

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



# CITY OF PORTLAND

# BUILDING PERMIT

This is to certify that LEE, JANE ELIZABETHJANE  
ELIZABETH LEE

Located At 86 WEST

Job ID: 2011-07-1615-HVAC

CBL: 063 - - F - 002 - 001 - - - -

has permission to install new Frontier boiler

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

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

Fire Prevention Officer

Code Enforcement Officer / Plan Reviewer

**THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY  
PENALTY FOR REMOVING THIS CARD**

## BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov)

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.

**City of Portland, Maine - Building or Use Permit Application**

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

Job No: 2011-07-1615-HVAC	Date Applied: 7/1/2011	CBL: 063 - - F - 002 - 001 - - - - -	
Location of Construction: 92WEST STREET	Owner Name: DREW ANDERSON	Owner Address: 92 WEST ST PORTLAND, ME - MAINE 04102	Phone:
Business Name:	Contractor Name: Charlie Burnham	Contractor Address: PO Box 382 FREEPORT MAINE 04032	Phone:  (207) 865-9010
Lessee/Buyer's Name:	Phone:	Permit Type:  HVAC	Zone:  R-4
Past Use:  Two Family Dwelling	Proposed Use:  Two Family Dwelling – to install new heating system	Cost of Work: \$15,000.00	CEO District:
		Fire Dept:  Approved Denied N/A	Inspection: Use Group: Type: HVAC State Gas Regs
Proposed Project Description: Install a Frontier Boiler System 2000		Signature: <i>[Signature]</i>	
Proposed Project Description: Install a Frontier Boiler System 2000		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Lannie		<b>Zoning Approval</b>	

<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p>	<p><b>Special Zone or Reviews</b></p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetlands</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> <p><input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM</p> <p>Date: <i>[Signature]</i> 7/1/11</p>	<p><b>Zoning Appeal</b></p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date:</p>	<p><b>Historic Preservation</b></p> <p><i>w/plan</i></p> <p><input type="checkbox"/> Not in Dist or Landmark</p> <p><input type="checkbox"/> Does not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p><i>Any exterior work requires A</i></p> <p>Date:</p>
	<b>CERTIFICATION</b>		

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.

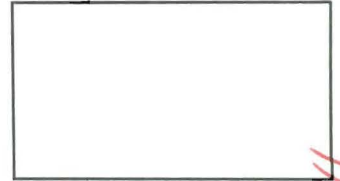
SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHON



rec'd 7/11/11

FILL IN AND SIGN WITH INK

# APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT



119.1  
7.6.11

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 92 West St 63-F2 Use of Building R-A Date 7-1-11

Name and address of owner of appliance Drew Anderson - 92 West St, Portland

Installer's name and address Charlie Burnham Heating Service Inc.  
P.O. Box 382 Freeport, ME 04032 Telephone \_\_\_\_\_

### Location of appliance:

- Basement
- Floor
- Attic
- Roof

### Type of Fuel:

- Gas
- Oil
- Solid

### Appliance Name:

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 # ANT 6050
- Other \_\_\_\_\_

### Type of Chimney:

- Masonry Lined Spunless  
Factory built \_\_\_\_\_
- Metal  
Factory Built U.L. Listing # \_\_\_\_\_
- Direct Vent  
Type \_\_\_\_\_ UL# \_\_\_\_\_

### Type of Fuel Tank

- Oil
- Gas

Size of Tank \_\_\_\_\_

Number of Tanks \_\_\_\_\_

Distance from Tank to Center of Flame \_\_\_\_\_ feet.

