

LPXBOXDC-2

Mechanical Ventilation with Heat Recovery Installation and Maintenance

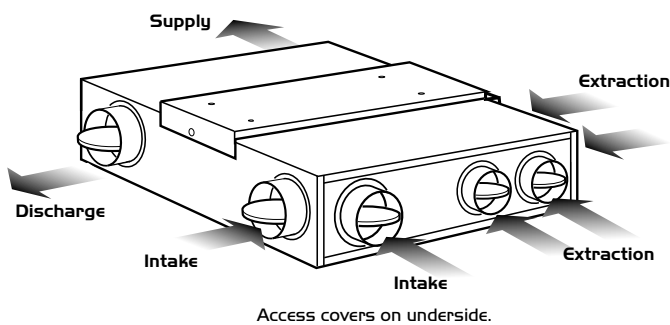
CE The EMC Directive
2004/108/EC
The Low Voltage
directive
2006/95/EC

1.0 Introduction

The Nuair LPXBOXDC-2 unit is designed to provide mechanical supply and extract ventilation with heat recovery.

The unit is fitted with two fans with independent adjustable speed control. A plate heat-exchange constructed from aluminium is used to provide up to 70% heat recovery.

Figure 1.



2.0 Installation

Installation must be carried out by competent personnel conforming to all statutory and governing regulations including the current wiring and CDM regulations.

Special attention must be paid to the size and weight of the unit and the handling method to locate the unit in situ.

The unit is designed to be ceiling mounted in the horizontal plane with access panel and condensate drain pipe on either side.

The fan must be fitted indoors, away from any direct sources of heat, water spray or moisture generation. Temperature range -5°C to 40°C.

Please note a clear working space is required around the installed unit to allow the cover to be removed and provide sufficient access for maintenance such as filter change.

The fan is designed to be wired direct to the mains supply through a fused spur isolator (by others).

With the unit fixed in position and working from underneath the installation bring the mains wiring through the chosen rubber cable entry grommet at the new connection box.

Additional grommeted holes are provided to allow additional wiring to each blower.

Installation of the unit

The integral mounting bracket supplied with the unit can be offered up to a chosen mounting position, the fixing points marked through and the bracket installed with 4 screws (by others).

The unit can then be offered into position, locating the tongues on the mounting bracket into the slots in the holding supports on either side of the unit. When positioned fix the unit to the mounting bracket with M5 screws.

Figure 2.

Fixing screw holes for M5 screws in the mounting bracket.

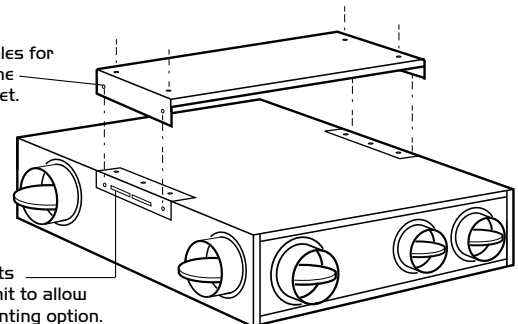
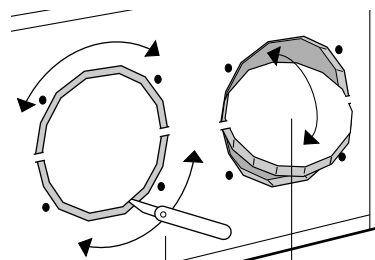


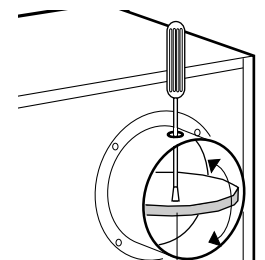
Figure 3.



Cut through the acoustic foam round the circumference of the damper.

Damper can be swivelled on the 2 body casing hinges.

Figure 4.



When spigot is in position, damper can be adjusted using a screwdriver.

Various damper/inlet spigot positions can be utilised as required to suit the system ductwork and extract grilles. To reduce air leakage, spigots should be sealed to the unit by silicone sealant or similar (by others).

All inlet dampers are 'closed' as knockouts when delivered but can be opened using a sharp knife. (See figure 3). After the spigot has been fixed adjust the damper with a screwdriver. (See figure 4).

