

Water Heater



Thermo Top C Parking Heater  00 0002

Installation documentation

Volvo S40 / V50 / C70 / C30

1.6l; 1.8l; 2.0l; 2.4l Petrol

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.

Table of Contents

Validity	2	Preparing installation location	13
Heater / Installation Kit	3	Premounting heater	16
Foreword	3	Installing heater	19
General Instructions	3	Coolant circuit	22
Special Tools	3	Fuel	25
Explanatory Notes on Document	4	Mounting underride protection	28
Preliminary Work	5	Final Work	29
Heater installation location	5	Operating Instructions for End Customer	30
Preparing electrical system	6		
Electrical System for 1.6l; 1.8l and 2.0l only	7		
Electrical System for 2.4l only	8		
Fan controller	9		
Remote option (Telestart)	12		

Validity

Manufacturer	Model	Type	EG-BE No. / ABE
Volvo	S40	544	e4 * 2001/116 * 0076 * ...
Volvo	V50	545	e4 * 2001/116 * 0076 * ...
Volvo	C70	542	e4 * 2001/116 * 0076 * ...
Volvo	C30	533	e4 * 2001/116 * 0076 * ...

Engine type / code	Engine model	Output in kW	Displacement in cm ³
B4164S3 / 20	Petrol	74	1596
B4184S11/21	Petrol	92	1798
B4204S3/43	Petrol	107	1999
B5244S5 / 66	Petrol	103	2435
B5244S4 / 38	Petrol	125	2435

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	Order No.:
1	Vehicle-specific delivery scope of <i>Thermo Top C</i> Petrol	1310028C

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 / C70 / C30 vehicles with 1.6l; 1.8l; 2.0l; 2.4l Petrol 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.

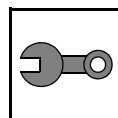
Special Tools

- 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)

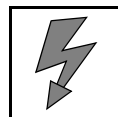
Explanatory Notes on Document

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.

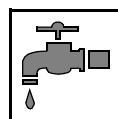
Mechanical system



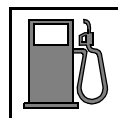
Electrical system



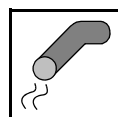
Coolant circuit



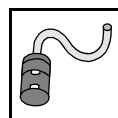
Fuel



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.



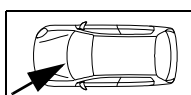
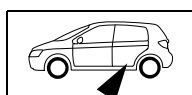
Specific risk of fire or explosion.



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



Reference to a special technical feature.

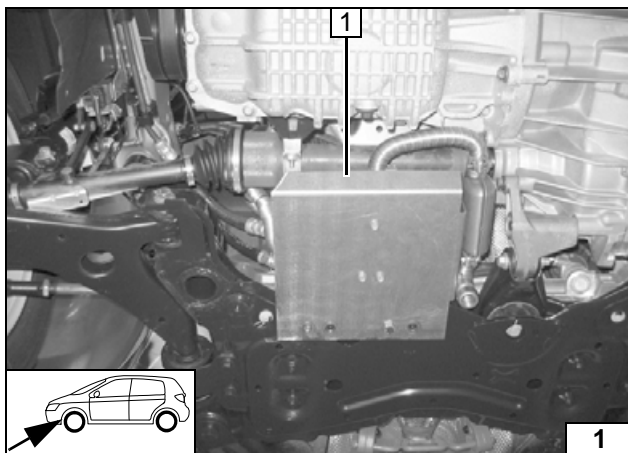


The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

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 (if present).
- Remove the underride protection (if present).
- Remove the underbody trim before the right rear wheel.
- Remove the fuel tank according to the manufacturer's instructions.
- Remove the glove compartment.



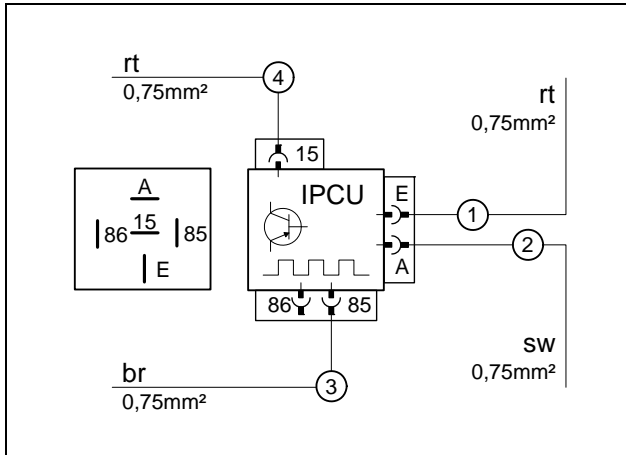
Heater installation location

Figure shows 1.6l vehicle.

1 Heater



Installation location



Preparing electrical system

Connect lines provided to IPCU as shown in wiring diagram.
 Connect 6 mm dia. cable lug to end of brown (br) wire from IPCU/85.



Premounting IPCU

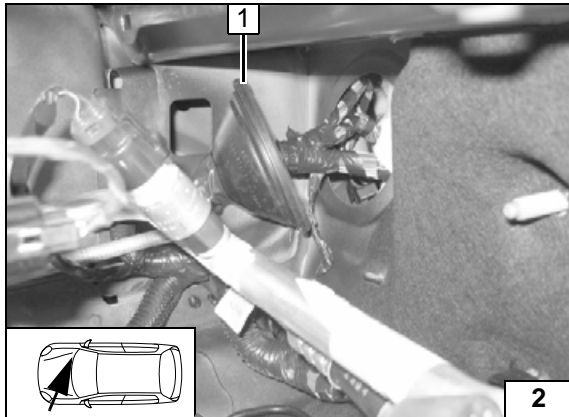


Electrical System for 1.6l; 1.8l and 2.0l only



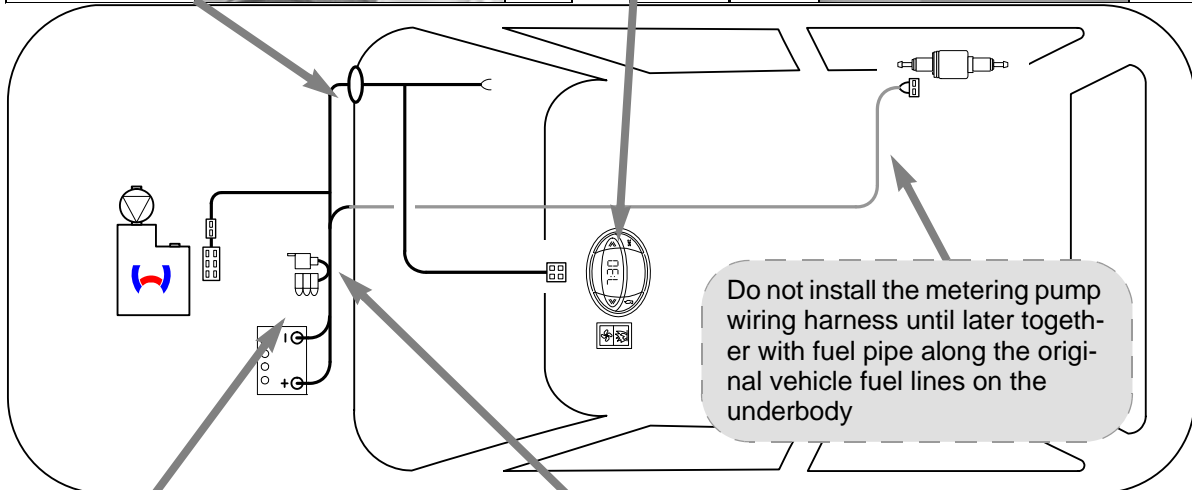
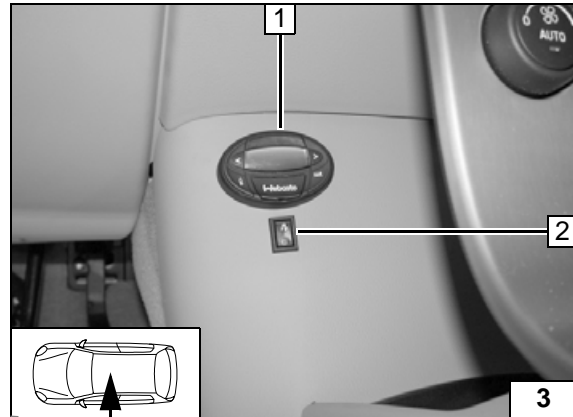
Wiring harness pass through

- 1 Protective rubber plug detached

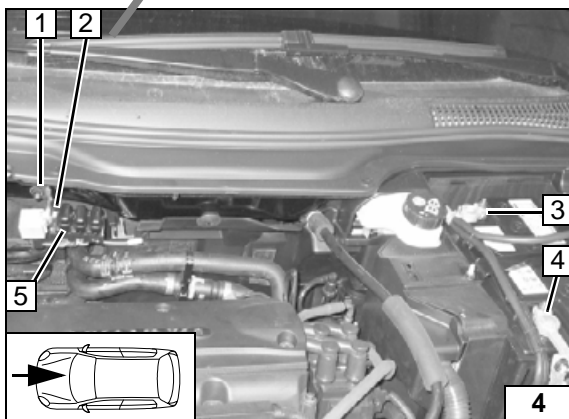


Digital timer

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

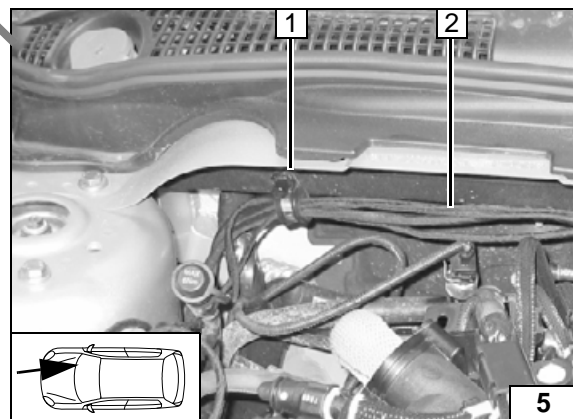


Wiring harness routing diagram for 1.6l; 1.8l



Fuse holder, K3 relay

- 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.



