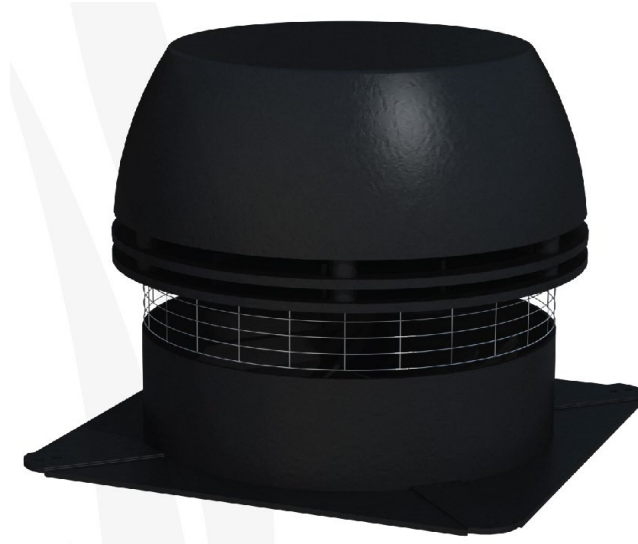


# ORTAL<sup>®</sup>

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## Installation and Operation Manual Enerflex RS Series Power Vent System



### **Enerflex RS Series Power Vents:**

RS 009 Power Vent


RS 012 Power Vent


RS 014 Power Vent


RS 016 Power Vent





## Safety Information and Warnings


 **IMPORTANT NOTE: ELECTRICAL WIRING**  
Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.


 **IMPORTANT NOTE: LOCAL CODE**  
Local codes and regulations that are more stringent than the requirements in this manual take precedence over Ortal requirements.


 **WARNING: REVIEW ALL WARNINGS**  
Review all safety warnings and installation guidelines contained in this manual and the applicable Ortal fireplace installation manual. Before installing the Ortal Power Vent System, read and understand all instructions. Consider installation location, venting pathway, clearances, structural requirements, framing and finish materials, and local codes. ALL warnings and instructions apply to all products manufactured and distributed by Ortal.

 **WARNING: ELECTRICAL GROUNDING**  
All electrical connections must be properly installed, insulated, and secured to avoid potential **ELECTRICAL SHOCK** and **FIRE HAZARD** and malfunction of the system. Consult local building code requirements. In the absence of local codes, refer to the National Electric Code, ANSI/NFPA 70, or the Canadian Electric Code, CSA C22.1.

 **WARNING: MATERIAL USAGE**  
All materials and objects used to carry out the installation must be certified/approved or specified by Ortal and are suitable for use. Do NOT install the system with different materials or objects than those approved for installation by Ortal.

 **WARNING: INSTALLATION AND SERVICE**  
Installation and repairs on the fireplace, power vent system, and vent system must be done by an authorized Ortal dealer/installer or gas supplier. Failure to meet this requirement will void the warranty of the fireplace and its components. Ortal will not be responsible for any damage caused by improper installation. The fireplace must be inspected before use and at least annually by a professional service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding material, etc. Control compartments, burners and circulating air passageways of the fireplace must be kept clean. Any alteration to the product can cause soot or carbon to form and may result in damage. This damage and any other damage that results from not following the instructions outlined in this manual is not the responsibility of Ortal.

 **WARNING: INSTALLATION AND OPERATION**  
The fireplace and accompanying components must be installed as an OEM installation in manufactured homes (USA only) or an aftermarket permanently located home, where not prohibited by local codes. The fireplace must be installed in accordance with the Manufacturer's instructions and the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280, in the United States, or the Standard for Installation in Mobile Homes, CAN/CSA Z240 MH Series, in Canada. **Exceeding the restrictions imposed in these instructions may result in a fire or explosion, causing property damage, personal injury, or loss of life. Ortal will not be responsible for any damage caused by improper installation. Do not store or use gasoline or other flammable vapors and liquids near this fireplace.**

 **WARNING: CALIFORNIA PROP 65**  
These products and the fuels used to operate these products (liquid propane or natural gas), and the products of combustion of such fuels, can expose you to chemicals including benzene, carbon monoxide, and ceramic fibers, which are known to the state of California to cause cancer and/or reproductive harm. For more information, visit [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov).

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“→” Denotes new or changed information from most recent version manual.

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## Certification

The RS series power vent is tested and listed to UL 378 for Standard Draft Equipment. The RS system is tested and listed for use with Ortal fireplaces to ANSI Z21.88/CSA 2.33 and ANSI Z21.50/CSA 2.22. The fan is manufactured at an ISO9001 certified plant and bears the European CE compliance label.

### Certification Listings:

**UL Standard 378:** Standard for Draft Equipment

**ANSI Z21.88/CSA 2.33 – 2019:** Gas Vented Fireplace Heaters

**ANSI Z21.50/CSA 2.22 – 2019:** Decorative Gas Vented Fireplaces

The chimney fan must be interlocked with the connected appliance(s) to ensure proper combustions and to avoid flue gas spillage.

Installations must conform to requirements of the authority having jurisdiction. Where required by the authority having jurisdiction, the installation must also conform to the Standard for Draft Equipment and The National Fuel Gas Code, ANSI Z223.1/NFPA 54.

All electrical wiring must be in accordance with the requirements of authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, NFPA70.

**It is the responsibility of the fireplace dealer and installer to ensure that the installation of the RS series power vent and its connection to the fireplace is in compliance with these instructions and all applicable codes.**

Before starting, take careful note of **ALL** the **WARNINGS** in this manual.

## General Information

The Enervex RS Series Power Vent System is an optional accessory for Ortal direct vent gas fireplaces that provides alternate installation configurations that are not available with passive direct vent runs, providing greater venting flexibility.

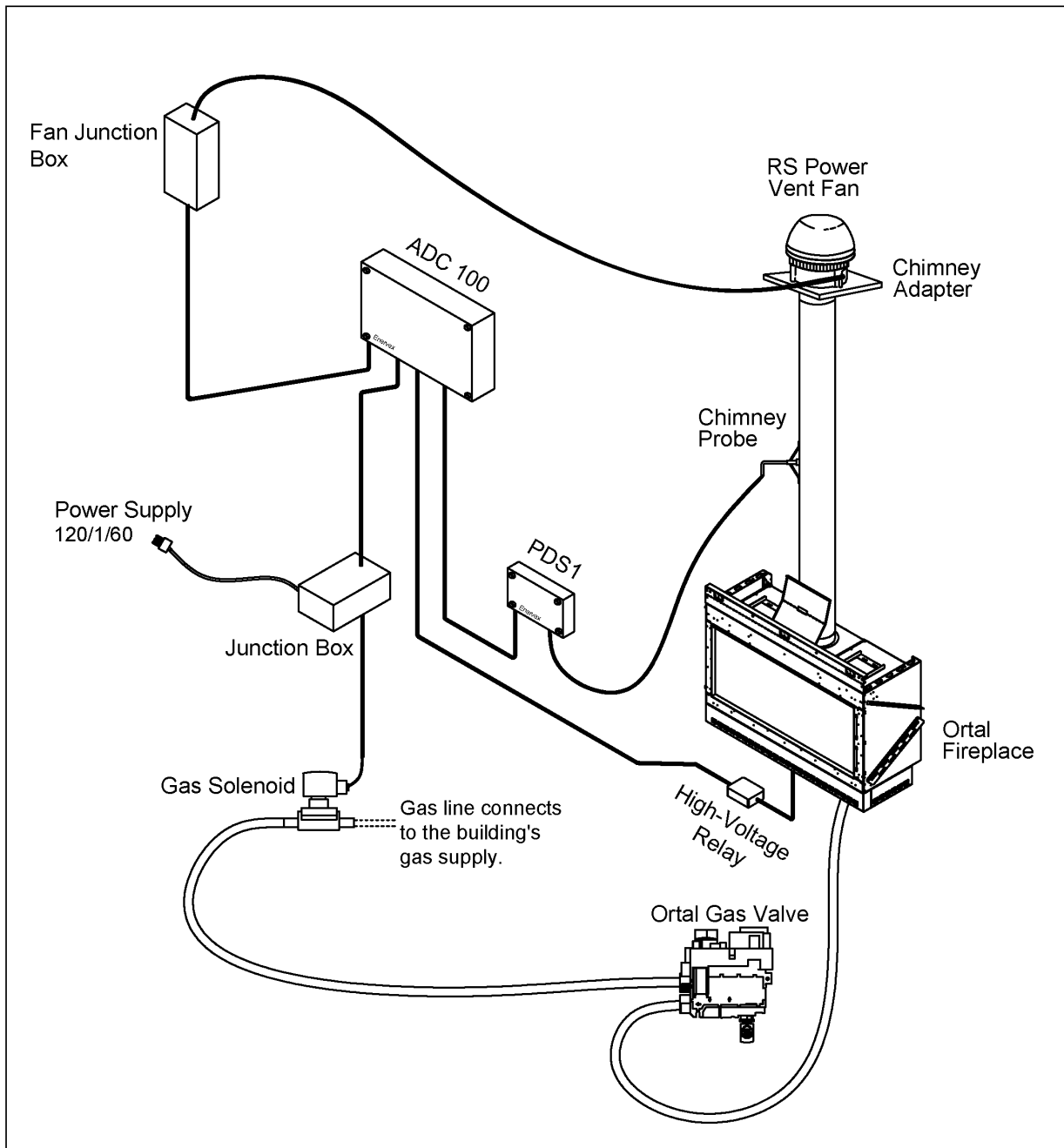
The power vent fan, located at the vent terminus, creates a draw on the exhaust, forcing the flow through the inner pipe. This creates a suction of fresh air that enters and draws in through the outer air intake pipe.

This manual applies to the Enervex RS Series Power Vent System and approved venting only. It is to be used along with the applicable Ortal fireplace installation manual for the installation of the fireplace and remaining components.

**Though this manual covers the RS 009 through the RS 016 fan models, the Enervex RS 009 fan is the standard fan offered in the Enervex Power Vent Kits. It covers most project venting needs. If your vent configuration exceeds the RS 009 model's capabilities, contact Ortal to determine which larger fan would work best.**

Before installing the Enervex system, review the system's construction plan and design. Consider installation location and pathway(s) including any structural requirements, clearances for rough and finish materials and local codes.

## Power Vent Kit Components



- **RS Power Vent Fan:** The RS Series Power Vent Fan connects directly to the vent pipe and is mounted at the termination location. The air intake and exhaust for the fireplace are taken in and expelled out here. Standard fan option is the RS 009.
- **Chimney Adapter:** The Chimney Adapter connects the power vent fan to the co-axial vent pipe. Adapter type varies between vertical and horizontal termination.
- **Chimney Probe:** The Chimney Probe is installed inside the vent pipe and connects to the Proven Draft Switch (PDS1). If pressure in the vent pipe drops, the negative pressure inside the Chimney Probe drops. This is communicated to the PDS1, which begins the process to shut off gas supply to the fireplace.
- **Proven Draft Switch (PDS1):** The Proven Draft Switch is a safety mechanism that monitors the pressure inside the vent pipe. In the event the pressure in the pipe drops, the PDS1 communicates with the ADC 100 and shuts off the supply of gas to the fireplace.
- **ADC 100 Control Box:** The ADC 100 Control Box controls the speed of the power vent fan to maintain proper draft and pressure in a vent system. The ADC 100 control comes with a Proven Draft Switch (the PDS1) and a Chimney Probe. The PDS and Chimney Probe are a required safety function used to ensure a negative pressure is maintained in the vent pipe. It also prevents appliance operation during an electrical or mechanical failure in the system.
- **Gas Solenoid Valve:** The Gas Solenoid Valve is a safety mechanism that regulates the flow of gas to the fireplace. In the event that pressure in the vent pipe drops below normal limits, the gas solenoid will shut off the gas going to the fireplace.
- **High-Voltage Relay:** The High-Voltage Relay makes the electrical connection between the Energex ADC100 and the Ortal fireplace Receiver.

The following table shows the standard Enervex Power Vent Kit options and components Ortal supplies. For fan sizes larger than the RS 009, please contact Ortal.

Kit SKU	Kit Description	Components	Vent Pipe Size
ENKIT4V	4x6 Enervex Power Vent Kit for Vertical Termination (End-of-Line)	RS 009 Power Vent Fan	4x6 co-axial direct vent pipe (6 5/8" exterior)
		Gas Solenoid Valve	
		ADC 100 Control Box with PDS1 and Chimney Probe	
		4" ASCA Chimney Adapter	
ENKIT4H	4x6 Enervex Power Vent Kit for Horizontal Termination (End-of-Line)	RS 009 Power Vent Fan	4x6 co-axial direct vent pipe (6 5/8" exterior)
		Gas Solenoid Valve	
		ADC 100 Control Box with PDS1 and Chimney Probe	
		4" SCA Chimney Adapter	
		RS 009 Horizontal Wall Adapter	
ENKIT5V	5x8 Enervex Power Vent Kit for Vertical Termination (End-of-Line)	RS 009 Power Vent Fan	5x8 co-axial direct vent pipe (8" exterior)
		Gas Solenoid Valve	
		ADC 100 Control Box with PDS1 and Chimney Probe	
		5" ASCA Chimney Adapter	
ENKIT5H	5x8 Enervex Power Vent Kit for Horizontal Termination (End-of-Line)	RS 009 Power Vent Fan	5x8 co-axial direct vent pipe (8" exterior)
		Gas Solenoid Valve	
		ADC 100 Control Box with PDS1 and Chimney Probe	
		5" SCA Chimney Adapter	
		RS 009 Horizontal Wall Adapter	

**!** NOTE: Though this manual covers the RS 009 through the RS 016 fan models, the Enervex RS 009 fan is the standard fan offered in the Enervex Power Vent Kits. It covers most project venting needs. If your vent configuration exceeds the RS 009 model capabilities, contact Ortal to determine which larger fan would work best.

# Venting

The following sections pertain to the vent pipe and vent configurations used with the Enerflex Power Vent System.

## General Information

**!** WILDERNESS 68-98 NOTE: the max run length and elbow allowances for Wilderness 68-98 models are different than what is listed in this manual. Follow the vent configuration instructions listed in the applicable fireplace manual instead.

Power Vent Model	Fireplace Series	Power Vent Fan Location	Max. Run Length	Vent Size	Approved Vent Manufacturers
RS 009 (Standard option)	25 31 4070 6080 75	<b>End-of-Line:</b> Horizontal Termination or Vertical Termination	120 ft	4x6 co-axial direct vent pipe (6 5/8" diameter)	<b>Olympia:</b> Ventis line  <b>DuraVent:</b> Direct Vent Pro line  <b>ICC:</b> EXCELDirect line  <b>BDM:</b> Pro-Form Direct Vent System  <b>Selkirk:</b> Direct-Temp System
	TR 90/110 44 / 110 120 51 / 130 60 / 150 68 /170 77 / 200 98 / 250 Curve Island All Wilderness			5x8 co-axial direct vent pipe (8-inch diameter)	
RS 0012 RS 0014 RS 0016	25 31 4070 6080 75	<b>End-of-Line:</b> Horizontal Termination or Vertical Termination	> 120 ft See note below.	4x6 co-axial direct vent pipe (6 5/8" diameter)	<b>Olympia:</b> Ventis line  <b>DuraVent:</b> Direct Vent Pro line  <b>ICC:</b> EXCELDirect line  <b>BDM:</b> Pro-Form Direct Vent System  <b>Selkirk:</b> Direct-Temp System
	TR 90/110 44 / 110 120 51 / 130 60 / 150 68 /170 77 / 200 98 / 250 Curve Island All Wilderness			5x8 co-axial direct vent pipe (8-inch diameter)	

**!** NOTE: If your vent configuration exceeds 120 feet in total length, contact Ortal to determine which of the larger fans (RS012-016) would work best.

