

# TRENCH HEATING LIMITED

www.trenchheating.com

## AQUAFAN-ELECTROFAN-ELECTROTRENCH WIRING/INSTALLATION INSTRUCTIONS

AQUAFAN/ELECTROFAN – Cross flow fan assisted convection with ready to install in- floor units with LPHW/electric heating element.

ELECTROTRENCH—Natural Convection Electric

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### Explanation of symbols:



Caution: Danger



Danger of electrocution

The non-observance of this information can result in serious injury to persons or property. Danger of electrocution

The non-observance of this information can result in serious damage to persons or property from electrical power.

**Read this manual carefully prior to assembly and installation work.**

All persons involved in the installation, commissioning and use of this product are obliged to pass this manual on to all persons working simultaneously or subsequently on the equipment, including the end user. Retain this manual until the equipment is ultimately decommissioned. We reserve the right to make changes to the content or design without prior notification.

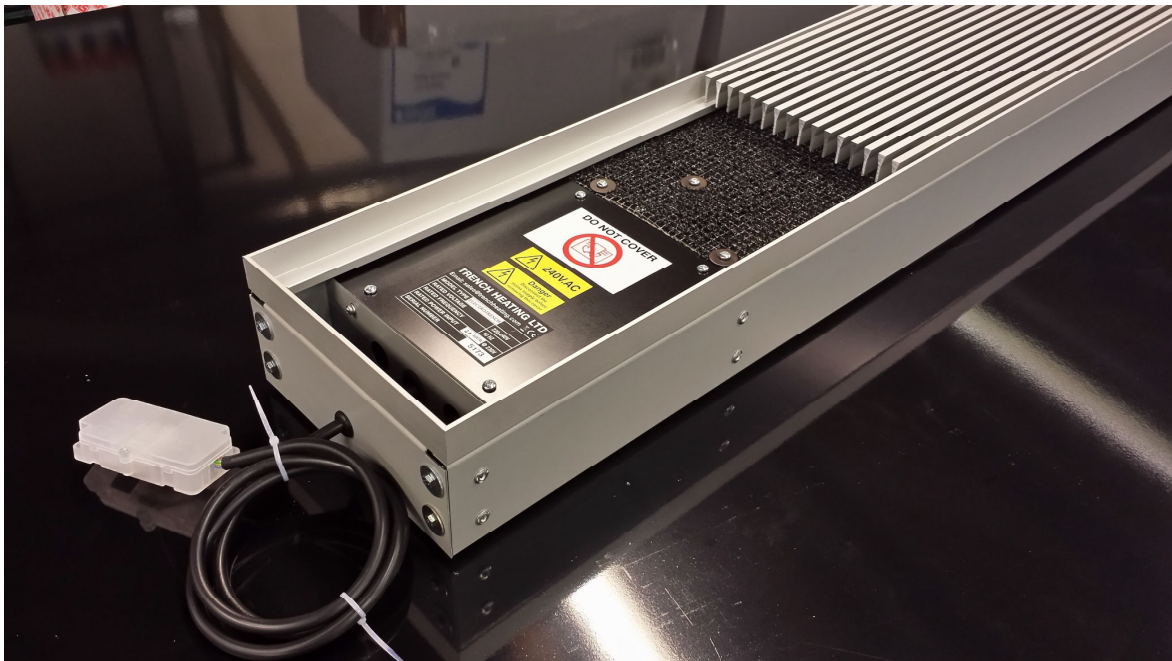


## 1. Correct and proper use

AQUAFAN/ELECTROFAN/ ELECTROTRENCH units are manufactured in accordance with state-of-the-art and recognised safety regulations. Personal danger or damage to the equipment or other property can nevertheless be caused if the units are not installed, commissioned and used correctly and properly.

AQUA/ELECTROFAN/ELECTROTRENCH units should only be used indoors (for example in residential and office buildings, salesrooms etc). They cannot be used in damp areas, such as swimming pools or outdoors. The products should be protected from moisture during installation. In case of doubt discuss the proposed use with the manufacturer. Any damage resulting from improper use is the sole responsibility of the user/operator of the equipment. Correct and proper use will also be deemed to include observance of all information regarding safety, operation and maintenance/ servicing, contained in this manual.

