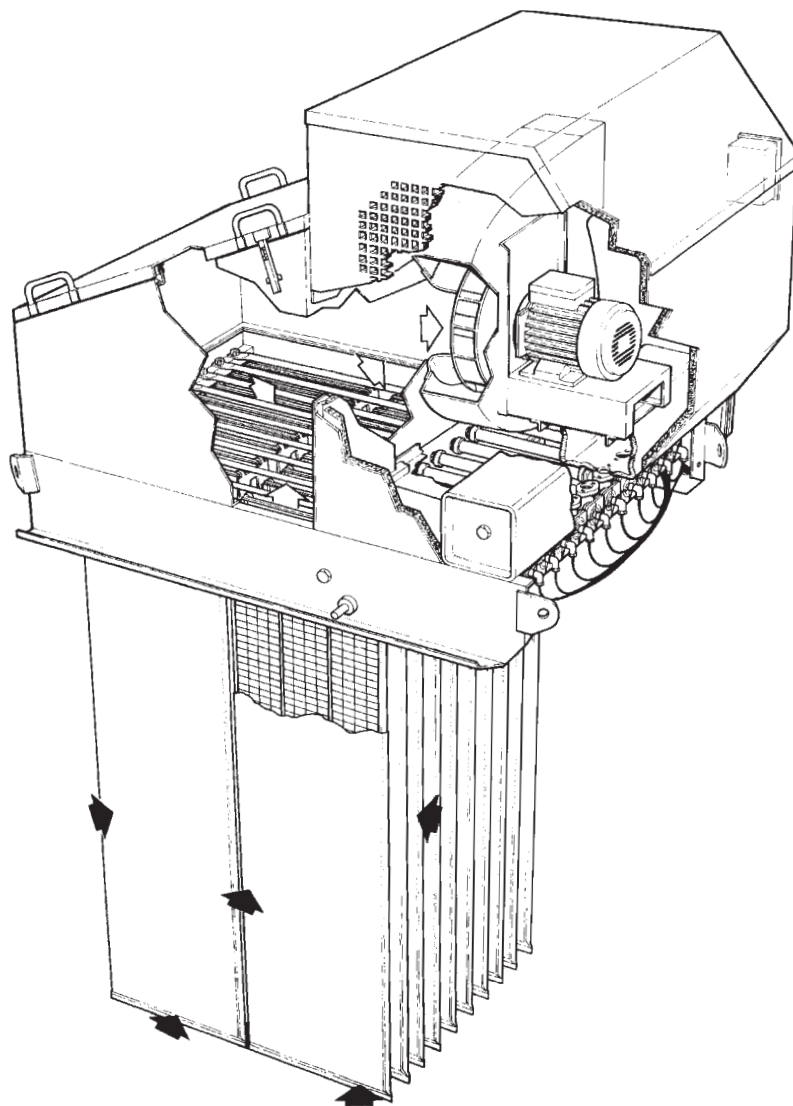


# Dalamatic Insertable Dust Collectors

## Series DLM V

---



## IMPORTANT

**PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION**

**THIS MANUAL SHOULD BE READ IN CONJUNCTION WITH THE RESPECTIVE  
CONTROLLER MANUAL SUPPLIED WITH THE DUST COLLECTOR:**

**EVC CONTROLLER – PUBLICATION 2698**

**IPC OR IPC ( $\Delta P$ ) CONTROLLER – PUBLICATION 2699**

**PT CONTROLLER – PUBLICATION 2697**

**Delta P-C01 Controller-Delta P-C01 IOM AK0303001**

**PRODUCT RELIABILITY, WARRANTY AND  
SAFE OPERATION MAY BE COMPROMISED BY NOT FOLLOWING  
THE GUIDANCE GIVEN IN THESE DOCUMENTS**

## EXPLANATION OF SYMBOLS USED



*Indicates information on the efficient operation of the collector.*



*Indicates important information directed towards preventing damage.*



*Indicates an important warning, designed to prevent injury or extensive damage.*

### IMPORTANT



*Improper operation of a dust control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected, sized and operated for the intended use.*

These details correspond to the serial nameplate located on the left-hand side panel of the equipment to which this Manual refers

**CONTENTS**

**General safety requirements** .....6

**Installation** .....10

- Mounting over aperture .....11
- Flat bar stiffening .....13
- Fitting Dalamatic filter elements.....13
- Final assembly .....13
- Compressed air requirements .....14
- Controller .....15
- Overload protection .....16
- Antistatic earthing .....16
- Interlocks.....17
- Ex controls .....18
- Explosion relief.....18
- Installation check list.....18

**Commissioning** .....19

- Commissioning check list.....19
- Start-up sequence .....20
- Shut-down sequence.....20

**Operation** .....21

- Principle of operation.....21



# CONTENTS

<b>Maintenance</b> .....	22
Routine inspection .....	22
Servicing schedule.....	23
Fan assembly removal/replacement .....	26
<b>Specification</b> .....	30
Description and range .....	30
Construction.....	30
<b>Spare Parts</b> .....	37
<b>Declaration of Conformity</b> .....	43
<b>Table 1</b> Torque values for bolts with ISO metric thread .....	27
<b>Table 2</b> Fault location .....	29
<b>Table 3</b> Dalamatic Insertable dust collector range .....	31
<b>Table 4</b> Weighted sound pressure levels .....	31
<b>Table 5</b> Compressed air manifold design details .....	34
<b>Table 6</b> Compressed air requirements.....	35
<b>Table 7</b> Design limits .....	35
<b>Table 8</b> Standard fan motor supply voltage details .....	36

### GENERAL SAFETY REQUIREMENTS



*The collector should be stored as supplied. Only remove packaging to install.*

*For the purposes of storage:*

- *Collector with specification for inside use = IP50.*
- *Collector with specification for outside use = IP54.*



*The dust collector should be used only when it is in a technically acceptable condition. Regular maintenance, as set out in this manual, is required to minimise technical failure. Third party supplied components (for example motors) should be maintained according to the manufacturer's instructions.*



*You should ensure any persons carrying out work on the supplied equipment follow any relevant recognised standards/codes, have received adequate training and are competent to do so. Areas requiring a competent person include:*

- *Maintenance on any component identified as a potential ignition source.*
- *Lifting and erection.*
- *Electrical installation, inspection and maintenance work.*
- *Pneumatic installation, inspection and maintenance work.*
- *Any access to internal classified potentially explosive atmospheres where there may be a risk due to explosion.*

*During assembly/installation or dismantling of equipment, potential ignition sources may occur that were not considered in the risk assessment of the unit in operation (for example, grinding, welding sparks, etc.)*



*You should use the dust collector in full accordance with the conditions set out in the Order Acknowledgment and relevant Scope of Delivery. Failure to do so may compromise product reliability, warranty and safety. The Scope of Delivery is an integral part of the manual.*



*Other items of equipment, not supplied under the Scope of Delivery from Donaldson, should be installed, operated and maintained according to the documentation supplied with the respective equipment.*



*Any modification carried out on the 'as supplied' equipment may reduce reliability and safety, and will nullify warranty; such actions fall outside the responsibility of the original supplier.*



*Where necessary for safety, the dust collector is fitted with fixed guards. Removal of these guards and any subsequent work should only be carried out after adequate precaution is taken to ensure it is safe to do so. All guards should be refitted before re-energising.*



*The access door requires tools to open. To avoid danger from rotating fan impellor, ensure fan is isolated and allow sufficient time for fan to become stationary.*

### GENERAL SAFETY REQUIREMENTS



*Compressed air is recommended for collectors that operate using reverse jet cleaning. Alternative gases should be assessed before use to ensure that explosive atmospheres are not introduced during media cleaning.*



*Where the equipment supplied is suitable for working within a potentially explosive atmosphere (as defined by Directive 94/9/EC) it will be according to the categories and conditions marked on the collector serial nameplate. You should ensure the equipment supplied by others is also suitable. If no marking is given on the serial nameplate then the supplied equipment is not suitable for use in potentially explosive atmospheres.*



*Care should be taken to ensure that any potentially explosive atmosphere is not present when performing operations that increase the risk of ignition (opening of controller for adjustment or electrical repair for example). Ensure the installation is always returned to its original state.*



*To reduce the risk of ignition when handling explosive or flammable materials, it is important that the accumulation of flammable deposits are prevented/removed, e.g. from within ducting etc.*



*If the collector is handling a potentially explosive dust or is placed in a potentially explosive atmosphere, then all motors should be connected to thermal protection devices to prevent them exceeding their maximum surface temperature. All electrical equipment should comply with a category according to all related National and Local Codes.*



*Where the dust being processed can ignite due to exothermic reaction, including self ignition, the installation **MUST** be fitted with a suitable explosion protection method (venting for example). The risk of ignition can be minimised by avoiding the accumulation of dust layers with regular cleaning.*



*Precautions, as set out in the Scope of Delivery, are used to minimise the risk of ignition of any dust clouds contained within the dust collector. The possibility of other ignition sources being introduced into the collector during periods where any dust cloud may be present should be minimised. Particular care should be taken to avoid introducing glowing particles via the inlet ducting.*



*You should ensure that explosions are not allowed to propagate into the dust collector (using suitable isolation devices) since pressures may be generated leading to unsafe equipment rupture.*



*Where applicable, equipment connected to the dust collector (for example, a cyclone) should be protected, using suitable isolation devices, against the transfer of flame and pressure if, in the event of an explosion initiating inside the dust collector, the connected equipment is not capable of safely withstanding these effects.*

### GENERAL SAFETY REQUIREMENTS



*It may be necessary to provide a facility to shut down the equipment in the event of an explosion.*



*Part of the risk assessment on possible ignition sources for dust and gas mixtures with very low MIE, has considered the electrostatic risk from cone discharges. Here the basis of safety is based on using a conductive bin, dusts with a median particle size of less than 400µm and advising frequent emptying.*



*You may wish to consider the use of a sprinkler system when handling explosive or flammable materials.*



*None of the fan assemblies can be considered to be a fully sealed design, indeed most are arranged with either an open inlet or an open outlet. For this reason, the internal and external atmospheres can be considered the same in terms of any potentially hazardous classification.*



*Standard fan assemblies should not exceed 3000 rpm (50 Hz supply) on systems fitted with an inverter drive.*



*The filtration media is suitable for filtering particulate only (and not gas).*



*Some applications are prone to risk of fire. This risk can be reduced by regular pulse cleaning.*

- Any extinguishing technique and material used must be suitable for the flammable nature of the dust.*
- A water sprinkler system can be fitted as a special option.*

*Materials handled by the dust collector may be hazardous (e.g. toxic). Conduct a Risk Assessment to ensure correct technique is employed.*



*The dust collector should be cleaned and put into a safe condition prior to decommissioning. All equipment decommissioning/removal is to be executed in a manner consistent with applicable codes, regulations and sound engineering practice.*