Cost of Work: \$ 14,350.00

Permit Fee: \$ 170

### Approved

Fire: \_\_\_\_\_  
Ele.: \_\_\_\_\_  
Bldg.: \_\_\_\_\_

### Approved with Conditions

- See attached letter or requirement

Inspector's Signature \_\_\_\_\_

Date Approved \_\_\_\_\_

Signature of Installer [Signature]

# System 2000

## FRONTIER BOILER

### Instructions, Service Version Oilheat Edition

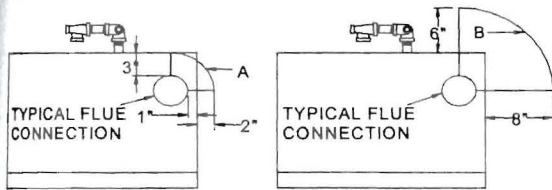
#### LOCATION and CLEARANCE

**DANGER:** Provide clearance to combustibles in accordance with all local and national codes. Follow National Fire Protection Association Bulletin NFPA Installation of Oil Burning Equipment and all applicable codes.

Installation Clearances from Boiler Surfaces	Clearance to Combustibles	Clearance for Service
FRONT	15-1/2"	20"
LEFT SIDE	0"	0"
RIGHT SIDE	0"	0"
BACK	4"	4"
TOP	16"	16"
BOTTOM OF LEGS	0"	16"*
FLUE CONNECTION (see Figure 1A)	(A) 3" L-Vent (B) 9" Std.Flue	(A) 3" L-Vent (B) 9" Std.Flue

\*Minimum recommended clearance to allow the door to fully open.

Figure 1A. Top View of Boiler -  
Flue Connection Clearance to Combustibles



(A) L-VENT OR PELLETT VENT (B) STANDARD VENT PIPE

Boiler Weight and Water Content		
Model	EK-1 Frontier	EK-2 Frontier
Weight	270 lbs	350 lbs
Water Content	2-1/2 gallons	4 gallons
Air Inlet Pipe Size	2"	3"
Boiler Flue Outlet	4"	6"

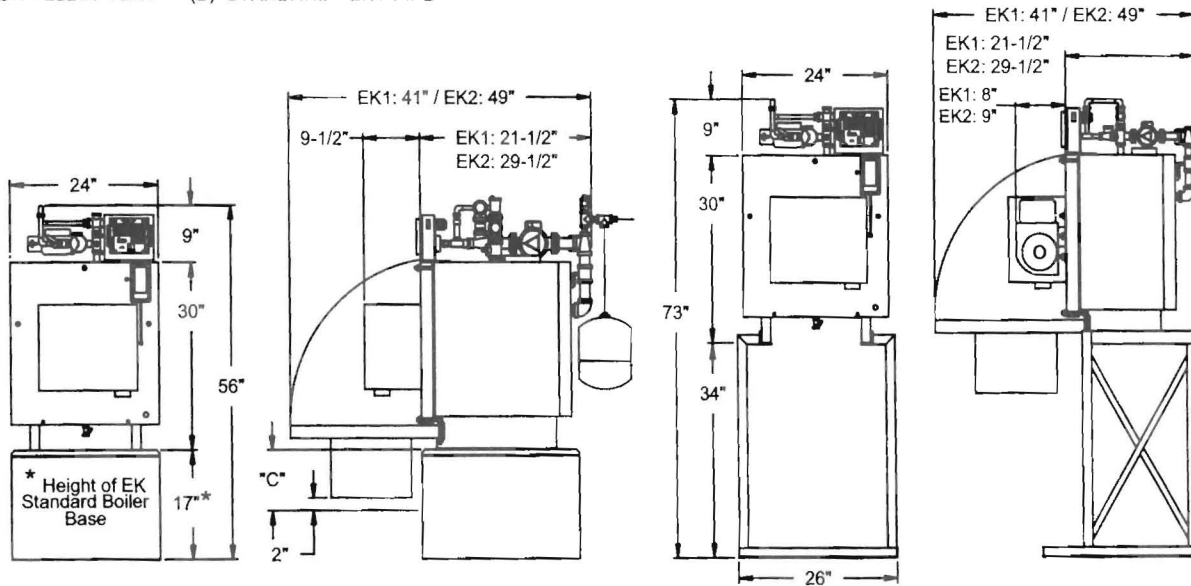


Figure 1B - Boiler Clearance for Cleaning and Service

Burner	"B"		Open Door Leg Bottom to Floor Clearance "C"
	W/o Airbox	W/Airbox	
Beckett AFG	8"	9-1/2"	12"
Carlin 99FRD	9"	9-1/2"	12"
Riello 40F5	13"	N/A	15"