The installation and electrical wiring of these products require specialist knowledge in the field of heating, cooling, ventilation and electrical engineering. This knowledge is generally taught as part of a vocational training course in the aforementioned fields and so is not described separately here. Damage resulting from improper installation is the sole responsibility of the operator.





## 2. Safety information

Installation, assembly and maintenance of electrical equipment should only be conducted by a qualified electrician. Wiring should comply with current BS7671: 2008 amended 2011.

Non observance of these guidelines and the operating manual can lead to malfunctions with subsequent damage to the equipment and risk personal injury. Incorrect wiring can result in fatal injury owing to crossed wires!

Prior to all wiring and maintenance work, all parts of the system have to be made voltage-free and prevented from being reconnected accidentally! The installer of this unit should have adequate knowledge about:

- Safety and accident prevention regulations
- Guidelines and recognised technical regulations e.g E.N standards-EN 60730 (Part 1)

## 3. AQUAFAN/ELECTROFAN/ELECTROTRENCH units are supplied as standard with:

Height adjustment feet, with rubber bases. Grille removal tool. Fixings.

## 4. Alignment and Fixing

Remove the blind grommets in the base of the heater. These are the floor fixing points. Position the AQUAFAN/ELECTROFAN/ ELECTROTRENCH in the trench and adjust the height using the height adjustment feet. Mark through the fixing holes where the fixing holes are to be drilled. Remove the Heater and drill the fixing holes. Insert the drop in anchor into the holes. Replace the Trench Heater and fix in place. Tighten nuts on Adjustable Feet.

Ensure that the installation manual is visible on the unit for the subsequent trades. Cover the grille and the AQUAFAN/ELECTROFAN/ ELECTROTRENCH unit to protect it from dirt or cement.

## 5. Screeding

Prior to commencing screeding, check whether

- the electrical connection has been made correctly
- the AQUAFAN/ELECTROFAN/ELECTROTRENCH is aligned correctly in terms of height and distance to the window
- the grille has been covered (Caution! Cement can destroy the surface of the grille!),
- sound insulation (not with raised floors) has been fitted under the units where specified.
- ensure rubber/felt feet pads are in place (Aquafan/Electrofan ONLY)
- there are no sound bridges to the concrete slab, especially around the height adjustment feet
- all openings in the AQUAFAN/ELECTROFAN/ELECTROTRENCH have been sealed with suitable material against the ingress of screed

### **Caution**

- the AQUAFAN/ELECTROFAN/ ELECTROTRENCH units should not be used as form work for final floor finish. Installation drawings show a recommended working space allowance for best practice.

## 6. Fitting grilles

Grilles should be handled with care when removing and re-fitting into unit.



## **7. Wiring**

### **7.1 Safety Information**

The installation and electrical wiring of this product requires specialist knowledge in the field of heating, cooling, ventilation and electrical engineering. This knowledge is generally taught as part of a vocational training course in the aforementioned fields and so is not described separately here.

The installer of this unit should have adequate knowledge about

- Safety and accident prevention regulations
- Guidelines and recognised technical
- EN standards
- Accident prevention directives
- EN 60730 (Part 1)

It is mandatory that the following safety-related information is adhered to prior to working on the controller and the units:

Disconnect the unit from the mains power supply and ensure that it cannot be reconnected accidentally.

Wire the unit in accordance with the wiring diagrams supplied.

Wiring should comply with BS 7671: 2008 amended 2011.

The unit should only be wired to fixed cables.

**Modifications to the units:**

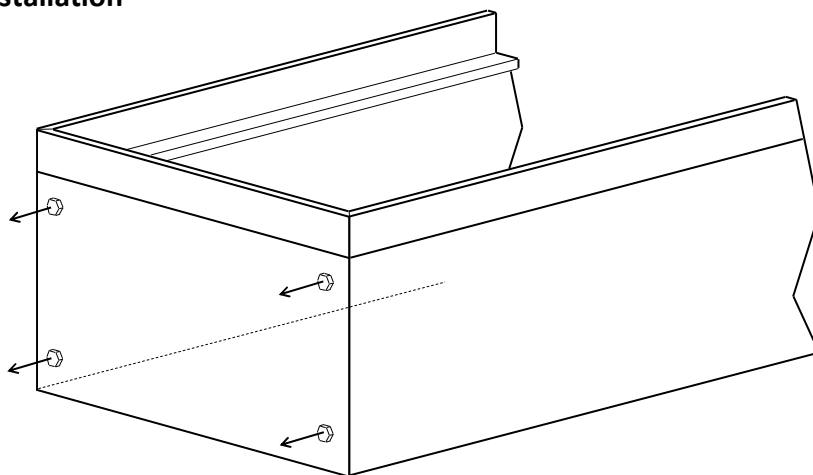
Do not undertake any modifications, conversions or additions to the units without consulting the manufacturer, as this would impair the safety and operation of the equipment.

