INSTALLATION RECOMMENDATIONS
HYDRONIC S3 – B 5 E IN THE DODGE RAM



THIS INSTALLATION RECOMMENDATION APPLIES TO VEHICLES FROM MODEL YEAR 2013 TO 2018 WITH THE FOLLOWING MOTORISATION:

5.7 l cubic capacity / 8 cylinder V-engine / 295 kW - 401 HP (HSN: 1726)

Eberspächer

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This installation recommendation documents the installation of the Hydronic S3 heater in a vehicle from model year 2013 to model year 2018 with the following equipment:

- **with 2-zone automatic aircon or**
- **manual aircon**
- **with fog lamps**
- **with daytime running lights**
- **with LED headlights**
- **with automatic gearbox**
- **with four-wheel drive 4 x 4**
- **with or without Prins LPG system**

not tested:

PLEASE NOTE!

This installation recommendation is valid for the above mentioned vehicle to the exclusion of all liability claims.
Deviating model years and/or deviating equipment may result in modifications to this installation recommendation.
It is therefore mandatory to check the feasibility of installing the heater in the vehicle before starting work.
All liability claims resulting from modifications to the vehicle are excluded.

Installation time: approx. 7 hours

1 INTRODUCTION

SPECIAL TEXT FORMATS, PRESENTATIONS AND PICTURE SYMBOLS

In this installation recommendation, special text formats and picture symbols are used to emphasise different contents. Please refer to the following examples for their meanings and appropriate action.

SPECIAL TEXT FORMATS AND PRESENTATIONS

- This dot (▪) denotes a list, which is started by a heading.
  - If an indented dash (–) follows a “dot”, this list is a sub-section of the black dot.

PICTURE SYMBOLS

DANGER!

This information points out a potential serious or fatal danger. Ignoring this information can result in severe injuries.

➔ This arrow indicates the appropriate precaution to take to avert the danger.

CAUTION!

This information points out a dangerous situation for a person and / or the product. Ignoring this information can result in injuries to people and / or damage to machinery.

➔ This arrow indicates the appropriate precaution to take to avert the danger.

PLEASE NOTE!

These remarks contain recommendations for use and useful tips for the operation, installation and repair of the heater.

SAFETY INSTRUCTIONS FOR INSTALLATION AND REPAIR

DANGER!

Improper installation or repair of Eberspächer heaters can cause a fire or result in toxic exhaust entering the inside of the vehicle.
This can cause serious and even fatal risks.

➔ Only authorised and trained persons may install the heater according to the specifications in the technical documents or repair it using original spare parts.

➔ 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.

➔ Installation according to this installation recommendation may only be carried out in conjunction with the respective unit-related technical description, installation instructions, operating instructions and maintenance instructions.
This document must be carefully read through before / during installation and repair and followed throughout. Particular attention is to be paid to the official regulations, the safety instructions and the general information.

PLEASE NOTE!

- The relevant rules of sound engineering practice and any information provided by the vehicle manufacturer are to be observed during the installation and repair.
- When carrying out electric welding on the vehicle, the positive cable at the battery should be disconnected and earthed to protect the control box.

LIABILITY CLAIM / WARRANTY

Eberspächer does not accept any liability for defects and damage, which are due to installation or repair by unauthorised and untrained persons.
Compliance with the official regulations and the safety instructions is prerequisite for liability claims.
Failure to comply with the official regulations and safety instructions leads to exclusion of any liability of the heater manufacturer.

ACCIDENT PREVENTION

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

1 INTRODUCTION

ADDITIONAL INFORMATION ON THE VALIDITY OF THE INSTALLATION RECOMMENDATION

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
5.7 l V8	295 / 401	AT

AT = automatic transmission

PLEASE NOTE!

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

INITIAL COMMISSIONING OF THE HEATER OR FUNCTIONAL TEST

- After installation or carrying out a repair on the heater, the coolant circuit and the whole fuel supply system must be carefully vented. Comply with the instructions issued by the vehicle manufacturer.
- Open all heating circuits before the trial run (set the temperature controller to “hot”).
- During the heater trial run, all water and fuel connections must be checked for leaks and secure, tight fit.
- If faults occur while the heater is running, use a diagnostic unit to correct the cause of the fault.

PARTS REQUIRED FOR INSTALLATION

QUANTITY	DESIGNATION	ORDER NO.
1	Hydronic S3 - B 5 E	20 1993 05 00 00
1	Vehicle-specific installation kit	24 8000 35 00 19
EasyStart control unit as chosen:		
1	EasyStart Timer	22 1000 34 15 00

SPECIAL TOOLS REQUIRED

- Necessary torque wrench
- Anti-corrosion agent
- Crimping tool
- Pliers for spring band clamps

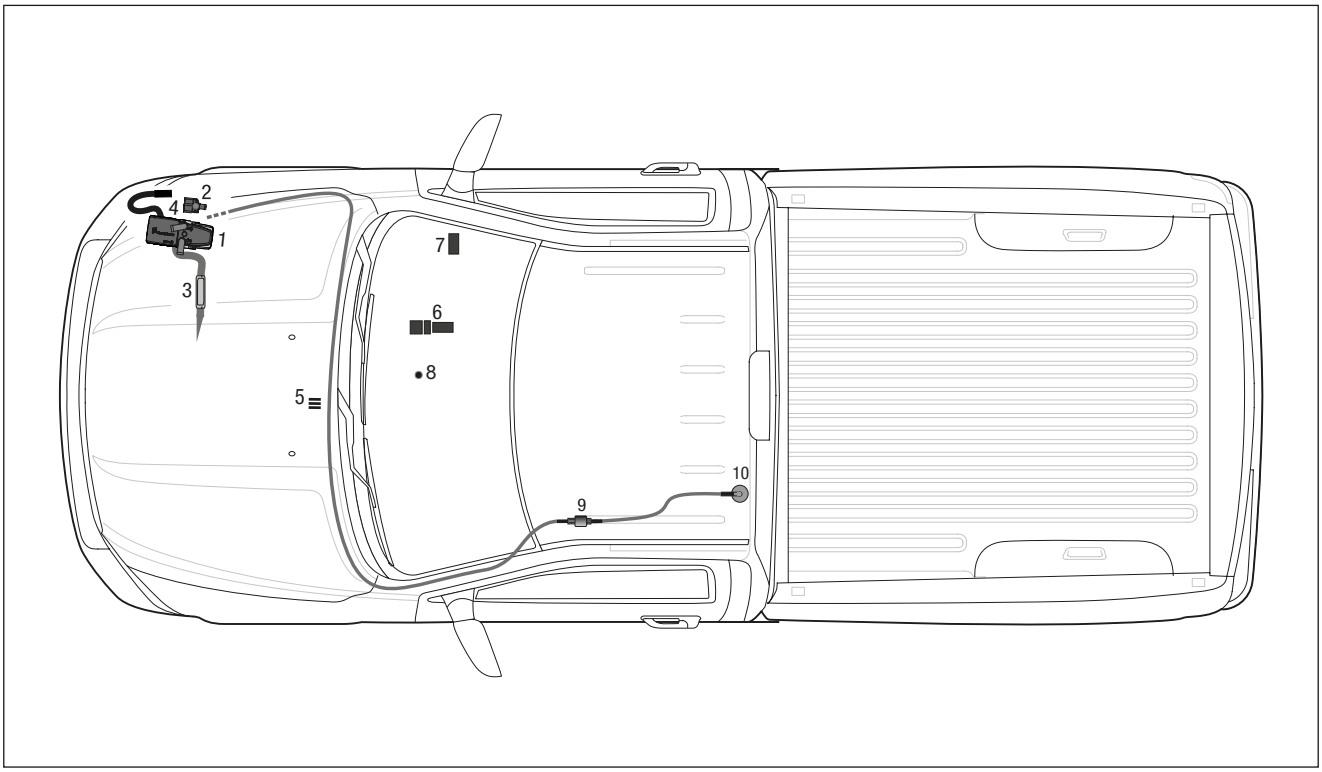
TIGHTENING TORQUES

If no tightening torques are specified, tighten the screw connections according to the following table:

Part name	Tightening torques
Hex screw M6	10 $^{+1}$ Nm
Hex screw M8	20 $^{+2}$ Nm
Hex screw M10	45 $^{+2}$ Nm
Self-threading M6 x 16 Torx screw	11 $^{+1}$ Nm
Screw M4	3 $^{+0.5}$ Nm
Screw M5 x 10	5 $^{+0.5}$ Nm
Screw M5 x 18	6.5 $^{+0.5}$ Nm
Pipe clip for exhaust pipe	7 $^{+1}$ Nm
Hose clip for water hose	3 $^{+0.5}$ Nm
Hose clip for combustion air pipe	5 $^{+0.5}$ Nm
Hose clip for fuel pipe	1 $^{+0.2}$ Nm

1 INTRODUCTION

INSTALLATION DRAWING



1 Heater Hydronic S3
2 Water pump
3 Exhaust pipe with exhaust silencer
4 Combustion air tube
5 Fuse holder
6 Fan control box “EasyFan”, fan relay and isolating relay
7 Stationary part EasyStart Remote+
8 EasyStart Remote+ button
9 Metering pump
10 Fuel tank extractor

1 INTRODUCTION

OVERVIEW DODGE RAM AIRCONS

- **1st generation manual aircon**



Aircon control unit


Fan motor and series resistor separated


Aircon control unit

- **1st generation automatic aircon**



Aircon control unit

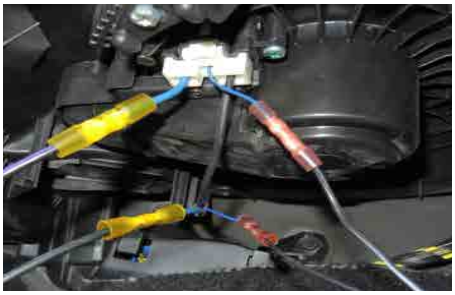

Fan motor and fan control separated

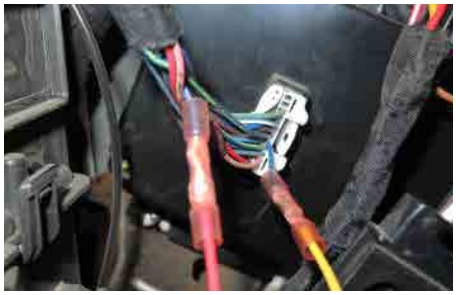

A/C amplifier on the right next to the glove compartment at the A-pillar

- **2nd generation manual aircon**



AirCon control unit


Fan motor with integrated control


A/C amplifier on the right next to the glove compartment at the A-pillar

- **2nd generation automatic aircon**



Aircon control unit


Fan motor with integrated control


A/C amplifier on the right next to the glove compartment at the A-pillar

2 PREPARATION OF THE VEHICLE

PREPARATORY WORK ON THE VEHICLE

- Disconnect the battery
- Remove glove compartment
- Remove aircon control for 1st generation manual aircon
- Remove top shelf
- Remove air filter housing
- Remove front right-hand wheel
- Remove right-hand, front wheel arch liner
- Remove lower gearbox cowling
- Remove tank according to the manufacturer's instructions
- Depressurise the cooling system
- Drain coolant into a clean container

INSTRUCTIONS FOR REMOVING THE GLOVE COMPARTMENT
(see Fig. 1)

Detach the retaining cable of the glove compartment out to the back.

Detach the glove compartment from the fastening points and remove.



Fig. 1
① Glove compartment
② Detach retaining cable

INSTRUCTIONS FOR REMOVING THE TOP SHELF
(see Figs. 2 to 4)

Unscrew the M4 screw of the top shelf.



Fig. 2
① Loosen M4 screw of top shelf

2 PREPARATION OF THE VEHICLE

Unscrew the four fastening screws of the top shelf and remove the shelf.



Fig. 3
① Top shelf
② Loosen 4x fastening screw of the top shelf

Loosen the fastening clips of the lower trim moulding and remove the trim moulding.

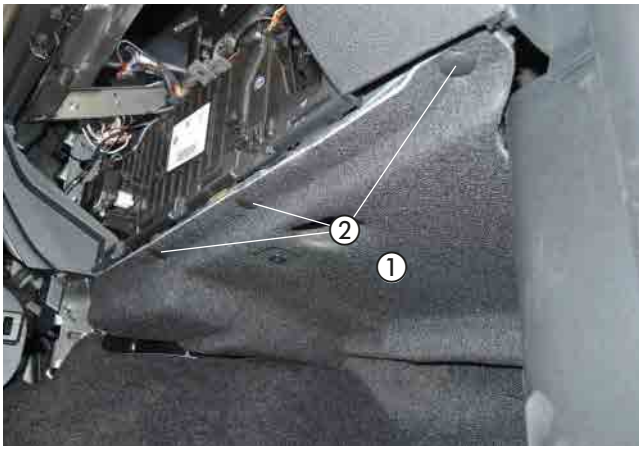


Fig. 4
① Remove lower trim moulding of glove compartment
② Loosen fasten clips of lower trim moulding

3 PRELIMINARY ASSEMBLY

PREPARE HEATER
(see Figs. 5 and 6)

Mount the angled water connection socket to the heater as shown, see “Installation steps”.

Remove the duplicate nameplate from the heater.



Fig. 5
① Heater
② Mount elbow connection

Installation steps

- Grease the O-ring (5) and insert in the groove at the connection socket.
- Fit the connection socket (3 or 4) in the cut-outs of the sensor cover (2). The collar of the connection socket is above the cover.
- Position the connection socket with the gearing in the sensor cover and fix accordingly.
- Fit the sensor cover on the heater with the connection socket pointing forwards.
- Press the connection socket completely into the corresponding holes on the heat exchanger.
- Adjust the direction for the angled connection socket:
  – Raise the sensor cover up to the collar of the connection socket
  – Turn the connection socket in the required direction
  – push the sensor cover down and readjust the position of the connection socket so that the gearing engages again
- Fasten sensor cover with M5 x 18 (1) screw
  (tightening torque $6.5^{+0.5}$ Nm).

