

HIGH EFFICIENCY COMMERCIAL BOILERS

# CREST<sup>®</sup>

CONDENSING BOILER

SMART  TOUCH<sup>™</sup>

CON-X-US<sup>®</sup> REMOTE CONNECT

MODBUS AND BACnet MSTP PROTOCOL

CASCADING SEQUENCER WITH  
CASCADE REDUNDANCY

6 INPUTS FROM 750,000 TO 2.0 MILLION BTU/HR

UP TO 25:1 TURNDOWN RATIO

DIRECT-VENTING UP TO 100 FEET USING PVC, CPVC,  
POLYPROPYLENE OR STAINLESS STEEL

FLEXIBLE FLOW RATES UP TO 350 GPM

FRONT END LOADING CAPABILITY



**96.2%**   
THERMAL EFFICIENCY

 **Lochinvar<sup>®</sup>**  
HIGH EFFICIENCY BOILERS & WATER HEATERS

DESIGNED ★ ENGINEERED ★ ASSEMBLED

**USA**

[Lochinvar.com](http://Lochinvar.com)

# CREST<sup>®</sup>

CONDENSING BOILER

## RIDE THE LOCHINVAR WAVE™ TO 96.2% EFFICIENCY

With the exclusive **Wave** fire-tube design, advancements in Lochinvar combustion technology and the SMART TOUCH™ control with CON·X·US<sup>®</sup>, CREST changed how the industry thinks about fire-tube boilers. Now, six new CREST boilers, with 750,000, 1.0 million, 1.25 million, 1.5 million, 1.75 million and 2.0 million Btu/hr inputs, deliver **96.2% thermal efficiency**.

### 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 FBN-2001 fires at its maximum 2,000,000 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.

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

FLOW-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





## INTRODUCING BOILER PLANT CONTROL, FROM ANYWHERE.

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 Systems via Modbus and BACnet MSTP as standard equipment.

And now, the CON-X-US mobile communication platform allows the SMART TOUCH to go where no other boiler has gone before.

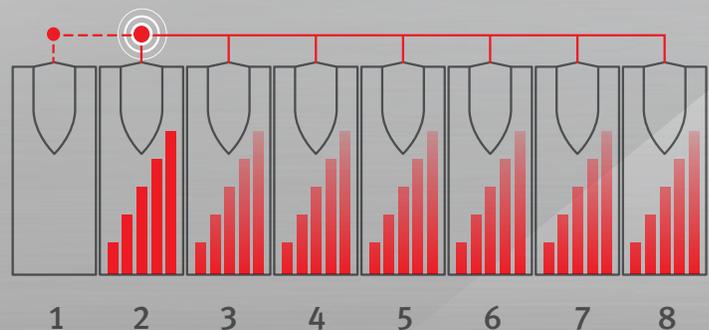
CON-X-US provides the ability to monitor and manage multiple Crest boiler plants without ever stepping into the mechanical rooms. CON-X-US will send alerts via text or email notifying of changes in system status, and anytime, from anywhere, a user can check system status and re-program any boiler function. Once downloaded, the free CON-X-US mobile application allows for remote access to all SMART TOUCH functions using any internet-capable device.

## 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 below), all boilers fire and modulate simultaneously at the same Btu/hr input rates, maximizing thermal efficiency.