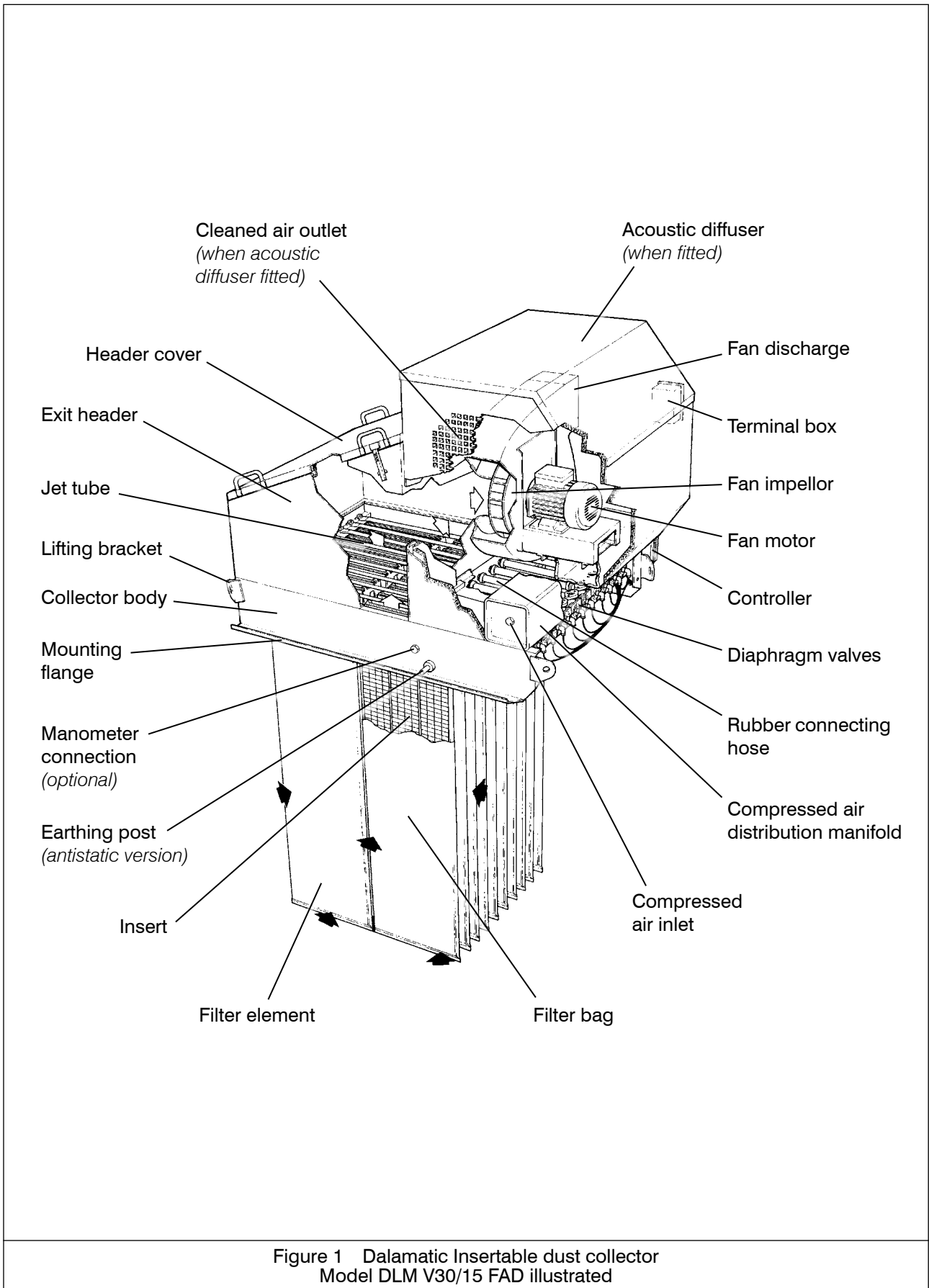






Figure 1 Dalamatic Insertable dust collector  
Model DLM V30/15 FAD illustrated


### INSTALLATION


 Where equipment is installed in a Potentially Explosive Atmosphere, care should be taken not to locate or use the collector where external ignition sources can be introduced, for example stray electric currents, lightning, electromagnetic waves, ionising radiation, ultrasonic waves.

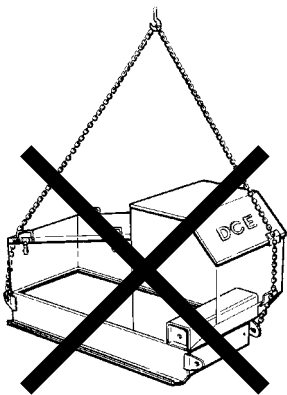

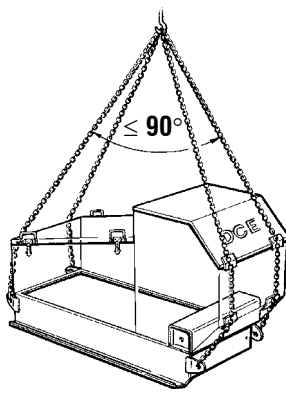

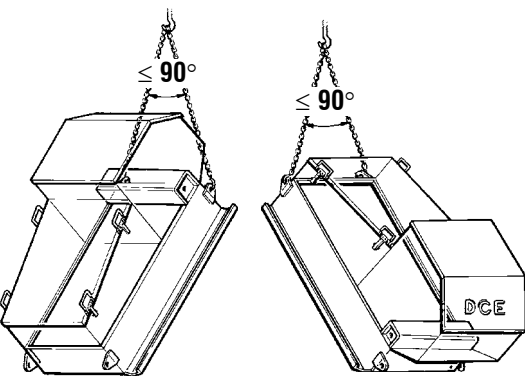

 When handling explosive or flammable materials and the risk of a fire is high, then precautions such as fitting a sprinkler system and not locating the collector in a zone 21/1 area should be considered.

 When handling explosive or flammable materials the collector should be located so as to avoid external heat sources, e.g. from nearby processes or extreme direct sunlight.

 The collector is not designed to support site-installed ducts, interconnecting piping or electrical services. All ducts, piping or electrical services must be adequately supported.

 All external equipment connected to the outlet (e.g. ducting) should be correctly sealed. This can be achieved by applying a continuous 5 mm bead of sealing compound to the mounting surface, along each side of the hole pattern. For non-Donaldson equipment please also check supplier's IOM manual for any specific requirements.

 Details of standard fan motor supply voltage are given in Table 8 (refer to 'Specification' section).

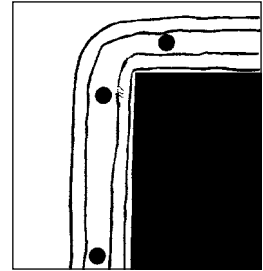
 <p><b>WARNING!</b></p> <p> Under no circumstances should the collector be lifted as illustrated above</p>	 <p>Four-point lift for vertical insertion</p> <p> Adjust lengths of chain (or rope) to ensure collector body remains level when lifted. (Note protective packing)</p>	 <p>Two-point lift for horizontal insertion, 'manifold up'</p> <p>Two-point lift for horizontal insertion, 'manifold down'</p> <p> Horizontally inserted collectors are normally fitted 'manifold up' for ease of access and maintenance, but where headroom is restricted they may be placed 'manifold down'. The collector itself will operate with equal efficiency in either position.</p>
<p>Figure 2 Lifting arrangement</p>		

### INSTALLATION

Dalamatic Insertable dust collectors are delivered partly assembled. Final assembly of each collector is as follows:

#### Mounting over aperture

- 1 Check that the aperture and fixing holes are correct in size and position to suit the mounting-flanges of the Dalamatic collector (if required, aperture and mounting flange details are provided in Publication 364).
- 2 Apply a continuous 5 mm bead of sealing compound all round aperture, along each side of the fixing holes, as shown.
- 3 Arrange lifting tackle to suit mode of insertion (fig. 2).



*On V60/15 and V50/12 collectors, for 4 point lift – vertical insertion. On exit header, weather cowl and fan versions (with or without acoustic diffuser) lift by means of the 4 eyebolts fitted to the exit header top.*

Chains or slings should be used with an adequate SWL (Safe Working Load). (Refer to lifting label located adjacent to lifting bracket for weight of equipment supplied by Donaldson).

Chains must be long enough to ensure that the included angle between diagonal chains is not greater than 90°.

- 4 Lift and position the collector body until the mounting-flange is seated in position over the aperture. Match up fixing-holes, install bolts, washers and nuts and tighten down all round to form an airtight seal.

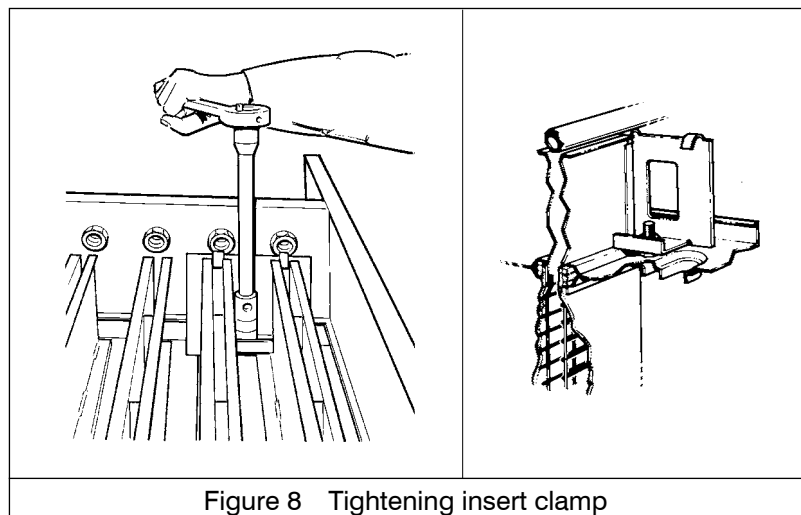
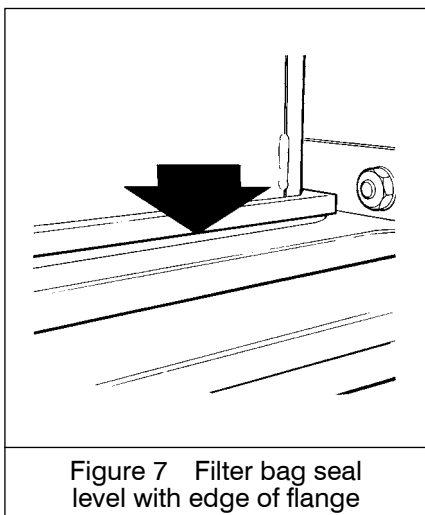
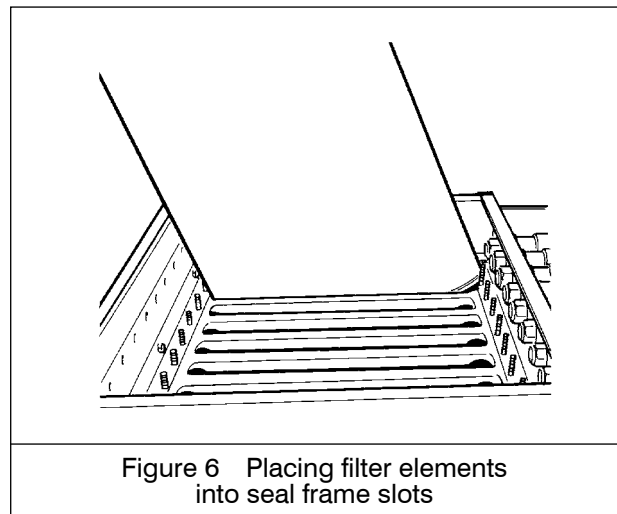
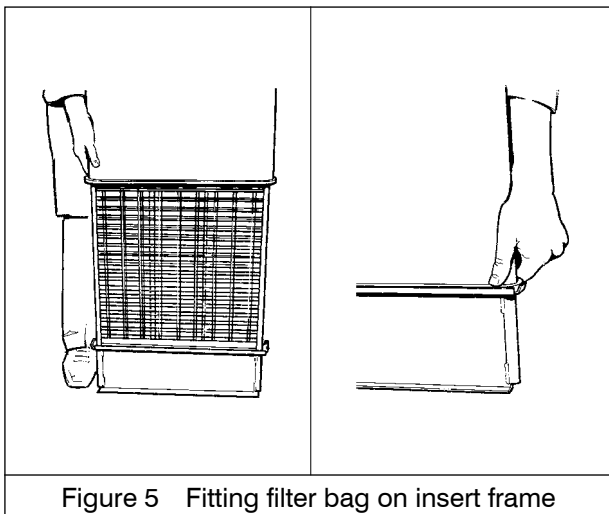
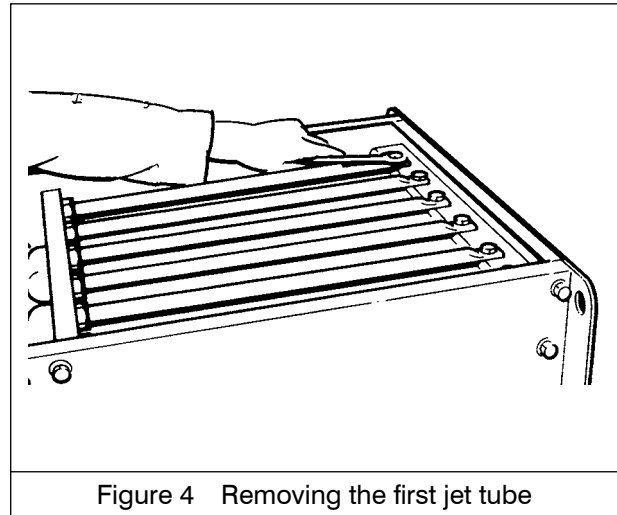
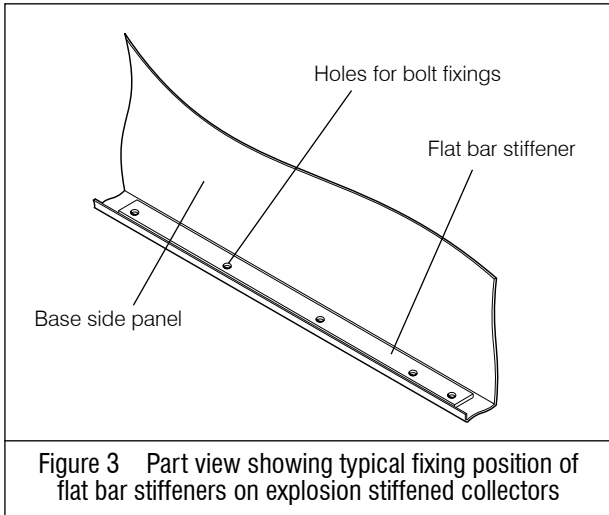


*For Insertable dust collectors mounted on a housing it is recommended that the housing be lifted into position before installation of the collector body. Most housings are fitted with brackets for lifting, however if these are not available a suitable sling arrangement should be used. If there is a requirement to lift both the collector body and housing together, the collector body brackets can be used for vertical insertion, provided the weight of the housing is less than 600kg (refer to lifting label for section weight). For horizontal insertion the use of the collector body lifting brackets alone is not permitted, it is then necessary to also use the housing lifting brackets or a suitable sling arrangement to give additional support.*



*Fixing bolts etc. are not supplied by Donaldson.*

**INSTALLATION**



### INSTALLATION

#### Flat bar stiffening

When collectors are explosion stiffened, a set of flat bar stiffeners are supplied with the collector. The flat bar stiffeners should be fitted when the collector is being installed, at the site joint where the collector is fitted to the mounting flange (see fig 3).

