



Water Heater

Thermo Top Evo Parking Heater



With FuelFix

Installation Documentation Toyota RAV4

Validity

Manufacturer	Model	Туре	EG BE No. / ABE
Toyota	RAV4	XA3 (A)	e6 * 2001 / 116 * 0105 *

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm ³	Engine code
2.0 D	Diesel	6-gear SG	105	1995	2WW

SG = manual transmission

From model year 2016 Left-hand drive vehicle

Verified equipment variants: Manual air-conditioning / automatic air-conditioning (2-zone)

Front fog lights LED-headlight

LED Daytime Running Lights Start button with Keycard

2 WD Euro 6

Not verified: Passenger compartment monitoring

Total installation time: approx. 7.5 hours

Ident. No.: 1324843A_EN Status: 31.05.2016 © Webasto Thermo & Comfort SE

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Necessary Components

- · Basic delivery scope of Thermo Top Evo according to price list
- Installation kit with FuelFix for Toyota RAV4 2016 Diesel: 1324842A
- Additional kit A/C control manual air-conditioning Toyota "Webasto Standard": 1324454_ or additional kit A/C control automatic air-conditioning Toyota / Lexus "Webasto Standard": 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

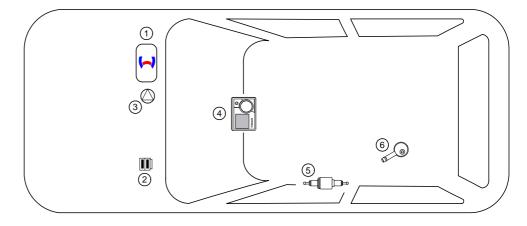
Installation instructions:

- 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.
- 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. Circulating pump
- 4. MultiControl CAR
- 5. Metering pump
- 6. FuelFix



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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 suffo-

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

Ident. No.: 1324843A EN

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 StV-ZO (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
- 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
- 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.

Status: 31.05.2016

In multilingual versions the German language is binding.

Information on Validity

This installation documentation applies to Toyota RAV4 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
- · Deep-hole marker
- · Hose clamping pliers
- Webasto Thermo Test Diagnosis with current software

Dimensions

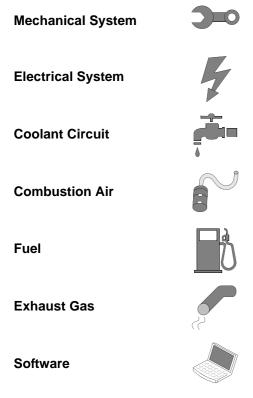
· All dimensions are in mm.

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. Special features are highlighted using the following symbols:



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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

Tightening torque according to the manufac-

and the viewing angle.

Status: 31.05.2016

Preliminary Work

Vehicle



- Open the fuel tank cap.
- Ventilate the fuel tank.
- · Close the fuel tank cap again.
- Depressurise the cooling system.
- Remove the engine cover.
- Disconnect the battery.
- Completely remove the air filter box.
- Remove heat shield plate of firewall
- Remove the cowl cover (option for easier installation).
- Remove the lower trim of the glove compartment.
- Remove the glove box.



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

• Remove the fuel tank according to the manufacturer's specifications.



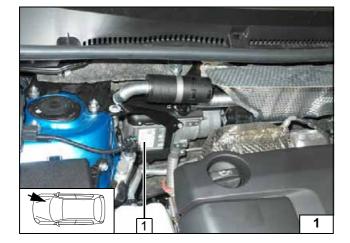


Heater

- 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.





