

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



# CITY OF PORTLAND BUILDING PERMIT



**This is to certify that**

MONTFORT HOUSING LIMITED PARTNERSHIP/Pine  
State Services Inc

**Located at**

37 FORE ST

**PERMIT ID:** 2013-02090

**ISSUE DATE:** 09/19/2013

**CBL:** 017 G007001

has permission to **HVAC Install multiple Lochinvar Knight Boilers in all buildings.**  
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 clsoed-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 procured prior to occupancy.

N/A

/s/ Tammy Munson

**Fire Official**

**Building Official**

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

*Approved Property Use - Zoning*  
140 Dwelling units in 29 buildings

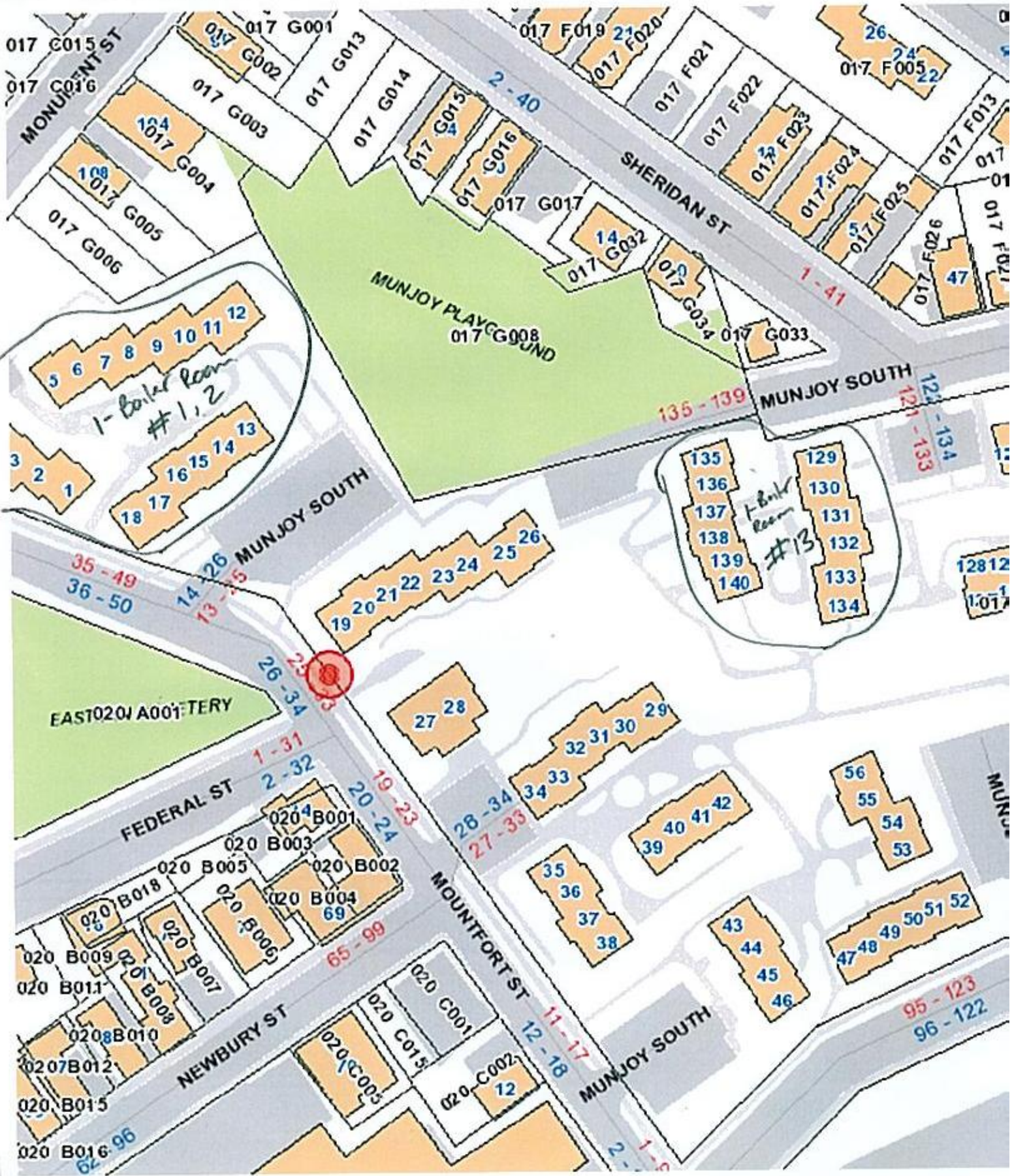
*Building Inspections*

*Fire Department*

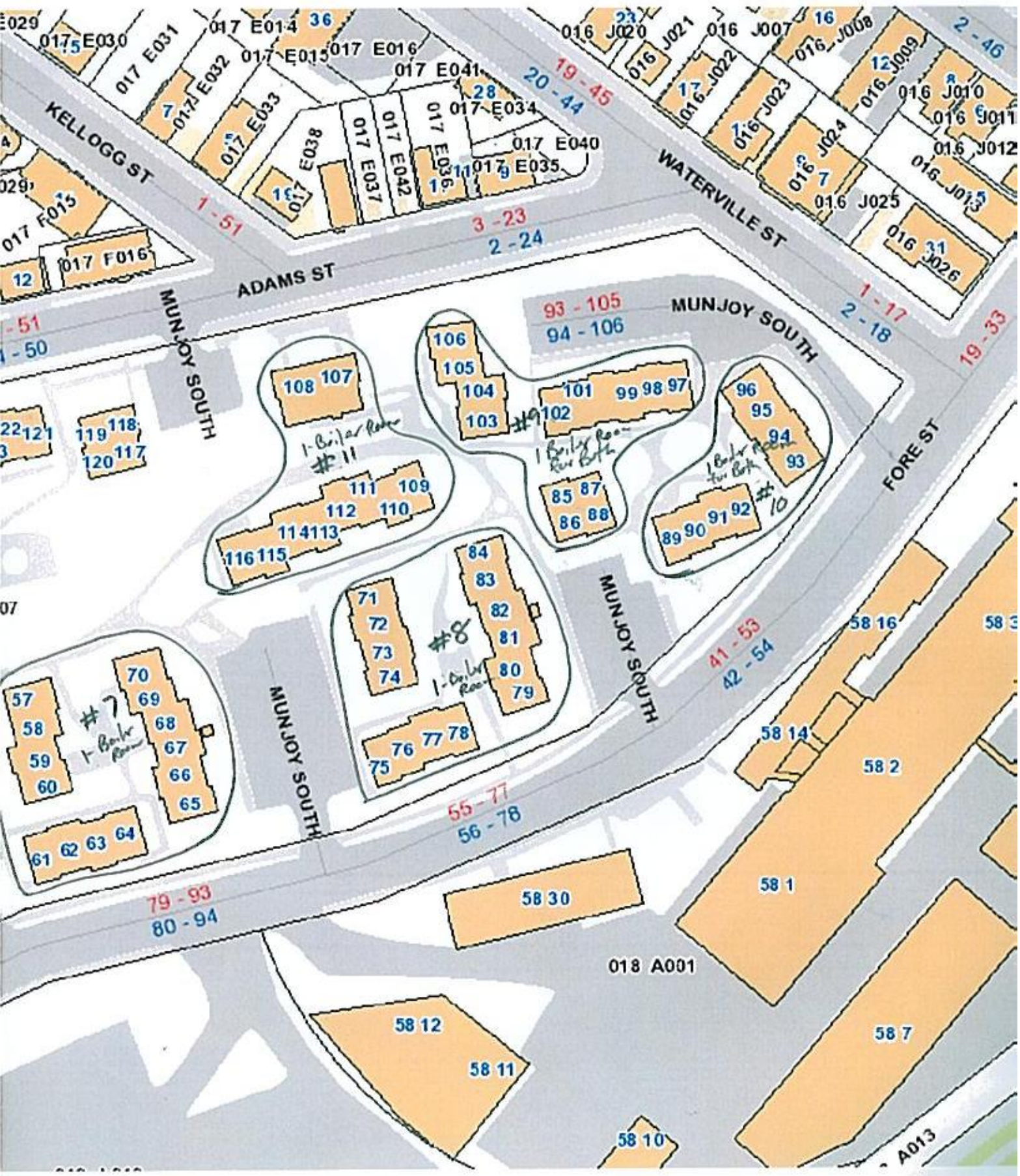


# My Map

## 27 Mountfort







BUILDING PERMIT INSPECTION PROCEDURES  
Please call 874-8703 (ONLY)  
or email: [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov)

**Check the Status or Schedule an Inspection On-Line at  
<http://www.portlandmaine.gov/planning/permitstatus.asp>**

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.**
- **Per Section 107.3.1 of the Maine Uniform Building and Energy Code (MUBEC). One set of printed approved stamped construction documents shall be kept at the site of work and shall be open to inspection by building officials.**

## **REQUIRED INSPECTIONS:**

Final Inspection

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.

<b>City of Portland, Maine - Building or Use Permit</b>		<b>Permit No:</b> 2013-02090	<b>Date Applied For:</b> 09/16/2013	<b>CBL:</b> 017 G007001
389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716				
<b>Proposed Use:</b> Same: 140 Dwelling units in 29 buildings		<b>Proposed Project Description:</b> HVAC Install multiple Lochinvar Knight Boilers in all buildings.		
<b>Dept:</b> Zoning	<b>Status:</b> Approved	<b>Reviewer:</b> Marge Schmuckal	<b>Approval Date:</b> 09/19/2013	
<b>Note:</b>				<b>Ok to Issue:</b> <input checked="" type="checkbox"/>
<b>Conditions:</b>				





PLEASE ALSO FILL OUT AND SIGN SECOND PAGE

Sign Here: *Lee Nicky* Owner or Owner's Authorized Agent  
Date: 9-13-13

