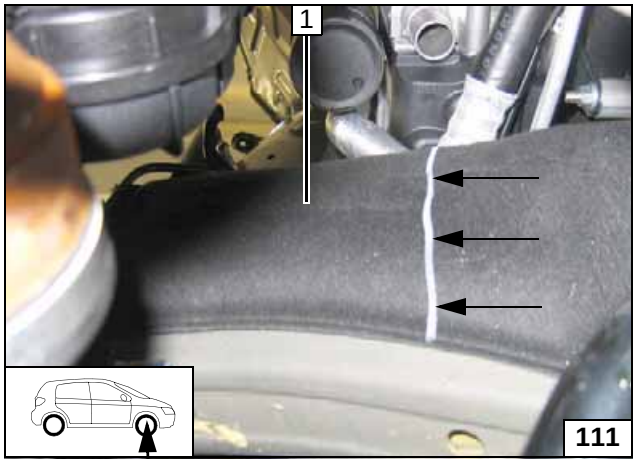
1 Rivet nut, existing hole

Installing rivet nut



1 Rivet nut, existing hole

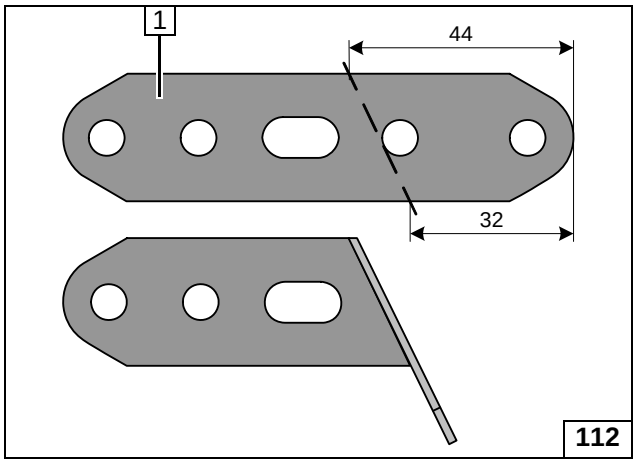
Installing rivet nut



Cut away insulation (if available) at the marking.

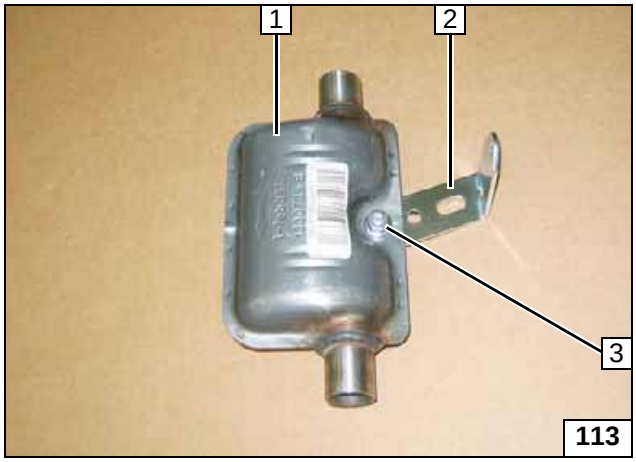
1 Remove and discard section

Cutting out insulation



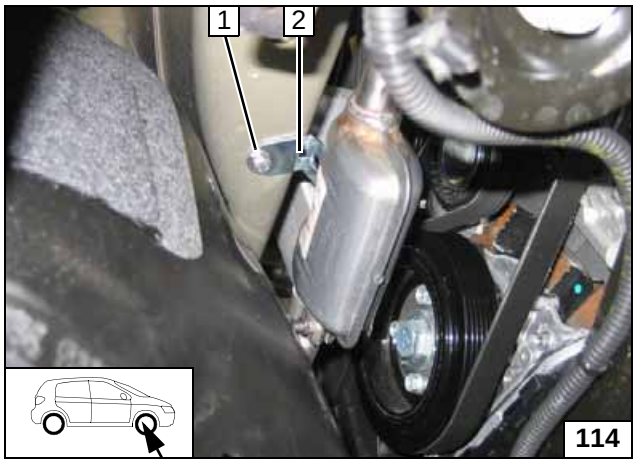
Angle down perforated bracket **1** by 90°

