

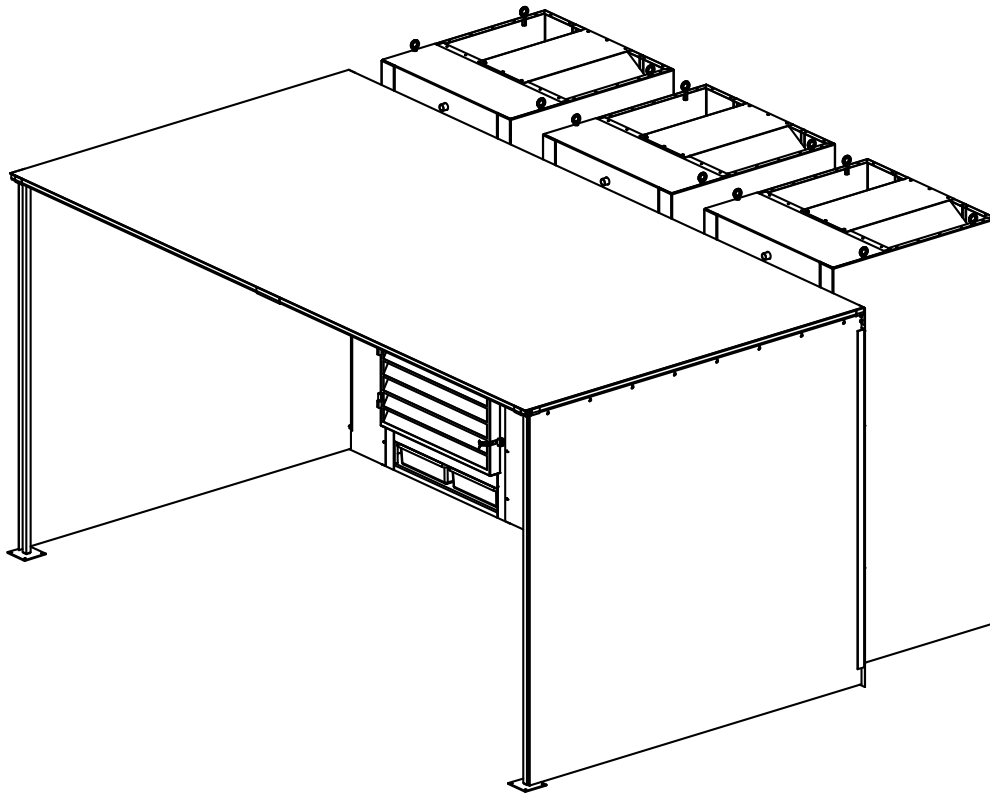


Downflo® Workstation

DWS 4-1, 4-2, 4-3, 4-4 and DWS 6-1, 6-2, 6-3 and 6-4

Installation and Operation Manual

Installation, Operation, and Service Information



This manual is property of the owner. Leave with the unit when set-up and start-up are complete. Donaldson Company reserves the right to change design and specifications without prior notice.

Illustrations are for reference only as actual product may vary.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



APPLICATION OF DUST CONTROL EQUIPMENT

Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials may be present in order to protect workers and property from serious injury or damage due to a fire and/or explosion.

Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

When combustible materials are present you must consult with an expert in fire extinguishing and/or explosion protection systems, who is also familiar with the local codes, for support and guidance on the selection and installation of an appropriate fire and/or explosion protection system.

DO NOT allow sparks, cigarettes or other burning objects to enter the hood or duct of any dust, fume, or mist collection equipment as these may initiate a fire or explosion of any combustible materials accumulated in the collector.

Portions of dust, mist, and fume-collection equipment, including the clean- and dirty-air plenums may be considered "OSHA Confined Spaces." Refer to the appropriate OSHA regulations to determine if a specific installation should be considered a confined space and if a permit program is required.

Recirculating filtered air in your facility can be a hazard. Consult with OSHA to ensure compliance with all codes regarding recirculating filtered air.

Improper operation of a dust, fume, or mist 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 dust, fume, or mist collection equipment is properly selected, installed, and operated for its intended use.

This manual contains specific precautionary statements relative to worker safety. Read this manual thoroughly and comply as directed. Instruct all personnel on the safe use and maintenance procedures related to this equipment. Discuss any questions on the application, use, or maintenance of this equipment with a Donaldson Torit representative.

For optimum collector performance, use only Donaldson Torit replacement parts.

Data Sheet

Model Number _____	Serial Number _____
Ship Date _____	Installation Date _____
Customer Name _____	
Address _____ _____	
Filter Type _____	
Accessories _____	
Other _____	

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DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to personal injury that may result in damage to equipment.

Description

The Downflo WorkStation, DWS, is a continuous duty, self contained, modular workstation with oval cartridge style filters. Continuous duty means the filters can be pulse cleaned - one at a time, without turning the unit off. The modular design creates a custom unit for each application. The DWS power module includes a blower, DWS 4 or DWS 6 filter modules, two (2) dust drawers (available in either metal or plastic), a louver air inlet that can be located in a high or low position, and a ledge less design to reduce dust build up in the collector. Models DWS 4-1, 4-2, 4-3, 4-4, and DWS 6-1, 6-2, 6-3, 6-4 power modules can have joining strips to tie modules together.

Optional booths can be applied for all models. Designed to increase versatility of the unit, standard options include heavy duty wall and ceiling acoustic panels. They also include a ceiling light for each power module on hard sided and roof booths in dust tight or flush mounting lighting. Soft side weld and acoustical curtain booths are also available with a clear plastic ceiling to allow plant light to illuminate the booth. Also, a moveable side shield with canopy booth is available for one module and two module configurations.

Purpose and Intended Use

The DWS is commonly installed in applications where dust containment and noise control from a specific operation are required. Typical applications include; abrasive blasting, batch mixing, composite grinding, and metal grinding.

While the DWS effectively contains dust and controls much of the noise generated within the work area, it does not provide source capture of dust and some noise will be emitted from the booth. The 160 fpm indraft velocity is sufficient to prevent nuisance dust from escaping the DWS.

Abrasive Blasting

Abrasion-resistant options include an open louver inlet and smooth wall booth. Recommended options include, a control panel for reduced installation expense, flush lights for increased headroom, and ASHRAE or HEPA afterfilters for added safety on hazardous dust.

Batch Mixing

Dumping and mixing operations often produce significant amounts of nuisance or hazardous dust. The DWS provides effective dust control and allows complete freedom of movement.

Composite Grinding

The DWS gives the worker complete freedom of movement while grinding or moving around large or odd-shaped parts. Open-pleat Fibra-Web or Ultra-Tek® filters are required for the fibrous nature of composite dust. An open louver inlet is also required for improved dust capture. Recommended options include acoustic panels for a quiet work environment, control panel for reduced installation expense, flush lights for increased headroom, and HEPA afterfilters for added confidence on composite dust.



WARNING Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials may be present in order to protect workers and property from serious injury or damage due to a fire and/or explosion.

Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

Standard Donaldson Torit equipment is not equipped with fire extinguishing or explosion protection systems.

Metal Grinding

The DWS is ideal for collecting dust from metal grinding operations involving large or odd-shaped parts. Open-pleat Fibra-Web filters are required to capture the fibrous and fine dust produced in grinding and buffing operations. Recommended options include, acoustic panels for a quiet work environment, control panel for reduced installation expense, flush lights for increased headroom, and ASHRAE or HEPA afterfilters for added confidence on hazardous dust such as chromium, cadmium, and zinc.

Metal Welding

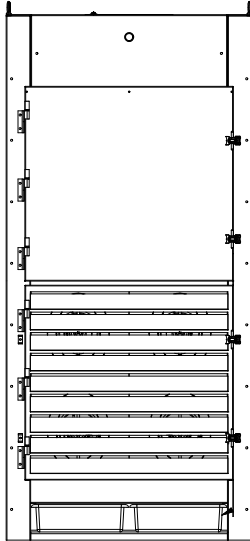
The DWS can be used to collect weld fume from welding operations involving large or odd-shaped parts. Ultra-Web® filters provide the capture efficiency required to control weld fume. The standard louvre door can be located high for fume when sparks are not being generated towards the louvre doors. The low-flow, 5-Hp blower maintains the recommended air-to-media ratio for weld fume and provides optimum filter life.

Recommended options include, acoustic panels for a quiet work environment with flush lights for increased headroom on hard sided booths or soft sided weld curtain booths, control panel for reduced installation expense and ASHRAE or HEPA afterfilters for added safety on hazardous dust such as chromium, cadmium, and zinc.

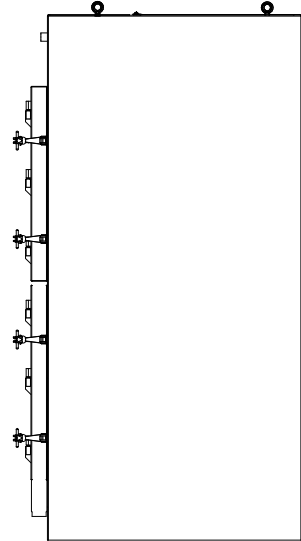
Powder Paint

The DWS gives the worker complete freedom of movement while capturing overspray. Use Ultra-Web filter cartridges for their excellent filtration performance of fine powder. To reduce the number of surfaces dust can settle on and decrease the amount of time required to clean the booth; no inlet door should be used. The low-flow, 5-hp blower allows more powder to coat the part and less powder is wasted. A smooth-wall booth is recommended for a working area without ledges, making the booth easy to clean. OSHA may require ASHRAE afterfilters in powder coat applications. Recommended options include, a control panel for reduced installation expense and external light fixtures for improved lighting.

Rating and Specification Information



Front View DWS 4



Typical Side View DWS 4

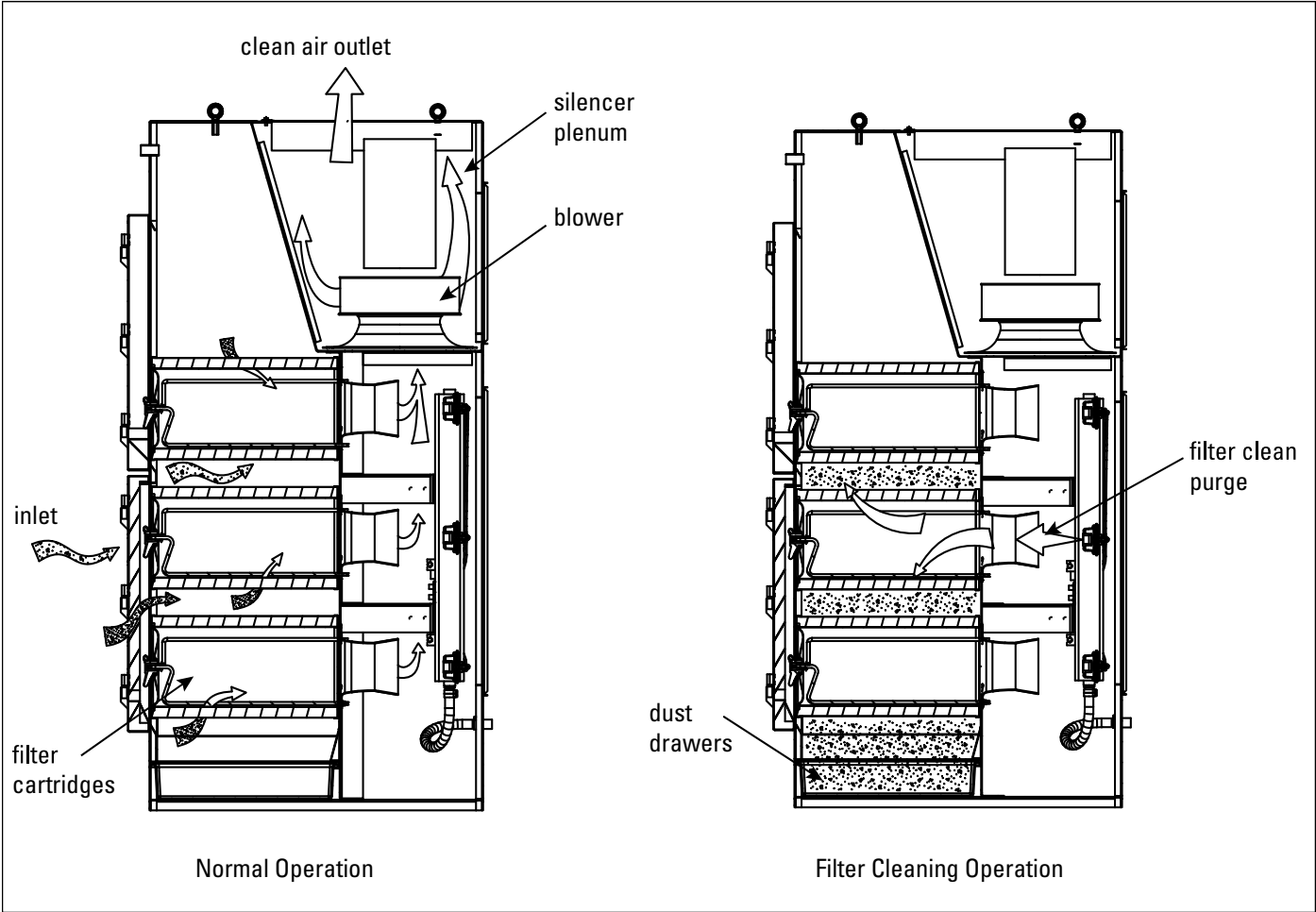
Compressed air, maximum psig	50
Housing rating, inches water gauge	+/- 20
Power, valves and controls	120-Volt 50/60 Hz or
.....	200 VAC 50/60 Hz

*If unit was supplied with a Record Drawing, the specifications on the drawing will supersede the standard specifications above.

Operation

During normal operation, the power module containing the blower draws dust-laden air from the work space through the filter cartridges. Dust collects on the outside surface of the filters. Clean, filtered air flows through to the center of the cartridge, through the clean-air plenum and into the blower silencer plenum. Filtered air exits through the top of the cabinet.

Filter cleaning is completed using pulse-jet technology. A solenoid valve controlled by a solid-state timer and a diaphragm valve aligned to each filter provides the pulse cleaning. The diaphragm valve sends a pulse of compressed air through the filter cartridge from the inside out and collected contaminants fall into the dust drawers. At the end of each pulse, the diaphragm valve closes and the filter cartridge resumes normal operation. One filter cartridge is cleaned per pulse.



Unit Operation

Inspection on Arrival

1. Inspect unit on delivery.
2. Report any damage to the delivery carrier.
3. Request a written inspection report from the Claims Inspector to substantiate any damage claim.
4. File claims with the delivery carrier.
5. Compare unit received with description of product ordered.
6. Report incomplete shipments to the delivery carrier and your Donaldson Torit representative.
7. Remove crates and shipping straps. Remove loose components and accessory packages before lifting unit from truck.
8. Check for hardware that may have loosened during shipping.
9. Use caution removing temporary covers.

