



# Terminator

## TRA/TRM/TRC Roof Extract Fan

### Installation and Maintenance

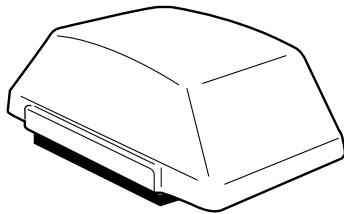
CE The EMC Directive 2014/30/EU  
The Low Voltage directive 2014/35/EU



## Introduction

The units are manufactured using a range of six basic cowl sizes A - F. Impellers are available in axial, mixed flow or centrifugal versions.

Figure 1. View of unit



### Coding:

**TRA = Axial Flow, TRM = Mixed Flow, TRC = Centrifugal**

A given cowl size may serve more than one size impeller. e.g. TRA500 & TRA560 use a size C cowl. (Table on page 2). Each unit consists of a base incorporating a spun venturi plate, a bridge\* from which the motor and impeller are suspended and a GRP cowl (fig. 1).

Motors are manufactured to BS5000, have sealed for life bearings and have integral thermal protection which must be incorporated into the control wiring. Failure to use this device will invalidate the equipment warranty.

## I.O Handling

Units must at all times be handled carefully to avoid damage or distortion. The unit is delivered fully assembled and mounted on a pallet for ease of handling. When lifting or hoisting units, care must be taken to ensure that no pressure is applied to the cowl. Lifting eyes, suitable for all units, are available.

### Purlin Box / Curb

Purlin box / curbs are manufactured in galvanised mild steel. The upper face of the purlin box is fitted with a sealing strip. When installed, the curb must be securely attached to the trimmer angles.

### Soaker Sheet

Soaker Sheets can be supplied by Nuaire. Manufactured in high quality GRP, each sheet is 19500 mm long and can be supplied to match most roof profiles. The soaker sheets are designed to be used over a prefabricated curb.

## 2.0 Installation

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

The unit is delivered completely assembled and a protective skin prevents damage to the unit. It is strongly recommended that this protective skin is allowed to remain in position for as long as possible. When necessary, the skin should be removed using a sharp knife, taking care not to score the unit surface.

The unit can now be inspected for damage. Any accumulation of dirt should be removed (see cleaning, page 6).

The unit is designed for roof mounting but can be wall mounted using the optional wallkit available from Nuaire (see page 3).

## 2.1 Roof installation

### IMPORTANT

On inclined roofs, the longer dimension of the cowl must be running **ACROSS** roof slope. Unit can be installed at an angle of up to 80° from the horizontal with the cowl so aligned.

Check that the curb mounting surface is flat and that the sealing strip is in position. (A suitable mastic may be used as an alternative).

If backdraught shutters or inlet side guards are to be fitted they should be installed centrally in the curb.

Curbs other than Nuaire purlin box/curbs should be fitted with timber capping. On timber capped curbs the units may be attached using coachbolts or similar. When attaching to Nuaire purlin box/curbs the use of TEK self drilling screws (type SF 46516) or self tapping screws is recommended.

Holes are provided in the skirt of the units base/venturi plate. (See fig. 5).

## 2.2 Wall installation

### IMPORTANT

Unit **MUST** be installed using the appropriate wall mounting plate (see Fig. 4b) and with the longer cowl dimension running horizontally.

If still assembled, separate the unit and wall plate by removing the screws and washers from around the unit skirt. Retain the fixings. Depending on the type of wall, prepare a hole to the dimensions shown on page 3. For a solid wall, fit the hole with a timber frame as shown. Drill and fit appropriate wall plugs and secure the timber frame. On completion, the frame must be flush with the outside surface of the wall.