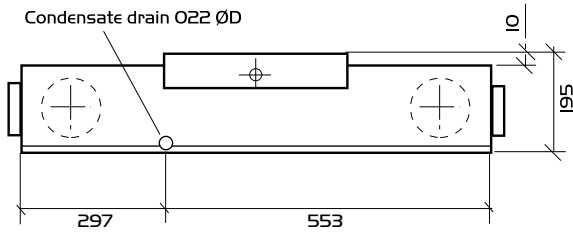
See figure 5 for spigot location and sizes.

The condensate drain must be connected via a trap into either a suitable waste water system or to the outside of the building. Ensure the pipe from the condensate drain falls away from the unit.

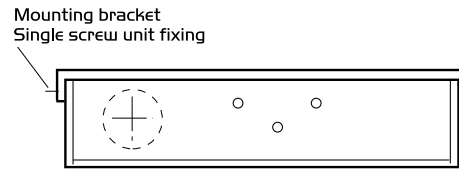
2.0 Dimensions

Figure 5. Dimensions in mm.

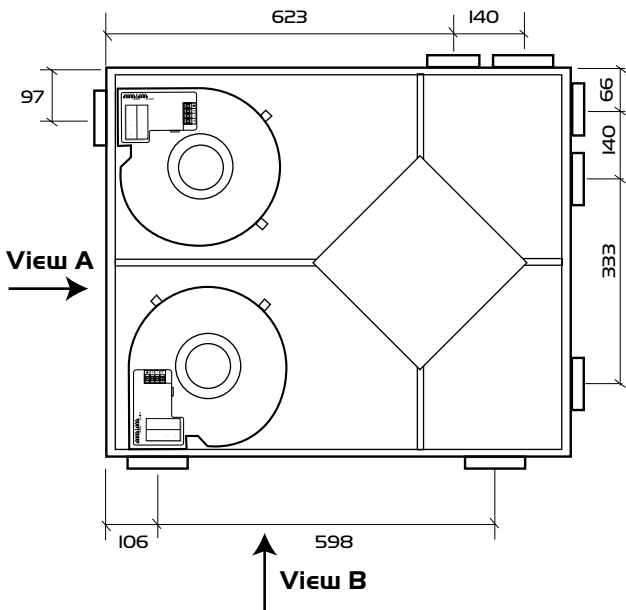
Side view (view from B)



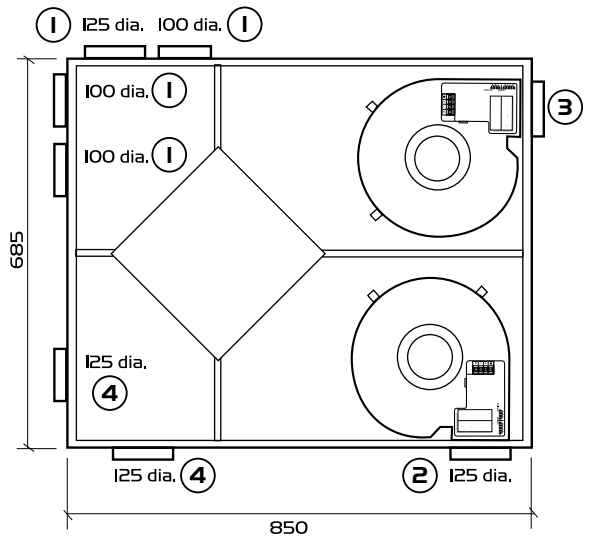
End view (view from A)



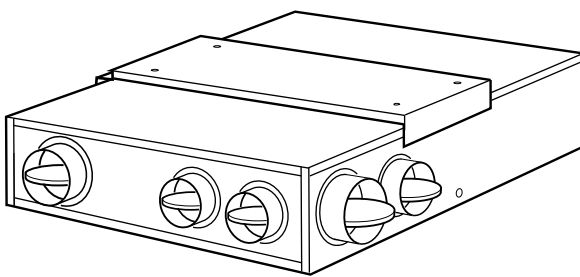
Plan view (view from top with covers removed)



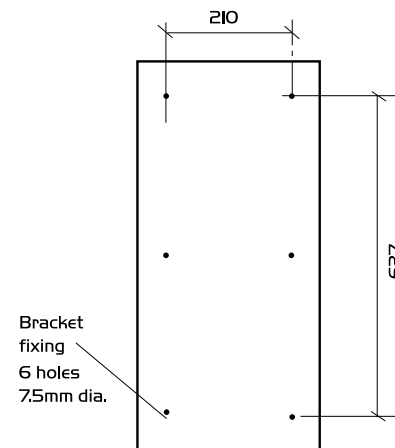
Plan view (view from underside with covers removed)



General view of unit



Plan view (Mounting bracket)



IMPORTANT

Any air intake terminal **MUST** be installed in accordance with the appropriate regulation.

