SCHAEFER®

Belt and Direct Drive Box Exhaust Fan Series Operators Manual

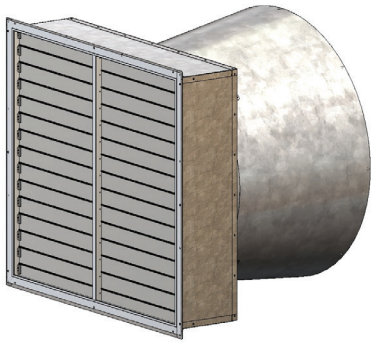
M-BEF



Box Exhaust Fan
Inlet View



Box Exhaust Fan
Outlet View



54" Box Exhaust Fan
with Cone

IMPORTANT: READ AND SAVE THESE INSTRUCTIONS

Read all instructions carefully before attempting to assemble, install, operate or service the product described. Failure to comply with instructions could result in personal injury and/or property damage.

Using this product for any other purpose than it was intended, or not within the operating specifications in this manual will void the warranty and may cause damage to the fan or serious injury to personnel.

WARNING - TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK:

- Do not expose fan to water or rain.
- The power source must conform to the electrical requirements of the fan. Consult your local electrician before wiring and follow all national, state, and local electrical codes.
- Disconnect all power before performing maintenance.
- DO NOT use a variable speed control device, unless your fan has been equipped with a VFD-compatible motor.

GENERAL SAFETY

- This fan is intended for general use only. Do not use near hazardous or explosive materials or vapors.
- Never insert fingers or any other objects into the fan when in operation.
- Use of an OSHA complying guard if within seven feet of floor is recommended.
- Use of a guard, shutter or hardware cloth if above seven feet of floor is recommended.
- Carefully read all safety messages in this manual and on your equipment safety decals.

  Follow recommended precautions and safe operating practices.

WARNING! This product can expose you to chemicals, including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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KEEP THIS MANUAL IN A CLEAN, DRY PLACE FOR FUTURE REFERENCE.

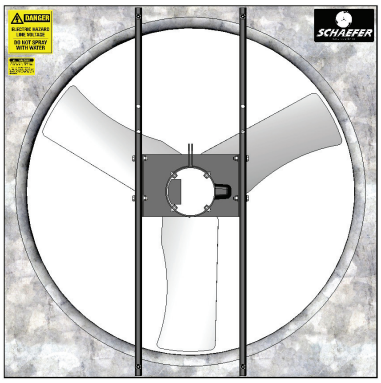
All information, illustrations and specifications in this manual are based on the latest product information available at the time of printing. Product specifications subject to change. We reserve the right to make changes at any time without notice.

If you need replacement parts, please contact your dealer. Take special care when ordering replacement blades, pulleys, motors and belts to ensure you get the proper configuration for your fan. If you do not have that information, please call our customer service department at 800-779-3267 for assistance.

SAFETY INFORMATION

Warning and danger decals have been placed on the equipment to warn of potentially dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety decals immediately.

Safety decal locations



IMPORTANT!

Pinnacle Climate Technologies (PCT) strongly recommends that a good alarm system be installed in confinement buildings to warn of power failure and high temperature. PCT also recommends that an alternate power source be available for confinement buildings in case of power failure.

INSTALLATION INFORMATION

The installation information is the same for all box exhaust fans, unless otherwise noted. Refer to the Rough-In Opening Dimension chart for the correct opening for your product.

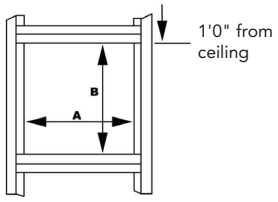
Build wall framing to the required wall opening illustrated in the chart below. The fans are shipped completely assembled and need only to be fastened to the wall framing with appropriate fasteners for your facility (not supplied).

Rough-in Opening Dimensions

Model #	Width (A)	Height (B) *
36"	43"	43"
42"	49"	49"
48"	55"	55"
54"	61"	62"

* Rough-in Framing Tolerance: +1/4"/-0"

Suggested rough-in frame construction



INSTALLATION INSTRUCTIONS

1. After you have made the opening in the wall, the fan unit can be placed into the opening and secured with fasteners appropriate for your application. Refer to the air flow directional arrow to ensure the fan is installed in the correct direction to achieve the desired air flow.