## Pre-Installation Considerations

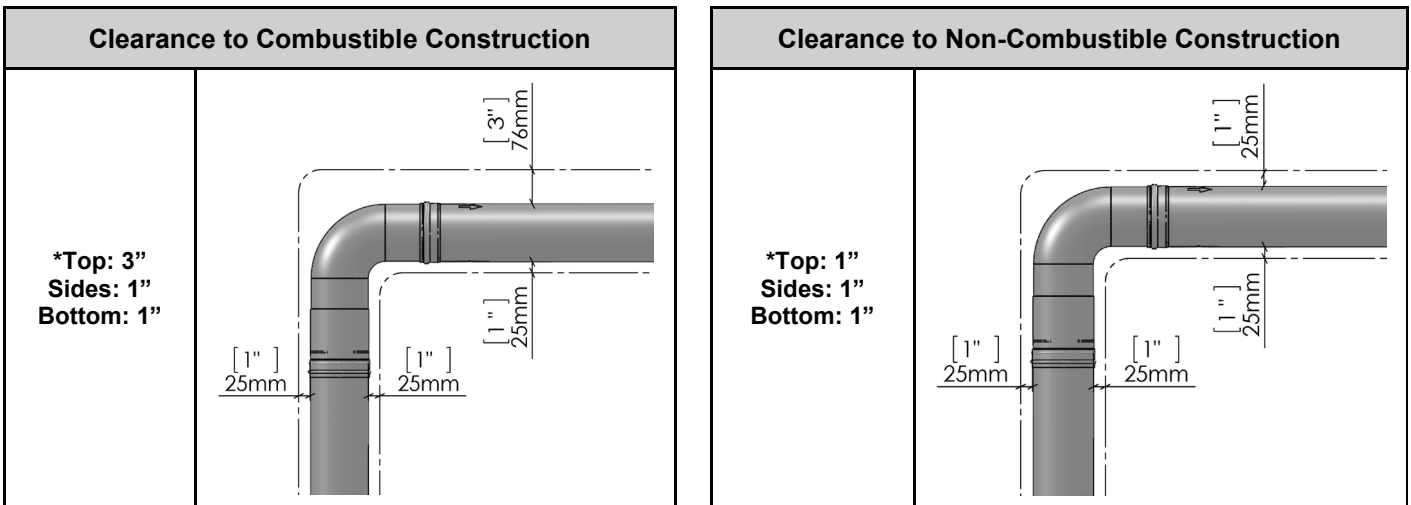
### IMPORTANT: Read Before You Begin

Take the following information into consideration when planning the vent configuration/pathway for your project.

1. **Vertical Drop:** The vent configuration cannot exceed **6 feet** of cumulative vertical drop (downhill run). For venting that rises vertically after a drop, a condensation drain must be installed mid-way through the horizontal portion of the drop.
2. **Elbows:** Up to **six 90° elbows** are permitted per vent configuration. One 90° elbow equals two 45° elbows.
3. **Clearances:** Plan for clearances around the pipe are met (see the section "Clearances" for details).
4. **Vent Installation:** For vent component installation instructions, refer to the applicable vent manufacturer's instructions for gas appliances.
5. **Vent Pipe Connections:**
  - Must be intact and without flaw (i.e., no holes, tears, open seams, corrosion, or other issues that may inhibit the proper function of the Power Vent System).
  - Inner and outer gasket rings must be intact.
  - Each connection between all the venting components must be securely locked.
  - Alignment dimples on the pipe must be correctly aligned. Twist pipe in place to secure.
6. **Sealing:**
  - Failure to properly seal the venting can prevent the system from working properly and can result in damage to the fireplace and/or surrounding building material.
  - Damaged seals may cause pressure loss.
7. **Mounting:**
  - Power Vent fan and vent pipe must be connected and secured per local code requirements.

**!** **WILDERNESS 68-77 NOTE:** the max run length and elbow allowances for Wilderness 68-77 models are different than what is listed in this manual. Follow the vent configuration instructions listed in the applicable fireplace manual instead.

## Vent Clearances



\*Top clearance applies to pipe oriented horizontally at any angle.

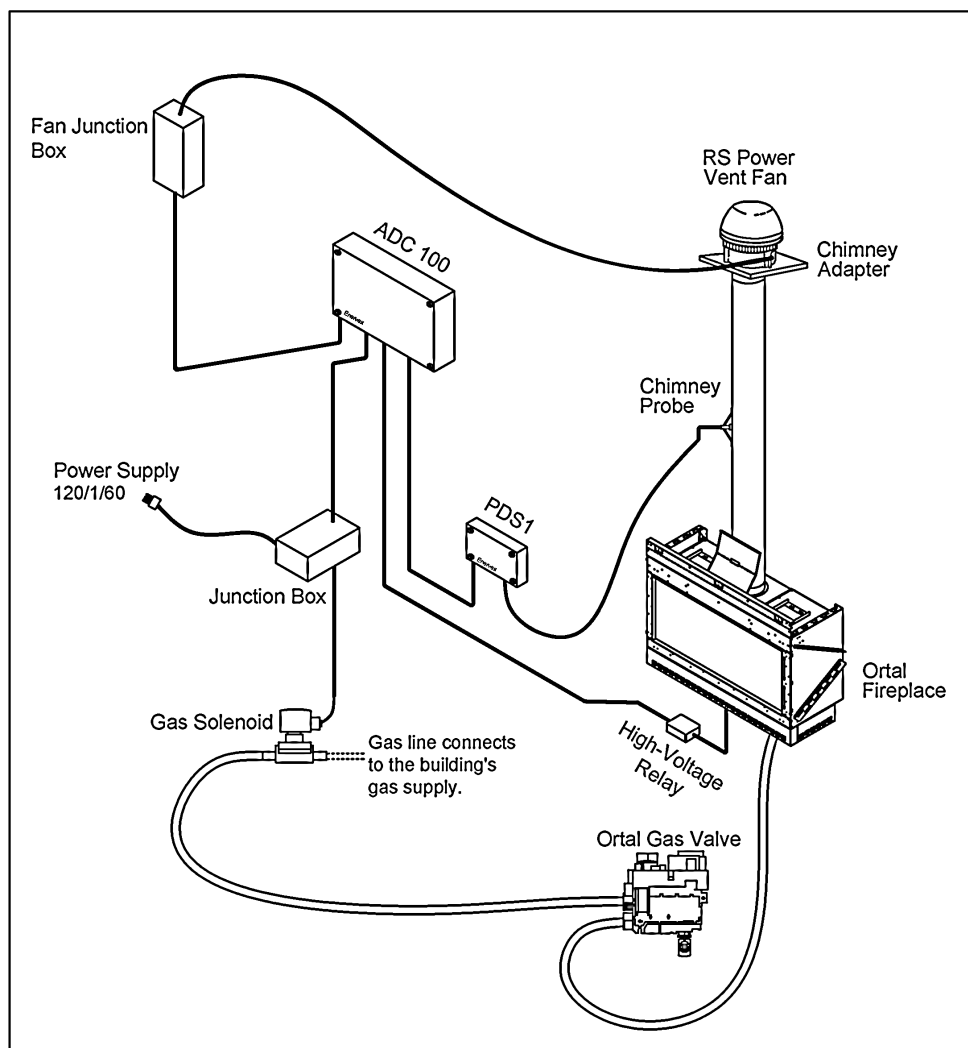
**!** **NOTE:** These clearances override the vent pipe manufacturer's installation instructions

# Power Vent System

The following sections pertain to the RS Series Power Vent fan and components. Though this manual covers the RS 009 through the RS 016 fan models, the Enervex RS 009 fan is the standard fan offered in the Enervex Power Vent Kits. It covers most project venting needs. If your vent configuration exceeds the RS 009 model capabilities, contact Ortal to determine which larger fan would work best.

## Installation

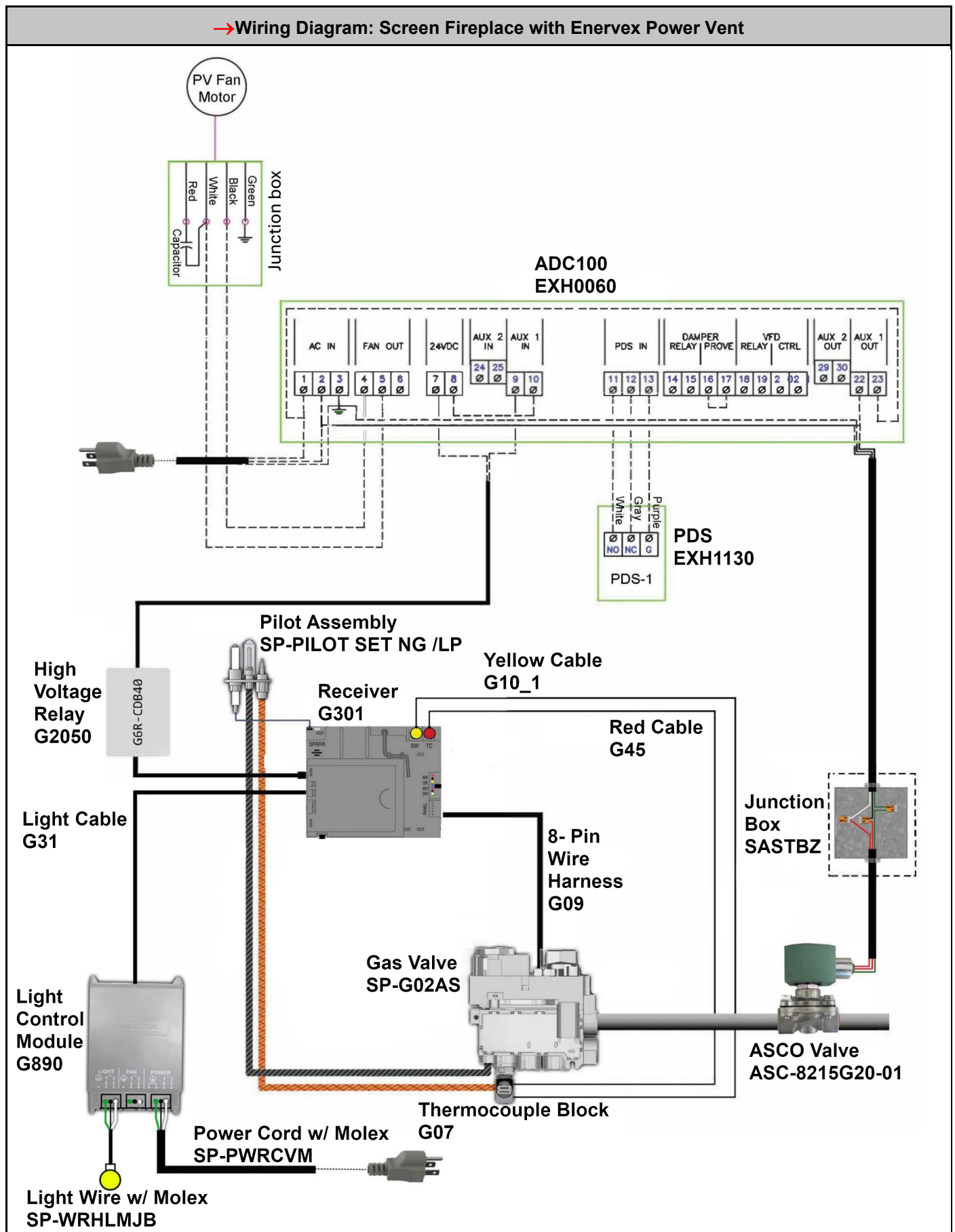
This section outlines the basic installation process for connecting the Enervex power vent system to the Ortal system.



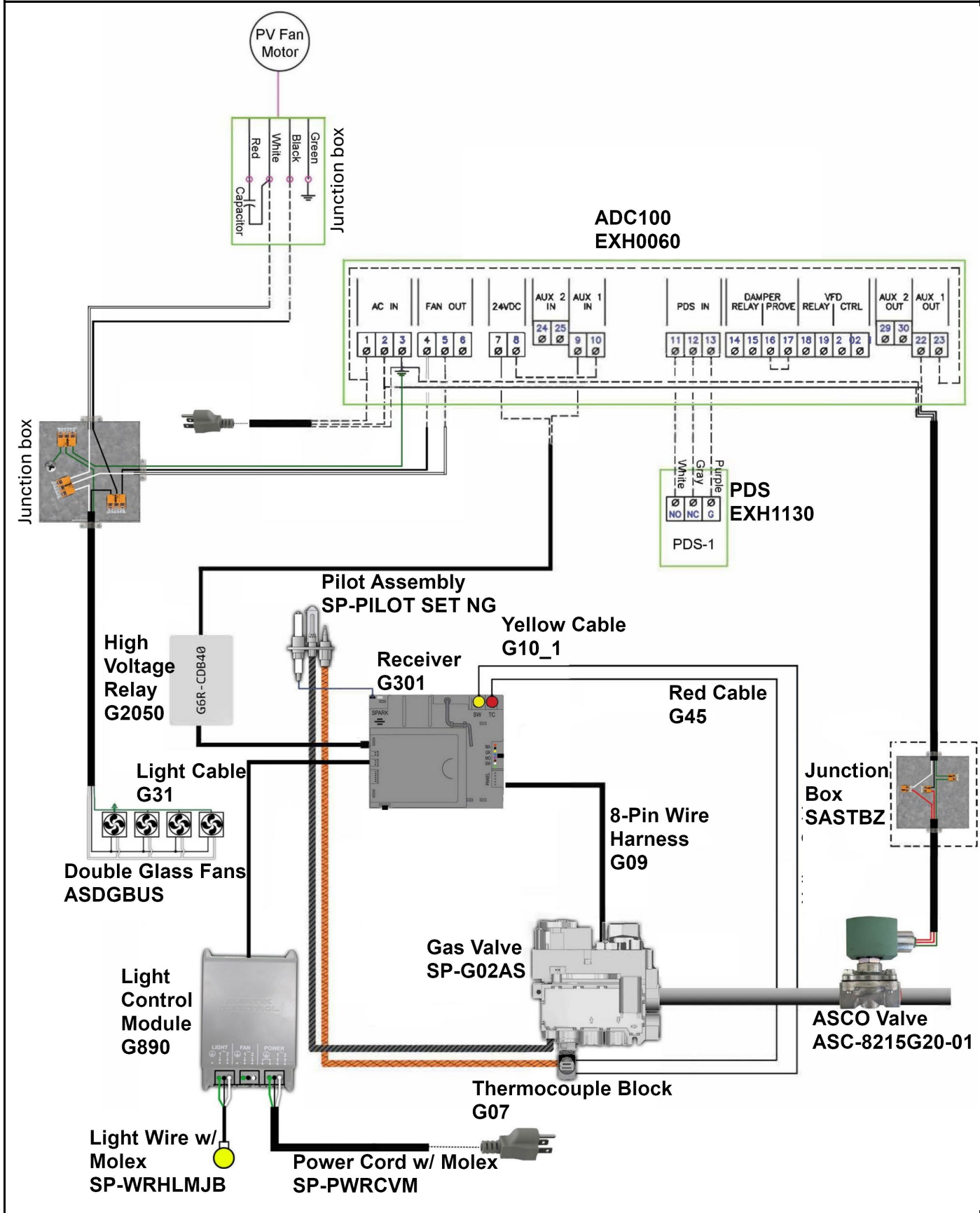
1. Attach **Chimney Adapter** to **RS Power Vent Fan**.
2. Install **Chimney Adapter + RS Power Vent Fan** on wall or roof and attaching to the vent pipe. (See pages 13-15 below for Enervex's full installation instructions of the RS Power Vent Fan.)
3. At a location along the vent run (closer to the fan), use a 0.2770-inch (J-sized) drill bit to drill an opening in the outer and inner walls of the vent pipe. Locate the probe at least a distance of 3 vent diameters away from an elbow.
4. Insert **Chimney Probe** into the drilled hole, ensuring the end of the probe is as flush as possible to the inner pipe wall.
5. Attach **Chimney Probe** to the vent pipe using the supplied bracket and two self-tapping screws (recommended 1/4-20 or M6, not supplied). (See pages 22 and 29 for Enervex's Chimney Probe installation instructions.)
6. Attach the 6-foot silicone chimney probe tube from the exposed end of the Chimney Probe to the grey NEGATIVE (-) port of the Proven Draft Switch (**PDS1**).
7. Install **PDS1** in desired indoor location. Must be vertically oriented. (See page 29 below for Enervex's full installation instructions of the PDS1.)
8. Mount **ADC100** Control Box at the desired location on the wall. (See pages 21-22 below for Enervex's full installation instructions of the ADC 100.) **ADC 100** Control Box may also be placed under the fireplace. **ADC 100** has no required clearances, and it may be mounted as far away from the fireplace as desired.
9. Run the connecting wire from **PDS1** to the **ADC 100**. Refer to wiring diagrams on pages 9 or 10.
10. Connect the **ADC 100** and **Gas Solenoid** to a **Junction Box** (not supplied) with **Power Supply**.
11. Connect the **Gas Solenoid** to the Ortal gas valve inlet.
12. Run the connecting wire from the **ADC100** to the fireplace **High-Voltage Relay**.
13. Connect the **High-Voltage Relay** two-pin connector to the relay port on the receiver.
14. Turn the **Ortal Fireplace** on to test the system for proper operation. (See pages 37-38 below for operation instructions.)

