

GENERAL DESCRIPTION

Process Air Heater Unit (incorporating open wire/ceramic element assembly mounted in a stainless-steel tubular enclosure).

HEALTH AND SAFETY

It is essential that all personnel follow safe working practices and adhere to local or site specific regulations.

It is essential that all operating and maintenance instructions appertaining to the heater and associated equipment have been read, understood and implemented prior to operation.

Particular attention should be paid to safe electrical connections and the air flow operation of each heater unit!

- Electrical Connection-wiring to be carried out by qualified electrical engineer in accordance with current wiring regulations.
- **Electric Shock Hazard.** Do not touch the heater coils!
- The Units must be earthed without exception.
- Minimum air flow and maximum air pressures must be adhered to. Failure to comply may result in premature failure of the heater elements.
- The heater coil **MUST NOT** be energised without an adequate air flow, as element failure will occur within seconds!
- It is essential to continue air flow for a period (60 seconds minimum) once power to the heating coils has been disconnected to aid safe cooling and prolong element life.
- In most cases, a thermal trip is included which must be appropriately wired within the control circuit. The trip is a normally closed circuit and is designed to open (isolating the power supply to the element) in the event of extreme over temperature situations to avoid fire risk. It will not prevent element failure due to insufficient air flow!
- The body and connection flanges of the heater can get hot during operation, appropriate insulation or guards should be put in place to prevent personal injury or equipment damage.
- It is the installers responsibility to ensure the machinery or system that the heater forms part of complies with the Machinery Directive 2006/42/EC.

Inspection

A visual check shall be carried out upon receipt of goods, in particular the element, and an assessment of any damage during transit.

Specification

Ensure the heater supplied meets the instillation requirements as per the label attached.

Storage

Heaters should be stored in a dry clean environment.

Pressure rating

Standard models are suitable to use on air pressures up to 1Bar.

(A very small amount of ambient temperature air may bleed into the terminal box due to the cable insulation type)

Higher pressure units are available on request.

Limitations of warranted operating conditions

Maximum inlet temperature: Continuous 70 degrees C

Maximum outlet temperature:

P type three ceramic element heater Continuous 350 degrees C

H type single ceramic element heater Continuous 600 degrees C

B type single mica element heater Continuous 250 degrees C

Minimum flow velocity 6 meters per second.

Air quality

Premature element failure will occur with one or more of the following conditions, excess dust/debris, high moisture or contaminant levels. It is recommended that a suitable intake filter of 10 microns or less is fitted to the air source to prevent contaminants entering the air stream.

Failure to fit a maintained suitable filter will invalidate any warranty.

Pre operation checks

Ensure no loose material has been left in the air source/heater or system and the air has a free passage throughout the process. Establish correct air flow before energizing the heater.

Maintenance

The internal surfaces of the heater casing/coils should be periodically inspected for deposits which can adhere, reducing efficiency and possibly causing premature coil failure. Cleaning procedures are dependent upon the degree and type of contamination. The minimum amount of cleaning is therefore recommended. If excessive deposits are present, check the air filter!

Due to varying site conditions specific time intervals for inspection cannot be forecast and is therefore a liability of site maintenance engineers to determine a suitable schedule.

Fault diagnosis

If the heater fails to operate as expected at any time, a qualified electrician should inspect the unit to ascertain any fault within the coils or control system.

