

DOMETIC S2 D2L AND M2 D4L / D4R CARAVAN , MOTORHOME AND R.V. INSTALLATION GUIDE AIRTRONIC S2 D2L AND AIRTRONIC M2 D4L / D4R



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1 INTRODUCTION

CONCEPT OF THIS MANUAL

This manual aims to support the service company installing the heater and to provide the user with all important information about the heater. It also refers to and should be used in conjunction with the technical manual as supplied with the AS2 D2L and AM2 D4L heaters.

Part No. 25.2720.90.0001 (CD with heater).

The manual has been divided into chapters to make it easier to find the corresponding information quickly.

The Eberspächer Airtronic x2 diesel fuelled heaters are suitable for installation into a Caravan application by using a separate diesel fuel tank and a Motorhome using the vehicles own diesel tank.

It also requires a DC power supply usually taken from the leisure batteries. The Airtronic can be used when stationary and on the move. There are 2.2kW (D2L) and 4kW (D4L / R) output heaters that have variable heat outputs, this allows them to automatically modulate down to 850 and 900 Watts respectively. Once installed all you need to do is set your preferred temperature and let the heater take care of the rest. It will heat the van up and then modulate down and up to maintain the selected temperature.

For information regarding use in cold climate conditions or high altitude please refer to the later pages of this manual.

EasyStart Pro



Airtronic D2L / D4L / D4R Heaters



1 INTRODUCTION

INTENDED USE

Range of application of the heater

The air heater operating independently of an engine is intended for installation in the following vehicles:

- All types of vehicles (max. 8 seats + driver's seat) and their trailers;
- Construction machinery;
- Agricultural machinery;
- Boats, ships and yachts (only diesel heaters);
- Camper vans.

Intended use of the heater

- Pre-heating, de-misting windows;
- Heating and keeping the following warm:
 - Driver and working cabs, ship's cabins;
 - Freight compartments;
 - Passenger and crew compartments;
 - Camper vans.

NOTE

Only use and operate the heater within the scope of the intended use stated by the manufacturer and in compliance with the documentation enclosed with each heater.

NON-INTENDED USE

On account of its functional purpose, the heater is not approved for the following applications:

- Long-term continuous operation, e.g. for heating:
 - Residential rooms;
 - Garages;
 - Work huts, weekend homes and hunting lodges;
 - Houseboats, etc.
- Heating or drying of:
 - Living creatures (people or animals) by blowing hot air directly at them;
 - Objects;
 - Blowing hot air into containers.

ATTENTION!

Risk of undercooling!

- The heater does not replace a temperature-monitored and controlled heating system, which ensures that a constant temperature is maintained and thus ensures survival in adverse weather conditions. It is not suitable for the continuous heating of vehicle interiors at low outdoor temperatures.

- Use, operation and deployment of the product outside the intended use stated by the manufacturer can cause considerable injuries to people and/or damage to machinery and property.
- ➔ Only use the product for the stipulated purpose and in the approved area of use.

DISCLAIMER

The manufacturer is not liable for damage caused by improper use or incorrect operation. Failure to comply with the safety instructions makes the guarantee null and void and this leads to the exclusion of any liability of Eberspächer Climate Control Systems GmbH & Co. KG.

TARGET GROUPS OF THIS DOCUMENT

This document is aimed at the following target groups:

Service company

The "service company" target group includes all service companies trained by Eberspächer that purchase heaters and air-conditioners and their control units, accessories and spare parts from Eberspächer or the trade and install, repair or service these on behalf of an end user.

Installation company

The "installation company" target group includes all companies trained by Eberspächer that purchase heaters and air-conditioners and their control units, accessories and spare parts from Eberspächer and install, repair or service these on behalf of another company (usually the automotive / body manufacturer).

End user

The "end user" target group includes all natural persons who operate a heater or air conditioner with the help of a control unit, regardless of whether they act as a consumer or as part of their job.

DUTY TO INSTRUCT OF THE TARGET GROUPS

Each named target group must fulfil their duty to instruct in full. The duty to instruct relates to the passing on of technical documents. Technical documents are all documents published by Eberspächer for the installation, operation, use, maintenance or repair of heaters and air conditioners and their control units, accessories and spare parts.

1 INTRODUCTION

NOTE

- If not explicitly defined in the following, the technical documents can be passed on printed out as hard copies, on a data carrier or by internet download.
- Current technical documents can be downloaded from the Eberspächer website.

Responsibility of the installation company

The installation company must pass on the following technical documents to the company that employs them, and it in turn is obliged to pass on the documents to the end user:

- Technical description.
- Operating instructions.

Responsibility of the service company

The service company must pass on the following technical documents to the end user, even if they employ a subcontractor:



- Technical description.
- Operating instructions.

NOTE

The named target groups must ensure that the operating instructions produced by the manufacturer for the product are made available to the end user in printed form and in their own national language. If necessary this can be a short form of the detailed operating instructions, which are additionally enclosed with the product on a data carrier or are available to download from the internet.

STATUTORY REGULATIONS

The Federal Motor Transport Authority has issued an approval for a component according to ECE-R122 and ECE-R10 for the heater for installation in motor vehicles, with the following official type-approval markings noted on the heater's nameplate.

Heater type:	ECE type approval mark:	
Airtronic S 2		122 R – 000523 10 R – 058206
Airtronic M 2		122 R – 000477 10 R – 057672

REGULATION!

Excerpt from ECE regulation No. 122 of the European Parliament and the Council!

General regulations

Operating state display

- A clearly visible operating display in the user's field of vision must indicate when the heater is switched on and off.

Regulations concerning installation in the vehicle

Scope

- Subject to differing stipulations in the following section, combustion heaters must be installed according to the regulations 5.3 of ECE-R122.
- It is assumed that Class 0 vehicles with heaters for liquid fuel conform to the regulations 5.3 of ECE-R122.

Arrangement of the heater

- Parts of the structure and other components near the heater must be protected from excessive heat exposure and possible fuel or oil contamination.
- The combustion heater shall not constitute a risk of fire, even in the case of overheating. This requirement shall be deemed to be met 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.
- The heater must not be installed in the passenger compartment of class M2 and M3 vehicles. However, a heater in a hermetically sealed enclosure which also complies with the aforementioned conditions may be used.
- The nameplate, or a duplicate, must be positioned so that it can be easily read when the heater is installed in the vehicle.
- Every reasonable precaution should be taken in positioning the heater to minimize the risk of injury and damage to personal property.

Fuel supply

- The fuel filler neck must not be located in the passenger compartment and must be sealed with a properly closing cover to prevent any fuel leaks.
- In heaters for liquid fuel where the heater fuel supply is separate from the vehicle fuel supply, the type of fuel and filler neck must be clearly marked.
- A warning sign is to be attached to the filler neck informing that the heater must be switched off before refuelling.

Exhaust system

The exhaust outlet must be arranged so as to prevent any penetration of exhaust fumes into the vehicle interior through the ventilation system, warm air intakes or open windows.

Combustion air intake

- The air for the heater's combustion chamber may not be drawn in from the vehicle's passenger compartment.
- The air intake must be arranged or protected in such a way that it cannot be blocked by other objects.

1 INTRODUCTION

Hot air intake

- The hot air supply must consist of fresh air or circulated air and must be drawn in from a clean area, which cannot be contaminated by exhaust fumes from the engine, the combustion heater or any other source in the vehicle.
- The intake pipe must be protected by a grille or other suitable means.

Hot air outlet

- The hot air pipes within the vehicle must be arranged or protected in such a way that there is no risk of injury or damage if they are touched.
- If there is a risk of the driver and/or passengers touching the heater or hot air system parts during normal vehicle operation, protection against contact must be fitted in these places.
- The air outlet must be arranged or protected in such a way that it cannot be blocked by any objects.

Automatic control of the heating system

If the engine fails, the heating system must be switched off automatically and the fuel supply stopped within 5 seconds. The heater may remain in operation if a manual device has already been activated.

NOTE

- Compliance with the statutory regulations, the additional regulations and the safety instructions is prerequisite for guarantee and liability claims. Failure to comply with the statutory regulations and safety instructions and incorrect repairs, even if original spare parts are used, make the guarantee null and void and this results in the exclusion of any liability whatsoever of Eberspächer Climate Control Systems GmbH & Co. KG.
- Subsequent installation of the heater must comply with these installation instructions.
- The statutory regulations are binding and must also be observed in countries which do not have any special regulations.
- When installing the heater in vehicles not subject to the German Road Traffic Licensing Regulations (StVZO), for example ships, observe the respective specially valid regulations and installation instructions.
- When installing the heater in special vehicles, comply with the regulations applying to such vehicles.
- Further installation requirements are printed in the relevant sections of these installation instructions.

ADDITIONAL REGULATIONS

REGULATION!

Additional regulations for certain vehicles named in Directive 94 / 55 / EC of the ADR Agreement!

Scope

This annex applies to vehicles to which the special provisions of Directive 94 / 55 / EC of the ADR Agreement for combustion heaters and their installation apply.

Definition of terms

The vehicle designations "EX / II", "EX / III", "AT", "FL" and "OX" according to Chapter 9.1 of the ADR Agreement Directive are used for the purposes of this annex.

Technical specifications

General regulations (vehicles EX / II, EX / III, AT, FL and OX)

Avoid heating and ignition

Combustion heaters and their exhaust pipes must be designed, arranged, protected or covered to avoid any unacceptable risk of heating or ignition of the load. This requirement is met if the fuel tank and the exhaust system of the heater comply with the requirements described in the "fuel tank" and "exhaust system and exhaust pipe layout" sections. Compliance with these requirements must be checked on the complete vehicle.

Fuel tank

Fuel tanks for supply of the heater must conform to the following regulations:

- In the event of a leakage, the fuel must be drained to the floor without coming into contact with any hot vehicle parts or the vehicle's load.
- Fuel tanks which contain petrol must be equipped with a flame arrester or hermetically sealed cap at the filler neck.

Exhaust system and exhaust pipe layout

The exhaust system and the exhaust pipes must be laid or protected so that dangerous heating or ignition of the vehicle's load cannot occur. Parts of the exhaust system located directly under the fuel tank (diesel fuel) must be positioned at a distance of at least 100 mm from the tank or be protected by a heat shield.

Switch on combustion heater

The combustion heater may only be switched on manually. Automatic switching on via a programmable switch is not allowed.

EX / II and EX / III vehicles

Combustion heaters for gaseous fuel are not allowed.

1 INTRODUCTION

FL vehicles

Combustion heaters must at least be able to be taken out of service by the procedures named in the following:

- Switching off manually in the driver's cab.
- Shutdown of the vehicle's engine; in this case the heater may be switched back on manually by the vehicle driver.
- Starting up an installed fuel pump in the vehicle for transported dangerous goods.

After running of the combustion heater

After running of the switched off combustion heater is permitted. In the cases named in the "FL vehicles" section under letters b) and c), the supply of combustion air must be interrupted by suitable means following an after-running period of 40 seconds maximum. Only combustion heaters whose heat exchangers are verifiably not damaged by the reduced after-running time of 40 seconds beyond their usual operating period may be used.

