DOMETIC AIRTRONIC D2 AND D4 CARAVAN, MOTORHOME AND R.V. KIT

29.2100.02.2326 · Issue H · 04/2015

Eberspächer

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 AT D2 and D4 heaters. Part No. 25.2069.90.52 (CD with heater).

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

1 INTRODUCTION

Here you will find important introductory information about installation of the heater and about the structure of the manual.

2 PRODUCT INFORMATION

Here you will find information about the scope of supply, the technical data and the dimensions of the heater.

3 INSTALLATION

Here you will find important information and instructions referring to installation of the heater.

4 OPERATION AND FUNCTION

Here you will find information about the operation and function of the heater.

5 ELECTRICAL SYSTEM

Here you will find information about the electronic system and electronic components of the heater.

6 TROUBLESHOOTING / MAINTENANCE / SERVICE

This section contains information on possible faults and malfunctions, troubleshooting, maintenance and the service hotline.

7 ENVIRONMENT

Here you will find information about certification and disposal of the heater together with the EU Declaration of Conformity.

8 LISTS

Here you will find an abbreviations list.

1 INTRODUCTION

The Eberspacher Airtronic D2 and D4 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 (D2) and 4kW (D4) output heaters that have four heat stages, these allow 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 through the four heat levels 2.2(4.0)kW, 1.8(3.0)kW, 1.2(2.0)kW and 850(900)W 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.

701 Timer / Modulator

801 Modulator

Airtronic D2 / D4 Heaters

1 INTRODUCTION

STATUTORY REGULATIONS

The Federal Road Transport Directorate has issued an “EC type approval” and an “EMC type approval” for the heater for installation in motor vehicles and with the following official type approval marks, noted on the heater name plate.

AIRTRONIC EC – e1 00 0025
EMC – e1 031516

REGULATION!
Directive 2001 / 56 / EU of the European Parliament and the Council.

- Arrangement of the heater.

  – Parts of the structure and other components near the heater must be protected from excess heat exposure and possible contamination from fuel or oil.
  – The heater must not pose a fire hazard even when it overheats.

This requirement is deemed to be fulfilled when adequate clearance to all parts is observed during installation, sufficient ventilation is provided and fire-proof materials or heat plates are used.

  – The heater must not be mounted in the passenger compartment of vehicles in class M2 and M3.

But a heater in a hermetically sealed enclosure which otherwise complies with the conditions stated above may be used.

  – The factory nameplate or duplicate must be affixed so that it can still be easily read when the heater is installed in the vehicle.
  – All appropriate precautions must be taken when arranging the heater to minimise the risk of injuries to persons or damage to other property.

- Operating status display.

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

- Fuel supply.

  – The fuel intake connection must **NOT** be located in the passenger compartment and must be sealed with a properly closing lid to prevent any fuel leaks.
  – In heaters for liquid fuel where the heater fuel is separate from the vehicle fuel, the type of fuel and intake connection must be clearly identified.
  – A warning sign is to be fixed to the intake connection indicating 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. The exhaust gases must be directed to the opposite side to an RV annex.

- Combustion air intake.

  – The air for the heater combustion chamber must **NOT** be drawn from the passenger compartment of the vehicle.
  – The air for the heater combustion must be taken from the outside.
  – The air intake must be arranged or protected in such a way that it cannot be blocked by other objects.

- Warm air intake.

  – The heater air supply must consist of fresh air or recirculated air and be drawn from a clean area not contaminated by exhaust fumes of the towing vehicle, the combustion heater or any other source in the van.
  – The intake pipe must be protected by the supplied grill or mesh.

- Warm 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.
  – The air outlet must be positioned or protected in such a way that it cannot be blocked by any objects.

Refer to separate universal Technical manual for full Statutory Regulations and Safety Instructions, pages 4 through to 7, Part No. 25.2069.90.99.52.

