HYDRONIC

Installation Recommendations

Eberspächer

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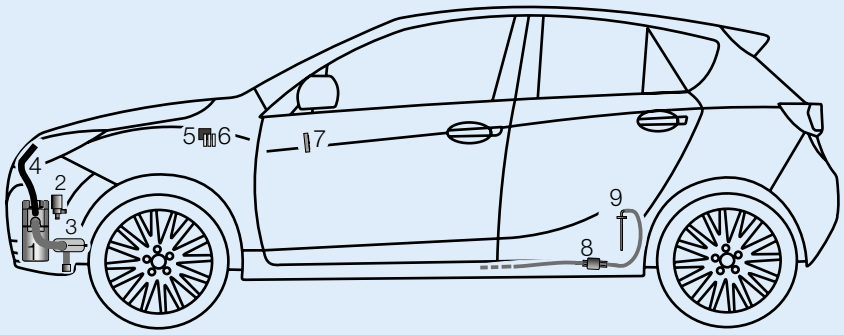
New vehicle-specific installation kit + heater

Hydronic D 4 W S in Mazda 3 (BL)

from 2009 model
1.6 l cubic capacity / 4 cylinder in-line engine / 80 kW - 109 HP (MZ-CD)
- with manual gearbox
- with fog lamps
- with manual or automatic AirCon

This installation recommendation is valid for the vehicle described above and is exempt from any liability claims whatsoever.
Depending on the version or modification status of the vehicle, differences can result between the vehicle and this installation recommendation.
The installer must check this before installation and, if necessary, take into account the differences compared to this installation recommendation.



1	Hydronic
2	Water pump
3	Exhaust pipe with exhaust silencer
4	Combustion air tube
5	Fan relay
6	Fuse holder
7	EasyStart T
8	Metering pump
9	Fuel tank extractor

Installation location
The Hydronic is fastened vertically between the lower radiator crossbeam and the left chassis beam.
The exhaust connection faces to the left and the control box upwards.

Parts needed for installation:
(1) Vehicle-specific installation kit
(2) D 4 W S
(3) EasyStart T control or as chosen

Installation time: approx. 6 h

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1 Introduction

Important!
Safety instructions for installation and repair!

Improper installation or repair of Eberspächer heaters can cause a fire or result in poisonous exhaust fumes entering the vehicle interior.
This can pose a serious risk to life and limb.

The heater may only be installed according to the specifications in the technical documents and repaired using original spare parts by authorised and trained persons. Installation and repairs by unauthorised and untrained persons, repairs using non-original spare parts and without the technical documents required for installation and repair are dangerous and therefore are not permitted.

Please note!

Installation according to this installation recommendation may only be carried out in conjunction with the respective unit type-related technical description, installation instructions, operating instructions and maintenance instructions.
This document must be carefully read through before / during installation and followed throughout.
Particular attention is to be paid to the safety instructions and the general information.
The relevant rules of sound engineering practice and any information provided by the vehicle manufacturer are to be heeded during the installation.
Eberspächer does not accept any liability for defects and damage due to installation by unauthorised and untrained persons.

Accident prevention

General accident prevention regulations / health and safety regulations and the corresponding workshop, company and operating safety instructions are to be observed.

Installation recommendation validity

The installation recommendation is valid for the vehicle with the engine and gearbox options listed in the following.

Engine and gearbox options		
Cubic capacity	kW / HP	Gearbox
1.6 l (MZ-CD)	80 / 109	5S

5S = 5-gear manual gearbox

Please note!

The installation recommendation is not valid for right-hand drive vehicles.

Vehicle types, engine types and feature options not listed in this installation recommendation have not been tested. Installation according to this installation recommendation can still be possible.

1 Introduction

Parts required for installation

Quantity/Designation	Order No.
(1) Vehicle-specific installation kit	
1 Vehicle-specific installation kit *	24 8456 00 00 00
(2) Heater	
1 HydronicD 4 W S	25 2355 05 00 00
(3) EasyStart control unit as chosen	
1 EasyStart T	22 1000 32 88 00
1 Console	22 1000 51 32 00
or	
1 EasyStart R+ radio remote control	22 1000 32 80 00
or	
1 EasyStart R radio remote control	22 1000 32 85 00

**** Important:*** *The new vehicle-specific installation kit contains* ***all*** *parts needed for installation.*

Special tools required

- Torque wrench (5....50 Nm)
- Anti-corrosion agent
- Pliers for spring band clamps
- Tool for bind rivet nuts
- Ejector tool for plug-in contacts
- Step drill
- Crimping tool

Tightening torques

If no tightening torques are specified, tighten the screw connections (hexagon screw and hexagon nut) according to the following table.

Screwed connections	Tightening torques
M6	10 Nm
M8	20 Nm
M10	45 Nm

Preparation on the vehicle

- Disconnect the battery
- Lift up rear seat bench
- Remove the glove compartment
- Remove the lower covering of the instrument panel on the left
- Remove the upper cowling
- Remove the battery cover
- Dismantle the bottom engine panelling
- Dismantle the fuel filter
- Remove the tank
- Drain coolant into a clean container

2 Installation - Heater

Prepare the unit holder
(see photo 1)

Mount holder 9305 to the upper middle hole of the unit holder with an M6 x 16 screw and align as shown in the photo.
Using an M6 x 16 screw, fasten the 90° bracket (20 1348 03 00 02) to the upper hole of holder 9305 as shown in the photo.

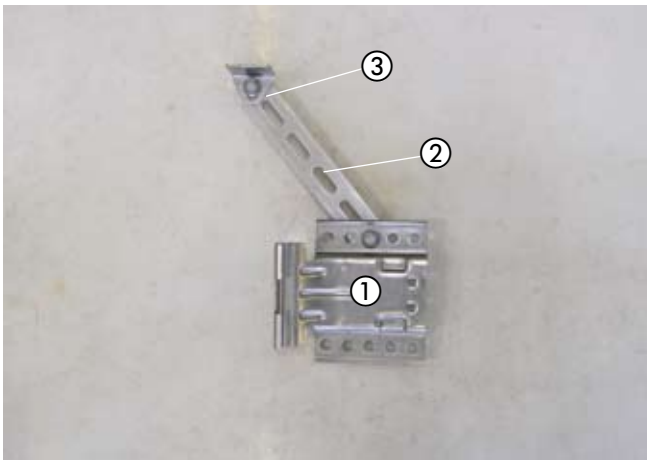


Photo 1

① Unit holder
② Holder 9305
③ 90° bracket (20 1348 03 00 02)

Prepare the installation position
(see photos 2 to 4)

The unit holder is fastened among others to the vehicle's left M6 screw on the lower radiator crossbeam.
To make the second fastening point, undo the screw and hold the second lower hole from the left of the unit holder against the fastening point on the radiator crossbeam.
Trace the position of the free hole of the 90° bracket onto the left chassis beam and drill a 9 mm Ø hole.
Insert a M6 blind rivet nut in the drilled hole.

