

BOXER Air Handling Units

NUAIRE

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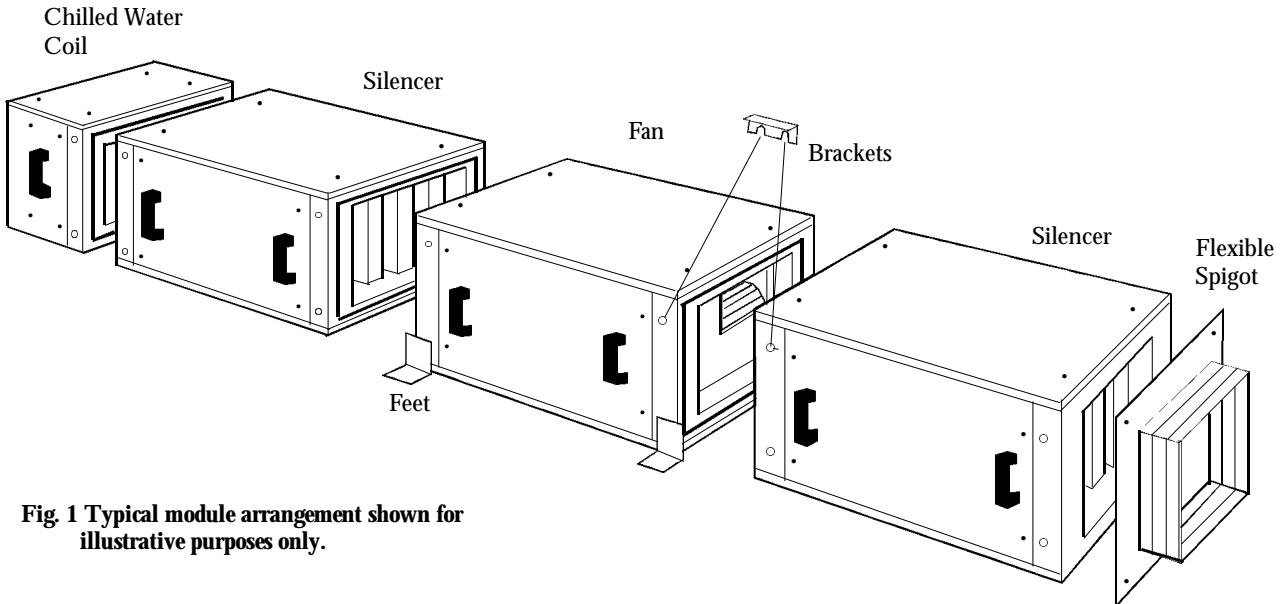


Fig. 1 Typical module arrangement shown for illustrative purposes only.

Introduction

The NuAire Boxer range of Air Handling Equipment comprises a selection of component modules. Fig 1 shows a typical arrangement. The modules provide treatment and conditioning of supply and extract air for general ventilation systems. Note: To ensure effective operation of a system it is essential that these instructions are adhered to.

Receipt of equipment

Depending on the order placed with your supplier; the equipment will either be delivered as separate modules, for ease of movement and assembly on site, or as full / sectional assemblies complete with a base frame.

In either case a dimensional drawing of the system will be supplied (attached to the supply fan module). The installer must check that the delivered items correspond with those detailed on the drawing.

Note: when assembling the system, the specified position of the components with the associated orientation and airflow directional restraints must be followed.

Lifting, moving and storage of equipment

When moving the units follow the procedure as shown in the diagrams. Do not attach lifting devices other than those shown. When using slings ensure that spreaders are employed to prevent damage to the unit casings.

Equipment should be stored in a dry location and protected from the accumulation of building dust and debris.

Do not stack the equipment during storage. Ensure that no impact loads are applied to the equipment

The handles fitted to the side panels of the units are for panel removal only. DO NOT attempt to move the unit using the handles.

Note: Avoid the panel handles when lifting. Consider the centre of gravity of the unit- this is not always central to the unit.

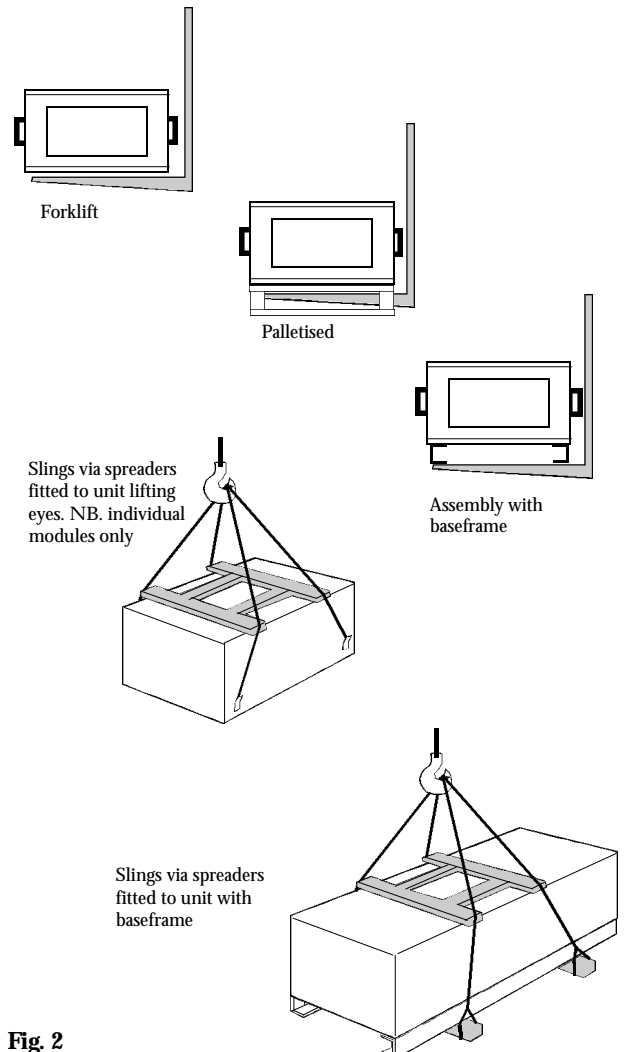


Fig. 2
Lifting and moving the unit.

Installation Options

The Boxer range can be installed using a number of different methods. This provides flexibility to cater for particular on site conditions. Note that for units delivered as individual modules; the spigot plates that connect with the ductwork are always fitted to the fan module. These should be removed in preparation for fitting to the appropriate modules at each end of the assembly.

Assembly of the modules

The module to module assembly is similar for all the unit sizes. Each module is constructed from six panels. End panels are designed to attach to the corresponding panel in the adjacent module and provide mounting points for the assembly.

