



KNIGHT FIRE TUBE BOILERS - FLOOR AND WALL MOUNT MODELS

Job Name:

Engineer:

Contractor:

Model #:

Location:

Agent/Wholesaler:

Type Gas:

Equipment Tag(s):

JOB NOTES:

Smart System Features

- › **Smart System Digital Operating Control**
Multi-Color Graphic LCD Display w/Navigation Dial,
Soft Keys and Loch-N-Link USB programming
- › **Three Boiler Setpoint Temperature Inputs**
Plus Domestic Hot Water Prioritization
- › **Built-in Cascading Sequencer for up to 8 Boilers, with Cascade Redundancy**
Multiple Size Boiler Cascade
Lead Lag
Efficiency Optimization
Front End Loading Capability
- › **Outdoor Reset Control with Outdoor Air Sensor**
Programmable for Three Reset Temperature Inputs
- › **Programmable System Efficiency Optimizers**
SH Night Setback
DHW Night Setback
Anti-Cycling
Outdoor Air Reset Curve
Ramp Delay
Modulation Factor Control
Boost Temperature & Time

Standard Features

- › **95% DOE AFUE Efficiency (55-285)**
- › **Modulating Burner with up to 10:1 Turndown**
Direct Spark Ignition
Low NOx Operation
- › **ASME Stainless Steel Heat Exchanger**
30 PSI ASME Relief Valve
- › **Top and bottom water connections (MNPT, WHB 55-285 Only)**
- › **Vertical & Horizontal Direct Vent**
PVC, CPVC, Polypropylene or SS Venting up to 100 ft.
- › **Universal Vent Adapter**
Built-in Combustion Analyzer Port
- › **SMART SYSTEM™ Control**
- › **Condensate Trap**
- › **ECM Variable Speed Boiler Circulating Pump**
- › **110V Convenience Outlet**
- › **High Altitude Models Available**
- › **Other Features**
Automatic Reset High Limit
Adjustable High Limit w/Manual Reset
Zero Clearances to Combustible Materials
15-Year Limited Warranty (See Warranty for Details)
5-Year Limited Parts Warranty

- › **Four Pump Control**
System Pump with Parameter for Continuous Operation
Boiler Pump with Variable Speed Control
Domestic Hot Water Pump
Domestic Hot Water Recirculation
- › **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 Space Heat/DHW Switching Times
- › **Building Management System Integration**
0-10 VDC Input to Control Modulation or Setpoint
0-10 VDC Modulation Rate Output
0-10 VDC Input to Enable/Disable Call for Heat
- › **Access to BMS Settings through Graphic LCD Display**
- › **High-Voltage Terminal Strip**
120 VAC / 60 Hertz / 1 Phase Power Supply
Three Sets of Pump Contacts
- › **Low-Voltage Terminal Strip**
DHW Recirculation Pump Start/Stop
24 VAC Device Relay
Configurable Proving 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