As a guide, the BS5440 series of British Standards deals with this issue and currently states that an air intake must be at a minimum distance of 300mm from a gas boiler balanced flue. Installers are advised to be aware of the requirements of this standard when installing 'through the wall' supply air ducting.

Similarly, supply and extract air grilles should be at least 300mm apart.

Key

- ① **Extract** - stale air ducted from within 'Wet' rooms in the building.
- ② **Discharge** - is the extracted air from the building ducted to the outside and removed.
- ③ **Supply** - is the fresh air ducted into the building. This may be sent to more than one room.
- ④ **Intake** - is the fresh air source ducted from outside.

3.0 Electrical Wiring

The supply and extract fan within the unit are pre-wired to an external wiring box for ease of connection. (see figure 6a to 6c). All field wiring must be routed through a suitable local isolator.

IMPORTANT

Isolation - Before commencing work make sure that the unit, switched live and Nuair control are electrically isolated from the mains supply. Please note this product must be earthed.

Figure 6a. Basic wiring. Both supply and extract will run at constant speed. The fan duty is controlled via the 'Boost' setting.

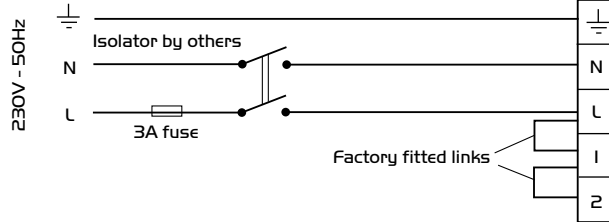


Figure 6b. Trickle and Boost operation. Both supply and extract will run at trickle and boost speed together. Closing the boost switch will cause both fan to run at boost setting.

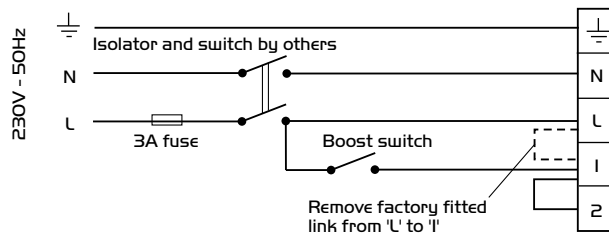
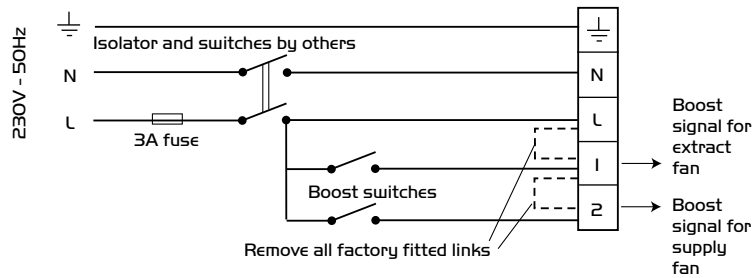


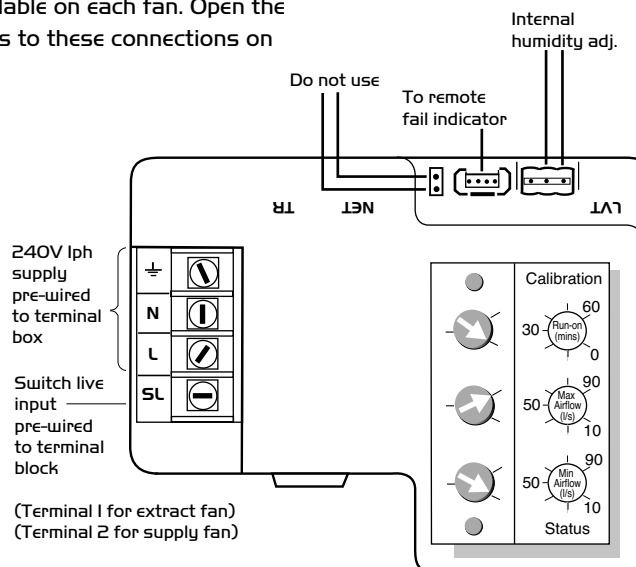
Figure 6c. Wiring for independent boost. The supply and extract fan will trickle and boost independently.