Incorrect wiring or modifications to the unit can result in damage to the units. The manufacturer cannot be held liable for the damage caused by incorrect wiring and/or incorrect installation and operations.

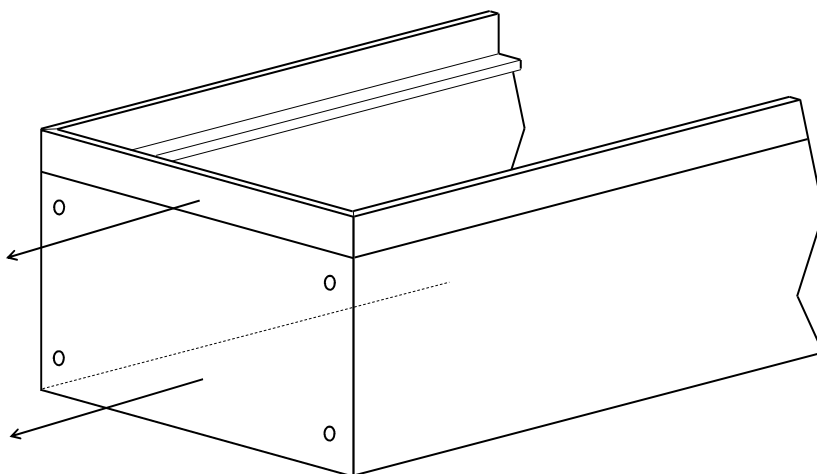
Disregard of the regulations and information contained in the operating manual can cause malfunction of the unit with possible damage to the unit and risk of possible injury. Incorrect wiring and crossed wires can cause fatal injury!

Please see the next page for wiring connection details.

