

Water Heater Unit



Thermo Top E Additional Heater e1 00 0003

Thermo Top C Additional Heater e1 00 0002

Thermo Top P Additional Heater e1 00 0104

Installation Instructions

Ford Ranger

Diesel
from Model Year 2007
For left-hand drive vehicles only
Manual air conditioning
with one battery



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, specialized tools and equipment are required to install and repair Webasto heating and cooling systems.

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.

Webasto does not accept any liability for defects and damage that are attributable to installation by untrained staff.

Table of Contents

Validity	2	Digital timer, summer/winter switch option	9
Heater Unit/Delivery Scope	3	Remote option (Telestart)	9
Heater Unit/Installation Kit	3	Preparing installation location	10
Foreword	3	Installing heater unit	11
General Instructions	3	Exhaust system	12
Special Tools	3	Fuel Connection	14
Explanatory Notes on Document	4	Coolant connection	17
Preliminary Work	5	Combustion air	22
Heater unit installation location	5	Final Work	23
Preparing electrical system	6	Operating Instructions for End Customer	24
Electrical Connections	7	Template for Perforated Fastening Strap	25
Fan controller	8		

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Ford	Ranger	2AW	K272

Engine type	Engine model	Output in kW	Displacement in cm ³
WE	Diesel	105	2499
WE	Diesel	115	3000

Vehicle and engine types, equipment variants and national specifications 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 Unit/Delivery Scope

Quantity	Description	Order No.:
1	Ford Delivery Scope of <i>Thermo Top C</i> without Heater Control	1312549B

Optional heater control either:

Quantity	Description	Order No.:
1	Digital timer	9010869A
1	Telestart T91	9016028A
1	Telestart T100 HTM	9013937A
1	Thermo-Call Connect	9013654A
1	Thermo-Call Comfort	9016027A
1	Thermo-Call Locate	9014272A

or:

Heater Unit/Installation Kit

Quantity	Description	Order No.:
1	Retail accessories with desired heater control	See price list
1	Installation kit for Ford Ranger Diesel	1312550B

Heater unit recommended for the respective vehicle class:

Vehicle	Heater unit
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 unit 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 Ford Ranger Diesel vehicles - for validity, see page 2 - from model year 2007 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to these installation instructions.

However, the stipulations in the "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 edge protectors (split-open plastic hose).

Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

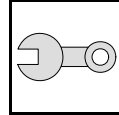
Special Tools

- Torque wrench for 2.0 - 10 Nm
- Metric thread-setter kit

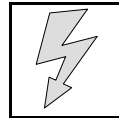
Explanatory Notes on Document

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.

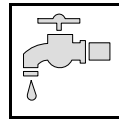
Mechanical system



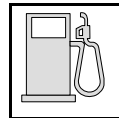
Electrical system



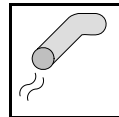
Coolant connection



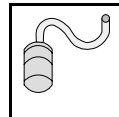
Fuel connection



Exhaust system



Combustion air



Special features are highlighted using the following symbols:



Specific risk of injury or fatal accidents.



Specific risk of damage to components.



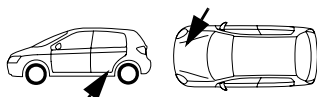
Specific risk of fire or explosion.



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



Reference to a special technical feature.



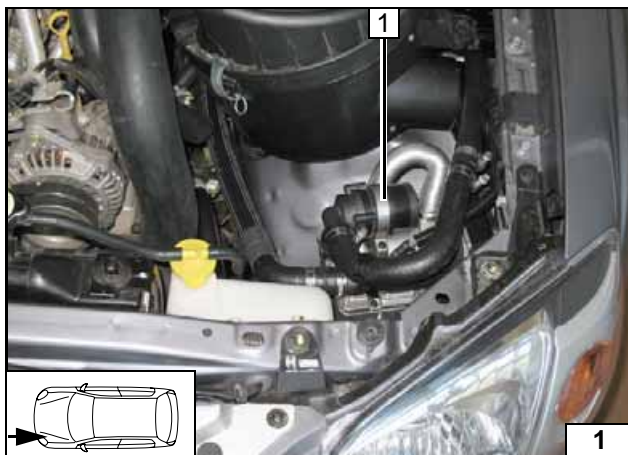
The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary Work

WARNING!

- Open fuel tank cap, ventilate tank.
- Close the tank cap again.
- Depressurize 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.
- Completely remove the battery.
- Completely remove the air filter box.
- Remove the engine cover.
- Detach the radiator, expansion tank and washer reservoir above.
- Detach the wheel well trim on the left
- Remove the glove compartment.
- Lower the tank during the beim work step Fuel Connection of Tank.

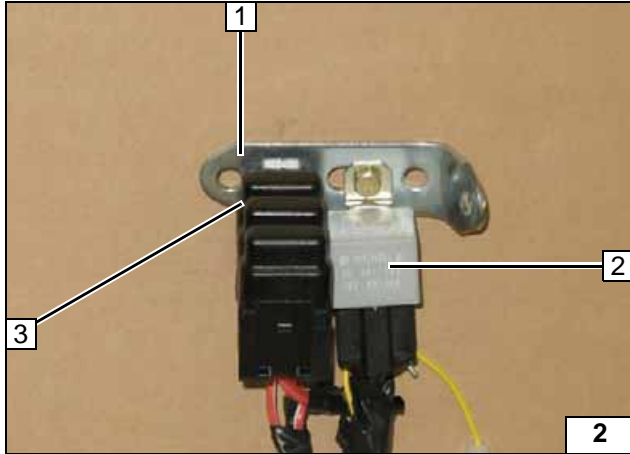
Remove page 24 "Operating Instructions for End Customer" and insert with vehicle operating instructions.



Heater unit installation location

1 Heater unit

Installation location



Preparing electrical system

Remove red (rt) wire from K3/87a, insulate and tie back.
Bend down perforated bracket 1 by approx. 60° as shown.

- 2 M5x16 bolt, K3 relay, washer, M5 nut
- 3 Fuse holder, M5x16 bolt, washer, M5 nut



Preassembling fuse holder

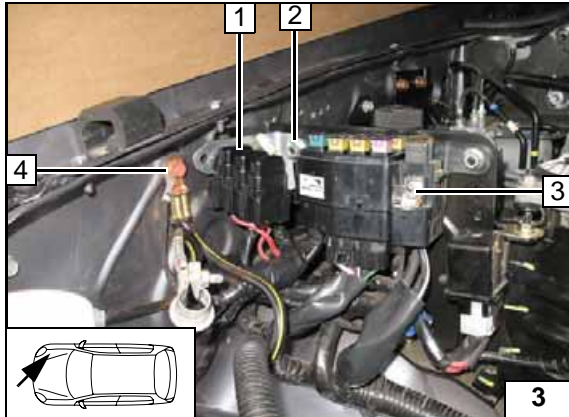


Electrical Connections



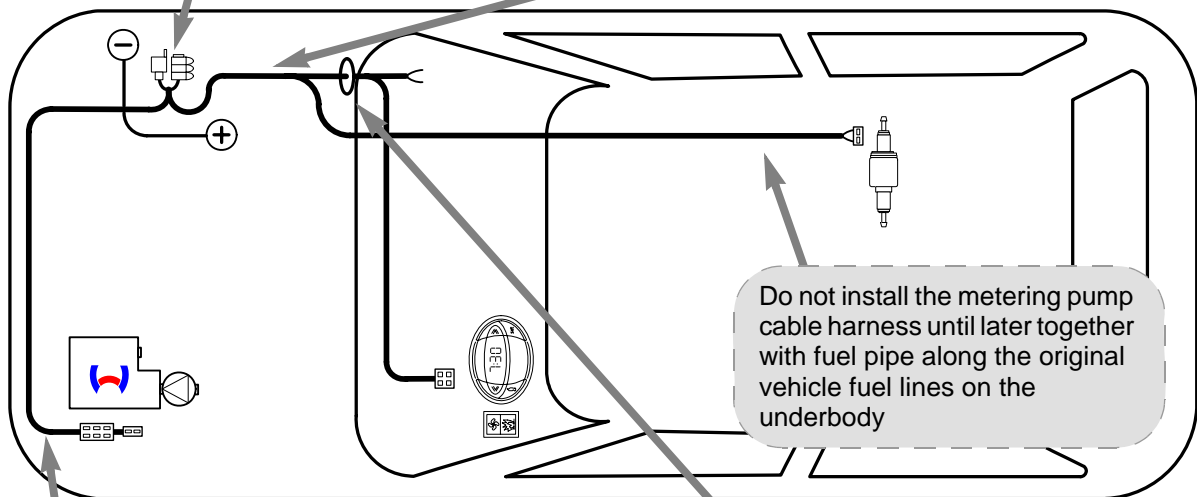
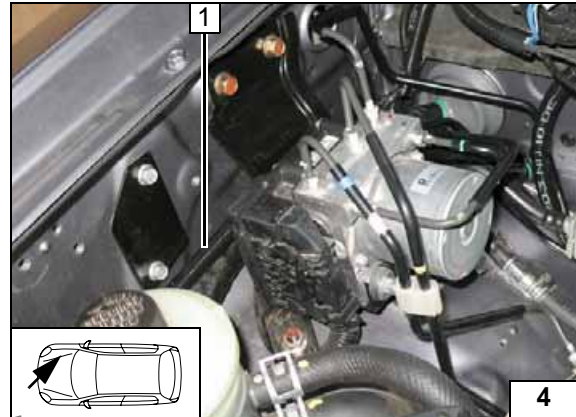
Fuse holder, relay K3