I further understand that it is my responsibility to schedule inspections of the work as required and that the City's inspections will, at that time, check the work for code compliance. The City's inspectors may require modifications to the work completed if it does not meet applicable codes. LN INITIAL HERE

I hereby apply for a permit as a Owner Agent of the below listed property and by so doing will assume responsibility for compliance with all applicable codes, bylaws, rules and regulations.  
I certify under penalty of perjury and under the laws of the State of Maine the foregoing is true and correct. I further certify that all easements, deed restrictions, or other encumbrances restricting the use of the property are shown on the site plans submitted with this application.

In addition, I understand and agree that this building permit does not authorize the violation of the 12 M.R.S. § 12801 et seq. - Endangered Species.

I am submitting for a permit authorized by the State of Maine Uniform Building and Energy Code (MUBEC), Fuel Board Laws and Rules and all locally adopted codes and standards applying to Plumbing, Electrical, Fire Prevention and Protection in anticipation of having it approved or approved with conditions. I have read the following statement and understand that failure to comply with all conditions once construction is begun may necessitate an immediate work stoppage until such time as compliance with the stipulated conditions is attained. I certify that I have made a diligent inquiry regarding the need for concurrent state or federal permits to engage in the work requested under this building permit, and no such permits are required or I will have obtained the required permits prior to issuance of this permit. I understand that the granting of this permit shall not be construed as satisfying the requirements of other applicable Federal, State or local laws or regulations, including City of Portland historic preservation requirements, if applicable. I understand and agree that this permit does not authorize the violation of regulations.

I understand that the permits obtained pursuant to this acknowledgement of code compliance responsibility will be in my name and that I am acting as the general contractor for this project. I accept full responsibility for the work performed.