Products

Concept  
A

Oil Heat Install  
B-1

Gas Heat Install  
B-2

Venting  
C

Diagnostics  
D

Digital Manager  
E

Classic Manager  
F

Wiring-General  
G

System Piping  
H

Dom. Piping &  
Pool Appl.  
J

Maintenance  
K

# CARLIN EZ-GAS BURNER SETTINGS

EK-1 Boilers are shipped from the factory preset for 120,000 Btu/Hr firing rate and EK-2 Boilers are shipped from the factory preset for 200,000 Btu/Hr firing rate. The SYSTEM 2000 Boiler can be fired over a range of firing rates to suit the needs of the application. The following table lists approximate settings for Carlin EZ-Gas burners based on extensive testing.

**CAUTION:** Final settings for each burner and firing rate for a particular installation **must** be determined by using combustion test equipment and following the instructions given under "Start Up Procedure".

**CAUTION:** Because the energy converter removes heat from the combustion flue gas so efficiently, low firing rates may not provide high enough flue gas temperature for proper draft in a chimney. The Columns labeled 'Chimney' and 'Sidewall' show the suitability of the firing rate for a particular combination.

Settings are approximate. All combustion tests must be performed at steady state with burner cover installed.

Take flue samples through Puff Switch opening: Natural Gas: CO2: 8.6%-9.2%, O2: 5.5%-4.5%