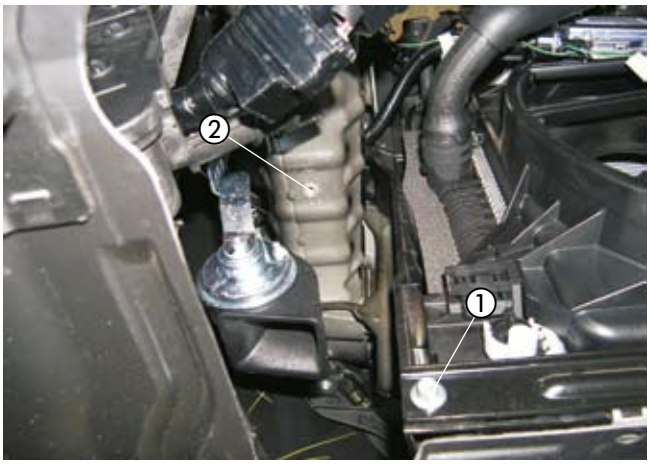


Photo 2

① Lower fastening point
② Drilled 9 mm Ø hole, M6 blind rivet nut, mounted

Drill open the 6 mm Ø hole on the inner side of the left chassis beam to 9 mm Ø and insert an M6 blind rivet nut.

Please note!

Deburr all finished holes and treat with anti-corrosion agent.



Photo 3

① Hole, drilled, with M6 blind rivet nut, mounted

2 Installation - Heater

Using the vehicle's M6 screw, mount the prepared unit holder to the second lower hole on the left to the radiator crossbeam. Using an M6 x 16 screw, fasten the 90° bracket (20 1348 03 00 02) to the M6 blind rivet nut in the left chassis beam.



Photo 4

① Unit holder, installed

Install water pump
(see photos 5 and 6)

Insert the water pump in the rubber holder.
Fasten the Z-bracket (20 1533 88 00 07) to the rubber holder using an M6 x 30 screw and a B6 body washer as shown in the photo.

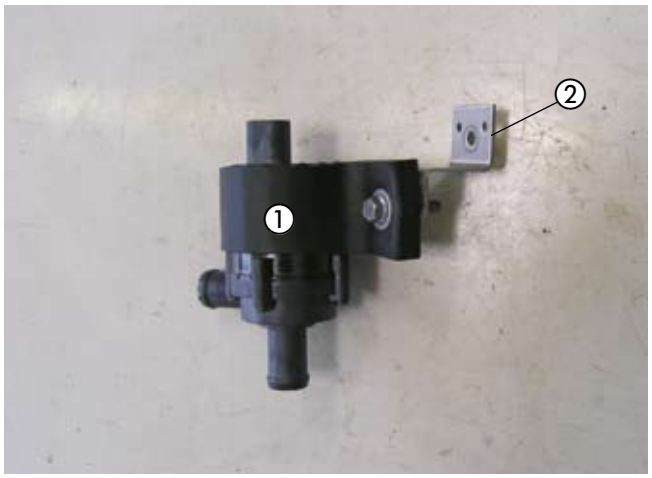


Photo 5

① Water pump
② Z-bracket (20 1533 88 00 07)

Using an M6 x 16 screw, mount the water pump with the Z-bracket (20 1533 88 00 07) as shown in the photo to the M6 blind rivet nut on the inner side of the left chassis beam.



Photo 6

① Water pump, installed

2 Installation - Heater

Premount the exhaust silencer
(see photo 7)

Mount holder 9502 to the exhaust silencer with an M6 x 16 screw and a B6 body washer.

Cut the exhaust pipe to a length of 240 mm, shape as shown in the photo and cover with the heat shield.
Use a pipe clamp to connect the exhaust pipe to the inlet connection of the exhaust silencer.

Cut the exhaust pipe end to a length of 190 mm, connect with a pipe clamp to the outlet connection of the exhaust silencer and shape it downwards in the elbow as shown in the photo.

The arrow on the exhaust silencer marks the direction of flow and points to the right.

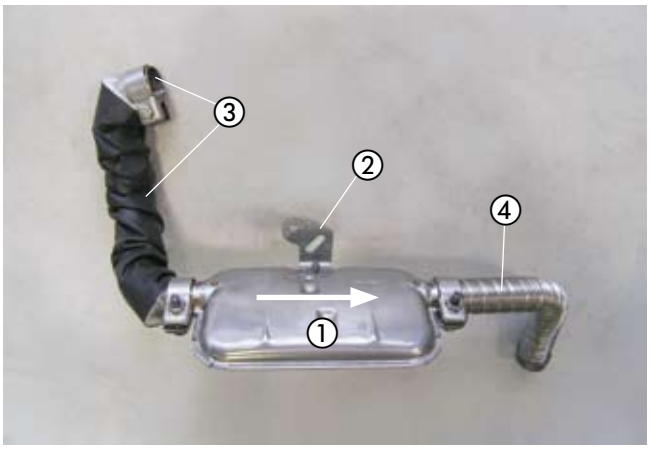


Photo 7

① Exhaust silencer
② Holder 9502
③ Exhaust pipe with heat shield
④ Exhaust pipe end

Premount the heater
(see photos 8 and 9)

Install the elbowed water connection to the heater as shown in the photo, see Technical Description, "Installation" chapter, "Installation of the elbowed water connection" section.



Photo 8

① Elbowed water pipe sockets

Using the holder 9502 and the M6 x 95 screw, fit the premounted exhaust silencer to the heater and connect the exhaust pipe to the outlet connection of the heater with a pipe clamp.

Fasten the combustion air pipe to the heater with a 16 - 25 mm Ø hose clip.

Connect the 4 x 1.25 Ø fuel pipe with the 3.5 x 3 mm Ø fuel hose, length 50 mm, to the fuel connection of the heater. Fasten the metering pump cable to the 4 x 1.25 mm Ø fuel pipe with insulating tape as shown in the photo.

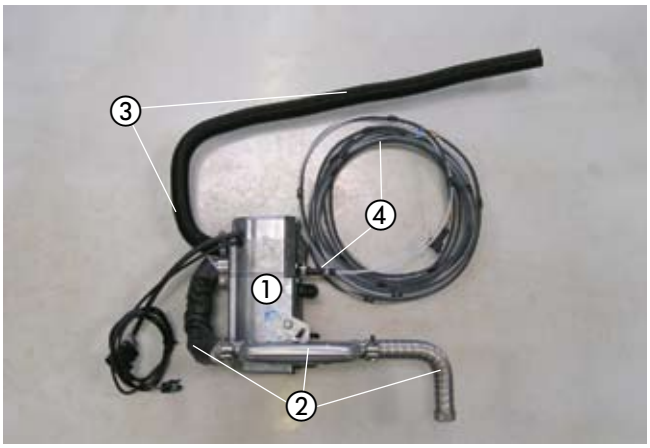


Photo 9

① Heater
② Exhaust silencer with exhaust pipe and exhaust pipe end
③ Combustion air pipe
④ Fuel pipe, 4 x 1.25 mm Ø

2 Installation - Heater

Install heater
(see photo 10)

Remove the duplicate nameplate from the heater.
Deface the inapplicable dates to make them illegible.
Attach the duplicate nameplate in a suitable, clearly visible position in the engine compartment.

Insert the heater in the unit holder and fix in the bottom threaded hole using the M6 x 95 screw with $6^{+0.5}$ Nm.