- 1 Premounted fuse holder
- 2 Original vehicle nut
- 3 Positive wire on positive support point
- 4 Ground wire on ground support point

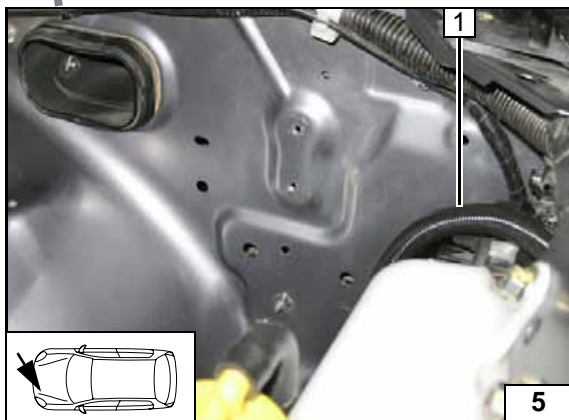


Wiring harness routing

- 1 Cut 300 mm corrugated tube to length and slide onto wiring harnesses of fan controller and digital timer

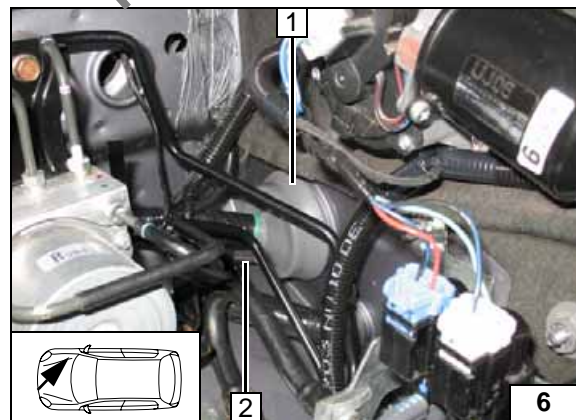


Wiring harness installation diagram



Wiring harness routing

- 1 Cut 1,600 mm corrugated tube to length, slide onto wiring harness of heater unit and route to installation location of heater unit

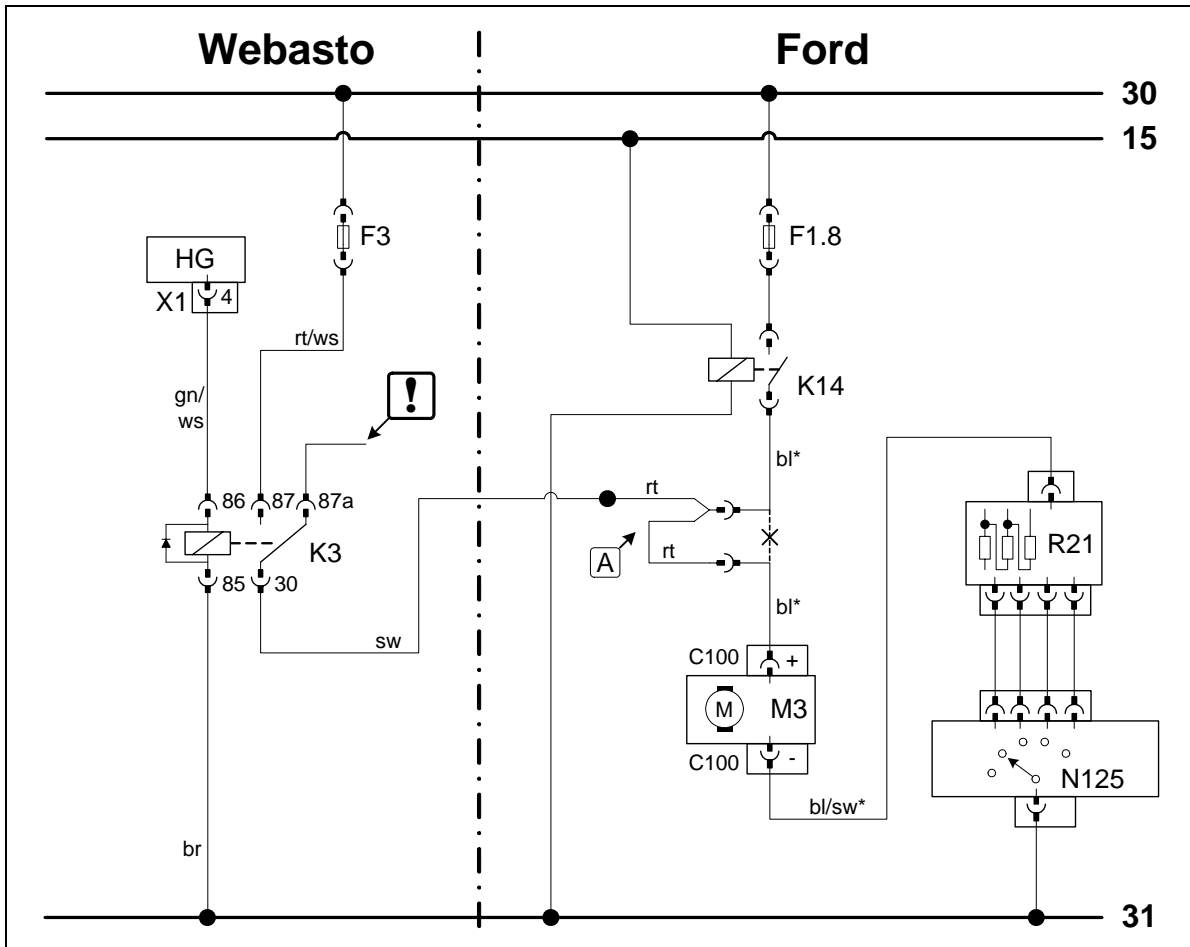


Wiring harness pass through

- 1 Protective rubber plug
- 2 Wiring harness of fan controller and digital timer



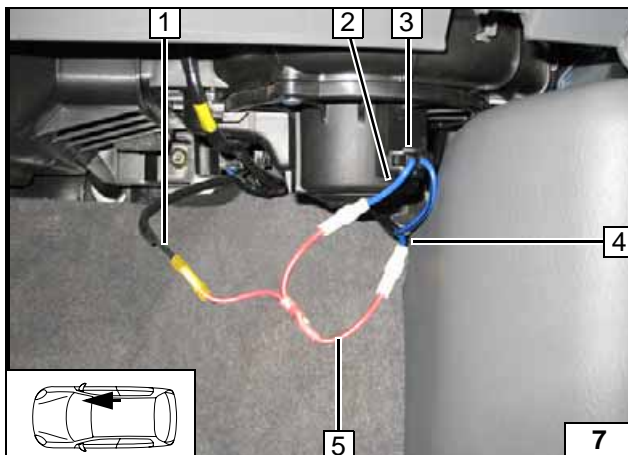
Fan controller



Wiring diagram

Webasto components		Vehicle components		Colors and symbols	
HG	Heater unit TT-C/E	F1.8	Fuse 60A	rt	red
X1	6-pin heater unit connector	K14	Fan relay	ws	white
F3	25 A fuse	M3	Fan motor	sw	black
K3	Fan relay	C100	2-pin connector GM	gn	green
A	Adapter	R21	Resistor group	bl	blue
		N125	Fan switch	X	Cutting point
				!	Insulate wire end and tie back
				*	Wiring colors may vary.

Legend

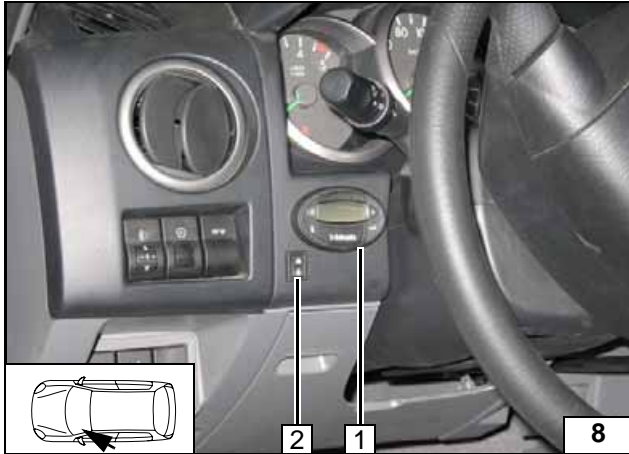


Connection on 2-pin connector C100 3 from fan motor. Measure out positive wire. Produce connections as shown in wiring diagram.

