



Water Heater

Thermo Top Evo Parking Heater



Installation Documentation Jeep Wrangler Unlimited

Validity

Manufacturer	Model	Type	EG BE No. / ABE
Jeep	Wrangler Unlimited	JK	e4 * 2001 / 116 * 0116 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm ³	Engine code
2.8 CRD	Diesel	SG	130	2777	49C / 50C
2.8 CRD	Diesel	AG	147	2777	ENF

SG = manual transmission
AG = automatic transmission

From model year 2007
Left-hand drive vehicle

Verified equipment variants: Manual / automatic air-conditioning system
Front fog lights

Not verified: Passenger compartment monitoring
Headlight washer system
Short wheelbase
Start-Stop

Total installation time: about 7 hours

Jeep Wrangler Unlimited

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Necessary Components

- Basic delivery scope of Thermo Top Evo in accordance with price list
- Installation kit for Jeep Wrangler Unlimited 2007 2.8 Diesel: **1317470B**
- Additionally required in case of automatic air-conditioning: 1x Power Adapter Ident. No.: **1320328_**
- 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

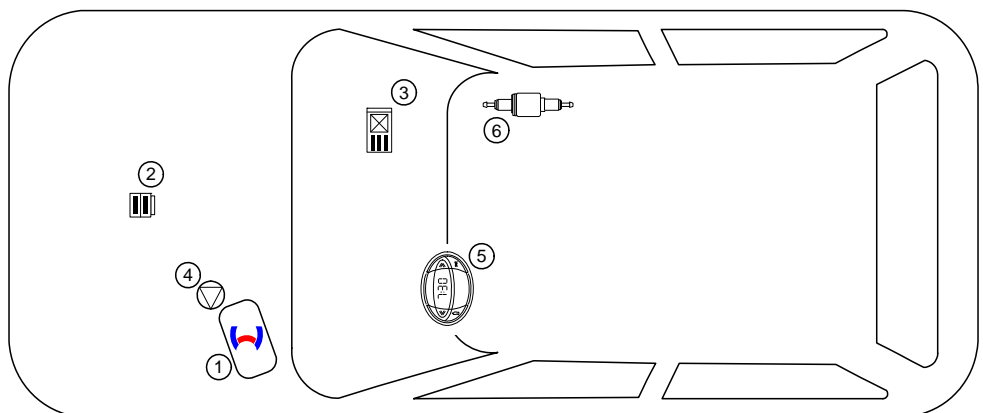
Installation instructions:

- 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. Passenger compartment relay and fuse holder
4. Circulating pump
5. Digital Timer
6. Metering pump



Information on Total Installation Time

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

The total installation time may vary for vehicle equipment other than provided.

Information on Operating and Installation Instructions

1 Important information (not complete)

1.1 Installation and repair



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



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



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

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

1.2 Operation

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

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

Always switch off the heater before refuelling.

The heater may only be used with the prescribed fuel diesel (DIN EN 590) or petrol (DIN EN 228).

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

1.3 Please note

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

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

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

Important

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

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

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

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

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

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

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

2 Statutory regulations governing installation

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

Note

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

Important

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

Note

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

2.1 Excerpt from ECE regulation 122 (heating system) paragraph 5 for the installation of the heater

Beginning of excerpt.

ANNEX VII

REQUIREMENTS FOR COMBUSTION HEATERS AND THEIR INSTALLATION

1. GENERAL REQUIREMENTS

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

2. VEHICLE INSTALLATION REQUIREMENTS

2.1. Scope

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

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

2.2. Positioning of heater

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

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

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

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

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

2.3. Fuel supply

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

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

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

2.4. Exhaust system

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

2.5. Combustion air inlet

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

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

2.6. Heating air inlet

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

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

2.7. Heating air outlet

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

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

End of excerpt.

In multilingual versions the German language is binding.

Jeep Wrangler Unlimited

Information on Validity

This installation documentation applies to Jeep Wrangler Unlimited 2.8 Diesel vehicles - for validity, see page 1 - from model year 2007 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to this 'installation documentation'.

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

Technical Information

Special Tools

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

Dimensions

- All dimensions are in mm.














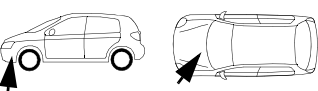

Tightening torque values

- Tightening torque values of 5x13 heater bolts = 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:

Mechanical System		Specific risk of injury or fatal accidents.	
Electrical System		Specific risk due to electrical voltage.	
Coolant Circuit		Specific risk of damage to components.	
Combustion Air		Specific risk of fire and explosion.	
Fuel		Reference to general installation instructions of the Webasto components or to the manufacturer's vehicle-specific documents.	
Exhaust Gas		Reference to a special technical feature.	
Software		The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.	
		Tightening torque according to the manufacturer's vehicle-specific documents.	

Jeep Wrangler Unlimited

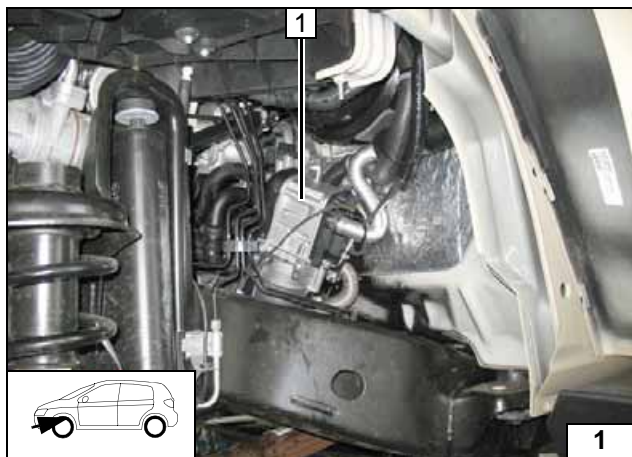
Preliminary Work

Vehicle

- Open the fuel tank cap.
- Ventilate the fuel tank.
- Close the fuel tank cap again.
- Depressurise the cooling system.
- Disconnect the battery.
- Remove the air filter completely, together with the intake hose.
- Remove the fuse and relay box in the engine compartment.
- Remove the battery.
- Remove the battery carrier fully.
- Remove the frontside-left wheel well trim.
- Remove the instrument panel trim on the front passenger's side (only with Telestart option).
- Remove the glove box.
- Remove the A/C control panel (only in case of automatic air-conditioning).

Heater

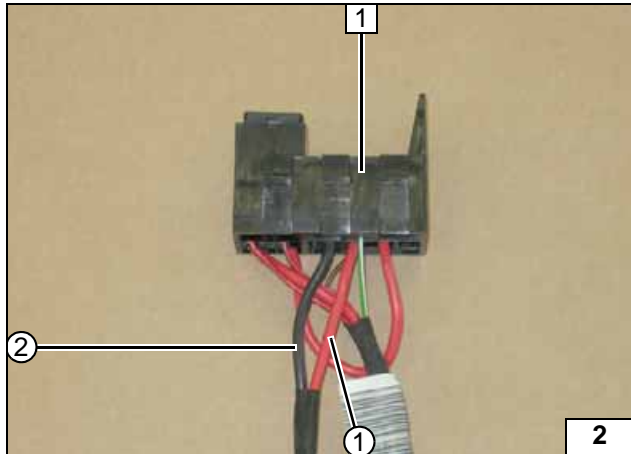
- Remove years that do not apply from the type and duplicate label.
- Attach the duplicate label (type label) visibly in the appropriate place in the engine compartment.



Heater Installation Location

1 Heater

Installation
location



Preparing Electrical System

Wire sections retain their numbering in the entire document.

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

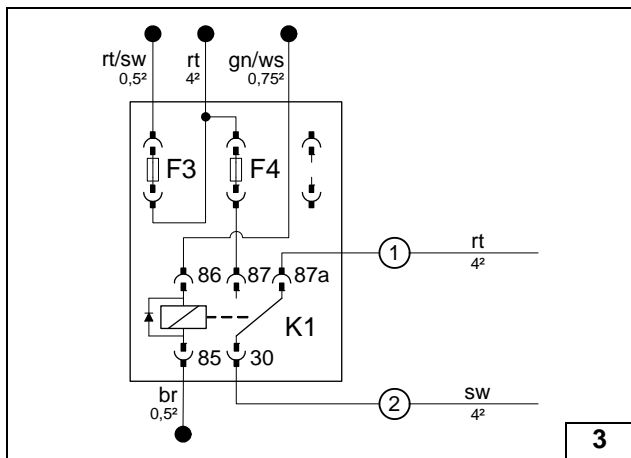
Manual air-conditioning

1 Passenger compartment relay and fuse holder

- ① Red (rt) 4² wire of K1/87a
- ② Black (sw) 4² wire of K1/30



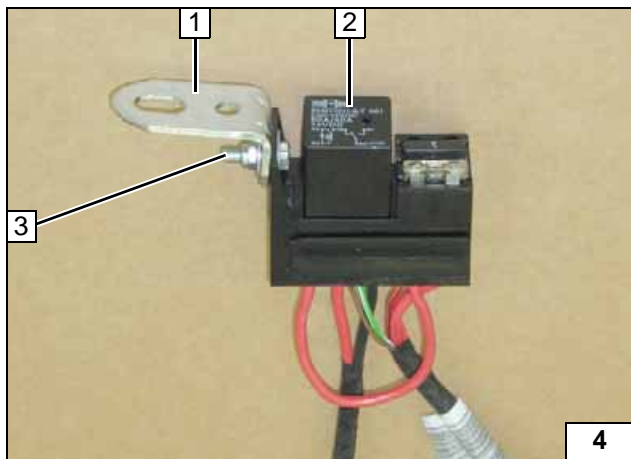
Premounting passenger compartment relay and fuse holder



Insert 25A fuse F4.

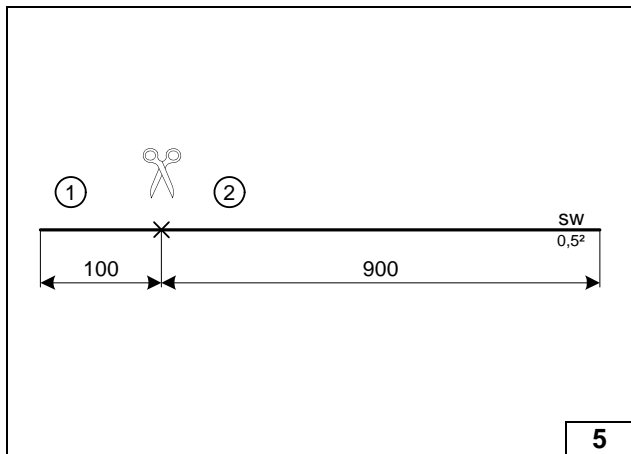


Premounting passenger compartment relay and fuse holder



- 1 Angle bracket
- 2 Relay K1, mounted
- 3 M5x16 bolt, large diameter washer [2x], nut

Premounting passenger compartment relay and fuse holder

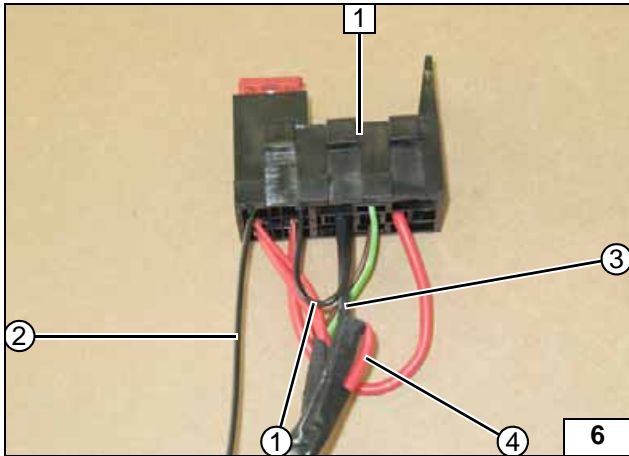
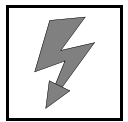


Automatic air-conditioning

Pull wire section ② into provided protective sleeving.



Cutting wires to length

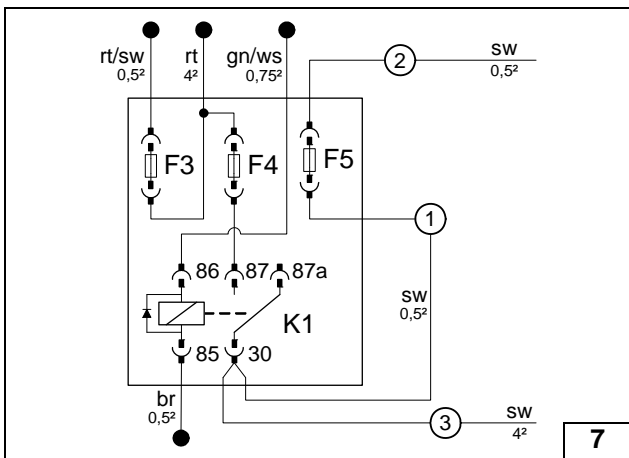


Insulate red (rt) wire ④ 4² and tie back.

- 1 Passenger compartment relay and fuse holder
- ① Black (sw) wire of fuse F4 and K1/30
- ② Black (sw) wire from fuse F4
- ③ Black (sw) 4² wire of K1/30



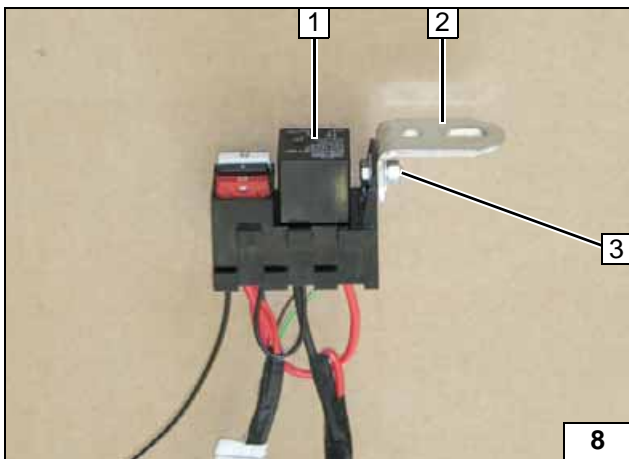
Premounting passenger compartment relay and fuse holder



Insert 25A fuse F4 and 10A fuse F5.



