

RSIF power venter



READ AND SAVE THESE INSTRUCTIONS!



Product information

Chapters 1 + 2



Mechanical installation

Chapter 3



Electrical installation

Chapter 4



Start up and configuration

Chapter 5



Maintenance and troubleshooting

Chapter 6

USA

CAN

Job name: _____

Installer: _____

Installation date: _____

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exodraft
CHIMNEY DRAFT TECHNOLOGY

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Symbol legend

The following terms are used throughout this manual to bring attention to the presence of potential hazards or to important information concerning the product.



DANGER

Indicates an imminent hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.



CAUTION

Indicates an imminent hazardous situation which, if not avoided, may result in personal injury or property damage.



TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Use this unit in the manner intended by the manufacturer. If you have questions, contact the manufacturer's distributor at the address or telephone number listed on the front of the manual.
2. Before servicing or cleaning the unit, switch off at service panel and lock service panel to prevent power from being switched on accidentally.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.
4. Follow the appliance manufacturer's guidelines 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.

5. This unit must be grounded.

How to use this manual

This installation manual does not contain any system design documentation. System design documentation is available from ENERVEX.

Accessories and variable frequency drives are not covered by this manual. Please refer to these component's individual manuals.

1. Product information

1.1 Function

- Use** The **exodraft** RSIF power venter is intended for use as an in-line power venter/draft inducer. It can be installed in-line in the chimney or stack and can be used for sidewall as well as vertical venting arrangements. It is specifically designed for applications where reliable and efficient operation, low noise level, low energy consumption, variable speed and compact design are of utmost importance. Typical uses are, but are not limited to: mechanical venting of gas-fired boilers and water heaters. The power venter should not operate with flue gas temperatures exceeding 400 °F (200 °C). For indoor installation only.
- Construction** The power venter housing is made of galvanized steel and insulated on all sides with fiberglass insulation material. The insulation assures a very low noise level and reduces the risk of condensation significantly. It also reduces the clearance to combustibles. The RSIF is equipped with an energy-efficient, totally enclosed, variable speed motor, which is mounted outside the air stream. A service door on the front of the power venter provides easy access to the inside of the power venter and the duct connections. The motor and impeller are mounted on the door. The motor is a direct drive, variable speed Class F insulated type. It has permanently lubricated, sealed ball bearings and is maintenance free.
- Listings** The RSIF model is tested and listed to UL378, Standard for Draft Equipment and CSA CAN3-B255-M81, Standard for Mechanical Flue-Gas Exhausters.
- Restrictions** The RSIF Power Venter should only be used with appliances operating on Natural Gas or LP-Gas/Bu-tane. It should never be used with incinerators, incinerating toilets or solid-fuel burning equipment. When used with multiple appliances and a Fan Speed Control to control the fan speed, a barometric damper should be installed to prevent overdraft conditions, unless the appliance(s) have a draft hood or a draft diverter. This limitation does not apply when used with an EBC 10, EBC 12 or EBC 30 Pressure Control. The temperature of the flue gases going through the power venter should never exceed 400 °F (200 °C).

1.2 Components

The power venter consists of the following components:

- | | |
|-------------------------|--|
| a. Housing | f. Door latches |
| b. Access door | g. Door handle |
| c. Motor | h. Support legs with vibration dampers (2) |
| d. Centrifugal impeller | i. Sheet metal screws (4) |
| e. Power venter housing | l. Wire conduit |

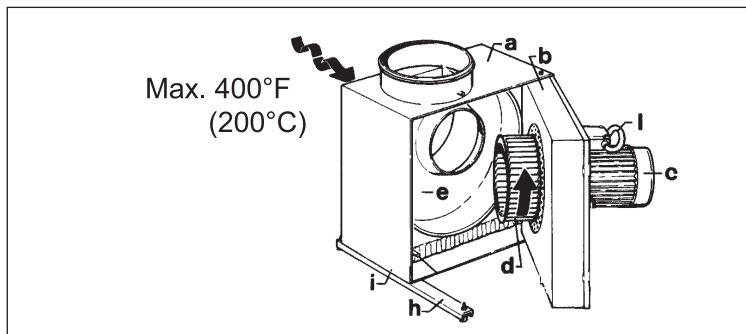


Fig. 1

1.3 Shipping

Protection

The power venter is protected by a corrugated box. Do not place other products or items on top of the box. After unpacking, the product must be handled in a way to prevent damaging the collars and the power venter housing.