#### Fitting Dalamatic filter elements

- 5 Remove header cover if fitted (see fig. 1).
- 6 Unbolt and remove jet tubes (fig. 4).
- 7 Fit filter bags on insert frames, ensuring that sealing collar of filter bag butts up tight to flange of insert frame (fig. 5).
- 8 Place filter elements into seal frame slots as shown in fig. 6.
- 9 Ensure that filter bag seal is level with edge of flange on insert frame to obtain effective seal (see arrow fig. 7).
- 10 Fit clamps and tighten nuts using a ratchet and long-reach socket as shown in fig. 8. If filter elements are horizontally mounted, tighten-up bottom clamp first.



*Do not over-tighten. (Recommended maximum torque 20 ft-lbs f or 27 Nm).*

#### Final assembly

- 11 Replace jet tubes (fig. 9). As each is bolted down, ensure that its open end is pressed firmly into its locator and that the jet tube orifices are pointing towards the inserts.
- 12 Open plastic bag containing fixing bolts, tubing and controller mounting brackets. For IPC or IPC( $\Delta$ P) controller only.
- 13 Fix brackets to controller using 4 x M4 fixing bolts and nuts (fig. 10). For IPC or IPC( $\Delta$ P) controller only.

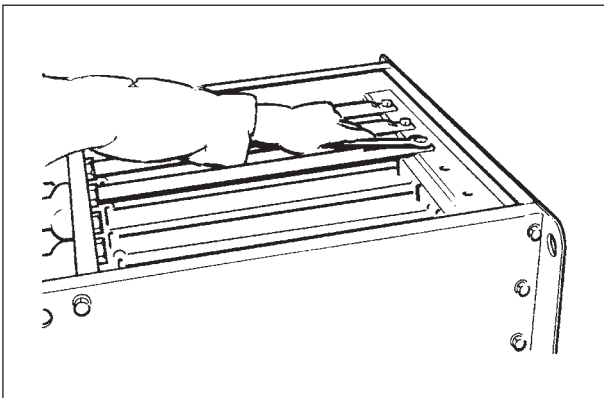


Figure 9 Replacing the jet tubes

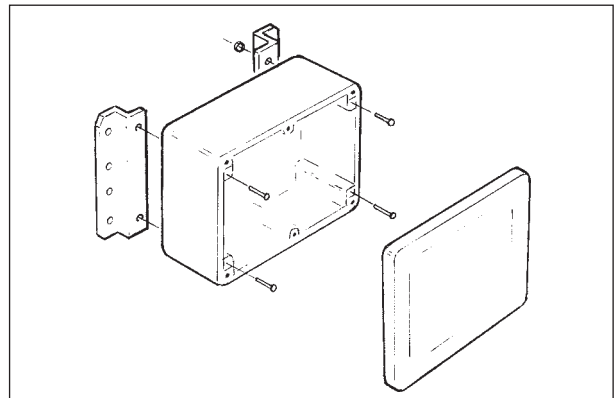


Figure 10 Fixing brackets to controller  
IPC controller illustrated

### INSTALLATION

- 14 Attach controller on preferred side of collector body using 6 x M8 fixing bolts and nuts.
- 15 Note from fig. 11 the manner in which the solenoid pilot valves projecting from the controller are to be connected by tubes to the diaphragm valves under the compressed air manifold. Cut tubing to suitable lengths.
- 16 Push-fit the tubing to the diaphragm valves in the manner shown in fig. 11.
- 17 Pass the tubes through the holes in the side of the collector body and push-fit to the corresponding solenoid pilot valves projecting from the controller (valves on the controller are numbered in sequence from the left, see fig. 11 and fig. 12 for typical arrangement).
- 18 Ensure each tube is firmly connected to the valves.
- 19 Replace header cover if applicable (fig. 1).

#### Compressed air requirements

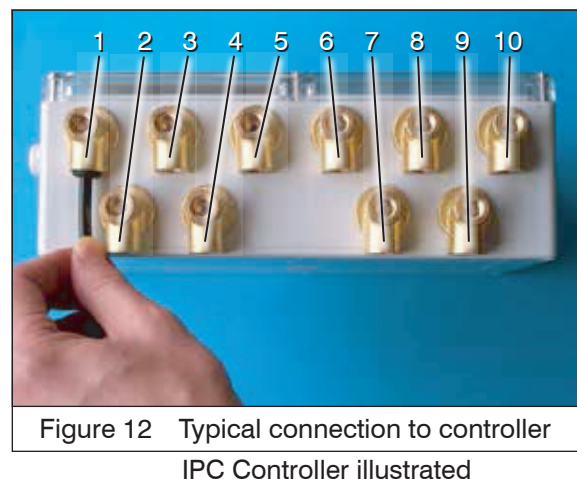
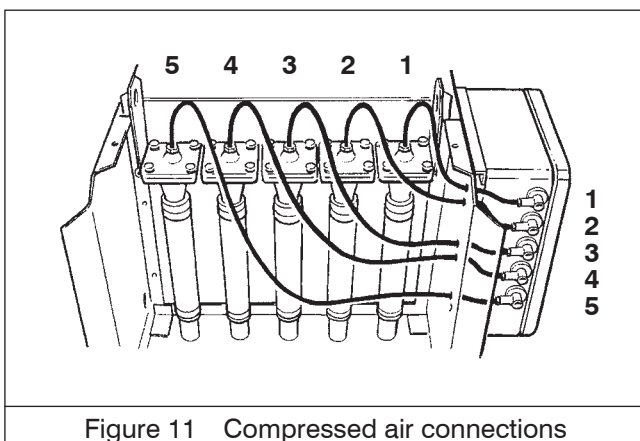
Dalamatic Insertable dust collectors require an independent supply of clean, dry, oil-free compressed air. Details of atmospheric pressure and quantity are given in Table 6 (refer to 'Specification' section). A design label is also attached to each manifold. Where an existing factory mains system is to be used it may be necessary to install an additional moisture separator in the supply line to the collector. If a compressor is being installed to supply the Dalamatic, then the following conditions should be observed as far as possible:

#### Type of compressor

Use a compressor of ample capacity – an overloaded compressor tends to produce excessively contaminated, moisture-laden air.

#### Location of air intake

Avoid locating the air intake in an excessively polluted area and install an adequate air intake filter. The compressor air intake should be sited, if possible, on the



### INSTALLATION

north side of the building – fresh air drawn from the north side is usually cooler and denser, and therefore has a lower moisture content. (South of the equator the reverse will apply).

#### *Layout and installation of air lines*

The pipework between compressor and dust collector should be long enough to act as a cooling device for the compressed air. A typical requirement for the smaller installation would be 10 m (30ft) of 12 mm (½" NB) piping. For further details see Table 6. The piping should be installed to provide a fall in the direction of air flow to assist in the drainage of accumulated moisture. A moisture separator should be provided at the lowest point of the installation.

#### *Pressure relief*

The manifold has a maximum operating pressure of 6.2 bar (see Table 5 in 'Specifications' section). It is a requirement that adequate precaution is taken to avoid exceeding this pressure. Where a relief valve is supplied by Donaldson this device has a relief rating of 25 dm<sup>3</sup>/s at 7.1 bar. Extra system relief will be required if the connected supply can exceed this.

### Controller



*It is a requirement of the Supply of Machinery (Safety) Regulations 1992 to provide adequate isolation and emergency stop facilities. Due to the varied nature of site installations this cannot be provided by Donaldson but instead is the responsibility of the customer.*



*Always isolate power before opening the controller.*

Each DLMV dust control collector is supplied with an EVC Controller, an IPC Controller, an IPC (ΔP) Controller or a Delta P-C01 Controller to operate the reverse jet cleaning system.

**DLM V3/7 and V5/12:** 2-way EVC, IPC, IPC (ΔP) Controller, Delta P-C01 Controller or Control Box Assembly (Timer with box)

**DLM V4/7, V6/10, V7.5/12, V8/7, V9/15, V12/10, V15/12 and V18/15:** 3-way EVC, IPC or IPC (ΔP) Controller, Delta P-C01 Controller or Control Box Assembly (Timer with box)

**DLM V7/7, V10/10, V13/12, V14/7, V15/15**

**and V20/10 (5-valve version):** 5-way EVC, IPC or IPC (ΔP) Controller, Delta P-C01 Controller or Control Box Assembly (Timer with box)

**DLM V20/10 (10-valve version), V21/7, V25/12, V30/10, V30/15, V38/12, V45/15, V50/12 and V60/15:** 10-way IPC or IPC (ΔP) Controller, Delta P-C01

Controller or Control Box Assembly (Timer with box)



*For EVC Controller connections and set-up, refer to Publication 2698.*



*For IPC or IPC (ΔP) Controller connections and set-up, refer to Publication 2699.*

*For Delta P-C01 Controller connections and set-up, refer to IOM AK0303001 and electrical drawings provided by Donaldson*

### INSTALLATION

#### ( $\Delta P$ connections)

On dust collectors fitted with an IPC ( $\Delta P$ ) Controller or Delta P-C01 Controller, the cleanside and dirtyside tapping points require connecting using the  $\Delta P$  connection kit supplied. The cleanside tapping point should be connected to the manometer connection identified in figure 1. The dirtyside tapping point should be connected as shown in figure 13.

#### Overload protection

All feeder circuits should be adequately protected with suitably-rated fuses and contactors with integral overload protection.

#### Antistatic earthing

It is particularly important on collectors having antistatic features and/or explosion stiffening, that the earthing post (located adjacent to the symbol, shown opposite) is properly connected to earth, using the brass screw provided, to prevent any static build-up (refer also to fig. 1).

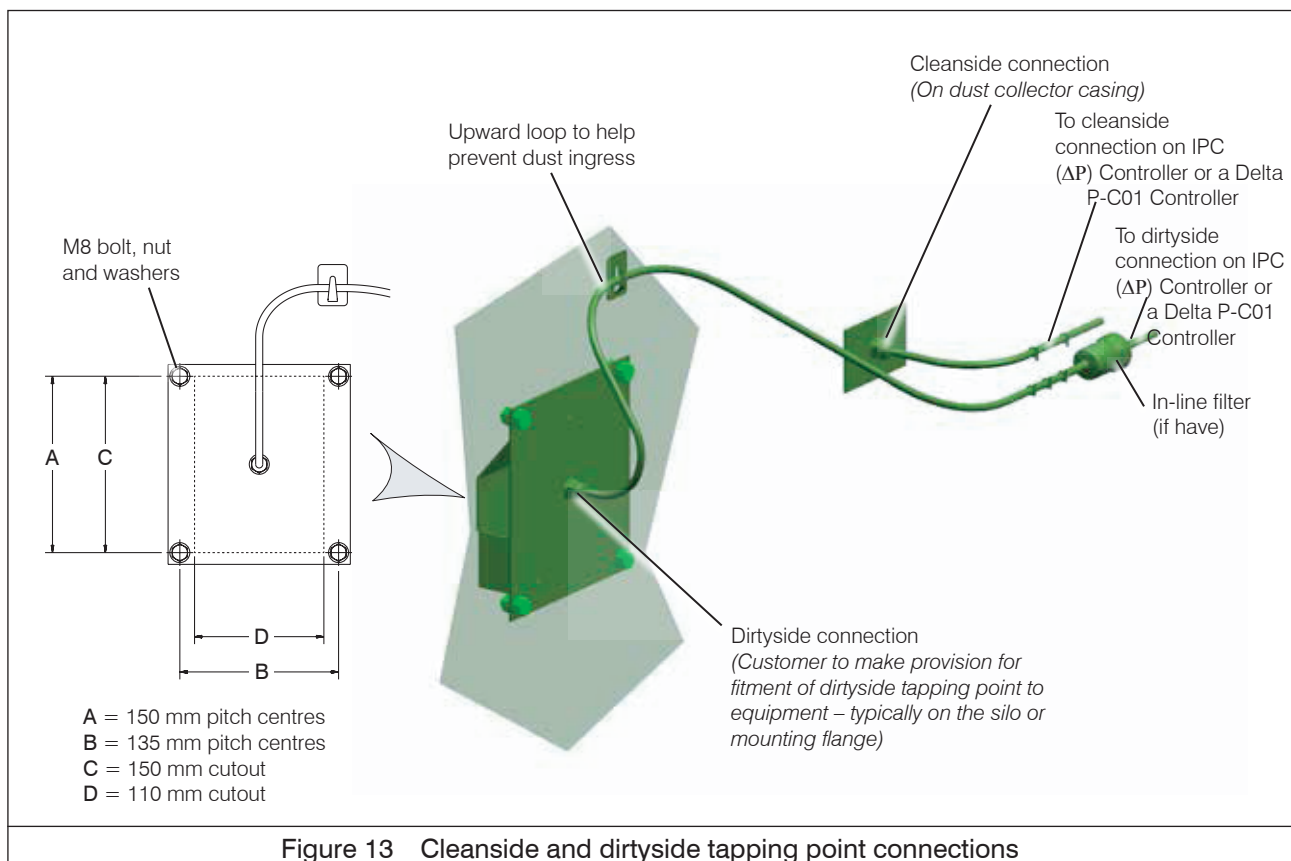
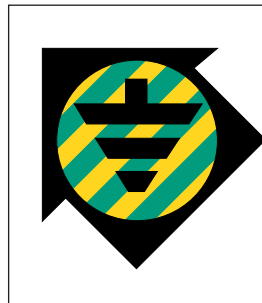


Figure 13 Cleanside and dirtyside tapping point connections



**INSTALLATION**

**Interlocks**

Discharge equipment such as belt feeders should be separately controlled but interlocked with the dust collector controller (see fig. 14).

