Water Heater

Webasto
Feel the Drive

***Thermo Top Evo 5+* Parking Heater** E1 00 0258

Installation Documentation
Jeep Grand Cherokee

Validity

Manufacturer	Model	Type	EG-BE-Nr. / ABE
Jeep	Grand Cherokee	WK	e4 * 2007 / 46 * 0186 * ...

Motorisation	Fuel	Transmission type	Output in kW	Displacement in cm³	Engine code
3.0 CRDI V6	Diesel	AG	177	2987	EXF
3.0 CRDI V6	Diesel	AG	184	2987	EXF / NZH

AG = automatic transmission

From Model Year 2011
Left-hand drive vehicle

Verified equipment variants: Automatic air-conditioning
Front fog light
Quadra-Lift air suspension
Headlight washer system

Not verified: Passenger compartment monitoring

Total installation time: about 12.5 hours

Jeep Grand Cherokee

Table of Contents

Necessary Components

- Basic delivery scope *Thermo Top Evo 5+* based on price list
- Installation kit for Jeep Grand Cherokee 2011: **1317820B**
- additionally required only for vehicles up to MY 2013
  Installation kit for cold fast idle system: **1318645A**
- Heater control in accordance with price list and upon consultation with end customer
- In case of Telestart, indicator lamp in accordance with price list and in consultation with end customer

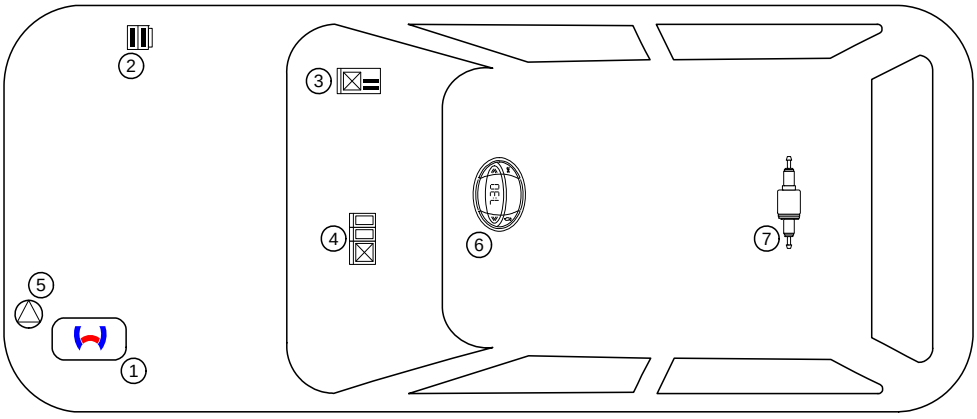
Installation instructions:

- Arrange for the vehicle to be delivered with the tank only about ¼ full!
- The installation location of the push button in case of Telestart or Thermo Call should be confirmed with the end customer.
- Depending on the available space and manufacturer's instructions, we recommend the use of a vehicle battery with more electrical capacity.

Installation Overview

Legend:

1. Heater
2. Fuse holder of engine compartment
3. Relay and fuse holder of passenger compartment
4. IPCU, K2 relay, K3 relay (only for MY 2014)
5. Circulating pump
6. Digital timer
7. 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 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 EC directive 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 Grand Cherokee

Notes on Validity

This installation document applies to the Jeep Grand Cherokee 3.0 CRDI vehicles - for validity, see page 1 - from model year 2011 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 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
- Torque wrench for 30 - 80 Nm
- Hose clamping pliers
- Metric thread-setter kit
- Webasto Thermo Test Diagnosis with current software

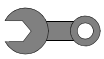
Dimensions
- All dimensions in mm

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

Explanatory Notes on Document

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

Mechanical system

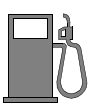


Electrical system

Coolant circuit

Combustion air

Fuel



Exhaust gas

Software

Special features are highlighted using the following symbols:

Specific risk of injury or fatal accidents.

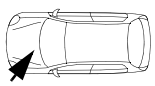
Specific risk of damage to components.

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.



Tightening torque according to the manufacturer's vehicle-specific documents

Jeep Grand Cherokee

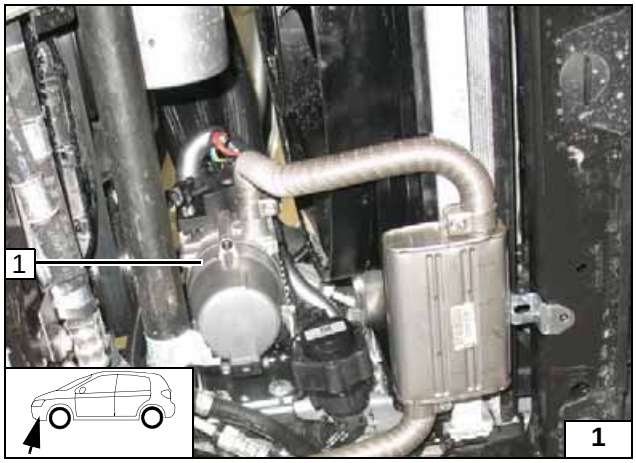
Preliminary Work

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 exhaust pipe.
- Remove the heat protection trim of the cardan shaft.
- Remove the cardan shaft according to the manufacturer's instructions.
- Remove the fuel lines trim at the left on the underbody.
- Remove the fuel tank according to the manufacturer's instructions.
- Remove the fuel-tank sending unit according to the manufacturer's instructions.
- Remove the lower engine cover.
- Drain the engine coolant.
- Remove the engine design cover.
- Remove the air filter box including the air ducting.
- Remove the footwell trim under the glove compartment.
- Remove the air outlet nozzle in the right footwell.
- Remove the trim of the entrance strip on the right side (for Telestart option only).
- Remove the lower A-pillar trim in the right footwell.
- Remove the A/C control panel.

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

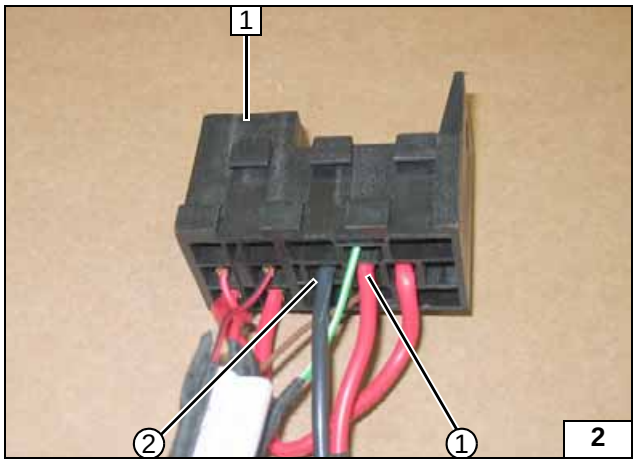
Preparing Electrical System

Wire sections retain their numbering in the entire document.

Produce connections as shown in following wiring diagram.

1 Relay and fuse holder of passenger compartment
① Red (rt) wire from K1/87a, fan wiring harness
② Black (sw) wire from K1/30, fan wiring harness

Premounting passenger compartment relay and fuse holder



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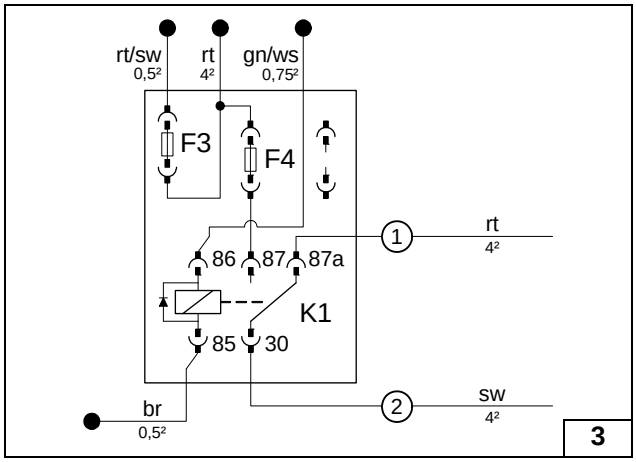
Insert 25A fuse F4. Install K1 relay only later.

Wiring diagram, preparing passenger compartment relay and fuse holder



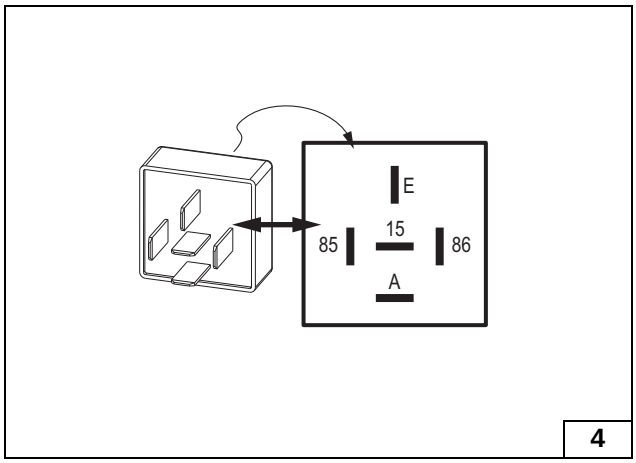
3

Check the IPCU settings when starting up the heater, adjust if necessary!

Settings:

Duty cycle: 62%
Frequency: 100Hz
Voltage: not relevant
Function: Low-side

View of IPCU



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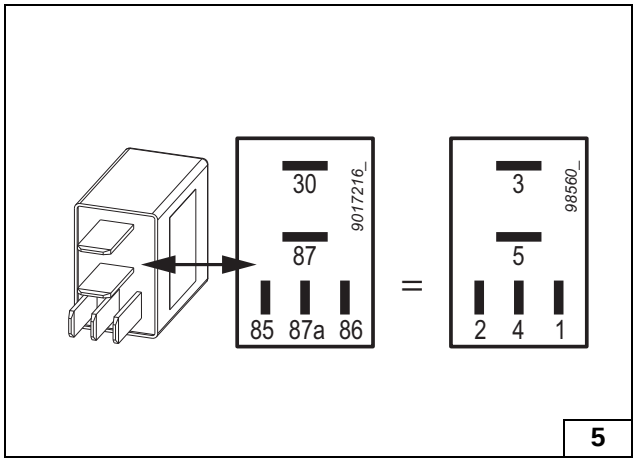
View of K2 / K3 relay



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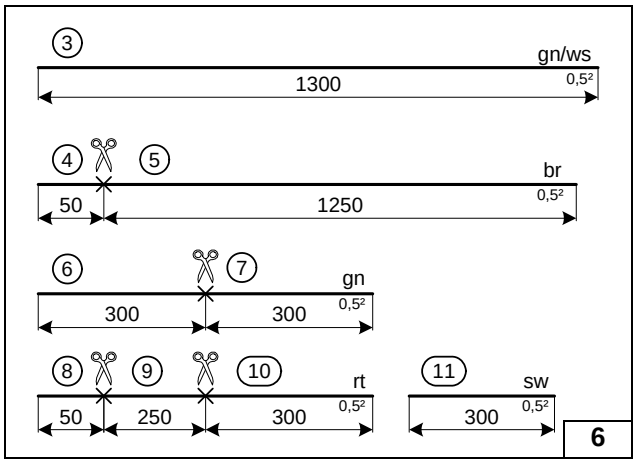
Up to MY 2013

Cutting wires to length



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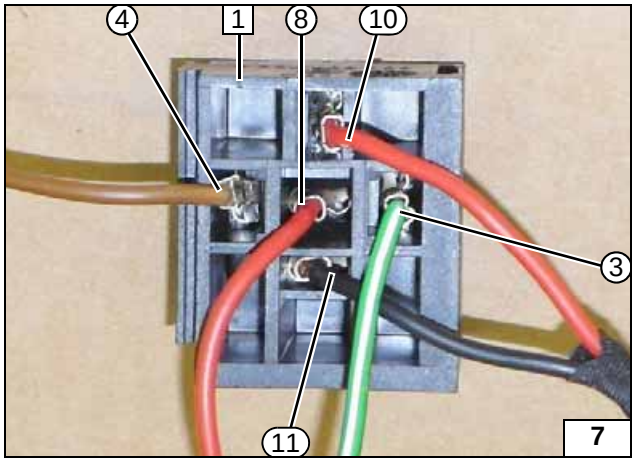
Connect the wires according to the following wiring diagram.
Pull wires (10) and (11) into the provided protective sleeving.

Connecting wires to the IPCU socket



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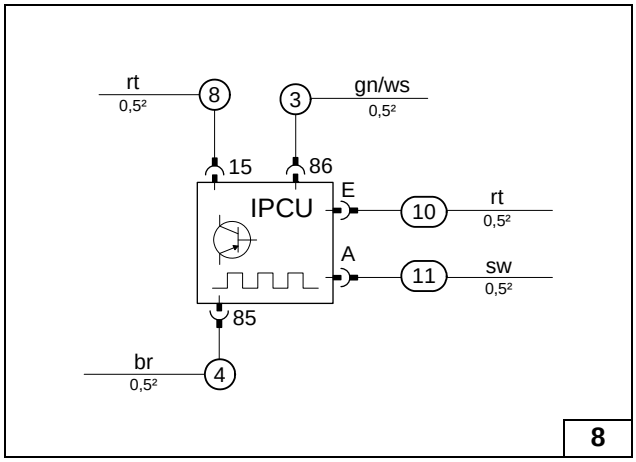
1 IPCU socket
(3) Green/white (gn/ws) wire of IPCU/86
(4) Brown (br) wire from IPCU/85
(8) Red (rt) wire from IPCU/15
(10) Red (rt) wire from IPCU/E
(11) Black (sw) wire from IPCU/A

IPCU wiring diagram



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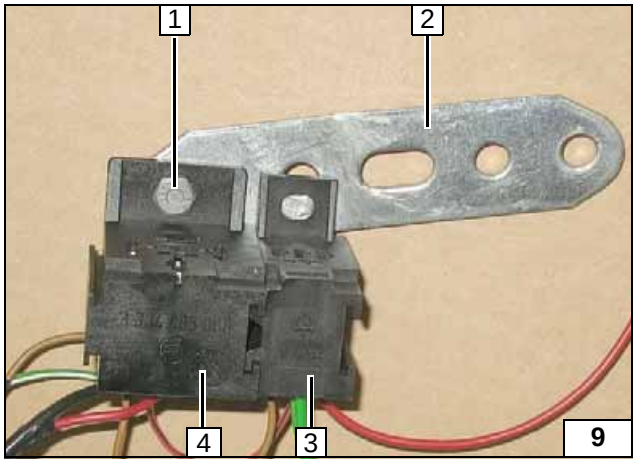
Interlock relay socket **3** and IPCU socket **4**.

Premounting IPCU and K2 relay



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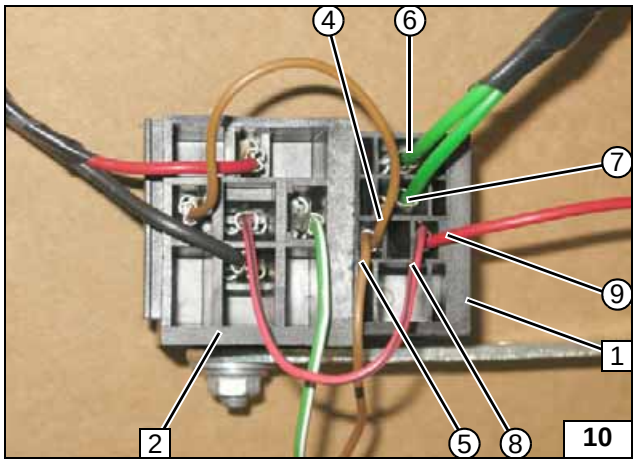
1 M5x16 bolt, large diameter washer, flanged nut
2 Perforated bracket



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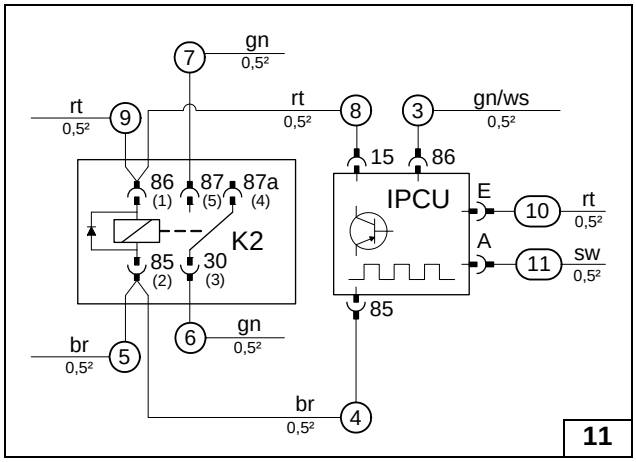
Connect the wires according to the following wiring diagram.

1 K2 relay socket
2 IPCU socket
④ Brown (br) wire from IPCU/85 on K2/85(2)
⑤ Brown (br) wire of K2/85(2)
⑥ Green (gn) wire of K2/30(3)
⑦ Green (gn) wire of K2/87(5)
⑧ Red (rt) wire from IPCU/15 on K2/86(1)
⑨ Red (rt) wire of K2/86(1)

Connecting wires



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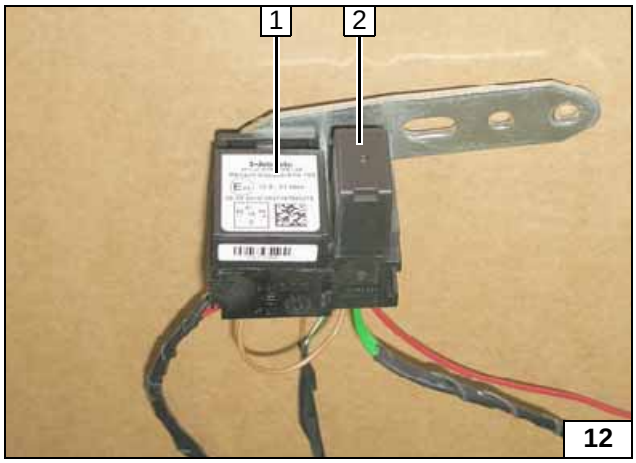
IPCU wiring diagram and K2 relay



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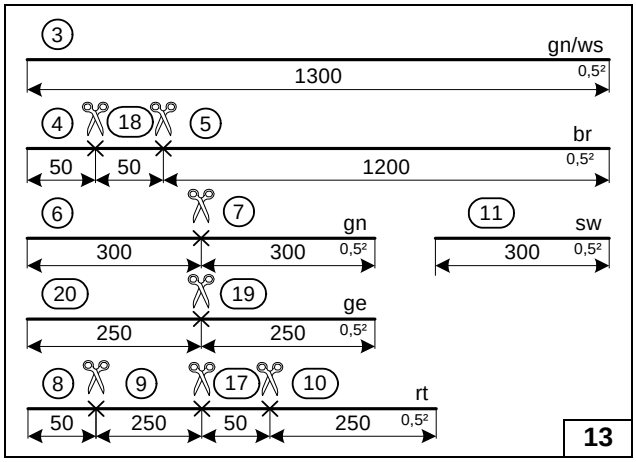
1 IPCU
2 K2 relay

Mounting IPCU and K2 relay

From MY 2014



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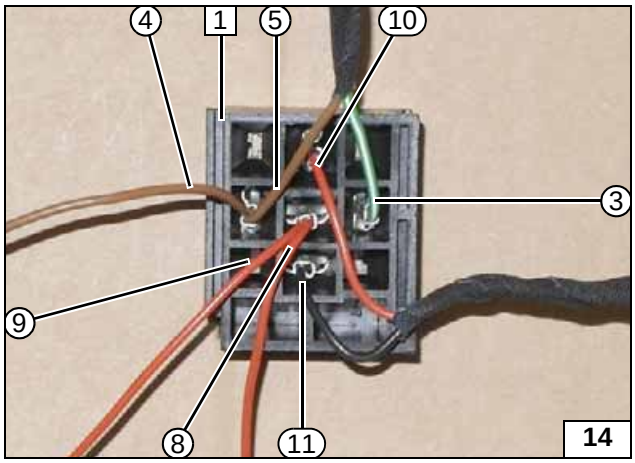
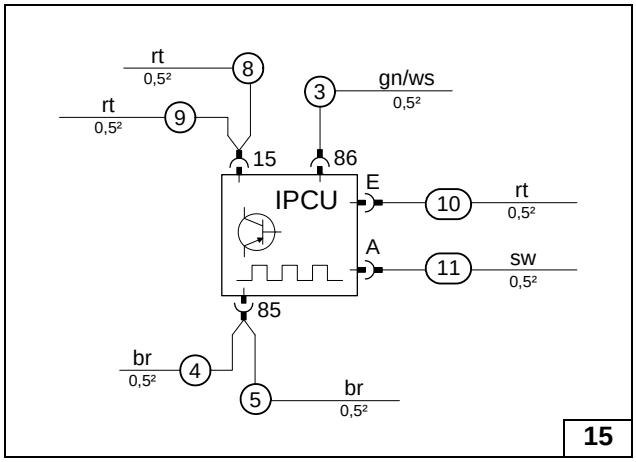
Cutting wires to length



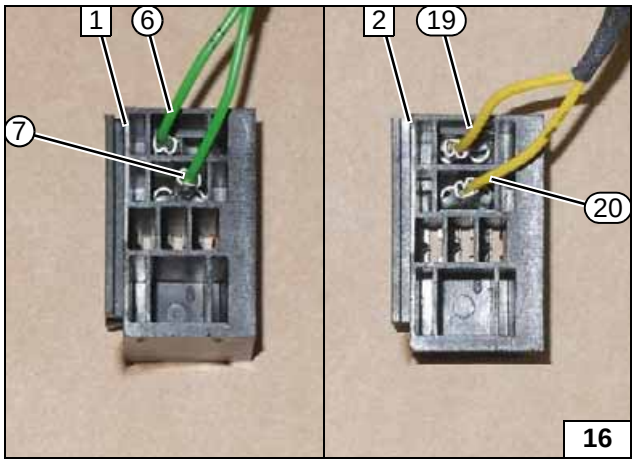
Connect the wires according to the following wiring diagram.
Pull wires ⑩ and ⑪ into the provided protective sleeving.

