



NALTF & NALTRF

Belt Drive Roof and Plantroom Twinfans

Installation and Maintenance

Introduction

The Nuair NALTF and NALTRF Belt Drive Twinfan range consists of the following units:

NALTF/NALTRF Plantroom/Roof in line mounted unit.

NALTRF Plantroom/Roof bottom inlet unit.

NALTRF Plantroom/Roof bottom/end inlet unit . (Larger sizes).

Units are rectangular in section and the casing is manufactured from heavy gauge 'Aluzinc' aluminium-zinc coated mild steel.

A full size internally lined access panel is fitted to the top face and is fully detachable for inspection purposes.

The motor plate and frames are supported on the base by resilient mountings allowing the fan unit to be operated without the need for separate anti vibration fan case mountings.

The units incorporate two independent motors with high efficiency, forward curved centrifugal impellers running in metal scrolls. Taperlocked pulleys and wedge drive belts are employed. The fans discharge into a common outlet chamber through a shutter system that prevents 'blowback through the standby fan. The motors are manufactured to BS5000 and are suitable for three phase supply.

Airflow and failure monitors are standard for sizes 9 to 15. All motors have Class F insulation and are suitable for operation in ambient temperatures up to 40°C.

I.O Handling

Always handle the units carefully to avoid damage and distortion. Eyebolts are provided on some units for lifting. If mechanical aids are used to lift the unit, spreaders should be employed and positioned so as to prevent the slings, webbing etc. making contact with the casing.

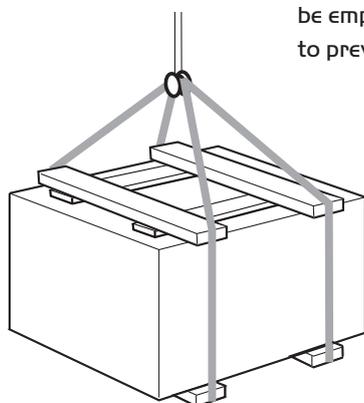
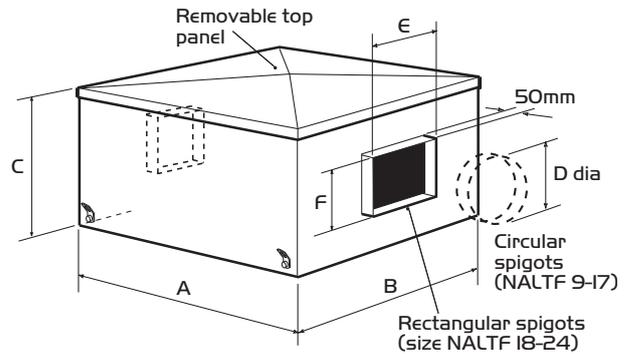


Figure I. Lifting unit with slings via spreaders.

Correctly position slings to avoid twisting of the unit case and observe the centre of gravity before the final lift is made. **Note: the weight of the unit from the rating plate.**

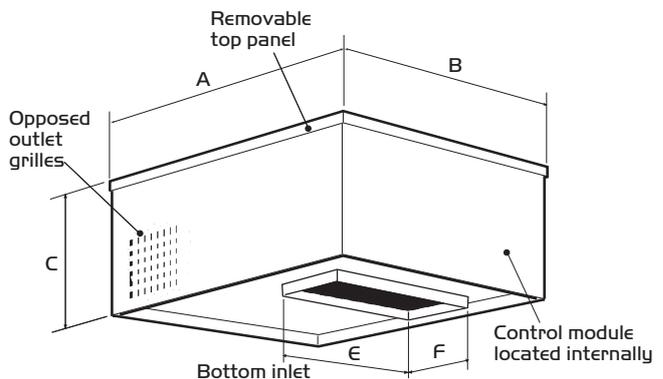
2.0 Dimensions

Figure 2. NALTF and NALTRF-I Units Dimensions



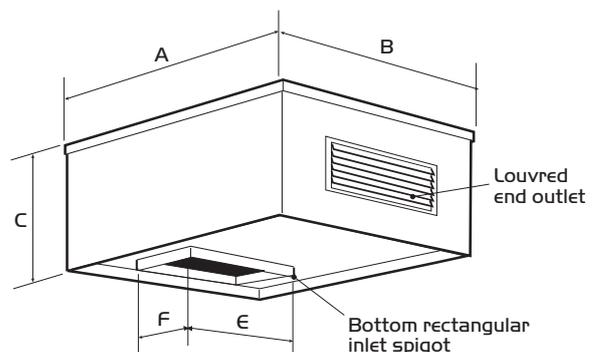
Unit	A	B	C	D dia	E	F
NALTF9-10, NALTRF9-10	974	974	622	400	-	-
NALTF11-12, NALTRF11-12	1233	1233	701	500	-	-
NALTF13-17, NALTRF13-17	1430	1635	796	630	-	-
NALTF18-24, NALTRF18-24	2030	2313	1183	-	1200	700