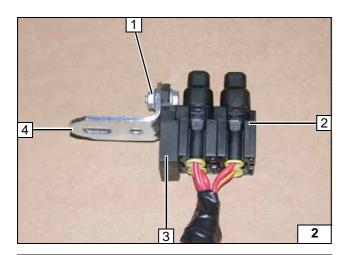


Heater Installation Location

1 Heater

Installation location

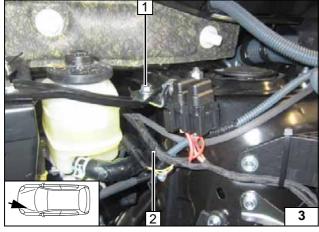




Preparing Electrical System

- 1 M5x16 bolt, large diameter washer [2x], nut
- 2 Fuses F1-2
- 3 Retaining plate for engine compartment fuse holder
- 4 Angle bracket

Installing retaining plate fuse holder

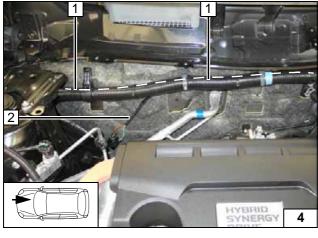


Route wiring harness of fan controller, heater control and heater 2 to firewall.

1 Original vehicle stud bolt, flanged nut



Routing wiring harnesses

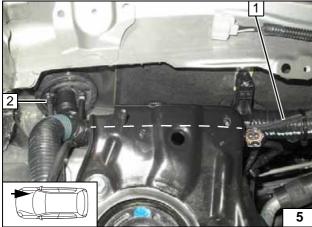


Route wiring harness of fan controller and heater control 1 along original vehicle lines to right vehicle side and fasten with cable ties.



2 Heater wiring harness

Routing wiring harnesses



- 1 Wiring harnesses of fan controller, heater control
- 2 Passenger compartment pass through

Routing wiring harnesses



Electrical System

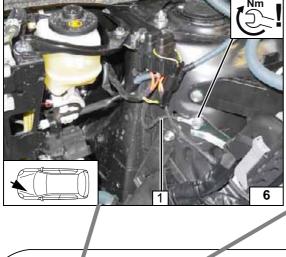


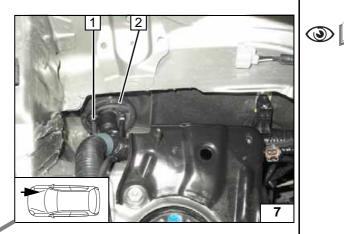
Earth wire

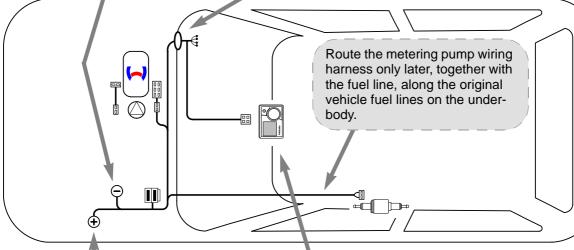
1 Earth wire on original vehicle earth support point

Wiring harness pass through

- 1 Wiring harnesses of fan controller, heater control
- 2 Protective rubber plug



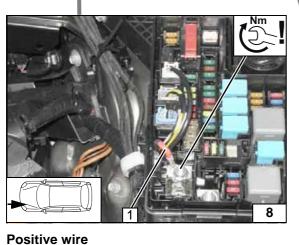


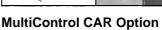


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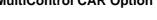
Wiring harness routing diagram







1 Positive wire



1 MultiControl CAR





Air-Conditioning Control

The connection of the A/C control has to be carried out in accordance with the separate installation documentation:



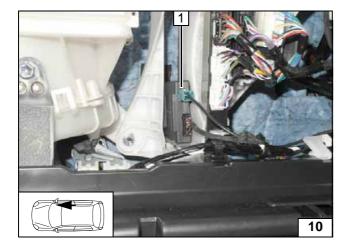
Installation documentation A/C control manual air-conditioning Toyota Avensis 2012, automatic air-conditioning Toyota Avensis 2012 / Auris 2015 / RAV4 2016 "Webasto Standard"



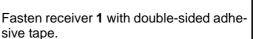
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Installation documentation A/C control manual air-conditioning Auris 2015 / RAV4 2016 "**Webasto Standard**"



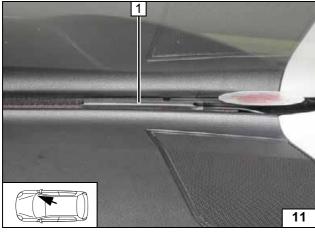


Remote Option (Telestart)



