

# Water Heater



## Thermo Top Evo Parking Heater

e1

00 0258

## Installation documentation

### VW Passat

1.6 Diesel

from model year 2011

Left-hand drive vehicle

Manual transmission

Passenger compartment monitoring not checked!



#### **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, specialised tools and equipment are required to install and repair Webasto heating and cooling systems. Only original Webasto parts must be used. For this, also see the catalog of air and water heater accessories from Webasto.

**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 warnings.

**The initial startup is to be executed with the Webasto Thermo Test Diagnosis.**

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

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**Validity**

Manufacturer	Model	Type	EG-BE No./ABE
VW	Passat	3C	e1 * 2001/116 * 0307 * ...

Engine type	Engine model	Output in kW	Displacement in cm <sup>3</sup>
CAYC	Diesel	77	1598

Vehicle and engine types, equipment variants and national specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

The installation location of the digital timer should be confirmed with the end customer before installation.

### Heater/Installation Kit

Quantity	Description	Order No.:
1	Basic delivery scope <i>Thermo Top Evo</i>	See Price list
1	Installation kit VW Passat 2011 1.6 Diesel	1317668A
1	Heater control	See Price list

### Also required with automatic air-conditioning

Quantity	Description	Order No.:
1	Automatic air-conditioning kit	1317273A

### Foreword

This installation documentation applies to the VW Passat 1.6 Diesel vehicles - for validity, see page 2 - from model year 2011 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.

However, the stipulations in the "installation documentation" and "operating instructions" and the "installation instructions" for the *Thermo Top Evo* must always be observed.

The corresponding rules of technology and any information from the vehicle manufacturer should be observed during the installation work.

### General Instructions

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 wires and tie back.

Sharp edges should be fitted with rub protection (split-open fuel hose).

Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

When installing an IPCU, check or adjust the corresponding settings before installation.

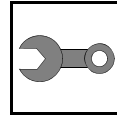
### Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Deburring tool
- Spiral drill 5.5 / 6.0 / 8.5 mm dia.
- Centre bit 60mm dia.

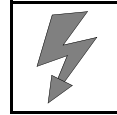
**Explanatory Notes on Document**

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.

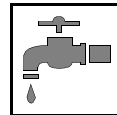
**Mechanical system**



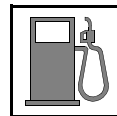
**Electrical system**



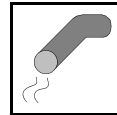
**Coolant circuit**



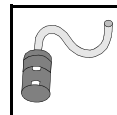
**Fuel**



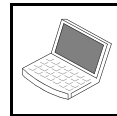
**Exhaust gas**



**Combustion air**



**Software**



Special features are highlighted using the following symbols:



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



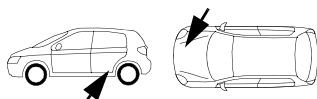
Specific risk of fire or explosion.



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.

**All dimensions are in mm!**

**Tightening torque of 5x13 heater bolts = 8Nm!**

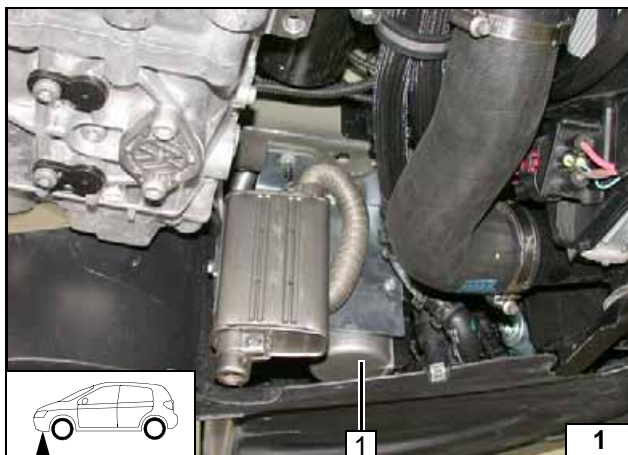
**Tightening torque of 5x15 bolt of water connection piece retaining plate = 7Nm!**

**Preliminary Work**

**WARNING!**

- Open the fuel tank cap, ventilate the tank.
- Close the fuel tank cap again.
- Disconnect the battery earth connection.
- Depressurise 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.
- Completely remove the battery.
- Remove the air filter together with the intake hose.
- Remove the charge-air hose and pipe.
- Remove the coolant reservoir cap.
- Remove the underride protection
- Remove the wheel-well inner panel on the left
- Remove the rear bench seat
- Open the right-hand tank-fitting service lid.
- Remove the fuel-tank sending unit in accordance with manufacturer's instructions.
- Remove the footwell trim on front passenger side
- Remove the fuse holder trim in the passenger compartment on the driver's side
- Remove the instrument panel trim at the left

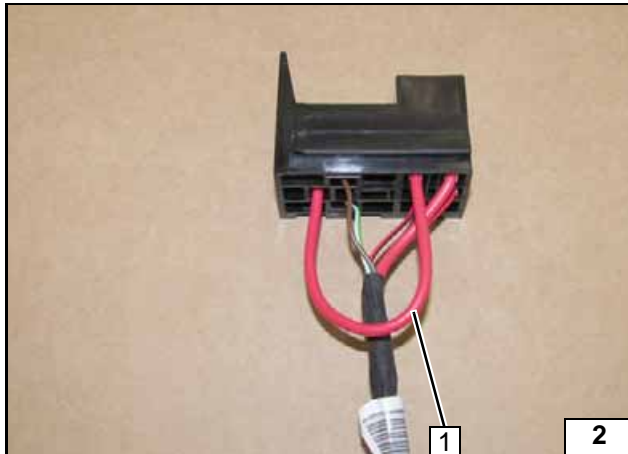
Remove page 30 "Operating Instructions for End Customer" and add to the vehicle operating instructions.



**Heater installation location**

1 Heater

**Installation location**



### Preparing electrical system

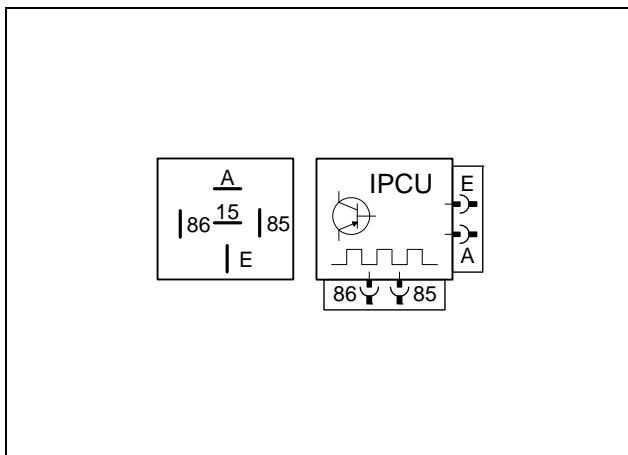
Wire sections retain their numbering in the entire document.

#### Climatronic

Detach red (rt) wire 1 from fuse F4 and discard.



Removing wire



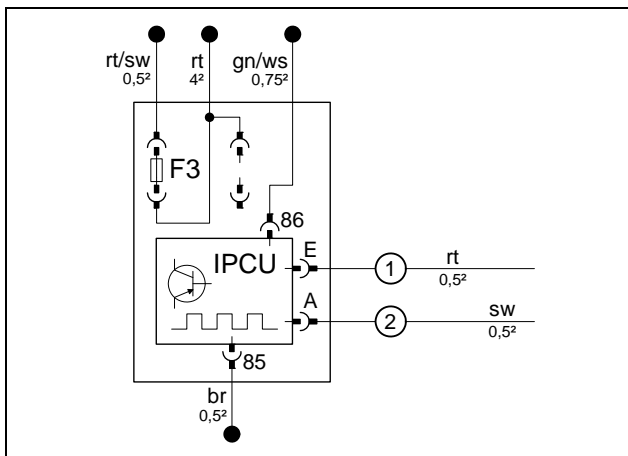
IPCUCircuit view on contact side.  
The IPCU provided in the kit is pre-programmed with the following settings.

- Duty cycle: 30%
- Frequency: 400Hz
- Voltage: 8V
- Function: High side

The adjustment values must be checked during the function check of the vehicle and adjusted, if necessary.



Preparing IPCU

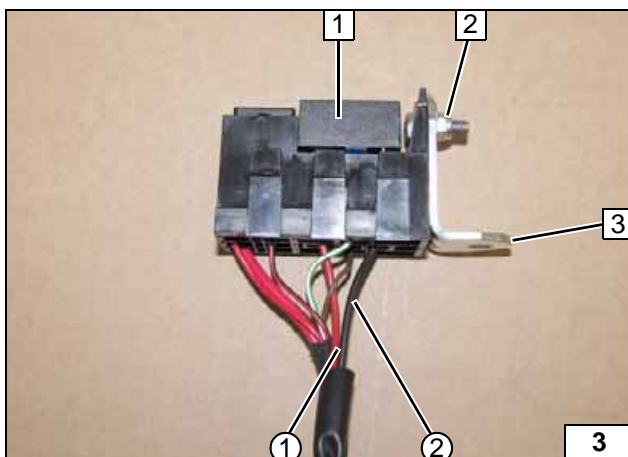


IPCUCircuit is to be inserted only after fuse holder has been premounted. Connect wires to socket IPCU. Draw wire ① and ② into the protective sleeving

- ① Red (rt) wire of IPCU/E
- ② Black (sw) wire of IPCU/A



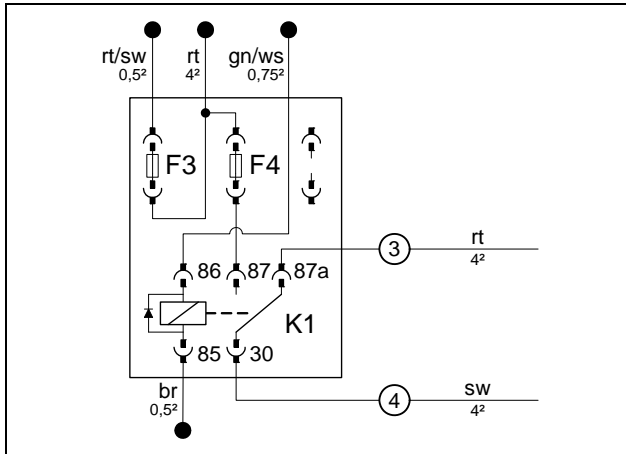
Preparing IPCU



- 1 IPCUCircuit
- 2 M5x16 bolt, large diameter washer [2x], retaining plate of fuse holder, self-locking M5 flanged nut
- 3 Angle bracket

- ① Red (rt) wire of IPCU/E
- ② Black (sw) wire of IPCU/A

Premounting passenger compartment fuse holder



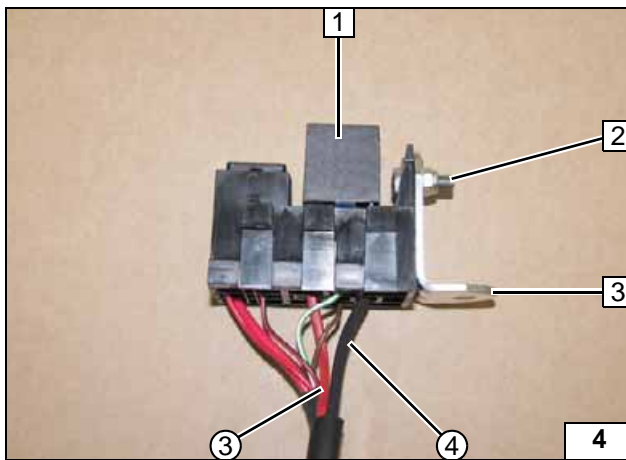
**Climatic**

Connect wires to socket of K1 relay. Install F4 25A fuse.

