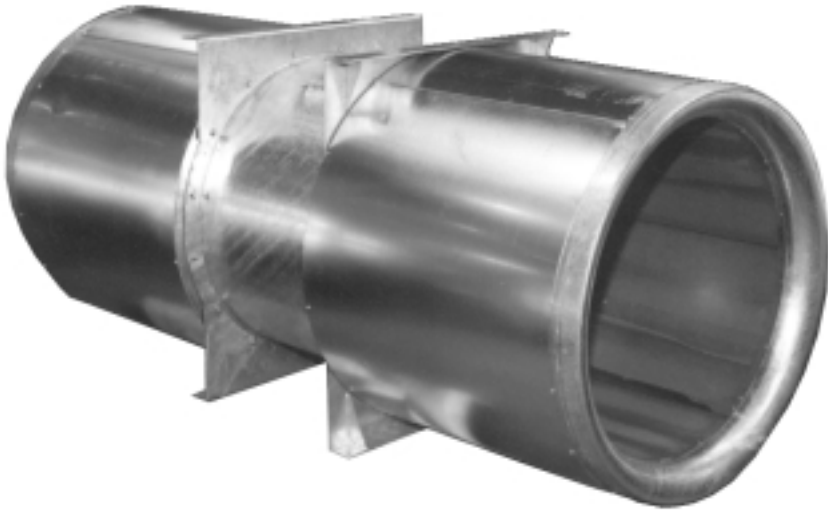


Jetfoil Axial-Flow Fan Assembly



Safety, Installation, Operation and Maintenance Instructions

Part No. 415735

FläktWoods

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1 Storage

WARNING: ONLY APPROVED, QUALIFIED PERSONNEL FAMILIAR WITH THE ASSESSMENT OF HAZARDS AND RISKS ASSOCIATED WITH FANS, AND WITH THE USE OF TOOLS AND TEST EQUIPMENT REQUIRED TO SERVICE SUCH FANS, SHOULD INSTALL, OPERATE AND MAINTAIN THE PRODUCT.

IF THE INSTALLER OR USER IS UNABLE TO UNDERSTAND THE INFORMATION IN THIS MANUAL, OR HAS ANY DOUBT THAT A SAFE AND RELIABLE INSTALLATION, OPERATION AND MAINTENANCE OF THE EQUIPMENT CAN BE ASSURED, FLÄKT WOODS OR THEIR REPRESENTATIVE SHOULD BE CONTACTED FOR ADVICE.

ALL WARNING AND SAFETY INFORMATION CONTAINED IN THIS DOCUMENT SHOULD BE READ BEFORE WORKING ON THE FAN ASSEMBLY.

- 1.1 Fläkt Woods 'Jetfoil Axial-Flow Fan Assemblies' are highly efficient air movement products designed and manufactured to standards and documentation that ensures all possible perceived hazards are assessed and eradicated before delivery to a customer. The standard fan is designed to operate between a temperature of -40°C and $+50^{\circ}\text{C}$ (-20°C to $+50^{\circ}\text{C}$ on starting) unless otherwise specified. When operating at low temperatures ice formation on the fan assembly must be prevented. If the extracted air is liable to contain flammable/explosive gases or large amounts of dust, fumes, or fatty materials Fläkt Woods or their representative should be consulted for advice. Some fans have a specification that calls for operation in high temperature emergency conditions; this will be identified on a label on the fan (see Paragraph 5.7). Each fan assembly is delivered with a Declaration of Conformity that should be retained with the fan.
- 1.2 The fan assembly is manufactured specifically to fulfil a particular application/environment. No deviation from the original requirement should be implemented without referring to Fläkt Woods . Should a fan failure occur whilst the product is under warranty, the Fläkt Woods service centre should be contacted, and supplied with full fan nameplate details, before any repair work is undertaken.
- 1.3 The fan is not designed for, and is not suitable for, speed control; unless specifically included in the original project requirement

2 Unpacking

- 2.1 On receipt of the fan assembly check that it is as ordered. Before fully unpacking the fan check that it has not been damaged during transit (bent flanges/mounting feet, deformed duct/silencer, damaged motor/guards/impeller etc). When unpacking to gain access to the fan, care should be taken to avoid injury from sharp edges, burrs, nails, staples, splinters etc. The fan must be lifted from the packaging safely and correctly. The fan packaging should be considered as a protective device only.

3 Storage

WARNING: WHEN FANS ASSEMBLIES ARE RETAINED IN STORAGE, ACCESS BY UNAUTHORISED PERSONS MUST BE PREVENTED WITH THE USE OF GUARDS, BARRIERS OR SECURE PREMISES SUCH THAT FAN IMPELLERS THAT MAY BE ROTATING (WINDMILLING) DO NOT PRESENT A HAZARD.