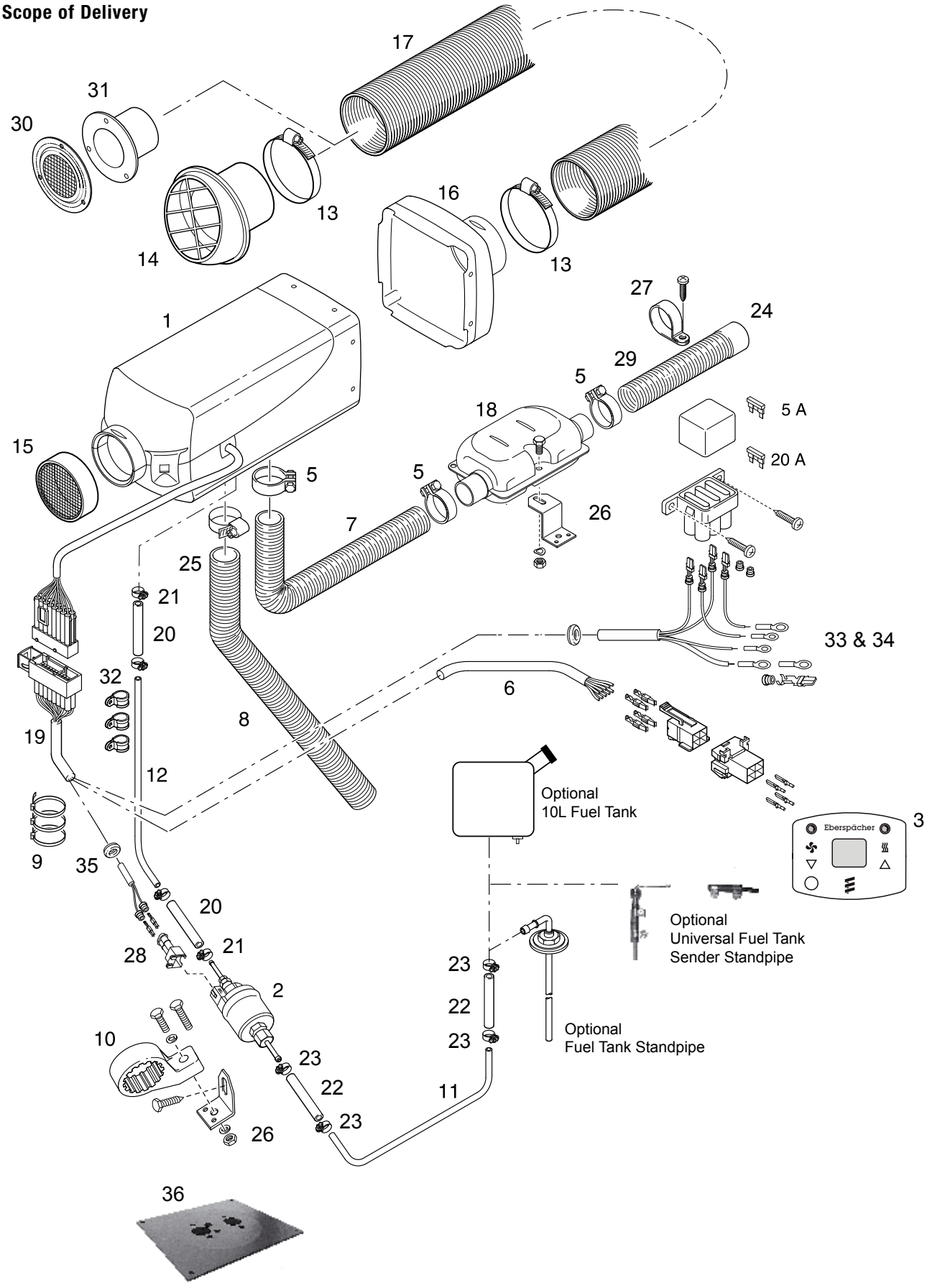
2 PRODUCT INFORMATION

29.2110.01.00.0034 Dometic D2 12V Universal (Single Outlet)

Item No.	Part Number	Description	Quantity
HEATER AND MOUNTING			
1	25.2069.05.0000	Heater D2 12V	1
2	22.4519.01.0000	FM Pump	1
36	29.2100.01.9003	Bracket Floor Mounting / Flange 32mm C	1
ELECTRICAL			
19	29.2100.02.4130	Loom Cap AT 12v Dometic C	1
28	29.2100.01.8986	Loom 6mtr FMP W/Proof B	1
3	29.2100.81.0103	Modulator 801 12 / 24V A	1
6	29.2100.18.0708	Loom Switch 801 Series 8mtr	1
DUCTING			
17	29.2100.01.0145	Ducting – 60mm APK A	2
31	20.1577.89.0601	Hose Flange 60mm	1
16	22.1000.01.0016	Hood Straight 60mm D2	1
14	20.1577.89.0600	Outlet – 60mm Rotary	1
15	25.1688.80.0600	Guard – D1LC Intake	1
13	10.2064.05.0070	Clip – 50-70 Duct 60mm	2
30	22.1000.01.0001	Mesh For Flange 60mm Plastic	1
C/AIR AND EXHAUST			
18	25.1864.81.0100	Exhaust Silencer – 24mm D3 / D4W	1
7	360.61.299	Exhaust 24mm ID	1.5
29	360.61.299	Exhaust 24mm ID	0.5
24	25.1482.80.0001	Sleeve – Exhaust End 24mm	1
27	152.10.051	Clip – 28mm Dia Exhaust Pipe	2
5	22.1000.50.0500	Clamp 26-28mm Exhaust	3
8	10.2114.21.0000	Combustion air hose – 25mm APK	0.5
25	10.2064.02.0032	Clip – 20-32mm C/A Hose	1
FUEL SYSTEM			
12	890.31.118	Fuel Line 1.5 x 4mm White	6.0
11	890.31.125	Fuel Line – 2mm Black	2.0
10	22.1000.50.0300	FMP Holder for Noise Reduction	1
26	20.1348.03.0002	Bracket – Angle For FM Pump	2
23	10.2063.01.1098	Clip – 11mm Fuel 46011	4
21	29.2100.17.1004	Clip – 9mm Fuel 46009 A	4
20	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
20	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
22	360.75.350	Hose Fuel – 5 x 3mm	0.05
22	360.75.350	Hose Fuel – 5 x 3mm	0.05
ANCILLARIES			
33	29.2100.01.8003	Terminal Housing Rec 2 Way Amp A	1
34	29.2100.01.8014	Term Rec AMP 180384-1 4-6mm	2
35	20.1280.09.0103	Grommet - 9/16”	1
9	29.2100.01.8066	Ties 200mm Cable Black Ncs 200	10
	152.10.003	Clip - 4mm Fuel Line	3
	110.10.026	Nut - M6	7
	171.22.086	Washer M6 Spring	7
	29.2100.01.9331	Screw - M6 x 25 Hex Head Z+P	1
	29.2100.02.0024	Washer M6 Penny	1
	108.10.325	Screw No10 x 1/2 Pan Pozi AB	3
	29.2100.01.9039	Screw No8 x 3/8 Pan Pozi AB’	8
	29.2100.02.2326	Dometic M/Home Instruction G	1
	29.2100.02.0357	Warranty Folder D	1

