

1.0 SAFETY INFORMATION

- The provision of the electrical supply and the connection of the unit to the mains must be carried out by a qualified electrician.
- Isolate from power supply before removing any covers. During installation / maintenance ensure all covers are fitted before switching on the mains supply.
- All-pole disconnection from the mains as shown in the wiring diagram must be incorporated within the fixed wiring and shall have a minimum contact separation of 3mm in accordance with latest edition of the wiring regulations.
- This unit must be earthed.
- Ducting must be securely fixed with screws to the spigot to prevent access to live parts. Duct runs terminating close to the fan must be adequately protected by suitable guards.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances.
- This appliance should not be used by children or persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning the safe use of the appliance by a person responsible for their safety. Children shall not play with the appliance. Cleaning and user maintenance shall not be carried out by children.

1.1 Hazard Symbols



GENERAL WARNING

Signifies a general warning regarding hazard specified by supplementary information.



ELECTRIC SHOCK

This unit must be completely electrically isolated before any panels are removed. Check mains supply and control connections.



ROTATING PARTS

This unit contains fast moving rotational parts which may start automatically. It is the sole responsibility of the installer to adequately guard these components.



REFER TO INSTRUCTION MANUAL

Read and understand the installation and maintenance manual before installing, operating or maintaining this product.

1.2 Important Information

This manual contains important information on the safe and appropriate assembly, transport, commissioning, operation, maintenance, disassembly and simple troubleshooting of the product.

While the product has been manufactured according to the accepted rules of current technology, there is still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings contained in these instructions are not complied with.

- Read these instructions completely and thoroughly before working with the product.
- Keep these instructions in a location where they are accessible to all users at all times.
- Always include the operating instructions when you pass the product on to third parties.

1.3 Personal Protective Equipment

The following minimum Personal Protective Equipment (PPE) is recommended when interacting with Nuaire product:

- Protective Steel Toed Shoes - when handling heavy objects.
- Full Finger Gloves (Marigold PU800 or equivalent) - when handling sheet metal components.
- Semi Fingerless Gloves (Marigold PU3000 3DO or equivalent) - when conducting light work on the unit requiring tactile dexterity.
- Safety Glasses - when conducting any cleaning/cutting operation or exchanging filters.
- Reusable Half Mask Respirators - when replacing filters which have been in contact with normal room or environmental air.

Nuaire would always recommend a site specific risk assessment by a competent person to determine if any additional PPE is required.

2.0 INTRODUCTION

The Nuaire SVTC impulse unit comprises a high temperature centrifugal fan enclosed in a galvanised steel casing. The impeller shall be made from a welded and painted steel sheet.

The air intake of the SVTC is on the lower side. The air is conveyed over the motor and then directed towards a horizontal discharge nozzle at the front of the unit.

The electrical cable is specified for high thermal loads, protected against mechanical stresses, and connects to a metal isolator box placed on the casing side.

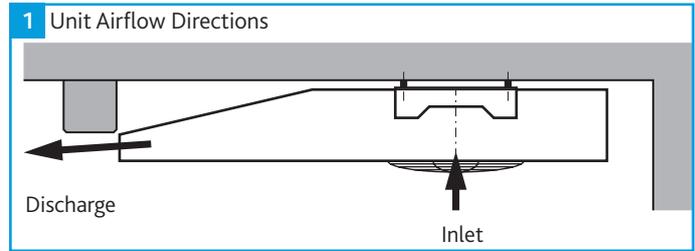
The units are designed for ceiling installation (hanging) and may only be fitted with the mounting brackets using certified anchoring bolts.

The Nuaire SVTC unit comprising fan/motor assembly shall be certified for high temperature operation at 300°C for 2 hours. The range shall have been type tested to EN12101-3.

The units shall be either 2 speed or inverter driven providing, low speed for day to day environmental ventilation and one off operation for emergency ventilation (S1 duty).

The Nuaire SVTC unit shall have an inlet guard for safety purposes and also to prevent debris being sucked through the fan.

