

Water heater



Thermo Top E Parking Heater


00 0003

Thermo Top C Parking Heater


00 0002

Thermo Top P Parking Heater


00 0104

Installation documentation

Toyota RAV 4

Diesel

from Model Year 2006

For left-hand drive vehicles only

Manual air-conditioning, automatic air-conditioning

Manual transmission, automatic transmission

2WD, 4WD



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
Toyota	RAV 4	X3A (a)	e6 * 2001 / 116 * 0105 * ...

Engine type	Engine model	Output in kW	Displacement in cm ³
2AD-FTV	Diesel	100	2231
2AD-FTV	Diesel	110	2231
2AD-FHV	Diesel	110	2231
2AD-FHV	Diesel	130	2231

Vehicle and engine types and equipment variants not listed in these installation instructions have not been tested. However, installation according to these installation instructions 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	<i>Thermo Top E / C / P</i> retail accessories	See price list
1	Installation kit for Toyota RAV 4 Diesel	1310908C
1	Heater control	See price list

Heater recommended for the respective vehicle class:

Vehicle	Heater
Compact car	Thermo Top E
Mid-size car, station wagon	Thermo Top C
Full-size car, van, offroader	Thermo Top P

The selection of the heater is based on the passenger compartment size of the vehicle and the level of comfort required by the customer!



Foreword

These installation instructions apply to vehicles Toyota RAV 4 with Diesel engine - for validity, see page 2 - from model year 2006 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 these installation instructions.

However, the stipulations in these "installation instructions" and "operating and maintenance instructions" for the *Thermo Top C/P/E* 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.

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).

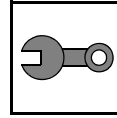
Special Tools

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

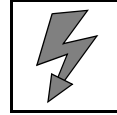
Explanatory Notes on Document

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.

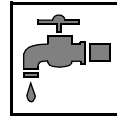
Mechanical system



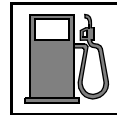
Electrical system



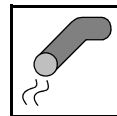
Coolant circuit



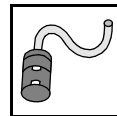
Fuel



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.



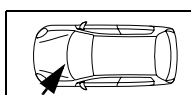
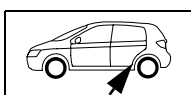
Specific risk of fire or explosion.



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



Reference to a special technical feature.



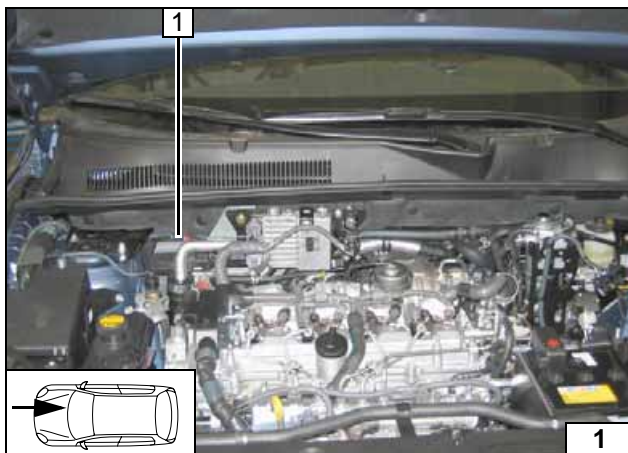
The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary Work

WARNING!

- 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 air filter together with the intake hose.
- Remove the coolant reservoir cap.
- Remove the coolant reservoir cap in the engine compartment.
- Remove the left-hand spring strut cover.
- Remove the entire windscreen wiper linkage.
- Open the fuel tank cap, ventilate the tank.
- Close the tank cap again.
- Remove the underride protection.
- Remove the lower glove compartment cover (with Telestart and manual A/C system)
- Remove the glove compartment (with Telestart and manual A/C system)
- Remove the side trim in the footwell on the right of the centre console (with Telestart or manual A/C system)
- Remove the lower cover of the instrument panel on the driver's side (with automatic A/C system).
- Remove the side trim of the centre console in the footwell on the left (with automatic A/C system).
- Detach the AC booster from the centre console (with automatic air-conditioning).

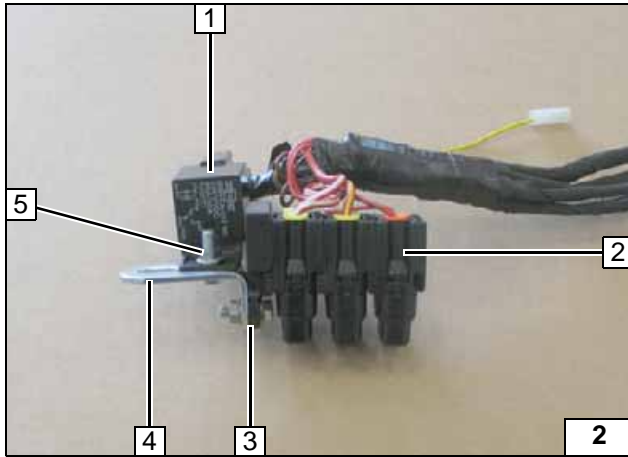
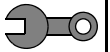
Remove page 25 "Operating Instructions for End Customer" and add to the vehicle operating instructions.



Heater installation location

1 Heater

Installation location



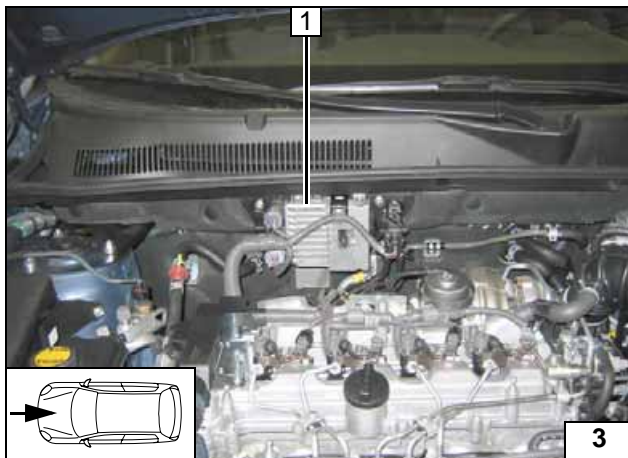
Preparing installation location

Premount wiring harness as shown.
Replace 25A fuse F3 with 10 A fuse for automatic air-conditioning.

- 1 Fan relay K3
- 2 Fuse holder
- 3 M5x12 bolt, retaining plate for fuse holder, washer, flanged nut
- 4 Angle bracket
- 5 M5x12 bolt, washer, flanged nut

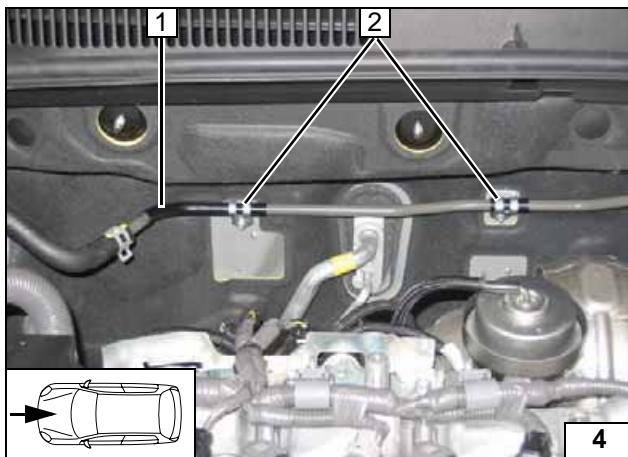


Preparing wiring harness of heater



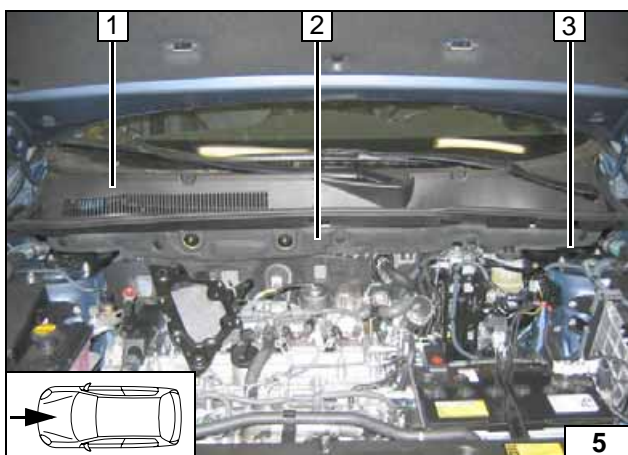
- 1 Remove control unit with bracket; some nuts will be reused

Preparing wiring harness of heater



- 1 Remove vacuum line
- 2 Remove clamps

Removing vacuum line



- 1 Remove coolant reservoir cap
- 2 Remove front section of coolant reservoir
- 3 Remove plate over strut tower on left

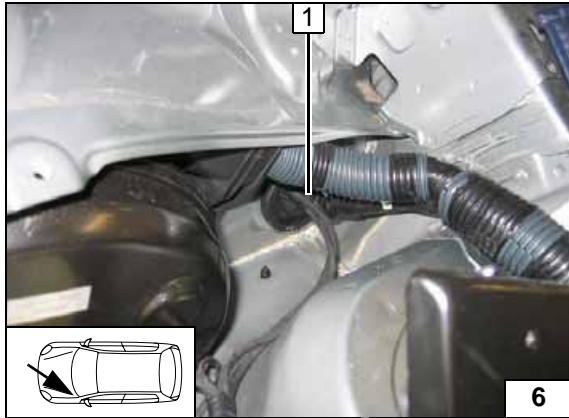
Remove the coolant reservoir.