NOTE

- Compliance with the statutory regulations, the additional regulations and the safety instructions is prerequisite for guarantee and liability claims.
 - Failure to comply with the statutory regulations and safety instructions and incorrect repairs, even if original spare parts are used, make the guarantee null and void and exclude any liability whatsoever of Eberspächer Climate Control Systems GmbH & Co. KG.
- Subsequent installation of this heater must comply with these installation instructions. The statutory regulations are binding and must also be observed in countries which do not have any special regulations.
- When installing the heater in vehicles not subject to the German Road Traffic Licensing Regulations (StVZO), for example ships, the respective specially valid regulations and installation instructions must be observed.
- Installation of the heater in special vehicles must comply with the regulations applying to such vehicles.
- Further installation requirements are printed in the relevant sections of these installation instructions.

HAZARD INFORMATION AND SAFETY INSTRUCTIONS FOR INSTALLATION AND OPERATION

DANGER!

Risk of injury, fire and poisoning!

- Only start up the heater if the maintenance flap is closed and the outlet hood is mounted in position.
- Do not open the maintenance flap during operation.
- Disconnect the vehicle battery before starting any kind of work.
- Before working on the heater, switch the heater off and let all hot parts cool down.
- Do not start up the heater in enclosed spaces, e.g. garage or multi-storey car park.
- Always adjust hot air outlets so that they cannot blow hot air directly at living creatures (people, animals) or objects sensitive to temperature (loose and / or fastened).

CAUTION!

Safety instructions for installation and operation!

- Mark the year of initial commissioning on the nameplate.
- Replace the heat exchanger of air heaters, a component subject to high thermal loads, 10 years after the initial commissioning of the heater. In addition, enter the installation date on the "original spare part" plate enclosed with the heat exchanger. Then affix the plate next to the nameplate on the heater.
- Have the heater installed only by a service partner authorised by the manufacturer according to the instructions in this manual, possibly according to special installation recommendations; the same applies to any repairs to be carried out in the case of repairs or guarantee claims.
- Only use the control units approved by the manufacturer to operate the heater. Use of other control units can cause malfunctions.
- Repairs by unauthorised third parties and / or not using original spare parts are dangerous and therefore not allowed. They result in expiry of the type-approval of the heater; consequently, when installed in motor vehicles they can cause expiry of the vehicle operating licence.
- The following measures are not allowed:
 - Changes to heating-relevant components.
 - Use of third party parts not approved by the manufacturer.
 - Deviations from the statutory, safety and / or functionally relevant requirements stated in this document regarding installation and/or operation. This applies in particular to the electrical wiring, fuel supply, combustion air system and exhaust system.

1 INTRODUCTION

- Only use original accessories and original spare parts for installation and repairs.
- When carrying out electric welding on the vehicle, disconnect the positive cable at the battery and attach it to ground to protect the control box.
- It is not permitted to operate the heater where there are readily flammable materials (e.g. dry grass, leaves, paper, etc.) in the area of the exhaust system or where ignitable fumes and dust can form, e.g. near a:
 - Fuel depot;
 - Coal depot;
 - Wood depot;
 - Grain storage and similar.
- Switch off the heater before refuelling.
- If the heater is installed in a safety housing or similar, the heater's installation box must not be used as storage space and must be kept clear. In particular, do not store or transport fuel canisters, oil cans, spray cans, gas cartridges, fire extinguishers, cleaning rags, items of clothing, paper, etc. on or next to the heater.
- Replace defective fuses only with fuses with the specified fuse rating.
- If fuel escapes from the heater's fuel system (leak), arrange for immediate repair of the damage by an Eberspächer service partner.
- Do not cancel the after-running of the heater prematurely, e.g. by pressing the battery isolating switch, except for an emergency stop.

NOTE

- All deviations from the safety requirements for installation and operation are to be agreed with the manufacturer in writing before they are implemented.
 - Following installation, attach the "Switch off heater before refuelling!" sticker near the tank filler neck.
-

ACCIDENT PREVENTION

Observe the general accident prevention regulations and the relevant workshop and operating safety instructions.

Please read carefully the following instructions, these have been compiled to assist you with every aspect of installing your heater. Special attention is required to the Safety or Caution areas, which are found at the end of each section.

To ensure maximum performance from your heater and for your own safety, please adhere to the following instructions closely. Be aware that in the unlikely event of a heater failure during the warranty period, that warranty may be rejected if the heater is not installed in accordance with these instructions.

Additional operational, technical and safety information, specific to the model of heater you are installing, is provided in the heater technical description and operating instructions manuals that are included within the heater packaging. Please ensure you have this for reference before and during your installation.

When installing the heater, for your own safety, please use all necessary personal protection/safety equipment where required.

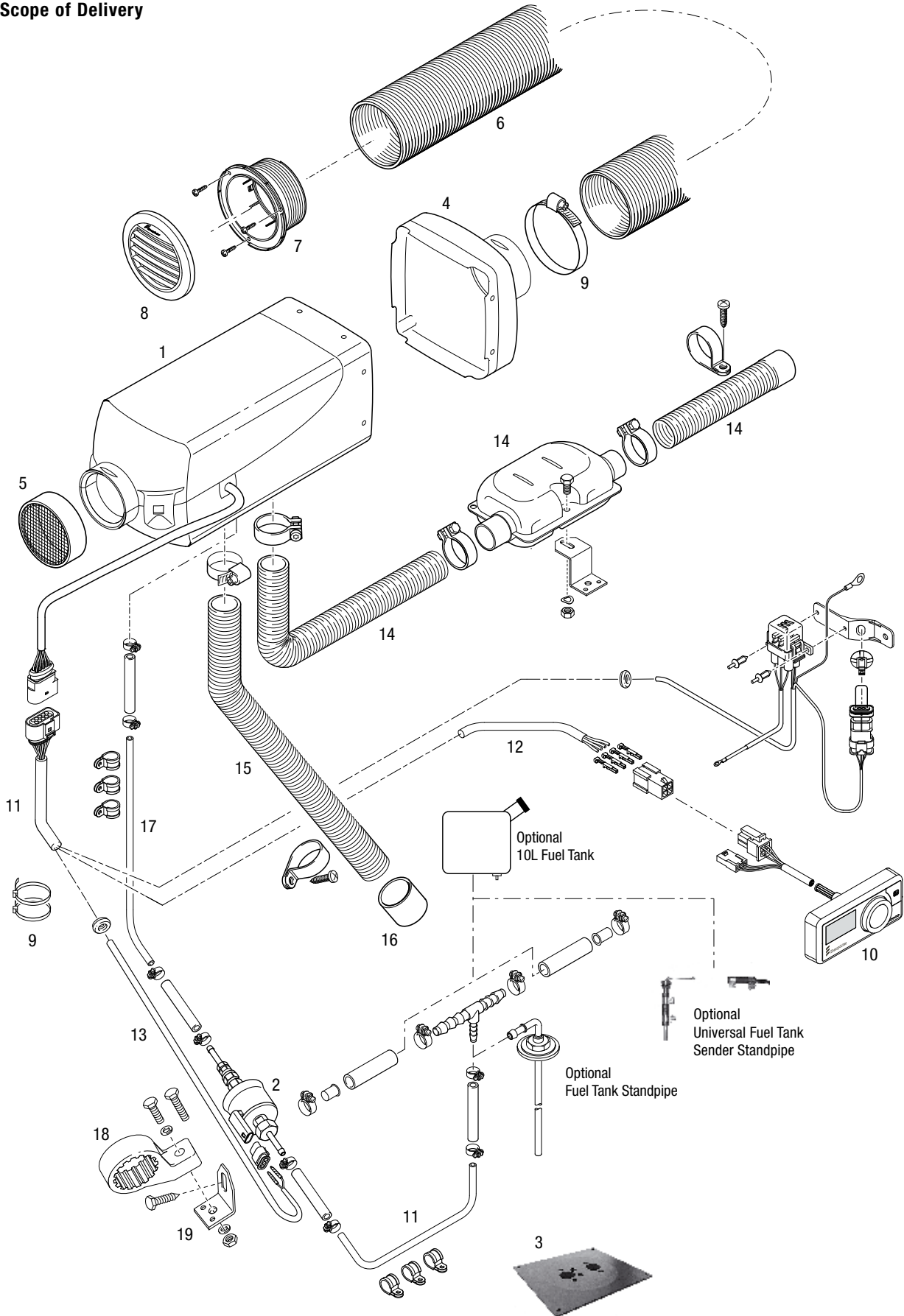
2 PRODUCT INFORMATION

29.2112.00.0025 Dometic D2L 12V Universal (Single Outlet)

Item No.	Part Number	Description	Quantity
HEATER AND MOUNTING			
1 and 2	25.2721.05.0000	Heater AS2 D2L 12V	1
3	29.2100.01.9611	Plate Floor ATD4 50mm Flange C	1
DUCTING			
4	22.1000.01.0016	Hood Straight 60mm D2	1
5	25.1688.80.0600	Guard – AT D2 and D1LC Intake 60mm	1
6	29.2100.10.1016	Duct 60mm APK 2mtr. Length Pre-Cut A	1
7	22.1000.01.0035	Fitting Flange Universal 60mm Black	2
8	22.1000.01.0044	Outlet 50 / 60mm Flat 30mm Dia. Black Logo	2
9	10.2064.05.0070	Clip – 50-70mm WORM Duct 60mm	2
ELECTRICAL			
10	22.1000.35.2200	EasyStart Pro Timer TP7.1	1
11	29.2100.24.2003	Loom Short Ax2 Dometic + Fuses C	1
12	29.2100.18.1154	Loom Switch Can Ax2 inc. Resistor 8M A	1
13	29.2100.18.1122	Loom FMP EXT AX2 6M A	1
	29.2100.01.8003	Housing REC 2W AMP	1
	29.2100.01.8014	Term Rec AMP 180384-1 4-6mm	2
C/AIR AND EXHAUST			
14	29.2160.01.0023	D87/051 Exhaust RV Sub-Kit	1
15	10.2114.21.0000	Ducting – 25mm ID APK for Combustion Air A	0.5m
	10.2064.02.0032	Clip – 20-32mm D3L C/A Hose	1
16	25.1729.89.0002	Sleeve – Combustion Air End	1
FUEL SYSTEM			
17	29.2160.01.0024	D87/051 Fuel System RV Sub-Kit	1
18	22.1000.50.0300	FMP Holder for Noise Reduction	1
19	20.1348.03.0002	Bracket – Angle for FM Pump	1
ANCILLARIES			
	81.1206.03.0168	Nut M6 x 1.0 Z+P	7
	81.1206.02.0039	Washer M6 Spring Z+P	7
	29.2100.01.9331	Screw – M6 x 25mm Hex Head Z+P	1
	29.2100.02.0024	Washer M6 Penny	1
	29.2100.01.9039	Screw No8 x 3/8 Pan Pozi AB”	8
	20.1280.09.0103	Grommet – 9/16”	1
	108.10.325	Screw No10 x 1/2 Pan Pozi AB”	3
	81.1804.08.0099	Cable Tie 200 x 4 BLK	10
	29.2100.20.1050	Manual Dometic RV Ax2 Operation and Service A	1
	29.2100.02.0357	Warranty Folder D	1
	29.2100.20.1057	Instruction NEW FMP Info in BOM	1
	29.2100.17.1145	Label RCM Tick Mark Australia A	2
		Affix to Heater Body and E/S Pro Box	1