Photo 10

① Heater, installed

Laying the combustion air pipe
(see photo 11)

Lay the combustion air pipe upwards in the elbow in the protected section behind the upper crossbeam.
Use cable ties to fix the combustion air pipe in suitable places.
Make a 2 mm Ø drain hole for condensation at the lowest point of the laid combustion air pipe.

Please note!

Lay the combustion air pipe so that only clean, dry combustion air can be drawn in through the heater.



Photo 11

① Combustion air pipe

3 Water circuit

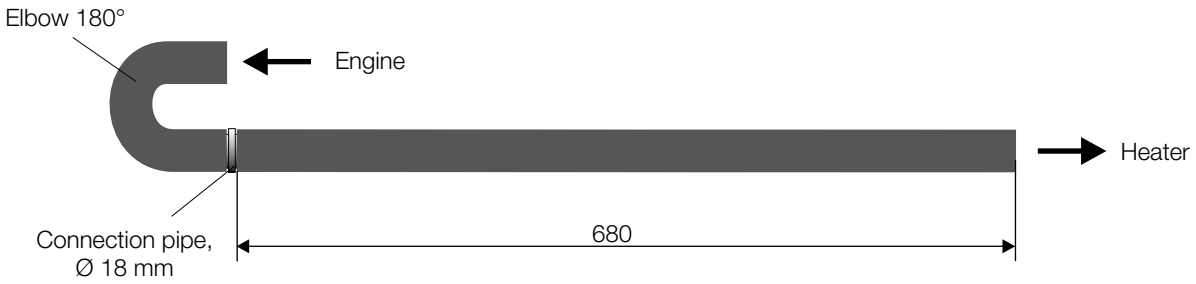
Prepare the water hoses
(see diagram 1)

Cut the water hoses according to the dimensions in the diagram and prepare.

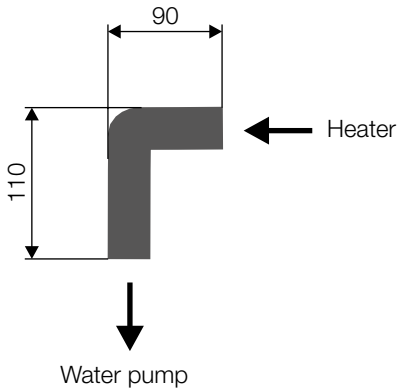
Please note!

The water hoses are connected "inline" to the water circuit , refer to the Technical Description, in the chapter on "Installation" and here the section on "Connection to the Cooling Water Circuit".

Water hose ①
from engine to heater



Water hose ②
from the heater to the water pump



Water hose ③
from the water pump to the heat exchanger

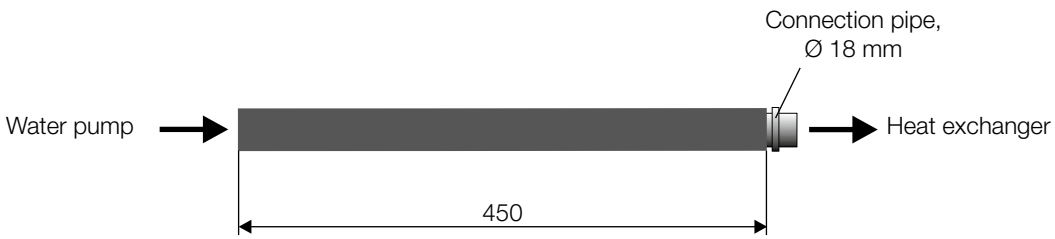
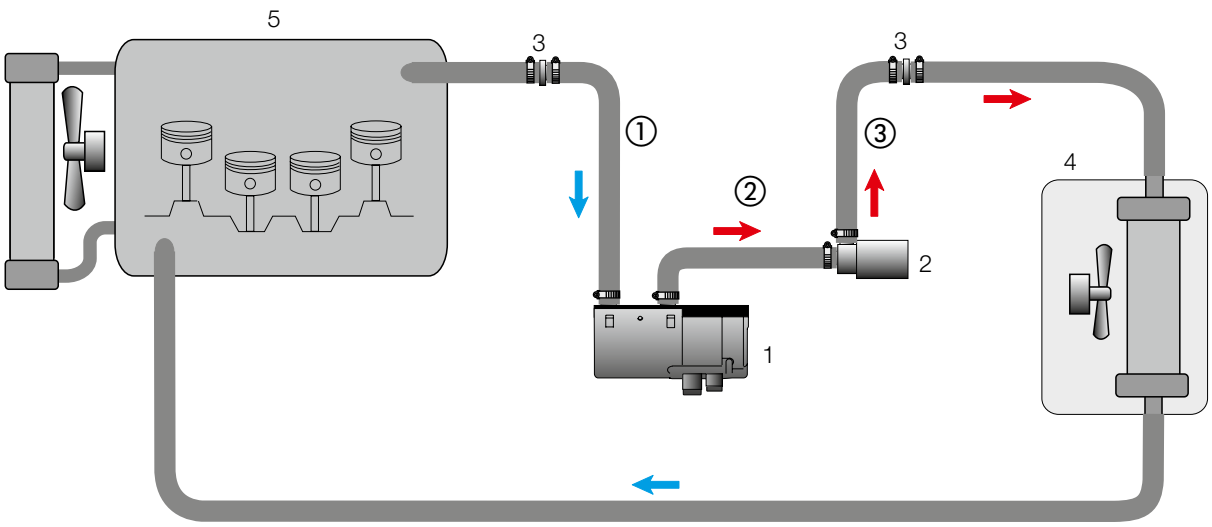


Diagram 1

3 Water circuit



1 - Heater
2 - Water pump
3 - Connection pipe Ø 18 mm
4 - Vehicle heat exchanger
5 - Engine
- Hose clip, Ø 20 – 32 mm

Diagram 2

Cut water flow hose
(see photo 12)

Disconnect the water flow hose from the engine to the heat exchanger (the upper water hose at the heat exchanger) at the engine connection.



Photo 12

① Cutting point in the water flow hose

Lay and connect water hoses
(see photos 13 to 15 and diagram 2)

Connect the water hose ① to the heater's water inlet connection.

Connect the water hose ② to the heater's water outlet connection and to the intake connection of the water pump.

Connect the water hose ③ to the discharge connection of the water pump.

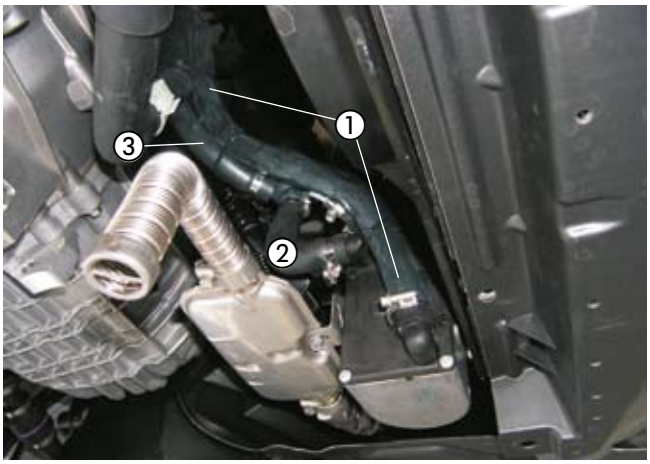


Photo 13

① Water hose ①
② Water hose ②
③ Water hose ③

Lay the water hoses ① and ③ in the bend upwards to the separation point.