Preparing perforated bracket



1 Silencer
2 Perforated bracket
3 M6x12 bolt, flanged nut

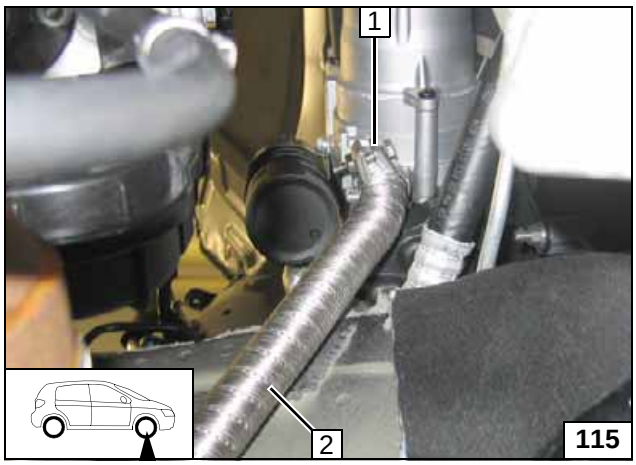
Premounting silencer



Insert two plain washers between perforated bracket **2** and frame side member.

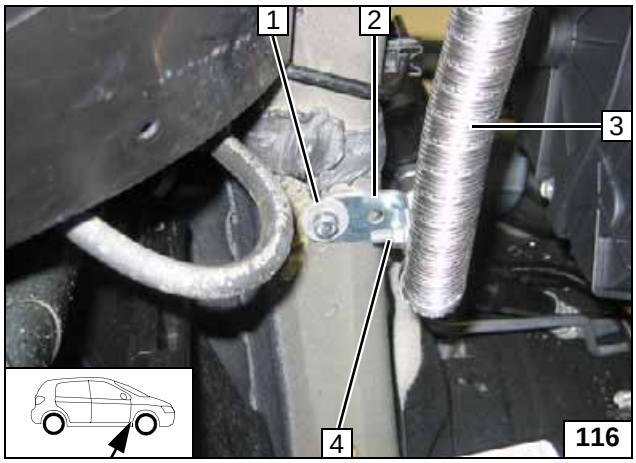
1 M6x20 bolt, spring lockwasher, plain washer [2x]

Installing silencer



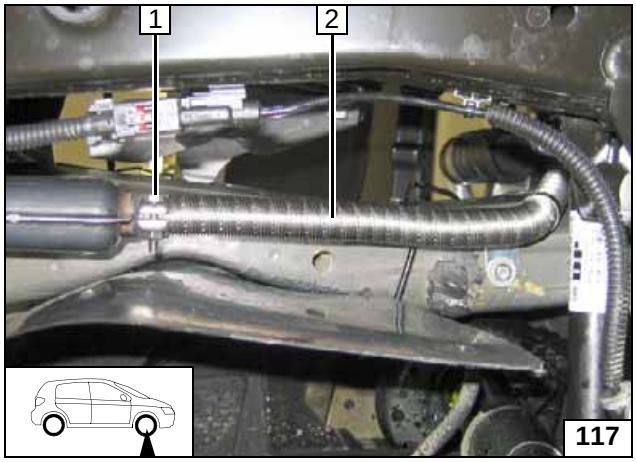
1 Hose clamp
2 Exhaust pipe

Mounting exhaust pipe



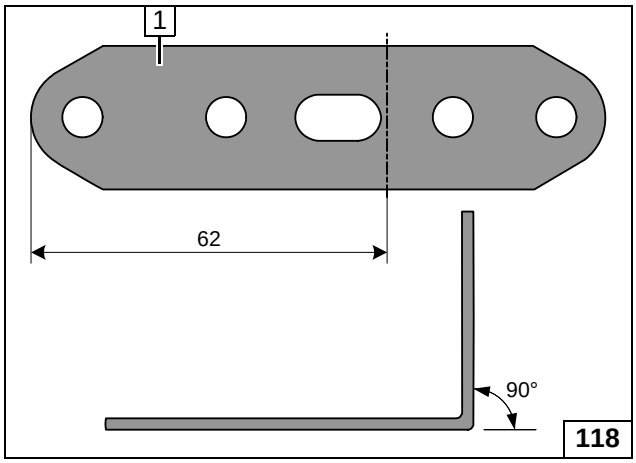
1 M6x20 bolt, spring lockwasher, large diameter washer
2 Angle bracket
3 Exhaust pipe
4 M6x20 bolt, p-clamp, flanged nut

