

CREST[®]

CONDENSING BOILER

HIGH EFFICIENCY
COMMERCIAL BOILERS

12 MODELS FROM 750,000 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

NOW AVAILABLE WITH
REALTIME O₂ FEEDBACK[™]

RIDE THE LOCHINVAR WAVE[™]

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



DESIGNED ★ ENGINEERED ★ ASSEMBLED

USA

 **Lochinvar**[®]

NO ONE BRINGS IT ALL TOGETHER LIKE LOCHINVAR

Lochinvar is the industry leader that other leading companies call upon for the most advanced and efficient water heating products in the world. For that reason, Lochinvar is trusted to go beyond the call of duty to find a solution for every project, no matter the size. You will not find a water heating company that works harder or cares more.

That's why no one brings it all together quite like Lochinvar.

A HISTORY OF INNOVATION

For over 80 years, Lochinvar, an American company, has been a leader of innovation and high-efficiency water heating. Through Lochinvar's pride in leadership and commitment to excellence, the company has continually improved year after year.

Today, Lochinvar touts the broadest line of high-efficiency water heating solutions, a world-class research & development department, comprehensive service with every sale and industry-leading training through Lochinvar University.

ALWAYS LEADING THE CHARGE

Introduced in 2011, the CREST® was a breakthrough product for Lochinvar. With five sizes ranging from 1.5 to 3.5 million BTU/hr and boasting a 92% thermal efficiency the CREST led the way for Lochinvar in the commercial condensing boiler industry.

A unique combustion system featuring 2 fans, 2 gas valves, and a dual chamber burner allowed the CREST to maximize turndown unlike any other product. The Wave fire tube, designed and engineered at Lochinvar, delivered robust heat transfer and set itself apart from the competition.

In 2015, the product line was enhanced by expanding the product offering down to 750,000 BTU/hr and up to 5 million BTU/hr. Along with that a new combustion system was introduced that allowed greater flexibility and more robust operation. In 2016, the 6 million BTU/hr input model was introduced making this product line broader in its capability.

Now the entire model line features a more streamline combustion system along with a greater thermal efficiency of up to 96.2%. Combined with the standard offering of CON·X·US® the CREST brings the best tools together in one product. Complete control from anywhere, installation flexibility, high turndown, and excellent serviceability are what set the CREST above the rest.

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
» 96% EFFICIENCY
ON MODELS FROM
2.5-6.0 MILLION BTU

CREST[®]

CONDENSING BOILER

RIDE THE LOCHINVAR WAVE[™]

UP TO 6.0 MILLION BTU & 96.2% EFFICIENCY

With the exclusive wave fire-tube design, advancements in Lochinvar combustion technology and the SMART TOUCH[™] control with CON-X-US, CREST changed how the industry thinks about fire-tube boilers. Now you have the opportunity to use all of these features in sizes ranging from 750,000 to 6.0 million BTU/hr and delivering up to 96.2% thermal efficiency.

HEAT ENERGY AND COMBUSTION
PRODUCTS FLOW DOWNWARD INTO
FIRE TUBES FROM THE BURNER

ENGINEERED HEAT
EXCHANGER FOR OPTIMUM
HEAT TRANSFER

HEATED WATER FLOWS UP AND OUT
WITH MINIMAL PRESSURE DROP

*NON-METALLIC PVC
VENTING FLEXIBILITY

FLUE OUTLET AND CONDENSATE
DRAIN AT THE BOTTOM



* 5.0 - 6.0 Stainless Steel Vent Only



THE CREST COMBUSTION SYSTEM

CREST boilers are equipped with a top-mounted micro-metal fiber burner, engineered specifically for fire-tube technology. The system is designed to ensure smooth, quiet modulating combustion with up to 25:1 turndown. A FBN2001 fires at its maximum 1,999,999 Btu/hr rate when the heat load is highest, and then gradually turns down to as low as 4% (80,000 Btu/hr) as load decreases. A modulating system runs smoothly and efficiently, without frequent on/off cycling. When the system is zoned, CREST's high turndown works to match the actual system demand. In return, CREST reduces the customer's fuel bill and provides better comfort by load-matching the heat loss of the system.

