

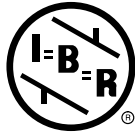
### CSB & CVSB CONSERVATOR® SERIES GAS FIRED STEAM BOILERS

# CSB & CVSB

\*78.8% to 80.9% A.F.U.E. (Standing Pilot)  
\*80.4% to 81.5% A.F.U.E. (Electronic Ignition)  
105,000 to 299,000 Btuh (30.8 to 87.6 kW) Input

Bulletin #210040  
September 1993

\*Based on DOE Test Procedures



**Applications** — Gas fired steam boilers are available in six sizes with heating inputs of 105,000 to 299,000 Btuh (30.8 to 87.6 kW) and AFUE's of up to 81.5%. Units are available with a choice of electronic or standing pilot ignition systems. Boilers may be used in a wide variety of applications including baseboard heating and zoned heating systems. May also be used in conjunction with chilled water systems. Compact size allows easy installation in a basement or utility room. All units are completely factory assembled with all controls installed and wired. Each unit is factory test operated to insure dependable performance.

**Approvals** — Low pressure, sectional cast iron boilers are design certified by A.G.A. and C.G.A. for use with natural gas or LPG/Propane. Annual Fuel Utilization Efficiencies are based on U.S. DOE test procedures and FTC labeling regulations. I=B=R ratings are certified in accordance with standards set by The Hydronics Institute. Boiler heat exchanger assemblies are constructed and hydrostatically tested in accordance with American Society of Mechanical Engineers (A.S.M.E.) Boiler and Pressure Vessel Code Section IV Standards for cast iron heating boilers.

**Warranty** — Cast iron boiler assembly has a limited warranty for a full twelve years. All other covered components have a limited warranty for one year. Refer to the Lennox Equipment Limited Warranty certificate included with the unit for additional details.

**Cabinet** — Constructed of heavy gauge steel with a baked-on enamel paint finish. Cabinet is fully insulated with fiberglass insulation, keeping cabinet surface temperatures low. Controls are shipped factory installed on right side of cabinet and may be field relocated to left side of cabinet. Supply and return steam lines are furnished on both sides of cabinet. Plugs are furnished for unused side. Burner access panel is easily removed for servicing. Integral draft diverter is part of unit cabinet.

**Cast Iron Boiler Assembly** — Boiler sections and push nipples are constructed of long life cast iron. Heat sections and push nipples expand and contract together, providing positive watertight seal. Boiler components are easily accessible for cleaning and servicing.

**Electronic Ignition (CSB Models Only)** — Solid-state electronic spark igniter provides positive ignition of pilot burner on each operating cycle. Pilot gas is ignited and burns during each running cycle (intermittent pilot) of the furnace. Main burners and pilot gas are extinguished during the off cycle. Ignition system permits main gas valve to open only when the pilot burner is proven to be lit. Pilot operation is fully automatic on demand for heat. Should a loss of flame occur, the main valve closes, shutting down the unit.

**Standing Pilot Ignition (CVSB Models Only)** — Manual lighted standing pilot provides dependable and safe burner ignition.

**Automatic Gas Control** — Silent operating gas controls provide 100% safety shut off. 24 volt redundant combination gas control valve combines automatic safety pilot, manual shut off option (On-Off), pilot filtration, automatic electric valve (dual) and gas pressure regulation into a compact combination control. Dual valve design provides double assurance of 100% close off of gas to the pilot and main burners on each off cycle.

**Burners** — Each burner has four rows of continuous ports which result in quiet and clean combustion. Cast iron burners are furnished on boilers equipped for natural gas operation. Burners are constructed of stainless steel for LPG/Propane models.

**Flame Rollout Switch** — Temperature sensitive fusible-link device is furnished and factory installed on the boiler base just outside of the burner box. Fuse prevents unit operation in the event combustion products passageway through the flueway is reduced or blocked.

**Blocked Vent Shutoff Sensor** — Temperature sensitive fusible-link device prevents unit operation in case of flue blockage. Sensor is furnished as standard and factory installed at the relief opening of the draft diverter.

**Vent Damper** — Motorized vent damper electrically interlocks with the gas ignition system to increase efficiency of heating system by reducing loss of heated air up the chimney after burner shut off. Also reduces chimney infiltration during boiler off cycle. Furnished as standard for field installation.

**Relief Valve** — Furnished as standard for field installation in top of cabinet. Valve provides for pressure relief of heating system in case of abnormal operating conditions. Valve opens at 15 psig (103 kPa) and is approved by A.S.M.E.

