

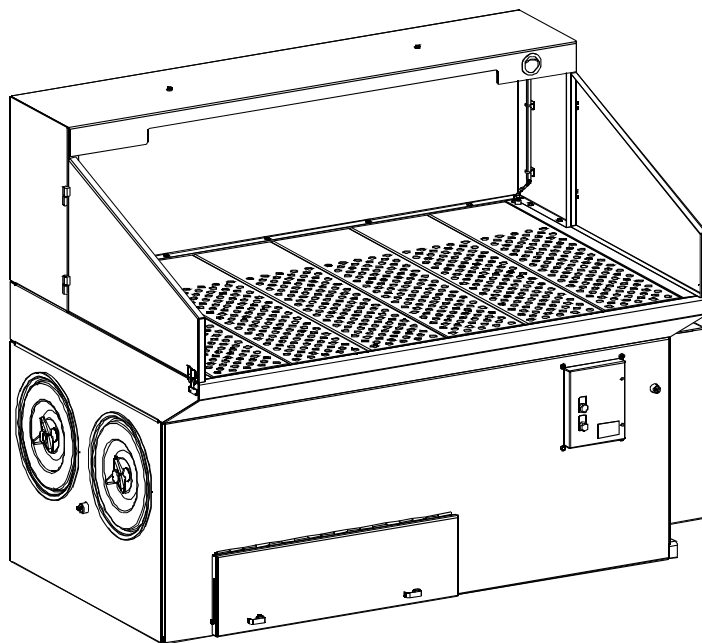


Downdraft Bench

DB-2000 and DB-3000

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.

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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

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

Data Sheet

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

Description

The Downdraft Bench, Models DB-2000 and DB-3000 are self-contained dust collectors with cartridge-style filters. Designed as a workstation for grinding, polishing, hand sanding, and dry buffing applications, the Downdraft Bench is available in standard 2,000 cfm two-filter or 3,000 cfm four-filter units.

Direct-drive airfoil fans provide 200 fpm minimum face velocity across the slotted-steel work surface designed to hold up to 75-lb per square foot. Hinged side panels open to accommodate larger work pieces and the built-in fluorescent light illuminates the work area.

The Downdraft Bench is available fully wired or unwired for integration into other equipment. Replace filters easily through access doors located on one end of the unit and dispose of dust contained in the dust drawers.

Purpose and Intended Use



Misuse or modification of this equipment may result in personal injury.

Do not misuse or modify.

The Downdraft Bench provides excellent efficiency on nuisance dust generated in industrial operations such as steel grinding, buffing and polishing without rouge, and hand-sanding operations.

Steel Grinding: The Downdraft Bench has a baffle that limits sparks from impinging directly with the filter cartridges reducing the risk of fire.

Buffing and Polishing: Buffing and polishing operations without rouges.

Hand Sanding: Light-duty hand sanding only. Avoid applications with explosive dust or welding operations.

Explosive Dust: Not intended for use with explosive dust.

Welding: Not recommended for welding operations due to the natural tendency for weld fumes to rise and Downdraft Benches develop a downward airflow. Use the Donaldson Torit Weld Bench in these operations.

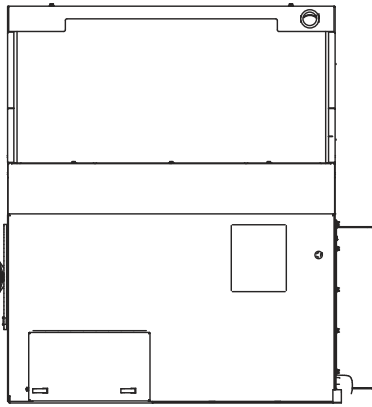


Combustible materials such as buffing lint, paper, wood, metal dusts, weld fume, or flammable coolants or solvents represent potential fire and/or explosion hazards. Use special care when selecting, installing, and operating all dust, fume, or mist collection equipment when such combustible materials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

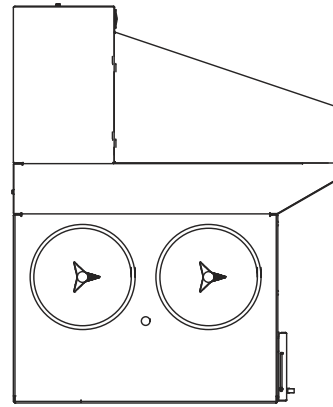
Consult and comply with all National and Local Codes related to fire and/or explosion properties of combustible materials when determining the location and operation of all dust, fume, or mist collection equipment.

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

Rating and Specification Information



Front View



Typical Side View

All Units:

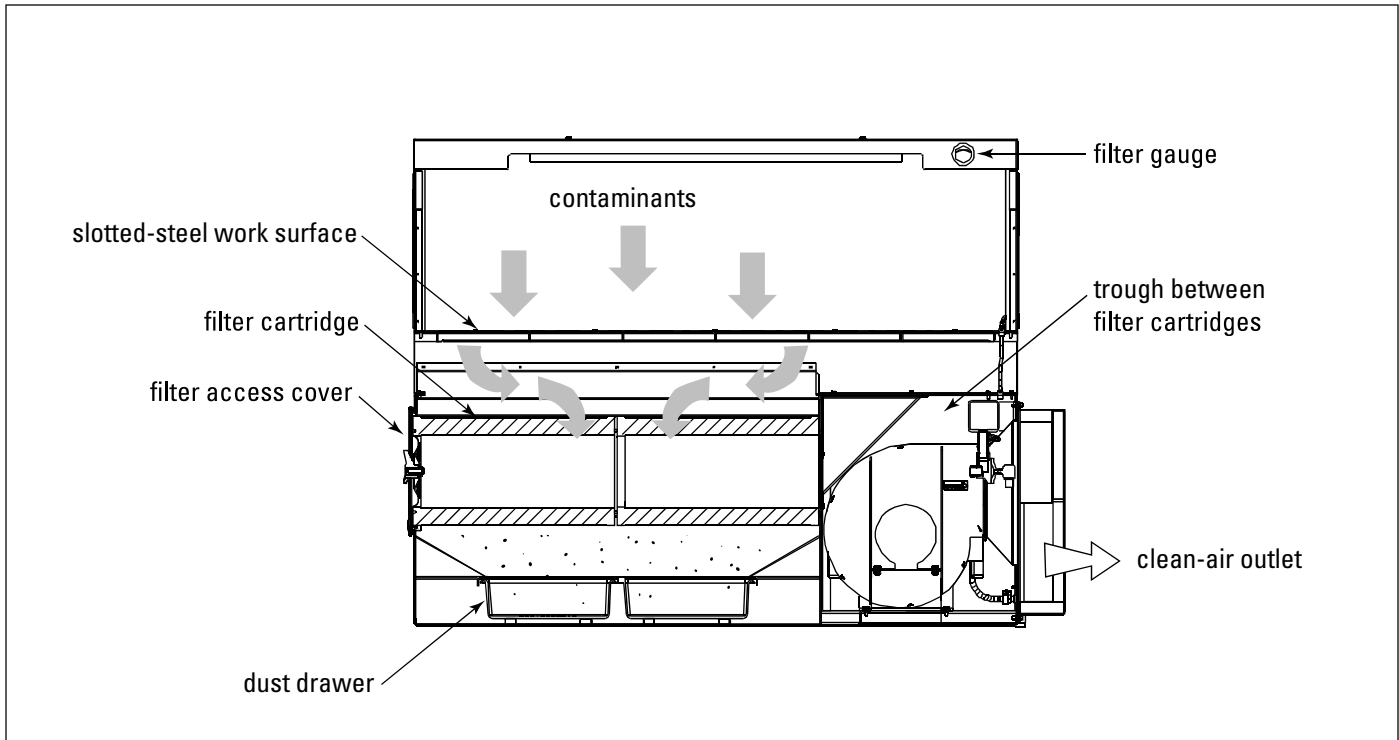
Compressed air, maximum psig..... 90-100
Housing rating, inches water gauge - 20
Power, valves and controls 120-Volt 50/60 Hz

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

Operation

During normal operation, dust-laden air enters the Downdraft Bench through the slotted-steel work surface. An inlet baffle diverts the air and prevents contaminants from direct contact with the cartridge. Heavier particulate falls into the dust drawers and fine particulate collects on the outside surface of the filter cartridges. Clean, filtered air passes through the cartridges, into the clean-air chamber, and discharges through the silencing chamber.

Filter cleaning is completed using pulse-jet technology. A solenoid and diaphragm valve aligned to each row of filters provides the pulse cleaning. The cleaning sequence starts at the front filter and continues through each filter. The diaphragm valve sends a pulse of compressed air through the filter from the inside out. The accumulated dust falls from the filter cartridge into the dust drawer. Remove, inspect, or change the cartridges from outside the unit by removing the filter access cover and sliding the filters out.



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 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 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

CAUTION 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

CAUTION

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

This unit should be located indoors. Reference the Rating and Specification Information.

Unit Location

WARNING

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 or roof support must be sized to accommodate the entire weight of the unit, plus the weight of the collected material, piping, and ductwork.

Prepare the foundation in the selected location. Install anchor bolts a minimum of 1 3/4-inches above foundation.

Locate the collector to ensure the shortest and straightest inlet- and outlet-duct length, easy access to electrical and compressed-air connections, and routine maintenance.

If explosion protection devices are part of the system, locate the collector in accordance with local code requirements (Example: NFPA654). These codes may require units handling combustible dust be located either outside or against an outside wall.

Rigging Instructions

Suggested Tools & Equipment

Clevis Pins and Clamps	Lifting Slings
Crane or Forklift	Pipe Sealant
Drift Pins	Drill and Drill Bits
Spreader Bars	Box and Open End
Screwdrivers	Wrenches (Metric)
Socket Wrenches (Metric)	Pipe Wrenches
End Wrenches	Adjustable Wrench
Torque Wrench (inch/lbs)	

Hoisting Information



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

Do not lift unit by the door handle.

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 unit's casing.

Check the Specification Control drawing for weight and dimensions of the unit 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 section flanges during assembly.

Electrical Wiring



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.

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

Sprinkler Taps

Units are equipped with a 3/4-in NPT pipe plug, located on the filter section of the unit, for customer-supplied sprinkler heads. Check local codes for sprinkler requirements.

Air Tool Connection

The Downdraft Bench is equipped with an air tool connection for easy, quick connection to common air-powered tools. Air tools should not be used while the unit is in the cleaning mode.

NOTICE

Changing air pressure to accommodate air tools will affect filter cleaning. Maintain 60 to 90-psig air pressure at the unit's compressed air fitting.