Proposed Project Description

I am seeking a permit for the construction or installation of:  
Heating Equipment gas boilers

Physical Address  
184 Main St South Portland ME 04106

I, Lee Nicky am the owner or duly authorized owner's agent of the property listed below



Acknowledgment of Code Compliance Responsibility - Fast Track Project



Sign Here: \_\_\_\_\_  
Date: 9-13-13

*\* OK'd by Henry 9/12/13 (BS)*

- One/Two Family Renovations/Rehabilitations with greater than 50% of the livable area (bearing the seal of a licensed design professional stating code compliance)
- One/Two Family Swimming Pools, Spas or Hot Tubs
- One/Two Family Decks, Stairs and Porches (attached or detached) First Floor Only
- One/Two Family Detached One Story Structures (garages, sheds, etc.) under 600sf
- One/Two Family Change of Use Only (no construction)
- One/Two Family Renovation/Rehabilitation (or less than 50% of the livable area of the building)
- One/Two Family HVAC (including direct replacement of boilers and furnaces)
- Attached One /Two Family Garages
- Interior office renovations w/ no change of use (no expansions; no site work; bearing the seal of a licensed design professional stating code compliance)
- Commercial HVAC systems (with structural and mechanical plans bearing the seal of a licensed design professional stating code compliance)
- Commercial Boilers/Furnaces
- Commercial Signs or Awnings
- Exterior Propane Tanks
- Residential or Commercial Subsurface Waste Water Systems (No Rule Variance)
- Renewal of Outdoor Dining Areas
- Temporary Outdoor Tents and Stages for Non-assembly Uses
- Fire Suppression Systems (Both non-water and water based installations)
- New *Sprinklered* Single Family Homes (bearing the seal of a licensed design professional stating code compliance) - **MUST STILL RECEIVE LEVEL 1 SITE PLAN APPROVAL FROM PLANNING**

THIS PROJECT IS ELIGIBLE FOR FAST TRACK PERMITTING BECAUSE IT IS IN THE FOLLOWING CATEGORY/CATEGORIES (CHECK ALL THAT APPLY):

Acknowledgment of Code Compliance Responsibility - Fast Track Project



DATE: \_\_\_\_\_  
BY: \_\_\_\_\_  
TITLE: \_\_\_\_\_





# PORTLAND MAINE

*Strengthening a Remarkable City, Building a Community for Life • [www.portlandmaine.gov](http://www.portlandmaine.gov)*

Jeff Levine, AICP, Director  
Director of Planning and Urban Development

Tammy Munson  
Director, Inspections Division

## **Electronic Signature and Fee Payment Confirmation**

*Notice: Your electronic signature is considered a legal signature per state law.*

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no permit application can be reviewed until payment of appropriate permit fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

- Within 24-48 hours, once my complete permit application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.
- Within 24-48 hours, once my permit application and corresponding paperwork has been electronically delivered, I intend to **hand deliver** a payment method to the Inspections Office, Room 315, Portland City Hall.
- I intend to deliver a payment method through the U.S. Postal Service mail once my permit paperwork has been electronically delivered.

Applicant Signature: Lee Nicely, Pine State Services

Date: 9/13/13

I have provided digital copies and sent them on:

Date: 9/13/13

NOTE: All electronic paperwork must be delivered to [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov) or by physical means ie; a thumb drive or CD to the office.





# HVAC / Power Equipment Checklist

All of the following information is required and must be submitted. Checking off each item as you prepare your application package will ensure your package is complete and will help to expedite the permitting process.

- A floor plan that includes structural details, size and dimensions of the floor the equipment is going to be installed.
- Information on how the unit is being vented & hanging details if appropriate.
- Details of the specific equipment being installed; ie; specifications and any heating technical specifications. Often this information can be obtained from the manufacturer's spec sheet or retail advertisements.
- A plot plan showing the shape and dimension of the lot, with the distance from the actual property lines, and the principal structure may be required.
- Proof of ownership is required if it is inconsistent with the assessors records.

**All HVAC installations must be conducted in compliance with the  
IRC 2009 Building Code**

Separate permits are required for plumbing and electrical installations, as required.

Separate permits are also required based on different properties (different Chart, Block and Lot.)

**Permit Fee: \$30.00 for the first \$1000.00 construction cost, \$10.00 per additional \$1000.00 cost**

**This is not a Permit; you may not commence any work until the Permit is issued.**



FILL IN AND SIGN WITH INK



Inspections Division  
Date: 09/19/13

# Application for Heating, Ventilation, Air Condition (HVAC) Cooking or Power Equipment

To the Inspector of Buildings, Portland Maine:

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

Address/CBL: 37 Fore Street (17-g-7) Use of Building: Low income housing Date: 9/13/13

Name and Address of Owner: Stanford Management, LLC  
245 Commercial Street, Third Floor, Portland, ME 04101

Installer's Name and Address: Pine State Services, Inc.  
184 Main Street, Ste 1c, South Portland, ME 04106 E-Mail: info@pinestateservices.com

<p>Location of Appliance:</p> <p><input type="checkbox"/> Basement                      <input type="checkbox"/> Floor</p> <p><input type="checkbox"/> Attic                                      <input type="checkbox"/> Roof</p> <p>Type of Fuel:</p> <p><input type="checkbox"/> Gas                      <input type="checkbox"/> Oil                      <input type="checkbox"/> Solid</p> <p>Appliance Name: <u>Lochinvar Knight</u></p> <p>UL Approved: <input type="checkbox"/> Yes                      <input type="checkbox"/> No</p> <p>Will appliance be installed in accordance with the manufacturer's installation instructions? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Type of License of Installer: Master Plumber #: <u>MS8235</u></p> <p>Solid Fuel #: _____</p> <p>Oil #: _____</p> <p>Gas #: <u>PNT1218</u></p> <p>Other: _____</p>	<p>Type of Venting: (<i>Plan required for submittal</i>)</p> <p><input type="checkbox"/> Masonry Lined Factory Built: _____</p> <p><input type="checkbox"/> Metal Factory Built UL Listing: _____</p> <p><input type="checkbox"/> Direct Vent Type: <u>PVC</u>                      UL #: _____</p> <p># of Tanks: _____</p> <p>Type of Fuel Tank:</p> <p><input type="checkbox"/> Gas                                      <input type="checkbox"/> Oil</p> <p>Size of Tank: _____</p> <p>Distance from tank to center of flame: _____</p> <p><b>Cost of Work: \$ <u>155,500</u></b></p> <p><b>Permit Fee: \$ <u>1575.00</u></b></p>
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Approved