(Continued)

## FEATURES (Continued)

**Steam Pressure Gauge** — Located in top of unit cabinet. Gauge monitors system for safe and reliable operation.

**Steam Pressure Limit Control** — Factory installed control gives protection against abnormal operating conditions. Adjustable control automatically shuts off gas to the burners if steam pressure reaches cut-off setpoint. Factory installed on side of unit cabinet.

**Water Level Gauge** — Furnished on side of unit. Allows a visual inspection for correct cold water level in the boiler. Correct level is stamped on cabinet side behind glass tube.

**Low Water Cut-Off** — Electronic probe type control automatically shuts off gas to the burners if water level drops below minimum safe levels. Factory installed in boiler.

**Brass Drain Valve** — 3/4 in. (19 mm) brass drain valve is furnished for field installation in return piping.

## INSTALLATION CLEARANCES — inches (mm)

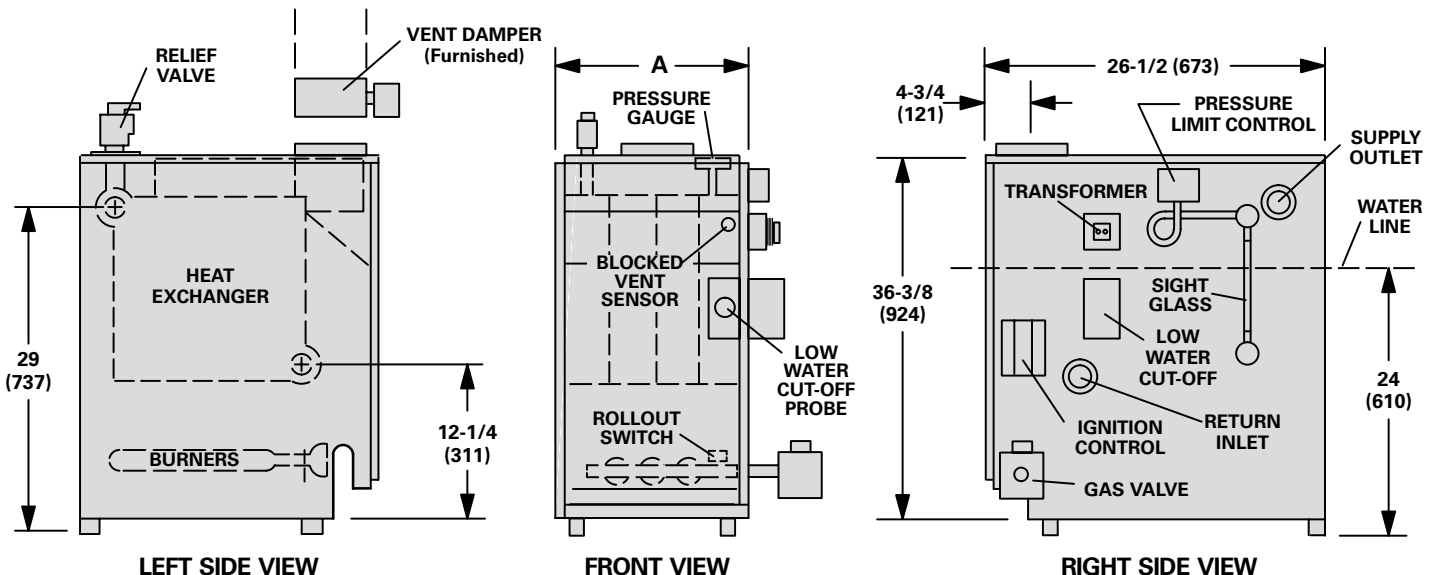
Side	6 inches (152 mm)
Gas Supply/Control Side	24 inches (610 mm)
Rear	6 inches (152 mm)
Top	6 inches (152 mm)
Service Clearance (Front)	24 inches (914 mm)
*Floor	*Combustible
Flue Pipe	6 inches (152 mm)

NOTE—Fresh air for combustion must conform to the methods outlined in American National Standard (ANSI-Z223.1) National Fuel Gas Code or National Standard of Canada CAN/CGA-149.1 & CAN/CGA-149.2 "Installation Code for Gas Burning Appliances".

NOTE—In the U.S. flue sizing must conform to the methods outlined in current GAMA/A.G.A. venting tables, American National Standard (ANSI-Z223.1) National Fuel Gas Code or applicable provisions of local building codes. In Canada flue sizing must conform to the methods outlined in National Standard of Canada CAN/CGA-149.1 and 149.2.

\*Clearance for installation on combustible floor if optional additive base is installed between the boiler and the combustible floor. See Specifications Tables.

