



# INSTALLATION OPERATION AND MAINTENANCE INSTRUCTIONS FOR EXHEAT FWD TYPE FLAMEPROOF AIR WARMER



Please read these instructions thoroughly before installation and ensure they are passed on to the end-user

## **1.0 GENERAL**

- 1.1 All work should be carried out by suitable qualified personnel.
- 1.2 Carefully remove all protective packaging and visually inspect unit for any transit damage.
- 1.3 Heaters must be handled with care and stored in dry conditions.
- 1.4 **CAUTION** – Air warmers over 1m long are HEAVY and must be handled appropriately.
- 1.5 **CAUTION** – These heaters are designed for industrial use only and additional personnel protection against contact with hot surfaces may be required in some installations.
- 1.6 Before connection ensure that the supply corresponds with that specified on the rating label.
- 1.7 Ensure that the sizes and types of cables to be used are suitably rated for the load and temperature of the unit.
- 1.8 Each heater must be protected by a suitably rated over current device.
- 1.9 All prevailing rules, regulations and bylaws in force at the time and place of installation must be observed.
- 1.10 The heater should be securely fixed in position and all terminal connections checked for tightness before energising.
- 1.11 Any modification not carried out by Exheat Ltd or its approved agent will invalidate certification and warranty.
- 1.12 Reference must be made to IEC / EN 60079-17.
- 1.13 All electrical testing must be carried out in a non-hazardous area.
- 1.14 Precautions must be taken to prevent damage to machined surfaces and threads of flameproof enclosure.
- 1.15 The FWD-T model variant includes a factory fitted integral externally adjustable air sensing thermostat.

## **2.0 INSTALLATION**

- 2.1 The installer or end user shall ensure that the unit has free and unrestricted airflow to allow natural convection to occur.
- 2.2 At no time is the ambient temperature to be allowed to rise above 40°C (or 60°C for the high ambient version). The recommended method of ensuring this is to install a flameproof room thermostat – Exheat model HFT.
- 2.3 Orientation of heater must be strictly adhered to. The heater tube must remain horizontal at all times whilst energised.
- 2.4 The appliance must be securely fitted to a wall or floor using only the brackets provided.
- 2.5 Threaded (FWD) or spigot (FWD-T) cover flame path surfaces must be checked to ensure that they are undamaged and the ‘O’ ring must be fully located in its groove before re-fitting.

### **3.0 ELECTRICAL SUPPLY CONNECTION**

- 3.1 Please refer to the wiring diagram *fig 1*.
- 3.2 The cable entries are M20 and positioned on the side of the terminal box.
- 3.3 The cables must enter the FWD heater terminal box via a certified Ex d cable gland (not supplied) to suit the cable, and be fitted by a suitably qualified person.
- 3.4 The installer or end-user must connect to the heater terminals within the terminal box - **DO NOT** connect to or disturb factory fitted heating element wires.
- 3.5 FWD only: the cover of the FWD terminal box is unscrewed after slackening a locking grub screw using a 3mm A/F hex key. When re-fitting ensure that the 'O' ring seal is in good condition and correctly located. The cover threads **MUST** be kept clean and free from any debris at all times.
- 3.6 FWD-T only: the cover of the FWD-T terminal box is opened after the three socket head screws have been removed. When re-fitting ensure that the 'O' ring seal is in good condition and correctly located. The cover spigot mating faces **MUST** be kept clean and free from any debris at all times.
- 3.7 FWD-T only: the terminal box of the FWD-T may be rotated as necessary for alignment purposes only while the cover is removed. Slacken the 3-off grub screws in the locking ring inside the base of the terminal box and then rotate the locking ring anti-clockwise sufficiently to allow re-alignment of the terminal box. The locking ring is tightened by rotating clockwise. The 3-off grub screws in the ring must be re-tightened before the terminal box cover is re-fitted.

### **4.0 EARTH CONNECTION**

- 4.1 **WARNING** – the heater **MUST BE EARTHED**.
- 4.2 The external earth connection is located on the outside of the terminal box.
- 4.3 The internal earth connection is via a pillar inside the terminal box (*see fig 1*).

### **5.0 OPERATION**

- 5.1 **WARNING** – The Air Warmer must at no time be covered during operation, as this could lead to dangerous overheating.
- 5.2 Once energized the Air Warmer will continue to operate until de-energised by an external control device (available separately).
- 5.3 FWD-T only: the control located on the terminal box cover may be adjusted until the heater de-energises at the desired air temperature.
- 5.4 The permitted ambient temperature range for operation of the standard FWD Air Warmers is  $-20^{\circ}\text{C} \leq T_{\text{amb}} \leq +40^{\circ}\text{C}$ . A special high ambient version (up to  $+60^{\circ}\text{C}$ ) is available, identified by marking of the extended ambient temperature range. The end user must ensure that no excursions outside these ambient temperature limits are allowed to occur at any time.

## **6.0 MAINTENANCE**

- 6.1 All prevailing site safety regulations shall be adhered to at all times.
- 6.2 Before and whilst any maintenance activity is carried out, it must be ensured that there are no hazardous gases present.
- 6.3 Equipment is to be fully isolated from the electrical supply before and whilst any work is being carried out.
- 6.4 Any damage or faults should be notified to Exheat Ltd immediately.
- 6.5 Any replacement parts required must be obtained directly from Exheat. The use of any other parts will void any certification and warranty.
- 6.6 Reference must be made to IEC / EN60079-17 (especially table 1) in addition to the following recommendations:

### **6.6.1 3 Monthly**

- a. Generally inspect the equipment for external damage.
- b. Ensure that the spaces between the element fins remain clear and that the airflow remains unrestricted.