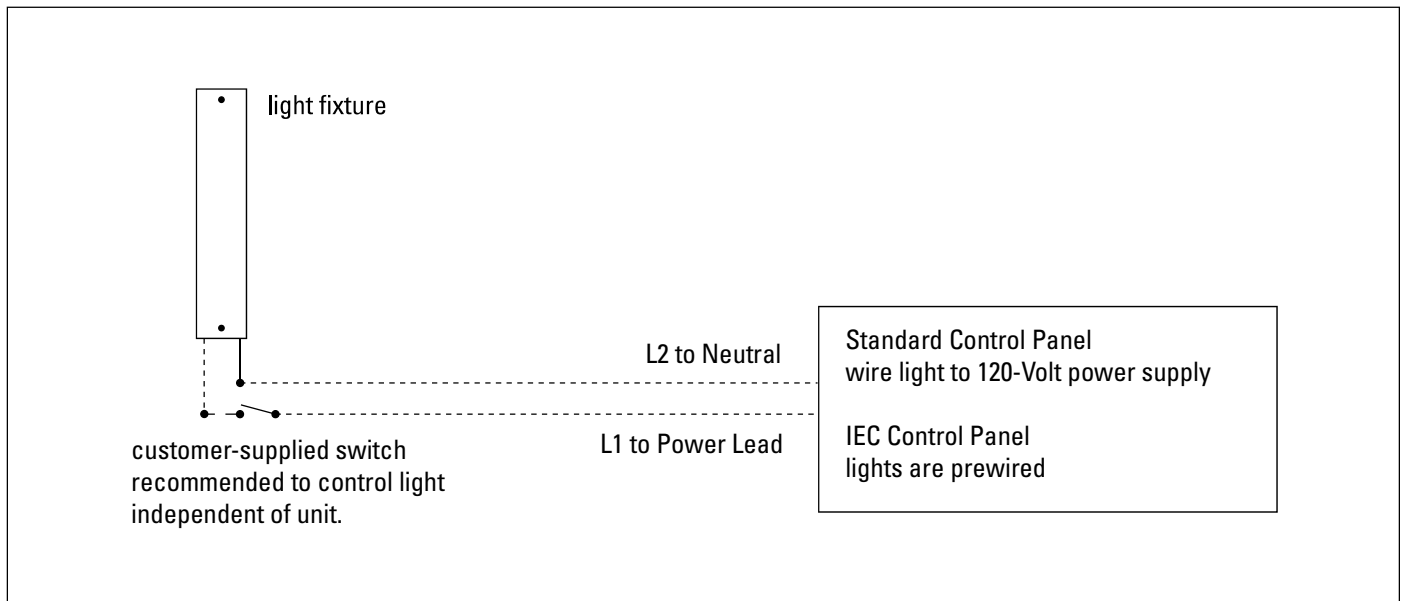
Industrial Light Fixture

Standard Control Panel

1. Wire the light fixture to a 120-Volt power supply. If a separate ON/OFF switch for the light is required, install and wire a switch as shown.
2. Install customer-supplied fluorescent bulbs.

IEC Control Panel

1. The light is prewired to the optional IEC control box, which is programmed to have the light ON when the fan is running.
2. Install customer-supplied fluorescent bulbs.



Industrial Light Fixture Wiring Schematic

Standard Control Panel

The standard control panel includes a solid-state timer used to control the filter cleaning system. Install the control box and customer-supplied fan starter switch in a convenient location. Install conduit and wire to the collector.



The solid-state timer requires a 105 to 135-Volt customer-supplied power supply. Failure to comply may result in personal injury and/or property damage.

1. 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.
2. Plug the program lug into the pin that corresponds to the number of solenoid valves controlled.
3. With power supply ON, check the operation of the solenoid valves. The valves should open and close sequentially at factory set 10-second intervals.
4. If a Photohelic® gauge or similar device is used to control the solid-state timer and the jumper on the pressure switch portion of the timer is removed, 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.

Solenoid Connection

The unit is equipped with 115-Volt solenoid valves that control the pulse-cleaning valves, which clean the filters.

Wire the solenoids to the solid-state timer following the wiring diagram supplied with the unit. Filter life and cleaning operation will be affected if not wired correctly.

Timer and Solenoid Specifications

Power to the solid-state timer is supplied to Terminals L1 and L2, which operate in parallel with the blower starter's low-voltage coil. On blower start-up, power is supplied to the timer and the preset OFF time is initiated. At the end of the OFF time, the timer energizes the corresponding solenoid valve to provide the ON time cleaning pulse for one diaphragm valve and then steps to the next until all filters have been cleaned.

To pulse when the blower is OFF, install a toggle switch as shown on the Solid-State Timer Wiring Diagram. When the toggle switch is ON, the timer receives power and energizes the solenoid valves' pulse-cleaning operation even though the blower is turned OFF.

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.

