

## 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!

### WARNING!

To reduce the risk of fire, electric shock, or injury, observe the following:

- Suitable for use with solid state speed controls.
- When cutting or drilling into wall or ceiling, do not damage electrical wiring or other hidden utilities.
- Acceptable for use over a bathtub or shower when installed in a GFCI protected branch circuit. (up through size SP-A390)
- Never place a switch where it can be reached from a tub or shower.
- Ducted fans must always be vented to the outdoors.
- These fans are not recommended for cooking exhaust applications. They are designed primarily for low temperature, clean air applications only. The diagram shows the minimum distances these fans should be placed in relation to cooking equipment.
- Fan/Light combination is not to be installed in a ceiling thermally insulated to a value greater than R40.

### CAUTION!

- For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.

#### 127V/60Hz/1-ph

**Black wire is "Hot"**

**White wire is "Neutral"**

**Green wire is "Ground"**

#### 220V/60Hz/1-ph

**Black wire is "Hot"**

**White wire is "Hot"**

**Green and Yellow wire is "Neutral/Ground"**



Use a device for disconnection from the supply, having a contact separation of at least 3 mm in double poles switch, which must be incorporated in the fixed wiring in accordance with the local electrical wiring rules.



For this fan, precautions must be taken to avoid the back-flow of gases into the room from the open-flue of gas or other fuel-burning appliances.



This product must be properly and reliably grounded.



Use this fan at the rated voltage and frequency indicated on the name plate.



Do not allow water to contact electrical parts such as motors or switches.



Do not switch this product on or off in case of gas leakage; otherwise, the electric spark may result in an explosion.



Do not spray or clean this product directly with water or other liquid; otherwise, a short circuit or an electrical shock may occur.



Do not disassemble the unit for reconstruction.



Make sure that its power switch is set to OFF before you touch this product; otherwise, an electrical shock may occur.



This fan must be installed by a qualified technician.



This fan should be installed so that the blades are more than 2.3 m above the floor.



Routine maintenance is required every year. Ensure that the fan is switched off from the main supply power source before removing the guard.



This appliance is not intended for the use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

## Model SP

Model SP is a direct drive ceiling exhaust fan designed for clean air applications where low sound levels are required. Many options and accessories are available such as lights, motion detectors, ceiling radiation dampers and speed controls. Capacities range from 25 to 1,600 cfm (42 to 2,718 m<sup>3</sup>/hr) and 1 in. wg (248 Pa). AMCA Licensed for Sound and Air Performance.



ENERGY STAR® Certified models include: SP-A, 50, 70, 90, 200, 250, 290 and 410; SP-B, 50, 70, 80 and 90.



## Model CSP

Model CSP is a direct drive inline exhaust fan designed for clean air applications where low sound levels are required. Capacities range from 70 to 3,800 cfm (119 to 6,456 m<sup>3</sup>/hr) and 1 in. wg (248 Pa). AMCA Licensed for Air Performance.

### WARNING!

*To reduce the risk of fire, electric shock, or injury to persons, observe the following:*

- Suitable for use with solid state speed controls.
- Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- Before servicing or cleaning unit, switch power off at service panel and lock service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
- Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) and the local code authorities.
- When cutting or drilling into wall or ceiling, do not damage electrical wiring or other hidden utilities.
- Acceptable for use over a bathtub or shower when installed in a GFCI protected branch circuit. (Up through size SP-A390)
- Never place a switch where it can be reached from a tub or shower.
- Ducted fans must always be vented to the outdoors.
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- Fan/Light combination not to be installed in a ceiling thermally insulated to a value greater than R40.

### CAUTION!

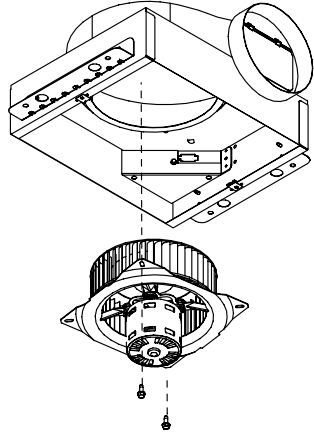
- For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.

