Water Heater

***Thermo Top C* Parking Heater** E1 00 0002

Installation Documentation

Chrysler Grand Voyager

2.8 CRD
From model year 2008
Left-hand drive vehicle
Automatic air-conditioning

WARNING!

Hazard warning:

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.
Only use genuine Webasto parts. See the Webasto air and water heaters accessories catalogue for this purpose.

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.

Table of Contents

Validity

Manufacturer	Model	Type	EG-BE-No. / ABE
Chrysler (USA)	Grand Voyager	rt	e11 * 2001 / 116 * 0144 * ...

Engine type	Engine model	Output in kW	Displacement in cm³
VM 64 C	Diesel	120	2777
5 / VM 25 D	Diesel	120	2776

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.

Note:
When the vehicle is delivered, the fuel tank should be filled with as little fuel as possible!

Heater / Installation Kit

Quantity	Description	Order No.:
1	Basic delivery scope of *Thermo Top C*	see price list
1	Installation kit for Chrysler Grand Voyager 2008 2.8 CRD	1313748A
1	Heater control	see price list

Foreword

This installation documentation applies to Chrysler Grand Voyager 2.8 CRD vehicles - for validity, see page 2 - from model year 2008 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."

In each case however, the specifications of this "installation documentation"; the "operating instructions" and the "installation instructions" of *Thermo Top C* must be followed.
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. Connectors on electronic components have to audibly click into place.

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).

When installing an IPCU, the corresponding settings must be checked or adjusted before the installation.

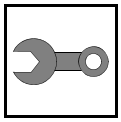
Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Chrysler special tool number: 9340 (Installation and removal of fuel-tank sending unit)

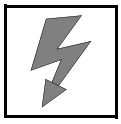
Explanatory Notes on Document

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

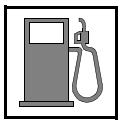


Electrical System

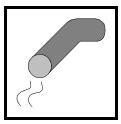


Coolant Circuit

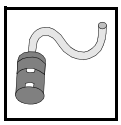
Fuel



Exhaust Gas



Combustion Air



Software

Special features are highlighted using the following symbols:

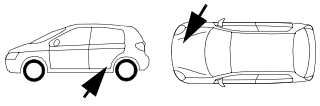
Specific risk of injury or fatal accidents.

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.

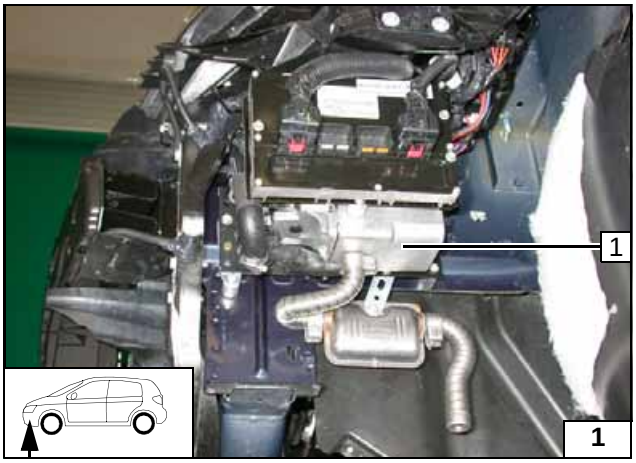
All dimensions are in mm!
Tightening torque of hose clamps = 2.0 + 0.5 Nm!
Tightening torque of Ejot screws, Ejot studs = 10 Nm!

Preliminary Works

WARNING!

- Open the fuel tank cap and vent the fuel tank.
- Empty the fuel 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.
- Remove the engine cover.
- Completely remove the battery.
- Remove the charge-air tube.
- Detach the wheel well trim on the right and left.
- Remove the bumper.
- Remove the fuel tank according to the manufacturer's instructions.
- Remove the fuel tank sending unit according to the manufacturer's instructions.
- Remove the lower instrument panel trim on the driver's side.
- Remove the footwell trim on the front passenger's side.
- Remove the A/C control panel in accordance with the manufacturer's instructions.

Please remove page 26 "Operating Instructions for End Customer" and add it to the vehicle operating instructions.



Installation Location of Heater

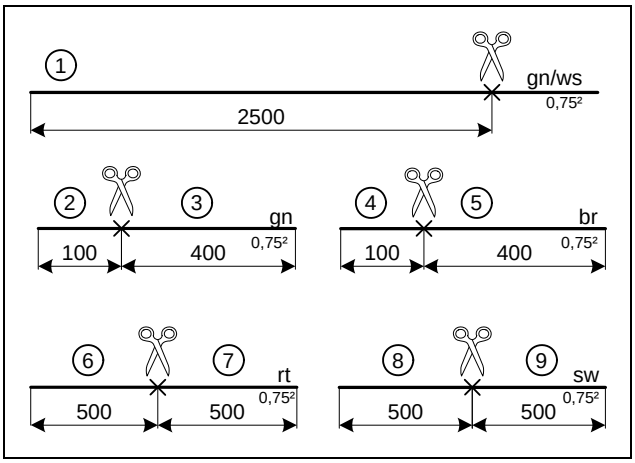
1 Heater

Installation location

Preparing Electrical System

Wire sections retain their numbering throughout the whole document!

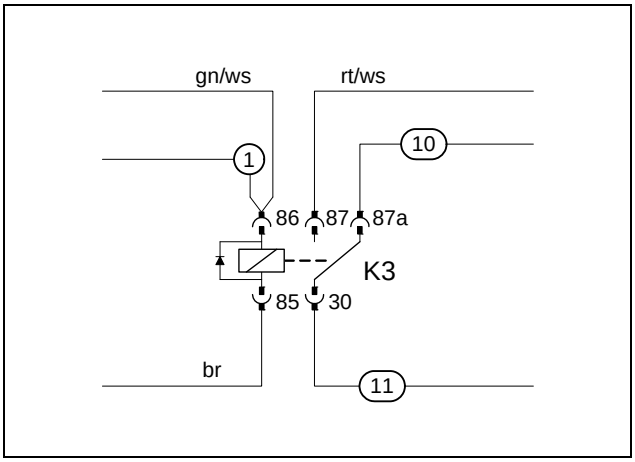
Cutting wires to length



Produce connections as shown in wiring diagram. Pull wire section **1** into protective sleeving.

⑩ Red (rt) wire from K3/87a premounted
⑪ Black (sw) wire from K3/30 premounted

Preparing K3 relay

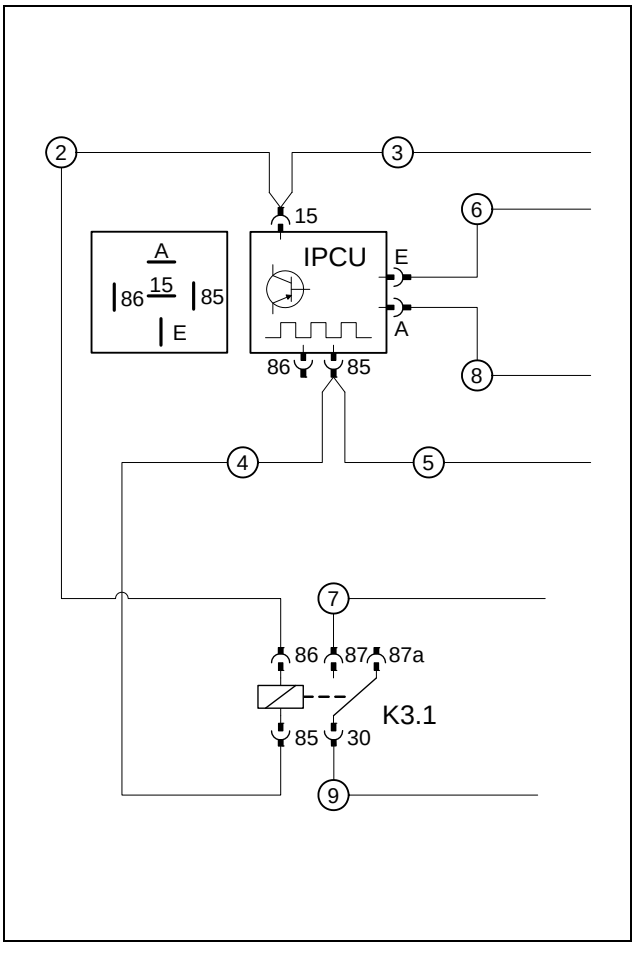


Connect wires to IPCU socket. Pull wire sections **3** and **5** into protective sleeving.
IPCU view on contact side!
The IPCU provided in the kit is preprogrammed with the following adjustment values:

Duty cycle: 55%
Frequency: 100Hz
Voltage: 5.0V
Function: Low-side

On heater activation, the adjustment values are to be controlled and corrective measures are to be taken if necessary.