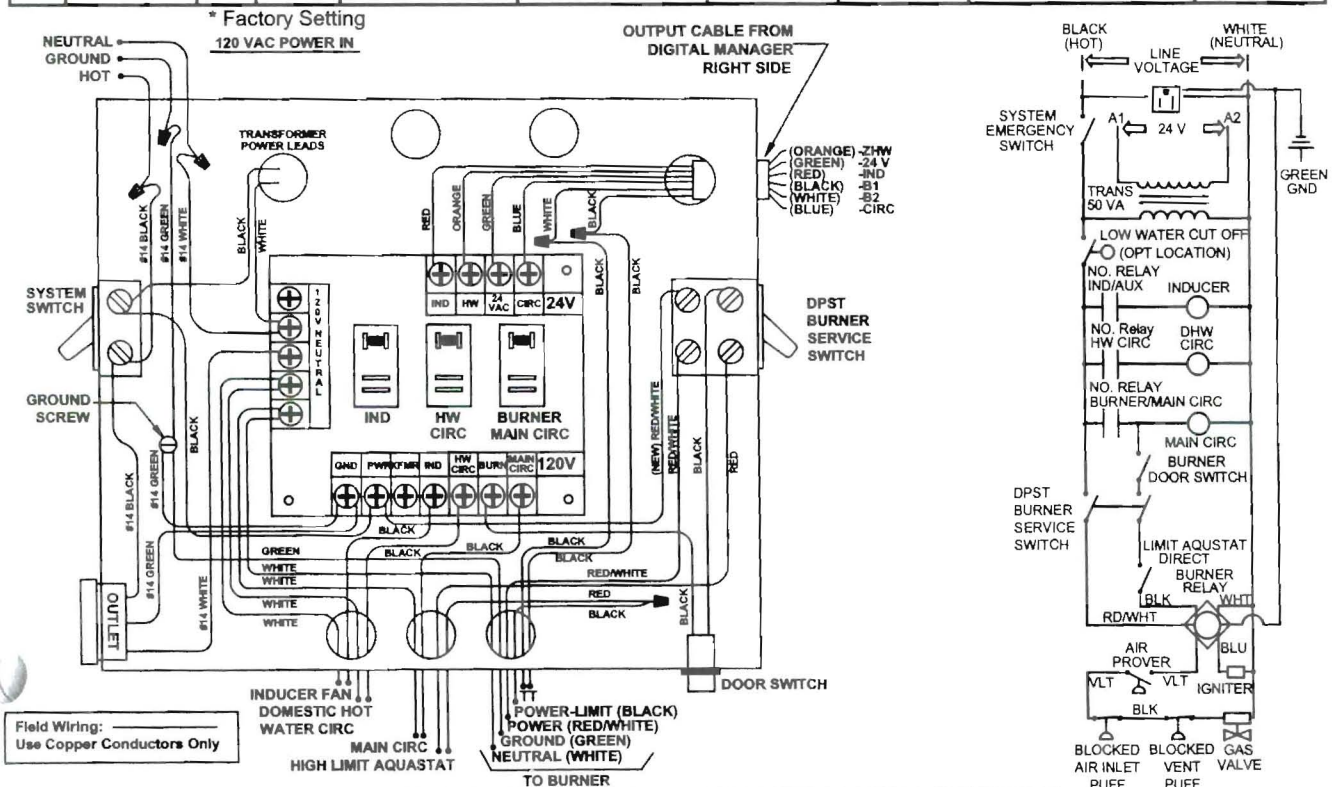
Propane: CO2: 9.7%-10.7%, O2: 6.0%-4.5%

CO: Less than 400 PPM Air-Free

Draft at Over Fire: Sidewall (power vent): negative -0.10" w.c. to -0.12" w.c. (Set with Damper)

Chimney: negative -0.02" w.c. to -0.12" w.c.

Model	Input Btu/Hr	Chimney	Sidewall Vent	Burner Orifice Drill size		Approximate air band setting		UTL - air tube insertion length inches	Diffuser
				Natural Gas	Propane Gas	1 Slot	2 Slot		
EK-1	80,000	N	Y	#8 (0.199)	#25 (0.149)	25		2-3/8"	B
	100,000	N	Y	#1 (0.228)	#16 (0.177)	35		2-3/8"	B
	120,000*	Y	Y	C (0.242)	#12 (0.189)	45		2-3/8"	B
	150,000	Y	Y	J (0.277)	7/32 (0.219)	60		2-3/8"	B
EK-2	175,000	N	Y	N (0.302)	C (0.242)		40	2-3/8"	A
	200,000*	Y	Y	21/64 (0.328)	17/64 (0.266)		50	2-3/8"	A
	225,000	Y	Y	T (0.358)	9/32 (0.281)		60	2-3/8"	A
	250,000	Y	N	X (0.397)	5/16 (0.312)		70	2-3/8"	A



Be careful to observe correct wiring in burner control junction box.

# GAS FIRED BOILER VENTING

All SYSTEM 2000 oil fired boilers can be converted in the field to use gas fired power burners. The gas fired power burners must be domestic conversion gas burners as tested under ANSI Z21.17 or CSA 2.7. All SYSTEM 2000 boilers are Category I appliances, which means the boilers run under negative pressure and are non-condensing.

All SYSTEM 2000 boilers can be fired with either Natural Gas or Propane/LP Gas. EK-1 boilers can be fired as low as 80,000 Btu/hr and as high as 150,000 Btu/hr. EK-2 boilers can be fired as low as 175,000 Btu/hr and as high as 250,000 Btu/hr. Energy Kinetics recommends that the EK-1 boilers be fired at 120,000 Btu/hr and that the EK-2 boilers be fired at 200,000 Btu/hr.

Any existing SYSTEM 2000 oil fired boiler that is converted to gas fired can be vented into the existing venting system. Oil rated vent systems can be used directly for venting of gas fired flue products. New installations using a converted gas fired boiler have several options for venting, including B-Vent which can not be used for oil fired flue products.

