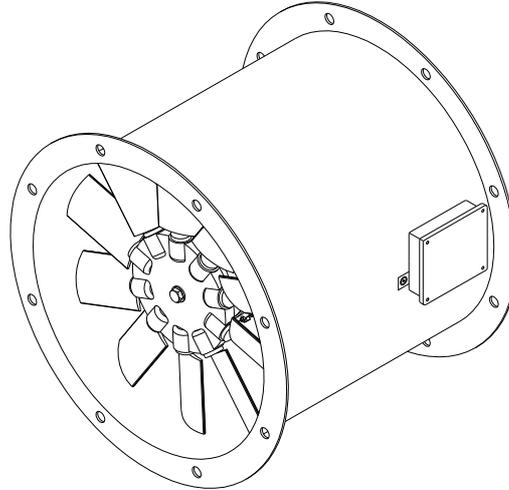


Long Case Axial Fan

Installation, Operation and Maintenance Manual



Important  This manual and all other relevant accompanying documentation must be read in full before Installation, Operation or Maintenance of the unit supplied.

Only authorised, qualified personnel should undertake work on this unit.

Please ensure this document and all other relevant documentation is passed on to the end user. This manual forms an integral part of the product and should be kept for the working life of the product.

Additional copies of this and supporting documents are available by contacting VES Andover Ltd. or by visiting www.ves.co.uk and following the 'Download O&M's link'

The following symbols used within this document refer to, potential dangers, advice for safe operation, or important points of reference.

Warning  Indicates hazards associated with electric current and high voltages.

Caution  Indicates hazards that require safety advice for personal and/or potential unit/property damage.

Important  Indicates important information.

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Introduction 1 Long Case Axial fans are designed for use with air at a density of 1.2 kg/m³ and an air temperature not exceeding 40°C. Electric motors are designed to operate in a maximum ambient of 40°C.

Where air conditions deviate from this it is important to inform VES Andover Ltd. as actual conditions and installation effects may vary and accurate information will ensure that the fan operates to your specification while meeting all safety requirements.

Where the fan is designed for a specific duty this is shown on the fan name plate.

For further technical details regarding dimensions and weights, contact VES Andover Ltd. on **08448 15 60 60**, quoting the sales order (SO) number and the unit type as found on the unit name plate.

Receipt of Goods & Handling 2 Check for possible damage in transit paying particular attention to fan impellers and motor. Prior to installation please check to ensure alignment and smooth rotation of the impeller after transit. Prior to checking rotation of the fan impeller the tip clearance should be checked by slowly rotating the impeller. Refer to table shown on page 3.

In the event of any damage having occurred or if an item is found to be missing, it is essential to inform VES Andover Ltd. within **7 working days** of delivery, quoting the sales order number and the unit type, as found on the unit name plate. After this period, VES Andover Ltd. will be unable to accept any claim for damaged or missing goods.

Caution



Operation of the fan outside of its intended application and technical specifications, (as shown on the fan/impeller rating plate) can lead to defect or damage within the device. The fans are only intended for the conveyance of air or mixtures similar to air. Damages resulting from use outside of those intended will be classed as unauthorised and will not be the liability of VES Andover Ltd. The user will assume sole responsibility.

Lifting Details

When moving the unit, handle with care and in such a manner as to avoid damaging the external finish as this may reduce the ability to resist corrosion.

Installation of fans where the weight exceeds 20kg requires lifting equipment to be used. When lifting impellers care should be taken as this may disturb the balance. The fan itself may only be lifted using a suitable hoisting device and spreader, the lifting beam needs to be positioned transverse to the motor axis.

Installation 3 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 manufacturer's recommendations, with due regard to the current **HEALTH AND SAFETY AT WORK ACT** and conforms to all the relevant statutory regulations.

Where a unit is installed so that a failure of components could result in injury to personnel, precautions should be taken to prevent any such injury. If the unit is installed where there is a reasonable possibility of persons or objects coming into contact with the impeller whilst operational, a guard should be fitted or steps taken to prevent this.

It is the installer's responsibility to ensure that access panels are not obstructed in any way and safe working access to the unit for maintenance must be provided in accordance with Health and Safety Building Regulations.

For optimum unit performance, careful consideration must be paid to the location of the unit in relation to the ductwork and associated items; placing the unit directly adjacent to a bend in ductwork will impede airflow and reduce performance.

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Installation Continued

3 Consideration must also be given by the installer for adequate illumination of the unit location in order for safe maintenance. Further consideration should be given to the unit's position so that the unit can be adequately secured into place.

Only parts specifically designed for the unit supplied and recommended by VES Andover Ltd. should be used, non genuine parts, or parts from non original sources are not guaranteed to meet load and safety requirements set out by the original manufacturer. Such parts are not approved by VES Andover Ltd. and the use of such parts may effect the terms of any warranty held with VES Andover Ltd.