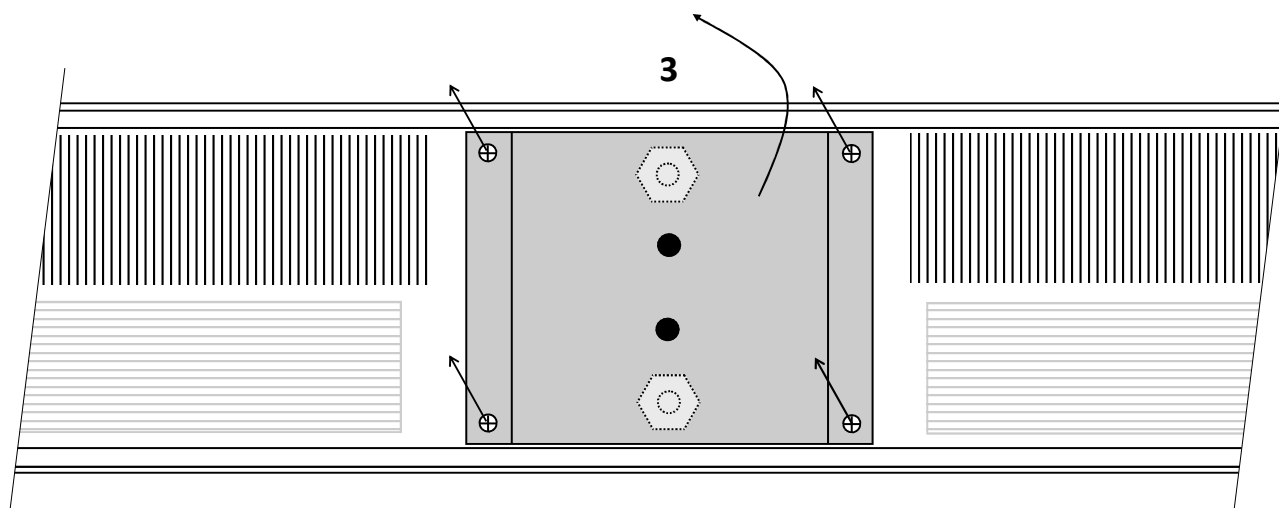
## 7.2 Fitting Installation



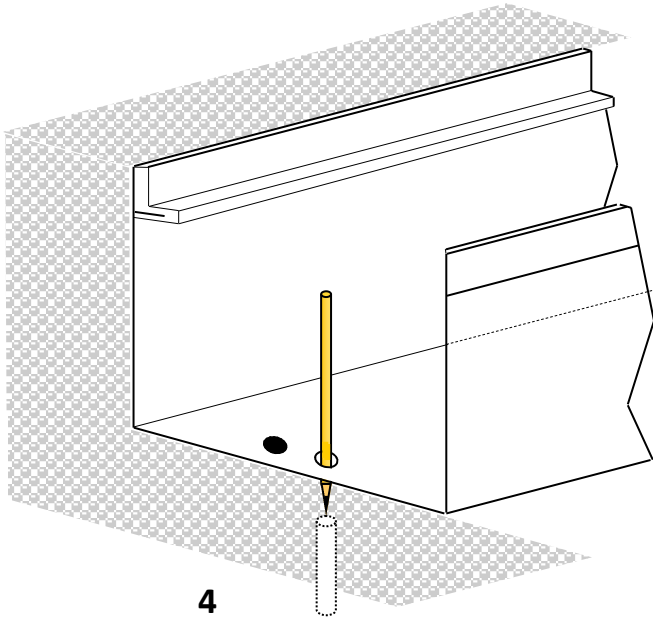
- 1 Remove Grille**  
Remove End Panel bolts both ends for easy marking and drilling of fixing holes (only if required for ease of access)



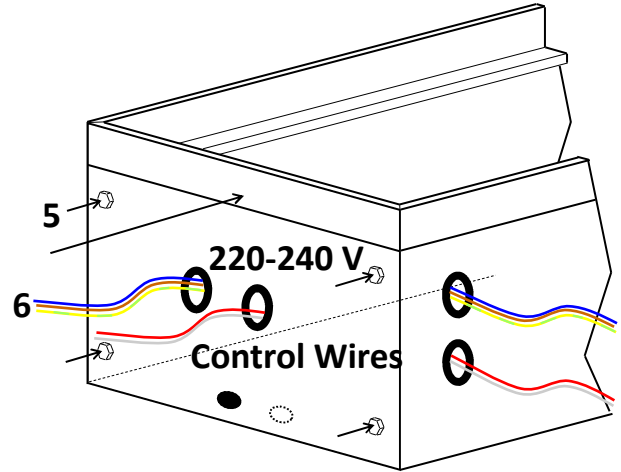
- 2 Remove End Panel both ends**  
Remove End Protection Panels (slide towards end and pull up only if required for ease of access).



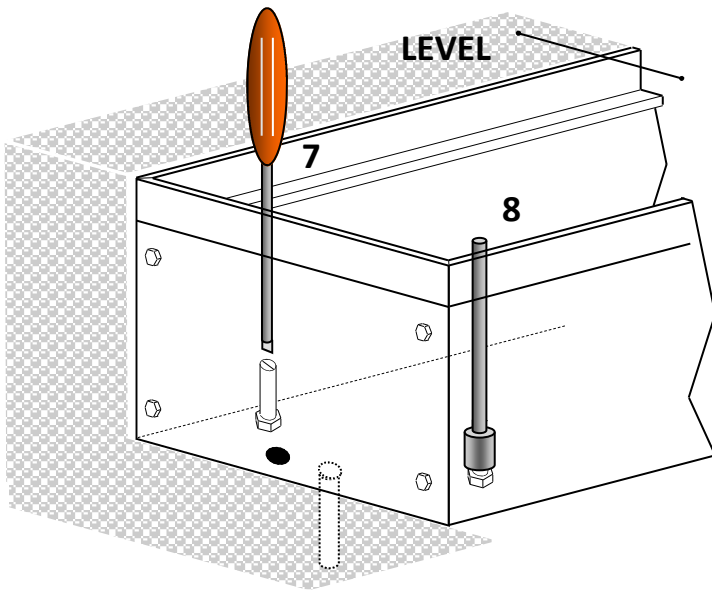
**For Double Units– Remove Centre Panel for Levelling & Fixing**