- ③ Red (rt) wire of K1/87a
- ④ Black (sw) wire from K1/30



**Preparing K1 relay**



- 1 K1 relay
- 2 M5x16 bolt, large diameter washer, fuse holder
- 3 Angle bracket

- ③ Red (rt) wire of K1/87a
- ④ Black (sw) wire from K1/30

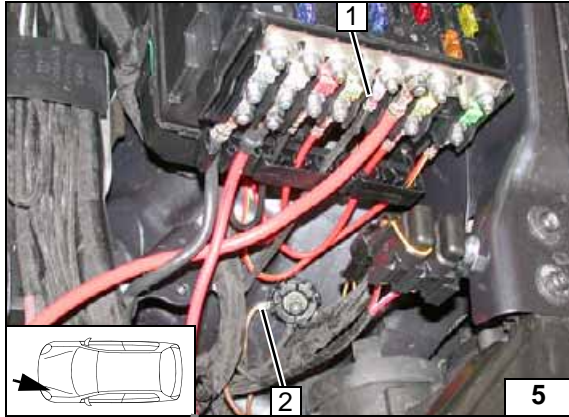
**Premounting passenger compartment fuse holder**



## Electrical system

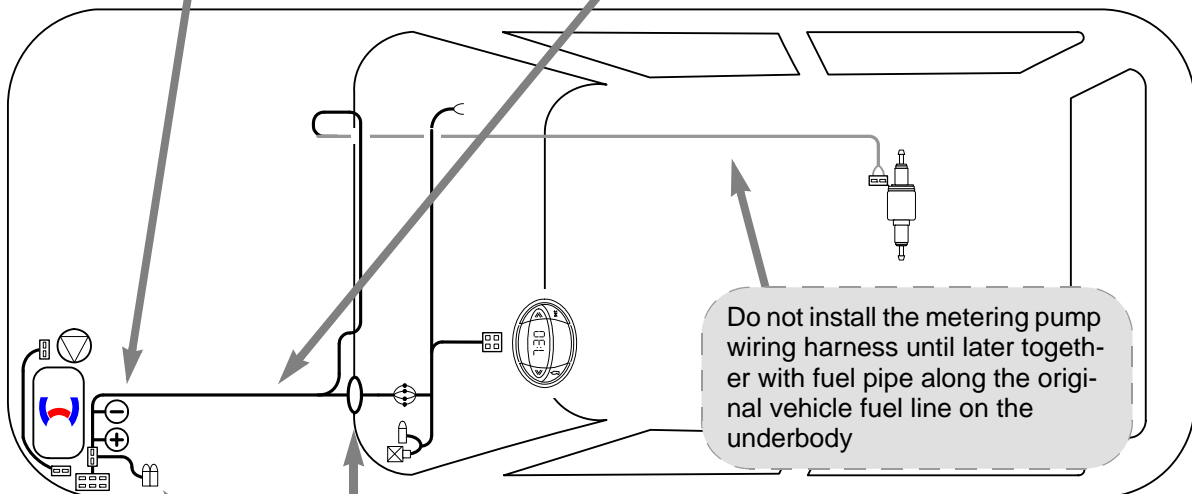
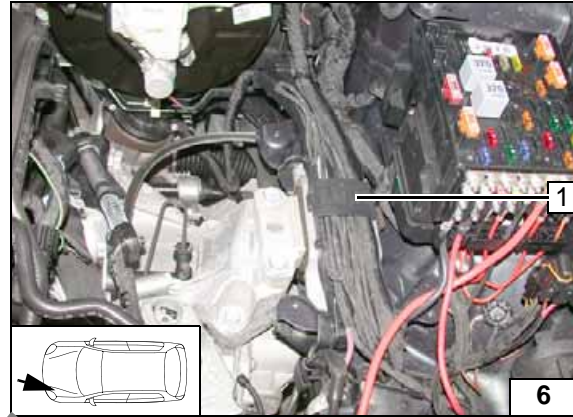
### Positive and earth wire

- 1 Positive wire to positive battery distributor
- 2 Earth wire on original vehicle earth support point

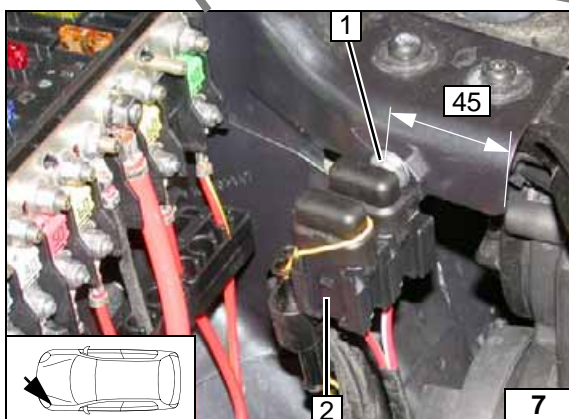


### Wiring harness routing

Route wiring harnesses in original vehicle cable duct 1



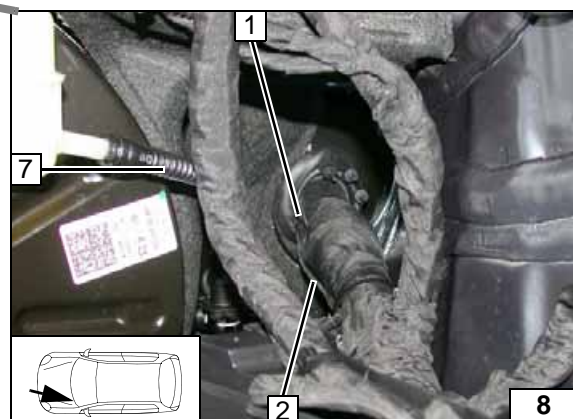
Wiring harness routing diagram



### Fuse holder of engine compartment

5.5mm hole at position 1. When drilling, watch for components located behind.

- 1 M5x16 bolt, washer [2x], retaining plate of fuse holder, self-locking M5 flanged nut
- 2 Fuses F1-2



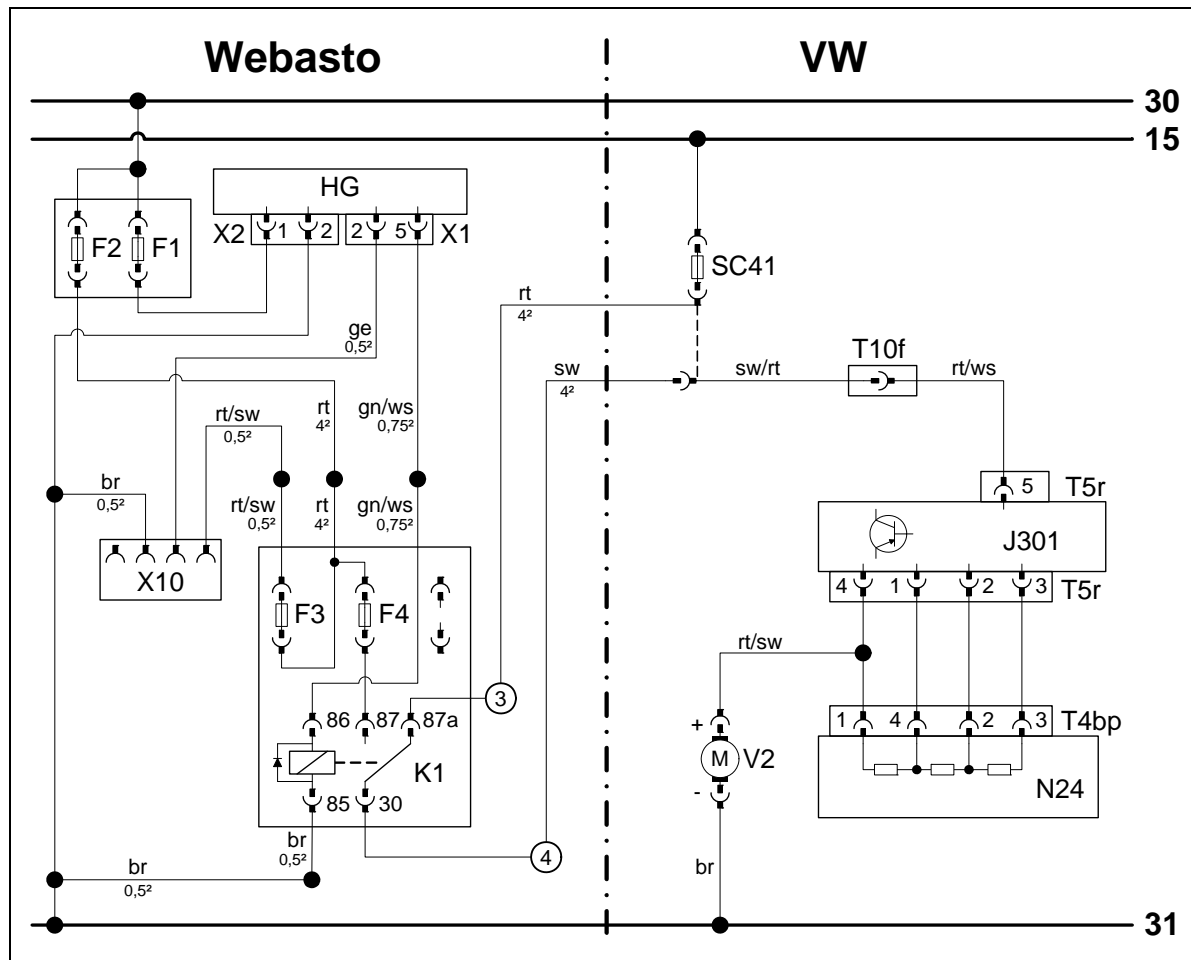
### Wiring harness pass through

- 1 Use free protective rubber plug
- 2 Wiring harnesses of heater, heater control





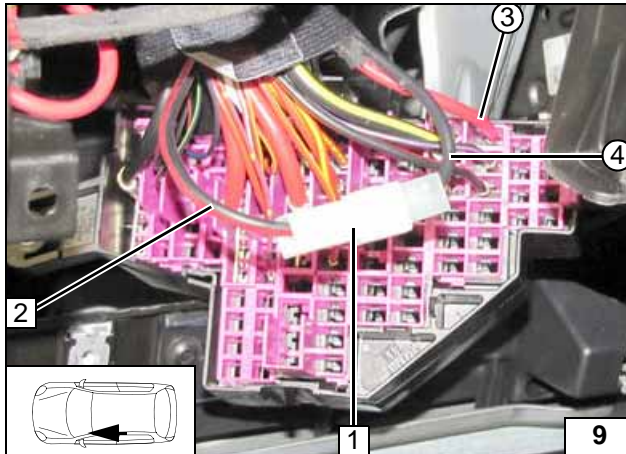
Climatic fan control



Wiring diagram

Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	N24	Resistor group	rt	red
X1	6-pin heater connector	T4bp	4-pin connector N24	sw	black
X2	2-pin heater connector	J301	A/C control unit	ge	yellow
X10	4-pin connector Heater control	T5r	16-pin connector J301	gn	green
K1	Fan relay	SC41	40 A fan fuse	bl	blue
F1	20A fuse	T10f	10-pin connector	ws	white
F2	30A fuse			br	brown
F3	1A fuse				
F4	25 A fuse				
				X	Cutting point
					Wiring colours may vary.

Legend

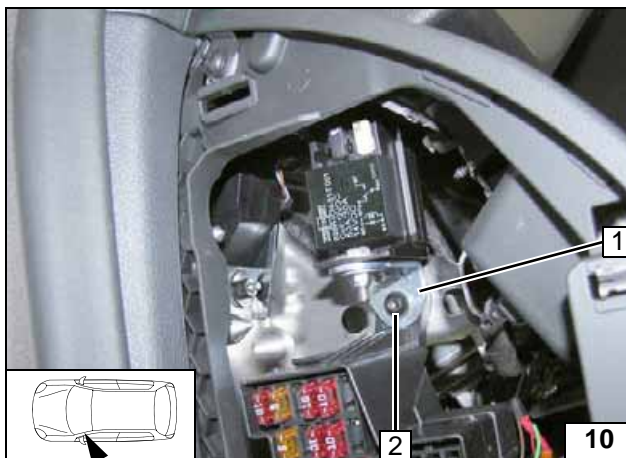


Fuse socket depends on vehicle equipment. Uncrimp black/red (sw/rt) wire **2** from socket of fan fuse. Red (rt) wire from K1/87a **3** with crimped standard-power timer in the fan fuse socket. Produce connections as shown in wiring diagram.