Warning



Faults detected within any electrical equipment must be rectified as soon as possible. If faults are not resolved the unit becomes potentially hazardous, the unit should not be operated when faulty.

For a standard catalogue type product the motor size is selected to ensure that the fan operates safely providing the impeller blade pitch angle is not altered.

As a general guide the various impeller blade materials should not exceed the following tip speeds or temperature range.

| Blade Materials and Tip Speed Temperature | |
|---|-------------------------|
| GRP (Glass reinforced polypropylene) | 105 m/s - 40 to + 70°C |
| GRN (Glass reinforced nylon) | 115 m/s - 40 to + 150°C |
| Aluminium LM6 | 100 m/s - 40 to + 200°C |
| GRN (Anti static) | 100 m/s - 30 to + 120°C |

Where fans are designed for use in hazardous areas, motors meet the requirements of BS5501 (incorporating EN 50 0114 and EN 50 018). Details of these motors, and where they are to be used, together with the fan operating conditions are shown on the fan name plate.

Operating Conditions

Providing that all pre installation checks have been made the fan units should operate safely. Fans are potentially dangerous if all the manufacturers instructions are not observed. Under no circumstances should the fan or guards be modified without agreement of VES Andover Ltd. as this could invalidate compliance from the machinery directive.

Fans generate noise; it is therefore recommended that where possible additional measures be taken to reduce airborne and mechanical transmission of noise. Where case axials are used it is recommended that they are installed using anti-vibration mounts and flexible connectors, this will reduce mechanical transmission of noise. The airborne noise emission of this particular fan product is based on tests carried out on a similar type of fan and in accordance with BS848.

Where fans form part of a run/standby design adequate warnings and warning labels must be clearly shown to warn against the hazards of an automatic start.

Only operate the fan up to the maximum permissible speed as given on the fan/impeller rating plate. Exceeding this speed can lead to a high kinetic energy and a resulting hazardous situation.

Caution



Faulty components, incorrect adjustments and bad electrical connections to the fan during installation can cause unexpected and hazardous conditions during commissioning.

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Installation 3

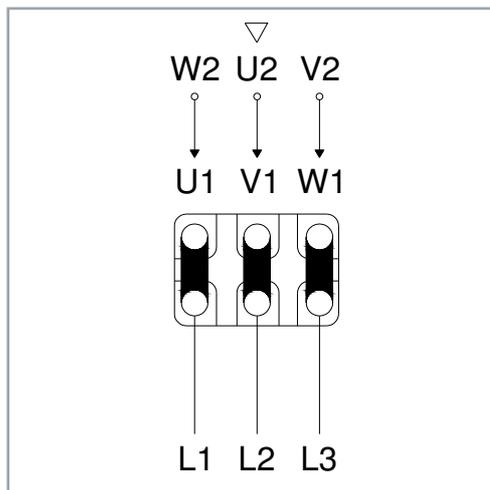
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Wiring

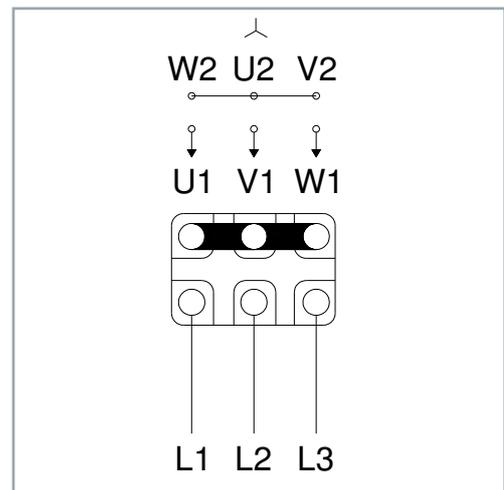
Warning  The electrical supply **must be fully isolated** before attempting any work on this unit. All electrical connections to any unit must be carried out in accordance with the current edition of the **I.E.E Regulations**. Only competent electricians should be allowed to affect any electrical work to our units.

Important  It is the customer's responsibility to supply earth fault protection through the buildings installation device and a dedicated, isolated power supply with overload protection, to account for motor start up currents. See the accompanying fan wiring diagram for specific fan details.

Warning  Do not connect any unit to an electrical supply voltage outside of the specification.



Delta Connection



Star Connection

Three Phase Motors
 400V Star for direct line connection
 (240V Delta for 1 Phase inverter)

Electric motors above 5.5 kW should use star delta, or soft start, starting. Motors below 5.5 kW may be connected Direct On Line (D.O.L.)

Where fans are to be used in hazardous areas the electrical wiring to the motors or fan units must be made using approved cabling, conduit, gland fittings and terminal boxes.