REDUCE INSTALLATION COST WITH VARIABLE FLOW TECHNOLOGY

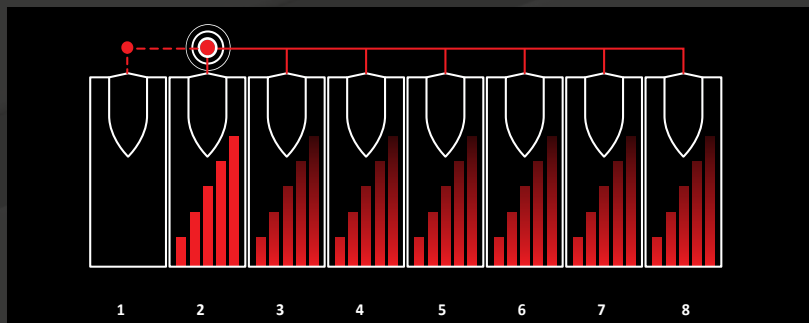
CREST can operate over a wide range of flow rates with very low pressure drop. This permits installation of a full flow (variable primary) system. Installation is streamlined, without the time and materials cost of primary/secondary piping, and pumps needed to maintain flow in a water-tube boiler. Variable flow also makes CREST more flexible at handling frequent fluctuations in the system flow rate.

HIGH EFFICIENCY WITH MINIMUM SUPPLY PRESSURE

CREST operates reliably with supply gas pressure as low as 4 inches water column. Negative Regulation technology draws gas into a pre-mix combustion system, instead of relying on utility pressure through the gas valve. Operation is steady in low gas pressure systems or when peak gas supply demand occurs. Plus, Neg/Reg fan control fine-tunes the fuel/air ratio entering the burner, providing an even, cleaner-burning flame, achieving high combustion efficiency.

PEACE OF MIND, WHEN IT MATTERS MOST

Cascade redundancy provides peace of mind because it helps ensure that a CREST boiler system will always deliver reliable performance with no downtime. If the lead boiler is turned off for maintenance, cascade redundancy automatically shifts the lead role to the second sequenced boiler. Up to eight CREST boilers can be sequenced using a 2-wire daisy-chain connection. Cascade sequencing can be programmed for lead-lag or efficiency optimized operation.



With lead-lag operation, one lead boiler modulates to capacity on demand. As load increases, the system then cascades to additional lag boilers in sequence. The first-on role shifts daily, distributing equal runtimes to each unit.

In an efficiency optimized system (see illustration above), all boilers fire and modulate simultaneously at the same Btu/hr input rates, maximizing thermal efficiency.



CREST features the next generation of Lochinvar's all-in-one SMART TOUCH™ operating control with the integration of the CON-X-US advanced technology. SMART TOUCH with CON-X-US provides outstanding functionality, and can



be integrated directly into a Building Automation System via Modbus and BACnet MSTP as standard equipment.

A 8" touch screen along with an updated user interface allows users to quickly see what their unit is doing. On screen graphs can help diagnose issues in the field. A new screen saver mode identifies the status of

the boiler. Dark green indicates running mode, olive green is blocking mode and red is lockout mode. This is another way Lochinvar is leading the charge with boiler controls.



INTRODUCING BOILER PLANT CONTROL, **FROM ANYWHERE.**

And now, the CON-X-US mobile communication platform allows the SMART TOUCH to go where no other boiler has gone before. CON-X-US provides the ability to monitor and manage multiple CREST boiler plants without ever stepping into the mechanical rooms. CON-X-US will send alerts via text or e-mail notifying of changes in system status, and anytime, from anywhere, a user can check system status and re-program boiler functions. Once downloaded, the free CON-X-US mobile application allows for remote access to all SMART TOUCH functions using any internet-capable device.