2. Flashing should be attached across the top of the fan on the outside of the building. Caulking can be used on the sides of the fan housing to assure a tight seal.

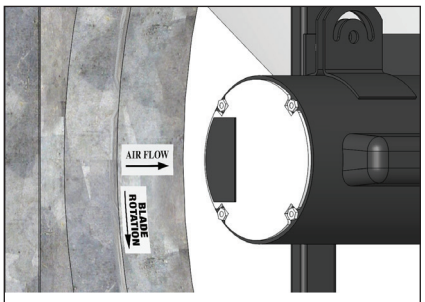
3. Once the unit has been securely fastened to the wall, the fan is ready to be wired.

POWERING THE FAN:

CAUTION:
ALL ELECTRICAL WORK SHOULD BE COMPLETED BY QUALIFIED ELECTRICIAN AND MEET ALL NATIONAL, STATE AND LOCAL CODES.

INSTRUCTIONS FOR WIRING

- Wiring should only be done by a trained electrician to prevent injury or death.
- Configure internal wires to match supply voltage and wire according to motor nameplate. Test to verify correct rotation.
- Many of the electric motors in our fans are reversible. Make sure the fan is rotating in the proper direction (see BLADE ROTATION ARROW LABEL on the fan housing). Follow instructions on the motor label to change rotation if necessary.
- PCT recommends installing a lockable disconnect switch near each fan.
- Route wire to motor with drip loop and secure. Drip loop will drain accumulated moisture away from the motor.
- Only permit power to unit when motor cover plate is properly installed to prevent injury.



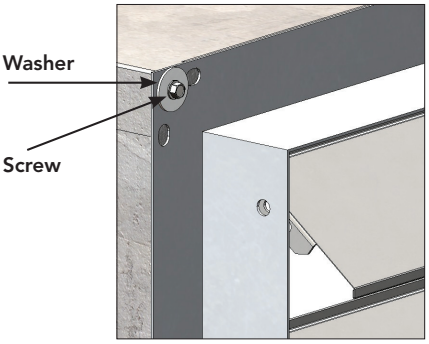
Fan blade rotation direction

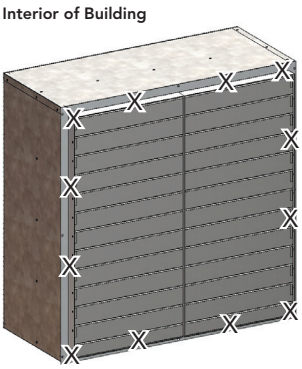
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SHUTTER INSTALLATION

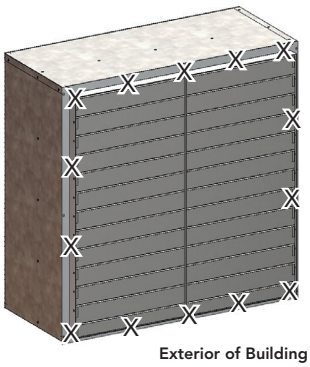
1. Place the shutter against the housing as shown below. Shutter must open outward.
2. Center the shutter left to right on the fan housing.
3. Align the top edge of the shutter flange with the top of the fan housing.
4. Attach the shutter to housing using a screw and washer at the locations shown below.
5. Measure and mark screw locations on shutter to ensure screws fasten through fan housing flanges on all four sides.

Note: If installing shutter on a 54" Box Fan with Cone, see shutter installation on page 4.





36" & 42" (12) locations



48" & 54" (16) locations

HARDWARE CLOTH INSTALLATION

Hardware Cloth Kit includes:
- Self-tapping screws
- Flat washers
- Hardware Cloth

Tools required:
- Electric/cordless drill
- 5/16" nut driver bit

Remove the entire kit from its packaging and inventory the contents making sure all the parts listed above are included. (If not, call your Schaefer dealer).

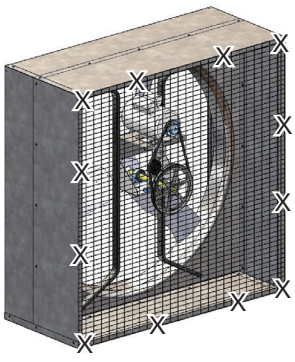
CAUTION: Hardware cloth may have sharp edges. Use caution while handling. Wear gloves.



