



DUST FILTER UNIT
ORIGINAL INSTRUCTIONS

OPERATING & MAINTENANCE MANUAL

MODEL No. : FX440

SERIAL No. : 11566

DATE : November 2013

7.5 KW FAN MOTOR 13.9AMPS FLC

**THIS MANUAL MUST BE READ AND ITS CONTENTS
UNDERSTOOD BY APPROPRIATE PERSONNEL
BEFORE THIS EQUIPMENT IS PUT INTO USE.**

Machinery Directive Compliant 2006 / 42 / EC

FILTER UNIT
OPERATING AND MAINTENANCE MANUAL
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It is essential that machine is switched off and electrically isolated before any inspection, maintenance or waste bin emptying is carried out.

HEALTH & SAFETY WARNING

The contents of this manual must be carefully read and understood by all appropriate personnel before this equipment is put in to use. This should include all operatives, safety officer and local managers. A copy of this manual should be kept readily available for reference as required.

A competent Dust Extraction Engineer should be consulted to ensure this equipment is suitable for this application. Hazard data sheets for any product being handled by this Filter Unit should be referred to and the appropriate action taken.

Some dusts are only of nuisance value, whilst others can be extremely harmful with excessive exposure resulting in effects from skin irritation to cancers.

Certain materials have an additional hazard of being explosive, statically charged or flammable. Additional precautions are necessary in these circumstances. Please refer to notes on fire prevention.

ATEX DIRECTIVE

This Filter Unit must be used in accordance with the ATEX DIRECTIVE . **ATEX Workplace Directive 1999/92/EC** places the responsibility on the **end user** to risk assess their workplace and mark hazardous area's according to their level of risk for gases and dusts. Dust explosions can result in the eruption of a significant fireball and secondary explosions from surrounding dust deposits.

This Filter unit must be used in accordance with C.O.S.H.H. Regulations. We recommend you refer to the latest editions of Health & Safety Executive Publications, EH 40: 'Occupational Exposure Limits' and EH 44: 'Dust in the Workplace: General Principles for Protection'.

It is a requirement of C.O.S.H.H. Regulations that all local exhaust ventilation systems (L.E.V.) are thoroughly examined and tested at least once every 14 months, and they should be visually checked at least once every week. Certain processes require a more frequent formal examination and test. Please refer to your supplier for further information.

Safe disposal of the collected dust is essential and should be carried out in accordance with the requirements of the appropriate licensing authority.

This publication is designed to assist with the safe and effective operation of this Filter Unit. Due to changing legislation and the varying materials (dust) it may have to accommodate, it is impossible to foresee every hazard.

It is essential that a competent Dust Extraction Engineer / Health & Safety Executive are consulted should there be any doubt as to this equipment's safe use or should the process vary from its original conception.

The Environmental Protection Act 1990, refers to Filter Units that discharge to atmosphere, (external to the building). Industry is required to register with either local authority (part B processes) or Her Majesty's Inspectorate of Pollution (part A processes).

In many cases monitoring of emission levels will be required, however as these regulations are complex we recommend the appropriate licensing authority is contacted for further advice.

FILTEX FX30 - FX825 DUST FILTER UNIT TYPICAL NOISE LEVELS

| Frequency Hz | FX30-FX50 0.55kw | FX75 1.5kw | FX100 2.2kw | FX125 2.2kw | FX150 3kw | FX175 3kw | FX205 4kw | FX250 5.5kw | FX294 7.5kw | FX375 7.5kw | FX440 7.5kw | FX500 11kw | FX600 11kw | FX750 11kw | FX825 11kw |
|--|---------------------|---------------|----------------|----------------|--------------|--------------|--------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|
| 31.5 | 76 | 80 | 80 | 79 | 79 | 79 | 79 | 79 | 79 | 75 | 75 | 73 | 73 | 68 | 68 |
| 63 | 80 | 77 | 77 | 78 | 78 | 78 | 78 | 78 | 78 | 79 | 79 | 75 | 75 | 73 | 73 |
| 125 | 74 | 76 | 76 | 77 | 77 | 77 | 77 | 77 | 77 | 74 | 74 | 72 | 72 | 69 | 69 |
| 250 | 74 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 74 | 74 | 72 | 72 | 70 | 70 |
| 500 | 69 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 71 | 68 | 68 | 77 | 77 | 78 | 78 |
| 1000 | 69 | 65 | 65 | 66 | 66 | 66 | 68 | 66 | 66 | 68 | 68 | 74 | 74 | 72 | 72 |
| 2000 | 68 | 62 | 62 | 63 | 63 | 63 | 63 | 63 | 63 | 67 | 67 | 66 | 66 | 65 | 65 |
| 4000 | 66 | 60 | 60 | 61 | 61 | 61 | 61 | 61 | 61 | 66 | 66 | 59 | 59 | 56 | 56 |
| 8000 | 56 | 54 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 57 | 57 | 51 | 51 | 51 | 51 |
| 16000 | 49 | 49 | 49 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 48 | 46 | 46 |
| 31500 | 27 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 27 | 27 | 28 | 28 | 27 | 27 |
| Typical weighted sound levels dB(A) | 74 | 72 | 72 | 73 | 73 | 73 | 73 | 73 | 73 | 74 | 74 | 78 | 78 | 78 | 78 |

All readings were measured in normal industrial area's,
for example in semi-reverberant surroundings, with adjacent equipment silent.

Measurements were taken based on standard filter unit airflow,
rated at 8f fpm. Standard vertical discharge arrangement

Taken 1m from front of the Filter Unit and a height of 1.5m, with a typical ducted inlet

Measurements of installed equipment may vary due to site conditions,
different discharge arrangements or Filter Unit performance.

Delivery

On receipt remove all wrapping and packing materials. Units are usually despatched either fully assembled or in flanged sections for easy on site assembly, where this is required bolts are located in waste bin. Electrical control panel and instruction manual are usually located in waste bin or fan chamber (top door). These should be removed and given to appropriate personnel.

Unit Weights

| <u>Single Bin Units</u> | <u>Weight kg</u> | <u>Twin Bin Units</u> | <u>Weight kg</u> |
|--------------------------------|-------------------------|------------------------------|-------------------------|
| FX30 Drawer Fully Auto | 80 | FX500 Hopper Fully Auto | 790 |
| FX30 Hopper Fully Auto | 85 | FX600 Hopper Fully Auto | 820 |
| FX50 Drawer Fully Auto | 90 | FX750 Hopper Fully Auto | 1000 |
| FX50 Hopper Fully Auto | 95 | FX825 Hopper Fully Auto | 1030 |
| FX75 Drawer Fully Auto | 255 | | |
| FX75 Hopper Fully Auto | 275 | | |
| FX100 Hopper Fully Auto | 290 | | |
| FX125 Hopper Fully Auto | 310 | | |
| FX150 Hopper Fully Auto | 340 | | |
| FX175 Hopper Fully Auto | 370 | | |
| FX205 Hopper Fully Auto | 400 | | |
| FX250 Hopper Fully Auto | 405 | | |
| FX294 Hopper Fully Auto | 415 | | |
| FX375 Hopper Fully Auto | 480 | | |
| FX440 Hopper Fully Auto | 510 | | |

Installation

1. Filter Unit to be located on solid, level base of adequate strength to accommodate filter weight and ensure full base seating.
2. Any fluctuations in base level that may cause unit to 'rock', should be overcome with packers, or holding down bolts.
3. It is not usually necessary for floor fixing bolts to Filter Unit base.
4. Ensure filter location allows required access to fan / filter chambers and waste bin removal.
5. Where explosion relief panels are fitted, see separate heading.
6. Filter Units that are externally located and are open to an ingress of water must have a suitable weathered discharge. This is usually by means of a side louvre outlet, or recirculating clean air ductwork.
7. Undo door retaining bolts prior to fan & filter chamber door opening. Re-tighten afterwards to prevent accidental door opening.
8. Ensure correct fan rotation by checking directional arrow in fan chamber.