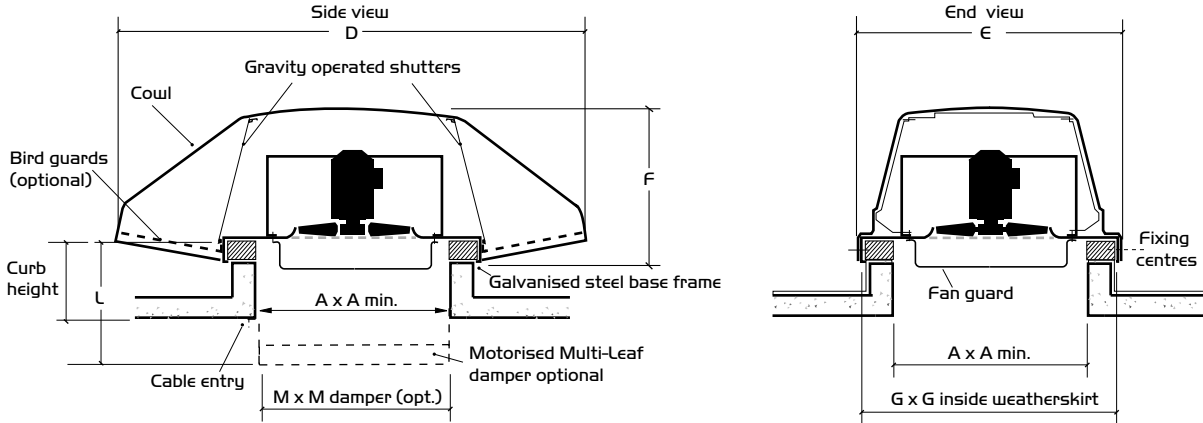
For installation to a profile sheet wall, fit a suitable timber frame supported by means of angle-iron sections. The timber frame should, on completion, be flush with the outside sheet profile (Fig. 4).

Apply a flexible silicone sealer e.g. Flowseal 32 to the timber frame and secure the wall plate using suitable coach bolts, nuts and washers. On a solid wall installation, apply a fillet of sealant between the wallplate and wall.

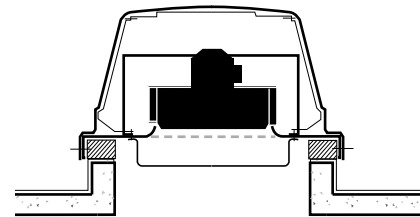
On profile walls it will be necessary to 'flash' the wall plate. Flashing strips should extend sufficiently to allow fixing to a high portion of the profile section. Ensure that the flashing strips overlap at the four corners. Fill between the top and bottom flashing strips with Neoprene profile filler and seal all external joints and seams with a suitable flexible silicone sealer such as Flousil 32. (See Wallplate dimensions fig. 4b).

3.0 Dimensions (mm) and Fixing Details

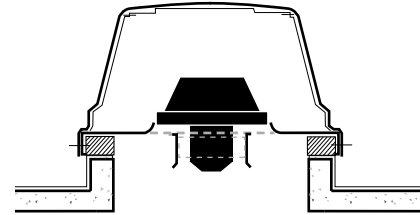
Figure 2.



AXIAL (code TRA)



CENTRIFUGAL (code TRC)



MIXED FLOW (code TRM)

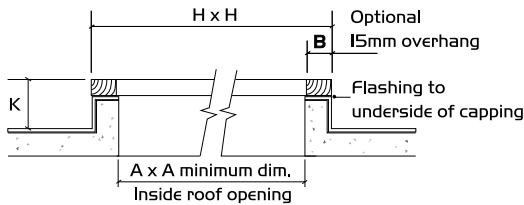
Dimensions (mm) Unit and Roof Curb.

Cowl unit size	Dimensions in mm													Cowl weight kg
	A	B	C	D	E	F	G	H	J	K	L	M		
A	460	45	475	900	620	340	600	550	560	150	450	390	12.3	
B	560	45	575	1080	740	375	695	650	660	150	450	490	14.7	
C	700	100	775	1320	964	475	945	900	910	150	450	690	25.4	
D	800	100	900	1470	1076	490	1050	1000	1010	200	500	800	28.2	
E	900	100	1000	1780	1170	485	1150	1100	1110	250	650	900	48.8	
F	1200	100	1300	2260	1476	600	1452	1400	1410	250	700	1200	88.0	

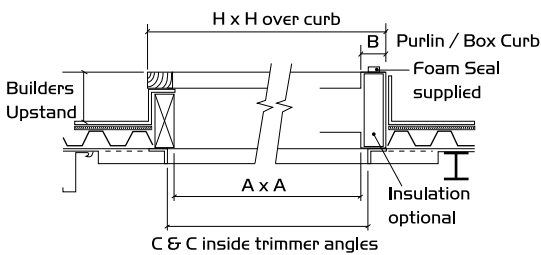
NOTE: Dimensions etc. refer to Axial, Mixed Flow and Centrifugal units. See table CODING & COWLS below.