## Prepare the fan

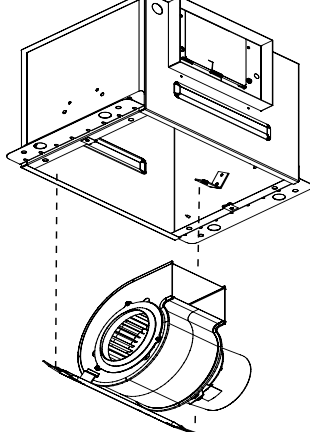
### Power Assembly

If power assembly (motor, wheel, and scroll) is not installed in housing, insert the electrical plug into fan socket, then slide scroll end of power assembly into fan housing. Attach by using two sheet metal screws provided.

#### B Model

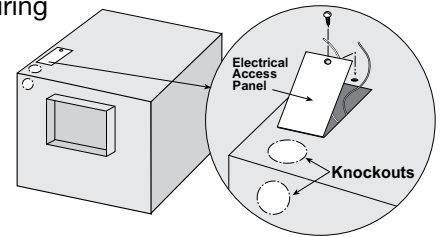


#### A Model



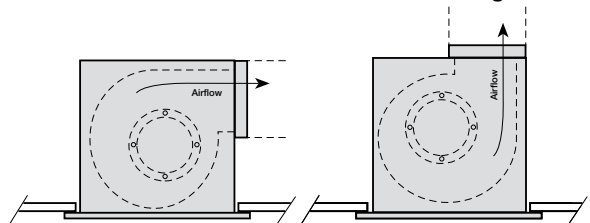
### Remove Wiring Knockout

Remove either top or side wiring knockout, depending on wiring direction, by bending it back and forth to break tabs.



### Ductwork

Check ductwork to see if the fan's discharge requires rotation from horizontal to vertical discharge.

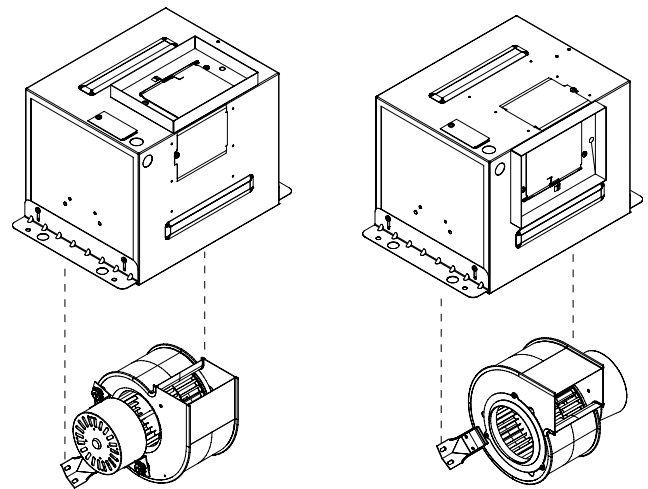


### Fan Rotation

To rotate from horizontal to vertical discharge  
A-Models Only

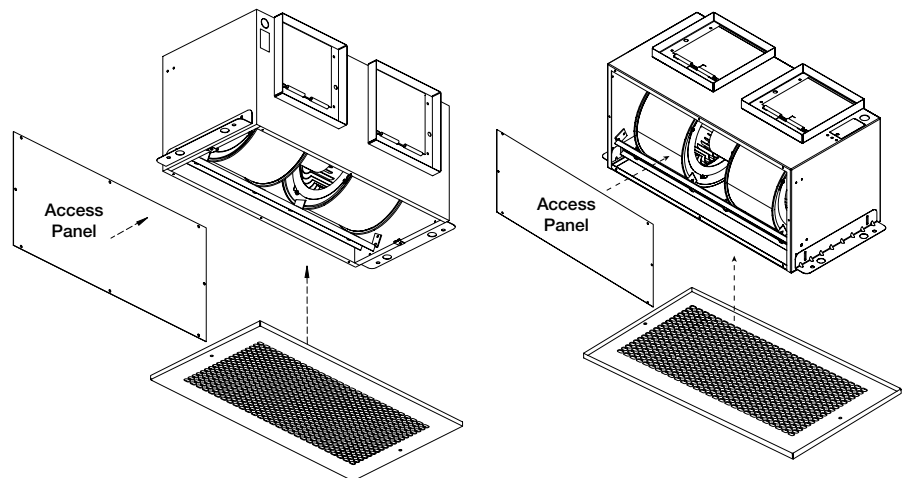
#### A-50-500, 710, 780 Models

Remove the two screws holding the power assembly in and pull power assembly out. Rotate power assembly 180 degrees and put back into fan. Use the same screws to reattach power assembly to fan housing. Flip fan over and remove the four screws holding the discharge duct and damper assembly. Exchange the assembly with plate mounted on top of fan, as shown in these illustrations.



