Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

Installation Documentation
Suzuki Grand Vitara

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Suzuki	Grand Vitara	JT	e4 * 2001 / 116 * 0091 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.9 D	Diesel	5-speed SG	95	1870	F9Q

SG = Manual transmission

From Model Year 2011
Left-hand drive vehicle
Starting with VIN **JSA JT A 44 V 00 610001**
JSA JT D 44 V 00 610001

Verified equipment variants: Automatic air-conditioning
Front fog light
Xenon
Headlight washer system

Not verified: Passenger compartment monitoring
Manual air-conditioning

Total installation time: about 7.5 hours

Suzuki Grand Vitara

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Necessary Components

- Basic delivery scope of *Thermo Top Evo* based on price list
- Installation kit for Suzuki Grand Vitara 2011 Diesel: **1316923B**
- Heater control in accordance with price list and upon consultation with final customer
- In case of Telestart, indicator lamp in accordance with price list and upon consultation with final customer

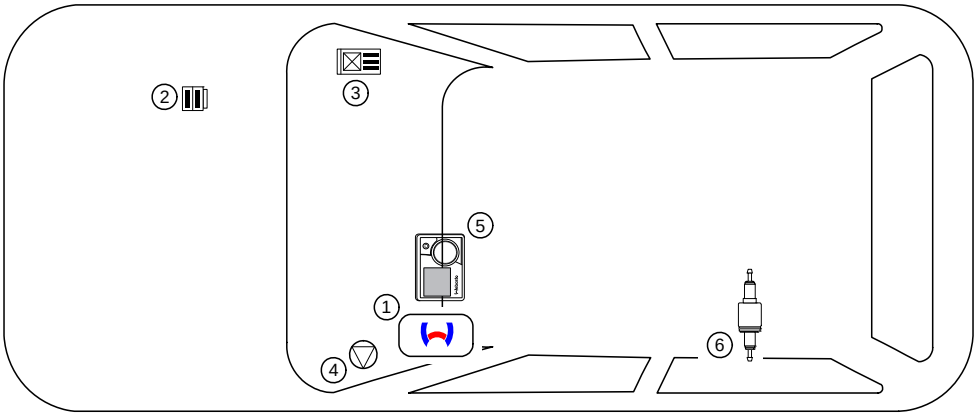
Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about 1/4 full!
- The installation location of the push button in the case of Telestart or Thermo Call should be confirmed with the end customer.
- Depending on the space required and the manufacturer's instructions, we recommend the use of a vehicle battery with a higher electrical capacity!

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Relay and fuse holder of passenger compartment
4. Circulating pump
5. Digital timer
6. Metering pump



Notes on Total Installation Time

The total installation time includes the time needed for mounting and demounting of the vehicle-specific components, the heater specific installation time and all other times required for the system integration and initial start-up of the heater.
The total installation time may vary for vehicle equipment other than provided.

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

The improper installation or repair of Webasto heating and cooling systems can cause fire or the leakage of deadly carbon monoxide, leading to serious injury or death.

To install and repair Webasto heating and cooling systems you need to have completed a special company training course and have the appropriate technical documentation, special tools and special equipment.

Installation and repair may ONLY be carried out by persons trained and certified in a Webasto training course. NEVER try to install or repair Webasto heating or cooling systems if you have not completed a Webasto training course, you do not have the necessary technical skills and you do not have the technical documentation, tools and equipment available to ensure that you can complete the installation and repair work properly.

Only use genuine Webasto parts. See the Webasto air and water heaters accessories catalogue for this purpose.

1.2 Operation

To ensure safe operation, we recommend having the heater checked every two years by an authorised Webasto dealer, especially when used over a long period and/or under extreme environmental conditions.

Do not operate the heater in closed rooms due to the danger of poisoning and suffocation.

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel Diesel (DIN EN 590) or petrol (DIN EN 227).

The heater may not be cleaned with a high-pressure cleaner.

1.3 Please note

ALWAYS follow all Webasto installation and operating instructions and observe all warnings.

To become familiar with and understand all functions and properties of the heater, the operating instructions must be read carefully and observed at all times.

For proper, safe installation and repair work, the installation instructions with all warnings and safety information must be carefully read and observed at all times. Please always contact a workshop authorised by Webasto for all installation and repair work.

Important

Webasto shall assume no liability for defects, damage and injuries resulting from a failure to observe the installation, repair and operating instructions of the information contained in them.

This liability exclusion particularly applies to improper installations and repairs, installations and repairs by untrained persons or in the case of a failure to use genuine spare parts.

The liability due to culpable disregard to life, limb or health and due to damage or injuries caused by a wilful or reckless breach of duty remain unaffected, as does the obligatory product liability.

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. Insulate loose wire ends and tie back. Connectors on electronic components must audibly snap into place during assembly.

Sharp edges should be fitted with rub protection. Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

Observe the instructions and guidelines of the respective vehicle manufacturer for demounting and mounting vehicle specific components!

The initial startup is to be executed with the Webasto Thermo Test Diagnosis.

When installing a programmable control module (e.g. a PWM Gateway), the corresponding settings must be checked or adjusted.

2 Statutory regulations governing installation

Guidelines	Thermo Top Evo
Heating Directive ECE R122	E1 00 0258
EMC Directive ECE R10	E1 04 5627

Note

The regulations of these guidelines are binding in the scope of the Directive 70/156/EEC and/or 2007/46/EC (for new vehicle models from 29/04/2009) and should also be observed in countries in which there are no special regulations.

Important

Failure to follow the installation instructions will result in the invalidation of the type approval for the heater and therefore invalidation of the general **homologation of the vehicle**.

Note

The heater is licensed in accordance with paragraph 19, section 3, No. 2b of the StVZO (German Road Traffic Licensing Authority).

2.1 Excerpt from EC directive 122 (heating system) paragraph 5 for the installation of the heater

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

1.7.1. A clearly visible tell-tale in the operator's field of view shall inform when the combustion heater is switched on or off.

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

2.1.1. Subject to paragraph 2.1.2. combustion heaters shall be installed according to the requirements of this Annex.

2.1.2. Vehicles of category O having liquid fuel heaters are deemed to comply with the requirements of this Annex.

2.2. Positioning of heater

2.2.1. Body sections and any other components in the vicinity of the heater must be protected from excessive heat and the possibility of fuel or oil contamination.

2.2.2. The combustion heater shall not constitute a risk of fire, even in the case of overheating. This requirement shall be deemed to be fulfilled if the installation ensures an adequate distance to all parts and suitable ventilation, by the use of fire resistant materials or by the use of heat shields.

2.2.3. In the case of M2 and M3 vehicles, the heater must not be positioned in the passenger compartment. However, an installation in an effectively sealed envelope which also complies with the conditions in paragraph 2.2.2 may be used.

2.2.4. The label referred to in paragraph 1.4 or a duplicate, must be positioned so that it can be easily read when the heater is installed in the vehicle.

2.2.5. Every reasonable precaution should be taken in positioning the heater to minimise the risk of injury and damage to personal property.

2.3. Fuel supply

2.3.1. The fuel filler must not be situated in the passenger compartment and must be provided with an effective cap to prevent fuel spillage.

2.3.2. In the case of liquid fuel heaters, where a supply separate to that of the vehicle is provided, the type of fuel and its filler point must be clearly labelled.

2.3.3. A notice, indicating that the heater must be shut down before refuelling, must be affixed to the fuelling point. In addition a suitable instruction must be included in the manufacturer's operating manual.

2.4. Exhaust system

2.4.1. The exhaust outlet must be located so as to prevent emissions from entering the vehicle through ventilators, heated air inlets or opening windows.

2.5. Combustion air inlet

2.5.1. The air for the combustion chamber of the heater must not be drawn from the passenger compartment of the vehicle.

2.5.2. The air inlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

2.6. Heating air inlet

2.6.1. The heating air supply may be fresh or recirculated air and must be drawn from a clean area not likely to be contaminated by exhaust fumes emitted either by the propulsion engine, the combustion heater or any other vehicle source.

2.6.2. The inlet duct must be protected by mesh or other suitable means.

2.7. Heating air outlet

2.7.1. Any ducting used to route the hot air through the vehicle must be so positioned or protected that no injury or damage could be caused if it were to be touched.

2.7.2. The air outlet must be so positioned or guarded that blocking by rubbish or luggage is unlikely.

End of excerpt.

In multilingual versions the German language is binding.

Suzuki Grand Vitara

Notes on Validity

This installation documentation applies to the Suzuki Grand Vitara Diesel vehicles - for validity, see page 1 - from model year 2011 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 this installation documentation.

Vehicle and engine types, equipment variants and other specifications not listed in this installation documentation have not been tested. However, installation according to this installation documentation may be possible.

Technical Instructions

Special tools
- Hose clamp pliers for self-clamping hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Automatic wire stripper 0.2 - 6 mm²
- Crimping pliers for cable lug / tab connector 0.5 - 6 mm²
- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

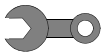
Dimensions
- All dimensions are in mm

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8 Nm.
- Tightening torque of the bolt of 5x15 water connection piece retaining plate = 7 Nm.
- Tighten other bolt connections in accordance with manufacturer's instructions or in accordance with state-of-the-art-technology.

Explanatory Notes on Document

You will find an identification mark on the outside top right corner of the page in question to provide you with a quick overview of the individual working steps.

Mechanical system



Electrical system

Coolant circuit

Combustion air

Fuel

Exhaust gas

Software

Special features are highlighted using the following symbols:

Specific risk of injury or fatal accidents.

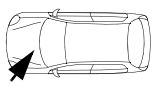
Specific risk of damage to components.

Specific risk of fire and explosion

Reference to general installation instructions of the 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.



Tightening torque according to the manufacturer's vehicle-specific documents

Suzuki Grand Vitara

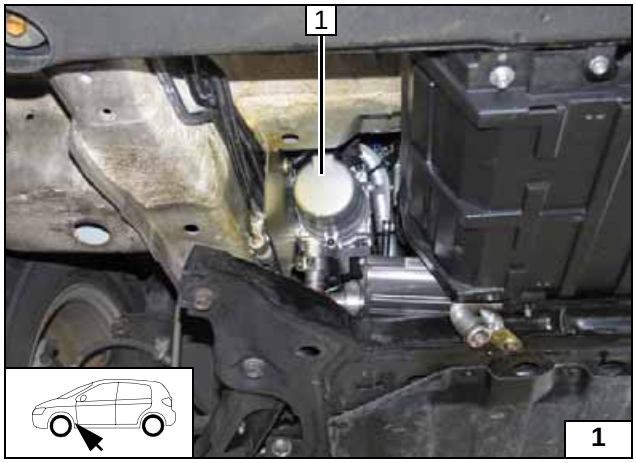
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect and remove the battery.
- Remove the underride protection.
- Remove the lower instrument panel trim on the front passenger's side.
- Remove the glove compartment.
- Remove the A/C control panel in accordance with the manufacturer's instructions.
- Remove the A-pillar trim on the front passenger's side (only with Telestart).

Heater

- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) in the appropriate place inside the engine compartment.



