Water Heater

Webasto
Feel the Drive

***Thermo Top Evo* Parking Heater**

E1
00 0258

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 D	Diesel	6-speed SG	91	1998	1AD
2.2 D	Diesel	6-speed SG	110	2231	2AD
2.2 D	Diesel	6-speed AG	110	2231	2AD

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 light
Daytime running lights LED
Xenon with headlight washer system
2 WD / 4 WD
Start / Stop
Smart key system

Not verified: Alarm system of passenger compartment monitoring

Total installation time: about 6.5 hours

Toyota RAV 4

Table of Contents

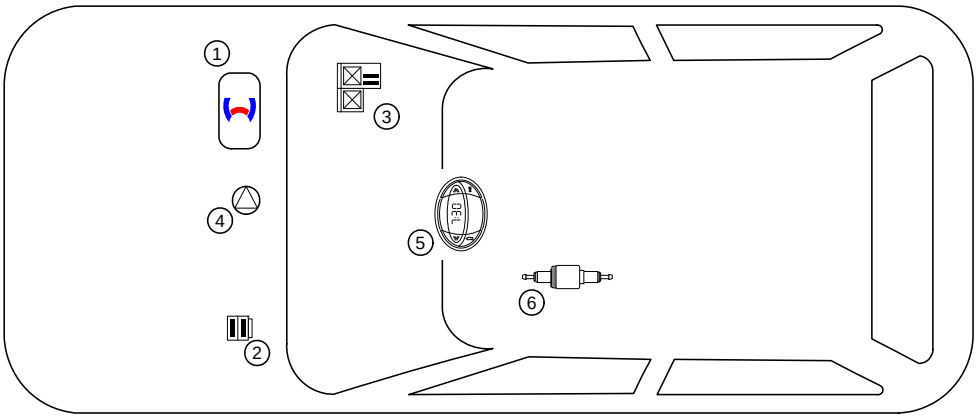
Necessary Components

- Basic delivery scope *Thermo Top Evo* in accordance with price list
- Installation kit for Toyota RAV 4 2013 Diesel: **1320521A**
- Heater control in accordance with price list and upon consultation with final customer
- In case of Telestart, indicator lamp in accordance with price list and upon consultation with final customer

Installation Overview

Legend:

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



Notes on Total Installation Time

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

Information on Operating and Installation Instructions

1 Important Information (not complete)

1.1 Installation and Repair

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

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

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

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

1.2 Operation

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

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

Always switch off the heater before refuelling.

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

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

1.3 Please note

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

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

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

Important

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

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

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

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and wiring harnesses to original vehicle lines and wiring harnesses using cable ties. Insulate loose wire ends and tie back. Connectors on electronic components must audibly snap into place during assembly.

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

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

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

When installing an IPCU, the corresponding settings must be checked or adjusted before the installation.

2 Statutory regulations governing installation

Guidelines	Thermo Top Evo
Heating Directive ECE R122	E1 00 0258
EMC Directive ECE R10	E1 03 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

For vehicles with an EU permit, no entry in accordance with § 19 Sub-Section 4 of Annex VIII b to the Road Traffic Act is required.

2.1 Excerpt from the directive 2001/56/EC Appendix VII 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.

Toyota RAV 4

Notes on Validity

This installation documentation applies to Toyota RAV 4 Diesel 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 Instructions

Special Tools
- Hose clamp pliers for self-clamping hose clamps
- Hose clamp pliers for Clic hose clamps of type W
- Automatic wire stripper 0.2 - 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
- Webasto Thermo Test diagnosis with current software

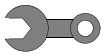
Dimensions
- All dimensions are in mm

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

Explanatory Notes on Document

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

Mechanical system



Electrical system

Coolant circuit

Combustion air

Fuel

Exhaust gas

Software

Special features are highlighted using the following symbols:

Specific risk of injury or fatal accidents

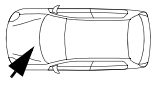
Specific risk of damage to components

Specific risk of fire and explosion

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

Reference to a special technical feature

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



Toyota RAV 4

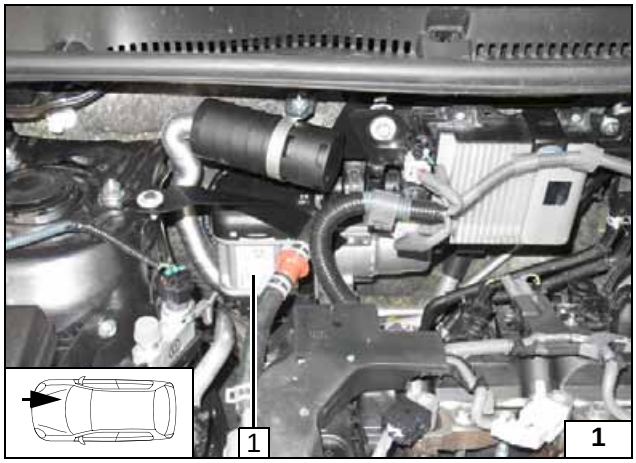
Preliminary Work

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 the cowl cover (option for easier installation).
- Remove the lower trim of the glove compartment.
- Remove the glove compartment.
- 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.

Heater

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



Heater Installation Location

1 Heater

Installation location

Preparing Electrical System

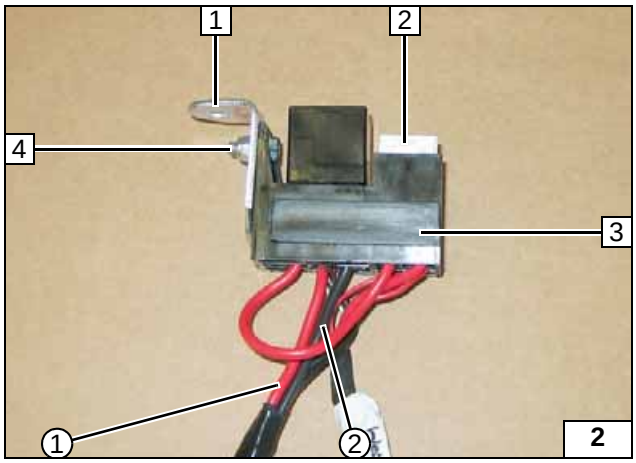
Wire sections retain their numbering in the entire document.

Manual air-conditioning

Connect wires according to wiring diagram.

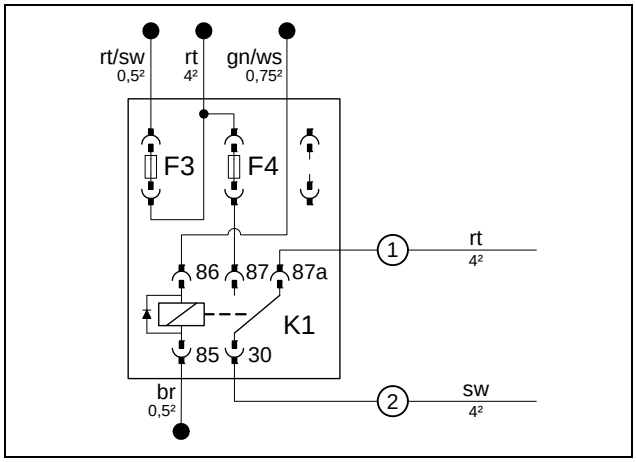
1 Angle bracket
2 Fuse F4
3 Relay and fuse holder of passenger compartment
4 M5x12 bolt, large diameter washer [2x], nut
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

Preparing passenger compartment relay and fuse holder



Produce connections as shown in wiring diagram. Installing F4 25A fuse. K1 relay will be inserted after installing the relay and fuse holder.

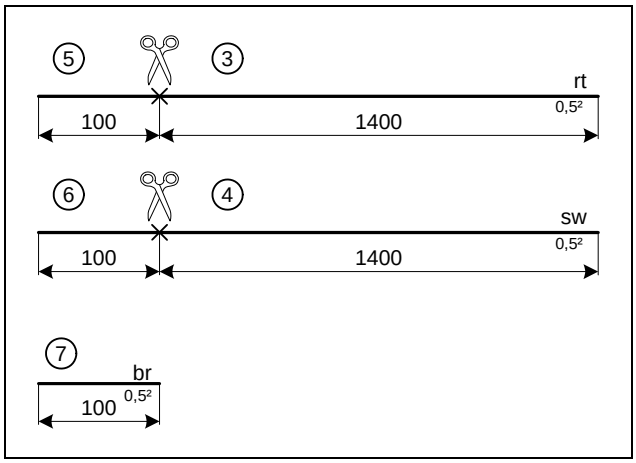
Preparing K1 relay and F4



Automatic air-conditioning

Pull wire sections ③ and ④ into the provided protective sleeving.

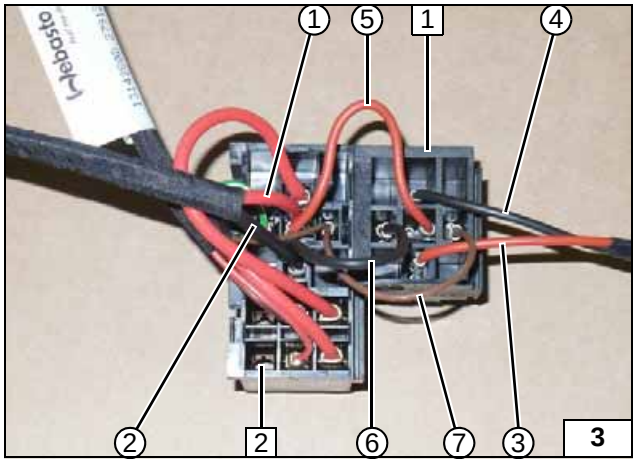
Cutting wires to length

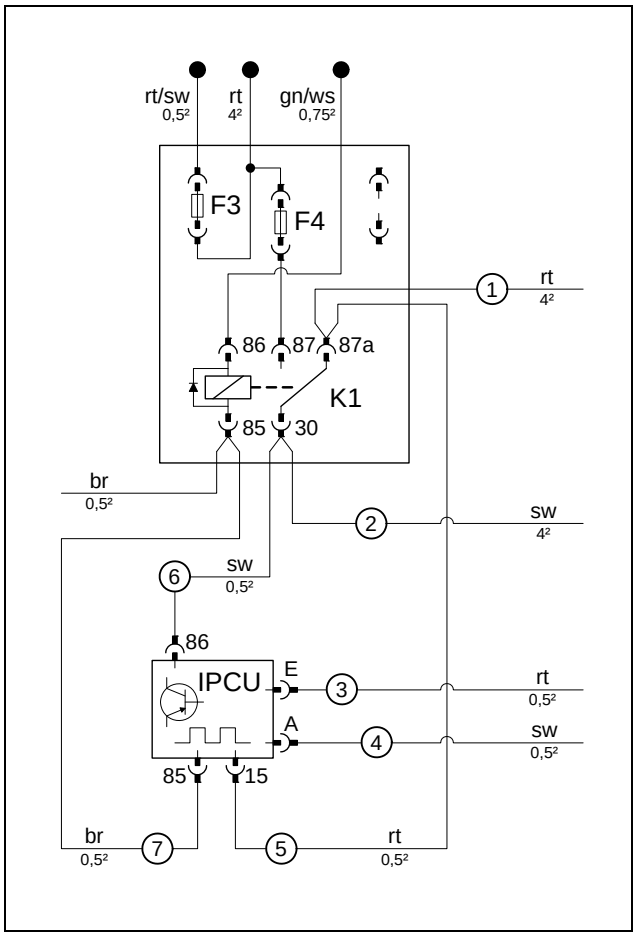


Connect wires according to wiring diagram. Snap IPCU socket **1** and passenger compartment relay and fuse holder **2** together.

① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30
③ Red (rt) wire of IPCU/E
④ Black (sw) wire of IPCU/A
⑤ Red (rt) wire of K1/87a and IPCU/15
⑥ Black (sw) wire of K1/30 and IPCU/86
⑦ Brown (br) wire of K1/85 and IPCU/85

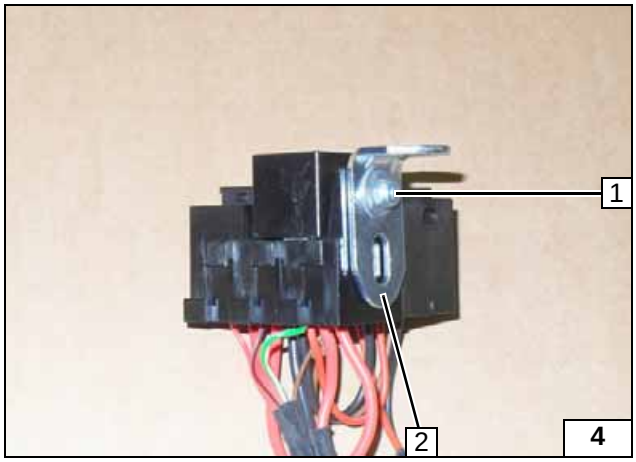
Preparing passenger compartment relay and fuse holder and IPCU





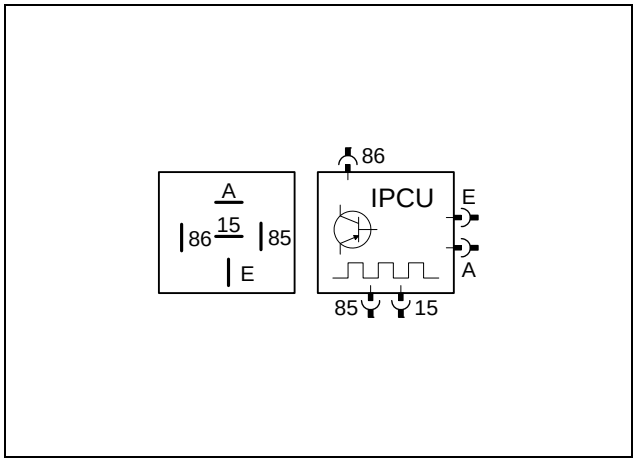
Fuse F4 and K1 relay will not be installed until later.

Preparing passenger compartment relay and fuse holder and IPCU



1 M5x12 bolt, large diameter washer [2x], nut
2 Angle bracket

Preparing passenger compartment relay and fuse holder

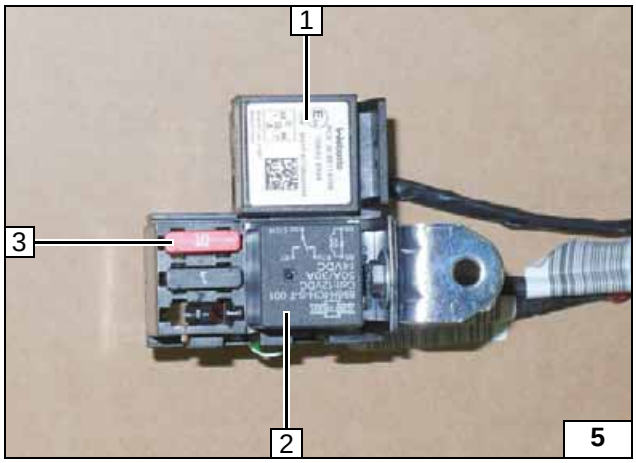


IPCU view on contact side.
The IPCU included in the kit is pre-programmed with the following adjustment values:

Duty-Cycle: 60%
Frequency: 400 Hz
Voltage: 10 V
Function: Low-side

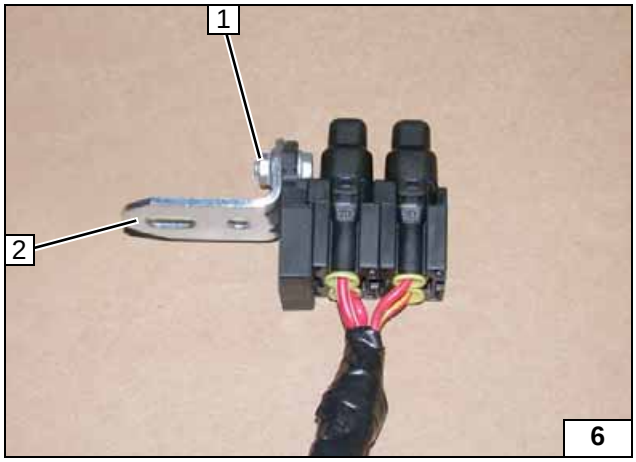
The adjustment values are to be checked upon start-up of the heater and adjusted if necessary.

