

APPROVED INSTALLATION AND OPERATION MANUAL

SWIMMING POOL & SPA HEATER D-2



**D-2 POWER VENT
206A, 207A, 266A,
267A, 268, 336A, 337A,
406A, 407A, 408
(ELECTRONIC IGNITION
MODELS ONLY)**



WARNING: If these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

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.

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.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

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

Raypak[®]
A Rheem[®] Company

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P/N 241243 Rev. 7

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Revision 7 reflects the following changes:

Reformatted to current standard. Revised Figure 1. Added "NOTE" after Figure 9. "Venting" text revised on page 10. Updated wire diagrams on pages 19 through 21. Figure in "Illustrated Parts List" revised on page 23.

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1. WARNINGS

Pay Attention to these Terms

▲ DANGER	Indicates the presence of immediate hazards which will cause severe personal injury, death or substantial property damage if ignored.
▲ WARNING	Indicates the presence of hazards or unsafe practices which could cause severe personal injury, death or substantial property damage if ignored.
▲ CAUTION	Indicates the presence of hazards or unsafe practices which could cause minor personal injury or product or property damage if ignored.
CAUTION	CAUTION used without the warning alert symbol indicates a potentially hazardous condition which could cause minor personal injury or product or property damage if ignored.
NOTE	Indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.

NOTE: Minimum 18 AWG, 105°C, stranded wire must be used for all low-voltage (less than 30 volts) external connections to the unit. Solid conductors should not be used because they can cause excessive tension on contact points. Install conduit as appropriate. All high-voltage wires must be the same size (105°C, stranded wire) as the ones on the unit or larger.

2. 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 the kit number. When ordering under warranty conditions, you must also specify the date of installation.

The manufacturer 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 Representative.

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

Included items:

- (1) D-2 Power Vent
- (1) Collar Adapter
- (1) 7/8" Plastic Grommet
- (1) Adj. 90° Elbow with Screen
- (1) 4" Flue Adapter

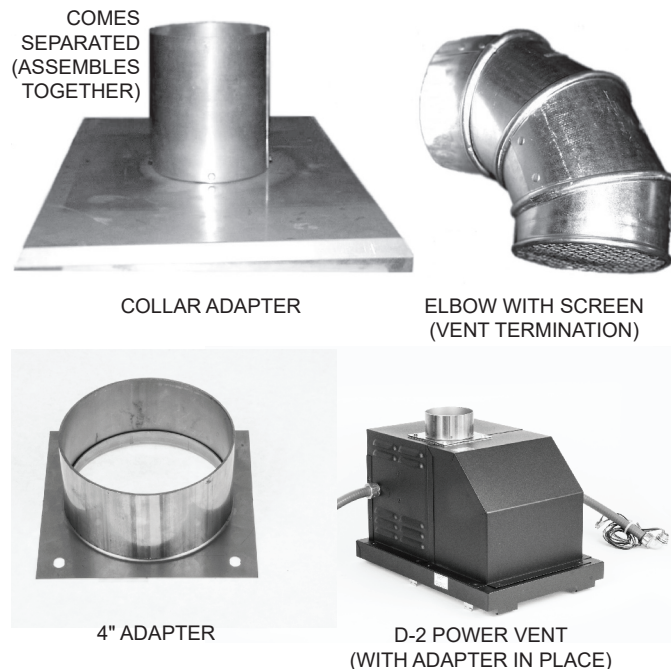


Figure 1. D-2 Parts

3. GENERAL SPECIFICATIONS

The D-2 Power Vent is tested and certified to the latest edition of the American National Standard ANSI Z21.56 standard for pool heaters.

The D-2 Power Vent is a fan-assisted combustion system designed for application to heater models 206 thru 408. When installed as directed, the unit is capable of operating in applications such as through-the-wall venting and reduced horizontal and vertical Category III flue pipe sizes in new and existing installations.

The D-2 Power Vent includes a blower with a 120/240 volt 60Hz 1.95/1.0A 3200 RPM motor and a plenum, complete with a draft proving switch and a motor relay.

Model No.	Factory Wired	D-2 Power Vent Part No.
206/207 - 266/267/268	240 VAC	009832
336/337 - 406/407/408		009833
206/207 - 266/267/268	120 VAC	010744
336/337 - 406/407/408		010745

Table A. D-2 Usage and Kit Numbers

Dimensions

Refer to Figure 2.

Model	Dimensional Data	
	A	B
206/207, 266/267/268	12.31" (31.3 cm)	4.31" (10.9 cm)
336/337, 406/407/408	18.31" (46.5 cm)	7.31" (18.6 cm)

Table B. Dimensions

4. INSTALLATION REQUIREMENTS

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

The equipment must be installed by a qualified installer in accordance with all local codes, or, in the absence of local codes, with the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and the National Electrical Code, ANSI/NFPA 70. In Canada, installations must conform to CAN/CSA B149.1 and to the latest Canadian Electrical Code Part 1.

Disconnect power supply when making wiring connections or when working around the fan blade and motor. Failure to do so may result in severe personal injury and equipment damage.

Make certain the power source is adequate for the fan motor requirements. Do not add the Power Vent to a circuit where the total load is unknown.

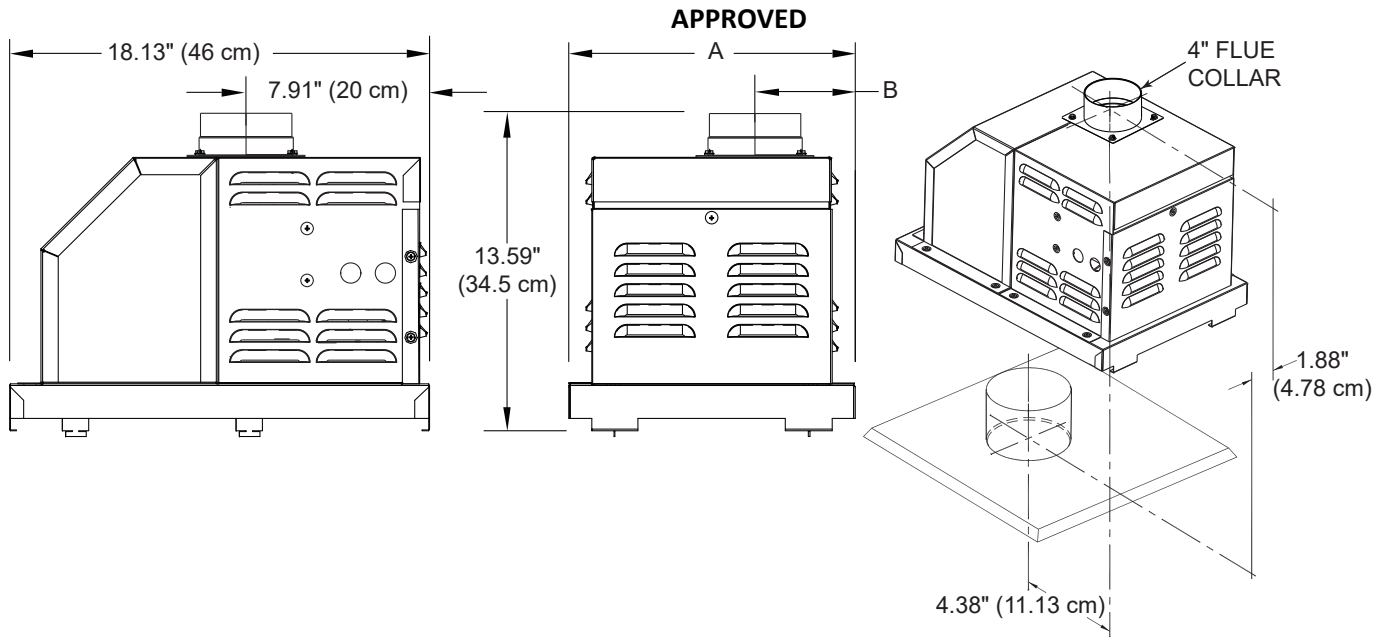


Figure 2. Dimensions

5. INSTALLATION

1. Start off by disconnecting main power to the heater.
2. Remove the front door from the heater. See **Figure 3**.



Figure 3. Door Removal

3. If this is a retro-fit application, remove existing "Pagoda Top" and discard. See **Figure 4**. If equipped with a draffhood, refer to draffhood installation manual for removal process.



Figure 4. Pagoda Top Location

4. Remove the (6) Phillips screws that hold the jacket top to the heater. See **Figure 5**.

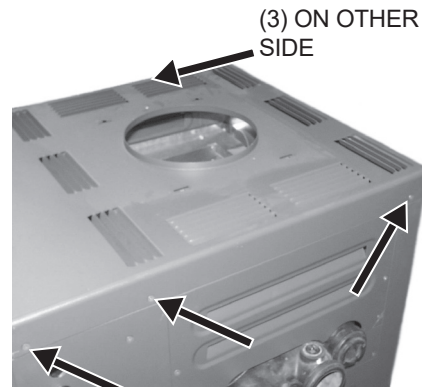


Figure 5. Screw Locations

5. Lift the rear end of the jacket top while inserting the collar adapter. See **Figure 6** and **Figure 7**.



Figure 6. Jacket Top Removal

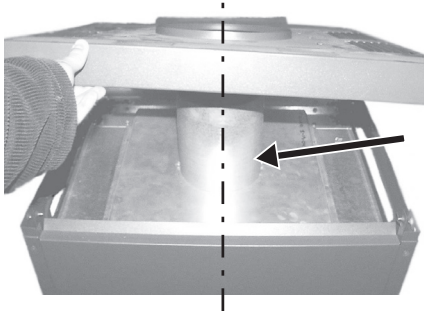
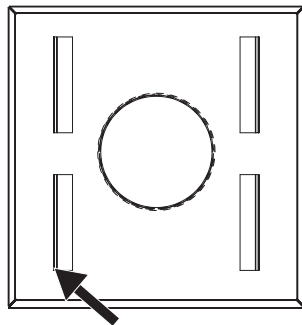


Figure 7. Alternative Jacket Top Removal

NOTE: Brackets are positioned underneath the collar adapter to capture the smaller model, See Figure 8. Also note the orientation of the adapter on the heater as shown in Figure 9.



BRACKETS USED ONLY ON
206/207/336/337 MODELS TO HOLD
COLLAR ADAPTER IN PLACE

Figure 8. Brackets, Models 206/207/336/337 Only

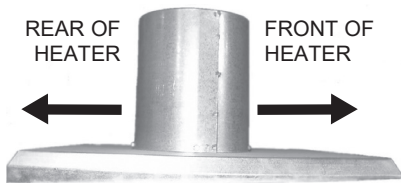


Figure 9. Adapter Orientation

6. Lower the jacket top back onto the heater and reinstall the (6) Phillips screws. See Figure 5.

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7. If installing on a model 266, 267, 268, 406, 407 or 408 heater, skip step 8.
 8. Turn the Power Vent upside down. Using a 5/16" nut driver, relocate the mounting brackets as shown in Figure 10.