The modules are assembled together using cleats, mounting feet or, for certain modules, closure plates.

All fixings necessary are provided. The fixings are vibration proof.

Clamping cleats are manufactured in heavy gauge mild steel and are designed to draw the end panels together into the correct position for gasket compression. For fitting, slacken the relevant vibration-proof bolts to show approximately 4mm of exposed thread and slide the cleat into position. A sharp blow to the folded edge will then engage the cleat. (See fig. 3). Tighten the bolts to a torque ofNm.

Mounting Feet, pressed in mild steel, provide for both attachment and mounting of the assembly. The vibration proof bolts should be tightened to a torque ofNm.

Closure Plates, are supplied with the Bend Modules and also the Heat Exchanger Modules. The vibration proof bolts should be tightened to a torque ofNm.

NOTE:

In all cases when positioning adjacent modules, ensure that the gasket material is not displaced.

Unit Mounting (floor or roof)

On a smooth and level surface, capable of supporting the assembled weight of the units, no assembly frame is required. This has the advantage of minimising the overall height of the unit.

An uneven mounting surface will impose undue strain upon the assembly. In extreme cases this may cause leakage and component failure. A simple builders work upstand may be used to raise the equipment from the floor level. (See fig. 6). Note: this will be necessary where cooling coils and heat exchangers are specified in order to allow fitting of the appropriate condensate drainage trap.

Construct the upstand to support the base periphery of the assembly. Position the modules in the correct order and assemble using clamping cleats. Mounting feet should be used, at least at every other joint, secured to the mounting surface. It is normal practice to fit a resilient matting between the unit and the mounting surface.

Where supplied with a base frame the module assembly needs only to be positioned and secured to the floor. Again, the surface should be level and additional height may be required for drainage traps.

Assemblies are supplied in maximum lengths of 2.4metres. Longer assemblies must be joined on site (fixings supplied).

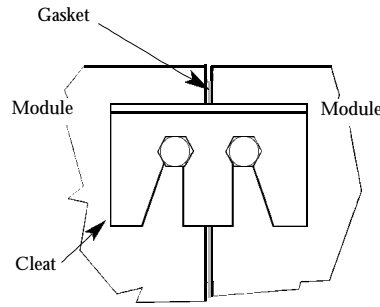


Fig. 3 Fitting a cleat

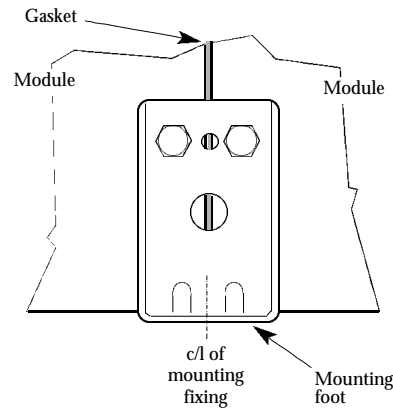


Fig. 4 The mounting foot

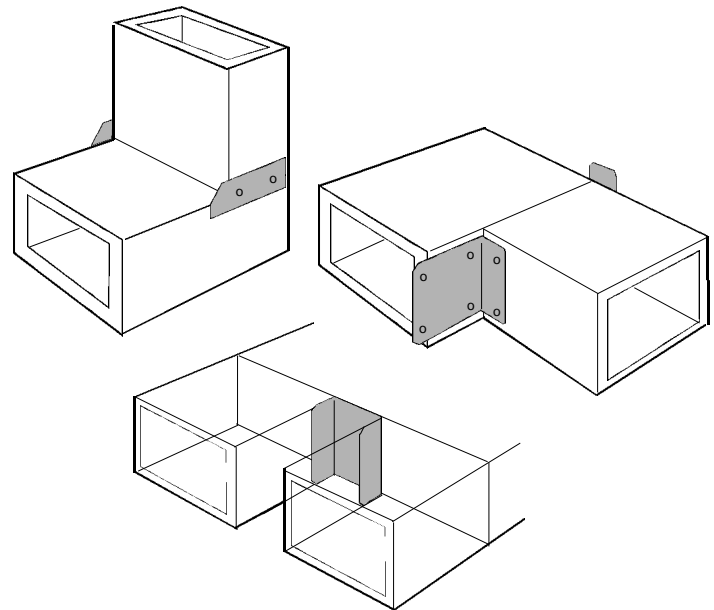


Fig. 5 Closure Plates used on Bend and Heat Exchanger modules.

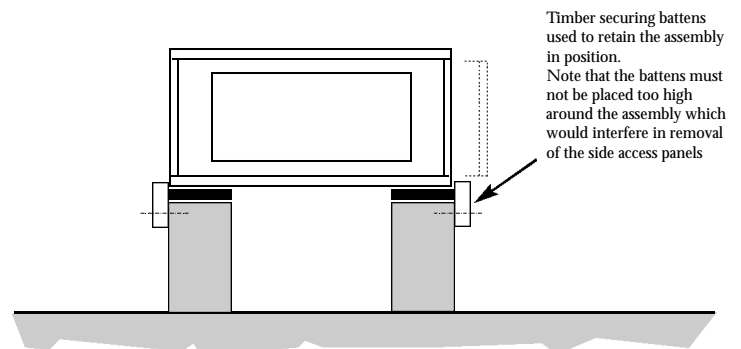


Fig. 6 Simple builders upstand mounting assembly.

Installation & Maintenance BOXER AIR HANDLING UNITS

High level mounting

For suspended mounting the installer must consider safe working access for construction and also subsequent maintenance, with particular regard to removal of access panels.

For baseframe mounted assemblies, the installer must provide a series of level supports for attachment of the baseframe.

Supports of cantilever or drop rod design must be adequately sized and securely fixed.

Supports should be evenly distributed along the length of the assembly with a recommended maximum span between supports of 1.5metres. Not more than 150mm of baseframe should overhang the outermost supports.

Note that the baseframe / module assembly as supplied has a maximum length of 2.4 metres. For longer assemblies, both the modules and the baseframe will need to be joined on site (fixings are supplied).

Where modules are to be individually mounted on site, the installer must adopt the following systematic procedure.

Supports are required at each extreme end of final assembly and at every second joint for B4 size units and at every joint for B5,6 and 7 units.

Installation procedure

- a) Fit the first two supports at one end of the assembly.
- b) Fit mounting feet to the unit. Lift the unit onto the supports and secure with fixings.
- c) Install the third support.
- d) Lift the second module into place and attach it to the mounting feet. Attach the free end to the third support.
- e) Fit cleats to the first joint.
- f) Continue the procedure until all modules are in position checking each joint is properly aligned.
- g) Check the torque of all bolts and that the fixings to the supports are secure.