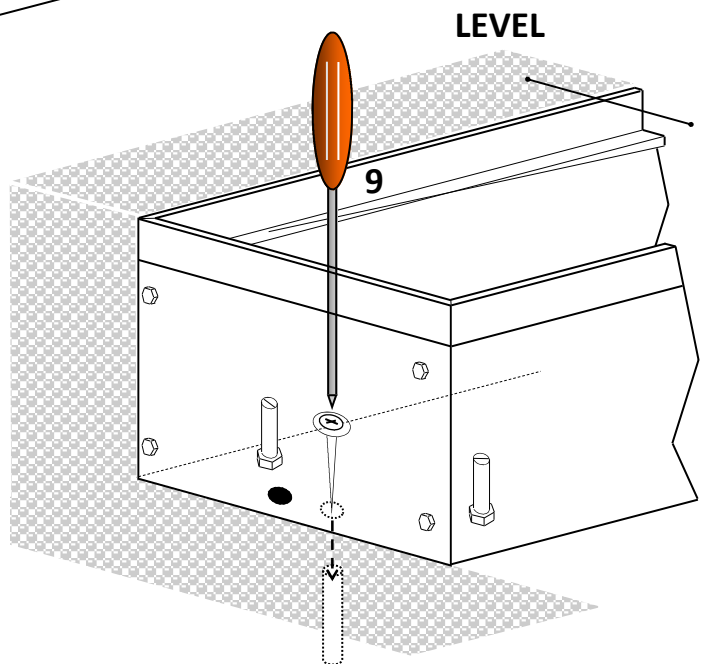
**Mark fixing positions  
Both ends & centre.  
Remove TH from opening  
and drill fixing holes**



