

Water Heater



Thermo Top C Parking Heater  00 0002

Installation documentation

Volvo S40 / V50 / C30

1.6l Diesel

from Model Year 2004

For left-hand drive vehicles only



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
Volvo	S40	544	e4 * 2001/116 * 0076 * ...
Volvo	V50	545	e4 * 2001/116 * 0076 * ...
Volvo	C30	533	e4 * 2001/116 * 0076 * ...

Engine type	Engine model	Output in kW	Displacement in cm ³
D4164T/76	Diesel	81	1560

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 a digital timer and summer/winter switch should be confirmed with the end customer before installation.

Heater / Installation Kit

Quantity	Description	Volvo Order No.:
1	Vehicle-specific delivery scope of <i>Thermo Top C</i> Diesel	1310029C

Optional heater control selection:

Quantity	Description	Order No.:
1	Digital timer	See price list
1	Telestart T91	See price list
1	Telestart T100 HTM	See price list

To be ordered additionally for Volvo:

Quantity	Description	Volvo Order No.:
1	Original Fuel Standpipe with Volvo Number:	30742055

Foreword

This installation documentation applies to Volvo S40 / V50 / C30 vehicles with 1.6l Diesel engine - for validity, see page 2 - from model year 2004 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 any case, however, it is necessary to observe the specifications in this "installation documentation", the "operating instructions" and the "installation instructions" for the *Thermo Top C*. 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.

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

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.

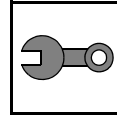
Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit for M6 aluminum rivet nut
- Metric thread-setter kit for M10 steel rivet nut (e.g. Würth Order No. 0964948900)

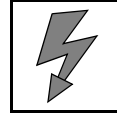
Explanatory Notes on Document

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

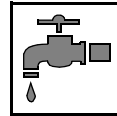
Mechanical system



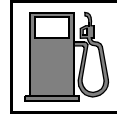
Electrical system



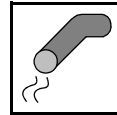
Coolant circuit



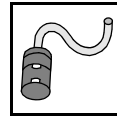
Fuel



Exhaust gas



Combustion air



Special features are highlighted using the following symbols:



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



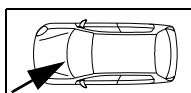
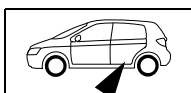
Specific risk of fire or explosion.



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



Reference to a special technical feature.



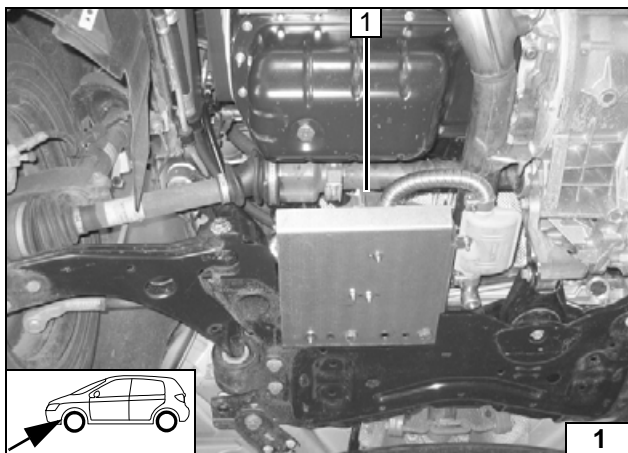
The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary Work



WARNING!

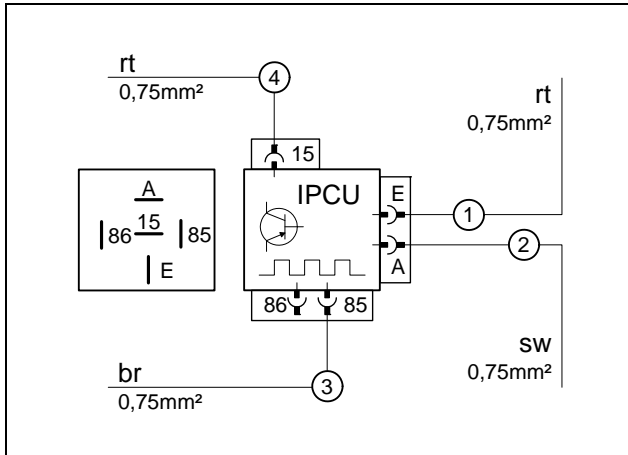
- Open fuel tank cap, ventilate tank.
- Close the fuel tank cap again.
- Disconnect the battery "earth" or "ground" connection.
- Depressurise the cooling system.
- Copy the factory number from the original type label to the duplicate type label.
- Remove years that do not apply from the duplicate label.
- Attach the duplicate label (type label) in the appropriate place.
- Remove the engine cover.
- Remove the underride protection
- Remove the underbody trim before the right rear wheel.
- Remove the fuel tank according to the manufacturer's instructions.
- Remove the glove compartment.
- Remove the A/C control panel according to the manufacturer's specifications.



Heater installation location

1 Heater

Installation location



Preparing electrical system

Produce connections as shown in wiring diagram. Crimp 6 mm dia. cable lug onto end of brown (br) wire from IPCU/85.



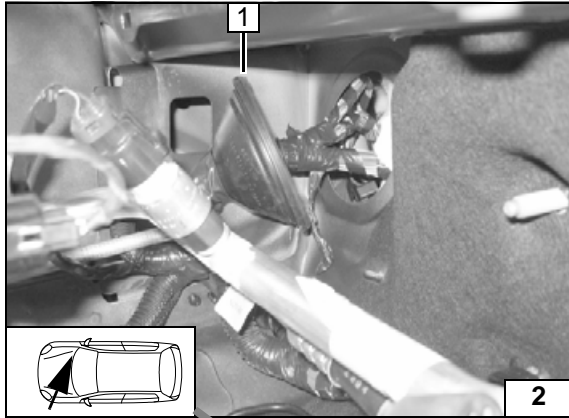
Premounting IPCU



Electrical system

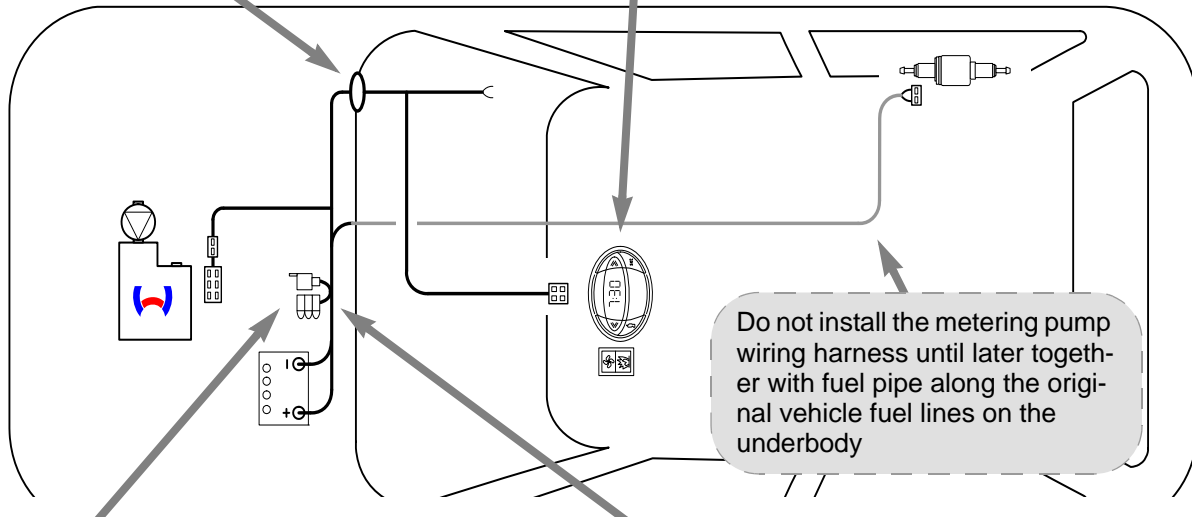
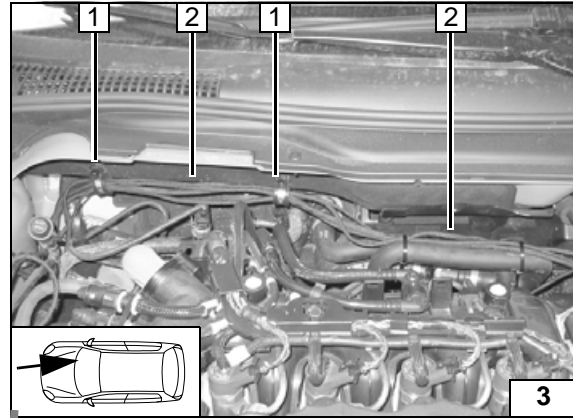
Wiring harness pass through