# Wiring Diagrams

The following diagrams show the electrical wiring required to connect the Enervee and Ortal system.



→ Wiring Diagram: Double Glass Fireplace with EnerveX Power Vent



# Components

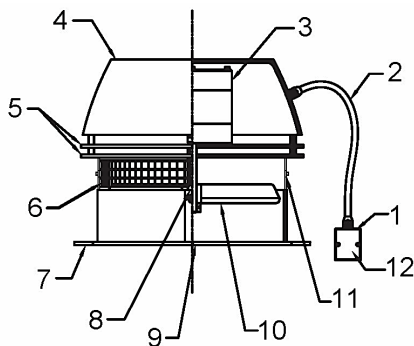
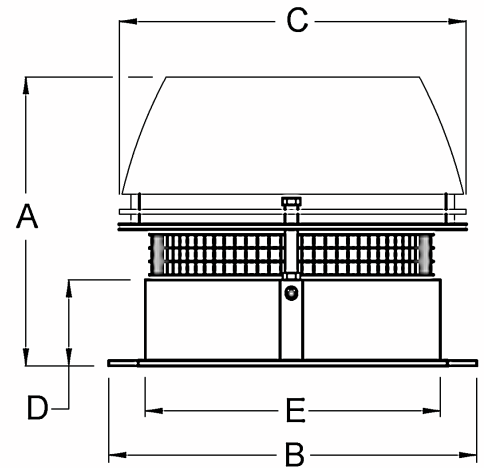
## RS Series Power Vent

### Specifications

The RS Series Power Vent Fan connects directly to the vent pipe and is mounted at the termination location. The air intake and exhaust for the fireplace are taken in and expelled out here.

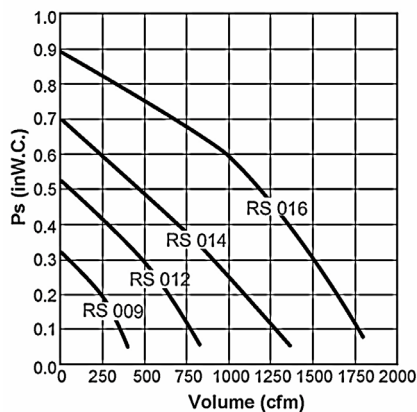
The following specifications were taken from page 5 of the Enverex RS Chimney Fan Installation Manual.

		RS 009	RS 012	RS 014	RS 016
<b>Discharge</b>		Horizontal			
<b>Fan Type</b>		Axial Vane			
<b>Motor Type</b>		Totally enclosed, Variable speed, Class H			
<b>Voltage</b>	VAC	1x120V @ 60 Hz			
<b>Amperage</b>	Amps	0.5	1.2	1.4	3.9
<b>RPM</b>		1600			
<b>CFM</b>	@0.0 Ps	450	950	1400	1950
<b>Motor Output</b>	hp/kW	1/30/0.025	1/10/0.08	1/7/0.1	1/3/0.25
<b>Weight</b>	lbs	29	37	47	61
	kg	13	17	21	28
<b>Dimensions (in / mm)</b>	A	10.2 / 259	11.5 / 292	13.1 / 334	16.0 / 407
	B x B	11.7 / 296	14.3 / 364	16.6 / 422	18.8 / 478
	C	10.8 / 275	13.5 / 344	15.5 / 395	17.4 / 441
	D	3.0 / 75	3.3 / 85	3.9 / 100	3.9 / 100
	E	9.4 / 238	11.6 / 294	13.5 / 342	15.4 / 391
<b>Temperature Rating</b>	Interm.	575°F / 300°C			
	Cont.	482 °F / 250°C			



Power Vent Components	
1 - Junction box	7 - Base plate
2 - Conduit/cord	8 - Locking nut
3 - Motor	9 - Inlet
4 - Motor housing	10 - Axial vane
5 - Motor plate	11 - Hinges
6 - Bird screen	12 - Capacitor (inside junction box)

### Capacity




### Sound Data

Model	Lw dB (measured in accordance with ISO 3744)							Lp dB(A)
	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	
RS 009	54	50	47	43	38	31	25	21
RS 012	64	60	55	52	48	42	34	30
RS 014	75	69	65	62	57	51	44	41
RS 016	81	76	72	69	64	58	52	47

## Pre-Installation Considerations

The following instructions were taken from page 6 of the Enervex RS Chimney Fan Installation Manual.

### 2.2 PLANNING AHEAD



Observe proper combustion air requirements.  
Provide a firm support system for the chimney fan.  
Determine the type of system involved.  
Observe proper safety measures are taken to assure safe use of the wood burning appliances.


#### Combustion Air Requirements

Provisions for combustion air must be in accordance with applicable local codes.

If the heating system is installed in an unconfined space, adequate air will be available via normal infiltration.

If the heating system is installed in a confined space, (a space with a volume less than 50 cubic feet per 1,000 Btu/hr of input for all fuel burning equipment) or building construction is unusually tight, adequate air for combustion must be provided by two openings: one located about 6" below the ceiling, the other about 6" above the floor. Each opening must have a minimum free area as follows:

1. One square inch per 4,000 Btu/hr of input when communicating directly with the outside or through a vertical duct.
2. One square inch per 2,000 Btu/hr when communication through horizontal ducts to the outside.
3. One square inch per 1,000 Btu/hr when ventilation air is provided by openings in doors, etc. to adjoining spaces having adequate infiltration.



Adequate fresh air must be provided for combustions; otherwise improper operation and inadequate venting of deadly flue gases may result.

#### Support system for the chimney fan

Prior to installation of the chimney fan, it must be assured the chimney can safely carry the weight of the chimney fan.

A steel chimney should be well supported at the roof penetration point. If the chimney extends more than 20' above the roof, the chimney and the fan should be secured by wires attached on the chimney and on the roof at 2 to 3 different points.

Brick chimneys usually do not need any kind of support to carry the weight of the chimney fan.

#### System type

Direct connect oil or gas appliances (no draft hood) normally do not require any mechanical draft adjustment. However, if there are long horizontal breechings and far between the appliances, it is a good idea to install mechanical vent dampers, so adjustments of the draft can be easily made.

Draft hood systems could generally speaking have vent dampers installed. The vent dampers are used to balance the system and assure that only a minimum of dilution air is pulled through the draft hoods.

#### Safety Devices

Local codes usually require installation of safety devices, when mechanical draft is provided in an oil or gas fueled system.

Make sure a differential pressure switch (proven draft switch) is installed to assure that no appliance will fire unless there is a proven draft.

## Installation

The following instructions were taken from pages 7-9, 10 of the Enervech RS Chimney Fan Installation Manual.

**NOTE:** Because the fireplace uses co-axial direct vent pipe, a special vent adapter (supplied) and must be attached to the power vent before the power vent is installed.

### 3. MECHANICAL INSTALLATION

#### 3.1 TRANSPORT SAFETY DEVICE

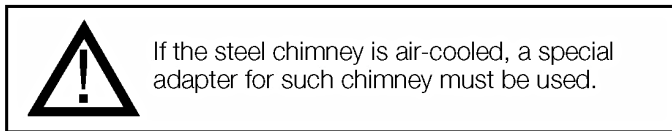
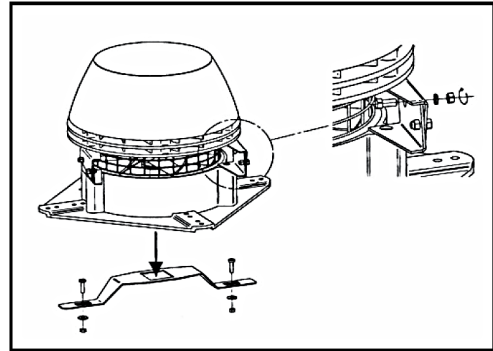
If a transport safety device is present, remove it from the vane and make sure that the vane can revolve without hindrance.

RS 14/16: Before mounting, the transport safety device on the hinges must be removed.

#### 3.2 SINGLE FAN ON STEEL CHIMNEY

##### Step 1: Prepare fan location

If a stack cap is already installed, it must be removed. The steel chimney adapter (SCA) slides right into the chimney, where the long collar engagement ensures safe anchoring. If necessary, the adapter can be secured by means of long self-tapping stainless steel screws into the side of the collar through the chimney wall.



If the steel chimney is air-cooled, a special adapter for such chimney must be used.

Measure the inside diameter of the flue and cut a corresponding hole in the center of the fiber mat. If the flue is so big that the throat in the adapter has been reduced to fit the throat of the fan, the hole in the fiber mat should correspond to the throat.

The aluminum foil on the fiber mat must face upward (against fan base).

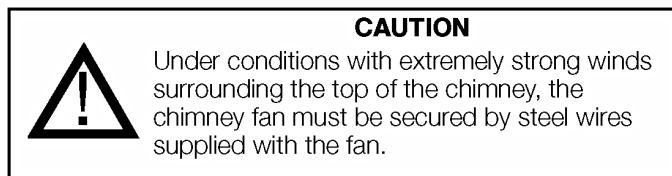
##### Step 2: Preparation of fan

Locate the installation brackets in the grooves on the underside of the fan base, using the bolts and nuts supplied to secure the brackets. Note that the bolts shall be installed from the bottom side in the two inner holes.

Adjust the final position of the installation brackets ensuring that there is a small gap between the brackets and the flue wall/adapter throat. Tighten the nuts. If the brackets touch the flue wall, it may create some vibration noise.

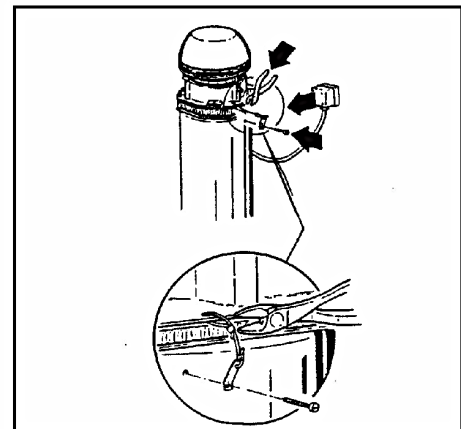
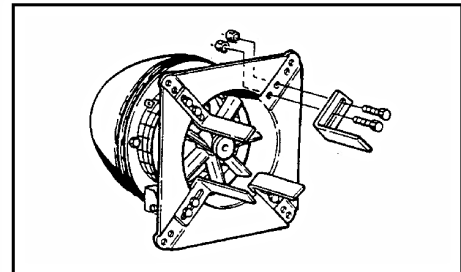
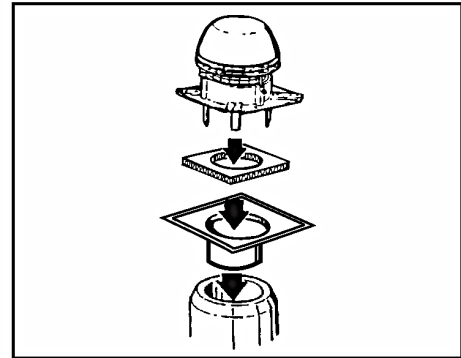
##### Step 3: Attaching the fan

The chimney fan is now ready for installation on the top of the chimney. Place the fiber mat with the aluminum foil facing upwards on the top of the adapter, and place the fan on top of the mat. High temperature silicone can be applied on the side of the mat, but is not required. It can also be painted. It is not necessary to bolt the fan to the chimney.



#### CAUTION

Under conditions with extremely strong winds surrounding the top of the chimney, the chimney fan must be secured by steel wires supplied with the fan.



**NOTE:** Because the fireplace uses co-axial direct vent pipe, a special vent adapter (supplied) and must be attached to the power vent before the power vent is installed.

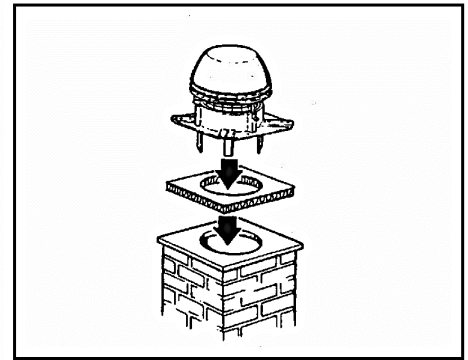
### 3.3 SINGLE FAN ON BRICK CHIMNEY

#### Step 1: Prepare fan location

The installation procedure is the same whether the flue is round or square. If a clay tile flue liner is installed, it might stick up a few inches. Cut it back so it is flush with or no more than 1/2 inch above the chimney crown.

Measure the inside diameter of the flue, cut a corresponding hole in the fiber mat leaving a minimum distance of 3/4" to any side of the fiber mat.

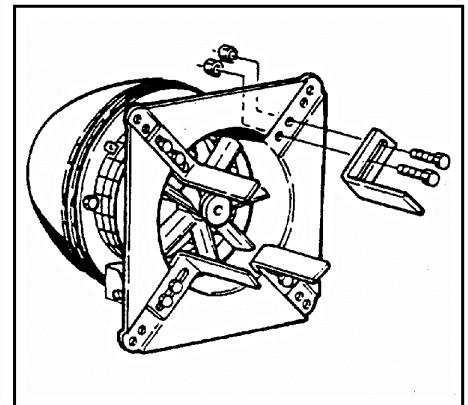
The aluminum foil on the fiber mat must face upwards (against fan base).



#### Step 2: Preparation of fan

Locate the installation brackets in the slots going through the fan base, using the bolts and nuts supplied to secure the brackets. If the flue diameter is larger than the chimney fan inlet, the bracket can be installed underneath the base. Note that the bolts must be installed from the bottom side.

Adjust the final position of the brackets ensuring that there is clearance between the brackets and the flue wall. If the brackets touch the wall, it may generate some vibration noise.