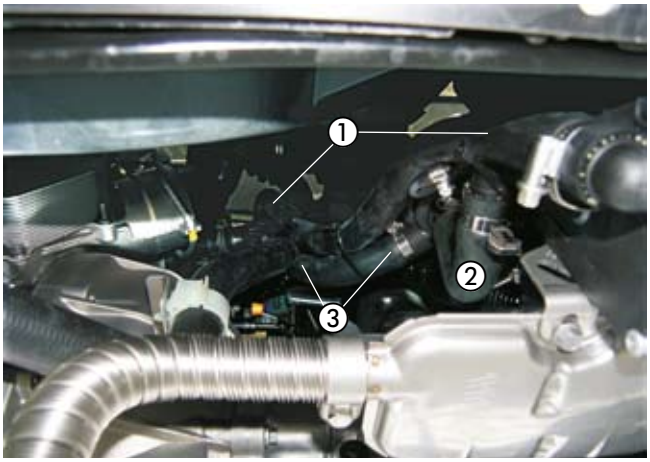


Photo 14

① Water hose ①
② Water hose ②
③ Water hose ③

Connect the water hose ① to the engine connection using the 180° elbow.

Connect the water hose ③ to the heat exchanger, using the 18 mm Ø connection pipe.

Use cable ties to secure the water hoses ① and ③ to each other and to the the vehicle's cable harness.

Please note!

Secure all hose connections with hose clips.
Protect the water hoses against chafing and use cable ties to secure in suitable positions.

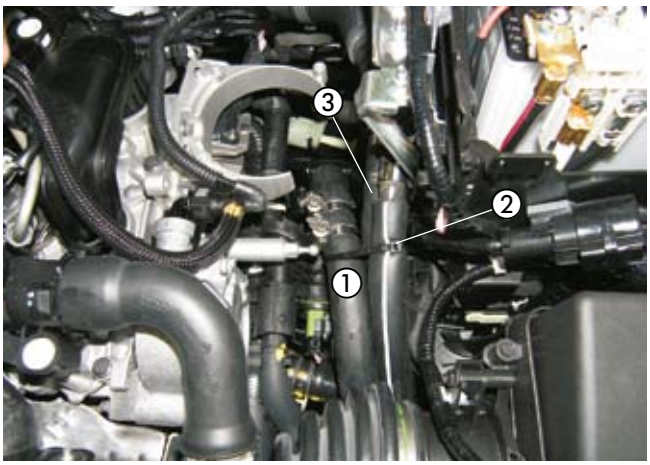


Photo 15

① Water hose ①
② Cable ties
③ Water hose ③

4 Fuel supply

Install fuel tank extractor
(see Photos 16 to 18 and Sketch 3)

Prepare the riser pipe of the fuel tank extractor as shown in the diagram.
Cut off the bottom end of the riser pipe to the correct length, at an angle of approx. 45°.

Remove the tank according to the manufacturer's instructions.

Loosen the plug-in connection and the fuel lines at the tank connection.

Remove the tank fitting from the tank by loosening the universal nut.

Please note!

The tank fitting should not be removed for longer than 10 minutes because of expansion of the tank!

Make an 8 mm Ø hole in the top part of the tank fitting with the dimensions shown in the photo.
Guide the fuel tank extractor through the prepared hole, align as shown in the photos and screw tight with the M8 nut from below.

Please note!

When drilling, ensure that no dirt gets into the the tank or supply lines.