1 IPCU socket
③ Green/white (gn/ws) wire of IPCU/86
④ Brown (br) wire from IPCU/85
⑤ Brown (br) wire from IPCU/85
⑧ Red (rt) wire from IPCU/15
⑨ Red (rt) wire from IPCU/15
⑩ Red (rt) wire from IPCU/E
⑪ Black (sw) wire from IPCU/A

Connecting wires to the IPCU socket



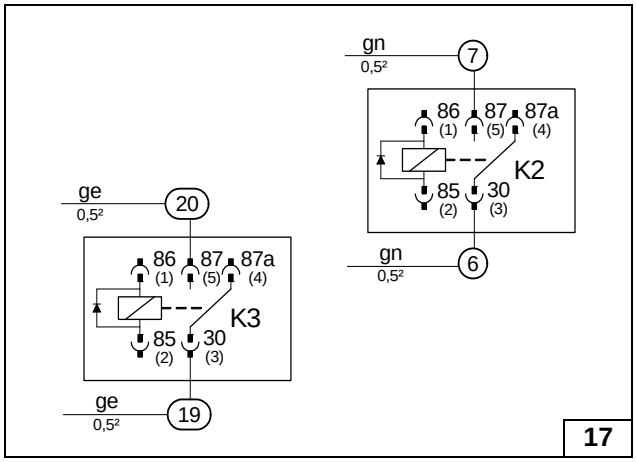
Wiring diagram for IPCU socket



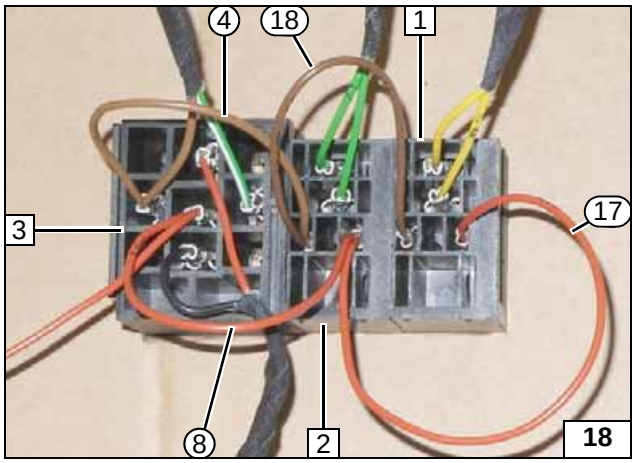
Connect the wires according to the following wiring diagram.

1 K2 relay socket
2 Socket of K3 relay
⑥ Green (gn) wire of K2/30(3)
⑦ Green (gn) wire of K2/87(5)
⑲ Yellow (ge) wire of K3/30(3)
⑳ Yellow (ge) wire of K3/87(5)

Connecting wires to K2/K3 relay socket



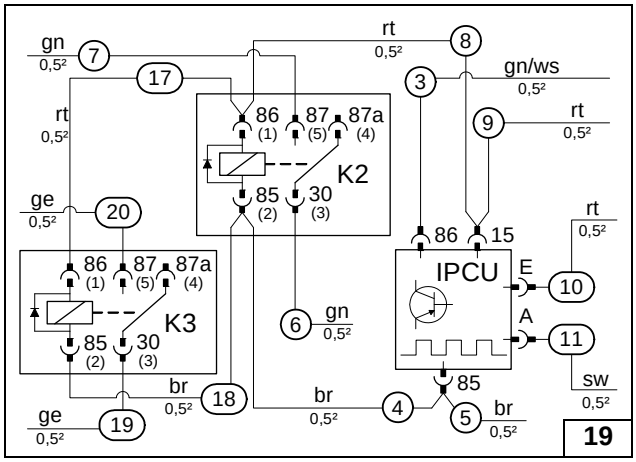
Wiring diagram for socket of K2 / K3 relay



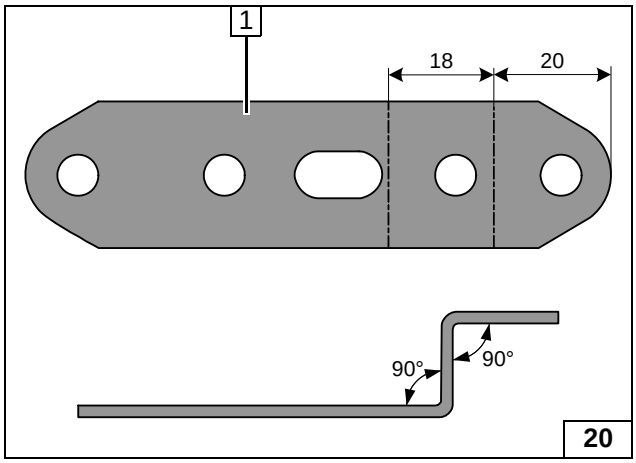
Interlock relay socket (K3) **1** with relay socket (K2) **2** and IPCU socket **3**.
Connect the wires according to the following wiring diagram.

④ Brown (br) wire from IPCU/85 on K2/85(2)
⑧ Red (rt) wire from IPCU/15 on K2/86(1)
⑰ Red (rt) wire from K2/86(1) on K3/86(1)
⑱ Brown (br) wire from K2/85(2) on K3/85(2)

Connecting wires to K2/K3 relay socket

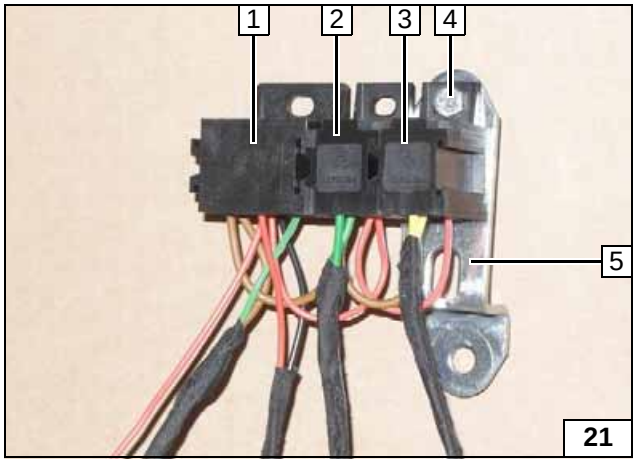


Wiring diagram for K2 relay, K3 relay and IPCU



1 Perforated bracket

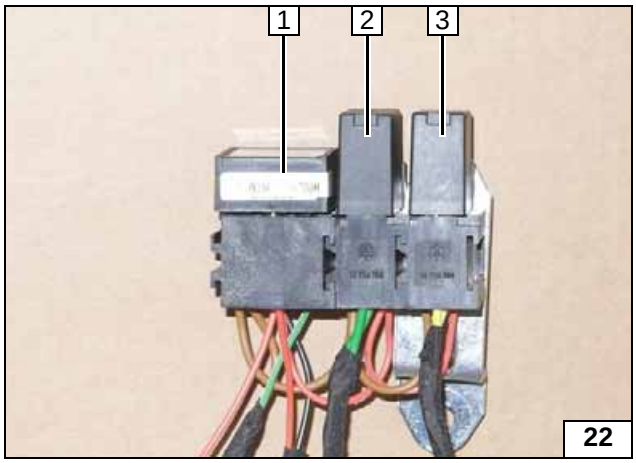
Preparing perforated bracket



1 IPCU socket
2 K2 relay socket
3 Socket of K3 relay
4 M5x16 bolt, large diameter washer, flanged nut
5 Perforated bracket

Installing perforated bracket

Mounting IPCU, K2 relay and K3 relay



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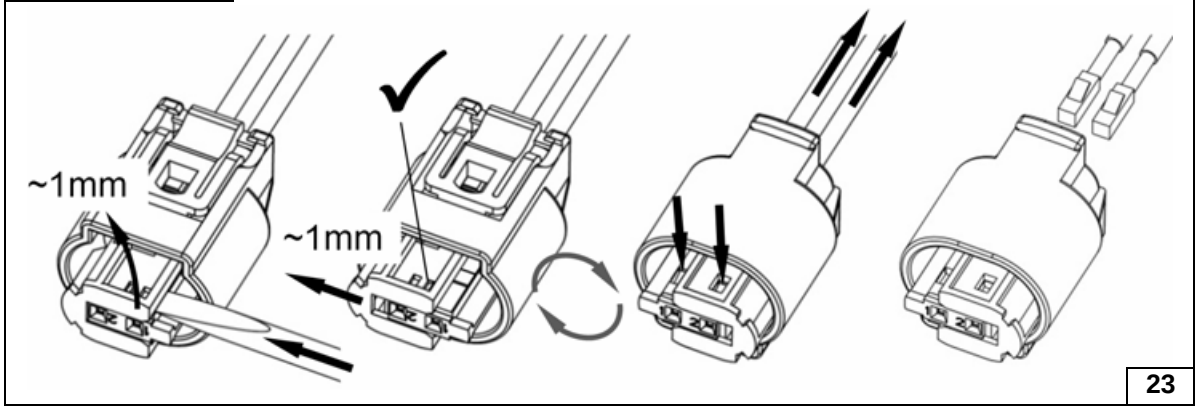
1 IPCU
2 K2 relay
3 K3 relay

Removing metering pump connector

Connector X7



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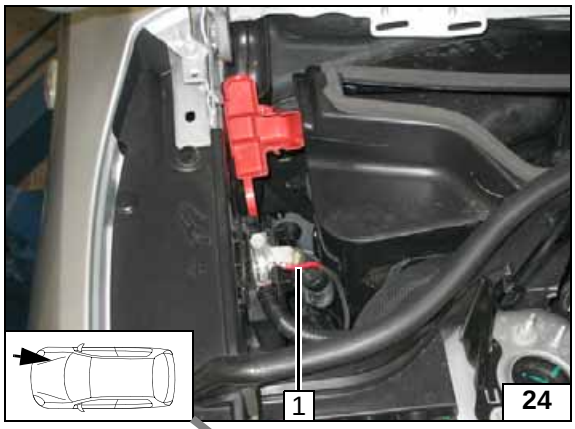
Electrical System, All Vehicles

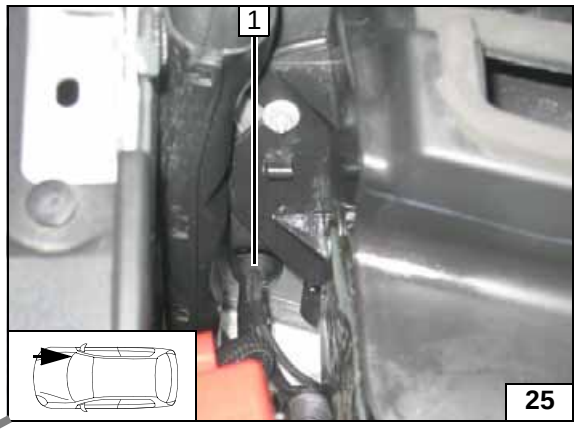
Positive wire

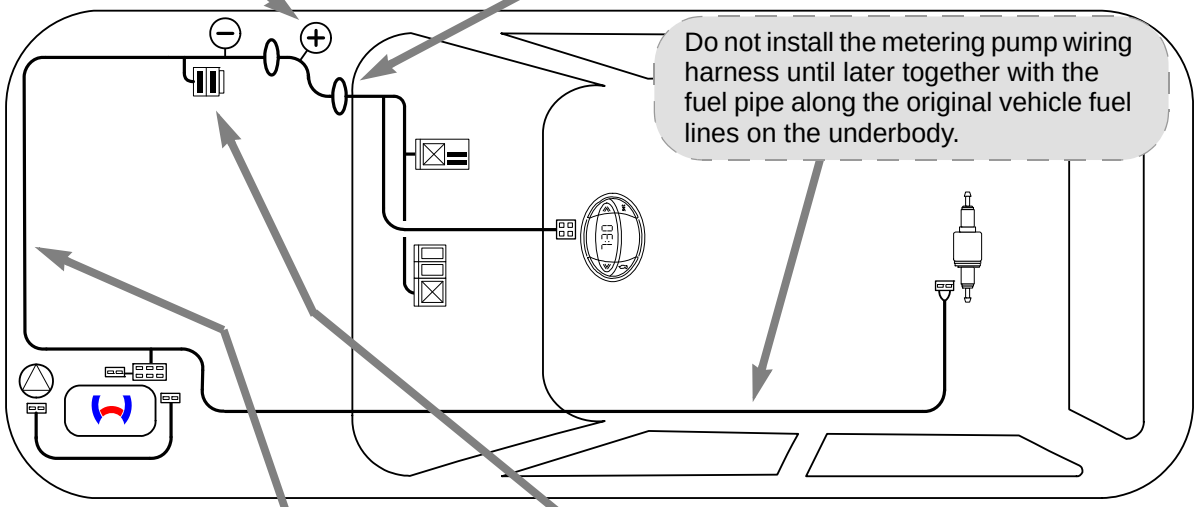
1 Positive wire on original vehicle positive support point



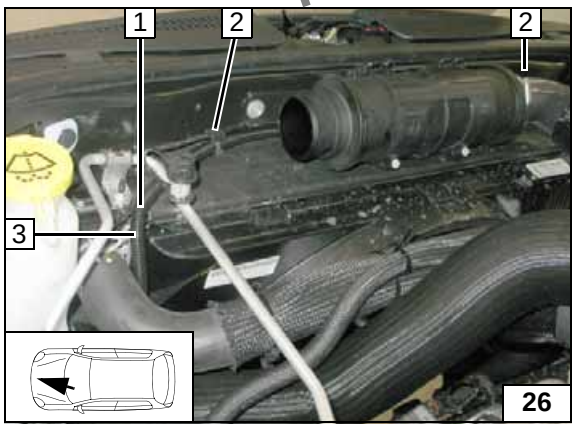
Wiring harness pass through

1 Cable grommet



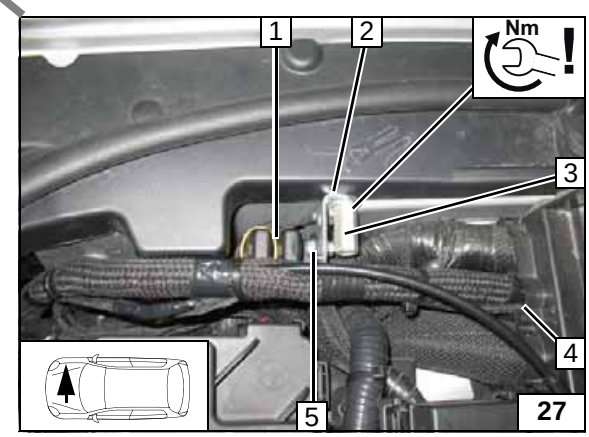


Wiring harness routing diagram (2014)



Wiring harness routing, engine compartment

1 Cable tie
2 Retaining clamp with cable tie [2x]
3 Heater wiring harnesses and metering pump in corrugated tube10mm dia. 2100



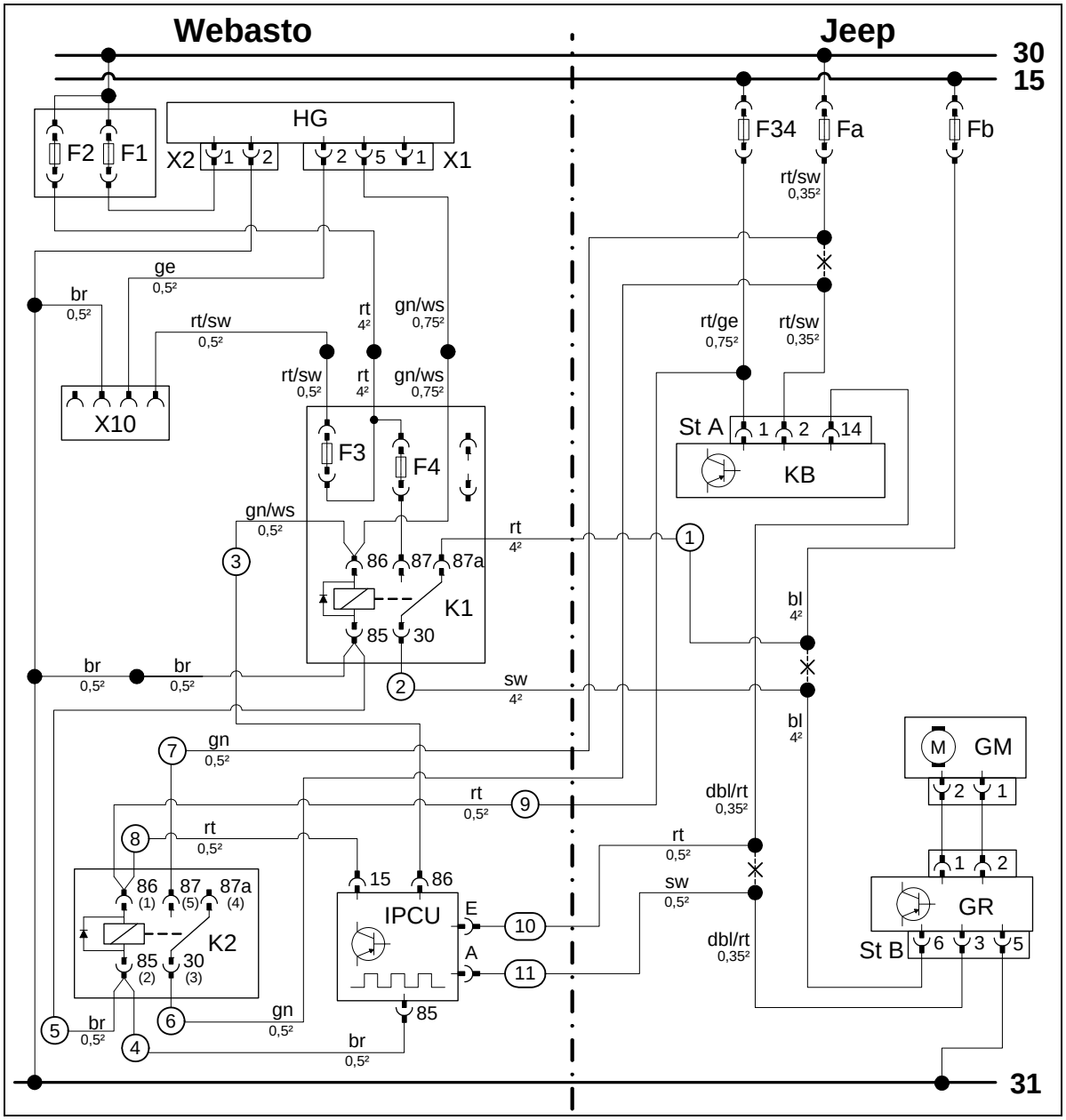
Fuse holder of engine compartment, earth wire

Mount earth wire with 8mm dia. cable lug and angle bracket **2** on original vehicle earth support point **3**.

