

elief

Belief Airo 4 Air Heater

Installation and spare-parts manual

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Scope And Safety

This manual covers the Belief Airo 4 air heater only. Content from combined source manuals has been separated so unrelated model references do not appear in this draft.

The heater operates independently from the vehicle engine. It normally uses the vehicle battery and fuel supply, although auxiliary batteries or independent tanks may be used where the installation requires them.

Installation, service and repair work should be carried out by trained personnel. Follow the vehicle, marine or welfare-unit safety requirements that apply to the installation.

Safety Notes

- Do not mount the heater near flammable sources, standing water or areas that can block air flow.
- Combustion air and exhaust must discharge outside the occupied space, away from fresh-air inlets.
- Switch the heater off and allow it to cool before working around the exhaust or heater body.
- Fuel lines must be secured, kept away from heat and protected against vibration, chafing and road debris.
- Electrical connections must be clean, dry, correctly oriented and protected where they pass through panels.

Technical Data

Item	Airo 4 value
Heat output	4000 W
Fuel	Diesel
Output range	900-4000 W
Fuel consumption	0.11-0.51 l/h
Run-time power consumption	8-40 W
Working temperature	-40 deg C to 20 deg C
Weight	4.5 kg

Output position	P01	P02	P03	P04	P05	P06	P07
Current draw (A)	0.4	0.6	0.9	1.4	2.0	3.0	4.3

The Airo 4 heater body contains the heat exchanger, burner, glow pin, overheat sensing, air motor and ECU inside a two-part casing. The split tables below keep the MV diagram item numbers beside the matching manufacturer numbers from the supplied 4kW Eberspacher Type parts sheet.

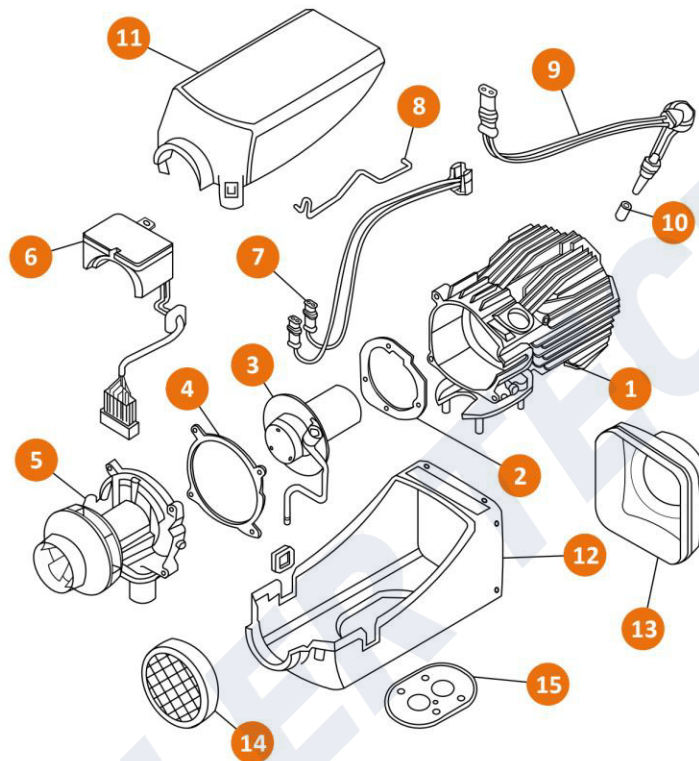


Figure 1

- | | | |
|----------------------------|-------------------------|----------------------------|
| 1. Heat exchanger | 2. Burner Gasket | 3. Burner Assembly |
| 4. Air Motor Gasket | 5. Air Motor | 6. ECU |
| 7. Overheat Sensor | 8. Spring Clip | 9. Glow Pin |
| 10. Glow Pin Screen | 11. Top Case | 12. Bottom Case |
| 13. Outlet Cover | 14. Inlet Grill | 15. Mounting Gasket |

Airo 4 internal structure

Internal Parts

MV item	Component	Manufacturer number	Workbook item
1	Heat exchanger / furnace body casing	12010700400	Furnace Body Casing
2	Burner gasket	12040700200	Asbestos-Free Gasket
3	Burner assembly	31010703100	Burner Assembly
4	Air motor gasket	12040700100	Fluorine-Coated Sealing Gasket
5	Air motor / fan assembly, 12 V / 24 V	31010703900 / 31010702900	Fan Assembly

