

# Water Heater Unit



Feel the drive

**Thermo Top E Additional Heater**



**Thermo Top C Additional Heater**



**Thermo Top P Additional Heater**



## Installation Instructions

### Hyundai Sonata

Gasoline

from Model Year 2005

Left-hand drive vehicle

Automatic air-conditioning



#### **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.**

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## Validity

Manufacturer	Model	Type	EG-BE No./ABE
Hyundai	Sonata	NF	e11 * 2001/116 * 0241

Engine type	Engine model	Output in kW	Displacement in cm <sup>3</sup>
G4KC	Gasoline	119	2359

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 Unit/Installation Kit

Quantity	Description	Order No.:
1	Retail accessories with desired heater control	See price list
1	Installation kit for Hyundai Sonata Gasoline	1310031A

### 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

The installation instructions apply to the Hyundai Sonata vehicles with a Gasoline engine  
 - For the validity, see page 2 - from model year 2005 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, where this is the case the stipulations in the "installation instructions" and "operating and maintenance instructions" for the *Thermo Top C* should 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
- Hose clamping pliers

## 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.

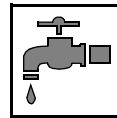
### Mechanical work



### Electrical connection



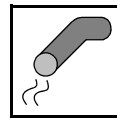
### Coolant connection



### 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.



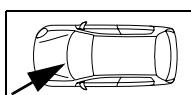
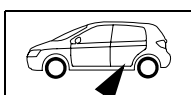
Specific risk of fire or explosion.



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.

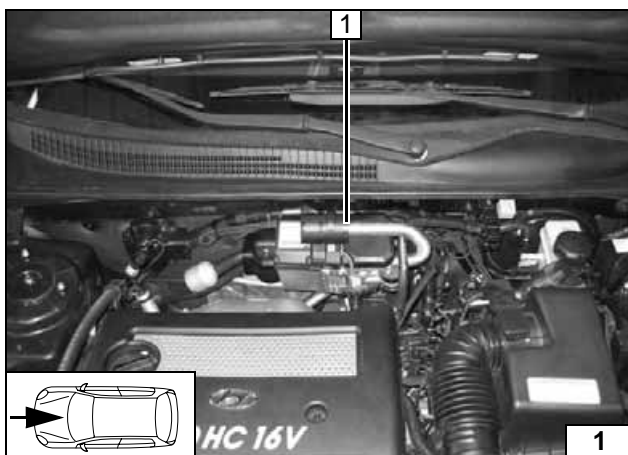
## Preliminary Work

### WARNING!

- Disconnect the battery "earth" or "ground" connection.
- 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.
- Remove the coolant reservoir cap.
- Remove the entire air filter
- Open the fuel tank cap, ventilate the tank.
- Close the tank cap again.
- Open the right-hand fuel sender service lid.
- Remove the fuel-tank sending unit in accordance with the manufacturers specifications.
- Detach the trim of the fuel lines on the underbody
- Remove the instrument panel trim in the right footwell
- Remove the A/C control panel.
- Remove the A-pillar trim on the right (only with Telestart)



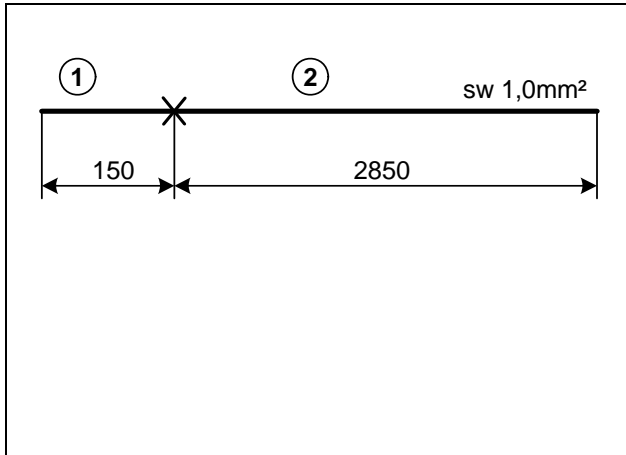
Pre-  
liminary  
Work



### Heater unit installation location

1 Heater unit

Installation  
location

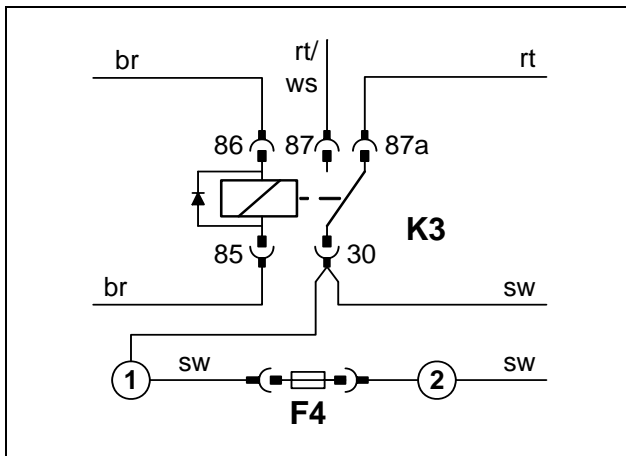


## Preparing electrical system Only with automatic air-conditioning

Wire section **1** will be required later for connection of additional fuse.



**Cutting wires to length**



Make connections as shown in the wiring diagram with the tab receptacles provided. Pull wire section **2** into protective sleeving provided and route into passenger compartment together with clock and fan wiring harness.



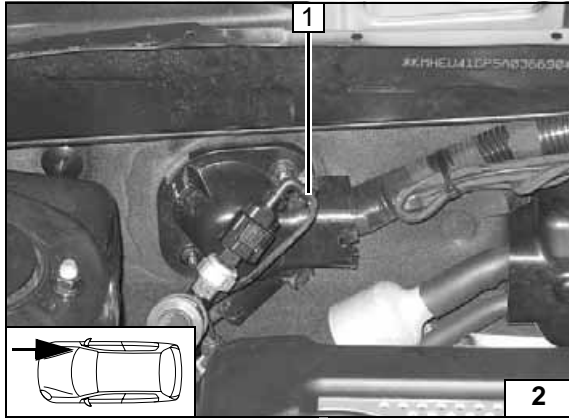
**Preassembling K3 relay**



## Electrical Connections

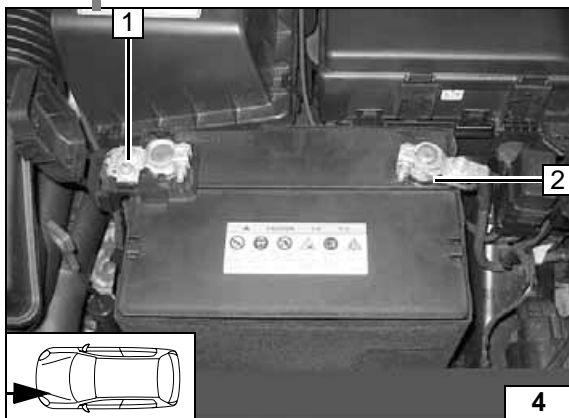
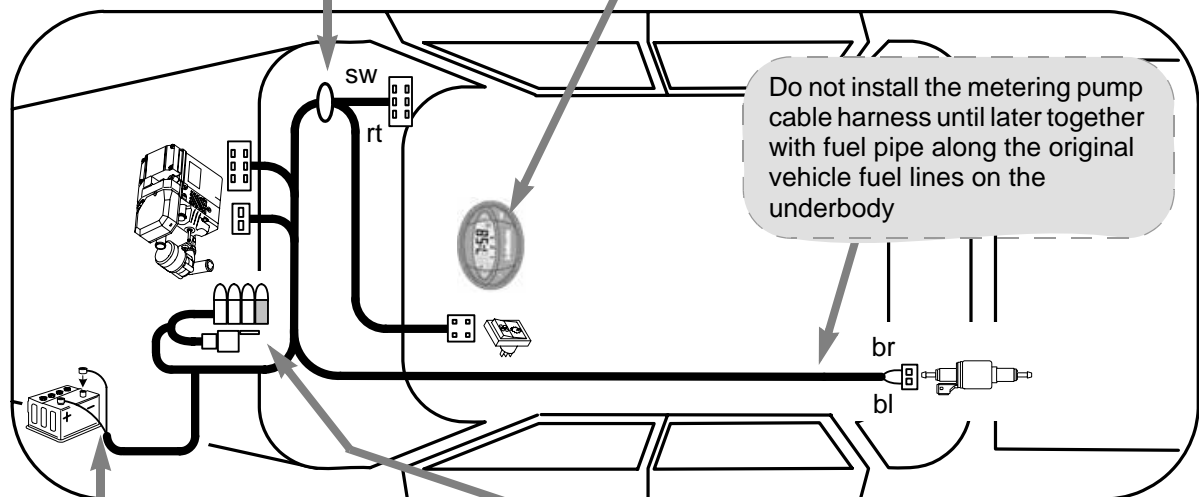
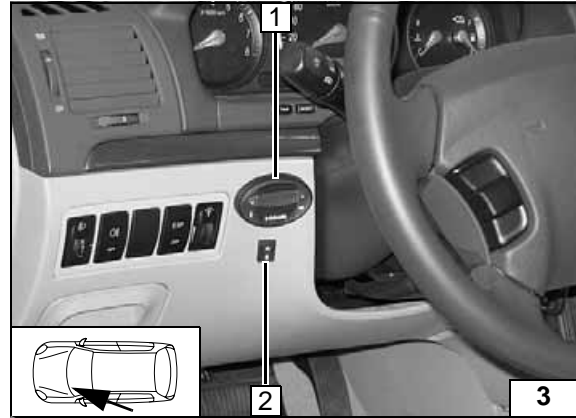
### Wiring harness pass through