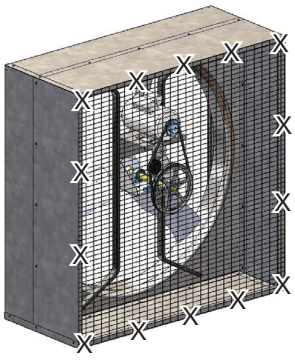
BOX FAN INTAKE SIDE

Installation

1. Place the cloth against the housing.
2. Attach the cloth to the housing by inserting a screw through a washer, then through the cloth between two horizontal wires, then into the housing. Insert a screw and washer at each location on the outer edge as shown below.

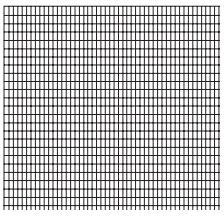


36" & 42" (12) locations



48" & 54" (16) locations

Optional Hardware Cloth Kit



OSHA Hardware Cloth Kit

- Meets OSHA Standards
- Heavy gauge pre-galvanized construction.
- Easy step-by-step instructions.

Kit includes:
2 pieces of hardware cloth to guard inlet and exhaust sides of fan. Complete with fasteners.

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SHUTTER INSTALLATION (54" MODELS WITH CONE)

54" Models:
Six shutter latches are supplied with each fan. Position two on the top, two on the bottom and two on the sides.

Tools:
- Electric/cordless drill
- 7/16" nut driver bit

Shutter Installation

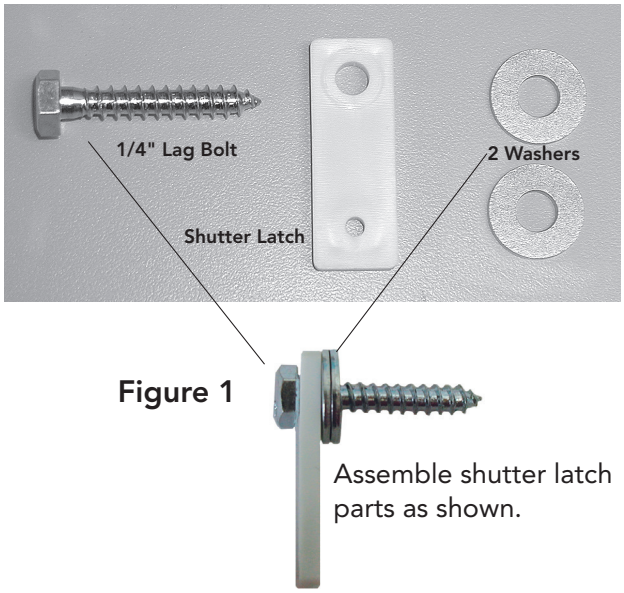
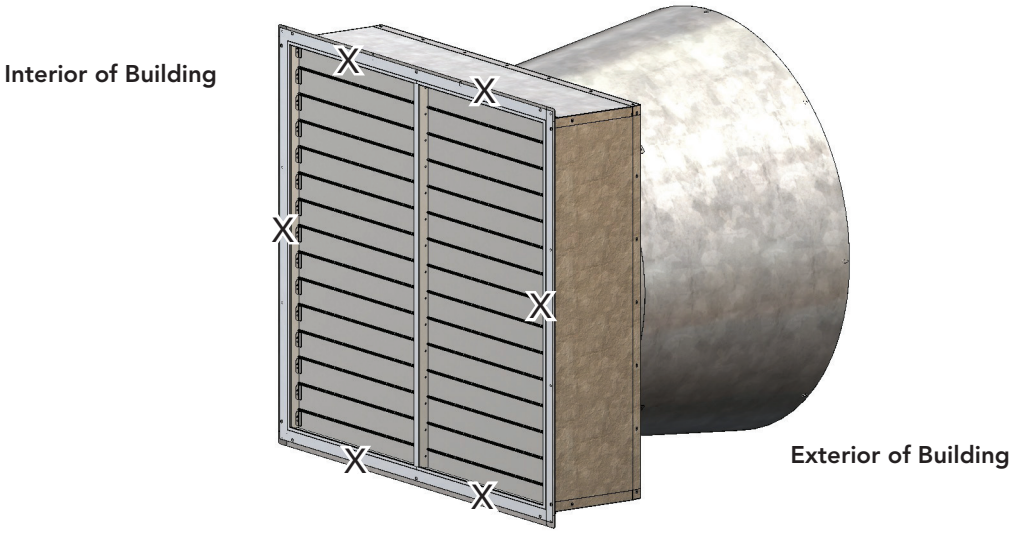


Figure 1

Assemble shutter latch parts as shown.



