

OPERATING AND INSTALLATION INSTRUCTIONS

Models

185, 265, 335, 405

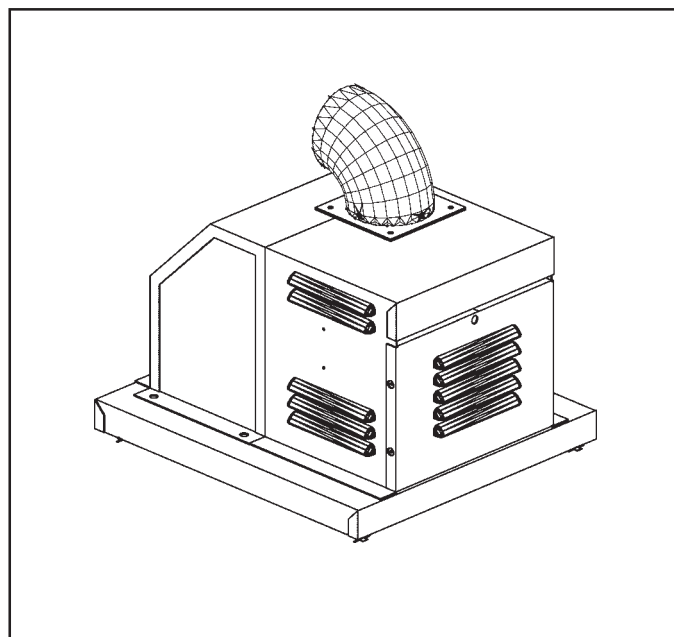
Swimming Pool and Spa Heaters

181/182, 260/261, 330/331, 400/401

Water Heaters and Boilers

D-2 POWER VENT

(FOR ELECTRONIC IGNITION MODELS ONLY)



FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to the user's information manual provided with this heater. Installation and service must be performed by a qualified installer, service agency or the gas supplier.

FOR YOUR SAFETY

WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

This manual should be maintained in legible condition and kept adjacent to the appliance or kept in a safe place for future reference.



Raypak®

A Rheem® Company

POWER VENT ASSEMBLY INSTALLATION, START-UP AND OPERATION

1. RECEIVING EQUIPMENT

On receipt of your equipment it is suggested that you visually check for external damage to the carton. If the carton is damaged, it is suggested that a note be made on the Bill of Lading when signing for equipment. Remove the complete assembly from the carton if it is damaged report the damage to the carrier immediately. Be sure that you receive the number of packages indicated on the Bill of Lading. Claims for shortages and damages must be filed with the carrier by consignee.

Purchased parts are subject to replacement only under the manufacturer's warranty. Debits for defective replacement parts will not be accepted and defective parts will be replaced in kind only per our standard warranties.

When ordering parts, you must specify Model and Serial Number of the unit. When ordering under warranty conditions, you must also specify date of Installation.

Raypak recommends that this manual be reviewed thoroughly before installing the D-2 Power Vent. If there are any questions which this manual does not answer, please contact your local Raypak Representative.

THIS MANUAL SHOULD BE MAINTAINED IN LEGIBLE CONDITION AND KEPT ADJACENT TO THE UNIT.

2. GENERAL SPECIFICATIONS

The D-2 Power Vent Assembly is tested and certified to the latest edition of the American National Standard **ANSI Z21.56**, standard for pool heaters, **Z21.10.3** for water heaters and **Z21.13** for boilers.

The Power Vent Assembly is a fan assisted combustion system designed for application to Raypak Pool Heater Models 185-405. The unit, when installed as directed, is capable of operating in applications such as through the wall venting and reduced horizontal and vertical vent pipe sizes in new and existing installations.

The D-2 Power Vent assembly includes a blower with a 120/240 volt 60 Hz 1.0/1.95A 3200 RPM motor, a plenum complete with a draft proving switch and a motor relay. When provided for field mounting the assembly is equipped with a wire harness.

MODEL SIZE	MINIMUM CONNECTION DIAMETER	KIT NUMBER	FACTORY WIRED
185	4"	008086	240V
265	4"	008086	240V
335	4"	008087	240V
405	4"	008087	240V
182/181	4"	008757	120V
260/261	4"	008757	120V
330/331	4"	008758	120V
400/401	4"	008758	120V

3. INSTALLATION REQUIREMENTS

The equipment must be installed in accordance with local codes, or in the absence of local codes with the latest edition of the National Fuel Gas Code, **ANSI Z223.1**, the National Electrical Code, **ANSI/NFPA 70**.

The equipment shall be installed in accordance with those installation regulations in force in the local area where the installation is to be made. These shall be carefully followed in all cases. Authorities having jurisdiction shall be consulted before installations are made.