Approved with Conditions

Fire: \_\_\_\_\_  
Electric: \_\_\_\_\_  
Building: \_\_\_\_\_

See attached letter or requirements

Inspector's Signature                      Date Approved

**Signature of Installer:** \_\_\_\_\_ *Lee* **E:Mail:** lee@pinestateservices.com





Inspections Division  
Date: 09/19/13

# CONDENSING RESIDENTIAL GAS BOILERS



## SMART SYSTEM

CONTROL WITH ADVANCED  
USER FEATURES

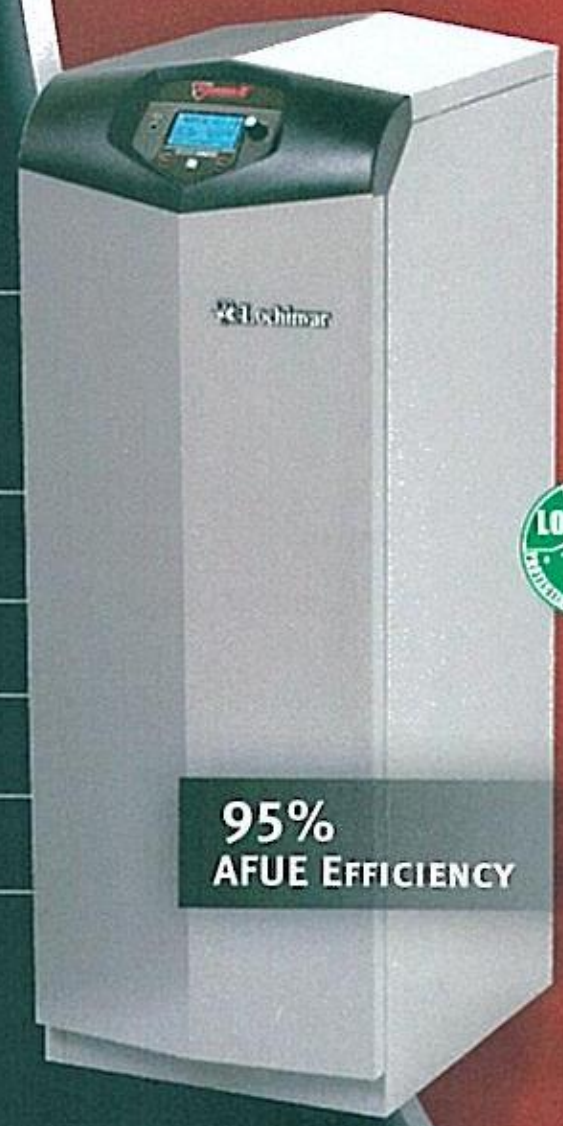
MODELS FROM 80,000 TO 285,000 BTU/HR

5:1 FIRING RATE MODULATION

LESS THAN 20 ppm NOx

DIRECT VENT FLEXIBILITY TO 100 FEET

UP TO 98% EFFICIENCY IN LOW TEMP  
APPLICATIONS



**95%  
AFUE EFFICIENCY**



[knightheatingboiler.com](http://knightheatingboiler.com)





Inspections Division  
Date: 09/19/13



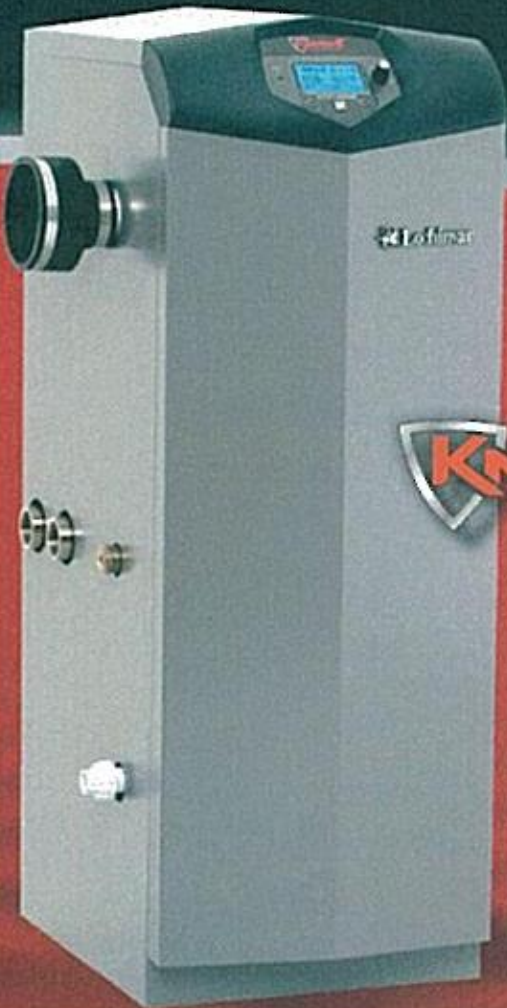
**95% DOE AFUE EFFICIENCY**

**THE BEST YOU CAN BUY IS NOW EVEN BETTER!**

KNIGHT is recognized for its reliable, proven performance and high quality standards. Its award winning design assures contractors and home owners peace of mind and long term savings in operating costs.

Lochinvar has raised the KNIGHT standard to even greater heights. The SMART SYSTEM™ control with color display gives installers and maintenance personnel a greater level of control than ever before. It's easy to access all the information they need to setup, troubleshoot and monitor all boiler functions. Additionally, two cascading options allow the installer to fine-tune sequencing of multiple boiler installations.

*More than ever, KNIGHT is the best choice for traditional hydronic space heating, radiant floor heating and indirect domestic hot water applications.*



**FLOOR STANDING MODELS**

The KNIGHT Floor-Standing lineup features 5 small footprint models from 80,000 to 285,000 Btu/hr.

**\*WALL-MOUNTED FIRE TUBE MODELS AVAILABLE**

7 Inputs from 55,000 to 399,999 Btu/hr. See Knight Wall Mount Literature (WHN) for more details.



All KNIGHT Boilers meet or exceed the most stringent requirements, with less than 20 ppm NOx.



**Most Efficient 2012**  
[www.energystar.gov](http://www.energystar.gov)

The KNIGHT Boiler has been designated as one of the Most Efficient ENERGY STAR qualified products in 2012.



**KNIGHT XL COMMERCIAL**

Need more BTU's? KNIGHT XL Commercial Boilers are available in 5 sizes from 399,999 to 800,000 Btu/hr. See KNIGHT XL literature for more details.