Heater Installation Location

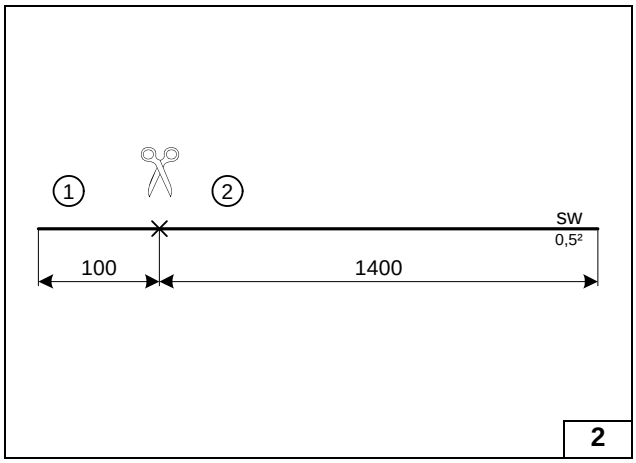
1 Heater

Installation location

Preparing Electrical System

Wire sections retain their numbering in the whole document.

Cutting black (sw) wire to length

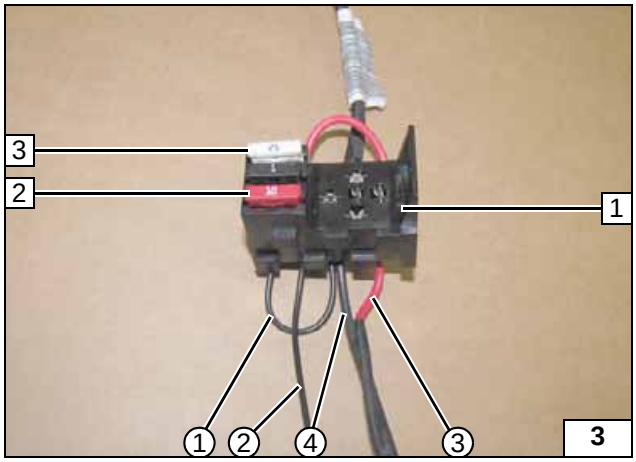


2

Connect wires according to the following connection diagram. K1 relay is inserted only after the installation of the relay and fuse holder.

Preparing relay and fuse holder of passenger compartment

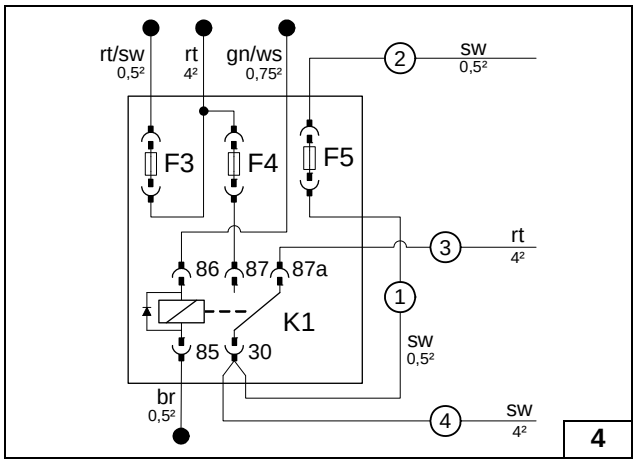
1 Relay and fuse holder of passenger compartment
2 Fuse F5 10A
3 Fuse F4 25A
① Black (sw) wire of K1/30 and fuse F5
② Black (sw) wire of fuse F5
③ Red (rt) wire of K1/87a
④ Black (sw) wire of K1/30



3

Produce connections as shown in wiring diagram. K1 relay is inserted only after the installation of the fuse holder. Pull wire section ② into protective sleeving.

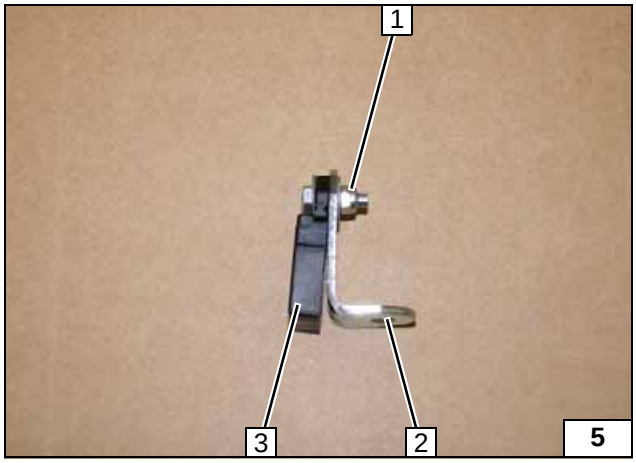
Connection diagram



4

1 M5x16 bolt, large diameter washer [2x], nut
2 Angle bracket
3 Retaining plate for engine compartment fuse holder

Preparing fuse holder of engine compartment



5

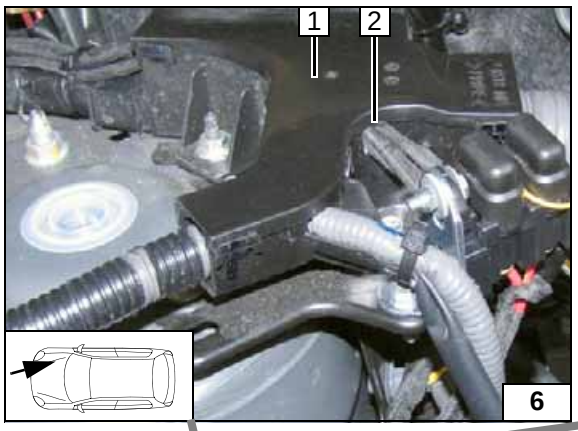
Electrical System

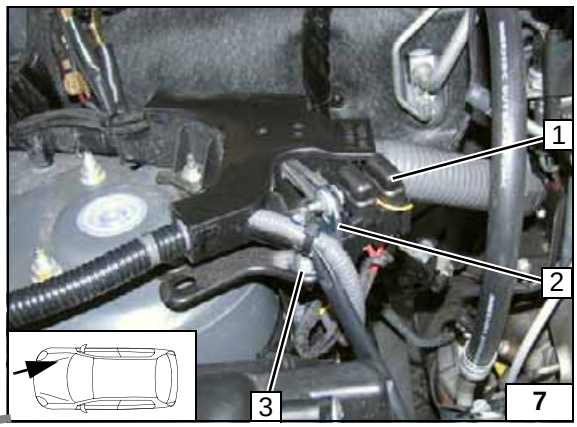
Wiring harness pass through

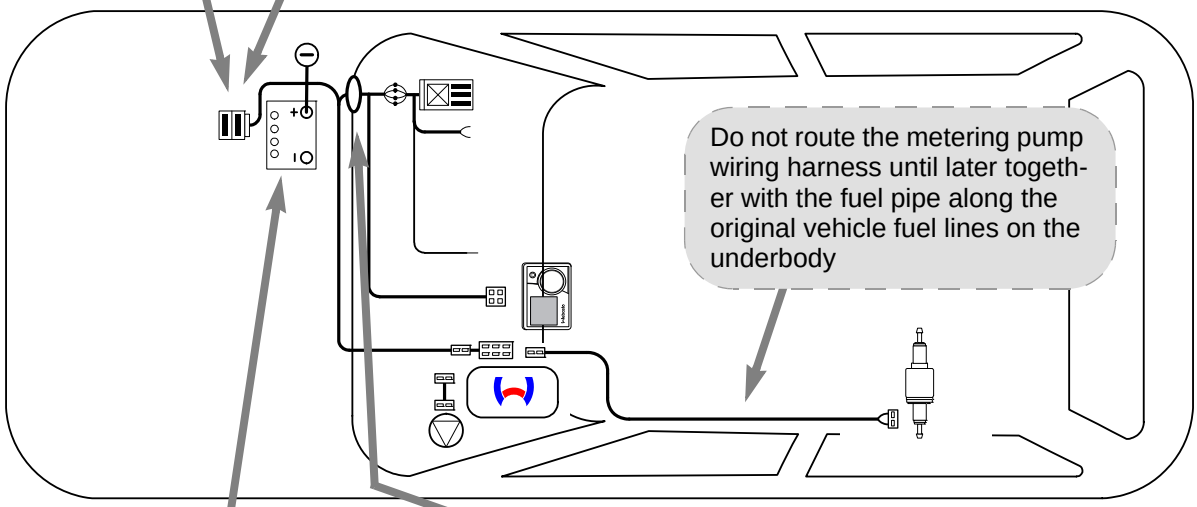
Cut out wiring duct **1** at Position **2** for wiring harnesses of the engine compartment fuse holder.

Fuse holder of engine compartment

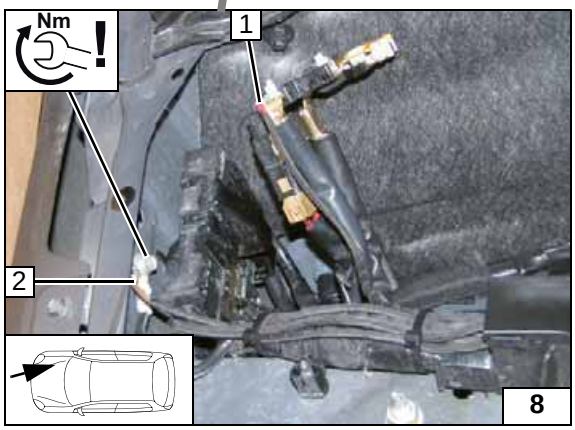
1 F1-2 fuses
2 Angle bracket
3 M6x20 bolt, flanged nut, original vehicle hole

