ducting express
Ducting Express Services Ltd
Trade House, 7 Claymill Road
Thurmaston, Leicester, LE4 9JJ.

OPERATIONS, MAINTENANCE, AND INSTALLATION MANUAL FOR D3000 Fully Clad DUST EXTRACTION UNIT.

SUPPLIERS

This machine is designed and constructed so as to fully conform with the essential health and safety requirements contained in the Supply of Machines (Safety) Regulations 1992 and the Supply of Machinery (Safety) (Amendment) Regulations 1994 which implement the European Machinery Directive 89/392/EEC. Furthermore Section 6 of The Health & Safety at Work Etc. Act 1974 places duties on designers, manufacturers and suppliers to ensure that among other things:

1. Articles supplied for use at work are, so far as is reasonably practicable, safe and without risks to health during setting, use, cleaning and maintenance.

2. Persons supplied with the articles are provided with adequate information about the use for which they are designed and about conditions necessary to ensure that they will be safe and without risks to health. These duties will apply to you if you re-supply the machine by way of sale, lease, hire or hire purchase.

INSTALLERS

Persons who install this machine for use at work have a duty under Section 6 of the Health and Safety at Work etc. Act 1974 to ensure, so far as is reasonably practicable, that nothing about the way in which it is installed makes it unsafe or a risk to health at all times during setting, use, cleaning and maintenance. This may include such aspects as correct assembly, electrical installation, construction of enclosures, fitting of guards to the machinery being extracted from and the correct positioning of dust collection hoods. When installing this machine, consideration must be given to the provision of adequate lighting and working space.

DELIVERY

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On delivery, **carefully** inspect the filter to detect any damage which may have occurred during transit. Report any damage immediately.

SPECIFICATION

Motor: 7.5kW, 4 Sleeves & Waste Sacks, Inlet Duct Spigot 300 dia., Weight 650kg Air volume 5000 M3H

MECHANICAL INSTALLATION

Great care should be exercised in the application of the filter unit.

A competent dust extraction engineer should be consulted before using.
Certain dusts are dangerous to handle i.e. explosive, toxic, carcinogenic or statically charged in nature. The mixing of apparently innocuous dusts within the same extraction systems can cause a serious hazard.
Reference should be made to the Health and Safety Executive Guidance No. EH44 " Dust in the Work-place, General Principles of Protection".

The unit should be positioned on a prepared floor area of adequate strength and care taken to ensure all feet are seating correctly. Holding down bolts should be fitted through holes in feet provided ensuring unit is securely anchored to its base.

ELECTRICAL INSTALLATION

The electrical installation must be carried out by a competent electrician in accordance with BS6467, BS7671 and the 16th edition of the IEE Regulations.

An IEE electrical installation certificate should be issued by the installing electrician, a copy retained for future reference and a copy sent to Ducting Express Services Ltd to validate the warranty.

If a separate electrical starter panel is supplied this should be located in a suitable place and a 3 phase electrical supply connected to it.
The supply and cabling should be suitable for a 7.5 kW motor with a full running load of approximately 20 amps (check motor plate). Note: Fans have a long run up time and have a high start up load, this should be taken into

account when selecting supply breakers or fuses. (e.g. MCB type 'D' size 30 amp minimum)
The fan motor should be connected to the starter panel in accordance with the panel wiring diagram. Any terminal linkages in the motor terminal box should be arranged in accordance with the motor plate. Check rotation of fan and set thermal overload to setting on rating plate of fan motor. (approximately 14.8 amps)
Ensure that the motor runs in the same direction as the arrow located on the motor cooling fan cover.

ANTI STATIC OR EPITROPIC FILTER MEDIA

When unit is fitted with antistatic or epitropic filter media, or if earthing braids are used, it is vital that an external earth connection is made. During manufacturing assembly the filter element is linked to an earthing bolt on the side of the units casing. It is essential that this bolt is connected to a suitable earthing point, such as a steel stanchion, using copper wire.

WARNING

DO NOT link the earth bolt to the earthing terminal of the units electrical supply.

CONSUMABLE COMPONENTS RE-ORDER DATA

FILTER ELEMENT

This unit is fitted with filter elements which should be renewed every 12-24 months depending on frequency of use of the extraction unit.

A wide variety of filter media is available depending on the materials/waste product processed.

