Water Heater

Thermo Top Evo Parking Heater

E1
00 0258

With FuelFix

Installation Documentation
Toyota Prius Toyota Prius

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Toyota	Prius	XW5	e11 * 2007 / 46 * 2971 * ..

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
1.8 Hybrid	Petrol	E-CVT	72	1798	2ZR-FXE

E-CVT = continuous transmission

From model year 2016
Left-hand drive vehicle

Verified equipment variants: Two zone Automatic air-conditioning
LED main headlights
Smart key
Euro 6

Not verified: Passenger compartment monitoring

Total installation time: approx. 11.5 hours

Note:

Only experts in high-voltage systems for vehicles should be authorised to carry out independent work on hybrid vehicles!
High-voltage systems must be taken out of operation, secured and reactivated according to the manufacturer's instructions.

Toyota Prius Toyota Prius

Table of Contents

Necessary Components

- Basic delivery scope of Thermo Top Evo according to price list
- Installation kit with FuelFix for Toyota Prius Toyota Prius 2016 Petrol: **1324892A**
- Additional kit ‘Webasto Standard’ A/C control for Toyota Prius Toyota Prius with automatic air-conditioning: **1324414_**
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

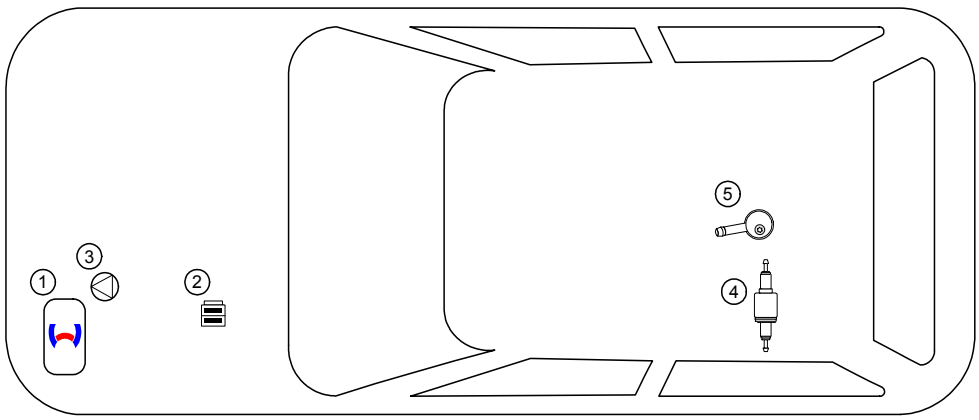
Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about ¼ full.
- The installation location of the push button in case of Telestart or ThermoCall should be confirmed with the end customer.

Installation Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Circulating pump
4. Metering pump
5. FuelFix



Information on Total Installation Time

The total installation time includes the time needed for mounting and demounting 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 228).

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 have to audibly click into place during installation.

Sharp edges should be fitted with rub protection. Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K).

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 ECE regulation 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.

Information on Validity

This installation documentation applies to Toyota Prius Toyota Prius Petrol vehicles - for validity, see page 1 - from model year 2016 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 Information

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

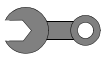
Dimensions
- All dimensions are in mm.

Tightening torque values
- Tightening torque values of 5x13 heater bolts and 5x11 heater stud bolts = 8Nm.
- Tightening torque value of 5x15 water connection piece retaining plate bolt = 7Nm.
- 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 damage to components.

Specific risk due to electrical voltage.

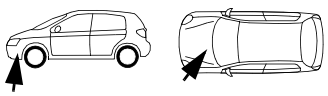
Specific risk of injury or fatal accidents.

Specific risk of fire or explosion.

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

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.

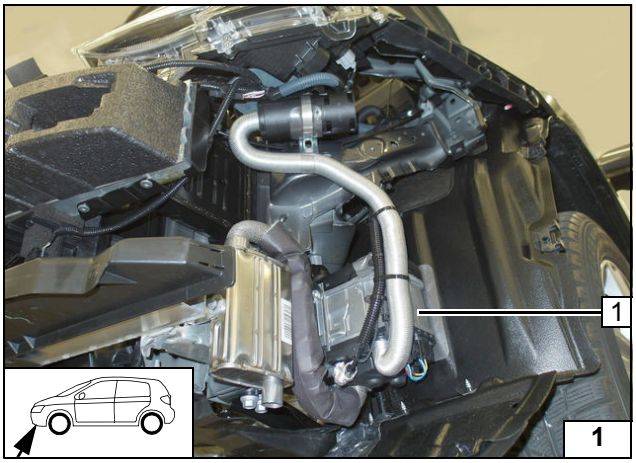
Preliminary Work

Vehicle

- Deactivate the high-voltage system according to the vehicle manufacturer's workshop manual.
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery.
- Remove the lower engine trim.
- Remove the front left wheel.
- Detach the wheel well trim (on the left and the right) in the front area.
- Remove the transmission cover in the wheel well on the left.
- Remove the bumper trim.
- Remove the 12V battery and battery carrier.
- Remove the engine design cover.
- Remove the windscreen wipers.
- Remove the upper coolant reservoir cover.
- Remove the partition wall between the coolant reservoir and the strut brace.
- Drain off the engine coolant (upper drain screw on the radiator).
- Remove the lateral cover of the instrument panel on the right.
- Remove the upper footwell trim on the right and left.
- Remove the entrance strip trim on the front right side.
- Remove the right lower A-pillar trim.
- Remove the glove box.
- Remove the lateral trim of the centre console on the left and right in the footwell.
- Remove the AC booster (back of the heat exchanger, accessible via the footwell on the driver's side, 1x screw).
- Remove the rear bench seat.
- Open the tank-fitting service lid on the left.

Heater

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

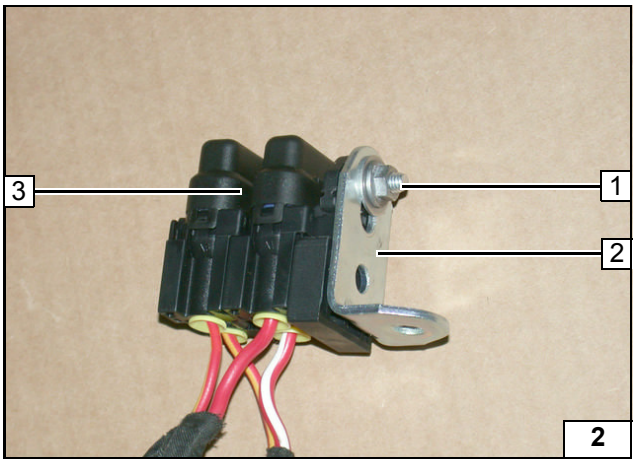


Heater Installation Location

1 Heater

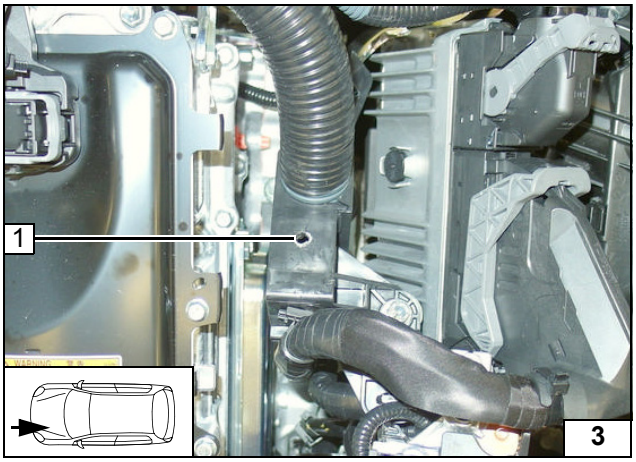
Installation location

Preparing Electrical System



1 M5x16 bolt, large diameter washer [2x], retaining plate for fuse holder, nut
2 Angle bracket
3 Fuses F1-2 mounted

Premounting engine compartment fuse holder



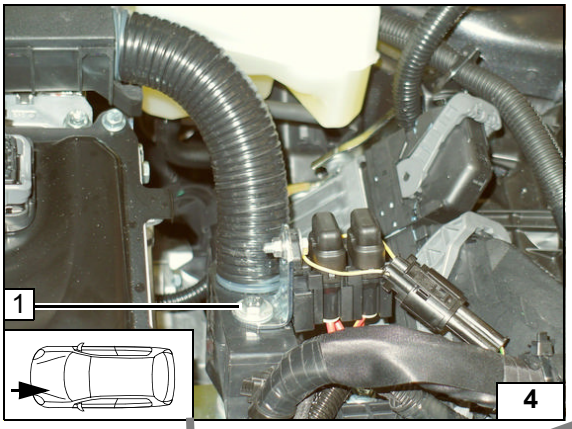
1 6.5 mm dia. hole

Hole for engine compartment fuse holder

Electrical System

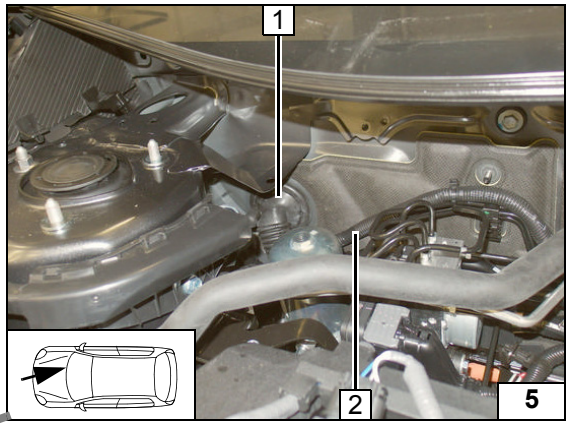
Engine compartment fuse holder

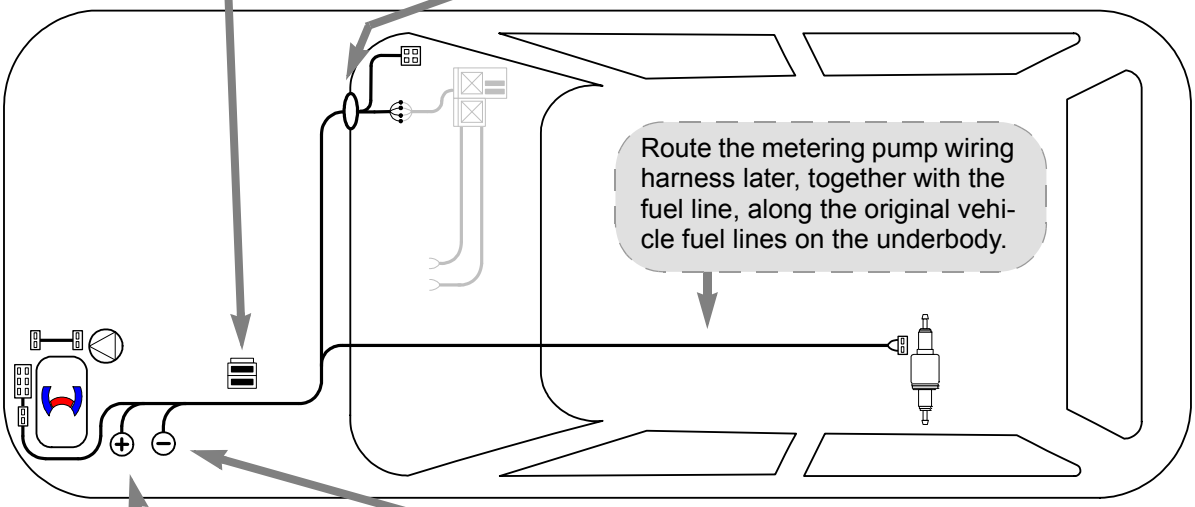
1 M6x12 bolt, large diameter washer, angle bracket, nut



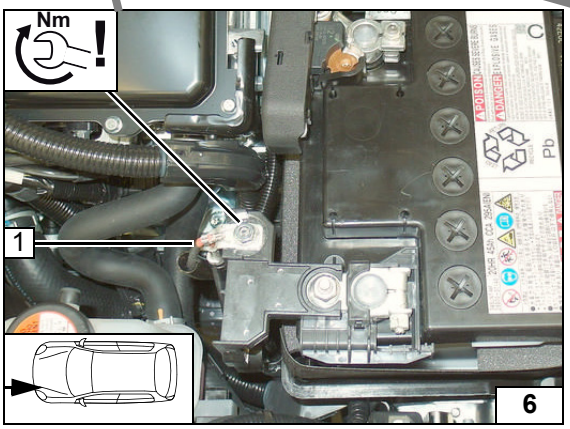
Wiring harness pass through

1 Protective rubber plug
2 Wiring harnesses of heater, heater control



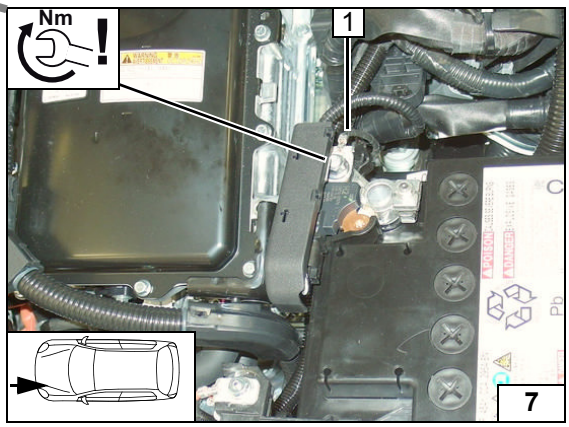


Wiring harness routing diagram



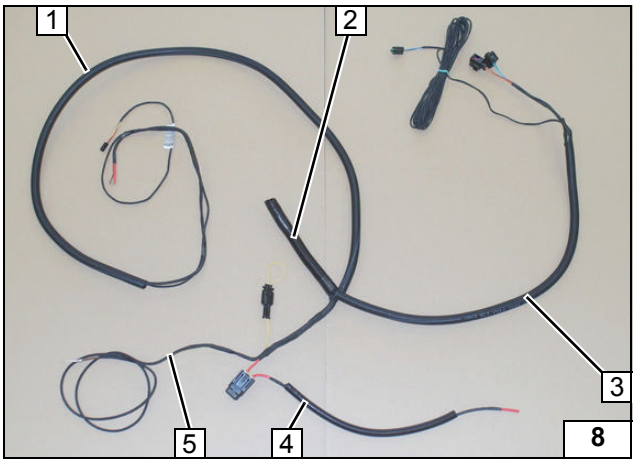
Positive wire

1 Positive wire on positive battery terminal



Earth wire

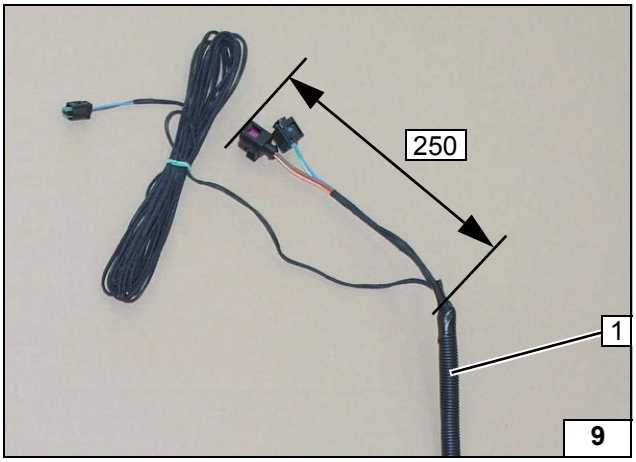
1 Earth wire on negative battery terminal