1 Fuses F1-2
4 Cable pass through via partition wall
5 M5x16 bolt, washer [2x], retaining plate for fuse holder, nut

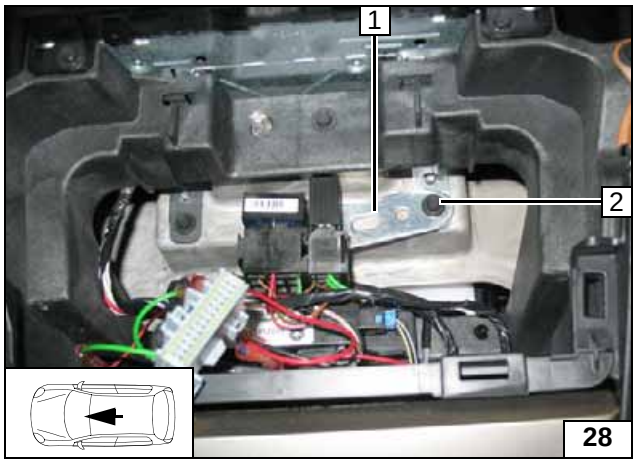
Fan Controller up to MY 2013

Wiring diagram



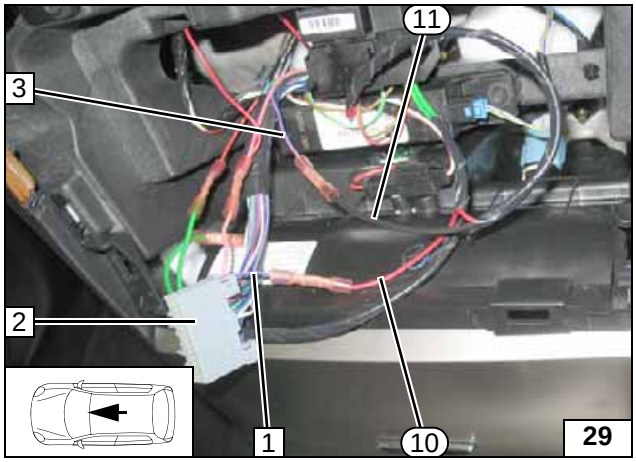
Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-Evo	F34	Fuse	rt	red
X1	6-pin heater connector	Fa	Fuse	sw	black
X2	2-pin heater connector	Fb	Fuse	ge	yellow
X10	Heater control	St A	26-pin connector of KB	gn	green
K1	Fan relay	KB	A/C control panel	ro	pink
K2	Additional relay	GM	Fan motor	ws	white
F1	20A fuse	GR	Fan controller	br	brown
F2	30A fuse	St B	6-pin connector GR	bl	blue
F3	1A fuse			dbl	dark blue
F4	25A fuse				
IPCU	Pulse width modulator				
IPCU settings:					
Duty cycle:	62%				
Frequency:	100Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low-side			Wiring colours may vary.	

Legend



1 Perforated bracket
2 Original vehicle bolt

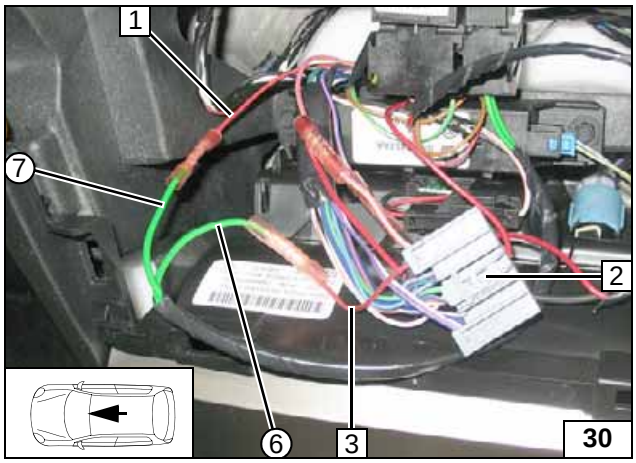
Premounting K2 relay and IPCU



Connection to 26-pin connector **2** from A/C control panel. Produce connections as shown in wiring diagram.

1 Dark blue/red (dbl//rt) wire of A/C control panel connector Pin 14
3 Dark blue/red (bl/rt) wire of fan controller
⑩ Red (rt) wire from IPCU/E
⑪ Black (sw) wire from IPCU/A

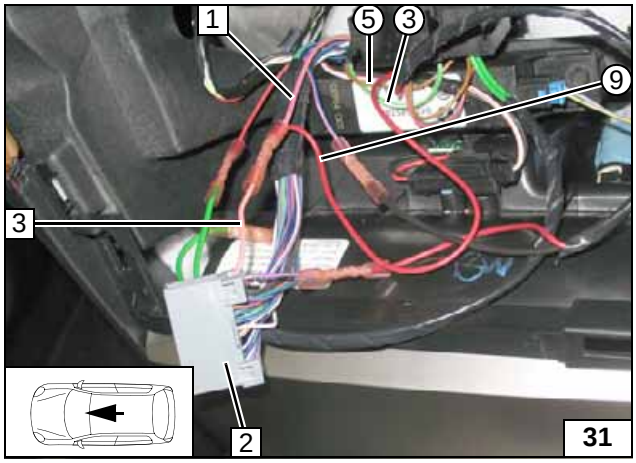
Connecting IPCU, A/C control panel



Connection to 26-pin connector **2** from A/C control panel. Produce connections as shown in wiring diagram.

1 Red/black (rt/sw) wire from Fuse Fa
3 Red/black (rt/sw) wire of A/C control panel connector Pin 2
⑥ Green (gn) wire of K2/30(3)
⑦ Green (gn) wire of K2/87(5)

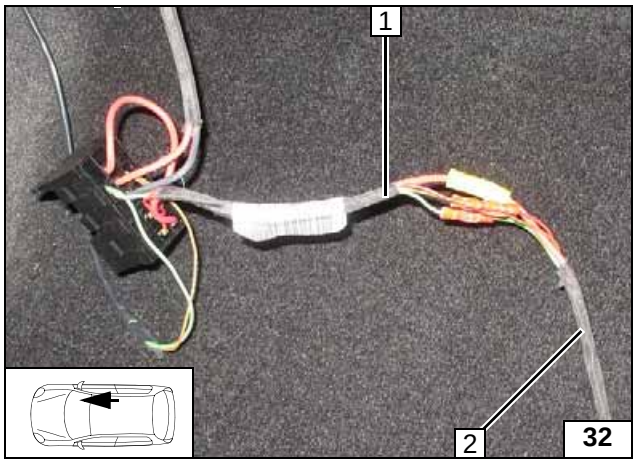
Connecting K2 relay, A/C control panel



Connection to 26-pin connector **2** from A/C control panel. Make connections according to wiring diagram. Route green/white (gn/ws) wire ③ of IPCU/86 and brown (br) wire ⑤ of K2/85(2) from centre console in the front passenger's side footwell.

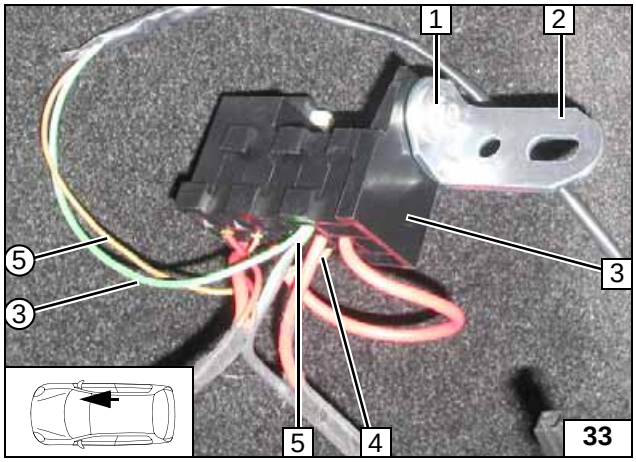
1 Pink/yellow (ro/ge) wire of fuse F34
3 Pink/yellow (ro/ge) wire of A/C control panel connector Pin 1
⑨ Red (rt) wire of K2/86(1)

Connection of terminal 15



Connect same colour wires of wiring harness of passenger compartment relay and fuse holder **1** with wiring harness of heater **2** as shown in wiring diagram.

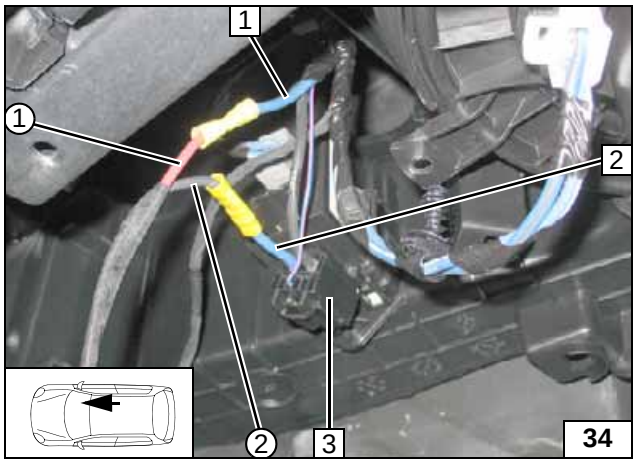
Connecting wiring harnesses using same colour wires



Detach and remove contacts of K1/85 and K1/86. Install wires with supplied contacts as shown in wiring diagram. Insert K1 relay later.

1 M5x16 bolt, large diameter washer, flanged nut
2 Angle bracket
3 Relay and fuse holder of passenger compartment
4 Brown (br) wire of K1/85
5 Green/white (gn/ws) wire of K1/86
③ Green/white (gn/ws) wire from IPCU/86 on K1/86
⑤ Brown (br) wire from K2/85(2) on K1/85

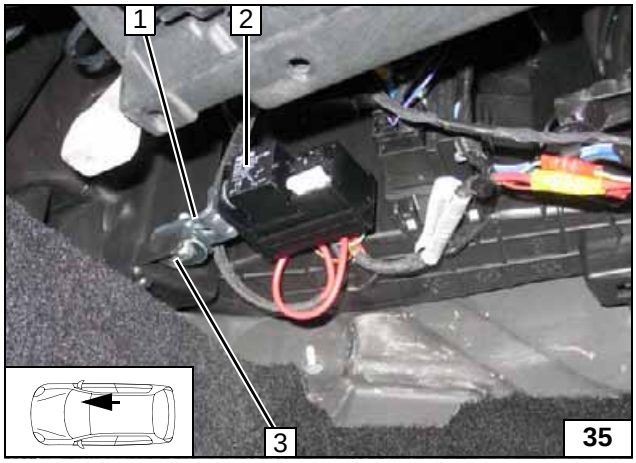
Preparing relay and fuse holder of passenger compartment



Connection to 6-pin connector **3** from fan controller. Produce connections as shown in wiring diagram.

1 Blue (bl) wire of fuse Fb
2 Blue (bl) wire of fan controller connector Pin 6
① Red (rt) wire from K1/87a
② Black (sw) wire from K1/30

Connecting fan controller



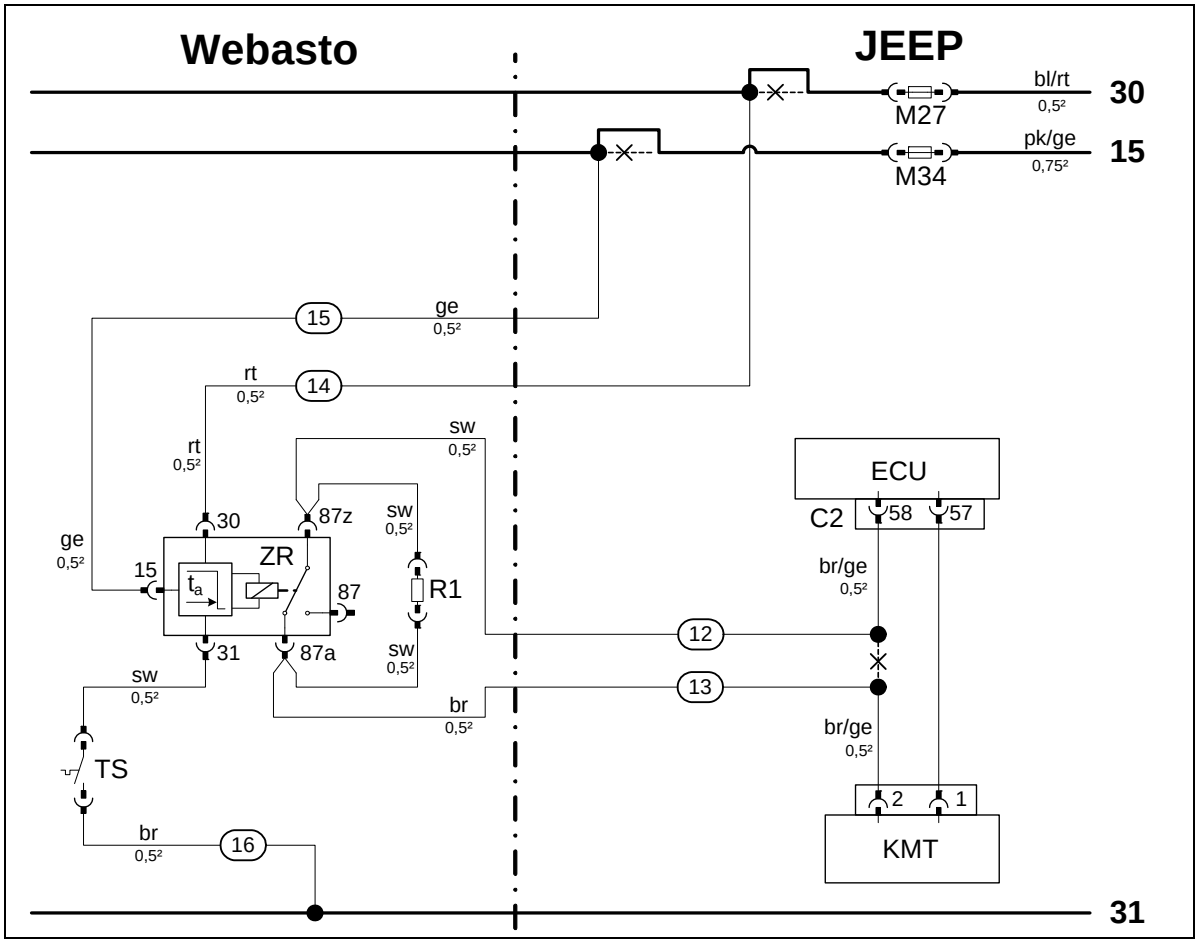
Mount K1 relay **2** after installation.

1 Angle bracket
3 M6x20 bolt, large diameter washer, flanged nut, original vehicle hole

Installing relay and fuse holder of passenger compartment

Cold Fast Idle System up to MY 2013

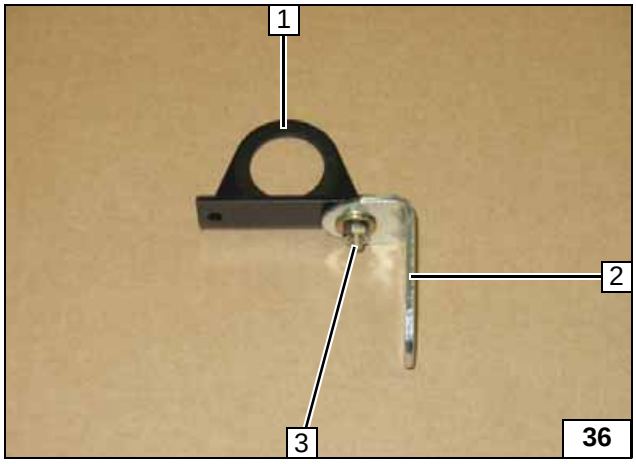
Wiring diagram



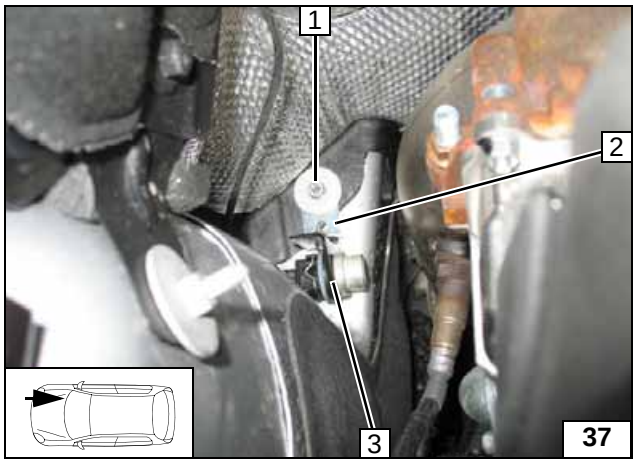
Legend

Webasto components		Vehicle components		Colours and symbols	
ZR	Time-delay relay	M27	10 A fuse	rt	red
R1	12 kilohm resistor	M34	10 A fuse	sw	black
TS	Temperature switch	ECU	Engine control unit	ge	yellow
		C2	60-pin connector of ECU	br	brown
		KMT	Coolant temperature sensor	gr	grey
				pk	pink
				bl	blue
				X	Cutting point
				Wiring colours may vary.	

Premounting bracket of temperature switch



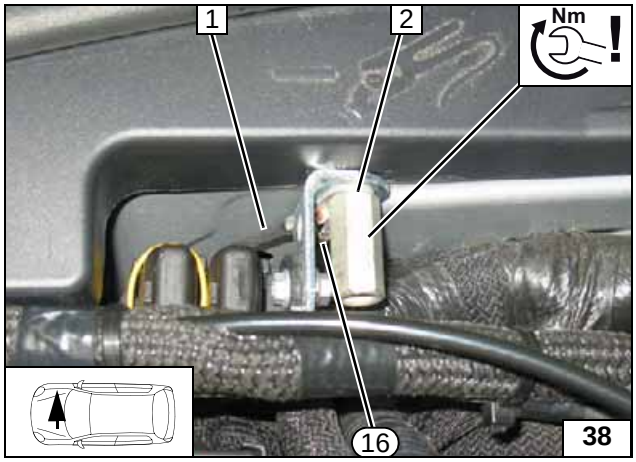
1 Bracket of temperature switch
2 Angle bracket
3 M5x16 bolt, large diameter washer, spring lockwasher, nut



Insert temperature switch **3** into bracket. Complete and attach connector.

