

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

Hyundai Sonata

Diesel

from Model Year 2006

For left-hand drive vehicles only

Manual transmission



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 ³ |
|-------------|--------------|--------------|---------------------------------|
| D4EA | Diesel | 103 | 1991 |

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/Installation Kit

| Quantity | Description | Order No.: |
|----------|--|----------------|
| 1 | Retail accessories with desired heater control | See price list |
| 1 | Installation kit for Hyundai Sonata Diesel | 1312222A |

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 Hyundai Sonata Diesel vehicles - 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 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).

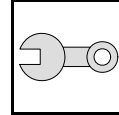
Special Tools

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

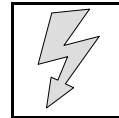
Explanatory Notes on Document

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.

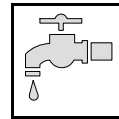
Mechanical system



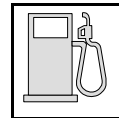
Electrical system



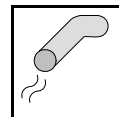
Coolant connection



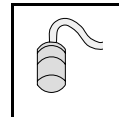
Fuel connection



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.



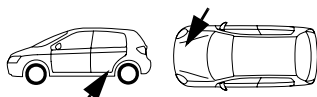
Specific risk of fire or explosion.



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



Reference to a special technical feature.



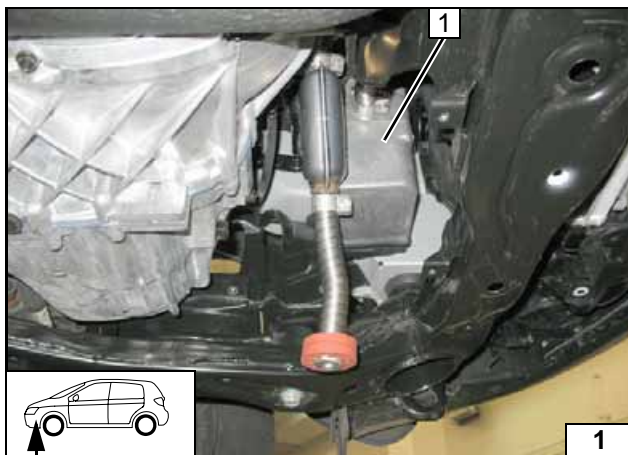
The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

Preliminary Work

WARNING!

- Open the fuel tank cap, ventilate the tank.
- Close the tank cap again.
- 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 air filter together with the intake connection piece.
- Remove the engine design cover
- Disconnect the vacuum valve (on firewall at right)
- Remove the plastic cover over the wiring harness pass through (on firewall at right)
- Remove the underride protection of from the engine at the rear left in front of the fuel tank
- Remove the lower left engine compartment trim
- Detach the lower cover from the fuel lines
- Remove the floor covering from the luggage compartment
- Fold down the right-hand backrest of the rear seat
- Open the right-hand fuel sender service lid.
- Remove the fuel-tank sending unit in accordance with the manufacturers specifications.
- Remove the right-hand footwell trim
- Remove the A/C control panel (only with automatic air-conditioning)

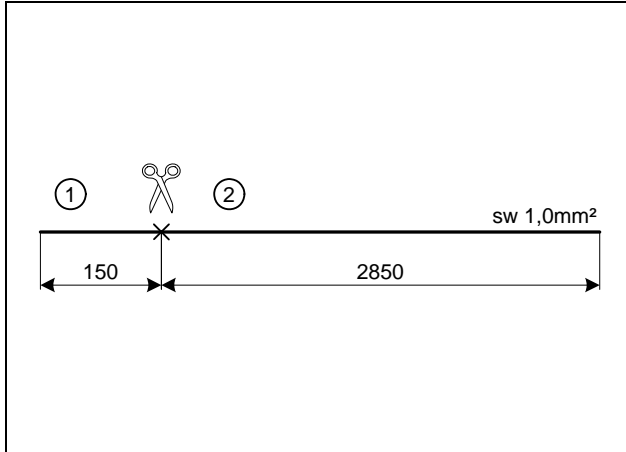
Remove page 22 "Operating Instructions for End Customer" and add to the vehicle operating instructions.



Heater unit installation location

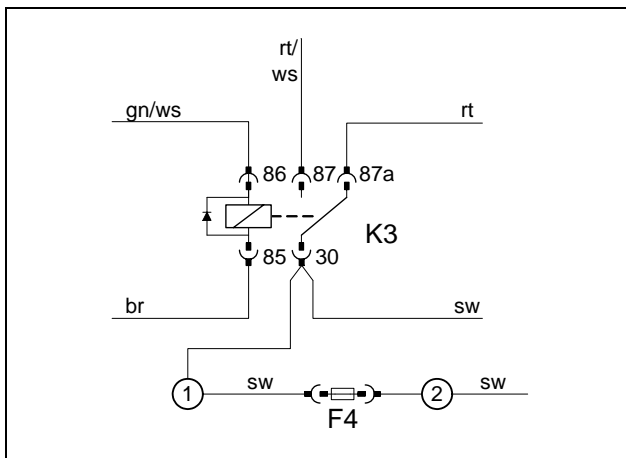
1 Heater unit

Installation location



Preparing electrical system

Only with automatic air-conditioning



Produce connections as shown in wiring diagram. Install wire section 2 in the protective sleeving provided.



Cutting wires to length

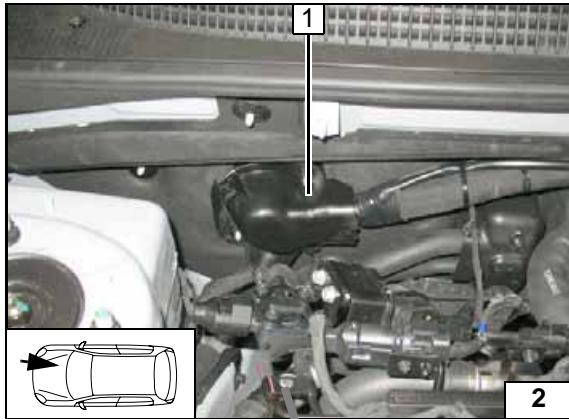
Preparing fuse F4



Electrical Connections

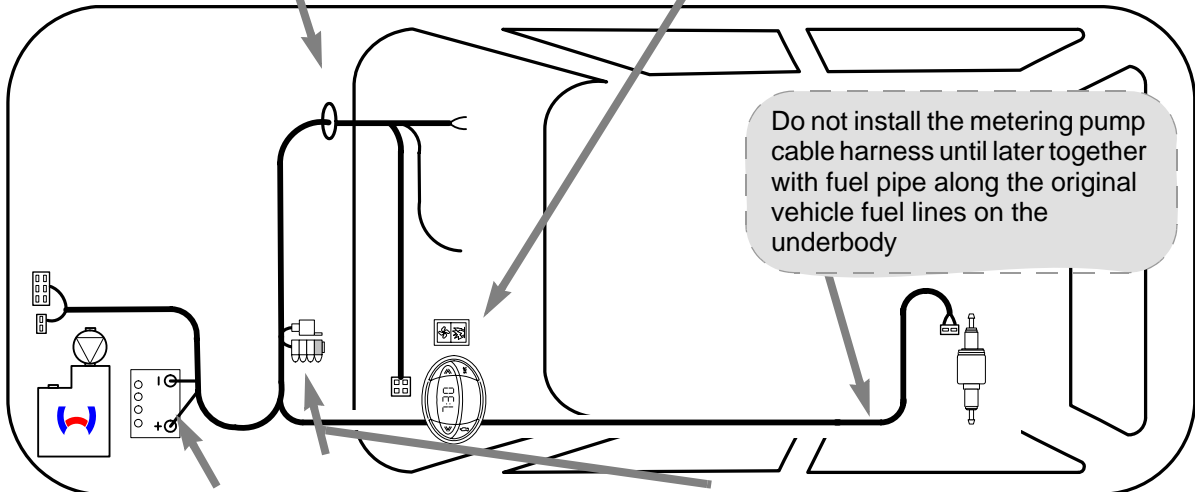
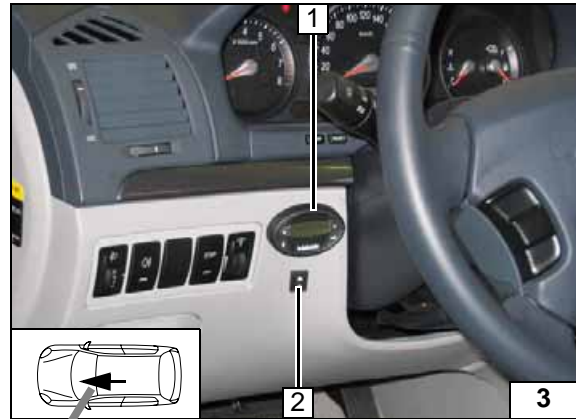
Wiring harness pass through