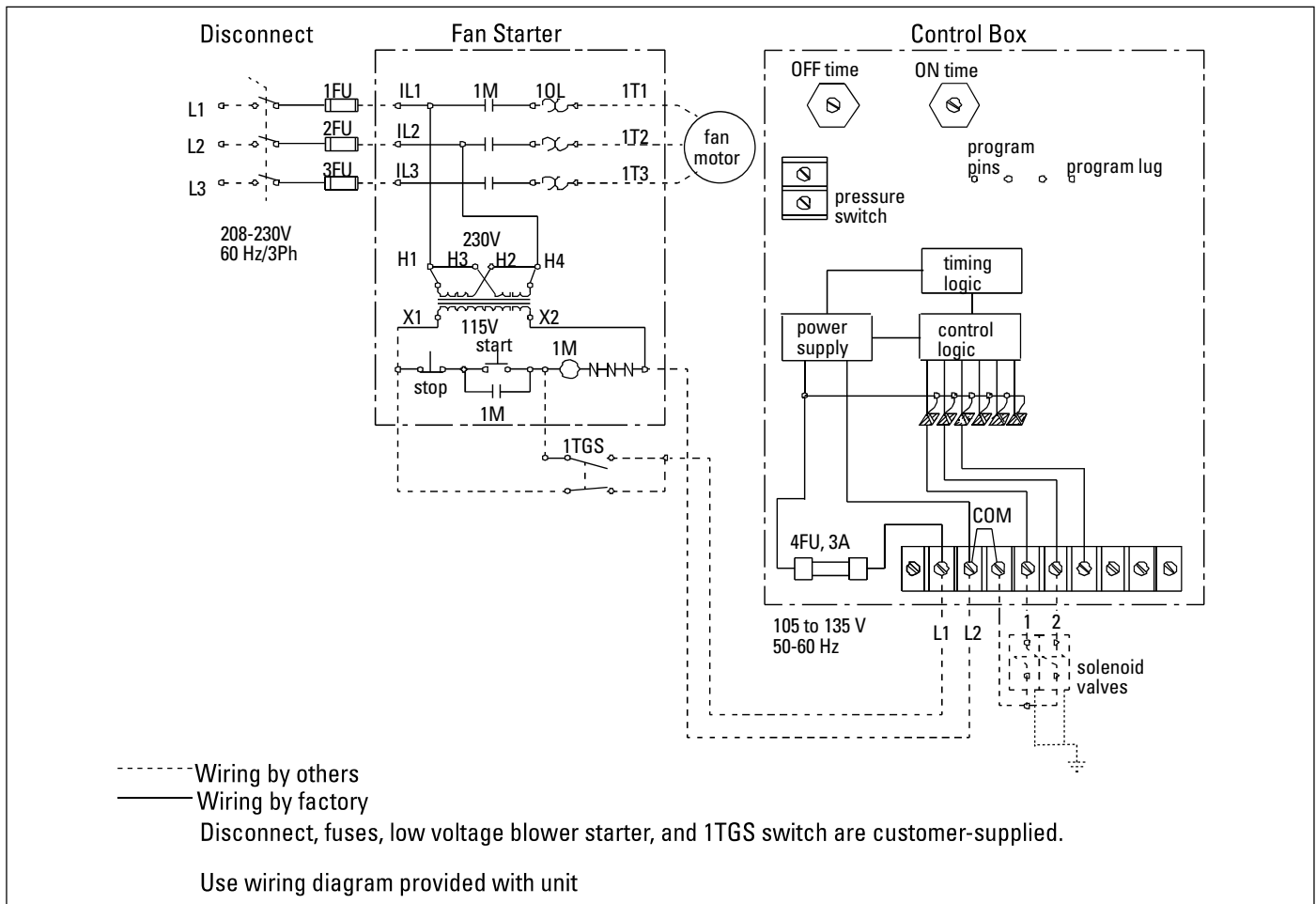
Operating Temperature Range
-20° F to 130° F

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

Solenoid Valves
110 to 120-Volt AC coil with NEMA 4 rated DIN socket rated at 15 watts includes a 1/2-in conduit fitting. The solenoid valve is part of an integral diaphragm valve assembly. DB-2000 is equipped with 3/4-in solenoid valves and DB-3000 with 1-in solenoid valves.

Compressed-Air
Set compressed-air supply at 90-psig. The timer is factory set to clean one filter or set of filters every 10-seconds.

NOTICE Do not increase supply pressure above 100-psig. Component damage can occur.



Solid-State Timer Typical Wiring Diagram

Optional IEC Control Panel

The optional IEC Control Panel is factory installed and programmed to clean the filters each time the unit is shut down. The IEC Control Panel consists of a motor starter with branch circuit and overload protection, power transformer with primary and secondary protection and capacity for up to 100-Volts AC for the light, preprogrammed logic controller for solenoid pulsing, and motor control.

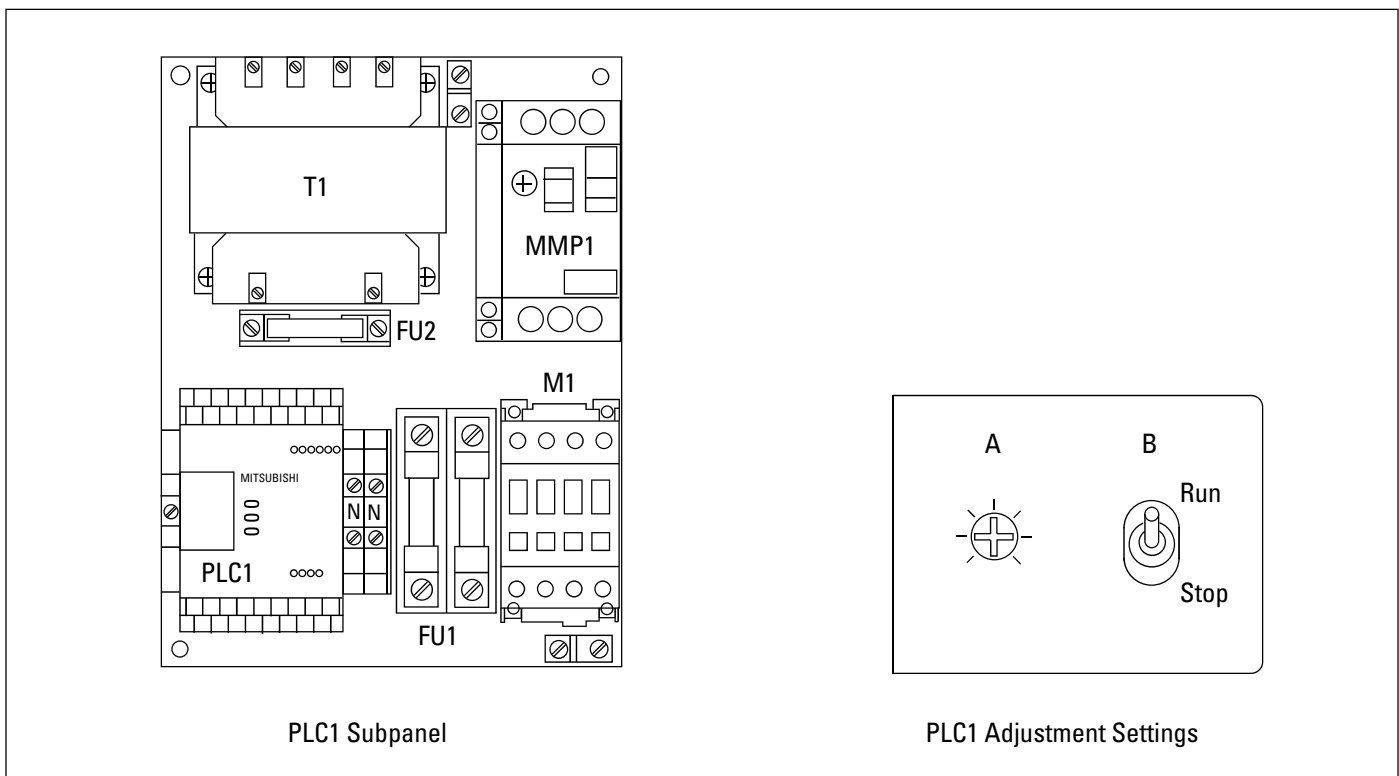
A standard filter gauge measures the pressure difference between the clean- and dirty-air chambers and provides a visual display of filter change requirements. If the gauge fails to return to the green zone after several cleaning attempts, filter element replacement may be necessary.