- 1 Connector
- ④ Black (sw) wire from K1/30

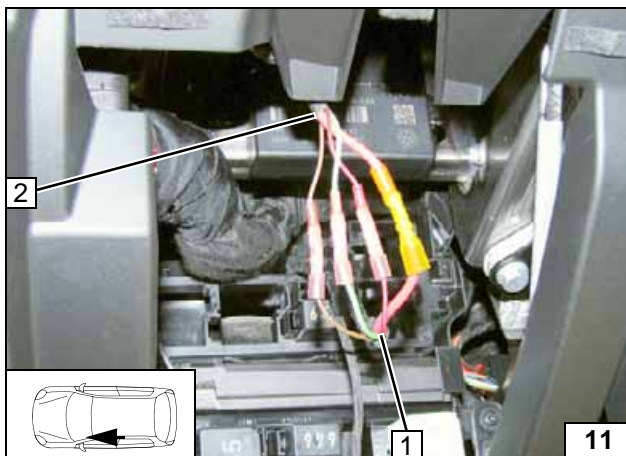


**Connect-  
ing wires**



- 1 Angle bracket
- 2 Original vehicle bolt

**Mounting  
fuse holder  
in passen-  
ger com-  
partment**



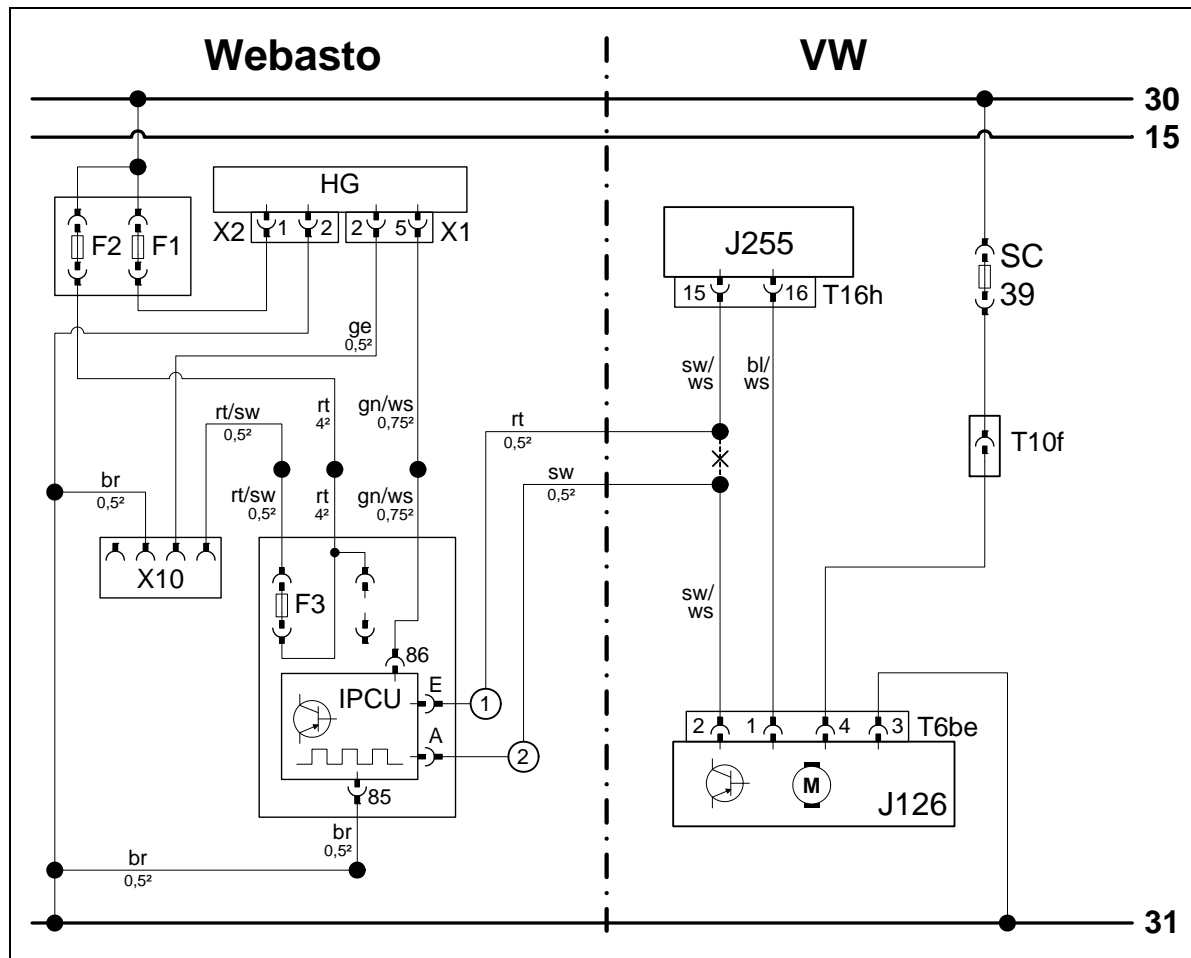
Connect the wiring harness of the fuse holder in passenger compartment **2** to the wiring harness of heater **1** according to the wiring diagram, with same colour wires connected to each other.



**Connect-  
ing wiring  
harnesses**



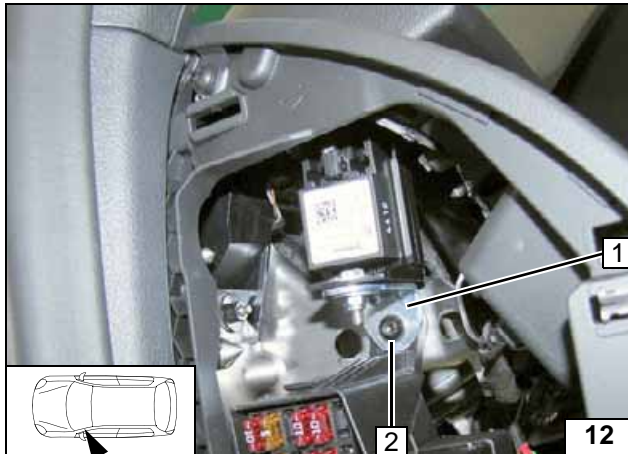
Climatronic fan control



Wiring diagram

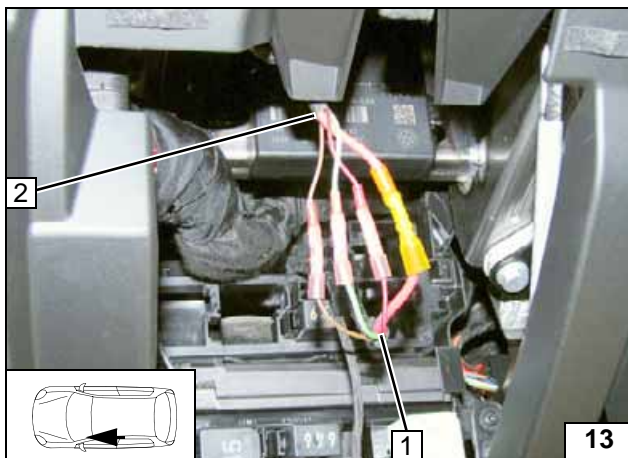
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	J126	Fan unit	rt	red
X1	6-pin heater connector	T6be	6-pin connector J126	sw	black
X2	2-pin heater connector	J255	A/C control unit	ge	yellow
X10	4-pin connector Heater control	T16h	16-pin connector J255	gn	green
K1	Fan relay	SC39	40A fuse	bl	blue
F1	20A fuse	T10f	10-pin connection	ws	white
F2	30A fuse			br	brown
F3	1A fuse				
IPCU	Pulse width modulator				
<b>IPCU adjustment values:</b>					
Duty cycle: 30%					
Frequency: 400Hz					
Voltage: 8V					
Function: High side					
				X	Cutting point
Wiring colours may vary.					

Legend



- 1 Angle bracket
- 2 Original vehicle bolt

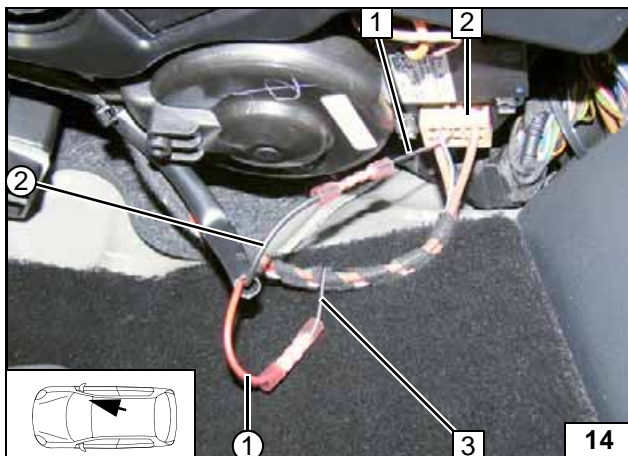
Mounting fuse holder in passenger compartment



Connect the wiring harness of the fuse holder in passenger compartment 2 to the wiring harness of heater 1 according to the wiring diagram, with same colour wires connected to each other.



Connecting wiring harnesses

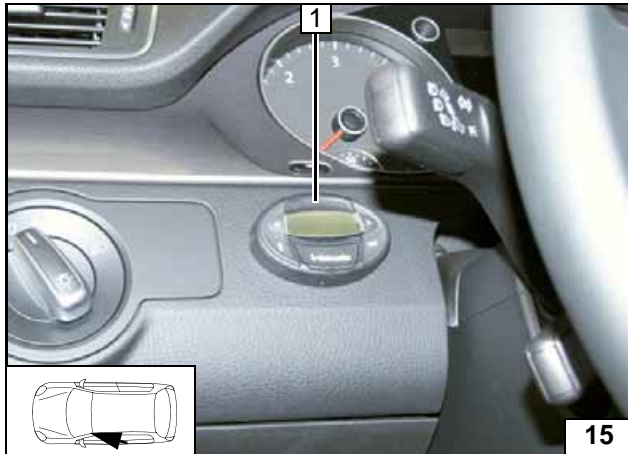


Connection to 6-pin connector T6be 2 from the fan unit. Produce connections as shown in wiring diagram.

- 1 Black/white (sw/ws) wire from 6-pin connector T6be pin 2
- 3 Black/white (sw/ws) wire from A/C control unit
- ① Red (rt) wire of IPCU/E
- ② Black (sw) wire of IPCU/A



Connecting fan unit

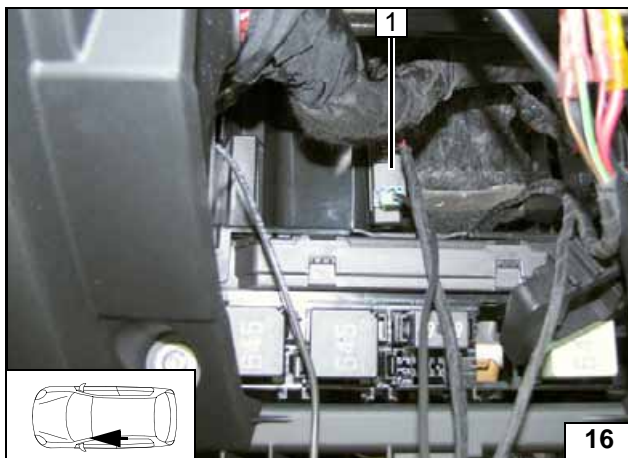


**Digital timer**

1 Digital timer



**Mounting digital timer**

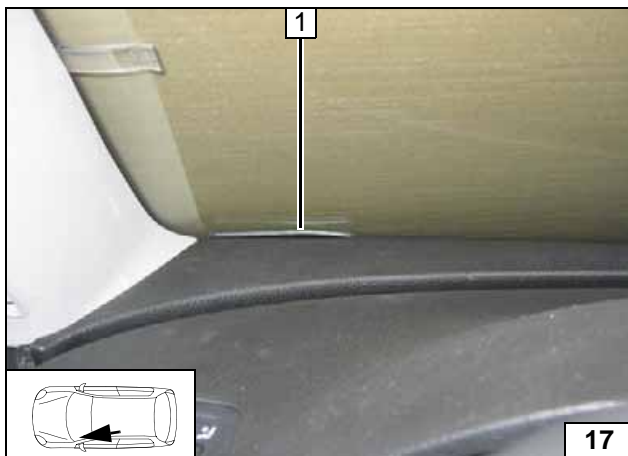


**Remote option (Telestart)**

Degrease adhesive area. Fasten receiver 1 with adhesive tape.

