

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 10-0819	Issue Date:	CBL: 014 F012001
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Location of Construction: 18 HOWARD ST	Owner Name: RUTHERFORD CONSTANCE M	Owner Address: 18 HOWARD ST	Phone:
Business Name:	Contractor Name: Heating Solutions	Contractor Address: PO Box 129 Buxton	Phone 2072327525
Lessee/Buyer's Name	Phone:	Permit Type: HVAC	Zone: R-6

Past Use: Single Family Home	Proposed Use: Single Family Home - install a Teledyne Laars Endurance Direct Vent Boiler	Permit Fee: \$170.00	Cost of Work: \$14,683.00	CEO District: 1	32397
		FIRE DEPT: <input type="checkbox"/> Approved <input type="checkbox"/> Denied <i>N/A</i>	INSPECTION: Use Group: <i>R-3</i> Type: <i>HVAC</i> <i>State Caps Rules</i>		

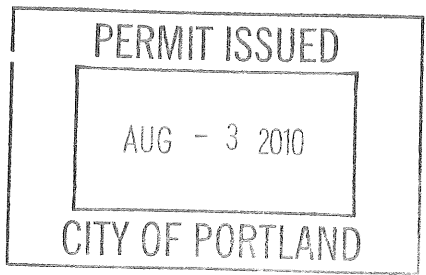
Proposed Project Description:
install a Teledyne Laars Endurance Direct Vent Boiler

Signature: _____
Signature: _____
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: Approved Approved w/Conditions Denied
Signature: _____ Date: _____

Permit Taken By: Idobson	Date Applied For: 07/09/2010	Zoning Approval		
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- This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
- Building permits do not include plumbing, septic or electrical work.
- Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Special Zone or Reviews	Zoning Appeal	Historic Preservation
<input type="checkbox"/> Shoreland	<input type="checkbox"/> Variance	<input checked="" type="checkbox"/> Not in District or Landmark
<input type="checkbox"/> Wetland	<input type="checkbox"/> Miscellaneous	<input type="checkbox"/> Does Not Require Review
<input type="checkbox"/> Flood Zone	<input type="checkbox"/> Conditional Use	<input type="checkbox"/> Requires Review
<input type="checkbox"/> Subdivision	<input type="checkbox"/> Interpretation	<input type="checkbox"/> Approved
<input type="checkbox"/> Site Plan	<input type="checkbox"/> Approved	<input type="checkbox"/> Approved w/Conditions
Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/>	<input type="checkbox"/> Denied	<input type="checkbox"/> Denied
Date: <i>OK with conditions</i> <i>5/7/12/10</i>	Date: _____	Date: _____



CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

City of Portland, Maine - Building or Use Permit

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Permit No: 10-0819	Date Applied For: 07/09/2010	CBL: 014 F012001
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Location of Construction: 18 HOWARD ST	Owner Name: RUTHERFORD CONSTANCE M	Owner Address: 18 HOWARD ST	Phone:
Business Name:	Contractor Name: Heating Solutions	Contractor Address: PO Box 129 Buxton	Phone (207) 232-7525
Lessee/Buyer's Name	Phone:	Permit Type: HVAC	

Proposed Use: Single Family Home - install a Teledyne Laars Endruance Direct Vent Boiler	Proposed Project Description: install a Teledyne Laars Endruance Direct Vent Boiler
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Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 07/12/2010

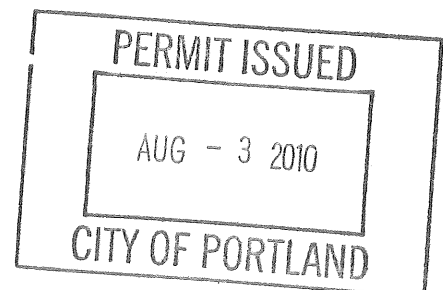
Note: **Ok to Issue:**

- 1) Separate permits shall be required for future decks, sheds, pools, and/or garages.
- 2) This is NOT an approval for an additional dwelling unit. You SHALL NOT add any additional kitchen equipment including, but not limited to items such as stoves, microwaves, refrigerators, or kitchen sinks, etc. Without special approvals.
- 3) This property shall remain a single family dwelling. Any change of use shall require a separate permit application for review and approval.

Dept: Building **Status:** Approved with Conditions **Reviewer:** Tammy Munson **Approval Date:** 08/03/2010

Note: **Ok to Issue:**

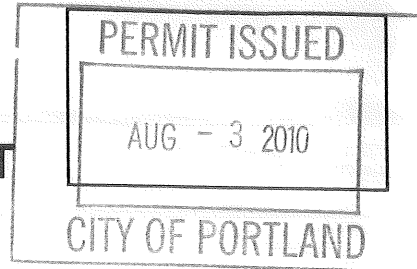
- 1) The installation must comply with the State of Maine Gas Regulations.





FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT



To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 14-F-12 Use of Building _____ Date 7/9/2010
 Name and address of owner of appliance Tom Landry 44 Coyle St Portland
Building 18 Howard St Portland
 Installer's name and address Heating Solutions LLC
PO Box 129 Buxton ME 04093 Telephone 207-232-7525

Location of appliance:

- Basement
- Floor
- Attic
- Roof

Type of Fuel:

- Gas
- Oil
- Solid

Appliance Name: Teddy bear Laars Endurance
 U.L. Approved Yes No

Will appliance be installed in accordance with the manufacture's installation instructions? Yes No

IF NO Explain: _____

The Type of License of Installer:

- Master Plumber # _____
- Solid Fuel # _____
- Oil # _____
- Gas # PNT 808
- Other _____

Type of Chimney:

- Masonry Lined
Factory built _____
- Metal
Factory Built U.L. Listing # _____
- Direct Vent
Type metal

Type of Fuel Tank

- Oil
- Gas

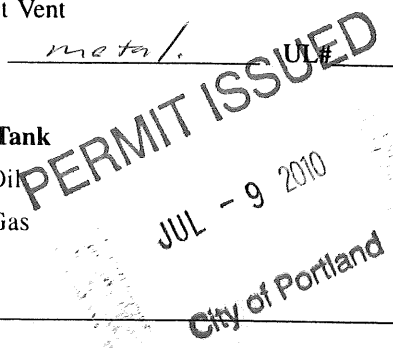
Size of Tank _____

Number of Tanks _____

Distance from Tank to Center of Flame _____ feet.