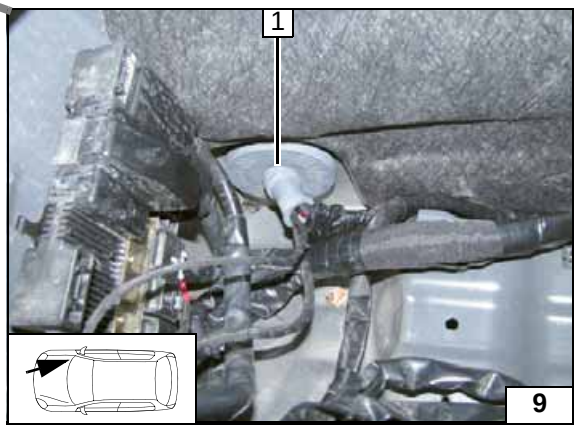






Wiring harness routing diagram





Positive and earth wire

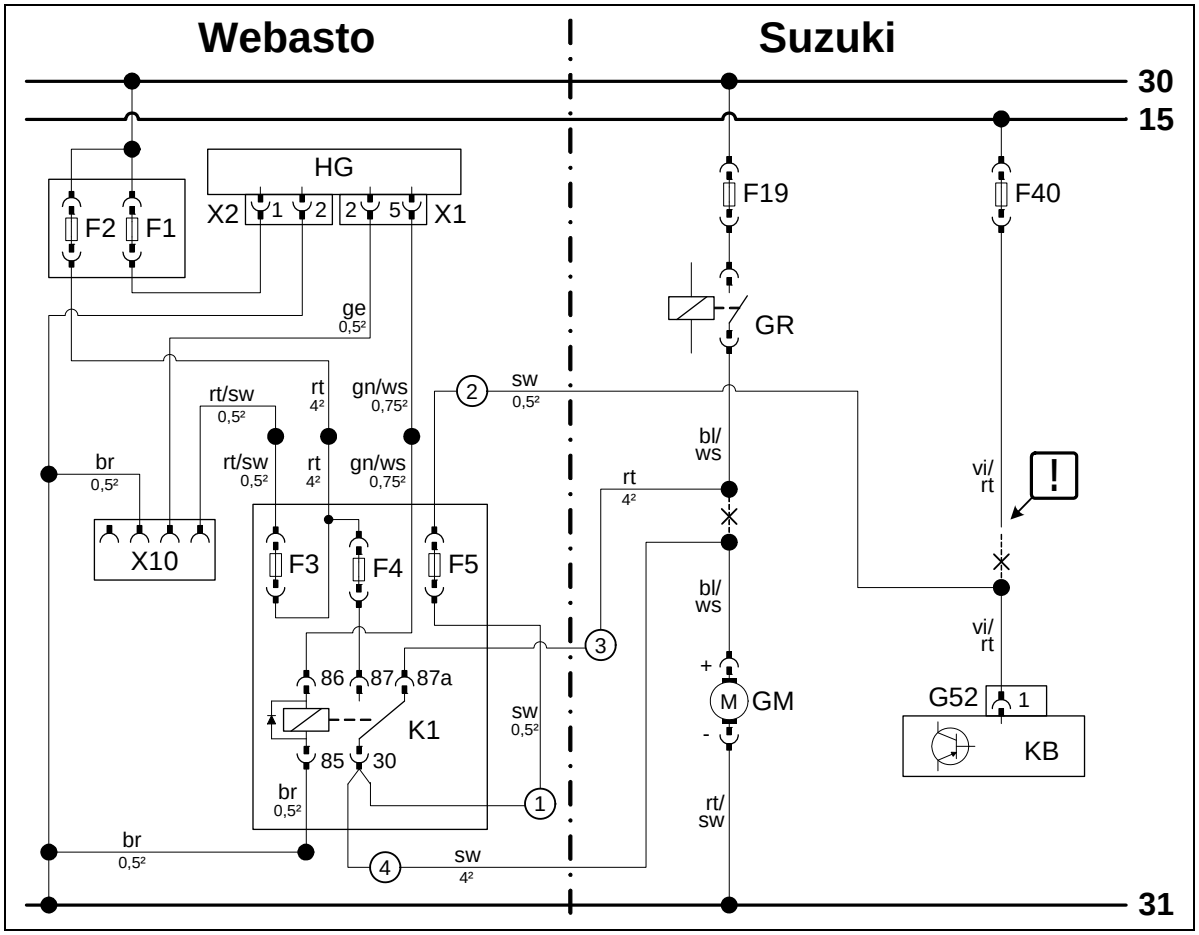
1 Positive wire on positive battery terminal
2 Earth wire on original vehicle earth support point

Wiring harness pass through

1 Protective rubber plug

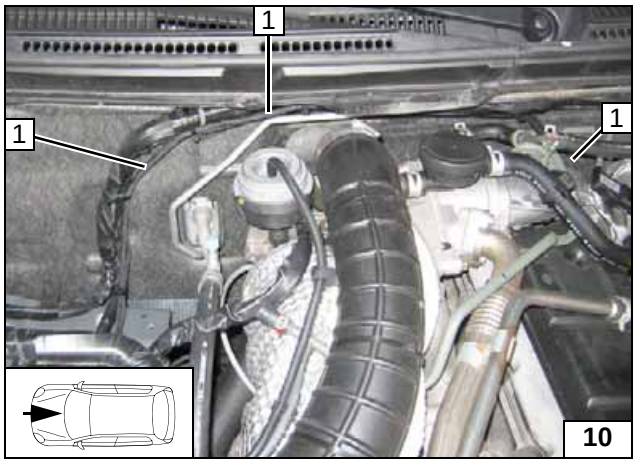
Fan Controller

Wiring diagram



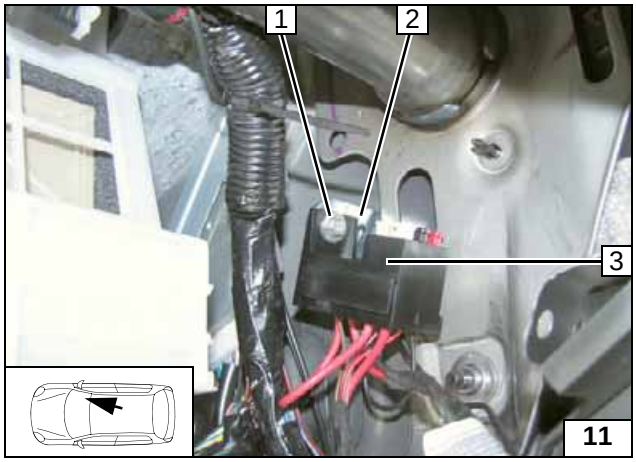
Legend

Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F19	40A fuse	rt	red
X1	6-pin heater connector	F40	10A fuse	sw	black
X2	2-pin heater connector	Gr	Fan relay	ge	yellow
X10	4-pin connector of heater control	GM	Fan motor	gn	green
		G52	Connector KB	br	brown
K1	Fan relay	KB	A/C control panel	ws	white
F1	20A fuse			bl	blue
F2	30A fuse			vi	violet
F3	1A fuse				
F4	25A fuse			!	Insulate wire end and tie back
F5	10A fuse				
				X	Cutting point
				Wiring colours may vary.	



Route wiring harnesses of heater and metering pump **1** on firewall to the left vehicle side and then along original vehicle lines to the installation location of the heater.

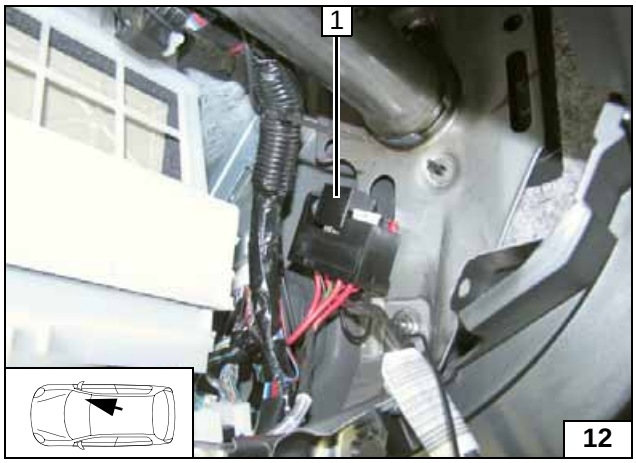
Routing wiring harnesses



Fasten angle bracket **2** on original vehicle stud bolt with M6 flanged nut.

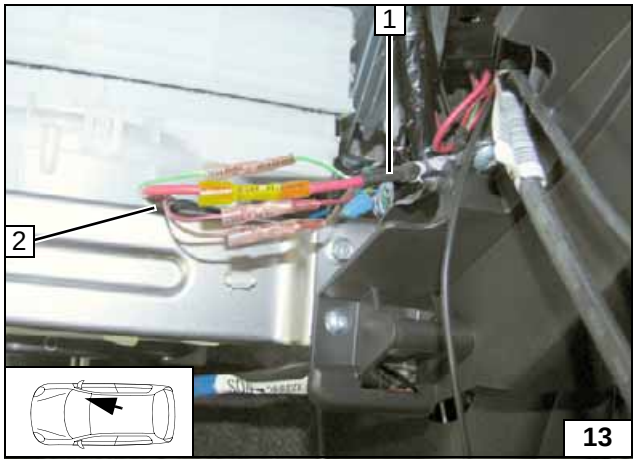
1 M5x16 bolt, large diameter washer [2x], nut
3 Relay and fuse holder of passenger compartment

Installing relay and fuse holder of passenger compartment



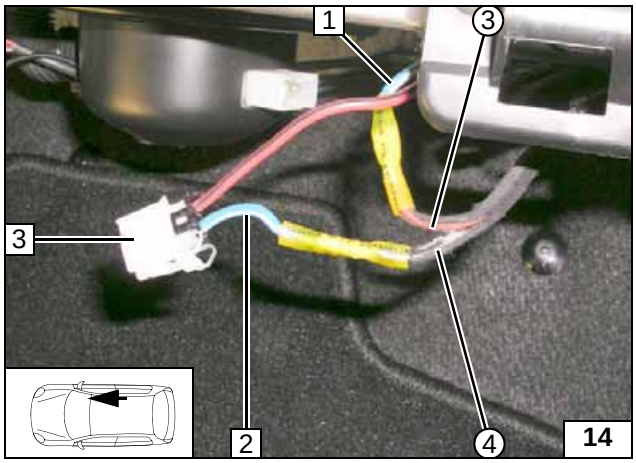
1 K1 relay

Mounting K1 relay



1 Wiring harness of passenger compartment relay and fuse holder
2 Wiring harness of heater

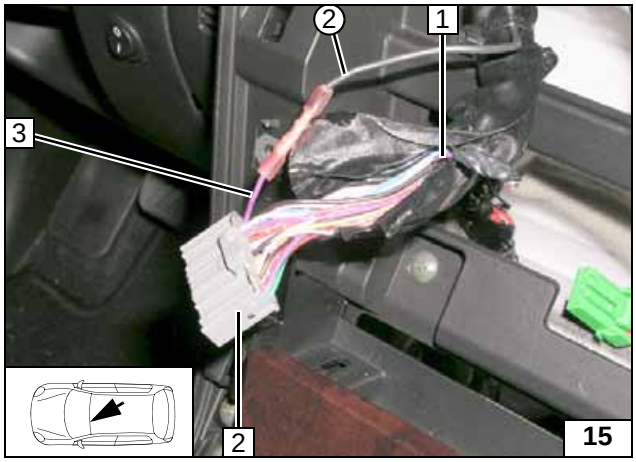
Connecting same colour wires of wiring harnesses



Connection to connector **3** from fan motor. Produce connections as shown in wiring diagram.

1 Blue/white (bl/ws) wire of fan relay
2 Blue/white (bl/ws) wire of connector of fan motor
③ Red (rt) wire of K1/87a, fan wiring harness
④ Black (sw) wire of K1/30, fan wiring harness

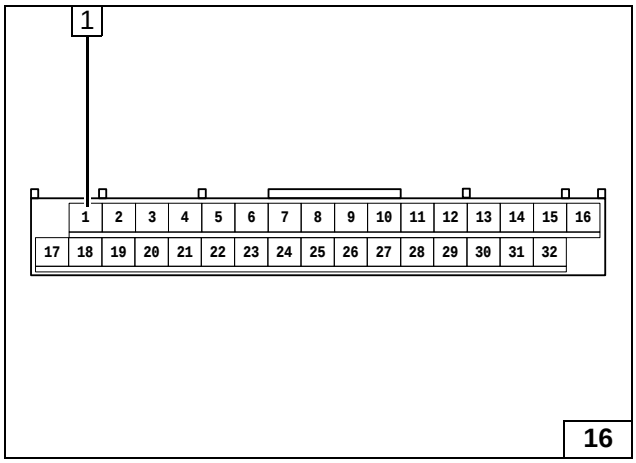
Connecting fan motor



Connection to 32-pin grey connector G52 **2** from A/C control panel. Insulate violet/red (vi/rt) wire **1** of fuse F40 and tie back. Produce connections as shown in wiring diagram.