PRINCIPLE OF OPERATION

This is a self contained Filter Unit, designed to operate when connected to dust producing machines / processes, usually via a conveying ductwork system. As dust enters the Filter Unit through the hopper inlet an internal baffle plate encourages heavier particles to fall into the waste bin. Lighter dust particles are entrained on the outer surfaces of the multi-pocket envelope fabric filters, the air passing into the fan chamber is now clean and is discharged to atmosphere through the fan chamber outlet.

Fully Automatic Shake Clean Filters (Standard)

At the end of the production period the extraction is switched off at the control panel (Clean/Reset Blue Button). A timer instigates a 60 second delay to allow extraction to come to rest (can be up to a 4 minute delay on high inertia fans), followed by a 30 - 60 second shaker motor clean cycle, which mechanically oscillates the filter sleeves dislodging the excessive dust burden, which falls under gravity into the waste bin.

This process is designed to reduce the pressure loss across the filter media and there by maintain extraction volume rates.

It is usual to wait five minutes to allow fine dust to settle before

1. Emptying the waste collection bin.
2. Re-starting the extraction system.

Production times between shake clean cycles will vary with application, usually every 4 - 8 hours of operation.

In the event of this equipment being controlled by another source, this should follow the same principles.

Pressure Switch Controlled Fully Automatic Shake Clean Filters

(Additional on site electrical connection is required)

At the end of the production period the extraction is switched off at the control panel (Clean/Reset Blue Button). The pressure switch facility will only activate a shake clean cycle once a pre-determined pressure loss (typically 1000 Pascals) has been reached across the primary filters. Until this pre-determined pressure loss is reached, the fan will stop but the shake clean cycle will not be energised.

The pressure switch facility is used to prevent excessive shake clean cycles

The pressure switch can also be used to indicate a high pressure condition (to a remote source) of primary or secondary filters.

Manually Cleaned Filters

Some smaller Filter Units do not have an automatic motorised clean facility, however have a manually operated handle.

This should be vigorously energised at least once per day, when the extraction is switched off and the fan has come to rest.

This is achieved by pushing handle 'to and fro' for a 10 second period.

ELECTRICAL INSTALLATION

Electrical installation should be carried out by qualified personnel only.

The filter unit is despatched with fan and shaker motors wired to side mounted terminal enclosures.

A controller is supplied separately for on site wiring by client. See wiring diagram.

All wiring should be in accordance with the regulations of the Institute of Electrical Engineers.

Great care should be exercised with regard to selection of cable size and fittings in accordance to load carrying capacity and type of environment of the installation.

A fused isolated supply is required, fitted with motor rated H.R.C. fuses (not supplied with unit) to the tables below. Check ratings on fan motor.

| Direct On Line | 400v 3ph 50hz | 400v 3ph 50hz | 400v 3ph 50hz |
|----------------|---------------|---------------|---------------|
| Motor Rating | F. L. Amps | Motor Fuses | MCB Type D |
| 0.55 kw | 1.35 | 6 amp | 2 |
| 0.75 kw | 1.70 | 6 amp | 4 |
| 1.50 kw | 3.35 | 16 amp | 6 |
| 2.20 kw | 4.55 | 16 amp | 10 |
| 3.00 kw | 5.95 | 20 amp | 10 |
| 4.00 kw | 7.40 | 20M25 | 16 |
| 5.50 kw | 10.50 | 20M32 | 16 |
| 7.50 kw | 13.90 | 32M35 | 20 |

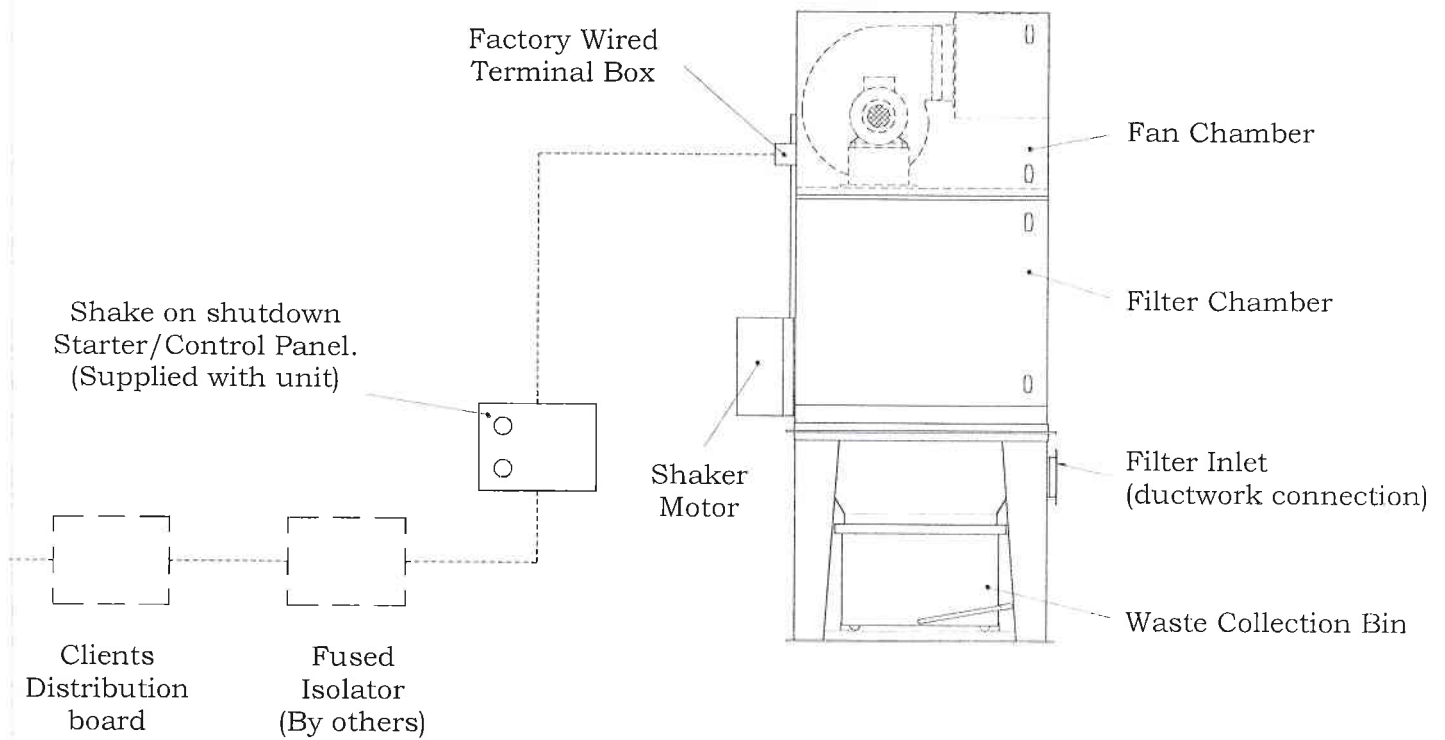
| Star Delta | 400v 3ph 50hz | 400v 3ph 50hz | 400v 3ph 50hz |
|--------------|---------------|---------------|---------------|
| Motor Rating | F. L. Amps | Motor Fuses | MCB Type D |
| 9.20 kw | 18.00 | 32 amp | 20 |
| 11.00 kw | 20.00 | 32 amp | 25 |
| 15.00 kw | 26.50 | 32M35 | 40 |
| 18.50 kw | 32.00 | 32M40 | 50 |

% Calculation for other voltages – 3ph 50hz

| | | | | | | |
|------|------|------|------|------|------|------|
| | 220v | 230v | 380v | 415v | 500v | 550v |
| Amps | 182% | 174% | 105% | 98% | 80% | 75% |

Always check and set thermal overloads to recommended values before starting.

