Water Heater Unit

Webasto
Feel the drive

***Thermo Top E* Additional Heater** e1 00 0003

***Thermo Top C* Additional Heater** e1 00 0002

Installation Instructions

Alfa Romeo 147

Gasoline and Diesel
from Model Year 2001
Left-hand drive vehicle
not for JTD 16V
not with GTA

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.

Ident. No.:1313160A_EN Fee Euro 10.00

Table of Contents

Validity

Manufacturer	Model	Type	EG-BE No./ABE
Fiat	Alfa 147	937 (Alfa Romeo)	e3 * 98/14 * 0070 * ...

Engine type	Engine model	Output in kW	Displacement in cm³
AR37203	Gasoline	77	1598
AR32104	Gasoline	88	1598
AR32310	Gasoline	110	1970
937A2000	Diesel	85	1910

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 the digital timer should be confirmed with the end customer before installation.

Heater Unit/Installation Kit

Quantity	Description	Order No.:
1	Retail Accessories for *Thermo Top E* Gasoline	See price list
or		
1	Retail Accessories for *Thermo Top E* Diesel	See price list
or		
1	Retail Accessories for *Thermo Top C* Gasoline	See price list
or		
1	Retail Accessories for *Thermo Top C* Diesel	See price list
and		
1	Installation kit for Alfa Romeo 147 Gasoline and Diesel	1313097A

Foreword

These installation instructions apply to Alfa Romeo 147 Gasoline and Diesel vehicles - for validity, see page 2 - from model year 2001 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/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).

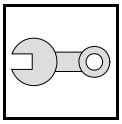
Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers

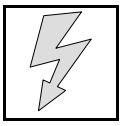
Explanatory Notes on Document

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

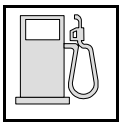


Electrical system



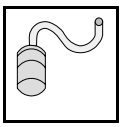
Water

Fuel



Exhaust gas

Combustion air



Special features are highlighted using the following symbols:

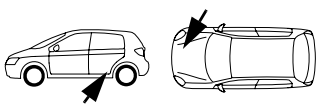
Specific risk of injury or fatal accidents.

Specific risk of damage to components.

Specific risk of fire or explosion.

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

Reference to a special technical feature.



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

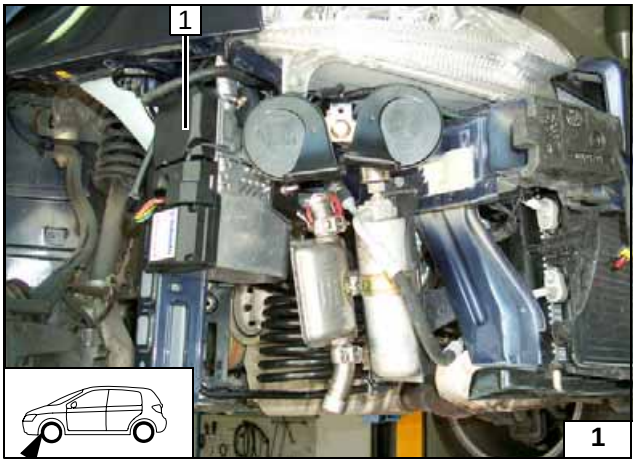
All dimensions are in mm!
Tightening torque of hose clamps = 2.0 + 0.5 Nm!
Tightening torque of Ejot screws, Ejot studs = 10 Nm!

Preliminary Work

WARNING!

- Open fuel tank cap, ventilate 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 engine cover on the left.
- Remove the coolant reservoir cap on the right.
- Remove the complete intake hose.
- Disconnect the expansion tank and lay it aside.
- Expose the distributor B1 in the engine compartment.
- Remove the right-hand wheel well trim.
- Remove bumper
- Remove the horns.
- Remove the horn cable up from the wiring harness sleeve up to the frame side member.
- Insulate the horn cable and route it under the right-hand headlight.
- Remove the underride protection.
- Remove the trim of the fuel lines on the underbody.
- Remove the lighting unit for the passenger compartment (only with passenger compartment monitoring).
- Remove the rear bench seat (only for gasoline vehicles).
- Open the tank-fitting service lid (only for gasoline vehicles).
- Remove the fuel-tank sending unit according to the manufacturer's instructions (only for gasoline vehicles).

Remove page 27 "Operating Instructions for End Customer" and add to the vehicle operating instructions.



Heater unit installation location

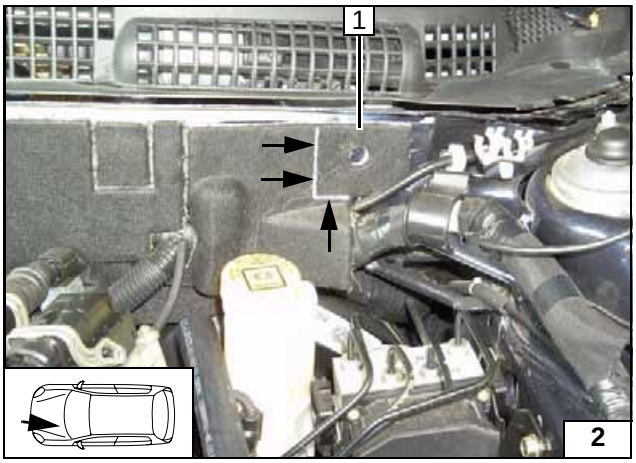
1 Heater unit

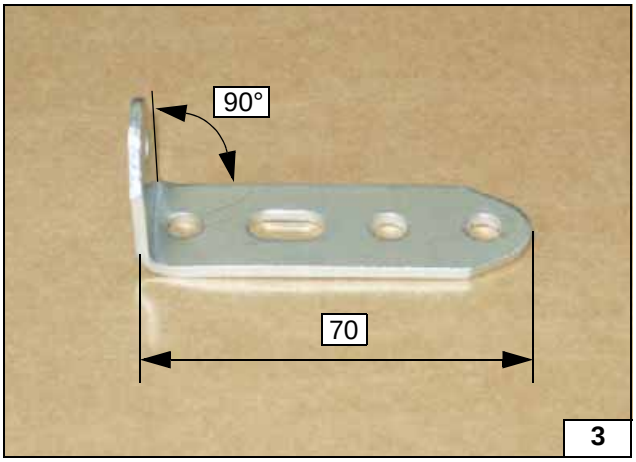
Installation location

Preparing electrical system

Cut away insulation **1** along marking in area of hole.

Cutting out insulation



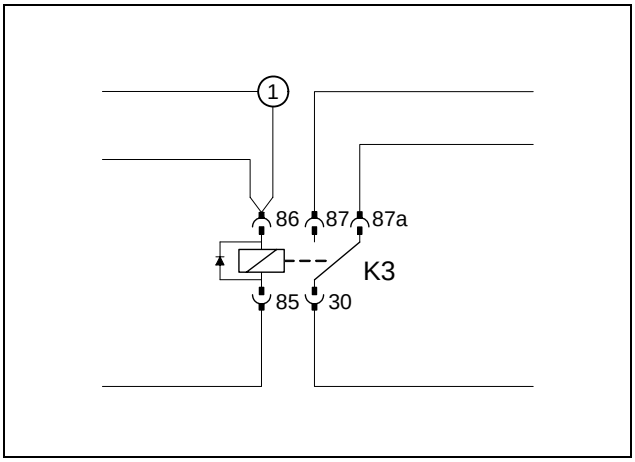


Bending perforated bracket

Only with passenger compartment monitoring

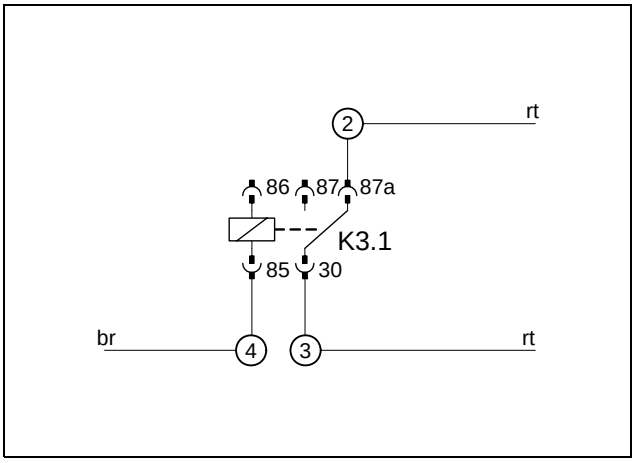
Produce connections as shown in wiring diagram. Also connect additional green/white (gn/ws) wire **1** to K3/86 and pull into included protective sleeving.

Preparing K3



Produce connections as shown in wiring diagram.

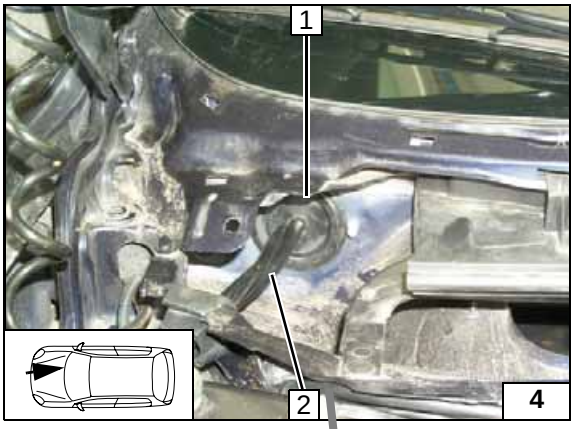
Preparing K3.1



Electrical system

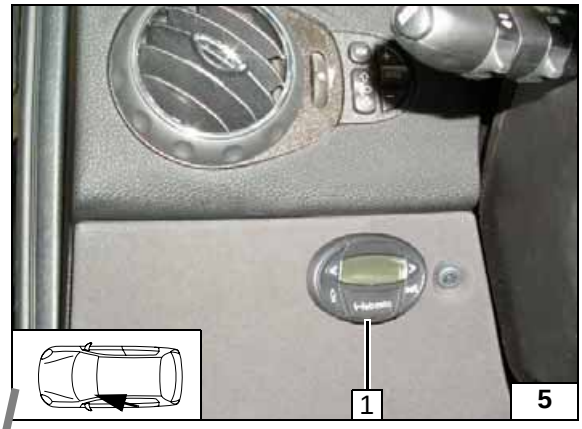
Wiring harness pass through

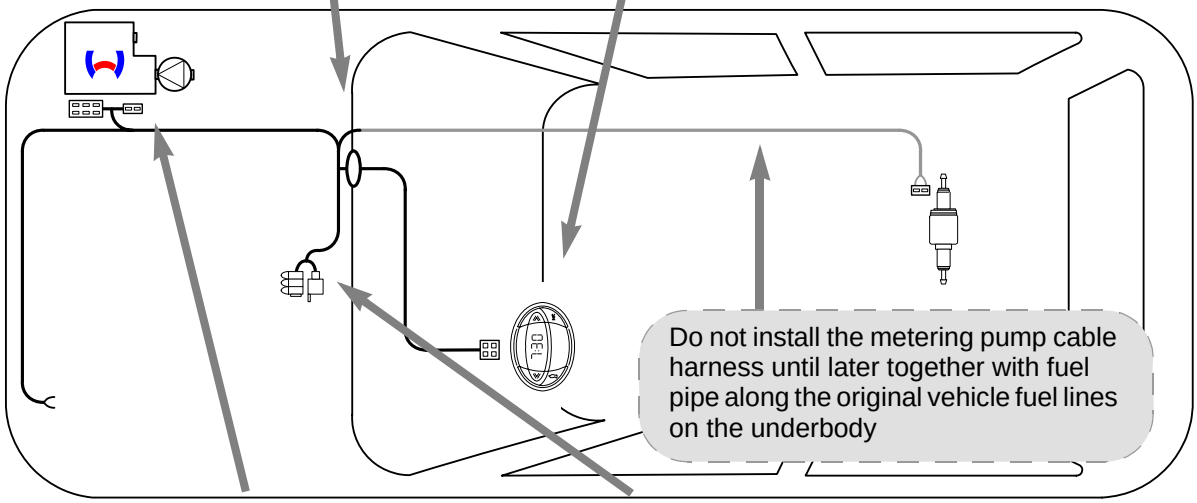
1 Protective rubber plug
2 Wiring harness of digital timer, additional green/white (gn/ws) wire with passenger compartment monitoring