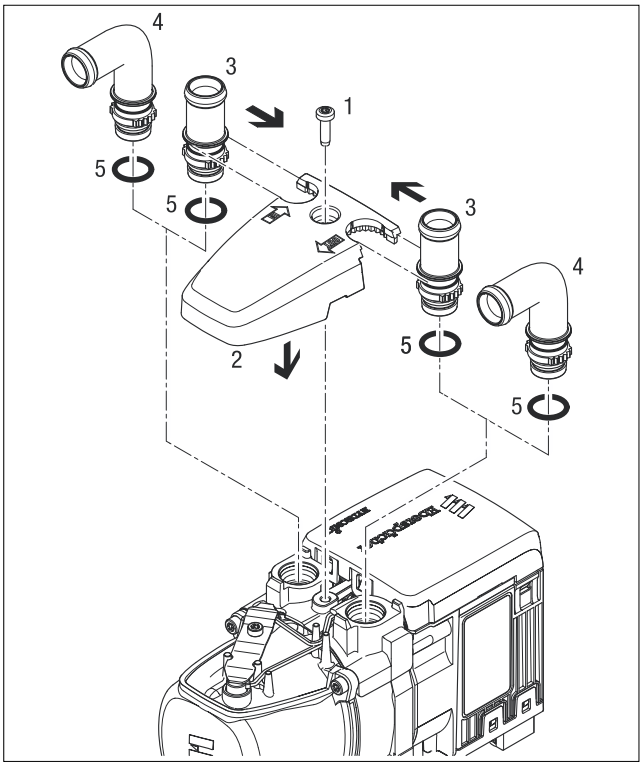


Fig. 6

1 M5 x 18 screw
2 Sensor cover
3 Connection socket, straight
4 Angled connection socket
5 O-ring

3 PRELIMINARY ASSEMBLY

ADHERE DUPLICATE NAMEPLATE
(see Fig. 7)

Fit the duplicate nameplate to the B-pillar on the passenger side as shown.



Fig. 7
① Fit duplicate nameplate

PREPARE HEATER BRACKET
(see Fig. 8)

Prepare the already premounted heater bracket for subsequent installation.



Fig. 8
① Heater bracket

PREMOUNT WATER PUMP
(see Fig. 9)

Insert the water pump in the water pump holder.

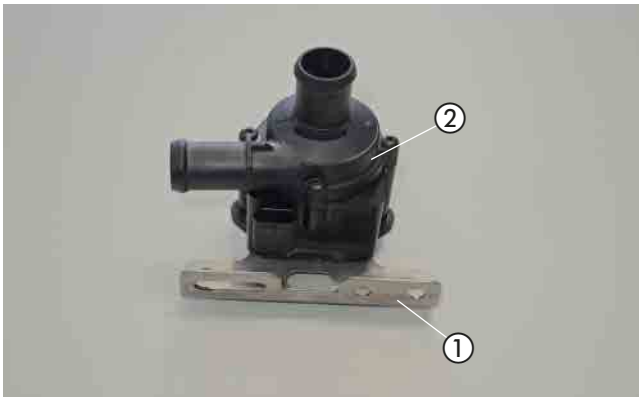


Fig. 9
① Holder, water pump
② Water pump

3 PRELIMINARY ASSEMBLY

PREPARE WATER HOSES
(see Figs. 10 to 13)
For vehicles without Prins LPG system

The water hoses are already prepared as shown.

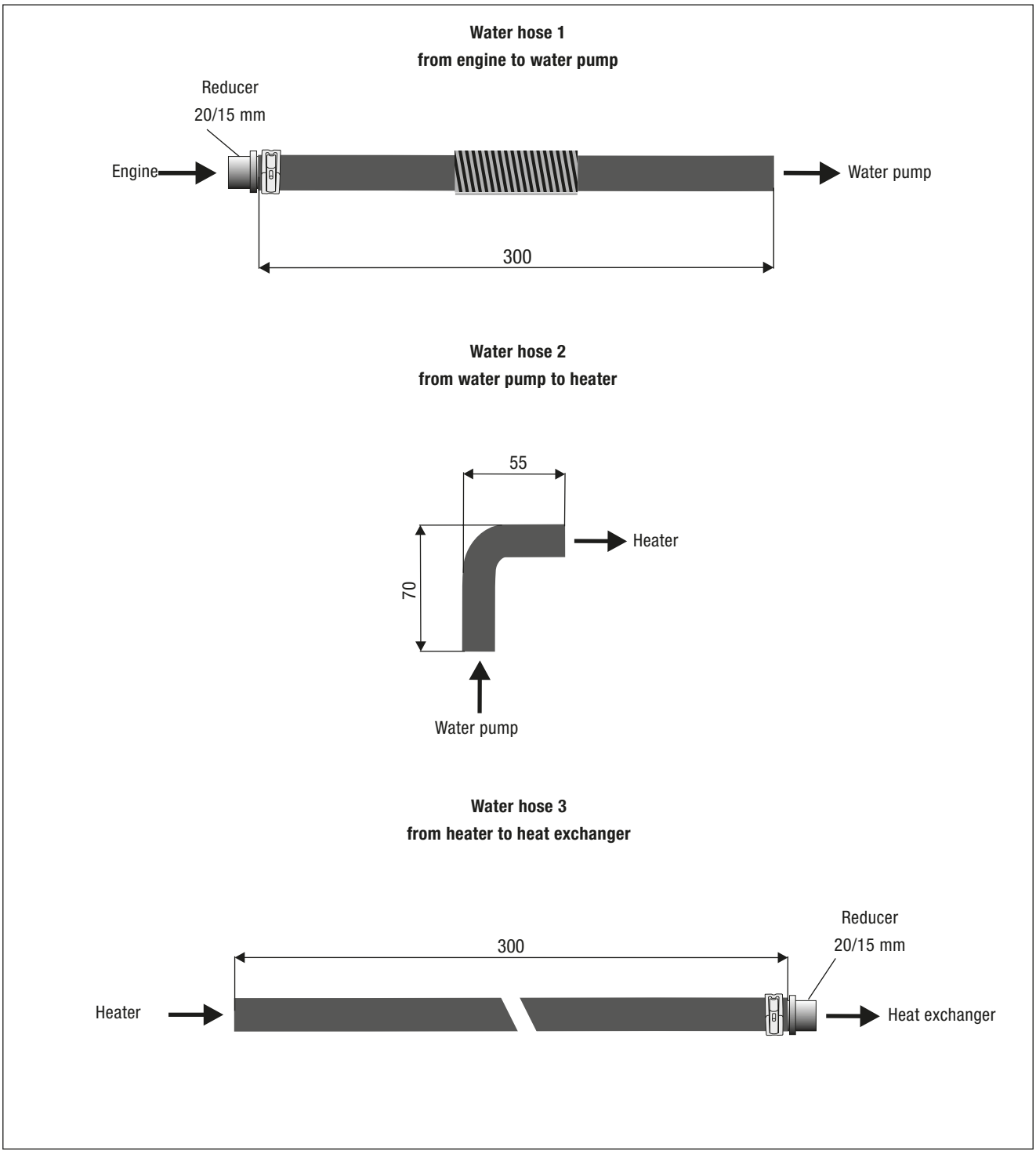


Fig. 10

3 PRELIMINARY ASSEMBLY

PREPARE WATER HOSES

For vehicles with Prins LPG system

Prepare water hoses as shown.

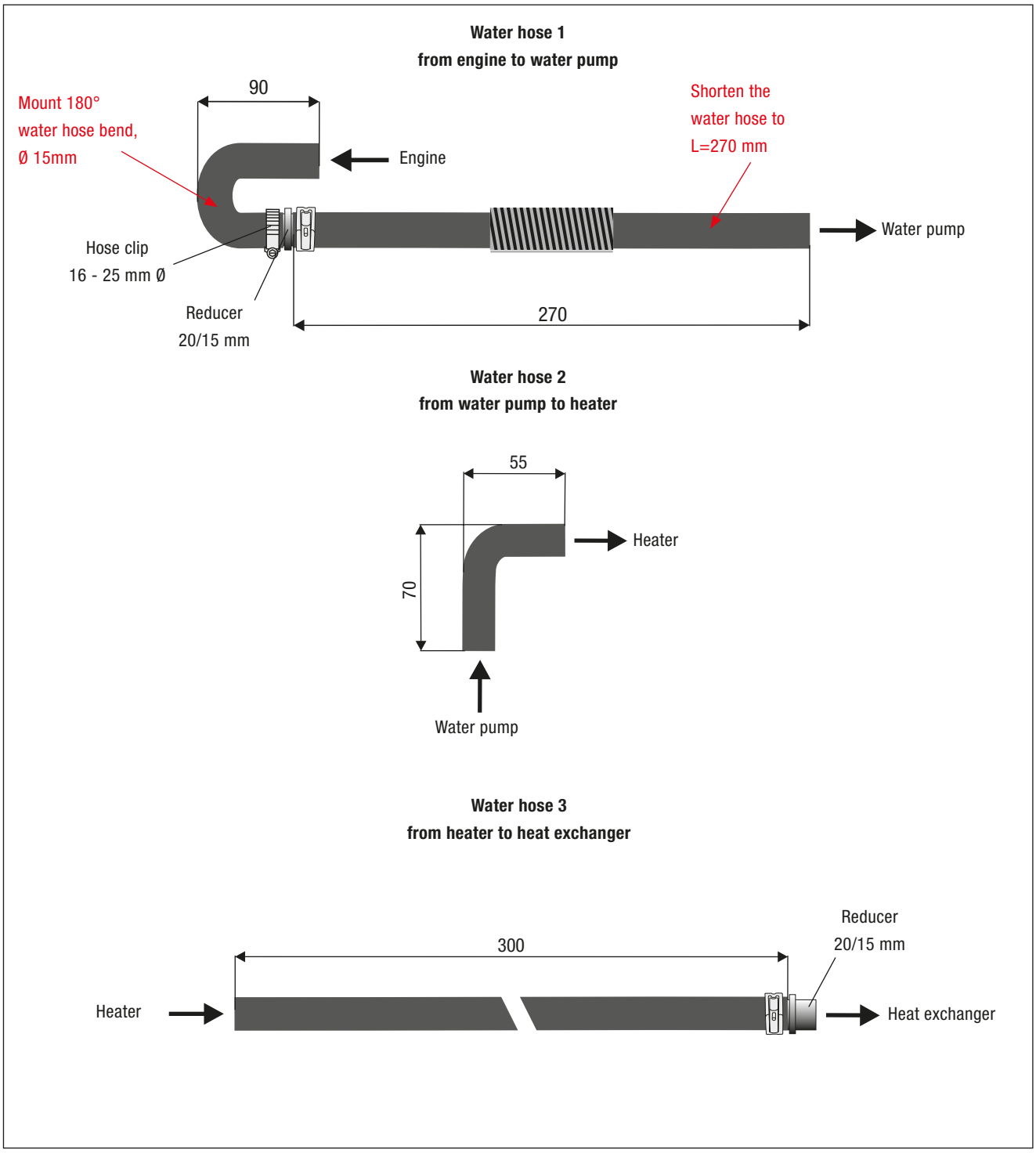


Fig. 11

3 PRELIMINARY ASSEMBLY

For vehicles without Prins LPG system

The figure shows the premounted water hoses 1 to -3.

Shape water hose 1 with the hose bending device (Unicoil) at the bending edge as shown.

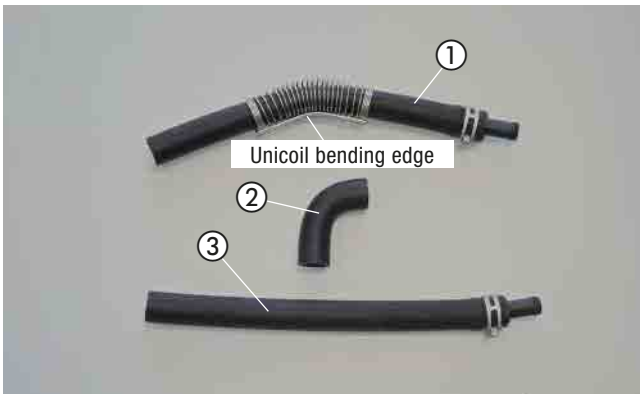


Fig. 12
① Water hose 1
② Water hose 2
③ Water hose 3

For vehicles with Prins LPG system

The figure shows the premounted water hoses 1 to -3.

Shape water hose 1 with the hose bending device (Unicoil) at the bending edge as shown.

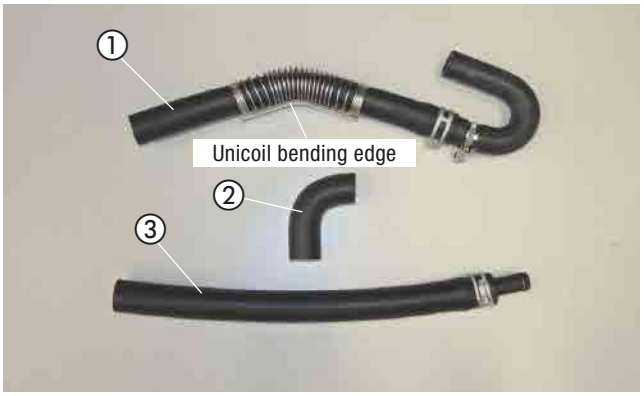


Fig. 13
① Water hose 1
② Water hose 2
③ Water hose 3

PREPARE EXHAUST SILENCER
(see Fig. 14)

Prepare the already premounted exhaust silencer for subsequent installation.