ELECTRICAL INSTALLATION SCHEMATIC



The Fan and Shaker Motors are factory wired to a Terminal Enclosure on the side of the Unit. See Wiring Diagrams for details of installation.

Do Not mount the Starter/Control Panel on the Filter Unit.

Motor rated Circuit Breakers or H.R.C Fuses **Must be used.**

WIRING DIAGRAM – DIRECT ON LINE. Manual Shake

CS-117-6320 Installation & Service Instructions

Revision C

Series PDL Enclosed Direct-on-line
Manual Shaker AC Motor Starters

WARNING: Before carrying out work on the starter ensure that the power supply is disconnected.

Types: Manual Shaker Direct On Line – PDL4APOW (400v), PDL4APOR (230v)

Installation

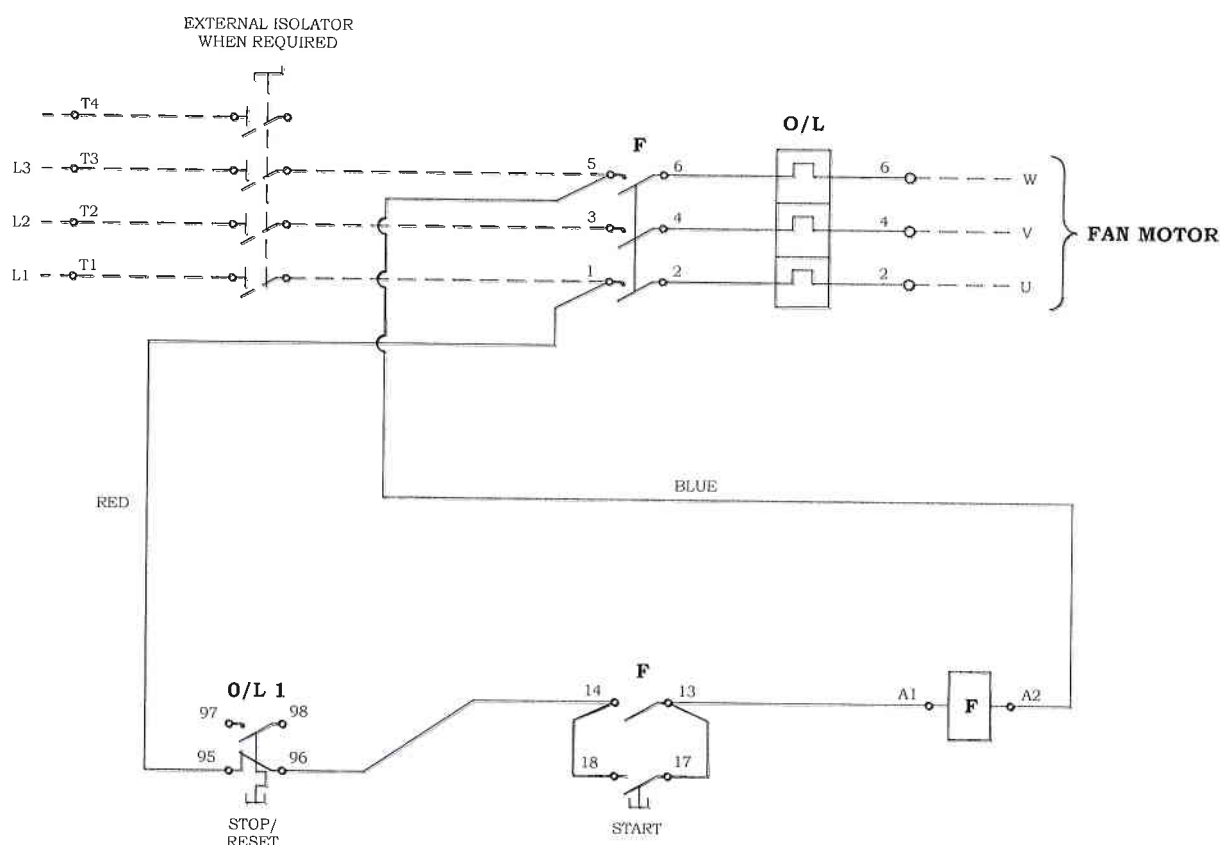
- 1 Mount the starter enclosure base securely to a vertical surface that is reasonably free from vibration. The enclosure is designed to give environmental protection to IP65 standard.
- 2 Check that the voltage and frequency marked on the contactor coils corresponds to the control supply voltage for the starter.
- 3 Fit overload relays Series RT1 directly to the fan motor contactor, tighten contactor – overload relay terminal connection screws as follows:

| | |
|-----------|-------------------|
| Contactor | Tightening Torque |
| F = CL00 | 1,6Nm |
- 4 Connect internal control circuit wiring (as provided) to the overload relay, from terminal 13 to 95 and L1 to 96. Overload relay terminals 97 and 98 can be used for remote signaling of overload tripped if required. Terminal screws should be tightened to 2.5Nm.
- 5 Adjust the overload current settings dial to correspond with the full load current on the motor name plates. Set overload relay function red push button to the desired position.
- 6 Remove appropriate conduit entries, install incoming and outgoing power cables.

Control Circuit Supply Options

Line – Neutral

Connection from terminals 5 (L3) to coil terminal A2 are omitted. A separate neutral or other control voltage wire must be connected directly into contactor coil terminal A2 by the installer.



GE Power Controls B.V.

GE Power Controls Liverpool

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchasers purposes, the matter should be referred to GE Power Controls.