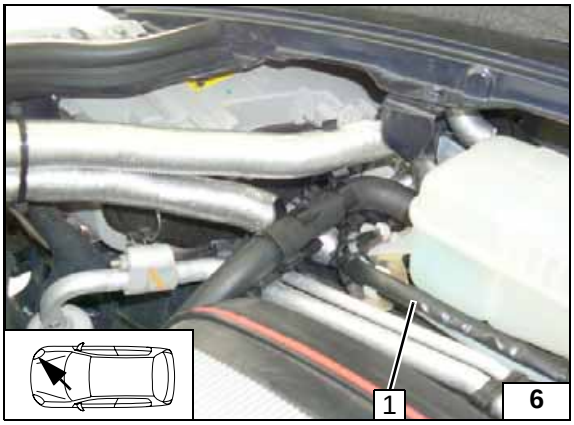
Digital timer

1 Digital timer



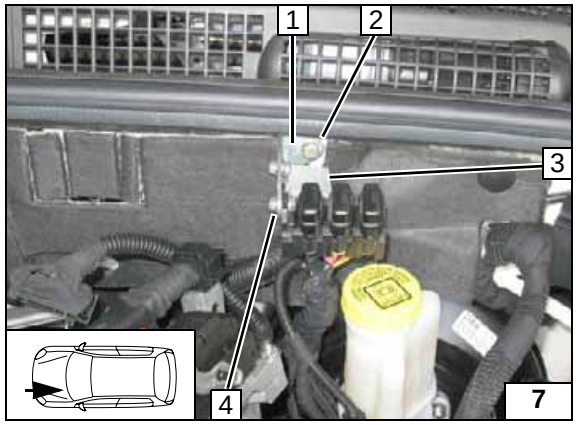


Wiring harness installation diagram



Wiring harness routing

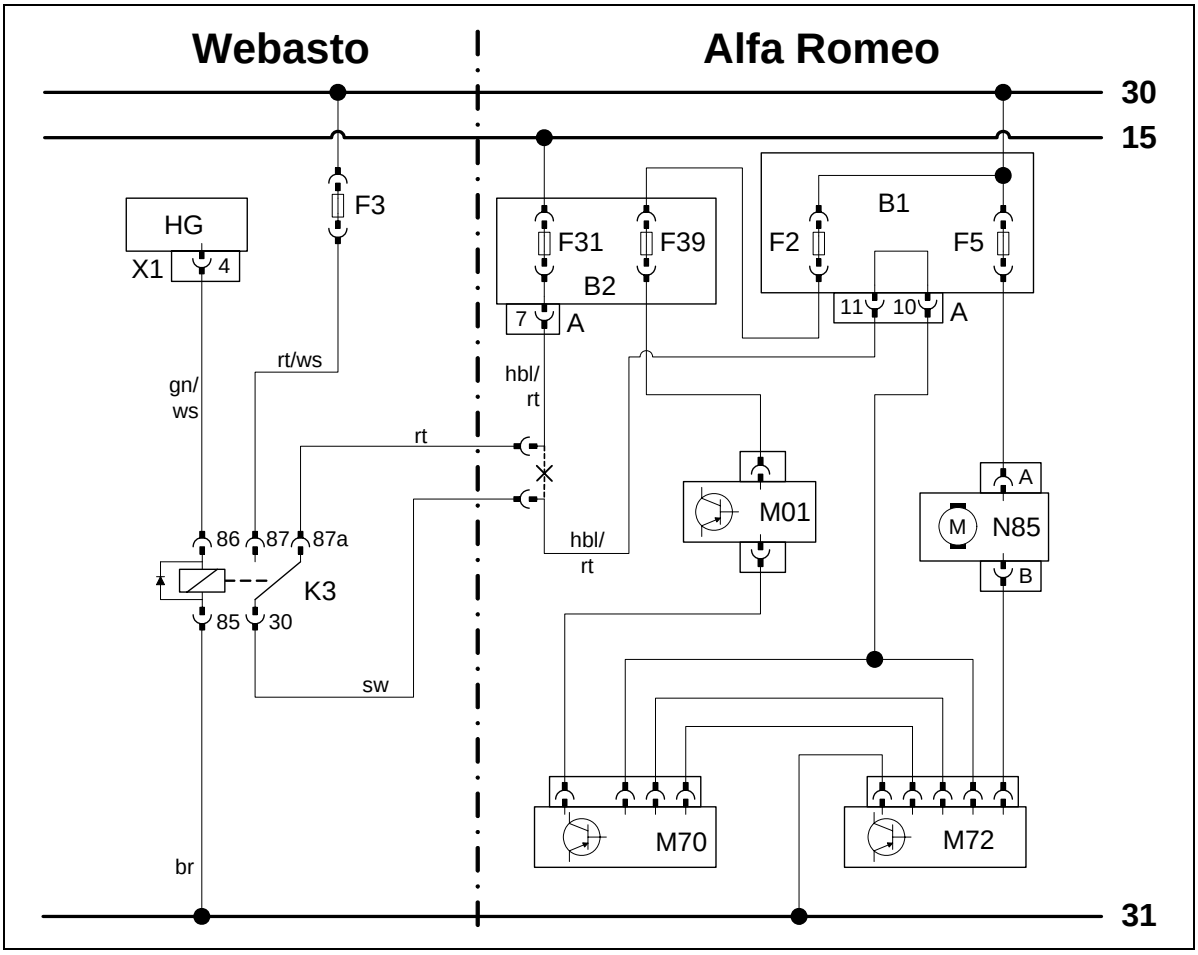
1 Wiring harness of heater unit, fuel line



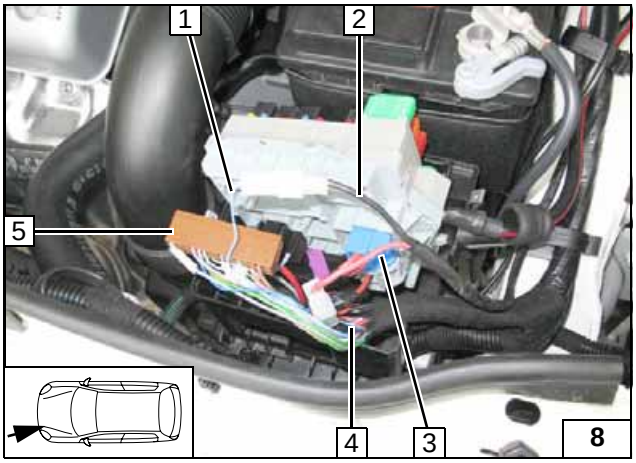
Fuse holder, relay K3

1 Angled-down perforated bracket
2 M6x20 bolt, M6 flanged nut on existing hole
3 k3 relay, M5x12 bolt, washer, spring lockwasher, M5 nut
4 Retaining plate of fuse holder, M5x12 bolt, washer, spring lockwasher, M5 nut

Fan controller



Webasto components		Vehicle components		Colors and symbols	
HG	Heater unit TT-C/E	N85	Fan motor	rt	red
X1	6-pin heater unit connector	M01	Body computer	ws	white
F3	Replace 25 A with 7.5 A fuse.	M72	Fan controller	sw	black
		M70	Air-conditioning control panel	br	brown
K3	Fan relay	B2	Distributor in engine compartment	gn	green
		F31	Fuse, 7.5 A	hbl	light blue
		F39	15 A fuse		
		B1	Distributor in engine compartment		
		F2	Fuse 40A	**X**	Cutting point
		F5	Fuse 40A	Wiring colors may vary.	



Connection on connector A **5**, Pin 11 from distributor B1 in engine compartment. Produce connections as shown in wiring diagram.

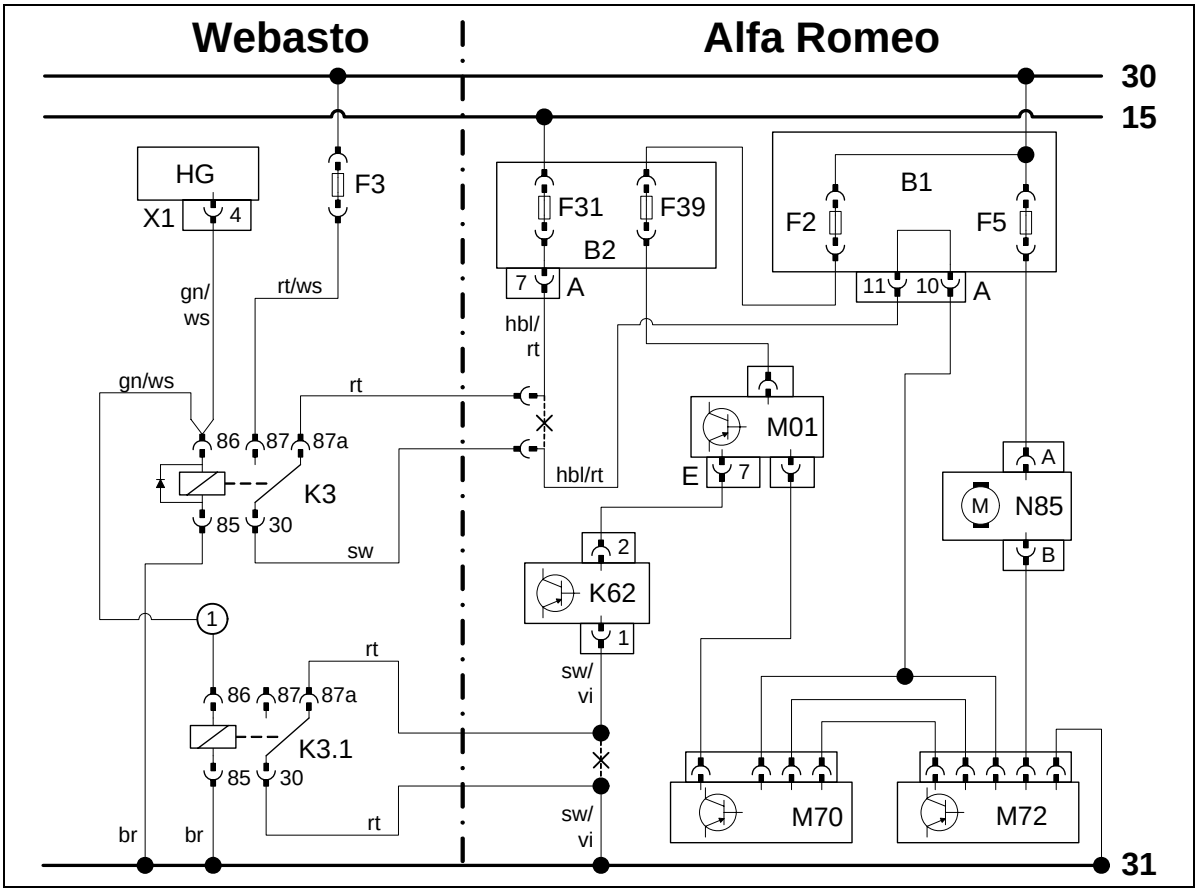
1 Light blue/red (hbl/rt) wire of connector A/11
2 Black (sw) wire from K3/30
3 Red (rt) wire from K3/87a
4 Light blue/red (hbl/rt) wire of connector A/7 for distributor B2