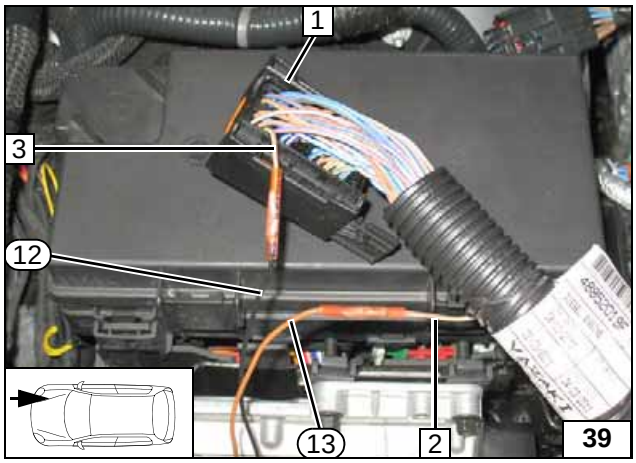
1 Original vehicle stud bolt
2 Angle bracket

Installing temperature switch



Mount brown (br) earth wire of temperature switch (16) on original vehicle earth support point **2** together with earth wire of heater **1**.

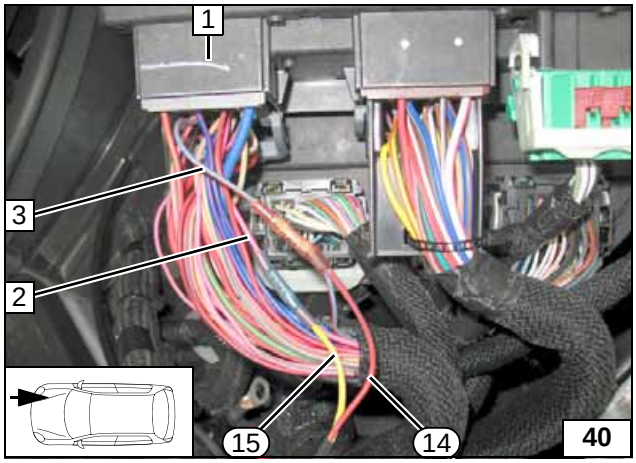
Earth connection of temperature switch



Connection to 60-pin connector C2 **1** of engine control unit. Produce connections as shown in wiring diagram.

2 Brown/yellow (br/ge) wire of temperature sensor
3 Brown/yellow (br/ge) wire of 60-pin connector C2, pin 58
(12) Black (sw) wire of ZR/87z
(13) Brown (br) wire of ZR/87a

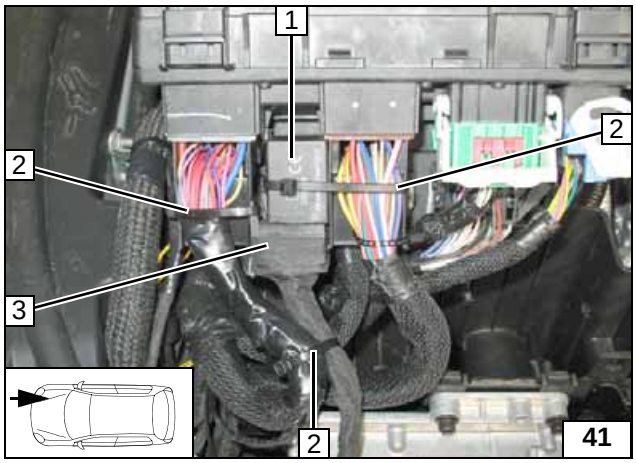
Connection of temperature sensor



Connection to connector of central electrical box **1**. Produce connections as shown in wiring diagram.

2 Pink/yellow (pk/ge) wire of fuse M34 of central electrical box connector, pin 19 (terminal 15)
3 Blue/red (bl/rt) wire of fuse M27of central electrical box connector, pin 21 (terminal 30)
(14) Red (rt) wire of ZR/30
(15) Yellow (ge) wire of ZR/15

Connection of power supply



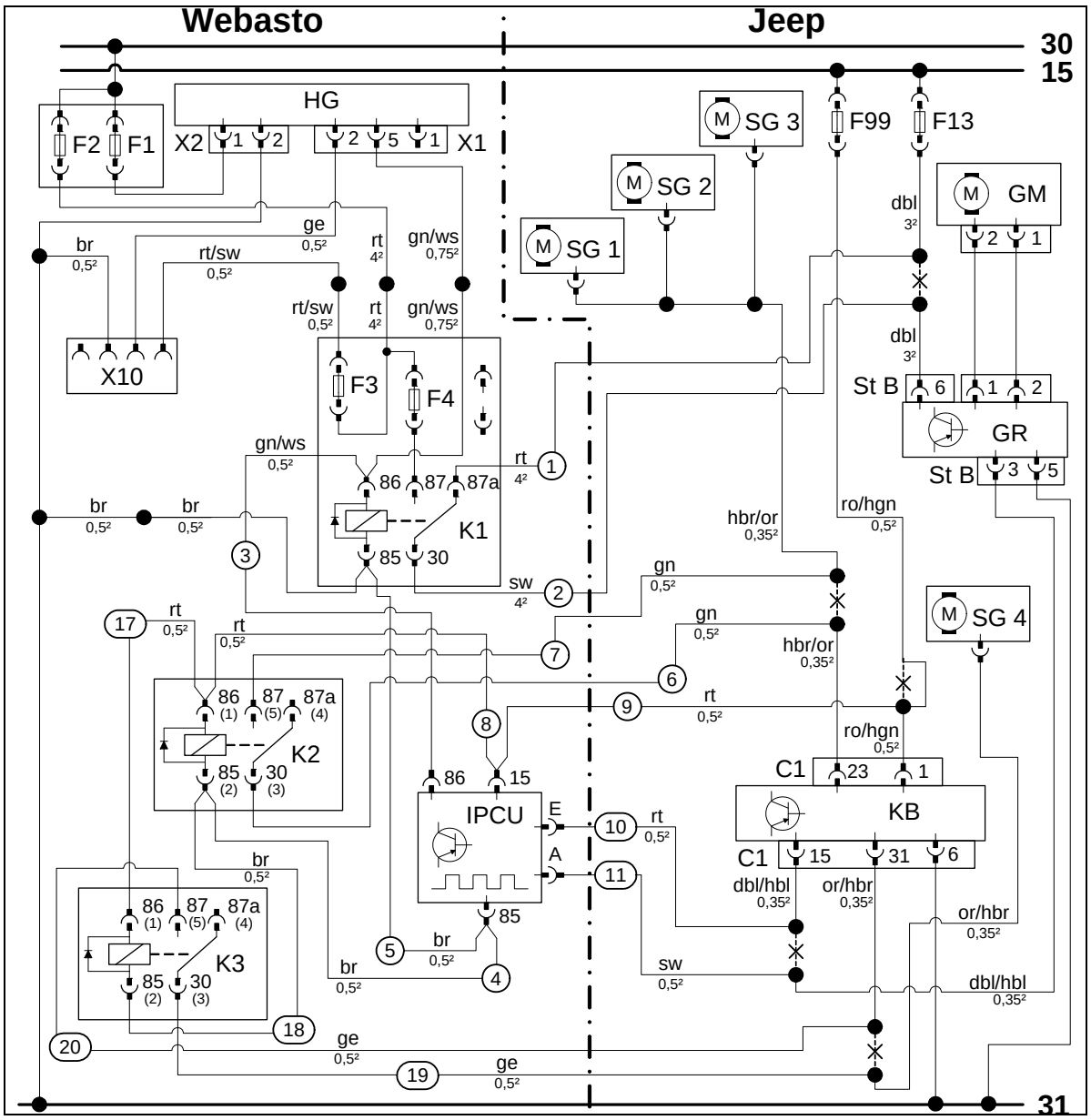
Insulate wiring harness of cold fast idle system with socket of time-delay relay **3** and fasten using cable tie [3x] **2** as shown.

1 Time-delay relay attached

Fastening wiring harness and time-delay relay

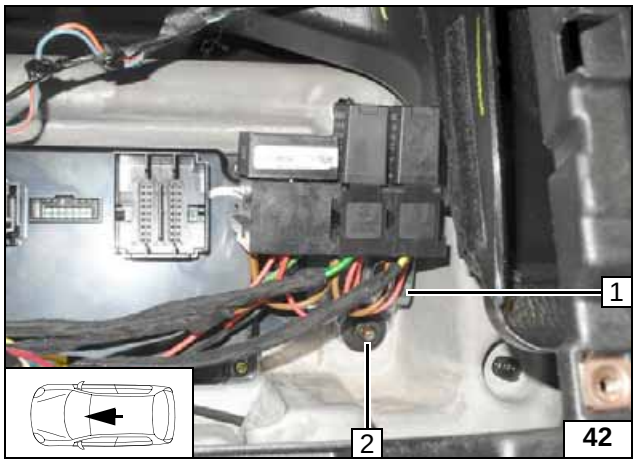
Fan Controller from MY 2014

Wiring diagram



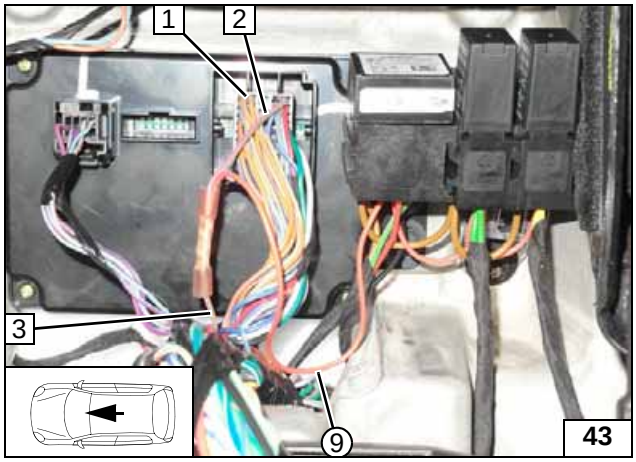
Webasto components		Vehicle components		Colours and symbols	
HG	Heater TT-Evo	F99	10 A fuse	rt	red
X1	6-pin heater connector	F13	40A fuse	sw	black
X2	2-pin heater connector	SG 3	Actuator for air recirculation flap	ge	yellow
X10	Heater control	SG 2	Actuator for front air distribution flap	gn	green
K1	Fan relay			ro	pink
K2	Additional relay	GM	Fan motor	ws	white
K3	Additional relay	SG 1	Actuator for left-hand mixed air flap	br	brown
F1	20A fuse			hbr	light brown
F2	30A fuse	St B	6-pin connector GR	bl	blue
F3	1A fuse	GR	Fan controller	ro	pink
F4	25A fuse	SG 4	Actuator for right-hand mixed air flap	hgn	pale green
IPCU	Pulse width modulator			dbl	dark blue
IPCU settings:		C1	36-pin connector of KB	hbl	light blue
Duty cycle:	62%	KB	A/C control unit	or	orange
Frequency:	100Hz				
Voltage:	not relevant			**X**	Cutting point
Function:	Low-side			Wiring colours may vary.	

Legend



1 Perforated bracket
2 Original vehicle bolt

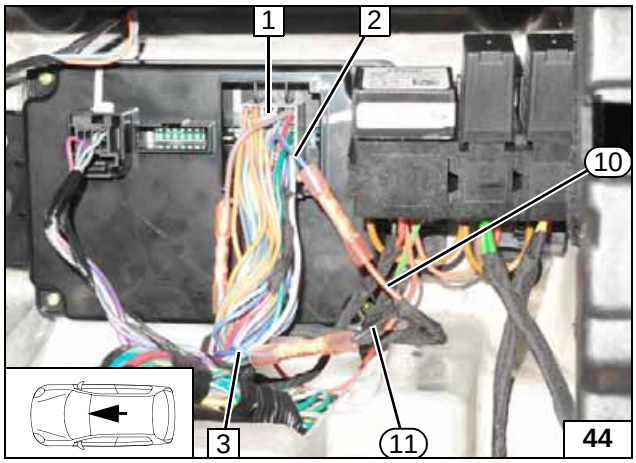
Mounting K2/K3 relay and IPCU



Connection to grey (gr) 36-pin connector **1** from A/C control unit. Make connections according to wiring diagram. Route green/white (gn/ws) wire ③ of IPCU/86 and brown (br) wire ⑤ of IPCU/85 from centre console in the front passenger's side footwell.

2 Pink/light green (ro/hgn) wire of A/C control unit grey connector Pin 1
3 Pink/light green (ro/hgn) wire from fuse F99
⑨ Red (rt) wire from IPCU/15

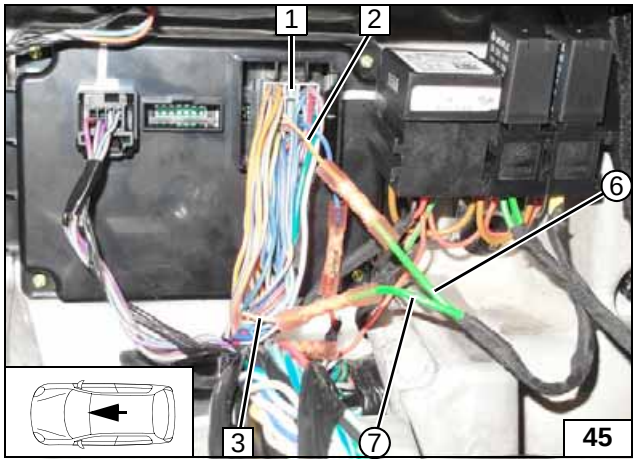
Connection of IPCU/15 to A/C control unit



Connection to grey (gr) 36-pin connector **1** from A/C control unit. Produce connections as shown in wiring diagram.

2 Dark blue/pale blue (dbl/hbl) wire of A/C control unit grey connector Pin 15
3 Dark blue/light blue (dbl/hbl) wire of fan controller St B/3
⑩ Red (rt) wire from IPCU/E
⑪ Black (sw) wire from IPCU/A

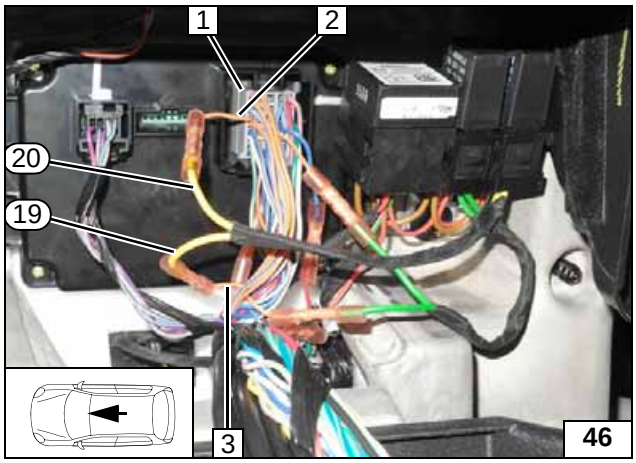
Connection of IPCU to A/C control unit



Connection to grey (gr) 36-pin connector **1** from A/C control unit. Produce connections as shown in wiring diagram.

2 Light brown/orange (hbr/or) wire of A/C control unit grey connector Pin 23
3 Light brown/orange (hbr/or) wire from actuator for air flaps
⑥ Green (gn) wire of K2/30(3)
⑦ Green (gn) wire of K2/87(5)

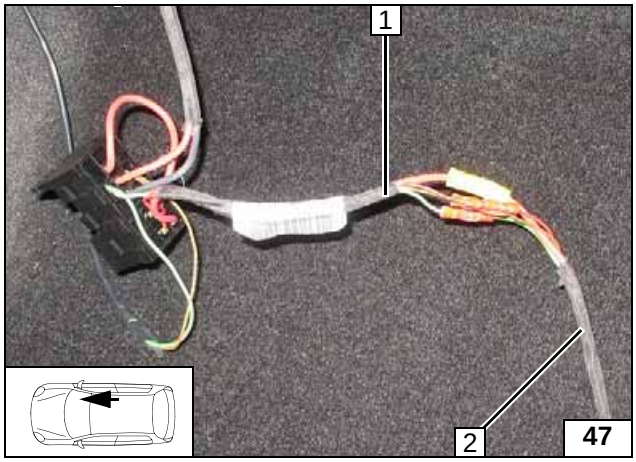
Connection of K2 relay to A/C control unit



Connection to grey (gr) 36-pin connector **1** from A/C control unit. Produce connections as shown in wiring diagram.

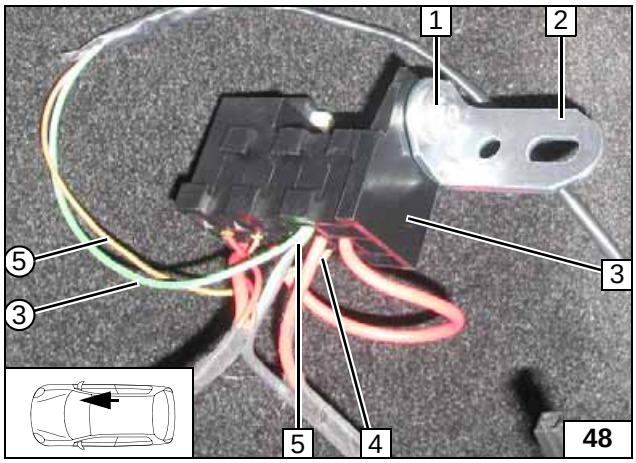
2 Orange/light brown (or/hbr) wire of A/C control unit grey connector Pin 31
3 Orange/light brown (or/hbr) wire from actuator for air flap
⑲ Yellow (ge) wire of K3/30(3)
⑳ Yellow (ge) wire of K3/87(5)

Connection of K3 relay to A/C control unit



Connect same colour wires of wiring harness of passenger compartment relay and fuse holder **1** with wiring harness of heater **2** as shown in wiring diagram.

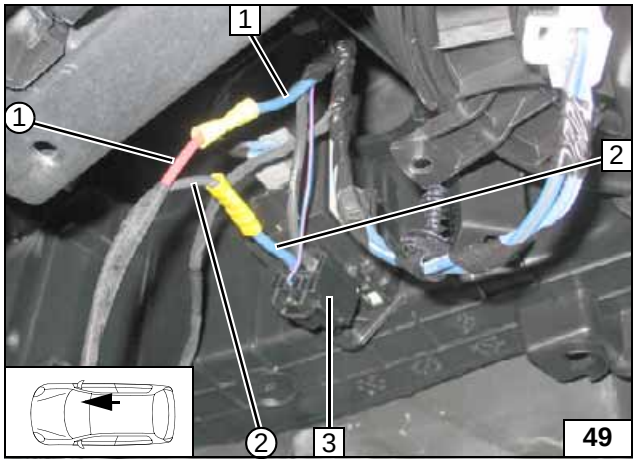
Connecting wiring harnesses using same colour wires



Detach and remove contacts of K1/85 and K1/86. Install wires with supplied contacts as shown in wiring diagram.
Insert K1 relay later.

1 M5x16 bolt, large diameter washer, flanged nut
2 Angle bracket
3 Relay and fuse holder of passenger compartment
4 Brown (br) wire of K1/85
5 Green/white (gn/ws) wire of K1/86
③ Green/white (gn/ws) wire from IPCU/86 on K1/86
⑤ Brown (br) wire from IPCU/85 on K1/85

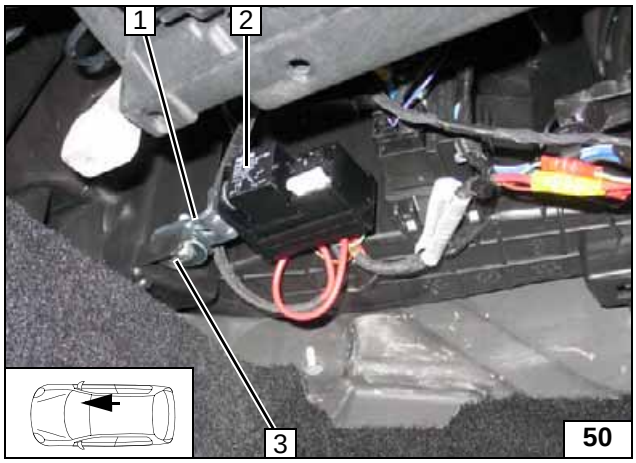
Preparing relay and fuse holder of passenger compartment



Connection to 6-pin connector **3** from fan controller. Produce connections as shown in wiring diagram.

