



PA18 DUST EXTRACTION UNIT OPERATION & MAINTENANCE MANUAL

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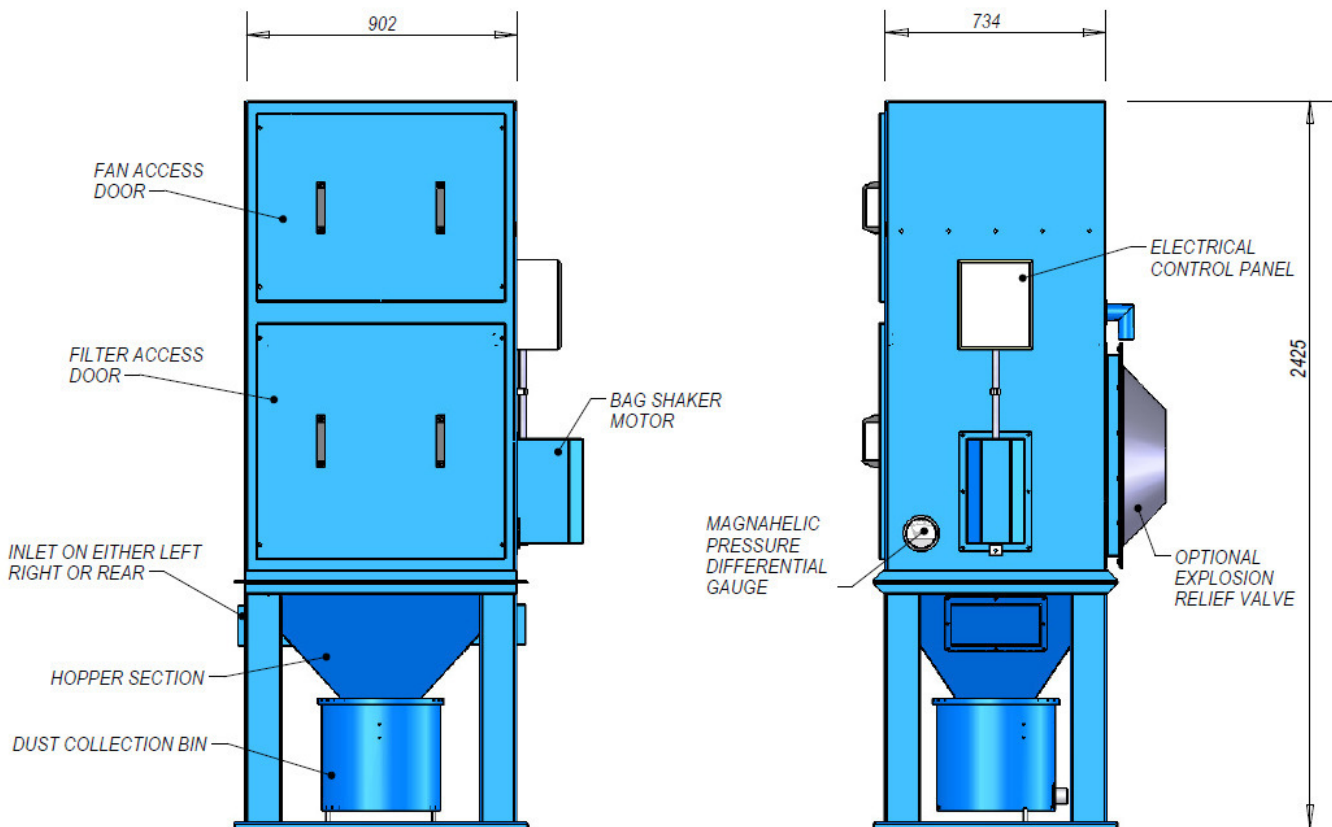
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1.0 Overview of Unit

The PA18 Dust Control Units consist of a centrifugal fan, filter section with auto shaker, hopper section and dust collection bin.

This unit is designed to handle 3,000m³/hr of free flowing airborne dust. Once captured, the waste product will be transported by vacuum through fixed or flexible ductwork to the filter unit. It is fitted with a self cleaning auto shake mechanism which is activated at pre-determined intervals to shake any unwanted contaminants from the surface of the filter bag. The particles then fall into the collection bin for easy disposal.

It is recommended that the client should review the amount of product collected and empty the collection bin on a regular basis.



1.1 Safety

READ FIRST – We recommend that you should first read this manual carefully. Having read the manual you will be able to get the best possible service out of the unit whilst protecting yourself and others. Keep the manual in a convenient place for future reference.