- **DO REGULAR CON-X-US CHECKS FOR ALL YOUR CREST 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 CREST BOILER NEEDS ATTENTION.**

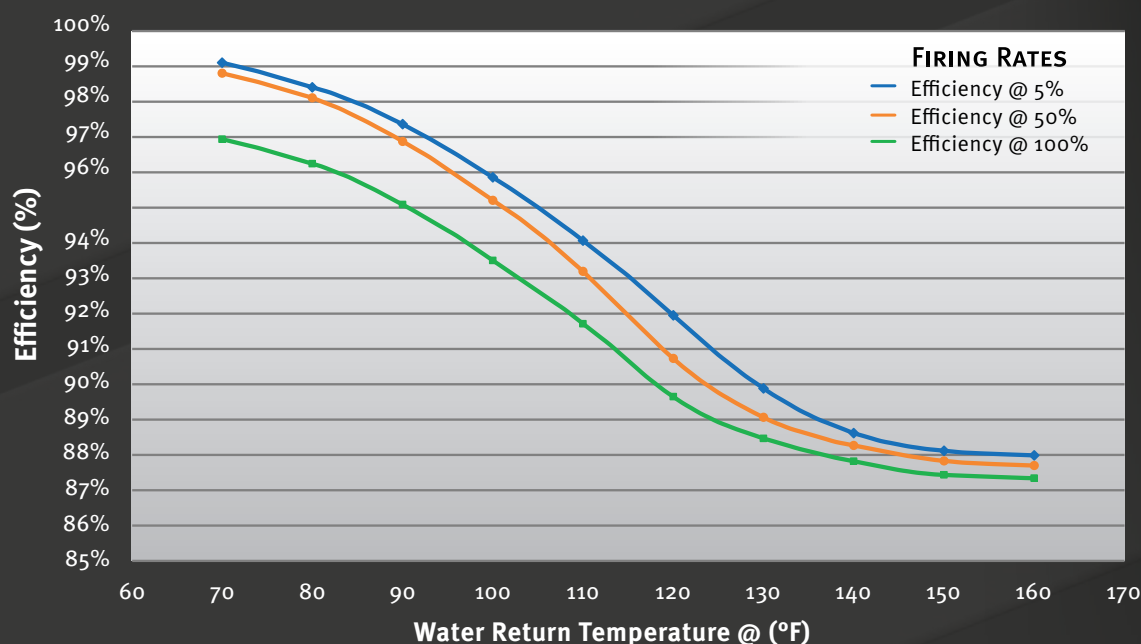


SUPERIOR FIRE-TUBE HEAT EXCHANGER DESIGN BOOSTS THERMAL EFFICIENCY

The CREST boiler takes fire-tube technology to a new level. The patented Wave configuration creates turbulence as flue gas products flow down the tube, scrubbing the energy from the flue products. The Wave design also enhances the life of the heat exchanger by allowing the tubes to flex, so they operate stress free with none of the adverse effects suffered by traditional fire-tube boilers.

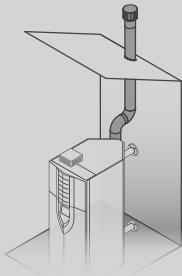
Each fire tube is welded into the heat exchanger and surrounded by water, and the heat transfer process is enhanced by the water's counterflow. As water flows up inside the vessel, superheated flue products flow down the fire tube. With one pass, heat is effectively captured, reaching condensing temperatures. At the top of the vessel, the combustion chamber is also water-backed for additional heat transfer.