The shutter is on the inside of building and the galvanized housing (with cone) extends outside the building.

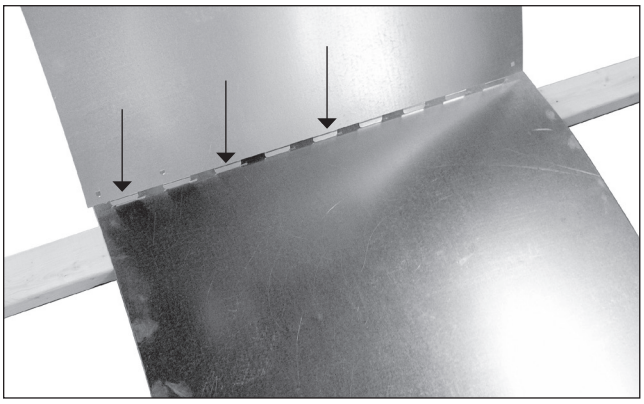
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CONE ASSEMBLY (IF APPLICABLE)

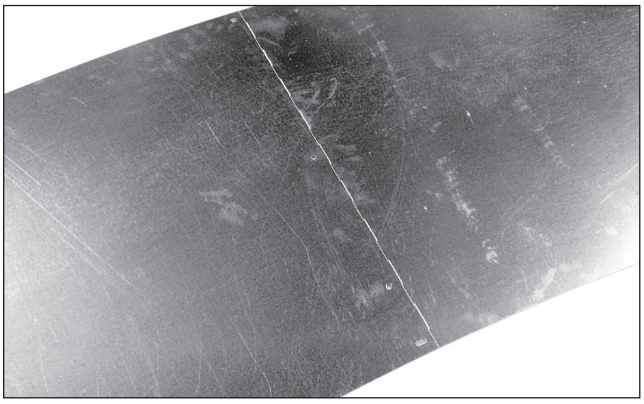
1. Lay one of the cone sections flat with the slotted end on a 2 x 4 board on the left and the tabs on the right, as shown.

** **BE CAREFUL! The cone sections have sharp edges; wear gloves to protect your hands.** **

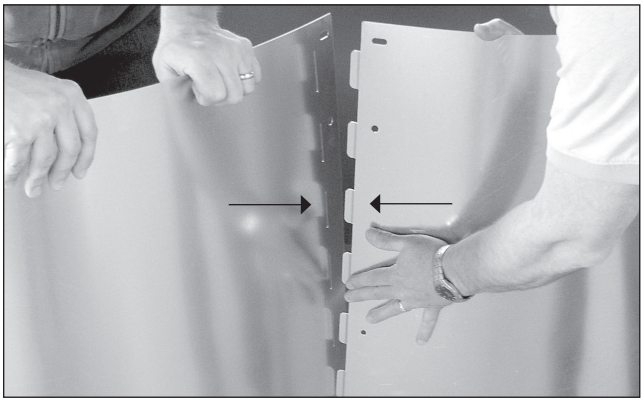
2. Insert the tabs of the second cone section into the slots of the first cone section.