Installation Codes and Procedures



Codes may regulate recirculating filtered air in your facility.

Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding recirculating filtered air.

Safe and efficient operation of the unit depends on proper installation.

Authorities with jurisdiction should be consulted before installing to verify local codes and installation procedures. In the absence of such codes, install unit according to the National Electric Code, NFPA No. 70-latest edition and NFPA 91 (NFPA 654 if combustible dust is present).

A qualified installation and service agent must complete installation and service of this equipment.

All shipping materials, including shipping covers, must be removed from the unit prior to, or during unit installation.

NOTICE

Failure to remove shipping materials from the unit will compromise unit performance.

Inspect unit to ensure all hardware is properly installed and tight prior to operating collector.

Installation



Site selection must account for wind, seismic zone, and other live-load conditions when selecting the location for all units.

Codes may regulate acceptable locations for installing dust collectors. Consult with the appropriate authorities having jurisdiction to ensure compliance with all national and local codes regarding dust collector installation.

Site Selection, Grade-Mounted Units

1. The unit should be located on a flat reinforced concrete foundation.
2. Provide clearance from heat sources and interference with utilities when selecting the location for the unit.

Unit Location



Donaldson Torit equipment is not designed to support site-installed ducts, interconnecting piping, or electrical services. All ducts, piping, or electrical services supplied by others must be adequately supported to prevent severe personal injury and/or property damage.

When hazardous conditions or materials are present, consult with local authorities for the proper location of the collector

Foundation must be sized to accommodate the entire weight of the unit, plus the weight of the collected material and piping.

Locate the collector to ensure easy access to electrical and compressed-air connections and routine maintenance.

Rigging Instructions

Suggested Tools & Equipment

Clevis Pins and Clamps	Lifting Slings
Crane or Forklift	Pipe Sealant
Drift Pins	Pipe Wrenches
Drill and Drill Bits	Screwdrivers
End Wrenches	Socket Wrenches
Adjustable Wrench	Spreader Bars
Torque Wrench (inch/lbs, 9/16-in Socket)	

Hoisting Information



Failure to lift the collector correctly can result in severe personal injury or property damage.

Use appropriate lifting equipment and adopt all safety precautions needed for moving and handling the equipment.

A crane or forklift is recommended for unloading, assembly, and installation of the collector.

Location must be clear of all obstructions, such as utility lines or roof overhang.

Use all lifting points provided.

Use clevis connectors, not hooks, on lifting slings.

Use spreader bars to prevent damage to units' casing.

Check the Specification Control drawing for weight and dimensions of the unit, subassemblies, and components to ensure adequate crane capacity.

Allow only qualified crane operators to lift the equipment.

Refer to applicable OSHA regulations and local codes when using cranes, forklifts, and other lifting equipment.

Lift unit and accessories separately and assemble after unit is in place.

Use drift pins to align holes in flanges during assembly.

Electrical Wiring



Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

All electrical wiring and connections, including electrical grounding, should be made in accordance with the National Electric Code (NFPA No. 70-latest edition).

Check local ordinances for additional requirements that apply.

The appropriate wiring schematic and electrical rating must be used. See unit's rating plate for required voltage.

If the unit is not furnished with a factory-mounted disconnect, an electric disconnect switch having adequate amp capacity shall be installed in accordance with Part IX, Article 430 of the National Electrical Code (NFPA No. 70-latest edition). Check unit's rating plate for voltage and amperage ratings.

Refer to the wiring diagram for the number of wires required for main power wiring and remote wiring.

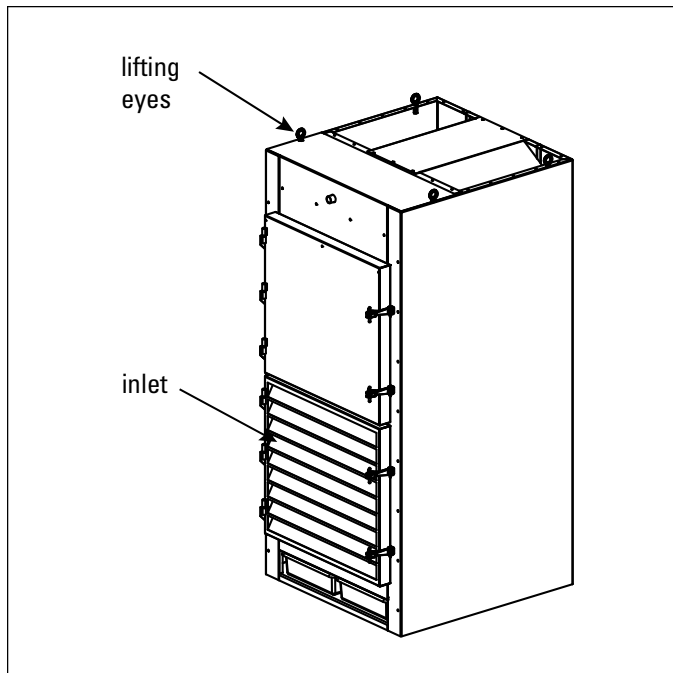
Standard Equipment

Single Power Module Installation

1. Install all lifting eyes (Four (4) per power module). Lifting eyes are shipped loose and install on roof of DWS.
2. Connect lifting sling or chains to the four lifting eyes located on the roof of the DWS.
3. Move the power module into position.

Note: Using the bolt hole plug pack, shipped loose, plug the bolt holes on the power module face with M8 x 20 mm bolts and washers provided.

4. Lifting eyes can be removed once unit is in place to install more power modules and for mounting accessories on roof.



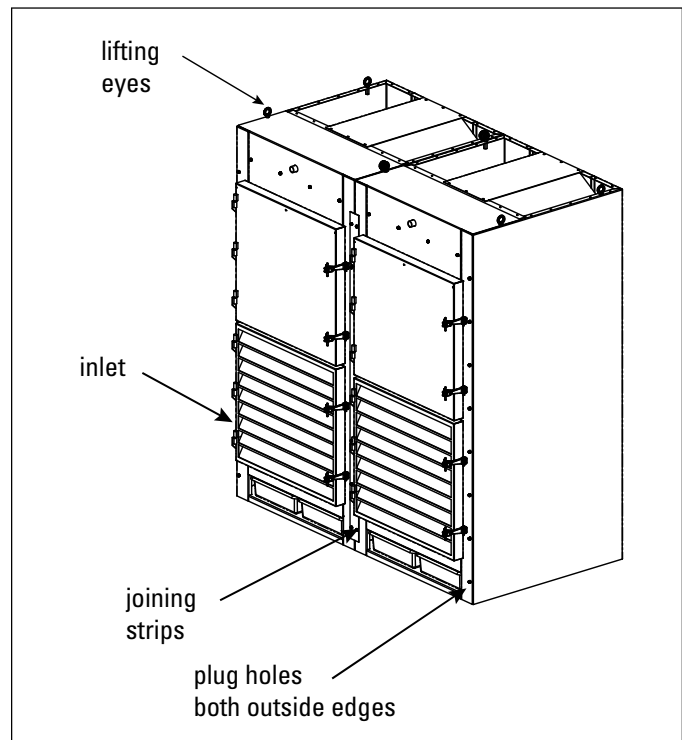
Single Power Module Installation

Multiple Power Module Installation

1. Connect lifting sling or chains to the four lifting eyes located on the roof of the power module.
2. Position the modules side by side. Position the first power module, remove the lifting eyes before positioning the next power module, as the lifting slings and chains can interfere.
3. Secure the power modules together using the joining strips, bolt hole plug pack, M8 x 20 mm bolts, and flat washers.
4. Lifting eyes can be removed once unit is in place to install more power modules and for mounting accessories on roof.

DWS 4-1 to 4-4 and 6-1 to 6-4 Installation

Models DWS 4 and DWS 6 are installed following the Multiple Power Module Installation instructions with the exception of plugging the bolt holes.



Multiple Power Module Installation

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Acoustic Hard Sided Booth Assembly

Note: Use M8 x 45 mm bolts to fasten the side rail channels.

Use M8 x 35 mm bolts to fasten the top support channels.

Use M8 x 20 mm bolts for the remainder of the assembly.

1. Fasten the module side angles to the right and left side of the assembled power modules.
2. Fasten the top panel angle to the top front of each power module.
3. Assemble two booth panels and a side panel angle to form a wall unit.
4. Attach wall to the outside of the power module side angle.
5. Fasten the side-rail channels to the wall using M8 x 45 mm long bolts, flat washers, and hex nuts.
Note: The side-rail channel with four bolt holes fits on the outside bottom of the walls and the side-rail channel with three bolt holes fits on the inside of the walls about midway up. Do not fasten the inside channel until the acoustic panels have been installed.
6. Bolt the gussets to the right and left support legs and fasten the support legs to the edge of the corresponding walls.

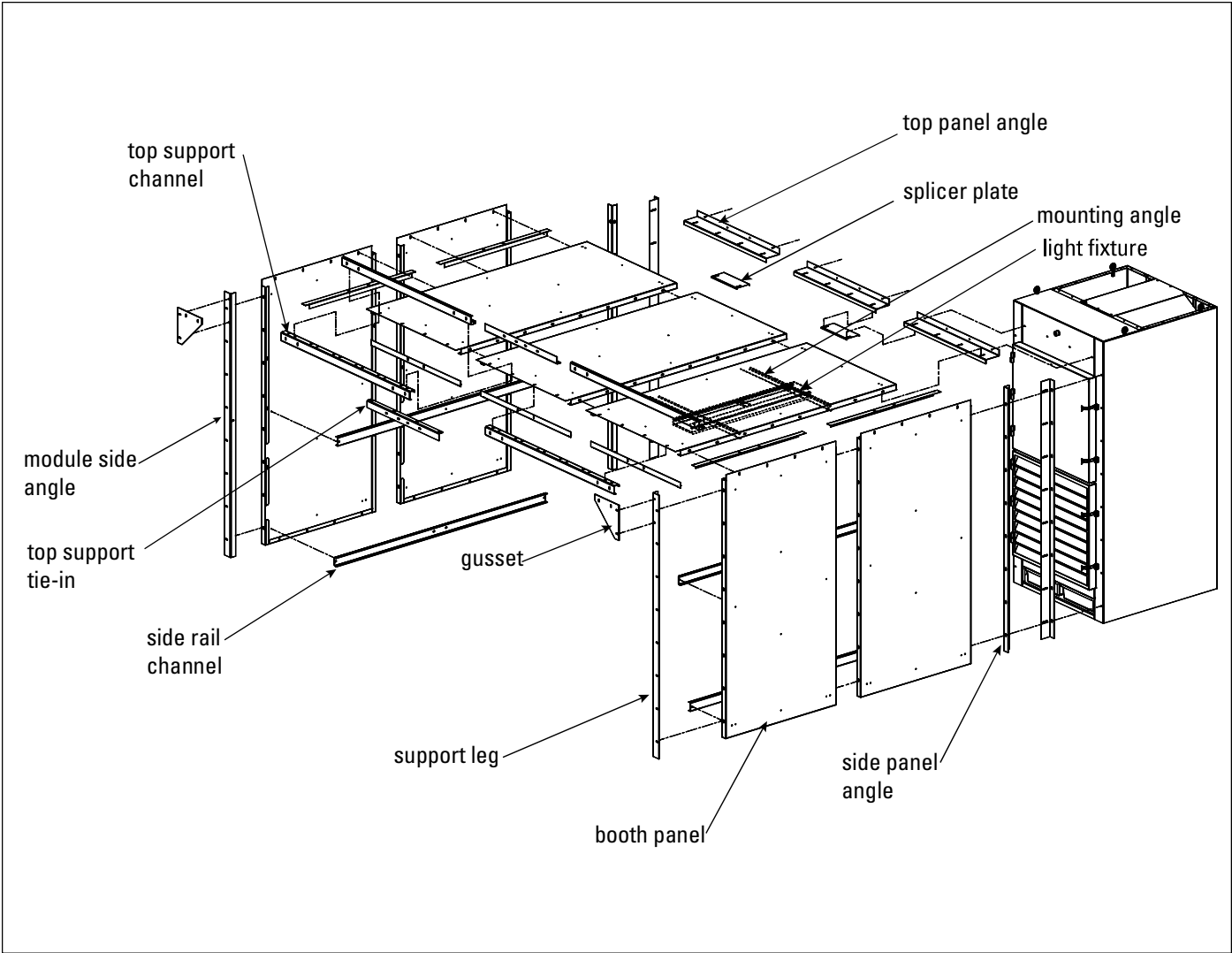
7. Bolt the top support channel to the gussets.

Note: The DWS-2 requires one top support channel. DWS-3 and DWS-4 require two top support channels. When assembling the DWS-3 or DWS-4, bolt the two top support channels and the top support tie-in together and then bolt to the gussets.



Roof panels are not intended as platforms. Personnel should use ladders or other appropriate equipment to avoid risk of personal injury and/or property damage.

8. Install and bolt the booth roof panels in place.
Note: Temporary roof support during assembly is not required. The top panel angles and the top support channels support the roof panels.
9. Attach the splicer plate to the top panel angles with the roof panels.
10. Install the acoustic panels to the power modules, booth roof, and walls.
11. Secure acoustic panels with nylon Christmas Tree™ clips supplied.
12. Install flexible protective caps over exposed end of Christmas Tree clips.
13. Tuck the edges of the booth acoustic panels into the return flanges of the booth panels.
14. See light fixture mounting and wiring.



Acoustic Hard Sided Booth Assembly

Galvanized Hard Sided Booth Assembly

Note: Use M8 x 45 mm bolts to fasten the side rail channels.

Use M8 x 35 mm bolts to fasten the top support channels.

Use M8 x 20 mm bolts for the remainder of the assembly.

1. Fasten the module side panel angles to the right and left side of the assembled power modules.
2. Fasten the top panel angle to the top front of each power module.
3. Assemble two booth panels and a side panel angle to form a wall unit.
4. Attach wall to the outside of the power module side angle.

Note: The stiffener side is the external wall and the side-rail channel is the inside.

5. Fasten the side-rail channels to the wall using M8 x 45 mm long bolts, flat washers, and hex nuts.
6. Bolt the gussets to the right and left support legs and fasten the support legs to the edge of the corresponding walls.
7. Bolt the top support channel to the gussets.

Note: The DWS-2 requires one top support channel. DWS-3 and DWS-4 require two top support channels. When assembling the DWS-3 or DWS-4, bolt the two top support channels and the top support tie in together and then bolt to the gussets.



WARNING

Roof panels are not intended as platforms. Personnel should use ladders or other appropriate equipment to avoid risk of personal injury and/or property damage.