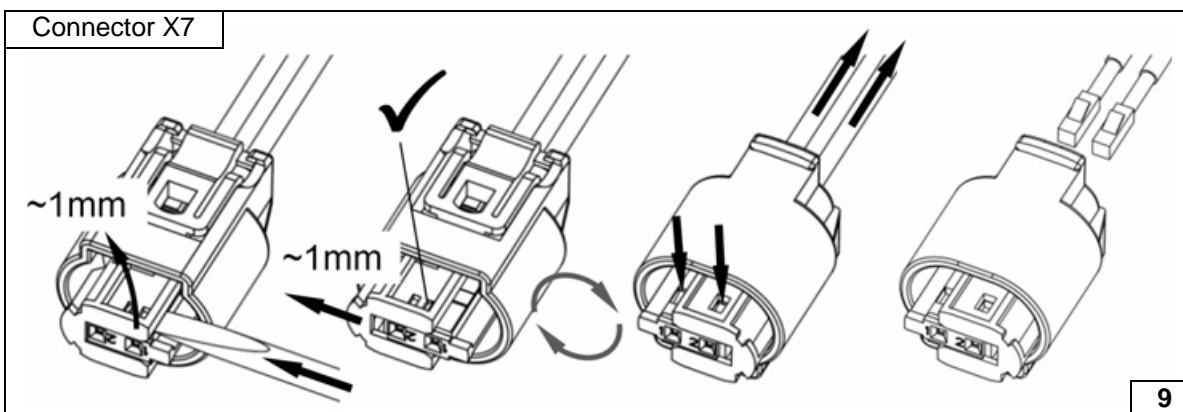
Premounting passenger compartment relay and fuse holder



- 1 Relay K1, mounted
- 2 Angle bracket
- 3 M5x16 bolt, large diameter washer [2x], nut

Premounting passenger compartment relay and fuse holder

All vehicles



Disassembling metering pump connector



Electrical System

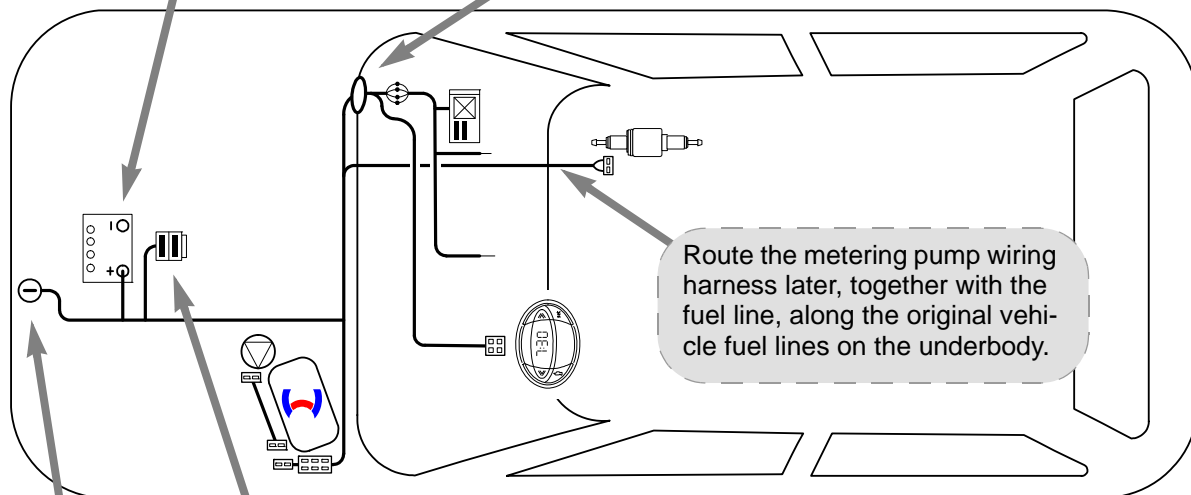
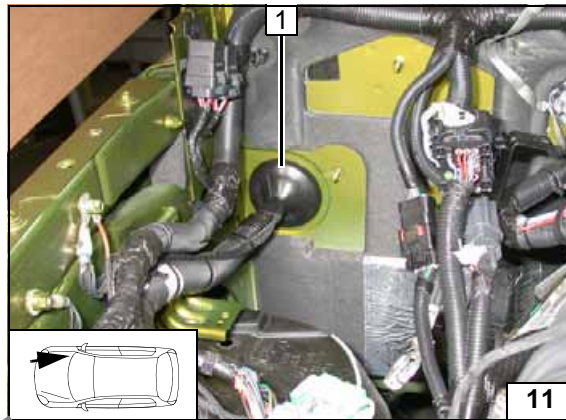
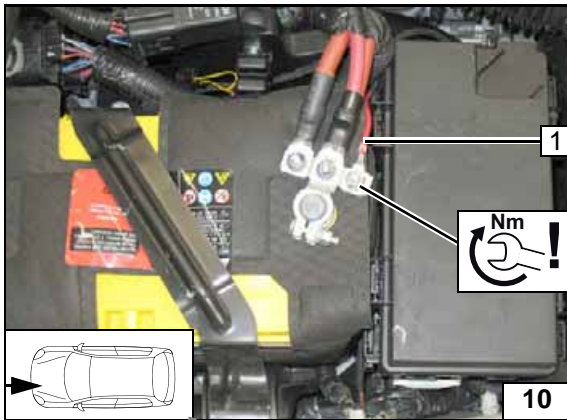


Positive wire

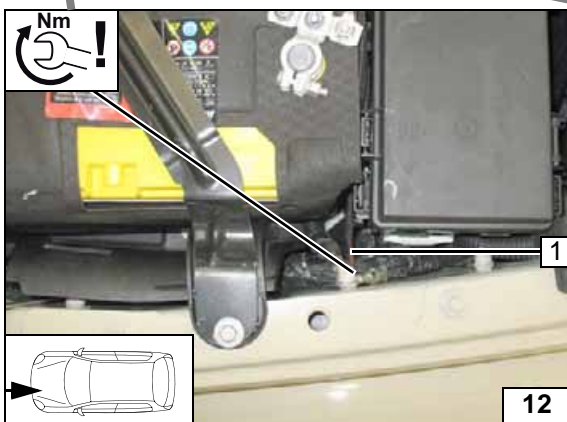
- 1 Positive wire on positive battery terminal

Wiring harness pass through

- 1 Protective rubber plug

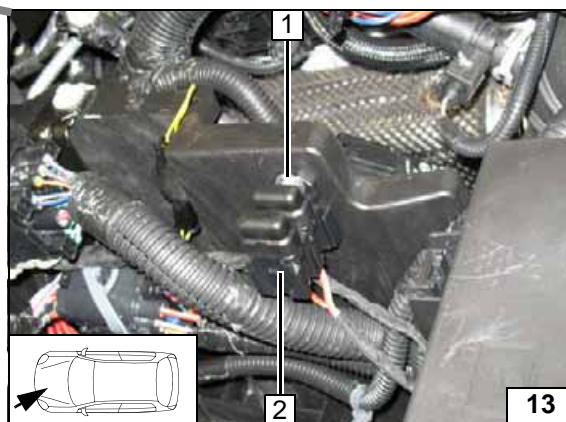


Wiring harness routing diagram



Earth wire

- 1 Earth wire on original vehicle earth support point



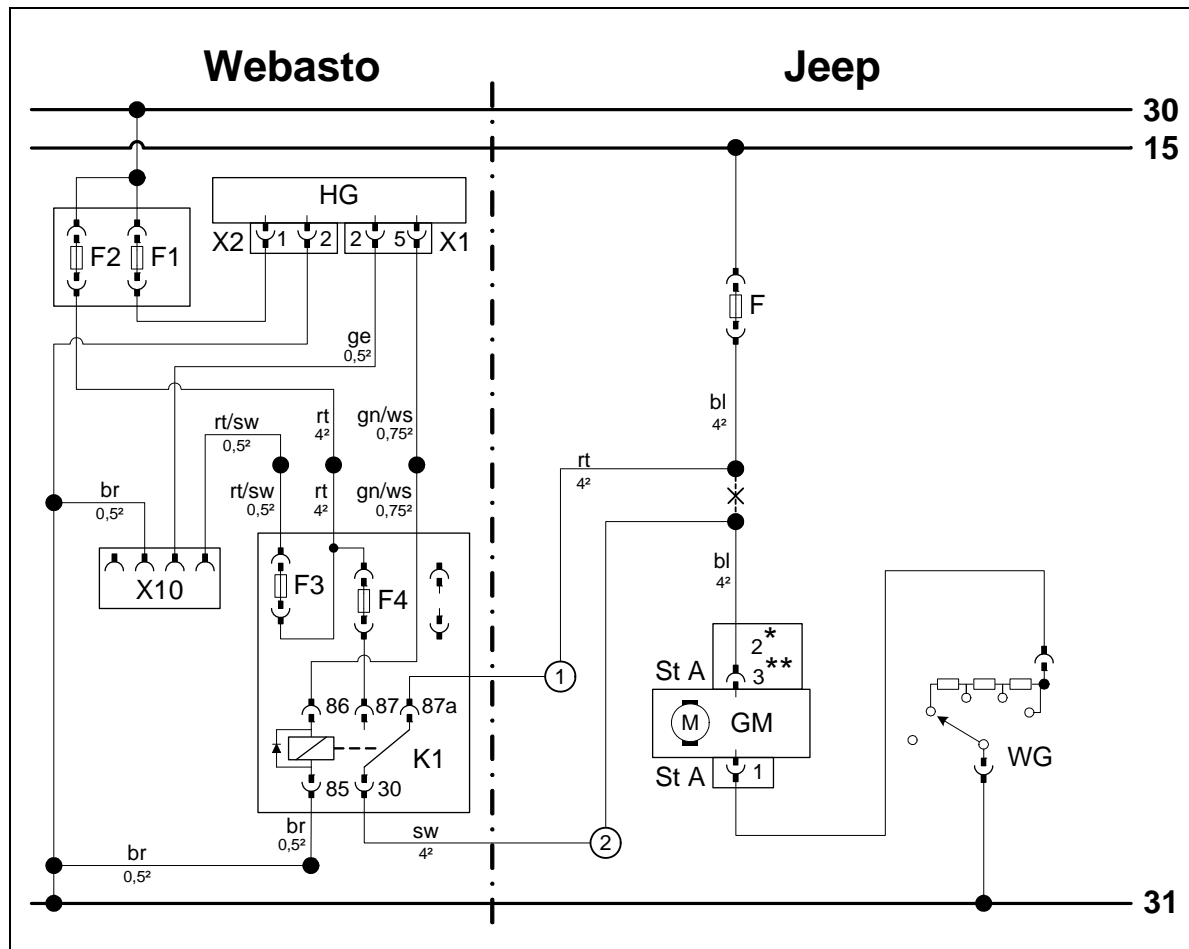
Engine compartment fuse holder

- 1 5.5 mm dia. hole; M5x16 bolt, washer [2x], retaining plate of fuse holder, nut
- 2 Fuses F1-2





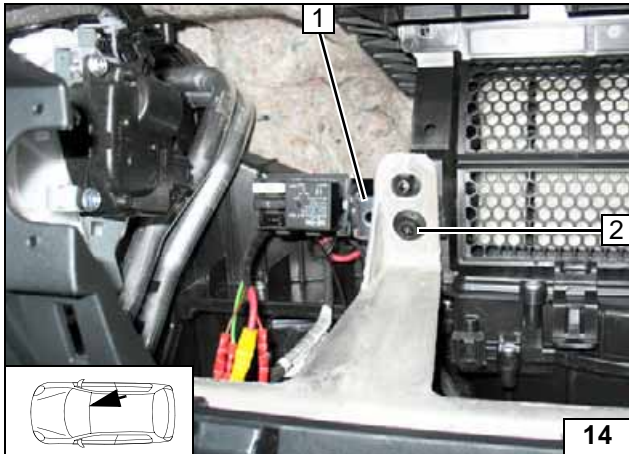
Manual Air-Conditioning Fan Controller



Wiring diagram

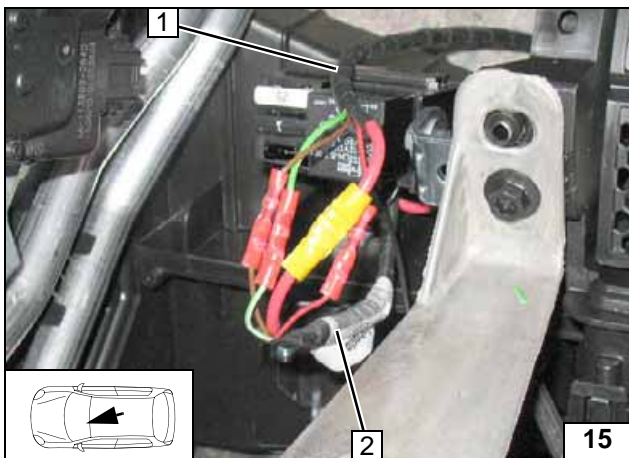
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	F	Fan fuse	rt	red
X1	6-pin heater connector	GM	Fan motor	sw	black
X2	2-pin heater connector	ST A	Connector of GM	bl	blue
F1	20A fuse	WG	Resistor group	ge	yellow
F2	30A fuse			gn	green
X10	4-pin connector of heater control			ws	white
F3	1A fuse			br	brown
F4	25A fuse			*	In case of 2-pin connector ST A
K1	Fan relay			**	In case of 3-pin connector ST A
				X	Cutting point
				Wiring colours may vary.	

Legend



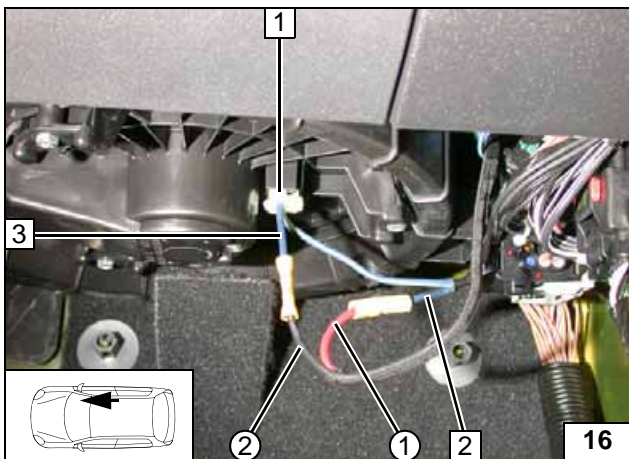
- 1 Angle bracket
- 2 Original vehicle bolt

**Installing pas-
senger com-
partment
relay and fuse
holder**



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

**Connecting
same colour
wires of wir-
ing harness-
es**



Connection to 2-pin/3-pin connector 1 from the fan motor.