Electrical system

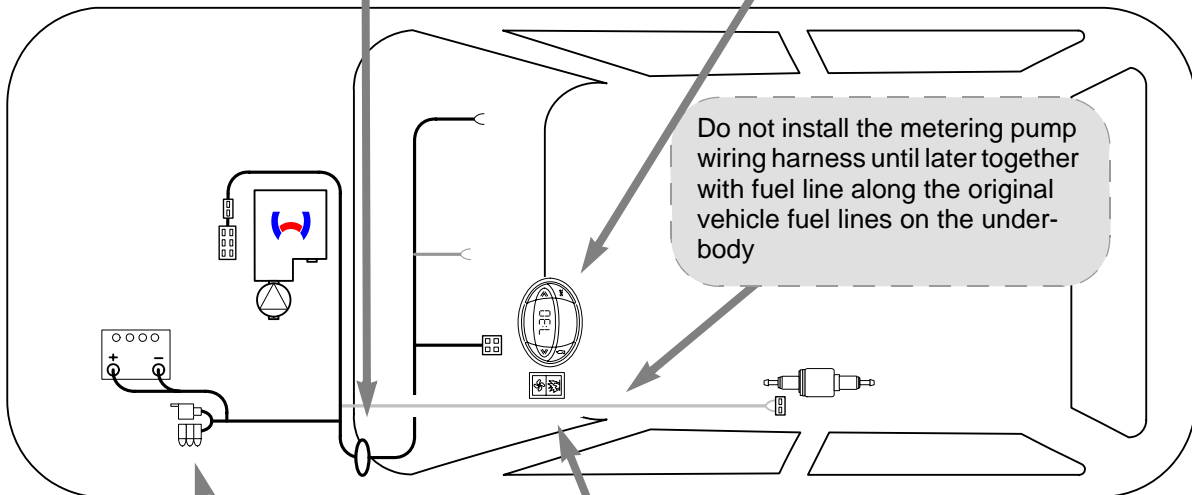
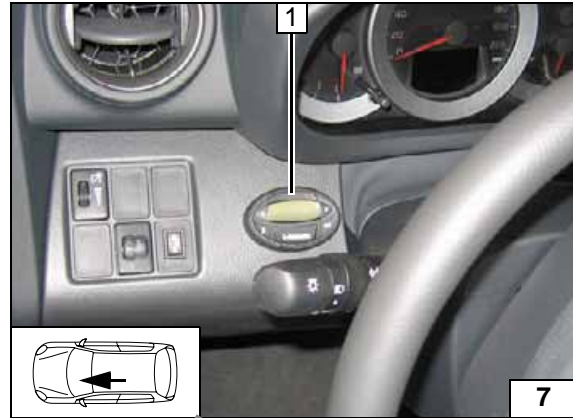
Wiring harness pass through

- 1 Protective rubber plug

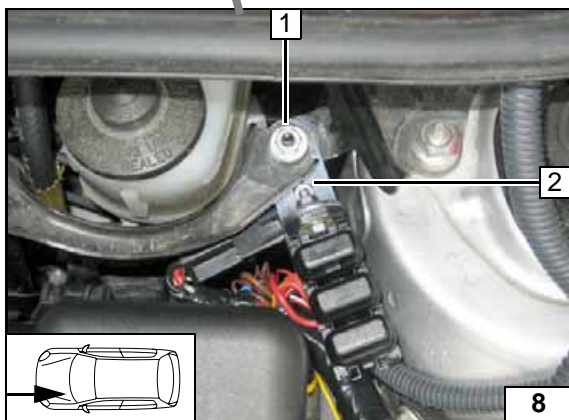


Digital timer

- 1 Digital timer



Wiring harness routing diagram



Fuse holder, K3 relay

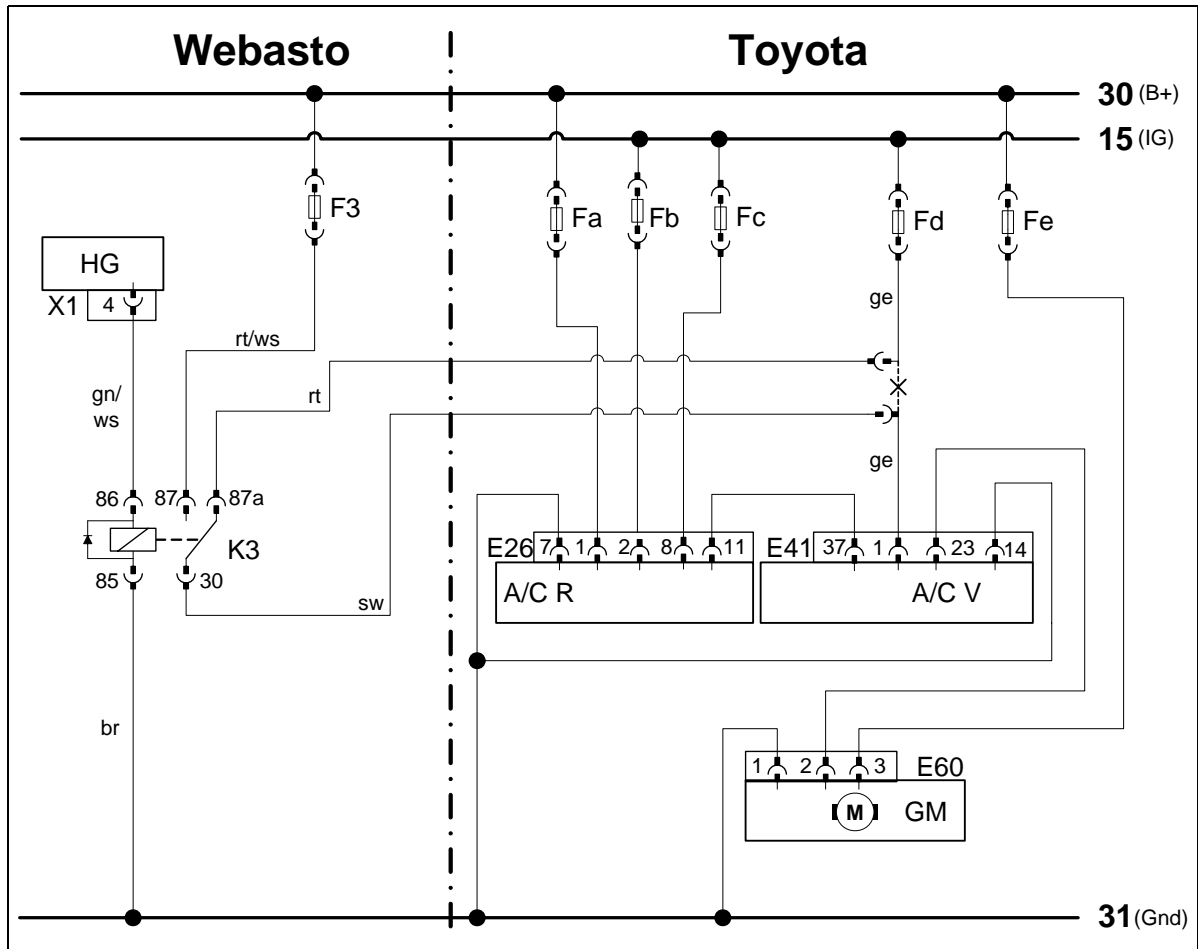
- 1 Original vehicle stud bolt
- 2 Premounted angle bracket, original vehicle bracket, M6 flanged nut

Summer/winter switch option

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



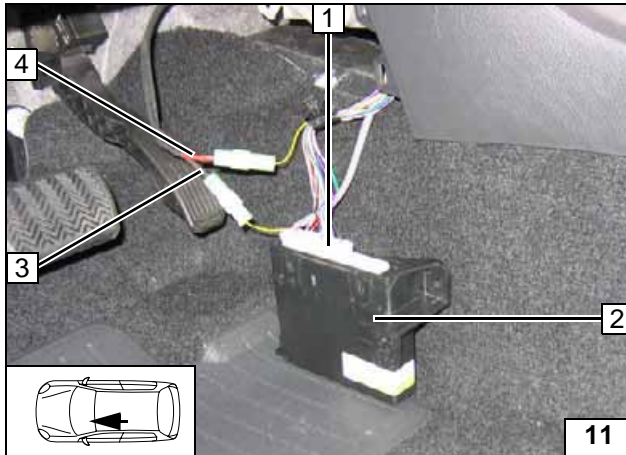
Automatic air-conditioning fan control



Automatic air-conditioning wiring diagram

Webasto components		Components Toyota RAV 4		Colours and symbols	
HG	Heater TT-C/E	GM	Fan motor	rt	red
X1	6-pin heater connector	A/C R	Controls (connection on Control and Panel Assembly)	ws	white
F3	Replace 25 A fuse with 10 A fuse	A/C V	A/C booster (AC amplifier)	sw	black
K3	Fan relay	E41	40-pin connector A/C V	br	brown
		E26	Connector A/C R	ge	yellow
		E60	Connector GM		
		Fa	10 A fuse ECU-B		
		Fb	10 A fuse ECU-IG1		
		Fc	7.5 A fuse ACC		
		FD	10 A fuse ECU-IG2		
		FE	50 A fuse HTR	X	Cutting point

Legend

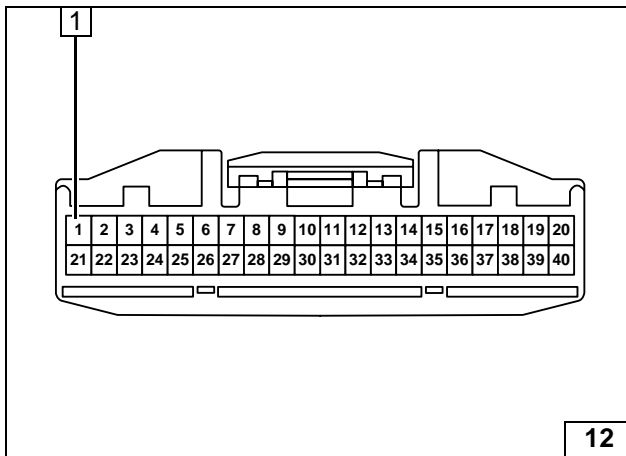


Connection on 40-pin white (ws) connector **E41** from AC booster.
Make connections as shown in wiring diagram with connectors provided.

