



**Lochinvar**<sup>®</sup>  
High Efficiency Water Heaters, Boilers and Pool Heaters

**KNIGHT  
HEATING BOILER  
Submission Sheet**

**KBN-Sub-09**

**KNIGHT<sup>®</sup> FLOOR STANDING HEATING BOILERS**

**JOB NAME** \_\_\_\_\_

**LOCATION** \_\_\_\_\_

**ENGINEER** \_\_\_\_\_

**WHOLESALE** \_\_\_\_\_

**MECH. CONTRACTOR** \_\_\_\_\_

**MODEL NO.** \_\_\_\_\_

**TYPE GAS** \_\_\_\_\_

**Btu/hr INPUT** \_\_\_\_\_

**Btu/hr OUTPUT** \_\_\_\_\_

**NOTES**

**SMART SYSTEM<sup>™</sup> 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
  - › Runtime 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 Info
  - › Installer Ability to De-activate Service Reminder
- › **Low-Water Flow Safety Control & Indication**
- › **Dual Level Password Security**
- › **Customizable Freeze Protection Parameters**

**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**

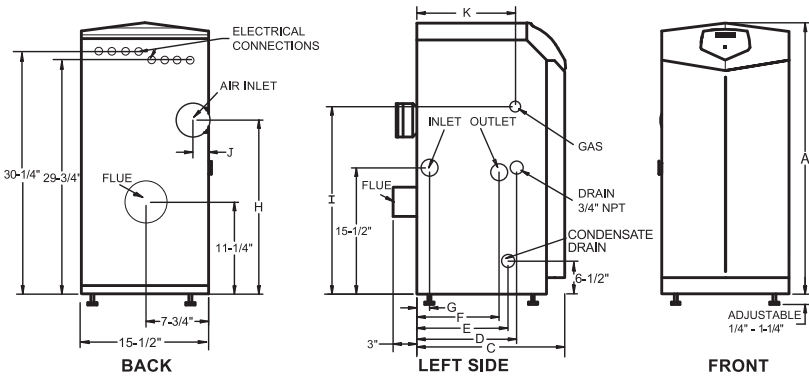
- › Modbus Communication
- › Condensate Neutralization Kit
- › Multi Temperature Loop Control
- › Flow Switch
- › Low-Water Cutoff w/Manual Reset & Test
- › Alarm Bell
- › Concentric Vent Kit
- › SMART SYSTEM PC Software
- › Stack Frame
- › BMS Gateway to LON or BacNet
- › Sidewall Vent Kit

**FIRING CODES**

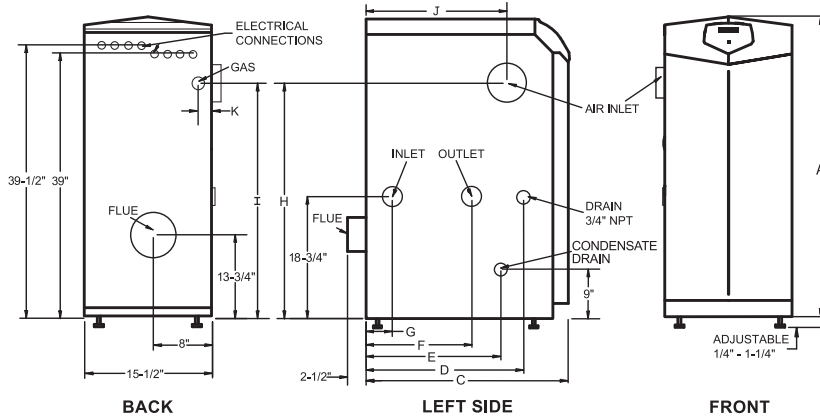
- › M9 Standard Construction
- › M7 California Code

# KNIGHT Heating Boiler Dimensions & Specifications

Models:  
KBN 081-211



Model:  
KBN286



Model Number	Input Min. MBH	Input Max. MBH	AFUE %	Heating Capacity MBH	NET I=B=R 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"	14"	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"	14"	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"	18"	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



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