

# CST Series



## Cemline STONESTEEL® Water Storage Tanks for Hot and Cold Water Storage Hot Water Generators



STONESTEEL is a registered trademark of Cemline Corporation

### CEMLINE CORPORATION

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# Cemline® STONESTEEL® Tank Lining

*STONESTEEL® tank lining has proven to be the most effective means of preventing corrosion in hot and cold water storage tanks and heaters.*

Cemline Corporation was incorporated in 1935 to make available to the public a unique method of corrosion prevention for hot water heaters, namely STONESTEEL®, a special hydraulic cement lining. This lining and its application were the results of previous research and development and enabled Cemline to become the original patent holder and originator of using

hydraulic cement lining to coat the inside of water tanks.

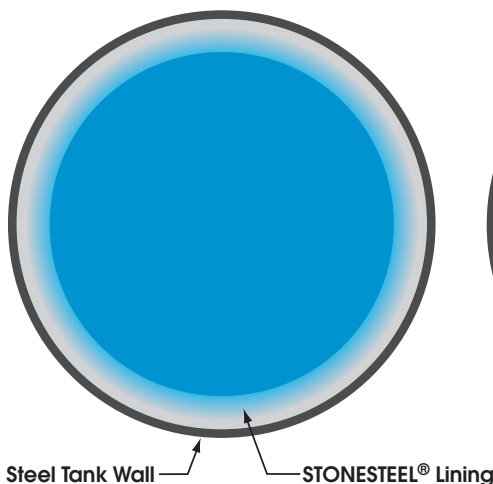
This lining has been time-tested and proven to be the most effective lining for hot water storage. Cemline STONESTEEL® lining is a formulation of hydraulic cement which has been designed to expand and contract with the same thermal co-efficient of

expansion and contraction as the steel tank shell. In this way, any rapid water temperature changes have no ill effect on the lining. The STONESTEEL® lining applied to tanks is the most durable, reliable, trouble-free lining known for hot water storage.

## An inside look at a STONESTEEL® Lined Tank

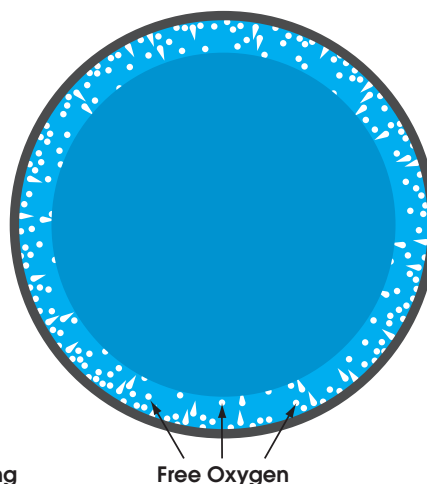
A STONESTEEL® tank is constructed with a steel shell which completely supports a uniform, water resistant lining of hydraulic STONESTEEL®. The rusting and corrosion common to metal tanks is prevented because the water touches only non-corrosive surfaces. The STONESTEEL® is applied as a continuous arch against the metal wall and will not be injured by ordinary use or handling.

### 1. STONESTEEL® Absorbs Water



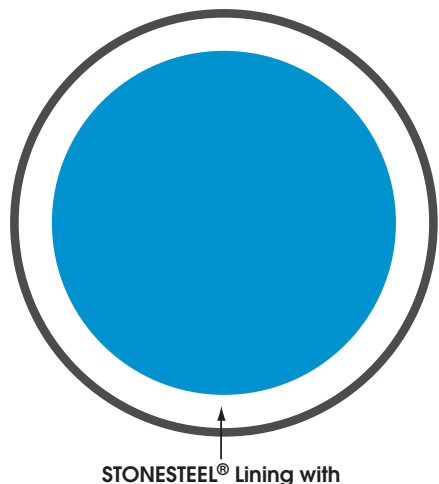
The vessel is filled with water, the STONESTEEL® absorbs water into its pore spaces.

### 2. Oxidation



The small amount of free oxygen in the water absorbed by the STONESTEEL® lining oxidizes against the steel tank wall, thus making the water within the lining inert.

### 3. Protection



The barrier created by the inert water absorbed in the STONESTEEL® lining prevents oxygenated water from coming into contact with the steel tank wall, thus preventing rusting and failure of the cement lined storage tank.