MOUNTING POWER VENT ASSEMBLY

Follow these instructions if the PowerVent venting system was purchased as an option assembly kit.

1. Remove existing pagoda top (outdoor units) or draft hood (indoor units). To remove the pagoda top, push the four brackets inward and pull up the pagoda top. The pagoda may then be discarded.
2. Unscrew the four screws holding the outer top using a phillips screw driver. Remove the jacket top.
3. Replace the inner stack adapter. If the heater had a draft hood installed previously, remove the inner stack adapter and replace it with the PowerVent stack adapter. Otherwise, install the PowerVent stack adapter.
4. Unscrew the access panel on the right side of the appliance. Set aside the screws with the access panel.
5. Remove the knurled screw holding the front door and set it aside with the door.
6. Mount the jacket top above the unit. Note: Do not install at this point.
7. Mount the Power Vent on the outer top.
8. Route the conduit harness of the PowerVent thru the outer top hole, around the adapter towards the back of the unit. Continue routing the harness thru the corner slot, which leads to open area behind the access panel. Finally, route only the wire harness thru the 7/8" grommet hole located on the sway brace. Follow instructions on page 7 to wire the PowerVent. Note: Newer units have a 7/8" grommet located on the rain shield, which would eliminate routing the harness around the back corner.
9. Re-mount the jacket top to its original position and screw in the four screws holding it down to the appliance.
10. If the appliance is a 181, 182, 330 or 331, remove the tabs underneath the power vent using a 5/16" nut driver and relocate the closer to the center of the Power Vent.

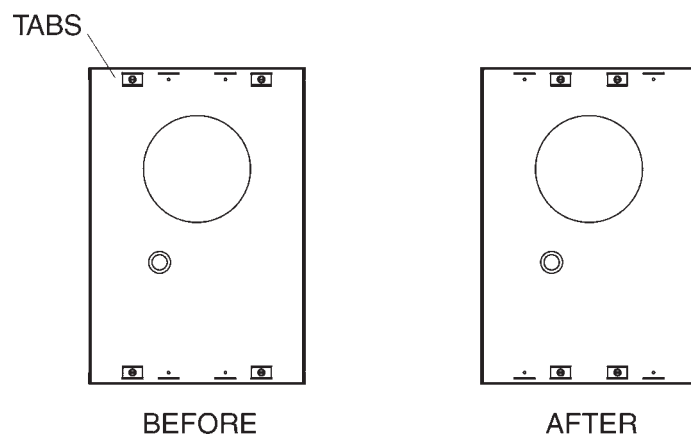


Fig #9372

MOUNTING POWER VENT ASSEMBLY-(continued)

11. Mount the PowerVent assembly bottom on the 6" vent. Twist the assembly downward. Snap the mounting brackets into their appropriate slot to hold the Power Vent in position.
Note: While twisting you may notice some roughness, this is due to a tight seal between the 6" vent and the Power Vent flue box.
12. Re-mount the access panel.
13. Re-mount the front door along with the knurled screw on the heater.