Figure 3. Roof Curb details (see dimensions in the table above).

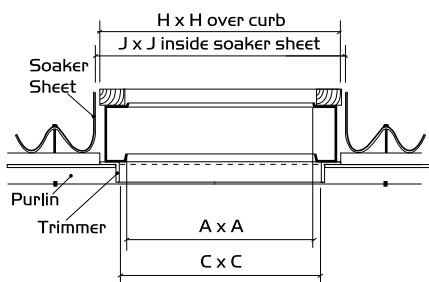
CONCRETE ROOF



DECKING ROOF



PROFILE ROOF



Note: Wooden curb and caps to be hardwood or treated softwood of minimum 50mm thickness.

Coding & Cowls

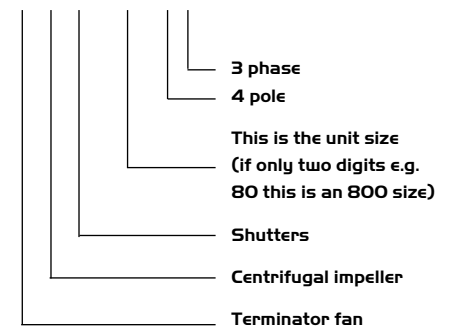
Refer to table to find cowl size.

Unit Size	Cowl Size
315	A
350	A
400	B
450	B
500	C
560	C
630	D
710	D
800	E
1000	F

Note: This table applies to all three unit types TRA, TRC & TRM.

Typical unit code

TR C S 450-4 3



IMPORTANT

Isolation - Before commencing work make sure that the unit and Nuair control if fitted are electrically isolated from the mains supply.

Do not operate the unit with the cowl removed. The impeller will continue to rotate after the supply has been disconnected - allow sufficient time for the impeller to come to rest.

Dimensions and Fixing Details cont Figure 4.

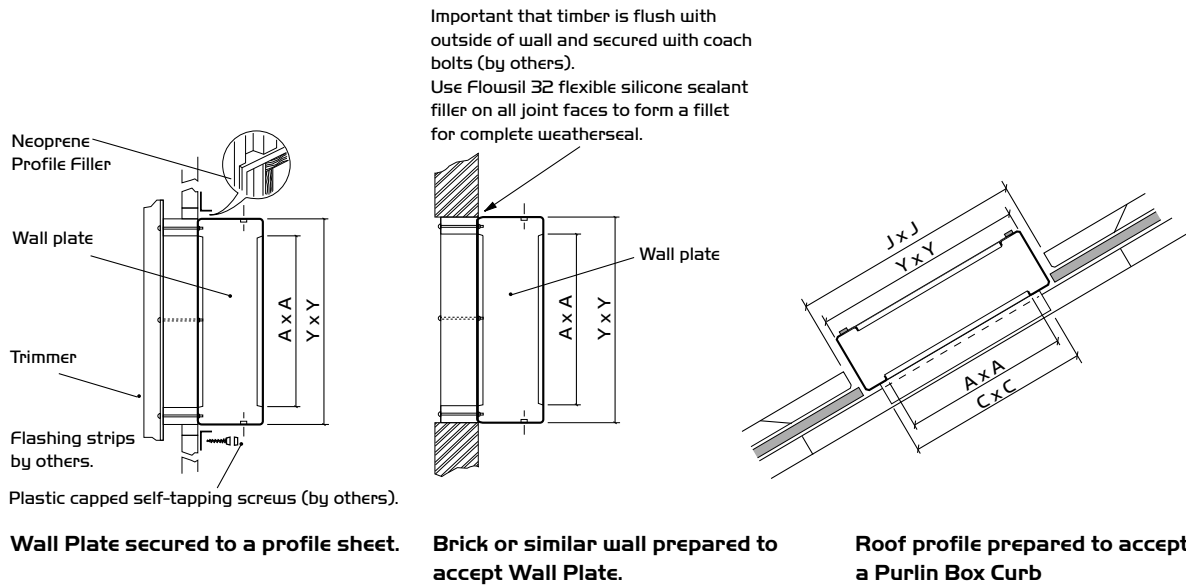
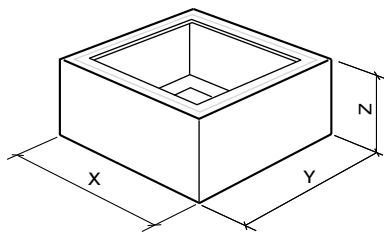