## DIMENSIONS — inches (mm)



Model No.	A	
	in.	mm
CSB-4D, CVSB-4D	14-1/2	368
CSB-5D, CVSB-5D	17-3/4	451
CSB-6D, CVSB-6D	21	533
CSB-7D, CVSB-7D	24-1/4	616
CSB-8D, CVSB-8D	27-1/2	699
CSB-9D, CVSB-9D	30-3/4	781

**Brass Drain Valve** — 3/4 in. (19 mm) brass drain valve is furnished for field installation in return piping.

**Transformer/Wiring Junction Box** — 24 volt control transformer and wiring junction box is furnished on side of unit cabinet for field wiring connections.

## OPTIONAL ACCESSORIES (Must Be Ordered Extra)

**NOTE** — See Lennox Price Book For Complete Listing of Optional Accessories (Expansion Tanks, Valves, Circulator Pumps, etc.)

**Thermostat (Optional)** — Heating thermostat is not furnished and must be ordered extra. See Thermostats bulletin in Accessories section and Lennox Price Book.

**Combustible Floor Base (Optional)** — For applications where it is necessary to locate boiler on a combustible floor, a combustible floor base must be ordered extra for field installation. See Specifications tables for order no.

## HIGH ALTITUDE DERATE

A.G.A. certified units must be derated when installed at an elevation of more than 2000 feet (610 m) above sea level. If unit is installed at an altitude higher than 2000 feet (610 m), the unit must be derated 4% for every 1000 feet (305 m) above sea level. Thus, at an altitude of 4000 feet (1210 m), the unit would require a derate of 16%.

ϕ C.G.A. certified units must be derated when installed at an elevation of more than 2000 feet (610 m) above sea level. If unit is installed at an altitude higher than 2000 feet (610 m), the unit must be derated 10% for elevations between 2000 feet and 4500 feet (610 m and 1370 m) above sea level.

**NOTE** — This is the only permissible derate for these units.

## SPECIFICATIONS – CSB Series Gas Fired Steam Boilers (Electronic Pilot)

Model No.	CSB-4D NT BLR ●CSB-4D LP BLR	CSB-5D NT BLR ●CSB-5D LP BLR	CSB-6D NT BLR ●CSB-6D LP BLR
Heating capacity input – Btuh (kW) natural gas	112,500 (33.0)	150,000 (44.0)	187,000 (54.8)
Heating capacity output – Btuh (kW) natural gas	91,000 (26.7)	122,000 (35.7)	153,000 (44.8)
†Net I=B=R rating – Btuh (kW) natural gas	68,000 (19.9)	92,000 (27.0)	115,000 (33.7)
†Net I=B=R rating – sq. ft. (m <sup>2</sup> ) radiation (natural gas)	283 (26.3)	383 (35.6)	479 (44.5)
Heating capacity input – Btuh (kW) LPG/Propane	105,000 (30.8)	140,000 (41.0)	175,000 (51.3)
Heating capacity output – Btuh (kW) LPG/Propane	85,000 (24.9)	114,000 (33.4)	143,000 (41.9)
†Net I=B=R rating – Btuh (kW) LPG/Propane	64,000 (18.6)	86,000 (25.2)	107,000 (31.4)
†Net I=B=R rating – sq. ft. (m <sup>2</sup> ) radiation (LPG/Propane)	267 (24.8)	358 (33.3)	446 (41.4)
*A.F.U.E.	80.4%	80.6%	80.9%
Number of boiler sections	4	5	6
Net boiler heating area – sq. ft. (m <sup>2</sup> )	11.17 (1.04)	14.73 (1.37)	18.29 (1.70)
Boiler capacity – U.S. gallons (L)	Full	5.90 (22.3)	7.60 (28.8)
	Water level	3.80 (14.4)	5.00 (18.9)
Flue size connection diameter – in. (mm) round	6 (152)	6 (152)	7 (178)
Gas piping size I.P.S. – in. (mm)	Natural gas only	1/2 (12.7)	1/2 (12.7)
	●LPG/Propane only	3/4 (19)	3/4 (19)
Water supply connection size N.P.T. – in. (mm)	2-1/2 (64)		
Water return connection size N.P.T. – in. (mm)	2-1/2 (64)		
Drain connection size NPT – in. (mm)	3/4 (19)		
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps)		
Shipping weight – lbs. (kg) 1 package	404 (183)	483 (219)	564 (256)
◆ Optional Accessories (Must Be Ordered Extra) ◆			
Combustible Floor Base (optional)	92P79	92P79	92P79

\* Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

† I=B=R ratings indicate the amount of equivalent direct radiation each boiler will produce under normal conditions and thermostatic control. Steam ratings based on an allowance of 1.333 in accordance with the factors shown on the I=B=R Standard as published by The Hydronics Institute. Selection of boiler size should be based on "Net I=B=R Rating" being equal to or greater than installed radiation in square feet (m<sup>2</sup>).