## B-VENT CHIMNEY

SYSTEM 2000 Gas Fired Boilers at factory recommended firing rates have flue gas temperatures between 350F and 450F during normal operation. Energy Kinetics recommends that EK-1 boilers be fired at 120,000 Btu/hr and EK-2 boilers be fired at 200,000 Btu/hr. Due to the low flue gas temperatures, B-Vent chimney pipe is suitable for use with SYSTEM 2000 Boilers. B-Vent chimney pipe is double walled and may require smaller chase dimensions than other chimney pipe materials and should be considered for new installations with SYSTEM 2000 Boilers. System 2000 and B-Vent must be installed in strict compliance with all State and Local Codes and with the regulations of the authorities having jurisdiction, which may differ from and which take precedence over these instructions or the vent manufacturer's instructions.

1. B-Vent must be U.L. Listed to U.L. 441.
2. B-Vent must be installed in accordance with the vent manufacturer's instructions.

## L-VENT CHIMNEY

SYSTEM 2000 Gas Fired Boilers at maximum firing rates may have flue gas temperatures between 470F and 530F during normal operation. When SYSTEM 2000 boilers are fired at maximum firing rates, L-Vent chimney pipe is suitable for use with SYSTEM 2000 Boilers. L-Vent chimney pipe is double walled and may require smaller chase dimensions than other chimney pipe materials and should be considered for new installations with SYSTEM 2000 Boilers. System 2000 and L-Vent must be installed in strict compliance with all State and Local Codes and with the regulations of the authorities having jurisdiction, which may differ from and which take precedence over these instructions or the vent manufacturer's instructions.

1. L-Vent must be U.L. Listed to U.L. 641.
2. L-Vent to be installed in accordance with the vent manufacturer's instructions.

## SIDEWALL VENTING

All Gas Fired System 2000 Frontier boilers with gas burners that are sidewall vented require Energy Kinetics Sidewall Vent Kit for Gas Burners in accordance with kit instructions. (Note: gas fired boilers vented by chimney and all oil fired boilers **DO NOT** require the blocked air intake kit.). This kit includes a second Puff Switch that is field installed to an inside surface of the air frame used on Energy Kinetics Sealed Air Inlet Boxes. The second Puff Switch in the kits for gas burners is an added safety device which shuts off the gas burner to prevent the burner from producing excessive amounts of Carbon Monoxide in the event that the air inlet to the burner were to become blocked.

**WARNING:** Sidewall vent systems **must** have outside air connected to the air box **and** both air box air intake and vent hood **must** be located on the same side of the structure, and within 20 inches of each other.

**NOTICE:** The sidewall vent inducer should be located above the boiler flue outlet, preferably a minimum of four feet vertical distance, which will provide some natural draft to the boiler (and cooling of the burner) in case of a power failure. When installing a sidewall venting system from another manufacturer, ensure that the manufacturer's instructions are followed. Vent manufacturer should confirm that the equipment is suitable for use with System 2000.

1. To provide power to the sidewall vent, first make sure a plug-in relay has been installed into IND relay socket in the junction box and set the Digital Manager Option Switch #2 to the "ON" (down) position. This enables the "Inducer" light and allows the Digital Manager to control the inducer. Refer to Digital Manager instructions for option switch settings and inducer timing details.
2. Set the draft over fire of the boiler between  $-.10"$  to  $-.12"$  w.c. with the burner running, after allowing time for sufficient warm-up.
3. Check/adjust CO<sub>2</sub>. Re-check the draft over fire and adjust draft if necessary.

## MASONRY CHIMNEY VENTING

**WARNING:** Masonry chimneys must have a tile or metal liner. The liner must:

- 1) Extend above the masonry.
- 2) Have an insulating air gap, isolating the liner from the chimney, allowing for rapid heat-up and draft establishment.
- 3) Be sealed at each joint to prevent air infiltration and damage from condensation.

