

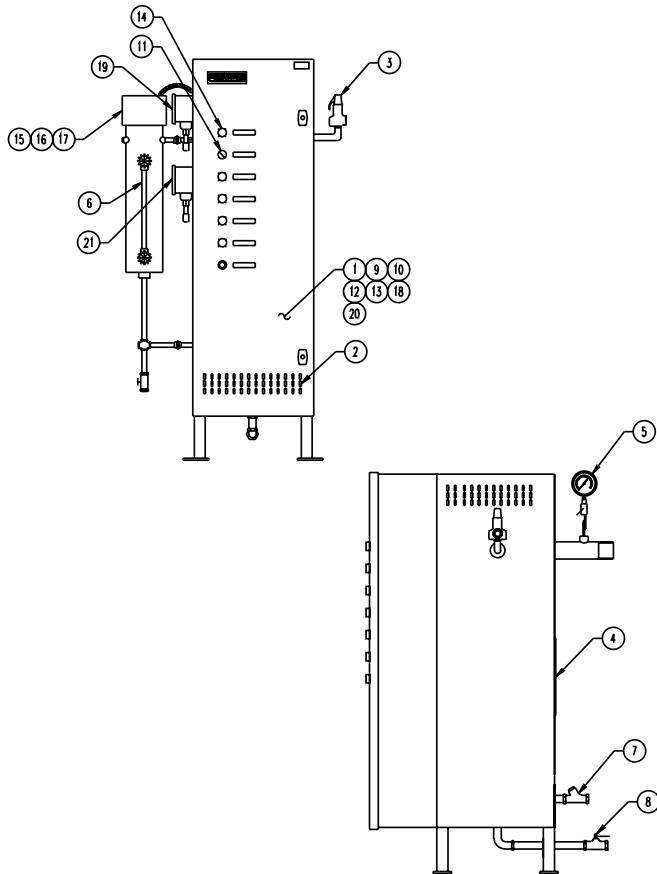
Packaged Steam Boilers

Description

Caloritech™ electric steam boilers provide safe, versatile, easy to use heat sources for low or high pressure steam in industrial, commercial or space heating applications. These boilers can be used as the sole source of steam or may be readily adapted to dual energy systems. Caloritech™ boilers have low water volumes for rapid response.

Typical Uses

- dry cleaning
- chemical reactions and distillations
- heating molasses, vegetable oils
- heating jacketed vessels for processing waxes, paraffins, glues, resins and varnishes
- pipe tracing
- knitting mills and dye tanks
- comfort heating, humidification
- storage tanks containing viscous fluids
- water heating, laundries, kitchen equipment
- autolaves
- kitchen and hospital equipment sterilization



Features

- space saving vertical vessels and top mounted vertically positioned flange heaters (VSB only) to minimize scaling, conserve floor space and simplify maintenance.
- clean and odourless; venting not required.
- quiet operation.
- fully packaged to minimize electrical and plumbing installation costs.
- Incoloy® sheathed heating elements silver brazed to mounting flange.
- designed and built to the latest edition of the ASME Code
- compliant to SELO standards.
- capacities up to 5000 kW and pressure ratings to 2500 are available.

Staging

Heating circuits are staged generally in compliance with the following table:

Boiler Amps	No. of Stages (Min.)	Boiler Amps	No. of Stages (Min.)
45	1	450	5
90	2	540	6
270	3	600	5
360	4	720	6

For each additional 120 amps after 720, add an additional stage. For example, for boiler amps of 960, the number of stages is 8.

Standard Boiler Accessories

Det. No.	Description
1	Insulated ASME designed pressure vessel
2	Vented control cabinet
3	Pressure relief valve
4	Inspection and cleanout holes
5	Pressure gauge c/w isolating stopcock
6	Sight glass assembly c/w protector
7	Back flow check valve
8	Drain blowdown valve(s)
9	Flanged heaters c/w low density elements
10	Control circuit transformer (fused)
11	Control circuit ON/OFF switch
12	HRC power fusing
13	Magnetic contactors
14	Indicating pilot lights
15	Electronic low water control
16	Electronic feed water control
17	Electronic high water control (not all models, check factory)
18	ON/OFF staging up to 95 amps
19	Modulating pressure control of units over 95 amps
20	Staging controller with feature no. 19
21	High pressure controller