Wiring harness routing

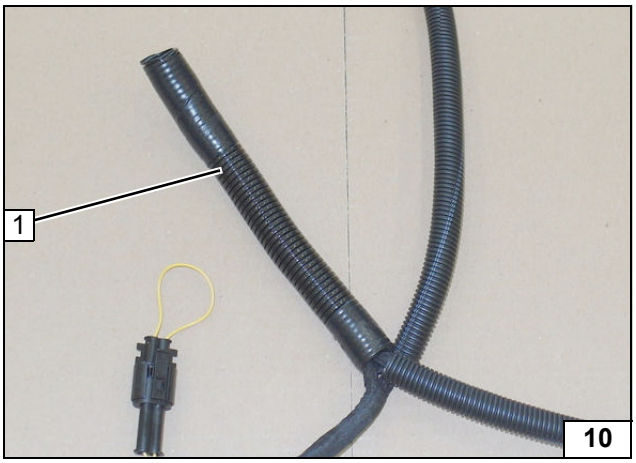
1 Fan controller and heater control wiring harnesses in 13mm dia., 1400mm long slit open corrugated tube
2 Coiled excess length of heater wiring harness in 17mm dia. 200mm long corrugated tube.
3 Heater wiring harness in 13mm dia., 670mm long slit open corrugated tube
4 Positive wire in 10mm dia., 300mm long corrugated tube
5 Earth wire

View for wiring harnesses preparation



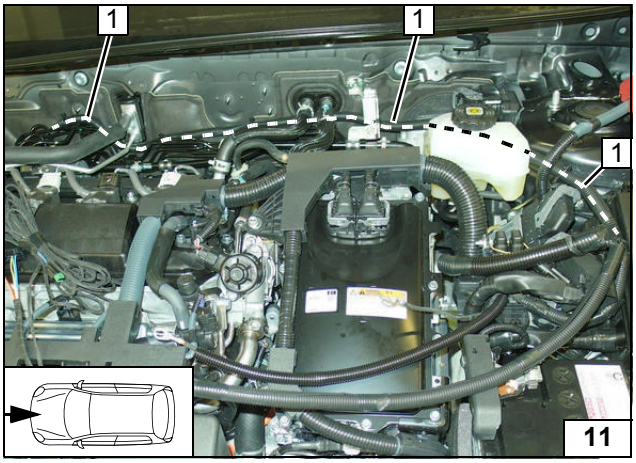
1 Heater wiring harness in cut lengthwise corrugated tube

Preparing wiring harnesses



1 Coiled excess length of heater wiring harness in corrugated tube.

Preparing wiring harnesses



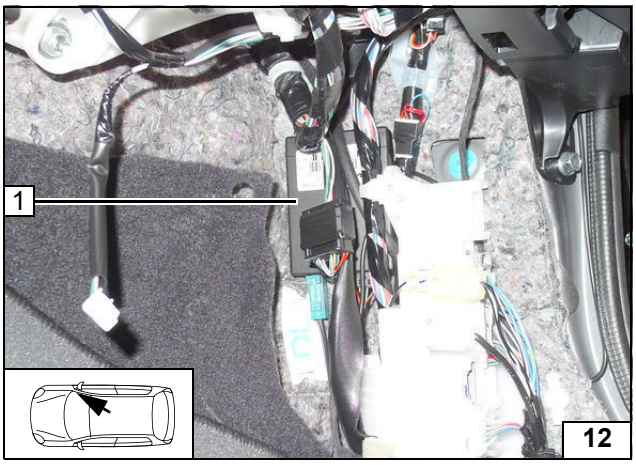
Route wiring harnesses of fan controller and heater control **1** to the firewall and further on along the original vehicle lines to the right side on the vehicle. Fasten with cable ties.

Routing wiring harnesses

Air-Conditioning Control

Connect the A/C control in accordance with the separate installation documentation:

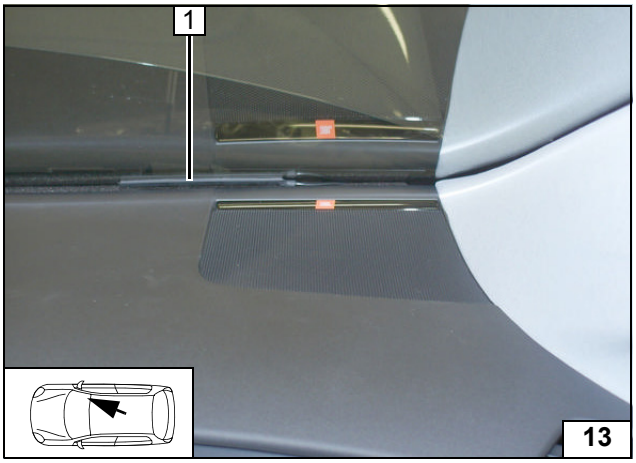
'**Webasto Standard**' A/C control installation documentation for Toyota Prius Toyota Prius with automatic air-conditioning



Remote Option (Telestart)

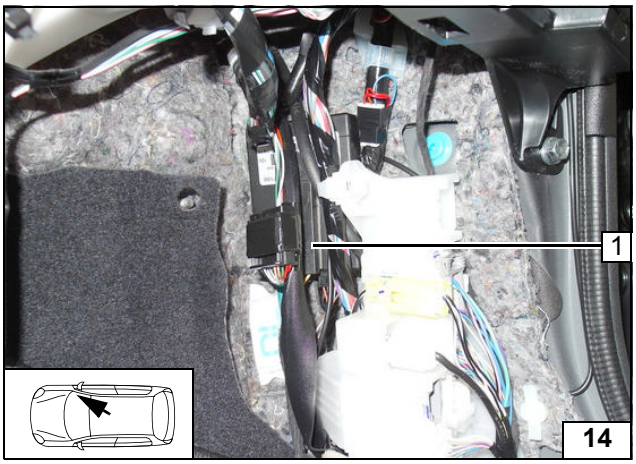
Fasten receiver **1** with double-sided adhesive tape.

Installing receiver



1 Aerial

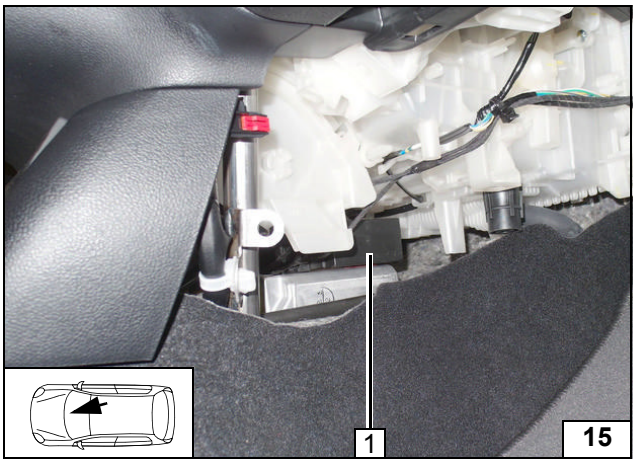
Installing aerial

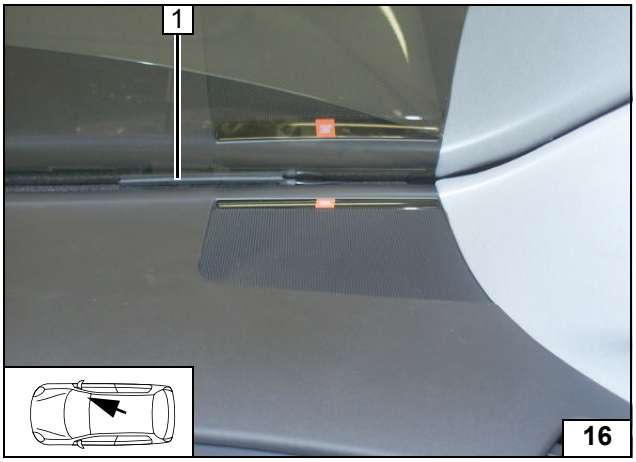


Temperature sensor T100 HTM

Fasten temperature sensor **1** to receiver with double-sided adhesive tape.

Installing temperature sensor





ThermoCall Option

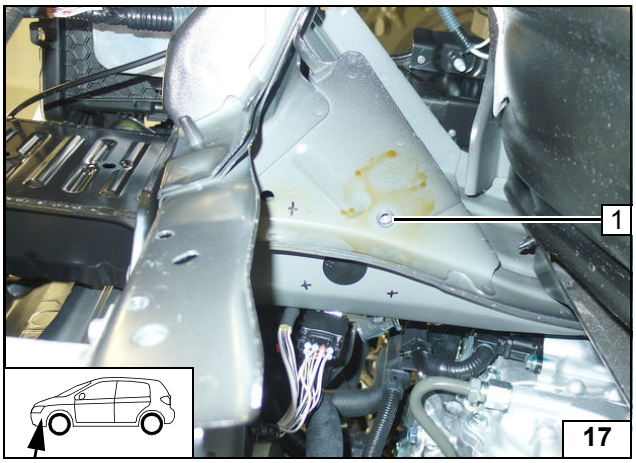
Installing receiver

Fasten receiver **1** with double-sided adhesive tape.

Installing aerial

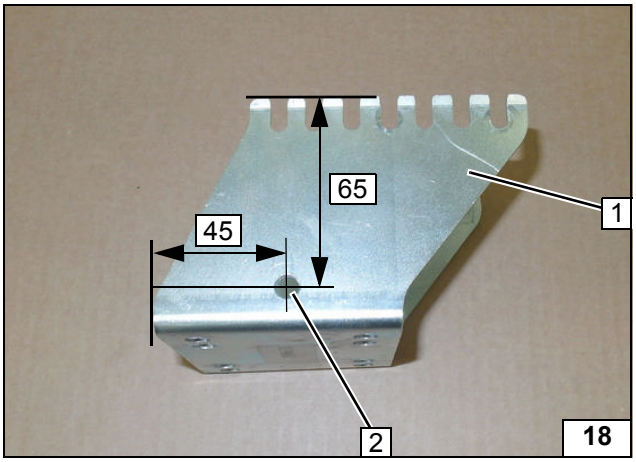
1 Aerial (optional)

Preparing Installation Location



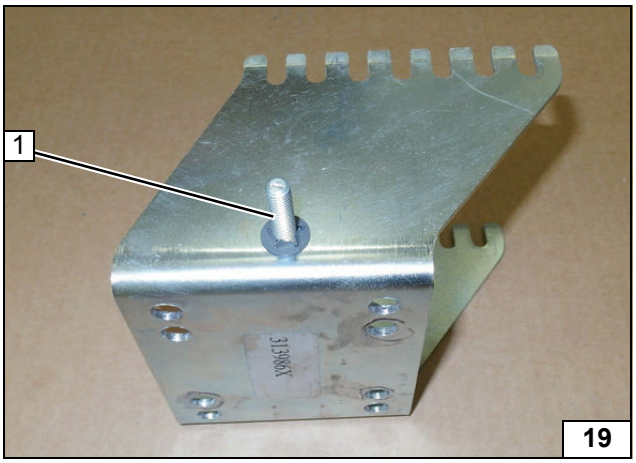
1 Drill out existing hole to 9.1mm dia., rivet nut

Installing rivet nut



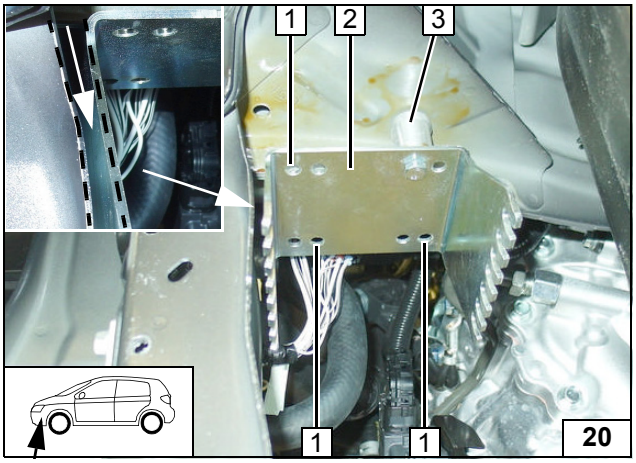
1 Bracket
2 7 mm dia. hole

Preparing bracket



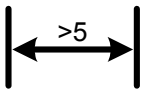
1 M6x25 bolt, spring lockwasher, pin lock

Preparing bracket

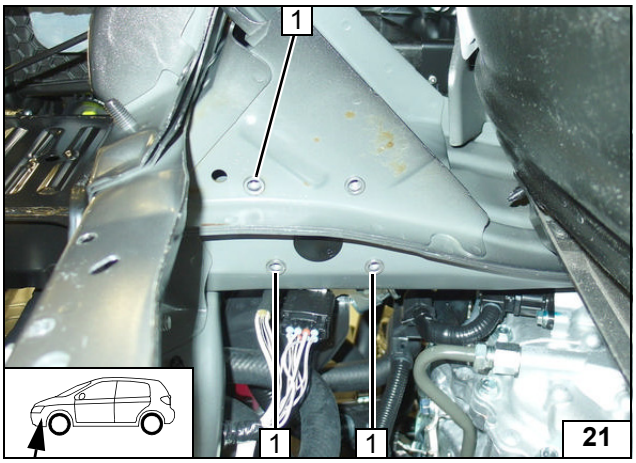


Install bracket **1** loosely and align as shown.