- 1 Protective rubber plug

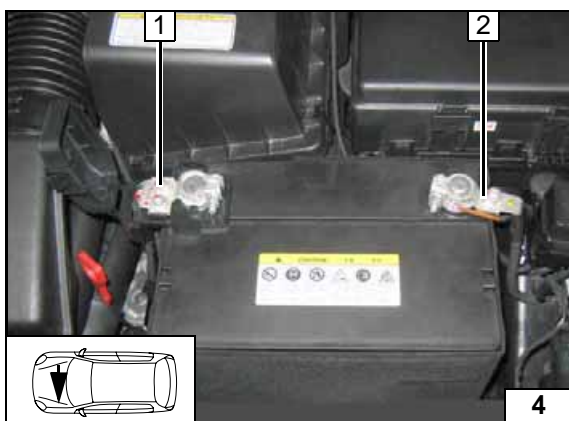


Digital timer and summer/winter switch option

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

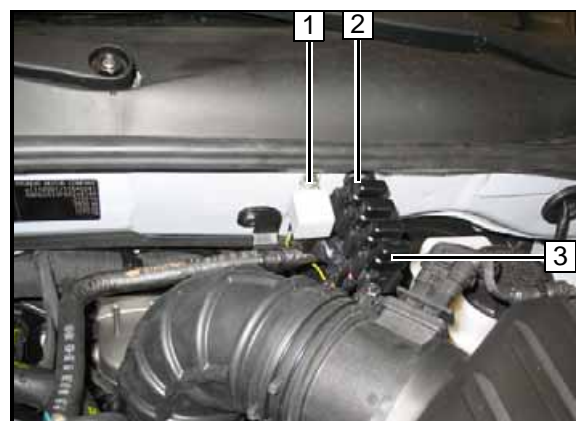


Wiring harness installation diagram



Positive and ground connection

- 1 Positive wire on positive battery terminal
- 2 Ground wire on negative battery terminal



Fuse holder, relay K3

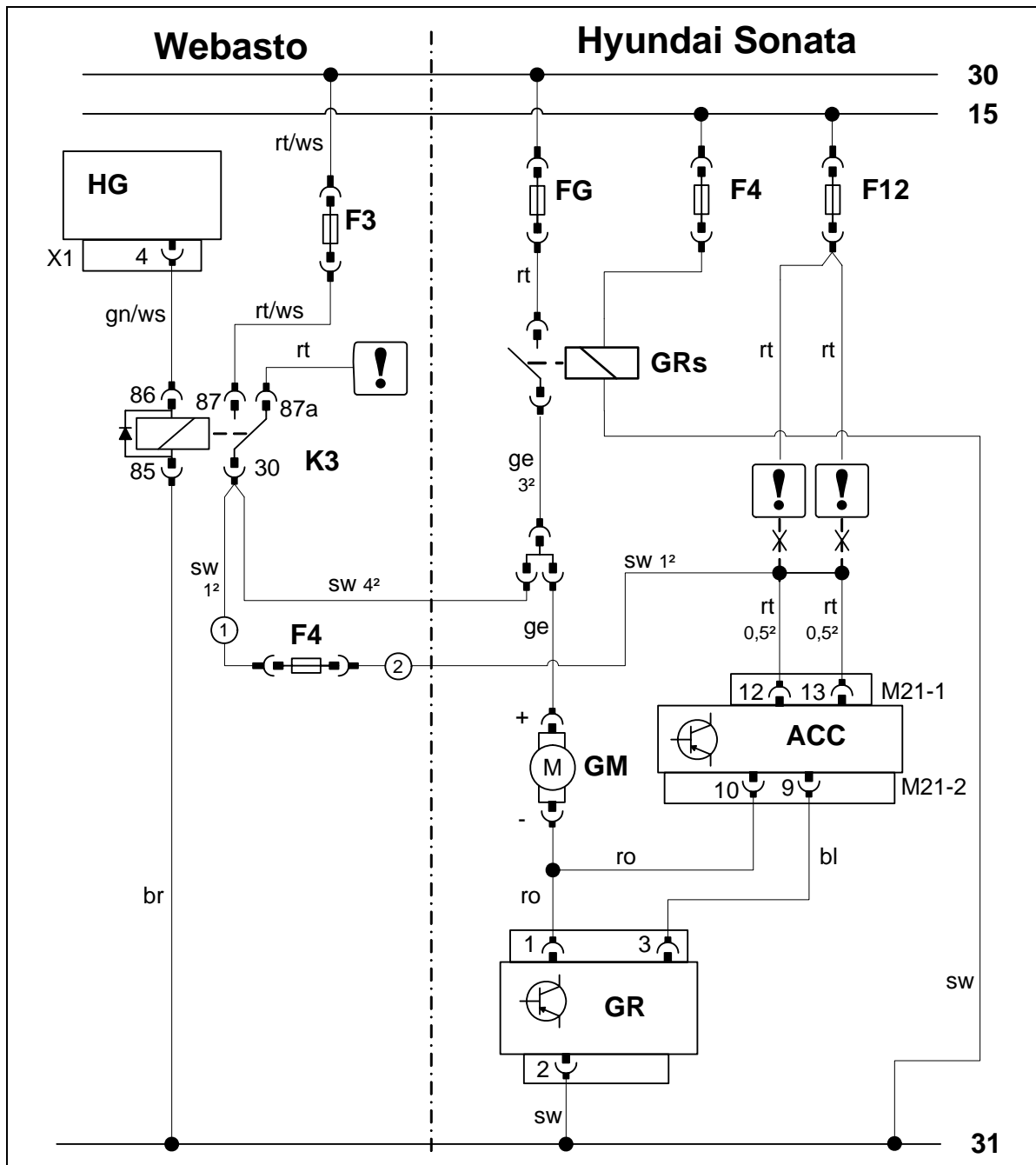
- 1 Relay K3, 4 mm dia. hole, 5.5x13 self-tapping screw
- 2 Fuse holder, 4 mm dia. hole, 5.5x13 self-tapping screw
- 3 10 A additional fuse