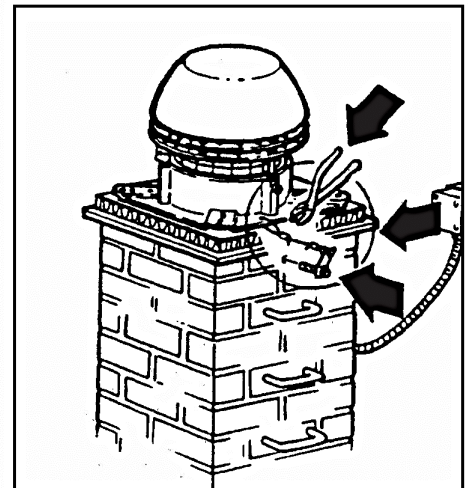


#### Step 3: Attaching the fan

The chimney fan is now ready for installation on the top of the chimney. Place fiber mat with the aluminum foil facing upwards on the top of the chimney, and place the fan on top of the mat.

High temperature silicone can be applied on the side of the mat, but is not required. It can also be painted.

It is not necessary to bolt the fan to the chimney.



#### CAUTION



Under conditions with extremely strong winds surrounding the top of the chimney, the chimney fan must be secured by steel wires supplied with the fan.

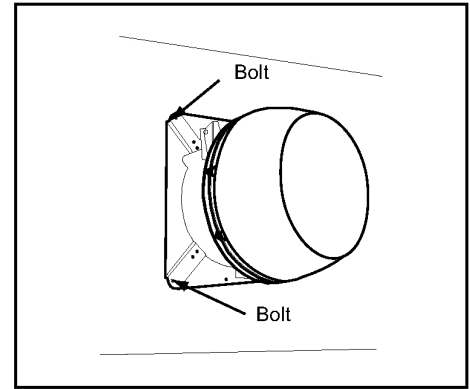
**NOTE:** Because the fireplace uses co-axial direct vent pipe, a special vent adapter (supplied) and must be attached to the power vent before the power vent is installed.

### 3.7 WALL MOUNTING OF CHIMNEY FAN

When mounting the chimney fan on a wall, the installation instructions for installation on a steel chimney should be followed. Use of the adapter SCA can make the installation easier, but is not a requirement.

To ease installation, detach the fan base by removing the bolts holding the hinges together. Center the fan base over the outlet and bolt the base onto the wall with the hinges pointing upwards.

After mounting the base securely, attach the fan motor housing by reassembling the fan hinges. Seal with silicone all around the fiber mat to prevent rain from entering the flue.

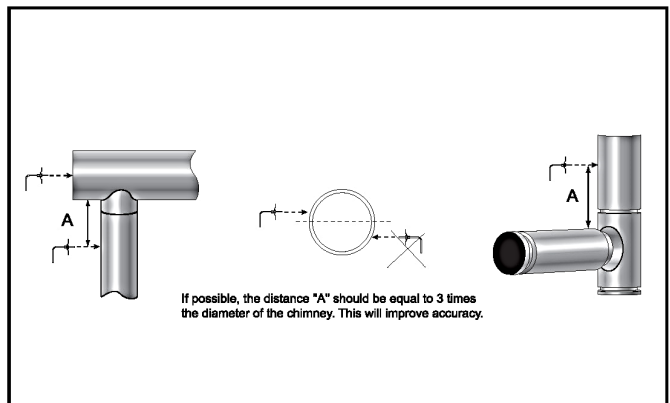


### 3.8 INSTALLATION OF PROVEN DRAFT SWITCH (PDS)

A safety system must be interlocked with the appliance(s). The safety system could utilize a Proven Draft Switch, a thermal switch or a flow switch. The device must be interlocked with the heating appliance so it shuts down in case of insufficient draft, fan failure or power failure. Please refer to the PDS Installation Manual if this control is used.

For more information on alternative safety systems, please contact ENERVEX, Inc.

The figure shows the location of the probe for the PDS. Location is important to make sure there is enough pressure or draft available or the switch to work.



#### CAUTION

A safety device that prevents the heating appliance operation, in case of a power failure or inadequate draft situation, must be installed.

## Startup

The following instructions were taken from page 14 of the Enervex RS Chimney Fan Installation Manual.

---

## 5. STARTUP AND CONFIGURATION

### 5.1 SYSTEM TESTING

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

1. Turn the chimney 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, on the power to the circuit it controls is disconnected.

#### **DANGER**



Check other heating appliances (water heater, furnace, 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 CHIMNEY FAN SPEED

Start up all appliances. Use the fan speed control to set the speed of the chimney fan 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) starts 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.

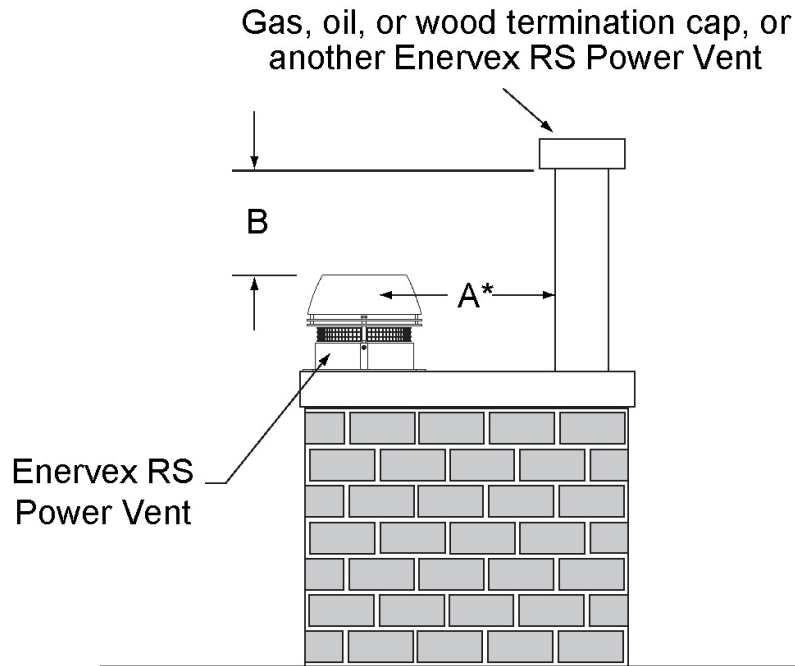


## Clearances

### Vertical Termination

Maintain clearances as described below.

A - when exhaust is facing away from an intake side	A - when exhaust is toward an intake side	B
12" min up to 24"	12" min up to 24"	18" min
24" min or greater	36" or greater	0" min



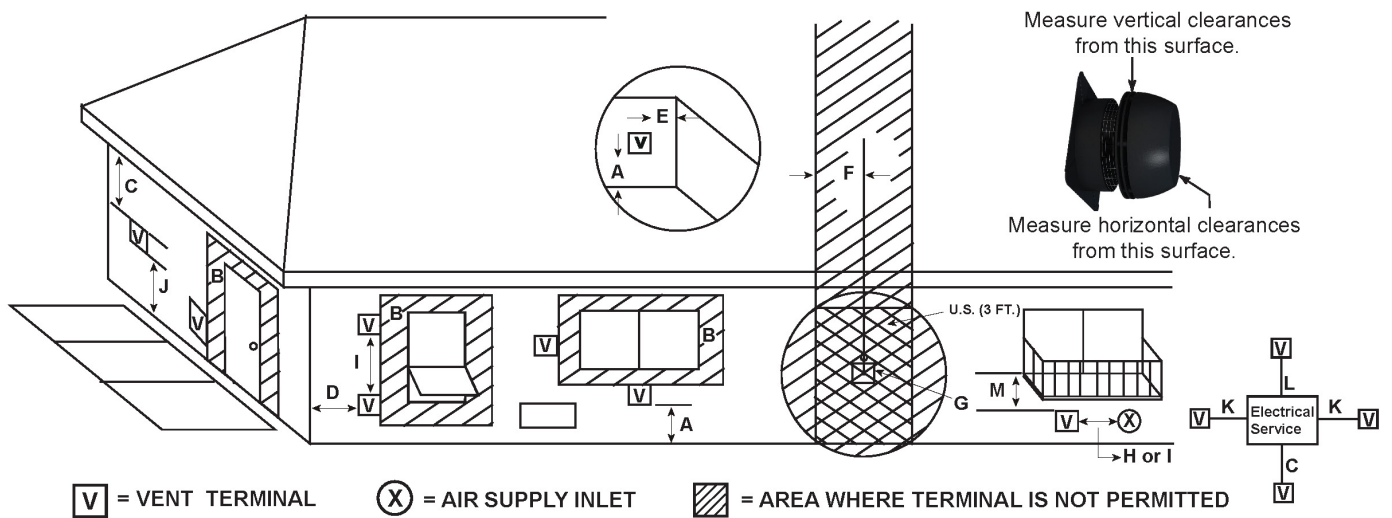
\*If using decorative chimney shroud, this distance may need to be increased. Refer to chimney shroud installation instructions.

\*\*In a staggered installation with wood or fuel oil terminations, the wood or fuel oil termination cap must be higher than the vertical termination power vent.

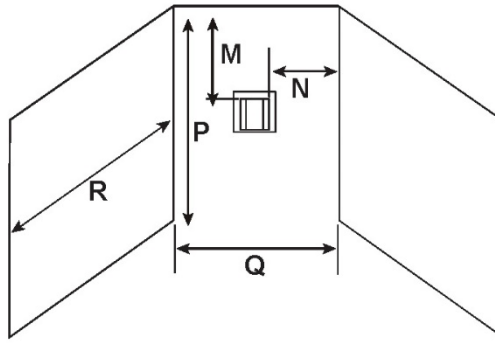
### NOTES:

- Maintain a minimum of 2 feet clearance between edge of vertical termination and perpendicular wall.
- If terminating near a window, keep minimum of 2 feet clearance between window and vent termination.
- All mechanical air intakes (such as an Enerflex power vent) within 10 feet of a termination cap must be a minimum of 1 foot below the termination cap.
- All gravity air intakes within 3 feet of a termination cap must be a minimum of 1 foot below the termination cap.
- Default to local code if greater clearance is required.

## Horizontal Termination



Location	Country	Minimum Clearance	Description
A	US & Canada	12 inches	Clearance above grade, veranda, porch, deck, or balcony. NOTE: On private property where termination is less than 7 feet above a sidewalk, driveway, deck, porch, veranda, or balcony, use of a listed cap shield is suggested.
B	US	≤ 50,000 BTU: 9 inches > 50,000 BTU: 12 inches	Clearance to an operable window or door. NOTE: Zero clearance to an inoperable window or door.
	Canada	12 inches	
C	US & Canada	24 inches	Vertical clearance to a <b>ventilated</b> soffit located above the vent termination.
		18 inches	Vertical clearance to an <b>unventilated</b> soffit located above the vent termination.
		42 inches	Vertical clearance to vinyl clad soffits and below electrical service.
D	US & Canada	9 inches	Clearance to an outside corner.
E	US & Canada	6 inches	Clearance to an inside corner.
F	US	N/A	Not to be installed above a gas meter/regulator assembly within 3 feet (90 cm) horizontally from the center-line of the regulator.
	Canada	3 feet	
G	US & Canada	3 feet	Clearance to gas service regulator vent outlet.
H	US	9 inches	Clearance to a non-mechanical air supply inlet to the building or the combustion air inlet to any other appliance. NOTE: Termination in a covered alcove space (spaces open only on one side and with an overhang) are permitted with the dimensions specified for vinyl or non-vinyl siding and soffits. 1. There must be 3 feet minimum between termination caps. 2. All mechanical air intakes within 10 feet of a termination cap must be a minimum of 3 feet below the termination cap. 3. All gravity air intakes within 3 feet of a termination cap must be a minimum of 1 foot below the termination cap.
	Canada	12 inches	
I	US	3 feet	Clearance to a mechanical (powered) air supply inlet. NOTE: Termination in a covered alcove space (spaces open only on one side and with an overhang) are permitted with the dimensions specified for vinyl or non-vinyl siding and soffits. 1. There must be 3 feet minimum between termination caps. 2. All mechanical air intakes within 10 feet of a termination cap must be a minimum of 3 feet below the termination cap. 3. All gravity air intakes within 3 feet of a termination cap must be a minimum of 1 foot below the termination cap.
	Canada	6 feet	
J*	US & Canada	7 feet	Clearance above paved sidewalk or a paved driveway located on <b>public</b> property. NOTE: On private property where termination is less than 7 feet above a sidewalk, driveway, deck, porch, veranda, or balcony, use of a listed cap shield is suggested. *a vent shall not terminate directly above a sidewalk or paved driveway which is located between two single family dwellings and serves both dwellings.
K	US & Canada	6 inches	Clearance from sides of electrical service. NOTE: Location of the vent termination must not interfere with access to the electrical service.
L	US & Canada	12 inches	Clearance above electrical service. NOTE: Location of the vent termination must not interfere with access to the electrical service.



Covered Alcove: spaces open only on one side and with an overhang

Horizontal Termination Clearances Continued:  
Covered Alcove Application

Location	Country	Minimum Clearance	Description
COVERED ALCOVE APPLICATION	M	US & Canada	16 inches Clearance under <b>non-vinyl</b> veranda, porch, deck, balcony, or overhang. NOTE: Termination in a covered alcove space is permitted with the dimensions specified. 1. There must be 3 feet minimum between termination caps. 2. All mechanical air intakes within 10 feet of a termination cap must be a minimum of 3 feet below the termination cap. 3. All gravity air intakes within 3 feet of a termination cap must be a minimum of 1 foot below the termination cap.
	N	US & Canada	6 inches Non-vinyl sidewalls.
			12 inches Vinyl sidewalls.
	P	US & Canada	8 feet Alcove height.
	Q	US & Canada	See table below. Alcove width (dependent on number of caps in the space).
R	US & Canada	See table below. Alcove depth (dependent on number of caps in the space).	

# Vent Caps	$Q_{\text{MINIMUM}}$	$R_{\text{MAXIMUM}}$
1 vent cap	3 feet	$2 \times Q_{\text{ACTUAL}}$
2 vent caps	6 feet	$1 \times Q_{\text{ACTUAL}}$
3 vent caps	9 feet	$\frac{2}{3} \times Q_{\text{ACTUAL}}$
4 vent caps	12 feet	$\frac{1}{2} \times Q_{\text{ACTUAL}}$
<b><math>Q_{\text{MIN}} = \# \text{ vent caps} \times 3</math></b>		<b><math>R_{\text{MAX}} = (\frac{2}{\# \text{ vent caps}}) \times Q_{\text{ACTUAL}}</math></b>

**! HORIZONTAL TERMINATION CAP CLERANCES - NOTES:**

- If exterior walls are finished with vinyl siding, it is **required** that a vinyl protector kit be installed.
- Vent system termination is not permitted in screened porches.
- Vent system termination is permitted in porch areas with two or more sides open. You must follow all side walls, overhang and ground clearances as stated.
- Termination caps may be hot. Consider their proximity to doors or other traffic areas.

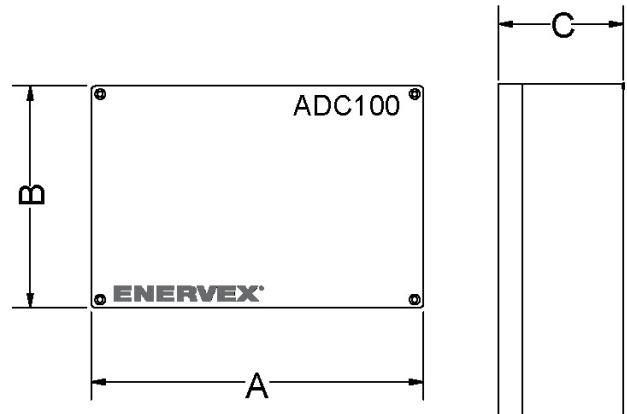
## ADC 100 Control Box

### Specifications

The ADC 100 Control Box controls the speed of the power vent fan to maintain proper draft and pressure in a vent system. The ADC 100 control comes with a Proven Draft Switch (the PDS1) and a Chimney Probe. The PDS and Chimney Probe are a required safety function used to ensure a negative pressure is maintained in the vent pipe. It also prevents appliance operation during an electrical or mechanical failure in the system.

