BRYAN "FLEXIBLE WATER TUBE"

CLM SERIES STEAM AND WATER BOILER

1,200,000 TO 3,000,000 BTUH

FORCED DRAFT GAS, OIL OR DUAL FUEL FIRED

Water Boiler
CLM300-W-FDG

Steam Boiler
CLM180-S-150-FDGO

BRYAN STEAM®

Originators of the "Flexible Water Tube" design

Low initial cost, reliable operating efficiency deliver substantial return on investment

- True “flexible water tube” design guaranteed shock free
- Longer service life with better performance
- Full five sq ft of heating surface per BHP
- Quality construction features
  - Heavy steel boiler frame, built and stamped in accordance with the appropriate ASME Boiler Code.
  - Large volume water leg downcomers promote rapid internal circulation, temperature equalization and efficient heat transfer.
  - Bryan bent water tubes are flexible, individually replaceable without welding or rolling. Never more than two tube configurations.
  - Boiler tube and furnace area access panel: heavy gauge steel casing with 2" high temperature ceramic fiber insulation, bolted and tightly sealed to boiler frame.
  - Heavy gauge steel boiler jacket with rust-resistant zinc coating and enamel finish, insulated with 1½" fiberglass to ensure exceptionally cool outer surface.
  - Water side or steam side interior accessible for cleanout and inspection, front and rear openings, upper and lower drums.
  - Steam boilers with extra large drum with high steam release area ensure stable water level and dry steam.
  - Steel plate boiler base with lightweight, high temperature insulating firebrick combustion chamber, designed for maximum combustion efficiency.

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Bryan CLM Series Boiler Specifications

BOILER MODEL [1]	INPUT MBH (KW)	OUTPUT @ 80% EFFICIENCY [2]		OUTPUT @ 81.5% EFFICIENCY [3]		STEAM OUTPUT [4] LBS/HR (KG/HR)	HTG. SURFACE SQ. FT. (M^2)	APPROX. SHIP LBS. (KG)
		MBH (KW)	HP (KW)	MBH (KW)	HP (KW)			
CLM120-W	1,200 (352)	960 (281)	29 (281)	978 (287)	29 (287)	—	145 (13.5)	2,250 (1,021)
CLM120-S	1,200 (352)	960 (281)	29 (281)	—	—	990 (449)	145 (13.5)	2,450 (1,111)
CLM150-W	1,500 (440)	1,200 (352)	36 (352)	1,223 (358)	37 (358)	—	180 (16.7)	2,675 (1,213)
CLM150-S	1,500 (440)	1,200 (352)	36 (352)	—	—	1,237 (561)	180 (16.7)	2,850 (1,293)
CLM180-W	1,800 (527)	1,440 (422)	43 (422)	1,467 (430)	44 (430)	—	215 (20.0)	2,975 (1,350)
CLM180-S	1,800 (527)	1,440 (422)	43 (422)	—	—	1,485 (674)	215 (20.0)	3,250 (1,474)
CLM210-W	2,100 (615)	1,680 (492)	50 (492)	1,712 (502)	51 (502)	—	251 (23.3)	3,475 (1,576)
CLM210-S	2,100 (615)	1,680 (492)	50 (492)	—	—	1,732 (786)	251 (23.3)	3,650 (1,656)
CLM240-W	2,400 (703)	1,920 (563)	57 (563)	1,956 (573)	58 (573)	—	287 (26.7)	3,900 (1,769)
CLM240-S	2,400 (703)	1,920 (563)	57 (563)	—	—	1,979 (898)	287 (26.7)	4,050 (1,837)
CLM270-W	2,700 (791)	2,160 (633)	64 (633)	2,201 (645)	66 (645)	—	322 (29.9)	4,400 (1,996)
CLM270-S	2,700 (791)	2,160 (633)	64 (633)	—	—	2,227 (1,010)	322 (29.9)	4,900 (2,223)
CLM300-W	3,000 (879)	2,400 (703)	72 (703)	2,445 (716)	73 (716)	—	360 (33.5)	4,800 (2,177)
CLM300-S	3,000 (879)	2,400 (703)	72 (703)	—	—	2,474 (1,122)	360 (33.5)	4,925 (2,234)