RULES AND REGULATIONS – The “CE” marking and its conformity declaration, certifies compliance with European regulations. In the case of units that do not have the “CE” marking, the installer must ensure the entire responsibility for any damage to persons or property caused by failure to comply with safety regulations, instructions or by modifications to the fans.

MAINTENANCE RULES – Maintenance staff must comply with current safety and accident prevention regulations; notably

- Safety clothing must be worn with no loose sections, as these are particularly dangerous with rotating machinery.
- Ear protection must be worn when noise levels exceed permitted limits.
- Ensure there is an interlocking device in the power supply to prevent others from starting the fan.

PROTECTION GUARDS – The protection guards fitted to the fan are not to be removed unless the fan is stopped and the power supply isolated. So as the supplies are not mistakenly re-connected, place notice on the control panels and power units “ATTENTION CONTROLS SUSPENDED FOR MAINTENANCE”. The guards must be re-installed as soon as the maintenance work is completed.

FREE ROTATION DANGER – Be aware that even when the power supply is isolated the fan is free to rotate in either direction and still represents a danger that must be respected.

1.2. Receipt

IMMEDIATE INSPECTION - Upon receipt, the unit should be inspected to detect any damage that may have been caused in transit and to ensure that all separately packed items are received. Any damage or missing parts must be notified within 3 working days.

1.3 Transport

Unit weight – approx. 500kg

For lifting with a hoist or crane, a qualified banks man must apply the slings and fixings. When using forklifts the forks are only to be used under the base frame. Lowering must be done as gently as possible as shocks and shaking may lead to in-balance and deformation and/or damage to the bearings.

1.4 Installation

ENVIRONMENT – Ambient temperature of 40°C maximum must not be exceeded as this will lead to premature failure of motor and bearings.

LOCATION – Adequate access to the fan must be provided to allow inspection, maintenance, motor and impeller removal.

FOUNDATIONS – By preference foundations should be reinforced concrete, suitable for a minimum weight of 4 times the rotating mass (approx double the total static weight). Units mounted on elevated steel structure should be fastened on a mass at least 6 times the mass of the rotating elements. The structure should be cross-braced for live load support.

1.5 Supply requirements

| Component / Description | Specification / Details |
|--------------------------------|--------------------------------|
| Electrical supply | 415v 3phase + neutral + earth |
| Motor Power | 3.0kw |
| Back up fuse required | 16amp motor rated |

1.6 Start and stop procedure

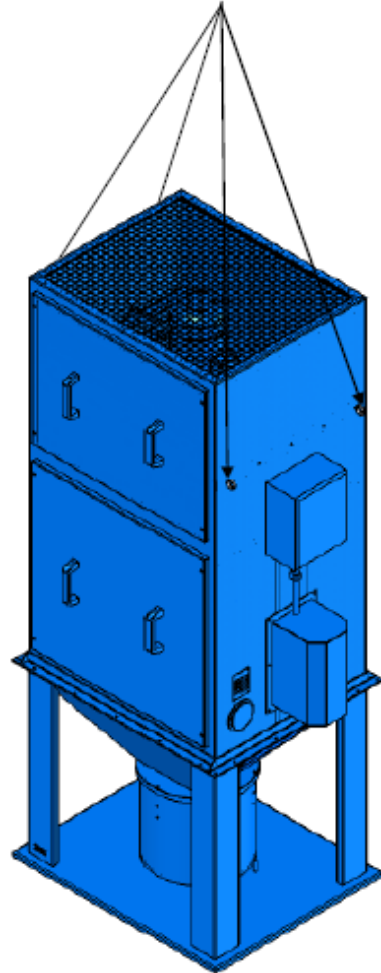
A pre wired electrical control panel is mounted on the unit and is supplied with mains isolator, star delta starter, start and stop pushbuttons.

BEFORE STARTING – Check the earth connection. In some instances the motor may be sized for hot conditions, so may not be suitable for starting with ambient air. If the system has not been balanced, this can cause overloading of the motor on some types of fans. Dampers in the system should be used at start-up to reduce power requirements.

1. Check that the Isolator is in the 'ON' position
2. Press Green Start Button
3. The fan will take approximately 40 seconds to reach full power.
4. The system is now ready to use.
5. To stop the System press the Red button

1.7 Lifting Instructions

For lifting use the 4No M10
Lifting eyes provided.
Lifting straps should be
used not chains.



Please note that the unit is top heavy

Approx weight is 500kg

If supplied in two sections - first put the base in position and then lower the top section as above.

2.0 Maintenance – Fan Section

2.1 Monthly Checks

Every 500 working hours, remove filter and clean filter using an industrial vacuum cleaner.