The following specifications were taken from pages 5 & 7 of the EnerveX ADC 100 Fan Control Installation Manual.

ADC 100 Control Box	
<b>Power Supply</b>	1x120VAC
<b>Amperage</b>	6.3 Amps
<b>Operating Temp.</b>	-4°F to 122°F / -20°C to 50°C
<b>Control signal</b>	max. 10 mA
<b>Control relay</b>	Max. 120 VAC / 8A
<b>Output</b>	10-120 VAC
	0-10VDC
<b>Post Purge Time</b>	0-3 Minutes
<b>Alarm Delay Time</b>	15 Seconds
<b>Dimensions</b>	A: 9.6 in / 244 mm
	B: 6.3 in / 160 mm
	C: 3.5 in / 90 mm
<b>Weight</b>	2.6 lbs in / 1.2kg
<b>Construction</b>	The housing is NEMA 1 rated ABS plastic.



## Installation

The following installation instructions were taken from pages 6-9 and 13-15 of the Enervex ADC 100 Fan Control Installation Manual.

### 3. MECHANICAL INSTALLATION

#### 3.1 LOCATION

The ADC100 Control Unit must be installed indoors.

As shown in Fig. 1, the control will be wired directly to a 120/1/60 VAC power supply. The control will also be connected to the fan, appliance and damper (if used). For detailed wiring information, see Chapter 4.

#### 3.2 MOUNTING THE CONTROL UNIT

The ADC100 control may be mounted directly to a wall. To mount, remove the cover and locate the (4) mounting holes. Using the hole-pattern shown below, mount the control using #6 screws. See Fig. 2. Once it is attached, wire the unit in accordance with Chapter 4.

#### 3.3 CONNECTION OF THE PROVEN DRAFT SWITCH AND STACK PROBE

The Proven Draft Switch (PDS) must be installed indoors, in the vertical position (pre-drilled knockouts face down). Mount the control upright to a wall or other flat surface. DO NOT lay the control down or mount horizontally.

A Proven Draft Switch (PDS) must be used with the ADC100 control as a system safety device. The PDS monitors the pressure inside the stack and signals the control to shut down the appliance if insufficient draft exists. A stack probe senses the pressure read by the PDS and is connected via silicone tubing.

The silicone tubing supplied with the PDS should be connected to the NEGATIVE (-) port of the PDS. This is the bottom port on the switch. See Fig. 3. The standard tube length is 6 feet. The distance can be extended up to 25 feet by using 1/4" rigid plastic or copper tubing as temperature allows (not supplied).

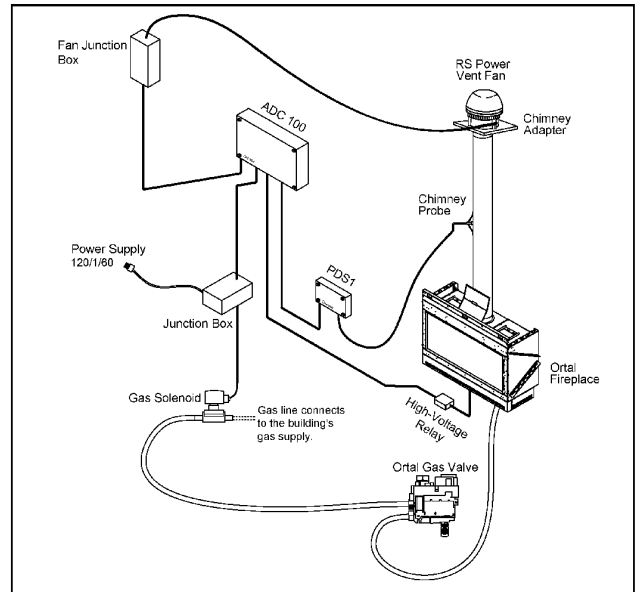


Fig. 1

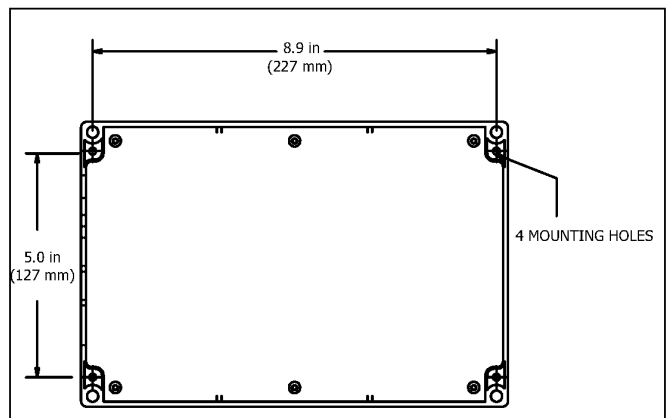


Fig. 2

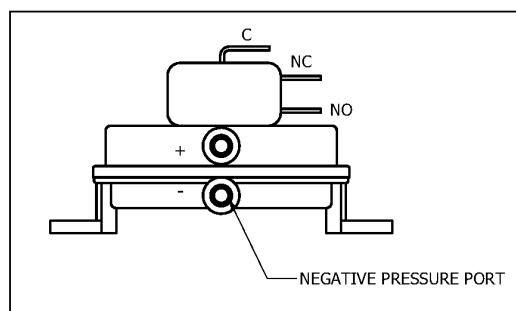


Fig. 3

**NOTE: Ortal fireplaces do not use a damper.**

### 3.4 INSTALLATION OF THE CHIMNEY PROBE

The probe must be installed between the appliance and the exhaust fan. If a damper is used in the system, the probe should be installed between the appliance and damper.

Locate the probe at least a distance three (3) vent diameters away from any elbow, tee or damper. For fireplace installations, the probe should be installed close to the fan inlet. See Fig. 4.

To produce an accurate pressure reading, the probe should be installed flush with the inner wall of the chimney or stack. If double walled stack is used, the probe should be flush with the inner most wall.

### 3.5 ADJUSTING THE FAN SPEED AND POST PURGE TIME

There are two potentiometers located on the main control board of the ADC100. To increase the fan speed, rotate the potentiometer labeled Fan Spd clockwise. Alternately, rotating the potentiometer counterclockwise will decrease the fan speed. In Manual mode, the potentiometer can be adjusted at any time during normal operation to increase or decrease the fan speed. When the control is in Automatic mode, the potentiometer is only used to set the initial speed of the fan. After that, the control will automatically adjust the fan speed to ensure the PDS stays closed during appliance operation.

A second potentiometer, labeled PG Time, is located on the top right corner of the control board. The post purge time is adjustable from 0 (no post purge) to 3 minutes. Turning the knob clockwise increases the post purge time while turning it counter-clockwise decreases the time.

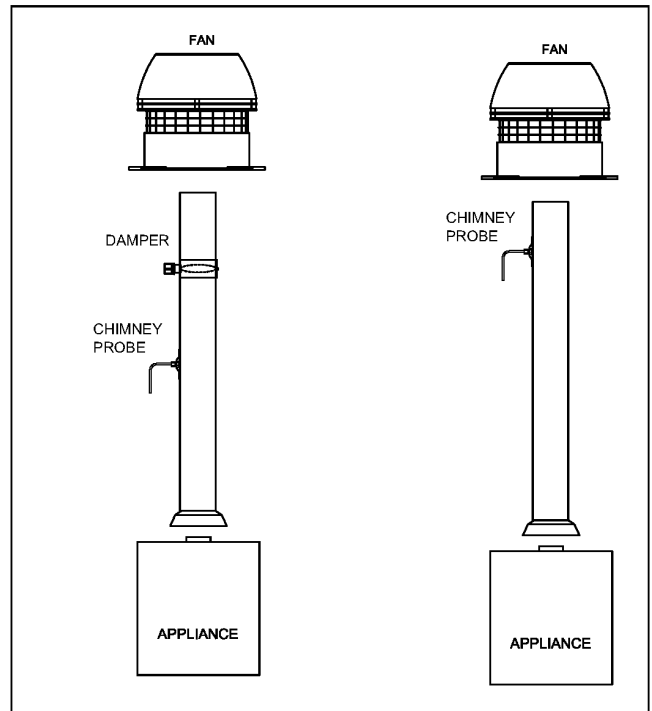


Fig. 4

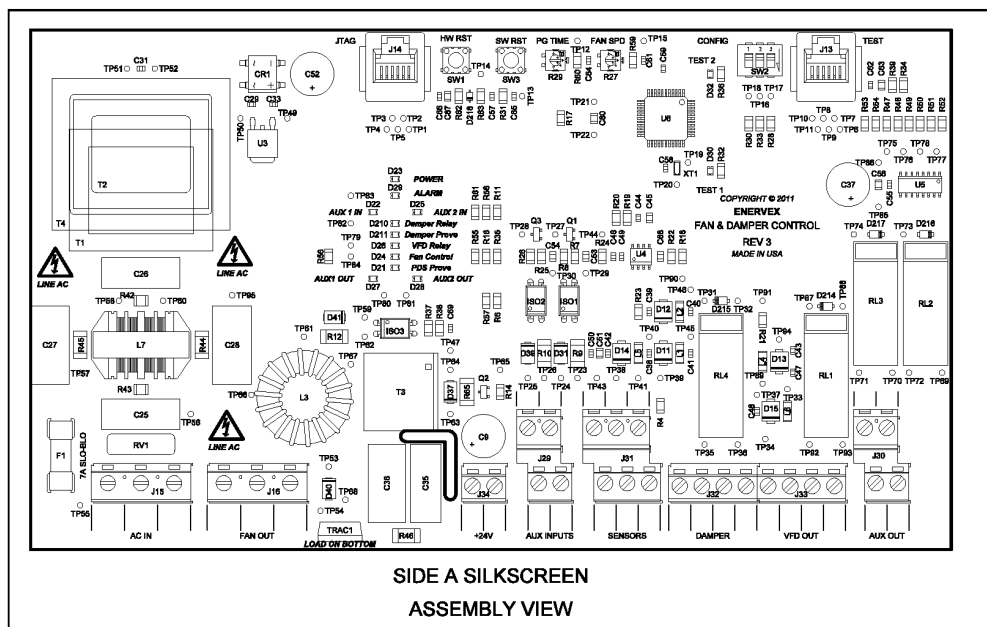



Fig. 5

## 4. ELECTRICAL INSTALLATION

### 4.1 GENERAL

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

 ADC100 is designed for 1x120VAC power supply only.

The designations for each terminal on the control board are shown below. Note that some installations may not require the use of all terminals. Also shown in this section is a general connection diagram for an ADC100 control system.

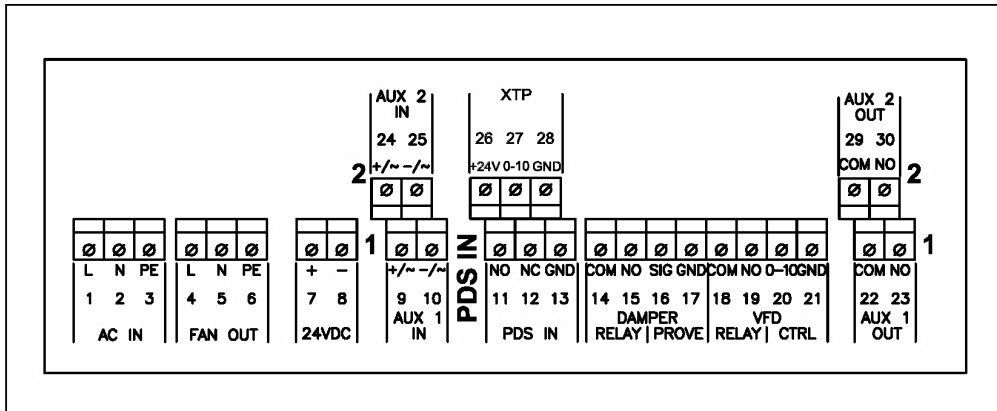


Fig. 6

Terminal	Use
1	Power Supply - L1
2	Power Supply - N
3	Power Supply - Ground
4	Chimney Fan- L1
5	Chimney/Exhaust Fan - N (regulating)
6	Chimney/Exhaust Fan- Ground
7	+ 24 VDC Out
8	Ground (-24 VDC) Out
9-10	Auxiliary Appliance Input 1 (10-240 VAC or 5-30 VDC)
11	PDS- Normally Open
12	PDS- Normally Closed
13	PDS- Common

Terminal	Use
14-15	Damper Relay
16-17	Damper Prove
18-19	VFD Relay
20	0-10 VDC Output
21	0 VDC Output (Gnd)
22-23	Auxiliary Appliance Output 1 (Max Amperage 250 VAC 8 A)
24-25	Auxiliary Appliance Input 2 (10-240 VAC or 5-30 VDC)
26	XTP- +24 VDC Out - Not Applicable
27	XTP In (0-10 VDC) - Not Applicable
28	XTP In (0 VDC) - Not Applicable Max Amperage 250 VAC 8 A)

## 4.2 CONNECTION DIAGRAM

The connection diagram shown in Fig. 7 below shows typical connections for a single phase fan. If a 3-phase fan is used, a VFD must be connected between the fan and control.

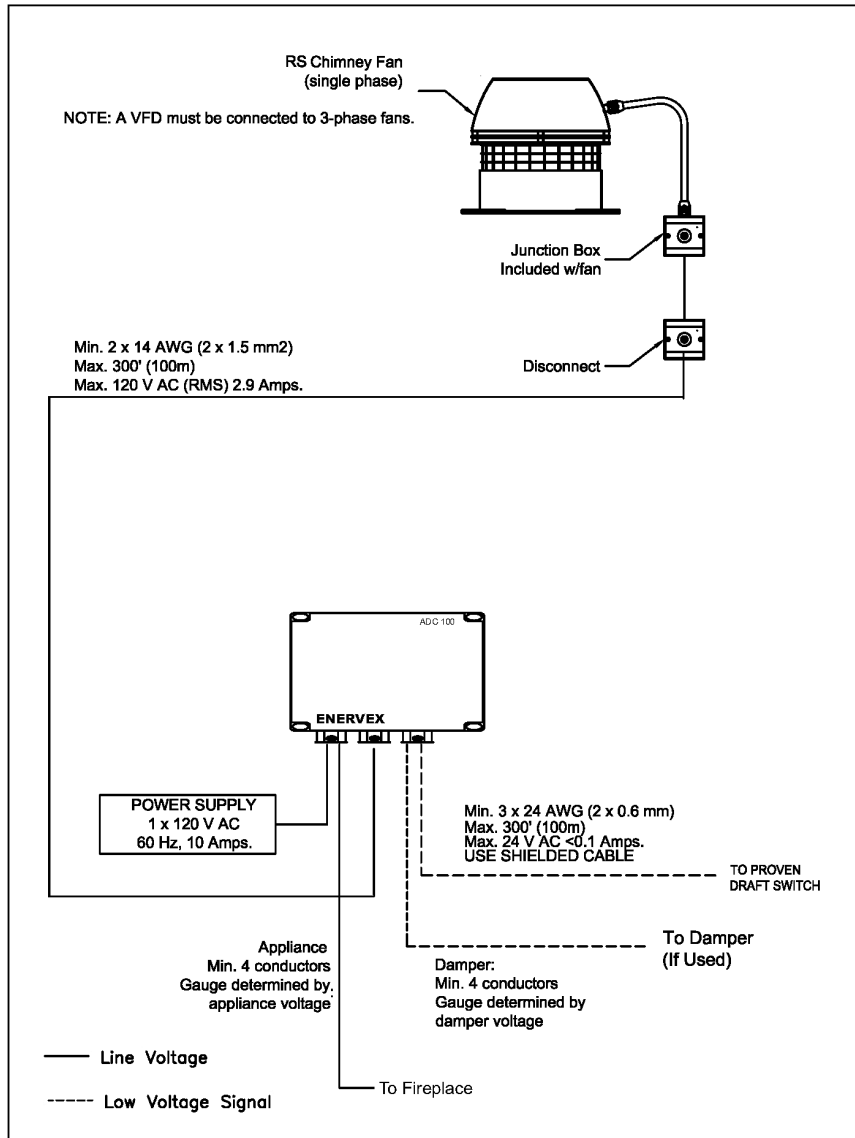


Fig. 7

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## 5. STARTUP AND CONFIGURATION

### 5.1 GENERAL

Dip switches are located on the control board to allow the user to specify certain functions of the ADC100. Verify settings using the table below.

