

# Water Heater

## Thermo Top E Parking Heater



## Installation Documentation

### smart fortwo coupe / convertible

Petrol and Diesel

From model year 2007

Left-hand drive vehicle

Manual air-conditioning system

Also MHD



#### 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. See section 'Final Work'.**

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
Smart	fortwo coupe/convertible	BR 451	e1 * 2001 / 116 * 0413 * ...

Engine type	Engine model	Output in kW	Displacement in cm <sup>3</sup>
132.9	Petrol	45	999
132.9	Petrol	52	999
132.9	Petrol	62	999
660.1	Diesel	33	799
660.2	Diesel	33	799

**Exclusion:** Not in case of 660.3 engine, 40kW diesel, 799 ccm.

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 / Delivery scope

Quantity	Description	Order No.:
1	Delivery scope of smart fortwo coupe/convertible petrol	1313730B
or		
1	Delivery scope of smart fortwo coupe/convertible diesel	1313729B
and		
1	Heater control	See price list

## Foreword

This installation documentation applies to smart fortwo coupe / convertible Petrol and Diesel vehicles - for validity, see page 2 - from model year 2007 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 this 'installation documentation', the 'operating instructions' and 'installation instructions' for the *Thermo Top E / C* 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 wire ends and tie back. Connectors on electronic components have to audibly click into place during installation.

Sharp edges should be fitted with rub protection. Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K).

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

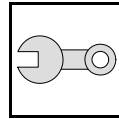
## Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit

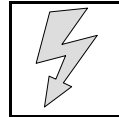
**Explanatory Notes on Document**

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 work steps.

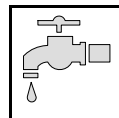
**Mechanical System**



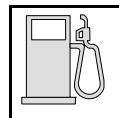
**Electrical System**



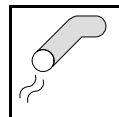
**Coolant Circuit**



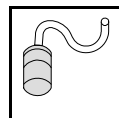
**Fuel**



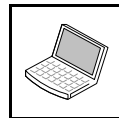
**Exhaust Gas**



**Combustion Air**



**Software**



Special features are highlighted using the following symbols:



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



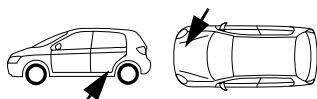
Specific risk of fire and explosion.



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!**

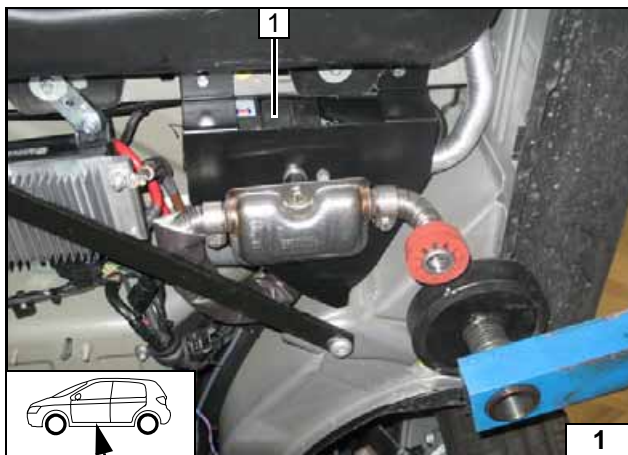
**Tightening torque of Ejet screws, Ejet studs = 10 Nm!**

**Preliminary Work**

**WARNING!**

- Open the fuel tank cap, ventilate the fuel tank.
- Extract the fuel with suitable means.
- Disconnect the battery.
- Remove the front cover.
- 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 entire lower vehicle trim.
- Remove the front air ducting on the underbody.
- Remove the diagonal struts (smart convertible only).
- Remove the bracket for the control unit (smart MHD only).
- Remove the right rear wheel.
- Remove the right rear wheel well trim.
- Remove the fuel tank according to the manufacturer's instructions.
- Fold back the floor trim on the front passenger's side.
- Expose the battery compartment.
- Remove the lower trim of the centre console.

Please remove page 27 'Operating Instructions for End Customer' and add to the operating instructions.



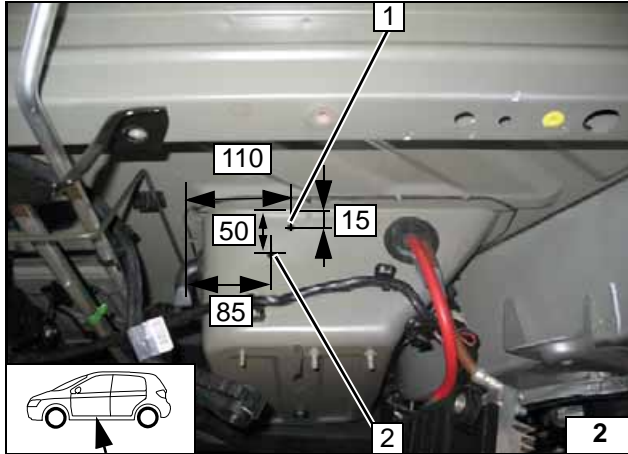
**Heater Installation Location**

Photo shows convertible with MHD

1 Heater



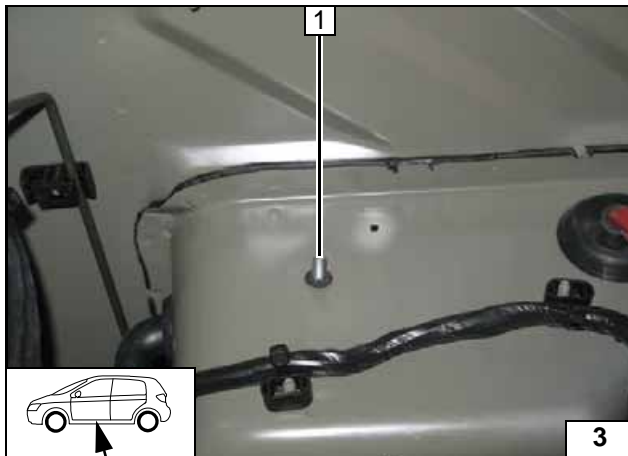
**Installation location**



**Preparing Electrical System**

- 1 4.5 mm dia. hole
- 2 6.5 mm dia. hole (vehicles with MHD only)

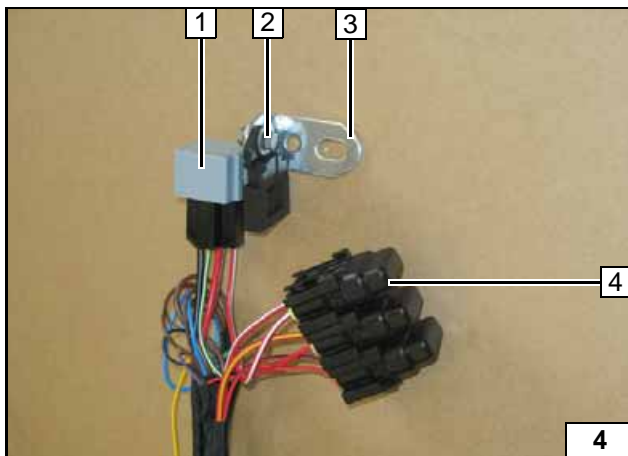
Holes in battery tray



M6x20 bolt 1 and pin lock only on vehicles with petrol engine with MHD



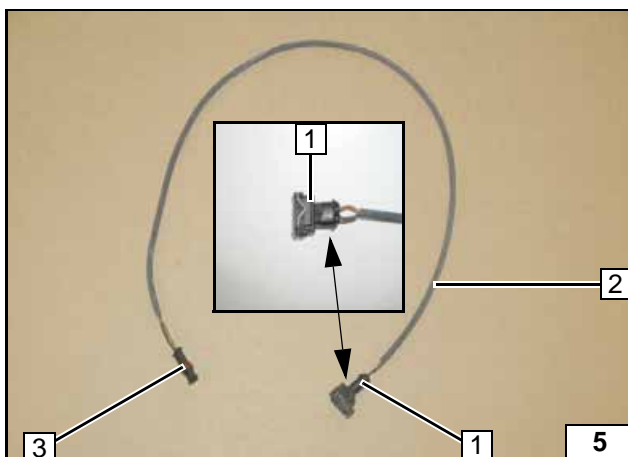
Inserting bolt



- 1 K3 relay
- 2 M5x16 bolt, washer [2x], retaining plate, nut
- 3 Angle bracket
- 4 Fuse holder



Preparing wiring harness



Shorten cable extension 2 to 740 mm, install connector 1 (brown (br) wire in chamber 2, black (sw) wire in chamber 1 [connect to same colours of connector for circulating pump])



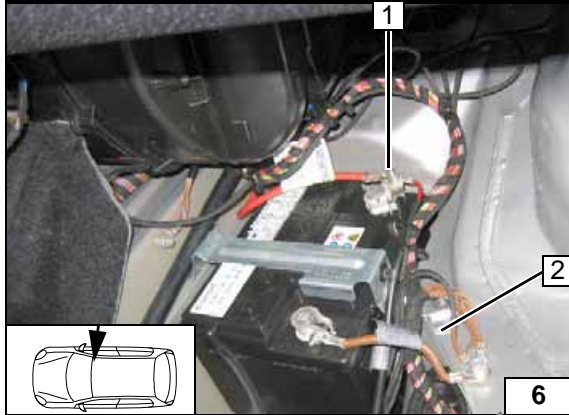
Preparing wiring harness extension of circulating pump