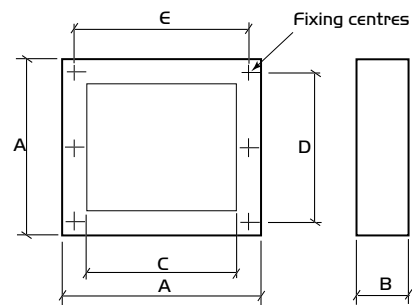
Figure 4a. Purlin Box Curb.



Dimensions (mm)			
Unit Curb Size	X	Y	Z
PBC A	550	550	250
PBC B	650	650	250
PBC C	900	900	250
PBC D	1000	1000	250
PBC E	1100	1100	350
PBC F	1400	1400	325

Note: For Thermal Curb add T to code e.g. PBCT A, PBCT B etc.

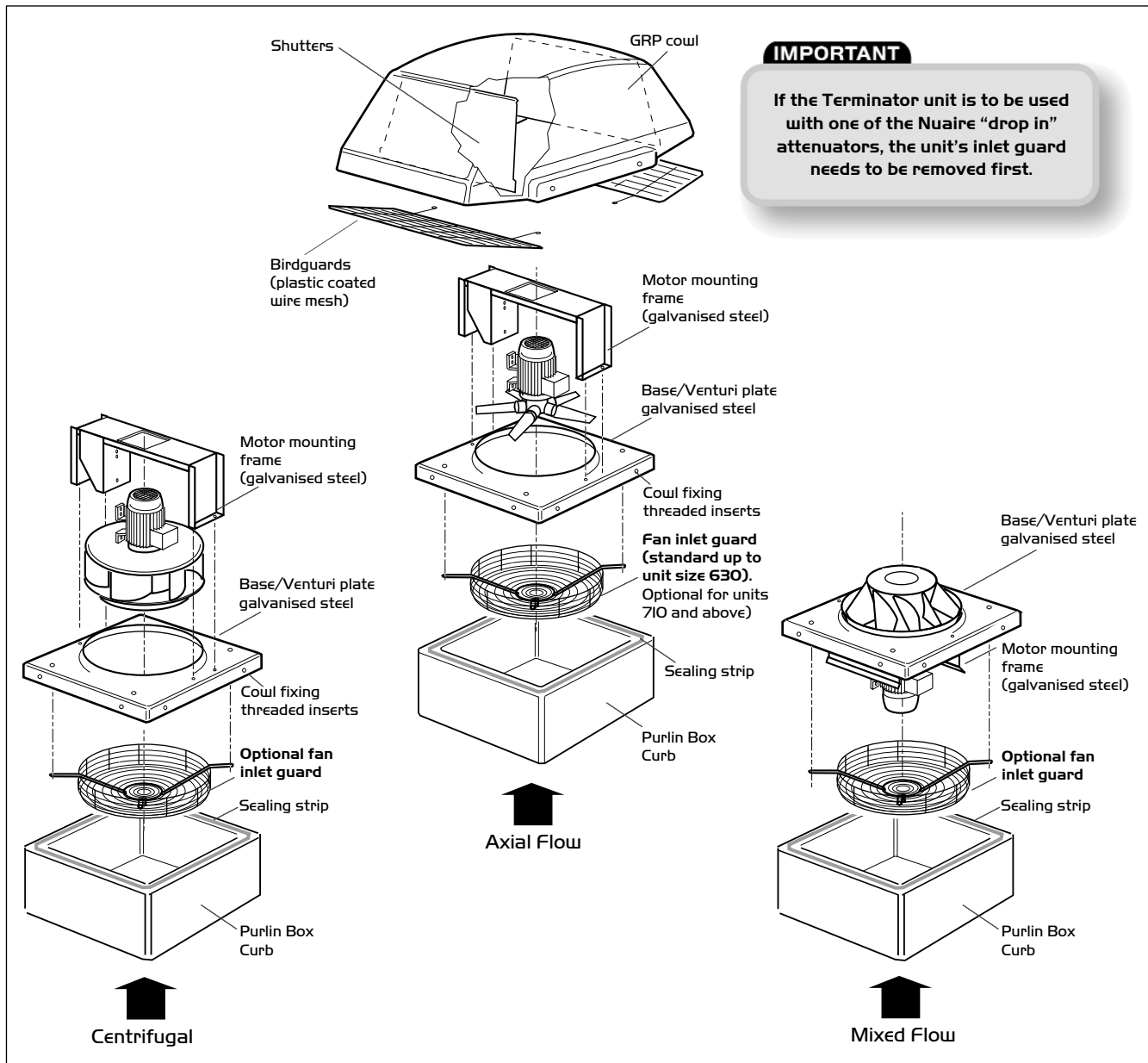
Figure 4b. Wall Frame Kit Dimensions (mm).