2 PRODUCT INFORMATION

Scope of Delivery



2 PRODUCT INFORMATION

TECHNICAL DATA

Airtronic S2 D2L

Heater Type		Airtronic			
Heater		Airtronic S2			
Version		D2L			
Heating Medium		Air			
Fuel "Fuel Quality" and "Fuel at Low Temperatures" on page 24.		Diesel – standard commercially available (EN 590)			
Control of the Heat Flow		Maximum	Minimum	Off	
Heat Flow (Watt)		2,200	850	–	
Hot Air Throughput Without Back Pressure (kg/h) with Hood 75mm		105	42	13	
Fuel Consumption (l/h)		0.28	0.1	–	
Average Electrical Power Consumption (Watt)		During Operation	31	6	4
		While Starting	≤ 100		
Closed-Circuit Power Consumption		100 µA			
Rated Voltage		12 Volt or 24 Volt			
Operating Range		Approx. 10.5 Volt or Approx. 21 Volt			
Lower Voltage Limit: Undervoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Undervoltage protection response time: 20 seconds ±1			
Upper Voltage Limit: Overvoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Approx. 16 Volt or Approx. 32 Volt Overvoltage protection response time: 20 seconds ±1			
Ambient Temperature	Heater	During Operation	–40°C to +70°C		
		Not in Operation	–40°C to +85°C		
	Metering Pump	During Operation	–40°C to +50°C		
		Not in Operation	–40°C to +125°C		
Hot Air Intake Temperature		Max. +40°C			
Combustion Air Temperature		Max. +50°C			
Interference Suppression		Suppression Class 5 to EN 55025			
Degree of Protection in Accordance with ISO 20653		During Operation	IP5k4k		
		Not in Operation	IP5k6k and IP5k9k		
Weight		Approx. 2.7 kg			
Ventilation Mode		Possible			



ATTENTION!

Safety instructions for technical data!

Failure to comply with the technical data can result in malfunctions.



NOTE

Provided no other values are given, the technical data provided is with the usual tolerances of ±10% at rated voltage, 20°C ambient temperature and reference altitude Esslingen.

2 PRODUCT INFORMATION

Airtronic M2 D4L

Heater Type		Airtronic			
Heater		Airtronic M2			
Version		D4L			
Heating Medium		Air			
Fuel "Fuel Quality" and "Fuel at Low Temperatures" on page 24.		Diesel – standard commercially available (EN 590)			
Control of the Heat Flow		Maximum	Minimum	Off	
Heat flow (watt)		4,000	900	–	
Hot Air Throughput Without Back Pressure (kg/h) with Hood 90mm		180	60	22	
Fuel Consumption (l/h)		0.51	0.11	–	
Average Electrical Power Consumption (watt)		During Operation	42	6	5
		While Starting	≤ 100		
Closed-Circuit Power Consumption		100 µA			
Rated Voltage		12 Volt or 24 Volt			
Operating Range		Approx. 10.5 Volt or Approx. 21 Volt			
Lower Voltage Limit: Undervoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Undervoltage protection response time: 20 seconds ±1			
Upper Voltage Limit: Overvoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Approx. 16 Volt or Approx. 32 Volt Overvoltage protection response time: 20 seconds ±1			
Ambient Temperature	Heater	During Operation	–40°C to +70°C		
		Not in Operation	–40°C to +85°C		
	Metering Pump	During Operation	–40°C to +50°C		
		Not in Operation	–40°C to +125°C		
Hot Air Intake Temperature		Max. +40°C			
Combustion Air Temperature		Max. +50°C			
Interference Suppression		Suppression Class 5 to EN 55025			
Degree of Protection in Accordance with ISO 20653		During Operation	IP5k4k		
		Not in Operation	IP5k6k and IP5k9k		
Weight		Approx. 4.5 kg			
Ventilation Mode		Possible			



ATTENTION!

Safety instructions for technical data!

Failure to comply with the technical data can result in malfunctions.



NOTE

Provided no other values are given, the technical data provided is with the usual tolerances of ±10% at rated voltage, 20°C ambient temperature and reference altitude Esslingen.

2 PRODUCT INFORMATION

Airtronic M2 D4R

Heater Type		Airtronic			
Heater		Airtronic M2			
Version		D4R			
Heating Medium		Air			
Fuel "Fuel Quality" and "Fuel at Low Temperatures" on page 24.		Diesel – standard commercially available (EN 590)			
Control of the Heat Flow		Maximum	Minimum	Off	
Heat Flow (Watt)		4,000	900	–	
Hot Air Throughput Without Back Pressure (kg/h) with Hood 90mm		185	55	22	
Fuel Consumption (l/h)		0.51	0.11	–	
Average Electrical Power Consumption (Watt)		During Operation	65	6	5
		While Starting	≤ 100		
Closed-Circuit Power Consumption		100 µA			
Rated Voltage		12 Volt			
Operating Range		Approx. 10.5 Volt			
Lower Voltage Limit: Undervoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Undervoltage protection response time: 20 seconds ±1			
Upper Voltage Limit: Overvoltage protection installed in the control box switches off the heater on reaching the voltage limit.		Approx. 16 Volt Overvoltage protection response time: 20 seconds ±1			
Ambient Temperature	Heater	During Operation	–40°C to +70°C		
		Not in Operation	–40°C to +85°C		
	Metering Pump	During Operation	–40°C to +50°C		
		Not in Operation	–40°C to +125°C		
Hot Air Intake Temperature		Max. +40°C			
Combustion Air Temperature		Max. +50°C			
Interference Suppression		Suppression Class 5 to EN 55025			
Degree of Protection in Accordance with ISO 20653		During Operation	IP5k4k		
		Not in Operation	IP5k6k and IP5k9k		
Weight		Approx. 4.5 kg			
Ventilation Mode		Possible			



ATTENTION!

Safety instructions for technical data!

Failure to comply with the technical data can result in malfunctions.



NOTE

Provided no other values are given, the technical data provided is with the usual tolerances of ±10% at rated voltage, 20°C ambient temperature and reference altitude Esslingen.

3 INSTALLATION

INSTALLATION AND LOCATION

The heater is to be located within the caravan or R.V., maybe under a bunk space or in cupboard or wardrobe.

The cold intake air is to be routed from within the vehicle either by venting the area the heater is located or via 60mm / 75mm ducting to the intake.

The warm hot air outlet is routed via 60mm / 75mm ducting to a permanently open outlet. A secondary closable outlet maybe fitted.

The exhaust, combustion air and fuel connection must be external and routed to a clean fresh air environment under the vehicle and routed away from the annex.

The electrical circuit diagram must be followed, however the kit contains a plug and play wiring loom. This must not be modified.

Only a suitable size cable is required to be routed from the 12 Volt battery source (6mm auto cable preferred).

The controller should be located approximately 1,500mm above the floor in a position away from external heat sources, such as direct sunlight, heat from the refrigerator unit and away from cold drafts such as vents to the outside.

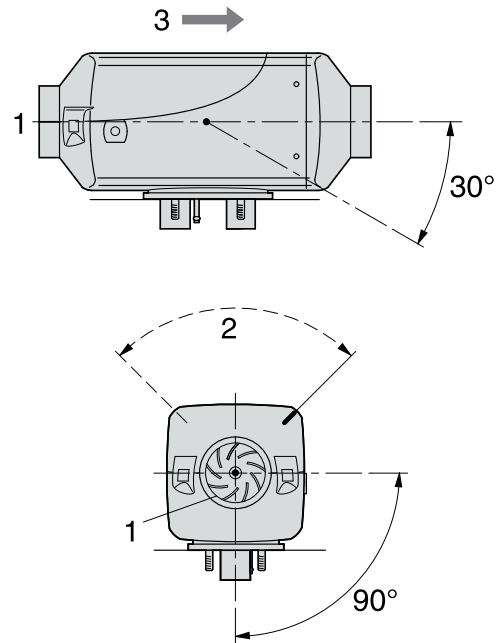
- The regulations and safety instructions to be observed for this chapter are on pages 4 – 8 of the Technical Book.

POSSIBLE INSTALLATION POSITIONS

The heater is preferably installed in the normal position as shown in the drawing.

Depending on the installation conditions, the heater can be tilted by max. 30° (flow direction to the bottom) or turned by max. 90° around its own longitudinal axis (exhaust connection horizontal, glow plug points upwards).

Normal Position Horizontal (Exhaust Connection Downwards) with Tolerable Swivel Range



- 1 – Heater Air Intake Opening (Fan Wheel).
- 2 – Position of the Glow Plug.
- 3 – Direction of Flow.

3 INSTALLATION

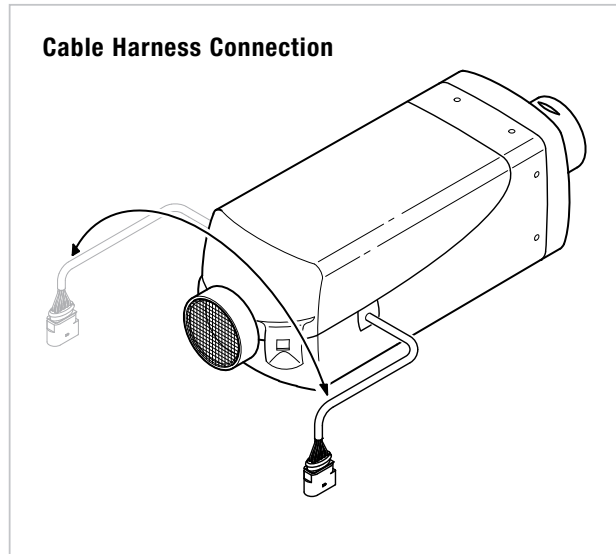
CABLE HARNESS CONNECTION, RIGHT OR LEFT

If necessary, the cable harness connection can be changed over to the other side of the heater. To do so, the controller has to be removed and the lower semi-circular cable harness cover unclipped.

The cable harness can then be rerouted in the controller. Then mount the controller again, position the jacket shell and insert the cable harness bush and the bungs in the corresponding recesses in the lower jacket shell.

In the heating mode, the heater can deviate from the shown normal or maximum installation positions by up to $+15^\circ$ in all directions because of a slanting position of the vehicle, without any impaired functions.

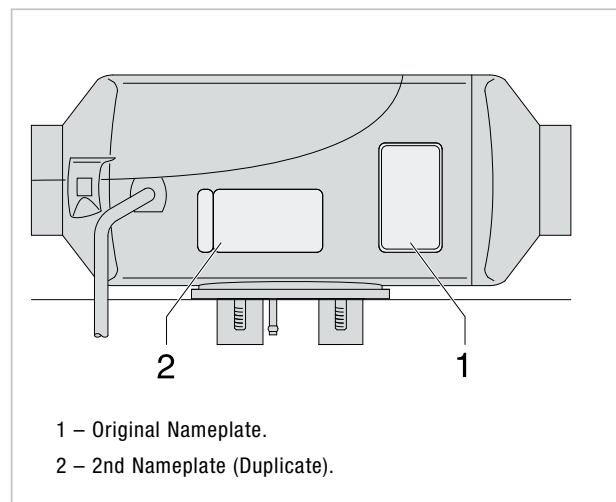
Cable Harness Connection



NAMEPLATE

The nameplate is fastened to the front of the heater. The second nameplate (duplicate) is included in the scope of supply of the heater.