2 PRODUCT INFORMATION

Scope of Delivery



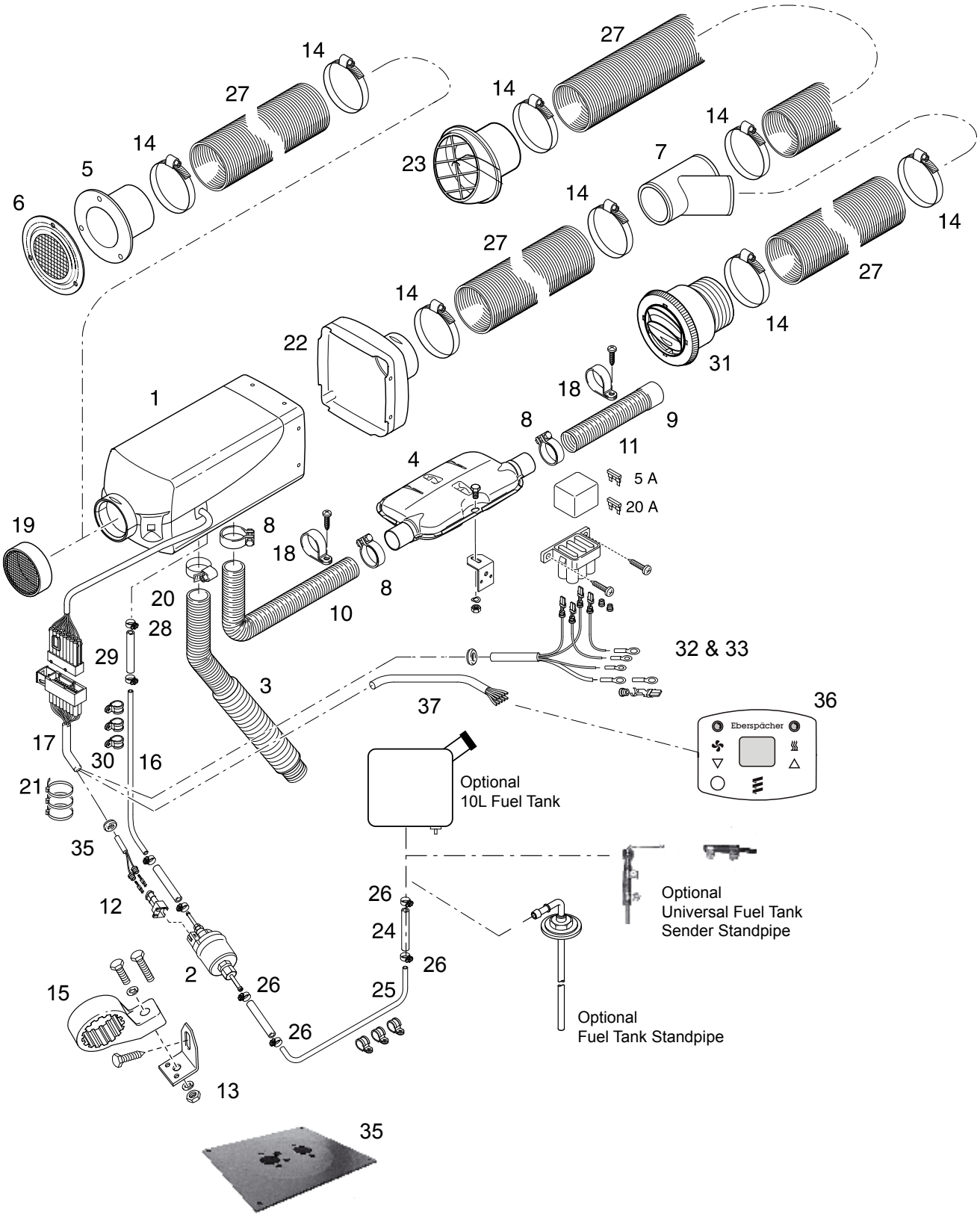
2 PRODUCT INFORMATION

29.2110.01.00.0035 Dometic D2 12V 2 Outlet (Twin Outlet)

Item No.	Part Number	Description	Quantity
HEATER AND MOUNTING			
1	25.2069.05.0000	Heater D2 12V	1
2	22.4519.01.0000	FM Pump	1
35	29.2100.01.9003	Bracket Floor Mounting / Flange 32mm C	1
ELECTRICAL			
12	29.2100.01.8986	Loom 6mtr FMP W/Proof	1
17	29.2100.02.4130	Loom Cap AT 12V Dometic	1
3	29.2100.81.0103	Modulator 801 12 / 24V	1
37	29.2100.18.0708	Loom Switch 801 Series 8mtr	1
DUCTING			
23	20.1577.89.0600	Outlet – 60mm Rotary	1
22	22.1000.01.0016	Hood Straight 60mm D2	1
5	20.1577.89.0601	Hose Flange 60mm	1
27	29.2100.01.0145	Ducting – 60mm APK	4
31	330.31.313	Outlet Black 60mm Closable	1
7	25.1774.89.0005	Duct Fitting 60mm Equal Y Plastic	1
6	22.1000.01.0001	Mesh For Flange 60mm Plastic	1
19	25.1688.80.0600	Guard – D1LC Intake	1
14	10.2064.05.0070	Clip – 50-70 Duct 60mm	8
C/AIR AND EXHAUST			
3	10.2114.21.0000	Combustion Air Hose 25mm APK	0.5
20	10.2064.02.0032	Clip – 20-32mm C/A Hose	1
4	25.1864.81.0100	Exhaust Silencer – 24mm D3 / D4W	1
10	360.61.299	Exhaust 24mm ID	1.5
11	360.61.299	Exhaust 24mm ID	0.5
9	25.1482.80.0001	Sleeve – Exhaust End 24mm	1
18	152.10.051	Clip – 28mm Dia Exhaust Pipe	2
8	22.1000.50.0500	Clamp 26-28mm Exhaust	3
FUEL SYSTEM			
16	890.31.118	Fuel Line 1.5 x 4mm White	6
25	890.31.125	Fuel Line – 2mm Black	2
15	22.1000.50.0300	FMP Holder for Noise Reduction	1
13	20.1348.03.0002	Bracket – Angle For FM Pump	2
26	10.2063.01.1098	Clip – 11mm Fuel 46011	4
28	29.2100.17.1004	Clip – 9mm Pt 46009	4
29	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
29	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
24	360.75.350	Hose Fuel – 5 x 3mm	0.05
24	360.75.350	Hose Fuel – 5 x 3mm	0.05
ANCILLARIES			
32	29.2100.01.8014	Term Rec AMP 180384-1 4-6mm	2
33	29.2100.01.8003	Terminal Housing Rec 2 Way Amp A	1
21	29.2100.01.8066	Ties 200mm Cable Black Ncs 200	10
	152.10.003	Clip - 4mm Fuel Line	3
	110.10.026	Nut - M6	7
	171.22.086	Washer M6 Spring	7
	29.2100.01.9331	Screw - M6 x 25 Hex Head Z+P	1
	29.2100.02.0024	Washer M6 Penny	1
	108.10.325	Screw No10 x 1/2 Pan Pozi AB	3
	29.2100.01.9039	Screw No8 x 3/8 Pan Pozi AB	8
	20.1280.09.0103	Grommet - 9/16"	1
	29.2100.02.2326	Dometic M/Home Instruction G	1
	29.2100.02.0357	Warranty Folder D	1

2 PRODUCT INFORMATION

Scope of Delivery



2 PRODUCT INFORMATION

TECHNICAL DATA FOR D2 AND D4

Heater		**AIRTRONIC**				
Heating Medium		Air				
Control of the Heat Flow		Power	Large	Medium	Small	Off
Heat Flow (Watt)	D2	2,200	1,800	1,200	850	–
	D4	4,000	3,000	2,000	900	–
Heater Air Flow Rate	D2 with 60mm Hood	105	90	60	40	13
	D4 with 90mm Hood	185	150	110	60	24
Fuel Consumption (l/h)	D2	0.28	0.23	0.15	0.10	–
	D4	0.51	0.38	0.25	0.11	–
Electrical Power Consumption (Watt) – 12 and 24 Volt	D2 In Operation	34	22	12	8	5
	D4 In Operation	40	24	13	7	5
	At Start	≤100				
Rated Voltage		12 Volt or 24 Volt				
Operating Range: Lower Voltage Limit: An undervoltage protection in the controller switches the heater off when the voltage limit is reached.		Approx. 10.5 Volt Resp. 21 Volt Undervoltage Protection Trigger Time: 20 Seconds				
Operating Range: Upper Voltage Limit: An overvoltage protection in the controller switches the heater off when the voltage limit is reached.		Approx. 16 Volt Resp. 32 Volt Overvoltage Protection Trigger Time: 20 Seconds				
Fuel “Fuel Quality” and ‘Fuel at Low Temperatures”, see page ??.		Commercially Available Diesel FUEL (DIN EN 590)				
Tolerable Ambient Temperature		Operation		Not Running		
	Heater	-40°C to +70°C		-40°C to +85°C		
	Dosing Pump	-40°C to +50°C		-40°C to +125°C		
Maximum Air Intake Temperature		+40°C				
Interference Suppression		Interference Suppression Class 5 to DIN EN 55 025				
Weight		D2 Approx. 2.7kg – D4 Approx. 4.5kg				
Ventilation Mode		Possible				

CAUTION!