Premounting IPCU



1 IPCU
2 K1 relay
3 10A fuse F4

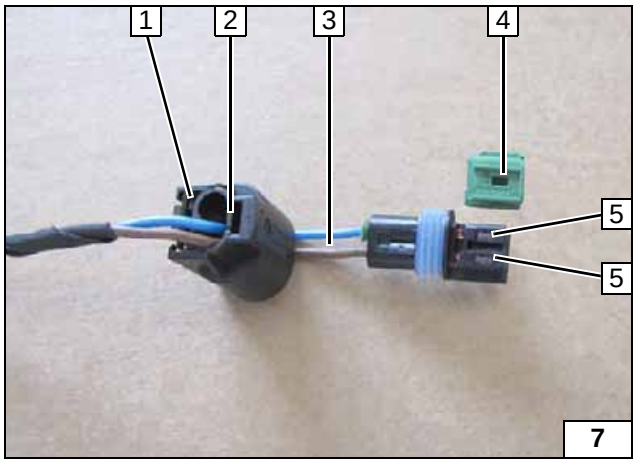
Preparing passenger compartment relay and fuse holder



All vehicles

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

Preparing fuse holder of engine compartment



Complete connector of metering pump again after routing. Pin assignment is not relevant.

1 Connector housing
2 Lock
3 Blue/brown (bl / br) wires
4 Coding
5 Timer lock

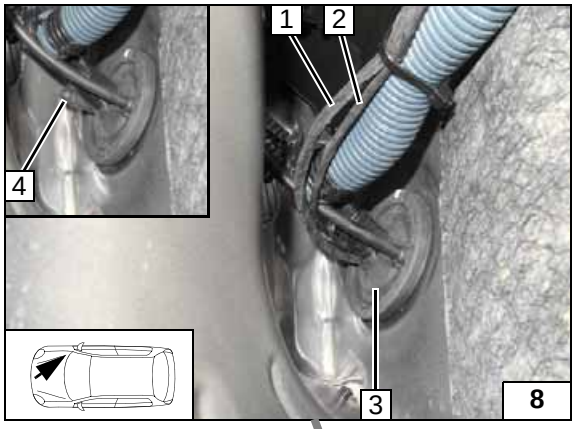
Disassembling connector

Electrical System

Wiring harness pass through

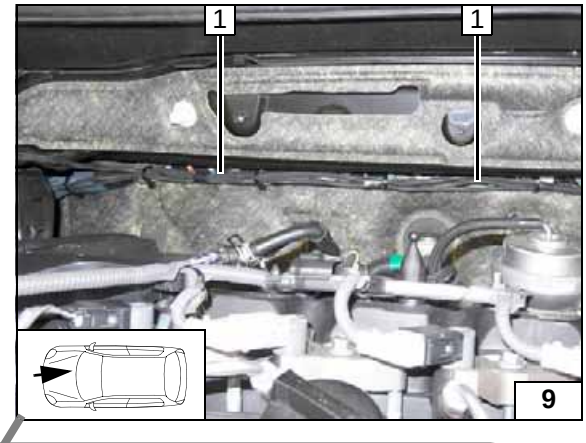
Cut off nippel **4** of protective rubber plug **3**.

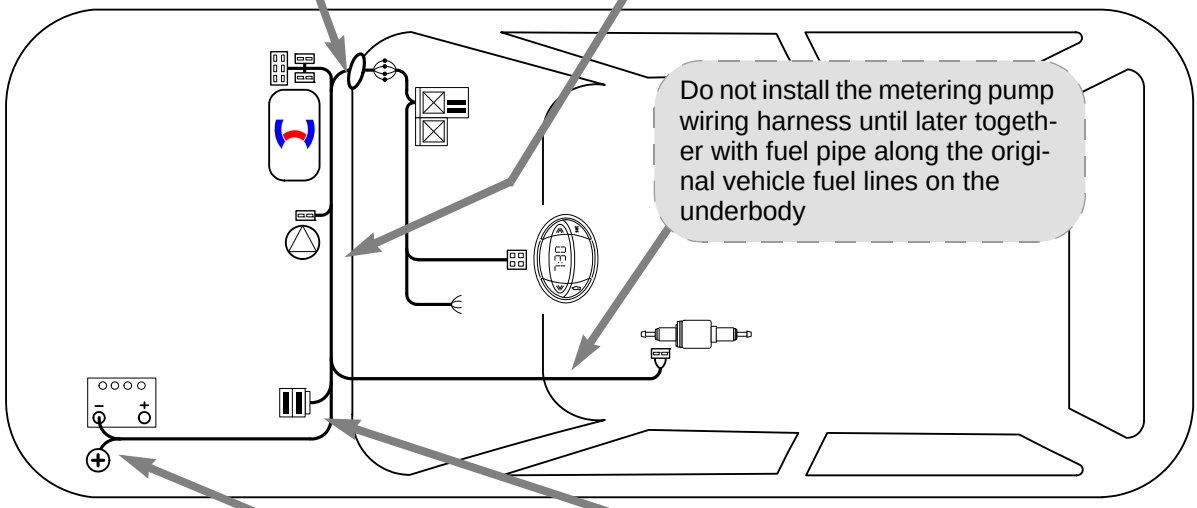
1 Wiring harness of fan controller
2 Wiring harness of heater control



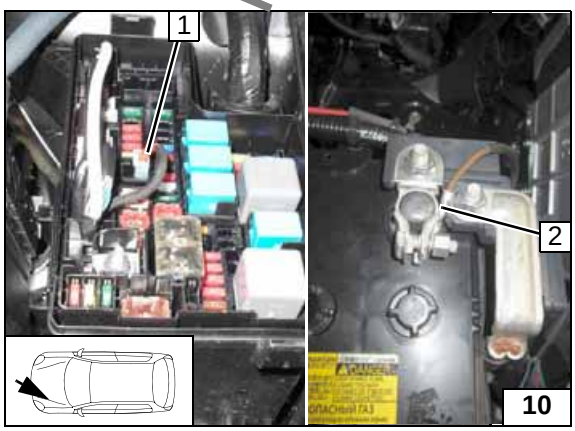
Wiring harness routing

1 Heater wiring harnesses, metering pump, heater control, fan controller





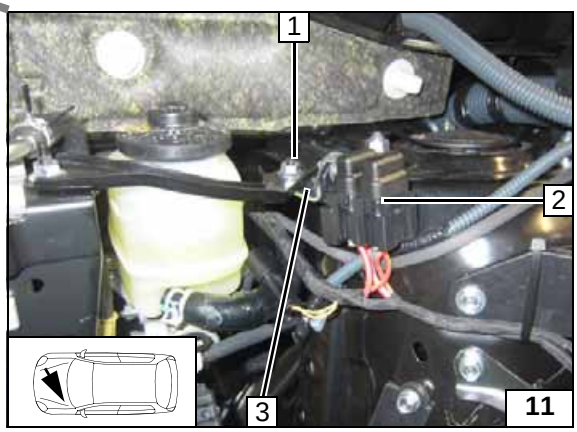
Wiring harness routing diagram



Positive wire and earth wire

Detach the engine control unit and put it aside for a better installation of the positive wire.

1 Route positive wire in 10 mm dia., 270 mm long corrugated tube, crimp on tab receptacle and insert in free socket (+30)
2 Earth wire on negative battery terminal

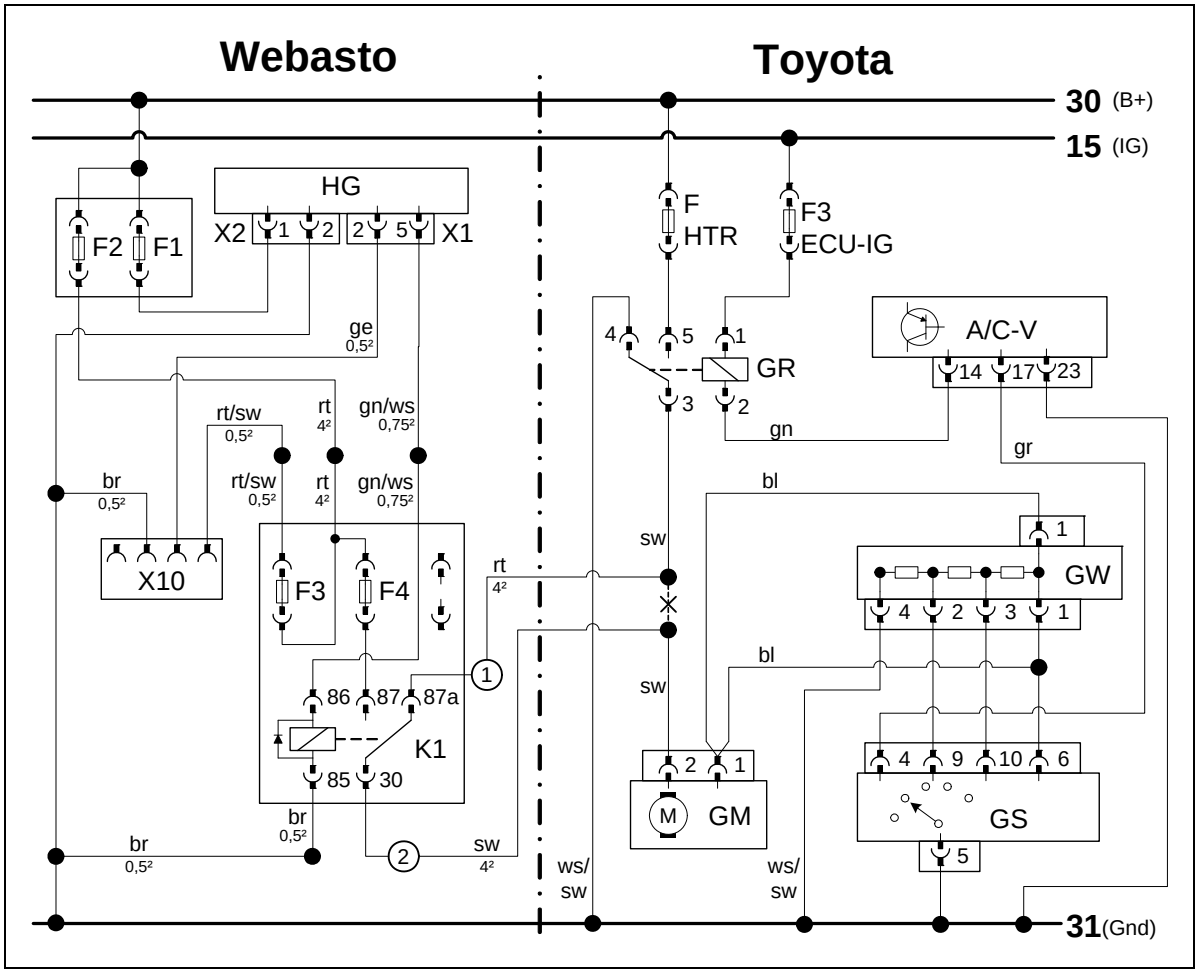


Fuse holder of engine compartment

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

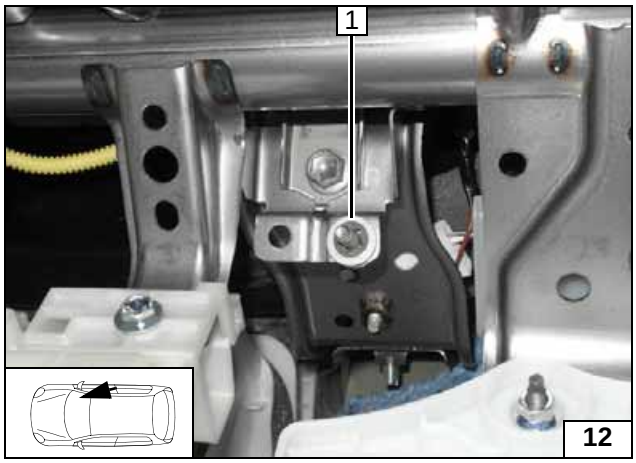
Manual Air-Conditioning Fan Controller

Wiring diagram



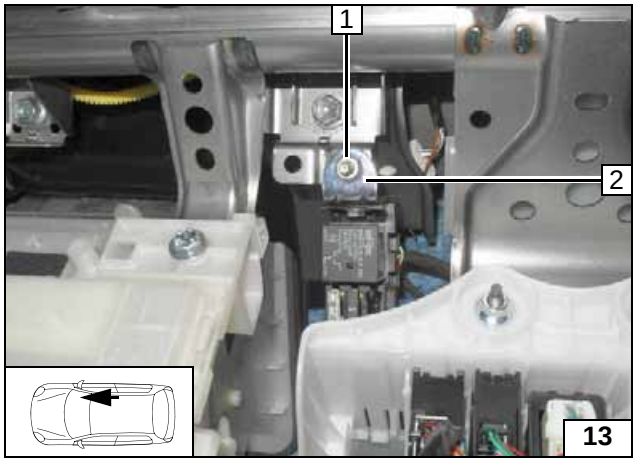
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F3 ECU-IG	7.5A fuse	rt	red
X1	6-pin heater connector			sw	black
X2	2-pin heater connector	F HTR	50A fuse	ge	yellow
F1	20A fuse	A/C-V	A/C booster	gn	green
F2	30A fuse	GR	Fan relay	bl	blue
X10	4-pin connector Heater control	GW	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



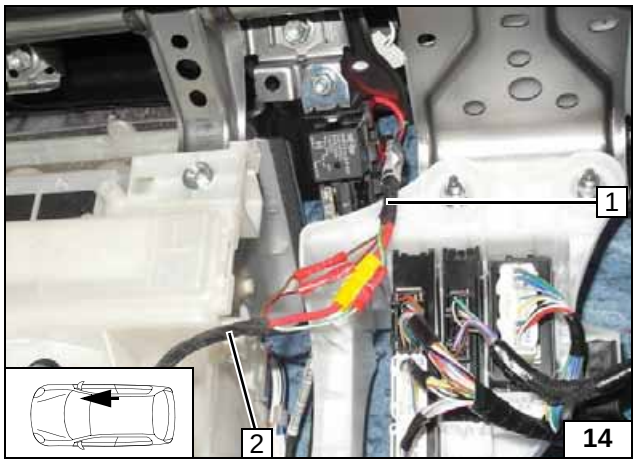
1 M6x20 bolt, large diameter washer [2x], pin lock, existing hole

