Water Heater

Thermo Top Evo Parking Heater

E1
00 0258

With FuelFix

Installation Documentation
Toyota RAV 4

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Toyota	RAV 4	XA3(a)	e6 * 2001 / 116 * 0105 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
2.0 P	Petrol	6-gear SG	111	1987	3ZR
2.0 P	Petrol	AG	111	1987	3ZR
2.0 P	Petrol	AG	112	1987	3ZR

SG = manual transmission
AG = Multidrive S automatic transmission

From model year 2013
Model code: **A4 - AN***W**
Left-hand drive vehicle

Verified equipment variants: Manual air-conditioning / 2-zone automatic air-conditioning
Front fog lights
Daytime running lights LED
Xenon with headlight washer system
4 WD
Smart key system

Not verified: Alarm system of passenger compartment monitoring

Total installation time: approx. 8.0 hours

Toyota RAV 4

Table of Contents

Necessary Components

- Basic delivery scope of Thermo Top Evo according to price list
- Installation kit with FuelFix for Toyota RAV 4 2013 Petrol: **1320516B**
- 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

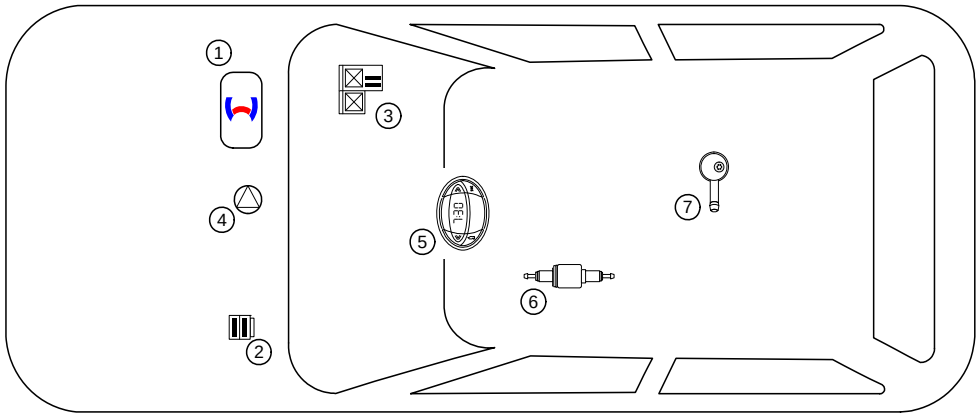
Installation instructions:

- 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 Thermo Call should be confirmed with the end customer.
- Depending on the space required and the vehicle manufacturer's instructions, we recommend the use of a vehicle battery with a higher electrical capacity.

Installation Overview

Legend:

1. Heater
2. Engine compartment fuse holder
3. Passenger compartment relay and fuse holder
4. Circulating pump
5. Digital Timer
6. Metering pump
7. 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 RAV 4 Petrol vehicles - for validity, see page 1 - from model year 2013 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

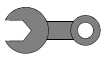
Dimensions
- All dimensions are in mm.

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.

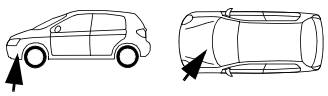
Specific risk of injury or fatal accidents.

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

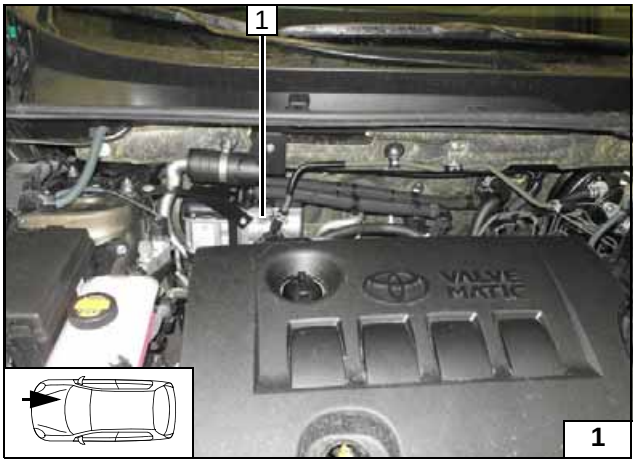
- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery.
- Completely remove the cover of the air cleaner housing.
- Remove the lower trim of the glove box.
- Remove the glove box.
- Remove the lower instrument panel trim on the driver's side.
- Remove the side trim of the centre console on the left.
- Detach the A/C booster of the centre console on the left.
- Remove the middle engine underride protection.
- Remove the lateral engine underride protection on the left.

The following work should only be performed during the corresponding installation sequence:

- Remove the fuel tank according to the manufacturer's instructions.

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

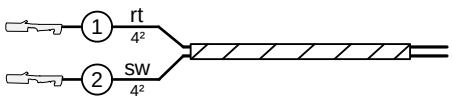
Wire sections retain their numbering in the entire document.

Produce all following electrical connections as shown in the wiring diagram.

Manual air-conditioning

① Red (rt) wire of fan wiring harness
② Black (sw) wire of fan wiring harness

Assigning wires



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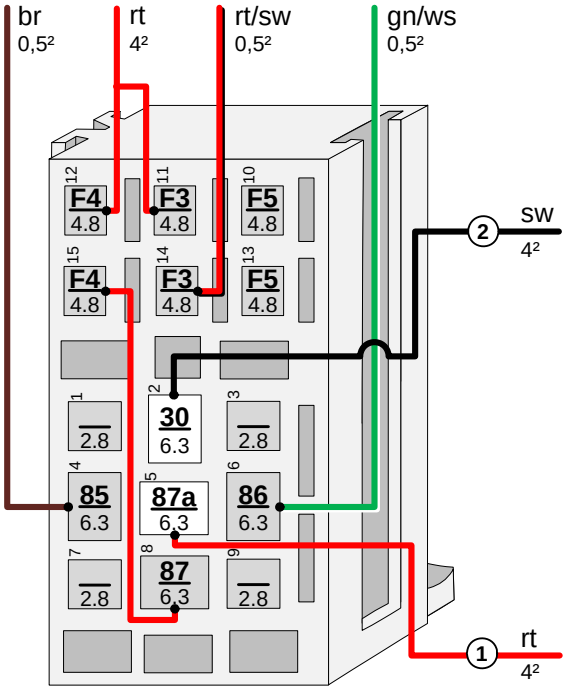
Connecting wires to passenger compartment relay and fuse holder



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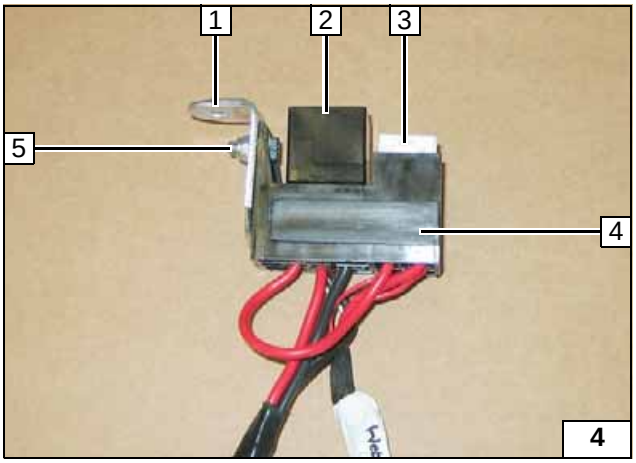

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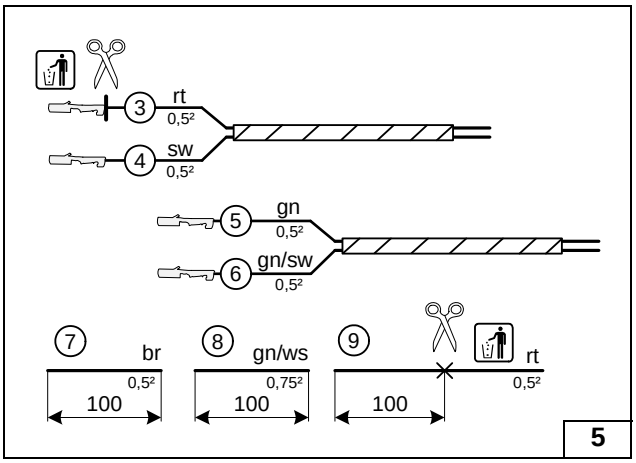
1 Angle bracket
2 Relay K1
3 25A fuse F4
4 Passenger compartment relay and fuse holder
5 M5x12 bolt, large diameter washer [2x], nut.

Preparing passenger compartment relay and fuse holder



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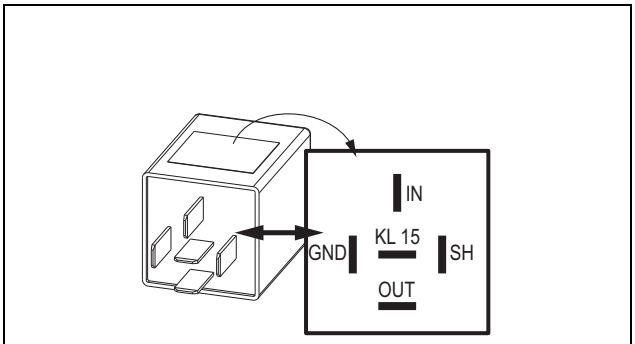
Automatic air-conditioning

③ Red (rt) wire of AC booster wiring harness
④ Black (sw) wire of AC booster wiring harness
⑤ Green (gn) wire of PWM control system wiring harness
⑥ Green/black (gn/sw) wire of PWM control system wiring harness

Cutting to length / assigning wires



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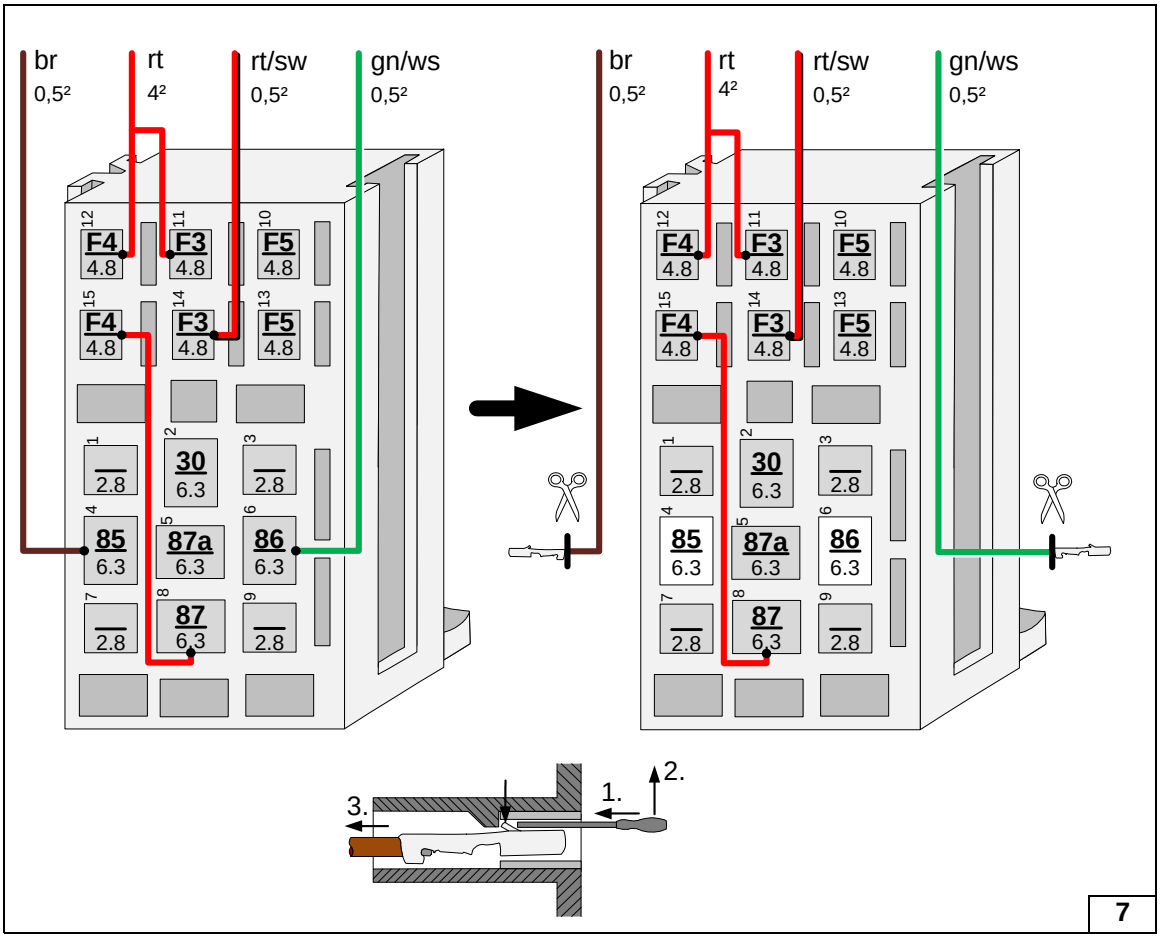
Check the PWM Gateway settings when starting up the heater and adjust if necessary.

