

Water Heater Unit



Thermo Top V Additional heater e1 00 0018

Installation instructions

Ford S-MAX / Galaxy

Diesel

From model year 2006

For left-hand drive vehicles only

Only for automatic air conditioning



WARNING!

Hazard warning:

Incorrect installation or repair of Webasto heating systems may cause a fire or result in the emission of carbon monoxide, which can be fatal. Serious or fatal injuries can be caused as a result.

Specialist company training, technical documentation, specialized tools and equipment are required to install and repair Webasto heating and cooling systems.

NEVER attempt to install or repair Webasto heating or cooling systems if you have not successfully completed the company training and thereby acquired the required technical skills or if you do not have access to the required technical documentation, tools and equipment needed to carry out correct installation and repairs.

ALWAYS follow all Webasto installation and repair instructions and observe all warning instructions.

Webasto does not accept any liability for defects and damage that are attributable to an installation by untrained staff.

Table of Contents

Validity	2	Automatic air conditioning blower control	8
Heater Unit / Scope of Delivery	3	Connection diagram for control elements:	11
Foreword	3	Remote Start Option	12
General Instructions	3	Thermo Call Option	13
Special Tools	3	Preassembling the heater unit	14
Explanatory Notes on the Document	4	Installing the Heater Unit	15
Preliminary work	5	Assembling the exhaust system	15
Heater unit installation location	5	Fuel Connection	17
Electrical Connections	6	Water Connection	20
Preparing the Electronics	7	Final Work	25
Preparing the cable harness	7	Operating instructions for the end customer	26

Validity

Manufacturer	Model	Type	EG-BE No. / ABE
Ford	S-MAX / Galaxy	WA 6	e13*2001/116*0185...

Engine type	Engine model	Power in kW	Engine capacity in cm ³
2.0 TDCi	Diesel	96	1997
2.0 TDCi	Diesel	103	1997

Vehicle and engine types, equipment variants as well as national specifications, which are not listed in these installation instructions, have not been tested. Installation according to these installation instructions may, however, be possible.

The installation location of the time switch or the tip switch should be confirmed with the end customer before installation.

Heater Unit / Scope of Delivery

Scope of delivery:

Amount	Description	Order No.
1	Scope of delivery for Ford S-Max / Galaxy Diesel without operating control	1311401A

Additionally for vehicles with automatic air conditioning

Amount	Description	Order No.
1	Automatic air conditioning kit	1311421A

Optional control element selection:

Amount	Description	Order No.
1	Time switch	9010869A
1	Remote start T80	9010870A
1	T91 remote start	9016028A
1	Thermo Call II	9016027A

In addition, when Thermo Call and Telestart are used

Amount	Description	Order No.
1	Y cable	9001505A

Foreword

These installation instructions apply to Ford S-MAX / Galaxy vehicles with Diesel engines - for validity, see page 2 - from model year 2006 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 these installation instructions.

However, where this is the case the stipulations in the "installation instructions" and "operating and maintenance instructions" for the *Thermo Top V* should be observed. The corresponding rules of technology and any information from the vehicle manufacturer should be observed during the installation work.

An error may be stored in the "heater, ventilation and air conditioner" error memory when the auxiliary heating is operated, this must be deleted during the vehicle inspection according to the manufacturer's instructions.

General Instructions

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and cable harnesses to original vehicle lines and cable harnesses using cable clips.

Sharp edges should be fitted with edge protectors (split open plastic hose).

Spray unfinished body areas, such as bore holes, with anti-corrosion wax (Tectyl 100K, Order no. 111329).

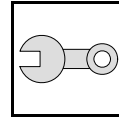
Special Tools

- Torque spanner for 2.0 - 10 Nm
- Vice-grip wrench
- Riveting nut tool
- Ford unlocking tool no.: GV 3301 (4x)

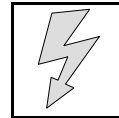
Explanatory Notes on the Document

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

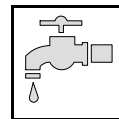
Mechanics



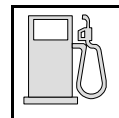
Electrics



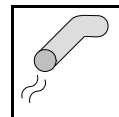
Water connection



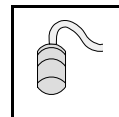
Fuel connection



Exhaust System



Combustion air



Special features are highlighted using the following symbols:



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



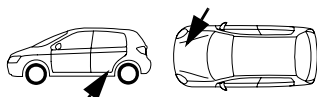
Specific risk of fire or explosion.



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



Reference to a special technical feature.



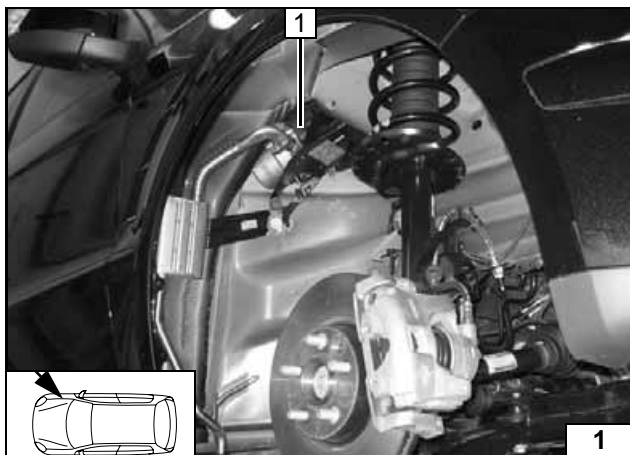
The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary work

WARNING!

- Open the tank cap, ventilate the tank.
- Close the tank cap again.
- Disconnect the battery.
- Let off pressure in the cooling system.
- Copy the factory number from the original type label to the duplicate type label.
- Remove years that do not apply from the duplicate label.
- Attach the duplicate label (type label) in the appropriate place.
- Add the information label on the diagnostic connection cover.
- Remove the engine design cover.
- Remove the battery and the battery support.
- Remove the air filter box.
- Remove the windshield wipers.
- Remove the cooling water reservoir cover
- Remove the cooling water reservoir cover in the engine compartment.
- Remove the bracket for the coolant hoses (2x plastic nuts on the engine compartment rear bulk)
- Remove the front right wheel.
- Remove the right wheel-house panel.
- Remove the lower engine cover
- Remove the fuel line cover under the vehicle.
- Remove the switch strip or decoration strip above the air conditioning control / radio or the air conditioning unit / navigation (unclip).
- Remove the air conditioning control / radio or the air conditioning unit / navigation.
- Remove the cover under the right glove compartment.
- Remove the lower cover on the right A-pillar panel.

Remove page 26 "Operating instructions for the end customer" and add this to the vehicle operating instructions.



Heater unit installation location

1 Heater unit

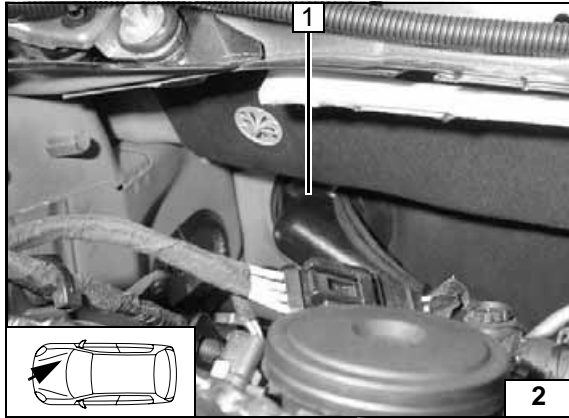
Installation location



Electrical Connections

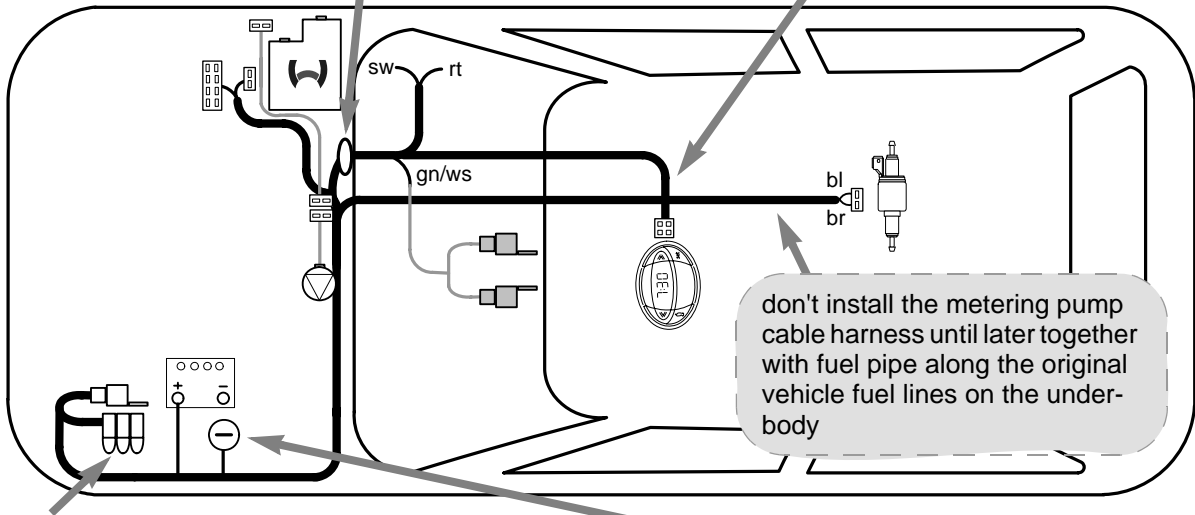
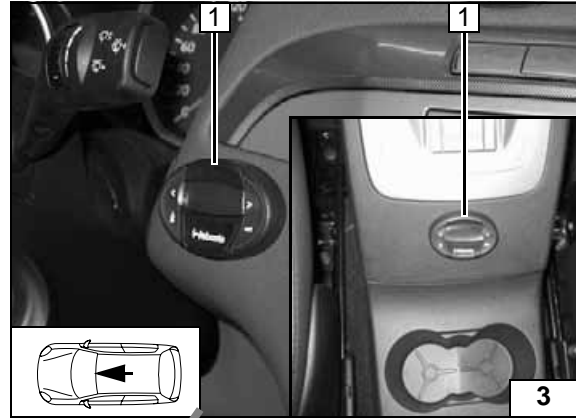
Cable harness feed-through