Cost of Work: \$ 14683

Permit Fee: \$ _____



Approved

Fire: _____
 Ele.: _____
 Bldg.: _____

Approved with Conditions

- See attached letter or requirement

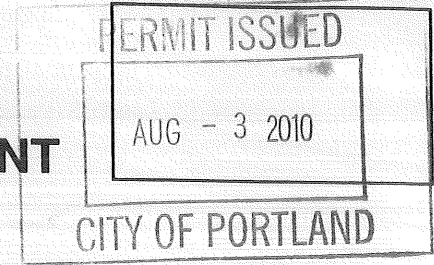
Signature of Installer [Signature]

Inspector's Signature _____ Date Approved _____



FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT



To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 14-F-12 Use of Building _____ Date 7/6/2010
 Name and address of owner of appliance Tom Landry 44 Cyle St Portland
Building 18 Howard St Portland
 Installer's name and address Heating Solutions LLC
PO Box 129 Buxton ME 04093 Telephone 207-232-7535

Location of appliance:
 Basement Floor
 Attic Roof

Type of Fuel:
 Gas Oil Solid

Appliance Name: Tekdyne Coars Endurance
 U.L. Approved Yes No

Will appliance be installed in accordance with the manufacture's installation instructions? Yes No

IF NO Explain: _____

The Type of License of Installer:
 Master Plumber # _____
 Solid Fuel # _____
 Oil # _____
 Gas # PNT 808
 Other _____

Type of Chimney:
 Masonry Lined
 Factory built _____
 Metal
 Factory Built U.L. Listing # _____
 Direct Vent
 Type metal UL# _____

Type of Fuel Tank
 Oil
 Gas

Size of Tank _____

Number of Tanks _____

Distance from Tank to Center of Flame _____ feet.

Cost of Work: \$ 14683

Permit Fee: \$ _____

Approved

Approved with Conditions

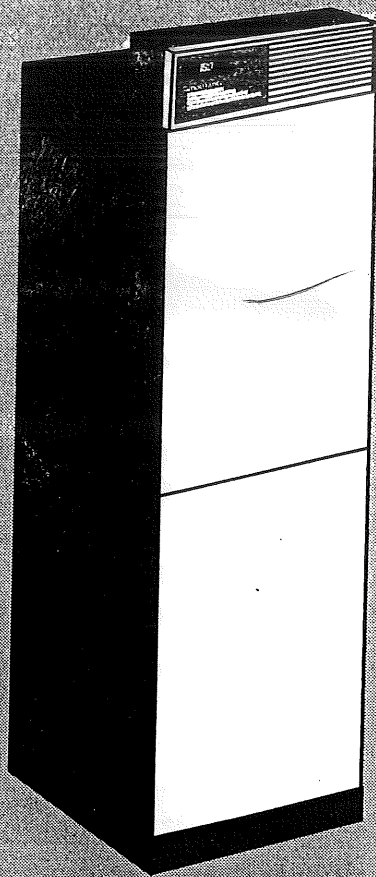
See attached letter or requirement

Fire: _____
 Ele.: _____
 Bldg.: _____

Inspector's Signature

Date Approved

Signature of Installer [Signature]



Installation,
Operation and
Maintenance
Instructions for

Teledyne Laars Endurance

EBP Series Modulating Combination Boiler
(natural or propane gas)
EDP Series Modulating Hydronic Boiler
(natural or propane gas)

FOR YOUR SAFETY: This product must be installed and serviced by a professional service technician, qualified in hot water heater and boiler installation and maintenance. Improper installation and/or operation could create carbon monoxide gas in flue gases which could cause serious injury, property damage, or death. Improper installation and/or operation will void the warranty.

⚠WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

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 nearby 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 gas supplier.

SECTION 5. Electrical Connections

All electrical wiring must conform to local codes and/or the National Electric Code or Canadian Electrical Code, Part 1.

The unit must be electrically grounded in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirement, with the National Electrical Code, ANS/NFPA No. 70 latest edition, or the CSA Standard C22.1 "Canadian Electrical Code, Part 1."

Single pole switches, including those of safety control and protective devices must not be wired in a grounded line.

All electrical connections are made in the field wiring box which is located on the top of the appliance, behind the right hand side of the control pod.

NOTE: All internal electric components have been pre-wired. No attempt should be made to connect electric wires to any other location except the wiring box as described below.

1. Main power: Connect a fused 120 volt supply (15 amp) to the main power switch (see Figure 15) (hot leg is connected directly to switch). Neutral leg to white wire. Ground wire can be connected to the grounding screw in the box or on the switch.
2. For single zone installations: (If external pump is required, e.g., because of large system pressure drop) connect room thermostat wires to the red and white/red wires. Connect circulator (120 volt, 5 amps maximum) between the blue wire and the white wire (neutral) (see Figure 16).
3. Zone Valves and Thermostats: Install external 24 volt transformer of sufficient V.A. to power combined load of zone valves. Consult zone valve manufacturer's instructions. Connect

circulator (120 volt, 5 amp maximum) between the blue wire and the white wire (neutral) (see Figure 17).

4. Multi zone/Multi-relay-circulator Installations: Multiple circulators must not exceed 5 amps total when connected to blue wire (see Figure 19).

NOTE: On zone valve systems such as Taco, Automag and others which do not have isolated (dry) contact end switches, a single pole isolating relay must be utilized (see Figure 18).

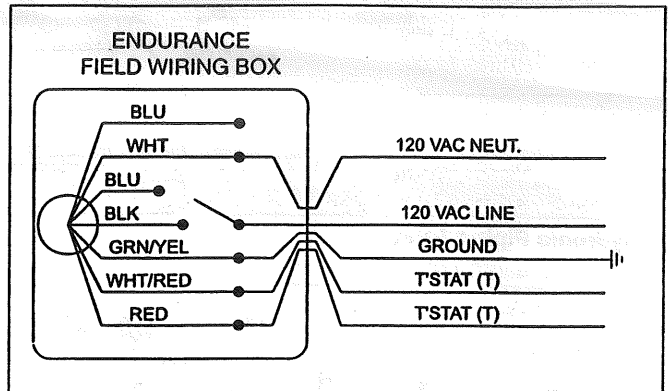


Figure 15. Single Zone With Room Thermostat (internal pump provides system flow).

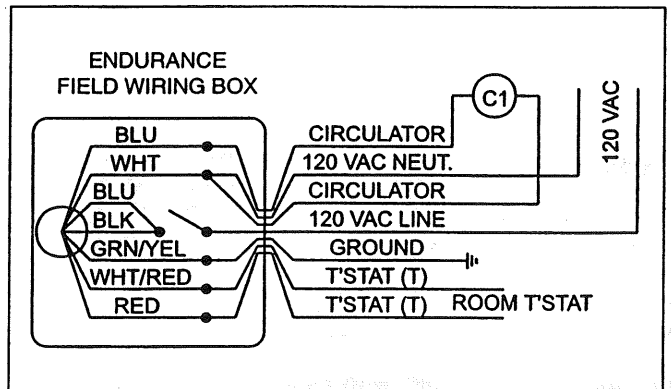


Figure 16. Single Zone with Added Circulator(s) and Room Thermostat(s).