Automatic air-conditioning fan controller

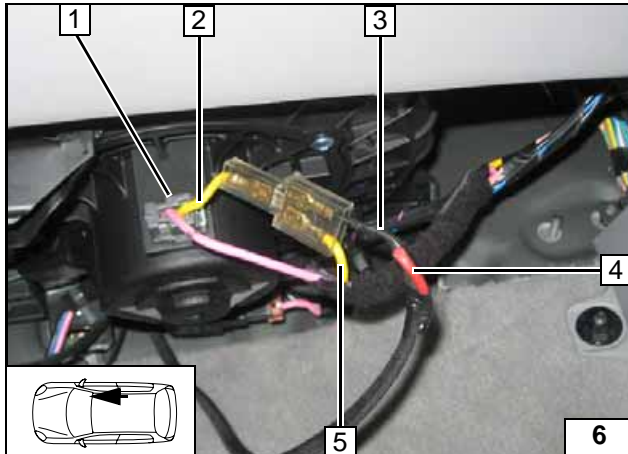


Wiring diagram



| Webasto components | | Vehicle components | | Colors and symbols | |
|--------------------|--------------------|--------------------|--------------------------------|--------------------|---------------------------------|
| HG | Heater unit TT-C/E | GM | Fan motor | rt | red |
| X1 | 6-pin connector | GRs | Fan relay | ws | white |
| F3 | Fuse, 25 A | GR | Fan controller | sw | black |
| K3 | Fan relay | ACC | Air-conditioning control panel | br | brown |
| F4 | 10 A fuse | FG | 40 A fan fuse | gn | green |
| | | F4 | 10 A fuse | bl | blue |
| | | F12 | 10 A fuse | ge | yellow |
| | | | | ro | pink |
| | | | | | Insulate wire ends and tie back |
| | | | | X | Cutting point |
| | | | | | Wiring colors may vary. |

Legend

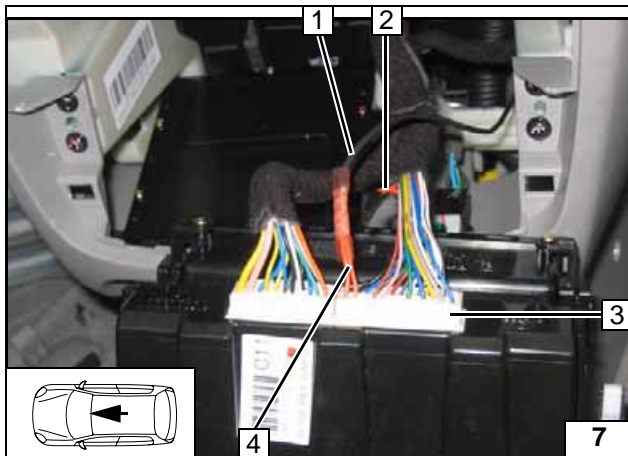


Connection to 2-pin connector **1** from the blower motor.
Produce connections as shown in wiring diagram.

- 2 Yellow (ge) wire
- 3 Black (sw) wire from K3/30
- 4 Red (rt) wire from /87a insulated
- 5 Yellow (ge) wire



Con-necting fan-motor

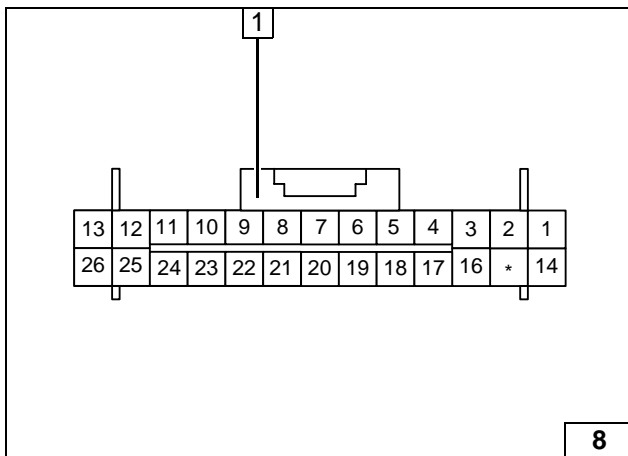


Connection to 26-pin connector **3** from A/C control element.
Produce connections as shown in wiring diagram.

- 1 Black (sw) wire from K3/30
- 2 Insulate red (rt) wire [2x] and tie back
- 4 Red (rt) wire [2x] to Pin 12 and 13

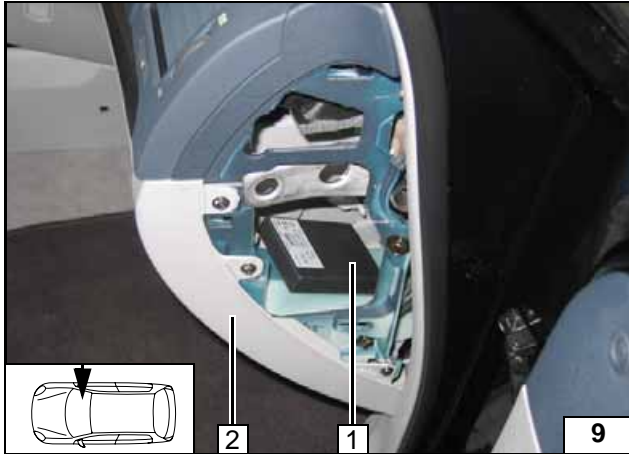


Con-necting A/C control panel



- 1 Connector M21-1

Connector for A/C control panel

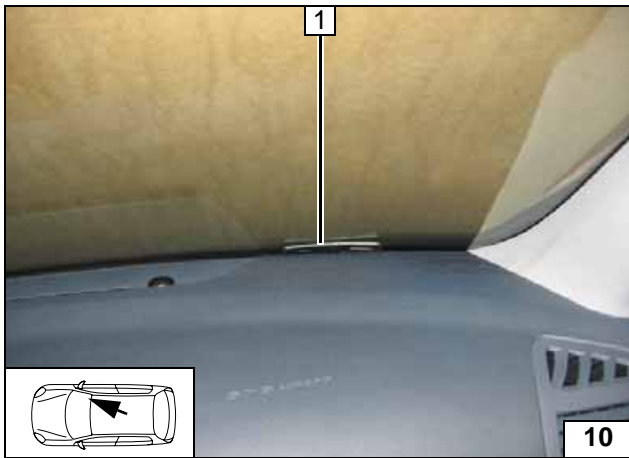


Remote option (Telestart)

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



Installing receiver

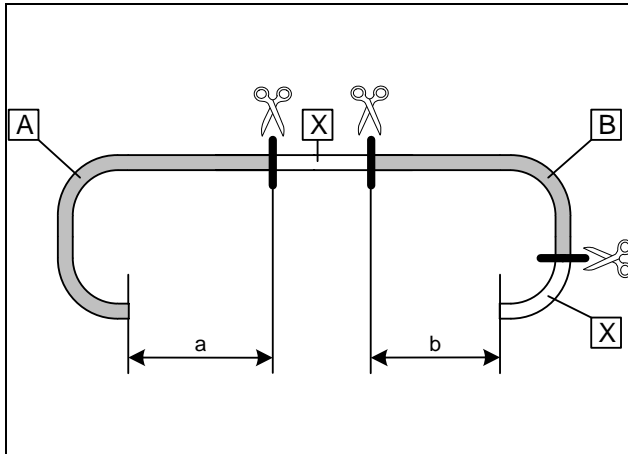
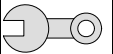


Route antenna cable to receiver in lower area of A-pillar trim.