**Electrical System**

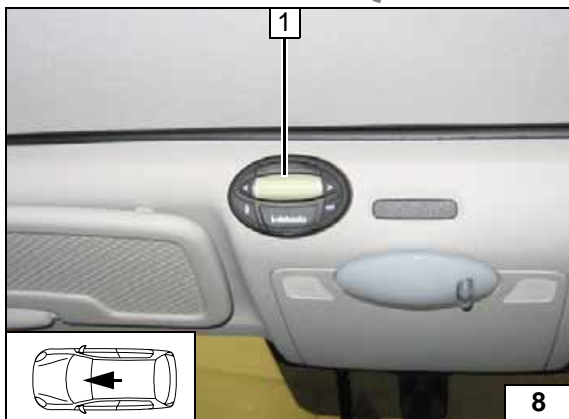
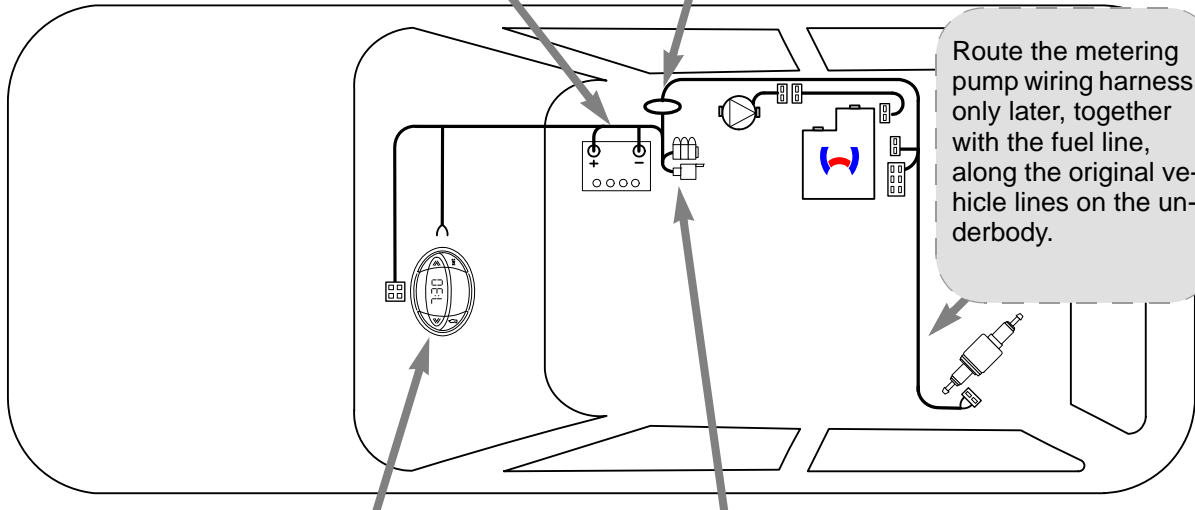
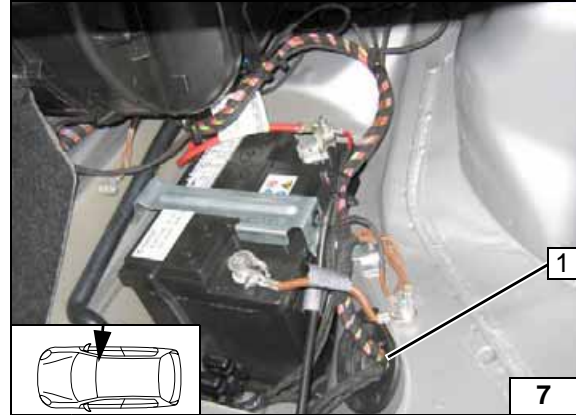
**Positive and earth connection**

- 1 Positive wire on positive battery terminal
- 2 Earth wire on earth support point



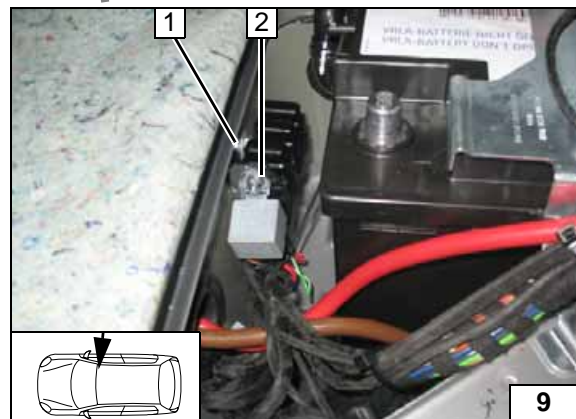
**Wiring harness pass through**

- 1 Protective rubber plug, wiring harness of metering pump, wiring harness of heater



**Digital timer**

- 1 Digital timer



**Fuse holder, K3 relay**

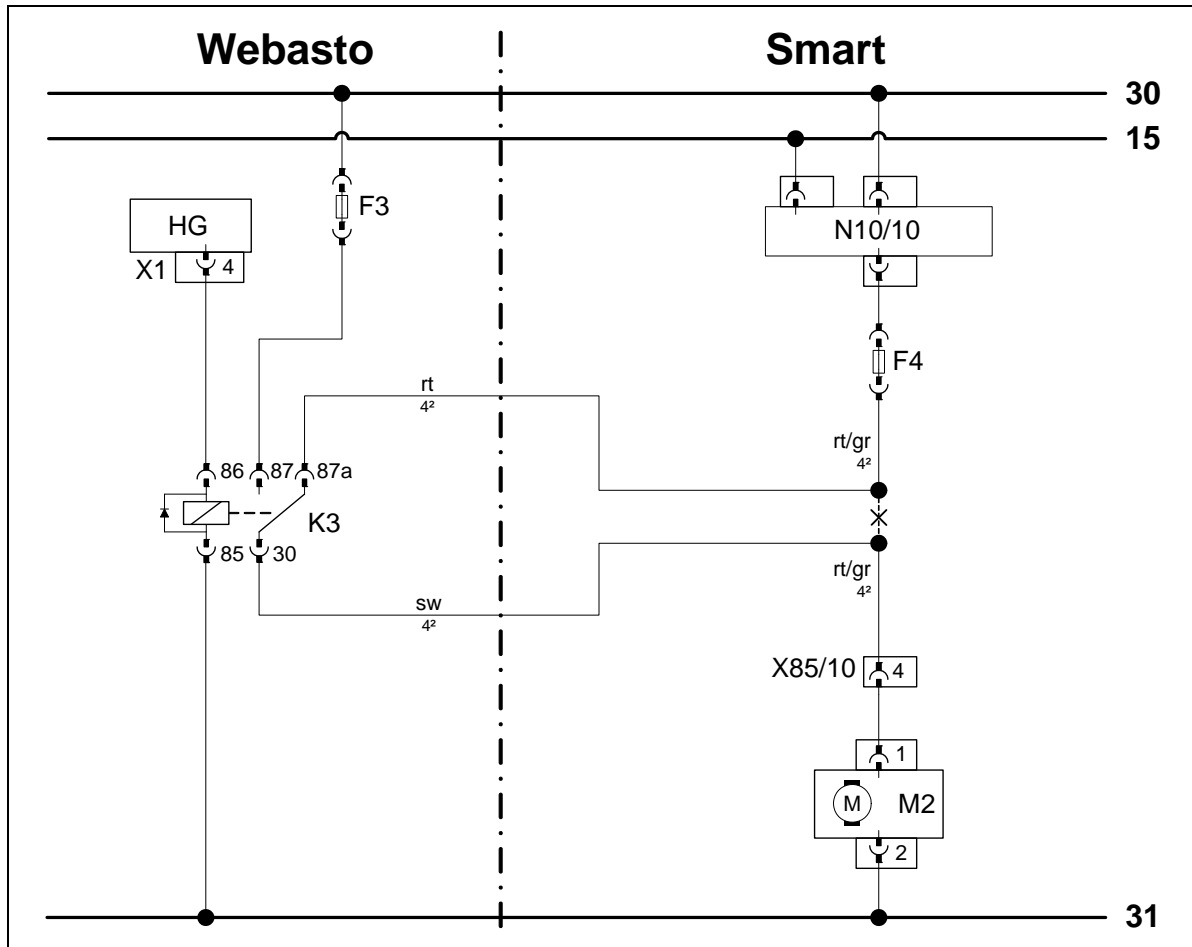
- 1 5.5x13 self-tapping screw, washer, angle bracket, 4.5 dia. hole
- 2 Premounted angle bracket and wiring harness



**Wiring harness routing diagram**



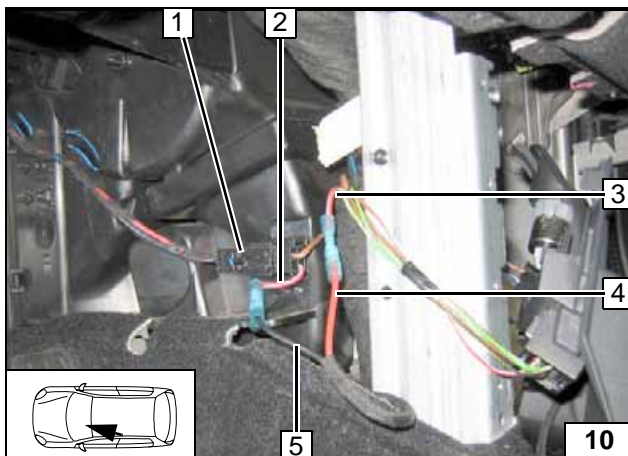
Fan Controller



Wiring diagram

Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-C/E	M2	Fan motor	rt	red
X1	6-pin heater connector	X85/10	Connector	gr	grey
F3	25A fuse	F4	25A fuse	sw	black
K3	Fan relay	N10/10	SAM control unit	br	brown
				X	Cutting point
				Wiring colours may vary.	

Legend



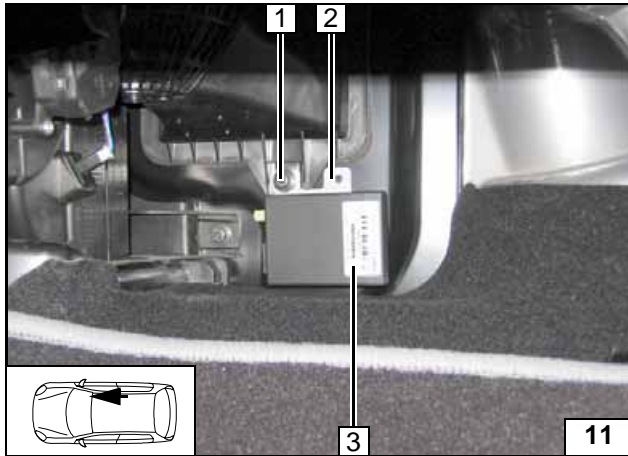
Connection on connector 1 from fan motor. Produce connections as shown in wiring diagram.

