



**LB-500  
through  
LB-1000**

## 90% EFFICIENT, LOW-NOx HYDRONIC HEATING BOILERS

The Legend 2000® series delivers an exceptional 90% thermal efficiency by combining advanced pre-mix burner design and an extruded, self-baffling copper heat exchanger for outstanding efficiency and unsurpassed performance. The heat-exchanger design exposes more surface area to the combustion system to maximize heat transfer. Each model features a small footprint with zero side clearance for outstanding adaptability perfect for retrofits. The exclusive Dia-Scan® solid-state self-diagnostic system helps make operation and troubleshooting quick and easy.

### ADVANCED HIGH-EFFICIENCY, LOW-NOx COMBUSTION TECHNOLOGY

- Advanced burner design precisely pre-mixes gas and air before ignition, increasing combustion efficiency and reducing emissions
- Delivers optimum burner performance for 90% thermal efficiency
- Meets or exceeds Texas and California SCAQMD Rule 1146.2 air quality standards differential, loop temperature and fault codes

### NEW STAINLESS STEEL BURNER DESIGN

- Features metal fiber alloy sheath for consistent heat distribution and reliable performance under all conditions

### DIA-SCAN BOILER CONTROL

- Comprehensive display panel includes LEDs with readouts for current operating and fault status
- Precise temperature management of  $\pm 1^\circ \text{F}$
- Self-diagnostics eliminate guess work and pinpoints problems—trouble shooting has never been easier

### EXCLUSIVE NO-BAFFLE HEAT EXCHANGER DESIGN

- Extruded copper manufacturing process exposes more surface area to the combustion system for increased heat-transfer efficiency
- Unique self-baffling design (patent pending) is a significant improvement over traditional heat-transfer systems

### 100% ALL NON-FERROUS WATERWAYS

- All waterways 100% copper, brass or bronze for years of reliable performance
- Impervious to thermal shock

### GASKETLESS ASME HEAT EXCHANGER

- Superior design assures reliability and long-life performance
- Isolated location offers optimum protection and years of service

### OPTIONAL FACTORY MOUNTED AND WIRED PUMP AVAILABLE

- Integral boiler mounted all bronze pump for primary/secondary pumping systems
- Allows for 50 equivalent feet of pipe between boiler and primary loop

### COMPACT, LOW-PROFILE DESIGN

- Allows easy entry for modular installations
- Zero clearance on sides for maximum installation versatility

### CATEGORY IV LISTED

- Legend 2000® boilers utilize a mechanical forced draft system designed to prevent leakage of flue (vent) gases and condensate

### MEETS OR EXCEEDS ASHRAE/IESNA 90.1-1999

### TEN-YEAR HEAT EXCHANGER LIMITED WARRANTY

- For complete information, consult written warranty or contact A. O. Smith



**ASME**

**A.O. Smith**  
**Water Heaters**



## 90% EFFICIENT, LOW-NOx HYDRONIC HEATING BOILERS

### CATEGORY IV LISTED

- Legend 2000® hot water supply boilers utilize a mechanical forced draft system designed to prevent leakage of flue (vent) gases and condensate

### PROFESSIONAL START-UP SERVICE FURNISHED

- Assures optimum performance for each installation

### MEETS ASHRAE/IESNA 90.1-1999

- For complete information, consult written warranty or contact A. O. Smith

### OTHER LEGEND 2000® FEATURES:

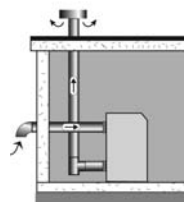
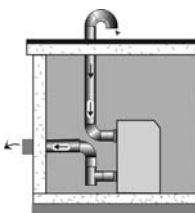
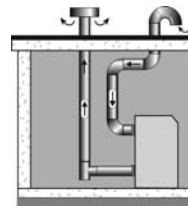
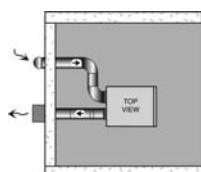
ASME 160# W.P.  
 ASME PRESSURE RELIEF VALVE #50  
 FLOW SWITCH MOUNTED  
 BRASS DRAIN VALVE  
 LOW GAS PRESSURE SWITCH  
 LOW AIR PRESSURE SWITCH  
 DIGITAL THERMOMETERS  
 MANUAL RESET HI LIMIT

### LEGEND 2000® OPTIONS:

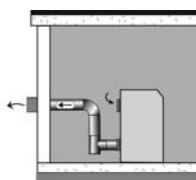
- CODE OPTIONS: CSD-1
- I.R.I. CODE
- ILLINOIS CODE
- NEW YORK CODE
- CALIFORNIA CODE
- LOW WATER CUTOFF
- DRY CONTACTS FOR ANY BOILER FAILURE
- ALARM BELL
- INTEGRAL BOILER MOUNTED PUMP FOR PRIMARY/SECONDARY PUMPING SYSTEMS
- SEQUENCING PANEL
- THROUGH-THE-WALL VENTING
- DIRECT/SEALED VENT KIT
- SKID-MOUNTED SYSTEMS