EN12101-3 compliant, refer to EC certificate of conformity, 2797-CPR-672476.



2.1 Code Description

1	-	2	3	4	5
SVTC	-	50	T	8	G

- 1. Range: **Induction Centrifugal Fans, 300°C for 2 hrs**
- 2. Performance Size: **50 = 50N**
100 = 100N
- 3. Motor Speed: **No Affix = Single Speed (Suitable For Frequency Inverter)**
T = 2 Speed
- 4. Motor Poles: **No Affix = 4 Pole**
8 = 8 Pole
- 5. Electrical Motor Details: **No Suffix = 400V / 50Hz**
G = 460V / 60Hz
J = 380V / 60Hz

3.0 DELIVERY & HANDLING

All equipment is inspected prior to despatch and leaves the factory in good condition. Upon receipt of the equipment an inspection should be made and any damage indicated on the delivery note. Particulars of damage and/or incomplete delivery should be endorsed by the driver delivering the goods before offloading by the purchaser.

No responsibility will be accepted for damage sustained during the offloading from the vehicle or on the site thereafter. All claims for damage and/or incomplete delivery must be reported to Nuaire within two days of receipt of the equipment.

Always handle the units carefully to avoid damage and distortion. 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.

4.0 MECHANICAL INSTALLATION

Installation must be completed by competent persons, in accordance with good industry practice and should conform to all governing and statutory bodies regulations i.e. IEE, CIBSE, etc. and EN standards etc.

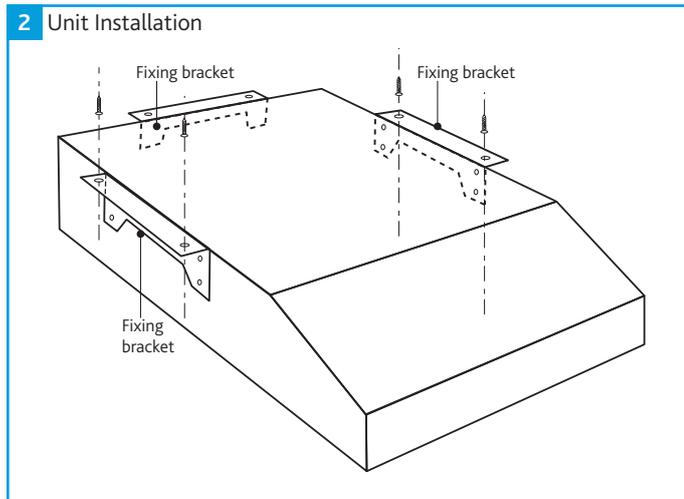
Before commencing installation check that all material, including mounting feet and optional ancillaries are available to complete the work. Every unit is tested and serialised at works and a test certificate produced, the details are also recorded on the fan side rating plate which should also be referred to before handling and installation. Any damage or deviations should be immediately reported to the seller / supplier / agent quoting the order and rating plate details.

The table below states the main characteristics of the SVTC fan range certified for operation at 300°C for 2 hours. The unit:

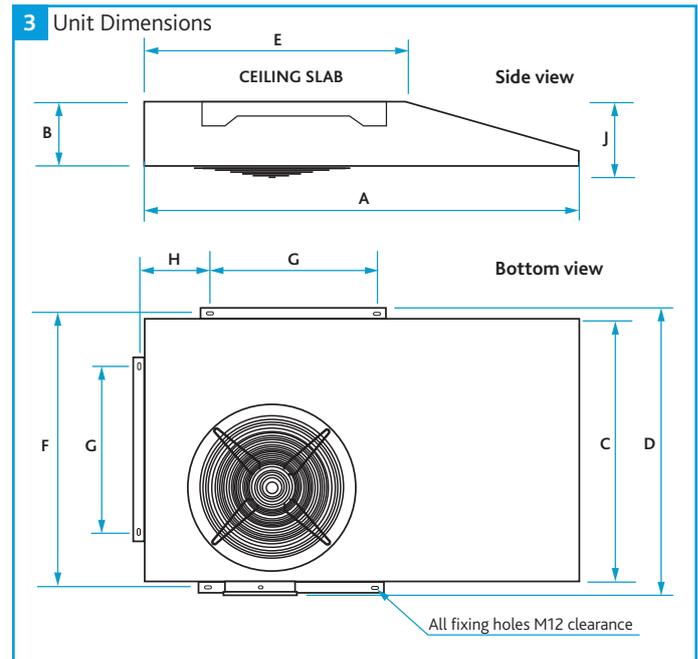
- Is thermally uninsulated.
- May be located in the smoke reservoir.
- Is dual purpose i.e. suitable for day-to-day operation and one-off emergency use.
- Suitable for mounting in horizontal orientation only.