If required, the duplicate nameplate can be adhered in a clearly visible position on the heater or near to the heater.



3 INSTALLATION

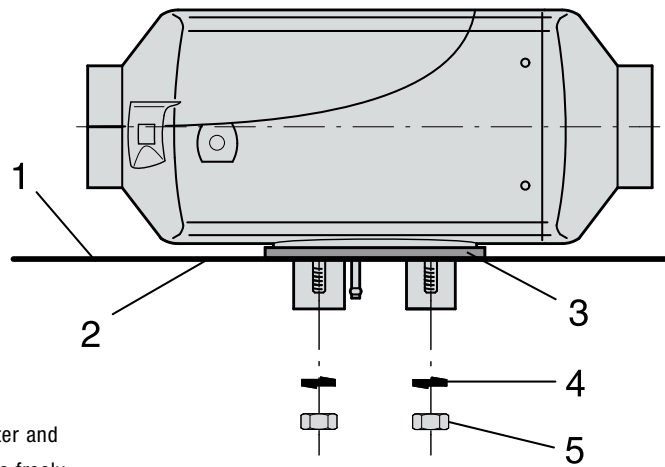
MOUNTING AND FASTENING

Use the supplied floor plate 29.2100.01.9611. This requires a 125mm diameter hole to allow the flange to seal through the floor. It is pre-drilled with the necessary breakthroughs.

Pre-fit the Flange to the Heater Before Placing the Heater in Position



Fastening the Unit on the Vehicle Floor



- 1 – There must be sufficient clearance between the heater and the vehicle floor – also check that the fan wheel runs freely.
- 2 – The mounting surface must be flat and smooth.
- 3 – The flange seal must be mounted.
- 4 – Spring Washer.
- 5 – Hexagon Nut M6 (torque 5 +1Nm).

3 INSTALLATION

HEATER DUCTING



Risk of burning and injuries!

- The hoses of the heater air system and the hot air outlet are to be routed and fastened in such a way that they pose no temperature risk to people, animals or materials sensitive to temperature from radiation / contact or blowing directly. If necessary, a cover is to be fitted to the heater air system or hot air outlet.
- The outflow hood must be fitted on the hot air outflow side.
- A safety grill must be fitted to the heater air intake side and outflow side to prevent any injuries from the heater air fan or burns from the heat exchanger.
- High temperatures occur in the heater ducting system during and after the heater have been working.

This is why it is important to avoid working in the vicinity of the heater air system while the heater is working. In such cases, switch the heater off beforehand and wait until all parts have cooled down completely.

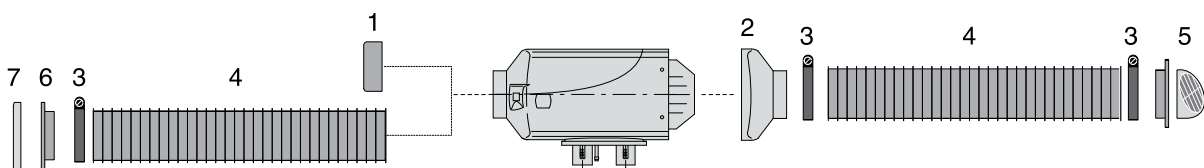
If necessary, wear safety gloves.



CAUTION!

- The heater air intake openings must be arranged in such a way that under normal circumstances, it is not possible for exhaust from a vehicle engine or heater to be drawn into the system, or for the heating air to be contaminated with dust, salt spray, etc.
- For circulating air, position the circulating air intake in such a way that the outflowing hot air cannot be directly drawn in again.
- In the event of possible overheating, it is possible for local hot air temperatures of up to max. 150°C or surface temperatures of up to max. 90°C to occur, immediately before the defect shutdown.
- Therefore only temperature-resistant hot air ducting approved by us must be used for the heater air system.
- When checking the functions, the mean outflow temperature measured after the heater has been running about 10 minutes at approx. 30cm from the outlet should not exceed 110°C (at an intake temperature of approx. 20°C).
- If there is a risk of the driver and passengers touching the heater when the vehicle is being driven normally, a contact protection device must be fitted.

Heater Air Duct System (Example)



- 1 – Intake Guard. 2 – Outlet Hood. 3 – Duct Clip. 4 – Ducting.
5 – Outlet. 6 – 60mm Flange. 7 – Mesh.

3 INSTALLATION

EXHAUST SYSTEM

MOUNTING THE EXHAUST SYSTEM

The installation kits include stainless steel flexible exhaust pipes, inner Ø 24mm, 1,500mm long and 500mm long and an exhaust silencer. The flexible exhaust pipe can be shortened to 20cm or lengthened to a maximum 2m, depending on the installation conditions.

Fasten the exhaust silencer to a suitable position under the caravan / motorhome.

Route the flexible exhaust pipe from the heater to the exhaust silencer and fasten with pipe clips. Use a pipe clip to fix a short exhaust pipe end (with end sleeve) to the exhaust silencer. Route to the offside, not under an opening window or awning area.

Do not route the exhaust gases to the annex side of a caravan or motorhome.

CAUTION!

Safety instructions!

The whole exhaust system gets very hot during and immediately after the heater has been working.

This is the reason why the exhaust system must be installed according to these instructions.

- The exhaust outlet must end in the open air.
- The exhaust pipe must not protrude beyond the lateral limits of the vehicle.
- Install the exhaust pipe sloping slightly downwards. If necessary, make a drain hole approx. Ø 5mm at the lowest point to drain off condensation.
- Important functional parts of the vehicle must not be impaired (keep sufficient clearance).
- Mount the exhaust pipe with sufficient clearance to heat-sensitive parts. Pay particular attention to fuel pipes (plastic or metal), electrical cables and brake hoses etc.
- Exhaust pipes must be fastened safely (recommended spacing of 50cm) to avoid damage from vibrations.
- Route the exhaust system so that the emitted fumes are not drawn in with the combustion air.
- The mouth of the exhaust pipe must not get clogged by dirt and snow.
- The mouth of the exhaust pipe must not point in the direction of travel.
- Always fasten the exhaust silencer to the vehicle.

CAUTION!

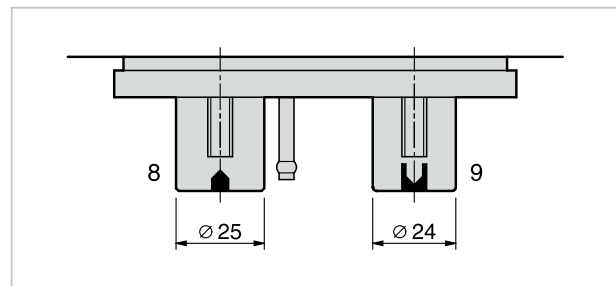
Risk of injuries and burns!

Every type of combustion produces high temperatures and toxic exhaust fumes. The exhaust system must be installed according to these instructions.

- Do not perform any work on the exhaust system while the heater is working.
- Before working on the exhaust system, first switch the heater off and wait until all parts have cooled down completely, wear safety gloves if necessary.
- Do not inhale exhaust fumes.

NOTE

- Comply with the regulations and safety instructions for this chapter on page 4 – 8 (Technical Book).
- When the silencer is fitted, the exhaust end pipe must be shorter than the flexible exhaust pipe between the heater and the exhaust silencer.
- Small arrows indicating the direction of flow have been cast into the fittings to differentiate between the combustion air (8) and the exhaust fittings (9) at the heater, see figure below.



3 INSTALLATION

COMBUSTION AIR INTAKE TUBE

MOUNTING THE COMBUSTION AIR SYSTEM

The installation kit includes a flexible combustion air hose, inner \varnothing 25mm, 500mm long.

If necessary the flexible combustion air hose can be shortened to 20cm. An optional combustion air intake silencer is available.

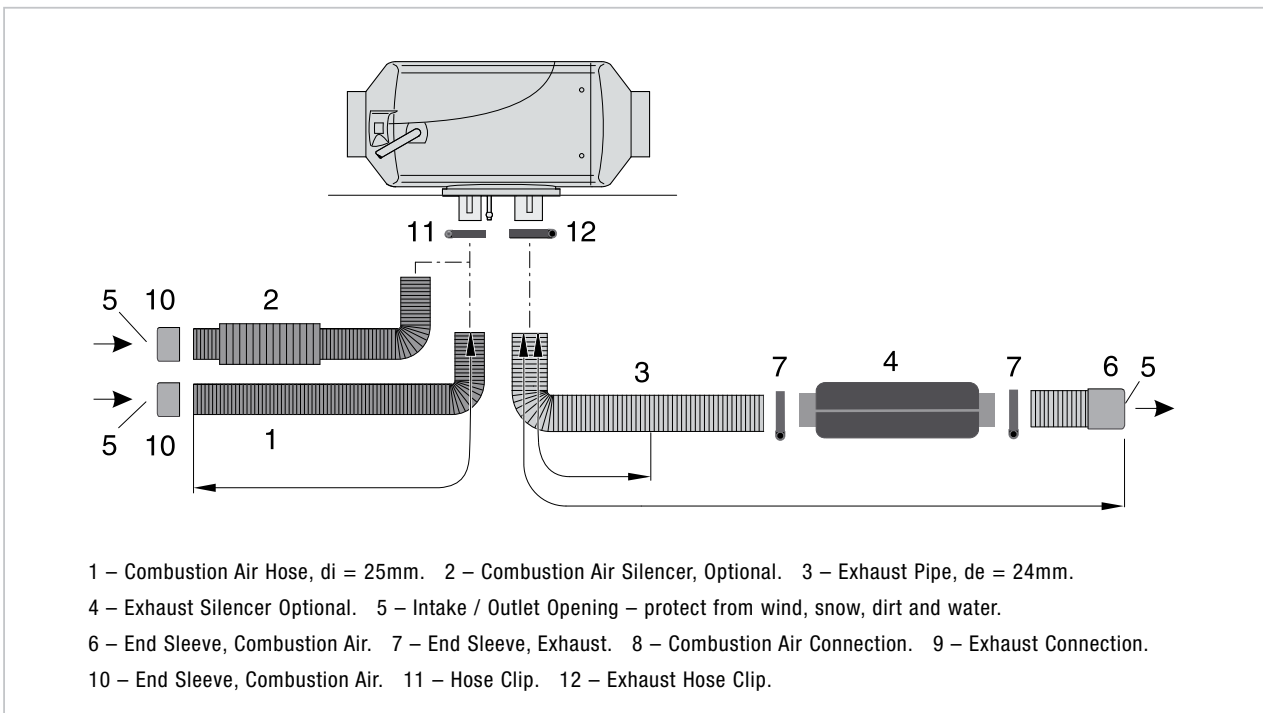
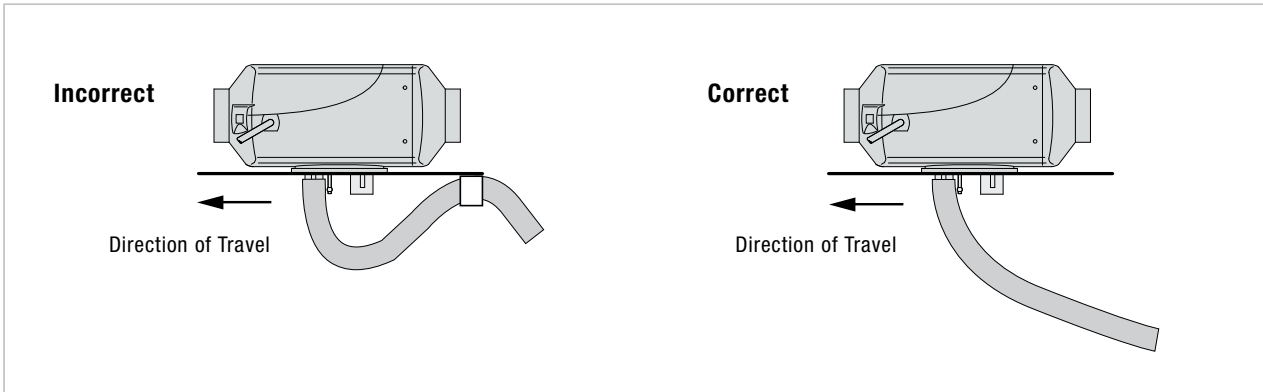
Fasten the combustion air hose to the heater with a hose clamp and at suitable points with hose clips or cable ties.