- 1 Protective rubber sleeve

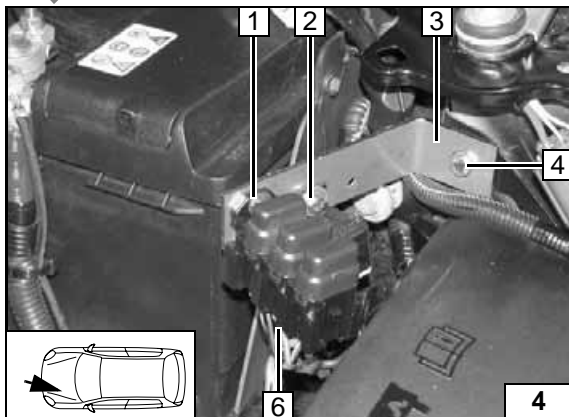


Time switch

- 1 Time switch

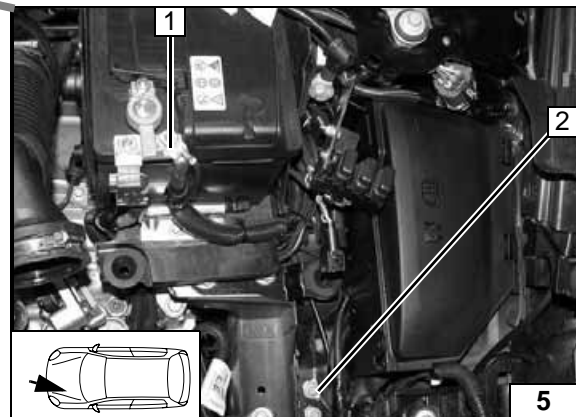


Cable harness installation diagram for the automatic air conditioning



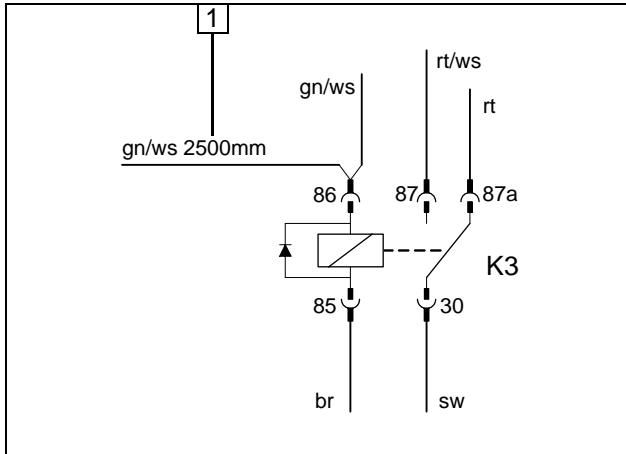
fuse holder, K3 relay

- 1 Fuse holder retaining plate, M5x16 bolt, washers, M5 nuts, (drill open hole 1 to 5.5 mm).
- 2 K3 relay, M5x16 bolt, washers, M5 nut
- 3 Fuse holder
- 4 M6x12 bolt, original vehicle bore hole, M6 flanged nut



Power supply for the heater unit cable harness

- 1 Battery positive terminal connection
- 2 Original vehicle grounding point

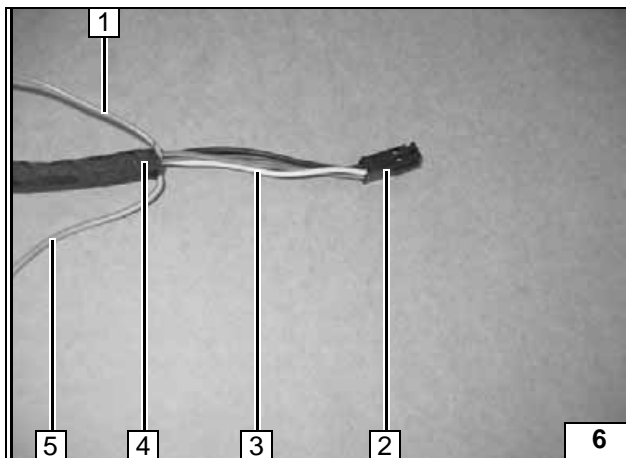


Preparing the Electronics

- 1 Green/white (gn/ws) wire, 2,500 mm, insulation hose.



Pre-assembling the Cable Harness



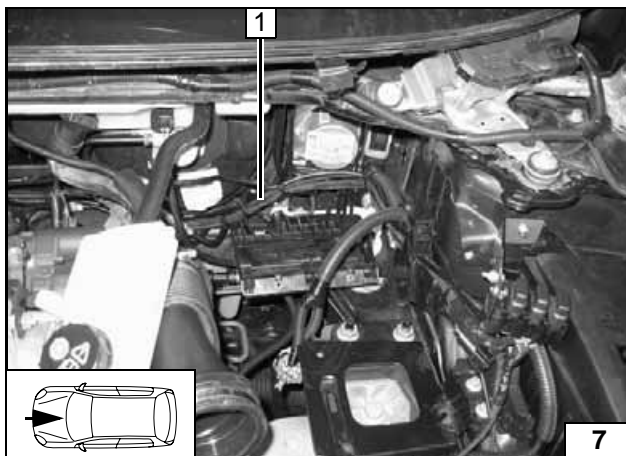
Preparing the cable harness

Insert the yellow wire 3 in the free slot from the 4 pin plug 2.



- 1 Insulate and tie back brown (br) wire
- 4 Heater unit cable harness
- 5 Insulate and tie back purple (vi) wire

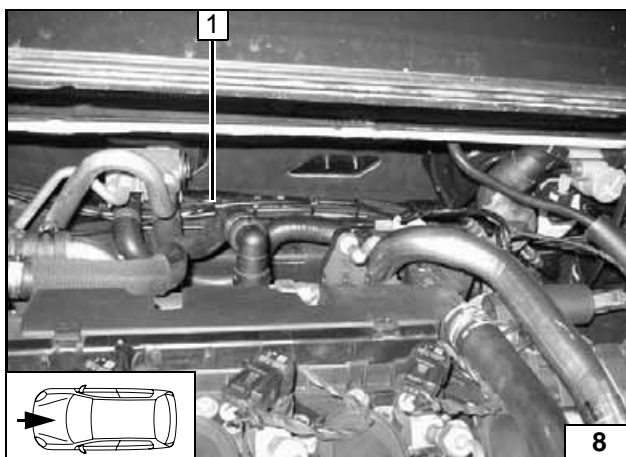
Preparing the cable harness



Run the heater unit cable harness 1 along the original vehicle cable harness and secure with cable ties.



Placement in the engine compartment

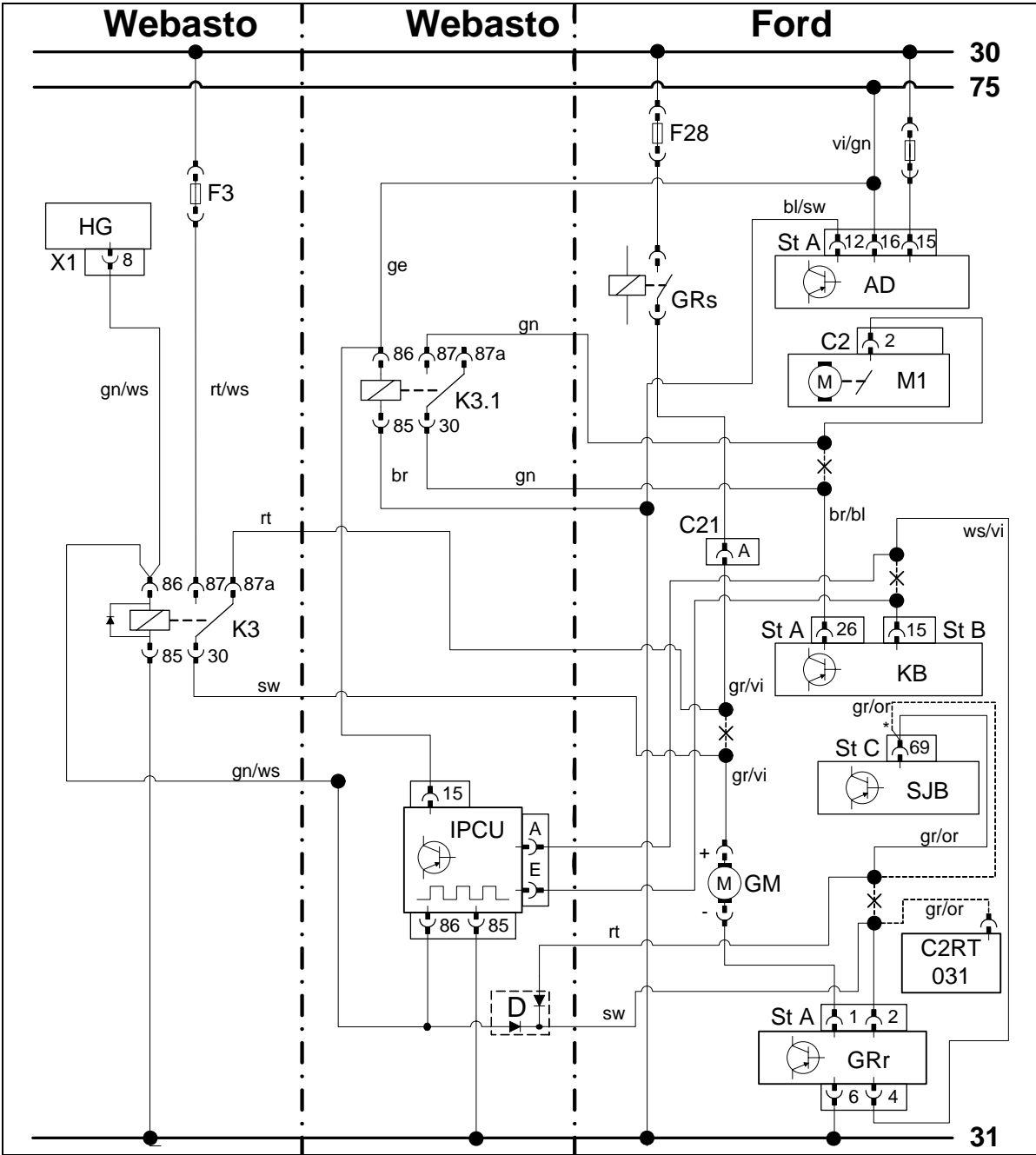


- 1 Heater unit cable harness

Placement in the engine compartment



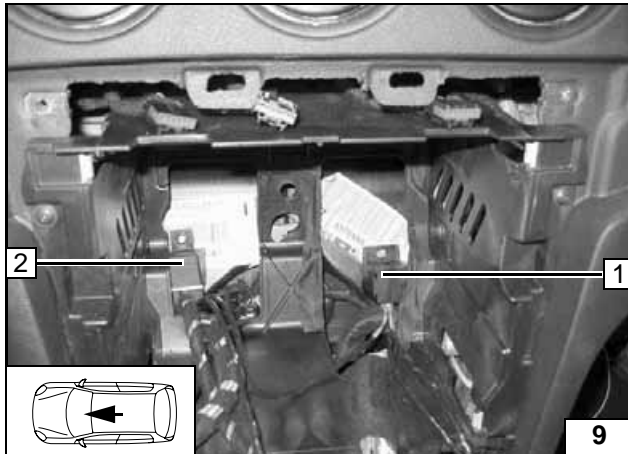
Automatic air conditioning blower control