- 1 Antenna



Installing antenna



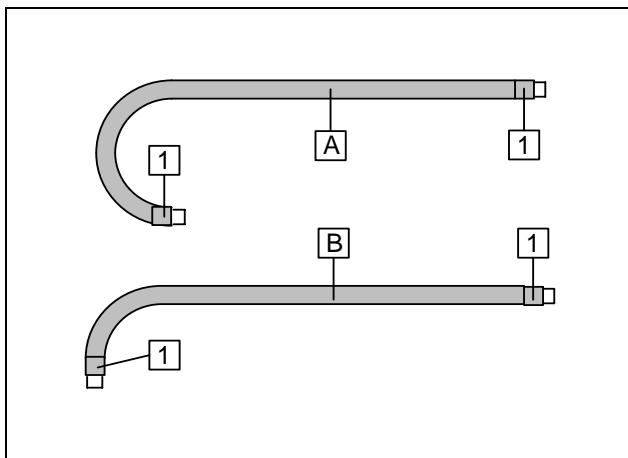
Preparing heater unit

a = 720 mm
b = 855 mm

Discard section X



Cutting coolant hoses to length

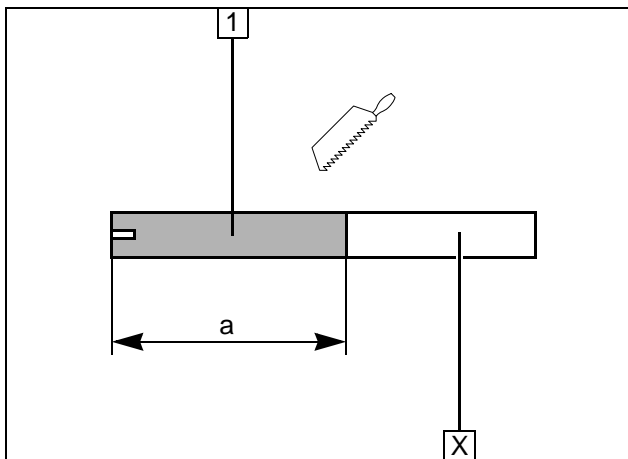


Push braided protection hoses onto hose A and B and cut to length.
Cut heat shrink plastic tubing to length.

1 25 mm heat shrink plastic tubing [4x]



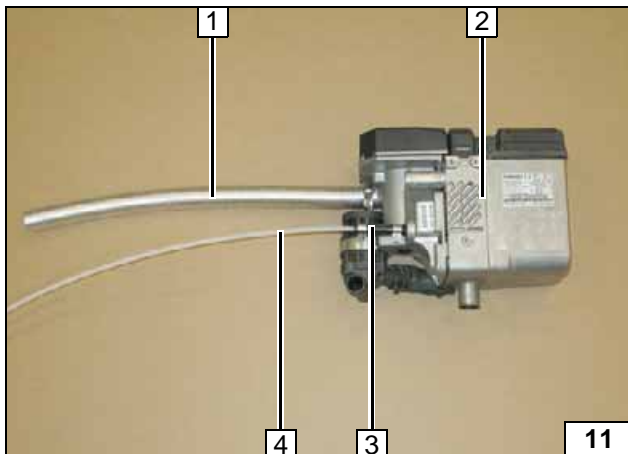
Preparing coolant hoses



1 Combustion air pipe
a = 320 mm

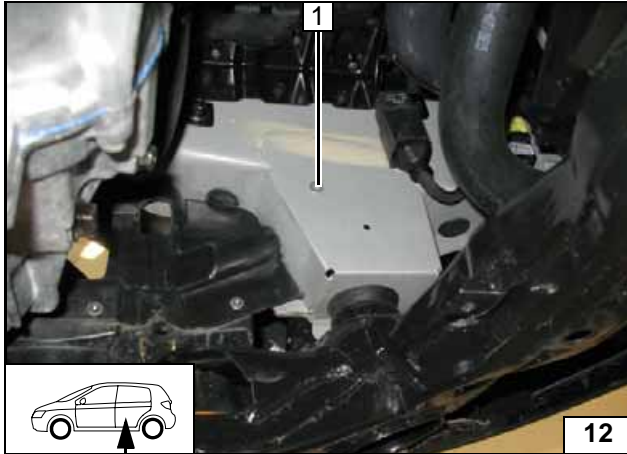
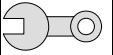
Discard section X

Cutting combustion air pipe to length



1 Combustion-air intake pipe, hose clamp
2 Heater unit
3 Hose section, 10 mm dia. hose clamps [2x].
4 Fuel line

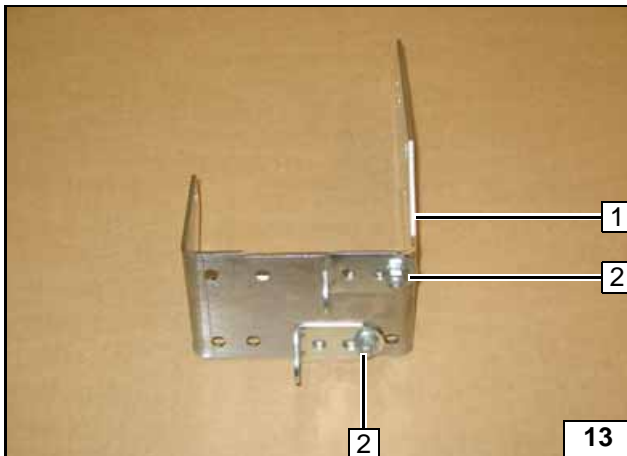
Preassembling heater unit



Preparing installation location

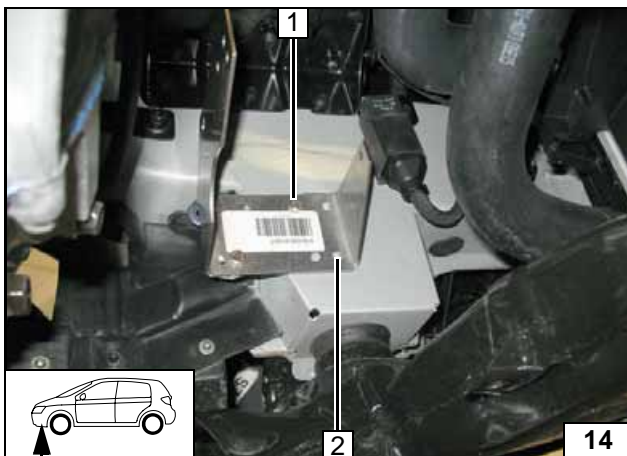
- 1 M6 rivet nut

Installing rivet nut



- 1 Bracket
- 2 Loosely mount angle bracket, M6x12 bolt, flanged nut [2x each]

Preassembling bracket

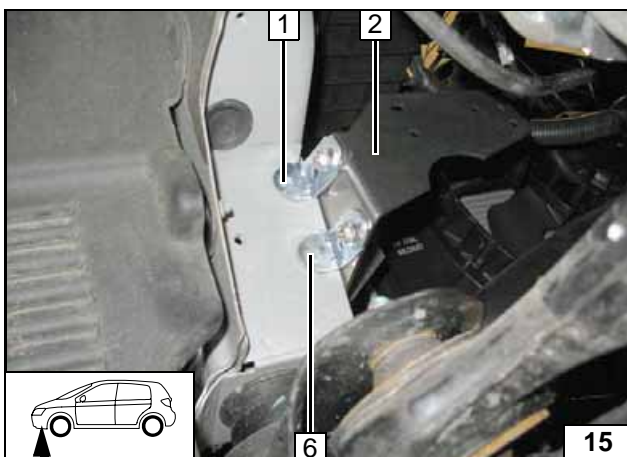


Align bracket and install, copy hole pattern 2 .

- 1 M6x20 bolt



Copying hole pattern

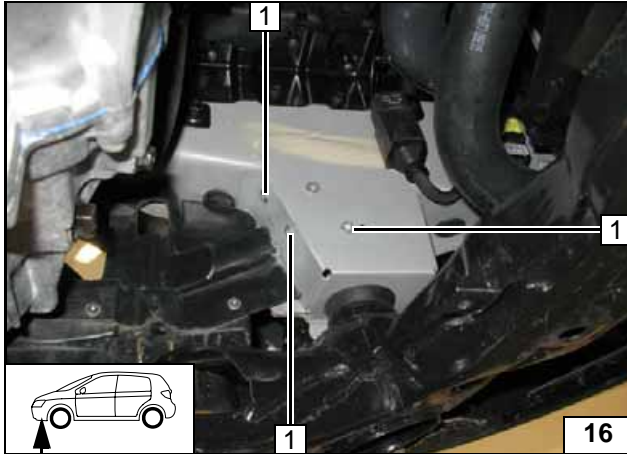
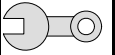


Copy hole pattern 1 and 3 .