Figure 3. NALTRF Bottom Inlet Units Dimensions



Unit	A	B	C	Spigot E	F
NALTRF9 to NALTRF10	974	974	622	457	229
NALTRF11 to NALTRF12	1233	1233	701	762	304
NALTRF13 to NALTRF17	1430	1635	796	889	381

Figure 4. NALTRF Larger Bottom/End Inlet Units Dimensions



Unit	A	B	C	Rect Spigot E	F
NALTRF18 to NALTRF24	2030	2313	1183	1200	700

3.0 Installation

IMPORTANT

The installation must be carried out by competent personnel in accordance with the appropriate authority and conforming to all statutory and governing regulations.

Units must not be installed at an angle over 5° from the horizontal (to ensure the backdraught shutters operate satisfactorily). Units must be installed with the access panel on top, never up-side-down.

IMPORTANT

Units should always be positioned with sufficient space to allow removal of the access covers and subsequent removal of fan and motor assemblies etc.

Ductwork connections must be airtight to prevent loss of performance.

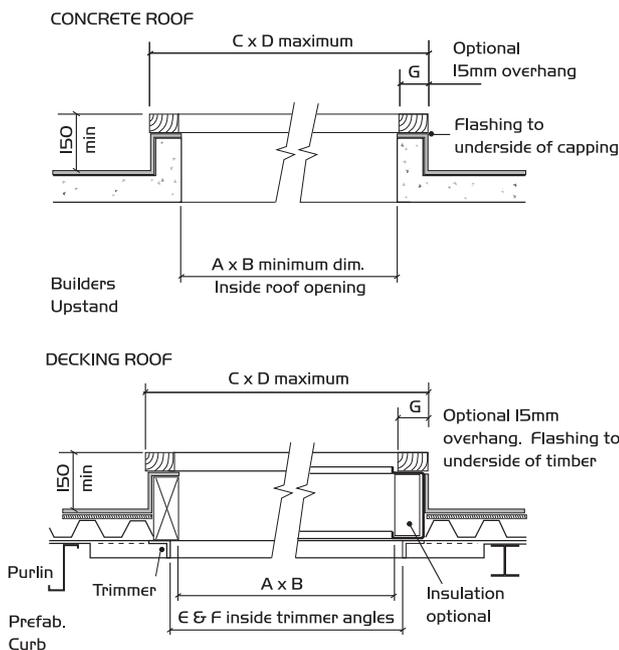
The method of mounting used is the total responsibility of the installer. The lower edge of the casing has an internal skirt allowing the unit to be located on an upstand or prefabricated curb if desired. The units must be securely screw fixed to the upstand/curb to prevent vibration and/or wind damage.

It is the installers responsibility to drill the case to provide access for the electrical cables. Care should be taken not to damage internal components and the cable entry must be properly sealed. NOTE: on bottom inlet units the electrical cabling may be routed up through the bottom inlet spigot.

Upstand Details

Details of roof opening dimensions etc required and basic construction of a builders upstand etc are shown below for typical concrete and decking roof installations.

Roof Opening Dimensions Figure 5.



Unit Code	Prefab Code	A	B	C	D	E	F	G
NALTF 9-10	NALPFC 4B	767	767	947	947	837	837	75
NALTF 11-12	NALPFC 5B	973	973	1203	1203	1064	1064	100
NALTF 13-17	NALPFC 6B	1169	1375	1399	1605	1268	1471	100

Note: Prefabricated curbs can be used to support internal or external units.

Testing after Installation

Ensure that the Fan unit and any specified controls are fitted securely according to the instructions. Switch on the mains supply. Push the test button to run each fan and check that they run satisfactorily. If a switched live signal is used, activate this signal and check that the fan runs. De-activate the switched live signal and check the run-on-time; adjust if necessary.

Adjust the maximum and minimum airflow (if required) by following the commissioning procedures.

Prefabricated Curb

CODES: NALPFC (typical)

Manufactured in aluminium alloy these curbs will reduce design work and guarantee correct unit mounting when on site.