Wiring diagram

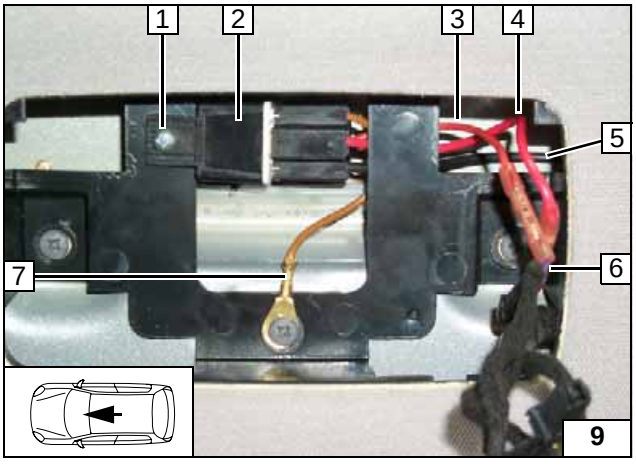
Legend

Connecting fan-motor

Fan controller with switch-off function for passenger compartment monitoring



Webasto components		Vehicle components		Colors and symbols	
HG	Heater unit TT-C/E	N85	Fan motor	rt	red
X1	6-pin heater unit connector	M01	Body computer	ws	white
F3	Replace 25 A with 7.5 A fuse.	M72	Fan controller	sw	black
		M70	Air-conditioning control panel	br	brown
K3	Fan relay	K62	Passenger compartment sensor	gn	green
K3.1	Additional relay	B2	Distributor in engine compartment	hbl	light blue
		F31	Fuse, 7.5 A	vi	violet
		F39	15 A fuse		
		B1	Distributor in engine compartment		
		F2	Fuse 40A	**X**	Cutting point
		F5	Fuse 40A	Wiring colors may vary.	



Passenger compartment monitoring is switched off on passenger compartment sensor K62 in lighting unit in passenger compartment. Produce connections as shown in wiring diagram. Connect green/white (gn/ws) wire from K3/86 to K3.1/86.

Note:
Passenger compartment monitoring will be deactivated while heating mode is active!

1 5.5x9.5 self-tapping screw
2 K3.1 relay
3 Red (rt) wire of K3/30
4 Red (rt) wire from K3/87a
5 Black/violet (sw/vi) wire K62/1
6 Black/violet (sw/vi) wire (original vehicle ground)
7 Brown (br) wire of K3.1/85 on ground point

Wiring diagram

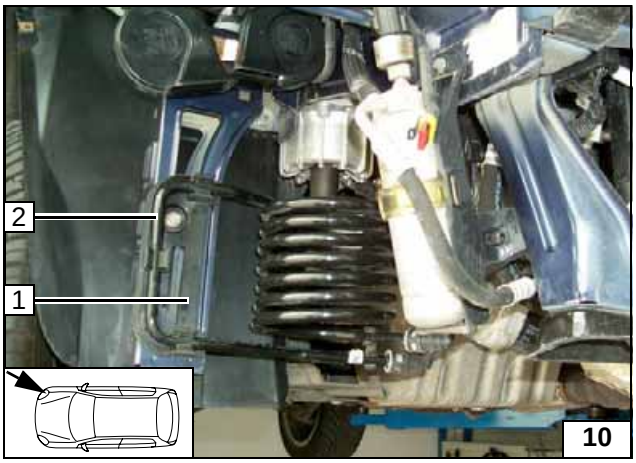
Legend

Switching off passenger compartment monitoring

Preparing installation location

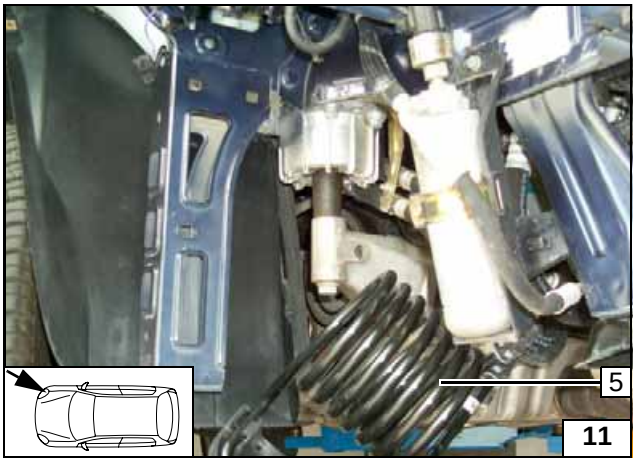
Remove original vehicle bolt **2** for plastic bracket **1** of servo cooling hose and discard.

Detaching plastic bracket



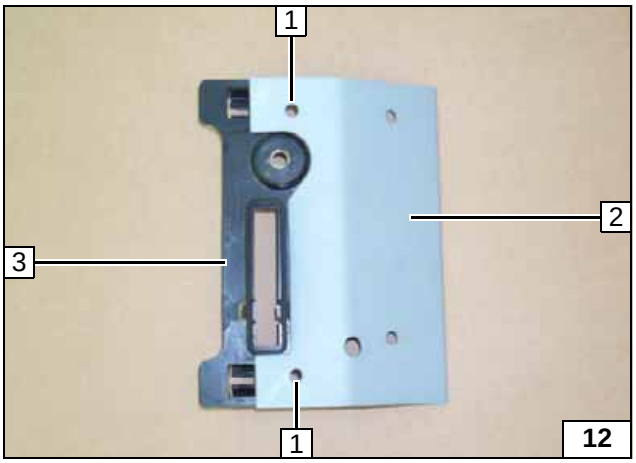
Remove plastic bracket from servo cooling hose **1**.

Removing plastic bracket



1 Copy hole pattern, drill 6.5 mm hole [2x each]
2 Additional bracket
3 Plastic bracket

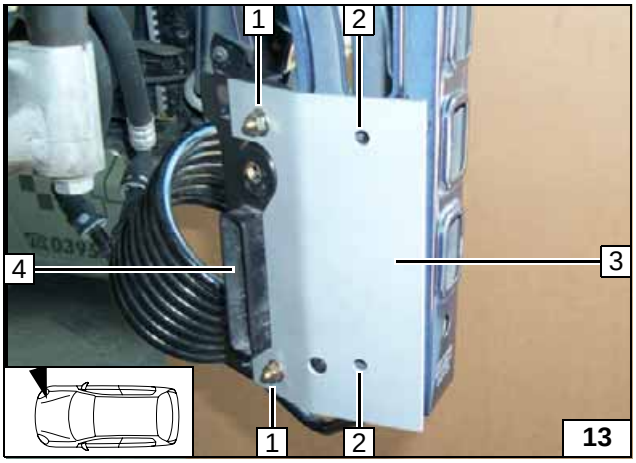
Copying hole pattern



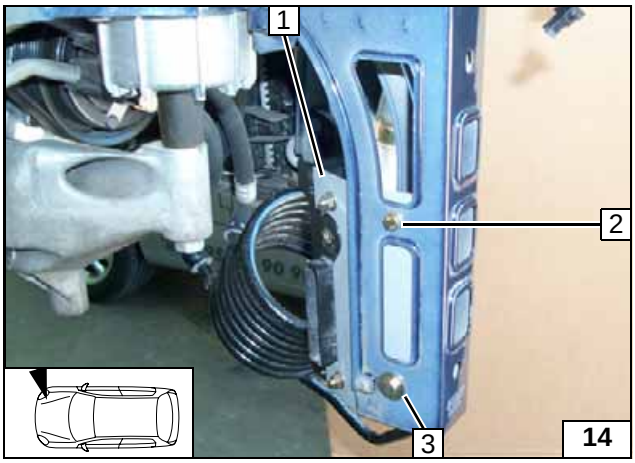
Connect additional bracket **3** and plastic bracket **4** with M6x15 bolt **1**, large diameter washer, flanged nut [2x each]. Lay on additional bracket **3** flush with right-hand side and lower edge on cross member.

2 Copy hole pattern, drill 6.5 mm hole [2x each]

Holes in cross member

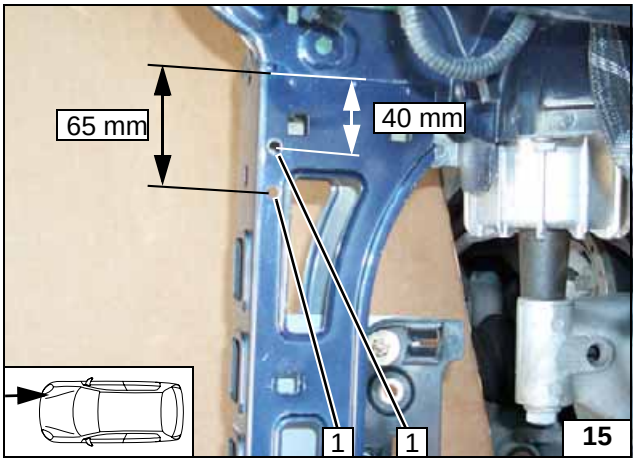


Installing additional bracket



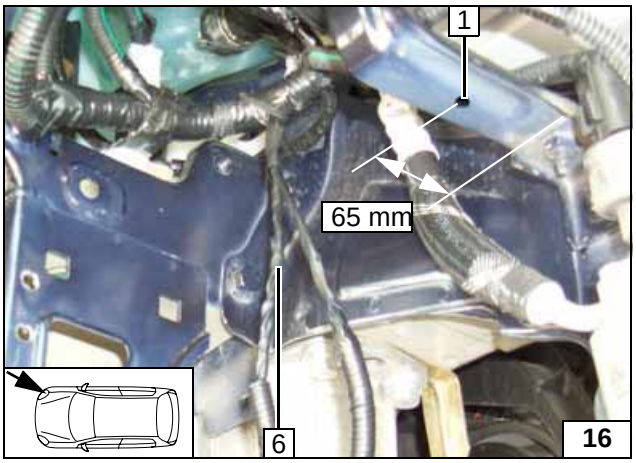
1 Premounted additional bracket
2 M6x20 bolt, flanged nut
3 M6x20 bolt, large diameter washer, flanged nut

Holes in cross member

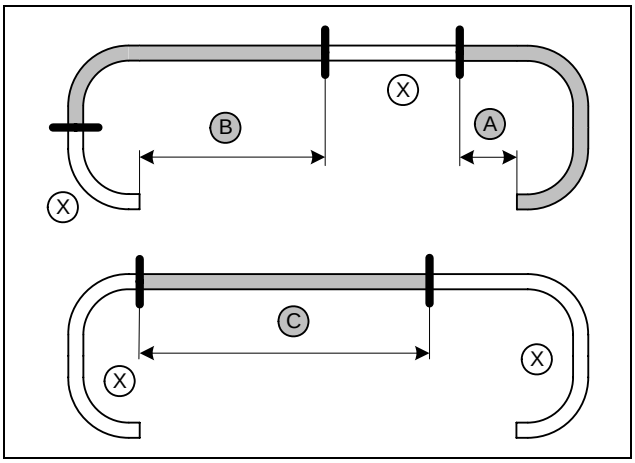


1 6.5 mm dia. hole [2x each]