- 1 Connector E41, Pin 1, yellow (ge) wire
- 2 AC booster
- 3 Black (sw) wire from K3/30
- 4 Red (rt) wire from K3/87a

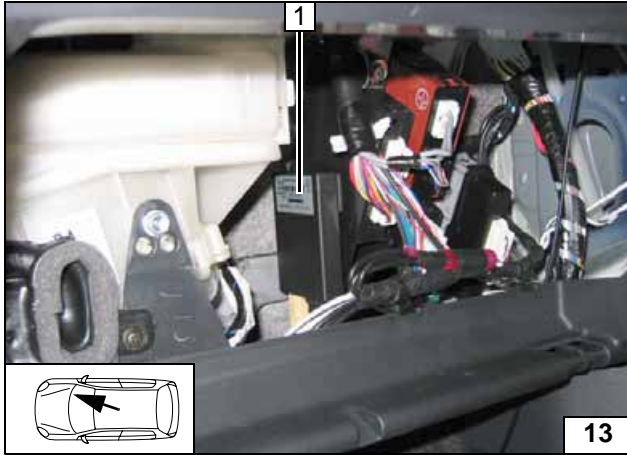


**Connect-
ing fan mo-
tor**



- 1 Connector E41, Pin 1

**Connector
E41 con-
tact side
(from front)**

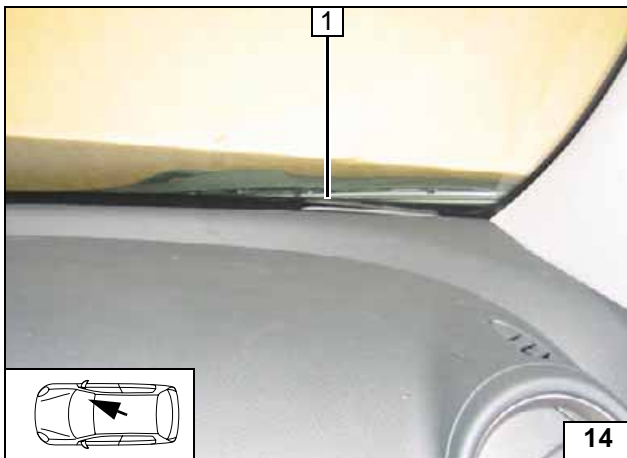


Remote option (Telestart)

Fasten receiver 1 with adhesive tape.



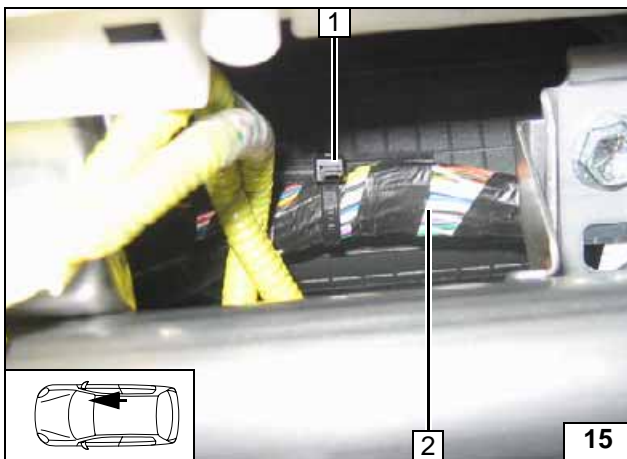
Installing receiver



Mount antenna 1 in the black area of the windshield.



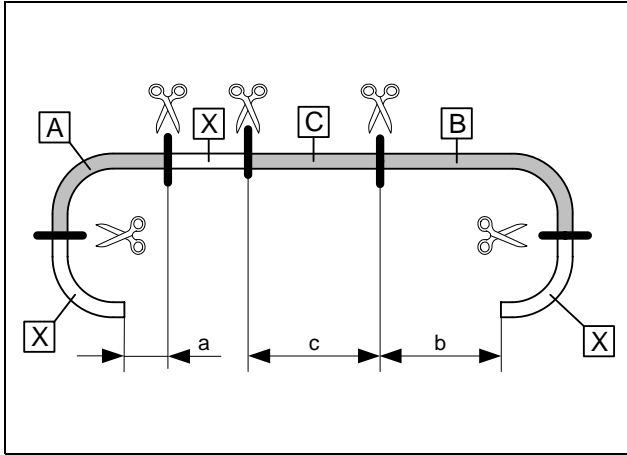
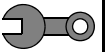
Installing antenna



Temperature sensor only with T100 HTM

- 1 Temperature sensor, cable tie
- 2 Original vehicle wiring harness behind glove compartment below ventilation duct on right

Installing temperature sensor

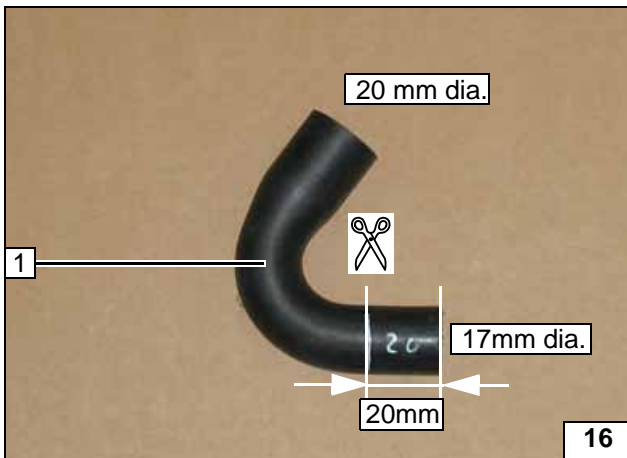


Preparing heater

a = 20mm
b = 430mm
c = 430 mm

Discard section X

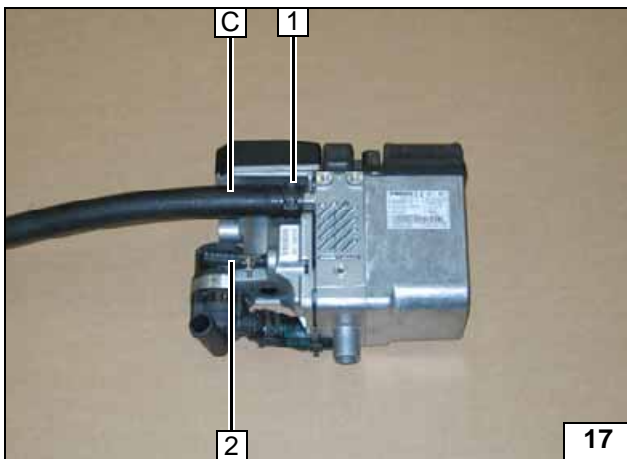
Cutting coolant hoses to length



1 Moulded hose D

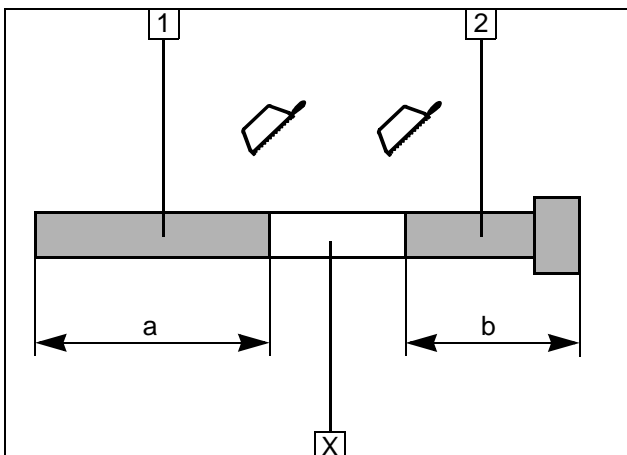


Shortening moulded hose



1 27 mm dia. spring clip
2 Hose section, 10 mm dia. hose clamp

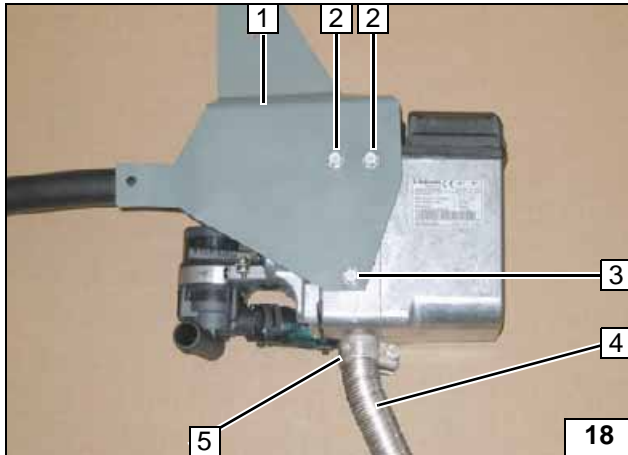
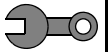
Premounting hose C