**5: Replace both ends  
6: Cable in Control Box End  
(Do Not Connect yet)**



**7: Adjust feet to Level  
Both ends & centre  
8: Tighten Lock Nut to secure**



**Screw fixing in both ends & centre**

### 7.3 ELECTROFAN/AQUAFAN: HEATER WIRING CONNECTIONS

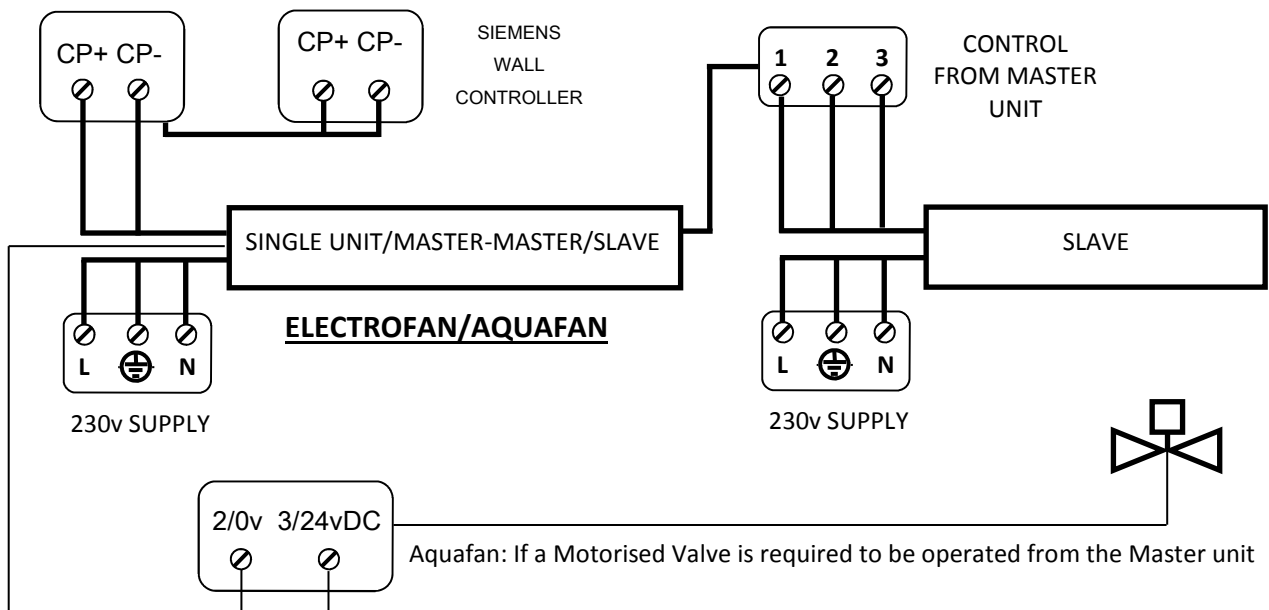
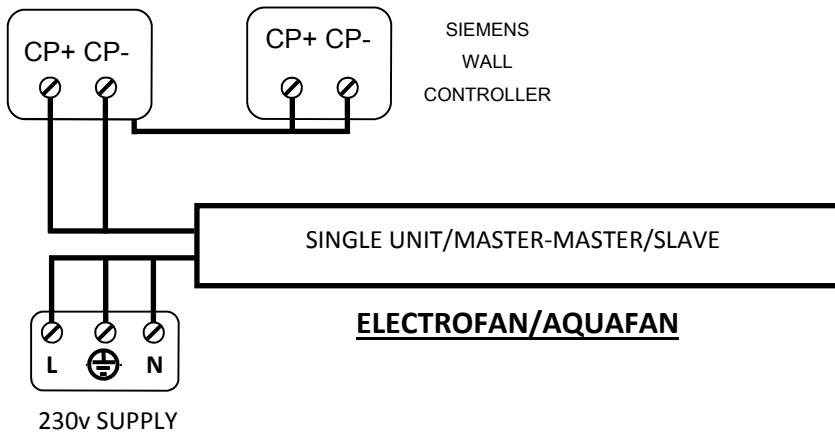


230V SUPPLY required to each Trench Heater.  
 Connect the 230 v supply to the Terminal block in each external enclosure  
 L = Brown  
 E = Green/Yellow  
 N = Blue

SIEMENS WALL STAT to Master Unit.  
 CP+ = Red  
 CP- = White

MASTER TO SLAVE to the Terminal block in each external enclosure  
 Terminal 1 = 0-10v Green  
 Terminal 2 = 0v Black  
 Terminal 3 = 24vDC Red

**IMPORTANT: ELECTROFAN & AQUAFAN HEATERS.**  
**AFTER POWER IS APPLIED TO THE MASTER UNIT, THE WALL STAT REQUIRES UP TO 10 MINUTES TO SYSTEM BOOT. DO NOT TOUCH THE WALL STAT DURING THIS PERIOD.**