1 Blue (bl) wire of fuse F13
2 Blue (bl) wire of fan controller connector Pin 6
① Red (rt) wire from K1/87a
② Black (sw) wire from K1/30

Connecting fan controller



Mount K1 relay **2** after installation.

1 Angle bracket
3 M6x20 bolt, large diameter washer, flanged nut, original vehicle hole

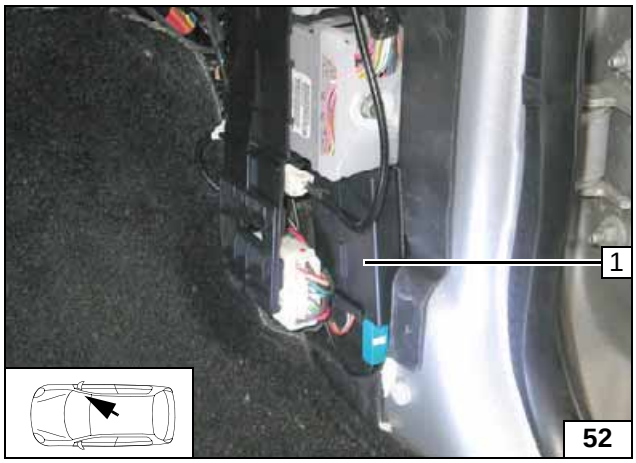
Installing relay and fuse holder of passenger compartment

Controls up to 2013

Digital timer

1 Digital timer

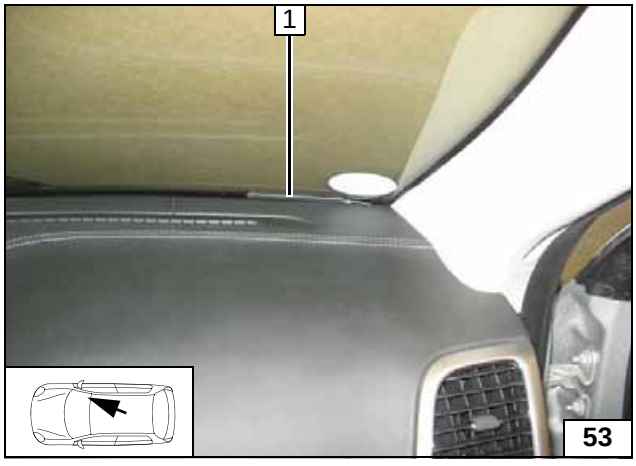
Installing digital timer



Remote Option (Telestart)

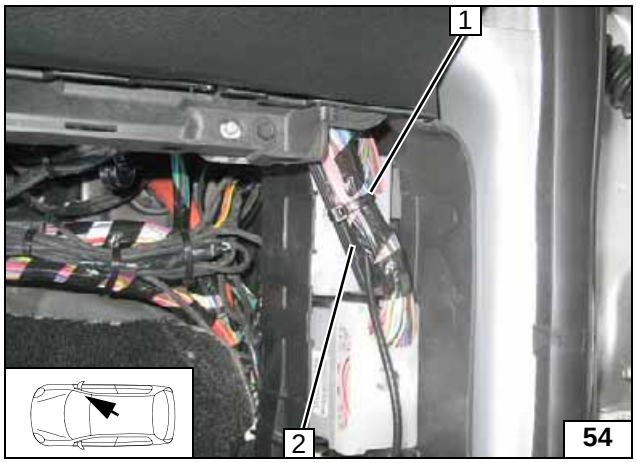
Fasten receiver **1** with adhesive tape.

Installing receiver



1 Antenna

Installing antenna



Temperature sensor T100 HTM

Fasten temperature sensor **2** with cable tie **1**.

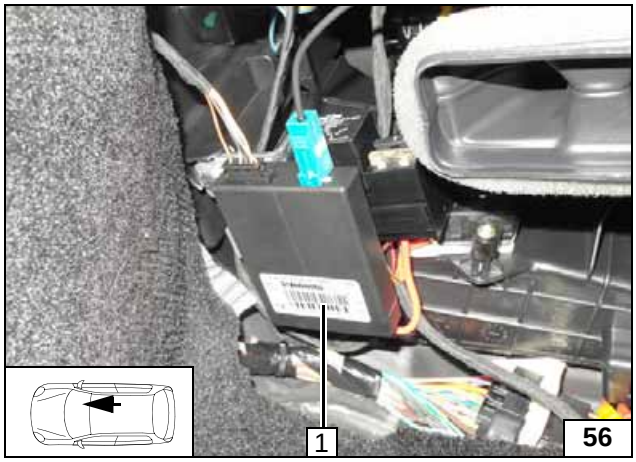
Installing temperature sensor

Controls from 2014

Digital timer

1 Digital timer

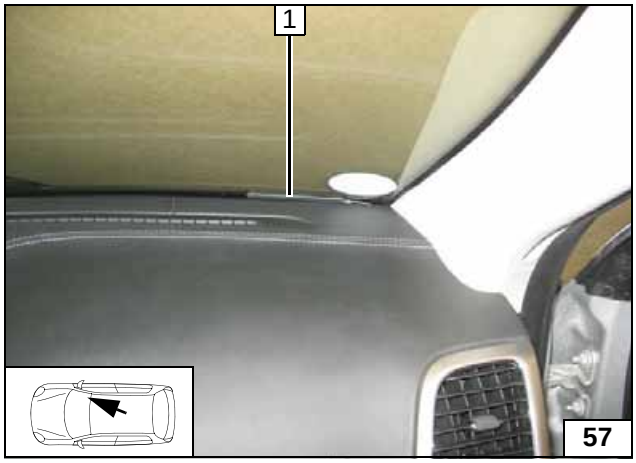
Installing digital timer



Remote Option (Telestart)

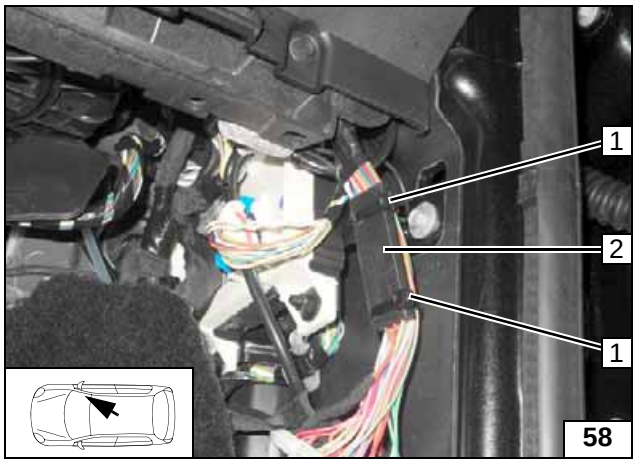
Fasten receiver **1** with adhesive tape.

Installing receiver



1 Antenna

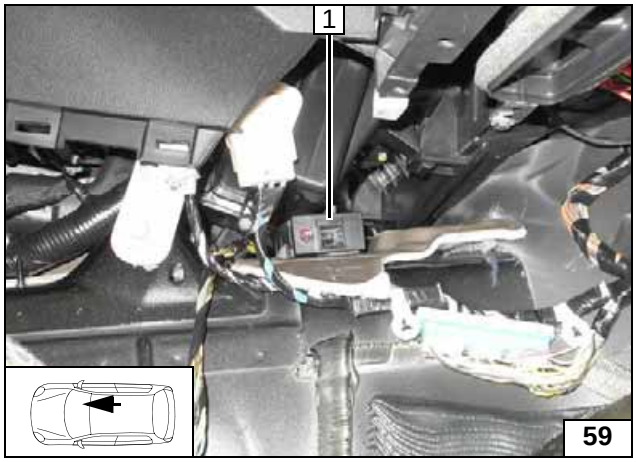
Installing antenna



Temperature sensor T100 HTM

Fasten temperature sensor **2** with cable tie **1**.

Installing temperature sensor



Remote option (Thermo Call)

Fasten receiver **1** with adhesive tape.

Installing receiver

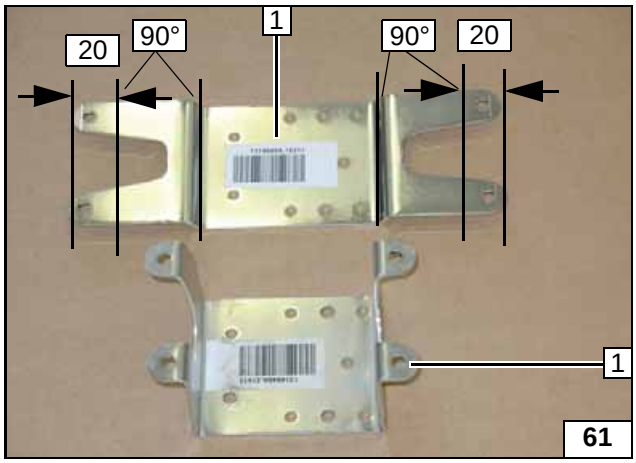
1 Antenna

Installing antenna

Preparing Installation

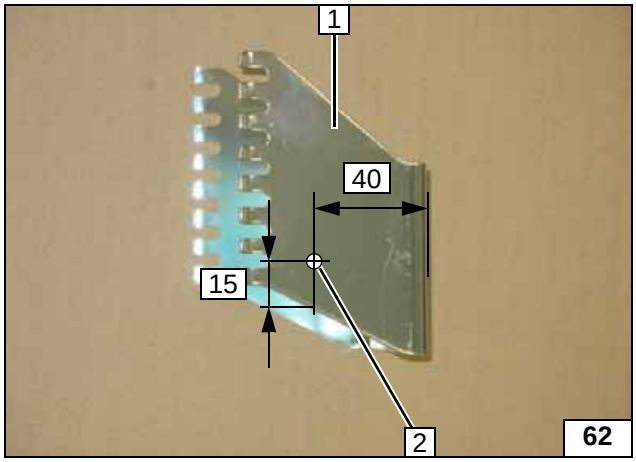
Angle down bracket **1** as shown.

Bending bracket



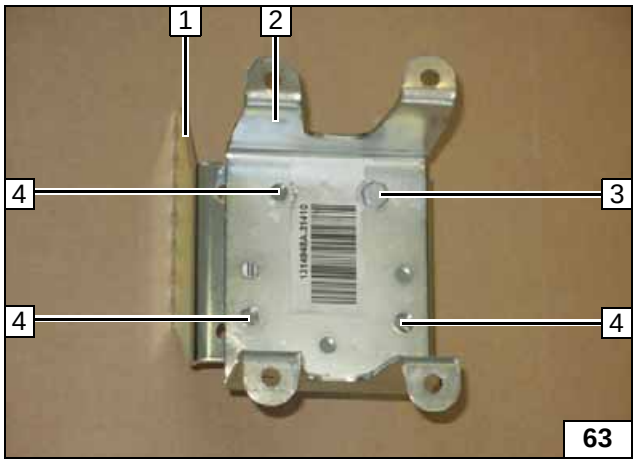
1 Bracket
2 7.0 mm dia. hole

Preparing bracket



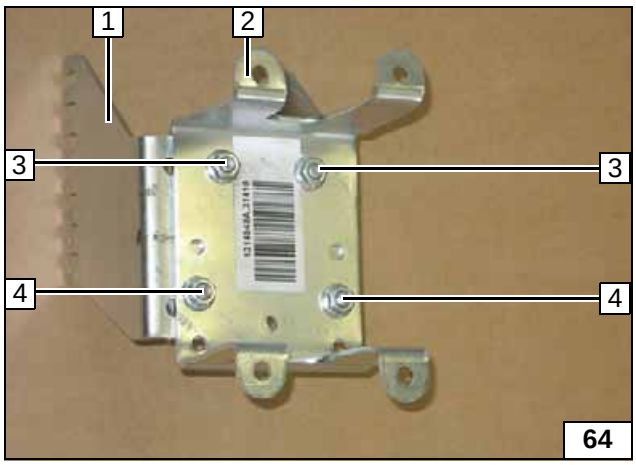
Align bracket **2** with bracket **1** and secure using M6x16 bolt and flanged nut **3**. Copy hole pattern **4** onto 7mm dia. bracket **1** [3x] and drill.

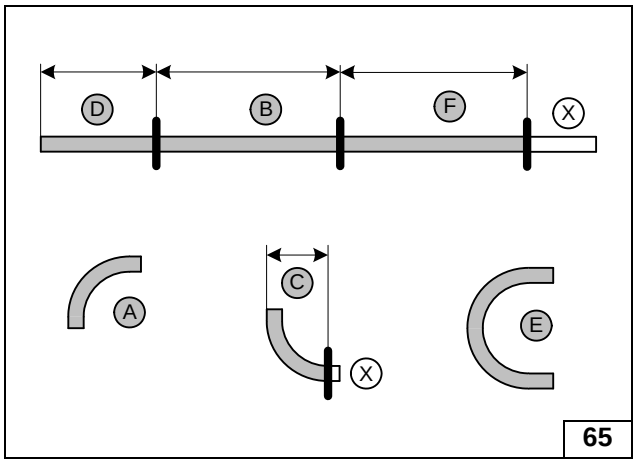
Copying hole pattern



1 Bracket
2 Bracket
3 M6x16 bolt, nut [2x each]
4 M6x16 bolt, large diameter washer, nut [2x each]

Premounting bracket

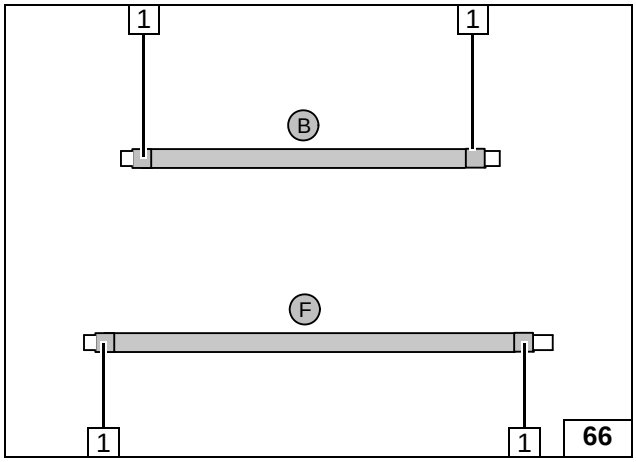




Discard section **X**.
Hose **A** = 90°, 15x18 mm dia. moulded hose
Hose **C** = 90°, 18 mm dia. moulded hose
Hose **E** = 180°, 18 mm dia. moulded hose

B = 770
C = 55
D = 80
F = 820

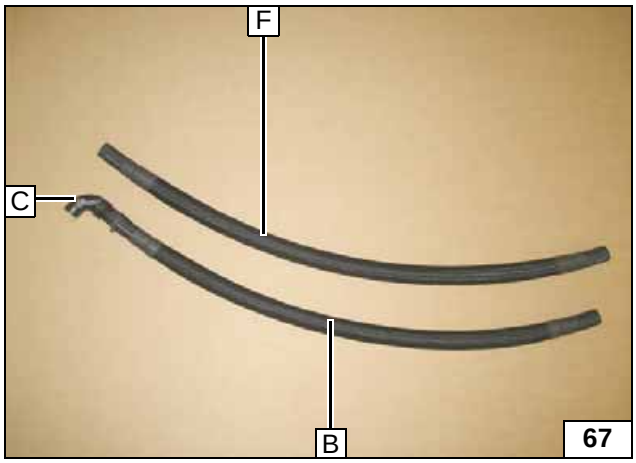
Cutting hoses to length



Push braided protection hose onto hose **B** and **F** and cut to length.
Cut heat shrink plastic tubing to length.

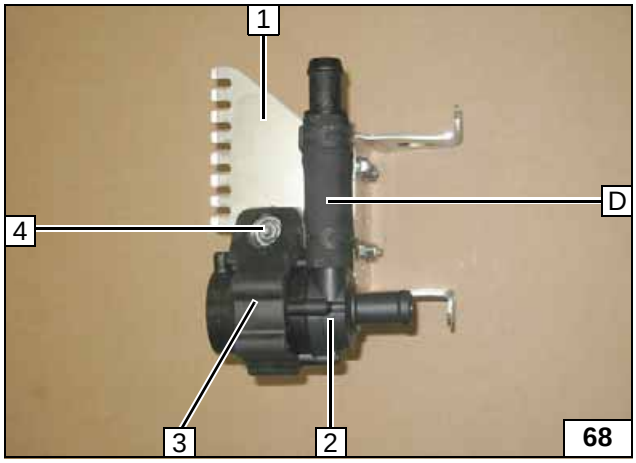
1 Heat shrink plastic tubing, length 50 mm [4x]

Preparing hoses



Connect hose **B** and hose **C** with long leg.

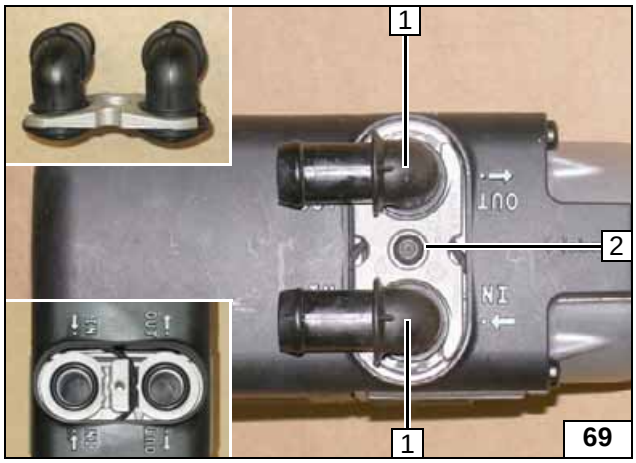
Preparing hoses



All spring clips = 25 mm dia.