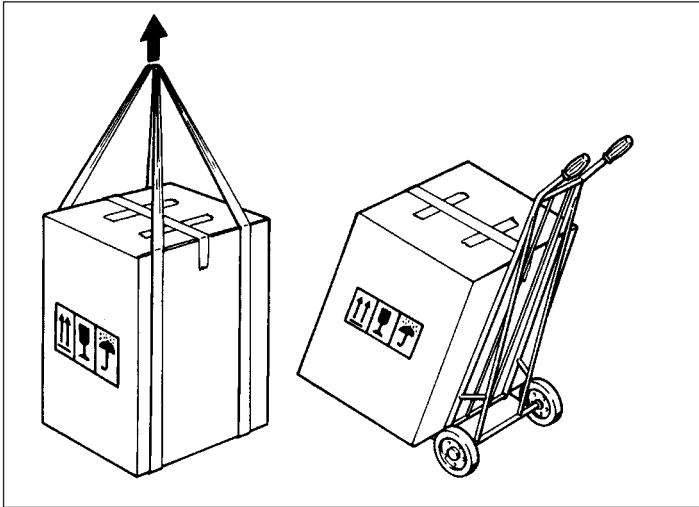


Fig. 2



Never operate the power venter with the access door open!
To open access door, loosen screws on latch handles and raise handles.

Standard packing:

The power venter is shipped with the motor installed on the access door, (2) legs with screws, (2) gaskets for the RSIF 160/180, and Installation and Operating Manual. If any other components are shipped, these will appear on the shipment packing list.

NOTE

All single phase fans are shipped with a capacitor and junction box connected via conduit. The capacitor is located INSIDE the junction box. Please do not discard.

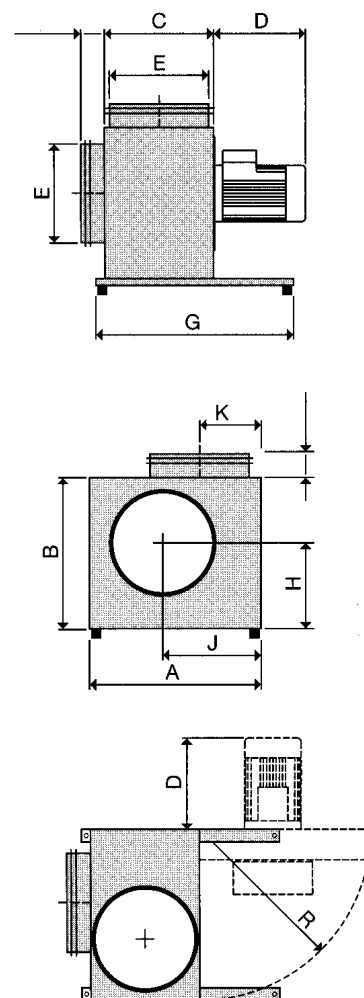
1.4 Warranty

Complete warranty conditions are available at www.enervex.com or request a copy at: info@enervex.com or at tel.: 1-800.255.2923.