1 Copy hole pattern [3x]
2 Bracket
3 M6x50 bolt, 20mm shim, 5mm shim



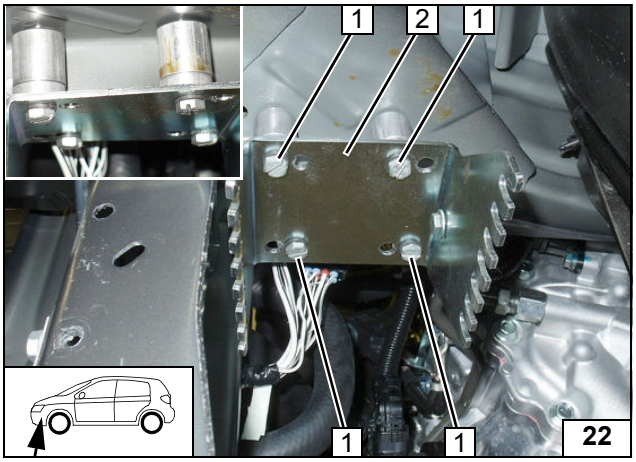
Copying hole pattern



Remove bracket.

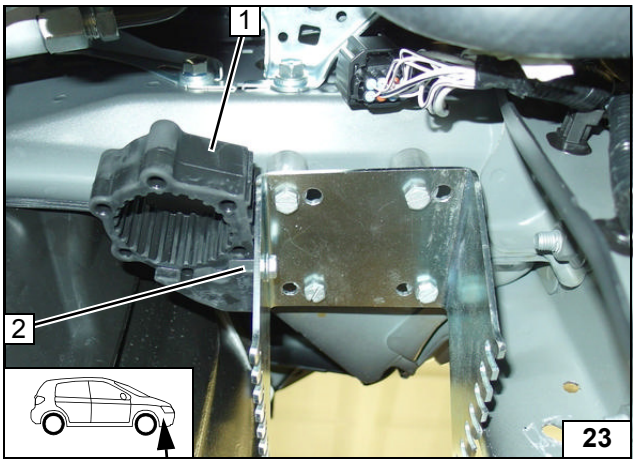
1 9.1 mm dia. hole; rivet nut [3x each]

Installing rivet nut



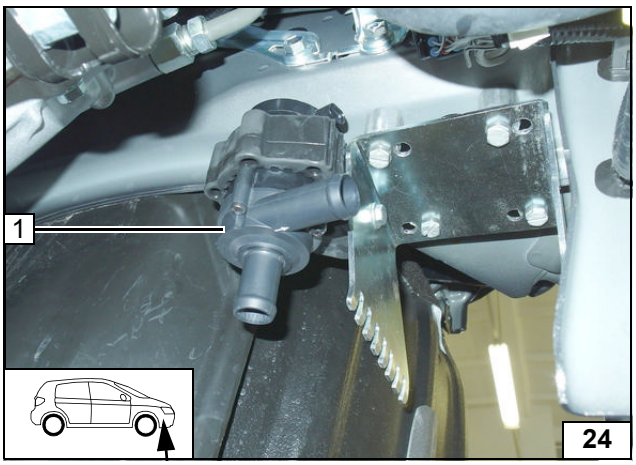
1 M6x50 bolt, spring lockwasher, 5mm shim, 20mm shim [4x each]
2 Bracket

Installing bracket



1 Circulating pump mount on premounted bolt
2 Flanged nut

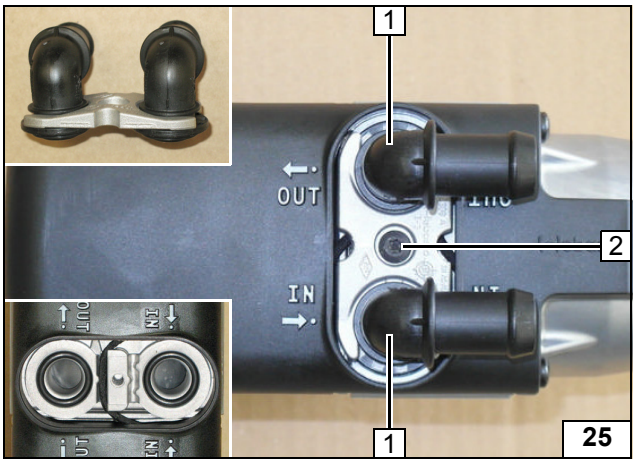
Mounting circulating pump mount



1 Circulating pump

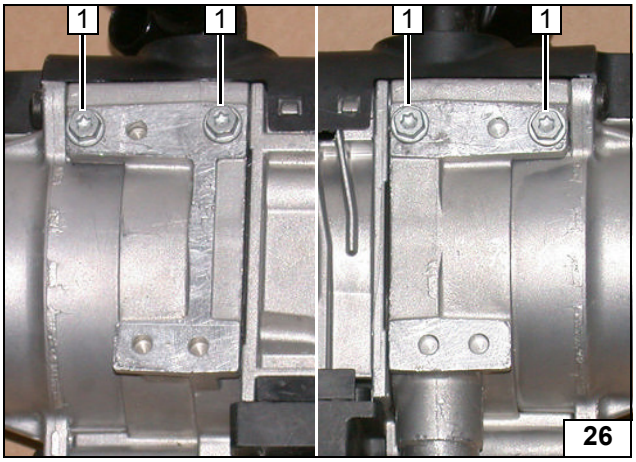
Premounting circulating pump

Preparing Heater



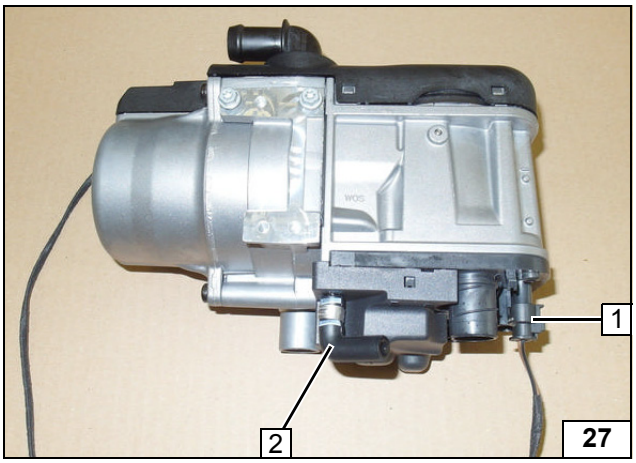
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



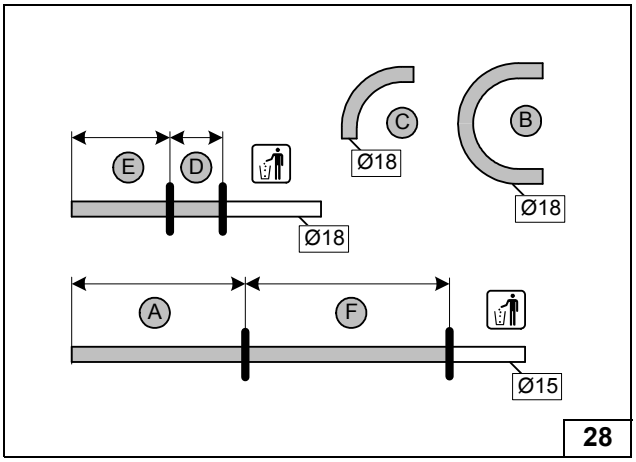
Screw 5x13 self-tapping bolts **1** [4x] into existing holes by a maximum of 3 thread turns.

Premounting bolts loosely



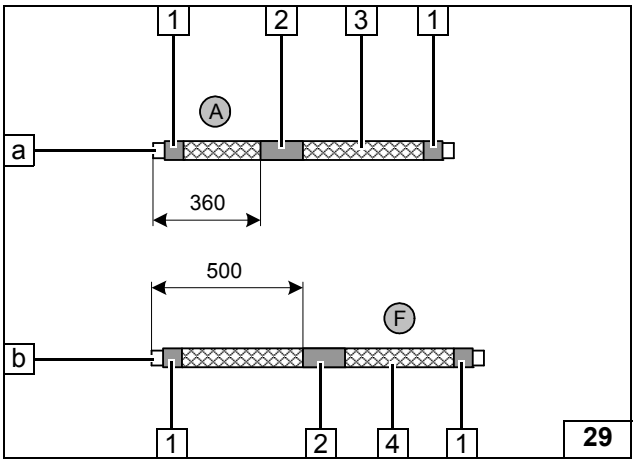
1 Connector of circulating pump wiring harness
2 90° moulded hose, 10 mm dia. clamp

Premounting heater



A = 950
D = 75
E = 130
F = 1060

Assigning / cutting to length hoses

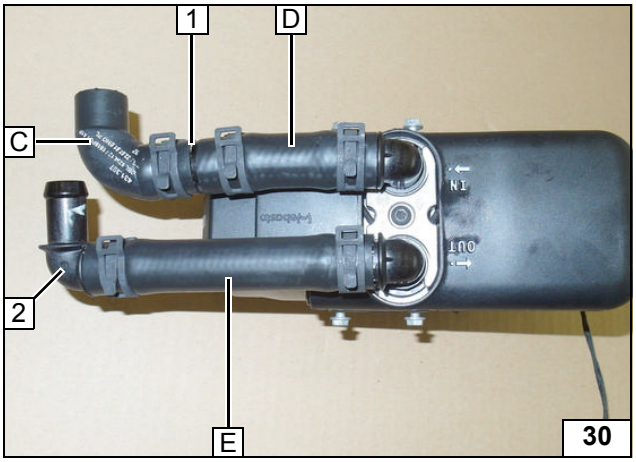


Push braided protection hoses onto hoses **A** and **F** and cut to length. Cut heat shrink plastic tubing to size.

1 60 mm long heat shrink plastic tubing [4x]
2 125 mm long heat shrink plastic tubing [2x]
3 1050 mm long braided protection hose
4 1250 mm long braided protection hose

a Connection with hose section **B**
b Connection with hose section **E**

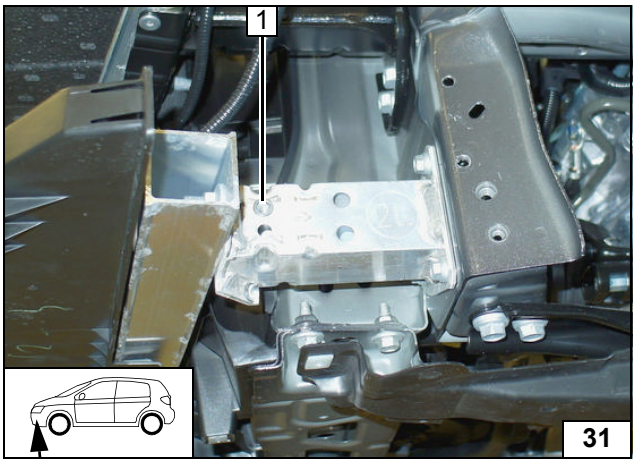
Preparing hoses



All spring clips = 25mm dia.!

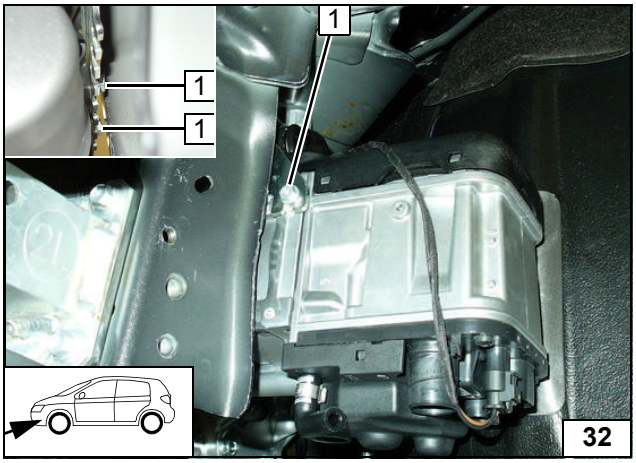
1 18x18mm dia. connecting pipe
2 90°, 18x18 mm dia. connecting pipe

Premounting hoses



1 Drill out existing hole to 9.1mm dia., M6 rivet nut

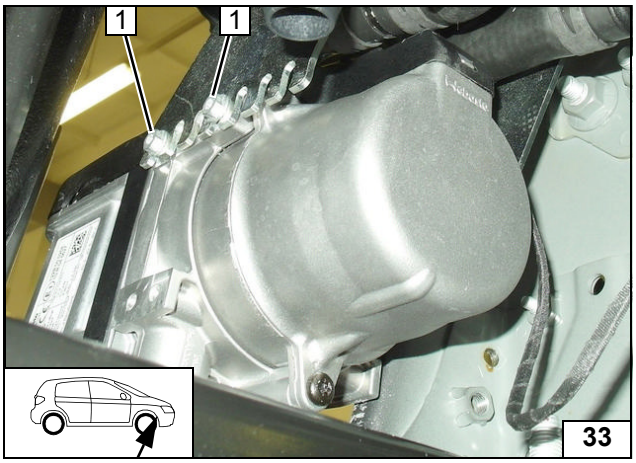
Installing rivet nut



Installing Heater

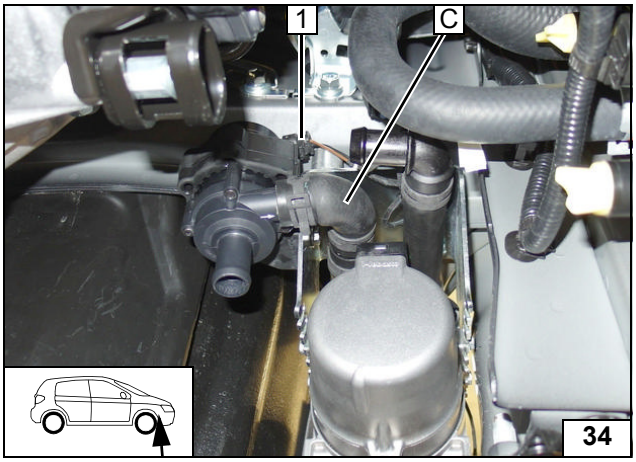
1 Tighten 5x13 self-tapping bolt [2x]