Preparing IPCU and K3.1 relay



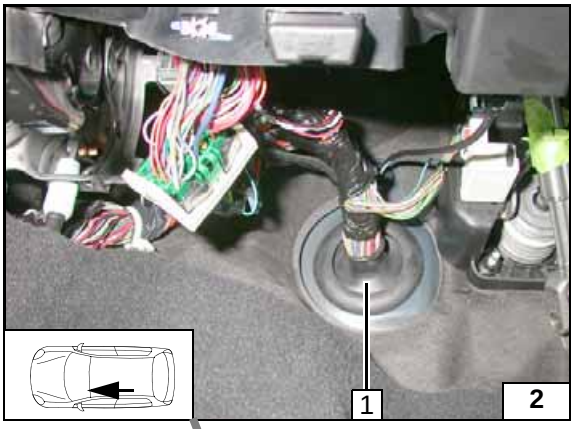
Electrical System

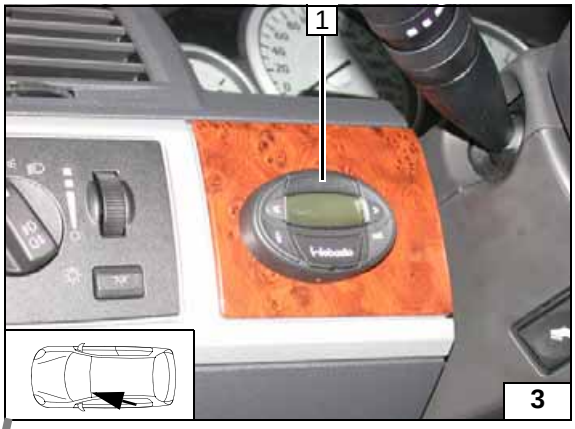
Wiring harness pass through

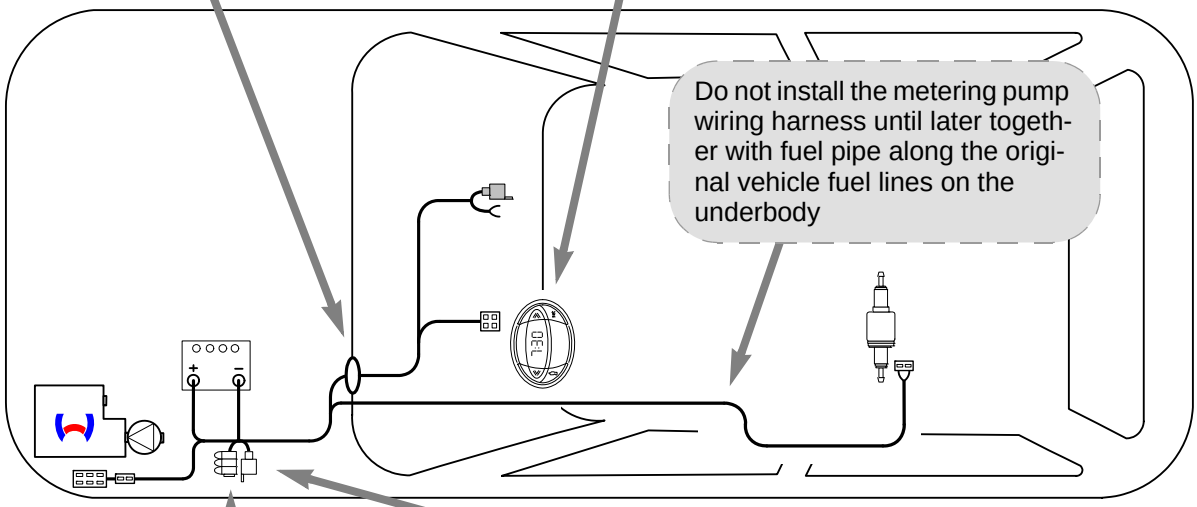
Route wiring harnesses of digital timer, fan controller and green/white (gn/ws) wire with suitable materials (fuel line) from engine compartment through protective rubber plug **1** into passenger compartment.

Digital timer

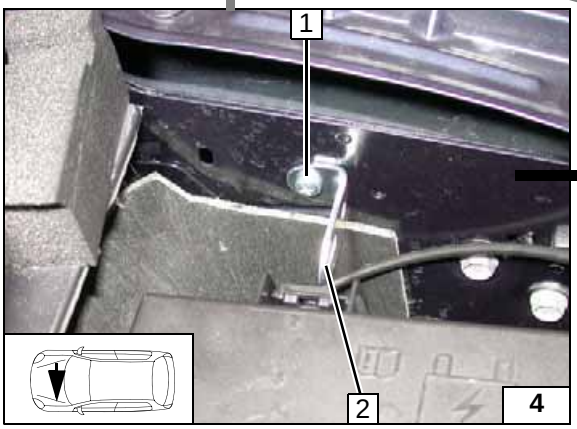
1 Digital timer

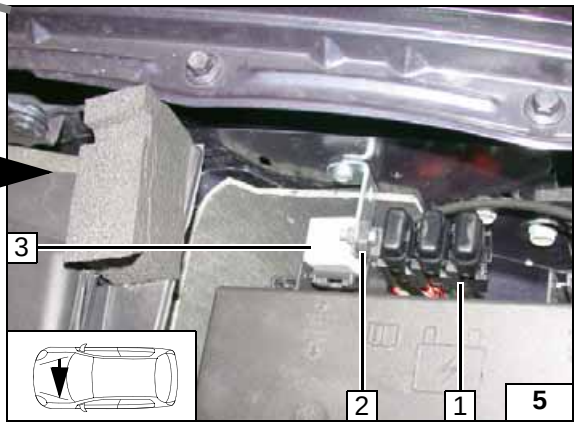






Wiring harness routing installation diagram





Fuse holder, K3 relay

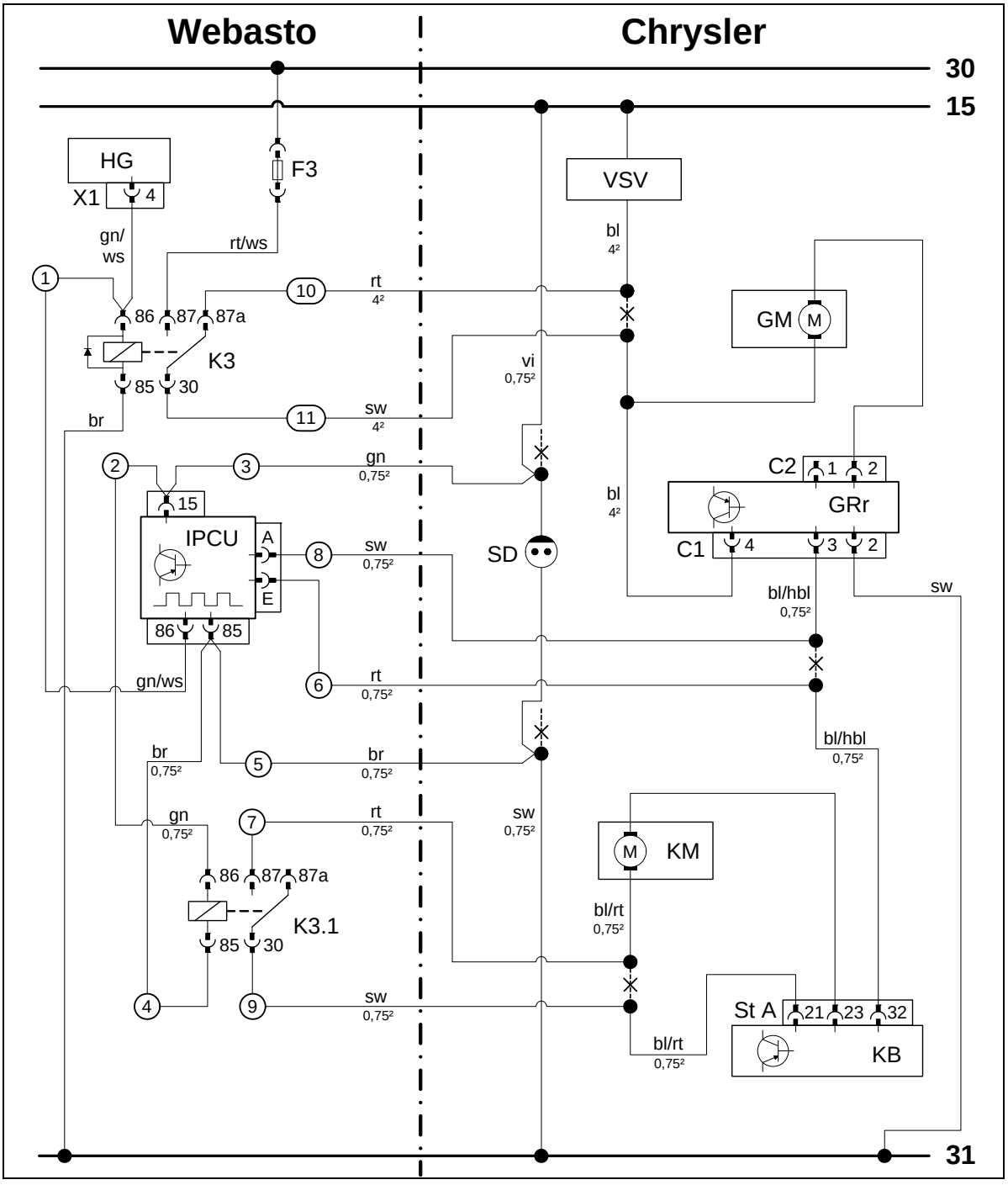
1 Existing hole, 5.5x13 self-tapping screw
2 Angle bracket

Fuse holder, K3 relay

1 Fuses attached
2 M5x16 bolt, retaining plate for fuse holder, washer, flanged nut
3 K3 relay

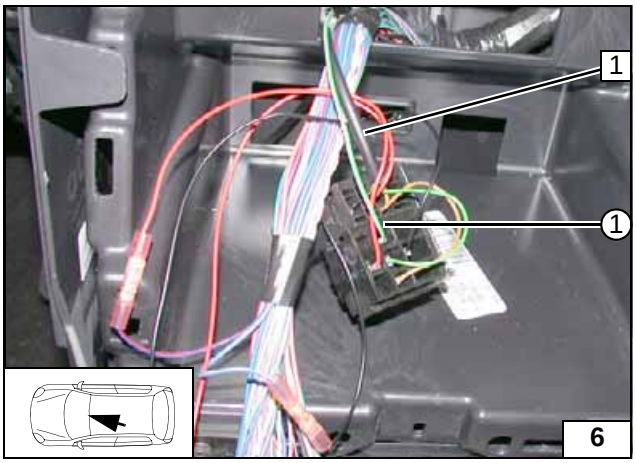
Fan Controller

Wiring diagram



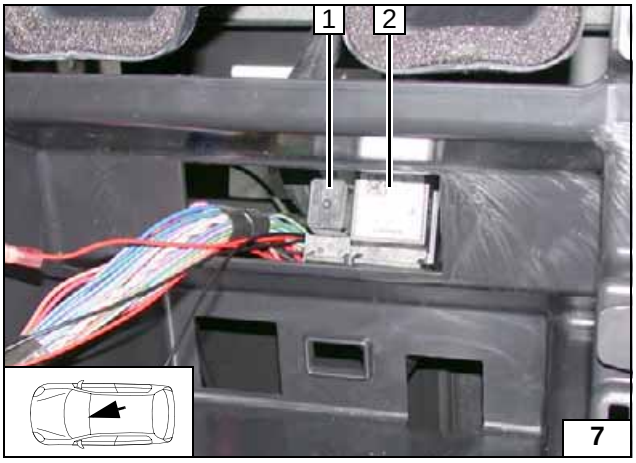
Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-C	VSV	Power supply module	rt	red
X1	6-pin heater connector			ws	white
F3	25A fuse	GM	Fan motor	sw	black
K3	Fan relay	C2	GRr connector	br	brown
K3.1	Additional relay	GRr	Fan controller	gn	green
IPCU	Pulse width modulator	C1	GRr 4-pin connector	bl	blue
IPCU adjustment values:		SD	Socket outlet of instrument panel	hbl	light blue
Duty cycle: 55%				vi	violet
Frequency: 100Hz		KM	Valve motor		
Voltage: 5.0V		St A	32-pin connector KB	**X**	Cutting point
Function: Low-side		KB	A/C control panel	Wiring colours may vary.	