The design of the electrical circuitry controlling equipment associated with the Dalamatic dust collector should be such that breakdown of any one of the associated pieces of equipment does not cause a complete blockage of the collector. For example, should the motor of a belt feeder cease to function, the collector housing will gradually fill with dust until completely choked. Failure of the compressor could also cause a similar blockage.

It is therefore important that the starters of all ancillary equipment be interlocked to ensure:

- 1 Correct starting sequence;
- 2 Operation of a warning system, or alternatively stoppage of the entire installation in the event of a failure of any of the auxiliary motors;
- 3 Correct stopping sequence.

Such interlocks are illustrated in figure 14 which also allows for the compressor etc. to operate without airflow through the collector, to facilitate clearance of the filter elements in the event of blockage due to failure of non-electrical equipment.

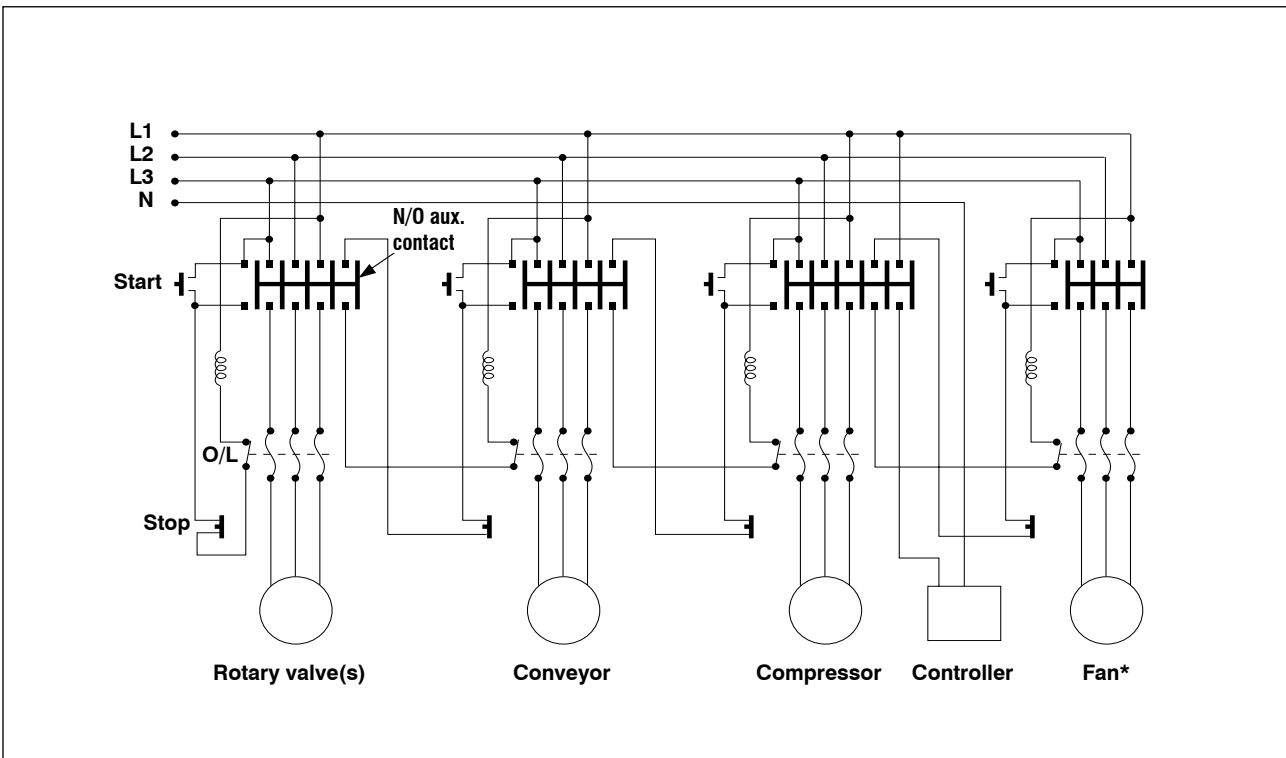


Figure 14 Schematic diagram showing typical interlock system for a Dalamatic dust collector installation  
 \* For fans powered by 11kW motors or above collectors are connected for star delta starting as standard

### INSTALLATION

#### Ex controls

When the dust collector is to be installed in a hazardous area where there is any risk of fire or explosion, the collector will be marked for the area(s) it can be safely used within (refer to collector serial nameplate). The collector may be fitted with either of the following control systems:

- *Exd solenoids and remote controller*

When this option is fitted, the dust collector has its solenoid valves in an Exd IIb T6 enclosure mounted on to the collector body. A controller, is supplied loose. This must be installed in a safe area and connected to the solenoid valves on the dust collector using suitable cabling (not supplied).

It is recommended that cable with a core size of 2.5 mm<sup>2</sup> is used.



*The maximum length of cabling that can be used is 100 m.*

Instructions for setting up the controller are the same as those for the standard controller.

- *PT Controller*

The PT Controller is a pneumatically operated device which operates the diaphragm valves in sequence, therefore the need for an electrical supply is eliminated.

The controller is supplied complete with air regulator and is normally bracket-mounted on to the side plate of the dust collector body.



*For PT Controller connections and set-up, refer to Publication 2697.*

#### Explosion relief



*Explosion panels, if fitted to upstand housings, must be relieved and vented to a safe area in accordance with Factory Inspectorate recommendations. The vent area is only suitable for the upstand housing volume and not the equipment being served.*



*Insertable dust collectors suitably stiffened for explosion pressures should be used.*

#### Installation check list



- Ensure the Dalamatic collector is securely bolted over the aperture.
- Ensure compressed air supply is installed correctly and free from leaks.
- Ensure electrical supply is installed correctly and complies to local legislation.

### COMMISSIONING



*It is a requirement of the Supply of Machinery (Safety) Regulations 1992 to provide adequate isolation and emergency stop facilities. Due to the varied nature of site installations this cannot be provided by Donaldson but instead is the responsibility of the customer.*



*When making your preliminary checks, or during the start-up sequence, particularly note that on collectors fitted with an explosion panel the cleaning system should not be operated on its own for longer than necessary as the positive pressure produced could weaken the Membrex membrane.*

#### Commissioning check list

- Ensure the Dalamatic dust collector body is securely bolted over the aperture.
- Ensure that all ducting is complete and all detachable panels are in position.
- Ensure header cover seal is intact on the collector, then secure the cover.
- Ensure collectors fitted with antistatic filter elements and/or explosion relief are suitably earthed.
- Where fitted, ensure explosion relief panels are venting to a safe area.
- Ensure controller is connected to the correct voltage and that the pulse interval and duration settings are correct. For 24V DC ensure polarity is correct. It is essential that the controller is earthed for both AC and DC connections.
- Ensure electric power is available.
- Ensure the compressed air manifold has sufficient protection for over-pressure.
- Start the compressor and check that the air supply is maintained at the recommended pressure.
- Switch on the controller and check that all valves operate in sequence by 'feeling' pulses in rubber hoses (look and listen for exhaust pulses). As each valve operates, the air pressure reading should drop to approximately 50% of the initial setting and then return to the initial value.
- Check fan motor for correct rotation and that the full load current is not exceeded. (Refer to the fan rotation label located above the fan inlet eye in the exit header section of the dust collector).
- If applicable, start up the main fan and equipment being served.
- Verify operation of the interlocks and audible warning system if fitted.

If any of the above check boxes are not ticked, then the reasons why should be investigated. (Refer to fault location table in 'Maintenance' section).

### COMMISSIONING

#### Start-up sequence

---

Having completed all the necessary checks, the equipment may be put into operation. A typical installation, as shown in figure 14, should be started up as follows:

- 1 Start up compressed air supply.
- 2 Set the equipment being served, if applicable, in motion.
- 3 Switch on controller.
- 4 Start main fan (if fitted).

#### Shut-down sequence

---



*At the end of any period of operation it is most important that all residual deposits are cleared from the filter elements, collector body and equipment being served. To achieve this, equipment should be shut down in the following order:*

- 1 Stop main fan only, leaving controller and compressed air supply switched on to allow filter elements to be cleaned 'off-line'.



*To enable off-line cleaning, refer to controller manual.*



*This procedure is not recommended where explosion panels are fitted, as damage could result to the Membrex membrane. In such cases consult with Donaldson.*

- 2 After 10-15 minutes, switch off controller and compressor but leave discharge equipment running to ensure that it is emptied.
- 3 After a further 5 minutes, switch off the discharge equipment if applicable.

Adherence to the above procedure will ensure that a Dalamatic dust collector installation is maintained at optimum efficiency.

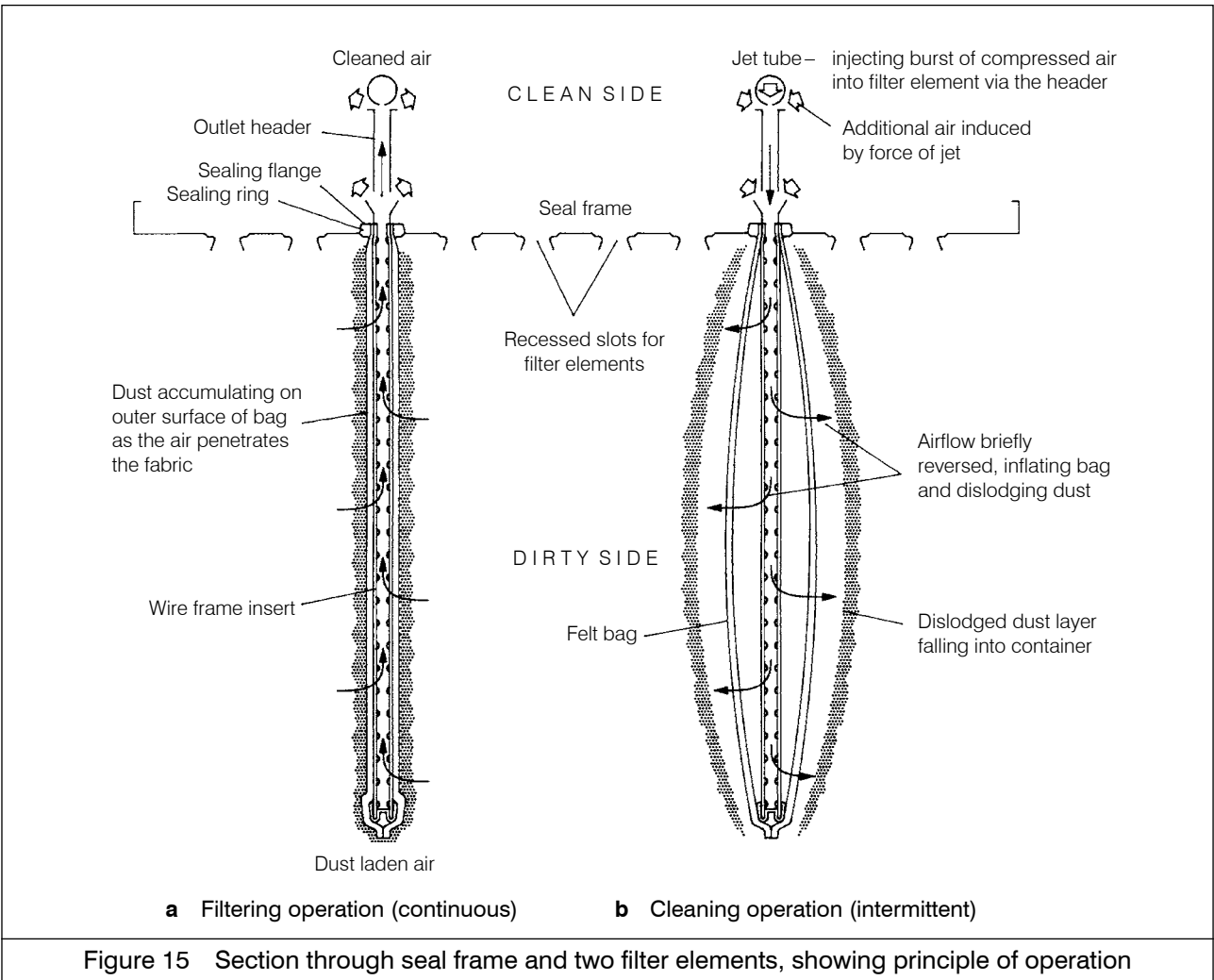
**OPERATION**

**Principle of operation**

Dust-laden air is ducted into the chamber containing the filter elements, where it impinges on all their outer surfaces. A layer of dust builds up on the outside of the elements as the air itself penetrates the fabric (see fig. 15a). The clean air emerges from the outlet header of each filter element into the cleaned air chamber and from there it is discharged, normally via the fan, to atmosphere.