- 2 Blue (bl) wire of fan fuse
- 3 Blue (bl) wire of connector GM
- ① Red (rt) 4² wire of K1/87a
- ② Black (sw) 4² wire of K1/30



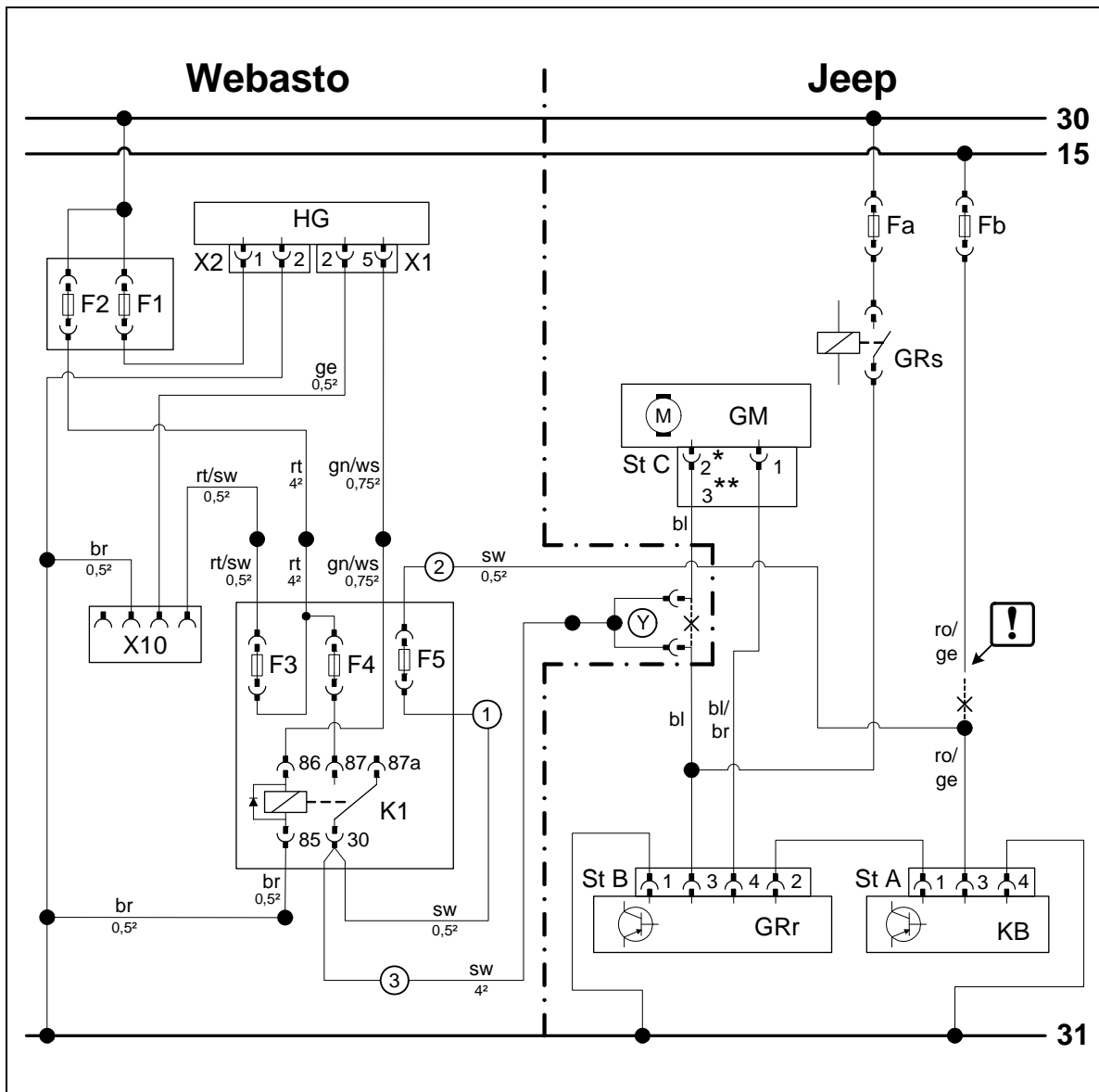
**Connect-
ing fan mo-
tor**



Automatic Air-Conditioning Fan Controller

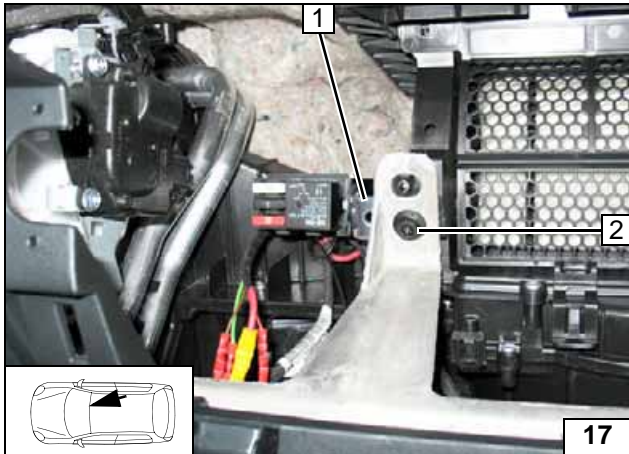


Wiring diagram



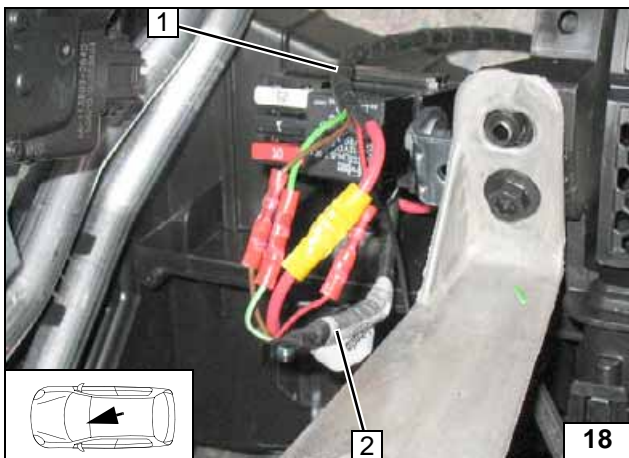
Webasto components		Vehicle components		Colours and symbols	
HG	TT-Evo heater	Fa	Fuse	rt	red
X1	6-pin heater connector	Fb	Fuse	sw	black
X2	2-pin heater connector	GRs	Fan relay	ge	yellow
F1	20A fuse	GM	Fan motor	gn	green
F2	30A fuse	St C	Connector of GM	or	orange
X10	4-pin connector of heater control	GRr	Fan controller	ws	white
Y	Wire adapter	St B	4-pin connector of GRr	br	brown
F3	1A fuse	KB	A/C control panel	ro	pink
F4	25A fuse	St A	16-pin connector of KB	bl	blue
F5	10A fuse			*	In case of 2-pin connector ST C
K1	Fan relay			**	In case of 3-pin connector ST C
				!	Insulate wire end and tie back
				X	Cutting point
					Wiring colours may vary.

Legend



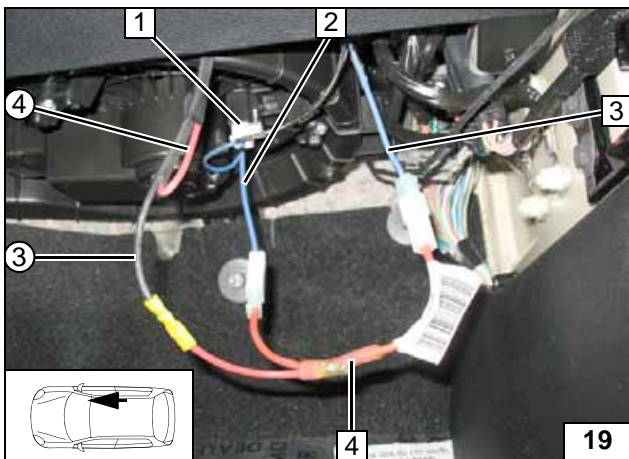
- 1 Angle bracket
- 2 Original vehicle bolt

Installing passenger compartment relay and fuse holder



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

Connecting same colour wires of wiring harnesses

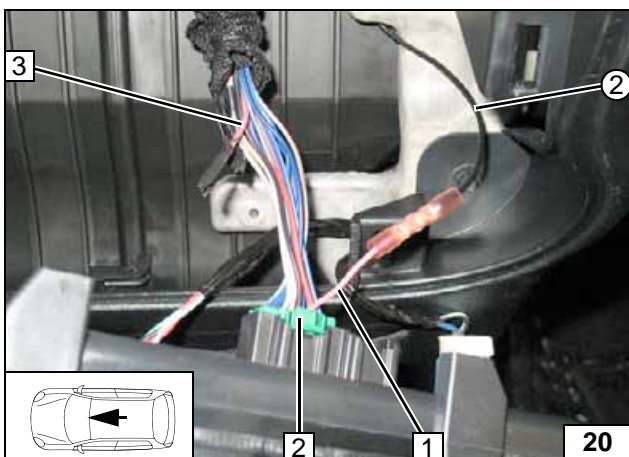


Connection to 2-pin/3-pin connector 1 from the fan motor.
Insulate red (rt) 4² wire ④ and tie back.

- 2 Blue (bl) wire of 2-pin connector of GM pin 2
- 3 Blue (bl) wire of fan controller
- 4 Wire adapter Y
- ③ Black (sw) 4² wire of K1/30



Connecting fan motor

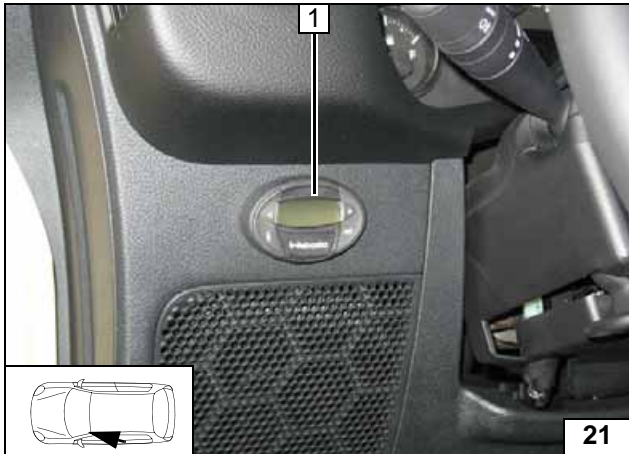


Connection to 16-pin connector 2 of the A/C control unit.
Insulate and tie back pink/yellow (ro/ge) wire 3.

- 1 Pink/yellow (ro/ge) wire of 16-pin connector of KB, pin 3
- ② Black (sw) wire from fuse F5



Connecting A/C control unit



Digital Timer

1 Digital timer



Installing digital timer

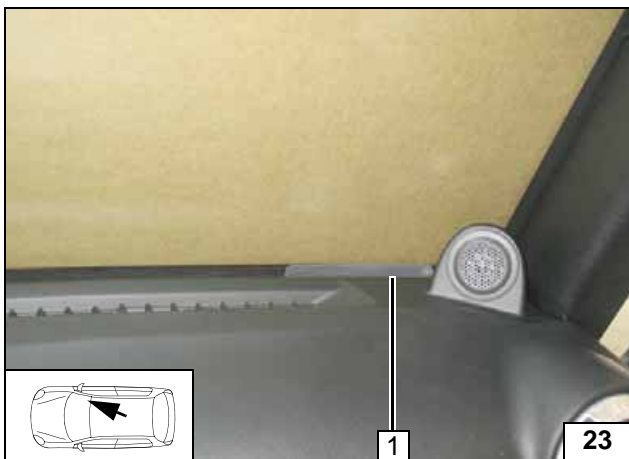


Remote Option (Telestart)

Fasten receiver 1 with double-sided adhesive tape.



Installing receiver



1 Aerial

Installing aerial

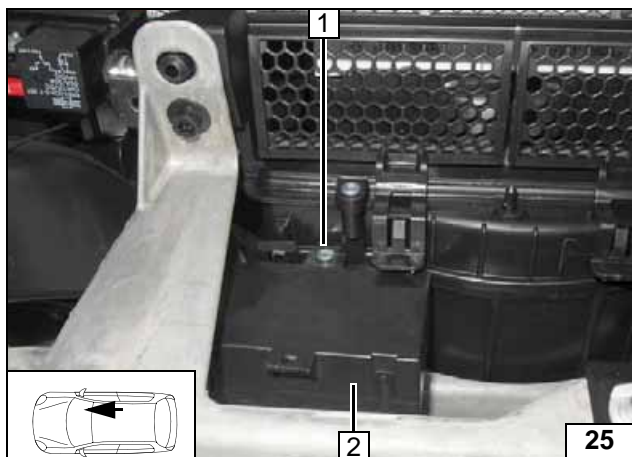


Temperature sensor T100 HTM

Fasten temperature sensor 1 with double-sided adhesive tape.



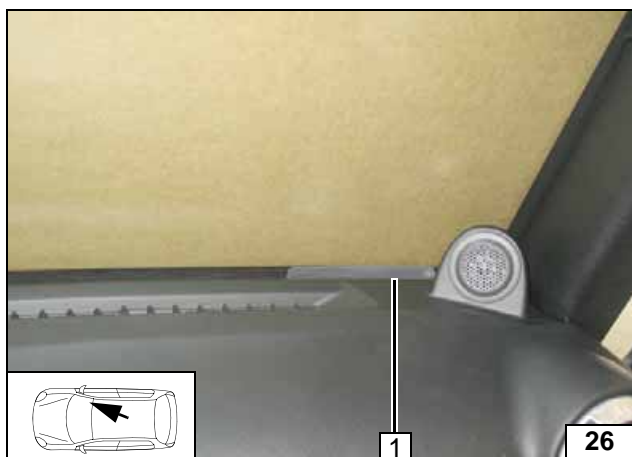
Installing temperature sensor



ThermoCall Option

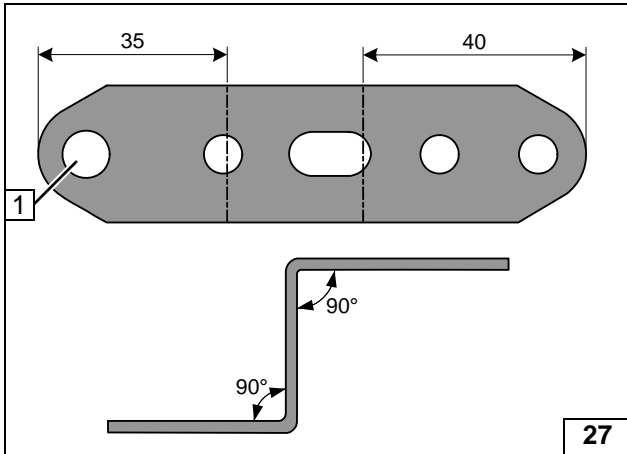
- 1 Original vehicle bolt
- 2 Receiver

Installing receiver



- 1 Aerial (optional)

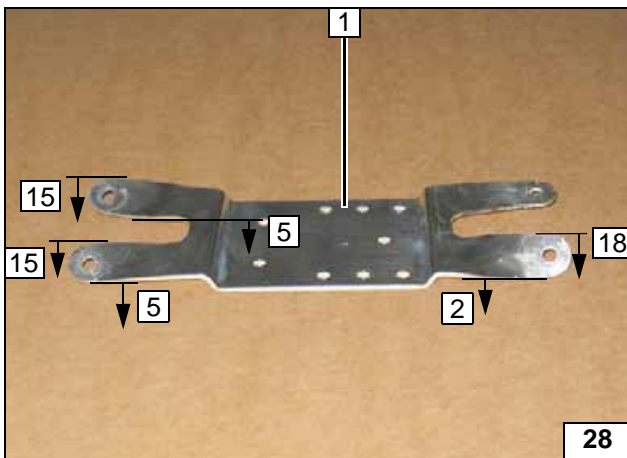
Installing aerial



Preparing Bracket

- 1 8.5 mm dia. hole

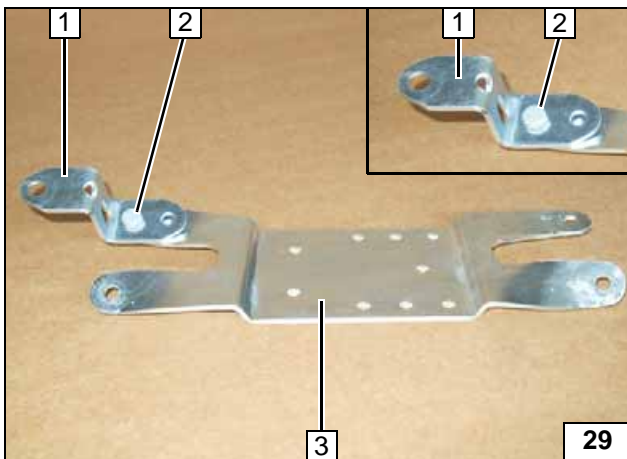
Preparing perforated bracket



Twist the three legs of bracket 1 as shown. The reference line of all dimensions is the base.