4.1 Fitting Unit to Ceiling

Raise the SVTC unit up into the chosen mounting position. Using the four holes in the top side of the two brackets either side of the unit attach the unit to the ceiling/support crossbars with certified anchoring bolts (Figure 2). The rear mounted bracket is utilised in installations where drop rods are used to provide additional stability on fan startup.



5.0 DIMENSIONS



Unit Code	Dimensions (mm)									Weight (kg)
	A	B	C	D	E	F	G	H	J	
SVTC-50*	1265	226	790	893	710	844	448	234	265	100
SVTC-50T8J	1265	226	790	893	710	844	448	234	302	100
SVTC-100	1916	303	1185	1254	950	1204	730	162	320	165

*Dimensions for all SVTC-50 models, except where otherwise noted.

6.0 ELECTRICAL INSTALLATION

Motors are totally enclosed and protected to IP55 (Dust and low pressure water jets). Motors comply with BS5000, EN600034 and IEC34-1. Enclosures are to IP55 with class H insulation. Motors are tested in accordance with EN12101-3 2015.

Note the requirements for maintenance of the motor. Failure to comply with the recommendations will invalidate any warranty claim.

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.

6.1 Wiring

Electrical supply wiring connection is to an externally mounted isolator box on the case exterior. The box is pre-wired to the motor with heat resisting cable.

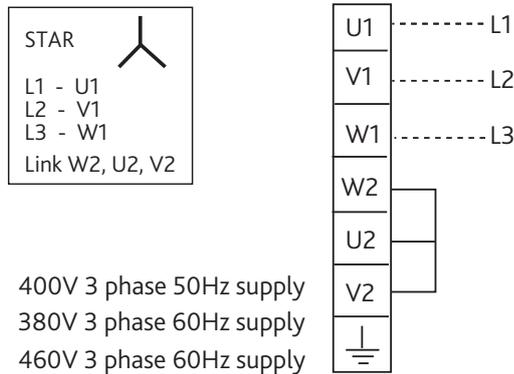
Total length of motor leads should not exceed 30 metres. If a screened motor cable is used, maximum length should be 25 metres. Consult our Technical Department if you wish to use longer leads. Inverters are configured to suit specific fans and control applications as described on the Customer Order free of charge.

Individual wiring instruction are included with each unit.

Under fire conditions the electrical supply must not run through the inverter (the inverter must be bypassed).

6.1.1 Star D.O.L. Starting (3kW and below) - 3 Phase

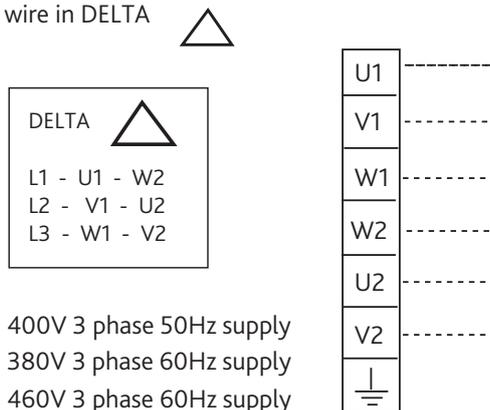
4 Wiring - Star D.O.L. Starting (3kW and below) - 3 Phase