Physical Dimensions, Opening Sizes, Volumes, And Line Currents

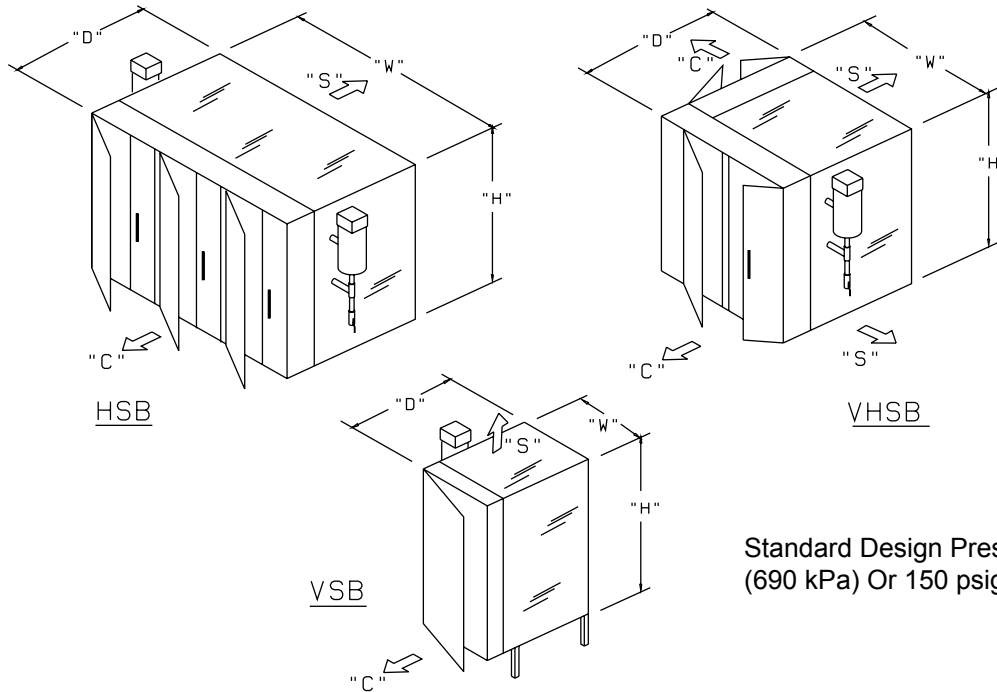
Listed below is a summary of the **approximate** minimum clearance requirements, piping sizes and volumes for the various standard boiler types and sizes.

If these dimensions are unsuitable to your intended installation, you may consider two smaller boilers working in tandem or requesting a quote on a customized unit.

To calculate boiler line current, use the following basic equations.

$$\text{One Phase : AMPS} = \frac{\text{Boiler Wattage}}{\text{Voltage}}$$

$$\text{Two Phase : AMPS} = \frac{\text{Boiler Wattage}}{1.73 \times \text{Voltage}}$$



Standard Design Pressure Is 100 psig (690 kPa) Or 150 psig (1035 kPa)

Steam Boiler General Specifications

Model No.	Max. Kw	Dimensions In. (Mm)					Vessel Openings (NPT)*					Normal Water Volume Imp. Gallons (Litres)	Normal Steam Chamber Imp. Gallons (Litres)	
		H	W†	D	C	S	Water Inlet	Chemical Treatment	Surface Blowdown	Drain Valve	Steam Outlet*			
											<15 Psi (103.5 Kpa)			>15 Psi (103.5Kpa)
VS-10	120	54 (1372)	16 (406)	24 (610)	15 (381)	36 (914)	3/4	3/4	3/4	3/4	2	2	7.9 (36)	3.4 (15.5)
VS-20	270	64 (1625)	26 (660)	36 (914)	26 (660)	36 (914)	3/4	3/4	3/4	1	3	3	32.5 (148)	14 (64)
VS-30	648	66 (1676)	42 (1067)	47 (1194)	38 (965)	36 (914)	1	3/4	3/4	1 1/4	4	3	73.5 (334)	31.5 (143)
VS-42	1512	66 (1676)	60 (1524)	59 (1499)	38 (965)	36 (914)	1 1/4	3/4	3/4	1 1/4	6	4	144 (655)	62 (282)
VHSB-42	2970	90 (2286)	72 (1829)	67 (1702)	48 (1219)	48 (1219)	1 1/4	3/4	3/4	1 1/2	6	4	230 (1046)	98 (445)
VHSB-48	3780	110 (2794)	84 (2134)	85 (2159)	48 (1219)	48 (1219)	1 1/2	3/4	3/4	1 1/2	6	4	327 (1488)	140 (640)
HSB-54	4995	90 (2286)	170 (4318)	92 (2337)	48 (1219)	48 (1219)	2	1	1	2	8	6	840 (3822)	560 (2550)

Note:

* Outlet flanged above 3" NPT
 † Width 'W' maybe 8" (200 mm) more for higher amperage units

Packaged Steam Boilers - VSB

Caloritech™ VSB electric steam boilers provide safe, versatile, easy to use heat sources for low or high pressure steam in industrial, commercial or space heating applications. Boilers can be used as the sole source of steam or may be readily adapted to dual energy systems. Boilers have low water volumes for rapid response.