- 1 Black (sw) wire from K3/30
- 2 Blue (bl) connector C100
- 4 Blue (bl) wire of fan relay
- 5 Adapter



Connecting fan-motor

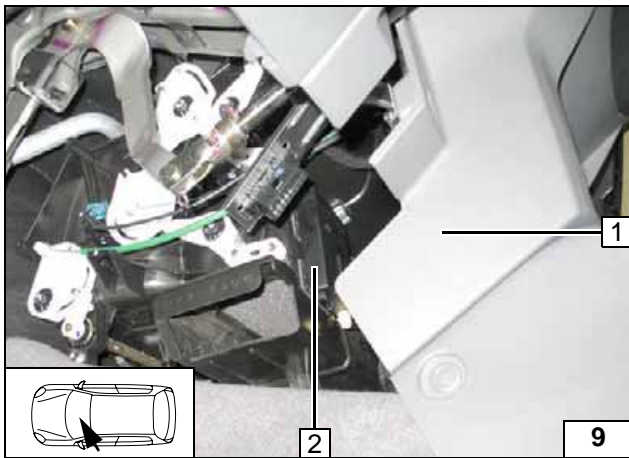


Digital timer, summer/winter switch option

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



Installing digital timer



Remote option (Telestart)

- 1 Center console on driver's side
- 2 Receiver, Dual Lock [2x]

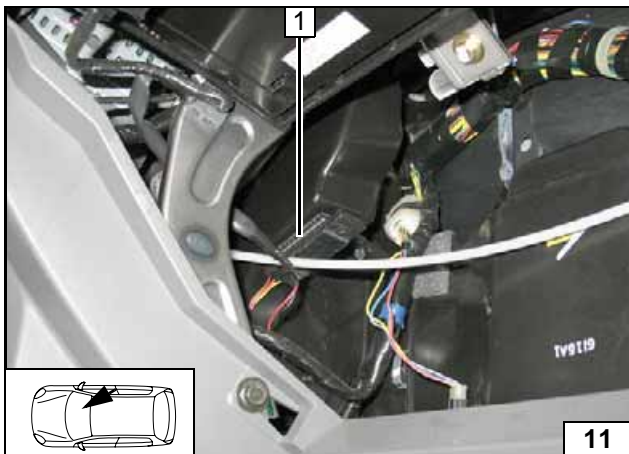


Installing receiver



- 1 Antenna

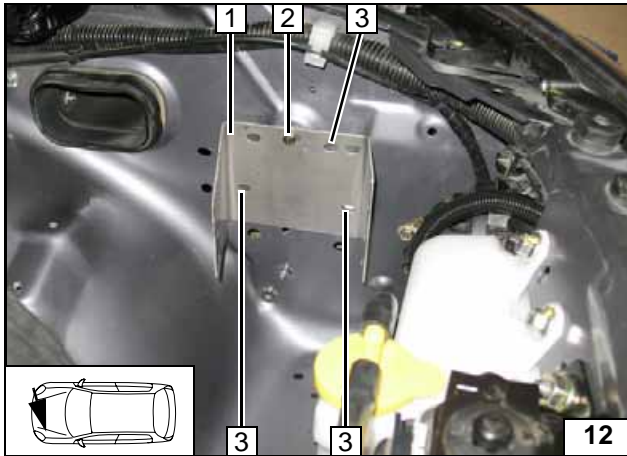
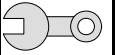
Installing antenna



Temperature sensor for HTM100 only

- 1 Fasten temperature sensor with suitable means

Installing temperature sensor



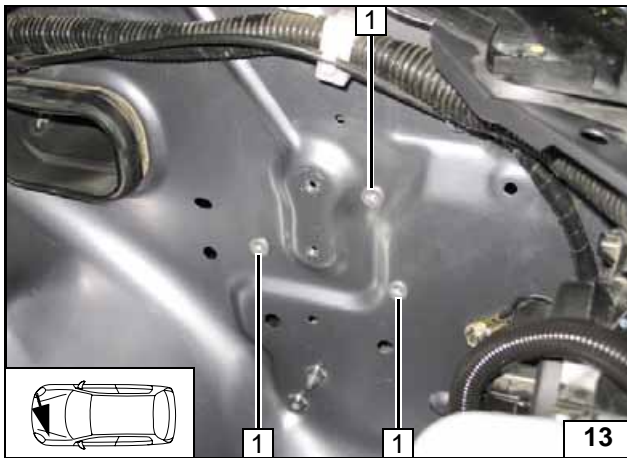
Preparing installation location

Loosely mount bracket 1 with M6x20 bolt 2 on existing threaded hole and align vertically.

3 Copy hole pattern [3x]

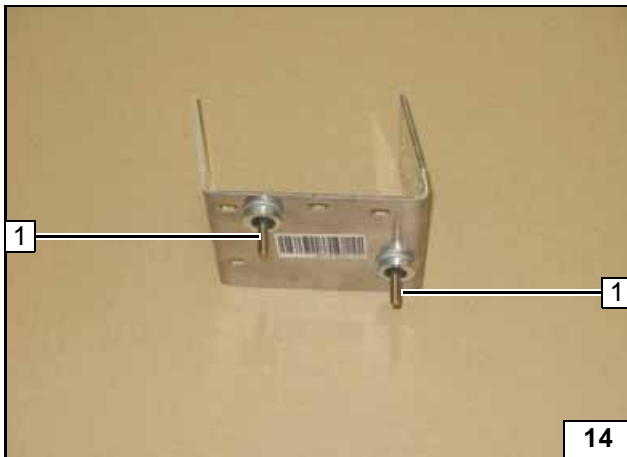


Copying hole pattern



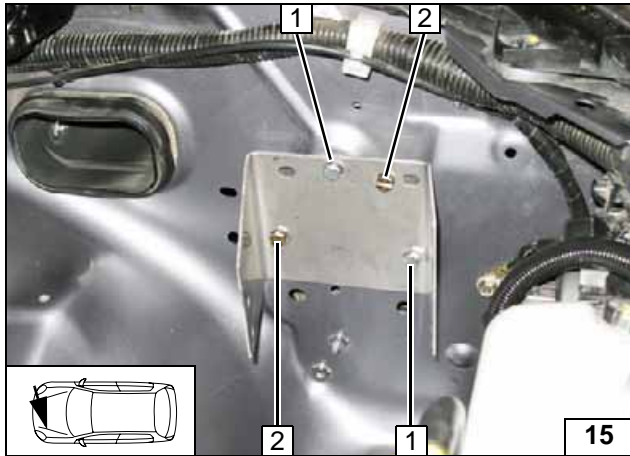
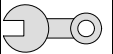
1 Drill 9.1 mm hole; install rivet nuts [3x each]

Installing rivet nut



1 M6x30 bolt, spring lockwasher, bracket, large diameter washer, 5 mm shim, pin lock

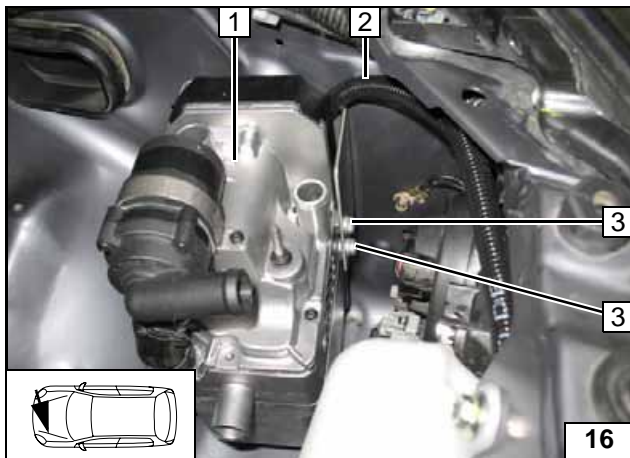
Preparing bracket



Installing heater unit

- 1 M6x20 bolt, spring lockwasher [2x each]
- 2 M6x30 bolt [2x each] premounted

Installing bracket



Connect wiring harness 2 before installing heater unit 1.
Tighten EJOT screws to 10 Nm!

- 3 Ejob screw [2x]



Installing heater unit

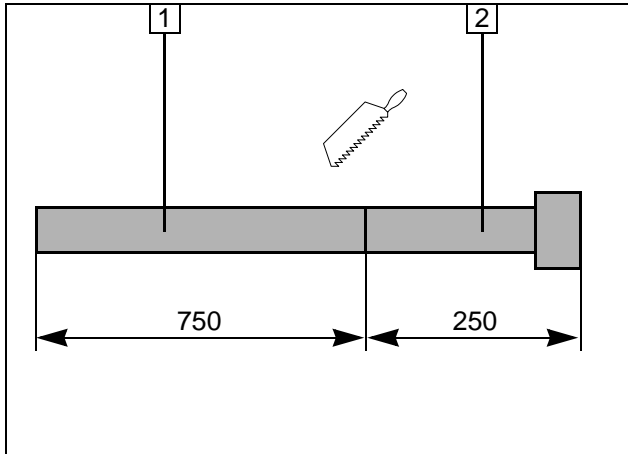
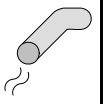


Tighten EJOT screws to 10 Nm!

- 1 Ejob screw [2x]



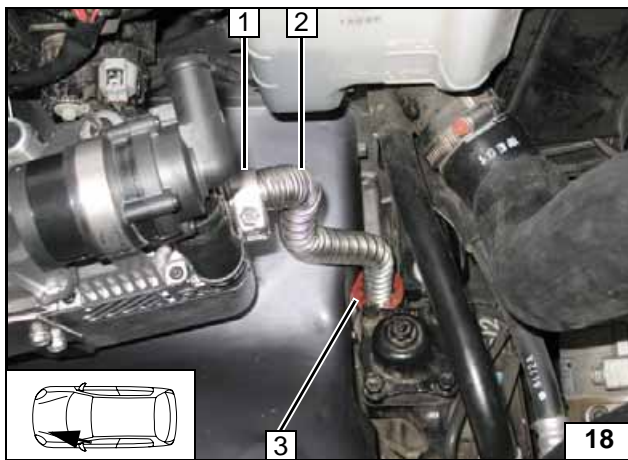
Installing heater unit



Exhaust system

- 1 Exhaust pipe = 750 mm
- 2 Exhaust end section = 250 mm

Preparing exhaust pipe

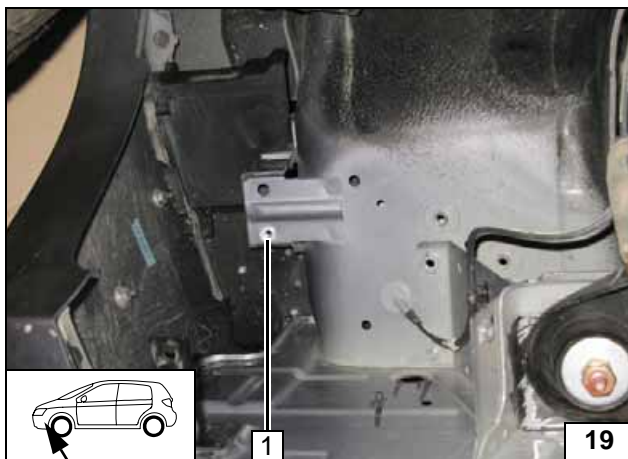


Ensure freedom of movement of neighboring parts.