Premounting bolt



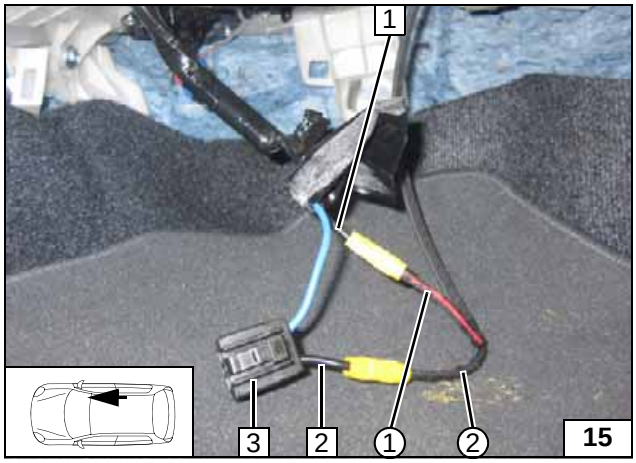
1 M6 flanged nut
2 Angle bracket

Installing relay and fuse holder of passenger compartment



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

Connecting wiring harnesses using same colour wires



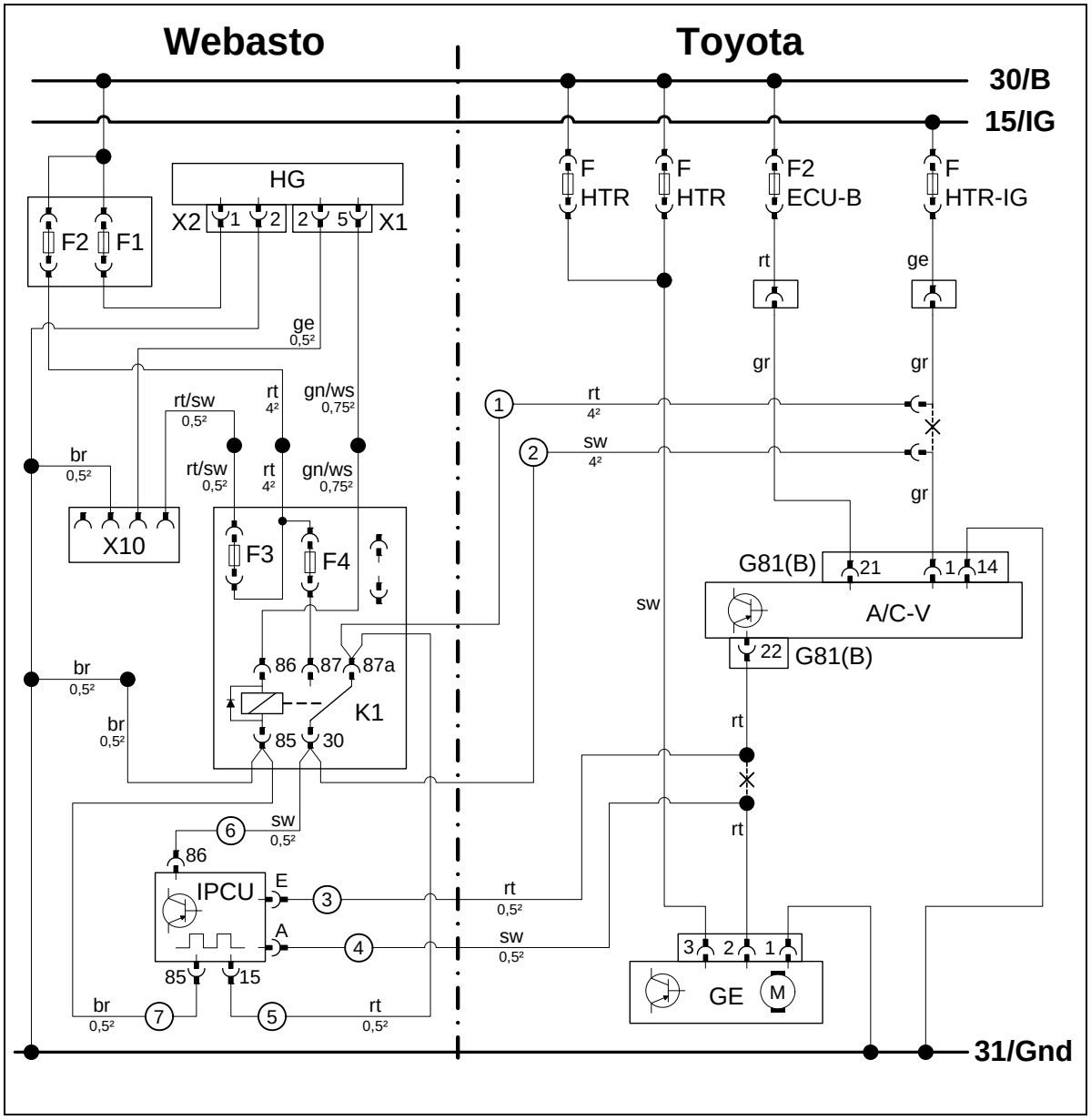
Connection to 2-pin connector **3** from the fan motor. Produce connections as shown in wiring diagram.

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

Connecting fan motor

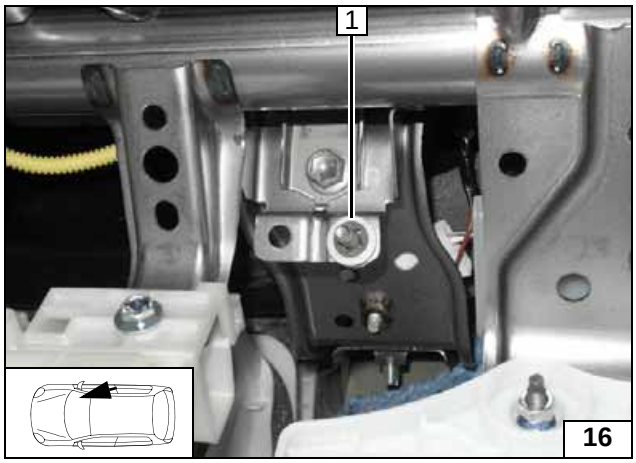
Automatic Air-Conditioning Fan Controller

Wiring diagram



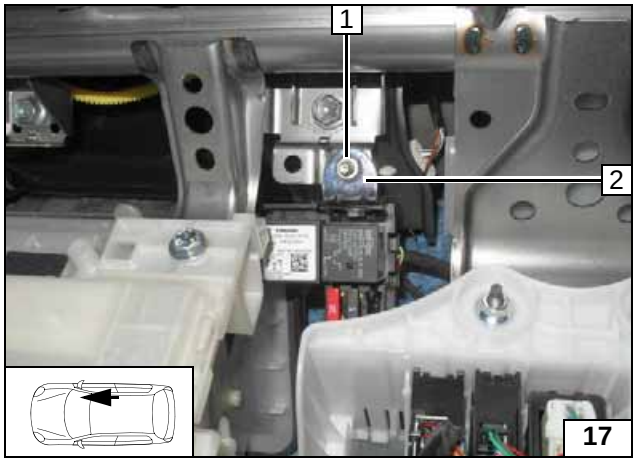
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F HTR	50A fuse [2x]	rt	red
X1	6-pin heater connector	F2 ECU-B	10A fuse	sw	black
X2	2-pin heater connector			ge	yellow
F1	20A fuse	F HTR-IG	7.5A fuse	gn	green
F2	30A fuse			gr	grey
X10	4-pin connector Heater control	G81(B)	40-pin connector of AC/V	ws	white
		AC/V	A/C booster	br	brown
F3	1A fuse	GE	Fan unit	ge	yellow
F4	10A fuse				
K1	Fan relay				
IPCU	Pulse width modulator				
IPCU settings:					
Duty-Cycle: 60%					
Frequency: 400 Hz					
Voltage: 10 V				**X**	Cutting point
Function: Low-side				Wiring colours may vary.	

Legend



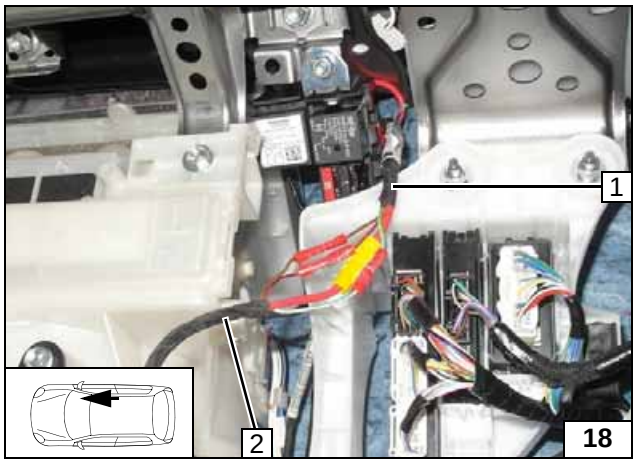
1 M6x20 bolt, large diameter washer [2x], pin lock, existing hole

Premounting bolt



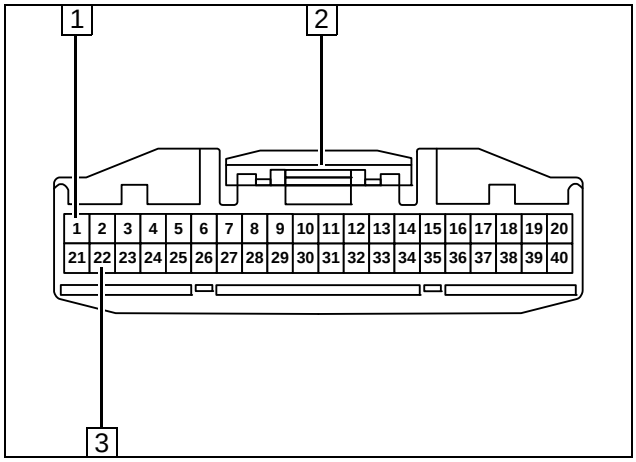
1 M6 flanged nut
2 Angle bracket

Installing relay and fuse holder of passenger compartment



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

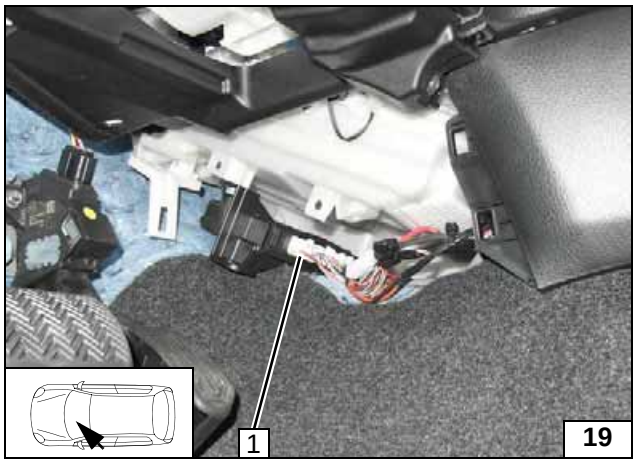
Connecting wiring harnesses using same colour wires



Connection to the 40-pin connector G81(B) **2** of the A/C booster. Produce connections as shown in wiring diagram.

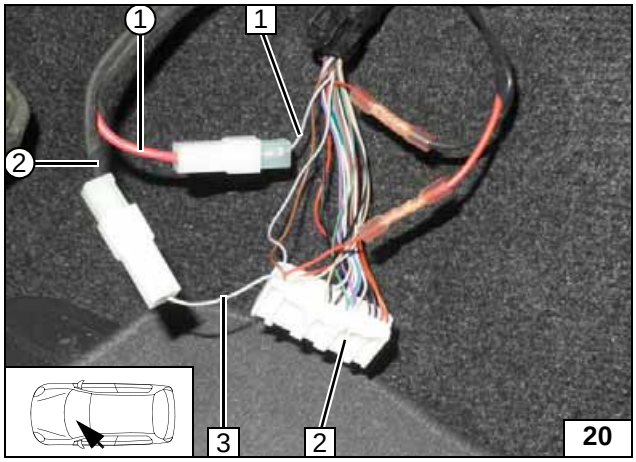
1 Grey (gr) wire of socket Pin 1
3 Red (rt) wire of Pin 22 socket

View of G81(B) connector from contact side



1 Disconnect 40-pin connector G81(B)

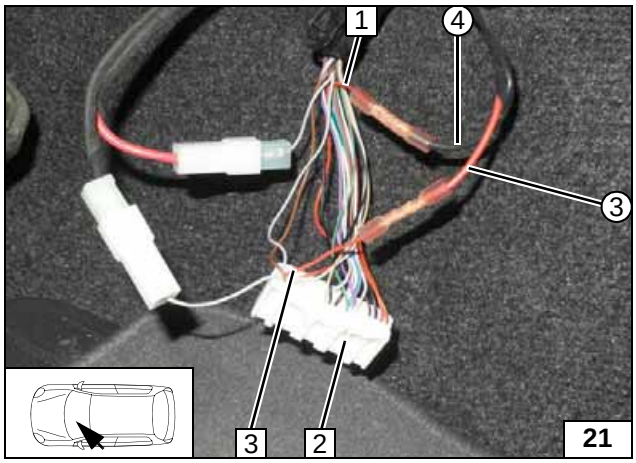
G81(B) connector socket



Produce connections as shown in wiring diagram.

1 Grey (gr) wire of fuse F HTR-IG
2 40-pin connector G81(B)
3 Grey (gr) wire of connector G81(B) Pin 1
① Red (rt) wire of K1/87a
② Black (sw) wire of K1/30

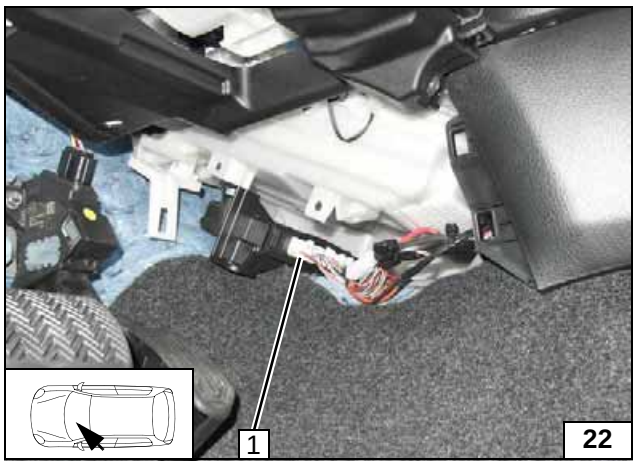
Connecting A/C booster



Produce connections as shown in wiring diagram.

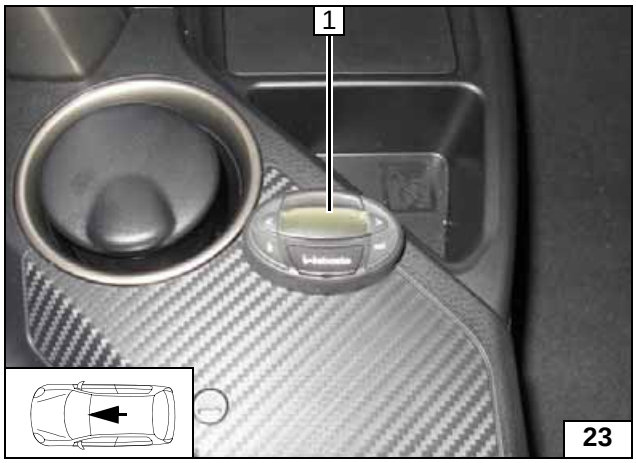
1 Red (rt) wire of fan unit
2 40-pin connector G81(B)
3 Red (rt) wire of connector G81(B) Pin 22
③ Red (rt) wire of IPCU/E
④ Black (sw) wire of IPCU/A

Connecting A/C booster



1 40-pin connector G81(B)

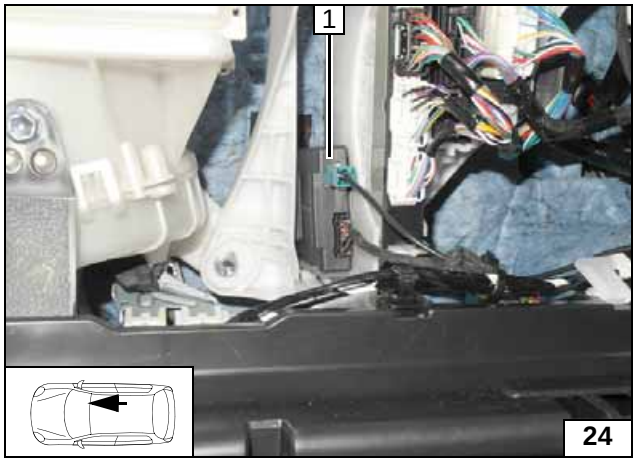
Mounting connector G81(B)



Digital Timer

1 Digital timer

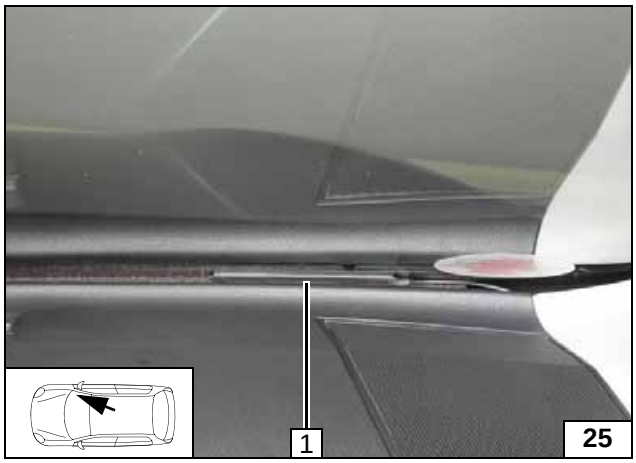
Installing digital timer



Remote Option (Telestart)

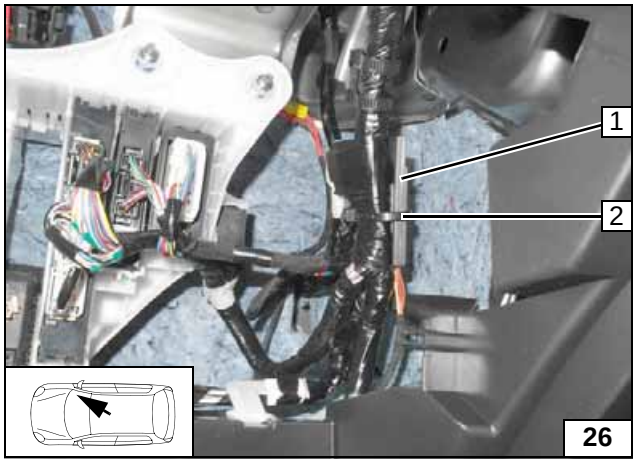
Fasten receiver **1** with adhesive tape.

