



# Lochinvar®

HIGH EFFICIENCY BOILERS & WATER HEATERS

## KNIGHT FIRE TUBE BOILER

Submittal Sheet

KHBWHB-Sub-02

### 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



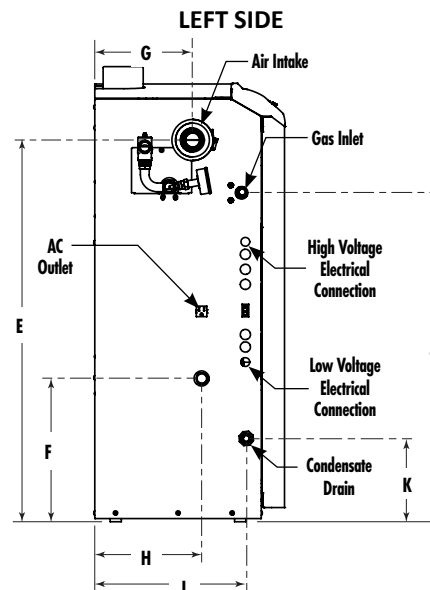
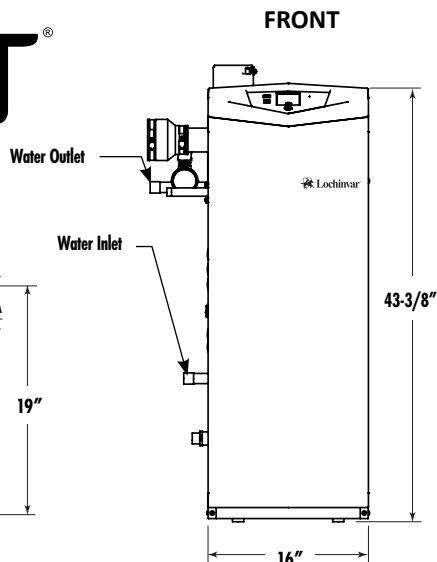
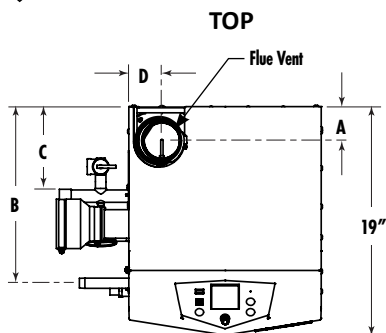
0-10 VDC BMS External Control Contact  
0-10 VDC Boiler Rate Output Contacts  
0-10 VDC Variable Speed System Pump Signal Input  
0-10 VDC Signal to Control Variable Speed Boiler Pump  
Modbus Contacts

- › **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  
Sidewall Vent Termination  
Wireless Outdoor Sensor  
LP Gas Conversion Kit

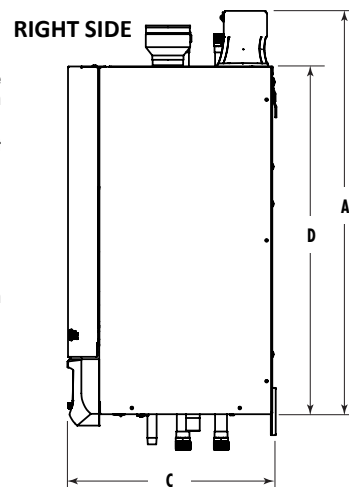
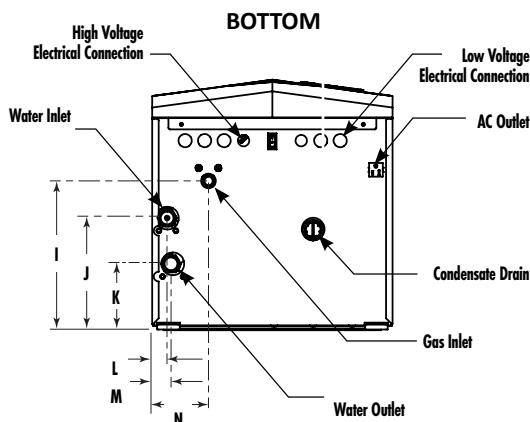
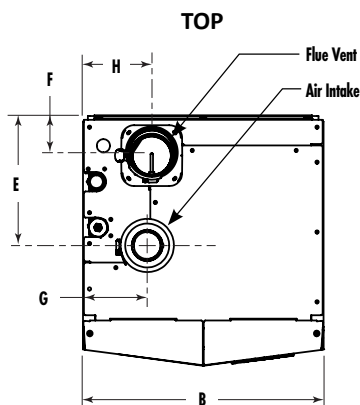
- › **Firing Codes**  
M9 Standard Construction  
M7 California Code



## FLOOR MOUNT

AHRI CERTIFIED

| Model Number | Input MBH |     | Heating Capacity MBH | Net AHRI Rating MBH | AFUE% | A      | B       | C      | D      | E       | F       | G       | H       | I   | J       | K      | Gas Conn. | Water Conn. | Air Inlet | Vent Size | Shipping Weight (lbs.) |
|--------------|-----------|-----|----------------------|---------------------|-------|--------|---------|--------|--------|---------|---------|---------|---------|-----|---------|--------|-----------|-------------|-----------|-----------|------------------------|
|              | Min       | Max |                      |                     |       |        |         |        |        |         |         |         |         |     |         |        |           |             |           |           |                        |
| KHB055N      | 8.3       | 55  | 51                   | 44                  | 95    | 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  | 79                   | 69                  | 95    | 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 | 102                  | 89                  | 95    | 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 | 143                  | 124                 | 95    | 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 | 184                  | 160                 | 95    | 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 | 264                  | 230                 | 95    | 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                    |



## WALL MOUNT

AHRI CERTIFIED

| Model Number | Input MBH |     | Net AHRI Rating, MBH | AFUE% | Combustion Efficiency % | Thermal Efficiency % | A       | B       | C       | D       | E       | F      | G      | H      | I       | J       | K      | L      | M      | N      | Gas Conn. | Water Conn. | Air Inlet | Vent Size | Ship Wt. (lbs.) |
|--------------|-----------|-----|----------------------|-------|-------------------------|----------------------|---------|---------|---------|---------|---------|--------|--------|--------|---------|---------|--------|--------|--------|--------|-----------|-------------|-----------|-----------|-----------------|
|              | Min       | Max |                      |       |                         |                      |         |         |         |         |         |        |        |        |         |         |        |        |        |        |           |             |           |           |                 |
| WHB055N      | 8.3       | 55  | 51                   | 44    | 95.0                    | -                    | 40"     | 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                    | -                    | 39-3/4" | 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                    | -                    | 41-1/4" | 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                    | -                    | 41-1/4" | 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                    | -                    | 41-1/4" | 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                    | -                    | 41-3/4" | 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                 | 43-5/8" | 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             |

• Information subject to change without notice. • Dimensions shown are approximate and should not be used for construction purposes. • "Output" is "Heating Capacity" for units with inputs <300 MBH and "Gross Output" for units ≥300 MBH. • 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.

For technical information call 800-722-2101. Lochinvar, LLC reserves the right to make product changes or improvements without prior notice.



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