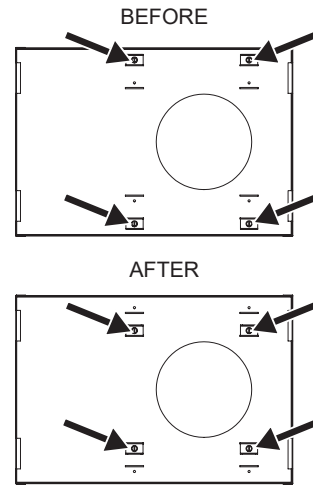


Figure 10. Bracket Relocation

9. Place the Power Vent on top of the heater. See Figure 11.

NOTE: Unit requires a minimum of 24" clearance overhead.



Figure 11. Power Vent Location

10. Move the Power Vent, so that the collar adapter slips into the Power Vent. See Figure 12.



Figure 12. Collar Adapter Location

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11. Push in all four bracket tabs, so the Power Vent locks into position. See **Figure 13**.

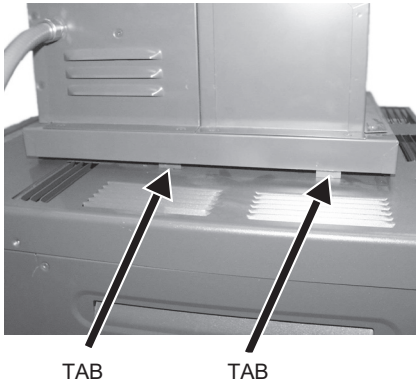


Figure 13. Tab Location

12. Using a 5/16" nut driver, remove the transformer cover located on the right side of the heater. See **Figure 14**.

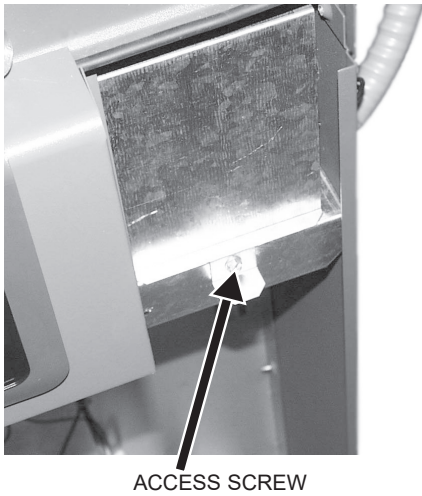


Figure 14. Transformer Cover Access

13. Install the right side outdoor conduit through the top 7/8" hole located on the right side of the heater. See **Figure 15**.

NOTE: You must first remove the 7/8" plug on the heater to install the hard conduit.

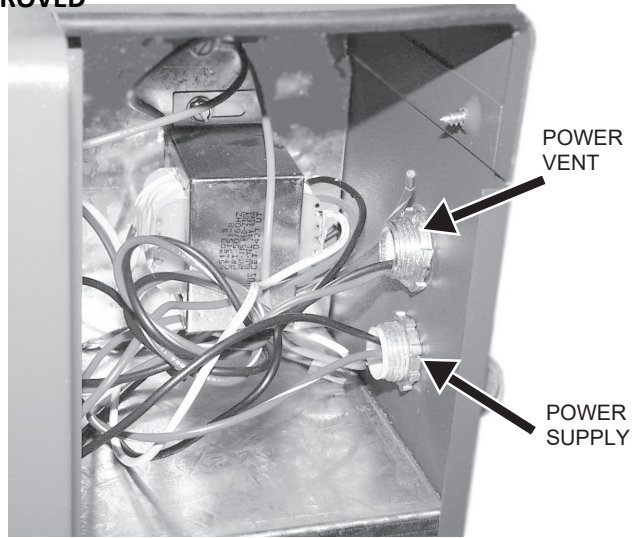


Figure 15. Conduit Routing

14. Wire the heater power lines along with the D-2 Power Vent power lines to the supply power per **Figure 16** for 010744 or 010745, and per **Figure 17** for 009832 or 009833. If the D-2 does not match the power supplied, re-wire the blower for the correct voltage.

D-2 POWER VENT 120VAC
010744 & 010745

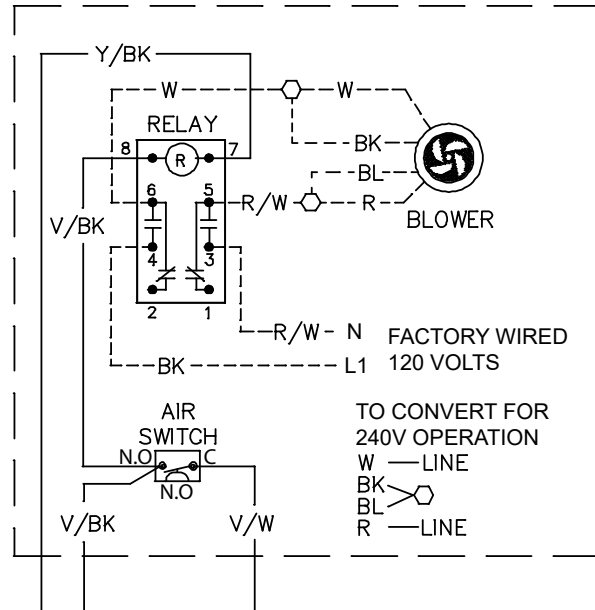


Figure 16. 120VAC

D-2 POWER VENT 240VAC APPROVED
009832 & 009833

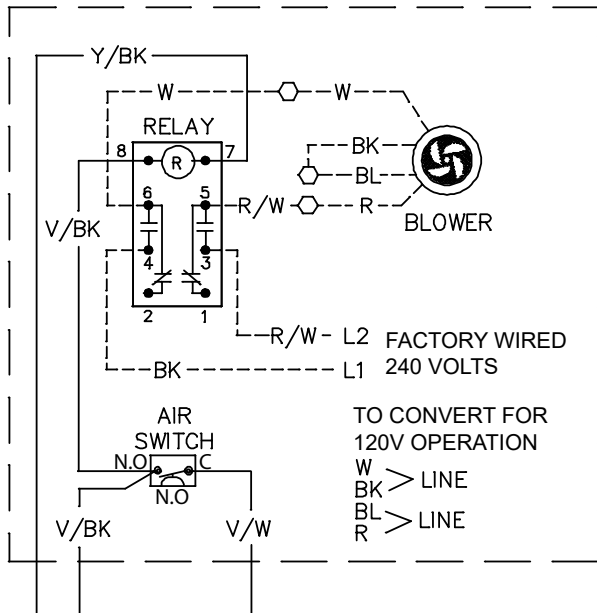


Figure 17. 240VAC

15. Reinstall the transformer cover. See **Figure 14**.
16. Install the left side outdoor conduit through the top 7/8" hole located on the left side of the heater. See **Figure 18**.

NOTE: You must first remove the 7/8" plug on the heater to install the conduit.

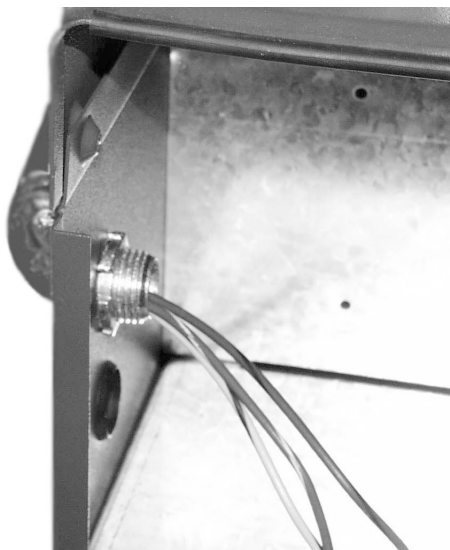


Figure 18. Wire Plumbing Location

17. Remove the (4) Phillips screws that hold the control panel to the heater and lower the control panel. **Figure 19**.

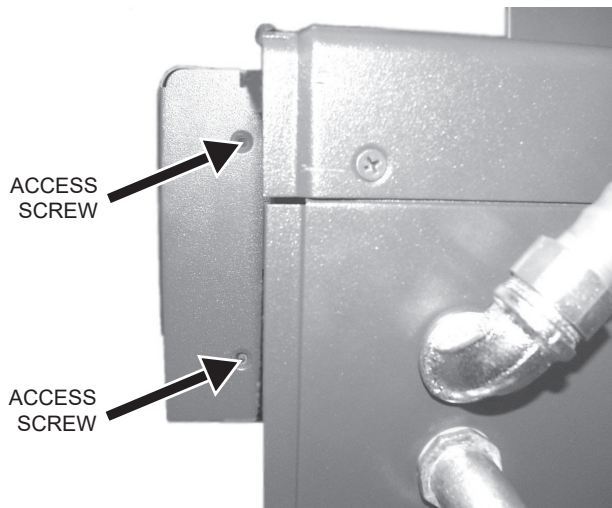


Figure 19. Control Panel Screw Location

18. Remove and replace the 7/8" plug with the provided 7/8" grommet (located on the left side of the control panel). See **Figure 20**.

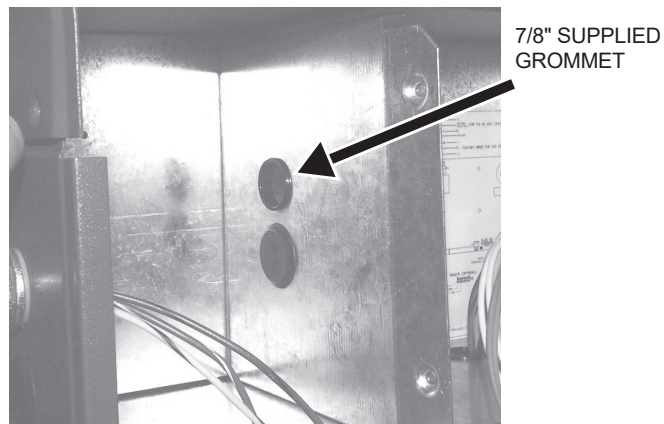


Figure 20. Grommet Location

NOTE: For Professional heaters, models 268 and 408, it may be necessary to reroute the flexible conduit to either side of the power vent.