**NOTICE:** Inspect Chimney and Chimney base after initial three months of heating season.

The installation of a chimney cap is recommended. The base of the chimney must always have a drop leg below the flue connector to allow scale and condensation to accumulate without blocking the flue pipe.

**CAUTION:** If drop leg is in excess of 12 inches deep, backfill with loose gravel or sand to obtain a maximum of 12-inch depth. All clean out doors must be sealed to prevent cold air entry into chimney.

In retrofit installations, have chimney thoroughly cleaned. Carefully inspect chimney, base of chimney, and liner prior to installation of System 2000 Boiler.

**CAUTION:** If liner is not sound, or if existing tile liner fails to contain intermittent condensation, or if excessive debris is found at the base of the chimney, then it is recommended to install a properly sized metal liner approved for use with oil heat appliances.

The metal liner diameter and length should be as recommended by the metal liner manufacturer. Corrugated metal liners should be at least 5" diameter for EK-1 and 6" diameter for EK-2. Connection of a flexible metal liner directly to the flue collar of the boiler is an acceptable connection method and is recommended. Energy Kinetics does not recommend use of a base tee when a corrugated metal liner is installed. Alternatively, a flexible metal vent connector may be used between the flue collar of the boiler and a flexible metal liner. Call Energy Kinetics for details on metal liners.

Chimney connectors should be positioned to create the shortest possible run of flue pipe to the chimney. The overall horizontal length of flue piping should not exceed 15 feet. Long runs or low firing rates may require insulated flue pipe such as L-Vent or All-Fuels to keep the temperature at base of chimney adequate for draft and to prevent corrosion of piping and connectors.

Because the System 2000 boiler uses a power burner, the flue pipe may experience some positive pressure on start up. Energy Kinetics recommends that all pipe joints be sealed with high temperature silicone sealant to ensure passage of all combustion products to the chimney.

Normally, pitch horizontal flue pipe up toward chimney approximately 1/4" per foot. For existing installations, it is permissible for the flue connection of the boiler to be higher than the chimney thimble, provided adequate draft is established.

If a minimum of -0.02" w.c draft over fire is not present after sufficient burner run time to heat up the chimney, there is a problem that will need to be corrected. Call Energy Kinetics for help resolving draft problems. Under normal circumstances, there is NO need for a DRAFT REGULATOR and one should not be installed. Call Energy Kinetics with questions about flue pipe sizing.

**WARNING:** No solid fuel appliance or fireplace should be installed in a flue common with this heating appliance. The flue gas exit of the venting system must be at least three (3) feet above the point at which it passes through the roof and at least two (2) feet higher than any portion of a building within 10 feet horizontally of its location.

Products

A  
Concept

B-1  
Oil Heat Install

B-2  
Gas Heat Install

C  
Venting

D  
Diagnostics

E  
Digital Manager

F  
Classic Manager

G  
Wiring-General

H  
System Piping

J  
Dom. Piping & Pool Appl.

K  
Maintenance





**CITY OF PORTLAND, MAINE**  
Department of Building Inspections

**Original Receipt**

\_\_\_\_\_ 7.1 20 11 \_\_\_\_\_

Received from Charlie Bunker -

Location of Work 90 West St.

Cost of Construction \$ \_\_\_\_\_ Building Fee: \_\_\_\_\_

Permit Fee \$ \_\_\_\_\_ Site Fee: \_\_\_\_\_

Certificate of Occupancy Fee: \_\_\_\_\_

Total: 170

Building (IL) \_\_\_\_\_ Plumbing (15) \_\_\_\_\_ Electrical (I2) \_\_\_\_\_ Site Plan (U2) \_\_\_\_\_

Other INAC

CBL: 63-F-2

Check #: 8072 Total Collected \$ 170

**No work is to be started until permit issued.  
Please keep original receipt for your records.**

Taken by: [Signature]

WHITE - Applicant's Copy  
YELLOW - Office Copy  
PINK - Permit Copy