1 Exhaust pipe
a = 570mm
2 Exhaust end section
b = 310mm

Discard section X

Preparing exhaust pipe

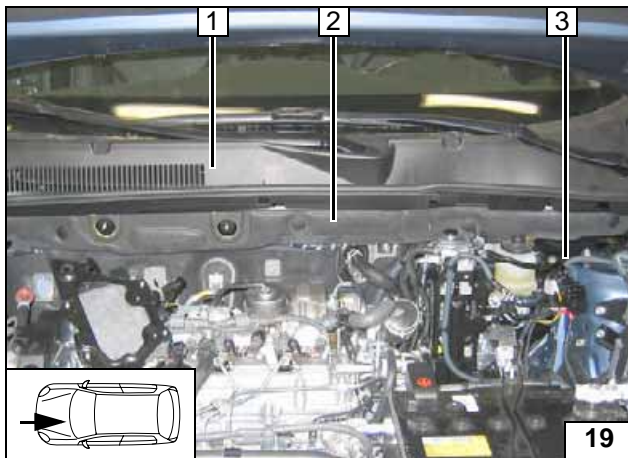


Ejot screws, tightening torque 10 Nm!
Insert three washers between heater and bracket 1 at position 3 and one washer each at position 2.

- 2 Ejot screw, washer [2x each]
- 3 Ejot screw, washer [3x]
- 4 Exhaust pipe
- 5 Hose clamp



Premounting bracket on heater



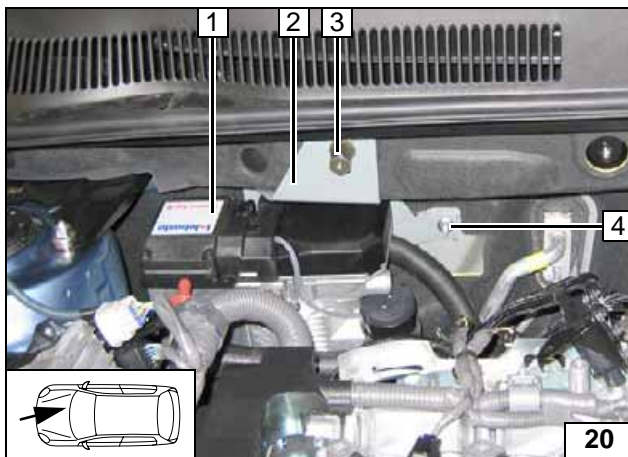
Installing heater

Before installing heater, remount cover of strut tower on left and front and upper coolant reservoir cap (incl. wiper linkage).

- 1 Upper section of coolant reservoir
- 2 Front section of coolant reservoir
- 3 Plate over strut tower on left



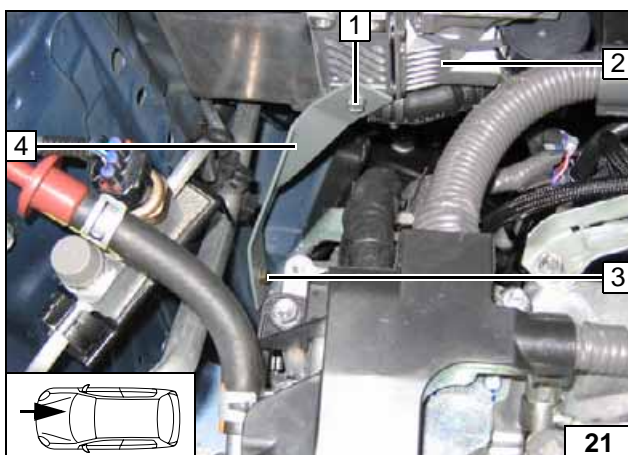
Preparing installation location



- 1 Heater
- 2 Bracket
- 3 Original vehicle stud bolt, large diameter washer, M6x20 spacer nut
- 4 Original vehicle stud bolt, original flanged nut



Installing heater



Ejot screws, tightening torque 10 Nm!

- 1 Ejot screw
- 2 Heater
- 3 Original vehicle threaded insert, M6x20 bolt, spring lockwasher
- 4 Strut



Installing strut



Fuel

CAUTION!

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

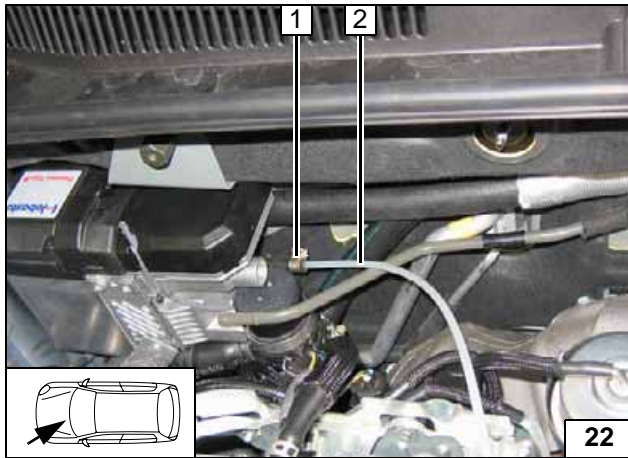
Catch any fuel running off with an appropriate container.

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.

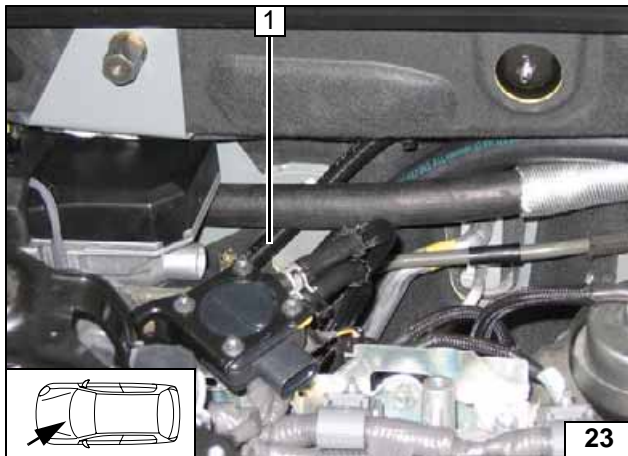
WARNING!

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



- 1 Hose section, 10 mm dia. hose clamp
- 2 Mecnyl fuel line

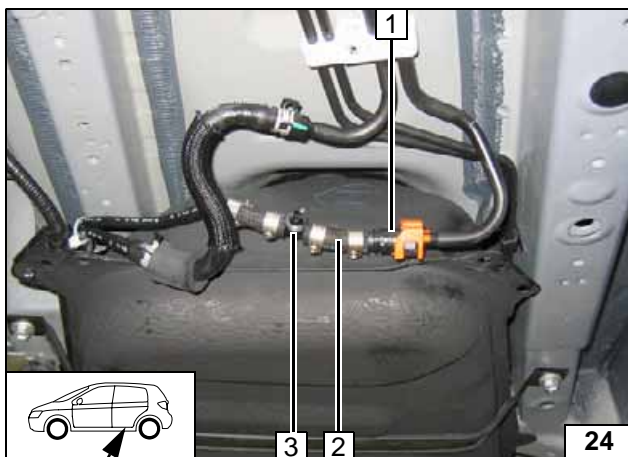
Connect-
ing heater



Slide included corrugated tube 1 onto Mecnyl fuel line and route with wiring harness of metering pump along original vehicle fuel lines to installation location of metering pump.



Installing
lines

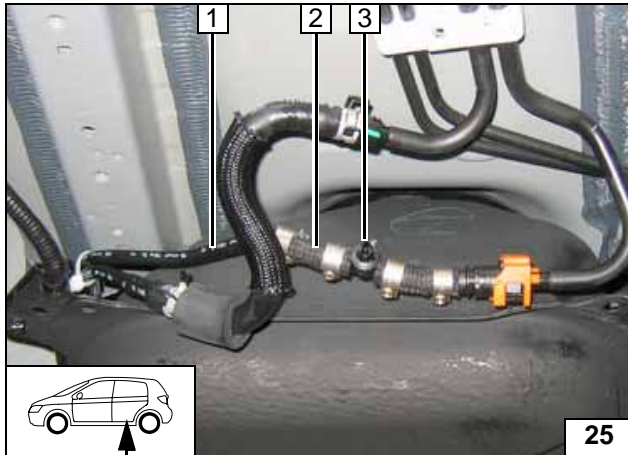


Fuel is removed from vehicle's fuel supply line. Pull off coupling 1. Separate fuel supply line at position 3. Remove fuel line from connection piece and install hose section 2.

- 2 8x12 hose section, 12 mm dia. hose clamp [2x]
- 3 8x5x8 mm fuel standpipe



Mounting
fuel stand-
pipe

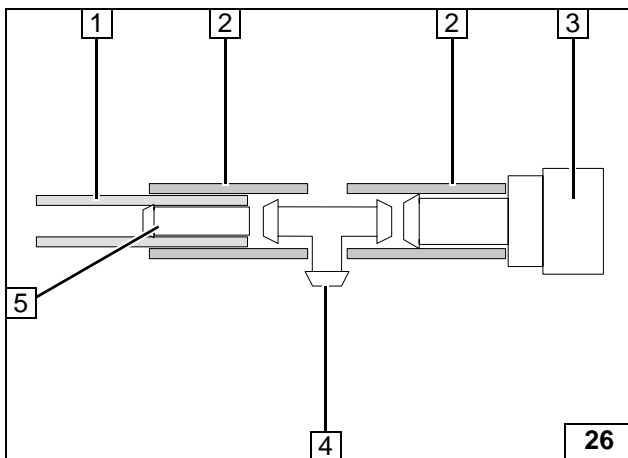


Mount included support sleeve in vehicle fuel line 1.