The VSB boiler features a space saving vertical vessel, utilizing top mounted vertically positioned flange heaters to minimize scaling and simplify maintenance. This design has set a new standard of reliability proven by thousands of Caloritech™ boiler installations.

Boilers are fully packaged to minimize installation costs. Standard units are designed to operate at less than 100 psig; other pressures are available if required.

To Order Specify

Quantity, catalog number, voltage, phase, kW rating, intended use, optional features (see pages E19 and E20), operating pressure, ultimate owner's name and address, and installation address.



**Type VSB Steam Boilers
30" and 42" (762 mm and 1067 mm)**

Type VSB Steam Boilers 10" (254 mm)

Kilowatts Nom'l (Act'l)*	Heaters No. (Kw)	Standard Voltages 1Ø & 3Ø	Catalog Number	Weight lbs (kg)
9	1(9)		VSB-10-09	360 (163)
12	1(12)		VSB-10-12	360 (163)
18	2(9)	208, 240, 380, 416, 480, 600	VSB-10-18	370 (168)
24	2(12)		VSB-10-24	370 (168)
30	2(9) + 1(12)		VSB-10-30	380 (172)
36	3(12)		VSB-10-36	380 (172)
42	2(9) + 2(12)	208, 240, 380, 416, 480, 600	VSB-10-42	390 (177)
50 (48)	4(12)		VSB-10-50	390 (177)
60	5(12) or 4(15)	208, 240, 380, 416, 480, 600	VSB-10-60	400 (181)
72	6(12) or 1(12) + 4(15) or 4(18)	208, 240, 380, 416, 480, 600	VSB-10-72	410 (186)
84	7(12) or 1(9) + 5(15) or 1(12) + 4(18)	208, 240, 380, 416, 480, 600	VSB-10-84	420 (191)
100 (96)	8(12) or 2(12) + 4(18)	208, 240, 380, 416, 480, 600	VSB-10-100	430 (195)
108	4(12) or 6(15) + 2(9) or 6(18)	208, 240, 380, 416, 480, 600	VSB-10-108	410 (186)

Type VSB Steam Boilers 20" (508 mm)

Kilowatts Nom'l (Act'l)*	Heaters No. (Kw)	Standard Voltages 3Ø Only	Catalog Number	Weight lbs (kg)
120	8(15)		VSB-20-120	1010 (458)
135	9(15)	208, 240, 380, 416, 480, 600	VSB-20-135	1020 (463)
150	10(15)		VSB-20-150	1030 (467)
165	11(15)		VSB-20-165	1040 (472)
180	12(15) or 10 (18)	208, 240, 380, 416, 480, 600	VSB-20-180	1050 (476)
200 (195)	13(15)	208, 240, 380, 416, 480, 600	VSB-20-200	1050 (476)
210	14(15) or 1(12) + 11(18)	208, 240, 380, 416, 480, 600	VSB-20-210	1060 (481)
240	16(15) or 2(12) + 12(18)	208, 240, 380, 416, 480, 600	VSB-20-240	1070 (485)
270	18(15) or 15(18)	208, 240, 380, 416, 480, 600	VSB-20-270	1090 (494)

Nominal kW	Actual kW at Standard Available 3Ø Voltages				Catalog Number	Weight lbs (Kg)
	208V, 240V	380V, 416V	480V	600V		
300	300	300	288	315	VSB-30-300	1500 (680)
350	360	360	360	360	VSB-30-350	1500 (680)
400	405	390	396	405	VSB-30-400	1550 (750)
450	450	450	450	450	VSB-30-450	1550 (705)
500	495	510	504	495	VSB-30-500	1600 (725)
550	540	540	540	540	VSB-30-550	1600 (725)
600	—	600	612	585	VSB-30-600	1650 (750)
650	—	648	648	630	VSB-30-650	1650 (750)
600	600	—	—	—	VSB-42-600	2500 (1135)
650	645	—	—	—	VSB-42-650	2500 (1135)
700	690	690	684	720	VSB-42-700	2500 (1135)
750	750	750	756	765	VSB-42-750	2500 (1135)
800	795	810	792	810	VSB-42-800	2550 (1160)
900	900	900	900	900	VSB-42-900	2550 (1160)
1000	1005	990	1008	990	VSB-42-1000	2550 (1160)
1100	1080	1080	1080	1080	VSB-42-1100	2550 (1160)
1200	1200	1200	1188	1215	VSB-42-1200	2650 (1205)
1250	1260	1260	—	—	VSB-42-1250	2650 (1205)
1300	—	1296	1296	1305	VSB-42-1300	2650 (1205)
1400-	—	1404	1404	1400	VSB-42-1400	2650 (1205)
1500-	—	1512	1512	1490	VSB-42-1500	2650 (1205)