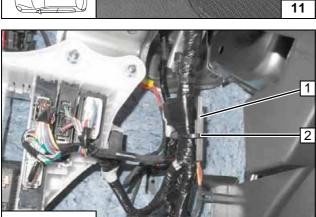


Installing receiver



1 Aerial

Installing aerial



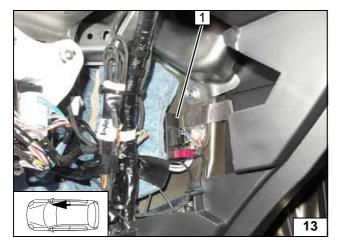
Temperature sensor T100 HTM

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



Installing temperature sensor



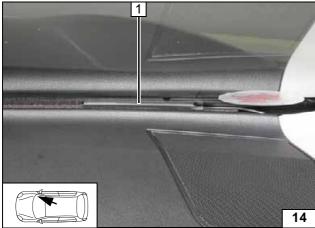


ThermoCall Option

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



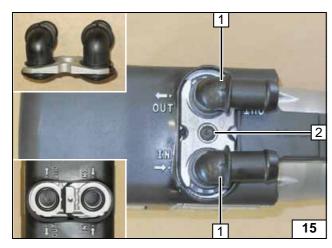
Installing receiver



1 Aerial (optional)

Installing aerial



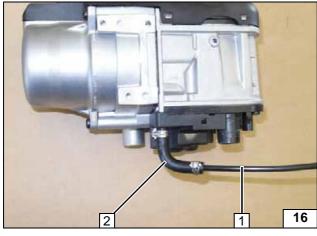


Preparing Heater



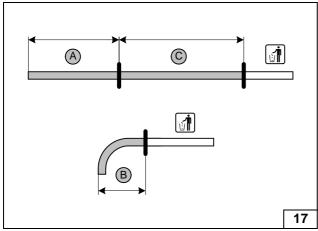
- 1 Water connection piece, sealing ring [2x each]
- 2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



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

Premounting fuel line

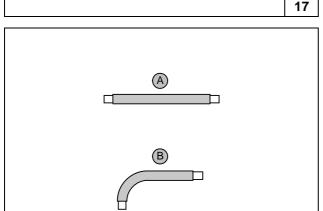


A = 340

B = 200 90° 18mm dia.

C = 460

Cutting hoses to length

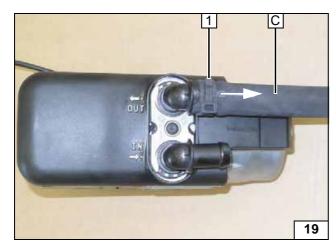


Cut provided heat protection in half and slide onto hoses **A** and **B**.



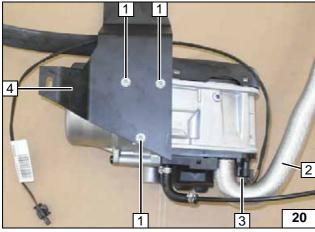
Installing heat shield hose





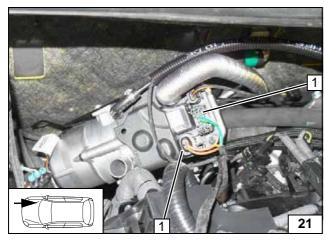
1 25mm dia. spring clip

Premounting hose



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

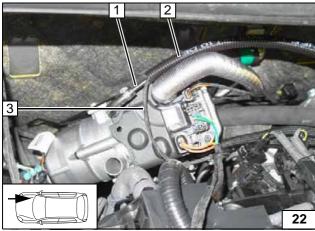
Premounting heater



Installing Heater

1 Heater wiring harness connector [2x]

Installing heater wiring harness

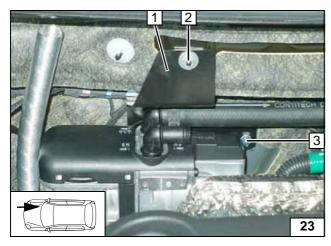


Pull fuel line 1 and metering pump wiring harness 3 into 10 mm dia. corrugated tube 2.