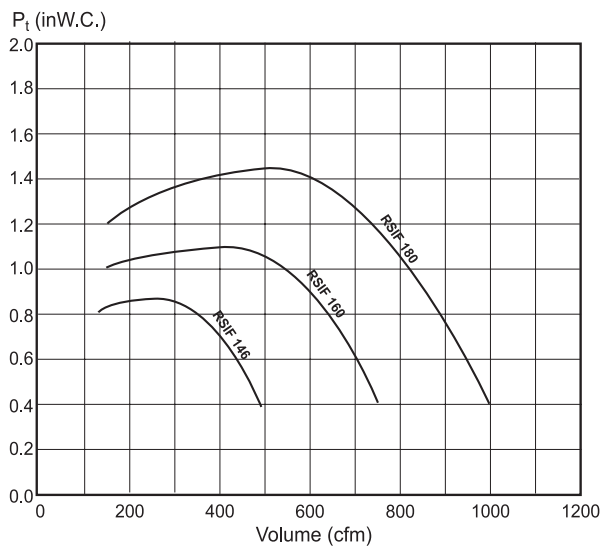
2. Specifications

2.1 Dimensions and capacities

Model		RSIF 146	RSIF 160	RSIF 180
Fan Type		Centrifugal Impeller (F-Wheel)		
Motor Type		TEFC		
Voltage	VAC	1x120		
Amperage	Amps	1.2	2.9	5.8
Motor Output	HP	1/10	1/5	1/2
	kW	0.08	0.16	0.35
RPM		1600		
Weight	lbs	28	38	60
	kg	13	17	27
Duct Connection E	in	6	8	8
	mm	153	200	200
Dimensions A	in	13.60	14.57	16.15
	mm	345	370	410
B	in	11.62	12.60	13.98
	mm	295	320	355
C	in	7.88	9.26	9.26
	mm	200	235	235
D	in	4.33	5.52	7.68
	mm	110	140	195
G	in	13.78	15.75	15.75
	mm	350	400	400
H	in	6.50	7.10	7.88
	mm	165	180	200
J	in	7.88	8.27	9.26
	mm	200	210	235
K	in	4.33	5.12	5.12
	mm	110	130	130
R	in	13.60	14.57	16.15
	mm	345	370	410



Capacity chart





3. Mechanical installation



WARNING

Failure to install, maintain and/or operate the RSIF Power Venter in accordance with the manufacturer's instructions may result in conditions, which can produce bodily injury and property damage.

- The RSIF must be installed by a qualified installer in accordance with these instructions and all local codes or in their absence with the latest edition of The National Fuel Gas Code (NFPA54/ANSI Z223.1) or NFPA 211 when applicable.
- Preferably, the RSIF should be installed as close to the termination as possible. It can also be installed at the outlet of a heating appliance, in the breaching itself, or in the transition from breaching to vertical chimney. It can also be used for sidewall vented applications where it discharges through a wall. It is for indoor installation only.
- Unless installed adjacent to the wall it is discharging through, the chimney material used on the discharge side must be airtight. Traditional gas vent (B-vent) is not considered airtight.
- The RSIF 146 is designed to fit any type of nominal 6" diameter vent pipe, while the RSIF 160 and 180 fit a nominal 8" diameter vent pipe. Special adapters are available for easy installation in the field. See Section 3.3. The vent pipe must be installed and supported according to the chimney manufacturer's instructions and/or in accordance with NFPA54 and NFPA211.

3.1 Positioning

- The power venter can be installed in many different positions. However, it should always be possible to open the access door at least 80 degrees, and the door latches should always be accessible. Acceptable power venter positions are shown below in Fig. 3. Note that the power venter motor can never point straight down as this could cause condensation build-up around the shaft, which can shorten the product life.



Never install the power venter so the motor points down. This will shorten the life.

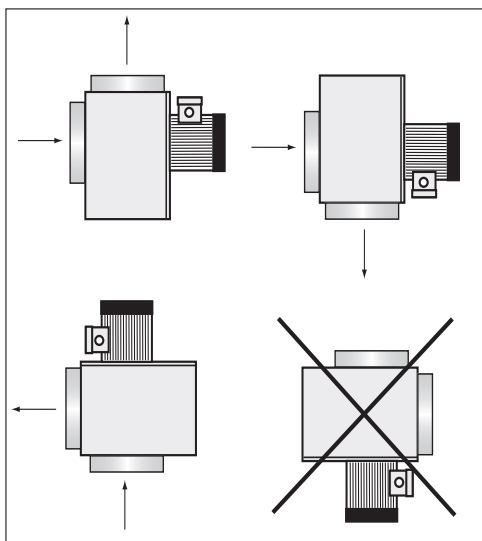


Fig. 3

- The RSIF can be used with any non-condensing gas-fired appliance. However, if serving a fan-assisted or forced draft appliance, a barometric damper must be installed in the connector.

