



**Confined
Space
Ventilators**

OWNER'S MANUAL SAFETY INSTRUCTIONS

Please read and keep these instructions with the fan.



MODEL: VAF3000P

For use in Class I, Groups A, B, C and D.

Purchase Date: _____ Serial No. _____

Dealer: _____

SCHAEFER

1.800.779.3267 • www.schaeferventilation.com

Wentworth
Space
Company



OWNER'S MANUAL
SAFETY INSTRUCTIONS

Please read and follow these instructions carefully.



MODEL VAF3000P

For use in Class 2, Groups A, B, C and D

Product Date _____

Model _____

Schaefer Limited Warranty Policy

Schaefer Corporation (Schaefer) warrants the following product
warranty shall be void if the product is used for any purpose other than
that intended by the manufacturer.

This policy covers only the product and does not cover
labor or other charges.

TABLE OF CONTENTS

Warranty Terms and Obligations	1
Introduction	2
General Safety Information and Operation	3
Exploded View of the VAF3000P	4
Parts List	5
Air Motor Precautions and Operating Specs	6
Trouble Shooting	7
Lubrication and Servicing the Air Motor	8
Motor Removal and Installation.....	9 - 11

Schaefer Limited Warranty Policy

Schaefer Ventilation Equipment, LLC (SVE) provides the following limited warranty from the date of invoice to the initial purchaser of our products or to its customer with a dated proof of purchase:

- I. Three-year coverage applies to all products, components and assemblies provided by SVE that prove to be defective in material or workmanship. Any such defective product will be repaired or replaced at SVE's option, with the defective product or component returned, upon approval, to SVE, F.O.B Sauk Rapids, Minnesota.
- II. This warranty does not cover:
 - a. Failure, damage or malfunction as a result of:
 - i. Improper installation or installation not in accordance with installation instructions.
 - ii. Operating conditions that vary from SVE's operating instructions.
 - iii. Misuse, abuse, negligence, alteration, or accident.
 - iv. Transporting the product.
 - v. Improper operation or lack of appropriate or regular maintenance of the product.
 - b. Loss of time, inconvenience, loss of use of the product or other consequential or incidental damages.
 - c. Parts that need replacement due to normal wear and tear.
 - d. Superficial or cosmetic rust or corrosion.
 - e. Any product whose name plate has been removed.

THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS OF USE.

Schaefer Ventilation reserves the right to change product design and specification without prior notice or liability.

The above constitutes the sole warranty offered by Schaefer Ventilation Equipment, LLC.

INTRODUCTION

Congratulations on your selection of a new Vane Axial Fan from Schaefer Ventilation. Our goal is to provide you with the very best in high performance air ventilators. Reading this Owner's Manual will help you achieve the maximum benefit from your portable air ventilator. If you do not understand any portion of this Manual, please contact Schaefer, or your authorized Schaefer dealer for proper assistance prior to operating this Fan.

Do not allow anyone to operate the Vane Axial Fan without first reading the Operator's Manual and becoming familiar with its operation. Schaefer has endeavored to provide you with the finest equipment available for providing air for portable ventilation purposes. The possibility does exist, however, that the Vane Axial Fan can be subjected to applications not intended by Schaefer. **Misuse and/or misapplication of the Vane Axial Fan can lead to the possibility of serious damage, injury or even death.** Anyone operating the Vane Axial Fan should refer to current OSHA job safety and health rules and regulations pertaining to the construction industry, with a particular emphasis on 29 CFR 1910, which contains rules governing Permit-Required Confined Spaces for General Industry.

Record the Vane Axial Fan model and serial number in the space provided below.

Model No. _____ Serial No. _____

Date Purchased _____

All specifications are general in nature and are not intended for specific application purposes. Schaefer accepts no responsibility for variations which may be evident in actual products, specifications, pictures and descriptions contained in this publication.

GENERAL SAFETY INFORMATION

These instructions are for your protection and convenience. Please read them carefully since failure to follow these precautions could result in injury or even death.