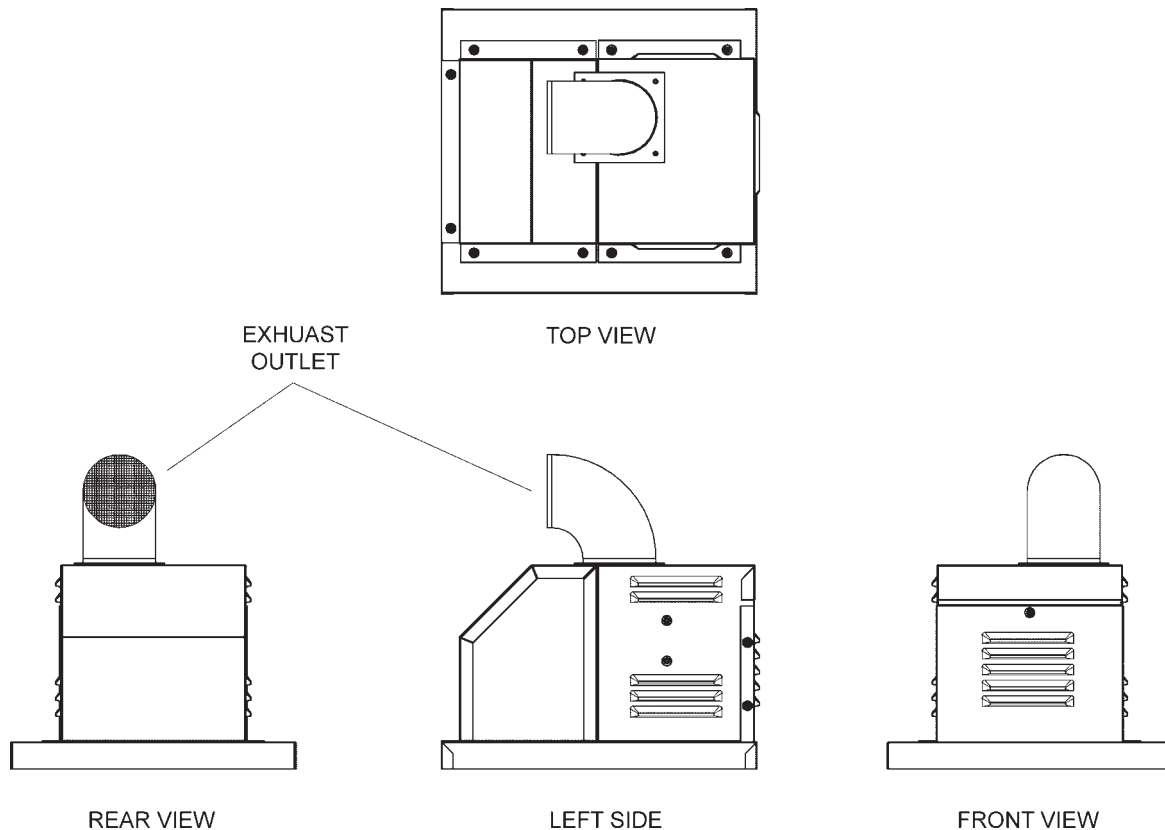


Fig #9356

** NOTE: The 90° elbow may be used as a termination cap.

WIRING A POWERVENT ASSEMBLY TO AN APPLIANCE WITH IID IGNITION.

WARNING: Disconnect all electrical power to the unit before servicing to avoid potential shock injury or damage to the unit. To change voltages, follow wiring diagram for correct voltage connections. Improper wiring connections can burnout the relay and blower motor.

VENTING

The vent pipe must be the same size or larger than what is indicated. The D-2 Power Vent are capable of 360-degree discharge rotation and operate with a positive vent static pressure and with a vent gas temperature less than 400°F. The total length of horizontal run shall not exceed an equivalent of 40 feet including termination cap. For all cases, each 90-degree elbow reduces the maximum horizontal vent run by 10 feet and each 45-degree elbow in the vent run reduces the maximum vent run by 5 feet. See the table for maximum vent lengths using 90-degree and 45-degree elbows. The D-2 Power Vent uses positive pressure to push flue gases through the vent pipe to the outside. The vent must be installed to prevent the flue gas leakage. Care must be taken during assembly to insure that all joints are sealed properly and are airtight.

The vent must be installed to prevent the potential accumulation of condensate in the vent pipes. It is recommended that:

- a) The vent be installed with a slight downward slope of not more than 1/4" per foot of horizontal run to the vent terminal.
- b) The vent be insulated through the length of horizontal run.

For appliances installed in extreme cold climate, it is recommended that:

- a) The vent be installed with a slight upward slope of not more than 1/4" per foot of horizontal run to the vent terminal. In this case, an approved condensate trap must be installed per applicable codes.
- b) The vent be insulated through the length of the horizontal run.

Reduced Maximum Equivalent Vent Run (feet)			
90 degree elbows		45 degree elbows	
Quantity	Maximum Length	Quantity	Maximum Length
1	30	1	35
2	20	2	30
3	10	3	25

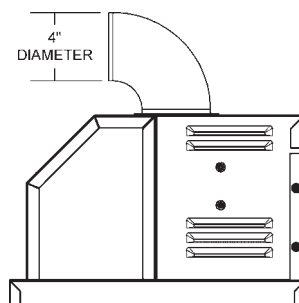
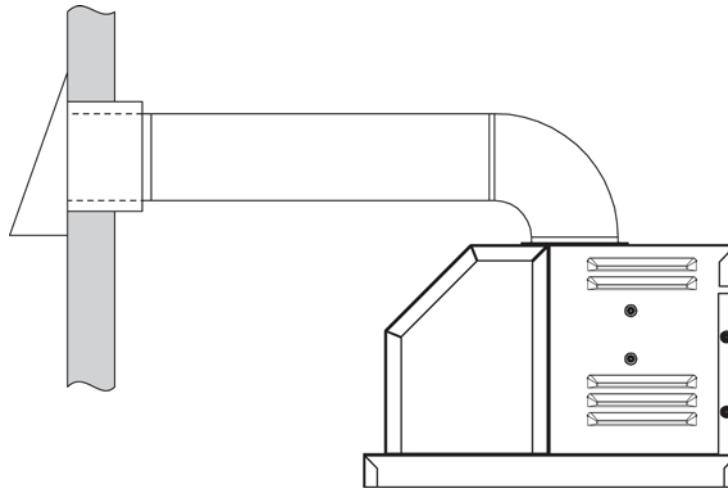


Fig #9357

The Raypak Power Vent operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent and as such it is listed as a **CATEGORY III** appliance.