- 3.1 A forklift truck or similar should be used for moving the fan assembly into storage. The fan can be heavy (between 130kg and 1000kg depending on fan and motor size, and the materials used; with additional equipment such as a single silencer adding up to 770kg to the overall weight). The assembly can be unwieldy (centre of gravity not central), and should be lifted slowly to prevent damage and distortion. The stored fan assembly must not have equipment stacked on it, and it must not be stacked on other equipment. The packaging must not be used as a lifting device unless otherwise indicated. The fan should be stored in a safe, clean, dry, vibration-free location. If condensation is liable to occur the motor anti-condensation heater (if fitted) should be connected to an appropriate electrical power supply and switched on. A regular monthly rapid spin of the impeller is recommended to prevent grease hardening and possible brinelling of the bearings; the impeller should not be in the same angular position after rotation.
- 3.2 If the fan is to be stored for 12 months or more, an inspection by Fläkt Woods service centre before installation is advised.

4 Installation (Mechanical)

WARNING: IT IS RECOMMENDED THAT SUITABLE SAFETY GUARDS FORM PART OF THE INSTALLATION WHEREVER NECESSARY. IF ACCESS TO AN UNGUARDED PART OF THE FAN IS POSSIBLE; AN ADDITIONAL GUARD MUST BE FITTED. ADVICE ON SAFETY GUARDS, IS AVAILABLE FROM FLÄKT WOODS .

WHERE THE FAN ASSEMBLY IS DELIVERED PACKAGED, THE PACKAGING MUST BE CONSIDERED AS A PROTECTIVE DEVICE ONLY, AND MUST NOT BE USED AS A LIFTING AID UNLESS OTHERWISE INDICATED.

ALL LIFTING AIDS AND LIFTING POINTS USED DURING INSTALLATION SHOULD BE ADEQUATELY CERTIFIED TO CARRY THE WEIGHT OF THE EQUIPMENT BEING LIFTED. DURING LIFTING ALL PERSONNEL MUST BE CLEAR OF THE AREA BELOW THE FAN.

BEFORE ENTERING THE AREA ENSURE THAT THE ENVIRONMENT IS SAFE TO EFFECTIVELY WORK IN, THAT ANY FUMES, DUST, TOXIC EMISSIONS, AND ENVIRONMENTAL HAZARDS ETC., HAVE BEEN REMOVED, AND THAT THE FAN BLADES ARE NOT LIKELY TO WINDMILL. ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING (INCLUDING HARNESSSES, HARD HATS, EYE PROTECTORS, GLOVES, BOOTS AND EAR DEFENDERS) WHEN WORKING IN THE VICINITY OF THE FAN ASSEMBLY.

CARE MUST BE TAKEN TO AVOID DAMAGE TO THE INNER PERFORATED SKIN OF THE SILENCERS WHEN WORKING ON THE FAN.