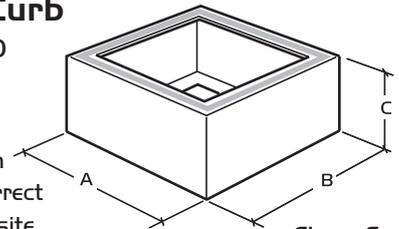


Figure 6.

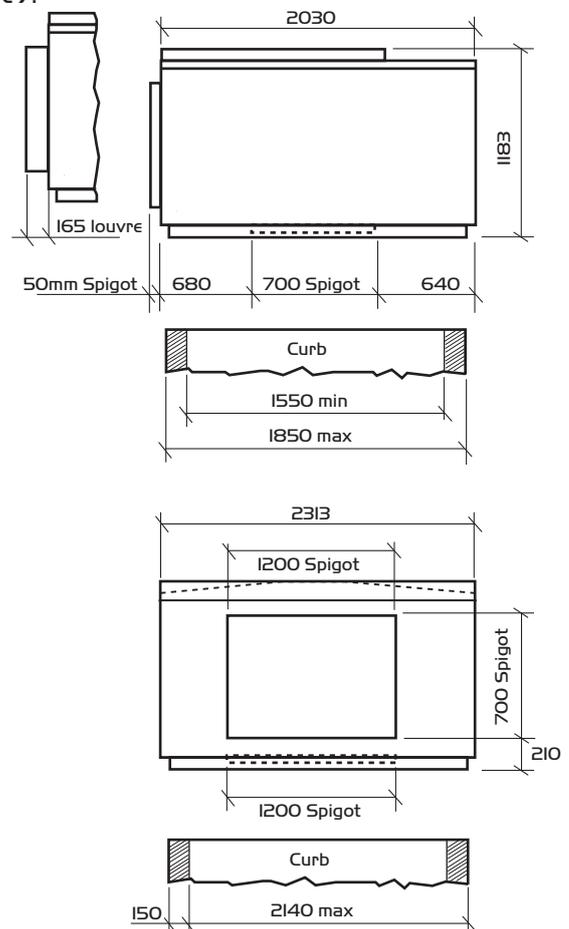
Note: Upper faces of curb are fitted with robust sealing strip.

Prefabricated curb dimensions

Unit Code	Prefab Curb Code	A	B	C
NALTF 9-10	NALPFC 4B	917	917	250
NALTF 11-12	NALPFC 5B	1173	1173	250
NALTF 13-17	NALPFC 6B	1374	1580	250

Typical Roof Upstand for NALTF 18-24

Figure 7.



4.0 Electrical Details

IMPORTANT

Isolation - Before commencing work make sure that the unit, and any control are electrically isolated from the mains supply.

Run currents etc.

Unit Code	400V 3 Phase 50Hz				
	Speed rpm	Power (kW)	f Ic (amps)	sc (amps)	Weight kg
NALTF/TRF 9	1225	0.75	2.1	9.5	84.4
NALTF/TRF 10	1400	1.1	2.9	13.0	90.4
NALTF/TRF 11	1085	1.5	3.7	8.5	125
NALTF/TRF 12	1225	2.2	5.4	27.0	134
NALTF/TRF 13	1040	2.2	5.4	27.0	168.7
NALTF/TRF 14	1040	4.0	10.0	60.0	193.6
NALTF/TRF 15	1260	3.0	6.9	38.0	174.6
NALTF/TRF 16	1260	5.5	12.0	75.0	231.6
NALTF/TRF 17	1440	5.5	12.0	75.0	231.6
NALTF/TRF 18	700	5.5	12.0	75.0	730
NALTF/TRF 19	800	4.0	10.0	60.0	716
NALTF/TRF 20	800	11.0	23.0	154.0	794
NALTF/TRF 21	1000	5.5	12.0	75.0	730
NALTF/TRF 22	1000	11.0	23.0	154.0	794
NALTF/TRF 23	1100	11.0	23.0	154.0	794
NALTF/TRF 24	1200	11.0	23.0	154.0	794

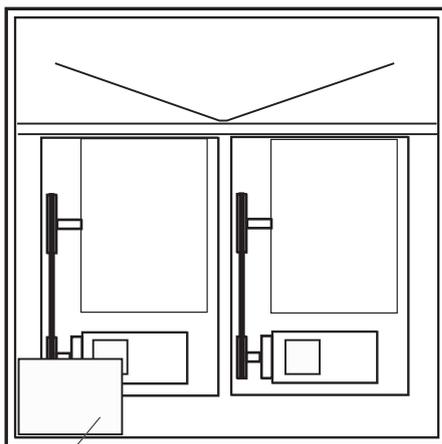
NOTES:

Because the run and start currents depend upon the duty and associated ductwork of an individual unit, the values quoted in the table are nominal.

