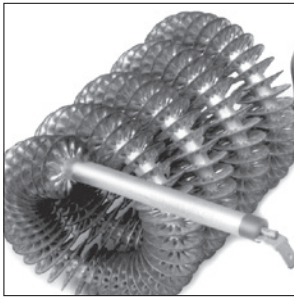


 Click Here for Quote!



# Caloritech™

Engineered Electric Heat



## Boilers

# Section E

Product Catalog

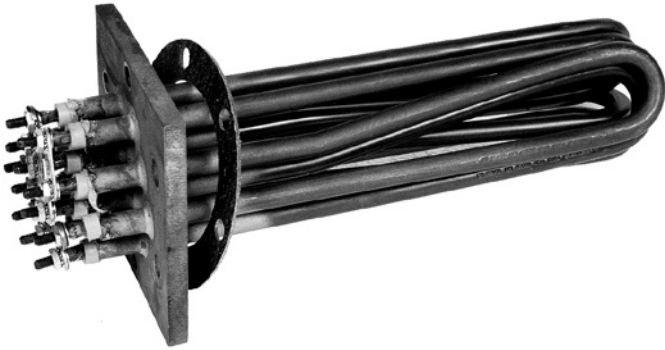
Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: [info@gordonhatch.com](mailto:info@gordonhatch.com)

# Contents

<b>Replacment Boilers - CX .....</b>	<b>4</b>
Rectangular Flanges.....	4
Replacement Boiler Flange Heaters - CX - Round Flanges .....	7
<b>Packaged Circulation Heaters - CWCB.....</b>	<b>9</b>
<b>Packaged Electric Boilers .....</b>	<b>11</b>
<b>Packaged Steam Boilers .....</b>	<b>13</b>
Packaged Steam Boilers - VSB.....	15
Packaged Steam Boilers - VHSB & HSB.....	16
Packaged Steam Boilers - Optional Equipment.....	17
Packaged Steam Boilers - Specifications.....	19
<b>Packaged Hot Water Boilers .....</b>	<b>20</b>
Packaged Hot Water Boilers - VWB.....	22
Packaged Hot Water Boilers - VWB, VHWB & HWB .....	24
<b>Calorifiers - VC &amp; HC.....</b>	<b>25</b>
Packaged Hot Water Boilers/Calorifiers - Specifications.....	27

# Replacement Boilers - CX

## Rectangular Flanges



### Application

Type CX flange heaters are registered Caloritech™ quality replacements for boilers manufactured by Thermon Heating Systems and other boiler manufacturers. Thermon Heating Systems manufactured replacements are of the highest commercial quality available anywhere.

### Selection

In the following four pages, replacement boiler flange heaters with rectangular flanges are listed in ascending flange sizes followed by heaters with circular flanges in a similar sequence. If the catalog number of your unit matches the listed catalog number, the only additional information we require is the voltage and phase and whether it is a steam or water boiler replacement. If not, check for a flange match and describe the heater in terms of the closest match, with exceptions.



**Caution** - Most boiler heaters fail due to low water levels in the boiler or excessive scale build-up on the heating elements. Suspect this cause if two or more heaters fail simultaneously.  
Make certain that defects in the system or poor maintenance procedures are corrected prior to installing the replacement heaters.

## Selection

On this page and the following one, replacement boiler flange heaters with rectangular flanges are listed in ascending flange sizes.

If the catalog number or part number of your unit matches a listed one, the only additional information we require is the voltage and phase and whether it is a steam or water boiler replacement.

If not, check for a flange match and describe the heater in terms of the closest match, with exceptions.

### 2 1/2" Square Flange - Caloritech™ VWB Water Catalogue Number - CXI10063-XX\*

kW	208V	240V	416V	480V	600V
6	-31	-32	-33	-34	-35
12	-26	-27	-28	-29	-30
15	-46	-47	-48	-49	-50
18	-1	-2	-3	-4	-5
18	-36	-37	-38	-39	-40
22.5	-21	-22	-23	-24	-25
22.5	-41	-42	-43	-44	-45
24	-66	-67	-68	-69	-70
24	-81	-82	-83	-84	-85
27.5	-86	-87	-88	-89	-90

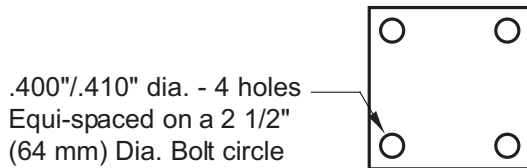
### 2 1/2" Square Flange Caloritech™ VSB Steam Catalogue Number - CXI10063-XX\*

kW	208V	240V	416V	480V	600V
9	-76	-77	-78	-79	-80
12	-61	-62	-63	-64	-65
12	-71	-72	-73	-74	-75
15	-6	-7	-8	-9	-10
15	-51	-52	-53	-54	-55
18	-56	-57	-58	-59	-60

**Note:** Replace XX with appropriate two digit suffix from table

## 2 1/2" Square Steel Flange (Custom)

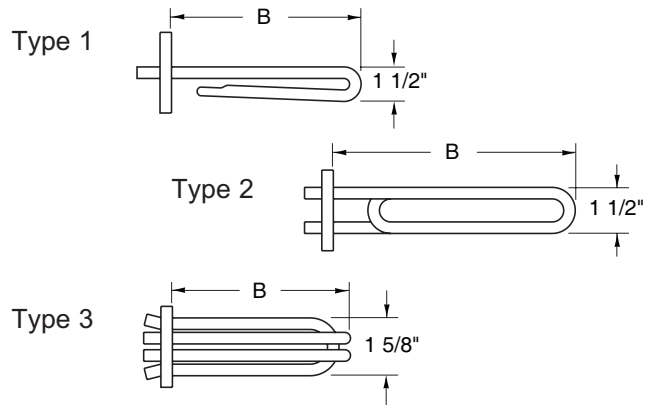
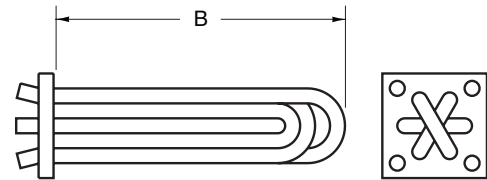
These various types of heater configurations are available on special order. Specify type 1, 2, or 3 and provide 'B' dimension, voltage, phase and wattage.



**Caution** - Most boiler heaters fail due to low water levels in the boiler or excessive scale build-up on the heating elements. Suspect this cause if two or more heaters fail simultaneously.  
Make certain defects in the system or poor maintenance procedures are corrected prior to installing the replacement heaters.

## To Order Specify

Quantity, catalog number, voltage, phase and whether used as a water or steam boiler replacement heater.



**3 5/8" x 9 5/8" Flange - CW Replacements**  
Catalog Number - 04349-XXX\*

kW	208V	240V	277V	416V	480V	600V
6	-10	-20	-30	-50	-50	-60
9	-70	-80	-90	-110	-110	-120
12	-130	-140	-150	-170	-170	-180
15	-190	-200	-210	-230	-230	-240
18	-250	-260	-270	-290	-290	-300
21	-310	-320	-330	-350	-350	-360
24	-370	-380	-390	-410	-410	-420
27	-430	-440	-450	-470	-470	-480
30	-490	-500	-510	-530	-530	-540

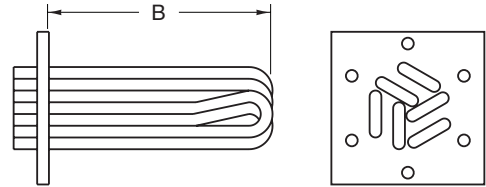
**Note:** \*Replace XXX with appropriate three digit suffix from table.



