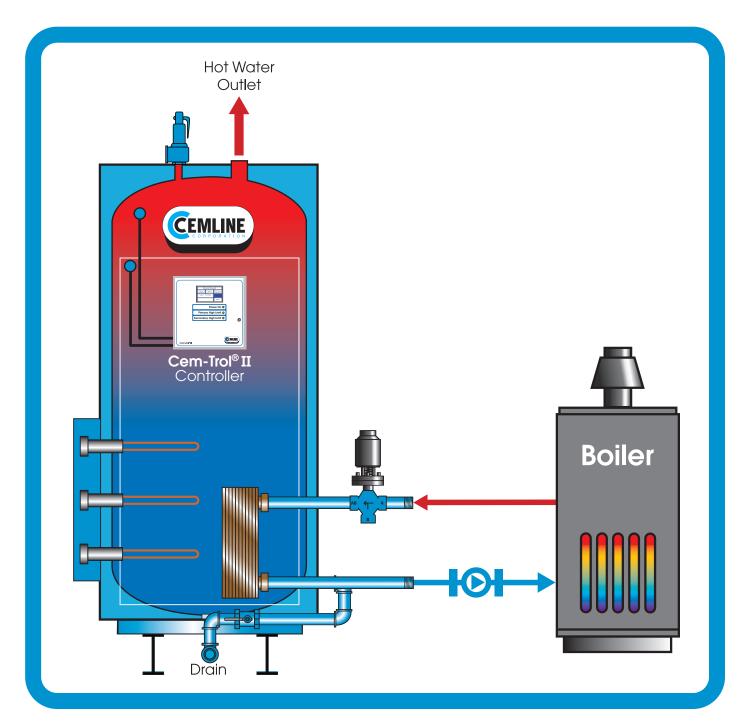
# CTB Series



### **Combination Water Heaters Dual Energy Source**





## Cemline® Combination Water Heaters Dual Source Water Heaters

As facilities attempt to minimize their energy foot print the approach of using multiple energy sources can be a solution for producing domestic hot water efficiently. The Cemline Combination Water Heaters (CTB Series) are designed to use multiple energy sources to provide domestic hot water. These dual source water heaters use a combination of electric, boiler water, or steam as the energy source.

The CTB Water Heater controls both energy sources electric/ boiler water or electric/steam. The electric can be used either during summer months when the steam/boiler water systems are shut down, during the night when electric prices can be lower, or as a booster to increase water temperature if rejection hot water is used to preheat water.

The operation of the water heater controls allow for the dual source energy to work together to produce hot water. The electric control open/closes contactors to turn on/off element to maintain proper temperature control. Electric uses incoloy immersion electric elements (208, 220, or 480 VAC). The boiler water/steam side

the control system modulates an electronic control valve to allow boiler water/steam to enter the heat exchanger and heat the tank. Boiler Water (or rejection hot water) use either a plate heat exchanger or a submerged U-Bend coil. Steam applications use a submerged U-Bend coil.

### **Basic Package Includes:**

A.S.M.E. CODE Constructed National Board Registered storage tank

STONESTEEL® lining

316-L Stainless Steel threaded connections

3" Fiberglass insulation

20 gauge steel jacket with hammertone enamel paint

Structural steel base

A.S.M.E. relief valve-pressure and temperature

Electronic temperature gauge

Water pressure gauge

Drain valve

Boiler Water: Brazed Plate or

U-Bend

Heat Exchanger

Steam: U-Bend

Heat Exchanger

Electric: Electric Immersion

Elements

Integral bronze circulator

Single safety system with electronic limit control

Electric, Air, Pilot Control Valve

- Boiler Water: 2 or 3-way

- Steam: 2-way

Boiler water temperature gauge or steam pressure gauge

Cem-Trol® II control module

Water divertiing valve

Steam:

- Strainer
- Main trap
- Drip trap
- Vacuum breakers

#### **Optional:**

316-L stainless steel vessel

Double walled heat exchanger

Boiler water pump

Over temperature dump valve

Openings for external water heater

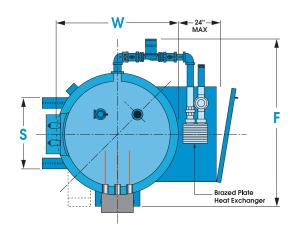


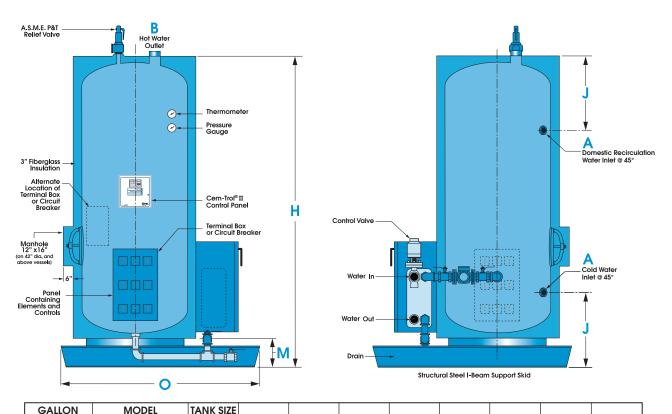


### Electric/Boiler Water-Brazed Plate Water Heaters Dimensional Data

Cemline Electric/Boiler Water-Brazed Plate Water Heaters can be supplied with either single wall or double wall heat exchangers. These vertical packaged heaters are normally piped as shown below.

### **Electric/Water-Brazed Plate**





1000	V 1000CIB-P	60" x 96"	64"	110"	84"	40"	88"	1
*Inlet and ou	tlet dimensions list	ed are sta	ndard size	. Please v	erify maxi	mum flow	rate.	
Larger sizes o	or sizes not shown (	contact lo	cal repres	entative				

W

28"

34"

40"

46"

DxL

24" x 63"

30" x 76"

36" x 80"

42" x 90"

48" x 96"

**NUMBER** 

V120CTB-P

V200CTB-P

V300CTB-P

V500CTB-P

V680CTB-P

CAPACITY

120

200

300

500

680

77"

90"

94"

104"

110"

0

48"

54"

60"

66"

72"

24"

28'

28"

30"

30"

F

52"

58"

64"

70"

76"

10"

10"

10"

10"

12"

12"

20"

24"

25"

32"

42"

46"

A & B\*

1 1/2"

1 1/2"

1 1/2"

1 1/2"

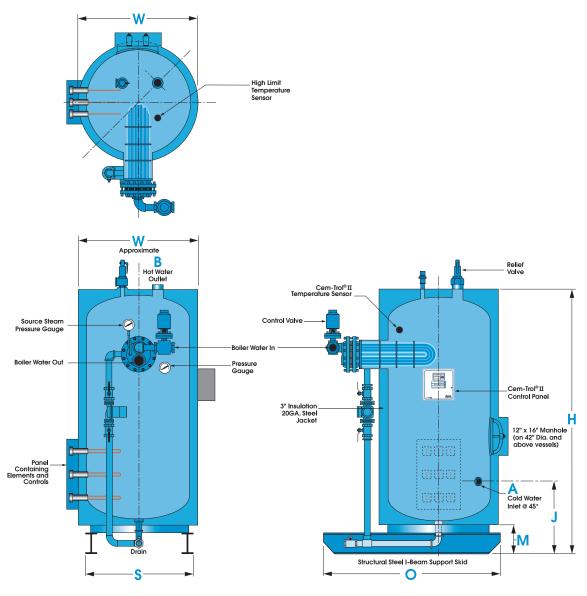
2"

2"

### Electric/Boiler Water-Coil Water Heaters Dimensional Data

Cemline Electric/Boiler Water-Coil Water Heaters can be supplied with either single or double wall brazed plate heat exchangers. These vertical packaged heaters are normally piped as shown below.

### **Electric/Boiler Water-Coil**



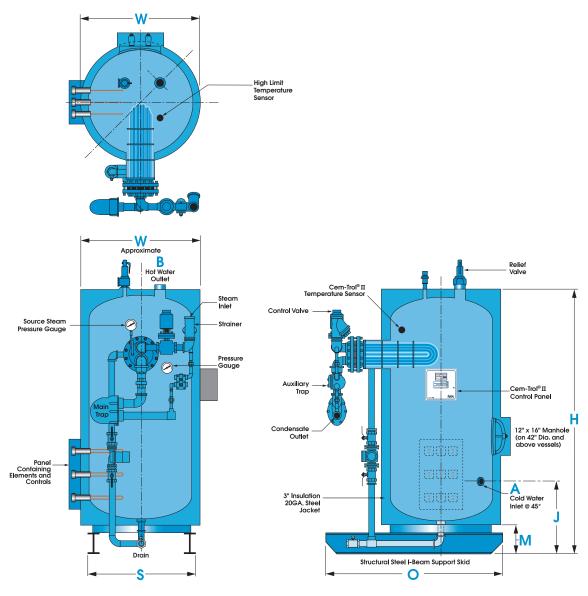
GALLON	MODEL	TANK SIZE								
CAPACITY	NUMBER	DxL	W	Н	0	J	F	М	S	A & B*
120	V120CTB-C	24" x 63"	28"	77"	48"	24"	52"	10"	20"	1 1/2"
200	V200CTB-C	30" x 76"	34"	90"	54"	28"	58"	10"	24"	1 1/2"
300	V300CTB-C	36" x 80"	40"	94"	60"	28"	64"	10"	25"	1 1/2"
500	V500CTB-C	42" x 90"	46"	104"	66"	30"	70"	10"	32"	1 1/2"
680	V680CTB-C	48" X 96"	52"	110"	72"	30"	76"	12"	42"	2"
1000	V1000CTB-C	60" X 96"	64"	110"	84"	40"	88"	12"	46"	2"