1 Bracket
2 Circulating pump
3 Circulating pump mounting
4 M6x25 bolt, washer, nut

Premounting bracket and circulating pump

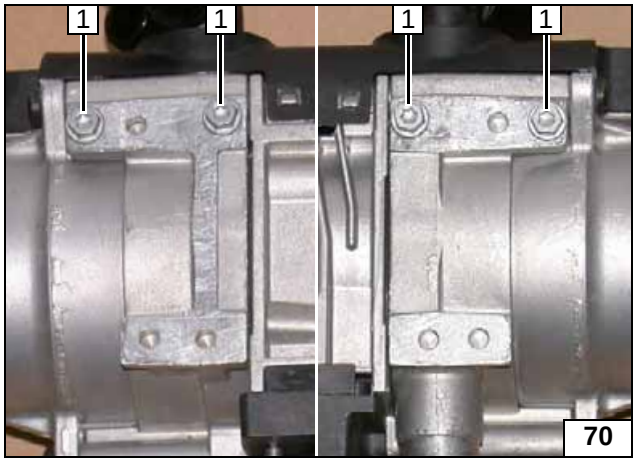


69

Preparing Heater

1 90° water connection piece, sealing ring [2x each]
2 5x15 self-tapping bolt, retaining plate of water connection piece

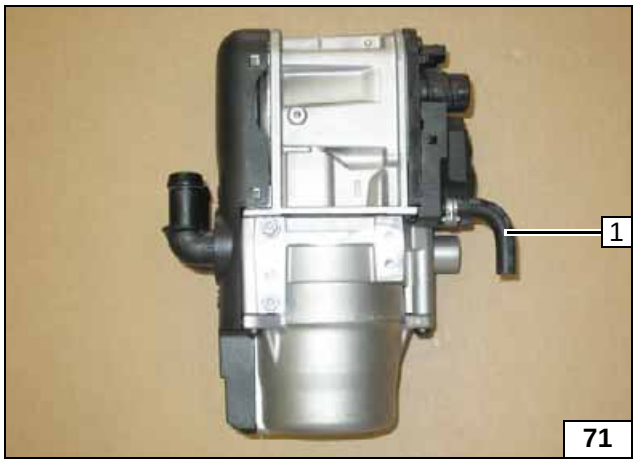
Installing water connection piece



70

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

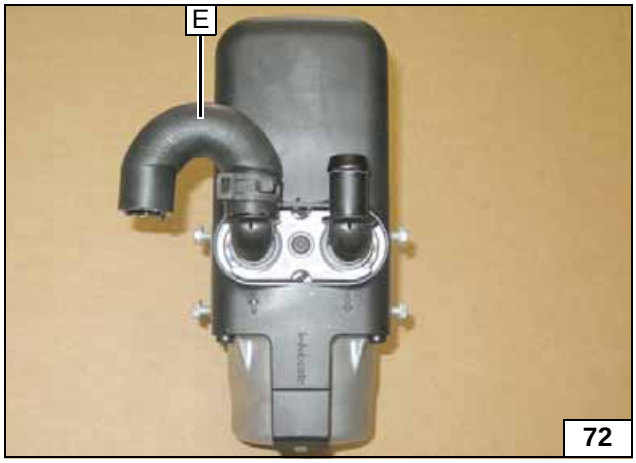
Premounting bolts loosely



71

1 90°, moulded hose, 10 mm dia. clamp

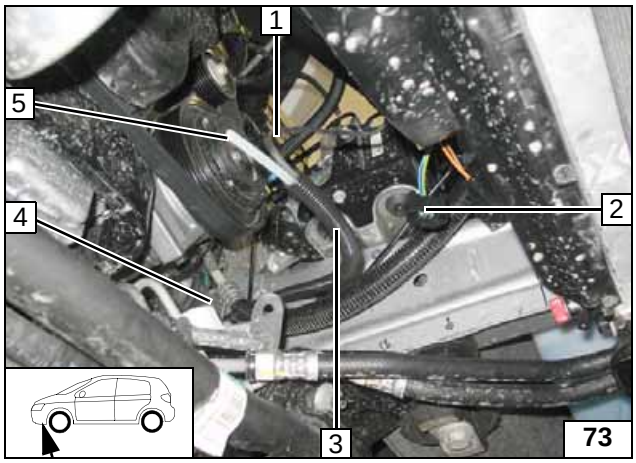
Installing moulded hose



72

Installing hose E

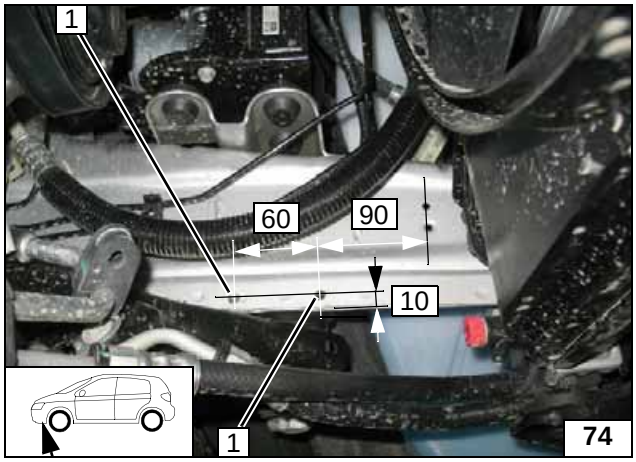
Preparing Installation Location



Route wiring harness of metering pump **1** and 6000 mm long fuel line **5** together in 10 mm dia. corrugated tube **3**behind the heat protection trim **4** along the brake wires to the underbody.

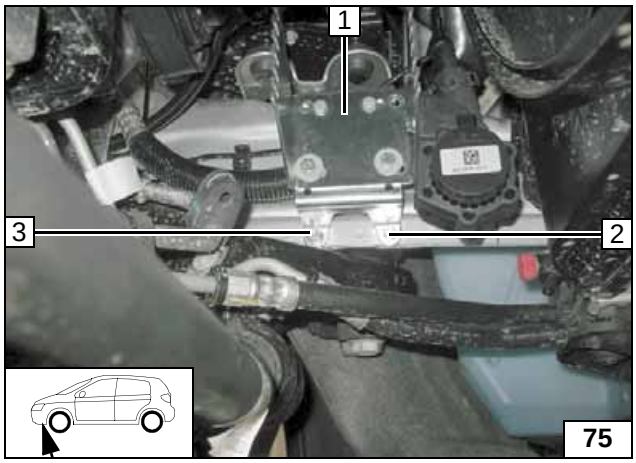
2 Wiring harness of heater

Wire routing in engine compartment



1 7mm dia. hole [2x]

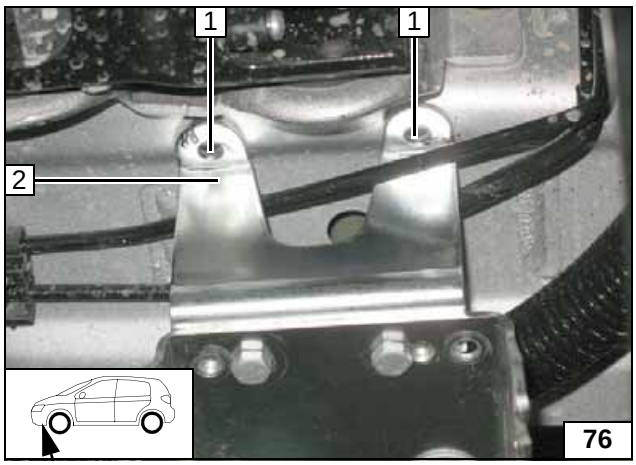
Hole in frame side member



Install bracket **1**.

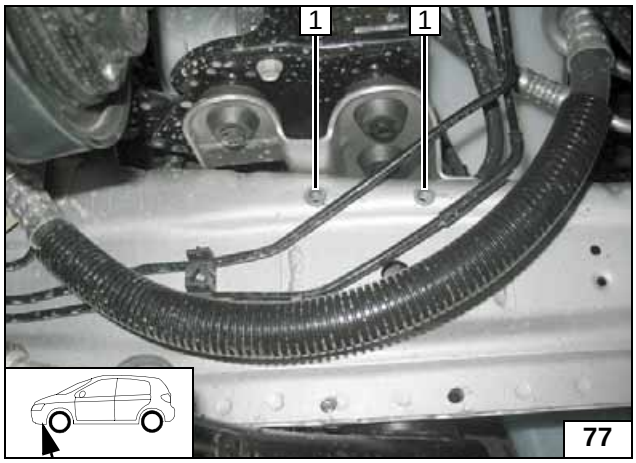
2 M6x16 bolt (installed from the inside), nut
3 M6x16 bolt (installed from the outside), nut

Copying hole pattern



Align bracket **2**, copy hole pattern at position **1** [2x].

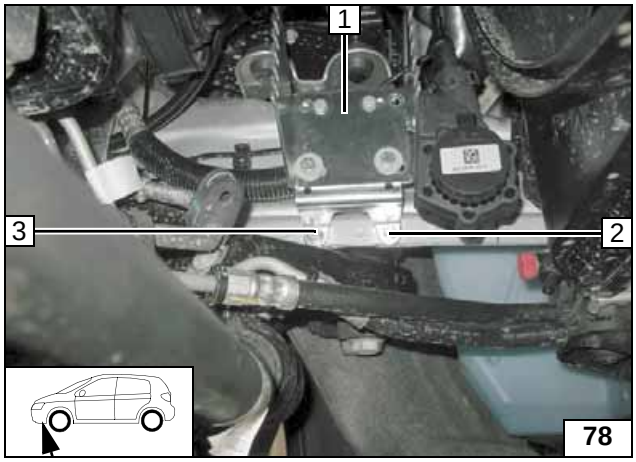
Copying hole pattern



1 9.1 mm dia. holes ; M6 rivet nut [2x each]

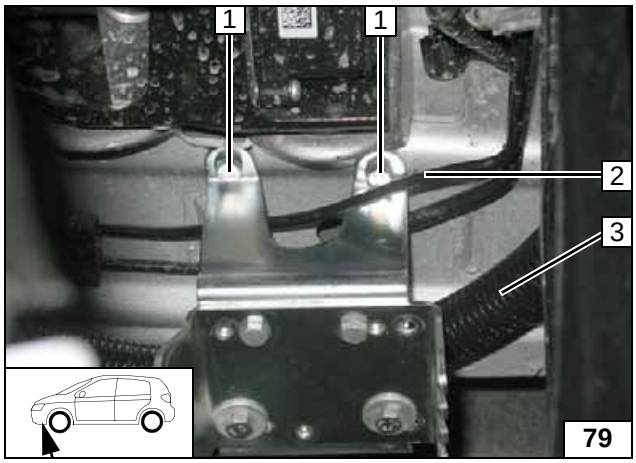
Installing rivet nuts

Installing Bracket



1 Bracket
2 M6x16 bolt (installed from the inside), nut
3 M6x16 bolt (installed from the outside), nut

Lower fastening of bracket

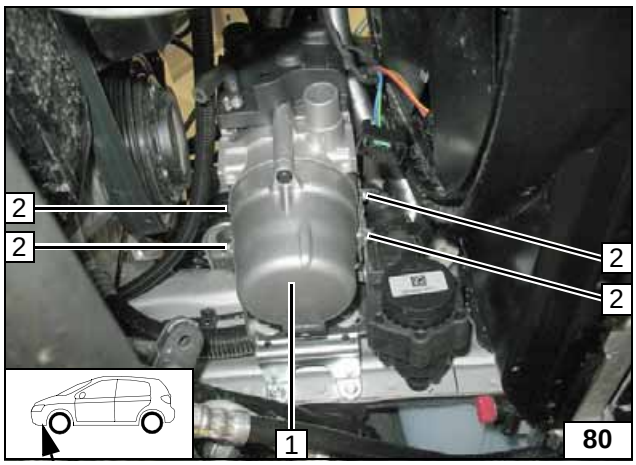


Align brake line **2** and line **3** freely inside the bracket.

1 M6x20 bolt, spring lockwasher [2x each]

Upper fastening of bracket

Installing Heater

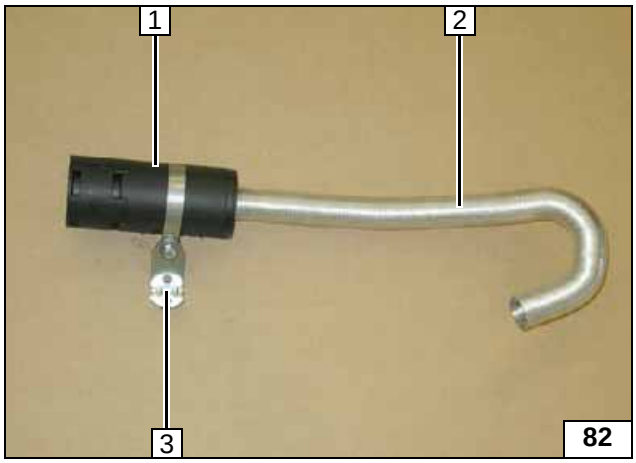


Install heater **1** in the lower position in the bracket.

2 Tighten 5x13 self-tapping bolts [4x]

Mounting heater

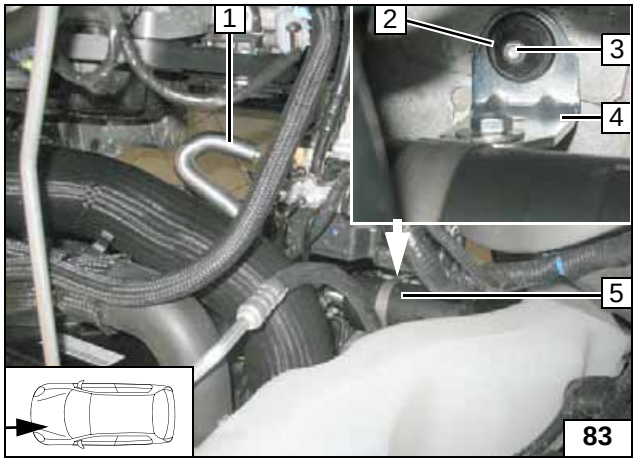
Connecting hose D and E



Combustion Air

1 Silencer
2 Combustion air pipe
3 Angle bracket, M5x16 bolt, nut, large diameter washer, 51 mm dia. clamp

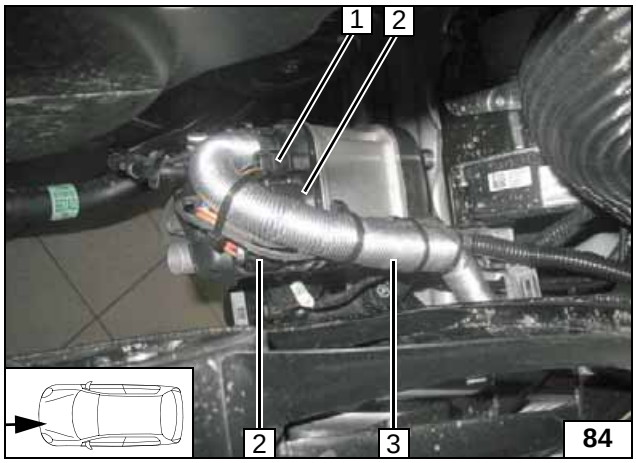
Premounting silencer



Remove wiring harness bracket from original vehicle bolt **3**, wiring harness is secured after installation of angle bracket **4** with a cable tie.

1 Combustion air pipe
2 Plastic nut
5 Silencer

Installing silencer



Prior to connection of combustion air pipe **3**, attach wiring harness of circulating pump **1** and wiring harness of heater **2** [2x] to heater.

Connecting heater

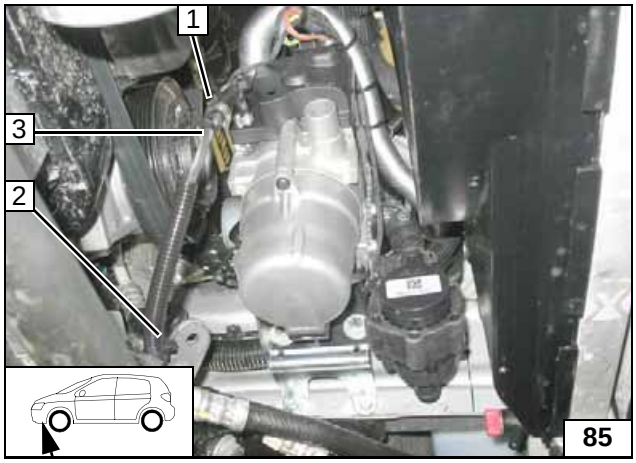
Fuel

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.

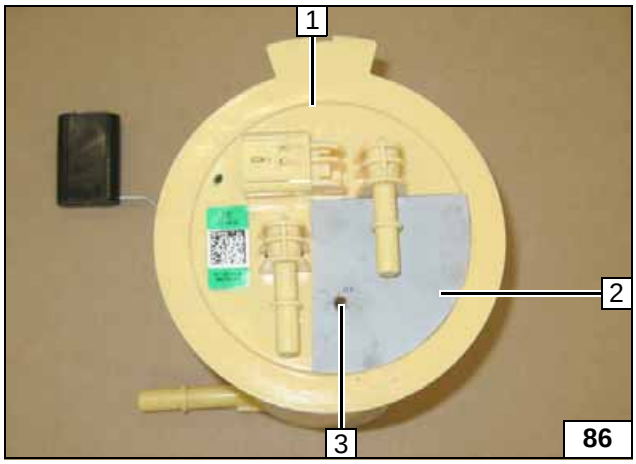
Route fuel line and metering pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Provide rub protection for fuel line and wiring harness in areas where there are sharp edges.

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



1 10 mm dia. clamp
2 Cable tie
3 Metering pump wiring harness, fuel line

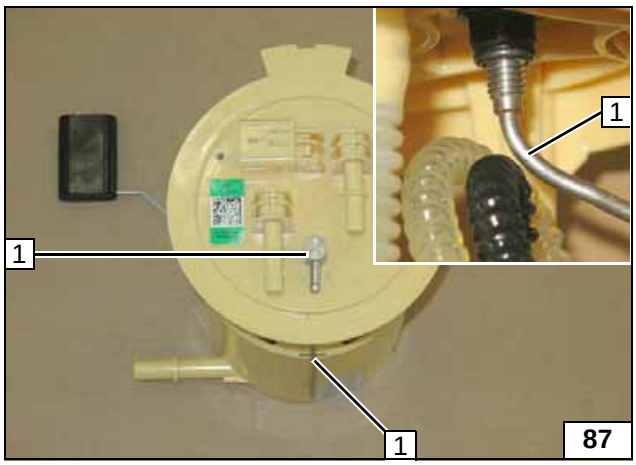
Connecting heater



Remove the tank according to the manufacturer's instructions. Remove fuel-tank sending unit **1** in accordance with manufacturer's instructions. Cut out template of fuel-tank sending unit **2** and apply.

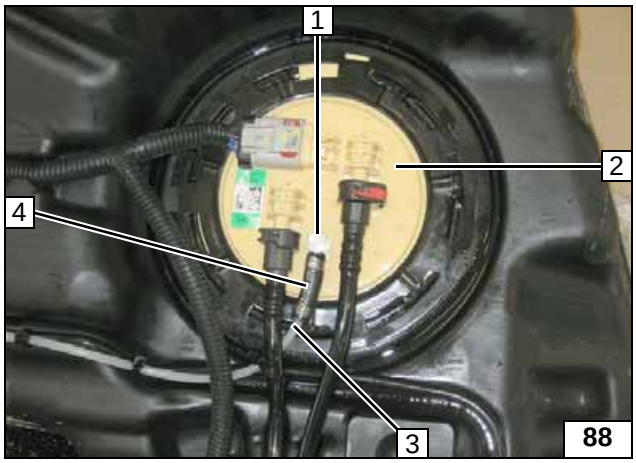
3 Copy hole pattern, 6 mm dia. hole

Fuel extraction



Mould fuel standpipe **1** according to template and cut to length. Ensure sufficient distance to neighbouring components.

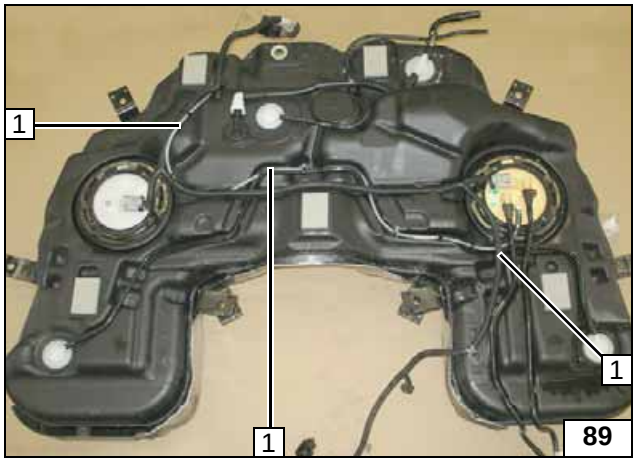
Installing fuel standpipe



Install fuel-tank sending unit **2** in accordance with manufacturer's instructions.

1 Fuel standpipe
3 1500 mm long fuel line
4 Hose section, 10 mm dia. clamp [2x]

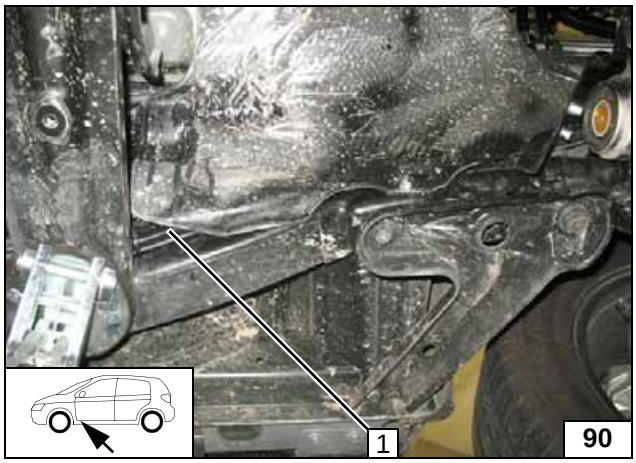
Connecting fuel line



Install tank after routing according to manufacturer's instructions.