WIRING DIAGRAM – DIRECT ON LINE. Fully Automatic Shake 230v Control Circuit

Series PDFS Enclosed DOL
Fan Shaker AC Motor Starters

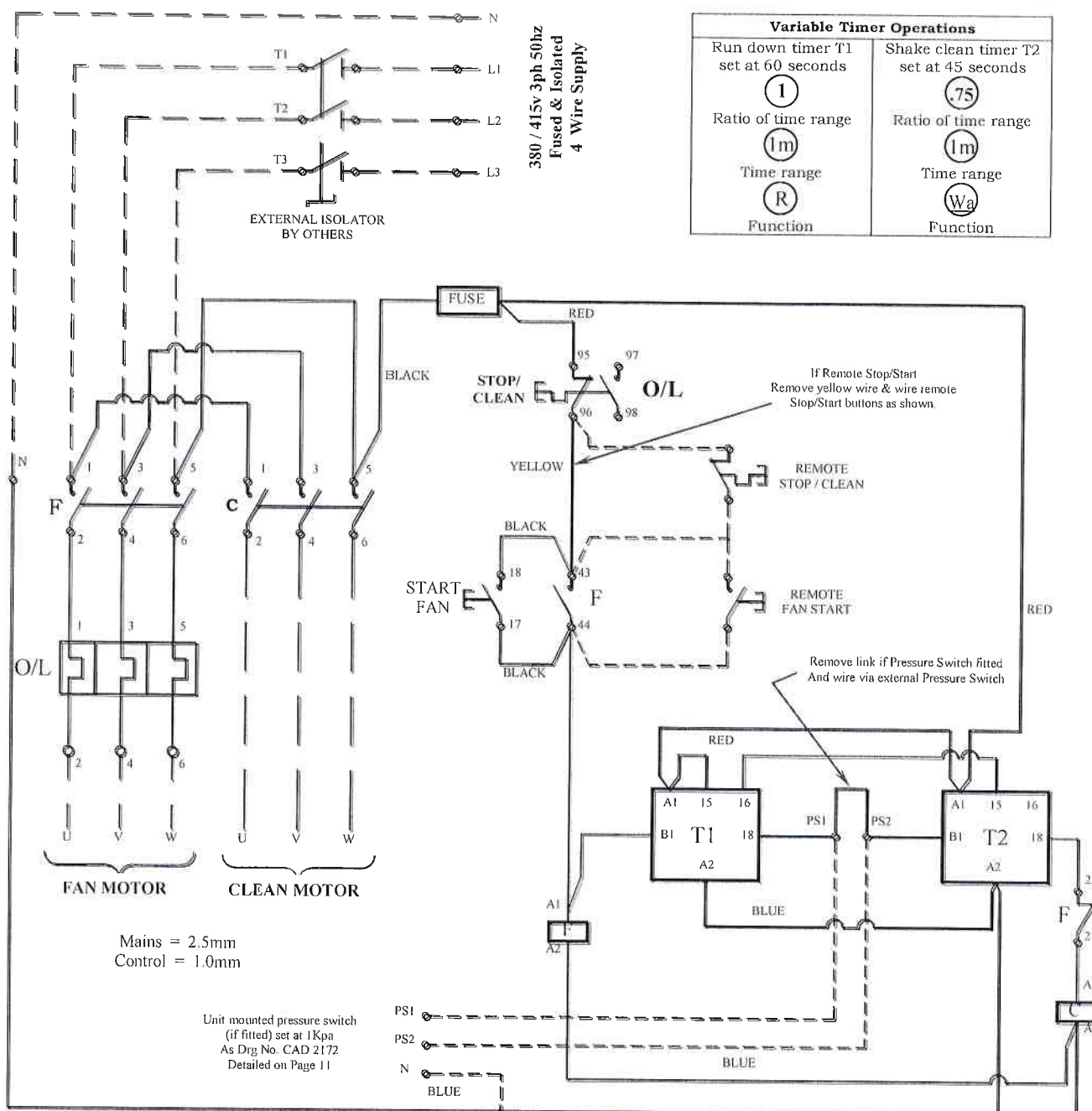
GED-PFS11APOR mk2 Installation & Service Instructions

WARNING: Before carrying out work on the starter ensure that the power supply is disconnected.

Types: Fan Shaker Direct On Line – With wiring modifications for:
Remote Stop / Start & Pressure Switch options

Installation

| | | | |
|---|---|---|---|
| 1 | Mount the starter enclosure securely to a vertical surface that is reasonably free from vibration. The enclosure is designed to give environmental protection to IP65 standard. | 3 | Fit overload relays Series RT1 directly to the fan motor contactor corresponding with the full load current of the motor to which it will be connected. Contactor – overload relay terminal connection screws should be tightened as follows: Contactor C = CL00 1.6Nm F = CL25 2.2Nm |
| 2 | Check that the voltage and frequency marked on the contactor coils corresponds to the control supply voltage for the starter. | 4 | Connect internal control circuit wiring (as provided) to the overload relay, terminals 95 and 96 (red and yellow wires) on the fan overload relay as shown. Overload relay 97 & 98 can be used for remote signaling of overload tripped if required. |



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WIRING DIAGRAM – STAR-DELTA Fully Automatic Shake 230v Control Circuit

Series PYDFS Enclosed Star Delta
Fan Shaker AC Motor Starters

GED-PYDFS11APOR Mk2 Installation & Service Instructions

WARNING: Before carrying out work on the starter ensure that the power supply is disconnected.

Types: Fan Shaker Star Delta – With wiring modifications for:

Remote Stop / Start & Pressure Switch options

Installation

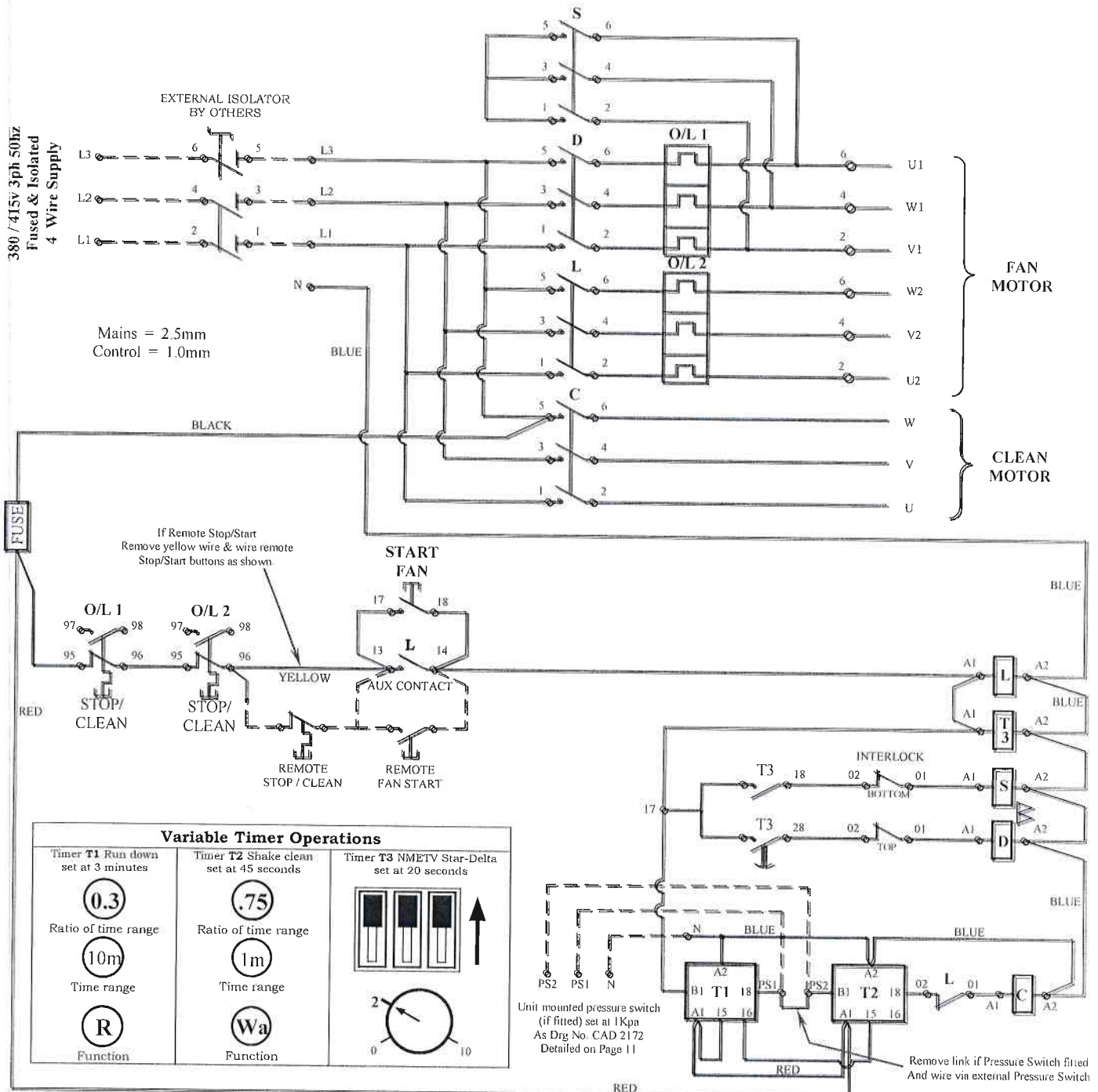
- 1 Mount the starter enclosure securely to a vertical surface that is reasonably free from vibration. The enclosure is designed to give environmental protection to IP65 standard.
- 2 Check that the voltage and frequency marked on the contactor coils corresponds to the control supply voltage for the starter.
- 3 Overload relay 97 & 98 can be used for remote signaling of overload tripped if required.