Typical installation arrangements

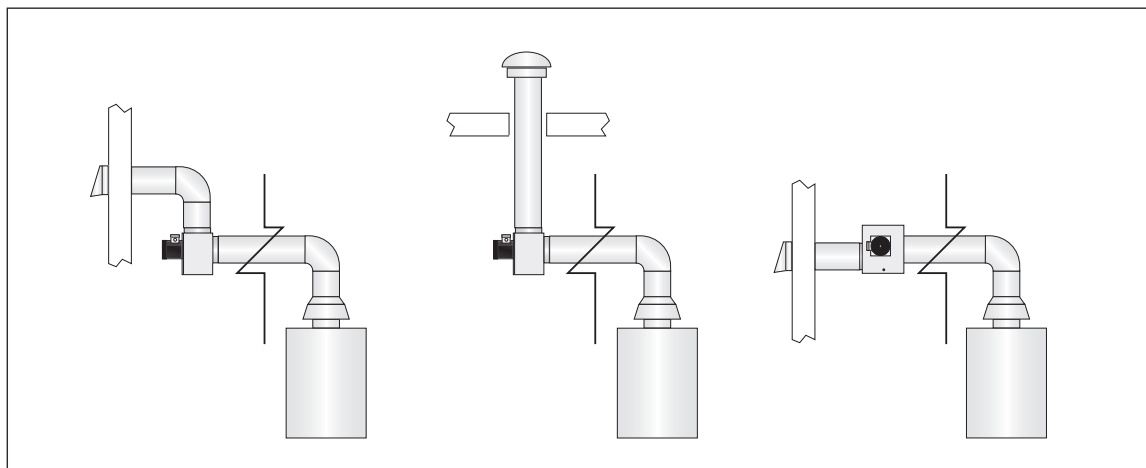


Fig. 4

3.2 Mounting of power venter

- The power venter can be mounted with plumber's strap or threaded rod with nuts and washers, or it can be placed on support legs (included).
- As fig. 5 illustrates, the venter can be placed in virtually any position or direction, except with the motor pointing down. When placing the venter on the support legs (1), the vibration dampers (4) should be used and secured by nuts (2).
- The support legs are attached to the bottom of the venter using the enclosed sheet metal screws (3). In this configuration, the venter is typically placed on a shelf hung from a wall.
- If hanging the venter from the ceiling, threaded rods should be used. Attach the support legs (1) to the bottom of the fan and secure with the sheet metal screws (3). Do not use the vibration dampers. Instead, use the holes on the top of the legs for the threaded rods, and secure these with the nuts (5).

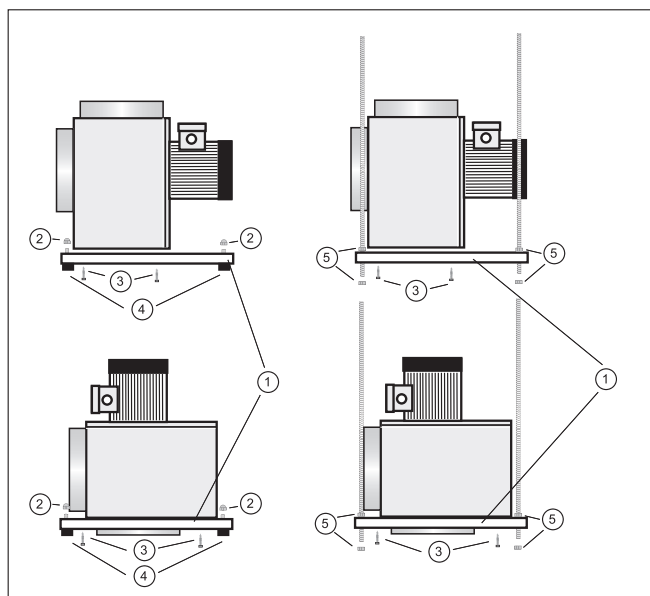


Fig. 5

3.3 Connection to Chimney or Vent

Adapters are available for easy connection to standard venting systems.

RSIF 146

When used with B-vent, a B-vent adapter should be used. It slides into the vent inlet/outlet as shown below. Secure with sheet metal screws. B-vent or single wall vent slides over the B-vent adapter. Secure the vent with sheet metal screws.