1 Fuel line

Routing fuel line

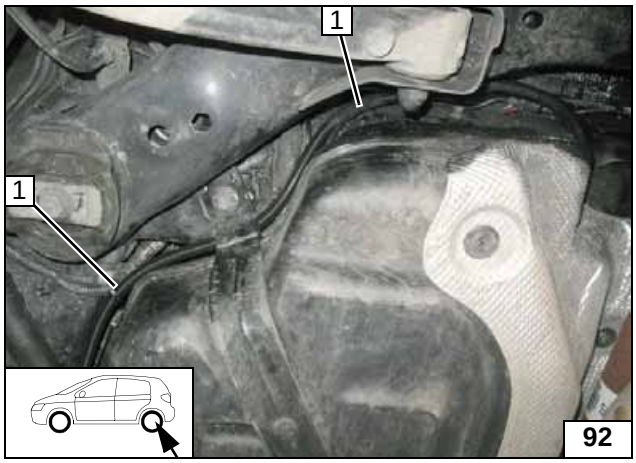


Route fuel line and wiring harness of metering pump in corrugated tube **1** on original vehicle lines to the rear.

Routing lines

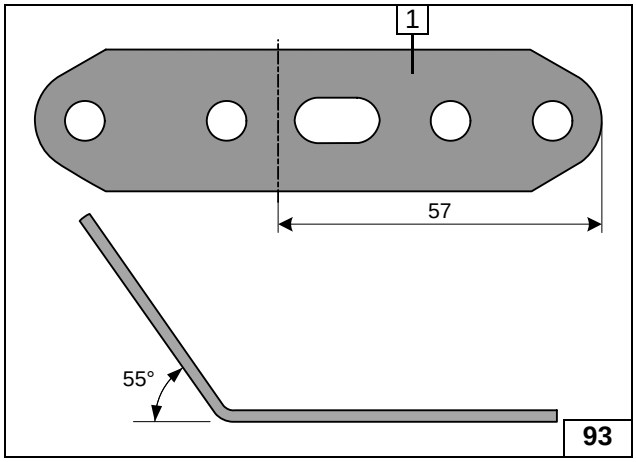
Route fuel line and wiring harness of metering pump in corrugated tube **1** on original vehicle lines to the rear.

Routing lines



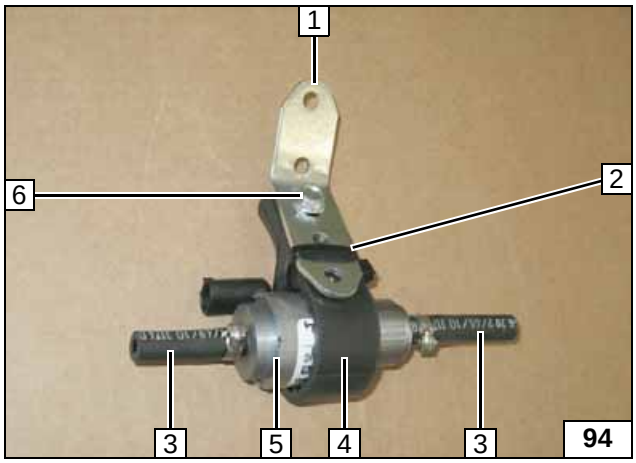
Route fuel line and wiring harness of metering pump in corrugated tube **1** to the installation location of the metering pump.

Routing lines



1 Perforated bracket

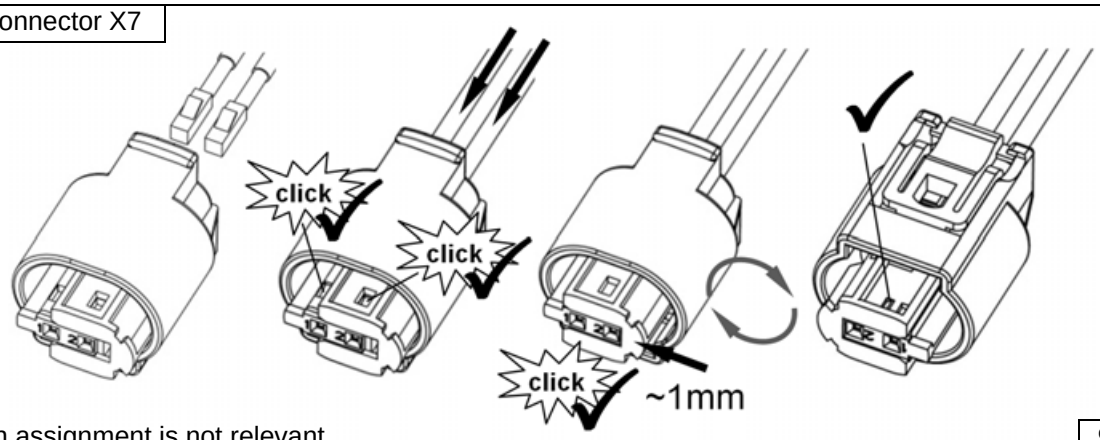
Angling down perforated bracket



1 Perforated bracket
2 Cable tie
3 Hose section, 10 mm dia. clamp [2x each]
4 Metering pump mounting
5 Metering pump
6 M6x25 bolt, support angle bracket, flanged nut

Premounting metering pump

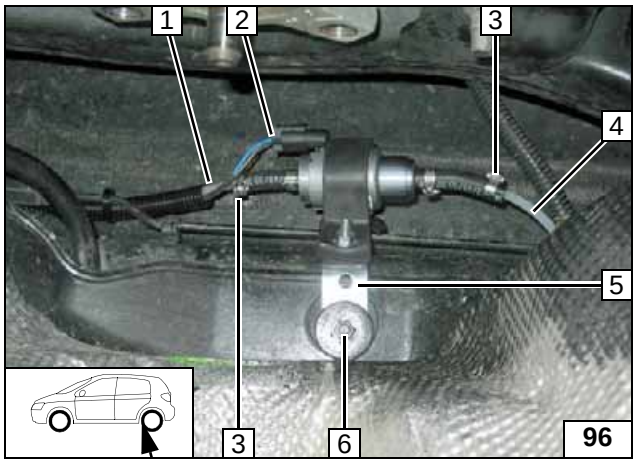
Connector X7



Pin assignment is not relevant.

95

Completing metering pump connector



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

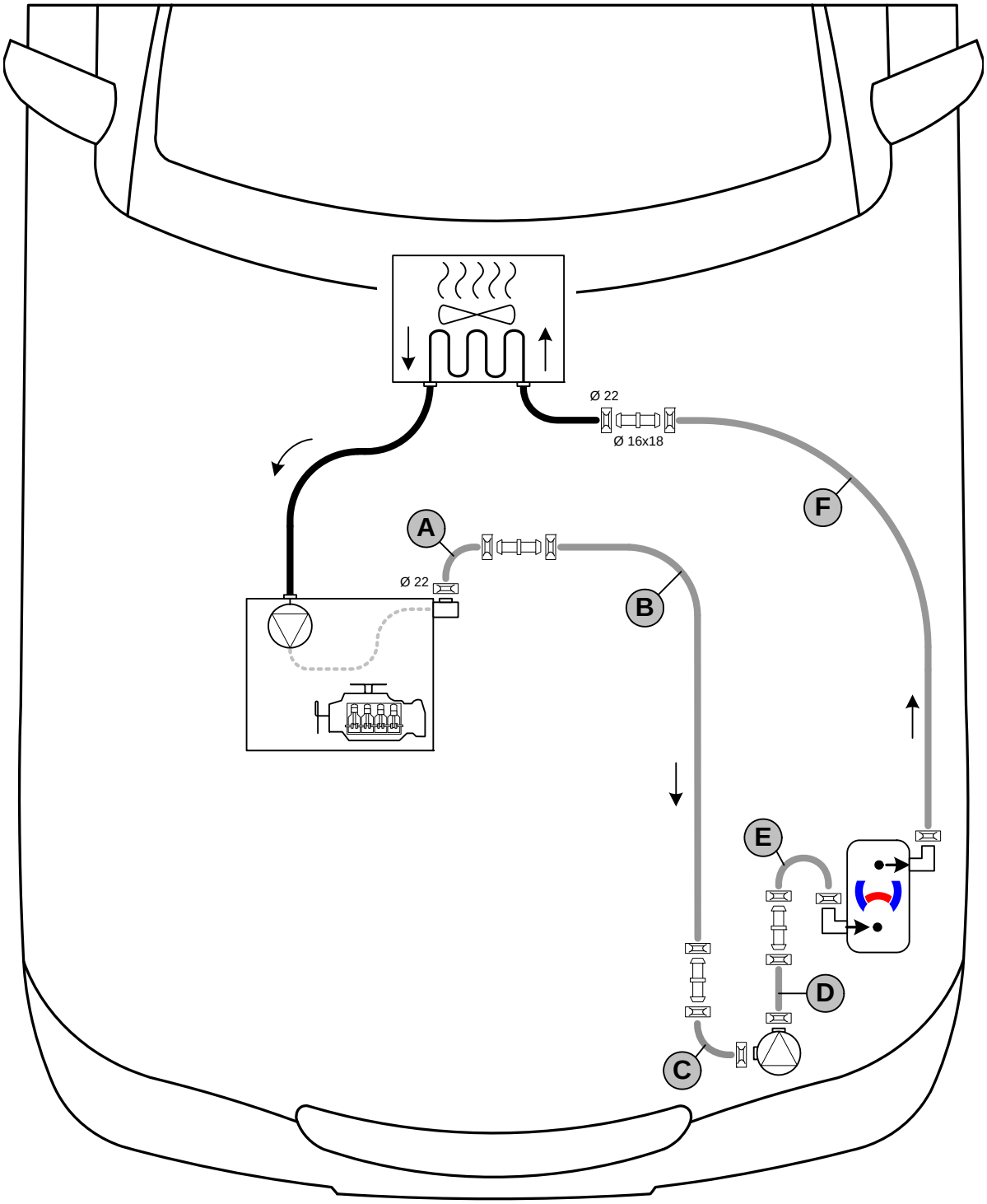
1 Fuel line of heater
2 Wiring harness of metering pump, connector mounted
3 10 mm dia. clamp [2x]
4 Fuel line of fuel standpipe
5 Perforated bracket
6 Original vehicle bolt

Installing metering pump

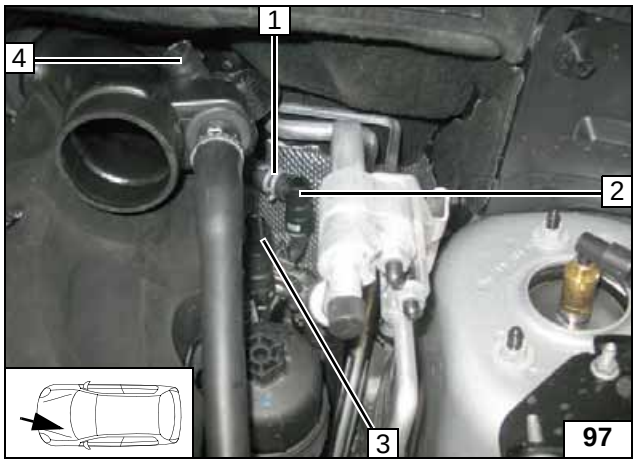
Coolant Circuit

WARNING!
Any coolant running off should be collected using an appropriate container. Install hoses so that they are 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

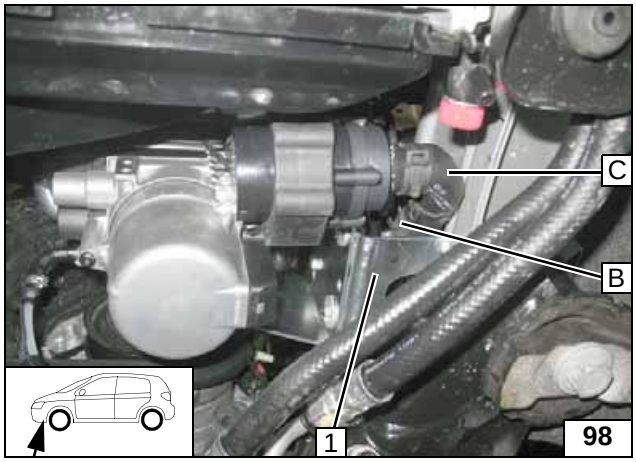


All spring clips without a specific designation = 25mm dia.
All connecting pipes without specific designation = 18x18mm dia.



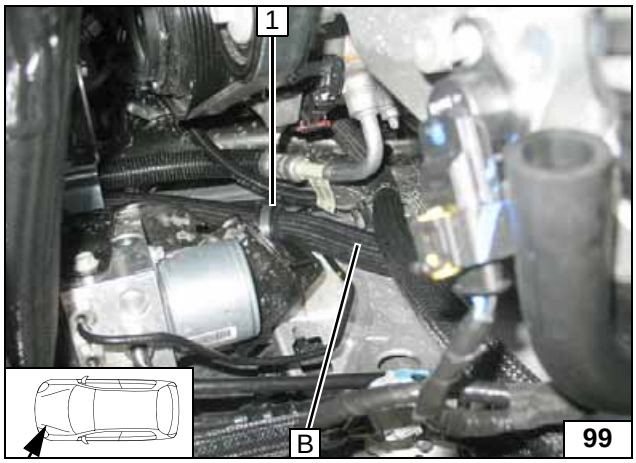
Pull hose at engine outlet **1** off quick-release coupling **2**, the original vehicle spring clip will not be reused.
Hose **4** has been removed from connection piece **3** only for better display.

Cutting point



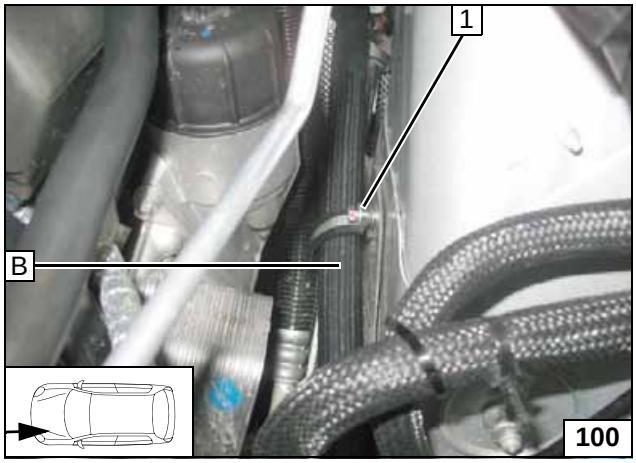
Connect premounted hoses **B** and **C** and route them laterally behind bracket **1** to the cutting point.

Connecting circulating pump



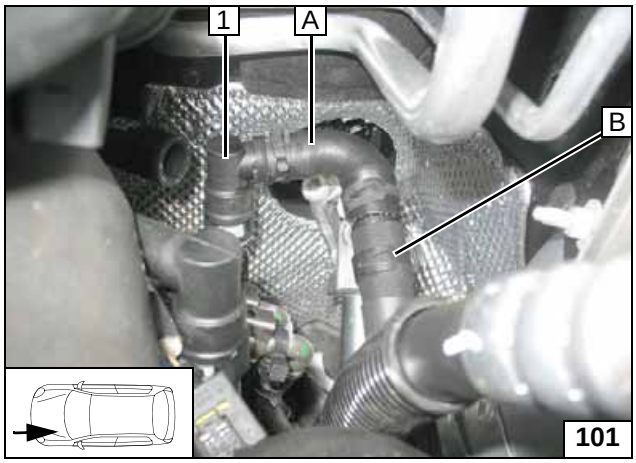
1 29 mm dia. rubber-coated p-clamp, original vehicle stud bolts, plastic nut

Routing in engine compartment



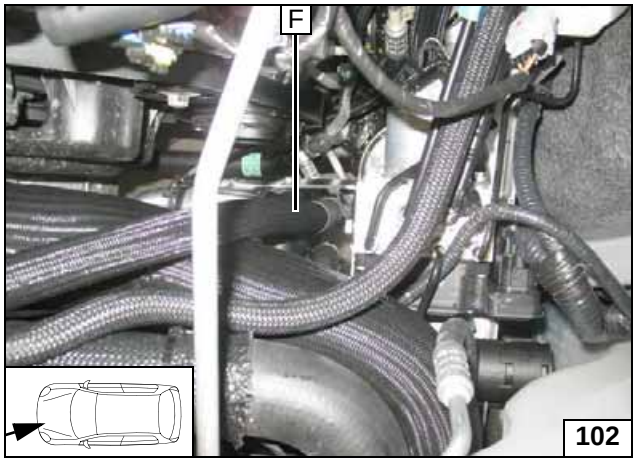
1 38 mm dia. rubber-coated p-clamp, original vehicle bolt

Routing in engine compartment



1 Quick-release coupling on connection piece engine outlet turned

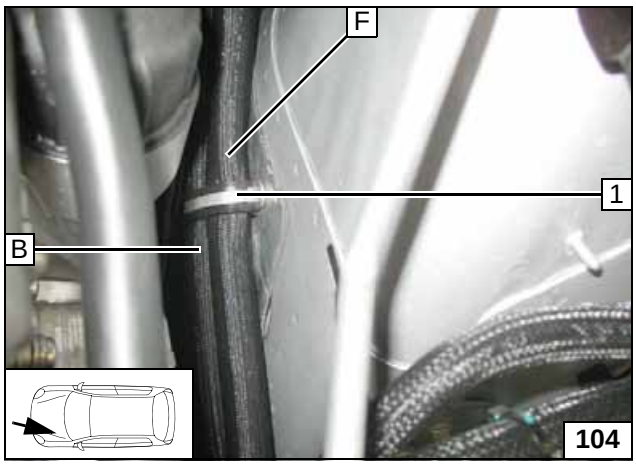
Connecting engine outlet



Connecting heater outlet

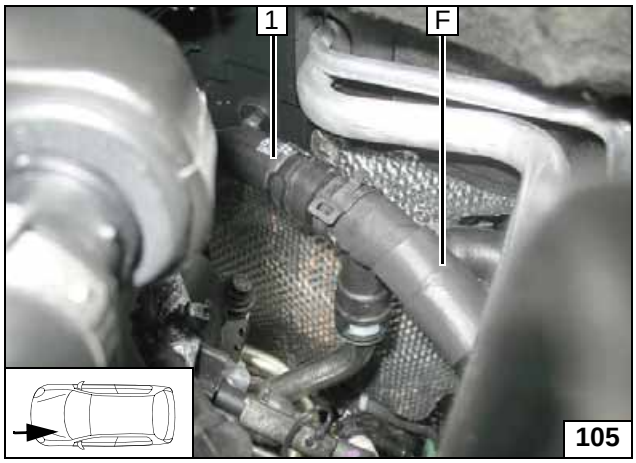
Route hose **F** to cutting point.

Routing in engine compartment



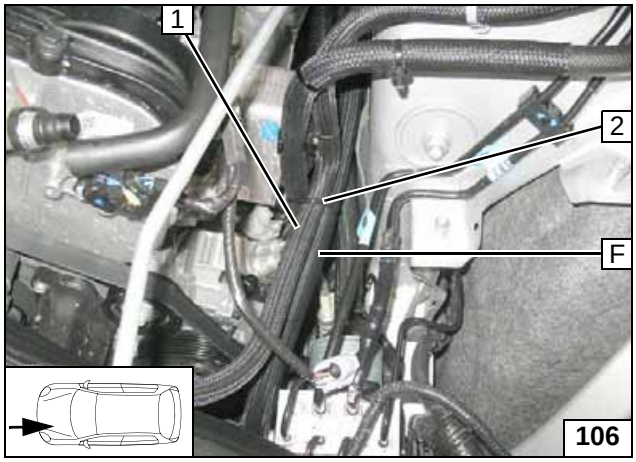
Route hose **F** through rubber-coated p-clamp **1**.