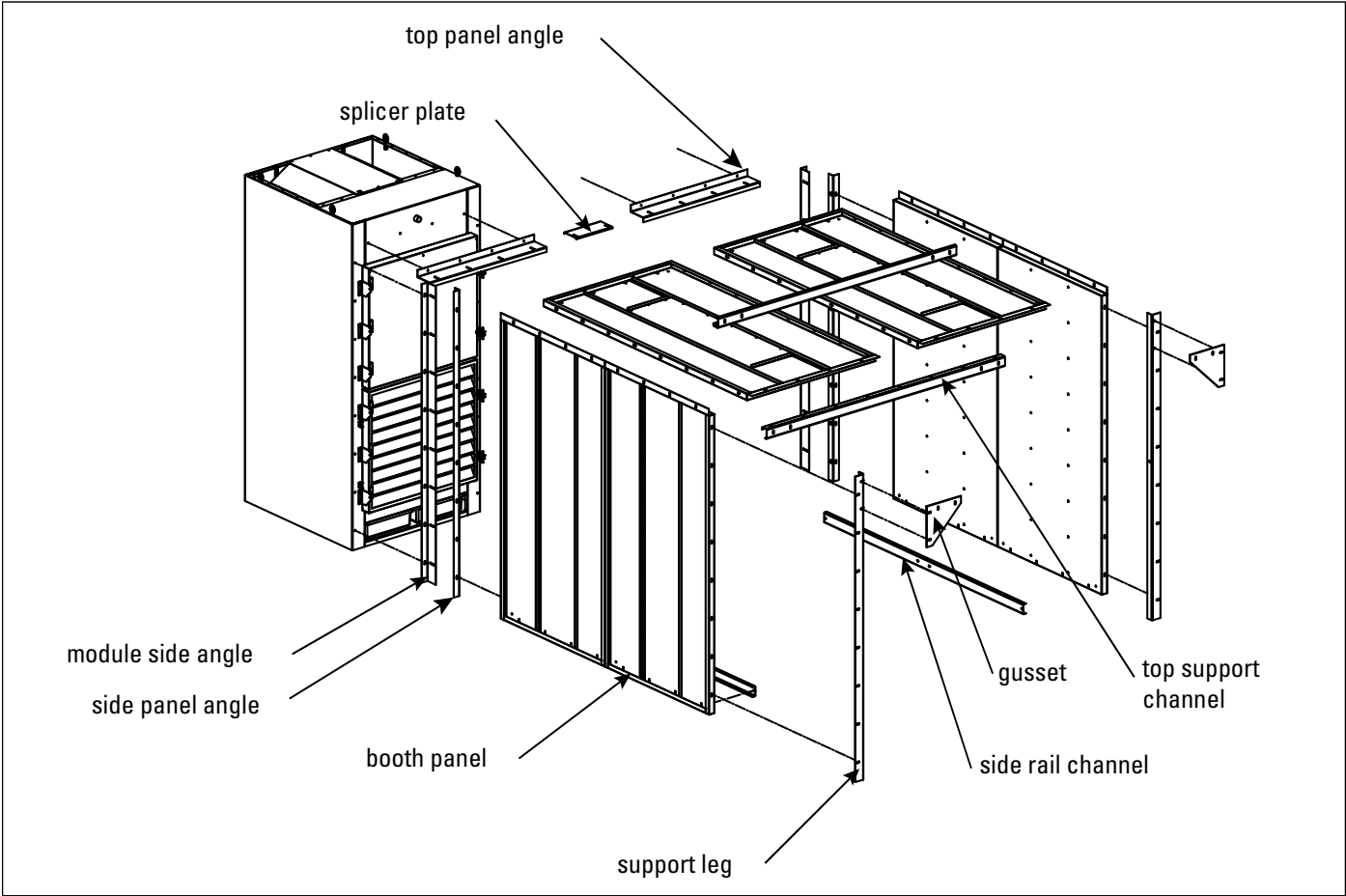
8. Install and bolt the booth roof panels in place.

Note: Temporary roof support during assembly is not required. The top panel angles and the top support channels support the roof panels.

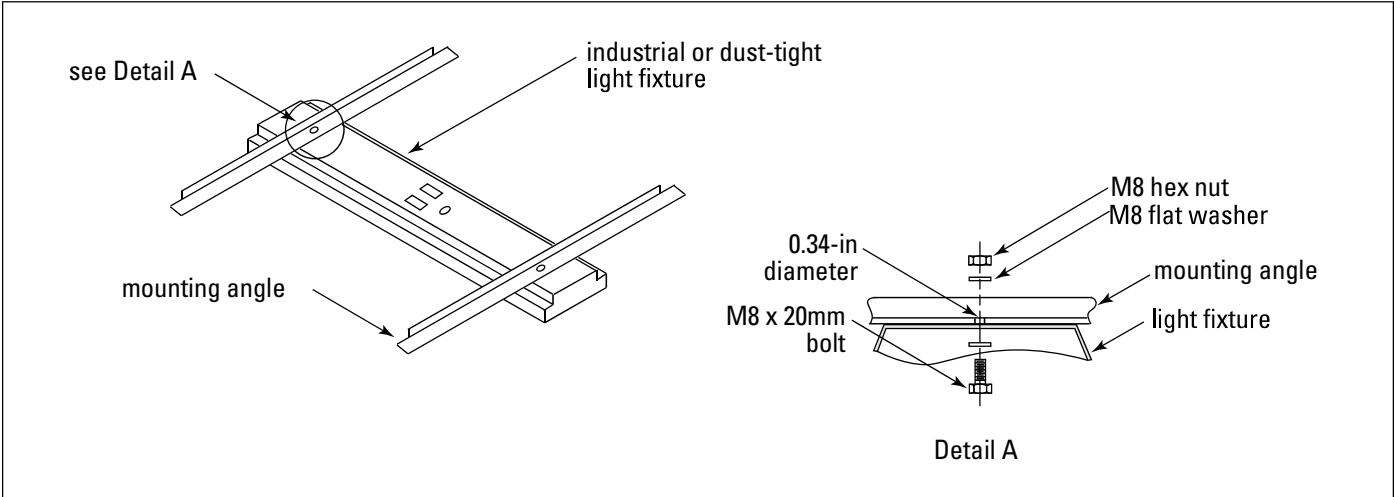
9. Place the light fixture on the clear panel between the stiffener angles on the booth roof.

Light Fixture for Hard Sided Booths

1. Attach the light mounting angles to the booth roof panels using M8 x 20 mm bolts, flat washers, and hex nuts.
2. Mount the light fixture to the mounting angles using M8 x 20 mm bolts, flat washers, and hex nuts supplied.
3. Install customer-supplied fluorescent bulbs.
4. See Electrical Installation for wiring connections.
5. Diaphragm valves have an external solenoid enclosure mounted inside the clean air plenum on the pressure manifold. Wire each solenoid by loosening the solenoid enclosure cover fastening screws. Pull the cover from the solenoid enclosure. Wire solenoids through access points in rear of cabinet and enclosure by referencing wiring diagram.



Galvanized Hard Sided Booth Assembly



Light Fixture Installation

Soft Sided Weld Curtain Booth Assembly

DWS Models 4-2, -3, -4

1. Position the power modules in-line so fronts are even and two sides are touching face-to-face. Position the first power module and remove lifting eyes, repeat this for each additional power module.
2. Remove and reuse the existing bolts and washers to install the joining strips in between the power modules.

DWS Models 6-1, -2, -3

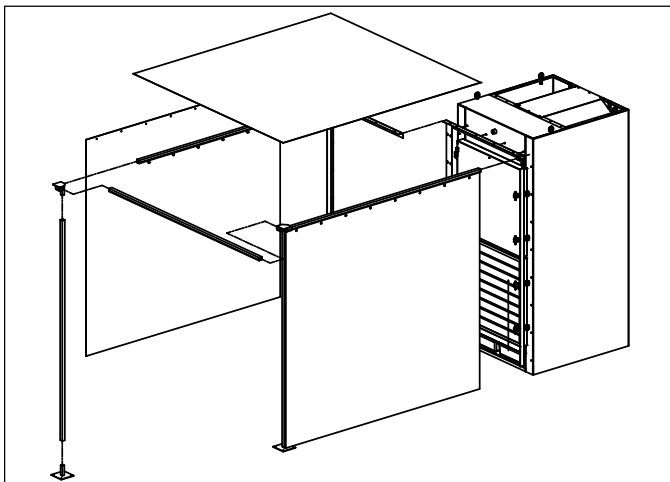
1. For DWS Models 6-2 and -3, check assembly drawings for power module spacing positions. Also, a spacer panel will need to be installed in between the power modules on these models. See drawings for details.
2. Install the side panels on each end of the power module assembly. Remove and reuse the existing bolts and washers on the front of the cabinet.

DWS Models 4 and 6

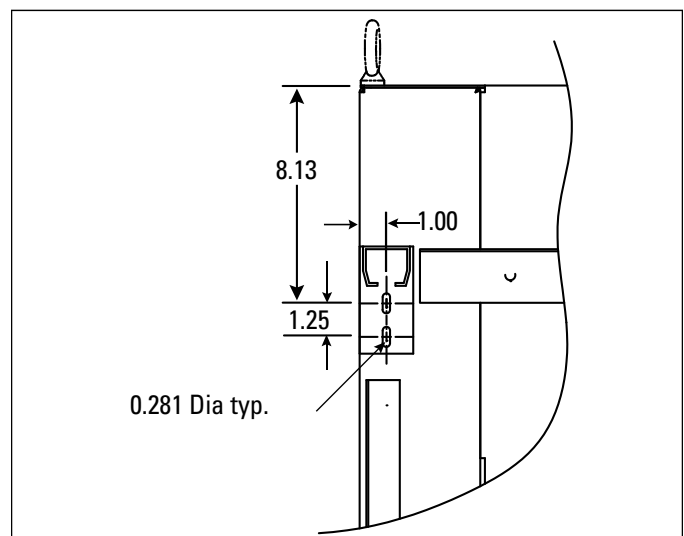
3. Install the side and top angles (3 places) with the existing hardware from the front of each power module. Attach the end brackets (2 places) to the outer ends of each power module with the provided hardware.

Note: for the DWS Models 4-2, -3, -4 only- Four (4) holes will need to be drilled in the front panel of the power module in order for the end brackets to be attached. See Bracket Detail for hole location and size.

4. Insert the foot pad and corner bracket into the front legs.
5. Insert the eight (8) roller hooks into the side channel. Install one end of the side channel into the end bracket mounted to the power module. The other end of the side channel should be installed into the corner bracket. Repeat these steps for the opposite side of the unit.
6. Install each end of the front channel into the corner brackets on each of the front legs. The front channel should extend past the side channels in order to lock in the roller hooks. Square the entire frame assembly and tighten all set screws on the end, corner, and coupling brackets. Anchor leg foot pad to the floor.
7. Install the self-adhesive hook-and-loop fastener around the top of the channels and angles on the power module. Install the clear plastic roof.
8. Install the self-adhesive hook-and-loop fastener strip down the outside of the side angles (2 places) and on the outside surface of the front legs. Hang the tinted side curtain on the roller hooks. Attach the side curtain to the hook-and-loop strips. Repeat this for the opposite side of the booth assembly.



Soft Sided Weld Curtain Booth



Bracket Detail

Soft Sided Acoustical Booth Assembly

DWS Models 4-2, -3, -4

1. Position the power modules in-line so fronts are even and two sides are touching face-to-face. Position the first power module and remove lifting eyes, repeat this for each additional power module.
2. Remove and reuse the existing bolts and washers to install the joining strips in between the power modules.

DWS Models 6-1, -2, -3

1. For DWS Models 6-2 and -3, check assembly drawings for power module spacing positions. Also, a spacer panel will need to be installed in between the power modules on these models. See drawings for details.
2. Install the side panels on each end of the power module assembly. Remove and reuse the existing bolts and washers on the front of the cabinet.

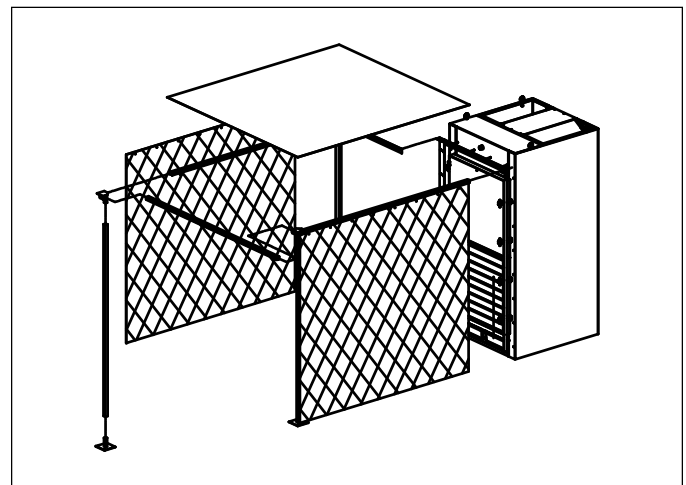
DWS Models 4 and 6

3. Install the side and top angles (3 places) with the existing hardware from the front of each power module. Attach the end brackets (2 places) to the outer ends of each power module with the provided hardware.

Note: for the DWS Models 4-2, -3, -4 only- Four (4) holes will need to be drilled in the front panel of the power module in order for the end brackets to be attached. See Bracket Detail for hole location and size.

4. Install the mounting angles (2 places) just below the sprinkler couplings on the power module. Remove and reuse the existing bolts and washers.
5. Insert the foot pad and corner bracket into the front legs.
6. Insert the eight (8) roller hooks into the side channel. Install one end of the side channel into the end bracket mounted to the power module. The other end of the side channel should be installed into the corner bracket. Repeat these steps for the opposite side of the unit.

7. Install each end of the front channel into the corner brackets on each of the front legs. The front channel should extend past the side channels in order to lock in the roller hooks. Square the entire frame assembly and tighten all set screws on the end, corner, and coupling brackets. Anchor the leg foot pad to the floor.
8. Install the self-adhesive Velcro strip around the top of the channels and angles on the power module. Install the clear plastic roof.
9. Install the self-adhesive Velcro strip down the outside of the side angles (2 places) and on the outside surface of the front legs. Hang the tinted side curtain on the roller hooks. Attach the side curtain to the Velcro strips. Repeat this for the opposite side of the booth assembly.