Drilling hole in cross member



1 6.5 mm dia. hole

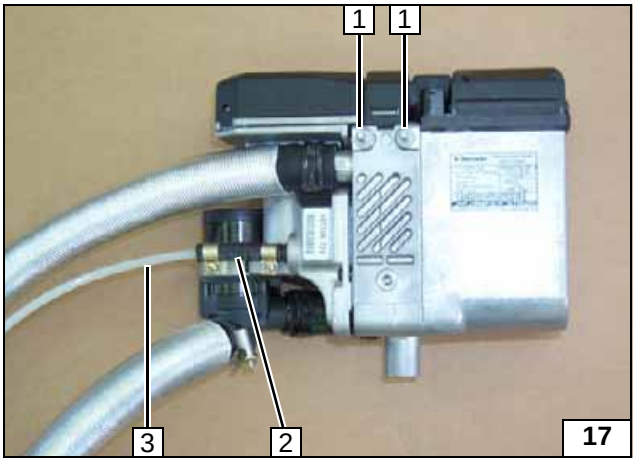


Preparing heater unit

a = 60
b = 1050
c = 1390

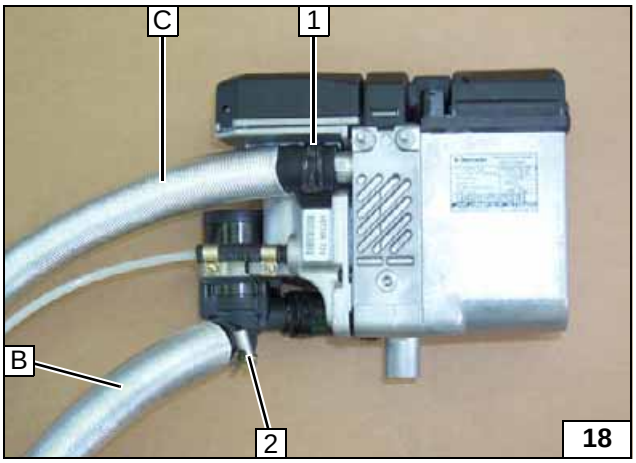
Discard sections **X**
Cut heat protection hose in half and push onto hose **A** and **B**.

Cutting coolant hoses to length



1 Ejot stud [2x]
2 Hose section, 10 mm dia. clamp [2x]
3 Fuel line

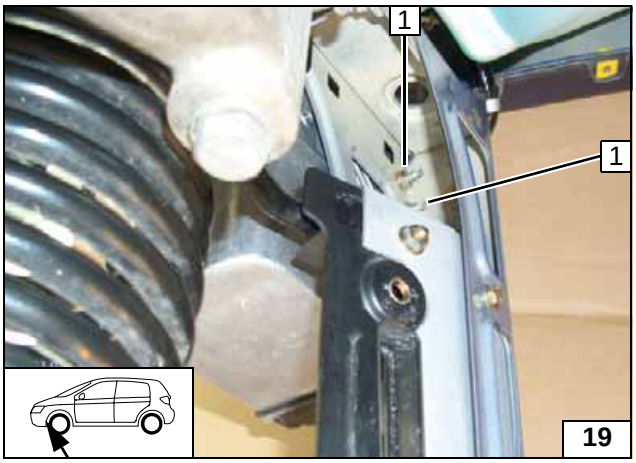
Preparing heater unit



Hose **B** with 90° elbow on heater unit inlet

1 27 mm dia. spring clip
2 27 mm dia. hose clamp

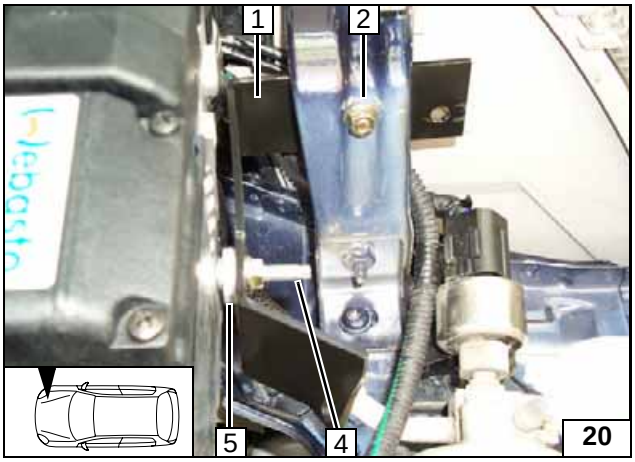
Premounting coolant hoses



Installing heater unit

1 Flanged nut [2x] on Ejot stud

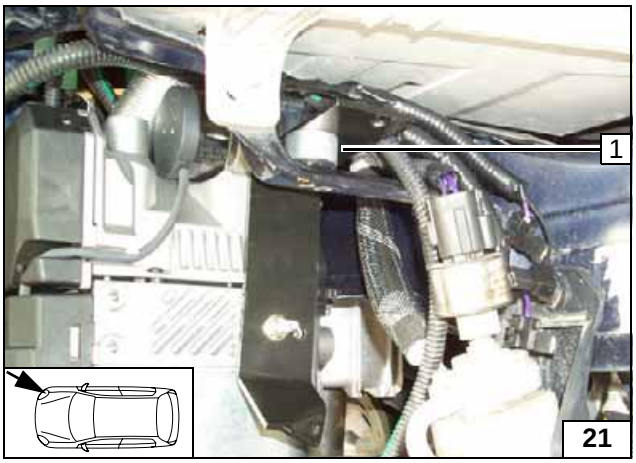
Installing heater unit



In case of tolerance deviations, use 2x 5 mm shims at Position **5**.

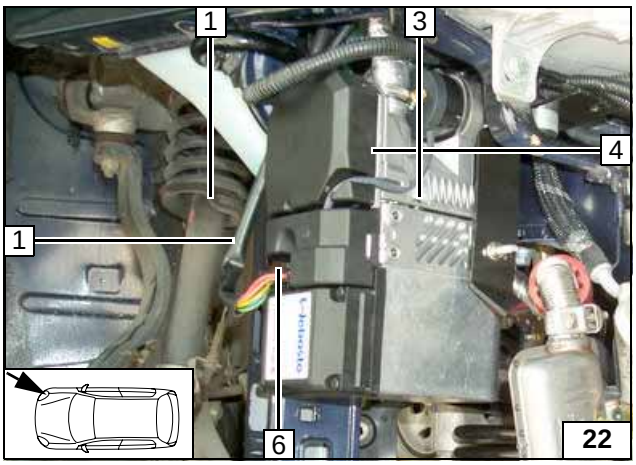
1 Strut
2 M6x30 bolt, 15 mm spacer sleeve (see following photo), flanged nut
4 Ejot stud, flanged nut
5 5 mm shim

Installing strut



1 15 mm shim

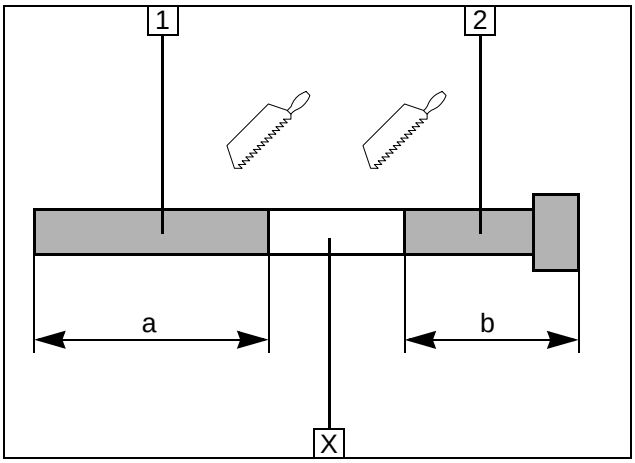
Positioning shim



1 Wiring harness of heater unit

Connecting wiring harness

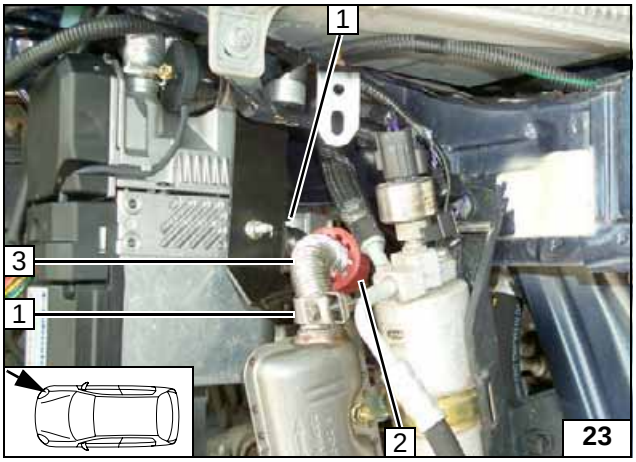
Exhaust gas



1 Exhaust pipe
a = 210
2 Exhaust end section
b = 80

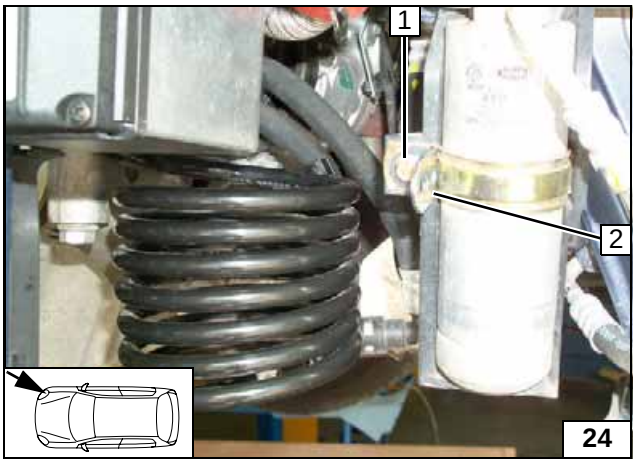
Discard section **X**

Preparing exhaust pipe



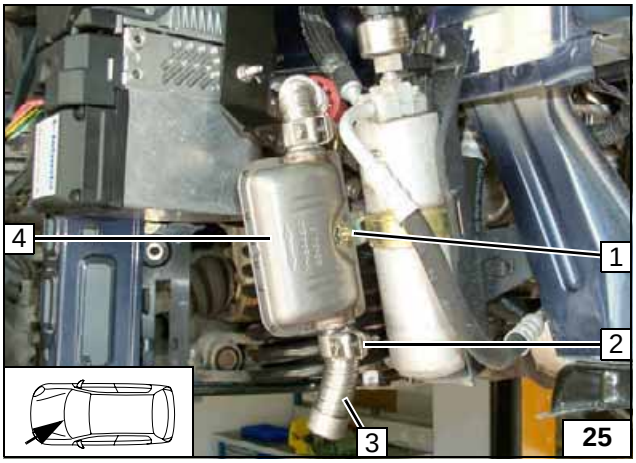
1 Hose clamp [2x]
2 Position red (rt) rubber isolator
3 Exhaust pipe