Fig. 14
① Premounted exhaust silencer

3 PRELIMINARY ASSEMBLY

PREPARE EXHAUST PIPE
(see Fig. 15)

Prepare the premounted exhaust pipe for installation.

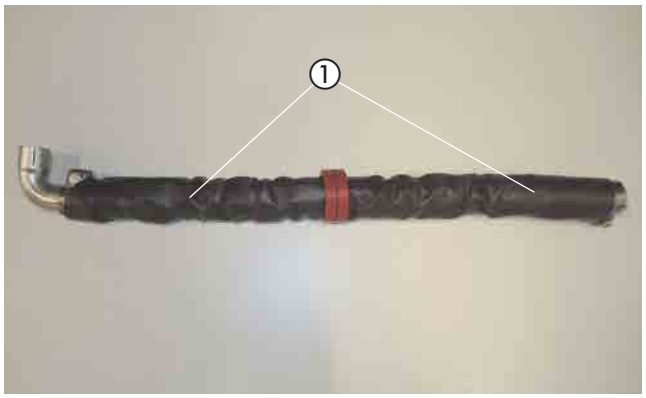


Fig. 15
① Premounted exhaust pipe

PREMOUNT METERING PUMP
(see Fig. 16)

Insert the metering pump in the rubber bracket as shown.

Fasten the 90° angle holder (22.1348.03.0004) to the rubber holder, offset through 15° as shown, using an M6 x 25 screw, a B6 body washer and an M6 nut.

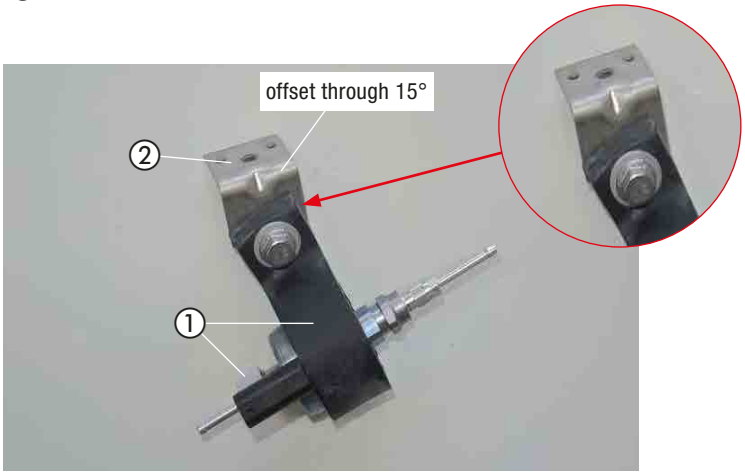


Fig. 16
① Insert metering pump in rubber bracket
② Mount 90° bracket

PREPARE FUEL PIPE (INTAKE LINE)
(see Fig. 17)

Prepare the premounted fuel pipe (intake line) with two 3.5 x 3 mm Ø fuel hoses for subsequent installation.



Fig. 17
① Fuel pipe (intake line)

3 PRELIMINARY ASSEMBLY

PREPARE FUEL PIPE (DELIVERY LINE)
(see Fig. 18)

Prepare the fuel pipe (delivery line) with 4.5/3.5 mm Ø adapter for subsequent installation.

Mount the 4.5/3.5 mm Ø adapter to the fuel connection of the heater.



Fig. 18
① Mount fuel pipe (delivery line) with 4.5/3.5 mm Ø adapter

PREPARE FUSE BLOCK
(see Fig. 19)

Prepare the premounted holder with fuse block and diagnostic connector for subsequent installation.

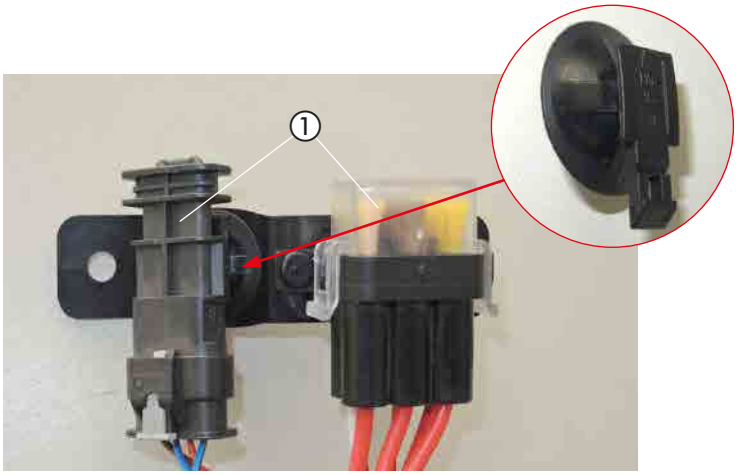


Fig. 19
① Fuse block and plug holder with diagnostic connector already premounted to holder

3 PRELIMINARY ASSEMBLY

PREMOUNT RELAY BLOCK

For vehicles with 1st generation manual aircon

(see Figs. 20 and 21)

Fasten the relay block for the fan and isolating relay to the holder using two M4 x 10 screws and two M4 nuts.

The two relays are inserted in the respective relay block later on.

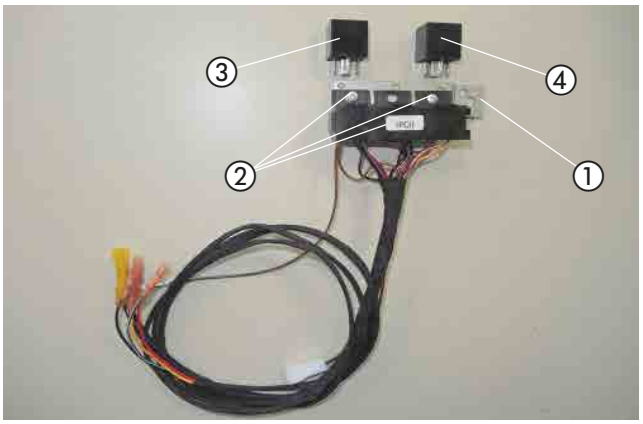


Fig. 20
① Holder for relay block
② Relay block for fan and isolating relay
③ Fan relay
④ Isolating relay

For vehicles with 2nd generation manual aircon and 1st and 2nd generation automatic aircon

Fasten the relay block for the fan, IPCU module and isolating relay to the holder using two M4 x 10 screws and two M4 nuts.

The two relays and the IPCU module are inserted in the respective relay block later on.

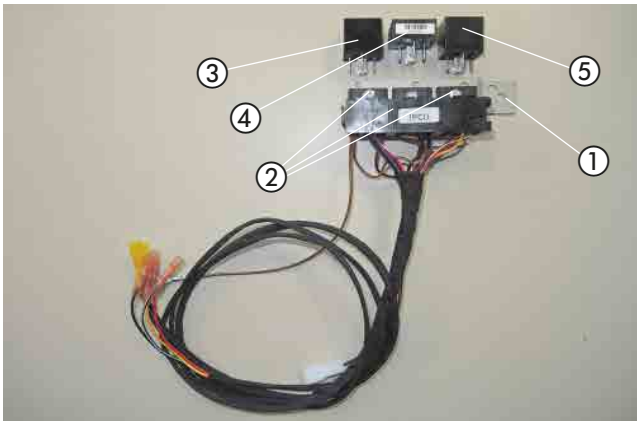


Fig. 21
① Holder for relay block
② Relay block for fan, IPCU module and isolating relay
③ Fan relay
④ IPCU module
⑤ Isolating relay

4 INSTALLATION

PREPARE THE INSTALLATION POSITION
(see Figs. 22 and 23)

The installation position of the heater is on the right inside of the front crossbeam.

Enlarge the existing 7 mm Ø hole to 9 mm Ø (1st fastening point).

The two M6 threaded holes act as 2nd and 3rd fastening point.

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

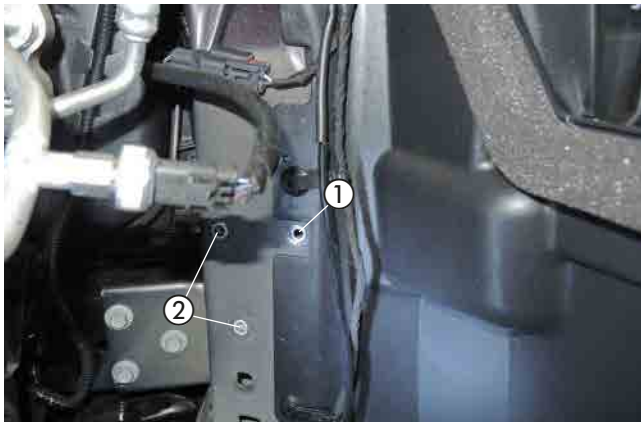


Fig. 22
① Existing 7 mm Ø hole
② 2 x M6 threaded holes

Insert an M6 blind rivet nut into the enlarged 9 mm Ø hole.

The two M6 threaded holes and the M6 blind rivet nut act as fastening points for the unit bracket.

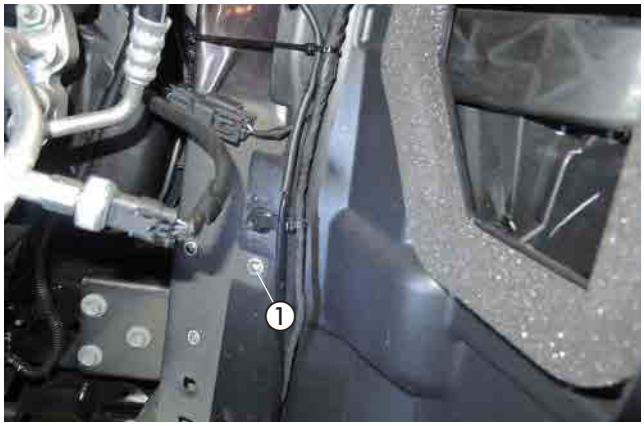


Fig. 23
① Insert M6 blind rivet nut

MOUNT HEATER BRACKET
(see Fig. 24)

Fasten the heater bracket with three M6 x 16 screws to the existing threaded holes and the M6 blind rivet nut.

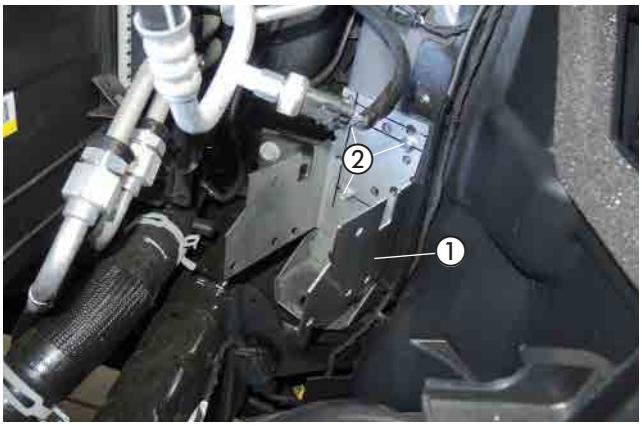


Fig. 24
① Heater bracket
② 3 x M6 x 16 screw

4 INSTALLATION

INSTALL WATER PUMP
(see Fig. 25)

Mount the prepared water pump to the heater bracket with an M6 x 12 screw and align as shown.

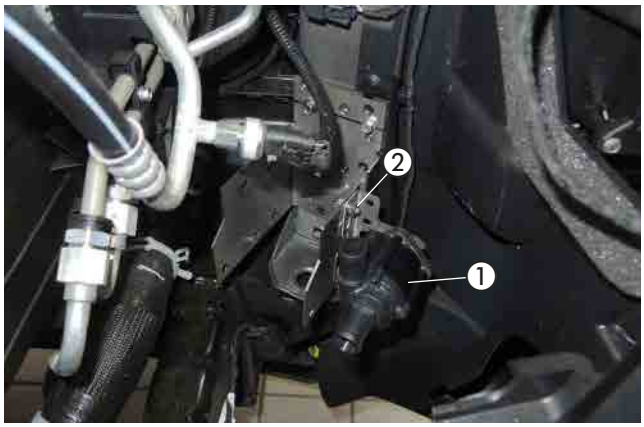


Fig. 25
① Prepared water pump
② Screw M6 x 12

INSTALL HEATER
(see Fig. 26)

Insert heater in the heater bracket and fasten with four M6 x 12 screws.

The water pump holder is also fastened to the front lower fastening point.

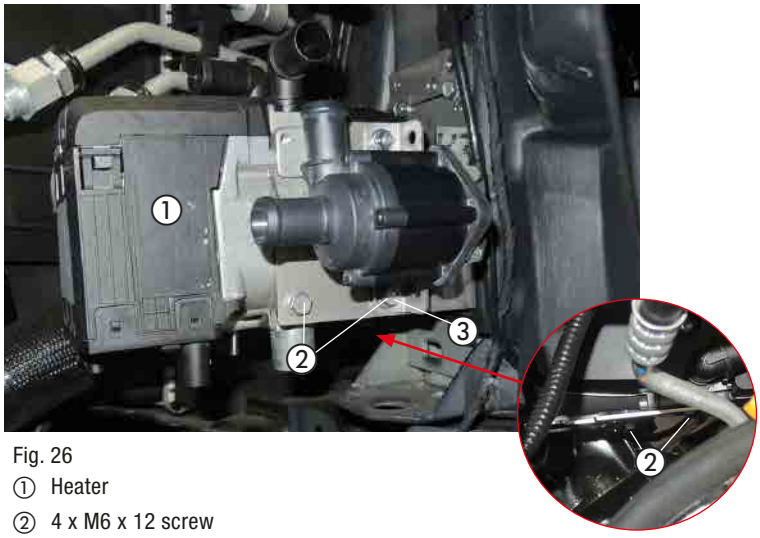


Fig. 26
① Heater
② 4 x M6 x 12 screw
③ Fastening point water pump holder

MOUNT WATER HOSE 2
(see Fig. 27)

Connect water hose 2 to the discharge end of the water pump and to the water inlet connection of the heater using a clip in each case.