DIP SWITCH	NAME	OFF	ON	DEFAULT POSITION
<b>1 (Left)</b>	MANUAL RESET	Automatic reset at power failure or insufficient draft	Manual reset at power failure or insufficient draft	OFF
<b>2 (Center)</b>	MANUAL ADJ	Automatic Mode-control speeds up fan if PDS opens during operation	Manually adjust fan speed using potentiometer	OFF
<b>3 (Right)</b>	PDS CHECK*	No monitoring to see if the PDS was in NC position prior to start	The PDS must be in NC position prior to start	ON

NOTE: Do NOT turn PDS check off unless requested by the factory technical support.



## 5.2 SEQUENCE OF OPERATION

The sequence of operation flow chart is shown in Figure 11 below.

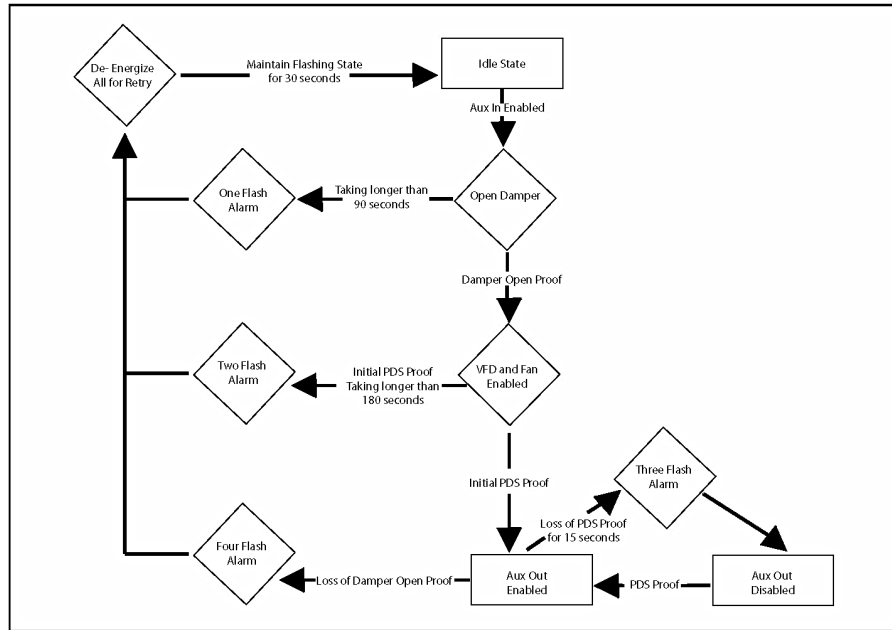


Fig. 11

### Alarm Stages

Flashes 1 - if damperprove does not close 90 seconds after auxin, go into alarm for 30 seconds, followed by a full retry

Flashes 2 - if initial pdsprove does not close 180 seconds after damperprove, go into alarm for 30 seconds, followed by a full retry

Flashes 3 - if pds loses proof for 15 seconds after initial pdsprove, auxouts de-energize, stay in alarm until pdsprove returns and auxout will re-energize

Flashes 4 - if at any point after auxout proves the damperprove is removed, the board immediately goes into alarm for 30 seconds, followed by a full retry

Flashes 5 - \*must have sw3 on\* if pds is proved prior to auxin, board will go into alarm and no further states can be achieved until proof is removed

### Start Sequence

1. A call for heat from the appliance energizes the ADC100 inputs at terminals 9 and 10.
2. If a damper is connected, it begins to open. Once open, the damper prove contact closes (Terminals 16 and 17).
3. The ADC100 begins to ramp up the fan.
4. The Proven Draft Switch closes when adequate draft is achieved and ADC100 adjusts fan to speed setting on the potentiometer.
5. The ADC100 control releases the appliance for operation by closing dry contact between terminals 22 and 23 (and terminals 29 and 30).

### Operating Sequence

Manual Mode:

1. Fan runs at a constant speed and can be adjusted during normal operation using the potentiometer.
2. If the Proven Draft Switch opens, a 15 second timing cycle starts.
3. If the Proven Draft Switch has not been made within 15 seconds, the auxiliary out contact opens and an alarm condition exists.
4. If the Proven Draft Switch closes, the control automatically resumes normal operation at set speed.

Automatic Mode:

1. Fan runs at speed setting of the potentiometer but cannot be adjusted using the potentiometer during operation.
2. If the Proven Draft Switch opens, the fan begins to ramp up.
3. If PDS closes, fan speed remains at that speed.
4. If the PDS has not closed by the time the fan has ramped up to 100% speed, a 10 second timing cycle begins.
5. If PDS does not close within 15 seconds the auxiliary out contact opens and an alarm condition exists.
6. If the Proven Draft Switch closes while the control is in alarm, the fan will resume the original speed setting.

### Shutdown Sequence

1. The call for heat signal from the appliance is turned off.
2. Fan output continues at pre-set speed for the set post purge time (0-3 minutes).
3. Fan output is set to zero.

---

### 5.3 OPERATING PRESSURE

The operating pressure of the ADC100 Control is determined by the PDS switch. The PDS-1 used with the ADC100 has a pressure setting of 0.05" W.C. +/- 0.03" W.C. As long as the pressure is within this range, the fireplace and/or appliance will continue to operate. Should the pressure fall outside of this range, it may be necessary to adjust the fan speed. The user may use a manometer or other device to read the pressure inside the stack.

For fireplaces, a standard smoke/ flame test should be performed before normal operation (specified in appliance manual). This test will determine if the fan is running at the correct speed.

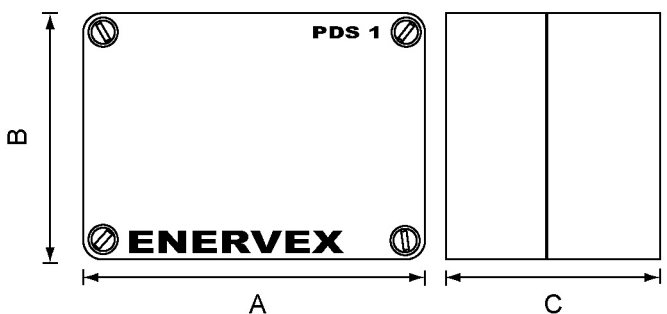
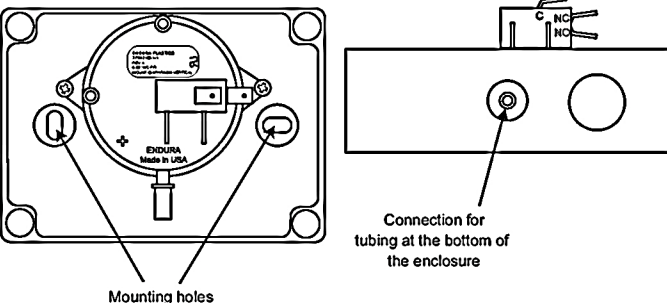


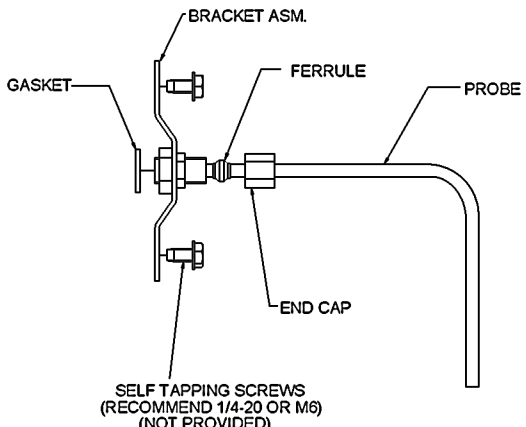
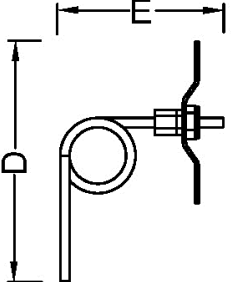
# Proven Draft Switch and Chimney Probe

## Specifications

The Proven Draft Switch (PDS1) and Chimney Probe create a safety mechanism that monitors the pressure inside the vent pipe. In the event Chimney Probe measures a pressure drop in the vent pipe, the PDS1 will communicate with the ADC 100 and shut off the supply of gas to the fireplace.

Proven Draft Switch (PDS)	
Maximum Load	1x120 VAC
Amperage	3 A
Range of Operation	.05 to .50 in WC / 13 to 135 Pa
Temperature Limits	-40°F to +190°F / -40°C to +88°C
Max. Pressure	3 PSI / 207 mbar
Wiring Connections	1/4" Solderless Quick Connect Terminals
Pressure Connections	Two plastic tubes, outside diameter of 1/4" (6.0mm)
Weight	9.6 oz / 0.275 kg
Dimensions	A: 5.12 in / 130 mm
	B: 3.7 in / 94 mm
	C: 3.19 in / 81 mm

Chimney Probe	
Dimensions	Components
D: 4.25 in / 108 mm	
E: 3.50 in / 89 mm	
	

## Installation

The following installation instructions were taken from pages 5-7 of the EnerveX PDS Fan Proving Switch Installation Manual.

### 3. MECHANICAL INSTALLATION

#### 3.1 GENERAL

The PDS 1 is for indoor installation only. The PDS 1 must be installed in a vertical position with the pressure connection pointing down. Secure the switch by using the mounting holes as shown on the figure. After installation connect the tubing from the probe onto the port marked accessible through the small of the plastic enclosure. Connect tubing to the NEGATIVE (-) port on the PDS.

Factory wiring comes with three wires that are already crimped onto the PDS. The purpose of these wires is to provide a point in which you can extend the length of the wire by using wire nuts and additional wire (not provided).

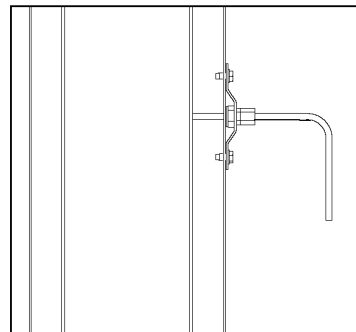
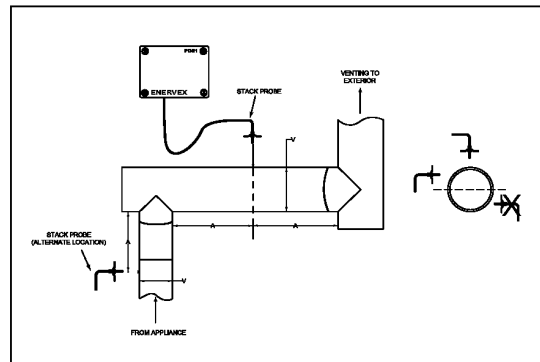
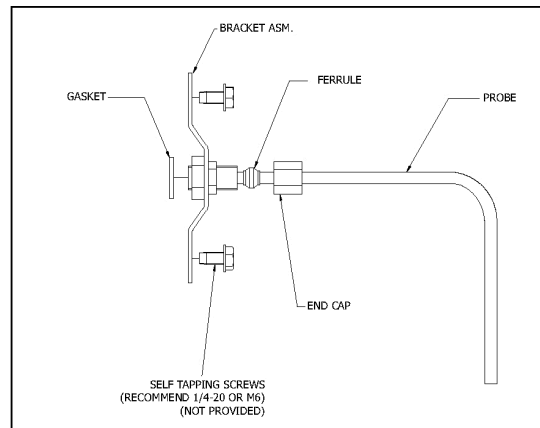
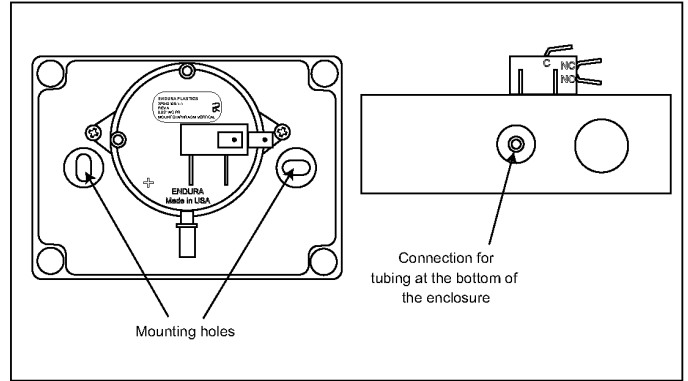
#### 3.2 INSTALLATION OF STACK PROBE FOR PDS 1

A stack probe is used with ENERVEX Proven Draft Switches (PDS). The PDS 1 monitors the pressure inside the stack and signals the control to shut down the appliance if insufficient draft exists inside the stack. The probe must be installed between the appliance and the exhaust fan.

For all installations, the stack probe must be placed so the flow through the stack is perpendicular to the tip of the probe. Locate the probe at least the distance "A" away from any elbows or tees in the stack. The distance "A" is defined as at least three (3) vent diameters;  $A \geq 3 * V$  (see figure below). To prevent condensation from entering the probe or PDS when installed on a horizontal stack, the probe must be installed above the centerline of the stack. For fireplace installations, the stack probe should be installed as close to the exhaust fan as possible.

For the PDS to function properly, the probe must be placed in a location that can produce at least 0.05 inWC in the stack. In order to produce an accurate pressure reading, the tip of the probe must be mounted flush with the inside of the stack wall (it should never extend more than 1/16" beyond the wall). For a double walled stack, the tip should be flush with the inner most wall.

To mount the probe, drill a clearance hole through the stack wall(s). Insert the probe and attach the bracket to the stack using (2) customer provided self-tapping machine screws. Tighten the end cap to compress the ferrule and permanently install the stack probe. Attach the supplied silicon tubing at the other end of the probe.



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## **4. ELECTRICAL INSTALLATION**

### **4.1 WIRING THE PDS 1**

The PDS 1 must be wired in a Normally Open (NO) position when used with a mechanical draft system.

Make sure to observe the electrical rating of the switch as shown on page 3.

Please refer to the wiring diagram enclosed with the mechanical draft system.

### ***Startup***

---

## **5. STARTUP AND CONFIGURATION**

### **5.1 THE PRESSURE SETTING**

The pressure switch has a fixed pressure setting of .05" +/- .03" W.C.

If the switch will not stay closed while the appliance is operating properly, you may need to increase the fan speed or move the probe closer to the vent termination.

However, always make sure the draft at the appliance outlet stays within the manufacturer's specified range.

Under-drafting and over-drafting can cause damage to the appliance.

### **5.2 COMMISSIONING**

Start the heating appliance(s) and the mechanical draft system and make sure the PDS 1 stays closed.

Turn off the mechanical draft system. After less than 60 seconds all appliances should be shut down by the switch.

## Gas Solenoid Valve

### Specifications

The Gas Solenoid Valve is a safety mechanism that regulates the flow of gas to the fireplace. In the event that pressure in the vent pipe drops below normal limits, the gas solenoid will shut off the gas going to the fireplace.