6.1.2 Delta D.O.L. Starting (4kW and above) - 3 Phase

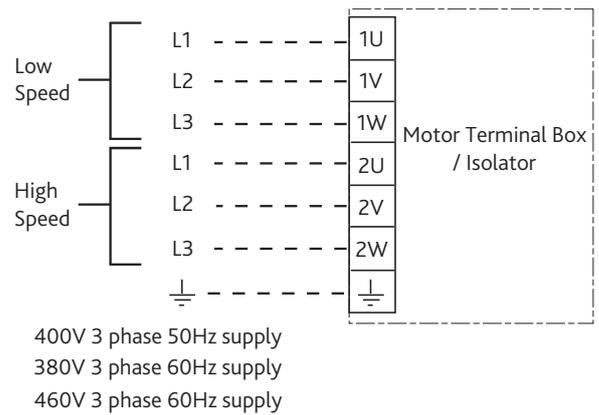
5 Wiring - Delta D.O.L. Starting (4kW and above) - 3 Phase

Note:
For all D.O.L. (Direct On Line) operation or Inverter type Speed Control wire in DELTA



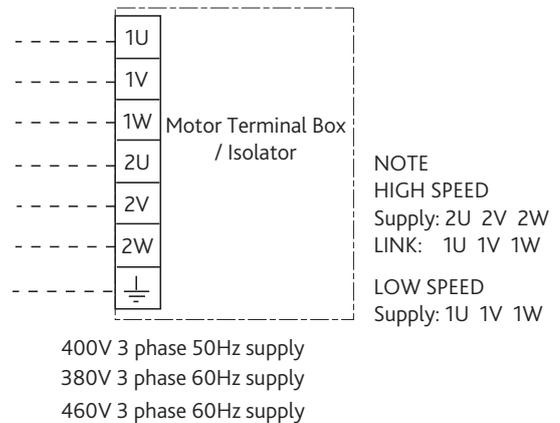
6.1.3 Two Speed - Dual Wound Motor - 3 Phase

6 Wiring - Two Speed - Dual Wound Motor - 3 Phase



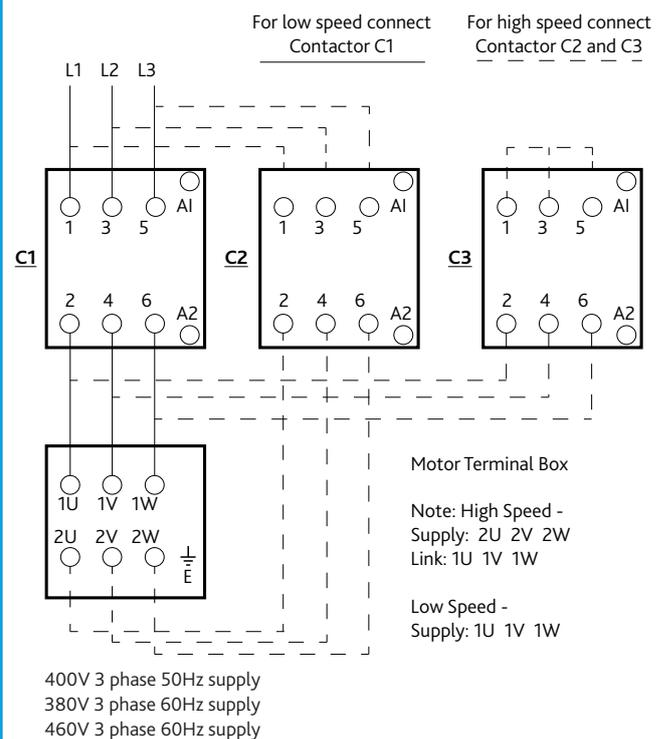
6.1.4 Two Speed - TAP / PAM Wound Motor - 3 Phase