Circuit diagram

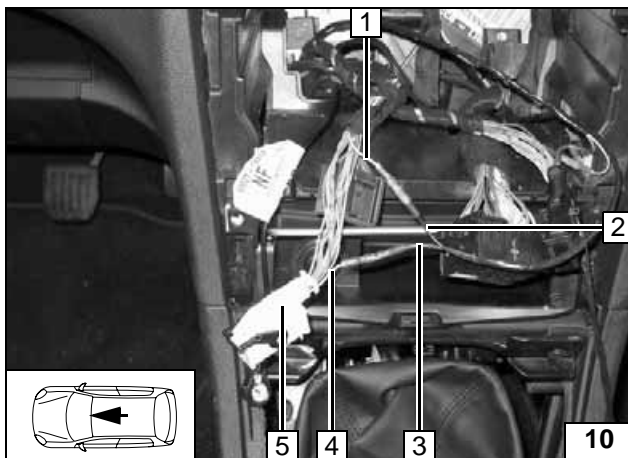
Webasto components		Vehicle components		Colours and symbols	
HG	Heater unit TT-V	GM	blower motor	rt	red
X1	8-pin connector	GRs	blower relay	ws	white
F3	Fuse 25A	GRr	Blower controller	sw	black
K3	blower relay	KB	Air conditioning control	br	brown
K3.1	Supplementary relay	F28	blower fuse	gn	green
IPCU	Pulse width modulator	M1	Servomotor air flap	bl	blue
D	Diodes integrated in the cable harness	SJB	Smart Junction Box	ge	yellow
IPCU settings		C21	Black connector	vi	purple
Voltage: 10 V		AD	Radio	gr	grey
Frequency: 400 Hz		C2T031	WFS receiver		
Duty-Cycle: 37 %		*	Depending on the equipment		
Function: Low-side				X	Splitting point
				Cable colors may vary.	

Legend



Divide the dual lock 1x in the middle. Fasten the relay K3.1 2 and IPCU 1 with the dual lock as shown in the figure. Watch the spatial requirements for the air conditioning and radio controls and their cable harnesses.

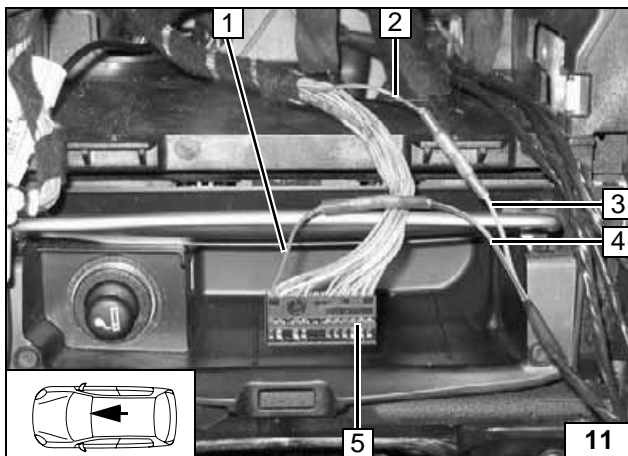
IPCU and relay K3.1 assembly



Connection to white connector B 5 from the air conditioning control pin 15. Connect to existing connectors according to the circuit diagram.

- 1 White/purple (sw/vi) wire to blower controller
- 2 Black (sw) wire from IPCU/A
- 3 Red (rt) wire from IPCU/E
- 4 White/purple (ws/vi) wire from the air conditioning control connector.

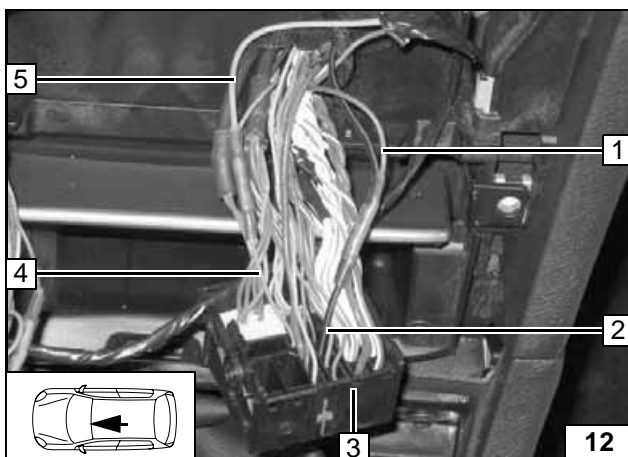
Air conditioning control / IPCU connection



Connection to black connector A 5 from the air conditioning control pin 26. Connect to existing connectors according to the circuit diagram.

- 1 Brown/blue (bn/bl) wire from air conditioner controller connector
- 2 Brown/blue (bn/bl) wire to the servomotor flap
- 3 Green (gn) wire from K3.1/87
- 4 Green (gn) wire from K3.1/30

Air conditioning control / relay K3.1 connection

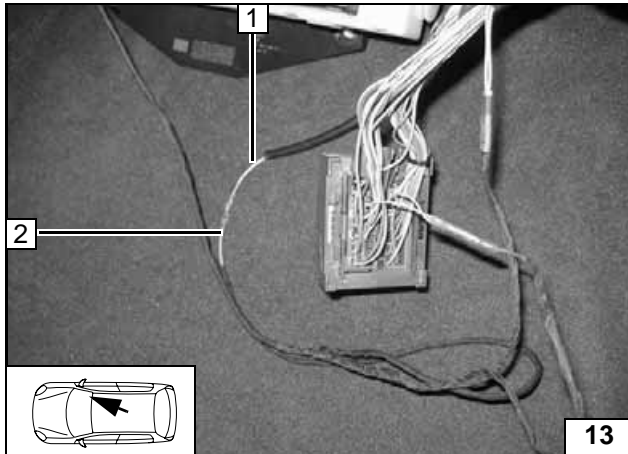


Connection to connector 3 from the radio. Connect to existing connectors according to the circuit diagram.

- 1 Brown (br) wire from K3.1/85
- 2 Black/blue (sw/bl) wire
- 4 Purple/green (vi/gn) wire (terminal 75)
- 5 Yellow (ge) wire from K3.1/86

Connection K3.1 to the radio



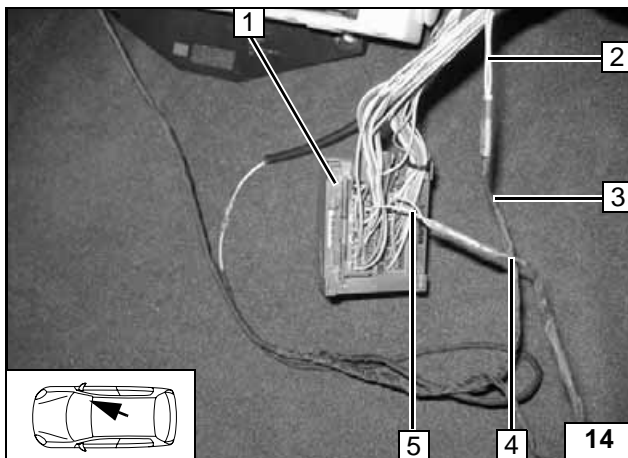


Reconnect according to the circuit diagram.

- 1 Green/white (gn/ws) wire from K3/86
- 2 Green/white (gn/ws) wire



Green/white (gn/ws) wire connection from K3/86



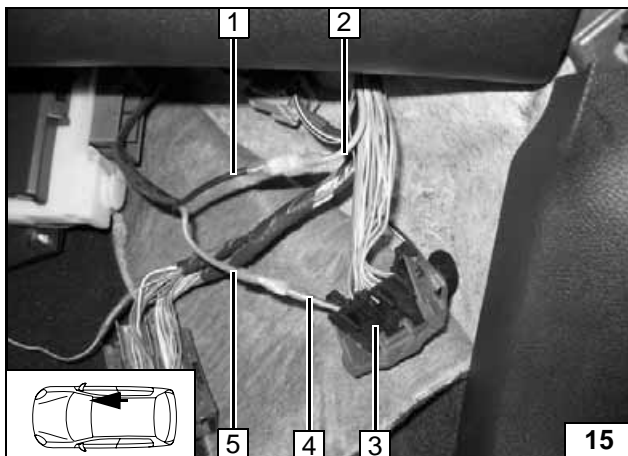
Connection to the blue connector 1 pin 69. Reconnect according to the circuit diagram.

Depending on the vehicle equipment, there may be two cables on pin 69.

- 2 Green/orange (gn/or) wire to the blower controller (see circuit diagram)
- 3 Black (sw) wire
- 4 Red (rt) wire
- 5 Green/orange (gn/or) wire to the SJB connector (see circuit diagram)



Connection to the SJB connector



Connection to the sw connector 3. Reconnect according to the circuit diagram.