- 4.1 Before installing the fan assembly, check that it has not been damaged in transit/storage (bent flanges/mounting feet, deformed duct/silencer, damaged motor/guards/impeller etc), that the impeller rotates freely at the correct pitch angle, and that the fan and motor nameplate data comply with the requirement of its use. If the fan assembly has been stored, the resistance of the motor windings to earth, should be measured (at 500V d.c). If any reading is less than ten megohms the motor should be dried in a warm airflow and re-checked before it is switched on.
- 4.2 The fan can be heavy (between 130kg and 1000kg depending on fan and motor size, and materials used; with additional equipment such as a single silencer adding up to 770kg to the overall weight), are sometimes unwieldy (centre of gravity not central), and should be lifted slowly to prevent damage and distortion. Proper precautions must be taken, and certified lifting aids used, to ensure the fan is well supported and stable before lifting into position. The fan assembly must be lifted into position from below, using temporary lifting feet, whilst ensuring that the load is safely spread. Any fixings disturbed during installation must be re-secured to their original torque value (see Figure 3). The fan must be installed, such that it is squarely positioned in accordance with the airflow direction requested when the fan was ordered. Packing shims can be used to ensure the fan is squarely in place. An airflow indication arrow is shown on the fan nameplate. Adequate unobstructed room must be allowed round the fan for safe inspection and future maintenance, and the environment must be safe for both the fan, and for personnel, with emergency escape procedures in place should they be necessary. Care must be taken to ensure that during extremes of wet and windy weather any ingress of water through the fan will not reach sensitive or hazardous areas.
- 4.3 The fan is provided with mounting feet. They allow the fan to be bolted into position either rigidly, or in conjunction with vibration isolators. Fläkt Woods strongly recommends the use of vibration isolators. A typical example of a fan in its operating position is shown on Figure 3.
- 4.3.1 When installing the fan on vibration isolators it is important that the natural frequency of the assembly is less than half the rotational frequency of the fan, and the natural frequency of the support frame is twice that of the isolators. To achieve this it is recommended that the deflection of the isolators in any direction, due to a force equivalent to the weight of the fan, should be at least:
- 5mm for rotational speeds of 900 to 1200rpm
3mm for rotational speed over 1200rpm
- Deflections greater than 10mm may need special installation methods to prevent excessive movement due to the air movement caused by large vehicles. The deflection of the frame should be not more than a 1/4 of the deflection of the isolator.
- 4.3.2 The thrust of the fan is unlikely to give excessive load or movement of the vibration isolators but its effect on the support mechanism must be considered as it could cause a high bending load. Similarly any misalignment between the support and the fan could give excessive loads and must be avoided. The position of the mounting holes in the fan feet are adjustable by means of oversized holes or slots or by packing shims, and this adjustment must be used to avoid misalignment.
- 4.3.3 The safety of the installation should not rely on the vibration isolator springs or rubbers, if these fail the fan must not be able to fall. So, for example, if a drop rod is used through the centre of the spring or rubber, a top plate must be used that will not pass through the support. Particular attention should be paid to the potential effects of fire on the component parts of the isolators.
- 4.4 The component parts of the fan assembly, including the anti-vibration mounts, mounting feet, silencers, bellmouths, platforms, supports, chains and harnesses, etc (if fitted), must be fully aligned before being bolted together so that no distortion or stress is placed on the equipment. Appropriate fixings, with the correct torque applied, must be used to secure the fan into position (see Figure 3). If in doubt about the torque of a particular fixing, contact Fläkt Woods for advice. The final position of the fan must be strong and rigid enough to take the weight of the fan and any other weight applied during installation. Vibration isolators, appropriate for the weight of the fan, are recommended in order that any vibration of the fan is isolated so that no resonant frequencies are generated in surrounding fixtures. The vibration isolators must not be used to align fixing points that are clearly misaligned. If any component parts do not easily fit together the cause must be investigated and rectified.

- 4.5 Motors are fitted with a drain hole in each end cover, and in the terminal box. The drain holes should be at the lowest point of the motor when it is installed. Plugs that cover the drain holes should either be removed entirely if condensation is liable to occur due to large variations in operating temperature, or removed periodically to allow any general build-up of condensation to drain away. The frequency of plug removal will be dictated by environmental conditions, a record should thus be kept.
- 4.6 After installation all packing materials must be disposed of in accordance with Section 10.

5 Installation (Electrical) and Operation

WARNING: THE FAN ASSEMBLY CONTAINS ROTATING PARTS AND ELECTRICAL CONNECTIONS THAT CAN BE A DANGER AND CAUSE INJURY. IF THERE IS ANY DOUBT THAT A SAFE AND RELIABLE ELECTRICAL INSTALLATION OF THE FAN CAN BE ASSURED; FLÄKT WOODS OR THEIR REPRESENTATIVE SHOULD BE CONTACTED FOR ADVICE.

IF THE FAN ASSEMBLY IS DESIGNED FOR HIGH-TEMPERATURE EMERGENCY-USE; IT IS IMPERATIVE THAT THE WIRING USED IS HIGH TEMPERATURE RATED, AND THAT ALL SWITCHES AND CONTROLS ARE ABLE TO BE OVERRIDDEN DURING AN EMERGENCY OPERATION.

IF THE FAN STOPS DUE TO AN OVERHEAT SITUATION, THE OVERHEAT PROTECTION THERMOSTATS (IF FITTED - SEE SECTION 5.2.1) MAY RESET AS THE TEMPERATURE COOLS AND AUTOMATICALLY RESTART THE FAN IF POWER IS STILL APPLIED.

ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING (INCLUDING HARNESSSES, HARD HATS, EYE PROTECTORS, BOOTS, GLOVES AND EAR DEFENDERS) WHEN WORKING IN THE VICINITY OF THE FAN ASSEMBLY.

5.1 General

- 5.1.1 The fan assembly is fitted with a terminal box on the fan duct. The electrical mains supply to the fan assembly should be connected into the terminal box through a weatherproof seal by an appropriately qualified electrician. Any unused entry points into the terminal box must be sealed. Connection details are provided with the fan assembly, and are further detailed on Figures 1 and 2. It is good practice to fit a clearly-marked lockable isolator switch close to the fan, and have a clearly-marked and accessible push button stop/start switch on a control panel located remotely from the fan. The two switches allow safe control of the fan and they provide a means of safely isolating the fan (until a controlled restart is made), they also protect personnel during maintenance, during a fault situation, or during a power supply failure/fluctuation. A suitable earth must also be connected. Sufficient cable length should be provided to allow for the flexibility of the fan on its vibration isolators (if fitted).
- 5.1.2 Fuses and wiring in the fan electrical control circuit must be sufficiently rated to carry the fan starting current as indicated on the motor nameplate. Fuses should be regarded as only protecting the wiring against the effects of short circuits or earth faults; they are not suitable for overload protection. To provide full protection for the motor, a control panel with overload protectors should be used. Overload protectors should be rated 15% above the motor full load current indicated on the motor rating label.
- 5.1.3 Speed controllers should not be used without prior agreement with Fläkt Woods