### **6.6.2 6 Monthly**

- a. Isolate the electrical supply and remove the cover.
- b. Internals should be clean and dry.
- c. Ensure terminals are intact and secure.
- d. Heating element insulation resistance to be at least 2 megohm.
- e. Refit cover with new 'O' ring if required (note – this must be secured in place using RTV sealant supplied with the replacement 'o'-ring).
- f. Earth continuity must be maintained between all earth points and main structure.

### **6.6.3 Annually**

- a. Check all above.
- b. Check for element failure or low insulation resistance.

- 6.6.4 If heaters are being left unused for a period greater than 3 months, carry out 6 monthly maintenance before energising.

## **6.7 Removal and Replacement of Ceramic Core Type Heating Element.**

- 6.7.1 Slacken lid locking grub screw and unscrew cover.
- 6.7.2 Disconnect electrical connections and remove cables to heater.
- 6.7.3 Release the clamp securing heater element.
- 6.7.4 Carefully withdraw heating element from its tube.
- 6.7.5 Ensure the tube is clean and dry internally.
- 6.7.6 Carefully fit replacement heating element through a new sealing gasket and into tube whilst preventing it from bending and protecting it from mechanical shock.
- 6.7.7 Re-assemble heater and re-connect wiring (reverse of 6.7.1 to 6.7.3.)
- 6.7.8 Carry out 6 Monthly checks as above.

## **7.0 Marking and certification reference**

- 7.1  II 2 G/D (ATEX certified units only)

Ex d IIC T4, T3 or T2

Ex tD A21 IP66 T135, T200 or T300°C

Do not open while energised

Do not open in presence of explosive atmosphere

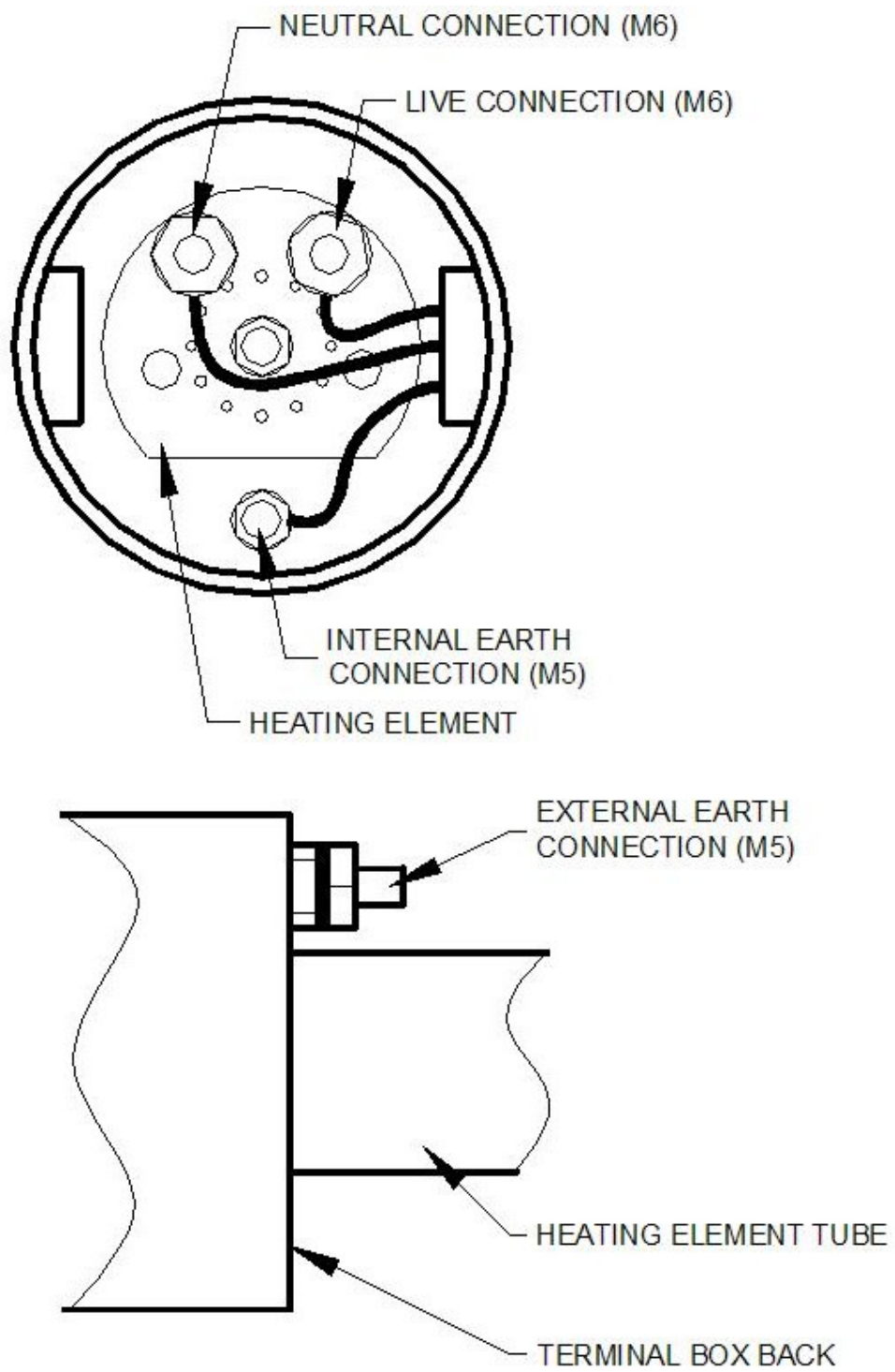
If the temperature at the conduit entry exceeds 70°C high temperature cable must be used

LCIE 04 ATEX 6016 X (ATEX certified units)

IECEX LCI 07.0005X (IECEX certified units)

Fig.1

WIRING DIAGRAM



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