Wiring harness routing

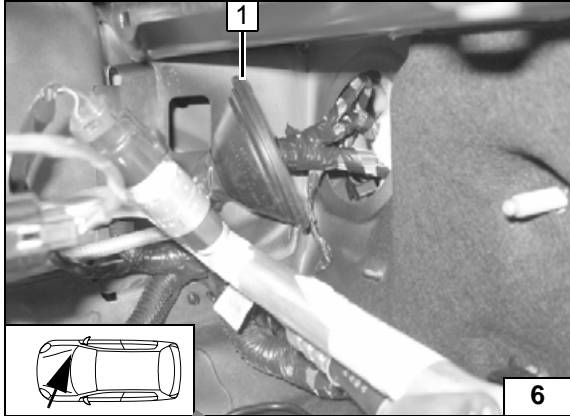
- 1 18mm dia. rubber-coated p-clamp, plastic nut on original vehicle stud bolt
- 2 Wiring harness



Electrical System for 2.4l only

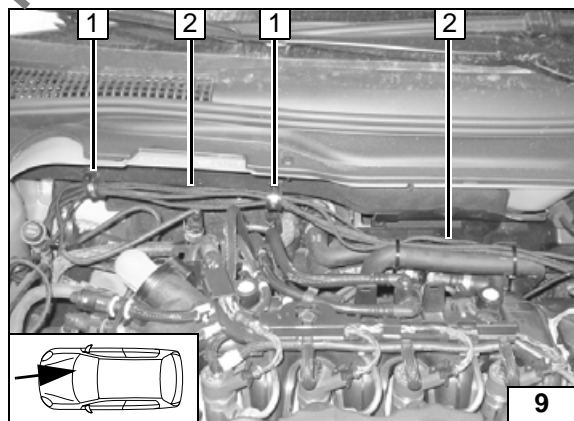
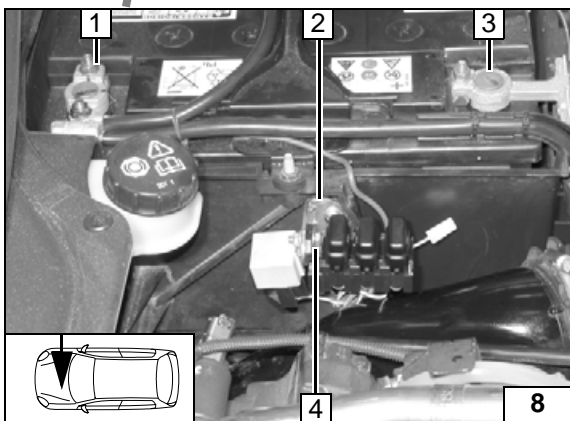
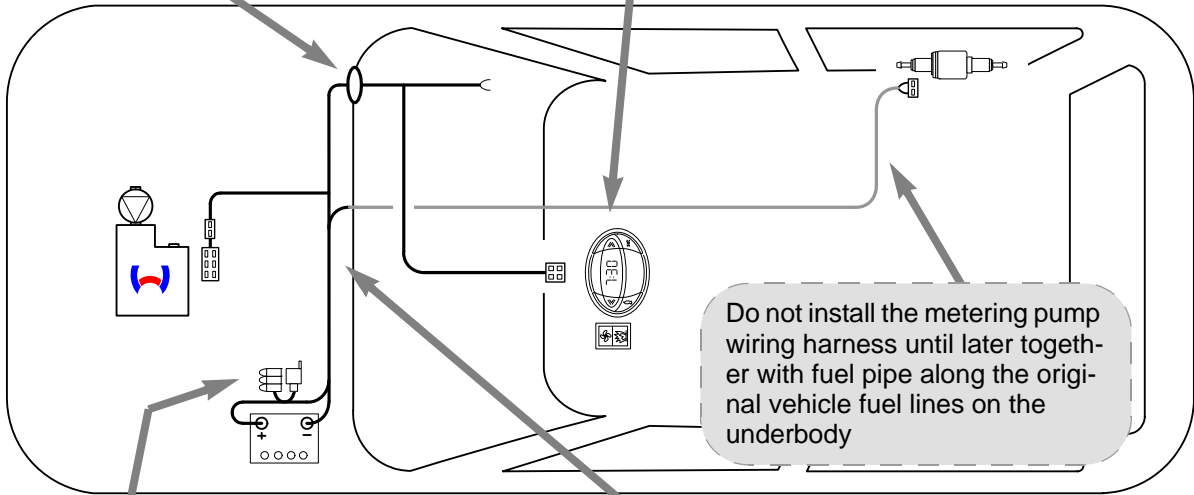
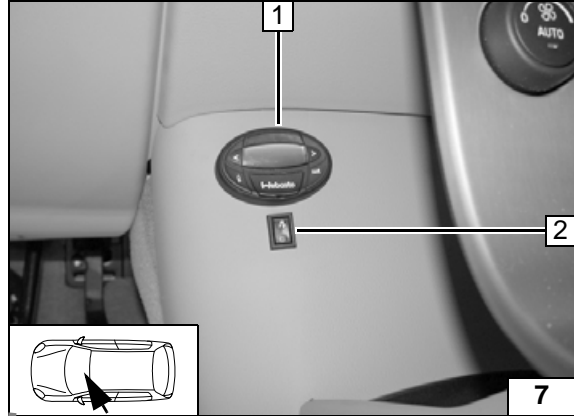
Wiring harness pass through

- 1 Protective rubber plug detached



Digital timer

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



Fuse holder, K3 relay

- 1 Earth wire on negative battery terminal
- 2 Fasten angle bracket with flanged nut on original vehicle stud bolt or with 6.3x13mm self-tapping screw
- 3 Positive wire on positive battery terminal
- 4 M5x12 bolt, flanged nut, K3 relay, fuse holder, replace fuse F3 with 3 A fuse.

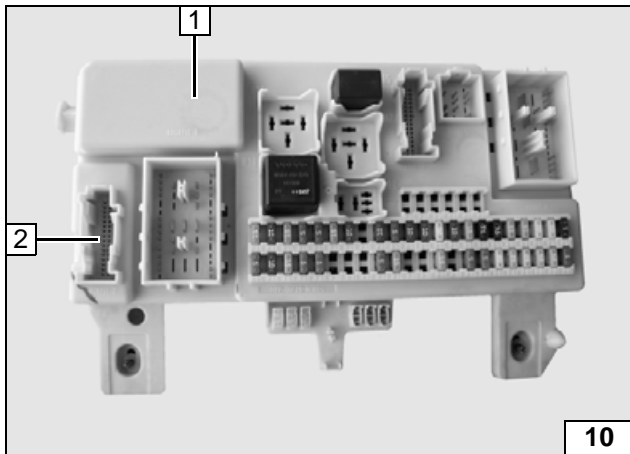
Wiring harness routing

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



Wiring harness routing diagram 2.4l





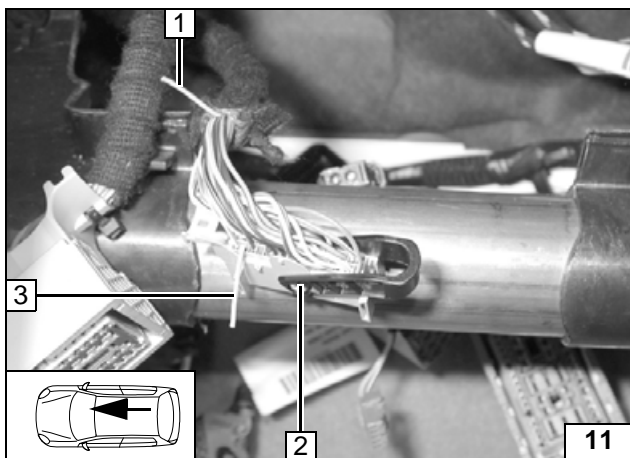
Fan controller

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

- 1 CEM module
- 2 Socket for connector B

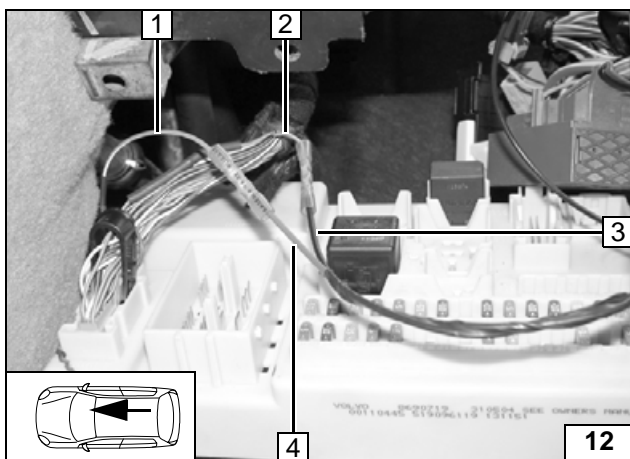


View of CEM



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

Disconnecting wire

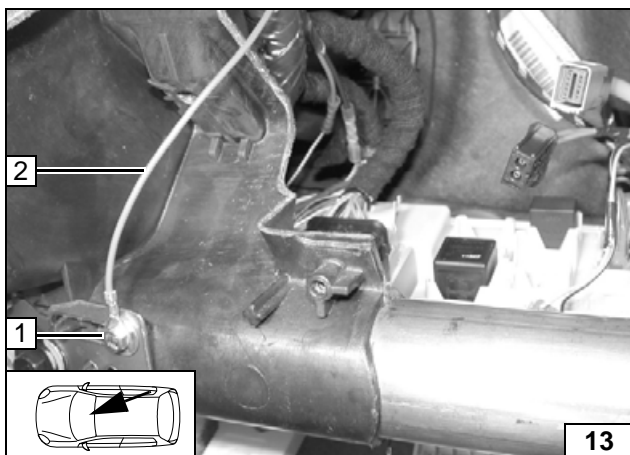


Make connections as shown in wiring diagram with shrink connectors provided.

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

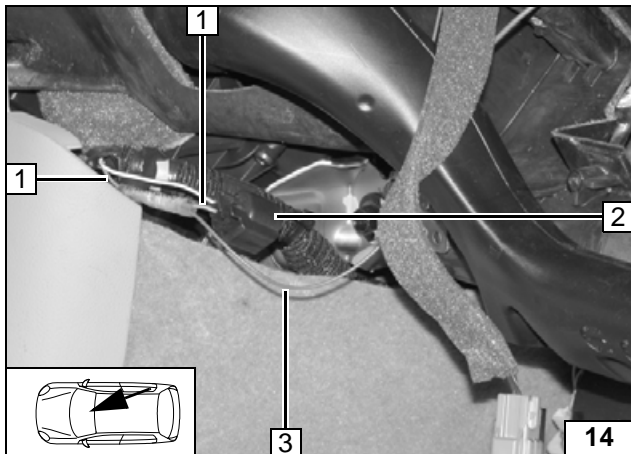


Connection of CEM



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

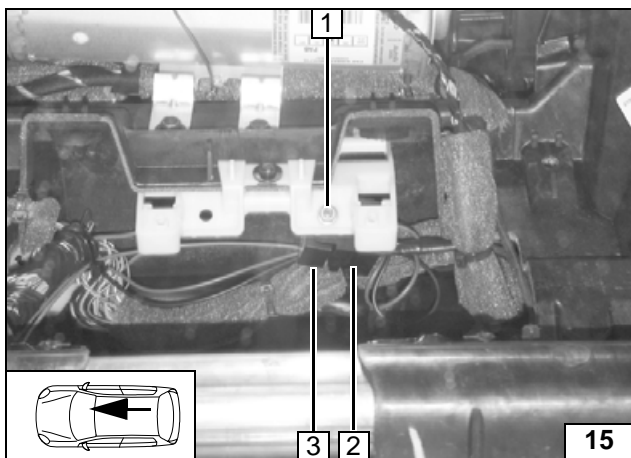
Connecting earth wire



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.