#### A-700, 900-1500 Models

Remove the eight screws holding the access panel or collar as shown in picture. Rotate the fan housing so the discharge is facing up. Replace access panel or collar and screws.



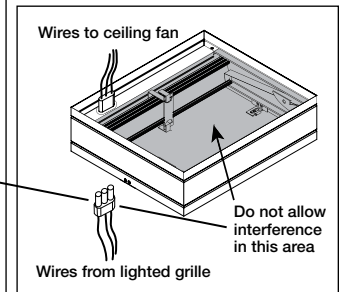
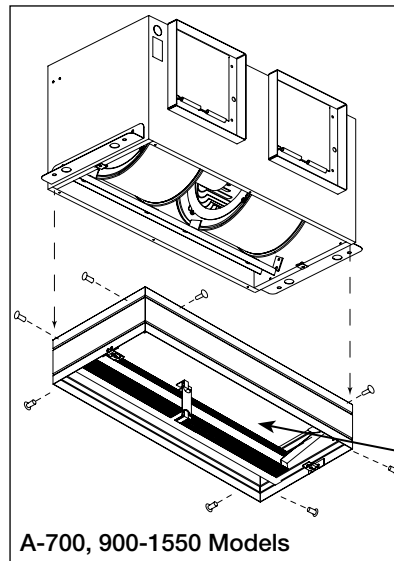
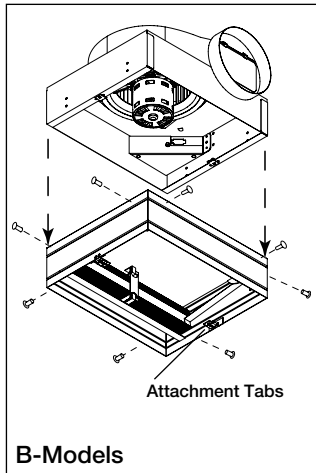
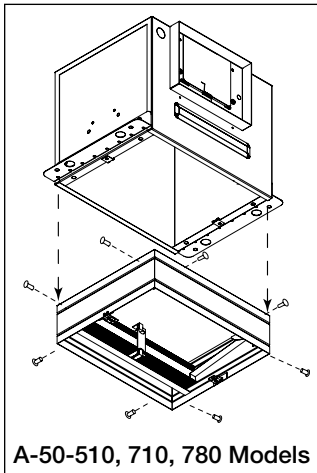
## Ceiling Radiation Damper (CRD)

If fan is to be used in a fire resistive membrane ceiling, a ceiling radiation damper must be used.

If the ceiling radiation damper is already mounted to the fan from the factory, proceed to Install the Fan.

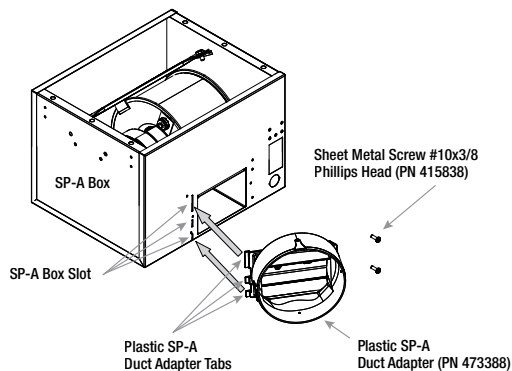
To mount the ceiling radiation damper to fan, make sure grille attachment tabs are facing down. Then place the inlet part of the fan into the ceiling radiation damper collar, and use self-tapping sheet metal screws (by others) to screw through the damper collar and into the fan housing. If the fan/light combination is being used, make sure ceiling

radiation damper has an electrical plug in it. The electrical plug must be inserted into the fan. Make sure the electrical wire will not interfere with damper operation as shown in figure below.