- Always use the VAF3000P in accordance with the required operation standards listed below.
- Never use combustible liquids or solvents to clean or flush any part this product.
- Never put the VAF3000P into standing water or allow water inside the motor.
- Never store the VAF3000P outdoors.
- Never allow the air intake screens to become plugged.
- Never put any object in the intake screen unless the unit is disconnected from the air supply line and the fan blade has stopped turning.
- Do not allow the unit to be used as a toy. Close attention is necessary when used by or near children.
- Keep hair, loose clothing, fingers and all parts of the body away from the intake screen. If the fan is not working properly because it has been dropped, damaged, left outdoors or submerged in water, contact Schaefer at (320) 251-8696.

INSTRUCTIONS FOR OPERATION AND CARE

OPERATION STANDARDS

FOR ALL APPLICATIONS

- **100 psi maximum**
- **Clean, dry, lubricated air supply required**
- **3/8" Type M Female quick connector (Fan connection: 3/8" Type M Male)**



FOR HAZARDOUS LOCATIONS

- **CAUTION:** Ground unit at lug on coupler plate
- Air supply lines shall be made of electrically conductive material in accordance with the recommended practice on static electricity, NFPA 77, and/or any other applicable local code

- Your new VAF3000P comes to you completely assembled and ready to operate. Carefully inspect unit for any possible damage from transit.
- When using the VAF3000P, note the directional airflow indicator on the external shell. This is the way the air moves.
- Prior to connecting the VAF3000P to the air supply line, inspect the inlet and outlet screen and remove any debris that may restrict airflow movement.

WHEN USED WITH DUCTING



FOR HAZARDOUS LOCATIONS

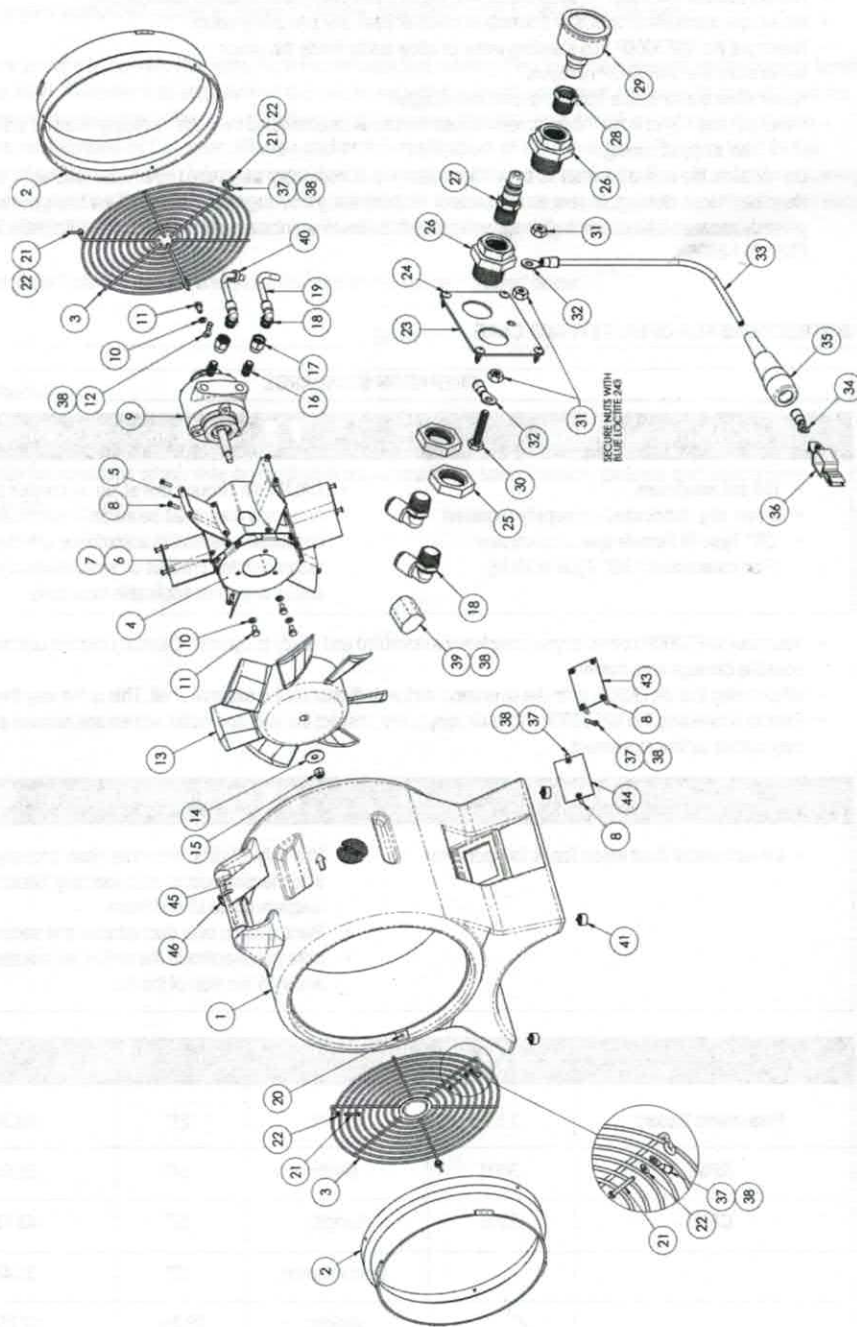
- **Do not install duct when fan is in operation**
- Use only 'Static Conductive Hose' properly grounded. If connecting duct to duct, use only 'Static Conductive' couplers made of aluminum
- Place duct lip over duct adapter and secure firmly
- Note the direction of the airflow as indicated by the arrow on the side of the fan

