MV Airo 2

Workshop Manual

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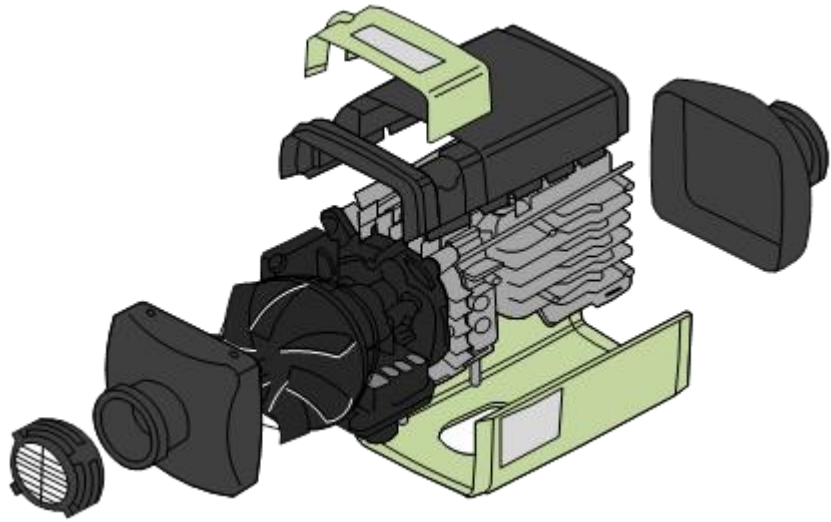
MV Heating UK Ltd
Unit 6
Second Avenue Business Park
Millbrook
Southampton
SO15 0LP



MV Heating UK LTD
+44 (0)2380 522345

Disclaimer:

This manual is intended to give an overview of the internal workings of MV diesel heaters. As such, all work should be carried out by trained professionals at their own discretion. Any action you take upon the information in this manual is strictly at your own risk, and MV Heating will not be liable for any losses and damages in connection with the use of this information. Under no circumstances shall MV Heating or its affiliates, suppliers, or installers be liable for any indirect, incidental, consequential, special or exemplary damages, arising out of or in connection with these manuals. We do not take any warranties about the completeness, reliability and accuracy of this information. MV Heating assumes no responsibility or liability for any errors or omissions from these manuals.

Contents

Note: The following flow charts will refer to the exploded diagrams, or figures as (F:P), where 'F' donates the figure, and 'P' donates the part in that figure. For example (2:4) would mean 'Figure 2: Part 4'.

Heater Removal

To remove the heater from its installation positions, follow these steps:

1. Disconnect the vehicle's battery.
2. Disconnect any ducting secured to the heater's inlet, or outlet caps.
3. Remove the E.C.U. cover (**1:3**) from the top cover (**1:4)** to access the main heater connection.
4. Disconnect main wiring harness connector from heater.
5. Disconnect the fuel supply line from heater's fuel inlet.
6. Disconnect the fuel pump by **pressing the spring clip down** and pulling away the connector.
7. Disconnect the combustion air intake and exhaust pipe from the bottom of the heater.
8. Remove the four M6 nuts and washers from the base of the heater.
9. Remove the heater and discard the mounting gasket.

Heater Installation

To reinstall the heater back into position, follow these steps:

1. Locate heater into position with a new mounting gasket and secure with the four M6 nuts and washers to 6 + 1 Nm.
2. Connect and secure fuel supply line to the heater's fuel inlet.
3. Connect and secure the combustion air intake and exhaust pipe to the heater.
4. Route the fuel cable to the fuel pump and reconnect it.
5. Connect the main wiring harness connector to the E.C.U. and replace the cover (**1:3**).
6. Reconnect the vehicle's battery.
7. Fully bleed the fuel supply system, by turning the heater on and off. Ignition failure will occur until the system has been bled.