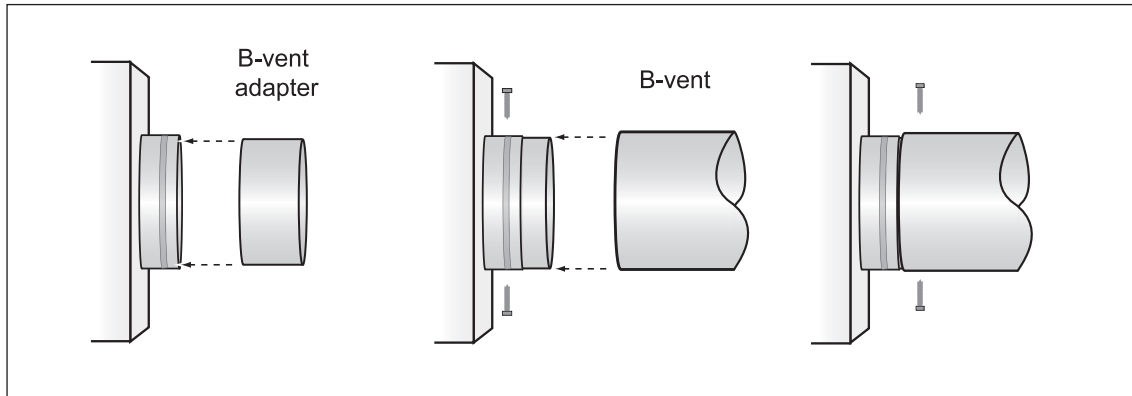


Fig. 6

When used with a Pressure Stack, a PS-adapter should be installed, as shown below, and secured with sheet metal screws.