SPECIFICATIONS

DIMENSIONS

Pneumatic Motor:	1.5 hp	Height:	21"	53.34 cm
RPM:	3000	Width:	14"	35.65 cm
CFM:	2000	Length:	17"	43.18 cm
		Duct Adapter:	12"	30.48 cm
		Weight:	28 lbs.	12.75 kg.


VAF3000P PICTORIAL BREAKDOWN



VAF3000P Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	HSG-VAF3000-AS	HOUSING BLUE VAF-3000 ANTI-STATIC	1
2	RING-VAF3000	DUCT RING 12" ABS BLACK	2
3	GUARD-VAF3000P-YZ	WIRE GUARD 12" YELLOW ZINC	2
4	10480-VAF3000P	AIR MOTOR MOUNT - VAF3000P	1
5	MTRVN-VAF3000P-YZ	MOTOR MOUNT VANE 12"	6
6	OSHCS832X12Z	SOCKET HEAD CAP SCREW	12
7	ONY832Z	NUT NYLOCK 8-32 ZINC	12
8	ORIVET6-8A	RIVET AB6-8A 3/16" DIA. x 1/2" ALUMINUM	18
9	AIRMV4-F-709	AIR MOTOR V4-F-709 / 4AM-NCC-144	1
10	OSW14SS_	SPLIT LOCK WASHER 1/4" STAINLESS	4
11	OB1420X12HSS	BOLT HEX HEAD STAINLESS 1/4-20 x 1/2"	4
12	ORGTERM1614-14	RING TERMINAL 1/4" 16-14 AWG INSULATED	1
13	BLADE-VAF3000	BLADE VAF3000 ASSEMBLY	1
14	OW38X114FWZ	WASHER FENDER 3/8" x 1-1/4	1
15	ONY3816Z	NUT NYLOCK 3/8-16	1
16	NIPB14H	NIPPLE BRASS 1/4" HEX	2
17	OREDCOUP38X14B	REDUCER COUPLING 3/8" NPT x 1/4" NPT BRASS	2
18	OEL9038TUBX38NPT	ELBOW 90° 3/8" TUBE PUSHLOCK x 3/8" NPT MALE	4
19	POLYTUBE38ODBL	TUBE 3/8" OD x .062 WALL POLYETHYLENE BLACK	2
20	OWNM3-0.5HT	WELL NUT M3-0.5 HIGH TORQUE	6
21	OBM3-0.5X25HHSS	BOLT HEX HEAD M3-0.5 x 25mm	6
22	OWM3FSS	WASHER 3mm FENDER STAINLESS STEEL	6
23	COUPPLATE-YZ	COUPLER PLATE VAF3000 YELLOW ZINC	1
24	OSMS8X12PHSSSTS	SHEET METAL SCREW #8 X 1/2" TORX SECURITY	4
25	BHFNUT38	NUT FOR BHF 3/8" FEMALE	2
26	BHF38F	FITTING BULKHEAD FEMALE 3/8" NPT	2
27	QCFM38-AIR	QUICK CONNECT FITTING MALE 3/8" TYPE M x 3/8" NPT	1
28	RBB38X14	REDUCER BUSHING 3/8" x 1/4" BRASS	1
29	AIRMU14	AIR MUFFLER 1/4" NPT GAST AC980	1
30	OB1420X114HB	BOLT 1/4-20 x 1-1/4 HEX HEAD BRASS FULL THREAD	1
31	ON1420B	NUT 1/4-20 HEX BRASS	3
32	ORGTERM1210-14	RING TERMINAL 1/4" 12-10 AWG INSULATED	2
33	WIRE10GGMTW	WIRE #10 STRANDED GREEN MTW 20'	1
34	ORGTERM1210-10	RING TERMINAL #10 12-10 AWG INSULATED	1
35	OCLIPINS-3000P	INSULATOR CLIP 28F487	1