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

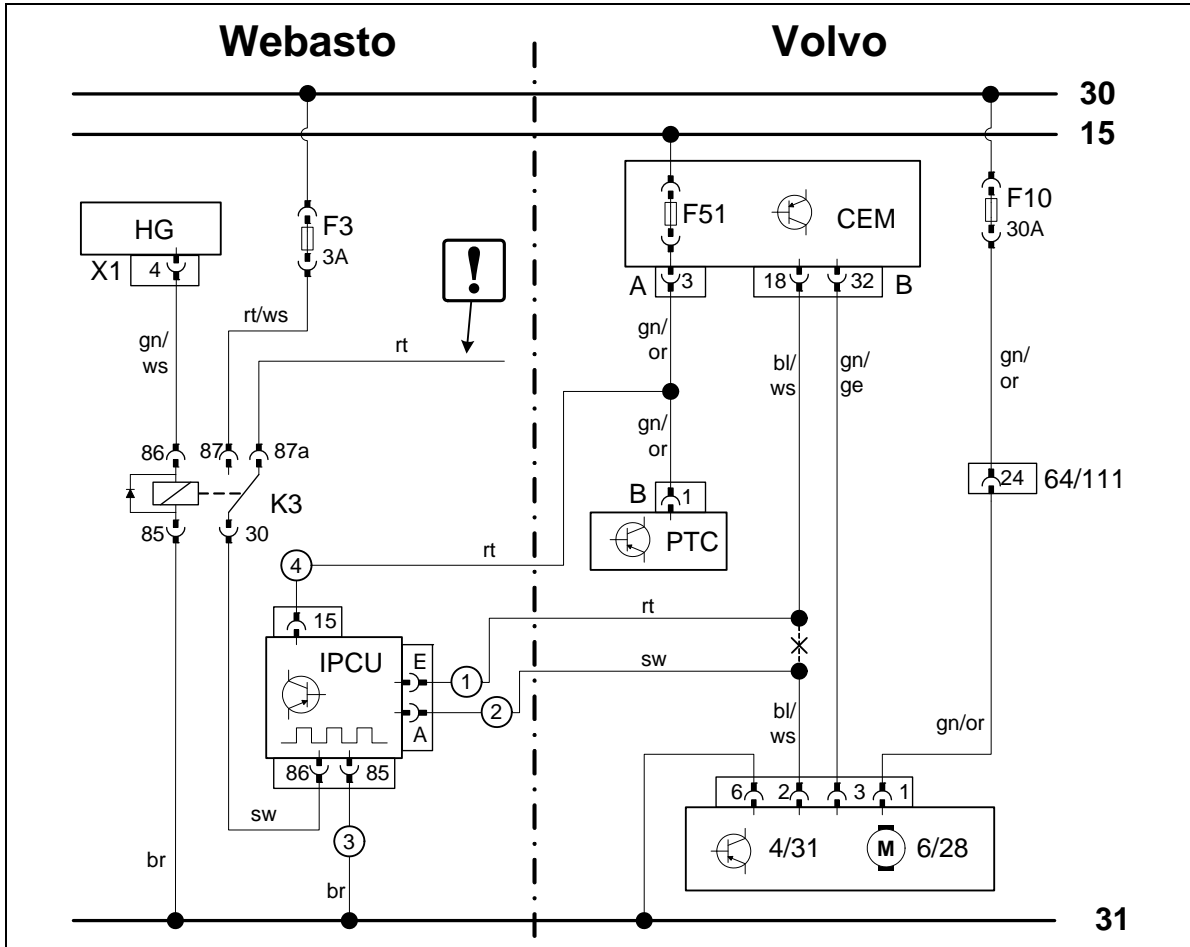
**Connect-
ing Termi-
nal 15**



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

- 1 M5x12 bolt, flanged nut in existing hole
- 2 IPCU socket
- 3 Connect IPCU

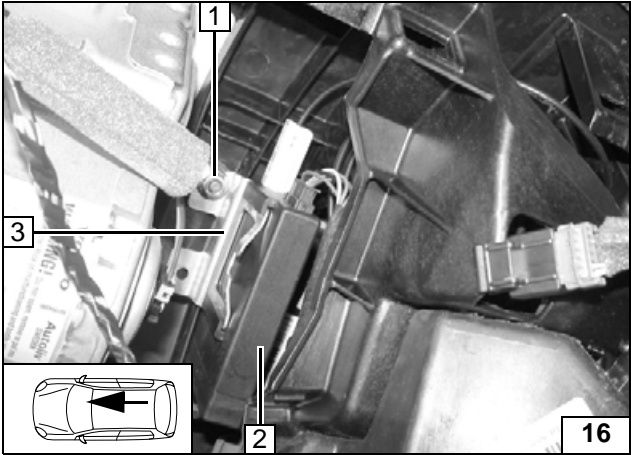
**Installing
IPCU**



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
IPCU	Pulse width modulator	CEM	Central Electrical Module	gn	green
		A	Connector on CEM	or	orange
		B	Connector on CEM	bl	blue
				ge	yellow
IPCU 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



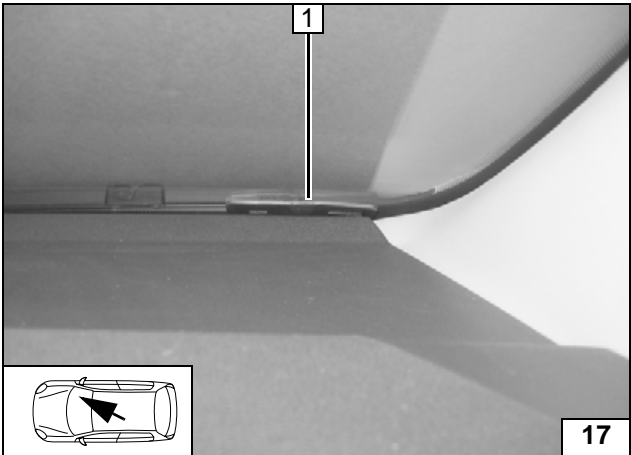
Remote option (Telestart)

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

- 2 Receiver
- 3 Bracket
- 1 M6 flanged nut

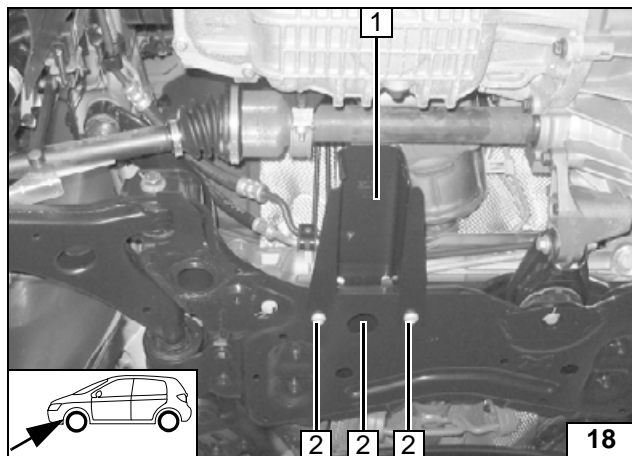
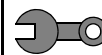


Installing receiver



- 1 Antenna

Installing antenna



Preparing installation location

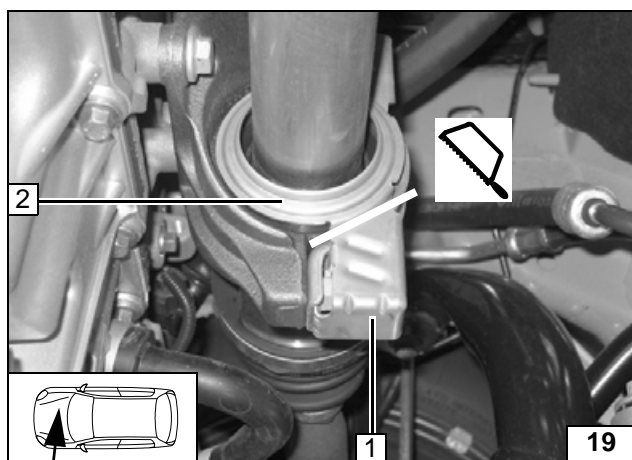
All vehicles

Cross member is dependent on vehicle equipment.

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



Removing cross member

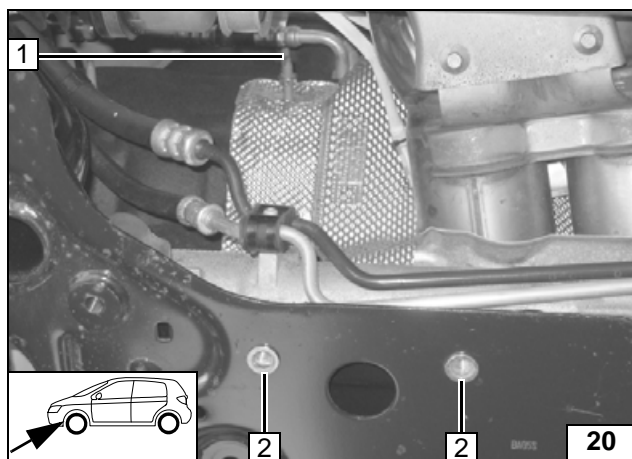


Design of guard plate 2 depends on vehicle equipment.