Overloads

OL1 = RT1P 10 – 16 Amps **OL2** = RT1T 17.5 – 22 Amps

Contactors

CLEAN **C** = CLOO DELTA **D** = CL02
STAR **S** = CLO1 LINE **S** = CL02



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OPERATING INSTRUCTIONS

After electrical installation has been completed and correct fan rotation established, the equipment is ready for use.

On initial start up it is important that design volume is not exceeded, as is often possible on a new system with a 'clean' filter, this could result in reducing filter media life expectancy and carry over of dust to atmosphere.

Measuring air volumes will often require the expertise of a dust extraction engineer and adjustment of the ductwork system dampers. Air volumes should be checked again and final adjustments made when system has been in use for about 1 – 2 weeks.

Operation Summary

1. At start of production period, energise system at control panel.
2. At end of production period switch off at control panel. Shake clean cycle will follow. Never switch off by isolator as this will prevent shake clean cycle occurring.
3. Regularly inspect and empty waste bins as required. Do not allow to overfill.
4. System should never be operated unless filter unit doors / waste bins are properly secured.

ROUTINE MAINTENANCE

Always isolate electrical supply before carrying out any inspection

The following visual checks should be made every 3 months and details recorded.

1. Shake cleaning cycle should be witnessed to ensure operation.

Especially check that there is not excessive wear between eccentric block shaft and bearing, as this will negate effect of cleaning cycle.

2. Condition of door seals and closing handles.
3. Condition of bin sealing mechanism.
4. Condition of filter sleeves. Any entrained foreign objects i.e. waste paper, should be removed.
5. Check fan chamber for any evidence of dust build up. Should dust be present, consult a dust extraction engineer for advice.
6. **See Motor manufacturer instructions for details of Fan Motor Lubrication.**

TROUBLE SHOOTING

Should the extraction deteriorate, check the following.

Always isolate electrical supply.

1. Fan rotation is correct.
2. Filter unit doors / bins are properly sealed / closed.
3. Clean air filter discharge is not obstructed.
4. Ductwork system / dampers have not been altered.
5. Blockages in ductworks / hoods.
6. Filter media 'blinded' and needs replacing.
7. Secondary filter (if fitted) need replacing.

FILTER MEDIA

Fabric filter elements deteriorate with use and eventually this will reduce performance and their replacement will be required.

Life span is subject to many varying factors and is impractical to predict. (A common average is 2 – 5 years, although this can be much less).

A competent extraction engineer will assess filter media condition during annual C.O.S.H.H. testing. Test points are fitted on side of casing.

The same will also advise on condition of secondary filters, where fitted. The replacement of these may be more frequent.

Waste Bin Emptying Procedure
Without Plastic Liner Bags

The following procedure should be adhered to when emptying the collection bins of unit type dust collectors. The bins should be emptied on a routine basis and must not be allowed to over fill. They should be emptied when approximately half full, or less if the product is heavy.

This procedure is usually effected after a shake clean cycle.

AN APPROVED RESPIRATOR (DUST MASK) MUST BE WORN WHEN CARRYING OUT THIS OPERATION. YOU MUST BE FAMILIAR WITH THE CORRECT WAY TO WEAR AND DISPOSE OF IT.

1. Ensure extraction is switched off and cannot be re-energised during this procedure.
2. Release each bin from its operating position by moving handle situated at bottom of each bin from horizontal to vertical position, this will allow bin to drop from the hopper gasket seal. Slowly withdraw the bin into a convenient working position in front of the unit.
3. Decant contents of waste bin into appropriate container (ready for dust disposal). Care is required so as not to generate dust emissions during this operation.
4. Push bin back under the hopper between the slide rails until the bin is fully home and meets the stop at the rear of the hopper.
5. Return the locking handle at the base of the bin to the horizontal position, the bin will then rise and seal onto the hopper.
6. Where applicable repeat with other bins.
7. Waste to be disposed of in accordance with relevant regulations.

Waste Bin Emptying Procedure
With Plastic Liner Bags

Plastic sacks can be used in collection bins providing a bin balance pipe kit is fitted to the bin.

The following procedure should be adhered to when emptying the collection bins of unit type dust collectors. The bins should be emptied on a routine basis and must not be allowed to over fill. They should be emptied when approximately half full, or less if the product is heavy.

This operation is usually effected after a shake clean cycle.

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1. Ensure extraction is switched off and cannot be re-energised during this procedure.
2. Release each bin from its operating position by moving handle situated at bottom of each bin from horizontal to vertical position, this will allow bin to drop from the hopper gasket seal. Slowly withdraw the bin into a convenient working position in front of the unit.
3. Carefully fold the sides of the plastic liner together and tie the neck of the bag with a wire. Do not leave a lot of air in the sealed bag as it would be more likely to burst. Take care not to create a sudden air movement when closing the bags as this would disperse dust into atmosphere.
4. Carefully lift the bag out of the bin (put on to a wheeled truck or pallet, if required).
5. Check the bin balance pipe is not blocked and correctly connected and then put a new plastic liner into the bin. Take care to fold it over the bin sides and push the bag close to the walls of the bin and bottom mesh. This is to minimise the amount of air that needs to be exhausted by the balance pipe.
6. Push the bin back under the hopper between the slide rails ensuring the plastic liner is still lapped around each of the sides. Push until the bin is fully home and meets the stop at the rear flange of the hopper.
7. Return the locking handle at the base of the bin to the horizontal position, the bin will then rise and seal onto the hopper.
8. Where applicable repeat with other bins.
9. Waste to be disposed of in accordance with relevant regulations.

Fire Prevention

As with all fabric Filter Units, the filter media is combustible given sufficient sources of ignition, this risk is increased should the process dust also be flammable.

In such cases a combustible dust must never be mixed with a source of ignition, for example sparks, ferrous objects that may produce a spark, cigarette ends etc.

The extraction system should not be used as a deposit for general rubbish, i.e. paper, rags etc.

When an extraction system is serving a process that generates sparks, i.e. mild steel grinding, these will usually self extinguish during their passage through the ductwork system. However, in severe cases a spark deflector box fitted to the filter inlet may further diminish the fire risk. See separate heading.

Certain machining processes should usually be served by separate extraction systems, i.e. finishing and polishing.

Aluminium (and similar volatile dusts) must always be served by its own dedicated extraction system and never mixed with ferrous dusts that may produce a spark.

In the event of a fire, the extraction must be switched off immediately and individual company procedures then followed.

Spark Deflector Box

The Spark Deflector Box is a pre-separation box situated prior to the Filter Unit inlet, containing deflector plates and a dust collection bin. The deflector plates obstruct the flow of dust particles within the air stream. The airflow is deflected and made to change the direction of dust containing hot sparks, the impact of hot metal dust particles upon the deflector plate, together with their change in direction, causes the larger mass particles to lose their heat energy and fall into a collection bin.

This unit is intended to help prevent hot sparks from entering the Filtex Dust Filter Unit inlet and although in most grinding and finishing operations a large percentage of sparks will be stopped, no guarantee of their elimination can be given.

Under no circumstances should combustible or explosive dusts enter any Dust Extraction System, where sparks are present and should never be mixed.

Anti-Static Filter Media (Also known as Epitropic Finish).