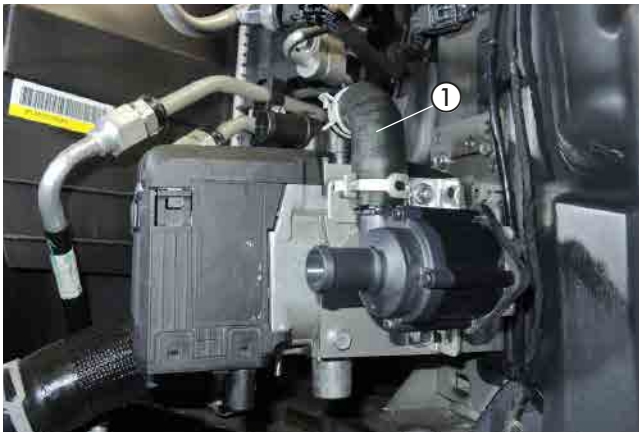


Fig. 27
① Mount water hose 2

4 INSTALLATION

CONNECT AND LAY WATER HOSES
(see Figs. 28 to 34)

For vehicles without Prins LPG system

Cut the water flow hose from the engine to the heat exchanger (the upper water hose at the heat exchanger) according to the dimensions shown.

Remove the piece of hose that has been cut out; it is no longer needed.

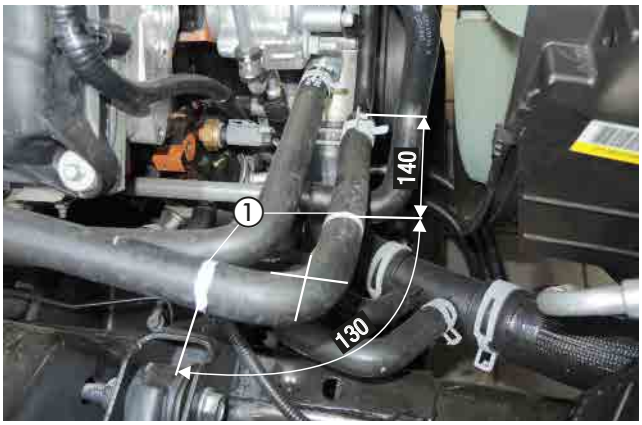


Fig. 28
① Cut water flow hose

Connect water hose 1 to the intake end of the water pump.

Connect water hose 3 to the water outlet connection of the heater.

Fix water hoses 1 and 3 to each other using two rotatable hose holders.

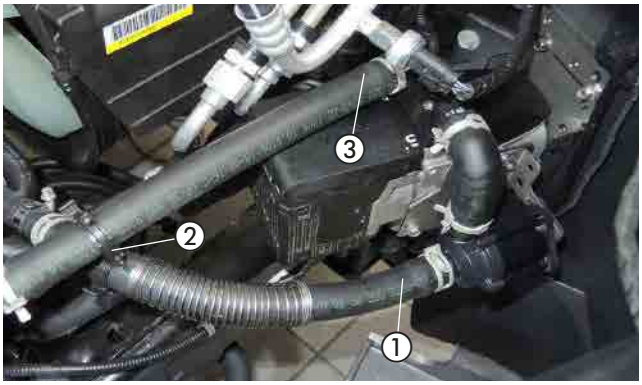


Fig. 29
① Connect water hose 1
② Two rotatable hose holders
③ Connect water hose 3

Use the 20/15 mm Ø reducer and a 16-25 mm Ø hose clip to connect water hose 1 to the water hose piece from the engine.

Use the 20/15 mm Ø reducer and a 16-25 mm Ø hose clip to connect water hose 3 to the water hose to the heat exchanger.

Secure the vehicle water hoses to the heat exchanger using 2 rotatable hose holders.

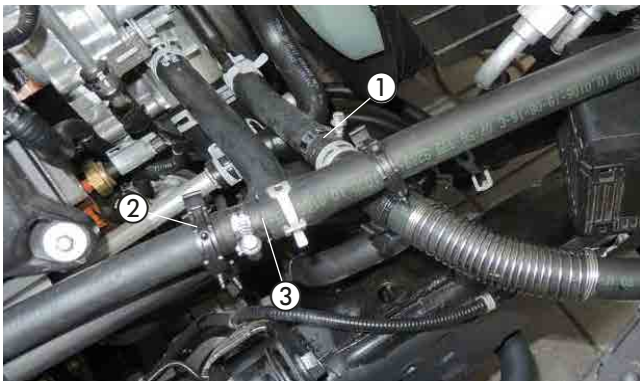


Fig. 30
① Connect water hose 1
② Two rotatable hose holders
③ Connect water hose 3

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

4 INSTALLATION

For vehicles with Prins LPG system

When a Prins LPG system is fitted, the water flow hose from the engine to the heat exchanger (upper water hose at the heat exchanger) has already been cut through and integrated in the LPG system.
Undo this connection again after loosening the clamp.

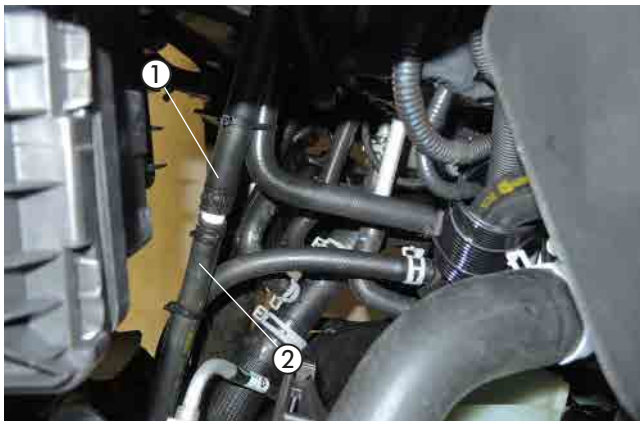


Fig. 31
① Disconnect water flow hose to the heat exchanger
② Water hose Prins LPG system

Connect water hose 1 to the intake end of the water pump using a clamp.

Connect water hose 3 to the water outlet connection of the heater using a clamp.

Fix water hoses 1 and 3 to each other using two rotatable hose holders.

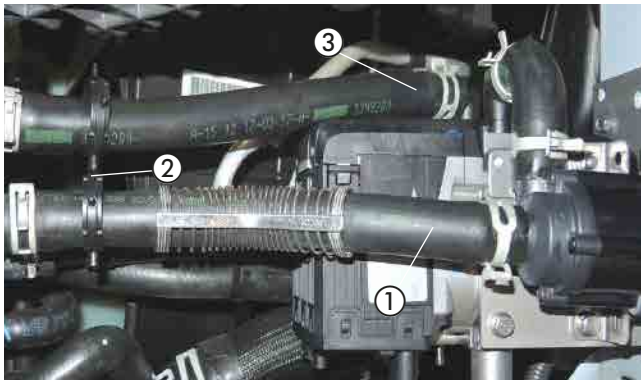


Fig. 32
① Connect water hose 1
② Two rotatable hose holders
③ Connect water hose 3

Connect water hose 1 to the water hose piece from the Prins LPG system using the 180° water hose elbow and a 16-25 mm Ø hose clip.

Use the 20/15 mm Ø reducer and a 16-25 mm Ø hose clip to connect water hose 3 to the water hose piece to the heat exchanger.

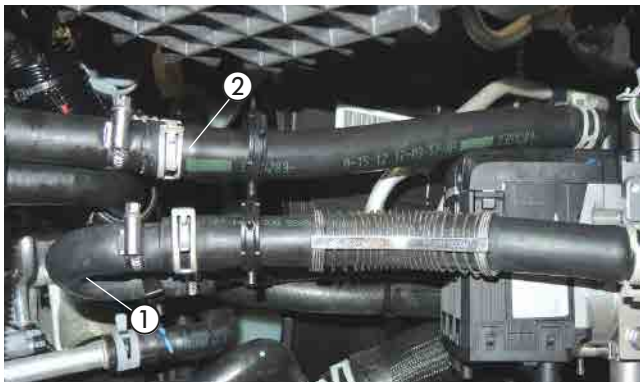
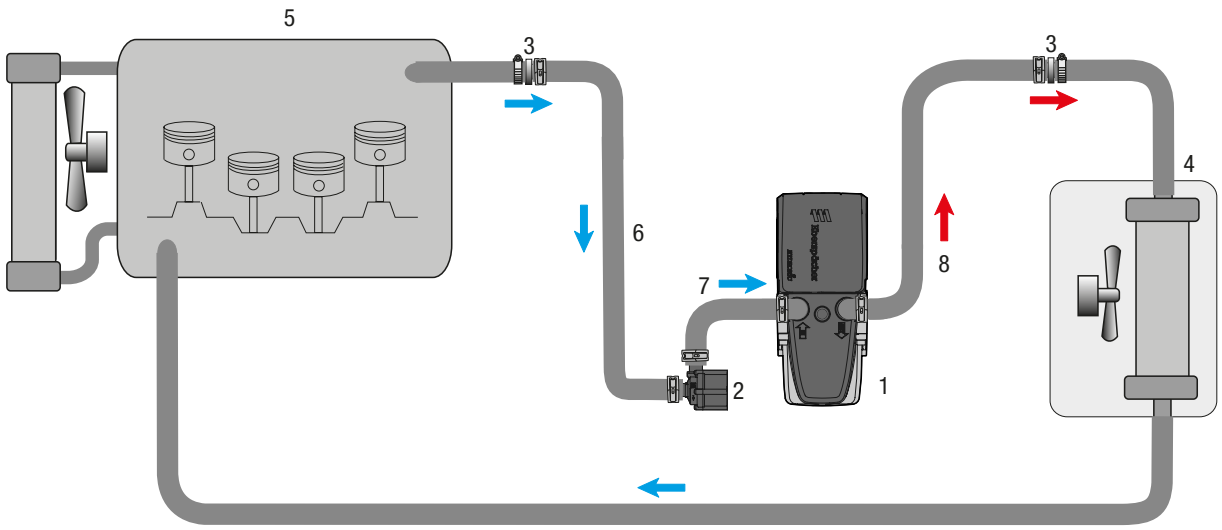


Fig. 33
① Connect water hose 1
② Connect water hose 3

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

4 INSTALLATION



1 - Heater Hydronic S3
2 - Water pump
3 - Reducer, 20/15 mm Ø
4 - Vehicle heat exchanger
5 - Engine
6- Water hose 1
7- Water hose 2
8- Water hose 3
- Spring band clip
- Hose clip, 16 – 25 mm Ø

Fig. 34

4 INSTALLATION

MOUNT EXHAUST SYSTEM
(see Figs. 35 and 36)

Use an M8 x 16 screw, a B8 body washer and an M8 nut to fasten the premounted exhaust silencer in the existing oblong hole on the outside of the right vertical support.

Use a clip to connect the exhaust pipe to the exhaust connection of the heater.

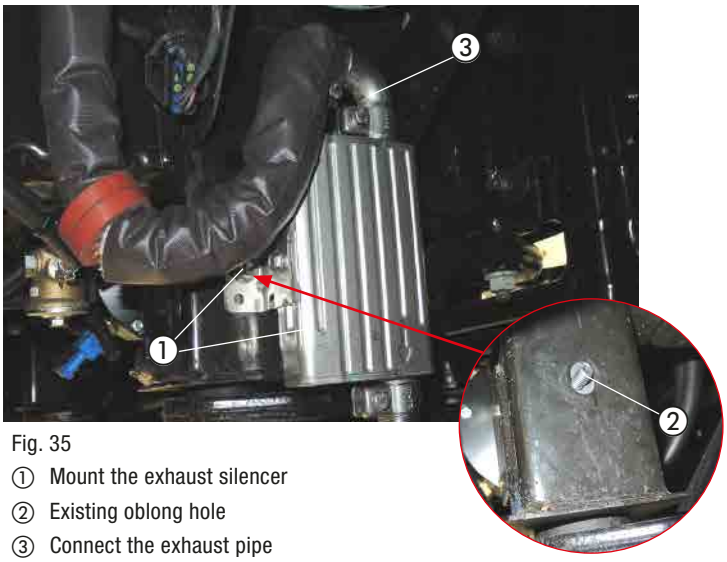


Fig. 35
① Mount the exhaust silencer
② Existing oblong hole
③ Connect the exhaust pipe

Shape the exhaust pipe and the exhaust pipe end as shown.



Fig. 36
① Connect and shape the exhaust pipe
② Shape exhaust pipe end

⚠ CAUTION!
When laying the exhaust pipes, ensure they are at a sufficient distance from adjacent body components.

CONNECT AND LAY COMBUSTION AIR PIPE
(see Fig. 37)

Use a 16 - 25 mm Ø hose clip to connect the combustion air pipe to the heater; lay upwards in the protected area of the front crossbeam and secure with cable ties.



Fig. 37
① Connect combustion air pipe
② Lay combustion air pipe

⚠ CAUTION!
Lay the combustion air silencer so that only clean, dry combustion air can be drawn in through the heater.

4 INSTALLATION

MAKE TANK CONNECTION
(see Figs. 38 to 43)

In vehicles with type 1 tank fitting

Remove the fuel tank according to the manufacturer's instructions. Dismantle the tank fitting, disconnect the plug-in connection and the fuel line from the tank fitting.

Drill an 8 mm Ø hole in the top part of the tank fitting with the dimensions shown.

CAUTION!
Make sure no impurities enter the tank when drilling the tank fitting.