NOTES:
(1) W = Water / S = Steam
(2) Output and horsepower based on boiler industry standard of 80% of input.
(3) Output and horsepower based on an average natural gas combustion efficiency of 81.5% for hot water boiler. Actual combustion efficiencies for oil will be higher.
(4) Lbs. steam per hour from and at 212°F.

BRYAN® STEAM

High efficiency hot water and steam boilers for commercial and industrial applications

- All Bryan CLM Series boilers offer these operating and performance features

  - The Bryan Flexible Tube
    - Bryan's exclusive "Flexible Tube" design eliminates the possibility of damage from so-called "thermal shock." Tubes are easily removable and replaceable, without welding or rolling, eliminating long, expensive downtime should repairs ever be required.
  - High or low pressure construction
    - The CLM series offers multiple configurations to meet the building design requirements for water or steam applications. Available in Section IV design of 15# steam or 160# water boiler and Section I design of 150# steam boiler. For special applications the boiler can also be supplied for higher temperatures with up to 300# design in steam or water.
  - Large steam drum
    - The steam drum has generous water volume and steam release area. This design, along with effective drum internal functions, results in a stable water level and produces extremely dry steam at all load conditions.
  - Accessibility of tube area
    - Inner panel provides easy and complete access to boiler tube area. All panels are heavily insulated and sealed to boiler frame. All access is from only one side.

BRYAN® STEAM

High efficiency hot water and steam boilers for commercial and industrial applications

- All Bryan CLM Series boilers offer these operating and performance features
  - Compact design, minimum floor space
    - With our compact water tube design, the overall size of the unit is less than most other types of boilers, yet maintains a full five square feet of heating surface area per HP. Needing only 24" for tube removal, and only on one side of the boiler, the CLM Series boiler occupies very little space in the boiler room. This can result in considerable savings in building costs. Pressurized firing permits minimum sized breaching and vent.
  - Low furnace pressure
    - The design of the CLM boiler allows for lower pressure in the furnace which allows for a smaller efficient motor on the burner and resultant energy savings.
  - Thermal blend water return
    - Bryan's unique "thermal blend" return mixes cooler return water with warmer boiler water abridging it to design operating temperatures. An injector tube directs the "mixed" water flow through the downcomer to the lower header and heating surfaces at a temperature above possible condensing conditions. This reduces the possibility of "cold spots" and damage from corrosive condensation.
  - Positive internal circulation
    - Each pass of the Bryan water tube slopes upward. This configuration, along with the large volume downcomer water legs, provides the extremely rapid natural thermal internal circulation, promoting both high efficiency of heat transfer and uniform temperature throughout the boiler. Eliminating stress damage caused by unequal temperature distribution is especially important for heating systems, particularly where intermittent or continuous low temperature water returns may be encountered.

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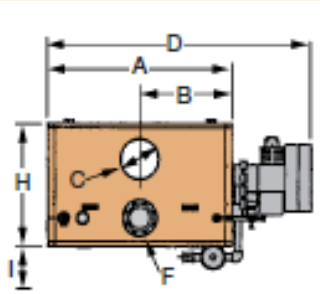
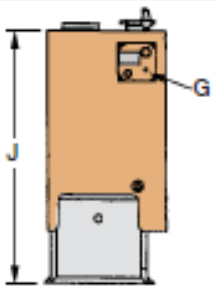
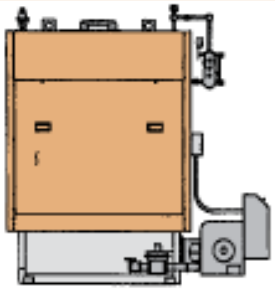
Steam Boiler Dimensions & Data