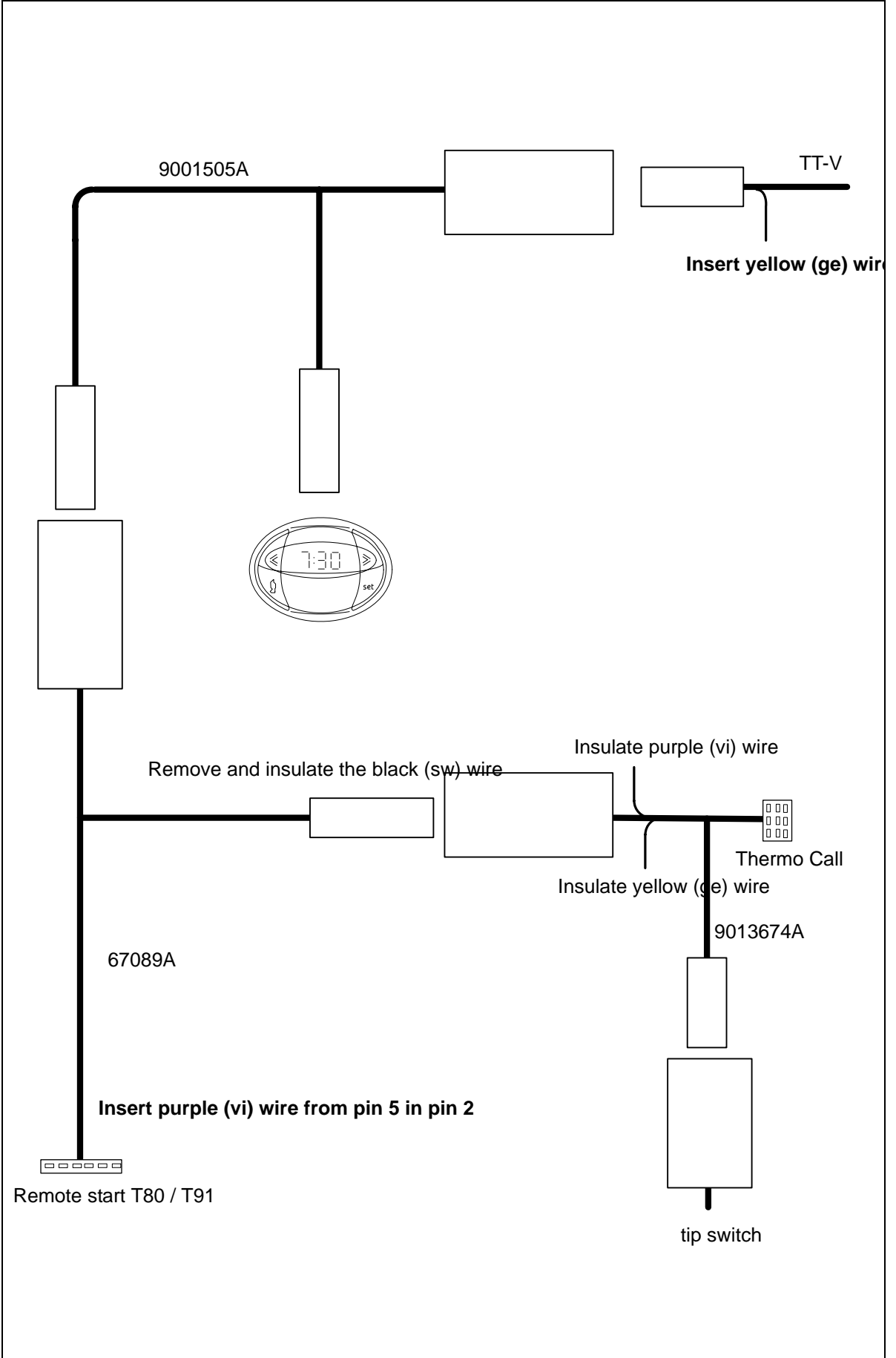
- 1 Black (sw) wire from relay K3/30
- 2 Green/purple (gr/vi) wire to blower motor
- 4 Grey/purple (gr/vi) wire
- 5 Red (rt) wire from K3/87a

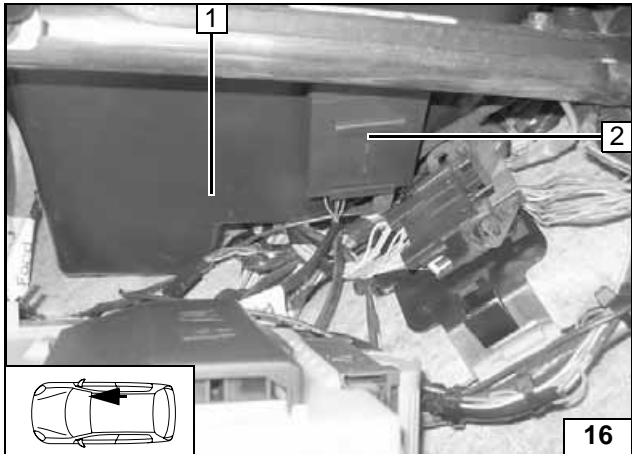


Connection to the blower motor



Connection diagram for control elements:



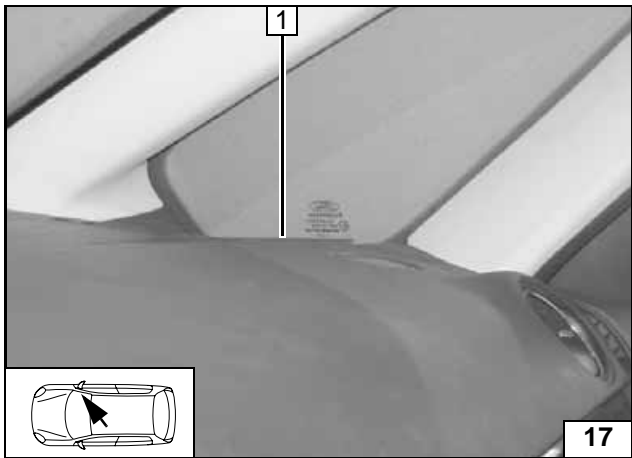


Remote Start Option

- 1 Bottom side of the glove compartment
- 2 Remote start receiver, dual lock



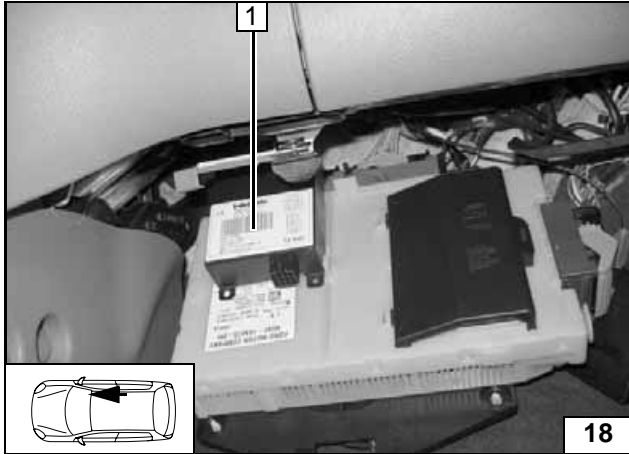
Assembling the receiver



- 1 Antenna



Assembling the antenna

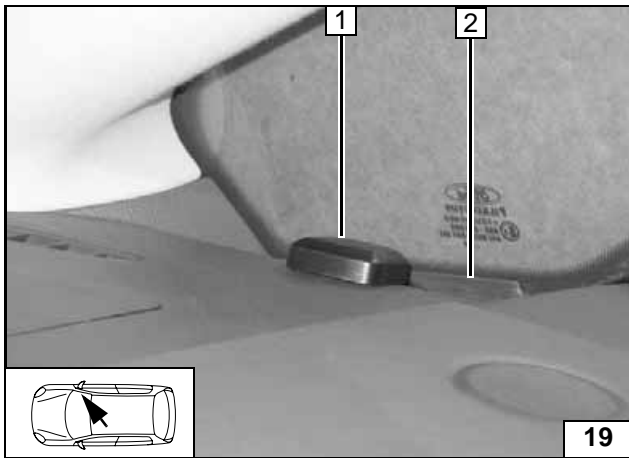


Thermo Call Option

- 1 Thermo call, dual lock



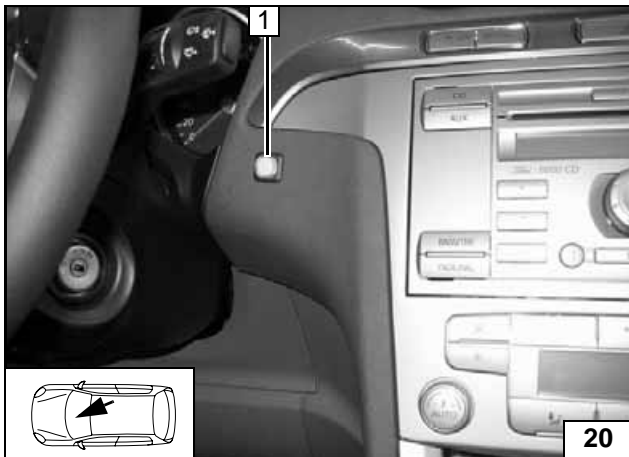
Assembling the receiver



- 1 GPS antenna (thermo call locate only)
- 2 GSM antenna



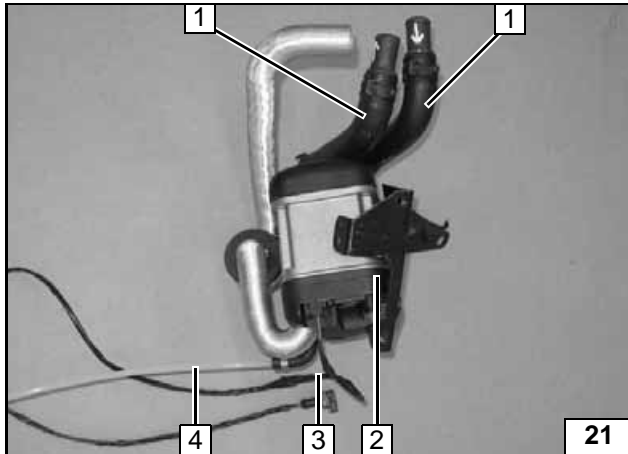
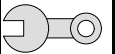
Assembling the antenna



- 1 Tip switch



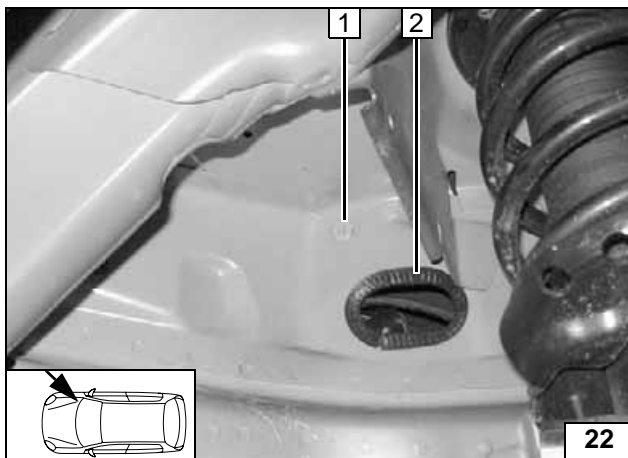
Assembling the tip switch



Preassembling the heater unit

Mark the preassembled water hoses 1 [2x] by flow direction and slide on the circulation pump adapter cable harness 3.

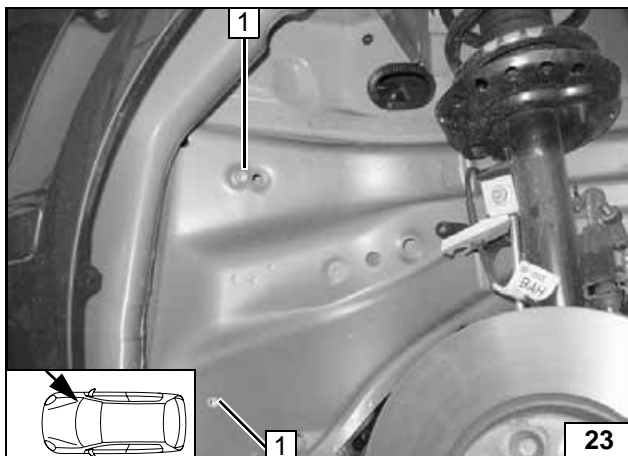
- 2 Heater unit
- 4 Fuel line, moulded hose, Ø10 mm hose clamp



Insert the cable sleeve 1 and the edge protection 2.