Dimensions (mm)					
Code	A	B	C	D	E
TRWP-A	550	250	400	369*	475
TRWP-B	650	250	500	470*	575
TRWP-C	900	250	700	610*	825
TRWP-D	1000	250	800	690**	900
TRWP-E	1100	350	900	780**	1000
TRWP-F	1400	325	1200	1080**	1300

\* Three holes equally spaced. \*\* Four holes equally spaced.

Figure 5. Exploded view of unit showing the three different types of impeller available.



## 4.0 Electrical details

### WARNING - DANGER

This equipment incorporates rotating and moving parts as well as electrical components and conductors. It is the responsibility of the installer to ensure that any such items remaining externally accessible once the equipment is installed are adequately guarded. This precaution is necessary to avoid the possibility of accidental injury or death. Particular attention must be paid to the outlet side of the rotating impellers if the cowl is removed.

### IMPORTANT

The unit must be provided with a means of isolation (by others) for maintenance purposes etc. A suitable isolator can be supplied by Nuairé on request as a separate item.

## 4.1 Connecting the supply

Refer to the unit rating label attached to the motor venturi plate.

Check that the electrical voltage and frequencies correspond to those marked on the rating label.

Some units have a 600mm flexible conduit direct from the motor terminated in a connector box. This should be mounted in a convenient position next to the fan. Refer to the wiring diagrams and connect the supply to the terminal box. On other units the cowl must be removed to gain access to the connection box. Remove and retain the couls M8 setscrews with the aluminium and nylon washers. Note: When birdguards are fitted on larger units, remove the extra four M8 end bolt fixings before removing the cowl.

Bring up the supply cables through the grommet provided in the baseplate. Refer to the wiring diagrams (page 5) and connect the supply to the unit terminal box which will be located on the baseplate or the motor bridge assembly.

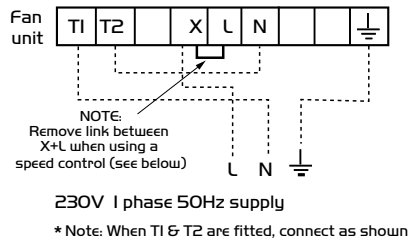
When replacing the cowl ensure that the nylon washer is placed next to the cowl surface. If the four M8 end bolts are fitted, ensure the birdguard fixing hooks are located correctly.

**Note: the unit is not weather tight when cowl is removed.**

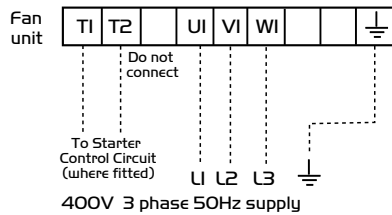
### 4.2 Wiring for Terminator TRA, TRM, TRC (Except TRA IOOH-43)

(Single phase units - 3 wire supply)