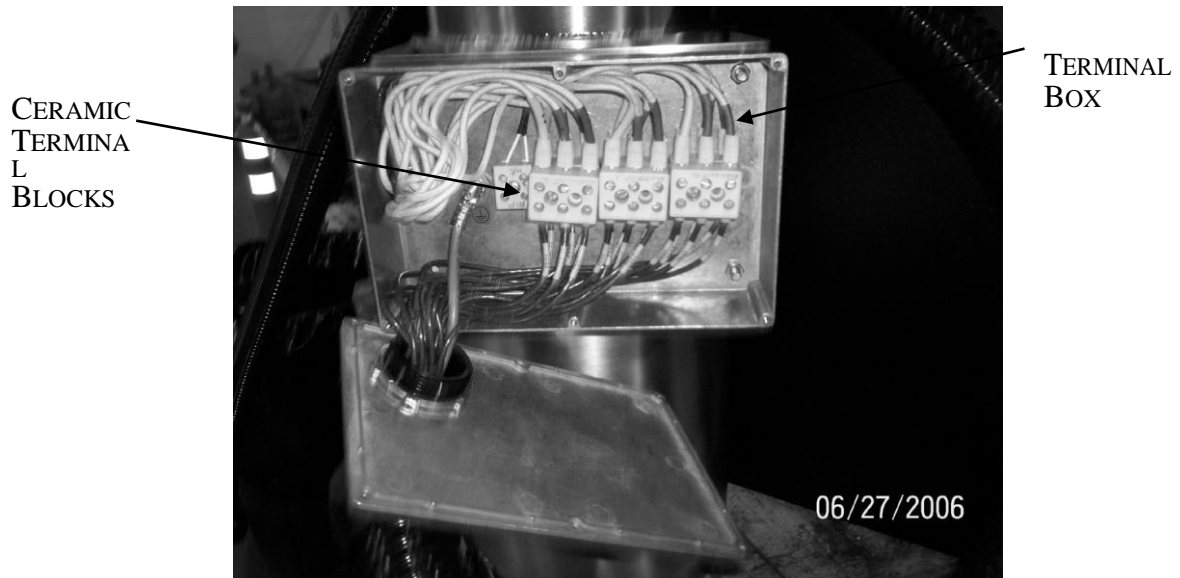
Coils should have a resistance in the range 10 to 50 ohms resistance dependent on type. A visual inspection may also be carried out, with the coils de-energised, to ascertain the integrity of the coils.

If the heater is faulty it should be repaired by a qualified electrician using genuine replacement parts available from Airtec Air systems Ltd. There is also a return to base service for any repairs required.

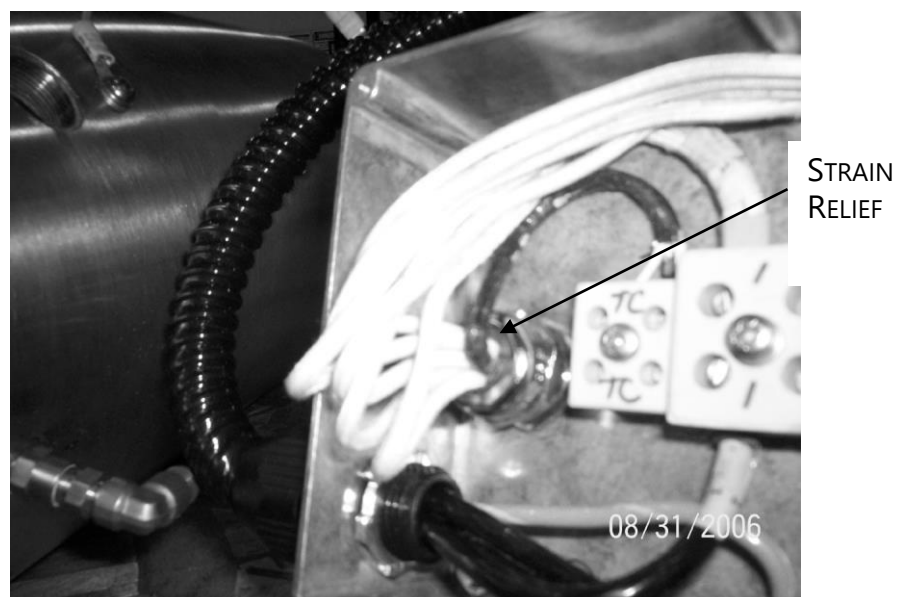
ELEMENT REPLACEMENT INSTRUCTIONS

Note: These instructions are generalized for this series of heaters. Your heater and junction box may differ slightly from pictures shown.