- 2 Red/grey (rt/gr) wire of connector X85/10
- 3 Red/grey (rt/gr) wire from fuse
- 4 Red (rt) wire from K3/87a
- 5 Black (sw) wire from K3/30



Connecting fan motor



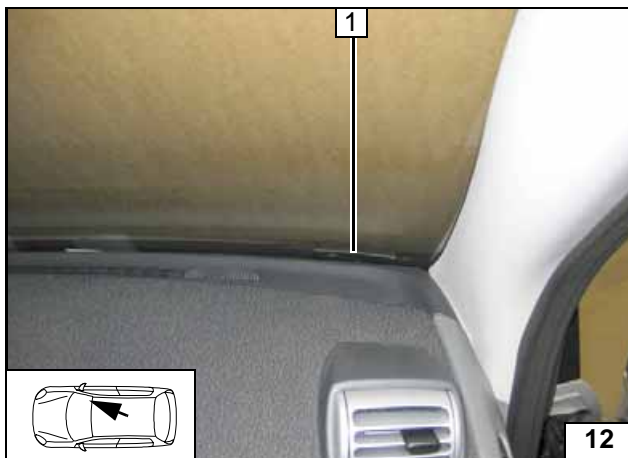


**Remote Option (Telestart)**

- 1 Original vehicle stud bolt, flanged nut
- 2 Bracket
- 3 Receiver

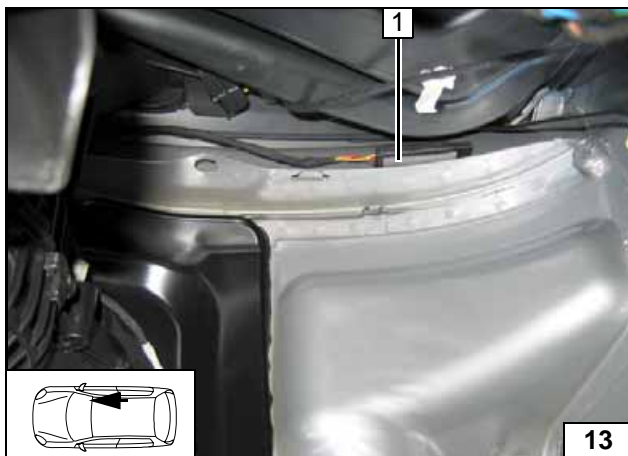


**Installing receiver**



- 1 Aerial

**Installing aerial**

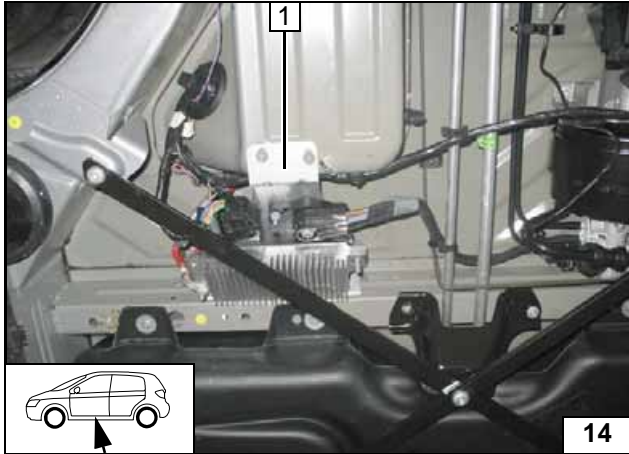
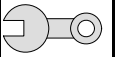


**Temperature sensor for HTM100 only**

- 1 Fasten temperature sensor with adhesive tape



**Installing temperature sensor**



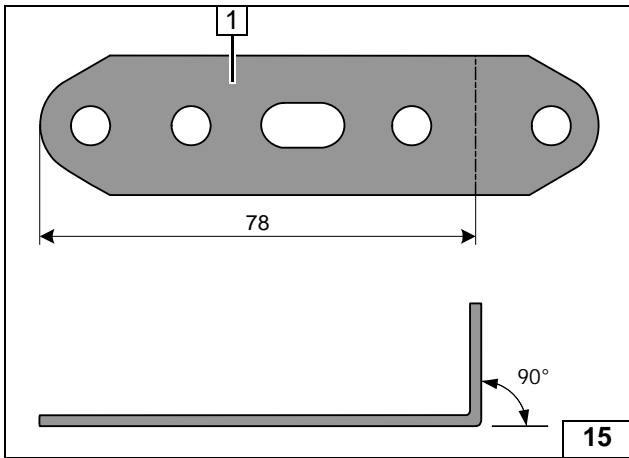
**Preparing Installation Location**

Only vehicles with MHD

Remove bracket 1; will not be reused.

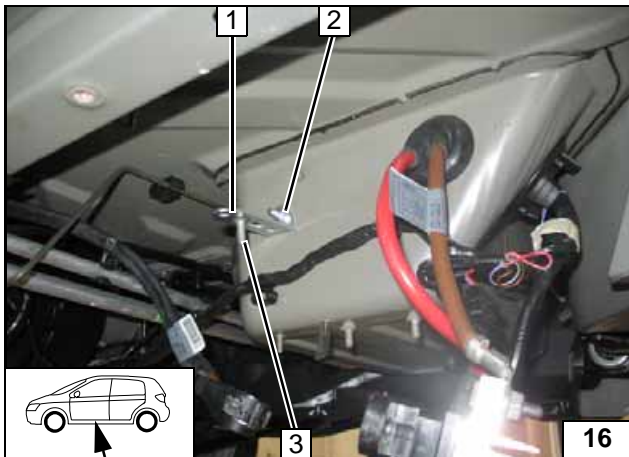


**Preparing installation for MHD control unit**



1 Perforated bracket A

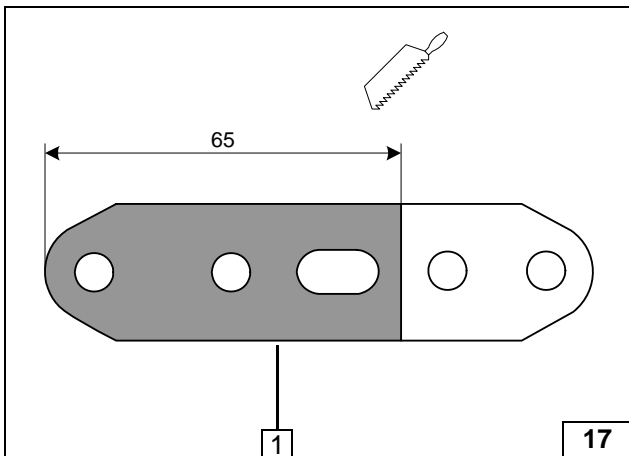
**Angling down perforated bracket A**



- 1 Perforated bracket A
- 2 Nut, M6x20 bolt premounted
- 3 M6x20 bolt, pin lock

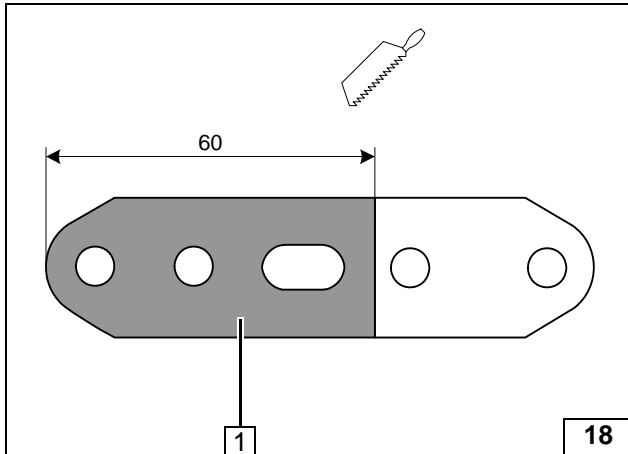
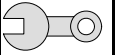


**Mounting perforated bracket A for control unit MHD**



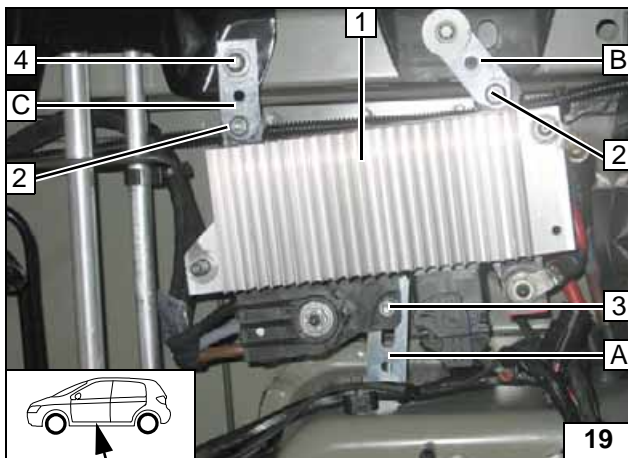
1 Perforated bracket B

**Cutting perforated bracket B to length**



1 Perforated bracket C

Cutting perforated bracket C to length

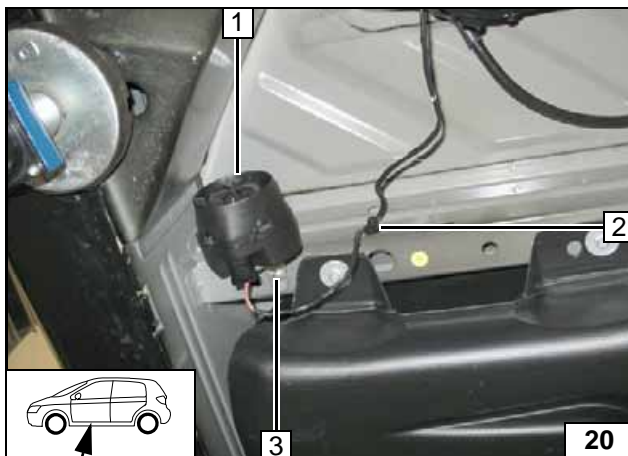


Loosely mount perforated bracket B on control unit; will not be mounted until later together with fuel tank.



- 1 MHD control unit
- 2 M6x20 bolt, large diameter washer, flanged nut [2x each]
- 3 Flanged nut
- 4 Original vehicle bolt

Mounting MHD control unit

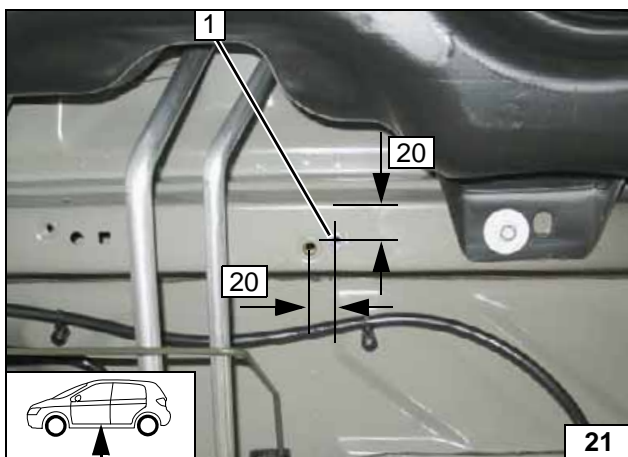


Only vehicles with alarm sirens without MHD



- 1 Dismantle alarm sirens
- 2 Unclip wiring harness
- 3 Discard original vehicle bolt

Dismantling alarm siren

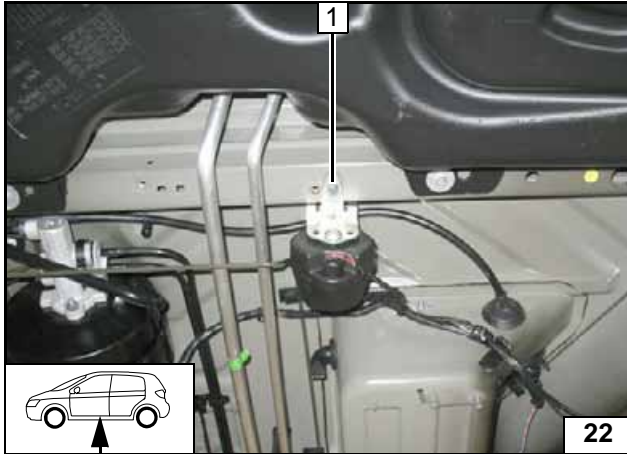
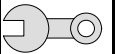


In case of vehicles with MHD, another installation location should be chosen for the alarm siren.