VSB

Packaged Steam Boilers - VHSB & HSB

The type VHSB steam boiler has a vertical shell with elements positioned horizontally. Other than this feature, the VHSB is similar in application to the VSB boiler shown on the previous page. Intermediate ratings are available.

The HSB steam boiler features a horizontal shell with elements also positioned horizontally. These larger boilers are available with actual wattage as listed or in any incremental rating up to 5000 kW.

When demand exceeds 5000 kW, we recommend two smaller boilers.



Type VHSB Steam Boilers 42" and 48" (1067 mm and 1219 mm)

Nominal kW	Actual kW at Standard Available 3Ø Voltages				Catalog Number	Weight lbs (Kg)
	208V, 240V	380V, 416V	480V	600V		
1100		1110	1116	1080	VHSB-42-1100	3900 (1770)
1200	Check Factory	1200	1188	1215	VHSB-42-1200	3900 (1770)
1300		1290	1296	1305	VHSB-42-1300	3900 (1770)
1400		1410	1404	1395	VHSB-42-1400	4050 (1840)
1500		1500	1512	1485	VHSB-42-1500	4050 (1840)
1750	Check Factory	1728	1728	1755	VHSB-42-1750	4200 (1905)
2000		1980	1980	1980	VHSB-42-2000	4350 (1975)
2250	—	2268	2268	2250	VHSB-42-2250	4500 (2040)
2500	—	—	2520	2520	VHSB-42-2500	4650 (2110)
2750	—	—	2745	2745	VHSB-42-2750	4800 (2175)
2500		2484	—	—	VHSB-48-2500	4750 (2160)
2750		2772	—	—	VHSB-48-2750	4850 (2250)
3000	—	3024	3024	2970	VHSB-48-3000	4950 (2245)
3250		—	3240	3240	VHSB-48-3250	4950 (2245)
3500	—	—	3510	3510	VHSB-48-3500	5100 (2315)
3750	—	—	3735	3735	VHSB-48-3750	5250 (2380)

To Order Specify

Quantity, catalog number, voltage, phase, kW rating, intended use, optional features (see pages E19 and E20), operating pressure, ultimate owner's name and address, and installation address.

Type HSB Steam Boilers 54" (1372 mm)

Nominal kW	Actual kW at Standard Available 3Ø Voltages				Catalog Number	Weight lbs (Kg)
	208V, 240V	380V, 416V	480V	600V		
4000			3996	4005	HSB-54-4000	5400 (2450)
4250			4230	4230	HSB-54-4250	5550 (2515)
4500	—	—	4500	4500	HSB-54-4500	5700 (2585)
4750			4770	4770	HSB-54-4750	5850 (2655)
5000			4995	4995	HSB-54-5000	6000 (2720)

Some Boiler Facts

- Most boilers require jurisdictional registration. Larger boilers may require an operating engineer on staff.
- Registered boilers must be fitted with registered flange heaters
- Take care that the boiler you select is sufficiently sized. Undersized boilers, especially those operating at intended pressures less than 15 psig, will not be able to maintain desired pressure and may produce very wet steam.
- The operating pressure on boilers should not normally exceed 90% of the relief valve setting.
- One kW-hour of energy produces approximately 3.1 lbs (1.4 kg) of steam per hour at 100°C (212°F) assuming water enters the boiler at 15°C (60°F).
- 1 Boiler horsepower (B.H.P.) = 10 kW.
- 1 Therm hour = 2.99 B.H.P. = 100,000 BTU/hour.
- All boilers require a water feed mechanism. See optional features on page E19.
- Frequent boiler blowdown minimizes scale build-up reducing maintenance costs. See auto blowdown under optional features.
- Some waters contain a high concentration of solids and may require water treatment. We recommend you consult a water treatment specialist in your area for advice prior to placing the boiler in operation.

VHSB & HSB



 Caloritech™

Packaged Steam Boilers