Legend



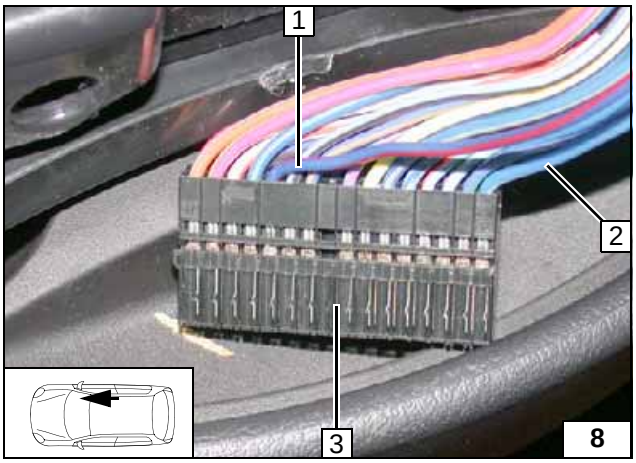
Produce connections as shown in wiring diagram. Mount green/white (gn/ws) wire ① from K3/86 into IPCU/86. Route wiring harness **1** with brown (br) ⑤ and green (gn) wire ③ downward to socket outlet on instrument panel.

Connecting IPCU



Mount IPCU **2** und K3.1 **1** with double-sided adhesive tape.

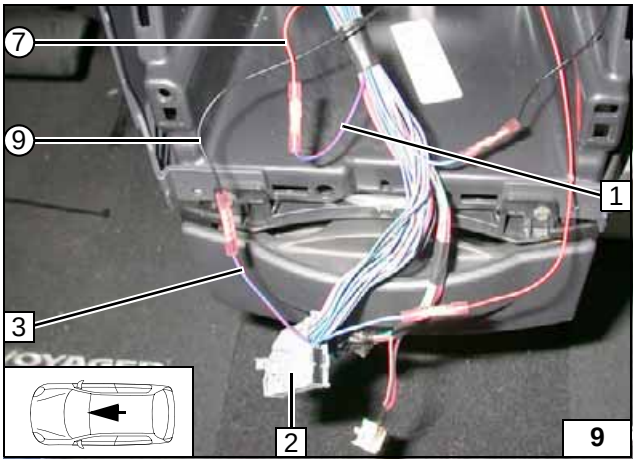
Fastening IPCU and K3.1



Remove 32-pin connector **3** of A/C control panel.

1 Blue/red (bl/rt) wire 32-pin connector wiring harness, pin 21
2 Blue/light blue (bl/hbl) wire 32-pin connector wiring harness, pin 32

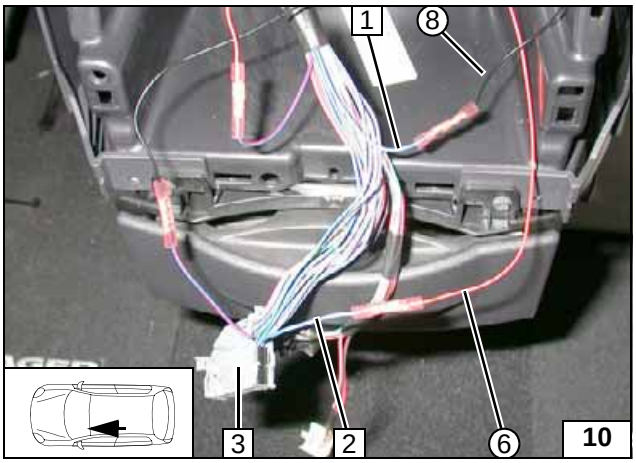
Connector for A/C control panel



Connection of K3.1 relay on 32-pin connector **2** from A/C control panel. Produce connections as shown in wiring diagram.

1 Blue/red (bl/rt) wire of valve motor
3 Blue/red (bl/rt) wire 32-pin connector wiring harness, pin 21
⑦ Red (rt) wire to K3.1/87
⑨ Black (sw) wire to K3.1/30

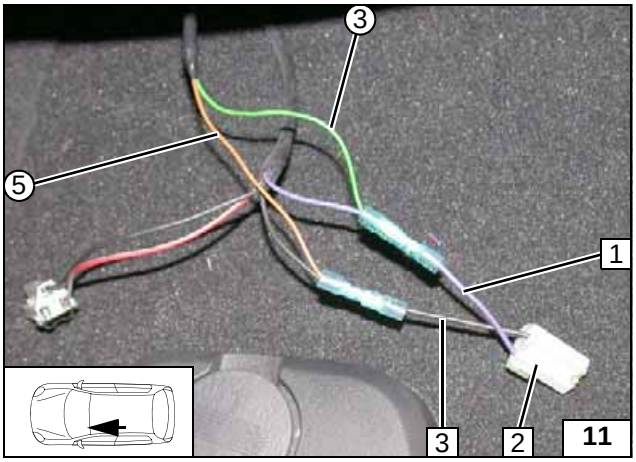
Connecting A/C control panel



Connection of IPCU to 32-pin connector **3** from A/C control panel. Produce connections as shown in wiring diagram.

1 Blue/light blue (bl/hbl) wire of fan controller
2 Blue/light blue (bl/hbl) wire 32-pin connector wiring harness, pin 32
⑥ Red (rt) wire of IPCU/E
⑧ Black (sw) wire of IPCU/A

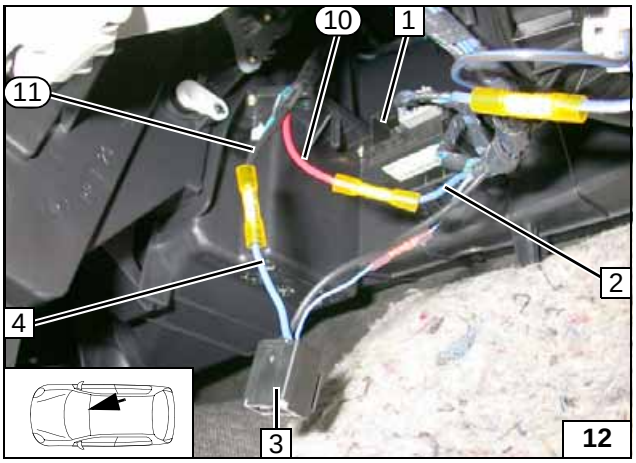
Connecting A/C control panel



Connection on socket outlet of instrument panel **2**. Produce connections as shown in wiring diagram.

1 Violet (vi) wire of positive wire on socket outlet (Terminal 15)
3 Black (sw) earth wire on socket outlet
③ Green (gn) wire to K3.1/86
⑤ Brown (br) wire to K3.1/85

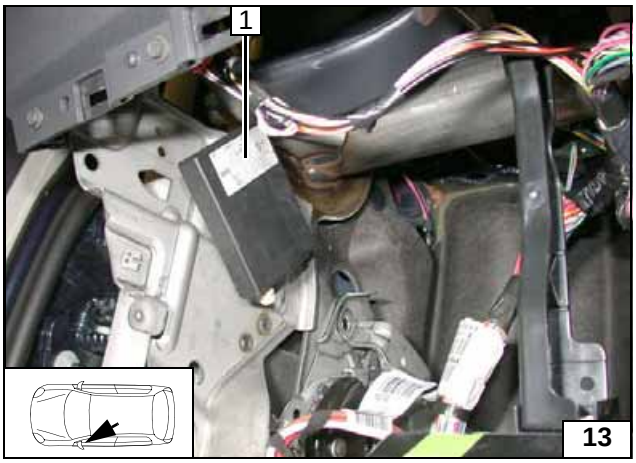
Connection of Terminal 15



Connection to 4-pin connector C1 **3** from fan controller. Produce connections as shown in wiring diagram.

1 Socket of connector C1
2 Blue (bl) wire of terminal 15
4 Blue (bl) wire of connector C1, pin 4
⑩ Red (rt) wire to K3/87a
⑪ Black (sw) wire to K3/30

Connecting fan controller

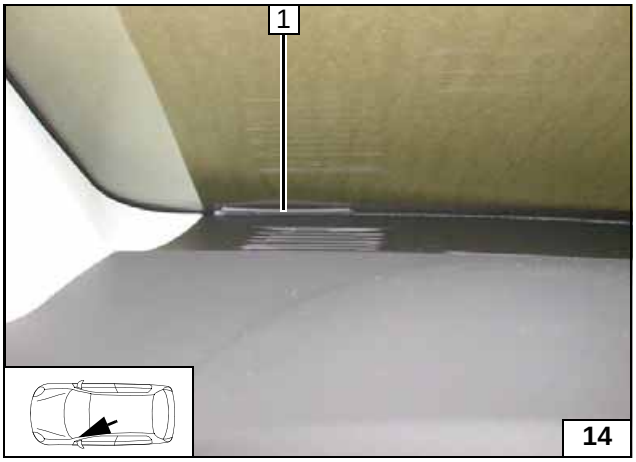


Remote Option (Telestart)

Fasten bracket on existing hole with M5x16 bolt and M5 flanged nut (see photo after next).