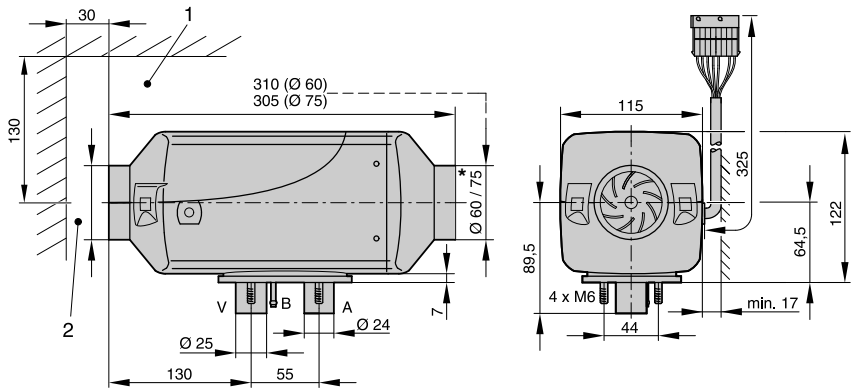
Safety instructions for technical data.

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

Please Note!

Provided no limit values are given, the technical data listed is subject to the tolerances usually applicable to heaters of ±10% for normal voltage, ambient temperature 20°C and reference altitude Esslingen, Germany.

Main Dimensions



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

The warm hot air outlet is routed via 60mm 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.

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.

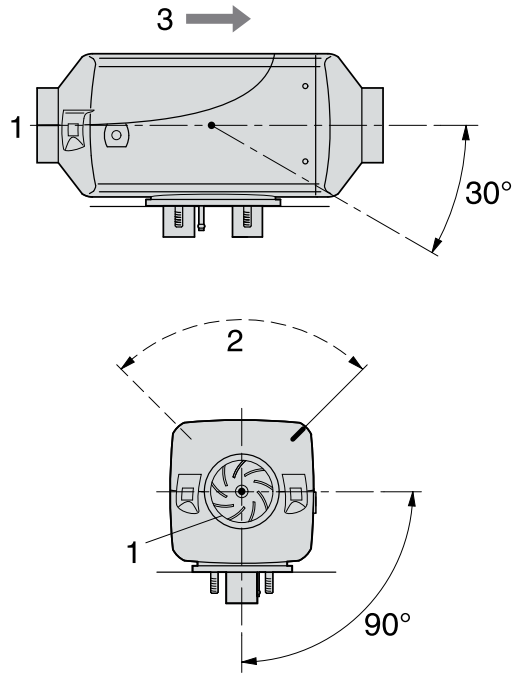
- The regulations and safety instructions to be observed for this chapter are on pages 4 – 7 of the Technical Book.

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

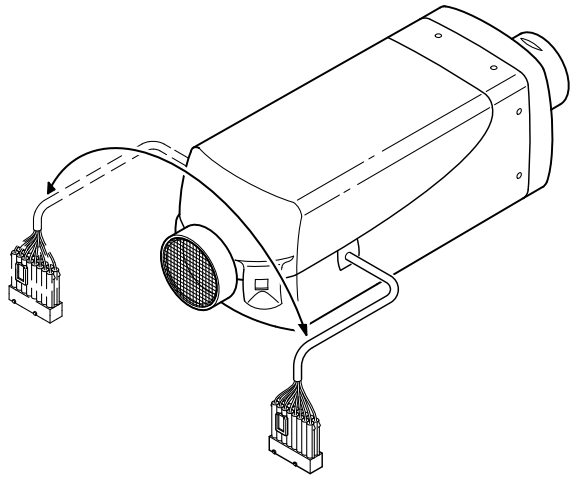
CABLE HARNESS CONNECTION, RIGHT OR LEFT

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° in all directions because of a slanting position of the vehicle, without any impaired functions.

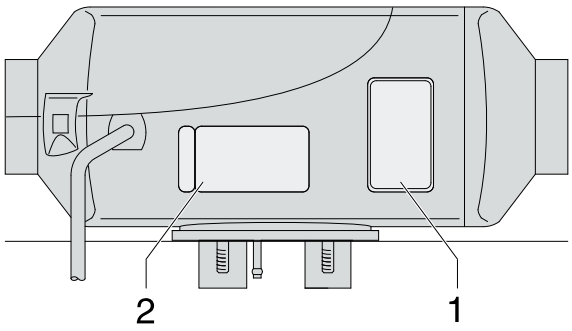
Cable Harness Connection



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.



1 – Original Nameplate.

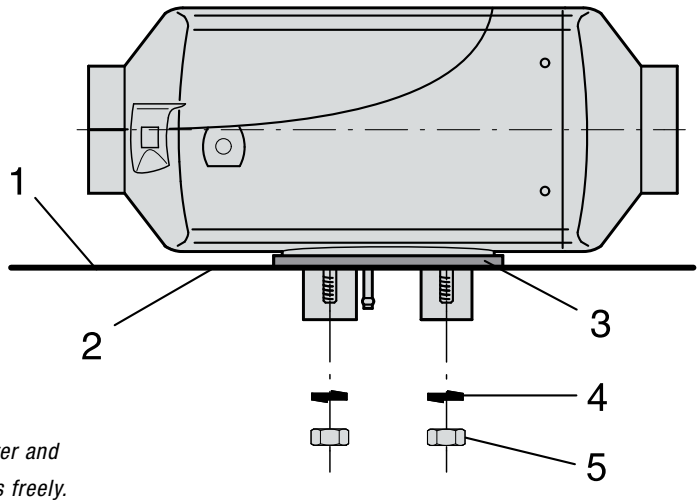
2 – 2nd Nameplate (Duplicate).

MOUNTING AND FASTENING

Use the supplied floor plate 29.2100.01.9003. 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

DANGER!
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.

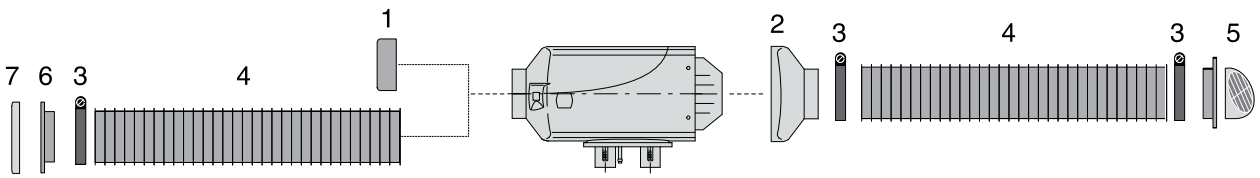
This is why it is important to avoid working in the vicinity of the heater air system while the heater is working. In such cases, switch the heater off beforehand and wait until all parts have cooled down completely.

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.

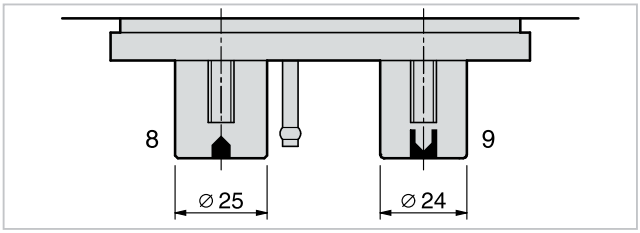
CAUTION!
Risk of injuries and burns.

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.

Please Note!

- Comply with the regulations and safety instructions for this chapter on page 4 – 7 (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 Ø 25mm, 500mm long.