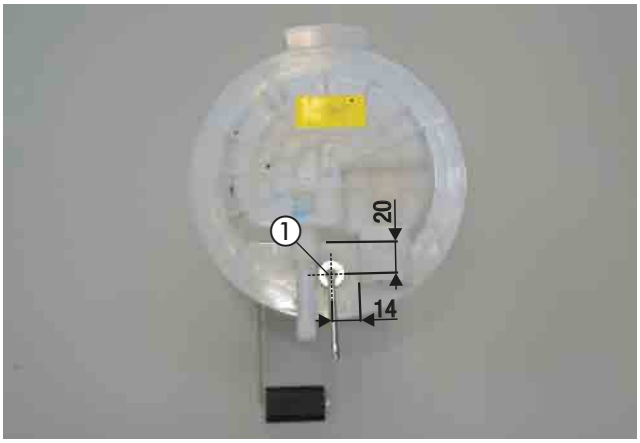


Fig. 38
① Drill an 8 mm Ø hole in the top part of the tank fitting

Introduce the prepared tank extractor through the hole, align as shown and screw firmly with the M8 nut and a B8 body washer from below.

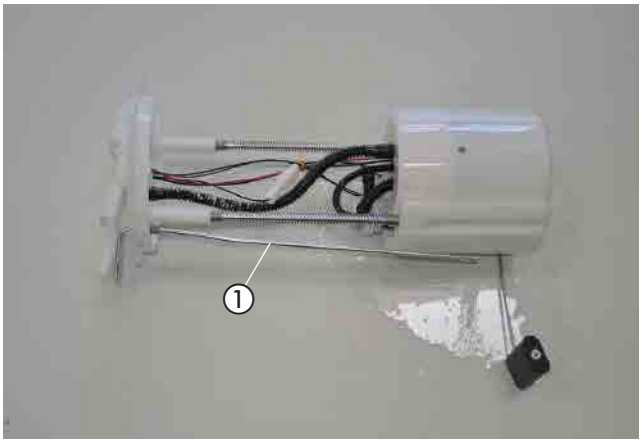


Fig. 39
① Mount tank extractor

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

Insert the tank fitting back into the tank and fasten with the locking ring; ensure the seal fits properly.

At the intake connection of the fuel tank extractor, connect the fuel pipe (intake line) with the 3.5 x 3 mm Ø fuel hose.

Take the fuel pipe (intake line) in front of the tank and fasten with cable ties.
Re-install the fuel tank.

PLEASE NOTE!
Secure all connection points with clamps.



Fig. 40
① Connect fuel pipe (intake line)
② Route fuel pipe (intake line)

4 INSTALLATION

In vehicles with type 2 tank fitting

Remove the fuel tank according to the manufacturer's instructions. Dismantle the tank fitting, disconnect the plug-in connection and the fuel line from the tank fitting.

Drill an 8 mm Ø hole in the top part of the tank fitting with the dimensions shown.

CAUTION!
Make sure no impurities enter the tank when drilling the tank fitting.

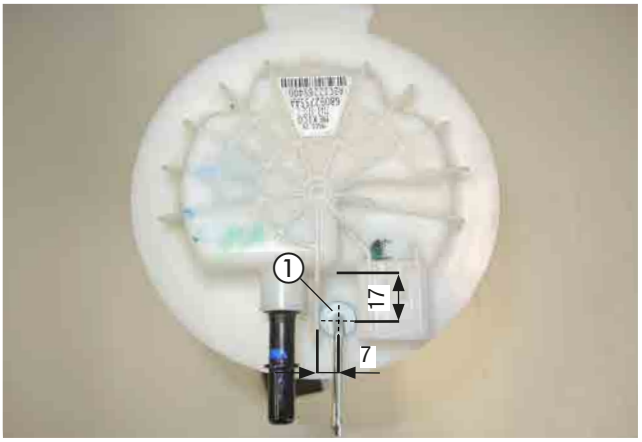


Fig. 41
① Drill an 8 mm Ø hole in the top part of the tank fitting

Introduce the prepared tank extractor through the hole, align as shown and screw firmly with the M8 nut and a B8 body washer from below.

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

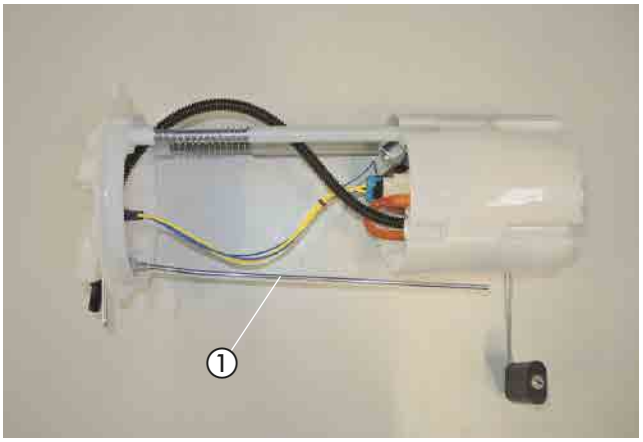


Fig. 42
① Mount tank extractor

Insert the tank fitting back into the tank and fasten with the locking ring; ensure the seal fits properly.

At the intake connection of the fuel tank extractor, connect the fuel pipe (intake line) with the 3.5 x 3 mm Ø fuel hose.

Take the fuel pipe (intake line) in front of the tank and fasten with cable ties.
Re-install the fuel tank.

PLEASE NOTE!
Secure all connection points with clamps.



Fig. 43
① Connect fuel pipe (intake line)
② Route fuel pipe (intake line)

4 INSTALLATION

LAYING THE FUEL PIPE
(see Figs. 44 to 46)

Fasten the metering pump cable of the main cable loom to the fuel pipe (delivery line) using insulating tape.

Mount the fuel pipe (delivery line) with the 4.5/3.5 mm Ø adapter to the fuel connection of the heater.

Plug in the connector of the main cable harness and the power supply cable loom to the heater.

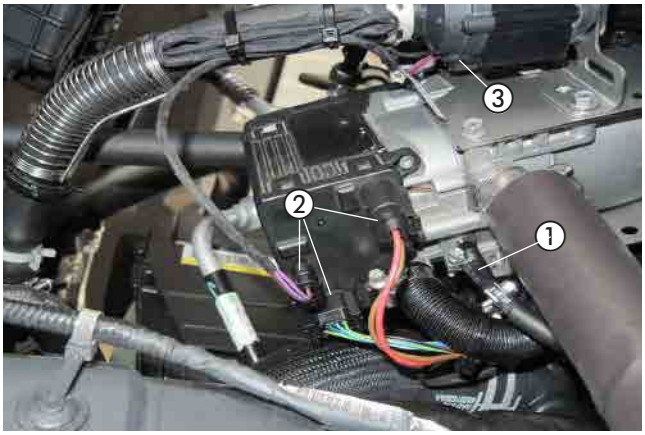


Fig. 44
① Mount fuel pipe (delivery line) with 4.5/3.5 mm Ø adapter
② Plug in electrical connections at heater
③ Connect water pump cable loom

Take the fuel pipe (delivery line) together with the metering pump cable behind the insulation mat at the engine partition to the left side of the vehicle.

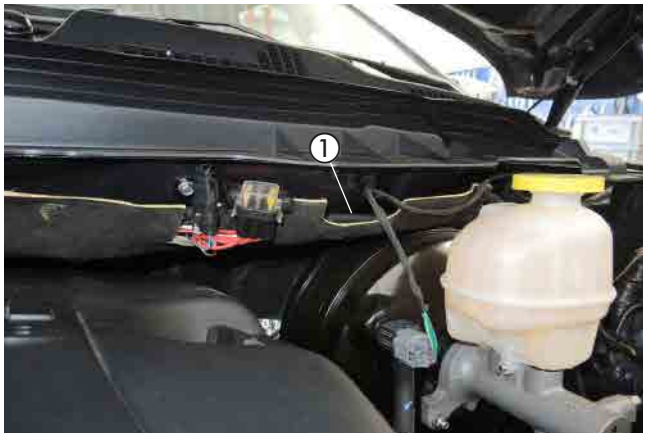


Fig. 45
① Route fuel pipe (delivery line)

Take the fuel pipe (delivery line) together with the metering pump cable along the vehicle's cable loom to the installation position of the metering pump at the left vehicle underbody.

⚠ CAUTION!
When laying fuel lines, always ensure they are at an adequate distance from hot vehicle and heater parts.

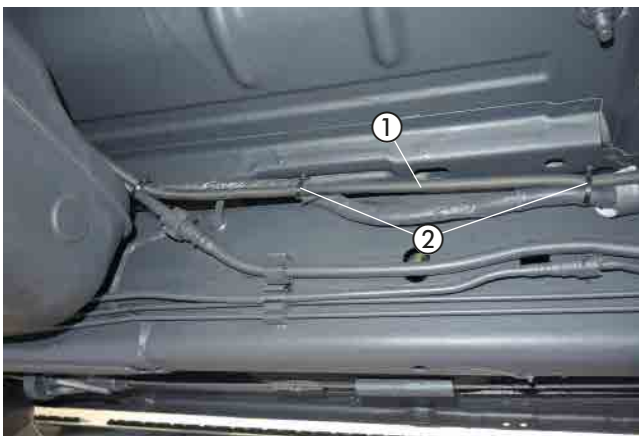


Fig. 46
① Route fuel pipe (delivery line)
② Cable ties

4 INSTALLATION

INSTALL AND CONNECT THE METERING PUMP
(see Figs. 47 and 48)

In vehicles with short wheelbase

Fasten the premounted metering pump to the existing stud bolt on the left underbody side, using an M6 nut.
Ensure it is installed with at least a 15° rising gradient on the pressure side. The discharge end points forwards.

Route the fuel pipe (intake line) from the tank extractor to the metering pump and connect with the 3.5 x 3 mm Ø fuel hose to the intake connection of the metering pump.
Connect the fuel pipe (delivery line) from the heater to the 3.5 x 3 mm Ø fuel hose at the discharge end of the metering pump.
Connect the connector to the metering pump.

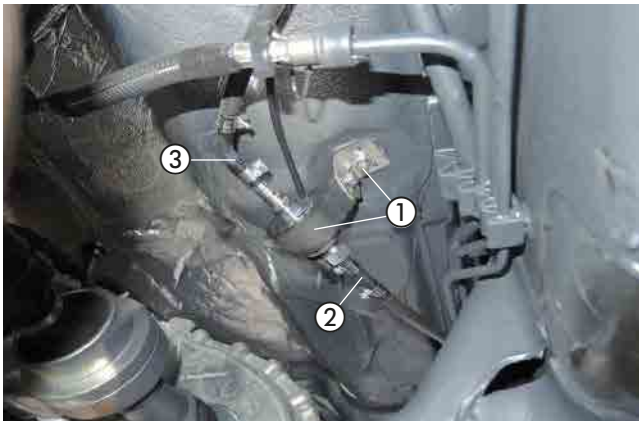


Fig. 47
① Install and connect the metering pump
② Metering pump intake end
③ Metering pump discharge end

In vehicles with long wheelbase

Fasten the premounted metering pump to the existing stud bolt on the left underbody side, using an M6 nut.
Ensure it is installed with at least a 15° rising gradient on the pressure side. The discharge end points forwards.

Route the fuel pipe (intake line) from the tank extractor to the metering pump and connect with the 3.5 x 3 mm Ø fuel hose to the intake connection of the metering pump.
Connect the fuel pipe (delivery line) from the heater to the 3.5 x 3 mm Ø fuel hose at the discharge end of the metering pump.
Connect the connector to the metering pump.

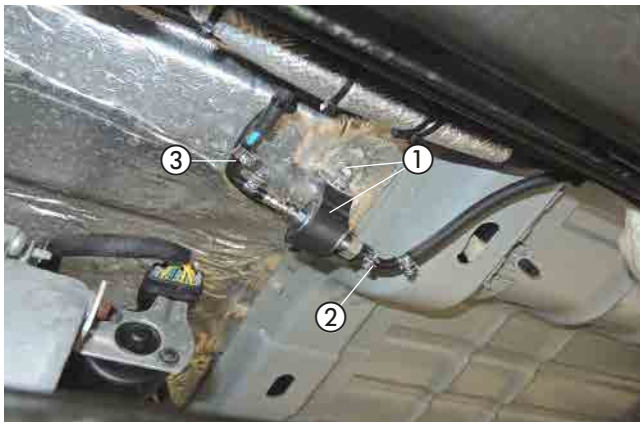


Fig. 48
① Install and connect the metering pump
② Metering pump intake end
③ Metering pump discharge end

⚠ CAUTION!
Use a sharp knife to cut the fuel pipe to length.
Secure all hose connections with hose clips.

4 INSTALLATION

INSTALL FUSE HOLDER
(see Fig. 49)

Mount the prepared holder with fuse block to the existing hole in the wiper pan using an M6 x 12 screw.



Fig. 49
① Fasten premounted holder with fuse block to existing hole in the wiper pan

CABLE LAYING
(see Fig. 50)

Take the vehicle interior cable loom consisting of:
- 4 mm² ws/rt and 1 mm² sw/rt cable
- 3-wire control unit cable loom
- 4-pin fan control box cable loom

through the vehicle cable grommet on the right side of the engine partition into the interior of the vehicle.

⚠ CAUTION!
When laying the cable looms, ensure they are at an adequate distance from hot vehicle and heater parts.
Use cable ties to fix the cable looms in suitable places.



Fig. 50
① Vehicle cable grommet

POWER SUPPLY
(see Fig. 51)

Route the 4 mm² rt positive cable to the positive terminal of the battery and connect with cable lug A6.

Route the 2.5 mm² br earth cable to the negative terminal of the battery and connect with the A6 cable lug.