**4 1/2" Square Flange - CMB/CES Replacements**  
Catalog Number - 30555-XXX\*

kW	1Ø			3Ø				
	208V	208V	240V	280V	240V	416V	480V	600V
3	-11	-21	-31	-	-	-	-	-
6	-	-81	-91	-60	-70	-80	-90	-100
9	-	-141	-151	-110	-120	-130	-140	-150
12	-	-201	-211	-160	-170	-180	-190	-200
18	-	-261	-271	-210	-220	-230	-240	-250

**Note:** \*Replace XXX with appropriate three digit suffix from table.



**5 1/2" Square Flange - CCES Replacements**  
Catalog Number - 30555-XXX\*

kW	1Ø			3Ø				
	208V	208V	240V	280V	240V	416V	480V	600V
9	-143	-153	-112	-122	-132	-142	-152	-
10	-323	-333	-262	-272	-	-	-302	-100
12	-203	-213	-162	-172	-182	-192	-202	-150
18	-263	-273	-212	-222	-232	-242	-252	-200

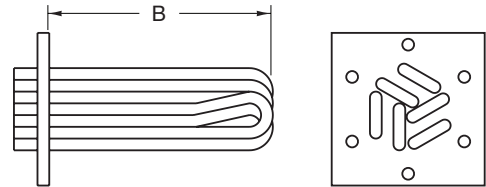
**Note:** \*Replace XXX with appropriate three digit suffix from table.



**5 1/2" Square Flange - FP Replacements**  
Catalog Number - CX110264-XX\*

kW	208V	240V	277V	416V	480V	600V
12	-13	-10	-7	-4	-1	-60
18	-14	-11	-8	-5	-2	-120
24	-28	-27	-26	-25	-24	-180
36	-23	-22	-21	-20	-19	-240
50	-	-	-18	-17	-16	-300

**Note:** \*Replace XX with appropriate three digit suffix from table.



**6 3/4" Square Flange - Caloritech™ MC, MN, MX**  
Catalog Number - CX110264-XX\*

kW	208V	240V	277V	416V	480V	600V
15	-33	-32	-31	-30	-29	-60
30	-15	-12	-9	-6	-3	-120
60	-38	-37	-36	-35	-34	-180

**Note:** \*Replace XX with appropriate three digit suffix from table.

# Replacement Boiler Flange Heaters - CX - Round Flanges

## Selection

On this page and the following one, replacement Caloritech™ boiler flange heaters with round flanges are listed in ascending flange sizes.

If the catalog number or part number of your unit matches a listed one, the only additional information we require is the voltage and phase and whether it is a steam or water boiler replacement.

If not, check for a flange match and describe the heater in terms of the closest match, with exceptions (see pg. E10).

### 6" Special Flange - Caloritech™ Boilers

kW	Std. Voltages	Catalog No.	WT. - lbs(kg)
15	208, 240, 416, 480,600	CXI10220-12	31 (14)
15		CXI10773-06	31 (14)
30		CXI10168-29	40 (18)
30		CXI10220-11	40(18)
30	208, 240, 416, 480,600	CXI10773-05	40 (18)
36		CXI10168-21	40 (18)
37.5		CXI10773-12	40 (18)
45		CXI10168-04/16	44 (20)
45	208, 240, 416, 480,600	CXI10220-10	44 (20)
45		CXI10773-04	44 (20)
60		CXI10168-28	48 (22)
60		CXI10220-09	48 (22)
60	208, 240, 416, 480,600	CXI10773-03	48 (22)
72		CXI10168-20	53 (24)
75		CXI10220-08	53 (24)
75		CXI10773-02	53 (24)
75	208, 240, 416, 480,600	CXI10773-11	53 (24)
90		CXI10168-27	59 (27)
90		CXI10220-07	59 (27)
90		CXI10773-01	59(27)
108	208, 240, 416, 480,600	CXI10168-19	66 (30)
112.5		CXI10773-10	66 (30)
125		CXI10168-09	70 (32)
135		CXI10168-02/18	70 (32)
145	208, 240, 416, 480,600	CXI10168-07	70 (32)
150		CXI10773-09	70 (32)
187.5		CXI10773-08	79 (36)
225		CXI10773-07	79 (36)

### 6" Caloritech™ Boilers - 150 lb. Flange

kW	Std. Voltages	Catalog No.	WT. - lbs(kg)
15	208, 240, 416, 480,600	CXI10220-13	35 (16)
30		CXI10168-13	44 (20)
30		CXI10220-05	44 (20)
38		CXI10220-06	44 (20)
45	208, 240, 416, 480,600	CXI10168-12/24	48 (22)
45		CXI10220-04	48 (22)
60		CXI10220-03	53 (24)
75		CXI10168-15	57 (26)

kW	Std. Voltages	Catalog No.	WT. - lbs(kg)
75	208, 240, 416, 480,600	CXI10220-02	57 (26)
90		CXI10168-05/11/23	66 (30)
90		CXI10220-01	66 (30)
100		CXI10220-14	73 (33)
135		CXI10168-03/10/22	73 (33)

**Caution** - Most boiler heaters fail due to low water levels in the boiler or excessive scale build-up on the heating elements. Suspect this cause if two or more heaters fail simultaneously. Make certain that defects in the system or poor maintenance procedures are corrected prior to installing the replacement heaters.

## To Order Specify

Quantity, catalog number, voltage, phase and whether used as a water or steam boiler replacement heater.

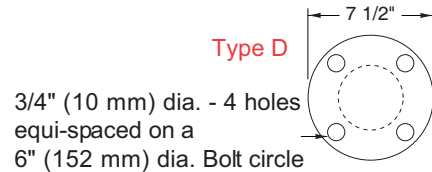
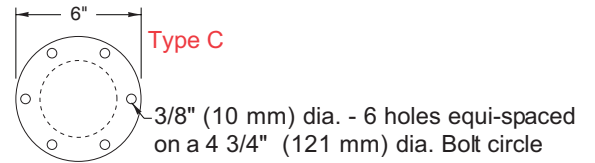
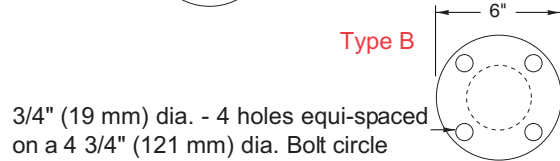
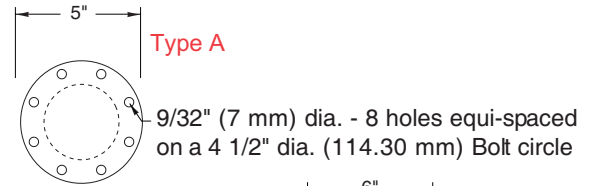
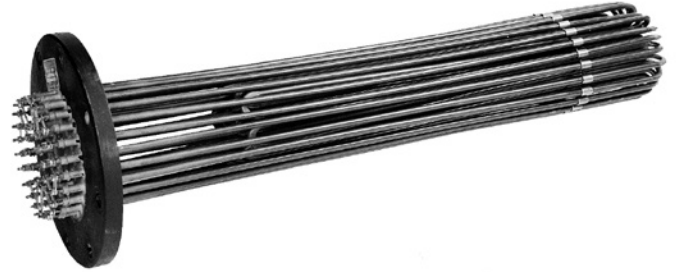


**6" Caloritech™ Boilers - 300 lb. Flange**

kW	Std. Voltages	Catalog No.	WT. - lbs(kg)
116.7	208, 240, 416, 480, 600	CXI10773-14	66 (30)
150		CXI10773-16	70 (32)
175.1		CXI10773-13	75 (34)