Some dusts / processes are static prone, i.e. powder coating dust, in such cases 'epitropic' anti-static filter media will have been fitted.

In such cases these will be linked to a brass bolt on the side of the filter casing, marked with an earth symbol.

This brass bolt should be connected to a suitable earth point using copper wire (not supplied).

This must not be linked to earthing terminal in electrical supply.

Filtration Efficiency

Primary Filters

Eurovent 4/5 EN 779

Standard Filter Units are supplied without secondary filtration and give an efficiency of 99.95% (no. 1 AC Fine Dust) at a filtration speed of 1.5 m/min., with an emission of less than 2 mg/m³.

Secondary filters can be incorporated during manufacture, being positioned directly after the primary filter, but before the fan chamber, thus keeping the fan chamber clean and free of any contamination. Secondary filters are under negative pressure preventing any possible leaks out of unit seals.

Secondary V-Pleat Filters – Class F8

Class F8 dust spot efficiency 90 – 95%. This does not improve overall filtration efficiency, however acts as a back up in the event of primary filter failure, often recommended when re-circulating air back into working environment. Also these can be indicative of overall filtration efficiency when used in conjunction with a magnehelic gauge or FC 200 filter condition monitor.

The Filter Unit overall height increases by 200 mm with the inclusion of secondary v-pleat.

Secondary HEPA Filters

Class H13 – 99.95% D.O.P. efficiency. These are usually employed where the quality of clean air discharge air is critical, as with toxic substances, such as asbestos or lead. Anticipated emission levels less than 1 mg/m³. Their performance can be monitored with a magnehelic gauge or FC 200 filter condition monitor.

The Filter Unit overall height increases by 400 mm.

Magnehelic Pressure Gauges

Where fitted these show a visual reading of pressure loss across filter elements.

Actual values are subjective, however with experience these can indicate optimum times for cleaning cycles and when filters need replacing.

LOCAL EXHAUST VENTILATION PLANT REGULAR MAINTENANCE LOG BOOK

The operative who checks each item must complete the relevant daily/weekly box
 Record problems and resolutions in boxes at bottom of sheet
 Completed logs must be retained for inspection by the LEV Test Engineer during the annual detailed examination and test
 The HSE require you to complete a maintenance log book for each LEV system and retain on record for 5 years

Filter Unit Model No. _____ System Description _____

Filter Serial No. _____ Date of last Annual Test _____ Annual Test Due _____

MONTH _____ Date of last service _____ Service due _____

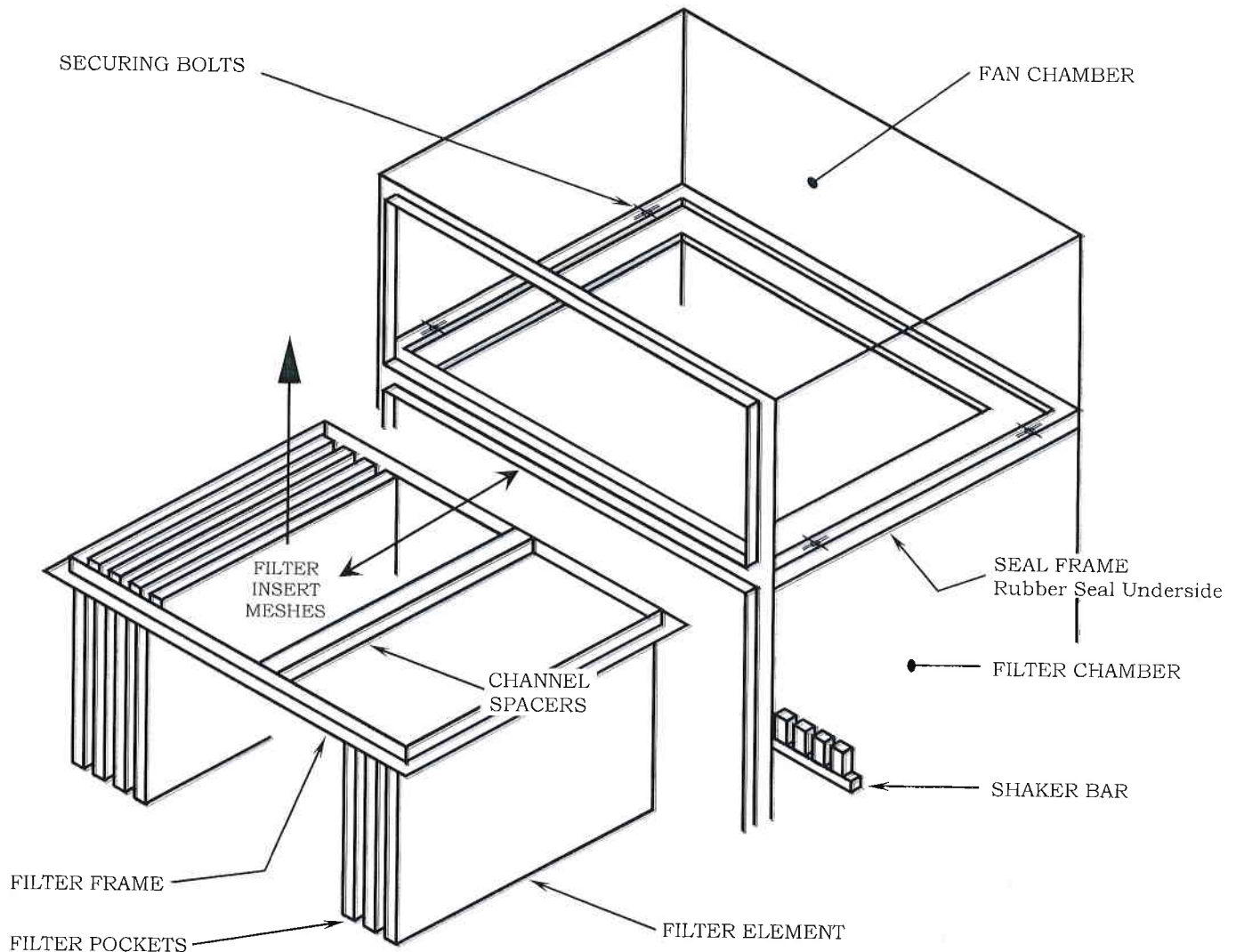
| DAILY CHECK LIST | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su | Mo | Tu | We | Th | Fr | Sa | Su |
|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Filter Unit is in use when machinery is operated | | | | | | | | | | | | | | | | | | | | | |
| Airflow appears normal and satisfactory | | | | | | | | | | | | | | | | | | | | | |
| NO visible emissions from Filter Unit outlet | | | | | | | | | | | | | | | | | | | | | |
| Filter cleaning system activated | | | | | | | | | | | | | | | | | | | | | |
| Waste collection receptacle emptied | | | | | | | | | | | | | | | | | | | | | |
| Area cleaned | | | | | | | | | | | | | | | | | | | | | |
| Explosion Relief vent area free of obstructions | | | | | | | | | | | | | | | | | | | | | |
| WEEKLY CHECKLIST | | | | | | | | | | | | | | | | | | | | | |
| Electrical Operation | | | | | | | | | | | | | | | | | | | | | |
| Noise/Vibration often is normal | | | | | | | | | | | | | | | | | | | | | |
| Filter Shaking Mechanism | | | | | | | | | | | | | | | | | | | | | |
| Blasgate Dampers | | | | | | | | | | | | | | | | | | | | | |
| Flexible Hoses | | | | | | | | | | | | | | | | | | | | | |
| Hoods/Ductwork | | | | | | | | | | | | | | | | | | | | | |

General Housekeeping - All dust spillages must be immediately removed by vacuum. Sweeping, dusting or use of compressed airline is contrary to HSE guideline
 - A regular cleaning routine must be operated, including high level surfaces - walls, ceilings, ducts, services pipes - every three months.