5.2 Overheat Protection

- 5.2.1 Motor overheat protection (if fitted) can be fitted on all three-phase motors. Overheat protection is achieved by the use of either thermostats or thermistors. The protection devices are wired in either of the following two ways:

thermostats are wired to separate terminals (K – K) within the terminal box; they operate by opening and closing with temperature and must be wired to directly control the motor start contactor, thermistors are wired to separate terminals (S – S) within the terminal box; they operate by changing their resistive value with temperature and must be wired to control the motor start contactor via a suitable relay. When the motor cools the thermostat will reset; the motor however must not be able to start until the motor start contactor is manually reset.

Note that the thermostats/thermistors must be able to be overridden by the EMERGENCY USE control system (see Paragraph 5.7) in an emergency.

5.3 Vibration sensors

- 5.3.1 Vibration sensor(s) (if fitted) are attached to the motor or to the motor casing and must be wired to switch off the fan if vibration levels are outside pre-set limits, or they must provide a remote warning indication. Note that the vibration sensors must be able to be overridden by the EMERGENCY USE control system (see Paragraph 5.7) in an emergency.

5.4 Temperature sensors

- 5.4.1 Temperature sensors (if fitted) are attached to the motor bearing housing and allow for monitoring of the bearing temperature; they can also be used to switch off the fan if the temperature rises above a pre-set level, or provide a remote warning indication. Note that the temperature sensors must be able to be overridden by the EMERGENCY USE control system (see Paragraph 5.7) in an emergency.

5.5 Level switches

- 5.5.1 Level switches (if fitted) are mounted on the fan casing and have normally open electrical contacts that will close if the fan tilts beyond the acceptable angle. The switches must be wired to switch off the fan and provide a remote warning indication. Note that the level switches must be able to be overridden by the EMERGENCY USE control system (see Paragraph 5.7) in an emergency.

5.6 Anti-condensation Heater

- 5.6.1 Motor anti-condensation heaters (if fitted) are terminated in a terminal box on the fan and must be externally wired to automatically receive the appropriate supply when the motor is switched to off. When the motor is switched on the anti-condensation heater will not be required and thus must be automatically switched out of circuit.

5.7 Emergency Use

- 5.7.1 Where the fan assembly is designed for emergency-use smoke-extraction at high temperature, the temperature/time capability will be shown on a special label adjacent to the main nameplate. An automatic control system, or a clearly-marked emergency-use switch, must be used to override and bypass all other switches and controls and immediately switch on the fan in the case of such an emergency situation. The emergency use switch must be capable of remaining engaged until a controlled switch-off is made. High temperature cable must be used between the switch and the fan assembly and all cable entry points must be adequately sealed in order that the high temperature specification of the system is maintained. The electrical supply must be from a guaranteed or separately maintained source to enable the fan to continue running during the emergency condition. After such an emergency the fan must be removed, refurbished or safely disposed of (see Section 10), and replaced as necessary.

6. SWITCH-ON

- 6.1 Only appropriately qualified personnel should switch-on the fan. Before switching on confirm that the electrical supply is fully compliant with the requirement of the motor as detailed on the motor nameplate, that the fan is correctly installed, all component parts and fixings are secure, safety guards are in place, no loose articles are present in the vicinity, that any temporary device used to stop the fan blades windmilling has been removed, and that personnel present are aware of the noise/vibration aspects of a fan starting and running and that they may not be able to communicate effectively with each other.
- 6.2 Immediately on switch-on check the assembly for smooth, low-vibration running, that the current consumption is within the full load current specified on the nameplate, and that the motor is not getting excessively hot. A trial connection of the three-phase supply should be made to check that the fan rotates in the required direction. If the rotation is incorrect, interchange any two phases of the incoming supply at the motor terminal block. The fan must not be switched on and off in a manner that could cause overheating of the motor; and could damage the insulation of the motor and the wiring to the motor.
- 6.3 Shutdown of the fan should be made in a controlled manner, and the system left safe and secure particularly if maintenance is to be carried out.

7. Maintenance

WARNING: NO MAINTENANCE WORK SHOULD BE ATTEMPTED BEFORE SWITCHING OFF AND COMPLETELY ISOLATING THE FAN ASSEMBLY AND ITS CONTROLS FROM ALL ELECTRICAL SUPPLIES AND ALLOWING THE ROTATING PARTS OF THE FAN TO COME TO REST AND THE MOTOR TO COOL.