The filters fitted to this unit are:-
Type: 4 off 500 mm diameter x 2mtrs long.
Fabric: Polyester needlefelt glazed dust release finish.

If the materials/waste product process changes you may need to order filters manufactured from a different fabric, please contact Ducting Express Services Ltd for further advice.

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WASTE COLLECTION BAGS

Replacement heavy duty polythene dust collection sacks are available in packs of 25 minimum order.

Type: 20”diameter x 54” long (Red Logo)

MOTORS

This unit has a 7.5 kw 3 phase motor available from stock at Ducting Express Services Ltd Quoting Ref: D3000L

IMPELLER

Replacement fan impellers are also available from stock Quoting Ref.D3000.

FLEXIBLE HOSE DUCTWORK, EXTRACTION HOODS.

Ducting Express Services Ltd manufacture a full range of dust extraction units, ductwork and purpose designed extraction hoods. A wide range of accessories such as flexible hose, jubilee clips and duct installation items such as brackets, clips, high velocity duct sealant and duct tape etc. is available.

OPERATING INSTRUCTIONS FOR DUCT UNIT FILTER.

The Ducting Express Unit is a self contained unit, and is designed to operate on an intermittent duty, and dependent on the dust concentration, can provide up to 12 hours continuous operation without the need to shut down the fan and clean the residual dust from the filter sleeves.

The cleaning operation is carried out manually at the end of each work shift (maximum period 12 hours), with the fan switched off and having stopped rotating.

The filters are cleaned by manually agitating the filter bags so the residual dust falls down through the filter and into collection bags below.

This should be carried out until all the fine dust is removed from the inside of the filter.

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Never shake the filter if the waste bag is not in place and sealed.

Wait after cleaning until the dust has settled before starting the filter unit again.

To encourage dust settlement in the collector bag, it is essential that the bag is correctly sealed at all times, when the fan is in operation, as air leaks at the peripheral seal it may cause the fine dust to remain in suspension. In the interest of good housekeeping. The bag should not be allowed to overfill.

Under no circumstances should the fan be operated with the ductwork system, collection bag, or with the access door removed. This would drastically reduce the extraction at the exhaust points, but, more importantly, would most likely cause the fan motor to seriously overload and burn out within a short time.

TRAINING

Machine operators must have received sufficient training and instructions as to the dangers arising in connection with the machine, the precautions to be observed and the requirement of the Woodworking Machinery Regulations 1974 which apply, except where they work under the adequate supervision of a person who has thorough knowledge and experience of the machine and the required safeguards.

BAG EMPTYING

In the interest of good housekeeping, the bags should not be allowed to overfill. A regular emptying routine should be established according to the rate of waste production.

Care should be taken during emptying of waste collection bags, and final disposal to avoid possible secondary dust emission and contamination.

It is recommended that protective clothing equipment be worn during the emptying process, for further information consult B.S 4275: 1974 ‘Recommendations for the selection, use and maintenance of respiratory protective equipment.’

GENERAL OPERATING ADVICE

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Under no circumstances should the fan be operated with the ductwork system, collection bags or the access doors removed. This would drastically reduce the extraction at the exhaust points, but more importantly, would most likely cause the fan motor to seriously overload and burn out within a short time. To ensure optimum efficiency during the work shift period, the operating precautions may be summarised as follows:

1. Ensure that the bags are correctly located and sealed. And any access doors are closed at all times during fan operation.

2. Do not allow the bag to overfill, but empty on a routine basis, i.e. daily, or according to volume of waste generated.

3. Do not allow the fan to run continuously for periods exceeding 12 hours. If the dust concentration is excessive, the maximum operating period between shaking cycles can be reduced conveniently by providing an intermediate shut down during the lunch or tea break.

MAINTENANCE INSTRUCTIONS DUST UNIT

To comply with regulation 9 Control of Substances Hazardous to Health Regulations 1994 (C.O.S.S.H.), it is essential to maintain the extraction unit (Local Exhaust Ventilation -L.E.V. Plant) in an efficient working condition.

To minimise fire and explosion risks it is essential to have a preventative maintenance regime for the entire collection system.

Take care to prevent metal objects entering the collection system.

Smouldering fires often precede explosions. If a fire is suspected stop the airflow through the collection system before investigating the problem.

Repairs and maintenance must only be undertaken by competent persons.

Ensure that all power supplies are isolated before maintenance work commences.