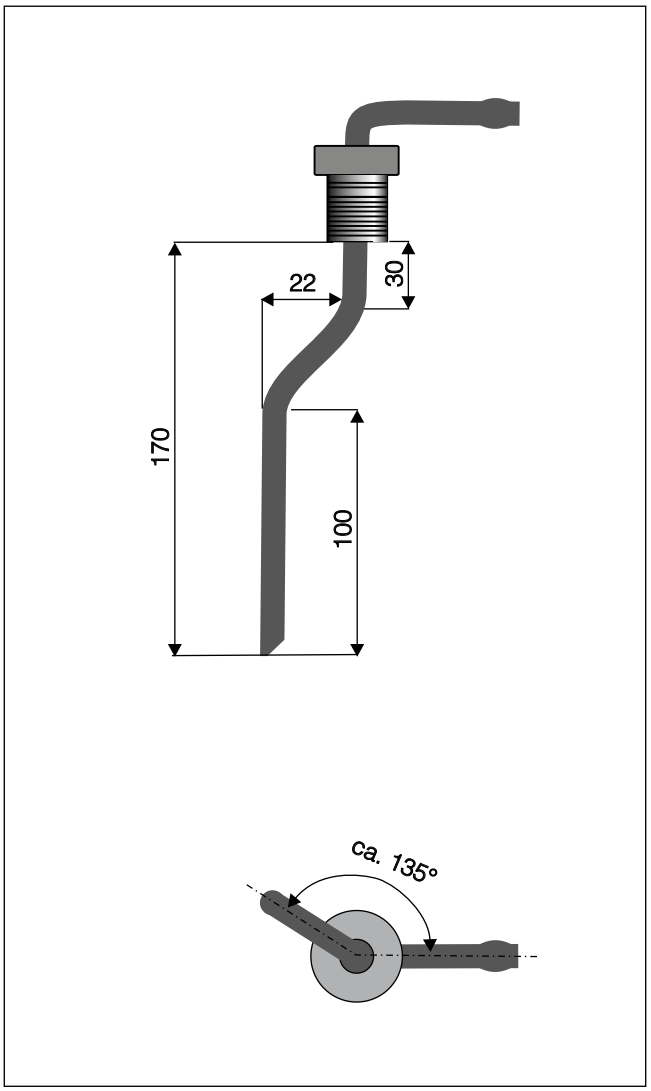


Diagram 3

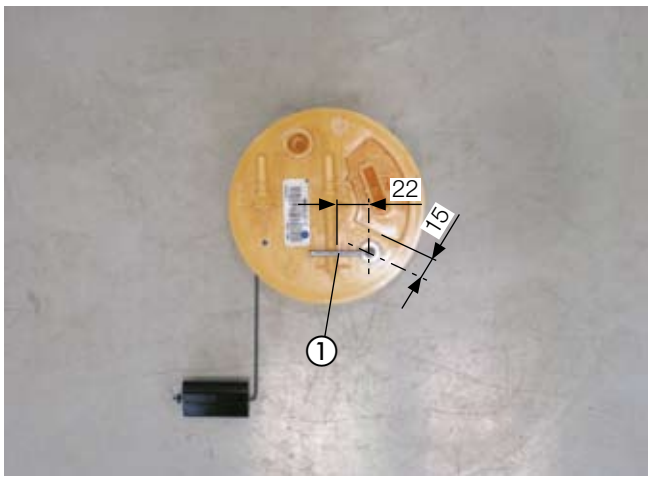


Photo 16

① Fuel tank extractor, installed

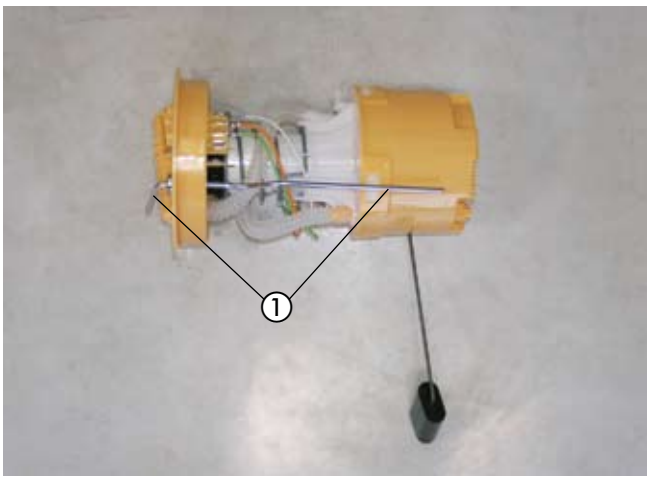


Photo 17

① Fuel tank extractor, installed

Insert the tank fitting back in the tank and ensure the seal fits properly.
Connect the fuel lines back onto the tank fitting.

Connect the 4 x 1 mm Ø fuel pipe with 3.5 x 3 mm Ø fuel hose, length 50 mm, to the intake connection of the fuel tank extractor and lay to the installation position of the metering pump on the right next to the tank.

Secure the connection points with 9 mm Ø hose clips.

Fit the tank back in position again as specified by the manufacturer.

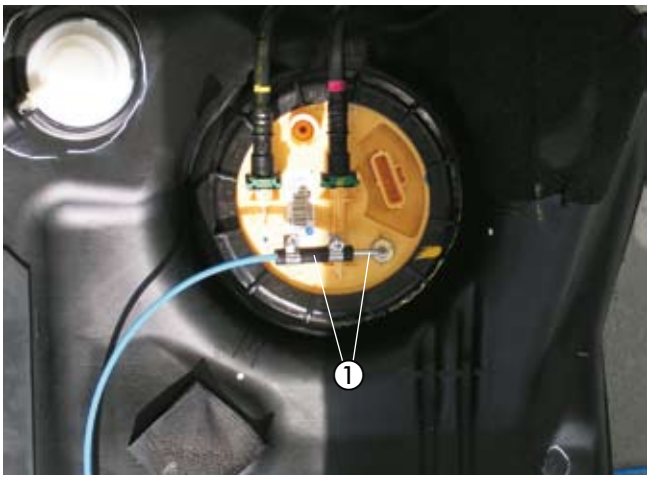


Photo 18

① Fuel tank extractor, connected

Install and connect the metering pump
(see photos 19 and 20)

Insert the metering pump in the rubber holder and fasten in the existing M6 threaded hole on the right next to the tank using an M6 x 20 screw and B6 body washer.
Ensure it is installed with at least 15° rising gradient on the discharge side.
The discharge connection of the metering pump points towards the rear.
Cut the 4 x 1 mm Ø fuel pipe from the fuel tank extractor to the metering pump and connect to the 3.5 x 3 mm Ø fuel hose, length 50 mm at the intake connection of the metering pump.

Remove the mating connector of the metering pump connection at the main cable harness.
Remove the dummy plugs from the mating connector.
Plug the connector of the supplied metering pump cable into the metering pump connection of the main cable harness.

Lay the 4 x 1.25 mm Ø fuel pipe with the 3.5 x 3 mm Ø fuel hose, length 50 mm, from heater together with the metering pump cable along the fuel lines on the right vehicle underbody to the metering pump.
Cut the 4 x 1.25 mm Ø fuel pipe to the correct length, connect to the discharge connections of the metering pump and fix with cable ties.
Slot the plug-in contacts of the metering pump cable into the mating connector without noting the polarity.
Connect the connector to the metering pump.

Please note!

Use a sharp knife to cut the fuel pipe to length.
Secure all hose connections with hose clips.
When laying fuel lines, always ensure they are at an adequate distance from hot vehicle and heater parts.

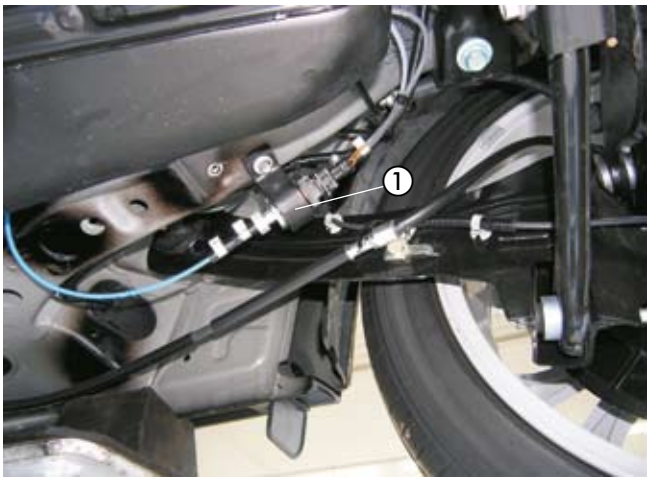


Photo 19

① Metering pump, installed

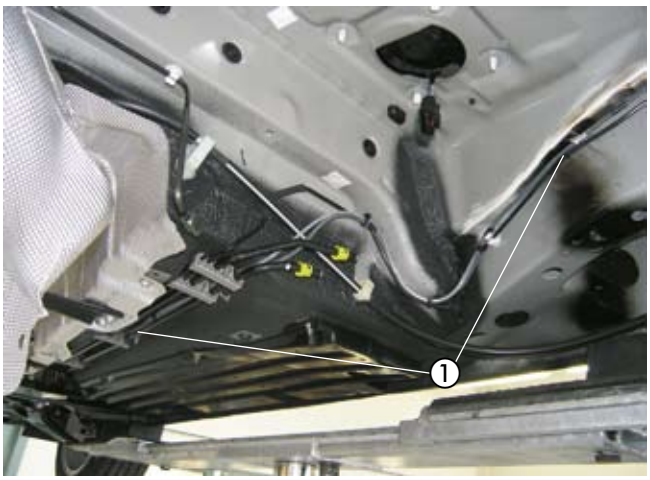


Photo 20

① Fuel pipe, 4 x 1.25 mm Ø and metering pump cable, laid

Install fuses and fan relay
(see photo 21 and diagrams 4 and 5)

Prepare the holder for the fuse and relay block as shown in the diagram.

Fasten the fuse holder with two M4 x 16 screws and the relay block with one M5 x 10 screw to the holder for the fuse and relay block.