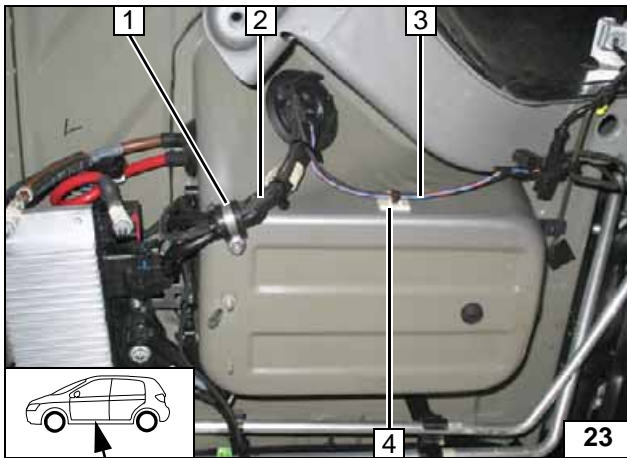
- 1 Drill 9.1 mm dia. hole and insert rivet nut

Inserting rivet nut



1 M6x20 bolt, spring lockwasher, large diameter washer

Mounting alarm siren

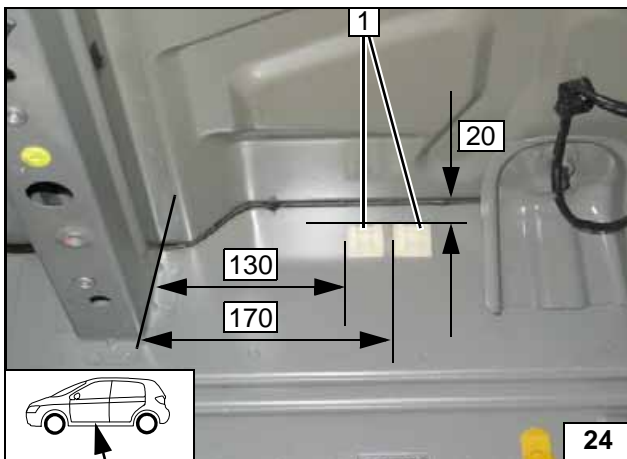


All vehicles

Degrease adhesive surface for socket.

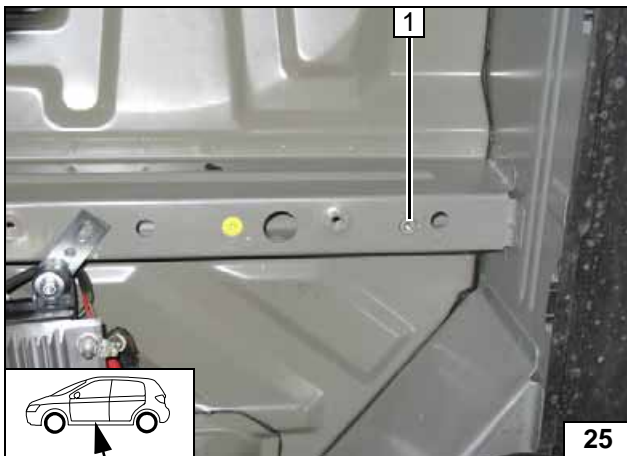
- 1 25 mm dia. rubber coated p-clamp, original vehicle bolt, nut
- 2 Original vehicle wiring harness, wiring harness of heater, wiring harness of metering pump
- 3 Original vehicle wiring harness
- 4 Self-adhesive socket, cable tie

Fixing wiring harnesses in place



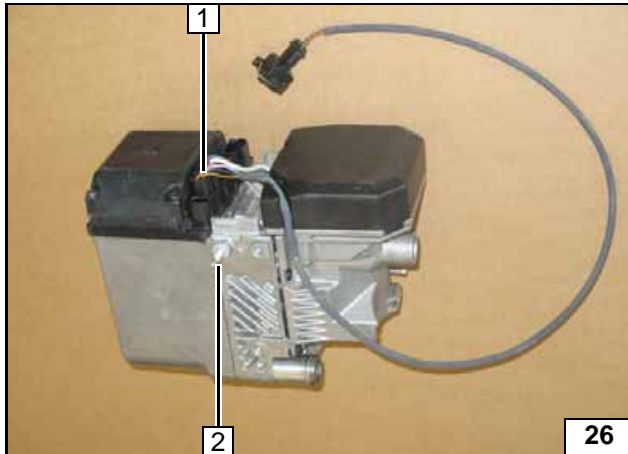
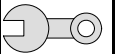
Degrease adhesive surface for socket 1 [2x]

Degreasing bonding surface



Drill out hole 1 to 9.1mm dia.; insert M6 rivet nut

Installing rivet nut

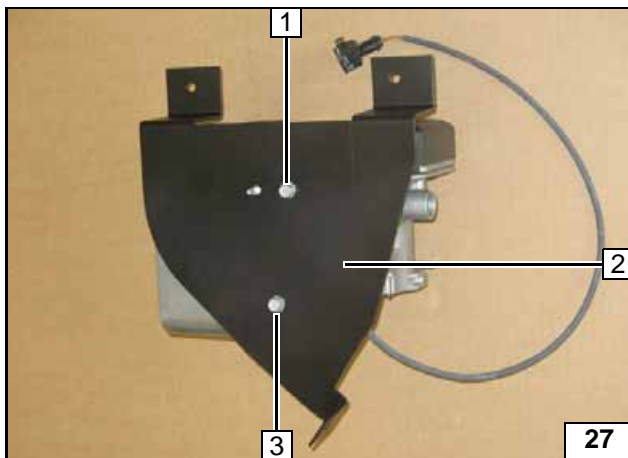


Remove centre heater cover and remount following installation.

- 1 Adapter cable
- 2 Eجت stud



Premounting heater



Insert one washer between heater and bracket 2 at position 1 and three washers at position 3.

- 1 Eجت screw, washer
- 3 Eجت screw, washer [3x]



Premounting bracket on heater

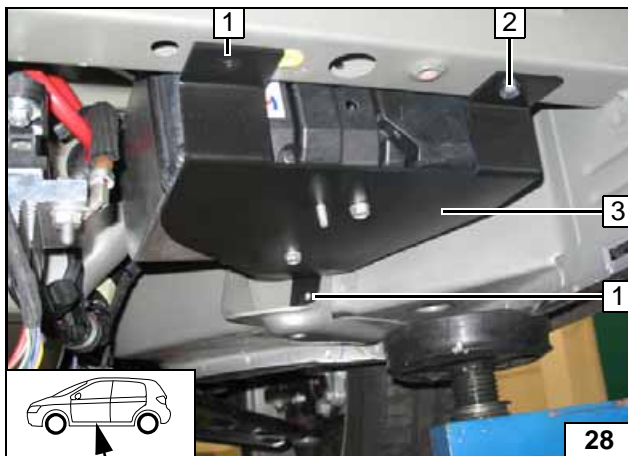


Photo shows smart convertible MHD. Align bracket 3, copy hole pattern 1.

- 1 Hole pattern for 9.1 mm dia. hole [2x]
- 2 M6x20 bolt
- 3 Bracket



Copying hole pattern

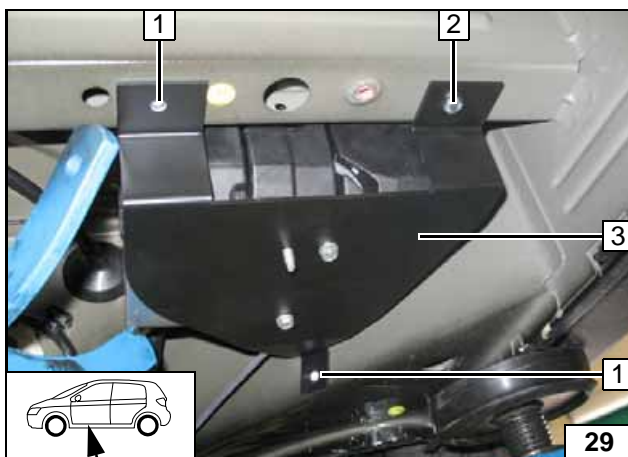


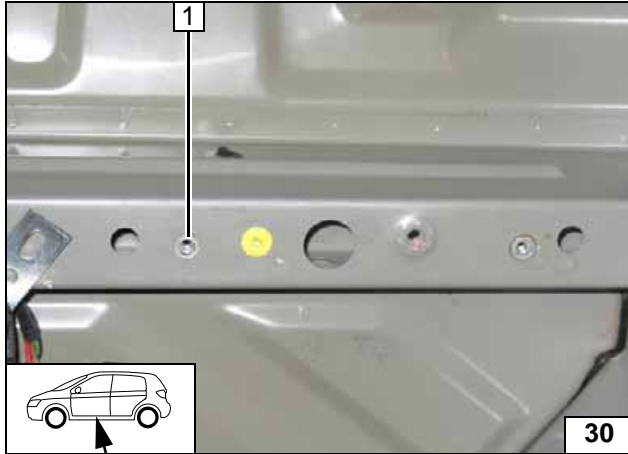
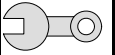
Photo shows smart fortwo coupé

Align bracket 3, copy hole pattern 1 [2x].

- 2 M6x20 bolt



Copying hole pattern



1 M6 rivet nut

Installing rivet nut

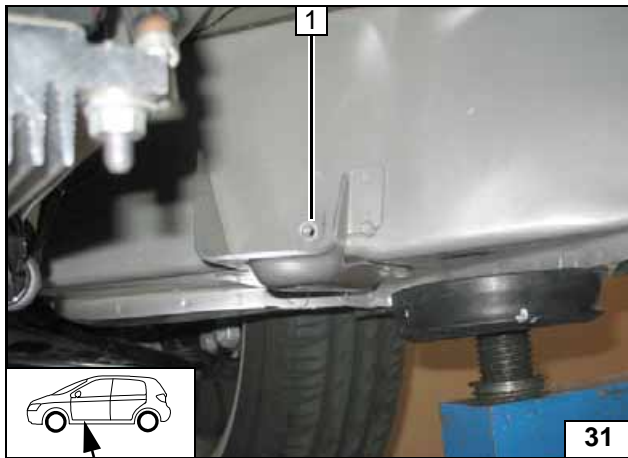
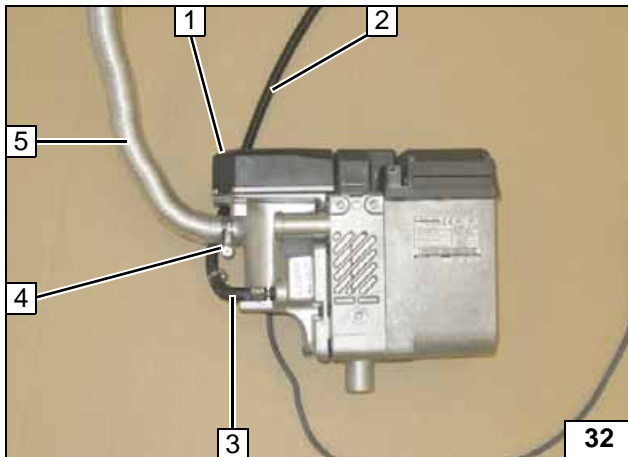


Photo shows smart convertible.