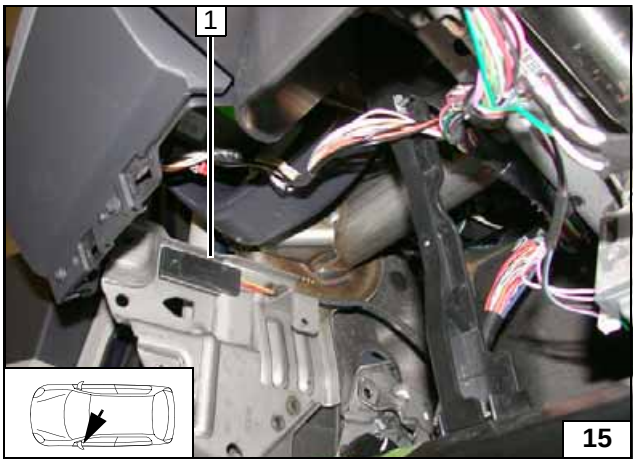
1 Receiver

Installing receiver



1 Antenna

Installing antenna



Temperature sensor for T100 HTM only

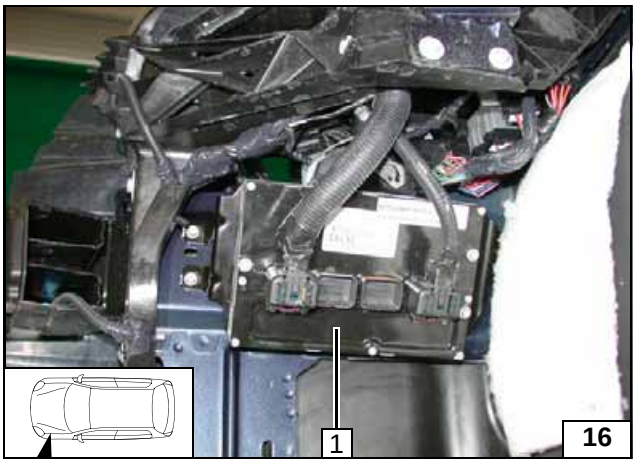
1 Fasten temperature sensor using suitable means

Installing temperature sensor

Preparing Installation Location

Remove control unit with bracket **1**. Original vehicle bolts will be reused.

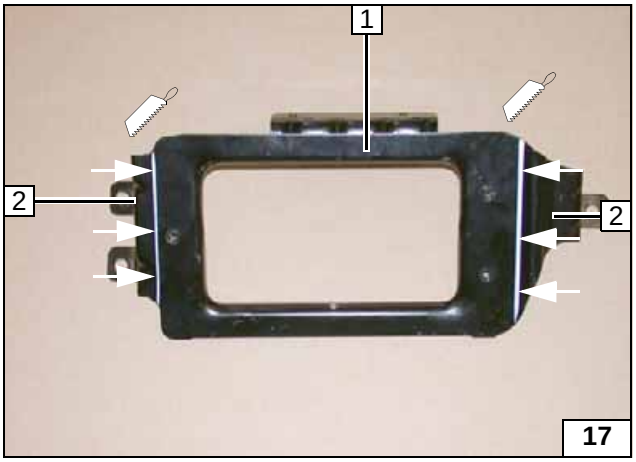
Removing control unit



Cut bracket of control unit **1** to length at markings.

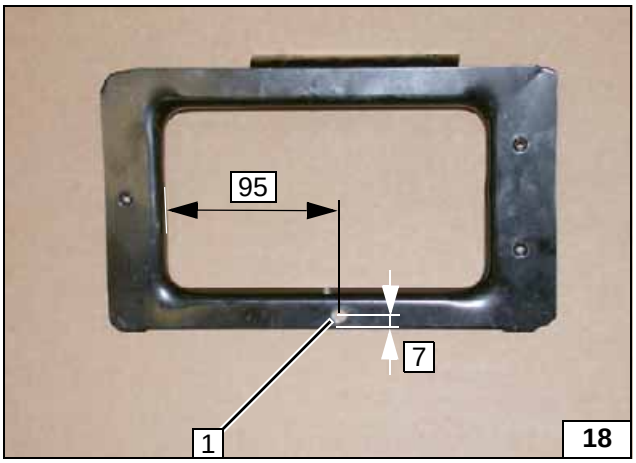
2 Discard sections

Preparing bracket of control unit



1 7mm dia. hole

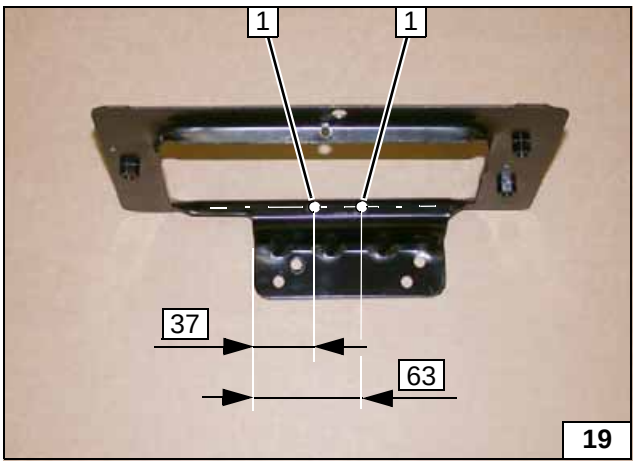
Hole in bracket

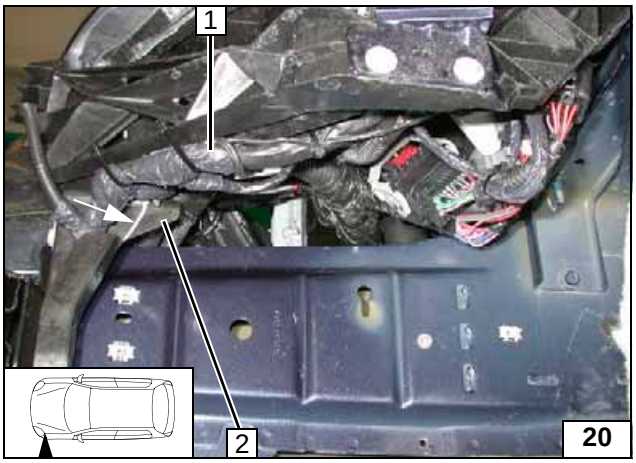


Bracket will be installed later during "Final Work".

1 Drill 5.5 mm dia. hole in centre [2x]

Hole in bracket

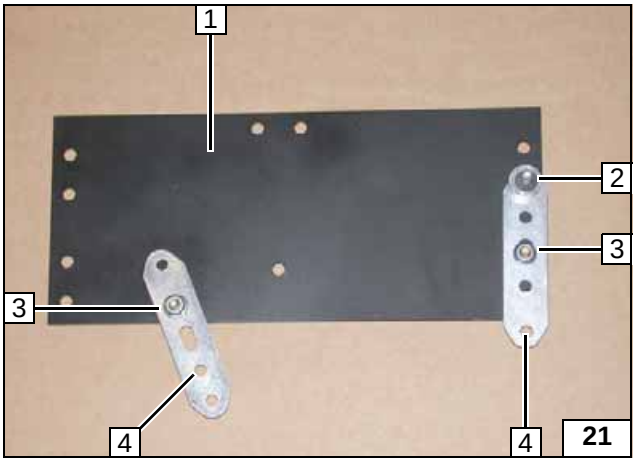




Route original vehicle wiring harness **1** and fasten using cable ties.
Cut away edge at marking.

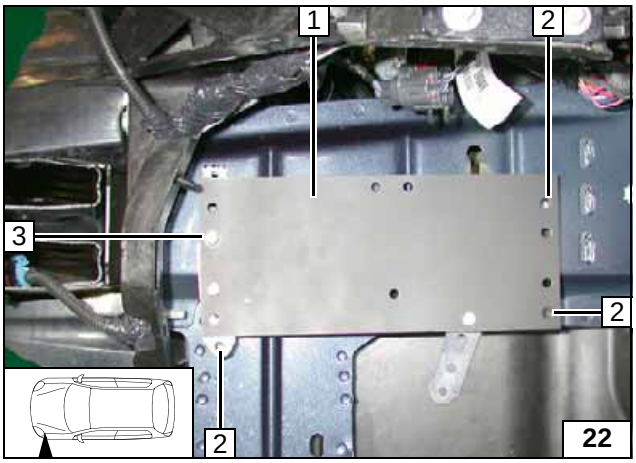
2 Discard section

Routing wiring harness



1 Bracket
2 M6x25 bolt, 8 mm shim, pin lock
3 M6x12 bolt, flanged nut [2x each]
4 Perforated bracket [2x]

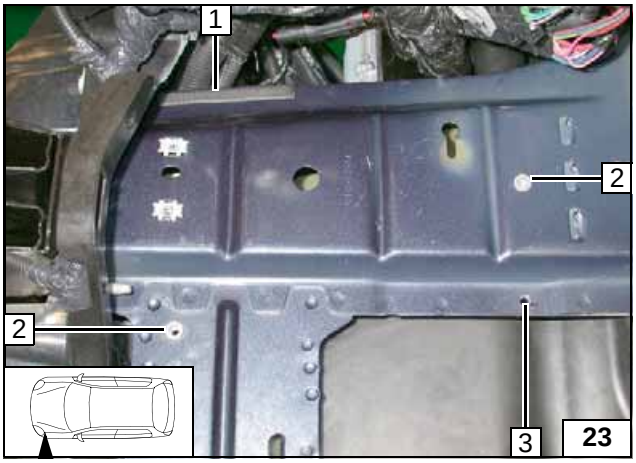
Preparing bracket



Loosely mount bracket **1** and align on lower edge of frame side member!

2 Copy hole pattern [3x]
3 Original vehicle rivet nut, M6x25 bolt

Copying hole pattern



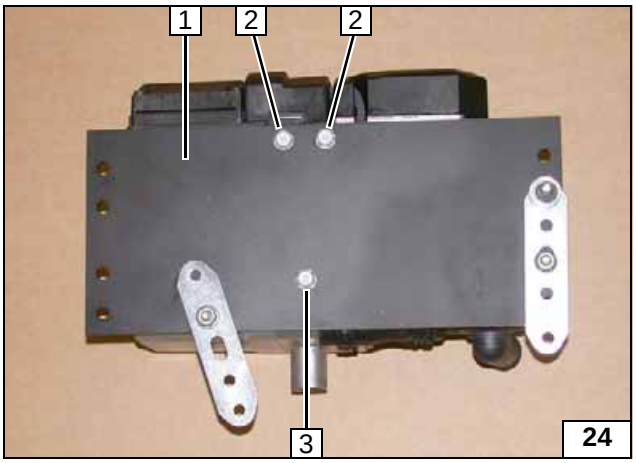
Remove bracket.