Exception: When a Power Vent is connected to a vertical vent of sufficient height to generate a negative draft in the system. Consult sizing guide or factory.

The D-2 Power Vent assembly is suitable for through the wall venting, and for connection to smaller size vent pipes and breeching other than the standard atmospheric heater.



LEFT SIDE

Fig #9358

THROUGH THE WALL VENT

The D-2 Power Vent assembly includes a wire harness which provides quick connections with the respective controls in the heater control box. The harness is of sufficient length to fit the appliance for which it is sized.

Reference the wiring diagram supplied with each appliance for actual connections.

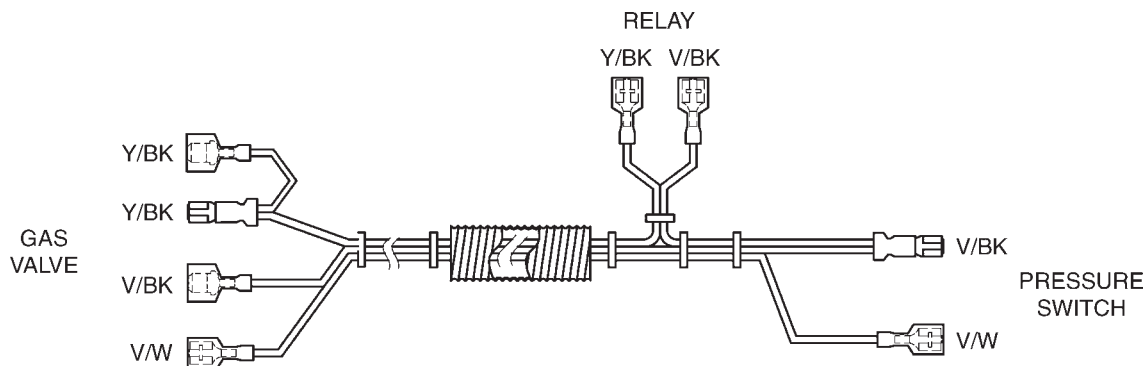
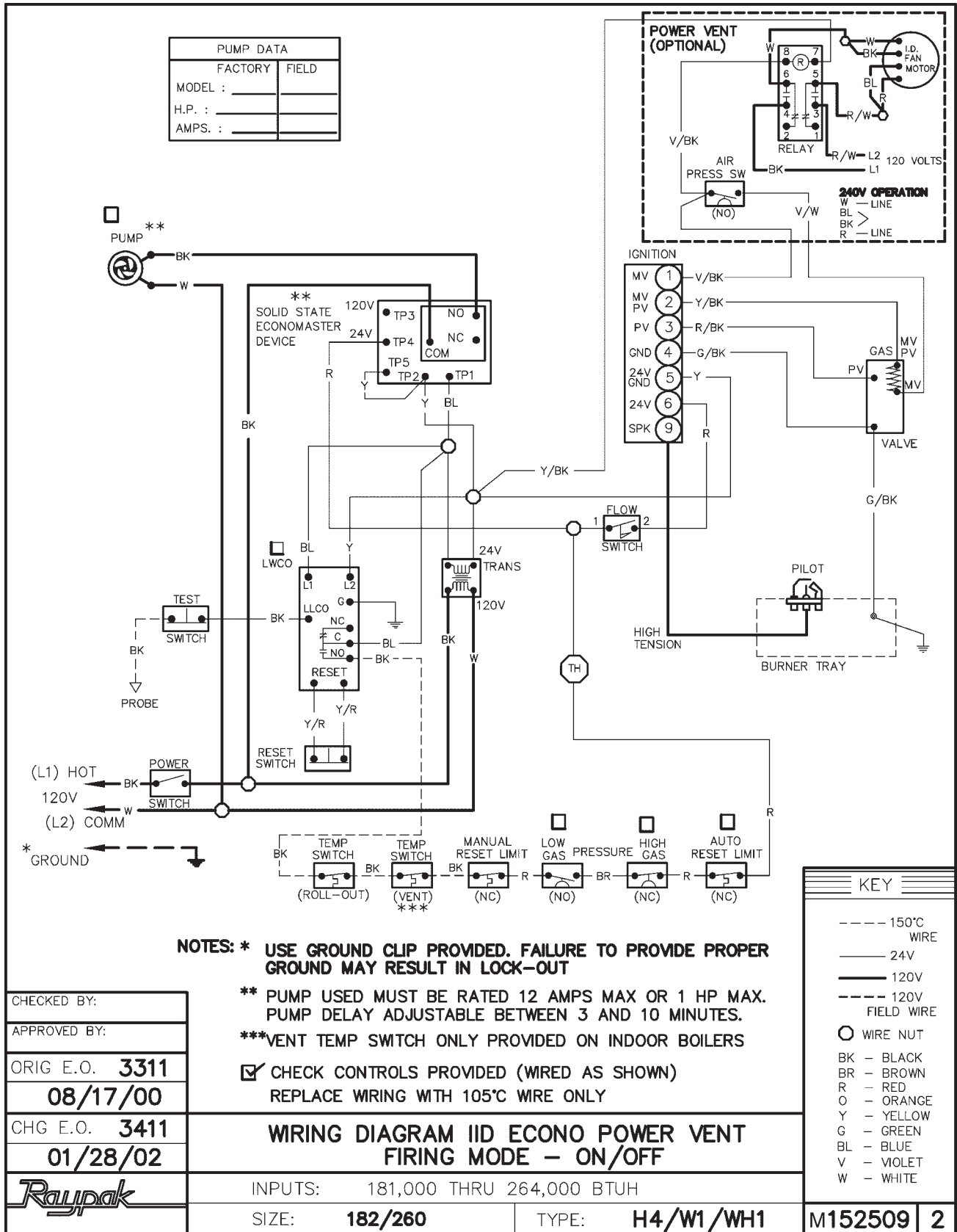
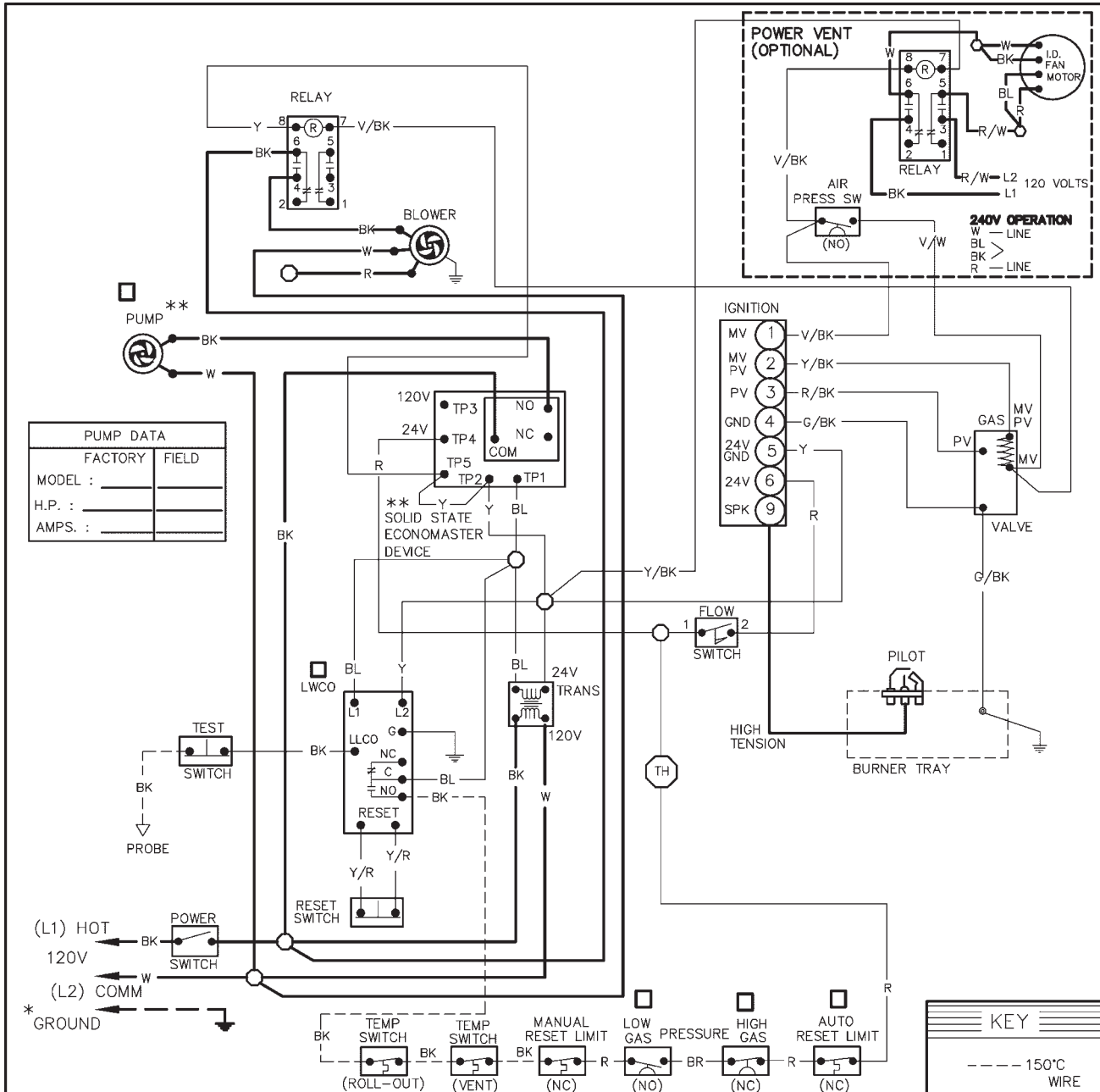