The combustion air intake must only draw fresh air from the outside, never from the living area.

⚠ CAUTION!

Safety instructions for the combustion air system!

- The combustion air opening must be free at all times.
- Never restrict the combustion air intake tube.
- Position the combustion air intake to be sure that exhaust fumes cannot be drawn in with the combustion air.
- Do not arrange the combustion air intake to pointing against the wind blast.
- The combustion air intake must not get clogged with dirt and snow.
- Install the combustion air intake system sloping slightly downwards at all times.



3 INSTALLATION

FUEL SUPPLY

MOUNTING THE DOSING PUMP AND ROUTING THE FUEL PIPES

The following safety instructions must be observed when mounting the dosing pump, routing the fuel pipes.

Deviations from the instructions stated here are not allowed.

Failure to comply can result in malfunctions.



DANGER!

Risk of injury!

Caution when handling fuel:

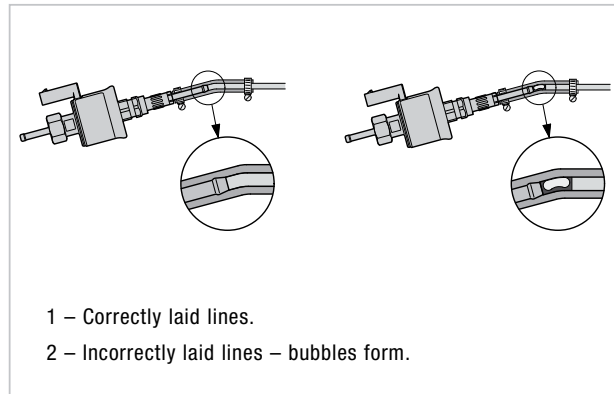
- Switch off the towing vehicle engine, generator and heater before refuelling and before working on the fuel supply.
- No naked lights when handling fuel.
- Do not smoke.
- Do not inhale fuel vapours.
- Avoid any contact with the skin.



CAUTION!

Safety instructions for routing the fuel pipes!

- Only use a sharp knife to cut off fuel hoses and pipes. Interfaces must not be crushed and must be free of burrs.
- The fuel pipe from the dosing pump to the heater should be routed at a continuous rise.
- Fuel pipes must be fastened safely to avoid any damage and / or noise production from vibrations (recommended spacing of approx. 50cm).
- Fuel pipes must be protected from any mechanical damage.
- Parts carrying fuel must be protected from interfering heat.
- Never route or fasten the fuel pipes to the heater or any other exhaust system. At crossings, always ensure adequate heat clearance; if necessary attach heat deflection plates or protective hose.
- Dripping or evaporating fuel must never be allowed to collect on hot parts or ignite on electric systems.
- When connecting fuel pipes with a fuel hose, always mount the fuel pipes in a butt joint to prevent any bubbles from forming.



NOTE

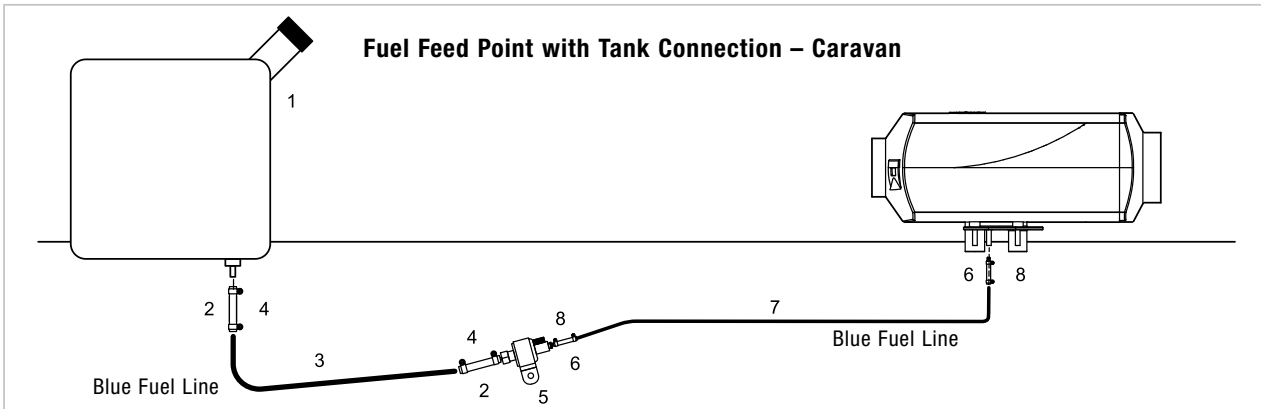
The fuel lines are coloured blue.

Blue fuel line is used between the tank and the dosing pump.

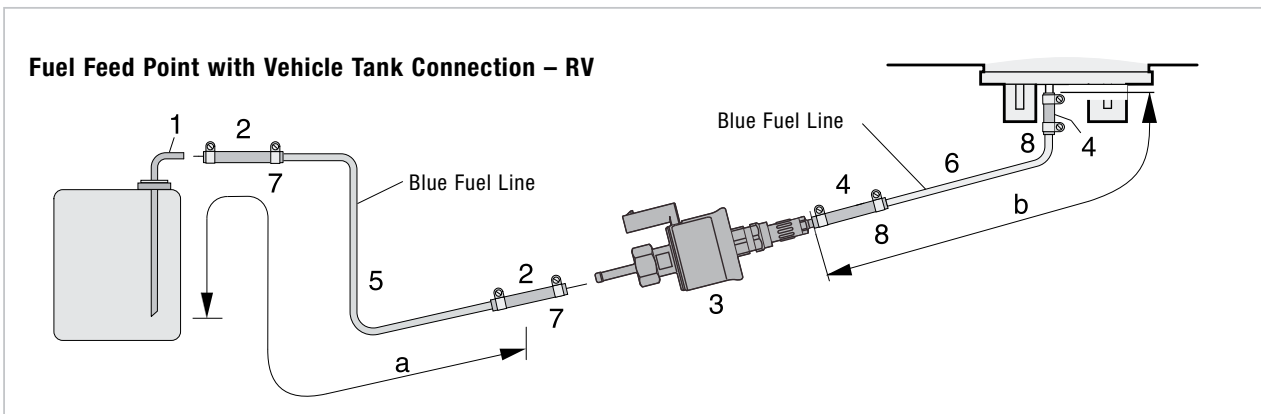
Blue fuel line is used between the dosing pump and the heater.

The fuel lines supplied are a special size with a very small internal hole. Never use any other type of fuel line.

3 INSTALLATION



Item No.	Part Number	Description	Quantity
1		Fuel Tank	1
2	25.1888.80	Hose Fuel – 5 x 3mm	0.05
2	360.75.30	Hose Fuel – 5 x 3mm	0.05
3	890.31.054	Fuel Line – 2mm Blue	2.00
4	10.2063.01.1098	Clip – 11mm Fuel 46011	4
5	22.1000.50.0300	Rubber Pump Mount	1
6	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
6	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
7	890.31.054	Fuel Line – 2mm Blue	6.00
8	29.2100.17.1004	Clip – 9mm Pt 46009 A	4



Item No.	Part Number	Description	Quantity
1		Fuel Standpipe Pickup	1
2	25.1888.80	Hose Fuel – 5 x 3mm	0.05
3	360.75.300	FM Pump	1
4	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
5	890.31.054	Fuel Line – 2mm Blue	2.00
6	890.31.054	Fuel Line – 2mm Blue	6.00
7	10.2063.01.1098	Clip – 11mm Fuel 46011	2
8	29.2100.17.1004	Clip – 9mm Pt 46009 A	6

POSSIBLE PIPE LENGTHS

Intake Side **Pressure Side**
 a = max. 2m b = max. 6m

- When installing tank connection maintain a minimum distance of 50 ±2mm from the end of the riser pipe and the bottom of the tank.

3 INSTALLATION

CAUTION!

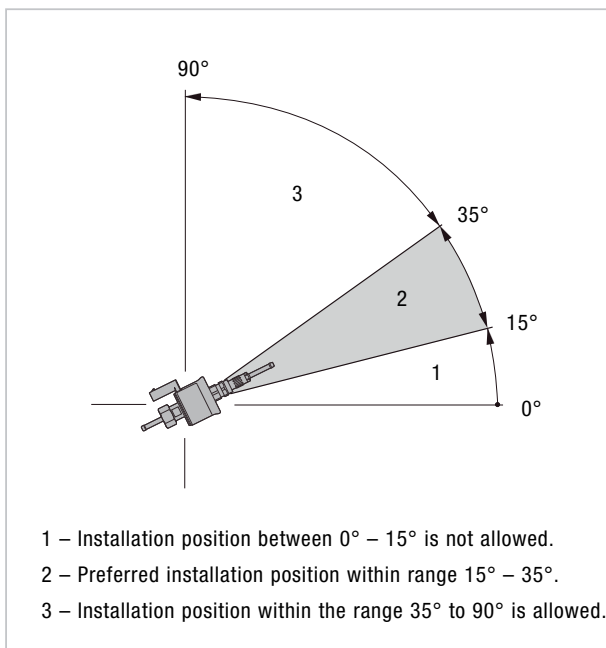
Safety instructions for the fuel supply!

- The fuel must not be conveyed by gravity or overpressure in the fuel tank.

INSTALLATION POSITION OF THE DOSING PUMP

Always mount the dosing pump with the output side rising upwards.

Mount the dosing pump between 15° and 35°.



CAUTION!

Safety instructions for installing the dosing pump!

- Always mount the dosing pipe with the output side rising upwards – minimum incline 15°.
- Protect the dosing pump and filter from intolerable heat, do not mount near silencers and exhaust pipes.

FUEL QUALITY FOR DIESEL HEATERS

- The heater runs without problems on normal commercial diesel fuel according to DIN EN 590.

During the winter months the diesel fuel is adapted to low temperatures from 0°C to -20°C. Problems can therefore arise if outdoor temperatures are extremely low – which also applies to the vehicle's engine – please refer to the vehicle manufacturer's regulations.