6	ECU / controller, 12 V / 24 V	31010703200 / 31010703400	Controller
7	Overheat sensor	31010602100	Overheat Sensor
8	Spring clip / sensor spring	12010700800	Sensor Compression Spring
9	Glow pin, 12 V / 24 V	31010605300 / 31010605400	Glow Plug
10	Glow pin screen	12010600800	Stainless Steel Filter Element

Casing And Mounting Parts

MV item	Component	Manufacturer number	Workbook item
11	Top case / upper cover	12020700200	Main Unit Upper Cover
12	Bottom case / main unit casing	12020700100	Main Unit Casing
13	Outlet cover / guard	12020701700	Air Outlet Guard
14	Inlet grill / combustion fan wheel	12020700300	Combustion Air Fan Wheel
15	Mounting gasket	12040600100	Silicone Sealing Gasket

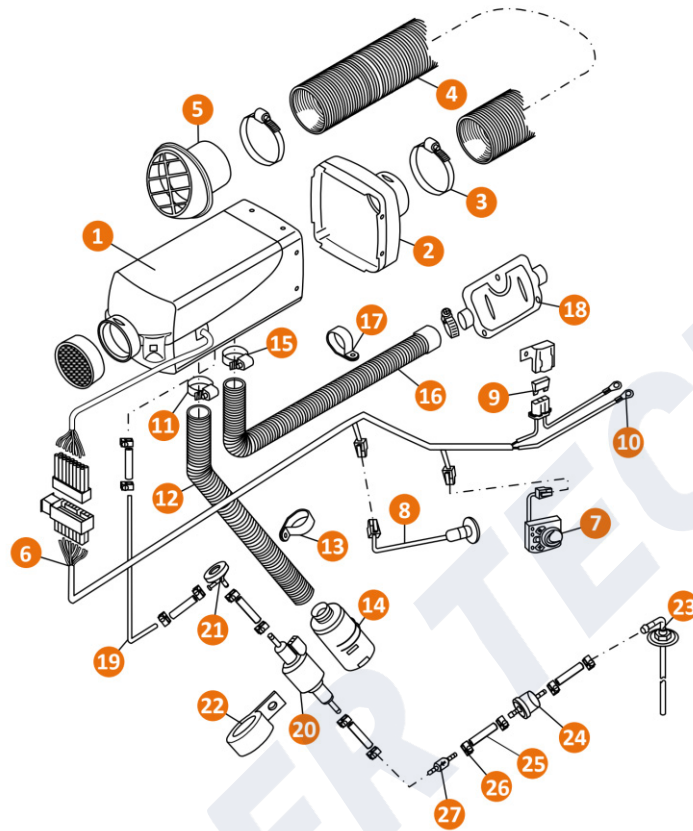


Figure 2

Standard Airo 4 installation parts

Installation Parts

Ref	Item	Ref	Item
1	Main heater unit	15	Exhaust pipe clamp
2	Outlet case	16	Exhaust pipe
3	Hose clip	17	Exhaust pipe P-clip
4	Hot-air ducting	18	Exhaust silencer
5	Hot-air outlet vent	19	Fuel pipe
6	Main wiring harness	20	Fuel pump
7	Control unit	21	Fuel pump damper
8	Temperature sensor probe	22	Fuel pump mount
9	Main fuse	23	Fuel standpipe

Ref	Item	Ref	Item
10	Power supply connection	24	Fuel filter
11	Combustion-air clamp	25	Fuel pipe connector
12	Combustion-air pipe	26	Fuel pipe connector clamp
13	Combustion-air strap	27	Fuel non-return valve
14	Combustion-air silencer / filter		