- 1 Remove section and discard
- 2 Guard plate



Adapting guard plate



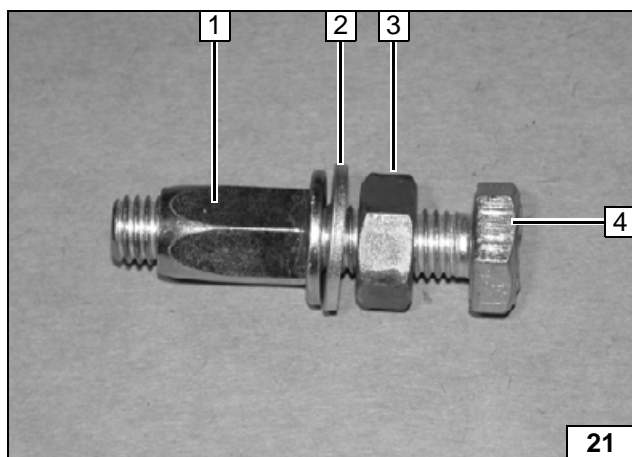
If threaded inserts are not present at position 1, then mount M10 rivet nuts provided in hexagon holes.

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]

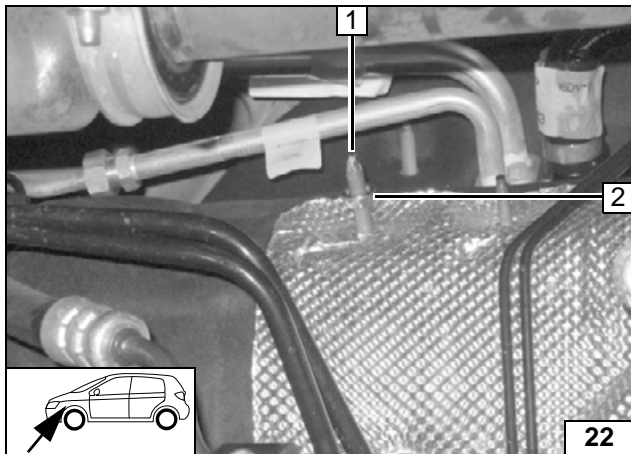


Installing rivet nut



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

Alternative rivet-down tool

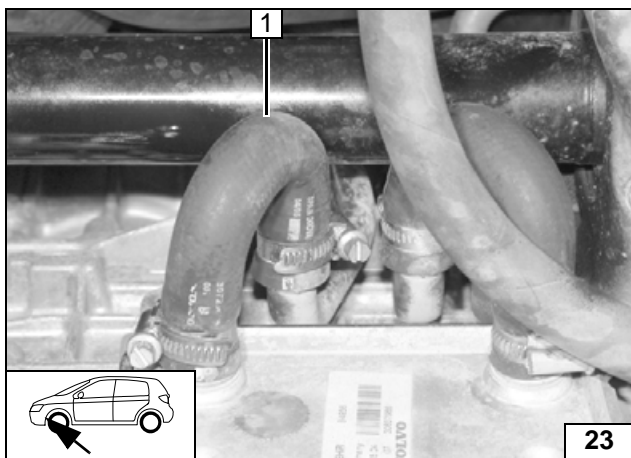


Screw on flanged nut with flange toward front.

- 1 Original vehicle stud bolt (23/1)
- 2 M8 flanged nut



Preparing installation location

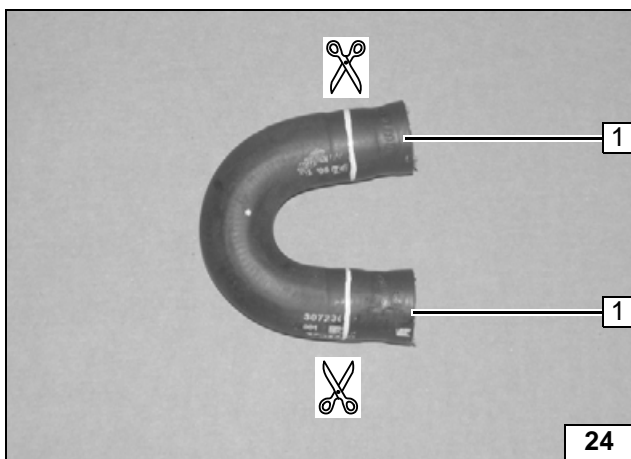


Only 2.4l for S40, V50, C70

- 1 Coolant hose to heat exchanger behind oil pan

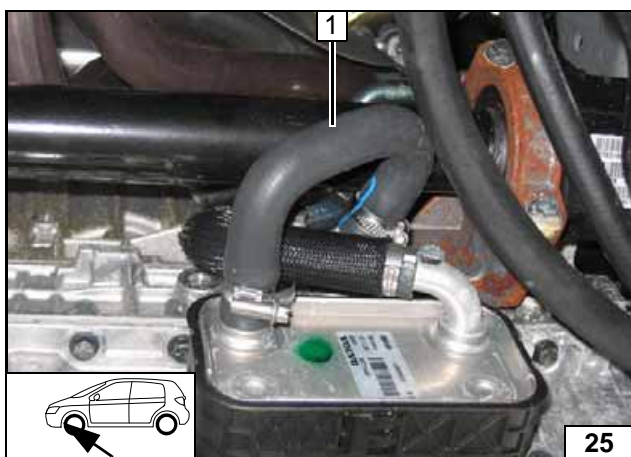


Removing hose



- 1 Discard cut-off section [2x]

Shortening hose

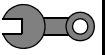


Only 2.4l for C30

- 1 Coolant hose to heat exchanger behind oil pan

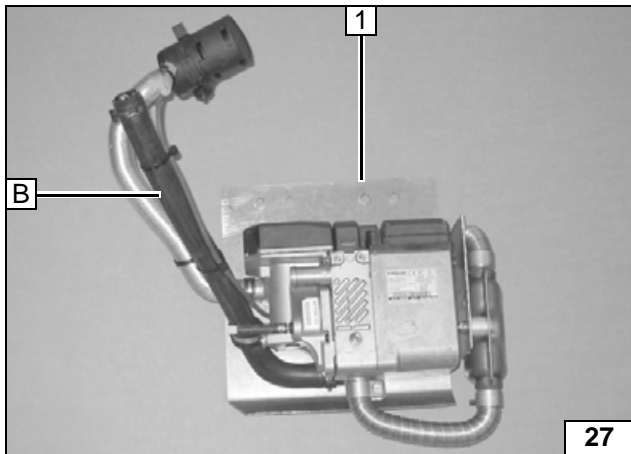


Removing hose



1 Discard cut-off section [2x]

Shortening hose



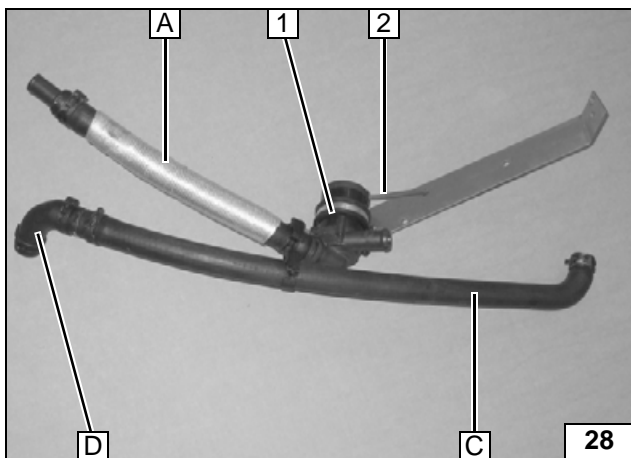
Premounting heater

Only 1.6l; 1.8l and 2.0l

- 1 Delivered heater assembly

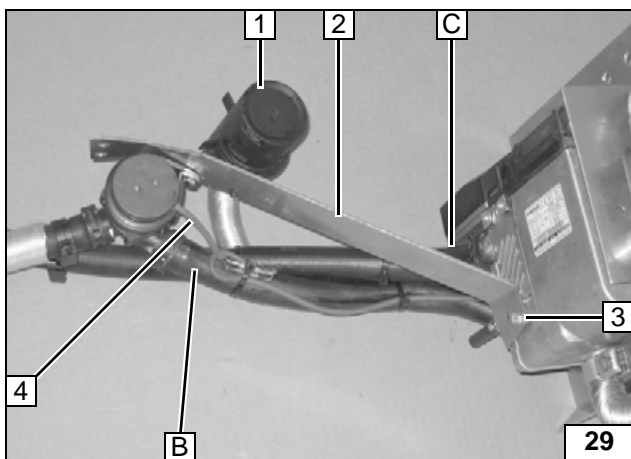


Heater assembly



- 1 Delivered coolant assembly
- 2 Remove connecting cable of circulating pump and discard

Coolant assembly

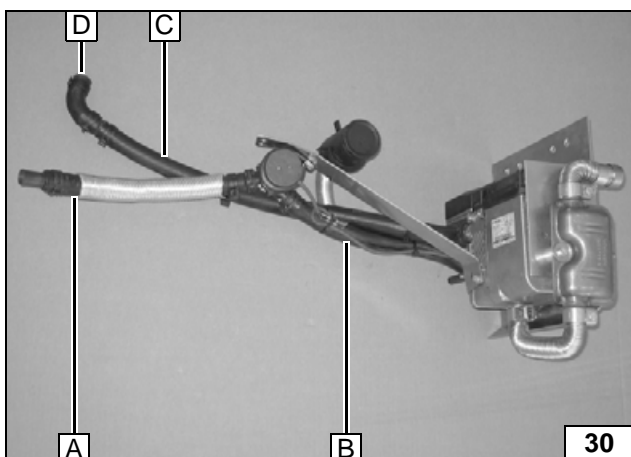


The hole in the corner of the strut 2 is used at position 3. Mount Ejet screw 3 loosely, so that strut 2 can be aligned during installation. Connect wiring harness 4 to circulating pump.

- 1 Retaining clip with intake silencer engaged in hole



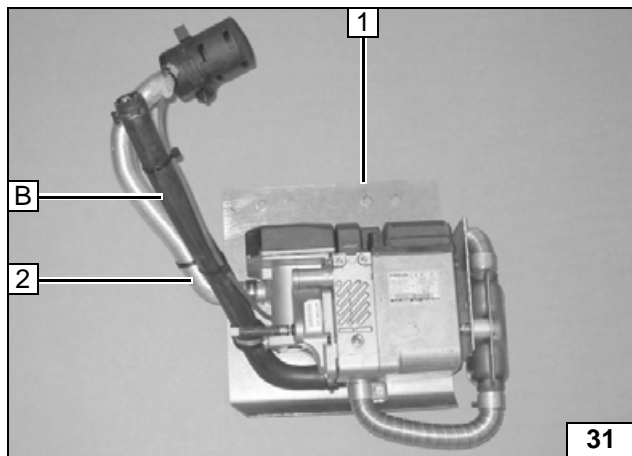
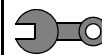
Connecting assemblies



General view
Fix hoses B and C and wiring harness of circulating pump in place with cable ties.



