

Part #468410 Model SAF Centrifugal Roof Supply Air Fan

Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage!

SAF

The SAF roof mounted supply air fan designed to provide non-tempered, filtered make-up air. Belt drive in five sizes.

Pre-Starting Checks

- 1. Inspect for any damage that may have occurred during transit.
- 2. Shipping damage claim must be filed with carrier.
- 3. Check all bolts, screws, set-screws, etc. for looseness that may have occurred during transit. Retighten as required. Rotate wheel by hand to be sure it turns freely.

Always use all four lifting holes when using a sling.

General Safety Information When Installing or Servicing the Fan

Do not depend on any switch as the sole means of disconnecting power when installing or servicing the fan. Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury. Motor will restart without warning after thermal protector trips. Do not touch operating motor, it may be hot enough to cause injury.

Do not place any body parts or objects in fan, motor openings or drives, while motor is connected to power source.

Do not use this equipment in explosive atmospheres!

- 1. Read and follow all instructions and cautionary markings. Make sure electrical power source conforms to requirements of equipment and local codes.
- 2. Ventilators should be assembled, installed and serviced by a qualified technician. Have all electrical work performed by a qualified electrician.
- 3. Follow all local electrical and safety codes in the United States and Canada, as well as the National Electrical Code (NEC), the Occupational Safety and Health Act (OSHA), and the National Fire Protection Association (NFPA) Bulletin 96 in the United States. Ground motor in accordance with NEC Article 250 (grounding). Follow the Canadian Electric Code (CEC) in Canada.
- 4. Motor and fan must be securely grounded (bare metal) to a suitable electric ground, such as a grounded water pipe or ground wire system.

NOTE: Refer to Figure 1 for connection wiring diagram.



In United States, to reduce the risk of injury to persons, OSHA compliant guards are required when fan is installed within 7 feet of floor or working level.

In Canada, to reduce the risk of injury to persons CSA compliant guards are required when fan is installed within 2.5 meters (8.2 feet) of floor or grade level.

- 5. Do not kink power cable or allow it to come in contact with sharp objects, oil, grease, hot surfaces or chemicals. Replace damaged cords immediately.
- 6. Make certain that the power source conforms to the requirements for the equipment.
- 7. Never open access door to a duct with the ventilator running.
- 8. Motor must be securely and adequately grounded. This can be accomplished by wiring with a grounded, metalclad race way system by using a separate ground wire connected to the bare metal of the motor frame, or other suitable means.

Figure 1 - Typical Wiring Diagram



Installation

Roof Mounting

Installation, troubleshooting and parts replacement is to be performed only by a qualified personnel. Consult and follow NFPA 96 recommendations. NFPA 96 instructions supersede this document.

NOTE: Refer to motor nameplate for wiring procedures. Refer to switch manufacturer for installation and wiring procedures.

- 1. Cut an appropriate sized hole in the roof surface. Follow curb manufacturer's installation instructions. Caulk and flash curb to ensure a water tight seal.
- 2. Position curb/equipment support(s) on the roof.
- 3. Good duct practices should be followed in accordance with SMACNA and AMCA guidelines, NFPA 96 and any local codes. The ductwork should extend far enough above the roofline to meet the supply unit once it is installed. See Figure 2.
- Before installing supply unit, apply a sealant around the perimeter of the supply duct to isolate the fan and minimize vibration. See Figure 3.
- 5. Use a crane and set of spreader bars hooked to the factory lifting holes (as shown in Figure 4) to lift and center the unit on the curb. Use self-tapping sheet metal screws to fasten unit to the curb.

NOTE: The use of all lifting holes and set of spreader bars is mandatory when lifting unit.

6. For unassembled units, or when motor and drive is shipped loose, install the motor and drive package as shown in Figures 5, 6 and 7.

MODELS 110, 112, 115 and 118 - Figure 5 (Motor Frame Sizes 56 and Smaller)

MODELS 110, 112, 115 and 118 - Figure 6 (Motor Frame Sizes 143T and Larger)

a. Install blower sheave and motor sheave.

NOTE: On some units, a bushing may be required on blower sheave.

- b. Bolt the belt tensioning bracket to the motor using one square head bolt and nut. Snap the rubber cap onto the head of the tensioning screw. Thread the screw through the tapped hole on the belt.
- c. Slide the remaining two square head bolts down the U-channel attached to the blower housing.
- d. Align the slots/holes of the motor base plate with the two square head bolts, attach the motor with remaining two nuts.
- e. Refer to page 3 for Motor and Pulley mounting

MODELS 120 - Figure 7

a. Install blower sheave and motor sheave.

NOTE: On some units a bushing may be required on blower sheave.

- b. Align the motor with the appropriate holes in the motor mounting plate. Bolt the motor to the motor mounting plate using the four bolts and nuts provided. Make certain to align the sheaves properly.
- c. Refer to page 3 for Motor and Pulley mounting instructions.



