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- Dust Director Division -

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INDUSTRIAL POWER BLOWER

OPERATIONS MANUAL

Introduction The DUST DIRECTOR, division of INDUSTRIAL CONTRACTORS SUPPLIES, is a leading manufacturer and distributor of products and accessories for environmental management in construction, industry and facility maintenance applications.

Our manufacturing business began with the invention of the Dust Director®. A dust control guard for handheld angle grinders that prevents silica dust from becoming airborne, while providing the operator with complete visibility of the diamond blade and cutting surface.

Since then, ICS has developed other products and applications for these products, while expanding into other industries and markets.

The DUST DIRECTOR Division of ICS has established a reputation as a leader and innovator in the air movement and control industry.

About This Manual

This manual is produced solely for the use of purchasers and operators of our DUST DIRECTOR® blowers and accessories for these blowers. The intent of this manual is to provide the owner/operator of our products general and specific information regarding the safe and proper operation and maintenance of the equipment described within.

Contact If after careful review, any questions arise concerning any portion of this manual, contact INDUSTRIAL CONTRACTORS SUPPLIES for assistance at:

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Table of Contents

SAFETY	PAGE
Safety Guide	3
GENERAL INFORMATION	
Blower Identification	3
Product Warranty: Your Dust Director Power Blower has been thoroughly tested and inspected and is warranted to be free of defects in material and workmanship for a period of one year from the date of purchase. This warranty does cover normal wear items such as brushes, belts, filters, powder cords, wheels and switches. Other items may apply or not apply based on your specific Dust Director Power Blower. If such defects occur, this warranty is void if service is attempted by non Authorized Dust Director Service Depots.	
Power Blower Data	4
Power Blower Electrical Information	5
OPERATION	
Operating Procedures	5
Pre-Operation	
Operation	
Set-Up, Starting and Stopping Instructions	
MAINTENANCE	
Maintenance Procedures	6 - 8
Belt Adjustment	
Belt Replacements	
Blade Removal	
Blade Installation	
Maintenance Schedule	9
POWER PRESSURE VENTILATION (PPV)	
PPV Set-up Procedures	9
Single Blower Placement	
Multiple Blower Placement	10
Exhaust Opening	11
Weather Effects on PPV	11
TROUBLESHOOTING	
Blower Troubleshooting	11
Blower Fails To Start	
Poor Blower Performance	
Blower Movement	

Safety Guide

Safety Guide Failure to follow the operating, maintenance and lubrication requirements set forth in this Operation and Maintenance Manual may result in serious personal injury and/or damage to the equipment.

The following WARNING statements indicate potentially hazardous conditions for operators and equipment. Make certain that anyone who works on or around the blower has read and fully understands the safety precautions listed.

1. Carefully read this Operation and Maintenance Manual before attempting to operate, service or disassemble any part of your *DUST DIRECTOR® POWER BLOWER*.
2. Never operate the unit when mentally or physically fatigued.
3. Stay away from rotating parts; avoid wearing loose jackets, shirts, and ties. Keep hands and feet away from the blower.
4. Keep all unauthorized personnel at a safe distance from the blower.
5. Keep all guards in place. Never make repairs while the unit is running. Never operate if any guard or grill is not in place.
6. Always wear eye protection. Loose debris can be picked up in the air stream and flown in the air.
7. Hearing protection is required. Motor and air noise may exceed safe DB levels.
8. Gasoline is extremely flammable and is explosive under certain conditions. To prevent fire hazards, do not place flammable objects close to the engine.
9. Do not overfill the fuel tank. After refueling, make sure the tank cap is closed properly and secured. If any fuel is spilled, make sure the area is dry before starting the engine.
10. Never operate gasoline-powered blowers in an enclosed or confined area. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death.
11. The muffler becomes very hot during operation and remains hot for some time after stopping the engine. Be careful not to touch the muffler while it is hot. To avoid severe burns or fire hazards, let the engine cool before transporting or storing the unit.
12. It is the sole responsibility of the owner/operator to develop and practice the proper use of the *DUST DIRECTOR® POWER BLOWER* in accordance with generally accepted ventilation procedures as well as the department's own operating procedures before placing the unit into service.