- 2 Support sleeve, hose section, 12 mm dia. hose clamp [2x]
- 3 8x5x8 mm fuel standpipe

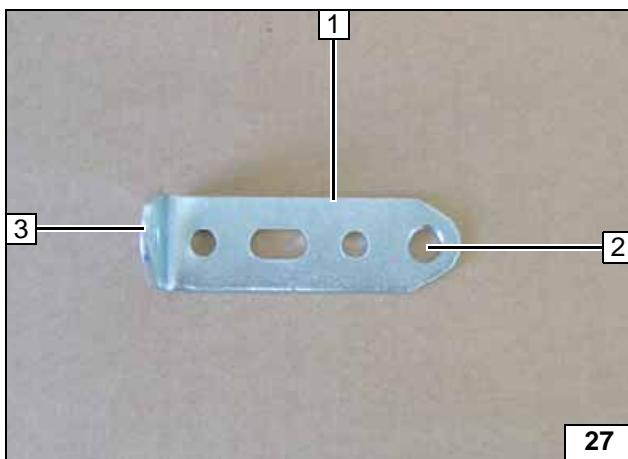


Mounting fuel standpipe



- 1 Cut-off fuel supply line
- 2 8x12 hose section [2x]
- 3 Coupling
- 4 8x5x8 fuel standpipe
- 5 Support sleeve

Mounting support sleeve



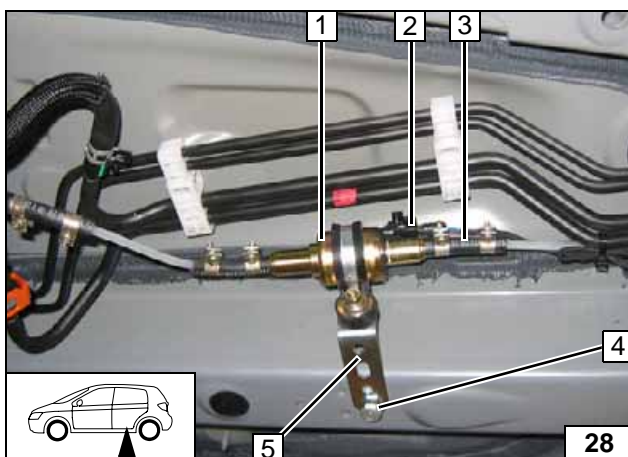
Vehicles without fuel cooler

Bend perforated bracket 1 and drill as shown.

- 2 8.5 mm dia. hole
- 3 Bend down by 90°



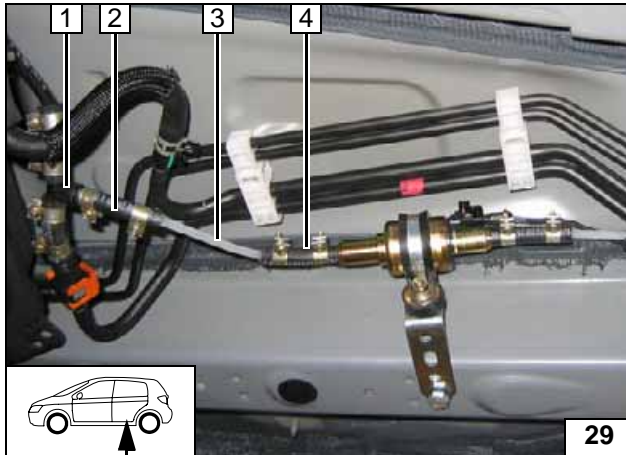
Preparing perforated bracket



- 1 Metering pump, rubber-coated p-clamp, silent block, M6 flanged nut [2x]
- 2 Wiring harness of metering pump, connector mounted
- 3 Fuel line from heater, hose section, 10 mm dia. hose clamp [2x]
- 4 M8x20 bolt, spring lockwasher, original vehicle threaded hole
- 5 Perforated bracket



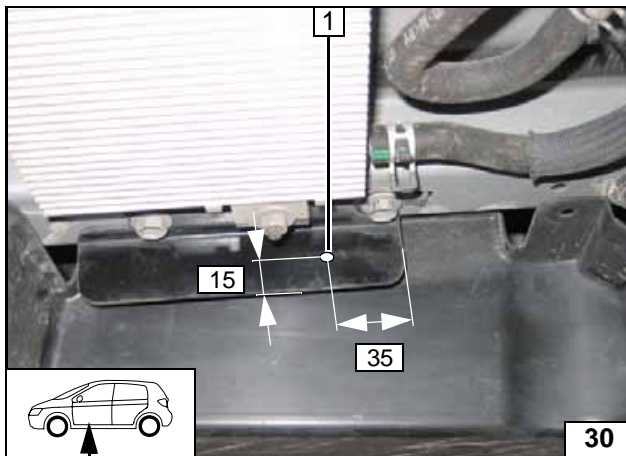
Installing metering pump



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

- 1 8x5x8 fuel standpipe
- 2 Hose section, 10 mm dia. hose clamps [2x].
- 3 Fuel line from fuel standpipe
- 4 Hose section, 10 mm dia. hose clamps [2x].

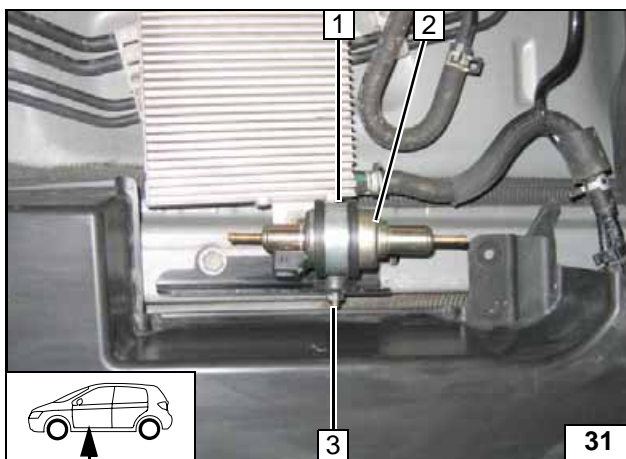
Connection of metering pump



Vehicles with fuel cooler

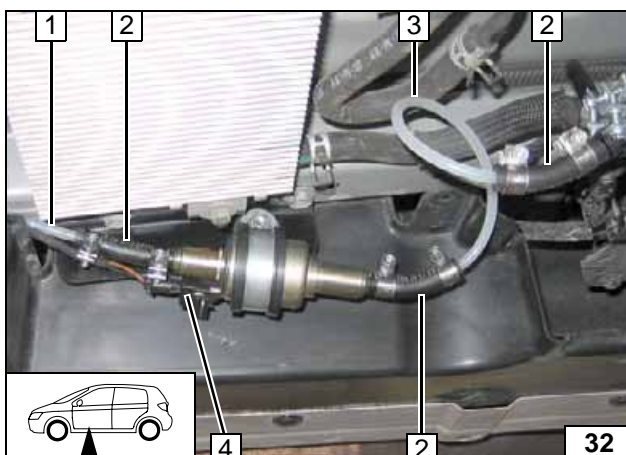
- 1 6.5 mm dia. hole

Hole in bracket of fuel cooler



- 1 Rubber-coated pipe clamp
- 2 Metering pump
- 3 Silent block, flanged nut M6 [2x]

Installing metering pump

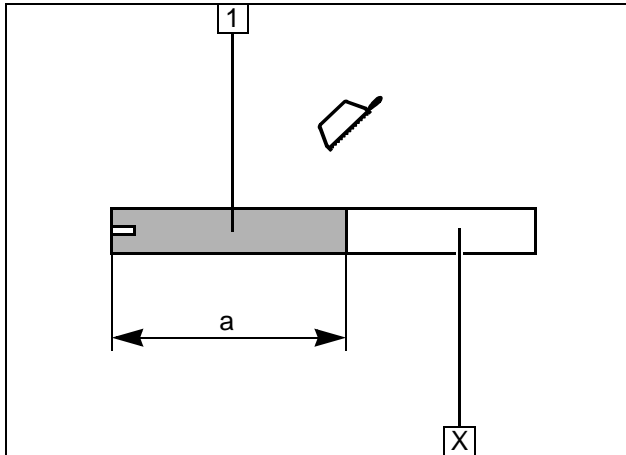
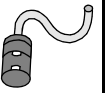


Check the position of the components; adjust if necessary. Check that they have freedom of movement.