Installing receiver



1 Antenna

Installing antenna



Temperature sensor T100 HTM

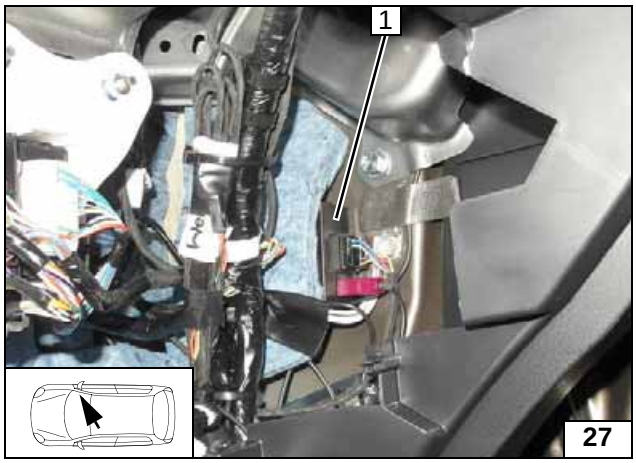
Fasten temperature sensor **1** to original vehicle wiring harness with cable tie **2**.

Installing temperature sensor

Remote Option (Thermo Call TC3)

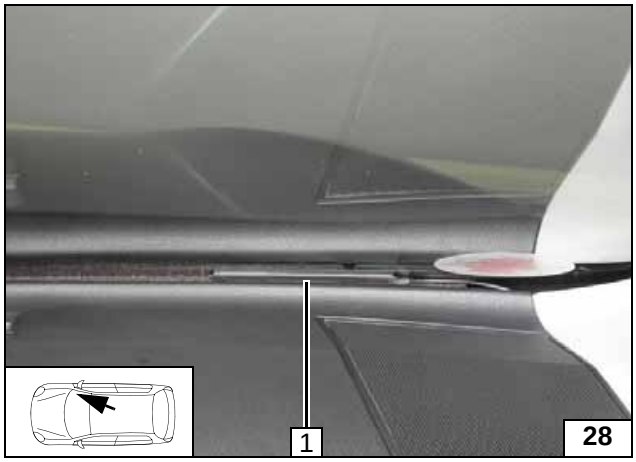
Installing receiver

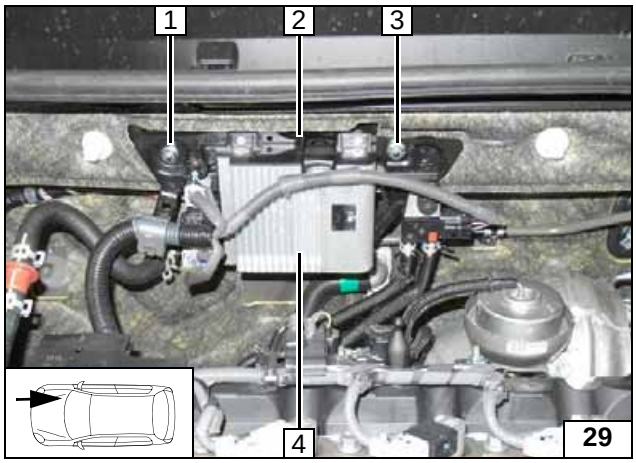
Fasten receiver **1** behind the insulation with adhesive tape.



1 Antenna

Installing antenna

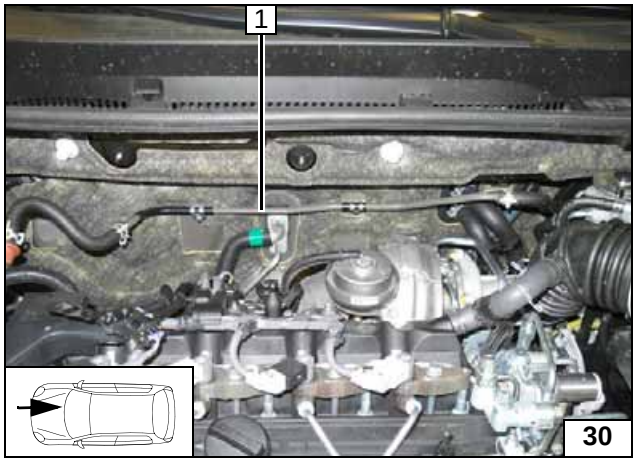




Preparing Installation Location

Remove control unit **4** with bracket **2**. Discard original vehicle nut **1**, original vehicle nut **3** will be reused.

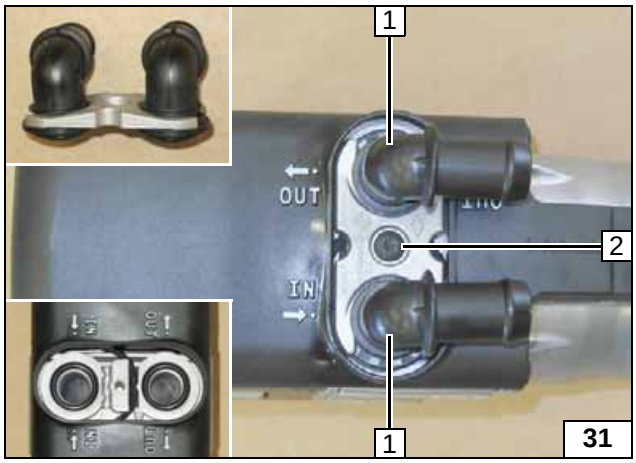
Preparing installation location



Removing Vacuum Line

Completely remove vacuum line **1** with hoses (will be modified and remounted, see section "Vacuum Line").

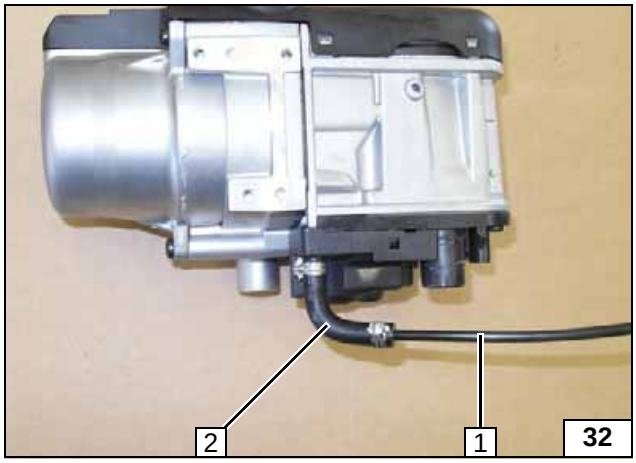
Removing vacuum line



Preparing Heater

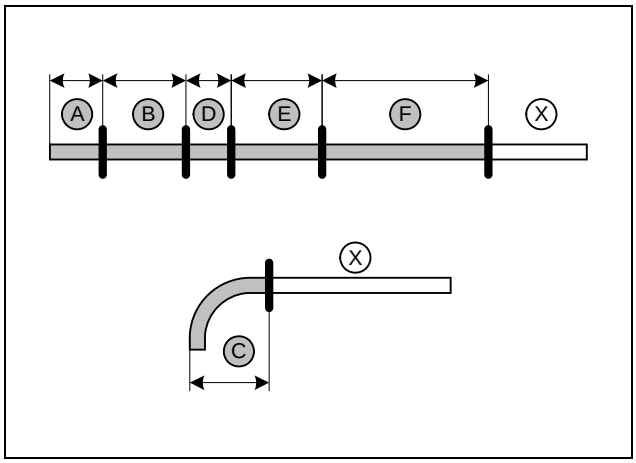
1 Water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

Installing water connection piece



1 Fuel line
2 4.5 mm dia., 90° moulded hose, 10 mm dia. clamp [2x]

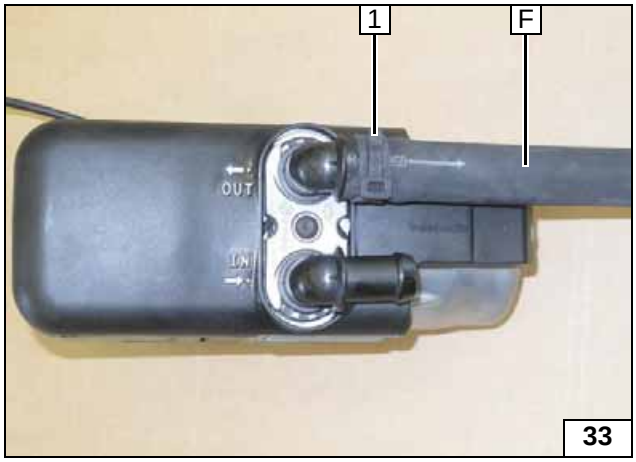
Premounting fuel line



Discard section **X**.
Hose **C** = 90°, 18 mm dia. moulded hose

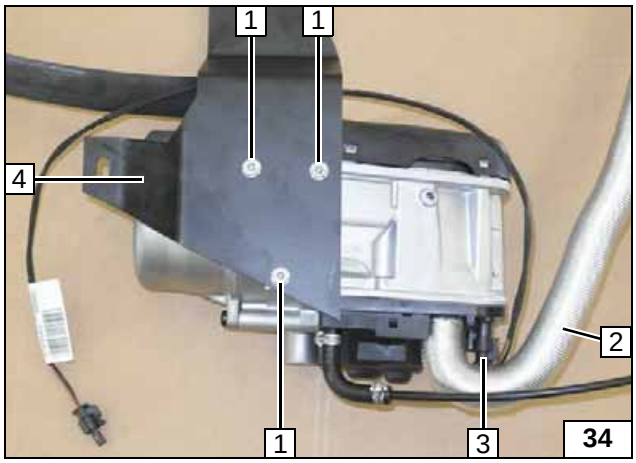
A = 80
B = 310
C = 90
D = 60
E = 160
F = 450

Cutting hoses to length



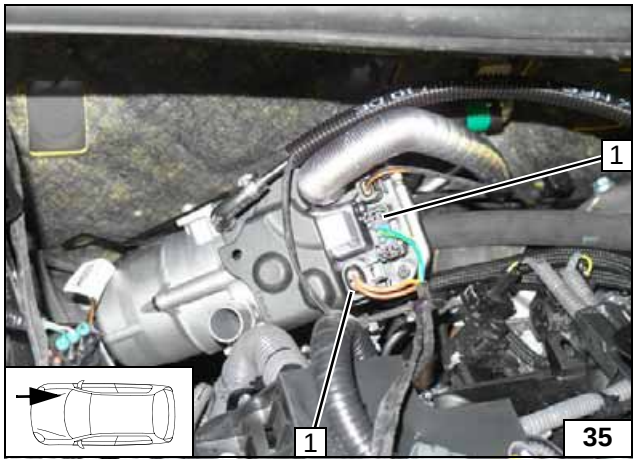
1 25 mm dia. spring clip

Premounting hose F



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

Premounting heater

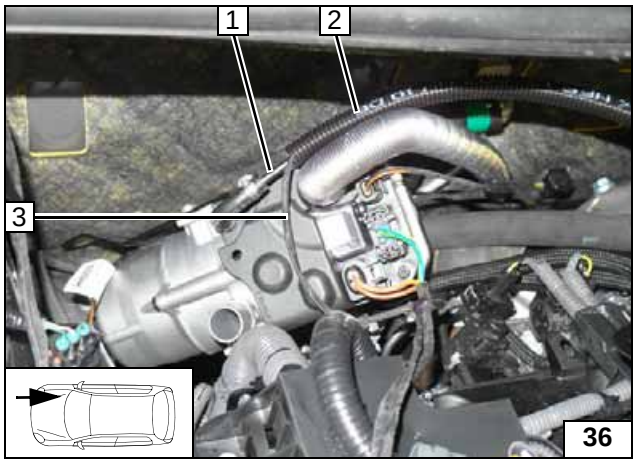


Installing Heater

Reinstall cowl cover, if previously removed.

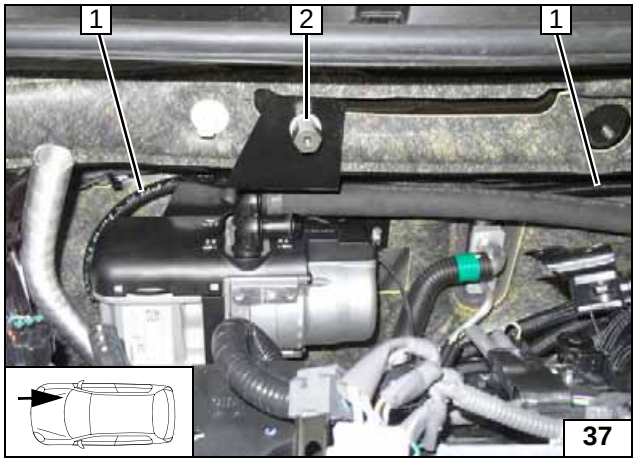
1 Wiring harness of heater [2x]

Installing heater wiring harness



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

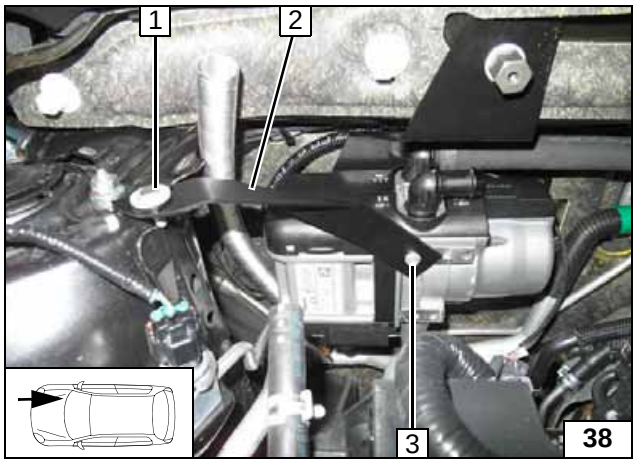
Mounting corrugated tube



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.