Ensure that the supports do not impose any undue loads on the component due to misalignment.

Note that when installing a module near to a wall, sufficient clearance must be allowed for fitting of the mounting feet and access to the fixing bolts.

Connecting the ductwork.

Assuming the assembly of the modules is complete, the spigot plates may now be fitted to the outer modules. All fixings are supplied.

The flexible connectors may now be connected to the ductwork. The weight of the ductwork should be separately supported. The ductwork should also be properly aligned with the connecting spigots. Flexible spigots should be extended so that they do not impede the airflow but flexibles must not be stretched as this could allow the transmission of vibration.

To achieve the rated airflow performance there should be at least 1 metre of straight ducting at both ends of the module assembly and any bends or restrictions should be positioned as far away from the unit as is possible.

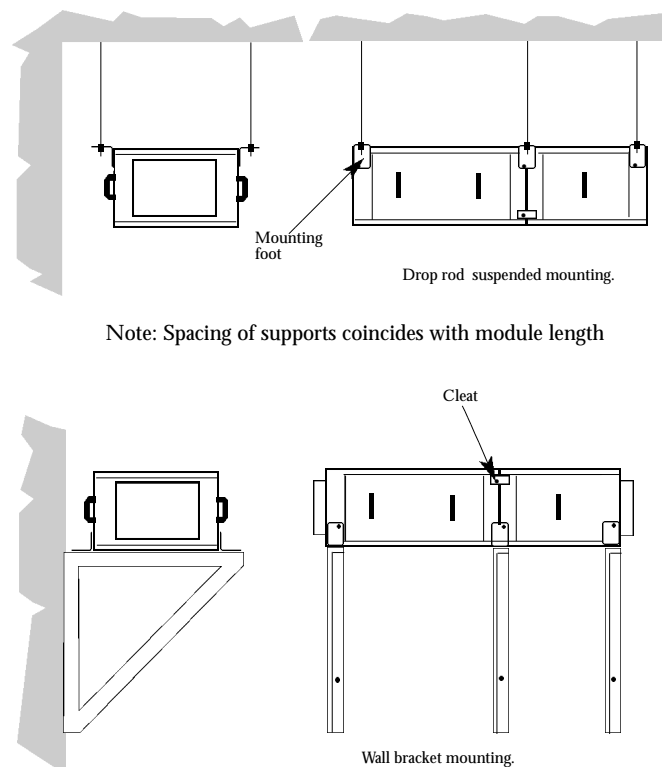


Fig.7 Suspended and wall mounting typical arrangements.

Module requirements

General

All access panels are secured by M6 x 50 screws which are retained in the panel. During routine maintenance only one access panel at any time should be removed from the unit. When a panel is removed, the condition of the sealing gasket tape should be checked and replaced if necessary. Before attempting any maintenance on any component in the system, **THE ENTIRE SYSTEM MUST BE ELECTRICALLY ISOLATED** using lockable isolators.

Unit codes, dimensions and weights

B4 Direct Drive

Description	Module Code	Weight (Kg)	Length (mm)	Width (mm)	Height (mm)	Access requirements (mm)		
						Top	Bottom	side
FAN								
Fan Module	B4-F1	41	700	684	476			
Fan Module	B4-F2	43	700	684	476			
Fan Module	B4-F3	45	700	684	476			
SILENCER								
	B4-SIL	36	700	684	476			
PANEL FILTER								
EU3	B4-FLP	34	700	684	476			
BAG FILTER								
EU5	B4-FLB5	35	700	700	476			
EU7	B4-FLB7	35	700	701	476			
ELEC. HEATER								
4kW 1Phase	B4-EH4/1	23	400	684	476			
6kW 1Phase	B4-EH6/1	23	400	684	476			
6kW 3Phase	B4-EH-6/3	23	400	684	476			
12kW 3Phase	B4-EH12/3	23	400	684	476			
18kW 3Phase	B4-EH18/3	23	400	684	476			
LPHW HEATER								
1 Row	B4-LW1	28	400	684	476			
2 Row	B4-LW2	36	400	684	476			
3 Row	B4-LW3	44	400	684	476			
4 Row	B4-LW4	52	400	684	476			
CHILLER								
3 Row (water)	B4-CW3	42	400	684	476			
4 Row (water)	B4-CW4	51	400	684	476			
MIXING BOX								
	B4-MB	50	700	684	476			
HEAT EXCH.								
	B4-HX	83	1000	1450	476			
DAMPER								
	B4-D	14	160	620	415			
MOD. DAMPER								
	B4-DM	118	160	620	415			
VERT. BEND								
	B4-V	38	1000	684	476			
HORIZ. BEND								
	B4-H	38	700	684	476			

ACCESS REQUIREMENTS

The dimensions shown in the tables are the minimum required to effect complete removal of all serviceable components. Note that when removing heating and cooling coils from the side of the module is necessary to remove either the base or top panel. Therefore allow 40mm minimum clearance above or below the appropriate panel.

NOTE:

Where handles and/or mounting feet are used the overall width of the module is effectively increased by 50mm each side (100mm overall).

The unit base frame, where supplied, increases the overall height by 150mm and the overall width by 120mm.

B5 Belt Drive

Description	Module Code	Weight (Kg)	Length (mm)	Width (mm)	Height (mm)	Access requirements (mm)		
						Top	Bottom	side
FAN								
Fan Module	B5-F1	83	1235	684	620			
Fan Module	B5-F2	83	1235	684	620			
Fan Module	B5-F3	83	1235	684	620			
Fan Module	B5-F4	83	1235	684	620			
Fan Module	B5-F5	77	1235	684	620			
Fan Module	B5-F6	77	1235	684	620			
Fan Module	B5-F7	77	1235	684	620			
Fan Module	B5-F8	77	1235	684	620			
Fan Module	B5-F9	77	1235	684	620			
Fan Module	B5-F10	77	1235	684	620			
Fan Module	B5-F11	74	1235	684	620			
Fan Module	B5-F12	74	1235	684	620			
Fan Module	B5-F13	73	1235	684	620			
Fan Module	B5-F14	73	1235	684	620			
Fan Module	B5-F15	73	1235	684	620			
Fan Module	B5-F16	73	1235	684	620			
Fan Module	B5-F17	72	1235	684	620			
Fan Module	B5-F18	72	1235	684	620			
SILENCER								
	B5/6-SIL	44	700	684	620			
PANEL FILTER								
EU3	B5/6-FLP	41	700	684	620			
BAG FILTER								
EU5	B5/6-FLB5	43	700	684	620			
EU7	B5/6-FLB7	43	700	684	620			
ELEC. HEATER								
4.0kW 1Phase	B5/6-EH4/1	31	400	684	620			
6kW 1Phase	B5/6-EH6/1	31	400	684	620			
6kW 3Phase	B5/6-EH6/3	31	400	684	620			
12kW 3Phase	B5/6-EH12/3	31	400	684	620			
18kW 3Phase	B5/6-EH18/3	31	400	684	620			
24kW 3Phase	B5/6-EH24/3	31	400	684	620			
LPHW HEATER								
1 Row	B5/6-LW1	34	400	684	620			
2 Row	B5/6-LW2	44	400	684	620			
3 Row	B5/6-LW3	53	400	684	620			
4 Row	B5/6-LW4	63	400	684	620			
CHILLER								
3 Row (water)	B5/6-CW-3	54	400	684	620			
4 Row (water)	B5/6-CW-4	63	400	684	620			
MIXING BOX								
	B5/6-MB	73	700	684	620			
HEAT EXCH.								
	B5/6-HX	144	1235	1450	620			
DAMPER								
	B5/6-D	12	160	620	560			
MOD. DAMPER								
	B5/6-DM	12	160	620	560			
VERT. BEND								
	B5/6-V	52	700	684	620			
HORIZ. BEND								
	B5/6-H	52	1000	684	620			