Wall Mounting

Only the 110 model is designed for wall mounting. Do NOT attempt to wall mount the 112, 115, 118 or 120 models.

- 1. Refer to the instructions, warnings and notes found for roof mounting.
- 2. Masonry Wall. Around the wall opening, install an angle iron frame at least 2 x 2

x 1/4 inch to match the inside base dimension of the ventilator. Secure with lead cinch type anchors with non-ferrous bolts, not supplied (3 per side). The ventilator should then be mounted (inlet assembly down) to the mounting angle with self-tapping sheet metal screws (not supplied) as shown in Figure 8.



Figure 8 - Wall Installation

Motor and Pulley Mounting

NOTE: For UL listed units, the motor used with this fan must be designated as such by Greenheck Fan Corp.

- 1. Secure motor to plate using hardware provided. Holes will align when the motor frame (shaft end) is flush with the edge of the motor plate. See Figure 9.
- 2. Mount pulleys on shafts securing to shaft with set screw. Check pulleys for proper alignment. Refer to Figure 10. Misaligned pulleys lead to excessive belt wear, vibration, noise and blower loss.
- 3. Install the belt and adjust the tension to allow for 1/64 inch of deflection per inch of span when moderate thumb pressure is applied to the belt. Too much tension will cause excess bearing wear and noise. Too little tension will cause slippage at startup and uneven wear. Refer to Figure 11.
- Adjust RPM to desired level using a variable pitch pulley. After adjustment, motor amperage should be checked to avoid overloading of the motor.

Assemble Weatherhood

NOTE: Assembly requires a 3/8 inch nut runner.

- 1. Remove top cover.
- 2. Carefully remove weatherhood assembly and filters from inside unit.
- 3. Slide weatherhood into place as shown in Figure 12. Weatherhood flange should be on the inside of the unit.
- 4. Attach weatherhood by using 3/8 inch nut runner. Drive the provided 1/4 inch thread rolling screws through the side panel and into the weatherhood.
- 5. Loosen the thumb screws on the filter racks. Install filters. Be sure the filters are properly oriented (airflow directions are located on the side of the filter). Slide filter rack back into place and tighten thumb screws.
- 6. Reinstall top cover.

3. Wood Siding. Around the wall opening install a wooden frame at least 2 x 4 in. to match the inside base dimension of the ventilator. Secure with counter-sunk expansion type lag bolts (not supplied, 3 per side). The ventilator should then be mounted (inlet assembly down) to the mounting frame with square head wood screws (not supplied) as shown in Figure 8.

NOTE: The actual size of the wall opening is determined by the duct size.

- 4. Any mounting flange connection between the wall, mounting flange and the ventilator, should be coated with a suitable caulking compound or approved waterproof mastic sealer to prevent water leakage into the ventilator.
- 5. It is recommended to install the unit with the inlet assembly installed in a horizontal position (left or right install configuration only). The inlet assembly must be rotated so that the filters point in a downward configuration, as shown in Figure 8.



Figure 10 - Pulley Alignment





Troubleshooting

Parts List

- 1. Blower Assembly
- 2. Bearing(s)
- 3. Aluminum Filter(s)*
- 4. Top Panel
- 5. Side Panel
- 6. Back Panel
- 7. Base
- 8. Weatherhood Assembly
- * One filter is required for Model 110.
- * Two filters are required for Models 112, 115, 118 and 120.



Problem	Cause	Corrective Action
Ventilator Inoperative	Blown fuse or breaker	Replace or repair
	Defective motor	Replace or repair
	Incorrectly wired	Shut power OFF and check wiring for proper connections
	Broken belts	Replace
Insufficient Airflow	Blocked duct or clogged filters	Clean or replace
	Speed too slow	Check for correct drives
	Damper closed	Inspect/repair damper
	Belt slippage	Replace/adjust tension
	Loose fitting duct sections permitting air loss	Check for secure connection where duct sections are joined (suggest duct tape at seams for sealed closure)
Excessive Noise or Vibration	Belt(s) too loose/tight	Adjust tension
	Loose or defective bearings	Replace bearings
	Loose wheel or sheaves	Tighten set screws
	Accumulation of material on wheel	Clean
	Misaligned sheaves	Realign
	Ventilator base not securely anchored	Secure properly
	Fan wheel out of balance	Replace wheel
Motor Overloads or Overheats	Wheel RPM too high	Check drives
	Shorted motor winding	Replace motor
	Incorrect wheel rotation	Check motor wiring
	Over/Under line voltage	Contact Power Company
	Belt slippage	Tighten belt

Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the shipment date. Any units or parts which prove to be defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Greenheck Centrifugal Roof Supply Fan catalog provides additional information describing the equipment, fan performance, available accessories, and specification data.

AMCA Publication 410-96, Safety Practices for Users and Installers of Industrial and Commercial Fans, provides additional safety information. This publication can be obtained from AMCA International, Inc. at www.amca.org.



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