- 1 Hose clamp
- 2 Exhaust pipe
- 3 Align red (rt) rubber isolator



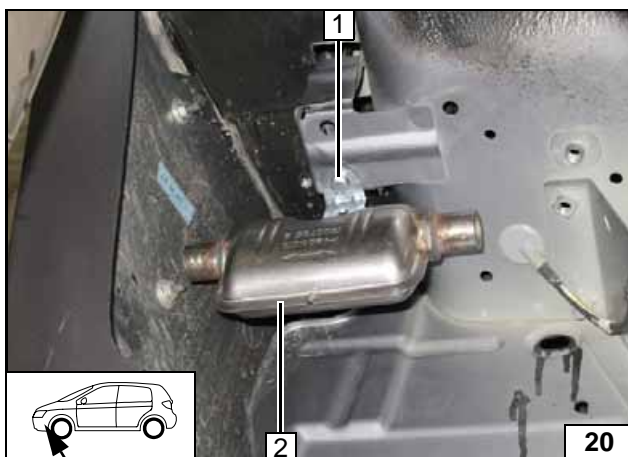
Installing exhaust pipe



- 1 Rivet nut in existing hole

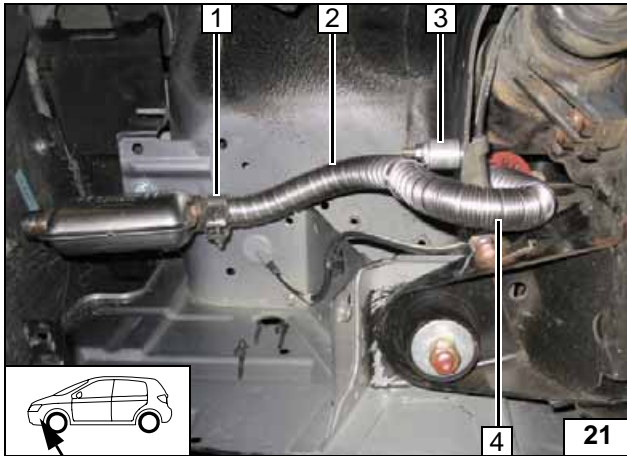
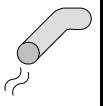


Installing rivet nut



- 1 M6x20 screw, spring lock washer, angle bracket
- 2 Muffler, M6x20 bolt, flanged nut on angle bracket

Installing muffler

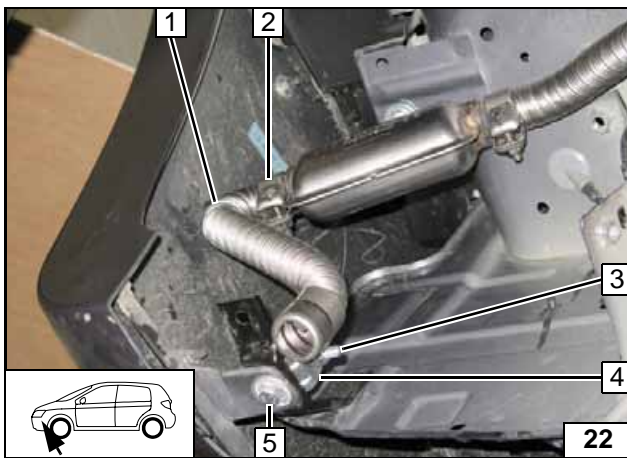


2.5 mm dia. hole 4 in exhaust pipe 2 for draining off condensed water at lowest point.

- 1 Hose clamp
- 3 M6x40 bolt, 20 mm shim, p-clamp, flanged nut on existing hole



Installing exhaust pipe

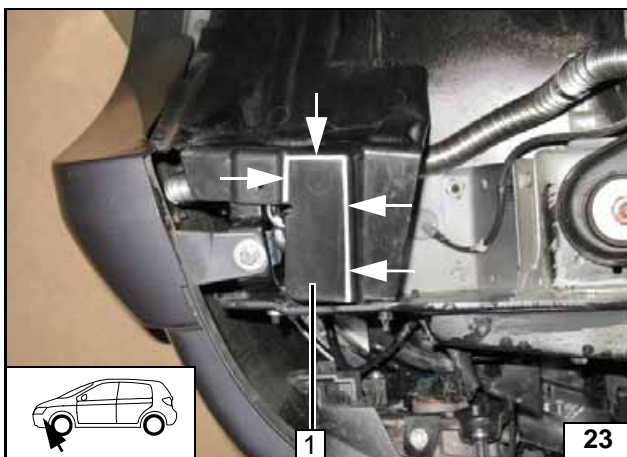


Replace original vehicle bolt 5 with M6x20 bolt and large diameter washer.

- 1 Exhaust end section
- 2 Hose clamp
- 3 M6x20 bolt, p-clamp, flanged nut on angle bracket
- 4 Angle bracket, flanged nut



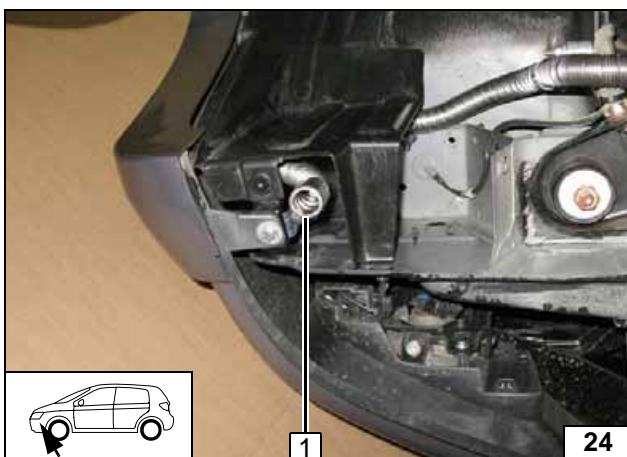
Installing exhaust end section



- 1 Cut out wheel well trim



Cutting out wheel well trim



Align exhaust end section 1 as shown.



Mounting rubber isolator



Fuel Connection

CAUTION!

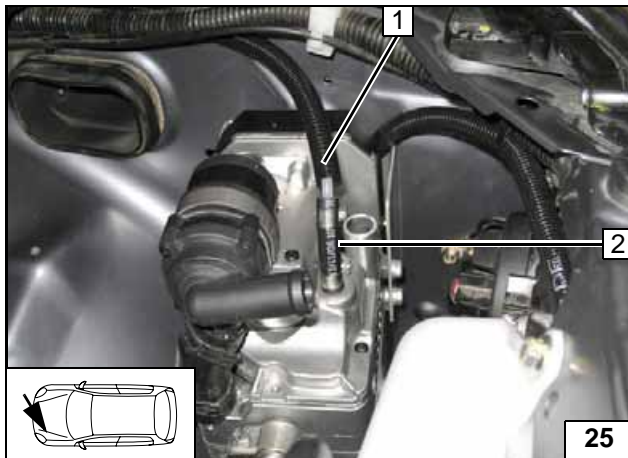
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

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!

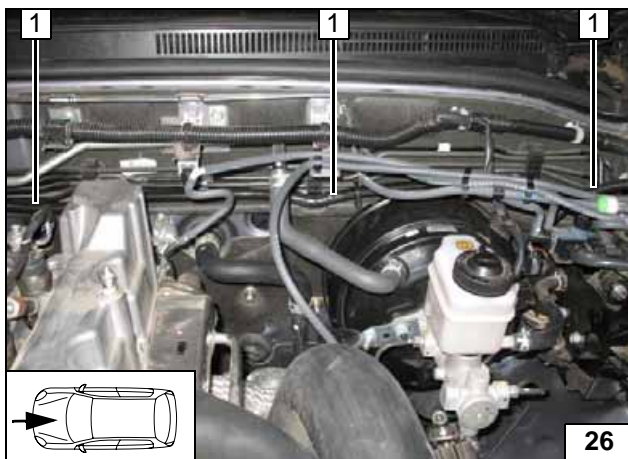
The fuel line and wiring harness are routed to the metering pump in as shown in the wiring harness routing diagram.



Cut 1,900 mm corrugated tube to length and slid onto fuel line 1.

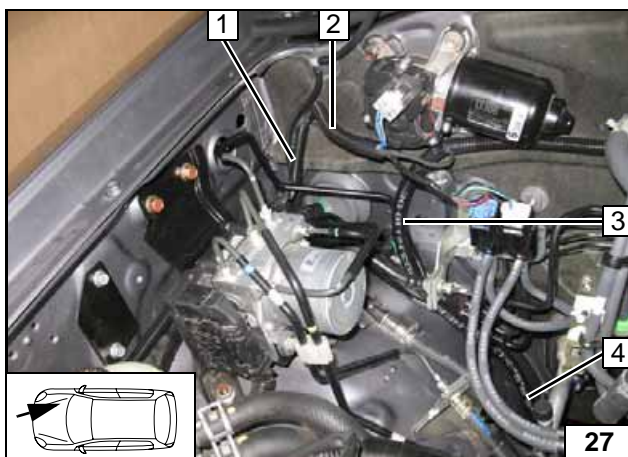
2 Hose section, 10 mm dia. hose clamps [2x]

**Conne-
tion to
heater unit**



Route fuel line in corrugated tube 1 on firewall up to cable pass through.