General Information

Blower Identification Each *DUST DIRECTOR® POWER BLOWER* has a model number as well as a serial number. The model number signifies information such as blade diameter, engine type and horsepower. The serial number relates to information referencing the date of manufacture. This information is useful should it become necessary to contact the factory regarding your Power Blower.

Please write the Serial Number of your *DUST DIRECTOR® POWER BLOWER* in the spaces below. This will aid us in identifying which model you have when assisting you.

Model Number: _____

Serial Number: _____

Date Purchased: _____

Serial Number Locations

ELECTRIC POWERED UNITS: The serial number is located on a plate attached to the motor.

Power Blower Data

TYPE: Positive Pressure Ventilator
BLADE: Air Flex Fiberglass Reinforced Polyamide High Strength Blades, Die Cast Aluminum or Polypropylene.

BUSHING: Keyed Shaft and Set or Cap Screws.
SHROUD: Turbo 2000 Tapered Aluminum.

DRIVE: Industrial-Type, Straight-Banded V-Belt.
BEARINGS: Locking, Self-Aligning and Permanently Lubricated.

FRAME: Rugged, Lightweight, Square-Steel Tubing with Powder-Coat Finish.
GRILL: Continuous Circular-Wound, External-Weld Steel Wire with 8 Tie Points for Additional Safety.

VIBRATION DAMPENERS: Steel-Reinforced Rubber.

Electric Blowers: All electric motors are single phase, 60 Hz, rigid base, 56 frame with ball and bearings and manual reset overload protection.

ELECTRIC UNITS	ENGINE	HP	CFM	S/B	RPM	WIDTH	DEPTH	HEIGHT	LBS
EBS-16	ELECTRIC	1/3 TEFC	3,200	N.A.	1,736	18.75	14.25	19.50	47
EB-24	ELECTRIC	1 TEFC	12,867	7	1,736	28.25	22.50	30.00	75

Electric Blower Power Requirements*
Based on 115 v blower on a 20 amp circuit.

Blower Model	Motor HP	Starting Amps	Starting Watts	Running Amps	Running Watts
EBS-16	1/3 TEFC	10.9	6,300	6.3	756
EB-24	1 TEFC	48	6,000	16	1,900

*Starting amps and watts are momentary

Maximum Power Cord Length (in feet) **

Motor HP	14 Gauge	12 Gauge	10 Gauge	8 Gauge	6 Gauge
1/3	215'	330'	550'	850'	1,350'
1.0	60'	95'	150'	240'	380'

** Calculations based on one blower connected to 20 amp circuit.

Power Blower Information The Dust Director® Power Blower is a high powered, portable blower used for Positive Pressure Ventilation (PPV), a ventilation technique that quickly and efficiently replaces hazardous interior environments. PPV was pioneered in the fire fighting industry where fire fighters use the blowers to ventilate smoke, heat and harmful gases from buildings. This creates a safer environment for them to work in and makes it easier for them to find victims and extinguish the fire.

PPV relies on two principles, (1) a cone shaped air pattern, and (2) pressure. To accomplish Positive Pressure Ventilation, the blower is placed on the outside of the structure. It is positioned so that the cone shaped air pattern created by the blower completely seals the entrance opening (*Figure 1.3*). When this seal is achieved, the air pressure is increased equally at all points inside the structure. When an exhaust opening is created, all of the interior air moves in one mass towards it. The result is fast, efficient ventilation of the entire structure.

For additional information on how to accomplish PPV, refer to "PPV Set-Up Procedures" in this Manual.