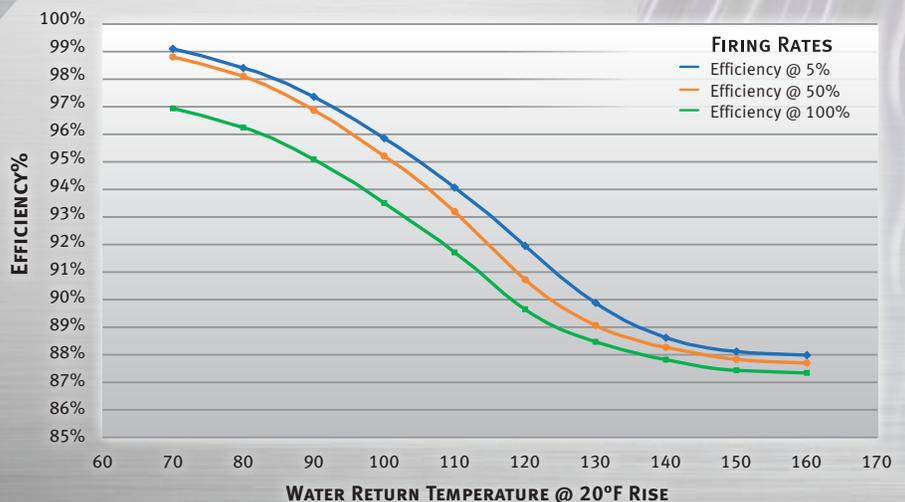


## SUPERIOR FIRE-TUBE HEAT EXCHANGER DESIGN BOOSTS THERMAL EFFICIENCY

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, super-heated 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.

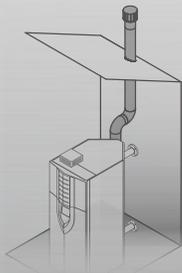
## CREST BOILER EFFICIENCY



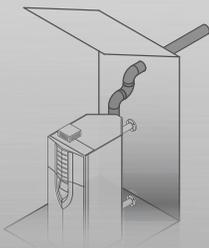


## FLEXIBLE VENTING OPTIONS

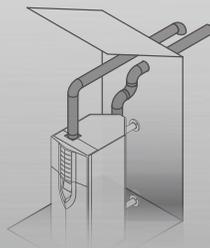
CREST offers 6 venting options, and permits direct-vent air intake and exhaust runs up to 100 equivalent feet, using PVC, CPVC, polypropylene or stainless steel pipe. Plus, multiple units can be common-vented to reduce time and materials cost.



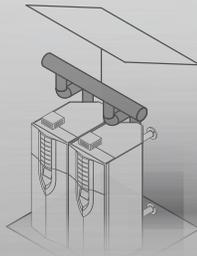
Room Air Vertical



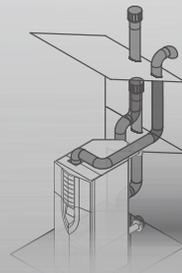
Room Air Sidewall



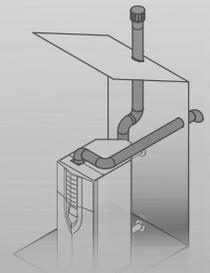
Direct-Vent



Common-Vent\*



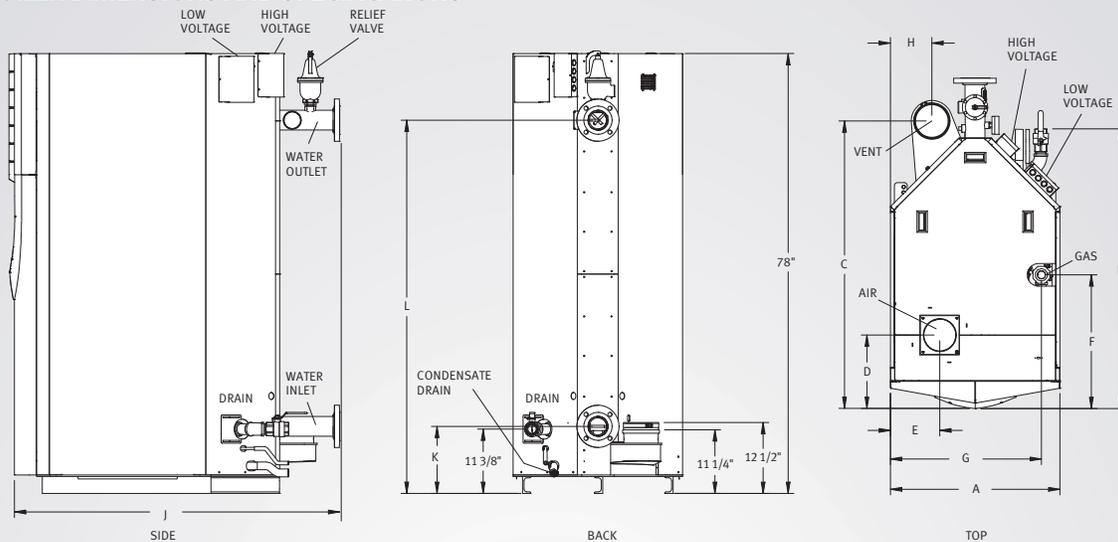
Direct-Vent Vertical



Vertical w/Sidewall Air

\*Contact Lochinvar for information on common venting of CREST boilers.