- 1 Fuel line from heater
- 2 Hose section [3x], 10 mm dia. hose clamp [6x]
- 3 Fuel line from fuel standpipe
- 4 Wiring harness of metering pump, connector mounted



Connecting metering pump

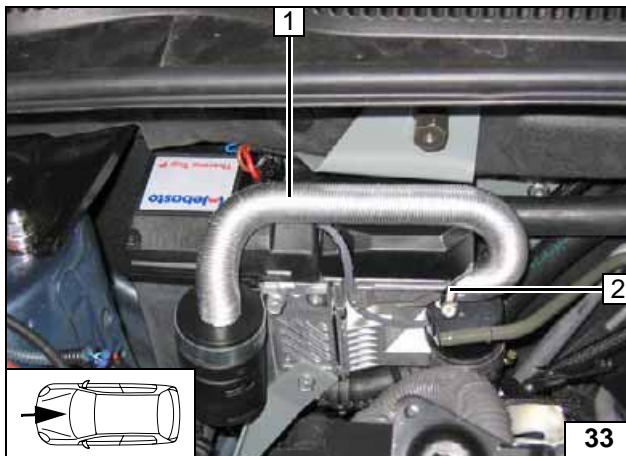


Combustion air

- 1 Combustion air pipe
a = 350mm

Discard section X

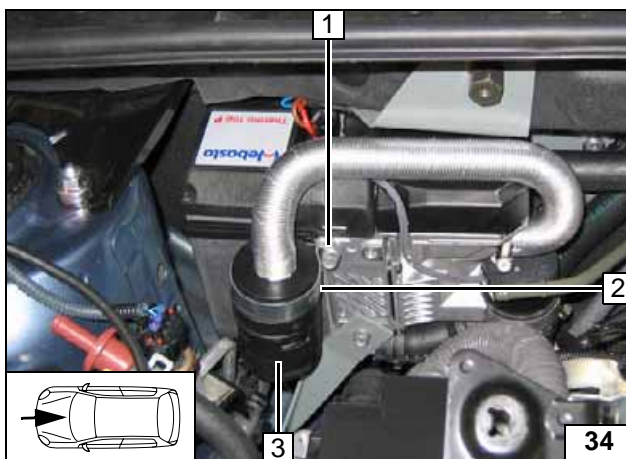
Cutting combustion air pipe to length



- 1 Combustion air pipe
- 2 27 mm dia. hose clamp



Installing combustion air pipe



Ejet screw bolt, tightening torque 10 Nm!
Remove rubber coating from p-clamp.

- 1 Ejet screw
- 2 48mm dia. p-clamp
- 3 Silencer



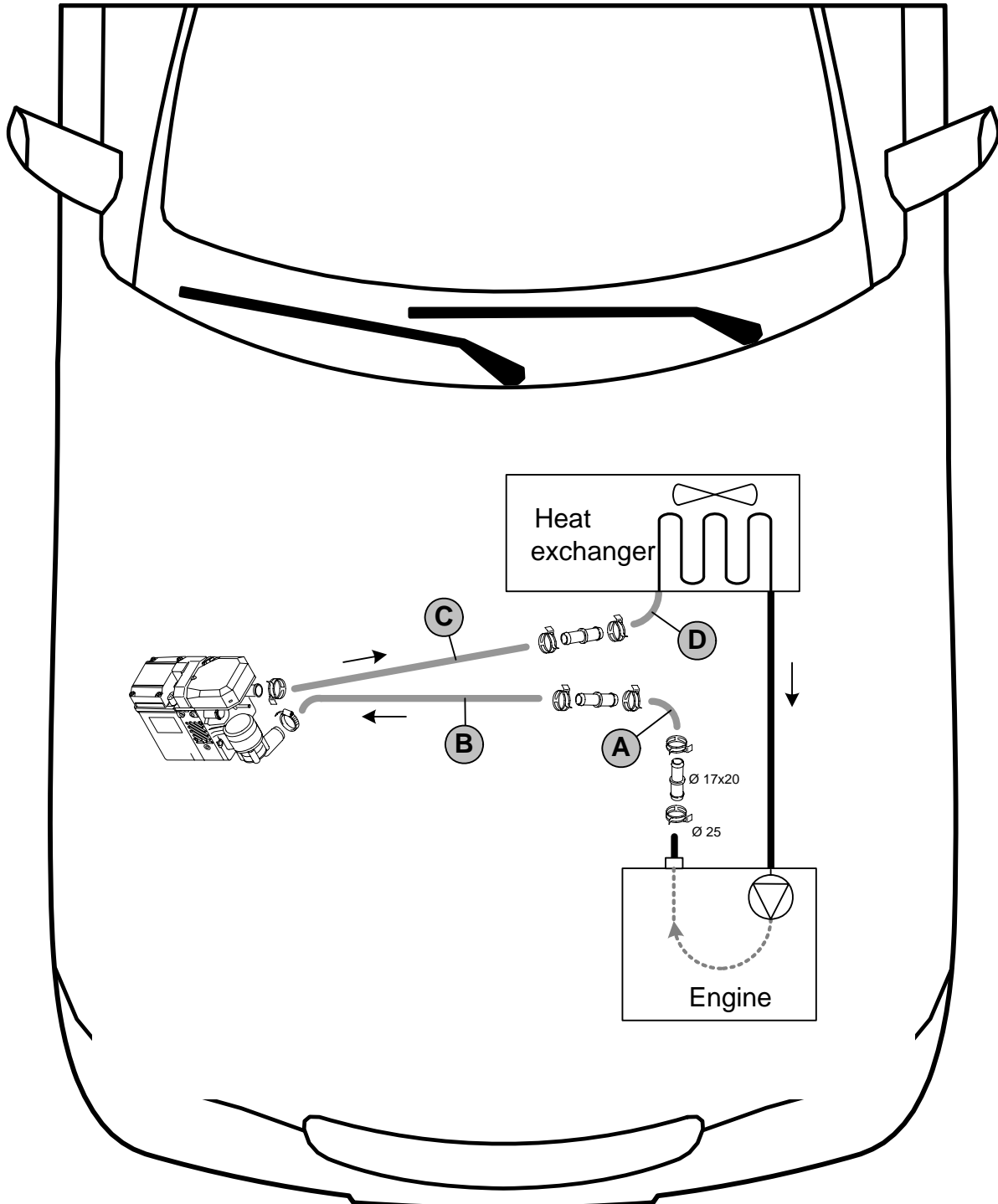
Installing silencer



Coolant circuit

WARNING!

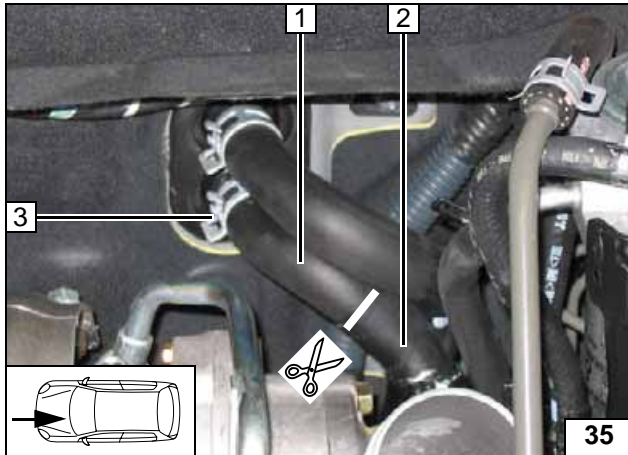
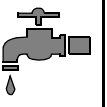
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged. When installing the hoses, the heater must be filled with coolant. The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



Hose routing diagram

All hose clamps = 20-27 mm dia.! All spring clips without a specific designation = 27 mm dia.
 All connecting pipes without a specific designation = dia. 20x20.



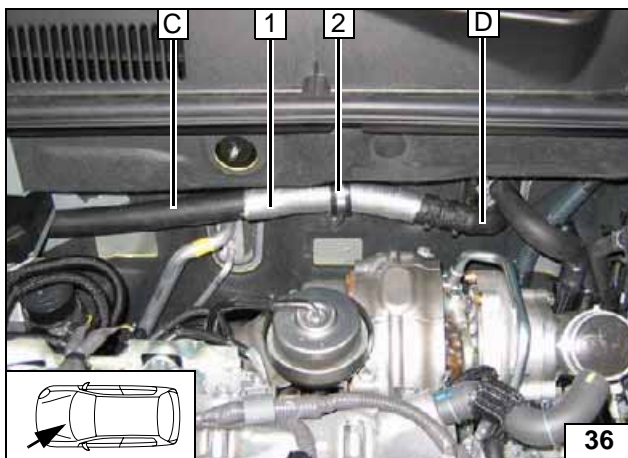


Spring clip **3** will be reused.

- 1** Remove hose section from heat exchanger inlet and discard
- 2** Engine-outlet hose section



Cutting point

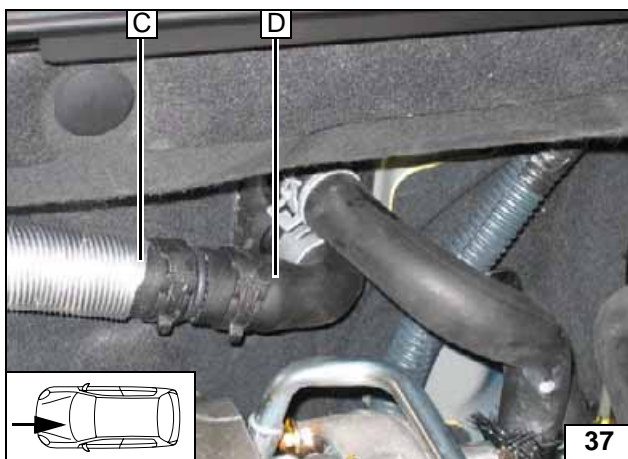


Slide heat protection hose **1** onto hose **C**

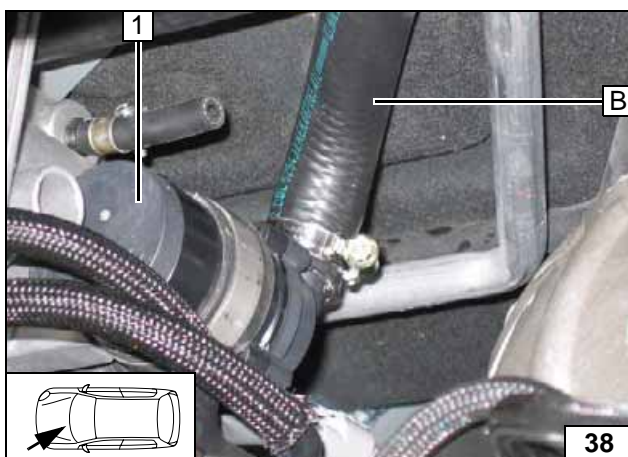
- 2** 34 mm dia. rubber-coated p-clamp, M6x20 spacer nut on original vehicle stud bolt