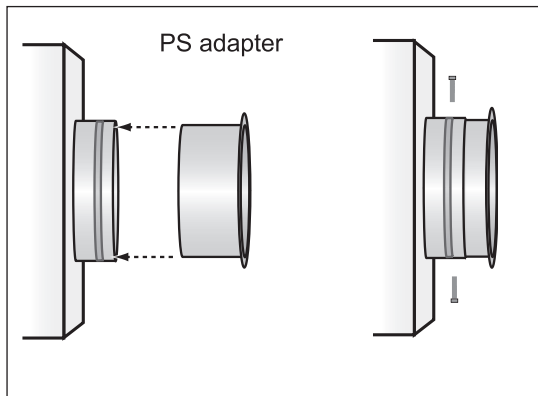


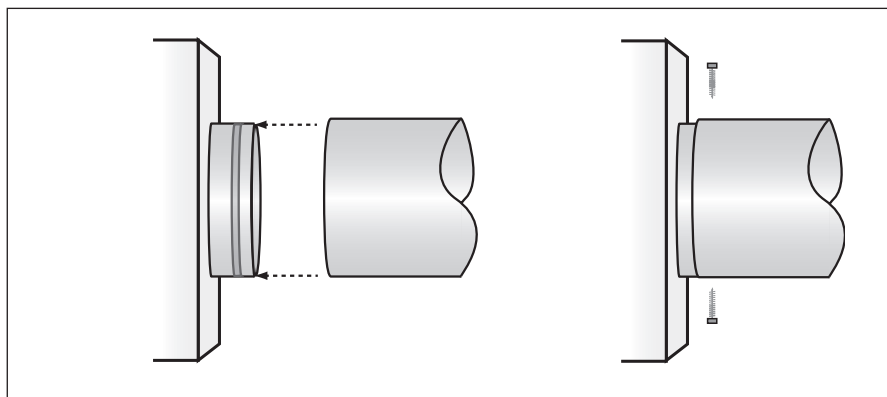
Fig. 7

NOTE

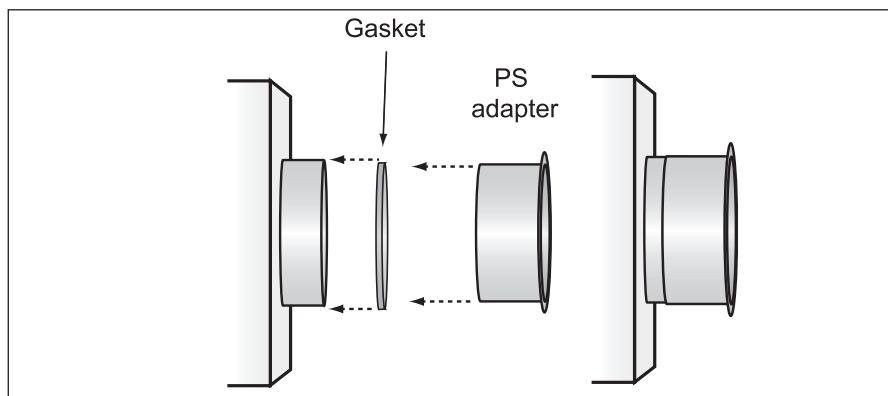
High temperature sealant should be used to seal the adapters on the outlet of the fan.

RSIF 160/180

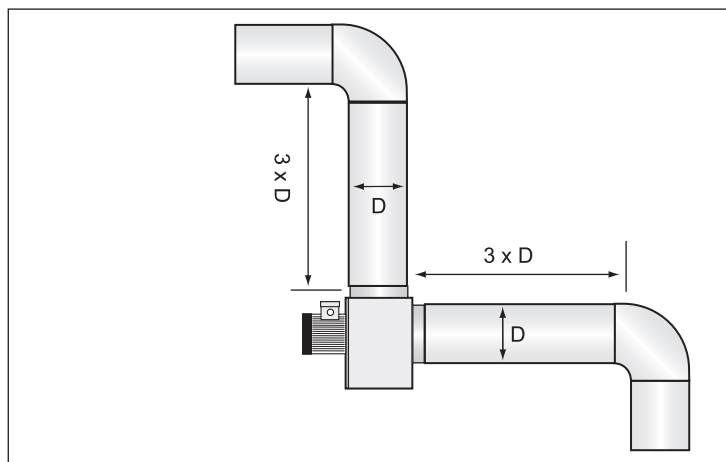
When used with B-vent, or single wall pipe, place the enclosed gasket around the end of the inlet/outlet. Push the vent over the gasket and secure with sheet metal screws.

**Fig. 8**

When used with pressure stack, place the enclosed gasket around the end of the inlet/outlet and push the adapter over the gasket and secure with sheet metal screws.

**Fig. 9**

In order to achieve optimal performance and energy consumption, the vent pipe should be installed as in fig. 10 and the distances observed.

**Fig. 10**

3.4 Installation of stack probe for proven draft switch function

- A safety system must be interlocked with the appliance. The safety system can utilize a Proven Draft Switch (PDS), a thermal switch, a flow switch or a sail switch. The device must be interlocked with the heating appliance(s) so it shuts down in case of insufficient draft, fan failure or power failure. Please refer to the PDS Installation Manual, EBC12 Installation Manual or EBC30 Installation Manual, if any of these controls are used.
- For more information about an alternative safety system, please consult ENERVEX.
- Install the probe for the Proven Draft Switch (PDS) in the vent connector. The probe must be located between the appliance and the power venter. The probe must be located at least 3 vent diameters downstream of the draft hood, draft diverter, or barometric damper. The probe placement should also observe distances from elbows and Tees as shown in Fig. 11.
- Drill $\frac{1}{4}$ " hole for the probe, center the probe's flange over the hole, and secure the flange with the two screws.
- Insert the probe so the end of the probe is flush with the inner wall of the vent.
- Install the PDS or the appropriate control within 6 feet of the probe location in the specified position.
- Connect the probe to the PDS "LO" pressure port using the tubing. Make sure there are no sharp bends or kinks in the tubing.