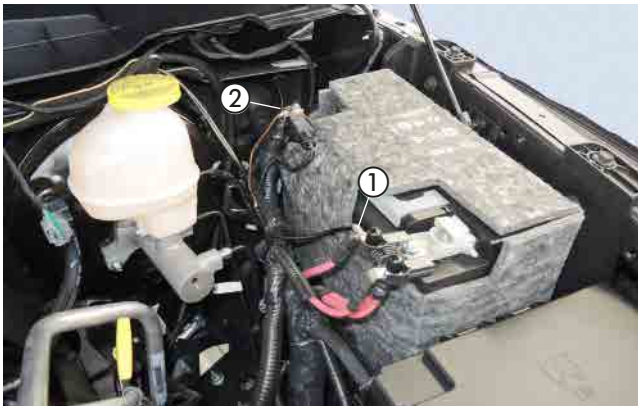


Fig. 51
① Connect positive cable 4 mm² rt
② Connect 2.5 mm² br earth cable

4 INSTALLATION

1st generation manual aircon

FAN CONTROL
(see Figs. 52 to 57)

At the prepared fan relay block, crimp a plug-in contact to the 4 mm² ws/rt cable from the vehicle interior cable loom and insert in the vacant slot (87) of the fan relay.

Fasten a plug-in contact to the 0.5 mm² sw/rt cable from the vehicle interior cable loom,
push on the receptacle housing and connect to the 0.5 mm² sw/rt cable from the fan relay.

Insert the fan and the isolating relay in the respective connector block.

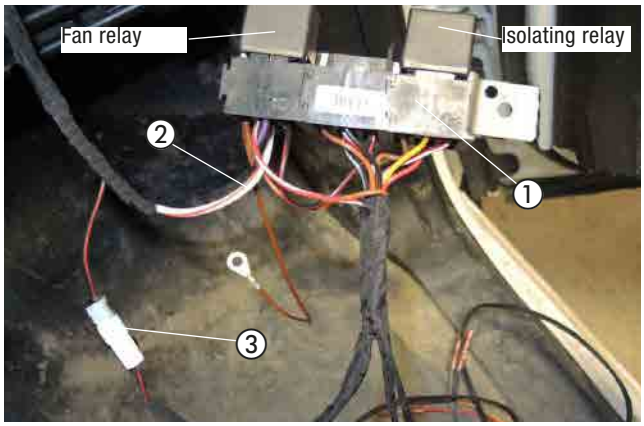


Fig. 52
① Prepared fan relay block
② Insert 4 mm² ws/rt cable
③ Connect 0.5 mm² sw/rt cable

View of fan relay block from below.

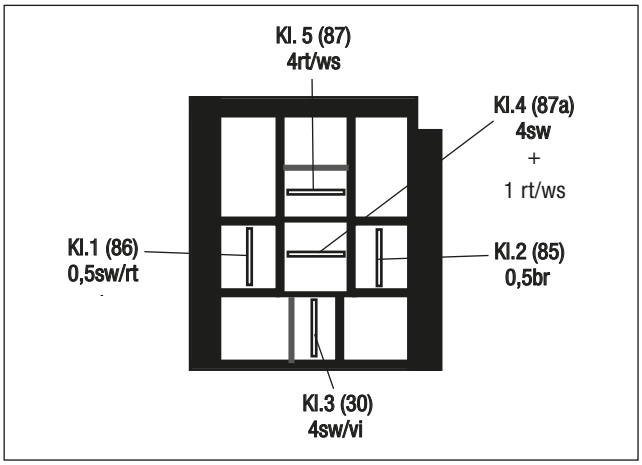


Fig. 53

The fan control is located on the passenger's side at the 2-pin white connector of the fan motor.

Route the “fan control” cable loom into the passenger footwell.

Disconnect the 4 mm² bl cable (pin 2) at the 2-pin white connector and integrate the 4 mm² sw and 4 mm² sw/vi cables using two butt-type connectors as shown in the circuit diagram.

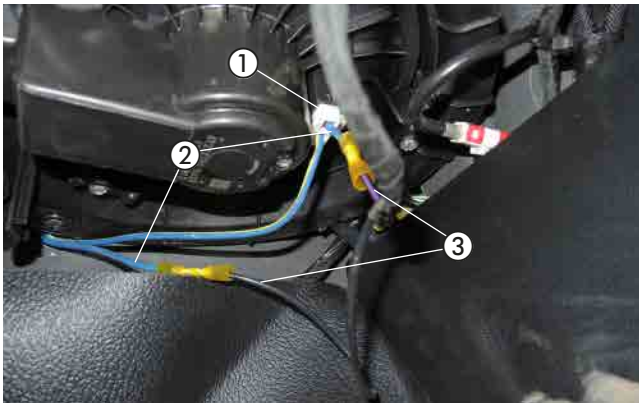


Fig. 54
① 2-pin white connector
② Disconnect 4 mm² bl cable (pin 2)
③ Insert 4 mm² sw and 4 mm² sw/vi cables

4 INSTALLATION

Mount the premounted holder with fan and isolating relay together with the 0.5 mm² br earth cable to the existing hole in the supporting strut on the right-hand side of the instrument panel using an M6 x 12 screw and an M6 nut.

Insulate and tie back the 1 mm² sw and 1 sw/sw mm² cable from the holder with the fan and isolating relay.

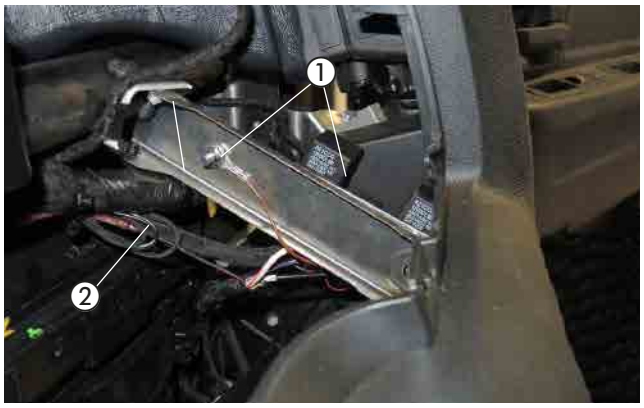


Fig. 55
① Mount holder with fan and isolating relay and the 0.5 mm² gr earth cable
② Tie back 1 mm² sw and 1 mm² sw/ws cable

Disconnect the 0.5 mm² rt cable (pin 1) from the 24-pin connector of the aircon control.

Integrate the 1 mm² rt cable and the 1 mm² ge cable from the holder with the fan and isolating relay using a red butt-type connector in each case as shown in the circuit diagram.

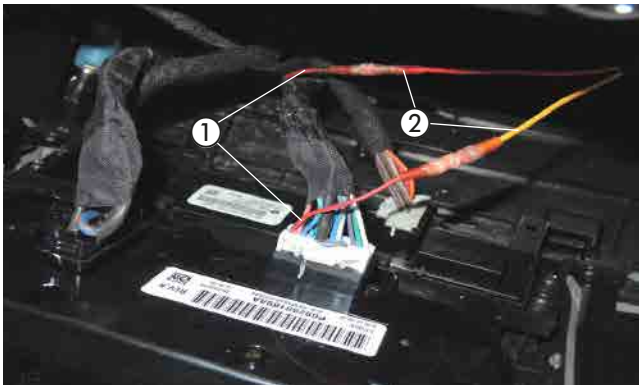
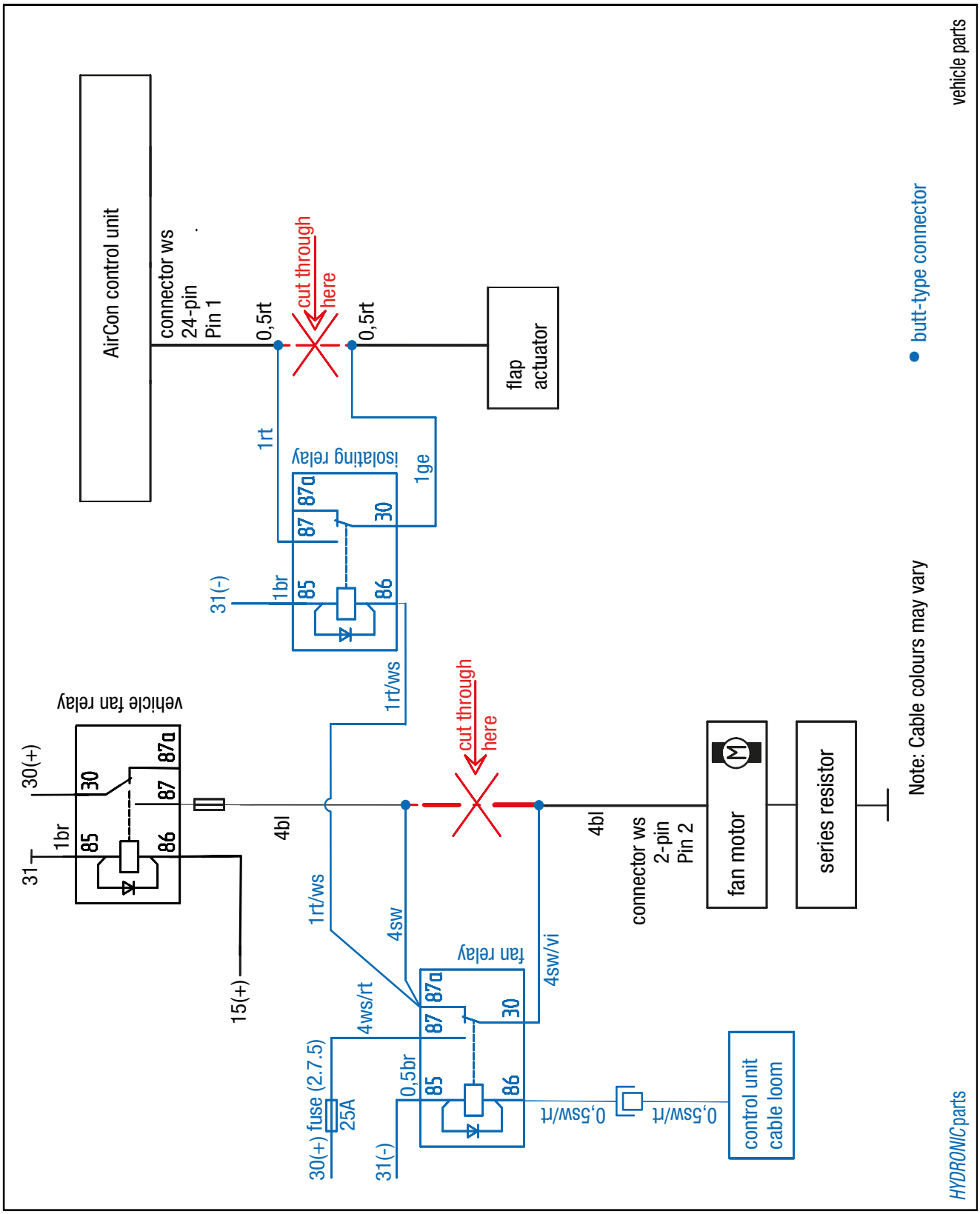


Fig. 56
① Disconnect 0.5 mm² rt cable
② Insert 1 mm² rt cable and 1 mm² ge cable

4 INSTALLATION



	ws	sw	rt	gn	br	ge	gr	or
D	weiß	schwarz	rot	grün	braun	gelb	grau	orange
GB	white	black	red	green	brown	yellow	grey	orange

Fig. 57

4 INSTALLATION

1st generation automatic aircon

FAN CONTROL
(see Figs. 58 to 64)

At the prepared fan relay block, crimp a plug-in contact to the 4 mm² ws/rt cable from the vehicle interior cable loom and insert in the vacant slot (87) of the fan relay.

Fasten a plug-in contact to the 0.5 mm² sw/rt cable from the vehicle interior cable loom,
push on the receptacle housing and connect to the 0.5 mm² sw/rt cable from the fan relay.

Insert the fan and the isolating relay and the IPCU module in the respective connector block.

View of fan relay block from below.

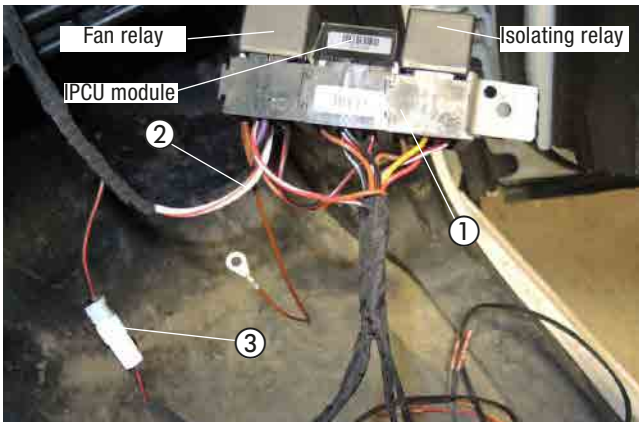


Fig. 58
① Prepared fan relay block
② Insert 4 mm² ws/rt cable
③ Connect 0.5 mm² sw/rt cable

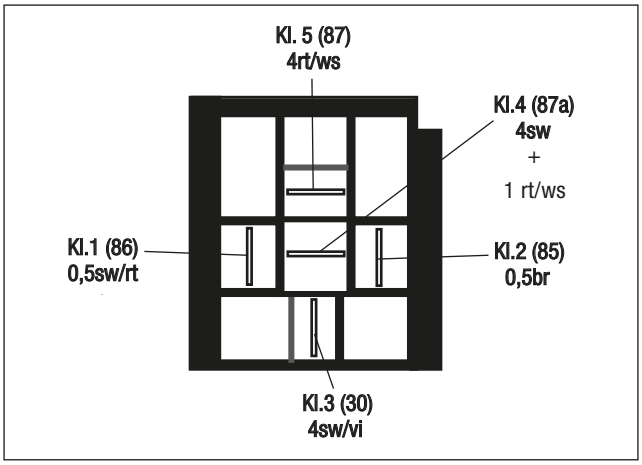


Fig. 59

Mount the premounted holder with fan, IPCU module and isolating relay together with the 0.5 mm² br earth cable to the existing hole in the supporting strut on the right-hand side of the instrument panel using an M6 x 12 screw and an M6 nut.