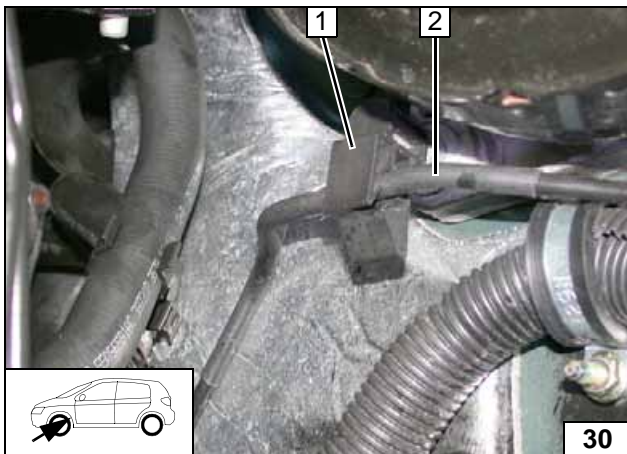


Preparing bracket



- 1 M6x12 bolt, flanged nut
- 2 Perforated bracket
- 3 Bracket

Premounting bracket



Preparing Installation Location

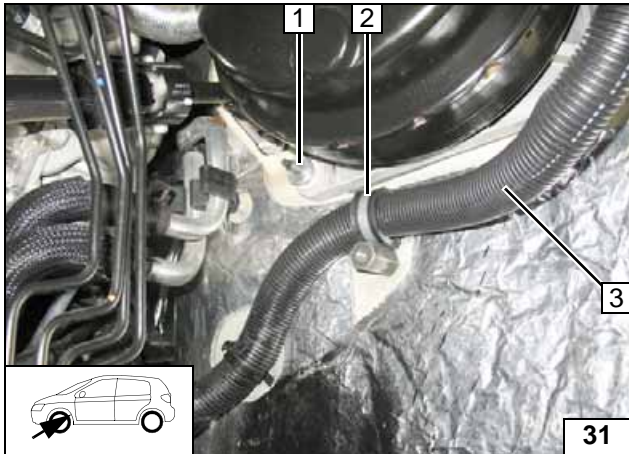
Manual transmission

Detach original vehicle wire 2 from bracket 1. Remove and discard bracket 1.



Removing bracket





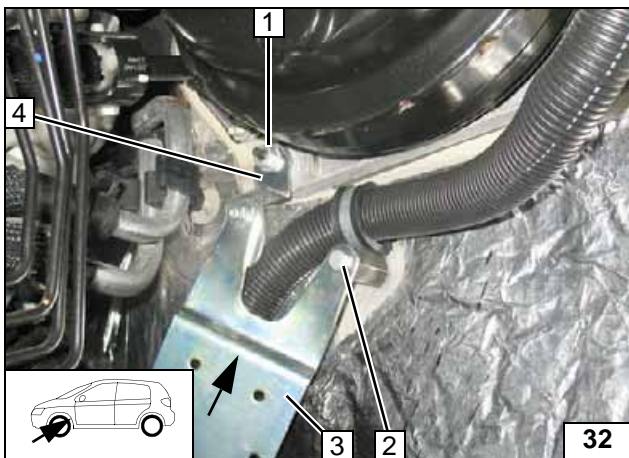
All vehicles

The figures show automatic transmission.

- 1 Original vehicle stud bolt, 5mm shim mounted
- 2 Original vehicle stud bolt, 29 mm dia. rubber-coated p-clamp, M6x30 spacer nut
- 3 Original vehicle wiring harness

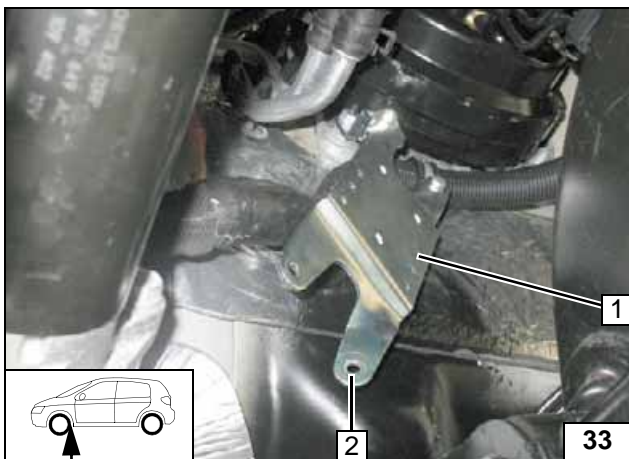


Copying hole pattern



- 1 M8 flanged nut
- 2 M6x12 bolt
- 3 Bracket
- 4 Perforated bracket

Premounting bracket



- 1 Bracket
- 2 Copy hole pattern

Copying hole pattern

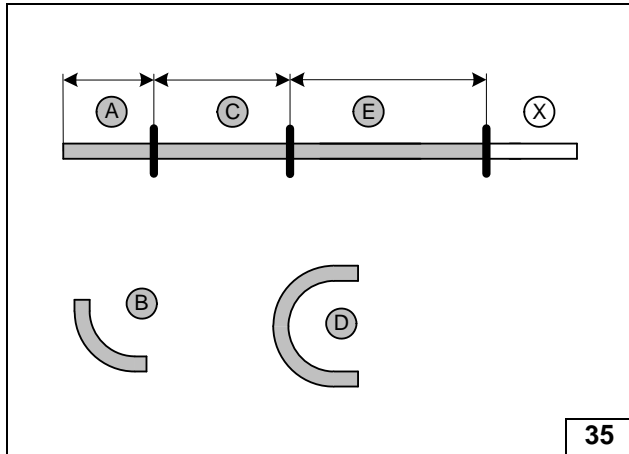


After installation, remove holder with perforated bracket.

- 1 9.1mm dia. hole; rivet nut



Installing rivet nut



Preparing Coolant Circuit

Manual transmission

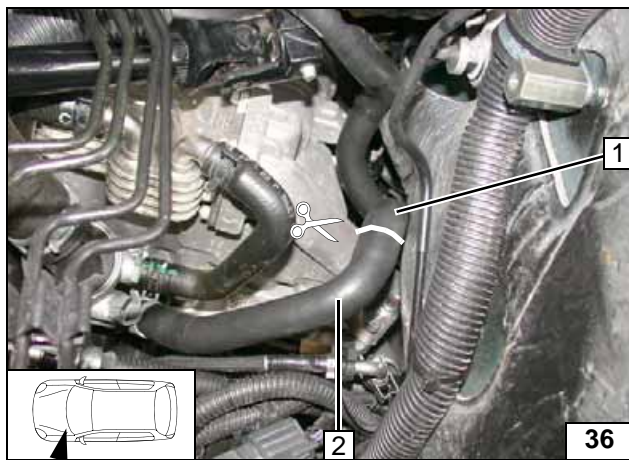
Discard section **X**.

Hose **B** = 90°, 18x18mm dia., moulded hose
 Hose **D** = 180°, 18x18mm dia., moulded hose

- A** = 60
- C** = 100
- E** = 165



Cutting hoses to length

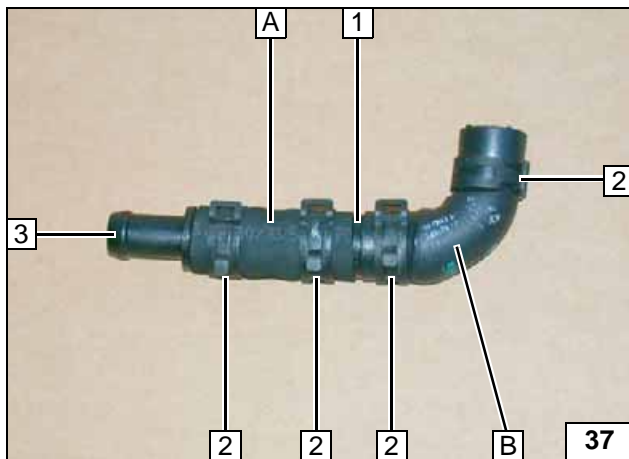


Cut hose of engine outlet / heat exchanger inlet at marking. Turn down hose section of engine outlet **2** at connection piece by approx. 180°.



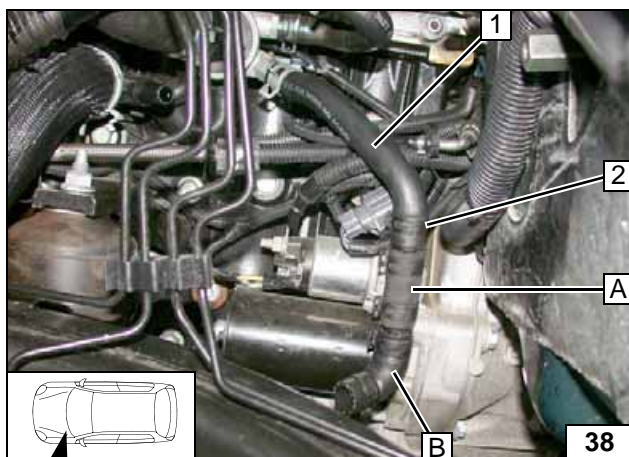
- 1** Heat exchanger inlet hose section

Cutting point



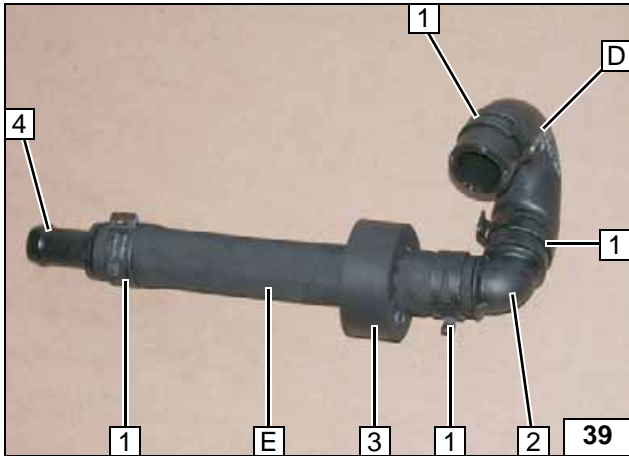
- 1** 18x18mm dia. connecting pipe
- 2** 25 mm dia. spring clip [4x]
- 3** 16x18mm dia. connecting pipe

Premounting hoses A and B



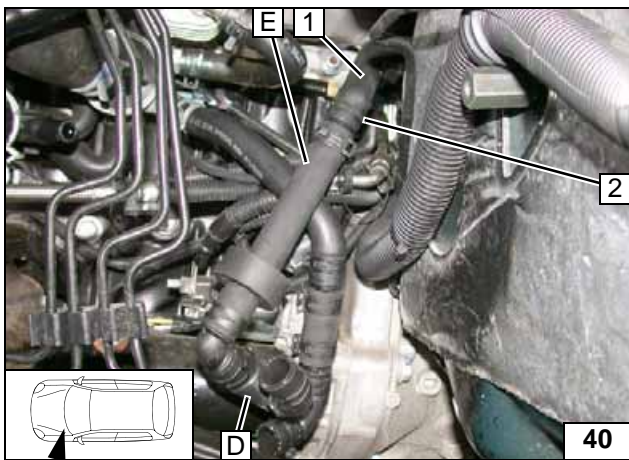
- 1** Hose on engine outlet turned
- 2** 22mm dia. spring clip

Mounting hoses A and B



- 1 25 mm dia. spring clip [4x]
- 2 90°, 18x18mm dia. connecting pipe
- 3 Slide on black (sw) rubber isolator
- 4 16x18mm dia. connecting pipe

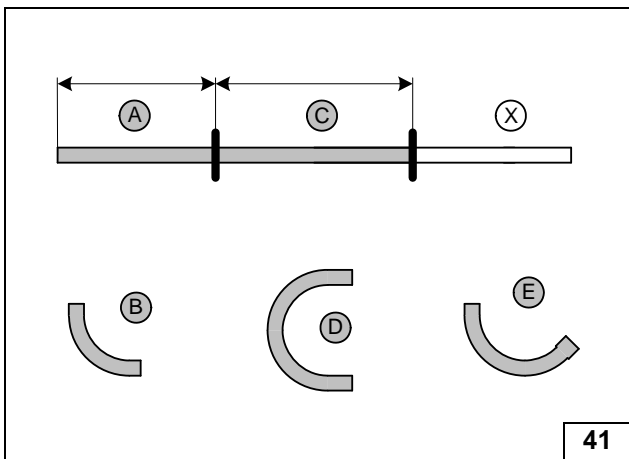
Premounting hoses D and E



- 1 Heat exchanger inlet hose
- 2 22mm dia. spring clip



Mounting hoses D and E



Automatic transmission

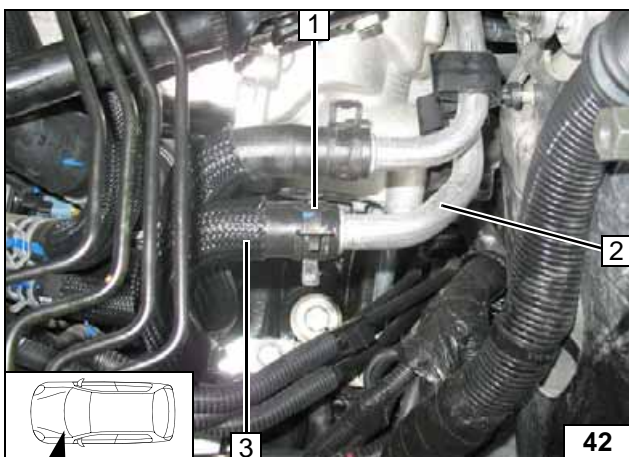
Discard section X.

- Hose B = 90°, 18x18mm dia., moulded hose
- Hose D = 180°, 18x18mm dia., moulded hose
- Hose E = 135°, 15x20mm dia., moulded hose

- A = 100
- C = 120

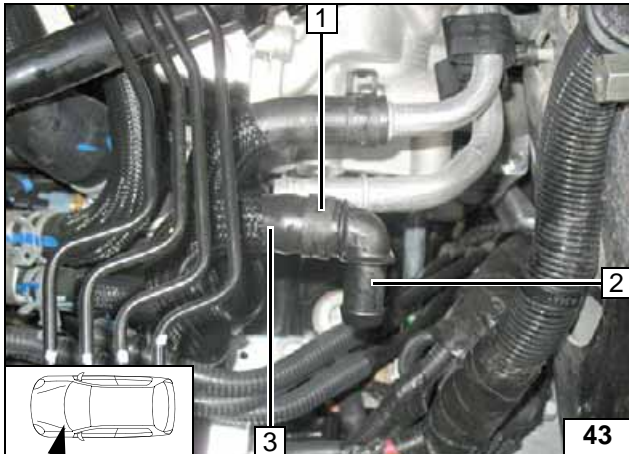


Cutting hoses to length



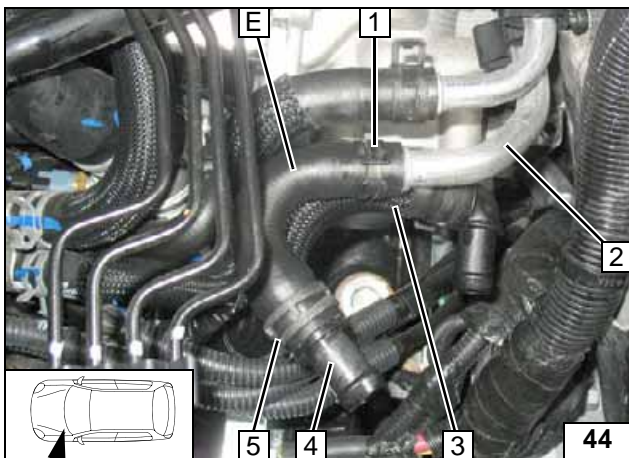
- 1 Remove and discard original vehicle clamp
- 2 Heat exchanger inlet pipe
- 3 Disconnect hose of engine outlet

Cutting point



- 1 25 mm dia. spring clip
- 2 90°, 18x18mm dia. connecting pipe
- 3 Engine outlet hose

Preparing engine outlet hose

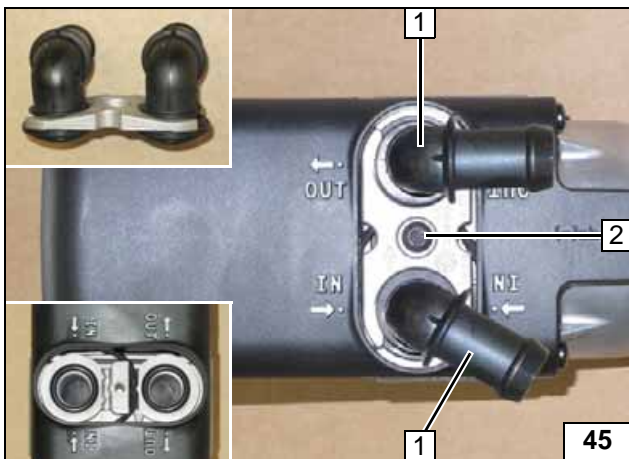


Move hose on engine outlet 3 to the rear.