36	OCLIP-3000P	CLIP 28F524	1
37	ORGTERM1614-10	RING TERMINAL #10 16-14 AWG INSULATED	4
38	WIRE14GGMTW	WIRE #14 STRANDED GREEN MTW	5.5 FT
39	OLN5TERM	LEVER NUT 5 TERMINAL GRAY	1
40	OCT4NB	CABLE TIE 4" NYLON BLACK	1
41	ORF78DP	RUBBER FOOT 7/8" OD DRIVE PIN RETAINER	4
42	LABELBP-3000P	LABEL BACKER PLATE SERIAL NUMBER	1
43	LABEL-SN-3000P	LABEL SERIAL NUMBER VAF3000P FAN	1
44	LABELSAFE-3000P	SAFETY LABEL VAF-3000P FAN	1
45	LABEL-CAMD-3000P	LABEL CAUTION AVOID MOISTURE DAMAGE	1
46	OCT712P	CABLE TIE 7-1/2" NYLON NATURAL	1

SAFETY SYMBOL

When you see this symbol,  CAUTION, be aware that personal injury or property damage is possible. The hazard is explained in the text following the symbol.



CAUTION: Severe personal injury or death COULD occur if hazard is ignored.

AIR MOTOR PRECAUTIONS



CAUTION: The air motor is designed to be driven by compressed air. Under no circumstances should the air motor be driven by any other gases. The air motor must not be driven by fluids, particles, solids or any substance mixed with air, particularly combustible substances likely to cause explosions.



CAUTION: DO NOT USE KEROSENE OR OTHER COMBUSTIBLE SOLVENTS.



CAUTION: Foreign materials exiting the air motor can be hazardous. Solid or liquid materials exiting the unit can cause eye or skin damage. Keep away from air stream.



CAUTION: Keep face away from exhaust port. Eye protection is required.



CAUTION: Water, vapor, oil-based contaminants or other liquids must be filtered out.



CAUTION: Do not drive the air motor in excess of the recommended operating maximums below. Ambient temperature (including the moving airstream) should not exceed 55°C (131°F).

INTERNAL OPERATING MAXIMUMS

Motor Size	Maximum RPM	Maximum Pressure (psi)	Maximum Torque in lb. - inch	Maximum Air Consumption in cfm
V4	3000	100	36	78



CAUTION: Do not allow the air motor to 'run free' at high speeds without a load. Excessive internal heat buildup will result in loss of internal clearance and rapid motor damage.