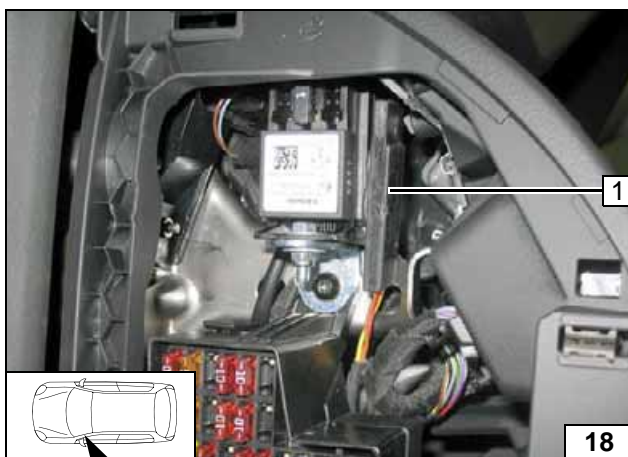


**Mounting receiver**



1 Antenna

**Mounting antenna**

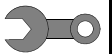


**Temperature sensor T100 HTM**

Fasten temperature sensor 1 with adhesive tape.



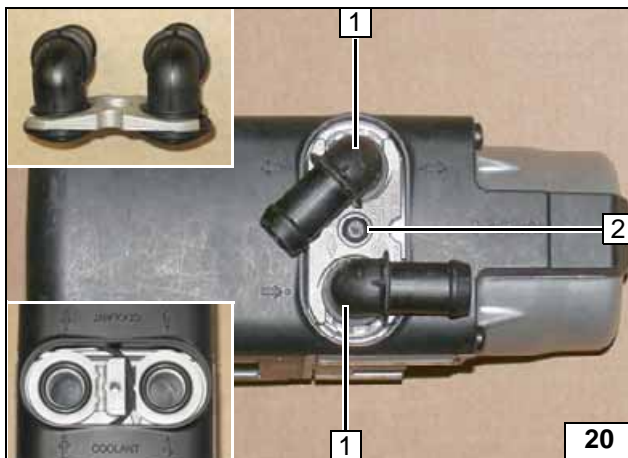
**Mounting temperature sensor**



### Preparing installation location

- 1 Wiring harness of heater

Routing wiring harness

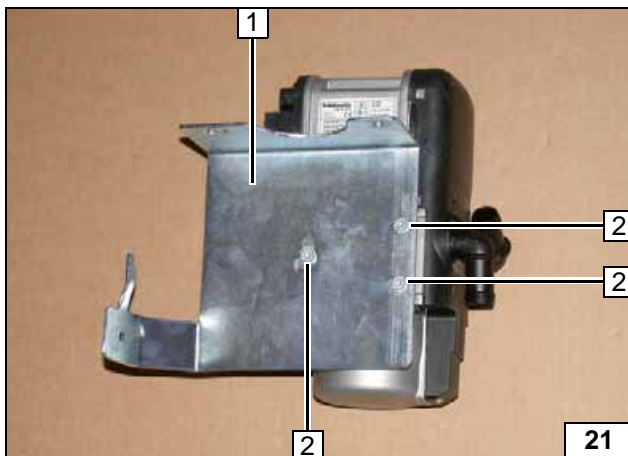


### Preparing heater

- 1 Water connection piece, sealing ring [2x each]
- 2 5x15mm self-tapping bolt, retaining plate of water connection piece

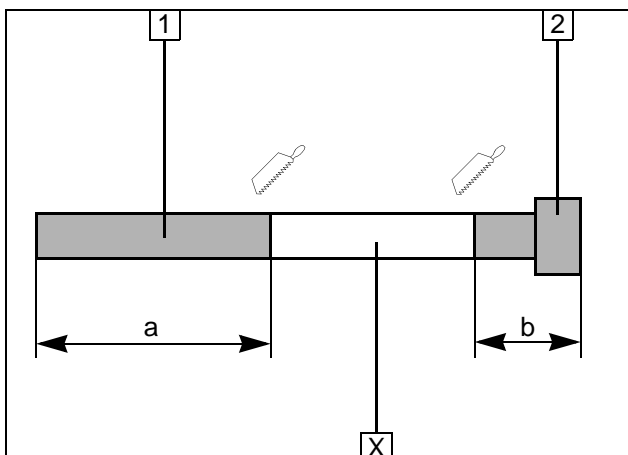


Mounting water connection pieces



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

Mounting bracket section A

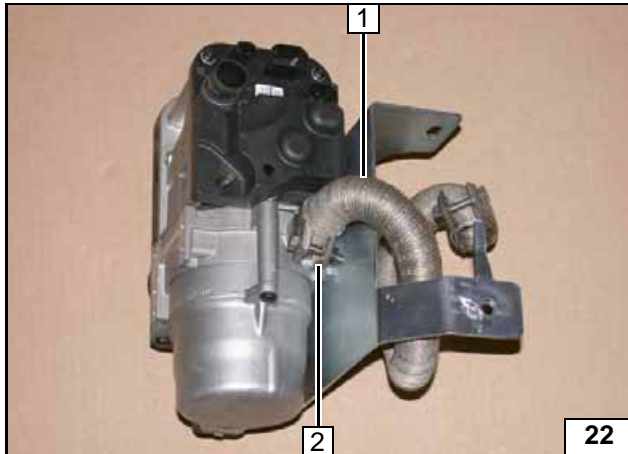
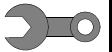


Discard section X.

- 1 Exhaust pipe  
a = 470
- 2 Exhaust end section  
b = 45

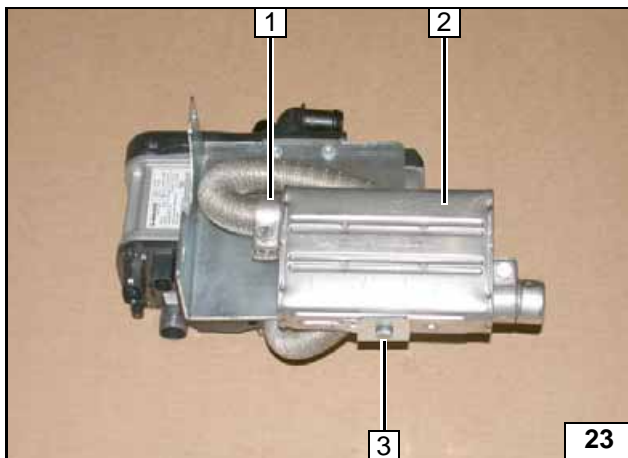


Preparing exhaust pipe



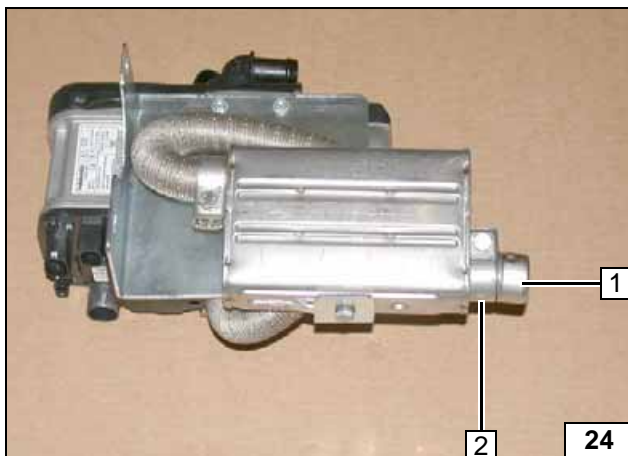
- 1 Exhaust pipe
- 2 Hose clamp

Mounting  
exhaust  
gas pipe



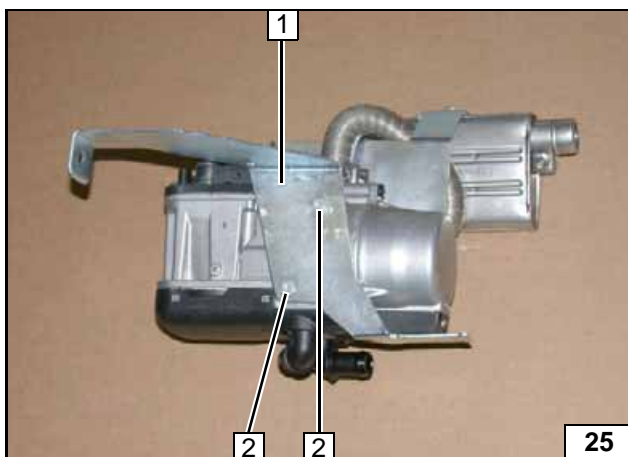
- 1 Hose clamp
- 2 Silencer
- 3 M6x16 bolt, spring lockwasher

Mounting  
silencer



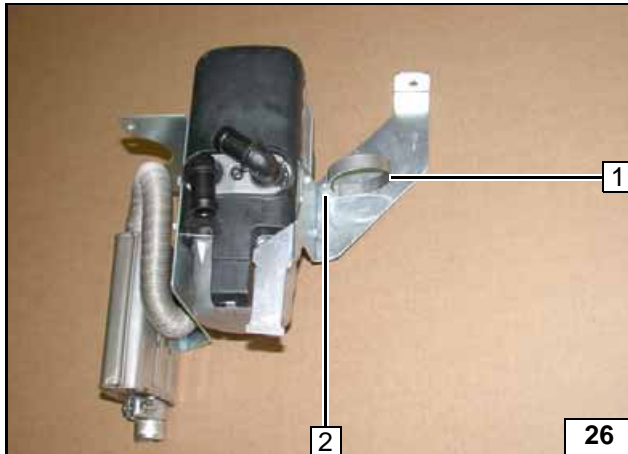
- 1 Exhaust end section
- 2 Hose clamp

Mounting  
exhaust  
end section



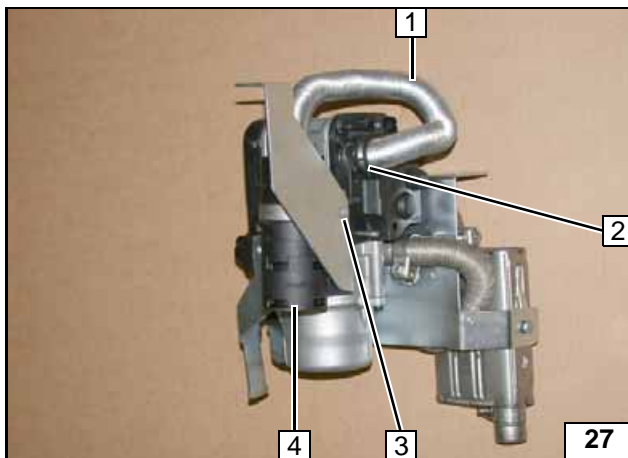
- 1 Bracket section B
- 2 5x13 self-tapping bolt [2x]

Mounting  
bracket  
section B



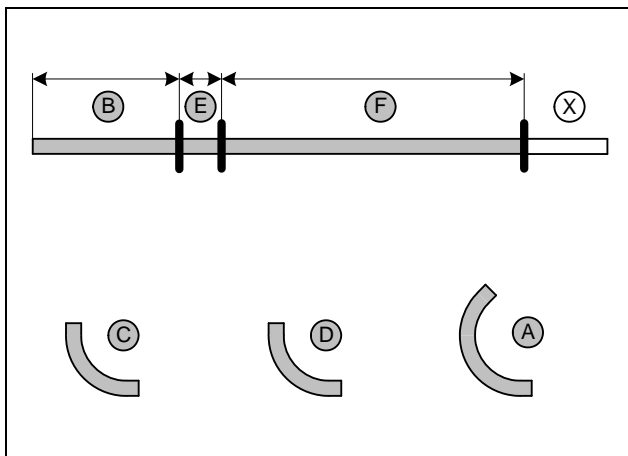
- 1 51mm dia. clamp
- 2 Mount M5x16 bolt, flanged nut loosely

