Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 061401

PERMIT ISSUED

OCT 16 2006

CITY OF PORTLAND

This is to certify that Martins Point Health Care/Johnson & Jordan

has permission to Install a Lochinvar boiler w/ direct vent and tank

AT 309 VERANDA ST 434 C005001

provided that the person or persons performing or supervising the execution accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is lathed or otherwise closed-in. 24 HOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. _____

Health Dept. _____

Appeal Board _____

Other _____
Department Name

_____
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

Scanned

City of Portland, Maine - Building or Use Permit Application

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

PERMIT ISSUED
OCT 16 2006
CITY OF PORTLAND

Permit No:	Issue Date:	CBL:
06-1401		434 C005001

Location of Construction:	Owner Name:	Owner Address:	Phone:
309 VERANDA ST	Martins Point Health Care	331 Veranda St	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Johnson & Jordan	18 Mussey Road Scarborough	2078838345
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		HVAC	R-P

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial - Health Care Facility	Commercial/Health Care Facility install a Lochinvar boiler w/ direct vent &1000 gal tank	$190.00	$17,000.00	4

FIRE DEPT: ☑ Approved ☐ Denied
Rated Room NFPA 58
Signature: Greg Cook

INSPECTION:
Use Group: I 1/B Type: IBC 2003 BOILER
Signature: [illegible] 10/04/06

Proposed Project Description:
Install a Lochinvar boiler w/ direct vent and 1000 gal tank

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

Permit Taken By:	Date Applied For:
dmartin	09/22/2006

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. 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..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
Date: Bldg 9/22/06	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

FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT
HEATING OR POWER EQUIPMENT

PERMIT ISSUED
OCT 16
CITY OF PORTLAND

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 309 Veranda Street Use of Building Commercial Office Date 6/22/06

Name and address of owner of appliance Martins Point Health Care

331 Veranda Street Portland, ME 04103

Installer's name and address Johnson & Jordan Mech. Contractors

18 Mussey Rd. Scarborough, ME 04074 Telephone 883-8345

Location of appliance:

- ☒ Basement
- ☐ Floor
- ☐ Attic
- ☐ Roof

Type of Fuel:

- ☒ Gas LP
- ☐ Oil
- ☐ Solid

Appliance Name: Lochinvar Boiler

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 # 02460
- ☐ Solid Fuel #
- ☐ Oil #
- ☒ Gas # PNT 4955
- ☐ Other

Type of Chimney:

- ☐ Masonry Lined
  Factory built
- ☐ Metal
  Factory Built U.L. Listing #
- ☒ Direct Vent
  Type Out. 2 VENT Stainless IN. CPVC UL# 1738 / BH636

Type of Fuel Tank

- ☐ Oil
- ☒ Gas LP

Size of Tank 1000 Gal

Number of Tanks (2)

Distance from Tank to Center of Flame 400 **feet.**

Cost of Work: $ 17,000.00

Permit Fee: $ 190.00

Approved

Fire:

Ele.:

Bldg.:

Approved with Conditions

☐ See attached letter or requirement

Inspector's Signature

10/04/06
Date Approved

Signature of Installer

White - Inspection Yellow - File Pink - Applicant's Gold - Assessor's Copy

City of Portland, Maine - Building or Use Permit

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

Permit No:	Date Applied For:	CBL:
06-1401	09/22/2006	434 C005001

Location of Construction:	Owner Name:	Owner Address:	Phone:
309 VERANDA ST	Martins Point Health Care	331 Veranda St	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Johnson & Jordan	18 Mussey Road Scarborough	(207) 883-8345
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		HVAC	

Proposed Use:	Proposed Project Description:
Commercial/Health Care Facility install a Lochinvar boiler w/ direct vent &1000 gal tank	Install a Lochinvar boiler w/ direct vent and 1000 gal tank

Dept: Zoning **Status:** Approved **Reviewer:** Marge Schmuckal **Approval Date:** 09/22/2006

Note: **Ok to Issue:** ☑

Dept: Building **Status:** Approved with Conditions **Reviewer:** Michael A. Collins **Approval Date:** 10/04/2006

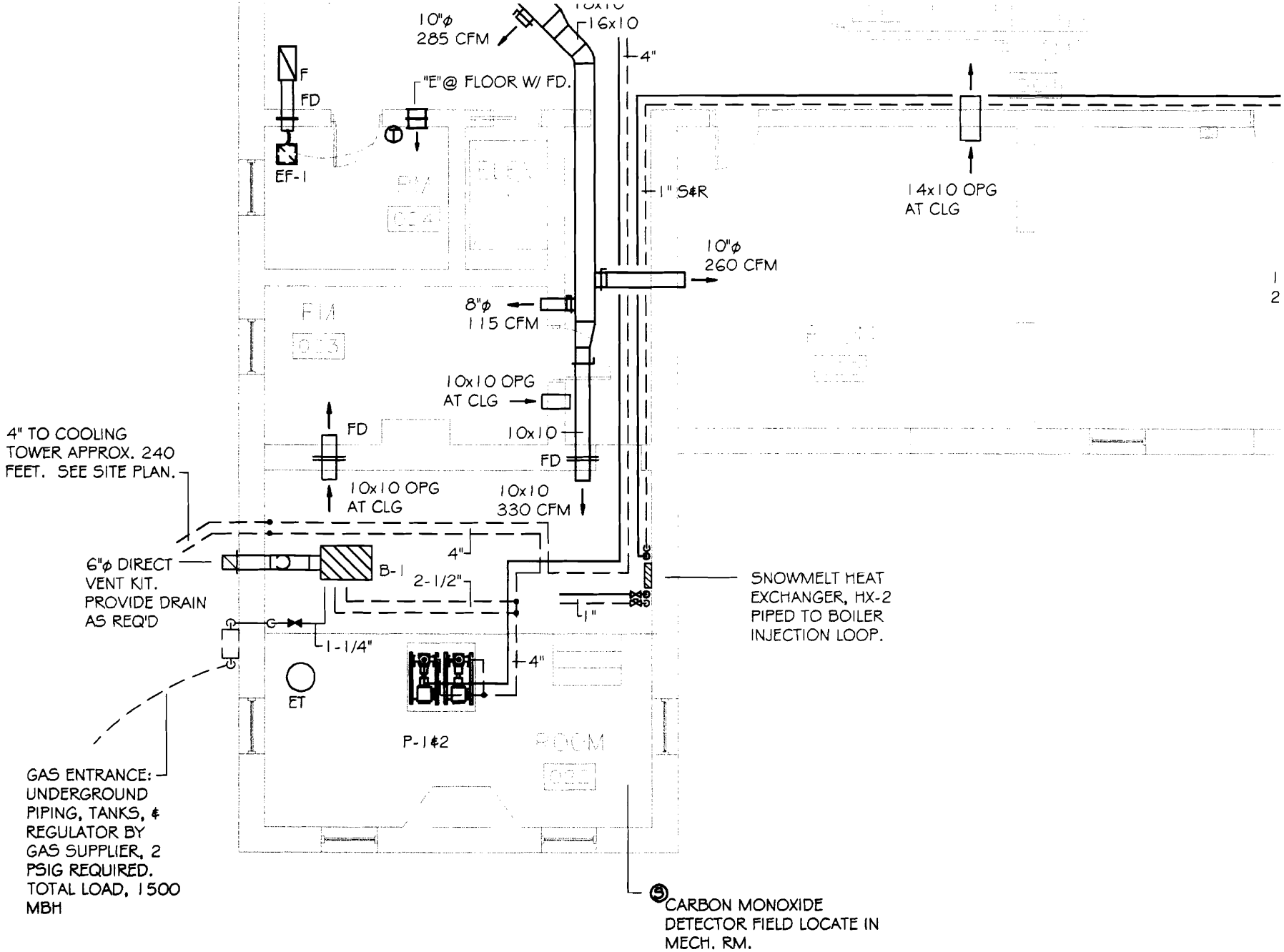
Note: **Ok to Issue:** ☑

1) Separate permits are required for any electrical, plumbing, or HVAC systems. Separate plans may need to be submitted for approval as a part of this process.
2) The installation must comply with the State of Maine Gas Regulations.
3) Equipment must be installed in compliance with the manufacturer's specifications

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Cptn Greg Cass **Approval Date:** 09/25/2006

Note: **Ok to Issue:** ☐

1) Install shall comply with NFPA 58
2) Room shall be rated to NFPA 101 standards



BASEMENT FLOOR PLA

SUBMITTAL - 013

PROJECT:	MARINE HOSPITAL RENOVATION MARTINS POIINT PHASE 1 PORTLAND, MAINE
GENERAL CONTRACTOR:	LEDGEWOOD CONSTRUCTION P. O. BOX 8107 PORTLAND, MAINE 04104
SUBCONTRACTOR:	N / A
SUPPLIER:	**F. W. Webb** 150 Postal Service Way South Portland, Maine 04106 Jim Senter P: 207-772-8364 F: 207-773-3423
SPECIFICATION SECTION:	N/A
PARAGRAPH:	N/A
DRAWING:	M-4
ITEM:	BOILER DIRECT VENT FLUE

JOHNSON&JORDAN, INC.
18 Mussey Rd. Scarborough, ME
Approved____ Approved as Noted____
Re-Submit____ Reviewed__X__
Subject to Architects Approval _X_
Date 9/19/06 By JEK

MARTNE HOSPITAL RENOVATION
MARTINS POINT PHASE 1
PORTLAND, MAINE

BOILER DIRECT VENT FLUE

MANUFACTURER: Z-FLEX

SUPPLIER: F. W. WEBB

INSTALLER: JOHNSON AND JORDAN MECHANICAL CONTRACTORS

Category IV Flue Pipe Materials

Select venting material from the following specified vent materials:

Heat-Fab Inc. Saf-T CI Vent with AL29-4C stainless steel (Call 1-800-772-0739 for nearest distributor)

Protech Systems Inc. Fas N Seal Vent with AL29-4C stainless steel (Call 1-800-766-3473 for nearest distributor)

Metal-Fab Inc. Corr/Guard Vent with AL29-4C stainless steel (Call 1-800-835-2830 for nearest distributor)

Z-Flex Z-Vent with AL29-4C stainless steel (Call 1-800-654-5600 for nearest distributor)

Or other listed **Category IV** vent systems suitable for a condensing, positive pressure gas fired appliance.

Venting Guidelines for a Category IV Vent

The connection from the appliance vent to the stack or vent termination outside the building **MUST** be made with listed **Category IV** vent system and must be direct as possible with no reduction in diameter. The **Category IV** vent and accessories, such as firestop spacers, thimbles, caps, etc., **MUST** be installed in accordance with the vent manufacturers instructions. The vent connector and firestop must provide correct spacing to combustible surfaces and seal to the vent connector on the upper and lower sides of each floor or ceiling through which the vent connector passes.

Each appliance must have a dedicated flue with no other appliance interconnected to any part of the dedicated flue. Each appliance **MUST** also connect to the dedicated flue stack using a properly sealed vent adapter provided by the vent manufacturer.

Any vent materials specified must be listed by a nationally recognized test agency for use as a **Category IV** vent material.

The venting system must be planned so as to avoid possible contact with concealed plumbing or electrical wiring inside walls, floors or ceilings.

Locate the appliance as close as possible to chimney or gas vent.