Routing in engine compartment

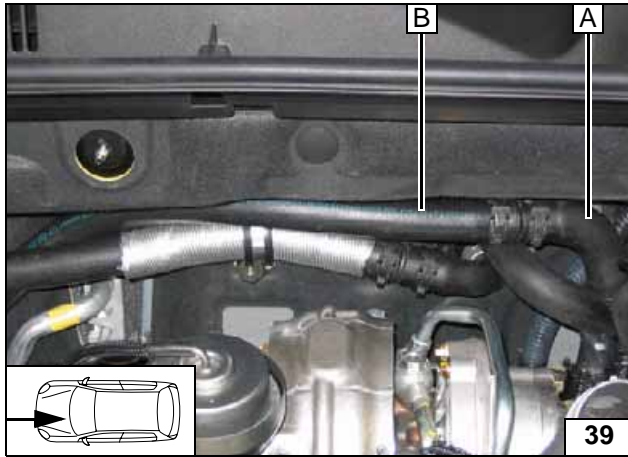
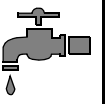


Connecting heat exchanger inlet

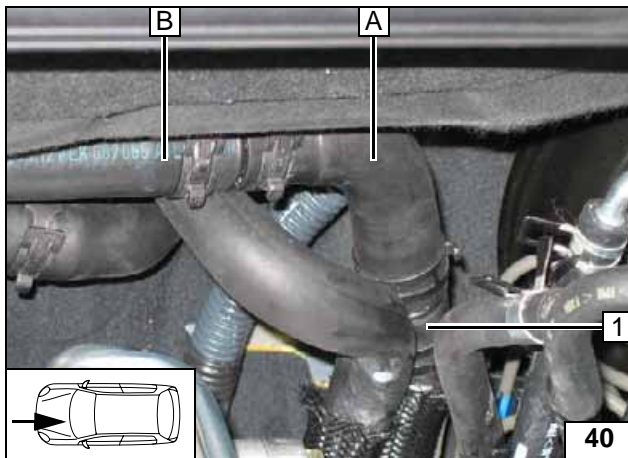


- 1** Heater circulating pump

Connecting heater



Routing in engine compartment

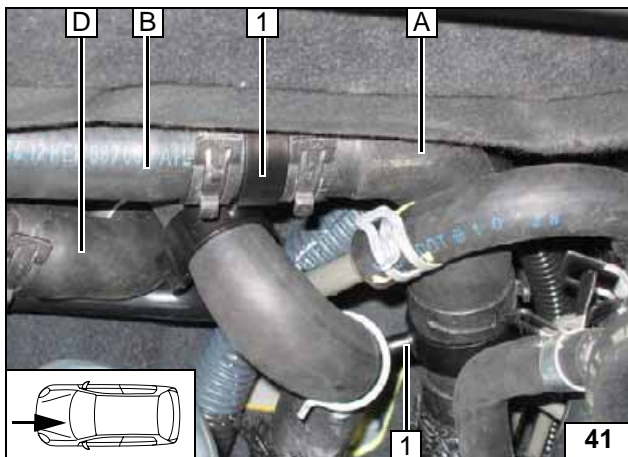


Before connecting, fill coolant hoses with coolant



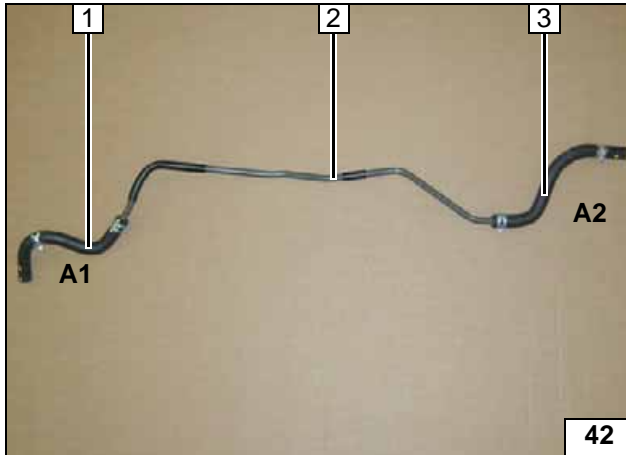
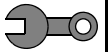
1 Hose section on engine outlet

Connecting engine outlet



1 Hose bracket [2x]

Mounting hose bracket



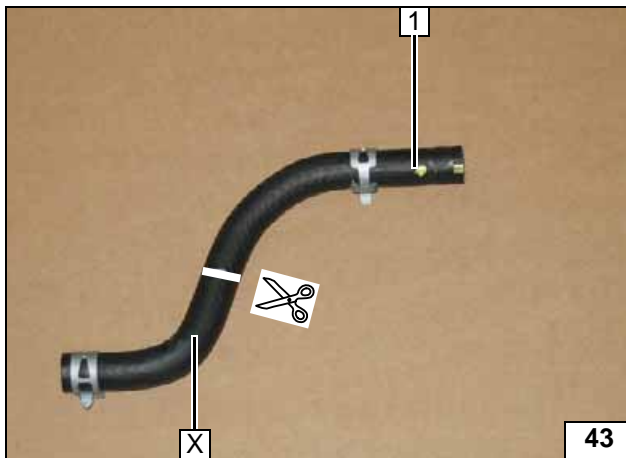
Installing vacuum pipe

Vacuum line removed, position as in vehicle!
Disconnect moulded hoses; will be reused!

- 1 Moulded hose A1
- 2 Vacuum pipe
- 3 Moulded hose A2



Preparing vacuum pipe

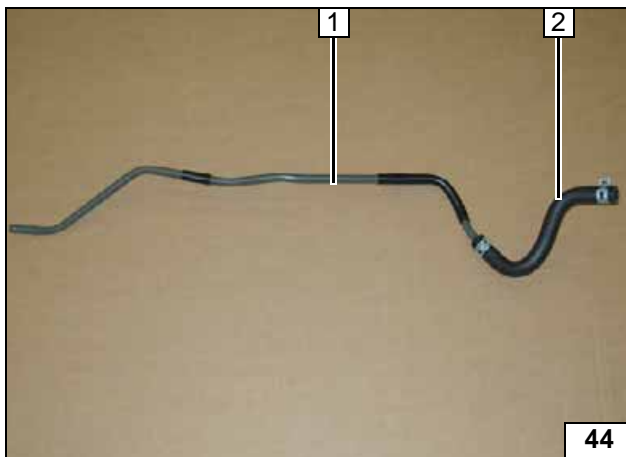


Cut off hose A2 as shown and discard section X.

- 1 Moulded hose A2



Preparing moulded hose

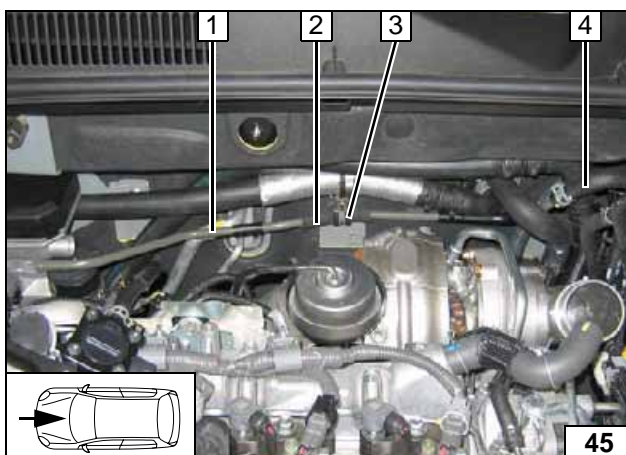


Vacuum pipe turned by 180° (horizontal), install hose A1 as shown.

- 1 Vacuum pipe
- 2 Moulded hose A1



Preparing vacuum pipe



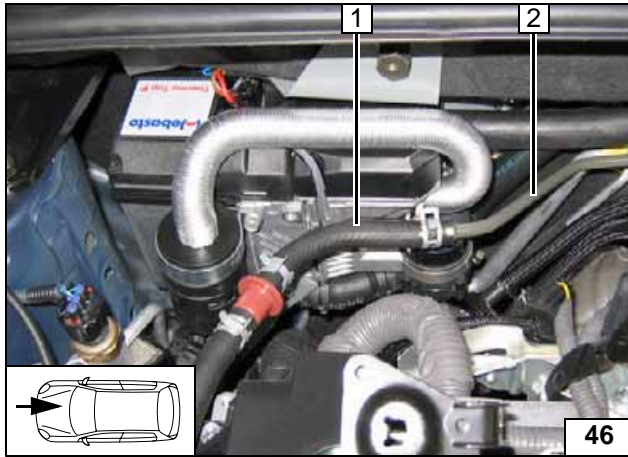
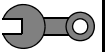
Install vacuum pipe as shown in the following Figure.

Ensure sufficient distance to neighbouring components.