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

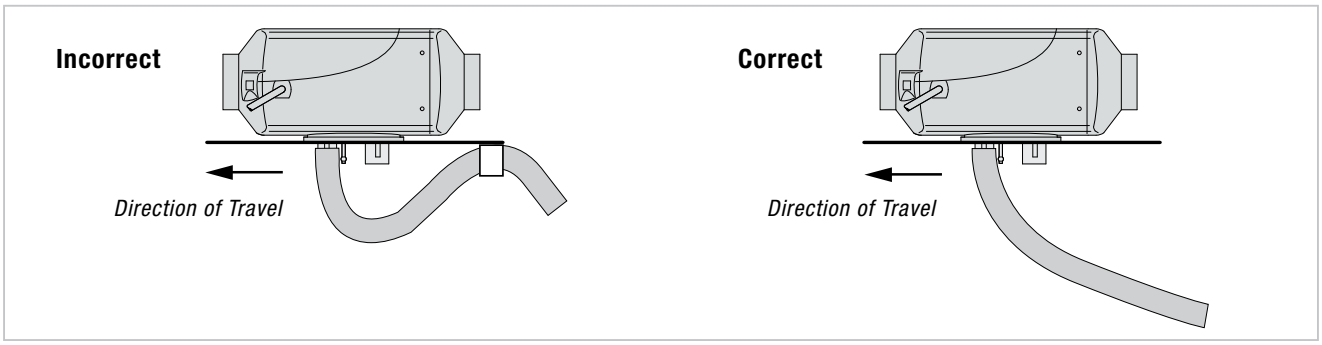
Fasten the combustion air hose to the heater with a hose clamp and at suitable points with hose clips or cable ties.

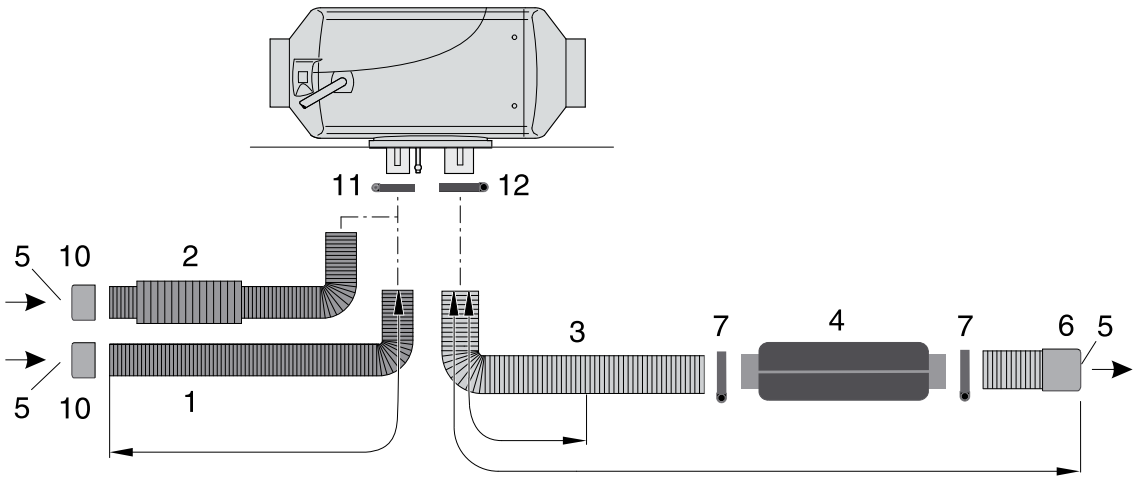
The combustion air intake must only draw fresh air from the outside, never from the living area.

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.





1 – Combustion Air Hose, di = 25mm. 2 – Combustion Air Silencer, Optional. 3 – Exhaust Pipe, de = 24mm.
4 – Exhaust Silencer Optional. 5 – Intake / Outlet Opening – protect from wind, snow, dirt and water.
6 – End Sleeve, Combustion Air. 7 – End Sleeve, Exhaust. 8 – Combustion Air Connection. 9 – Exhaust Connection.
10 – End Sleeve, Combustion Air. 11 – Hose Clip. 12 – Exhaust Hose Clip.

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.

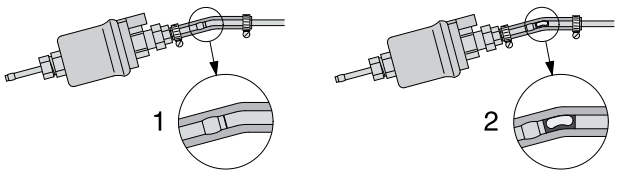
DANGER!
Risk of injury.

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.



1 – Correct Connection.
2 – Incorrect Connection – bubble formation.

Please Note!

The fuel lines are colour coded.

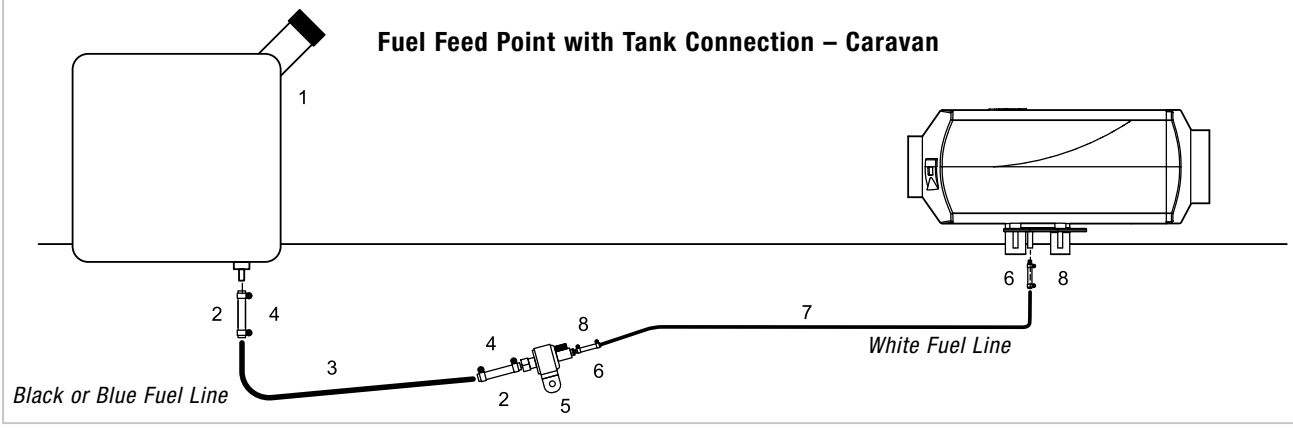
Black or Blue fuel line is used between the tank and the dosing pump.

White 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.