At regular intervals, governed by the controller, each element in turn receives a short burst of compressed air from its respective jet tube (see fig. 15b). The jet tube has a series of small-diameter jet orifices positioned adjacent to the outlet header of each filter element (see figs. 15 and 17). These orifices are of an optimum size and distance from the filter element, ensuring that a large volume of air is induced by each injection of compressed air. This causes a brief, powerful reversal of airflow through the filter element, flexing the fabric outwards and effectively dislodging the dust layer.

In this way the pressure drop across the filter elements is kept at a virtually constant level, enabling the Dalamic to operate continuously, twenty-four hours a day.



### MAINTENANCE



*A platform should be used when carrying out maintenance where the position of the technician's feet is greater or equal to 2 metres above ground level.*



*Before any work is carried out, ensure the equipment is adequately isolated.*



*Ensure the pneumatic system is fully isolated and depressurised before any work is carried out.*



*For ancillary equipment not manufactured by Donaldson, refer to manufacturer's instructions.*



*If it is unavoidable to work on the equipment while an explosive atmosphere is present, care should be taken to avoid introducing ignition sources not present during expected operation. Non-sparking tools should be used.*



*Access to the dirty air chamber of the equipment may create risks and hazards that under normal circumstances are not present and as such this work must be carried out by competent personnel. These risks include inhalation of dust and potential explosion hazards. Appropriate personal protection equipment (PPE) should be used, e.g. dust mask, safety hat, gloves etc.*



*In order to maintain the original collector specification and to ensure the same level of safety, only genuine spare parts should be fitted.*



*Every care has been taken to avoid the risk of ignition of a flammable atmosphere. The measures taken to avoid ignition should not be altered since this may result in unsafe operation. Particular care should be taken during maintenance and component replacement to ensure the same level of safety is maintained. When replacing fan impellers, avoid any rubbing of components (to prevent mechanical sparks).*



*Care should be taken during cleaning and maintenance to avoid creating static discharges that have the potential to ignite a flammable atmosphere.*



*When carrying out maintenance always follow typical best practice to local regulations (e.g. TRGS 560).*

#### **Routine inspection**

To maintain the optimum performance of any Dalamatic dust collector, a routine inspection should be made to minimise down-time in the event of equipment malfunction, particularly on continuous performance applications and to ensure the equipment is maintained to its original supply condition.

### MAINTENANCE

Any abnormal change in pressure differential across the filter elements indicates a change in operating conditions and a fault to be rectified. For example, a prolonged stoppage of compressed air will cause an excessive build-up of dust on the elements, resulting in a greatly increased pressure drop.

After the fault has been rectified, resumption of compressed air cleaning will usually return the collector to normal efficiency. However, it is advisable to operate the controller in still-air conditions for a short period to dislodge any accumulated dust before putting the Dalamatic dust collector into operation.

Filter element resistance can be checked by connecting a U-tube manometer or differential-type pressure gauge to tapping points on the collector body and equipment being served (see fig. 1). This will give a continuous indication of the state of the filter elements. Once running, the operating resistance will be relatively stable, the actual value depending on the air volume and the characteristics of the dust being handled.



*To fit manometer connection to tapping point position, remove hexagon head set screw, nut and washers which blank-off tapping point hole located in base side panel. If exit header is fitted, access may be gained by removing the header cover. Fit a suitable manometer connection in place of the hexagon head set screw etc., ensuring it is capped when not in use. If requested, Donaldson can supply the recommended parts to enable connection to measuring equipment.*

It is recommended to periodically inspect the general casing integrity.



*Ignition minimising fans are fitted with a lining inside the casing. As this may only offer protection for a limited period, any upset condition leading to rubbing, the fan must be switched off immediately and the condition corrected.*



*Do not operate above recommended compressed air pressure. Excessive pressure will reduce the working life of components.*



*Dalamatic housings or upstands fitted with explosion relief should be inspected weekly to ensure that the bursting panels are intact and clear of obstruction. During winter, particular care must be taken to prevent build-up of snow or ice on explosion panels.*

#### Servicing schedule

A record of all pressure checks should be kept in a log book to aid the speedy diagnosis of faulty operation.

#### Weekly

- 1 Open the valve at the bottom of the moisture separator bowl and allow the collected water to drain off, then close the valve.
- 2 Connect a manometer to tapping points (refer to Routine inspection) and measure the pressure drop across the filter elements.

### MAINTENANCE

#### Monthly

Check operation of solenoid and diaphragm valves.

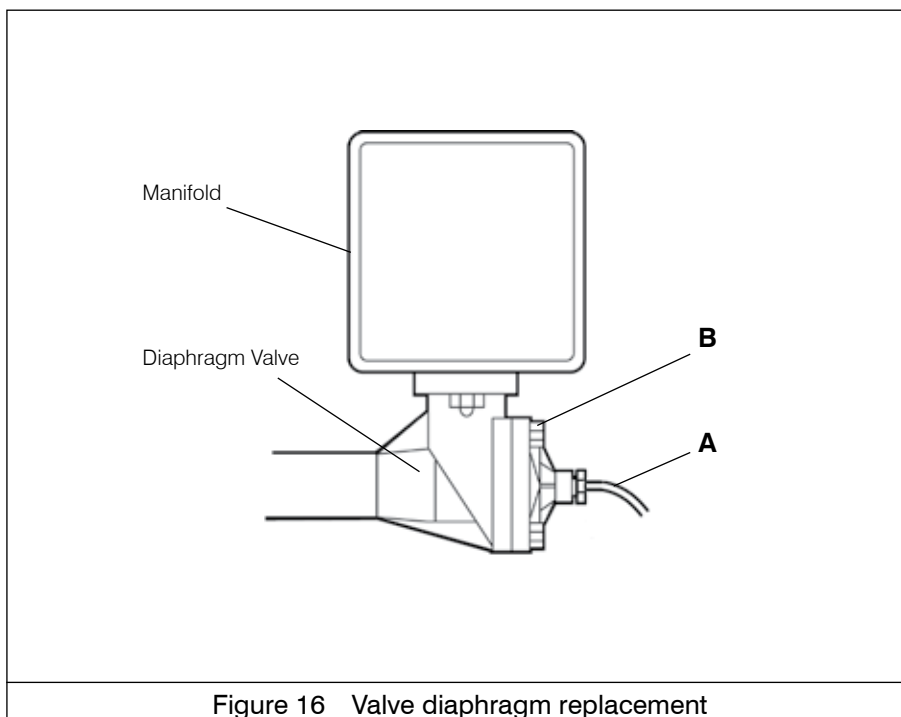


*It may be necessary to check the operation of the valves while the system is pressurised. Care should be taken to avoid injury.*

If it is found necessary to replace a diaphragm, use the following procedure (see fig. 16):

Use service kit available from Donaldson.

- 1 Remove 6mm diameter nylon tube (A) by pulling out from valve.
- 2 Remove the hexagon head set screws and shakeproof washers securing the valve bonnet (B).
- 3 The diaphragm and spring (if fitted) can now be replaced, first ensuring the 'bleed' hole pin is not blocked.
- 4 Ensure that diaphragm fits over 'bleed' hole pin and that the nylon sealing washer is inside throat of valve.
- 5 Position spring (if fitted) inside bonnet recess.
- 6 Refit bonnet ensuring spring (if fitted) locates over diaphragm disc shoulder and bonnet locates over 'bleed' hole pin.
- 7 Refit and tighten the hexagonal head set screws and shakeproof washers.
- 8 Push-fit 6mm diameter nylon tube back into valve.





### MAINTENANCE

#### Six-monthly

The fan impeller has been dynamically balanced and the fan assembly vibration level should be in line with category BV-3, ISO 14694. An assessment of vibration should be made every six months, or after a significant emission, or after any misuse and a record kept of measured values. Excessive vibration levels should be investigated and corrected immediately.



*Vibration monitoring is mandatory on category 2G, 3G and 2D fan assemblies.*

#### Annually

- 1 Moisture separator – Isolate the compressed air supply; remove and clean the filter element.
- 2 Air manifold – Having isolated the compressed air supply, remove the drain plug and air inlet connections and clean out any accumulated sludge and inspect to any current local legislation.



*It may be necessary to remove a diaphragm valve for internal inspection purposes.*

- 3 Doors – Check the dust seals on all access doors for damage or ageing and ensure that they are properly seated to prevent entry of water. This is particularly important where the dust collector is located outside or in a wet atmosphere.



*Faulty seals must be replaced.*

- 4 Filter elements (inserts and bags) – Remove the jet tubes then remove each filter element and check the general condition of the bag. Clean each bag using a vacuum cleaner. If the dust is of an abrasive nature it is advisable to examine the elements more frequently.



*Bags showing holes must be replaced. Place used filter bag into a sealable bag and dispose properly.*



*If in doubt regarding the safe disposal of the used filter bag, consult your local regulations.*



*When refitting filter elements, do not over-tighten. If elements are horizontally mounted, tighten bottom clamp first. (Recommended maximum torque 20 ft-lbs f or 27 Nm.)*

- 5 Jet Tubes – Check that the jet tubes are clean and that the jet orifices are clear.
- 6 Flameproof maintenance – It is important that all flameproof enclosures, motors and cable glands are inspected for corrosion and tightness on an annual basis.



*In particularly aggressive environments, this period should be more frequent.*

### MAINTENANCE

- 7 Explosion risks – Check measures taken to avoid ignition sources are still in place.
- 8 Fan maintenance – Remove header cover and, by looking through fan inlet eye, inspect fan thoroughly. If necessary, remove all residual dust accumulation. (Although the fan is located on the clean side of the collector, it is possible for low quantities of dust to migrate through the filter media).



*The fan should be inspected immediately after any period of significant dust emission, i.e. due to damaged filter media or seal etc.*



*The fan should be inspected immediately if there is any unexpected noise, temperature or vibration.*



*The fan should be inspected every twelve months or immediately following any misuse.*



*If inspection reveals any damage then the fan must not be put back into service until properly repaired or replaced.*

#### Fan assembly removal/replacement



*Isolate electrical power supply.*

- 1 Disconnect electrical cables from motor terminal box.
- 2 Remove header cover by undoing toggle fasteners and retaining strap (if fitted).
- 3 From inside the header, remove bolts holding fan assembly to header plate.
- 4 If an acoustic diffuser is fitted, remove access cover by undoing holding screws.
- 5 Remove nuts, bolts and washers from motor pedestal (2 located at front of compressed air manifold and 2 located at rear).
- 6 The fan assembly can now be removed using a suitable lifting arrangement.

#### Renewing fan impeller and/or motor

Refer also to Table 1.

- 1 Make a note of the distance from either impeller back plate to fan case (preferred) or inlet eye to impeller front plate, as this will assist with replacement. If required, refer to Donaldson for exact dimensions.
- 2 From front of fan assembly (non motor end) remove impeller inlet eye from fan casing by removing outer circle of bolts and pulling away the plate.
- 3 Undo grub screw that holds hub onto motor shaft.

### MAINTENANCE

- 4 Undo and remove bolt in end of motor shaft holding the hub retaining washer.
- 5 Remove motor key by easing it out from keyway.
- 6 Using the location grooves machined into hub, pull impeller from motor shaft and out through the front of fan case.
- 7 Slide spacer off motor shaft.
- 8 Remove the 4 nuts, bolts and washers holding motor to pedestal.
- 9 The motor can now be removed using suitable lifting equipment, taking care not to damage sealing washer placed between motor endplate and fan casing.
- 10 Place the new motor on support pedestal and locate rubber sealing washer between fan case and motor.
- 11 Position motor on pedestal and secure loosely by replacing the 4 nuts, bolts and washers.
- 12 Locate motor key into keyway on motor shaft.
- 13 Push motor shaft spacer onto motor shaft.
- 14 Align keyway of impeller hub onto key and slide impeller onto motor shaft.
- 15 Replace hub retaining washer and shakeproof washer. Apply thread lock to motor end shaft bolt and replace bolt, ensuring impellor is pushed back onto spacer.
- 16 Apply thread locks to grub screws holding hub and tighten into place.
- 17 Locate impeller, according to the dimension taken during removal, by moving motor along pedestal, ensuring motor remains square to fan case.