**8" Caloritech™ Boilers - 150 lb. Flange**

kW	Std. Voltages	Catalog No.	WT. - lbs(kg)
36	208, 240, 416, 480, 600	CXI10221-25	79 (36)
45		CXI10221-06/12/19	84 (36)
72		CXI10221-24	88 (40)
90		CXI10221-05/11/18	92 (42)
108	208, 240, 416, 480, 600	CXI10221-23	92 (42)
135		CXI10221-04/10/17	99 (45)
144		CXI10221-22	99 (45)
180		CXI10221-03/09/16	106 (48)
180	208, 240, 416, 480, 600	CXI10221-21	106 (48)
216		CXI10221-20	112 (51)
225		CXI10221-02/08/15	119 (54)
270		CXI10221-01/07/14	139 (63)
270		CXI10221-13	139 (63)



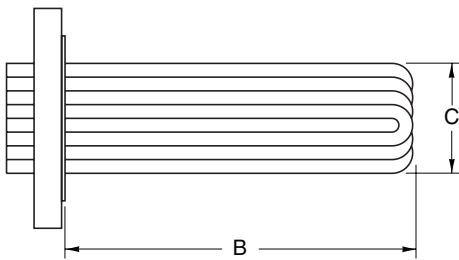
**Custom Heaters with Round Flanges**

To order a custom round flange boiler replacement specify flange type from adjacent sketches, 'B' dimension, 'C' dimension, voltage, phase, kilowatts, number of elements, and number of circuits.

If your boiler flange does not match any of these types, send us a similar sketch or a description. Include the flange thickness

**To Order Specify**

Quantity, catalog number, voltage, phase and whether used as a water or steam boiler replacement heater.



Replacement Boiler Flange CX- Round Flange



# Packaged Circulation Heaters - CWCB

## Application

Type CWCB packaged water heaters are designed for installation in circulating loops where space is limited. The basic unit can be equipped with various control packages which will allow the heater to function:

- As a commercial swimming pool heater, or
- As a side arm domestic water heater or commercial dishwasher booster heater, or
- As a commercial hot water furnace for comfort or process heating.



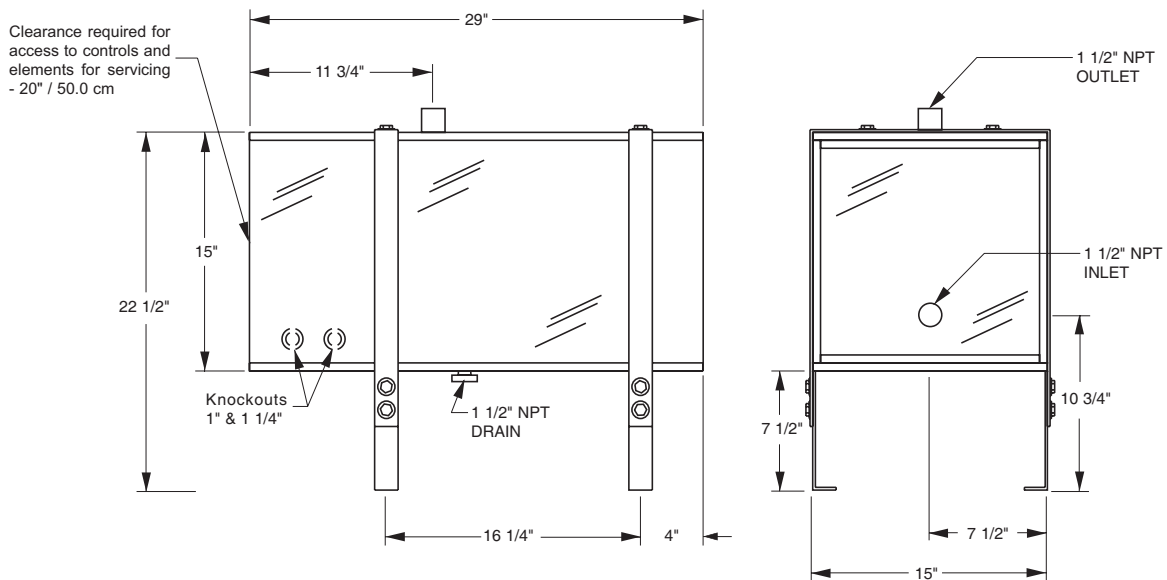
## Construction

The unit features a 12" (305 mm) SCH. 20 galvanized steel shell designed to accept one or two heavy duty flange heaters having copper sheathed heating elements.

The shell is insulated and protected with a prepainted sheet metal casing. Standard control equipment is contained within the heater and control compartment at one end of the casing. A hinged inner panel allows convenient access to the heaters.

## Standard Equipment

- Factory prewired
- Galvanized shell designed to the ASME code for pressure vessels
- 1 1/2" N.P.T. inlet and outlet
- 1 1/2" N.P.T. drain
- Flange heater(s) with heavy duty copper sheathed elements
- Insulated shell with painted sheet metal casing
- Mounting legs
- Magnetic contactor(s)
- Splitter block
- On-off switch





### Model CWCB-XX-1 for Commercial Pool Heating

Kilowatts	Std. Voltages				Catalog Number	Net Wt. - kg (lbs.)
	208, 240		480, 600			
	1Ø	3Ø	1Ø	3Ø		
6	✓	✓	✓	✓	CWCB-06-1	86 (189)
9	✓	✓	✓	✓	CWCB-09-1	86 (189)
12	✓	✓	✓	✓	CWCB-12-1	90 (198)
15	✓	✓	✓	✓	CWCB-15-1	90 (198)
18	✓	✓	✓	✓	CWCB-18-1	90 (198)
21	✓	✓	✓	✓	CWCB-21-1	90 (198)
24	✓	✓	✓	✓	CWCB-24-1	90 (198)
27	✓	✓	✓	✓	CWCB-27-1	90 (198)
30	✓	✓	✓	✓	CWCB-30-1	90 (198)
36	✓	✓	✓	✓	CWCB-36-1	90 (198)
42	✓	✓	✓	✓	CWCB-42-1	95 (209)
48	—	✓	✓	✓	CWCB-48-1	95 (209)
54	—	✓	✓	✓	CWCB-54-1	95 (209)
60	—	✓	✓	✓	CWCB-60-1	95 (209)

The CWCB when configured to specifically function as a pool heater has the following equipment in addition to the standard equipment listed on the previous page:

- 15 psig maximum pressure
- Adjustable manual reset high limit control
- Thermostat with 35°F to 110°F (2°C to 43°C) temperature range (supplied loose)
- Control circuit transformer (when required) with 120V fused secondary

### Optional Equipment

- Flow switch  
(must use when installed above pool water surface)
- Circulating pump and motor
- ASME registration

### Model CWCB-XX-2 for Domestic Water Heating and Dishwasher Booster Heating

Kilowatts	Std. Voltages				Catalog Number	Net Wt. - kg (lbs.)
	208, 240		480, 600			
	1Ø	3Ø	1Ø	3Ø		
6	✓	✓	✓	✓	CWCB-06-2	86 (189)
9	✓	✓	✓	✓	CWCB-09-2	86 (189)
12	✓	✓	✓	✓	CWCB-12-2	90 (198)
15	✓	✓	✓	✓	CWCB-15-2	90 (198)
18	✓	✓	✓	✓	CWCB-18-2	90 (198)
21	✓	✓	✓	✓	CWCB-21-2	90 (198)
24	✓	✓	✓	✓	CWCB-24-2	90 (198)
27	✓	✓	✓	✓	CWCB-27-2	90 (198)
30	✓	✓	✓	✓	CWCB-30-2	90 (198)
36	✓	✓	✓	✓	CWCB-36-2	90 (198)
42	✓	✓	✓	✓	CWCB-42-2	95 (209)
48	—	✓	✓	✓	CWCB-48-2	95 (209)
54	—	✓	✓	✓	CWCB-54-2	95 (209)
60	—	✓	✓	✓	CWCB-60-2	95 (209)