## SMART SYSTEM PUTS MORE CONTROL AND INFORMATION AT YOUR FINGERTIPS

The SMART SYSTEM™ is the most advanced integrated boiler control on the market today.

### LARGER LCD SCREEN

Displays more information.

### SOFT KEYS

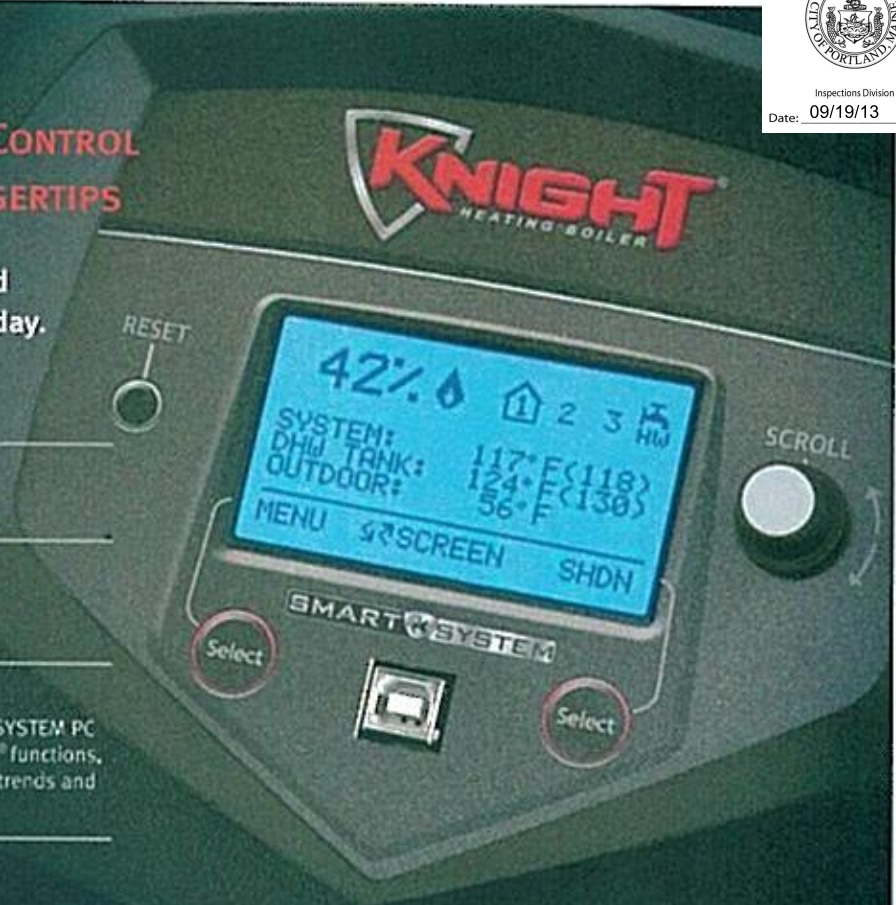
For simple programming.

### NAVIGATION DIAL

For fast transitions from screen to screen and easy adjustment of settings.

### USB PORT

USB port permits connection to a laptop computer. SMART SYSTEM PC software may be used to troubleshoot and program KNIGHT® functions, set date and time, monitor historical data, including faults, trends and energy consumption.



## AT-A-GLANCE COLOR-CODING



### BLUE SCREEN

Normal system operation.



### YELLOW SCREEN

Maintenance due - shows the installer's name and number on the display.



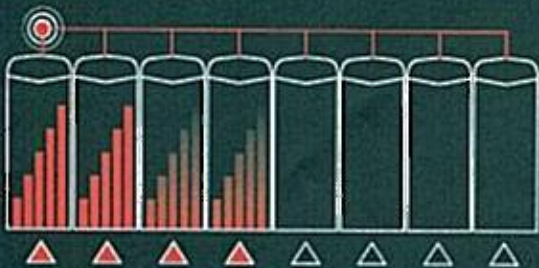
### RED SCREEN

Lockout mode - shows active fault and installer's name and number on the display.

## SELECTABLE CASCADE OPTIONS

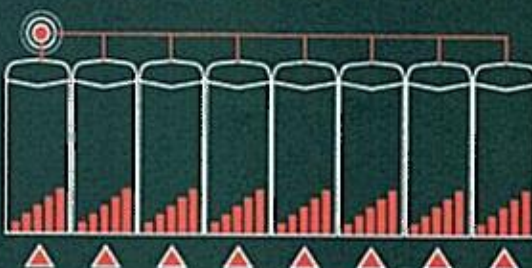
When multiple KNIGHT boilers are installed together, the SMART SYSTEM built-in sequencer can be set for "Lead-Lag" cascade or "Efficiency Optimized" cascade operation.

### LEAD-LAG CASCADE



The "lead" boiler modulates with demand to capacity. As demand increases, additional boilers fire and modulate to capacity. This continues, with additional boilers firing and modulating to capacity until all units are operating. Every 24 hours, the SMART SYSTEM automatically shifts the lead boiler role to the next in the sequence, distributing lead-lag runtimes equally.

### EFFICIENCY OPTIMIZED CASCADE



This feature optimizes the modulation capabilities of the Boiler Plant while evenly distributing run time across all cascaded boilers. Every 24 hours the SMART SYSTEM automatically shifts the 1st boiler on role to the next in the sequence, distributing run time equally.

SMART SYSTEM Cascade option allows 2 - 8 boilers to be sequenced.



# DIAL IN SYSTEM PERFORMANCE

**NEW!**  
**COMPATIBILITY WITH COPPER FIN II  
NON-CONDENSING BOILER**

Allows you to create a front end loading system.

**NEW!**  
**MULTIPLE SIZED BOILER CASCADE  
CONTROL**

KNIGHTS of one or more sizes can be combined into a single cascade to maximize turndown and meet minimum demands.

**\* INTERNAL CASCADING SEQUENCER  
WITH MULTIPLE PROGRAMMABLE  
SYSTEM EFFICIENCY OPTIMIZERS**  
Fine-tune installations using Lead-Lag or Efficiency Optimization Cascade features.