Installing heater



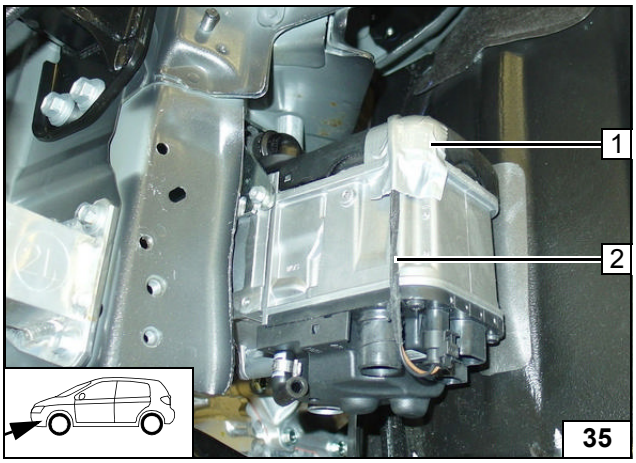
1 Tighten 5x13 self-tapping bolt [2x]

Installing heater



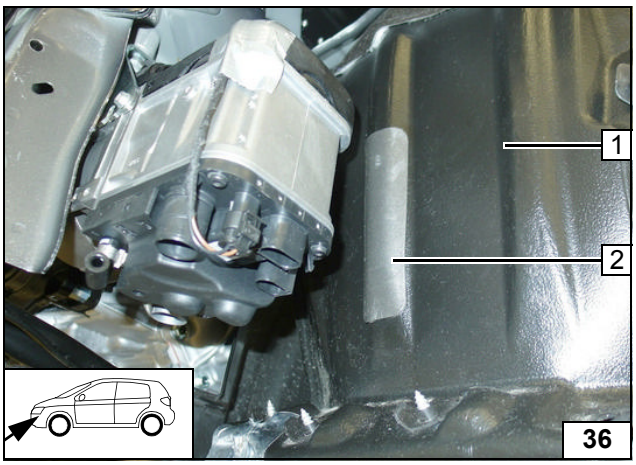
1 Connector of circulating pump wiring harness

Connecting circulating pump



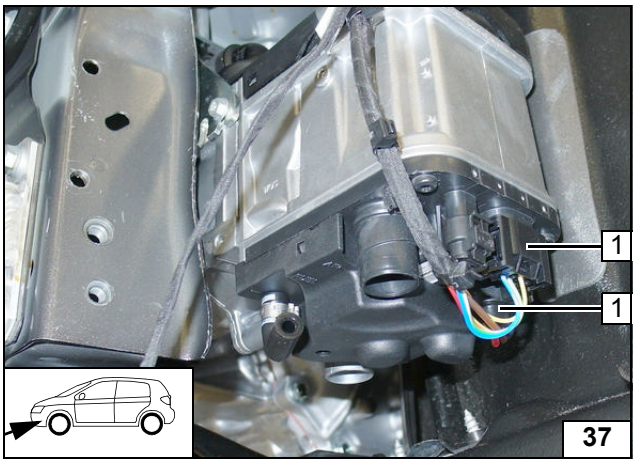
Attach circulating pump wiring harness **2** on heater using aluminium tape **1** as shown.

Attaching circulating pump wiring harness



Stick self-adhesive foam **2** onto wheel housing liner **1** as shown.

Sticking on self-adhesive foam



1 Heater wiring harness connector [2x]

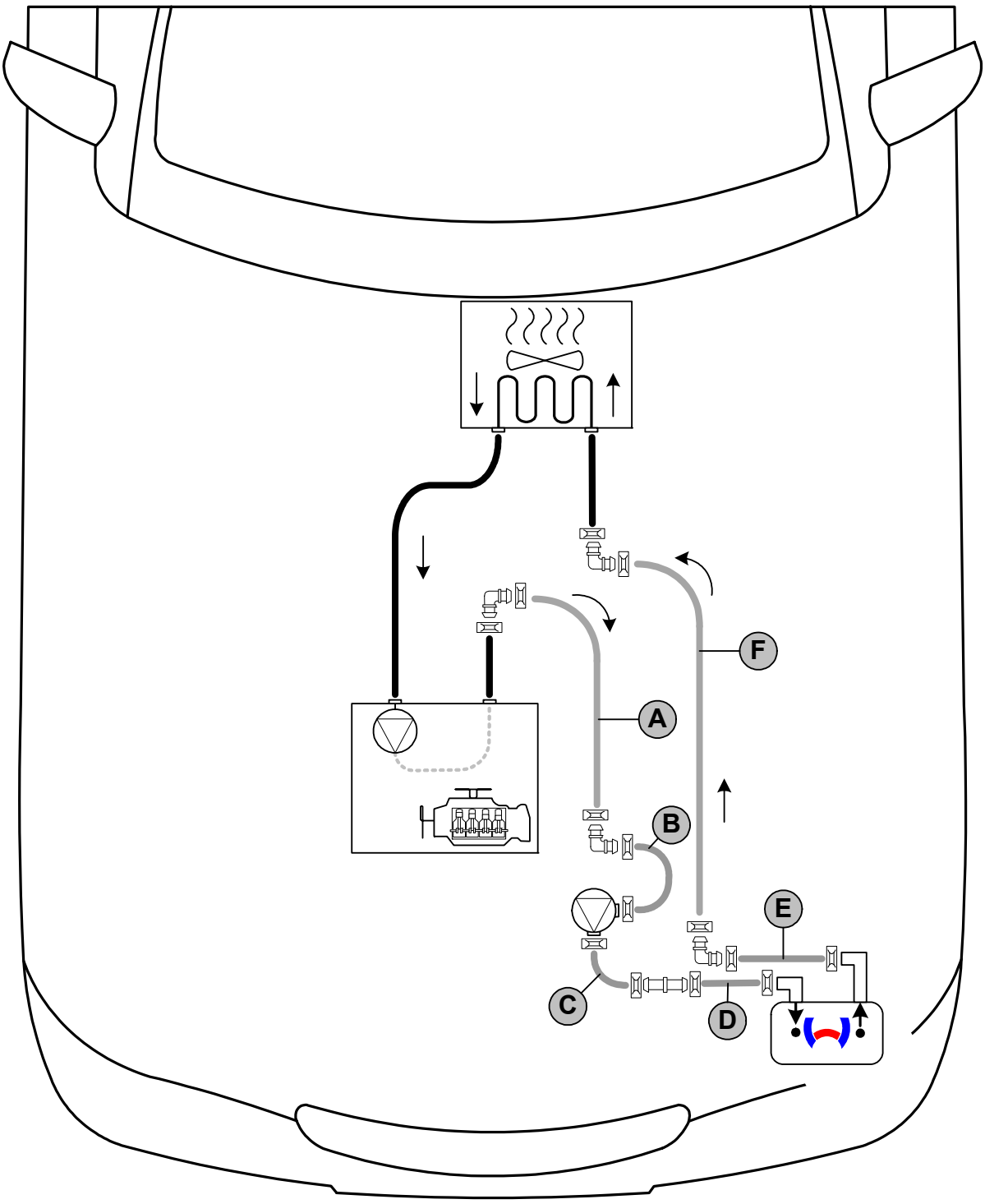
Installing heater wiring harness

Coolant Circuit

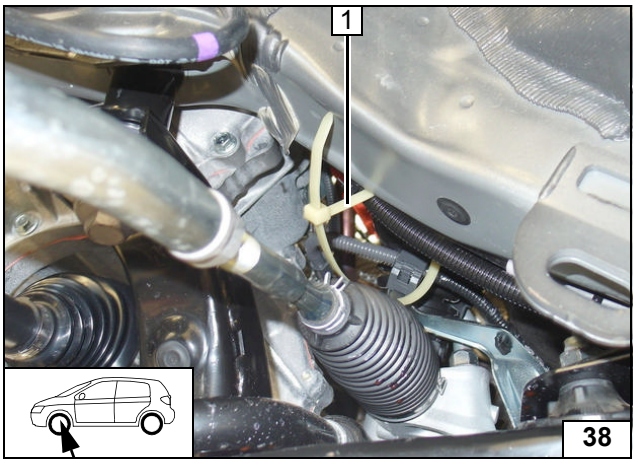
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

The connection should be modelled on an ‘inline’ circuit and based on the following diagram:

Hose routing diagram

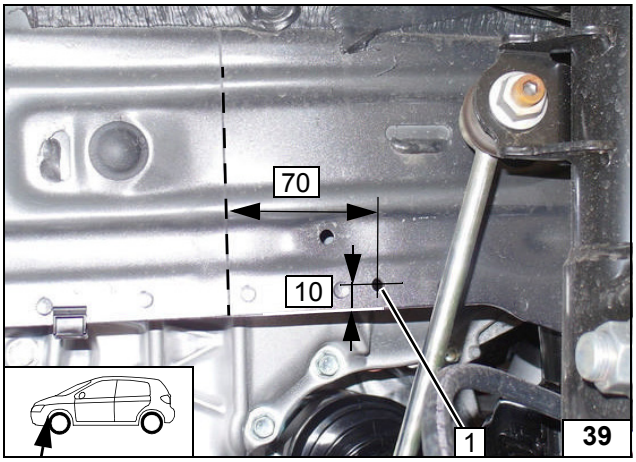


All spring clips = 25 mm dia. All connecting pipes and = 18x18 mm dia.



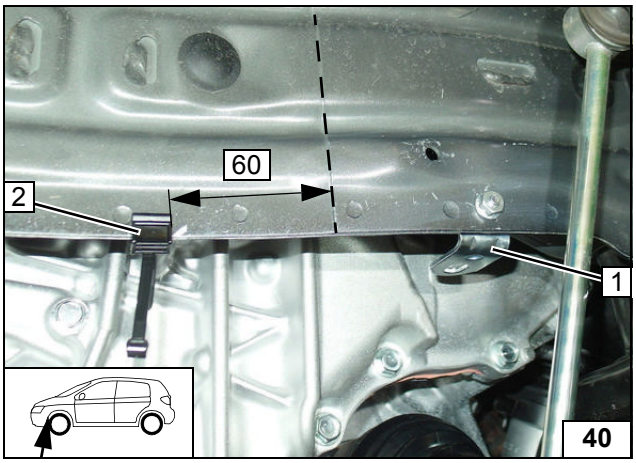
Tie 7.5X380 cable tie **1** loosely around original vehicle fuel line as shown.

Premounting cable tie



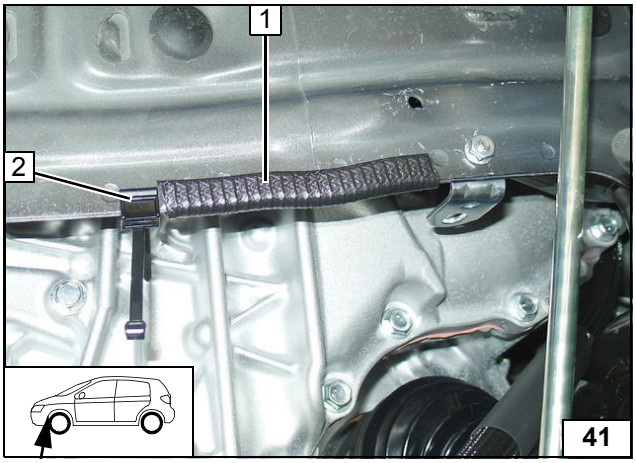
1 7 mm dia. hole

Drilling hole



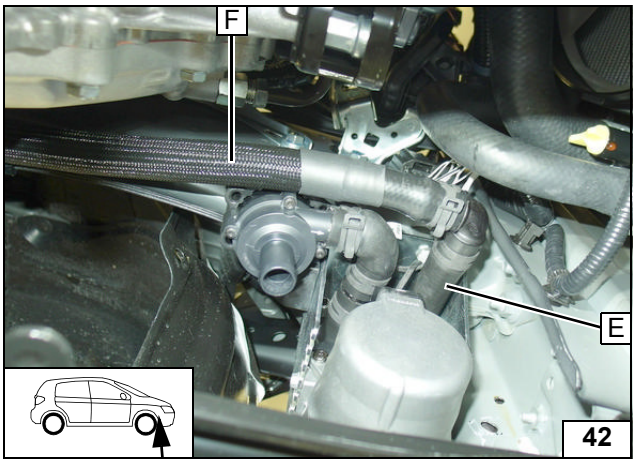
1 Angle bracket, M6x12 bolt, flanged nut
2 Clip-type cable tie

Installing angle bracket

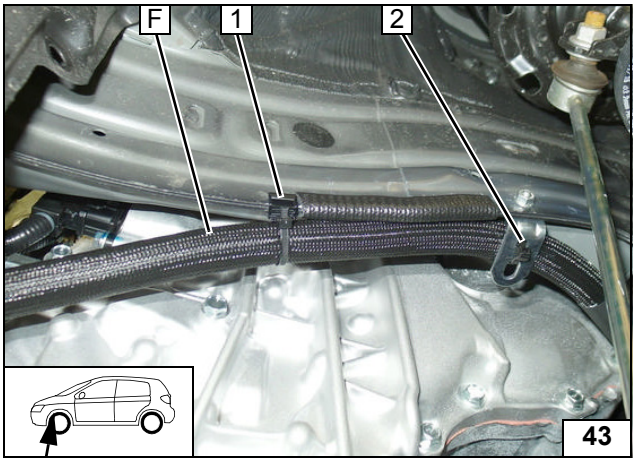


1 100mm edge protection section
2 Clip-type cable tie

Installing edge protection

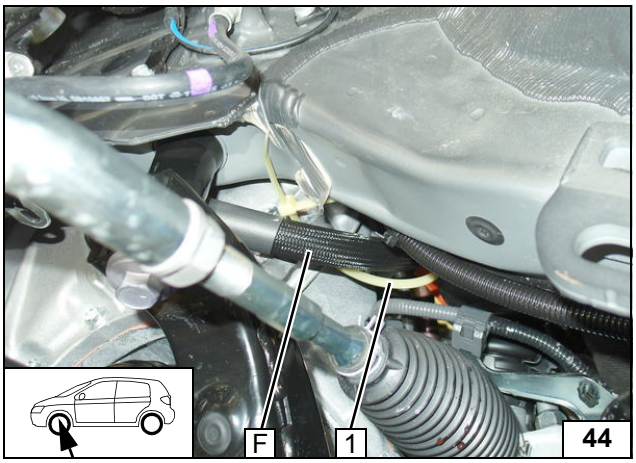


Connecting heater outlet



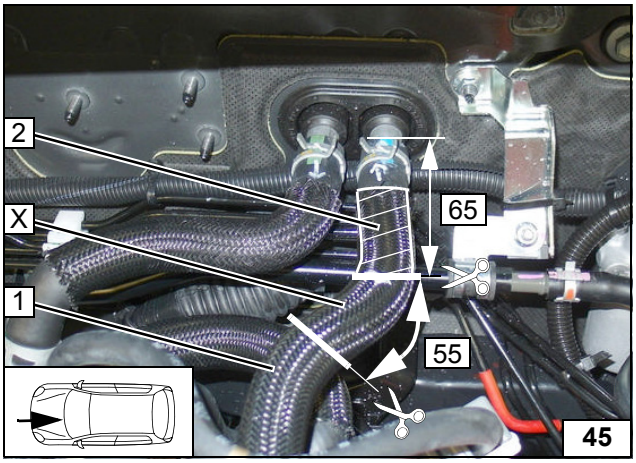
1 Close clip-type cable tie
2 Cable tie

Routing in engine compartment



Route hose section **F** through premounted cable tie **1**.