Heater Cases Diagram

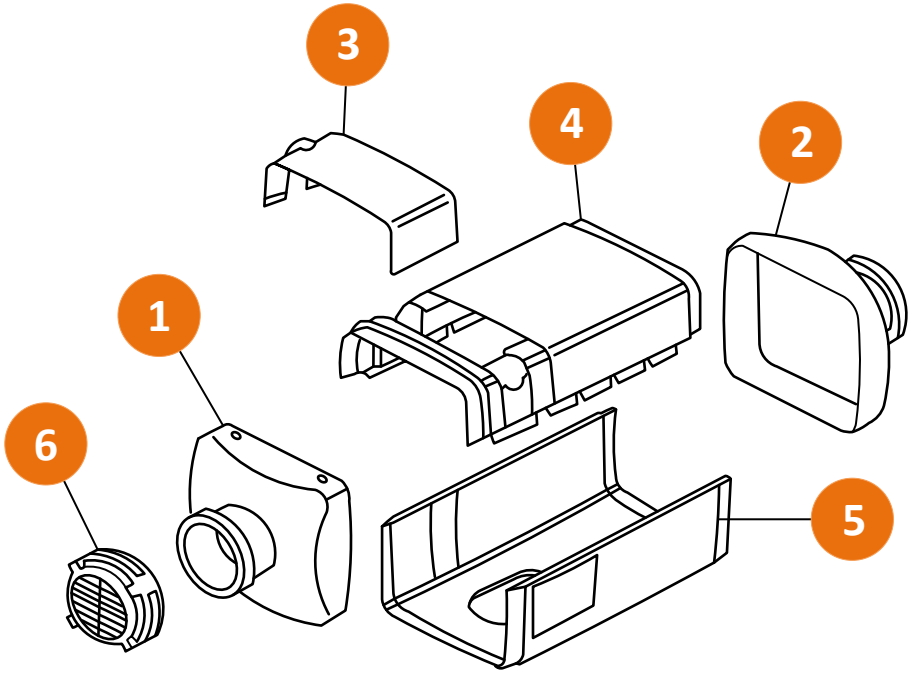


Figure 1

1. Inlet Cap **2.** Outlet Cap **3.** E.C.U. Cover

4. Top Cover **5.** Bottom Cover **6.** Grill

Internal Structure Diagram

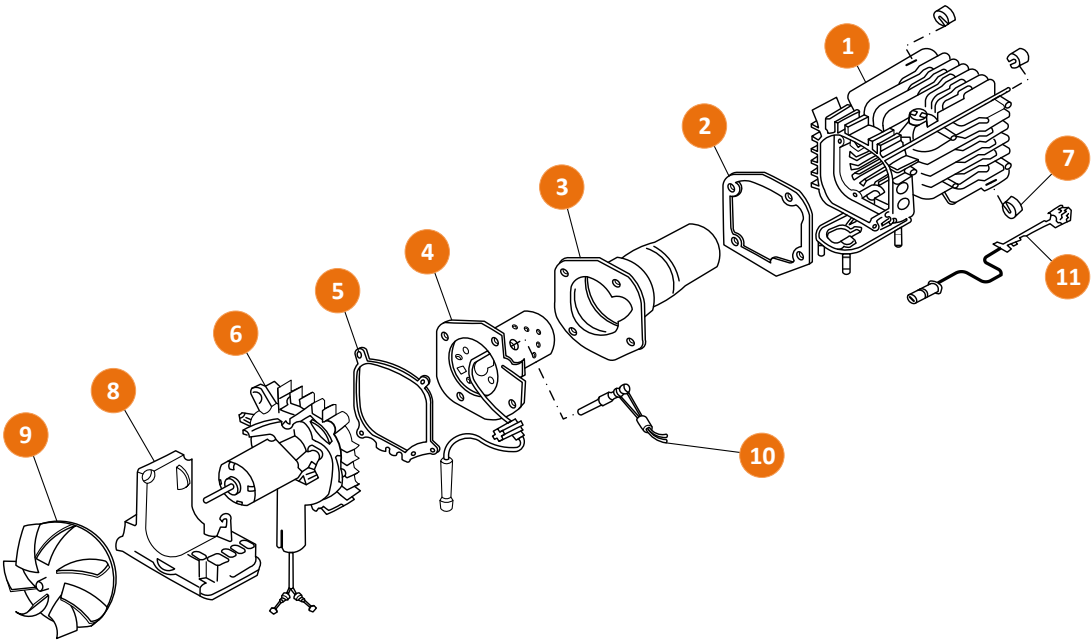


Figure 2

1. Heat Exchanger

2. 4-Hole Gasket

3. Combustion Tube

4. Burner Assembly

5. 5-Hole Gasket

6. Air Motor

7. Insulation Bushes

8. E.C.U.

9. Air Fan

10. Glow Pin

11. Overheat Sensor

ECU Connections Diagram

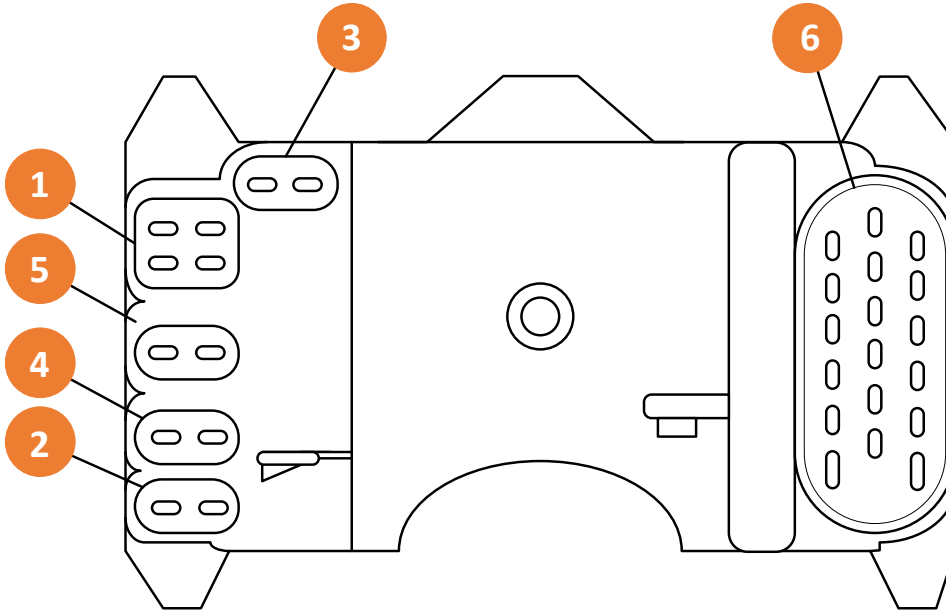


Figure 3

1. Fan Motor **2.** Glow Pin **3.** Overheat Sensor

4. Fuel Pump **5.** Unused **6.** Main Wiring Harness

Removing and Refitting of Parts

Pre-Checks and Notes

- All gaskets located between the disassembled parts must always be discarded and replaced.

- All the parts that have been disassembled should be cleaned with appropriate cleaning fluid and blown dry with pressurized air.

- Any sealing compound on parts must be carefully and completely removed before attempting to refit.

- All disassembled parts should be Inspected for damage (cracks, distortion, wear, etc.) and replaced as required.

You should also regularly inspect all electrical connectors and wiring for corrosion, loose contacts, or wrong crimping, etc. and repair as required.

Part 1: The Case Assembly

Tools:

- 1 x Small Flat-Bladed Screwdriver

Removing the Cases:

1) Remove the heater from its installation position.
2) Remove the inlet cap (**1:1**) using a small flat-bladed screwdriver to separate from bottom and top cases.
3) Remove the outlet cap (**1:2**) the same way.
4) Remove the top case (**1:4**) by sliding away from the bottom case.
5) Remove the bottom case (**1:5**) by pulling away from air motor lugs first.

Refitting the Cases:

1) Make sure all 4 insulating bushes (**4:7**) are located on the heat exchanger (**2:1**).
2) Replace bottom case, ensuring the air motor lugs sit inside the appropriate holes.