- As the heater is run from a separate tank, please comply with the following rules:
 - If outdoor temperatures over 0°C,
Use diesel fuel according to DIN EN 590.
 - If outdoor temperatures from 0°C to -20°C,
Use winter diesel fuel according to DIN 590.
 - If outdoor temperatures -20°C to -40°C,
Use Arctic Diesel or Polar Diesel.
- Mixtures with used oil are not allowed.
- After refuelling with winter or cold diesel, the fuel pipes and the metering pump must be filled with the new fuel by letting the heater run for 15 minutes.

NOTE

OPERATION WITH BIO-DIESEL (FAME)

AIRTRONIC 2

The heater is **NOT** approved for operation with bio-diesel fuel (FAME). Up to 30% bio-diesel fuel (FAME) may be added.

Bio-diesel fuel must **NOT** be used.

4 OPERATION AND FUNCTION

OPERATING INSTRUCTIONS

The heater is operated by an EasyStart Pro. Detailed operating instructions are enclosed with the control unit. The workshop / garage installing the heater will issue you with the operating instructions.

IMPORTANT INSTRUCTIONS FOR OPERATION

SAFETY CHECKS BEFORE THE START

After a lengthy period of non-use (summer months) check that all parts fit securely (tighten screws where necessary). Change to fresh diesel fuel when separate fuel tank is used.

Check the fuel system visually for any leaks.

HEATING AT HIGH ALTITUDES

When using the heater at high altitudes, please note:

- Heating at altitudes up to 3,000m:
 - Unlimited heating possible.

INITIAL COMMISSIONING

The following points are to be checked by the company installing the heater during initial commissioning:

- After installation of the heater, fuel supply system must be vented carefully.
- During the trial run of the heater, check fuel connections for leaks and firm fitting.
- If the heater shows a fault during operation, find and eliminate the cause of the fault.



NOTE

During the initial start-up of the heater, odours can be produced for a short time. This is fully normal during the first few minutes of operation and does not indicate a malfunction in the heater.

DESCRIPTION OF FUNCTIONS

SWITCHING ON

When the heater is switched on, the control lamp in the control element lights up.

The glow pin is switched on and the fan starts at low speed.

If there is still too much residual heat in the heat exchanger from when the heater was last used, firstly only the fan starts up (cold blowing).

Once the residual heat has been cleared, the heater starts.

STARTING AIRTRONIC

After approx. 65 seconds the fuel supply starts and the fuel / air mixture in the combustion chamber ignites.

Once the combined sensor (flame sensor) has detected the flame, the glow pin is switched off after 60 seconds. The heater is now in standard operation.

TEMPERATURE SELECTION WITH THE CONTROL ELEMENT

The control can be used to preselect an interior temperature.

The resulting temperature can be within the range of +5°C to +30°C and depends on the selected heater, on the size of the space to be heated and on the prevailing outdoor temperature.

The setting to be selected at the control is an empirical value.

4 OPERATION AND FUNCTION

CONTROL IN THE HEATING MODE

During the heating mode the temperature of the air being drawn into the heater is constantly measured.

There is variable heat output so that the outflow of heat produced by the heater can be adjusted finely to the heating requirements. Fan speed and fuel quantity correspond to the particular control stage.

If the set temperature is still exceeded in the smallest control stage, the heater goes to the "OFF" stage with the fan running on for approx. 4 minutes to cool off.

Then the fan continues at minimum speed (circulation mode) or is switched off (fresh air mode) until the heater is started again.

When the air temperature cools the heater will start again automatically.

VENTILATING MODE

Select ventilation mode. The fan will run only some controls (No heating).

SWITCHING OFF

When the heater is switched off, the control lamp goes off and the fuel supply is switched off.

The fan runs on for approx. 4 minutes to cool down.

While the fan is running on, the glow pin is switched on for approx. 40 seconds to clean.

Special Case:

If no fuel has been supplied or if the heater is in the "OFF" stage until it is switched off, the heater is stopped without any after running.

NOTE

Never terminate the 12 Volt supply to the heater while it is running, always use the off button on the control.

CONTROL AND SAFETY DEVICES

- If the heater does not ignite within 90 seconds after starting the fuel pump, the start is repeated. If the heater still does not ignite after another 90 seconds of pumping fuel, the heater is switched off, e.g. the fuel supply is off and the fan runs on for approx. 4 minutes. (Fault code 52).
- If the flame goes off by itself during operation, the heater is restarted. If the heater does not ignite within 90 seconds after the fuel pump has started, or ignites and goes off again within 15 minutes, the heater is switched off, e.g. the fuel supply is off and the fan runs on for approx. 4 minutes.

This status can be remedied by briefly switching off and on again. (Fault code 53-56).

Do not repeat the switching off / on routine more than twice.

- In the case of overheating, the combined sensor (flame sensor / overheating sensor) triggers, the fuel supply is interrupted and the heater switched off. Once the cause of the overheating has been eliminated, the heater can be re-started by switching off and on again (Fault code 12).
- If the lower or upper voltage limit is reached, the heater is switched off after 20 seconds (Fault code 10 or 11).
- The heater does not start up when the glow pin is defective or when the electric lead to the dosing pump is interrupted (Fault code 20 or 48).
- If the combined sensor (flame sensor / overheating sensor) is defect or the electric lead interrupted, the heater starts up and is then switched off again during the start phase (Fault code 61-61).
- The speed of the fan motor is monitored continuously. If the fan motor does not start up or if the speed deviates by more than 10%, the heater is switched off after 30 seconds (Fault code 31-33).
- When the heater is switched off, the glow pin is switched on for 40 seconds (after-glowing) while the fan runs on to clean off any combustion residues.

NOTE

Do not switch the heater off and on again more than twice.

4 OPERATION AND FUNCTION

GENERAL INFORMATION

EasyStart Pro has a simple operating structure. All settings, functions and parameters are controlled with a single operating button.

If the power supply in the vehicle is interrupted (e.g. the battery is disconnected), EasyStart Pro retains all the basic settings, with the exception of date and time. When the power supply is restored, only the date and time have to be set again for timer mode, see page 13.

The use of EasyStart Pro is described in detail from page 8.

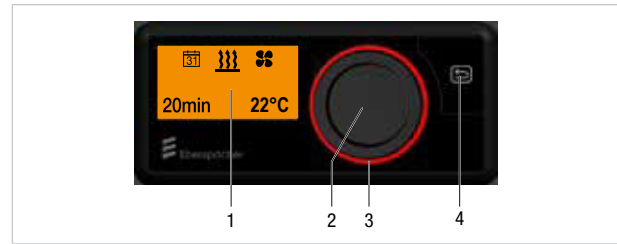
PRODUCT PROPERTIES

EasyStart Pro is a permanently installed control unit for air and water heaters. It is based on the CAN bus communication and has been designed for the new Hydronic S3 Economy / Commercial and Airtronic S2 / M2 heater generations.

EasyStart Pro is generally installed in the cockpit or dash panel of the vehicle.

EasyStart Pro allows you to make all the necessary settings for heater, ventilator and timer mode of up to two heaters separately or of two identical heaters (Airtronic 2 or Hydronic S3) in a group.

DESCRIPTION OF OPERATING COMPONENTS



1 Display

The display shows the following parameters:

- Current operating mode.
- Current interior temperature.
- Operating mode.
- Timer positions.
- Settings.
- Error codes.

2 Operating Button

The operating button is used to operate, select and program all the functions and values in EasyStart Pro.

- **Turning** selects a value / function within a menu.
 - Turning to the right increases a value or selects the next menu item to the right.
 - Turning to the left decreases a value or selects the next menu item to the left.
- **Pressing** confirms the flashing menu item or value on the display.
- If EasyStart Pro is in sleep mode (display OFF), pressing or turning “wakes up” the active display mode.
 - If all heaters are switched off, the Start mask will be displayed.
 - When the heater is running, the currently remaining operating time of the heater is displayed. If several heaters are running, the currently remaining operating times will be displayed alternately.

i NOTE

- A LONGPRESS (min. 2 sec.) immediately starts all connected heaters. The standard operating time here is set at the factory to 30 minutes.
- During operation, a LONGPRESS (min. 2 sec.) immediately switches off all connected heaters.
- If terminal 58 has voltage, sleep mode will not be activated as long as the vehicle lights are switched on.

4 OPERATION AND FUNCTION

3 LED Ring

The LED ring with its different colours serves to indicate the operating mode.

- Red ring: Heating mode.
- Blue ring: Ventilator mode.
- Orange ring: Residual heat mode.
- White ring: System configuration.
- Red flashing ring: Fault in one of the connected heaters or in EasyStart Pro.


4 Button Back

The BACK button causes a jump back to the menu or command at the next higher level. If EasyStart Pro is in sleep mode (display OFF), pressing “wakes up” the active display mode.

- If all heaters are switched off, the Start mask will be displayed.
- When the heater is running, the currently remaining operating time of the heater is displayed. If several heaters are running, the currently remaining operating times will be displayed alternately.

NOTES ON OPERATION AND SETTING

ACTIVATING EASYSTART PRO

If the display is not lit, EasyStart Pro has to be activated. Pressing the operating button or BACK button  displays the Start mask; you can then continue with operation or setting.

DISPLAY

The display is lit:

- During operation of EasyStart Pro.
- When terminal 58 has voltage, for example when the vehicle lights are switched on (optional).
- When the heater is ON (the display goes out after approx. 30 seconds).

Display Language

The display language is set by the workshop during installation. In the delivery condition of EasyStart Pro, German or English are available as display languages.

A further 25 display languages are currently available. If necessary, agree on the display language to be set with your installation workshop. It will then undertake the necessary configuration.

Display Goes Out

The display goes out after approx. 30 seconds if:

- No settings are made.
- No heater is switched on.
- When using terminal 58, when the vehicle lights are switched off.

EasyStart Pro then goes to sleep mode. Before going to sleep mode, an overview mask is displayed. EasyStart Pro then has to be activated (see above) before a new input can be made.

ACTIVATING A FUNCTION

The symbol of the function to be activated appears in the middle and flashing in the display.

Flashing Function / Flashing Value

- Select the flashing function in the menu bar by pressing the operating button.
- Increase or decrease the flashing value by turning the operating button. Then confirm the selected value by pressing the operating button.

Cancel Settings

Any settings being made can be cancelled with the BACK button



NOTE

Settings and changes must always be confirmed by pressing the operating button, otherwise they will be lost.

SETTING THE OPERATING TIME

The operating time can be set individually using the operating button.

- Turning to the right increases the operating time.
- Turning to the left decreases the operating time.
- Setting range for the operating time: min. 10 minutes to max. 120 minutes in one-minute steps.
- The operating time can be prolonged to infinite. Above the 120th minute, the input is made in 60-minute steps.

NOTE

- With air and water heaters, continuous heating mode [∞] is also possible.
- The operating times of all the connected heaters can be set independently of one another.

4 OPERATION AND FUNCTION

OPERATING MODES

Heating

- In this operating mode, a water heater heats the vehicle engine via the coolant circuit and the vehicle interior via the ventilation louvres, irrespective of the configuration.
- An air heater heats the vehicle interior with warm air that is distributed by a fan in the heater.

Ventilation

In this operating mode, the water or air heater supplies the vehicle interior with fresh outdoor air via the ventilation louvres. This operating mode is only possible if the function is supported by the heater version (see also the Technical Description of the heater).