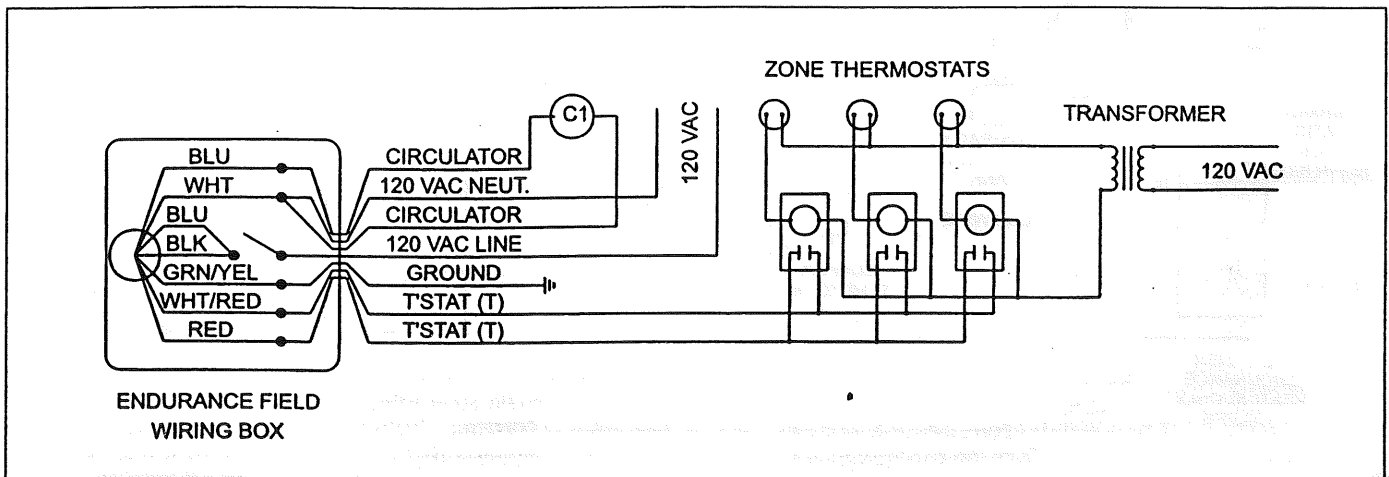


Figure 17. Multiple Zones Utilizing Four Wire Zone Valves with (Dry) End Switches.

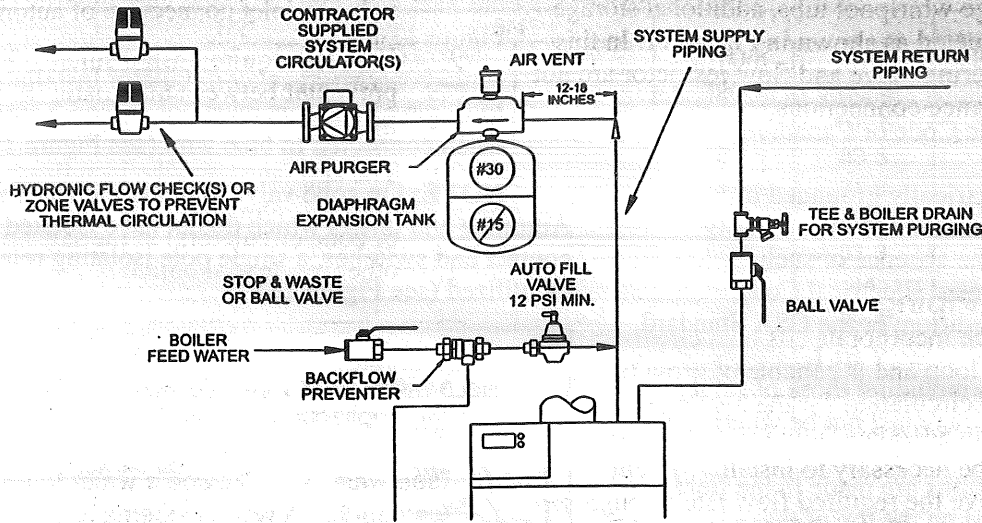


Figure 12. Hydronic Piping EBP.

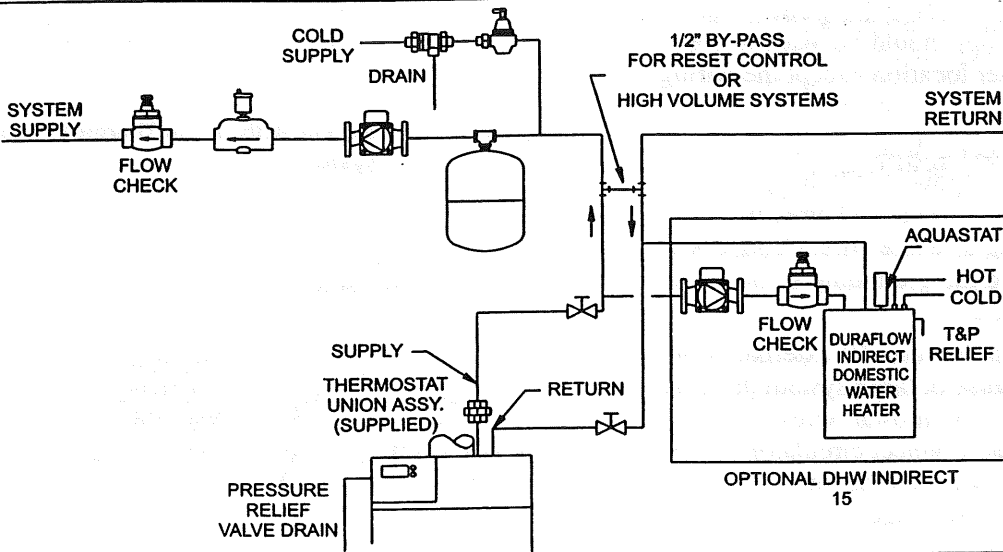


Figure 13. Piping, Model "EDP" with Indirect.

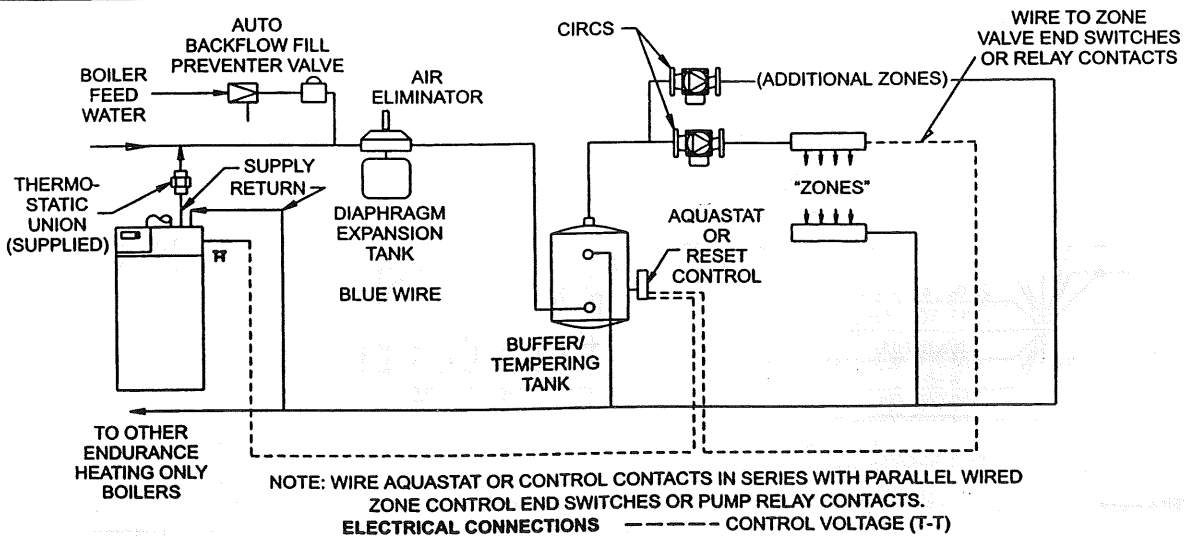


Figure 14. Piping, Model "EDP" for Radiant Floor.