Installation & Maintenance BOXER AIR HANDLING UNITS

Unit codes, dimensions and weights

B6 Belt Drive

Description	Module Code	Weight (Kg)	Length (mm)	Width (mm)	Height (mm)	Access requirements (mm)		
						Top	Bottom	side
FAN								
Fan Module	B6-F1	94	1235	684	620			
Fan Module	B6-F2	94	1235	684	620			
Fan Module	B6-F3	89	1235	684	620			
Fan Module	B6-F4	89	1235	684	620			
Fan Module	B6-F5	89	1235	684	620			
Fan Module	B6-F6	86	1235	684	620			
Fan Module	B6-F7	86	1235	684	620			
Fan Module	B6-F8	86	1235	684	620			
Fan Module	B6-F9	83	1235	684	620			
Fan Module	B6-F10	83	1235	684	620			
Fan Module	B6-F11	83	1235	684	620			
Fan Module	B6-F12	83	1235	684	620			
Fan Module	B6-F13	80	1235	684	620			
Fan Module	B6-F14	79	1235	684	620			
SILENCER								
	B5/6-SIL	44	700	684	620			
PANEL FILTER								
EU3	B5/6-FLP	41	700	684	620			
BAG FILTER								
EU5	B5/6-FLB5	43	700	684	620			
EU7	B5/6-FLB7	43	700	684	620			
ELEC. HEATER								
4kW 1Phase	B5/6-EH4/1	31	400	684	620			
6kW 1Phase	B5/6-EH6/1	31	400	684	620			
6kW 3Phase	B5/6-EH6/3	31	400	684	620			
12kW 3Phase	B5/6-EH12/3	31	400	684	620			
18kW 3Phase	B5/6-EH18/3	31	400	684	620			
24kW 3Phase	B5/6-EH24/3	31	400	684	620			
LPHW HEATER								
1 Row	B5/6-LW1	34	400	684	620			
2 Row	B5/6-LW2	44	400	684	620			
3 Row	B5/6-LW3	53	400	684	620			
4 Row	B5/6-LW4	63	400	684	620			
CHILLER								
3 Row (water)	B5/6-CW3	54	400	684	620			
4 Row (water)	B5/6-CW4	63	400	684	620			
MIXING BOX								
	B5/6-MB	73	700	684	620			
HEAT EXCH.								
	B5/6-HX	144	1235	1450	620			
DAMPER								
	B5/6-D	17	160	620	560			
MOD. DAMPER								
	B5/6-DM	17	160	620	560			
VERT. BEND								
	B5/6-V	52	700	684	620			
HORIZ. BEND								
	B5/6-H	52	1000	684	620			

B7 Belt Drive

Description	Module Code	Weight (Kg)	Length (mm)	Width (mm)	Height (mm)	Access requirements (mm)		
						Top	Bottom	side
FAN								
Fan Module	B7-F1	163	1420	1000	750			
Fan Module	B7-F2	163	1420	1000	750			
Fan Module	B7-F3	163	1420	1000	750			
Fan Module	B7-F4	163	1420	1000	750			
Fan Module	B7-F5	163	1420	1000	750			
Fan Module	B7-F7	155	1420	1000	750			
Fan Module	B7-F8	136	1420	1000	750			
Fan Module	B7-F9	136	1420	1000	750			
Fan Module	B7-F10	127	1420	1000	750			
Fan Module	B7-F11	124	1420	1000	750			
Fan Module	B7-F12	124	1420	1000	750			
Fan Module	B7-F13	119	1420	1000	750			
Fan Module	B7-F14	116	1420	1000	750			
Fan Module	B7-F15	116	1420	1000	750			
Fan Module	B7-F17	116	1420	1000	750			
SILENCER								
	B7-SIL	65	700	1000	750			
PANEL FILTER								
EU3	B7-FLP	63	700	1000	750			
BAG FILTER								
EU5	B7-FLB5	65	700	1000	750			
EU7	B7-FLB7	65	700	1000	750			
ELEC. HEATER								
6kW 1Phase	B7-EH-6/1	45	700	1000	750			
6kW 3Phase	B7-EH-8/1	45	700	1000	750			
12kW 3Phase	B7-EH-12/3	45	700	1000	750			
18kW 3Phase	B7-EH-18/3	45	700	1000	750			
24kW 3Phase	B7-EH-24/3	45	700	1000	750			
30kW 3Phase	B7-EH-30/3	45	700	1000	750			
42kW 3Phase	B7-EH-42/3	45	700	1000	750			
LPHW HEATER								
1 Row	B7-LW-1	52	700	1000	750			
2 Row	B7-LW-2	70	700	1000	750			
3 Row	B7-LW-3	85	700	1000	750			
4 Row	B7-LW-4	102	700	1000	750			
CHILLER								
3 Row (water)	B7-CW-3	86	700	1000	750			
4 Row (water)	B7-CW-4	103	700	1000	750			
5 Row (water)	B7-CW-5	119	700	1000	750			
6 Row (water)	B7-CW-6	136	700	1000	750			
MIXING BOX								
	B7-MB	116	1420	1000	750			
HEAT EXCH.								
	B7-HX	291	1420	2200	750			
DAMPER								
	B7-D	26	160	960	690			
MOD. DAMPER								
	B7-DM	26	160	960	690			
VERT. BEND								
	B7-V	84	700	1000	750			
HORIZ. BEND								
	B7-H	84	1420	1000	750			

Electrical information

When selecting suitably sized cable, refer to the table of maximum running and starting currents. The actual test values for the module supplied can be found on the module rating label.