Mounting exhaust pipe



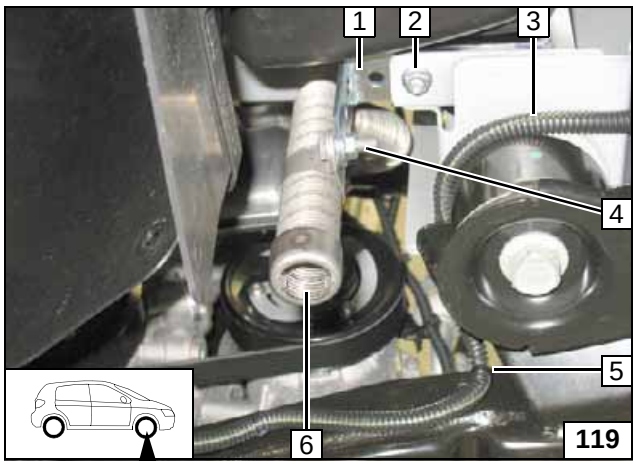
1 Hose clamp
2 Exhaust pipe

Mounting exhaust pipe



Angle down perforated bracket **1** by 90°

Preparing perforated bracket



Remove retaining clip from original vehicle wiring harness **3** at Position **2** and install at Position **5** in the existing hole!

1 Perforated bracket
2 M6x12 bolt, flanged nut
4 M6x20 bolt, p-clamp, flanged nut
6 Exhaust end section

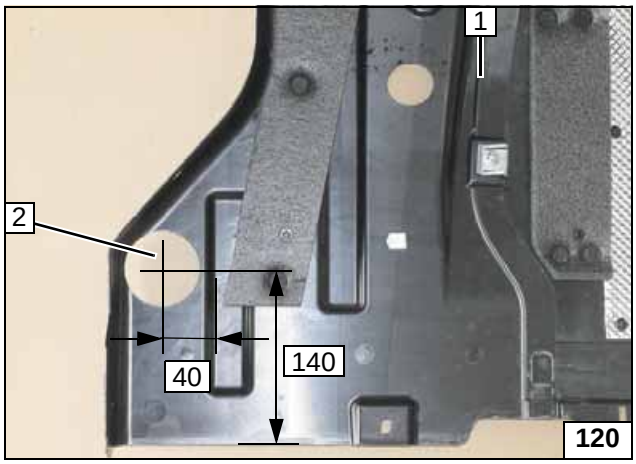
Mounting exhaust end section

Final Work

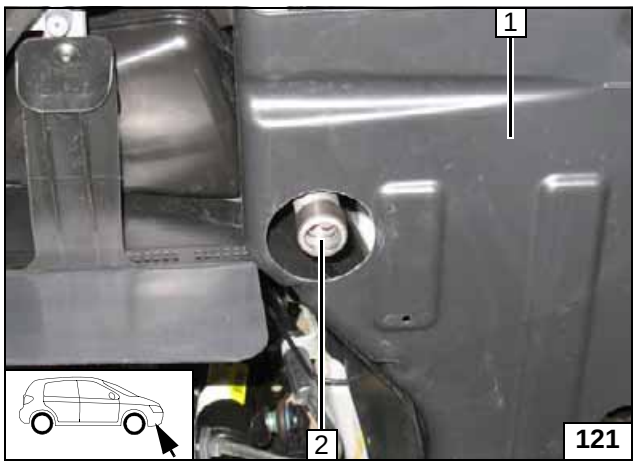
WARNING!
Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires.
Only use manufacturer-approved coolant. Spray heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's instructions.**
- **Set the digital timer, teach Telestart transmitter**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place the "Switch off parking heater before refuelling" caution label in the area of the filler neck.**
- **For initial start-up and function check, see installation instructions**