Connecting assemblies



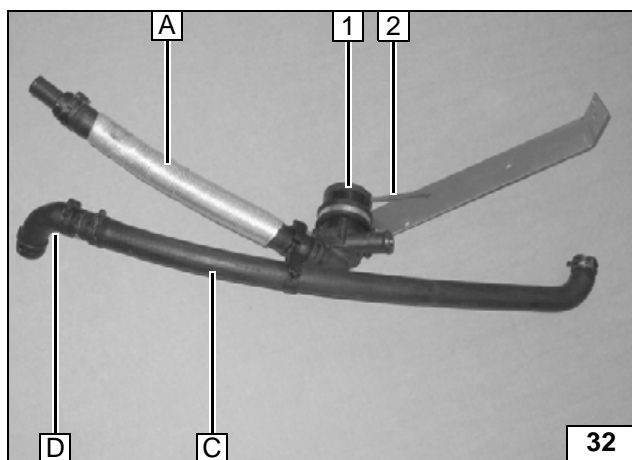
2.4l only

Disconnect combustion air pipe 2 from heater. Spring clip will be reused.

1 Delivered heater assembly

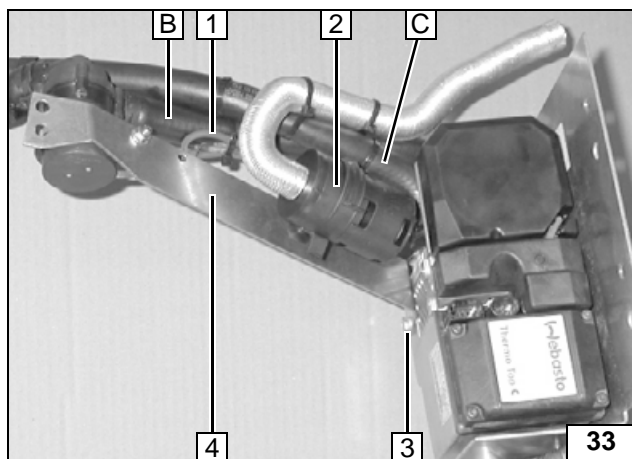


Discon-necting combustion air pipe



1 Delivered coolant assembly
2 Remove connecting cable of circulating pump and discard

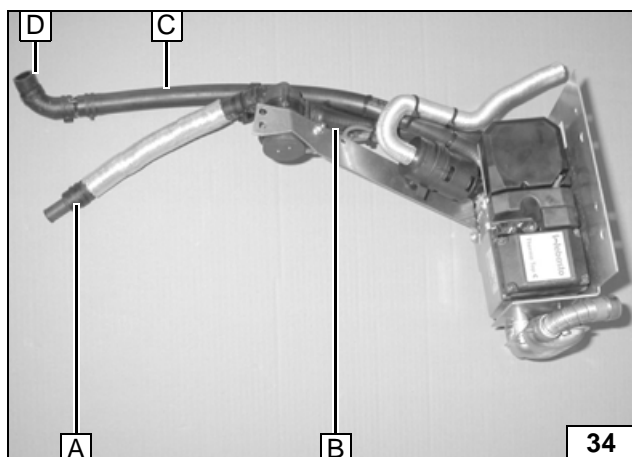
Coolant assembly



The hole in the corner of the strut is used at position 3. Mount Ejet screw 3 loosely, so that strut 4 can be aligned during installation. Combustion air pipe is not fastened on heater until later. Connect wiring harness 1 to circulating pump.

2 Retaining clip with intake silencer engaged in hole

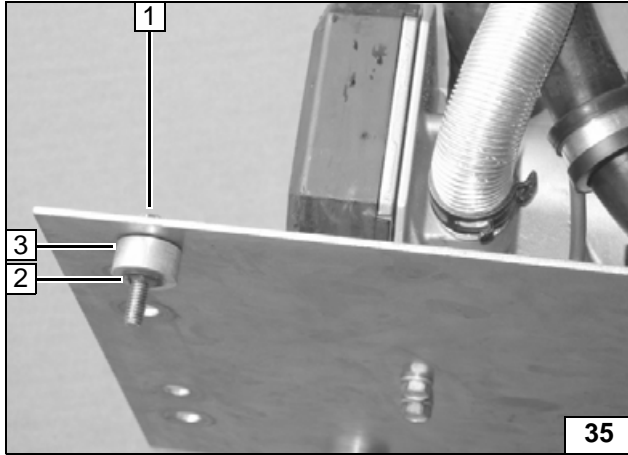
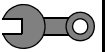
Connect-ing as-semblies



General view
Fix hoses B and C as well as wiring harness of circulating pump and combustion air pipe in place with cable ties.

Connect-ing as-semblies



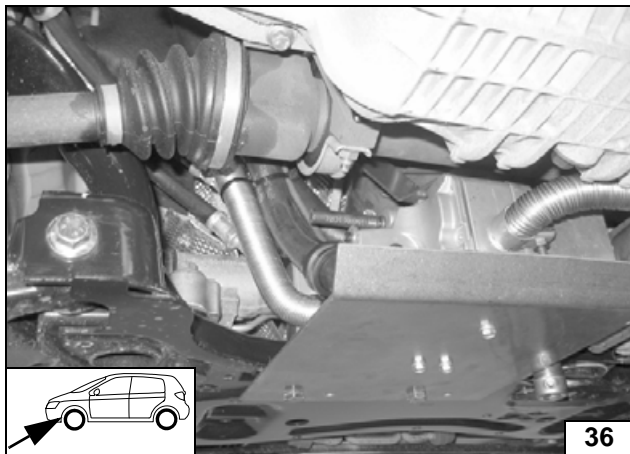
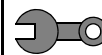


Premount fastener for underride protection, for 1.8l and 2.0l only



- 1 M6x25 bolt in existing 7 mm dia. hole
- 3 10 mm shim
- 2 Pin lock

Premounting heater



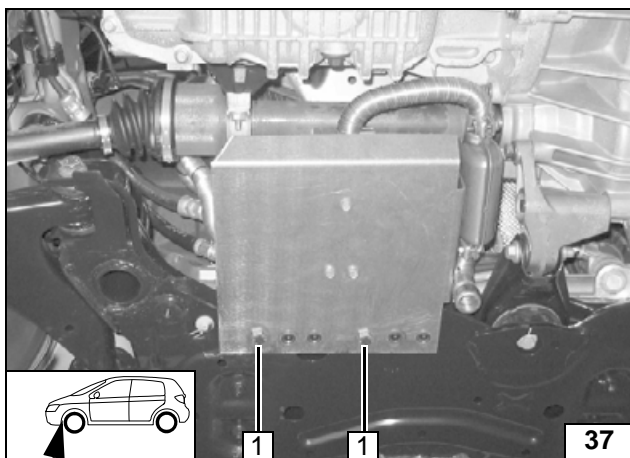
Installing heater

1.6l only

Guide heater to installation location and connect wiring harness as shown.



Installing heater

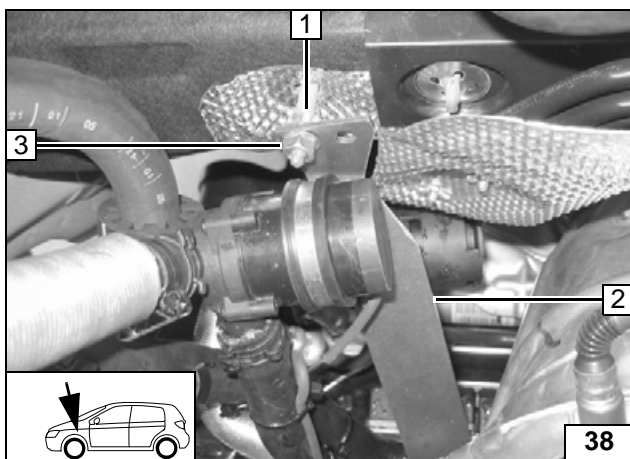


Use holes in bracket as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 1 Original M10x30 bolt [2x]



Installing heater



Use hole in strut as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

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



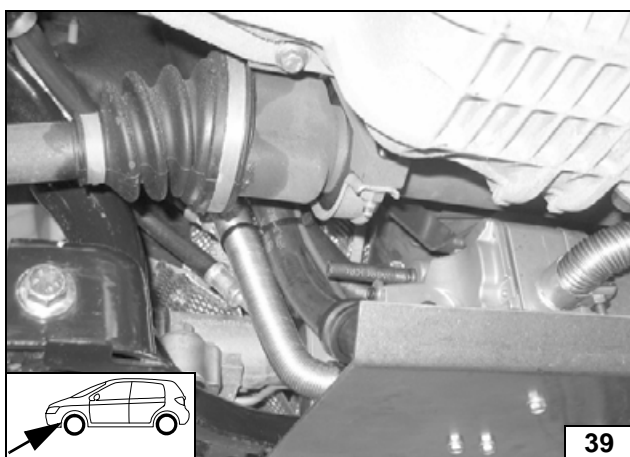
Installing heater

Tighten Eجت screw (29/3) (10 Nm).

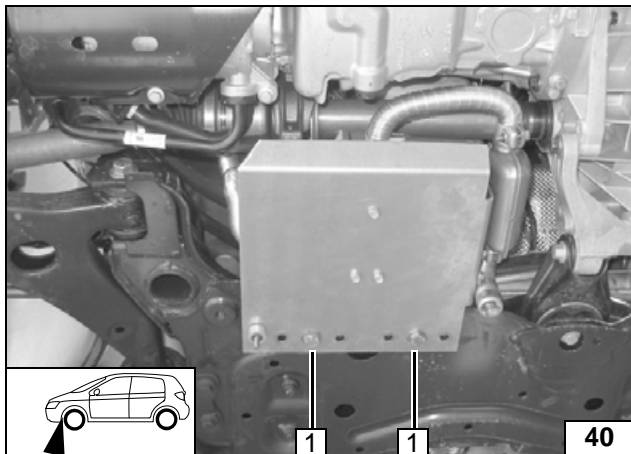
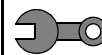


1.8l and 2.0l only

Guide heater to installation location and connect wiring harness as shown.