Protective clothing must be worn at all times when handling filter. (See Filter Removal / Changing instructions)

2.2 6 Monthly Checks

Every 1000 working hours the following parts should be checked:

1. Filter bag - for wear.
2. Rubber seals for tears and over compression.
3. Shaker mechanism with particular attention to:
 - Tightness of mounting bolts.
 - Play in eccentric.
 - Splits in diaphragm.
 - Torn shaker bar support strap(s).
 - Eccentric bearing: check for lubrication; any absence may lead to excessive heat being generated during operation.
 - If the unit is fitted with Anti Static Castors we recommend that these are cleaned to reduce dust-build up.

2.3 Annual Checks

Every 2000 working hours the following parts should be checked:

1. List as per 3 and 6 Monthly
2. Check Earth continuity
3. Flameproof maintenance – It is important that all flameproof enclosures, motors and cable glands are inspected for corrosion and tightness, on an annual basis.
4. Explosion risks – Check measures taken to avoid ignition sources are still in place.

Should any defective parts be found on the extraction system the unit should be taken out of use until the parts have been replaced.

- 2.4 GUARDS – Check that all protection guards are in position and secure. Check the access door is fitted and secure.

If the inlet or the outlet is not ducted then it is important to attach a suitable screen.

- 2.5 CHECK - Check that the fan does not vibrate over 4.5mm/s rms
Check that bearings do not overheat
Check V-belt tension after running for 24 hours
Check bolt torques as per 5.5 above after running for one week

- 2.6 ORDERING OF SPARE PARTS – When ordering replacement or spare parts or requesting information regarding performance or application, please specify the fan serial number which is stamped on a metal nameplate attached to the unit.

3.0 Maintenance – Filter Section

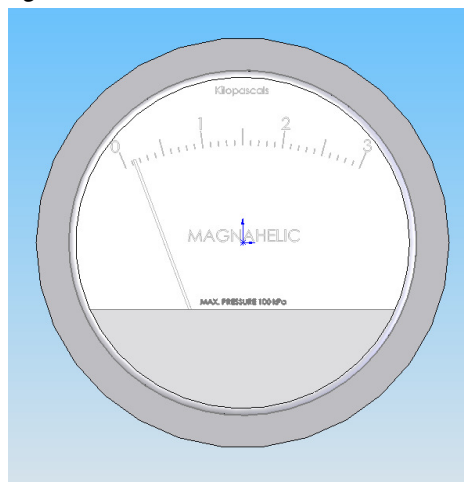
A Magnahelic pressure gauge, if fitted to your plant is used as an aid to show the operating status of the air flow through the filter banks. The readings from the gauge are inches of water. Once calibrated (as shown below) the readings can be broken down as follows:

| Reading | Meaning |
|------------------------|---|
| 0Kpa through to 1.5Kpa | Filters in good service |
| 1.5Kpa to 3Kpa | Indicates possible blockage – Change of filters |