CFM RATINGS

Free Air	2000 cfm	25' 1-90° Bend	1250 cfm
15' Straight Duct	1700 cfm	25' 2-90° Bend	1100 cfm
15' 1-90° Bend	1400 cfm	100' Straight Blowing	1000 cfm
25' Straight Duct	1600 cfm	100' Straight Suction	1125 cfm



CAUTION: Always disconnect the unit from the air supply before servicing.

GENERAL TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Unit will not run	<ul style="list-style-type: none"> No air supply to unit Faulty air supply line 	<ul style="list-style-type: none"> Connect air supply Perform maintenance and check line to air supply
Unit runs but fan makes loud scraping noise	<ul style="list-style-type: none"> Unit has been severely jolted causing fan to rub against housing Unit has been severely jolted causing housing to deform 	<ul style="list-style-type: none"> Remove motor and replace damaged motor mounts Perform maintenance and check line to air supply
Unit runs but vibrates excessively	<ul style="list-style-type: none"> Severe jolt has bent motor shaft causing unit to be out of balance Fan blade is damaged Dirt build-up on one side of fan blade 	<ul style="list-style-type: none"> Remove and replace motor Replace fan blade as necessary Replace fan blade Clean fan blade
Unit runs but fan does not turn	<ul style="list-style-type: none"> Fan is jammed Housing has been damaged and presses on the fan blade 	<ul style="list-style-type: none"> Remove motor and replace damaged motor mounts Replace fan blade if necessary Replace housing/unit as necessary
Unit runs but does not develop full power	<ul style="list-style-type: none"> Low air supply pressure Low air supply cfm Excessive duct length Worn motor vanes 	<ul style="list-style-type: none"> Supply 100 psi air Increase size of compressor and/or size of supply lines to provide at least 71 cfm Reduce duct length to recommended maximum Rebuild motor

MOTOR TROUBLESHOOTING GUIDE

REASON	LOW TORQUE	LOW SPEED	WON'T RUN	RUNS HOT	RUNS GOOD, THEN SLOWS
Dirt, Foreign Material	X	X	X		
Internal Rust	X	X	X		
Misalignment	X	X	X	X	
Insufficient Air Pressure	X	X			
Too Small Air Line		X			X
Restricted Exhaust		X			
Poor Lubrication	X	X	X	X	
Jammed Machine	X	X	X		X
Compressor Too Small		X			X
Compressor Too Far From Unit		X			X

LUBRICATION

An automatic lubricator can be installed in the air line just ahead of the motor. The lubricator should be adjusted to feed one drop of oil per minute. Lubrication is necessary for all internal moving parts and rust prevention. Excessive moisture in the air line can cause rust formation in the motor and might also cause ice to form in the muffler due to the expansion of air through the motor. The moisture problem can be corrected by installing a moisture separator in the line and also by installing an after cooler between the compressor and air receiver. The use of a Filter Regulator Lubricator (FRL) will cover both of these requirements. USE DETERGENT SAE #10 AUTOMOTIVE ENGINE OIL.

SERVICING AIR MOTOR

If the motor is sluggish or inefficient, try flushing with recommended solvent. The recommended solvent for air motors and lubricated pumps is Gast Flushing Solvent, Part #AH255 or AH255A, Demkote 2X726 Safety Solvent, Inhibisol Safety Solvent or Dow Chemical Chlorothane.

To flush the unit, disconnect the air line from the coupler plate and remove the felt inside the muffler assembly. Add several teaspoons of solvent directly into the air motor fitting. Rotate the fan shaft by hand in both directions for a few minutes. Connect motor to an adjustable air supply. Slowly apply pressure until there is no trace of solvent in exhausted air system. Reinstall the felt insert and secure the muffler cap.



CAUTION: Foreign material exiting the air motor can be hazardous. Solid or liquid material exiting the unit can cause eye or skin damage. Keep away from air stream. Keep face away from exhaust port. Eye protection is required.



CAUTION: DO NOT USE KEROSENE OR OTHER COMBUSTIBLE SOLVENTS.



CAUTION: Flush unit in a well-ventilated area only.