**\* CONTROLS UP TO THREE  
SETPOINT TEMPERATURES**  
Allows three different temperature inputs to be controlled. Boiler can be run at the lowest temperature demand for optimal efficiency.

**\* OUTDOOR RESET FOR EACH TEMP LOOP**  
The boiler setpoint temperature responds to changes in outdoor air temperature. Outdoor temperature monitor guides the reset schedule to meet the load.

**NIGHT SETBACK**  
Program a heating loop temperature setback for any time of the day, each day of the week.

**DOMESTIC HOT WATER  
PRIORITIZATION W/PUMP CONTROL**  
On DHW call, SMART SYSTEM overrides the outdoor reset and starts the DHW pump to the indirect water heater alternating to meet both heating and hot water demands.

**\* DHW NIGHT SETBACK**  
Resets DHW setpoint to save water-heating energy during times of low or no usage.

*\*Exclusive feature, available only from Lochivar*

**\* DHW MAX FIRING RATE**  
Allows you to limit the maximum percentage of firing rate when in DHW mode.

**\* SEPARATELY ADJUSTABLE  
SH/DHW MODE SWITCHING TIMES**  
Allows controls to be tailored to meet system demand. Design system setup for flexibility.

**INDIRECT WATER HEATER  
ZONE PUMP CONTROL**  
All boilers in cascade can be used to meet DHW demand as well as satisfy building load.

**SYSTEM & BOILER PUMP CONTROLS**  
Provides power to system and boiler pumps on a call for heat. Programmable post purge allows pumps to operate after a call has been satisfied. Option for Continuous System Pump Operation.

**\* PUMP RELAY WITH  
FREEZE PROTECTION**  
Parameters adjustable by installer for flexibility in low-temperature applications.

**\* INSTALLER ACCESS TO  
BMS AND RAMP DELAY SETTINGS**  
Set up or change these parameters through the control itself on the front of the boiler, no PC software required.

**LOW-WATER FLOW INDICATOR**  
Uses temperature differential to protect against low flow in heat exchanger by reducing modulation or forcing boiler shutdown.

**PASSWORD SECURITY**  
Allows only qualified personnel to access parameters.

**\* PRODUCT SERVICE INDICATOR**  
Program reminders for cycle count, operation hours or last service. Installer's name and number may be displayed.

# BUILDING MANAGEMENT INPUTS & OUTPUTS

**OPTIONAL MODBUS CAPABILITY**  
Allows boiler communication through Modbus protocol. Simplifies BMS/boiler interface for status monitoring.

**0-10V BUILDING MANAGEMENT  
SYSTEM (BMS) CONTROL INPUT**  
BMS-driven input for modulation rate or temperature control.

**0-10V CASCADE SETPOINT  
AND MODULATION CONTROL**  
BMS-driven input for modulation rate or temperature control of cascade.

**0-10V HEAT DEMAND INPUT**  
Enables thermostat or a 0-10V signal to initiate a call for heat. Gives the BMS options on how to enable boiler or cascade.

**0-10V BOILER RATE OUTPUT**  
Signal output of modulation rate allows BMS to monitor boiler firing rate.

**0-10V PUMP SIGNAL INPUT**  
Input from variable speed system pump allows faster reaction to changes of flow in system, reducing possibility of temperature over-shoot and cycling.

**0-10V SIGNAL TO CONTROL VARIABLE  
SPEED BOILER PUMP**  
Allows control to maintain a higher  $\Delta T$  at low firing rates and reduces boiler flow when it responds to lower flow rates in the system loop.

# 5 FLEXIBLE OPTIONS FOR DIRECT-VENTING UP TO 100 FEET!

Placement of units within a building will never be a problem with KNIGHT. It permits up to 100 feet of air intake and 100 feet of exhaust vent with PVC, CPVC, polypropylene or stainless steel pipe.



OPTIONAL  
SIDEWALL VENT  
TERMINATION



\*OPTIONAL KIT ALLOWS FOR AN ATTRACTIVE SIDEWALL  
TERMINATION WHEN USING PVC, CPVC OR POLYPROPYLENE VENT MATERIAL.



Direct-Vent Vertical



Vertical with Sidewall Air



Direct-Vent Vertical\*



Direct-Vent Sidewall\*



Direct-Vent Sidewall

*\*An optional concentric vent kit is sold separately to allow a single penetration for both combustion air and vent pipes.*

*This one*





# STATE-OF-THE-ART MODULATING COMBUSTION SYSTEM

## Advanced Negative Regulation Technology

KNIGHT safely and reliably operates with supply gas pressures as low as 4 inches water column. Plus "Neg/Reg" technology automatically adjusts gas pressure to ensure the correct volume of fuel and air entering the burner.

## Direct-Spark Ignition

With each call for heat, two electrodes ignite the fuel/air mixture. A third electrode then senses for flame. The SMART SYSTEM will generate a soft lockout and display a fault if ignition does not occur.

## Fully Modulating Burner with 5:1 Turndown

The SMART SYSTEM allows fully modulating combustion with 5:1 turndown. The burner can fire as low as 20% of maximum input and modulate the firing rate up to 100% as demand increases. A woven stainless steel mesh enclosed burner tube fires in a 360° pattern along the entire length of the primary heat exchanger.

## Two-in-One Stainless Steel Heat Exchanger

A primary heat exchanger combined with a secondary heat exchanger captures flue gas heat and condenses to utilize available latent energy. The stainless steel, pH-tolerant design features a weld-sealed assembly with no O-rings or gaskets and does not require special glycol. ASME Section IV approved and stamped.

## Field Connection Versatility

User-friendly terminal strip allows for 44 low-voltage field connections. Four-line voltage connections supply power to the unit and up to three pumps operated by the SMART SYSTEM.