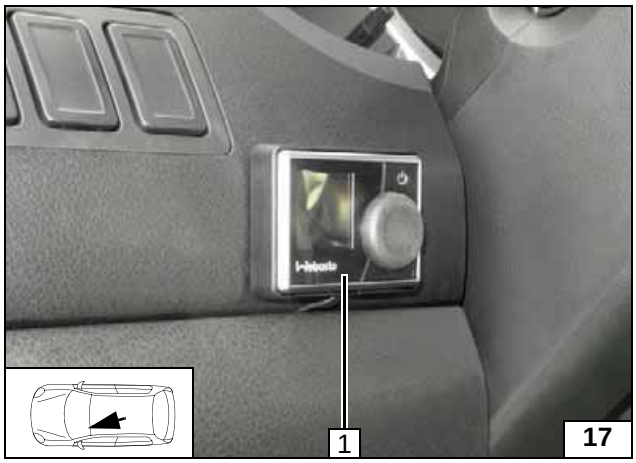
3 Violet/red (vi/rt) wire of connector G52, pin 1
② Black (sw) wire of fuse F5

Connecting A/C control panel



1 Pin 1 of G52 connector on contact side

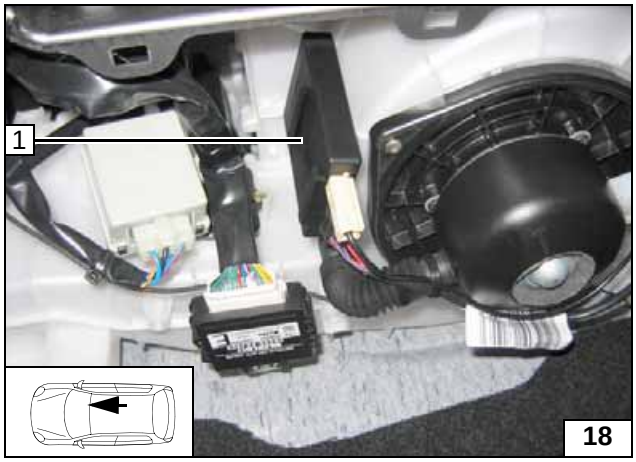
Connector G52



MultiControl Option

1 MultiControl

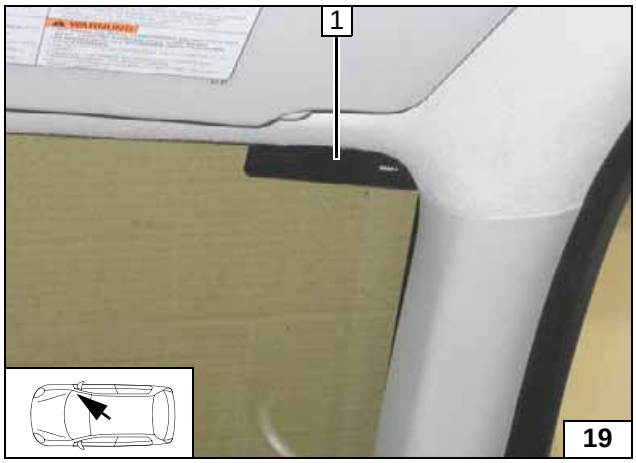
Mounting MultiControl



Remote Option (Telestart)

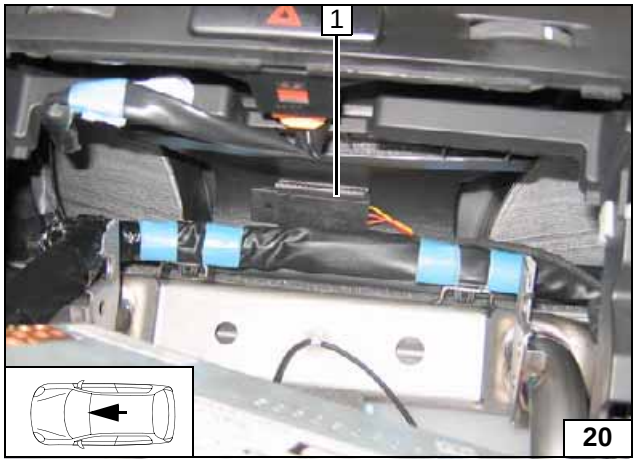
Fasten receiver **1** with adhesive tape.

Mounting receiver



1 Antenna

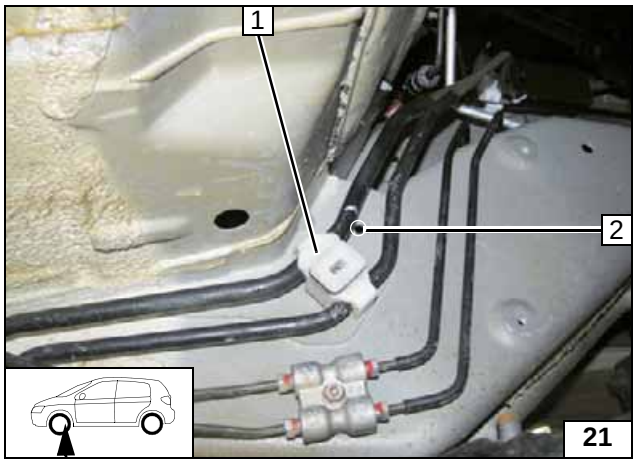
Mounting antenna



Temperature sensor T100 HTM

Fasten temperature sensor **1** with adhesive tape.

Mounting temperature sensor

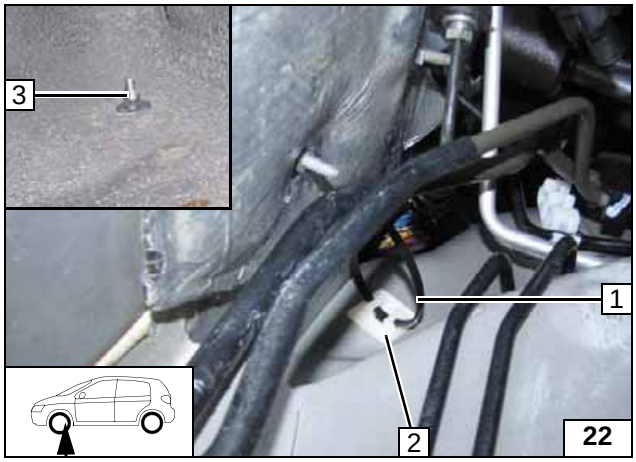


Preparing Installation Location

Remove bracket of fuel lines **1** and discard.

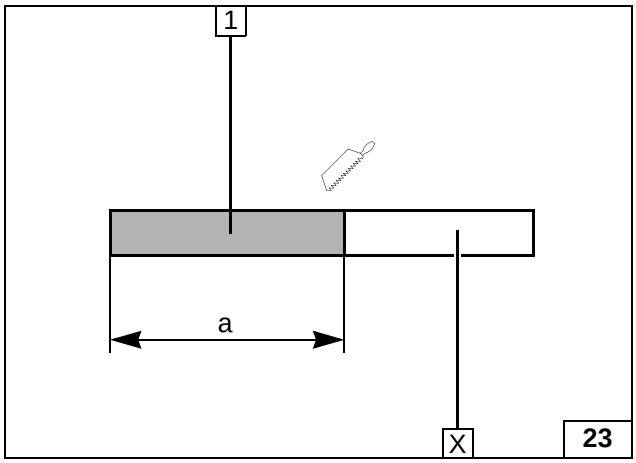
2 Drill 9.1 mm dia. hole

Hole in frame side member



Insert cable tie of retaining plate **2** with M4x16 bolt in existing hole and secure on the wheel well side using large diameter washer, spring lockwasher and nut **3**. Draw cable tie **1** through retaining plate **2** and insert into 1st lock

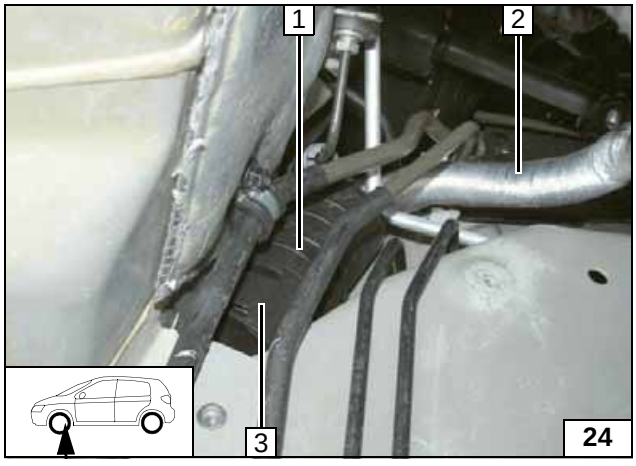
Installing retaining plate of cable tie



Discard section **X**

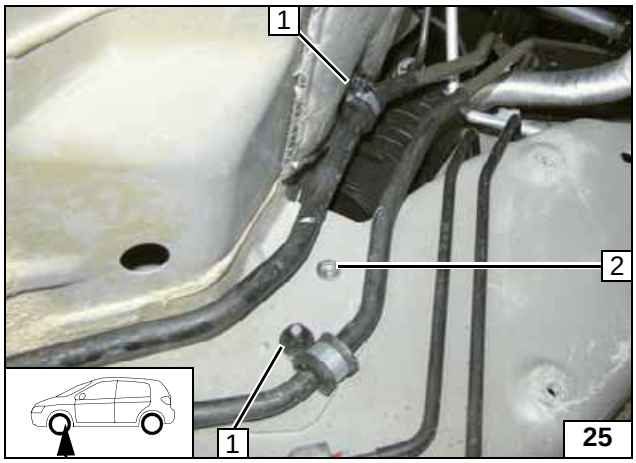
1 Combustion air pipe
a = 560

Cutting combustion air pipe to length



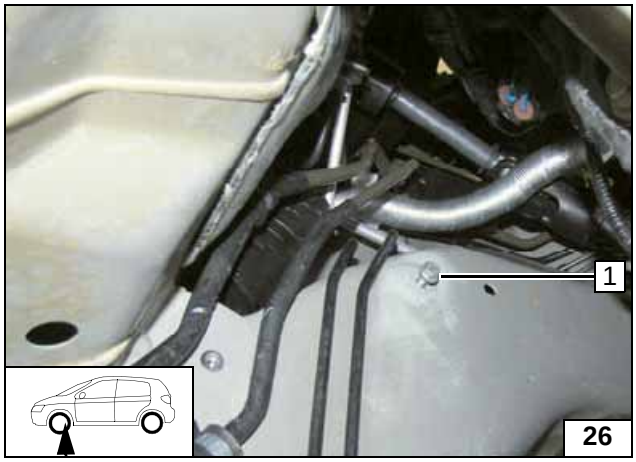
1 Fasten cable tie
2 Combustion air pipe
3 Silencer