Installing fuel line

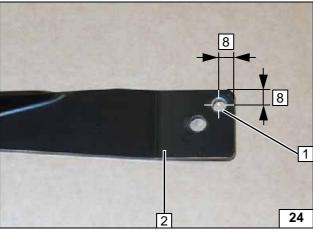




Route fuel line and wiring harness of metering pump into corrugated tube to the left vehicle side. Align heater bracket **1** in the oblong holes.

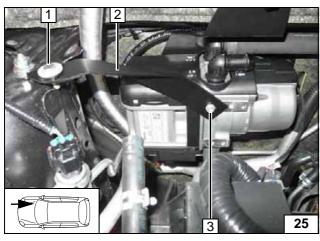
- 2 Original vehicle stud bolt, large diameter washer, flanged nut mounted hand-tight
- 3 Flanged nut mounted loosely

Installing heater



- 1 Copy hole pattern, hole 6mm dia. (only with bracket without oblong hole)
- 2 Bracket 2

Preparing bracket 2



- 1 M6x20 bolt, large diameter washer [2x], flanged nut, existing hole
- 2 Bracket 2, with 6mm dia. hole in position 3
- 3 5x13 self-tapping bolt

Installing heater

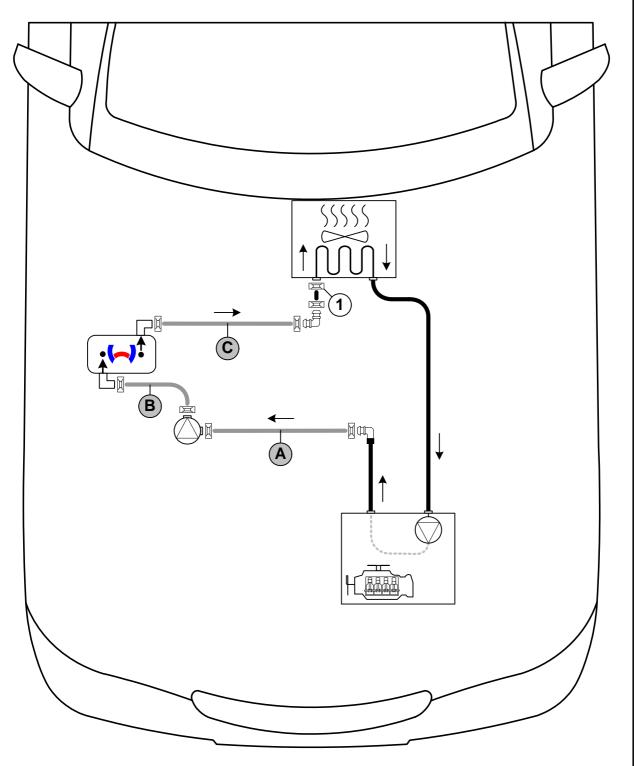


Coolant Circuit



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:

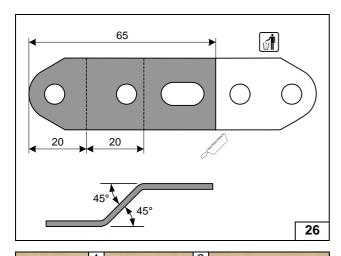


Hose routing diagram

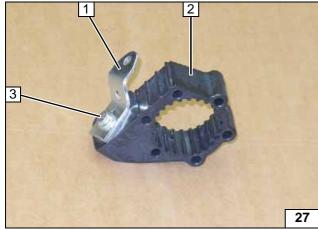
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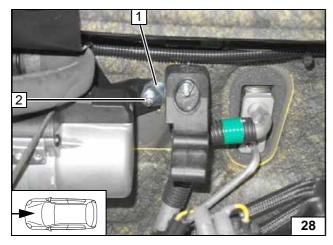


Preparing perforated . bracket



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

Premounting circulating pump mount



- 1 Perforated bracket
- 2 Flanged nut, original vehicle stud bolt

Mounting circulating pump mount



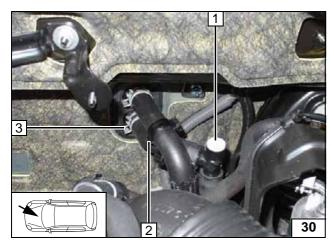
- 1 Circulating pump2 Connector of circulating pump wiring harness

Installing circulating pump

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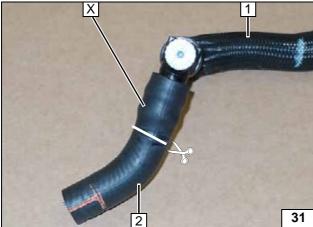




Remove hose on engine outlet / heat exchanger inlet 1. Hose bracket 2 and spring clip 3 will be reused.