1 M6 rivet nut

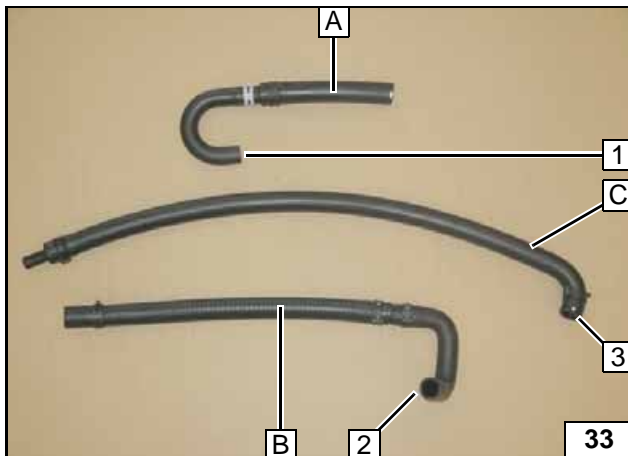
Installing rivet nut



### Premounting Heater

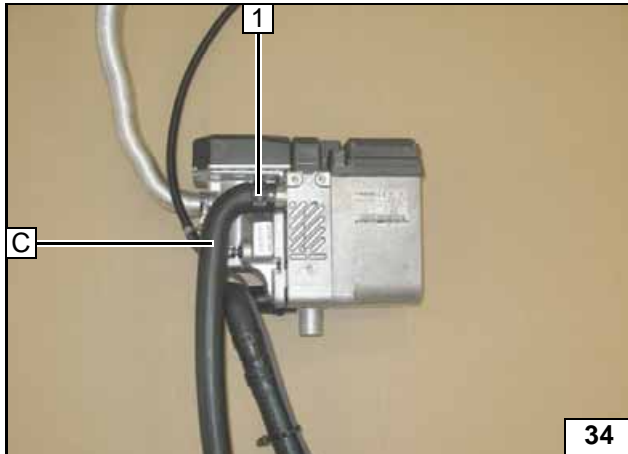
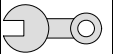
Remove bracket from heater 1

- 2 1700 mm long fuel line in 6 mm dia. corrugated tube
- 3 90° moulded hose, 10mm dia. clamp [2x]
- 4 27mm dia. clamp
- 5 Combustion-air intake pipe



- A Hose group for connection to pipe socket of engine outlet 1
- B Hose group for connection on coolant inlet of heater 2
- C Hose group for connection to coolant outlet of heater 3

Preparing hose groups

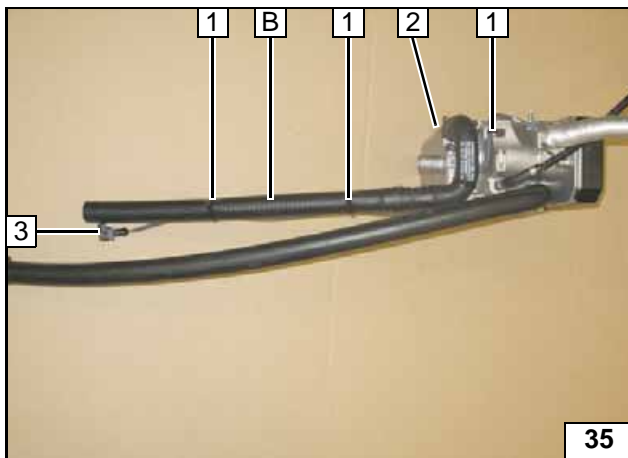


Mount hose **C** on coolant outlet of heater

- 1 27mm dia. clamp



**Installing hose C**

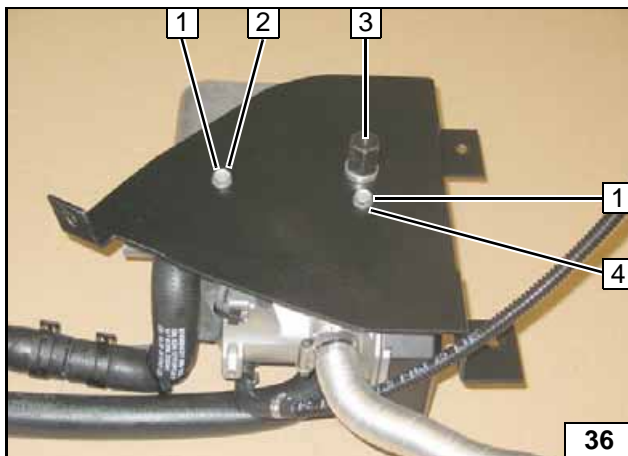


Mount hose **B** on coolant inlet of heater; fix adapter cable **3** in place with cable ties **1** [3x] .

- 1 27mm dia. clamp

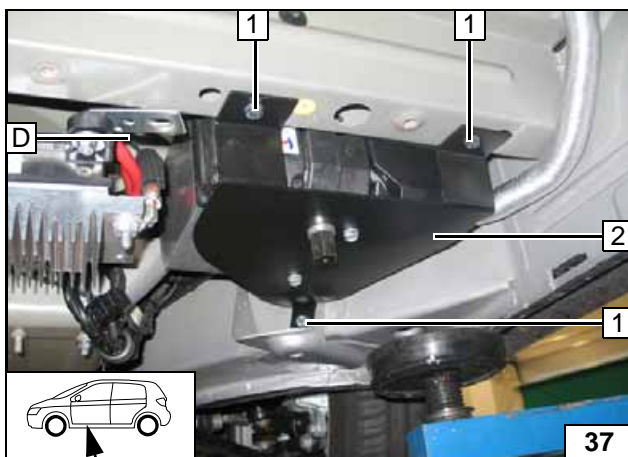


**Installing hose B**



- 1 Eject screw [2x]
- 2 Washers [3x] between heater and bracket
- 3 5 mm shim, M6x20 spacer nut
- 4 Washer [1x] between heater and bracket

**Installing bracket**



**Installing Heater**

Photo shows smart convertible. Connect wiring harness on heater.

- 1 M6x20 bolt, spring lockwasher [3x]
- 2 Bracket



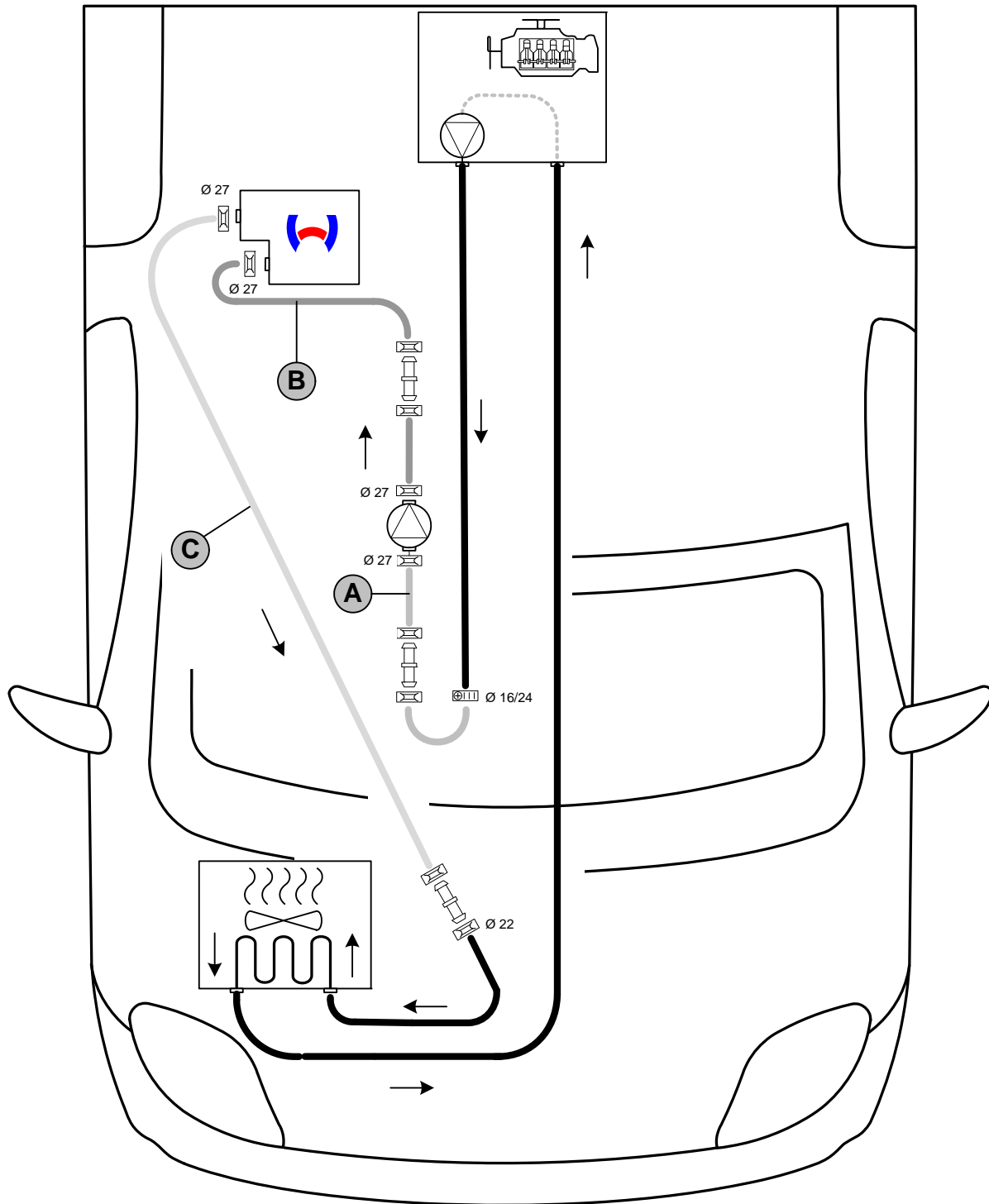
**Installing heater**





### Coolant Circuit

**WARNING!**

Any coolant running off should be collected in an appropriate container. Route hoses 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 modelled on an 'inline' circuit and based on the following diagram:

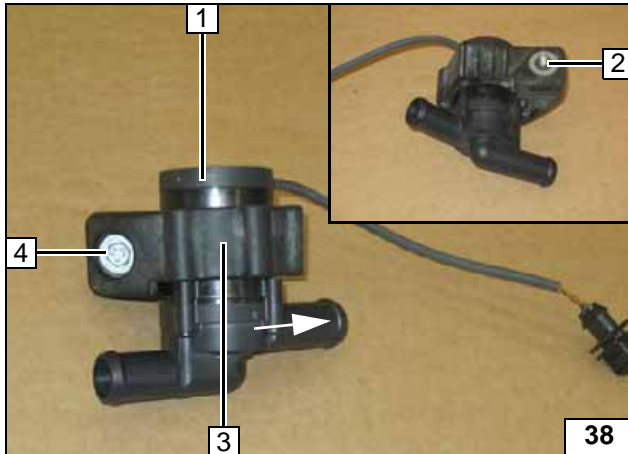


Hose routing diagram

All spring clips not designated  are premounted.  
All connecting pipes  premounted.