- 1 Remove protective rubber plug and lay in cable



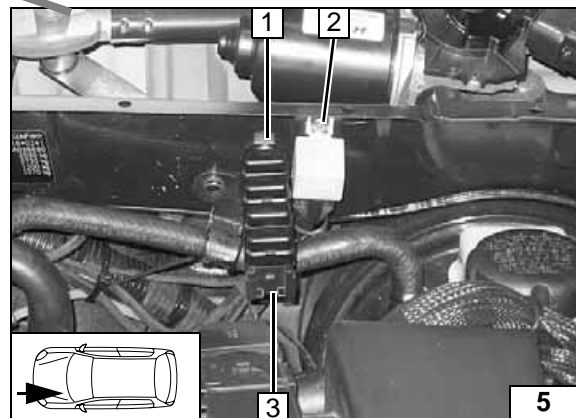
### Digital timer and summer/winter switch option

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



### Connecting power supply

- 1 Positive wire on positive support point
- 2 Ground wire on battery terminal grounding pole

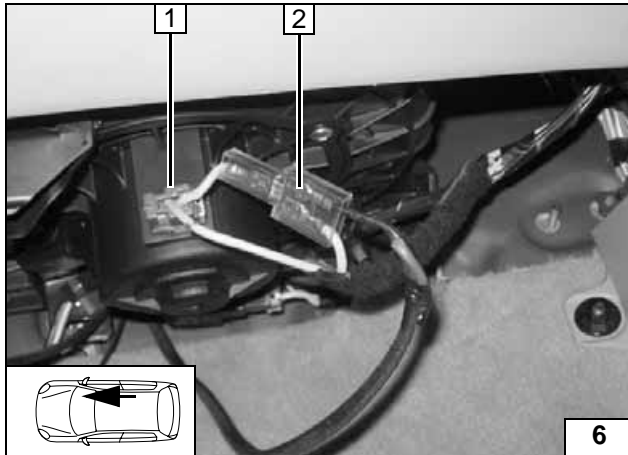


### Fuse holder, relay K3

- 1 Retaining plate of fuse holder, 4 mm dia. hole, 5.5x13 self-tapping screw
- 2 K3 relay, 4 mm dia. hole, 5.5x13 self-tapping screw
- 3 10 A additional fuse



Wiring harness installation diagram

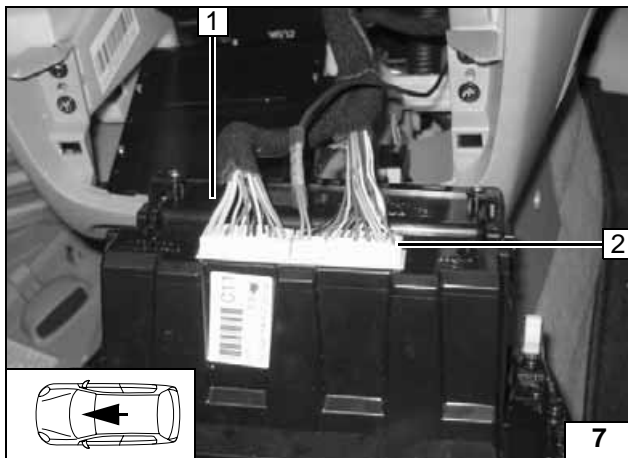


## Automatic air-conditioning fan controller

Connection to 2-pin connector from blower motor.  
Make connections as shown in the wiring diagram with the tab receptacles provided.

- 1 2-pin connector
- 2 3x connector

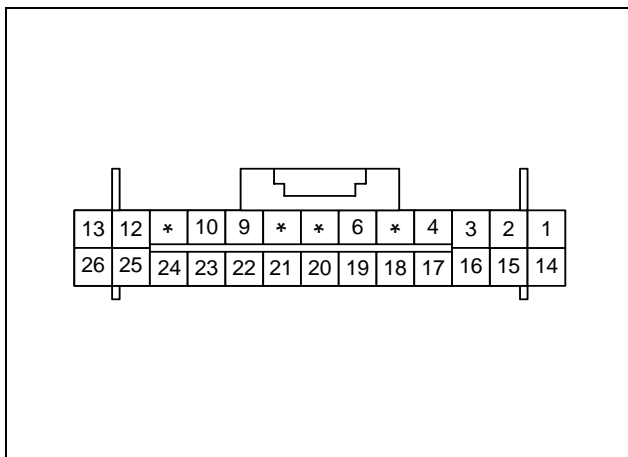
  
**Con-necting fan motor**



Connection to 26-pin connector M 21-1 from air conditioning control.  
Make connections as shown in wiring diagram with connectors provided.