Cutting point



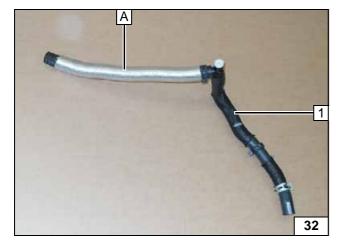
Cut engine outlet / heat exchanger inlet hose 1 at the marking.



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

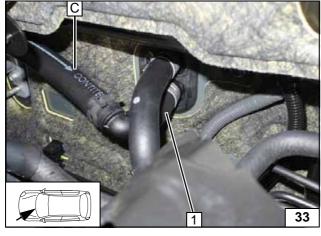


Cutting point



1 Engine outlet hose section

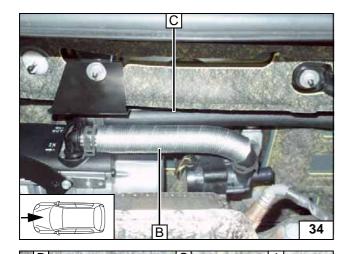
Premounting hose A



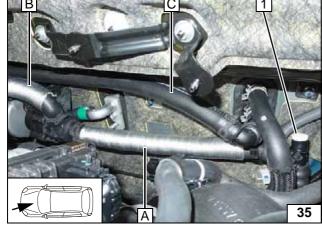
1 Hose section of heat exchanger inlet

Connecting heat exchanger inlet



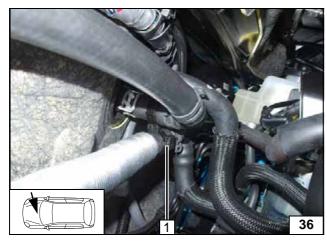


Connecting circulating pump



1 Mount hose section on engine outlet

Connecting hose A



1 Original vehicle hose bracket

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.

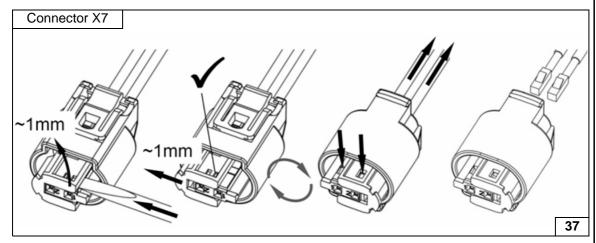


Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.

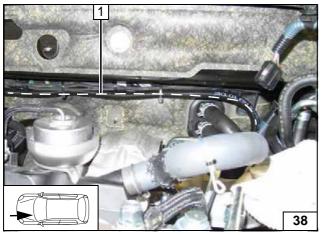
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

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





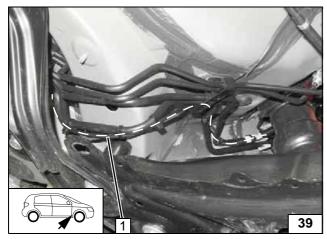
Dismantling metering pump connector



Route fuel line and wiring harness of metering pump into 10mm dia. corrugated tube 1 along original vehicle lines to the underbody and fasten with cable ties.



Routing on underbody

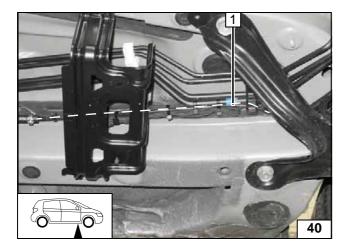


Route fuel line and wiring harness of metering pump 1 along original vehicle lines to installation location of metering pump and secure using cable ties.