The CWCB when configured to function as a domestic water or dishwasher booster heater has the following equipment in addition to the standard equipment listed on the previous page:

- 125 psig maximum pressure
- Adjustable manual reset high limit control
- Pressure/temperature relief valve 125 psig / 210°F (99°C)

- Control circuit transformer (when required) with 120V fused secondary
- Thermostat 100°F to 240°F (38°C to 116°C) supplied loose
- Pressure/temperature gauge supplied loose

### Optional Equipment (check factory)

- Flow switch
- Circulating pump and motor
- ASME registration

### Model CWCB-XX-3 for Comfort Heating or Process Water Heating

Kilowatts	Std. Voltages				Catalog Number	Net Wt. - kg (lbs.)
	208, 240		480, 600			
	1Ø	3Ø	1Ø	3Ø		
6	✓	✓	✓	✓	CWCB-06-3	86 (189)
9	✓	✓	✓	✓	CWCB-09-3	86 (189)
12	✓	✓	✓	✓	CWCB-12-3	90 (198)
15	✓	✓	✓	✓	CWCB-15-3	90 (198)
18	✓	✓	✓	✓	CWCB-18-3	90 (198)
21	✓	✓	✓	✓	CWCB-21-3	90 (198)
24	✓	✓	✓	✓	CWCB-24-3	90 (198)
27	✓	✓	✓	✓	CWCB-27-3	90 (198)
30	✓	✓	✓	✓	CWCB-30-3	90 (198)
36	✓	✓	✓	✓	CWCB-36-3	90 (198)
42	✓	✓	✓	✓	CWCB-42-3	95 (209)
48	—	✓	✓	✓	CWCB-48-3	95 (209)
54	—	✓	✓	✓	CWCB-54-3	95 (209)
60	—	✓	✓	✓	CWCB-60-3	95 (209)

The CWCB when configured to function as a hot water furnace for comfort heating or for process water heating has the following equipment in addition to the standard equipment listed on the previous page:

- 0 psig maximum pressure
- Adjustable manual reset high limit control
- Pressure relief valve set at 30 psig
- Control circuit transformer (when required) with 120V fused secondary
- Built-in thermostat 50°F to 250°F (10°C to 120°C)
- Low voltage relay for 24V thermostat
- Pressure/temperature gauge supplied loose

### Optional Equipment (check factory)

- Flow switch
- Circulating pump and motor
- ASME registration
- Expansion tank
- Outdoor thermostat

### To Order Specify

Quantity, catalog number, voltage, phase, wattage, application, optional equipment, operating pressure, ultimate owner's name and address, installation location name and address.

# Packaged Electric Boilers

## Packaged Electric Boilers

Electric resistance boilers find broad application in commercial and industrial heating systems. Their main advantages over fuel fired boilers are that they are clean and odourless with no requirement for venting and that they are easy to operate.



## Typical Uses

Smaller boilers are used in comfort heating, commercial dishwashers, heating consumable water for showers and sinks, swimming pool heating, freeze protection, and process water heating. During the summer months when heating is not required, a small electric boiler may be a good stand-by alternative.



## Efficiency

In general, the electric boiler is more expensive to operate than a fuel burning boiler but in many cases the difference in cost is insignificant. When you consider that the electric boiler is close to 100% efficient, which may be almost twice the operating efficiency of many gas and oil boilers, and take into account the savings in space and maintenance costs, the electric boiler may be your best option. Boilers are fully packaged to minimize installation costs requiring only water and drain plumbing and connection to the electrical supply.



## Design

Thermon Heating Systems is a world leader in electric boiler design and manufacture. Ratings to 5000 kW and 2500 psig operating pressure are available. With well over 3000 megawatts of installed boiler capacity and thirty plus years of experience, the Caloritech™ boiler embodies the best combination of cost, efficiency, and state-of-the-art technology. Boilers are designed and constructed to ASME code requirements. Code stamping and national board registration are available for all models.

## Sizing

Care must be exercised in determination of the boiler kW rating. Steam boilers which are undersized will not be able to maintain pressure resulting in large amounts of entrained water in the steam.

## Top Mount Heaters ... A Caloritech™ Feature

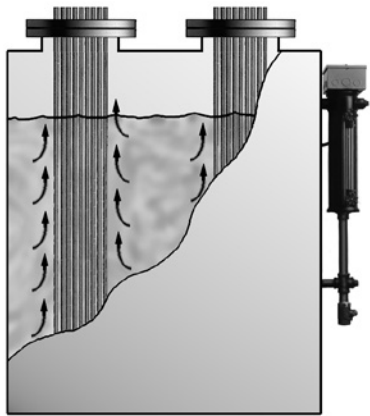
Top mount heaters with vertical elements are standard in steam boiler designs with ratings up to 1296 kW and water boiler designs up to 1890 kW.

Water normally contains calcium and magnesium salts in suspension. The solubility of these chemicals decreases with increased temperature so that they may precipitate out of the water when it is heated in the boiler.

### Caloritech™ Flange Heaters

Many of the larger boiler manufacturers throughout North America have chosen Thermon Heating Systems as their prime supplier of electric boiler flange heaters. Our heaters are the best quality, designed to provide years of dependable service when properly maintained.

Elements are silver brazed to the mounting flange to assure leak proof connections that will not loosen and leak with time.



A vertical element develops a water-water vapour “stack” effect and a corresponding cleansing action over the element. This superior design concept has proven to minimize scale build-up on the heating element sheath, prolonging heater life. Top mount elements also simplify maintenance and save space.

Unfortunately, with very large boilers the top mount design becomes impractical.



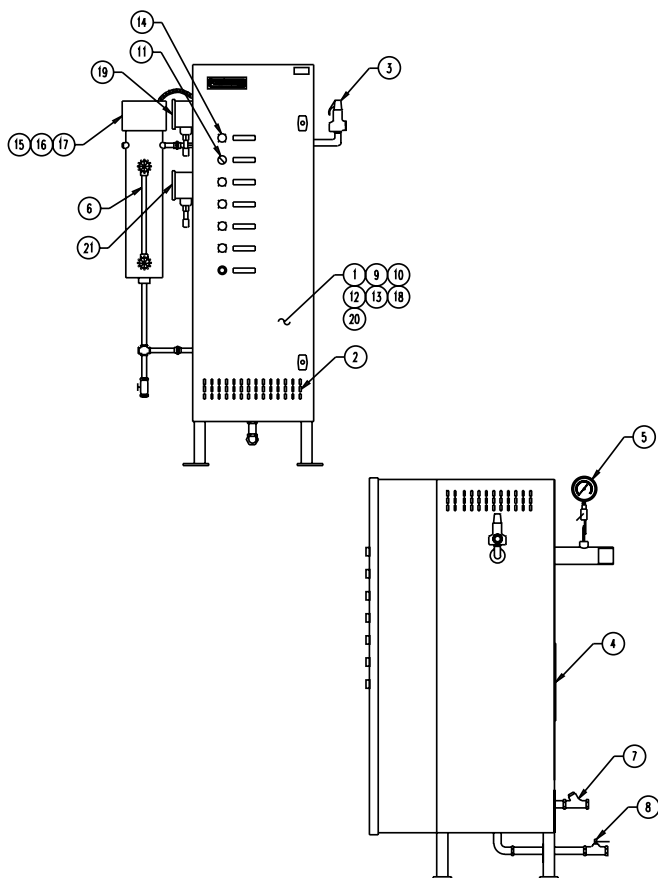
# Packaged Steam Boilers

## 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
18	(not all models, check factory) 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