Installing heater

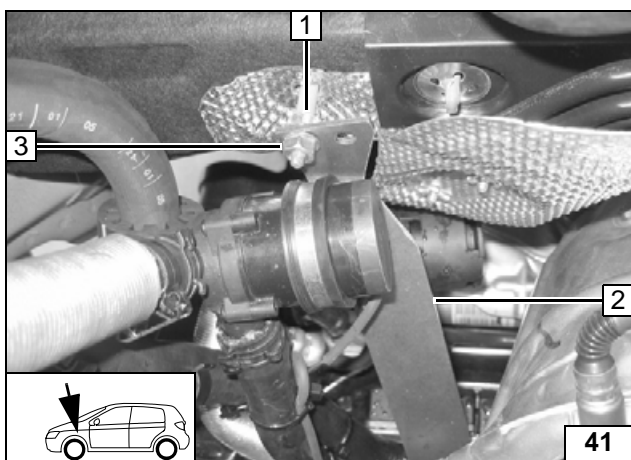


Use holes in bracket as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 1 Original M10x30 bolt [2x]



Installing heater

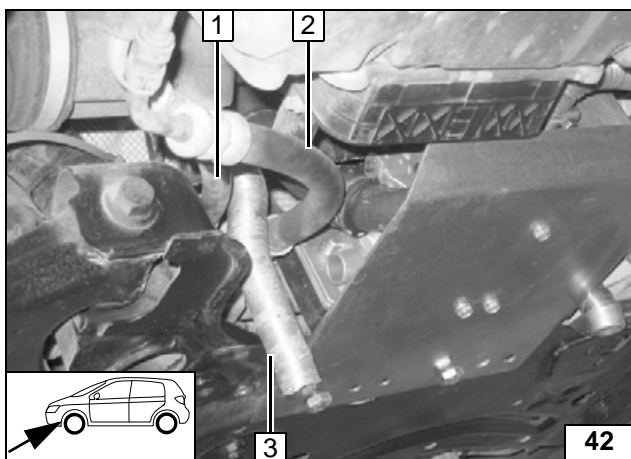


Use hole in strut as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

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



Installing heater



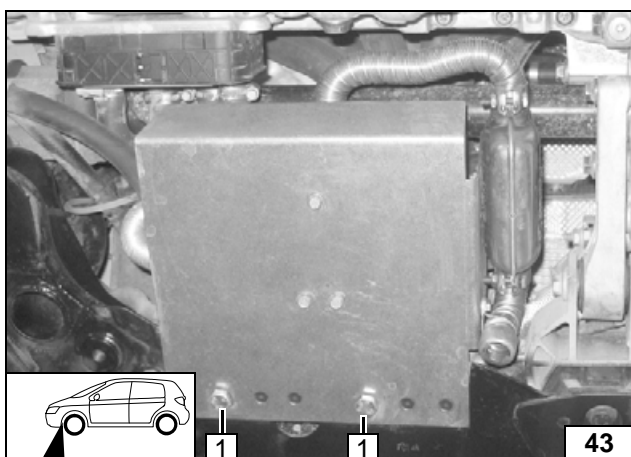
Tighten Eject screw (29/3) (10 Nm).

2.4l only

Guide heater to installation location and connect wiring harness as shown. Route combustion air pipe (3) between original vehicle lines (1, 2) as shown.



Installing heater

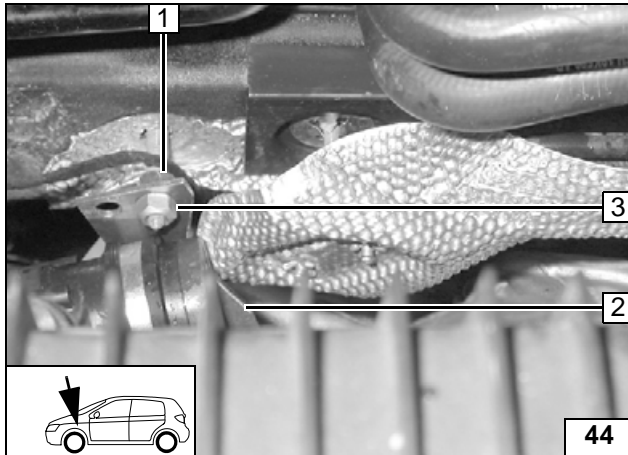
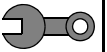


Use holes in bracket as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 1 Original M10x30 bolt [2x]



Installing heater



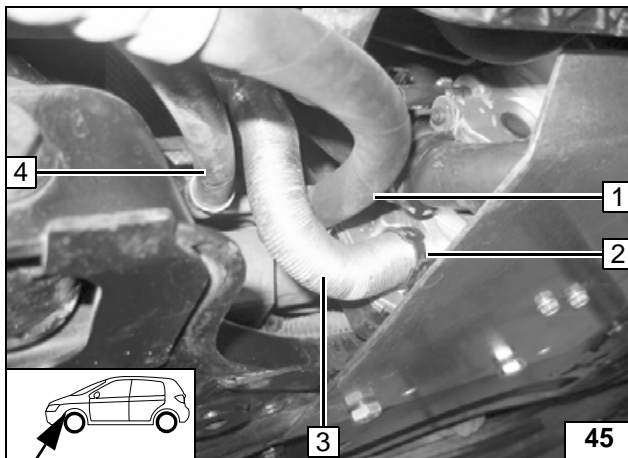
44

Use hole in strut as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

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



Installing heater



45

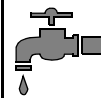
Tighten Eject screw (36/2) (10 Nm).

Align combustion air pipe centred between lines 4 and 1 as shown. Check position of all components and adjust if necessary. Check that they have freedom of movement.

- 3 Combustion air pipe
- 2 25 mm dia. spring clip
- 1 Original vehicle line
- 4 Original vehicle line



Connect-
ing com-
bustion air
pipe

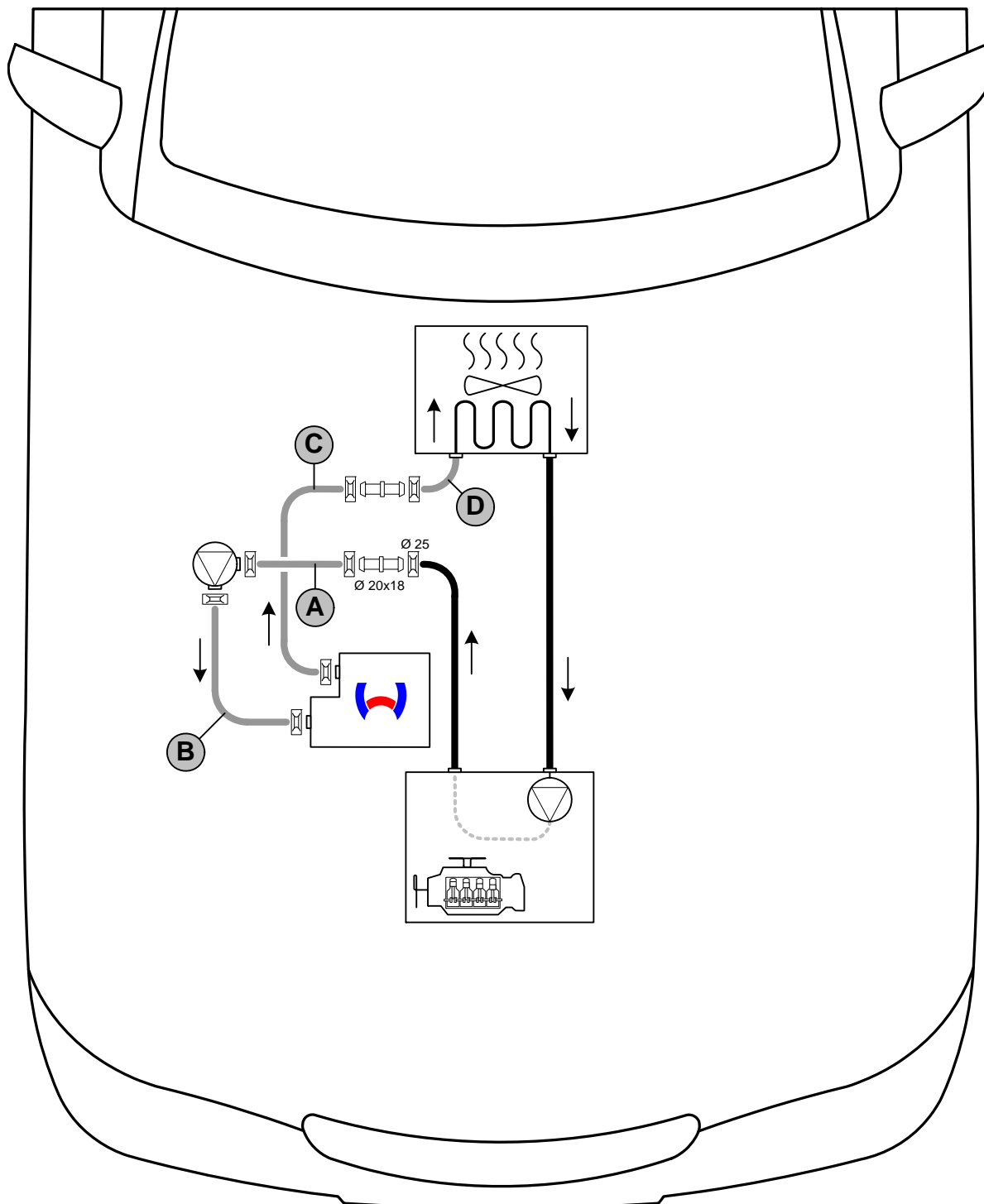


Coolant circuit





WARNING!

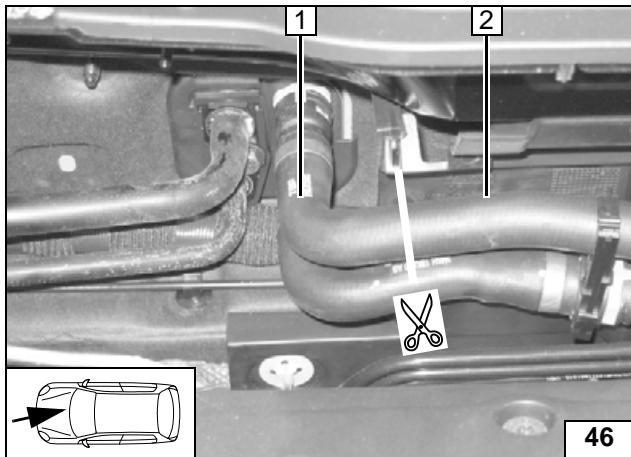
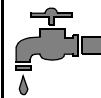
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged. When installing the hoses, the heater must be filled with coolant. The connection should be "inline" based on the following diagram:



Hose routing diagram

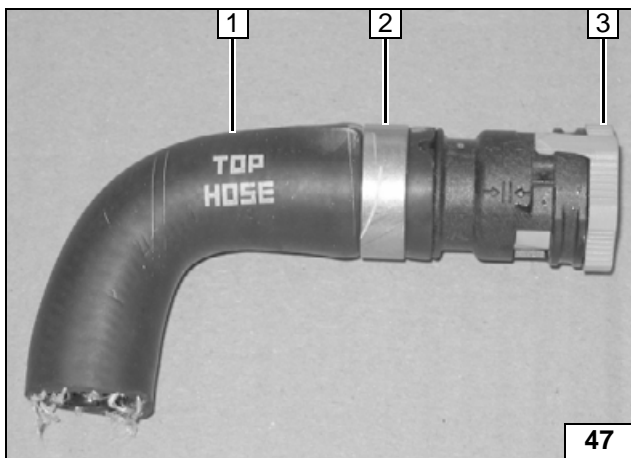
All spring clips without a specific designation  = 27mm dia.
Connecting pipes without a specific designation  = 20x20mm dia.