The cleaning cycle starts with the filter nearest the operator three seconds after the power switch is turned OFF. The second cleaning pulse starts 13 seconds after the power switch is turned OFF with the next filter

row. The fan automatically starts after both rows have been pulsed and then shuts down. This cleaning cycle is repeated two more times.

If the factory setting does not provide sufficient cleaning action to maintain satisfactory airflow, the number of cleaning cycles can be adjusted.

1. Open the control box and the small cover on the left of PLC1 sub-panel to expose the adjustment section.
2. Using a small Phillips® screwdriver, turn the potentiometer clockwise one increment.
3. Start and stop the collector and observe the cleaning cycle. Repeat this process until the cycle time allows both valves to fire four times. The potentiometer can be adjusted to permit up to six cleaning cycles. Turning the potentiometer counterclockwise reduces the number of cleaning cycles.



Optional IEC Control Panel Subpanel and Adjustment Section

Compressed Air Installation

WARNING

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

NOTICE

Do not set compressed-air pressure above 100-psig.

Component damage can occur.

All compressed air components must be sized to meet the maximum system requirements of 90-psig supply pressure.

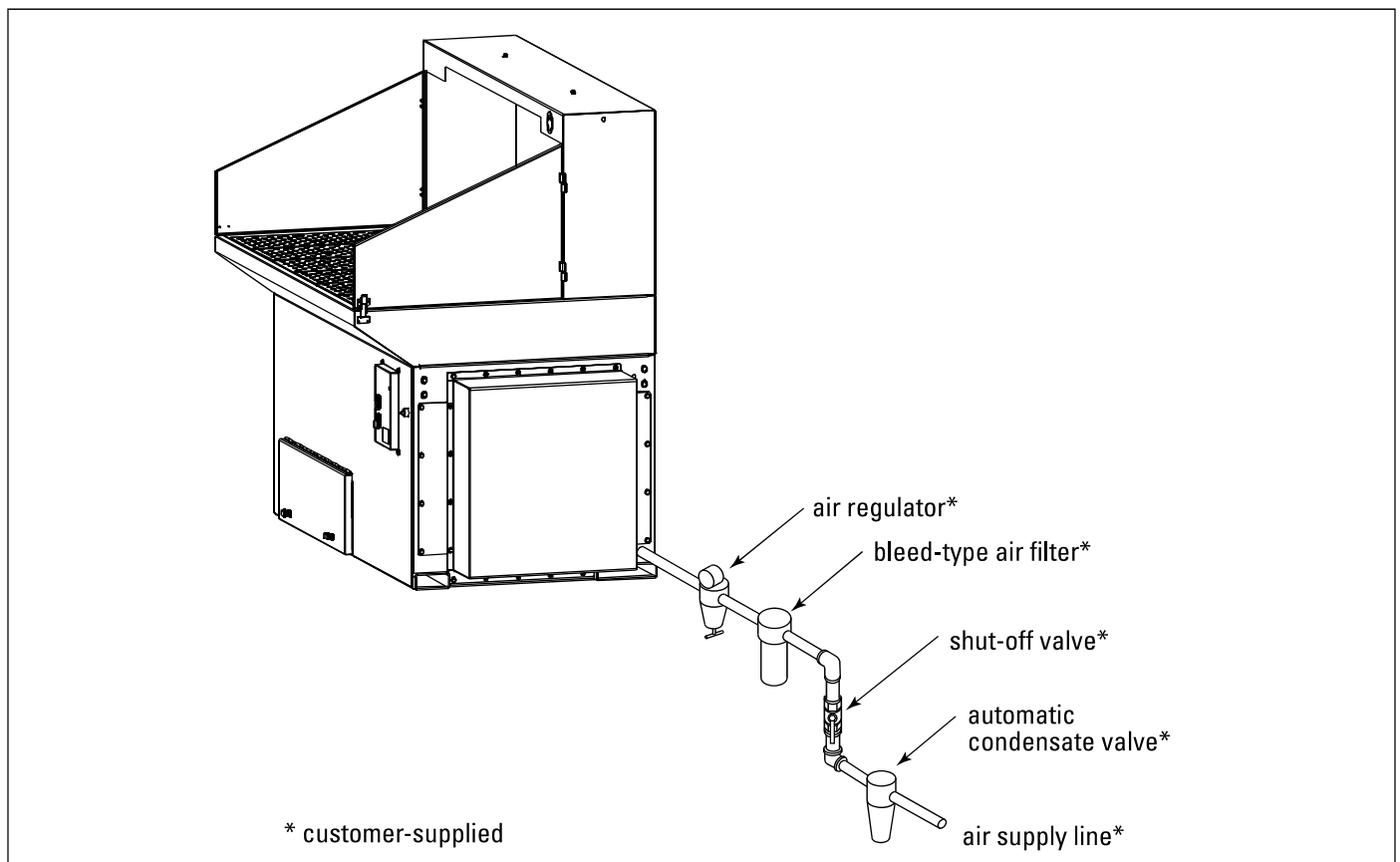
The compressed-air supply must be oil and moisture free. Contamination in the compressed air used to clean filters will result in poor cleaning, cleaning valve failure or poor collector performance.