Installing exhaust pipe



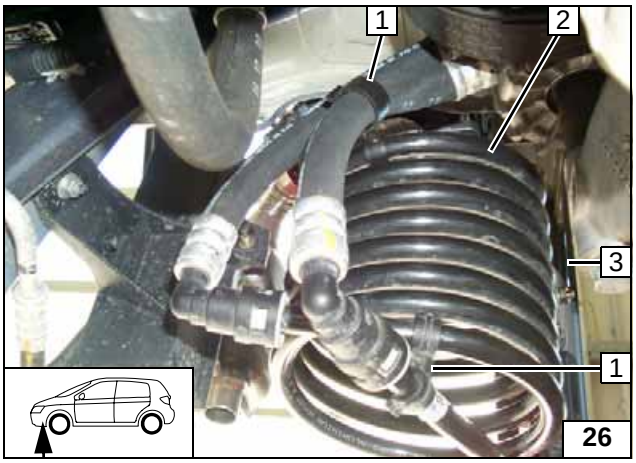
1 Original vehicle bolt
2 Angle bracket

Installing angle bracket



1 M6x20 bolt, large diameter washer, flanged nut on angle bracket
2 Hose clamp
3 Exhaust end section
4 Muffler

Installing muffler and end section

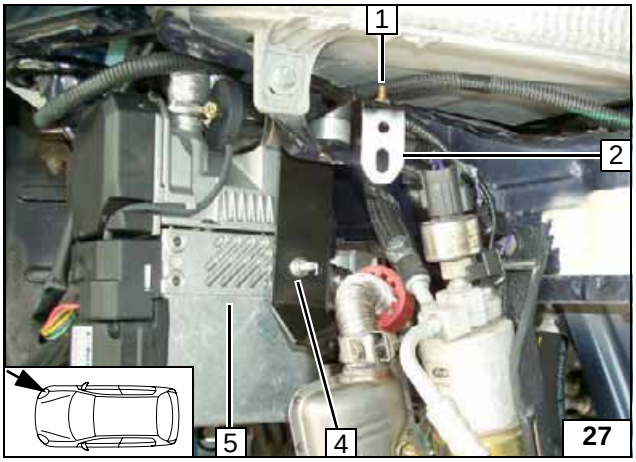


Installing cooling coil

Mount cooling coil **2** in prepared bracket **3**.

1 Spacer bracket
2 Original vehicle spacer bracket

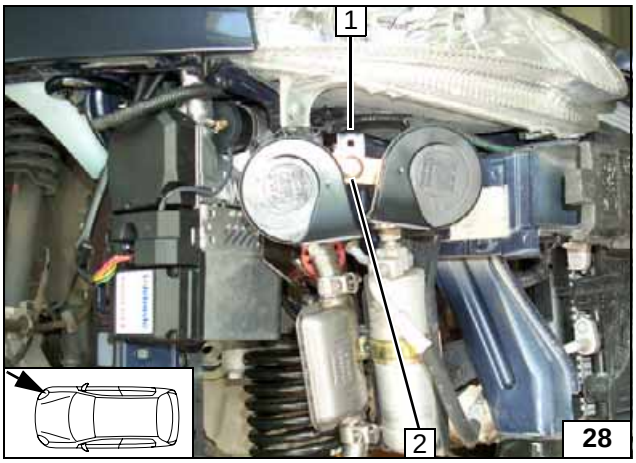
Installing cooling coil



Installing horns

1 M6x20 bolt, flanged nut on strut
2 Angle bracket

Installing horns



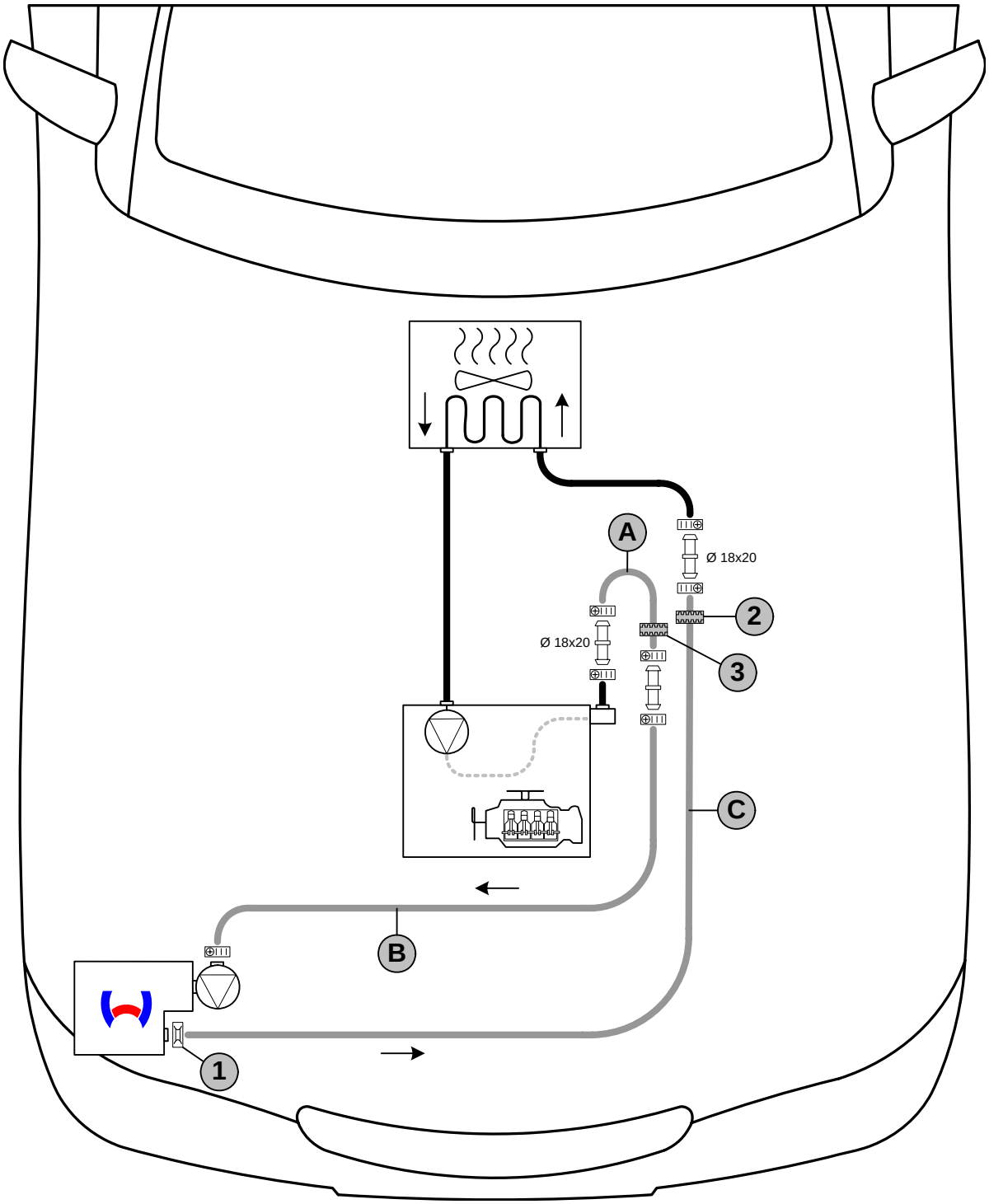
Install horn bracket with original vehicle bolt **2** on angle bracket **1**.

Installing horns

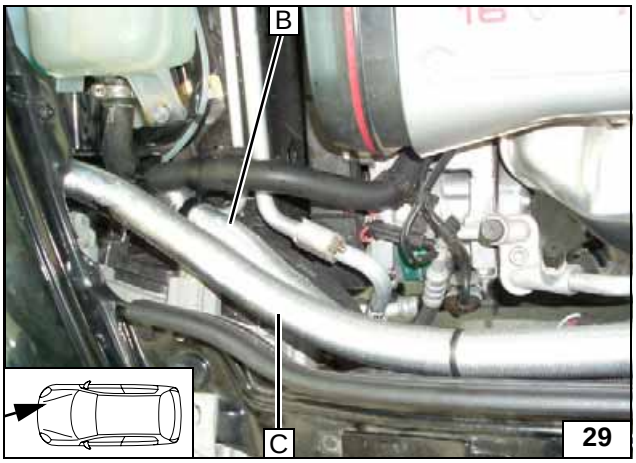
Coolant for gasoline engine

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

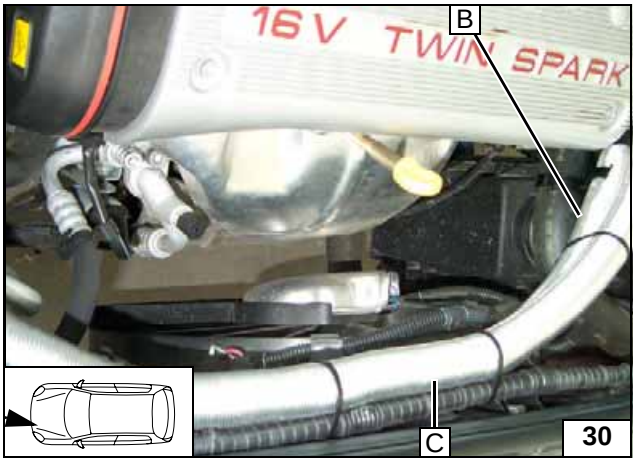
Coolant routing diagram



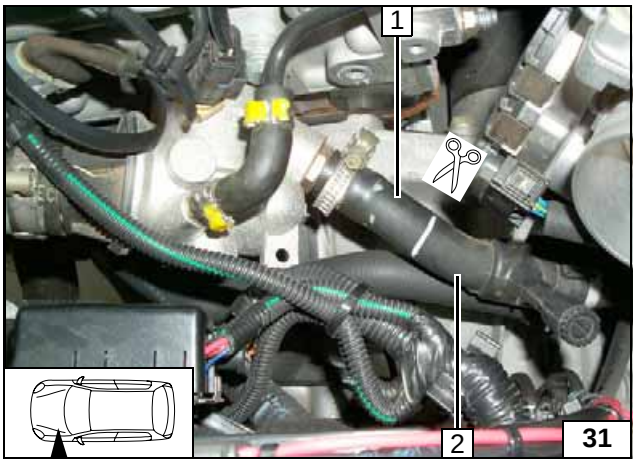
Undesignated connecting pipes = dia. 20x20. All hose clamps = 20-27 mm dia.!
1 = Spring clip = 27 mm dia.
2 = Black (sw) rubber isolator (2.0 liter only)! **3** = Black (sw) rubber isolator (1.6 liter only)!