CREST BOILER EFFICIENCY

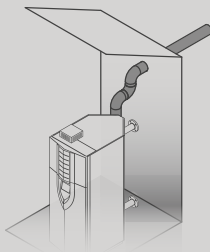


FLEXIBLE VENTING OPTIONS

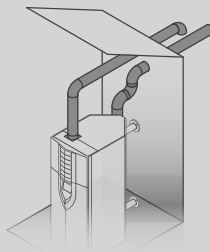
CREST offers 6 venting options, and permits direct-vent air intake and exhaust runs up to 100 equivalent feet, using PVC, CPVC, polypropylene or stainless steel pipe.** Plus, multiple units can be common-vented to reduce time and materials cost.



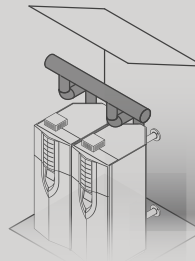
Room Air Vertical



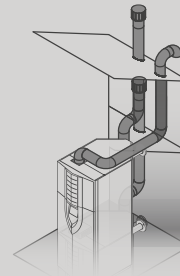
Room Air Sidewall



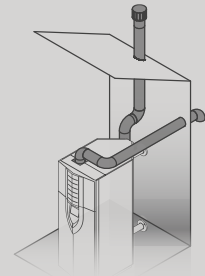
Direct-Vent



Common-Vent*



Direct-Vent Vertical



Vertical w/Sidewall Air

*Contact Lochinvar for information on common venting of CREST boilers.
** Available for models FB 0751-4001. Stainless steel pipe only for models FB 5001-6001.

SMART TOUCH FUNCTIONS AND FEATURES

SMART TOUCH FEATURES

- ›CON-X-US Remote Connect
- ›SMART TOUCH Touchscreen Operating Control
- ›Full-Color 8" 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, Space Heating
 - Hours Running, Domestic Hot Water
 - Hours Running, Modulation Rate
 - Ignition Attempts
 - Last 10 Lockouts
- ›Programmable System Efficiency Optimizers
 - Night Setback
 - Anti-Cycling
 - Outdoor Air Reset Curve
 - Ramp Delay
 - Boost Temperature & Time
 - Modulation Factor Control
- ›Three Pump Control
 - System Pump
 - Boiler Pump
 - Domestic Hot Water Pump
- ›High-Voltage Terminal Strip
 - > 120V/1PH/60Hz (FB 0751-2001)
 - > 208V/3PH/60Hz (FB 2501-3501)
 - > 480V/3PH/60Hz (FB 4001-6001)

›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 Contacts
- System Sensor Contacts
- 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

OPTIONAL EQUIPMENT

- Alarm Bell
- BMS Gateway - BACnet IP or LonWorks
- Wireless Outdoor Temperature Sensor
- Condensate Neutralization Kit
- Common Vent Damper Kits
- Motorized Isolation Valve
- Variable Speed Boiler Pump
- Electrical Transformer Options (Shipped Loose):
 - FB 0751-2001
 - > 208V/3PH/60Hz → 120V/1PH/60Hz
 - > 480V/3PH/60Hz → 120V/1PH/60Hz
 - > 600V/3PH/60Hz → 120V/1PH/60Hz
 - FB 2501-3501
 - > 480V/3PH/60Hz → 208V/3PH/60Hz
 - > 600V/3PH/60Hz → 208V/3PH/60Hz
 - FB 4001-6001
 - > 208V/3PH/60Hz → 480V/3PH/60Hz
 - > 600V/3PH/60Hz → 480V/3PH/60Hz
- RealTime O₂ Feedback
- Modbus Communication
- Short Circuit Current Rating (SCCR) Options:
 - FB 2501 - 6001
 - >100,000 A
 - >200,000 A

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 0751-2001)
- AHRI Certified