2 Original vehicle stud bolt, large diameter washer, M6x20 spacer nut

Installing 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

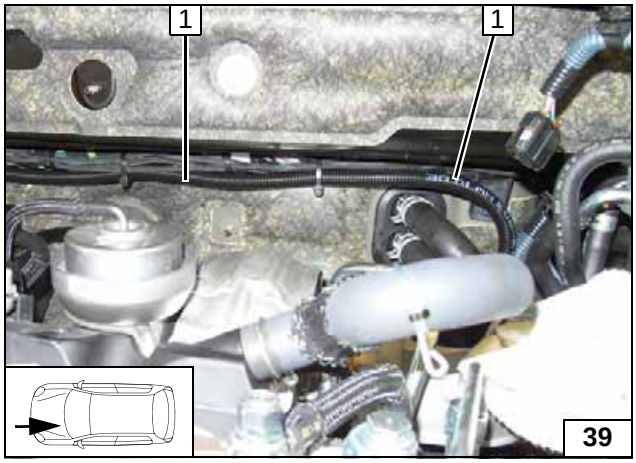
Fuel

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

Catch any fuel running off with an appropriate container.

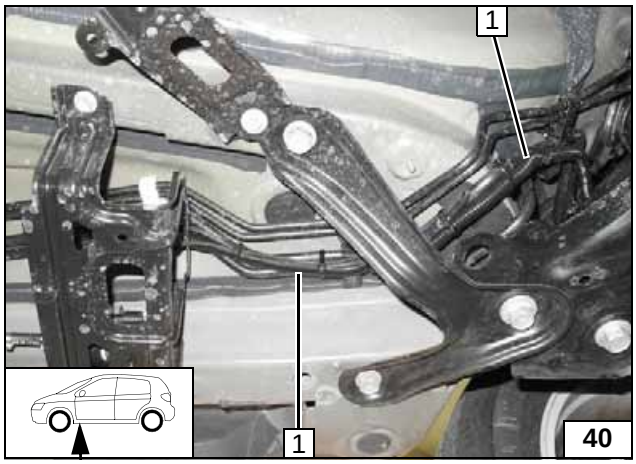
Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

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



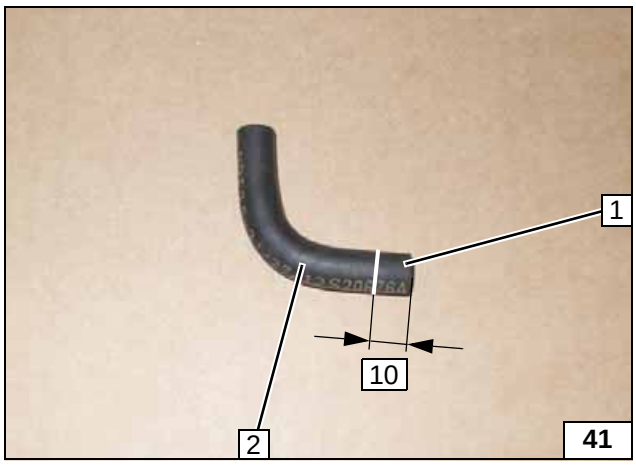
Route fuel line and wiring harness of metering pump in corrugated tube **1** along original vehicle lines to underbody.

Routing lines



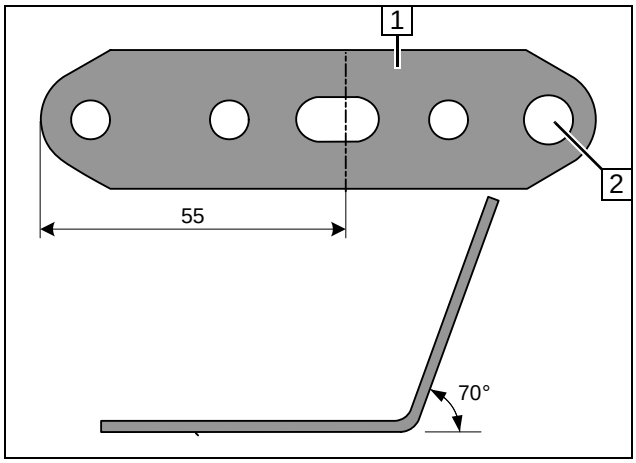
Route fuel line and wiring harness of metering pump in corrugated tube **1** to installation location of metering pump.

Routing lines



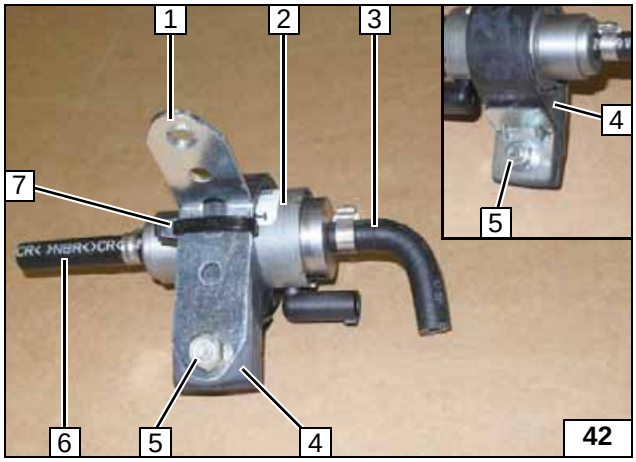
1 Discard section
2 90° 4.5 mm dia. moulded hose

Shortening moulded hose



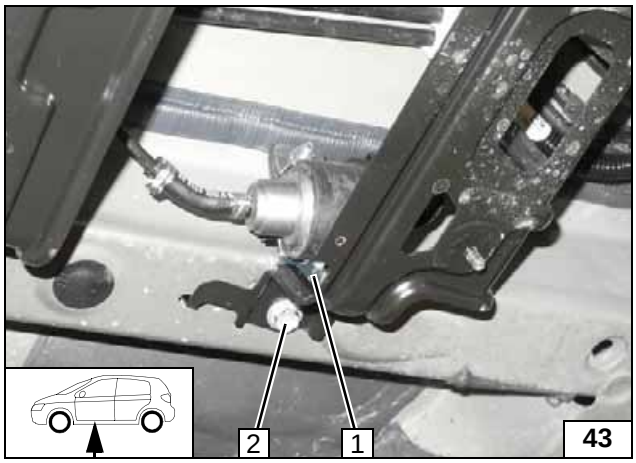
1 Angle down perforated bracket
2 Drill out 8.5 mm dia. hole

Preparing perforated bracket



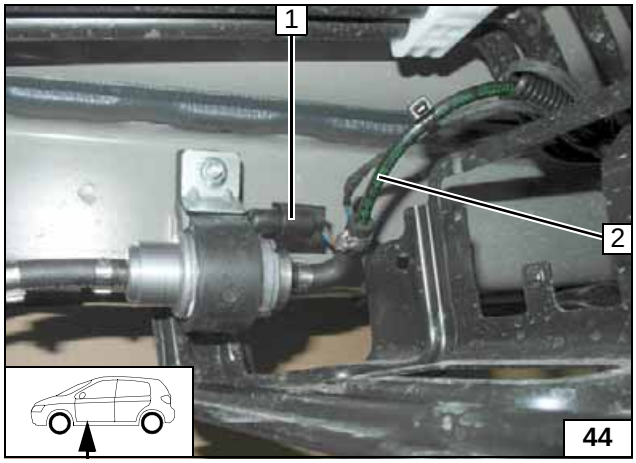
1 Perforated bracket
2 Metering pump
3 4.5 mm dia., 90° moulded hose, 10 mm dia. clamp
4 Metering pump mounting
5 M6x25 bolt, support angle bracket, flanged nut
6 Hose section, 10 mm dia. clamp
7 Cable tie

Premounting metering pump



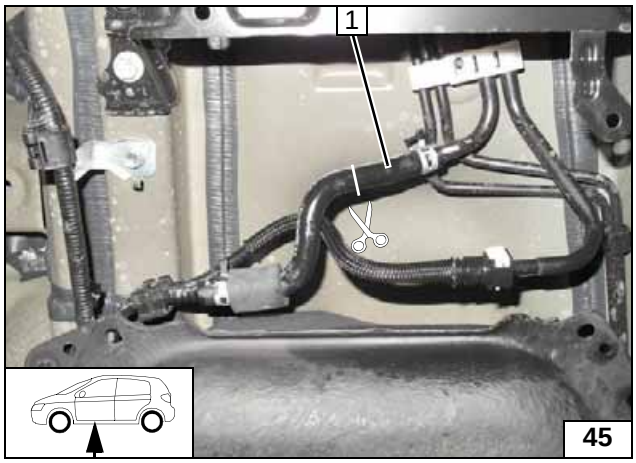
1 Perforated bracket
2 Original vehicle bolt

Installing metering pump



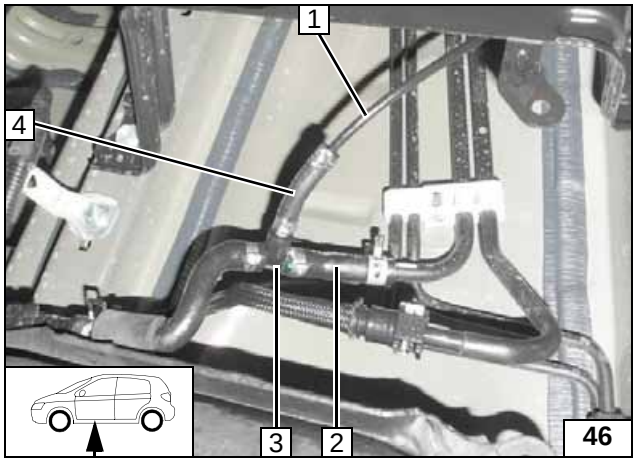
1 Wiring harness of metering pump, connector mounted
2 Fuel line of heater, 10 mm dia. clamp

Connection of metering pump



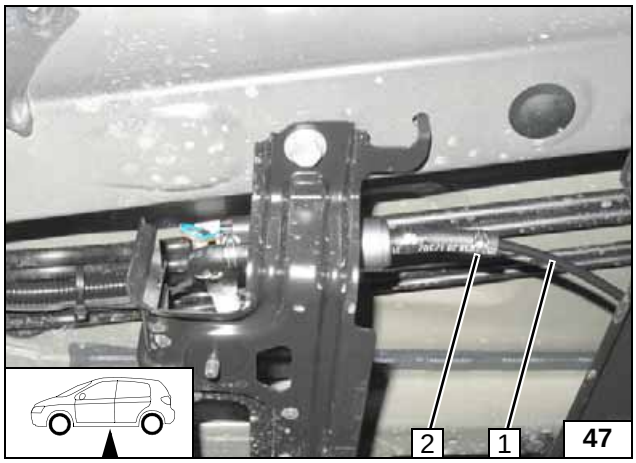
Cut out fuel return line **1** along the marking.

Fuel extraction



1 Fuel line
2 Fuel return line
3 8x5x8 fuel standpipe, clamp 13.5 mm dia [2x]
4 Hose section, 10 mm dia. clamp [2x]

Mounting fuel standpipe



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

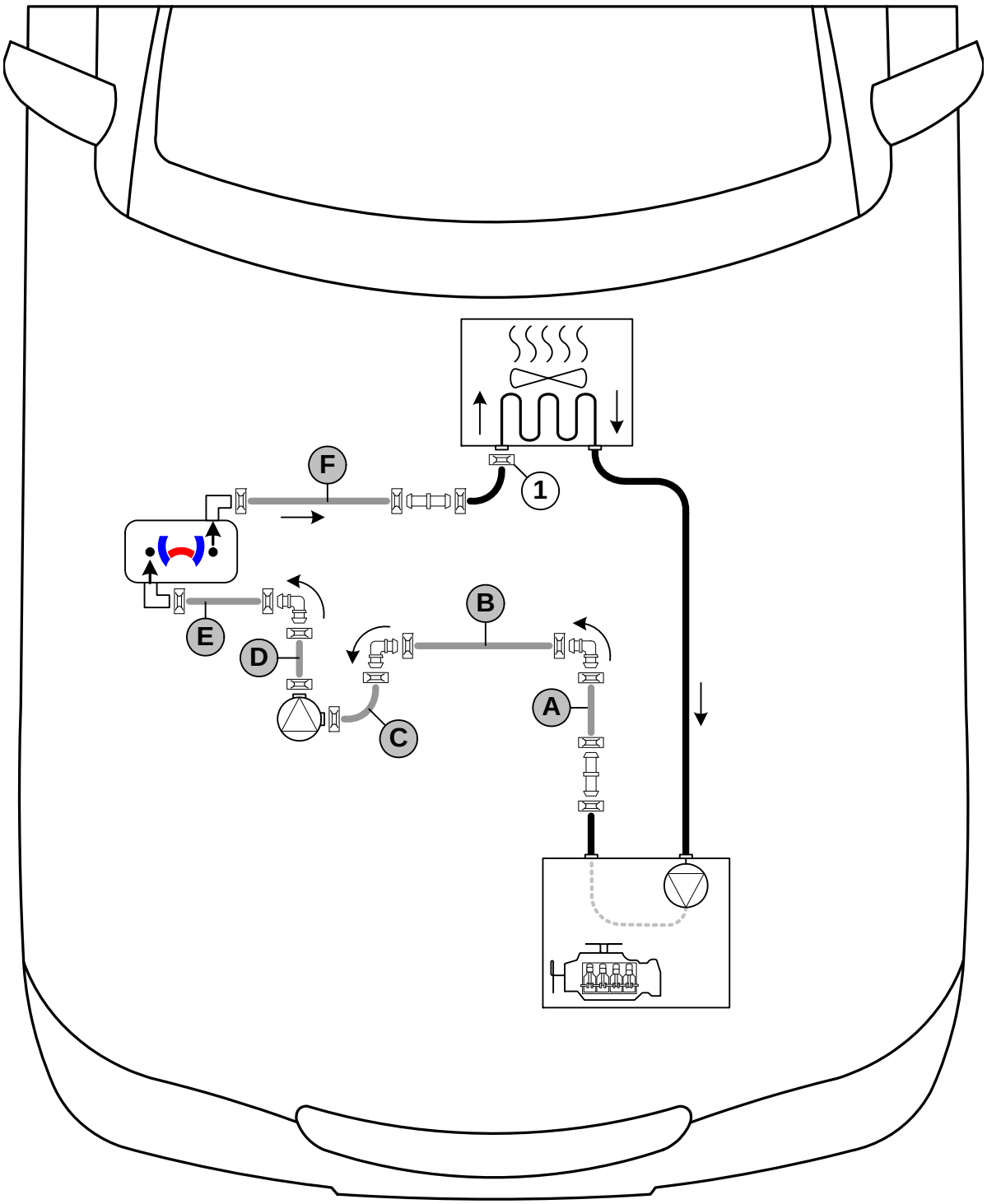
1 Fuel line, fuel standpipe
2 10 mm dia. clamp

Connection of metering pump

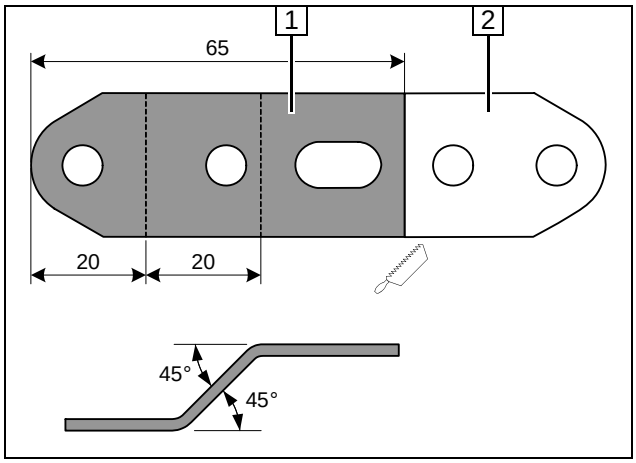
Coolant Circuit

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

Hose routing diagram

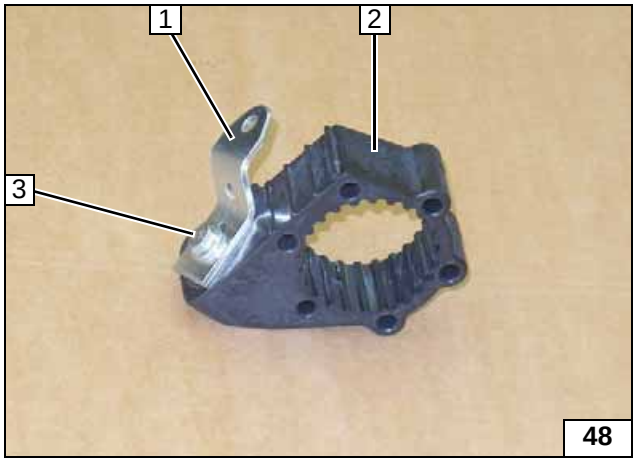


All spring clips = 25 mm dia. **1** = Original vehicle spring clip .
All connecting pipes and = 18x18 mm dia.