See fig. 11 for more details

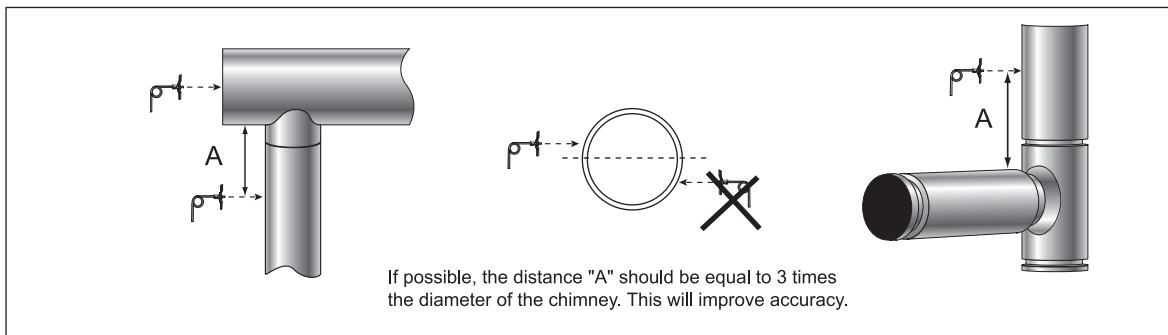


Fig. 11



CAUTION

A safety device that prevents heating appliance operation must be installed to prevent a hazardous situation in case of power failure to the fan or an inadequate draft situation.

4. Electrical installation

4.1 Electrical requirements

Power requirements depend on the power venter size. They can be found on page 5.



DANGER

Turn off electrical power before servicing. Contact with live electric components can cause shock or death.

NOTICE

If any of the original wire supplied with the system must be replaced, use similar wire of the same temperature rating. Otherwise, insulation may melt or degrade, exposing bare wire.

All wiring must be in compliance with the local codes, or in their absence, with the National Electric Code, NFPA70. All wiring should be appropriate Class 1 wiring as follows: installed in rigid metal conduit, intermediate metal conduit, rigid non-metallic conduit, electrical metallic tubing, or be otherwise suitably protected from physical damage.

4.2 Wiring the fan to a fan speed control and proven draft switch

There are several ways of installing and operating the power venter depending on how it must operate for a certain application.

The simplest way to operate the power venter is shown in Fig. 12. It involves interlocking the venter with the appliance using a relay controlled via the appliance. On a call for heat, the venter is energized. A PDS is interlocked with the appliance control. In case of insufficient draft, the appliance is shut down. A fan speed control can be used to set the initial draft and without further adjustment.

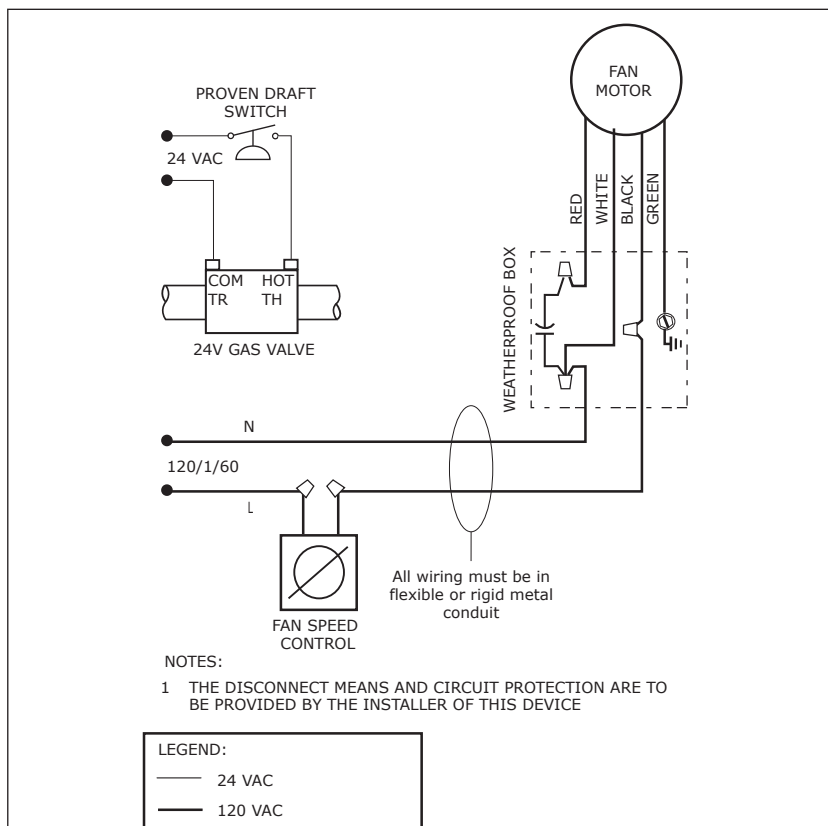


Fig. 12



5. Startup and configuration

5.1 System testing

Before any adjustments are made to the system, follow these procedures:

1. Turn the fan ON and make sure that it is operating. Increase and decrease the speed of the fan by adjusting the fan speed control to make sure it is operating properly.
2. Turn the fan OFF and make sure the pressure switch opens, ensuring power to the circuit is disconnected.