- 1 A/C control panel
- 2 26-pin connector

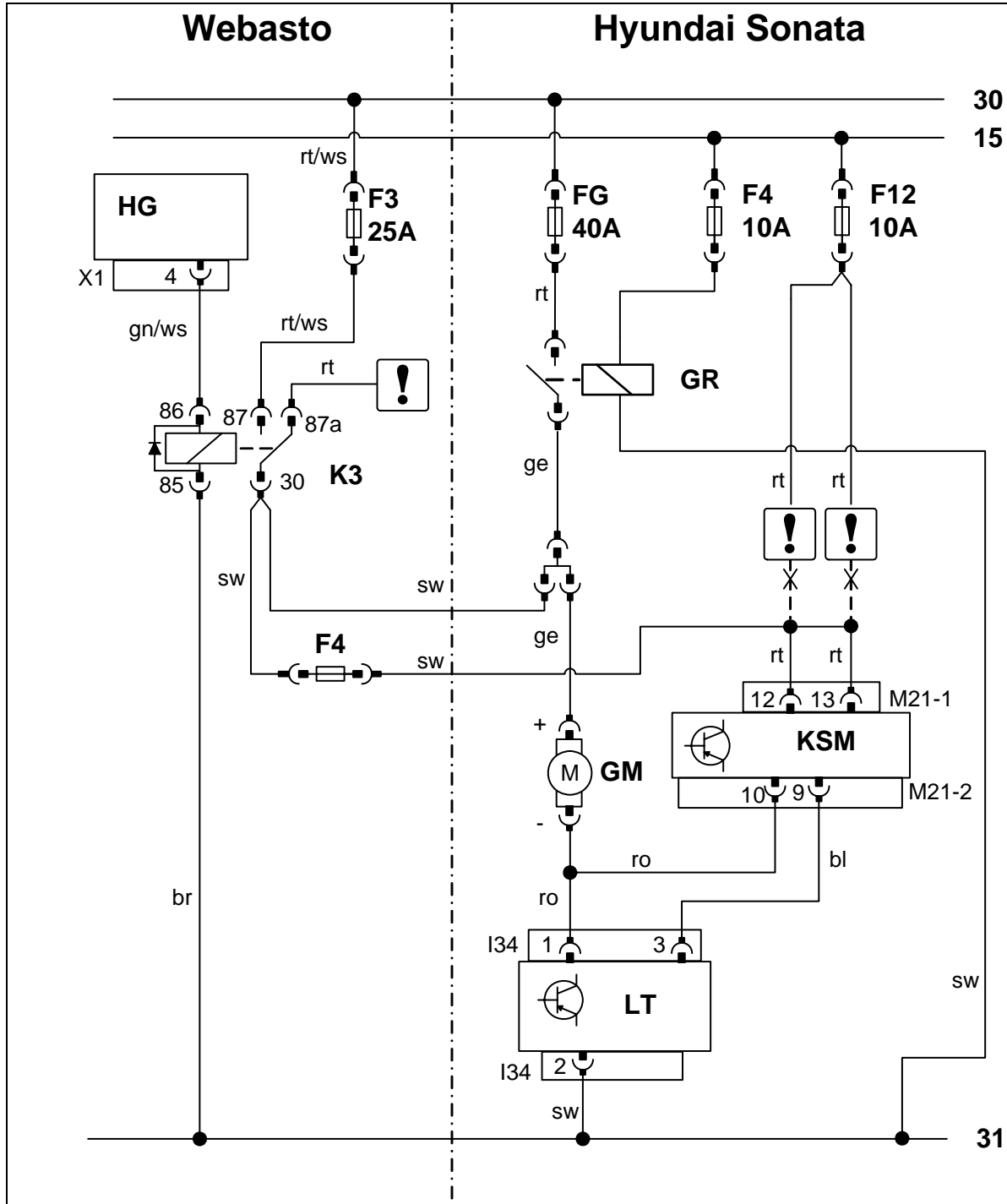
  
**Con-necting air-con-ditioning control element**



Connector view M21-1 on contact side

**Connector for A/C control panel**

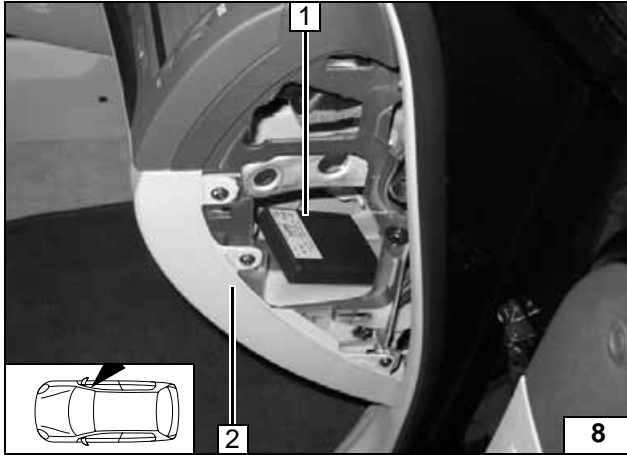




Automatic air-conditioning circuit diagram

Webasto components		Hyundai components		Colors and symbols	
HG	Heater unit TT-C/E	GM	Fan motor	rt	red
F3	Fuse	GR	Fan relay	ws	white
K3	Fan relay	LT	Power transistor	sw	black
F4	10 A additional fuse	KSM	A/C control module	br	brown
		FG	Fan fuse	gn	green
		F4	GR fuse	bl	blue
		F12	KSM fuse	ge	yellow
				or	orange
				ro	pink
				!	Insulate wire ends and tie back
				X	Cutting point

Legend

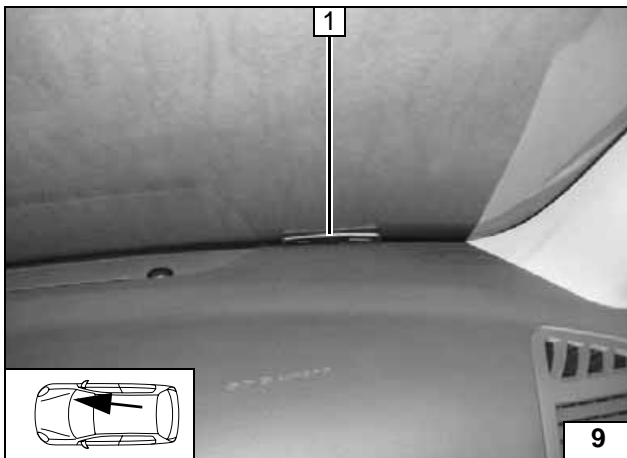


## Remote option (Telestart)

- 1 Receiver, double-sided adhesive Velcro strip
- 2 Instrument panel trim



**Installing receiver**



Route antenna cable to receiver in lower area of A-pillar trim.

- 1 Antenna

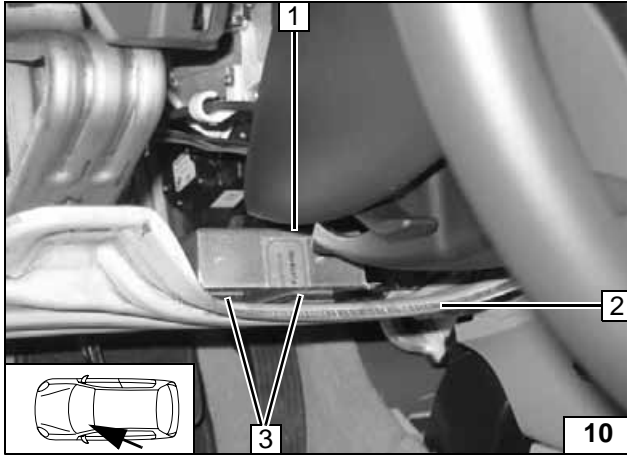


**Installing antenna**



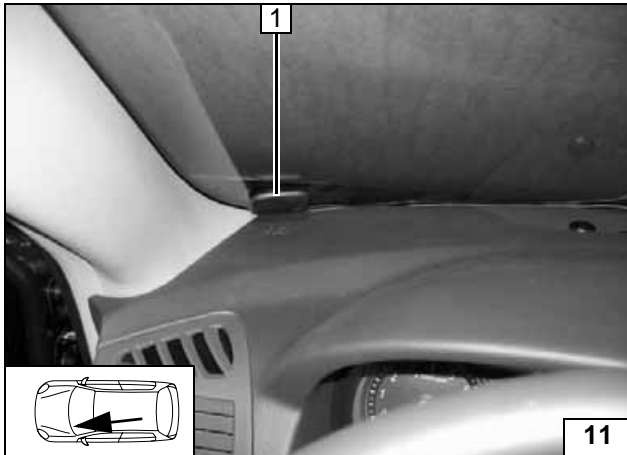
## Remote option (Thermo Call)

- 1 Receiver
- 2 Cross member under steering column
- 3 Double-sided adhesive Velcro strip



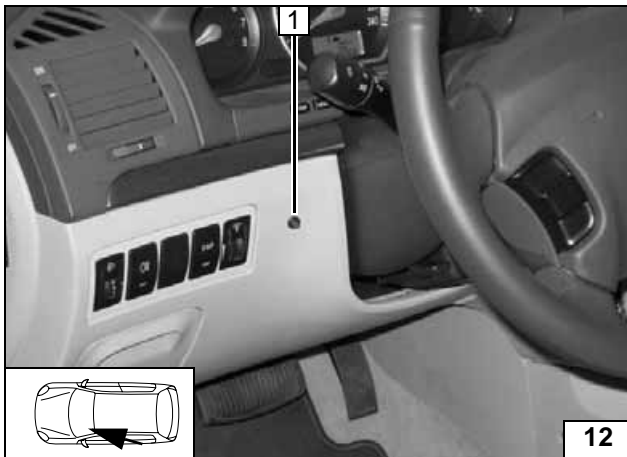
Installing receiver

- 1 Antenna

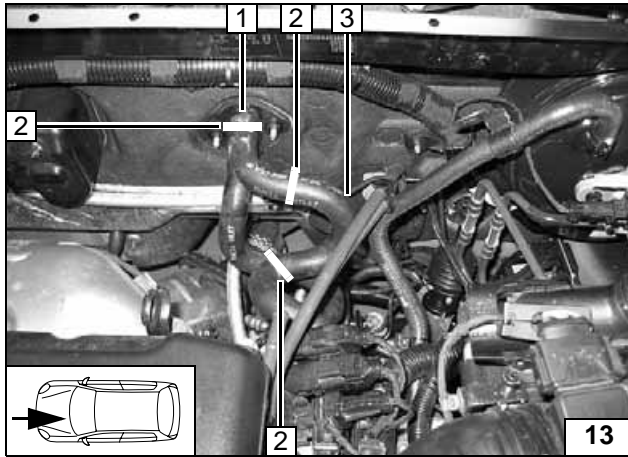
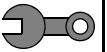


Installing antenna

- 1 Pushbutton



Installing push button



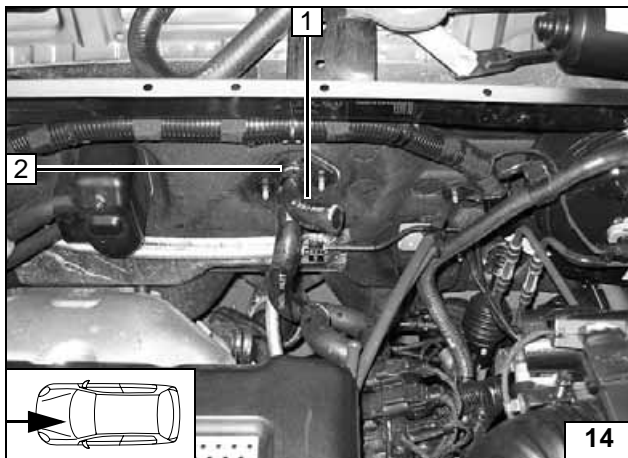
## Preparing installation location

Disconnect hose section from heat exchanger inlet **1** and **shorten by approx. 25 mm**. Original vehicle clamp will be reused.