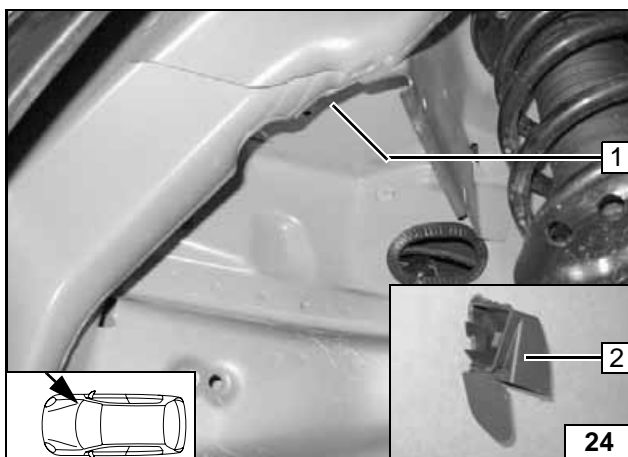
Preparing the Installation Location



Insert the M6 1 [2x] rivet nuts in the original vehicle bore holes.



Inserting rivet nuts

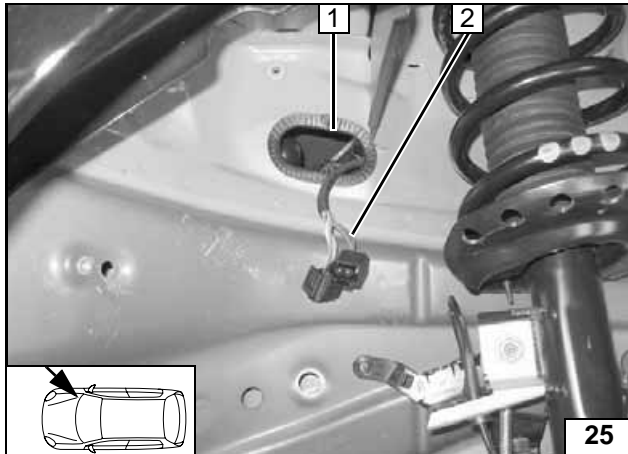
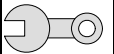


Remove water drainage 2 from the wheel arch.

1 Water drainage position is covered.

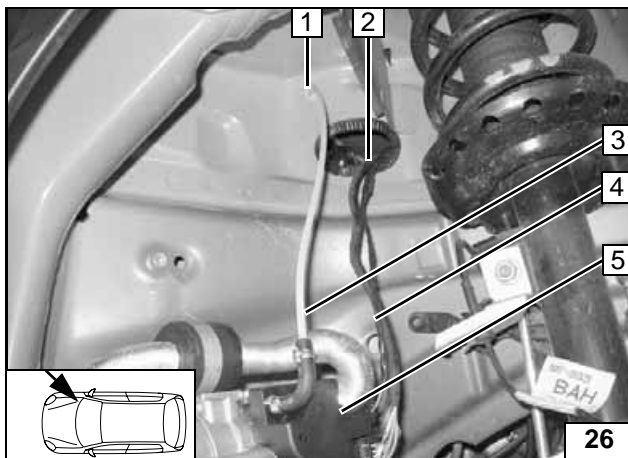


Preparing the exhaust pipe



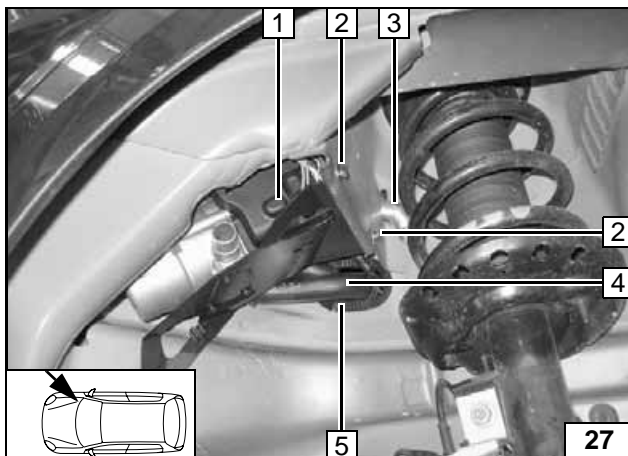
- 1 Feed-through
- 2 Heater unit cable harness

Installing the heater unit cable harness



Installing the Heater Unit

Run the fuel pipe 3 through the grommet 1 into the engine compartment.
Run the adapter cable for the circulation pump 4 through the duct 2 into the engine compartment.
Slide the heater unit cable harness 5 onto the heater unit.

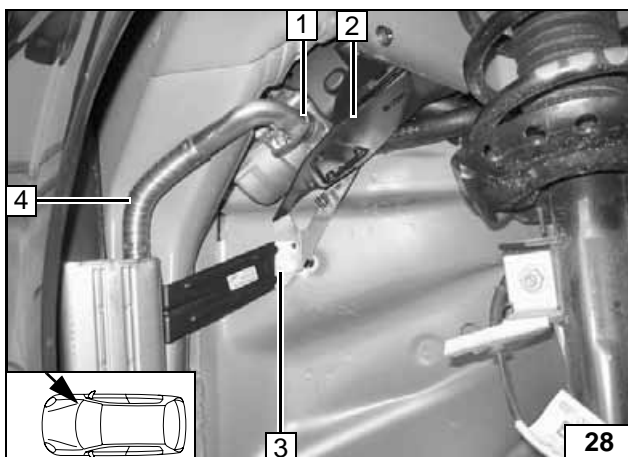


Loosely assemble the heater unit 1 as shown in the figure.

- 2 M6x20 bolt [2x], spring washer [2x], body washer [2x]
- 3 Combustion air pipe
- 4 Water hoses
- 5 Feed-through



Assembling the Heater Unit

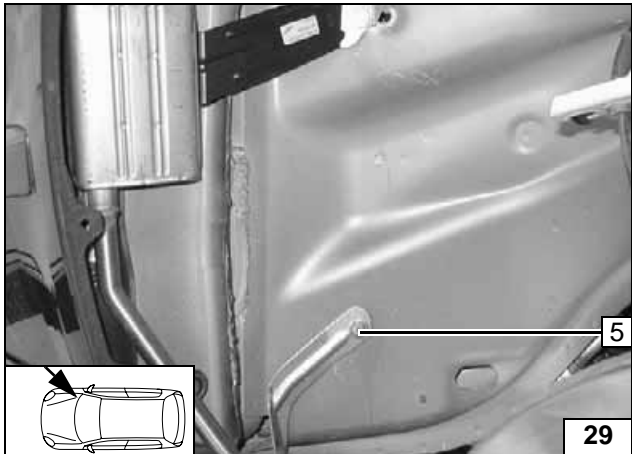
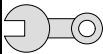


Assembling the exhaust system

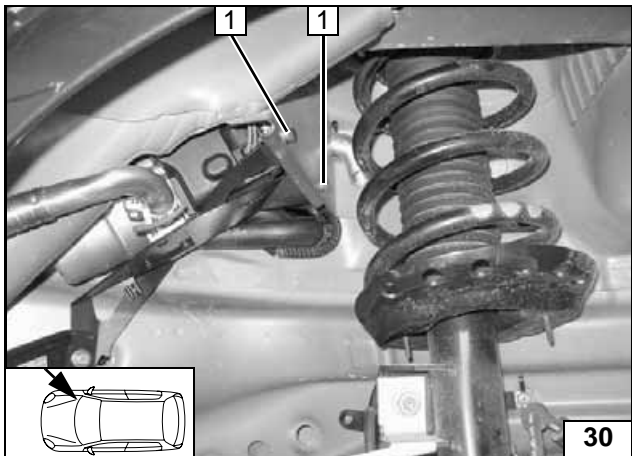
Assemble the exhaust system 4 on the heater unit 2 as shown in the figure.
Ensure sufficient distance from adjacent components.

- 1 Hose clamp
- 3 M6x20 bolt, spring washer, washer





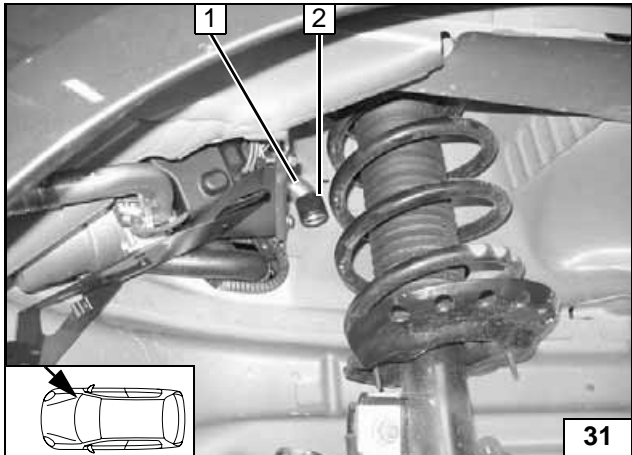
1 M6x20 bolt, spring washer, washer



Tighten the M6 bolts1 [2x].



Assembling the Heater Unit



Twist the protective cover 2 onto the intake hose 1.



Assembling the protective cap on the combustion air line



Fuel Connection

CAUTION!

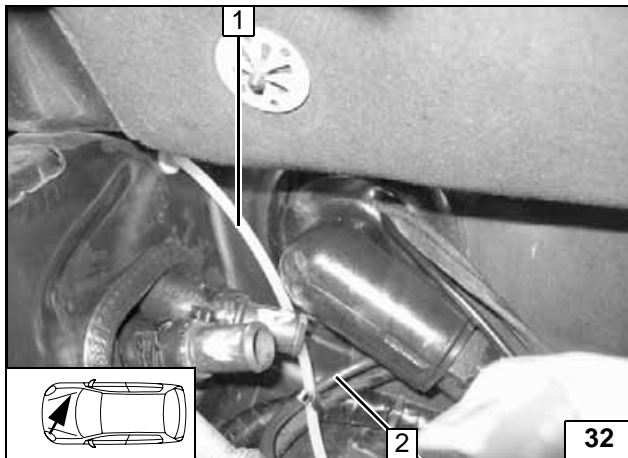
Open the vehicle's tank-cap lock, ventilate the tank and then re-close the tank lock.

Catch any fuel running off with an appropriate container.

Install fuel line and metering pump cable harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable clips!
Fit the fuel line and cable harness with edge protectors around sharp edges.