- 1 Protective rubber plug detached

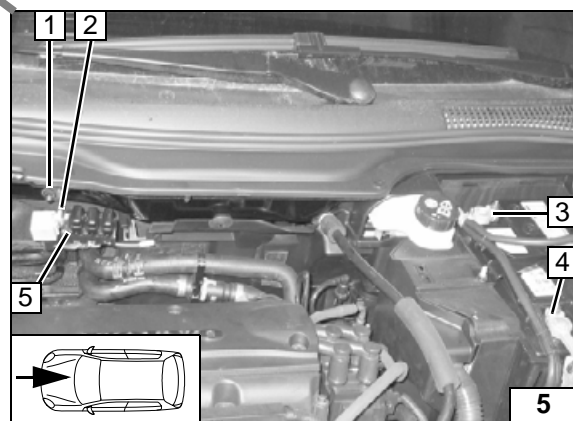
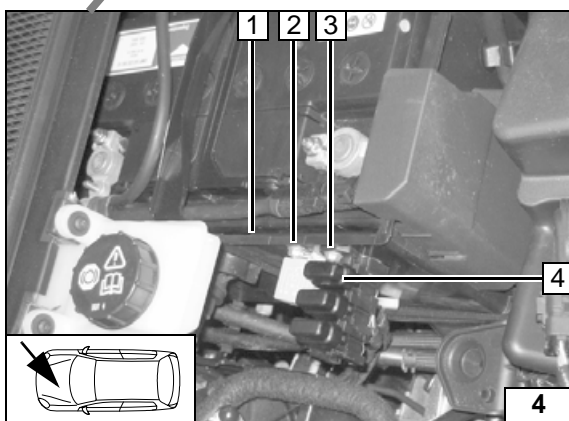


Wiring harness routing

- 1 18 mm dia. rubber-coated p-clamp, original vehicle plastic nut [2x]
- 2 Wiring harness



Wiring harness routing diagram



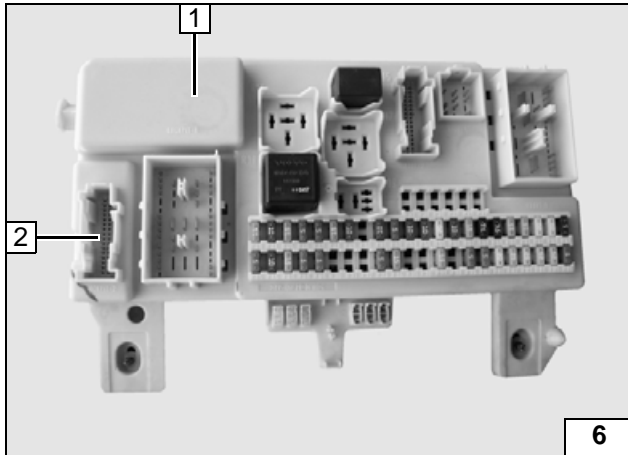
Fuse holder, K3 relay on S40 / V50

- Remove battery trim 1 for drilling, countersink hole for M5 countersunk head screws from inside
- 2 K3 relay, 5 mm dia. hole, M5x10 countersunk head screw, flanged nut
 - 3 Fuse holder, 5 mm dia. hole, M5x10 countersunk head screw, flanged nut
 - 4 Replace F3 fuse with 3 A fuse.

Fuse holder, K3 relay on C30

- 1 Angle bracket with plastic nut on original vehicle stud bolt
- 2 K3 relay, fuse holder, M5x12 bolt, flanged nut
- 3 Earth wire on negative battery terminal
- 4 Positive wire on positive battery terminal
- 5 Replace F3 fuse with 3 A fuse.





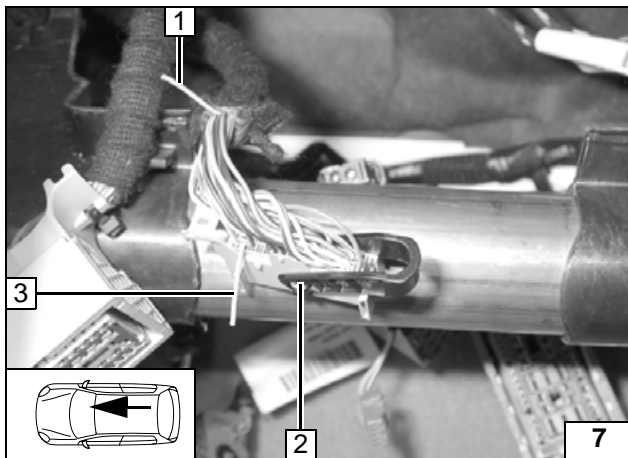
Fan controller

Detach CEM under glove compartment. Disconnect 32-pin connector B.

- 1 CEM module
- 2 Socket for connector B

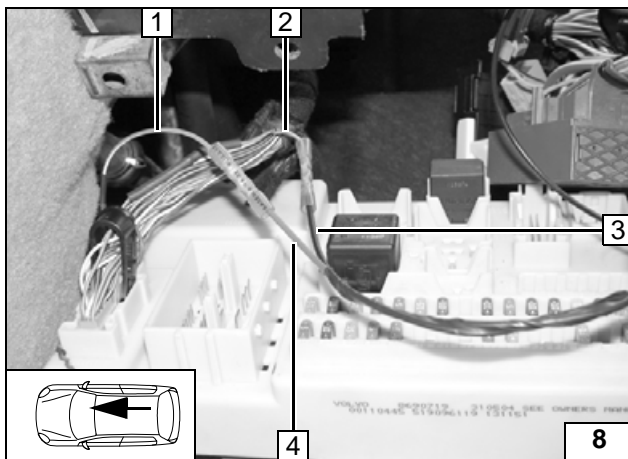


View of CEM



- 1 Blue/white (bl/ws) wire to fan unit
- 2 Connector B from CEM
- 3 Blue/white (bl/ws) wire from connector B, Pin 18

Disconnecting wire

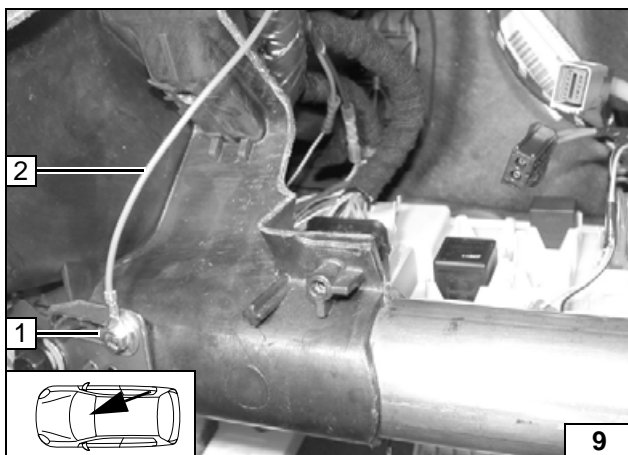


Produce connections as shown in wiring diagram.