- 2 Cutting point [3x]
- 3 Discard hose section

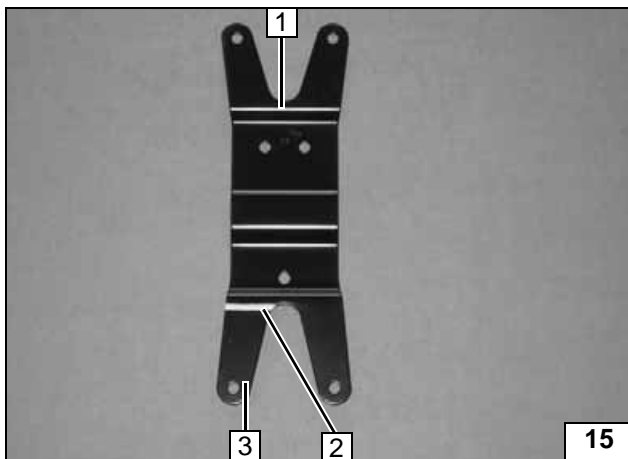


Cutting point for coolant



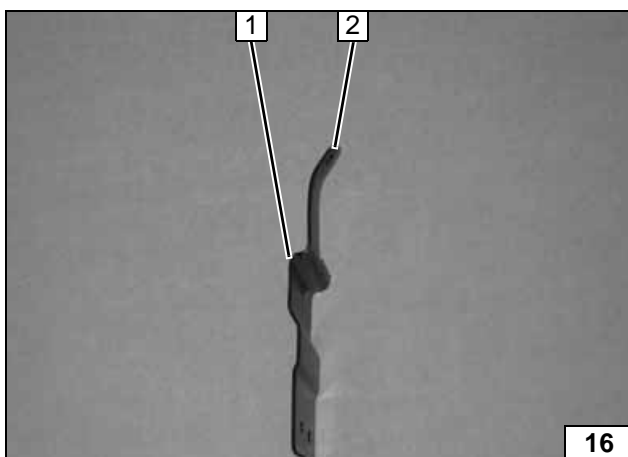
- 1 Remaining hose on heat exchanger inlet, turned upward by approx. 25°
- 2 Original vehicle clamp

Preparing coolant



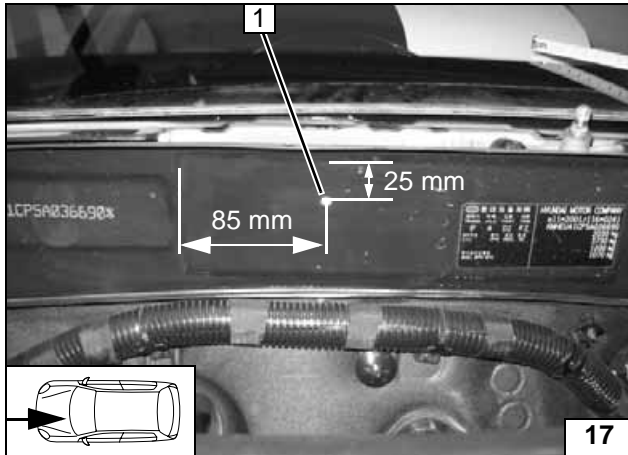
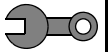
- 1 Bracket
- 2 Cutting point
- 3 Discard section

Preparing bracket



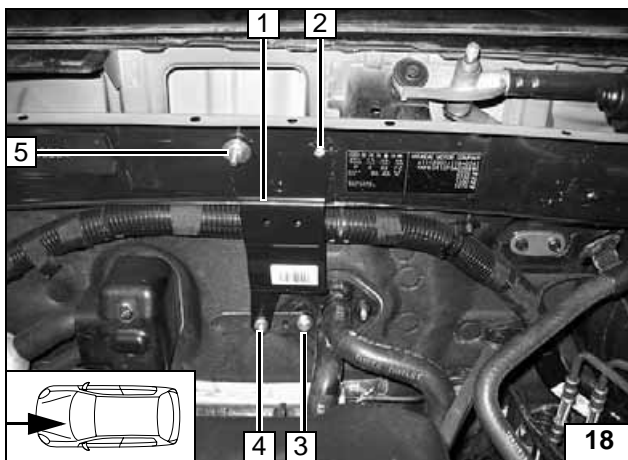
- 1 Bracket
- 2 Bend tab approx. 30°

Preparing bracket



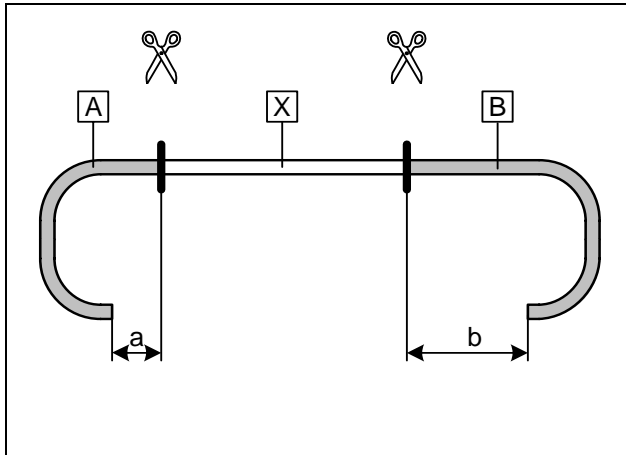
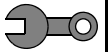
1 7 mm dia. hole

Copying  
hole  
pattern



- 1 Bracket
- 2 Copy hole pattern, 7 mm dia. drilled hole
- 3 Perforated plate with M6 flanged nut on original vehicle stud bolt
- 4 Bracket with M6x20 bolt, large diameter washer, M6 flanged nut on perforated bracket
- 5 M6x20 bolt, M6 flanged nut

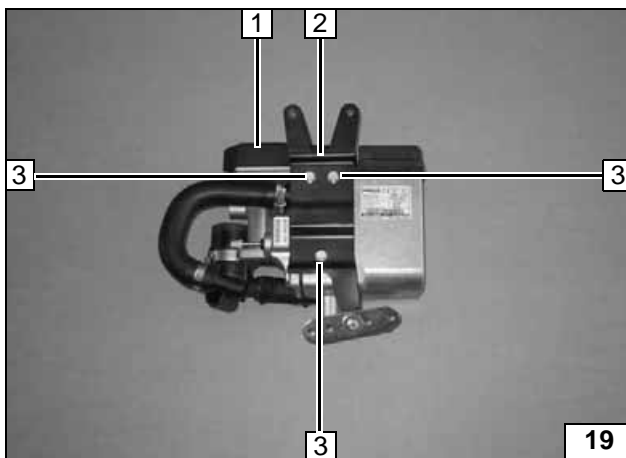
Copying  
hole  
pattern



## Preparing heater unit

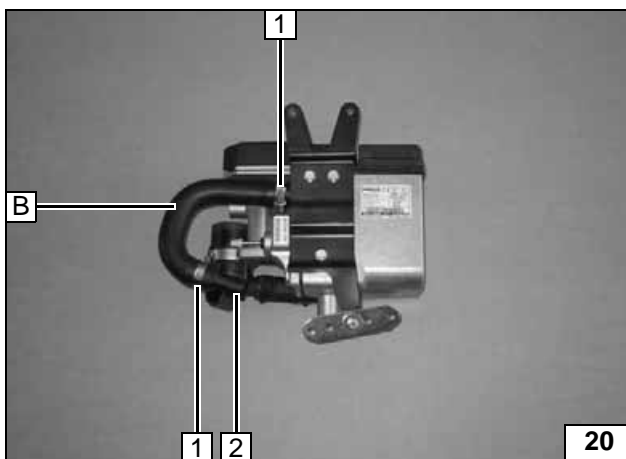
a = 25 mm  
b = 55 mm

Discard section X

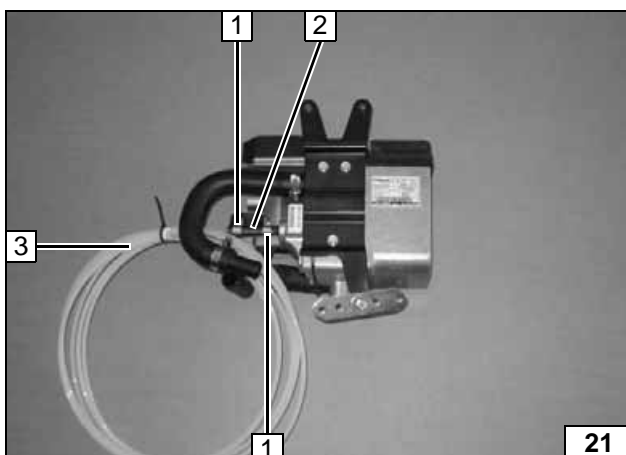


Tighten E-JOT screws to 10 Nm!  
Insert two washers between heater unit and bracket at position X.