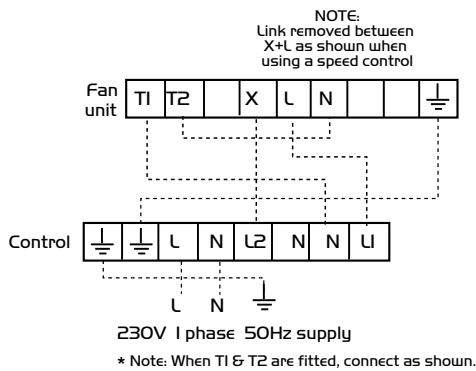
#### Single Speed 1 Phase



#### Single Speed 3 Phase

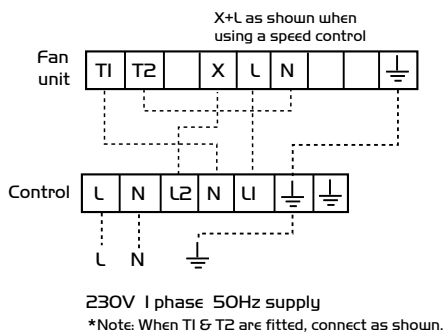


#### Speed Control, Transformer 1 Phase



(Single phase units - 3 wire supply)

#### Speed control, Electronic 1 Phase



### 4.3 Unit Wiring

The terminator range of units are pre-wired from the motor to an enclosed terminal box.

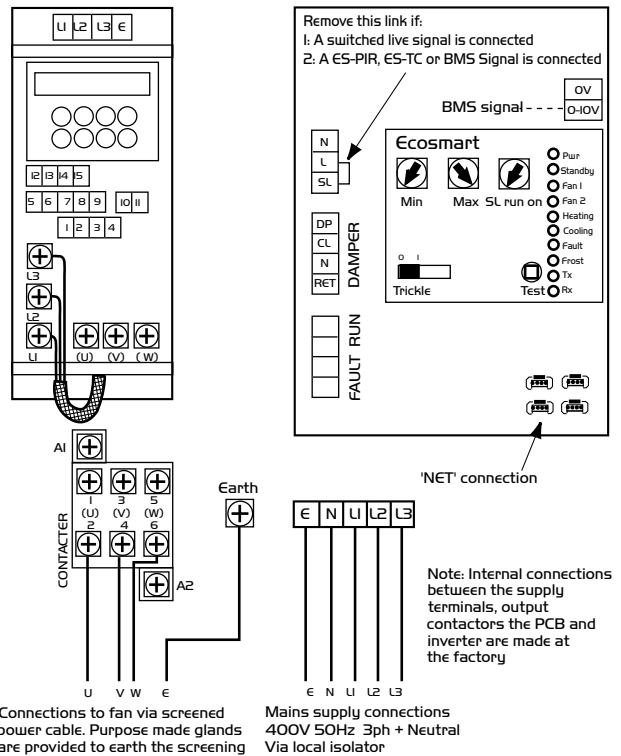
On TRA (axial) models this box is located at the end of a 600mm long flexible conduit which hangs underneath and is fixed to a convenient surface by the installer. These units will require bottom access to complete wiring.

On TRM (mixed flow) and TRC (centrifugal) models the box is located on the fan plate or motor bridge inside the cowl.

On these units it will be necessary to remove the cowl to gain access.

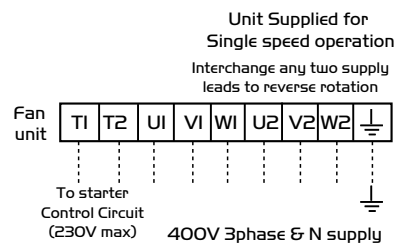
When wiring in the unit take care to avoid rotating components and also gravity shutters. 20mm holes are provided in the fan base plate to bring wiring out from inside the building.

#### Ecosmart



**Note: The Ecosmart control box is a separate item packed individually. See installation leaflet 671193 for details of Ecosmart Control (ES-ISC).**

#### TRAIOOH-43 3 Phase



### 4.4 Connection details

Check that the electrical supply is compatible with the unit (see unit rating plate).

Connection details are supplied with speed controls.

All wiring must be carried out in accordance with regulations for electrical installations and comply with the requirements of the local supply authority.

Ensure that the direction of rotation is correct. Single phase units are checked during manufacture for correct rotation.

Three phase units must be tested on site and, if incorrect, interchange any two supply leads to reverse impeller direction.

## 5.0 Routine Maintenance

Before attempting to carry out any work, ensure the unit and speed control, if fitted, are electrically isolated.