Fig #9371.2

182-260 WH1 (ATMOSPHERIC)



181-261 WH1 (Low NOx)



PUMP DATA	
FACTORY	FIELD
MODEL :	
H.P. :	
AMPS. :	

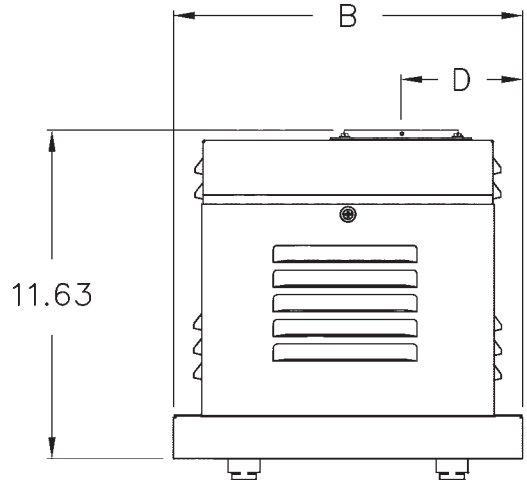
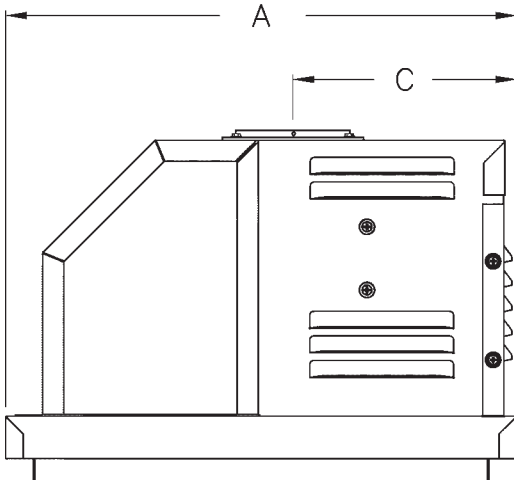
NOTES: * USE GROUND CLIP PROVIDED. FAILURE TO PROVIDE PROPER GROUND MAY RESULT IN LOCK-OUT
 ** PUMP USED MUST BE RATED 12 AMPS MAX OR 1 HP MAX. PUMP DELAY ADJUSTABLE BETWEEN 3 AND 10 MINUTES.
 *** VENT TEMP SWITCH ONLY PROVIDED ON INDOOR UNITS
 CHECK CONTROLS PROVIDED (WIRED AS SHOWN)
 REPLACE WIRING WITH 105°C WIRE ONLY

KEY	
---	150°C WIRE
---	24V
---	120V
---	120V FIELD WIRE
○	WIRE NUT
BK	BLACK
BR	BROWN
R	RED
O	ORANGE
Y	YELLOW
G	GREEN
BL	BLUE
V	VIOLET
W	WHITE

CHECKED BY:	
APPROVED BY:	
ORIG E.O.	3311
	08/17/00
CHG E.O.	3411
	01/28/02
<i>Raypak</i>	

WIRING DIAGRAM IID ECONO LOW NOX POWER VENT FIRING MODE - ON/OFF	
INPUTS:	181,000 THRU 264,000 BTUH
SIZE:	181/261
TYPE:	H4/W1/WH1

M152522	2
---------	---



Dimensional Data				
Model	A	B	C	D
181	18.13	12.38	7.88	4.25
182	18.13	12.38	7.88	4.25
185	18.13	12.38	7.88	4.25
260	18.13	12.38	7.88	4.25
261	18.13	12.38	7.88	4.25
265	18.13	12.38	7.88	4.25
330	17.50	15.75	7.63	6.00
331	17.50	15.75	7.63	6.00
335	17.50	15.75	7.63	6.00
400	17.50	15.75	7.63	6.00
401	17.50	15.75	7.63	6.00
405	17.50	15.75	7.63	6.00