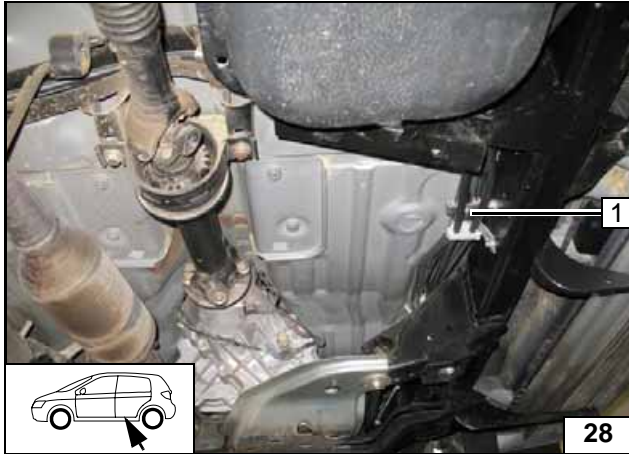
**Installing
lines**



Cut 50 mm, 100 mm and 2,000 mm corrugated tube to length and slide on.

- 1 Wiring harness of metering pump in 50 mm corrugated tube
- 2 Wiring harness of metering pump in 100 mm corrugated tube
- 3 Wiring harness of metering pump, fuel line in 2,000 mm corrugated tube
- 4 Hole cable tie

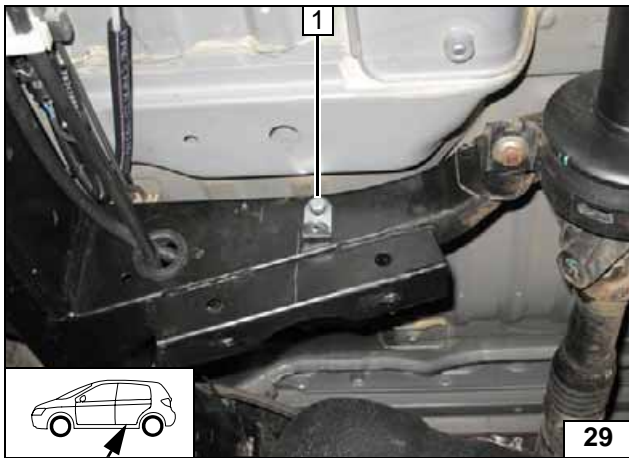
**Installing
lines**



1 Fuel line, wiring harness of metering pump in 2,000 mm corrugated tube

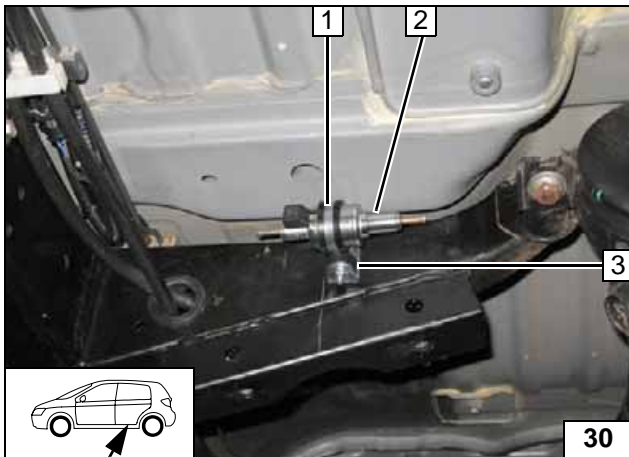


Installing lines



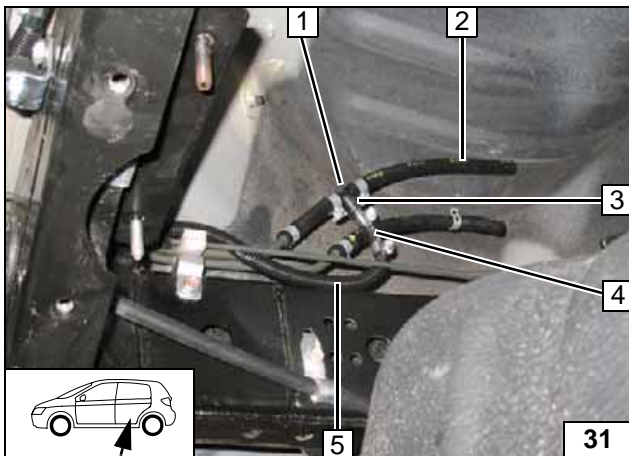
1 Angle bracket, M8x20 bolt, spring lockwasher in threaded hole

Installing angle bracket



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

Installing metering pump



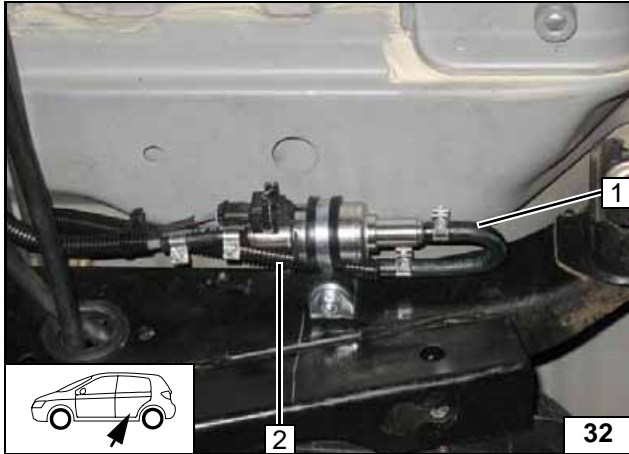
Fuel tank lowered!

Cut 550 mm corrugated tube 5 to length, slide onto fuel line and route to metering pump. Cut off fuel return line 2 at Position 1.

3 8x5x8 fuel standpipe, 14 mm dia. hose clamp [2x]
4 Hose section, 10 mm dia. hose clamps [2x]



Removing fuel

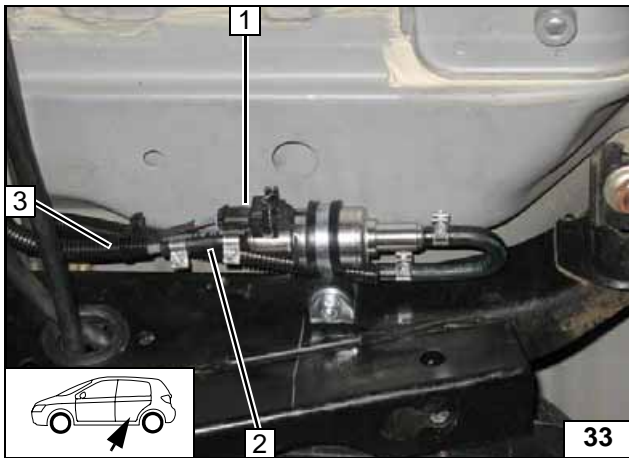


Fuel line **2** in corrugated tube from fuel standpipe on intake side of metering pump [side without connector].

- 1** 180° molded hose, 10 mm dia. hose clamp [2x]



**Connect-
ing to me-
tering
pump**



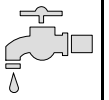
Fuel line **3** in corrugated tube from heater unit on pressure side of metering pump [side with connector].

Check the position of the components; adjust if necessary. Check that they have free clearance.

- 1** Wiring harness of metering pump, connector mounted
- 2** Hose section, 10 mm dia. hose clamp [2x]