Routing in engine compartment

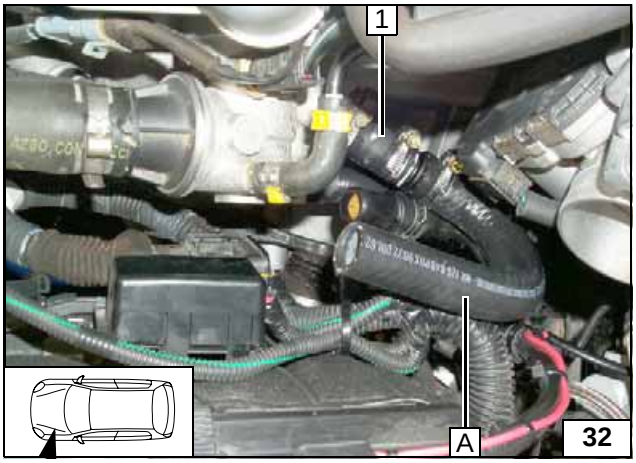


Routing in engine compartment



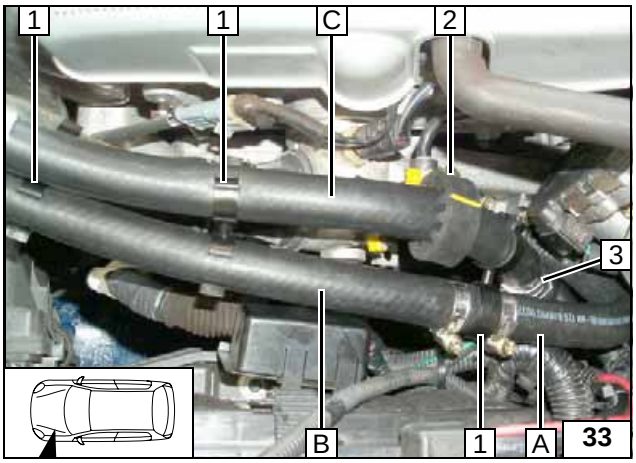
1 Engine-outlet hose section
2 Hose section of heat exchanger inlet

Cutting point



1 Engine-outlet hose section

Connecting engine outlet

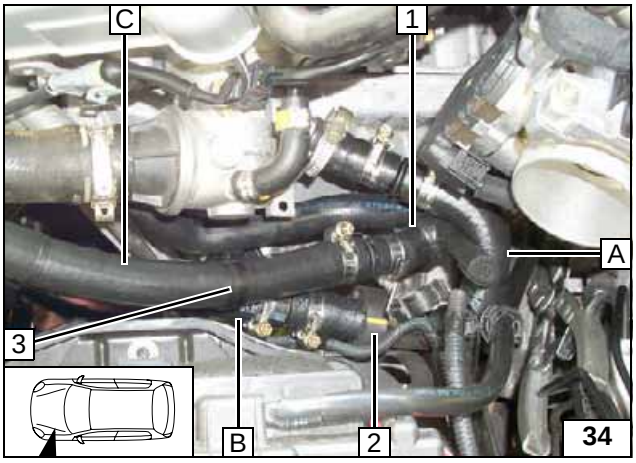


2.0 liter gasoline

Ensure sufficient distance to neighboring components.

1 Spacer bracket [3x]
2 Position black (sw) rubber isolator
3 Hose section of heat exchanger inlet

Connection on engine outlet and heat exchanger inlet

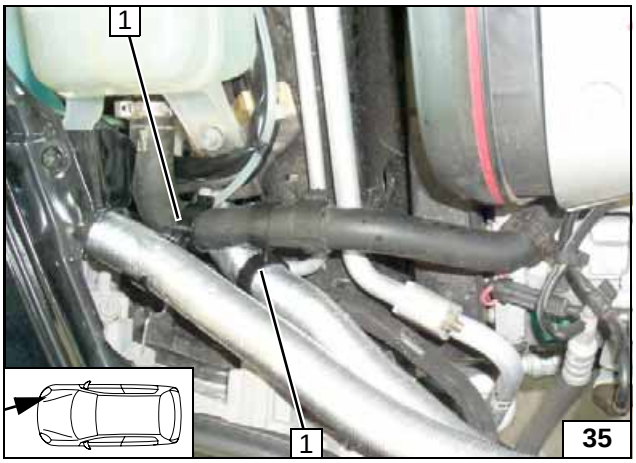


1.6 liter gasoline

Ensure sufficient distance to neighboring components.
Route hose **A** under original vehicle lines.

1 Hose section of heat exchanger inlet
2 Position black (sw) rubber isolator
3 Spacer bracket

Connection on engine outlet and heat exchanger inlet



All gasoline vehicles

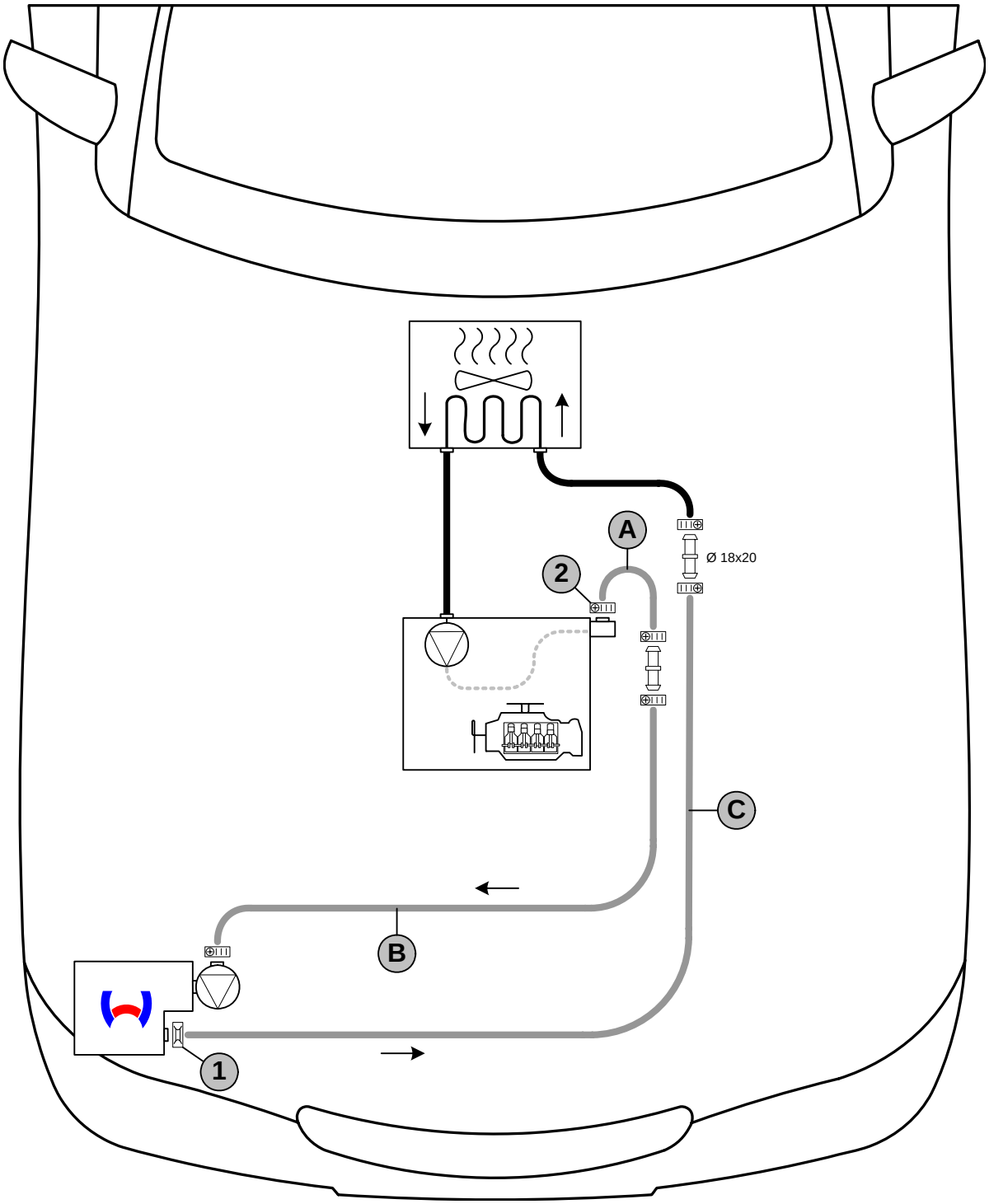
1 Spacer bracket [2x]

Installing spacer bracket

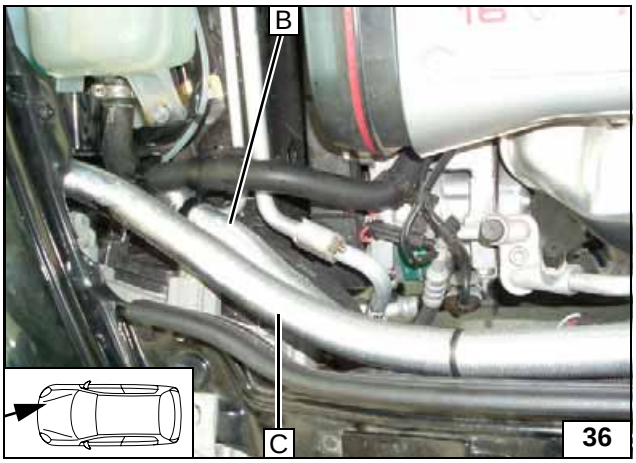
Coolant for diesel engine

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

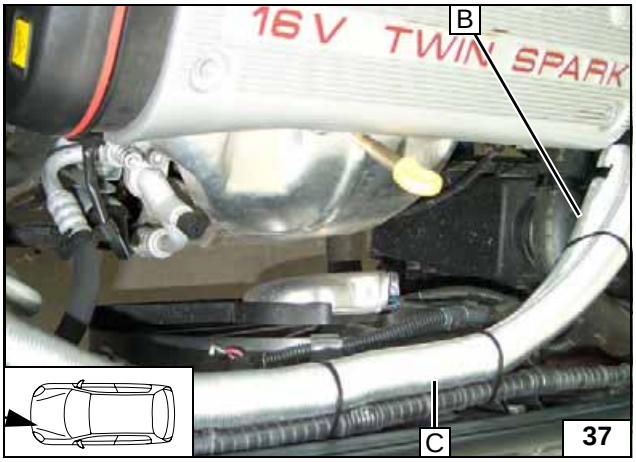
Coolant routing diagram



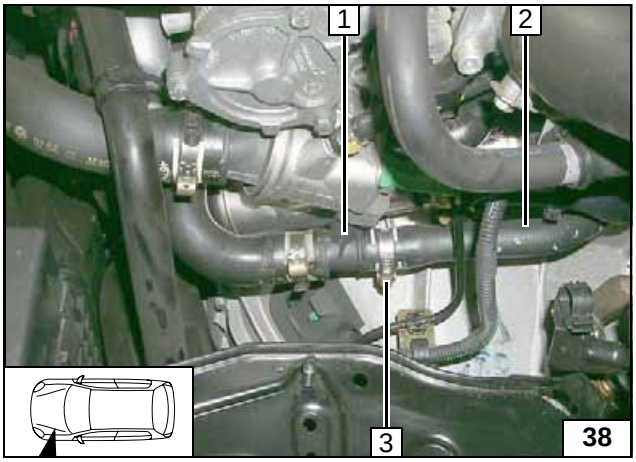
Undesignated connecting pipes = dia. 20x20. All hose clamps = 20-27 mm dia.!
1 = Spring clip = 27 mm dia. **2** = Original vehicle hose clamp .



Routing in engine compartment

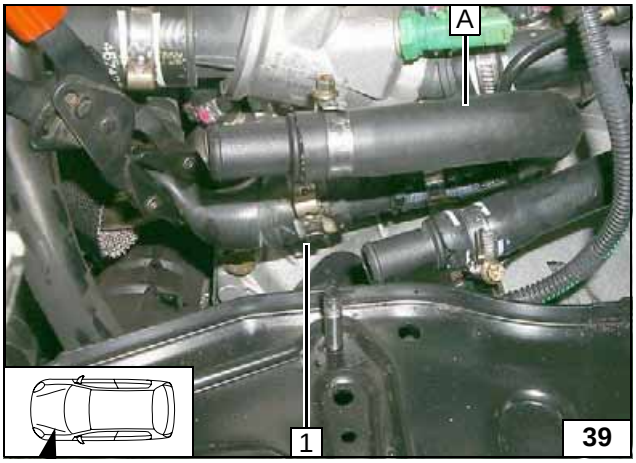


Routing in engine compartment



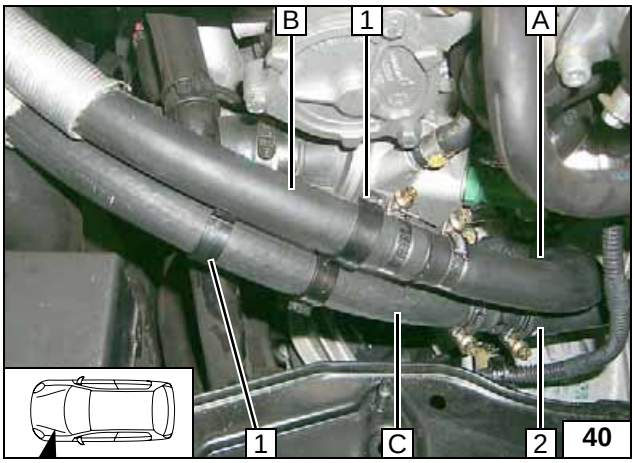
Pull hose on engine outlet/heat exchanger inlet **2** off connection piece of engine outlet **1**. Spring clip **3** will be reused.