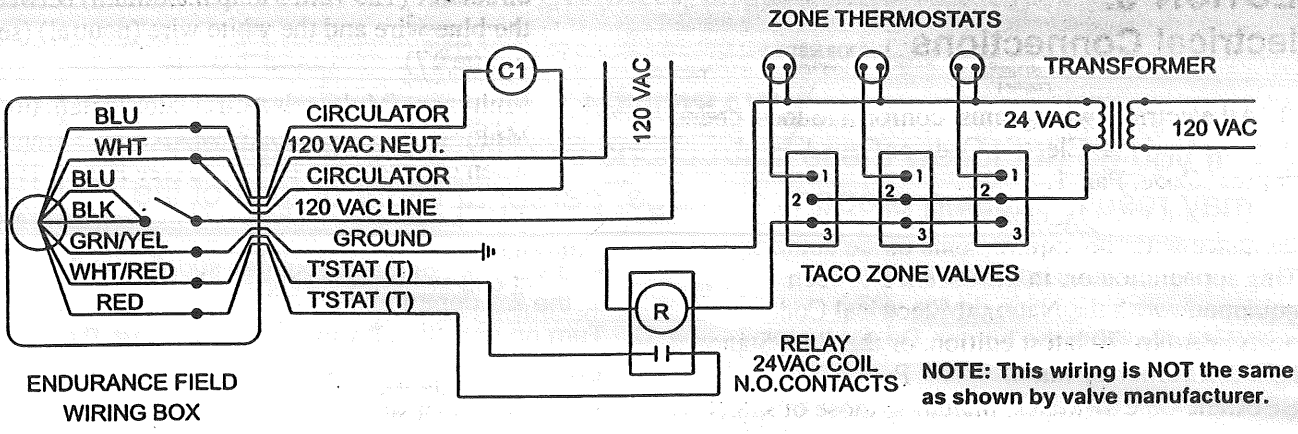


Figure 18. Multiple Zones with Three Wire Zone Valves (Requires Isolation Relay).

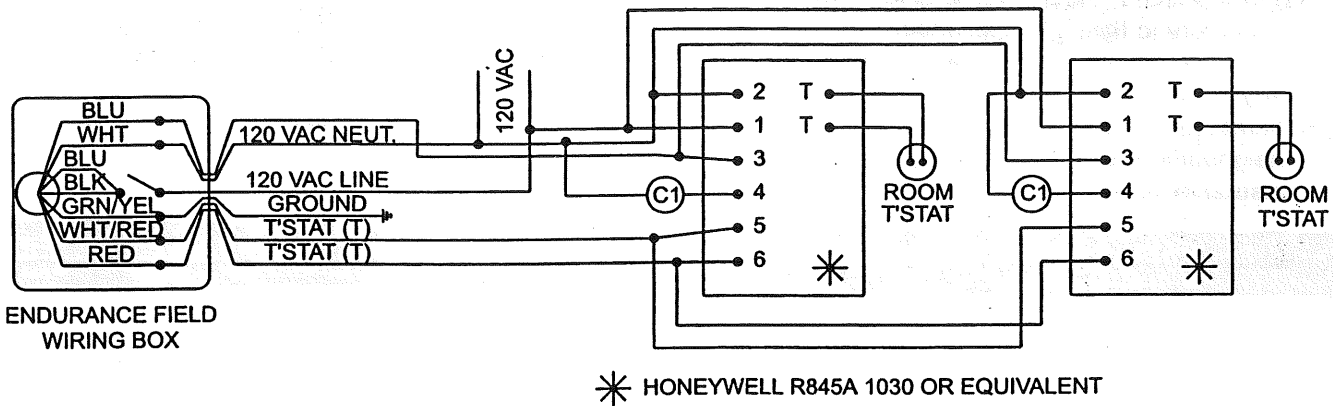


Figure 19. Multiple Zones with Circulators and Room Thermostats.

SECTION 6. Boiler Start Up

6A. Common Vent Test

At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

1. Seal any unused opening in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliance not connected to the common

venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.

4. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
5. Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.
6. After it has been determined that each appliance remaining connected to the common venting system properly vents, when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers and any other gas burning appliance to their previous conditions of use.
7. Any improper operation of the common venting system should be corrected so the installation conforms with the
 - a. National Fuel Gas Code, ANSI Z223.1 latest edition.
 - b. Can / CGA - B149.

FOR YOUR SAFETY READ BEFORE OPERATING

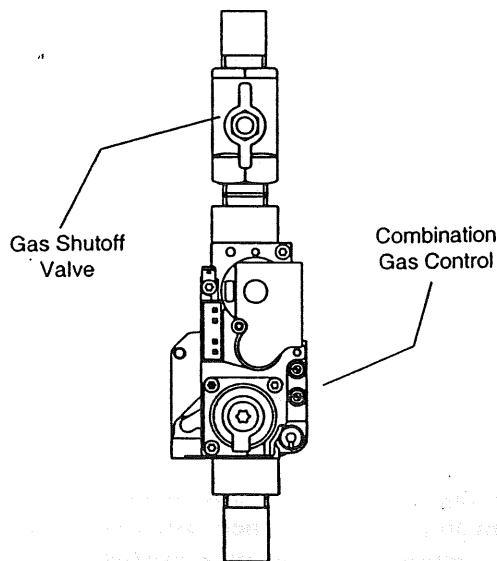
⚠ WARNING



If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
- B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance.
 - Do not touch any electric 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.
- C. If you cannot reach your gas supplier, call the fire department.
- C. Turn on gas shutoff valve (located above the combination gas control) so that the handle is aligned with the gas pipe. If the handle will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.


OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance.



4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Remove control access panel, and top front cover.
6. Turn gas shutoff valve clockwise  to "off". Handle will be horizontal, do not force.
7. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
8. Turn gas shutoff valve counterclockwise  to "on". Handle will be vertical.
9. Replace top front cover and control access panel.
10. Turn on all electric power to appliance, depress on/off button on control panel, depress black button on top of control panel.
11. Set thermostat to desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance if service is to be performed.
3. Remove control access panel and top front cover.
4. Turn gas shutoff valve clockwise  to "off". Do not force.
5. Replace top front cover and control access panel.

The CSA standard C22.1 "Canadian Electrical Code - Part 1" and local codes.

Unit installations must be made in accordance with:

Part 7, Venting of Equipment of the National Fuel Gas Code, ANSI Z223.1 latest edition, or applicable provisions of the local building codes or CAN/CGA B149.