- 1 Heater unit
- 2 Bracket
- 3 E-jot screw, washer [3x]



- 1 27 mm dia. hose clamp [2x]
- 2 18x20 connecting pipe



- 1 10 mm dia. hose clamp [2x]
- 2 Hose section
- 3 Mecanyl fuel line



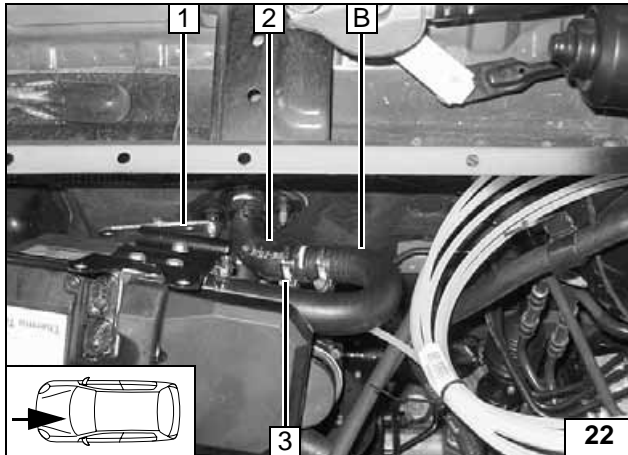
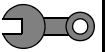
**Cutting coolant hoses to length**



**Preassembling bracket on heater unit**

**Pre-mounting water hose on heater unit**

**Pre-mounting fuel hose on heater unit**



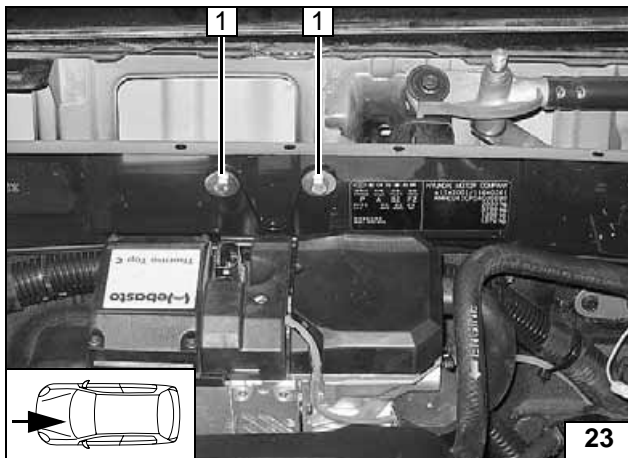
## Installing heater unit

Tighten EJOT screws to 10 Nm!

- 1 Perforated bracket on original vehicle stud bolt, M6 flanged nut
- 2 Hose section of heat exchanger inlet
- 3 27 mm dia. clamp

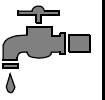


Installing heater unit



- 1 M6x20 bolt [2x], large diameter washer [4x], M6 flanged nut [2x]

Installing heater unit



## Coolant connection

### WARNING!

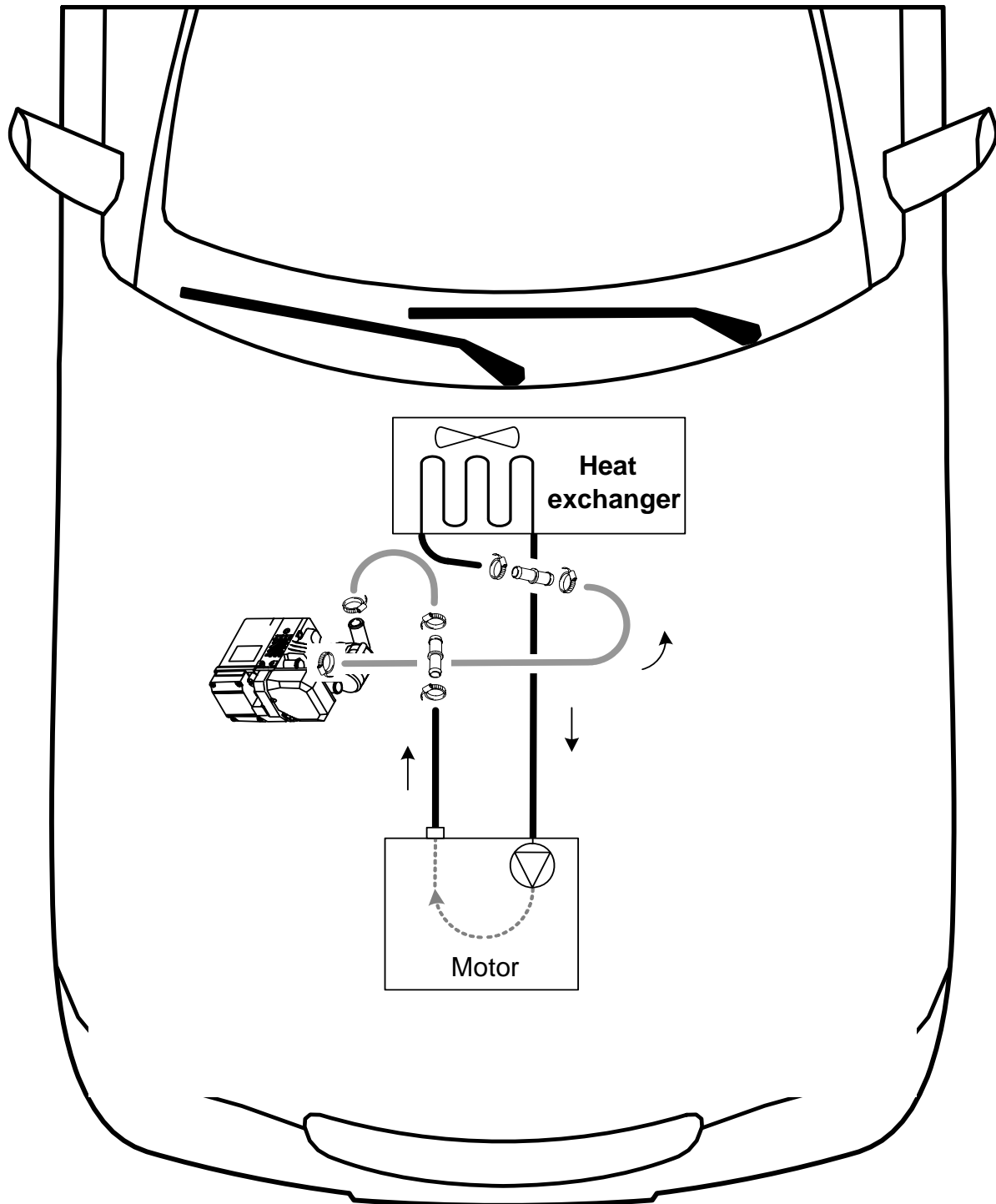
Tighten all hose clamps to  $2.0 + 0.5$  Nm.

Any cold water 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:

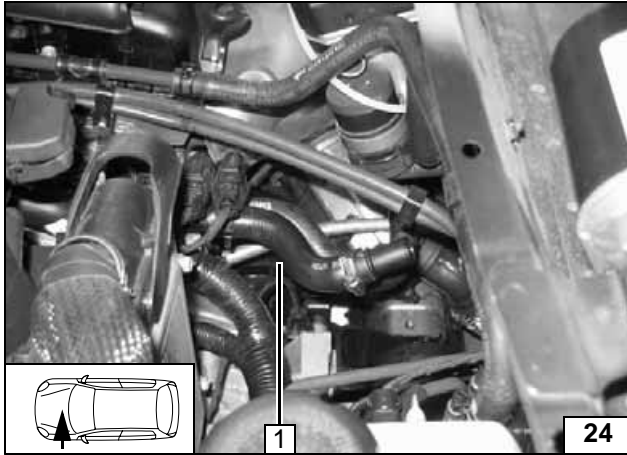


Coolant routing diagram

All clamps without a specific designation are 20-27 mm dia. hose clamps  
All connecting pipes are 18x20 dia.