- 1 Blue/white (bl/ws) wire from connector B, Pin 18
- 2 Blue/white (bl/ws) wire to fan unit
- 3 Black (sw) wire from IPCU/A
- 4 Red (rt) wire to IPCU/E

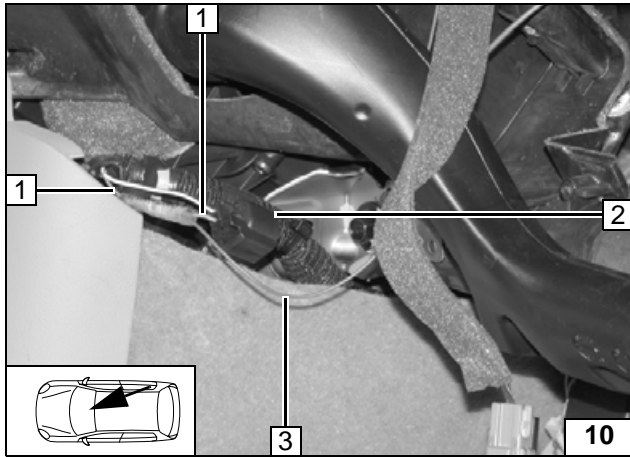


Connection of CEM



- 1 M5x12 bolt, flanged nut in existing hole
- 2 Earth wire from IPCU/85

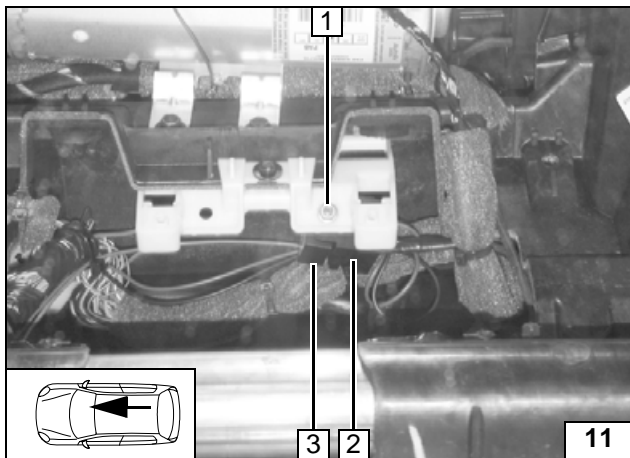
Connecting earth wire



Connect red (rt) wire from IPCU/15 to green/orange (gn/or) wire from fuse F51 to PTC connector B, Pin 1. PTC is vehicle-dependent (option). Connector B is present on all vehicles.

- 1 Green/orange (gn/or) wire to 2-pin connector B, Pin 1
- 2 Connector B from PTC
- 3 Red (rt) wire from IPCU/15

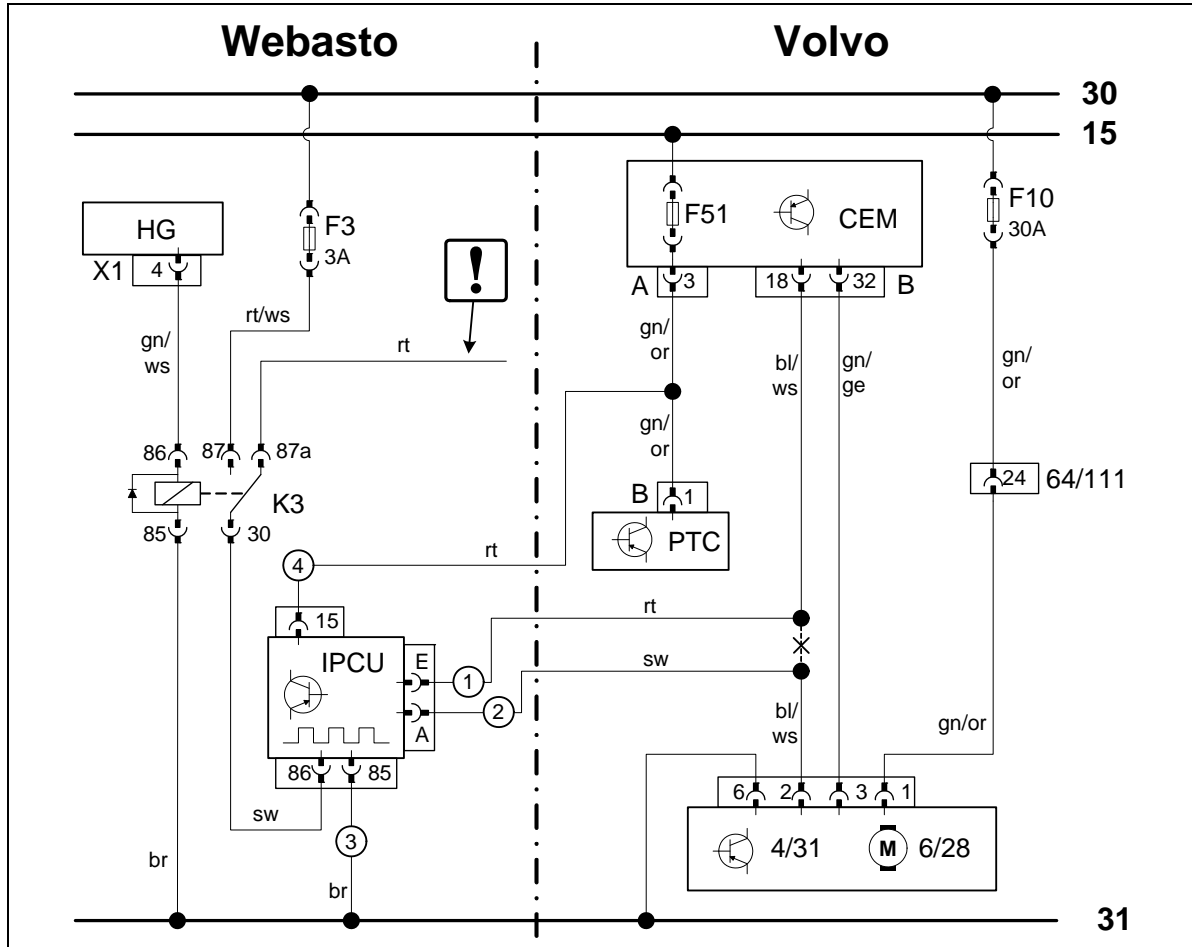
**Connect-
ing Termi-
nal 15**



Connect black (sw) wire from K3/30 to IPCU/86.
Insulate red (rt) wire from K3/87a and tie back.

- 1 Original vehicle hole, M5x12 bolt, flanged nut
- 2 IPCU socket
- 3 Connect IPCU

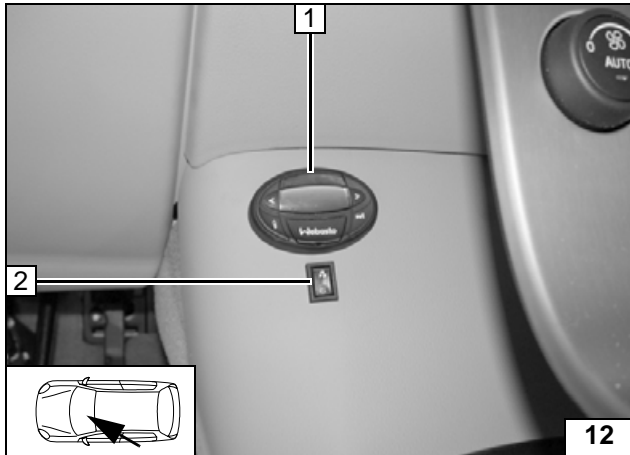
**Installing
IPCU**



Wiring diagram

Webasto components		Volvo components		Colours and symbols	
HG	TT-C heater	4/31	Fan controller	rt	red
X1	6-pin heater connector	6/28	Fan motor	ws	white
F3	Fuse, 3 A	F10	30 A fan fuse	sw	black
K3	Fan relay	64/111	Connector on right-hand A-pillar	br	brown
IPCUC	Pulse width modulator	CEM	Central Electrical Module	gn	green
		A	Connector on CEM	or	orange
		B	Connector on CEM	bl	blue
				ge	yellow
IPCUC settings:		PTC	Heating element * (not installed on all vehicles)	!	Insulate wire ends and tie back
Duty cycle: 60%		B	Connector on PTC	X	Cutting point
Frequency: 400Hz		F51	Fuse	Wiring colours may vary.	
Voltage: 10V					
Function: Low-side					