When required by the jurisdiction authority, the installations must conform to the American Society of Mechanical Engineers' Safety Code for Controls and Safety Devices for Automatically fired Boilers, No. 3D-1.

D. Unpacking the Appliance

Remove all packing and tie down materials. Make immediate claims (to the carrier) if the appliance and its packaging are damaged.

D. Locating the Appliance

The appliance is designed for installation on non-combustible flooring, in alcoves, basements, closets, or utility rooms. It must not be installed on carpeting. **IF INSTALLED IN A FINISHED AREA, PROVISION SHOULD BE MADE FOR DRAINAGE OF ANY ACCIDENTAL SPILLAGE OR LEAKAGE.**

The location for the unit should be chosen with regard to venting dimensions, convenient access to piping, and accessibility for service and cleaning.

The boiler shall be installed so that the gas combustion system components are protected from water dripping, spraying, rain, etc.) during appliance operation or service (circulator replacement, control placement, etc.).

E. Clearances

The dimension and criteria in Table 1 should be followed when choosing the location for the unit.

	A		B			
	AGA/CGA		AGA		CGA	
	in.	mm	in.	mm	in.	mm
Left Side	1	25	6	152	24	610
Right Side	1	25	12	305	24	610
Top Side	1	25	14	356	24	406
Back	1	25	9	229	12	305
Front	1	25	24	610	24	610
Vent: Direct Vent	0	0	0	0		
Vent: Category IV	3	76	3	76		

Minimum clearance from combustible construction to meet AGA/CGA requirements.

Recommended clearance for accessibility and venting.

Table 1. Clearances

SECTION 2. Venting Options

2A. Direct Vent Kits

When using a direct vent kit, the appliance is a sealed combustion unit. All of its air is drawn in from the outside through the 5" outer pipe. Flue gases are vented through the 3" vent pipe positioned inside the 5" intake pipe. The hot flue gases are surrounded by the intake flow of cooler outdoor air. This vent system may be installed through, and be in contact with, combustible materials.

2B. Installing Direct Vent Kits

The direct vent appliance is certified with a maximum of 15 linear feet (4.6m) of vent pipe and three sets of elbows. There are two basic vent kits available, together with various additional elbow and extension kits if required (see Figures 3 and 4).

Detailed installation instructions are provided in the kits.

For additional length and/or fittings, the following components are available:

3" and 5" elbow set	Part Number 2400-330
5" x 1' extensions	Part Number 2400-332
5" x 2' extensions	Part Number 2400-334
5" x 2' to 4' adjustable extensions	Part Number 2400-336
3" x 1' extensions	Part Number 2400-338
3" x 2' extensions	Part Number 2400-340
3" x 2' to 4' adjustable extensions	Part Number 2400-342

2C. Locating the Vent on an Outside Wall

The center line of the vent opening must be at least 16½" (419mm) above grade, outside, and at least 13½" (343mm) from any other building opening, such as doors, windows, etc. Vent opening should be well away from shrubbery or other obstructions that would prevent free air flow to and from vent terminal. Do not terminate vent under decks, stairways, or car ports.

NOTE: Should it be impossible to locate opening center line 16½" (419mm) above grade, use optional vent terminal extension (p/n 2400-278).

Vent terminals must also be at least 3' (0.9m) above any forced air inlet located within 10' (3.0m), and at least 7' (2.1m) above grade when located adjacent to a public walkway, and cannot terminate in a location where condensate or vapor may be a nuisance, hazard, or could be a detriment to other equipment. Vent terminals must have a minimum clearance of 4' (1.2m) horizontally from, and in no case above or below electrical meters, gas meters, regulators, and relief equipment unless a 4' (1.2m) horizontal distance is maintained.

Do not locate the vent terminal where blockage by snow is a possibility, or where flue products could

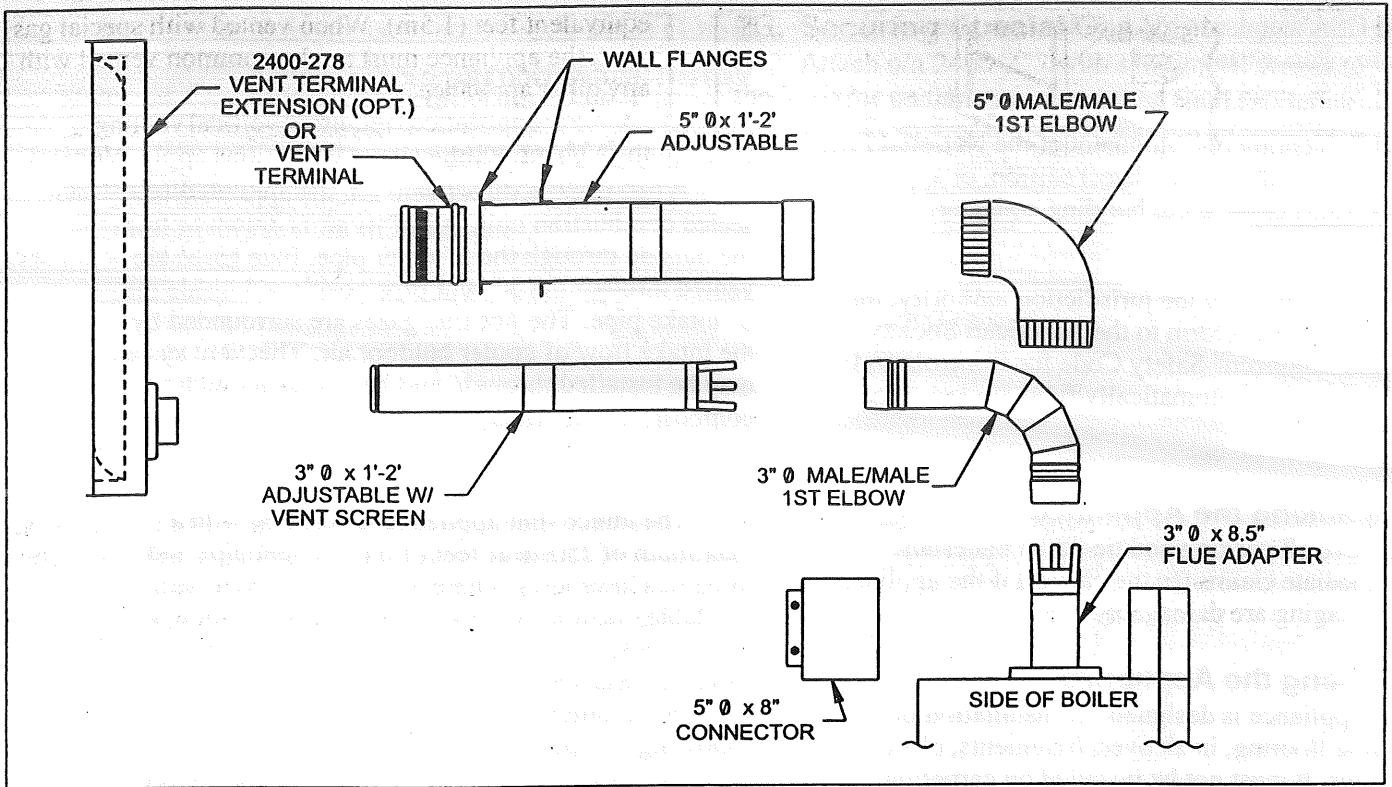


Figure 3. Part number 2400-500 provides all of the required venting materials for appliance installations adjacent to an outside wall and for installation of wall mounted units. Requires minimum above unit clearance of 13" (330mm) and provides maximum horizontal length of 24" from unit center line to outside wall face.