For trouble- free operation, and maximum service life, it is recommended that the following items be checked at monthly intervals:

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1. Check condition of filter element(s)
   Ensure filter element is free of dust build up.
2. The filter element will need replacing every 12-24 months depending on usage
3. Check condition of the bag sealing mechanism.
4. Check condition of door seals and bag seals.
5. Check condition of any ductwork, flexible hoses and extraction hoods connected to the extraction unit.
6. Check that the airflow is not constricted through ducts or hoses by blockages.
7. Check the integrity of all electrical enclosures and wiring

C.O.S.H.H.REGULATIONS

The Control of Hazardous Substances Regulations 1994 requires that all employers identify hazards to which their employees are exposed and assess the risks associated with the hazards.

If hazardous substances are present the employer has a legal duty to know and record the level of exposure over an 8 hour T.W.A. (time weighted average).

All hazardous substances have been given either a Maximum Exposure Limit (M.E.L) or an Occupational Exposure Limit (O.E.L) for an 8 hour T.W.A. For dusts this is measured in mg per m^3.

Regulation 7 of C.O.S.H.H. imposes on employers a legal duty to reduce the exposure of employees to below the M.E.L or the O.E.L, whichever is applicable to the hazardous substance. This is achieved by use of a control measure such as an efficient dust extraction system.

To comply with Regulation 9 of the C.O.S.H.H. Regulations the control measures employed i.e. the dust extraction unit (L.E.V.Plant) must be the subject of a detailed report and test at least every 14 months.

A record of the examination and test should be kept for at least 5 years.

Ducting Express Services Ltd have an L.E.V. Assessment Division to help you to comply with Regulation 9 of C.O.S.H.H. Skilled L.E.V.engineers offer a choice of personal monitoring and L.E.V assessment services which include the

measurement of dust exposure levels in mg/m3 and the detailed examination and test of Dust and Fume Extraction system(s) (L.E.V Plant)

To arrange for an L.E.V. Assessment to comply with the COSHH Regulations contact Ducting Express Services Ltd 01455 616 444

HEALTH AND SAFETY ADVICE

USERS

This machine is supplied complete with all necessary safeguards to enable the user to comply with the Provision and Use of Work Equipment Regulations 1992, and where applicable, Regulation 20 and Regulation 39 of the Woodworking Machinery Regulations 1974.

Details of correct installation and use are described in this manual. Under the above legislation, employers have a legal duty to ensure that guards and other safety devices are suitable, and are maintained in efficient working order and in good repair.

Employees also have to take reasonable care for the health and safety of themselves and others, and co-operate with their employer in meeting health and safety requirements. Before commencing work, ensure that the dust collection hoods are in place and are secured correctly.

DUST

Employers have duties under the Factories Act 1961, The Health and Safety at Work etc. Act 1974 and Control of Substances Hazardous to Health Regulations 1989 to control dust in the workplace.

Wood dust can be harmful to health by inhalation and skin contact and no one should be exposed to airborne concentrations of wood dust greater than 5mg/m3 averaged over an 8 hour working day.

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Concentrations of small dust particles in the air can form an explosive mixture. These concentrations usually occur in dust extraction equipment which may be destroyed unless explosion precautions have been taken in the design and installation of the equipment.

Other types of dusts also pose health hazards. Most dusts have been allocated Maximum Exposure Limits or Occupational Exposure Limits by the Health and Safety Executive. Please refer to the latest issue of H.S.E. Guidance Note EH40 for full details.

Employers must carry out an adequate assessment of the risks to their employees health arising from dust, and steps that need to be taken to control it. Effective dust extraction is required on any machine which produces dust.
Prevention or control of dust exposure should, so far as is reasonably practicable, be achieved by measures such as dust extraction units rather than the provision of personal protective equipment (i.e. dust masks)

Further information and references to practical guidance are contained in free leaflets available from the Health and Safety Executive.

INJURY BY MOVING PARTS

The only access to moving parts is by removing panels/covers from the machinery requiring the use of screw drivers etc. This should never be attempted until the unit has been electrically isolated as physical injury could result.