7 Wiring - Two Speed - TAP / PAM Wound Motor - 3 Phase

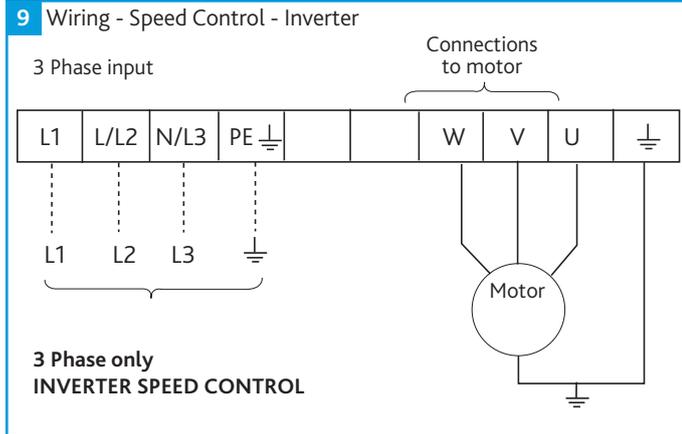


6.1.5 Two Speed Motors - Example Contactor Control

8 Two Speed Motors - Example Contactor Control



6.1.6 Speed Control - Inverter - 3 Phase



6.2 Start Up Procedure

Ensure that the impeller rotation follows the label arrow indicator on the casing. Should the direction be incorrect on three phase units, reverse any two of the supply leads. Care should be taken to set correct rotation as incorrect rotation may result in damage to the motor. Equipment should be run for approx. 30 minutes to ensure correct operation. If any fault occurs, the equipment should be switched off. Do not re-start until the fault has been rectified.

7.0 SPECIFIC COMMISSIONING AND SERVICING REQUIREMENTS

Motors for Smoke Extract Fans

Exposure temperature/time: 300°C for 2 hours / 400°C for 2 hours

These motors are used to provide a SAFETY FUNCTION for people in the event of fire in public premises or in the home: they are therefore subject to strict constraints concerning their operating and maintenance.

Operating Constraints

- i. Check on the nameplate that the selected motor corresponds to the maximum exposure temperature and duration.
- ii. Non ventilated motors MUST be placed in the airflow from the driven fan. Ventilated motors can be placed outside the flow.
- iii. AFTER THE MOTOR HAS BEEN SUBJECTED TO ONE EMERGENCY DUTY OPERATION, IT MUST BE REPLACED.
- iv. With variable speed control. Ensure that the maximum speed never exceeds the speed of the motor supplied by the mains and that the delivered power corresponds to the previous definitions.

These qualifications ensure the qualification of the driven fan by the manufacturer.

Maintenance Constraints

Regular service visits must be performed on the installation AT LEAST EVERY 6 MONTHS, incorporating the following checks:

i. Checking insulation resistance (R>100 MOhms, 500V DC)

- If the drain holes are blocked, open them to eliminate any accumulated condensation.
- If R<100 MOhms, dry the stator in an oven and check the insulation resistance. If the fault persists, replace the stator.
- The stator must be replaced 5 years after installation or after 20,000 hours of operation.

ii. Cooling check

- Ensure there is no dust or grease in the entire ventilation circuit (housing fins, motor cover/fan if fitted driven fan).
- Ensure the motor runs normally when switched on for a few minutes.

iii. Bearing check (C3 or C4 play)

Run the motor during each maintenance visit. When the motor is cold, a high level of noise is caused by the texture of the grease. This does not indicate a bearing fault.

iv. S2 duty only:

The bearings must be replaced by an identical type every 5 years. Ensure the motor runs normally when switched on for a few minutes.

v. Fixing Check

During regular maintenance, check all fixtures and fittings to ensure they have remained secure and in good working order.

S1 duty and Emergency in S2 duty:

a) Permanently greased bearings.

300°C or 400°C range; replace on 2 pole motors after 10,000 hours of operation and on motors with 4 poles or more after 20,000 hours.

b) Regreaseable bearings

The information on the motor nameplates must be strictly respected (grease quantity, grease quality and regreasing frequency). The bearings must be replaced after 20,000 hours of operation.

8.0 MAINTENANCE

It is important that maintenance checks are recorded and that the schedule is always adhered to, in all cases, the previous report should be referred to.