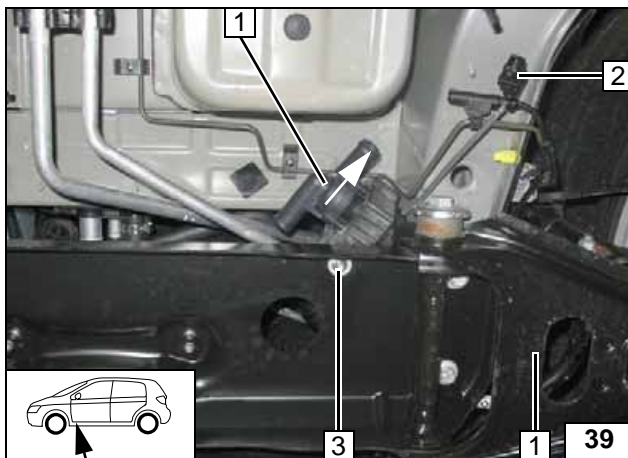






- 1 Circulating pump
- 2 21.5 mm dia. washer
- 3 Mount
- 4 M6x40 bolt, 17.5 mm dia. washer

Premounting circulating pump

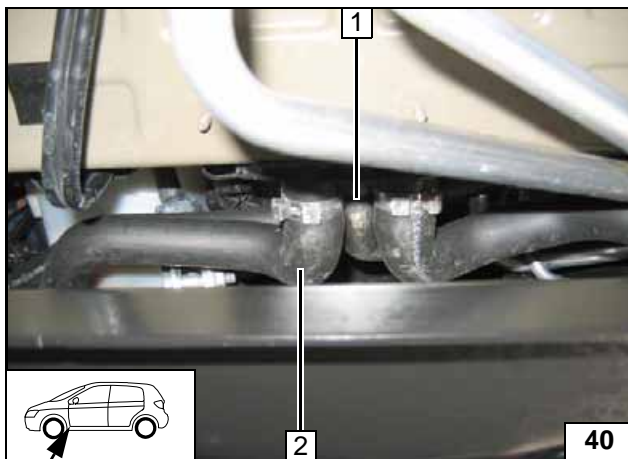


Ensure sufficient distance from neighbouring components.  
Observe direction of flow of circulating pump 1.



- 2 Connector
- 3 21.5 mm dia. washer, flanged nut

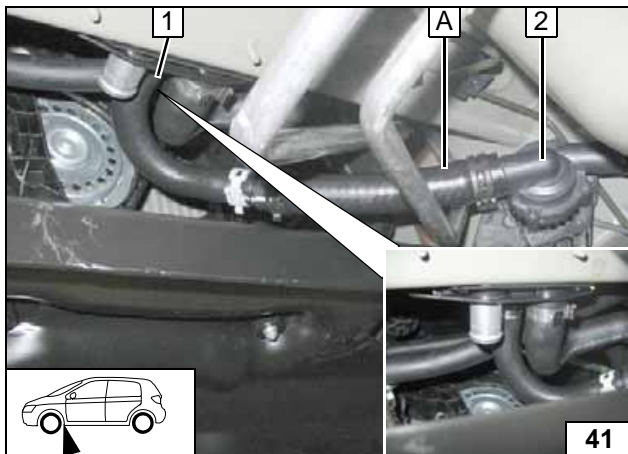
Installing circulating pump



Pull off water hose 2 for easier installation.  
Pull hose of heat exchanger inlet 1 off connection piece. Discard clamp.

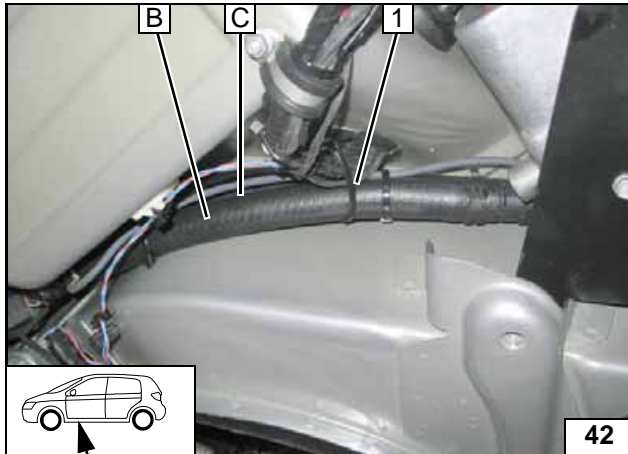


Cutting point



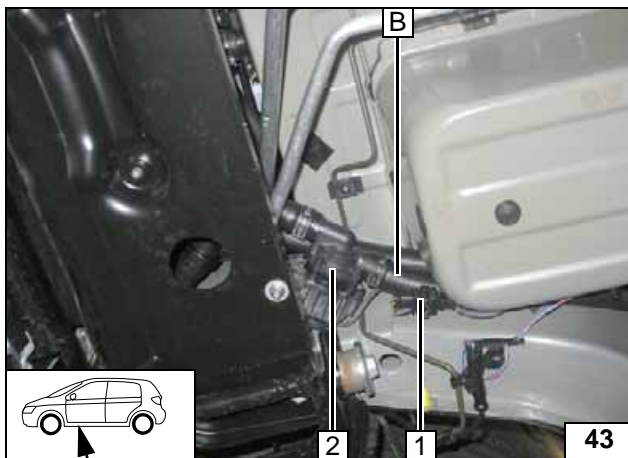
- 1 Pipe socket on engine outlet, 16-24 mm dia. clamp
- 2 Circulating pump

Connection on engine outlet



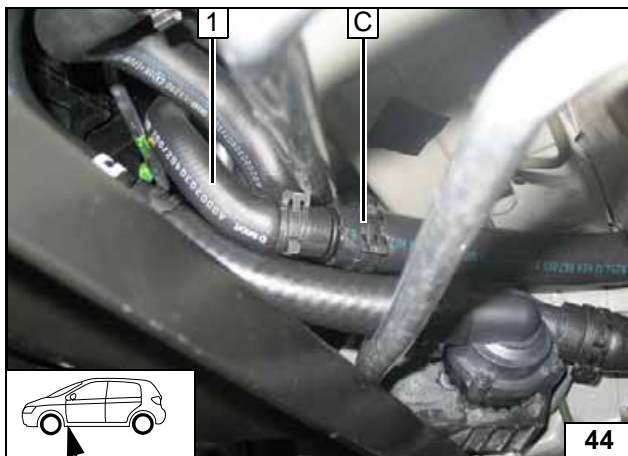
1 Cable tie

Routing



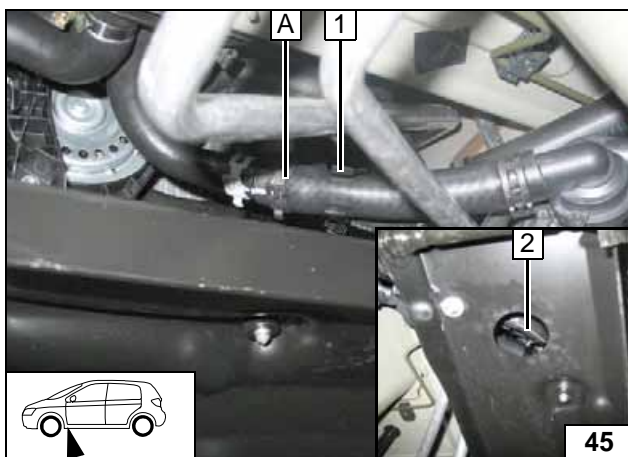
1 Plug connection on circulating pump  
2 Circulating pump

Connect-  
ing hose B  
to circulat-  
ing pump



1 Hose of heat exchanger inlet

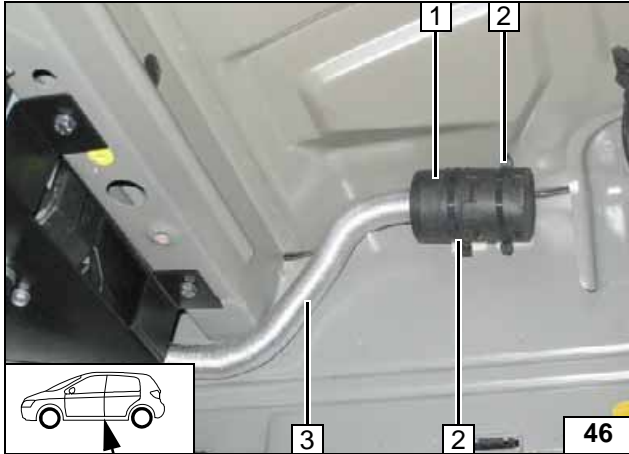
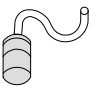
Connect-  
ing hose C  
to heat ex-  
changer in-  
let



Install hose bracket 1 between hose A and original vehicle hose of heat exchanger inlet 2.



Routing



**Combustion Air**

- 1 Silencer
- 2 Socket, cable tie [2x]
- 3 Combustion air pipe



**Installing  
silencer**



**Fuel**

**CAUTION!**

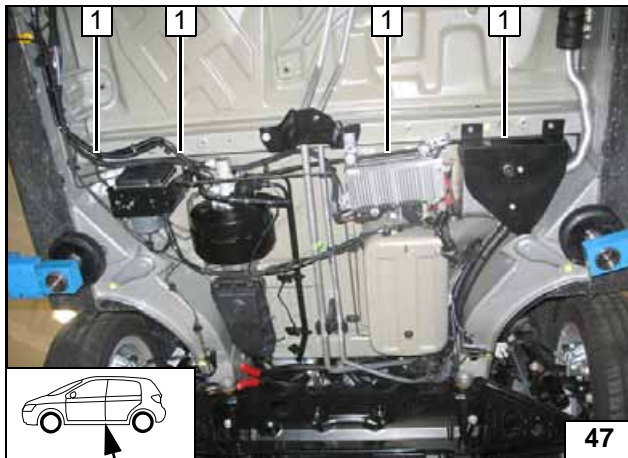
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off in an appropriate container.

