

Packaged Hot Water Boilers

Description

Caloritech™ electric hot water boilers are recommended for applications where a clean, safe, quiet and reliable source of hot water is required. Caloritech™ electric hot water boilers may be used as the sole source of heat or in standby applications such as summer periods when operation of larger boilers may prove uneconomical. The Caloritech™ boiler is ideally suited for use in dual energy systems; electric-oil or electric-gas. Low water volume assures quick response. Caloritech™ boilers are 100% efficient with over 98% of the energy consumed transferred directly to the water.

Typical Uses

- process heating
- heat transfer loops
- comfort heating: institutional and commercial
- freeze protection
- industrial and commercial standby equipment
- commercial dishwashers
- radiant floor heating
- commercial swimming pools
- domestic hot water
- car washes
- laundromats

Features

- space saving vertical vessels and top mounted vertically positioned flange heaters (VWB only) to minimize scaling, conserve floor space and simplify maintenance.
- clean and odorless; 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 4950 kW and pressure ratings to 2500 psig are available.

Staging

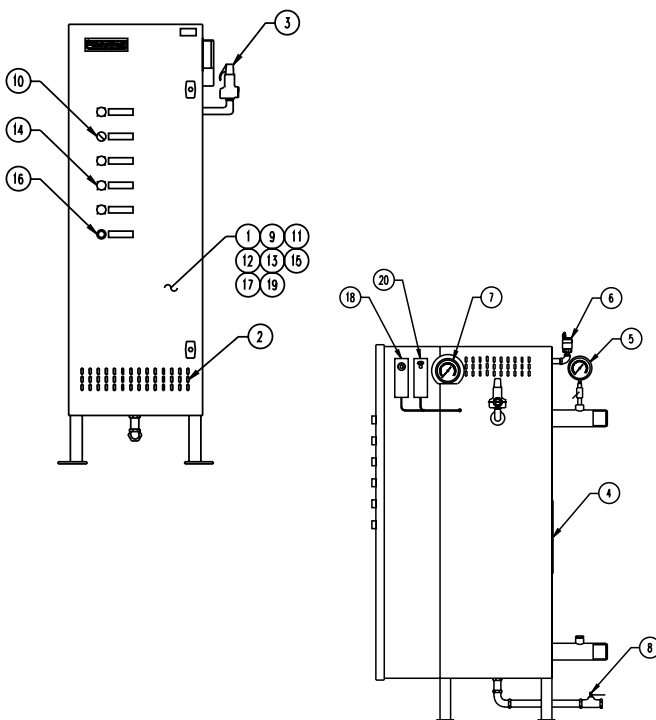
Heating circuits are staged generally in compliance with the following table:

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 (not shown)
6	Air vent
7	Temperature gauge
8	Drain blowdown valve
9	Flanged heaters c/w low density elements
10	Control circuit ON/OFF switch
11	Control circuit transformer (fused)
12	HRC power fusing
13	Magnetic contactors
14	Indicating pilot lights
15	Electronic low water control
16	Push to test button for low water simulation
17	On/off staging up to 95 amps
18	Proportional temperature controller for units over 95 amps
19	Staging controller with deal no. 18
20	High temperature controller



Physical Dimensions, Opening Sizes, Volumes, And Line Currents

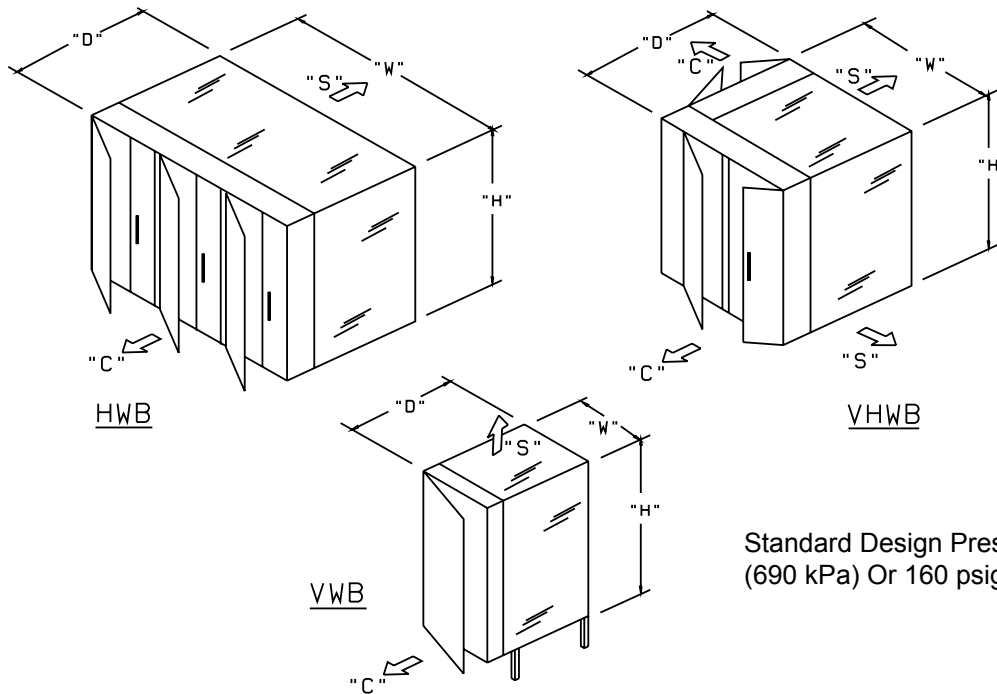
Listed below is a summary of the **approximate** minimum clearance requirements, piping sizes and volumes for the various standard boiler types and sizes.