Mounting silencer



1 Plastic nut, 15mm dia. rubber coated pipe clamp, existing stud bolt [2x each]
2 Install rivet nut

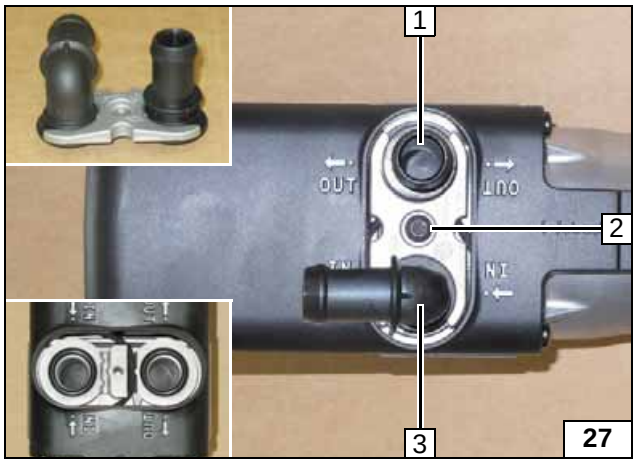
Fastening fuel lines



1 M6x25 detent edged bolt, existing threaded hole (turn by approx. 15mm)

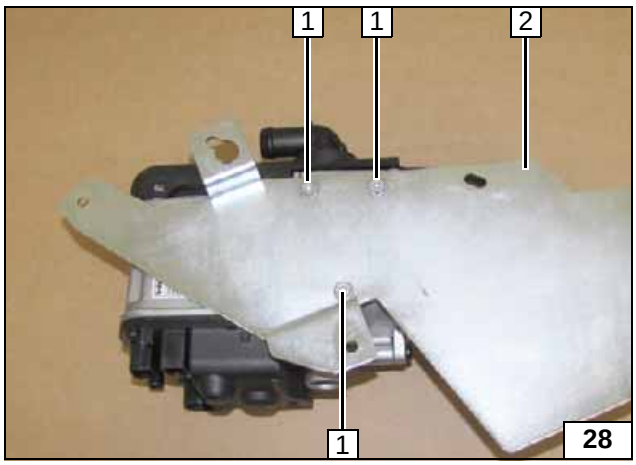
Premounting bolt

Preparing Heater



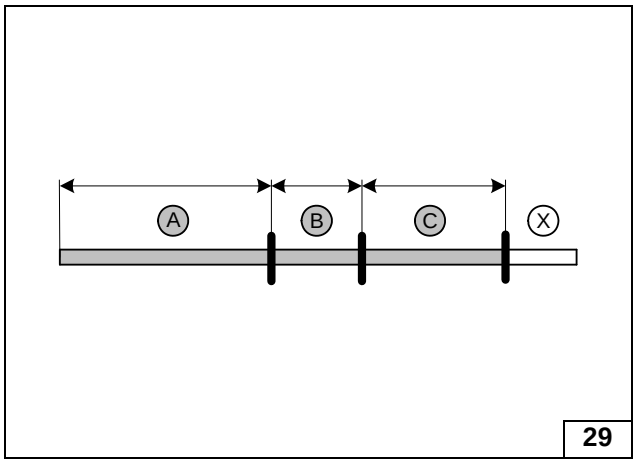
1 Straight water connection piece, sealing ring
2 5x15 self-tapping bolt, retaining plate of water connection piece
3 90° water connection piece, sealing ring

Installing water connection piece



1 5x13 Self-tapping bolt [3x]
2 Bracket

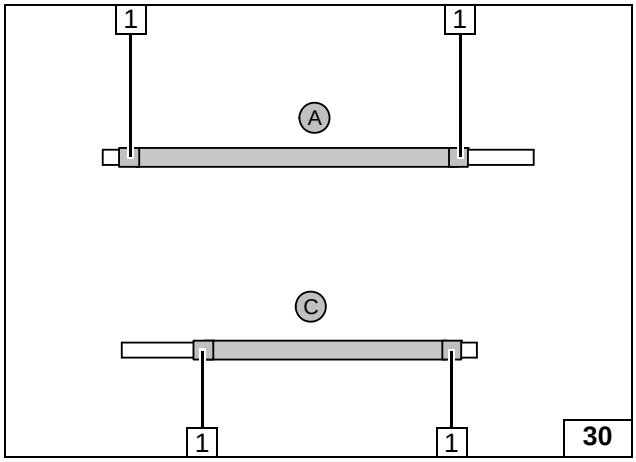
Mounting bracket



Discard section **X**

A = 850
B = 130
C = 630

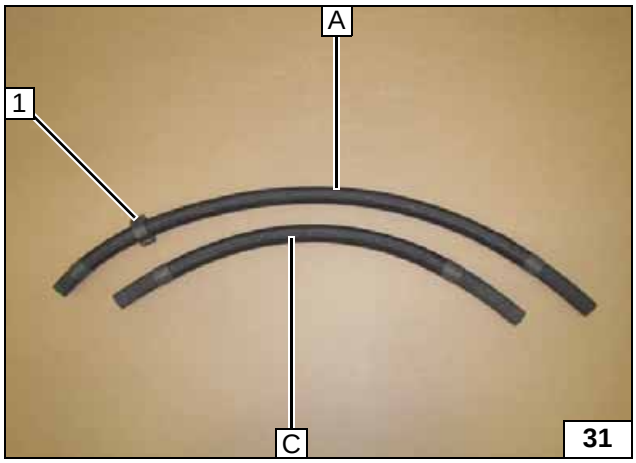
Cutting hoses to length



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

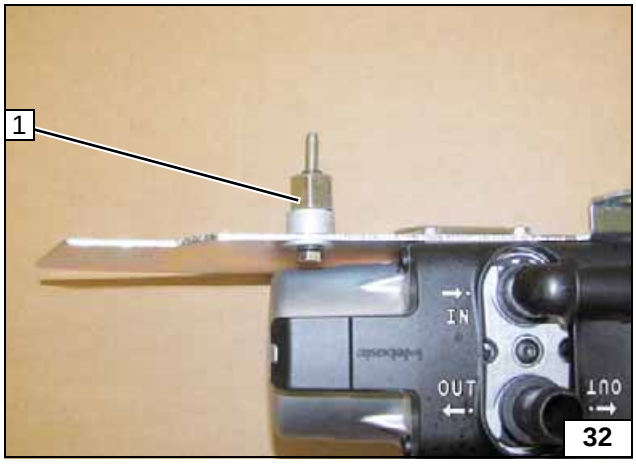
1 50 mm long heat shrink plastic tubing [4x]

Preparing hoses



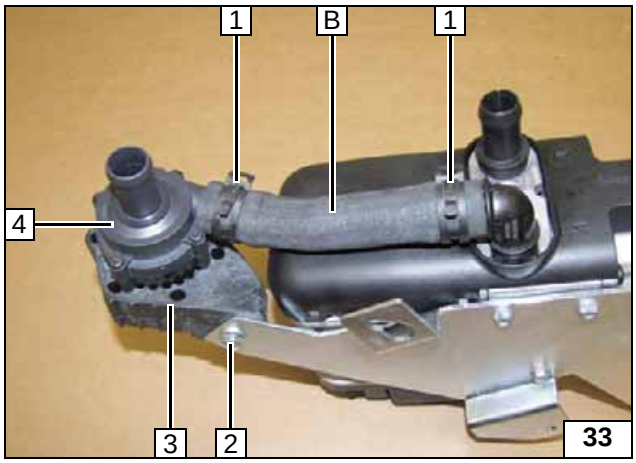
1 Black (sw) rubber isolator

Sliding on rubber isolator



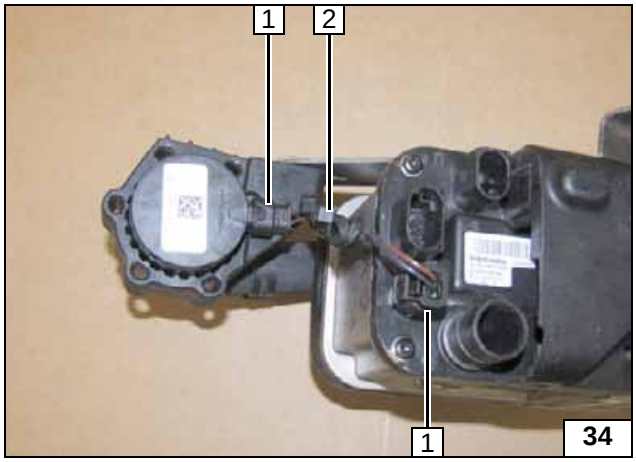
1 M6x50 bolt, spring lockwasher, large diameter washer, 10 mm shim, M8x15 spacer nut, pin lock.

Installing bolt



1 25 mm dia. spring clip [2x]
2 M6x25 bolt, flanged nut
3 Circulating pump intake
4 Circulating pump