Soft Sided Acoustical Booth

Compressed Air Installation

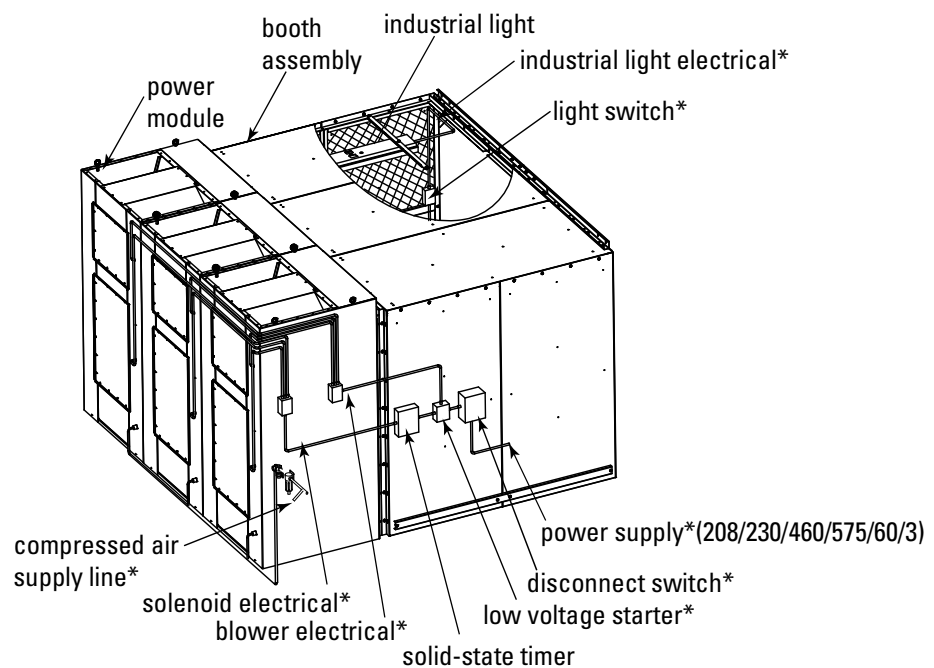
WARNING

Turn compressed-air supply OFF and bleed lines before performing service or maintenance work. A safety exhaust valve should be used to isolate the compressed air supply. The safety exhaust valve should completely exhaust pressure from the collector when closed and include provisions to allow closed-position locking.

NOTICE

Do not set compressed-air pressure above 60-psig. Component damage can occur. All compressed air components must be sized to meet the maximum system requirements of 50-psig supply pressure. The compressed-air supply must be oil and moisture free. Contamination in the compressed air used to clean filters will result in poor cleaning, cleaning valve failure, or poor collector performance. Purge compressed-air lines to remove debris before connecting to the unit's compressed-air manifold.

1. Compressed-air components must be sized for system requirements as follows: one, two, or three power modules, 0.86 CF at 50-psig or 1.0 CF at 60-psig.
2. Connect the compressed-air supply line to the 1-in NPT connection located at the rear of each power module. Use thread-sealing tape or pipe sealant on all compressed-air connections.
3. Install a customer-supplied shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line.
4. With power supply ON, check the operation of the solenoid valves. The valves should open and close sequentially at factory set 10-second intervals.
5. If a Photohelic[®] gauge, Torit Delta P, Torit Delta P Plus, or similar device is used to control the solid-state timer, the solenoid valves pulse only when the differential pressure reaches the high-pressure setpoint. The valves continue to pulse until the low-pressure setpoint is reached.



sprinkler system (not shown)*
* customer supplied

Compressed Air and Component Installation

Solid-State Timer Installation in NEMA 4 Enclosure

WARNING

Electrical installation must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing installation, service, or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

The solid-state timer is an electronic timer used to control the filter cleaning system. Each power module is equipped with four or six 115-Volt AC solenoid valves that energize the diaphragm valves to pulse-clean the filter cartridges. The timer is factory adjusted at 100-millisecond ON time and 10-second OFF time between pulses.

1. Mount the fan starter with low voltage control in a convenient location.
2. Mount the control box as close to the blower motor starter as possible.
3. Using the wiring diagram supplied, wire the blower motor, blower-motor starter, solid-state timer, and solenoid valves. Use appropriate wire gauge for rated amp load as specified by local codes.

Note: Access the solenoid valves and blower motor by removing the access covers at the rear of the power module. After wiring is complete, replace the covers.

Route wiring through the conduit holes located at the rear of the power module. All conduit holes are sized for 3/4-in fittings. Secure all conduit in the blower and solenoid plenums. Seal conduit to prevent airflow from passing through to the control panels.

4. Diaphragm valves have an external solenoid enclosure mounted inside the clean air plenum on the pressure manifold. Wire each solenoid by loosening the solenoid enclosure cover fastening screws. Pull the cover from the solenoid enclosure. Wire solenoids through access points in rear of cabinet and enclosure by referencing wiring diagram.
5. Motor and fan should be wired for clockwise rotation when viewed from the back of the motor.

To reverse rotation, three-phase power supply:
Turn electrical power OFF at source and switch any two leads on the motor junction box.

WARNING

Do not interchange a power lead with the ground wire. Severe damage or personal injury may result.

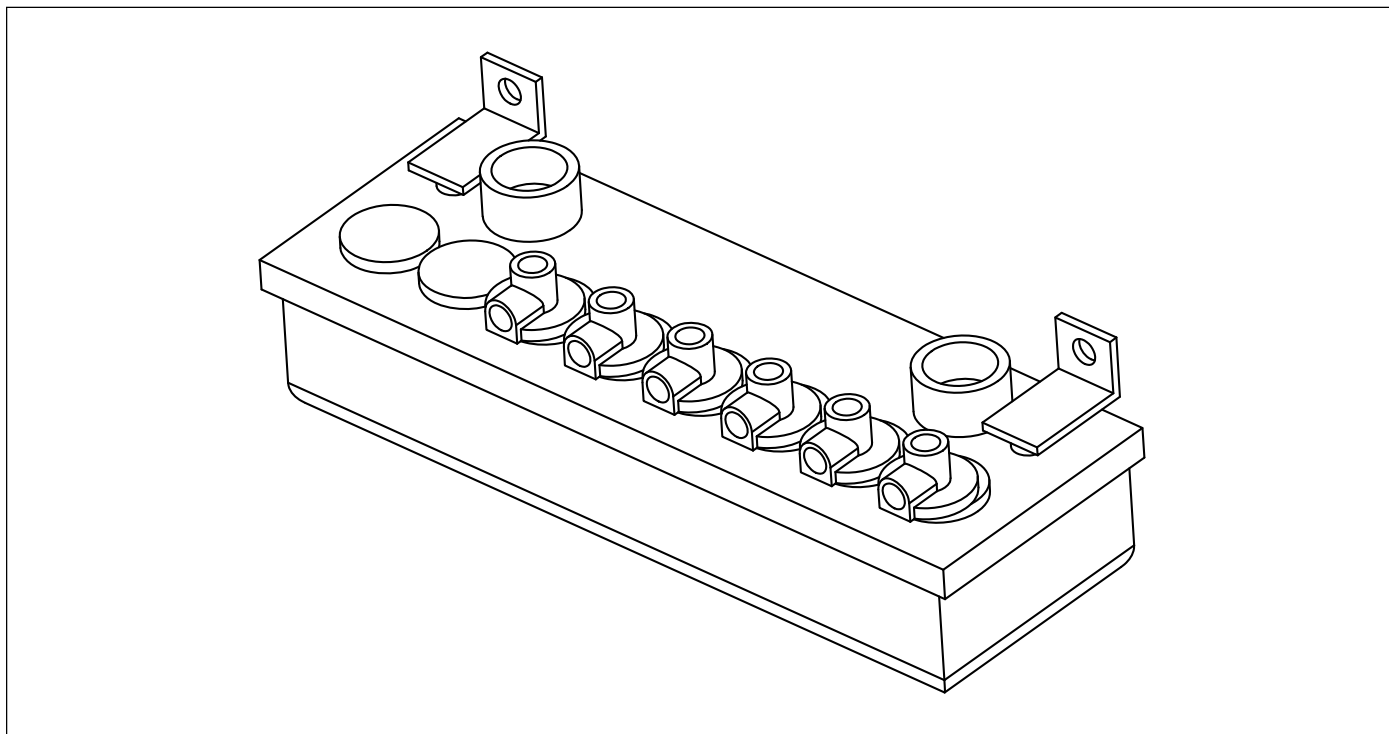
6. Turn the blower motor ON then OFF. Check for clockwise rotation when viewed from the back of the motor.
7. Turn blower fan motor ON.

WARNING

Do not look into fan outlet to determine rotation. View the fan rotation through the back of the motor.

Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.

Stand clear of exhaust to avoid personal injury.



Solenoid Enclosure

Input
105-135V/50-60Hz/1Ph

Output Solenoids
The load is carried and turned ON and OFF by the 200 watt maximum-load-per-output solid-state switch.

Pulse ON Time
Factory set at 100-milliseconds, or 1/10-second.

NOTICE Do not adjust pulse ON time unless the proper test equipment is available. Too much or too little ON time can cause shortened filter life.

Pulse OFF Time
Factory set at 10-seconds, adjustable from 1 to 1.5-second minimum to maximum 60 to 66-second.

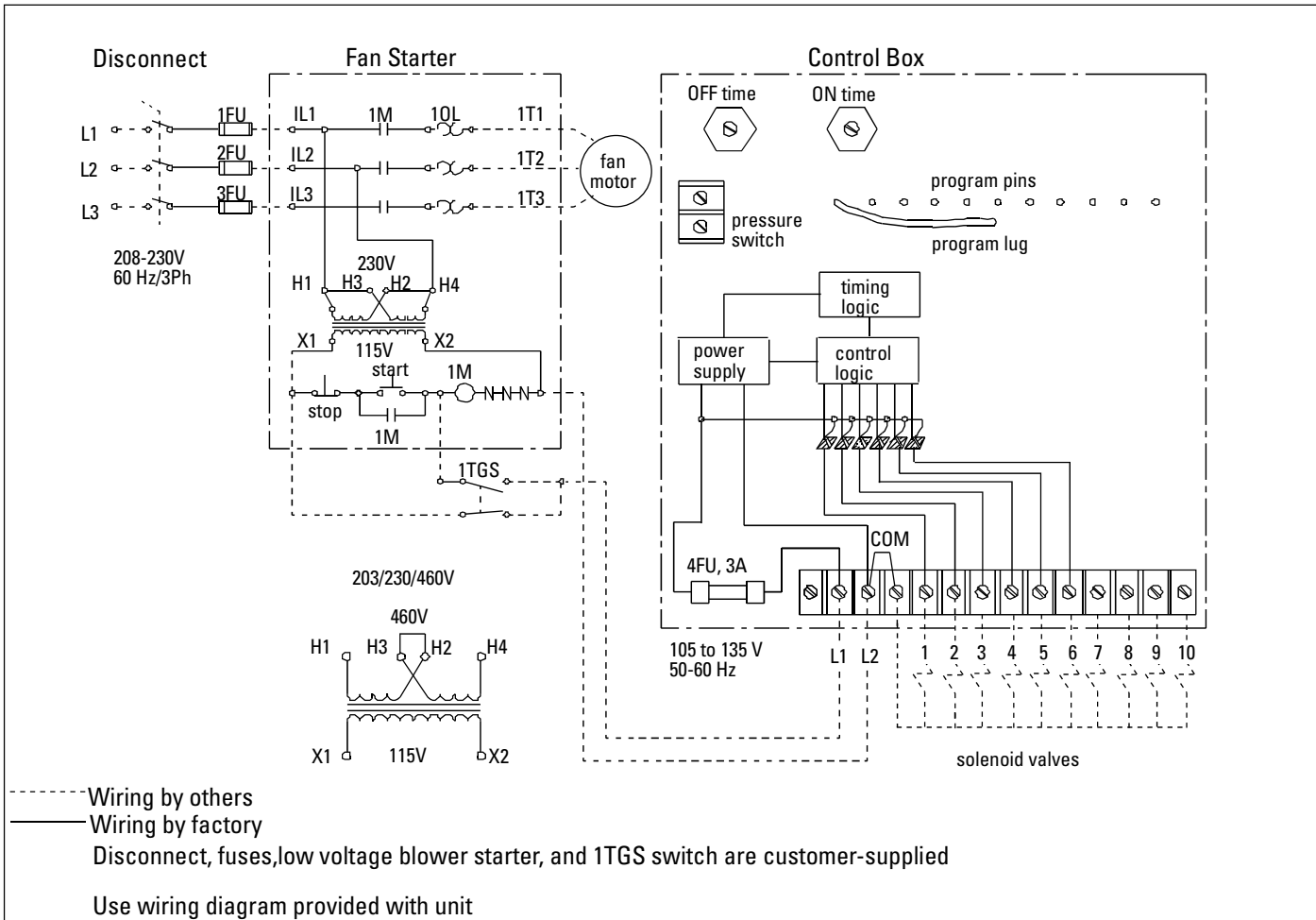
Operating Temperature Range
-20° F to 130° F

Transient Voltage Protection
50 kW transient volts for 20-millisecond duration once every 20 seconds, 1% duty cycle.

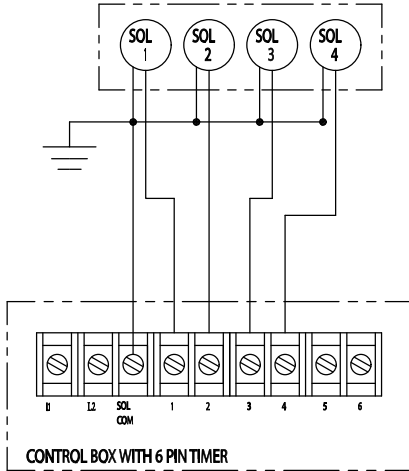
Solenoid Valves
115-V at 19.7 watts each

Compressed-Air
Set compressed-air supply at 50-psig. The timer is factory set to clean one filter or set of filters every 10-seconds.

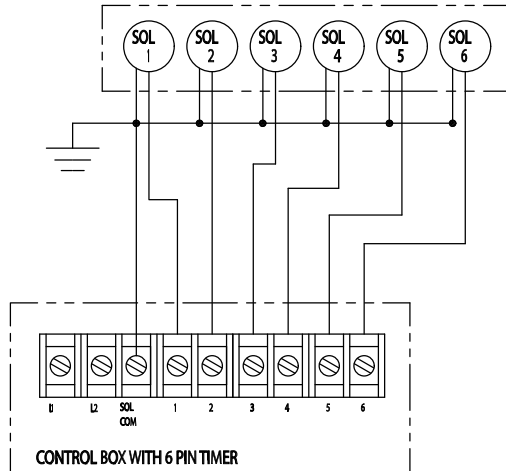
NOTICE Do not increase supply pressure above 60 psig. Component damage can occur.