Routing lines

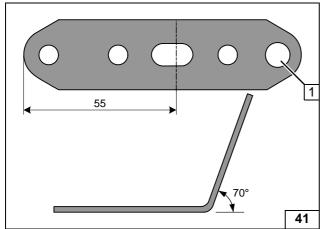




Route fuel line and wiring harness of metering pump 1 along original vehicle lines to installation location of metering pump and secure using cable ties.

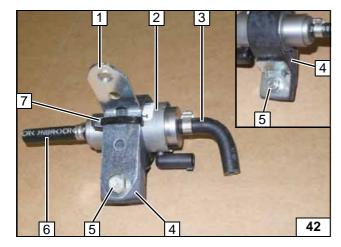


Routing lines



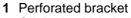
1 Drill out 8.5 mm dia. hole





- 1 Perforated bracket
- 2 Metering pump
- **3** 4.5 mm dia., 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

Premounting metering pump



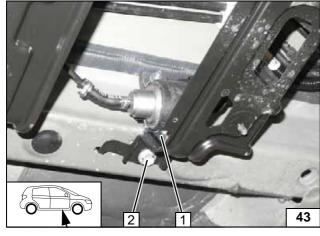
2 Original vehicle bolt





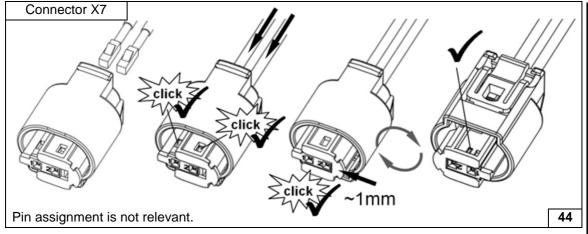
18

Installing metering pump



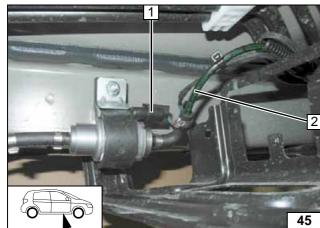






Completing metering pump connector

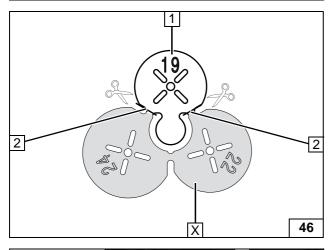




- 1 Wiring harness of metering pump,connector mounted
- 2 Fuel line of heater, 10 mm dia. clamp



Connecting metering pump



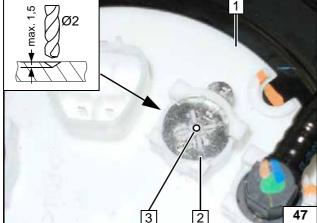
Installing FuelFix

Cut off drilling template 19mm dia. 1 on cutting line 2 as shown.





Preparing drilling template

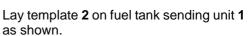


Remove the fuel tank according to the manufacturer's instructions.





Work steps F1 and F2.



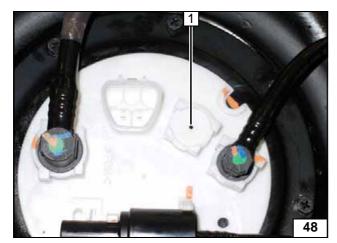
3 2mm dia. central hole



Drilling central hole





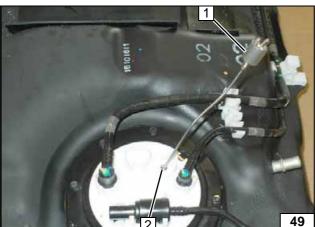


Work step F3.

1 Hole made with provided drill

Hole for FuelFix





Work steps F4 and F5.

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



Preparing FuelFix

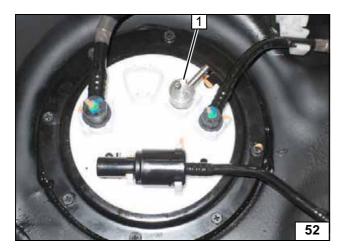


Inserting FuelFix



Inserting FuelFix

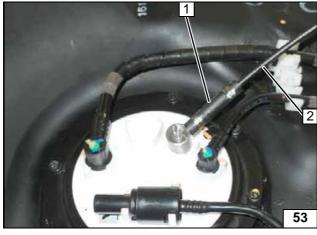




Work step F5.4.