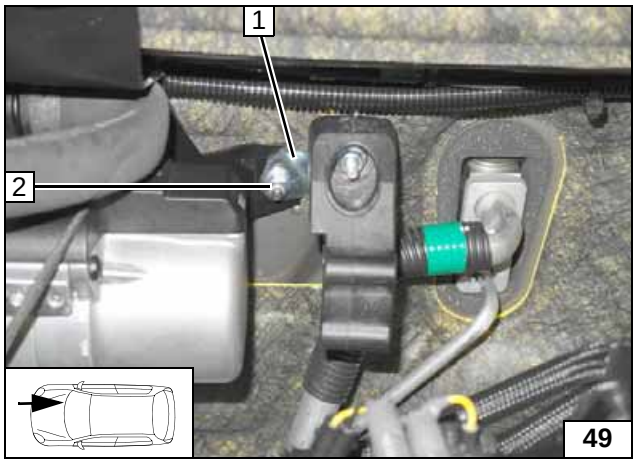
1 Angle down perforated bracket [2x]
2 Discard section

Preparing perforated bracket



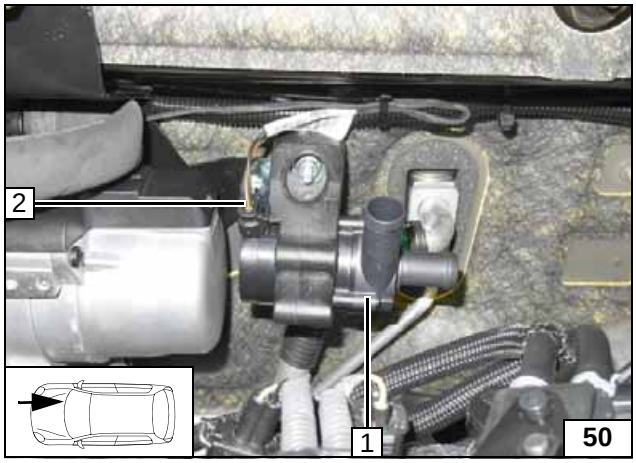
1 Perforated bracket
2 Circulating pump mounting
3 M6x25 bolt, flanged nut

Premounting circulating pump mounting



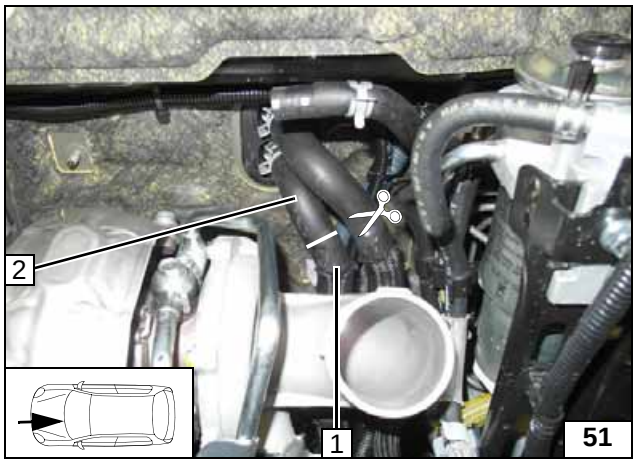
1 Perforated bracket
2 Flanged nut, original vehicle stud bolt

Installing circulating pump



1 Circulating pump
2 Install wiring harness of circulating pump

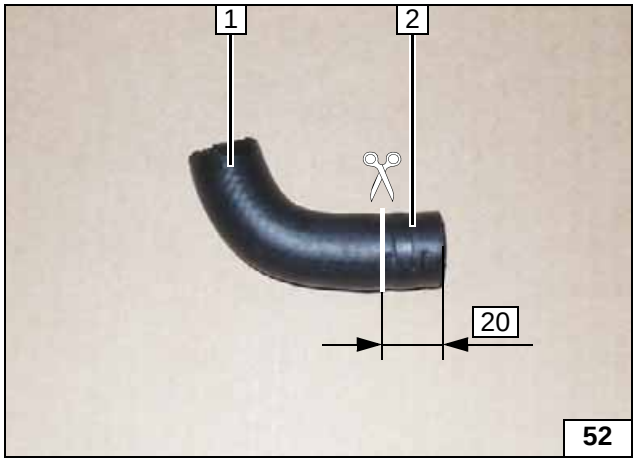
Installing circulating pump



Separate hose of engine outlet / heat exchanger inlet at the marking.

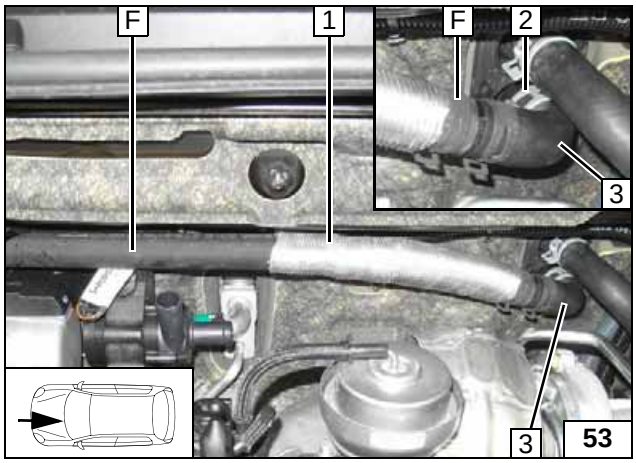
1 Engine outlet hose section
2 Remove hose section of heat exchanger inlet, will be reused with spring clip

Cutting point



1 Hose on heat exchanger inlet
2 Discard section

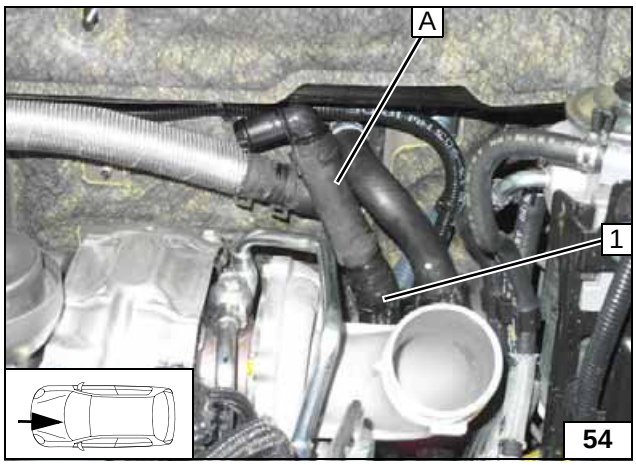
Cutting hose to heat exchanger inlet to length



Cut heat protection hose **1** to 230 mm and slide it onto hose **F**.

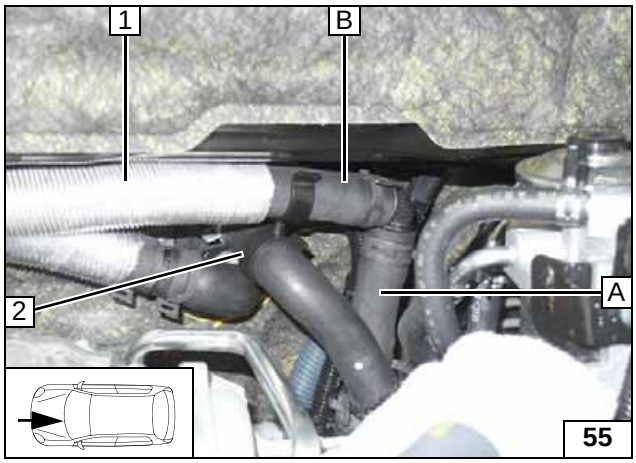
2 Original vehicle spring clip
3 Hose on heat exchanger inlet

Connecting heat exchanger inlet



1 Hose of engine outlet

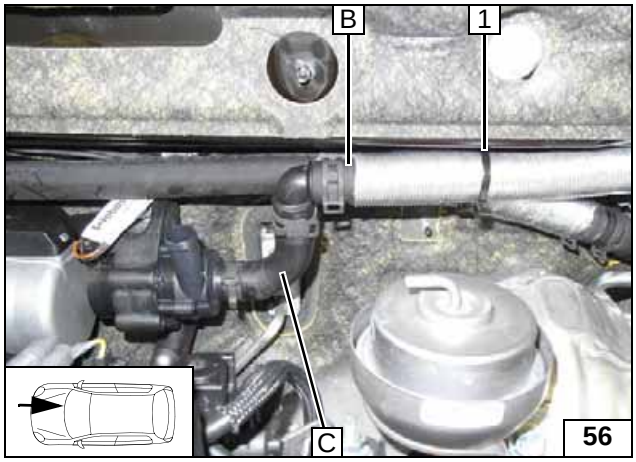
Connecting heat exchanger outlet



Cut heat protection hose **1** to 230 mm and slide it onto hose **F**.

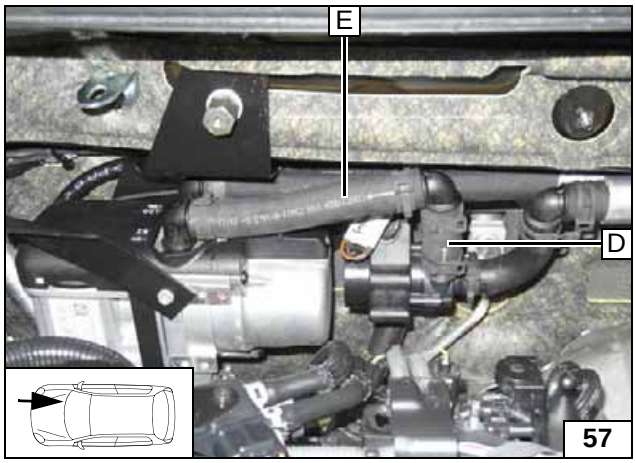
2 20x20 mm hose bracket (between hose **B** and hose of heat exchanger outlet)

Connecting heat exchanger outlet



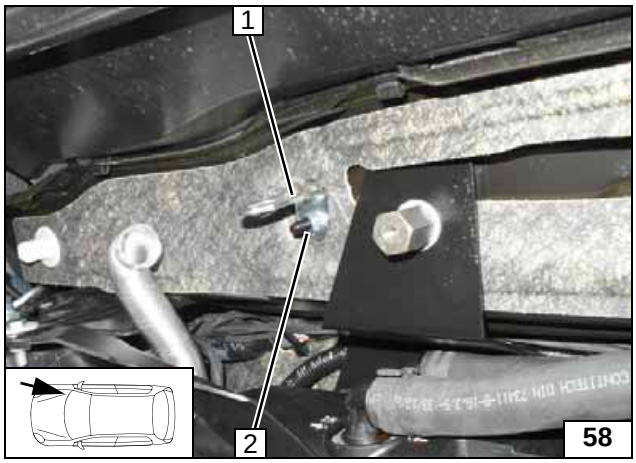
1 Cable tie

Connecting circulating pump



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

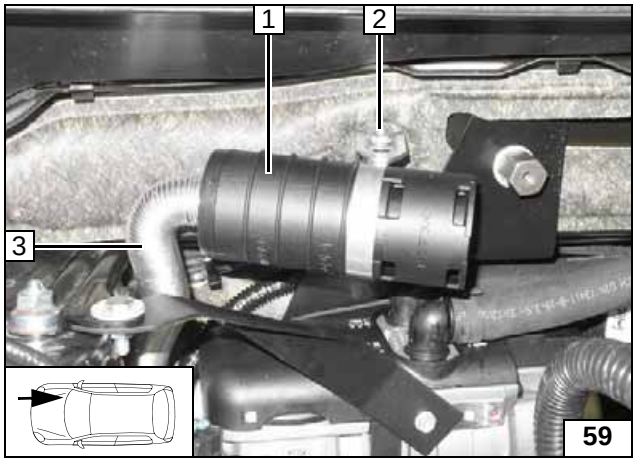
Connecting heater



Combustion Air

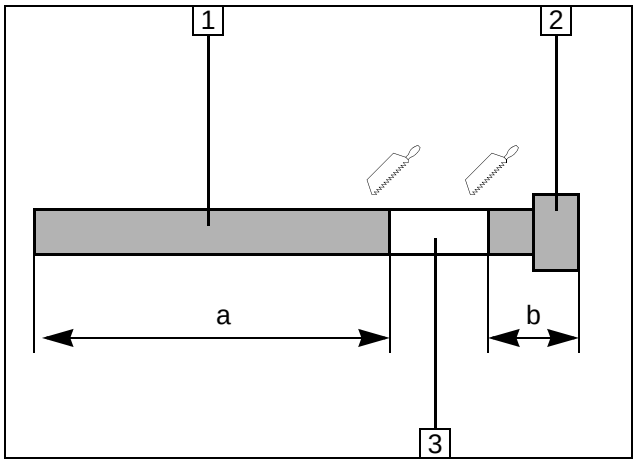
1 Angle bracket
2 M6 flanged nut, existing stud bolt

Mounting angle bracket



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

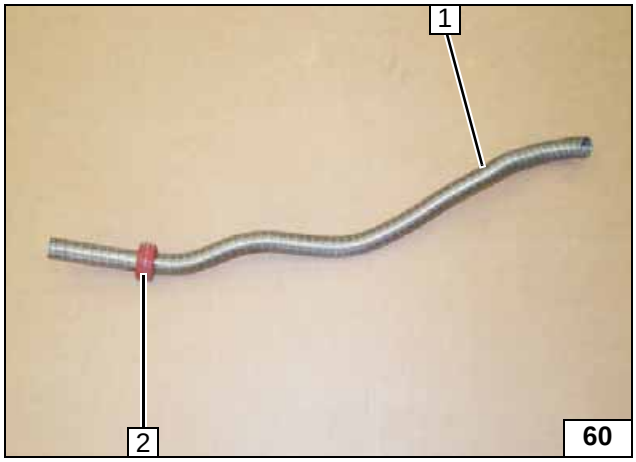
Installing silencer



Exhaust Gas

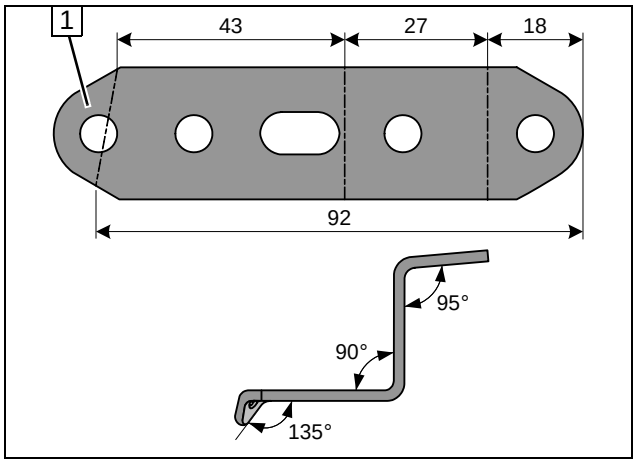
1 Exhaust pipe
a = 680
2 Exhaust end section
b = 80
3 Discard section