3) Replace top case, ensuring that the tabs are locate inside the bottom case correctly.
4) Refit the outlet cap, ensuring that it is orientated correctly.
5) Refit the inlet cap, ensuring that it is orientated correctly.

Part 2: The Overheat Sensor

Tools:

- 1 x Small Flat-Bladed Screwdriver

Removing the Overheat Sensor:

1) Remove the cases (**Part 1**).

2) Unplug the overheat sensor (**2:11**) from the E.C.U. (**2:8**) (two blue wires).

3) Free the wires from around the E.C.U. hook.

4) Slide the overheat sensor off the heat exchanger (**2:1**). Using a small flat-bladed screwdriver as necessary to lever it off.

Refitting the Overheat Sensor:

1) Replace the overheat sensor on the heat exchanger.

2) Feed the wires back under the E.C.U. hook to secure them in place.

3) Plug the overheat sensor back into the E.C.U. paying attention to its correct orientation.

Part 3: The E.C.U.

Tools:

- 1 x 3mm Hex Key

Removing the E.C.U.:

1) Remove the cases (**Part 1**).
2) Remove the air fan (**2:9**) by inserting a large flat-bladed screwdriver between the top of the air fan and the air motor spigot, twisting gently and pulling to separating the two.
3) Remove all connections from the E.C.U. (**2:8**).
4) Remove the 3 x Phillips head screws holding the E.C.U. in place.
5) The E.C.U. can now be removed, inspected and replaced as necessary.

Refitting the E.C.U.:

1) Place the E.C.U. back into position and tighten the 3 x Phillips head screws back into position at 0.7 ±0.07 Nm.
2) Reconnect all the connections paying attention to their orientations – They will only plug in one way, **do not** force them.
3) Push the air fan back onto the shaft, look for the flat edge on the air fan, and the flat edge of the air motor spigot to connect the two.
4) Check the fan spins freely and reconnect the overheat sensor (**Part 2**), and the cases (**Part 1**).