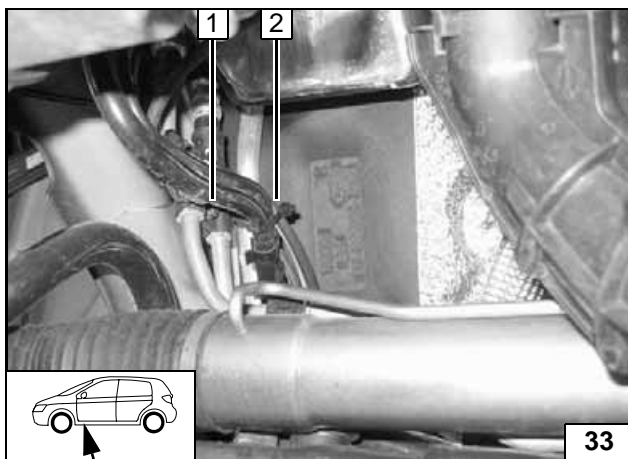
WARNING!

The fuel line and cable harness to the metering pump should be installed based on the cable harness installation diagram.



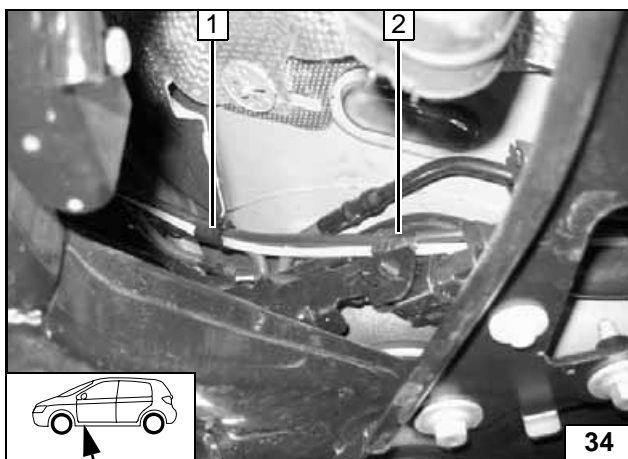
Run the fuel line **1** and the metering pump cable harness **2** to the underbody, secure with cable ties to the original vehicle fuel lines.

Placement of the fuel line and the metering pump cable harness



Run the fuel line and the metering pump cable harness **2** to the underbody, secure with cable ties to the original vehicle fuel lines **1**.

Placement of the fuel line and the metering pump cable harness

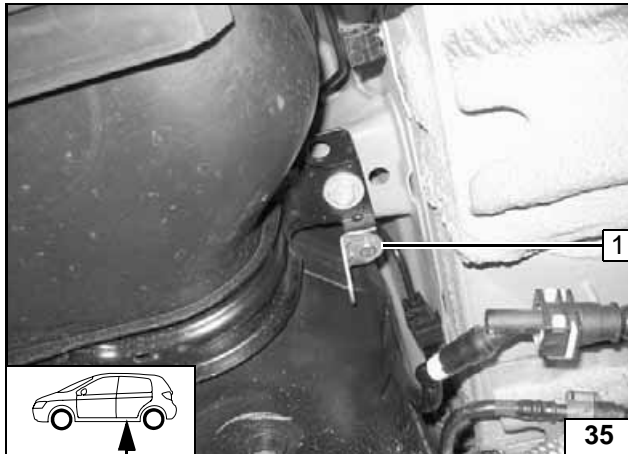


Secure the lines along the original vehicle fuel line to the underbody with cable ties.

1 Fuel pipe, metering pump cable harness

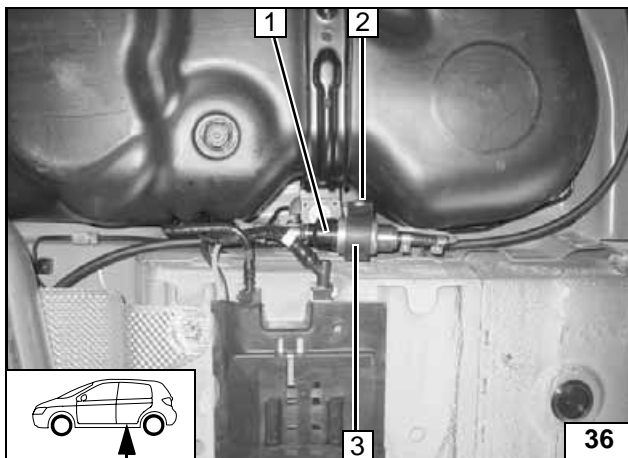


Installing lines



1 Bracket, M6x20 bolt, flanged nut

Assembling the metering pump

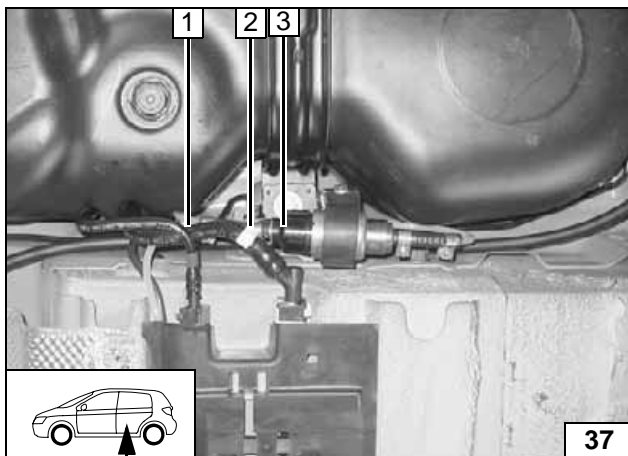


Check the position of the components; adjust if necessary. Check that they have free clearance.



1 Metering pump
2 M6x20 bolt, washer, flanged nut
3 Metering pump bracket

Assembling the metering pump



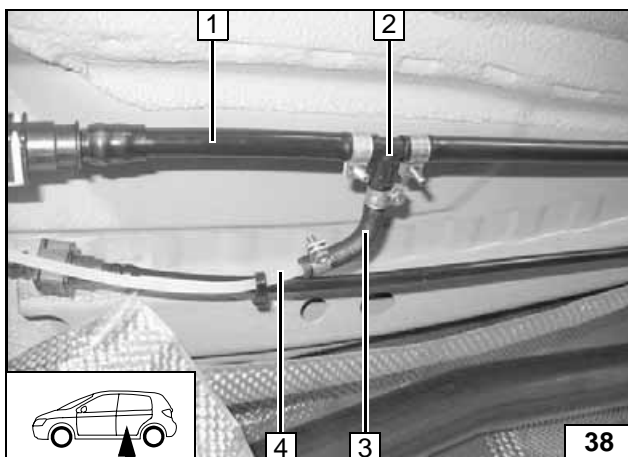
Fuel line from the heater unit on the pressure side of the metering pump [side with connector].

Check the position of the components; adjust if necessary. Check that they have free clearance.



1 Fuel pipe, cut into sections
2 Hose section, Ø 10 mm hose clamps [2x]
3 Metering pump cable harness connector

Connection to metering pump

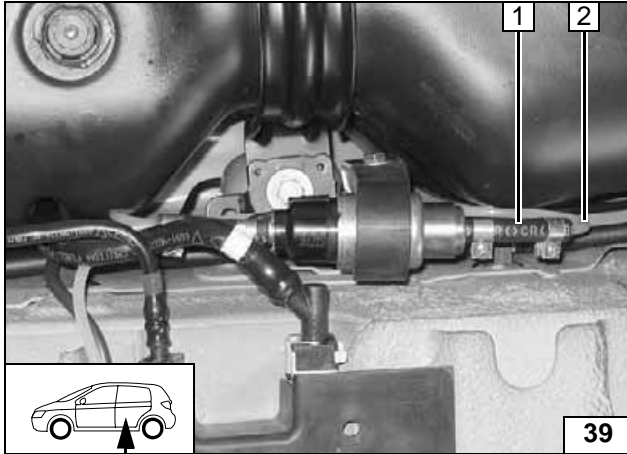


Separate the leading fuel line 1 about 70mm before the connecting piece.

2 T section 10x5x10, Ø 12 mm hose clamps [2x].
3 90° moulded hose, Ø10 mm hose clamps [2x]
4 Remaining fuel line



Fuel Take-Off



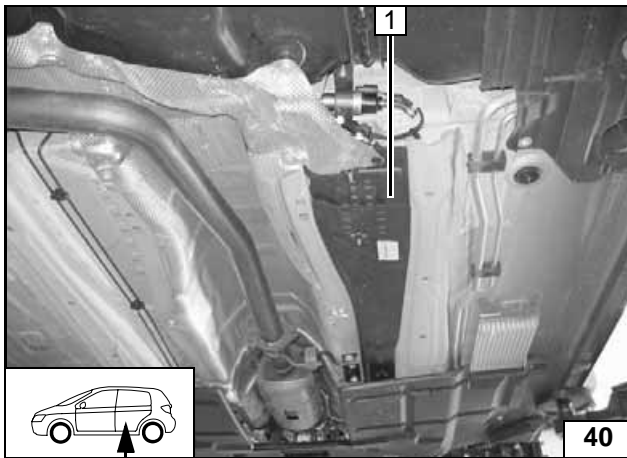
Fuel line from the tank extracting device on the intake side of the metering pump [side without connector].

Check the position of the components; adjust if necessary. Check that they have free clearance.

- 1 Hose section, Ø 10 mm hose clamps [2x]
- 2 Fuel pipe, cut into sections



Assembling the metering pump



Assemble the cover 1.



