CREST®
CONDENSING BOILER

HELLCAT™
COMBUSTION TECHNOLOGY

REALTIME O_2 TRIM™

8 MODELS FROM 999,000 TO 6.0 MILLION BTU/HR

UP TO 96.2% THERMAL EFFICIENCY

UP TO 25:1 TURNDOWN RATIO

SMART TOUCH™
OPERATING CONTROL

CON·X·US®
REMOTE CONNECT

Registered under U.S. Patent #9,746,176

DESIGNED ★ ENGINEERED ★ ASSEMBLED
USA

Lochinvar®

CREST WITH HELLCAT COMBUSTION TECHNO

HELLCAT COMBUSTION TECHNOLOGY

With RealTimeO$_2$ Trim, this combustion technology features feedforward and feedback data that ultimately delivers a targeted combustion O$_2$ range. Commissioning trim allows the user to program the optimal O$_2$ setting and patent pending learned trim delivers a consistent performance based on past environmental data. The long-lasting O$_2$ sensor delivers an accurate and dependable combustion system.

ENHANCED CONTROLS

Featuring a larger 10" capacitive touchscreen that acknowledges users' interaction and offers greater contrast for better visibility. The new platform provides seamless updates and protocol enhancements.

150 FT DIRECT VENT

Venting flexibility is now even greater with an industry best 150 total equivalent feet.

INCREASED TURNDOWN

The FCB4000 – FCB6000 models feature 20:1 turndown. Lochinvar has made the CREST's turndown even greater with Hellcat Combustion Technology, compared to today's CRESTS' (FBN4001 at 12:1 & FBN5001/6001 at 10:1).

NEW LOOK

An refined industrial design features narrower front doors and lighter, yet stronger side panels. This rigid construction results in easier to maneuver panels.

2011-2012
» 1.5 MILLION - 5 MILLION RELEASED

2015
» ENHANCED EFFICIENCY
» NEW MODELS
» NEW COMBUSTION TECHNOLOGY
» 96.2% EFFICIENCY ON MODELS FROM 750,000-2 MILLION BTU

2016
» 6 MILLION RELEASED

2018
» OUTDOOR MODEL RELEASED
» NEW COMBUSTION TECHNOLOGY ON MODELS 2.5-6.0 MILLION BTU
» 96% EFFICIENCY ON MODELS FROM 2.5-6.0 MILLION BTU

2021
» HELLCAT COMBUSTION TECHNOLOGY ON MODELS 1.0 - 6.0 MILLION BTU

LOGY FEATURES

The Crest with Hellcat Combustion Technology features an O_2 sensor system designed for a condensing, hydronic boiler combined with Lochinvar's SMART TOUCH control that adapts to rapidly changing environmental conditions. Seasonal changes, drastic weather shifts, and altitude are all compensated for. No matter what is happening outside, Crest with Hellcat Combustion Technology is automatically adjusting and performing optimally. The control platform learns the optimal settings and logs that information, so that as those same environmental conditions arise, the combustion system automatically adjusts. This is another way no one brings it all together like Lochinvar.