Settings:

Duty cycle: 60%
Frequency: 500Hz
Voltage: not relevant
Function: Low side

View of PWM GW



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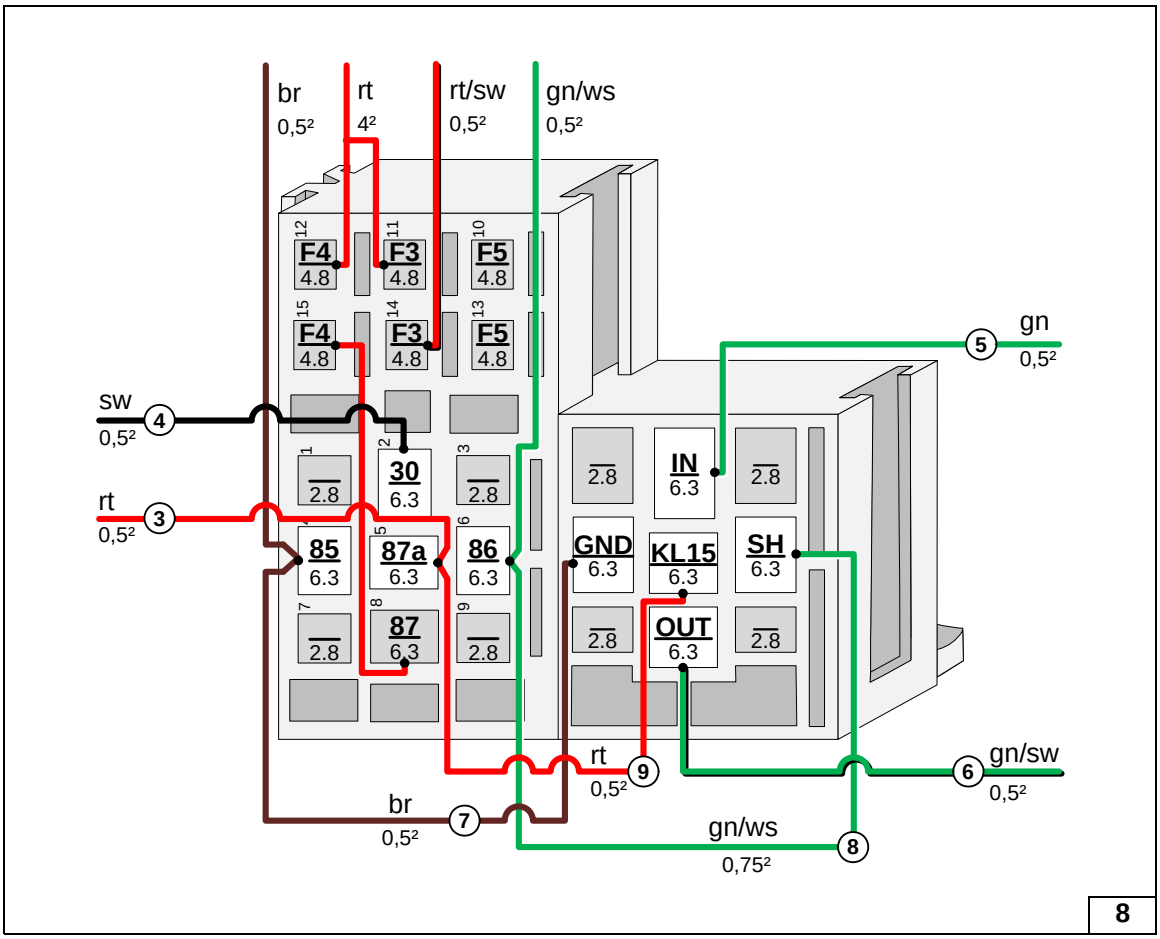
Preparing passenger compartment relay and fuse holder



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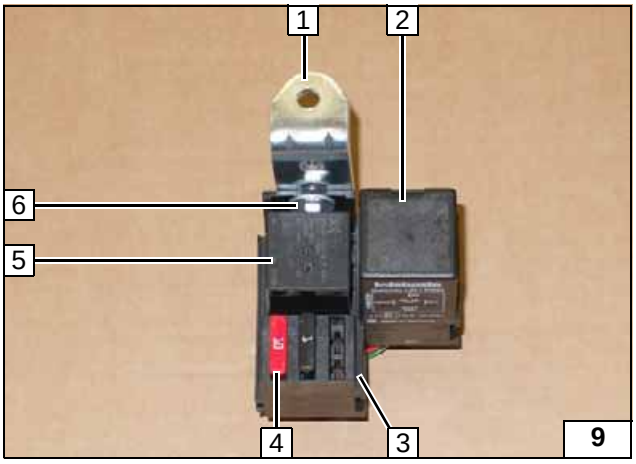
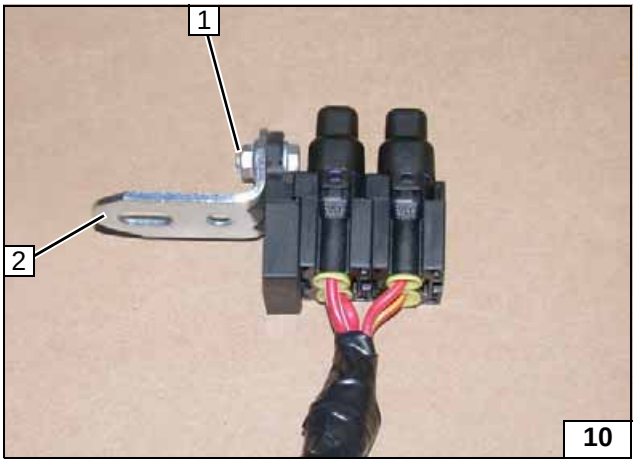
Connecting wires to socket of PWM GW and passenger compartment relay and fuse holder, interlocking sockets



9

1 Angle bracket
2 PWM Gateway
3 Passenger compartment relay and fuse holder
4 10A fuse F4
5 Relay K1
6 M5x16 bolt, large diameter washer [2x], nut

Mounting angle bracket, installing F4 fuse



10

All vehicles

1 M5x16 bolt, large diameter washer [2x], nut
2 Angle bracket

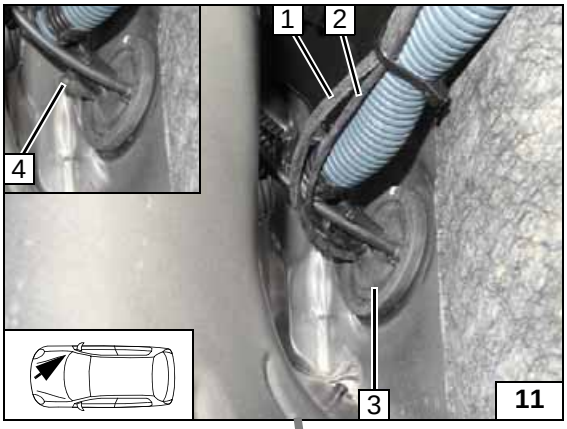
Premounting engine compartment fuse holder

Electrical System

Wiring harness pass through

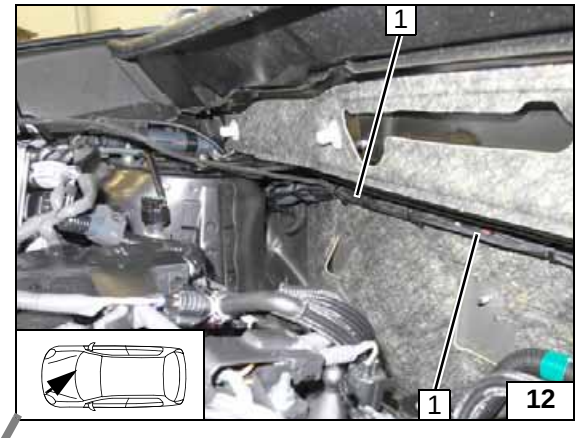
Cut off nipple **4** of protective rubber plug **3**.

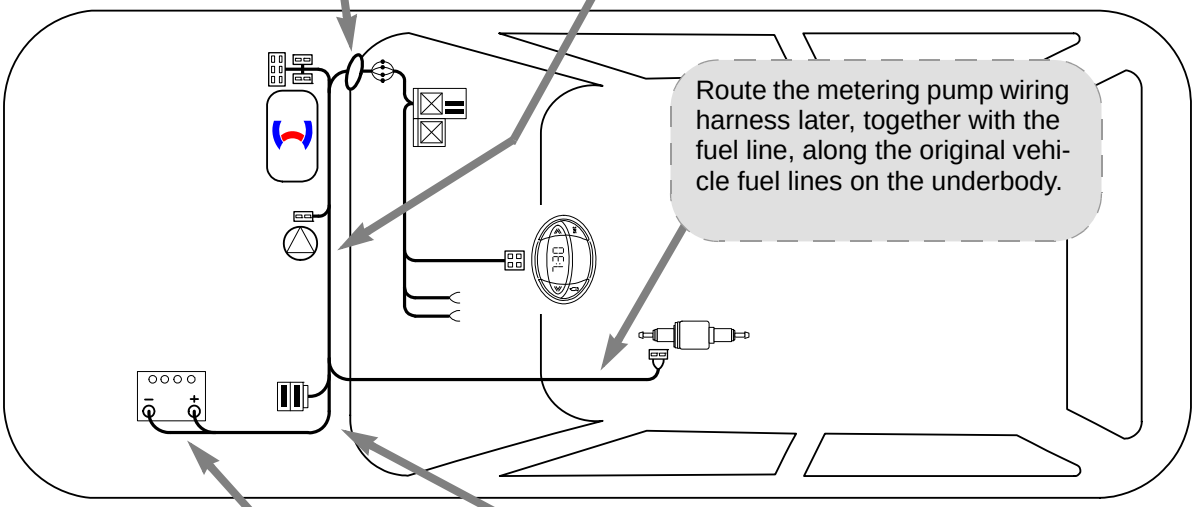
1 Wiring harness of fan controller
2 Heater control wiring harness



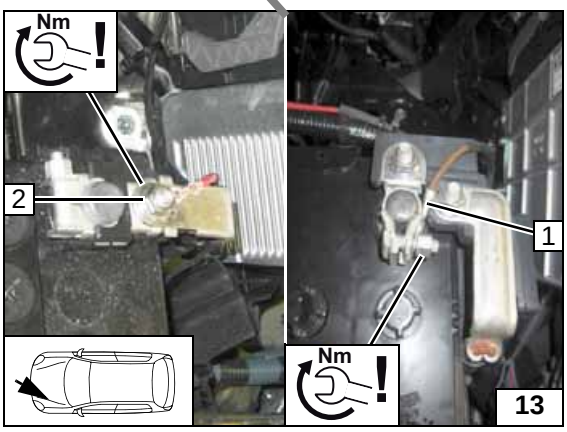
Wiring harness routing

1 Heater wiring harness, metering pump



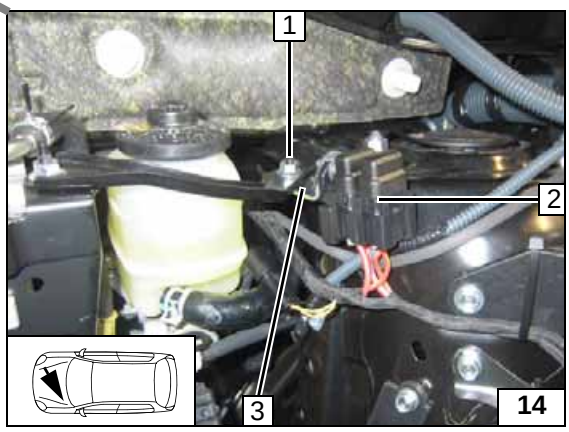


Wiring harness routing diagram



Positive and earth wire

1 Earth wire on negative battery terminal
2 Route positive wire in 10mm dia., 270mm long corrugated tube and connect to positive battery terminal

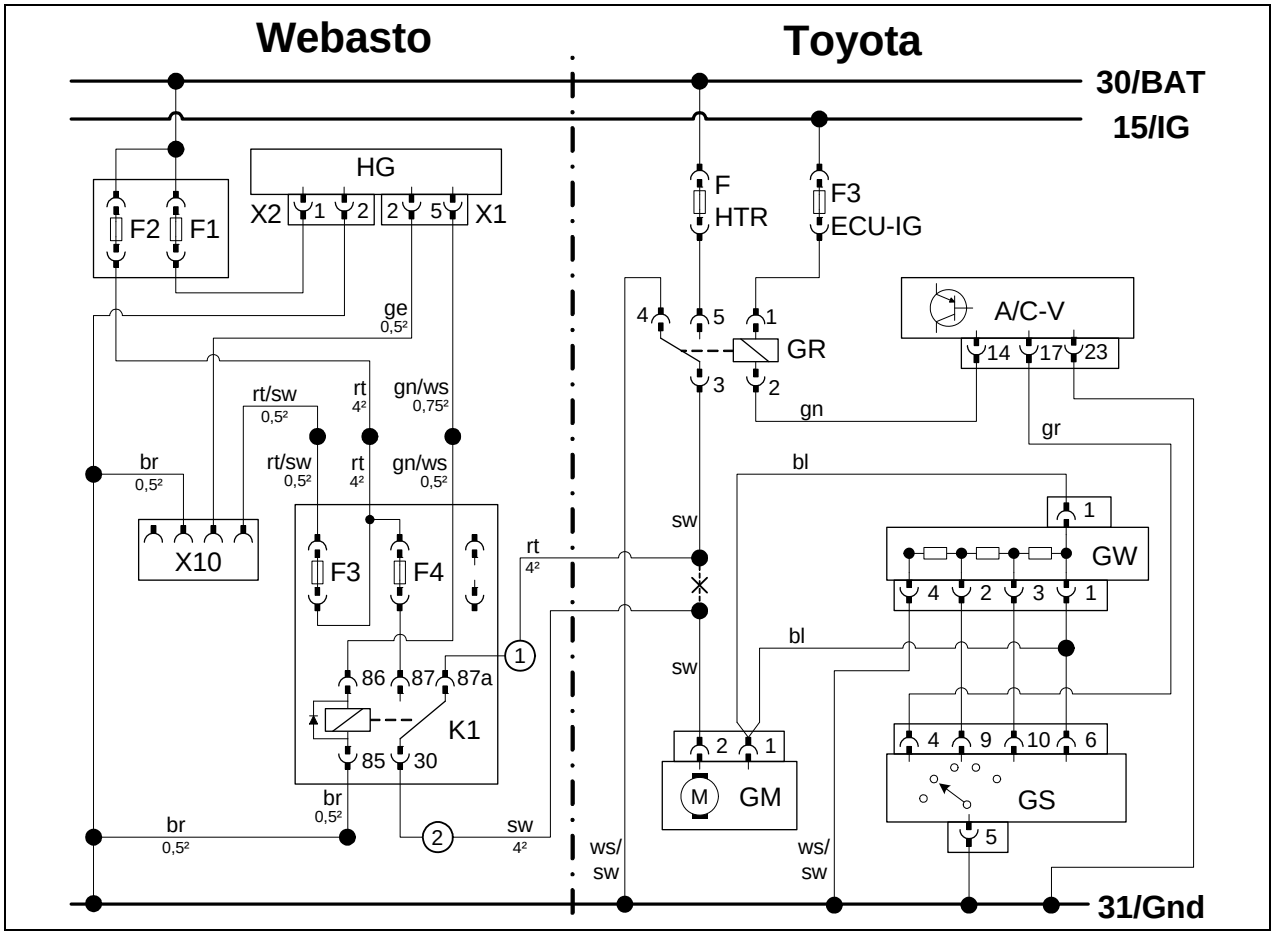


Engine compartment fuse holder

1 Original vehicle stud bolt, flanged nut
2 Fuses F1-2
3 Angle bracket

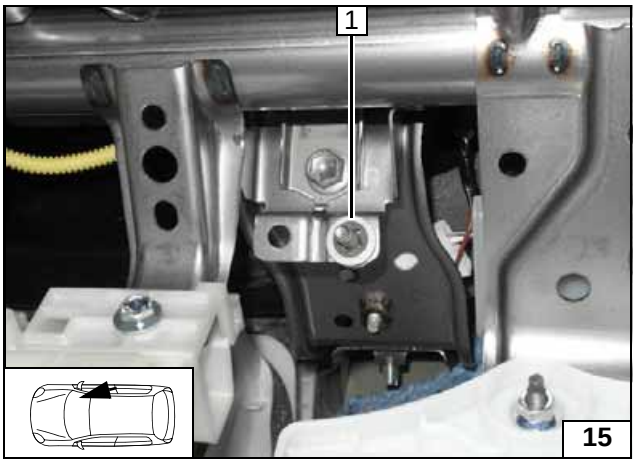
Manual Air-Conditioning Fan Controller

Wiring diagram



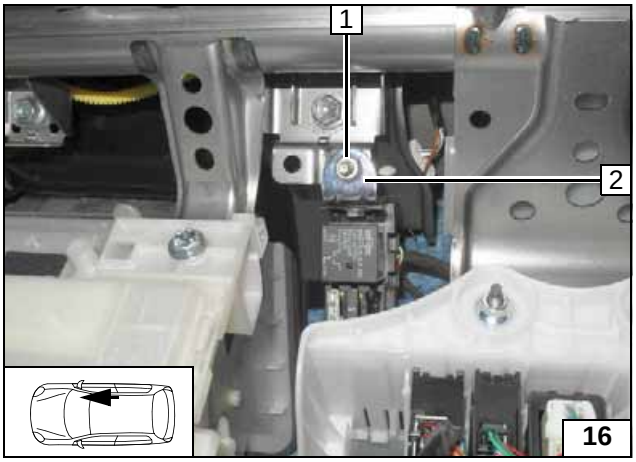
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F3 ECU-IG	7.5A fuse	rt	red
X1	6-pin heater connector			sw	black
X2	2-pin heater connector	F HTR	50A fuse	ge	yellow
F1	20A fuse	A/C-V	A/C booster	gn	green
F2	30A fuse	GR	Fan relay	bl	blue
X10	4-pin connector of heater control	GW	Fan resistor	ws	white
		GS	Fan switch	br	brown
F3	1A fuse	GM	Fan motor	gr	grey
F4	25A fuse				
K1	Fan relay				
				X	Cutting point
				Wiring colours may vary.	