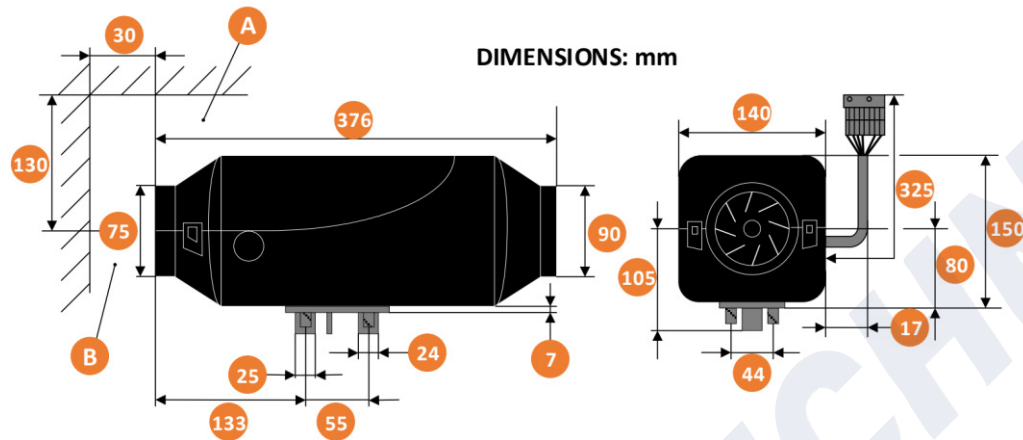


Figure 3

Airo 4 installation clearances and dimensions

- Warm-air ducting size: 90 mm.
- A is the minimum clearance required to open the lid and remove the glow pin or ECU.
- B is the minimum clearance required at the air intake.
- Use a flat installation surface; uneven panels can twist the case and prevent an even seal.
- Use the supplied mounting gasket and plate, especially where the mounting surface is less than 1.5 mm thick.
- Tighten the M6 fixing nuts to 6 Nm + 1 Nm.

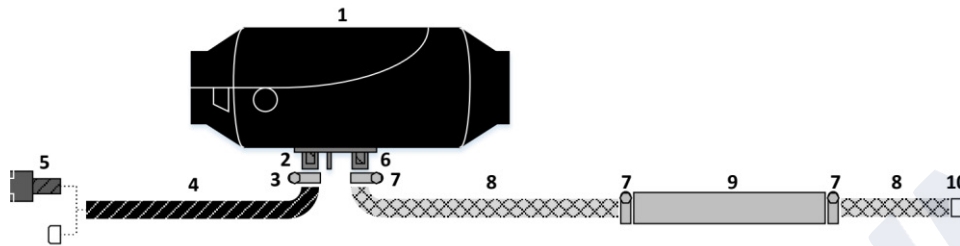
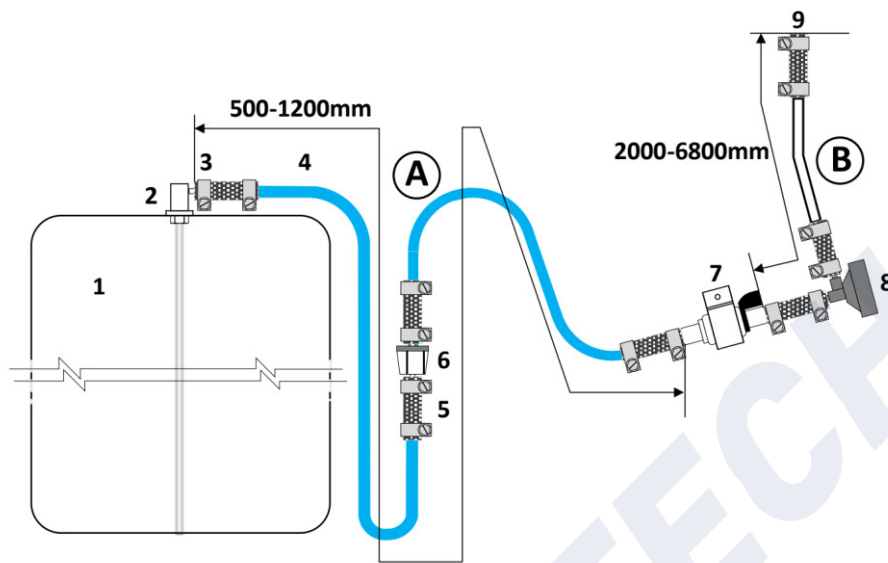


Figure 16

- | | |
|-------------------------------|------------------------------|
| 1. Heater Body | 2. 25mm Combustion Air Inlet |
| 3. Combustion air inlet clamp | 4. Combustion air pipe |

Combustion-air and exhaust components

- Combustion-air inlet hardware is 25 mm; exhaust outlet and pipe are 24 mm.
- Flexible exhaust pipe may be shortened to no less than 200 mm and must not exceed 2.3 m.
- The exhaust outlet must end in open air, point away from the direction of travel and drain condensation.
- For marine exits, form a swan-neck at the skin fitting to reduce the risk of water travelling back to the heater.