Legend

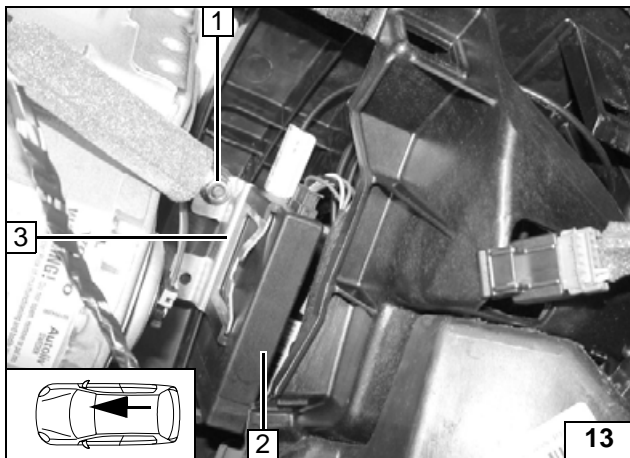


Digital timer option

- 1 Digital timer
- 2 Summer/winter switch, drilled hole 12 mm dia.



Installing digital timer



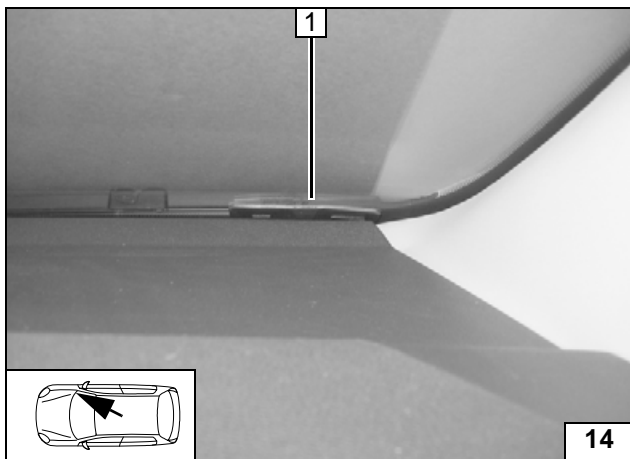
Remote option (Telestart)

Angle down bracket 3 by 90° and drill out to 6mm dia. at Position 1.

- 1 M6 flanged nut
- 2 Receiver

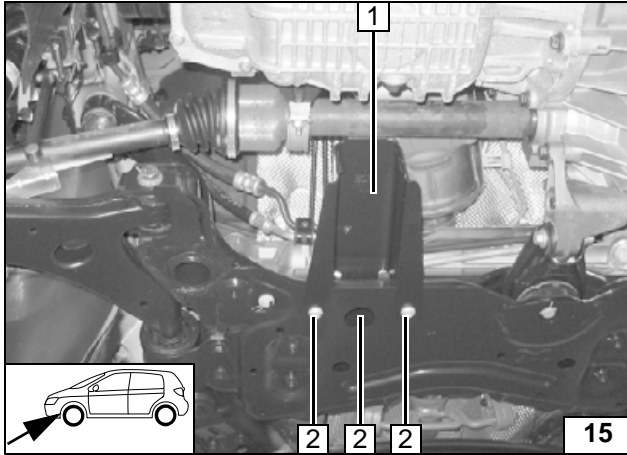
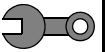


Installing receiver



- 1 Antenna

Installing antenna



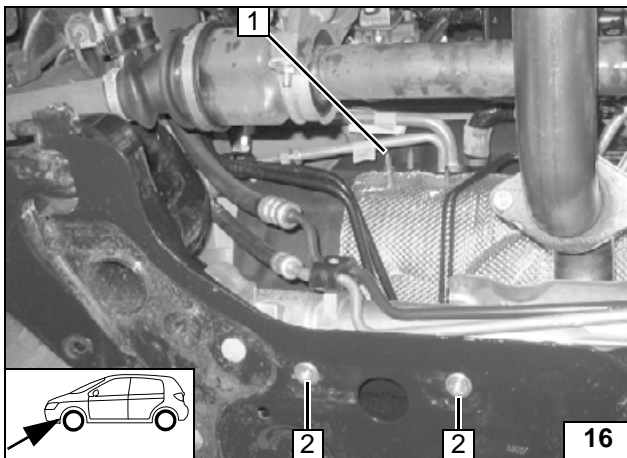
Preparing installation location

Cross member dependent on vehicle equipment!

- 1 Cross member
- 2 M10 screws [3x]



Removing cross member

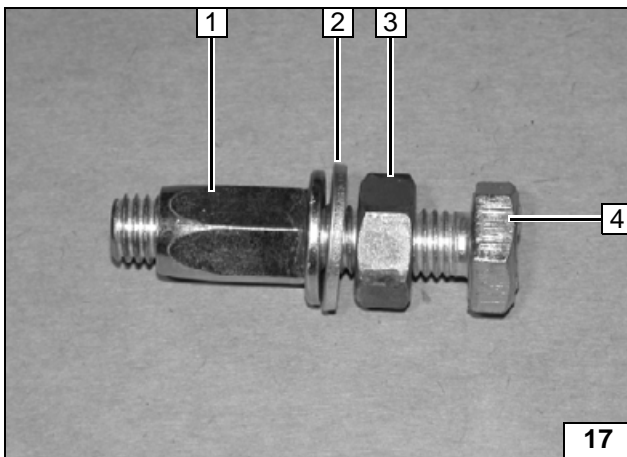


If threaded inserts are not present at Position 2, then mount M10 rivet nuts provided in hexagon holes. Use special tool as shown on Page 3. For alternative, see next figure.

- 1 Original vehicle M8 stud bolt
- 2 M10 steel rivet nut [2x]

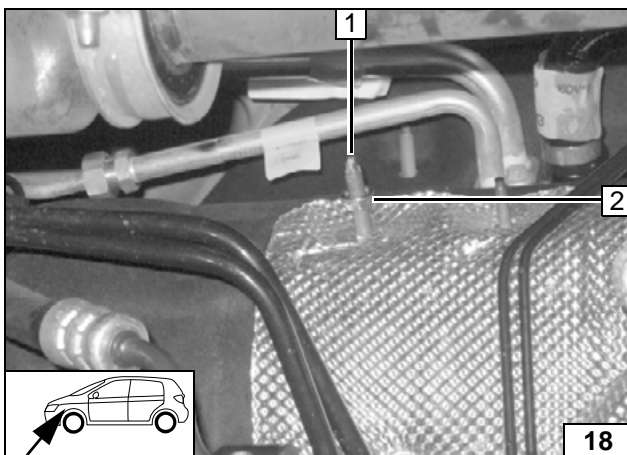


Installing rivet nut



- 1 M10 rivet nut (steel)
- 2 Washer
- 3 M10 nut
- 4 M10 bolt

Alternative rivet-down tool

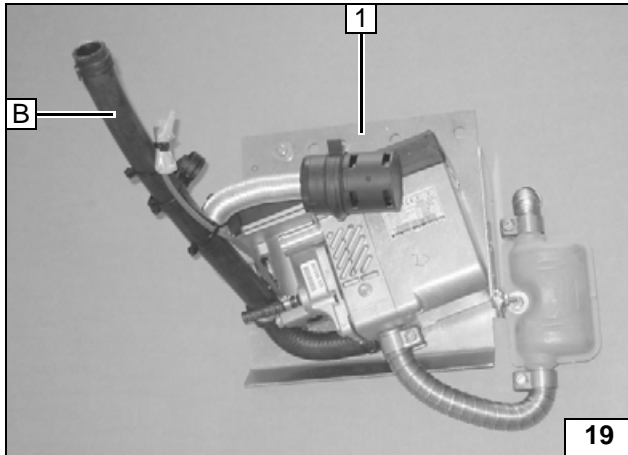
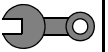


Screw on flanged nut with flange toward front.