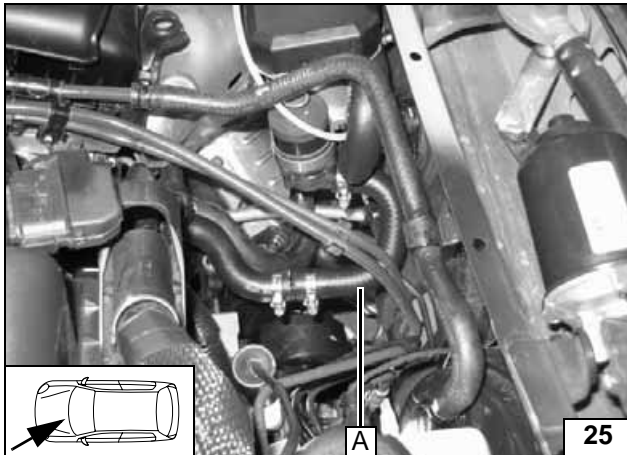




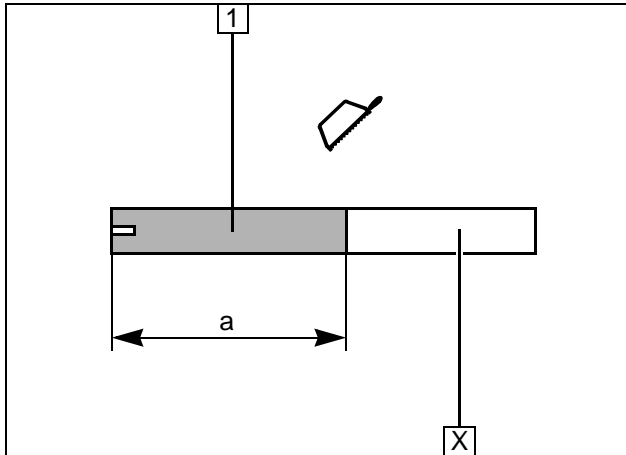
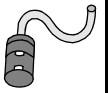
Turn hose section 1 on engine outlet by 180°.



Con-  
nection on  
engine  
outlet



Con-  
nection on  
heater unit

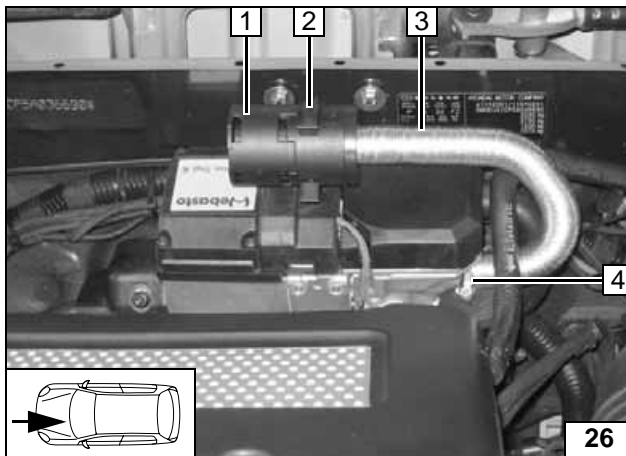


## Combustion air connection

- 1 Combustion air pipe  
a = 280 mm

Discard section X

Cutting combustion air pipe to length



- 1 Combustion-air intake muffler
- 2 Retaining clip in hole
- 3 Combustion-air intake pipe
- 4 27 mm dia. hose clamp



Installing intake muffler



## Fuel Connection

### CAUTION!

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

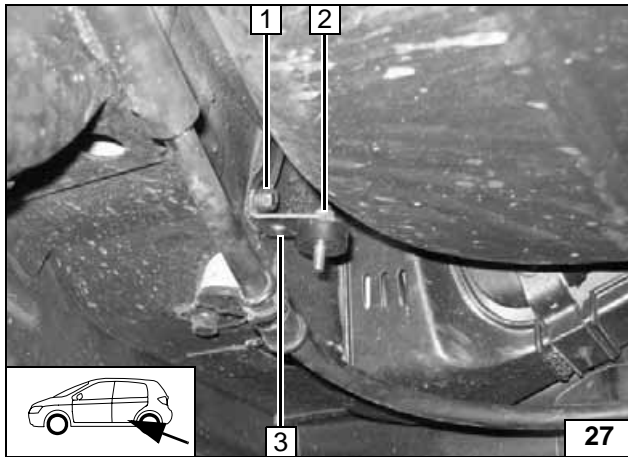
Catch any fuel running off with an appropriate container.

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.

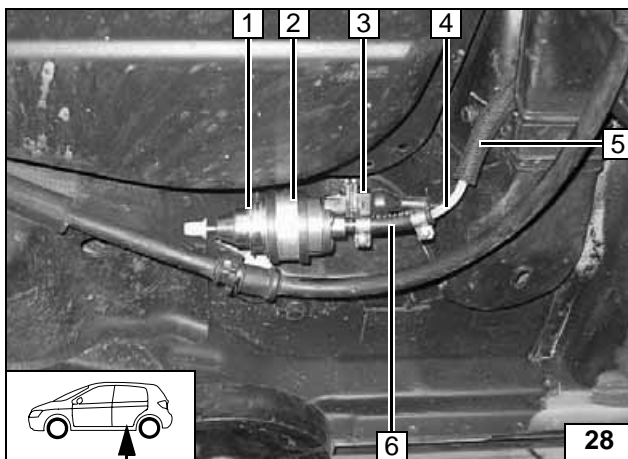
### WARNING!

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



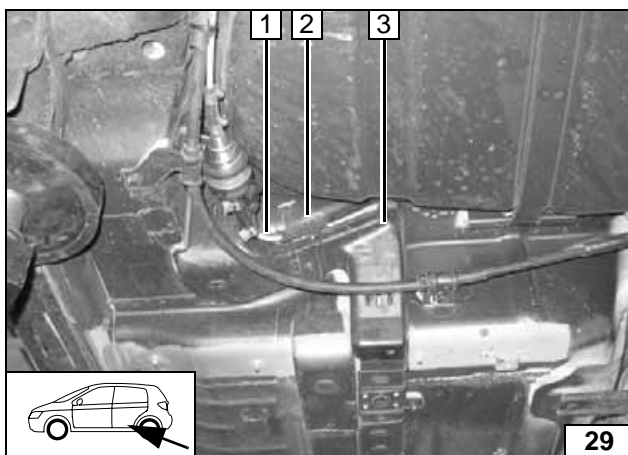
Ensure proper installation position of metering pump, see "Installation Instructions".  
Installation location on left next to vehicle fuel tank.

- 1 Original vehicle bolt
- 2 Silentblock, M6 flanged nut
- 3 Angle bracket



Fuel line from heater unit on pressure side of metering pump [side with connector].

- 1 Metering pump
- 2 Rubber-coated p-clamp on silent block, M6 flanged nut
- 3 Wiring harness of metering pump, protective rubber plug, tab connector, connector housing
- 4 Mecanyl fuel line
- 5 Included hose section as protection
- 6 Hose section, 10 mm dia. clamp [2x]



- 1 Mecanyl fuel line
- 2 Metering pump wiring harness
- 3 Cover for fuel lines

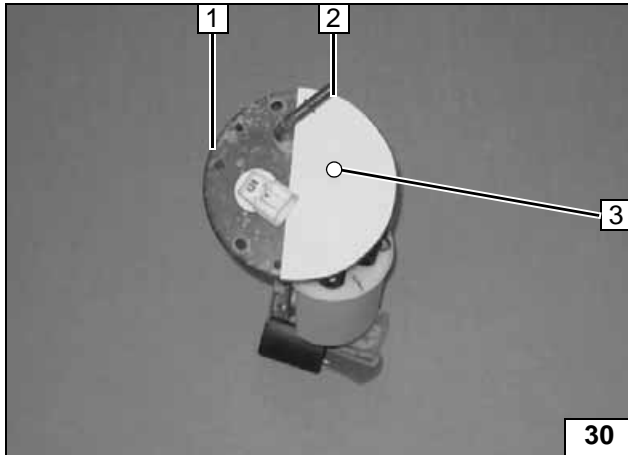


Installation location of metering pump



Installing metering pump

Installing lines

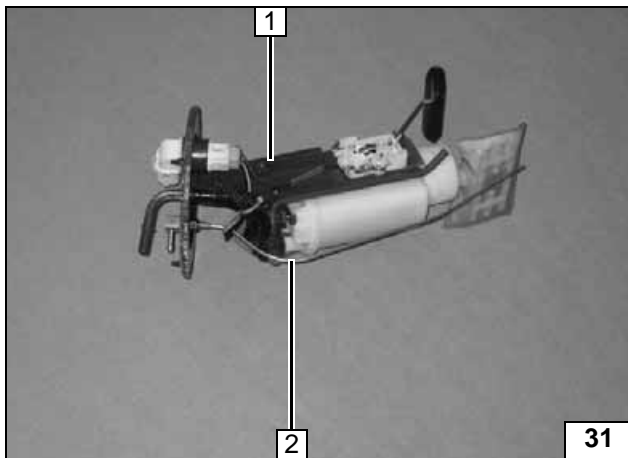


Remove and dismantle fuel-tank sending unit according to manufacturer's instructions.