## 7.4 ELECTROTRENCH (NATURAL CONVECTION): HEATER WIRING CONNECTIONS



**230V SUPPLY** required to each Trench Heater.

Connect the 230 v supply to the Terminal block in each external enclosure

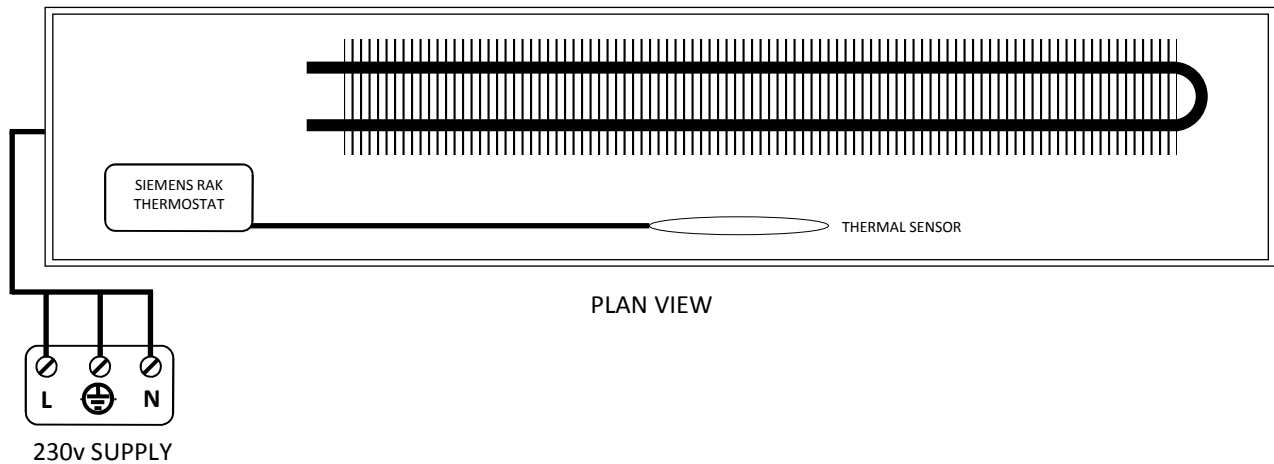
L = Brown

E = Green/Yellow

N = Blue

Refer to the SIEMENS RAK-TR data sheet AND FOLLOW THE instructions when setting the required temperature.

**Caution:** prior to opening the RAK Thermostat housing, disconnect the thermostat from the mains



## 7.5 Controls

The AQUAFAN and ELECTROFAN Heaters are designed to be controlled via a SIEMENS wall mounted controller.

The QAX34.3 or the QAX84.1/PPS2

Both of these units provide the following functions:

- Auto temperature control
- Auto Fan Speed control to achieve desired temperature and minimise Fan use
- Fan speed manual override
- Fan only mode for cool air
- Frost protection mode

Please refer to the appropriate SIEMENS Control data sheet

## 7.6 Safety Cut-out Switches

The Heating elements for AQUAFAN and ELECTROFAN have 3 Safety cut-out switches.

The first switch (Re-set switch) will cut power to the Electric Element If it senses an unusual rise in temperature, that would occur in the event of material being placed over the heater and blocking the air flow. This switch will cut the power as the temperature rises and restart the unit when the temperature has lowered significantly.

The other two switches will cut power to the Electric Heater if the temperature rises beyond the cut-off temperature of the first Re-set switch. The unit will not re-start and a fully qualified electrician must be called to investigate if the reason for excessive heat is not obvious.

After investigation by a qualified electrician and having identified and resolved the problem the unit can be re-started by disconnecting power to it and then re-connecting power to it.



## 7.7 Electrical Ratings

### AQUAFAN Electrical Ratings

Rated voltage 220-240 volts

Rated frequency 50 Hz

Rated power input 50 watts at 230 volts

### ELECTROFAN Electrical Ratings

Rated voltage 220-240 volts

Rated frequency 50 Hz

Rated power input 1250 watts at 230 volts

### ELECTROTRENCH Electrical Ratings

Rated voltage 220-240 volts

Rated frequency 50 Hz

ET-1: Rated power input 650 watts at 230 volts

ET-2: Rated power input 1300 watts at 230 volts

TYPE OF UNIT	ELECTROTRENCH	AQUAFAN	ELECTROFAN
MASTER AND SLAVE SINGLE UNIT	6 AMPS	1 AMP	12 AMPS
MASTER SINGLE	3 AMPS	1 AMP	6 AMPS
SLAVE SINGLE	-	1 AMP	6 AMPS

## 7.8 Fan Acoustic emissions (Standard: 2352012 Rev 1) AQUAFAN & ELECTROFAN

Fan speed Low: 28 Db

Fan speed medium: 33 Db

Fan speed High: 45 Db

## 7.9 Maintenance

Turn off power to the unit/s. Remove the Grille and carefully vacuum clean any debris-dust that is on the protective mesh. When re-applying power, follow the instructions on page 7 and allow 10 minutes for the Wall stat to system boot before using.

## 8. Test Certificates

Testing Laboratory: York EMC Services Ltd

EMC Test Standards:

EN 55014-1:2006+A1:2009

EN 55016-2-3:2006

EN 55014-1:2006

EN 61000-3-2:2006+A1:2009+A2:2009

EN 61000-3-3:2008

LVD Test Standards: Report No: 10779TR1

EN 60335-1:2002 + A1:2004 + A2:2006 + A11:2004 + A12:2006 + A13:2008 + A14: 2010

EN 60355-2-30: 2009

dB (Acoustic certs) Test Standard: Report No: B998TR1 & B999TR1.

Standard: 2352012 Rev 1