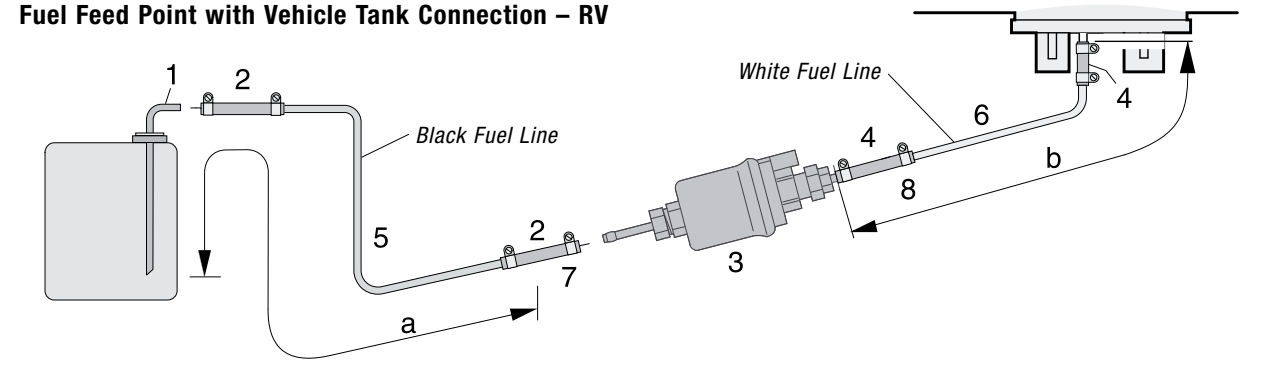
3 INSTALLATION

Fuel Feed Point with Tank Connection – Caravan



Item No.	Part Number	Description	Quantity
1		Fuel Tank	
2	360.75.350	Hose Fuel – 5 x 3mm	0.05
2	360.75.350	Hose Fuel – 5 x 3mm	0.05
3	890.31.125	Fuel Line – 2mm Black	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	890.31.118	Fuel Line 1.5 x 4mm White	6.00
8	29.2100.17.1004	Clip – 9mm Pt 46009 A	4

Fuel Feed Point with Vehicle Tank Connection – RV



Item No.	Part Number	Description	Quantity
1		Fuel Standpipe Pickup	
2	360.75.350	Hose Fuel – 5 x 3mm	0.05
3	22.4519.01.0000	FM Pump	1
4	360.75.300	Hose Fuel – 3.5 x 3mm	0.05
5	890.31.125	Fuel Line – 2mm Black	2.00
6	890.31.118	Fuel Line 1.5 x 4mm White	6.00
7	10.2063.01.1098	Clip – 11mm Fuel 46011	4
8	29.2100.17.1004	Clip – 9mm Pt 46009 A	4

POSSIBLE PIPE LENGTHS

Intake Side a = max. 2m

Pressure Side 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!

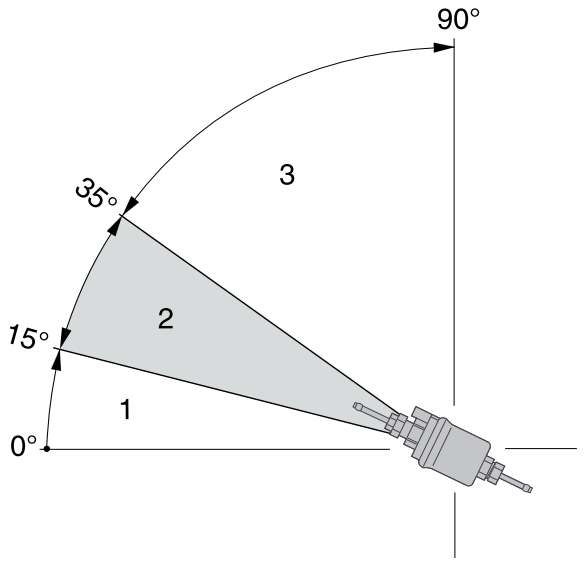
Safety instructions for the fuel supply.

- 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°.



1 – Installation Position Between 0° and 15° is Not allowed.
2 – Acceptable Position for Correct Operation 15° to 35°.
3 – Installation Position Between 35° to 90° is Not Allowed.

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.

Please Note!

OPERATION WITH BIO-DIESEL (FAME)

AIRTRONIC

The heater is **NOT** approved for operation with bio-diesel fuel (FAME). Up to 10% 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 a control thermostat. 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 1,500m:
  - Unlimited heating possible.
- Heating at altitudes over 1,500m – 3,000m:
  - Heating is possible for short periods at this altitude (e.g. driving over a mountain pass or taking a break in a journey).
  - During longer stays (e.g. winter camping), the fuel supply must be adjusted to the altitude. This can be done by installing an air pressure sensor. The air pressure sensor is included in the Altitude kit – Order No. 22.1000.33.22.00.

Heaters suitable for high altitudes are labelled with “H-Kit” on the side nameplate.

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.

Please 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 are 4 control stages 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.

Please 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.

Please Note!

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

4 OPERATION AND FUNCTION

801 MODULATOR WITH DIAGNOSTICS

The 801 modulator is the standard controller supplied for your caravan. It offers manual control and digital temperature adjustment, also diagnostic readout for your Airtronic heater.

SWITCHING ON THE HEATER

Press the key on “ON” will briefly appear on the display. The heater will commence its start-up cycle.

Also the green LED “Heater ON” indicator will illuminate and the display will now revert to show ambient temperature (°C).

The ambient display temperature range is from -9°C to +59°C.

SWITCHING OFF THE HEATER

The heater may be switched off at any time by pressing the key.

The heater cooling down cycle of approx. 3 minutes will then be initiated. Wait for the blower to stop before isolating the batteries.

ADJUSTING THE TEMPERATURE

Pressing the and keys will alter the desired temperature shown on the display. This level may be adjusted at any time and will remain in the modulator memory when the heater is not in operation.

When the and keys are released the display will revert back to show ambient temperature.

The Modulator temperature adjustment range is from +5°C to +32°C.

DIAGNOSTIC MODE

With the heater switched on, press and hold key until the display shows “**da**”. The blue LED will briefly illuminate. Release key and the display then shows the current fault code. Each press of the key will scroll through the last 5 previously stored fault codes.

TYPICAL FAULT CODES

10 = Over voltage shut down – Check battery charging.
11 = Under voltage shut down – Check battery charging.
12 = Overheating – Check air ducts for blockage / obstruction.
52 = Safety time exceeded – Check fuel supply.

For other fault codes contact your Eberspächer Dealer.

Press both the and keys together to erase stored fault codes and display shows “EE”. To exit diagnostic mode, press and release key.

VENTILATION

To activate ventilation mode, press and hold the key until the blue LED illuminates and display shows rotating two digits.

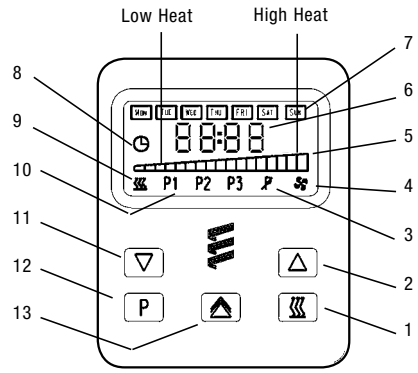
Press again to switch ventilation mode off.