Mounting combustion air pipe



- 1 Combustion air pipe
- 2 25 mm dia. clamp
- 3 Tighten M5x16 bolt, flanged nut
- 4 Intake silencer

Mounting combustion air pipe

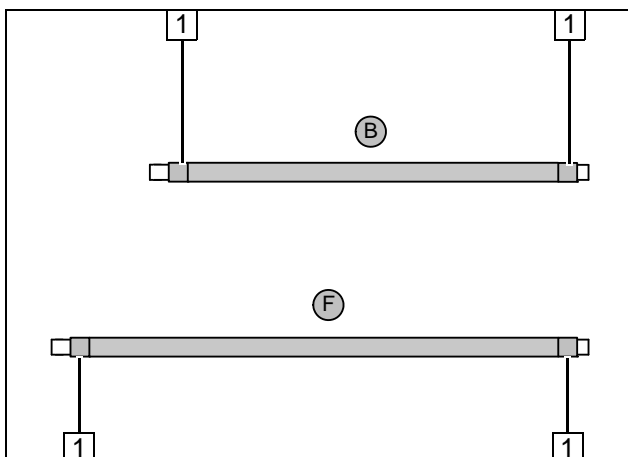


Discard section **X**.  
 Hose **A** = 135°, 15x20 mm dia. moulded hose  
 Hose **C** = 18mm dia. 90° moulded hose  
 Hose **D** = 18mm dia. 90° moulded hose

- B** = 640
- E** = 65
- F** = 900



Cutting hoses to length



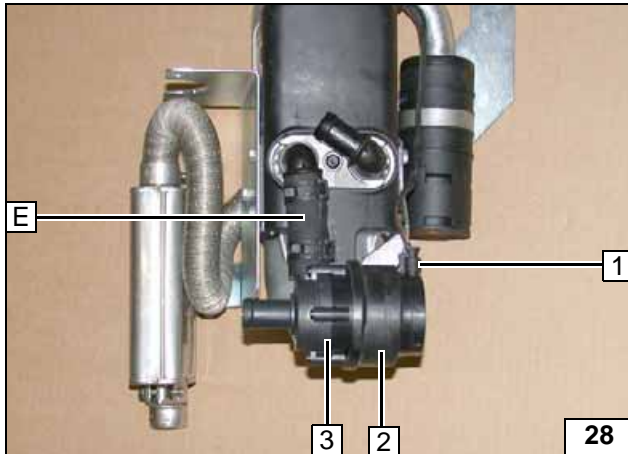
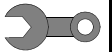
Slide on braided protection hoses and cut to length. Cut heat shrink plastic tubing to length.

- 1 50 mm long heat shrink plastic tubing [4x]



Preparing hoses B and F



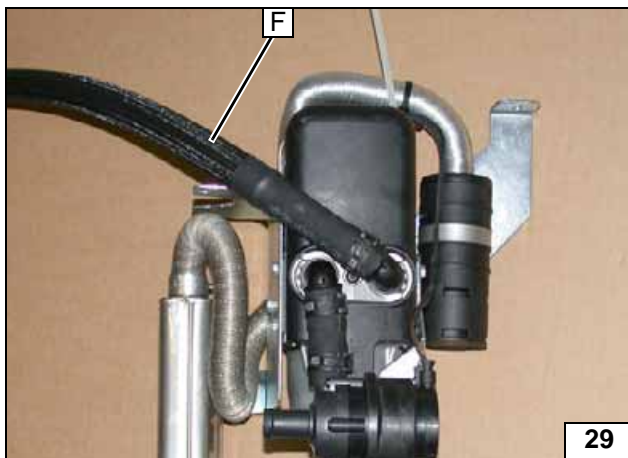


All spring clips = 25mm dia.

- 1 Mount wiring harness of circulating pump
- 2 Mounting of circulating pump
- 3 Circulating pump



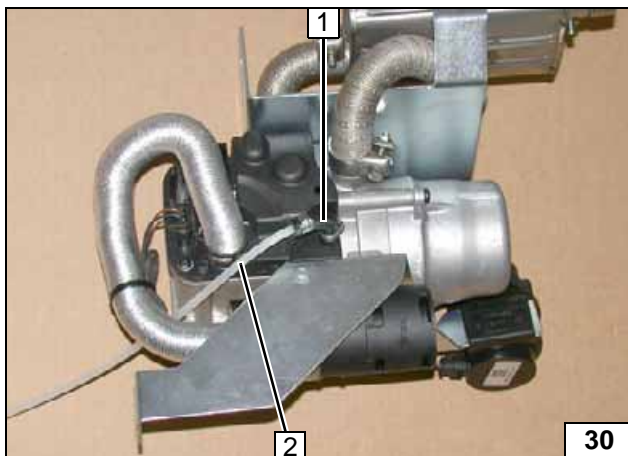
**Mounting hose and circulating pump**



Spring clip = 25 mm dia.

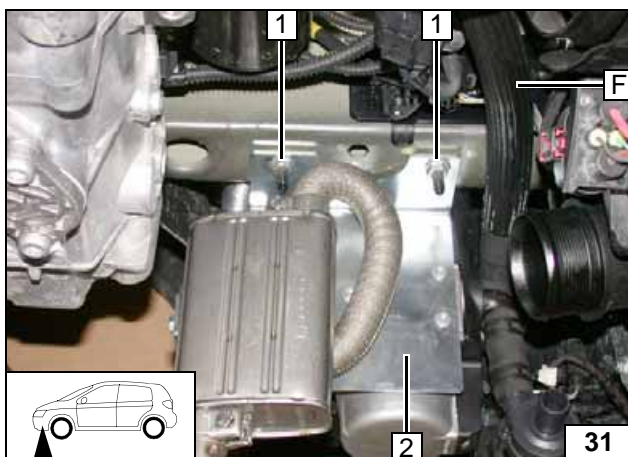


**Mounting hose F**



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

**Premounting fuel line**



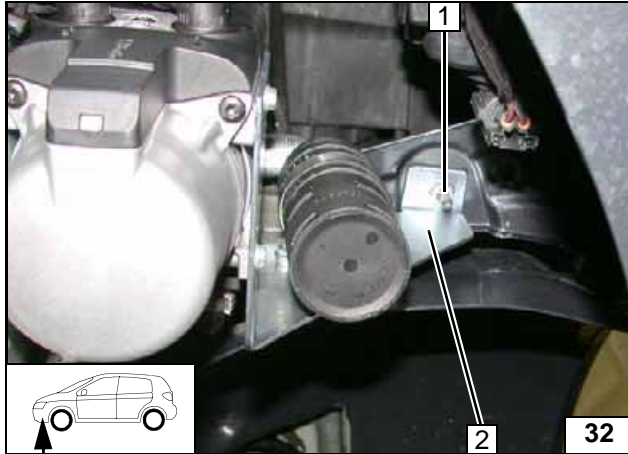
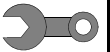
**Installing heater**

Route hose F to brake booster.

- 1 Original vehicle stud bolt, M8 flanged nut [2x each]
- 2 Bracket section A



**Mounting heater**

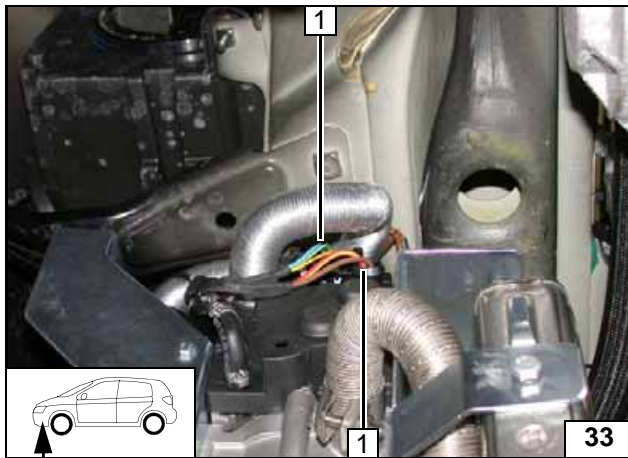


If stud bolt is not available at position **1**, copy hole pattern from bracket, drill 8.5mm dia. hole in cross member and fasten bracket with M8x20 bolt and flanged nut.

- 1** Original vehicle stud bolt, M8 flanged nut
- 2** Bracket section **B**



**Mounting heater**



- 1** Wiring harness of heater [2x]

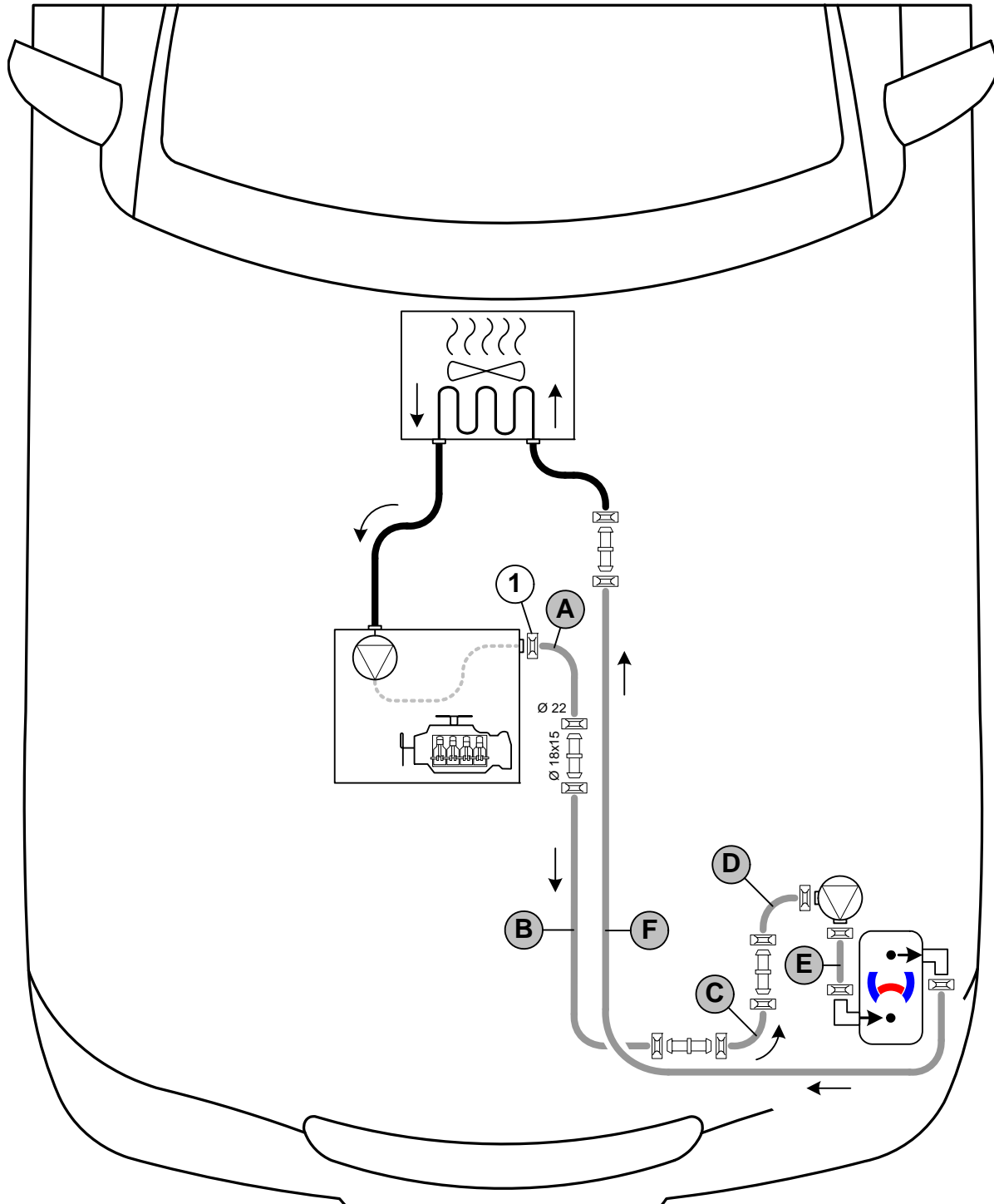
**Connect-  
ing wiring  
harness**






**Coolant circuit**

**WARNING!**

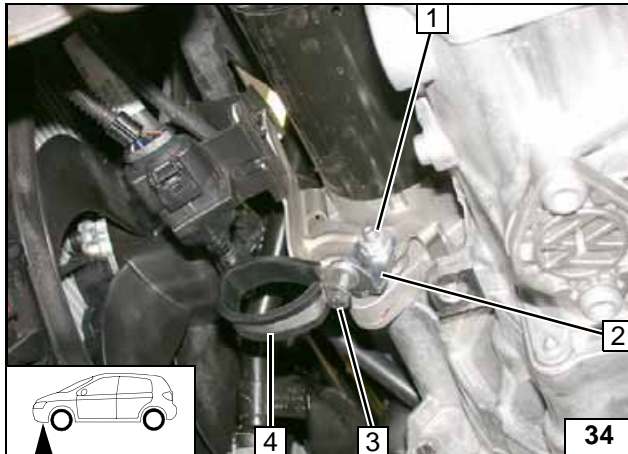
Any coolant running off should be collected in an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses. The connection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