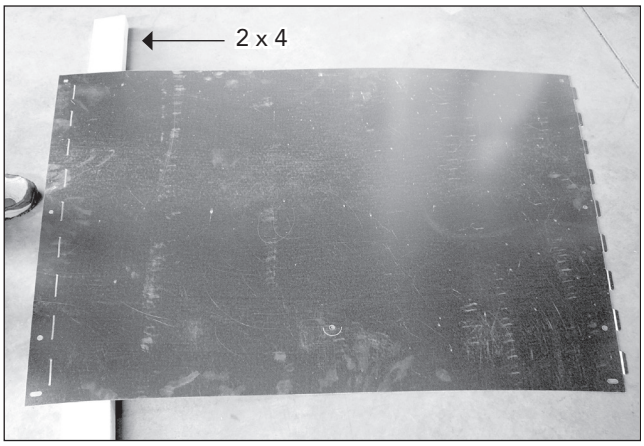


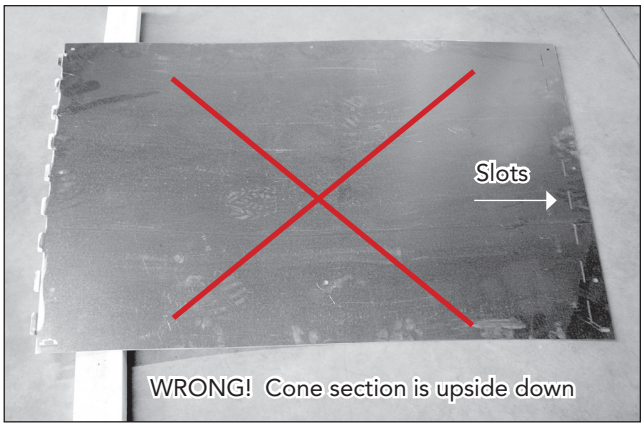
3. Carefully lay the section down to lock the two sections together. Move the 2 x 4 board to the slot end of the second section.



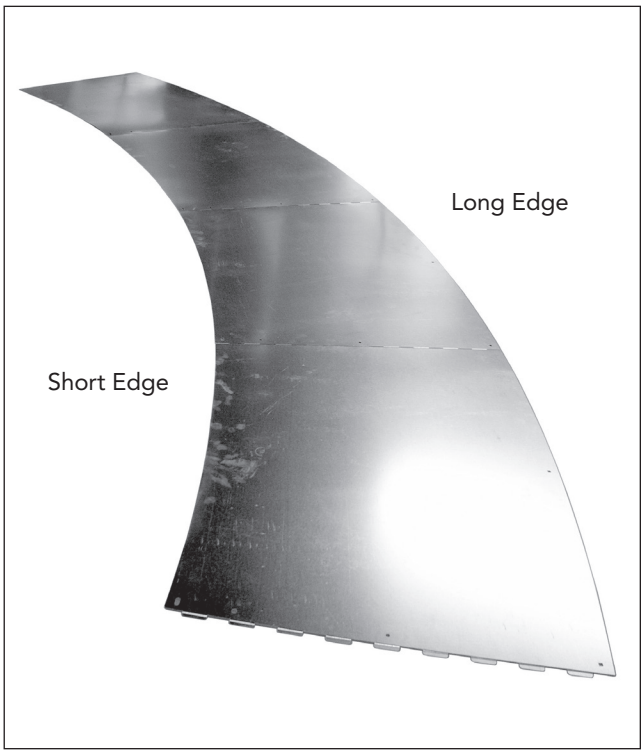
5. Stand the cone sections on edge (longer edge down, shorter edge up) and curl them around to make a cone shape. Insert the tabs of the first section into the slots of the last section.







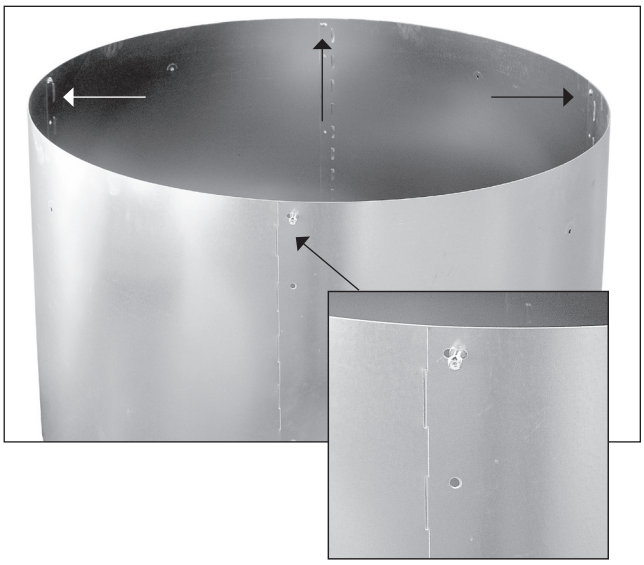
4. Repeat steps 2 and 3 until all four cone sections are locked together.



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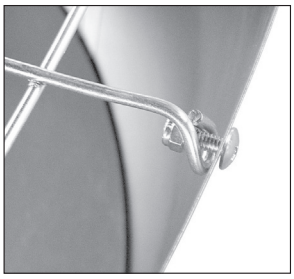
6. Fasten the cone sections together by inserting one 1/4"-20 phillips head bolt, threaded from inside the cone, into the top hole of each seam and secure with a 1/4"-20 nylock nut **(hardware bag #11)**.