Cutting point



1 Original vehicle spring clip

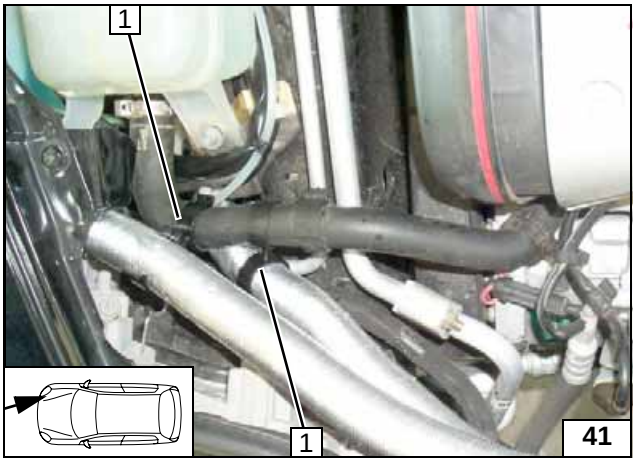
Connecting engine outlet



Ensure sufficient distance to neighboring components.

1 Spacer bracket [2x]
2 Hose section of heat exchanger inlet

Connection on engine outlet and heat exchanger inlet



1 Spacer bracket [2x]

Installing spacer bracket

Fuel

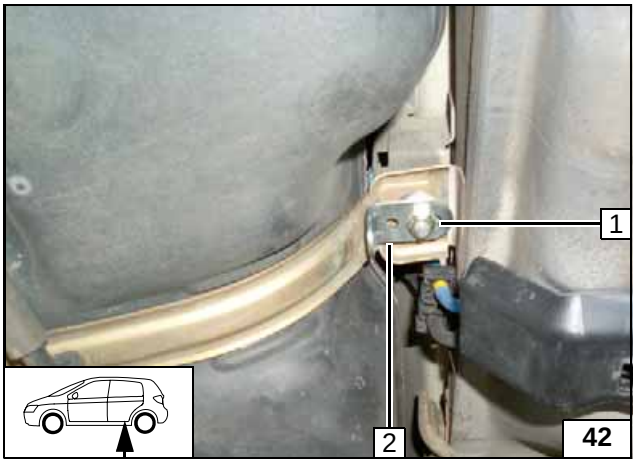
CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off with an appropriate container.

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

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

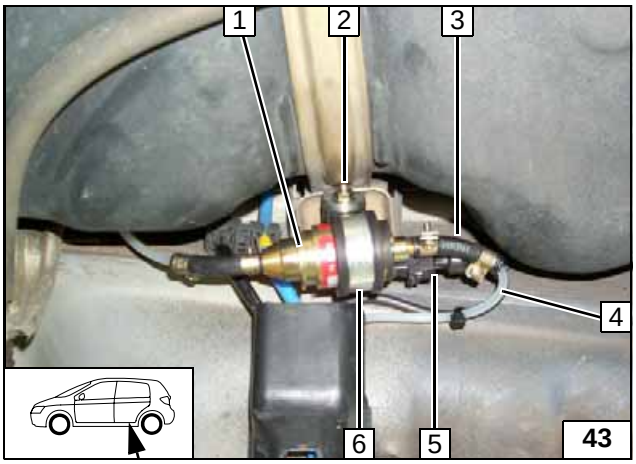
Installing angle bracket



1 M8 nut on existing stud bolt
2 Angle bracket

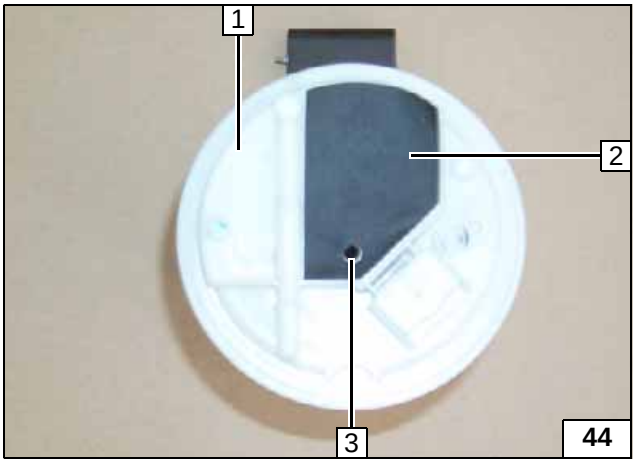
Installing metering pump

Fuel removal on gasoline engines



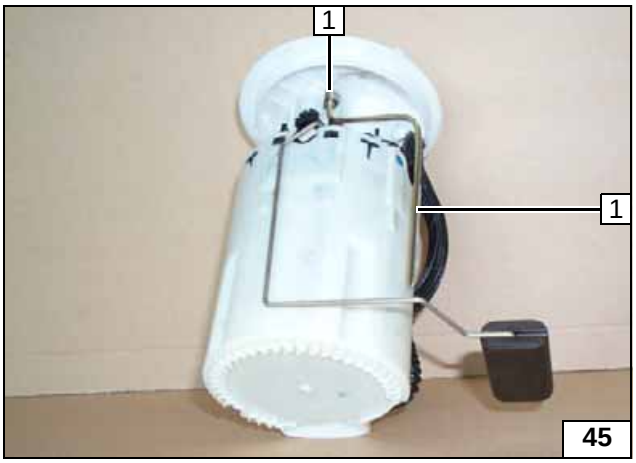
1 Metering pump
2 Silent block, flanged nut [2x] on angle bracket
3 Hose section, 10 mm dia. clamp [2x]
4 Fuel line
5 Wiring harness of metering pump, connector mounted
6 Rubber-coated pipe clamp

Removing fuel



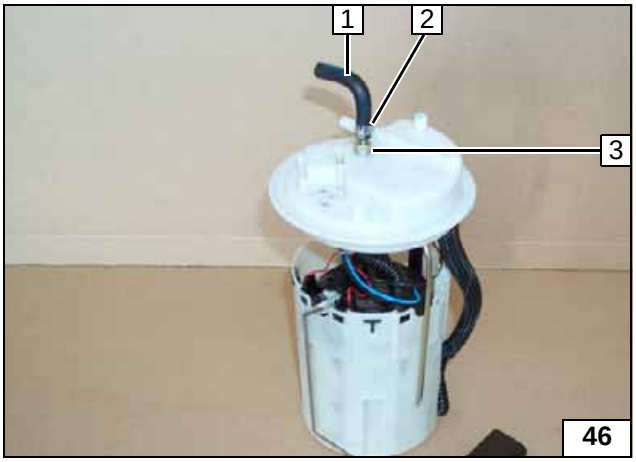
Remove fuel-tank sending unit **1** in accordance with manufacturer's specifications.

2 Cut out template and lay on
3 Copy hole pattern, 6 mm dia. hole



Shape fuel standpipe **1** according to template, cut to length and install.

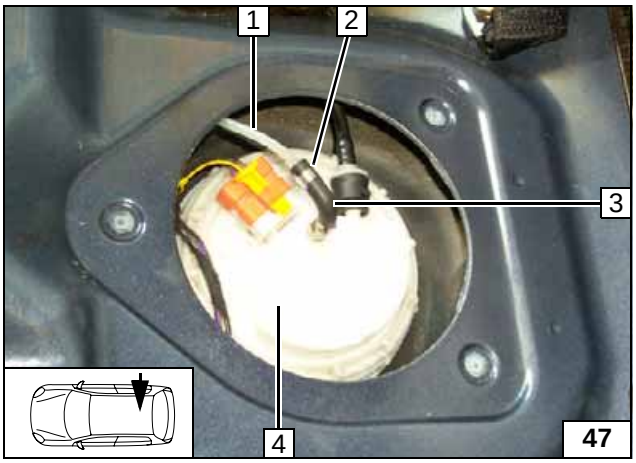
Installing fuel standpipe



Shorten 90° molded hose **1** by 10 mm at 3.5 mm dia. (shortened side on fuel standpipe).

2 9 mm dia. Caillau clamp
3 Fuel standpipe

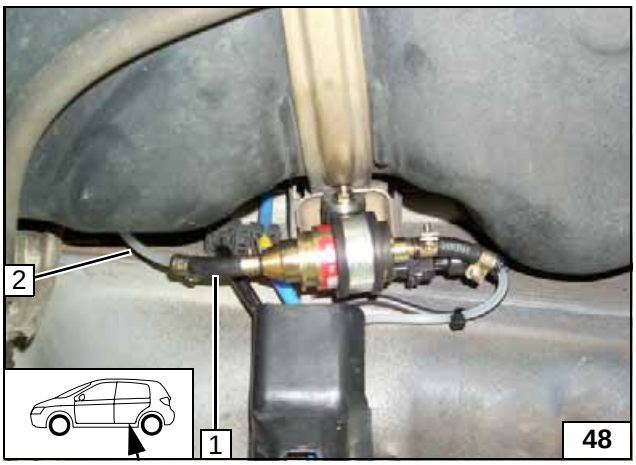
Connecting 90° molded hose



Install fuel-tank sending unit **4** in accordance with manufacturer's specifications.