NOISE EMISSION

Noise levels can vary widely from machine to machine depending on conditions of use. Persons exposed to high noise levels, even for a short time, may experience temporary partial hearing loss and continuous exposure to high levels can result in permanent hearing damage. The Noise at Work Regulations 1989 require employers to take reasonable practicable measures to reduce noise levels where any person is likely to be exposed to a continuous equivalent noise level of 90dB (A) or more over an 8 hour working day. Additionally employers must make available suitable ear protectors at equivalent noise levels of 85dB(A), and employers must ensure that they are properly maintained and worn at noise levels

of 90dB(A) or more. Machines identified as generating unhealthy noise levels should be marked with a warning of the need to wear hearing protection and it may be necessary to designate particular areas of the work place as “Ear protection zones”. Suitable warning signs are specified in the Safety Sign Regulations 1995. It may be necessary to construct a suitable noise enclosure, in which case professional
Advice should be sought.

FIRE & EXPLOSION RISKS

Wood waste usually has a dust explosion risk where the mean particle size is less than 200 microns and where as little as 10% of the mixture of dust particles contain dust less than 80 microns in size. Where the mean particle size exceeds 200 microns only weak explosions are likely.

In practice this means that processes such as:

Sanding hard or soft woods
Sawing or machining hardwoods, MDF, chipboard and similar boards.
Mixed processing of a variety of woods and boards produces dust, which should be assumed to be explosivible.

Common sources of ignition include naked flames, faulty or unsuitable electric’s and impact sparks.

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TROUBLE SHOOTING

If the exhaust conditions appear to deteriorate, check the following:

1. Fan motor running with correct rotation.
2. Bags are located and sealed and access doors are closed.
3. Blast gates in the duct system, if applicable have not been tampered with.
4. Fan is being shut down by means of stop button and not isolator.
5. Maximum periods between shaking not exceeding normal limits.
6. Leakage or damage to duct system.

DUST CARRY OVER

If dust carry-over occurs, evidenced by dust visible discharging from filter media, check the following:

Filter media is intact and not damaged.
– Refit or replace filter sleeves.

Filter media visibly discoloured by dust penetration.
– Replace filter sleeves.

MAINTENANCE CALL OUT

If you are unable to resolve the problem contact
Ducting Express Services Ltd to arrange for a maintenance engineer to call Tel. 01455 616 444

FURTHER INFORMATION

For further information on the bag filters and other Ducting Express products please contact us on Tel. 01455 616 444
For further information and practical guidance on general aspects of Health and Safety relating to dust extraction plant are contained in free leaflets available from the Health and Safety Executive Woodworking National Interest Group.

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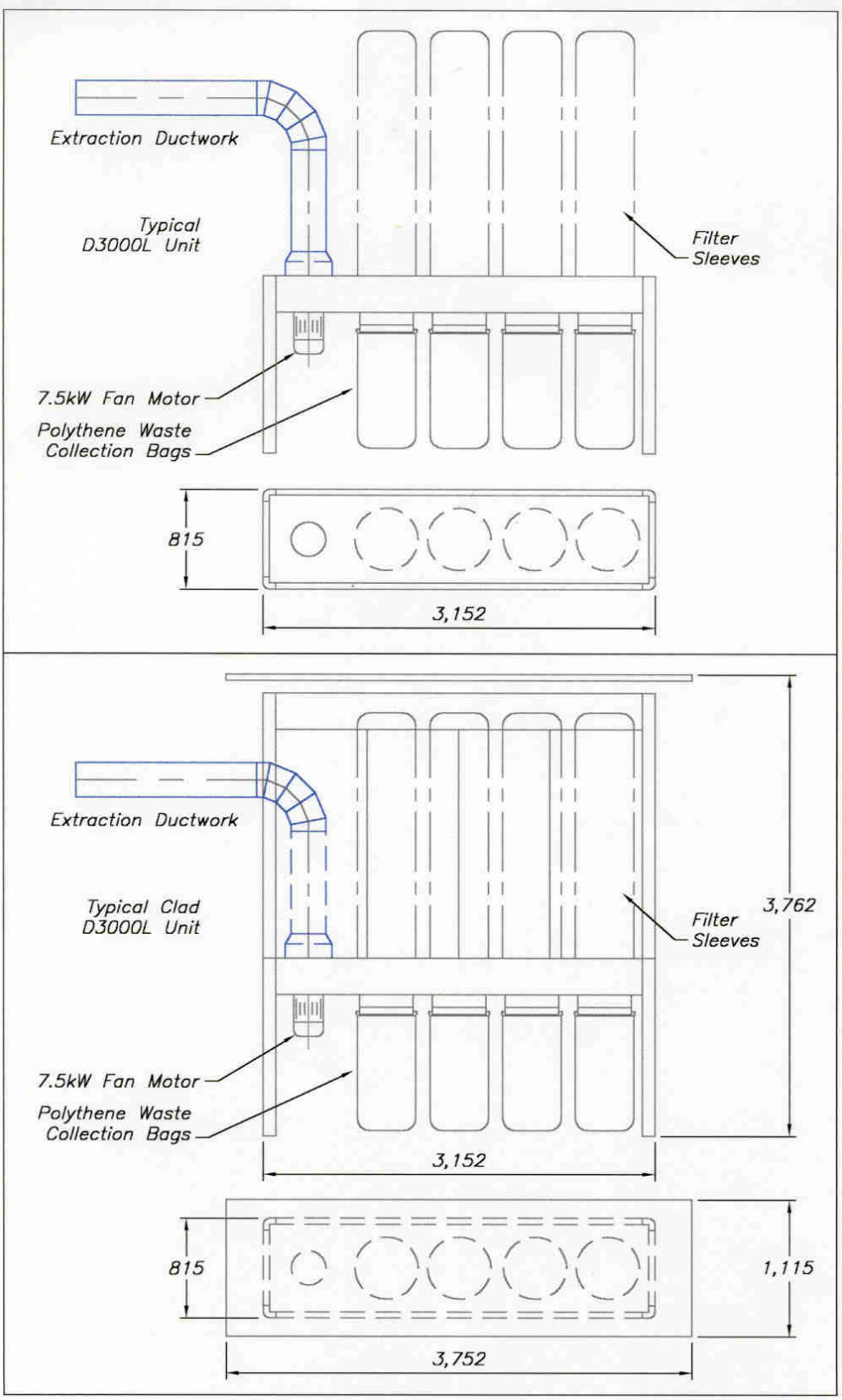