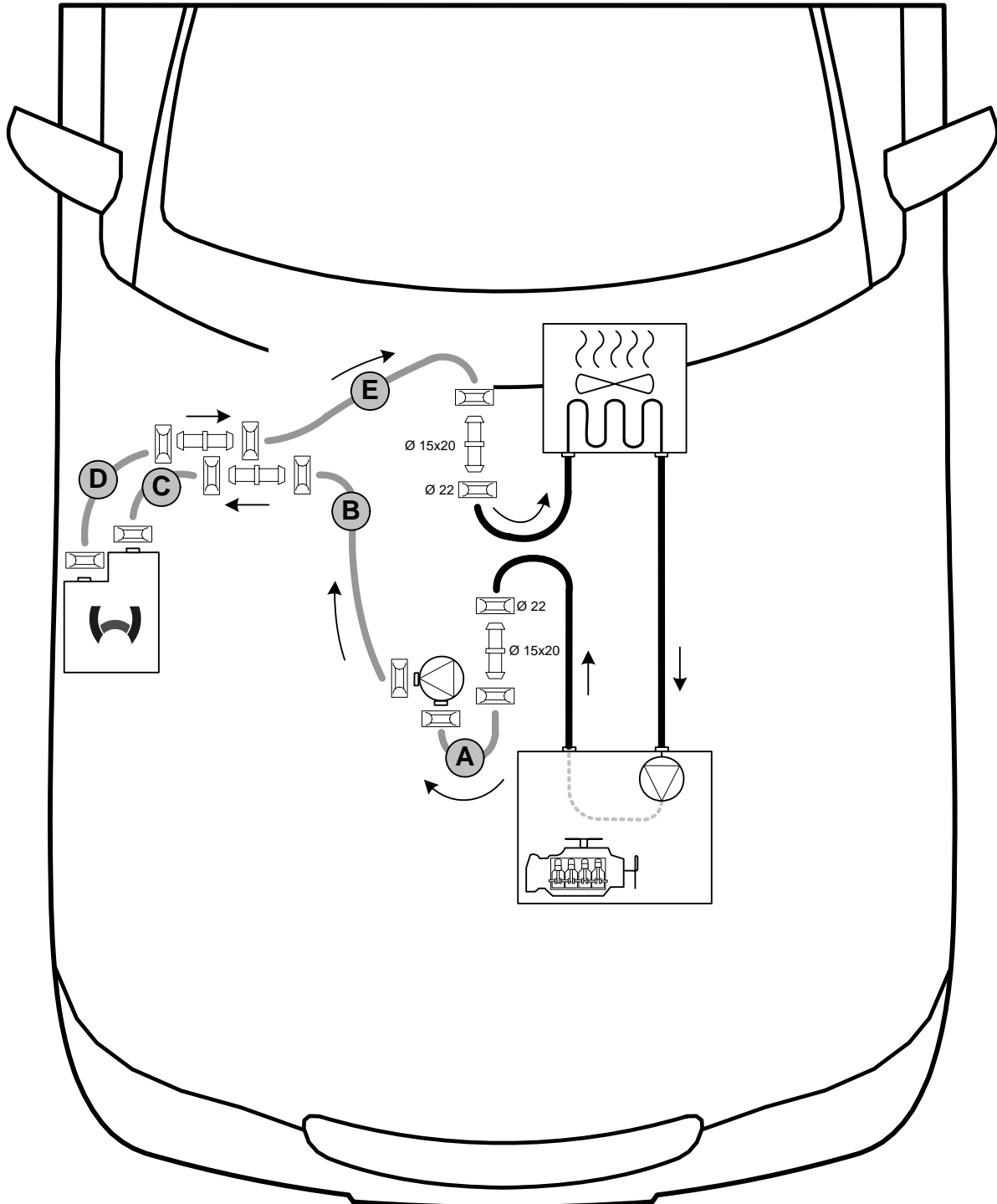
Installing



Water Connection

WARNING!

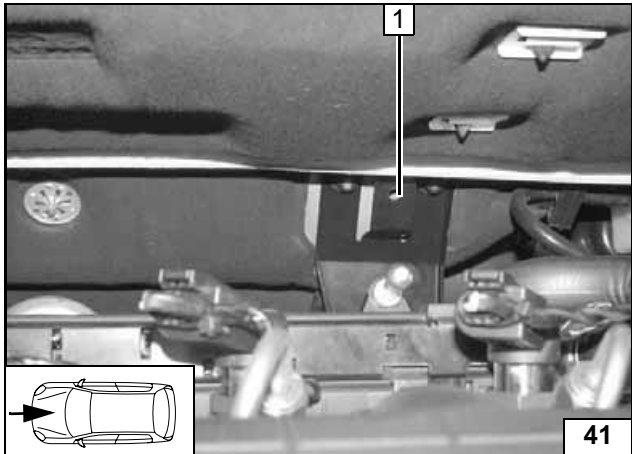
Any coolant running off should be collected using an appropriate container!
 Install hoses so that they are kink-free! Unless specified otherwise, always fasten using cable clips!
 Position hose clamps and spring band clamps so that no other hose can be damaged!
 The connection should be "inline" based on the following diagram:



Water installation diagram

All undesignated clamps = Ø 27mm spring band clamps!
 All undesignated connecting pipes = Ø 20x20.

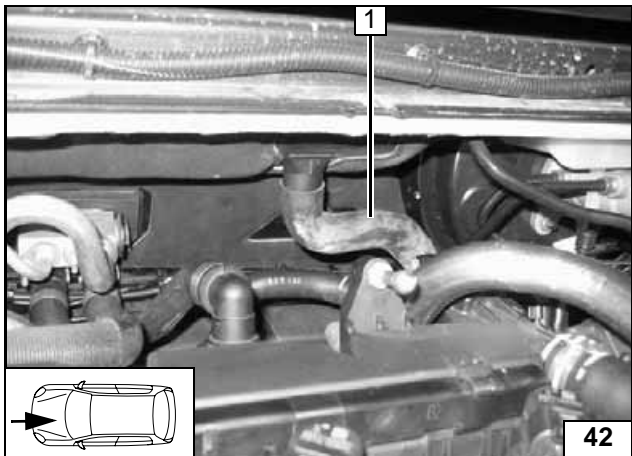




Remove the hose bracket 1, it will be used again



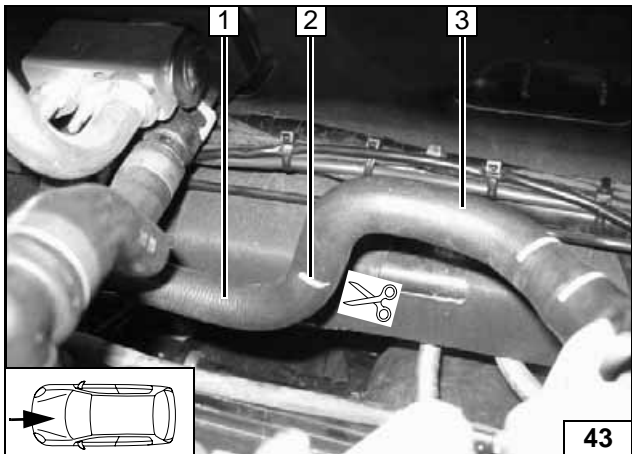
Preliminary work



Unclip the water drainage hose 1, it will be used again

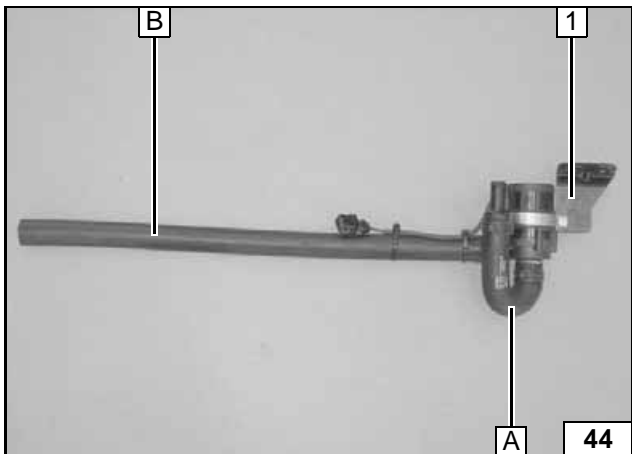


Preliminary work



- 1 Heat exchanger inlet hose section
- 2 Cut location
- 3 Engine exhaust hose section

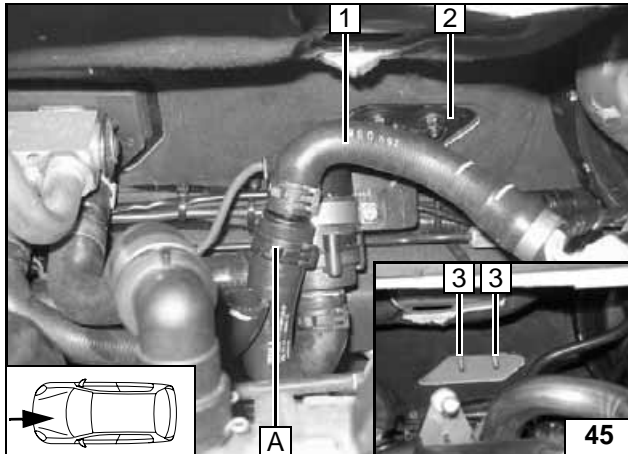
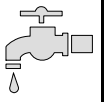
Splitting point



Assemble the moulded hose A according to the diagram on page 20.

- 1 Preassembled circulation pump

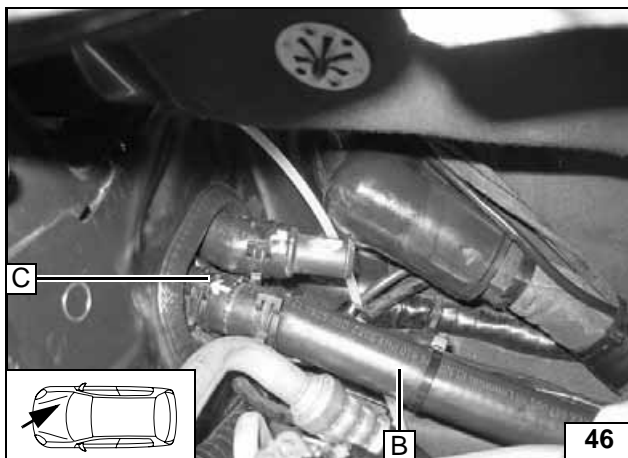
Pre-assembling the circulation pump assembly



Note the water connection diagrams on page 20.
The assembly is on the original vehicle stay bolts **3** [2x].

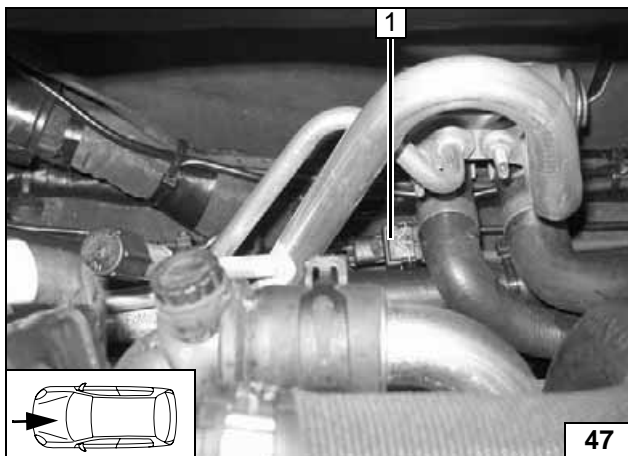
- 1** Engine exhaust hose section
- 2** Circulation pump bracket, plastic nuts [2x]