Run currents will be exceeded if the unit is operated with its cover removed. The unit must NOT run for more than 2 minutes in this condition.

Electrical Installation Basic Layout

Figure 8. Basic internal layout.

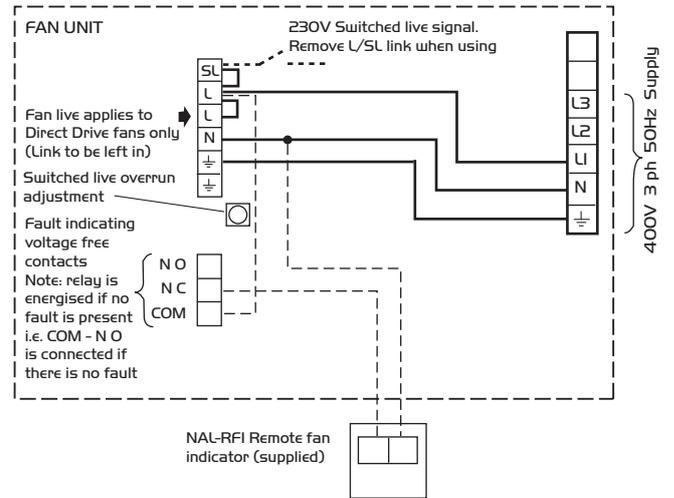


Supply
400V 3ph 50Hz
L1, L2, L3, N, E.

Electrical Wiring

Figure 9.

Basic fan wiring diagram for NALTRF 9-15 and NALTF 9-15 only



IMPORTANT

The fan will only operate when a 230V mains signal is present at the SL terminal.
When the SL signal is switched off the fan will continue to run for a preset period (1-60 minutes). Adjust the overrun time at the pot marked 'SL RUNON'.
Ensure the local isolator (by others) also isolates the switched live.

Controls for NALTF/NALTRF 9-15

The NALTF/NALTRF 9-15 fan units incorporate an integral auto-changeover controller which provides 12 hour duty share operation and automatic selection of the standby fan should the duty fan fail.

Fault indication to an external device is provided via volt free contacts of a relay.

Note: the relay is energised when no fault is present.

Note: It is the responsibility of the installer to provide a suitable switchable local isolator for maintenance purposes etc.

NALTF/NALTRF 16-24 Inclusive

These fan units are supplied without any controls fitted.

The electrical power is connected directly to the motor.

Note that the motors are 5.5kW or higher and STAR-DELTA starting or a Soft Starter should be used in the motor control panel (by others).

IMPORTANT

Isolation - Before commencing work make sure that the unit, and any control are electrically isolated from the mains supply.

5.0 Maintenance - Fan unit

Maintenance Intervals

The first maintenance should be carried out three months after commissioning and thereafter at twelve monthly intervals. These intervals may need to be shortened if the unit is operating in adverse environmental conditions, or in heavily polluted air. Access to the unit internals is gained by removing the top cover(s).

Motors

Brush away any dust or dirt from the motor housings and ensure that the motor vents are unblocked.

Bearings

Lubrication is unnecessary as the motors are fitted with sealed for life bearings.

Impellers

Remove any dust and check that the impellers are securely fixed to the motor shafts. Take care not to disturb any balance weights fitted. Check sealed for life bearings for excessive wear.

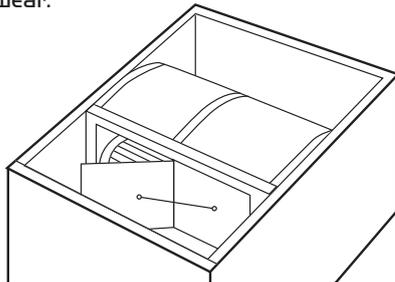


Figure 10. Shutter detail.

Shutter Assembly

Remove any dust and check that the shutters operate freely and that they seal the appropriate fan outlet effectively.

Anti Vibration Motor Plate Mountings

Each motor plate is supported on ten individual resilient mountings. Check that all the mountings are secure and in good condition. (See figure 11).