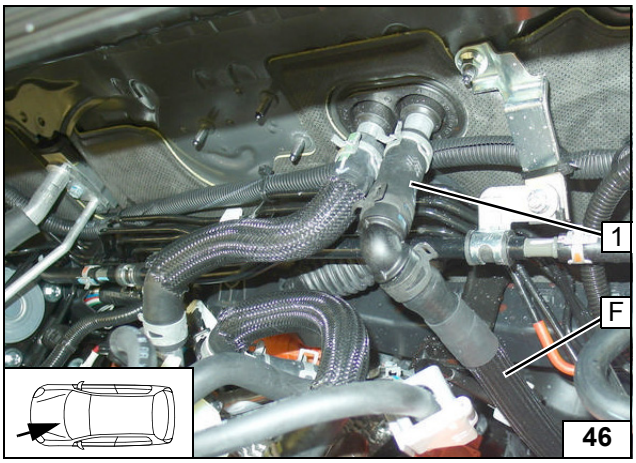
Routing in engine compartment



Remove shaded section of braided protection hose **2**. Cut engine outlet / heat exchanger inlet hose **1** at the marking.

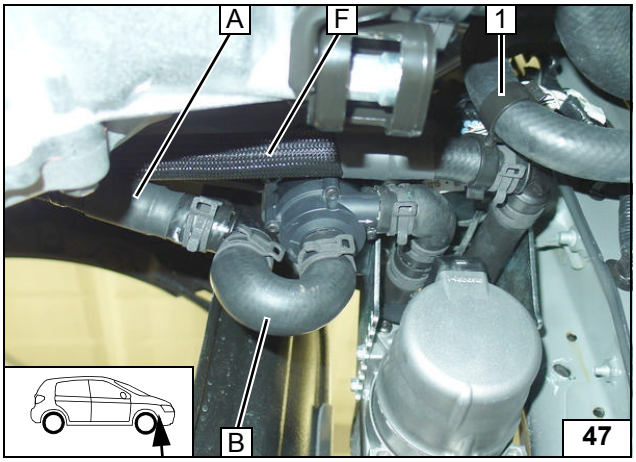
X=

Cutting point



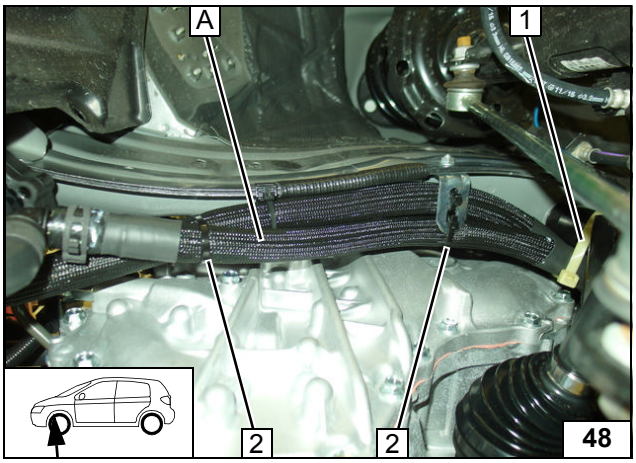
1 Original vehicle heat exchanger inlet hose section

Connecting heat exchanger inlet



1 25x25 mm hose bracket between hose section **F** and original vehicle hose

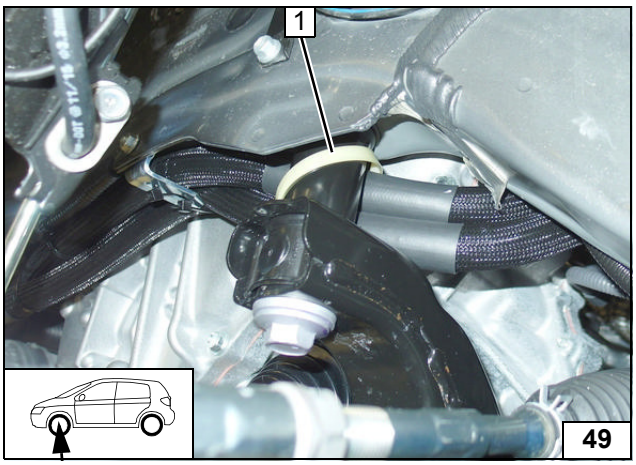
Connecting heater inlet



Route hose section **A** through premounted cable tie **1**.
Ensure sufficient distance from neighbouring components, correct if necessary.

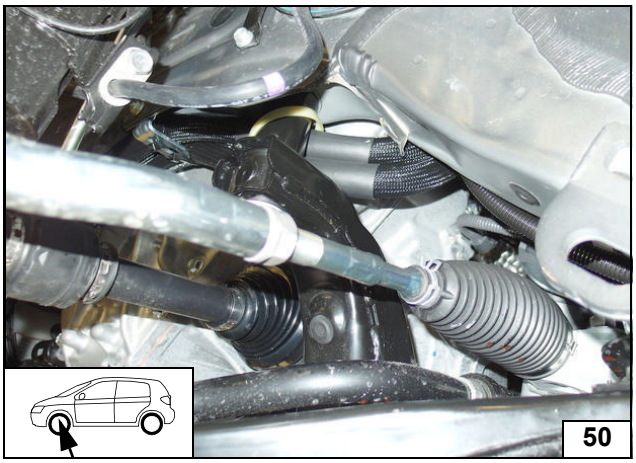
2 Cable tie [2x]

Routing in engine compartment



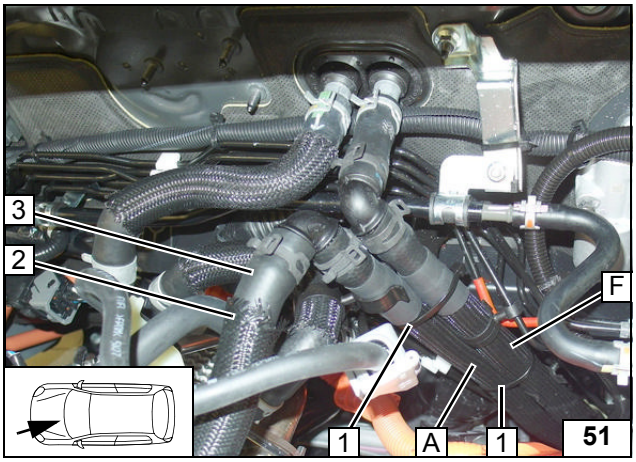
1 7.5x380 cable tie

Routing in engine compartment



Ensure sufficient distance from transmission and steering system, correct if necessary.

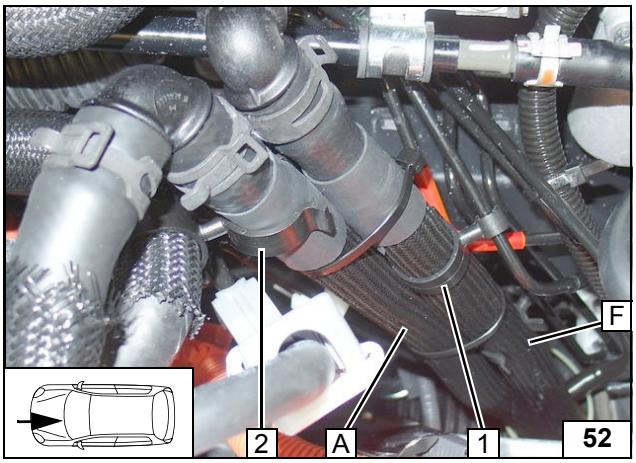
Routing in engine compartment



Push braided protection hose a bit back at position **2**.

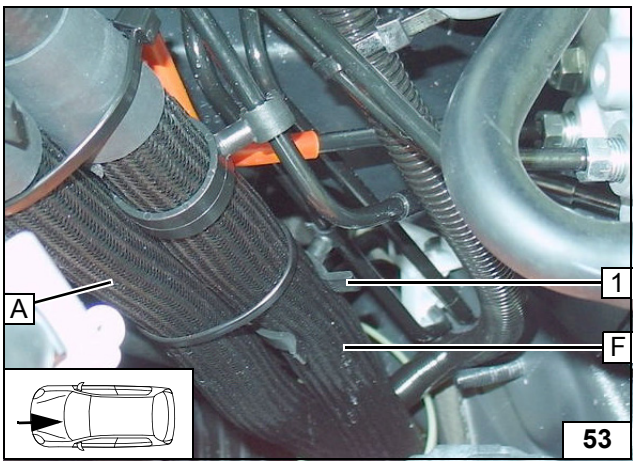
1 Cable tie [2x]
3 Engine outlet hose section

Connecting engine outlet



1 22x8 mm hose bracket between hose section **F** and original vehicle line
2 25x25 mm hose bracket between hose section **A** and original vehicle hose

Installing hose bracket



1 22x8 mm hose bracket between hose section **F** and original vehicle line

Installing hose bracket

Fuel

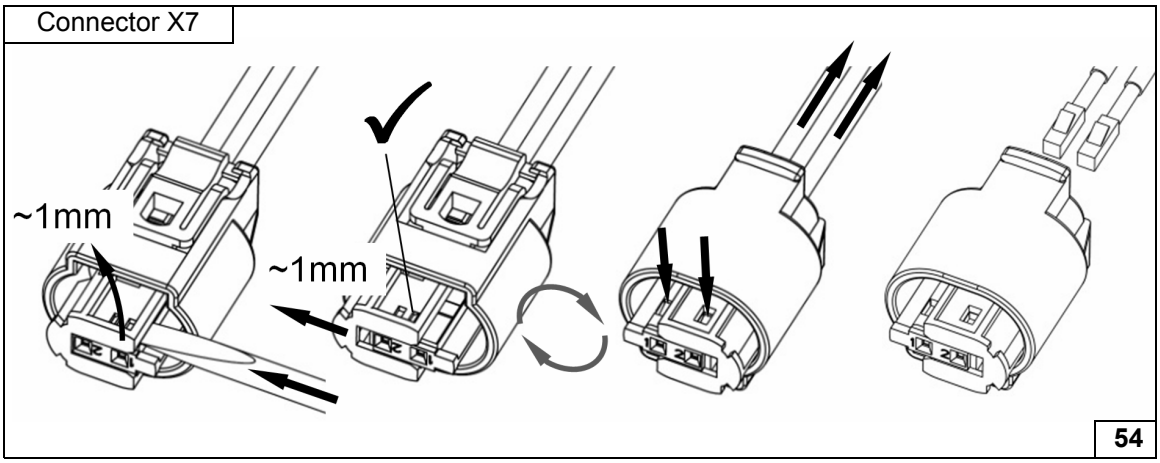
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

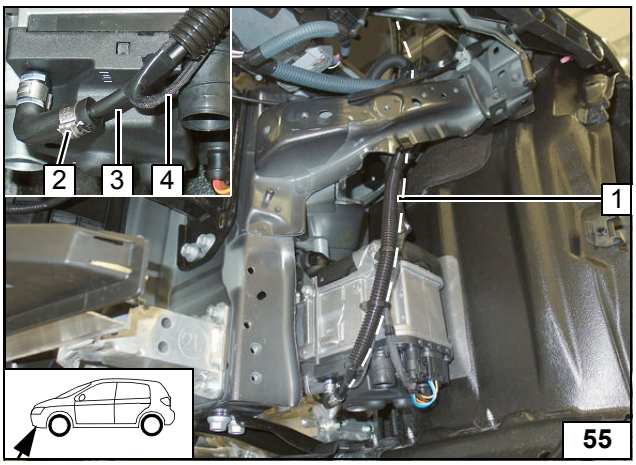
Catch any fuel running off in an appropriate container.

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.

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

Dismantling metering pump connector

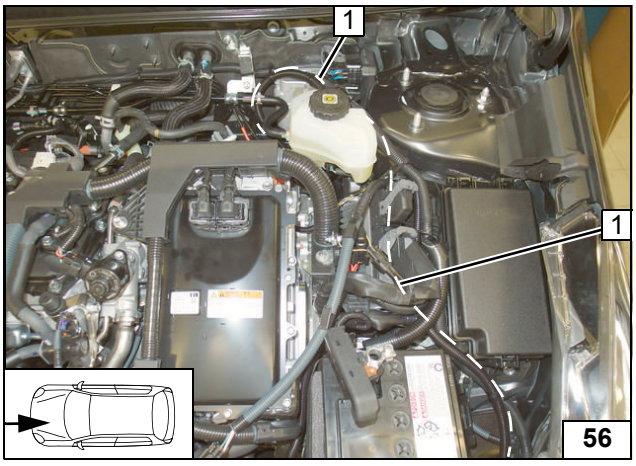




Pull fuel line **3** and wiring harness of metering pump **4** into 10mm dia., 2000mm long corrugated tube **1** and route in engine compartment.