There shall be no reductions in vent diameter.

Horizontal portions of the venting system shall be supported to prevent sagging. Horizontal runs should slope upwards not less than 1/4 inch per foot (21 mm/m) from the drain tee installed in the flue to the vertical portion of the flue or to the vent terminal on sidewall venting installations. This ensures proper removal of any condensate that may form in the flue. Follow the installation instructions from the vent material manufacturer.

Do not use an existing chimney as a raceway if another appliance or fireplace is vented through the chimney.

The weight of the venting system must not rest on the unit. Adequate support of the venting system must be provided in compliance with local codes and other applicable codes. All connections should be secured and sealed per the vent manufacturers specifications.

Vent connectors serving appliances vented by natural draft shall not be connected to any portion of the **Category IV** positive pressure vent system used by this appliance. Connection of a negative draft flue into the positive pressure stack from this appliance may cause flue products to be discharged into an occupied living space causing serious health injury.

When a **Category IV** vent system is disconnected for any reason, the flue must be reassembled and resealed according to the vent manufacturer's instructions.

The installed length of the **Category IV** flue from the appliance to the point of termination, outside of the building, must not exceed a **maximum of 50 equivalent feet** (15.2 m) **in length**. Subtract 5 feet (1.5 m) of equivalent length for each 90° elbow installed in the vent. Subtract 2-1/2 feet (0.7 m) of equivalent length for each 45° elbow installed in the vent.

The flue may terminate either vertically at the roof top or horizontally on a sidewall. See the information about the specific vent termination location for recommended location and clearances.

Z-VENT

Commercial/Industrial

MODEL SVE SERIES IV

INSTALLATION AND MAINTENANCE INSTRUCTIONS

3"- 12" SINGLE AND DOUBLE WALL

SPECIAL STAINLESS STEEL VENTING SYSTEM

FOR GAS BURNING APPLIANCES

CATEGORY II, III, & IV

c UL us
LISTED

TESTED AND LISTED BY
UNDERWRITERS LABORATORIES INC.
UL 1738 & BH636

Note the following before installation of Z-Vent

* Examine all components for possible shipping damage prior to installation. *

* The **Z-Vent** system must be free to expand and contract. Pipe must be properly supported. *

* Proper joint assembly is essential for a safe installation. Follow these instructions exactly as written. Check severeness of joints upon completion of assembly. *

* Check for unrestricted vent movement through walls, ceilings and roof penetrations. *

* Different manufacturers have different joint systems and adhesives. Do Not Mix Pipe, Fittings or Joining methods from different manufacturers. *

FLEXMASTER CANADA LTD
452 ATTWELL DR.
M9W 5C3
ETOBICOKE, ONTARIO
(416) 679-0045

Z-FLEX US, INC.
20 COMMERCE PARK, NORTH
BEDFORD, N.H.
03110-691
1(800) 654-5600

SPECIAL STAINLESS STEEL VENTING
For use with Category I, II, III, & IV gas burning appliances

Contact Local Building or Fire Officials about Restrictions and Installation Inspections in your area as well as National codes: USA -National Fuel Gas Code ANSI-Z223.1/NFPA 54, CANADA -CAN\CGA-B149.1 or .2 Fuel Burning Installation Code
Please refer to appliance manufacturers' instructions to determine proper sizing and connection of venting system to appliance, including maximum horizontal length, maximum height, and installation clearances (air spaces). The proper operation of the vent system and appliance requires parts specified by Z-FLEX with no deletions or substitutions.

Z-FLEX recommends that an experienced professional who works with venting systems on a regular basis perform the installation. These instructions are intended as a guide to assist a professional installer.

When the **Z-VENT** system is installed, the following should be observed:

1. A venting system that exits the structure through a sidewall or the like, shall terminate not less than 12 inches (254 mm) above the ground (see illustration # 2, page 4).
2. The termination of a system shall be located above the snow line in geographical areas where snow accumulates. The termination area should be kept clear of snow and ice at all times.
3. The vent shall not terminate less than 7 ft. (2.13 m) above a paved sidewalk or driveway.
4. The termination shall be 6 ft. (1.8 m) or more from the combustion air intake of any appliance.
5. The system shall terminate more than 3 ft. (.91 m) from any other building opening, gas utility meter, service regulator or the like.
6. Exterior mounted venting systems should be enclosed below the roof line with a chase to limit condensation and protect against mechanical failure.

NOTES:

A. The Z-FLEX SPECIAL STAINLESS VENT SYSTEM is for use only with appliances having a positive vent pressure of 8" of water column or less.
B. Except for installation in one and two family dwellings, a venting system that extends through any zone above that on which the connected appliance is located shall be provided with an enclosure having a fire resistance rating equal to or greater than that of the floor or roof assemblies through which it passes
C. Do not place any type of insulation in any required air spaces surrounding the venting system.
D. A termination must be used on all installations to assure proper operation and to prevent debris from entering the venting system.
E. Vertical runs must use firestops as lateral support at each ceiling level and at least one support collar at the base of the vertical run. For vertical runs exceeding 16' (4.88 m), a support collar is required at 16' (4.88 m) intervals. Horizontal runs require a loose fitting metal strap or similar support at each elbow.

Model SVEIV	
PRODUCT NO.	DESCRIPTION
2SVEPWC	Model SVEIV Single Wall Pipe
2SVSPA	Model SVEIV Single Wall Adj. Pipe
2SVST	Model SVEIV Single Wall Tee
2SVEE	Model SVEIV Single Wall Elbow 90
2SVSRCX	Model SVEIV Single Wall Rain Cap W/ Wind Band
2SVSRC	Model SVEIV Single Wall Rain Cap
2SVDP	Model SVEIV Double Wall Pipe
2SVDA	Model SVEIV Double Wall Adj. Pipe
2SVDE	Model SVEIV Double Wall Elbow 90
2SVDT	Model SVEIV Double Wall Tee
2SVDRC	Model SVEIV Double Wall Rain Cap W/ Wind Band
2SVDRC	Model SVEIV Double Wall Rain Cap
2SVSTCD	Model SVEIV Tee Cap W/Drain
2SVSTC	Model SVEIV End Cap
2SVSFSS	Model SVEIV Single Wall Firestop/ Support
2SV_F	Model SVEIV Tall Cone Flashing
2SV_LS	Model SVEIV Support/Storm Collar
2SV_WS	Model SVEIV Wall Support
2SV_GB	Model SVEIV Guy Band

JOINT PROCEDURE

(see illustration #1)

The female end of each Z-Vent Model SVE IV component incorporates a silicone sealing gasket. Examine all components to insure that gasket integrity has remained during shipping.

1. Align pipes and push them together as far as they will go for single wall or until lock engages for double wall.

NOTE: Some flue collars may require the use of high temperature silicone sealant to make a positive pressure gas tight seal.

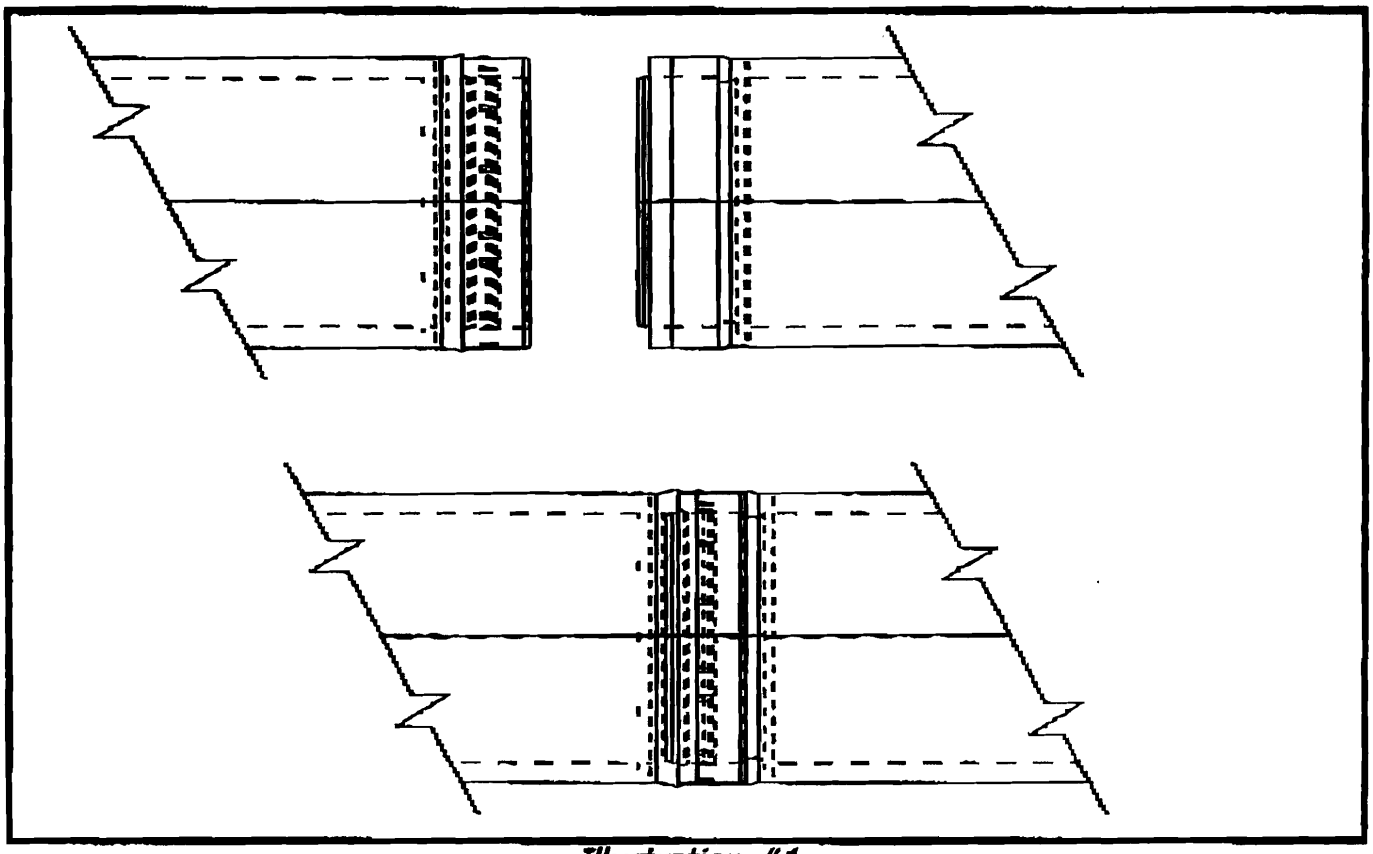


Illustration #1

CLEARANCE TO COMBUSTIBLES

SYSTEM	SYSTEM OPERATING TEMPERATURE	CLEARANCE ENCLOSED VERTICAL	CLEARANCE UNENCLOSED	
			HORIZONTAL	VERTICAL
SINGLE WALL	550°F (288°C)	6" (150 mm)	Pipe 3" (76 mm) Thimble-6"(25 mm)	3" (152 mm)
	480 F (249 C)	4" (100 MM)	1" (25 MM)	N/A
	300 F (149 C)	4" (100 MM)	1" (25 MM)	1" (25 MM)
DOUBLE WALL	550°F (288°C)	6" (150 mm)	Pipe-2" (51 mm) Thimble-3" (76	2" (51 mm)
	480 F (249 C)	4" (100 MM)	MM)	N/A
	300 F (149 C)	4" (100 MM)	1" (25 MM)	1" (25 MM)
			1" (25 MM)	

SIDE WALL VENTING INSTALLATION

(see illustration #2 below)

1. The pipe may be mortared in directly without using a wall thimble, if the wall is non-combustible. Penetrating a combustible wall requires the use of a wall thimble. Install wall thimble into wall, observing the aforementioned rules and/or local building codes. Select the point of wall penetration where the minimum 1/4 " per foot of slope (6.4 mm per 305 mm) can be maintained. A framed opening is required to insert the thimble halves. The thimble is adjustable for different wall thicknesses. The termination cap is to be installed no less than 5-1/2 in. from the combustible exterior sidewall. Caulk around outside edge of plates as necessary and fasten to wall using suitable screws or nails. The vent pipe must be sealed at wall thimble as per code regarding continuous vapor barrier.