BEFORE ENTERING THE AREA ENSURE THAT ALL FUMES, DUST, TOXIC EMISSION, HEAT ETC HAVE DISPERSED FROM THE LOCAL ENVIRONMENT, AND THAT THE FAN BLADES ARE NOT LIKELY TO WINDMILL.

ALL LIFTING AIDS USED DURING MAINTENANCE, AND ALL LIFTING POINTS UTILISED, SHOULD BE ADEQUATELY CERTIFIED TO CARRY THE WEIGHT OF THE EQUIPMENT BEING LIFTED (SEE SECTION 3.1/4.1.2).

ALWAYS WEAR APPROPRIATE PROTECTIVE CLOTHING (INCLUDING HARNESES, HARD HATS, BOOTS, EYE PROTECTORS AND EAR DEFENDERS) WHEN WORKING IN THE VICINITY OF THE FAN ASSEMBLY.

CARE MUST BE TAKEN TO AVOID DAMAGE TO THE INNER PERFORATED SKIN OF THE SILENCERS WHEN WORKING ON THE FAN

NOTE : *The maintenance procedures are designed to keep the fan equipment safe, operational and fault-free.*

- 7.1 Maintenance must be carried out on the fan assembly by experienced and appropriately qualified personnel using the correct tools and equipment. A regular routine maintenance schedule should be established and a record kept. A list of suggested intervals is given in Table 1. Where the environment is particularly dirty, hazardous, or open to weather extremes, a reduction in the intervals may be necessary. Internal and external fan and motor surfaces may be cleaned with low-pressure clean water and non-abrasive additives. Drain holes in silencers must be kept clear to allow the water to drain away. Direct application of water from any direction to the motor drain plugs, motor shaft seals and silencer in-fill must be avoided. No toxic materials should be used in the enclosed area of the fan.
- 7.2 It is essential to ensure that all fixings on the assembly are secure. When examining and checking the security of fixings during routine maintenance (see Table 1), those fixings that are locked into position in any way or are painted over, need not be disturbed if they can be seen to be secure. Any locking devices that are disturbed during maintenance must be discarded and replaced with identical devices. Thread forming screws must have locking compound applied when being reused. Information on replacement locking devices, and parts of all types, is available from Fläkt Woods. Those fixings that have no locking devices fitted and are torqued into position, should be checked at 95% of their original setting to ensure no un-necessary disturbance of the fixing. If in doubt about the torque of a particular fixing contact Fläkt Woods for advice. Additional care must be observed when disturbing fixings that secure devices that hold potential energy in place (eg anti-vibration mounts etc).

- 7.3 In addition to routine maintenance, motor bearings, if they are not of the sealed type, will require attention. If the motor bearings are greased through extended lubricators, the grease should be periodically applied in accordance with the instructions on the fan or motor nameplate. The correct grease, or compatible grease type, must be used. It is essential that every trace of water and dirt is removed from around the grease points and that a clean grease gun is used. Only low pressure should be needed to inject the specified quantity of grease. If a high pressure is required, the cause should be investigated. Grease points are generally located in the region of the duct terminal box.
- 7.4 After maintenance ensure that no loose articles are present in the vicinity of the fan, that all safety guards, chains or steel ropes, etc., are properly secured into their original location, and that any temporary device used to stop the fan blades windmilling has been removed.

7.5 Infrequent Use

- 7.5.1 If the fan assembly is to be used less frequently than once a month, or for emergency-use only, the following additional maintenance procedures should be carried out, and a record kept:
- 7.5.1.1 the resistance of the motor windings to earth should be measured (at 500V d.c) each month. If the reading is less than ten megohms, the motor should be dried in a warm air-flow (typically 40°C) and re-checked before running the motor,
 - 7.5.1.2 the fan should be operated for at least two hours each month to ensure correct lubricant conditions in the bearings,
 - 7.5.1.3 the 'emergency-use' system (if applicable) should be run continuously for a minimum of fifteen minutes each month, the test should ensure that the emergency use control system overrides all other controls and switches (see Section 5.7),
 - 7.5.1.4 the anti-condensation heater (if fitted) should be checked each month to ensure that it is automatically switched on (drawing current) when the motor is switched to off.