<sup>\*</sup>Inlet and outlet dimensions listed are standard size. Please verify maximum flow rate.

### Electric/Steam-Coil Water Heaters Dimensional Data

Cemline Electric/Steam Water Heaters can be supplied with either single or double wall brazed plate heat exchangers. These vertical packaged heaters are normally piped as shown below.

### Electric/Steam-Coil



GALLON CAPACITY	MODEL NUMBER	TANK SIZE D x L	W	н	0	1	F	М	ç	A & B*
120	V120CTB-C	24" x 63"	28"	77"	48"	24"	52"	10"	20"	1 1/2"
200	V200CTB-C	30" x 76"	34"	90"	54"	28"	58"	10"	24"	1 1/2"
300	V300CTB-C	36" x 80"	40"	94"	60"	28"	64"	10"	25"	1 1/2"
500	V500CTB-C	42" x 90"	46"	104"	66"	30"	70"	10"	32"	1 1/2"
680	V680CTB-C	48" X 96"	52"	110"	72"	30"	76"	12"	42"	2"
1000	V1000CTB-C	60" X 96"	64"	110"	84"	40"	88"	12"	46"	2"

<sup>\*</sup>Inlet and outlet dimensions listed are standard size. Please verify maximum flow rate.

### Dual Source Water Heaters-Sizing Charts

#### **Electric**

Electric Recovery Section
GPH Recovery 100°F Rise with KW

GPH		208V/3 Phase 240V/3 Phase		Phase	480V/3	Phase	
Recovery	Total KW	STEPS	AMPS	STEPS	AMPS	STEPS	AMPS
74	18	1	50	1	36	1	22
98	24	2	67	2	58	2	29
148	36	2	100	3	87	2	43
197	48	3	133	3	116	3	58
246	60	4	167	4	145	2	72
308	75	5	209	3	104	3	90
369	90	6	250	3	125	3	108
492	120	8	334	4	167	4	144
590	144	8	400	8	347	8	173
615	150	_	_	_	_	5	180
861	210	_		_	_	7	252
984	240	_	_	_	_	8	288
1107	270	_				9	325
1230	300		_	_	_	10	361

**Specifying Voltage and Phase by following code numbers.** (use in Model Numbers below)

208V/1 Phase = BY1 240V/1 Phase = B1 480V/1 Phase = C1 208V/3 Phase = BY3 240V/3 Phase = B3 480V/3 Phase = C3 380V/3 Phase = B1 415V/3 Phase = CY3

#### **U-Bend Coil**

Steam/Boiler Water Recovery Section GPH Recovery 100°F Rise with Hot Water or Various Steam Pressures Single Wall (SW) Coil: Copper, Double Walled (DW) Coil: Copper/Copper

	180°F Boil	er Water*	10 PSI Steam		15 PSI	Steam	25 PSI Steam		
	Recove	ry GPH	Recovery GPH		Recovery GPH		Recovery GPH		
Model No.	SW	DW	SW	DW	SW	DW	SW	DW	
430	85	70	275	200	300	270	300	290	
630	223	170	800	625	670	650	740	700	
830	375	350	1500	1200	1650	1200	1800	1700	
848	110	1075	2500	2700	2675	2600	2900	2800	
1036	1150	1125	2900	4200	3100	3000	3400	3300	
1236	1700	1675	4400	4200	4700	4600	5200	5100	
1436	2350	2325	5500	5300	5700	5500	6400	6300	
1448	3400	3375	7000	6000	7200	6600	8500	7500	

<sup>\*</sup>Boiler Water requirements based on 20°F temperature drop.