2. The system can now be assembled through the thimble (attach the termination first - note "UP" arrow) and then back to the appliance as per illustration using **JOINT PROCEDURE** as described on page #3. A gear clamp must be installed around the pipe on the inside of wall to trap pipe in position so that the system cannot be moved in or out of wall. This applies to both combustible and non-combustible walls

3. The system must be supported along its horizontal length at all elbow locations and every forty-eight inches or less using straps around pipes maintaining clearance to combustibles as per table on page 3.

4. The horizontal distance of the system from the appliance flue collar to the outside of the Horizontal termination cannot be greater than that specified in the manufacturer's installation instructions and not be less than four (4) feet unless the vent is through a non-combustible wall.

NOTE:

Any horizontally installed portion of a venting system shall have a slope (upwards for Category II, III, or IV appliances or downwards for Category III or IV appliances) not less than 1/4" (6.4 mm) every 12 inches (305 mm) to prevent collection of condensate at any location in the assembly. Fasteners must not penetrate the components of the system either when joining pipes and fittings or using support straps.

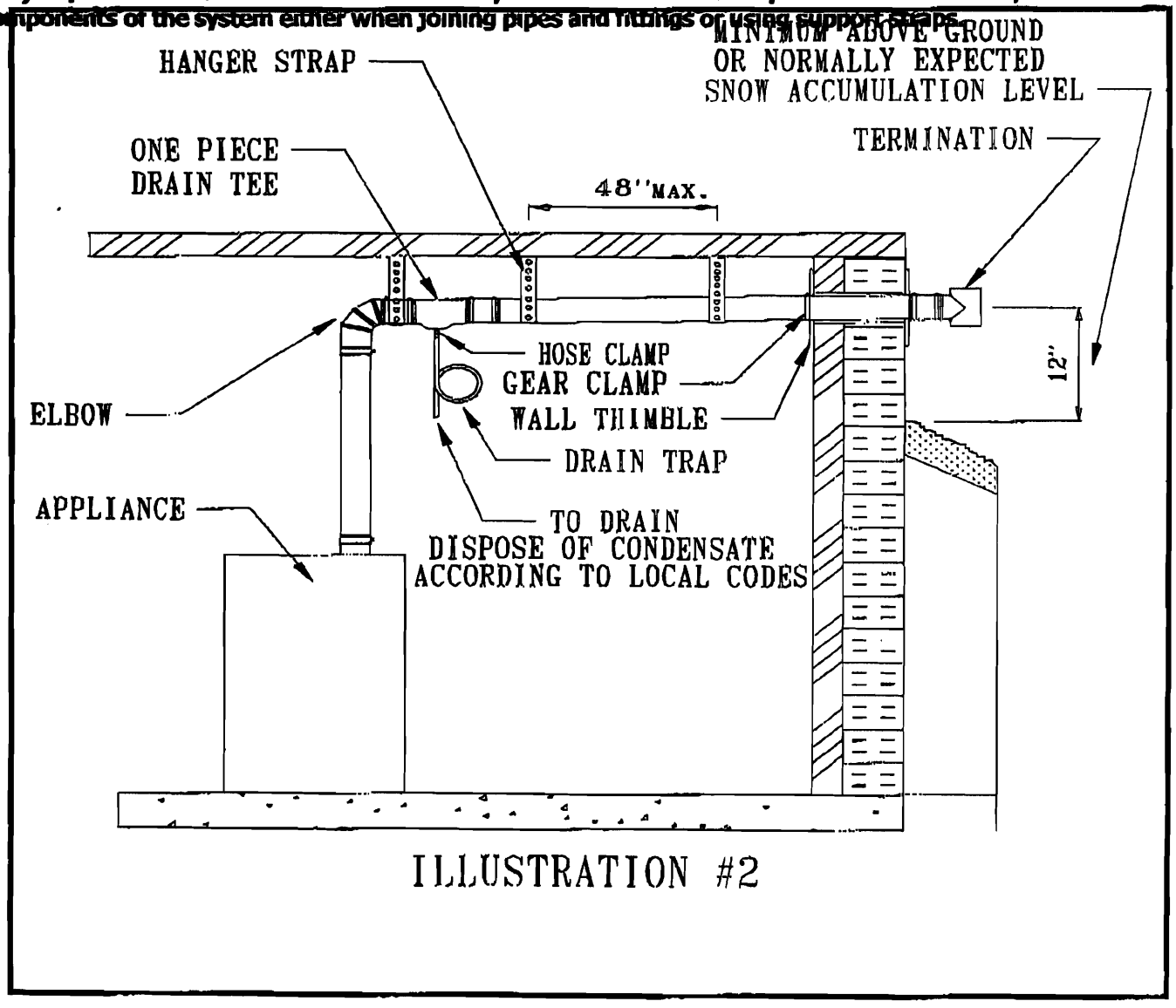


ILLUSTRATION #2

VERTICAL VENTING

(see illustrations #3 & 4)

NOTE: The vent termination above the roof line shall consist of a continuous section of vent pipe only (without any joints) and must be at least 3 ft. (1 m) to a maximum of 6ft. above the roof line and 2 ft. (.61 m) higher than any part of a structure within 10 ft. (3.1 m). The total vertical distance of the vent system from appliance flue collar to the rain cap termination and the maximum length of offsets shall not exceed that specified in the appliance manufacturer's installation instructions. No continuous vertical run shall be longer than sixty feet (18.3 m). All horizontal sections must observe the rules for **HORIZONTAL VENTING.**

NOTE: Double wall pipe must be used through combustible roofs.

1. Prior to beginning the installation, loosely assemble all parts required to make sure all parts are present.

2. Locate position for venting system and proceed to cut holes for firestop support and firestop spacers. All vertical installations require the use of a support. Frame the opening of the floor using lumber, which is dimensionally consistent with the structural members. Insert the support from beneath the framed opening and secure with nails or screws as required.

3. Refer to **JOINT PROCEDURE** (*illustration #1*) before assembling system.

4. Install system joining pipe as required up through roof (*illustration page 7*). Tighten gear clamp on firestop support to hold vent system. NOTE: A firestop must be provided when a vent passes through a combustible floor or ceiling. The opening must be framed for the support since the support also serves as a firestop.

5. The roof flashing can now be installed. Where the vent passes through the roof a flashing must be used to maintain the required clearances and to protect from the elements. The framed opening must be large enough to provide the necessary clearances to combustibles, taking into account the slope of the roof. The flashing can be used on slopes from flat to 6/12 pitch. Install the flashing while holding the pipe centered in the opening. Fasten the flashing to the roof under the roofing material upslope from the pipe and above the roofing material below the pipe. Seal as required using high temperature silicone.

6. Install Top Support around pipe and against flashing collar. (*illustrations #3,4,5,6)*

7. Attach rain cap using. **JOINT PROCEDURE** (*illustration #1*)

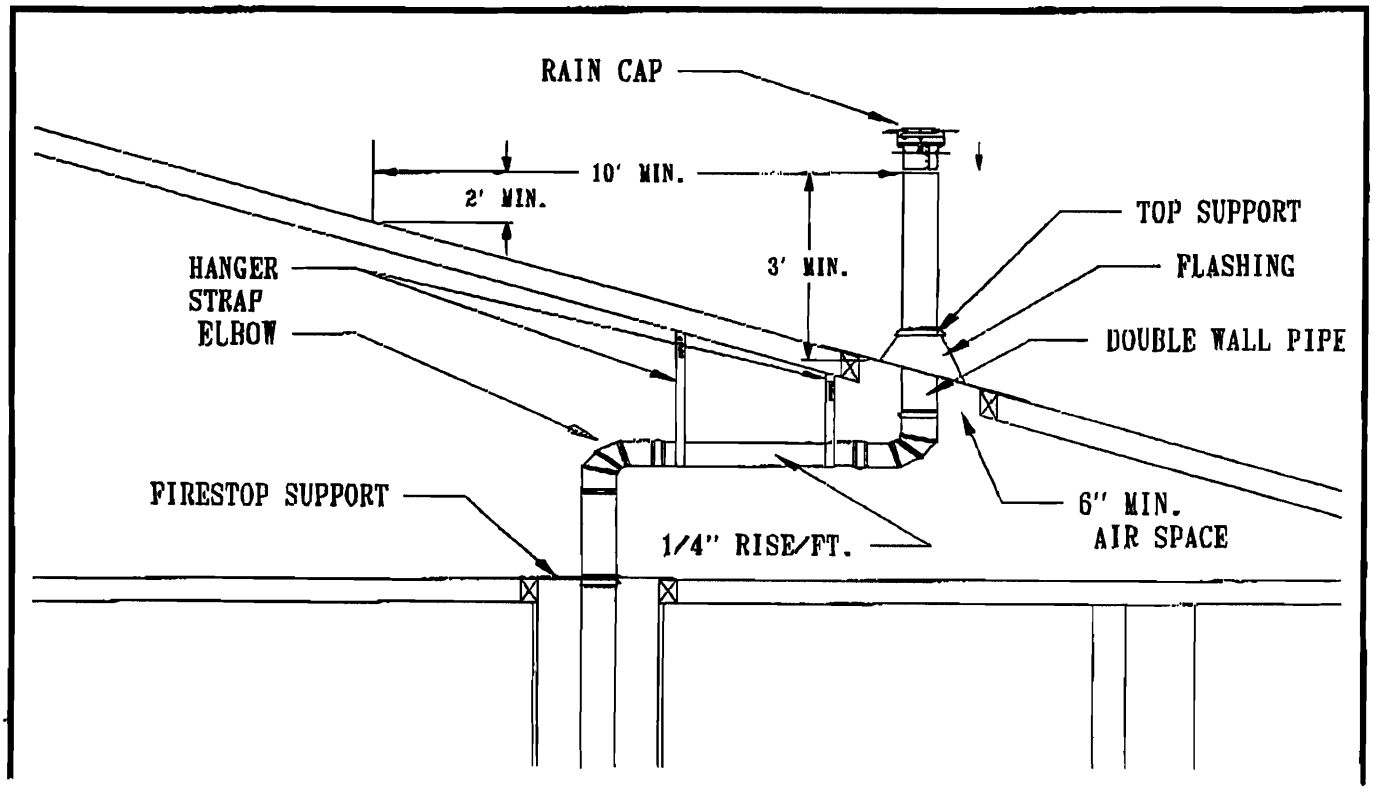
8. The vertical section is connected by an elbow joined to the horizontal run and then through a drain tee (*see page 4 for details*) to the appliance. Elbows are joined to pipe using the **JOINT PROCEDURE** (*illustratioon #1*).