- 1 22mm dia. spring clip
- 2 Heat exchanger inlet pipe
- 4 18x20mm dia. connecting pipe
- 5 27mm dia. spring clip



Installing hose E

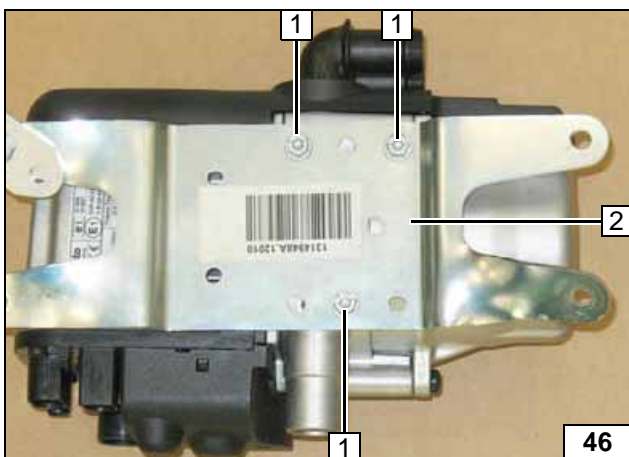


Preparing Heater

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

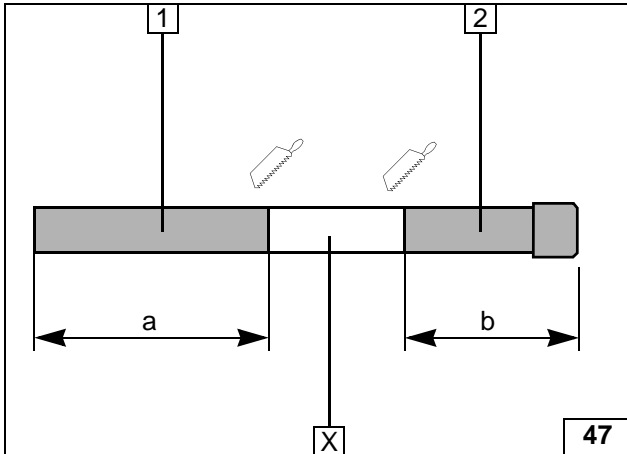


Installing water connection piece



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

Installing bracket

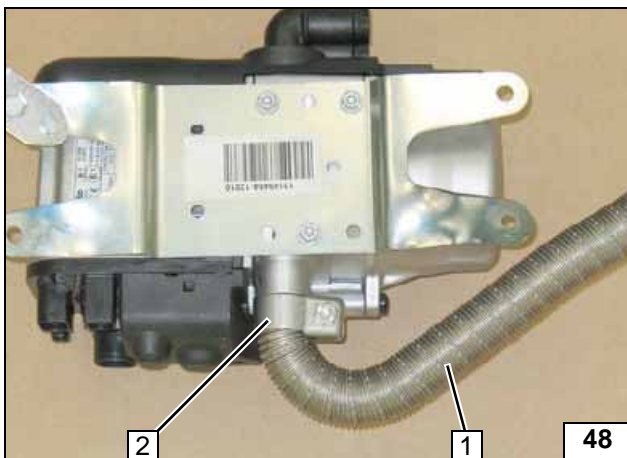


Discard section X.

- 1 Exhaust pipe
a = 420
- 2 Exhaust end section
b = 240

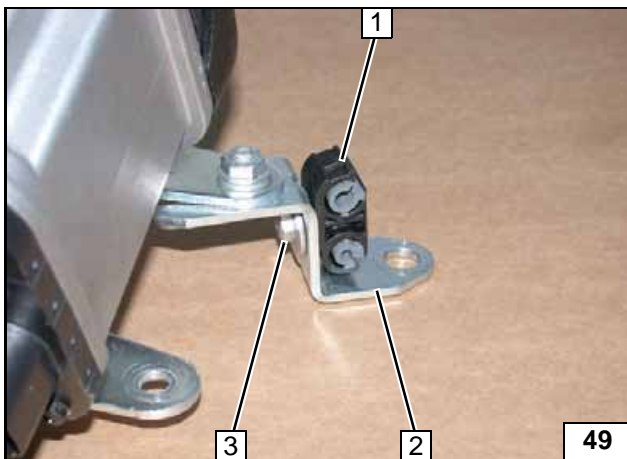


Preparing exhaust pipe



- 1 Exhaust pipe
- 2 Hose clamp

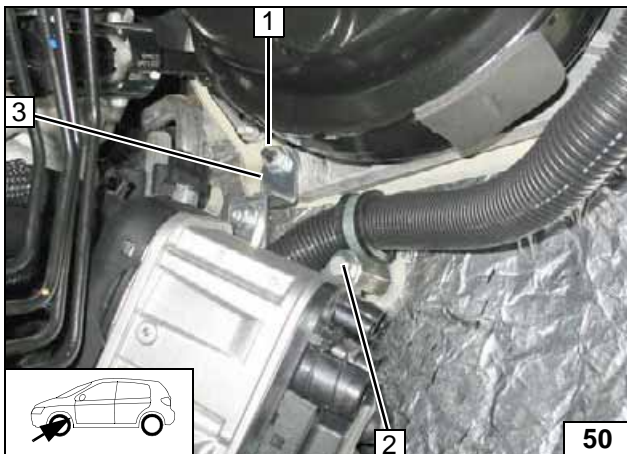
Premounting exhaust pipe



Manual transmission

- 1 Spacer bracket
- 2 Perforated bracket
- 3 M5x16 bolt, large diameter washer

Installing spacer bracket



Installing Heater

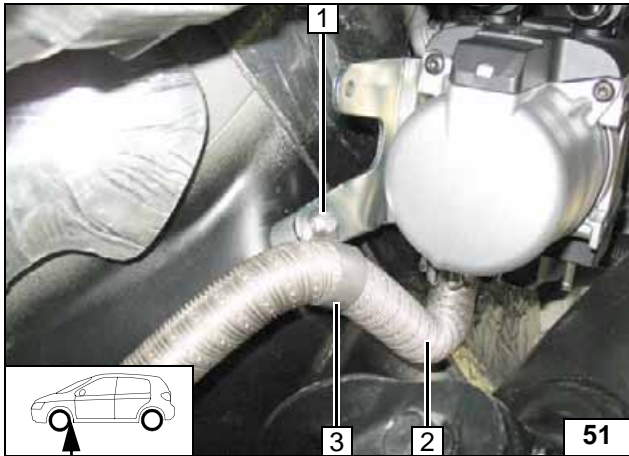
All vehicles

The figures show automatic transmission.

- 1 M8 flanged nut
- 2 M6x12 bolt, spring lockwasher
- 3 Perforated bracket

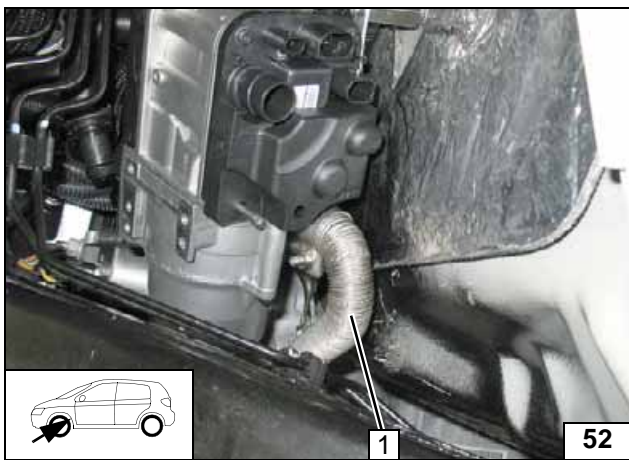


Installing bracket



- 1 M6x50 bolt, spring lockwasher, 20mm shim
- 2 Exhaust pipe
- 3 P-clamp

Installing heater

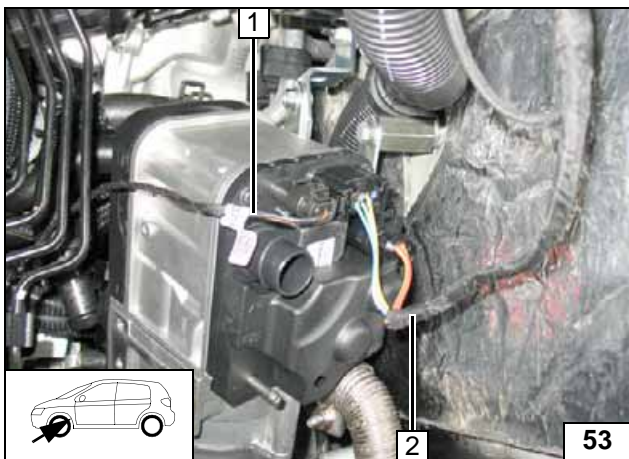


Ensure sufficient distance from neighbouring components, correct if necessary.



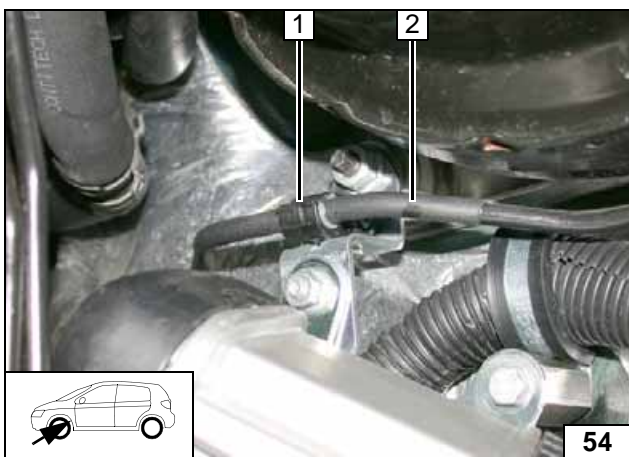
- 1 Exhaust pipe

Aligning exhaust pipe



- 1 Circulating pump wiring harness
- 2 Heater wiring harness [2x]

Connecting wiring harnesses



Manual transmission

Install original vehicle wire 2 in spacer bracket 1.



Fastening wire

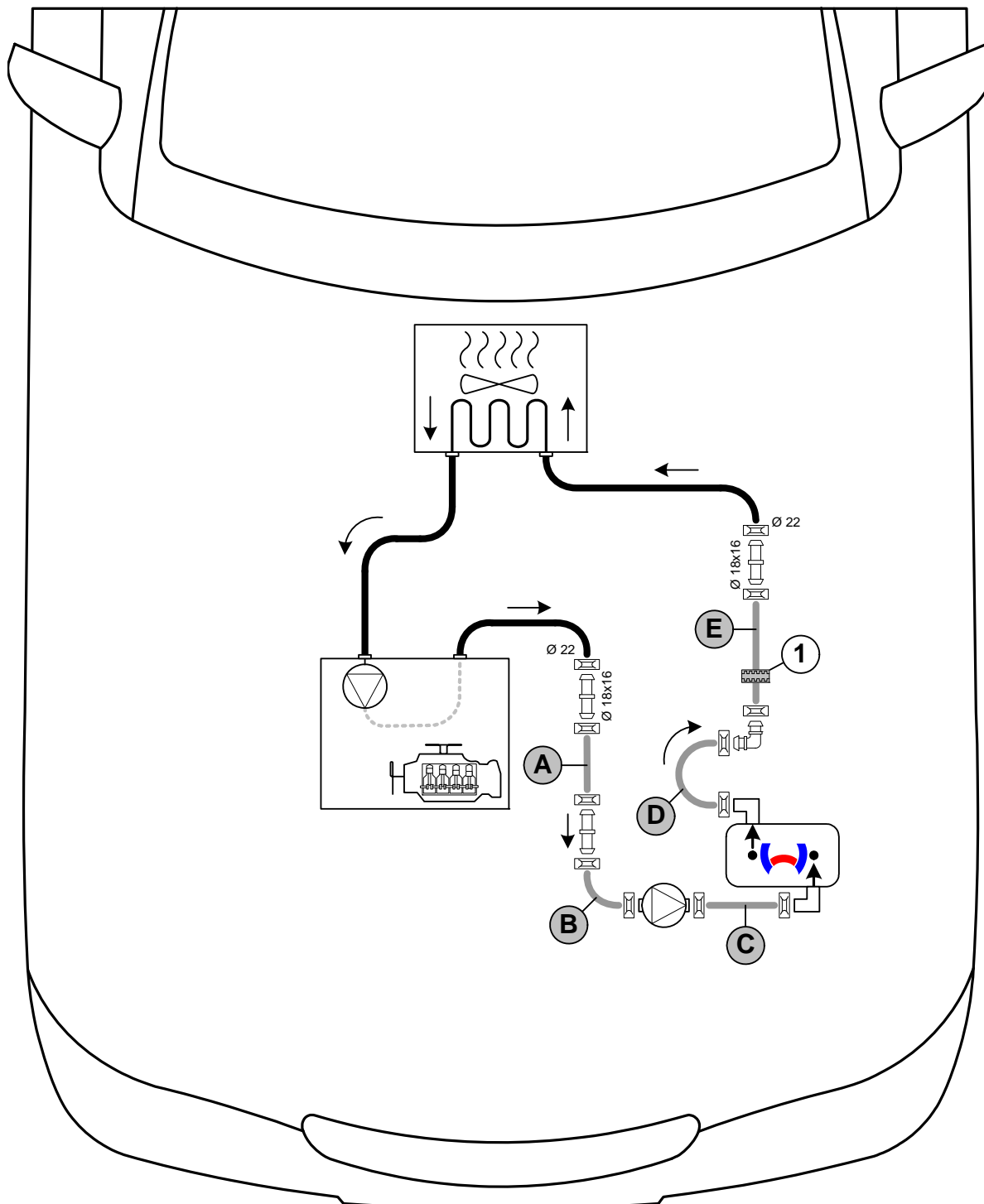


Coolant Circuit of Manual Transmission


WARNING!