1 Align FuelFix as shown.

Aligning FuelFix

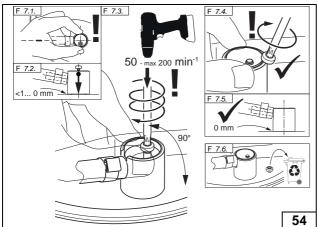


Work step F6.

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

Connecting fuel line





Work step F7.



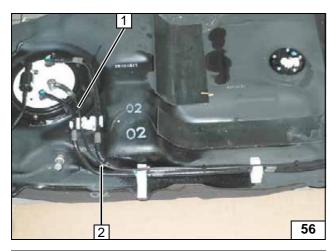
Mounting FuelFix



Work step F8.

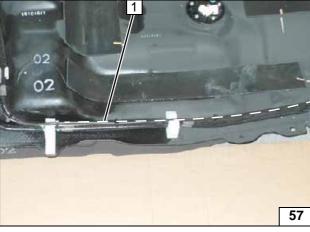
Ensuring firm seating of FuelFix





- 1 Fuel line of FuelFix
- 2 Cable tie for strain relief

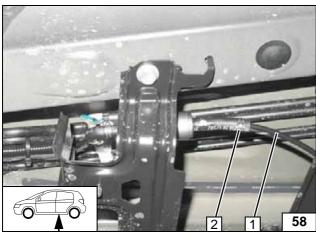
Securing fuel line



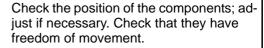
Route fuel line of FuelFix 1 along original vehicle fuel line and fasten with cable ties.



Routing fuel line



Install fuel tank in accordance with manufacturer's instructions.



- 1 Fuel line of FuelFix
- 2 10 mm dia. clamp



Connecting metering pump



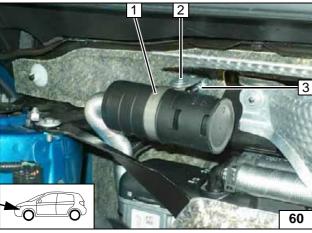


Combustion Air

Mount heat shield plate 4, tighten flanged nut 3.

- 1 Combustion air pipe
- 2 Silencer





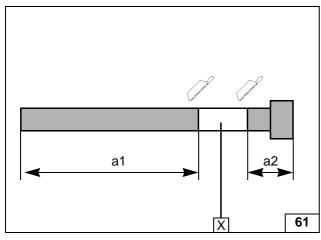
Remove original vehicle plastic nut at position **3** and discard.



- 1 51 mm dia. clamp
- 2 M5x16 bolt, large diameter washer, flanged nut
- 3 Flanged nut



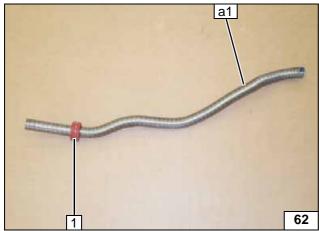




Exhaust Gas

a1 = 680 a2 = 80

Preparing exhaust pipe

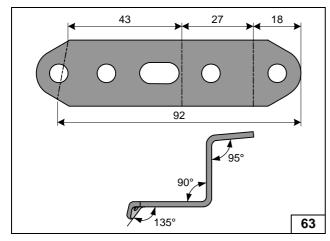


Shape exhaust pipe a1 as shown.