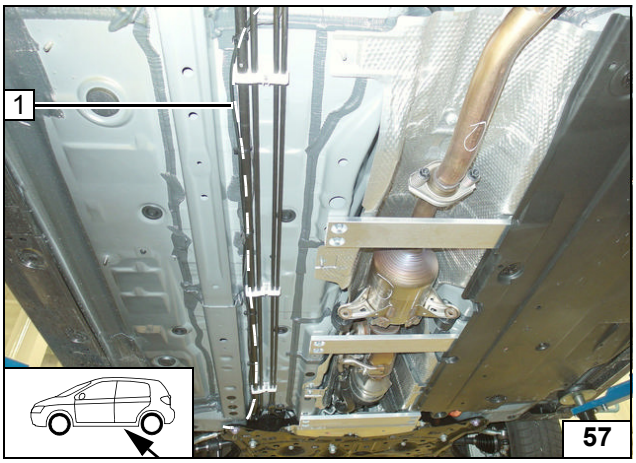
2 10 mm dia. clamp

Routing lines



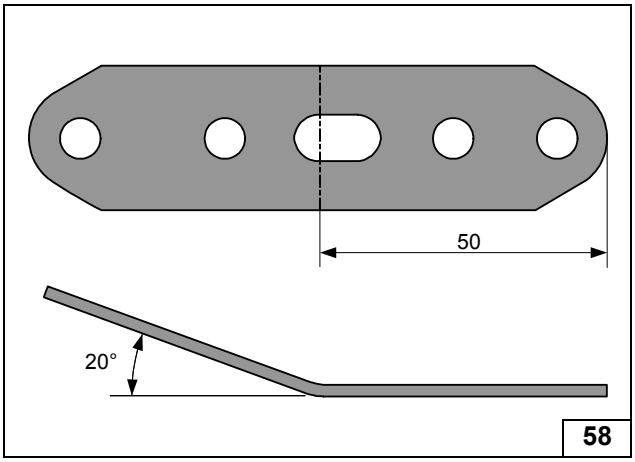
1 Fuel line and wiring harness of metering pump in 10mm dia. corrugated tube

Routing lines

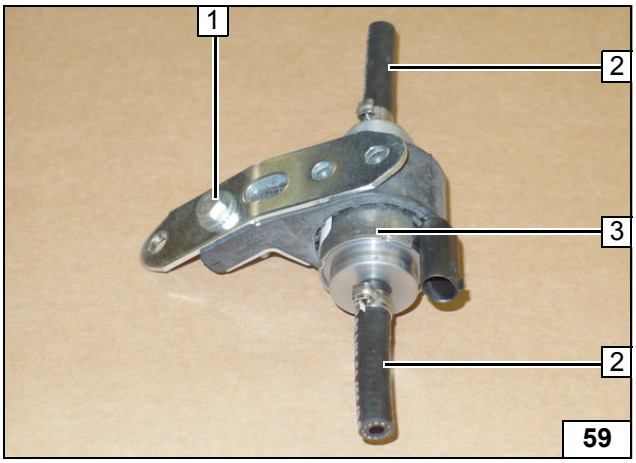


Route fuel line and wiring harness of metering pump in 10mm dia. corrugated tube **1** to the installation location of the metering pump along original vehicle fuel lines.

Routing lines

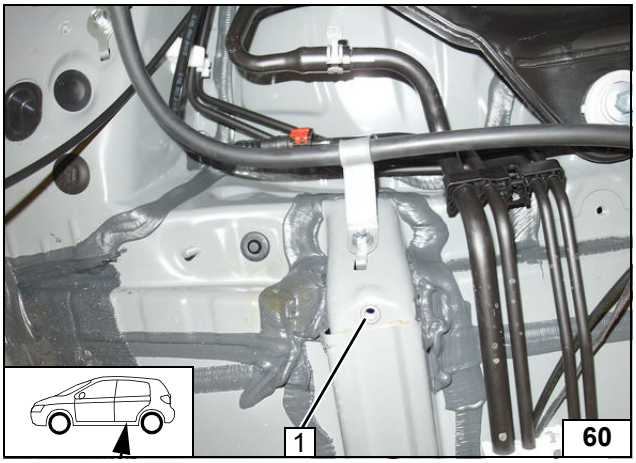


Preparing perforated bracket



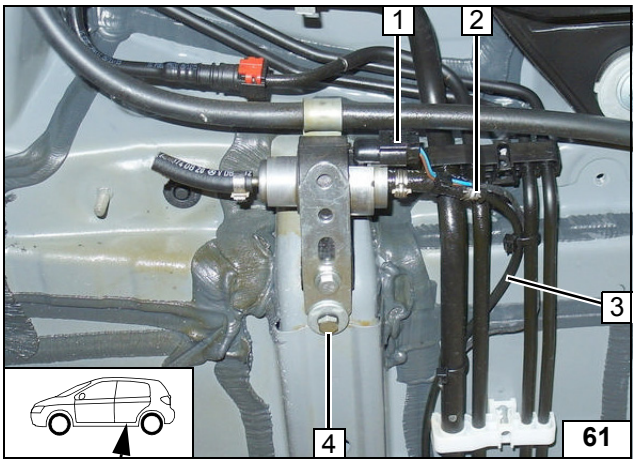
1 M6x25 bolt, perforated bracket, metering pump mount, support angle bracket, flanged nut
2 Hose section, 10mm dia. clamp
3 Metering pump

Premounting metering pump



1 Drill out existing hole to 9.1 mm dia. and mount rivet nut

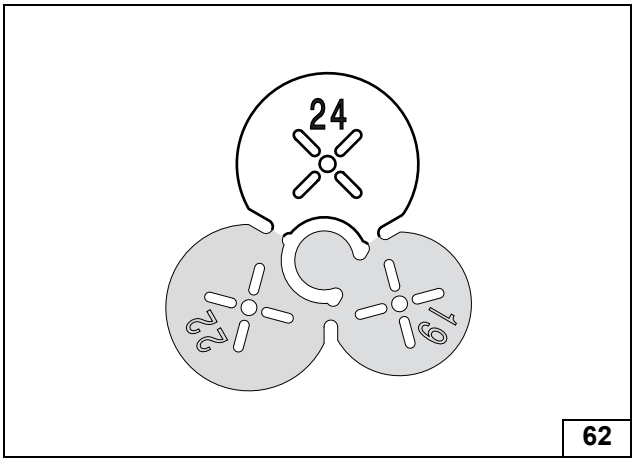
Installing rivet nut



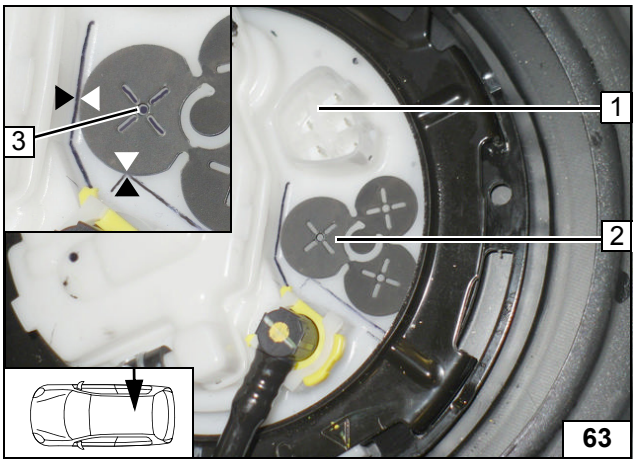
1 Metering pump wiring harness, connector X7 mounted
2 10 mm dia. clamp
3 Fuel line of heater
4 M6x20 bolt, spring lockwasher, large diameter washer

Installing metering pump

Installing FuelFix



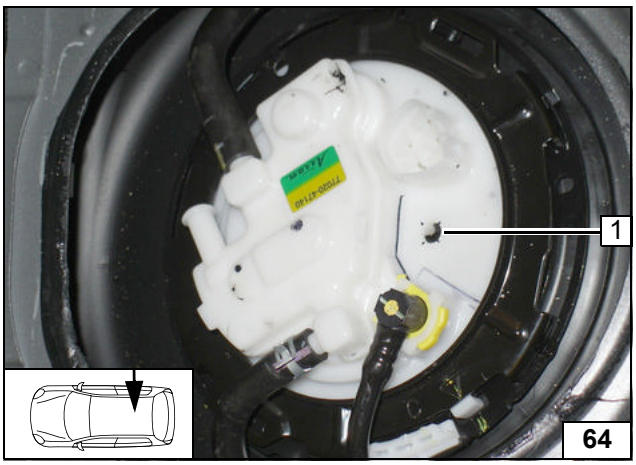
Drilling template



Work steps F1 and F2.

1 Fuel tank sending unit
2 Position 24mm dia. drilling template as shown (use existing ridge as guide line)
3 Copy hole pattern

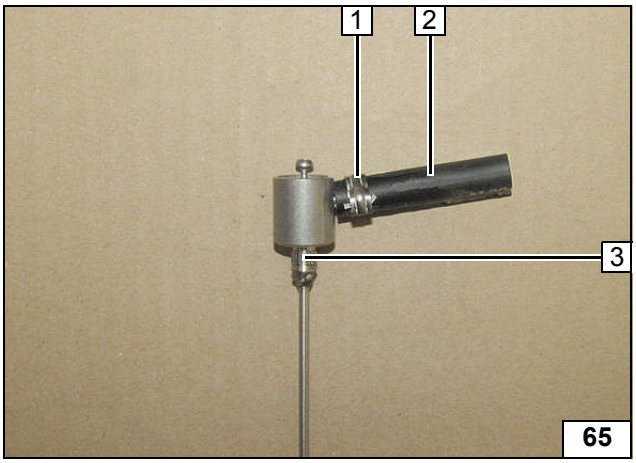
Copying hole pattern



Work step F3.

1 Hole made with provided drill

Hole for FuelFix

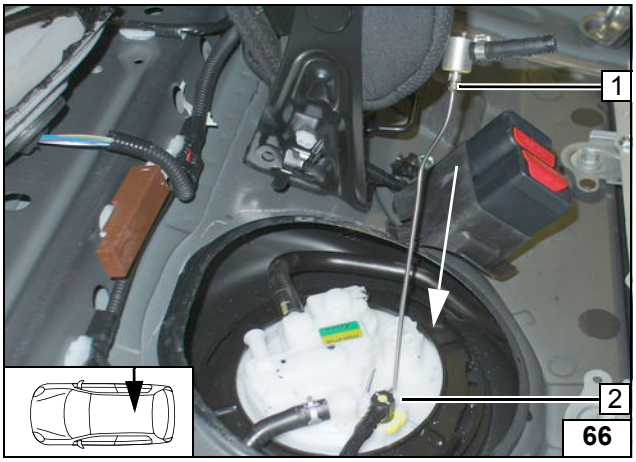


Work step F4.

Bend FuelFix **1** according to template and cut to length.

1 10 mm dia. clamp
2 Hose section
3 FuelFix

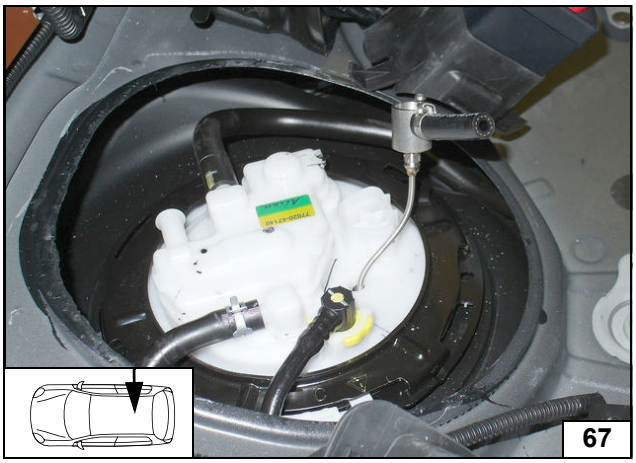
Installing hose section



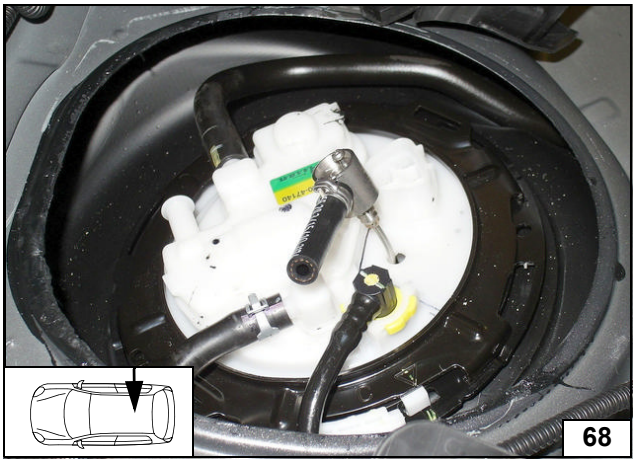
Work step F5.

Insert FuelFix **1** in hole **2**.

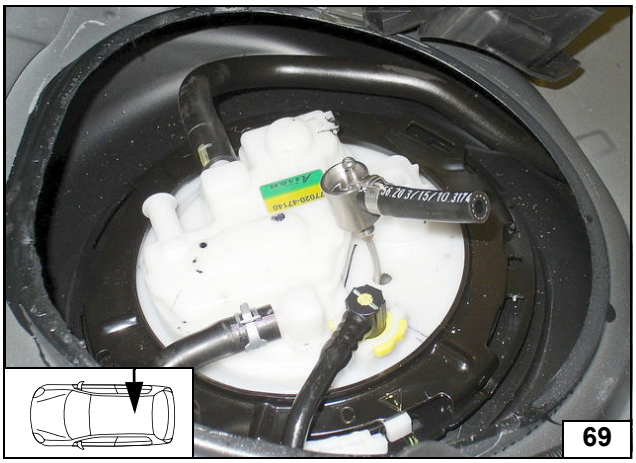
Inserting FuelFix



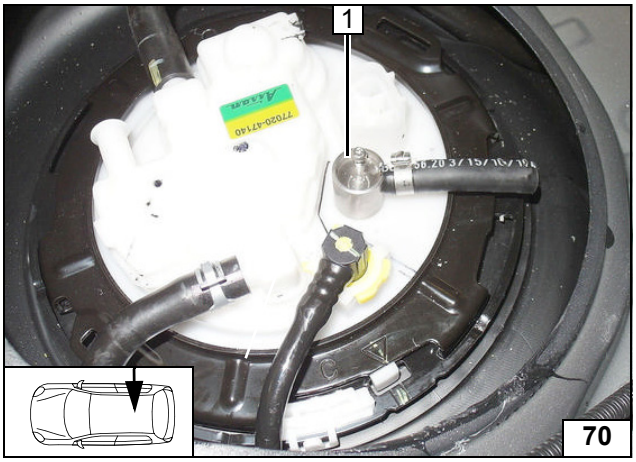
Inserting FuelFix



Inserting FuelFix



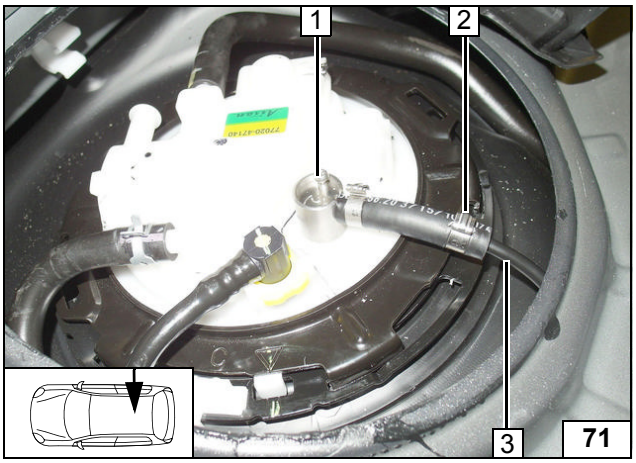
Inserting FuelFix



Work steps F5.3 and F5.4.