Access for wiring is achieved by passing the cables through the conduit hole which can be found in the module end panels and fan plate. When routing the cable within the unit, ensure that it is securely fastened and clear of any moving parts.

On belt drive units the electrical connection is made directly to the motor terminal box. Flexible conduit should be used to avoid bridging the anti vibration mountings.

Note:

To avoid damage during transit, the anti vibration mountings are protected by a **TRANSIT PACKER** located at the rear of the fan blower scroll which **MUST BE REMOVED BEFORE STARTING THE UNIT.**

The fan module must be earthed and the entire installation must conform to the requirements of the current electrical regulations.

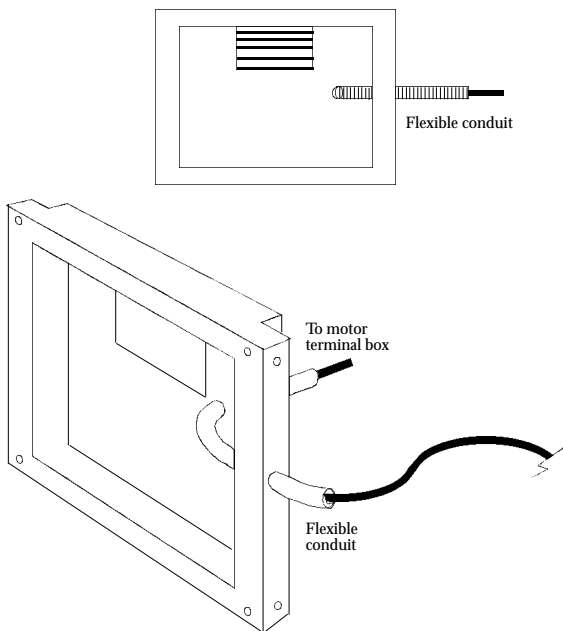


Fig.8 Cable connection through end panel of fan unit

Start Up Procedure

Ensure that nothing is obstructing the fan impeller or drive mechanism and that there are no loose foreign objects, tools etc. in the unit assembly or ductwork.

With the access panel placed in position (but not fixed) apply power to the unit for 10 seconds. Switch off and quickly remove the panel to observe the directional rotation of the impeller. **DO NOT REACH INTO THE UNIT.**

Alter the phase wiring as necessary.

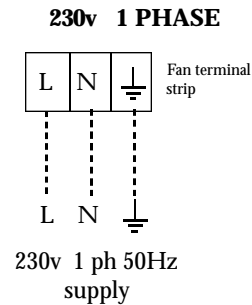
NB. When an inverter control is fitted the connections must be reversed between the control and the motor.

Replace the panel and start the unit. Note that the motor and drive are matched to the unit to operate against a given system resistance. If the system is not complete, or access panels are removed, the motor output rating will be exceeded and damage to motor and drive may occur.

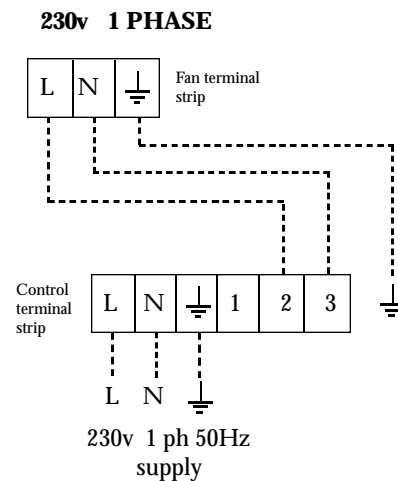
Wiring Diagrams

FAN MODULES B4-F1, B4-F2, B4-F3

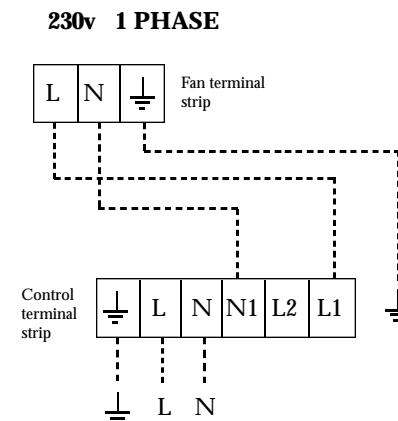
UNIT WITHOUT SPEED CONTROL



AUTO TRANSFORMER SPEED CONTROL



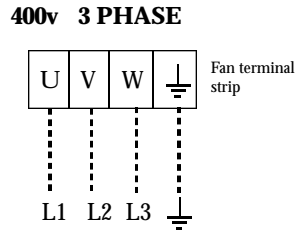
ELECTRONIC SPEED CONTROLS



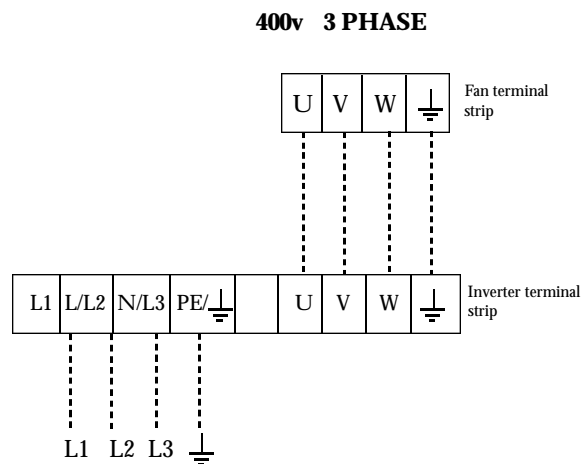
Wiring Diagrams

FAN MODULES THREE PHASE BELT DRIVE

UNIT WITHOUT SPEED CONTROL



UNIT WITH SPEED CONTROL FREQUENCY INVERTER TYPE 3SCINV... MOTORS ABOVE 2.2kW



Note: Inverter Speed Controls

Full operating and installation instructions are supplied with every inverter control. The requirements for cabling and earthing specified MUST be followed in order to avoid electrical interference problems.

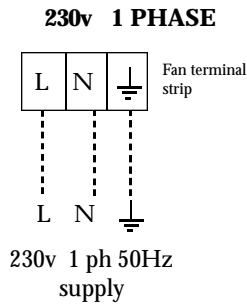
Inverter type SCINV.... has RFI filters pre-fitted. For other types, separate filters may be required to comply with the relevant electromagnetic compatibility standards.

(NuAire part code RFI2).