**TABLE 1 – TORQUE VALUES FOR BOLTS WITH ISO METRIC THREAD**

Nominal diameter	Thread pitch	Stress area	Torque value*		
			Grade 8.8	Grade 10.9	Grade 12.9
8 mm	1 mm	20.1 mm <sup>2</sup>	10.4 Nm	15.3 Nm	17.9 Nm
7 mm	1 mm	28.9 mm <sup>2</sup>	17.2 Nm	25 Nm	30 Nm
8 mm	1.25 mm	36.6 mm <sup>2</sup>	25 Nm	37 Nm	44 Nm
10 mm	1.5 mm	58 mm <sup>2</sup>	50 Nm	73 Nm	86 Nm
12 mm	1.75 mm	84.3 mm <sup>2</sup>	86 Nm	127 Nm	148 Nm
14 mm	2 mm	115 mm <sup>2</sup>	137 Nm	201 Nm	235 Nm
16 mm	2 mm	157 mm <sup>2</sup>	214 Nm	314 Nm	368 Nm
18 mm	2.5 mm	192 mm <sup>2</sup>	306 Nm	435 Nm	509 Nm
20 mm	2.5 mm	245 mm <sup>2</sup>	432 Nm	615 Nm	719 Nm
22 mm	2.5 mm	303 mm <sup>2</sup>	592 Nm	843 Nm	987 Nm
24 mm	3 mm	353 mm <sup>2</sup>	744 Nm	1060 Nm	1240 Nm
27 mm	3 mm	459 mm <sup>2</sup>	1100 Nm	1570 Nm	1840 Nm
30 mm	3.5 mm	561 mm <sup>2</sup>	1500 Nm	2130 Nm	2500 Nm

\* For nuts and bolts to ISO 4017.

### MAINTENANCE

- 18 If the measurement was taken from impeller back plate to fan case, adjust to suit and tighten motor fixing fasteners through pedestal and motor feet. Replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts.
- 19 If the measurement was taken from inlet eye to impeller front plate, then replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts. Adjust impeller to suit and tighten motor fixing fasteners through pedestal and motor feet.
- 20 If a measurement was not taken, then replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts. Adjust impeller so that there is approximately 2 mm clearance between inlet eye and front of impeller and tighten motor fixing fasteners through pedestal and motor feet. For ignition minimising fans the minimum clearance must be >1% of the relevant contact diameter.
- 21 Rotate impeller by hand, adjusting where necessary, to ensure that impeller runs freely.

#### *Replacing the fan assembly*

- 1 Apply a bead of sealant to form a seal between inlet eye and housing when assembled.
- 2 Locate fan assembly onto compressed air manifold.
- 3 From inside the header secure fan assembly in position by replacing bolts.
- 4 Replace and tighten the 4 nuts, bolts and washers securing motor pedestal to compressed air manifold.
- 5 Rotate fan impellor to ensure it runs freely.
- 6 Replace header cover and retaining strap (if fitted).
- 7 Replace acoustic diffuser access cover (if fitted).
- 8 Reconnect electrical cables to motor terminal box.

### MAINTENANCE

**TABLE 2 – FAULT LOCATION**

Symptom	Possible cause	Action
1 Part loss of suction (excessive pressure differential).	1.1 Compressed air malfunction.	<ul style="list-style-type: none"> <li>a If compressor stopped, rectify compressor fault; check interlocks; check motor and supply; check drive.</li> <li>b If compressor OK, check pulses at manifold pressure gauge.</li> <li>c Clean filters, dismantle and clean moisture separator.</li> <li>d Check for excessive water or oil in compressed air supply, and possible accumulation in manifold.</li> </ul>
	1.2 No pulses of air to valves.	<ul style="list-style-type: none"> <li>a Refer to 'Fault location' table in controller manual supplied with dust collector.</li> </ul>
	1.3 Filter elements blocked.	<ul style="list-style-type: none"> <li>a Check that emptying device or equipment being served is working. Check starter overloads, fuses and interlocks.</li> <li>b Run filter elements clear*, then remove each element in turn and vacuum-clean all its outer surfaces. Renew any filter bags that are damaged.</li> </ul>
	1.4 Motor speed low.	<ul style="list-style-type: none"> <li>a Check line voltage, phases, fan motor connections. For Star/Delta applications, check motor is in Delta.</li> </ul>
	1.5 Incorrect fan motor rotation.	<ul style="list-style-type: none"> <li>a Check electrical connections and transpose if necessary.</li> </ul>
2 Total loss of suction.	2.1 Fan motor stopped.	<ul style="list-style-type: none"> <li>a Check motor supply overloads, fuses and interlocks (if fitted).</li> <li>b Check motor connections and windings.</li> </ul>
	2.2 Filter elements blocked.	<ul style="list-style-type: none"> <li>a Check that emptying device or discharge equipment is working. Check starter overloads, fuses and interlocks.</li> <li>b Run filter elements clear*, then remove each element in turn and vacuum-clean all its outer surfaces. Renew any filter bags that are damaged.</li> </ul>
	2.3 Ducting blocked.	<ul style="list-style-type: none"> <li>a Check throughout and clear.</li> </ul>
3 Visible effluent in clean air outlet.	3.1 Filter elements not properly sealed.	<ul style="list-style-type: none"> <li>a Tighten element retaining bolts to ensure compression of sealing rings.</li> </ul>
	3.2 Damaged filter bag.	<ul style="list-style-type: none"> <li>a Damaged filter bag can be identified by the dust present in clean air chamber. Withdraw element and renew bag.</li> </ul>

\*To run filter elements clear, switch off main fan only and allow the controller to perform several complete cleaning cycles before switching off compressor etc.



This procedure is not recommended where explosion panels are fitted, as damage could result to the Membrex membrane. In such cases consult with Donaldson.

### SPECIFICATION

#### Description and range

The Dalamatic Insertable is an automatic reverse-jet type of dust collector, designed to handle known quantities of dust-laden air, and is capable of continuous operation over extended periods by virtue of the 'reverse air' filter cleaning system employed. This system, which functions during the normal course of operation, not only serves to maintain optimum filtering efficiency at all times, but enables the collector to operate at a constant rating – in that it maintains a uniform pressure drop across the filter elements.

The basis of the Dalamatic is a module comprising a group of filter elements mounted on a sealed frame. The elements are fitted side by side and the individual sealing arrangement effectively separates the dirty (inlet) side of the collector from the clean (outlet) side, as shown in figure 15. Removal of filter elements is always carried out from the clean side of the collector.

The Dalamatic Insertable dust collector range is based on seven sizes of filter module, each containing a number of filter elements (as indicated in Table 3). These filter elements are available in four sizes, having an effective filtration area of 0.7 m<sup>2</sup>, 1.0 m<sup>2</sup>, 1.25 m<sup>2</sup> and 1.5 m<sup>2</sup> respectively (see Table 3).

The dust collector is designed for application in silos, bunkers, conveyor transfer points etc. Variations of the Insertable are available for applications in pneumatic conveying systems, operating at pressures either above or below atmospheric pressure depending on collector type. For further details refer to Publication 364.

Equipment is available suitable for use in a potentially explosive atmosphere (Directive 94/9/EC) satisfying the requirements for group II category 2G or 2D and 3G or 3D T135°C.

#### Construction

The Insertable collector body is flanged and drilled for mounting over an aperture located in the top or side of an enclosed bin or silo.

The DLM V type F dust collector also incorporates a fan to provide the suction necessary for efficient operation in non-pressurised conditions such as conveyor transfer points.

#### Compressed air distribution manifold (fig. 1)

The manifold is fabricated from either 150sq x 6mm thick or 180sq x 8mm thick steel tube, with welded ends. Holes are provided for diaphragm valves, drain plug, pressure relief valve and air inlet moisture separator connections. (Moisture separator and pressure relief valve are not supplied as standard with the dust collector).



*It may be necessary to remove a diaphragm valve for internal inspection purposes.*

The manifold supplied with the Dalamatic Insertable dust collector has been independently approved to operate under the conditions as specified in Table 5.

**SPECIFICATION**

**TABLE 3 – DALAMATIC INSERTABLE DUST COLLECTOR RANGE**

Collector type*	Filtration area	Number of elements	Bag length	Collector type*	Filtration area	Number of elements	Bag length
<b>DLM V3/7</b>	3.0 m <sup>2</sup>	4	0.7 m	<b>DLM V15/12</b>	15.0 m <sup>2</sup>	12	1.25 m
<b>DLM V4/7</b>	4.0 m <sup>2</sup>	6	0.7 m	<b>DLM V15/15</b>	15.0 m <sup>2</sup>	10	1.5 m
<b>DLM V5/12</b>	5.0 m <sup>2</sup>	4	1.25 m	<b>DLM V18/15</b>	18.0 m <sup>2</sup>	12	1.5 m
<b>DLM V6/10</b>	6.0 m <sup>2</sup>	6	1.0 m	<b>DLM V20/10</b>	20.0 m <sup>2</sup>	20	1.0 m
<b>DLM V7/7</b>	7.0 m <sup>2</sup>	10	0.7 m	<b>DLM V21/7</b>	21.0 m <sup>2</sup>	30	0.7 m
<b>DLM V7.5/12</b>	7.5 m <sup>2</sup>	6	1.25 m	<b>DLM V25/12</b>	25.0 m <sup>2</sup>	20	1.25 m
<b>DLM V8/7</b>	8.0 m <sup>2</sup>	12	0.7 m	<b>DLM V30/10</b>	30.0 m <sup>2</sup>	30	1.0 m
<b>DLM V9/15</b>	9.0 m <sup>2</sup>	6	1.5 m	<b>DLM V30/15</b>	30.0 m <sup>2</sup>	20	1.5 m
<b>DLM V10/10</b>	10.0 m <sup>2</sup>	10	1.0 m	<b>DLM V38/12</b>	38.0 m <sup>2</sup>	30	1.25 m
<b>DLM V12/10</b>	12.0 m <sup>2</sup>	12	1.0 m	<b>DLM V45/15</b>	45.0 m <sup>2</sup>	30	1.5 m
<b>DLM V13/12</b>	13.0 m <sup>2</sup>	10	1.25 m	<b>DLM V50/12</b>	50.0 m <sup>2</sup>	40	1.25 m
<b>DLM V14/7</b>	14.0 m <sup>2</sup>	20	0.7 m	<b>DLM V60/15</b>	60.0 m <sup>2</sup>	40	1.5 m

**\*Designation codes:**

A letter 'B', 'H', 'W', 'F', 'FAD' or 'S' is added after the figures to signify the type as follows:

**B** = basic type                      **H** = as B, plus exit header                      **W** = as H, plus weather cowl  
**F** = as H, plus integral fan                      **FAD** = as F, plus acoustic diffuser                      **S** = high pressure

**TABLE 4 – WEIGHTED SOUND PRESSURE LEVELS**

	<b>F1</b> (0.75 kW)	<b>K3</b> (1.5 kW)	<b>KV5</b> (2.2 kW)	<b>KV7</b> (3.0 kW)	<b>KV10</b> (5.5 kW)	<b>KV11</b> (7.5 kW)	<b>KV15</b> (11.0 kW)
With acoustic diffuser	76 dB(A)	73 dB(A)	74 dB(A)	76 dB(A)	79 dB(A)†	84 dB(A)	85 dB(A)
Without acoustic diffuser	91 dB(A)	89 dB(A)	92 dB(A)	93 dB(A)	94 dB(A)	97 dB(A)	99 dB(A)

All readings were taken in normal industrial areas, i.e. semi-reverberant surroundings, with local equipment silent. Measurements were taken at maximum air flow conditions at 1.0 metre radius from the equipment housing and 1.6 metres above base level, using a precision sound level meter and octave filter. Noise levels of installed equipment may vary due to site conditions.

† Estimated data.

**SPECIFICATION**

**Jet tubes (figs. 1, 15 & 17)**

Positioned in the ‘clean side’ of the collector is a series of full-length ‘jet tubes’ having small-diameter jet orifices located adjacent to the outlet header of each filter element. The ‘open’ end of each tube is connected by a rubber hose to a compressed air valve; the closed end is flattened and crimped, and is secured by a bolt and nut.