●LPG/Propane model for use with LPG/Propane only.

## SPECIFICATIONS – CSB Series Gas Fired Steam Boilers (Electronic Pilot)

Model No.	CSB-7D NT BLR ●CSB-7D LP BLR	CSB-8D NT BLR ●CSB-8D LP BLR	CSB-9D NT BLR ●CSB-9D LP BLR
Heating capacity input – Btuh (kW) natural gas	225,000 (65.9)	262,500 (76.9)	299,000 (87.6)
Heating capacity output – Btuh (kW) natural gas	183,000 (53.6)	214,000 (62.7)	245,000 (71.8)
†Net I=B=R rating – Btuh (kW) natural gas	137,000 (40.1)	161,000 (47.2)	184,000 (53.9)
†Net I=B=R rating – sq. ft. (m <sup>2</sup> ) radiation (natural gas)	571 (53.0)	671 (62.3)	767 (71.3)
Heating capacity input – Btuh (kW) LPG/Propane	210,000 (61.5)	245,000 (71.8)	280,000 (82.0)
Heating capacity output – Btuh (kW) LPG/Propane	171,000 (50.1)	200,000 (58.6)	229,000 (67.1)
†Net I=B=R rating – Btuh (kW) LPG/Propane	128,000 (37.5)	150,000 (44.0)	172,000 (50.4)
†Net I=B=R rating – sq. ft. (m <sup>2</sup> ) radiation (LPG/Propane)	553 (51.4)	625 (58.1)	717 (66.7)
*A.F.U.E.	81.1%	81.3%	81.5%
Number of boiler sections	7	8	9
Net boiler heating area – sq. ft. (m <sup>2</sup> )	21.85 (2.03)	25.41 (2.36)	28.97 (2.69)
Boiler capacity – U.S. gallons (L)	Full	11.00 (41.6)	12.70 (48.1)
	Water level	7.40 (28.0)	8.60 (32.6)
Flue size connection diameter – in. (mm) round	7 (178)	7 (178)	7 (178)
Gas piping size I.P.S. Natural or *LPG/Propane – in. (mm)	3/4 (19)	3/4 (19)	3/4 (19)
Water supply connection size N.P.T. – in. (mm)	2-1/2 (64)		
Water return connection size N.P.T. – in. (mm)	2-1/2 (64)		
Drain connection size NPT – in. (mm)	3/4 (19)		
Electrical characteristics	120 volts – 60 hertz – 1 phase (less than 12 amps)		
Shipping weight – lbs. (kg) 1 package	649 (294)	719 (326)	800 (363)
◆ Optional Accessories (Must Be Ordered Extra) ◆			
Combustible Floor Base (optional)	18P26	18P26	18P26

\* Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

† I=B=R ratings indicate the amount of equivalent direct radiation each boiler will produce under normal conditions and thermostatic control. Steam ratings based on an allowance of 1.333 in accordance with the factors shown on the I=B=R Standard as published by The Hydronics Institute. Selection of boiler size should be based on "Net I=B=R Rating" being equal to or greater than installed radiation in square feet (m<sup>2</sup>).

●LPG/Propane model for use with LPG/Propane only.