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

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



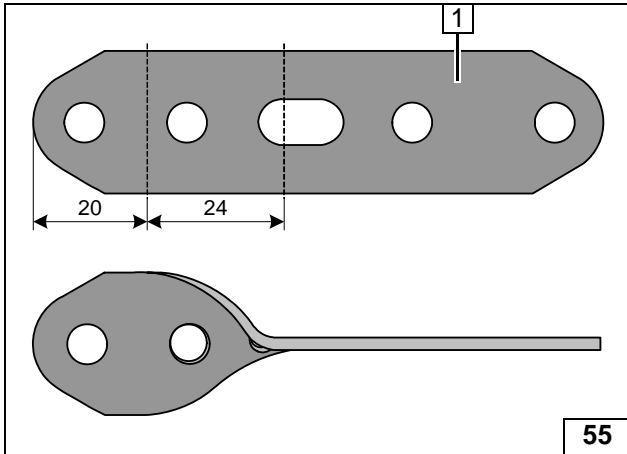
Hose routing diagram

All spring clips without a specific designation  = 25 mm dia.

1 = Black (sw) rubber isolator  .

All connecting pipes without a specific designation  and  = 18x18mm dia.

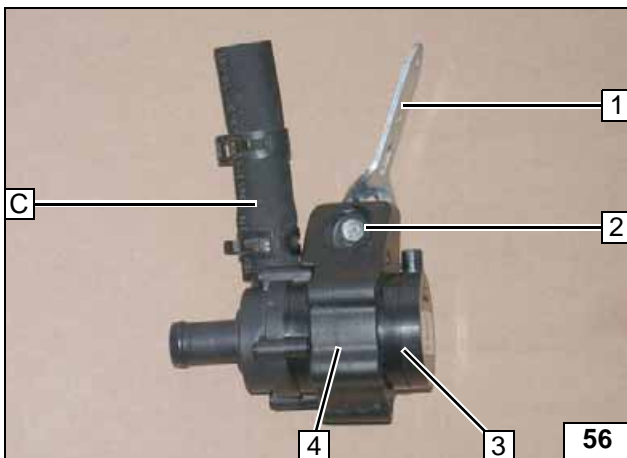




- 1 Twist perforated bracket by 90° in longitudinal axis



Preparing perforated bracket

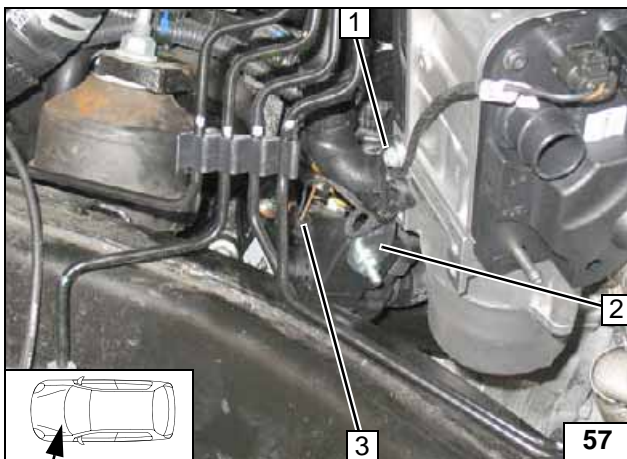


All spring clips = 25 mm dia.

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

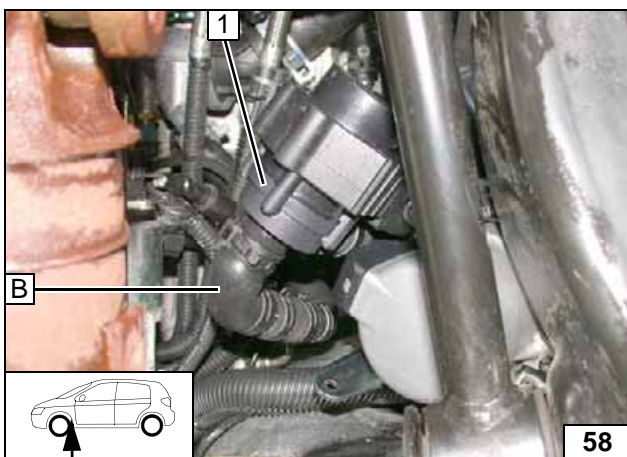


Premounting circulating pump



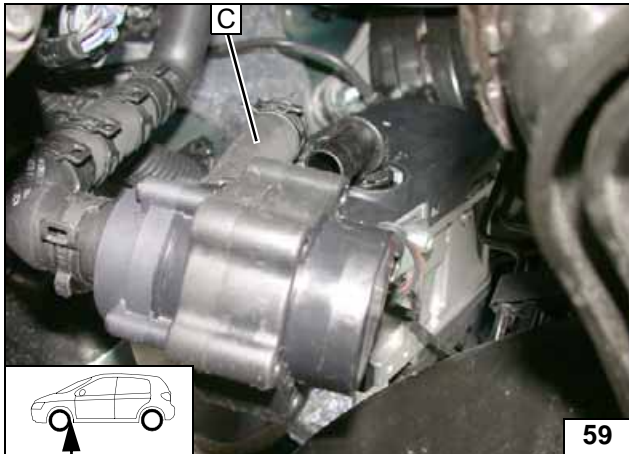
- 1 5x13 self-tapping bolts, large diameter washer
- 2 Perforated bracket
- 3 Connect circulating pump wiring harness

Installing circulating pump

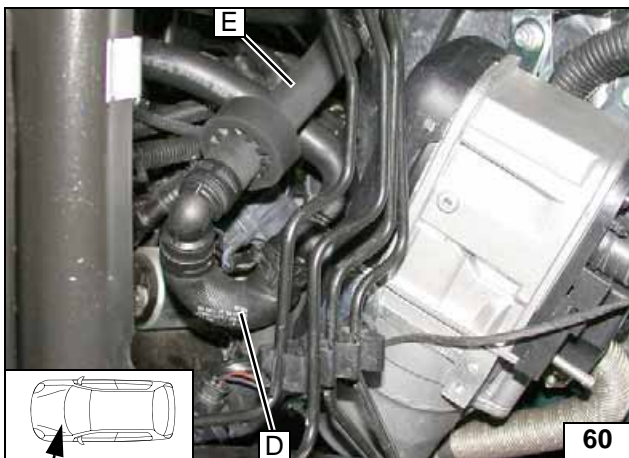


- 1 Circulating pump

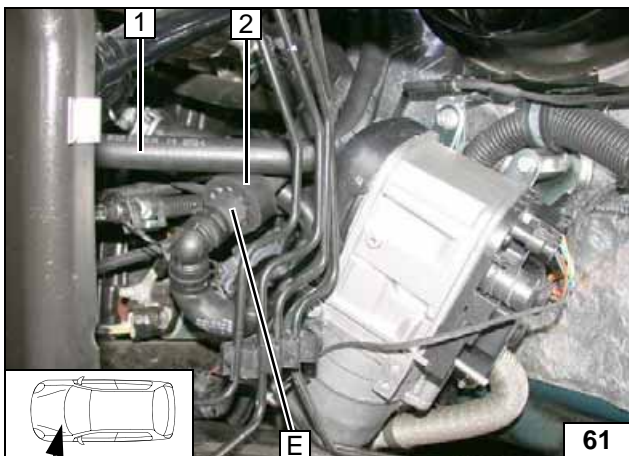
Connecting engine outlet



Connect-
ing heater
inlet



Connect-
ing heat ex-
changer
inlet and
heater out-
let



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

- 1 Hose on heat exchanger outlet
- 2 Black (sw) rubber isolator



Aligning
rubber iso-
lator

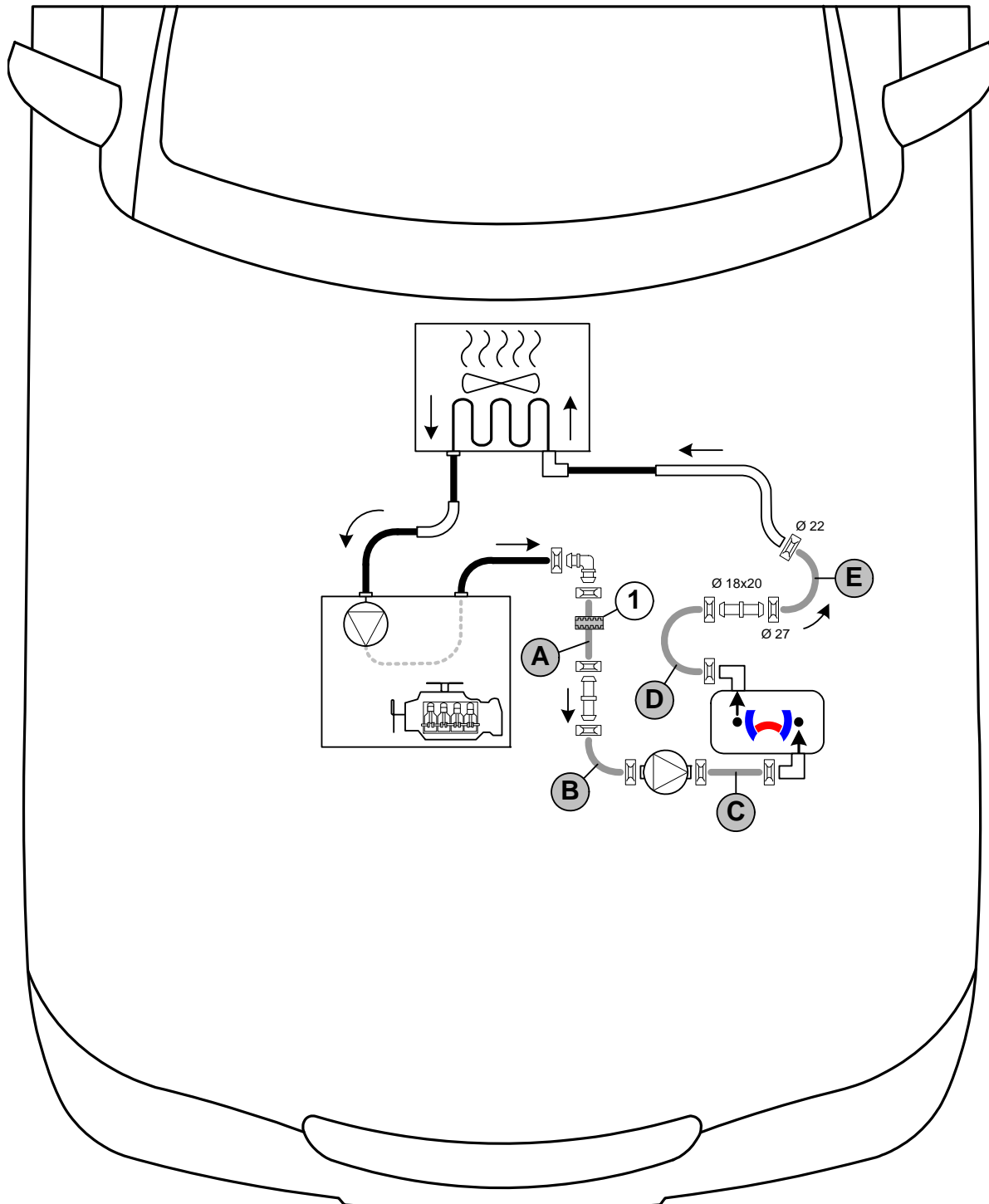


Coolant Circuit of Automatic Transmission


WARNING!


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

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



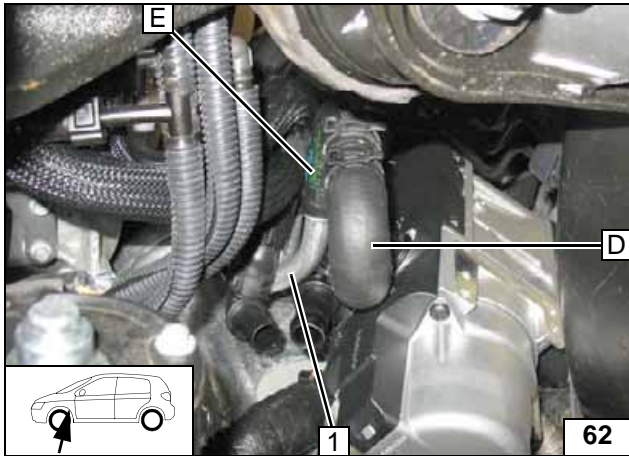
Hose routing diagram

All spring clips without a specific designation  = 25 mm dia.

1 = Black (sw) rubber isolator .

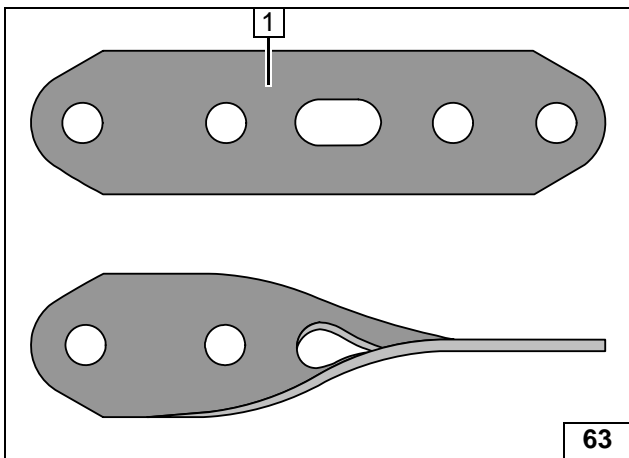
All connecting pipes without a specific designation  and  = 18x18mm dia.





1 Heat exchanger inlet pipe

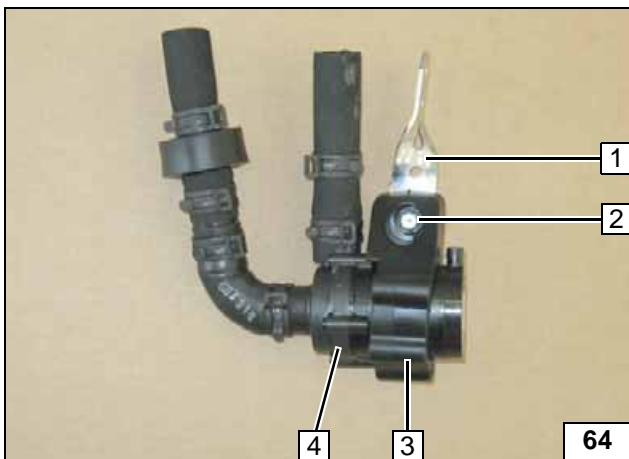
Connecting heat exchanger inlet and heater outlet



1 Twist perforated bracket by 90° in longitudinal axis

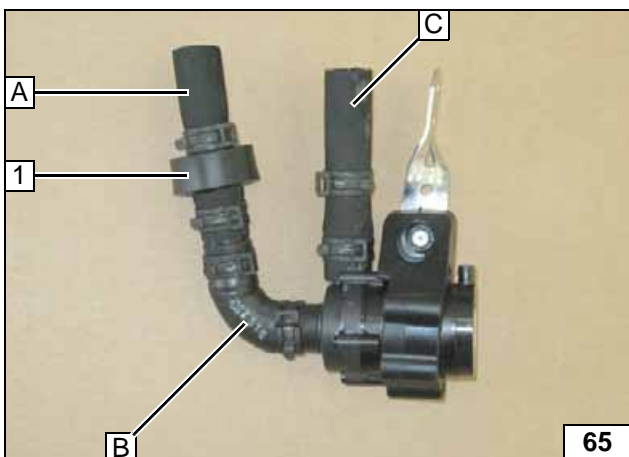


Preparing perforated bracket



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

Premounting circulating pump

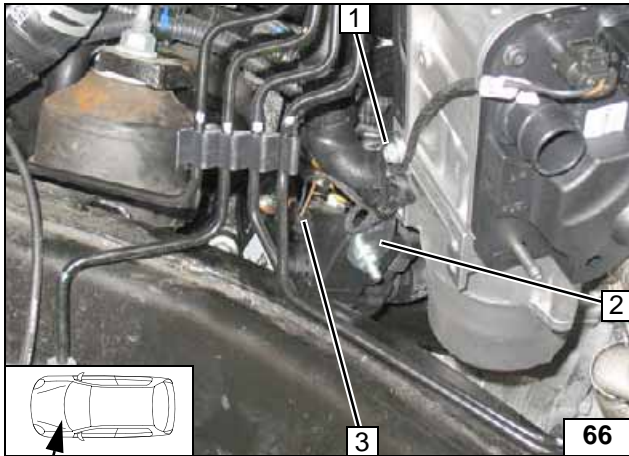


All spring clips = 25 mm dia.