EMERGENCY SHUTDOWN – EMERGENCY OFF

If an emergency shutdown – EMERGENCY OFF – is necessary during operation, proceed as follows:

- Swich the heater off with the control, or
- Pull the fuse out, or
- Disconnect the heater from the battery.

4 OPERATION AND FUNCTION



1. Instant Heat ON/OFF key.
2. Adjustment Up key.
3. Disengaged pre-set symbol.
4. Ventilation symbol.
5. Temperature ramp.
6. Current Time, Preset Time, Heating Time, Run Time and Diagnostics.
7. Day selected indicator boxes.
8. Clock symbol.
9. Heater operation symbol.
10. Preset Programme symbols.
11. Adjustment Down key.
12. Programme key.
13. Set / Programme key.

701 TIMER / MODULATOR WITH DIAGNOSTICS

Your Timer / Modulator offers manual and programmable control along with temperature adjustment of your heater. When the heater is switched on by the Timer / Modulator in a programmed mode it will run for 1 hour or for the duration time that you have selected e.g Heater on at 0700, duration time of 1 hour, which means heater will be switched off automatically at 0800.

CLOCK SETTINGS

Press and hold key until the symbol begins to flash. Use the and keys to set correct time. Press and release the key and the day box will begin to flash. Use the and keys to set the correct day. Press and release the key again to reset the clock to the start of the minute displayed. This may be used to coincide with a known time signal.

Please Note!

These adjustments are not possible when the heater is in operation. To set the heater's programmable switch on timer, see "Setting Program Times".

SWITCHING ON THE HEATER (MANUALLY)

Press the key and the symbol will appear on the display. The heater will commence its startup cycle. The display will change to show a default of one hour heating countdown time. This can be extended in increments of 10 minutes, 30 minutes, 1 hour, 1 hour 30 minutes, 2 hours up to eight hours or to continuous running operation (shown as C-: -- on display) by repeatedly pressing the key while the heater is in operation. Current time will be displayed every 5 seconds.

SWITCHING OFF THE HEATER (MANUALLY)

The heater may be switched off at any time by pressing the key. The cooling down cycle will then be initiated.

ADJUSTING THE TEMPERATURE

Pressing the and keys will alter the 20 segment temperature ramp shown on the display. This level may be adjusted at any time and will remain in the timer memory when the heater is not in operation.

DIAGNOSTIC READOUT

With the heater switched on, press and hold key until the display shows "dAtA". Release key and display then shows "AF--" and alternatively displays the current fault code. Each press of the key will scroll through the last 5 previously stored fault codes.

Typical Fault Codes:

- 10 = Over voltage – Check battery charging system.
- 11 = Under voltage – Check battery voltage.
- 12 = Overheating – Check air ducts for obstruction.
- 52 = Safety time exceeded – Check fuel supply.

For other codes consult your local dealer.

Press and keys together to erase stored faults and display shows "EEEE".

To exit diagnostic mode, press and release the key. If stored faults cannot be erased consult your local dealer.

HEATER RUN TIME

Press and hold the key until the display shows the heater run time in hours.

4 OPERATION AND FUNCTION

SETTING PROGRAMME TIMES

Press the ⩓ key and the P1 symbol will begin to flash. Pressing the P key will alternate the display between a preset time display and “OFF”. With P1 flashing in the time display mode the desired programme time can be set using the △ and ▽ keys.

Once the desired time has been selected and if no keys are depressed for 8 seconds the display will revert to the clock mode. During this 8 second period pressing the ⩓ key will select P2 which can be used to select another programme time or be set to “OFF” if not required.

A further pressing of the ⩓ key will select the P3 symbol which can be set or turned off in the same manner as above.

SETTING PROGRAMME DAYS

Having set programme times P1, P2 or P3 or all three, press the ⩓ key, all the ‘P’ symbols that have been selected will start flashing and a box will appear around one of the days. Press the P key to select “ON” if you require the selected day to be programmed, or “OFF” if you do not wish it to be selected.

To move onto the following day press the ⩓ key once again and select “ON” or “OFF” as before. Repeat this procedure for all seven days. To store these settings in the Timer / Modulator memory, wait for 8 seconds and the display will revert to the clock mode.

SETTING PROGRAMME DURATION

To set the desired heater duration, press and hold the P key and whilst holding repeatedly press the ⩓ key to select the desired time in increments of 10 minutes, 30 minutes, 1 hour, 1 hour 30 minutes, 2 hours up until 8 hours.

Please Note!

Continuous operation is not selectable in this programme mode.

Once stored the preset duration time cannot be adjusted during heater “ON” operation.

SWITCHING ON THE HEATER (PROGRAMMED)

To activate your selected program settings, press the P key to show the P1, P2, P3 (to determine when the heater will switch on) or symbol P̸ to turn off all settings.

Please Note!

If all presets and days have been selected to “OFF” pressing the P key will have no effect.

When the heater has been switched on manually, it is possible to view which of the programmed times have been set and whether or not they have been activated. Press the P key to view and if any programmed time has been activated, its corresponding P will flash. If no programmed times have been activated then P̸ flashes. Press the P key to activate or de-activate the programmed times as required. Wait 8 seconds and the display will revert to manual operation countdown.

VENTILATION

To activate ventilation mode, repeatedly press ▽ key until only one segment shows in the ramp. Press and hold the ▽ key until shows and display changes to 1 hour countdown. To stop ventilation, press △ key to return to normal display time.

Please Note!

The ventilation countdown time of 1 hour is not adjustable.

5 ELECTRICAL SYSTEM

HEATER WIRING

CAUTION!
Safety instructions for wiring the heater.

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, and jamming or exposure to heat.
- Electrical connections and ground connections must be free of corrosion and firmly connected.

Please Note!

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

- Electrical leads, switchgear and controllers must be arranged in the vehicle so that they can function perfectly under normal operating conditions (e.g. Heat exposure, moisture etc.).

12 VOLT DC CONNECTION

The heater must be connected to the 12 volt supply battery using suitable DC cable. Voltage drop must not exceed 0.5V for 12 volt connection.

Minimum cable size for lengths up to 2 metres between the heater and the battery is 4mm^2. Minimum cable size for lengths up to 8 metres is 6mm^2.

The 12 volt DC connection must be a permanent dedicated connection. Turning the 12 volt DC supply off while the heater is running may damage the heater.

The heater must always be shut down using the control panel, this allows the heater to turn off then pass through a cool-down stage.