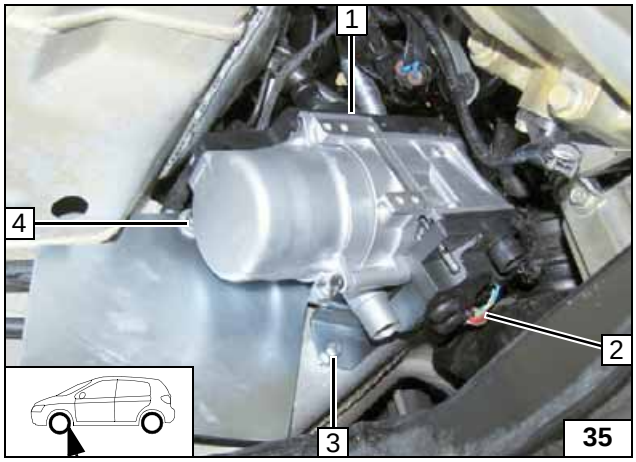
Installing circulating pump



1 Connector of circulating pump wiring harness [2x]
2 Cable tie, secure wiring harness

Installing wiring harness of circulating pump

Installing Heater



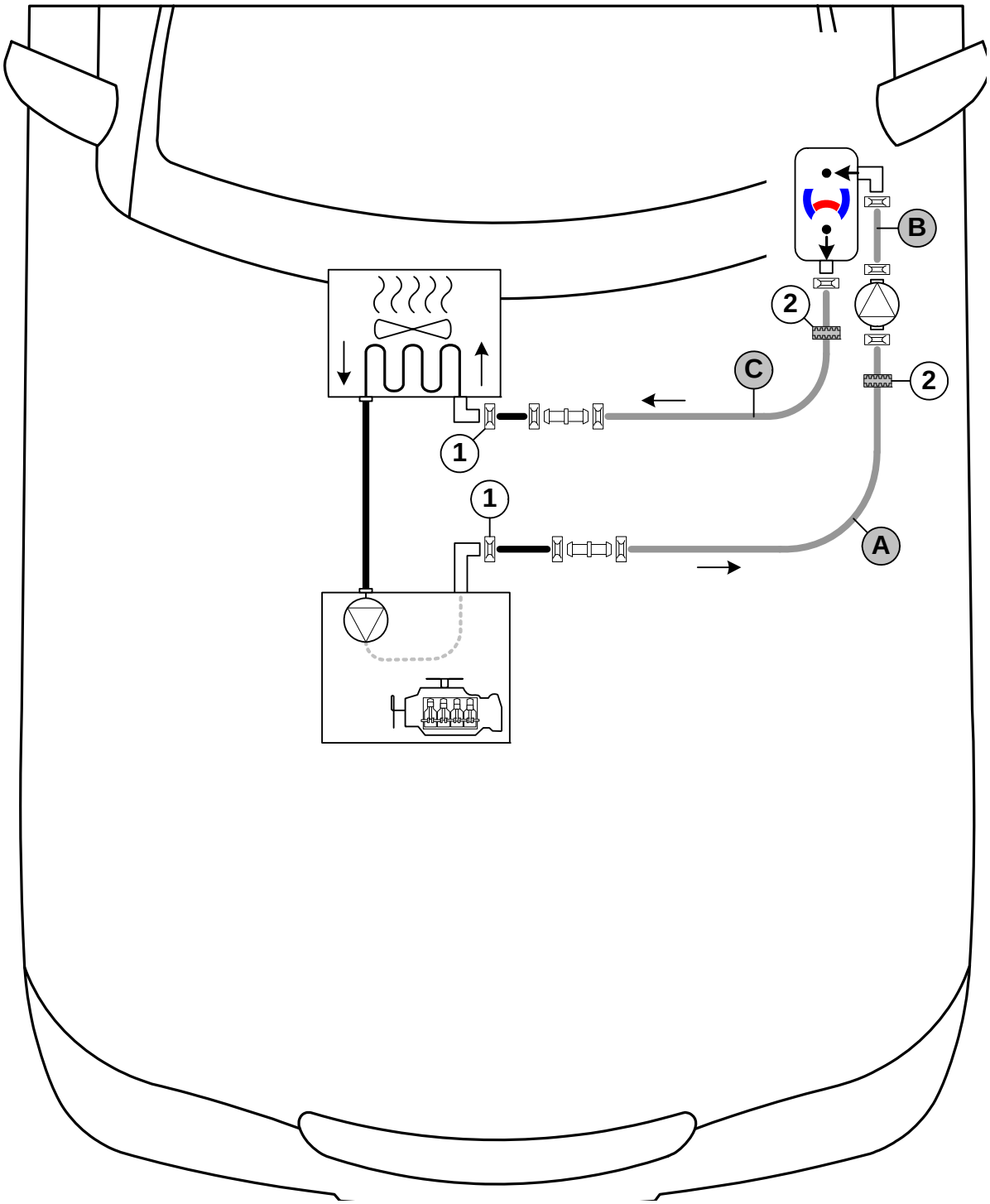
1 Tighten M6x25 bolt (covered)
2 Mount connector of heater wiring harness [2x]
3 M6x16 bolt, spring lockwasher, existing threaded hole
4 Tighten M6x50 bolt

Installing heater

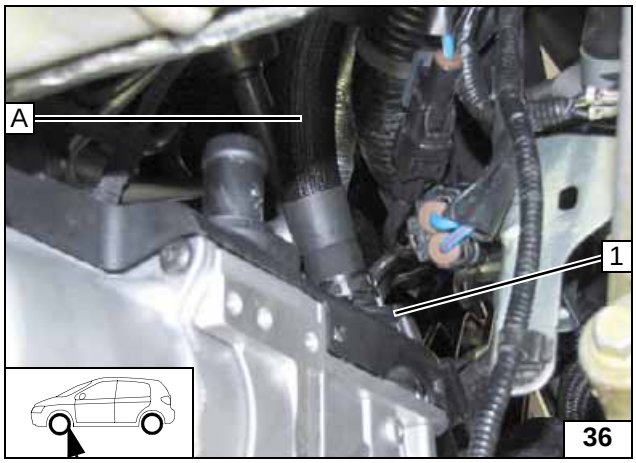
Coolant Circuit

WARNING!
Any coolant running off should be collected using an appropriate container. Route hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when mounting the coolant hose. The connection should be modelled on an "inline" circuit and based on the following diagram:

Hose routing diagram

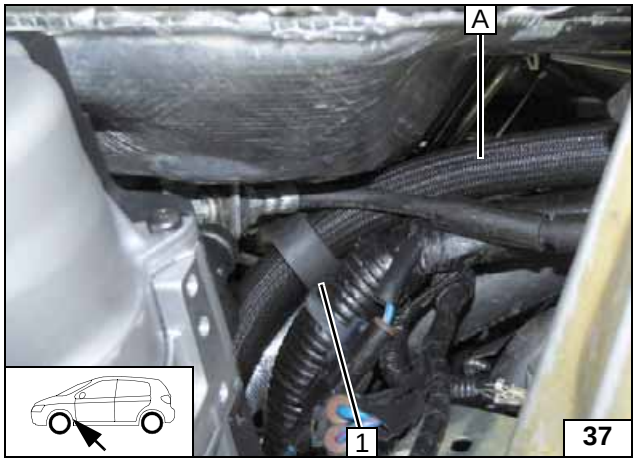


All connecting pipes without a specific designation = 25 mm dia. All connecting pipes = 18x18mm dia.
1 = Original vehicle spring clip . **2** = Black (sw) rubber isolator



1 Circulating pump

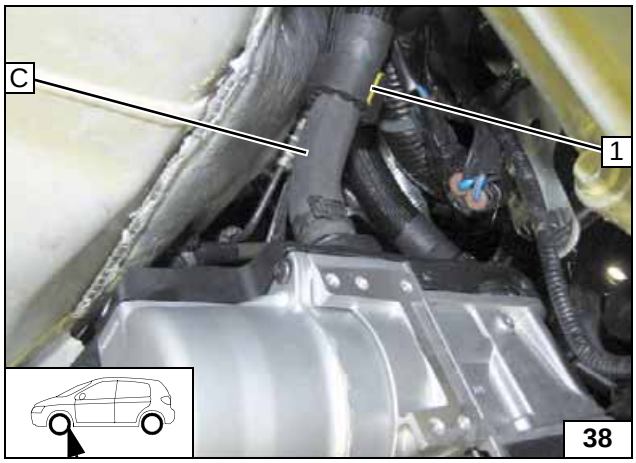
Connecting heater inlet



Route hose **A** to the engine compartment over the transmission on the right vehicle side.

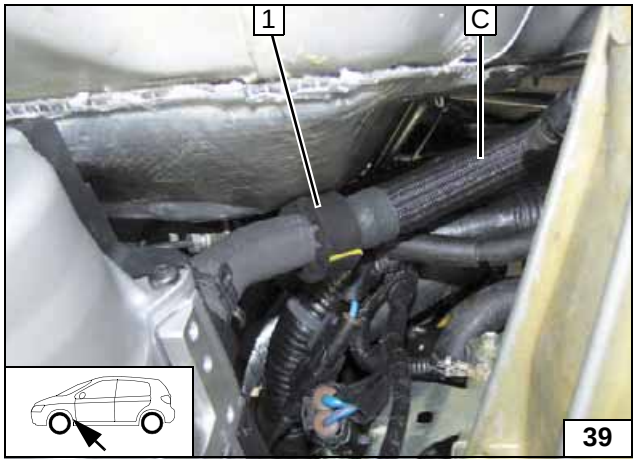
1 Position black (sw) rubber isolator

Routing in engine compartment



1 Slide on black (sw) rubber isolator

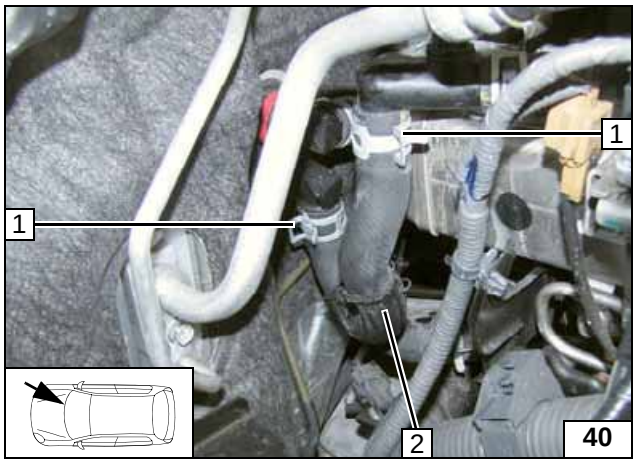
Connecting heater outlet



Route hose **C** along hose **A** to the right vehicle side.

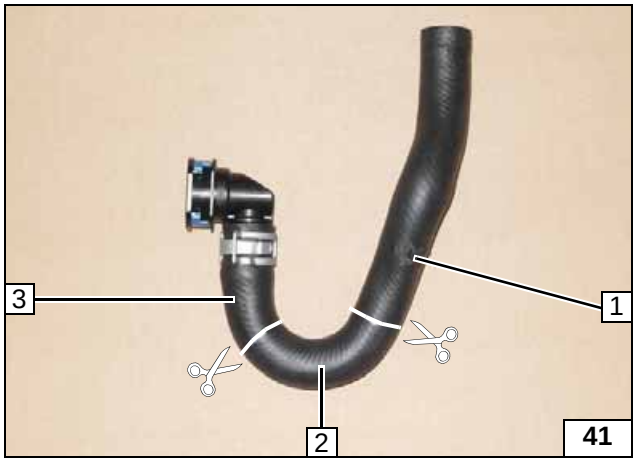
1 Position black (sw) rubber isolator

Routing in engine compartment



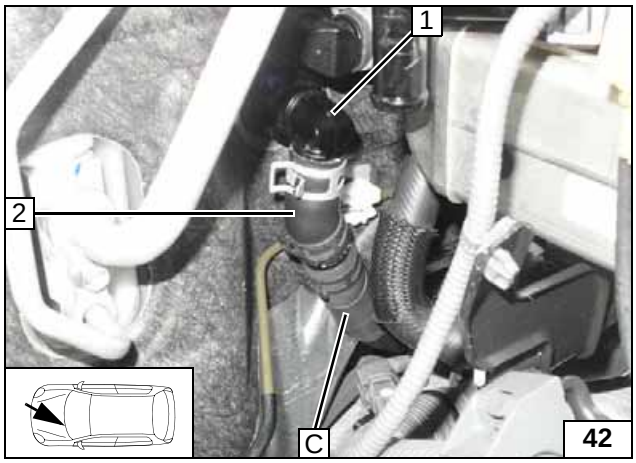
Remove hose of engine outlet / heat exchanger inlet **2** together with coupling piece of heat exchanger inlet. Spring clips **1** [2x] will be reused.