- 2 Bracket

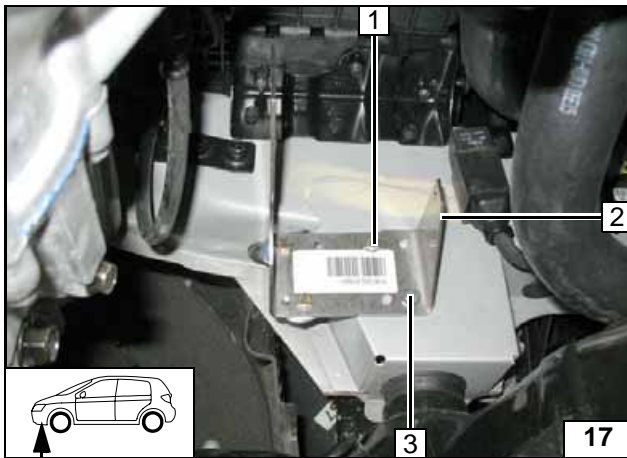


Copying hole pattern



1 Drill 9.1 mm dia. hole; install M6 rivet nut [3x each]

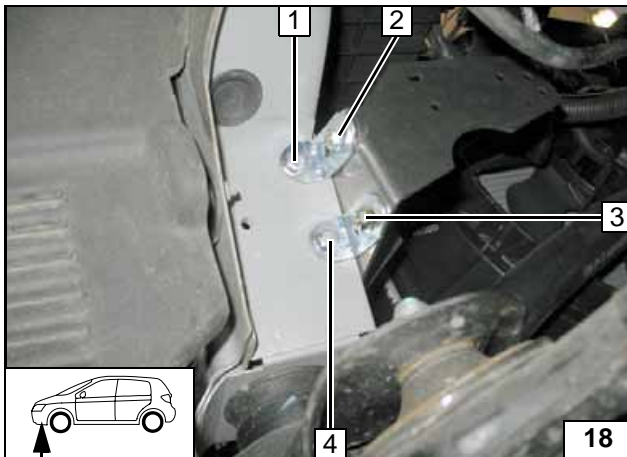
Installing rivet nut



Installing bracket

- 1 M6x20 bolt, spring lockwasher
- 2 Bracket
- 3 M6x20 bolt, spring lockwasher

Installing bracket

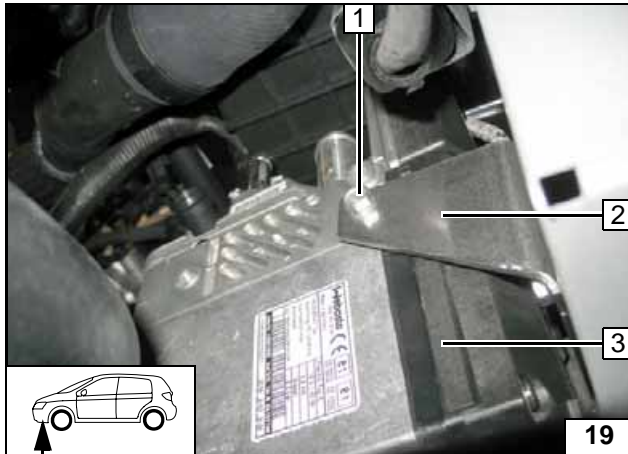
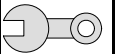


Tighten screw fitting 2 and 3.

- 1 M6x20 bolt, spring lockwasher
- 4 M6x20 bolt, spring lockwasher



Installing bracket



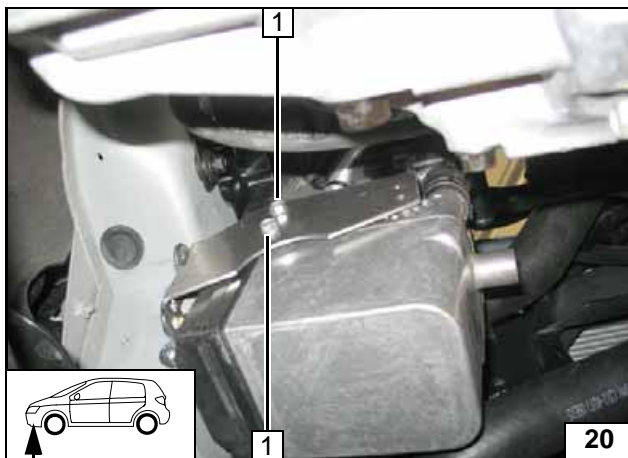
Installing heater unit

Connect wiring harness for heater unit before installation.
E-jot screws, tightening torque 10 Nm.

- 1 E-jot screw
- 2 Bracket
- 3 Heater unit



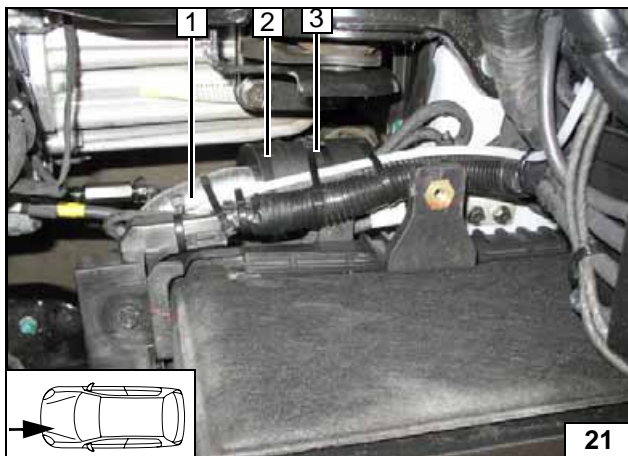
Installing heater unit



- 1 E-jot screw [2x]



Installing heater unit



Combustion air

- 1 Combustion-air intake pipe
- 2 Muffler
- 3 Cable tie



Installing muffler



Coolant connection for diesel engine

WARNING!

Tighten all hose clamps to 2.0 + 0.5 Nm.

Any coolant running off should be collected using an appropriate container.