Fuel line length and component order

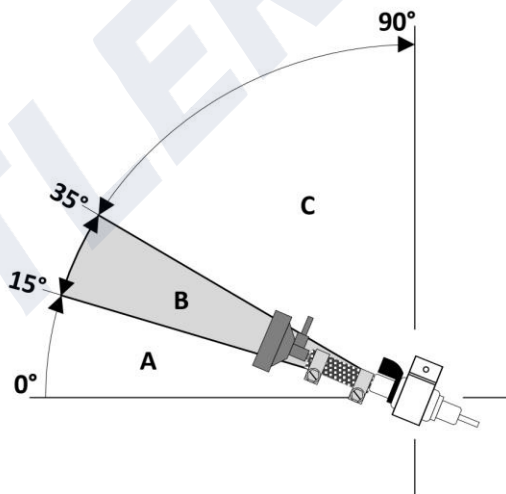


Figure 20

A. Between 0° and 15° - Not acceptable

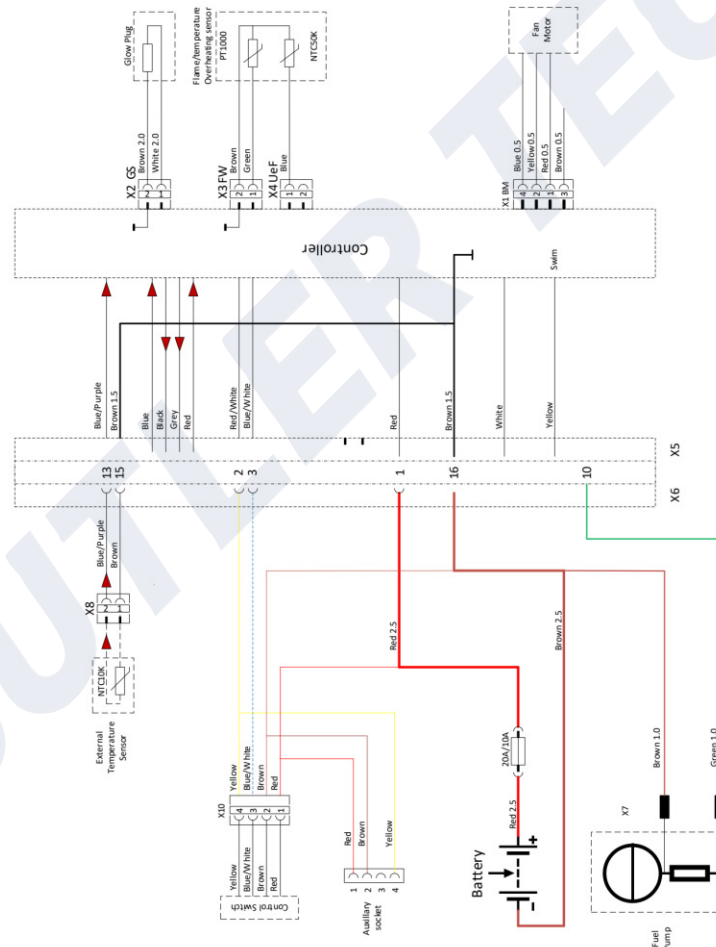
Fuel pump installation angle

- Use a clean, square cut on fuel pipe ends. Do not crush the pipe.
- Fit a diesel fuel filter in the correct flow direction.
- Mount the fuel pump with the pressure side rising; the preferred angle is 15 to 35 degrees.

- Route fuel pipe away from heat and protect it from vibration, chafing and debris.
- The bottom of the fuel standpipe should sit 30-40 mm above the tank bottom.

The Airo 4 loom uses a latch-style main connector. Pull out the latch, seat the heater multiplug in the correct orientation, then push the latch closed to lock the plugs together.