19. Route the 24 VAC harness through the 7/8" grommet, See **Figure 21**.

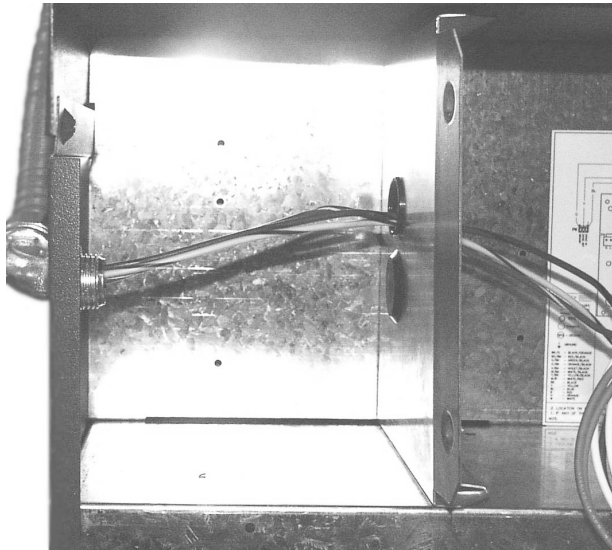


Figure 21. Harness Routing

20. Continue to route the harness down through any available grommet hole. See **Figure 22**.

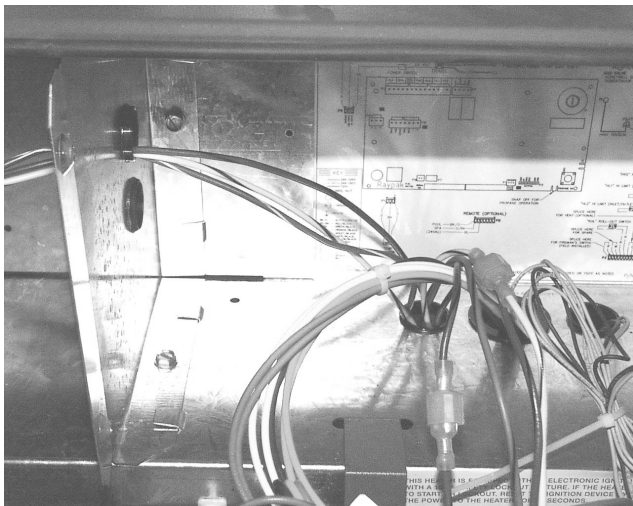


Figure 22. Harness Routing Continued

21. Wire the harness along with the installed gas valve harness per the wiring diagram.
22. Reinstall the (4) Phillips screws that hold the control panel to the heater. See **Figure 19**.
23. Place the front door back onto the heater. Refer to **Figure 3**.

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6. VENTING

The D-2 Power Vent operates with a positive vent static pressure and with a vent gas temperature that prevents excessive condensate production in the vent, and requires Category III venting.

The 4" collar atop the D-2 Power Vent requires a gasket-to-gasket flue adapter in order to properly connect to your selected brand of 4" Category III flue pipe. Contact your HVAC distributor.

The total length of run shall not exceed an equivalent length of 100 ft (30.5 m) of Category III venting, including the termination cap. For all cases, each 90° elbow reduces the maximum vent run by 10 ft (3 m) and each 45° elbow reduces the run by 5 ft (1.5 m). A maximum of four (4) 90-degree elbows is allowed. The vent must be installed properly to prevent the flue gas leakage within the heater. The vent pipe must be certified with Category III usage on systems which have flue gas temperatures of less than 400°F (204°C). Care must be taken during the assembly to ensure that all joints are properly sealed.

For appliances installed in extremely cold climates, it is recommended that:

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

The point of discharge of the D-2 Power Vent shall not be less than 7 ft (2.1 m) above grade where located adjacent to public walkways. It must also be at least 3 ft (0.9 m) above any forced air inlet located within a 10 ft (3 m) radius.

For installations which terminate vertically, a field-supplied Category III vent termination may be used.

For through-the-wall (sidewall) installations, the screened elbow supplied with the D-2 Power Vent must be used as the flue termination. Install the elbow so that the screened end faces directly downwards and is at least 12" (30.5 cm) from the wall. Alternate sidewall vent terminations shall not be accepted; see the National Fuel Gas Code, paragraph 12.4.3.1.

The discharges of multiple sidewall vent terminations must have at least 12" (30.5 cm) separation.

Raypak does not support common venting of systems operating under positive vent pressure. Use of separate cat III vents is strongly recommended. Common cat III venting, if required, must be handled as an Engineered Vent System by a Professional Engineer (PE) and is outside Raypak's scope.

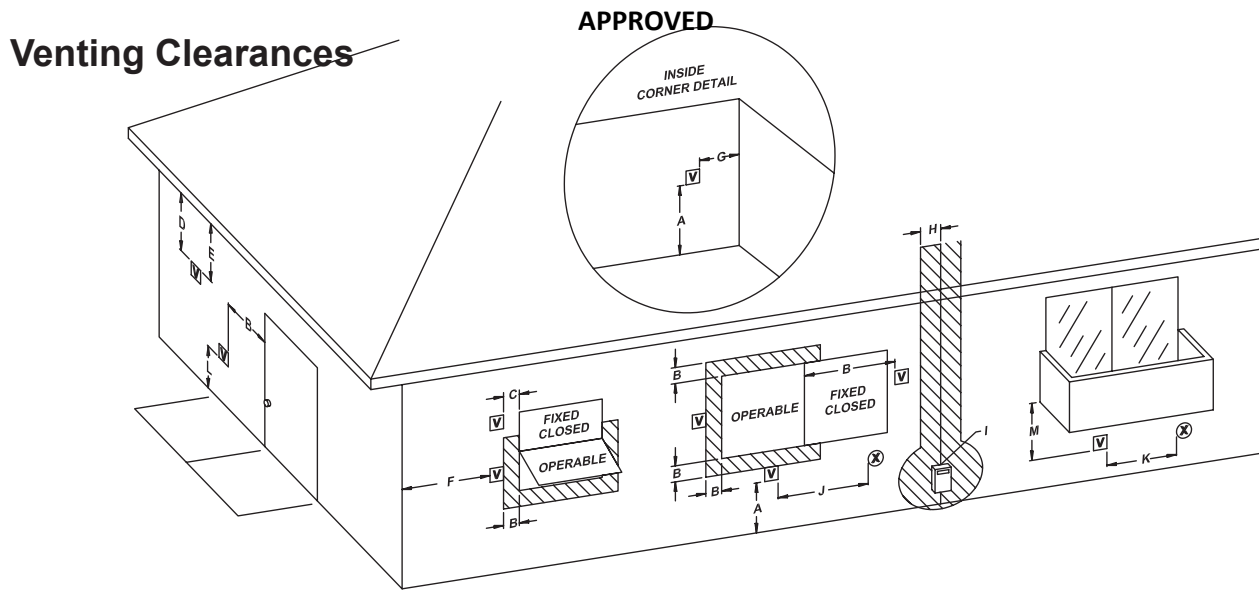


Figure 23. Minimum Clearances from Vent/Air Inlet Terminations – Indoor and Outdoor Installations

		U.S. Installations¹	Canadian Installations²
A	Clearance above grade, veranda, porch, deck, or balcony	1 ft (30 cm)	1 ft (30 cm)
B	Clearance to window or door that may be opened	4 ft (1.2m) below or to side of opening; 1 foot (30 cm) above opening	3 ft (91 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 ft (61cm) from the centerline of the terminal	5 ft (1.5m)	*
E	Clearance to unventilated soffit	*	*
F	Clearance to outside corner	*	*
G	Clearance to inside corner	6 ft (1.83m)	*
H	Clearance to each side of center line extended above meter/regulator assembly	*	3 ft (91 cm) within a height 15 ft above the meter/regulator assembly
I	Clearance to service regulator vent outlet	*	6 ft (1.83m)
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	4 ft (1.2m) below or to side of opening; 1 ft (30 cm) above opening	3 ft (91 cm)
K	Clearance to mechanical air supply inlet	3 ft (91 cm) above if within 10 ft (3m) horizontally	6 ft (1.83m)
L	Clearance above paved sidewalk or paved driveway located on public property	7 ft (2.13m)	7 ft (2.13m) ^t
M	Clearance under veranda, porch, deck or balcony	*	12 in. (30 cm) ^{TT}

¹ In accordance with the current ANSI Z223.1/NFPA 54 National Fuel Gas Code

² In accordance with the current CAN/CSA-B149.1 Installation Codes

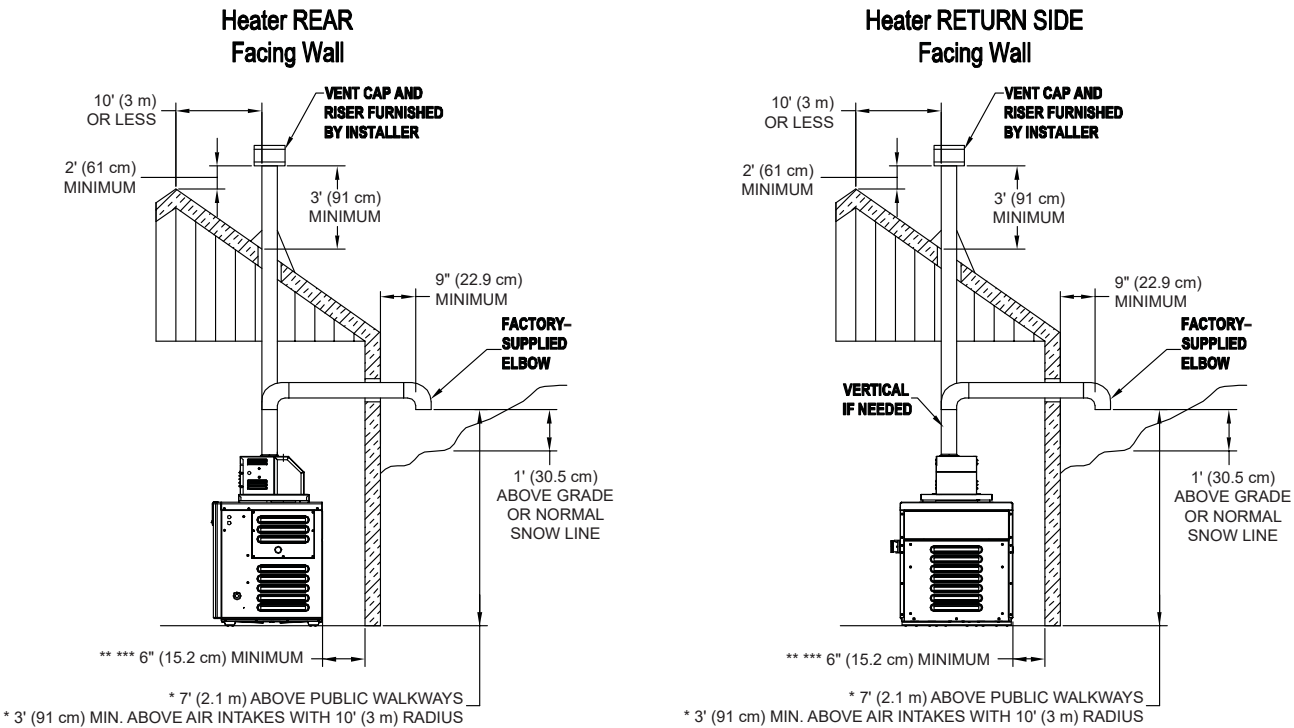
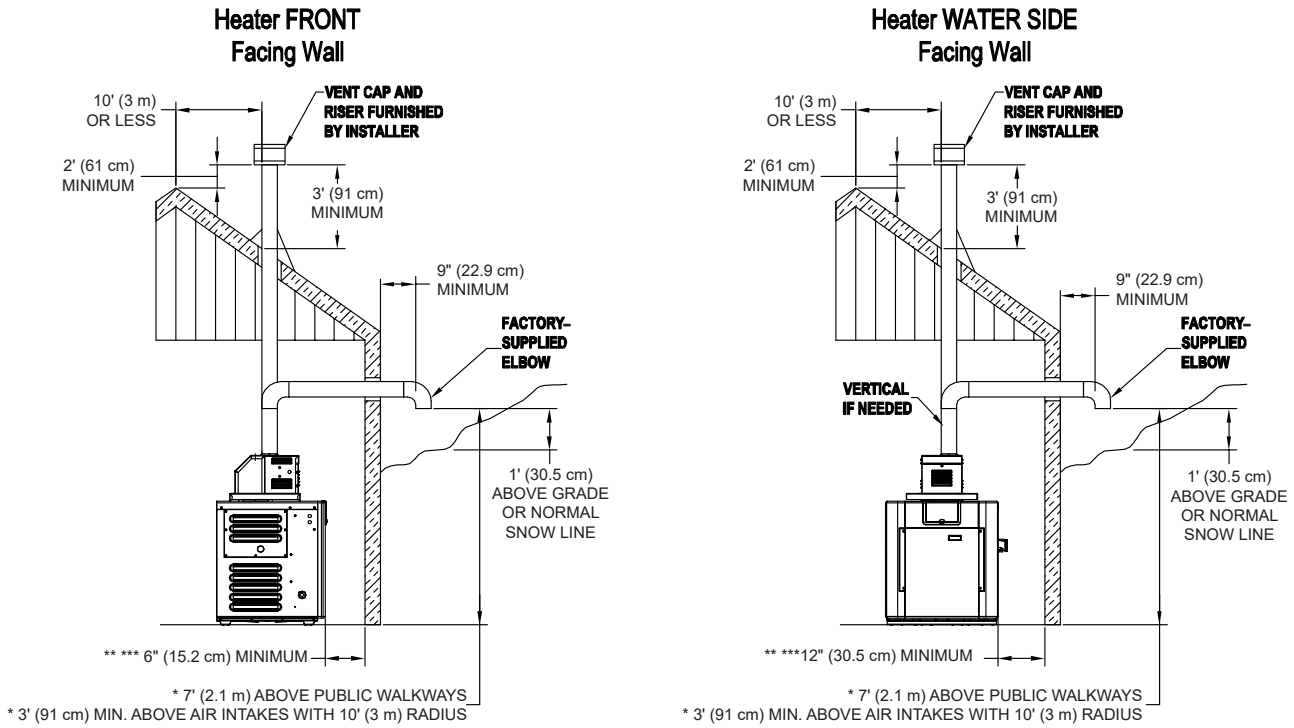
^t Vent terminal shall not terminate directly above sidewalk or paved driveway located between 2 single family dwellings that serves both dwellings