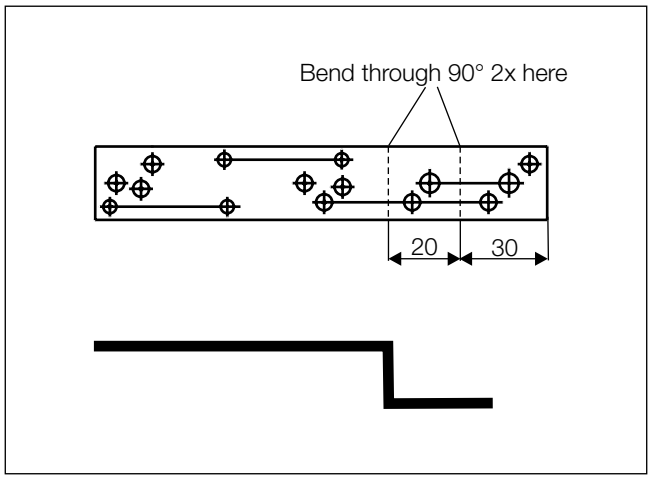


Diagram 4

Insert the 0.5 mm² br cable of the main cable harness in slot 85 of the relay block.

Remove the 0.5 mm² sw/rt cable of the main cable harness from the bushing connector housing and insert in slot 86 of the relay block.

Remove the dummy plug from the fuse block and connect the 4 mm² rt/ws cable of the relay block in the vacant slot of the fuse block.

Connect the 8 pin connector of the main cable harness with the 8 pin flat connector housing of the heater's cable loom.

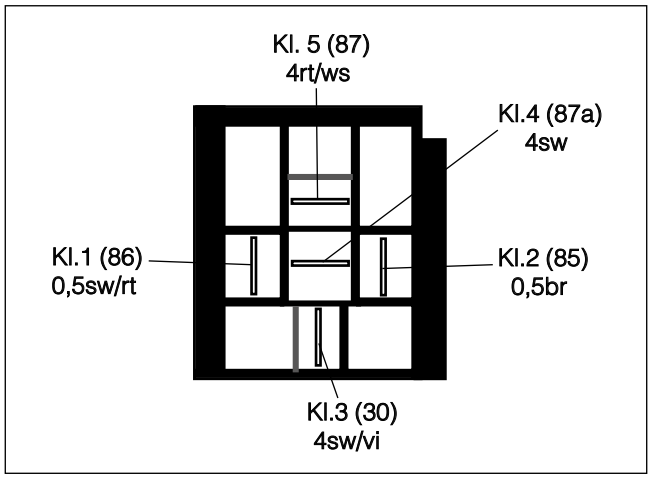


Diagram 5

View of the relay block from the cable inlet side

Mount the holder for the fuse and relay block to the existing M6 stud bolt on the wiper pan using an M6 nut.

Remove the 25 A fuse from the fuse bracket and insert a 10A fuse.



Photo 21

① Fuses and fan relay, installed
② Holder for fuse and relay block, installed

Cable laying
(see photo 22)

Make a 16 mm Ø hole in the engine partition at the pre-marked position behind the glove compartment for laying the cable looms and insert the 16.5 mm Ø grommet.

Lay the "Control" and "Fan control" cable looms through the grommet into the passenger compartment and up to the driver's side.



Photo 22

① 16.5 mm Ø grommet, inserted

Fan control for vehicles with manual or automatic AirCon
(see photo 23 and diagram 6)

The fan control is at the central fuse box (heater 10A fuse F02) on the left side of the instrument panel.

Disconnect the two 0.5 mm² rs/gr cables from the 10 A heater fuse and integrate the 4 mm² sw and 4 mm² sw/vi cables with plug-in connectors as shown in the circuit diagram .

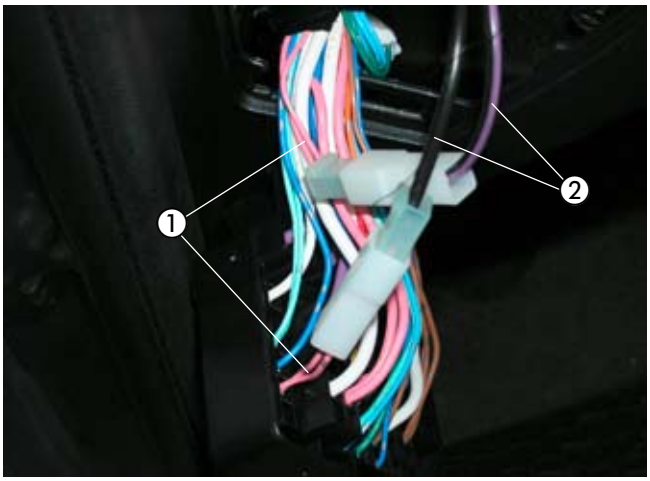


Photo 23

① Two 0.5 mm² rs/gr cables (heater 10A fuse), disconnected
② 4 mm² sw and 4 mm² sw/vi cables, integrated

Power supply
(see photo 24)

Take the 4 mm² rt plus cable to the positive terminal post of the battery, crimp on an A8 cable lug and connect to the positive terminal post.

Take the 2.5 mm² br earth cable to the negative terminal post of the battery and connect it there with the A6 cable lug.