- 1 Original vehicle stud bolt
- 2 M8 flanged nut



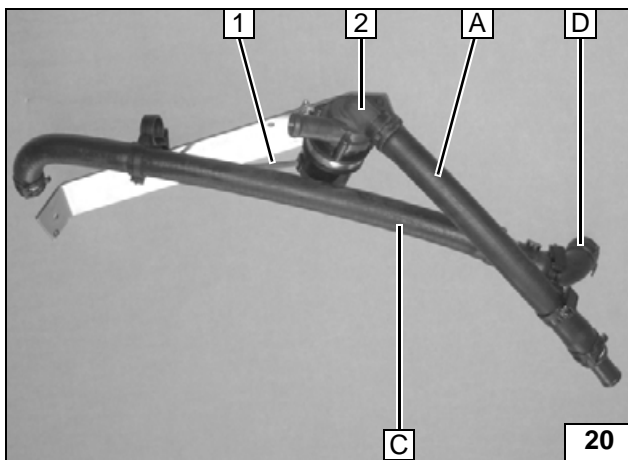
Preparing installation location



Premounting heater

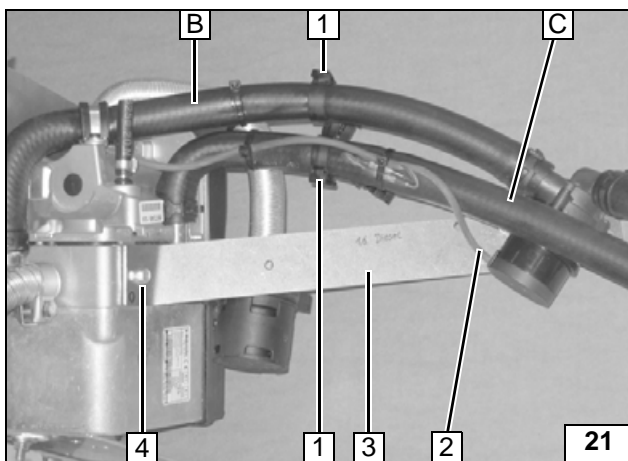
- 1 Heater assembly (premounted)

Heater assembly



- 1 Remove connecting cable of circulating pump and discard
- 2 Coolant assembly (premounted)

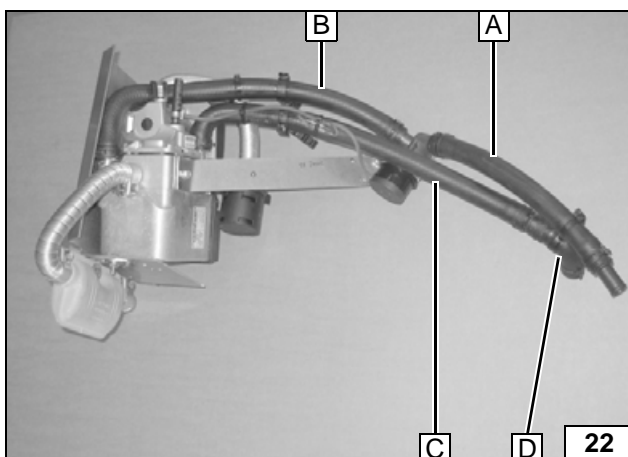
Coolant assembly



Use hole of strut 3 centred at Position 4. Install ejet screw 4 loosely. Premount 27x27 spacer 1 [2x] for fastening later on original vehicle lines. Connect wiring harness 2 to circulating pump.



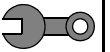
Connecting assemblies



Fasten hoses B and C and wiring harness of circulating pump with cable ties.



Connecting assemblies

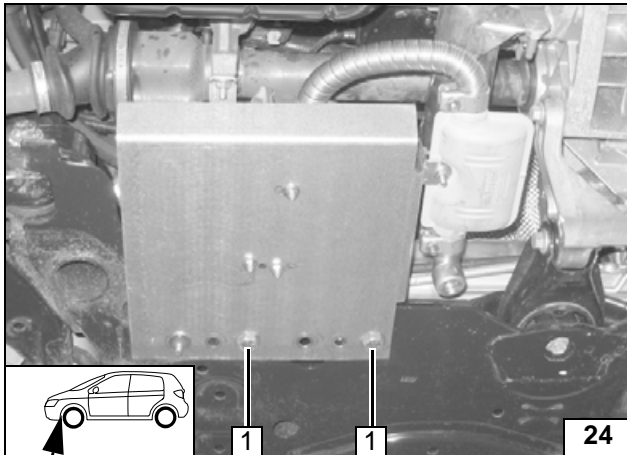


Installing heater

Connect wiring harness of heater at installation location.



Installing heater

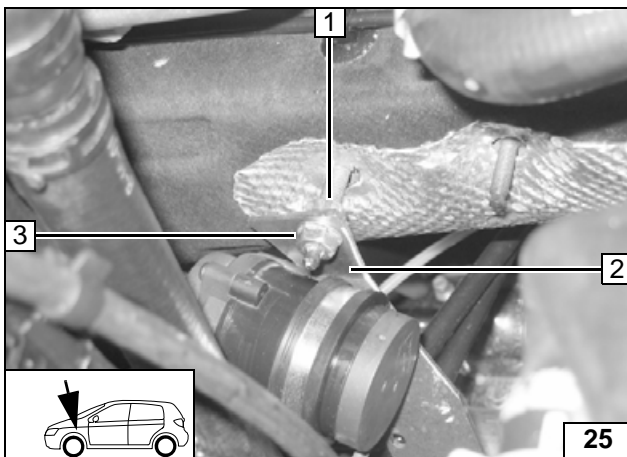


Use bracket holes as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 1 Original M10x30 bolt [2x]



Installing heater

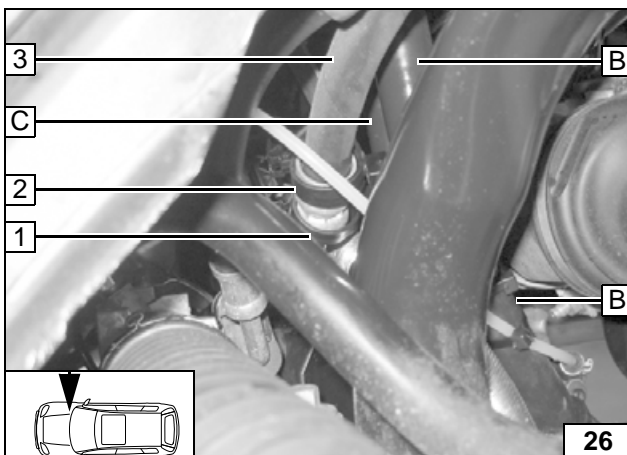


Use strut hole as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement. Tighten ejot screw (10Nm).