3.1 Additional Control Wiring Option

Other control wirings are available on each fan. Open the cover of the unit to gain access to these connections on each fan (see figure 7).

Figure 7. Circuit board wiring.



4.0 Setting to Work

Each fan is factory set to operate at trickle airflow when power is applied and switch over to the boost flow rate when a switched live signal is present. The pot marked 'MIN Airflow' adjusts the trickle flow rate and the boost flow rate by the pot marked 'MAX Airflow'. These flow rates for the supply and extract fan are adjusted separately. When the switched live signal is removed, the fan will continue to run at boost flow rate for a preset period as dictated by the pot marked 'RUN-on'.

Work out the required flow rate for the supply and extract fans (these are usually supplied by the design consultant) and adjust the appropriate pots. If these figures are not available, please refer to the typical settings below.

No. of Bedrooms	Typical volume of ventilated space	Trickle/normal flow rate l/s*	Boost flow rate l/s*
1	140m ³	19	24
2	200m ³	28	35
3	260m ³	36	45
4	320m ³	44	56

*These figures are given as a general guide. They should only be used if actual design figures are not available.

IMPORTANT

For good EMC engineering practice, any sensor cables or switched live cables should not be placed within 50mm of other cables or on the same metal cable tray as other cables.

5.0 Run-on Timer

The Run-on timer adjustment is from 0 - 60 mins. Run-on is only available from the switched live (SL) signal.

5.1 Start-up Routine

On power up or and after power failure the unit goes through a 2 minute set-up period.

During this period the unit:

1. Starts at full speed
2. Ramps down to off
3. Restarts at 25% speed
4. Resumes normal operation

5.2 Status Light

Green light - Fan running

Red light - Fan failure

Flashing green light - Set-up period

Flashing red light - Electronics failure or insufficient pressure reading, check ducting/installation

e.g. please remove inlet/outlet ducting and test

5.3 Calibration

By pressing the calibration button the unit re-sets itself by switching off for 30 seconds then re-starts at full speed before ramping down to the desired duty. Whilst running at full speed the status light flashes to indicate if the duty set on the adjustment dials can be achieved (green for yes, amber for no). Checks can be carried out in both the trickle and boost modes. If the light flashes amber check the resistance of the ducting, grilles etc. or turn down the adjustment dial.

IMPORTANT

Unit must not be switched off, product is designed to run continuously.

IMPORTANT

WARNING - Before commencing work, electrically isolate the fan unit from the mains supply.

6.0 Maintenance

It is inevitable that even with filtered extract grilles as recommended in BRE digest 398 some dust, fluff etc. will pass through the filter, and which, if allowed, will build up internally on motors and impellers, shortening the life of the unit and, in severe cases, leading to overheating of the motors. Consequently, it is strongly recommended that all units are inspected and cleaned every six months.

7.0 Cleaning

Remove covers and carefully clean out interiors as necessary. To clean the filter, remove from the unit and wash in tepid water to which a little mild detergent has been added. Shake out excess water and allow to dry naturally. Replace when dry. Check for damage and security of components. Refit covers.

8.0 Replacement of Parts

Should any component need replacing Nuair keep extensive stocks for quick delivery. Ensure that the unit is electrically isolated, before carrying out any work.

When ordering spare parts, please quote the serial number of the unit and the ARC number of the purchase if possible. (This information will be available on the fan label).

9.0 Warranty

The 5 year warranty starts from the day of delivery and includes parts and labour for the first year and parts only for the remaining four years. This warranty is conditional on planned maintenance being undertaken.

10.0 Service Enquiries

Nuair can assist you in all aspects of service. Our service department will be happy to provide any assistance required, initially by telephone and if necessary arrange for an engineer to call.

**Customer Services Department
on 08705 002 555**

II.O Connection of Drain Pipe

The unit needs a drain pipe to function correctly.