Cutting out underride protection



1 Underride protection
2 60mm dia. hole

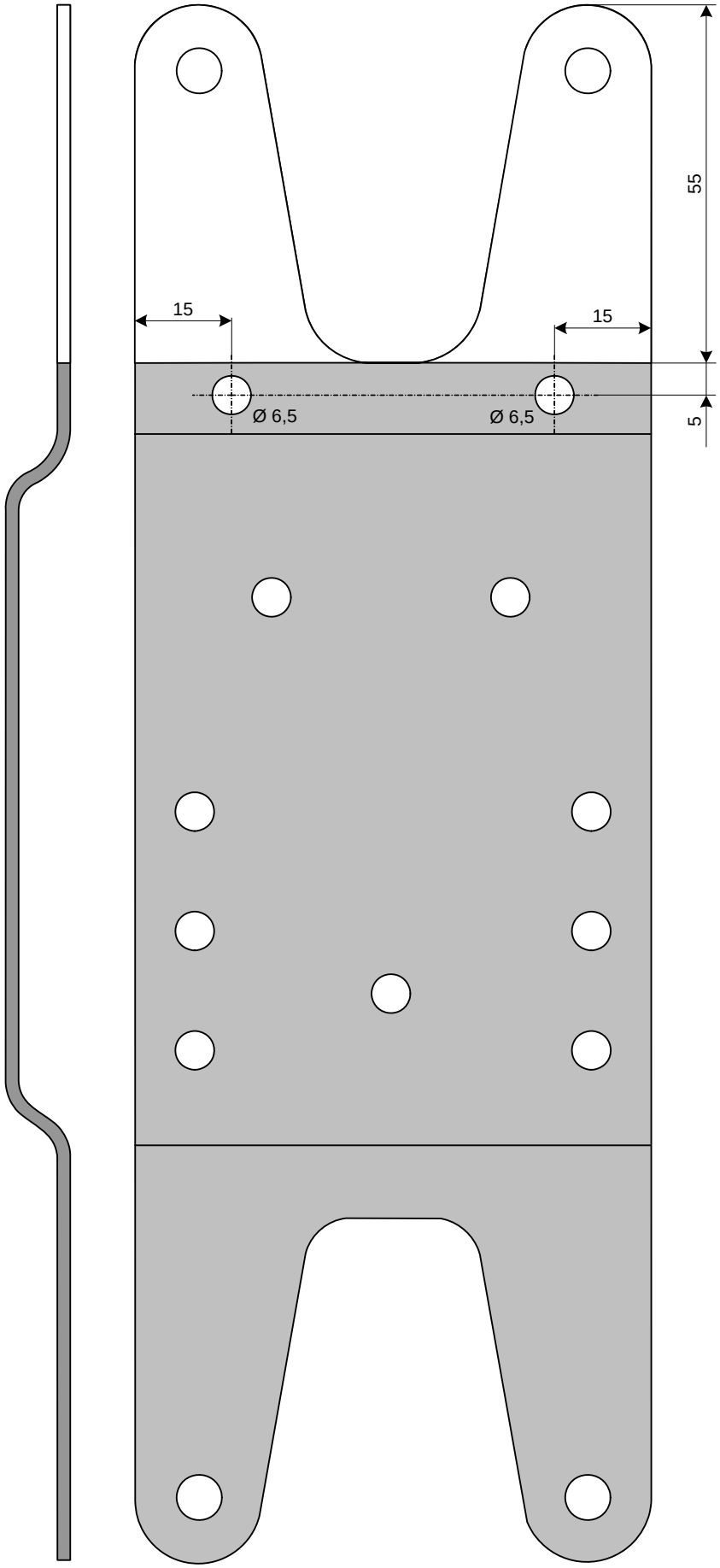


Align exhaust end section **2** in the middle of the hole and flush with underride protection **1**. Ensure sufficient distance from adjacent components; correct if necessary.