ROUTINE MAINTENANCE SCHEDULE	EVERY 6 MONTHS	EVERY 12 MONTHS	COMMENTS
1. Examine airways into fan guards	*		Removed any debris that may have accumulated round the guards.
2. Examine motor cooling fins.	*		Remove any material/dirt build-up between the motor fins.
3. Examine motor fixings.	*		Re-torque arm-to-motor fixings if necessary (refer to Figure 1).
4. Examine impeller for dirt build-up, and for physical damage to the impeller and to stationary parts.	*		Remove material build-up. Report any damage to Fläkt Woods Service Centre.
5. Check fan rotation (applicable to truly reversible fans only).	*		Ensure fan provides airflow in the required direction of thrust.
6. Check condition and tautness of fan safety support chains/ropes (if fitted).	*		Clean safety support chains/ropes. Replace them if there are any signs of deterioration or corrosion.
7. Examine and operate vibration sensors (if fitted), level switches (if fitted), and temperature sensors (if fitted).	*		Check operation using built-in sensor test features or dummy signals. Check that the fan is automatically switched off and/or provides a warning indication in the event of a fault (see also Paragraph 3.3).
8. Examine condition of safety guards (if fitted) and their fixings.	*		Clean safety guards. Replace them if there are any signs of damage.
9. Check operation of anti-condensation heaters (if fitted).	*		Switch off power to motor. Check that anti-condensation heaters are energised (drawing their rated current).
10. Check fan operational vibration level (readings to be obtained at rotational frequency).		*	If the vibration level is more than 7.2 mm/s r.m.s. when fitted on vibration isolators (1mm/s r.m.s when hard mounted) the fan must be re-balanced after obtaining advice from Fläkt Woods .
11. Examine the clearance between the fan impeller blade tips and the fan duct.		*	If the impeller blade tip clearances are below the minimum figure listed in Table 2 the cause must be investigated. Blade tip clearances can be adjusted by changing the number of washers under the motor support arms (see Figure 1). After adjustment ensure that the fixing screws remain of an adequate length to provide a safe and secure hold.
12. Check torque of fan-to-frame fixings.		*	Re-torque fixings (see Figure 1).
13. Examine torque of fan and ancillary equipment fixings.		*	It is essential to confirm that all fixings on the component parts of the fan assembly are properly fitted, are tight, and are fully driven home. Torque ratings for the various fixings on the assembly are given on Figure 1.
14. Check torque and movement of vibration isolators (if fitted).		*	Check freedom of movement. Re-torque fixings (see Figure 1).
15. Check motor voltage and current consumption		*	Ensure voltage and full load current readings are as specified on the motor nameplate.
16. Inspect paintwork.		*	Treat any areas of damage with suitable anti-corrosion paint.

TABLE 1: ROUTINE MAINTENANCE PROCEDURES

8. OVERHAUL/EXTENDED MAINTENANCE

- 8.1 The procedures detailed in this document are designed to keep the fan assembly safe, operational and fault-free; however in the longer term the fan will require additional servicing that may include a complete overhaul, bearing/seal replacement, motor replacement, motor rewinding, spare parts, condition monitoring, vibration analysis, refurbishment, etc. Information on all aspects of overhaul/extended maintenance is available from Fläkt Woods service centre. It is recommended that the motor shaft seals and bearings are replaced after 20,000 hours or 5 years of normal operation whichever ever comes sooner, and that the motor should be rewound to its original specification after 40,000 hours of normal operation to ensure that adequate insulation life is available should the fan be required for emergency operation. After overhaul/extended maintenance the fan assembly must be safely and correctly installed back into its original position in accordance with this document. The fan should then be checked for smooth and vibration-free running (see Table 1, Item 10) and the current consumption checked to ensure it is within the full load current specified on the fan nameplate

9. Fault-Finding

- 9.1 Fault-finding must be carried out on the fan assembly by appropriately qualified personnel using the correct tools and equipment.

9.1.1 Electrical

- 9.1.1.1 Check that the electrical connections to the assembly are secure and wired in accordance with the connection diagrams (see Figures 1 and 2),
- 9.1.1.2 Check that the voltage applied to the assembly is as specified on the motor nameplate and is balanced,
- 9.1.1.3 Connect an ammeter (clammeter) in line with each phase of the motor in turn and check that the current consumption is within the full load current specified on the motor nameplate,
- 9.1.1.4 Measure each motor winding to earth, and between each winding, using a 500V d.c insulation tester. If the reading is less than ten megohms the reason is liable to be dampness in the motor. To dry the motor place it in a warm (typically 40 degrees centigrade) dry airstream and regularly monitor the motor until the insulation reading is restored to ten megohms or greater. If the reading remains less than ten megohms a break-down in the motor winding insulation could be the reason, and a motor rewind/overhaul may be necessary,
- 9.1.1.5 Ensure that there is no smell of burnt insulation in the vicinity of the motor.