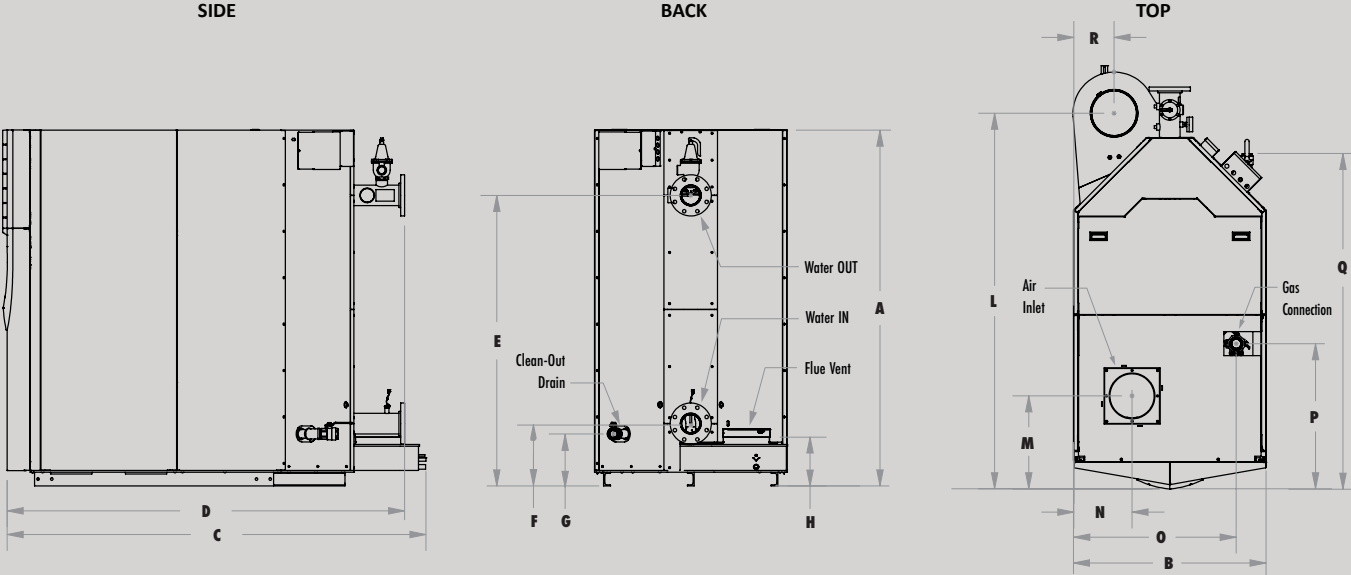
STANDARD FEATURES

- Proof of Closure Valve (6001)
- 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 100 Feet
 - > PVC, CPVC, Polypropylene or AL29-4C (FB 0751-4001)
 - > AL29-4C (FB 0751-6001)
- 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
- 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
- High Altitude Models Available
- SCCR of 5,000 A
- 10-Year Limited Warranty (See Warranty for Details)
- 1-Year Warranty on Parts (See Warranty for Details)

*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.