Interface	Connection
GS	Glow pin: white and brown
FW	Overheat and flame sensor: green and brown
UeF	Overheat and flame sensor: blue
BM	Air motor: red, yellow, brown and blue



Airo 4 wiring diagram

Belief / JP Heating Source Parts List

Source sheet: 4kW Eberspacher Type. Descriptions are copied from the workbook with non-English characters removed for Word compatibility; part numbers and English item names are retained.

No.	Belief / JP Heating No.	Item	Description	Qty
1	12030601800	Main Wiring Harness	HK.CR06.3D 4.0mm2 L=4m	1
2	11990002003	Blade Fuse	QY169-20A HW 12V	1
3	11990001901	Blade Fuse	QY169-15A 24V	1
4	33000003100	Fuel Pump	YB--12V	1
5	33000003300	Fuel Pump	YB-I-24V	1
6	33000000400	Fuel Filter	Fuel filter	1
7	12060004600	Nylon Fuel Pipe	dia5mm*1.5mm 1.2/	1
8	12060009400	Nylon Fuel Pipe	dia4*1.25 L=6800	1
9	31010202700	Air Intake Pipe	F5 CR06 CR07	1
10	12060008200	Exhaust Pipe	CR01.13D dia24 L=1000m with end cap	1
11	12040600100	Silicone Sealing Gasket	CR06-1()	1
12	12020015700	Reducing Tee	HK.CR01-18 10-6-10 PA66-GF33	1
13	12020015800	Reducing Tee	HK.CR01-19 12-6-12 PA66-GF33	1
14	12010007100	Fuel Pump Clamp	dia32 ()	1
15	12040100400	Fuel Pump Fixing Clamp Sleeve	PET dia32*29 CR01.8-1 EPDM/	1
16	12010004100	Water Pipe Clamp	dia20-dia32 ()	1
17	29010003700	Air Intake Pipe Fixing Clamp	F2 Y5 dia24 T=0.5	1
18	29010002300	Exhaust Pipe Fixing Clamp	F2 F5 Y5	1
19	12060003800	Fuel Pipe Connector	dia4.1/dia10.5 L=40mm	1
20	12060003900	Fuel Pipe Connector	dia3.5xdia9.5 L=40mm	1
21	12010004300	Fuel Pipe Clamp	dia8-dia109 ()	1
22	12010004200	Mini Clamp	dia9-dia11	1
23	12010004600	Fuel Pipe Clamp	dia12-dia14 ()	1
24	12010006500	Large Washer	dia6*dia18 ()	1
25	12050003400	Nut	M6	1
26	12050003100	Self-drilling Screw (Tek Screw)	ST5.5x25	1

No.	Belief / JP Heating No.	Item	Description	Qty
27	12050003000	Self-drilling Screw (Tek Screw)	ST5.5x30ST5.5x32	1
28	12050002700	Self-tapping Screw	ST4x16	1
29	12050002500	Self-tapping Screw	ST3x20	1
30	21990106400	Nylon Cable Tie	4*200 UV	1
31	31000000500	Suction Pipe Assembly	F2 F5 Y9 dia5*600	1
32	31010703200	Controller	CR07 12V Diesel ECU/Constant power	1
33	31010703300	Controller	CR07 12V Petrol ECU/Constant power	1
34	31010703400	Controller	CR07 24V Diesel ECU/Constant power	1
35	31010605300	Glow Plug	HK.CR06.1.1.1.3JC 12V Kyocera	1
36	31010605400	Glow Plug	HK.CR06.1.1.1.3JC 24V Kyocera	1
37	31010702900	Fan Assembly	CR07 24V 8	1
38	31010703900	Fan Assembly	CR07 12V 8	1
39	12010700300	Fan Bracket	CR07.1.1.1-4	1
40	12020700700	Heating Fan Wheel	CR07.1.1.1-3 PA6-GB30 JX	1
41	12020700500	Housing Bracket	CR07.1.1.1-1 PA6-GB30	1
42	12010700400	Furnace Body Casing	CR07.1.1.2-1	1
43	31010703100	Burner Assembly	F4	1
44	12010600800	Stainless Steel Filter Element	CR06/CR07 dia9*16	1
45	12040700200	Asbestos-Free Gasket (Fluorine-Coated Metal Gasket)	CR07.1.1-4 4	1
46	12040700100	Fluorine-Coated Sealing Gasket	CR07.1.1-1	1
47	31010602100	Overheat Sensor	CR06 CR07	1
48	12010700800	Sensor Compression Spring	CR07.1.1-2	1
49	12020700200	Main Unit Upper Cover	CR07.1.2-2 AP6-GF30	1
50	12020700100	Main Unit Casing	CR07.1.2-1 PA66-GF30	1
51	12020701700	Air Outlet Guard	HK.CR07.1-3H PA66 GF30	1
52	12020700300	Combustion Air Fan Wheel	CR07.1.2-3 PA4.6-GF30	1
53	31000004400	Air Filter	F2 F5	1
54	31010002300	LCD Switch Cable	LX F2-5 HK.CR06.4L	1
55	31010107400	Main Unit Casing	HK.CRO1.37 1.54 Without LOGO	1