1 Insert edge protection
2 9.1mm dia. hole; rivet nut [2x each]
3 7mm dia. hole

Installing rivet nut

Preparing Heater

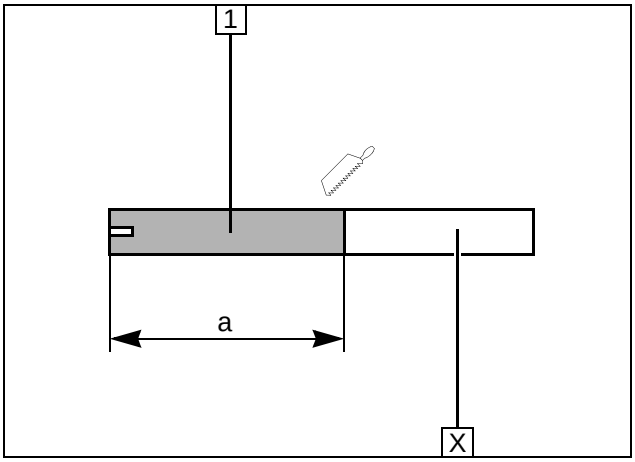
Mounting bracket on heater



Insert two washers between heater and bracket **1** at position **3**.

2 Ejot screw [2x]
3 Ejot screw, washer [2x]

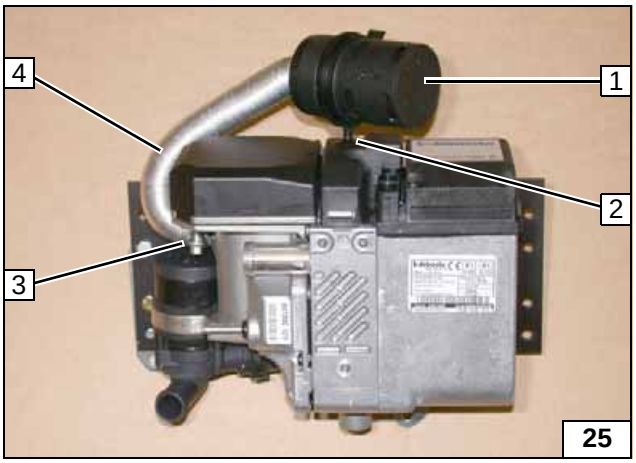
Cutting combustion air pipe to length



1 Combustion air pipe
a = 220

Discard section **X**

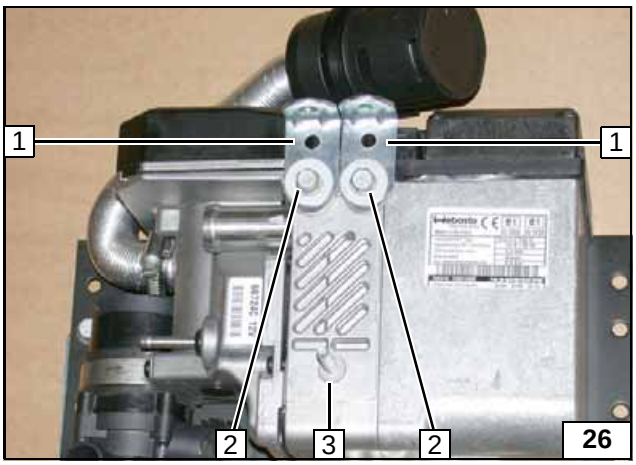
Mounting silencer



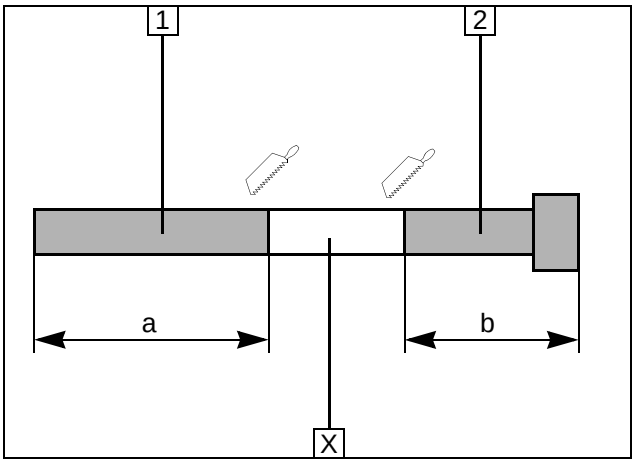
Punch through perforation on heater cover at position **2**.

1 Silencer
2 Retaining clip in hole
3 27mm dia. clamp
4 Combustion air pipe

Loosely mounting angle bracket



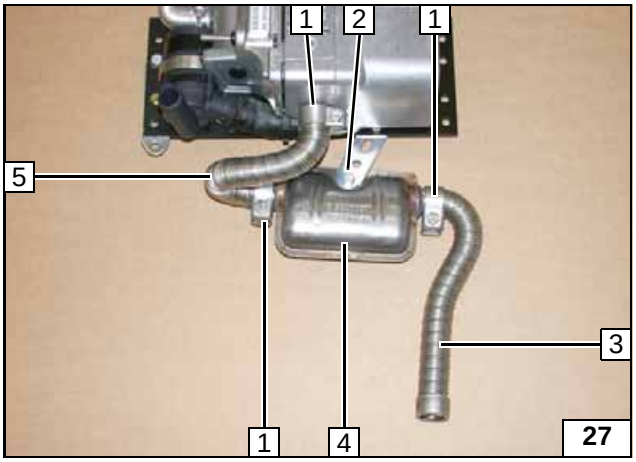
1 Loosely mount angle bracket [2x]
2 Ejot screw, large diameter washer [2x each]
3 Ejot stud



Discard section **X**

1 Exhaust pipe
a = 200
2 Exhaust end section
b = 180

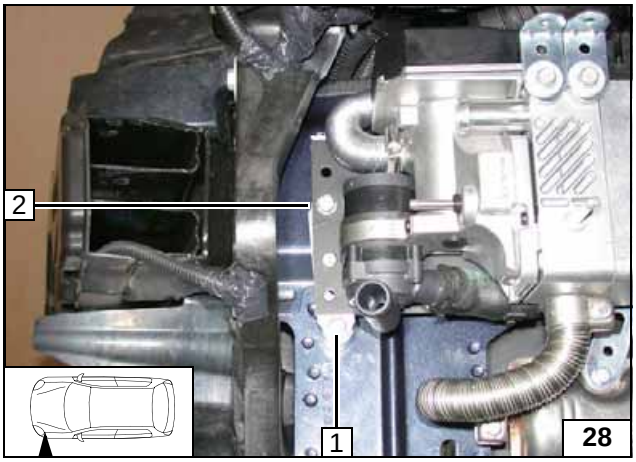
Preparing exhaust pipe



1 Hose clamp [3x]
2 M6x20 bolt, flanged nut
3 Exhaust-pipe end section
4 Exhaust silencer
5 Exhaust pipe

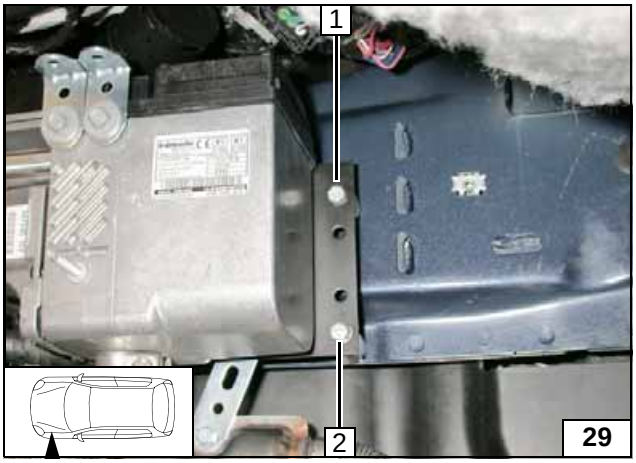
Premounting exhaust pipe

Installing Heater



1 M6x40 bolt, spring lockwasher, 20mm shim, rivet nut
2 M6x25 bolt, original vehicle rivet nut

Mounting heater



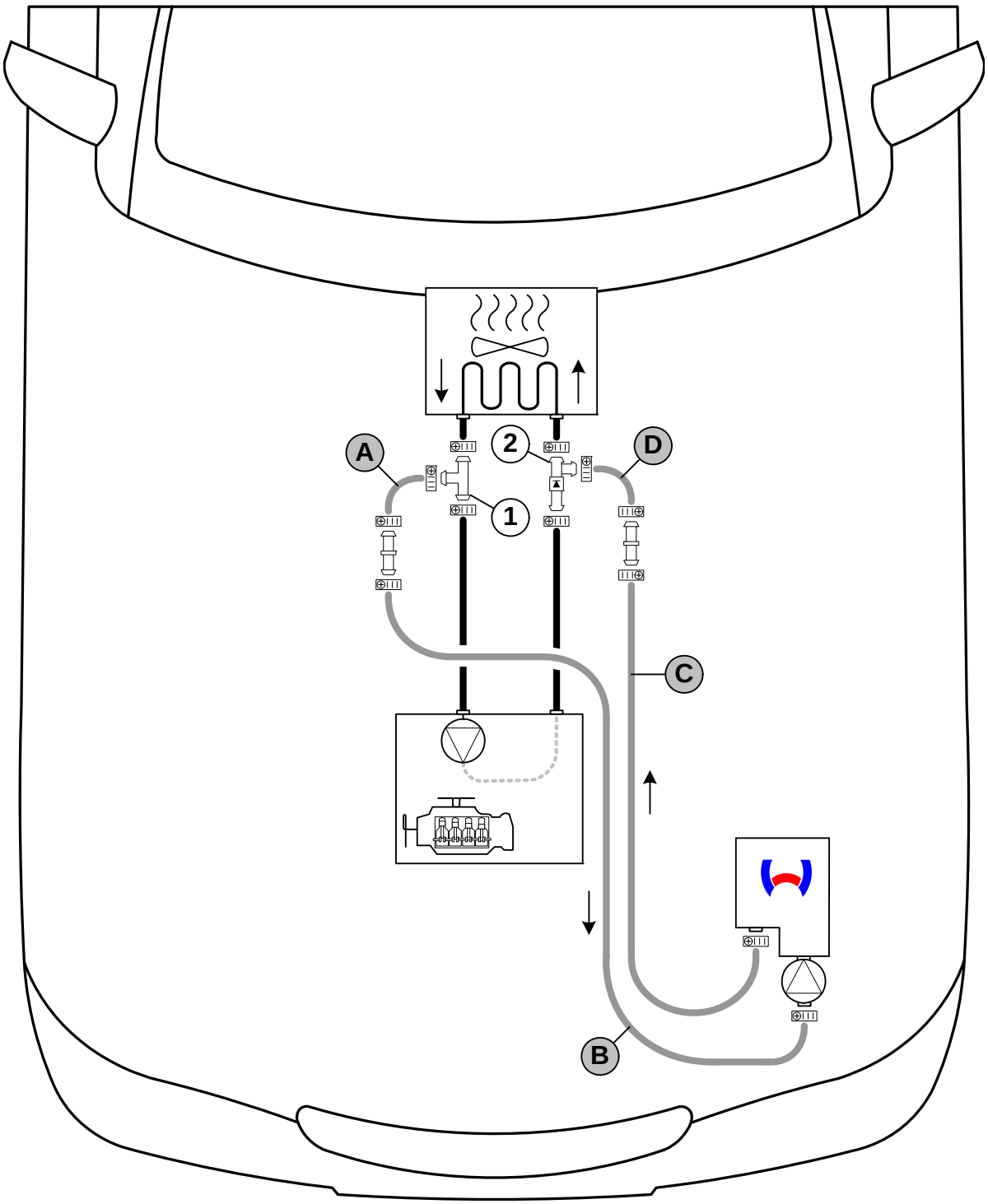
1 M6x40 bolt, spring lockwasher, 20mm shim, rivet nut
2 M6x50 bolt, spring lockwasher, 30mm shim, flanged nut