Wiring Diagrams

FAN MODULES SINGLE PHASE BELT DRIVE

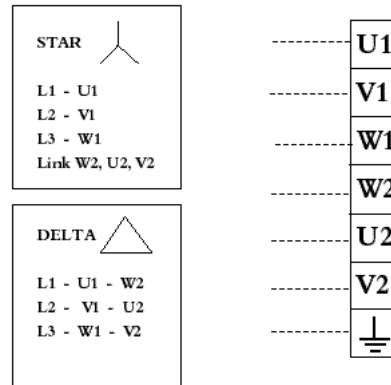
UNIT WITHOUT SPEED CONTROL



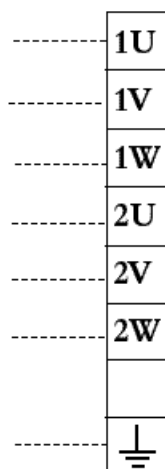
Note:

Single phase belt driven fan modules are not suitable for speed control

3 Phase for Star / Delta starting (4kW and above)



FAN MODULES THREE PHASE BELT DRIVE with TWO SPEED TAP / PAM WOUND MOTORS (DOL starting both speeds)



Note:

LOW SPEED - Supply - 1U, 1V, 1W

HIGH SPEED - Supply - 2U, 2V, 2W
LINK 1U, 1V, 1W

NOTE: For D.O.L. (Direct on line) operation or Inverter type Speed Control, wire in DELTA (\triangle)

NB:

Reversal of rotation is obtained by interchanging any two supply lines.

Maintenance

Before commencing work ensure that the electrical supply is securely isolated.

DIRECT DRIVE FAN MODULES

Maintenance is limited to the cleaning of the fan blades by light brushing. Gentle handling is essential as the blades are fragile. All fastenings should be checked for security.

BELT DRIVEN FAN MODULES

Maintenance is limited to the cleaning of the fan blades by light brushing. Gentle handling is essential as the blades are fragile. All fastenings should be checked for security. The condition and tension of the drive belts should be checked and adjusted or replaced as necessary.

Changing a drive belt.

To replace a belt, remove the two bolts from the motor mounting furthest from the fan and slacken the remaining two bolts. Lift the motor plate and remove the belt. Replacing the belt is the reverse of this procedure.

Adjusting drive belt tension.

To check the correct tension of a drive belt, place a straight edge across the two pulleys. Apply a force perpendicular to the centrally to the belt of 100 Newtons (22 lbs).

The deflection in the belt should be 16mm per metre of belt span. (8mm for 500mm etc.). See fig.9.

The tension of the belt should be checked after 24hrs of continuous running and adjusted as necessary.

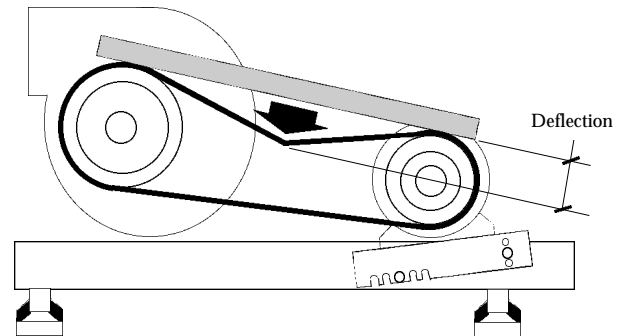


Fig.9 Adjusting the drive belt

Filter modules

Three filter types are available in the boxer range:-

FLP - EU3 Grade panel filter.

FLB5 - EU5 Grade bag filter.

FLB7 - EU7 Grade bag filter.

Ensure that the entire system is electrically isolated before removing a filter.

The panel filter consists of punched metal frames retaining the washable filter media. The filters can be withdrawn from either side of the module. The filter media is lifted from the frame by loosening the frame clamps. The filter media may then be washed in warm water with a mild detergent. The filter must be pulled into shape and laid flat when drying. Ensure the filter is fully dry before replacement.

The bag filters are clamped against an internal flange on the module end plates. The filters may be withdrawn from either the left or right hand of the module and the chosen direction of withdrawal can be configured on site by altering the position of the clamp and location components. (See fig 10). Ensure the chosen filter withdrawal direction is suitable for the installation.

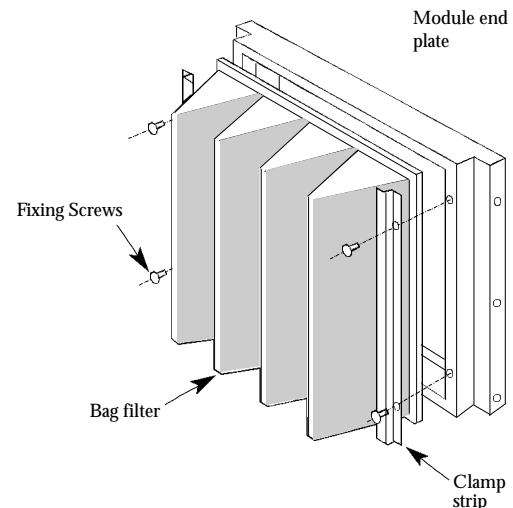


Fig.10 Bag filter clamping arrangement.

Installation & Maintenance BOXER AIR HANDLING UNITS

Electrical Heater Module

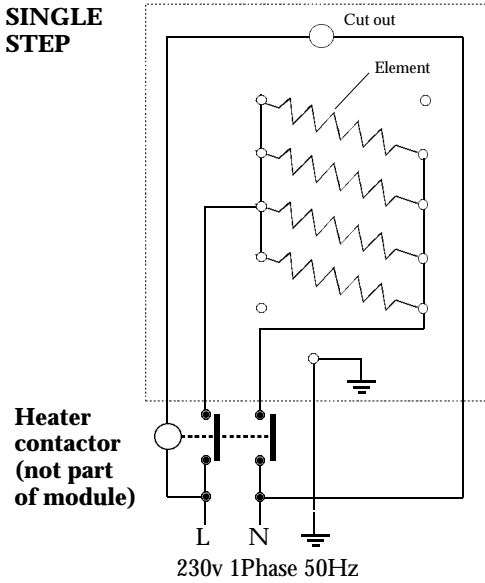
The electrical heater modules are assembled as an array of individual 2kW 230v resistance elements. As supplied, the standard modules are wired as a single step. Also included is a high temperature cut out which should be wired in series with the main contactor coil. In a correctly filtered system, there is no maintenance requirement for the heater module other than periodic checking of the fasteners for security.

Note:
If nuisance tripping of the heater occurs, the most likely cause is the air velocity dropping below the required 1.5 m/s. This may be due to dirty filters, too low a speed setting or user adjustments to the system dampers remote from the unit.