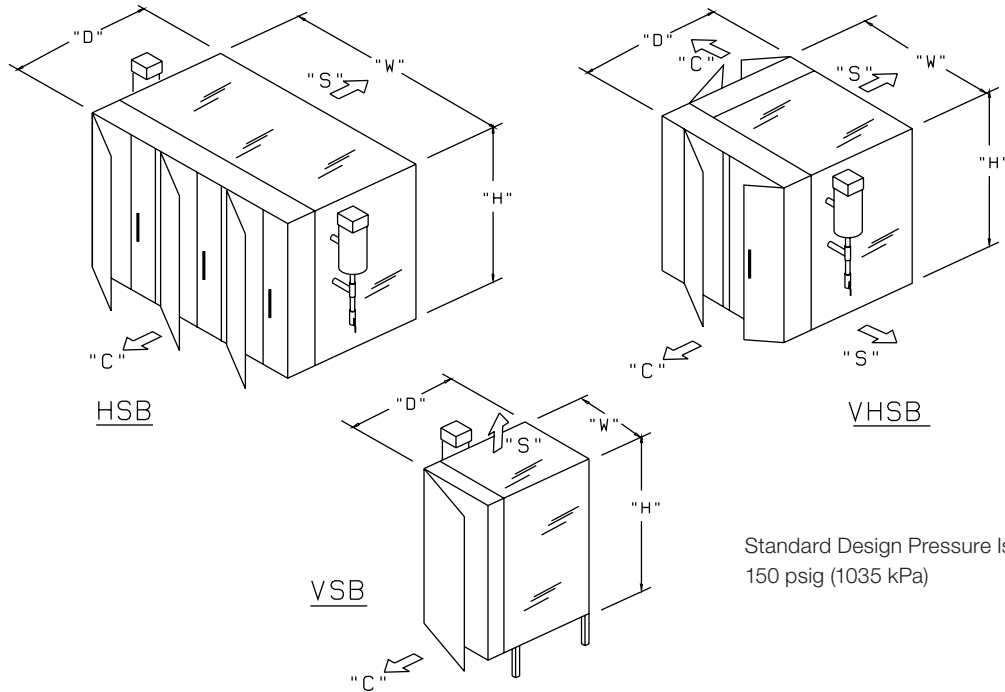
Listed below is a summary of the approximate minimum clearance requirements, piping sizes and volumes for the various standard boiler types and sizes.

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 (103.5 Kpa)		
VSB-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)
VSB-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)
VSB-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)
VSB-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)	208, 240, 380, 416, 480, 600	VSB-10-09	360 (163)
12	1(12)		VSB-10-12	360 (163)
18	2(9)		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)	208, 240, 380, 416, 480, 600	VSB-10-36	380(172)
42	2(9) + 2(12)		VSB-10-42	390 (177)
50 (48)	4(12)		VSB-10-50	390(177)
60	5(12) or 4(15)		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 1Ø & 3Ø	Catalog Number	Weight lbs (kg)
120	8(15)	208, 240, 380, 416, 480, 600	VSB-20-120	1010 (458)
135	9(15)		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				Number Catalog	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)

# 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 VSB 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	1200	1188	1215	VHSB-42-1200	3900 (1770)
1300	Factory	1290	1296	1305	VHSB-42-1300	3900 (1770)
1400		1410	1404	1395	VHSB-42-1400	4050 (1840)
1500	Check	1500	1512	1485	VHSB-42-1500	4050 (1840)
1750	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)

8. All boilers require a water feed mechanism. See optional features on page E19.
9. Frequent boiler blowdown minimizes scale build-up reducing maintenance costs. See auto blowdown under optional features.
10. 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.

**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)

## Boiler Facts

1. Most boilers require jurisdictional registration. Larger boilers may require an operating engineer on staff.
2. Registered boilers must be fitted with registered flange heaters
3. 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.
4. The operating pressure on boilers should not normally exceed 90% of the relief valve setting.
5. 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).
6. 1 Boiler horsepower (B.H.P.) = 10 kW.
7. 1 Therm hour = 2.99 B.H.P. = 100,000 BTU/hour.

## To Order Specify

Quantity, catalog number, voltage, phase, kW rating, intended use, optional features (see pages 17 and 18), operating pressure, ultimate owner's name and address, and installation address.



# Packaged Steam Boilers - Optional Equipment

## Feed Mechanisms

All boilers require some type of feed mechanism.

### Solenoid Feed

Specify a solenoid feed if condensate is not required to be returned to the boiler and mains water pressure is always no less than 10 psig higher than maximum boiler operating pressure. The solenoid is activated by the level controller.

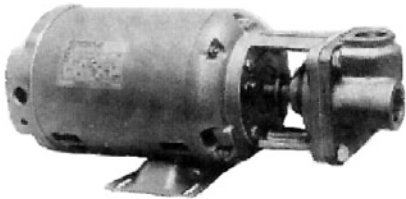
TABLE 1 - Solenoid Feed Mechanisms

Inlet Size	Solenoid Feed 50 PSIG Catalog No.	
	50 PSIG	125 PSIG
NPT		
1/2	SF050-050	SF050-125
3/4	SF075-050	SF075-125
1	SF100-050	SF100-125
1 1/4	SF125-050	SF125-125
1 1/2	SF150-050	SF150-125

### Pump Feed

Specify a pump feed if condensate is not required to be returned to the boiler and mains water pressure is not 10 psig or more above maximum boiler operating pressure. Note that the pump motor is normally powered from a separate source.

Suction side piping is 1" NPT for BFP240 and smaller and 1 1/4" for BFP345 and larger. Discharge piping is 1" NPT.



## To Order Specify

Quantity, catalog number, boiler kW rating, operating pressure, and motor voltage (if applicable).

TABLE 2 - Boiler Feed Pumps: 0 - 150 psig

Boiler kW	Motor			Catalog Number
	HP	Voltage	PH	
0-60	1/3	120/240	1	BFP060
60-150	1/2	120/240	1	BFP150
150-240	3/4	120/240	1	BFP240
240-345	1 1/2	Specify	3	BFP345
345-540	3	Specify	3	BFP540
540-990	5	Specify	3	BFP990

## Condensate Receiver Package

For closed systems, when condensate is to be returned to the boiler, a condensate return system is required. The system is packaged as one assembly made up of a feed pump selected from Table 2, a receiver tank, stand, makeup water inlet with float control, condensate inlet, vent, drain valve, strainer, sight glass assembly, and shut off valve.

TABLE 3 - Condensate Receiver Package Dimensions

Catalog Number	A		B		C	
	in	mm	in	mm	in	mm
CRP060	24	610	37	890	16 1/2	420
CRP150	24	610	35	890	16 1/12	420
CRP240	30	760	37	940	20 1/2	520
CRP345	42	1065	37	940	20 1/2	520
CRP540	48	1220	37	940	20 1/2	520
CRP780	48	1220	37	940	20 1/2	520
CRP990	60	1525	49	1245	27 1/4	690

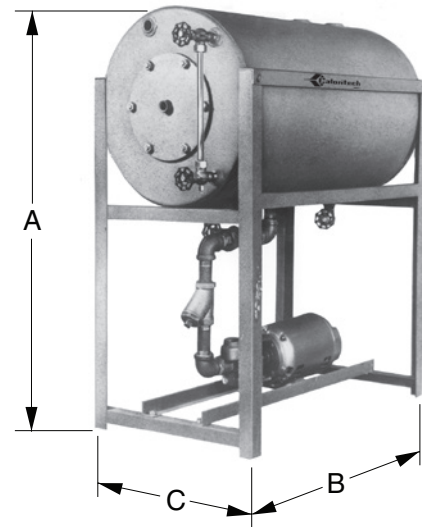


TABLE 4 - Condensate Receiver Package: 0 - 150 psig

Boiler kW	Tank Size		Motor H.P.	Catalog Number	Weight	
	Gal.	ℓ			lbs	kg
0-60	14	62	1/3	CRP060	125	55
60-150	14	62	1/2	CRP150	130	60
150-240	26	118	3/4	CRP240	160	75
240-345	36	165	1 1/2	CRP345	200	90
345-540	43	195	3	CRP540	240	110
540-780	43	195	5	CRP780	250	115
780-990	86	390	5	CRP990	325	150

