

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 these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.

Centrifugal Roof Supply Air Fan

This roof mounted supply fan is designed to provide non-tempered, filtered make-up air. Belt drive fans are available in five sizes and include washable aluminum filters.



General Safety Information

Only qualified personnel should install this fan. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. Other considerations may be required if high winds or seismic activity is present. If more information is needed, contact a licensed professional engineer before moving forward.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electric Code (CEC) in Canada.
2. The rotation of the wheel is critical. It must be free to rotate without striking or rubbing any stationary objects.
3. Motor must be securely and adequately grounded.
4. Do not spin fan wheel faster than max cataloged fan RPM. Adjustments to fan speed significantly affects motor load. If the fan RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
5. Do not allow the power cable to kink or come in contact with oil, grease, hot surfaces or chemicals. Replace cord immediately if damaged.
6. Verify that the power source is compatible with the equipment.
7. Never open access doors to a duct while the fan is running.

DANGER

Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury.

CAUTION

When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing.

CAUTION

Precaution should be taken in explosive atmospheres.

DANGER

Pour écarter les risques d'incendie, de choc électrique ou de blessure grave, veiller à toujours débrancher, verrouiller et étiqueter la source de courant avant l'installation ou l'entretien.

ATTENTION

Lors de toute intervention sur la soufflante, le moteur peut être suffisamment chaud pour provoquer une douleur voire une blessure. Laisser le moteur refroidir avant toute maintenance.

ATTENTION

Faire preuve de précaution dans les atmosphères explosives.

Receiving

Upon receiving the product check to ensure all items are accounted for by referencing the delivery receipt or packing list. Inspect each crate or carton for shipping damage before accepting delivery. Alert the carrier of any damage detected. The customer will make a notation of damage (or shortage of items) on the delivery receipt and all copies of the bill of lading which is countersigned by the delivering carrier. If damaged, immediately contact your representative. Any physical damage to the unit after acceptance is not the responsibility of the manufacturer.

Unpacking

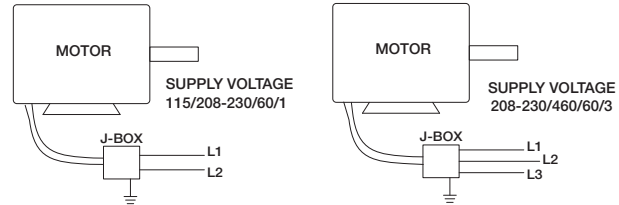
Verify that all required parts and the correct quantity of each item have been received. If any items are missing, report shortages to your local representative to arrange for obtaining missing parts. Sometimes it is not possible that all items for the unit be shipped together due to availability of transportation and truck space. Confirmation of shipment(s) must be limited to only items on the bill of lading.

Installation

Roof Mounting

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

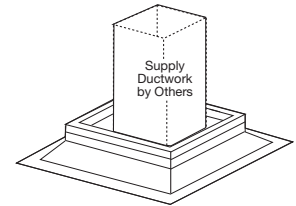
Figure 1 - Connection Wiring Diagram



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.

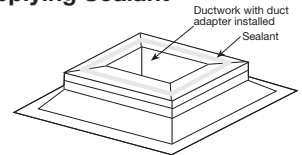
2. Position curb on the roof.
3. Good duct practices should be followed in accordance with SMACNA and AMCA guidelines, NFPA 96 and any local codes. The ductwork should extend far enough above the roofline to meet the supply unit once it is installed. See Figure 2.

Figure 2 - Installing Ductwork



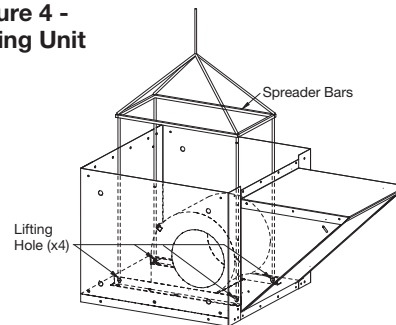
4. Before installing supply unit, apply a sealant around the perimeter of the supply duct to isolate the fan and minimize vibration. See Figure 3.

Figure 3 - Applying Sealant



5. Use a crane and set of spreader bars hooked to the factory lifting holes (see Figure 4) to lift and center the unit on the curb. Use self-tapping sheet metal screws to fasten unit to the curb.