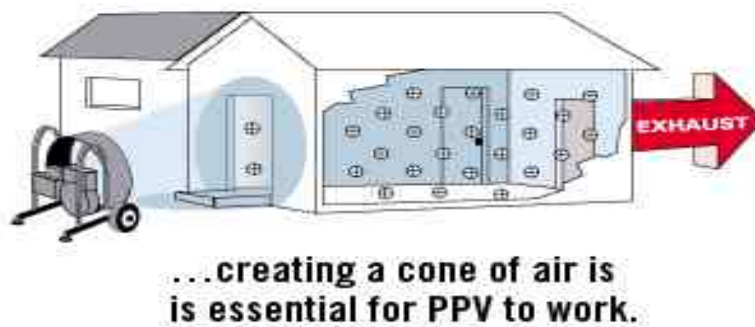


Figure 1.3

Note: The Dust Director® Power Blower is the most efficient tool for PPV for two reasons. First, the exclusive Dust Director tapered shroud design creates a wide, stable, conical air pattern. Second, the seven blade air movement impeller used on all Dust Director blowers is designed to create high pressure. These two features make the Dust Director® Power Blower the powerful ventilation tool that it is.

Operating Procedures The information and instructions in this section should be routinely reviewed and followed before the actual operation of a Dust Director® Power Blower.

Pre-Operation: VISUAL INSPECTION. After receiving and unpacking your blower, be sure to carefully inspect it for any damage that might have occurred during shipping. Should you find any damage: PLEASE NOTIFY ICS COMPANY IMMEDIATELY AT: 1-412-824-6933

CAUTION: NEVER MOVE THE BLOWER WHILE IT IS IN OPERATION. SEVERE PERSONAL INJURY IS POSSIBLE AS WELL AS DAMAGE TO THE BLOWER. ALWAYS SHUT-DOWN THE BLOWER PRIOR TO MOVING!

SET-UP Position the blower in the desired location, making sure it is placed on a flat, hard and debris free surface.

Maintenance Procedures Proper maintenance is necessary to ensure that your DUST DIRECTOR® Power Blower operates as efficiently and trouble-free as possible. By following the instructions in this section you will be providing the maintenance needed to achieve this goal.



Figure 4.1

BELT ADJUSTMENT

The blower drive belt has been adjusted at the factory prior to delivery. However, the belt should be inspected and checked after the initial three (3) hours of operation as it may require re-tightening due to belt stretch. It should be inspected after every 25 hours of operating time.

Operating the blower with a loose belt will cause excessive wear and reduce performance. Follow the procedures listed to properly adjust the drive belt.

1. Remove the eight bolts holding the front grill in place and remove the grill. (Figure 4.1)

2. Loosen the four front engine mount bolts. (Figure 4.2)



Figure 4.2

3. Use a lever to pry or push the engine downward to tighten the belt(s). (Figure 4.3) The belt(s) should be snug and have very little play. DO NOT OVERTIGHTEN THE BELT(S).

4. Tighten the front engine mount bolts. On the Honda 13 HP models the rear mounting studs must also be tightened.

5. Re-install the front grill and test the blower.



Figure 4.3

BELT REPLACEMENT

1. Remove the eight bolts holding the front grill in place and remove the grill. (Figure 4.1)

2. Loosen the four front engine mount bolts. On the Honda 13 HP models the rear mounting studs

3. Pry the engine up to loosen and remove the belt(s). (Figure 4.4)

4. Use a lever to pry or push the engine downward to tighten the belt(s). The belt(s) should be snug and have very little play. DO NOT OVERTIGHTEN THE BELT(S).

5. Tighten the front engine mount bolts. On the Honda 13 HP models the rear mounting studs must also be tightened.

6. Re-install the front grill and test the blower.



Figure 4.4

BLADE REMOVAL AND INSTALLATION FOR THE FOLLOWING BLADES



Figure 4.5

EB24 blade (260-021) requires a J 5/8 bushing

BLOWER BLADE CAUTION: THE ENGINE MAY START SIMPLY BY ROTATING THE BLADES. ALWAYS REMOVE THE SPARK PLUG WIRE PRIOR TO WORKING ON THE BLADE SIDE OF THE MOTOR.