NOTE: If there is no solid anchor point in the system below the roof (ie Firestop Support etc.) then a Z-Vent Guy Band must be used below the roof as follows. (*see illustration #6)*

a. Attach the Guy Band at any point above an elbow or tee in the vertical section within 20 feet of the roof.

b. Fasten stainless steel or galvanized cable with a minimum capacity of 500 lbs. to each of the four anchor holes.

c. Anchor the cables to a rigid building member using an appropriate fastening method.



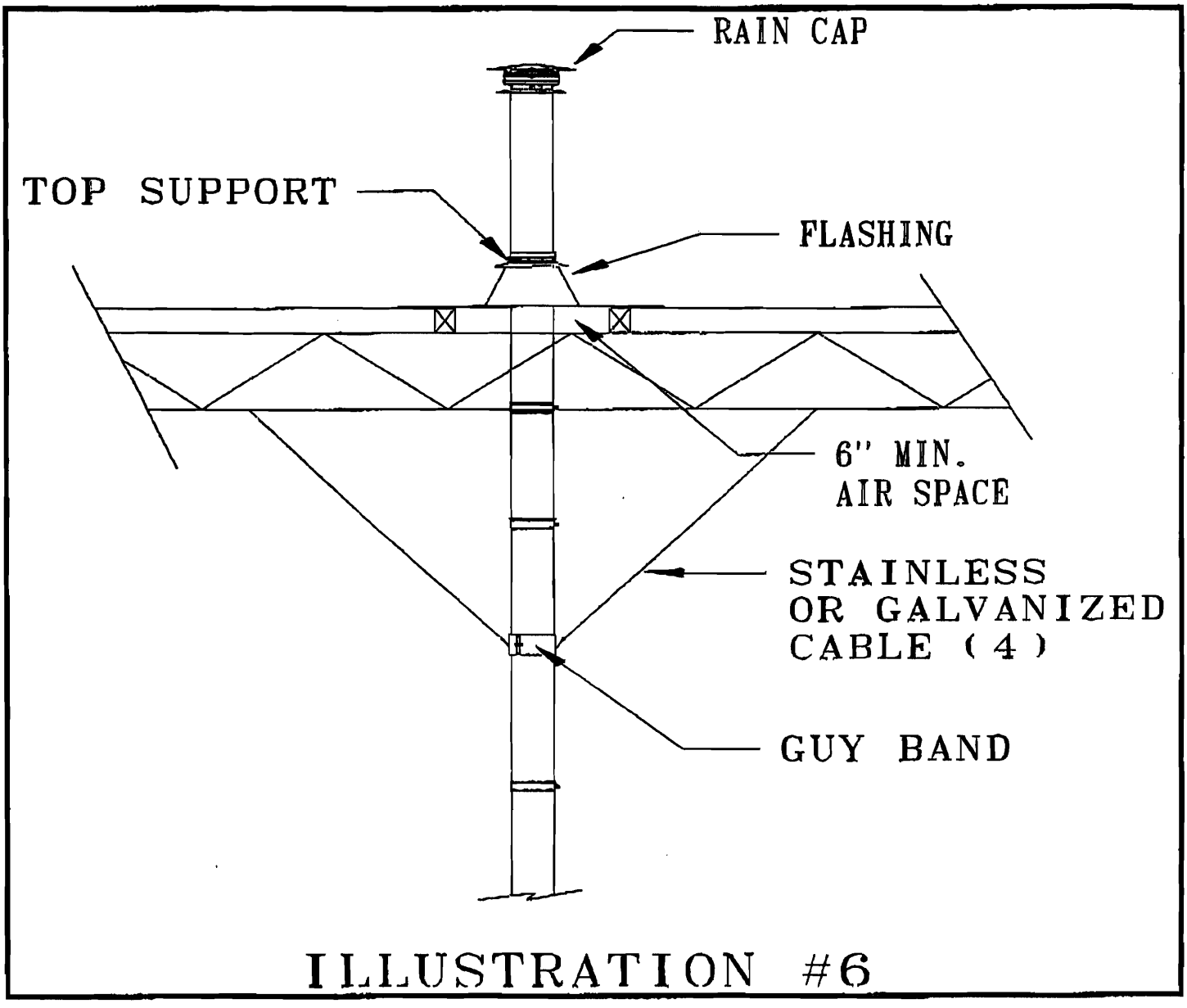


ILLUSTRATION #6

EXISTING MASONRY CHIMNEY

(see illustration #5)

NOTE: A masonry chimney flue may be used to route **Z-VENT** if no other appliance vents directly into the same flue without a liner. Prior to beginning the installation, be sure that the existing chimney meets all national and local building codes. The chimney must be cleaned, removing all soot, debris and creosote before installing **Z-VENT.**

1. Using the **JOINT PROCEDURE,** *(illustration #1)* join pipe lengths as they are lowered down the chimney until bottom end lines up with opening in chimney. (A rope may be used to facilitate lowering of pipe).

2. Install flashing over last pipe length and attach top support to pipe. Leave 6" (150 mm) of pipe protruding from flashing so that rain cap may be installed and to allow for any adjustment to line up base tee properly.

3. Fasten flashing to chimney top using caulking and/or screws. If the top clay tile is still in place, the corners of the flashing must be notched and flashing plate formed down around clay tile.

4. The rain cap may now be installed using the **JOINT PROCEDURE** *(illustration #1).*

5. Where required a drain tee should be installed to a pipe as per **JOINT PROCEDURE** *(illustration #1).*

6. The remainder of the horizontal installation to the appliance can be done the same as for side wall venting on page 4 observing rules for **HORIZONTAL VENTING.**