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

Cutting point

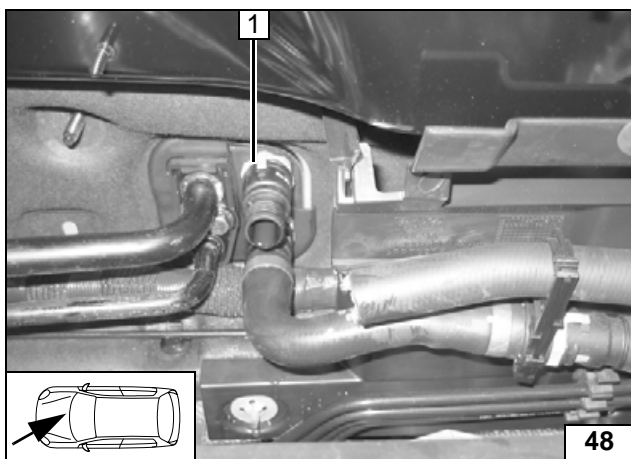


Remove connection piece according to manufacturer's instructions. Locking device 3 must be turned counterclockwise for this purpose.

- 2 Carefully saw open clamp
- 1 Discard hose

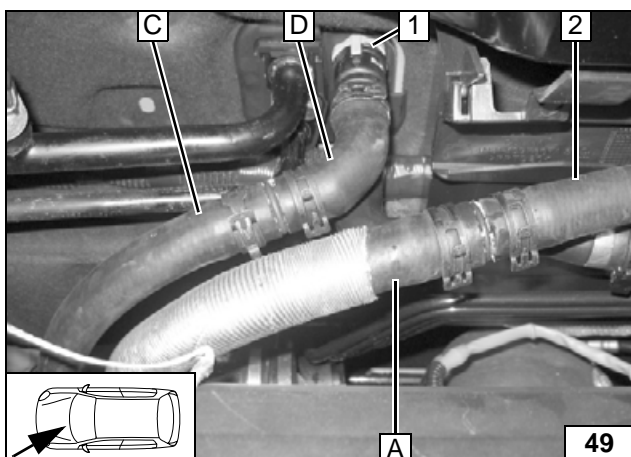


Preparing coolant



- 1 Connection piece of heat exchanger inlet mounted and locked

Preparing coolant



Before connecting, fill the water hoses with coolant.

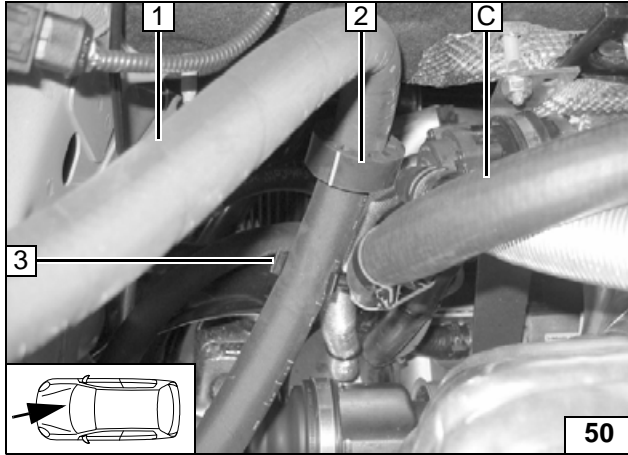
- 1 Connection piece of heat exchanger inlet
- 2 Engine outlet hose section



Connecting hoses

Check routing of hoses and correct if necessary. Fasten wiring harness of heater to coolant hoses with cable tie.





A/C line is dependent on vehicle equipment!

- 1 Original vehicle A/C line
- 2 Original vehicle rubber profile positioned on circulating pump
- 3 27x27 spacer on A/C line and hose C



**Fastening
on A/C line**



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.

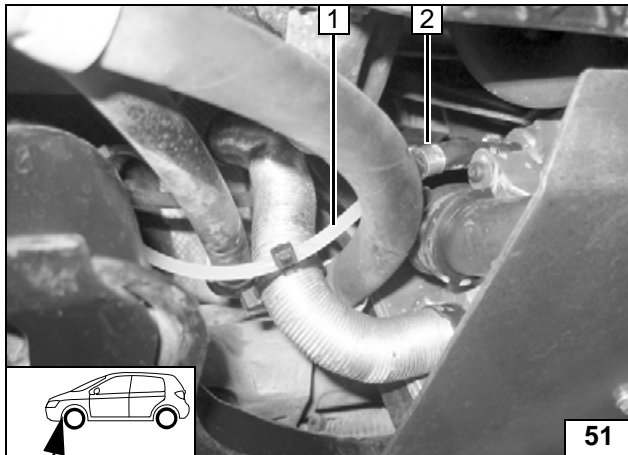
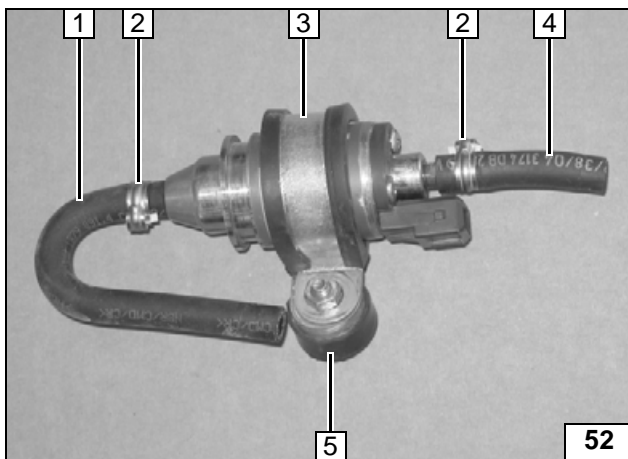
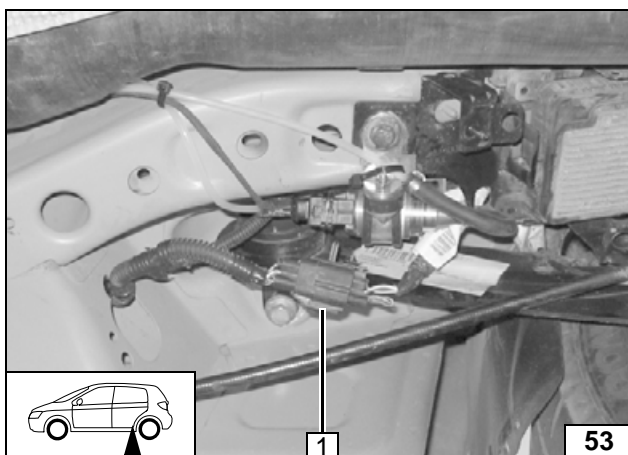


Figure shows 2.4l.

- 1 Mecanyl fuel line
- 2 10 mm dia. Caillau clamp



- 1 180° moulded hose
- 2 10 mm dia. Caillau clamp [2x]
- 3 Rubber-coated pipe clamp
- 4 Hose section
- 5 Silent block, flanged nut



Installation location on right next to vehicle fuel tank. Figure shows 2.4l.

- 1 Connector unlocked



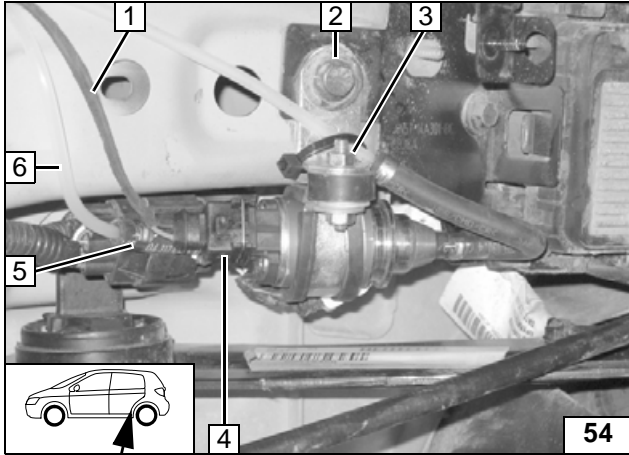
**Conne-
ction on
heater**



**Premount-
ing meter-
ing pump**



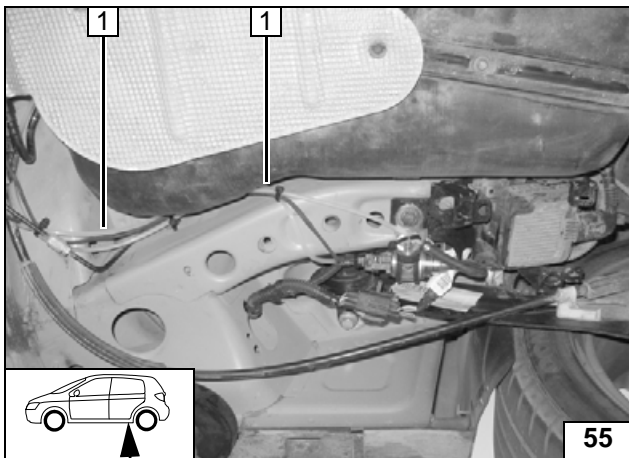
**Installa-
tion loca-
tion of
metering
pump**



Route fuel line and wiring harness as shown in following figure. Fuel line to heater on pressure side of metering pump [side with connector]. Bolt 2 dependent on vehicle equipment.