8.1 Routine Maintenance (Every 3 Months)

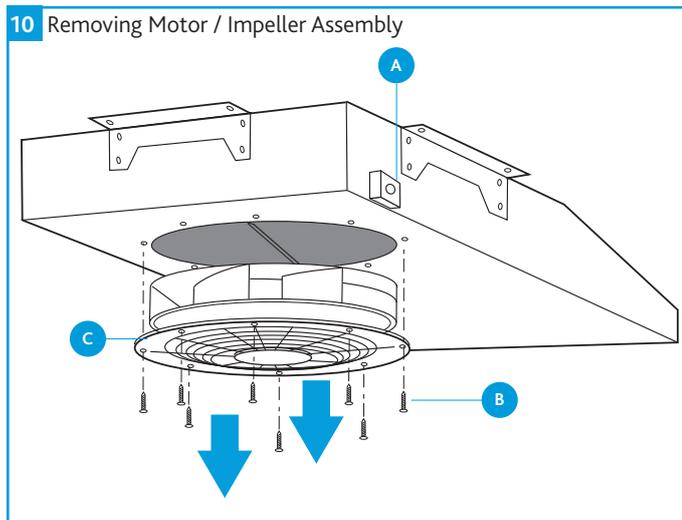
- Clean all areas of unit of dust and fibres, thoroughly inspect the unit and its components for corrosion, acting immediately to treat/restore any damaged areas.
- Check sealing of motor and gland plate.
- Check for visible damage (cracked impeller, fan cowl bent, etc.)
- Check for excessive vibration.
- Check insulation resistance is adequate, imperative this is checked after prolonged shutdown.
- Tighten fasteners.
- All electrical connections within the unit should be tightened.

8.2 Motor / Impeller Removal

If the motor or impeller has to be removed for cleaning the following procedures are recommended:

Inspection of the motor/impeller must be made by using the intake and discharge openings.

- Motor connection cables to be unfastened within metal isolator box (A).
- Taking care, feed the cable contact back into the unit casing.
- Before loosening bolts (B) of the motor impeller (C) care must be taken to prevent the unit from falling down - e.g. by using a lifting device or elevating platform.
- To remove motor/impeller - loosen bolts (B). **Before loosening bolts (B) of the motor impeller (C), care must be taken to prevent the unit from falling down i.e. by using a lifting device or elevating platform.**
- Remove impeller from unit (C) by lowering it out of casing.
- Re-fitting the assembly is achieved by performing the above process in reverse order.



8.3 Motor Repair

Due to unit certification EN12101-3 and in compliance with the construction products directive, the motor must be returned to the motor manufacturer for replacement.

9.0 WARRANTY

The 3 year warranty starts from the day of delivery and includes parts and labour for the first year. The labour element is subject to full, free and safe access to the equipment as recommended by the CDM regulations. The remaining two years 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.

Failure to maintain the unit as recommended will invalidate the warranty.

10.0 END-OF-LIFE AND RECYCLING

Where possible Nuair use components which can be largely recycled when the product reaches its end-of-life:

- Fans, motors, controls, actuators, cabling and other electrical components can be segregated into WEEE recycling streams.
- Sheet metal parts, aluminium extrusion, heating/cooling coils and other metallic items can be segregated and fully recycled.
- Cardboard packaging, wood, used filters and other paper components can be largely recycled or fully processed in energy from waste centres.
- Remaining items can be further segregated for energy from waste centres or, as a last resort, sent to landfill. Please call After Sales Support for further information on items not listed above.

Ensure that Nuair product is made safe from any electrical / water / refrigerant supplies before dismantling commences. This work should only be undertaken by a qualified person in accordance with local authority regulations and guidelines, taking into account all site based risks.

11.0 AFTER SALES AND REPLACEMENT PARTS

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

If 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.

Telephone 02920 858 400
aftersales@nuaire.co.uk

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.

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

All parts except for moving parts requiring the correct installation of safety guards or incorporation into ducts or building fabrications acting as 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 1.3.7 to 1.3.8.2 relating to guards/moving parts.