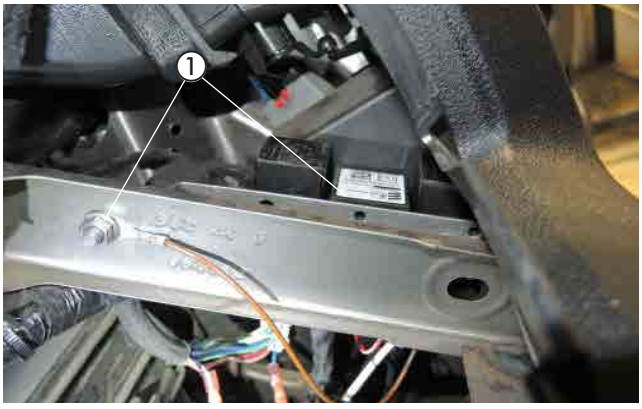


Fig. 60
① Mount holder with fan, IPCU module and isolating relay and the 0.5 mm² gr earth cable

4 INSTALLATION

The fan control is located on the passenger's side at the 2-pin white connector of the fan motor and at the 4-pin black connector of the fan control.
Take the “fan” cable loom into the passenger's footwell. Remove the yellow butt-type connectors from the two 4 mm² sw and 4 mm² sw/vi cables. Affix a tab receptacle housing in each case. Push on a receptacle housing and connect with a Y-line splitter in each case.

Disconnect the 4 mm² bl cable (pin 2) at the white 2-pin connector. Affix a tab receptacle housing in each case. Push on a receptacle housing and connect with the two Y-line splitters as shown.
Disconnect the 2.5 mm² bl cable (pin 3) at the white 4-pin connector. Affix a tab receptacle housing in each case. Push on a receptacle housing and connect with the two Y-line splitters as shown.

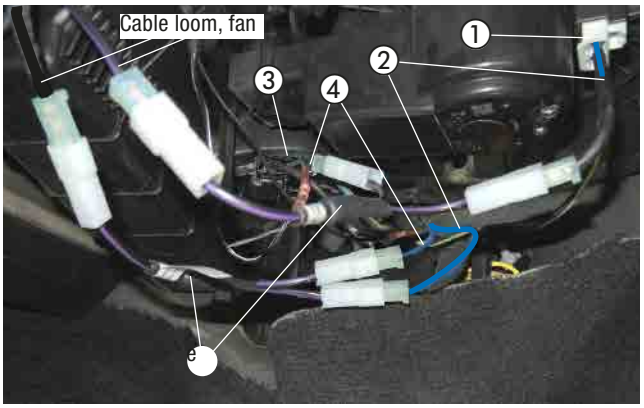


Fig. 61
① 2-pin white connector
② Disconnect 4 mm² bl cable (pin 2)
③ 4-pin black connector
④ Disconnect 2.5 mm² bl cable (pin 3)
⑤ Integrate 2x Y-line splitters

At the black 4-pin connector from the fan control, disconnect the 0,5 mm² bl cable (pin 2) and insert the 1 mm² sw and 1 mm² sw/ws cables from the IPCU module block using two butt-type rt connectors as shown in the circuit diagram.

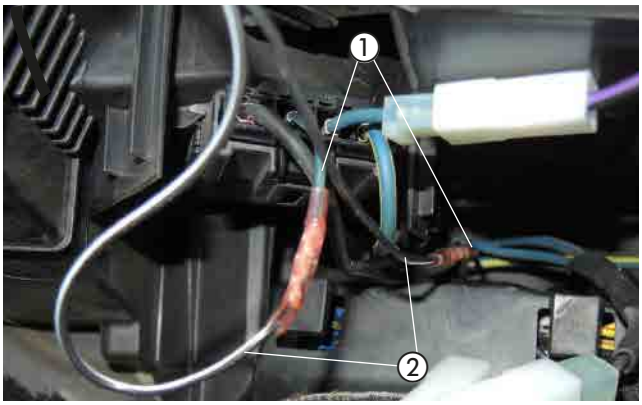


Fig. 62
① Disconnect 0.5 mm² bl cable (pin 2)
② Integrate 1 mm2 sw and 1 mm2 sw/ws cable

At the black 24-pin connector from the A/C amplifier, disconnect the 0.5 mm² b/bl cable (pin 5) and integrate the 1 mm² rt and 1 mm² ge cables from the isolating relay block using two butt-type rt connectors as shown in the circuit diagram.

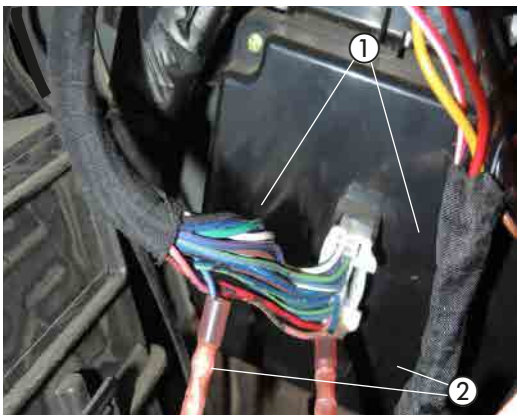
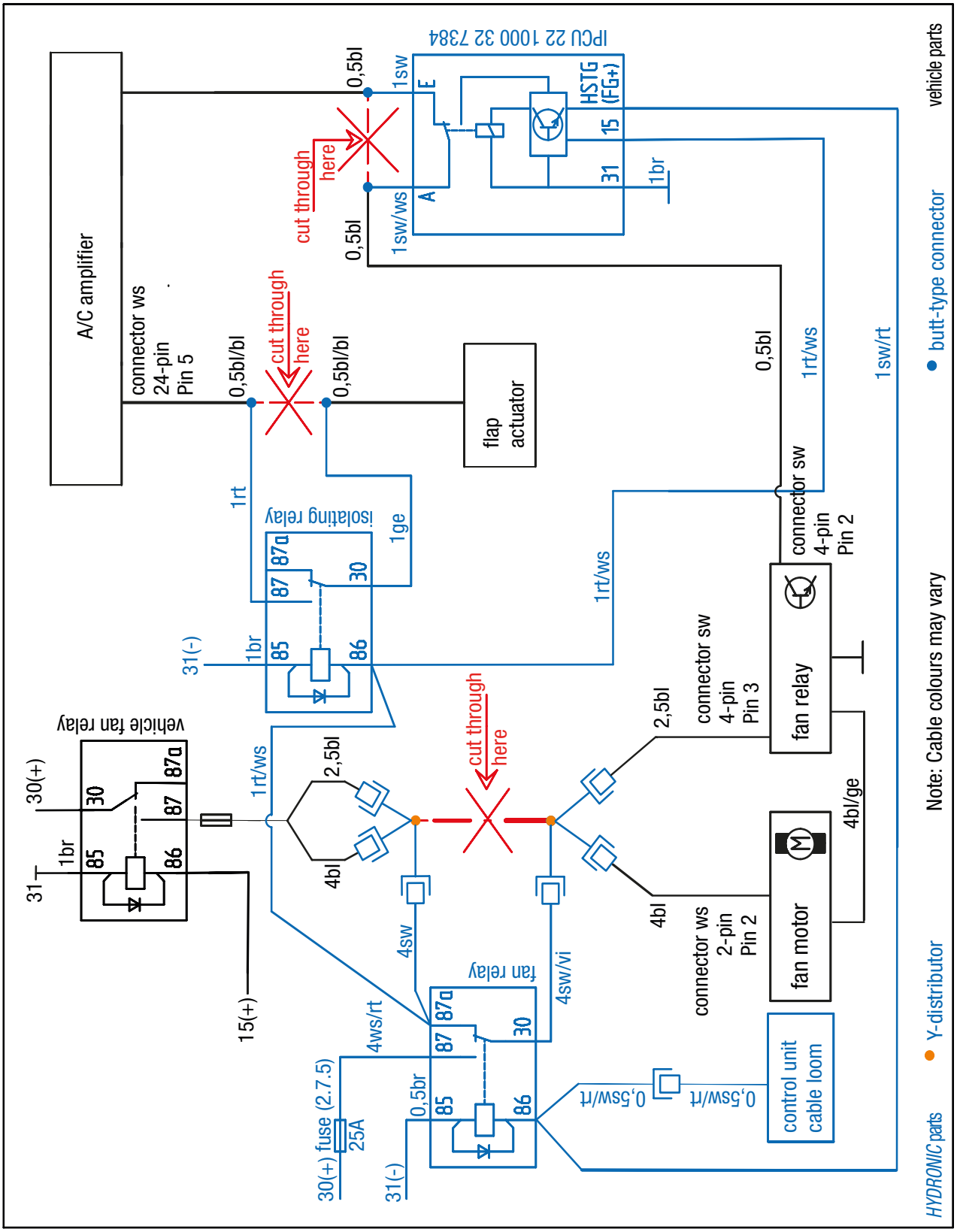


Fig. 63
① Disconnect 0.5 mm² bl/bl cable (pin 24)
② Integrate 1 mm2 rt and 1 mm2 ge cables

4 INSTALLATION



	ws	sw	rt	gn	br	ge	gr	or
D	weiß	schwarz	rot	grün	braun	gelb	grau	orange
GB	white	black	red	green	brown	yellow	grey	orange

Fig. 64

4 INSTALLATION

2nd generation manual aircon and 2nd generation automatic aircon

FAN CONTROL
(see Figs. 65 to 70)

At the prepared fan relay block, crimp a plug-in contact to the 4 mm² ws/rt cable from the vehicle interior cable loom and insert in the vacant slot (87) of the fan relay.

Fasten a plug-in contact to the 0.5 mm² sw/rt cable from the vehicle interior cable loom. Push on a receptacle housing and connect with the 0.5 mm² sw/rt cable from the fan relay.

Insert the fan, IPCU module and the isolating relay in the respective connector block.

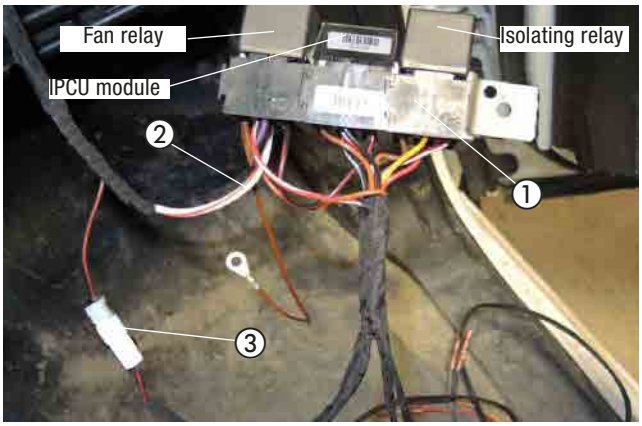


Fig. 65
① Prepared fan relay block
② Insert 4 mm² ws/rt cable
③ Connect 0.5 mm² sw/rt cable

View of fan relay block from below.

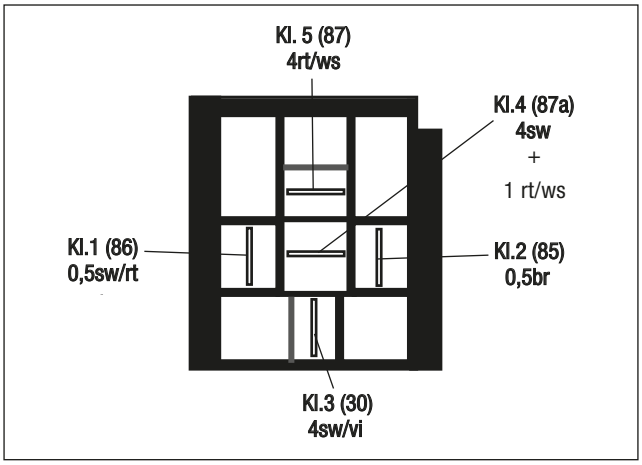


Fig. 66

Mount the premounted holder with fan, IPCU module and isolating relay together with the 0.5 mm² br earth cable to the existing hole in the supporting strut on the right-hand side of the instrument panel using an M6 x 12 screw and an M6 nut.

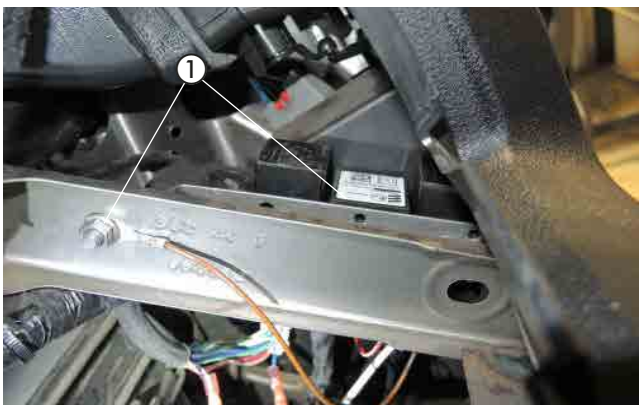


Fig. 67
① Mount holder with fan, IPCU module and isolating relay and the 0.5 mm² gr earth cable

4 INSTALLATION

The fan control is located on the passenger's side at the 3-pin white connector of the fan motor.

Route the “fan control” cable loom into the passenger footwell.

Disconnect the 4 mm² bl cable (pin 3) at the 3-pin white connector from the fan and integrate the 4 mm² sw and 4 mm² sw/vi cables using two butt-type connectors ge as shown in the circuit diagram.
At the white 3-pin connector from the fan, disconnect the 0,5 mm² bl/bl cable (pin 2) and insert the 1 mm² sw and 1 mm² sw/ws cables from the IPCU module block using two butt-type rt connectors as shown in the circuit diagram.

