ALWAYS LEADING THE CHARGE

Introduced in 2005, the KNIGHT® boiler was a major step forward for Lochinvar. Designed for both new construction and replacement applications, the KNIGHT quickly became recognized by the industry as the gold standard for installation flexibility and ease of serviceability.

In 2008, the KNIGHT boiler line was broadened to reach up to 800,000 BTU/hr with the introduction of the KNIGHT XL residential and light commercial boiler, and in 2010 a new and innovative SMART SYSTEM™ control was added to both the KNIGHT and KNIGHT XL boiler products to increase their feature set.

The SMART SYSTEM control makes the setup and operation of KNIGHT boilers easier through its large display, color-coded screens, soft keys and navigation dial used for transitioning from screen to screen quickly.

With over 100,000 units sold to date, the KNIGHT boiler line has continued to benefit from Lochinvar’s commitment to perpetual innovation with four model generations and a host of design, efficiency and installation enhancements.

THE BEST KNIGHT EVER

Lochinvar is proud to introduce the new, improved KNIGHT fire tube boiler—delivering ultimate ease of installation and unmatched operational reliability and serviceability.

Recent upgrades keep KNIGHT at the head of the class, allowing it to continue to lead the charge as the industry-leading high-efficiency residential boiler. With more adjustable parameters than any other competitor, KNIGHT is the most flexible residential boiler you can install.

Today, the new KNIGHT boiler family is available in 13 model options—six floor mounts and seven wall mounts. It also offers a broader range of heating capacity from 55,000 to 399,000 BTU/hr—while continuing to work at 95% AFUE efficiency.
KNIGHT FEATURES

1 UNIVERSAL VENT CONNECTOR*
Allows for easy installation of multiple vent materials.

2 FIRE-TUBE HEAT EXCHANGER
Low pressure drop saves on pump operation costs and provides installation flexibility, while stainless steel fights off corrosion.

3 SMART SYSTEM USER INTERFACE
A plain English, code free interface with multicolor diagnostic display.

4 10:1 MODULATION TURNDOWN
Saves money on fuel cost.

5 ELECTRICAL OUTLET (not shown on WHB)*
Plug available for work light or condensate pump.

6 LOCH-N-LINK® USB PROGRAMMING
Allows for saving of parameters onto a USB drive for use at a different job site.

7 INSTALLATION FLEXIBILITY
Top and bottom water connection for the WHB. Top and left side connections for the KHB for easy retro-fitting, such as a cast iron efficiency upgrade.

VARIABLE SPEED ECM PUMP*
Saves electricity and lowers operating cost.

*New Features on WHB and KHB models.
BOILER CONTROL FROM ANYWHERE

The industry’s most advanced boiler control system now includes the CON-X-US® Remote Connect option and Loch-N-Link® USB drive programming feature. See below for a complete list of SMART SYSTEM™ functions and features.

From wherever you are, the CON-X-US option lets you use any internet-capable device to link up with the SMART SYSTEM on an unlimited number of KNIGHT boilers. With CON-X-US, you're always in touch and in control. Optional CON-X-US control board is sold separately.

» DO REGULAR CON-X-US CHECKS FOR ALL YOUR KNIGHT CUSTOMERS, AND LET THEM KNOW YOU'RE MONITORING THEIR BOILER'S PERFORMANCE.

» ADJUST SETPOINTS, DOMESTIC HOT WATER, RESET CURVES, PUMP DELAYS AND MORE, USING THE CON-X-US INTERACTIVE DISPLAY.

» STATUS ALERTS VIA TEXT OR E-MAIL LET YOU KNOW WHEN A KNIGHT BOILER NEEDS ATTENTION.

SMART SYSTEM™ FUNCTIONS AND FEATURES

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
  - Space Heat Night Setback
  - DHW Night Setback
  - Anti-Cycling
  - Outdoor Air Reset Curve
  - Ramp Delay
  - Modulation Factor Control
  - Boost Temperature & Time
- 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

STANDARD FEATURES

- ENERGY STAR Most Efficient Product
- 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

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
- SMART SYSTEM™ PC Software
- Condensate Neutralization Kit
- BMS Gateway to LON or BACnet IP
- Multi-Temperature Loop Control
- Sidewall Vent Termination
- Wireless Outdoor Sensor
- LP Conversion Kit

» MNPT Top and Bottom Water Connections (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
  - Boiler Circulating Pump
  - Zero Clearances to Combustible Materials
  - 15-Year Limited Warranty (See Warranty for Details)
  - 5-Year Limited Parts Warranty
» Firing Codes
  - M9 Standard Construction
  - M7 California Code
**FLOOR MOUNT**

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**WALL MOUNT**

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*Thermal Efficiency%
# Gross Output MBH

Information subject to change without notice. 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.