Align FuelFix **1** as shown.

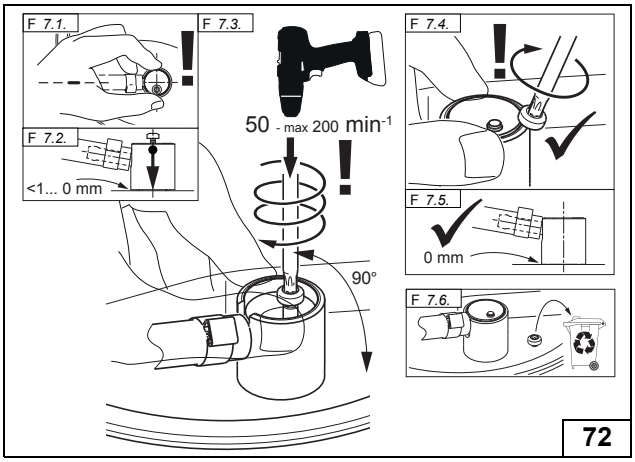
Aligning FuelFix



Work step F6.

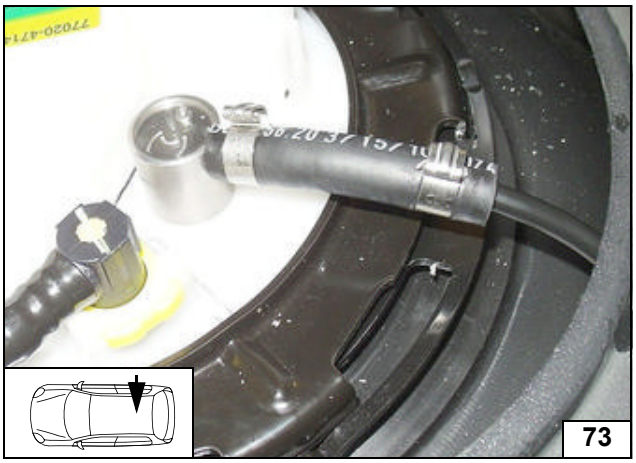
1 FuelFix
2 10 mm dia. clamp
3 Fuel line

Connecting fuel line



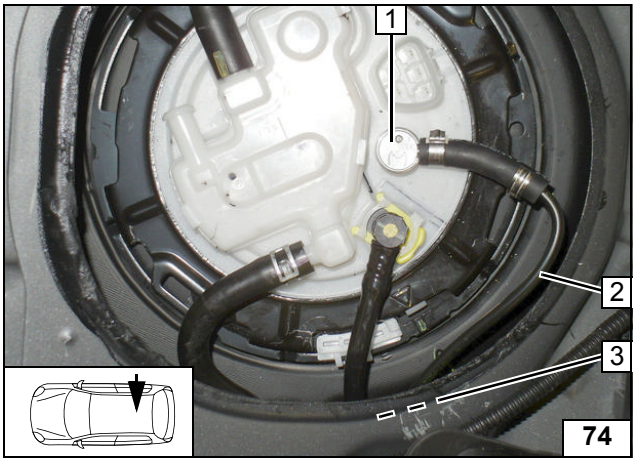
Work step F7.

Installing FuelFix



Work step F8.

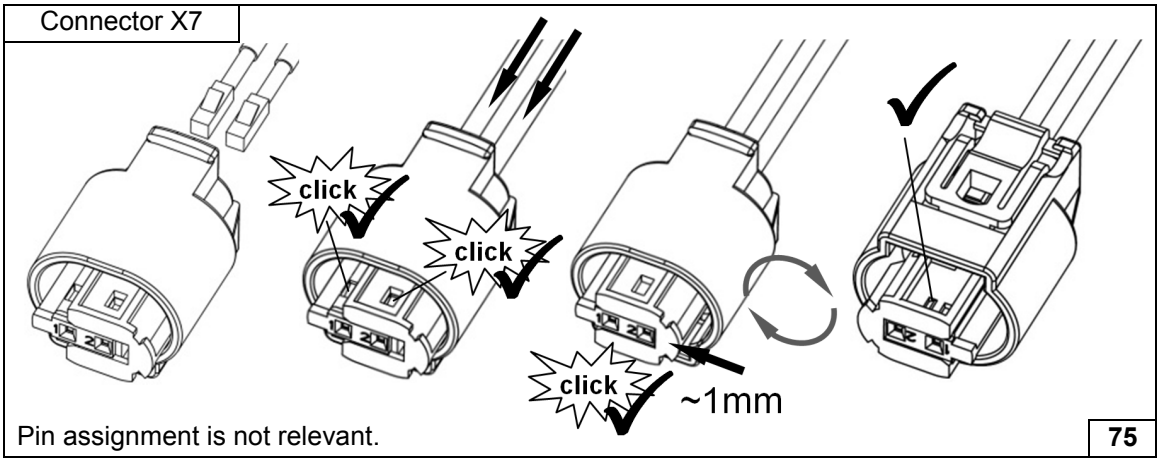
Ensuring firm seating of FuelFix



1 FuelFix installed
2 Fuel line of FuelFix
3 Cable tie as tension relief (hidden)

Securing fuel line

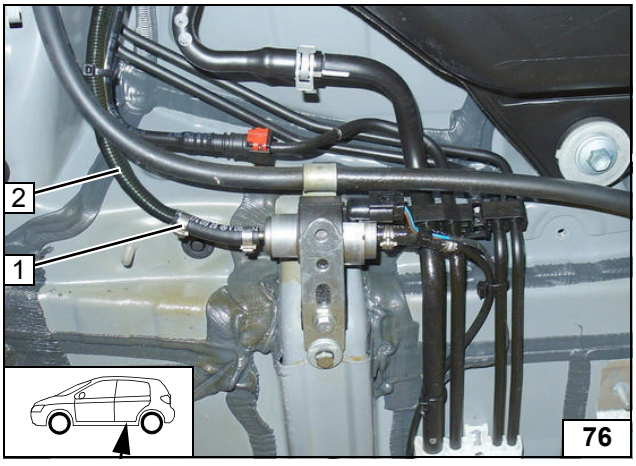
Connector X7



Pin assignment is not relevant.

75

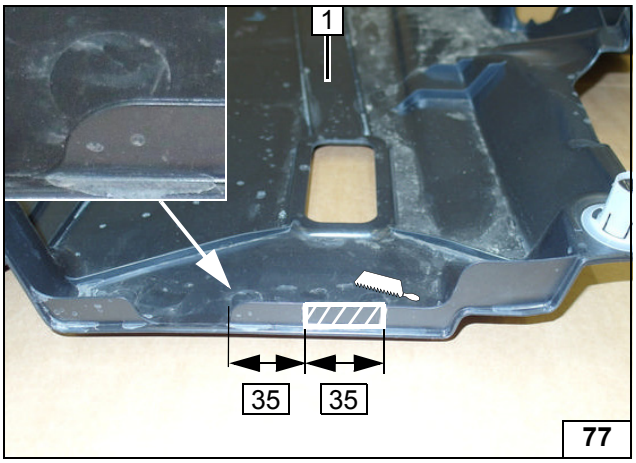
Completing metering pump connector



Check the position of the components; adjust if necessary. Check that they have freedom of movement.

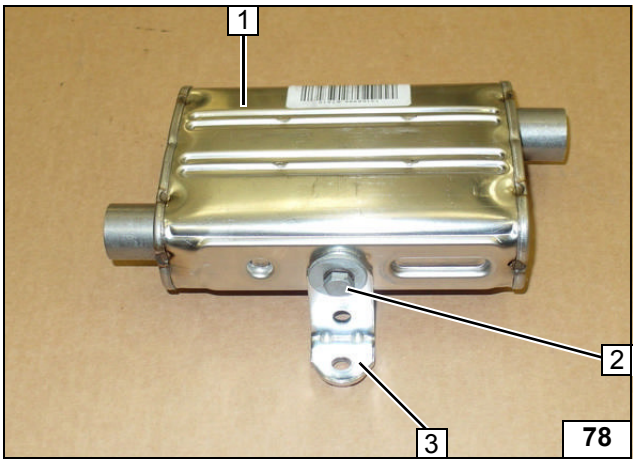
1 10 mm dia. clamp
2 FuelFix fuel line in 10mm dia. corrugated tube

Connecting metering pump



1 Tank trim

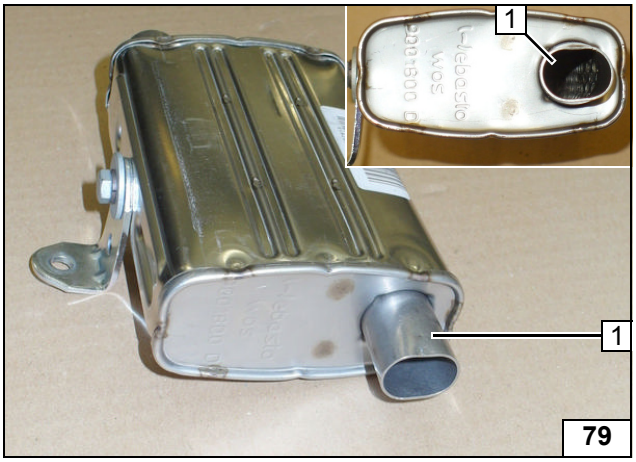
Cutting out shaded area of tank trim



Exhaust Gas

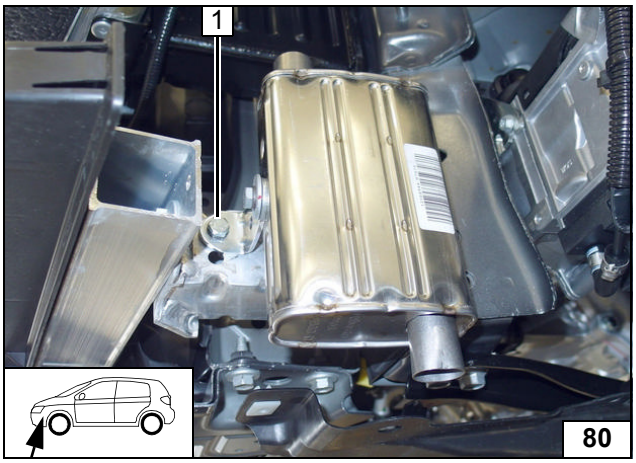
1 Silencer
2 M6x16 bolt, spring lockwasher, large diameter washer
3 Angle bracket

Premounting silencer



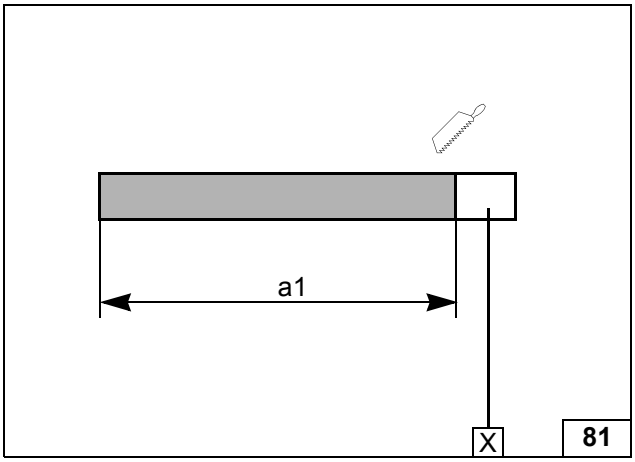
Mould silencer exhaust outlet **1** as shown.

Preparing silencer



1 M6x20 bolt, spring lockwasher

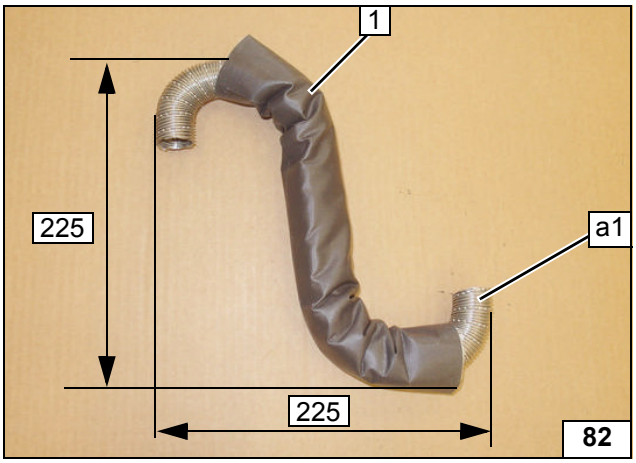
Installing silencer



a1 = 460

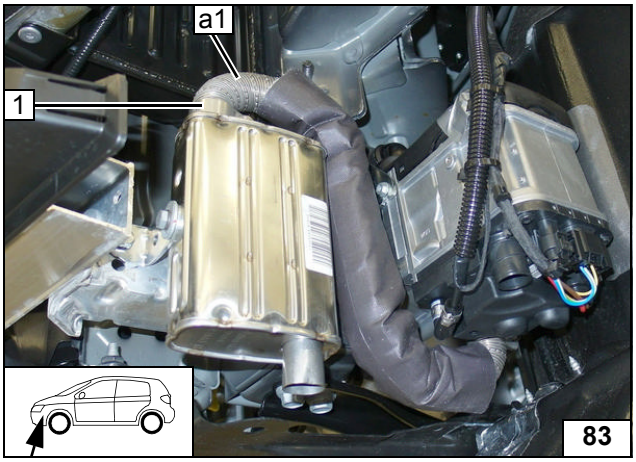
X =

Preparing exhaust pipe



Bend exhaust pipe **a1** as shown and pull insulation **1** over the pipe.