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

1. Remove the plastic pipe plug from the unit's air manifold and connect the compressed-air supply line. Use thread-sealing tape or pipe sealant on all compressed-air connections.
2. Install a customer-supplied shut-off valve, bleed-type regulator with gauge, filter, and automatic condensate valve in the compressed-air supply line.

NOTICE

All compressed-air components must be sized to meet the system requirements of 1.1 scfm at 90-psig supply pressure for the DB-2000 and 1.5 scfm at 90-psig for the DB-3000.



Compressed Air Installation

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 for and remove all loose items in or near the inlet and outlet of the unit.
3. Check that all remote controls are wired into the control system, and all service switches are in the OFF position.
4. Check that all optional accessories are installed properly and secured.
5. Check that hopper discharge is open and the storage container is sealed, if equipped. Excess airflow to the blower will cause electrical failure.
6. Turn power ON at source.
7. Turn the compressed-air supply ON. Adjust pressure regulator for 90 to 100-psig.

8. Turn the fan motor ON then OFF to check for proper rotation. Motor and fan should be wired for clockwise rotation when viewed from the back of the motor.

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.

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

WARNING

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

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 100-psig.

Component damage can occur.

All compressed air components must be sized to meet the maximum system requirements of 90-100 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.

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. 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.

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

1. Turn power to unit OFF.
2. Remove access cover by turning knob counterclockwise.
3. Break the seal between the filter cartridge and the sealing surface.
4. Slowly rotate the cartridge slightly to the left to remove dust that may have accumulated on the top of the filter.

5. Slide the filter out the access port along the suspension yoke.
6. Dispose of properly.
7. Clean the sealing surface with damp cloth.

NOTICE

Clean dust from gasket sealing area to ensure a positive filter gasket seal.

8. Check for an accumulation of dust in the storage area and empty as necessary.

Filter Installation

1. Slide the new filter cartridge onto each suspension yoke.

NOTICE

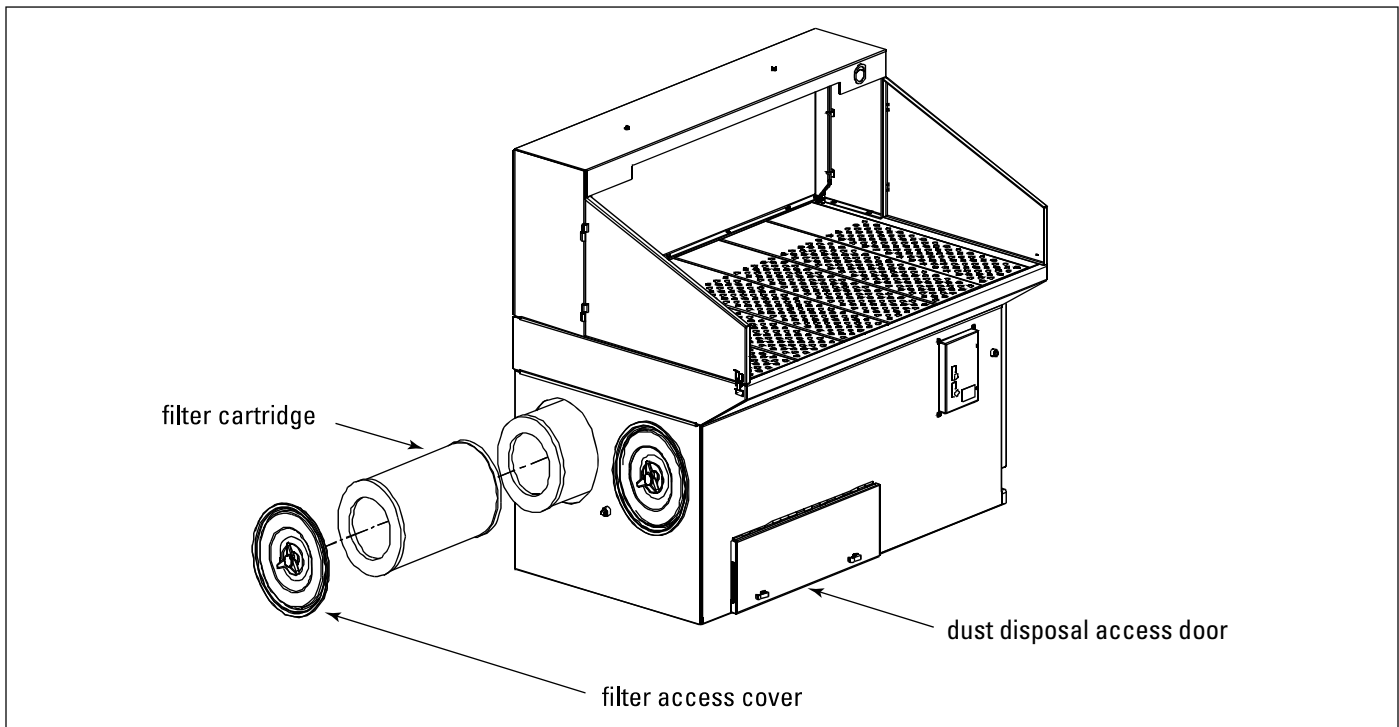
Insert the filter gasket end first into the collector.