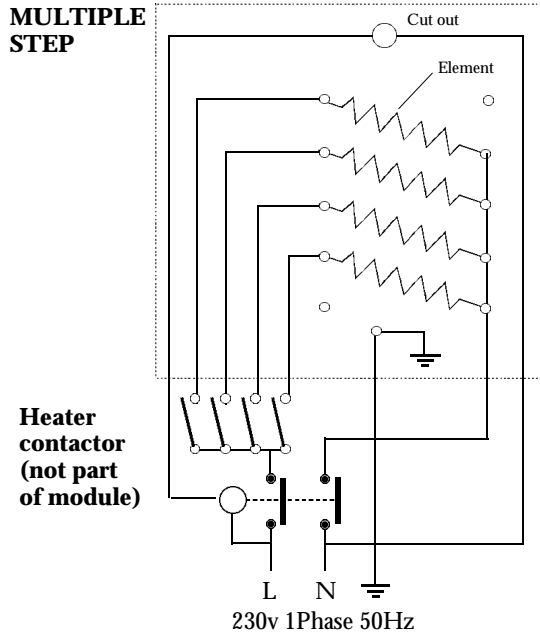
$$\text{Full load running current } I_T = \frac{\text{Total Watts}}{230}$$

Single Phase Heater Modules Wiring diagrams (typical)

SINGLE STEP



MULTIPLE STEP

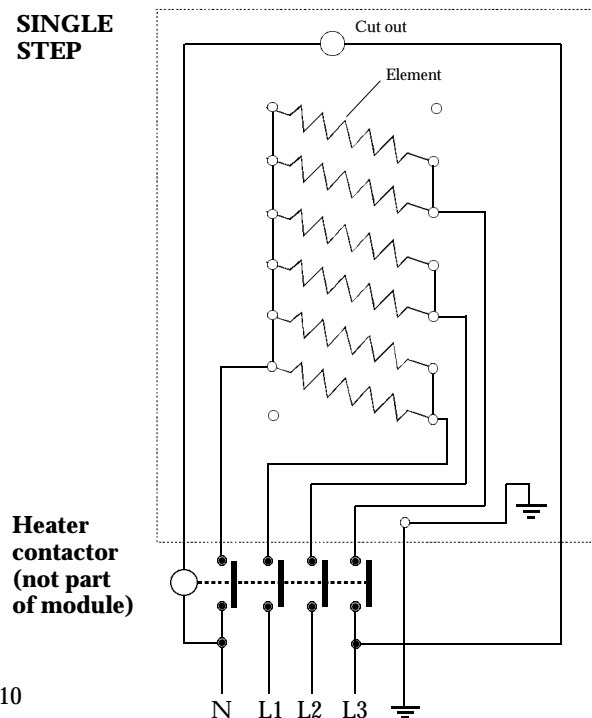


Three Phase Heater Modules Wiring diagrams (typical)

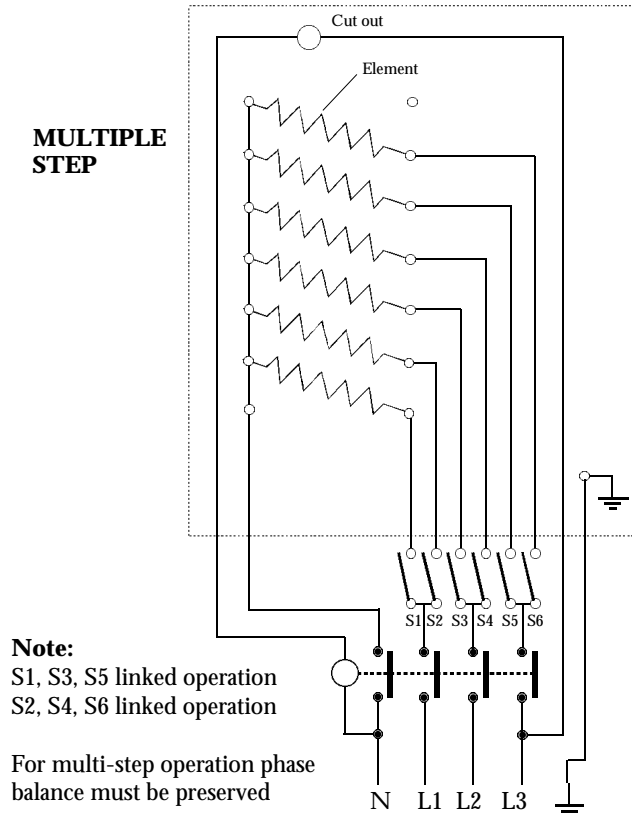
$$\text{Full load running current at 230v } I_T = \frac{\text{Total Watts}}{230}$$

$$I_P = \text{Phase current} = \frac{I_T}{3}$$

SINGLE STEP



MULTIPLE STEP



Low Pressure Hot Water Heater Module and Chilled Water Coils

Each LPHW and CW coil block is supplied with water connections, a drainage cock and an air bleed valve. Observe the orientation and airflow direction instructions on the module.

Note that pipework connections should be separately supported.

When draining the system some water may remain in the tubes. It is advisable to remove this residual water by the application of regulated compressed air.

If coil replacement should become necessary, detach all pipework and remove the side access panel and either the top or base panel. The coil may now be lifted over the base panel lip and withdrawn or, in the case of base panel removal, slacken the two bolts retaining the coil tray and allow it to move to its lower position which will allow the coil to slide free.

The chilled water coils also have a condensate drainage tray and connection. To prevent the pressure differentials between the inside and outside of the unit assembly from affecting the condensate drainage it is necessary to provide a trap arrangement in the drainage pipework.

The depth of the trap is dependent on the actual air pressure at the coil position.

Where the coil is on the inlet side of the fan, dimension 'Y' must be 30mm for every 250Pa of negative pressure. Dimension 'X' should be 40mm.

Where the coil is on the outlet side of the fan, dimension 'Y' should be 40mm and dimension 'X' should be 30mm for every 250 Pa of positive pressure.

Occasional cleaning of the fins may be necessary. However, adequate filtration should minimise the need for this operation. When handling the coil, care should be taken to avoid damaging the fins. Compressed air may be used to blow through the fins.

The drain tray of cooling coils must be cleaned regularly to prevent the build up of deposits and the drainage system flushed through.