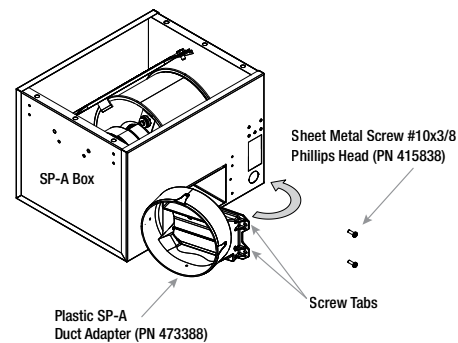


## Discharge Installation SP-A 50-90 Models

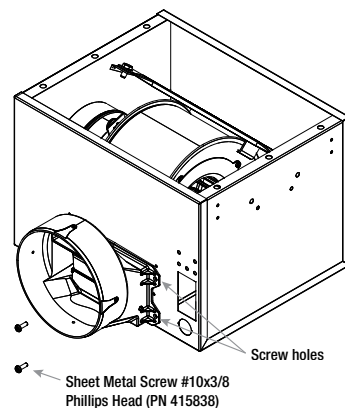
- 1 Insert plastic duct tab into SP-A box slots.



- 2 Rotate plastic SP-A duct adapter (PN 473388) until the screw tabs meet SP-A box.

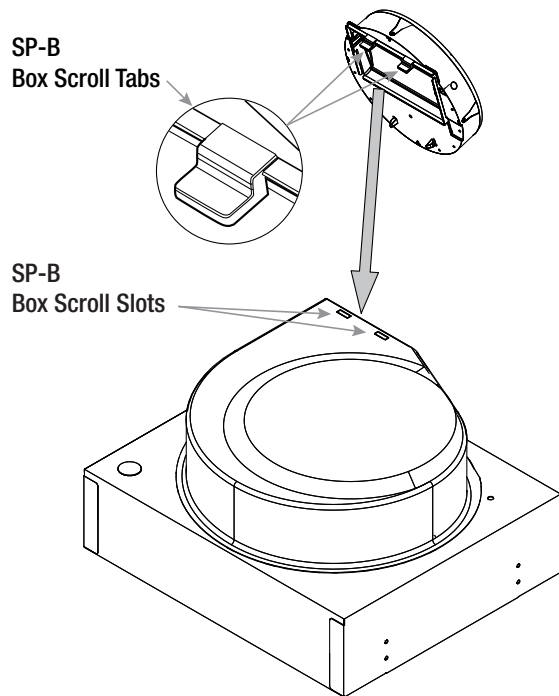


- 3 Install screws provided to secure discharge.

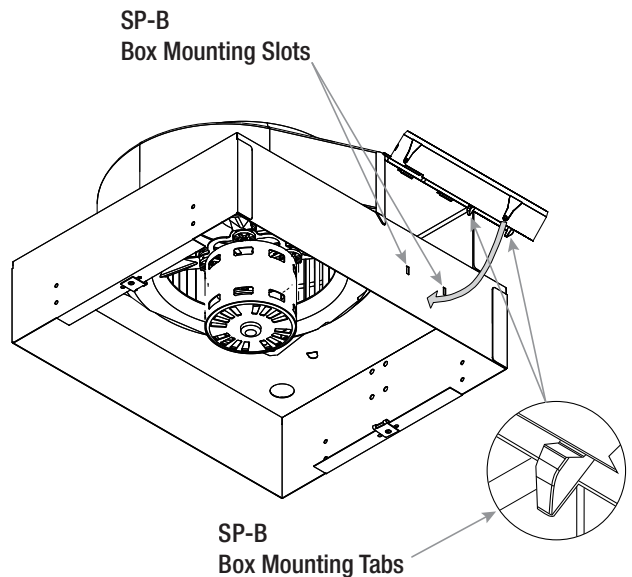


## Discharge Installation SP/CSP-B 50-200 Models

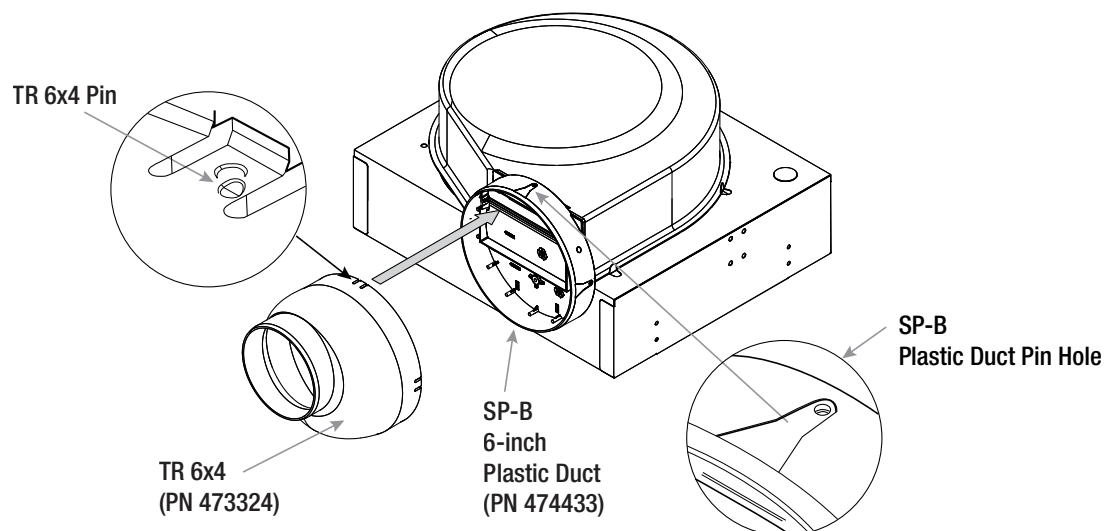
- 1** Insert SP-B box scroll tab into SP-B box scroll slots.