Assembly and connection to the engine exhaust

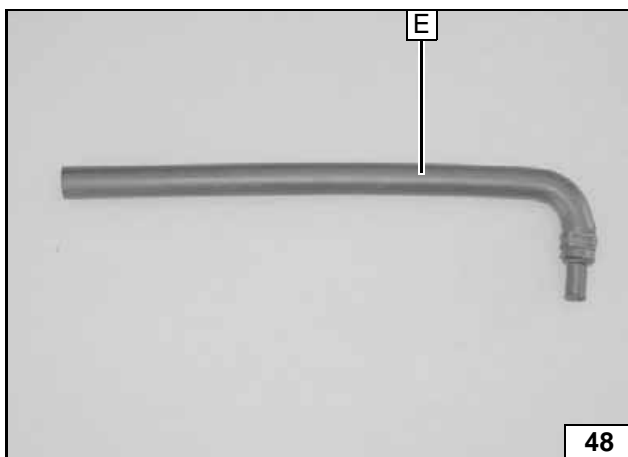


Connection to heater unit inlet

- 1** Circulation pump adapter cable, circulation pump cable

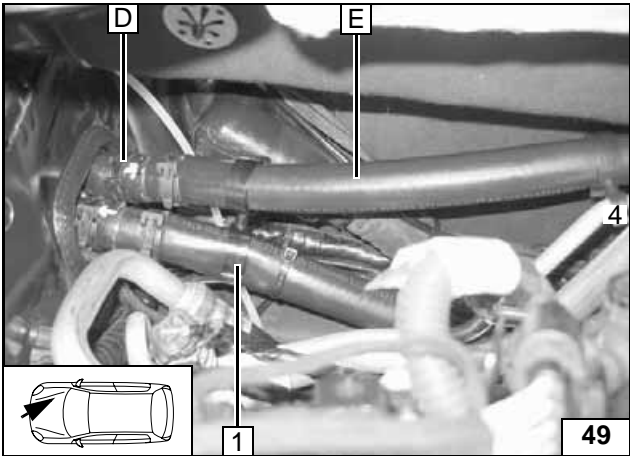


Connecting the circulation pump adapter cable harness



Moulded hose E



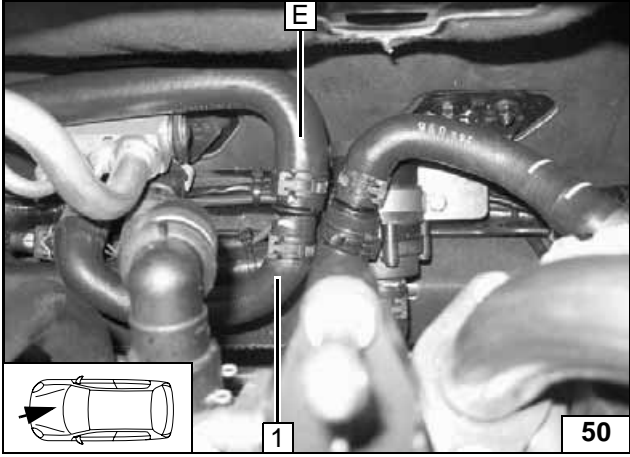


Note the water connection diagrams on page 20.

1 Hose bracket



Connection to metering pump

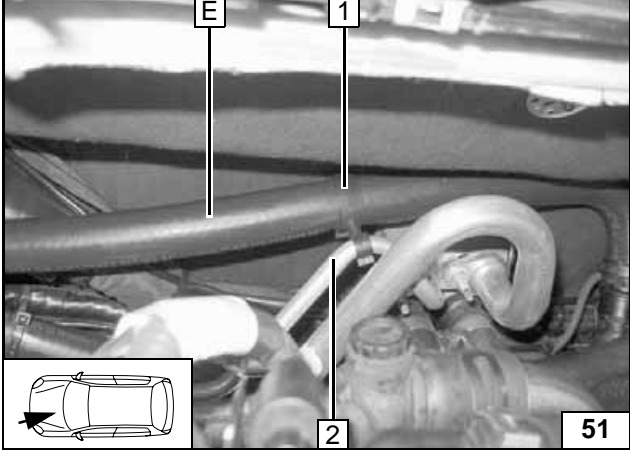


Before connecting, fill the water hose with coolant.

1 Heat exchanger inlet hose section



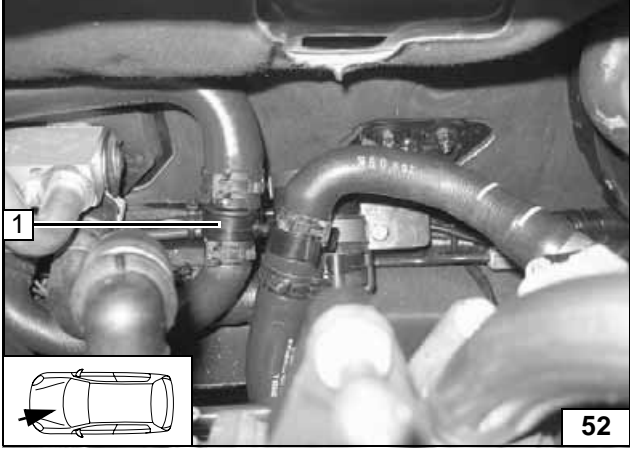
Connecting to the heat exchanger inlet



Insert the hose bracket 1 between the hose E and the air condition line 2.



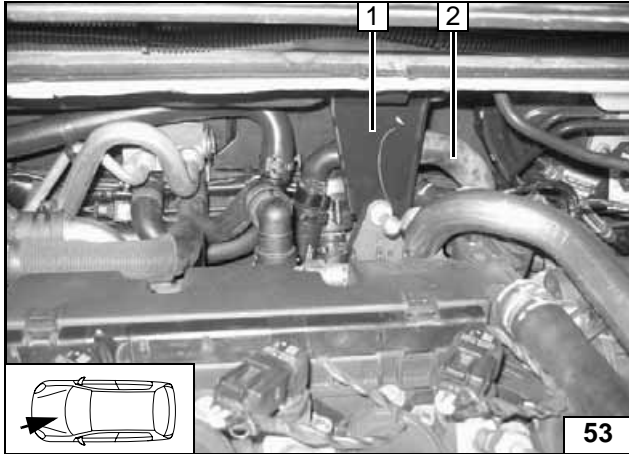
Assemble the hose bracket



Insert the hose bracket 1 as shown in the figure.

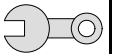


Assemble the hose bracket



- 1 Hose bracket
- 2 Water drainage hose

Assembling the hose bracket and the water drainage

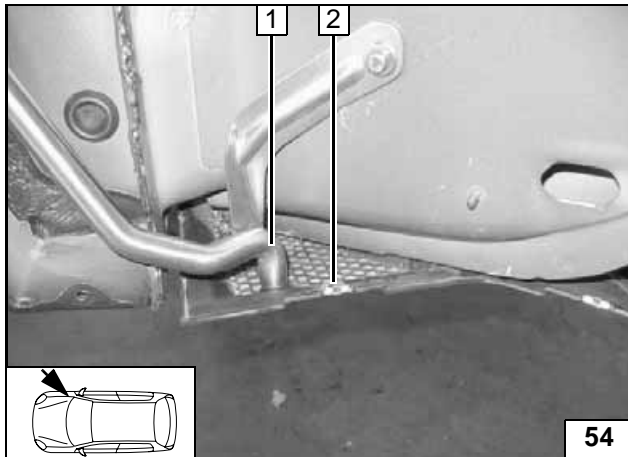


Final Work

WARNING!

Reassemble disassembled components in reverse order.
 Check that all hose lines, clips, and all electrical connections are securely fastened.
 Secure all loose cables using cable clips.
 Only use manufacturer-approved coolant.
 Spray heating unit components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

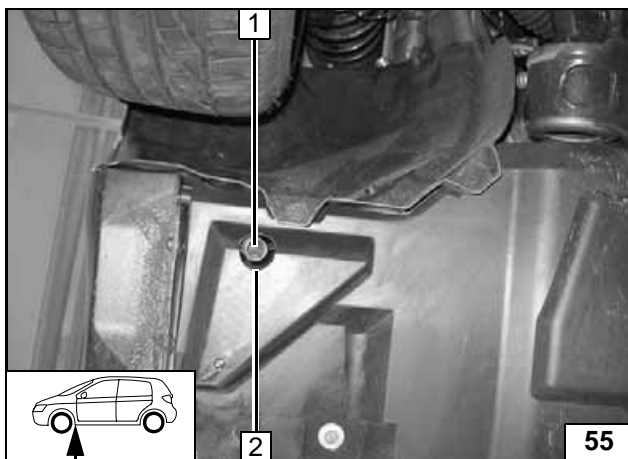
- Connect battery
- Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.
- Bleed the fuel system according to the manufacturer's instructions
- Set the time switch.
- Make automatic air conditioning settings according to the "Operating instructions for the end customer".
- Check that the auxiliary heating operates properly, see operating instructions / installation instructions.
- Attach the "Switch off auxiliary heating before re-fuelling" sticker onto the left side of the B-pillar.
- Decode the radio according to the manufacturer's instructions



In the lower panelling **2** (when present) near the exhaust outlet **1**, drill a Ø 35mm hole.



**Cut out the
underride
protection**



- 1** Exhaust outlet
- 2** Hole Ø 35mm

**Exhaust
outlet**



Webasto AG
 PO Box 80 - 82132 Stockdorf
 Hotline 01805 / 932278 - Hotfax 0395 / 5592-353
<http://www.webasto.de>

Operating instructions for the end customer

Please remove page and add to the vehicle operating instructions.

Note:

We recommend adjusting the heating time to the driving time

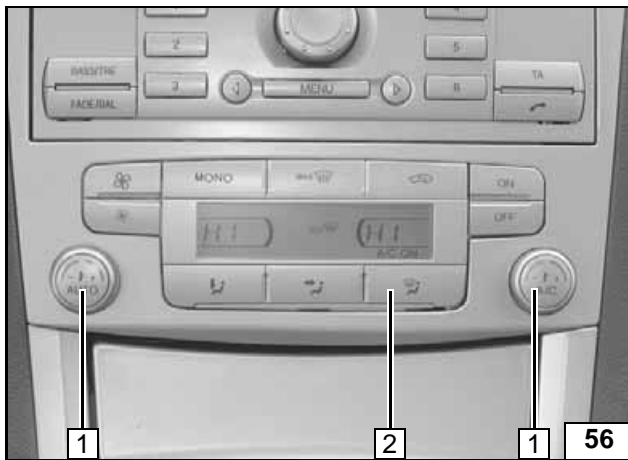
heating time = driving time

Example:

For a driving time of 20 minutes (one way) we recommend not exceeding 20 minutes of power on time.

Before parking the vehicle, make the following settings:

On vehicles with anti-theft warning system, set this system to "reduced protection"; for information on activation, please consult the vehicle operating instructions.



Blower rpm is pre-set in auxiliary heating operation

- 1 Temperature to "HI"
- 2 Air outlet to windshield



Blower rpm is pre-set in auxiliary heating operation

- 1 Temperature to "HI"
- 2 Air outlet to windshield

The auxiliary heating may only be started if there is enough fuel in the tank (reserve light is not on).



For vehicles without touch screen



For vehicles with touch screen