Re-lubricate the motor by squirting a drop of oil in the chamber. If the vanes need replacing or foreign materials are present in motor chamber, an experienced mechanic may remove the end plate opposite the drive shaft end. DO NOT PRY WITH A SCREWDRIVER because it will dent the surface of the plate and body causing leaks. A puller tool should be used which will remove the end plate while maintaining the position of the shaft. New vanes should have the edge with the corners cut on an angle or the notched edge towards the bottom of the vane slot.

If motor requires service, it is highly recommended that the user remove the motor from the housing as per the instructions provided in this manual and return it to the factory for repair.

A service kit is available; however, it should only be installed by a qualified mechanic. The tolerances inside the air motor must be maintained to ensure top operating performance.

SHUTDOWN AND STORAGE PROCEDURE

1. Turn off air intake supply and remove plumbing.
2. Remove air motor from the connecting machinery.
3. Use clean, dry air at low pressure to 'flush out' condensates, such as water.
4. Re-lubricate the air motor with a squirt of oil in the chamber. Rotate the shaft by hand several times.
5. Plug or cap each port. The unit is now ready for storage.

MOTOR REMOVAL & INSTALLATION TOOL LIST

- Socket (7/16")
- Deep Socket (9/16")
- Open End Wrench (7/8")
- Socket and Driver (5.5 mm)
- Open End Wrench (3/4")
- Loctite #545 or Pipe Seal
- Duct tape for sealing motor ports
- 3 pieces of wood blocking cut to 12"



CAUTION: This unit is cULus listed for use in hazardous locations. The grounding system links all metal components together. If you fail to properly reattach grounding stud rings, washers and bolts, static electric build-up can result. The cULus listing for this unit will also be null and void.

MOTOR REMOVAL PROCEDURES

Step One: Remove Grills and Duct Rings from the front and rear of the unit. Use a 1/4" ratchet and a 5.5 mm socket to remove bolts and washers. Store these components in a safe place. They will be needed for the reassembly of the unit.

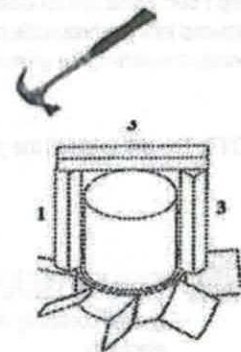
Step Two: Position the unit so that the back of the motor is facing you. Disconnect air hoses one at a time from the motor by pushing in on the ferrule lock ring while pulling on hoses. Label each hose with masking tape and a pen. Mark the top line "Top Inlet". Mark the bottom line "Bottom Exhaust".

Step Three: Use a 7/8" open end wrench to spin off brass hex fittings from the air motor. NOTE: A 3/4" open end wrench may also be needed to spin off air connection ferrules of the 90° elbow because of limited space.

Step Four: Lay unit down with the fan blade facing up. Remove the nylock nut that holds the blade on shaft with a 9/16" open end wrench and remove the 3/8" flat washer. You may need to wedge the fan blade to prevent rotation during this procedure.

Step Five: Flip unit so that blade is facing workbench. Create a 3-legged brace with pieces of wood cut approximately 12" in length. Pound gently on the center of the cross beam to release the fan blade from the shaft.

NOTE: Even pressure is required on at least two points at the same time to release the fan hub without causing damage to the blade assembly or motor shaft.



CAUTION: Striking the back of the fan hub directly with a hard or sharp object (e.g. hammer or screwdriver) may damage components.

REMOVAL PROCEDURES CONTINUED

Step Six: Flip unit over on its back and remove the front motor assembly bolts with a 7/16" socket.

Step Seven: Use a 9/16" deep socket to remove the remaining brass hex fittings from the motor.



CAUTION: Be sure to note the location of all grounding wires, washers and star washers before removing. Reattached assemblies to the same location from which they were removed in order to safeguard proper ground continuity.

Step Eight: The motor is now detached from the mounting assembly. Carefully slip out of the housing for repair. Tape over the air fitting holes to prevent debris from falling into the motor while it is out of the housing.

Step Nine: Decide if you want to ship the motor to the factory for repair, order a service kit or purchase a new motor. Please contact Schaefer at the number listed on the front of this manual to obtain parts, secure a return authorization or receive technical assistance.