7. Final adjustment may be made to the top support if necessary.

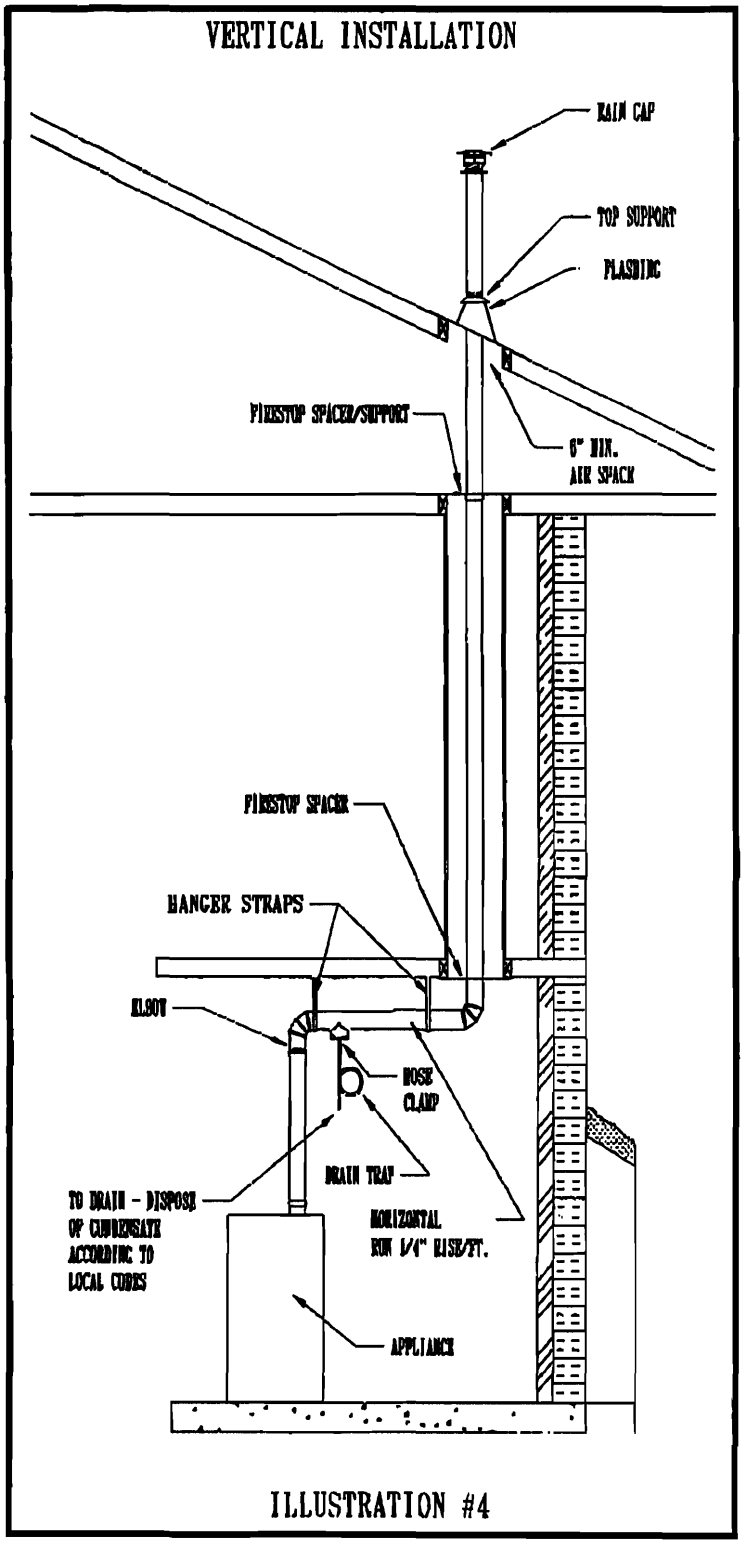


ILLUSTRATION #4

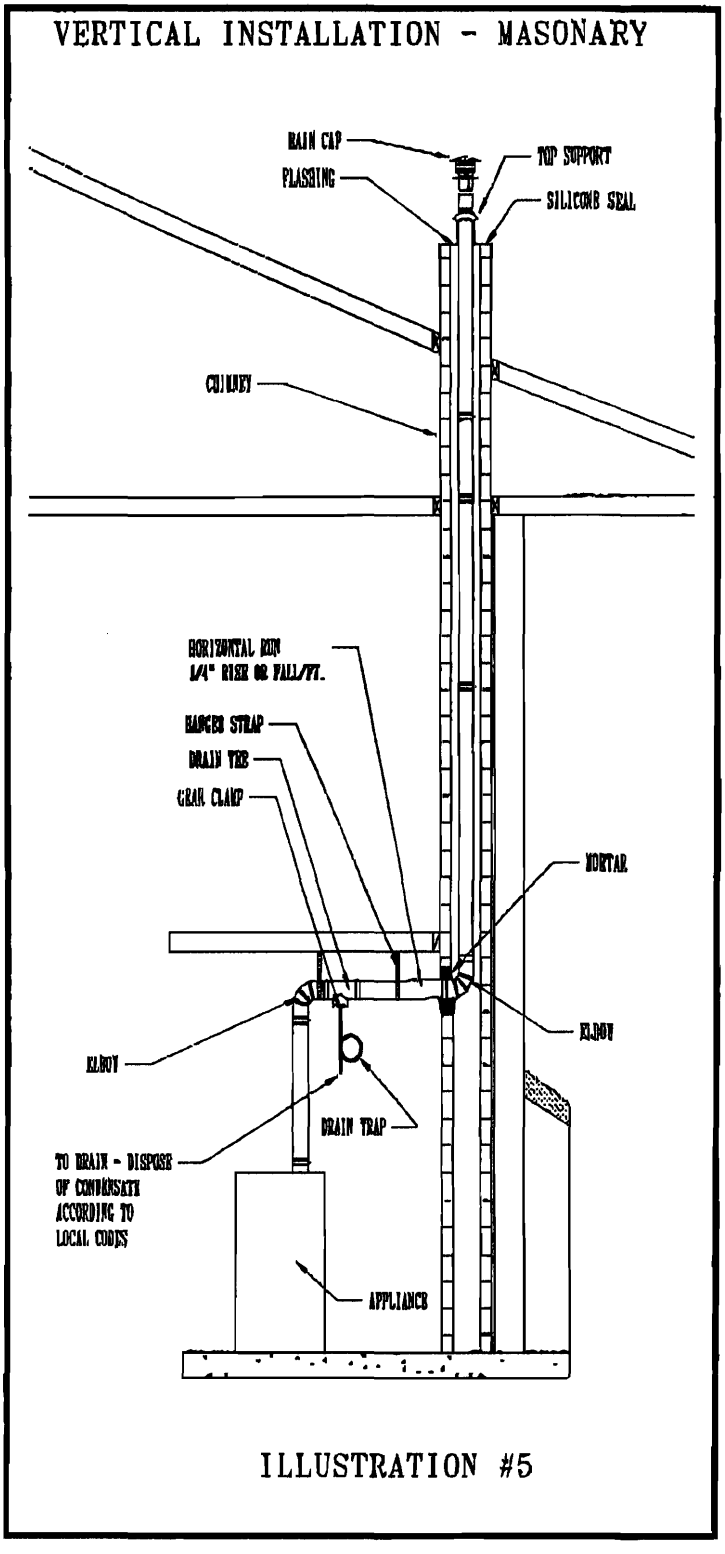


ILLUSTRATION #5

APPLIANCE CONNECTION

Refer to the appliance manufacturer's installation manual for proper method of joining **Z-VENT** to the appliance collar. An appliance adapter to suit specific requirements may be obtained from Z-FLEX.

IMPORTANT NOTICE

When any of the previous installation procedures are completed, be sure to go over the entire system to make sure all joints are secure and sealed correctly. The seams and joints must be checked for tightness prior to using the venting system.

A qualified inspector must check the entire system at least once annually following initial installation to maintain the **Z-FLEX** warranty.

The installation must conform to the requirements of the appliance manufacturers' instructions, The National Fuel Gas Code and local codes and regulations.

Z-FLEX® LIMITED LIFETIME WARRANTY

Z-FLEX® ("Seller") extends the following LIMITED WARRANTY for Z-VENT (the "Z-Vent"):

Seller warrants that at the time of purchase, the Z-Vent will be free of manufacturer's defects in material and/or workmanship. This warranty shall extend to the original purchaser of the Z-Vent or, if purchased by a contractor, to the end user. This warranty is valid for a period of fifteen (15) years from the date of purchase, provided that the Z-Vent has been installed according to Z-Flex® installation instructions. Deviating from the installation and use instructions included with the Z-Vent will void the warranty.

Under this Limited Warranty, Seller's sole responsibility and liability shall be to replace the Z-Vent and/or accessories, if found by Seller to be defective according to the terms of the warranty, and shall not include replacement installation or other costs.

IMPORTANT: The Z-Vent Model SVEIV is designed for use with Category II, III and IV furnace and boiler venting and should not be used with any other type of furnace and boiler venting. Use of the Z-Vent with any other type of furnace and boiler venting other than those recommended by Seller for use with its Z-Vent will void the warranty.

WARNING: CONDENSATION WITH HIGH ACID CONTENT MAY BE PRODUCED DUE TO UNFORESEEN CONDITIONS. YOUR HEATING APPLIANCE AND VENTING SYSTEM SHOULD BE INSPECTED BY A LICENSED CONTRACTOR ON AN ANNUAL BASIS FOR POSSIBLE SIGNS OF DETERIORATION DUE TO RUSTING OR PIN HOLES. CONDENSATION WITH HIGH ACID CONTENT MAY CAUSE LEAKAGE OF HARMFUL GASES WHICH CAN CAUSE NAUSEA, FAINTING OR DEATH. IF DETERIORATION IS DETECTED CEASE USE OF HEATING SYSTEM AND CALL FURNACE/BOILER INSTALLER FOR REMEDIAL ACTION.

To activate the warranty, the end-user must complete and return the Z-Flex® Warranty Registration Card within ninety (90) days of installation of the Z-Vent. Upon written notice of any defects, Z-Flex® reserves the right to examine or establish reasonable proof of defective material or workmanship justifying replacement.

NO OTHER EXPRESS WARRANTY HAS BEEN MADE OR WILL BE MADE ON BEHALF OF SELLER WITH RESPECT TO THE Z-VENT OR THE INSTALLATION OR REPLACEMENT OF THE Z-VENT. SELLER SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CON-SEQUENTIAL DAMAGES.

As some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, the above limitations or exclusions may not apply to you.

IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IMPOSED ON THIS SALE UNDER STATE LAW, ARE LIMITED TO THE PERIOD DURING WHICH THIS WARRANTY IS IN EFFECT. AS SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON THE LENGTH OF AN IMPLIED WARRANTY, THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Claims under this Warranty must be made within the warranty period in writing and directed to: In **the USA;** Warranty Claims, Z-Flex®(US) Inc., 20 Commerce Park North, Bedford, New Hampshire 03110, (603) 669-5136 or (800) 645-5600. **In Canada;** Warranty Claims, Z-Flex® Inc., 452 Attwell Drive, Etobicoke, Ontario, M9W 5C3, (416) 679-0045.

This Warranty gives you specific legal rights, and you may also have other rights that vary in different States and Provinces.

WARRANTY REGISTRATION CARD: Z-FLEX®

For this warranty to be effective, this card must be completed upon purchase of the covered Z-Vent and returned to Z-Flex® within ninety (90) days of installation of the Z-Vent.

Original end-user's name: _____

Address of premises in which the Z-Vent is installed: _____

_____

Z-Vent purchased from: _____

Date of Installation: _____

Type of Heating System into which Z-Vent installed: _____

I understand and agree to the Warranty as stated: _____

_____ _____

Signature **Date**

Z-VENT MODEL SVE IV SPECIAL GAS VENT SYSTEM

Technical data
Sheet 4/03

APPLICATION

Z-VENT is a factory built, engineered AL 29-4C special gas venting system suitable for venting positive or negative pressure residential and commercial gas fired heating equipment. The maximum allowable continuous flue gas temperature for Model SVE IV is 550 deg. F (288 deg. C).

APPROVAL

UL tested and listed to UL1738/S636 Venting Systems for Gas-Burning Appliances, Category II, III and IV. **File MH 18505**

Model SVE IV Single Wall, 3 to 12 in. dia. For use with Category II, III and IV gas-burning appliances only, where the maximum vent gas temperature at the appliance outlet does not exceed 550°F. When the vent system is installed in an unenclosed horizontal installation, a minimum clearance to combustible construction of 3 in. must be maintained. When the vent system is installed in an unenclosed vertical installation, a minimum clearance to combustible construction of 3 in. must be maintained. When the vent system is installed in an enclosed vertical installation, a minimum clearance to combustible construction of 6 in. must be maintained. See manufacturer's installation instructions and appliance manufacturer's instructions for recommended clearances at other vent temperatures.

Model SVE IV Double Wall, 3 to 12 in. dia. For use with Category II, III and IV gas burning appliances only, where the maximum vent gas temperature at the appliance outlet does not exceed 550°F. When the vent system is installed in an unenclosed horizontal installation, a minimum clearance to combustible construction of 2 in. must be maintained. When the vent system is installed in an unenclosed vertical installation, a minimum clearance to combustible construction of 2 in. must be maintained. When the vent system is installed in an enclosed vertical installation, a minimum clearance to combustible construction of 6 in. must be maintained. See manufacturer's installation instructions and appliance manufacturer's instructions for recommended clearances at other vent temperatures.

CONSTRUCTION

The inner flue is manufactured from superferritic ***AL 29-4C*** stainless steel. The AL 29-4C alloy shows excellent resistance to chloride ion pitting, crevice corrosion and stress corrosion cracking making it the ideal choice for battling the effects of high temperature flue gases and corrosive condensate from high efficiency gas heating equipment. A unique ***built-in gasket*** system provides air and water tight connections with no sealant required. Leakage tested to 2 1/2times the UL listed pressure rating of 8" water column. The ***double Wall*** system has a one inch air space between the vent walls providing an insulation factor. This reduces clearance to combustibles and helps to maintain stack temperature, an important feature in the safe venting of modern high efficiency heating equipment. ***Fusion welded*** components provide superior fit, reduced turbulence and flow resistance. Also eliminated are crevices and other spots where condensation can collect and corrode the vent.

PATENTED SEALING SYSTEM

Z-VENT components are supplied with factory installed, patented (US patent 6-523-865), self-sealing gaskets. The gaskets special design along with precision engineered close tolerance construction ensure an air and water tight fit leakage tested to 2 1/2 times the UL pressure rating of 8" W.C.

SUGGESTED SPECIFICATION:

Venting shall be ***Z-Vent model SVE IV*** as manufactured by **Z-FLEX**. The vent system shall consist of factory welded pipe and fittings incorporating a factory fitted sealing gasket which, when installed in accordance with the manufacturers installation instructions, will seal the pipe joints without the use of field applied sealant. The vent system shall be leakage tested to 8" W.C. positive pressure. The vent system will be tested and listed by Underwriters Laboratories to UL1738/ULC S636 with a maximum allowable continuous flue gas temperature of 550 deg. F

Z·FLEX
NOVAFLEX GROUP

Lochinvar®
High Efficiency Water Heaters, Boilers and Pool Heaters

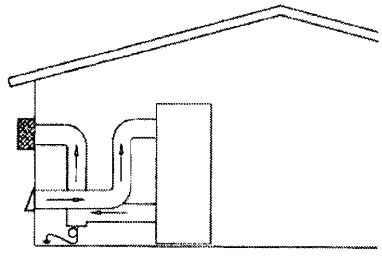
POWER-FIN® EXTENDED DIRECT VENTING OPTIONS Submittal Sheet

PFEVO-Sub-02

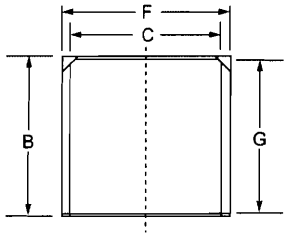
POWER-FIN® HORIZONTAL DIRECT VENTING (PB/PF 1.5-2.0)

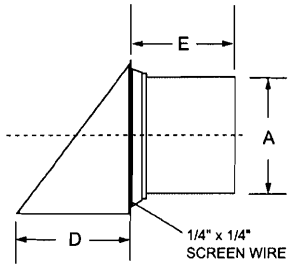
JOB NAME Martins Point Marine Hospital
LOCATION
ARCH./ENGR.
WHOLESALER FW Webb
MECH. CONTRACTOR Johnson and Jordan
MODEL NO. HDK3021
NOTES Quantity of one (1) HDK3021 Horizontal Direct Vent kit to be provided.