Routing in engine compartment



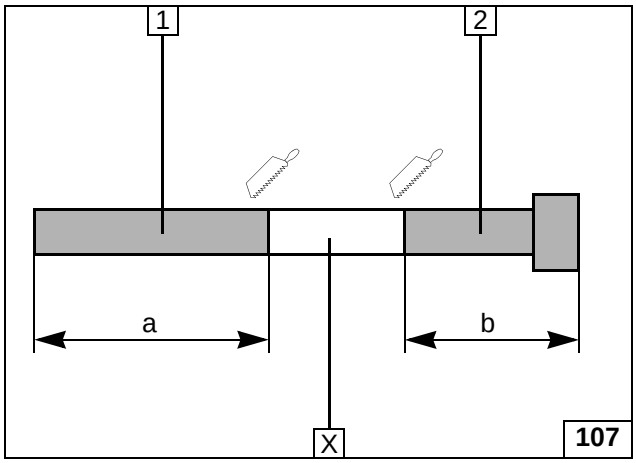
1 Hose section on heat exchanger inlet

Connecting heat exchanger inlet



1 Original vehicle hose
2 Cable tie

Routing in engine compartment

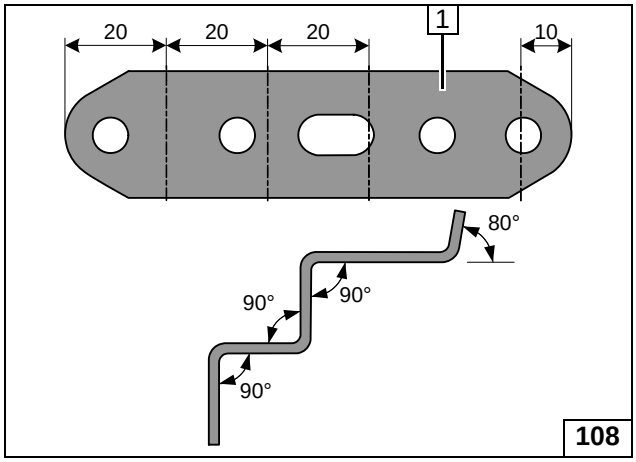


Exhaust Gas

Discard section **X**.

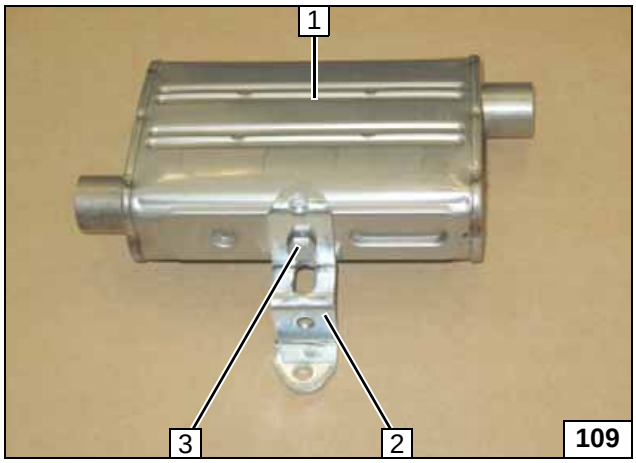
1 Exhaust pipe
a = 450
2 Exhaust end section
b = 350

Preparing exhaust pipe



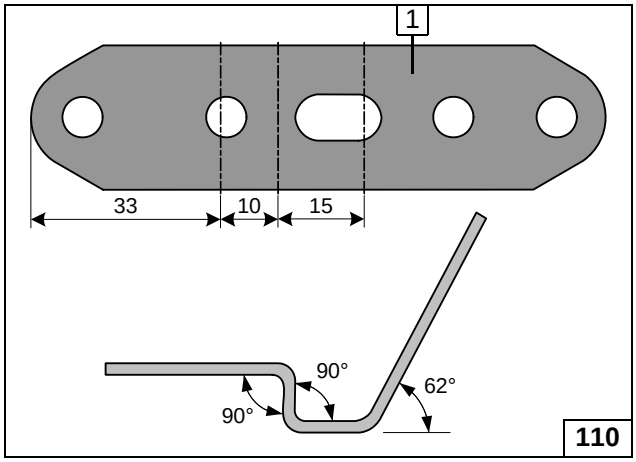
1 Perforated bracket

Angling down perforated bracket



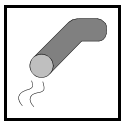
1 Silencer
2 Perforated bracket
3 M6x16 bolt, spring lockwasher

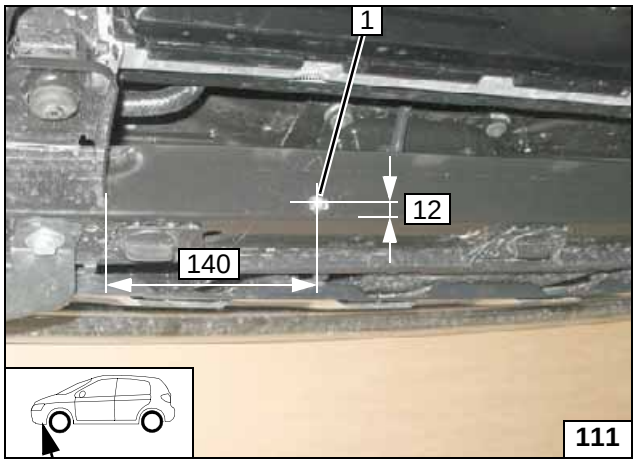
Premounting silencer



1 Perforated bracket

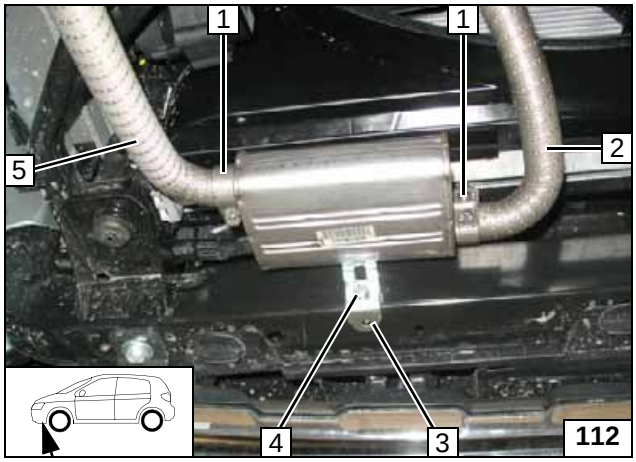
Preparing perforated bracket





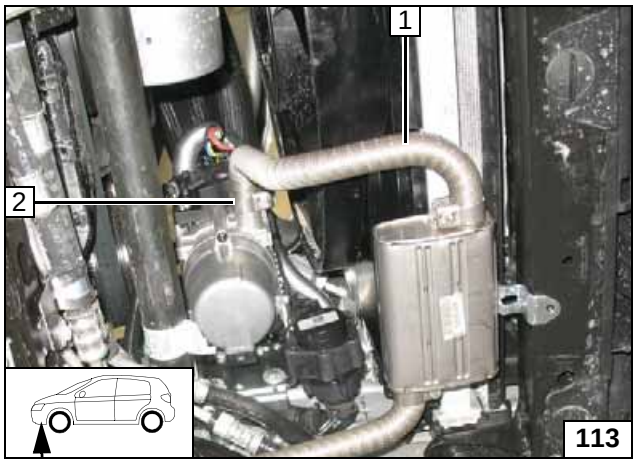
1 9.1mm dia. hole; M6 rivet nut

Installing rivet nut



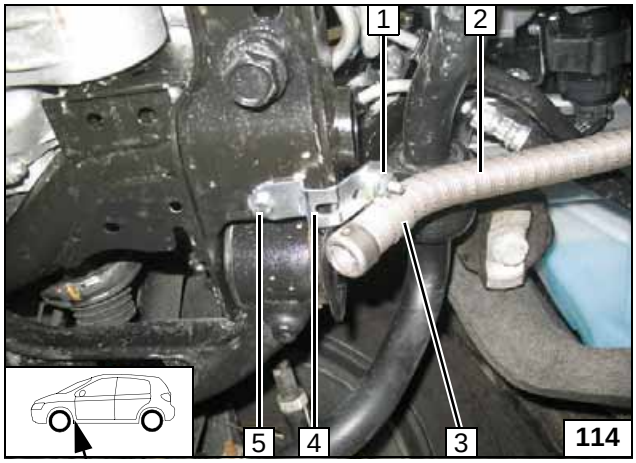
1 Hose clamp [2x]
2 Exhaust pipe
3 Perforated bracket
4 M6x20 bolt, spring lockwasher
5 Exhaust end section

Installing exhaust system



1 Exhaust pipe
2 Hose clamp

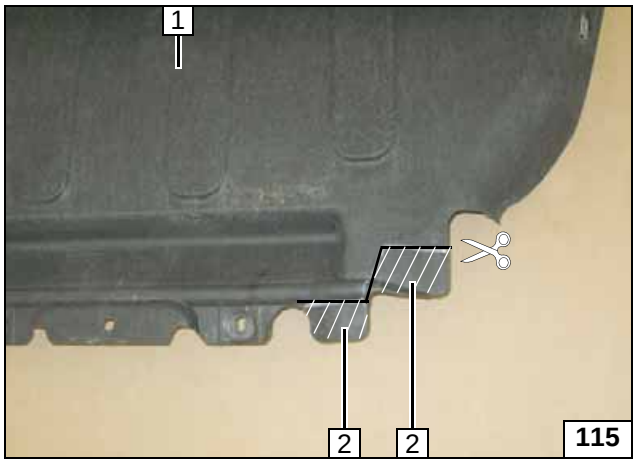
Mounting exhaust pipe



Ensure sufficient distance to neighbouring components.

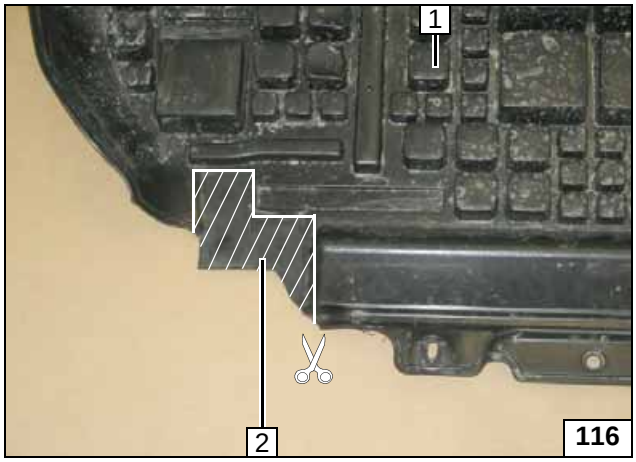
1 M6x20 bolt, flanged nut
2 Exhaust end section
3 P-clamp
4 Perforated bracket
5 M6x20 bolt, large diameter washer, flanged nut, existing hole

Installing exhaust end section



1 Underride protection
2 Discard sections

Cutting out underride protection



Cut out insulation in the area of the marking.

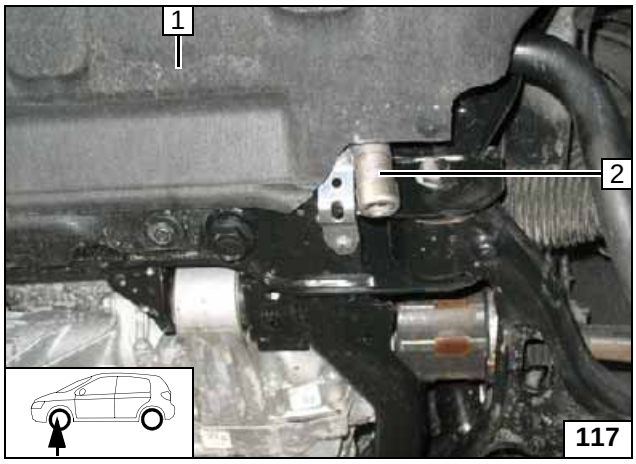
1 Underride protection
2 Discard section

Cutting out underride protection

Final Work

WARNING!
Reassemble the disassembled 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 instructions.**
- **Set digital timer, teach Telestart transmitter.**
- **Make settings on A/C control panel according to the "Operating Instructions for End Customer".**
- **Place caution label "Switch off parking heater before refueling" in the area of the filler neck.**
- **For initial startup and function check, please see Installation Instructions.**
- **Execute starting process in accordance with "operating instructions"**



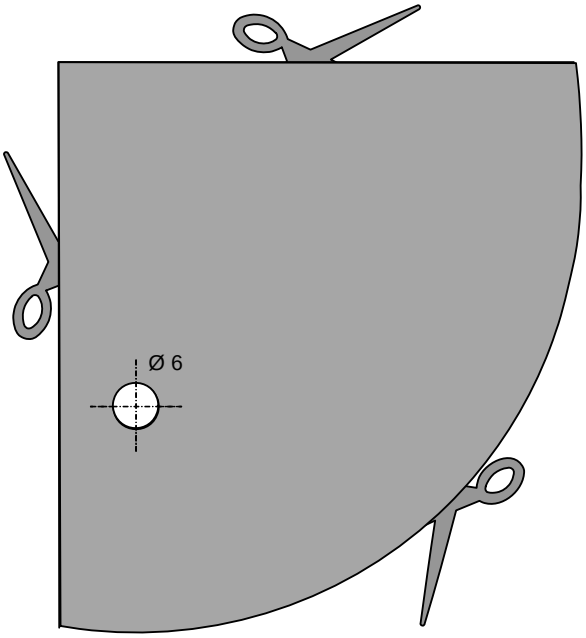
Ensure sufficient distance to neighbouring components.

1 Mount underride protection
2 Exhaust end section

Aligning exhaust end section

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

Template for Fuel-Tank Sending Unit



Template for Fuel Standpipe

100mm

Scale 1:1

Compare the size of the printed version with dimension lines.
Permitted tolerance a maximum of 2%.

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

100mm

0

Webasto
Feel the Drive

Operating Instructions for Automatic Air-Conditioning up to MY 2013

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.

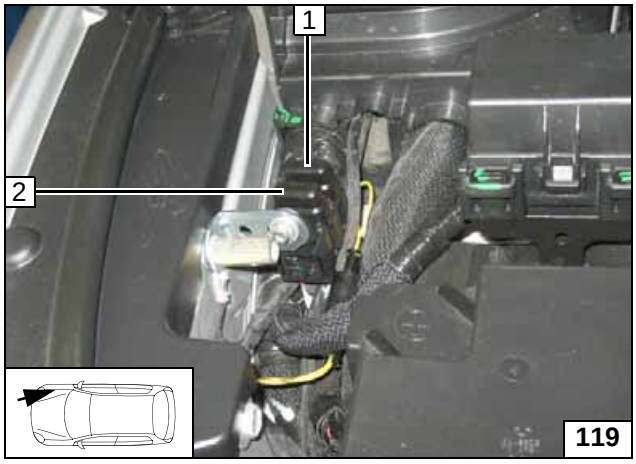
If vehicles have passenger compartment monitoring, this must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for deactivation are given in the Operating Manual of the vehicle!

Before parking the vehicle, make the following settings:

The fan speed need not be pre-selected.

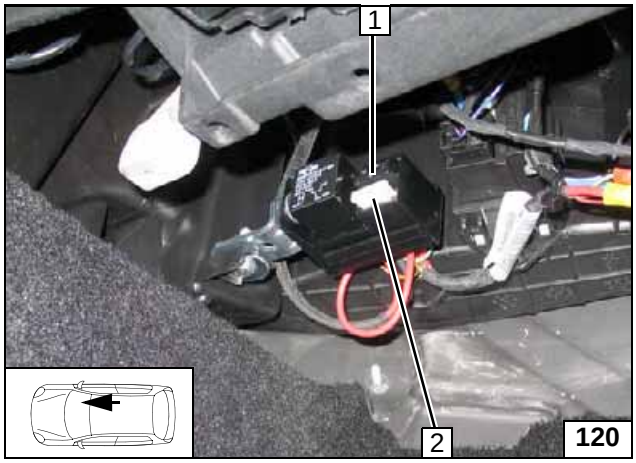
1 Set temperature to "HI" on both sides
2 Air outlet to windscreen

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses

Webasto
Feel the Drive

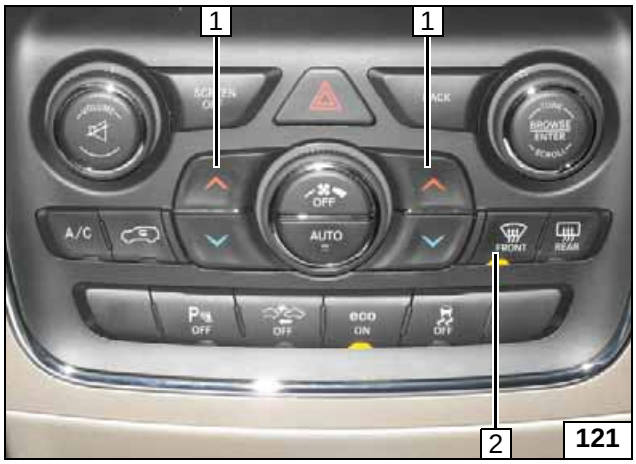
Operating Instructions for Automatic Air-Conditioning from MY 2014

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.

If vehicles have passenger compartment monitoring, this must be deactivated in addition to the vehicle settings for the heating operation.
Instructions for deactivation are given in the Operating Manual of the vehicle!

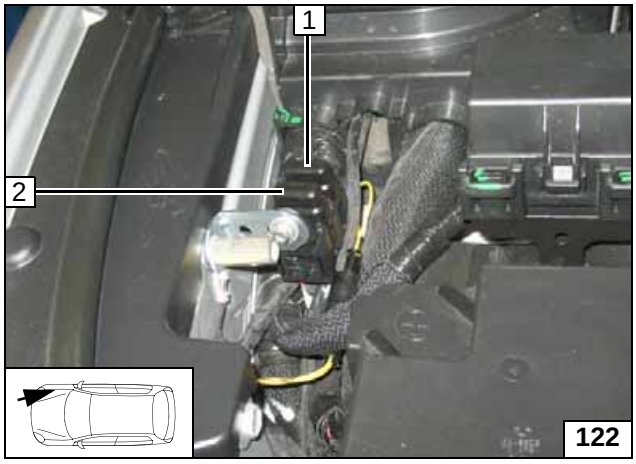
Before parking the vehicle, make the following settings:



The fan speed need not be pre-selected.

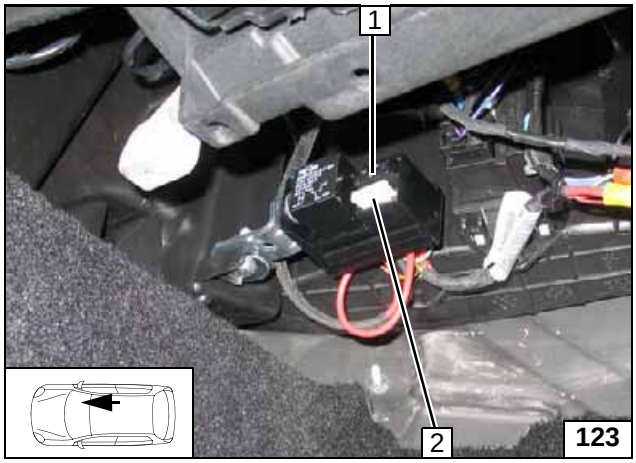
1 Set temperature to "HI" on both sides
2 Air outlet to windscreen

A/C control panel



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

Engine compartment fuses



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

Passenger compartment fuses