Legend



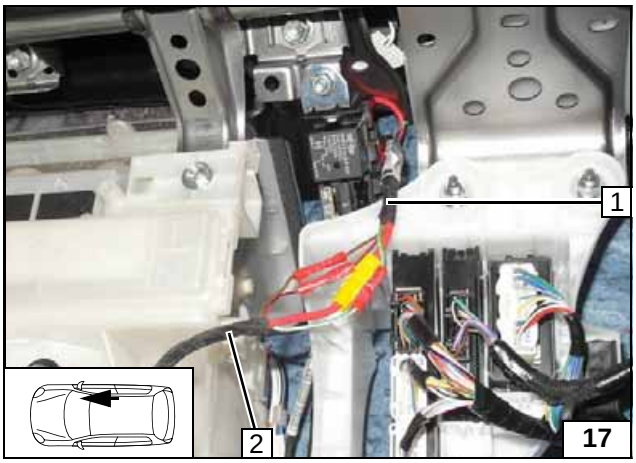
1 M6x20 bolt, large diameter washer [2x], pin lock, existing hole

Premounting bolt



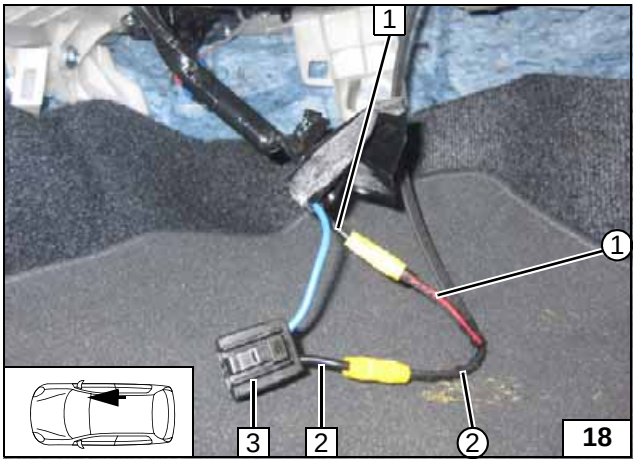
1 M6 flanged nut
2 Angle bracket

Installing passenger compartment relay and fuse holder



1 Passenger compartment relay and fuse holder wiring harness
2 Heater wiring harness

Connecting same colour wires of wiring harnesses



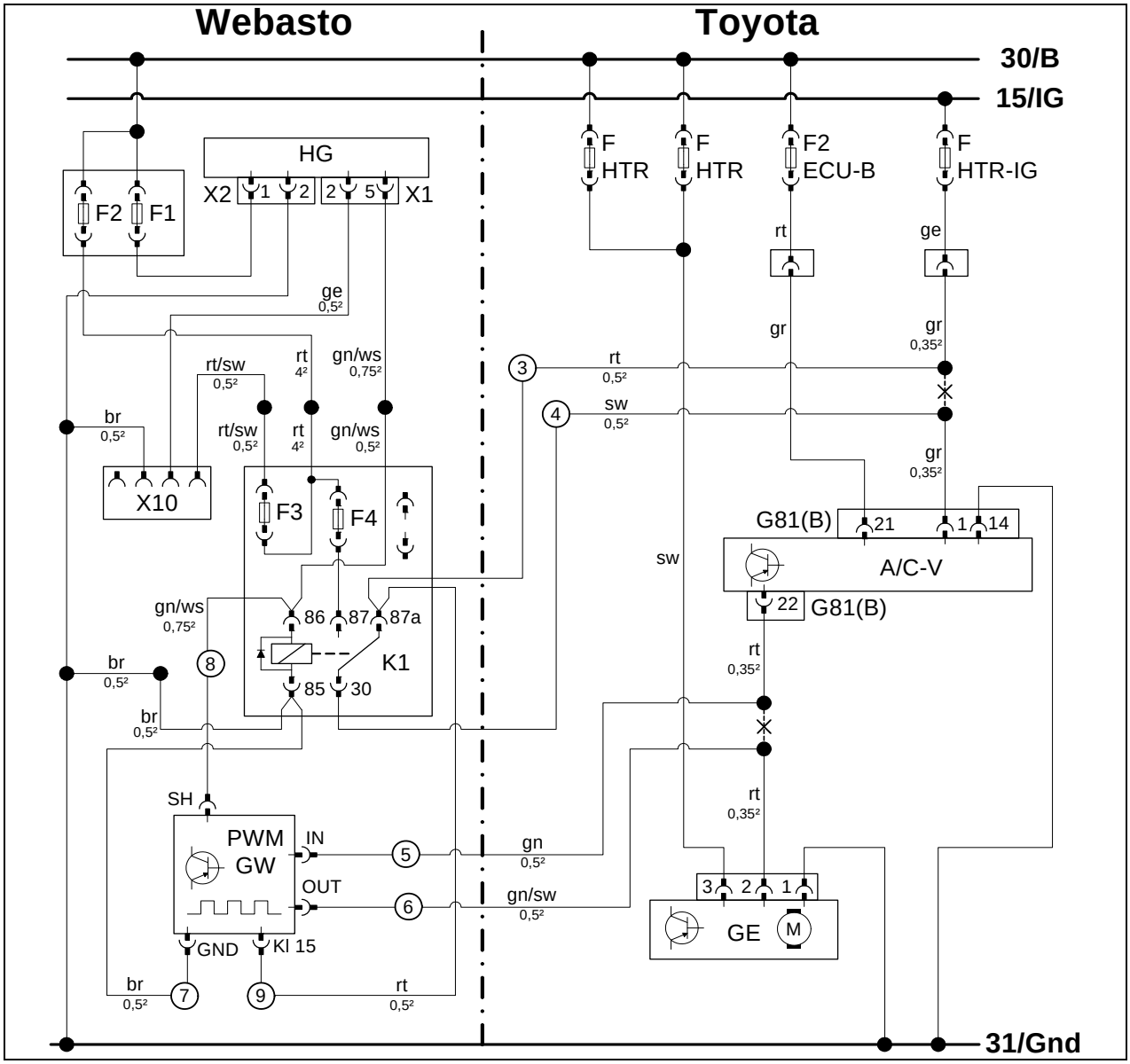
Connection to 2-pin connector **3** from the fan motor.

1 Black (sw) wire of fan relay
2 Black (sw) wire of 2-pin GM connector
① Red (rt) wire of K1/87a, fan wiring harness
② Black (sw) wire of K1/30, fan wiring harness

Connecting fan motor

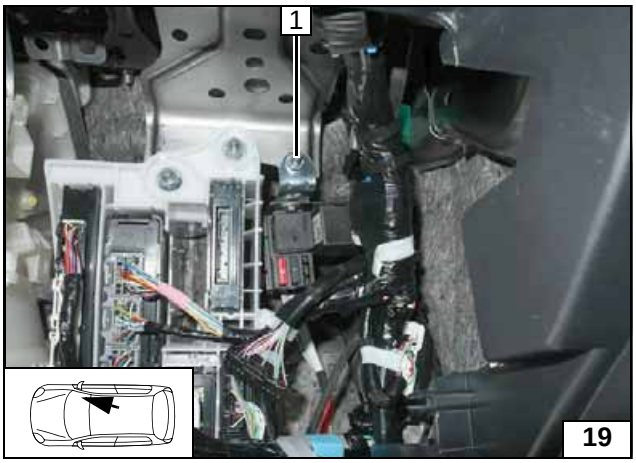
Automatic Air-Conditioning Fan Controller

Wiring diagram



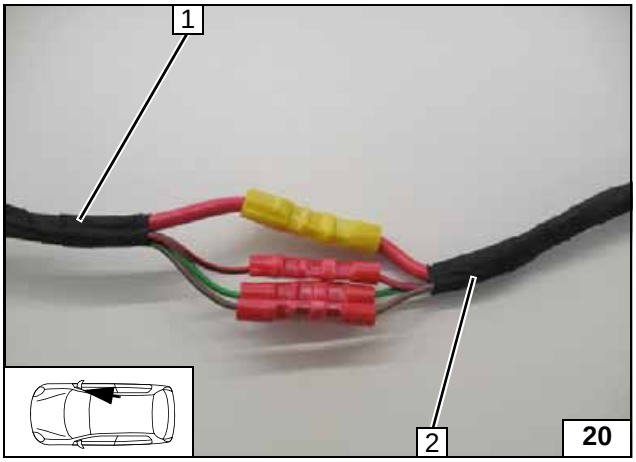
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F HTR	50A fuse [2x]	rt	red
X1	6-pin heater connector	F2 ECU-B	10A fuse	sw	black
X2	2-pin heater connector			ge	yellow
F1	20A fuse	F HTR-IG	7.5A fuse	gn	green
F2	30A fuse			gr	grey
X10	4-pin connector of heater control	AC/V	A/C booster	ws	white
		G81(B)	40-pin connector of AC/V	br	brown
F3	1A fuse	GE	Fan unit		
F4	10A fuse				
PWM GW	PWM Gateway				
K1	Fan relay				
PWM Gateway settings:					
Duty cycle:	60%				
Frequency:	500Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low side			Wiring colours may vary.	

Legend



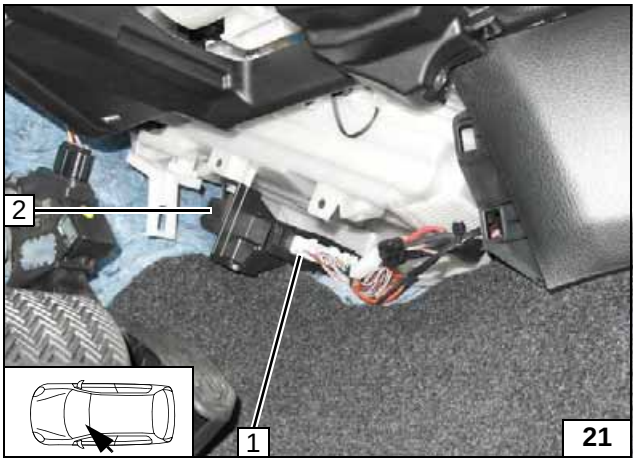
1 Original vehicle stud bolt, flanged nut

Installing passenger compartment relay and fuse holder



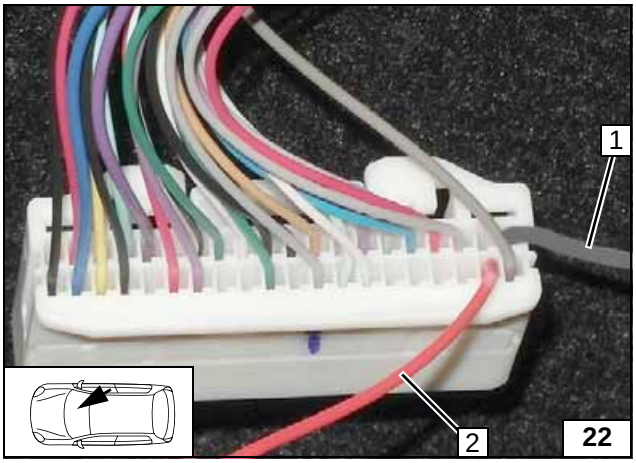
1 Passenger compartment relay and fuse holder wiring harness
2 Heater wiring harness

Connecting same colour wires of wiring harnesses



1 40-pin connector G81(B)
2 AC booster

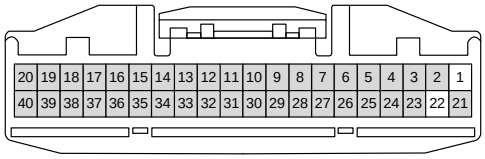
G81(B) connector socket



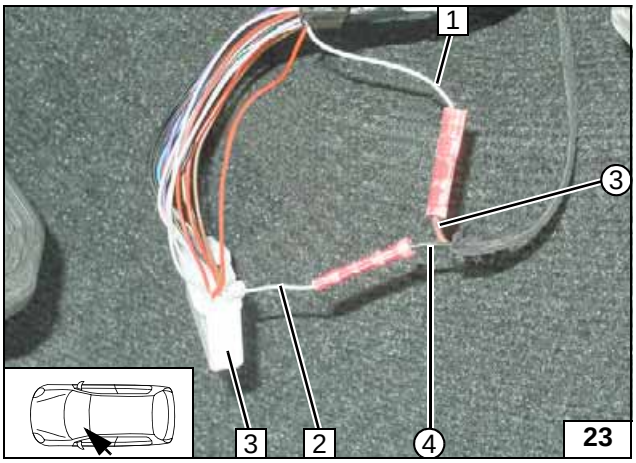
Disconnect the 40-pin connector G81(B) **3** from the A/C booster.