HELLCAT™
COMBUSTION TECHNOLOGY

1 O_2 Sensor: Available to Lochinvar via an exclusive arrangement with a global supplier, this O_2 sensor has been specifically designed for a condensing, hydronic boiler application.
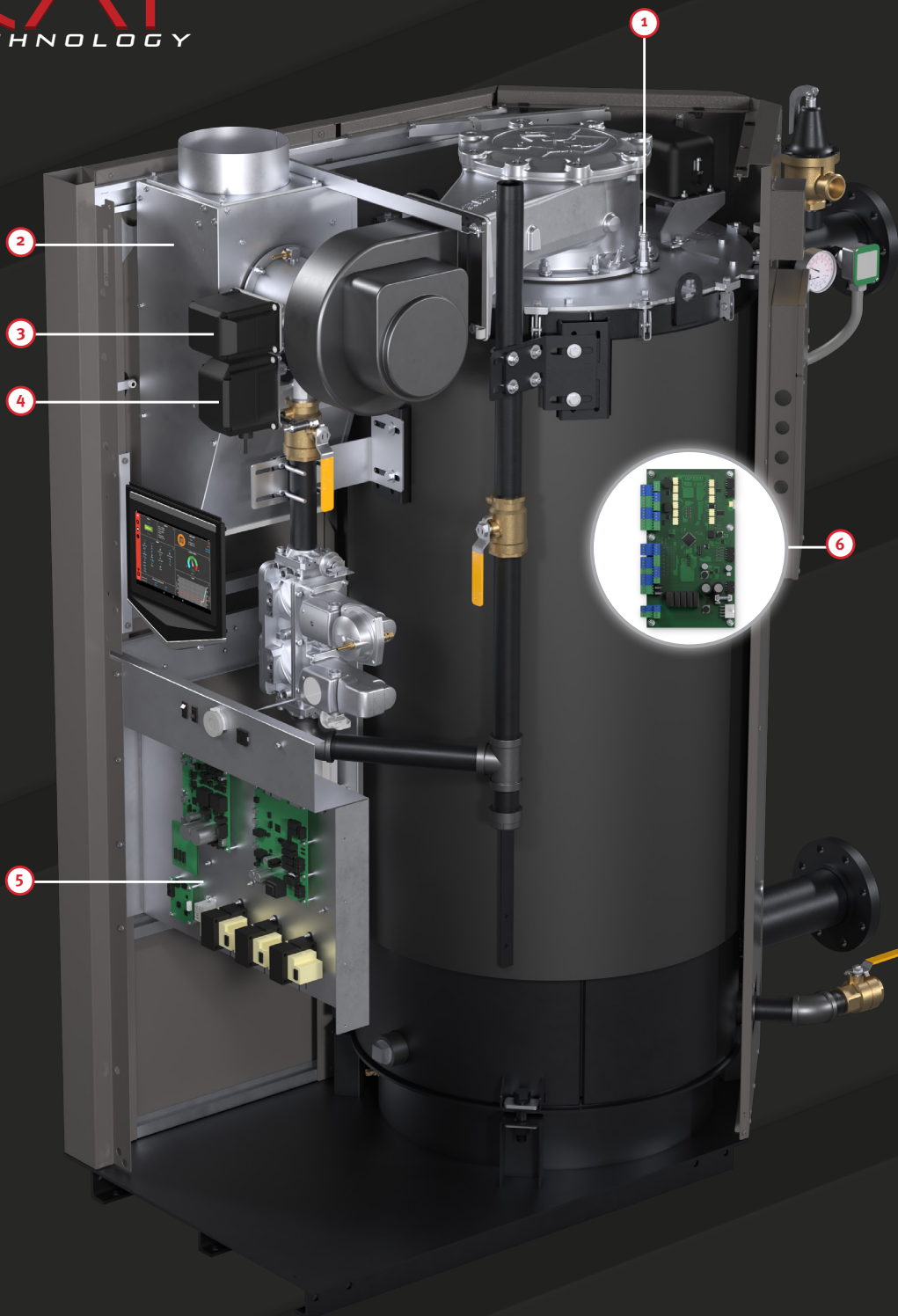
2 Air Filter Box: Integrated into the boiler cabinet, the air filter stops particles from entering the burner.

3 Air Damper: The air damper provides precision control of the air supply independently of the gas damper.

4 Gas Damper: Much like the air damper, the gas damper provides precision control of the fuel supply independent of the air supply.

5 Boiler Control Panel: Located behind the front panel of the boiler, this panel contains the boiler control board, the combustion feedback board, and the O_2 sensor board.

6 Comfort Control Panel: Located on the back of the boiler, the comfort control takes the place of the low voltage board and features pluggable terminal blocks. Also located in this back panel are the pump and BACnet integrated circuitry.

INTEGRATED CONTROLS PLATFORM

This innovative control platform consists of five boards which provides ultimate flexibility.