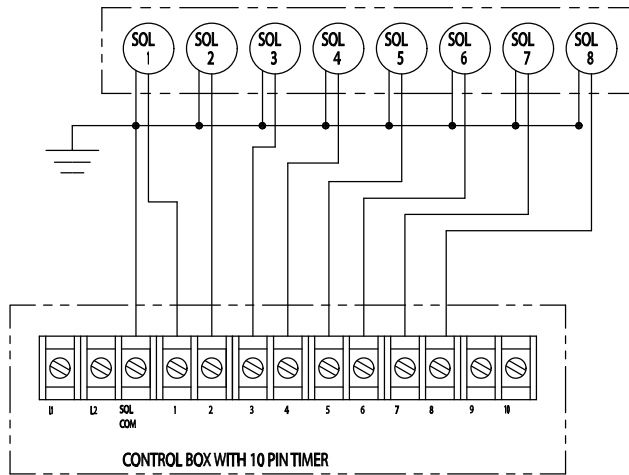
Solid-State Timer Typical Wiring Diagram



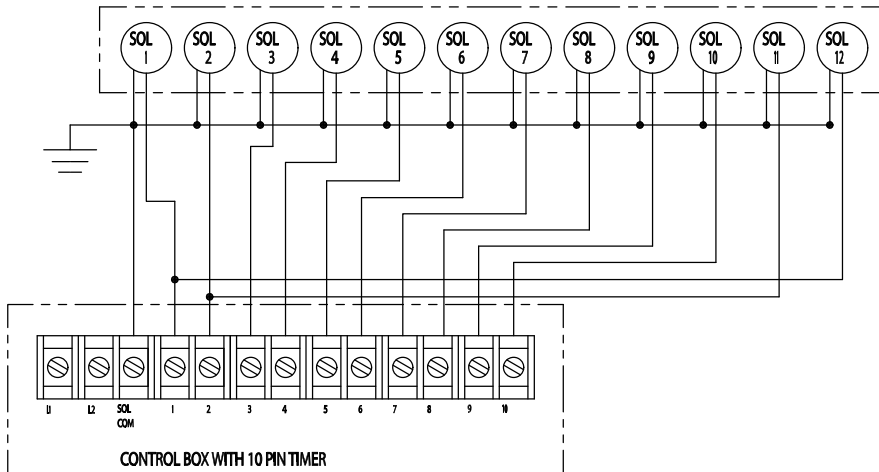
DWS 4-1



DWS 6-1

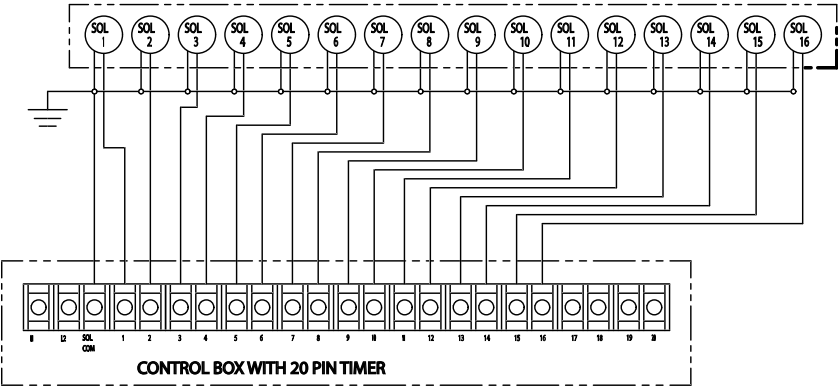


DWS 4-2

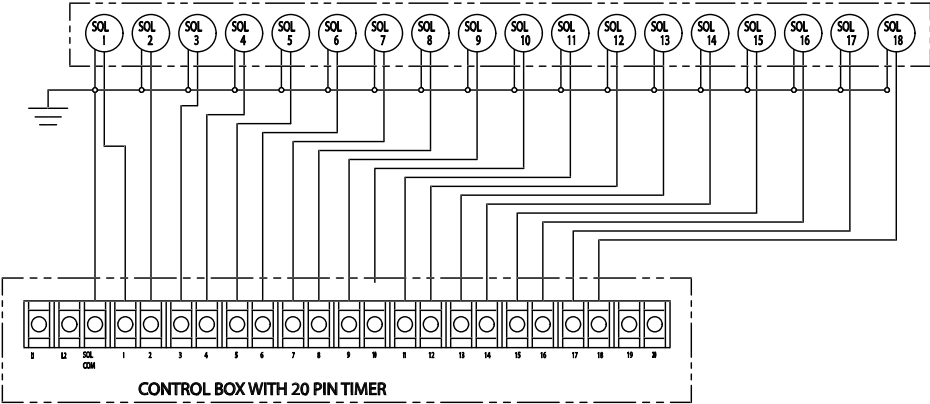


DWS 4-3 & DWS 6-2

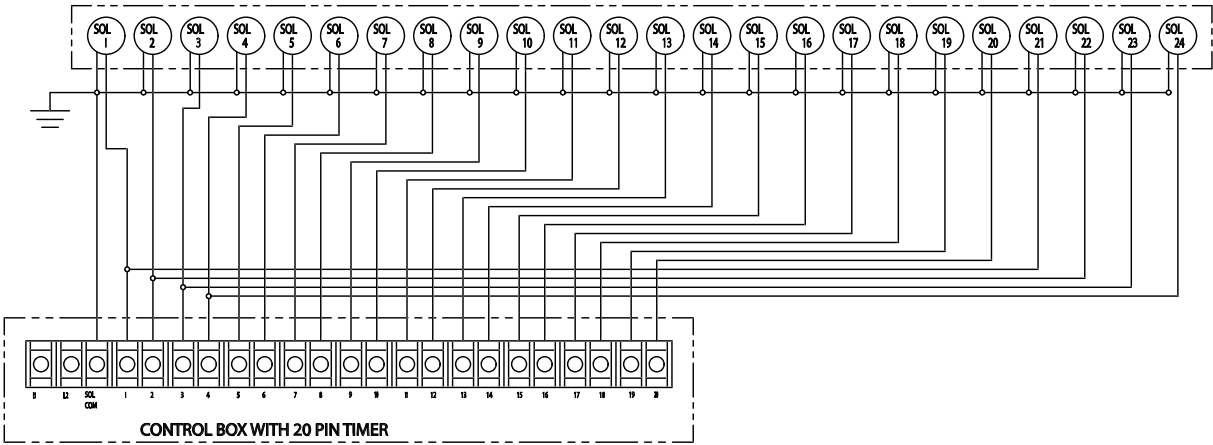
Wiring Diagram, Control Box Timer to Solenoids



DWS 4-4



DWS 6-3



DWS 6-4

Wiring Diagram, Control Box Timer to Solenoids

Preliminary Start-Up Check

Instruct all personnel on safe use and maintenance procedures.

WARNING

Electrical work during installation must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Turn compressed air supply OFF and bleed lines before performing service or maintenance work

Check that the collector is clear and free of all debris before starting.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Optional fans over 600 lbs must be independently supported.

1. Check all electrical connections for tightness and contact.
2. Check that fan wheel set screws are properly torqued (10.5 foot pounds) prior to initial start-up.

WARNING

Set screws on fan wheels must be properly tightened to avoid severe personal injury and/or property damage.

3. Motor and fan should be wired for clockwise rotation when viewed from the back of the motor.

To reverse rotation, single-phase power supply:
Follow manufacturer's instructions on the motor's nameplate.

To reverse rotation, three-phase power supply:
Turn electrical power OFF at source and switch any two leads on the motor junction box.

WARNING

Do not interchange a power lead with the ground wire. Severe damage or personal injury may result.

4. All access panels should be sealed and secure.
5. Check that the dust container is properly sealed and clamped.

6. Check that exhaust damper is set to the fully-closed position.
7. Check and remove all loose items in or near the inlet and outlet of the unit.
8. Check that all remote controls and solenoid enclosures (if applicable) are properly wired and all service switches are in the OFF position.
9. Check that all optional accessories are installed properly and secured.
10. Turn power ON at source.
11. Turn the compressed-air supply ON. Adjust pressure regulator for 50-psig.
12. Turn blower fan motor ON.

WARNING

Do not look into fan outlet to determine rotation. View the fan rotation through the back of the motor.

Check that the exhaust plenum is free of tools or debris before checking blower/fan rotation.

Stand clear of exhaust to avoid personal injury.

13. Adjust airflow with the exhaust damper.

NOTICE

Excess airflow can shorten filter life, cause electrical system failure, and blower motor failure.

14. Check that filter cartridges are secure by turning the filter knob clockwise. Turn by hand only. Do not use a wrench.
15. If equipped, set the Photohelic gauge low setpoint to 3-in, the high setpoint to 4-in, and zero the indicator needle.
16. Set the selector switch to the type of cleaning required.

Optional IEC Control Panel: HAND is continuous clean, OFF is aftershift cleaning.

Note: If aftershift cleaning is selected, set the toggle switch located inside the control panel to ON or STAG (staggered) and zero the Magnehelic® gauge needle.

Maintenance Information

Instruct all personnel on safe use and maintenance procedures.

WARNING

Use proper equipment and adopt all safety precautions needed for servicing equipment. Electrical service or maintenance work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Turn compressed air supply OFF and bleed lines before performing service or maintenance work.

NOTICE

Do not set compressed-air pressure above

50-psig. Component damage can occur.

All compressed air components must be sized to meet the maximum system requirements of 60-psig supply pressure.

The compressed-air supply must be oil and moisture free. Contamination in the compressed air used to clean filters will result in poor cleaning, cleaning valve failure, or poor collector performance.

Purge compressed air lines to remove debris before connecting to the unit's compressed air manifold.

Drain moisture following the manufacturer's instructions. With the compressed air supply ON, check the cleaning valves, solenoid valves, and tubing for leaks. Replace as necessary.

2. Monitor pressure drop across filters.

Abnormal changes in pressure drop indicate a change in operating conditions and possibly a fault to be corrected. For example, prolonged lack of compressed air will cause an excess build-up of dust on the filters resulting in increased pressure drop. Cleaning off-line with no flow usually restores the filters to normal pressure drop.

3. Monitor exhaust.

4. Monitor dust disposal.

5. Check fan wheel set screws.

6. Set screws should be checked and retightened to 10.5 foot pounds after eight hours of operation and again after 80 hours of operation.

WARNING

Set screws on fan wheels must be properly tightened to avoid severe personal injury and/or property damage.

Operational Checklist

1. Monitor the physical condition of the collector and repair or replace any damaged components.

Routine inspections will minimize downtime and maintain optimum system performance. This is particularly important on continuous-duty applications.

Periodically check the compressed air components and replace compressed air filters.

Filter Removal and Installation



WARNING Use proper safety and protective equipment when removing contaminants and filters. Dirty filters may be heavier than they appear. Use care when removing filters to avoid personal injury.

Filter Removal

Note: Remove filter cartridges by opening the top and bottom doors; start with the top filters first. Optional plastic filter bags are offered for filter and dustpan dust removal for cleanliness.

1. Turn the knob counterclockwise until it is loose. Remove knob and access cover.
2. Remove the filter cartridge from the yoke.

Filter Installation

Reusing Hardware

1. Install filter gasket end in first on to yoke.
2. Turn the knob with access cover clockwise to seal the cartridge gasket to the tubesheet. Tighten by hand only. Do not use wrenches.

Fluorescent Bulb Replacement

Industrial Light Fixture

This light fixture uses a wrap around lens that is not fastened to the light housing by fasteners or latches.

To remove the lens: Lift lens one side at a time up and away from the housing.

To replace the bulbs: Rotate and remove from the rotary-lock lamp holders.

Replace with 40 watt, 48-in long fluorescent bulbs.

Dust-Tight Lens Fixture

This light fixture uses latches to hold the lens to the housing.

To remove the lens: Unsnap the latches and lower the lens from the housing.

To replace the bulbs: Rotate and remove from the rotary lock lamp holders.

Replace with 40 watt, 48-in long fluorescent bulbs.

Galvanized Booth Light Fixture

1. Lift and pull the light fixture toward the front of the booth.
2. Leave the fixture on the roof, turn over, and unlatch the lens from the housing.
3. Rotate and remove bulbs from the rotary-lock lamp holders.
4. Replace with 40 watt, 48-in long fluorescent bulbs.
5. Replace the lens, turn the light fixture over, and place the fixture back into the clear panel. Make sure that the light is entirely within the framework of the stiffener angles.

Flush Light Fixture

This light fixture is serviced from inside the booth.

To access the bulbs: Unlatch the lens and hinge down from the housing.

To replace the bulbs: Rotate and remove from the rotary-lock lamp holders.

Replace with 40 watt, 48-in long fluorescent bulbs.

Optional Afterfilter Replacement

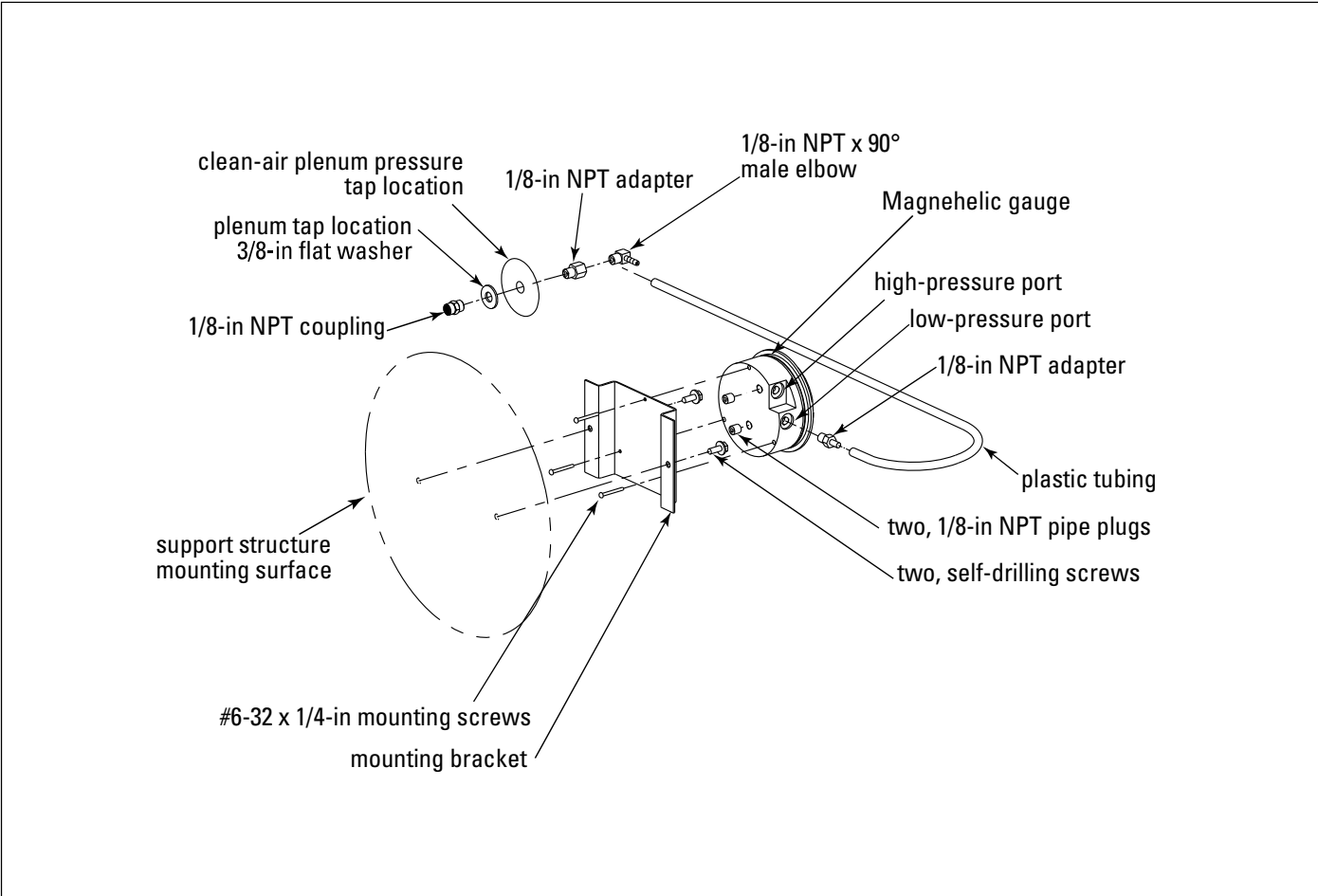
1. Loosen the retaining screws and clamping straps and pull the afterfilters out of the frames.
2. Install the new afterfilters with the airflow arrow located on the side of the filter pointing outward. Airflow is from the inside of the plenum to the outside.
3. Position the clamping straps and tighten the wing screws to secure the new afterfilter.