Where specified the fan will have been provided with the correct equipment to ensure that the fan unit does not introduce hazards through the use of non-certified components. It is essential that if there are any doubts as to the existence of potential hazards when connecting the fan, that advice is sought from the VES Andover Ltd.

For Three Phase Fans, a trial connection of the three phase supply should be made to check that the fans rotates in the correct direction indicated on the fan. If the rotation is incorrect, interchange any two phases of the incoming supply at the terminal block. For incorrect rotation of single phase fans, check with the VES Andover Ltd. Service Department for advice, on **08448 15 60 60**.

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Installation 3

Continued

Wiring

If in any doubt about the wiring of this fan consult, the wiring diagram on page 4, the wiring diagram supplied in your document pack, or contact VES Andover Ltd. Customer Services Department on **08448 15 60 60**, quoting the sales order (SO) number and unit type as found on the unit name plate.

Maintenance 4

Warning  It is essential that all electrical connections are properly made.

Important  Pre-wired units supplied in sections may require a number of wires to be reconnected to either the isolator/control panel or, in the case of multiple sections, a local terminal box. For further information regarding fitted controls, please see the accompanying controls O&M.

Recommended Checks

Caution  Ensure the unit has been allowed to completely cool before attempting any work to the unit.

Important  Before attempting to carry out any work on our units, all accompanying documentation including warning labels on the unit must be referenced.

Warning  Before attempting to carry out any maintenance, investigative or repair work on our units, the unit **MUST BE COMPLETELY ISOLATED** from its electrical supply. Ensure a minimum of three minutes after electrical disconnection before removing access panels.

The fan/motor may switch on and off automatically for functional reasons.

After a power outage and subsequent voltage return the fan will complete an automatic restart.

To keep the unit in good working order the following maintenance routine is recommended.

Every three months the general operation of the unit should be inspected, particularly for noise from bearings, motors and fans. An irregular noise could signify that unit failure is imminent.

Every six months check for dust build-up in the system, especially around the impeller. Remove dust if necessary. Failure to do this periodically could lead to a loss of performance or cause the fan to become out of balance, ultimately leading to bearing failure.

Motors are provided with grease filled "SEALED FOR LIFE BEARINGS". Recommended re-lubrication intervals (or change of bearings) depend upon motor size.

NOTE: Electric motor information including safety instructions, Maintenance instructions and wiring diagram are supplied separately with each fan unit.

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Maintenance 4 Continued Recommended Checks

Fan frames are supplied with either unpainted galvanized sheet steel or powder coat paint finishes. Check all painted items to ensure that they have not deteriorated. Repaint as necessary. Paint can be supplied upon request. Checks should also be carried out for missing fasteners.

In general, this series of units require little maintenance. In the unlikely event of component failure, spares are available from VES Andover Ltd.

Should a full service be required it may be necessary to disassemble the unit casework to gain access to some components.

Important  Sufficient clearance should be provided to enable access to the unit.

Cleaning Regular inspection, and cleaning is necessary to prevent imbalance due to build up of dirt.

Before cleaning the fan with water, note the fans IP protection class and follow the recommended cleaning methods. Make sure no water gets inside of the motor and electronics. If water enters the motor, dry off the motor winding before using it again.

The entire fan can be cleaned, the fans flow area should also be cleaned. Maintenance of the fan depends upon the level of contamination on the impeller.

Do not use aggressive, paint solvent cleaning agents when cleaning.

Warning  Maintenance and cleaning of the fan whilst running is not permitted and can lead to an electric shock, danger of death.

Spares & Repairs When enquiring about, or ordering spares contact VES Andover Ltd. Spares Department, quoting the sales order (SO) number and unit type as found on the unit name plate.

Tel: 08448 15 60 60

Fax: 02380 26 12 04

WEEE Directive  At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with normal household waste. Do not burn.

CE Declaration of Conformity

Date: 20th. May 2015
Product: Long Case Axial Fans
Type: AX_LC
Manufacturer: VES Andover Limited

The product above is produced in accordance with EC Council Directives:

2004/108/EC (Electromagnetic Compatibility Directive)

2006/42/EC (Machinery Directive)

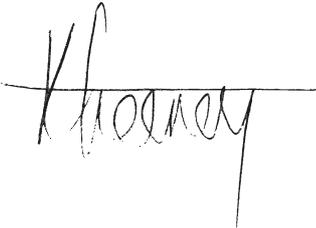
The European Harmonised Standards applied are:

BS EN ISO 12100:2010, BS EN ISO 13857:2008, EN61000, EN 60204-1, BS EN 60950-1:2006

Basis of Self attestation:

Quality Assurance to ISO 9001-2008, BSI Reg. Firm Cert. No. Q05375

Signature of Manufacturer:

| Name: | Signature | Position of Signatory: |
|-----------|---|--------------------------------|
| R. Peters |  | Deputy Managing Director |
| K. Feeney |  | Engineering Associate Director |