- 1 M8 flanged nut (premounted)
- 2 Strut
- 3 M8 flanged nut



Installing heater

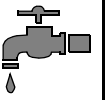


Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 1 27x27 spacer on hose C and original vehicle line 3
- 2 27x27 spacer on hose B and original vehicle line 3



Installing heater

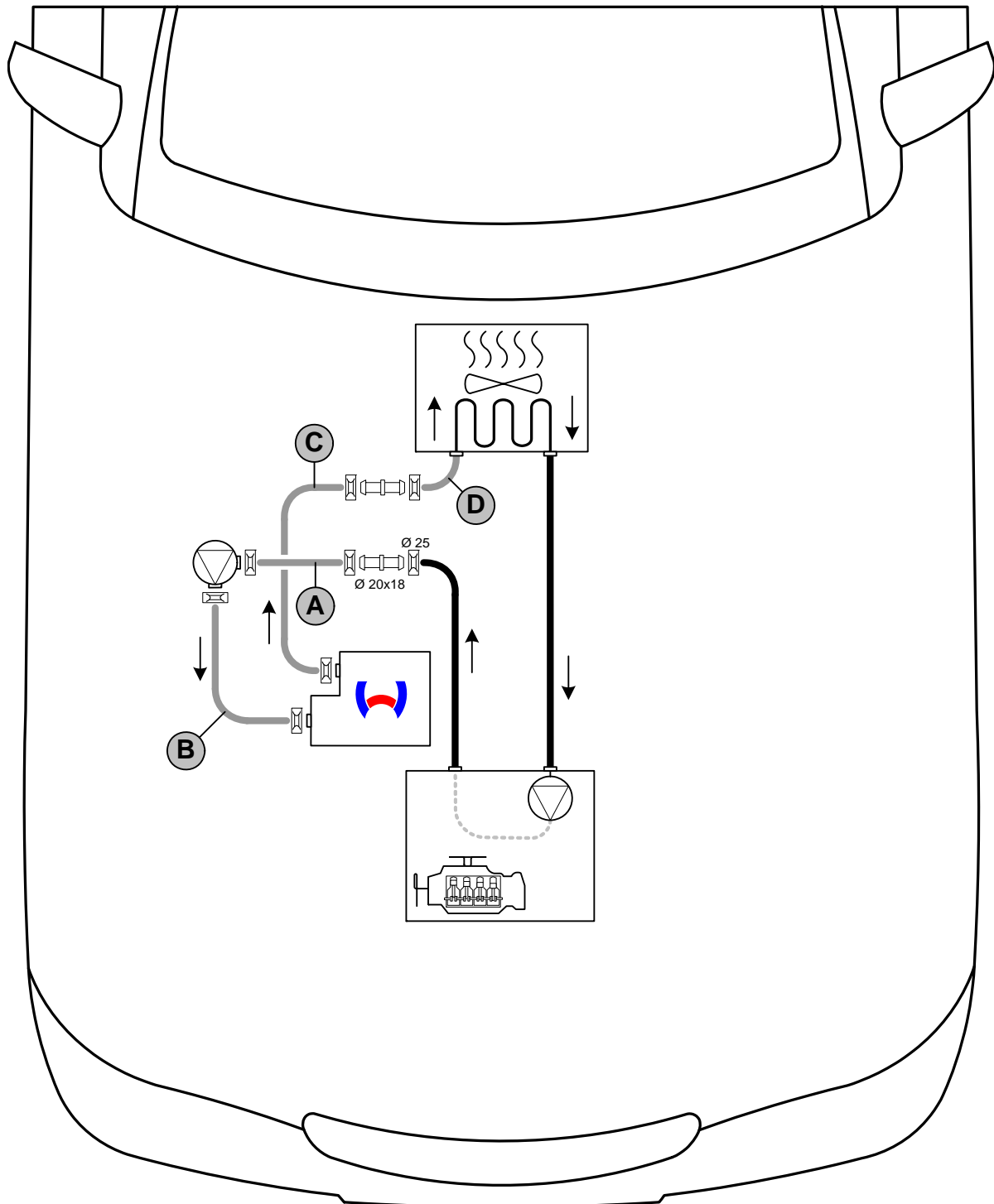


Coolant circuit



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 no other hose can be damaged. When installing the hoses, the heater must be filled with coolant.

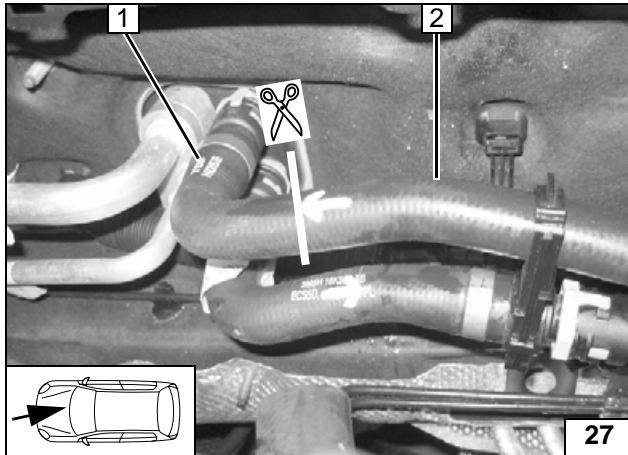
The connection should be made "inline", based on the following diagram:



Hose routing diagram

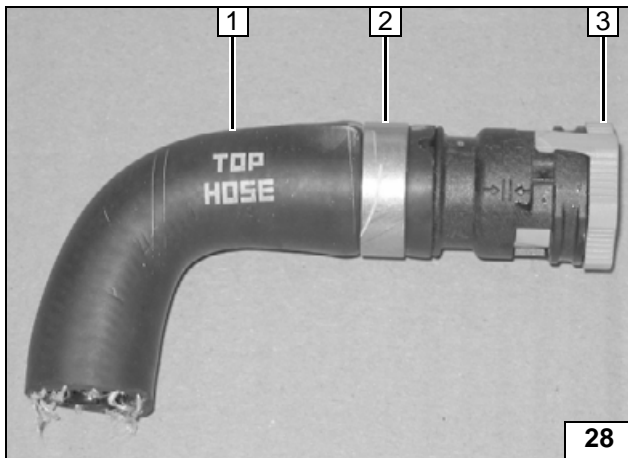
All spring clips without a specific designation  = 27mm dia.
Connecting pipes without a specific designation  = 20x20mm dia.





- 1 Hose on heat exchanger inlet
- 2 Hose of engine outlet

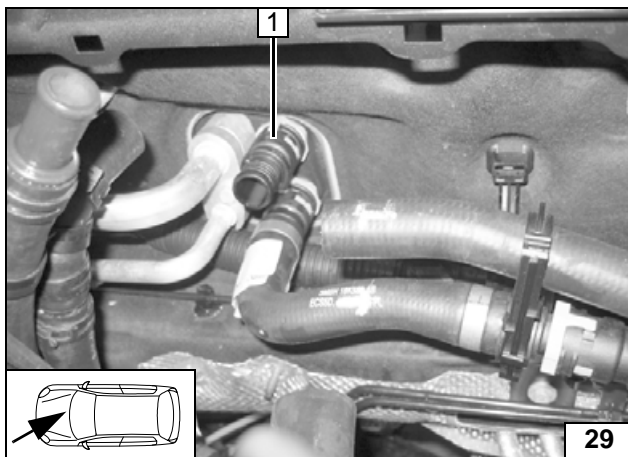
Cutting point



Detach coupling according to manufacturer's instructions. Turn locking device **3** counter-clockwise. Remove clamp **2**, discard hose **1**

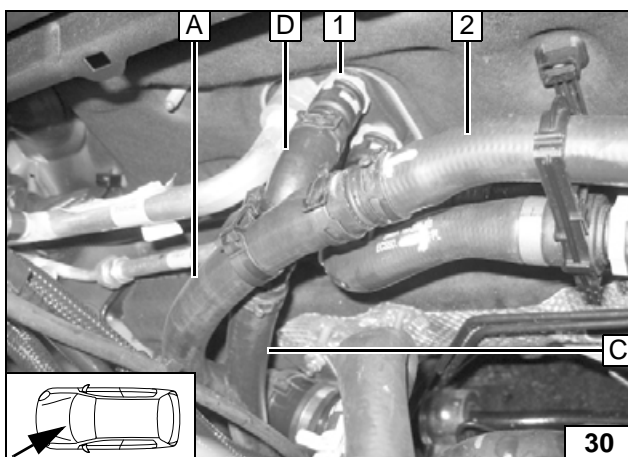


Preparing coolant



- 1 Coupling mounted on heat exchanger inlet and locked

Preparing coolant



Fill coolant hoses before connecting.