REINSTALLING THE AIR MOTOR INTO THE VAF3000P HOUSING

Step One: Prepare motor for installation by removing the shipping plugs from the air motor ports. Lay the VAF3000P face down on a firm work surface.

Step Two: Carefully position air motor into the housing assembly with the motor shafts through the front mounting plate. Be sure to align the air fitting holes of the motor and housing so that the fittings can be installed into the motor through the housing.

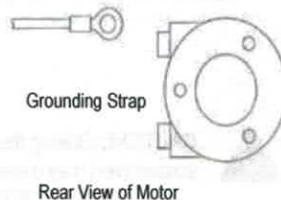
Step Three: Coat threaded joints with Loctite #545 Pneumatic Seal or equivalent product to ensure leak free installation of air fittings. Install the two brass hex nipples into the air motor and tighten with a 9/16" deep socket.

Step Four: Stand unit on base with front facing you. Attach motor to front housing plate with three 1/4"-20 bolts and lock washers while maneuvering the motor into position from the rear. Tighten securely with a 7/16" socket.

NOTE: The bolt to which the grounding wire must be attached is located between the two air fittings.



CAUTION: Failure to reattach grounding stud ring will break ground continuity and allow the accumulation of static electricity.



Rear View of Motor

REINSTALLATION PROCEDURES CONTINUED

Step Five: Stand unit on its base, once again with the motor shaft towards you. Use a 7/8" open end wrench to tighten the 90° hose fittings onto the brass hex nipples previously installed onto the motor through the motor housing. Be sure to coat threaded joints with Loctite #545 Pneumatic Seal or equivalent product to assure leak free installation of air hose fitting. Attach hose to the fittings by pushing onto ferrule until they snap-lock into place. Tug on hose gently. If hoses release, push more firmly into the ferrule until you hear it snap-lock into place.

NOTE: Orient the unit so the back of the motor is facing you. Reinstall the air hoses into the proper motor fittings.

Step Six: Test air connections by attaching the unit to air supply line. Inspect hose connections for leaks. If a leak is found, repeat sealing instructions outlined in Step Six.



CAUTION: Never touch the spinning motor shaft – severe personal injury will result.

Step Seven: Lay unit down with the motor shaft facing up. Install fan blade with the flat part of the shaft aligned with the flat guide on the fan hub. Place 3/8" flat washer on top of the fan hub before securing the nut on the shaft with a 9/16" open end wrench. Tighten until you see one thread exposed above the installed nylon nut. You may need to hold the blade by wedging it to prevent rotation during this procedure.



CAUTION: Never operate the unit with the fan blade installed without first installing the safety grill. Severe personal injury will result.

Step Eight: Install grill, duct ring and grounding stud ring to the front of the unit's housing. Assemble bolt with flat washer first, then the ground stud ring. This bolt assembly is then threaded through the grill and duct ring into the unit's housing. Repeat steps to install grill, duct ring and grounding stud to the rear of the unit's housing. You should use a 1/4" ratchet and a 5.5 mm socket for this procedure.



CAUTION: Be sure to reattach flat washer and grounding wire stud ring to ensure proper operation.

Step Nine: Connect completely reassembled fan to air supply line and perform a final inspection of the unit to ensure proper operation.

Step Ten: Ensure ground continuity with a multi meter. Test with one lead attached to the grounding stud located on the coupler plate, and complete the circuit by touching the secondary lead to the following points while noting meter response:

1. The rivet holding the right side of the safety label in place.
2. The upper left corner rivet holding serial plate in place.
3. Any coupler plate screw.
4. The front and rear grills. Test one of the bolts not connected to the ground wire.
5. Back of motor (long probe will be required to make contact).

NOTE: Some resistance may be present when testing various points. The objective of this test is to ensure that all wires removed are properly attached.



CAUTION: This unit is cULus listed for use in hazardous locations. The grounding system links metal components together. If you fail to properly reattach grounding stud rings, washers and bolts, static electric build-up can result. The cULus listing for this unit will also be null and void.