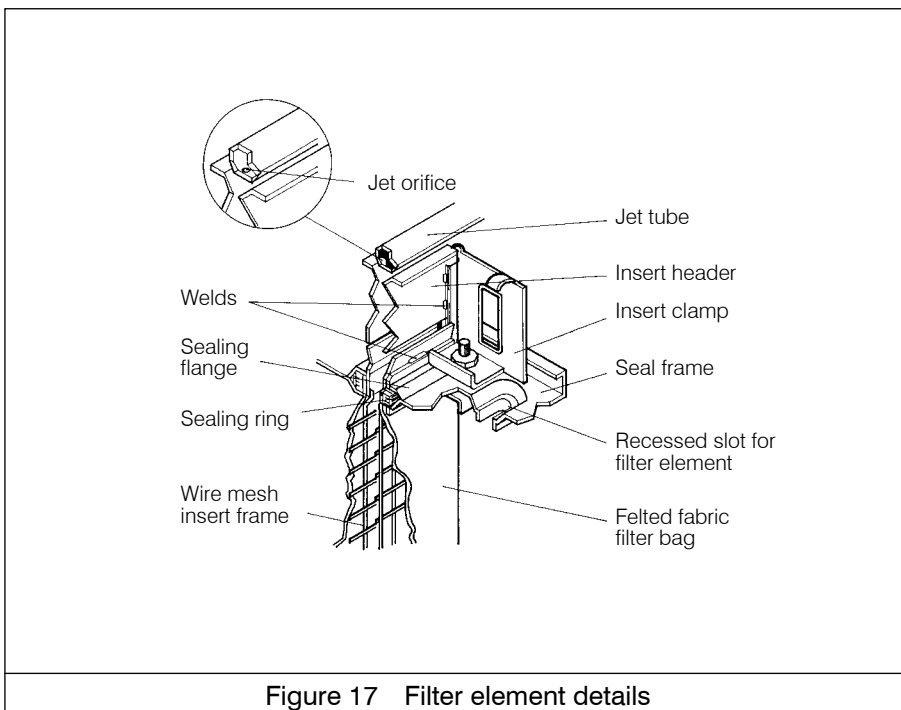
**Filter elements (figs. 1, 15 & 17)**

Each removable filter element is rectangular in shape and comprises a slim wire mesh frame or ‘insert’ for the filter bag, to which is welded a shaped steel outlet header with sealing flange. The filter bag itself consist of a rectangular pocket incorporating a resilient sealing ring at the open end. The bag is pulled over the wire portion of the insert until the sealing ring meets the sealing flange. The ring is compressed when the element is clamped into the seal frame, effectively isolating the dirty side from the clean side of the collector. There are four sizes of element, designated 0.7 m, 1.0 m, 1.25 m and 1.5 m according to the length of filter bag and used as shown in Table 3.

Antistatic filter elements are available, together with stainless steel and brass securing bolts and washers, as an option for installations where the dust is potentially explosive. (See ‘Installation’ section.)

**Seal frame (figs. 15 & 17)**

The seal frame assembly is a rectangular structure of sheet steel which is flanged for rigidity and incorporates a slotted steel pressing into which the filter elements





**SPECIFICATION**

are inserted and secured by clamps. The number of seal frames depends on the dust collector size.

An earthing boss is fitted to all antistatic versions of dust collectors for antistatic earthing (see fig. 1).

**Valves (figs. 1 & 18)**

The compressed air is supplied to each jet tube via a diaphragm valve, the opening and closing of which is controlled by a solenoid-operated pilot valve connected to the diaphragm vent by a flexible nylon tube. The solenoid valves are energised sequentially by electrical pulses generated by the controller.

**Controller**



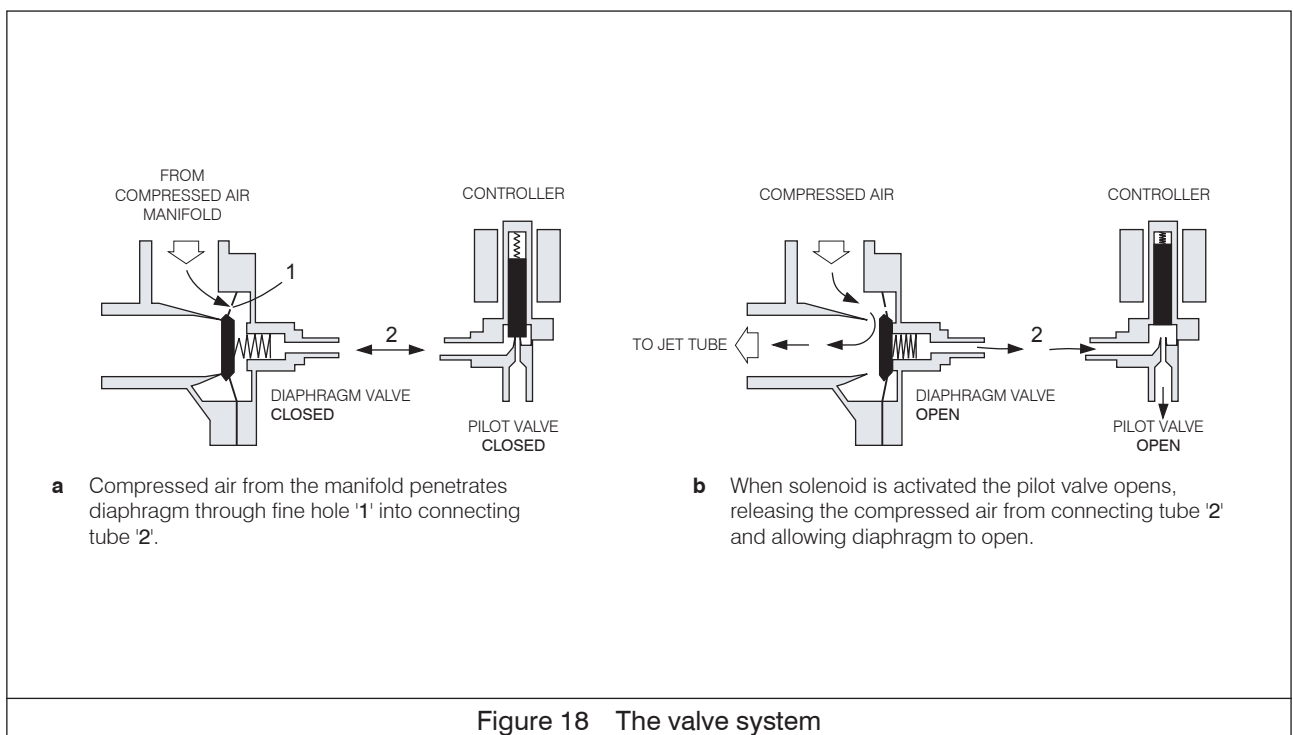
*For EVC Controller specifications, refer to Publication 2698.*



*For IPC or IPC (ΔP) Controller specifications, refer to Publication 2699.*



*For PT Controller specifications, refer to Publication 2697.  
For Delta P-C01 Controller connections and set-up, refer to IOM AK0303001*



### SPECIFICATION

**TABLE 5 – COMPRESSED AIR MANIFOLD DESIGN DETAILS**

<b>Design pressure:</b>	6.9 bar (100 psig)
<b>Maximum operating pressure, PS:</b>	6.2 bar (90 psig)
<b>Test pressure:</b>	10.35 bar (150 psig)
<b>Design temperature:</b>	-30° to +150°C
<b>Maximum rating of pressure relief device:</b>	25 dm <sup>3</sup> /s at 7.1 bar (factory set at 7.1 bar) <i>(not supplied as standard)</i>
<b>Manifold volume:</b>	6.23 litres (DLM V3/7 and V5/12 collectors) 9.55 litres (DLM V4/7, V6/10, V7.5/12 and V9/15 collectors) 17.14 litres (DLM V7/7, V10/10, V13/12 and V15/15 collectors) 13.61 litres (DLM V8/7, V12/10, V15/12 and V18/15 collectors) 24.37 litres (DLM V14/7, V20/10, V21/7, V25/12, V30/10, V30/15, V38/12, V45/15, V50/12 and V60/15 collectors)
<b>Product of pressure and capacity:</b>	38.63 bar litres (DLM V3/7 and V5/12 collectors) 59.21 bar litres (DLM V4/7, V6/10, V7.5/12 and V9/15 collectors) 106.27 bar litres (DLM V7/7, V10/10, V13/12 and V15/15 collectors) 84.38 bar litres (DLM V8/7, V12/10, V15/12 and V18/15 collectors) 151.09 bar litres (DLM V14/7, V20/10, V21/7, V25/12, V30/10, V30/15, V38/12, V45/15, V50/12 and V60/15 collectors)
<b>Material used for manifold construction:</b>	Structural hollow section
<b>Minimum metal thickness before manifold requires special inspection:</b>	To improve corrosion resistance the manifold is painted externally and internally using cathodic electrocoat.  5.5 mm (DLM V3/7, V4/7, V5/12, V6/10, V7/7, V7.5/12, V9/15, V10/10, V13/12 and V15/15 collectors) 7.0 mm (DLM V8/7, V12/10, V14/7, V15/12, V18/15, V20/10, V21/7, V25/12, V30/10, V30/15, V38/12, V45/15, V50/12 and V60/15 collectors)

1 bar = 10<sup>5</sup> Pa

**SPECIFICATION**

**TABLE 6 – COMPRESSED AIR REQUIREMENTS**

Collector type	Working compressed air pressure <sup>a</sup>		Atmospheric air volume – F.A.D.		Pulse duration	Minimum pipe diameter <sup>c</sup>
			at 25 sec. intervals <sup>b</sup>			
<b>DLM V3/7 and V5/12</b>	4.1 bar	60 psig	2.6 m <sup>3</sup> /h	1.5 cfm	100 ms	½" NB (12)
<b>DLM V4/7, V6/10, V7.5/12 and V9/15</b>	4.1 bar	60 psig	3.3 m <sup>3</sup> /h	1.9 cfm	100 ms	½" NB (12)
<b>DLM V7/7, V10/10, V13/12 and V15/15</b>	4.1 bar	60 psig	4.0 m <sup>3</sup> /h	2.4 cfm	100 ms	½" NB (12)
<b>DLM V8/7, V12/10, V15/12 and V18/15</b>	5.2 bar	75 psig	6.0 m <sup>3</sup> /h	3.6 cfm	100 ms	½" NB (12)
<b>DLM V14/7 and V20/10 (5 valve)</b>	5.2 bar	75 psig	7.2 m <sup>3</sup> /h	4.2 cfm	100 ms	½" NB (12)
			at 12 sec. intervals <sup>b</sup>			
<b>DLM V20/10 (10 valve)</b>	4.1 bar	60 psig	6.1 m <sup>3</sup> /h	3.6 cfm	60 ms	½" NB (12)
<b>DLM V21/7 and V30/10</b>	4.5 bar	65 psig	7.8 m <sup>3</sup> /h	4.6 cfm	60 ms	½" NB (12)
<b>DLM V25/12 and V30/15</b>	4.1 bar	60 psig	7.4 m <sup>3</sup> /h	4.3 cfm	60 ms	½" NB (12)
<b>DLM V38/12 and V45/15</b>	4.5 bar	65 psig	9.5 m <sup>3</sup> /h	5.6 cfm	60 ms	½" NB (12)
<b>DLM V50/12 and V60/15</b>	5.2 bar	75 psig	13.7 m <sup>3</sup> /h	8.0 cfm	60 ms	½" NB (12)

<sup>a</sup>Normal operating pressure.    <sup>b</sup>Recommended initial setting; this may be varied with experience.  
<sup>c</sup>Sizes suitable for runs of pipe up to 30 m (100ft) in length. For longer runs consult with Donaldson.

1 bar = 10<sup>5</sup> Pa

**TABLE 7 – DESIGN LIMITS**

<b>Temperature range:</b>	-10° to +60°C (Std.) or -10° to +200°C (not type F)
<b>Pressure range:</b>	Types B, W and H: -400 mm W.G. (For positive pressures refer to Donaldson) Type S: -3000 mm W.G. (For positive pressures refer to Donaldson) Types F and FAD: as fan performance curves from shut-off to ambient pressure (refer to Publication 364)
<b>Maximum fan impellor speed:</b>	3000 RPM (50Hz) or 3600 RPM (60Hz)

**SPECIFICATION**

**TABLE 8 – STANDARD FAN MOTOR SUPPLY VOLTAGE DETAILS**

To comply with European standards the motor nameplate will display the following:

**3 Phase / 50 Hz  
(IEC 60034-30)**

kW	Nameplate details	Range
0.75 – 1.5	230/3/50 D	220-240 D
	400/3/50 Y	380-420 Y
2.2 and above	400/3/50 D	380-420 D
	690/3/50 Y	660-690 Y