Preparing exhaust pipe



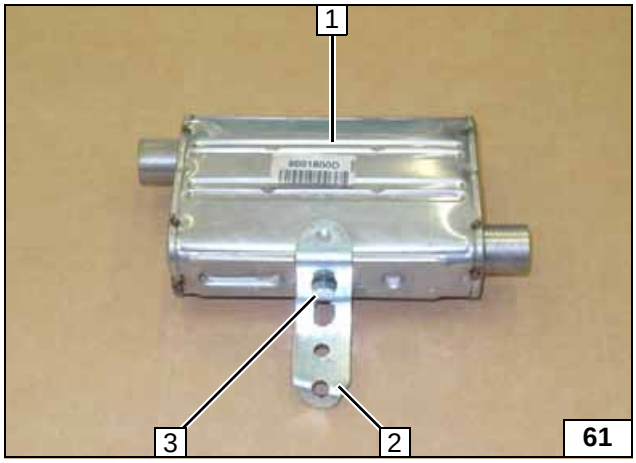
1 Shape exhaust pipe
2 Push on spacer bracket

Preparing exhaust pipe



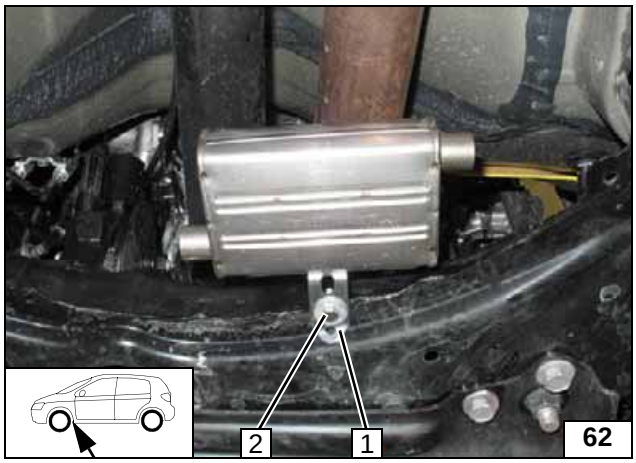
1 Perforated bracket

Preparing perforated bracket



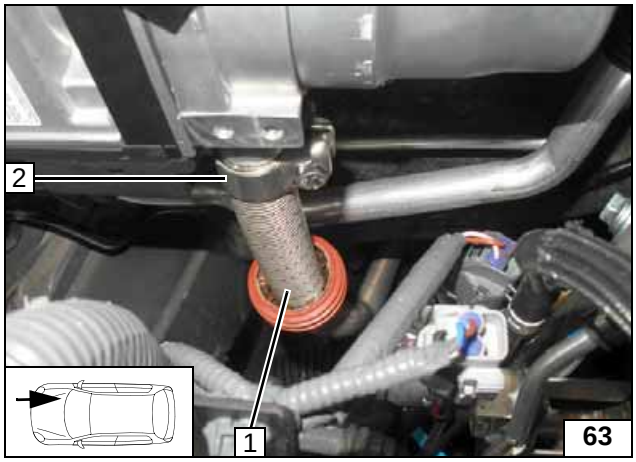
1 Silencer
2 Perforated bracket
3 M6x16 bolt, spring lockwasher

Premounting silencer



1 Perforated bracket
2 M6x20 bolt, large diameter washer, flanged nut, existing hole

Installing silencer

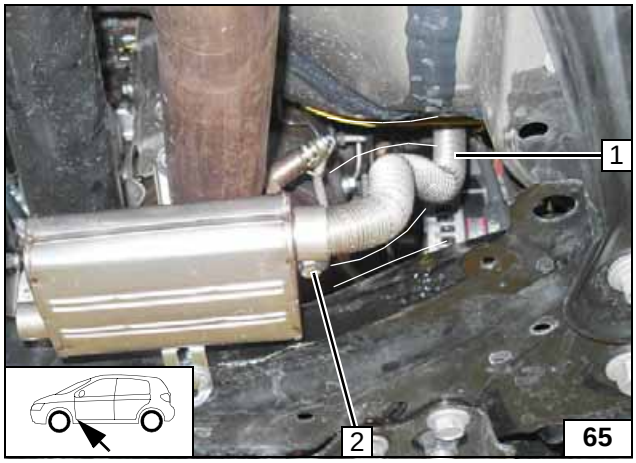


1 Exhaust pipe
2 Hose clamp

Installing exhaust pipe

1 Align spacer bracket with A/C line

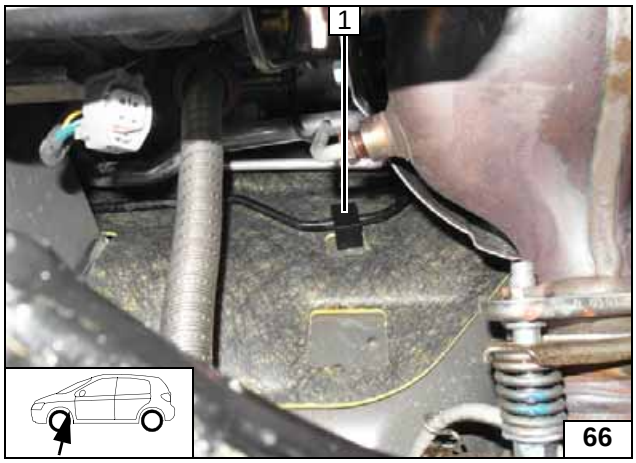
Aligning spacer bracket



Ensure sufficient distance from body and from engine support (min. 20 mm), correct if necessary.

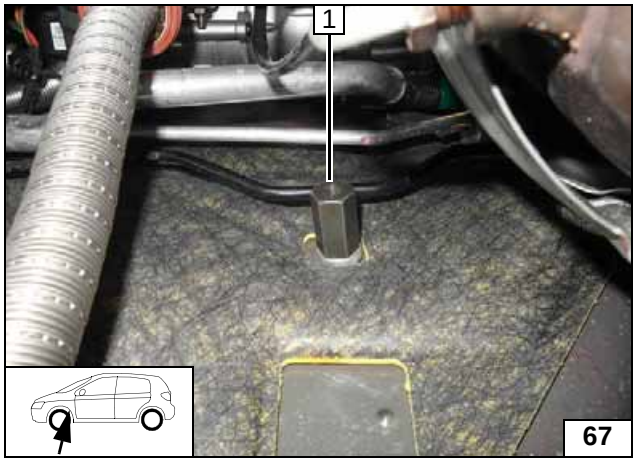
1 Exhaust pipe
2 Hose clamp

Installing exhaust pipe



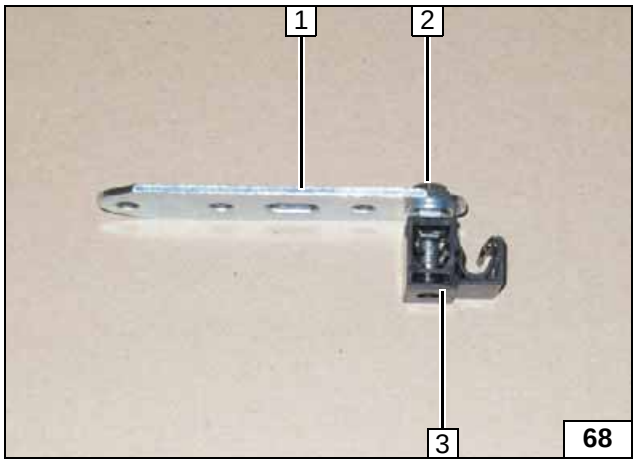
1 Remove clip, will be reused

Fastening exhaust pipe



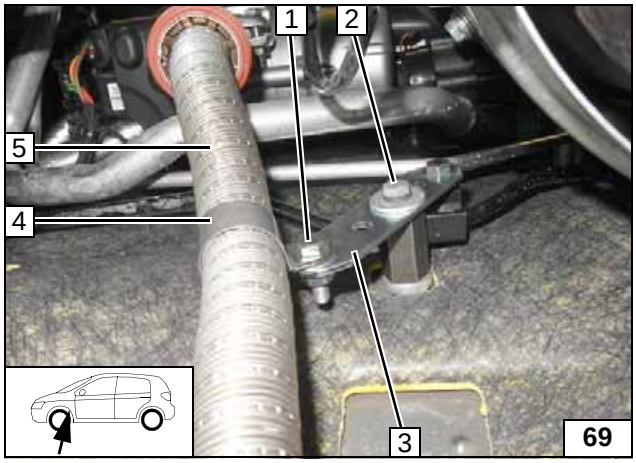
1 5 mm shim, M6x30 spacer nut, original vehicle stud bolt

Fastening exhaust pipe



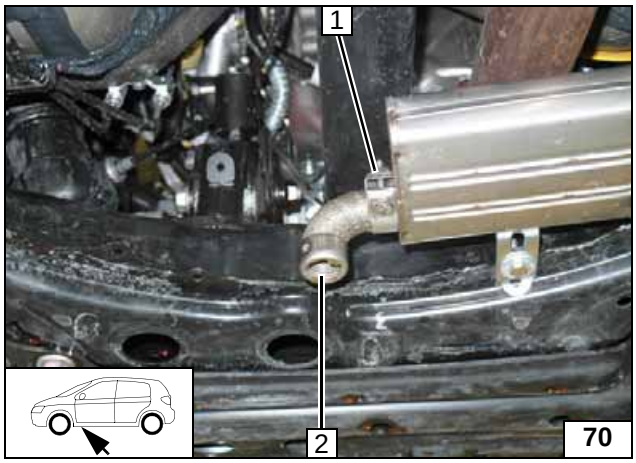
1 Perforated bracket
2 M6x20 bolt, flanged nut
3 Mount clip

Preparing clip



1 M6x20 bolt, flanged nut
2 M6x12 bolt, spring lockwasher, large diameter washer
3 Perforated bracket
4 P-clamp
5 Exhaust pipe

Fastening exhaust pipe

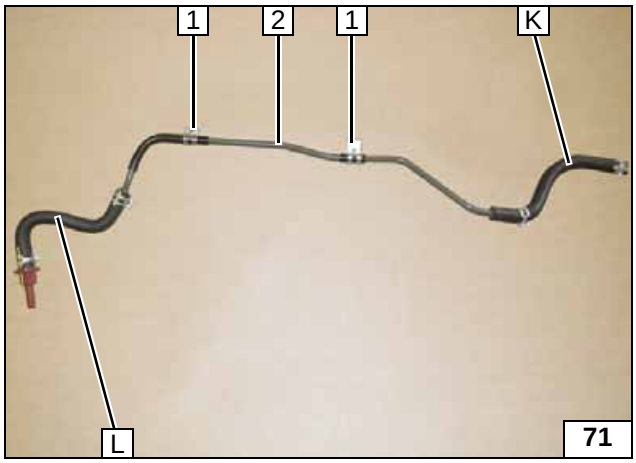


Ensure sufficient distance from engine support (min. 20 mm), correct if necessary.

1 Hose clamp
2 Exhaust end section

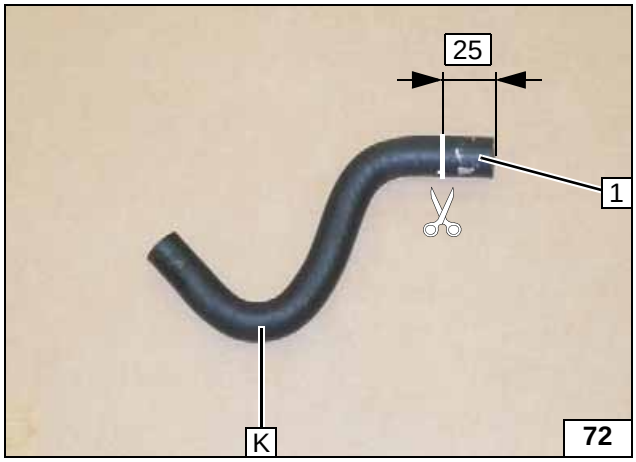
Fastening exhaust end section

Vacuum Line



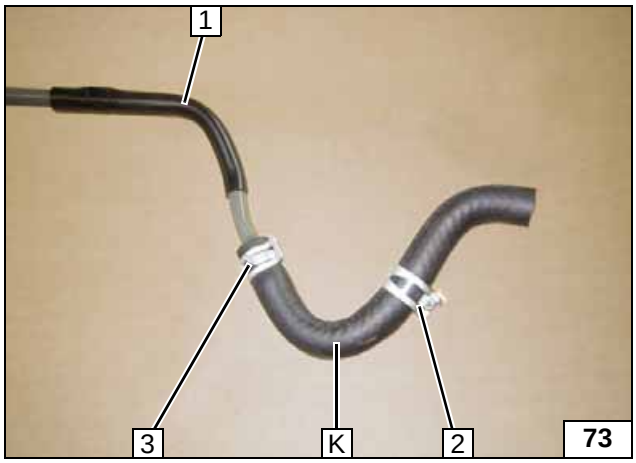
1 Remove clamp [2x] and discard
2 Vacuum line
K Remove hose, will be reused
L Remove hose with check valve, will be reused

Removing vacuum line



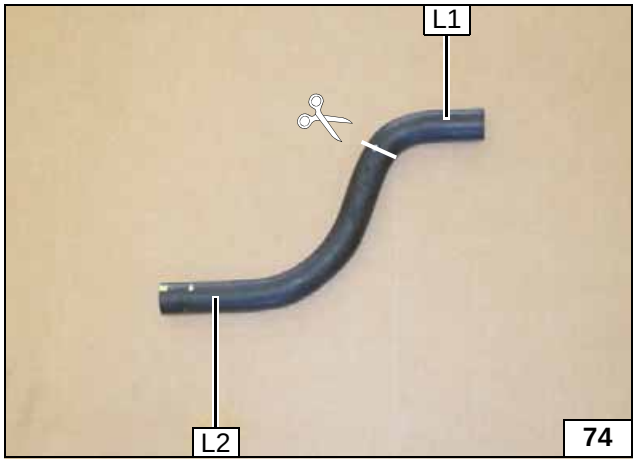
1 Discard section

Cutting hose K to length



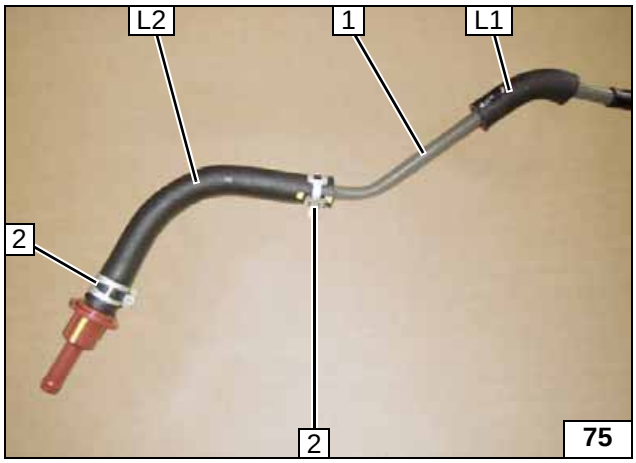
1 Vacuum line
2 Original vehicle spring clip, pushed on
3 Original vehicle spring clip

Premounting hose K



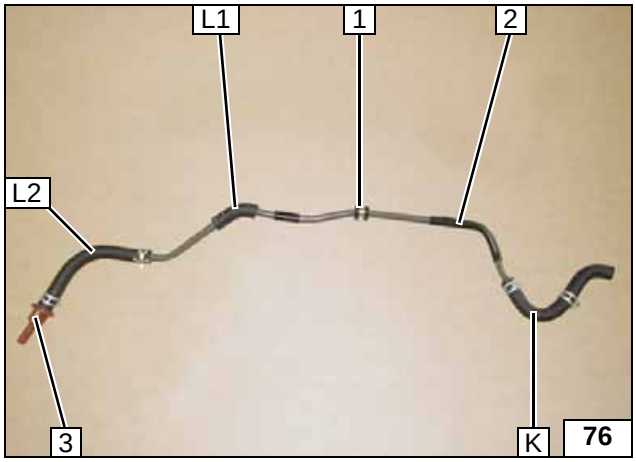
Cut hose **L** at the marking. Sections will be named **L1** and **L2**.