HORIZONTAL DIRECT VENT



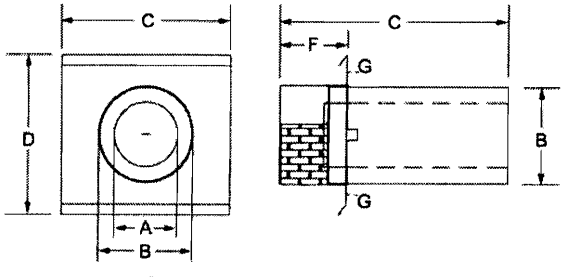
Horizontal Direct Vent kit supplied with air inlet cap and exhaust cap. Vents horizontally up to 50 equivalent feet, using Category IV approved vent material. Directly draws combustion air 50 equivalent feet from a side wall. Deduct 5 ft. per elbow.





SIDEWALL AIR INTAKE CAP

Model	Kit #	A	B	C	D	E	F	G
1500	HDK3021	6"	9"	8"	4-1/2"	2-1/2"	9"	8-1/2"
1700	HDK3022	8"	12"	11"	7"	2-1/2"	12"	11-1/2"
2000	HDK3023	8"	12"	11"	7"	2-1/2"	12"	11-1/2"



SIDEWALL EXHAUST CAP

Model	Kit #	A	B	C	D	E	F	G
1500	HDK3021	8"	11"	18"	17"	23-1/2"	8"	13"
1700	HDK3022	8"	11"	18"	17"	23-1/2"	8"	13"
2000	HDK3023	10"	13"	19"	18"	27-1/2"	12"	15"

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Air Inlet Pipe Materials

The air inlet pipe(s) must be sealed. Choose acceptable combustion air inlet pipe materials from those specified in this section.

Select air inlet pipe material from the following specified materials:

PVC, CPVC or ABS (6", 7"or 8" I.D.)*
Dryer Vent or Sealed Flexible Duct (not recommended for roof top air inlet)
Galvanized steel vent pipe with joints and seams sealed as specified below.
Type "B" double wall vent with joints and seams sealed as specified below

* Plastic pipe may require an adapter (not provided) to transition between the air inlet connection on the appliance and the plastic air inlet pipe.

WARNING: ⚠

Using vent or air intake materials other than those specified, failure to properly seal all seams and joints or failure to follow vent pipe manufacturer's instructions can result in personal injury, death or property damage. Mixing of venting materials will void the warranty and certification of the appliance.

NOTE:

The use of double wall vent or insulated material for the combustion air inlet pipe is recommended in cold climates to prevent the condensation of airborne moisture in the incoming combustion air.

Sealing of Type "B" double wall vent material or galvanized vent pipe material used for air inlet pipe on a sidewall or vertical roof top Combustion Air Supply System.

a. Seal all joints and seams of the air inlet pipe using either Aluminum Foil Duct Tape meeting UL Standard 723 or 181A-P or a high quality UL Listed silicon sealant such as those manufactured by Dow Corning or General Electric.

b. Do not install seams of vent pipe on the bottom of horizontal runs.

c. Secure all joints with a minimum of three sheet metal screws or pop rivets. Apply aluminum foil duct tape or silicone sealant to all screws or rivets installed in the vent pipe.

d. Ensure that the air inlet pipes are properly supported.

The PVC, CPVC or ABS air inlet pipe should be cleaned and sealed with the pipe manufacturers recommended solvents and standard commercial pipe cement for the material used. The PVC, CPVC, ABS, Dryer Vent or Flex Duct air inlet pipe should use a silicone sealant to ensure a proper seal at the appliance connection and the air inlet cap connection. Dryer vent or flex duct should use a screw type clamp to seal the vent to the appliance air inlet and the air inlet cap. Proper sealing of the air inlet pipe ensures that combustion air will be free of contaminants and supplied in proper volume.

When a sidewall or vertical roof top combustion air supply system is disconnected for any reason, the air inlet pipe must be resealed to ensure that combustion air will be free of contaminants and supplied in proper volume.

DANGER: ⚠

Failure to properly seal all joints and seams as required in the air inlet piping may result in flue gas recirculation, spillage of flue products and carbon monoxide emissions causing severe personal injury or death.

SUBMITTAL - 04

PROJECT:	MARINE HOSPITAL RENOVATION MARTINS POIINT PHASE 1 PORTLAND, MAINE
GENERAL CONTRACTOR:	LEDGEWOOD CONSTRUCTION P. O. BOX 8107 PORTLAND, MAINE 04104
SUBCONTRACTOR:	N / A
SUPPLIER:	**F. W. Webb** 150 Postal Service Way South Portland, Maine 04106 Jim Senter P: 207-772-8364 F: 207-773-3423
SPECIFICATION SECTION:	N/A
PARAGRAPH:	N/A
DRAWING:	M-4
ITEM:	BOILER

JOHNSON&JORDAN, INC.
18 Mussey Rd. Scarborough, ME
Approved____ Approved as Noted_____
Re-Submit____ Reviewed___X____
Subject to Architects Approval __X____
Date 9/18/06 By JLC

MARTNE HOSPITAL RENOVATION
MARTINS POINT PHASE 1
PORTLAND, MAINE

BOILERS

MANUFACTURER: LOCHINVAR

SUPPLIER: F. W. WEBB

INSTALLER: JOHNSON AND JORDAN MECHANICAL CONTRACTORS

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High Efficiency Water Heaters, Boilers and Pool Heaters

POWER-FIN® BOILER Submittal Sheet

PBE-Sub-04

POWER-FIN® GAS BOILER 1.5, 1.7, 2.0 MBH MODELS

JOB NAME Martins Point Marine Hospital
LOCATION
ARCH./ENGR.
MECH. CONTRACTOR Johnson & Jordan
MODEL NO. PBL1500
TYPE GAS LP
Btu/hr INPUT 1,500,000 **Btu/hr OUTPUT** 1,305,000
NOTES

Quantity of one (1) Power-Fin boiler to be provided.

Boiler constructed in accordance with ASME boiler and pressure vessel code section VI, bears the "H" stamp, and is National Board Certified.

All electrical components have been listed and labeled by UL and comply with NEMA standards.

Standard Features

- 87% Thermal Efficiency
- 25 - 100% Infinitely Proportional Firing Rate
- Digital Display w/ Alarm & Status LED's
- Variable Frequency Drive
- Digital Temperature Control Accurate to 1°F
- Tamper Resistant Temperature Controls
- Alcromesh Burner with 5-Year Limited Warranty
- Low NOx Operation Exceeds the most Stringent Air Quality Requirements
- Low Gas Pressure Operation
- Selectable Supply/Return Temperature Controls
- ASME Copper Finned TubeHeat Exchanger
- 160 PSI Working Pressure
- Gasketless Heat Exchanger Design
- Pump Delay
- Glass-Lined Water Surfaces
- Low Gas Pressure Operation
- Zero Clearance to Combustible Materials
- Temperature and Pressure Gauge
- ASME Pressure Relief Valve
- Down Stream Test Cock
- Adjustable High Limit w/ Manual Reset
- Flow Switch
- Small Footprint
- 24 Volt Circuit Breaker
- Freeze Protection
- Construction Air Filter
- 10 Year Limited Warranty on Heat Exchanger (See warranty for details)

Optional Equipment

Place an X in the box by all options that apply

- ☐ Alarm Bell
- ☑ Contacts on any Failure
- ☑ Contacts for Air Louvers
- ☐ Cupro-Nickel Heat Exchanger
- ☐ High Gas Pressure Switch w/ Manual Reset
- ☐ Low Gas Pressure Switch w/ Manual Reset
- ☑ Indoor/Outdoor Reset
- Low Water Cut-Off
  - ☐ Probe Type
  - ☑ Probe Type Manual Reset w/ Test

HARMONY SEQUENCER

☐ 1-4 Unit Master Control Module	SMP2100
☐ 5-12 Unit Extension Module	SMP2101
☐ Outdoor Air Sensor	SMP2102

Harmony Sequencer Ordering Information

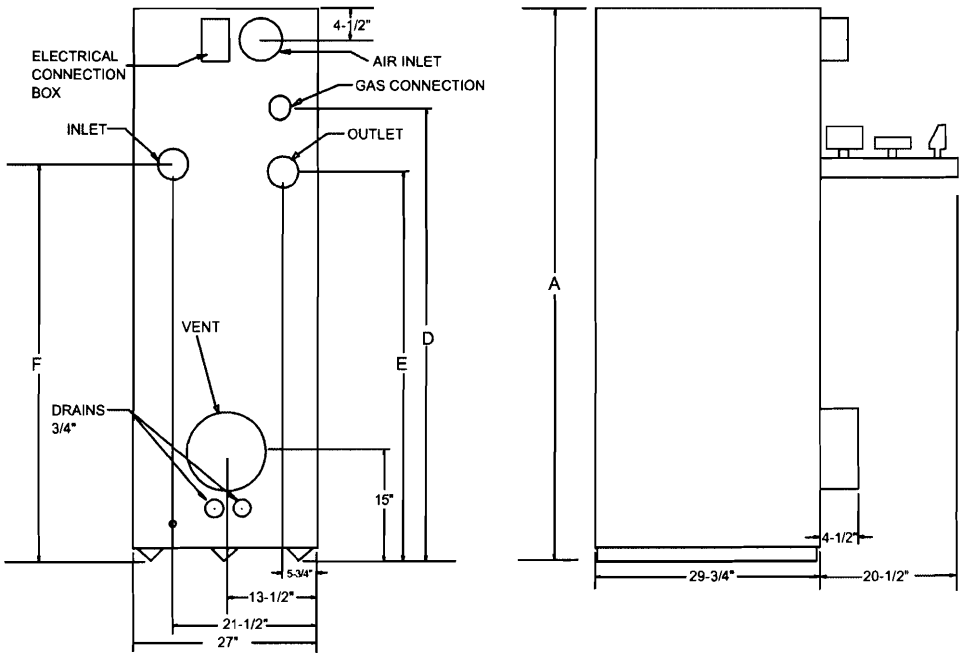
Sequencing of up to 4 Units requires the following:
1 - SMP3100 Master Control Module

Sequencing of 5 - 12 units requires the following:
1 - SMP3100 Master Control Module
and 1 - SMP3101 Extension Module

Firing Control Systems

☐ M9	HSI (Standard)
☑ M13	Factory Mutual
☐ M14	IRI Controls
☐ M7	California Code

Power-Fin Boiler Dimensions & Specifications



Model Number	Btu/Hr Input	Btu/hr Output	A	D	E	F	Air Inlet Size	Vent Size	Shipping Weight
PBN1500	1,500,000	1,305,000	66-3/4"	52-1/4"	42"	44-1/2"	6"	8"	1,115
PBN1700	1,700,000	1,479,000	71-1/4"	56-3/4"	46-1/2"	49"	7"	8"	1,150
PBN2000	2,000,000	1,740,000	78"	63-1/2"	53-1/4"	55-3/4"	8"	10"	1,245

Notes: Change 'N' to 'L' for L.P. Gas Model. No deration on L.P. models. Performance data based on manufacturer test results. All gas connections are 1-1/2" NPT. All water connections are 2-1/2".