2. Wipe cover gaskets clean and replace covers by turning the knob clockwise. Tighten securely by hand.

NOTICE

Tighten access covers securely by hand. Gaskets must be compressed to seal properly.

3. Turn electrical power and compressed air supply ON before starting unit.



Filter Removal and Installation

Dust Disposal

Model DB-2000 has one dust drawer and Model DB-3000 has two dust drawers located on the front of the unit. The dust drawer is conveniently located in front of the collector for easy access and simple disposal. The operator should remove and dispose of the welding fume dust daily as part of regular maintenance. Follow these procedures to empty the dust drawers:

1. Turn power OFF. When the unit is shut down, the fan runs down and the collector begins its cleaning cycle.
2. When the cleaning cycle is complete, open the dust disposal access door.
3. Reach inside the opening, grasp the dust drawer edge, and pull the dust drawer out of the collector.

DB-3000

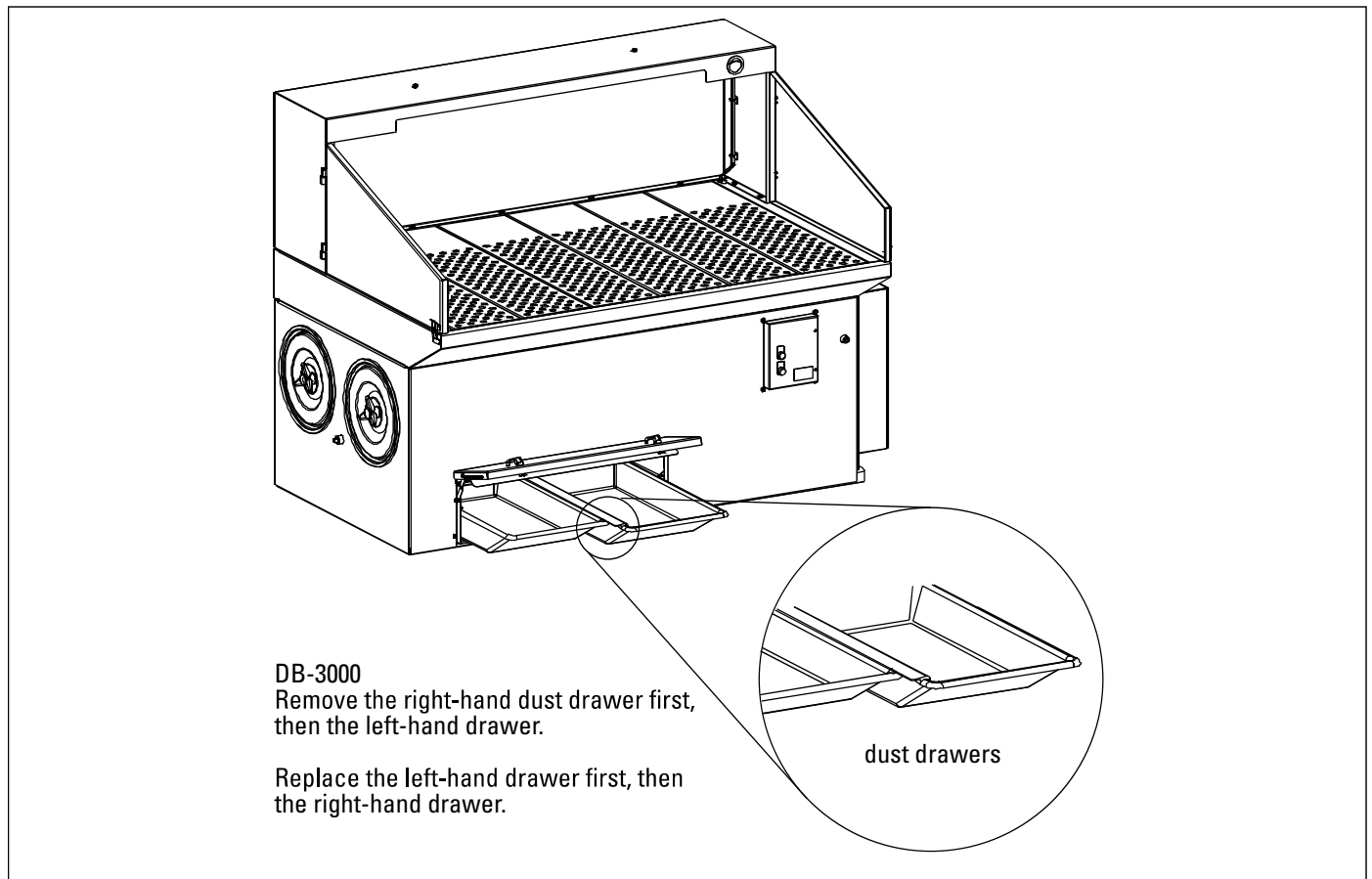
Remove the right-hand dust drawer first, then the left-hand drawer.

4. Dispose of contaminates in a safe and responsible manner.
5. Replace the drawer by pushing the drawer forward between the shed strip and the dust drawer until the drawer is firmly seated.

DB-3000

Replace the left-hand drawer first, then the right-hand drawer.