### Features

- 2-way normally closed operation
- For gas control of gas burners.
- Valves provided with 1/8" NPT upstream and downstream pipe taps with plugs for routine testing.
- Mountable in any position.



### Construction – Valve Parts in Contact with Gas

<b>Body</b>	Aluminum
<b>Seals &amp; Disc</b>	NBR
<b>Core Tube</b>	305 Stainless Steel
<b>Core Guide</b>	Acetal
<b>Rider Ring</b>	PTFE
<b>Core &amp; Plugnut</b>	430F Stainless Steel
<b>Springs</b>	302 Stainless Steel
<b>Shading Coil</b>	Copper
<b>Pipe Plug</b>	Zinc-Plated Steel

### Electrical

Standard Coil Class of Insulation	Watt Rating & Power Consumption			Ambient Temp °F	Spare Coil Family	
	AC				General Purpose	Explosionproof
	Watts	VA Holding	VA Inrush		AC	AC
F	10.1	25	70	-40 to 125	238610	238614
H	10.1	25	70	-40 to 140	238810	-
F	15.4	27	160	-40 to 125	099257	-
H	15.4	27	160	-40 to 140	222345	-

Solenoid Enclosures	Valve Response Time	
Valve has RedHat II molded epoxy Types 1, 2, 3, 3S, 4, and 4X combinations. Standard valves have general purpose and watertight solenoid enclosures with 1/2" conduit hub as standard.	<b>Opening Time</b>	Less than 1 second
	<b>Closing Time</b>	Less than 1 second

**Installation**

The following instructions were taken from pages 1-2 of the ASCO Valve Manual.

# INSTALLATION AND MAINTENANCE INSTRUCTIONS

2-WAY DIAPHRAGM OPERATED  
SOLENOID VALVES – 3/8, 1/2 AND 3/4 N.P.T.  
NORMALLY CLOSED CONSTRUCTION

BULLETIN

**8215**



**DESCRIPTION**

Bulletin 8215's are 2-way, normally closed, internal pilot, diaphragm operated solenoid valves with die cast aluminum bodies for air and gas service. The standard valves have a General Purpose, NEMA Type 1 Solenoid Enclosure. Valves may be equipped with an enclosure which is designed to meet NEMA Type 4 - Watertight, NEMA Type 7 (C or D) Hazardous Locations - Class I, Group C or D, and NEMA Type 9 (E, F or G) Hazardous Locations - Class II, Group E, F or G. For Installation and Maintenance Instructions for Explosion-Proof/Watertight Solenoids, refer to Form No. V-5391 or V-5380.

**OPERATION**

**Normally Closed:** Valve opens when solenoid is energized and closes when solenoid is de-energized.

**IMPORTANT:** Minimum pressure differential 5 P.S.I.

**INSTALLATION**

Check nameplate for correct catalog number, pressure, voltage and service.

**TEMPERATURE LIMITATIONS**

For maximum valve ambient and fluid temperature limitations, refer to the following chart. The temperature limitations listed are for UL applications. For other valves and non-UL applications, higher ambient and fluid temperature limitations are available. Consult factory. Check catalog number on nameplate to determine maximum temperature.

Construction	Coil Class	Catalog Number Prefix	Maximum Ambient Temp. °F	Maximum Fluid Temp. °F
A-C Construction (Alternating Current)	A	None	77	77
	F	FT	104	104
	H	HT	140	140
D-C Construction (Direct Current)	A, F or H	None, FT or HT	77	77

**POSITIONING/MOUNTING** (Refer to Figure 1)

**A-C Construction** - valve is designed to perform properly when mounted in any position. However, for optimum life and performance, the solenoid should be mounted vertical and upright so as to reduce the possibility of foreign matter accumulating in the core tube area.

**D-C Construction** - valve must be mounted with solenoid vertical and upright.

**PIPING**

Connect piping to valve according to markings on valve body. Apply pipe compound sparingly to male threads only; if applied to valve threads, it may enter valve and cause operational difficulty. Pipe strain on valve body should be avoided by proper support and alignment of piping. When tightening connections, do not use body or solenoid as a lever. Wrenches applied to valve body or piping are to be located as close as possible to connection point.

**CAUTION:** To avoid damage to the valve body, **DO NOT OVERTIGHTEN PIPE CONNECTIONS.** If teflon tape, paste, spray or similar lubricant is used, use extra care due to reduced friction.

**IMPORTANT:** For protection of the solenoid valve, install a strainer or filter suitable for the service involved in the inlet side as close to valve as possible. Periodic cleaning is required depending on service conditions. See Bulletins 8600, 8601 and 8602 for strainers.

**WIRING**

Wiring must comply with Local and National Electrical Codes. Housings for all solenoids are made with connections for 1/2 inch conduit. The general purpose solenoid enclosure may be rotated to facilitate wiring by removing the retaining cap or clip. **CAUTION:** When metal retaining clip disengages, it will spring upward. Rotate to desired position. Replace retaining cap or clip before operating.

**NOTE:** Alternating Current (A-C) and Direct Current (D-C) Solenoids are built differently. To convert from one to the other, it is necessary to change the complete solenoid.

**SOLENOID TEMPERATURE**

Standard catalog valves are supplied with coils designed for continuous duty service. When the solenoid is energized for a long period, the solenoid enclosure becomes hot and can be touched by the hand only for an instant. This is a safe operating temperature. Any excessive heating will be indicated by the smoke and odor of burning coil insulation.

**MAINTENANCE**

**WARNING:** Turn off electrical power supply and depressurize valve before making repairs. It is not necessary to remove valve from pipe line for repairs.

**CLEANING**

A periodic cleaning of all solenoid valves is desirable. The time between cleanings will vary, depending upon media and service conditions. In general, if the voltage to the coil is correct, sluggish valve operation, excessive leakage or noise will indicate that cleaning is required. Be sure to clean valve strainer or filter when cleaning solenoid valve.

**ASCO Valves**



Form No. V-5494R1

PRINTED IN U.S.A.

1975

Automatic Switch Co.

FLORHAM PARK, NEW JERSEY 07932

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## PREVENTIVE MAINTENANCE

1. Keep medium flowing through valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to insure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

## IMPROPER OPERATION

1. **Faulty Control Circuit:** Check electrical system by energizing solenoid. A metallic click signifies that the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown-out fuses, open circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open circuited coil. Replace coil if necessary.
3. **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to the valve must be within range specified on nameplate.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace parts that are worn or damaged with a complete Spare Parts Kit for best results.

## COIL REPLACEMENT

Turn off electrical power supply and disconnect coil lead wires.

1. Remove retaining cap or clip, nameplate and cover. **CAUTION: When metal retaining clip disengages, it will spring upward.**
2. Slip yoke containing coil, sleeves and insulating washers off solenoid base sub-assembly. For D-C Construction, slip spring washer, coil and insulating washers off solenoid base sub-assembly.
3. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.

**CAUTION: Solenoid must be fully reassembled as the housing and internal parts are part of and complete the magnetic circuit. Place insulating washers at each end of coil, if required.**

## VALVE DISASSEMBLY

Depressurize valve and turn off electrical power supply. Proceed in the following manner:

1. Remove retaining cap or clip and slip entire solenoid enclosure off solenoid base sub-assembly. **CAUTION: When metal retaining clip disengages, it will spring upward.**
2. **A-C CONSTRUCTION** (Refer to Figure 2)
  - A. Remove bonnet screws (4) and lift solenoid base sub-assembly off valve body.
  - B. Remove core spring, core assembly and diaphragm spring.
2. **D-C CONSTRUCTION** (Refer to Figure 3)
  - A. Unscrew solenoid base sub-assembly and remove bonnet gasket.
  - B. Remove bonnet screws (4) and lift bonnet off valve body.
  - C. Remove core assembly and core spring.
3. Remove diaphragm assembly. **CAUTION: Do not damage pilot seat on upper side of diaphragm.**
4. Remove body gasket.
5. All parts are now accessible for cleaning or replacement. Replace worn or damaged parts with a complete Spare Parts Kit for best results.

## VALVE REASSEMBLY

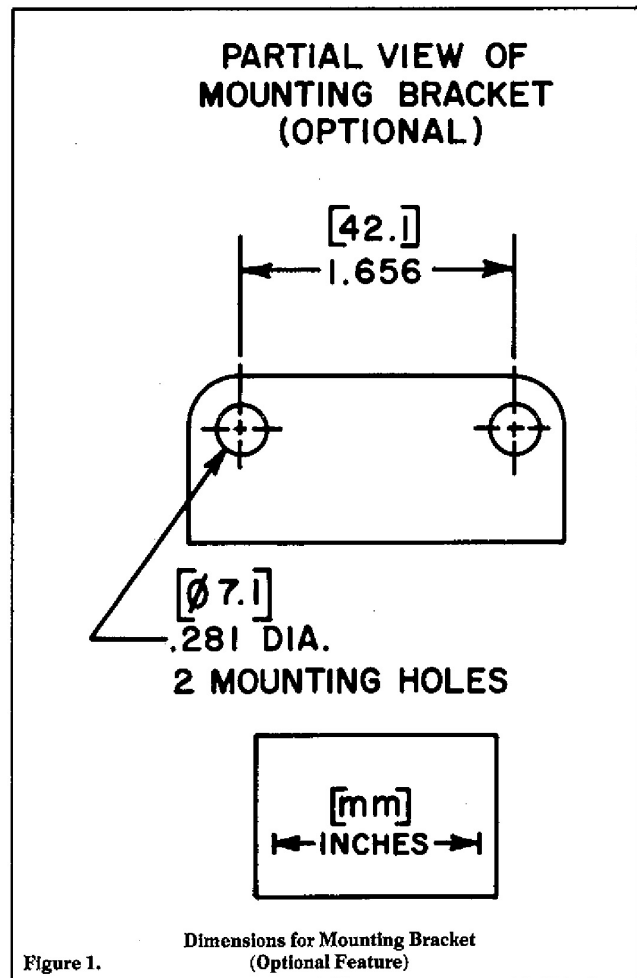
1. Clean all parts and passageways thoroughly.
2. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for identification and placement of parts.
3. When replacing core spring in core for A-C Construction, closed end of spring must protrude from top of core.
4. For D-C Construction, torque solenoid base sub-assembly to  $175 \pm 25$  inch pounds.
5. Torque bonnet screws (4) to  $110 \pm 10$  inch pounds.
6. After maintenance, operate valve a few times to be sure of proper opening and closing.

## SPARE PARTS KITS

Spare Parts Kits and Coils are available for ASCO valves. Parts marked with an asterisk (\*) are supplied in Spare Parts Kits.

### ORDERING INFORMATION FOR SPARE PARTS KITS

When Ordering Spare Parts Kits or Coils  
Specify Valve Catalog Number,  
Serial Number and Voltage.



**ASCO Valves**  
**Automatic Switch Co.**

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## Electrical

Power is supplied to the power vent fan from the ADC 100 control box. The power cable for the ADC 100 control box and the fireplace AC Adapter may be plugged into a duplex receptacle (2 outlets). This requirement is already called out in the Ortal fireplace manual. No additional outlets are required unless the ADC 100 is not close enough to share the receptacle. In this situation, an additional single outlet must be supplied near the ADC 100. **For wiring diagrams showing the connection of the Energex system to the Ortal fireplace, see pages 8-10.**

 **Installation work and electrical wiring must be done by a qualified person(s) in accordance with applicable codes and standards.**

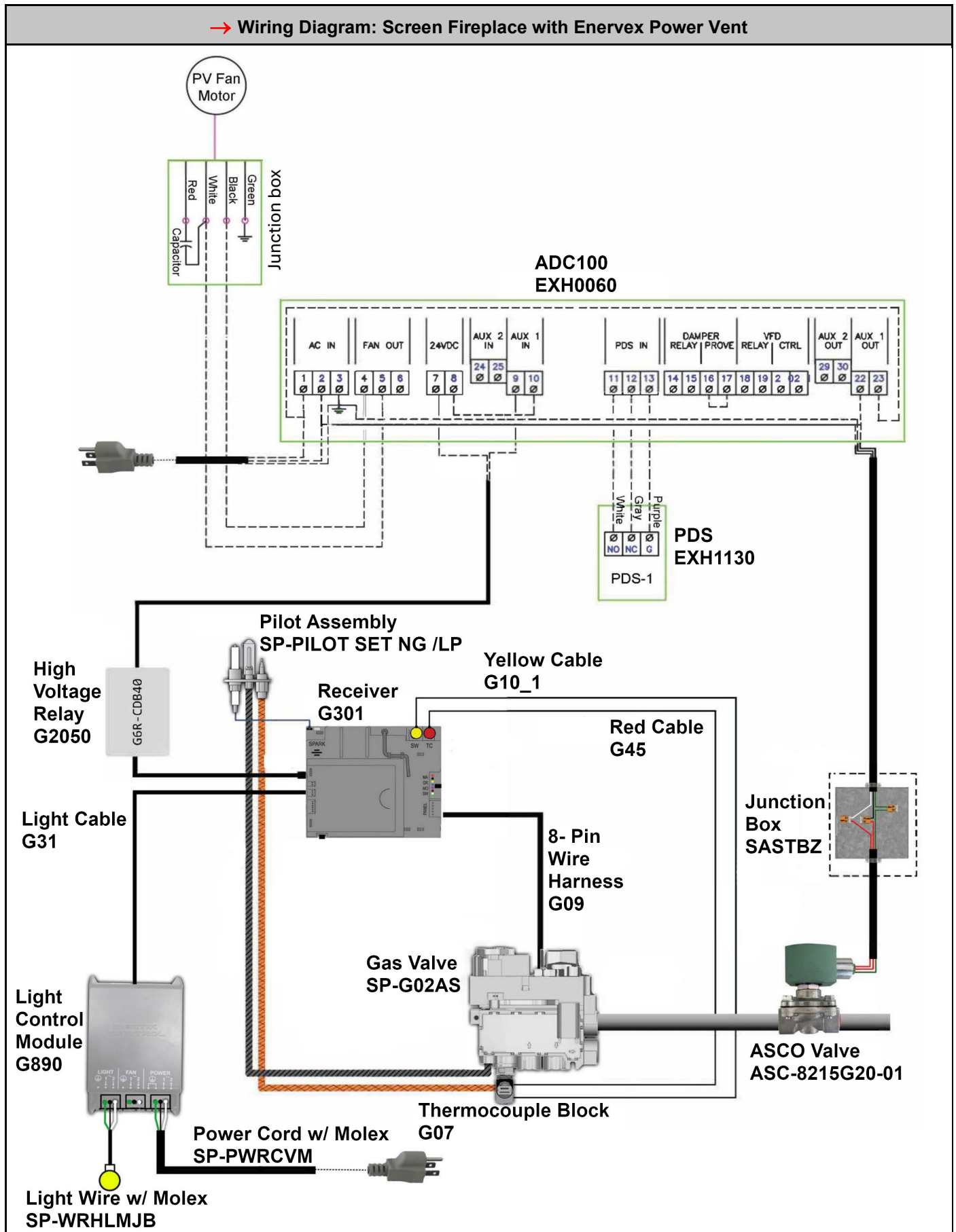
Electrical Outlet Requirements			
Duplex Receptacle with 2 outlets (This meets the electrical needs for the fireplace <i>and</i> power vent.)	120V	15 amp	Located near the access panel location (Or according to local code)