- 1 Fuel-tank sending unit
- 2 Template
- 3 Copy hole pattern, 6 mm dia. hole



## Removing fuel

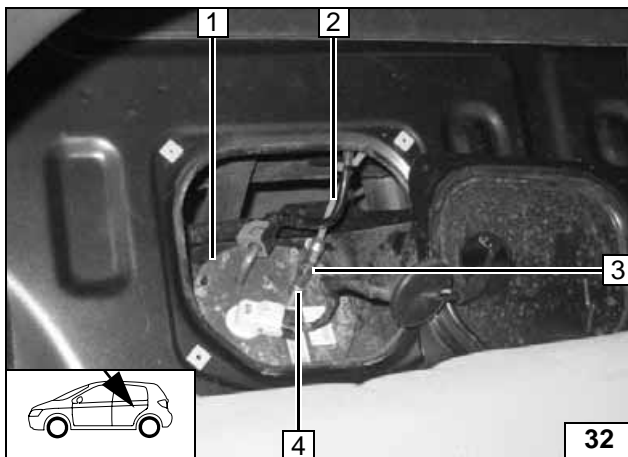


Shape fuel standpipe according to template, cut to length and install, see "installation instructions".

- 1 Fuel-tank sending unit
- 2 Fuel standpipe



## Installing fuel standpipe

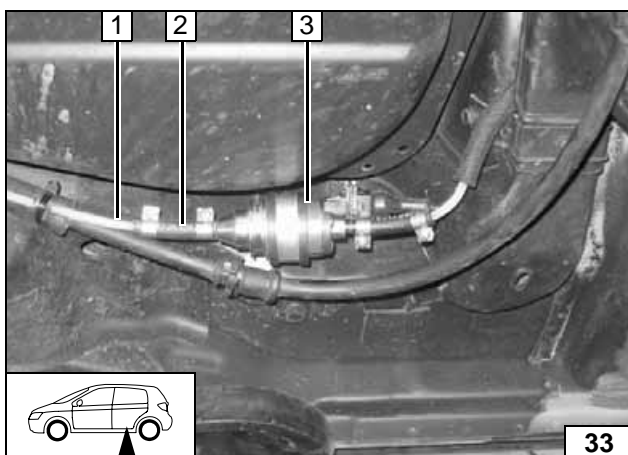


Install fuel-tank sending unit according to manufacturer's specifications.

- 1 Fuel sender
- 2 Remaining end of Mecanyl fuel line
- 3 Hose section, 10 mm dia. clamp [2x]
- 4 Fuel standpipe



## Connecting fuel line

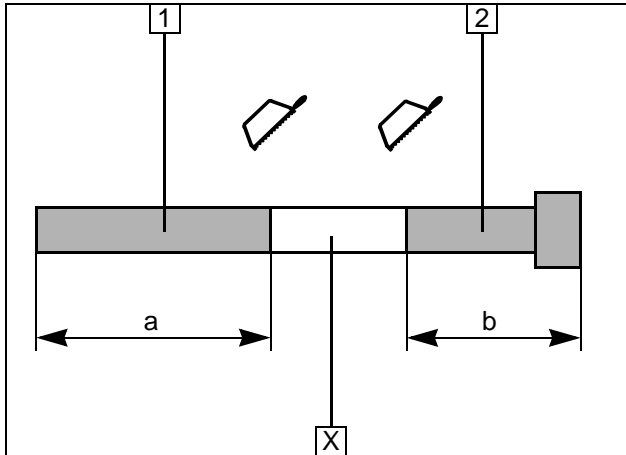


Fuel line from fuel standpipe on intake side of metering pump [side without connector]. Check the position of the components; adjust if necessary. Check that they have free clearance.

- 1 Fuel line
- 2 Hose section, 10 mm dia. clamp [2x]
- 3 Metering pump



## Connection to metering pump

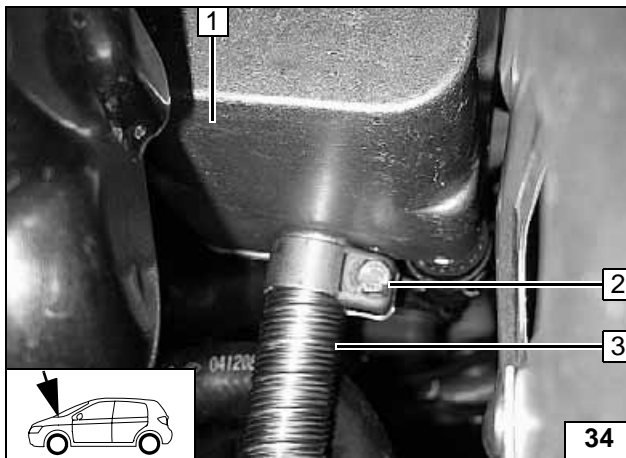


## Exhaust-gas connection

- 1 Exhaust pipe  
a = 700 mm
- 2 Exhaust end section  
b = 70 mm

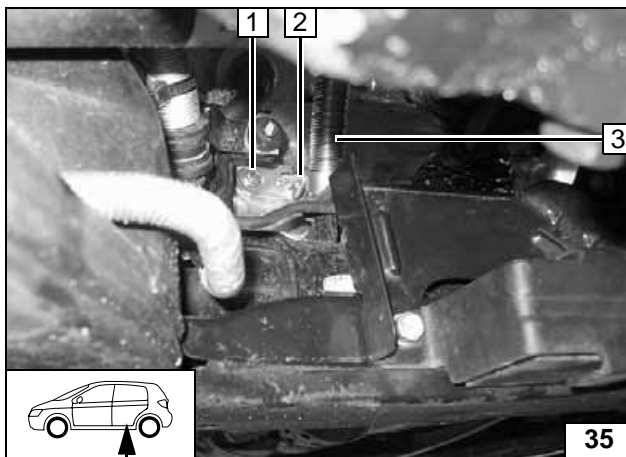
Discard section X

Preparing exhaust pipe



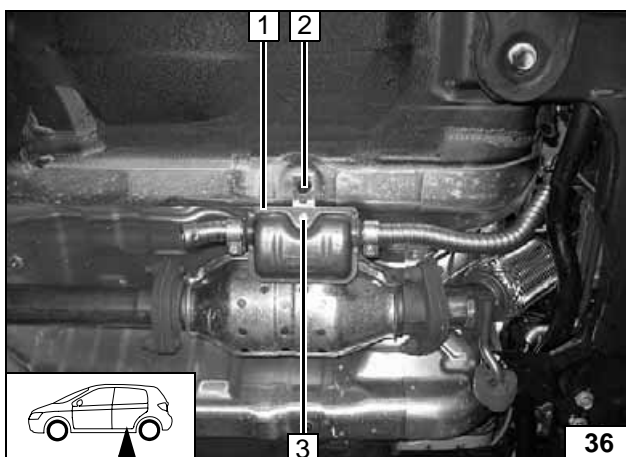
- 1 Heater unit
- 2 Hose clamp
- 3 Exhaust pipe

Installing exhaust pipe



- 1 Original vehicle stud bolt, large diameter washer, angle bracket, M6 flanged nut
- 2 Pipe clamp, M6x20 bolt, M6 flanged nut
- 3 Exhaust pipe

Installing exhaust pipe

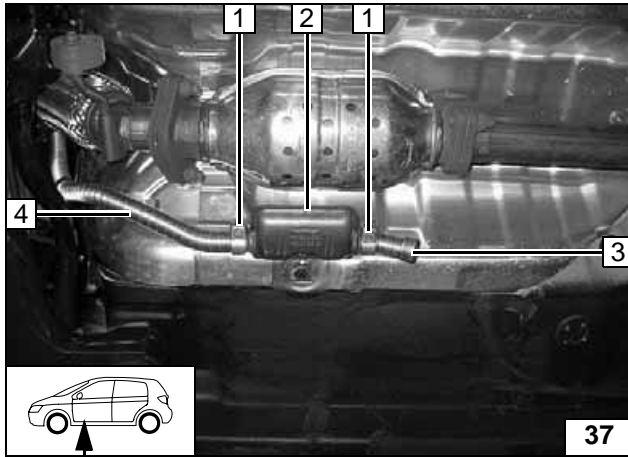


Cut included perforated bracket to length according to template.