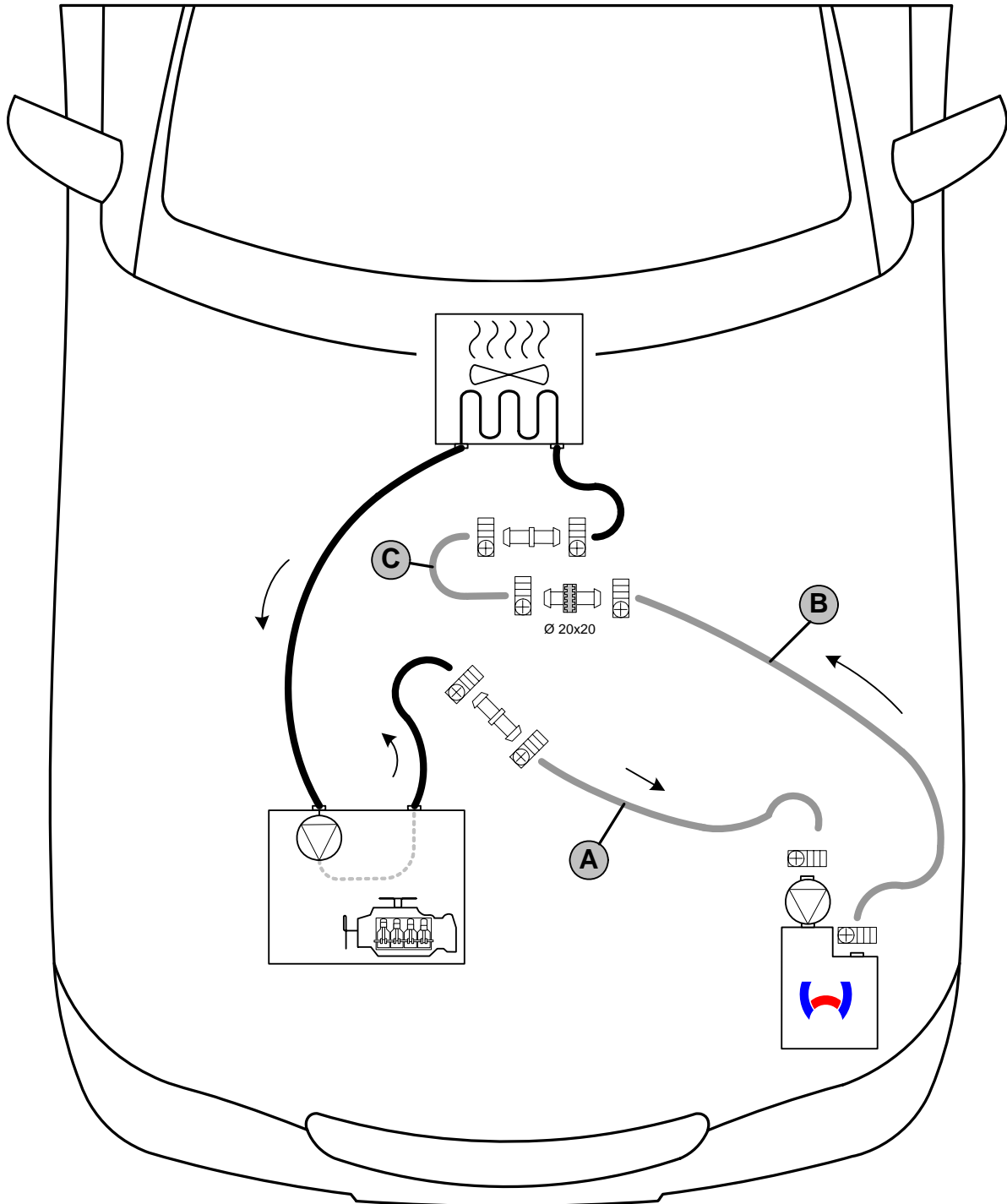
Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties.

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:



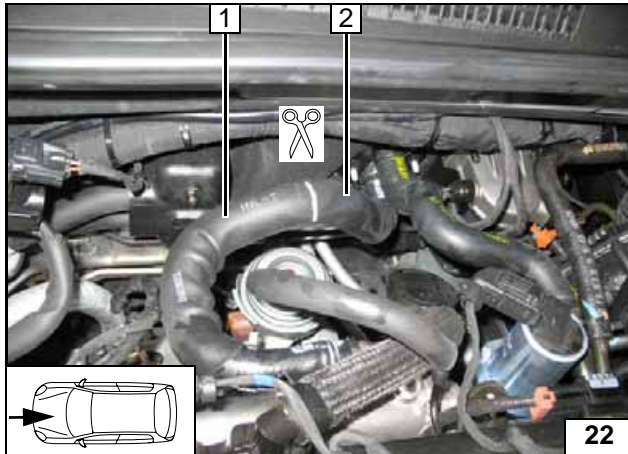
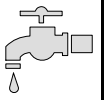
Coolant routing diagram



All connecting pipes without a specific designation = dia. 18x20.

All hose clamps without a specific designation  = 20-27 mm dia Black (sw) rubber isolator 



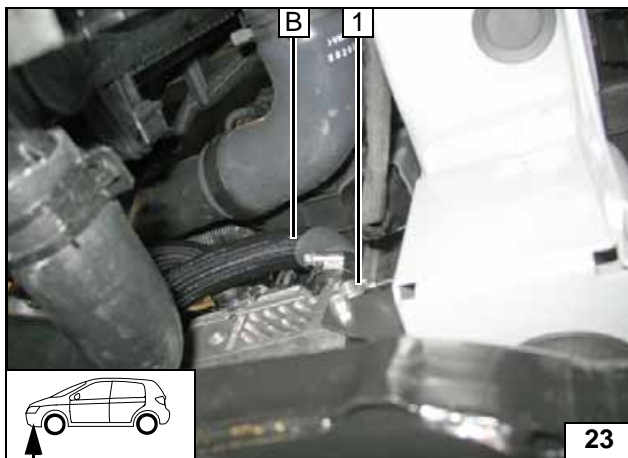


Push back hose insulation in area of cutting point after cutting.

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

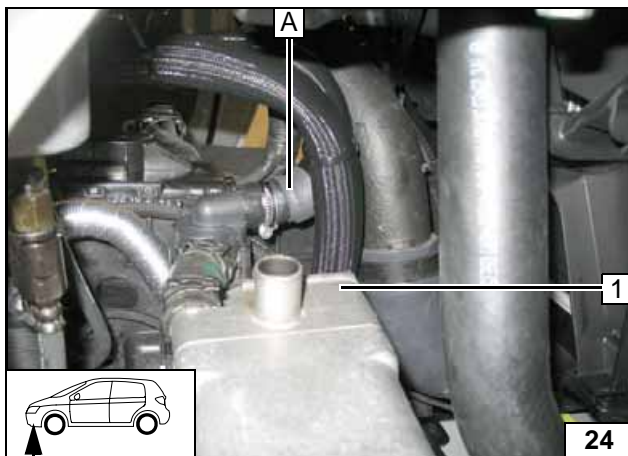


Cutting point



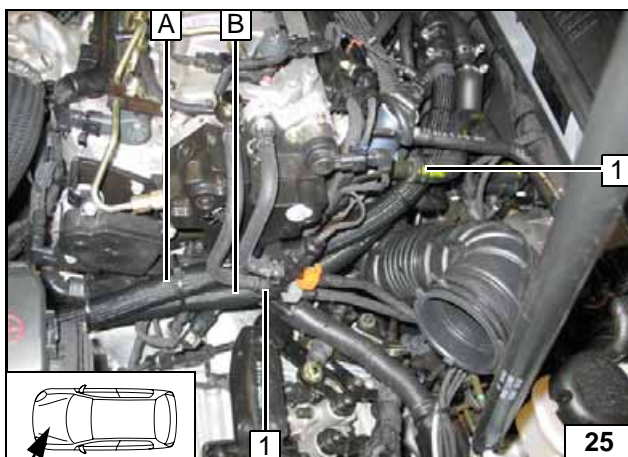
- 1 Heater unit

**Con-
nection to
heater unit**



- 1 Heater unit

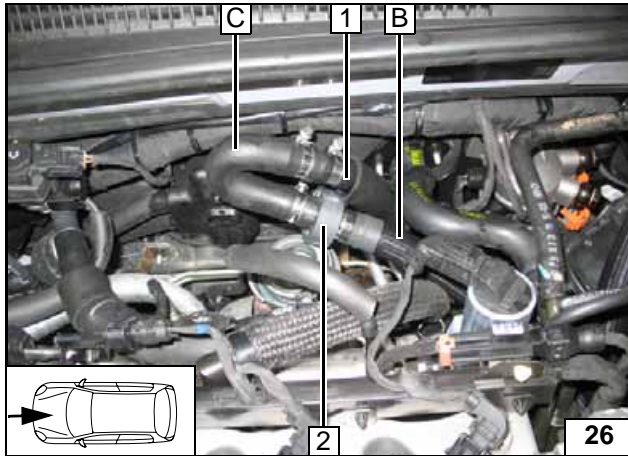
**Con-
nection to
heater unit**



Turn locks of original vehicle spring clips 1 out of area of coolant hoses.