Record details of any problems reported to management, include date, nature of problem, person reporting problem, name of person reported to.

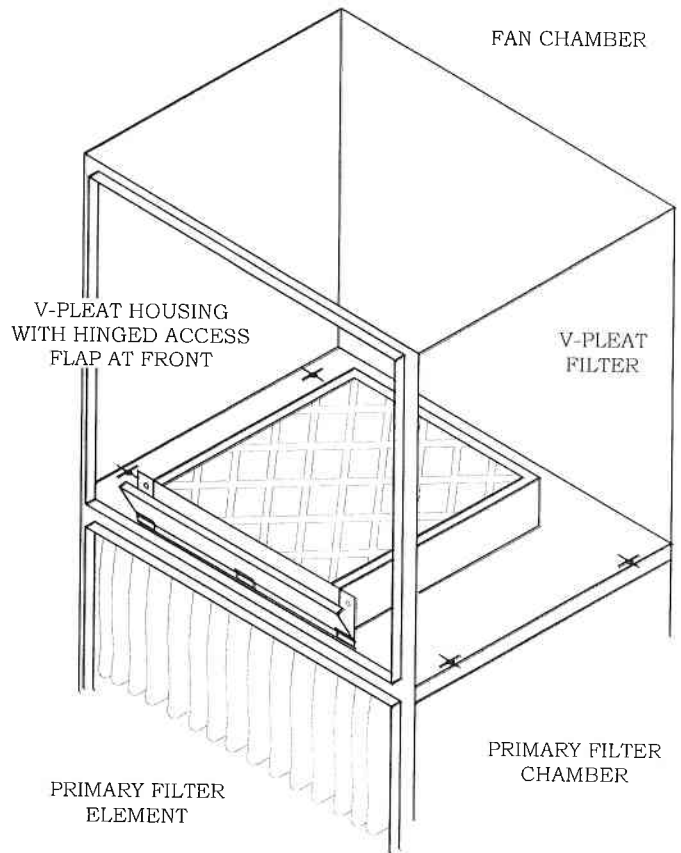
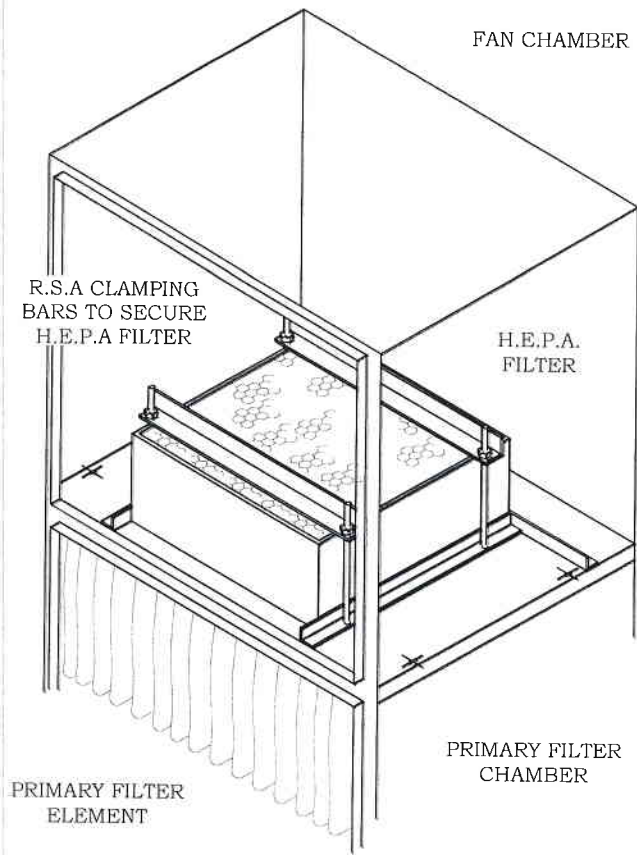
| | | |
|------|---------|----------------------|
| Date | Problem | Problem reported by: |
| | | Problem reported to: |

| | |
|--|-------------------|
| Record action taken to resolve problem | Problem resolved? |
| Date Resolution. | Yes / No |

Replacement Primary Filter Element**Procedure**

1. Isolate Filter Unit electrical supply.
2. Wear respirator and protective clothing.
3. Loosen securing bolts located in the Fan Chamber on either side, until top of the bolts are level with the top of the nuts.
4. Carefully pull filter assembly horizontally, completely out of the Filter Chamber. Taking care NOT to damage the rubber seal on the underside of the 'Seal Frame'. If this rubber seal is damaged, it MUST be replaced before fitting the new Filter.
5. Remove filter insert meshes by pulling them carefully upwards.
6. Remove filter element carefully.
7. Fit new filter element by threading each pocket down between the channel spaces in Filter frame.
8. Slide filter insert meshes into individual pockets.
9. Ensure top of filter element laps over the top of the toes of the filter frame.
10. Locate filter assembly into the angle runners on the inside of the Filter Chamber.
11. Push assembly into unit. Ensuring bottom of pockets threads between the hoops on the shaker bar. Push the filter assembly firmly until it hits stop at rear.
12. Tighten securing bolts in the Fan Chamber, ensuring filter frame seats on gasket.
13. Ensure the airflow is set to design volume. Some dusts may require a pre-coat prior to use.