^{TT} Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor and top of terminal and underside of veranda, porch, deck or balcony is greater than 1 ft (30cm)

* Clearances in accordance with local installation codes and the requirements of the gas supplier

Table C. Vent/Air Inlet Termination Clearances
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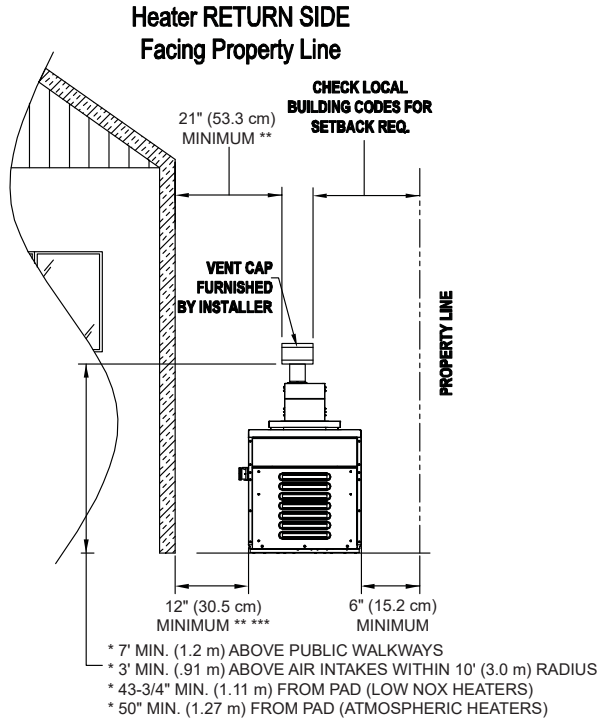
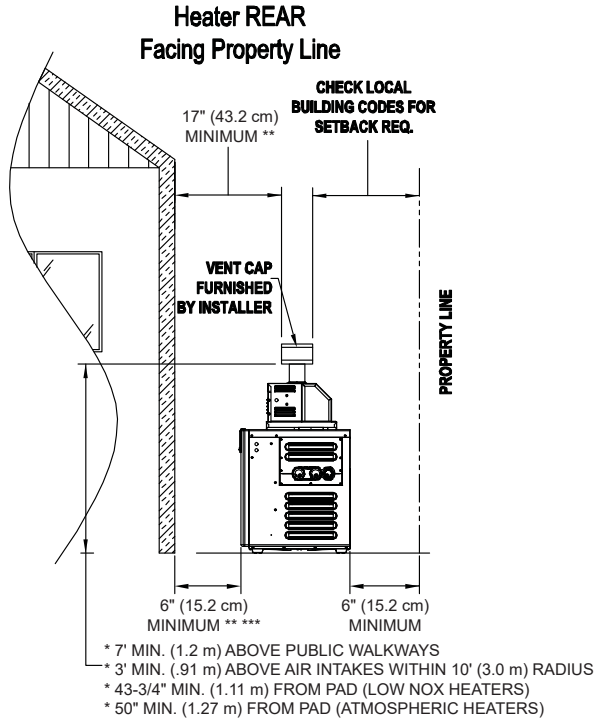
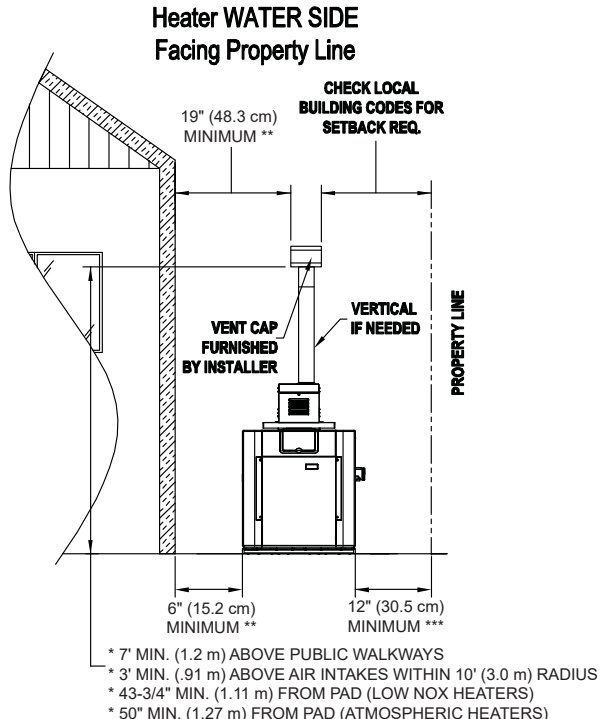
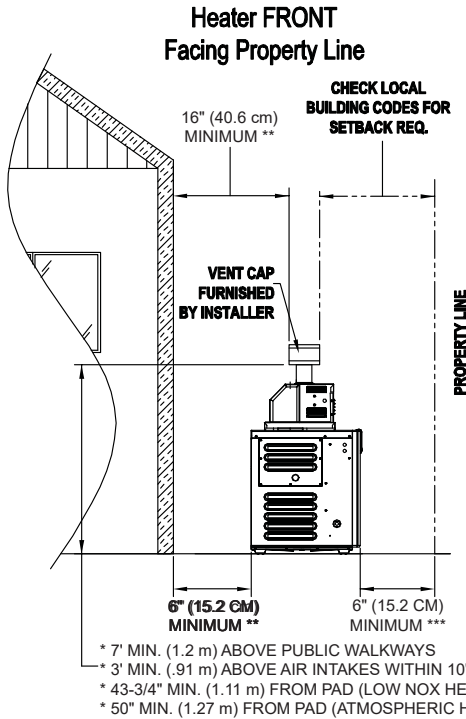
APPROVED
CLEARANCES - INDOOR INSTALLATION
 Vertical & Horizontal Venting



* USE VERTICAL VENT PIPE TO MEET MINIMUM HEIGHT REQUIREMENTS
 ** MUST BE 4' (1.2 m) AWAY FROM ANY WINDOW, DOOR, OR GRAVITY AIR INLET
 *** RECOMMENDED SERVICE CLEARANCES IS 24" (61 cm) FROM THE FRONT OF THE HEATER TO A WALL;
 18" (45.7 cm) FROM THE WATER SIDE TO A WALL