- 1 Connection piece of heat exchanger inlet
- 2 Hose of engine outlet



Connecting hoses





Fuel

CAUTION!

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

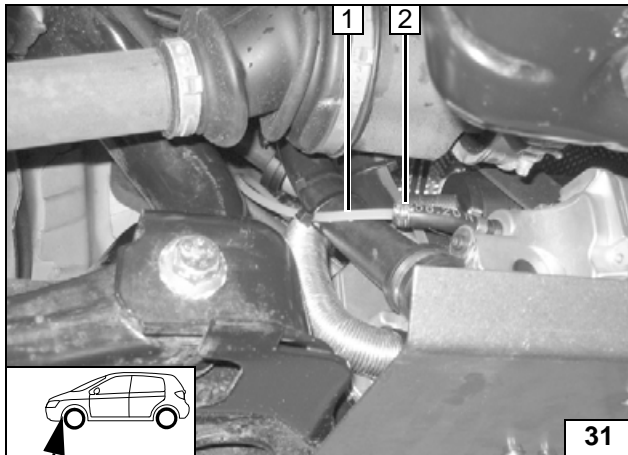
Catch any fuel running off with an appropriate container.

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.

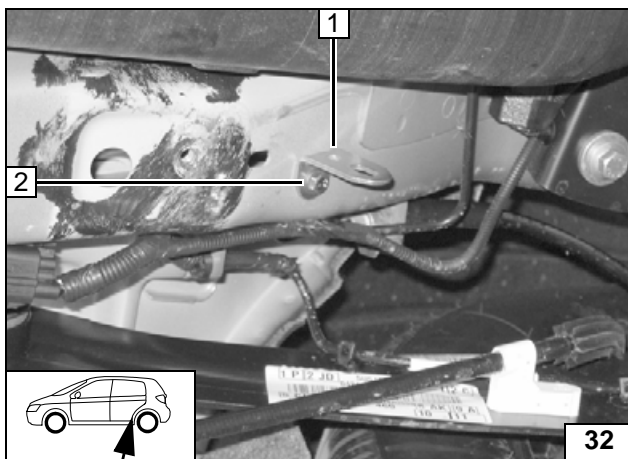
WARNING!

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



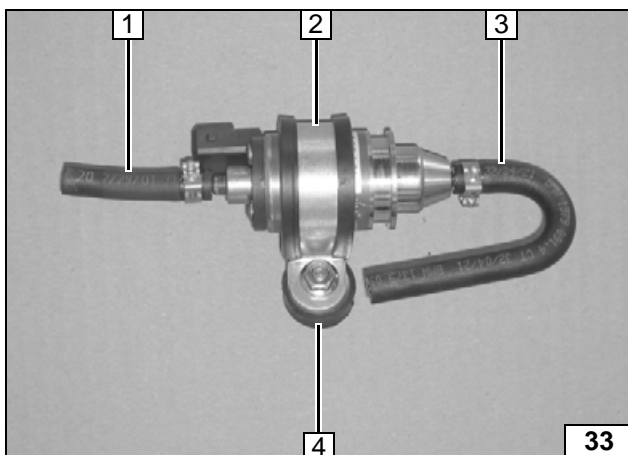
Route fuel line to firewall. Ensure sufficient distance from cardan shaft.

- 1 Fuel line
- 2 10 mm dia. Caillau clamp



Installation location on right next to vehicle fuel tank.

- 1 Angle bracket
- 2 M6x20 bolt, spring lockwasher on existing threaded insert



- 1 Hose section, 10 mm dia. Caillau clamp
- 2 Rubber-coated pipe clamp
- 3 180° moulded hose, 10 mm dia. Caillau clamp
- 4 Flanged nut

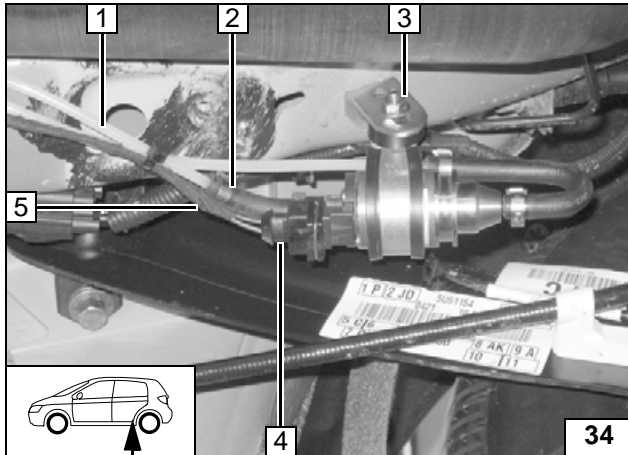


Connection on heater



Installation location of metering pump

Premounting metering pump

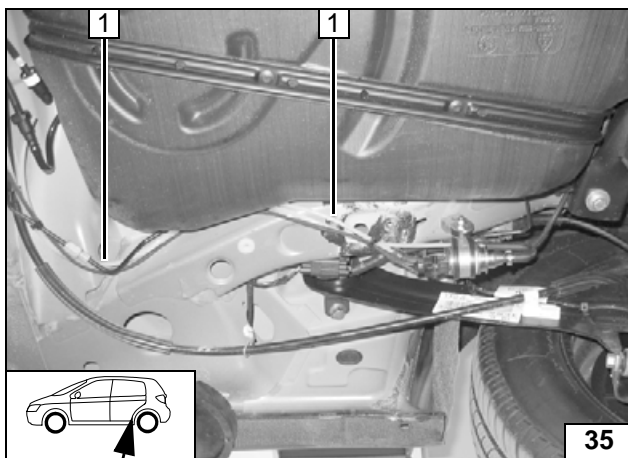


Slide silent block completely upward in oblong hole. Fuel line to heater on pressure side of metering pump [side with connector].

- 1 Fuel line
- 2 10 mm dia. Caillau clamp
- 3 Flanged nut
- 4 Completed connector housing
- 5 Metering pump wiring harness

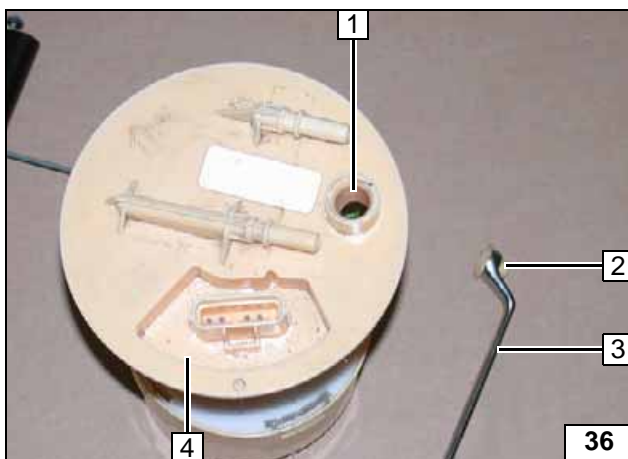


Installing metering pump



- 1 Fuel line and wiring harness of metering pump

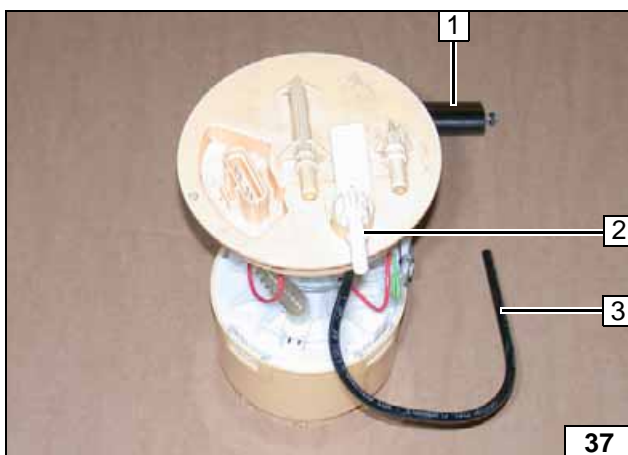
Wiring routing



Remove fuel-tank sending unit 4 in accordance with manufacturer's instructions. Break out connection piece 2 at rupture joint 1 with suitable tool 3 according to manufacturer's instructions.