**Routing in
engine
compartment**

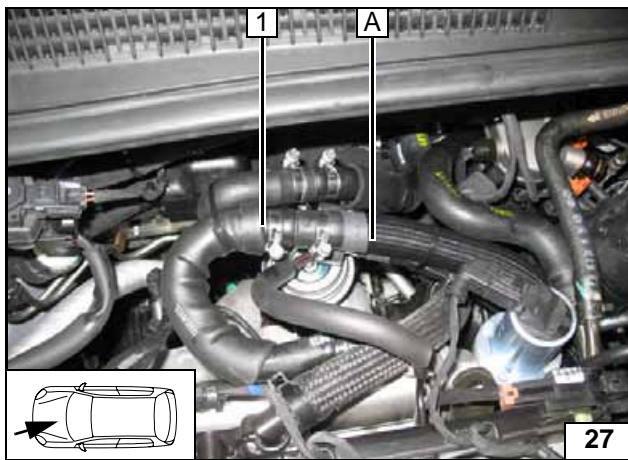


Align black (sw) rubber isolator **2** as shown.

1 Hose on heat exchanger inlet



**Con-
nection on
heat
exchanger
inlet**

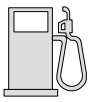


Before connecting, fill the coolant hoses with coolant.

1 Engine-outlet hose section



**Con-
nection on
engine
outlet**



Fuel Connection

CAUTION!

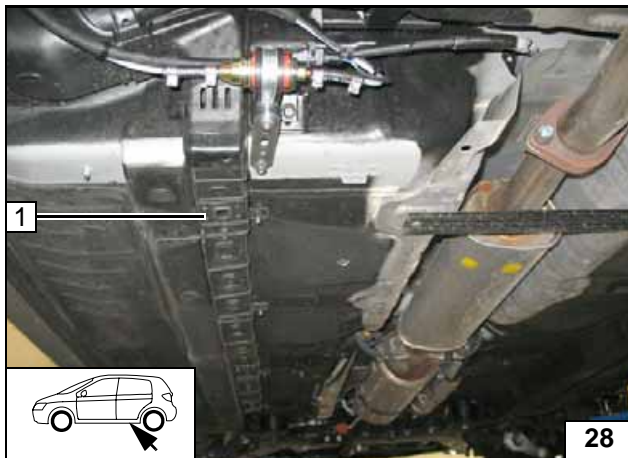
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off with an appropriate container.

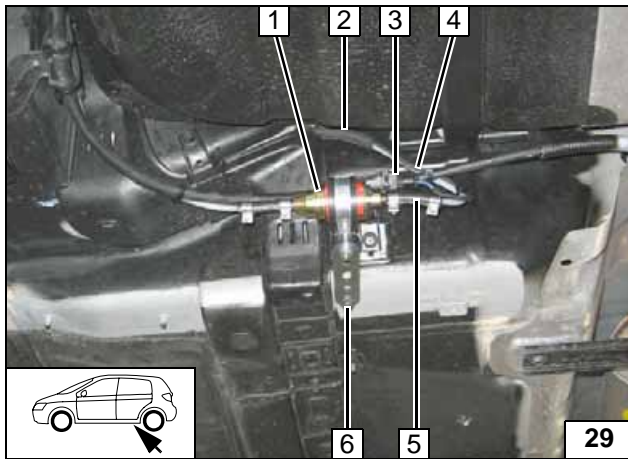
Install fuel line and metering-pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties. Mount the fuel line and wiring harness with rub protection on sharp edges.

WARNING!

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

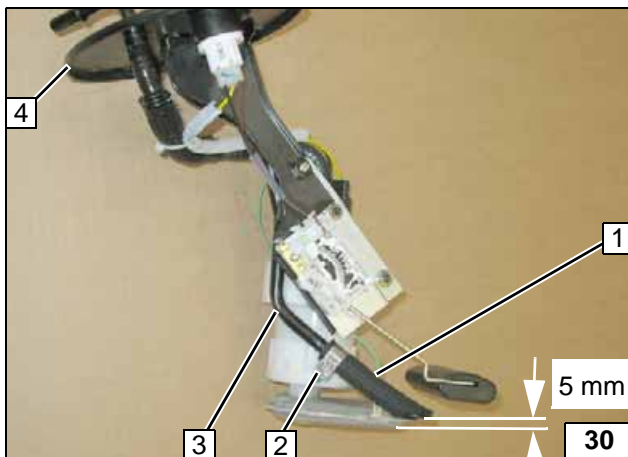


1 Original vehicle cover



Ensure proper installation position of metering pump 1, see "Installation Instructions". Installation location on left in front of vehicle fuel tank!
Connect fuel line 4 from heater unit on pressure side of metering pump 1 [side with connector].

- 1 Metering pump, rubber-coated p-clamp, silent block, flanged nut [2x]
- 2 8 dia. x 12 hose section as scuff guard
- 3 Metering pump wiring harness
- 5 Hose section, 10 mm dia. hose clamp [2x]
- 6 Original vehicle stud bolt, perforated bracket, flanged nut (mounted hand-tight)



Remove fuel-tank sending unit 4 in accordance with manufacturer's specifications.
Mount 8 dia. x 12 hose 1 on return pipe 3, secure with 12 mm dia. hose clamp 2 and cut to length.

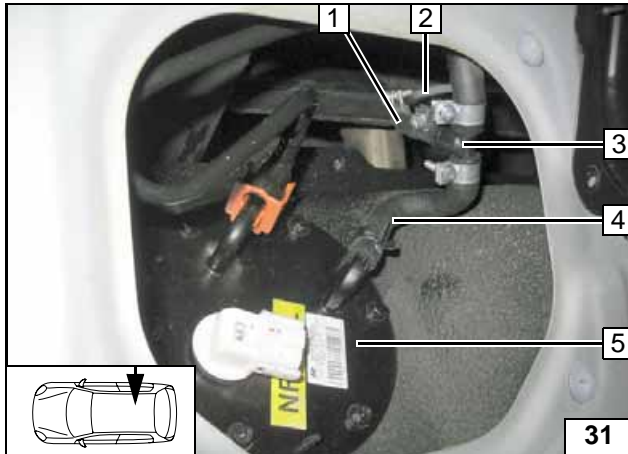
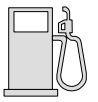
Installing lines



Installation location of metering pump and connection



Removing fuel

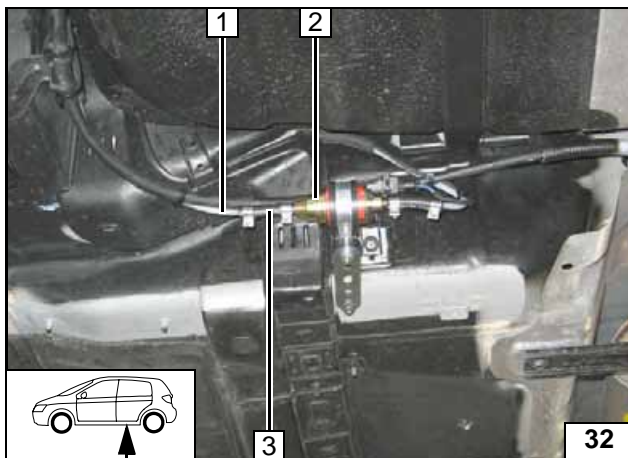


Install fuel-tank sending unit **5** in accordance with manufacturer's specifications.

- 1** Hose section, 10 mm dia. hose clamp [2x]
- 2** Remaining section of fuel line
- 3** Fuel standpipe, 14 mm dia. hose clamp
- 4** Original vehicle return line



Mounting fuel standpipe

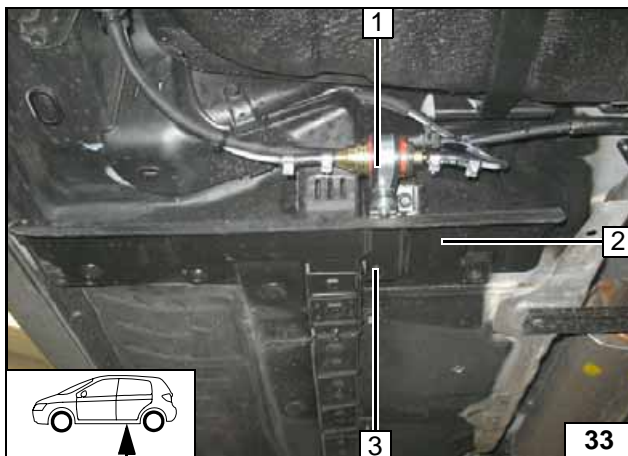


Fuel line **1** from fuel standpipe on intake side of metering pump **2** [side without connector]. Check the position of the components; adjust if necessary. Check that they have free clearance.