Optional Equipment

Magnehelic® Gauge

The Magnehelic is a differential pressure gauge used to measure the pressure difference between the clean and ambient air and provides a visual display of filter change requirements. The low-pressure tap is located in the clean-air plenum located on the back of the cabinet.

1. Choose a convenient, accessible location on or near the unit for mounting that provides the best visual advantage.
2. Plug the pressure ports on the back of the gauge using the two supplied 1/8-in NPT pipe plugs. Install one 1/8-in NPT male adapter, also supplied with the gauge, into the low-pressure port on the side of the gauge. Attach the mounting bracket using three #6-32 x 1/4-in screws supplied.
3. Mount the gauge and bracket assembly to the supporting structure using three self-drilling screws.
4. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.



Magnehelic Gauge Installation

Photohelic® Gauge

⚠️ WARNING

Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

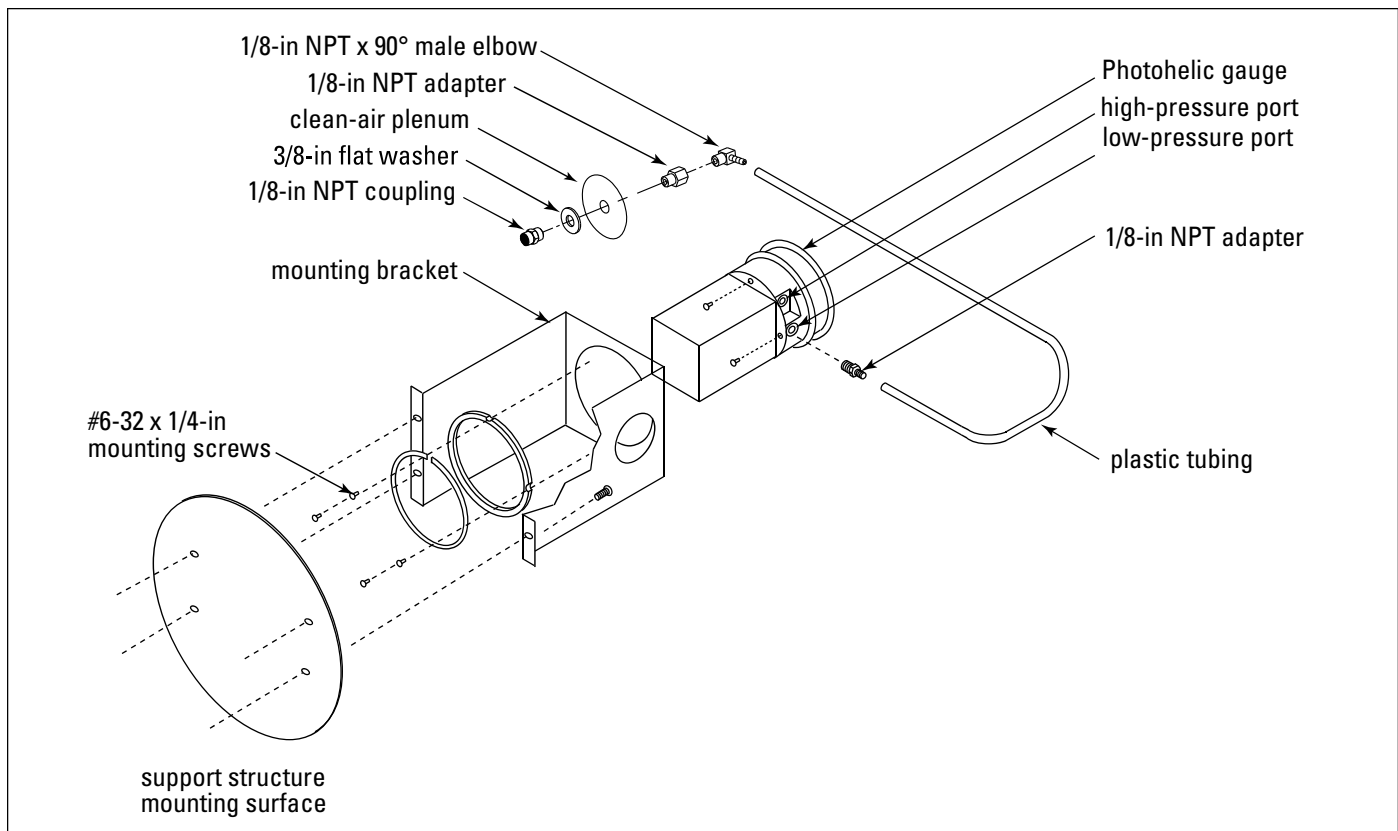
Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

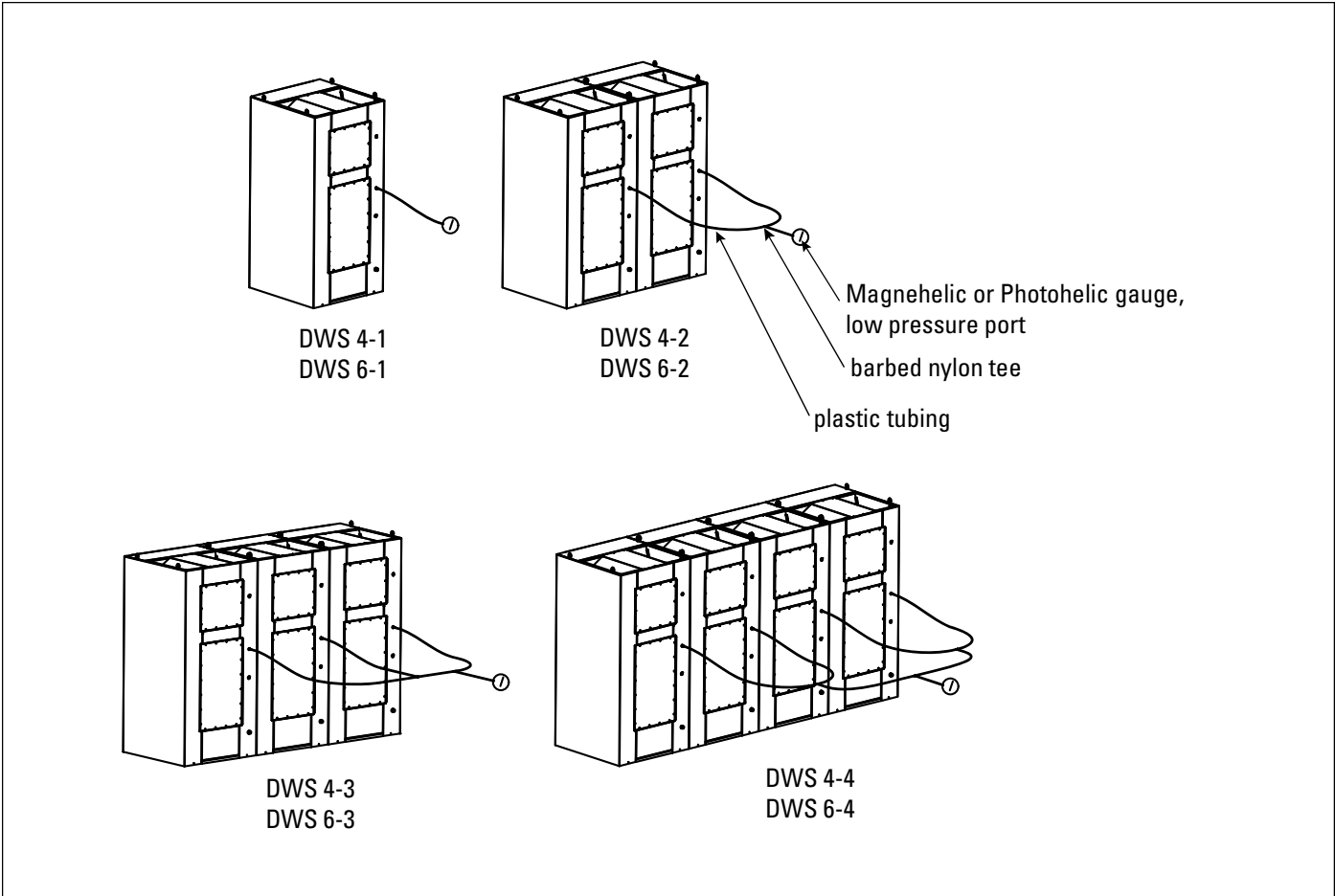
The Photohelic combines the functions of a differential pressure gauge and a pressure-based switch. The gauge function measures the pressure difference between the clean and ambient air and provides a visual display of filter condition. The low-pressure tap is located in the clean-air plenum on the back of the cabinet.

pressure-based switch function provides high-pressure ON and low-pressure OFF control of the filter cleaning system.

1. Choose a convenient, accessible location on or near the unit for mounting that provides the best visual advantage.
2. Mount the gauge to the remote panel or door using the mounting ring, retaining ring, and four #6-32 x 1/4-in screws. Do not tighten screws. Connect one 1/8-in NPT x 1/4-in OD male adapter to the low-pressure port of the gauge. Align the adapter to the 2.375-in hole in the right-hand side of the mounting bracket. Tighten screws.
3. Zero and maintain the gauge as directed in the manufacturer's Operating and Maintenance Instructions provided.



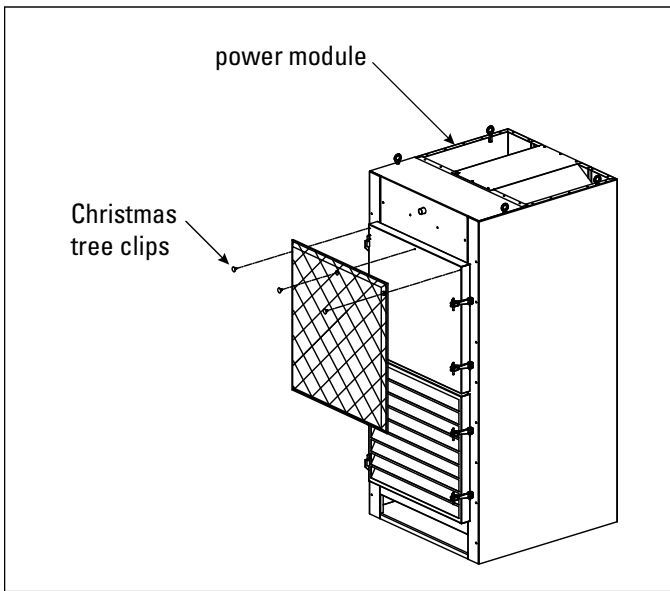
Photohelic Gauge Installation



Magnehelic and Photohelic Gauge and Tubing Installation

Acoustic Curtain for Power Module

1. Install the acoustic curtain to the front of the power module by aligning the acoustic curtain holes with the non-louvre door holes and secure with nylon Christmas Tree™ clips.



Acoustic Curtain Assembly

Light Fixture



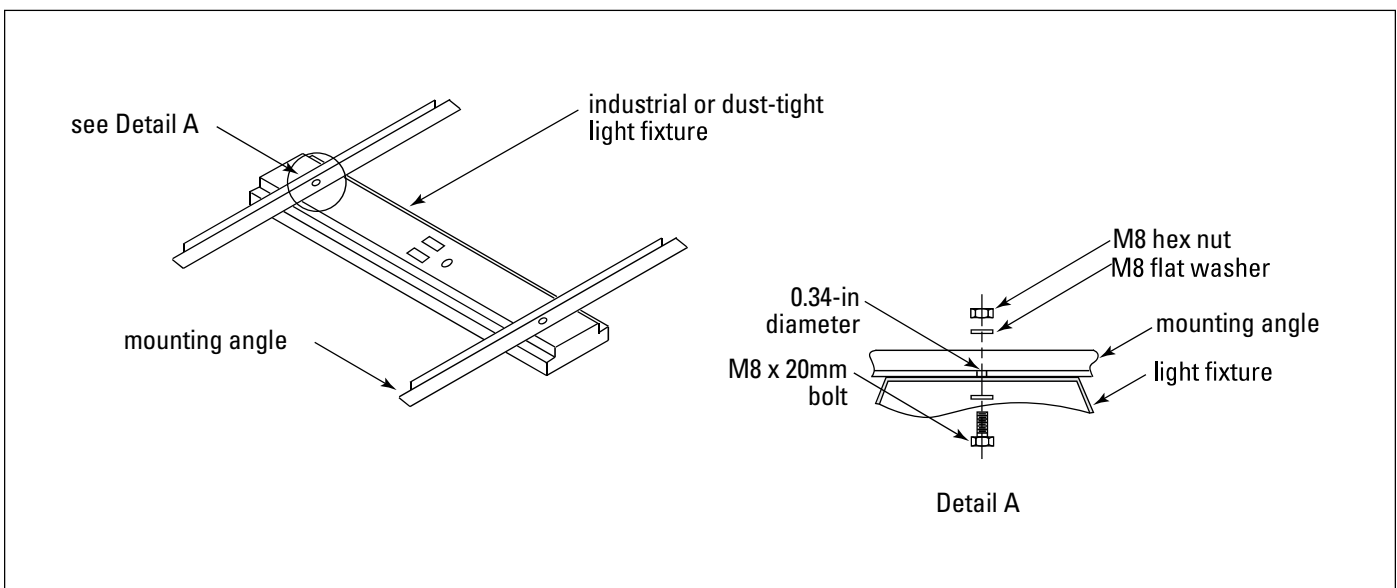
Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

Dust-Tight

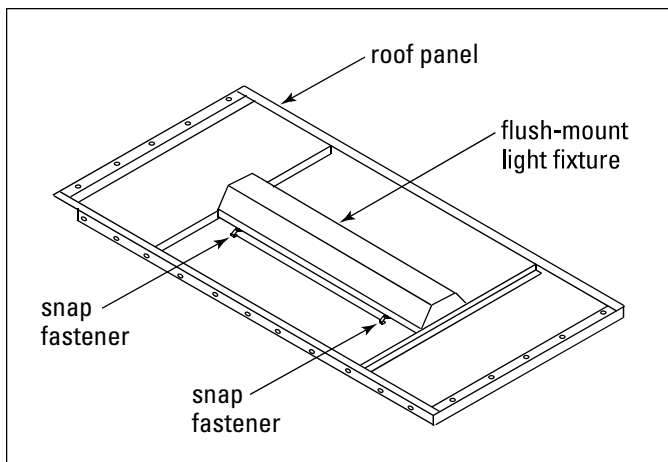
1. Bolt the mounting angles to the roof panels with M8-1.25 x 20 mm bolts, flat washers, and hex nuts.
2. Drill two 11/32-in holes in the center of the 2.25-in diameter boss stamped in the fixture housing.
3. Using the holes drilled in Step 2, attach the fixture to the mounting angles using M8-1.25 x 20 mm bolts, flat washers, and hex nuts.
4. Wire the fixture following the wiring diagram included with the fixture.
5. Install customer-supplied fluorescent bulbs.