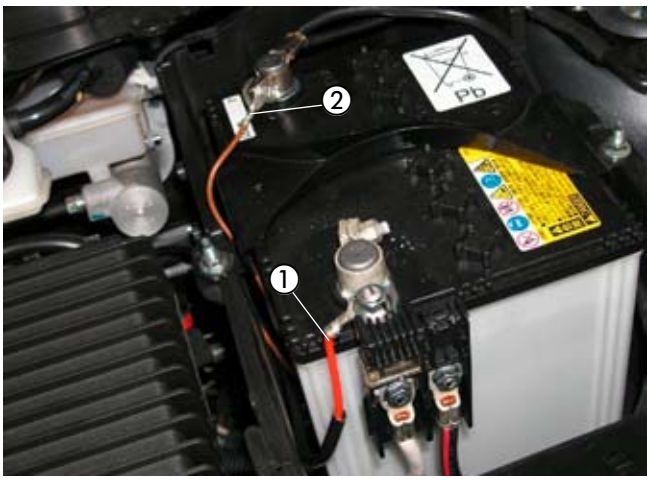


Photo 24

① Positive cable 4 mm² rt, connected
② Earth cable 2.5 mm² br, connected

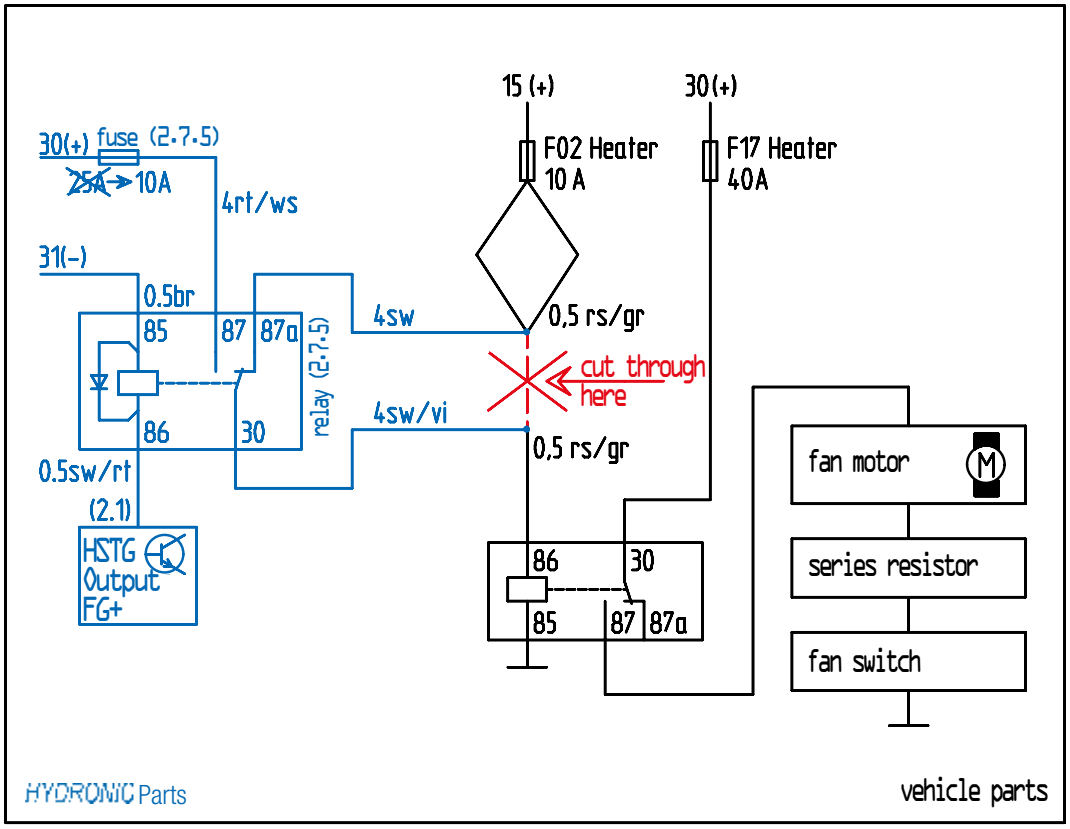


Diagram 5

Circuit diagram manual AirCon

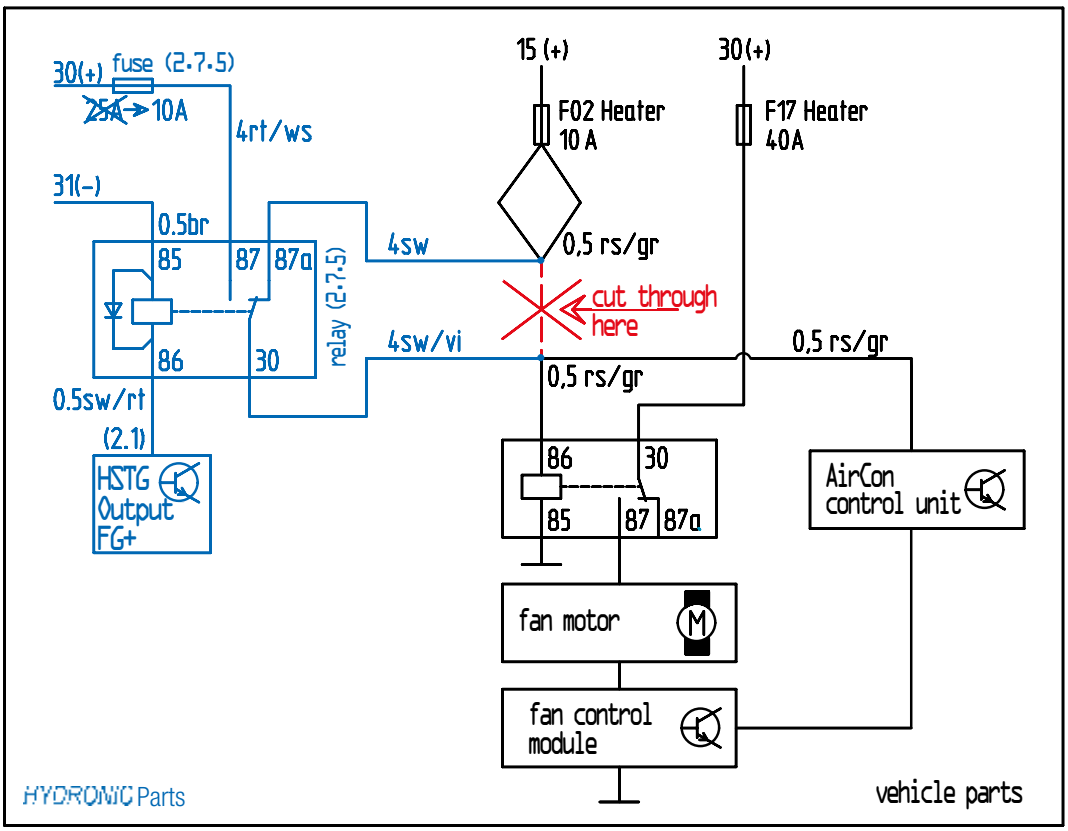


Diagram 6

Circuit diagram automatic AirCon

Install EasyStart T
(see photo 25)

The EasyStart T is installed according to the "EasyStart T" installation instruction.

Mount the EasyStart T timer with the console to the instrument panel covering below the switch unit.

Align the console on the mounting surface and trace the drillholes onto the mounting surface.
Make the Ø 3 mm and Ø 8 mm holes.
Remove the drilling template after making the holes.
Fix the console using the B 3.5 x 19 fixing screws supplied.

Take the "control" lead harness through the 8 mm Ø hole and use the expansion plug to premount the timer in the 6.5 mm Ø hole.
Push or screw the fixing screw into the expansion plug and use it to fix the timer.

Insert the flat connector from the "Control" lead harness into the 9 pin flat connector housing and insert the ready mounted bushing connectors in the bushing connector housing.
Push the fuse clasp into the flat connector housing.
Pull off the protective film of the cover cap and glue in the cover cap.



Photo 25

① EasyStart T, installed

Please note!

Do not decide on the installed location of the timer until after consulting the customer.

Install EasyStart R/R⁺ radio remote control
(Alternative suggestion - consult with the customer)
(see photos 26 to 27 and diagram 7)

The EasyStart R/R⁺ is installed according to the Technical Description for the EasyStart R/R⁺ Radio Remote Control; see the "Installation Instruction" section.
Install the EasyStart R/R⁺ button to the cover on the left next to the cigarette lighter.
To this end, drill an 8 mm Ø hole in the panelling and insert the button in the hole.



Photo 26

① EasyStart R/R⁺ button, installed

Prepare the holder for the stationary part of the EasyStart R/R+ as shown in the diagram.

Fix the stationary part of the EasyStart R/R+ to the holder using two M4 x 16 screws.

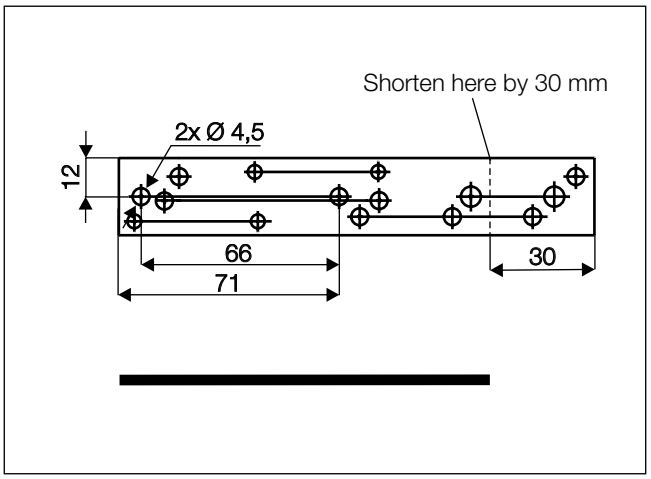


Diagram 7

Mount the stationary part of the EasyStart R/R+ with the holder behind the glove compartment to the supporting strut of the instrument panel to the existing M6 stud bolt, using an M6 nut.