Cutting point



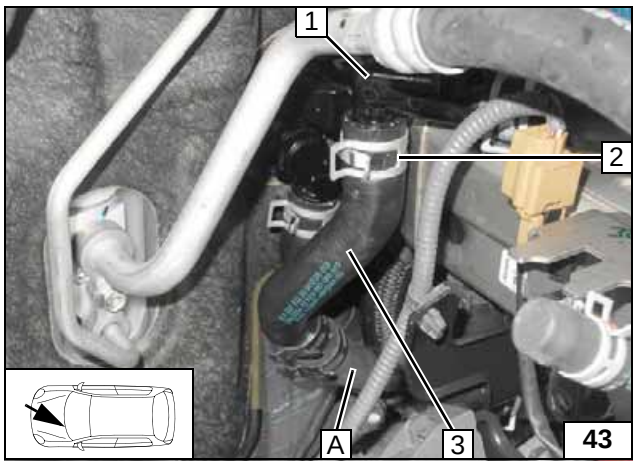
1 Engine outlet hose section
2 Discard section
3 Hose section of heat exchanger inlet

Cutting point



1 Coupling piece of heat exchanger inlet
2 Hose on heat exchanger inlet

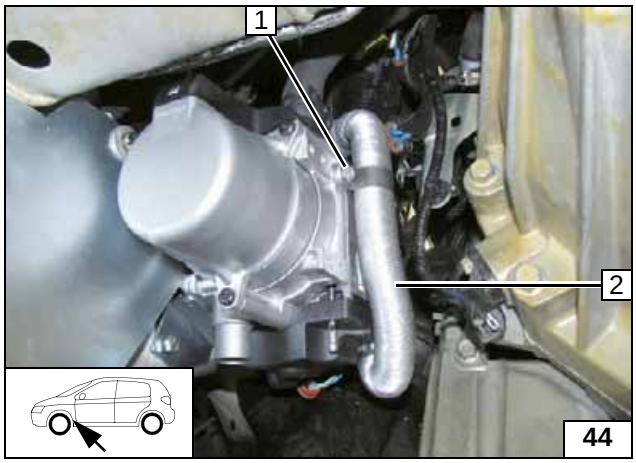
Connecting heat exchanger inlet



Check the routing of hoses **A** and **C** over the transmission. Ensure sufficient distance from adjacent components, correct if necessary.

1 Connection piece for engine outlet
2 Original vehicle spring clip
3 Hose of engine outlet

Connection of engine outlet



Combustion Air

1 5x13 Self-tapping bolt, p-clamp
2 Combustion air pipe

Installing combustion air pipe

Fuel

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

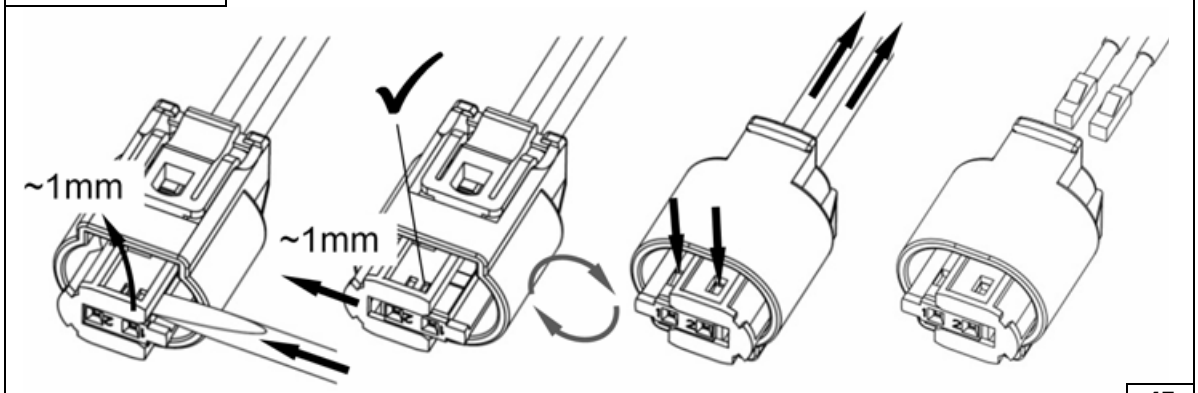
Catch any fuel running off with an appropriate container.

Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

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

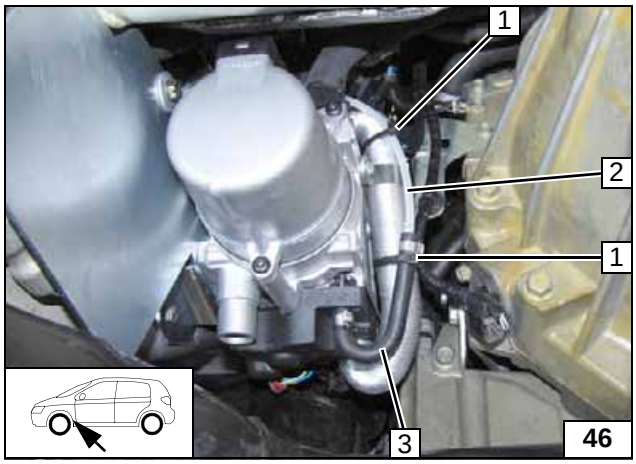
Removing metering pump connector

Connector X7



45

Connecting heater



46

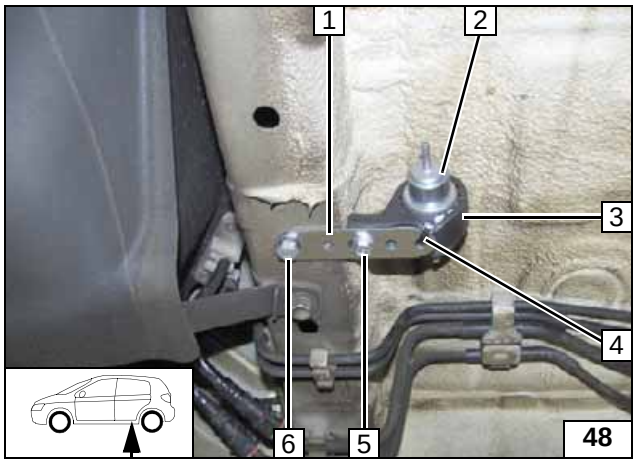
Pull wiring harness of metering pump and fuel line into 10mm dia. corrugated tube.

1 Cable tie
2 Fuel line
3 180° moulded hose, 10 mm dia. clamp [2x]

Routing lines

47

1 Wiring harness of metering pump, fuel line in 10mm dia. corrugated tube

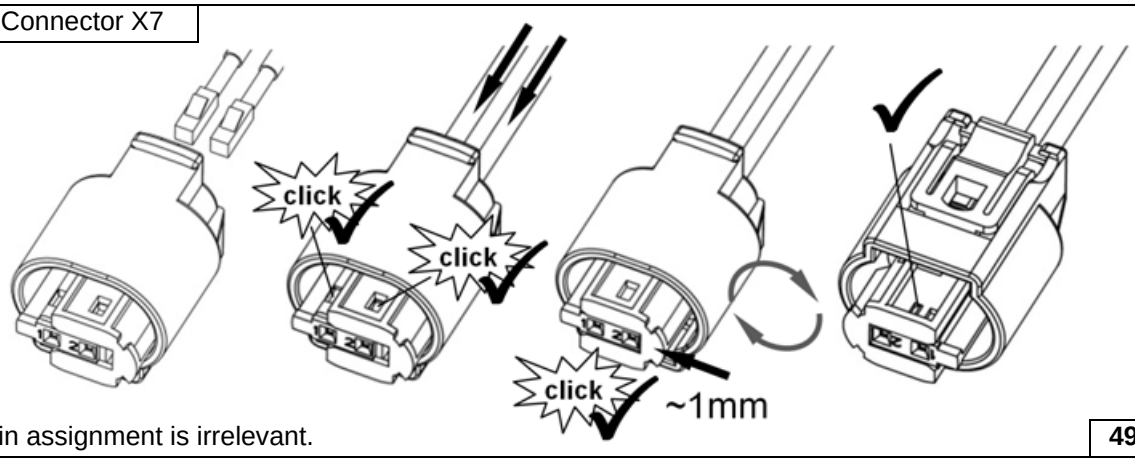


Drill out perforated bracket **1** at position **6** to 8.5 mm dia.

2 Metering pump
3 Metering pump intake
4 Cable tie
5 M6x25 bolt, support angle bracket, flanged nut
6 M8x20 bolt, spring lockwasher, existing threaded hole

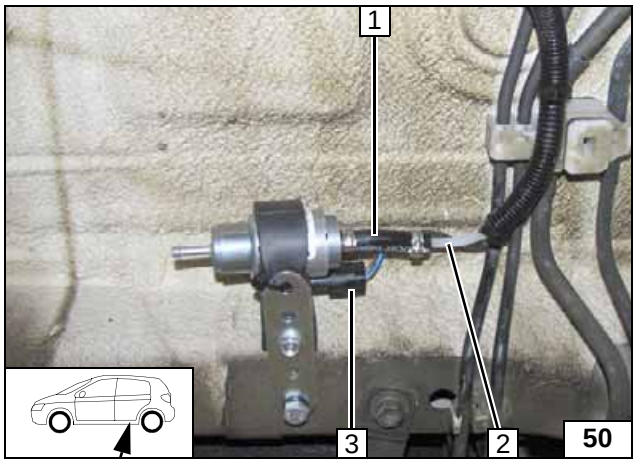
Installing metering pump

Connector X7



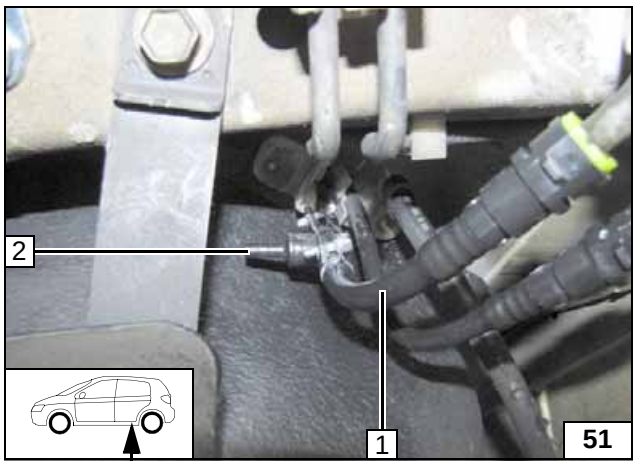
Pin assignment is irrelevant.

Completing metering pump connector



1 Hose section, 10 mm dia. clamp [2x]
2 Fuel line of heater
3 Wiring harness of metering pump, X7 connector installed

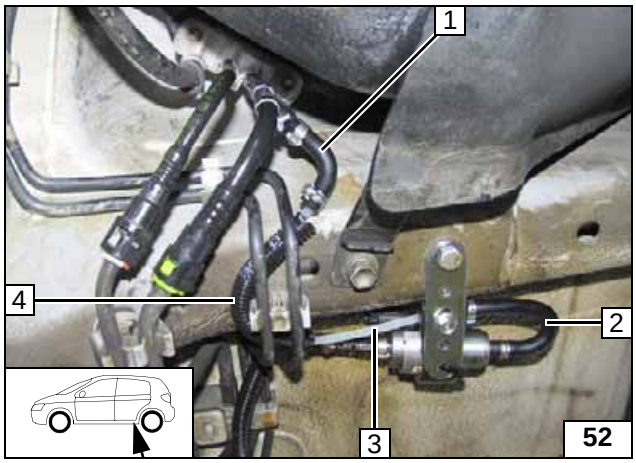
Connecting metering pump



Cut fuel supply line **1** as shown.