KB9286 Shown

## TEAM KNIGHT WITH SQUIRE FOR LOW-COST DOMESTIC HOT WATER!

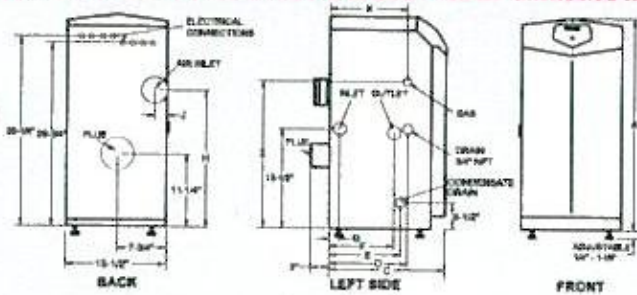


KNIGHT's Domestic Hot Water Prioritization feature means you can easily install it with Lochinvar's SQUIRE® indirect water heater, available in 30, 40, 50, 65, 80 and 119 gallons. This combination will give homeowners high-efficiency space heating from KNIGHT, and abundant domestic hot water from SQUIRE. With a stainless steel tank and heat exchanger, SQUIRE provides more hot water and lower water heating costs than standard gas or electric water heaters.

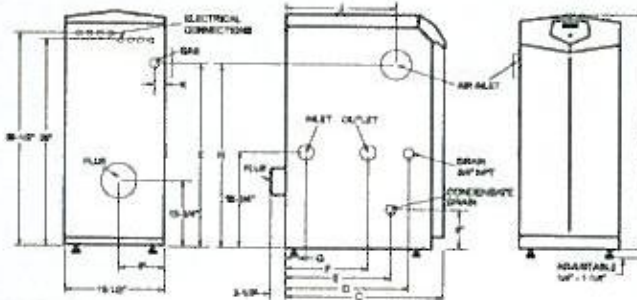


## KNIGHT® BOILER DIMENSIONS AND SPECIFICATIONS - FLOOR-STANDING MODELS

Models:  
KBN081-211



Models:  
KBN286



Model Number	Input Min. MBH	Input Max. MBH	AFUE %	Heating Capacity MBH	NET I-BwR MBH
KBN081	16	80	95.0	74	64
KBN106	21	105	95.0	97	84
KBN151	30	150	95.0	139	121
KBN211	42	210	95.0	196	170
KBN286	57	285	95.0	267	232

### DIMENSIONS AND SPECIFICATIONS

A	C	D	E	F	G	H	I	J	K	Gas Conn.	Water Conn.	Air Inlet	Vent Size	Shipping Wt. (lbs.)
33-1/4"	34"	7"	5-3/4"	5"	3"	20-1/2"	22"	1-3/4"	6-1/2"	1/2"	1"	3"	3"	125
33-1/4"	34"	6-1/2"	5-3/4"	4-1/2"	1-1/2"	20-1/2"	22"	1-3/4"	6-1/2"	1/2"	1"	3"	3"	129
33-1/4"	38"	12-1/4"	11-1/2"	10"	1-1/2"	21-1/4"	23"	1-3/4"	12"	1/2"	1"	3"	3"	157
33-1/4"	22-1/4"	16-1/2"	15-3/4"	14-1/4"	5-1/4"	21-1/4"	23"	1-3/4"	16-1/4"	1/2"	1"	3"	3"	172
42-1/4"	19-3/4"	12-3/4"	13-1/2"	6"	2"	34"	31"	11-3/4"	4-1/4"	3/4"	1-1/4"	4"	4"	224

Notes: Indoor installation only. All information subject to change. Change "N" to "L" for LP gas models.  
 Net ratings based on piping and pick-up allowance of 1.15

### SMART SYSTEM™ FEATURES

- ▶ **SMART SYSTEM Digital Operating Control**
  - ▶ Multi-Color Graphic LCD Display with Navigation Dial and Soft Keys
- ▶ **Three Setpoint Temperature Inputs**
- ▶ **Built-in Cascading Sequencer for up to 8 Boilers**
  - ▶ Cascade Multiple Sized Boilers
  - ▶ Lead Lag
  - ▶ Efficiency Optimization
  - ▶ Front End Loading Capability with Copper Fin II
- ▶ **Outdoor Reset Control with Outdoor Air Sensor**
  - ▶ Programmable for Three Reset Temperature Inputs
- ▶ **Programmable System Efficiency Optimizers**
  - ▶ Night Setback w/Override Function
  - ▶ DHW Night Setback w/Override Function
  - ▶ Anti-Cycling
  - ▶ Outdoor Air Reset Curve
  - ▶ Ramp Delay
  - ▶ Boost Temperature & Time
- ▶ **Three Pump Control**
  - ▶ System Pump with Parameter for Continuous Operation
  - ▶ Boiler Pump with Variable Speed Pump Control\*
  - ▶ Domestic Hot Water Pump
- ▶ **Domestic Hot Water Prioritization**
  - ▶ DHW tank piped with priority in the boiler loop
  - ▶ DHW tank piped as a zone in the system with the pumps controlled by the Smart System
  - ▶ DHW Modulation Limiting
  - ▶ Separately Adjustable SH/DHW Switching Times\*
- ▶ **Building Management System Integration**
  - ▶ 0-10VDC Input to Control Modulation or Set Point
  - ▶ 0-10VDC Modulation Rate Output
  - ▶ 0-10VDC Input Signal from Variable Speed System Pump\*
  - ▶ 0-10VDC Input to Enable/Disable call for heat
- ▶ **High-Voltage Terminal Strip**
  - ▶ 120 VAC / 60 Hertz / 1 Phase Power Supply
  - ▶ Three Sets of Pump Contacts
- ▶ **Low Voltage Terminal Strip**
  - ▶ 24 VAC Device Relay
  - ▶ Proving Switch Contacts
  - ▶ Flow Switch Contacts
  - ▶ Alarm on Any Failure Contacts
  - ▶ Run/Time Contacts
  - ▶ DHW Thermostat Contacts
  - ▶ 3 Space Heat Thermostat Contacts
  - ▶ System Sensor Contacts
  - ▶ DHW Tank Sensor Contacts
  - ▶ Outdoor Air Sensor Contacts
  - ▶ Cascade Contacts
  - ▶ 0-10VDC BMS External Control Contact
  - ▶ 0-10VDC Boiler Rate Output Contacts
  - ▶ 0-10VDC Variable Speed System Pump Signal Input
  - ▶ 0-10VDC Signal to Control Variable Speed Boiler Pump
  - ▶ Modbus Contacts
- ▶ **Time Clock**
- ▶ **Data Logging**
  - ▶ Hours Running, Space Heating
  - ▶ Hours Running, Domestic Hot Water
  - ▶ Ignition Attempts
  - ▶ Last 10 Lockouts
- ▶ **Access to BMS Settings through Graphic LCD Display**
- ▶ **Maintenance Reminder**
  - ▶ Custom Maintenance Reminder with Contractor Ir/fo
  - ▶ Installer Ability to De-activate Service Reminder
- ▶ **Low-Water Flow Safety Control & Indication**
- ▶ **Dual Level Password Security**
- ▶ **Customizable Freeze Protection Parameters**