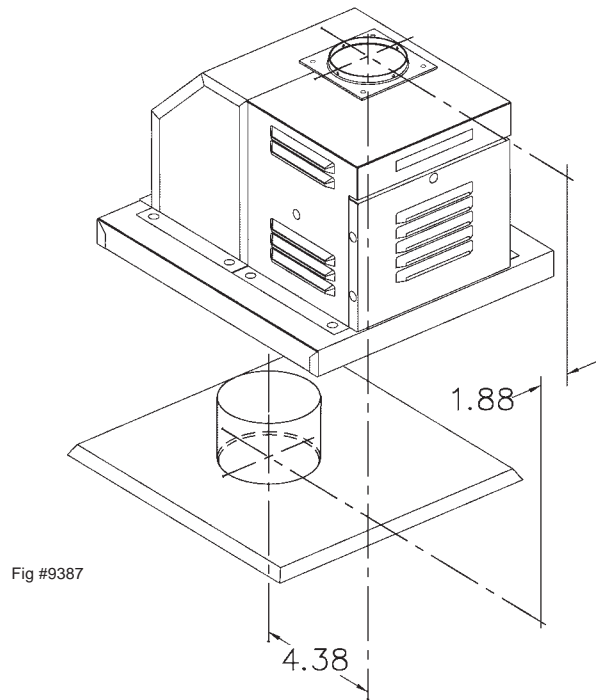


Fig #9387

SEQUENCE OF OPERATION

On call for heat, the D-2 Power Vent fan (and appliance pump) start. When the flow switch circuits close, the ignition system consisting of an electronic spark module, pilot gas system and flame sensor, are energized. When draft proving switch closes and all safety circuits are proven, the automatic main gas valves will open and the heater will operate. When the operating limit circuit is satisfied, the heater will shut down.

START UP PROCEDURES

The water system, the gas system and the electrical system for the heater should be completed and checked as per the heater installation manual and associated documents.

1. Turn on power to the heater with the manual main gas valve and pilot gas valve off. The electric power supply requirements are:
 - Dual-voltage fan motor.
120/240 volt 60Hz 1.0/1.95 Amp fan motor for appliance sizes 181-401.
2. Check power connections.
3. Close heater power switch.
4. Set operating control to call for heat.
 - a. Fan motor starts, draft proving switch closes.
 - b. Heater pump starts, flow switch closes.
 - c. Ignition module energized.
 - d. Check for spark at gas pilot.
5. Turn operating control to end call for heat.
6. Wait a minimum of 60 seconds.
7. Open pilot gas valve.
 - a. Repeat procedure outlined in #4 above.
8. After pilot gas is proven and main safety shut-off valve is energized.
 - Main burners will ignite.
9. Heater will operate until call for heat is satisfied.
11. Restart unit and visually check all components for proper operation.
12. Check all vent connections and joints for leakage. Correct if found.
13. To restart unit after a failure, follow the procedures outlined above and other subsequent or related sections outlined in the heater manual.

EMERGENCY SHUTDOWN

SHUT OFF ALL POWER AND GAS, CALL GAS UTILITY.

DRAFT PROVING SWITCH

The draft proving switch insures that the blower is operating. The switch is in the limit circuit and does not allow the ignition module to operate unless it is closed.