Replacement Secondary Filters **H.E.P.A & V-Pleat**



H.E.P.A FILTER

V-PLEAT FILTER

Procedure for Replacement H.E.P.A Filters

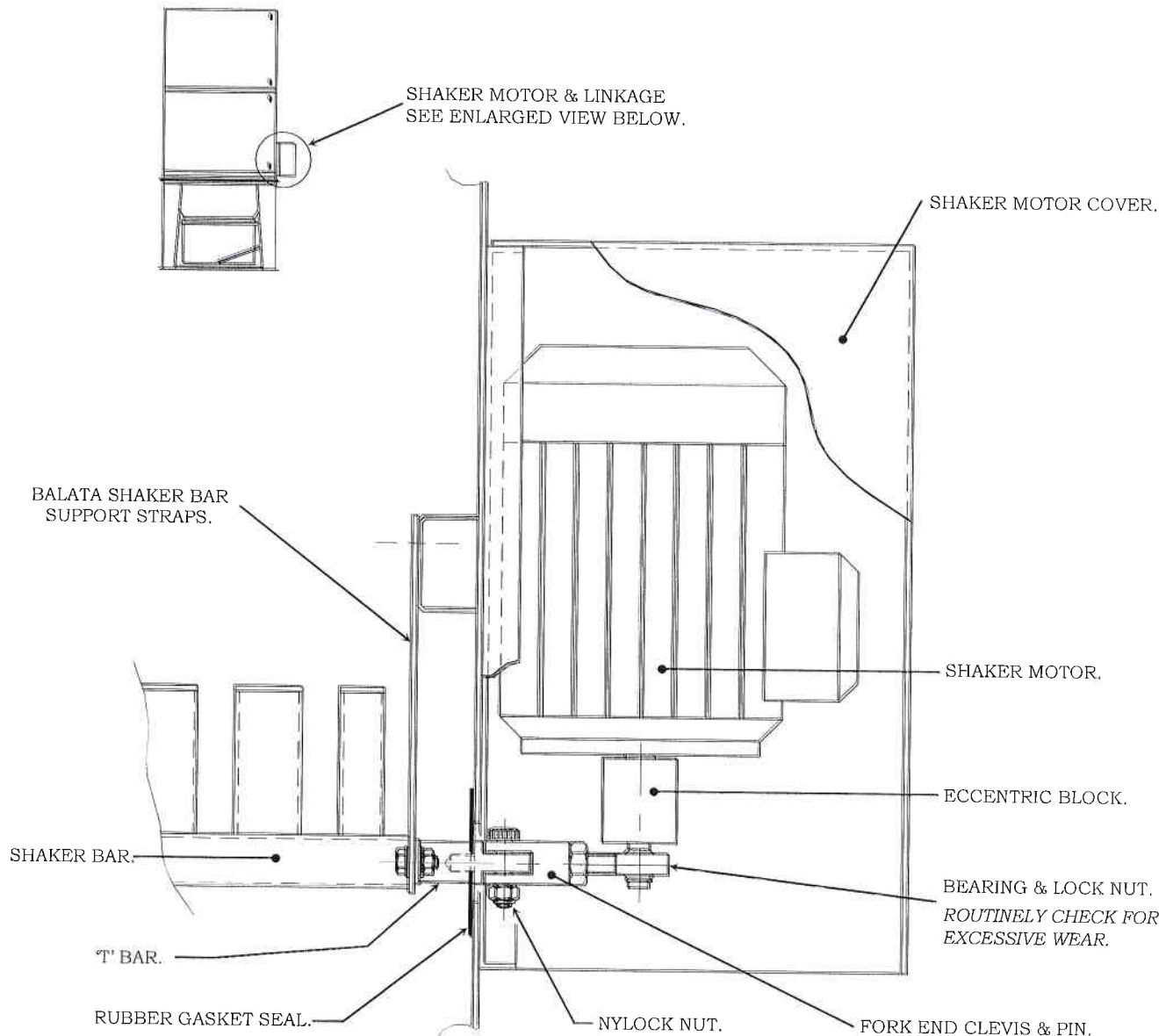
1. Isolate Filter Unit electrical supply.
2. Wear respirator and protective clothing.
3. Open Secondary filter door.
4. For H.E.P.A Filter, loosen four securing bolts on clamping bars, lift H.E.P.A Filter upwards and remove.
5. Lift new H.E.P.A Filter into place, ensure correct location. Re-tighten securing bolts on clamping bars.

DO NOT SLIDE H.E.P.A AS THIS MAY DAMAGE THE RUBBER SEAL.

Procedure for Replacement V-Pleat Filters

1. Isolate Filter Unit electrical supply.
2. Wear respirator and protective clothing.
3. For V-Pleat Filter, undo nuts on retaining flap – open and slide out V-Pleat Filter.
4. Slide in replacement filter and close flap, tighten closing nuts.
5. Dispose of old filters in a safe and appropriate manner.

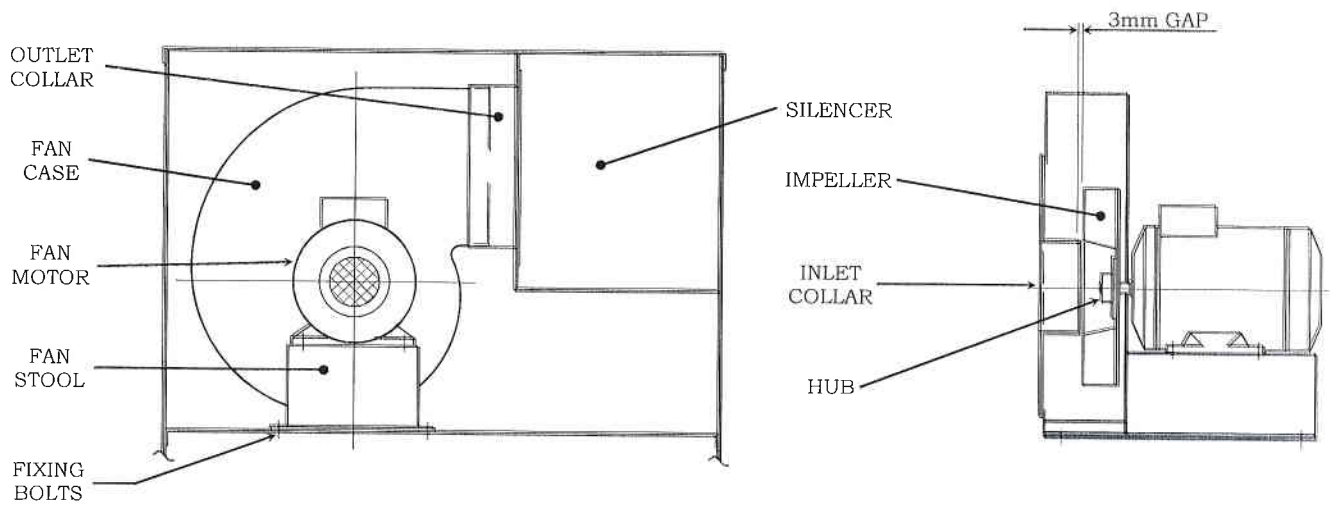
Replacement Shaker Linkage



Procedure

1. Isolate Mains Electrical Supply.
2. Remove the 'Shaker Motor Cover'.
3. Remove Circlip from 'Eccentric Block shaft'.
4. Unscrew 'Nylock Nut' and remove 'Pin' from the 'Fork End Clevis'.
5. Remove part of the 'Fork End Clevis' & 'Bearing' from the 'Eccentric Block'.
6. Unscrew remaining part of the 'Fork End Clevis' from the 'T Bar', and remove this through the 'Rubber Gasket seal'.
7. Loosen the Grub Screw in the 'Eccentric Block' & carefully remove from the 'Shaker Motor' shaft.
8. Remove the two bolts which connect the 'T Bar' to the 'Shaker Bar'.
The 'Shaker Bar' will now drop loose from this side of the unit.
9. Remove & refit new 'Rubber Gasket Seal'.
10. Fit new 'T Bar' to the 'Shaker Bar' remembering to trap the 'Balata Support Strap' in between.
1. Refit remaining parts in reverse order.

Replacement Fan Impeller



ELEVATION
(Fan / Silencer Chamber)

SECTION ON FAN SET

Procedure

1. Isolate Mains Electrical Supply.
2. Open fan / silencer chamber door.
3. Disconnect electrical wiring from 'Fan Motor'.
4. Remove four 'Fixing Bolts' from 'Fan Stool' and slide 'Fan Set' to the left, this will disengage the Fan Outlet from the 'Fan Outlet Collar', and break mastic seal.
5. Remove 'Fan Set' from filter unit.
6. Remove any debris from fan / silencer compartment.
7. Remove fan 'Inlet Collar' from 'Fan' Casing by removing eight M6 bolts and breaking mastic seal.
8. Remove old 'Impeller', by loosening two Grub Screws on 'Impeller Hub' and pulling off from the 'Motor' Shaft.
9. Clean all debris from inside 'Fan case'.
10. Fit new 'Impeller' to the 'Motor' shaft ensuring alignment of the key and key way, DO NOT tighten Grub Screws yet.
11. Refit 'Inlet Collar' and adjust the position of the 'Impeller' on the 'Motor' shaft, to ensure a 3mm gap between the end of the 'Inlet Collar' and 'Impeller'.
12. Tighten Grub Screws in the 'Impeller Hub' ensuring firm location onto the 'Motor' shaft and key.
13. Refit 'Fan Set' into filter unit, tighten the four fan 'Fixing Bolts'.
14. Pass the Fan 'Outlet Collar' through the 'Silencer' and fit over Fan Outlet, Mastic mastic seal and fix through 'Silencer' wall.
15. Reconnect electrical wiring.
16. Close fan / silencer chamber door.
17. See Motor manufacturers instructions for details of Fan Motor Lubrication.