- **User Interface**
- **Comfort Control Board (including low voltage board connections)**
- **Boiler Control Board**
- **Pump Board**
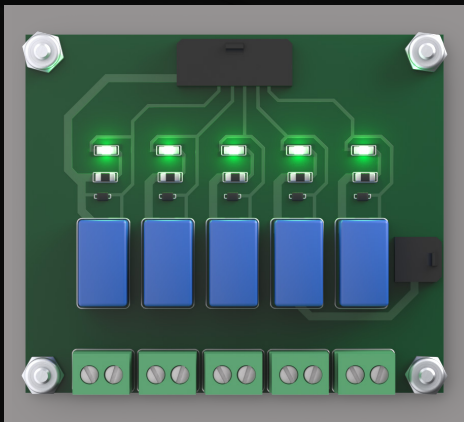- **Combustion Feedback Board**
- **O₂ Sensor Board**

Lochinvar developed a new separate Comfort Control Board which provides more flexibility and quicker adjustments. Previously the single boiler control board contained safety controls (High Limits for example) and comfort controls (Outdoor Air Reset) making an adjustment to an unrelated certified safety control a complicated and time consuming process. The Boiler Control Board, Combustion Feedback Board, the Comfort Control Board, the O₂ Sensor Board and the Pump Board also feature LED status and fault indicators to help with diagnosis in the field.

MORE FLEXIBILITY, QUICKER ADJUSTMENTS

All five of the control boards are universal, which means they will not be designated by model size. If a board needs to be replaced, the universal board can be used since the individual boiler's settings remain on an external personality key (which is plugged into the boiler control board.) This helps with inventory and with field replacement.

THE BOILER CONTROL BOARD OFFERS SEVERAL NEW FEATURES

TWO GAS PRESSURE SWITCH INPUTS:
One switch for high and one for low. The control can now tell which switch has locked out, where the previous version only identified the lock out as gas pressure switch.

AIR FILTER SWITCH INPUT:
Indicates when a filter is dirty and impacting performance.

BLOCKING REPORT:
Identifies the last blocking code as well as what time it occurred.

LOCKOUTS NOW LOG THE BURNER STATE:
Lockout during flame stabilization after ignition for example.

RECYCLING REPORT:
This helps troubleshoot situations where recycling occurs but there is no lockout. If a condition requires the ignition sequence to recycle, this would be noted. Previously only the lockout conditions would have been reported and logged.

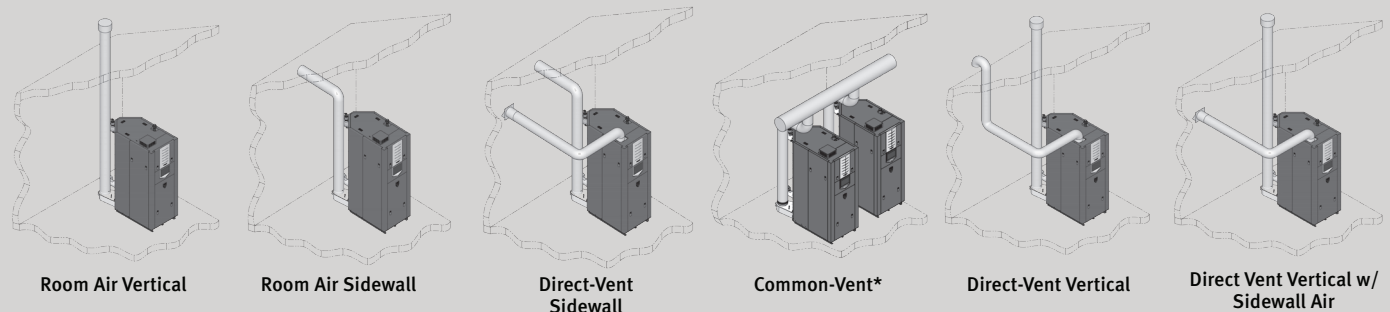**LED INDICATOR LIGHTS TO AID IN TROUBLESHOOTING:**
The Pump Board indicates which pump outputs are active, making troubleshooting quick and easy.
The Combustion Feedback board shows a solid yellow light when the boiler is running, a flashing yellow light when a demand is present, and a red light on a lockout. The O₂ Sensor Board features a green light for normal conditions.

FLEXIBLE VENTING OPTIONS

CREST with Hellcat Combustion Technology offers 6 venting options, and permits direct-vent air intake and exhaust runs up to 150 equivalent feet, using PVC, CPVC, polypropylene or stainless steel pipe.** Plus, multiple units can be common-vented to reduce time and materials cost.