**Connect-
ing to me-
tering
pump**



Coolant connection

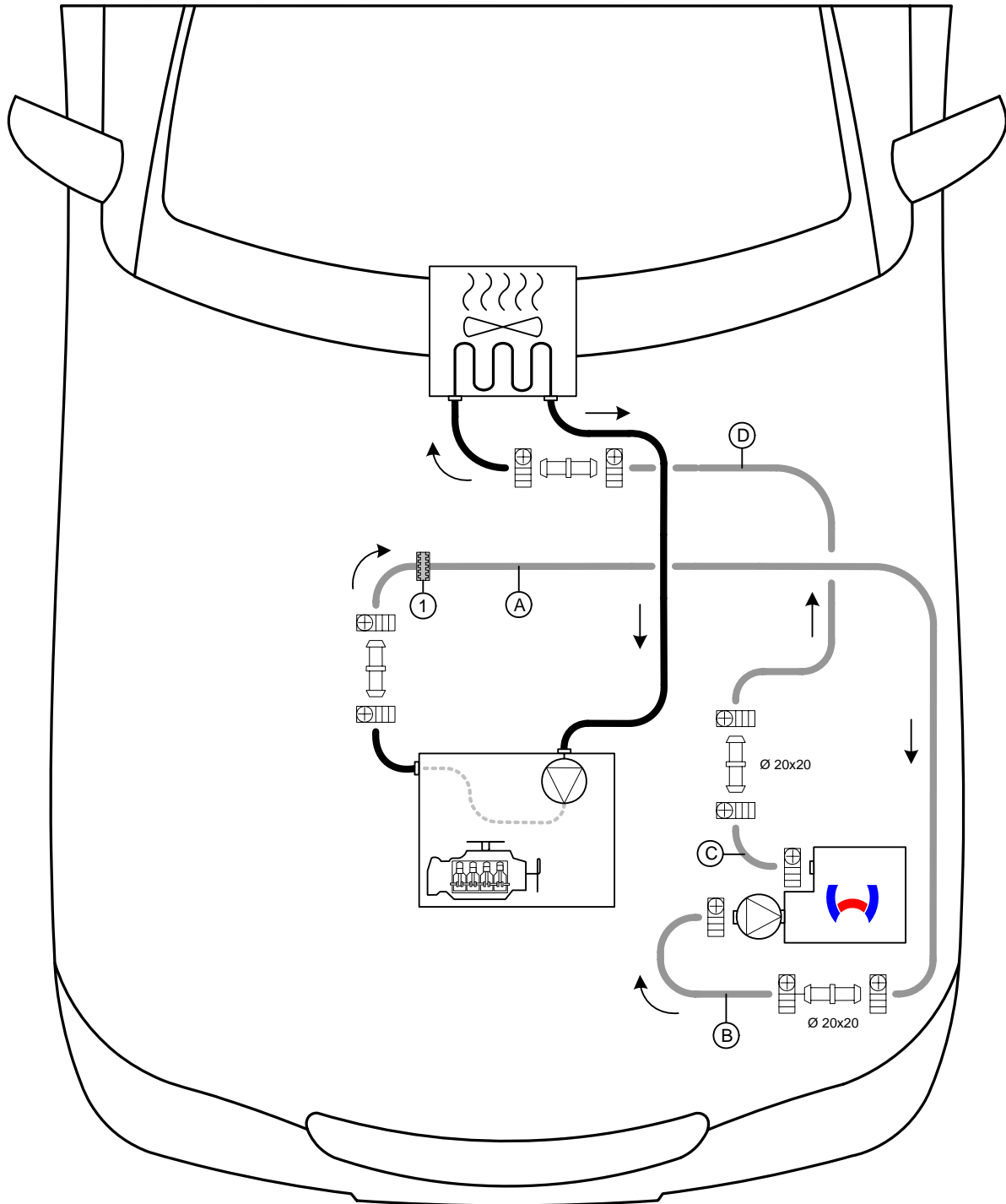
WARNING!

Tighten all hose clamps to 2.0 + 0.5 Nm.

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 hose clamps and spring band clamps so that no other hose can be damaged. The connection should be "inline" based on the following diagram:



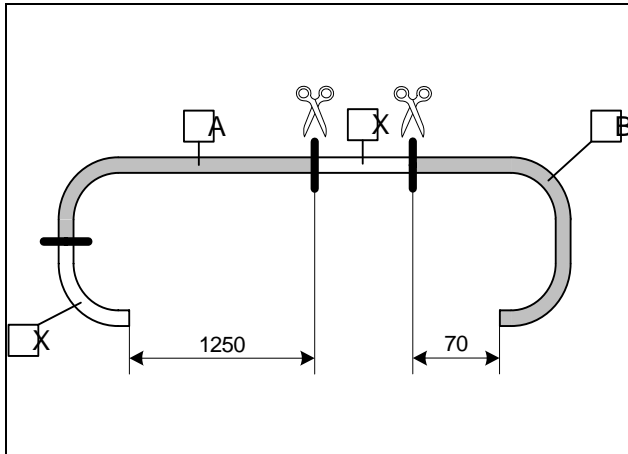
Coolant routing diagram

All connecting pipes without a specific designation = dia. 17x20.

All hose clamps  = 20-27 mm dia.

1 = Black (sw) rubber isolator 

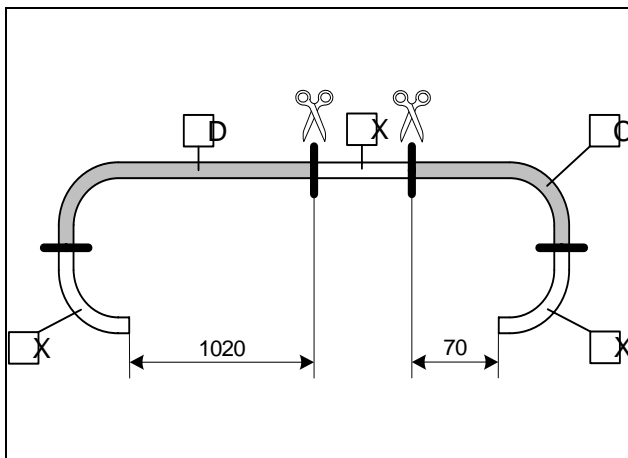




a = 1,250 mm
b = 70 mm

Discard section X

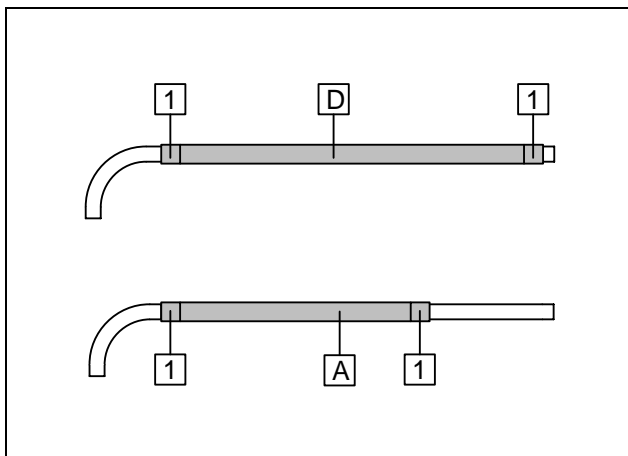
Cutting coolant hoses to length



d = 1,020 mm
c = 70 mm

Discard section X

Cutting coolant hoses to length

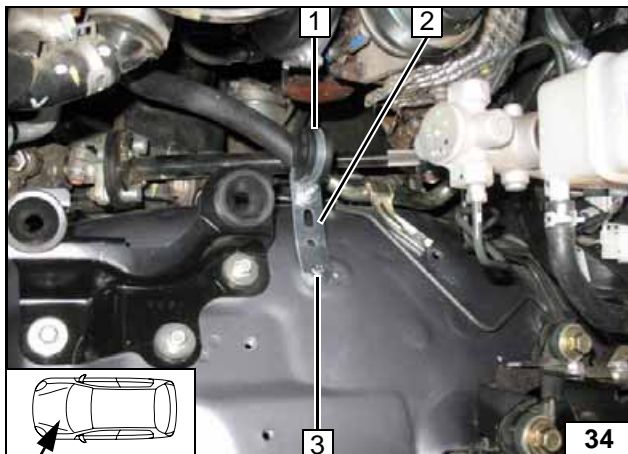


Push braided protection hoses onto hose A and D and cut to length.
Cut heat shrink plastic tubing to size.



- 1 50 mm heat shrink plastic tubing [4x]

Preparing coolant hoses

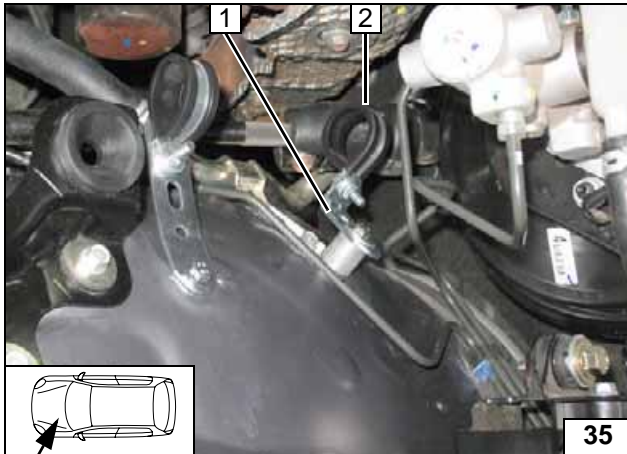


Ensure sufficient distance to neighboring components.
Bend down perforated bracket 2 by approx. 15° as shown.



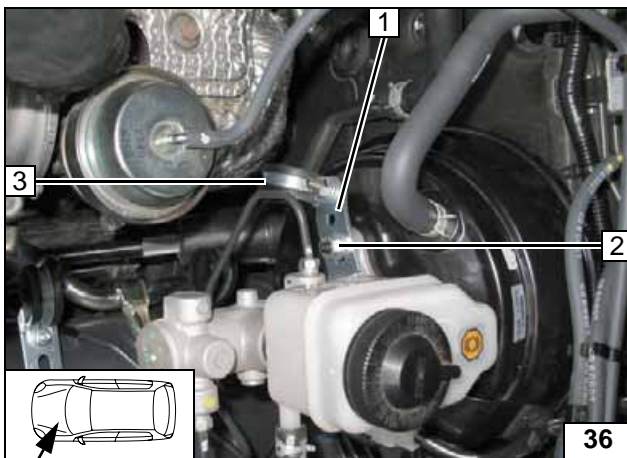
- 1 M6x20 bolt, 29 mm dia. rubber-coated p-clamp, flanged nut
- 3 M6x20 screw, spring lockwasher on threaded hole

Installing perforated bracket



- 1 M6x40 bolt, large diameter washer, angle bracket, 20 mm shim, p-clamp, flanged nut on existing hole
- 2 M6x20 bolt, 29 mm dia. rubber-coated p-clamp, flanged nut

Installing angle bracket

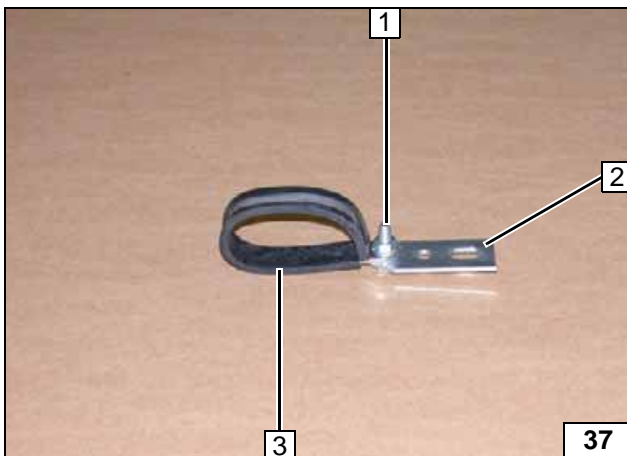


Cut perforated bracket 1 to length according to template and bend down by approx. 20°.