1 Grey (gr) wire of connector G81 (B) Pin 1
2 Red (rt) wire of connector G81 (B) Pin 22

View of G81(B) connector from wire side:

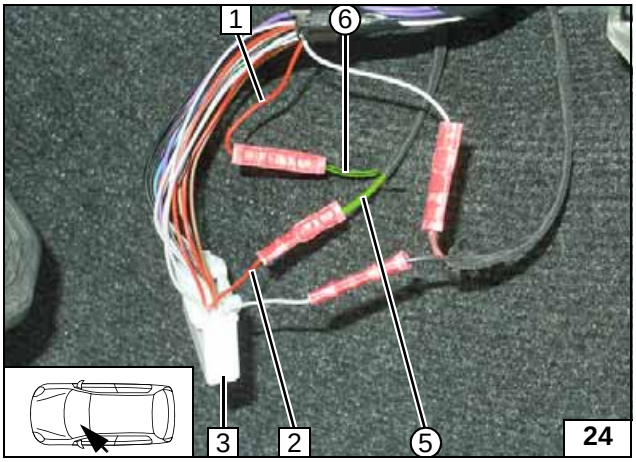


View of G81(B) connector



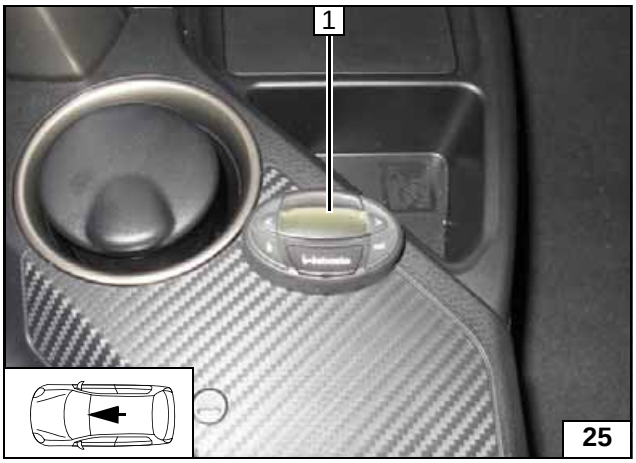
1 Grey (gr) wire of HTR IG fuse
2 Grey (gr) wire of connector G81(B) A/C-V Pin 1
3 Connector G81(B) A/C-V
③ Red (rt) wire of K1/87a from AC booster wiring harness
④ Black (sw) wire of K1/30 from AC booster wiring harness

Connecting A/C booster



1 Red (rt) wire of GE pin 2
2 Red (rt) wire of connector G81(B) A/C-V Pin 22
3 Connector G81(B) A/C-V
⑤ Green (gn) wire from PWM GW/IN of wiring harness of PWM control
⑥ Green/black (gn/sw) wire from PWM GW/OUT of wiring harness of PWM control

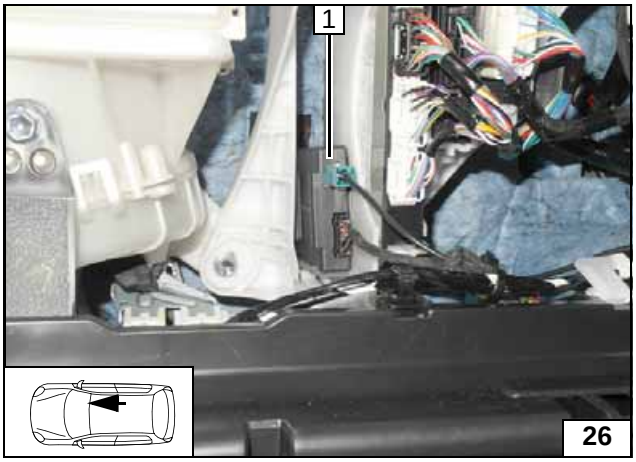
Connecting A/C booster



Digital Timer

1 Digital timer

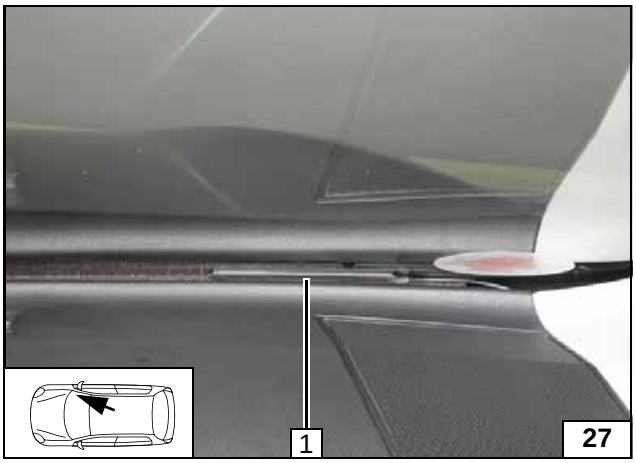
Installing digital timer



Remote Option (Telestart)

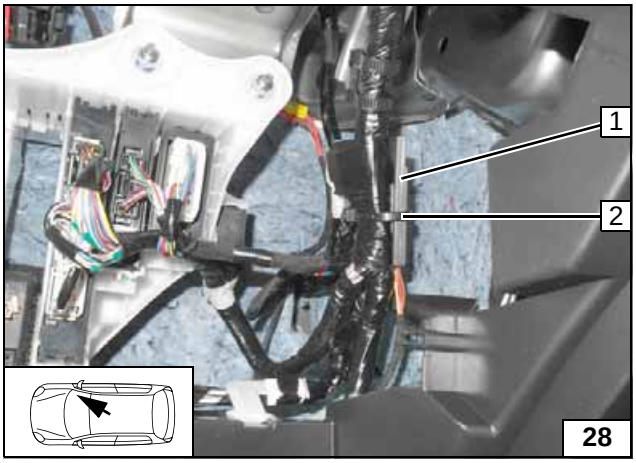
Fasten receiver **1** with double-sided adhesive tape.

Installing receiver



1 Aerial

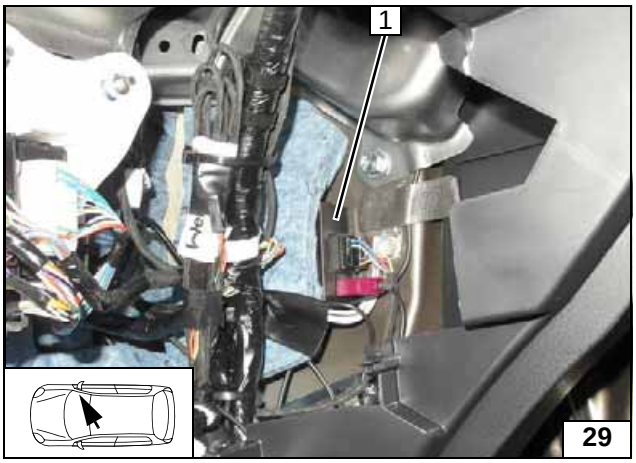
Installing aerial

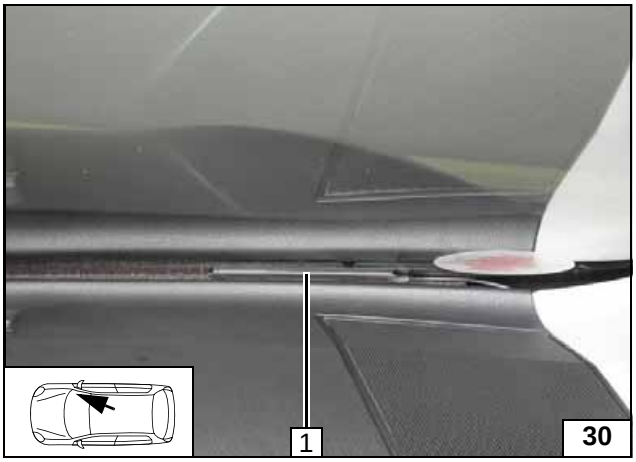


Temperature sensor T100 HTM

Fasten temperature sensor **1** to original vehicle wiring harness using cable tie **2**.

Installing temperature sensor





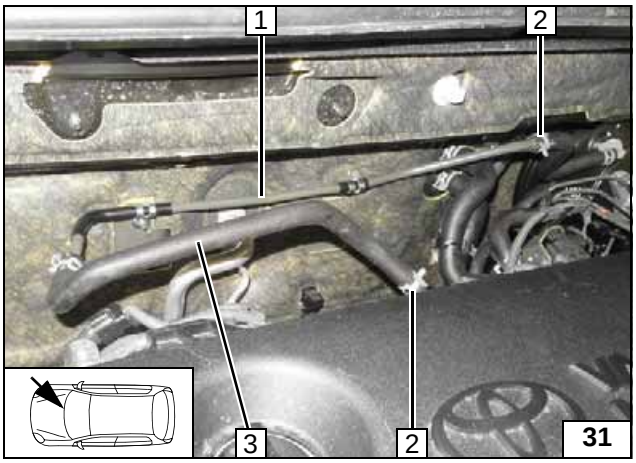
ThermoCall Option

Installing receiver

Fasten receiver **1** behind the insulation with double-sided adhesive tape.

Installing aerial

1 Aerial (optional)

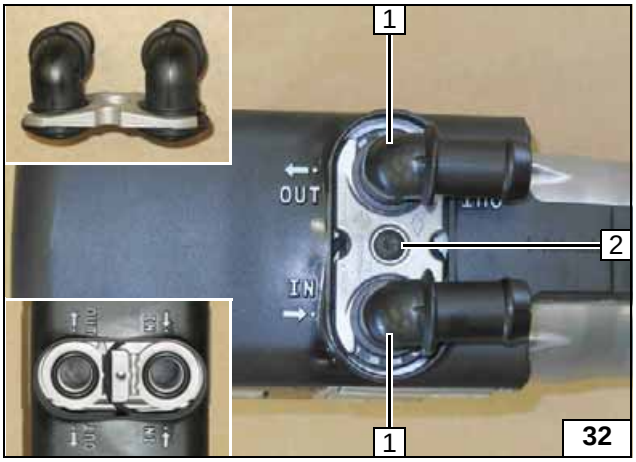


Dismantling the Vacuum Line

Remove vacuum line **1** with hose **3** (will be modified and remounted, see section ‘Mounting the Vacuum Line’)!

2 Remove original vehicle clamps [2x], will be reused

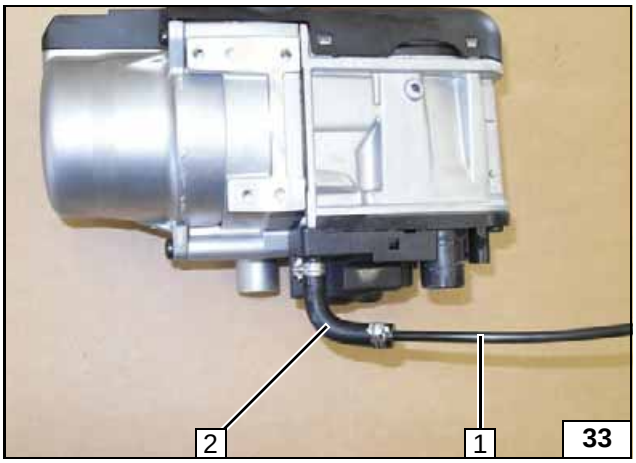
Removing vacuum line



Preparing Heater

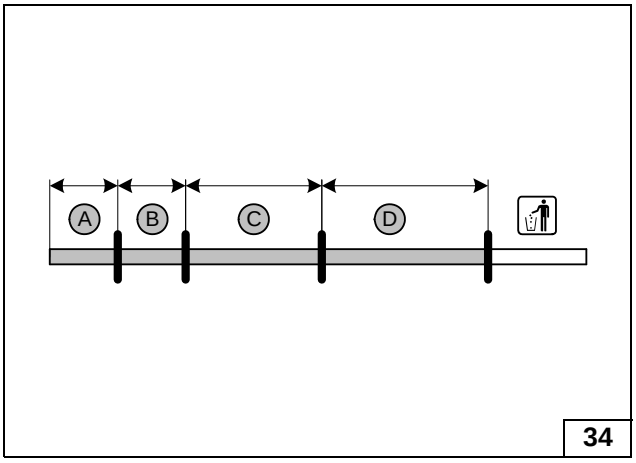
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



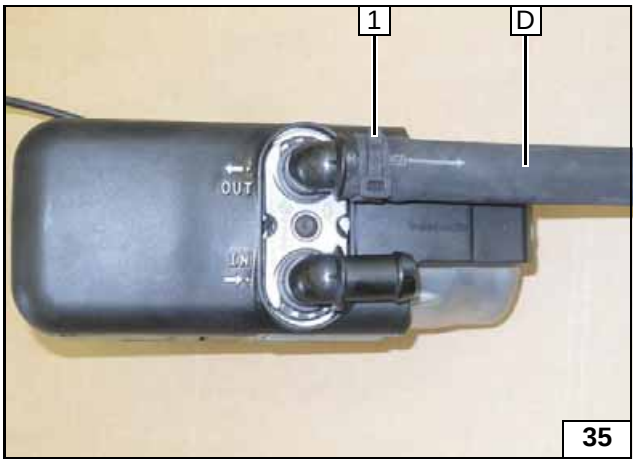
1 Fuel line
2 90° moulded hose, 10mm dia. clamp [2x]

Premounting fuel line on heater



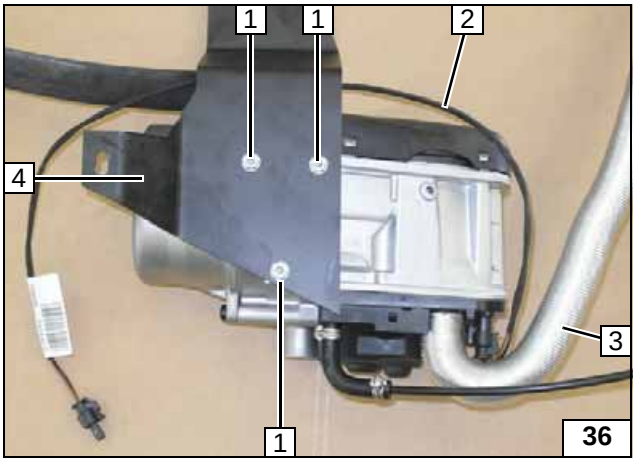
A = 70
B = 65
C = 340
D = 420

Cutting hoses to length



1 25mm dia. spring clip

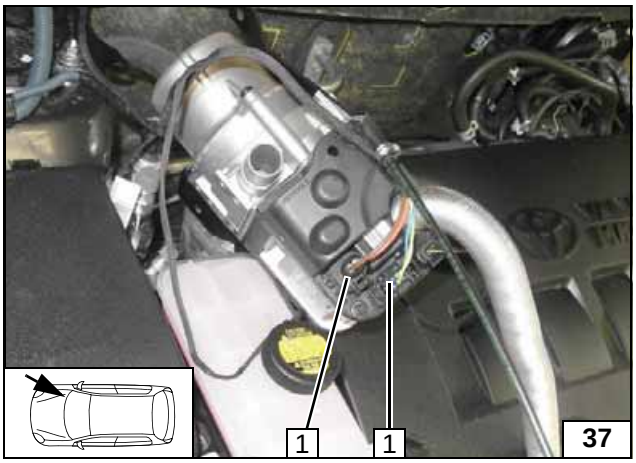
Premounting hose D



1 5x13 self-tapping bolt [3x]
2 Install wiring harness of circulating pump
3 Combustion air pipe
4 Bracket

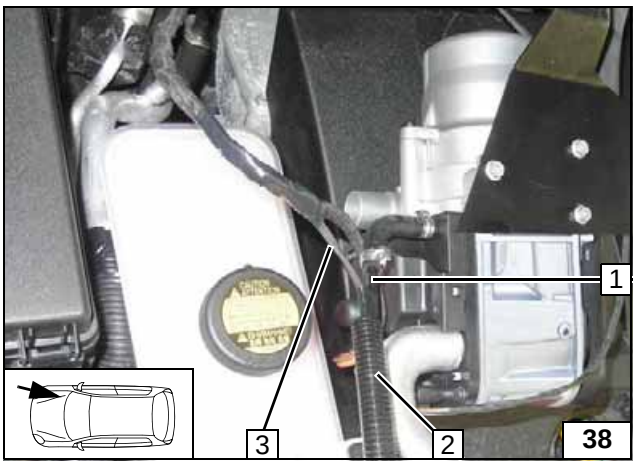
Premounting heater

Installing Heater



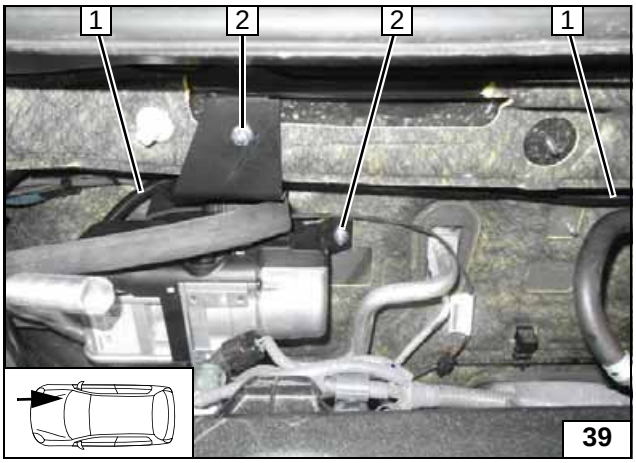
1 Heater wiring harness [2x]

Installing heater wiring harness



Pull fuel line **1** and metering pump wiring harness **3** into 10 mm dia. corrugated tube **2**.