6. Close and latch the access door.



Dust Disposal

Split Taper™ Bushing Mounting Instructions

Many fans are furnished with split taper bushings for mounting the impeller to the shaft. When properly assembled, the bushings grip the hub with a positive clamping action.

1. Bushel barrel and bore of impeller are tapered to ensure concentric mounting and a true running propeller.
2. Capscrews, when tightened, lock bushing in propeller. Use special plated capscrews and nylock nuts.

Bushing No.	Bolt Size	Torque Ft-Lbs
QT/QH/L/H	1/4-20	7-1/2

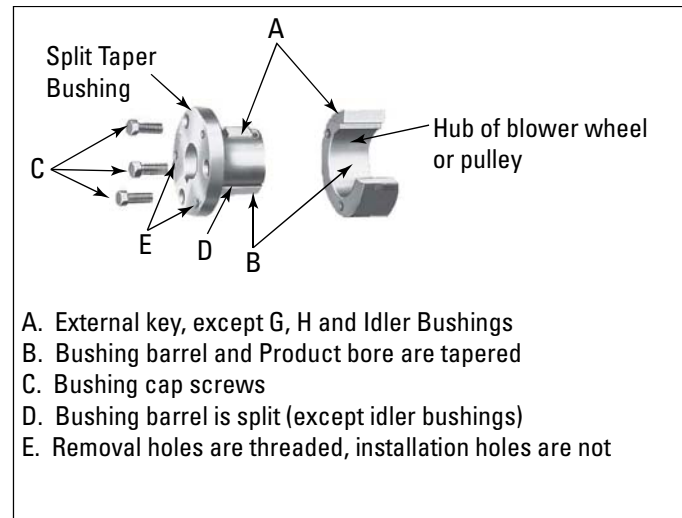
3. Bushing is split so that when the locking capscrews force bushing into tapered bore, the bushing grips the shaft with a positive clamping fit. This will withstand vibration and heavy loads without being loosened.
4. Impeller and bushing assembly is keyed to the shaft and held in place by compression, which adds driving strength.

NOTICE

Before assembly, ensure shaft and keyway are clean and smooth. Check key size with both shaft and bushing keyway.

5. To assemble, insert the capscrews through the clearance holes in the bushing and install bushing loosely into the impeller. Do not press or drive. Start capscrews by hand, turning them just enough to engage threads in the nylock nut. Do not use a wrench at this time. The bushing should be loose enough in the propeller to move freely. Slide impeller and bushing assembly onto shaft, allowing adequate clearance for shaft end play to prevent friction. Fit key into keyway. Do not force impeller and bushing onto shaft. If it does not go on easily, check shaft, bushing, and key sizes once again.

Tighten capscrews gradually and evenly with wrench similar to mounting an automobile wheel. Rotate a quarter turn on each capscrew successively until



Spilt Taper Bushing Installation

- A. External key, except G, H and Idler Bushings
- B. Bushing barrel and Product bore are tapered
- C. Bushing cap screws
- D. Bushing barrel is split (except idler bushings)
- E. Removal holes are threaded, installation holes are not

all capscrews are tight. These capscrews force the taper bushing into the hub, which in turn compresses the bushing onto the shaft. This makes a positive clamping fit. The torque must not exceed the value specified in the table.

CAUTION

Do not attempt to pull bushing flange flush with hub end.

There should be a clearance which varies approximately 3/16-in to 1/4-in with the bushing size when tightened. This is not a locating dimension.

Impeller Assembly Removal

1. Remove all capscrews from impeller and hub assembly.
2. Insert capscrews into the threaded holes in the bushing flange.
3. Tighten each bolt in quarter of a turn increments to push the impeller off the bushing. This forces the bushing loose from the propeller hub and releases the compression so that the entire assembly will slide from the shaft.
4. Pull the bushing off the shaft.

NOTICE

If the assembly has been in place sometime it may be necessary to use a wheel puller to remove the bushing. Never use a wheel puller on the impeller.

Optional Equipment

Work Surface Rubber Mat

An optional 5/8-inch thick nitrile rubber mat is available for the Downdraft Bench. Used to protect the work piece during buffing or grinding operations, the mat is oil, grease, alkali, acid resistant, and suitable for aircraft components.

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.
Blower fan and motor start, but do not stay running	Incorrect motor starter installed	Check for proper motor starter and replace if necessary.
	Access doors are open or not closed tight	Close and tighten access doors. See Filter Installation.
	Electrical circuit overload	Check that the power supply circuit has sufficient power to run all equipment.
Clean-air outlet discharging dust	Filters not installed correctly	See Filter Installation.
	Filter damage, dents in the end caps, gasket damage, or holes in media	Replace filters as necessary. Use only genuine Donaldson replacement parts. See Filter Installation.
	Access cover(s) loose	Tighten access doors securely. See Filter Installation.
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.
	Access doors open or not closed tight	Check that all access doors are in place and secured.
	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 filters. See Filter Installation.

Problem	Probable Cause	Remedy
Insufficient airflow continued	Lack of compressed air	Check that a minimum of 90-psig is available. See Compressed Air Supply.
	Pulse cleaning not energized	Use a voltmeter to check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary. See Standard Control Panel.
	Dust storage area overfilled or plugged	Clean out dust storage area. See Dust Disposal.
	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.
	Solid-State Timer failure	Using a voltmeter, check supply voltage to the timer board. Check and replace the fuse on the timer board if necessary. If the fuse is good and input power is present, but output voltage to the solenoid valves is not, replace the timer board. See Standard Control Panel.
	Solid-State Timer out of adjustment	See Standard Control Panel and Solid-State Timer Wiring Diagram.
	Optional IEC Control Panel out of adjustment.	See Optional IEC Control Panel.

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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