### IMPORTANT

Do not operate the unit with the cowl removed. The impeller will continue to rotate after the supply has been disconnected - allow sufficient time for the impeller to come to rest.

### Before proceeding, check that:-

- Bird Guards (if fitted) are not distorted or obstructed in any way.
- Anti Backdraught Shutters operate correctly.
- Impeller rotates freely and does not foul the fan plate.
- The impeller is clean and free from wear.
- The condition of all components is suitable for further service.
- Also check condition and tightness of all fixings.

**Note:** the unit is not weather tight when cowl is removed.

### Spare Parts

When ordering spare parts please quote the serial number of the unit. Please fully describe the part. Serial number will be found on the identification plate fixed to the unit.

## 5.1 Maintenance

### IMPORTANT

Before commencing work, ensure the unit is isolated from the electrical supply. Also, see notes on safety precautions above.

Remove the cowl to gain access to the moving parts.

**TRA (Axial)** The impeller is accessible immediately and can be removed if required.

**TRC (Centrifugal)** Motor/impeller bridge assembly can be removed after releasing the 4 or 6 screws holding the bridge support. On this unit the impeller cannot be removed from the motor.

**TRM (Mixed flow)** Motor/impeller bridge assembly can be removed after releasing the 4 or 6 screws holding the bridge support. Invert the bridge and remove impeller if required

### Removal of impeller (AXIAL) Ref: TRA

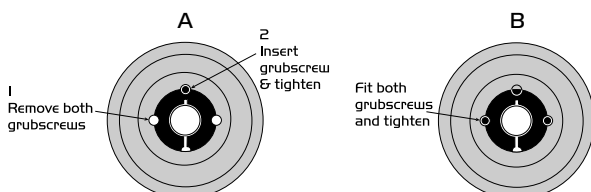
Knock up the tab washer and remove the retaining screw. Remove the impeller from the motor shaft. Retain the motor shaft key. Replacement is the reversal of the above procedure.

### Removal of impeller (CENTRIFUGAL) Ref: TRC

On this type of unit the impeller cannot be removed from the motor. Cleaning of the impeller must be carried out in situ.

### Removal of impeller (MIXED FLOW) Ref: TRM

On this type of unit the impeller is retained by a taperlock fixing. To release the impeller, remove the grub screws on each side of the slit. Lightly lubricate one of the grub screws and insert it into the threaded hole opposite the slit (A). Carefully tighten the grub screw until the tapers 'break' allowing removal of the impeller. Remove the impeller.



## 5.2 Replacement of the impeller

Place the impeller over the shaft and locate the taperlock in the impeller. Insert and tighten the two grub screws into the tapped holes either side of the slit (B).

## 5.3 Maintenance check list

Item	Tick
Check that bird guards/safety grilles are secure and free of obstruction.	
Inspect all bolts, fixings and electrical terminals for security.	
Check motor for undue wear, signs of overheating and apply winding insulation and continuity tests.	
Remove all dust and dirt from impellers, be especially careful not to disturb balance weights.	
Generally clean.	
Check resilient mounts and replace any that show signs of wear or deterioration.	

## 5.4 Cleaning the impeller

A build up of dust/dirt may be removed by brushing carefully with a stiff brush. Take care not to damage or distort the impeller blades. If the impeller is too badly fouled to allow cleaning in situ, proceed as follows:-

- 1) Remove the impeller.
- 2) Remove all loose dirt using a stiff brush.
- 3) Sponge the impeller with warm soapy water.
- 4) Rinse thoroughly with clean water and wipe dry.

Do not use solvents or caustic fluids.

## 6.0 Spare Parts

When ordering spares please quote the serial number of the unit together with the part number. If the part number is not known please give a full description of the part required. The serial number will be found on the identification plate attached to the unit casing.

## 7.0 Warranty

Terminator has a 3 year warranty, Ecosmart Terminator has a 5 year warranty. The warranty starts from the day of delivery and includes parts and labour for the first year. The remaining period covers replacement parts only.

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 Nuair 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. 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:** Terminator Roof Extract Fans  
**Machinery Types:** TRA, TRM, TRC  
**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	26. 01. 11
2) A. Jones 	Manufacturing Director	26. 01. 11

## 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.