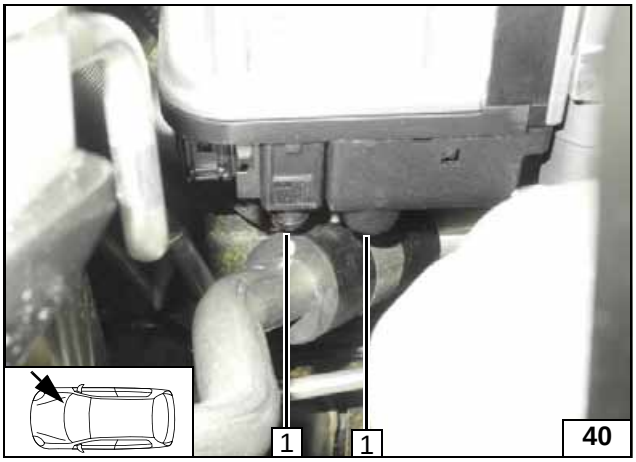
Installing corrugated tube



Route fuel line and wiring harness of metering pump in corrugated tube **1** to the left vehicle side. Align heater bracket in the oblong holes. Ensure sufficient distance from the A/C lines, see following figure.

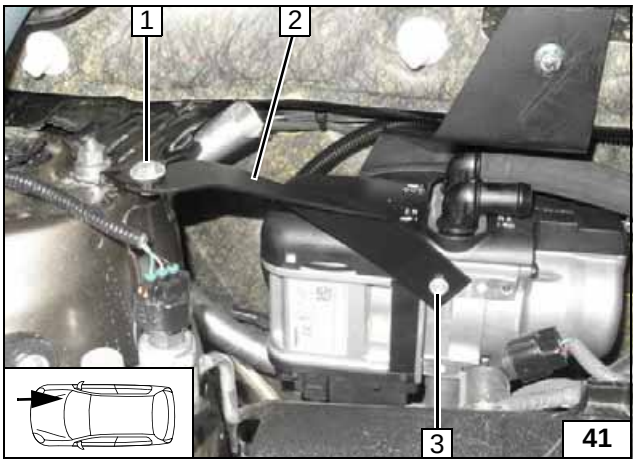
2 Original vehicle stud bolt, flanged nut [2x each]

Installing heater



Ensure sufficient distance (at least 5 - 10 mm) between heater and A/C lines at position **1**, move the bracket in the oblong holes if necessary.

Aligning heater



1 M6x20 bolt, large diameter washer [2x], flanged nut, existing hole
2 Strut with oblong hole at position 1
3 5x13 self-tapping bolt

Installing heater

Fuel

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

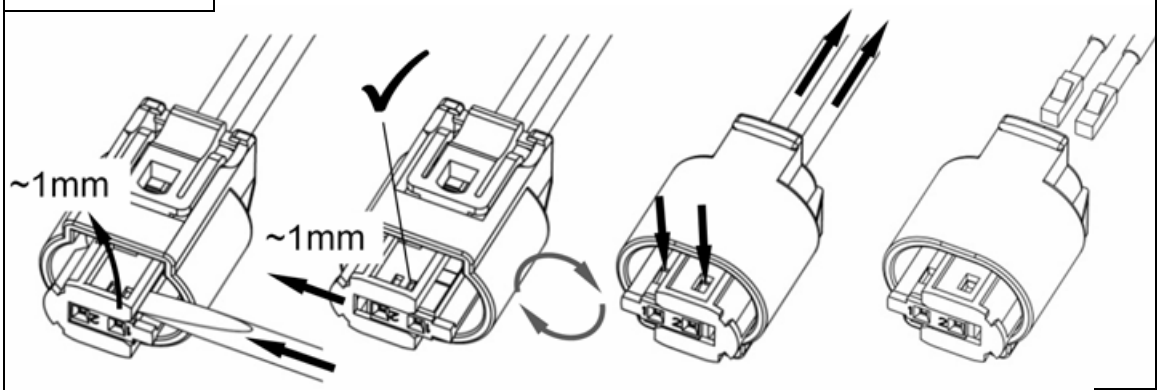
Catch any fuel running off in an appropriate container.

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.

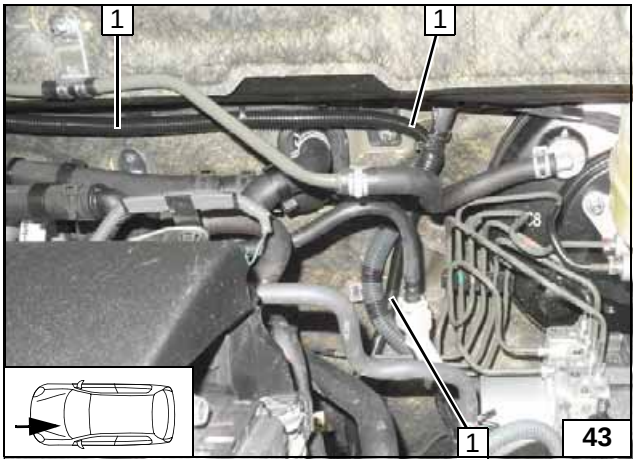
The fuel line and wiring harness are routed to the metering pump as shown in the wiring harness routing diagram.

Dismantling metering pump connector

Connector X7



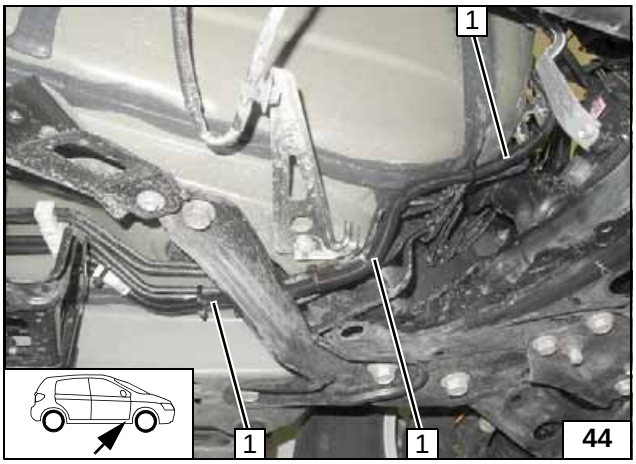
42



43

Route fuel line and wiring harness of metering pump in corrugated tube **1** along original vehicle lines to underbody.

Routing lines

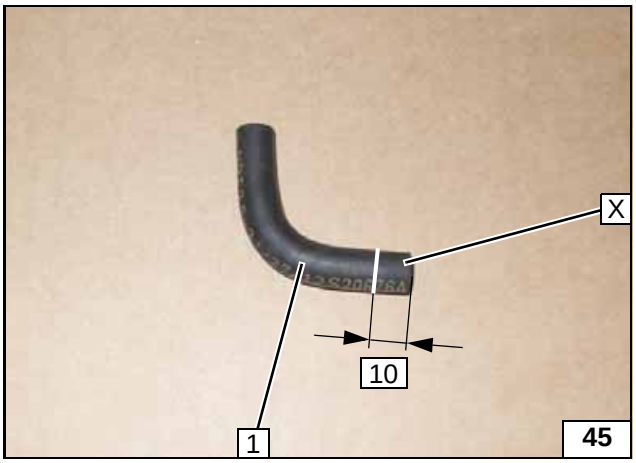


44

Route fuel line and wiring harness of metering pump in corrugated tube**1** to installation location of metering pump.

Routing lines

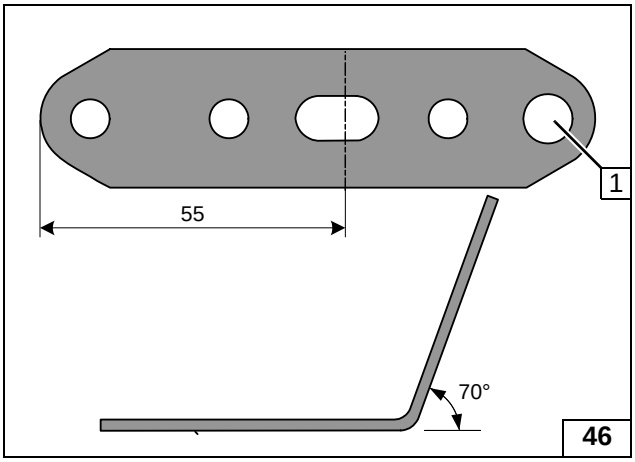
Shortening moulded hose



1 90° moulded hose

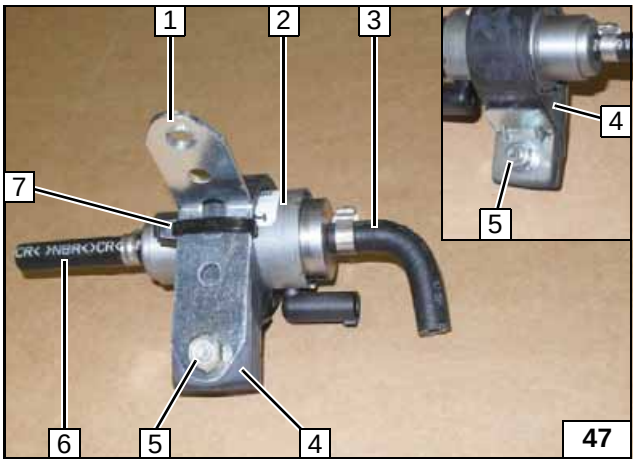
X = 

Preparing perforated bracket



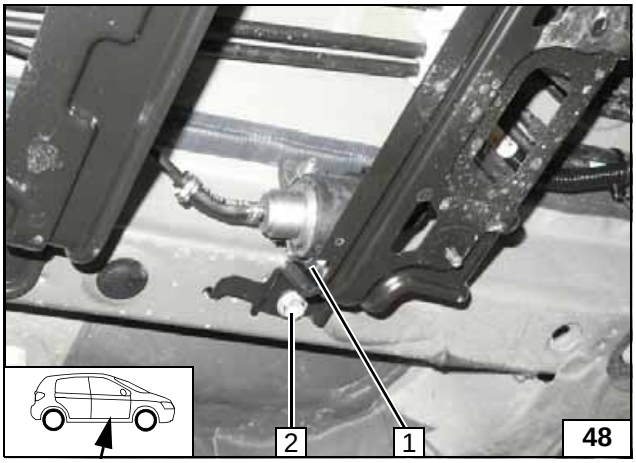
1 Drill out hole to 8.5 mm dia.

Premounting metering pump



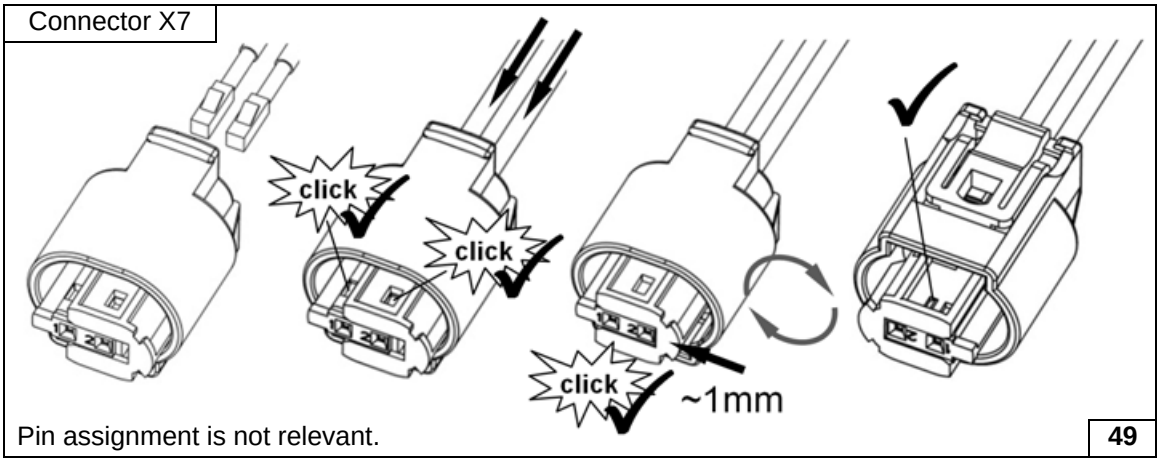
1 Perforated bracket
2 Metering pump
3 90° moulded hose, 10 mm dia. clamp
4 Metering pump mount
5 M6x25 bolt, support angle bracket, flanged nut
6 Hose section, 10 mm dia. clamp
7 Cable tie

Installing metering pump



1 Perforated bracket
2 Original vehicle bolt

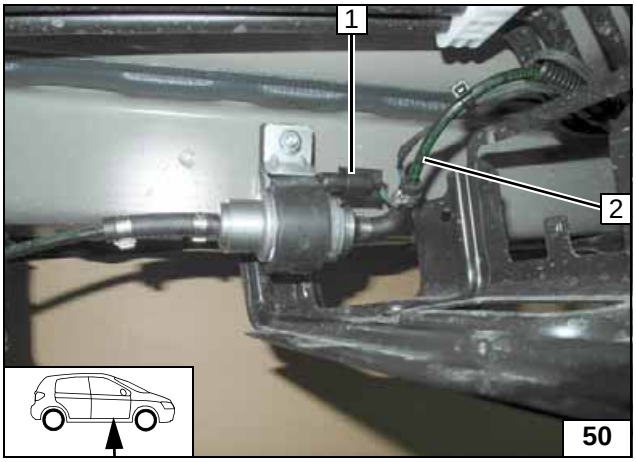
Connector X7



Pin assignment is not relevant.