## Blow Off Tanks

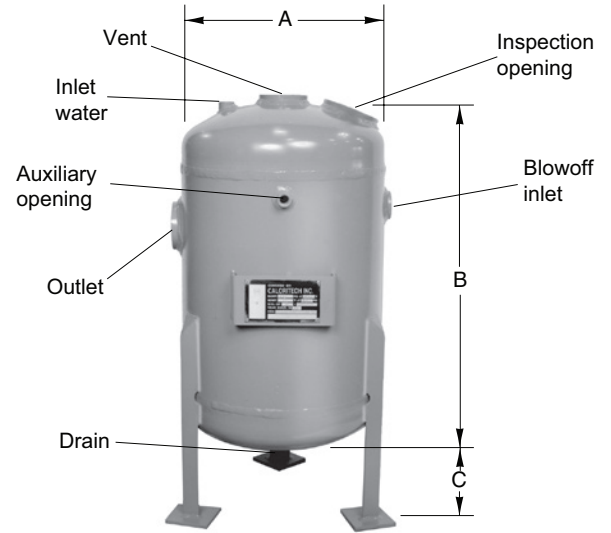
When the boiler pressure exceeds 15 psig (103 KPA), most jurisdictions prohibit the blow off from the boiler from being directly discharged into the sewer system. Registered blow off tanks for installation between the boiler and drain are listed in Table 6. Units are supplied with pressure gauge and drain valve.

### To Order Specify

Quantity, catalog number, boiler kW rating, and operating pressure.

**TABLE 5 - Blow Off Tank Dimensions**

Catalog Number	A		B		C	
	in	mm	in	mm	in	mm
BOT210	18	457	30	762	6	152
BOT428	24	610	39	991	6	152
BOT855	30	762	46	1168	6	152
BOT2000	36	914	44	1118	6	152



**TABLE 6 - Blow Off Tanks**

Boiler kW	Tank Volume		Tank Diameter		Connections					Catalog Number	Weight	
	Imp. Gal.	Litres	in	mm	Vent	Inlet Water	Blowoff Inlet	Outlet	Drain		lbs	kg
0-210	22	100	18	457	3	3/4	1 1/2	3	1 1/2	BOT210	250	115
210-428	50	225	24	610	3	3/4	1 1/2	3	1 1/2	BOT428	428	205
428-855	94	425	30	762	4	3/4	2	4	1 1/2	BOT855	650	295
855-2000	125	565	36	914	4	3/4	2	4	1 1/2	BOT2000	775	350

### Other Optional Equipment

1. Feed mechanism - choose from solenoid feed, pump feed or receiver feed package (see above)
2. Steam outlet globe valve
3. Auxiliary low water cutoff
4. Manual reset low water cutoff
5. Timed auto blowdown system
6. Timed surface blowdown system
7. Vacuum breaker
8. Manual surface blowdown metering valve
9. Steam superheater
10. High pressure alarm
11. Low pressure alarm
12. Audible alarm with silence
13. Pilot lights for each stage
14. Manual off/auto staging switch
15. Voltmeter with 3 position selector switch
16. Ammeter with 3 position selector switch
17. kW hour meter
18. Main disconnect (unfused) switch
19. Main automatic breaker
20. Safety door interlock switch
21. Proportional controller (standard over 95 amps)
22. Electronic sequencer (standard over 95 amps)
23. Motor starter with overloads
24. Ground fault indicator
25. Dual energy interface
26. Epoxy sealed elements
27. HRC power fusing

# Packaged Steam Boilers - Specifications

## 1. Scope

- 1.1 Supply an electrically heated steam boiler complete with standard equipment and options as indicated in the following specification.

## 2. General

- 2.1 The boiler shall be the electric resistance type VSB/VHSB/HSB as manufactured by Thermon Heating Systems.
- 2.2 The boiler shall be constructed to the latest edition of the ASME code with the design registered in \_\_\_\_\_.

## 3. Capacity

- 3.1 The minimum boiler output shall be \_\_\_\_\_ lbs/hr of steam from and at 100°C (212°F).
- 3.2 The boiler shall be rated at \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ kW, \_\_\_\_\_ HZ.
- 3.3 The boiler vessel shall be designed for an operating pressure of \_\_\_\_\_ psig (kPa) maximum.

## 4. Controls

- 4.1 The boiler shall be fully equipped with all electrical and mechanical controls so that it is complete and ready to operate.
- 4.2 Standard mechanical components provided shall include a pressure gauge with isolating stopcock, sight glass assembly, check valved on inlet, blowdown valve(s) as required, pressure controller(s), high pressure controller, and pressure relief valve(s).
- 4.3 Standard electrical components provided shall include a control circuit ON/OFF switch, fused control transformer, fused magnetic contactors derated to a maximum of 90% of their rated capacity, electronic low water controller, electronic feed water controller, pilot lights for "Power ON", "Heat ON", "Lower Water", and "High Pressure", and connection lugs for incoming power supply.
- 4.4 In addition to the standard components itemized in articles 4.2 and 4.3, the boiler shall come equipped with the following optional features: (specify - see pages E19 and E20 for options)

## 5. Flange Heaters

- 5.1 The boiler shall be equipped with flanged immersion heaters as manufactured by Thermon Heating Systems.
- 5.2 The flange heaters shall be Incoloy® sheathed and of low watt density.
- 5.3 (For VSB Only) The flange heaters shall be mounted vertically through the top of the vessel so as to minimize the build-up of solids on the heating elements.

## 6. Enclosure

- 6.1 The steam boiler shall be equipped with a full structural steel base supporting the vessel, control panel and sheet metal enclosure.
- 6.2 The entire enclosure shall be finished with a baked on epoxy finish (ASA-61 gray).
- 6.3 The boiler dimensions shall be approximately \_\_\_\_\_ high x \_\_\_\_\_ wide x \_\_\_\_\_ deep.

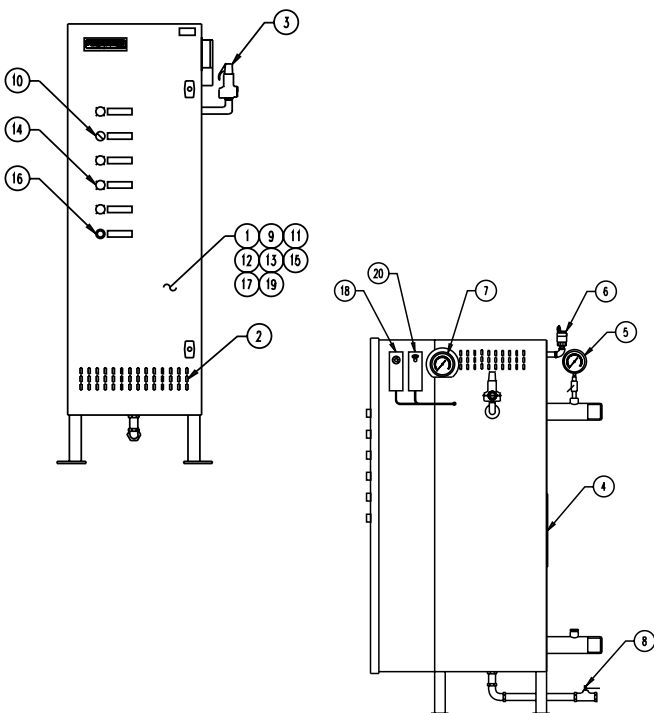
# Packaged Hot Water Boilers

## 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 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 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 detail no. 18
20	High temperature controller