### VERSATILE MULTI-VENTING CONFIGURATIONS

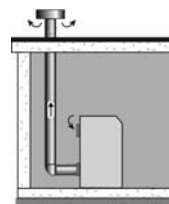
#### DIRECT-VENTING



#### SIDEWALL VENTING



#### CONVENTIONAL VENTING



### LEGEND 2000® VENTING VERSATILITY

#### STANDARD-VENT OR DIRECT-VENT FLEXIBILITY

- Standard-venting, vertical or horizontal sidewall
  - Single pipe vent runs up to 180 equivalent feet (90° elbow = 10 equivalent feet, 45° elbow or boot tee = 5 equivalent feet)
- Two-pipe direct-venting vertical and/or horizontal sidewall, with all combustion makeup air drawn from outside the building
  - Air intake and exhaust vent runs permitted up to 90 equivalent feet (90° elbow = 10 equivalent feet, 45° elbow or boot tee = 5 equivalent feet)

Please consult latest edition of the Installation Manual for detail venting information and maximum/minimum venting distances.

# Commercial Gas Boilers

## DIMENSIONS AND SHIPPING WEIGHTS

MODEL NUMBER	INCHES OR CM	DIMENSIONS																SHIPPING WEIGHT
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	
LB-500	Inches	53	23	32	13-1/2	4-3/8	3-1/4	6-3/8	7-1/2	3-1/2	19	16-1/4	5	5-1/4	11-1/2	2	1	425 Lbs.
	CM	134.6	58.4	81.3	34.3	11.1	8.3	16.2	19	8.9	48.3	41.3	12.7	13.3	29.2	5.1	2.54	193.2 Kg
LB-750	Inches	53	23	32	13-1/2	4-3/8	3-1/4	6-3/8	7-1/2	3-1/2	19	12-1/4	5	5-1/4	11-1/2	2	1	528 Lbs.
	CM	134.6	58.4	81.3	34.3	11.1	8.3	16.2	19	8.9	48.3	31.1	12.7	13.3	29.2	5.1	2.54	240 Kg
LB-1000	Inches	60-1/2	27-1/8	38-3/16	13-3/4	15-1/2	3-1/4	8-1/8	8-1/4	3-1/2	36	12-1/2	6-3/4	4-1/8	13-3/8	2.25	1-1/4	934 Lbs.
	CM	153.7	68.9	97	34.9	39.4	8.3	20.6	21	8.9	91.4	31.8	17.1	10.5	34	5.7	3.17	424.5 Kg

Vent Size on LB-500 and LB-750: 6"/15.2 CM

Vent Size on LB-1000: 7"/17.8 CM

## BOILER INPUT, OUTPUT AND PRESSURE DROP

MODEL NUMBER	TYPE OF GAS	BTUH INPUT	BTUH OUTPUT	FLOW RATE @ 20°F/ 11°C TEMPERATURE RISE			
				GPM	PD-FT/ HD	LPM	PD-M/ HD
LB-500	Natural LP	500,000	450,000	45	10	170.3	3.0
		450,000	405,000				
LB-750	Natural LP	750,000	675,000	68	10.1	257.4	3.1
		675,000	607,500				
LB-1000	Natural LP	1,000,000	900,000	91	8.9	344.4	2.7
		860,000	774,000				

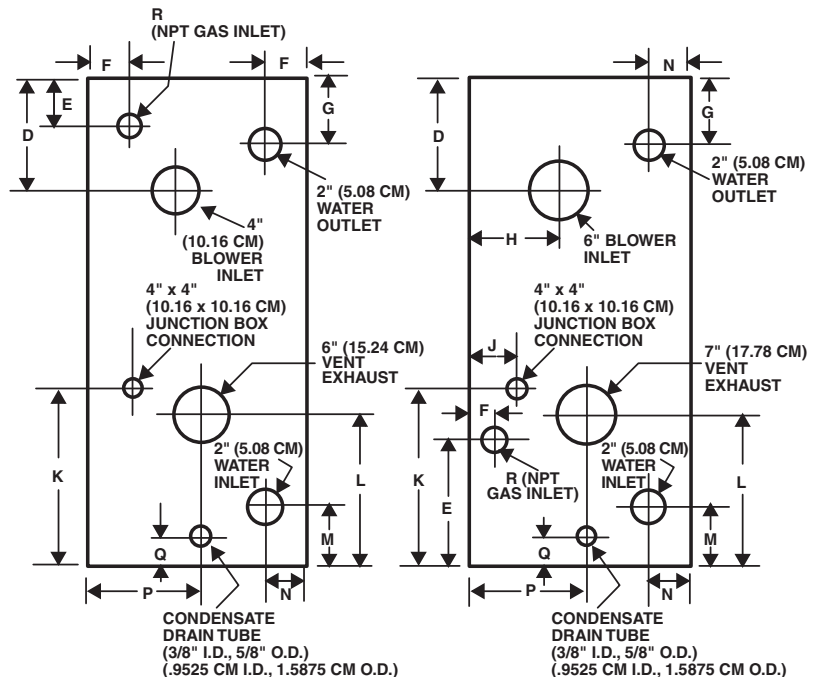
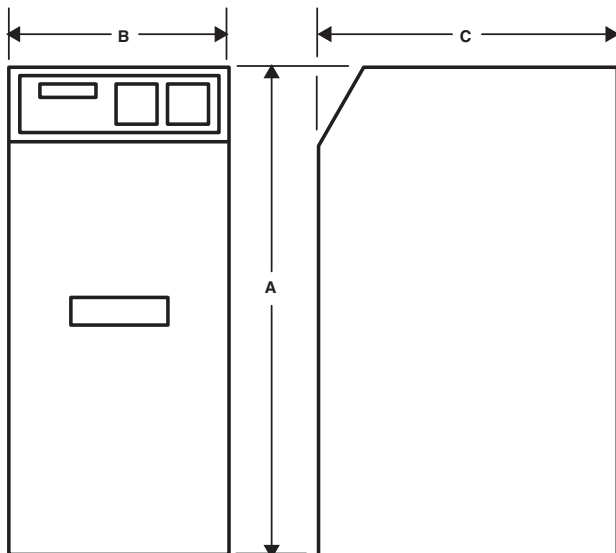
Maximum gas supply pressure (natural and propane gas): 13.8" w.c.