Aligning exhaust end section

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

Template for Bracket



100mm

Scale 1:1

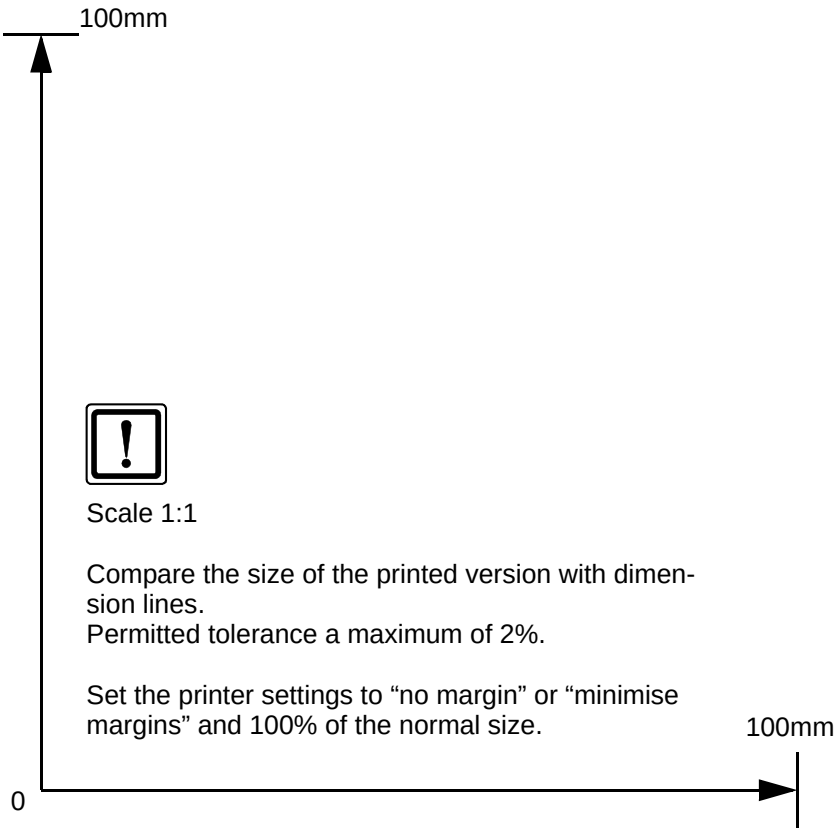
Compare the size of the printed version with dimension lines.
Permitted tolerance a maximum of 2%.

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

100mm

0

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.

Operating Instructions for End Customer

Please remove page and add to the vehicle operating instructions.

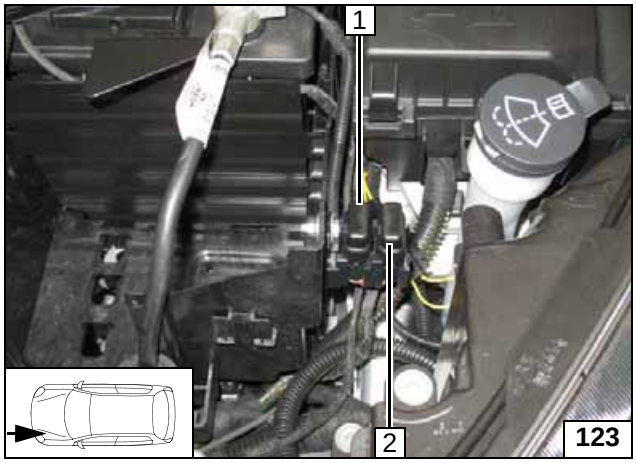
Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For information on deactivation, please see the vehicle owner's manual.

Before parking the vehicle, make the following settings:

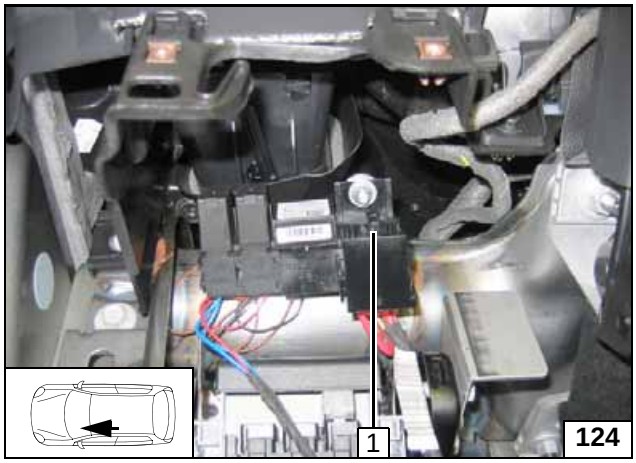
A/C control panel

1 Air outlet to windscreen
2 Set temperature to "max."



Engine compartment fuses

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



Passenger compartment fuses

1 1A fuse F3 of heater control