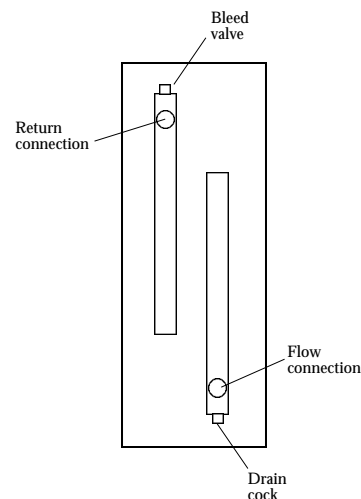


Fig.11 Coils detail

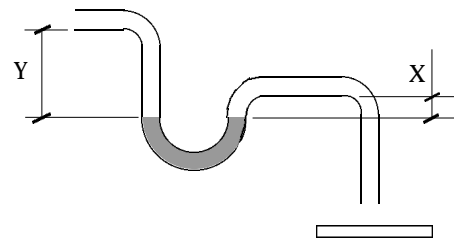


Fig.12 Drain trap arrangement.

Heat Exchange Module

This module incorporates a plate type heat exchanger which requires occasional removal for cleaning. Inside the unit is a condensate collection tray and connections to drainage pipework.

The heat exchanger block is retained in the unit by a series of closure plates which must be removed to allow the block to be withdrawn. (See fig 13).

With the closure plates removed, the block may be drawn out through the side access panels.

Cleaning the block is best achieved by immersion in warm (hand hot) water containing a mild detergent. After soaking for 2 minutes a short period of agitation should suffice. Allow the block to dry thoroughly before replacement.

The condensate tray should be cleaned regularly and the drainage system flushed through. The condensate drainage system requires a trap to prevent the unit internal pressures from affecting the drainage. Refer to the section on the coil (page ???) for details of the drainage trap.

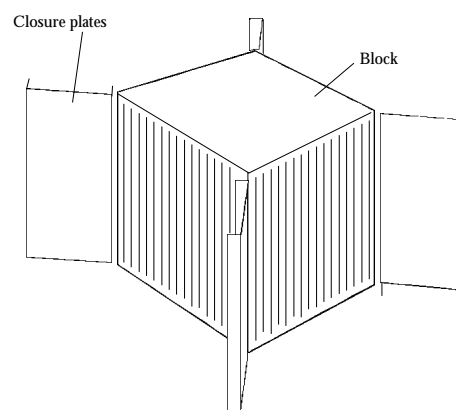


Fig.13 The heat exchanger block.

Installation & Maintenance BOXER AIR HANDLING UNITS

Damper Module and Mixing Box Module

The Motorised Dampers supplied with the Boxer range are designed to be fitted to any of the unit end panels.

Two damper types are available:-

Type 'D' these dampers are designed for simple OPEN / CLOSED operation.

Type 'DM' These dampers are fitted with a modulating damper motor which allows setting of the damper block position at any point via a control signal.

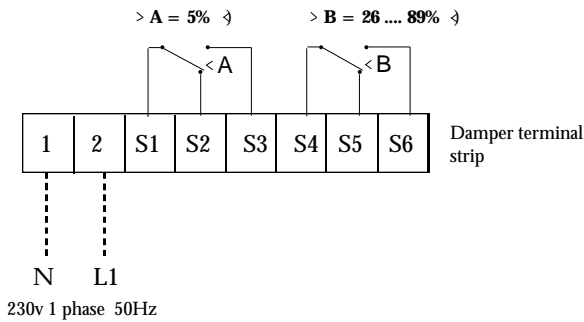
The Damper Module requires no routine maintenance.

The mixing box module is fitted with two of the modulating dampers and may be connected such that when one damper opens the other damper closes for variable air recirculation systems

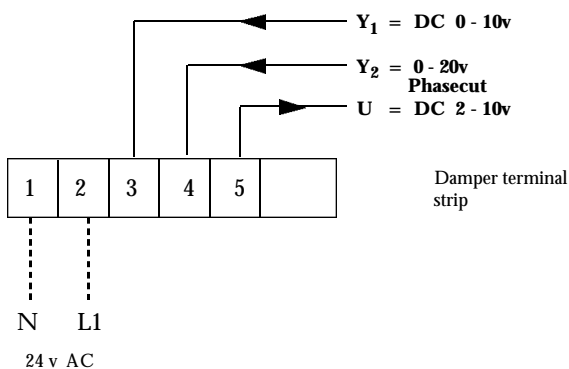
Before operating the damper check for any obvious blade distortion. During initial operation check that the damper movement operates smoothly.

Wiring Diagrams

TYPE 'D'



TYPE 'DM'



Other Modules (Silencers etc)

The other modules in the Boxer range (Silencers and Vertical / Horizontal Bends) are passive components with no special installation or maintenance requirements.

For cleaning purposes the unit panels are removable as in the other modules.

Modules mounting restrictions

Module type	Horizontal	Vertical	Side
Fan B4 size	/	/	/
Fan B6&7 size	/		
Filter (panel)	/	/	/
Filter (bag)	/	/	
Electric Heater	/		
LPHW Heater	/		
CW Coil	/		
Heat Exchanger	/		
Damper	/	/	/
Silencer	/	/	/
Bends	/	/	/
Mixing Box	/	/	/

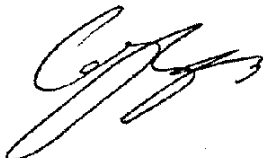

CE DECLARATION OF CONFORMITY

APRIL 2000

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 :-	BOXER
Machinery Types :-	B
Relevant EC Council Directives :-	89/336/EEC, 92/31/EEC (EMC) 73/23/EEC, 93/68/EEC (Low Voltage Directive)
Applied Harmonised Standards :-	E50081-1, EN50082-1, EN60204-1 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	3. 3. 00
2)	 M. Fussell	Manufacturing Director	3. 3. 00

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

APRIL 2000

We declare that the machinery named below is intended to be assembled with other components to constitute a system of machinery.

The machinery shall not be put into service until the system has been declared to be in conformity with the provisions of the EC Council Machinery Directive.

Designation of machinery :- BOXER

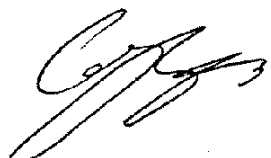

Machinery Types :- B

Relevant EC Council Directives :- 98/37/EC (Machinery Directive)

Applied Harmonised Standards :- EN292-1, EN292-2, EN294, EN29001

Applied National Standards :- BS848 Parts One, Two and Five

Signature of manufacture representatives :-

	Name:	Position:	Date:
1)	 C. Biggs	Technical Director	3. 3.00
2)	 W. Glover	Manufacturing Director	3. 3.00

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

To comply with EC Council Directives 89/392/EEC Machinery Directive

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, please 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 in particular 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 ductwork systems. They must not be used to support the ductwork.

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.

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.

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.

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