1 Fuel line
2 10 mm dia. Caillau clamp
3 90° molded hose

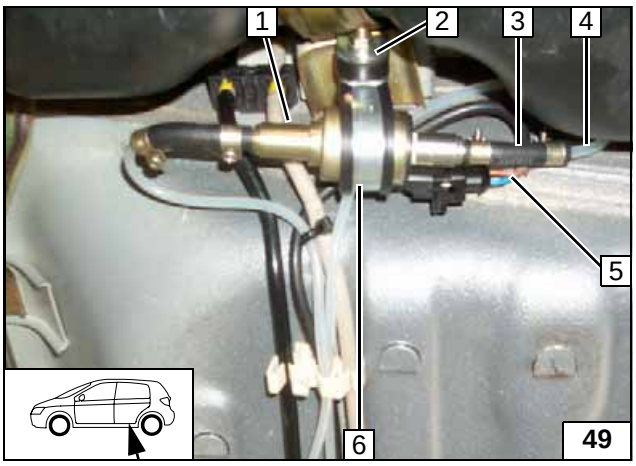
Connecting fuel line



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

1 Hose section, 10 mm dia. clamp [2x]
2 Fuel line

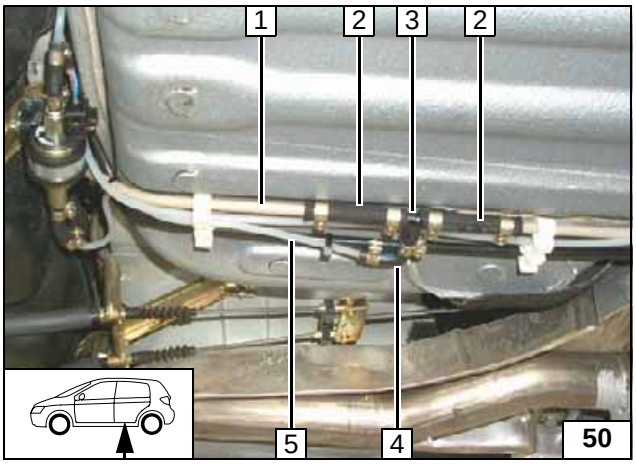
Connecting metering pump



Fuel removal on diesel engines

1 Metering pump
2 Silent block, flanged nut [2x] on angle bracket
3 Hose section, 10 mm dia. clamp [2x]
4 Fuel line
5 Wiring harness of metering pump, connector mounted
6 Rubber-coated pipe clamp

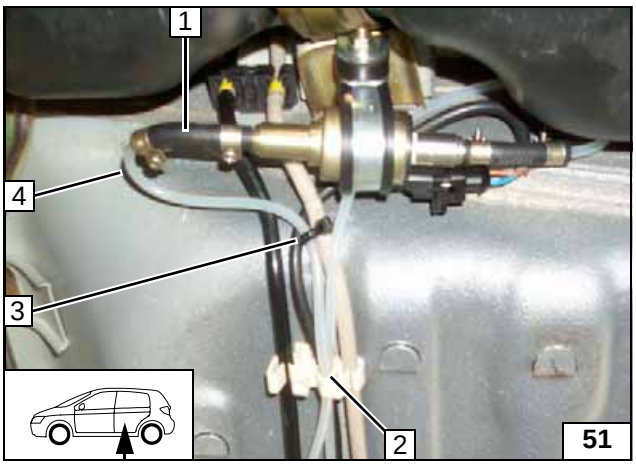
Installing metering pump



Cut fuel return line **1** at Position **3** and insert support sleeves in line ends.
Shorten molded hose **4** by 10 mm at 3.5 mm dia.

2 Hose section (inside dia. = 8 mm) [2x], 12 mm dia. clamp [4x]
3 8x5x8 mm fuel standpipe
4 90° molded hose (shortened side on fuel standpipe), 10 mm dia. clamp [2x]
5 Fuel line

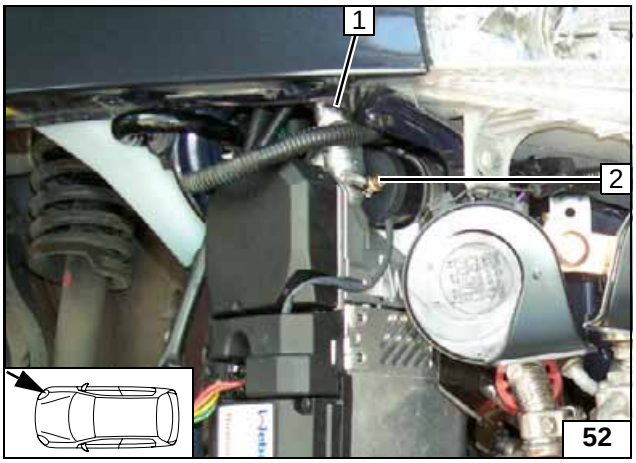
Removing fuel



Insert fuel line **4** in line holder **2**.
Check the position of the components; adjust if necessary. Check that they have free clearance.

1 Hose section, 10 mm dia. clamp [2x]
3 Cable tie

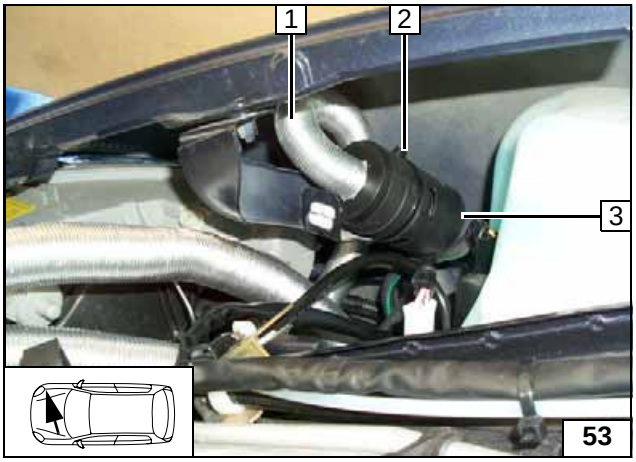
Connecting metering pump



Combustion air

1 Intake pipe
2 27 mm dia. clamp

Installing intake pipe



1 Intake pipe
2 Cable tie
3 Intake muffler

Installing muffler

Final Work

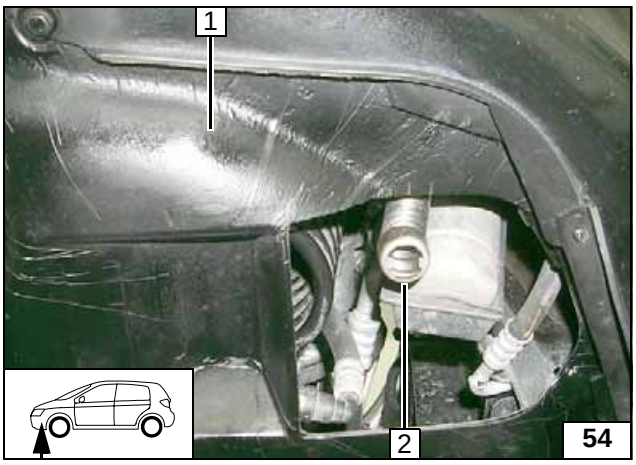
WARNING!
Reassemble the disassembled components in reverse order.
Check all hoses, clamps and all electrical connections for firm seating.
Secure all loose cables using cable ties.
Only use manufacturer-approved coolant.
Spray the heater unit components with anti-corrosion wax (Tectyl 100K, Order No. 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.

WARNING:
During heating, three "sporadic errors" are stored in the A/C control unit:

- Coolant temperature
- Outside temperature sensor
- Engine speed

These are irrelevant and can be deleted when performing vehicle service (inspection)!



1 Underride protection
2 Exhaust end section

Aligning exhaust end section

Webasto AG
Postfach 80 - 82132 Stockdorf
Hotline 01805 / 932278 - Hotfax 0395 / 5592-353
http://www.webasto.de

Operating Instructions for End Customer

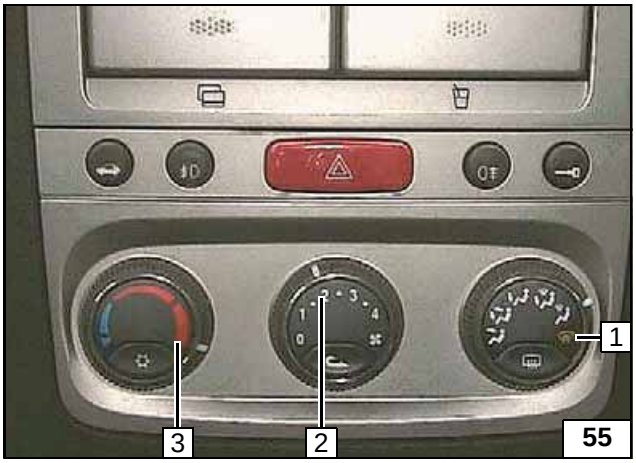
Please remove page and add to the vehicle operating instructions.

WARNING!
Passenger compartment monitoring will be deactivated while heating mode is active!

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.

Before parking the vehicle, make the following settings:

Manual air conditioning

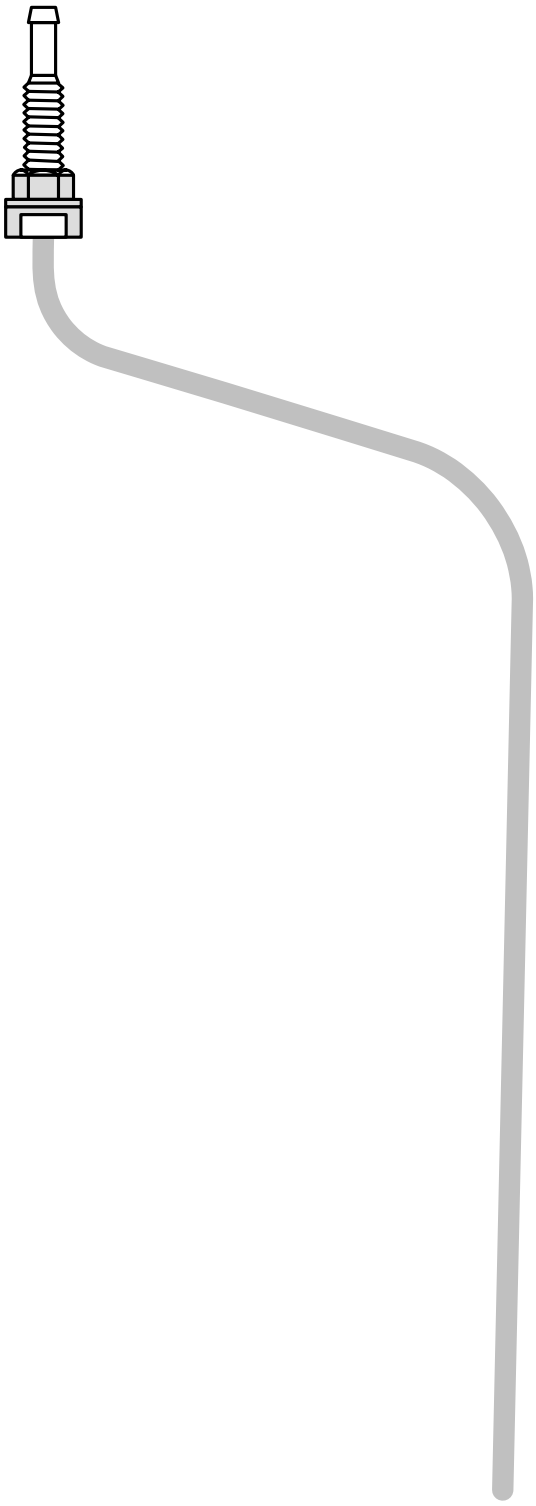


1 Air outlet to windshield
2 Set fan to level "2"
3 Set temperature to "max."

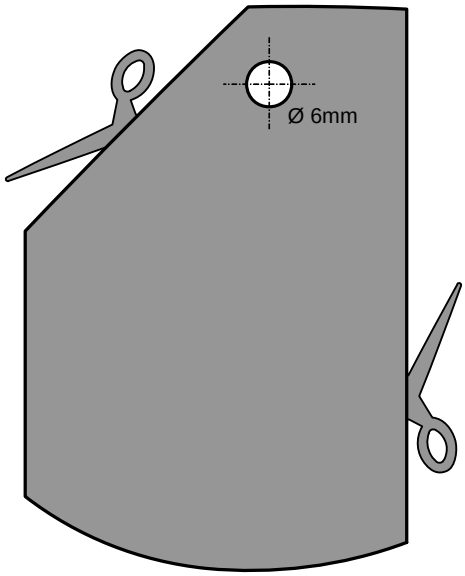
Automatic air-conditioning

1 Air outlet to windshield
2 Set temperature on both sides to "HI".
3 Set fan to level "2"

Template for Fuel Standpipe



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%.

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

100 mm

0