## Physical Dimensions, Opening Sizes, Volumes, And Line Currents

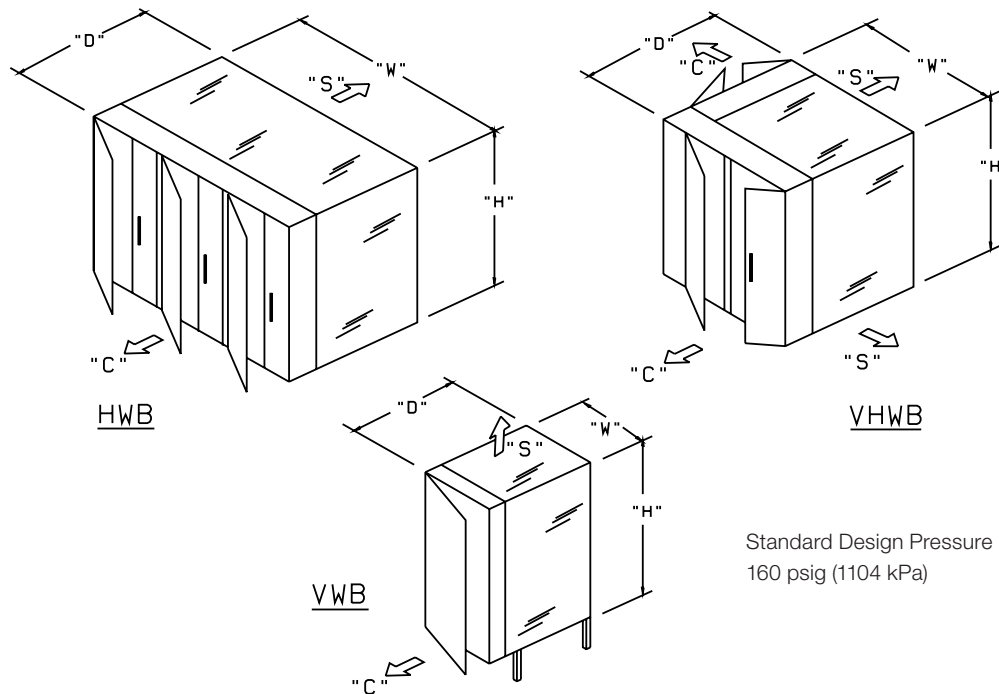
Listed below is a summary of the approximate minimum clearance requirements, piping sizes and volumes for the various standard boiler types and sizes.

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)

### 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)	24 (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 (2473)	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.



Shown with Optional Features

## 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.

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)	208, 240, 380, 416, 480, 600	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
<b>3Ø ONLY</b>							
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

**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.



Shown with Optional Features

**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 Steel	Galvanized	lbs	kg
165	11(15) or 5(15) + 5(18)	280, 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
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
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

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	1110	1116	1080	VWB-42-1100	3100 (1410)
1200	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	1500	1512	1485	VWB-42-1500	3300 (1500)
1750	Factory	1740	1755	1755	VWB-42-1750	3460 (1570)
1900	—	1890	1890	1890	VWB-42-1900	3460 (1570)

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)

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)

## 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. 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.

## 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.

# Calorifiers - VC & HC

## Electric Calorifiers

Caloritech™ types VC and HC electric calorifiers are essentially hot water storage tanks fitted with one or more flange heaters and a prewired control panel. Simply connect the water and power lines and the system is ready to perform. The tanks are insulated and enclosed with a painted sheet steel housing. Types VC have vertical vessels and types HC horizontal vessels.

Vessels are designed and constructed to ASME code requirements. Code stamping and registration is available on request. Three choices of inner shell materials cover most application requirements.

All units are equipped with a pressure relief valve. A thermometer is located at the top of the vessel near the outlet to provide a quick check on water temperature. Standard equipment also includes an inlet water diffuser, a temperature control thermostat, a high limit thermostat and a pressure gauge.

A 3" inspection opening is standard. Manholes are optional.

## kW Ratings

All heaters feature Incoloy® sheathed heating elements. The number and kW rating of the flanged heaters installed in the calorifier are determined from its intended use. Detailed guidelines on optimum sizing of tanks and heaters are covered in ASHRAE handbooks. Some local utilities will also provide assistance on request.

Figures 1 to 4 below represent typical curves which have been devised to assist in sizing. For example, if the storage tank capacity was set at 100 U.S. gallons and the office had a staff of 100, or 1 gallon per person, the required power input from Figure 1 would be 0.35kW/person x 100 persons = 35 kW.

Figure 1 Office Buildings

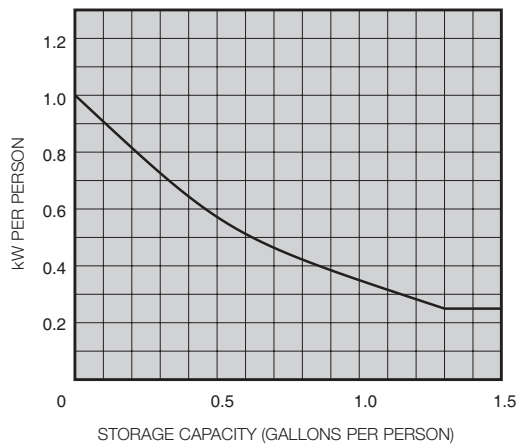


Figure 2 Motels

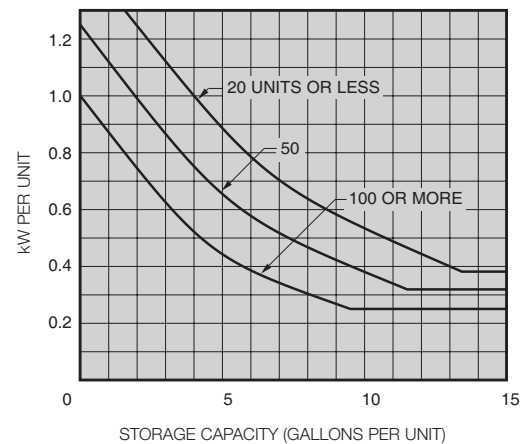


Figure 3 Apartment Buildings

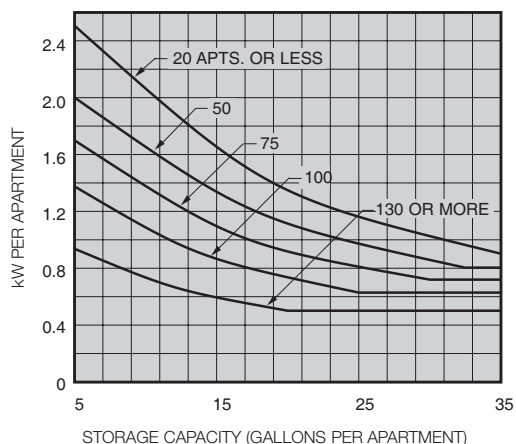
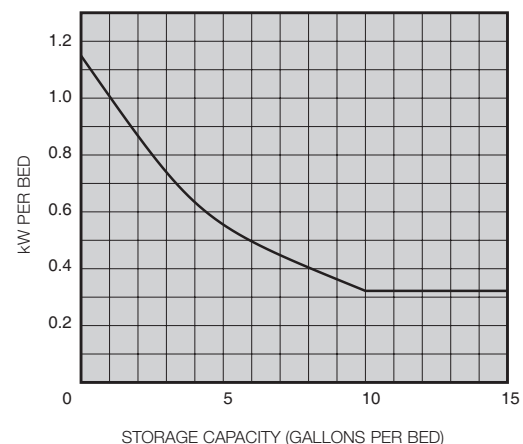


Figure 4 Nursing Homes



**Type VCF and HCF** - The VCF and HCF calorifiers have an uncoated steel shell best suited to non-potable water heating.