Venting Options

- ☐ Sidewall
- ☐ Vertical
- ☐ DirectAire Vertical w/ Sidewall Inlet
- ☐ DirectAire Horizontal w/ Rooftop Inlet
- ☑ Direct Vent Horizontal
- ☐ Direct Vent Vertical
- ☐ Intelligent Venting Solutions

Electrical Requirements

Boiler	15 Amp Circuit Required

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POWER-FIN® GAS-FIRED BOILERS (PB MODELS)

	PB-1500	PB-1700	PB-2000
WATER			
GALLON CAPACITY	5.5	5.75	6.0
WATER CONNECTIONS	2-1/2"	2-1/2"	2-1/2"
DRAIN (TWO)	3/4"	3/4"	3/4"
MAXIMUM FLOW RATE (GPM)	90	90	90
HEAD LOSS (FT. OF HD.)	9.8	10.2	11.9
MINIMUM FLOW RATE (GPM)	65	75	87
HEAD LOSS (FT. OF HD.)	6	8	12
MAX. WORKING PRESSURE (PSI)	160	160	160
RELIEF VALVE SIZE (MBH)	1,934	1,934	1,352
RELIEF VALVE SIZE	1-1/4"	1-1/4"	1"
PRESSURE RATING (PSI)	50	50	50
# OF RELIEF VALVES	1	1	2
HEATING SURFACE (SQ. FT.)	156	178	209
GAS			
INLET CONNECTION	1-1/2"	1-1/2"	1-1/2"
MAX. INLET PRESSURE, NAT (WC)	10.5	10.5	10.5
MIN. INLET PRESSURE, NAT (WC)	4	4	4
MANIFOLD PRESSURE, NAT (WC)	3.5	3.5	3.5
MAX. INLET PRESSURE, LP (WC)	13	13	13
MIN. INLET PRESSURE, LP (WC)	4	4	4
MANIFOLD PRESSURE, LP (WC)	3.5	3.5	3.5
Btu/hr INPUT	1,500,000	1,700,000	2,000,000
Btu/hr OUTPUT	1,305,000	1,479,000	1,740,000
ELECTRICAL			
VOLTAGE/HEATER	120	120	120
CONTROL VOLTAGE	24	24	24
TOTAL AMPS	6.7	6.7	6.7
# OF ELECTRICAL CONNECTIONS	1	1	1
DIMENSIONS (INCHES)			
HEIGHT	66-3/4"	71-1/4"	78"
WIDTH	27"	27"	27"
DEPTH	29-3/4"	29-3/4"	29-3/4"
SERVICE CLEARANCES (INCHES)			
FRONT	24"	24"	24"
BACK (PIPING)	24"	24"	24"
RIGHT SIDE	0	0	0
LEFT SIDE	0	0	0
TOP	24"	24"	24"
VENTING			
SIZE (INCHES)	8"	8"	10"
CATEGORY	IV	IV	IV
VENT MATERIAL	AL29-4C	AL29-4C	AL29-4C

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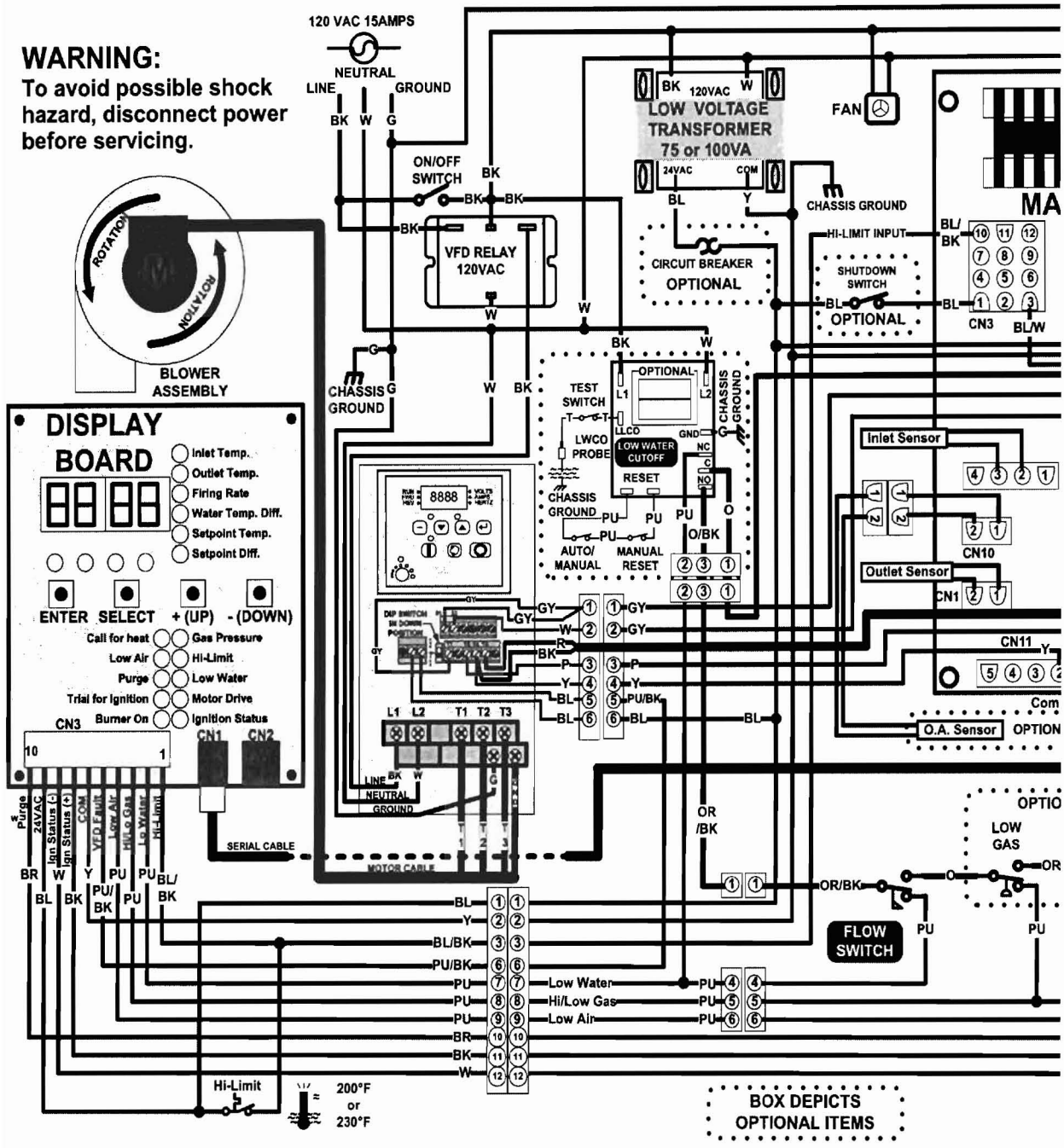
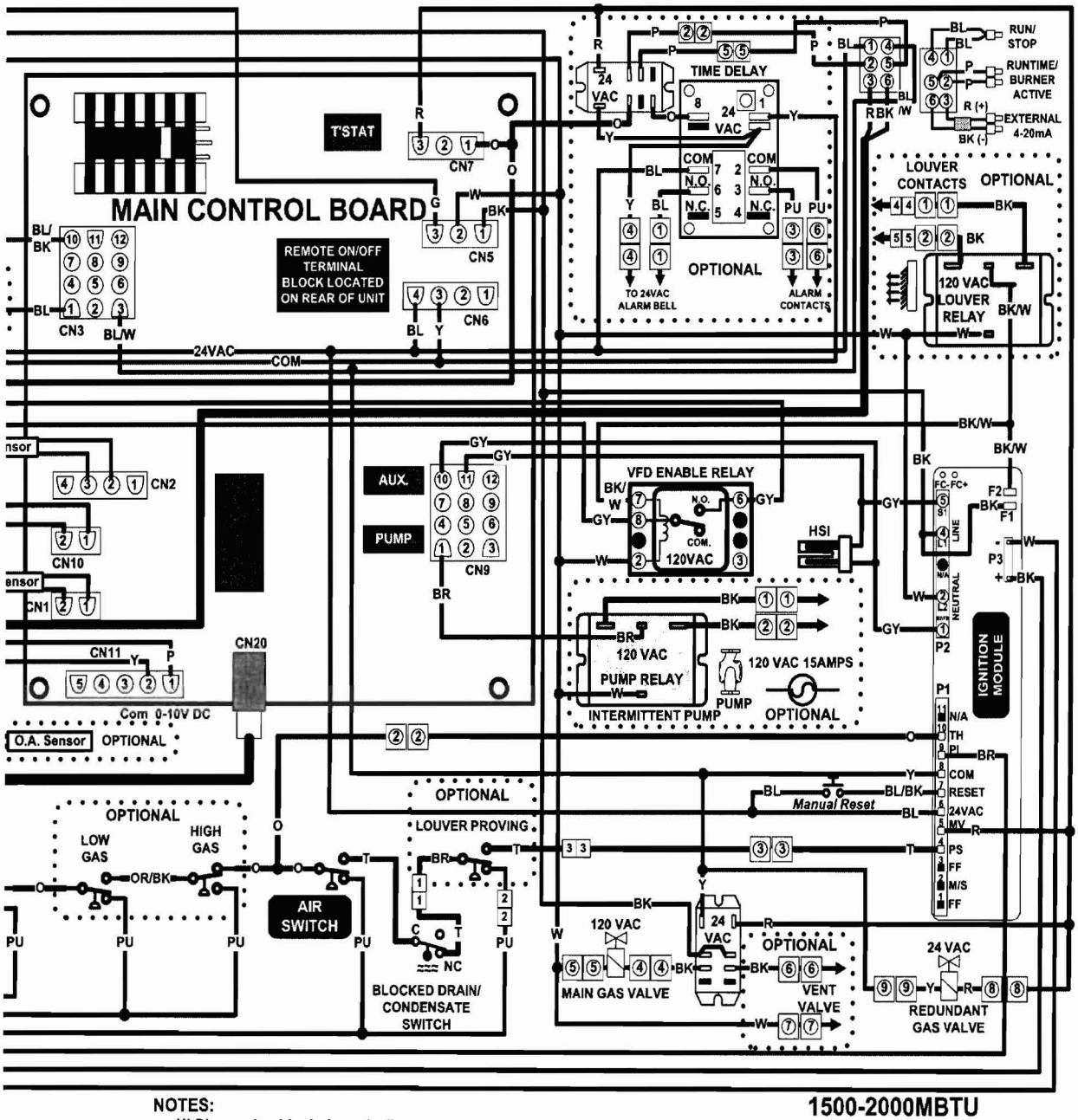
Wiring Diagram
1,500,000, 1,700,000 and 2,000,000 Btu/hr Models



Wiring Diagram

(continued)

1,500,000, 1,700,000 and 2,000,000 Btu/hr Models



NOTES:

(1) Diagram is wiring/schematic diagram.
(2) When replacing wiring, use wire of equal or higher temperature and gage.
(3) Pump delay is standard on water heaters.