Attach the temperature sensor of the EasyStart R/R+ to the panelling on the A-pillar in the passenger's footwell.

Lay the cables from the installed button and temperature sensor together with the "Control" cable loom to the installed position of the stationary part and connect to the stationary part.

Connect the antenna cable of the EasyStart R/R+ to the stationary part, guide to the right and lay in the rubber door seal on the passenger side.

Please note!

Avoid contact with metal parts at the uninsulated end of the antenna cable.
Use cable ties to fix any excessive length of antenna cable underneath the instrument panel.



Photo 27

① Stationary part of the EasyStart R/R+, installed with holder

6 After installation

Install grommet for exhaust pipe
(see photo 28)

Make a 38 mm Ø hole in the removed lower cowling according to the dimensions shown in the photo.
Fit the grommet in the drilled hole.
Mount the lower cowling and take the exhaust pipe end through the grommet.

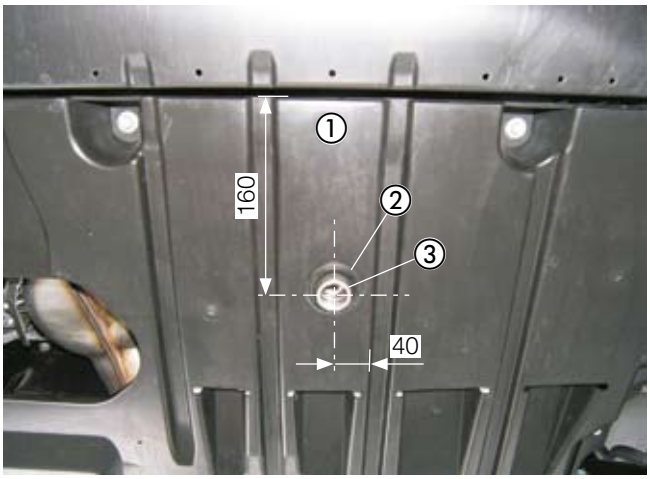


Photo 28

① Underbody covering, mounted
② Grommet for exhaust pipe end, mounted
③ Exhaust end pipe

Complete the vehicle

- Install all removed parts in the reverse order.
- Reconnect the battery.
- Check that the hoses, hose clips and pipe clamps as well as all electrical connections are fitted securely.
- Use cable ties to secure all loose cables, lines, etc.
- Set the clock time.
- If necessary, enter the radio code.
- Start the engine, vent the cooling system and check for leaks, top up any missing coolant liquid up to the marking (arrow).
- Please also note and follow the vehicle manufacturer's information on filling and venting the cooling system.
- Read and observe all official regulations and safety instructions in the Technical Description.
- Program the control and place the Operating Instructions together with the leaflet for the customer in the glove compartment.

Please note!

Fill the cooling system only with the coolant liquid specified by the vehicle manufacturer.

Starting up the heater

- Switch on the heater at the control.
  See Operating Instructions - Control.

7 Parts Overview

No.	Designation	Quantity	Order number
1	Vehicle-specific installation kit		24 8456 00 00 00
	Heater holder, new	1	
	Hexagon screw M6 x 95	1	
	Lead harness, heater	1	
	Holder, fuse	1	
	Exhaust silencer	1	
	Exhaust pipe, L = 300 mm	1	
	Holder, water pump	1	
	Hose, shaped, 18 mm Ø	1	
	Hose clip, 16 - 25 mm Ø	1	
	Hose clip, 20 - 32 mm Ø	6	
	Pipe clamp, 26 - 28 mm Ø	3	
	Holder, metering pump	1	
	Lead harness, metering pump	1	
	Fuel hose, 3.5 x 3 mm Ø, L = 50 mm	3	
	Hose clip, one-piece with clamping jaws	6	
	Fuel pipe, 4 x 1 mm Ø	2 m	
	Fuel pipe, 4 x 1.25 mm Ø	5 m	
	Cable tape, 2.5 x 100 mm	10	
	Cable tape, 5.0 x 200 mm	20	
	Cable tie with internal toothing	5	
	Hexagon screw M4 x 16	2	
	Hexagon nut M4	2	
	Hexagon screw M5 x 10	1	
	Hexagon nut M5	1	
	Hexagon screw M6 x 16	5	
	Hexagon screw M6 x 20	1	
	Hexagon screw M6 x 30	1	
	Hexagon nut M6	7	
	Holder 9502	1	
	Holder 9305	1	
	Z-bracket	1	
	90° bracket	1	
	Holder stationary part	1	
	Blind rivet nut M6	2	
	Hexagon screw M6 x 25	1	
	Body washer B6	3	
	Hexagon screw M4 x 16	2	
	Hexagon nut M4	2	
	Flat connector, 4 - 6 mm^2	1	
	Bushing connector, 4 - 6 mm^2	1	
	Flat connector, 1.5 mm^2	1	
	Flat connector, 1.5 mm^2	1	
	A8 cable lug, 2.5 mm^2	1	
	Fuse, 10 A	1	
	Exhaust insulation	1	
	41 mm Ø exhaust grommet	1	
	Grommet, 16 mm Ø	1	
	Exhaust pipe	0.3 m	
	Hose clip, 20 - 32 mm Ø	3	
	180° elbow, 18 mm Ø	1	
	Connection pipe, 18 mm Ø	2	
	Fuel tank extractor	1	
	Clamp, 9 mm Ø	2	
	Fuel hose, 3.5 x 3 mm Ø	0.05 m	
	Angled neck	2	
	"Fan" cable loom	1	
	Relay, 12 V	1	
	Flat connector housing	2	
	Push-on sleeve housing	2	

8 Leaflet for the customer

Before switching on
in vehicles with manual AirCon
(see photo 1)

- Before switching on or pre-programming heating mode with the ignition switched on, set the vehicle's temperature controller ① to "Hot" (maximum setting).
- Set the fan controller ② to level 1 or 2.
- Set the controller for the air system ② to Defroster. Maximum air directed to the front windscreen.



Photo 1

① Temperature controller
② Fan controller
③ Air system controller

Before switching on
in vehicles with automatic AirCon
(see photo 2)

- Before switching on or pre-programming heating mode with the ignition switched on, set the vehicle's temperature controller ① to "Hot" (maximum setting).
- Set the fan controller ② to level 1 or 2.
- Switch the button for the air system ③ to Defroster. Maximum air directed to the front windscreen.



Photo 2

① Temperature controller
② Fan controller
③ Button for the air system
④ Switch for the seat heating

Please note!

Before switching on or preprogramming the heating mode, adjust the seat heating switches ④ to the 0 setting.