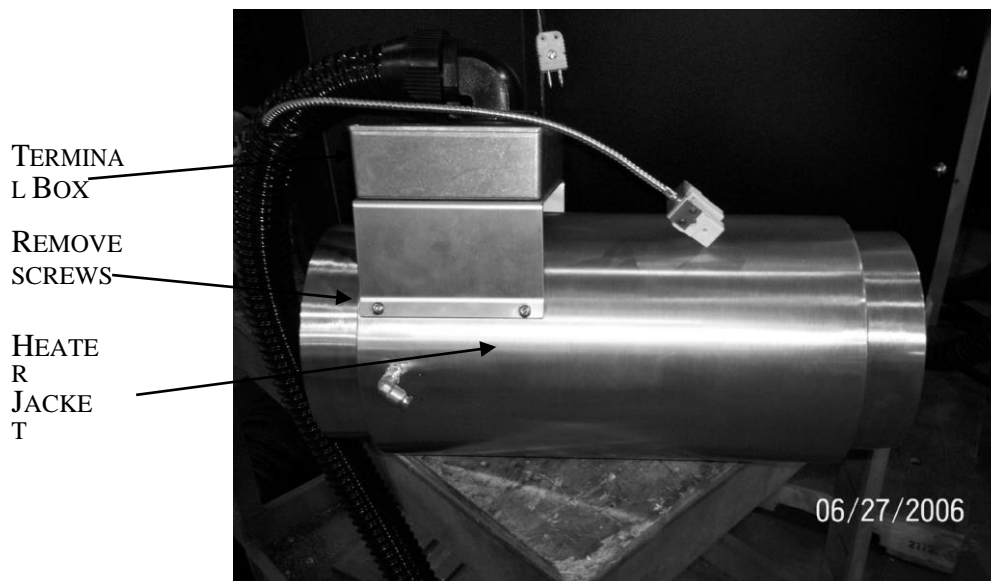
1. Open the terminal box located on the outside of the heater jacket.
2. Begin by making a sketch of the wire connections in the terminal box.



3. Mark all wires and their locations on the terminal blocks as per the sketch that you made in Step 1. We recommend using a fine point marker to mark the ceramic terminal blocks and wires.
4. Loosen and then remove the wires from their terminals.
5. Loosen and then remove the strain relief from the wires coming into the terminal box.



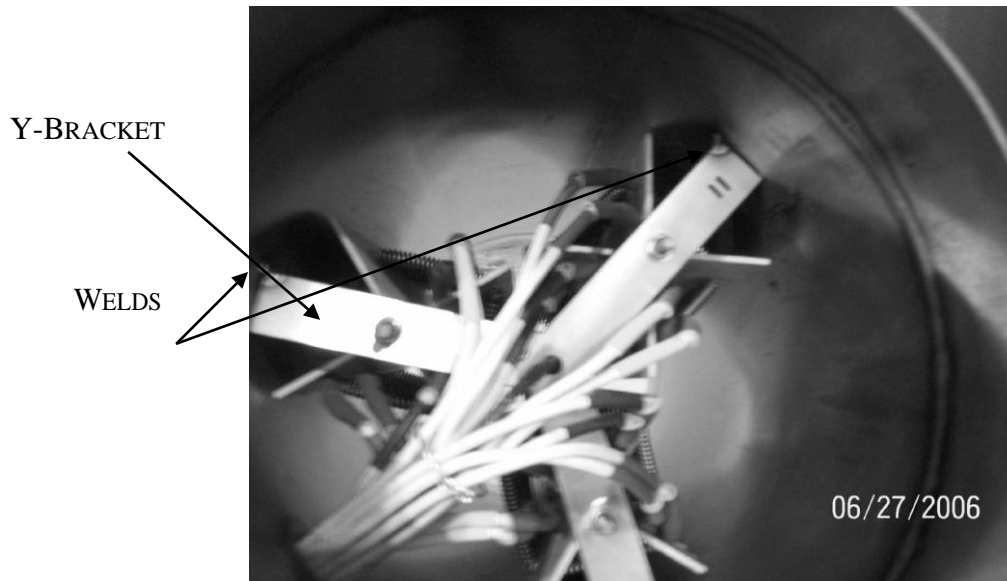
6. Remove the terminal box and mount by removing the screws holding the mount to the insulated heater jacket. Pull the wires through the terminal box.