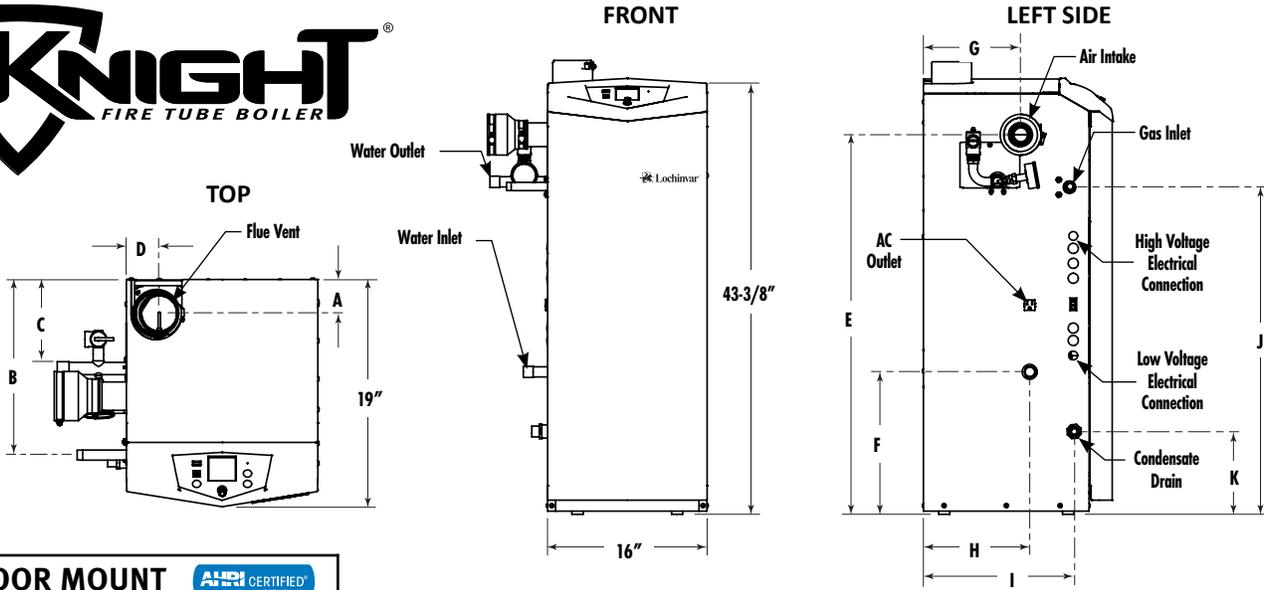


- 0-10 VDC BMS External Control Contact
- 0-10 VDC Boiler Rate Output Contacts
- 0-10 VDC Variable Speed System Pump Signal Input
- 0-10 VDC Signal to Control Variable Speed Boiler Pump
- Modbus Contacts

- › **Time Clock**
- › **Data Logging**
Hours Running, Space Heating
Hours Running, Domestic Hot Water
Ignition Attempts
Last 10 Lockouts
- › **Maintenance Reminder**
Custom Maintenance Reminder with Contractor Contact Information
Installer Ability to De-activate Service Reminder
- › **Low-Water Flow Safety Control & Indication**
- › **Password Security**
- › **Customizable Freeze Protection Parameters**

Optional Equipment

- CON-X-US Remote Connectivity
- Modbus Communication
- BACnet MSTP
- Flow Switch
- Low-Water Cutoff w/Manual Reset & Test
- Alarm Bell
- Concentric Vent Kit
- Condensate Neutralization Kit
- BMS Gateway to LON or BACnet IP
- Multi-Temperature Loop Control
- Sidewall Vent Termination
- Wireless Outdoor Sensor
- LP Gas Conversion Kit
- › **Firing Codes**
M9 Standard Construction