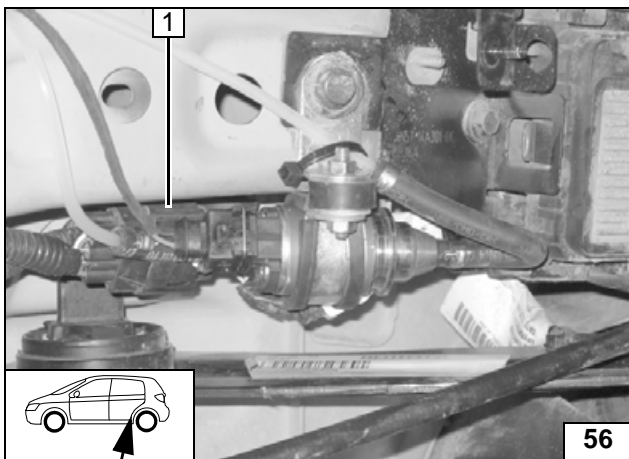
- 1 Metering pump wiring harness
- 2 Angle bracket, M8x20 bolt, spring lock-washer, washer or existing bolt
- 3 Flanged nut
- 4 Completed connector housing
- 5 10 mm dia. Caillau clamp
- 6 Mecanyl fuel line

Installing metering pump



- 1 Mecanyl fuel line and metering pump wiring harness

Wiring routing

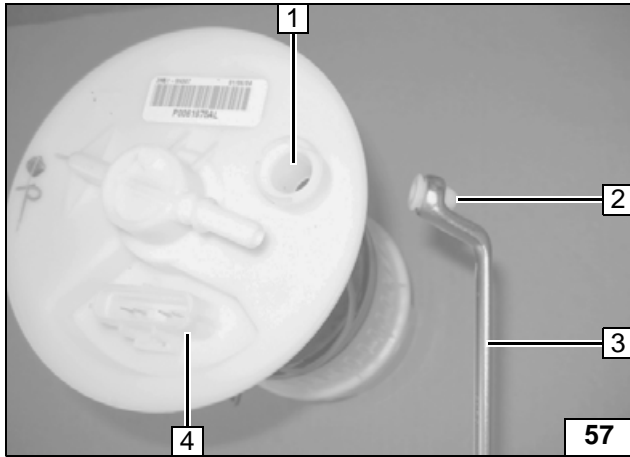


Fasten connector 1, 56/1 with cable ties

- 1 Connector

Fastening connector



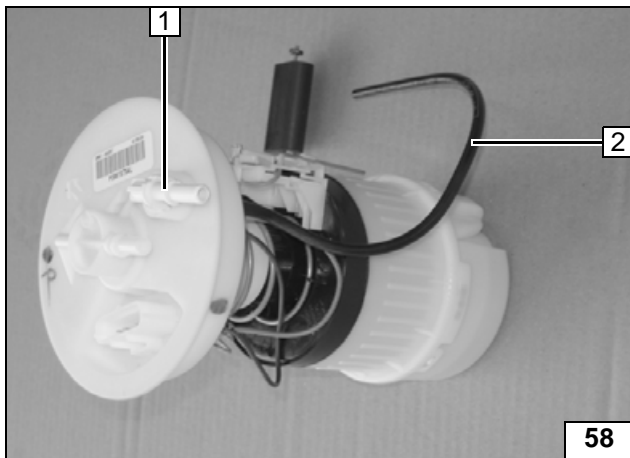


Removing fuel

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



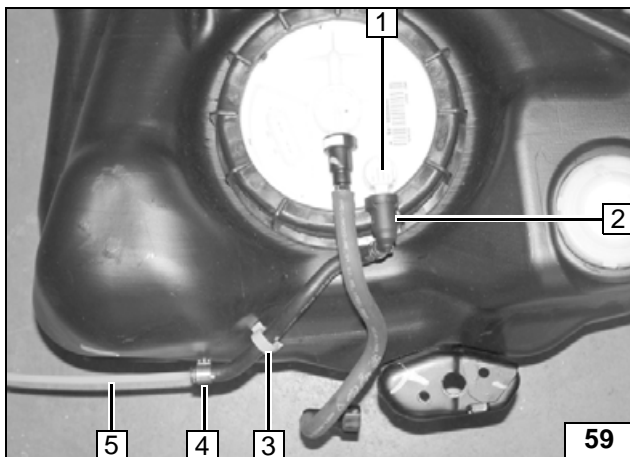
Install fuel standpipe (Volvo Order No. 30742055) according to manufacturer's instructions.

- 1 Fuel standpipe
- 2 Removal hose



Installing fuel standpipe

Align removal hose up to bottom of fuel tank. Ensure freedom of movement of fuel gauge.

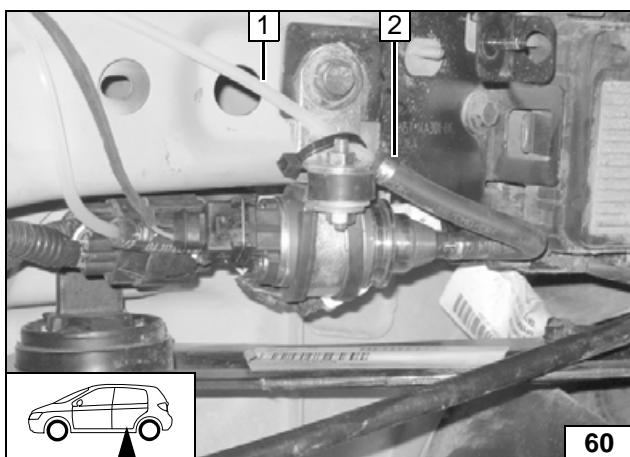


Install fuel-tank sending unit according to manufacturer's instructions. Mount coupling and align; remove clip at Position 3.

- 1 Fuel standpipe
- 2 Coupling piece, mounted on fuel standpipe
- 5 Mecanyl fuel line
- 4 10 mm dia. Caillau clamp
- 3 Clip

Connecting fuel line

Reinstall fuel tank.



Fuel line from fuel standpipe on intake side of metering pump [side without connector].

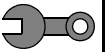
- 1 Fuel line
- 2 10 mm dia. Caillau clamp

Connection to metering pump

Check the position of the components; adjust if necessary. Check that they have freedom of movement.

Align fuel lines and wiring harness of metering pump over entire length and secure with cable ties



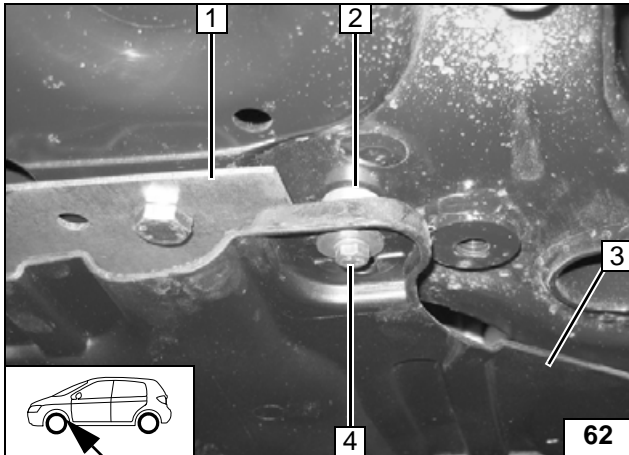


Mounting underdrive protection

Underdrive protection is dependent on vehicle equipment. Cut out underdrive protection as shown.



Cutting out underdrive protection

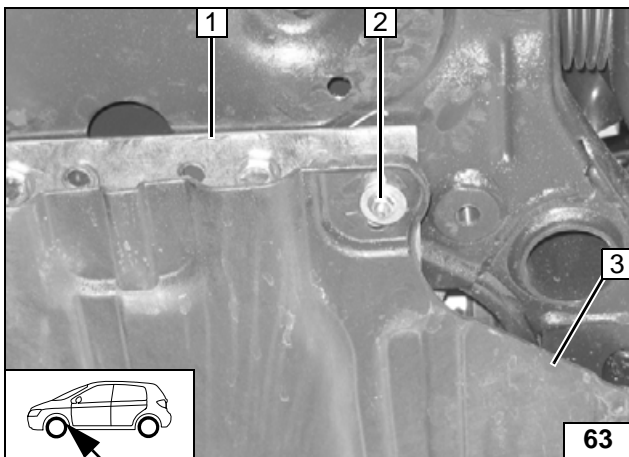


Remove plastic threaded insert at Pos. 2. Drill out hole to 9 mm dia. and insert M6 rivet nut.



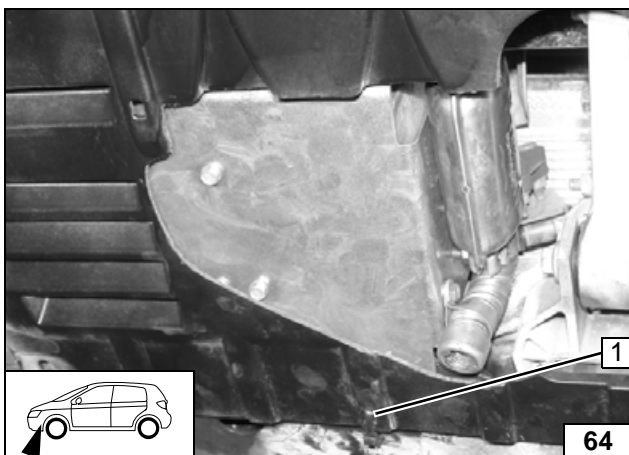
- 1 Bracket of heater
- 2 M6 rivet nut, 10 mm shim
- 3 Underdrive protection
- 4 M6x40 bolt, spring lockwasher, large diameter washer

Installing underdrive protection for 1.6l and 2.4l



- 1 Bracket of heater
- 2 Pre-mounted bolt, large diameter washer, M6 flanged nut
- 3 Underdrive protection

Installing underdrive protection for 1.8l and 2.0l

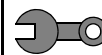


Ensure sufficient distance from heater exhaust system. Rework cut-out if necessary. Fasten underdrive protection with cable tie at Position 1.



Figure shows 2.4l.

Installing underdrive protection for all vehicles.



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 Teletstart 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**



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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.

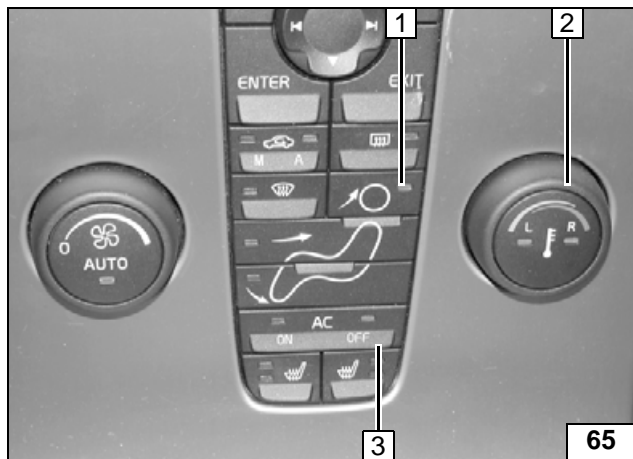
Heating time = driving time

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