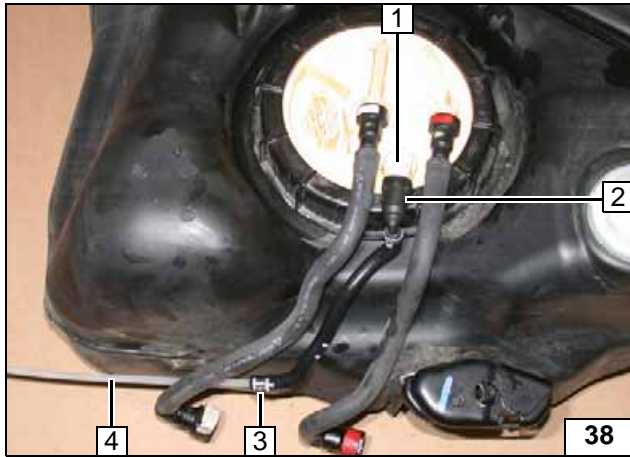
Removing fuel



Install fuel standpipe 2 (Volvo Order No. 30742055) according to manufacturer's instructions. Align removal hose 3 up to bottom of fuel tank. Ensure freedom of movement of fuel gauge 1.



Installing fuel standpipe

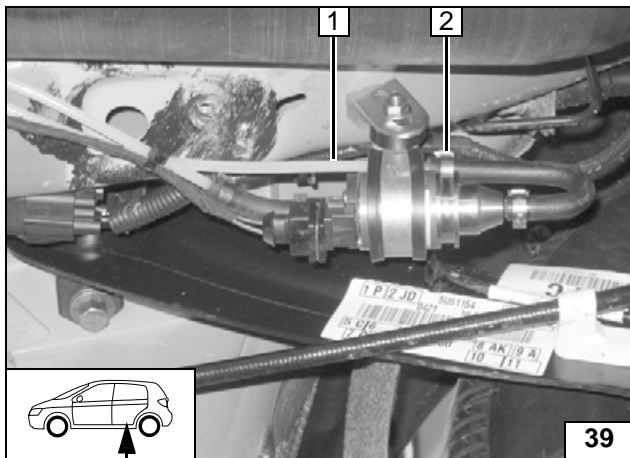


Install fuel-tank sending unit according to manufacturer's instructions. Mount coupling 2 on fuel standpipe 1. Install fuel tank.

- 3 10 mm dia. Caillau clamp
- 4 Fuel line



**Connect-
ing fuel
line**

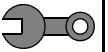


Fuel line from fuel standpipe on intake side of metering pump [side without connector]. Check the position of the components; adjust if necessary. Check that they have freedom of movement.

- 1 Fuel line
- 2 10 mm dia. Caillau clamp



**Conne-
tion to me-
tering
pump**



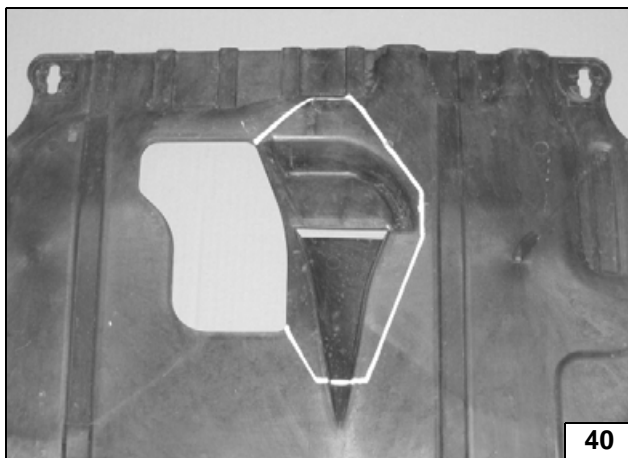
Final Work

WARNING!

Reassemble the disassembled components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate all loose wires and tie back.

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

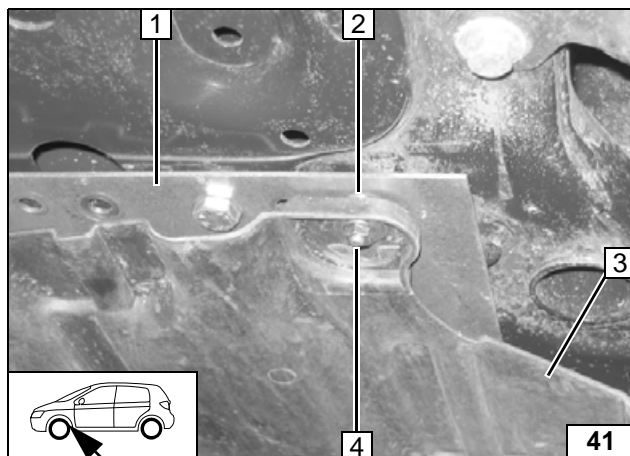
- Connect the battery.
- Fill and bleed the coolant circuit according to the vehicle manufacturer's instructions.
- Adjust digital timer, teach remote Telearstart transmitter
- Make settings on A/C control panel according to the "Operating Instructions for End Customer".
- Place signboard "Switch off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



Cut out under-ride protection on marking.



Cutting out under-ride protection



Ensure sufficient distance from heater exhaust system. Rework cut-out if necessary.

- 1 Bracket of heater
- 2 M6x20 bolt (premounted)
- 3 Underride protection
- 4 Flanged nut, large diameter washer



Mounting under-ride protection

Webasto
Feel the drive

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
 http://www.webasto.com

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

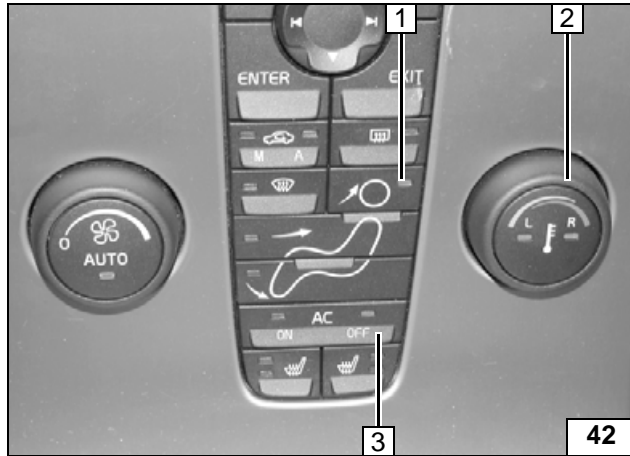
Example:

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

If the summer/winter switch option has been installed, this must be switched in accordance with the time of year. The heater will then heat in the position Winter and in the position Summer it will only switch on the vehicle fan to ventilate the vehicle interior.



Before parking the vehicle, make the following settings:



- 1 Air outlet faces upward
- 2 Set temperature to "HI"
- 3 Set AC button to "OFF"

All vehicles