Parts List for the Circuit Diagrams Airtronic

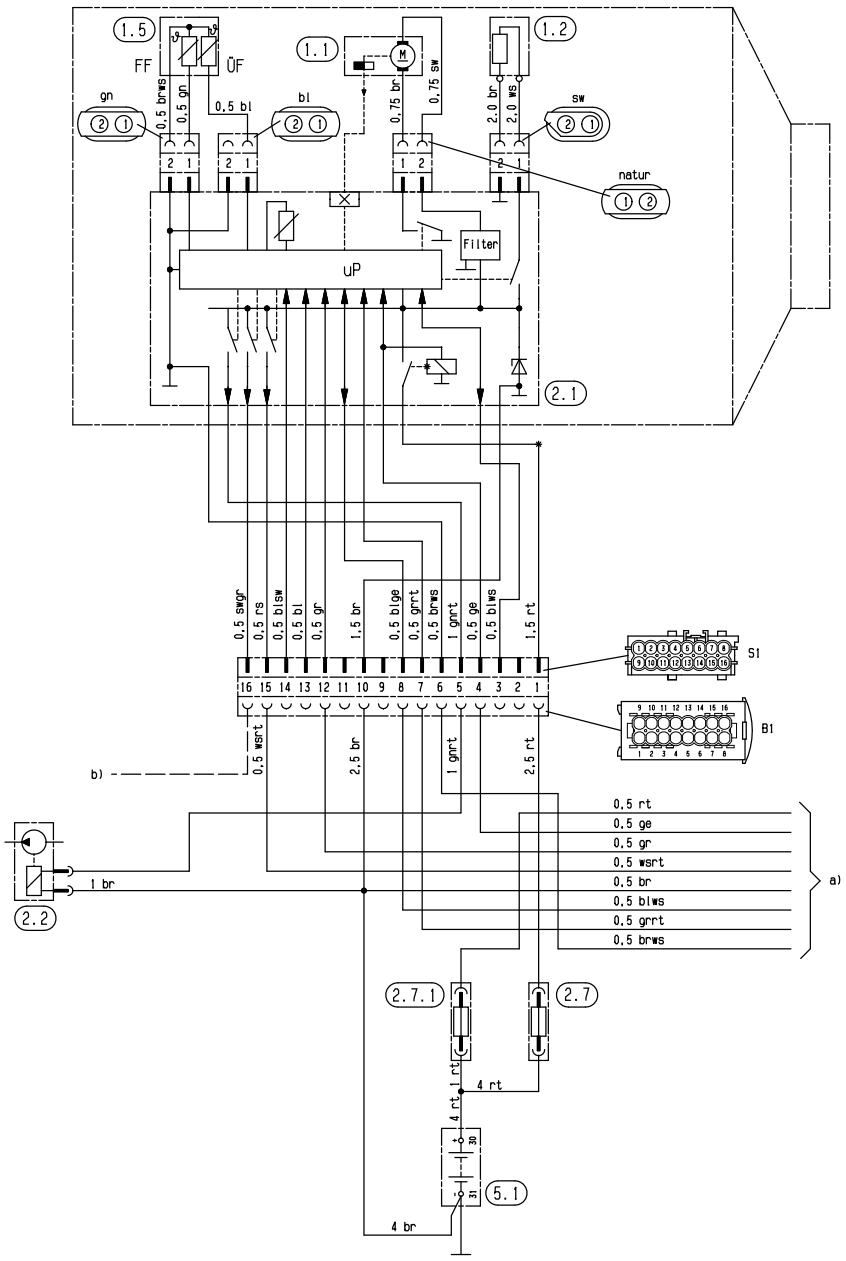
1.1 – Blower Motor.
1.2 – Glow Pin.
1.5 – Overheating and Flame Sensor.
2.1 – ICU Controller.
2.2 – Fuel Metering Pump.
2.7 – Main fuse 12 volt = 20 A.
2.7.1 – Fuse, actuation 5 A.
5.1 – Battery.

a) – Connection of the control unit and external sensor according to the circuit diagram “operating controls”.

rt – red – Power Supply, Plus – Terminal 30.
ge – yellow – Switch-on Signal – S+.
gr – grey – Actual Temperature.
br – brown – Power Supply, Minus – Terminal 31.
blws – blue/white – Diagnosis.
grrt – grey/red – Nominal Temperature.
brws – brown/white – Reference Signal Sensor.

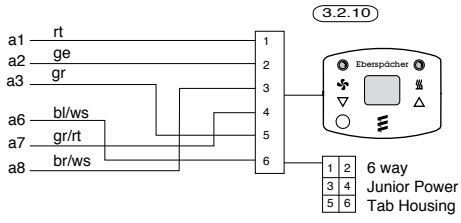
5 ELECTRICAL SYSTEM

Airtronic D2 and D4

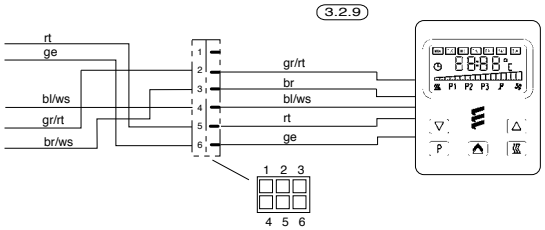


Operating Controls

801 Modulator



701 Timer Modulator



Wiring Colour Codes

rt – red	*gn – green*
br – brown	*bl – blue*
ws – white	*gr – grey*
sw – black	*ge – yellow*

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:

Please Note!

Please note that warranty claims can be 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

CERTIFICATION

The high quality of Eberspächer's 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 affects products, procedures and customer / supplier relationships.

Officially approved public experts assess the system and the corresponding certification company awards a certificate.

Eberspächer has already qualified for the following standards:

QUALITY MANAGEMENT AS PER
DIN EN ISO 9001:2000 AND ISO/TS 16949:1999

ENVIRONMENT MANAGEMENT SYSTEM AS PER
DIN EN ISO 14001:1996

DISPOSAL

DISPOSAL OF MATERIALS

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

Electric motors, controllers and sensors (e.g. temperature sensors) are deemed to be "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 it has to be sent back.

EU DECLARATION OF CONFORMITY

With regard to the following products:

HEATER TYPE AIRTRONIC / AIRTRONIC M

We herewith confirm that it conforms with the prime safety requirements stipulated in the directives of the EU Council for harmonisation of the legal regulations of the member states with regard to electromagnetic compatibility (89 / 336 / EEC).

This declaration applies to all heaters produced according to the production drawings AIRTRONIC / AIRTRONIC M, which are an integral part of this declaration.

The following standards / directives have been used to assess the product with regard to electromagnetic compatibility:

- EN 50081 – 1 Basic form interference emission.
- EN 50082 – 1 Basic form interference resistance.
- 72 / 245 / EEC – Modification status 2005 / 83 / EU interference suppression in motor vehicles.

8 LISTS

LIST OF ABBREVIATIONS

EC TYPE APPROVAL
Permit awarded by the Federal Vehicle Office for the production of a heater for installation in motorised vehicles.

EMC DIRECTIVE
Electromagnetic compatibility.

JE PARTNER
J. Eberspächer partner.

FAME
Bio-diesel according to DIN V 14 214.

NOTES

This publication was correct at the time of going to print however, Eberspächer (UK) Ltd have a policy of continuous improvement and reserve the right to amend any specifications without prior notice.

Eberspächer (UK) Ltd
Climate House
Yeoman Road, Ringwood
Hampshire BH24 3FA
Tel: 01425 480151
Fax: 01425 480152
enquiries@eberspaecher.com
www.eberspacher.com

Eberspächer