TEMPERATURE SENSOR

EasyStart Pro has an integrated temperature sensor that measures the interior temperature and regulates the power of the air heater. During installation, an additional external temperature sensor can be connected and integrated into the system.

With air heaters, the temperature sensor installed in the heater for control of the heater can also be used to measure the interior temperature. This function will be installed by the installing workshop during initial commissioning.



NOTE

The number of symbols and displays differs depending on the installed heater and feature options.

FACTORY SETTING

Timer Mode (For all Heaters)

- Weekday group: Mon – Fri.
- Departure time: 07:00 h.

Air Heaters

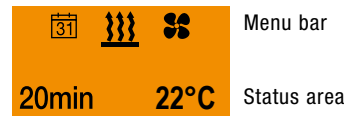
- Operating time: 30 minutes.
- Maximum operating time: 720 minutes.
- Target temperature: 22°C / 72°F.

Water Heaters

- Operating time: 30 minutes.
- Maximum operating time: 720 minutes.

OPERATING AND CONFIGURING EASYSTART PRO

THE MENUS AND THEIR FUNCTIONS



Menu Bar

The following menus can be selected from the menu bar (turn the operating button to the right):

Symbol	Menu
	Heat
	Ventilate (Air Heater Only)
	Residual Heat (Water Heater Only)
	Settings
	Timer



NOTE

- The Ventilation function is only displayed if the heater supports this function.
- The timer function is not available on vehicles in ADR mode.
 - ADR mode is reserved for vehicle transporting hazardous goods on the road (e.g. road tankers).

Status Area

When the menu (heating, ventilation, settings, timer or residual heat) is activated, various items of information are displayed in the status area. These are presented and described in the respective sections of these operating instructions.

4 OPERATION AND FUNCTION

Input Area

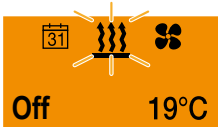



Display

e.g. Heating ON / Operating time 107 min.

In the menu bar, the symbol of the selected menu item appears in the middle of the display. The corresponding setting value flashes in the input area and can be altered by turning the operating button to the left or right and confirmed by pressing.

HEATING



In the Start mask, a flashing heater symbol  in the menu bar and the current temperature and status of the heater are displayed.

Possible actions are:

- HEATING IMMEDIATELY with LONGPRESS.
- HEATING ON with settings.

HEATING IMMEDIATELY WITH LONGPRESS

- Press operating button for longer than 2 seconds.
- ➔ Heating mode starts immediately with the last operating time used. The LED ring lights up red and the residual heating mode time is displayed.

NOTE

The function LONGPRESS ON is not available in ventilator and residual heat mode.

HEATING ON with Settings

- Press the operating button.
- Select the operating time by turning the operating button.

NOTE

With air heaters, select and confirm the target temperature.

- Confirm the operating time by pressing the operating button.
- ➔ Heating mode starts with the set operating time. The LED ring lights up red, the residual heating mode time and the current temperature are displayed.
- Heating mode ends at the end of the set operating time.



NOTE

If an air heater is operated with EasyStart Pro, the desired temperature can also be set in heating mode.

14°C – 36°C in 1°C steps.

57°F – 97°F in 1°F steps.

Changing the Operating Time During Heating Mode


- Press the operating button.
- Select and confirm flashing menu .
- Select and confirm the settings by turning and pressing the operating button .
- Set the desired operating time by turning and press to confirm.

NOTE

With air heaters, select and confirm the target temperature beforehand.

- ➔ Heating mode is continued with the set operating time. The LED ring lights up red and the residual heating mode time is displayed.

HEATING OFF During Heating Mode

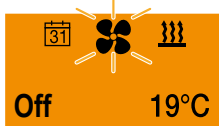
- Press the operating button.
- Select and confirm flashing menu .
- When OFF flashes on the display, press the operating button again.
- Heating mode is terminated.


NOTE

- LONGPRESS terminates heating mode immediately and all further connected heaters are also switched off.
- If the heater is connected to the vehicle battery (e.g. car battery), the operating time of the heater should not exceed the subsequent driving time of the vehicle. This will ensure that the vehicle battery is sufficiently charged.
Example:
Operating time of the heater: 25 minutes.
Driving time of the vehicle: min. 25 minutes.

4 OPERATION AND FUNCTION

VENTILATION





In the Start mask, a flashing fan symbol  in the menu bar and the current temperature and status of the heater are displayed.


VENTILATION ON with Settings

- Press the operating button.
- Select the operating time by turning the operating button and confirm, or confirm the displayed operating time.
- ➔ Ventilation mode starts with the set operating time. The LED ring lights up red and the residual ventilation mode time is displayed.
- Ventilation mode ends at the end of the set operating time.

Changing the Operating Time During Ventilation Mode

- Press the operating button.
- Select and confirm flashing menu .
- Select and confirm the settings by turning and pressing the operating button .
- Set the desired operating time by turning and press to confirm.
- ➔ Ventilation mode is continued with the set operating time. The LED ring lights up blue, the residual ventilation mode time and the current temperature are displayed.

VENTILATION OFF During Ventilation Mode

- Press the operating button.
- Select and confirm flashing menu .
- When OFF flashes on the display, press the operating button again.
- Ventilation mode is terminated.




NOTE

LONGPRESS terminates ventilation mode immediately. All connected heaters are switched off.

SETTINGS







In the Start mask, a flashing gear wheel  in the menu bar and the set day of the week and the current time are displayed.

Possible actions are:

- Standard settings for day of the week, time and temperature format.
- Heating at high altitudes: ON / OFF.
- Low temperature during heating: ON / OFF.
- Fault diagnosis: Display of error messages.
- Reset user settings.

Standard Settings

- Set time:
 -  Select and confirm.
 - Set the hours and confirm.
 - Set the minutes and confirm.
- Set time format:
 -  Select and confirm.
 - Select between 12 h and 24 h format and confirm.
- Set weekday:
 -  Select and confirm.
 - Set the day of the week and confirm.
- Set temperature format:
 -  Select and confirm.
 - Select between degrees Celsius and degrees Fahrenheit and confirm.


4 OPERATION AND FUNCTION

Heating Mode at High Altitudes

NOTE


This function applies only to the Hydronic S3 12V. This setting is not visible on heaters with integrated altitude sensor as it is not required.

When operating the heater at an altitude above 1,500m above sea level, an adjustment has to be made in this menu in order to regulate the fuel supply according to the altitude.


-  Select and confirm.
- Select between ON (above 1,500m above sea level) and OFF (below 1,500m above sea level) and confirm.

Low Temperature Heating Mode


Low temperature heating mode fulfils the following functions:

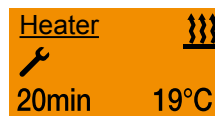
- Water heaters: Comfort function at higher outdoor temperatures. The function modifies the control thresholds of the heater in order to harmonise heating mode, e.g. in the summer months.
 - Air heaters: Reduction of the outlet temperature at the air louvre by approx. 10°C / 18°F (depending on the air routing), e.g. if the air louvre is near the body or discharges onto temperature-sensitive components in the vehicle.
-  Select and confirm.
 - Select between ON and OFF and confirm.

Fault Diagnosis

-  Select and confirm.
- Select and confirm the connected heater or control unit.
- The faults are displayed in the order of their occurrence.


NOTE

- If a fault occurs, the symbol  appears on the display during operation:



- The LED ring flashes red as soon as a fault occurs. It stops flashing when the error message has been cancelled by pressing the operating button.
- Further information on fault diagnosis from Eberspächer Dealer.

Resetting the User Settings

-  Select and confirm.
- YES resets the user settings in the EasyStart Pro and deletes the programmed timer, date and other settings.
- NO retains the existing user settings in the EasyStart Pro.

4 OPERATION AND FUNCTION

TIMER

General Information on Programming the Timer Positions

The timer selection menu controls up to three programmable timer positions. The timer positions can either all take place on one weekday or can be distributed between different weekdays or weekday ranges.

Weekday ranges, e.g.


Mon – Fri 5 x heat / ventilate.

Mon – Sun 7 x heat / ventilate.

If a programmed weekday range is activated, all the days of the week are processed in turn as long as the timer is active. Renewed programming is not necessary.



NOTE

- If EasyStart Pro is activated with a programmed weekday range Mon – Fri on Sunday, the heater heats or ventilates from the following Monday to Friday with the set defaults (5x HEATING / VENTILATION).
- If EasyStart Pro is activated with a programmed weekday range Mon – Fri on Wednesday, the heater heats or ventilates on Wednesday, Thursday and Friday. In the following week, operation is continued with the set defaults on Monday and Tuesday (5x HEATING / VENTILATION).
- When a weekday range has been processed, the time position has to be reactivated for the following week.
- If the  symbol is not displayed in the menu bar, the heater is in ADR mode. Timer mode is not possible here.

Start Time

The heater starts on the selected day on reaching the set starting time.



NOTE

“Start time” mode is set at the factory. “Departure time” mode has to be configured by the specialist workshop during installation.

Start Time Conditions

Under the following conditions, the preselected heating mode is not started on the current day.

- The current day and the preselected day are identical.
- The current time lies within the time period, departure time minus operating time.

Example:

Current day / preselected day: Thu.

Current time: 18:45 h.

Departure time: 19:00 h.

Operating time: 30 minutes.

Consequently: Time range for operating time: 18:30 to 19:00 h.

The current time lies within the time period of the operating time. The heater is not switched on. The program will be run during the next week.

In all other configurations the start takes place according to the preset operating time.

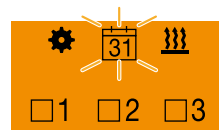
Departure Time (With Water Heaters)

The heater starts on the selected day before reaching the set departure time so that engine and vehicle interior are heated up in good time. This takes place in line with parameters such as current temperature, preselected operating time and engine displacement.

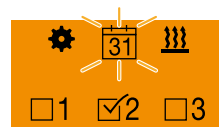
Programming the Timer

Display ON, the Start display appears.

- Select in the menu bar  with the operating button.



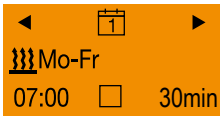
Picture 1: Display if no timer is activated.




Picture 2: Display if a timer is activated, here T2.

- Confirm timer selection by pressing the operating button.
- ➔ The first timer position T1 appears. Turn the operating button to select the alternative timer positions T2 or T3.

4 OPERATION AND FUNCTION



Picture 3: T1 with factory settings.

- The factory settings are:
 - Heating mode.
 - Weekday range Mon – Fri.
 - Starting time: 7:00 h.
 - Operating time: 30 minutes.
- Call up timer T1 by pressing the operating button. You are now in configuration mode.
- **The following settings are possible:**
 - Timer T1 ON/OFF by turning and pressing the operating button.
 - Step 1: After selecting  in the menu bar, next select the day of the week / weekday range by turning the operating button. Each day of the week is selected individually and confirmed by pressing. Pressing a second time deselects the day of the week again. At the end of the selection, turn the operating button to [OK] and press to confirm.



- Step 2: Setting the starting time. Turning and pressing confirms first the hour, then the minutes.



- Step 3: Selection of heating or ventilation mode.



NOTE

If an air heater is operated with EasyStart Pro, the desired temperature in heating mode can also be set before setting the operating time:

14°C – 36°C in 1°C steps.

57°F – 97°F in 1°F steps.