Product: High Temperature Induction Centrifugal Fan
Type: SVTC
Installation Manual Serial no.: 671635
Relevant EU Council Directives: 2006/42/EC (MACHINERY DIRECTIVE);
Applied EU Harmonised Standards: EN 60204-1; EN ISO 12100; EN ISO 13857; EN ISO 9001.
Relevant Directives specified in EU Declaration of Conformity: 2014/30/EU (EMC); 2011/65/EU (RoHS) incl. (EU) 2015/863; 2009/125/EC (ErP) Reg (EU) no. 327/2011; CP Regulation (EU) No. 305/2011.

The relevant technical documentation has been compiled in accordance with Annex VII (Part 7 of Schedule 2), part B. We undertake, in response to a reasoned request, to supply it in electronic form to the market surveillance authorities within a reasonable period.

Signature of manufacture representatives:

Name:	Position:	Date:
1) A. Thomas 	Technical Director	30. 10. 20
2) C.Sargent 	Manufacturing Director	30. 10. 20

Basis of Self Attestation: BS EN ISO 9001, BSI Cert No. FM 665203

Nuaire: A Trading Division of Polypipe, Western Industrial Estate, Caerphilly, CF83 1NA.

EU Authorised Representative: Eurolink Europe Compliance Limited, 25 Herbert Place, Dublin D02 AY86, Republic of Ireland.

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 2014/30/EU (EMC), 2006/42/EC (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, 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 e.g. 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 **Local Environment - Humidity.** Ambient humidity (the humidity at the unit's installed location) shall be within the range: 10 to 95% (for controls, non-condensing).
 Air humidity (the humidity of the air passing through the unit) shall be within the range: 10 to 95% (for controls, non-condensing).

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 (e.g. 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 good EMC engineering practice all control and sensor cables should not be placed within 50mm of 230V cables.
 5.4 For fans with electronic speed control, protection against surges L/N-E is recommended on the supply.
 5.5 Fans with electronic speed/inverter control should be connected to an Industrial not Public Low Voltage supply.

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.



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

All parts except for moving parts requiring the correct installation of safety guards or incorporation into ducts or building fabrications acting as guards comply with the essential requirements of the Machinery (Safety) Regulations. The machinery shall not be put into service until the system has been declared to be in conformity with the provisions of the Supply of Machinery Regulations 2008 clauses 1.3.7 to 1.3.8.2 relating to guards/moving parts.

Product: High Temperature Induction Centrifugal Fan
Type: SVTC
Installation Manual Serial no.: 671635
Relevant UK Regulations: 2008 No. 1597, The Supply of Machinery (Safety) Regulations 2008;
Applied UK Harmonised Standards: BS EN 60204-1; BS EN ISO 12100; BS EN ISO 13857; BS EN ISO 9001.
Relevant Regulations specified in UKCA Declaration of Conformity: No. 1091, EMC Regulations 2016; No. 3032, RoHS regulation 2012; No. 2617, ErP Regulation 2010; No. 1359, CP Regulation 2020.

The relevant technical documentation has been compiled in accordance with Annex VII (Part 7 of Schedule 2), part B. We undertake, in response to a reasoned request, to supply it in electronic form to the market surveillance authorities within a reasonable period.

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Name:	Position:	Date:
1) A. Thomas 	Technical Director	01. 01. 21
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INFORMATION FOR SAFE INSTALLATION, OPERATION AND MAINTENANCE OF NUAIRE VENTILATION EQUIPMENT

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 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

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 4.2 Where installation accessories are supplied with the specified equipment e.g. wall mounting brackets. They are to be used to support the equipment only. Other system components must have separate provision for support.
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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 (e.g. 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 good EMC engineering practice all control and sensor cables should not be placed within 50mm of 230V cables.
 5.4 For fans with electronic speed control, protection against surges L/N-E is recommended on the supply.
 5.5 Fans with electronic speed/inverter control should be connected to an Industrial not Public Low Voltage supply.

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. 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.
 8.4 **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.