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.

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

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



Standard Design Pressure Is 100 psig (690 kPa) Or 160 psig (1104 kPa)

TABLE 1 Hot Water Boiler General Specifications

Model No.	Max. kW	Dimensions in. (mm)					Vessel Openings (NPT)*		Normal Water Volume Imp. Gallons (Litres)
		H	W†	D	C	S	Inlet/Outlet	Drain Valve	
VWB-10	150	54 (1372)	16 (406)	214 (610)	16 (406)	36 (914)	2	3/4	11.3 (51.4)
VWB-20	585	65 (1626)	26 (680)	36 (914)	26 (660)	36 (914)	4	1 1/4	46.5 (212)
VWB-30	1080	66 (1676)	42 (1067)	47 (1194)	38 (965)	36 (914)	4	1 1/2	105 (478)
VWB-42	1890	90 (2286)	72 (1829)	62 (1575)	48 (1219)	36 (914)	8	1 1/2	206 (936)
VHWB-42	3240	96 (2438)	72 (1829)	72 (1829)	48 (1219)	36 (914)	8	2	328 (1500)
VHWB-48	3735	108 (2743)	84 (2134)	84 (2134)	48 (1219)	48 (1219)	8	2	470 (2140)
HWB-54	4995	92 (2337)	163 (4140)	82 (2083)	48 (1219)	48 (1219)	8 1/2	2 1/2	1400 (6370)

Note:

* Inlet and outlet flanged above 3" NPT

† Width 'W' maybe 8" (200 mm) more for higher amperage units

Packaged Hot Water Boilers - VWB

Caloritech™ VWB packaged hot water boilers have proven their superiority in thousands of installations. The VWB boiler features a space saving vertical vessel with vertically positioned flange heaters which minimize scaling while simplifying maintenance. Standard units have a design pressure of 160 psig with the relief valve set at 125 psig.

Three choices of inner shell material coatings allow the VWB to meet most applications:

TYPE VWBF - The VWBF boiler has an uncoated steel shell. The boiler is suitable for use in comfort heating, domestic water heating, freeze protection, process heating, etc. where water purity is not an important issue.

TYPE VWBC - The VWBC boiler has a sprayed copper inner shell lining for use in water heating applications where a higher purity water is required and a galvanized vessel is unsuitable.

TYPE VWBG - The VWBG boiler has a dipped galvanized steel shell. Besides covering all uses of the VWBF, the boiler is also suitable for heating water in commercial dishwashers, for heating consumable water for showers and sinks, and for heating swimming pools.

To Order Specify

Quantity, catalog number, voltage, phase, kW rating, intended use, optional features, operating pressure, ultimate owner's name and address, and installation address.



Shown with
Optional
Features

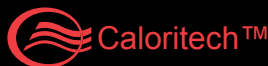
TABLE 1 Type VWBF, VWBC And VWBG Water Boilers - 10" (254 mm)