# CREST® BOILER DIMENSIONS AND SPECIFICATIONS



CREST HEATING BOILER							DIMENSIONS AND SPECIFICATIONS																
Model Number	Input MBH		AHRI Thermal %	Gross Output MBH	Net AHRI Rating MBH	Turndown	A	B	C	D	E	F	G	H	J	K	L	Water Gas Conn.	Inlet/Outlet	Air Intake	Vent Size	Oper. Weight	Ship. Weight
	Min	Max																					
FBN0751	50	750	96.2%	722	627	15:1	30"	49-1/2"	51"	13"	8-3/4"	23-3/4"	26-3/4"	7-3/8"	57-5/8"	11-7/8"	66-1/8"	1-1/4"	3"	6"	6"	1,768	1,560
FBN1001	50	1,000	96.2%	962	837	20:1	30"	49-1/2"	51"	13"	8-3/4"	23-1/8"	26-3/4"	6-1/2"	57-5/8"	11-7/8"	66-1/8"	1-1/4"	3"	6"	6"	1,838	1,596
FBN1251	63	1,250	96.2%	1,203	1,046	20:1	30"	49-1/2"	51-3/8"	13"	8-3/4"	21-5/8"	26-3/4"	6-1/2"	57-3/4"	11-7/8"	66-1/8"	1-1/4"	3"	6"	8"	1,975	1,648
FBN1501	60	1,500	96.2%	1,443	1,255	25:1	30"	59-1/4"	62-3/8"	15-7/8"	9"	27-7/8"	26-7/8"	5-1/8"	68"	12-3/8"	65-3/8"	1-1/2"	4"	8"	8"	2,307	1,961
FBN1751	70	1,750	96.2%	1,684	1,464	25:1	30"	58-3/4"	61-1/2"	15-7/8"	9"	27-1/8"	27"	5-1/8"	68"	12-3/8"	65-3/8"	1-1/2"	4"	8"	8"	2,458	2,017
FBN2001	80	1,999	96.2%	1,924	1,673	25:1	30"	58-3/4"	61-1/2"	15-7/8"	9"	26-3/4"	27"	5-1/8"	68"	12-3/8"	65-3/8"	1-1/2"	4"	8"	8"	2,570	2,087

NOTES: Indoor installation only. Change "N" to "L" for LP gas models and to "D" for dual fuel models. (Consult factory for availability of Dual Fuel models)  
 \*The Net AHRI Water Ratings shown are based on a piping and pickup allowance of 1.15. \*Information subject to change without notice.

## 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**
- Modbus Communication**
- 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

- 120 VAC / 60 Hertz / 1 Phase Power Supply
- System Pump, Boiler Pump and DHW Pump Power

## 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
- SMART TOUCH PC Software
- Common Vent Kits
- Dual Fuel Gas Train
- Motorized Isolation Valve
- Variable Speed Boiler Pump
- Electrical Options (Shipped Loose):
  - 208V/3Ø/60Hz
  - 480V/3Ø/60Hz
  - 600V/3Ø/60Hz

\*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.

## 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
- AHRI Certified

## STANDARD FEATURES

- 96.2% Thermal Efficiency (AHRI)
- Up to 99% Thermal Efficiency in Low-Temp. Applications
- Modulating Burner with up to 25:1 Turndown
- Direct-Spark Ignition
- Low NOx Operation
- Sealed Combustion
- Air Inlet Filter w/Replacement Reminder
- Low Gas Pressure Operation
- Vertical and Horizontal Direct Venting
  - Direct Vent up to 100 Feet
    - PVC, CPVC, Polypropylene or AL29-4C
- 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
- 10-Year Limited Warranty (See Warranty for Details)
- 1-Year Warranty on Parts (See Warranty for Details)



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