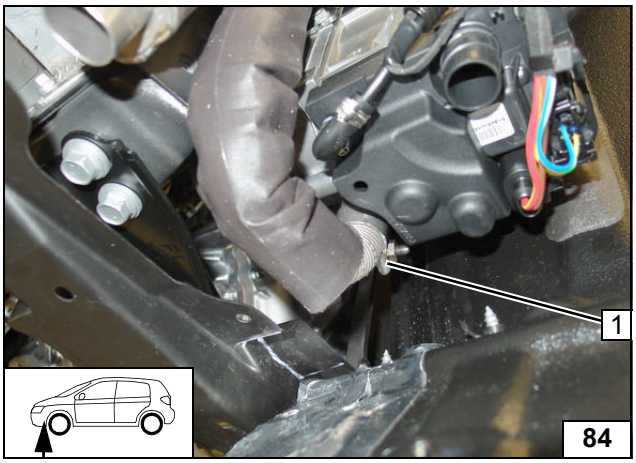
Preparing exhaust pipe a1



Ensure sufficient distance from neighbouring components, correct if necessary.

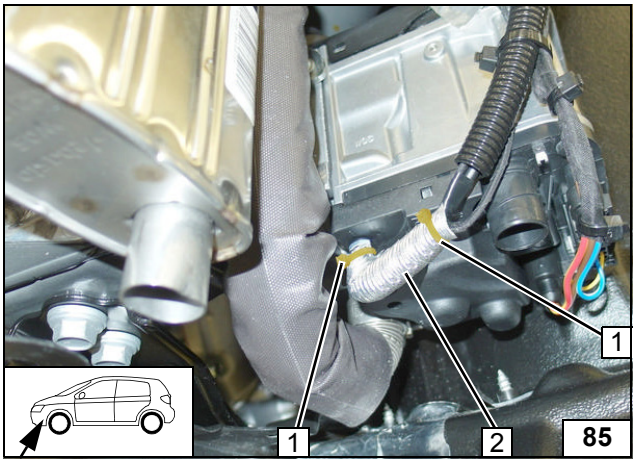
1 Hose clamp

Installing exhaust pipe a1



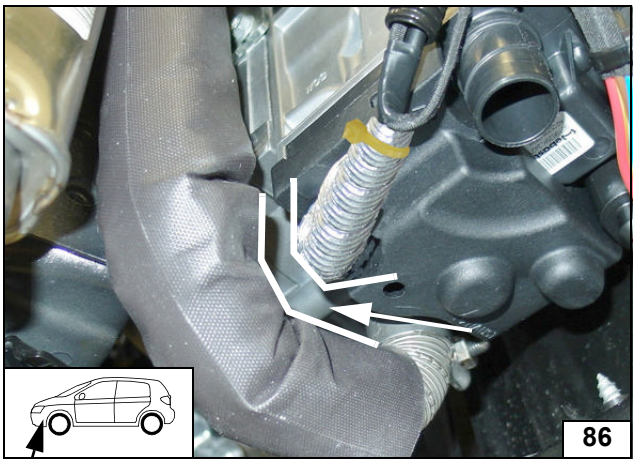
1 Hose clamp

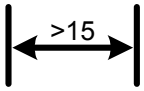
Installing exhaust pipe a1



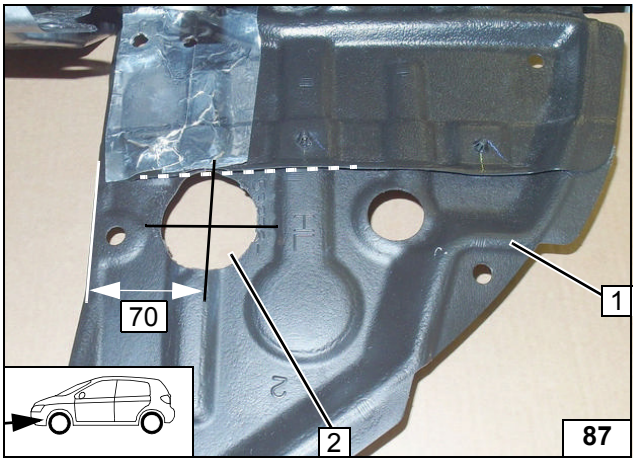
Pull 100mm flexible tube **2**, cut lengthwise, as heat protection over 90° moulded hose and secure using heat-resistant 3.5x150 cable tie **1** [2x] .

Installing heat protection



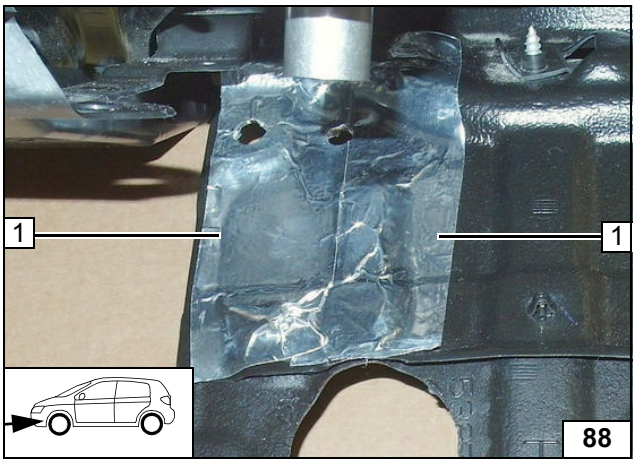


Checking distance



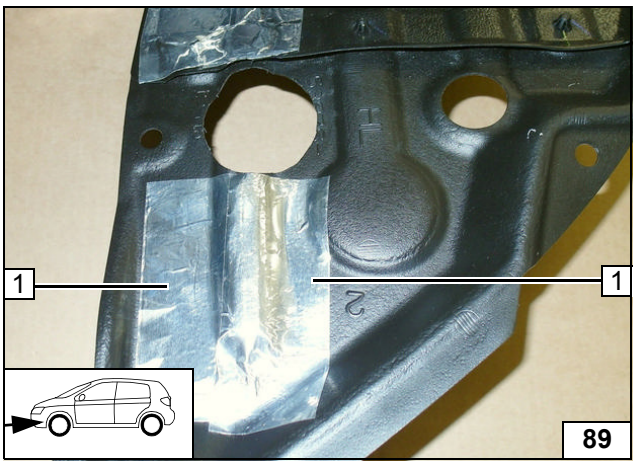
1 Underride protection
2 60 mm dia. hole

Hole in underride protection



Cut heat protection film **1** in half and stick on underride protection as shown.

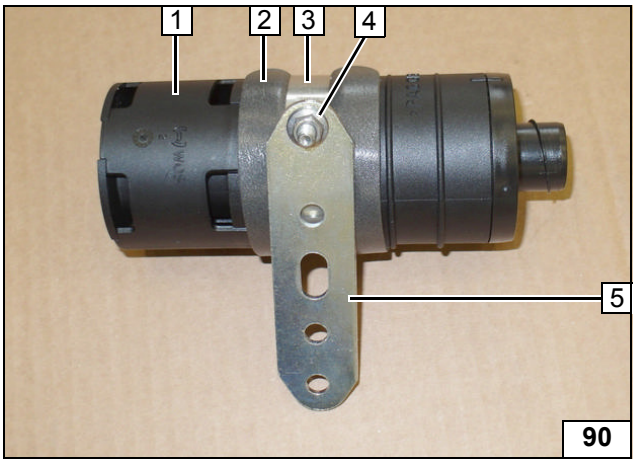
Sticking on heat protection film



Cut heat protection film **1** in half and stick on underride protection as shown.

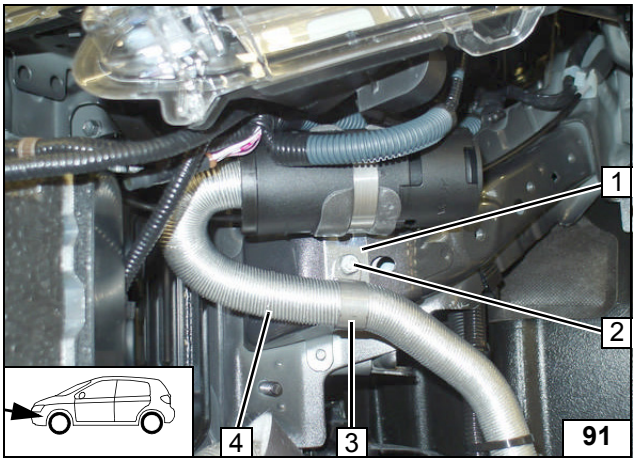
Sticking on heat protection film

Combustion Air



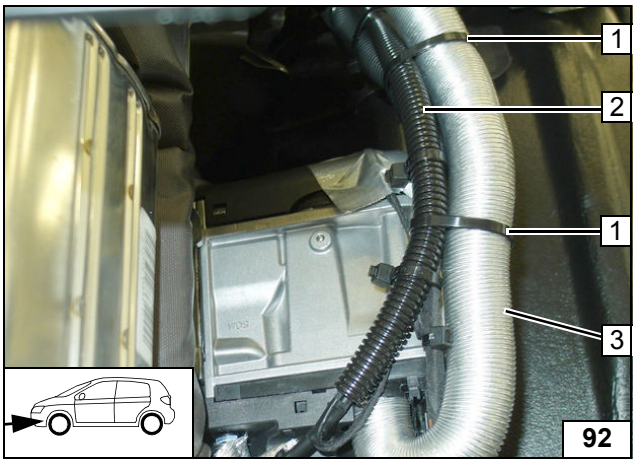
1 Silencer
2 Insulation protection strips
3 51 mm dia. clamp
4 M5x16 bolt, large diameter washer, flanged nut
5 Perforated bracket

Premounting silencer



1 Perforated bracket
2 M6x20 bolt, spring lockwasher
3 P-clamp
4 Combustion air pipe

Installing silencer



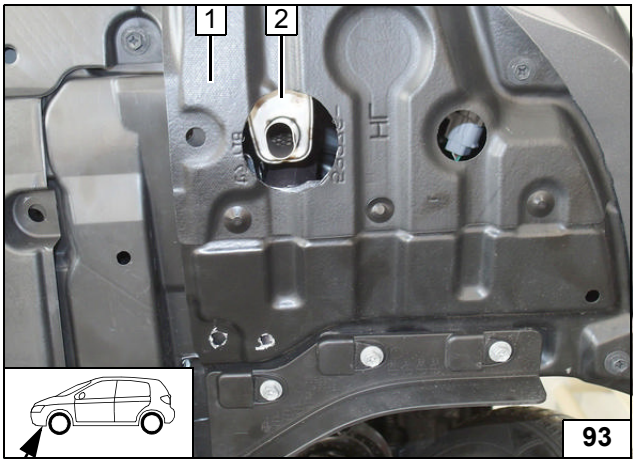
1 Cable tie [2x]
2 Corrugated tube
3 Combustion air pipe

Installing combustion air pipe

Final Work

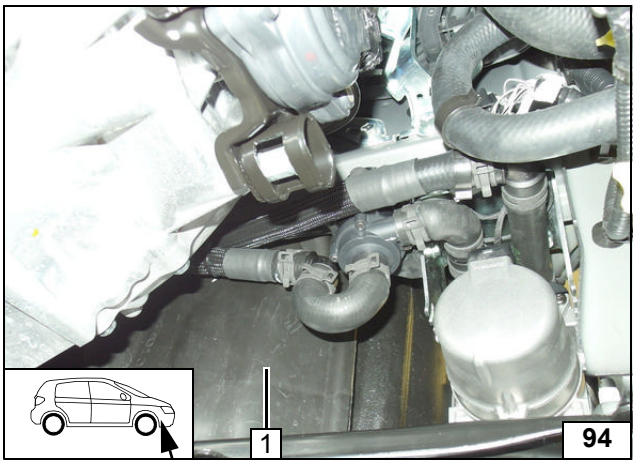
Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate loose wire ends and tie back.
Only use manufacturer-approved coolant. Spray the heater components with anti-corrosion wax (Tectyl 100K).

- **Activate high-voltage system in accordance with the manufacturer's instructions**
- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Teach Telestart transmitter**
- **If the fan function or A/C control panel settings need to be checked, see the installation documentation in the additional kit 'Webasto Standard' A/C control, section 'Final Work'.**
- **Place the 'Switch off parking heater before refuelling' caution label near the filler neck.**



Install trim of underbody **1**. Align exhaust silencer **2**. Ensure sufficient distance from neighbouring components, correct if necessary.

Aligning exhaust silencer



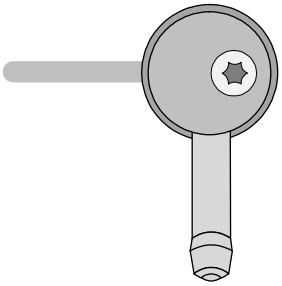
Install lateral wheel well trim **1**. Ensure sufficient distance between hoses and neighbouring components, correct if necessary.

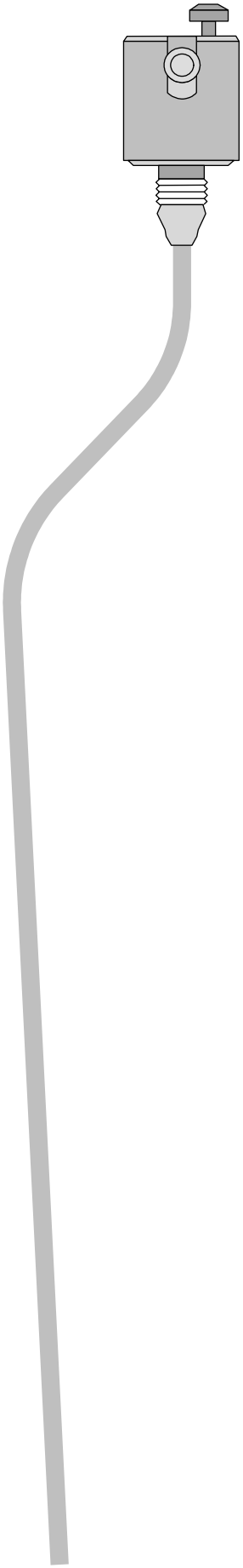
Checking position of hoses

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

FuelFix Template

Top view





100mm

Scale 1:1

Compare size of printout with dimension lines.
Allowed tolerance a maximum of 2%.

Set the printer settings to ‘no margin’ or ‘minimise margins’ and 100% of the normal size.

100mm

0