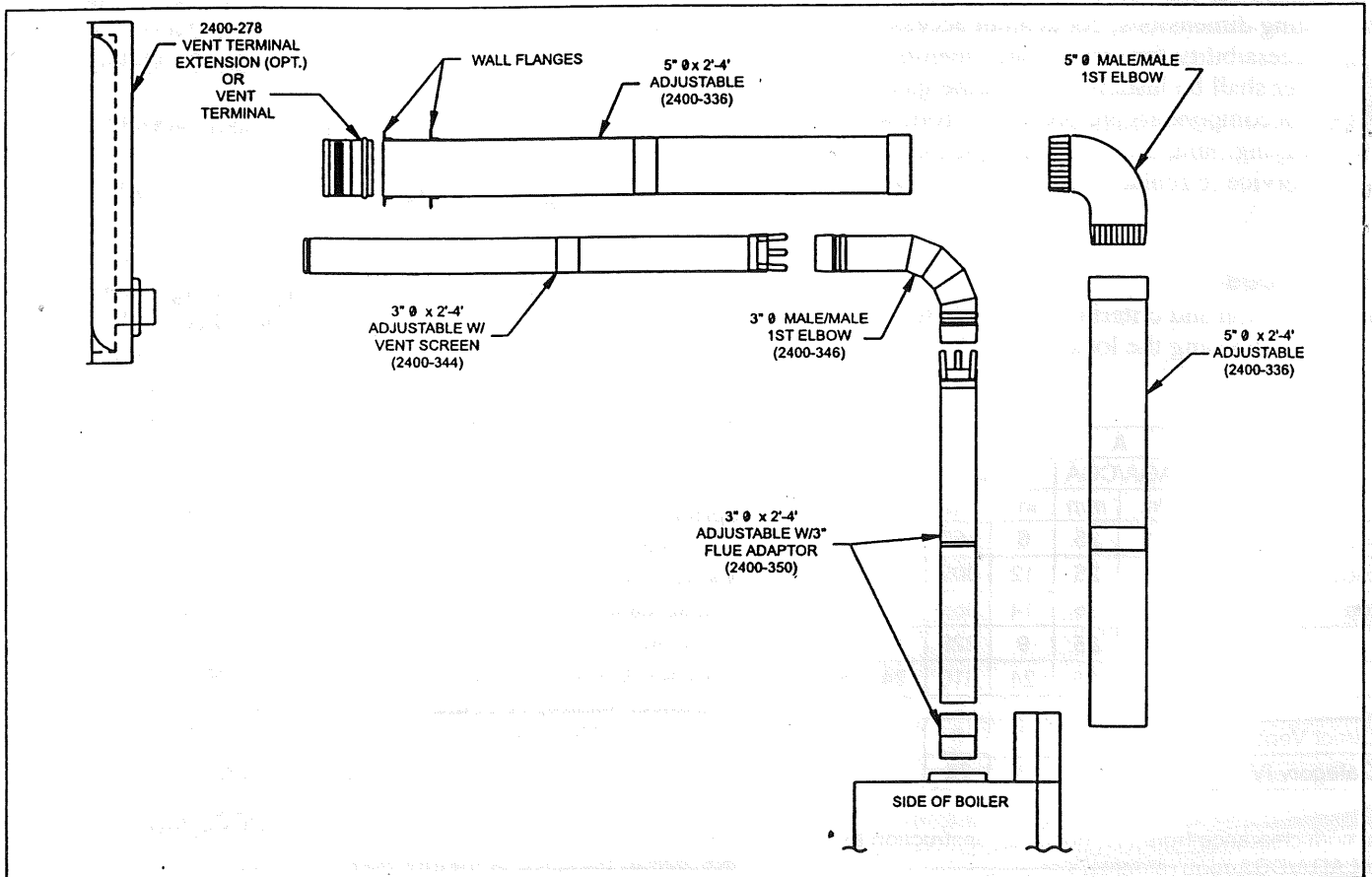


Figure 4. Part number 2400-326 for vent installations which require adjustable height and horizontal run. This kit provides vertical and horizontal lengths of pipe from 2' to 3½' (0.6 to 1.1m). To adapt 2400-278 (vent terminal extension) remove 3" screen section of telescoping piece. Companion section will directly fit extension.

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SECTION 1. General Information

1A. Introduction

EBP - This appliance is a low pressure, direct vent, hot water boiler that provides priority domestic hot water on demand as well as hydronic space heating system. It includes an insulated storage tank which is used to provide immediate response to both the hydronic space heating and domestic hot water production. The domestic hot water is produced via an indirect stainless steel plate heat exchanger.

EDP - This appliance is a low pressure, direct vent, cold start hot water boiler that provides heat for hydronic space heating.

Both appliances incorporate a circulating pump and a bypass loop, and provide circulation for the heating system and adequate flow for its own needs. It may be necessary to install a system circulator to achieve the required flow rate through the system.

Both appliances feature a forced draft, premixed combustion system. All air for combustion is supplied with the gas to the burner (flame holder). Both the

intake air and the gas are metered through separate orifices before entering the combustion air blower. The blower forces the air/fuel mixture through the flame holder and into the combustion chamber. The mixture is ignited from the hot surface ignitor and burns. Hot gases are forced out between the passes of the heat exchanger into the flue collector. Flue gases are discharged into the outside atmosphere through the vent terminal.

The appliance can operate with a concentric vent system that will provide outside air for combustion. Other venting arrangements can be provided for the appliance to include an alternative 50 equivalent feet maximum horizontal or condensate trapped vertical vent.

1B. Codes and Standards

The Endurance may be a direct vent or Category IV Boiler. All installations must be made in accordance with:

1. The National Fuel Gas Code, ANSI Z223.1 latest edition, or.
2. CAN/CGA B149 "Installation Codes for Gas Burning appliances and Equipment" and with the requirements of the local utility or other authorities having jurisdiction. Such application requirements take precedence over the general instructions contained herein.