## SPECIFICATIONS — CVSB Series Gas Fired Steam Boilers (Standing Pilot)

Model No.	CVSB-4D NT BLR ●CVSB-4D LP BLR	CVSB-5D NT BLR ●CVSB-5D LP BLR	CVSB-6D NT BLR ●CVSB-6D LP BLR
Heating capacity input — Btuh (kW) natural gas	112,500 (33.0)	150,000 (44.0)	187,000 (54.8)
Heating capacity output — Btuh (kW) natural gas	91,000 (26.7)	122,000 (35.7)	153,000 (44.8)
†Net I=B=R rating — Btuh (kW) natural gas	68,000 (19.9)	92,000 (27.0)	115,000 (33.7)
†Net I=B=R rating — sq. ft. (m <sup>2</sup> ) radiation (natural gas)	283 (26.3)	383 (35.6)	479 (44.5)
Heating capacity input — Btuh (kW) LPG/Propane	105,000 (30.8)	140,000 (41.0)	175,000 (51.3)
Heating capacity output — Btuh (kW) LPG/Propane	85,000 (24.9)	114,000 (33.4)	143,000 (41.9)
†Net I=B=R rating — Btuh (kW) LPG/Propane	64,000 (18.6)	86,000 (25.2)	107,000 (31.4)
†Net I=B=R rating — sq. ft. (m <sup>2</sup> ) radiation (LPG/Propane)	267 (24.8)	358 (33.3)	446 (41.4)
*A.F.U.E.	78.8%	79.2%	79.6%
Number of boiler sections	4	5	6
Net boiler heating area — sq. ft. (m <sup>2</sup> )	11.17 (1.04)	14.73 (1.37)	18.29 (1.70)
Boiler capacity — U.S. gallons (L)	Full	5.90 (22.3)	7.60 (28.8)
	Water level	3.80 (14.4)	5.00 (18.9)
Flue size connection diameter — in. (mm) round	6 (152)	6 (152)	7 (178)
Gas piping size I.P.S. — in. (mm)	Natural gas only	1/2 (12.7)	1/2 (12.7)
	●LPG/Propane only	3/4 (19)	3/4 (19)
Water supply connection size N.P.T. — in. (mm)	2-1/2 (64)		
Water return connection size N.P.T. — in. (mm)	2-1/2 (64)		
Drain connection size NPT — in. (mm)	3/4 (19)		
Electrical characteristics	120 volts — 60 hertz — 1 phase (less than 12 amps)		
Shipping weight — lbs. (kg) 1 package	404 (183)	483 (219)	564 (256)
<b>↘ Optional Accessories (Must Be Ordered Extra) ↘</b>			
Combustible Floor Base (optional)	<b>92P79</b>	<b>92P79</b>	<b>92P79</b>

\* Annual Fuel Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

† I=B=R ratings indicate the amount of equivalent direct radiation each boiler will produce under normal conditions and thermostatic control. Steam ratings based on an allowance of 1.333 in accordance with the factors shown on the I=B=R Standard as published by The Hydronics Institute. Selection of boiler size should be based on "Net I=B=R Rating" being equal to or greater than installed radiation in square feet (m<sup>2</sup>).

●LPG/Propane model for use with LPG/Propane only.

## SPECIFICATIONS — CVSB Series Gas Fired Steam Boilers (Standing Pilot)

Model No.	CVSB-7D NT BLR ●CVSB-7D LP BLR	CVSB-8D NT BLR ●CVSB-8D LP BLR	CVSB-9D NT BLR ●CVSB-9D LP BLR
Heating capacity input — Btuh (kW) natural gas	225,000 (65.9)	262,500 (76.9)	299,000 (87.6)
Heating capacity output — Btuh (kW) natural gas	183,000 (53.6)	214,000 (62.7)	245,000 (71.8)
†Net I=B=R rating — Btuh (kW) natural gas	137,000 (40.1)	161,000 (47.2)	184,000 (53.9)
†Net I=B=R rating — sq. ft. (m <sup>2</sup> ) radiation (natural gas)	571 (53.0)	671 (62.3)	767 (71.3)
Heating capacity input — Btuh (kW) LPG/Propane	210,000 (61.5)	245,000 (71.8)	280,000 (82.0)
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†Net I=B=R rating — sq. ft. (m <sup>2</sup> ) radiation (LPG/Propane)	553 (51.4)	625 (58.1)	717 (66.7)
*A.F.U.E.	80.1%	80.5%	80.9%
Number of boiler sections	7	8	9
Net boiler heating area — sq. ft. (m <sup>2</sup> )	21.85 (2.03)	25.41 (2.36)	28.97 (2.69)
Boiler capacity — U.S. gallons (L)	Full	11.00 (41.6)	12.70 (48.1)
	Water level	7.40 (28.0)	8.60 (32.6)
Flue size connection diameter — in. (mm) round	7 (178)	7 (178)	7 (178)
Gas piping size I.P.S. Natural or ●LPG/Propane — in. (mm)	3/4 (19)	3/4 (19)	3/4 (19)
Water supply connection size N.P.T. — in. (mm)	2-1/2 (64)		
Water return connection size N.P.T. — in. (mm)	2-1/2 (64)		
Drain connection size NPT — in. (mm)	3/4 (19)		
Electrical characteristics	120 volts — 60 hertz — 1 phase (less than 12 amps)		
Shipping weight — lbs. (kg) 1 package	649 (294)	719 (326)	800 (363)
<b>↘ Optional Accessories (Must Be Ordered Extra) ↘</b>			
Combustible Floor Base (optional)	<b>18P26</b>	<b>18P26</b>	<b>18P26</b>

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●LPG/Propane model for use with LPG/Propane only.