- 1 Muffler
- 2 Perforated bracket on original vehicle bolt
- 3 M6x20 bolt, M6 flanged nut

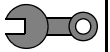


Installing muffler



- 1 Hose clamp [2x]
- 2 Exhaust muffler
- 3 Exhaust end section
- 4 Exhaust pipe

**Installing  
exhaust  
pipe and  
exhaust  
end  
section**



## Final Work

### WARNING!

Reassemble the disassembled components in reverse order.

Check all hoses, hose, spring and Caillau clamps, as well as all electrical connections for firm seating.

Secure all loose cables using cable ties.

Spray the heater unit components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- Connect battery
- Start the engine, bleed the coolant circuit according to the instructions of the vehicle manufacturer and add coolant
- Set the digital timer.
- Adjust the vehicle heater with automatic air-conditioning or without automatic air-conditioning according to "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

*Feel the drive*

Webasto AG  
Postfach 80 - 82132 Stockdorf, Germany - Hotline +49-  
(0)1805-932278  
Hotfax +49-(0)395-5592-353 - <http://www.webasto.de>

## Operating Instructions for End Customer

Please remove page and add to the vehicle operating instructions.



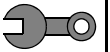
Before parking the vehicle, make the following settings:



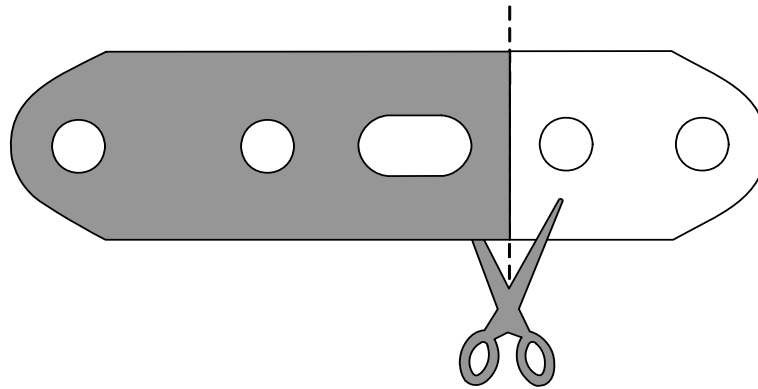
- 1 Air outlet to windshield
- 2 Set fan to level "3"
- 3 Set temperature to "max."

For vehicles with automatic air conditioning





Template for Perforated Fastening Strap



100 mm



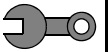
Scale 1:1

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

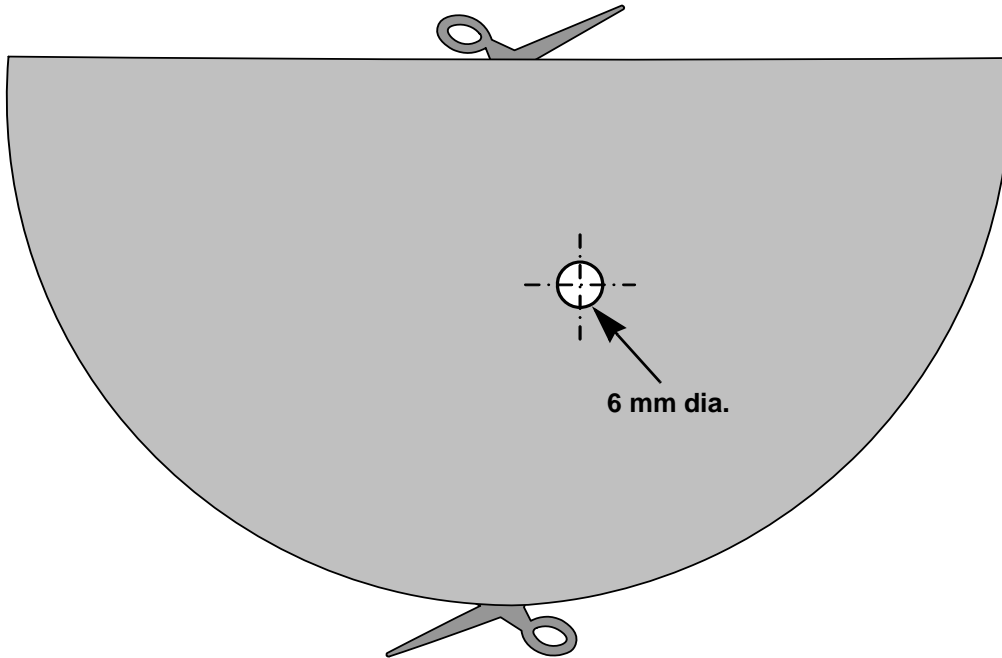
Correct major differences in the printer settings or request an original printout.

100 mm

0



Template for Fuel sender



100 mm



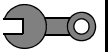
Scale 1:1

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

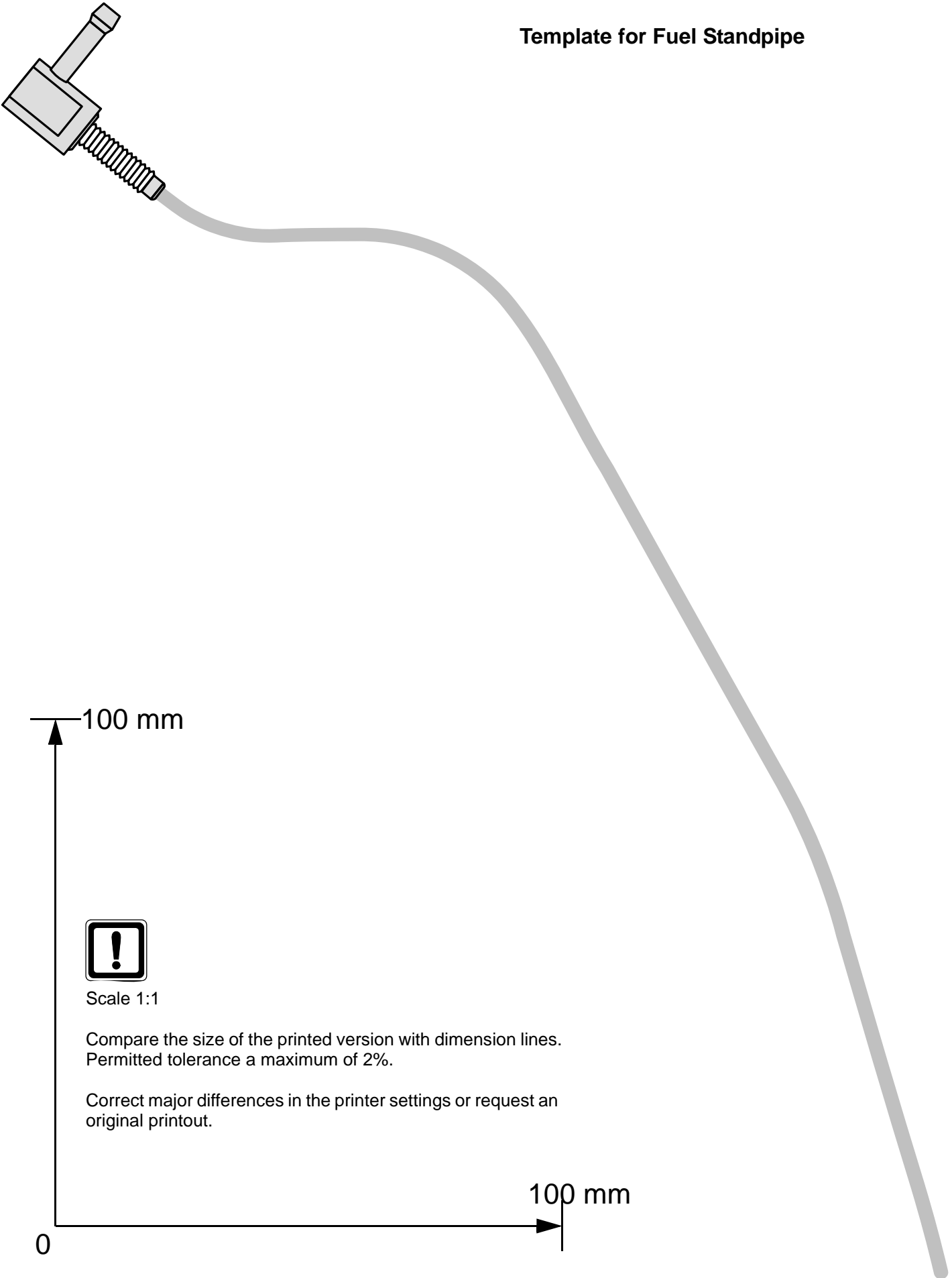
Correct major differences in the printer settings or request an original printout.

100 mm

0



Template for Fuel Standpipe



100 mm



Scale 1:1

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

Correct major differences in the printer settings or request an original printout.

100 mm

0