BLADE REMOVAL PROCEDURES

1. Remove the eight bolts holding the front grill in place and remove the grill. (Figure 4.1)
2. Remove the three cap screws in the center of the fan blade bushing with an 5/32 hex bit (Allen wrench). (Figure 4.5)
3. Insert the cap screws into the adjoining threaded holes in the bushing. (Figure 4.6) Turn the screws in a clockwise manner. Tighten the cap screws progressively with the wrench. Evenly tighten each cap screw $\frac{1}{4}$ to $\frac{1}{2}$ a turn successively until the blade slides off of the bushing. (Figure 4.7)



Figure 4.7

4. Insert a small screwdriver into the bushing slot to release the bushing from the engine shaft. Be careful not to damage the end of the jackshaft. Remove the bushing and blade.



Figure 4.6

BLADE INSTALLATION

1. Put bushing on motor shaft then tighten the allen screw on the bushing. Put blade on bushing (Fig. 4.7). Put lock washers on the three allen screws and insert into drilled holes of blade. Turn each screw and tighten evenly.
2. Reinstall front grill.

BLADE REMOVAL AND INSTALLATION FOR THE FOLLOWING BLADES

EB16 blade (260-069) requires a G 5/8 bushing and a 3/16" X 1 3/8" key.

BLADE REMOVAL PROCEDURES

1. Remove the eight bolts holding the front gr place and remove the grill (Figure 4.1).
2. Remove the three bolts from blade. Remove the two bolts from the bushing and hub. Put the two bolts in the threaded part of the bushing and turn evenly until bushing separates from hub.

BLADE INSTALLATION PROCEDURES FOR DD16



Figure 4.9

1. Make sure that the shaft and keyway are clean and smooth before installing the blade.
2. Insert the cap screws through the clearance holes in the bushing and place loosely into the hub of the blade. Do not press the bushing in. Hand start
3. Insert the cap screws, turning them just enough to engage the threads in the tapped holes on the hub. The bushing should be loose in the hub. Insert the key into the keyway (Figure 4.9). Tighten two bolts drawing the bushing and hub together.
4. Slide the blade onto the bushing/hub assembly and insert the three screws through the blade and turn evenly but do not tighten. Make sure blade is in line with hub then tighten screws (Fig. 4.10). Locate the blade and bushing so that the blade tips do not hit the rear grill eyelets. On some models the blade and bushing may be in beyond or out away from the end of the shaft up to 1/4" but no further. This is necessary for proper blade clearance.

5. Tighten the cap screws progressively with a wrench. Tighten each cap screw partial turns successively until both are tight. Final tightening should be done with torque wrench with the torque set at 7.5 ft./lbs. for each screw. Over tightening will cause the cap screws to break or crack the blade. (Figure 4.10)

- Carefully turn the blade and check for clearance between the blade and shroud. Confirm that the blade is free to rotate without hitting other parts.
- Reinstall the front grill and test the blower.
- If you have any trouble removing or installing the blade on your blower, contact the factory for assistance at 4120824-6944.



Figure 4.10

Maintenance Schedule

	EACH USE	NEW BLOWER FIRST 3 HOURS	EVERY MONTH OR 10 HOURS	EVERY MONTH OR 25 HOURS	EVERY MONTH OR 50 HOURS	EVERY MONTH OR 100 HOURS
TENSION BELT(S)		✓		✓		
REPLACE BELT(S)						✓
INSPECT BLOWER FOR DAMAGE, FIX IF ANY	✓					
INSPECT BLOWER FOR LOOSE OR MISSING BOLTS, NUTS, ATTACHMENTS. TIGHTEN OR REPLACE WHERE REQUIRED				✓		

PPV Set-up Procedures

Single Blower Placement When using one blower, it should be positioned so that the cone of pressurized air *just* covers the entrance opening (Figure 5.1). If the blower is too close to the opening, the opening will not be completely covered by pressurized air. If the blower is too far from the opening, pressurized air will strike the building around the opening and reduce the amount of pressurized air being forced inside the building. Therefore, optimum placement is dependent on the size of the entrance opening, the size of the blower, and the distance between the blower and the entrance opening.

Due to the size of the "cone" of air issued from a blower, small blowers need to be moved back from entrance openings while larger blowers should be placed closer to entrance openings to properly cover the opening with pressurized air.