1 Slide on black (sw) rubber isolator

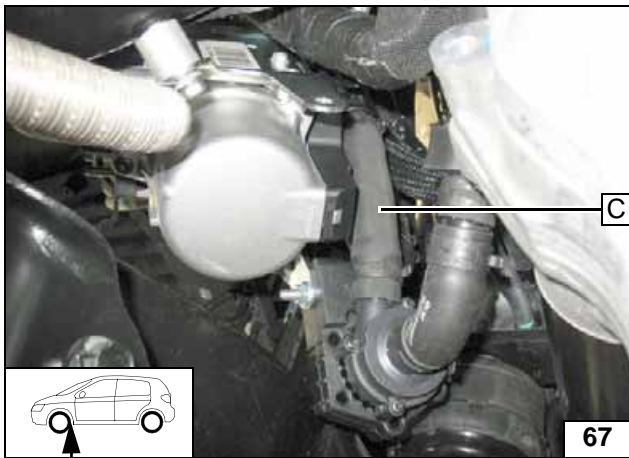


Premounting circulating pump

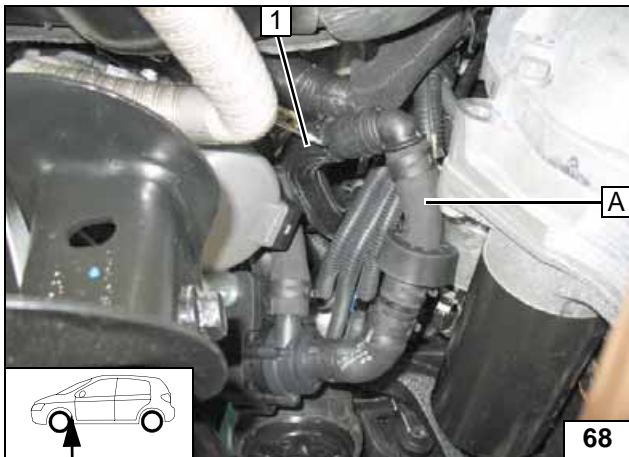


- 1 5x13 self-tapping bolts, large diameter washer
- 2 Perforated bracket
- 3 Connect circulating pump wiring harness

Installing circulating pump



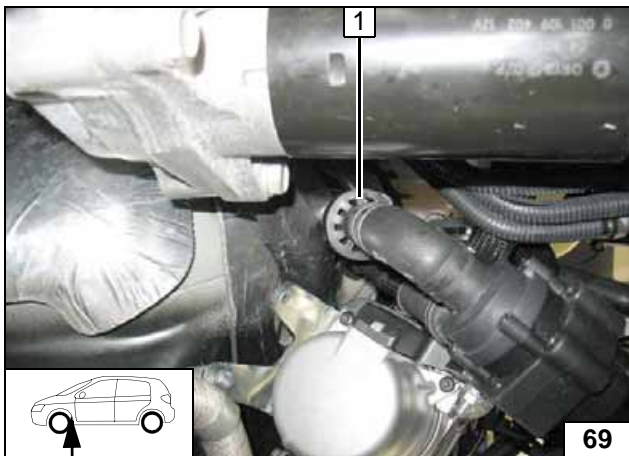
Connecting heater inlet



Hose on engine outlet 1 pulled down for better installation.



Connecting engine outlet

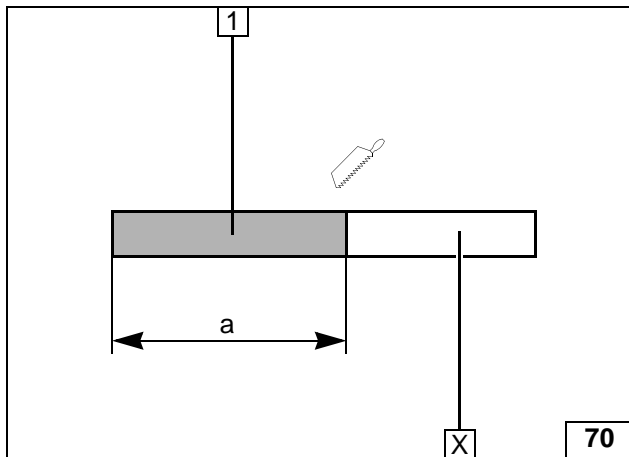
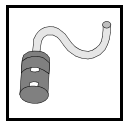


Align hoses. Ensure sufficient distance from neighbouring components, correct if necessary.



- 1 Black (sw) rubber isolator

Aligning rubber isolator

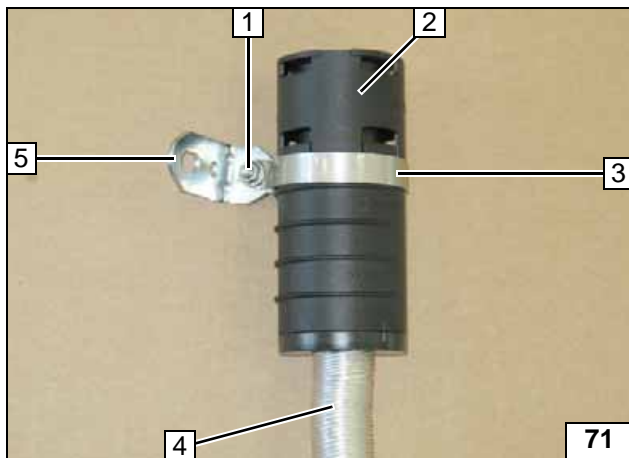


Combustion Air

Discard section X.

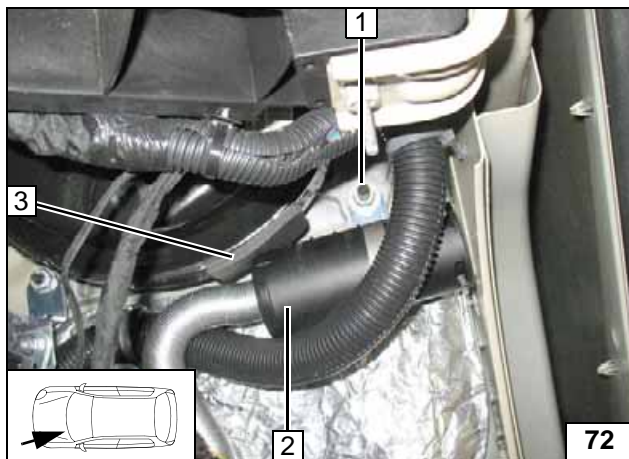
- 1 Combustion air pipe
a = 270

Cutting combustion air pipe to length



- 1 M5x16 bolt, flanged nut
- 2 Silencer
- 3 51mm dia. clamp
- 4 Combustion air pipe
- 5 Angle bracket

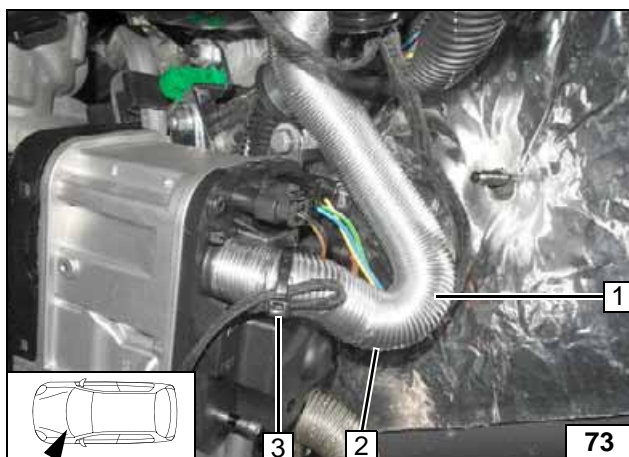
Premounting silencer



- 1 Original vehicle stud bolt, original vehicle M8 flanged nut
- 2 Silencer
- 3 Stick on insulation strip



Installing silencer



- 1 Combustion air pipe
- 2 3 mm dia. condensed-water drain hole
- 3 Cable tie



Installing combustion air pipe



Fuel

CAUTION!

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

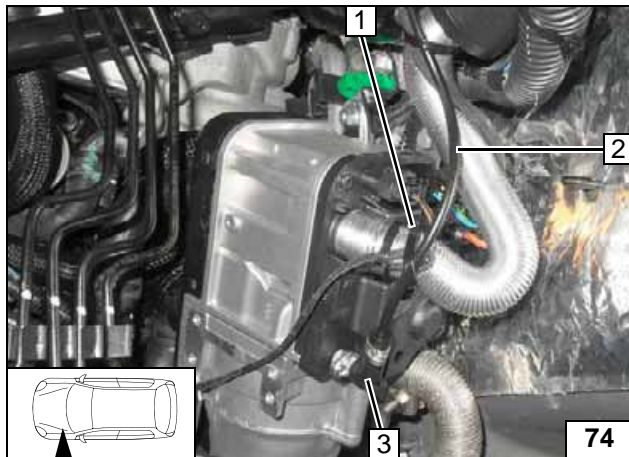
Catch any fuel running off in an appropriate container.

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.

WARNING!

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



- 1 Cable tie
- 2 Fuel line
- 3 90° moulded hose, 10mm dia. clamp [2x]

Connect-
ing heater



Route wiring harness of heater, fuel line and wiring harness of metering pump in corrugated tube 1 to the firewall on the right hand vehicle side.



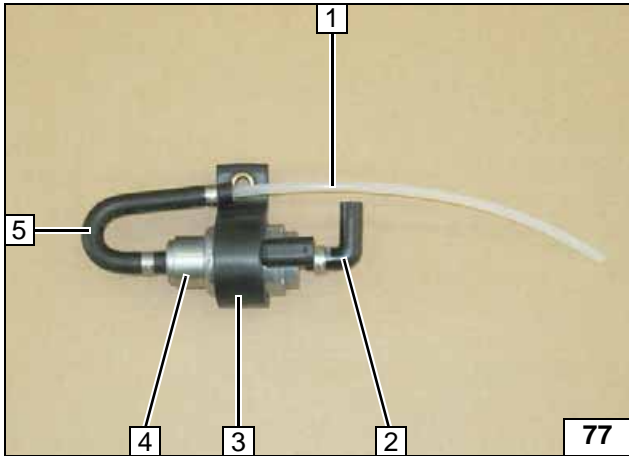
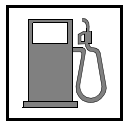
Routing
lines



Route fuel line and wiring harness of metering pump in heat protection hose 1 on original vehicle fuel lines to the underbody and further to the installation location of the metering pump.



Routing
lines

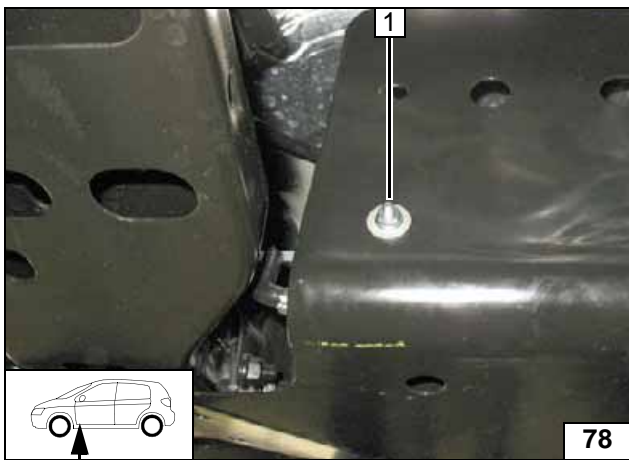


Cut off 250 mm from fuel line.

- 1 Fuel line, 250 mm
- 2 90° moulded hose, 10mm dia. clamp
- 3 Metering pump mount
- 4 Metering pump
- 5 180° moulded hose, 10mm dia. clamp [2x]



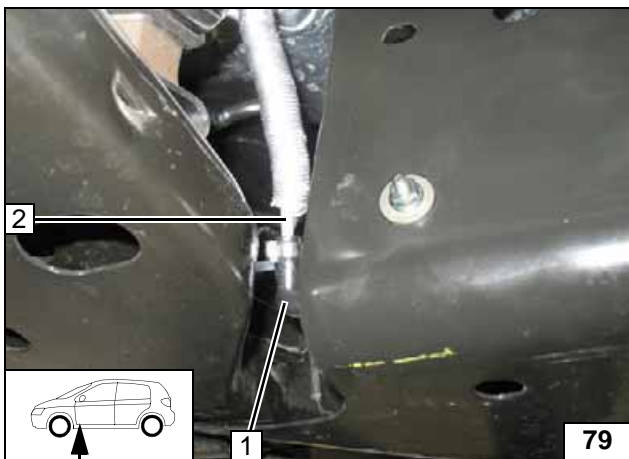
Premounting metering pump



Relocate premounted metering pump behind trim. Fasten mounting of metering pump with M6x25 bolt, large diameter washer and flanged nut 1 (existing hole).

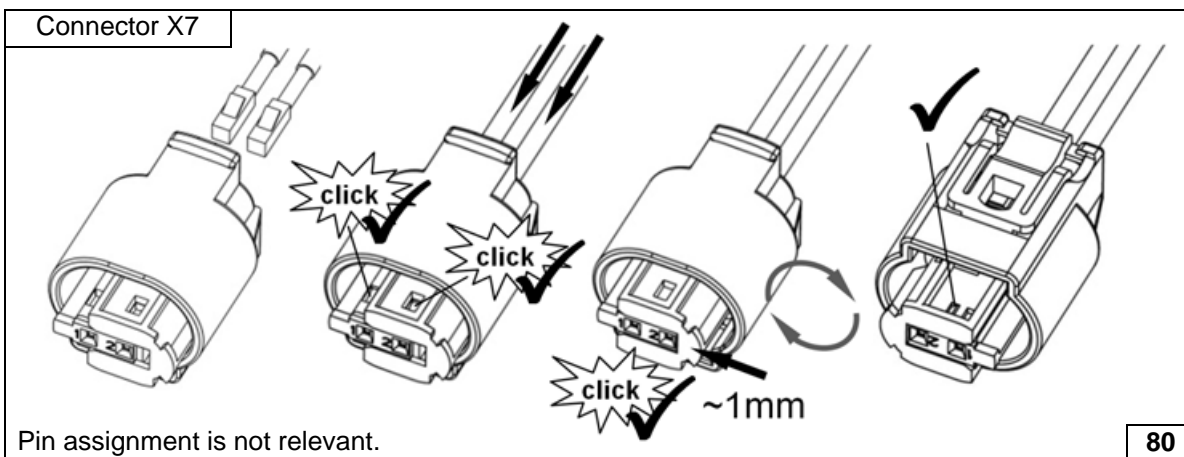


Installing metering pump



- 1 90° moulded hose, 10mm dia. clamp
- 2 Fuel line of heater

Connecting metering pump



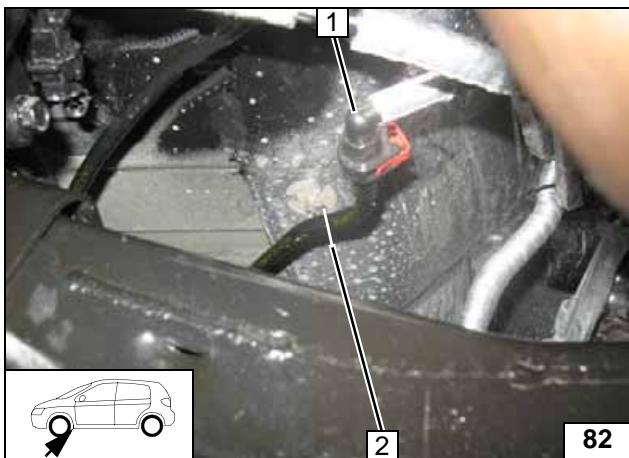
Pin assignment is not relevant.