- 2** Rotate plastic SP-B duct adapter (PN 474433) until the two SP-B mounting tabs fully engage into the two SP-B box mounting slots.



- 3** **OPTIONAL**  
Align the pins on the TR 6x4 adaptor to the duct pin hole on the SP-B 6-inch duct. Push until the adaptor snaps into place.





## Install the Fan

- For best performance, choose a location with the shortest possible duct run and minimum number of elbows. Do not mount near cooking equipment, as shown in Fig. 1.

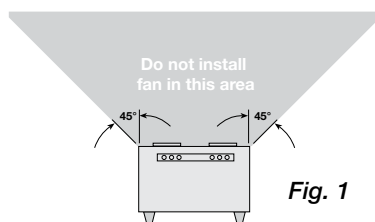


Fig. 1

- Attach adjustable mounting brackets to fan, but leave the screws loose until proper height is determined, shown in Fig. 2. Cut hole to dimensions shown in table below:

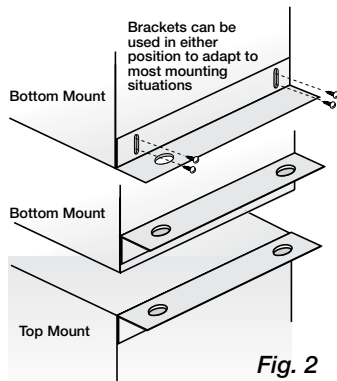


Fig. 2

Ceiling Openings		
Sizes	Fan or Fan/Light	Fan/CRD
SP-A50, A70, A90 SP-A110, A125, A190	10 <sup>7</sup> / <sub>8</sub> x 13 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>8</sub> x 13 <sup>7</sup> / <sub>16</sub>
SP-A200, A250, A290, A390	12 <sup>1</sup> / <sub>8</sub> x 14 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>4</sub> x 14 <sup>3</sup> / <sub>8</sub>
SP-A700	23 <sup>3</sup> / <sub>4</sub> x 11 <sup>3</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>8</sub> x 12 <sup>1</sup> / <sub>4</sub>
SP-A410, A510, A710, A780	14 <sup>3</sup> / <sub>4</sub> x 18 <sup>3</sup> / <sub>8</sub>	14 <sup>7</sup> / <sub>8</sub> x 18 <sup>7</sup> / <sub>16</sub>
SP-A900, A1050, A1410, A1550	14 <sup>3</sup> / <sub>4</sub> x 24	14 <sup>7</sup> / <sub>8</sub> x 24 <sup>1</sup> / <sub>8</sub>
SP-B 50 - 200	14 <sup>1</sup> / <sub>8</sub> x 11 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>8</sub> x 12 <sup>1</sup> / <sub>4</sub>

### NOTE

Model SP-A 50-90 are standard with a round duct. Should Model SP-A 110-190 require a round duct, Model RDC (Round Duct Connector) may be ordered from Greenheck for field installation.

## For Frame Construction:

Position unit between joists. Position brackets such that bottom edge of housing will be flush with finished ceiling, and tighten the adjustable mounting brackets, shown in Fig. 3.

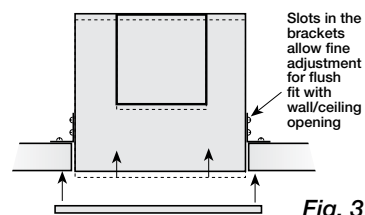


Fig. 3

## For Hanging Installations:

Use Greenheck's optional vibration isolator kit Part Number VI Kit. Using the fan's standard adjustable mounting brackets and 10 by 32 threaded rod (by others), hang unit as shown in Fig. 4.