Room Air Vertical	Room Air Sidewall	Direct-Vent Sidewall	Common-Vent*	Direct-Vent Vertical	Direct Vent Vertical w/ Sidewall Air

Contact Lochinvar for information on common venting of CREST boilers.
* *Available for models FCB1000-4000. Stainless steel pipe only for models FCB5000-6000.*

SMART TOUCH FUNCTIONS AND FEATURES

STANDARD FEATURES
Hellcat Combustion Technolgy featuring
   RealTime O_2 Trim™
Proof of Closure Valve (FCB 6000)
Modulating Burner with up to 25:1 Turndown
Direct-Spark Ignition
Low NOx Operation
Sealed Combustion
Air Inlet Filter
Low Gas Pressure Operation
Vertical and Horizontal Direct Venting
   > Direct Vent up to 150 Feet
   > PVC, CPVC, Polypropylene or AL29-4C
     (FCB 1000-4000)
   > AL29-4C (FCB 1000-6000)
ASME "H" Stamped Heat Exchanger
316L Stainless Steel Fire Tubes
160 psi Working Pressure
On/Off Switch
Adjustable High Limit with Manual Reset
Low Water Cutoff with Manual Reset & Test
High & Low Gas Pressure Switches w/Manual Reset
Low Air Pressure Switches indicate Blocked Vent/Air
Condensate Trap w/Blocked Drain Switch
Drain Valve
System Sensor
Outdoor Air Sensor
Inlet & Outlet Temperature Sensors
High-Voltage Terminal Strip
Low-Voltage Terminal Strip
Downstream Gas Test Cocks
50 psi ASME Relief Valve
Temperature & Pressure Gauge
Zero Clearances to Combustible Materials
SCCR of 5,000 A
See Warranty for Details
   10-Year Limited Warranty
   5-Year Warranty on Burner
   18-Month Warranty on Parts
   Lifetime Thermal Shock

SMART TOUCH FEATURES
›CON·X·US Remote Connect
›SMART TOUCH Touchscreen Operating Control
›Full-Color 10" Capacitive Touchscreen LCD Display
›Built-in Cascading Sequencer for up to 8 Boilers
   Built-in Redundancy
   Cascade Multiple Sized Boilers
   Lead/Lag Cascade
   Efficiency Optimized Cascade
›Front-End Loading Capability with Copper-Fin II®
  and Power-Fin® Boilers

›Building Management System Integration
   with 0-10 VDC Input
›BACnet MSTP Communications
›Outdoor Reset Control with Outdoor Air Sensor
›Password Security
›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
›Low Water Flow Safety Control & Indication
›Inlet & Outlet Temperature Readout
›Freeze Protection
›Service Reminder
›Time Clock
›Data Logging
   Hours Running, Modulation Rate
   Ignition Attempts
   Last 10 Lockouts with Burner State
   Recycling Reporting
›Programmable System Efficiency Optimizers
   Night Setback
   Anti-Cycling
   Outdoor Air Reset Curve
   Ramp Delay
   Boost Temperature & Time
   Modulation Factor Control
›Pump Control Board (24V) with LED Indicators
   System Pump
   Boiler Pump
   Domestic Hot Water Pump
   DHW Recirculation Pump (Future)
   Bypass Pump (Future)
›High-Voltage Terminal Strip
   › 120V/1PH/60Hz (FCB 1000-2000)
   › 208V/3PH/60Hz (FCB 2500-3000)
   › 480V/3PH/60Hz (FCB 4000-6000)
›Low-Voltage Terminal Strip
   24 VAC Auxiliary Device Relay
   Auxiliary Proving Switch Contacts
   Alarm on Any Failure Contacts
   Runtime Contacts
   DHW Thermostat Contacts
   Unit Enable/Disable (Demand) Contacts
   System Sensor Input
   DHW Tank Sensor Contacts
   Outdoor Air Sensor Contacts
   Cascade Contacts