   Insert one 5/16" - 18 phillips head bolt, threaded from inside the cone, into the second hole of each seam and secure with a 5/16" - 18 jam nut (hardware bag #10).



INSTALL GUARD

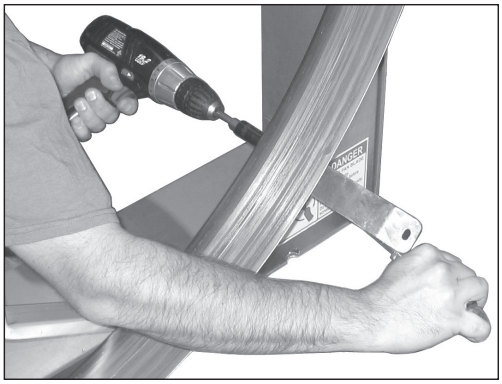
7. Turn the shutter and cone assembly upside down. Line up the eyelets in the guard with the holes in the cone. Use 1/4"-20 bolts and nylock nuts to fasten the guard to the cone at all eight locations **(hardware bag #11)**.



ATTACH CONE ASSEMBLY TO FAN

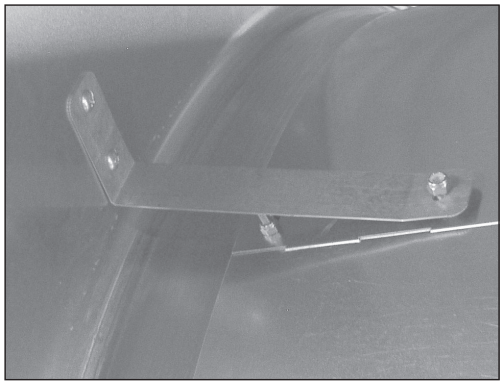
8. Attach the four cone brackets to the fan shroud using two 5/16" x 3/4" screws and nylock nuts per bracket, as shown (hardware bag #10).



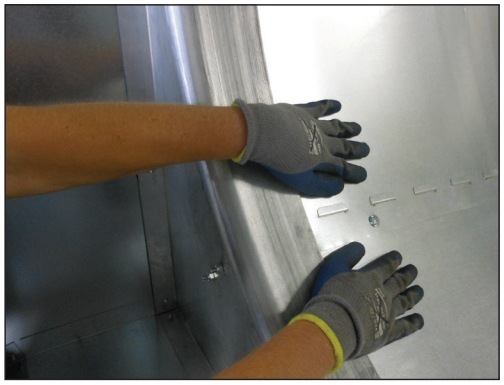


9. Pick up the cone assembly and rest the cone on the top of the fan orifice.

   With the cone resting on the top of the fan orifice, attach to the cone brackets using the bolts that were inserted through the cone in step 6 and secure with nylock nuts. Leave the nuts loose at this time.



10. Work around the bottom part of the shroud from inside the fan to guide the cone over the orifice. The cone should just fit. Use the bolts that were inserted through the cone in step 6 and secure with nylock nuts. Now tighten all the hardware.



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MAINTENANCE

The fan you have purchased is built with heavy duty components, designed to give you many years of worry-free performance. Like anything else that is mechanical, your fan will require a small amount of periodic maintenance to assure maximum efficiency.

Disconnect power before cleaning or maintaining your fan in order to prevent serious injury or death.

PERFORM EVERY 6 MONTHS
Clean motor, fan blade and guard option



- Service and repair of fan should only be completed by a qualified technician.
- Use an air hose to remove dust.
- Use a damp cloth to remove grime and grease.
- PRESSURE WASHING WILL VOID WARRANTY.
- Do not use harsh chemicals or cleaners to clean any part of the fan.
- Sealed motor bearings are pre-lubricated and do not require servicing.

CAUTION: Fasteners may loosen over time. It is important to check and tighten fasteners frequently.
CAUTION: Inspect fan components and fasteners frequently for corrosion. Replace any corroded fasteners or parts.

SET SCREW TIGHTENING SCHEDULE

1. Before initial operation of the fan, tighten set screws according to the procedure outlined below.
2. After 500 operating hours or three months, whichever comes first, tighten set screws to the full recommended torque.
3. At least once a year, tighten set screws to the full recommended torque.