9.1.2 Mechanical

- 9.1.2.1 Check that there is no obstruction to the motor impeller blade, that the blade is clean, and no loose articles or debris are present in the vicinity,
- 9.1.2.2 Rotate the motor shaft by hand. Investigate any sound of internal chaffing, rubbing or stiffness. Any stiffness may indicate that the bearings require lubrication or replacing,
- 9.1.2.3 Lift the end of the motor shaft to check for bearing wear (i.e. excessive lift of shaft). Any excessive movement may indicate that the bearings require replacing,
- 9.1.2.4 Ensure that all fixings are secure,

10. Disposal

When the fan assembly has completed its working life the metal components should be segregated and recycled. The remaining items of material should be safely disposed of in accordance with local health and safety regulations. Note that a facemask and gloves should be worn when handling the silencer infill. If the infill is particularly dry or is damaged it should be damped-down before disposal).

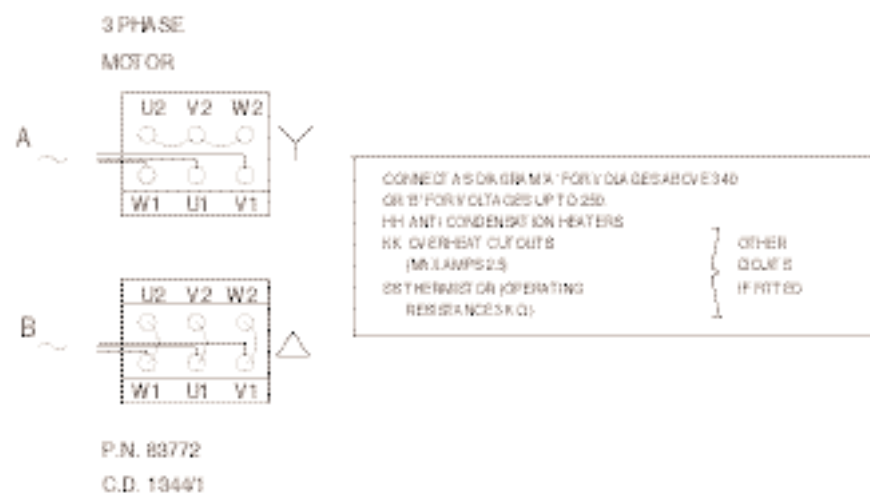
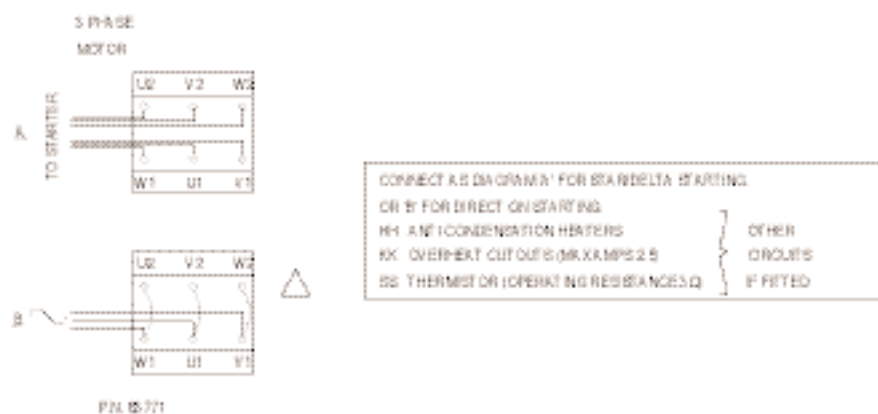
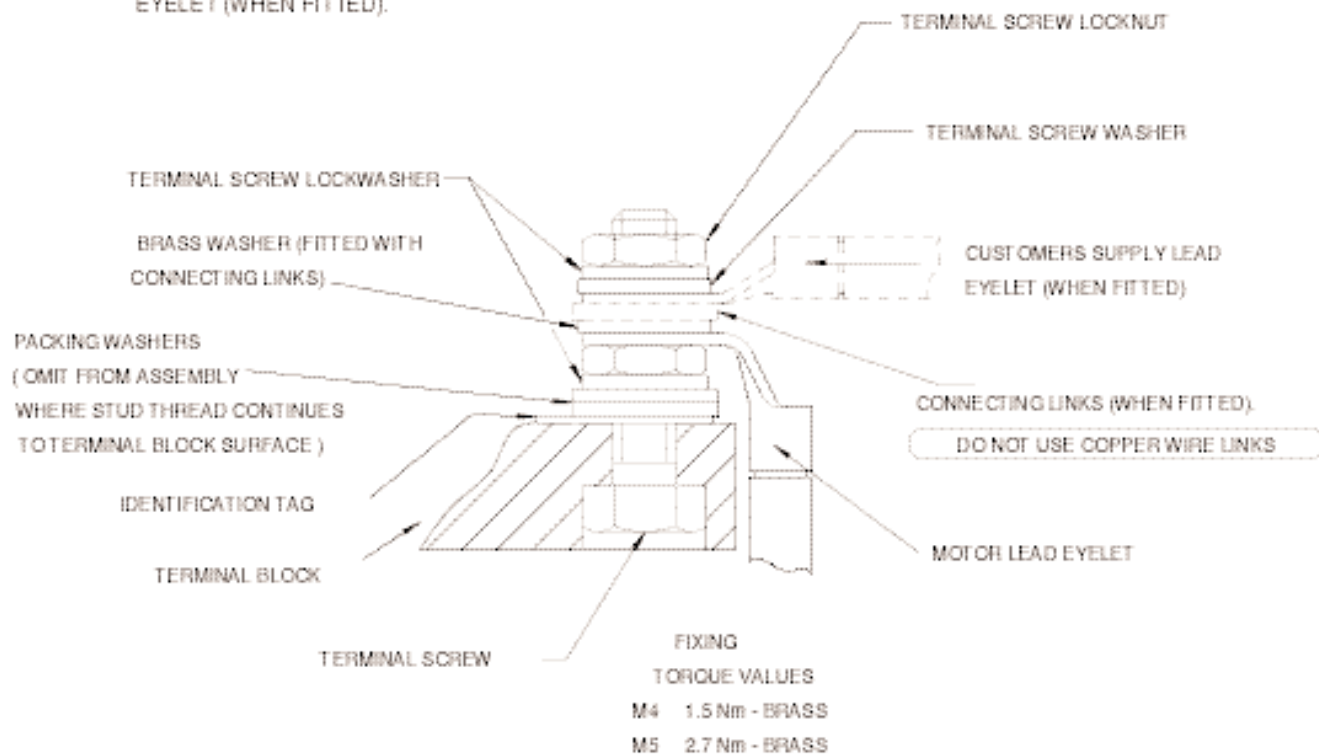