Mounting heater

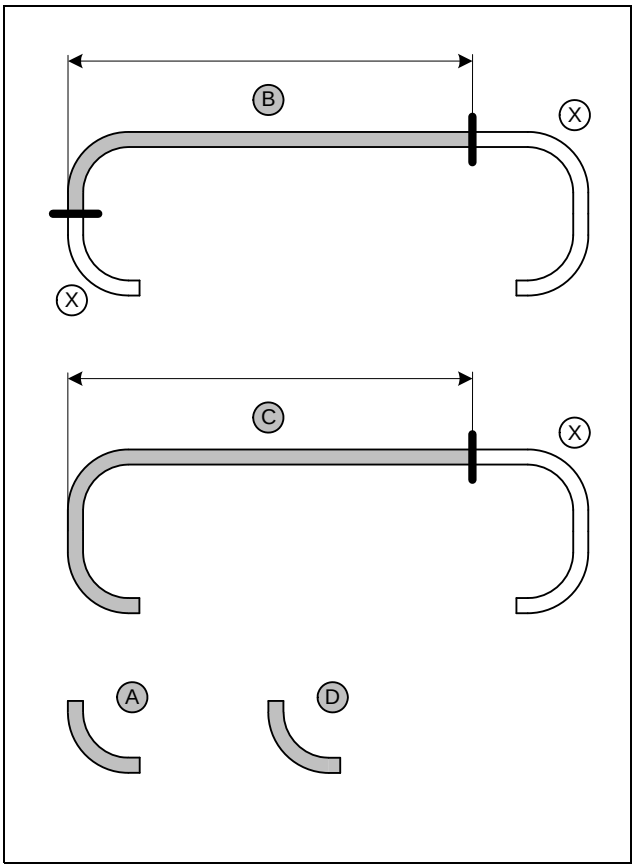
Coolant Circuit

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

Hose installation diagram



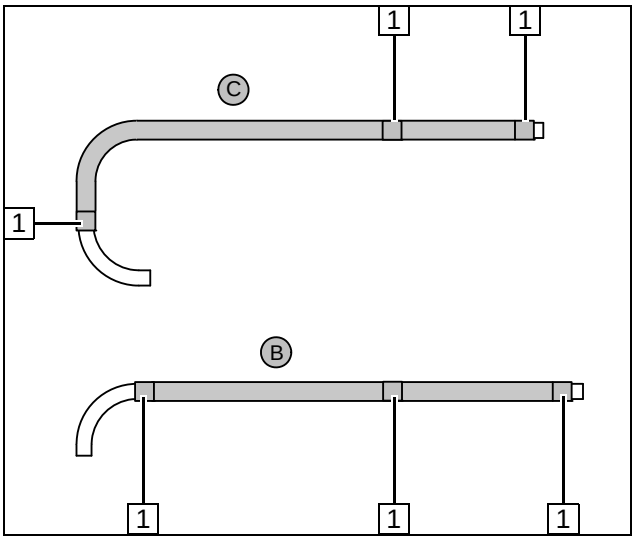
All connecting pipes = 18x20 mm dia. All hose clamps = 20-27 mm dia.
1 = T-piece ! **2** = Check valve !



Hose **A** = 90° elbow, 18x18mm dia.
Hose **D** = 90° elbow, 18x18mm dia.
Discard section **X**.

B = 1260
C = 1140

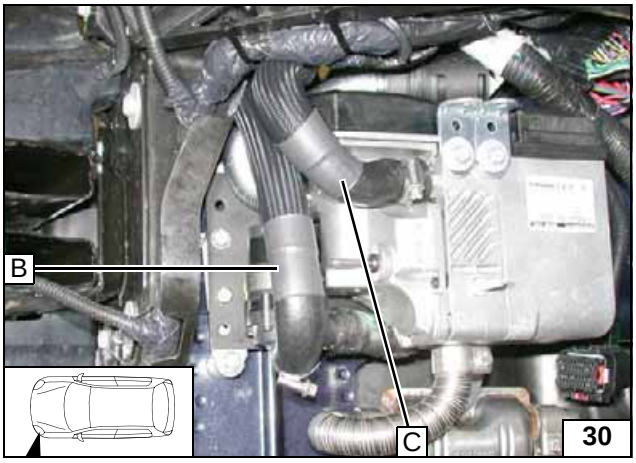
Cutting hoses to length



Divide braided protection hose in middle.
Push one and a half braided protection hose each onto hose **B** and **C**.
Cut heat shrink plastic tubing to length.

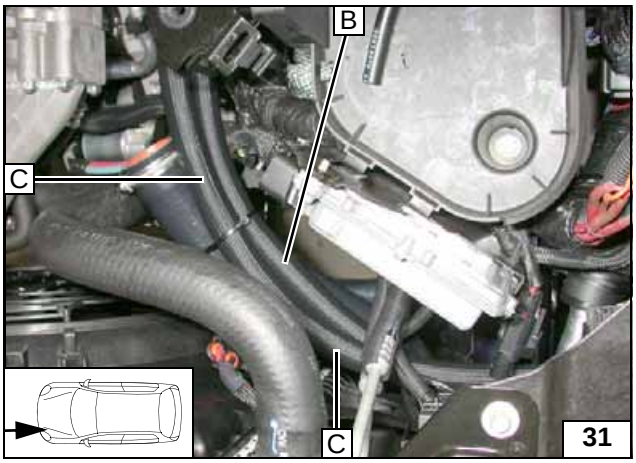
1 50 mm long heat shrink plastic tubing [6x]

Preparing hoses

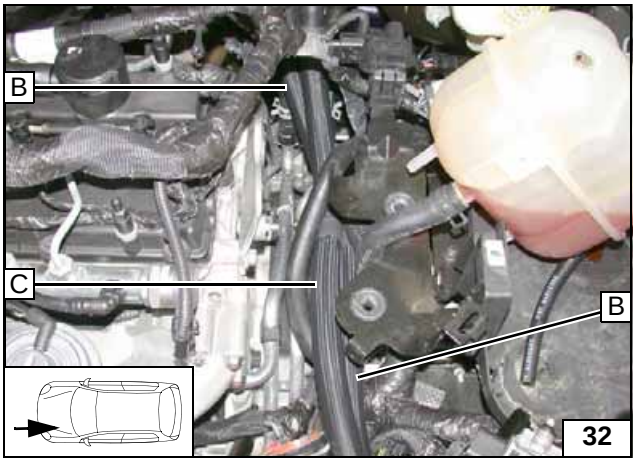


Route hose **B** and **C** under original vehicle wiring harness into engine compartment.

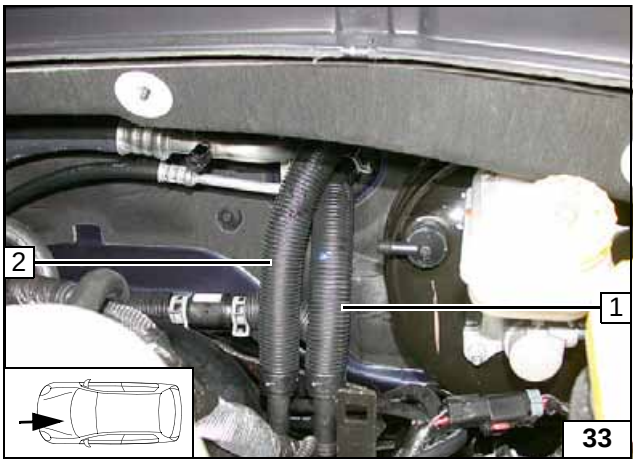
Connecting heater



Routing in engine compartment

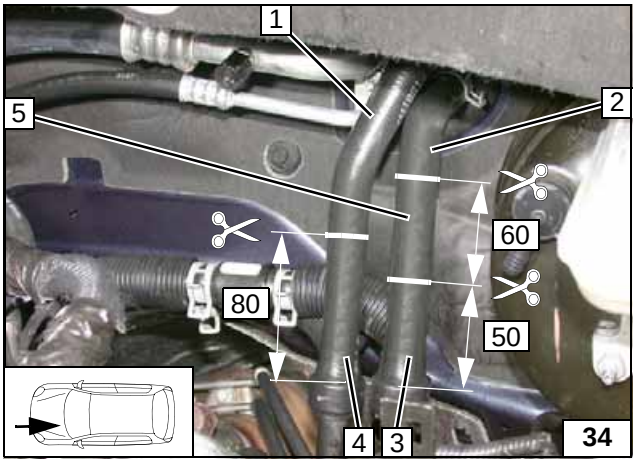


Routing in engine compartment



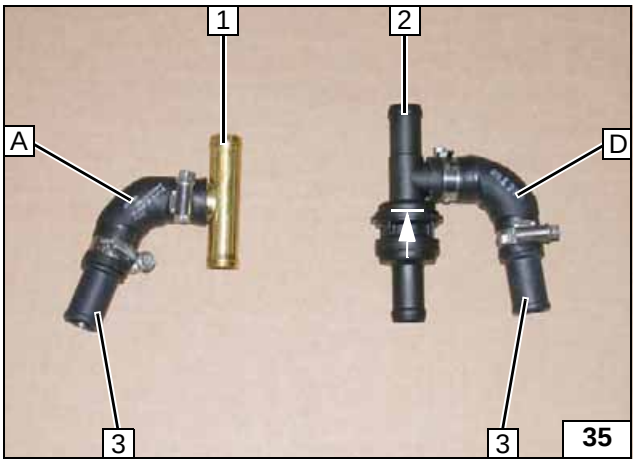
Remove protective hoses on hose on engine outlet **2** and heat exchanger inlet **1**.