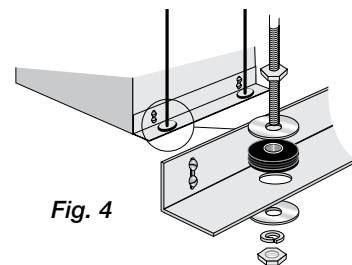
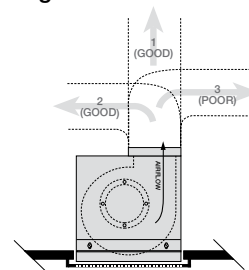


Fig. 4

- Installation of ductwork is critical to the performance of the fan, shown in Fig. 5. Straight ductwork (1) or ductwork that turns in the same direction as the wheel (2) is recommended. Ductwork turning opposite the wheel direction (3) will cause turbulence and back pressure resulting in poor performance.

Fig. 5



- Slide ductwork over the fan's discharge collar and securely attach it with sheet metal screws.

**Make sure the screws do not interfere with damper operation. Check damper to make sure it opens freely.**

## Wire the Fan

- Remove wiring cover. If fan/light combination is being used, make sure the fan plug is connected to the fan receptacle and the light plug is connected to the light receptacle, shown in Fig. 6.

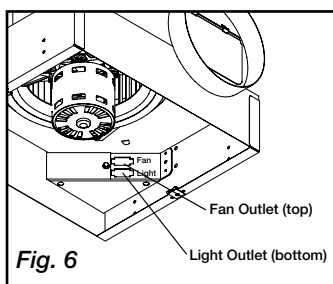


Fig. 6

- Using proper wire connectors, wire the fan as shown in Fig. 7a. For wiring of light proceed to Fig. 7b.
- Push all wiring into the unit's cover and replace wiring cover.

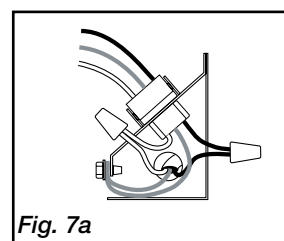


Fig. 7a

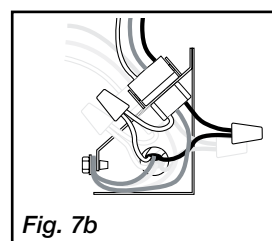


Fig. 7b

**115 & 277 Volt**  
Black wire is "Hot"  
White wire is "Neutral"  
Green wire is "Ground"

**220 - 240 Volt**  
Black wire is "Hot"  
White wire is "Hot"  
Green and Yellow wire is "Neutral/Ground"

## Attach the Grille

1. If lighted grille is being used, plug wire into fan socket.  
If lighted grille and ceiling radiation damper are being used, plug wire from lighted grille into ceiling radiation damper socket. Do not plug wire directly into the fan socket. Make sure the wire does not interfere with the ceiling radiation damper operation.
2. Attach grille with two screws provided. Make sure not to over tighten; over tightening will damage grille.
3. Slide attachment screw covers over the attachment screws, shown in Figure 8 and 9.
4. If lighted grille is being used, install light bulb(s) into light socket(s). For incandescent lights, use maximum 100 watt bulb (by others). For fluorescent lights, use 27W GU24 bulbs. Greenheck has replacement 27W GU24 bulbs call 1-800-355-5354 to order.
5. If lighted grille is being used, snap lens into place, by pushing on the outside edges of lens, shown in Fig. 9. To remove lens, use small screw driver and pry on one side of lens.
6. Turn on power and check fan and light operation.

Fig. 8

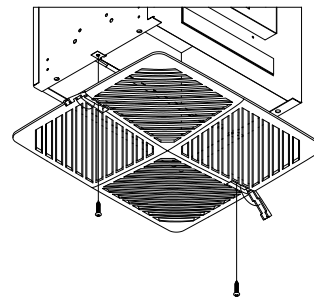
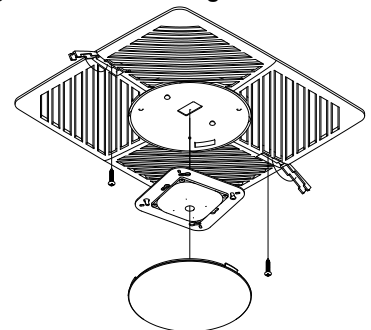


Fig. 9



## Converting from ceiling to cabinet design for Model SP fans

All convertible sizes will be shipped with grille and duct collar cover. Note, this applies only to fans originally ordered as convertible.