- 2 Original vehicle nut
- 3 M6x20 bolt, 29 mm dia. rubber-coated p-clamp, flanged nut



Installing perforated bracket

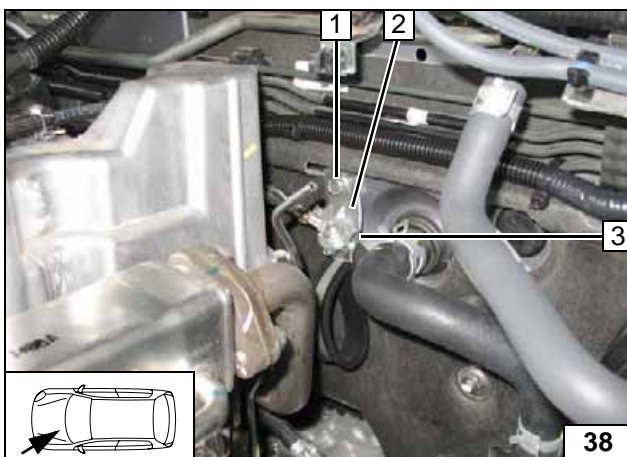


Cut perforated bracket 2 to length according to template and shape 48 mm dia. p-clamp 3

- 1 M6x20 bolt, flanged nut



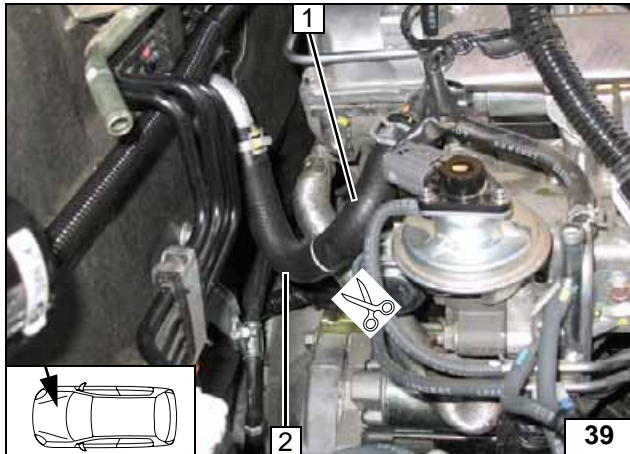
Preparing perforated bracket



Install perforated bracket 3 behind bracket 2 with bolt 1.

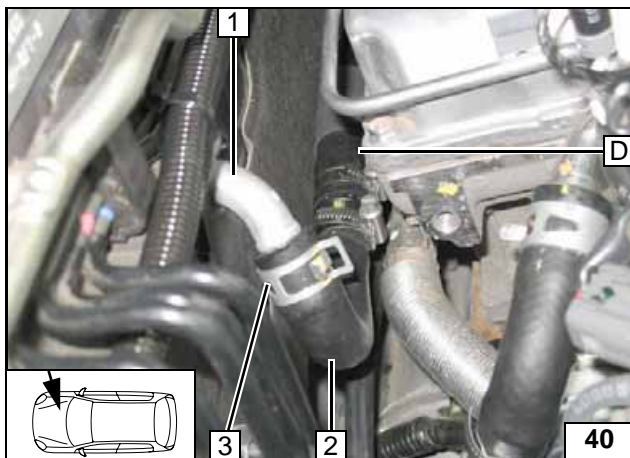


Installing perforated bracket with rubber-coated p-clamp



- 1 Original vehicle hose from engine outlet
- 2 Original vehicle hose to heater exchanger inlet

Cutting point

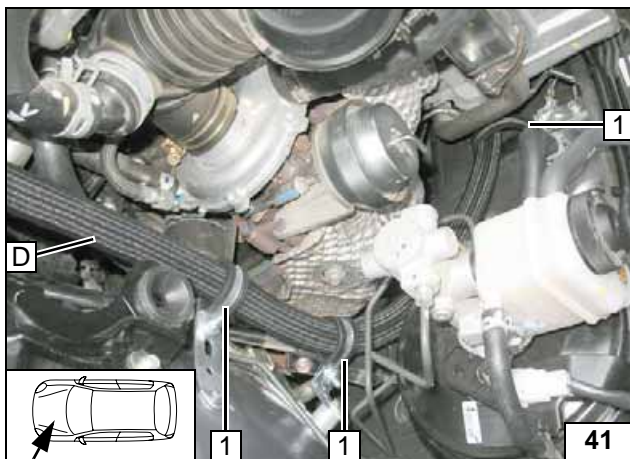


Pull original vehicle hose 2 off heat exchanger inlet 1 and remount with cut point.



- 2 Original vehicle spring clip

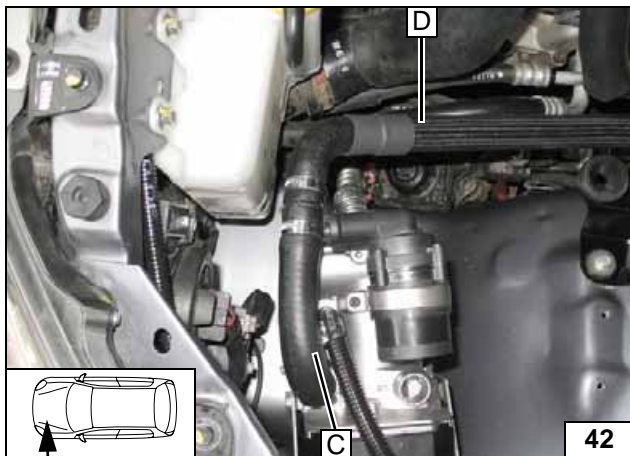
Connection on heat exchanger



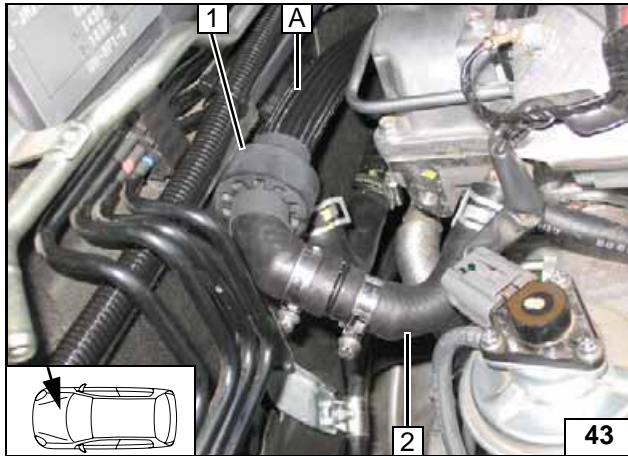
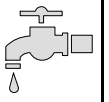
Route coolant hose D through rubber-coated p-clamp 1 [3x] to installation location of heater unit.



Routing in engine compartment



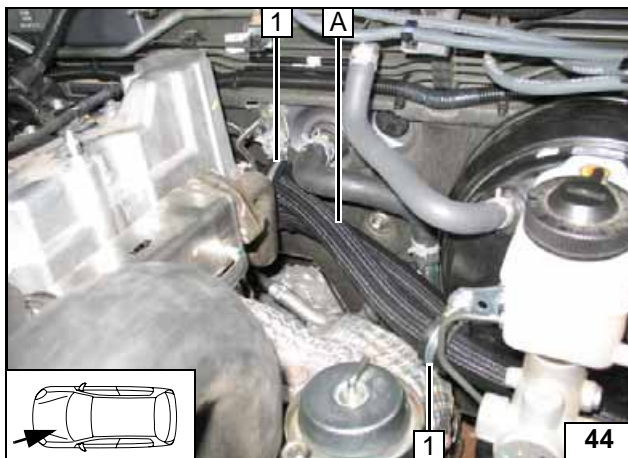
Connection to heater unit



- 1 Align black (sw) rubber isolator
- 2 Original vehicle hose



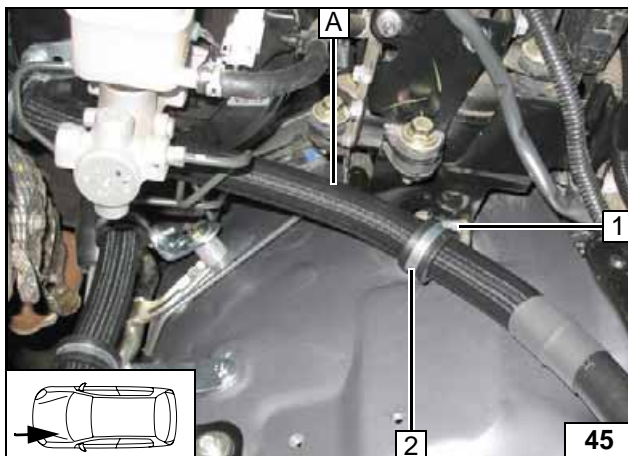
**Connect-
ing engine
outlet**



Route coolant hose **A** through rubber-coated p-clamp **1** [2x]