Minimum gas supply pressure, natural gas: 7" w.c.

Minimum gas supply pressure, propane gas: 11" w.c.

Electrical requirements: 120 VAC, 60 Hz, 30 Amps

The Legend 2000® must be connected to a single phase independent line source. For proper boiler performance, it is important that the Legend 2000® is on its own separate breaker. Do not put other appliances on the same breaker as boiler.



MODELS LB-500, 750

MODEL LB-1000



## 90% EFFICIENT, LOW-NO<sub>x</sub> HYDRONIC HEATING BOILERS

### LEGEND 2000® HYDRONIC HEATING BOILER SUGGESTED SPECIFICATION

The gas-fired hydronic heating boiler(s) shall be A. O. Smith Legend 2000® model LB \_\_\_\_\_ with an input rating of \_\_\_\_\_ BTU/hr and an output rating of \_\_\_\_\_ BTU/hr on natural gas. The boiler shall: 1) Bear the ASME "H" stamp and shall be National Board registered for 160 PSI working pressure. 2) Be test certified at 90% thermal efficiency by CSA International. 3) Meet SCAQMD Rule 1146.2 for low-NO<sub>x</sub> emissions and air quality standards.

The gasketless wet section shall be constructed of 100% copper, brass and bronze. No phenolic lining or cast iron is acceptable.

The heat exchanger shall: 1) Incorporate 5/8" I.D. finned copper tubing with 9 fins per inch and an integrated self-baffling tube design. No "V" baffles are acceptable. 2) Be circular, encompassing the entire burner and forming the combustion chamber. No gaskets are acceptable in the combustion chamber, burner assembly or the ASME wet section. Combustion chamber tub shall be glass-coated steel to prevent damage by condensation.

The gas burner shall be constructed of Inconel™ 625 stainless steel, warranted for 5 years and fire in a radial 360-degree flame pattern. Fuel and gas mixture shall take place in the stainless steel pre-mix tube for safety. Pressurized cabinets are unacceptable. Gas orifices shall be replaceable without removal of the burner.

Boiler shall have an inner steel frame and jacket panels shall have a baked-on enamel finish. The unit must be capable of operating with jacket panels removed for inspection and maintenance. Control panel shall permit easy access and have a protective cover, removable with no tools. All units shall utilize an approved stainless steel vent system to handle condensation. The Dia-Scan® solid-state control system shall monitor and control 15 operating and safety functions. Indicating lights will monitor and include air, transformer, ignition, gas pressure, water flow, gas valves, pre-purge, post-purge and safety lock-outs.

CSA International-certified for installation on combustible floor. Standard operating controls and equipment shall include hot surface electronic ignition, operating aquastat, manual reset hi-limit, automatic main and redundant gas valve, master switch with pilot light, digital inlet/outlet temperature gauges, ASME safety relief valve, flow switch, heat-resistant glass viewing port and Dia-Scan control system.

The boiler shall be equipped for 120V, single-phase, 60Hz current. Complete operating and start-up instructions are to be furnished with unit. Units shall meet or exceed ASHRAE/IESNA 90.1-1999.

Controls shall be 24 VAC, including slow-opening main gas valve for soft ignition, redundant safety shutoff gas valve, main and pilot pressure regulators, recycling intermittent pilot system with one-second shutdown in the event of pilot flame failure, automatic recycling high limit, manual reset ECO limit, main and pilot manual cocks and manual firing valve and an ASME-rated pressure relief valve. The boiler shall be approved by Factory Mutual (FM).

The boiler shall comply with ASHRAE/IESNA 90.1-1999 standards.

**A.O. Smith**  
**Water Heaters**  
[www.hotwater.com](http://www.hotwater.com)

500 Tennessee Waltz Parkway, Ashland City, TN 37015

**For Technical Information and Automated Fax Service, call 800-527-1953.**  
A. O. Smith reserves the right to make product changes or improvements without prior notice.