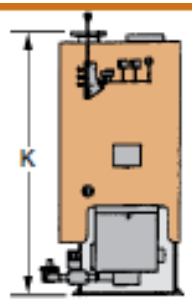
PLAN VIEW



LEFT END VIEW



FRONT VIEW



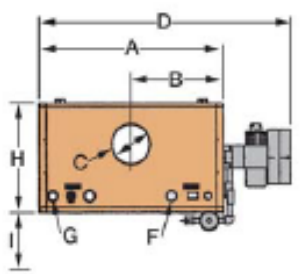
RIGHT END VIEW

STEAM BOILER DIMENSIONS in inches (cm)

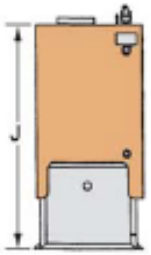
	A	B	C	D	E	F		G	H	I	J	K
Boiler Model Number	Length of Jacket	Flue Location	Flue Size	Overall Length	Gas Train Connection (Approx.)	Supply Nozzle		Feed Conn.	Width Outside Jacket	Min. Tube Removal Clearance	Height Over Jacket	Floor to Flow Nozzle
						15 psi	150 psi					
CLM-120-S	50 11/16 (128.74)	25 11/32 (64.37)	10 (25.40)	78 11/16 (199.86)	1 1/4 NPT (3.18)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-150-S	59 11/16 (151.60)	29 27/32 (75.80)	12 (30.48)	87 11/16 (222.72)	1 1/2 NPT (3.81)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-180-S	69 1/8 (175.57)	34 9/16 (87.78)	14 (35.56)	97 1/8 (246.69)	2 NPT (5.08)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-210-S	78 3/8 (199.07)	39 3/16 (99.53)	14 (35.56)	106 3/8 (270.19)	2 NPT (5.08)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-240-S	88 (223.52)	44 (111.76)	16 (40.64)	116 (294.64)	2 NPT (5.08)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-270-S	97 (246.38)	48 1/2 (123.19)	16 (40.64)	125 (317.50)	2 NPT (5.08)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)
CLM-300-S	106 5/8 (270.82)	53 3/16 (135.41)	16 (40.64)	134 5/8 (341.94)	2 1/2 NPT (6.35)	6 FLG (15.24)	3 NPT (7.62)	1 1/2 NPT (3.81)	38 3/8 (97.47)	30 (76.2)	79 7/16 (201.76)	82 5/8 (209.86)

BRYAN® STEAM

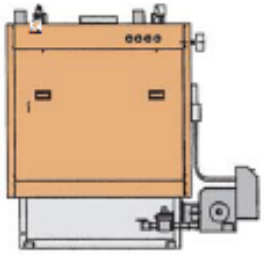
Water Boiler Dimensions & Data

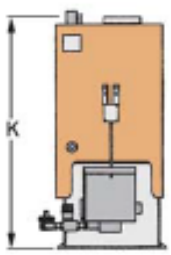


PLAN VIEW



LEFT END VIEW


FRONT VIEW



RIGHT END VIEW

WATER BOILER DIMENSIONS in inches (cm)