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

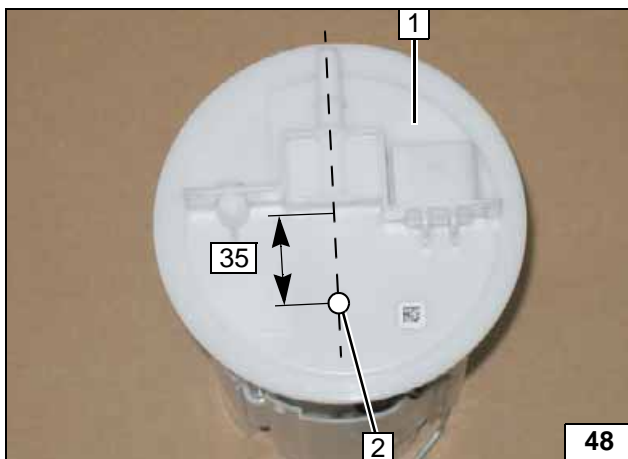
**WARNING!**

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



Route fuel line in corrugated tube and metering-pump wiring harness 1 along original vehicle lines and secure with cable ties.

Wiring routing



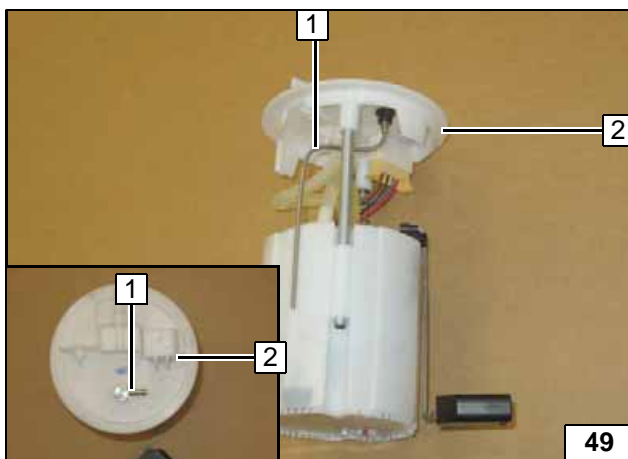
**Fuel extraction on petrol vehicles**

Remove fuel tank sending unit 1 in accordance with the manufacturer's instructions.

2 Copy hole pattern, 6mm dia. hole



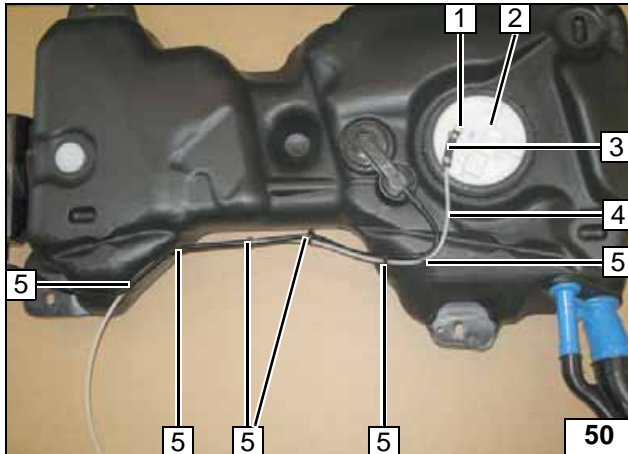
Fuel extraction



Shape fuel standpipe 1 in accordance with template, cut to length and install in fuel tank sending unit 2.



Fuel extraction

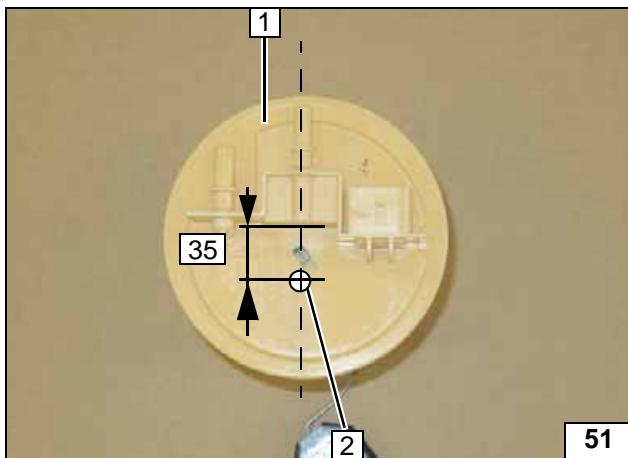


Install fuel tank sending unit 2 according to manufacturer's instructions.

- 1 Fuel standpipe
- 3 Hose section, 10mm dia. clamp [2x]
- 4 Fuel line
- 5 Cable tie [6x]



Connecting fuel line



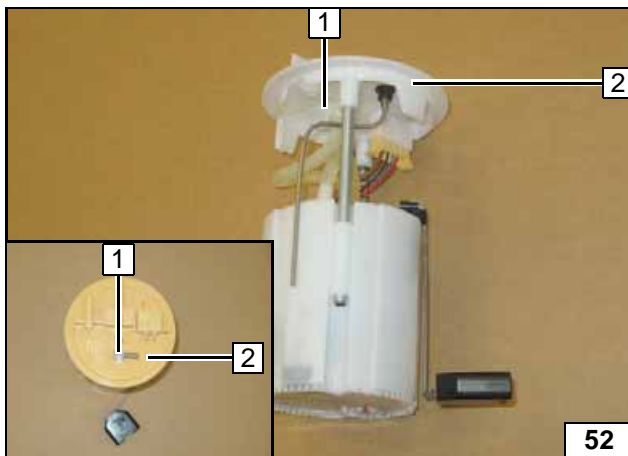
**Fuel extraction on diesel vehicles**

Remove fuel tank sending unit 1 in accordance with the manufacturer's instructions.

- 2 Copy hole pattern, 6mm dia. hole



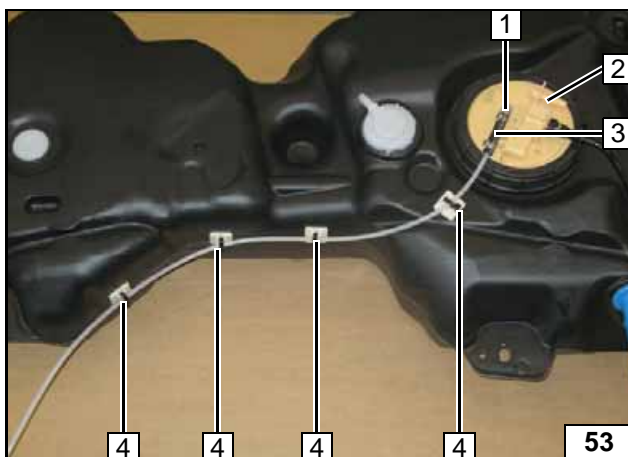
Fuel extraction



Shape fuel standpipe 1 in accordance with template, cut to length and install in fuel tank sending unit 2.



Fuel extraction

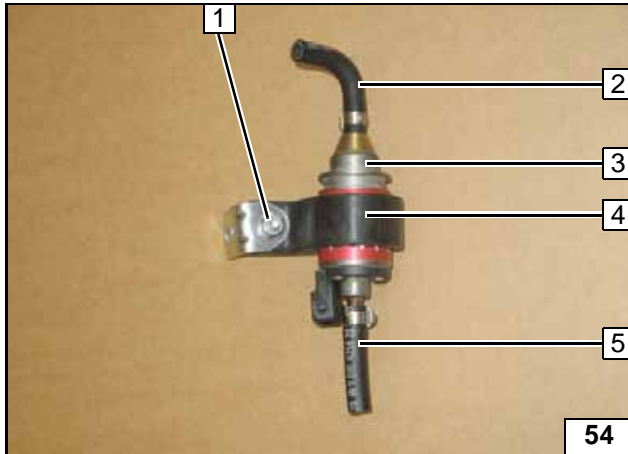


Install fuel tank sending unit 2 according to manufacturer's instructions. Degrease adhesive surface for socket 4 [4x].

- 1 Fuel standpipe
- 3 Hose section, 10mm dia. clamp [2x]
- 4 Cable tie [4x]



Connecting fuel line

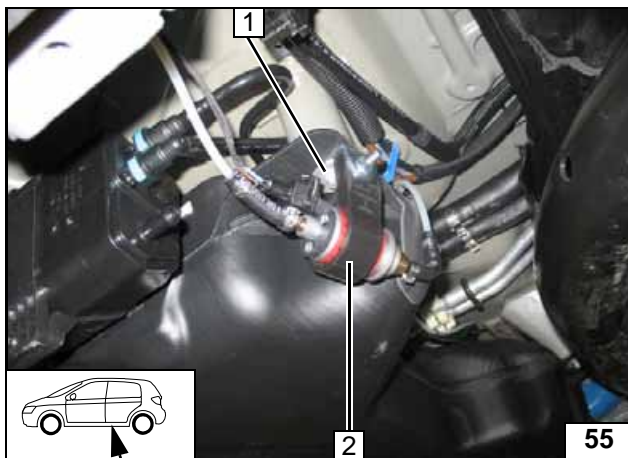


**All vehicles**

- 1 M6x20 bolt, flanged nut
- 2 90° moulded hose, 10mm dia. clamp
- 3 Metering pump
- 4 Metering pump mount
- 5 Hose section, 10 mm dia. clamp



**Premounting metering pump**

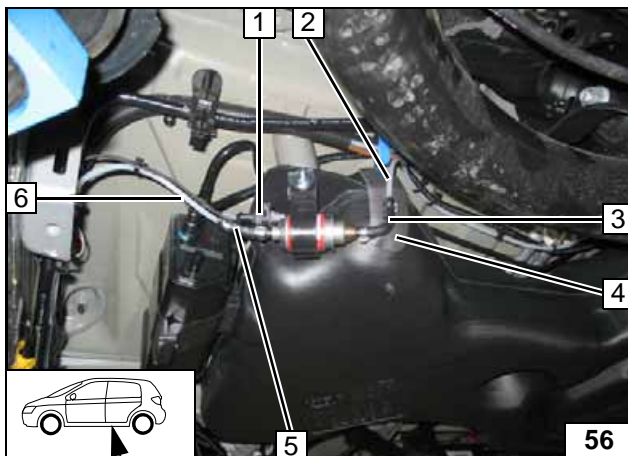


Install fuel tank in accordance with manufacturer's instructions.