Figure 1

Connection diagrams

IMPORTANT NOTE:

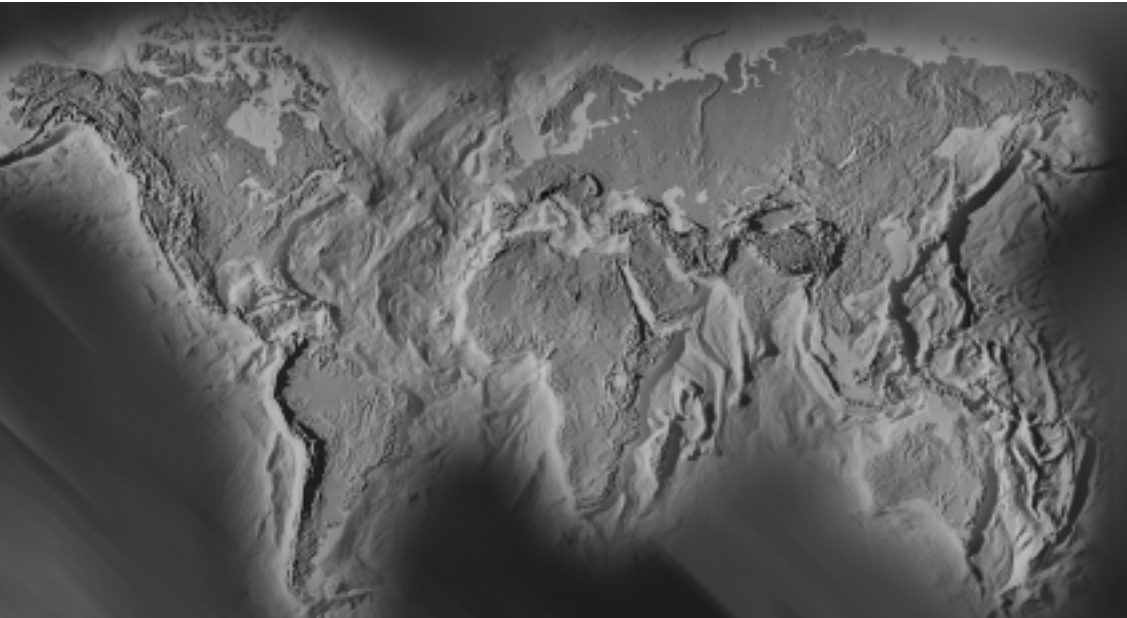
THIS DRAWING SHOWS THE CORRECT ASSEMBLY SEQUENCE OF TERMINAL PARTS.
IT IS ESSENTIAL THAT NO LOCKWASHERS OR NUTS ARE PLACED BETWEEN THE MOTOR LEAD EYELET, CONNECTING LINK OR CUSTOMERS SUPPLY LEAD EYELET (WHEN FITTED).



Terminal Block connection diagram

Figure 2

We Bring Air to Life



Fläkt Woods Group provides a full range of products and solutions for buildings ventilation, air treatment and industrial air movement

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FläktWoods