Hose in-  
stallation  
diagram

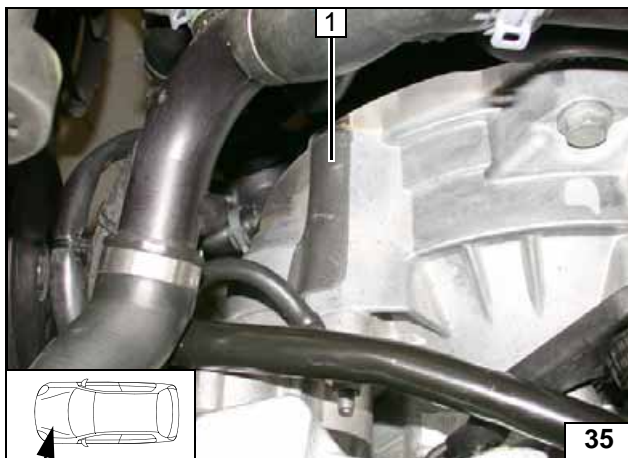
All spring clips without a specific designation  = 25mm dia.  
 1 = Original vehicle spring clip  .  
 All connecting pipes without a specific designation  = 18x18 mm dia..





- 1 Original vehicle stud bolt, original vehicle nut
- 2 Angle bracket
- 3 M6x20 bolt, flanged nut
- 4 38mm dia. rubber-coated p-clamp

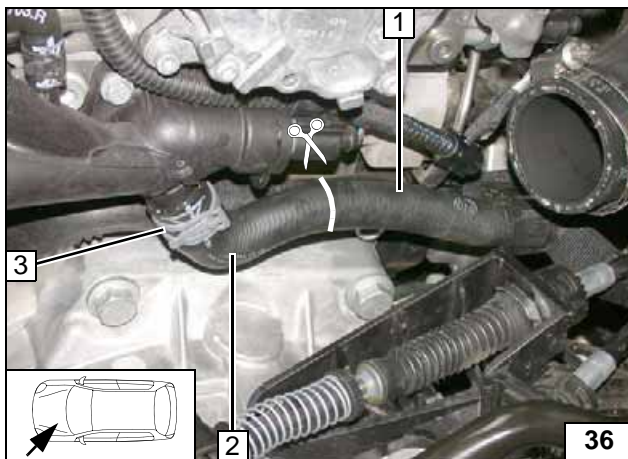
**Mounting p-clamp**



Deburr and paste foam strip 1.



**Pasting foam strip**

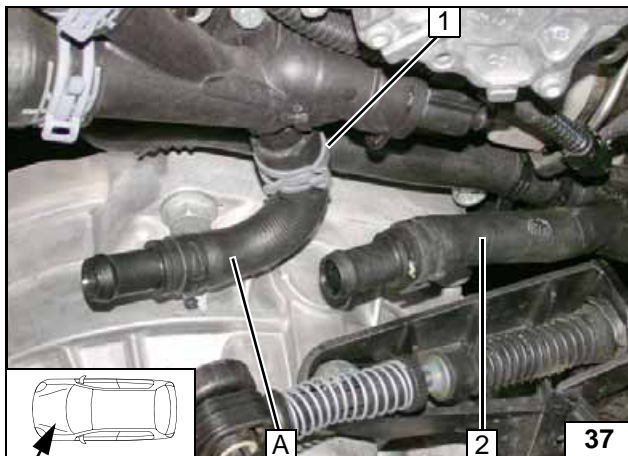


Cut off hose on engine outlet/heat exchanger inlet at marking. Spring clip 3 will be reused.

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



**Cutting point**

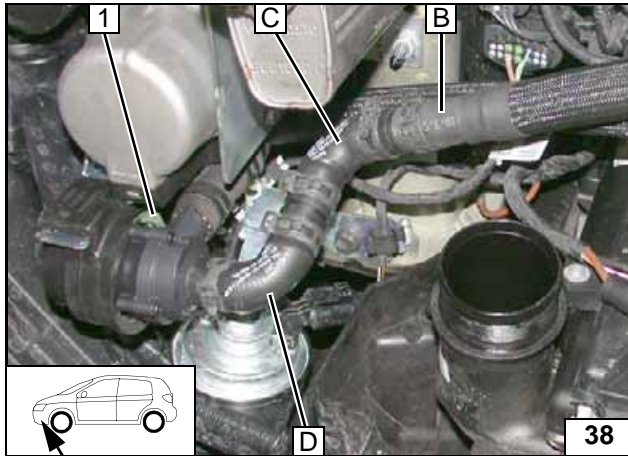


Premount connecting pipes and spring clips.

- 1 Original vehicle spring clip
- 2 Hose on heat exchanger inlet

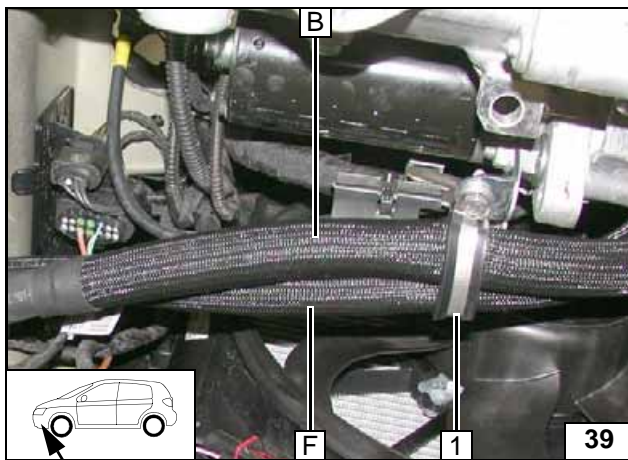


**Preparing connection of engine outlet and heat exchanger inlet**



1 Circulating pump

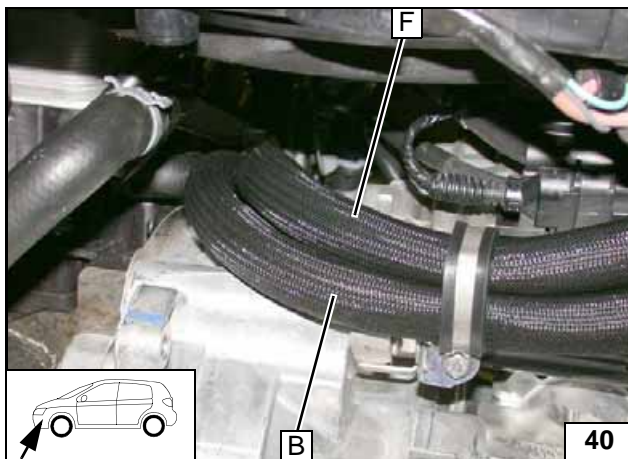
Circulating pump connection



Route hoses **B** and **F** through rubber-coated p-clamp **1**.



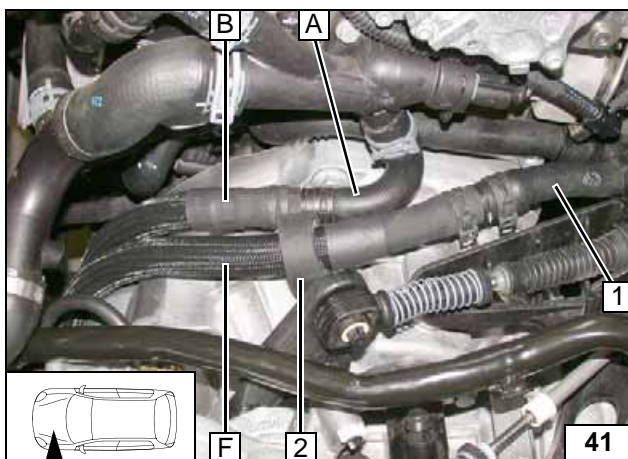
Routing in engine compartment



Route hoses **B** and **F** before the transmission in the upward direction.



Routing in engine compartment

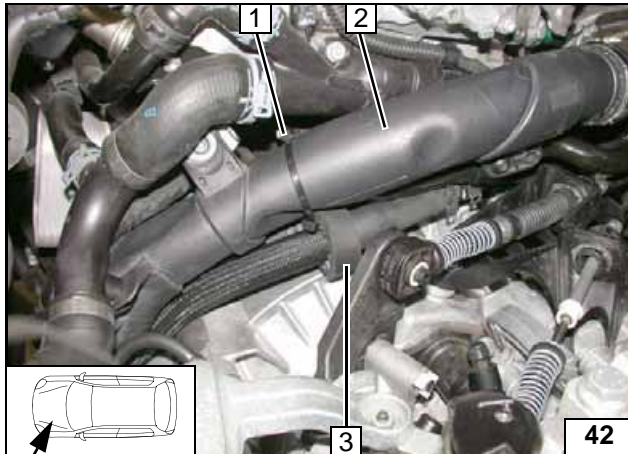


Slide black (sw) rubber isolator **2** on to hose **F** and align to connection point point of hose **A** and **B**.

2 Hose on heat exchanger inlet



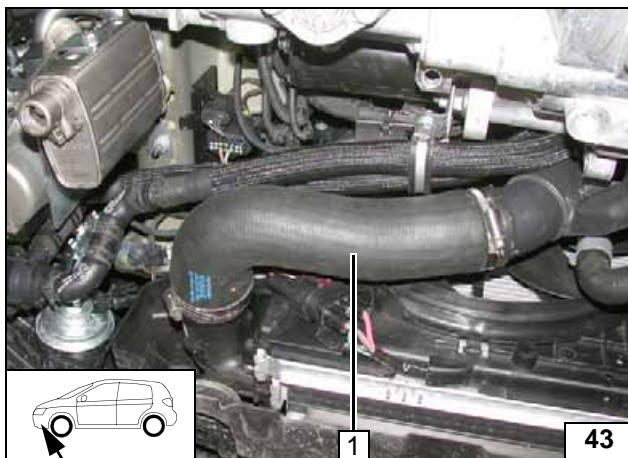
Connecting engine outlet and heat exchanger inlet



Align hoses. Fasten black (sw) rubber isolator 3 with cable tie 1 on charge air pipe 2. Ensure sufficient distance from neighbouring components, correct if necessary.



**Mounting charge-air pipe**



Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

1 Charge air hose

**Mounting charge-air hose**



**Fuel**

**CAUTION!**

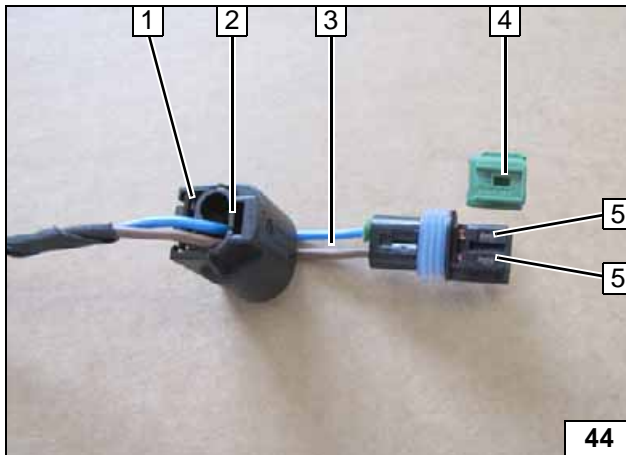
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off in an appropriate container.

Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties. Mount the fuel line and wiring harness with rub protection on sharp edges.

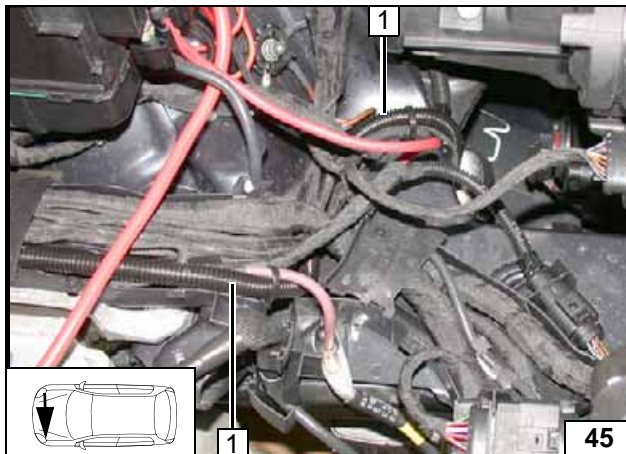
**WARNING!**

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



Complete connector of metering pump again after routing. Pin assignment is not relevant.

- 1 Connector housing
- 2 Lock
- 3 Blue / brown (bl / br) wires
- 4 Coding
- 5 Timer lock



Route fuel line and wiring harness of metering pump in 1130mm corrugated tube 1 to firewall



Route fuel line and wiring harness of metering pump in coolant reservoir on the right side of the vehicle. Pay particular attention to freedom of movement of wiper linkage. If there is an insulation mat, routing can be undertaken behind it.

- 1 Original vehicle pass throughs



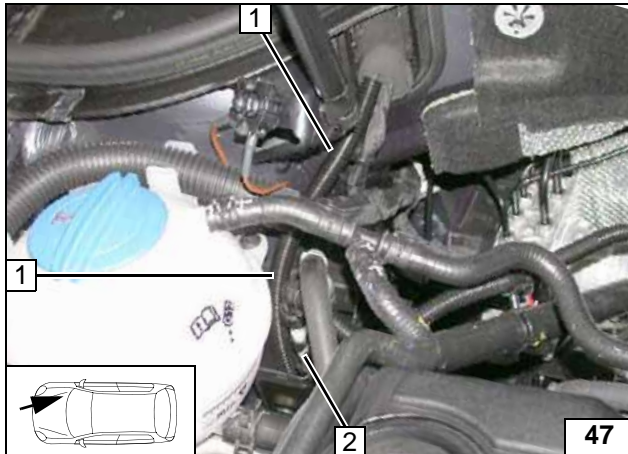
**Dismantling connector**



**Routing lines**



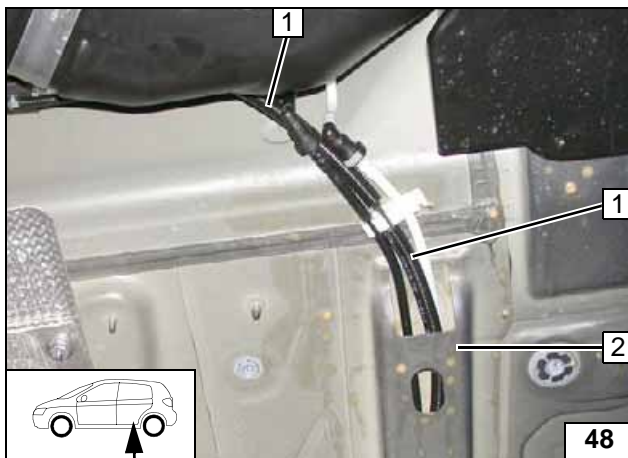
**Routing lines**



Cut off approx. 300mm from the 10mm dia. corrugated tube and slide on to fuel line and wiring harness of metering pump. Guide fuel line and wiring harness of metering pump 1 into original vehicle line duct 2 and route to underbody.

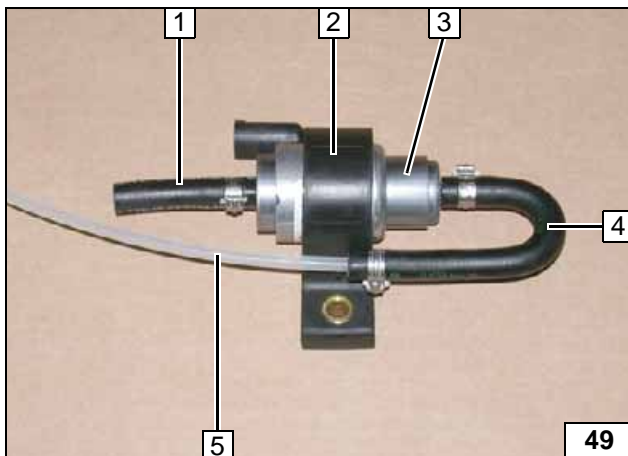


**Routing lines**



1 Fuel line and wiring harness of metering pump in corrugated tube  
2 Original vehicle line duct

**Routing lines**



Cut off approx. 600mm from fuel line.

1 Hose section, 10mm dia. clamp  
2 Mounting of metering pump  
3 Metering pump  
4 180° moulded hose, 10mm dia. clamp [2x]  
5 600mm fuel line



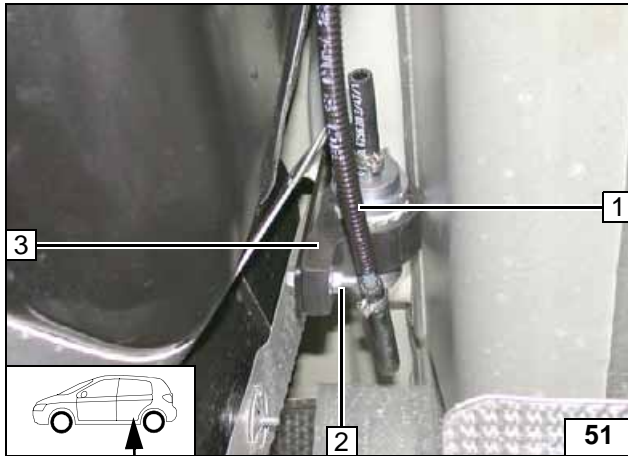
**Premounting metering pump**



1 Original vehicle bolt  
2 Bracket of metering pump

**Mounting metering pump bracket**



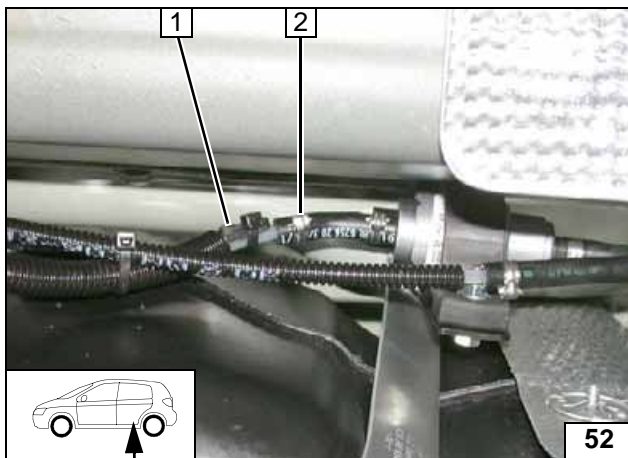


Slide approx 500mm of 10mm dia. corrugated tube **1** onto fuel line.

- 2** M6x25 bolt, flanged nut
- 3** Mounting of metering pump



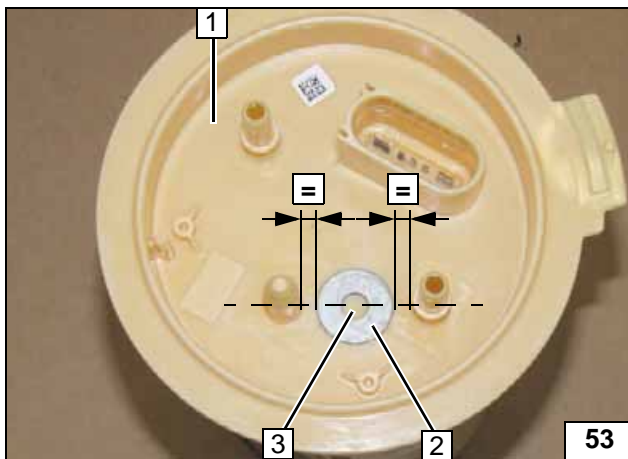
**Mounting metering pump**



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



**Connecting metering pump**

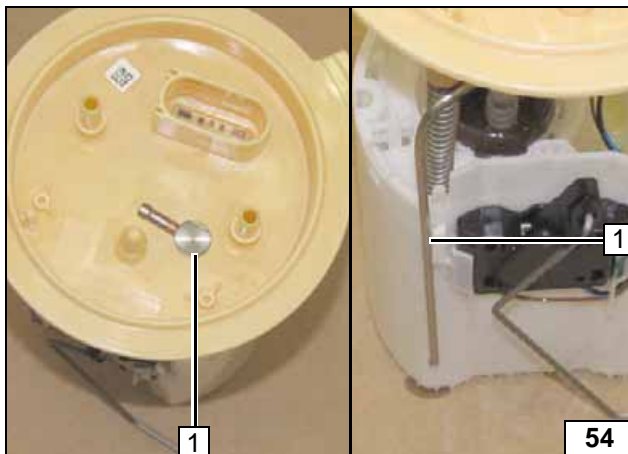


Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Position large diameter washer **2** dia.  $d_a = 21.6\text{mm}$  midway between the connection pieces.

- 3** Copy hole pattern, 6.0mm dia. hole



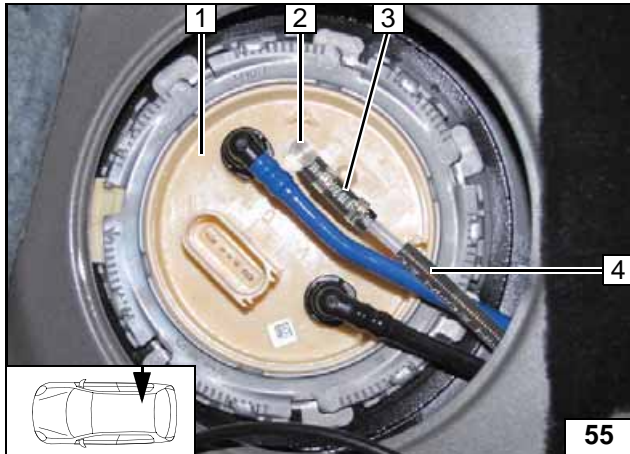
**Removing fuel**



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



**Installing fuel standpipe**

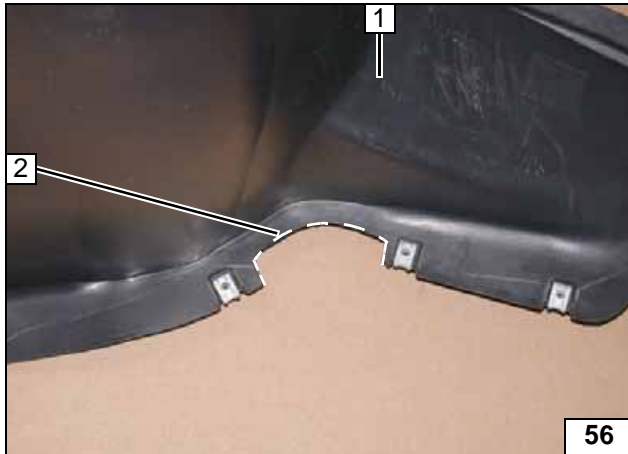
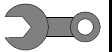


Install fuel-tank sending unit 1 in accordance with manufacturer's instructions.

- 2 Fuel standpipe
- 3 Hose section, 10 mm dia. clamp [2x]
- 4 Fuel line in 10mm dia. corrugated tube



**Connect-  
ing fuel  
line**

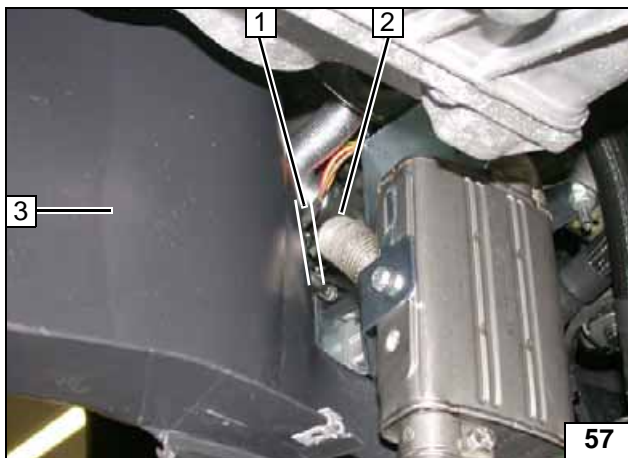


**Wheel-well inner panel**

Cut out wheel-well inner panel 1 at the marking 2.



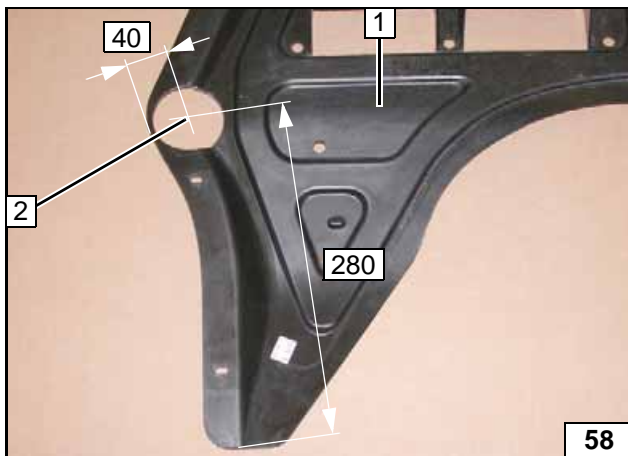
**Wheel-well inner panel cutting out**



Ensure sufficient distance between wheel-well inner panel 3 and exhaust pipe 2 at position 1 (min. 10mm).



**Mounting wheel-well inner panel**

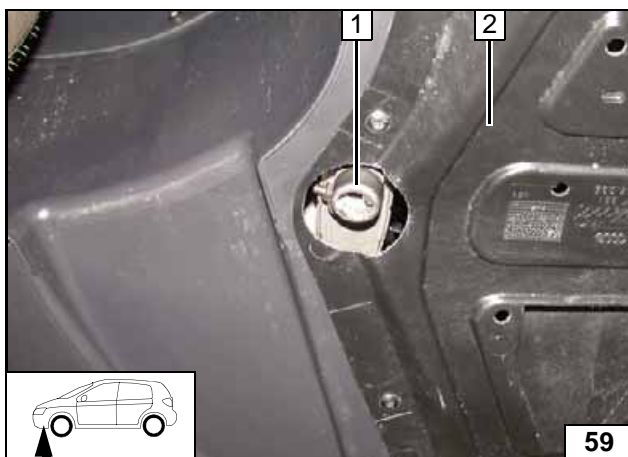


**Underride protection**

- 1 Underride protection
- 2 60mm dia. hole



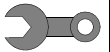
**Cutting out underride protection**



Align exhaust end section 1 at centre of hole and flush with underride protection 2.



**Aligning exhaust end section**



## Final Work

### WARNING!

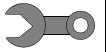
Mount removed parts in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose lines.

Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

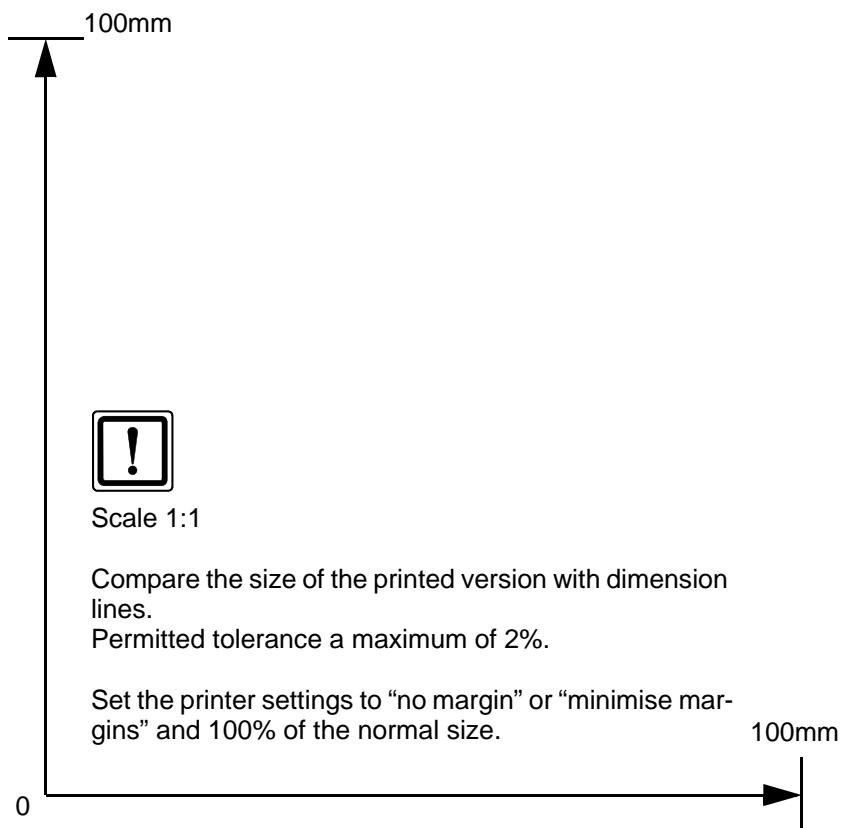
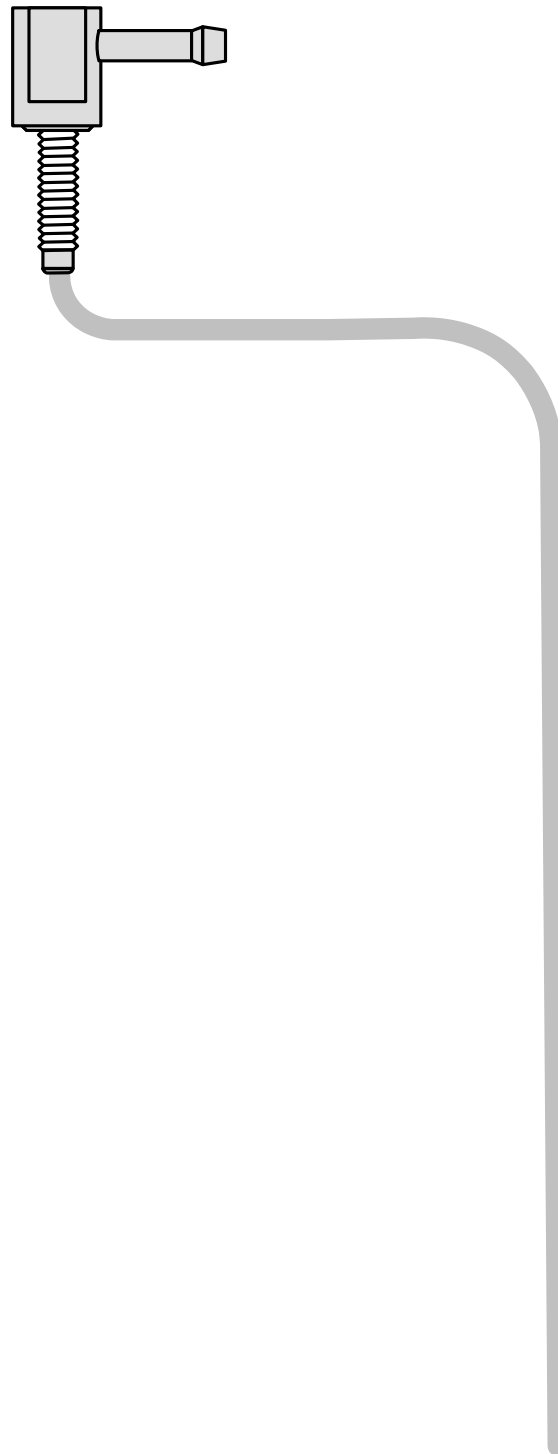
- **Connect the battery**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Set digital timer, teach telestart transmitter**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place the "Switch off parking heater before refuelling" signboard near the filler neck.**
- **See installation instructions for initial start-up and function test**



Webasto AG  
Postfach 80  
D-82132 Stockdorf / Germany  
National Hotline: 01805 93 22 78  
(14 Cent aus dem deutschen Festnetz)  
Hotfax: 0395 5592 353  
Hotmail: [technikcenter@webasto.com](mailto:technikcenter@webasto.com)  
<http://www.webasto.com>



Template for Fuel Standpipe



Scale 1:1

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

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

## 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

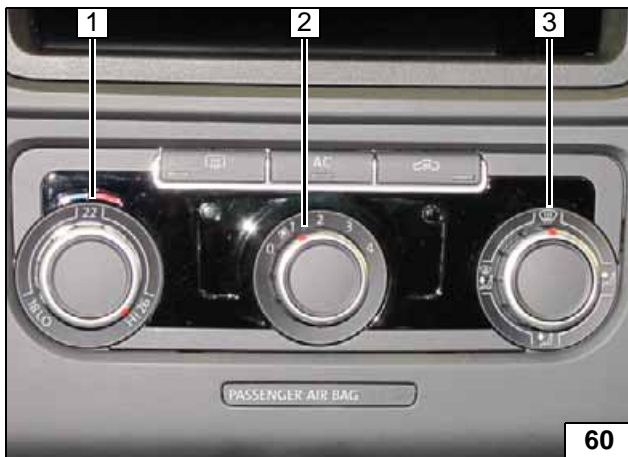
**Example:**

For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

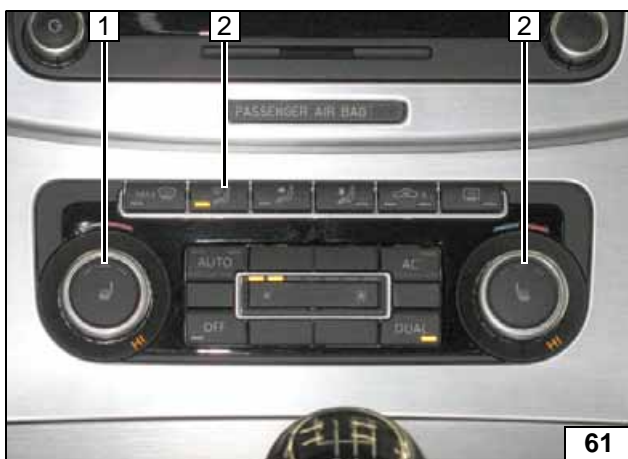
Passenger compartment monitoring unit, if installed, must be deactivated in addition to vehicle settings for the heating cycle.

For information on deactivation, please see the vehicle owner's manual.

Before parking the vehicle, make the following settings:



- 1 Set temperature to "max."
- 2 Fan level 1 or 2
- 3 Air outlet to windscreen



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



Climatic

Climatronic