All electrical wiring is to be done in accordance with:

1. The National Electrical Code ANSI / NFPA 70 latest edition or

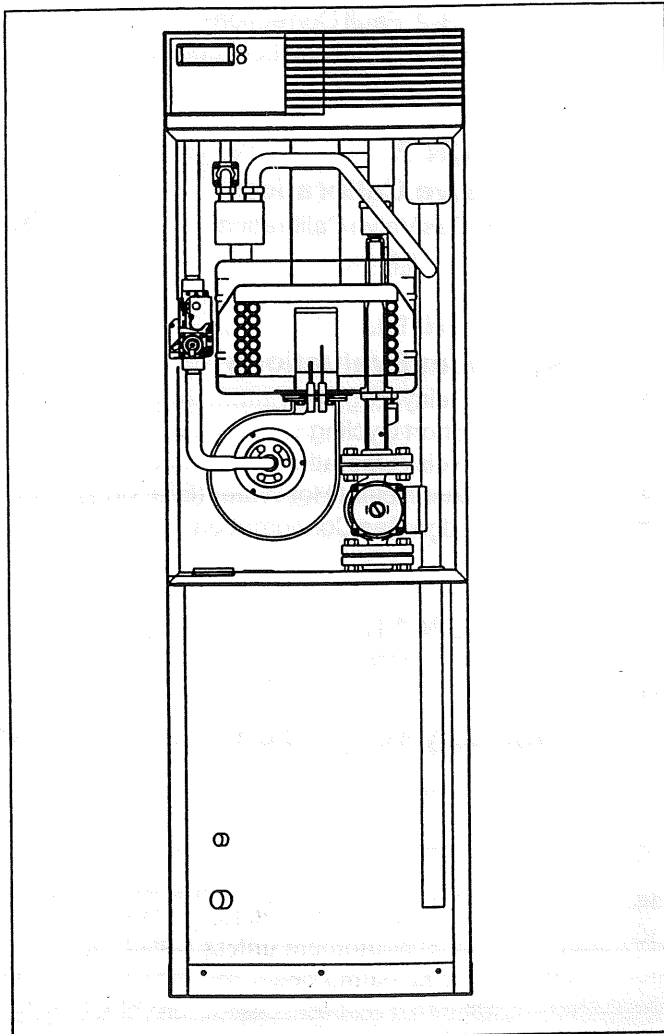


Figure 1. Combo Heating/Domestic Water (Model EBP).

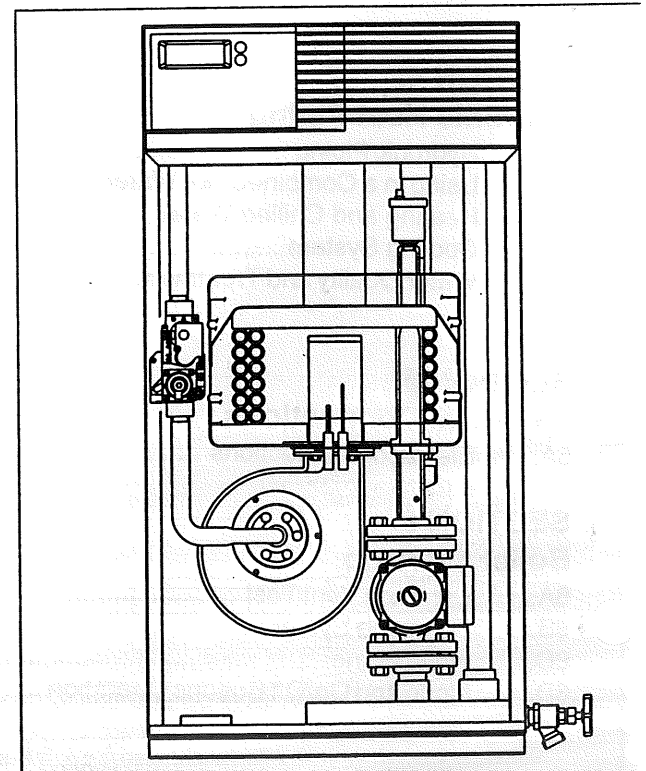


Figure 2. Heating Unit (Model EDP).

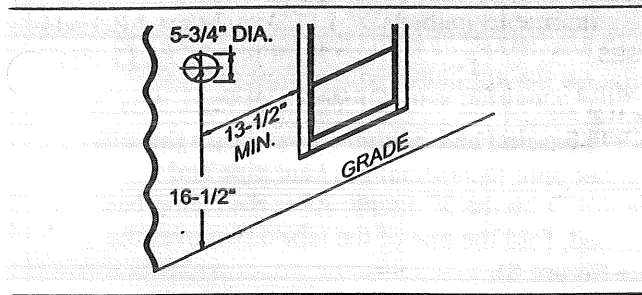


Figure 5. For Appliances Certified as Direct Vent.

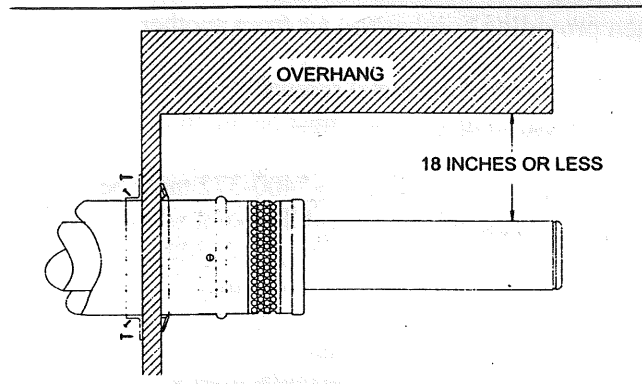


Figure 6. Typical vent installation with 18" or less overhead clearance to outside.

Strike against building materials and cause degradation. If the vent terminal location chosen is less than 18" below an overhang, the 3" vent pipe must extend to the outside edge of the overhang (see figure 6).

D. Stainless Steel Single Pipe Horizontal and Vertical Vents - Category IV

Stainless steel special gas Vent listed to U.L. Standard 1738 and U.L.C. Standard 636 may be used to vent all models. Vent pipe and fittings are manufactured to these standards by HeatFab, Inc.

Minimum clearance from combustibles (vent)	3"	76mm
Max. flue gas temp.	325°F	163°C
Max. vent pressure	1.5" WC	0.4kPa
Max. equivalent ft. of venting (any combination of horizontal or vertical)	3" diameter 50 equiv. ft.	76mm diameter 15.2m
Max. equivalent ft. of venting (any combination of horizontal or vertical)	100 equiv. ft. 4" diameter	30.5m 102mm dia.

Table 2. Appliance Venting Design Data.

Under the trade name of Saf-T Vent® and by Z-Flex™ under the trade name of Z-Vent. Follow the Special Vent manufacturer's instructions regarding design, location and assembly of the vent system.

The appliance may be vented with any number of elbows or fittings provided that the maximum equivalent feet of venting is not exceeded. Elbows 90° in the vent system shall be considered to be 5

equivalent feet (1.5m). When vented with special gas vent, the appliance must not be common vented with any other appliance.

For applications requiring vertical venting through a roof, the above limitations apply. Vertical vents greater than 6' (1.8m) in length must offset a condensate trap tee p/n 2400-358 adjacent to the appliance. Utilize vent cap p/n 2400-370 to terminate vertical venting.

2E. Air Source For Combustion (when not direct vented)

When using Category IV venting methods the appliance draws all combustion air through its top and from the adjacent space. When locating the appliance in unconfined spaces in buildings, infiltration may be adequate to provide air for combustion and ventilation. However, in buildings of unusually tight construction, or when locating the appliance in a confined space, additional air should be provided and the following guidelines must be followed.