- Step 4: Select the operating time:
min. 10 minutes – max. 120 minutes.



NOTE

If the heater is connected to the vehicle battery (e.g. car battery), the operating time of the heater should not exceed the subsequent driving time of the vehicle. This will ensure that the vehicle battery is sufficiently charged.

Example:

Operating time of the heater: 25 minutes.

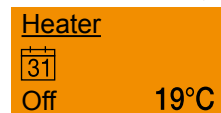
Driving time of the vehicle: min. 25 minutes.

- Select the heating level (only for water heaters with automatic operating time calculation):
 - ECO heating level = normal heating.
 - HIGH heating level = comfort heating.

- After activation of timer T1, the following appears on the display.



- Heating mode.
- Weekday range Mon – Fri.
- Starting time: 6:30 h.
- Operating time: 25 minutes.
- Timer T1 is activated. The heater will be started at the set time on the next working day and will run for 25 minutes.
- If a timer is activated, the timer symbol appears on the display.



- Timer positions T2 and T3 can be configured in the same way.

NOTE

To edit an existing timer, it first has to be selected and then switched to configuration mode by pressing the operating button. Then carry out steps 1 to 4 as described above.

Deactivate Timer

To deactivate a timer position, it first has to be selected with the operating button. Press once and with OFF flashing, press the operating button again. All operating settings of the timer remain saved.

NOTE

When a weekday range has been processed, the time position has to be reactivated for the following week.

5 ELECTRICAL SYSTEM

HEATER WIRING

The electronic control box is integrated in the heater, which makes wiring during installation much easier.



CAUTION!

Safety instructions!

The heater is to be connected up electrically according to the EMC directives.

EMC can be affected if the heater is not connected up correctly. For this reason, comply with the following instructions:

- Ensure that the insulation of electrical cables is not damaged. Avoid: Chafing, kinking, jamming or exposure to heat.
- In waterproof connectors, seal any connector chambers not in use with filler plugs to ensure they are dirt-proof and water-proof.
- Electrical connections and ground connections must be free of corrosion and firmly connected.
- Lubricate connections and ground connections outside the heater interior with contact grease.



NOTE

Comply with the following when wiring the heater and the control unit:

- Electrical leads, switch and control boxes must be positioned in the vehicle so that they can function perfectly under normal operating conditions without impairment (e.g. due to heat exposure, moisture, etc.).
- The following cable cross-sections are to be used between the battery and heater. This ensures that the max. permissible voltage drop in the cables does not exceed 0.5V for 12V or 1V for 24V rated voltage.

Cable cross-sections for a cable length (plus cable + minus cable) of:

- up to 5m = cable cross-section 4mm²
- 12V: from 5m to 8m = cable cross-section 6mm²
- 24V: from 5m to 8m = cable cross-section 4mm²
- If the positive cable is to be connected to the fuse box (e.g. terminal 30), the vehicle's cable from the battery to the fuse box must also be included in the calculation for the total cable length and re-dimensioned if necessary.
- Insulate unused cable ends.

PARTS LIST FOR THE AIRTRONIC S2 AND AIRTRONIC M2 CIRCUIT DIAGRAMS

-A1	Airtronic Ax2 control box
-A30	Fuse holder, 3 pin
-B1	Air inlet sensor, internal (LEF1)
-B6	Flame and air outlet sensor
-R1	Terminating resistor I
-R2	Terminating resistor II
-R3	Terminating resistor, stub line
-F1	Heater fuse: 12V = 20A / 24V = 10A
-HG	Heater
-R1	Glow plug
-M4	Burner motor
-Y1	Fuel metering pump
-p	Switch output, N/A.
-XB6/1	EasyScan bush housing
-XS6/1	Mating connector with terminating resistor
-XB6/4	Bush housing, EasyStart Pro
d	To the ADR acknowledgement button, N/A.
n	Generator input D+
o	Secondary drive input NA+



NOTE

- It must be ensured that if the battery isolating switch is pressed due to EMERGENCY STOP, all the heater's electric circuits are disconnected from the battery immediately (without any consideration of the heater's status).
- If the battery isolating switch is pressed to disconnect the battery from all electric circuits, the heater must be switched off first and if applicable you must wait until the heater's afterrun has finished.

- a – To the heater
- c – To the control unit
- x – Insulate and tie back any cables that are not needed



NOTE

Circuit diagram for Airtronic S2 / Airtronic M2 from Technical Description Manual.

Circuit diagrams for control units, e.g. EasyStart Pro etc. see CD-ROM.

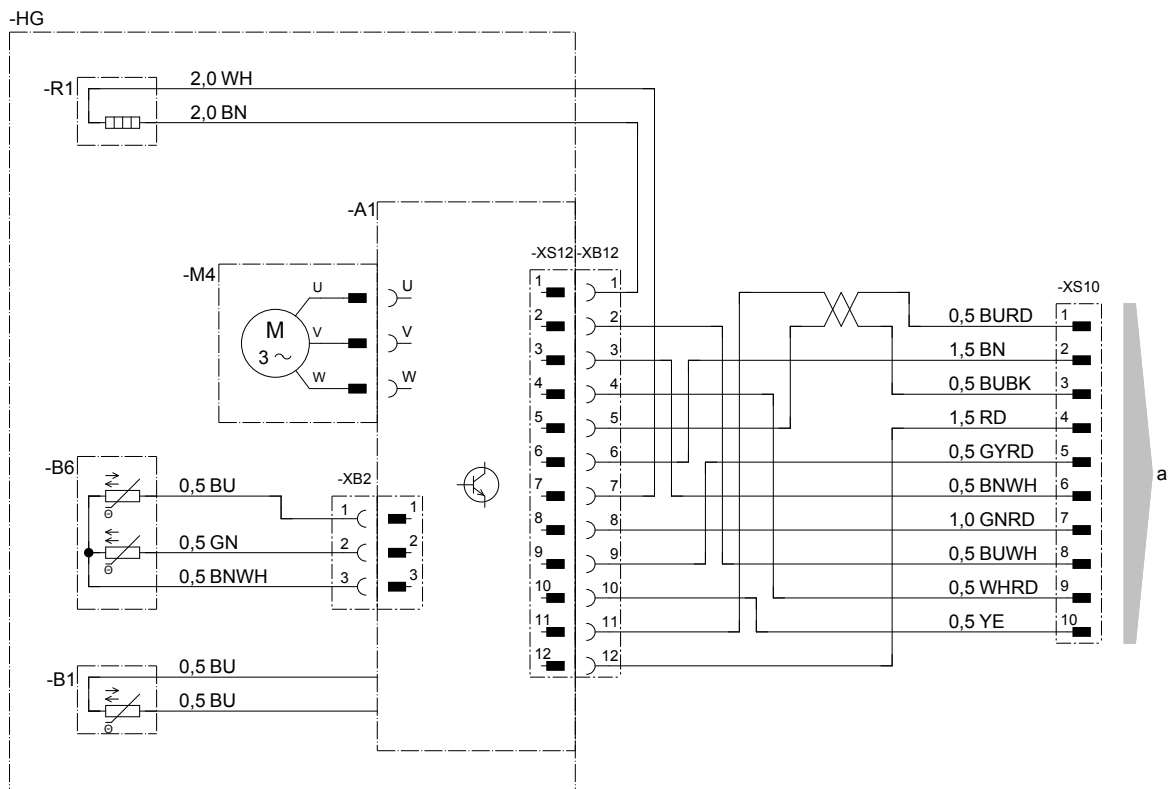
Cable Colours

bk = black	og = orange
bn = brown	rd = red
bu = blue	vt = violet
gn = green	wh = white
gy = grey	ye = yellow

5 ELECTRICAL SYSTEM

Airtronic D2 and D4

- X:15 ○ Ign (+)
- X:58 ○ Light (+)
- X:30 ○ Bat (+)
- X:31 ○ Bat (-)



6 TROUBLESHOOTING / MAINTENANCE / SERVICE

IN CASE OF FAULTS, PLEASE CHECK THE FOLLOWING POINTS

- If the heater does not start after being switched on:
 - Switch the heater off and on again.
- If the heater still does not start, check whether:
 - There is fuel in the tank?
 - The fuses are OK?
 - The electrical cables, connections etc. are OK?
 - Anything is clogging the combustion air supply or exhaust system?
 - Call up the diagnostics using the operating device to identify the fault.

TROUBLESHOOTING

If the heater remains faulty even after these points have been checked, or another malfunction occurs in your heater, please contact:

Dometic Australia Pty Tel: **039239 1000** for your local Eberspacher Dealer:



NOTE

Please note that warranty claims can become void if the heater is tampered with by unauthorised persons or modified in any way.

MAINTENANCE INSTRUCTIONS

- Switch the heater on once a month for about 10 minutes, even outside the winter period.
- Before the winter period starts, the heater should undergo a trial run.

If persistent extreme smoke develops, unusual burning noises or a clear fuel smell can be perceived or if electric / electronic parts heat up, the heater must be switched off and put out of service by removing the fuse.

In this case, the heater should not be started up again until it has been checked by qualified staff that has been trained on Eberspacher heaters.

- Check the openings of the combustion air supply and exhaust system after longer standstill periods, clean if necessary.
- Be aware of vermin building nest or occupying the air intake or exhaust.

SERVICE

If you have any technical queries or problems with your heater contact Dometic Australia Pty. Tel: **039239 1000**.

7 ENVIRONMENT

ENVIRONMENT

Certification

The high quality of the Eberspächer products is the key to our success. To guarantee this quality, we have organised all work processes in the company along the lines of quality management (QM). Even so, we still pursue a large number of activities for continuous improvement of product quality in order to keep pace with the similarly constantly growing requirements made by our customers.

All the steps necessary for quality assurance are stipulated in international standards. This quality is to be considered in a total sense. It concerns products, processes and customer – supplier relationships. Officially approved public experts assess the system and the corresponding certification company awards a certificate.

Eberspächer has qualified for the following standards:

- Quality management in accordance with
EN ISO 9001:2008 and ISO/TS 16949:2009
- Environmental management system in accordance with
EN ISO 14001:2004

Disposal

Disposal of materials

End-of-life devices, defect components and packaging material can all be separated and sorted into pure-grade fractions so that all parts can be disposed of as required in an environment-friendly manner and recycled where applicable.

Electric motors, control boxes and sensors (e.g. temperature sensors) are deemed to be “electrical and electronic scrap”.

Dismantling the heater

The heater is dismantled according to the repair stages in the current troubleshooting / repair instructions.

Packaging

The packaging of the heater can be kept in case the heater has to be sent back.

EU Declaration of Conformity

We herewith declare that the version of the heater placed on the market by us conforms to the applicable provisions of the following EC Directives.

EC Directive 2014/30/EU



The full Declaration of Conformity can be viewed and downloaded from the download centre at www.eberspaecher.com.

8 LISTS

LIST OF ABBREVIATIONS

ADR

European Agreement concerning the International Carriage of Dangerous Goods by Road.

ECE Regulation

Internationally agreed, uniform technical specifications for vehicles, parts and equipment of motor vehicles.

EMC Directives

Electromagnetic compatibility.

JE Service Partner

Eberspächer partner.

CE Marking

With the CE marking, the manufacturer declares in a declaration of conformity, that the version of the heater placed on the market conforms to the relevant provisions of the EU Directive.



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