2 8x5x8 fuel standpipe, 10 mm dia. hose clamp [2x]

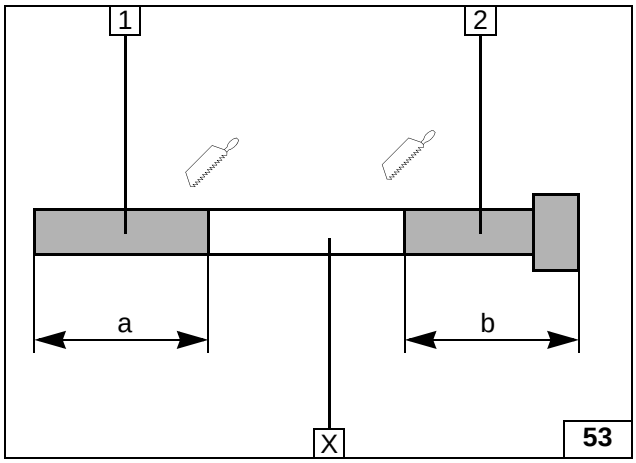
Fuel extraction



Route fuel line **3** in 10mm dia. corrugated tube **4**. Check the position of the components; adjust if necessary. Check that they have freedom of movement.

1 90° moulded hose, 10 mm dia. clamp [2x]
2 180° moulded hose, 10 mm dia. clamp [2x]

Connecting metering pump

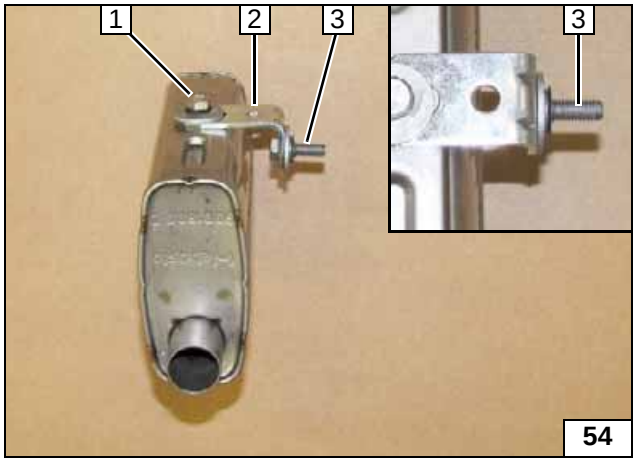


Exhaust Gas

Discard section **X**

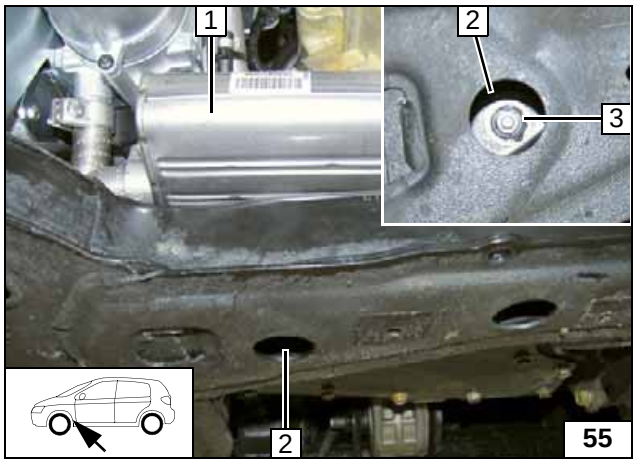
1 Exhaust pipe
a = 150
2 Exhaust end section
b = 200mm

Preparing exhaust pipe



1 M6x20 bolt, spring lockwasher, large diameter washer
2 Angle bracket
3 M6x20 bolt, large diameter washer, plain washer, pin lock

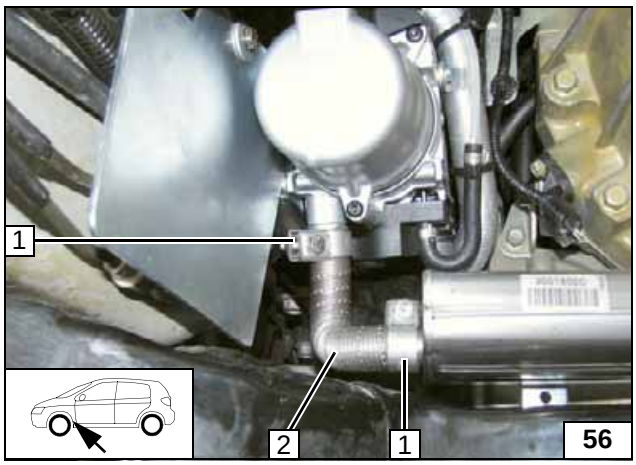
Premounting silencer



Install silencer **1** through existing hole **2**.

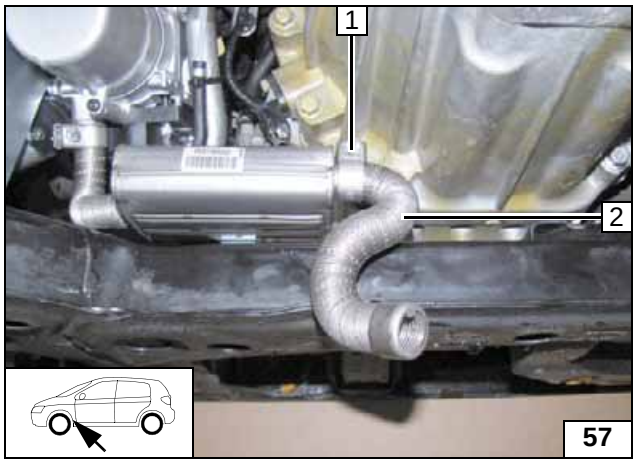
3 Large diameter washer, flanged nut

Mounting silencer



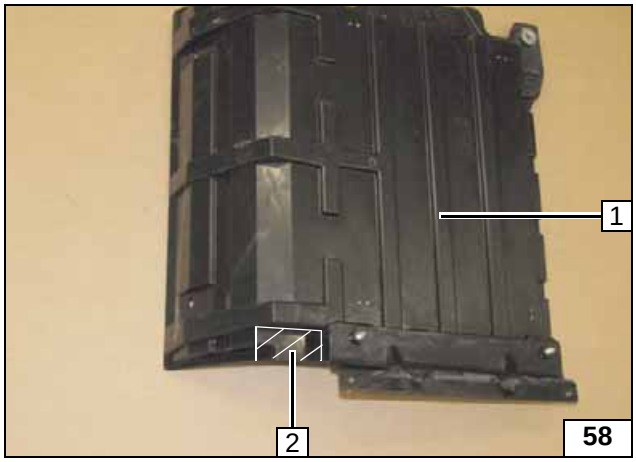
1 Hose clamp [2x]
2 Exhaust pipe

Mounting exhaust pipe



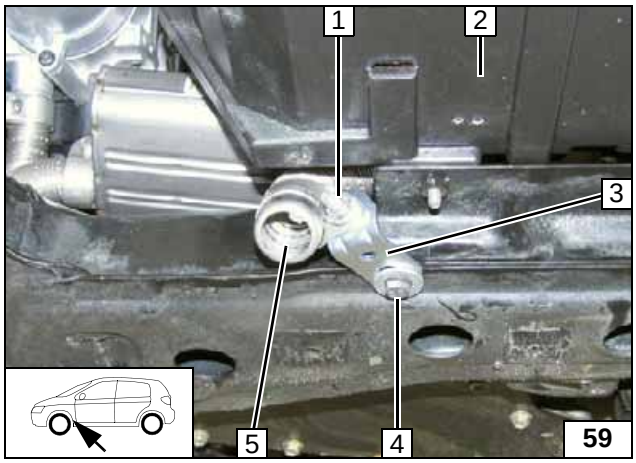
1 Hose clamp
2 Exhaust end section

Installing exhaust end section



1 Underride protection
2 Discard section

Cutting out underride protection



Replace original vehicle bolt with M6x20 bolt, spring lockwasher and large diameter washer at Position **4**. Ensure sufficient distance from neighbouring components.

1 M6x20 bolt, p-clamp, flanged nut
2 Underride protection
3 Angle bracket
5 Exhaust end section

Fastening exhaust end section

Final Work

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

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

Webasto Thermo & Comfort SE
Postfach 1410
82199 Gilching
Germany
Internet: www.webasto.com
Technical Extranet:
http://dealers.webasto.com

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.

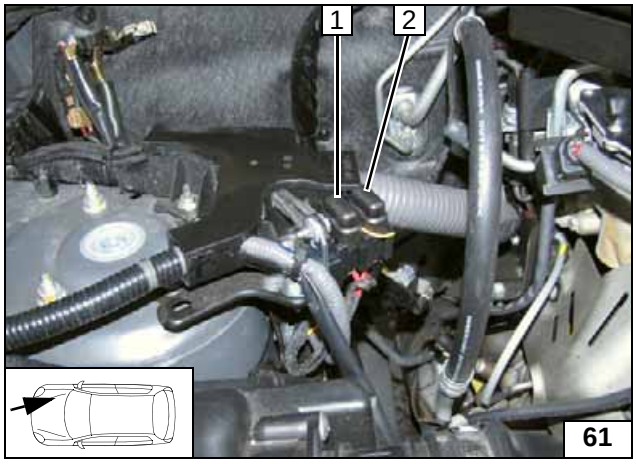
Passenger compartment monitoring, when installed, must be deactivated as well as deactivating the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

Note:
"AUTO" operation indicator flashes during heating.

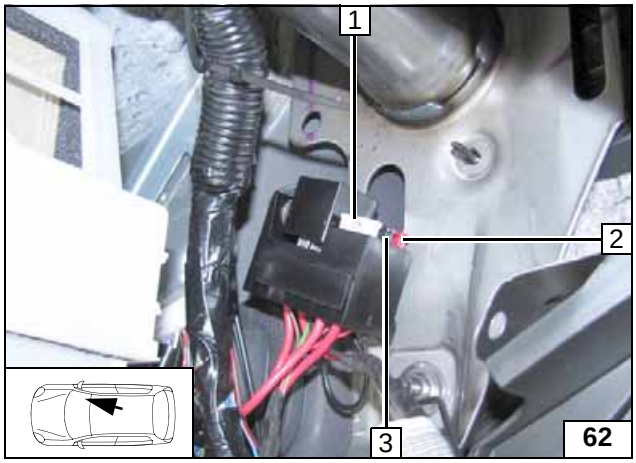
1 Air outlet to windscreen
2 Set fan to level "2", max. "3"
3 Set temperature to "HI"

A/C control panel



1 30 A main fuse F2 of passenger compartment
2 20A heater fuse F1

Engine compartment fuses



1 25A fan fuse F4
2 10A additional fuse F5
3 1A fuse F3 of heater control

Passenger compartment fuses