DANGER

Check other heating appliances (e.g. water heater, furnace, fireplace, etc.) for proper operation while the chimney fan is operating. Make sure no flue gases are spilling out as this can lead to carbon monoxide poisoning.

5.2 Adjusting the fan speed

Start up all appliances. Use the fan speed control to set the speed of the venter so no back pressure is experienced anywhere in the system. Check the system for flue gas spillage. Mark this setting on the fan speed control cover.

5.3 Adjusting the proven draft switch setting

Remove the snap-on cover from the conduit enclosure by loosening its retaining screw. Turn the slotted Adjustment Screw clockwise to raise the set point pressure and counter clockwise to lower the set point.

Set the adjustment to its lowest position. With all appliances operating, reduce the speed of the fan to the set point, where the appliance(s) begins to spill flue gas. Increase the speed of the fan gradually to the point where there is no more spillage. Raise the switch's set point so it opens. Return the fan speed to the original setting marked on the cover.

The system is now adjusted so the flue gas spillage will disconnect the heating appliance(s).

The procedure described here may not cover all Proven Draft Switches, so please review the Installation Manual for the switch being used.



6. Maintenance and troubleshooting

6.1 Cleaning intervals

The power venter is designed for prolonged use. It must be inspected and cleaned at least every 12 months. The need for cleaning is dependent on the type of application and how the power venter is operated.

The run capacitor is considered a wear part and will need to be replaced depending on usage.

6.2 Cleaning

Deposits should be removed from the impellers and the bottom of the power venter:

1. Turn the fan off at the repair switch
2. When the blower wheel no longer rotates, open the access door
3. Clean the inside housing and the wheel with water containing a detergent
4. Dry all parts with a cloth
5. Close and secure the access door
6. Turn the fan on

If necessary, the blower wheel can be removed. Prior to removal, mark the position on the shaft. The placement of the wheel is also shown on a label placed on the inside of the access door.

Do not remove the balancing weights on the impellers.

Vibration in the draft inducer can be caused by a dirty impeller.

No other maintenance is required.

6.3 Troubleshooting

Problem	Probable cause	What to do
Fan is making too much noise	Ducting is too small for the volume of the air	Resize ducts
	Ducts / filters are dirty / clogged	Clean and inspect ducts and filters
	Fan inlet or outlet is too close to the customer	Relocate duct or fan
Fan is vibrating and making noise	Damaged during shipping or installation	See if blower wheel is damaged or if motor shaft is bent. Replace if damaged
	Dirt build-up on blower wheel	Clean wheel
	Fan and air ducts not installed with vibration dampers	Install vibration dampers
Fan is not working	Power is off	Switch on power to the fan
	Capacitor is not wired correctly	Rewire connection
	Fan speed control is bad	Bypass fan speed control. If fan now operates at 100 %, replace fan speed control
Fan gets power, but will not run	Blower wheel is stuck due to dirt build-up	Clean blower wheel
	Fan speed control is set too low	Set fan speed control to highest setting until fan is up to speed. Then reduce speed
	Motor bearings have seized. (Refer to section 1.1 "Use")	See that the fan is operating within its design parameters. Replace the motor
	Motor capacitor has failed. (Refer to section 1.1 "Use")	Please refer to fig. 12 and insure that capacitor is connected correctly. Check amp draw with and without the capacitor being connected. If amp draw is the same, replace capacitor
Fan overheats and cycles on and off	Dirt build-up on blower wheel	Clean blower wheel
	Motor capacitor has failed. (Refer to section 1.1 "Use")	Please refer to note in section above
	Motor windings or bearings are failing. (Refer to section 1.1 "Use")	Check amp draw. If incorrect, replace blower motor

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