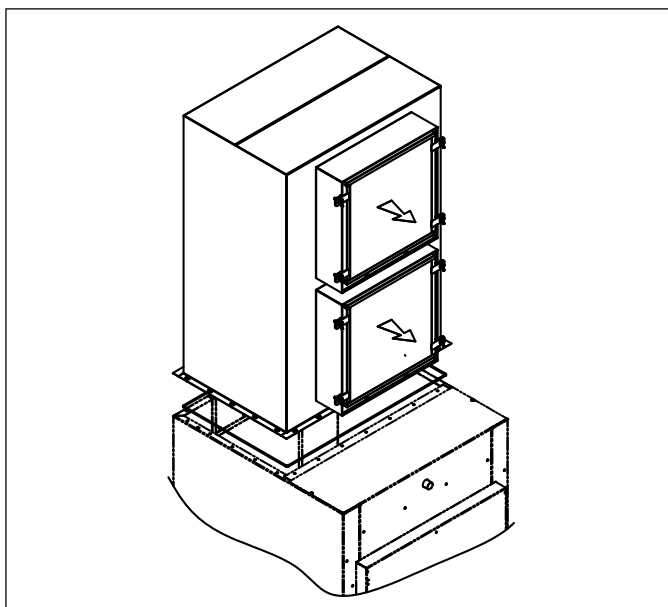
Light Fixture Installation

Flush-Mount

1. Open the four snap fasteners located on top of the roof panel.
2. Install customer-supplied fluorescent bulbs in the fixture.
3. Position the fixture between the angle stiffeners on top of the roof panel.
4. Secure by lowering the snap fasteners to the light fixture flange.
5. Wire the fixture as shown in Light Fixture Installation.



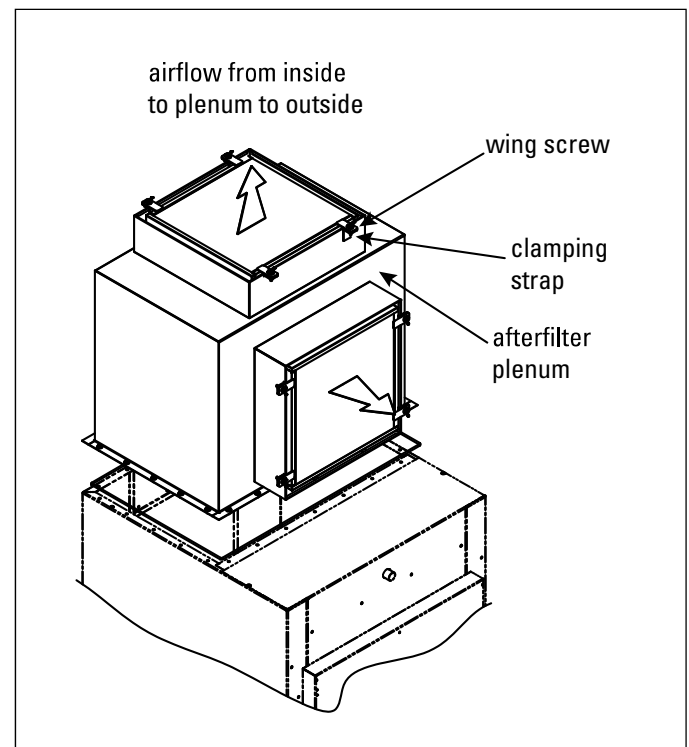
Flush-Mount Light Fixture



Optional AfterFilter 61-in High Installation

Afterfilters

1. Place 1/4-in diameter rope-type sealant to the top flange of the power module.
2. Position the afterfilter plenum on the power module with the vertically mounted afterfilter facing over the booth.
3. Fasten using M8 x 20 mm bolts and flat washers.
4. Install the afterfilters in the afterfilter frame.
5. Install HEPA filters with the filter gasket toward the inside of the frame.
6. Install ASHRAE filters with the airflow arrow pointing to the outside.
7. Position the clamping straps and tighten the wing screws securely.



Optional Afterfilter 40.73-in High Installation

Chamber Silencer

WARNING

Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

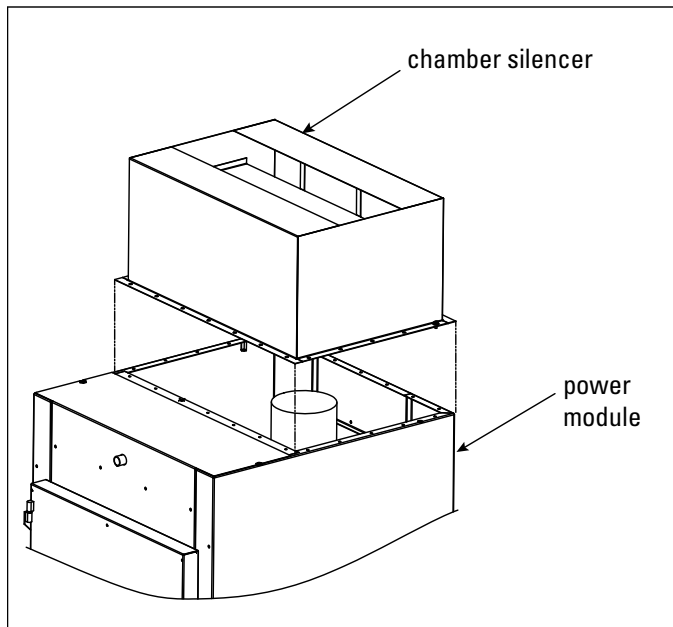
Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

NOTICE

Install chamber silencer after the motors are wired and rotation checked.

Install the silencer to the top of the power module using the hardware supplied.



Chamber Silencer

IEC Control Panel with Programmable Logic Control

This control panel contains a safety disconnect switch, blower motor control, pulse control functions, and a Magnehelic gauge. The Programmable Logic Control, PLC, provides features such as sequential start-up, staggered aftershift cleaning, and troubleshooting capabilities.

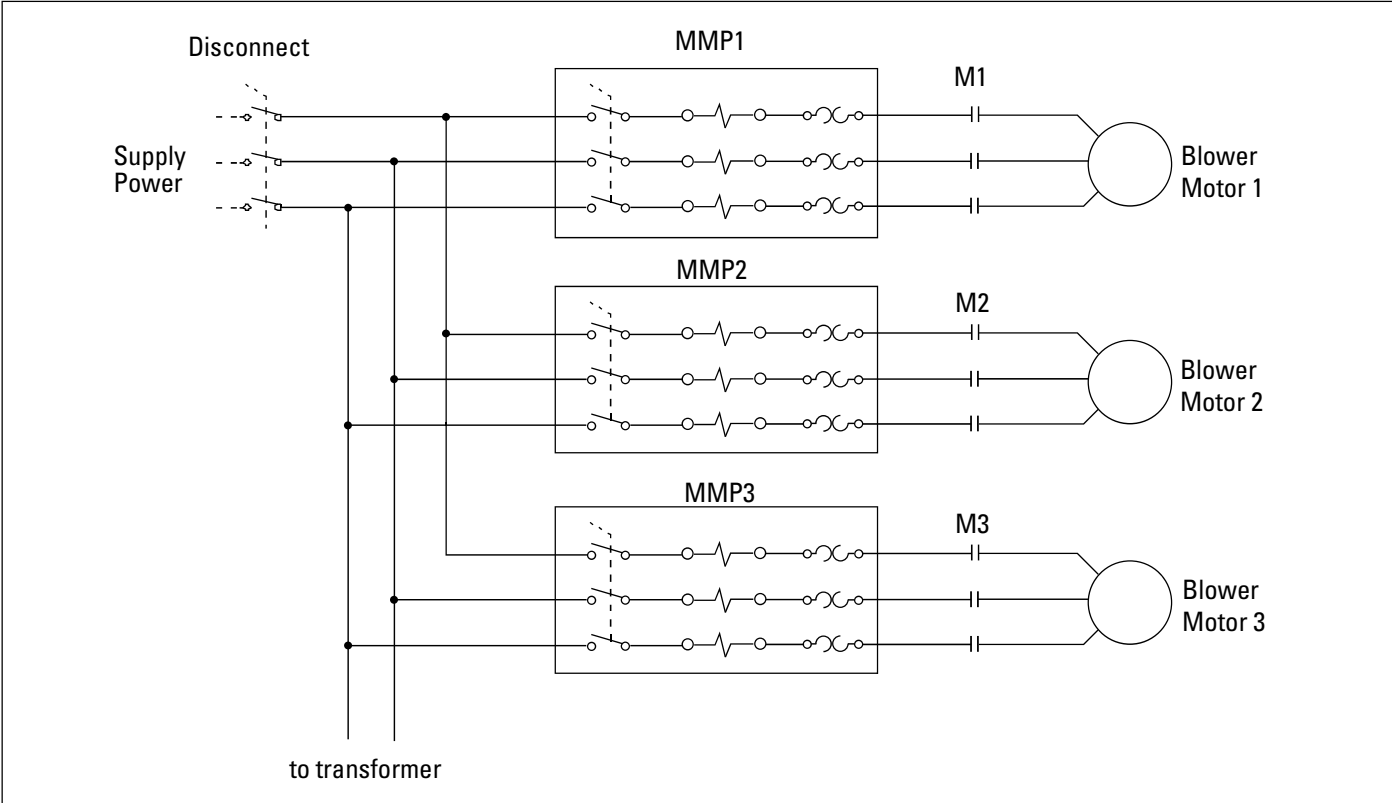
Blower Control Functions

1. This control panel includes magnetic starters with a low-voltage control circuit.
2. The blower motor ON/OFF buttons are located on the control panel cover. A red blower motor RUNNING light is also provided.
3. Sequential start-up is provided for all DWS 4- and DWS 6- 2, 3, and 4 modules. This allows a delay between starting each blower motor and reduces undesirable overload current at start-up.
4. The control panel has troubleshooting capabilities. If a blower motor shuts down due to a failure, such as an overload, the panel will flash the red RUNNING light quickly. The two amber lights, CLEANING and AFTERSHIFT CLEANING, will also flash indicating which circuit tripped the alarm. For example: The overload on motor protector #3 is tripped. The red RUNNING light will flash quickly and the two amber lights, CLEANING and AFTERSHIFT CLEANING, will flash three times, then pause and repeat. This indicates that motor protector #3 has been tripped. The lights will continue to flash until the alarm is serviced.
5. Thermal overload relays and circuit breakers are provided for the motor circuit and fuses for the low voltage circuit. Standard voltages available are 208/230/460/575/60 Hz/3 phase.

Pulse Control Functions

- 1. Each power module has four or six 115-Volt AC solenoid valve enclosure that control four or six diaphragm valves, which clean the filter cartridges. The control panel PLC controls the solenoids.
- 2. The two-position switch on the front panel controls the HAND pulsing mode. When in the HAND mode, pulsing is continuous until the switch is turned to the OFF position or until the blowers are turned off. If hand pulsing is enabled more than once while the blowers are on, the last solenoid valve fired is remembered and the panel fires the next valve in sequence. Pulsing will be continuous while the DWS is running. This setting is suggested for high dust loading situations.
- 3. The aftershift cleaning function is designed to pulse for a designated period of time at the end of the work shift. In this mode, the noise associated with the pulsing of the filter cartridges can be avoided during work hours.
- 4. In conjunction with the aftershift pulsing function, a toggle switch located inside the control box turns the blower motors ON or OFF. When the aftershift push button is activated with the toggle switch in the STAG position, the even-numbered blowers shut off and the odd-numbered blowers remain on. All valves, starting with number one, are pulsed three times. The even-numbered blowers turn on and the odd-numbered blowers turn off. All valves are pulsed three times once more. The even-numbered blowers remain on for three minutes, when all blowers are shut down, and the system is deactivated.

Note: Route wiring through the conduit holes located in the rear of the power module. A conduit hole is also located in the blower panel above the solenoid valves. All conduit holes are sized for 3/4-in fittings. Secure all conduit in the blower plenum and in the solenoid plenum. Seal conduit to prevent air from passing through to the control panels.



Optional IEC Control Panel Motor Wiring Diagram

When the aftershift button is activated in single power module units, the blower turns off and each valve pulses three times. The blower turns on, the valves pulse three more times, and both blower and pulsing turn off.

When the aftershift-cleaning button is pushed, the amber light illuminates and the pulse sequence is initiated. The pulse sequence continues until terminated by the aftershift-cleaning timer. This timer, located inside the control box, is factory set for a specified length of time depending upon how many power modules are used. The timer for a single power module is set at 3 minutes, two module at 6 minutes, three module at 9 minutes, and four module at 12 minutes. This allows each pair of filter cartridges to be pulse cleaned six times at the end of the shift. If experience indicates that more time is required to pulse clean the filter cartridges, the timer can be adjusted from the factory setpoint to a maximum of 100 hours.