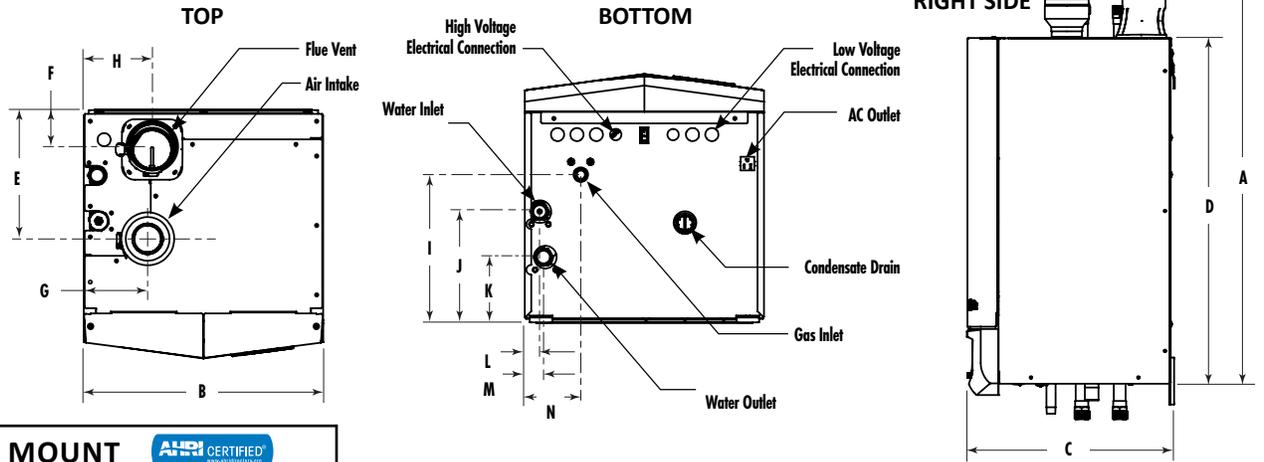


FLOOR MOUNT



Model Number	Input MBH			Heating Capacity MBH	Net AHRI Rating MBH	Dimensions (inches)											Gas Conn.	Water Conn.	Air Inlet	Vent Size	Shipping Weight (lbs.)
	Min	Max	AFUE%			A	B	C	D	E	F	G	H	I	J	K					
KHB055N	8.3	55	95	51	44	3-1/2"	13-1/4"	6"	2-3/4"	37-2/3"	13-1/2"	8-1/3"	10-1/2"	15"	32-1/2"	8-1/3"	1/2"	1"	2"	2"	160
KHB085N	8.5	85	95	79	69	3-1/2"	13-1/4"	6"	2-3/4"	37-2/3"	13-1/2"	8-1/3"	10-1/2"	15"	32-1/2"	8-1/3"	1/2"	1"	2"	2"	165
KHB110N	11	110	95	102	89	2-3/4"	14-3/4"	7-1/2"	2-3/4"	38"	14-1/3"	9-3/4"	10-1/2"	15"	33"	8-1/3"	1/2"	1"	3"	3"	170
KHB155N	15.5	155	95	143	124	2-3/4"	14-3/4"	7-1/2"	2-1/2"	38"	14-1/3"	9-3/4"	10-1/2"	15"	33"	8-1/3"	1/2"	1"	3"	3"	175
KHB199N	19.9	199	95	184	160	3"	15-1/2"	7-1/2"	2-1/2"	38-1/3"	14-1/3"	10-1/2"	11-1/2"	15"	33"	8-1/3"	1/2"	1-1/4"	3"	3"	195
KHB285N	28.5	285	95	264	230	3"	15-1/2"	7-1/2"	2-1/2"	38-1/3"	14-1/3"	10-1/2"	11-1/2"	15"	33"	8-1/3"	1/2"	1-1/4"	3"	3"	205

• Information subject to change without notice. • Dimensions shown are approximate and should not be used for construction purposes. • Change "N" to "L" for LP gas models. • The Net AHRI Water Ratings shown are based on a piping and pickup allowance of 1.15. • Lochinvar should be consulted before selecting a boiler for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc. • The ratings have been determined under the provisions governing forced draft burners.



WALL MOUNT



Model Number	Input MBH			Net AHRI Rating, Water MBH	AFUE, %	Combustion Efficiency %	Thermal Efficiency %	Dimensions (inches)											Gas Conn.	Water Conn.	Air Inlet	Vent Size	Ship Wt. (lbs.)			
	Min	Max	*Output MBH					A	B	C	D	E	F	G	H	I	J	K						L	M	N
WHB055N	8.3	55	51	44	95.0	-	-	10"	18-3/4"	16"	31-1/8"	8-1/2"	3-3/4"	4-1/2"	6-1/2"	7-1/4"	8-7/8"	3-1/2"	1-1/2"	1-1/2"	6"	1/2"	1"	2"	2"	139
WHB085N	8.5	85	79	69	95.0	-	-	8-3/4"	18-3/4"	16"	31-1/8"	8-1/2"	3-3/4"	4-1/2"	6-1/2"	7-1/4"	8-7/8"	3-1/2"	1-1/2"	1-1/2"	6"	1/2"	1"	2"	2"	142
WHB110N	11	110	102	89	95.0	-	-	11-1/4"	18-3/4"	19"	31-1/8"	10"	2-3/4"	5"	5-1/4"	11-1/2"	8-1/2"	5"	1"	1"	4-1/2"	1/2"	1"	3"	3"	159
WHB155N	15.5	155	144	125	95.0	-	-	11-1/4"	18-3/4"	19-1/8"	31-1/8"	10"	2-3/4"	5"	5-1/4"	11-1/2"	8-1/2"	5"	1"	1"	4-1/2"	1/2"	1"	3"	3"	166
WHB199N	19.9	199	184	160	95.0	-	-	11-1/4"	18-3/4"	19-1/8"	31-1/8"	10-1/2"	3"	5-1/4"	6"	11"	9-1/2"	6-1/4"	1-1/2"	1-1/2"	4-1/2"	1/2"	1-1/4"	3"	3"	175
WHB285N	28.5	285	264	230	95.0	-	-	11-3/4"	18-3/4"	21-1/8"	31-1/8"	15"	3"	3-3/4"	5-1/4"	12-1/4"	11"	6-1/4"	1-1/2"	1-1/2"	6-1/2"	1/2"	1-1/4"	3"	3"	184
WHB399N	39.9	399	377	328	-	96.0	94.4	13-5/8"	25-1/4"	21-7/8"	34-3/8"	3-1/8"	4-1/4"	23"	3-7/8"	8-3/4"	12-1/2"	9-1/4"	2"	2"	23"	3/4"	1-1/2"	4"	4"	213

*Top and bottom water connections are not included on WHB399.

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