1. If the space is in a building of unusually tight construction, air should be obtained from outdoors, or from spaces which freely connect with outdoors.
2. For boilers in confined rooms, two permanent openings shall be provided - one within 12" (305mm) of the ceiling, and one within 12" (305mm) of the floor of each room. Each opening shall be at least one square inch (6.5 sq. cm) per 1,000 BTU/hr (293W) boiler input, but not be less than 100 square inches (645.2 sq. cm). These openings shall freely connect with areas having adequate infiltration from outside.
3. When all air is provided from outdoors, the confined space shall be provided with one opening within 12" of the ceiling. This opening shall connect directly, or by ducts, with outdoors or spaces (crawl or attic) that freely connect

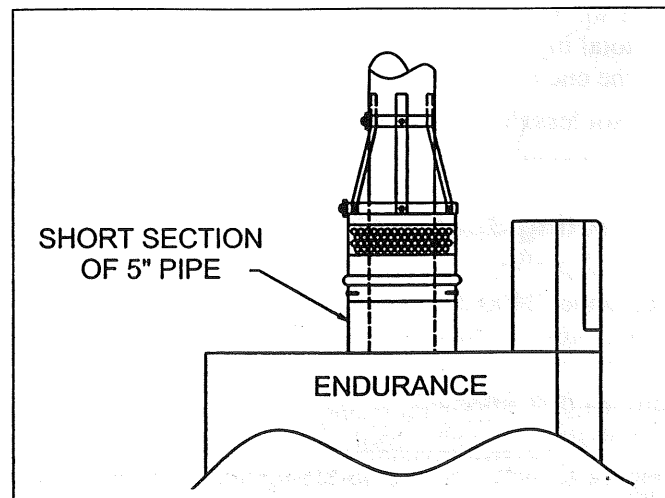


Figure 7. Special Gas Vent Connection.

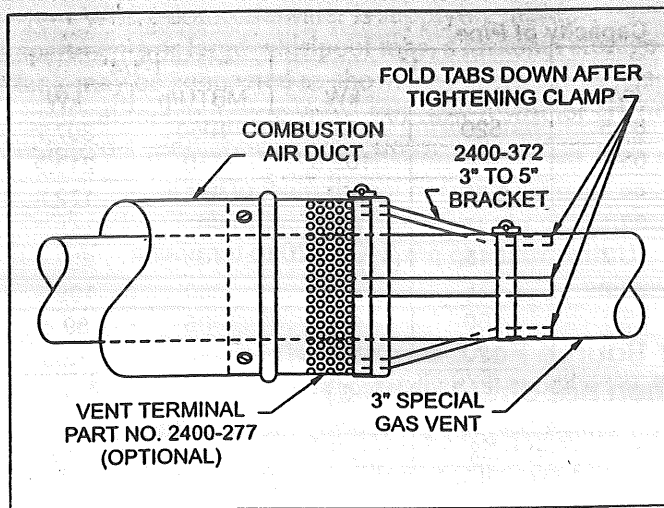


Figure 8. Alternative Combustion Air Source.

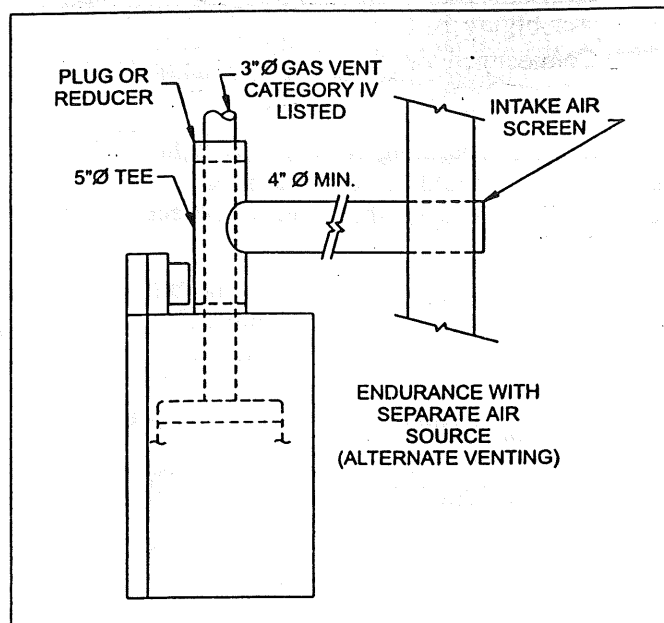


Figure 9. Non-Concentric Combustion Air Source.

with the outdoors, and shall have a minimum free area of:

- 1 sq. in. per 3000 BTU/hr (7 cm²/kw) of the total input rating of all equipment located in the enclosure, and
- Not less than the sum of the areas of all vent connectors in the confined space.

2F. Connecting Special Gas Vent to the Appliance

Part number 2400-372 is used with a vent terminal (p/n 2400-277) to secure the 3 inch special gas vent to the flue outlet of the appliance. Heat-Fab pipe or fittings (p/n 2400-350 or 2400-352) or the male end of Z-Vent pipe (Z-Vent # 02 SVEPXX030) may be installed over the flue outlet of the Appliance (see Figure 7).

2G. Securing Special Gas Vent

Attach p/n 2400-277 with sheet metal screws to the 5" collar on the appliance with a short piece of 5" pipe or to the end of the 5" combustion air duct. Attach p/n 2400-372 bracket and tighten clamp. Form the tabs on the bracket onto the special gas vent pipe and secure the tabs with the 3" clamp. After the clamp has been tightened, fold the end of the tabs down over the clamp (see Figure 8).

DO NOT use screws in any portion of the 3" special gas vent.

When providing combustion air from another location, the connection of the 5" duct to the appliance must be secured with sheet metal screws.

Each 5" joint in the 5" duct must be secured with sheet metal screws.

In this type of installation, p/n 2400-372 must be used to secure the special gas vent at the point where it exits the duct. The combustion air supply should be protected from debris entering the duct with an appliance vent terminal, p/n 2400-277, as shown in Figure 8 or with a large mesh screen.

Follow the special gas vent manufacturer's instructions for cleaning and sealing all parts before assembling.

Apply ¼" bead of silicone sealer (GE108 or Novagard 400) to the 3" flue outlet of the appliance approximately 1" from the end.

Slide 3" vent pipe over the appliance flue outlet and push down to stop (do not force pipe beyond stop).

Apply another bead of silicone around this joint and smooth out.

Apply ¼" bead of silicone to subsequent 3" joints.

An alternate, nonconcentric combustion air source may be installed (as shown in Figure 9), provided that the minimum 4" diameter combustion air duct does not exceed 15' (4.6m). Termination should include an air screen and be located in a qualified air space (see Section 2E) or outside.

SECTION 3.

3A. Gas Piping

The appliance requires an inlet gas pressure of at least 4" w.c. (1.0kPa) and no greater than 13" WC (3.2kPa). Check with your local gas utility or supplier for availability of this pressure range.

Refer to Table 3 to size the supply piping to minimize pressure drop between meter or regulator and unit.

1. Run gas supply line in accordance with all applicable codes.
2. Locate and install manual shutoff valves in accordance with state and local requirements.