Optional IEC Control Panel Installation



WARNING

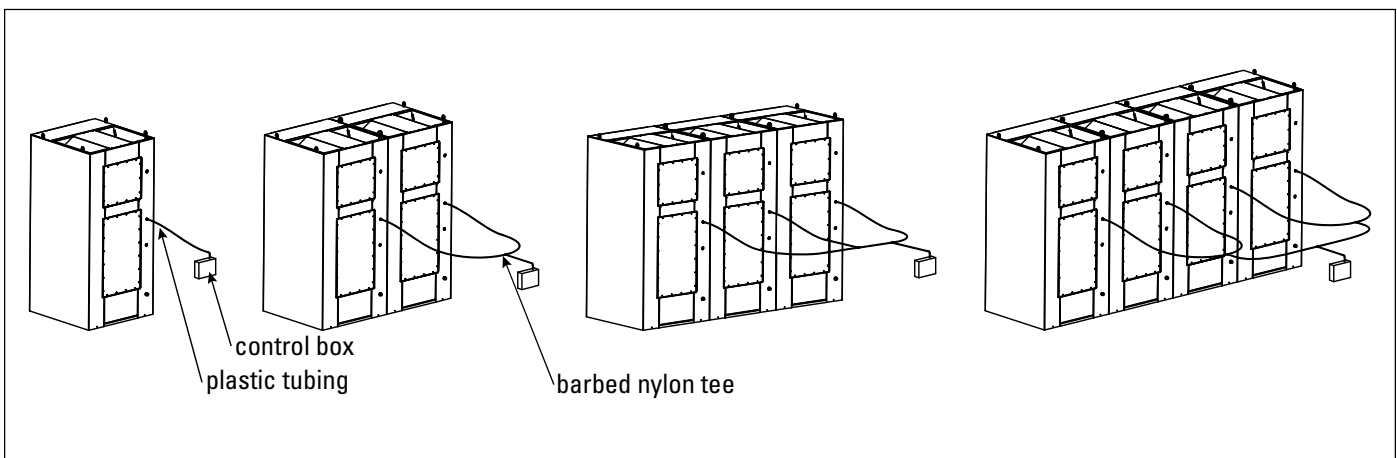
Electrical work must be performed by a qualified electrician and comply with all applicable national and local codes.

Turn power off and lock out electrical power sources before performing service or maintenance work.

Do not install in classified hazardous atmospheres without an enclosure rated for the application.

1. Mount the control panel in a convenient, accessible location.
2. Connect tubing to the low pressure barbed fitting located on the control panel (as shown) to the barb fittings on the rear of the power module marked Low.
3. Wire the control panel to the motor and solenoid valves as shown in Optional IEC Control Panel Motor Wiring Diagram and Optional IEC Control Panel to Solenoid Valves Wiring Diagram.

Note: Access the solenoid valves and blower motor by removing the access covers at the rear of the power module. Replace cover when wiring is complete.

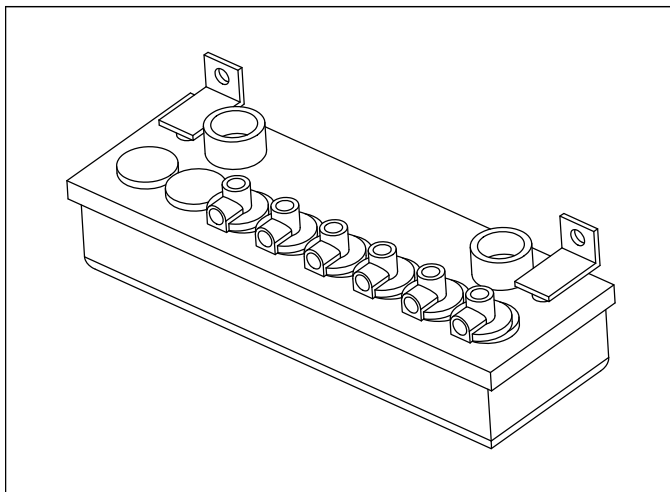


Control Box Tubing Connection

- Turn the blower motor ON then OFF to check for proper rotation by referencing the rotation arrow located on the motor's mounting plate.

To reverse rotation, three-phase power supply: Turn electrical power OFF at source and switch any two leads on the output-side of the blower-motor starter.

- Connect compressed-air supply following the instructions in Compressed Air Installation.
- With power supply ON, check the operation of the solenoid valves by turning the switch on the front of the control panel in the HAND position and pressing the START button. The valves should open and close sequentially at factory set 10-second intervals.
- Turn the switch OFF.



Solenoid Enclosure

Sprinkler Installation

CAUTION

Sprinkler systems place a large quantity of water in the dust collector when activated. Provide adequate drainage to remove water. Excess water weight can cause the leg structure to collapse.

Optional fire control sprinklers are available for all models operating under negative pressure. Donaldson Torit supplied sprinklers require a minimum of 15-psig water pressure to each module. The volume of water discharged per sprinkler head is 20 gallons per minute.

NOTICE

Consult with local authorities when installing fire control systems on dust collection equipment.

- Open the front access doors to access the sprinkler tap located in the dirty-air plenum.
- Apply pipe sealant to the threads of the pipe reducer located on the sprinkler assembly.
- Thread sprinkler assembly onto the 1-in diameter sprinkler tap.
- Tighten securely.



access from inside the dirty-air plenum

Sprinkler Installation

Troubleshooting

Problem	Probable Cause	Remedy
Blower fan and motor do not start	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Unit not wired for available voltage	Correct wiring for proper supply voltage.
	Input circuit down	Check power supply to motor circuit on all leads.
	Electrical supply circuit down	Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.
Insufficient airflow	Fan rotation backwards	Proper fan rotation is clockwise from the top of the unit. The fan can be viewed through the back of the motor. See Preliminary Start-Up Check.
	Fan exhaust area restricted	Check fan exhaust area for obstructions. Remove material or debris. Adjust damper flow control.
	Filters need replacement	Remove and replace using genuine Donaldson replacement filter packs. See Filter Replacement.
	Lack of compressed air	See Rating and Specification Information for compressed air supply requirements.
	Pulse cleaning not energized	Use a voltmeter to check the solenoid valves in the control panel. Check pneumatic lines for kinks or obstructions.
	Pulse control timer board out of adjustment	See Solid-State Timer Installation.
	Compressed air supply wet or oily	Bleed compressed air supply. Check for debris, valve wear, or diaphragm failure by removing the diaphragm cover on the pulse valves. Check for solenoid leaks or damage. If pulse valves or solenoid valves and tubing are damaged, replace.
	Pulse valves leaking compressed air	Lock out all electrical power to the unit and bleed the compressed air supply. Check for debris, valve wear, pneumatic tubing fault, or diaphragm failure by removing the diaphragm cover on the pulse valves. Check for solenoid leaks or damage. If pulse valves or solenoid valves and tubing are damaged, replace.

Problem	Probable Cause	Remedy
Control Box with Pulse Cleaning Control		
Pulse cleaning does not operate	Defective wiring	Check wiring to solenoid valves
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	Timer control box not energized	Check supply voltage to timer board. Check the timer board's fuse. Replace with one of equal value. If supply voltage and fuse are good, observe the control board. The outlet LED indicates if the control board is attempting to pulse. LED's flash to indicate power to the solenoid. Check output with an analog volt meter using the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the timer board.
Pulse cleaning does not operate with the selector switch in the ON position	Defective wiring	Check wiring to solenoid valves.
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	Timer control board not energized	Check supply voltage to timer board. Check the timer board's fuse. Replace with one of equal value. If supply voltage and fuse are good, observe the control board. The outlet LED indicates if the control board is attempting to pulse. LED's flash to indicate power to solenoid. Check output with an analog volt meter using the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the timer board.
Pulse cleaning does not operate with the selector switch in the GAUGE position	Defective wiring	Check wiring to solenoid valves.
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	Timer control board not energized	Check supply voltage to timer board. Check the timer board's fuse. Replace with one of equal value. If supply voltage and fuse are good, observe the control board. The outlet LED indicates if the control board is attempting to pulse. LED's flash to indicate power to solenoid. Check output with an analog volt meter using the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the timer board.
	Defective Photohelic air lines	Check tubing and fittings for leaks or obstructions.

Troubleshooting

Problem	Probable Cause	Remedy
NEMA Control Box with Starter, Pulse Control and Photohelic Gauge		
Pulse cleaning does not operate with the selector switch in the ON position	Defective wiring	Check wiring to solenoid valves.
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	Timer control board not energized	Check supply voltage to timer board. Check the timer board's fuse. Replace with one of equal value. If supply voltage and fuse are good, observe the control board. The outlet LED indicates if the control board is attempting to pulse. LED's flash to indicate power to solenoid. Check output with an analog volt meter using the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the timer board.
Pulse cleaning does not operate with the selector switch in the GAUGE position	Defective wiring	Check wiring to solenoid valves.
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	Timer control board not energized	Check supply voltage to timer board. Check the timer board's fuse. Replace with one of equal value. If supply voltage and fuse are good, observe the control board. The outlet LED indicates if the control board is attempting to pulse. LED's flash to indicate power to solenoid. Check output with an analog volt meter using the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the timer board.
	Defective Photohelic air lines	Check tubing and fittings for leaks or obstructions.
	Defective Photohelic gauge	Use a voltmeter and the wiring diagram to check for power at Terminals L1 and L2. If power is present, move setpoint indicators below gauge pressure reading. If pulsing does not begin when pressure exceeds the high setpoint, replace the gauge. If power is not present at Terminals L1 and L2, check the CR1 relay function.

Problem	Probable Cause	Remedy
NEMA Control Box with Starter, Pulse Control and Phothelic Gauge		
Blower motor does not start	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
If a blower motor fails to start or shuts down due to a short, overload or other fault, the panel indicates an alarm by flashing the RUNNING light. Two amber lights flash in a pattern indicating which circuit tripped the alarm.	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Unit not wired for available voltage	Correct wiring for proper supply voltage.
	Branch circuit protection or overload tripped	Disconnect power using the disconnect switch. Press the black start button on the Manual Motor Protector, MMP. The red stop button should remain extended. The overload relay in the MMP resets automatically when the black start button is reset.
For example: The overload on the manual motor protector #3 trips. The RUNNING light starts flashing. The amber lights blink three times indicating the #3 motor. The alarm feature repeats itself until the STOP button is pressed and the circuit is reset.	Defective motor branch circuit protection or overload relay	Replace as necessary.
	Defective control transformer or control transformer branch circuit protection	Disconnect power using the disconnect switch. Check the control transformer T1, the primary fuse FU1, and the secondary fuse FU2. If fuses are good, check output voltage for 115-Volts. Replaced the transformer if output voltage is excessively high or low.

Troubleshooting

Problem	Probable Cause	Remedy
IEC Control Panel with Starter, PLC, and Magnehelic Gauge		
<p>Blower motor does not start</p> <p>If a blower motor fails to start or shuts down due to a short, overload or other fault, the panel indicates an alarm by flashing the RUNNING light. Two amber lights flash in a pattern indicating which circuit tripped the alarm.</p> <p>For example: The overload on the manual motor protector #3 trips. The RUNNING light starts flashing. The amber lights blink three times indicating the #3 motor. The alarm feature repeats itself until the STOP button is pressed and the circuit is reset.</p>	Improper motor wire size	Rewire using the correct wire gauge as specified by national and local codes.
	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Unit not wired for available voltage	Correct wiring for proper supply voltage.
	Branch circuit protection or overload tripped	Disconnect power using the disconnect switch. Press the black start button on the Manual Motor Protector, MMP. The red stop button should remain extended. The overload relay in the MMP resets automatically when the black start button is reset.
	Defective motor branch circuit protection or overload relay	Replace as necessary.
Defective control transformer or control transformer branch circuit protection	Disconnect power using the disconnect switch. Check the control transformer T1, the primary fuse FU1, and the secondary fuse FU2. If fuses are good, check output voltage for 115-Volts. Replace the transformer if output voltage is excessively high or low.	
<p>Pulse cleaning does not operate</p>	Defective wiring	Check wiring to solenoid valves.
	Defective solenoid valves	Check solenoid coils and replace as necessary.
	PLC output is not energized or is defective	Check supply voltage to the PLC timer. If voltage is not present at PLC Terminals L and N, check the control transformer fuses FU1 and FU2. Observe the output LED's corresponding to the wiring diagram. Set the selector switch SW1 to ON. The LED's flash in sequence indicating the PLC is pulsing the solenoid valves. Check the output voltage between neutral N, 302, 303, and remaining solenoid connections using an analog voltmeter set to the 150-Volt AC scale. The needle deflects if voltage is present when LED flashes. If LED's do not flash or no voltage is present, replace the PLC.
Lack of compressed air	Maintain 50-60 psig. Adjust as necessary.	

Problem	Probable Cause	Remedy
IEC Control Panel with Starter, PLC, and Magnehelic Gauge		
Aftershift pulse not working properly	Not wired correctly	Check and correct motor wiring for supply voltage. See motor manufacturer's wiring diagram. Follow wiring diagram and the National Electric Code.
	Blown fuse	Check the transformers primary and secondary fuses FU1 and FU2.
	Lack of compressed air	Maintain 50-60 psig. Bleed compressed air supply. Check for debris, valve wear, or diaphragm failure by removing the diaphragm cover on the pulse valves. Check for solenoid leaks or damage. If pulse valves or solenoid valves and tubing are damaged, replace.
Push buttons do not work, no pulse cleaning	Loss of power	Check disconnect, fuses and transformer
	Defective PLC	Check that the power LED, POW is lit. If neither or only one LED is lit, replace the PLC. Check error LED's, ERR1 and ERR2. If lit, replace the PLC.

Service Notes

Date	Service Performed	Notes

The Donaldson Torit Warranty

Donaldson warrants to the original purchaser that the major structural components of the goods will be free from defects in materials and workmanship for ten (10) years from the date of shipment, if properly installed, maintained and operated under normal conditions. Donaldson warrants all other Donaldson built components and accessories including Donaldson Airlocks, TBI Fans, TRB Fans, Fume Collector products, Donaldson built electrical control components and Donaldson built Afterfilter housings for twelve (12) months from date of shipment. Donaldson warrants Donaldson built filter elements to be free from defects in materials and workmanship for eighteen (18) months from date of shipment. Donaldson does not warrant against damages due to corrosion, abrasion, normal wear and tear, product modification, or product misapplication. Donaldson also makes no warranty whatsoever as to any goods manufactured or supplied by others including electric motors, fans and control components. After Donaldson has been given adequate opportunity to remedy any defects in material or workmanship, Donaldson retains the sole option to accept return of the goods, with freight paid by the purchaser, and to refund the purchase price for the goods after confirming the goods are returned undamaged and in usable condition. Such a refund will be in the full extent of Donaldson's liability. Donaldson shall not be liable for any other costs, expenses or damages whether direct, indirect, special, incidental, consequential or otherwise. The terms of this warranty may be modified only by a special warranty document signed by a Director, General Manager or Vice President of Donaldson. Failure to use genuine Donaldson replacement parts may void this warranty. THERE EXIST NO OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES EXCEPT AS STATED IN THIS PARAGRAPH AND ALL OTHER WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED ARE HEREBY EXPRESSLY EXCLUDED AND DISCLAIMED.



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