**Type VCC and HCC** -The VCC and HCC calorifiers have a sprayed copper inner shell for use in applications where high purity water is required.

**Type VCG and HCG** -The VCG and HCG calorifiers have a galvanized steel inner shell and are best suited for hard water storage.

### Optional Connections

- 11. Rupture Disc
- 12. Anti-Vacuum Valve
- 13. Manhole

### Pricing

Since all units are custom designed, a standard price list is impractical. If possible, choose from the typical tanks shown as a guide in Figures. 5 and 6. Also provide the required KW rating, supply voltage and pressure rating as part of your quotation request.

### Standard Connections

- 1. Immersion Heater
- 2. Secondary Flow
- 3. Thermometer
- 4. Pressure Gauge
- 5. Safety Valve
- 6. High Limit Stat
- 7. Secondary Return
- 8. Cold Feed
- 9. Drain
- 10. Control Panel

Figure 5 Type HC Calorifier

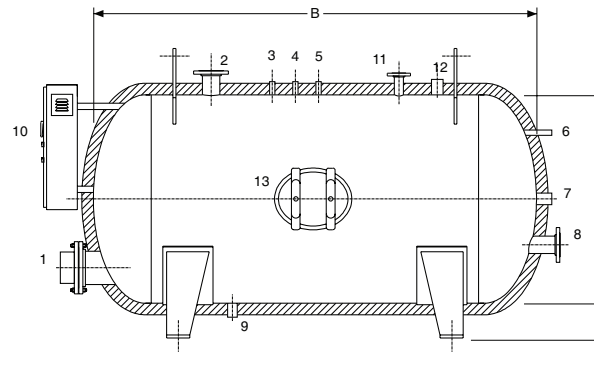
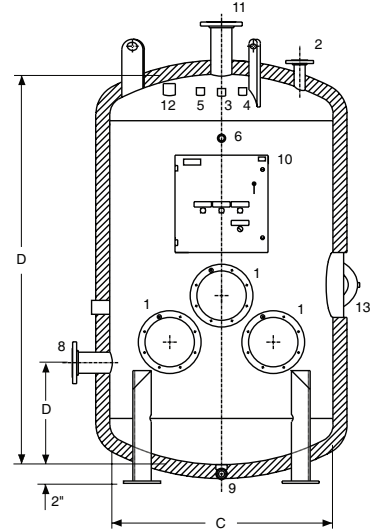


Figure 6 Type VC Calorifier



Litres	Capacity U.S. Gallons	Imperial Gallons	Dimensions				Tank Weight lbs (kg)
			A in (mm)	B in (mm)	C in (mm)	D in (mm)	
500	132	110	24 (610)	81 (2057)	24 (610)	81 (2057)	570 (260)
600	158	132	24 (610)	92 (2337)	24 (610)	92 (2337)	635 (290)
700	185	154	24 (610)	108 (2743)	30 (762)	71 (1803)	720 (328)
800	211	176	30 (762)	78 (1981)	30 (762)	78 (1981)	775 (350)
900	238	198	30 (762)	90 (2286)	30 (762)	90 (2286)	860 (390)
1000	264	220	36 (914)	70 (1778)	36 (914)	70 (1778)	860 (390)
1250	330	275	36 (914)	86 (2184)	36 (914)	86 (2184)	1050 (475)
1500	396	330	36 (914)	102 (2591)	42 (1067)	78 (1981)	1200 (545)
1750	462	385	36 (914)	118 (2997)	42 (1067)	90 (2286)	1300 (590)
2000	528	440	42 (1067)	96 (2438)	48 (1219)	76 (1930)	1700 (770)
2500	660	550	42 (1067)	120 (3048)	48 (1219)	96 (2438)	2150 (975)
3000	792	660	48 (1219)	116 (2946)	54 (1372)	92 (2337)	2350 (1065)
3500	924	770	48 (1219)	132 (3353)	60 (1524)	90 (2286)	2650 (1200)
4000	1056	880	48 (1219)	148 (3789)	60 (1524)	100 (2540)	2900 (1315)
4500	1188	990	54 (1372)	134 (3404)	60 (1524)	112 (2845)	3050 (1380)

# Packaged Hot Water Boilers/Calorifiers - Specifications

## 1. Scope

- 1.1 Supply an electrically heated hot water boiler/calorifier complete with standard equipment and options as indicated in the following specification.

## 2. 2.0 General

- 2.1 The boiler/calorifier shall be electric resistance type VWB/VC/etc. as manufactured by Thermon Heating Systems.
- 2.2 The boiler/calorifier shall be constructed to the latest edition of the ASME code with the design registered in \_\_\_\_\_.

## 3. Capacity

- 3.1 The minimum boiler/calorifier output shall be \_\_\_\_\_ Btu's/hr.
- 3.2 The boiler/calorifier shall be rated at \_\_\_\_\_ volts, \_\_\_\_\_ phase, \_\_\_\_\_ kW, \_\_\_\_\_ HZ.
- 3.3 The boiler/calorifier shall be suitable for operating under the following conditions:
- 3.4 - flow rate: \_\_\_\_\_ USGPM (l/s)
- 3.5 - inlet temperature: \_\_\_\_\_ °F (°C)
- 3.6 - outlet temperature: \_\_\_\_\_ °F (°C)
- 3.7 The boiler/calorifier vessel shall be designed for an operating pressure of \_\_\_\_\_ psig (kPa) maximum.

## 4. Controls

- 4.1 The boiler/calorifier shall be fully equipped with all electrical and mechanical controls so that it is complete and ready to operate.
- 4.2 Standard mechanical components provided shall include a pressure gauge with isolating stopcock, a temperature gauge, drain blowdown valve(s) as required, temperature controller, high temperature controller c/w manual reset and pressure relief valve(s).
- 4.3 Standard electrical components provided shall include a control circuit ON/OFF switch, fused control transformer, fused magnetic contactors derated to a maximum of 90% of their rated capacity, electronic low water controller, pilot lights for "Power ON", "Heat ON", "Low Water", and "High Temperature", and connection lugs for incoming power supply.
- 4.4 In addition to the standard components itemized in articles 4.2 and 4.3, the boiler/calorifier shall come equipped with the following optional features: (specify - see pages E26 and E28 for options)

## 5. Flange Heaters

- 5.1 The boiler/calorifier shall be equipped with flanged immersion heaters as manufactured by CCI Thermal Technologies Inc.
- 5.2 The flange heaters shall be Incoloy® sheathed and of low watt density.
- 5.3 (For VWB Boilers) The flange heaters shall be mounted vertically through the top of the vessel so as to minimize the build-up of solids on the heating elements.

or

- 5.4 (For Calorifiers) The flange heater shall be mounted horizontally as close as practical to the bottom of the vessel.

## 6. Enclosure

- 6.1 The hot water boiler/calorifier shall be equipped with a full structural steel base supporting the vessel, control panel and sheet metal enclosure.
- 6.2 The entire enclosure shall be finished with a baked on epoxy finish (ASA-61 gray).
- 6.3 The boiler/calorifier dimensions shall be approximately \_\_\_\_\_ high x \_\_\_\_\_ wide x \_\_\_\_\_ deep.
- 6.4 (For Calorifiers) The vessel storage volume shall be \_\_\_\_\_ U.S. gallons (litres).