- 1 Vacuum pipe
- 2 8x12 mm hose
- 3 15 mm dia. rubber-coated p-clamp, M6x12 bolt, spring lockwasher
- 4 Moulded hose A1



Installing vacuum pipe

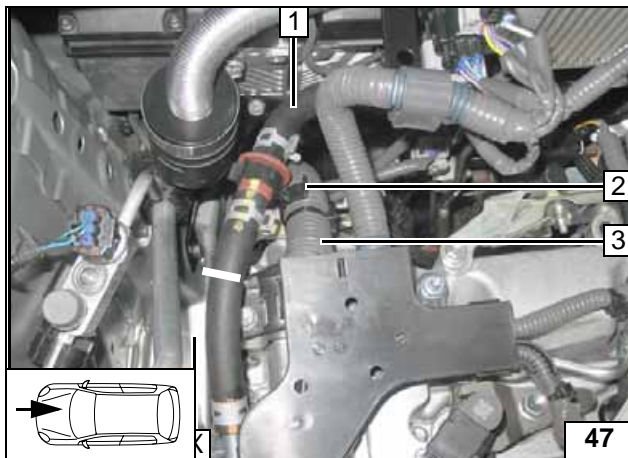


Install vacuum pipe as shown.
Ensure sufficient distance to neighbouring components.

- 1 Moulded hose A2
- 2 Vacuum pipe



Installing vacuum pipe

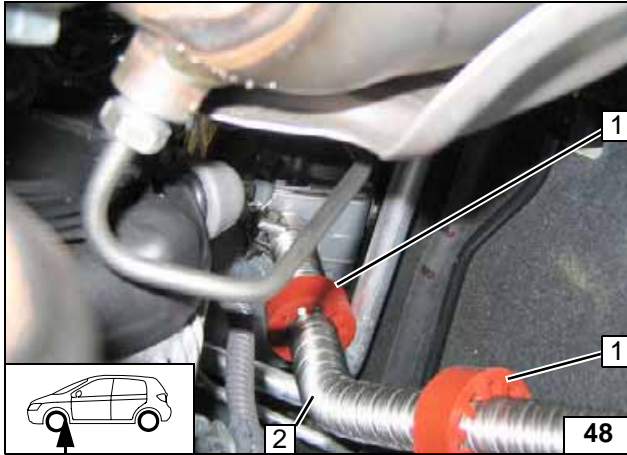
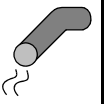


Ensure sufficient distance to neighbouring components.

- 1 Moulded hose A2
- 2 Hose bracket
- 3 Original vehicle wiring harness



Mounting hose bracket

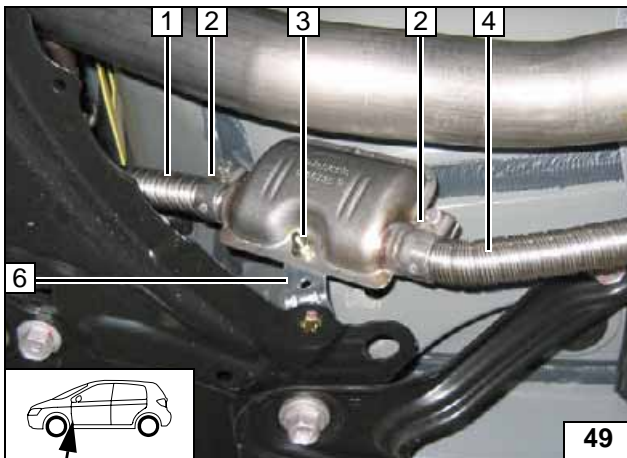


Exhaust gas

- 1 Red (rt) rubber isolator [2x]
- 2 Exhaust pipe

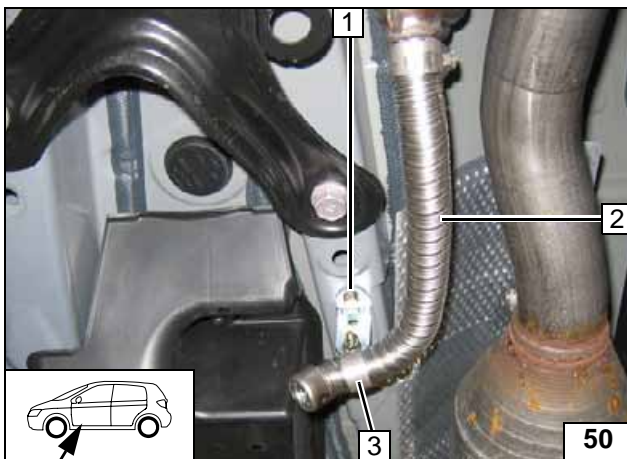


Routing exhaust pipe



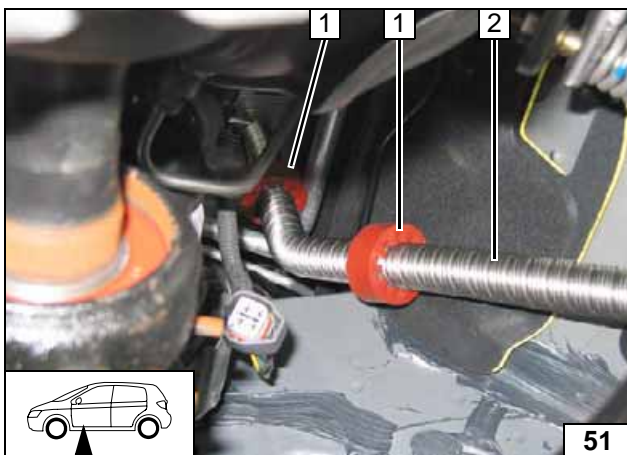
- 1 Exhaust pipe
- 2 Hose clamp [2x]
- 3 Exhaust silencer, M6x20 bolt, M6 flanged nut on angle bracket
- 4 Exhaust-pipe end section
- 5 M6x20 bolt, large diameter washer, M6 flanged nut, original vehicle hole
- 6 Angle bracket

Installing silencer



- 1 Angle bracket, M6x20 bolt, spring lock-washer, original vehicle threaded hole
- 2 Exhaust end section
- 3 Pipe clamp, M6x20 bolt, M6 flanged nut

Installing exhaust pipe and end section

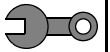


Ensure sufficient distance to neighbouring components.

- 1 Position red (rt) rubber isolator [2x]
- 2 Exhaust pipe



Positioning rubber isolator

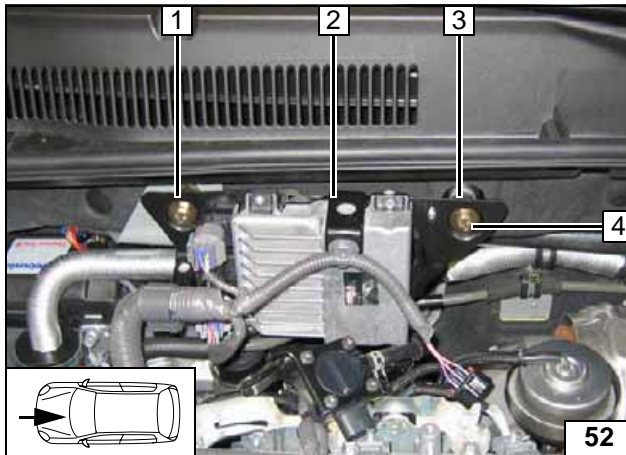


Final Work

WARNING!

Reassemble the disassembled components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose wires. Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- Connect the battery
- Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.
- Set digital timer, teach Telestart transmitter
- Make settings on A/C control panel according to the "Operating Instructions for End Customer".
- Mount sticker "Switch off parking heater before refueling" in area of filler neck.
- For initial startup and function check, see installation instructions

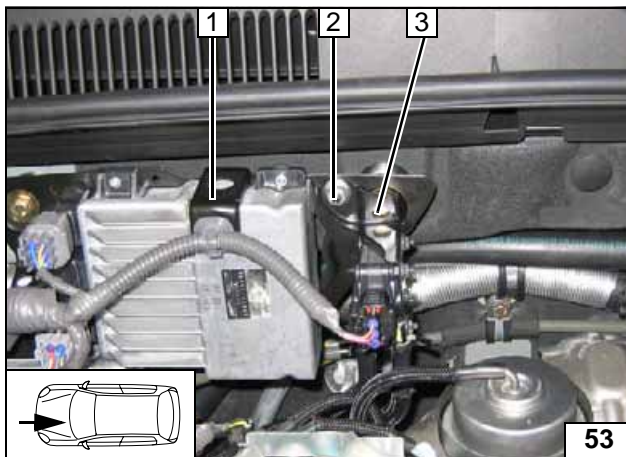


Ensure proper seating of connectors.

- 1 M6x12 bolt, spring lockwasher, large diameter washer, M6x20 spacer nut
- 2 Bracket with control unit
- 3 Stud bolt, 5 mm shim, M6x20 spacer nut
- 4 M6x12 bolt, spring lockwasher, large diameter washer, bracket of control unit



Installing control unit



Ensure proper seating of connectors.

- 1 Bracket with control unit
- 2 Original vehicle flanged nut, stud bolt
- 3 Bracket



Installing control unit



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: hotline@webasto.de
<http://www.webasto.de>

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.

For vehicles with a passenger compartment monitoring unit, deactivate it in addition to vehicle settings for the heating cycle.

Please refer to the operating manual of the vehicle for instructions regarding deactivation.

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:



The display 4 is not active during heating!

- 1 Set temperature to "HI"
- 2 Air outlet at windscreen, AC off
- 3 Set fan to level "2" or max. "3"



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



**Automatic
air-conditioning**

**Manual air
conditioning**