49

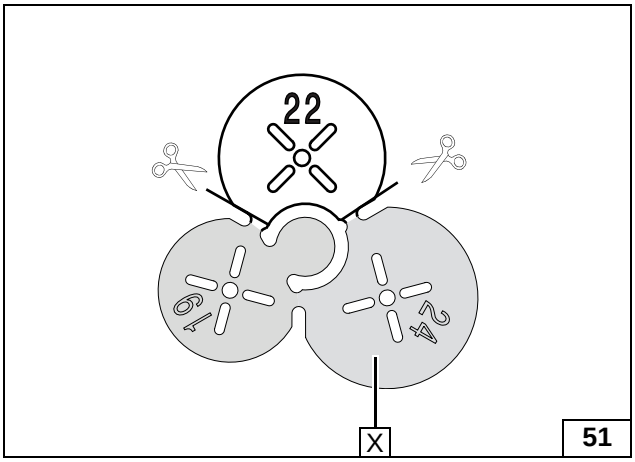
Completing metering pump connector



50

1 Metering pump wiring harness, connector X7 mounted
2 Fuel line of heater, 10 mm dia. clamp

Connecting metering pump

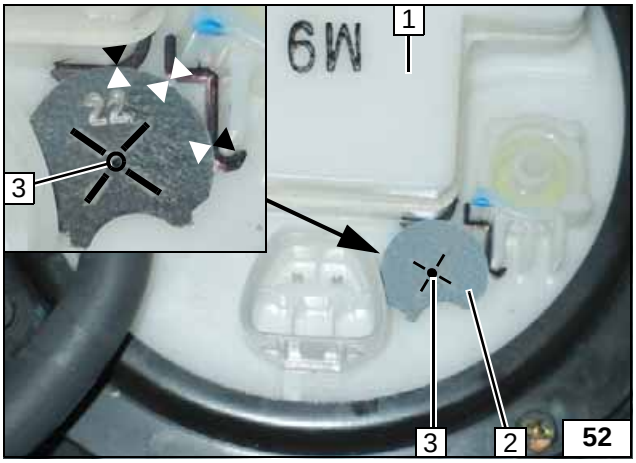


51

Installing FuelFix

X =

Preparing drilling template



52

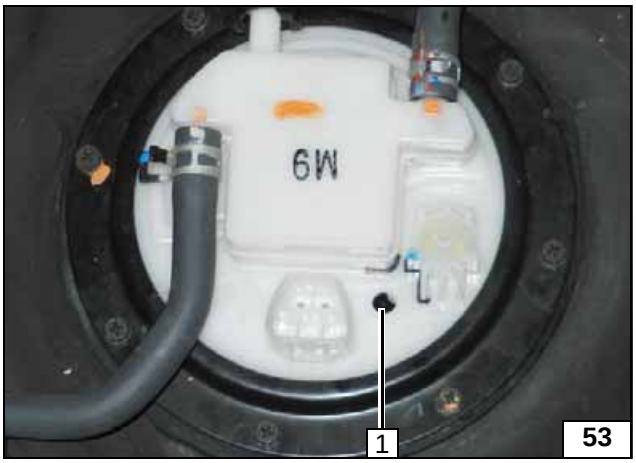
Remove the fuel tank according to the manufacturer's instructions.

Work steps F1 and F2.

Lay template **2** on fuel tank sending unit **1** as shown.

3 Hole pattern

Copying hole pattern



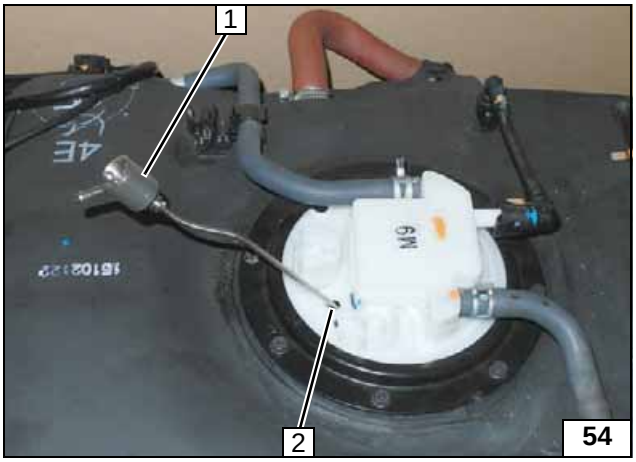
53

Work step F3.

1 Hole made with provided drill

Catch metal shavings!

Hole for FuelFix



54

Work steps F4 and F5.

Bend FuelFix **1** according to template and cut to length.
Insert into hole **2**.

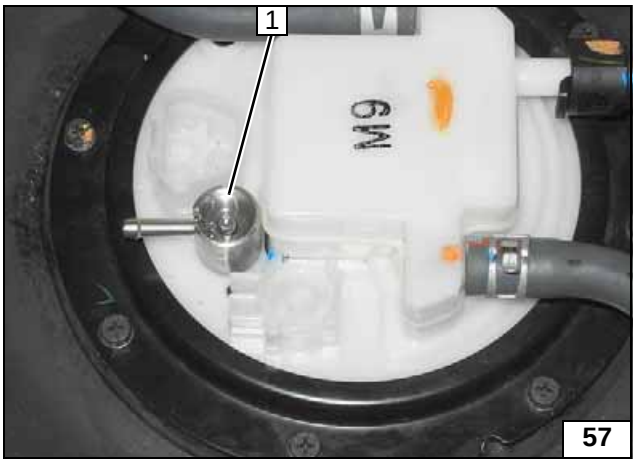
Inserting FuelFix

55

Inserting FuelFix

56

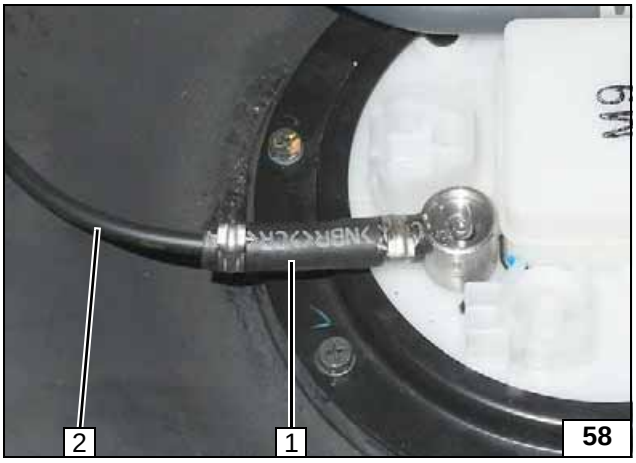
Inserting FuelFix



Work steps F5.3 and F5.4.

Align FuelFix **1** as shown.

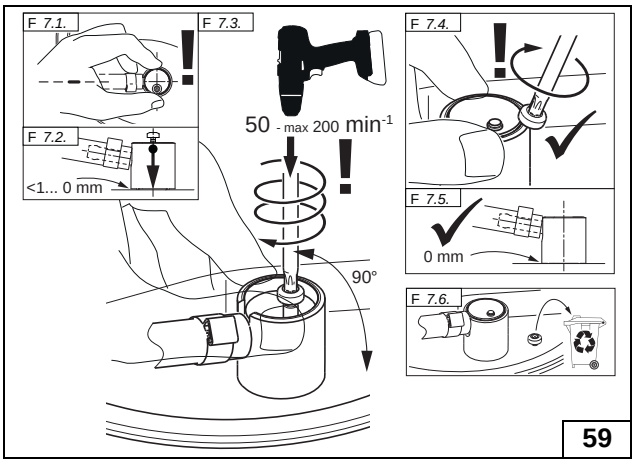
Aligning FuelFix



Work step F6.

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

Connecting fuel line



Work step F7.

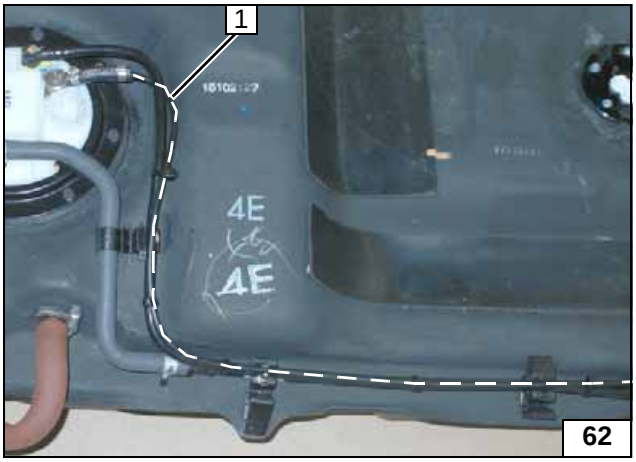
Mounting FuelFix

Work step F8.

Ensuring firm seating of FuelFix

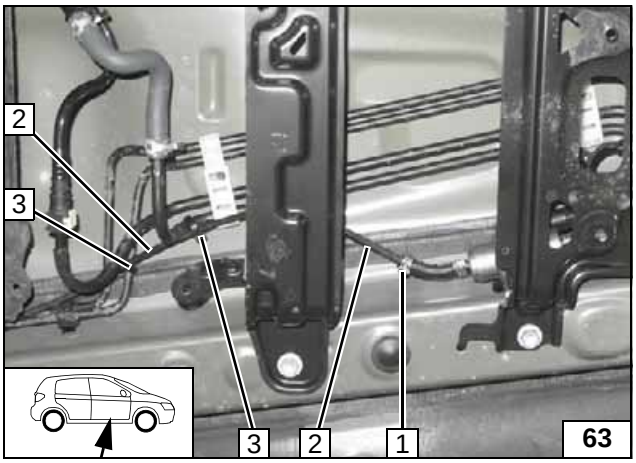
1 Fuel line of FuelFix
2 Cable tie for strain relief

Securing fuel line



Route fuel line of FuelFix **1** along original vehicle fuel line and fasten with cable ties.

Routing fuel line



Install fuel tank in accordance with manufacturer's instructions. Check the position of the components; adjust if necessary. Check that they have freedom of movement.

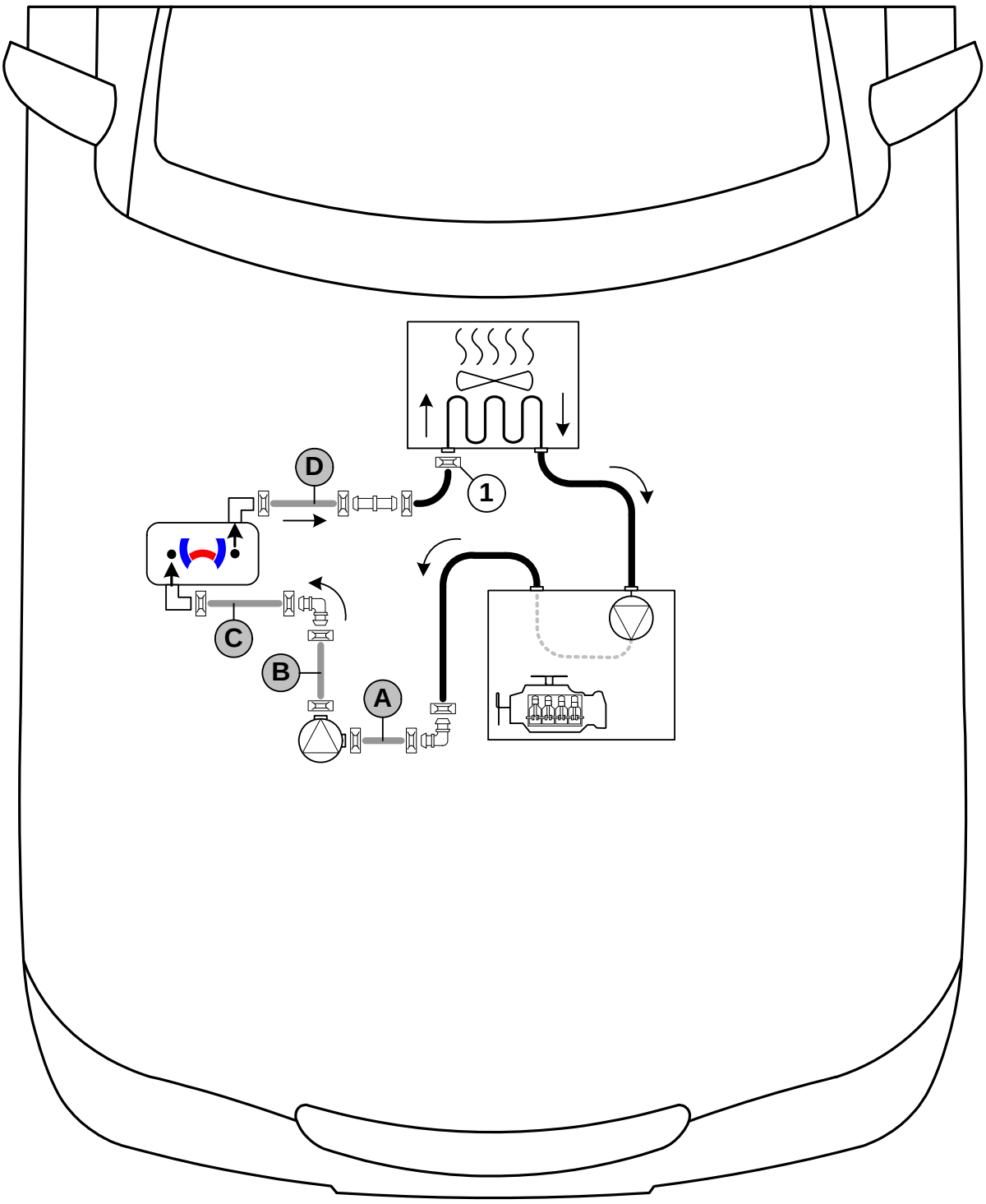
1 10 mm dia. clamp
2 Fuel line of FuelFix
3 Cable tie [2x]

Connecting metering pump

Coolant Circuit

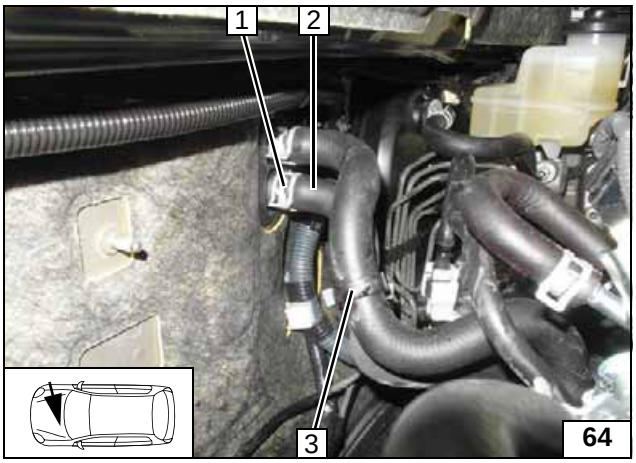
Any coolant running off should be collected in an appropriate container. Route hoses kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that other hoses cannot be damaged. The heater must be filled with coolant when installing the hoses.

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



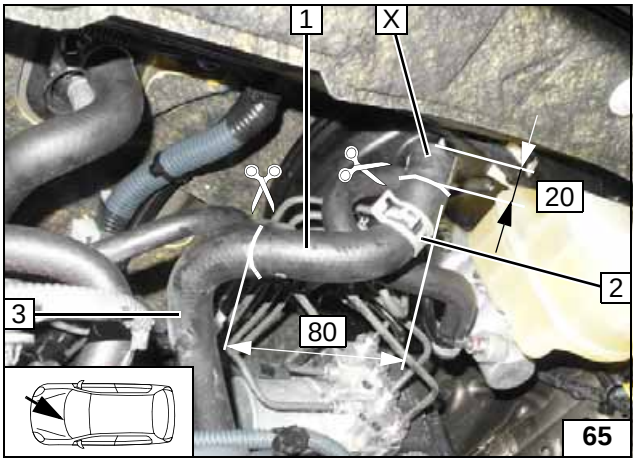
Hose routing diagram

All spring clips = 25 mm dia. All connecting pipes and = 18x18 mm dia.
1 = Original vehicle spring clip .



Detach hose bracket **3**. Disconnect hose of engine outlet / heat exchanger inlet **2** from connection piece of heat exchanger inlet. Spring clip **1** will be reused.