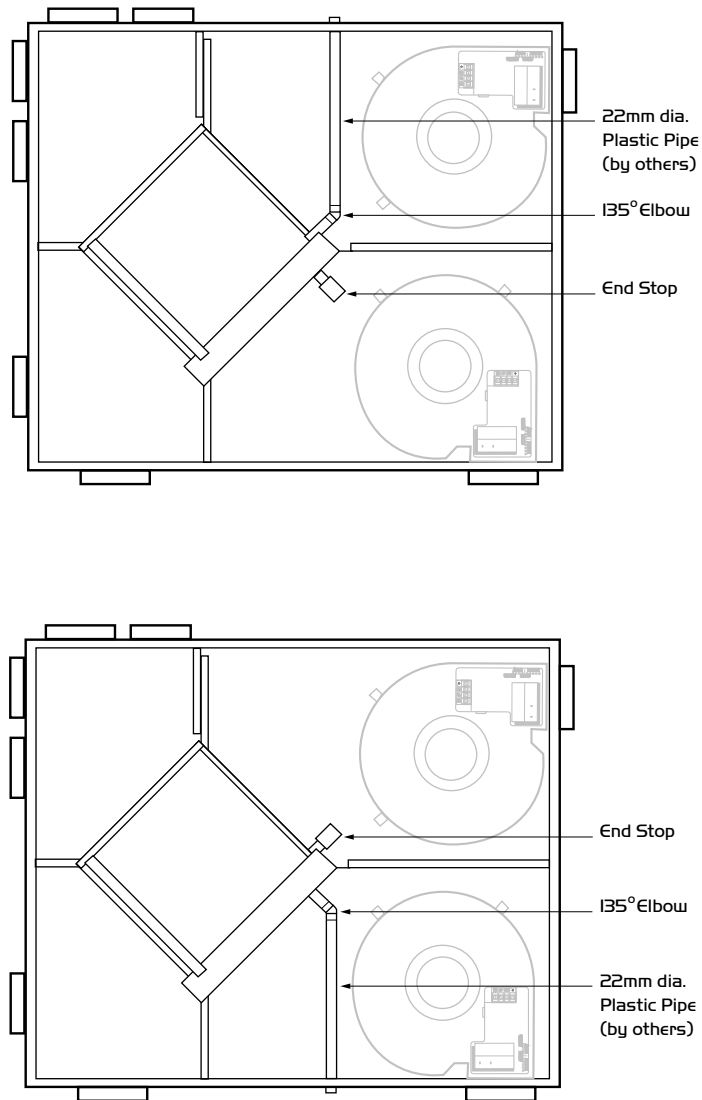
Remove the lid via the screws and decide which side the drain pipe is to be connected. On the same side as where the drain pipe is to be connected, fit a 135 degree elbow to the copper pipe and connect a 22mm dia. plastic pipe to the other side of the elbow and through the supplied "O" ring in the outer wall. This is the drain pipe.

Seal the internal perimeter between the drain pipe and "O" ring with silicone to prevent air leakage.

On the other copper pipe place the end stop as shown in the diagram below and place the supplied rubber bung into the opposite hole in the outer casing to prevent air leakage.

Replace the lid and hand tighten all the fixing screws.

Figure 8. Drain pipe configuration options.



Technical or commercial considerations may, from time to time, make it necessary to alter the design, performance and dimensions of equipment and the right is reserved to make such changes without prior notice.

DECLARATION OF INCORPORATION AND INFORMATION FOR SAFE INSTALLATION, OPERATION AND MAINTENANCE

We declare that the machinery named below is intended to be assembled with other components to constitute a system of machinery. All parts except for moving parts requiring the correct installation of safety guards comply with the essential requirements of the Machinery Directive. The machinery shall not be put into service until the system has been declared to be in conformity with the provisions of the EC Machinery Directive.

Designation of machinery: LPXBOXDC-2
Machinery Types: Mechanical Ventilation with Heat Recovery
Relevant EC Council Directives: 2006/42/EC (Machinery Directive)
Applied Harmonised Standards: BS EN ISO 12100-1, BS EN ISO 12100-2, EN60204-1, BS EN ISO 9001, BS EN ISO 13857
Applied National Standards: BS848 Parts 1, 2.2 and 5

Note: All standards used were current and valid at the date of signature.

Signature of manufacture representatives:

Name:	Position:	Date:
1) C. Biggs	Technical Director	8. 07. 11
2) A. Jones	Manufacturing Director	8. 07. 11

CE DECLARATION OF CONFORMITY

We declare that the machine named below conforms to the requirements of EC Council Directives relating to Electromagnetic Compatibility and Safety of Electrical Equipment.

Designation of machinery: LPXBOXDC-2
I & M Serial No.: 671390
Machinery Types: Mechanical Ventilation with Heat Recovery
Relevant EC Council Directives: 2004/108/EC (EMC), 2006/95/EC (Low Voltage Directive)
Applied Harmonised Standards: EN55014-1, EN55014-2, EN61000-3-2, EN61000-3-3, EN60335-2-80
Basis of Self Attestation: Quality Assurance to BS EN ISO 9001 BSI Registered Firm Certificate No. FM 149

Signature of manufacture representatives:

Name:	Position:	Date:
1) C. Biggs	Technical Director	8. 07. 11
2) A. Jones	Manufacturing Director	8. 07. 11

Nuaire Ltd,
 Western Industrial Estate,
 Caerphilly CF83 1NA.