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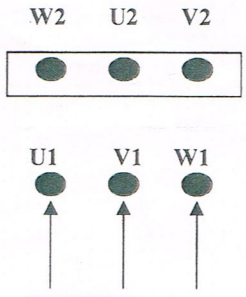
Wiring & Maintenance Instructions

415 volt 3 phase 50 cycle Systems

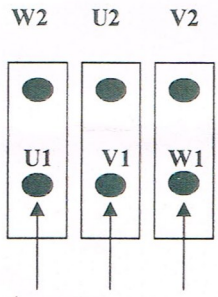
Fan Motor Size		Full Load Current	Overload Supplied	Motor Connection	HRC Fuse Rating
1.0HP	0.75Kw	2.0 Amps	1.4-2.3 Amp	DIRECT ON STAR	6 Amp
2.0HP	1.5Kw	3.4 Amps	3.0-5.0 Amp	DIRECT ON STAR	10 Amp
3.0HP	2.2Kw	4.6 Amps	3.0-5.0 Amp	DIRECT ON STAR	10 Amp
4.0HP	3.0Kw	6.0 Amps	4.5-7.5 Amp	DIRECT ON STAR	16 Amp
5.5HP	4.0Kw	7.9 Amps	6.0-10.0 Amp	DIRECT ON DELTA	16 Amp
7.5HP	5.5Kw	10.8 Amps	9.0-15.0 Amp	DIRECT ON DELTA	20 Amp
10.0HP	7.5Kw	14.8 Amps	10.0-17.0 Amp	STAR--DELTA	30 Amp
15.0HP	11.0Kw	21 Amps	15.0-22.0 Amp	STAR--DELTA	30 Amp

Fan Motor Connection
DIRECT ON STAR

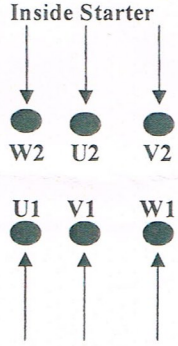


415v Direct On Line (DOL) Starter

Fan Motor Connection
DIRECT ON DELTA



Fan Motor Connection
STAR – DELTA
Connect below RN
Inside Starter



6 Wires from starter to motor

ALL CONNECTIONS TO COMPLY WITH I.E.E. Regulations 17th Edition

Ensure correct setting of the starter overloads and check fan rotation with arrow as indicated

Periodic Maintenance

Check All Electrical Connections are tight and Check running load on each phase
Remove plastic bags when full (Replace bags only with unit switched off)
Manually shake filter sleeves daily and replace when required

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