1500-2000MBTU

LBL2137 REV F

panel of the **BOILER**. The diagnostic information center shall contain a lighted on/off main power switch, a digital display of a temperature functions and a series of LED's to indicate data currently shown in the digital display, the operational status of the **BOILER**, or an active alarm fault. Data points visible in the digital display include inlet water temperature, outlet water temperature, water temperature differential, percent firing rate, setpoint temperatures and setpoint differential. (Optional outdoor air reset function shall add a digital display of outdoor air temperature, minimum temperature, maximum temperature and maximum reset temperature including LED's to indicate the current display of each additional function.) Operational status LED's shall be provided for call for heat, low air, purge, trial for ignition and burner on. Fault status LED's shall be provided for high limit, gas pressure (optional), low water, motor drive and ignition module status. The **BOILER** electronic temperature module shall serve as an operating temperature control to track demand and regulate the amount of heat added to the water system for heating boilers.

The Electronic Temperature Control Module shall be capable of varying burner input from 25 percent up to 100 percent of rated input. Burner input may vary in steps as small 1 percent of input allowing up to 75 adjustable steps while tracking the heating load. Access to the boiler electronic temperature control and the digital display shall be from a front mounted diagnostic information center. The electrical components, relays and circuit boards shall be accessible from the from control panel access. All electrical connections from the safety and operating controls to the electronic temperature control module shall be made by a wiring harness with unique multiple pin terminations for each connection point.

The ignition control system shall include an electronically proven Hot Surface Ignition system with full flame monitoring capability. Additional standard controls shall include a low voltage transformer for the control circuit, a flow switch to prove water flow, temperature-pressure gauge and a factory installed ASME pressure relief valve. All internal and external wiring harness connections shall have multi-pin plug in type connectors to ease service, troubleshooting and reduce removal and replacement cost. The manufacturer shall verify proper operation of the burners, all controls and the heat exchanger by connection to gas, water and venting for a full factory fire test prior to shipping. A quality test report shall be shipped with each unit.

The **BOILER** shall be certified and listed by C.S.A. International under the latest edition of the harmonized ANSI Z21.13 test standard for the US and Canada. The **BOILER** shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard. The **BOILER** shall operate at up to 87% thermal efficiency.

The hot water **BOILER** shall have an independent laboratory rating for Oxides of Nitrogen (NOx) of less than 30 ppm corrected to 3% O_2.

The Firing Control System shall be **M-13** Factory Mutual (FM).

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Lochinvar®
High Efficiency Water Heaters, Boilers and Pool Heaters

LIMITED COMMERCIAL COPPER TUBE BOILER WARRANTY

WHAT DOES THIS LIMITED WARRANTY COVER?

This limited warranty covers the Heat Exchanger for leakage, thermal shock or other malfunction caused by defects in materials and/or workmanship. It extends to the first buyer and to any subsequent owner(s) as long as the boiler remains installed at its original place of installation.

TEN YEARS OF COVERAGE!

This limited warranty is effective 60 days from the date of manufacture as determined by the serial number. Model number and serial number are found on the rating plate affixed to the boiler. Copper tube heat exchangers are warranted against leakage and thermal shock for 10 years. Parts are warranted for one year. Any replacement copper tube heat exchanger under this warranty shall remain in warranty only for the unexpired portion of the original warranty.

SPECIAL NOTE: The warranty of any boiler found to be operating as a "water heater" shall revert back to Lochinvar's standard water heater warranty.

WHAT DOES THIS LIMITED WARRANTY NOT COVER?

1. **This limited warranty does not cover leakage or other malfunction caused by:**
   a. Defective installation and specifically, any installation which is made:
      I) in violation of applicable state or local plumbing, housing or building codes, or
      II) without a certified American Gas Association, ASME, or comparable Pressure Relief Valve, or
      III) contrary to the written instructions furnished with the unit.
   b. Adverse local conditions and specifically, sediment or lime precipitate in the tubes and/or headers or corrosive elements in the atmosphere.
   c. Misuse and specifically, operation and maintenance contrary to the written instruction furnished with the unit, disconnection, alteration or addition of non-approved components or apparatus, operation with fuels or at settings other than those set forth on the rating plate, or accidental or other exterior damage.
2. **This warranty also does not cover:**
   a. Production of noise, odors, discoloration or rusty water.
   b. Damage to surrounding area or property caused by leakage or malfunction.
   c. Cost associated with the replacement and/or repair of the unit, including:
      I) any freight, shipping or delivery charges
      II) any removal, installation or reinstallation charges
      III) any material, and/or permits required for installation, reinstallation or repair
      IV) charges to return the boiler and/or components to the manufacturer.

WHAT IS THE DURATION OF THE IMPLIED WARRANTY?

ANY IMPLIED WARRANTY, INCLUDING THE WARRANTY OF MERCHANTABILITY IMPOSED ON THE SALE OF THE BOILER UNDER THE LAWS OF THE STATE OF SALE ARE LIMITED IN DURATION TO ONE YEAR FROM DATE OF ORIGINAL INSTALLATION.

HOW DOES STATE LAW RELATE TO THE WARRANTY?

Some states do not allow:

1. Limitations on how long an implied warranty lasts.
2. Limitations on incidental or consequential damages.

The above limitations may or may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

WHAT WILL WE DO TO CORRECT PROBLEMS?

If a defect occurs within the warranty period we will:

1. Provide a comparable manufactured replacement, or at our option, repair any unit which develops a leak in the copper tube heat exchanger within the warranty period.
2. Provide a replacement part, or at our option, repair any part which fails to function within the part's warranty period. To obtain a replacement, you must return in the defective part to one of our distribution centers. We do reserve the right to verify any claims of defect by inspection.

CONDITIONS

We will not:

1. Repair or replace any boiler, or part, subject to conditions outlined in "What Does This Limited Warranty Not Cover?"
2. Reimburse any costs associated with repair and/or replacement.
3. Replace and/or repair any boiler without complete model/serial number.
4. Replace any boiler without prior receipt of actual rating plate from the appliance.

HOW TO KEEP YOUR WARRANTY IN EFFECT?

To facilitate warranty service, you should:

1. Follow all instructions enclosed with the product.
2. Retain all bills of sale or receipts for proof of installation, etc.
3. Contact your installer or dealer as soon as any problem or defect is noticed.
4. When necessary, allow our representative to inspect the unit.
5. For your reference, fill in the Model and Serial Number found on the unit's Rating Plate:

Model Number _____

Serial Number _____

Date of Installation _____

Lochinvar®
High Efficiency Water Heaters, Boilers and Pool Heaters

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Typical Specification

PBE-SPEC-03

Typical Specification for Lochinvar® Power-Fin® Boiler

Models 1,500,000 - 2,000,000 Btu/Hr

The hot water **BOILER** shall be a **LOCHINVAR POWER-FIN** Model **PBL1500** having an input rating of **1,500,000** and an output of **1,305,000** Btu/Hr and shall be operated on LP Gas.

The water containing section shall consist of a heat exchanger constructed of a "Fin Tube" design, with straight copper tubes having extruded integral fins spaced seven (7) fins per inch. These tubes shall be "rolled" securely into glass-lined, cast iron headers. There shall be no bolts, gaskets or "O" rings in the head configuration. Removable access plugs shall be provided on the heat exchanger headers for the purposes of inspection, cleaning or repair. Boiler drains shall be provided, having external access. The heat exchanger shall be mounted in a stress free jacket assembly in order to provide a "free floating design" able to withstand the effects of thermal shock. The **BOILER** shall bear the ASME "H" stamp for 160 psi working pressure and shall be National Board listed. The complete heat exchanger assembly shall carry a ten (10) year limited warranty against failure caused by defective workmanship or material.

The combustion chamber shall be constructed of stainless steel and sealed for combustion employing the Lochinvar power burner concept. The burner surface shall be constructed of high temperature aluminum/chromium alloy woven mesh and fire in a vertical plane within the combustion chamber. The burner shall employ a special perforated flame injection tube extending the entire length of the heat exchanger. A complete five-year warranty from the **BOILER** manufacturer must be provided. The burner must be capable of firing at both a complete blue flame with maximum gas and air input as well as firing infrared when gas and air are reduced. Burner must be capable of firing from 25 percent up to 100 percent of rated input when supplied with 4 inches water column of inlet gas pressure to the **BOILER**. This will ensure availability of full rate firing under heavy demand conditions, no exceptions. The burner shall fire in a full 360-degree pattern resulting in uniform heat transfer upon every inch of heating surface. A viewing port shall be provided, permitting visual observation of burner operation.

The hot water **BOILER** shall use a combustion air blower to precisely control the fuel/air mixture for maximum efficiency. The blower housing shall be a fully sealed, non-sparking, cast aluminum assembly. The blower assembly shall be mounted on the burner and draw gas and air from a premixing chamber. A variable frequency drive shall be used to infinitely vary blower speed and volume of air delivered to the combustion process. The combustion air blower shall operate for a pre-purge period before burner ignition and a post-purge period after burner operation to clear the combustion chamber. A differential air pressure switch shall be provided to prove operation of the combustion air blower, monitor combustion chamber pressures and monitor operation of the flue.

The gas train shall consist of a ratio gas valve to supply gas in a 1:1 ratio to combustion air allowing burner input to vary based on load. The ratio gas valve shall perform the functions of safety shutoff, constant pressure regulation and air/gas ratio control. Operation of the ratio gas valve shall be accomplished by operation of an electro-hydraulic cylinder providing a slow opening and quick closing of the valve seat. Full closing of the valve seat shall occur in less than 0.8 seconds when the valve is de-energized. A visual stroke position indicator shall be provided on the valve assembly to indicate the position of the valve seat. An additional gas valve shall be provided in the gas train to provide redundant valve seats in the burner gas supply.

The **BOILER** shall be constructed with a 16 gauge galvanized steel jacket assembly. The interior of the combustion chamber and flue collector shall be constructed completely of stainless steel to ensure corrosion protection. All inner and outer jacket panels shall be fully gasketed and sealed. The exterior of the jacket assembly shall be primed and pre-painted on both sides with a minimum dry film thickness of 0.70 mills. All models shall be certified for installation on combustible floors without additional safety provisions.

The **BOILER** shall be designed to allow field installation of multiple venting options. The **BOILER** shall be vented with a horizontal Direct Vent system using a two pipe system installed with Category IV vent pipe and a separate air inlet pipe, both terminating on the sidewall. The sidewall vent and air inlet caps shall be provided by Lochinvar. A Direct Vent system shall terminate both the flue outlet and the combustion air inlet in the same pressure zone on the building exterior surface.

A 24 VAC control circuit and components shall be used. All components shall be easily accessed and serviceable from the front and top of the unit. Standard operating controls shall utilize immersion thermisters to sense water temperatures, for the digital temperature control module. An adjustable immersion type, manual reset safety high limit shall be provided to limit boiler water temperature. The control panel shall contain a lighted on/off main power switch, digital temperature display and LED's for operation and alarm faults.

The **BOILER** shall be equipped with an Electronic Temperature Control Module with a microprocessor based platform incorporating software customized for operation of the Lochinvar *Power-Fin*. All internal safety, operating and ignition controls shall interface with the electronic temperature control module. The electronic temperature control module shall provide on/off control of the gas supply to the burner, operation of the VFD to control the variable speed combustion air blower, interface with the ignition control system, control of water temperature set points, and monitoring of all safety functions. Local communication, programming and a display of operating and alarm status conditions shall be accessible through a Diagnostic Information Center with a digital display. The diagnostic information center shall be integrally mounted on the front control