Part 4: The Air Motor

Tools:

- 1 x 4mm Hex Key

Removing the Air Motor:

1) Remove Cases (**Part 1**) and E.C.U. (**Part 3**)

2) Remove the 5 x bolts located around the bottom of the air motor (**2:6**)

3) Carefully remove the air motor, tilting it to one side so that the combustion intake clears the gap on the heat exchanger (**2:1**).

4) The air motor gasket (**2:5**) can be removed and discarded once the air motor is clear

Refitting the Air Motor:

1) Place a new air motor gasket around the end of the heat exchanger.

2) Refit the air motor back into position.

3) Place the earth cable over the top right hex bolt, and fit the remaining 4 x hex bolts around the base of the air motor and tighten to 4.0 ± 0.4 Nm.

4) Refit E.C.U. (**Part 3**) and cases (**Part 1**).

Part 5: Burner, Glow Pin, and Combustion Chamber

Tools:

- 1 x Small Flat-Bladed Screwdriver
- 1 x 5.5mm Socket Screwdriver
- 1 x Small Phillips Head Screwdriver

Removing the Assembly:

1) Remove the cases (**Part 1**) remove the E.C.U. (**Part 3**) and remove the air motor (**Part 4**).

2) Gently push the glow pin grommet fully through toward the burner.

3) Using an Allen key, remove the 4 x 3mm hex bolts from the burner (**2:4**), and place to one side.

4) The burner and combustion chamber (**2:3**) will be connected to each other and can be partially lifted out of the heat exchanger.

5) Separate the two using a small flat-bladed screwdriver and remove both parts from the heat exchanger (**2:1**).

6) Remove the 4-hole gasket (**2:2**) from inside the heat exchanger and discard.

Part 5 Cont'd: Burner, Glow Pin, and Combustion Chamber

Tools:

- 1 x Small Flat-Bladed Screwdriver
- 1 x 5.5mm Socket Screwdriver
- 1 x Small Phillips Head Screwdriver

Glow Pin Removal:

1) One the burner has been removed, use a Phillips head screwdriver to loosen the screw holding the glow pin (**2:10**) in place.

2) Gently remove the glow pin from out of its housing (the glow pin can be tight to remove).

3) The burner and glow pin can now be inspected, cleaned or replaced as necessary.

Refitting the Glow Pin:

1) Feed the glow pin back through the appropriate slot on the burner and reinsert it fully into position.

2) Tighten the small Phillips head screw onto the glow pin to 0.8 ± 0.08 Nm to hold it securely in place.

Part 5 Cont'd: Burner, Glow Pin, and Combustion Chamber

Tools:

- 1 x Small Flat-Bladed Screwdriver
- 1 x 5.5mm Socket Screwdriver
- 1 x Small Phillips Head Screwdriver

Refitting the Assembly:

1) Refit a new 4-hole (burner) gasket (**2:2**).

2) Place the combustion chamber the right way up inside the heat exchanger.

3) Place the burner assembly inside the combustion chamber, and reinsert the 3 x 5.5mm hex screws back into the burner and tighten to 0.6 ± 0.06 Nm.

4) Feed the glow pin lead back through the correct hole and push the grommet so that it is flush with the cut-out.

5) Push the fuel inlet grommet back into position ensuring it is flush with the heat exchanger.

6) Refit the air motor (**Part 4**), the E.C.U. (**Part 3**), the overheat sensor (**Part 2**), and the cases (**Part 1**).

Part Numbers

Part (Voltage)	Part Number
1) Heat Exchanger:	A2Z-001
2) 4-Hole Gasket:	A2Z-002
3) Combustion Tube:	A2Z-003
4) Burner Assembly:	A2Z-004
5) 5-Hole Gasket:	A2Z-005
6) Air Motor (12V/24V):	A2C-006/A2A-006
7) Insulation Bushes:	A25Z-007
8) E.C.U. (12V/24V):	A2C-009/A2A-009
9) Air Fan:	A2Z-010
10) Glow Pin (12V/24V):	A2C-014/A2C-014
11) Overheat Sensor:	A25Z-016
12) Inlet Cap:	A2Z-027
13) Outlet Cap:	A2Z-028
14) E.C.U. Cover:	A2Z-024
15) Top Cover:	A2Z-025
16) Bottom Cover:	A2Z-026
17) Grill:	A2Z-029
18) Fuel Pump (12V/24V)	AHC-023/AHA-023

Notes

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