Lochinvar.com

CREST BOILER DIMENSIONS AND SPECIFICATIONS - SERIES 1**



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							DIMENSIONS AND SPECIFICATIONS										
Model Number	Inout MBH		Gross Output MBH	Net AHRI Rating MBH	Combustion Efficiency	Thermal Efficiency	Turn-down	Flow Rate GPM		A	B	C	D	E	F	G	H
	Min	Max						Min	Max								
FB*0751	50	750	722	628	96.4%	96.2%	15:1	18	350	78"	30"	55-1/2"	57-5/8"	66-1/8"	11-7/8"	11-3/8"	11-1/4"
FB*1001	50	999	961	836	96.4%	96.2%	20:1	18	350	78"	30"	56-1/2"	57-5/8"	66-1/8"	11-7/8"	11-3/8"	11-1/4"
FB*1251	62.5	1,250	1,203	1,046	96.4%	96.2%	20:1	18	350	78"	30"	56-1/2"	57-3/4"	66-1/8"	11-7/8"	11-3/8"	11-1/4"
FB*1501	60	1,500	1,443	1,255	96.4%	96.2%	25:1	25	350	78"	30"	67-3/4"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"
FB*1751	70	1,750	1,684	1,464	96.4%	96.2%	25:1	25	350	78"	30"	66-1/4"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"
FB*2001	80	1,999	1,923	1,672	96.4%	96.2%	25:1	25	350	78"	30"	66-1/2"	68"	65-3/8"	12-3/8"	11-3/8"	11-1/4"
FB*2501	125	2,500	2,400	2,087	96.1%	96.0%	20:1	25	350	77-3/4"	35"	83-3/4"	83-3/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"
FB*3001	150	3,000	2,883	2,507	96.1%	96.0%	20:1	25	350	77-3/4"	35"	83-3/4"	83-3/4"	63-3/4"	13-1/2"	11-1/4"	10-1/2"
FB*3501	175	3,500	3,364	2,925	96.1%	96.0%	20:1	45	350	77-3/4"	42"	91-1/2"	86-3/4"	63-1/2"	13-1/4"	11-1/2"	10-3/4"
FB*4001	333.3	3,999	3,843	3,342	96.1%	96.0%	12:1	45	350	77-3/4"	45-1/2"	103-1/2"	99"	63-1/2"	13-3/4"	11-1/2"	10-3/4"
FB*5001	499.9	4,999	4,804	4,177	96.1%	96.0%	10:1	50	600	77-3/4"	46-1/2"	102-1/4"	99-1/2"	63-1/2"	15"	11-1/2"	10-3/4"
FB*6001	600	6,000	5,766	5,014	96.1%	96.0%	10:1	60	600	77-3/4"	50"	102-3/4"	99-3/4"	63-1/4"	14-3/4"	11-1/2"	10-3/4"

Model Number	L	M	N	O	P	Q	R	Gas Conn.	Water Inlet/Outlet	Air Inlet	Vent Size	Oper. Weight (lbs.)	Ship. Weight (lbs.)
FB*0751	51"	13"	8-3/4"	26-3/4"	23-3/4"	49-1/2"	7-3/8"	1-1/4"	3"	6"	6"	1,768	1,560
FB*1001	51"	13"	8-3/4"	26-3/4"	23-1/8"	49-1/2"	6-1/2"	1-1/4"	3"	6"	6"	1,838	1,596
FB*1251	51-3/8"	13"	8-3/4"	26-3/4"	21-5/8"	49-1/2"	6-1/2"	1-1/2"	3"	6"	8"	1,975	1,648
FB*1501	62-3/8"	15-7/8"	9"	26-7/8"	27-7/8"	59-1/4"	5-1/8"	1-1/2"	4"	8"	8"	2,307	1,961
FB*1751	61-1/2"	15-7/8"	9"	27"	27-1/8"	58-3/4"	5-1/8"	1-1/2"	4"	8"	8"	2,458	2,017
FB*2001	61-1/2"	15-7/8"	9"	27"	26-3/4"	58-3/4"	5-1/8"	1-1/2"	4"	8"	8"	2,570	2,087
FB*2501	76-1/4"	19-3/4"	9-1/4"	28-3/4"	32"	71"	7-1/4"	2"	4"	8"	9"	3,600	2,577
FB*3001	76-1/4"	19-3/4"	9-1/4"	28-3/4"	32"	71"	7-1/4"	2"	4"	10"	10"	3,900	2,881
FB*3501	82"	20-1/4"	12-3/4"	35-1/2"	31-3/4"	73-1/4"	8-3/4"	2"	4"	10"	10"	4,600	3,218
FB*4001	94"	24-3/4"	13-1/2"	39-1/2"	42-1/4"	85-1/4"	10-1/2"	2-1/2"	4"	12"	12"	5,200	3,805
FB*5001	92-1/2"	22"	14"	39-3/4"	39-1/2"	84"	9"	2-1/2"	6"	14"	14"	5,900	4,101
FB*6001	93-1/4"	20"	15-3/4"	43-1/2"	36-1/2"	83-3/4"	9-1/4"	3"	6"	14"	14"	6,900	4,711

Notes: *Insert "N" for natural gas, "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.



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