**10:1 Turndown ratio and top and bottom water connections are not included on WHB399. WHB399 operates with a 5:1 turndown.**
INTRODUCING THE NOBLE® RESIDENTIAL BOILER

Lochinvar is proud to introduce the Noble™ boiler—our newest high-efficiency residential boiler. Noble, Lochinvar’s first-ever value-inspired boiler, comes with many of the industry-leading features you would expect to find in a Lochinvar residential boiler. With the addition of the Noble fire-tube boiler, Lochinvar now offers one of the broadest lines of residential condensing boiler products in the industry.

Designed, engineered and assembled in the USA, the Noble boiler delivers performance far beyond other value-priced residential boilers in its class. It touts several of the industry-leading features first pioneered by Lochinvar’s KNIGHT boiler—the top-selling residential boiler since 2005 and still the leading premium solution in hydronic heating.

VALUE PRICED AT THE TOP OF ITS CLASS

Noble comes to market as a leader in standard residential boilers, and the best option to step up from a traditional cast iron boiler to a high efficiency design. It comes with many standard features, including a Universal Vent Connector—a multi-material connector that allows for PVC, CPVC, polypropylene and stainless steel connections directly into the unit. It also offers a 10:1 turndown ratio, a built-in cascading sequencer for up to eight units, and Lochinvar’s revered SMART CONTROL ™ system, the gold standard for boiler control systems that includes an intuitive setup wizard and text-based display.

Because it is a Lochinvar boiler, Noble is easy to install, set up and service, and promises to deliver the lasting reliability and serviceability the industry has come to expect from a Lochinvar boiler.

COMPETITIVE COMPARISON

<table>
<thead>
<tr>
<th>COMPETITION</th>
<th>DISPLAY</th>
<th>HEAT EXCHANGER</th>
<th>VENT CONNECTOR</th>
<th>MODULATION TURNDOWN</th>
<th>DESIGNED, ENGINEERED AND ASSEMBLED IN THE USA</th>
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</table>
Always Leading The Charge

The Noble residential boiler is the perfect hydronic heating solution for homeowners seeking the reliability, ease of installation, and engineering prowess of a Lochinvar high efficiency product. The Noble boiler is available in four sizes: the NKB080N with max input of 80,000 BTU/hr, the NKB110N with max input of 110,000 BTU/hr, the NKB150N with max input of 150,000 BTU/hr and the NKB199N with a max input of 199,000 BTU/hr.

The Noble boiler was designed for durability with 95% AFUE efficiency, a fire-tube stainless steel heat exchanger, and a 10/5 (heat exchanger/parts) warranty. The Noble boiler is also engineered with installation and serviceability in mind, including a simple layout and construction as well as technical support from Lochinvar professionals to assist with troubleshooting.

Noble Features

1. Universal Vent Connector
   Multi-material connector allows either PVC, CPVC, polypropylene or stainless steel connection directly to the appliance without adapters. NOBLE also has a built-in combustion analyzer port.

2. Direct Venting Up to 100 Feet
   Offers five venting options for tremendous installation flexibility. It permits direct-vent air intake and exhaust runs up to 100 equivalent feet using either PVC, CPVC, polypropylene or AL29-4C stainless steel vent pipe.

3. Advanced Negative Regulation Technology
   Safely and reliably operates with supply gas pressure as low as 4 inches water column. Its negative regulation (neg/reg) technology eliminates mechanical dampers as it automatically adjusts fan speed to ensure the correct volume and mix of fuel and air throughout the firing range.

4. Fire-Tube Heat Exchanger
   Low pressure drop saves on pump operation costs and provides installation flexibility, while stainless steel fights off corrosion.
Information subject to change without notice. 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.