Cutting point

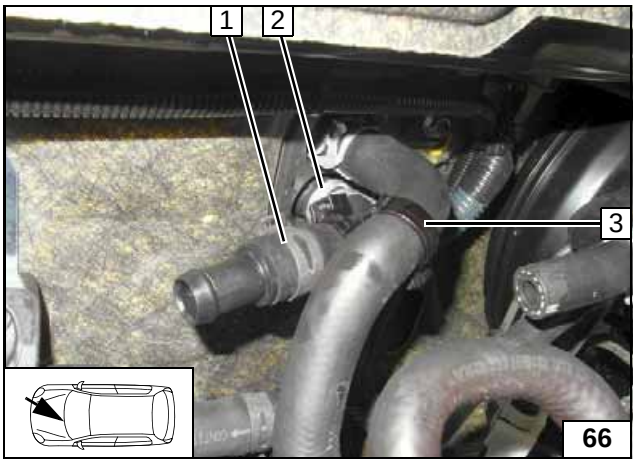


Cut the engine outlet / heat exchanger inlet hose **1** at the marking. Spring clip **2** will be reused.

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

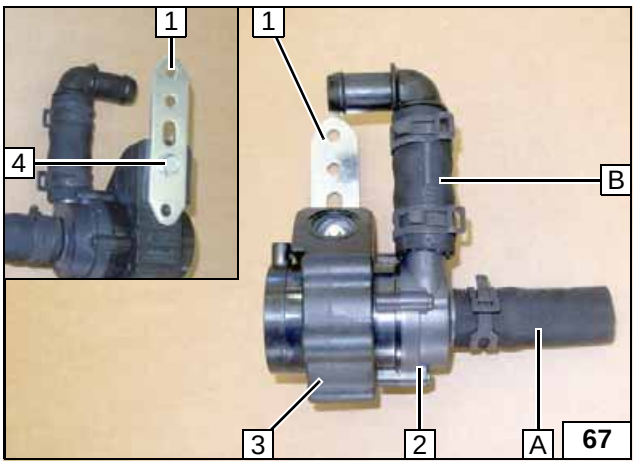
X =

Cutting point



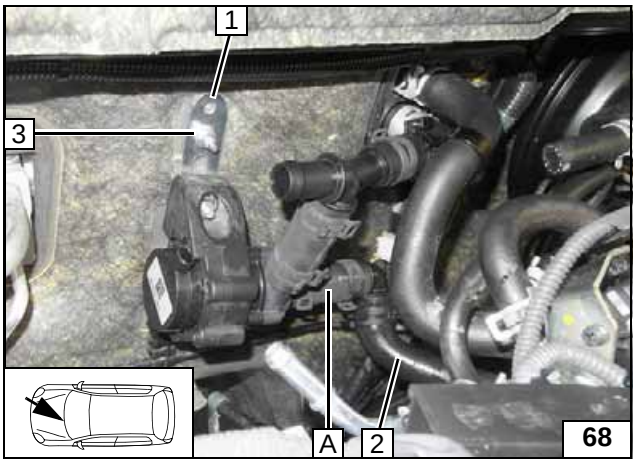
1 Hose section of heat exchanger inlet
2 Original vehicle spring clip
3 Original vehicle hose bracket installed

Connecting heat exchanger inlet



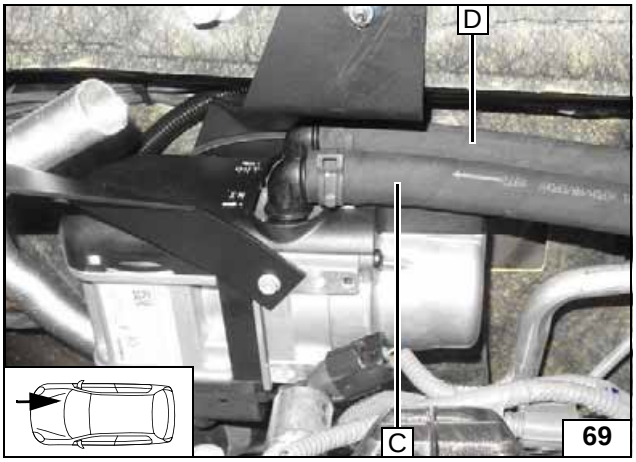
1 Perforated bracket
2 Circulating pump
3 Circulating pump mount
4 M6x25 bolt, flanged nut

Premounting circulating pump

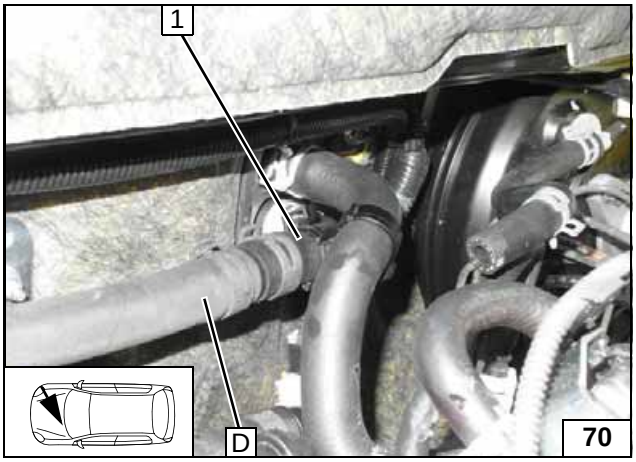


1 Perforated bracket
2 Engine outlet hose section
3 M6 flanged nut, existing stud bolt

Mouting circulating pump, connection of engine outlet

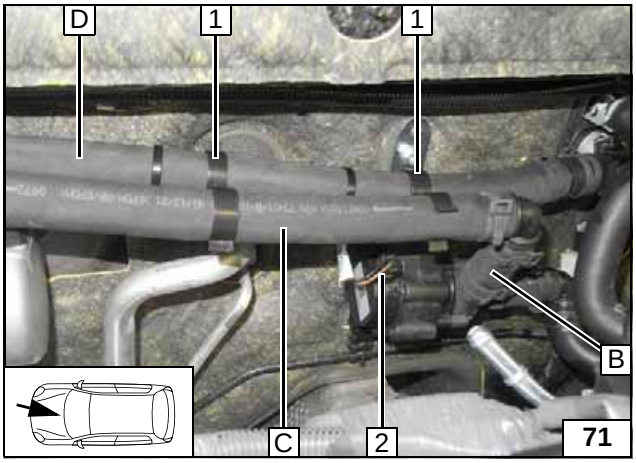


Connecting heater



1 Hose section of heat exchanger inlet

Connecting heat exchanger inlet



Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.

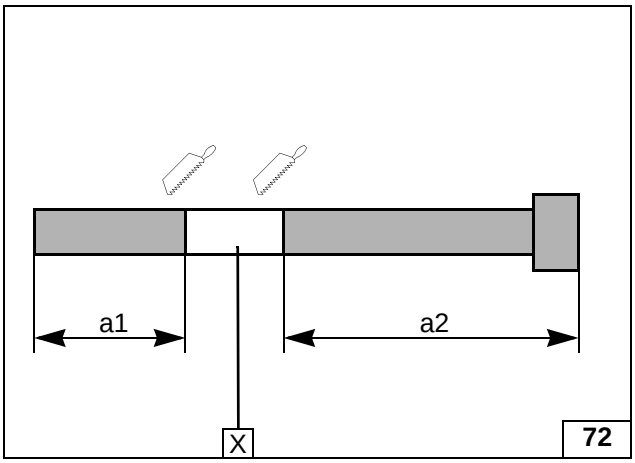
1 25x25mm hose bracket [2x]
2 Circulating pump wiring harness

Connecting circulating pump

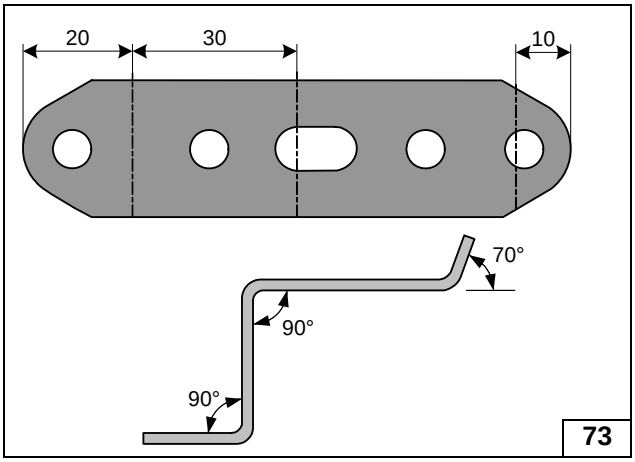
Exhaust Gas

a1 = 180
a2 = 480

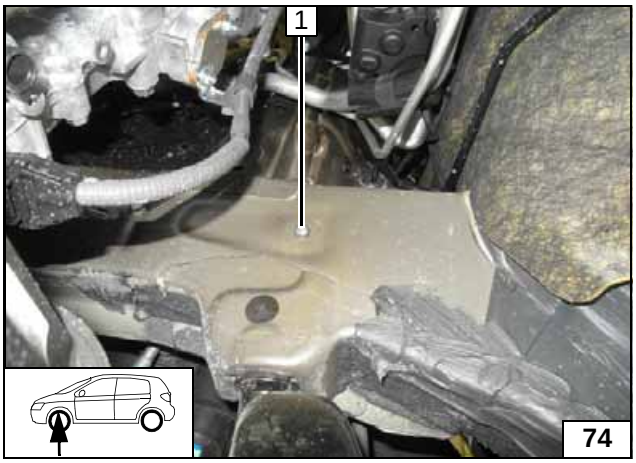
X =



Preparing exhaust pipe



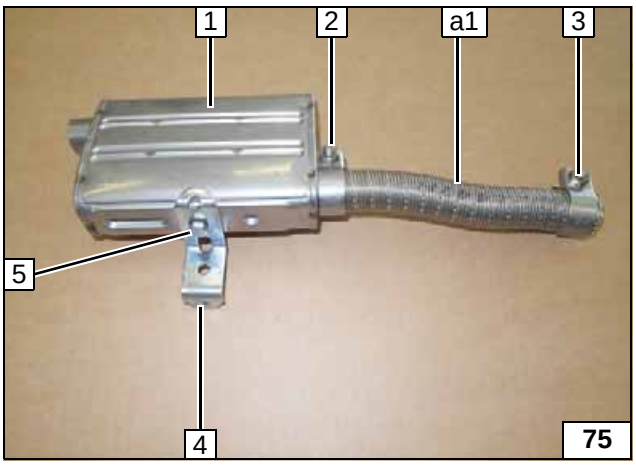
Preparing perforated bracket



Remove sticker at position **1**.

1 Drill out hole to 9.1mm dia.; rivet nut

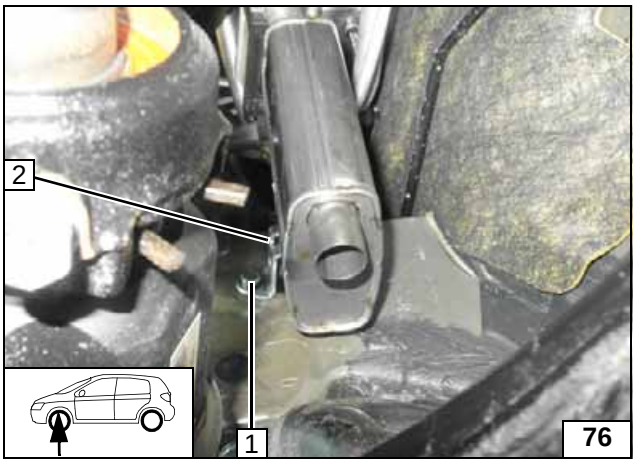
Installing rivet nut



Tighten hose clamp **3** until it cannot turn anymore.

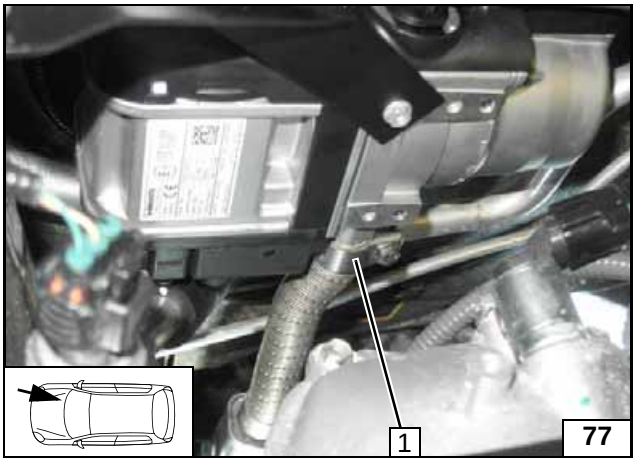
1 Silencer
2 Hose clamp
4 Perforated bracket
5 M6x16 bolt, spring lockwasher

Premounting silencer



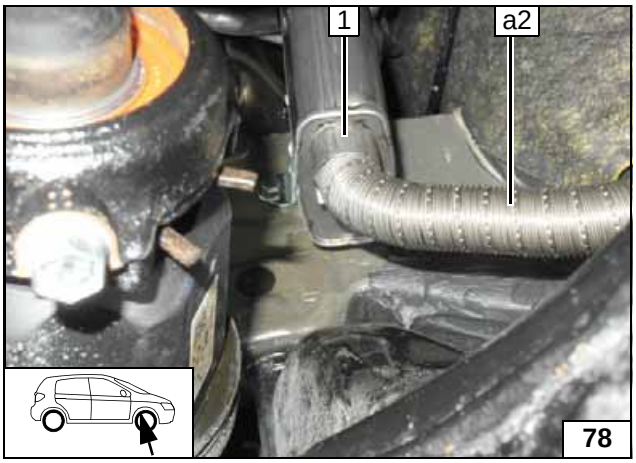
1 M6x20 bolt, spring lockwasher
2 Perforated bracket

Installing silencer



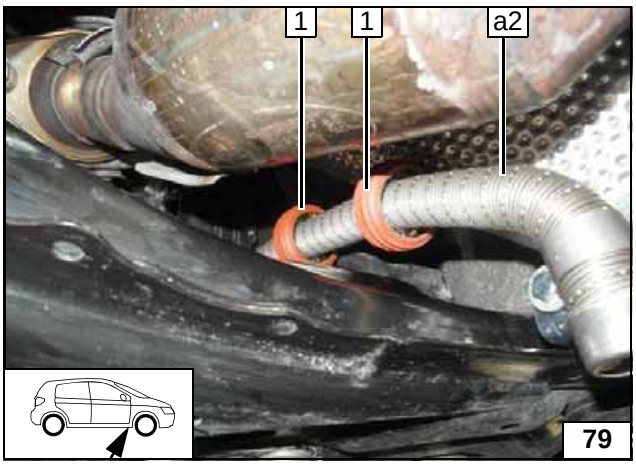
1 Tighten hose clamp

Installing exhaust pipe a1



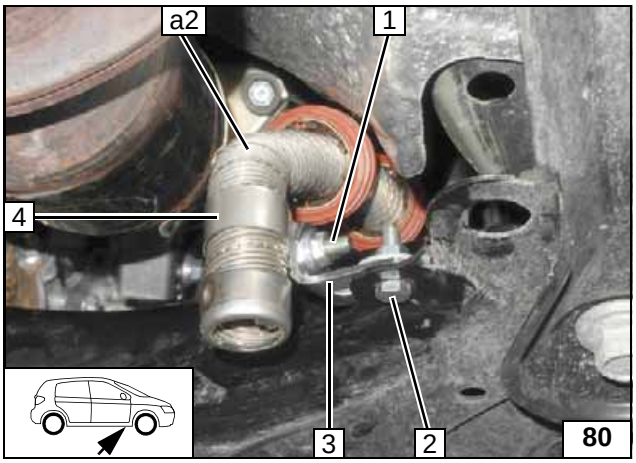
1 Hose clamp

Installing exhaust pipe a2



Slide spacer bracket **1** [2x] onto exhaust pipe **a2** and align with cross member and heat guard plate.