   0-10 VDC BMS External Control Contact
   0-10 VDC Variable Speed Boiler Pump
     Control Contact
   0-10 VDC System Pump Speed Input Contact
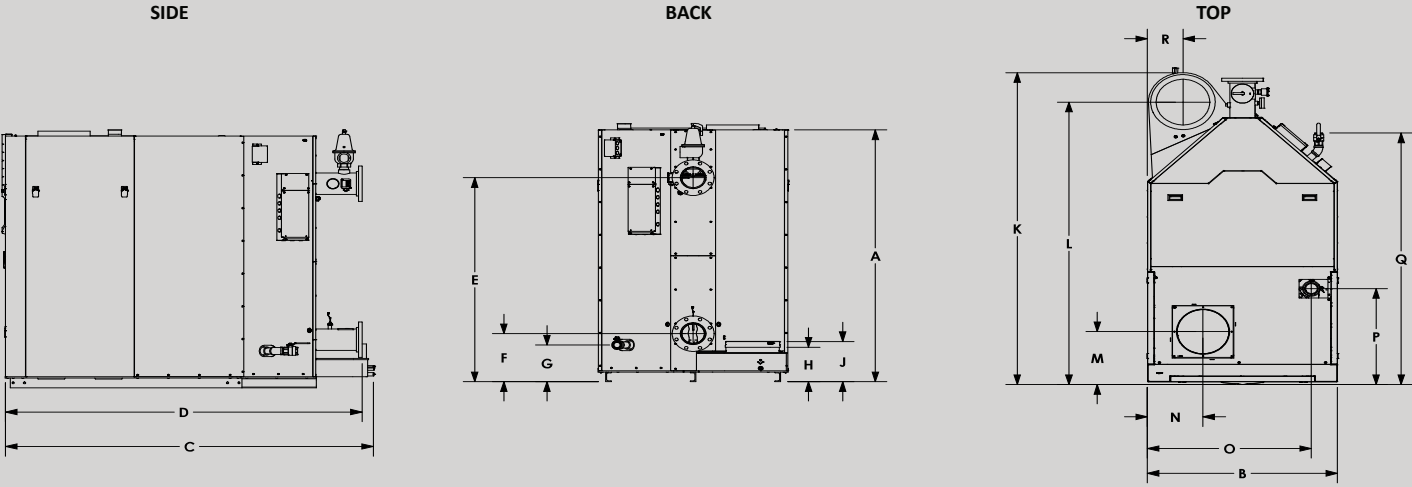   Flow Switch/Low Water Cutoff Contact

OPTIONAL EQUIPMENT
Alarm on Any Failure
ASME Relief Valve Option:
   75 psi   100 psi   125 psi   150 psi
BMS Gateway - BACnet IP or LonWorks
Condensate Neutralization Kit
Common Vent Damper Kits
Modbus Communication
Short Circuit Current Rating (SCCR) Options:
   FCB 2500-6000
   › 100,000 A
   › 200,000 A
Motorized Isolation Valve
Variable Speed Boiler Pump
Wireless Outdoor Temperature Sensor
Electrical Transformer Options (Shipped Loose):
   FCB 1000-2000
   › 208V/3PH/60Hz → 120V/1PH/60Hz
   › 480V/3PH/60Hz → 120V/1PH/60Hz
   › 600V/3PH/60Hz → 120V/1PH/60Hz
   FCB 2500-3000
   › 480V/3PH/60Hz → 208V/3PH/60Hz
   › 600V/3PH/60Hz → 208V/3PH/60Hz
   FCB 4000-6000
   › 208V/3PH/60Hz → 480V/3PH/60Hz
   › 600V/3PH/60Hz → 480V/3PH/60Hz

CODES & REGISTRATIONS
ANSI Z21.13/CSA Certified
ASME Certified, "H" Stamp / National Board
California Code Compliant
CSD1 / Factory Mutual / GE Gap Compliant
Canadian Registration Number (CRN)
South Coast Air Quality Management District Qualified (FB 1000-2000)
AHRI Certified

CREST BOILER DIMENSIONS AND SPECIFICATIONS

SIDE

BACK

TOP

For technical information call 800-722-2101. Lochinvar LLC reserves the right to make product changes or improvements without prior notice. Dimensions are approximate and should not be used for construction purposes.