Note: All standards used were current and valid at the date of signature.

INFORMATION FOR SAFE INSTALLATION, OPERATION AND MAINTENANCE OF NUAIRE VENTILATION EQUIPMENT

To comply with EC Council Directives 2006/42/EC Machinery Directive and 2004/108/EC (EMC).

To be read in conjunction with the relevant Product Documentation (see 2.1)

1.0 GENERAL

1.1 The equipment referred to in this Declaration of Incorporation is supplied by Nuaire to be assembled into a ventilation system which may or may not include additional components.

The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturers recommendations and with due regard to current legislation and codes of practice.

2.0 INFORMATION SUPPLIED WITH THE EQUIPMENT

2.1 Each item of equipment is supplied with a set of documentation which provides the information required for the safe installation and maintenance of the equipment. This may be in the form of a Data sheet and/or Installation and Maintenance instruction.

2.2 Each unit has a rating plate attached to its outer casing. The rating plate provides essential data relating to the equipment such as serial number, unit code and electrical data. Any further data that may be required will be found in the documentation. If any item is unclear or more information is required, contact Nuaire.

2.3 Where warning labels or notices are attached to the unit the instructions given must be adhered to.

3.0 TRANSPORTATION, HANDLING AND STORAGE

3.1 Care must be taken at all times to prevent damage to the equipment. Note that shock to the unit may result in the balance of the impeller being affected.

3.2 When handling the equipment, care should be taken with corners and edges and that the weight distribution within the unit is considered. Lifting gear such as slings or ropes must be arranged so as not to bear on the casing.

3.3 Equipment stored on site prior to installation should be protected from the weather and steps taken to prevent ingress of contaminants.

4.0 OPERATIONAL LIMITS

4.1 It is important that the specified operational limits for the equipment are adhered to e.g. operational air temperature, air borne contaminants and unit orientation.

4.2 Where installation accessories are supplied with the specified equipment eg. wall mounting brackets. They are to be used to support the equipment only. Other system components must have separate provision for support.

4.3 Flanges and connection spigots are provided for the purpose of joining to duct work systems. They must not be used to support the ductwork.

4.4 In the event of RF interference the fan may change speed. This is normal and will have no adverse effect on the fan. The speed will return to normal once the interference has subsided.

5.0 INSTALLATION REQUIREMENTS

In addition to the particular requirements given for the individual product, the following general requirements should be noted.

5.1 Where access to any part of equipment which moves, or can become electrically live are not prevented by the equipment panels or by fixed installation detail (eg ducting), then guarding to the appropriate standard must be fitted.

5.2 The electrical installation of the equipment must comply with the requirements of the relevant local electrical safety regulations.

5.3 For EMC all control and sensor cables should not be placed within 50mm or on the same metal cable tray as 230V switched live, lighting or power cables and any cables not intended for use with this product.

6.0 COMMISSIONING REQUIREMENTS

6.1 General pre-commissioning checks relevant to safe operation consist of the following:

Ensure that no foreign bodies are present within the fan or casing.

Check electrical safety. e.g. Insulation and earthing.

Check guarding of system.

Check operation of Isolators/Controls.

Check fastenings for security.

6.2 Other commissioning requirements are given in the relevant product documentation.

7.0 OPERATIONAL REQUIREMENTS

7.1 Equipment access panels must be in place at all times during operation of the unit, and must be secured with the original fastenings.

7.2 If failure of the equipment occurs or is suspected then it should be taken out of service until a competent person can effect repair or examination. (Note that certain ranges of equipment are designed to detect and compensate for fan failure).

8.0 MAINTENANCE REQUIREMENTS

8.1 Specific maintenance requirements are given in the relevant product documentation.

8.2 It is important that the correct tools are used for the various tasks required.

8.3 If the access panels are to be removed for any reason the electrical supply to the unit must be isolated.

8.4 A minimum period of two minutes should be allowed after electrical disconnection before access panels are removed. This will allow the impeller to come to rest.

NB: Care should still be taken however since airflow generated at some other point in the system can cause the impeller to "windmill" even when power is not present.

8.5 Care should be taken when removing and storing access panels in windy conditions.