- 3** Hose section, 10 mm dia. hose clamp [2x]



Connecting to metering pump

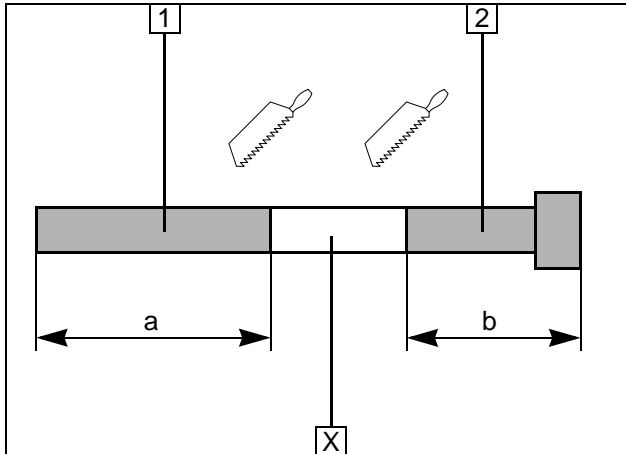
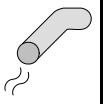


Mount original vehicle cover **2** together with perforated bracket (metering pump **1**).

- 3** Original vehicle flanged nut



Installing cover

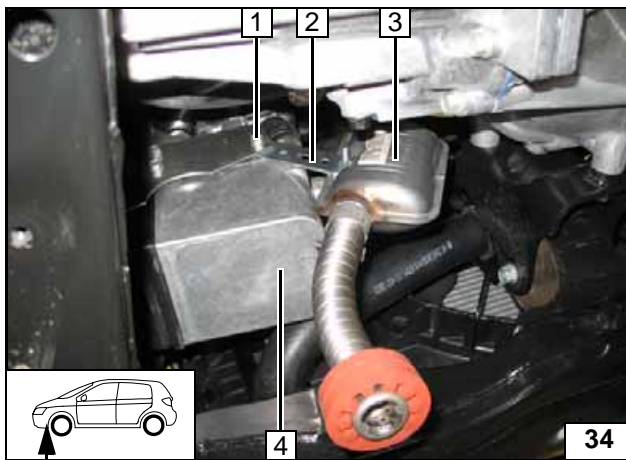


Exhaust system

- 1 Exhaust pipe
a = 195 mm
- 2 Exhaust end section
b = 145 mm

Discard section X

Preparing exhaust pipe

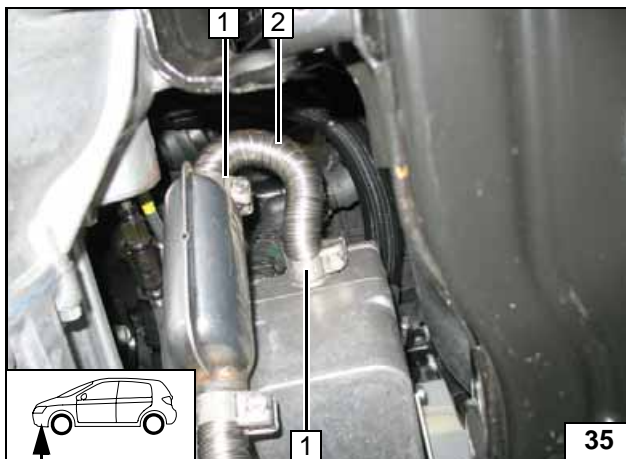


E-jot screw bolt 1, tightening torque 10 Nm.

- 2 Perforated bracket
- 3 Exhaust muffler, M6x20 bolt, flanged nut

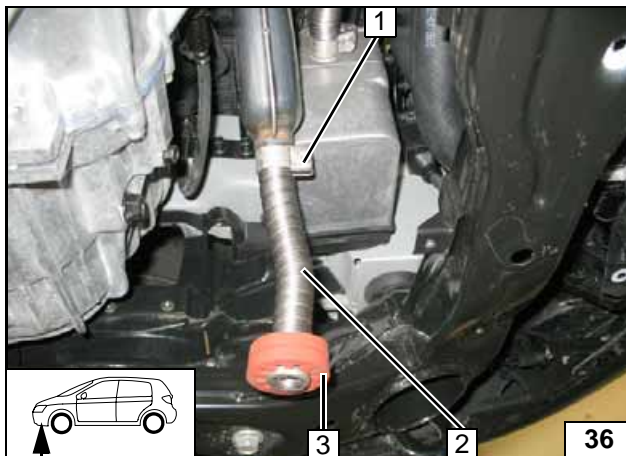


Installing muffler



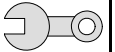
- 1 Hose clamp [2x]
- 2 Exhaust pipe

Installing exhaust pipe



- 2 Hose clamp
- 3 Exhaust-pipe end section
- 4 Position red (rt) rubber isolator with groove

Installing end section



Final Work

WARNING!

Reassemble the disassembled components in reverse order.

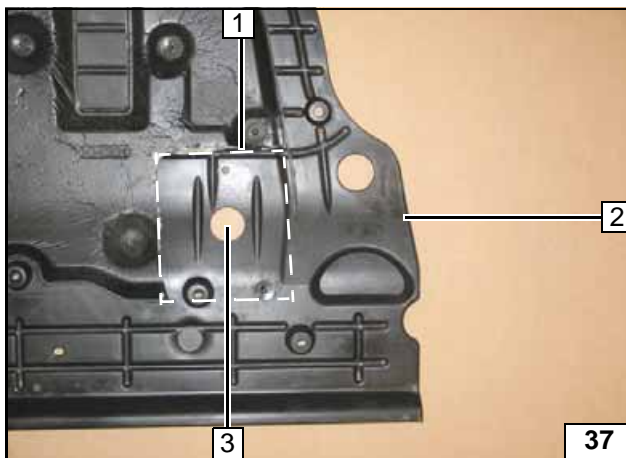
Check all hoses, clamps and all electrical connections for firm seating.

Secure all loose cables using cable ties.

Only use manufacturer-approved coolant.

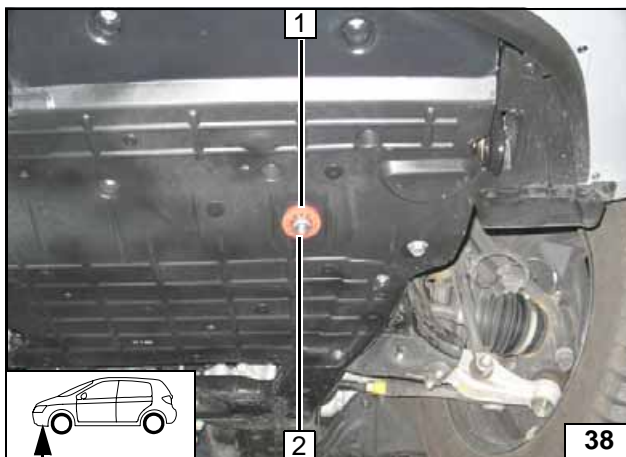
Spray the heater unit components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- Connect the battery
- Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.
- Set the digital timer.
- Set the manual air conditioning or automatic air conditioning according to the "operating instructions for the 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.



Cut out insulation **1** in underride protection **2** in area of hole.

3 42 mm dia. hole



Align exhaust end section **2** flush on red rubber isolator **1**.



**Cutting out
underride
protection**



**Mounting
rubber
isolator**

Webasto
Feel the drive

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

Automatic
air-con-
ditioning