Figure 24. Indoor Clearances
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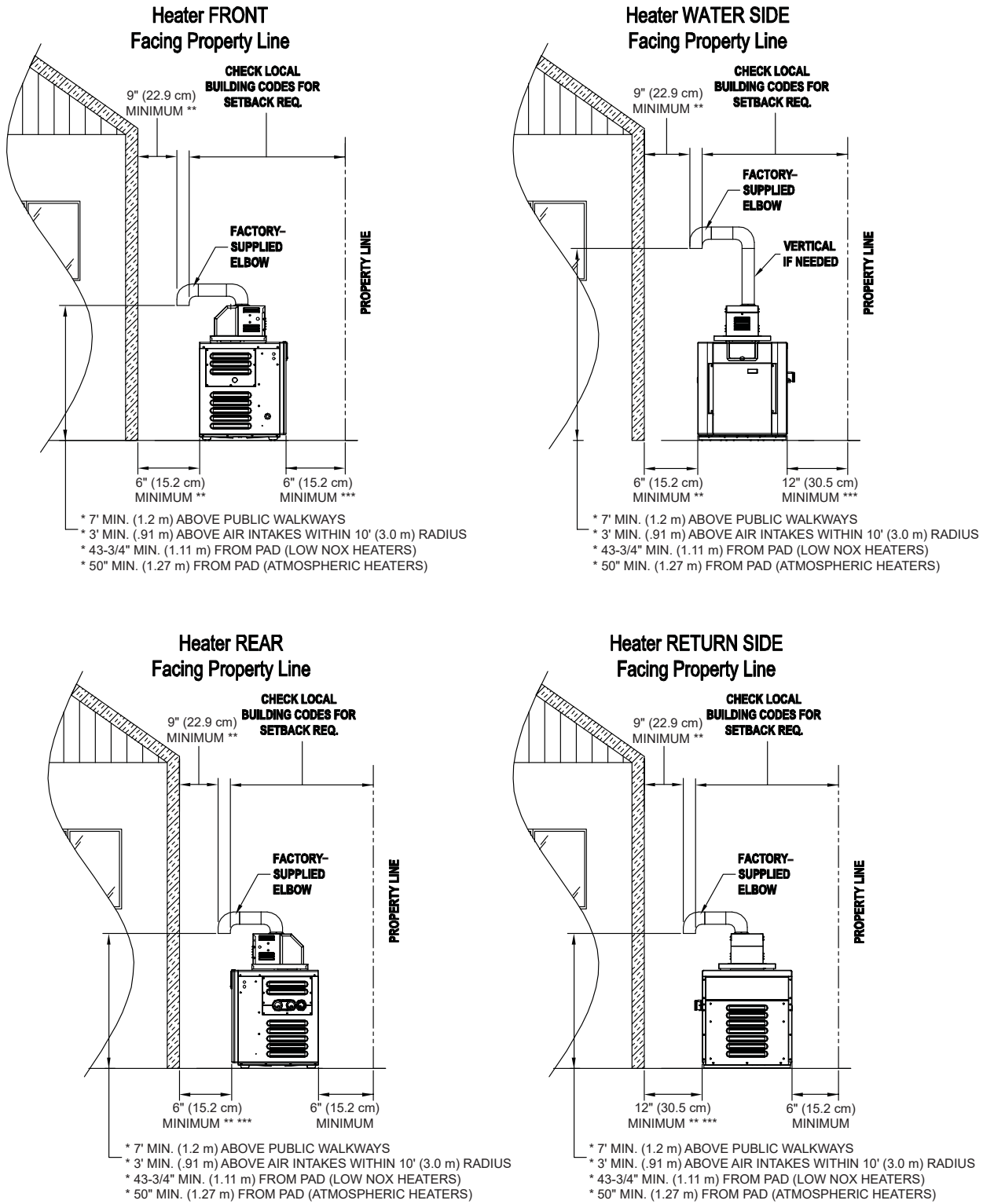
APPROVED
CLEARANCES - OUTDOOR INSTALLATION
 Vertical Venting



* USE VERTICAL VENT PIPE TO MEET MINIMUM HEIGHT REQUIREMENTS
 ** MUST BE 4' (1.2 m) AWAY FROM ANY WINDOW, DOOR, OR GRAVITY AIR INLET
 *** RECOMMENDED SERVICE CLEARANCES IS 24" (61 cm) FROM THE FRONT OF THE HEATER TO A WALL;
 18" (45.7 cm) FROM THE WATER SIDE TO A WALL

Figure 25. Outdoor Clearances, Vertical Venting
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APPROVED
CLEARANCES - OUTDOOR INSTALLATION
 Horizontal Venting



* USE VERTICAL VENT PIPE TO MEET MINIMUM HEIGHT REQUIREMENTS
 ** MUST BE 4' (1.2 m) AWAY FROM ANY WINDOW, DOOR, OR GRAVITY AIR INLET
 *** RECOMMENDED SERVICE CLEARANCES IS 24" (61 cm) FROM THE FRONT OF THE HEATER TO A WALL;
 18" (45.7 cm) FROM THE WATER SIDE TO A WALL

Figure 26. Outdoor Clearances, Horizontal Venting
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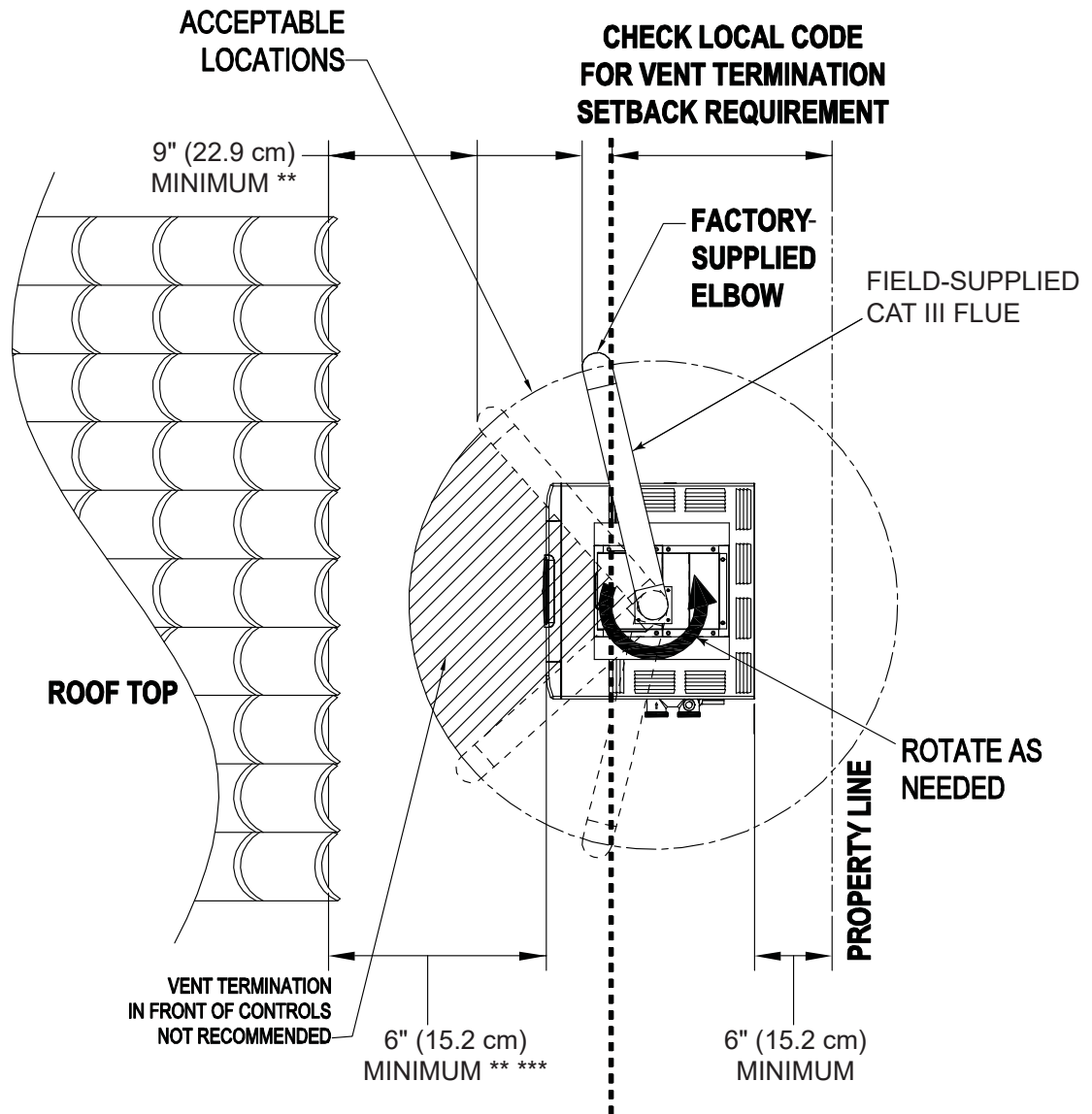
APPROVED CLEARANCES - OUTDOOR INSTALLATION

Horizontal Venting

TOP VIEW

Heater REAR

Facing Property Line



* USE VERTICAL VENT PIPE TO MEET MINIMUM HEIGHT REQUIREMENTS
** MUST BE 4' (1.2 m) AWAY FROM ANY WINDOW, DOOR, OR GRAVITY AIR INLET
*** RECOMMENDED SERVICE CLEARANCES IS 24" (61 cm) FROM THE FRONT OF THE HEATER TO A WALL;
18" (45.7 cm) FROM THE WATER SIDE TO A WALL

NOTE: FOR EXHAUST TERMINATION, MINIMUM CLEARANCES FROM COMBUSTIBLES SHOULD BE MAINTAINED SUCH AS FROM VEGETATION

Figure 27. Outdoor Clearances, Horizontal Venting, Top View

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7. WIRING

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

Reference the connection diagrams **Figure 29** and **Figure 30** or the wiring diagrams on pages 19 through 21 for actual connections.

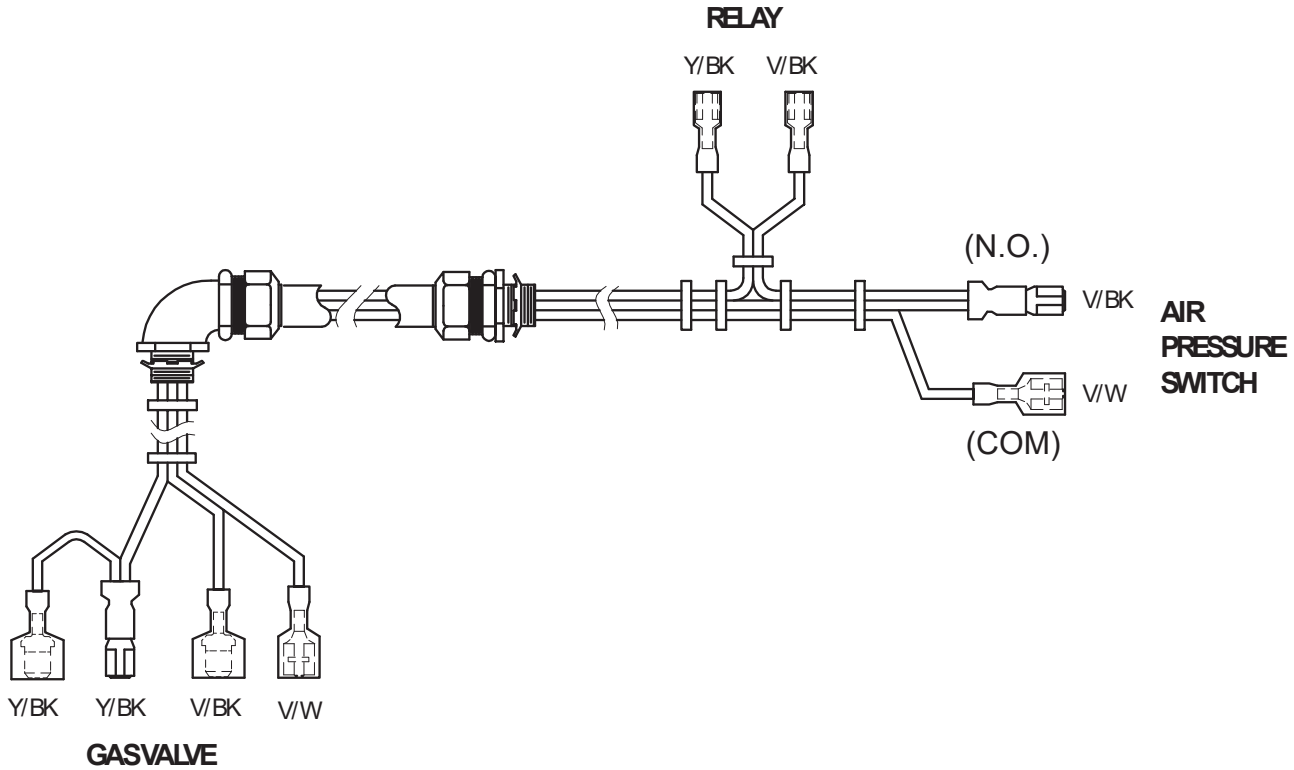
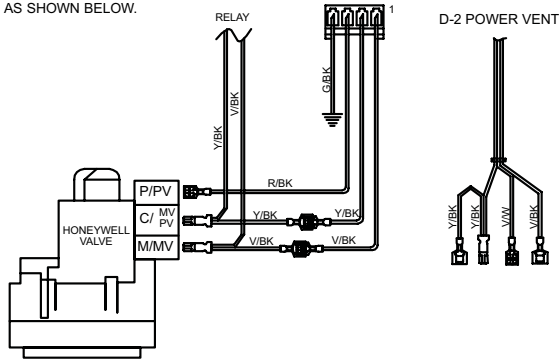