 **NOTE: The system requires a continuous power supply and will not operate on battery power or during power failure.**

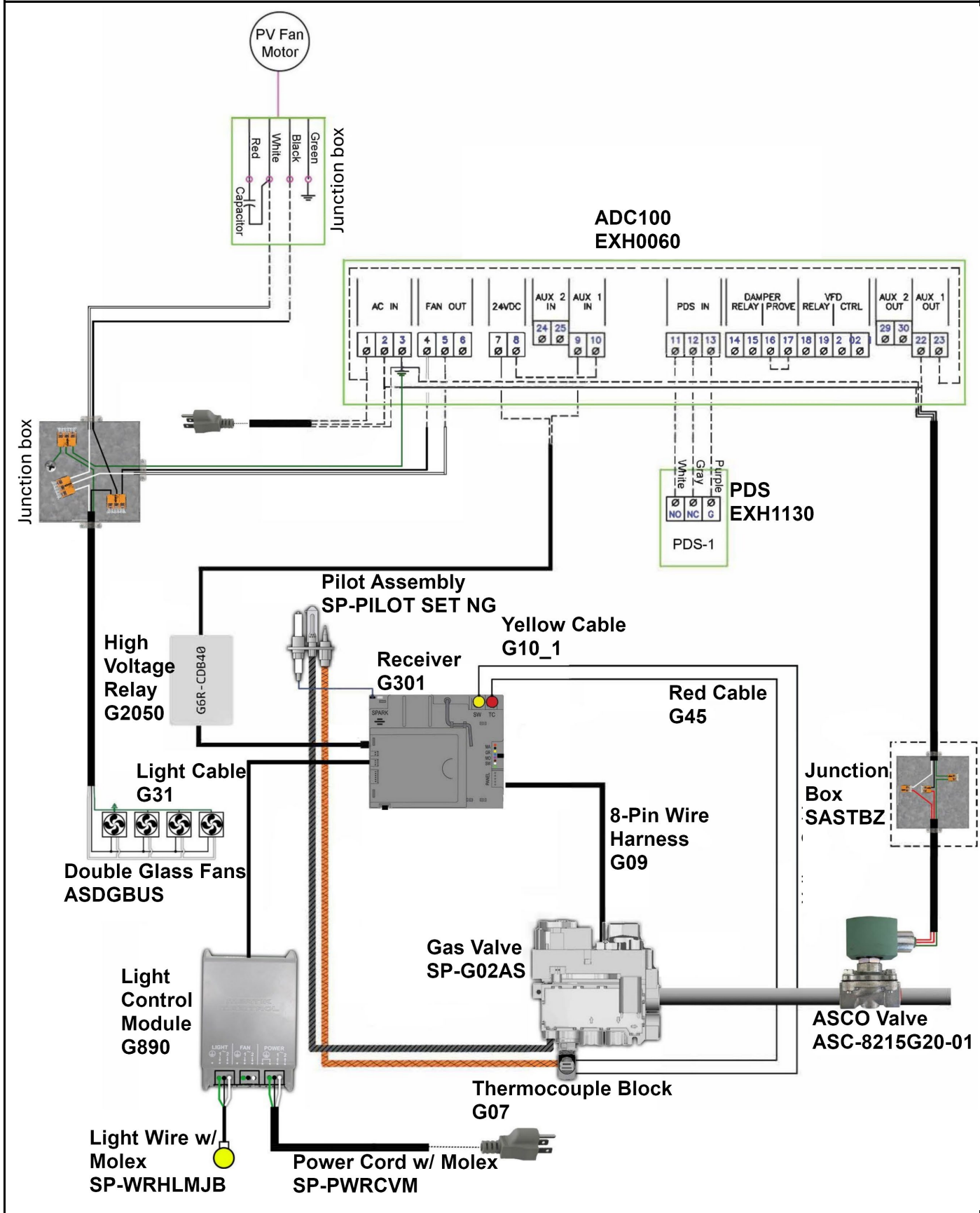
# Wiring Diagrams

The following diagrams show the electrical wiring required to connect the Enervec and Ortal system.

**NOTE:** These wiring diagrams are identical to the wiring diagrams on pages 9-10.



→ Wiring Diagram: Double Glass Fireplace with Enerverx Power Vent



# Operation

An Ortal fireplace equipped with an Enervex RS Power Vent System is operated in the same manner as a standard Ortal fireplace, including remote controlled on/off and flame control. Basic operation for the 10-Button Remote Control Handset is provided below. For operation instructions for the Puck Handset, Wall Switch, or MyFire App, or for more in-depth operation instructions, please consult the appropriate “Homeowner’s Fireplace Operation Manual” or “Remote Operation Instructions”.

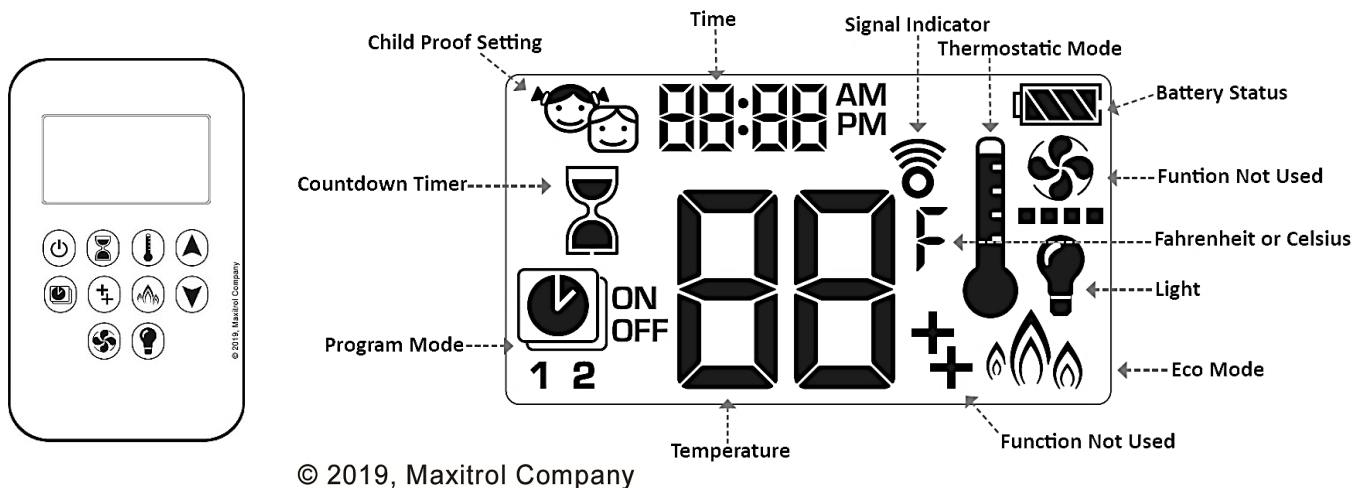
**WARNING** – Read these instructions carefully before lighting the fireplace.

**IMPORTANT:** The 10-Button remote control handset is always included with the fireplace regardless of which operation option is chosen. **DO NOT DISCARD.** The 10-Button remote must be kept within 26 feet of the fireplace at all times.

**NOTES:**

- Wiring of valve and receiver must be completed before starting ignition. Failure to do so could damage the electronics.
- If operating the fireplace without an AC adapter, battery replacement is recommended at the beginning of each heating season.
- Fireplaces with double glass, power vent, and/or interior lighting features must operate using the AC Adapter and therefore will not operate during a power failure.
- Only the Mertik Maxitrol AC Adapter is permitted for use with the fireplace. Use of other adapter brands can render the system inoperable. The handsets, receivers, wall switches are not interchangeable with other electronics.
- Batteries must be kept within their recommended temperature limits (32°F to 131°F).

## 10-Button Remote Control Handset



Control Option	Radio Frequency	Power Supply	
10-Button Handset	918.0 MHz (U.S. & Canada)	2 x 1.5V AAA batteries (quality alkaline recommended)	Replace batteries after 2 years or when low battery indicator appears on handset display

**IMPORTANT:** For safety/communication purposes, 10-button handset must be located within 26 feet of the receiver.

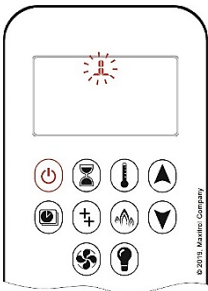
**NOTE:** Any device that functions using the same radio frequency as the handset will be affected when handset is in use.


## Operating Instructions

Instructions for operating the 10-Button Handset are shown below. For more in-depth instructions, please refer to the "Homeowner's Fireplace Operation Manual" or "Remote Operation Instructions".

**NOTE:** Some options on the remote may not be available for all fireplaces.

### Turning the Fireplace On




1. Press the  button until you hear continuous beeping, and a blinking series of lines confirms the start sequence has begun; release buttons.
2. Main gas flows once pilot ignition is confirmed.
3. The system automatically goes into Manual Mode after main burner ignition.

**NOTE:** When pilot ignition is confirmed, motor turns automatically to maximum flame height.

**NOTE:** If the Timer function has been set and the fireplace is manually turned on, the Timer function will need to be reset.

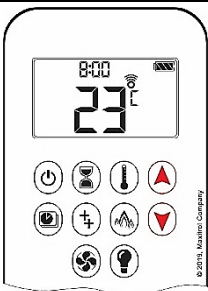
### Turning the Fireplace Off





1. Press the  button to turn the fireplace off.

**NOTE:** The fireplace may be turned on again after the OFF icon stops flashing.

### Flame Height Adjustment



1. To increase flame height, press and hold the  button to desired flame height.
2. To decrease flame height, or to set fireplace to pilot flame only, press and hold the  button.

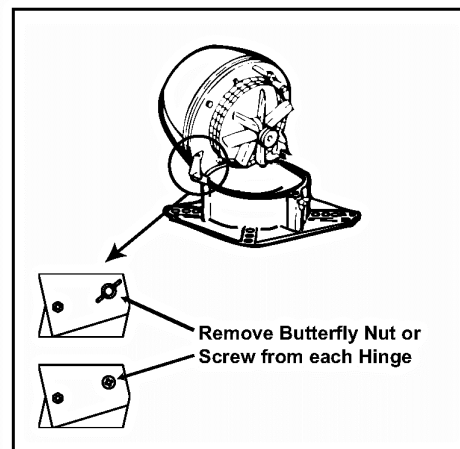
## RS Series Power Vent Fan

The following instructions were taken from pages 16-17 of the Enervex RS Chimney Fan Installation Manual.

### 6. MAINTENANCE AND TROUBLESHOOTING

#### 6.1 PRIOR TO CLEANING

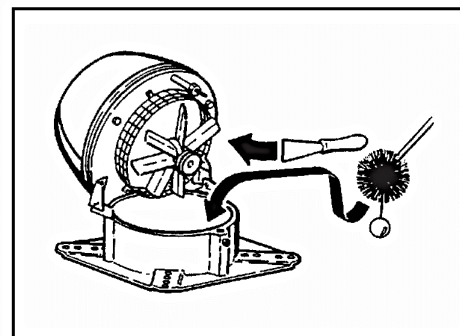
Remove butterfly nut or screw from each hinge prior to cleaning.



#### 6.2 CARE AND CLEANING

The Chimney Fan System is designed for prolonged use. The fan should be inspected at least one a year when the chimney is inspected. Fuel residues and other deposits should be removed from the fan blades and the bottom of the motor housing.

The top of the fan is hinged and can be opened in order to ease the cleaning.



#### 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.

#### 6.3 CHIMNEY CLEANING INTERVALS

It is extremely important to keep the chimney flue clean from combustion and deposits. Unburned oil residues can cause chimney fires.

Cleaning intervals depend on the use of the appliance. The more the appliance is used, the more often the chimney flue needs cleaning. As there are no firm guidelines for cleaning intervals, have the chimney inspected on a regular basis (every quarter or so) to determine what the interval should be. Then follow this interval.

No matter how much used, a chimney flue should be cleaned and inspected at least once every year.

NOTE:

The chimney should be cleaned by a trained professional.

We recommend using a Certified chimney sweep certified by Chimney Safety Institute of America.

You can find a Certified Chimney Sweep at [www.csia.org](http://www.csia.org) or [www.ncsg.org](http://www.ncsg.org) or by calling (317) 837-5362 or (317) 837-1500.

RS Power Vent Fan		
Observation	Problem	Solution
There is no power going to the fan.	The circuit breaker may be off.	Check the circuit breaker.
	Fan speed control is off.	Turn fan speed control on.
	Bad electrical connections.	Check and correct problem.
There is power to the fan, but it is not operating.	Bad electrical connections.	Check and correct problems with connections. Pay special attention to the wiring in the junction box.
	The fan speed control's low voltage setting is too low.	Increase the setting with the plastic screw on the fan speed control's front plate.
	The fan speed control is bad.	Replace the fan speed control.
There is power to the fan, but it hums and does not turn.	The motor run capacitor may be bad.	Check capacitor and replace if necessary.
	Creosote may stick.	Clean fan.
The fan seems to work fine, but there is not enough draft.	The fan may be undersized.	Replace with a larger fan.
The fan vibrates.	The motor shaft may be bent.	Replace motor.
There is airflow noise from the fireplace opening.	The flue is undersized.	There is not much to do about it. Try to reduce the fireplace opening.
	The fan is oversized and running too fast.	Reduce the fan speed.
Mechanical noise can be heard.	Foreign matter may be stuck.	Remove matters.
	Motor bearings may be worn out.	Replace bearings.

## ADC 100 Control Box

The following instructions were taken from page 16 of the Enervex ADC 100 Fan Control Installation Manual.

ADC 100 Control Box		
Observation	Problem	Solution
Heating appliance/fireplace cycle on and off.	Potentiometer setting is too low.	Turn potentiometer clockwise to increase fan speed.
Fan is 'hunting' (increasing speed and then decreasing speed constantly).	Fan speed control is set too low.	Increase potentiometer setting.
	Draft in chimney fluctuates.	Move Stack Probe closer to fan.
Fan will not come on.	ADC100 is not wired correctly.	Check wiring and correct.
	There may be sufficient natural draft	If the PDS is closed when the start signal is applied, sufficient natural draft exists for the fan to run. The ADC100 can run the fan even during these conditions if dipswitch #1 is set to the ON position to initialize a PDS check during the startup sequence.
	Fan is not working	Check the fan and if necessary, repair or replace. Verify all wiring to fan and control is correct and control is receiving external power.
Heating appliance or fireplace will not come on.	Fan is not working. No power to the ADC100.	Check the fan and if necessary, repair or replace. Verify all wiring to fan and control is correct and control is receiving external power.
	Proven draft switch is not properly connected to the chimney.	Make sure the probe is properly inserted into the stack, so the tip of the probe is flush with the inside of the chimney.
	PDS is not working.	Replace relay or switch.
Heating appliance/fireplace will not shut off.	ADC100 is not wired correctly.	Check wiring and correct.

## Gas Solenoid

The following instructions were taken from page 2 of the Valvate ASCO Valve Manual.

### PREVENTATIVE MAINTENANCE

1. Keep medium flowing through valve as free from dirt and foreign material as possible.
2. While in service, operate valve at least once a month to ensure proper opening and closing.
3. Periodic inspection (depending on media and service conditions) of internal valve parts for damage or excessive wear is recommended. Thoroughly clean all parts. Replace any parts that are worn or damaged.

### IMPROPER OPERATION

1. **Faulty Control Circuit:** Check electrical system by energizing solenoid. A metallic click signifies that the solenoid is operating. Absence of the click indicates loss of power supply. Check for loose or blown-out fuses, open circuited or grounded coil, broken lead wires or splice connections.
2. **Burned-Out Coil:** Check for open circuited coil. Replace coil if necessary.
3. **Low Voltage:** Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.
4. **Incorrect Pressure:** Check valve pressure. Pressure to the valve must be within range specified on nameplate rating.
5. **Excessive Leakage:** Disassemble valve and clean all parts. Replace parts that are worn or damaged.

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Ortal USA  
2152 Citygate Drive, Columbus, OH 43219  
T: (818) 238-7000 | F: (818) 678-0541  
info@ortalheat.com | www.ortalheat.com