Cutting point



1 Hose section heat exchanger outlet
2 Hose section heat exchanger inlet
3 Hose section engine outlet
4 Hose section engine inlet
5 Discard 60mm hose section

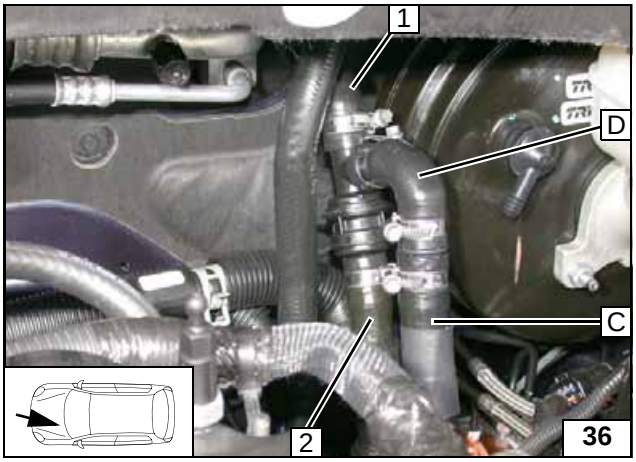
Cutting point



Observe direction of flow of check valve **2**.

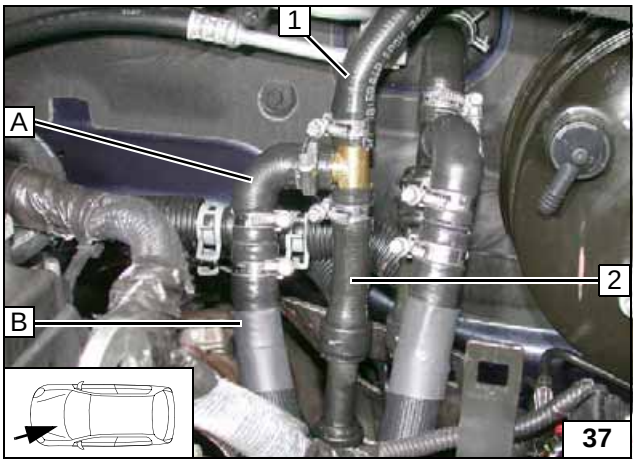
1 T-piece
3 18x20mm connecting pipe

Preparing hose A and D



1 Hose of heat exchanger inlet
2 Hose of engine outlet

Connecting engine outlet



Fill coolant hoses with coolant. Ensure sufficient distance to neighbouring components.

1 Hose of heat exchanger outlet
2 Hose of engine inlet

Connection of heat exchanger inlet

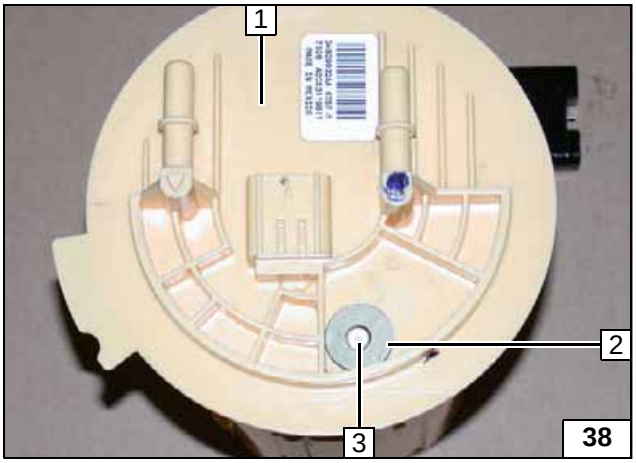
Fuel

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.
Mount the fuel line and wiring harness with rub protection on sharp edges.

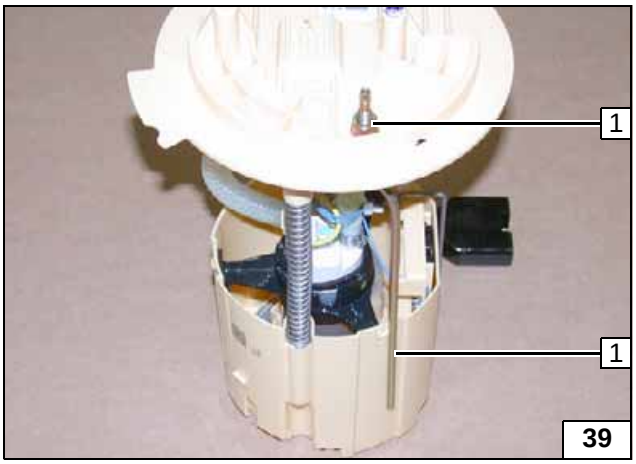
WARNING!
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.



Remove fuel tank. Remove fuel tank sending unit **1** in accordance with manufacturer's instructions.
Place large diameter washer **2** on bars.

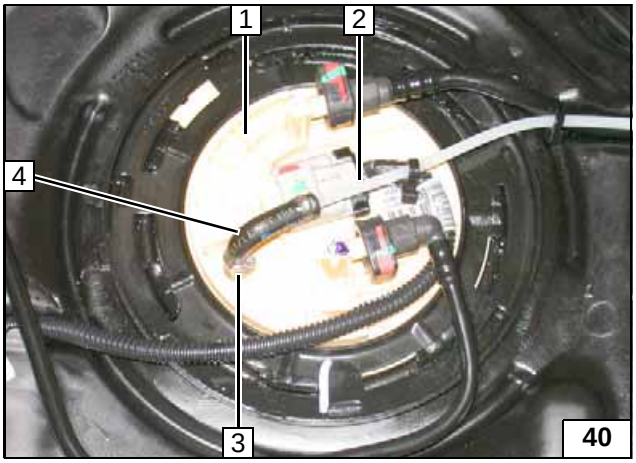
3 Copy hole pattern, 6mm dia. hole

Fuel extraction



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

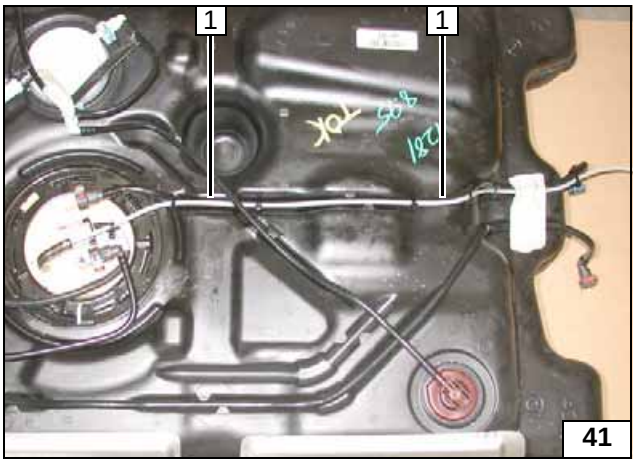
Installing fuel standpipe



Install fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut 1000mm off fuel line **2**.

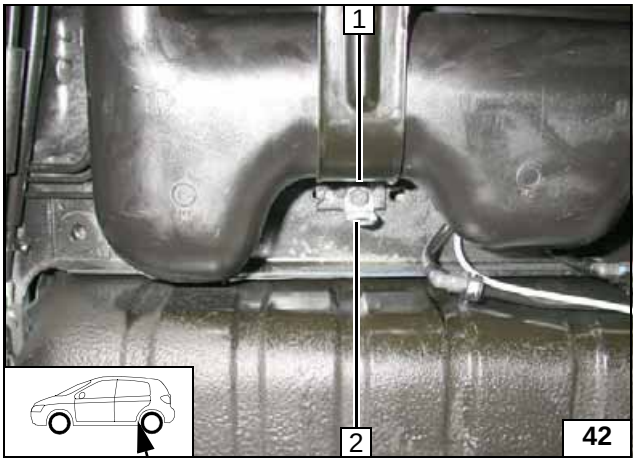
3 Fuel standpipe
4 3.5x4.5mm dia. hose section 8mm dia. clamp, 10mm dia. clamp

Connecting fuel line



Fasten fuel line **1** to original vehicle fuel line using cable ties.

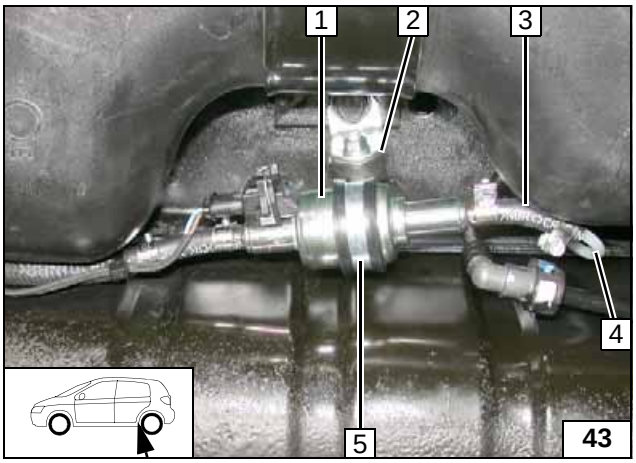
Routing fuel line



Drill out angle bracket **2** at position 1 to 10.5mm dia.