Figure 4 - Lifting Unit



NOTE: The use of all lifting holes and set of spreader bars is mandatory when lifting unit. *Always use all four lifting holes when using a sling.*

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.

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

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

- Install blower sheave and motor sheave.

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

- 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.
- Slide the remaining two square head bolts down the U-channel attached to the blower housing.
- Align the slots/holes of the motor base plate with the two square head bolts, attach the motor with remaining two nuts.
- Refer to page 4 for Motor and Pulley Mounting instructions.

Figure 5 - Drive Package Assembly

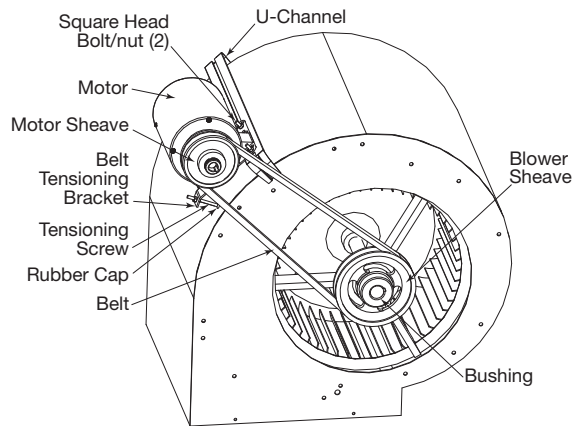
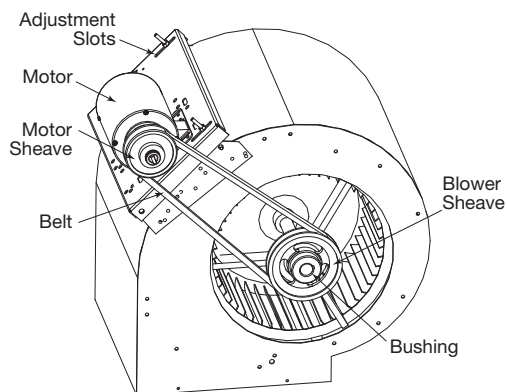


Figure 6 - Drive Package Assembly



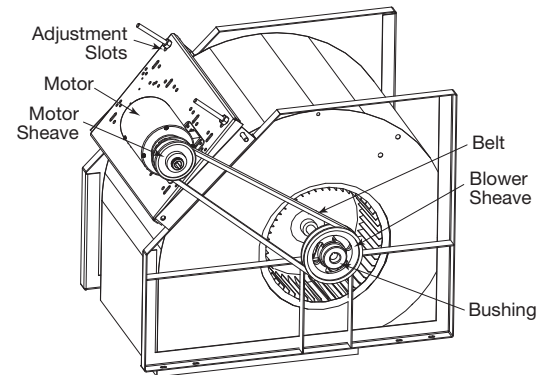
- **Size 120 - Figure 7**

- Install blower sheave and motor sheave.

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

- 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.
- Refer to page 4 for Motor and Pulley Mounting instructions.

Figure 7 - Drive Package Assembly



Wall Mounting

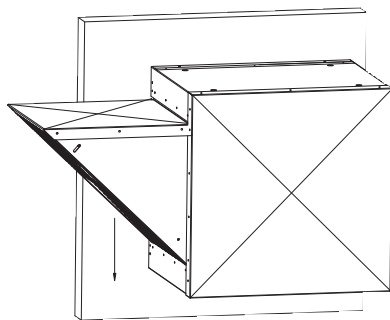
Only size 110 is designed for wall mounting. Do NOT attempt to wall mount sizes 112, 115, 118 or 120.

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.
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 8 - Wall Installation



Motor and Pulley Mounting

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

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.
4. Adjust RPM to desired level using a variable pitch pulley. After adjustment, motor amperage should be checked to avoid overloading of the motor.