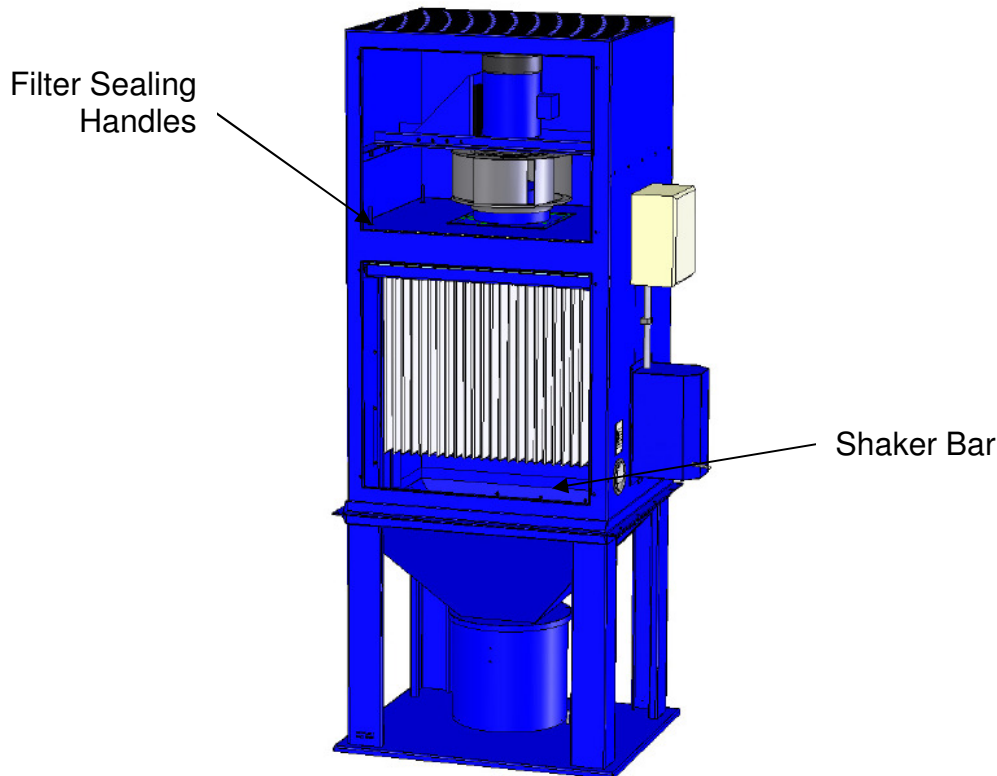
3.1 Magnahelic Δp Gauge Calibration

- 3.2.1 With gauge case held firmly, loosen bezel, by turning anticlockwise. To avoid damage, a canvas strap wrench or similar tool should be used.
- 3.2.2 Lift out plastic cover and 'O' ring.
- 3.2.3 Remove scale screws and scale assembly. (Being careful not to damage pointer).
- 3.2.4 The calibration is changed by moving the clamp. Loosen the clamp screw(s) if the gauge is reading high, move slightly towards the helix and away if gauge is reading low. Tighten clamp screw and install scale assembly.
- 3.2.5 Place cover and 'O' ring in position. Make sure the hex shaft on inside cover is properly engaged in zero adjust screw.
- 3.2.6 Secure cover in place by screwing bezel down snug. Note that the area under the cover is pressurised in operation. As such the gauge will leak if not properly tightened.
- 3.2.7 Zero gauge and compare to test instrument. Make further adjustments as necessary.