Kilowatts Nom'l (Act'l)	Heaters No. (kW)	Standard Voltages 1Ø & 3Ø	Catalog Number			Weight	
			Uncoated Steel	Copper Coated	Galvanized	lbs	kg
12	1(12)	208, 240, 380, 416, 480, 600	VWBF-10-12	VWBC-10-12	VWBG-10-12	350	159
15	1(15)		VWBF-10-15	VWBC-10-15	VWBG-10-15	350	159
18*	1(18)		VWBF-10-18	VWBC-10-18	VWBG-10-18	350	159
24	2(12)	208, 240, 380, 416, 480, 600	VWBF-10-24	VWBC-10-24	VWBG-10-24	360	163
30	2(15)		VWBF-10-30	VWBC-10-30	VWBG-10-30	360	163
36*	2(18)		VWBF-10-36	VWBC-10-36	VWBG-10-36	360	163
42	1(12) + 2(15)		VWBF-10-42	VWBC-10-42	VWBG-10-42	370	168
50 (48)	4(12) or 2(24)		VWBF-10-50	VWBC-10-50	VWBG-10-50	380	172
60	5(12) or 4(15)	208, 240, 380, 416, 480, 600	VWBF-10-60	VWBC-10-60	VWBG-10-60	390	177
72	1(12) + 1 (15) or 4(18) or 3(24)	208, 240, 380, 416, 480, 600	VWBF-10-72	VWBC-10-72	VWBG-10-72	390	177
84	2(12) + 4(15)	208, 240, 380, 416, 480, 600	VWBF-10-84	VWBC-10-84	VWBG-10-84	400	181
90	6(15) or 5(18) or 4(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-10-90	VWBC-10-90	VWBG-10-90	400	181
96*	2(12) + 4(18) or 4(24)	208, 240, 380, 416, 480, 600	VWBF-10-96	VWBC-10-96	VWBG-10-96	400	181
100* (102)	1(12) + 5(18) or 1(12) + 4(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-10-100	VWBC-10-100	VWBG-10-100	400	181
108*	1(12) + 4 (24) or 6(18)	208, 240, 380, 416, 480, 600	VWBF-10-108	VWBC-10-108	VWBG-10-108	400	181
3Ø ONLY							
120	1(12) + 6(18) or 8(15)	208, 240, 380, 416, 480, 600	VWBF-10-120	VWBC-10-120	VWBG-10-120	410	186
135	3(15) + 5(18)		VWBF-10-135	VWBC-10-135	VWBG-10-135	420	191
150*	4(15) + 5 (18)		VWBF-10-150	VWBC-10-150	VWBG-10-150	430	195

Note:

* Contactors in this unit not derated for 208V, 3Ø

VWB



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Shown with
Optional
Features

TABLE 1 Type VWBF, VWBC And VWBG Water Boilers - 20" (508 mm)

Kilowatts Nom'l (Act'l)	Heaters No. (kW)	Standard Voltages 1Ø & 3Ø	Catalog Number			Weight	
			Uncoated Steel	Copper Coated	Galvanized	lbs	kg
165	11(15) or 5(15) + 5(18)	208, 240, 380, 416, 480, 600	VWBF-20-165	VWBC-20-165	VWBG-20-165	1120	508
180	12(15) or 10 (18)	208, 240, 380, 416, 480, 600	VWBF-20-180	VWBC-20-180	VWBG-20-180	1130	513
200 (195)	13(15) or 1(15) + 10(18)	208, 240, 380, 416, 480, 600	VWBF-20-200	VWBC-20-200	VWBG-20-200	1130	513
210	14(15) or 2(15) + 10(18)	208, 240, 380, 416, 480, 600	VWBF-20-210	VWBC-20-210	VWBG-20-210	1140	517
240	16(15) or 4(15) + 10(18)	208, 240, 380, 416, 480, 600	VWBF-20-240	VWBC-20-240	VWBG-20-240	1160	526
250 (247, 252, 255)	17(15) or 14(18) or 11(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-20-250	VWBC-20-250	VWBG-20-250	1170	531
270	18 (15) or 15(18)	208, 240, 380, 416, 480, 600	VWBF-20-270	VWBC-20-270	VWBG-20-270	1180	535
300	20(15) or 2(15) + 15(18) or 2(15) + 12(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-20-300	VWBC-20-300	VWBG-20-300	1200	544
360	24(15) or 20(18) or 16(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-20-360	VWBC-20-360	VWBG-20-360	1230	558
400* (396, 405)	22(18) or 18(22 1/2)	208, 240, 380, 416, 480, 600	VWBF-20-400	VWBC-20-400	VWBG-20-400	1230	558
450	25(18) or 20 (22 1/2)	208, 240, 380, 416, 480, 600	VWBF-20-450	VWBC-20-450	VWBG-20-450	1240	562
500 (510)	2(15) + 20(24) or 1(15) + 22(22 1/2)	380, 416, 480, 600	VWBF-20-500	VWBC-20-500	VWBG-20-500	1240	562
585	26(22 1/2)	600	VWBF-20-585	VWBC-20-585	VWBG-20-585	1250	567

Note:

* Contactors in this unit not derated for 208V, 3Ø

Packaged Hot Water Boilers - VWB, VHWB & HWB

**TABLE 2 Type VWB Water Boilers
30" & 42" (762 mm & 1067 mm)**

Nominal kW	Actual kW at Standard Available 3Ø Voltages				Catalog Number	Weight lbs (kg)
	208V, 240V	380V, 416V	480V	600V		
450	450	450	468	450	VWB-30-450	
500	495	510	510	495	VWB-30-500	
550	555	540	540	540	VWB-30-550	
600	600	600	600	585	VWB-30-600	1640 (745)
650	—	648	648	630	VWB-30-650	1640 (745)
700	—	684	684	720	VWB-30-700	1750 (795)
750	—	756	759	765	VWB-30-750	1750 (795)
800	—	792	792	810	VWB-30-800	1750 (795)
900	—	—	900	900	VWB-30-900	1860 (845)
1000	—	—	990	990	VWB-30-1000	1970 (895)
1100	—	—	1080	1080	VWB-1100	1970 (895)
650	645	—	—	—	VWB-42-650	2700 (1225)
700	705	—	—	—	VWB-42-700	2800 (1270)
750	750	—	—	—	VWB-42-750	2800 (1270)
800	795	—	—	—	VWB-42-800	2900 (1320)
900	900	900	—	—	VWB-42-900	2900 (1320)
1000	1005	990	—	—	VWB-42-1000	3000 (1365)
1050	1050	1050	—	—	VWB-42-1050	3000 (1365)
1100	Check Factory	1110	1116	1080	VWB-42-1100	3100 (1410)
1200	Check Factory	1200	1188	1215	VWB-42-1200	3100 (1410)
1300	—	1290	1296	1305	VWB-42-1300	3200 (1455)
1400	—	1410	1404	1395	VWB-42-1400	3300 (1500)
1500	Check Factory	1500	1512	1485	VWB-42-1500	3300 (1500)
1750	—	1740	1755	1755	VWB-42-1750	3460 (1570)
1900	—	1890	1890	1890	VWB-42-1900	3460 (1570)

**TABLE 3 Type VHWB Water Boilers
42" & 48" (1067 mm & 1219 mm)**

Nominal kW	Actual kW at Standard Available 3Ø Voltages				Catalog Number	Weight lbs (kg)
	208V, 240V	380V, 416V	480V	600V		
2000	—	2010	1980	1980	VHWB-42-2000	4100 (1860)
2250	—	2250	2268	2250	VHWB-42-2250	4260 (1930)
2500	—	2490	2484	2520	VHWB-42-2500	4410 (2000)
2750	—	2730	2745	2745	VHWB-42-2750	4560 (2070)
3000	—	3000	2970	2970	VHWB-42-3000	4560 (2070)
3250	—	3240	3240	3240	VHWB-42-3520	4710 (2135)
3500	—	3510	3510	3510	VHWB-48-3500	4860 (2205)
3750	—	3750	3735	3735	VHWB-48-3750	5010 (2275)

**TABLE 4 Type HWB Water 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	—	3990	3996	4005	HWB-54-4000	5160 (2340)
4250	—	4260	4230	4230	HWB-54-4250	5310 (2410)
4500	—	4500	4500	4500	HWB-54-4500	5460 (2475)
4750	—	4740	4770	4770	HWB-54-4750	5610 (2545)
5000	—	4980	4995	4995	HWB-54-5000	5760 (2615)

VWB, VHWB & HWB

Options for Packaged Hot Water Boilers

These are many of the most frequently supplied optional items.

- Inlet and outlet valves (gate)
- Auxiliary low water cutoff
- High temperature alarm
- Low temperature alarm
- Audible alarm c/w reset
- Pilot light per heating stage
- Manual OFF/AUTO switch per heating stage
- Voltmeter c/w three position selector switch
- Ammeter c/w three position selector switch
- kW hour meter
- Main power disconnect switch
- Main power automatic breaker
- Safety door interlock switch
- Proportional temperature controller (std over 95 amps/)
- Electronic progressive sequencer
- Circulating pump
- Motor starter
- Ground fault indicator
- Spare components
- Higher kW capacities
- Non-listed voltages
- Single phase
- Higher pressure rating
- Lined vessels (check factory)
- Dual energy system interface
- Indoor/outdoor temperature reset controller
- Auxiliary high temperature cutoff
- High or low pressure cutoff
- Flow switch

Some Boiler Facts

1. Most boilers require jurisdictional registration. Very large boilers may require an operating engineer on staff.
2. Registered boilers must be fitted with registered flange heaters.
3. The operating pressure on boilers should not normally exceed 90% of the relief valve setting.
4. 1 Boiler horsepower (B.H.P.) = 10 kW.
5. 1 Therm hour = 2.99 B.H.P. = 100,000 Btu/hr
6. 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.