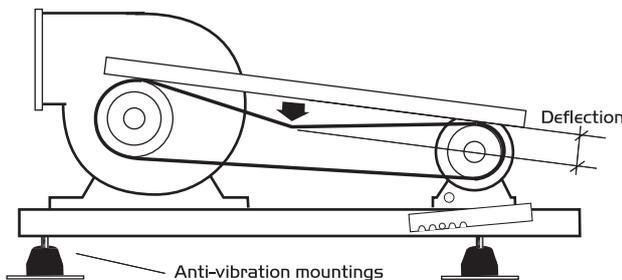


Figure 11. Adjusting the Drive Belts (smaller units).

Adjusting Drive Belt Tension (smaller units).

To check the correct tension of a drive belt, apply a force at right angles to the centre of the belt span sufficient to deflect the belt 16mm for every metre of span length (see figure 11). The force required to deflect the 'V' belt should be from 0.5kg to 0.8kg.

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.

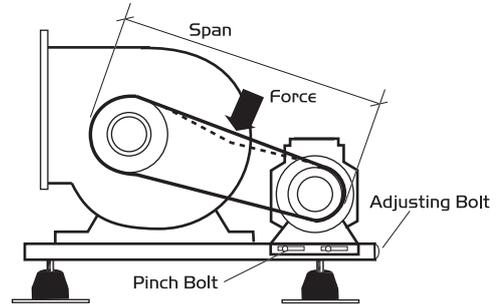


Figure 12. Adjusting the Drive Belts (larger units).

Adjusting Drive Belt Tension (larger units)

All belt drive units incorporate belt tensioning devices. To adjust the belt tension, slacken the pinch bolt on the sides of the motor plate. Turn the adjusting bolt clockwise to tighten the belt and counter clockwise to loosen it. The drive should be tensioned until a slight bow appears in the slack side of the 'V' belt when running under load.

To check for correct tension, proceed as follows.

1. Measure the span length (See figure 12).
2. At the centre of the span, apply a force at right angles to the belt sufficient to deflect one belt 16mm for every metre of span length (see figure 12). The force required to deflect the 'V' belt should be from 0.5kg to 0.8kg.
3. Tighten the pinch bolts.

General Cleaning and Inspection

Clean and inspect the exterior of the fan unit and associated controls etc. Remove the access panel from the fan unit. Inspect and, if necessary, clean the fan and motor assemblies and the interior of the case. If the unit is heavily soiled it may be more convenient to remove the fan/motor assemblies. If NuAire controls and or remote indicators are fitted, remove the covers and carefully clean out the interiors as necessary. Check for damage. Check security of components. Refit the access covers.

General

1. Check that all fixings are tight.
2. Check sealing strips around the fan outlets are tight up against the bulkhead.
3. Check that duct connections are not leaking.

6.0 Replacement of Parts

Drive belts are the only servicable items on these fan units. With time and fair wear and tear it may be necessary to replace fan assemblies or motors - consult the fan rating plate detail when ordering.

Note: Isolate the Electrical Supply

Remove the top access panel. Disconnect the wiring to the motor assembly. Remove the old unit. Replace the fan/motor assembly. Re-connect the supply to the motor. Check for correct rotation and operation and replace the top access panel.

Spare Parts

When ordering spares please quote the serial number of the unit. This number will be found on the identification plate attached to the unit mounting frame. Please give a full description of the part required.

7.0 Warranty

The unit has a one year warranty. The warranty starts from the date of delivery and covers faulty materials or workmanship and includes parts and labour. The labour element is subject to full, free and safe access to the equipment as recommended by the CDM regulations.

This warranty is void if the equipment is modified without authorisation, is incorrectly applied, misused, disassembled, or not installed, commissioned and maintained in accordance with the details contained in this manual and general good practice.

The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

8.0 After Sales Enquiries

For technical assistance or further product information, including spare parts and replacement components, please contact the After Sales Department.

Telephone 02920 858 400

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. 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: BELT DRIVE TWINFAN
 Machinery Types: NALTF, NALTRF
 Relevant EC Council Directives: 2006/42/EC (Machinery Directive)
 Applied Harmonised Standards: BS EN ISO 12100-1, BS EN ISO 12100-2, EN294, EN60204-1, BS EN ISO 9001
 Applied National Standards: BS848 Parts One, Two and Five
 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	20. 07. 07
2) A. Jones	Manufacturing Director	20. 07. 07

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

To comply with EC Council Directives 2006/42/EC Machinery Directive and 2014/30/EU (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 Nuairé 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 Nuairé.
 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.

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.

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.