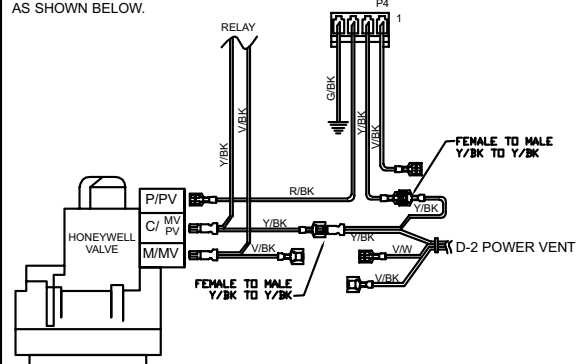
Figure 28. Wire Harness

MODELS 207, 267, 337, 407 EQUIPPED WITH HONEYWELL GAS VALVE

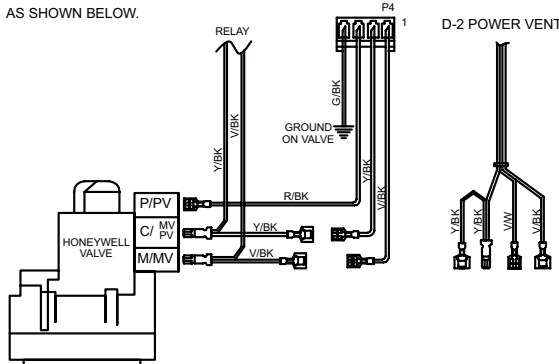
STEP 1: VERIFY CURRENT CONNECTIONS AS SHOWN BELOW.



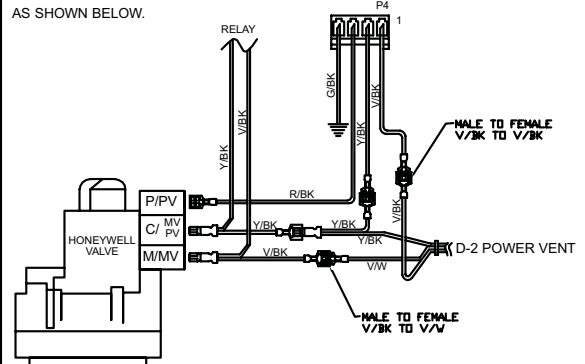
STEP 3: CONNECT THE RETURN LINES, FEMALE SPADES TO MALE SPADES AS SHOWN BELOW.



STEP 2: DISCONNECT BOTH TERMINALS MVPV & MV AS SHOWN BELOW.

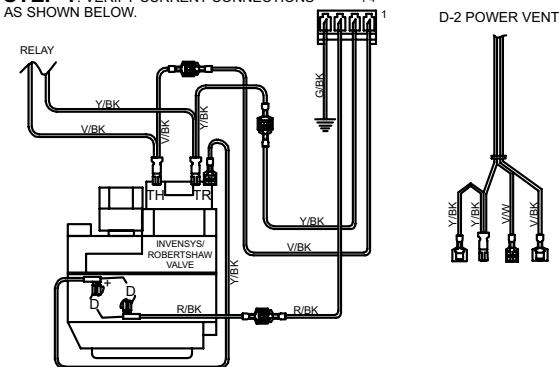


STEP 4: CONNECT THE MAIN VALVE LINES, FEMALE SPADES TO MALE SPADES AS SHOWN BELOW.

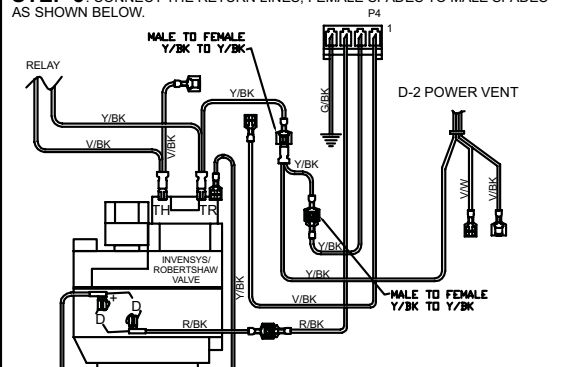


MODELS 207, 267, 337, 407 EQUIPPED WITH INVENSYS/ROBERTSHAW GAS VALVE

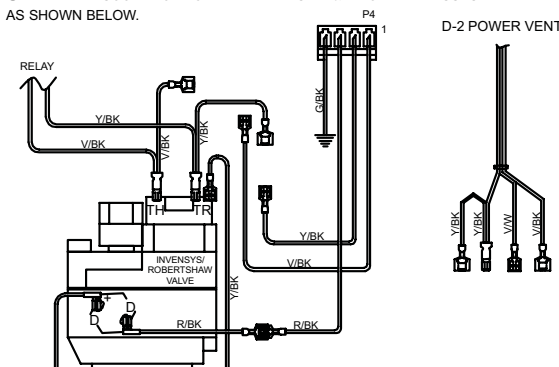
STEP 1: VERIFY CURRENT CONNECTIONS AS SHOWN BELOW.



STEP 3: CONNECT THE RETURN LINES, FEMALE SPADES TO MALE SPADES AS SHOWN BELOW.



STEP 2: DISCONNECT BOTH TERMINALS TH & TR ON HARNESSSES AS SHOWN BELOW.



STEP 4: CONNECT THE MAIN VALVE LINES, FEMALE SPADES TO MALE SPADES AS SHOWN BELOW.

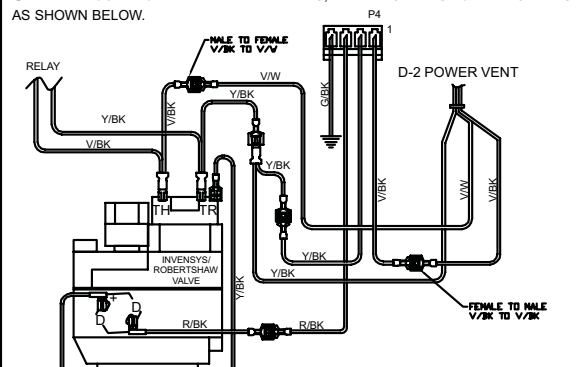
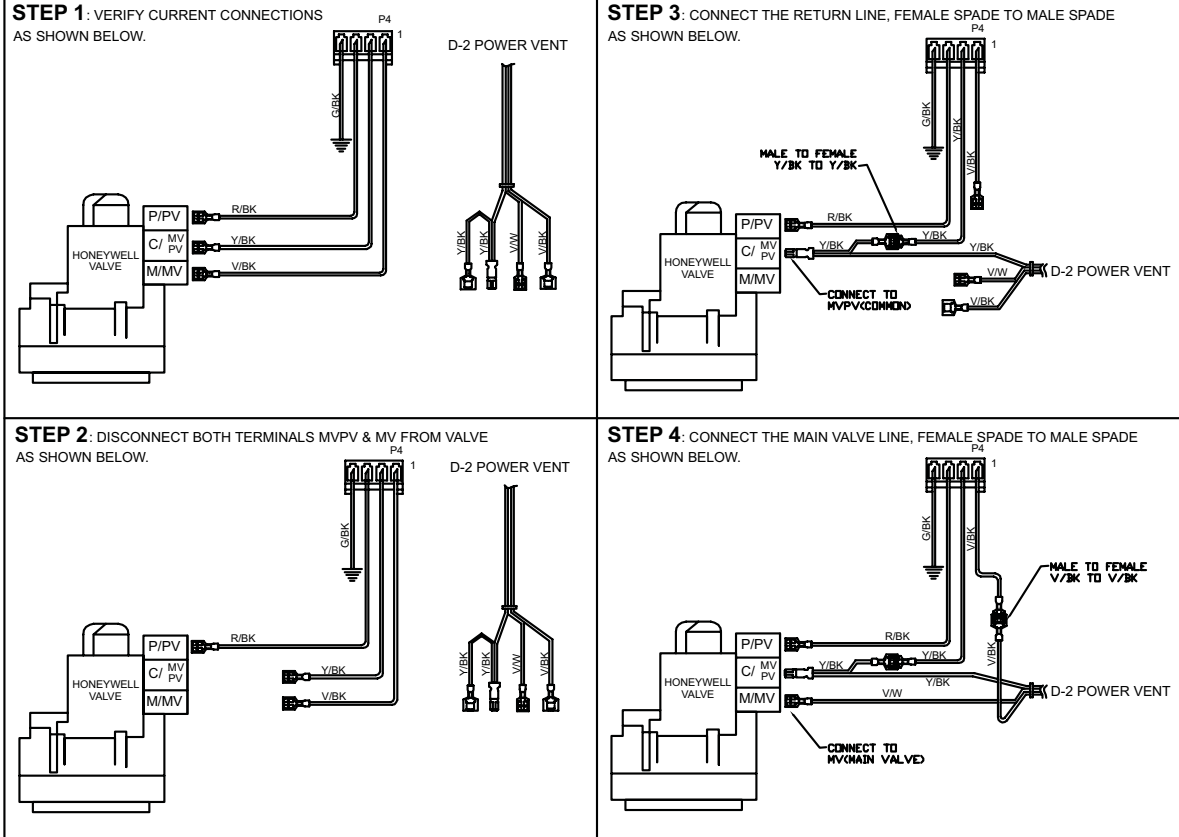


Figure 29. Connection Diagrams (207, 267, 337, 407)
UNCONTROLLED DOCUMENT IF PRINTED