CREST HEATING BOILER — AHRI CERTIFIED® / DIMENSIONS AND SPECIFICATIONS

Model Number	Input MBH Min	Input MBH Max	Gross Output MBH	Net AHRI Rating MBH	Combustion Efficiency	Thermal Efficiency	Turndown	Flow Rate GPM Min	Flow Rate GPM Max	A	B	C	D	E	F	G	H
FCB1000N	50	999	961	836	96.4%	96.2%	20:1	18	350	78"	30"	56"	57-1/2"	66-1/8"	11-7/8"	11-3/8"	11-1/4"
FCB1500N	60	1,500	1,443	1,255	96.4%	96.2%	25:1	25	350	78"	30"	63-3/4"	64"	65-3/8"	12-3/8"	11-3/8"	11-1/4"
FCB2000N	80	1,999	1,923	1,672	96.4%	96.2%	25:1	25	350	78"	30"	62-1/2"	64-1/4"	65-3/8"	12-3/8"	11-3/8"	11-1/4"
FCB2500N	125	2,500	2,400	2,087	96.1%	96.0%	20:1	25	350	77-3/4"	35"	79-1/4"	79-1/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"
FCB3000N	150	3,000	2,883	2,507	96.1%	96.0%	20:1	25	350	77-3/4"	35"	79-1/4"	79-1/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"
FCB4000N	200	3,999	3,843	3,342	96.1%	96.0%	20:1	45	350	78"	43-1/4"	95-1/4"	90-3/4"	63-1/2"	13-3/4"	11-1/2"	10-3/4"
FCB5000N	250	4,999	4,804	4,177	96.1%	96.0%	20:1	50	600	78"	46-1/2"	96-1/2"	94"	63-1/2"	15"	11-1/2"	10-3/4"
FCB6000N	300	6,000	5,766	5,014	96.1%	96.0%	20:1	60	600	78"	50"	97-3/4"	94-3/4"	63-1/4"	14-3/4"	11-1/2"	10-3/4"

Model Number	J	K	L	M	N	O	P	Q	R	Gas Conn.	Water Inlet/ Outlet	Air Inlet	Vent Size	Oper. Weight (lbs.)	Ship. Weight (lbs.)
FCB1000N	12-1/2"	55-1/2"	51-3/4"	12-3/4"	6-1/2"	26"	21-1/2"	48-3/4"	6-1/2"	1-1/4"	3"	6"	6"	1,939	1,721
FCB1500N	12-1/2"	63-1/4"	58-1/4"	13-1/4"	7-1/2"	25-3/4"	23-1/4"	55-3/4"	5-1/8"	1-1/2"	4"	8"	8"	2,345	1,985
FCB2000N	12-1/2"	62-1/4"	57-1/4"	12"	7-1/2"	26"	21-1/2"	55-1/2"	5-1/8"	1-1/2"	4"	8"	8"	2,622	2,120
FCB2500N	12-1/4"	79"	71-3/4"	17-1/4"	9-1/4"	30-1/4"	28"	67"	7-1/4"	2"	4"	8"	9"	3,555	2,812
FCB3000N	12-1/4"	79"	71-3/4"	17-1/4"	9-1/4"	30-1/4"	28"	67"	7-1/4"	2"	4"	10"	10"	3,582	2,848
FCB4000N	12-1/2"	94-3/4"	85-3/4"	19"	11-1/4"	36-1/2"	35"	77"	10-1/2"	2-1/2"	4"	12"	12"	4,882	3,874
FCB5000N	12-1/2"	96-1/4"	87"	18-3/4"	13"	39-3/4"	34"	78-1/2"	9"	2-1/2"	6"	14"	14"	5,920	4,470
FCB6000N	12-1/2"	96-1/2"	87-1/2"	16-1/2"	14-3/4"	43-1/4"	29-3/4"	78"	6-3/4"	3"	6"	14"	14"	6,755	4,862

*Notes: *Change "N" to "L" for LP gas models .Indoor installation only. 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. The Net AHRI water ratings shown are based on a piping and pickup allowance of 1.15.*

Lochinvar® HIGH EFFICIENCY BOILERS & WATER HEATERS

ENERGY STAR 1000-2000 · CSA CERTIFIED · DESIGN CERTIFIED · LOW NOx · ASME H