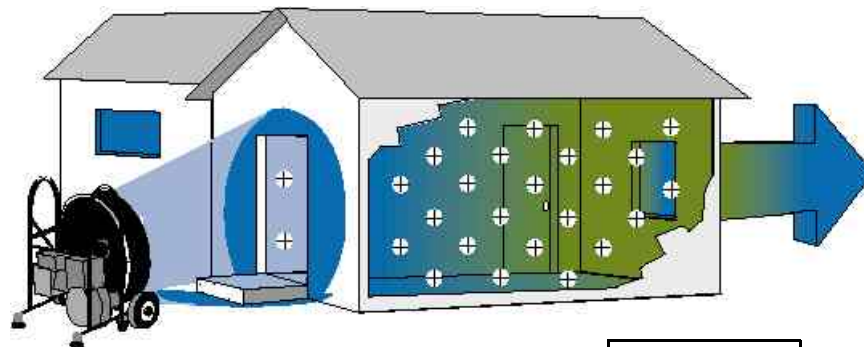


Figure 5.1

Multiple Blower Placement The use of more than one blower can dramatically increase airflow (volume) and reduce the time necessary to complete a ventilation operation.

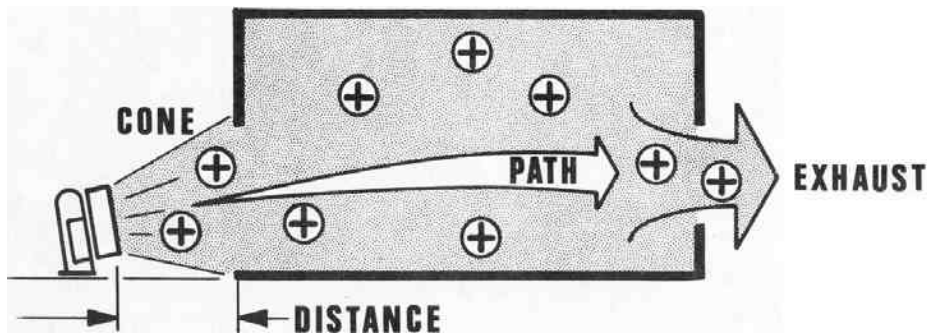


Figure 5.2

For standard entrance openings (that is, door openings of three feet by six and one-half feet), maximum effectiveness is achieved by placing two blowers "in-line" with each other. As in (Figure 5.2), blower A is positioned about two feet from the entrance opening. This ensures that all of the pressurized air from the blower enters the building, yet allows sufficient room for personnel to enter and exit the building. Blower B is then positioned behind blower A. The proper location for blower B is determined by the distance necessary to cover the entrance opening with pressurized air. Blower B covers the entrance opening with pressurized air and increases the capacity of blower A by approximately ten percent.

For standard entrance openings, multiple blowers in a parallel (side-by-side) configuration are less effective than multiple blowers in an in-line configuration. However, for large entrance openings, multiple blowers in a parallel configuration (Figure 5.3) should be used due to their combined ability to cover the larger opening with pressurized air. The size of the opening dictates the numbers of blowers necessary to cover the opening with combined cones of pressurized air.

Remember that some openings (such as loading-dock doors) can be reduced in size by partially closing the door to reduce the size of the entrance opening that must be covered by pressurized air. Depending on the number of blowers that are available, large areas may be effectively ventilated by using a combination of parallel (proper coverage of the opening) and in-line (increased volume) blowers.

Areas or locations that do not have openings that can be used as exhaust openings (storage rooms, offices, enclosed work areas, etc.) can be effectively ventilated by using multiple blowers as depicted below.