1 Push on spacer bracket



Preparing exhaust pipe a1

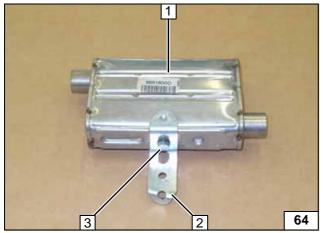


Preparing perforated bracket



- 2 Perforated bracket
- **3** M6x16 bolt, spring lockwasher

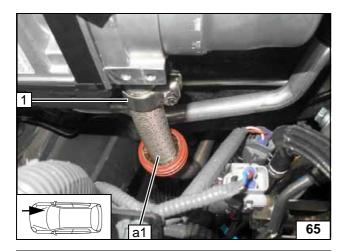
Premounting silencer



Status: 31.05.2016

Ident. No.: 1324843A_EN





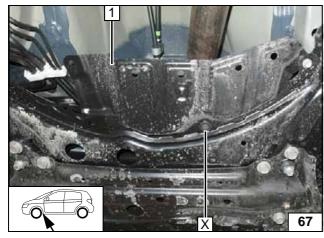
1 Hose clamp

Installing exhaust pipe a1



1 Align spacer bracket with A/C line

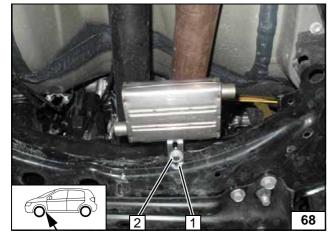
Aligning spacer bracket



1 Rear underride protection

X =

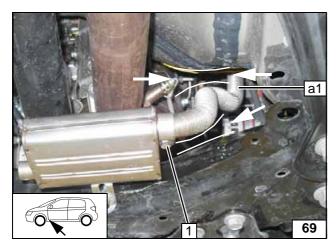
Removing the rear underride protection



- 1 Perforated bracket
- 2 Install M6x20 bolt, large diameter washer, flanged nut in existing hole loosely

Installing silencer





Ensure sufficient distance from body and from engine support, correct if necessary.



1 Hose clamp

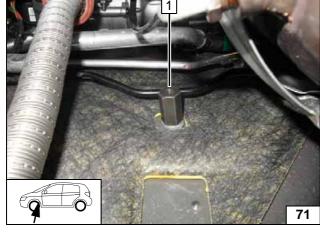


Installing exhaust pipe a1



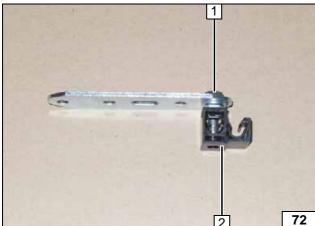
1 Remove clip, will be reused

Removing original vehicle clip



1 5 mm shim, M6x30 spacer nut, original vehicle stud bolt

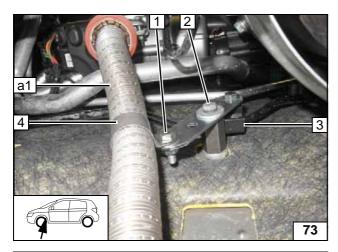
Installing spacer nut



- 1 M6x20 bolt, flanged nut
- 2 Mount clip

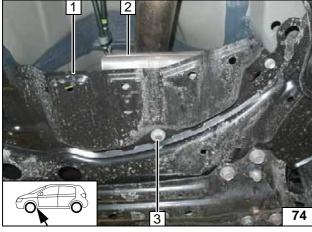
Premounting perforated bracket





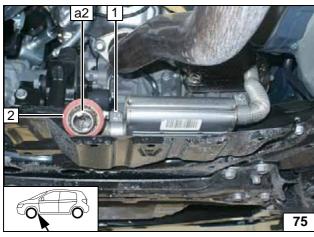
- M6x20 bolt, flanged nut
 M6x12 bolt, spring lockwasher, large diameter washer
- 3 Clip with line locked in place
- 4 P-clamp

Fastening exhaust pipe a1



- 1 Rear underride protection
- 2 Silencer
- 3 M6x20 bolt, large diameter washer, flanged nut

Installing the rear underride protection



Ensure sufficient distance from neighbouring components, correct if necessary.



- 1 Hose clamp
- 2 Spacer bracket

Installing exhaust pipe a2



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.
- Program MultiControl CAR, 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 A/C control manual air-conditioning "Webasto Standard", section "Final Work" or:
 - See the installation documentation in the additional kit A/C control automatic air-conditioning "Webasto Standard", section "Final Work"
- 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 CO₂ 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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FuelFix Template