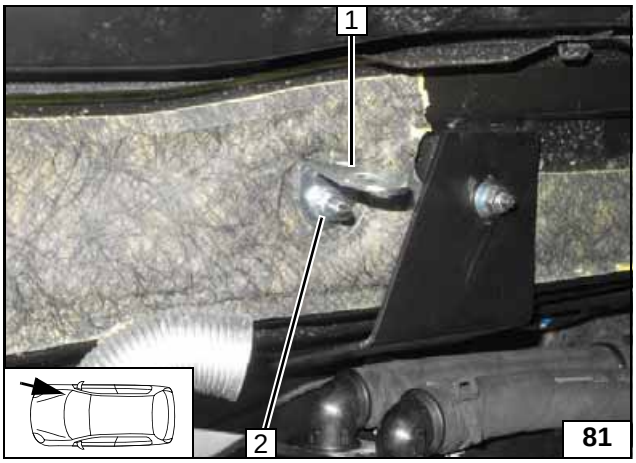
Installing exhaust pipe a2



Ensure sufficient distance from neighbouring components (min. 20mm), correct if necessary.

1 M6x20 bolt, flanged nut
2 M6x20 bolt, large diameter washer, flanged nut, existing hole
3 Angle bracket
4 P-clamp

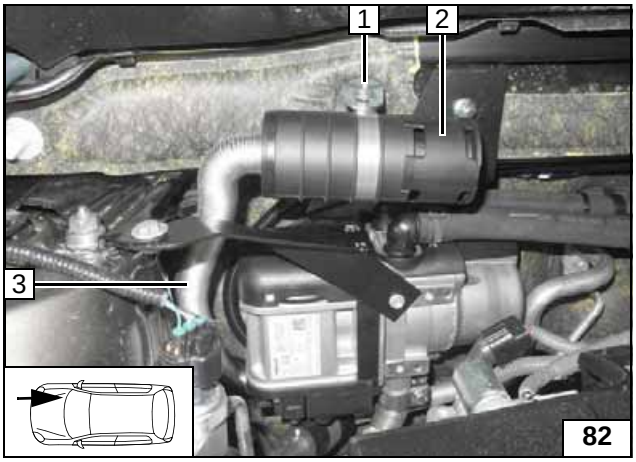
Fastening exhaust pipe a2



Combustion Air

1 Angle bracket
2 M6 flanged nut, existing stud bolt

Installing angle bracket



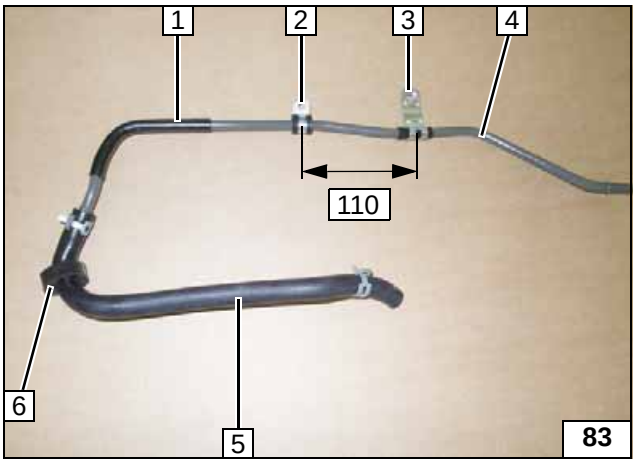
1 M5x16 bolt, 51 mm dia. clamp, large diameter washer [2x], nut.
2 Silencer
3 Combustion air pipe

Installing silencer

Mounting Vacuum Line

Clamp at position **1** removed.

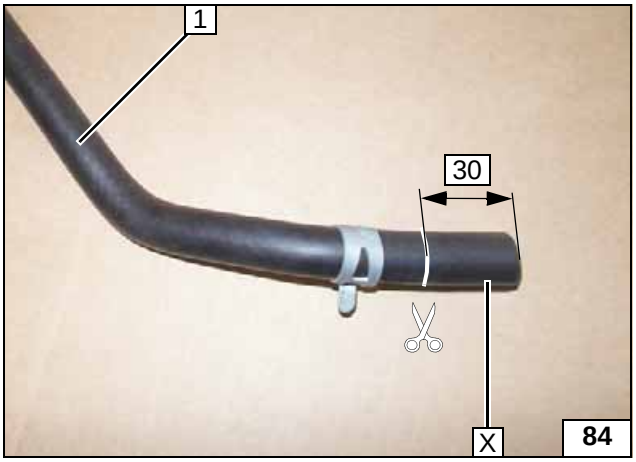
2 10 mm dia. rubber-coated p-clamp
3 Original vehicle clamp, bent straight
4 Vacuum line
5 Hose
6 Slide on black (sw) rubber isolator



Preparing vacuum line

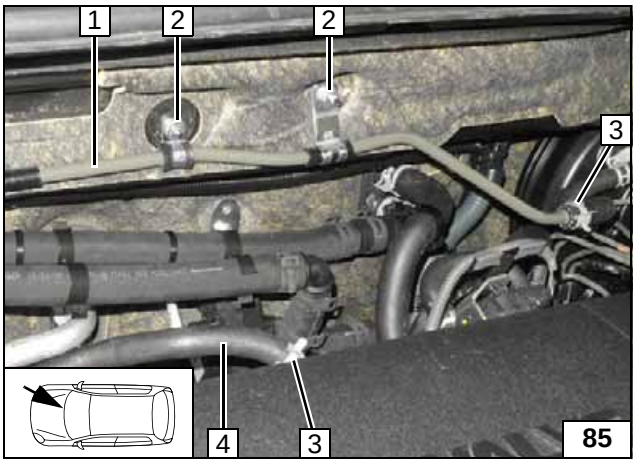
1 Hose of vacuum line

X = 



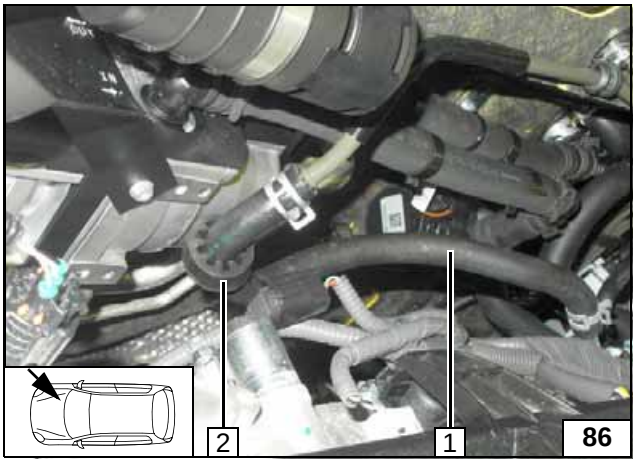
Cutting hose of vacuum line to length

1 Vacuum line
2 Flanged nut, original vehicle stud bolt [2x each]
3 Original vehicle clamp [2x]
4 Hose



Mounting vacuum line

1 Hose of vacuum line
2 Align black (sw) rubber isolator with heater



Aligning rubber isolator

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).

- **Connect the battery.**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Adjust digital timer, teach Telestart**
- **Make settings on the A/C control panel according to the 'operating instructions'.**
- **Verification of the fan function (PWM Gateway):**
  Set the fan speed to max. Then switch off ignition and switch on parking heater.
  On reaching the activation temperature of 50°C the fan speed must correspond to the value of approx. 1/3 of the maximum speed specified by the PWM Gateway.
- **Check the proper operation of the parking heater, see the operating instructions/installation instructions.**
- **Place the 'Switch off parking heater before refuelling' caution label near the filler neck.**

Proceed as follows with the Webasto Thermo test diagnostics during initial start-up:

- **Control coolant pump under Menu Component test, check coolant level**
- **Pre-feed fuel for the heater using the line filling menu.**
- **Check CO_2 settings; take setting values from the general installation instructions**
- **During the trial run, all water and fuel connections must be checked for leakage and firm seating**
- **Conduct troubleshooting in case of malfunctions.**

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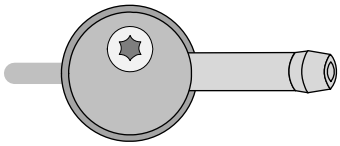
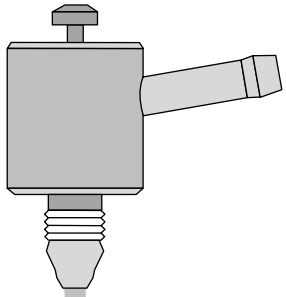
Technical Extranet:
http://dealers.webasto.com

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

Operating Instructions for Manual Air-Conditioning

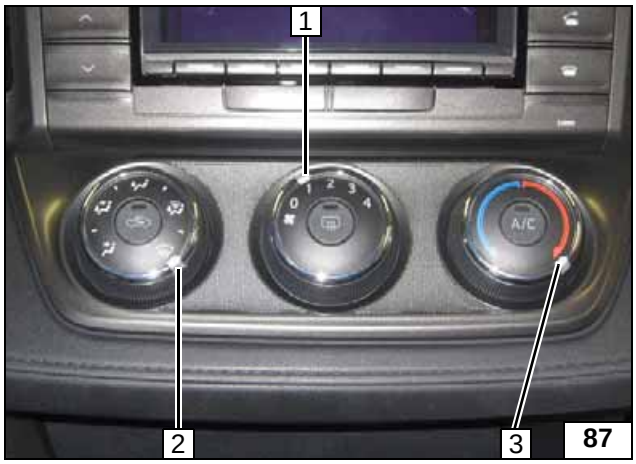
Please remove page and add to the vehicle operating instructions.

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, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

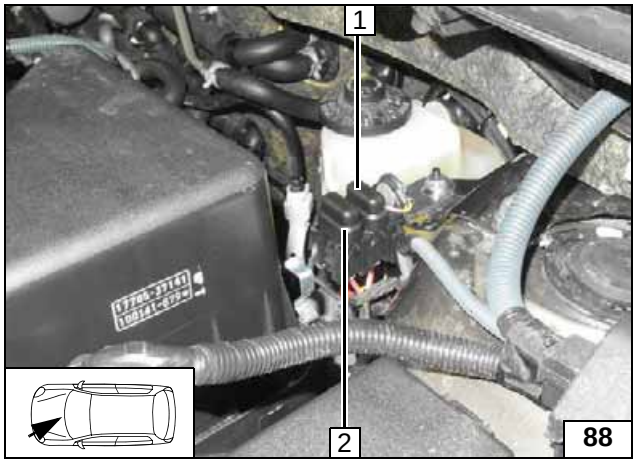
Before parking the vehicle, make the following settings:

A/C control panel



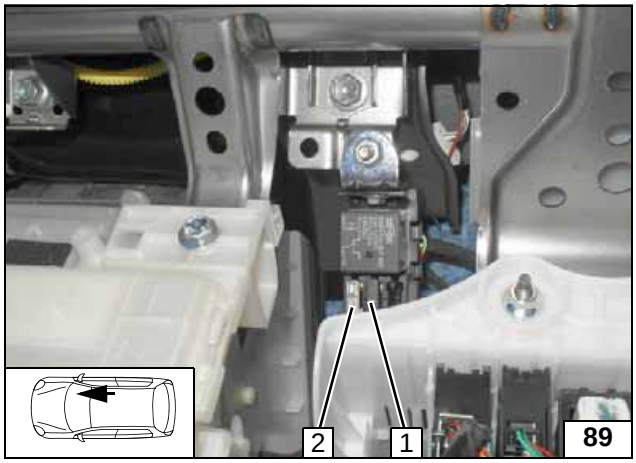
1 Set fan to level ‘1’, or max. ‘2’
2 Air outlet to windscreen
3 Set temperature to ‘max.’

Engine compartment fuses



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

Passenger compartment fuses



1 1A heater control fuse F3
2 25A fan fuse F4

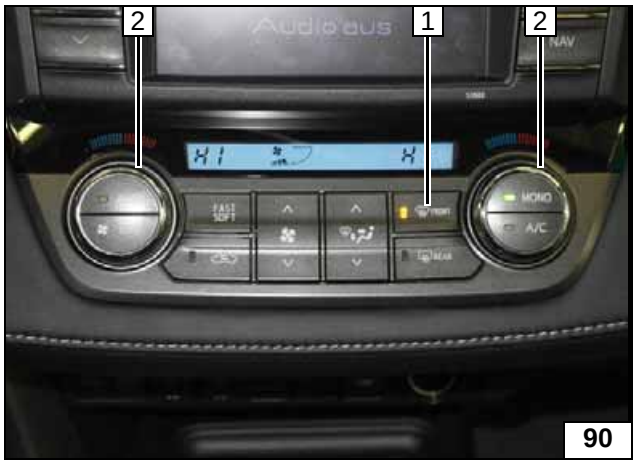
Operating Instructions for Automatic Air-Conditioning

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.

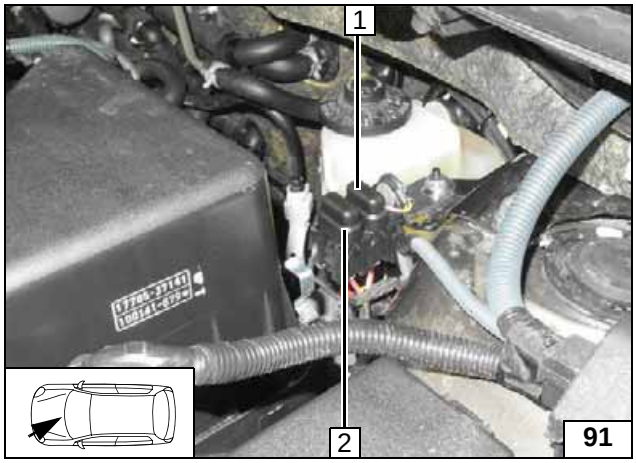
Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



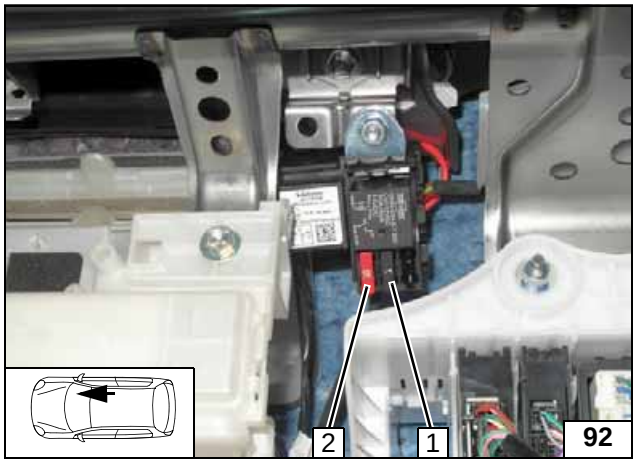
1 Air outlet to windscreen
2 Set temperature on both sides to ‘HI’

A/C control panel



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

Engine compartment fuses



1 1A heater control fuse F3
2 10A fan fuse F4

Passenger compartment fuses