	A	B	C	D	E	F	G	H	I	J	K
Boiler Model Number	Length of Jacket	Flue Location	Flue Size	Overall Length	Gas Train Connection	Supply Nozzle	Return Nozzle	Width Outside Jacket	Min. Tube Removal Clearance	Height Over Jacket	Floor to Flow Nozzle
CLM-120-W	50 11/16 (128.74)	25 5/16 (64.29)	10 (25.40)	78 11/16 (199.86)	1 1/4 NPT (3.18)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-150-W	59 11/16 (151.60)	29 13/16 (75.72)	12 (30.48)	87 11/16 (212.72)	1 1/2 NPT (3.81)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-180-W	69 1/8 (175.57)	34 9/16 (87.78)	14 (35.56)	97 1/8 (246.69)	2 NPT (5.08)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-210-W	78 3/8 (199.07)	39 3/16 (99.53)	14 (35.56)	106 3/8 (270.19)	2 NPT (5.08)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-240-W	88 (223.52)	44 (111.76)	16 (40.64)	116 (294.64)	2 NPT (5.08)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-270-W	97 (246.38)	48 1/2 (123.19)	16 (40.64)	125 (317.50)	2 NPT (5.08)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)
CLM-300-W	106 5/8 (270.82)	53 3/16 (135.41)	16 (40.64)	134 5/8 (341.91)	2 1/2 NPT (6.35)	3 NPT (7.62)	3 NPT (7.62)	34 5/8 (87.94)	30 (76.2)	72 1/16 (180.03)	76 3/16 (193.51)

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Steam Boiler Vessel Pictures

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Water Boiler Vessel Pictures

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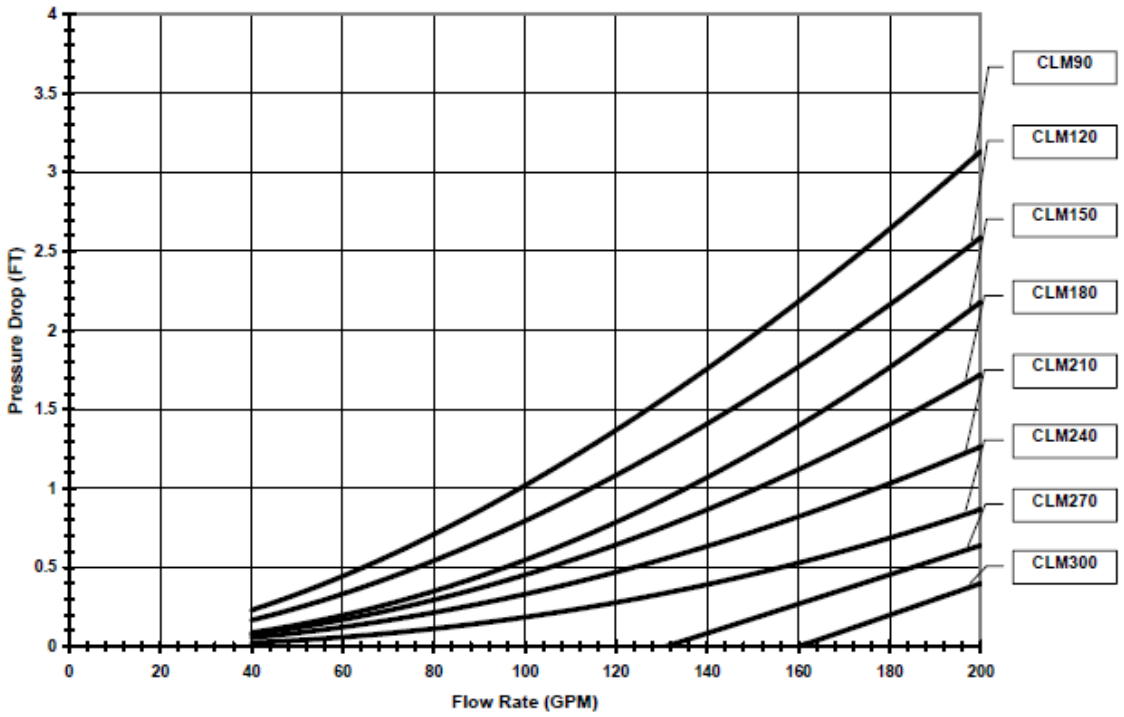
CLM Pressure Drop Data

Bryan Steam, LLC
Engineering Section

CLM Series
Pressure Drop Curves

Form 2263
1/14/2005



Notes: GPM = Boiler Output / (500 x delta T)
CLM90 is Atmospheric only.

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