- 1 Original vehicle bolt for fuel-tank fastening
- 2 Premounted metering pump



**Installing metering pump**

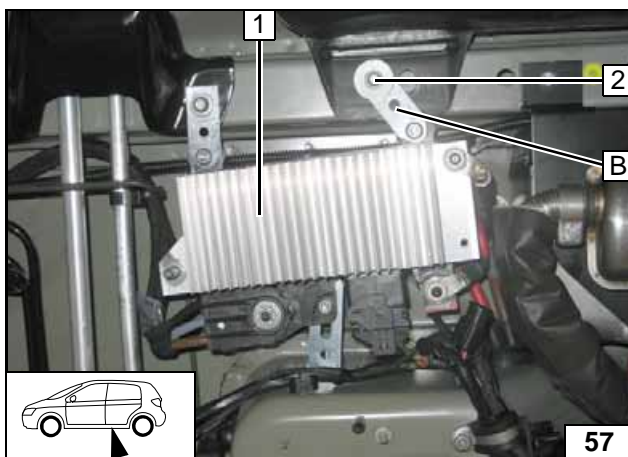


Degrease adhesive surface for rattle protection 4.

- 1 Wiring harness of metering pump
- 2 Fuel line
- 3 90° moulded hose, 10mm dia. clamp
- 4 Metering pump
- 5 Hose section, 10 mm dia. clamp
- 6 Fuel line



**Connecting metering pump**

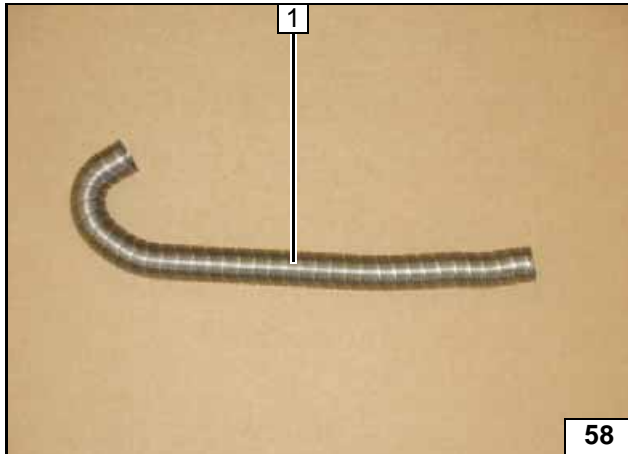
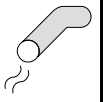


**Only vehicles with MHD**

- 1 MHD control unit
- 2 Original vehicle bolt for fuel-tank fastening
- B Perforated bracket



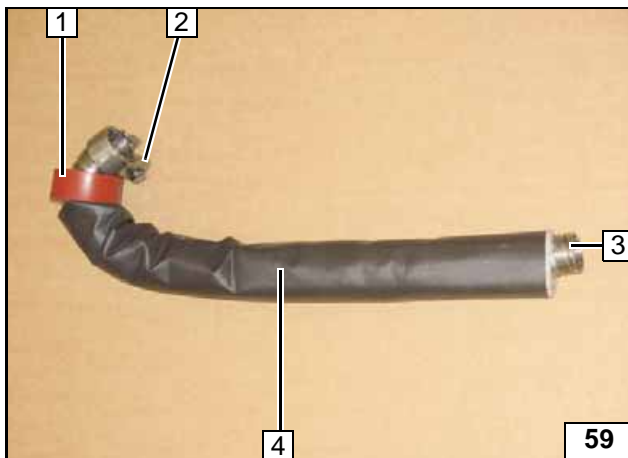
**Mounting MHD control unit**



**Exhaust Gas**

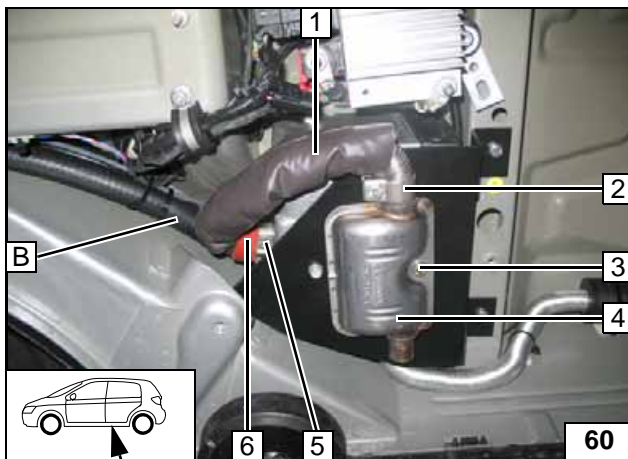
Shape exhaust pipe 1.

Preparing exhaust pipe



- 1 Red (rt) rubber isolator
- 2 Hose clamp, loose
- 3 Exhaust pipe
- 4 Exhaust insulation

Preparing exhaust pipe

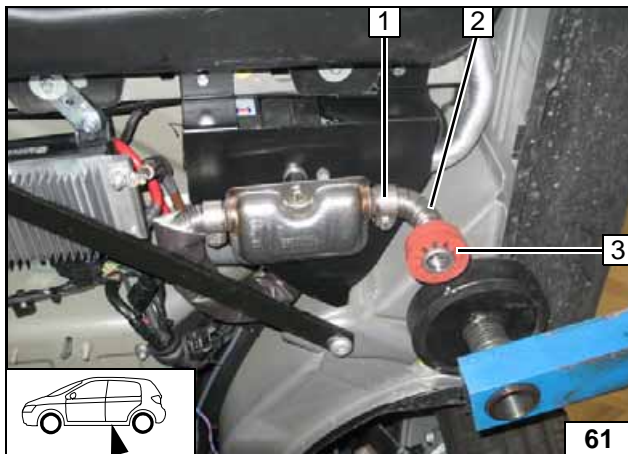


Align red (rt) rubber isolator 6 relative to hose B.

- 1 Exhaust pipe
- 2 Hose clamp
- 3 Mx12 bolt, spring lockwasher
- 4 Exhaust silencer
- 5 Hose clamp

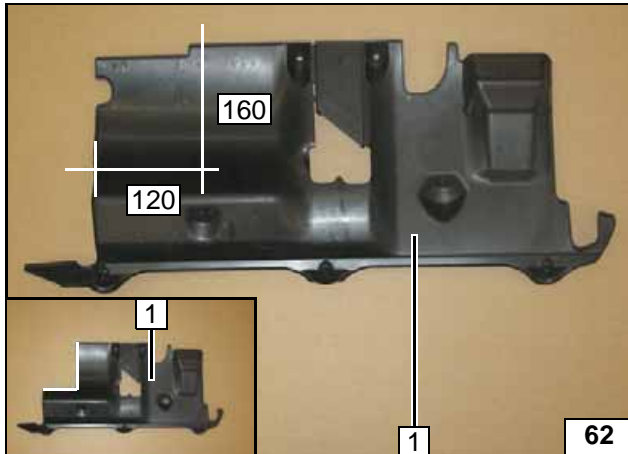
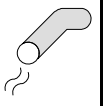


Installing exhaust pipe



- 1 Hose clamp
- 2 Exhaust end section
- 3 Red (rt) rubber isolator with groove

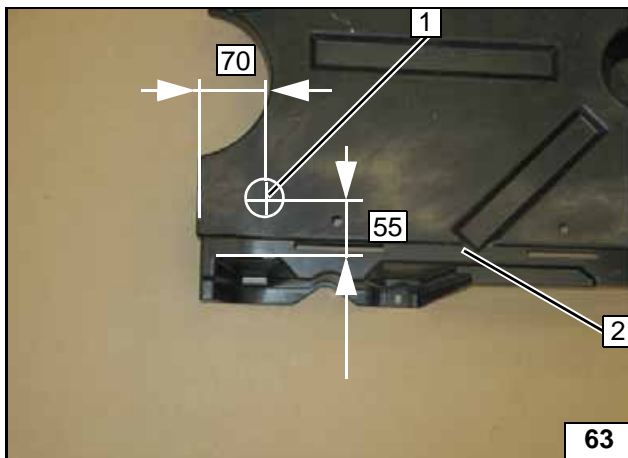
Installing exhaust pipe and exhaust end section



Cut out front air ducting 1 as shown and re-install.

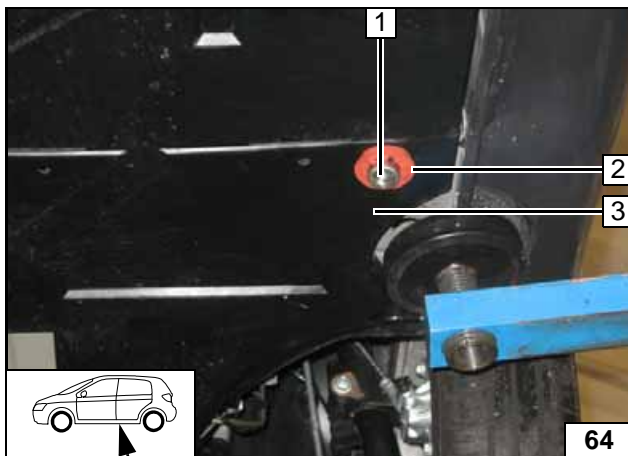


**Cutting out air ducting**



1 42mm dia. hole  
2 Underride protection

**Cutting out underride protection**



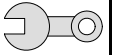
Align exhaust end section 1 on red rubber isolator 2.

3 Underride protection



**Mounting underride protection**





## Final Work

### WARNING!

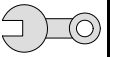
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Secure all loose wires using cable ties.

Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Set the digital timer.**
- **Make settings on A/C control panel according to the 'Operating Instructions for End Customer'.**
- **Place the 'Switch off parking heater before refuelling' caution label near the filler neck.**
- **Check the proper operation of the parking heater, see the operating instructions/installation instructions.**
- **Proceed as follows with the Webasto Thermo test diagnostics during initial start-up:**
  - Deliver fuel for the heater under the line filling button
  - Check the CO<sub>2</sub> setting, take the adjustment values from the general installation instructions
  - During the trial run, all coolant and fuel connections must be checked for leakage and firm seating.
  - A troubleshooting must be undertaken if errors occur.



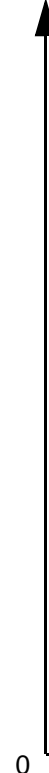
Webasto Thermo & Comfort SE  
Postfach 1410  
82199 Gilching  
Germany  
Internet: [www.webasto.com](http://www.webasto.com)  
Technical Extranet:  
<http://dealers.webasto.com>



Template for Fuel Standpipe of Petrol/Diesel Vehicle



100mm



Scale 1:1

Compare size of printout with dimension lines.  
Allowed tolerance a maximum of 2%.

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

100mm



## Operating Instructions for End Customer

Please remove page and add to the vehicle operating instructions.

**Note:**

We recommend matching the heating time to the driving time.

Heating time = driving time

**Example:**

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

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

For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



- 1 Set temperature to 'max.'
- 2 Air outlet to windscreen
- 3 Set fan to level '1'

Manual  
air-condi-  
tioning  
system