Cutting hose L to length



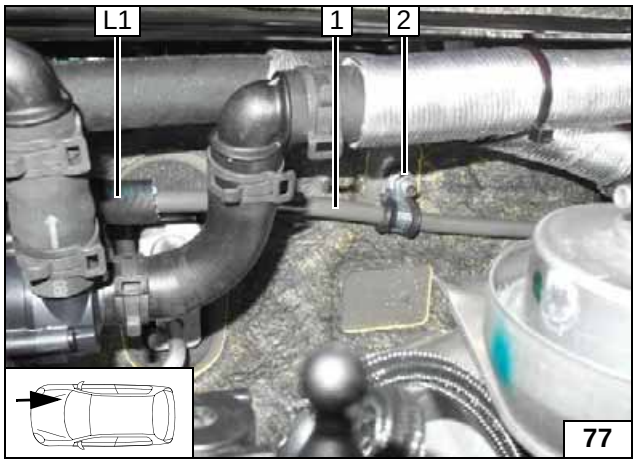
1 Vacuum line
2 Original vehicle spring clip [2x]

Premouting hoses L1 and L2



1 10 mm dia. rubber-coated p-clamp
2 Vacuum line
3 Vacuum valve

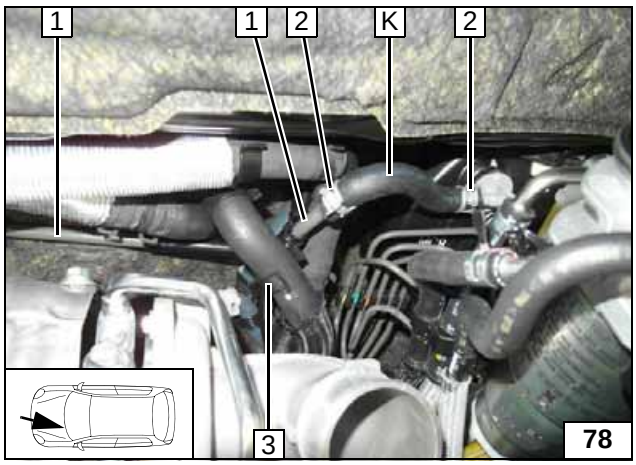
Premounting vacuum line



Route and align vacuum line **1** on the firewall as shown and according to following figures. Align hose **L1 1** with circulating pump.

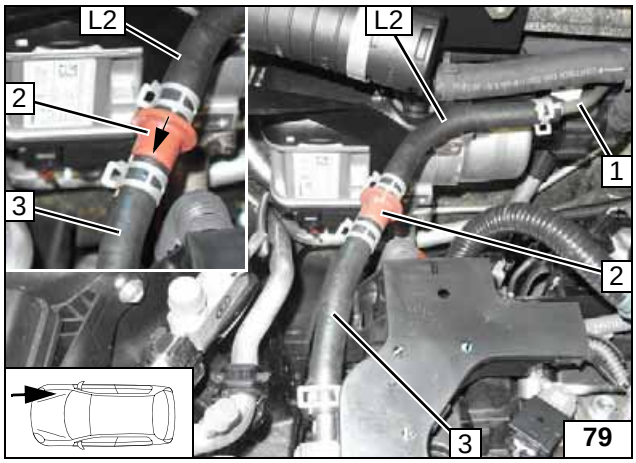
2 10 mm dia. rubber-coated p-clamp, flanged nut, existing stud bolt

Mounting vacuum line



1 Vacuum line
2 Original vehicle clamp [2x]
3 10x19 hose bracket (between vacuum line and hose of heat exchanger outlet)

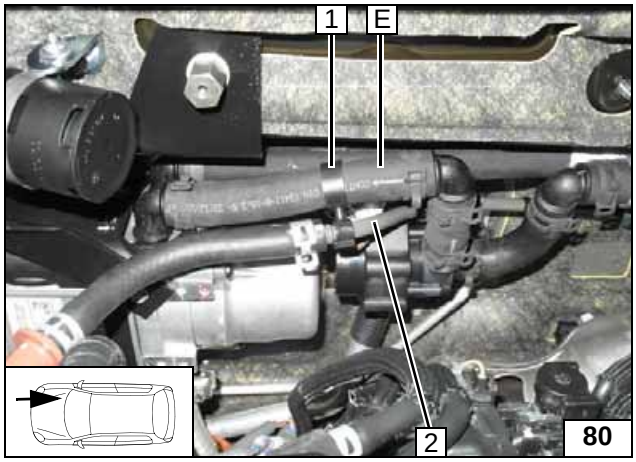
Mounting hose K



Mind direction of flow of check valve!

1 Vacuum line, original vehicle spring clip
2 Check valve, original vehicle spring clips [2x]
3 Vacuum hose of engine

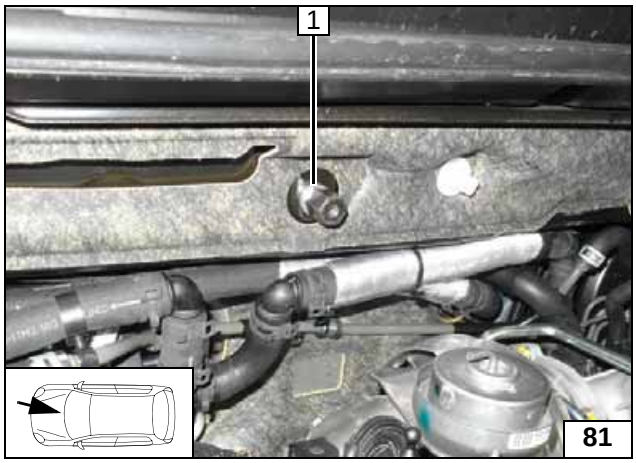
Mounting L2 hose



1 10x19 hose bracket
2 Vacuum line

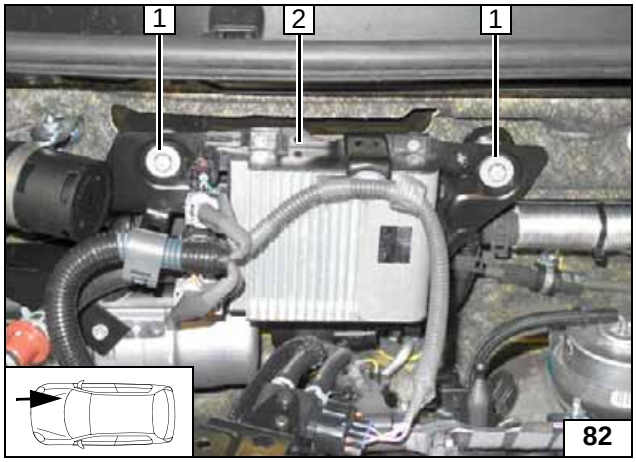
Mounting hose bracket

Control Unit



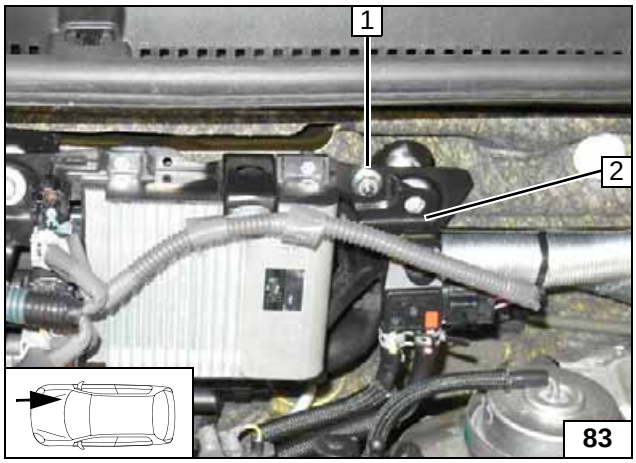
1 5 mm shim, M6x20 spacer nut on original vehicle stud bolt

Installing spacer nut



1 M6x12 bolt, spring lockwasher, large diameter washer on M6x20 spacer nut [2x each]
2 Bracket of original vehicle control unit

Installing control unit



1 Original vehicle nut on stud bolt of control unit bracket
2 Vacuum valve bracket

Mounting vacuum valve

Final Work

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

- **Connect the battery**
- **Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.**
- **Adjust digital timer, try out Telestart**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Checking the fan function (IPCU):**
  Adjust fan output to maximum. 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 IPCU.
- **Check the proper function of the parking heater, see the operating instructions/installation instructions.**
- **Place signboard "Switch off parking heater before refuelling" in the area of the filler neck.**

During initial start up, proceed as follows with the Webasto Thermo Test Diagnosis:

- **Control coolant pump under Menu Component test, check coolant level**
- **Pump fuel for the heater under the menu pipe filling**
- **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.**
- **An error search is to be conducted in case of fault**

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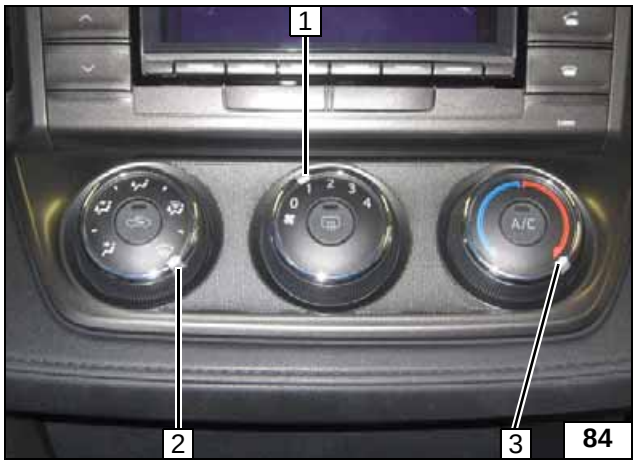
Operating Instructions for Manual Air-Conditioning

Please remove this page in case of manual air-conditioning and add it 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.

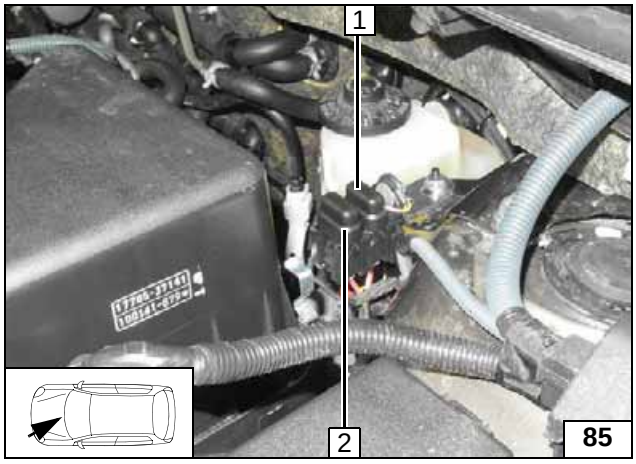
If vehicles have passenger compartment monitoring, this must be deactivated in addition to the vehicle settings for the heating operation.
Deactivation instructions can be found in the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



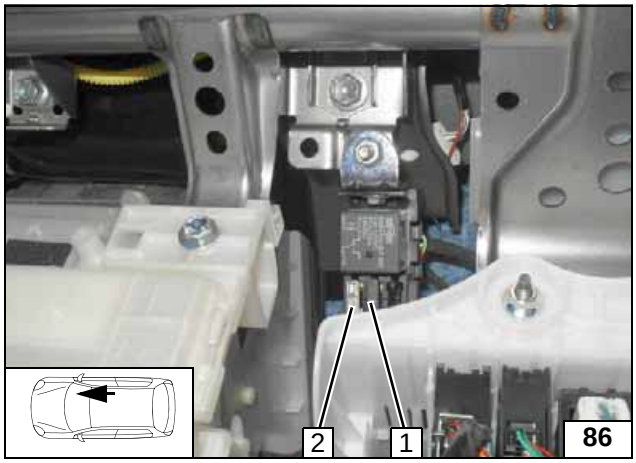
1 Set fan to level "1" or max. "2"
2 Air outlet to windscreen
3 Set temperature to "max."

A/C control panel



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

Fuses of engine compartment



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

Fuses of passenger compartment

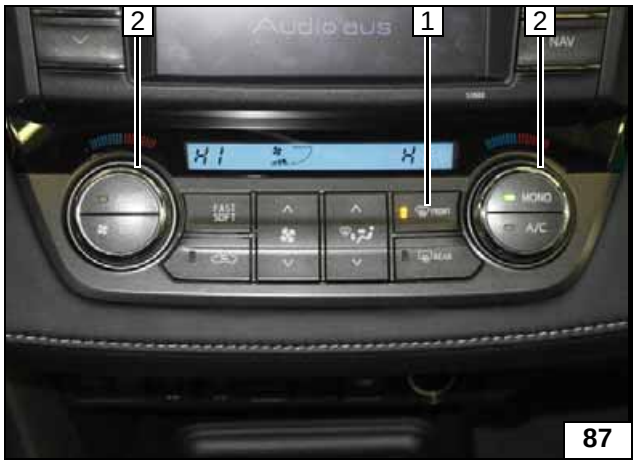
Operating Instructions for Automatic Air-Conditioning

Please remove page in case of automatic air-conditioning and add it 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.

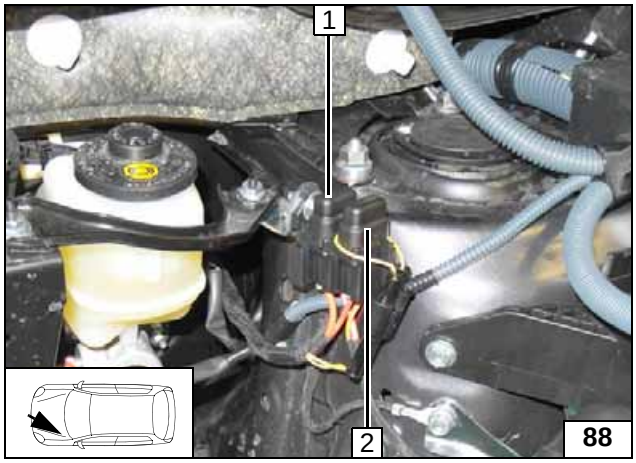
If vehicles have passenger compartment monitoring, this must be deactivated in addition to the vehicle settings for the heating operation.
Deactivation instructions can be found in the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:



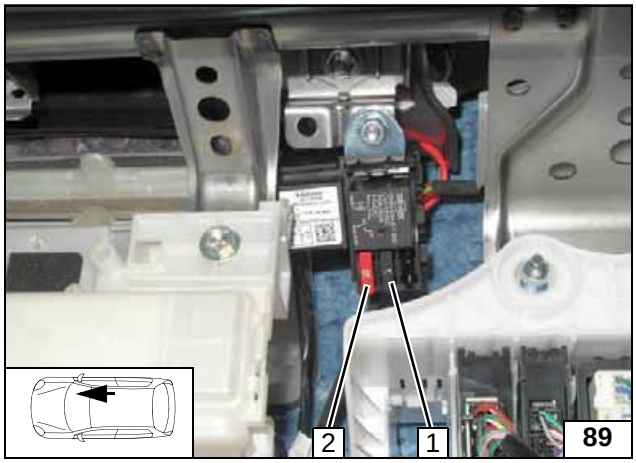
1 Air outlet to windscreen
2 Set temperature to "HI" on both sides

A/C control panel



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

Fuses of engine compartment



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

Fuses of passenger compartment