No.	Belief / JP Heating No.	Item	Description	Qty
56	12030103800	LCD Switch Cable	HK.CR01.37.2C L=0.8m	1

Maintenance And Fault Codes

After installation, run the heater several times to remove trapped air from the fuel line and check for leaks or loose electrical terminals. Run the heater at high output for at least 10 minutes every month to reduce the risk of mechanical sticking during periods of low use.

- Check the heater air inlet and outlet for blockage or contamination.
- Inspect the combustion-air inlet and exhaust pipe for damage, leaks or clogging.
- Check fuel lines, pump fittings and filters for leaks or deterioration.
- Inspect wiring, plugs and terminals for corrosion or loose connections.
- After 10 years, have the heat exchanger, overheat sensor and exhaust system replaced by a professional.

Fault-code rows are taken from the supplied MV Airo fault-code sheet and the matching fault-code pages in the Airo source manuals. Rotary-control flash wording is cross-checked against the OLED Display V2 fault-code table.

Digital/OLED code	Error description	Rotary-control indication
00	No Fault	No Flashes
10	Second start failure	F01 / 1 Flash
20	Heater does not light in time	F02 / 2 Flashes
21	Combustion termination	F02 / 2 Flashes
30	Voltage too high	F03 / 3 Flashes
31	Voltage too low	F03 / 3 Flashes
A9	Voltage too low	F03 / 3 Flashes
41	Overheated	F10 / 10 Flashes
50	Flame sensor open circuit	F05 / 5 Flashes
51	Flame sensor short circuit	F05 / 5 Flashes
52	Hot air sensor open circuit	F05 / 5 Flashes
53	Hot air sensor short circuit	F05 / 5 Flashes
54	Hot air sensor overheated	F05 / 5 Flashes
65	Inside temperature sensor broken circuit	F06 / 6 Flashes
66	Inside temperature sensor short circuit	F06 / 6 Flashes

Digital/OLED code	Error description	Rotary-control indication
68	Outside temperature circuit broken circuit	F06 / 6 Flashes
69	Outside temperature circuit short circuit	F06 / 6 Flashes
70	Fuel pump short circuit	F07 / 7 Flashes
71	Fuel pump broken circuit	F07 / 7 Flashes
80	Fan broken circuit	F08 / 8 Flashes
81	Fan short circuit	F08 / 8 Flashes
82	fan speed too low	F08 / 8 Flashes
83	Fan speed too high	F08 / 8 Flashes
84	Fan speed measurement fault	F08 / 8 Flashes
85	Fan motor failure to start	F08 / 8 Flashes
90	Glow pin open circuit	F09 / 9 Flashes
91	Glow pin short circuit	F09 / 9 Flashes
92	Glow pin high resistance	F09 / 9 Flashes
93	Glow plug drive open circuit	F09 / 9 Flashes
a2	Overheating	F10 / 10 Flashes
b4	Overheating or sensor fault	F11 / 11 Flashes
b5	Overheat sensor fault	F11 / 11 Flashes
c0	Hydro only - blower relay open circuit	F12 / 12 Flashes
c1	Hydro only - blower relay short circuit	F12 / 12 Flashes
c4	Preheating temperature broken circuit	F12 / 12 Flashes
c5	Preheating temperature short circuit	F12 / 12 Flashes
d0	Crystal oscillator in ECU broken	F13 / 13 Flashes
d1	Fault information storage failure	F13 / 13 Flashes
d3	Maintenance reminder	F13 / 13 Flashes
-	Earth Fault	Constant Flash
-	Connection/Communication Error	Traffic Light