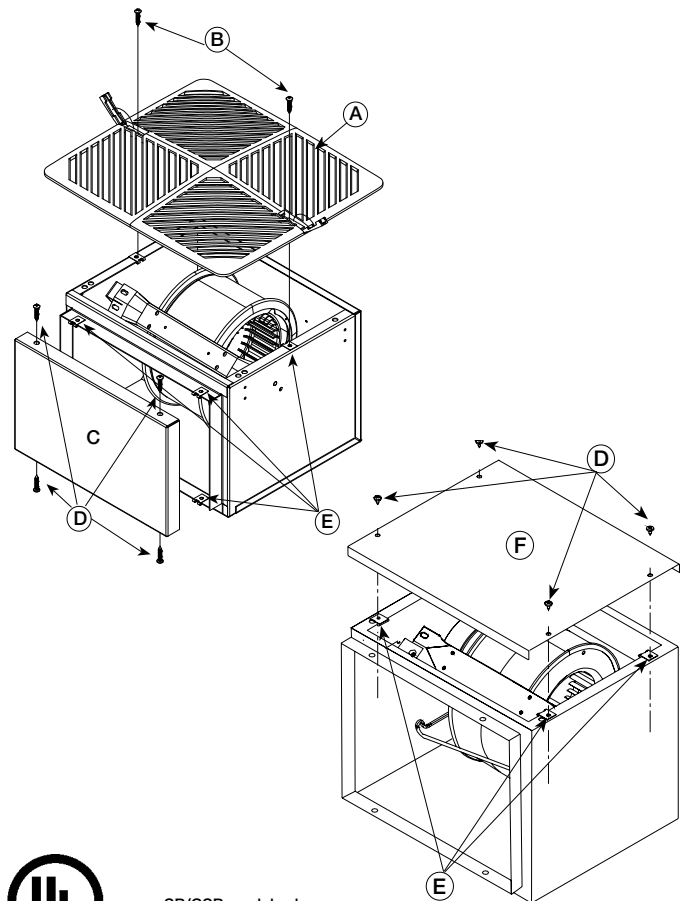
### Conversion Kit Parts List

- Qty. of 1 Blower Box Cover

### Tools Required

- Phillips Head Screwdriver

- Step 1: Remove grille (A) by removing the two grille screws (B).
- Step 2: Remove duct collar cover (C) by removing the four duct collar screws (D).
- Step 3: Discard grille (A), two grille screws (B), and duct collar cover (C).
- Step 4: Remove the six (6) tinnerman clips (E) by twisting them to one side and pulling straight out. Discard two of the six tinnerman clips.
- Step 5: Insert the remaining four tinnerman clips (E) on grille opening side.
- Step 6: Place blower box cover (F) over tinnerman clips (E), which were inserted in step 5.
- Step 7: Screw the blower box cover (F) into place with four blower box cover screws (D).



SP/CSP models shown are  
UL and cUL listed E 33599

## Other Installation Considerations

### Ductwork and Noise

Fiberglass ductboard is a better choice than metal ductwork for reducing fan noise and is highly recommended for low sound applications. Where metal duct is used, sound transmission can be reduced with flexible duct connections between the fan and the duct.

### Sound and Location

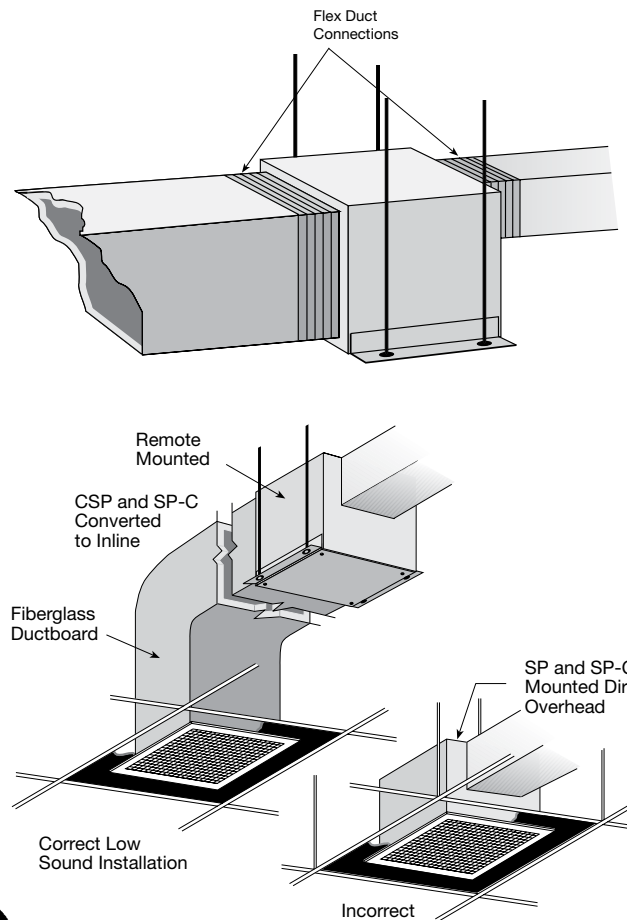
The location of these fans must be taken into consideration before installation. In critical sound installations, insulated ductwork, flexible duct connections or placing the fan in a remote section of ductwork are solutions to meeting the required fan sound levels.