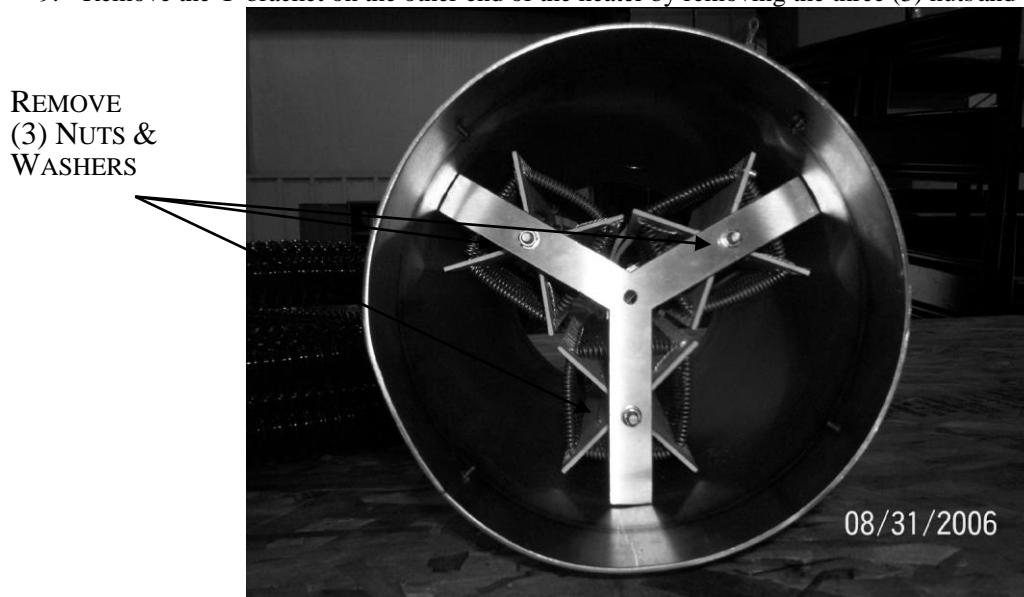
7. Loosen then remove the strain relief nut and gasket at the insulation jacket.



8. Note that the Y-shaped bracket is welded to the heater tube on the strain relief (wirebundle) end of the heater.



9. Remove the Y-bracket on the other end of the heater by removing the three (3) nuts and washers.



10. Carefully pull all the wires through into the heater tube.
Note: Use caution! If the wires are pulled too hard, a connector may come loose

PULL ALL
WIRES
THROUGH
H

REMOVE
(1) NUTS &
WASHER



11. Remove one (1) nut and washer.
12. Carefully pull the element assembly out of the heater tube.
13. Repeat steps #10 & #11 for the remaining two element assemblies.
14. Reassemble using the reverse order of steps above.

FAULT FINDING SCHEDULE

- Fault – heater will not energise*

Probable cause – voltage supply failure on one or more phases

Remedy – check and verify correct voltage supply

- Fault – heater will not energise with correct voltage supply*

Probable cause – coil failure on one or more phase

Remedy – check and verify coils with a resistance meter. Coils will be in the range 10 to 50 ohms resistance dependant on type. If open circuit, coil needs replacing. A visual inspection may also be carried out, with the coils de-energised, to ascertain the integrity of the coils.

- Fault – heater gets hot but no longer reaches desired temperature*

Probable cause – coil failure on one or more phase

Remedy – check and verify coils with a resistance meter. Coils will be in the range 10 to 50 ohms resistance dependant on type. If open circuit, coil needs replacing. A visual inspection may also be carried out, with the coils de-energised, to ascertain the integrity of the coils.

Replacement coils are available, refer to type on nameplate.

Notes: coil failure can be due to a number of conditions

including:

- Too low or no air flow
- Contaminated Air.
- Over temperature on heater outlet (refer to maximum safe operating temperatures)
- Direct coupling to a centrifugal blower without air mass separator
- Bend or excessive restriction on inlet
- Incorrect voltage supply
- Incorrect wiring of elements.

Correctly fitted and supplied coils should provide many years of service without fault. If the coils are deemed to fail prematurely, you must contact Airtec to discuss suitability of application.

Element codes

All Airtec heaters are marked with a part number that denotes the type of heater coil and body code.

e.g. EC3-124003DL

EC3 denotes the standard ceramic element
12 denotes all the power rating of each coil in Kw,
400 denotes the phase to phase voltage supply
D denotes DELTA wiring configuration