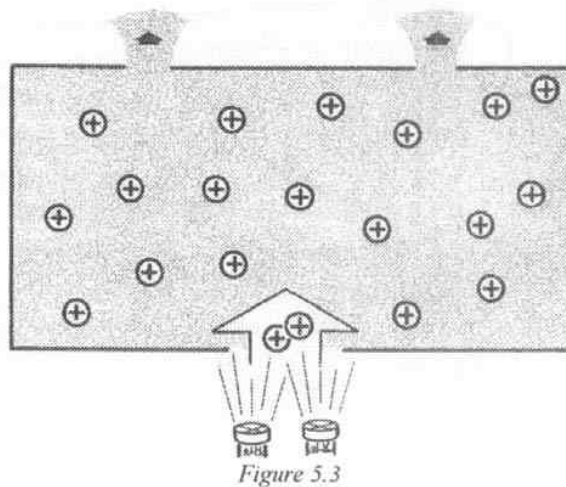
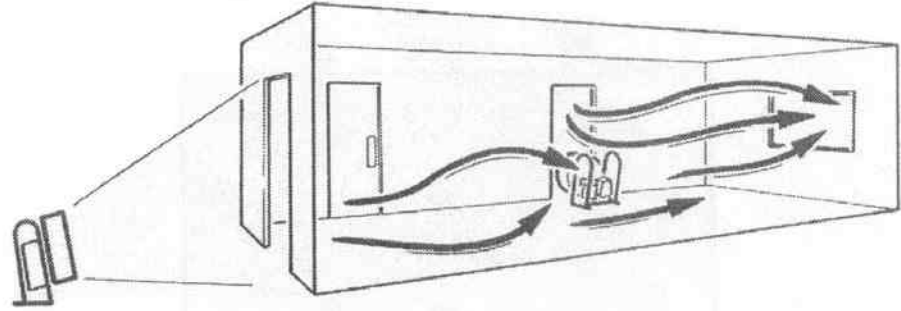


Figure 5.3

Use a blower to provide a flow of air past the opening. This blower can be located outside the building to provide pressurized air to the interior of the building and past the area to be ventilated. The blower should be placed in the bottom portion of the opening and will provide pressurized air that will create positive pressure within the area to be ventilated and force the contaminants out of the upper portion of the entrance opening. The air flowing past the entrance opening will force the exhausting contaminants to follow its direction to the exterior of the building.

Exhaust Opening Positive pressure ventilation is most effective when the exhaust opening (window, door, etc.) is between three-fourths to twice the size of the entrance opening (Figure 5.4). This variance is due to the number and CFM'S of the blower(s) utilized and can be summarized as follows:

Figure 5.4



A single blower powered by 1/3 HP to 4 HP electric motor is most effective when utilized with exhaust openings that are three-fourths or slightly less than the size of the entrance opening. Remember, these guidelines are generalized and that optimum efficiency is easily obtained by a combination of training and experience.

Weather Temperature, humidity, snow, and rain do not have any appreciable effect on positive pressure ventilation. Although cold, damp weather conditions may limit the ability of smoke to rise; these atmospheric conditions will not limit the ability of blowers to move contaminants horizontally and, in most cases, vertically. Wind can have an adverse effect on positive pressure ventilation, but its effect is dependent on direction and velocity. As in any ventilation operation, maximum efficiency can be obtained by using the prevailing wind direction to advantage by pressurizing the structure on the windward side and exhausting contaminants on the leeward side of the building. If it is not possible to utilize the prevailing wind as an advantage, positive pressure has proven effective against winds of up to 25 mph. As winds exceed 25 mph, efficiency reduces accordingly.

Blower Troubleshooting Many factors can contribute to or be the sole cause of problems for gas and electric power blowers. This section will identify some of these problems and provide solutions to correct them.

Poor Blower Performance MAKE SURE THE BELT(S) ARE TIGHT. REFER TO PAGES 6 - 8 FOR INSTRUCTIONS ON CHECKING AND TIGHTENING THE BELT(S).

Blower Movement or "Walking"

- ADJUST THE RUBBER FOOTPADS ON THE BACK OF THE BLOWER BY TURNING THEM EITHER IN OR OUT. ADJUST THE SIDE THAT IS WALKING. THIS WILL HELP TO EVENLY DISTRIBUTE THE WEIGHT OF THE BLOWER TO ALL FOUR POINTS OF THE FRAME.
- MOST BLOWERS WILL WALK IF NOT RUNNING AT FULL SPEED, MAKE SURE THE BLOWER IS RUNNING AT FULL SPEED.
- MAKE SURE THE BLOWER IS SITTING FLAT AND NOT ON SMALL ROCKS OR OTHER OBJECTS.