MODELS 206, 266, 268, 336, 406, 408 EQUIPPED WITH HONEYWELL GAS VALVE



MODELS 206, 266, 268, 336, 406, 408 EQUIPPED WITH INVENSYS/ROBERTSHAW GAS VALVE

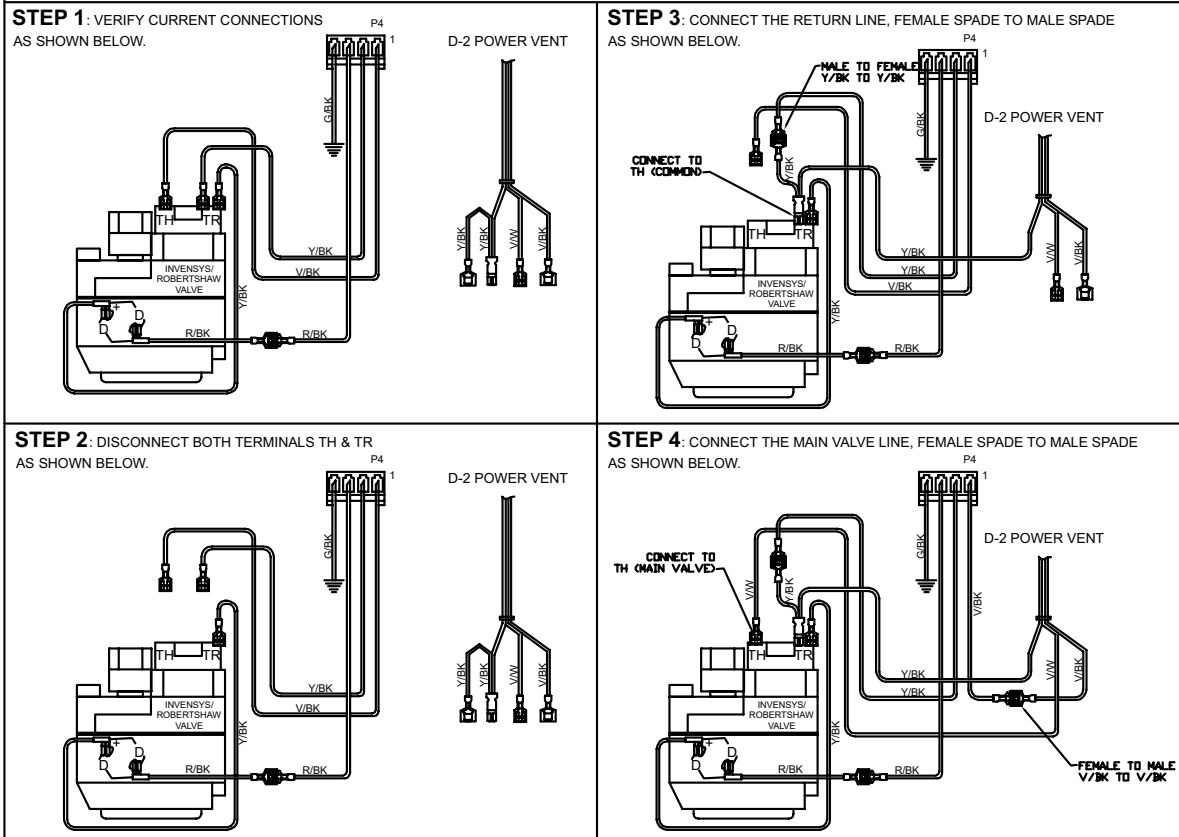
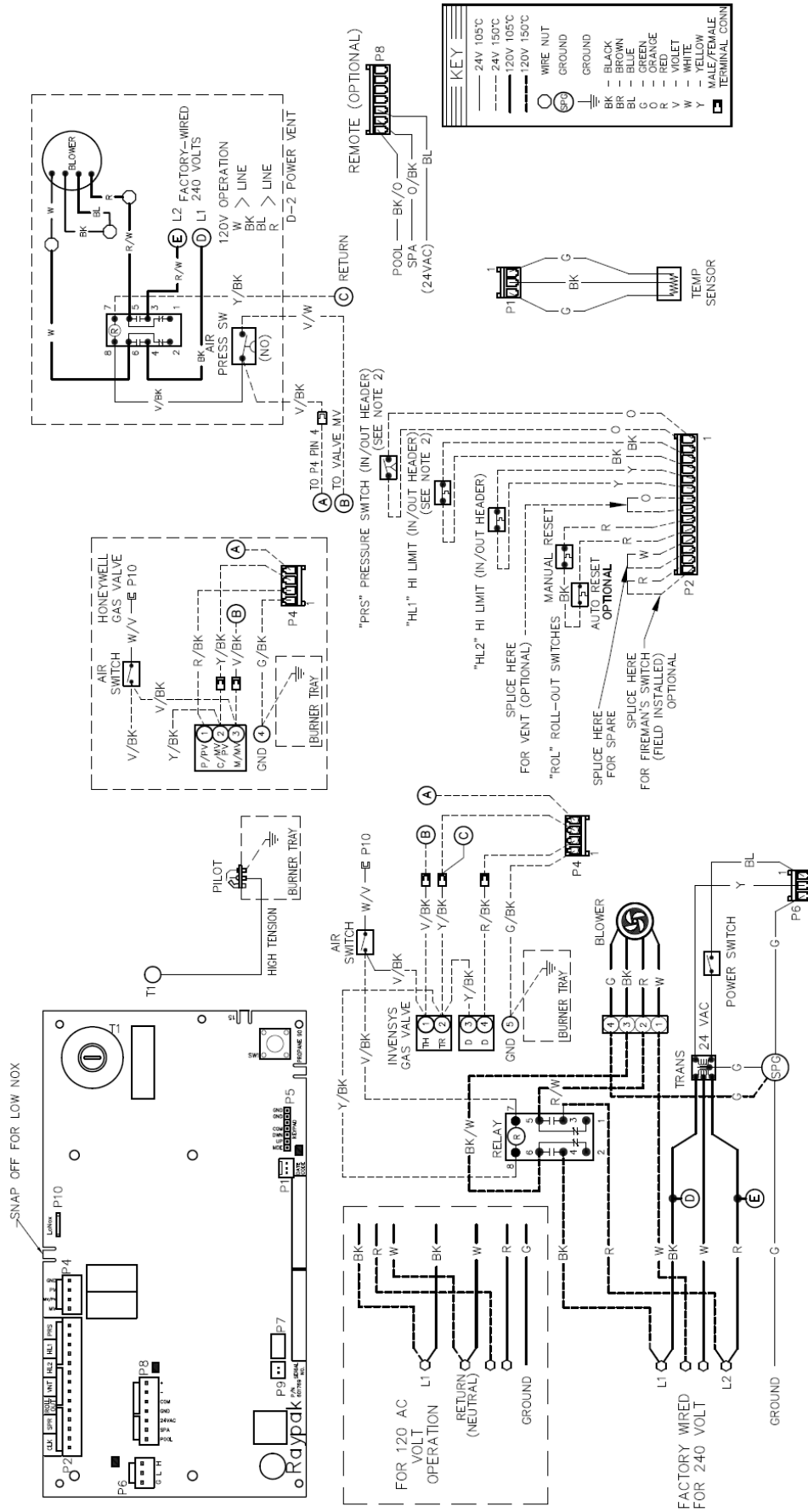
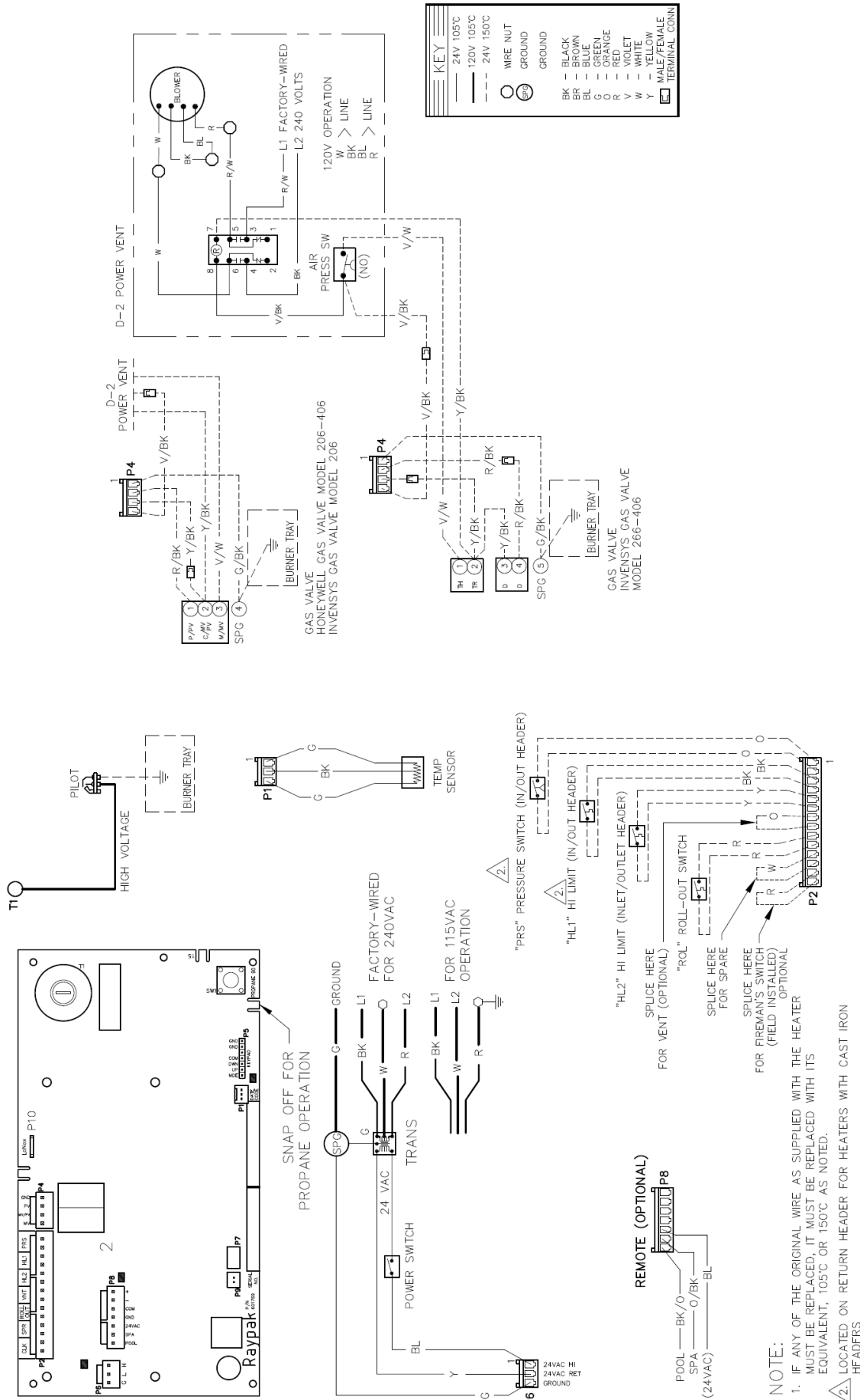