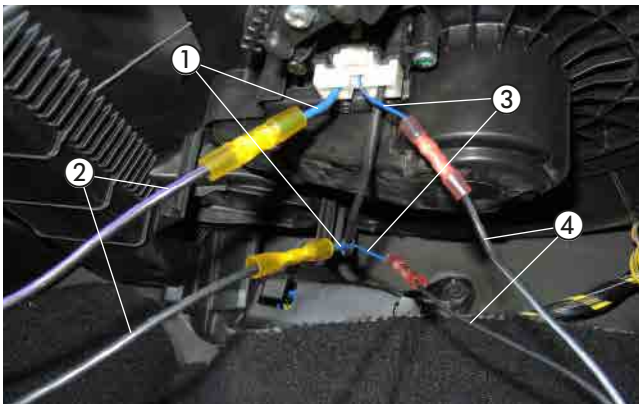


Fig. 68
① Disconnect 4 mm² bl cable (pin 3)
② Insert 4 mm² sw and 4 mm² sw/vi cables
③ Disconnect 0.5 mm² bl/bl cable (pin 2)
④ Integrate 1 mm2 sw and 1 mm2 sw/ws cable

At the black 24-pin connector from the A/C amplifier, disconnect the 0.5 mm² b/bl cable (pin 5) and integrate the 1 mm² rt and 1 mm² ge cables from the isolating relay block using two butt-type rt connectors as shown in the circuit diagram.

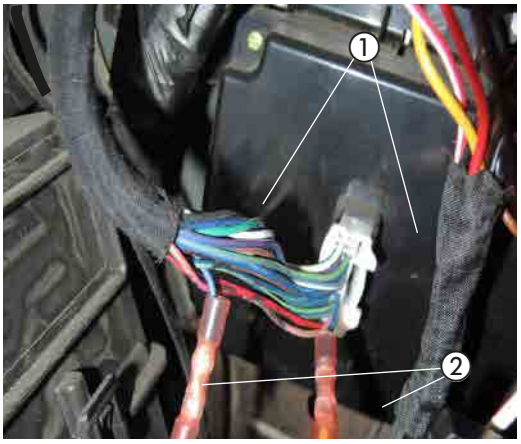


Fig. 69
① Disconnect 0.5 mm² bl/bl cable (pin 24)
② Integrate 1 mm2 rt and 1 mm2 ge cables

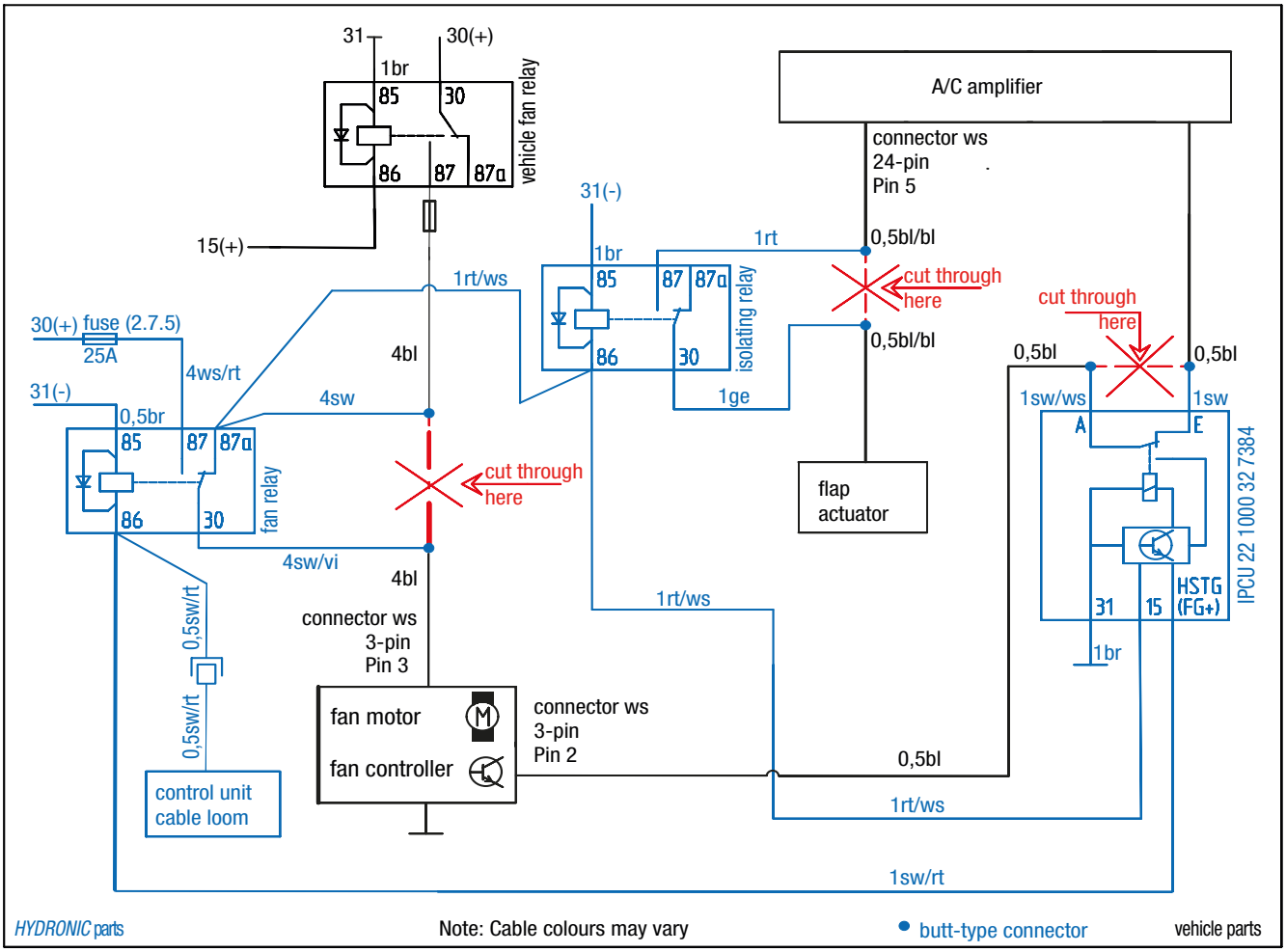


Fig. 70

	ws	sw	rt	gn	br	ge	gr	or
D	weiß	schwarz	rot	grün	braun	gelb	grau	orange
GB	white	black	red	green	brown	yellow	grey	orange

4 INSTALLATION

INSTALL EASYSTART TIMER
(Alternative suggestion - consult with the customer)
(see Fig. 71)

The EasyStart Timer is installed according to the “EasyStart Timer” installation instructions.

Mount the EasyStart timer to the trim moulding of the instrument panel on the left next to the steering column as shown.



Fig. 71
① Install EasyStart timer

5 FOLLOWING INSTALLATION

ADHERE THE “REFUEL” LABEL
(see Fig. 72)

Adhere the “Refuel” label inside the fuel tank flap as shown.



Fig. 72
① Adhere the “Refuel” label

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.
- Restore all the vehicle's programmed settings (radio, window lift, etc.).
- Fill the cooling system, start the engine, vent the cooling system and check for leaks, top up any missing coolant liquid up to the marking (arrow).
- Adhere the duplicate nameplate in a clearly visible position near the heater or at a suitable point on the B-pillar.
- Adhere the “Refuel” label in the fuel tank flap or at a suitable point on the B-pillar.
- 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 unit and place the operating instructions in the glove compartment.
- Place the leaflet for the customer in the glove compartment or hand over personally to the customer.

⚠ CAUTION!
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 unit.
  See Operating Instructions - Control Unit.

6 PARTS OVERVIEW



Fig. 73

INITIAL COMMISSIONING (EASYSTART TIMER)

INITIAL COMMISSIONING

For initial commissioning, the following steps must be carried out one after the other.

APPLYING THE OPERATING VOLTAGE
The operating voltage is applied by inserting the fuse A5 into the fuse holder.
After applying the operating voltage INIT appears in the display.



Note: The timer checks which type of heater is connected and configures the Menu bar (automatic detection).

SET THE TIME

Use the ◄ or ► button to set the hours.



Press the ▭ button to confirm the setting.

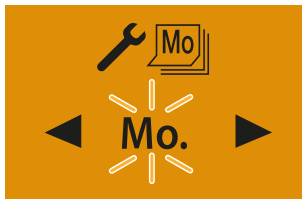
Use the ◄ or ► button to set the minutes.



Press the ▭ button to confirm the setting.

SET WEEKDAY

Use the ◄ or ► button to set the weekday.

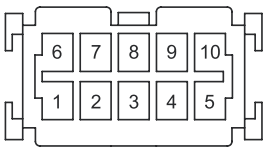


Press the ▭ button to confirm the setting.
Then configure the EasyStart Timer.

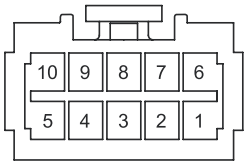
PIN CONFIGURATION (EASYSTART TIMER)

CHAMBER ASSIGNMENT OF CONNECTOR HOUSING (ITEM 4) AND BUSH HOUSING (ITEM 5)

(Assignment seen from the cable inlet side)



-XS10 (Pos. 4)



-XB10 (Pos. 5)

-XS10 / -XB10 CONNECTOR PIN ASSIGNMENT TABLE

Pin	Signal	Cable colour	Cross section
1	Terminal 30	red	0.35 mm^2
2	Terminal 58	grey / black	0.22 mm^2
3	Terminal 31	brown	0.35 mm^2
4	Diagnostics	blue / white	0.22 mm^2
5	DAT cable	violet	0.22 mm^2
6	S^+	yellow	0.35 mm^2
7	ADR	brown / yellow	0.22 mm^2
8	ADR	white / red	0.22 mm^2
9	Temp (-)	brown / white	0.22 mm^2
10	Temp (+)	grey	0.22 mm^2

DIAGNOSTICS

EASYSTART TIMER / REMOTE+ WORKSHOP MENU

The service functions listed in the following can be displayed, read out and / or changed via the vehicle workshop menu.

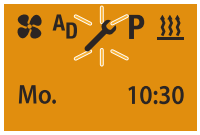
NOTE!

- A reset (remove 5A fuse) is necessary to activate some functions. To do this, not and follow the relevant note under “Comments” of the “Service functions overview”.
- To correct the fault, refer to the heater's repair instructions.

OPENING THE VEHICLE WORKSHOP MENU

Display ON, the Start display appears.

Use the ◄ or ► button to select the 🔧 symbol in the Menu bar.



Confirm the SETTINGS menu item by pressing the ▭ button.



Press the ▭ LONGPRESS button for longer than 5 sec.; the Workshop menu is displayed.

Press the ◄ or ► button to select the required function, e.g. »2: Select temperature unit, °C or °F« and confirm by pressing the ▭ button.

Use the ◄ or ► button to select the temperature units °C or °F.

Press the ▭ button to confirm the selection.

Press the ▭ button to exit the workshop menu.

SERVICE FUNCTIONS OVERVIEW

Menu item	Service function	Comments
1.1.1:	Heater 1 – display current fault	The heater must be switched on to detect current faults. “no diag” is displayed if no diagnostics cable is connected.
1.1.2:	Heater 2 – display current fault	The heater must be switched on to detect current faults. “no diag” is displayed if no diagnostics cable is connected.
1.2.1:	Heater 1 – read out fault memory F1 – F5	Display fault memory F1 – F5 with error code, e.g.: F1: 12. “no diag” is displayed if no diagnostics cable is connected.
1.2.2:	Heater 2 – read out fault memory F1 – F5	Display fault memory F1 – F5 with error code, e.g.: F1: 12. “no diag” is displayed if no diagnostics cable is connected.
1.3.1:	Heater 1 – delete fault memory F1 – F5	Select the delete → function by pressing the ▭ button, the DEL display appears, flashing, press the ▭ button to confirm. “no diag” is displayed if no diagnostics cable is connected.
1.3.2:	Heater 2 – delete fault memory F1 – F5	Select the delete → function by pressing the ▭ button, the DEL display appears, flashing, press the ▭ button to confirm. “no diag” is displayed if no diagnostics cable is connected.
1.4.1:	Heater 1 – read out operating hours counter	Operating time is displayed in minutes. “no diag” is displayed if no diagnostics cable is connected.
1.4.2:	Heater 2 – read out operating hours counter	Operating time is displayed in minutes. “no diag” is displayed if no diagnostics cable is connected.

LEAFLET FOR THE CUSTOMER

NOTES FOR CUSTOMERS
FOR VEHICLES WITH 1ST GENERATION MANUAL AIRCON
(see Fig. 1)



Fig. 1
① Set temperature control to maximum
② Set air system controller to the windscreen
③ Set the controller for the fan control to stage 2

NOTES FOR CUSTOMERS
FOR VEHICLES WITH 1ST GENERATION AUTOMATIC AIRCON
(see Fig. 2)



Fig. 2
① Set temperature control to maximum
② Set air system button to the windscreen
③ The fan speed does not need to be pre-set

NOTES FOR CUSTOMERS
FOR VEHICLES WITH 2ND GENERATION MANUAL AIRCON
(see Fig. 3)



Fig. 3
① Set temperature control to maximum
② Set air system button to the windscreen
③ The fan speed does not need to be pre-set

NOTES FOR CUSTOMERS
FOR VEHICLES WITH 2ND GENERATION AUTOMATIC AIRCON
(see Fig. 4)



Fig. 4
① Set temperature control to maximum
② Set air system button to the windscreen
③ The fan speed does not need to be pre-set

RECOMMENDATION!

- Switch the pre-heater on at least once a month for about 10 minutes, also in the summer months!
  This will ensure that it works properly during the season!
- We recommend adjusting the heating time to the driving time: Driving time > heating time.

PLEASE NOTE!

In vehicles with interior monitoring, this must be disabled for the heating process.
Please refer to the vehicle operating instructions for disabling instructions.

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