Figure 9 - Drive Package Diagram

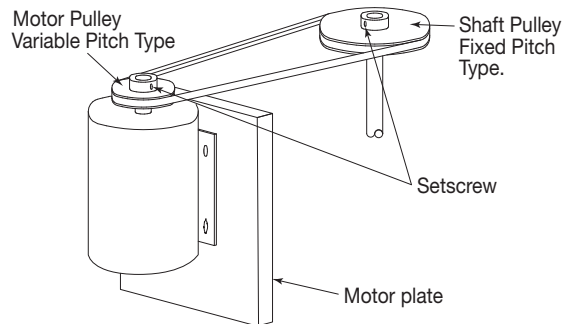


Figure 10 - Pulley Alignment

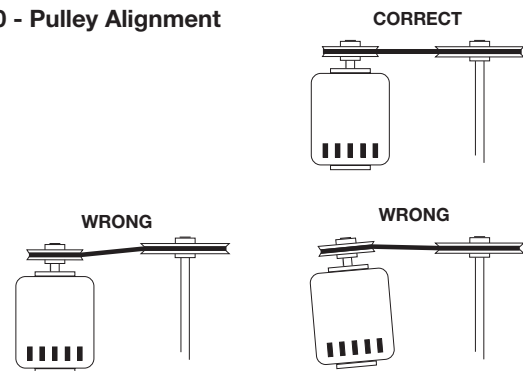
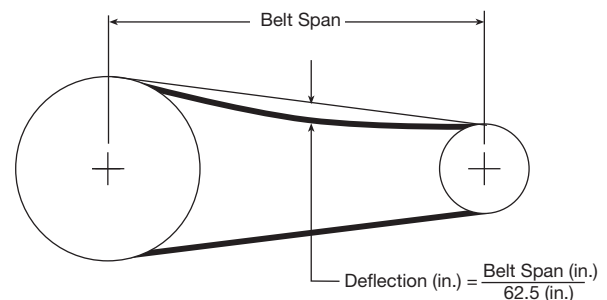


Figure 11 - Belt Tension

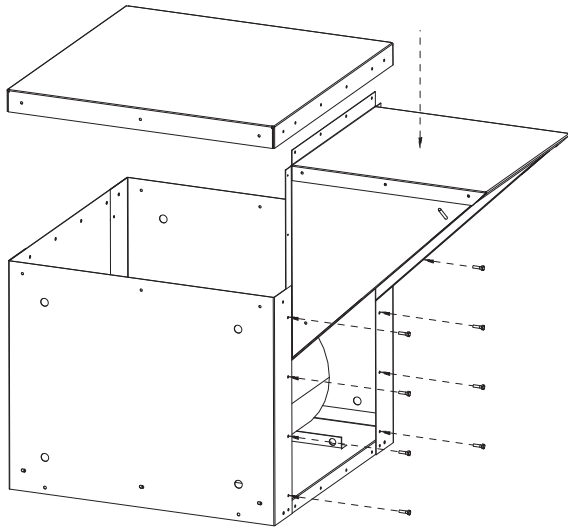


Assemble Weatherhood

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.

Figure 12 - Weatherhood Assembly



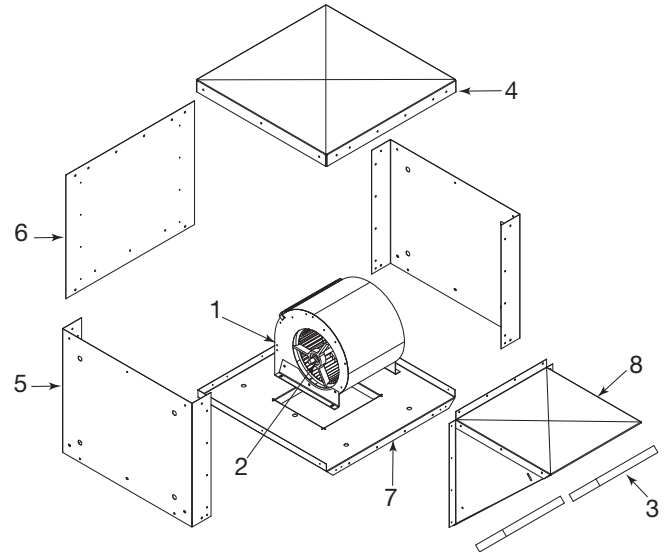
Parts List

Each fan bears a manufacturer's nameplate with model number and serial number embossed. This information will assist the local representative and the factory in providing service and replacement parts. Before taking any corrective action, make certain unit is not capable of operation during repairs.

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 size 110

Two filters are required for sizes 112, 115, 118 and 120



Troubleshooting

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

Maintenance Log

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Our Commitment

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

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.

Greenheck's Centrifugal Roof Supply Fan, Model SAF 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.