#### Plate Heat Exchanger

Boiler Water Recovery Section Single Wall or Double Wall

	Boiler V	Vater**	Boiler V	Vater**	Boiler Water** 160°F		
	200	0°F	180	D°F			
Model No.	Recovery GPH	BW GPM	Recovery GPH	BW GPM	Recovery GPH	BW GPM	
250	300	13	300	13	300	13	
500	600	26	600	26	600	26	
750	900	39	900	39	900	39	
1000	1200	52	1200	52	1200	52	
1250	1500	65	1500	65	1500	65	
1750	2100	91	2100	91	2100	91	
2000	2400	104	2400	104	2400	104	
2500	3000	130	3000	130	3000	130	

<sup>\*\*</sup>Boiler Water requirements based on 40°F temperature drop.

To Specify Model Number, state Gallons Storage, KW Output and Phase, Heat Exchanger Type, and Heat Exchanger Model Number. (use in Model Numbers below)

EXAMPLE:

500 CTB 120 830 Configuration Gallons Stonesteel Voltage/Phase UL Listing Heat Coil Model Number ΚW Exchanger Type P-Plate V-Vertical C-Coil

### Dual Source Water Heaters-Sample Specifications

For specifying Cemline Dual Source Water Heaters, select model from charts and use specification below. Please contact Cemline or your local representative for sizing or go to www.cemline.com to access on-line.

#### **Dual Source Water Heaters**

Dual Source Water Heater shall be Cemline Series CTB; factory assembled and packaged. Water heater shall be constructed in accordance with A.S.M.E. Code for a working pressure of 125 psig. The packaged water heater shall be constructed with a vertical steel tank, cement lined (or 316-L stainless steel) with 316-L stainless threaded openings.

Heater shall be mounted on a steel support skid and shall have concealed lifting lugs. Heater shall be insulated with 3" Fiberglass protected by an enameled metal jacket, 20 gauge minimum thickness.

Electric heater elements shall be individually flange mounted. Total KW sha
be volts,
phase, cycle.
Elements shall be controlled by immersion thermostats and electrically held

steps. All element circuits shall be fused with Class J fuses.

Control circuit shall operate on 120 volts supplied by an integral transformer for the control circuit. Both high voltage and low voltage side of transformer shall be fused and the low voltage side grounded to the heater and jacket in

Control circuit shall include one manual reset and one automatic reset high temperature thermostats with bulb located near top of tank and one electronic low water cut-off.

Elements, thermostats, contactors, transformers, low water cut-off, and high limit thermostats shall be factory wired to terminal strip.

**Boiler water heater** shall be factory assembled and piped including electronic operated 2 or 3-way temperature regulating valve. Heat exchanger shall be single wall copper brazed 316L Stainless Steel Plate Type (or double wall brazed, or single or double wall u-bend heat exchanger with 3/4" O.D. copper tube, copper wrapper baffles) and shall have an integral valved circulator to circulate domestic water through the heat exchanger into the bottom of the tank.

**Steam heater** shall be factory assembled and piped including incoming steam strainer, electronic, air, pilot temperature regulator, main and auxiliary float and thermostatic steam traps, and condensate strainer. 3/4" O.D. copper tubes, copper lined tube sheet, and steel or cast iron coil head. Coil shall have copper wrapper, shall be baffled and shall have an integral valved circulator to circulate the water across the coil into the bottom of the tank.

Heater shall be provided with a field programmable digital electronic limit control with LCD readout and digital thermometer.

Heater shall be furnished with a water pressure gauge and an A.S.M.E. pressure-temperature relief valve of sufficient size to relieve total BTU input of the coil.

Manufacturer shall assume responsibility for correct sizing of components to assure performance designated in design criteria.

·	•	•			
Heater shall be Cemline Tank dimensions					
Electric heater shall be phase,cycle.	KW. Eleme	nts designed to	o operate o	n volt	s,
Boiler water heat exchang of °F inlet °F outle		GPH from _	°F to	°F with	GPM
Steam heat exchanger to steam to the control valve		GPH from	_°F to°	F with	PSIG

accordance with A.S.M.E. Code.







### • Product Sizing Programs

- I.O.M. Manuals
- Drawings & Specifications
   Agent Locator
   Plant Tour

#### **Available Cemline Brochures**

- STONESTEEL®
- Water Storage Tanks
- Jacketed Storage Tanks
- Commercial Electric and Packaged Copper Coil Water Heaters
- Submerged Heating Coils
- Replacement Tube Bundles
- Steel Tanks
- Chilled Water Buffer Tanks
- System Efficiency Buffer Tanks
- Electric Boilers
- Stainless Compact Packaged Copper Coil Water Heaters - Semi-instantaneous, Instantaneous
- Unfired Steam Generators
- Condensed Catalog

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