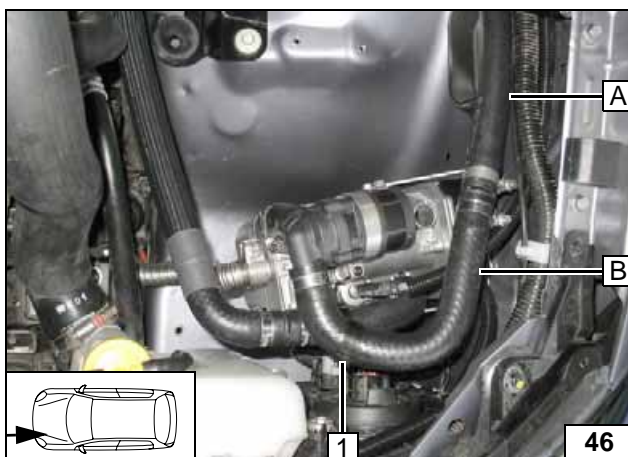
**Routing in
engine
compart-
ment**



Mount 29 mm dia. rubber-coated p-clamp **2** on original vehicle bolt **1**. Route coolant hose **A** through 29 mm dia. rubber-coated p-clamp **2** to installation location of heater unit



**Routing in
engine
compart-
ment**

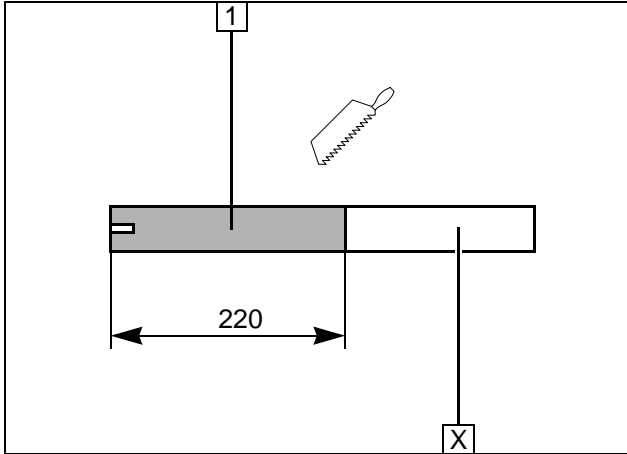
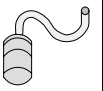


Before connecting, fill the coolant hoses with coolant.

- 1 Spacer bracket



**Connec-
tion to
heater unit**

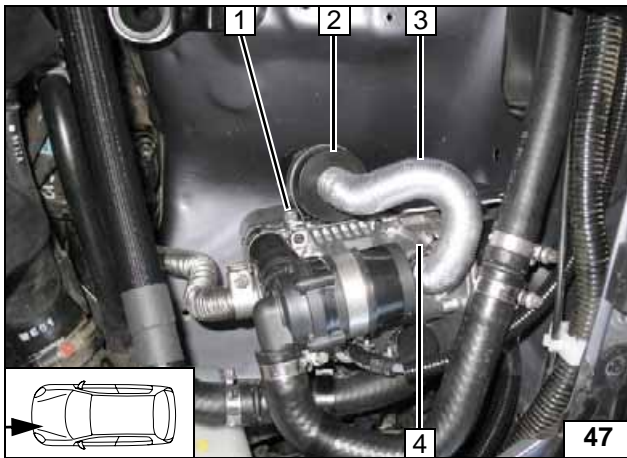


Combustion air

- 1 Combustion air pipe = 220 mm

Discard section X

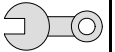
Cutting combustion air pipe to length



- 1 Ejet screw, 52 mm dia. clamp
- 2 Combustion-air intake muffler
- 3 Combustion-air intake pipe
- 4 27 mm dia. hose clamp



Installing intake pipe and muffler



Final Work

WARNING!

Reassemble the disassembled components in reverse order.

Check all hoses, clamps and all electrical connections for firm seating.

Secure all loose cables using cable ties.

Only use manufacturer-approved coolant.

Spray the heater unit 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 the digital timer.
- Make settings on A/C control panel according to the "Operating Instructions for End Customer".
- Check the proper operation of the additional heater, see the operating instructions/installation instructions.
- Attach the "Switch off additional heater before refueling" sticker to the left-hand B-pillar.



Webasto AG
Postfach 80 - 82132 Stockdorf
Hotline 01805 / 932278 - Hotfax 0395 / 5592-353
<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.

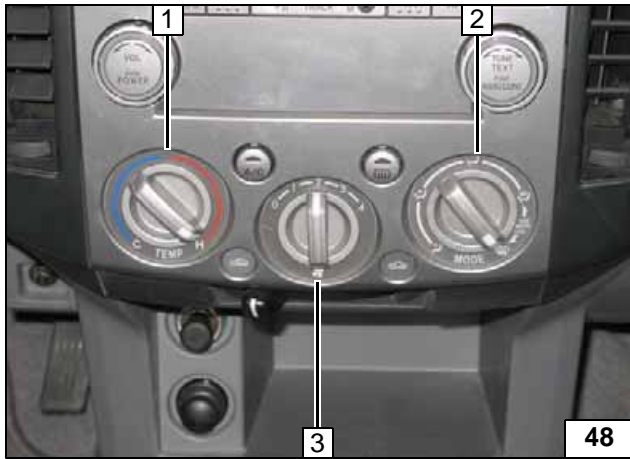
Heating time = driving time

Example:

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

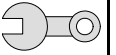
If the summer/winter switch option has been installed, this must be switched in accordance with the time of year. The heater unit will then only switch on the vehicle fan to ventilate the vehicle interior in the position Winter  heat and in the position Summer .

Before parking the vehicle, make the following settings:

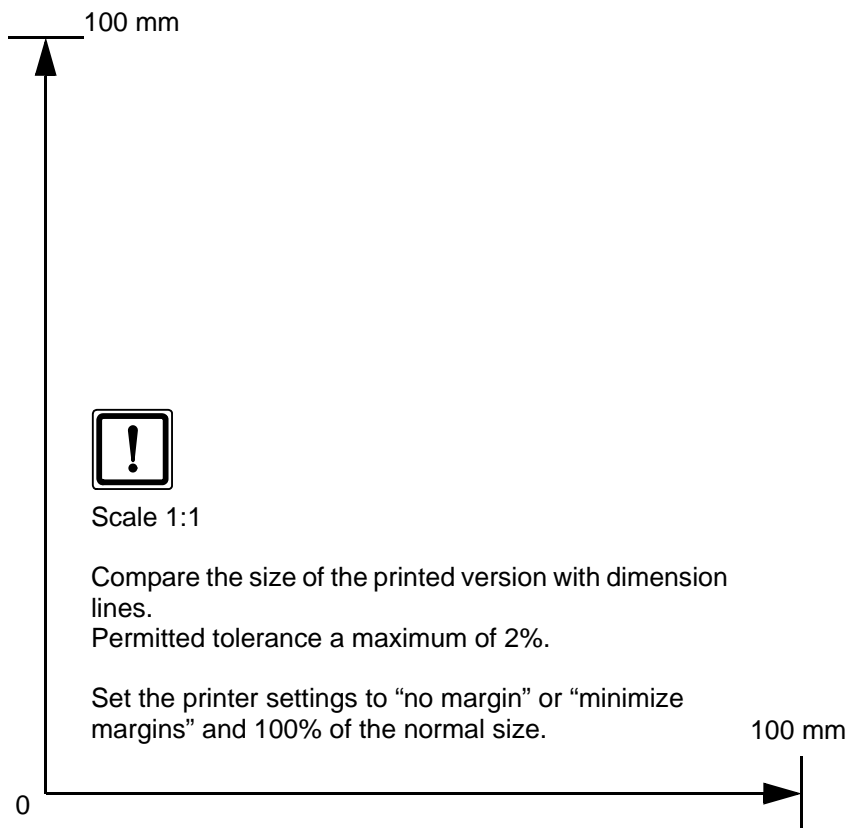
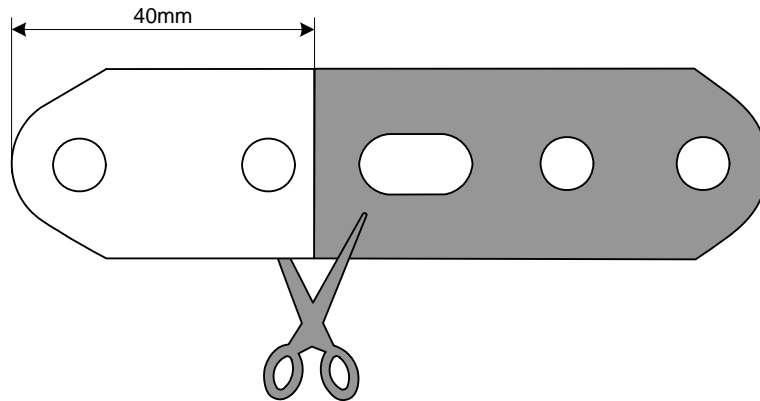


- 1 Set temperature to "max."
- 2 Air outlet to windshield
- 3 Set fan to level "1", or possibly "2"

Manual air conditioning



Template for Perforated Fastening Strap



Scale 1:1

Compare the size of the printed version with dimension lines.
Permitted tolerance a maximum of 2%.

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