**3 Phase / 60 Hz\***

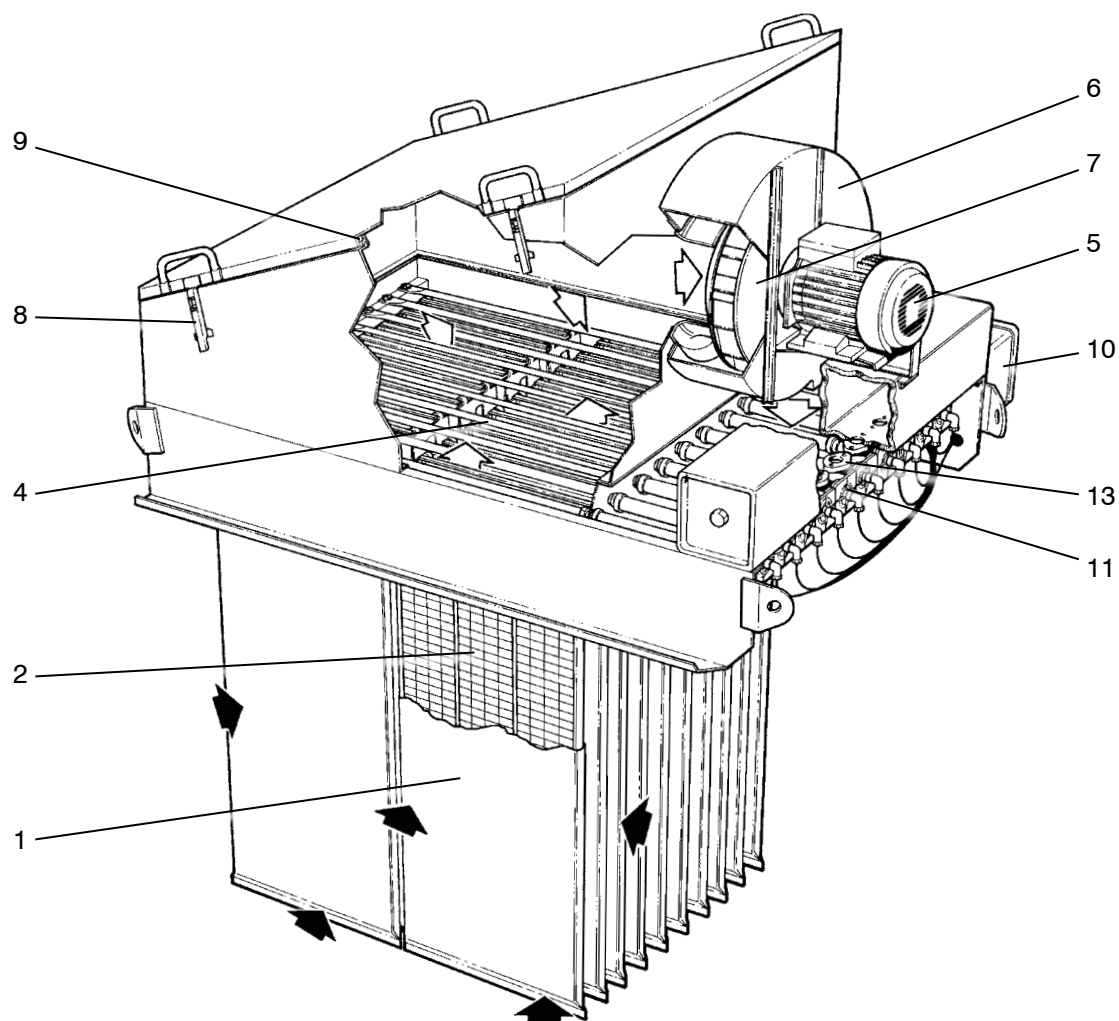
kW	Nameplate details	Range
0.75 – 1.5	250-280/3/60 D	250-280 D
	440-480/3/60 Y	440-480 Y
2.2 and above	440-480/3/60 D	440-480 D

\*Some motors will be fitted with a second nameplate displaying 60 Hz details



*The details above may not apply to non-standard motors.*

**SPARE PARTS**



**DLM V20/10F (10 valve version) illustrated**

Figure 19 Spare parts identification

Item	Description	Part number	*	
	<b>Filter element assembly</b>			
1	Fabric filter bag, Dura-Life	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2316 1A 3139 2317 1A 3139 2318 1A 3139 2319	✓ ✓ ✓ ✓
1	Fabric filter bag, Dura-Life oleophobic	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2328 1A 3139 2329 1A 3139 2330 1A 3139 2331	✓ ✓ ✓ ✓
1	Fabric filter bag, Dura-Life epitropic	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2322 1A 3139 2323 1A 3139 2324 1A 3139 2325	✓ ✓ ✓ ✓
1	Fabric filter bag, Dura-Life oleophobic and epitropic	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2334 1A 3139 2335 1A 3139 2336 1A 3139 2337	✓ ✓ ✓ ✓
1	Fabric filter bag, polypropylene	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2026 1A 3139 2010 1A 3139 2057 1A 3139 2042	✓ ✓ ✓ ✓
1	Fabric filter bag, polypropylene antistatic <sup>‡</sup>	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2034 1A 3139 2018 1A 3139 2065 1A 3139 2050	✓ ✓ ✓ ✓
1	Fabric filter bag, Tetratex	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2278 1A 3139 2279 1A 3139 2280 1A 3139 2281	✓ ✓ ✓ ✓
1	Fabric filter bag, Tetratex antistatic <sup>‡</sup>	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2290 1A 3139 2291 1A 3139 2292 1A 3139 2293	✓ ✓ ✓ ✓
1	Fabric filter bag, Dralon (homopolymer acrylic)	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2022 1A 3139 2000 1A 3139 2053 1A 3139 2038	✓ ✓ ✓ ✓
1	Fabric filter bag, Nomex	0.7 m <sup>2</sup> 1.0 m <sup>2</sup> 1.25 m <sup>2</sup> 1.5 m <sup>2</sup>	1A 3139 2030 1A 3139 2014 1A 3139 2061 1A 3139 2046	✓ ✓ ✓ ✓
	<sup>‡</sup> Fitting antistatic bags will not provide a full earthing arrangement without fitting an additional earthing bar and straps			
2	Insert	0.7 m 1.0 m 1.25 m 1.5 m	1A 3231 9000 1A 3131 9001 1A 3331 9000 1A 3131 9000	
3	Insert clamp – item not illustrated		1A 3131 0007	
<p><b>* Recommended spares for up to two years' operation</b>            Damaged safety related parts and safety components should be replaced only with genuine original spare parts</p>				

Item	Description	Part number	*
4	Jet tube DLM V3/7, V4/7, V5/12, V6/10, V7/7, V7.5/12, V9/15, V10/10, V13/12 and V15/15 DLM V8/7, V14/7, V12/10, V20/10, V15/12, V25/12, V18/15 and V30/15 DLM V21/7, V30/10, V38/12 and V45/15 DLM V50/12 and V60/15	1A 3381 1007 1A 3381 1006 1A 3381 1008 1A 3381 1009	
	<b>Fan assembly</b>		
5	Fan motor†, F1 fan, 0.75 kW, IP55	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 2757 2259 1A 3329 7036
5	Fan motor†, K3 fan, 1.5 kW, IP55	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 2757 2263 1A 3329 7038
5	Fan motor†, KV5 fan, 2.2 kW, IP55	380/3/50HZ 220/3/60HZ	AK 0013221 AK 0013226
5	Fan motor†, KV7 fan, 3.0 kW, IP55	380/3/50HZ 220/3/60HZ	AK 0013231 AK 0013236
5	Fan motor†, KV10 fan, 5.5 kW, IP55	380/3/50HZ 220/3/60HZ	AK 0013241 AK 0013246
5	Fan motor†, KV11 fan, 7.5 kW, IP55	380/3/50HZ 220/3/60HZ	AK 0013251 AK 0013256
5	Fan motor†, KV15 fan, 11.0 kW, IP55	380/3/50HZ 220/3/60HZ	AK 0013261 AK 0013266
	The following fan assemblies are used for Dalamatic Insertables without acoustic diffuser:		
6	F1 fan assembly (including motor†)	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 3321 9017 1A 3321 9018
6	K3 fan assembly (including motor†)	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 3321 9206 1A 3321 9207
6	KV5 fan R270 assembly (including motor†)	380/3/50HZ 220/3/60HZ	AK 0012831 AK 0012836
6	KV7 fan R270 assembly (including motor†)	380/3/50HZ 220/3/60HZ	AK 0012881 AK 0012886
6	KV10 fan R270 assembly (including motor†)	380/3/50HZ 220/3/60HZ	AK 0012931 AK 0012936
6	KV11 fan R270 assembly (including motor†)	380/3/50HZ 220/3/60HZ	AK 0012981 AK 0012986
6	KV15 fan R270 assembly (including motor†)	380/3/50HZ 220/3/60HZ	AK 0013031 AK 0013036
	The following fan assemblies are used for Dalamatic Insertables with acoustic diffuser:		
6	F1 fan assembly (including motor†)	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 3321 9031 1A 3321 9032
6	K3 fan assembly (including motor†)	220-240V/380-420V 50 Hz 250-280V/440-480V 60 Hz	1A 3321 9198 1A 3321 9199
	† For other types/specifications/motors for hazardous areas consult Donaldson For other type of fan consult Donaldson.		
<p><b>* Recommended spares for up to two years' operation</b>                  Damaged safety related parts and safety components should be replaced only with genuine original spare parts</p>			

Item	Description	Part number	*	
6	KV5 fan R180 assembly (including motor <sup>†</sup> )	380/3/50HZ 220/3/60HZ AK 0012821 AK 0012826		
6	KV7 fan R180 assembly (including motor <sup>†</sup> )	380/3/50HZ 220/3/60HZ AK 0012871 AK 0012876		
6	KV10 fan R180 assembly (including motor <sup>†</sup> )	380/3/50HZ 220/3/60HZ AK 0012921 AK 0012926		
6	KV11 fan R180 assembly (including motor <sup>†</sup> )	380/3/50HZ 220/3/60HZ AK 0012971 AK 0012976		
6	KV15 fan R180 assembly (including motor <sup>†</sup> )	380/3/50HZ 220/3/60HZ AK 0013021 AK 0013026		
	† For other types/specifications/motors for hazardous areas consult Donaldson			
7	Impellor, F1 fan	50 Hz 60 Hz 1A 2121 9061 1A 2121 9060		
7	Impellor, K3 fan	50 Hz 60 Hz 1A 3321 9137 1A 3321 9143		
7	Impellor, KV5 fan	50 Hz 60 Hz AK 0013371 AK 0013381		
7	Impellor, KV7 fan	50 Hz 60 Hz AK 0013372 AK 0013382		
7	Impellor, KV10 fan	50 Hz 60 Hz AK 0013373 AK 0013383		
7	Impellor, KV11 fan	50 Hz 60 Hz AK 0013374 AK 0013384		
7	Impellor, KV15 fan	50 Hz 60 Hz AK 0013375 AK 0013385		
	<b>Access door assembly</b>			
8	Draw latch and keeper – item not applicable to DLM V50/12 and V60/15	1A 2253 2526		
9	Exit header spare seals pack (standard temperature)	DLM V3/7 and V5/12 DLM V4/7, V6/10, V7.5/12 and V9/15 DLM V7/7, V10/10, V13/12 and V15/15 DLM V8/7, V12/10, V15/12 and V18/15 DLM V 14/7, V20/10, V25/12 and V30/15 DLM V 21/7, V30/10, V38/12 and V45/15 (front) DLM V 21/7, V30/10, V38/12 and V45/15 (rear) DLM V50/12 and V60/15	1A 3369 4178 1A 3369 4179 1A 3369 4180 1A 3369 4182 1A 3369 4183 1A 3369 4181 1A 3369 4183 1A 3369 4194	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
9	Exit header spare seals pack (high temperature)	DLM V3/7 and V5/12 DLM V4/7, V6/10, V7.5/12 and V9/15 DLM V7/7, V10/10, V13/12 and V15/15 DLM V8/7, V12/10, V15/12 and V18/15 DLM V 14/7, V20/10, V25/12 and V30/15 DLM V 21/7, V30/10, V38/12 and V45/15 (front) DLM V 21/7, V30/10, V38/12 and V45/15 (rear) DLM V50/12 and V60/15	1A 3369 4185 1A 3369 4186 1A 3369 4187 1A 3369 4189 1A 3369 4190 1A 3369 4188 1A 3369 4190 1A 3369 4195	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
<p>* Recommended spares for up to two years' operation            Damaged safety related parts and safety components should be replaced only with genuine original spare parts</p>				



Item	Description	Part number	*
	<b>Controller</b>		
10	For controller spares information refer to Publication 2698 for EVC Controller and Publication 2699 for IPC or IPC ( $\Delta P$ ) Controller IOM AK0303001 for Delta P-C01 Controller		
	<b>Compressed air assembly</b>		
11	Diaphragm valve	1A 3189 9011	
12	Diaphragm valve service kit – item not illustrated	1A 2565 3204	✓
13	Gasket, diaphragm valve	1A 3189 0066	✓
14	Differential pressure gauge assembly – item not illustrated	1A 2151 9155	
	<b>Acoustic diffuser assembly</b>		
15	Acoustic diffuser spare seals pack – item not illustrated DLM V4/7, V6/10, V7.5/12 and V9/15 DLM V7/7, V10/10, V13/12 and V15/15 DLM V8/7, V12/10, V15/12 and V18/15 DLM V 14/7, V20/10, V25/12 and V30/15 DLM V 21/7, V30/10, V38/12, V45/15, V50/12 and V60/15	1A 3369 7006 1A 3369 7007 1A 3369 7008 1A 3369 7009 1A 3369 7010	✓ ✓ ✓ ✓ ✓
<p>* Recommended spares for up to two years' operation Damaged safety related parts and safety components should be replaced only with genuine original spare parts</p>			