\*Exclusive feature, available only from Lochinvar

### STANDARD FEATURES

- ▶ **ENERGY STAR Most Efficient Recognition**
- ▶ **95% DOE AFUE Efficiency**
- ▶ **Modulating Burner with 5:1 Turndown**
  - ▶ Direct-Spark Ignition
  - ▶ Low-NOx Operation
  - ▶ Field Convertible from Natural to LP Gas
- ▶ **ASME Stainless Steel Heat Exchanger**
  - ▶ 30 psi ASME Relief Valve
- ▶ **Vertical & Horizontal Direct-Vent**
  - ▶ PVC, CPVC, Polypropylene or SS Venting up to 100 feet
- ▶ **Smart System Control**
- ▶ **Condensate Trap**
- ▶ **Other Features**
  - ▶ Automatic Reset High Limit
  - ▶ Adjustable High Limit w/Manual Reset
  - ▶ Boiler Circulating Pump
  - ▶ Adjustable Leveling Legs
  - ▶ Zero Clearances to Combustible Materials
  - ▶ 12-Year Limited Warranty (See Warranty for Details)

### OPTIONAL EQUIPMENT

- ▶ Modbus Communication
- ▶ Condensate Neutralization Kit
- ▶ Multi Temperature Loop Control
- ▶ Flow Switch
- ▶ Low-Water Cutoff w/Manual Reset & Test
- ▶ Alarm Bell
- ▶ Concentric Vent Kit
- ▶ SMART SYSTEM PC Software
- ▶ Stack Frame
- ▶ BMS Gateway to LON or BacNet
- ▶ Sidewall Vent Termination

### FIRING CODES

- ▶ M9 Standard Construction
- ▶ M7 California Code



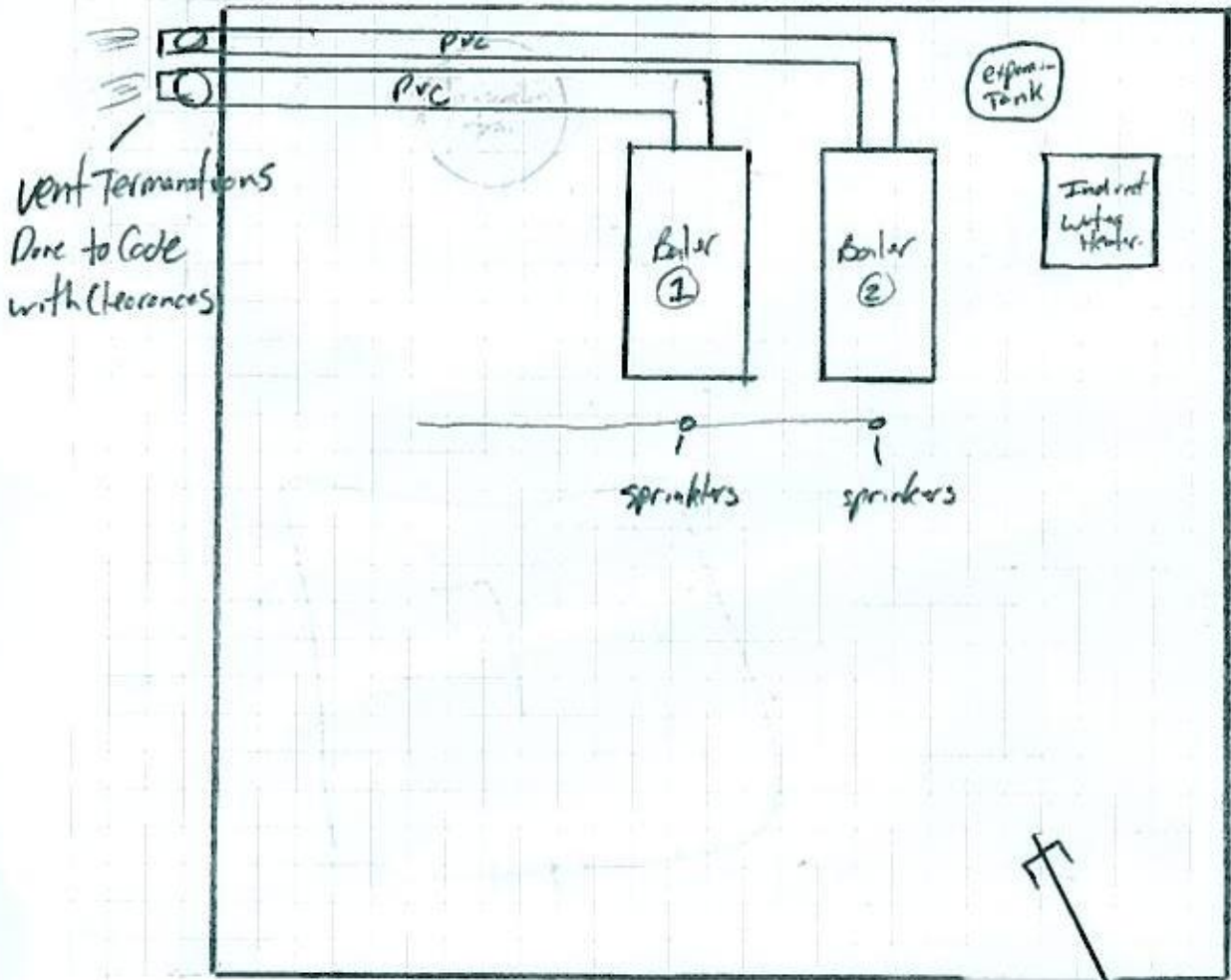
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Patent Pending





# Typical Boiler Room 18x18



7 Boiler Rooms Total.