Fig 1 Magnahelic Pressure Gauge



3.2 Filter Changing Instructions

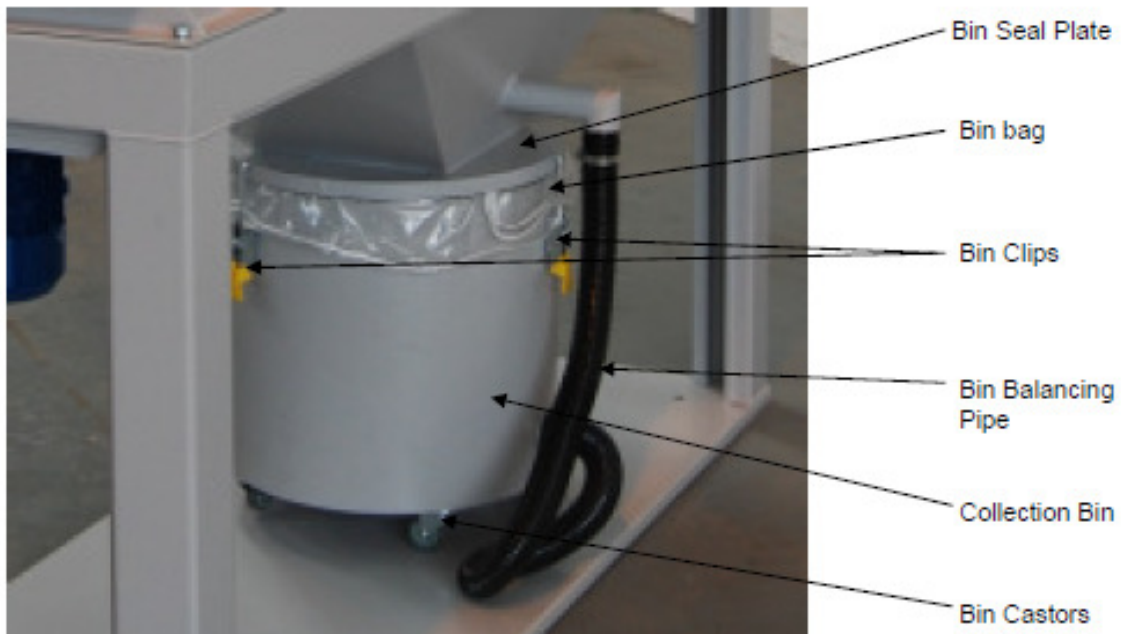


- 3.2.1 Isolate the power to the unit.
- 3.2.2 Wait a further 2-3 minutes to allow any airborne dust inside the unit to settle.
- 3.2.3 Ensure the fan and shaker motors have stopped turning.
- 3.2.4 Open motor access door by unscrewing the star knobs.
- 3.2.5 Take out the M6 bolts to remove the fan guard using a 10mm spanner and a size 4 allen key.
- 3.2.6 Unscrew the filter sealing handles using a 17mm spanner/socket (this will lower the filter).
- 3.2.7 Open filter access door by unscrewing the star knobs.
- 3.2.8 Slide the filter element out from the filter housing.
- 3.2.9 Insert the new filter element into the filter housing, taking care not to damage the filter pockets on the shaker bar.
- 3.2.10 Position each pocket into its own slot on the shaker bar. (Do not force the bag into slots, align each pocket individually)
- 3.2.11 Tighten the filter sealing handles to raise the filter element, ensuring that a seal is formed around the top of the filter.
- 3.2.12 Replace the filter access door.
- 3.2.13 Manual Filter Cleaning. When the used filter has been removed from the housing it is possible to clean it using an industrial vacuum cleaner. Taking care not to rip the media, use a crevice tool to hand vacuum the dirty side only.

3.3 Collection Bin Emptying

To empty the collection bin:

- Isolate the electrical supply
- Release the 3no bin clips, by lifting the yellow lever upwards unhooking the clip.
- Ensure all 3 clips are unhooked
- Pull the bin outwards using the handle
- Tie a not in the bin bag and remove.
- Insert new bin bag.
- Reposition the bin under the bin seal plate
- Re hook the 3no bin clips.
- Ensure the bin is fully sealed
- Turn electrical supply on.



4.0 Fault Finding

| 8. Fault Finding | | |
|---|--|---|
| Symptom | Possible Cause | Action |
| 1. Loss of suction | 1.1 Filter Blocked. | a. Filter not cleaned regularly enough. Remove filter bags and clean by hand b. Defective Cleaning. Check operation of cleaning mechanism. c. Filter Cleaned while fan still in motion. Check Shaker motor timer settings. |
| | 1.2 Incorrect Fan Motor | a. Check electrical connections and transpose if necessary. |
| | 1.3 Fan Motor Stopped rotation | a. Check Power Supply |
| | 1.4 Ducting Arm Blockage | a. Check throughout and clear |
| 2. Visible Effluent in clean air outlet. | 2.1 Filter assembly not sealed properly | a. Check tightness of filter assembly clamping nuts. |
| | 2.2 Damaged sealing gasket or filter bag. | a. Identify and replace defective component(s) by following procedure given in 'Maintenance' |

If problems with starting the extraction unit or loss of vacuum arise, check for:

- Leaks in pipes or hoses
- Leaks in other connections.
- Correct direction of rotation for the fan (Clockwise, looking at the fan drive end).
- Clogged filter / Separator / Dust collector.
- Leaks in Separator / Dust collector.
- Restriction in exhaust system.
- Clogged suction heads, hoses or pipes.
- Number of suction heads does not exceed maximum capacity for extraction system.
- Tripped overloads.
- Loose electrical connections.

If none of the above seems to solve the issues with your system, please contact Climavent Systems for technical assistance.

5.0 Spares

| QTY | PART |
|-----|--|
| 1 | POLYESTER NEEDLEFELT FILTER BAG 550GSM |
| 1 | FILTER SPRING (SINGLE) |
| 1 | FILTER CLAMP - CHROME HANDLE |
| 1 | FILTER FRAME |
| 1 | FILTER FRAME SEAL |
| 1 | FAN MOTOR (415V 3PH) |
| 1 | FAN IMPELLOR |
| 1 | FAN ACOUSTIC LINING |
| 1 | FAN HOUSING |
| 1 | FAN PROTECTION MESH (GUARD) |
| 1 | SHAKER MOTOR |
| 1 | SHAKER BOSS |
| 1 | SHAKER BAR |
| 1 | SHAKER BAR WEBBING |
| 1 | SHAKER BELLOW + JUBILEES |
| 1 | FILTER DOOR |
| 1 | DOOR SEAL |
| 1 | DOOR LIFT AND TURN HANDLE |
| 1 | DOOR HINGE |
| 1 | COLLECTION BIN ASSEMBLY |
| 1 | BIN CATCH |
| 1 | BIN SEAL |
| 1 | BIN BALANCING PIPE |
| 1 | PURATRON BALANCING PIPE |
| 1 | BALANCING HOSE |
| 1 | BIN BALANCING KIT |
| 1 | SET OF 50 BIN BAGS |
| 1 | SWIVEL CASTOR x1 |
| 1 | FIXED CASTOR x1 |
| 1 | CONTROL PANEL |
| 1 | OVERLOAD |

6.0 Electrical Drawing