Figure 30. Connection Diagrams (206, 266, 268, 336, 406, 408)
UNCONTROLLED DOCUMENT IF PRINTED

Wiring Diagram: Models 207A, 267A, 307A, 407A



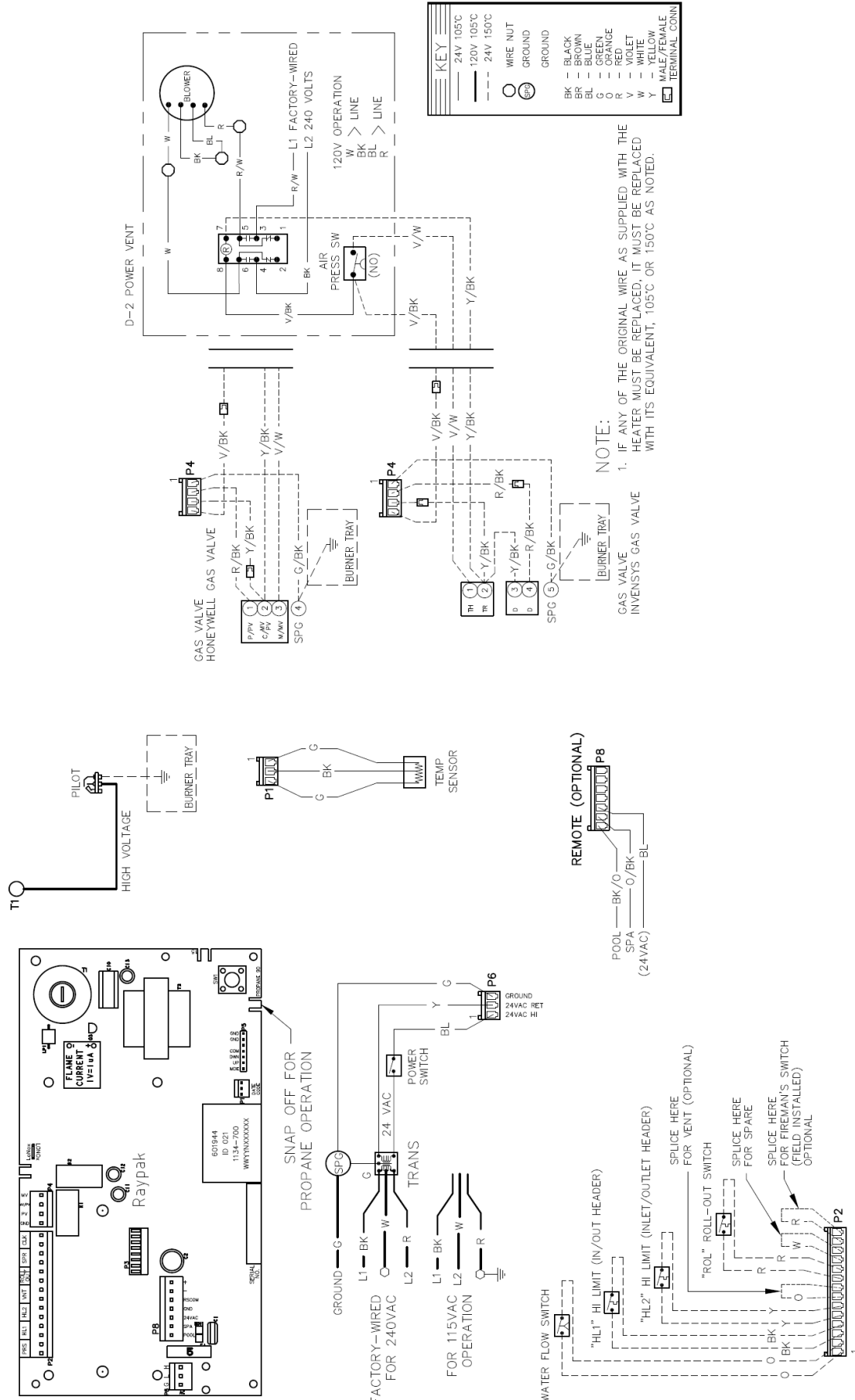
Wiring Diagram: Models 206A, 266A, 406A, 406A



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Wiring Diagram: Models 268, 408

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10. REPLACEMENT PARTS

NOTE: To supply you with the correct part, it is important that you supply the heater model number, serial number and type of gas when applicable.

Any part returned for replacement under standard company warranties must be properly tagged with a return parts tag, completely filled in with the heater serial number, model number, etc., and shipped to the Company freight prepaid.

If determined defective by the Company and within warranty, a like part or equal substitution will be returned, freight collect. Credit will not be issued.

MANUFACTURER:

2151 EASTMAN AVENUE
OXNARD, CA 93030

8. SEQUENCE OF OPERATION

On call for heat, the PC board will go through its safety chain (water pressure switch, high limit 1 & 2, roll-out, etc.). When the safety chain is closed, the IID pilot will begin to spark and the pilot gas valve will open. A flame will be lit at the pilot assembly. When an acceptable signal is sent back to the PC board, proving the rectification, the D-2 Power Vent blower will start. When the blower comes up to speed, a draft-proving switch will close to allow the main gas valve on the heater to open.

NOTE: On Low NOx units, the main gas valve & combustion blower will turn on simultaneously. A heater with a D-2 Power Vent will continue to operate until call for heat is satisfied.

9. DRAFT-PROVING SWITCH

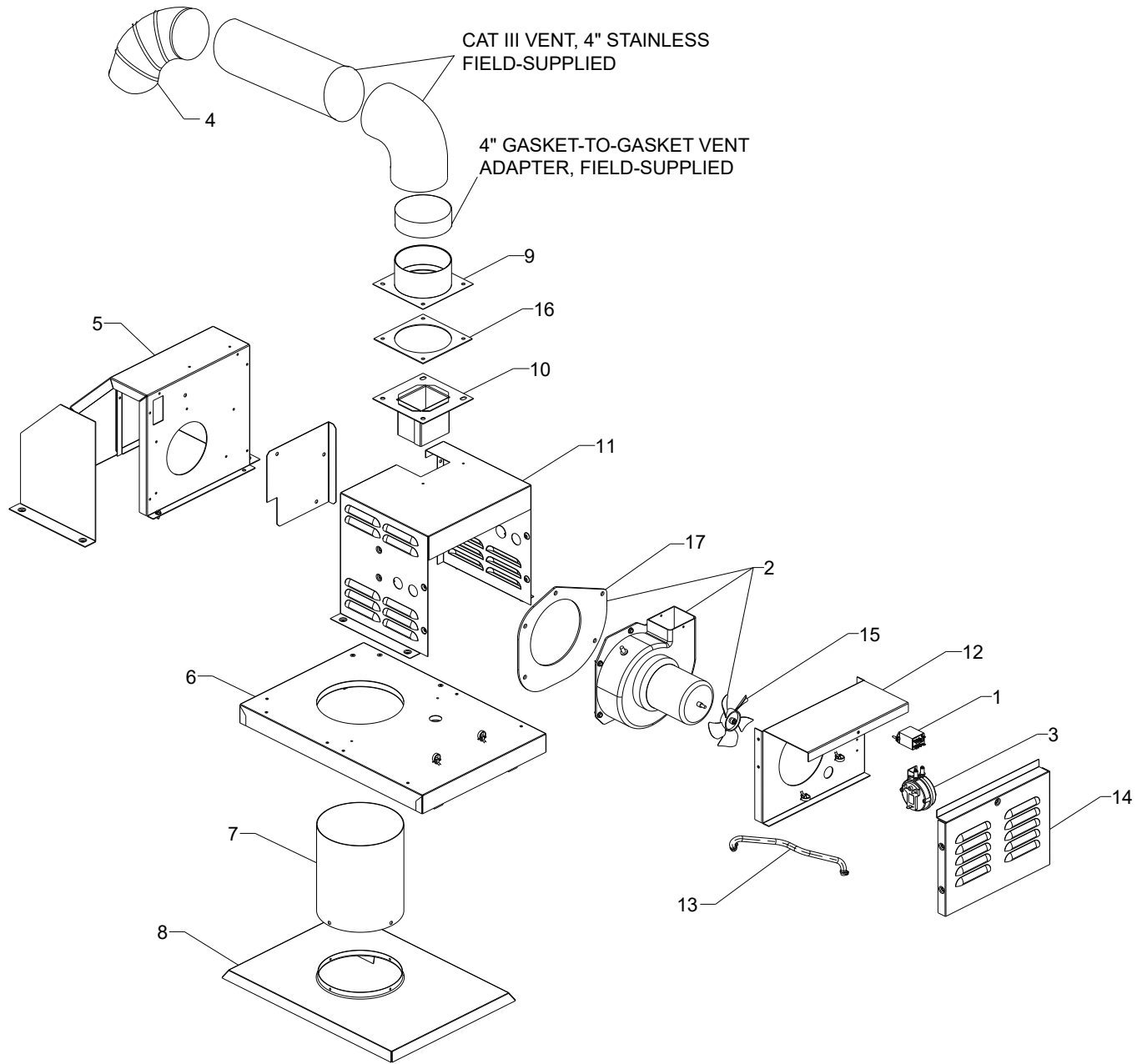
The draft-proving switch ensures that the blower is operating. Once the D-2 Power Vent is wired to the heater, the switch does not allow the PC board to open the main gas valve, unless it is closed.



Figure 31. Draft-Proving Switch

11. ILLUSTRATED PARTS LIST

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Call Out	Description	206/207	266/267/268	336/366	406/407/408
1	DPDT Relay	008784F	008784F	008784F	008784F
2	Blower	008156F	008156F	008156F	008156F
15	Blower Cooling Fan	011549F	011549F	011549F	011549F
17	Gasket	016000F	016000F	016000F	016000F
3	N.O. Air Pressure Switch	008062F	008062F	008135F	008135F
4	4"-90° Elbow w/Screen	010827F	010827F	010827F	010827F
5	Combustion Flue Box				
	Green	008682F	008682F	008683F	008683F
	Cool Dark Gray	013854F	013854F	013855F	013855F
6	Base Assembly	010821F	010821F	010822F	010822F
7	Flue Collar	008686F	008686F	008686F	008686F
8	Flue Adapter	010823F	010823F	010824F	010824F
9	4" Flange	008689F	008689F	008689F	008689F
16	Seal Gasket	015040F	015040F	015040F	015040F
10	Blower Adapter				
	Green	008690F	008690F	008690F	008690F
	Cool Dark Gray	013858F	013858F	013858F	013858F
11	Control Cover				
	Green	008691F	008691F	008691F	008691F
	Cool Dark Gray	013856F	013856F	013856F	013856F
12	Control Swaybrace	008692F	008692F	008692F	008692F
13	Silicone Hose	008693F	008693F	008693F	008693F
14	Front Panel				
	Green	008694F	008694F	008694F	008694F
	Cool Dark Gray	013857F	013857F	013857F	013857F