### Filters

The addition of an intake filter is highly recommended for these fans, even in clean air environments excess dirt can accumulate on wheels and motors causing reduced performance and imbalance.

Filters, once installed, should be checked and cleaned periodically to maintain performance.

Greenheck offers washable aluminum mesh filters specifically designed for these fans. Please consult our SP/CSP catalog for more information.



SP/CSP models shown are  
UL and cUL listed E 33599

## General Maintenance Suggestions

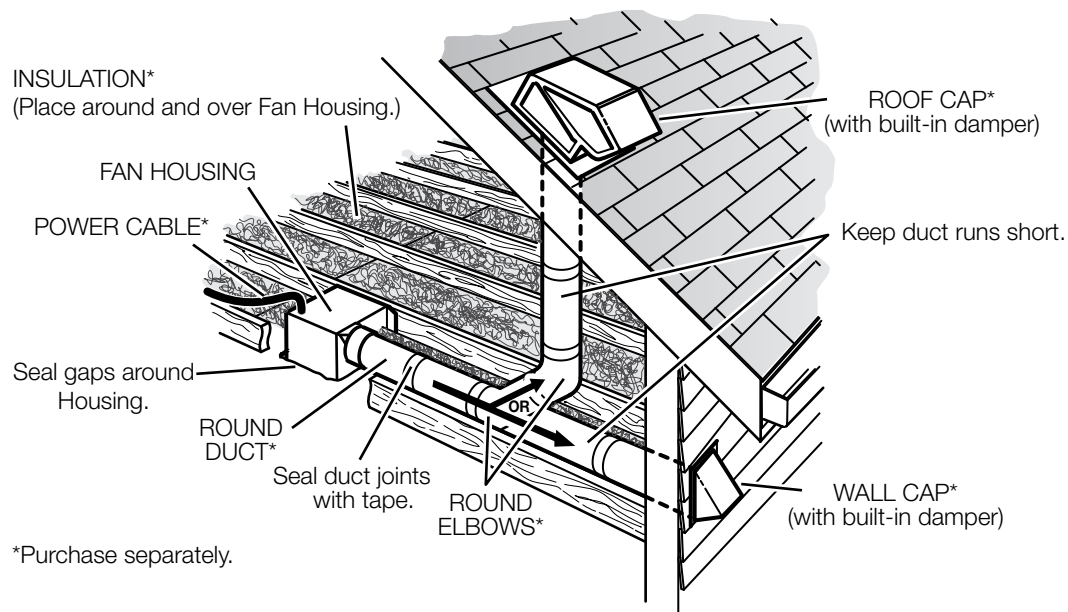
Model SP/CSP ceiling exhaust fans require very little maintenance. But since small problems over time left unchecked could lead to loss of performance or early motor failure, we do recommend that the unit be inspected periodically (once or twice a year).

The fan motor and wheel should be checked for dust and dirt accumulations. Dirt buildup can lead to loss of performance and motor overheating. Cleaning can be accomplished by brushing off any dust that may have accumulated. Even filtered units can accumulate build-up and should be checked when cleaning filters.

The motor should be checked for lubrication at this time. Lubricate only those motors which have an oil hole provided. A few drops of all purpose oil (SAE 20) will be sufficient.



## Typical Installation



## 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](http://greenheck.com) within the product area tabs and in the Library under Warranties.

Greenheck's SP and CSP 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](http://www.amca.org).



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