Completing metering pump connector



- 1 Metering pump wiring harness, connector X7 mounted

Connect-
ing meter-
ing pump

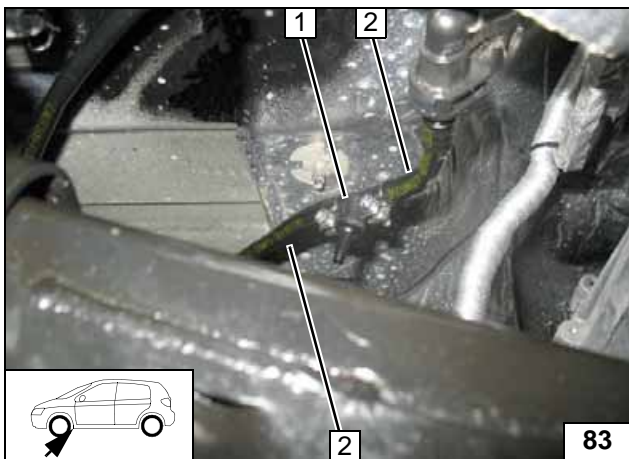


Cut fuel return line 1 at markings.

- 2 Cutting point



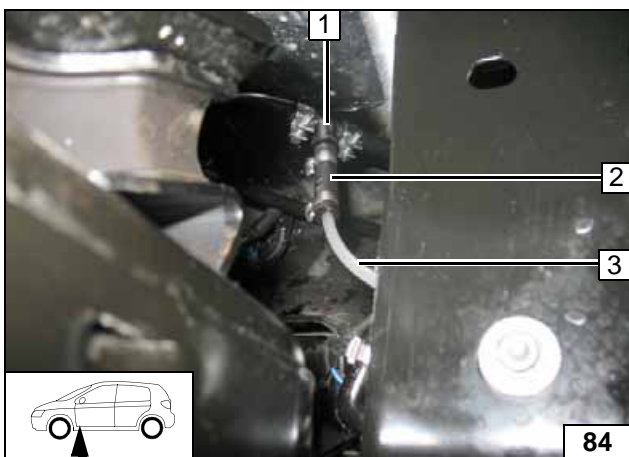
Fuel ex-
traction



- 1 8x5x8 fuel standpipe, 10mm dia. hose clamp [2x]
- 2 Fuel return line

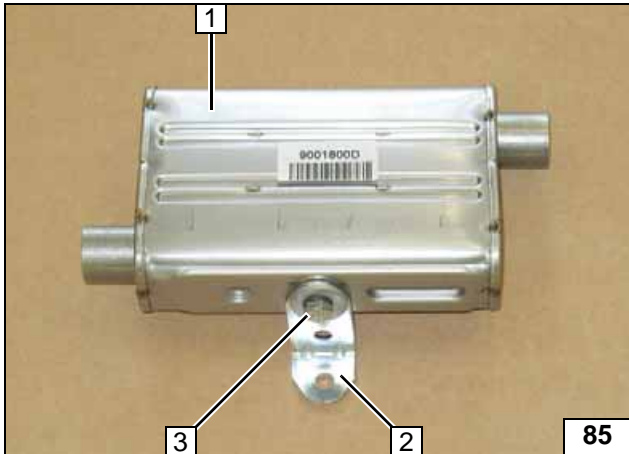


Installing
fuel stand-
pipe



- 1 Fuel standpipe
- 2 Hose section, 10mm dia.clamp [2x]
- 3 Fuel line, 250 mm

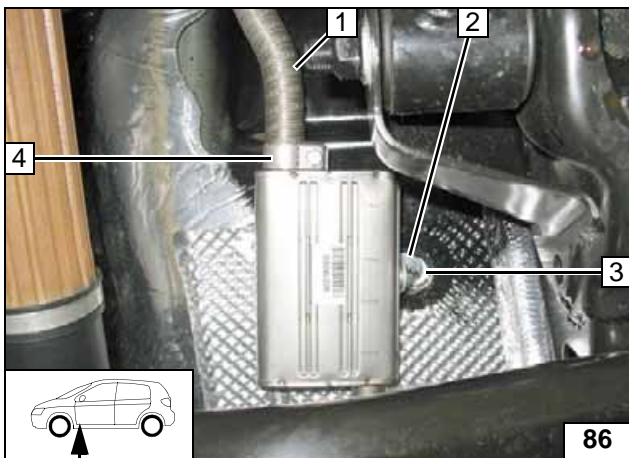
Connect-
ing fuel line



Exhaust Gas

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

Premounting silencer

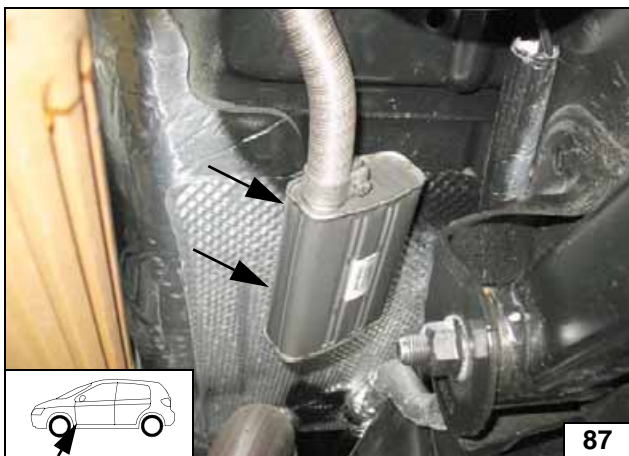


Remove original vehicle plate nut at position 3 and discard.



- 1 Exhaust pipe
- 2 Angle bracket
- 3 Original vehicle stud bolt, M6 flanged nut
- 4 Hose clamp

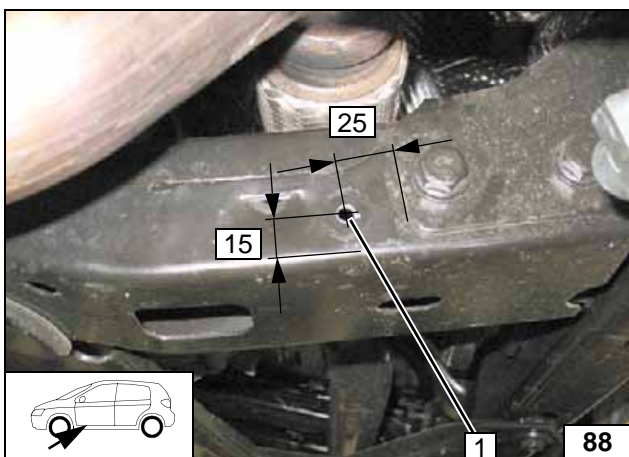
Installing silencer



Ensure sufficient distance from underbody, re-bend angle bracket of silencer if necessary.

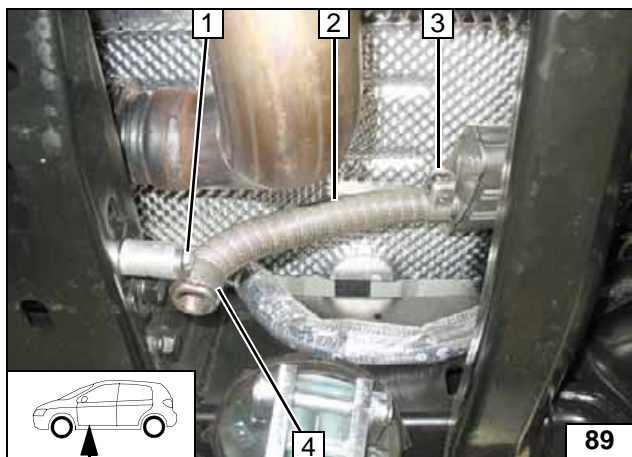
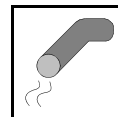


Aligning silencer



- 1 7 mm dia. hole

Hole in cross member



- 1 M6x50 bolt, spring lockwasher, 30mm shim, flanged nut
- 2 Exhaust end section
- 3 Hose clamp
- 4 P-clamp

**Installing
exhaust
end section**



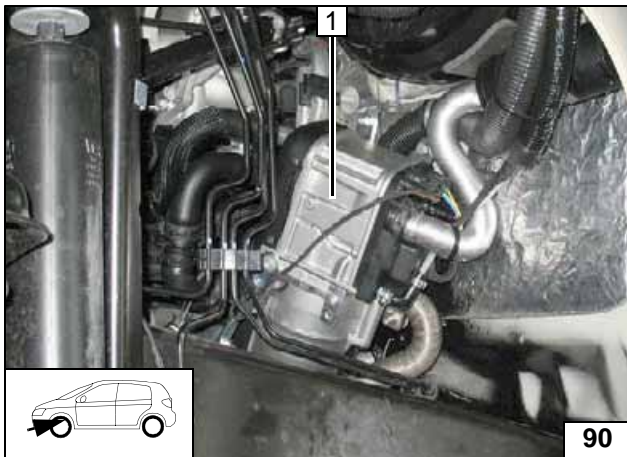
Final Work

WARNING!

Reassemble the components in reverse order. Check all hoses, clamps and all electrical connections for firm seating. Insulate and tie back all loose lines.

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.**
- **Set digital timer, teach Telearstart transmitter.**
- **Make settings on the A/C control panel according to the 'operating instructions'.**
- **Place the 'Switch off parking heater before refuelling' caution label near the filler neck.**
- **For initial startup and function check, please see installation instructions.**



When installing the wheel well trim, ensure sufficient distance from neighbouring components, align heater 1 accordingly, if necessary.

Aligning heater

Operating Instructions for Manual A/C

Please remove page and add to the vehicle operating instructions.

Note:

We recommend matching the heating time to the driving time.

Heating time = driving time

Example:

For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.

For instructions on deactivation, please refer to the operating instructions of the vehicle.

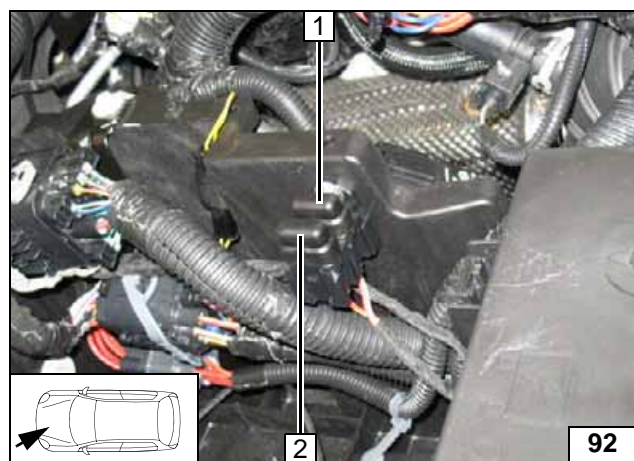
Before parking the vehicle, make the following settings:



- 1 Air outlet to windscreen
- 2 Set fan to level '1', or possibly '2'
- 3 Set temperature to 'max.'

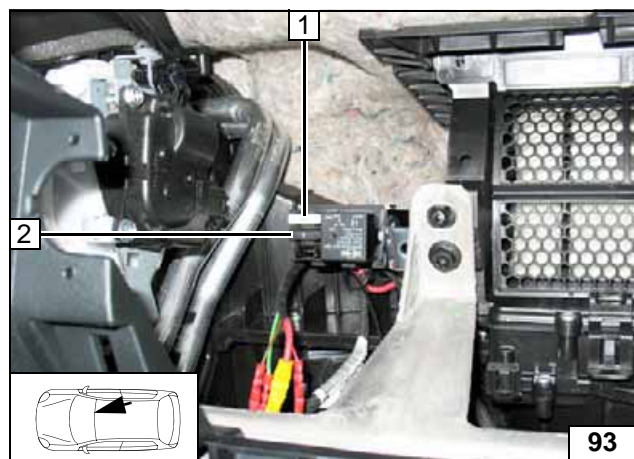


A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses



Operating Instructions for Automatic A/C

Please remove page and add to the vehicle operating instructions.

Note:

We recommend matching the heating time to the driving time.
 Heating time = driving time

Example:

For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

Passenger compartment monitoring, if installed, must be deactivated in addition to the vehicle settings for the heating operation.

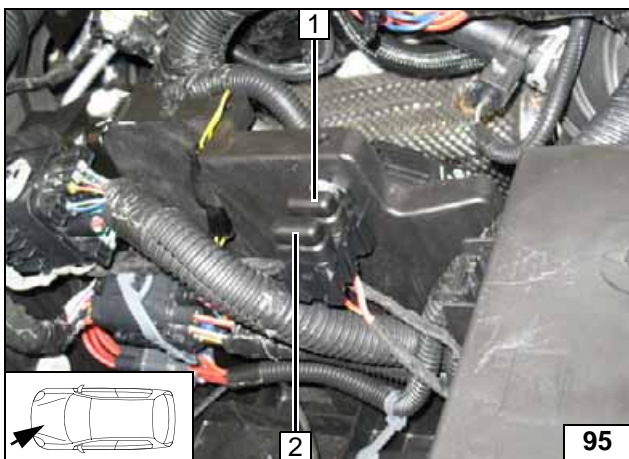
For instructions on deactivation, please refer to the operating instructions of the vehicle.

Before parking the vehicle, make the following settings:

- 1 Air outlet to windscreen
- 2 Set temperature to 'max.'
- 3 Set fan to level '1', or max. '2'

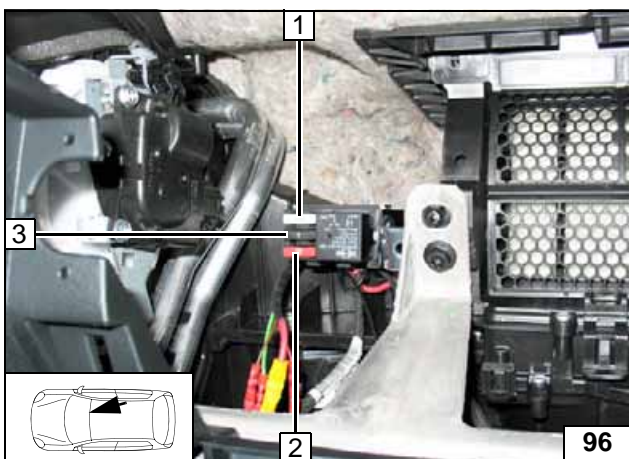


A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses