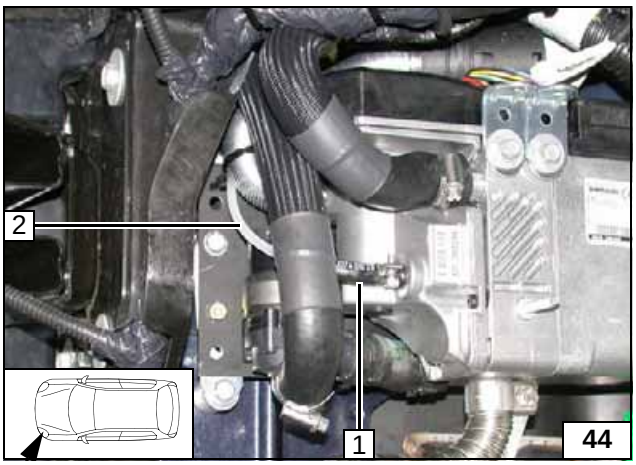
1 Original vehicle bolt of tank mount

Installing angle bracket



1 Metering pump
2 Silent block, flanged nut [2x]
3 Hose section, 10mm dia. clamp [2x]
4 Fuel line of fuel standpipe
5 Rubber-coated pipe clamp

Mounting metering pump

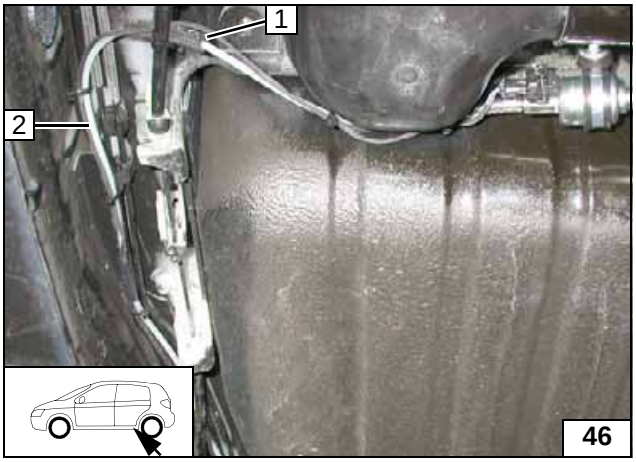


1 Hose section, 10mm dia. clamp [2x]
2 Fuel line

Connecting heater

1 Fuel line, metering pump wiring harness

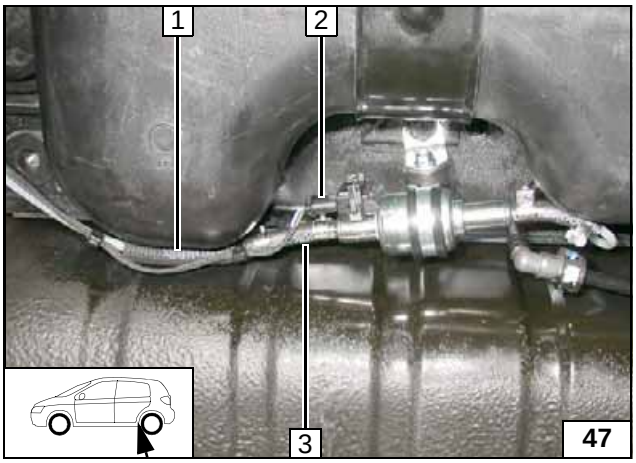
Installing lines



Slide fuel hose **1** onto fuel line as rub protection.

2 Fuel line, metering pump wiring harness

Installing lines



Slide fuel hose **1** onto fuel line as rub protection.
Check the position of the components; adjust if necessary. Check that they have freedom of movement.

2 Metering pump wiring harness, connector mounted
3 Fuel line, hose section, 10mm dia. clamp [2x]

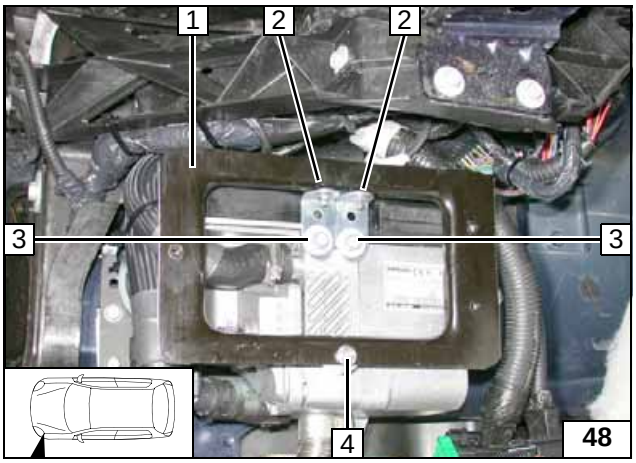
Connecting metering pump

Installing Control Unit

Tighten Ejot screws at position **3** [2x].

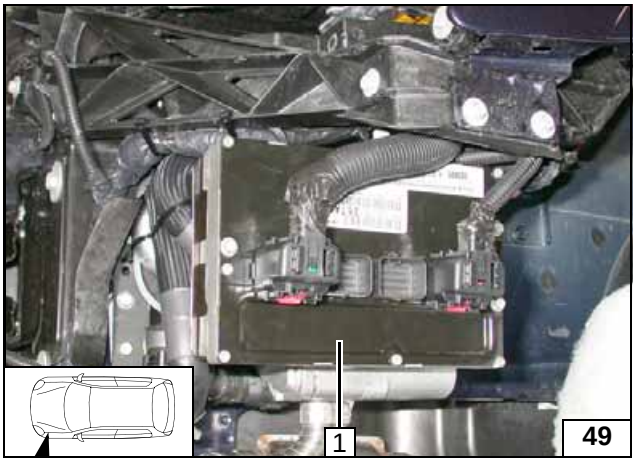
1 Control unit bracket
2 M5x16 bolt, flanged nut [2x each]
4 Ejot stud, 20mm shim, flanged nut

Installing control unit bracket



Mount control unit **1** with original vehicle bolts on bracket and complete with connector.

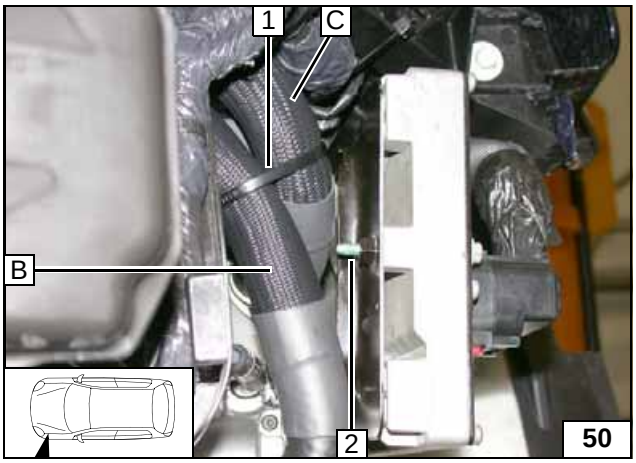
Installing control unit



Ensure sufficient distance to adjacent components; shorten bolt at position **2** if necessary.

1 Cable tie

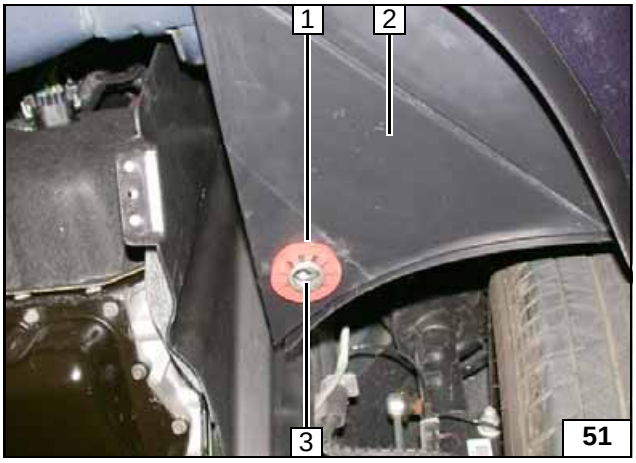
Fixing hoses B and C in place



Final Work

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

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

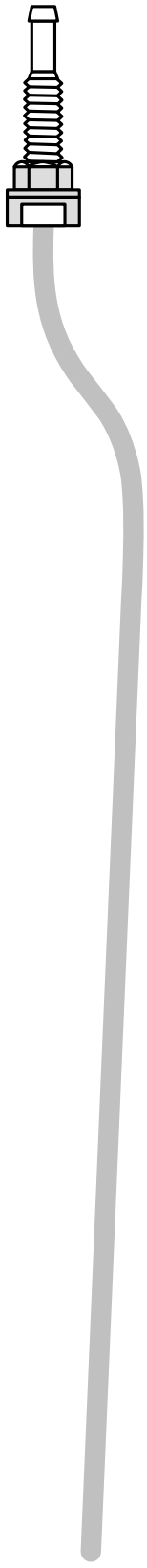


42mm dia. hole in wheel-well inner panel **2** at position **3**. Align exhaust end section **3** flush on red (rt) rubber isolator **1**.

Mounting rubber isolator

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

Fuel Standpipe Template



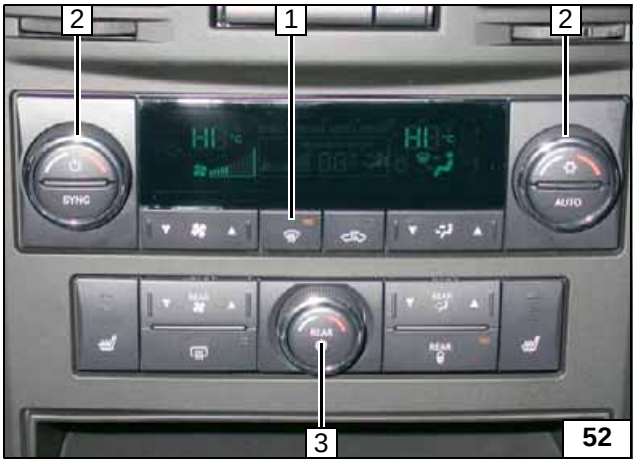
Operating Instructions for End Customer

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.
Instructions about deactivation can be taken from the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



1 Direct air outlet towards windscreen
2 Set temperature on both sides to "HI"
3 Switch off rear ventilation