PROCEDURE FOR TIGHTENING SET SCREWS IN BEARINGS AND BLADES

ONE SET SCREW APPLICATION

Using a torque wrench, tighten the set screw to the full torque recommended in Table 1.

TWO SET SCREW APPLICATION

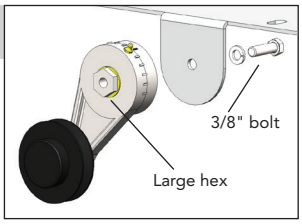
1. Using a torque wrench, tighten the one set screw to half of the torque recommended in Table 1.
2. Tighten the second set screw to the full recommended torque.
3. Tighten the first set screw to the full recommended torque.

Table 1. Recommended Tightening Torque for Set Screws

Set screw diameter	Torque (in-lbs)
#10	35
1/4	80
5/16	120
3/8	240

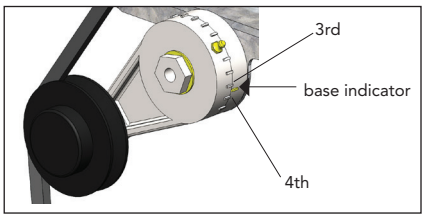
BELT DRIVE FANS ONLY

PERFORM EVERY 6 MONTHS



CHECK BELT TENSION

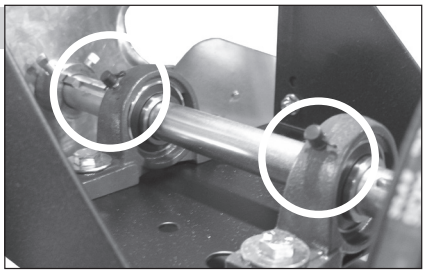
- Belt tension should be just tight enough to minimize slipping, but not so tight as to cause premature wear. Correct tension is 3/4" deflect at 10 lbs. of force.
- When a new belt is installed, the indicator on the idler base should line up between the third and fourth notch on the idler arm.
- To increase tension from idler arm, while holding the hex on the face of the idler, loosen the 3/8" attaching bolt. Release the large hex and rotate the idler base clockwise. Now hold the large hex stationary and re-tighten the 3/8" attaching bolt, making sure the larger hex does not turn. To decrease belt tension, rotate base counter-clockwise. After adjustment, verify idler arm moves freely.
- Lubricate the idler base with 1-2 shots of grease. Frequency and quantity of grease may vary based on operating conditions.



EVERY 800 HOURS OF OPERATION

GREASE THE BEARINGS

- While slowly turning the bearing, use 1-2 shots of a lithium base NLGI #2 grease from a hand operated grease gun to adequately fill the bearing 30-50% full.



Note: Verify that the grease seals on both sides of the bearing are intact and not showing signs of displacement or deformation once greasing activities have been completed. Over greasing bearings will cause premature failure of bearings if seals are compromised.

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TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES	CORRECTIVE ACTION
Fan not operating	1. Improper wiring 2. Fan control set above room temperature 3. Blown fuse or tripped breaker 4. Fan blade contacting fan 5. Fan control defective 6. Motor defective	1. Ensure wiring is done correctly 2. Set to a lower temperature 3. Replace fuse or reset breaker 4. Realign fan blade in fan housing 5. Repair or replace control 6. Repair or replace motor
Insufficient airflow	1. Shutter jammed 2. Guard, shutter, fan blade dirty 3. Fan blade facing wrong direction 4. Incorrect belt tension	1. Clean shutter and fan housing 2. Clean guard, shutter and fan blade 3. Orient fan blade correctly 4. See Maintenance section
Excessive fan noise	1. Fan blade contacting fan panel 2. Motor bearing defective	1. Realign fan blade in fan housing 2. Repair or replace motor
Excessive vibration	1. Motor loose in mount 2. Fan blade damaged 3. Motor shaft bent 4. Fan shaft bent 5. Pillow block bearings defective	1. Tighten fasteners 2. Replace fan blade 3. Repair or replace motor 4. Replace fan shaft 5. Replace pillow block bearings
Fan does not turn off	1. Thermostat set incorrectly 2. Control set for continuous operation	1. Set to the desired temperature 2. Set fan control correctly

WARRANTY

Pinnacle Climate Technologies Limited Warranty Policy

Pinnacle Climate Technologies (PCT) 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:

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

Full warranty statement may be printed or downloaded from www.schaeferventilation.com

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