NEGATIVE PRESSURE CONNECTOR

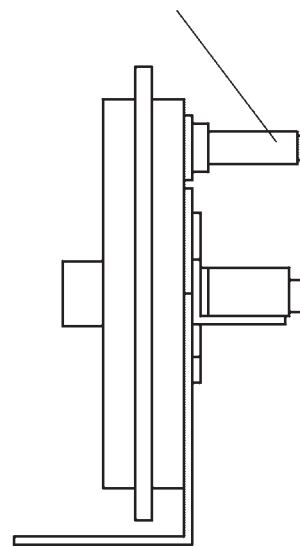
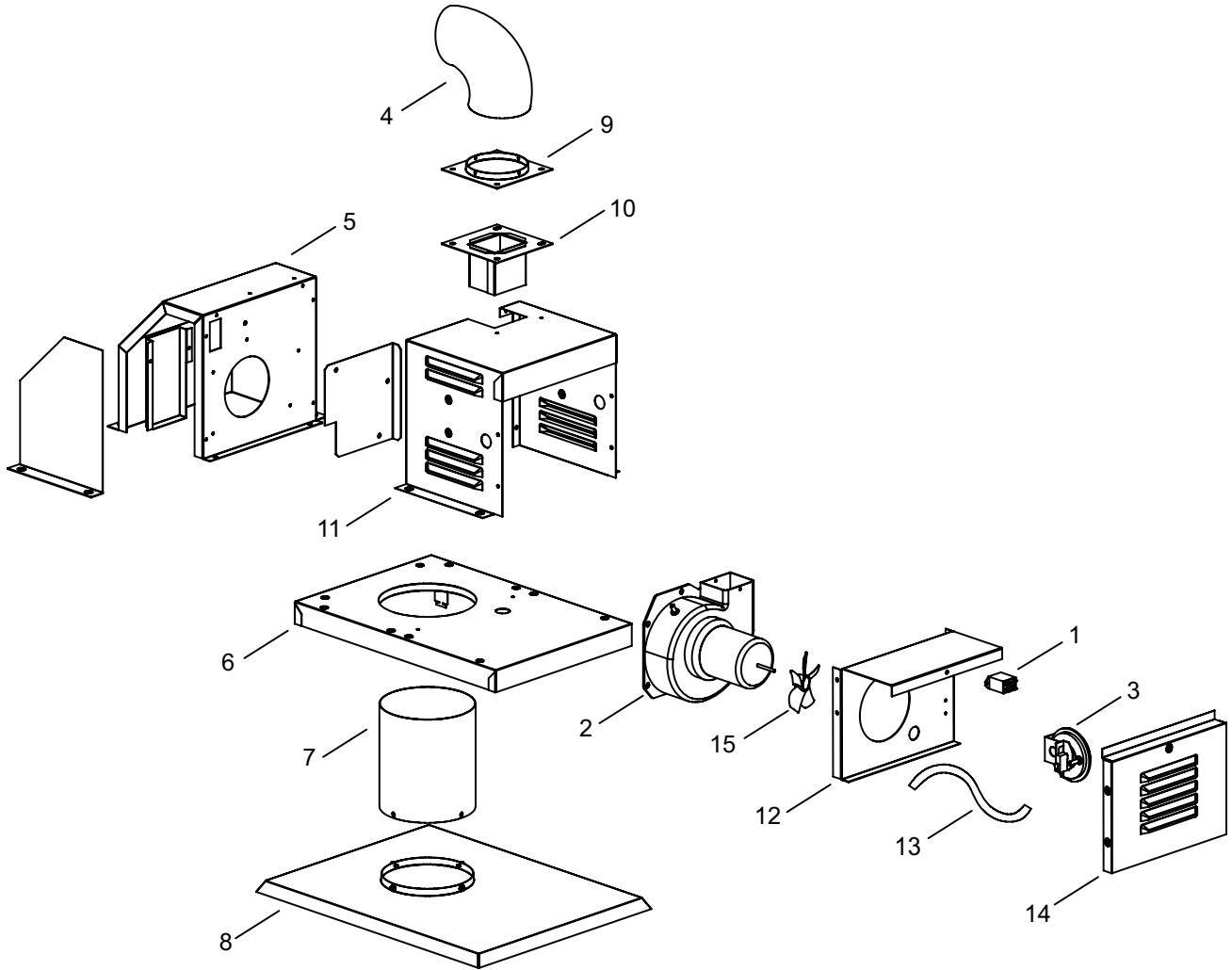


FIG #9359

ILLUSTRATED PARTS LIST



Call Out	Description	181-265	331-405
1	Power Vent Relay	008784F	008784F
2	Power Vent Blower	008156F	008156F
3	Power Vent NO Pressure Switch	008062F	008135F
4	Elbow 4"-90° with Screen	006996	006996
5	Power Vent Flue Box	008682F	008683F
6	Power Vent Base Assembly	008684F	008685F
7	Power Vent Flue Collar	008686F	008686F
8	Power Vent Flue Adaptor	008687F	008688F
9	Power Vent 4" Flange	008689F	008689F
10	Power Vent Blower Adaptor	008690F	008690F
11	Power Vent Control Cover	008691F	008691F
12	Power Vent Control Swaybrace	008692F	008692F
13	Power Vent Silicone Hose	008693F	008693F
14	Power Vent Front Panel	008694F	008694F
15	Blower Cooling Fan	011549F	011549F



www.raypak.com

Raypak, Inc., 2151 Eastman Avenue, Oxnard, CA 93030 (805) 278-5300 FAX (800) 872-9725
Raypak Canada LTD, 2805 Slough Street, Mississauga, Ontario, Canada L4T 1G2 (905) 677-7999 FAX (905) 677-8036
Raypak Australia Pty. Ltd, 7 Geddes St., Mulgrave, Victoria, Australia 3170 (6139) 560 4944 FAX (6139) 560 4974
Litho in U.S.A.