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# Construction and Design

## STONESTEEL® Storage Tanks

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*STONESTEEL® lined tanks as manufactured by Cemline Corporation are built with the highest quality materials and lined with our unique hydraulic STONESTEEL® lining.*

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Standard CST Package	Features
<b>Sizing</b> .....	Cemline STONESTEEL® tanks are manufactured in a wide range of sizes. The sizing and dimension guide shown in the following pages will assist you in choosing the correct gallon capacity and dimensions. Tank diameter is measured over the outside of the head, and length refers to overall tank length.
<b>Construction</b> .....	Cemline STONESTEEL® tanks are manufactured in strict accordance with ASME Code requirements and National Board Registration, and conform to Military Specifications, MIL-T-12295, Type II.
<b>Working Pressure</b> .....	Cemline STONESTEEL® tanks can be built in accordance with working pressures designed to suit particular jobs. Tanks are usually built for 125 psig working pressure, but we are able to provide tanks with pressure from 1 to 500 psig.
<b>Connections</b> .....	Cemline STONESTEEL® tanks are furnished with noncorrosive stainless steel threaded openings, when specified, to assure that water never contacts corrosive material. In accordance with ASME Code requirements, openings 4" and larger are furnished as 150# ANSI flanges. When flanged openings are provided, the neck of the flange is lined with STONESTEEL® tank lining to provide corrosion protection. All threaded openings are furnished as female NPT openings.
<b>Manhole</b> .....	Cemline STONESTEEL® tanks are provided with 12" x 16" elliptical manholes on 42" diameter and larger diameter tanks as required by the ASME Code. Other manhole sizes are available and can be furnished upon request. Smaller tank diameters do not require a manhole, but a manhole or handhole can be provided if so specified. Manhole or handhole openings are lined with STONESTEEL® to insure continuous protection against rust and corrosion.
<b>Lining</b> .....	Cemline Corporation, as the originator of STONESTEEL® lining takes pride in supplying the most durable tank lining available. The STONESTEEL® is normally applied approximately 1/2" thick to the tank interior.
<b>Wire Mesh</b> .....	Cemline STONESTEEL® tanks 42" diameter and larger are provided with wire mesh reinforcement welded to the interior tank wall to guarantee a proper bond of lining to the tank wall.
<b>Guarantee</b> .....	Cemline STONESTEEL® tanks are furnished with a five (5) year non-prorated guarantee.
<b>Exterior</b> .....	Cemline STONESTEEL® tanks are normally furnished with factory primed exterior. Special paints and coatings are available upon customer request.
<b>Specialties</b> .....	Cemline STONESTEEL® tanks can be provided as a factory insulated package (see Cemline Jacketed Storage Tank (JST Series) brochure). Cemline storage tanks can be supplied with Cemline tube bundles designed and sized to suit job requirements and customer specifications (see Cemline Submerged Heating Coil brochure).

# STONESTEEL® Storage Tanks

## Gallon Capacities

*The dimensions below are for STONESTEEL® storage tanks and are actual capacities in gallons.*

STONESTEEL® Tanks Capacity Gallons											
Length	Dia. 24"	Dia. 30"	Dia. 36"	Dia. 42"	Dia. 48"	Dia. 54"	Dia. 60"	Dia. 66"	Dia. 72"	Dia. 84"	Dia. 96"
5'	105	160	230	310	395	480	570	680	820	1080	1400
6'	125	190	275	375	475	575	710	850	1030	1350	1760
7'	145	225	325	440	560	670	850	1020	1250	1620	2120
8'	165	255	390	530	680	800	1000	1190	1460	1890	2480
9'	185	295	425	570	730	880	1130	1360	1670	2160	2840
10'	205	320	470	650	865	980	1300	1525	1980	2430	3200
11'	220	355	520	700	915	1085	1400	1690	2190	2700	3560
12'	245	390	565	770	1010	1190	1600	1860	2400	2970	3920
13'	270	420	615	840	1080	1290	1760	2020	2610	3240	4280
14'	290	455	665	910	1170	1390	1900	2190	2820	3500	4640
15'	315	490	715	970	1260	1500	1950	2365	3030	3780	5000
16'	340	525	765	1040	1340	1600	2090	2520	3250	4040	5360
17'	365	560	815	1110	1430	1710	2225	2690	3450	4320	5720
18'	390	595	865	1180	1520	1810	2360	2850	3660	4580	6080
19'	415	630	915	1250	1610	1910	2500	3020	3880	4860	6440
20'	440	665	965	1320	1700	2010	2630	3190	4000	5120	6800
21'	465	700	1015	1390	1790	2120	2770	3350	4200	5400	7160
22'	490	735	1065	1460	1880	2220	2900	3520	4400	5660	7520
23'	515	770	1115	1530	1970	2320	3050	3680	4600	5940	7880
24'	540	800	2265	1600	2060	2420	3200	3850	4800	6200	8240
25'	565	840	1215	1670	2150	2520	3350	4020	5000	6480	8600

Sizes in shaded area are normally not used.

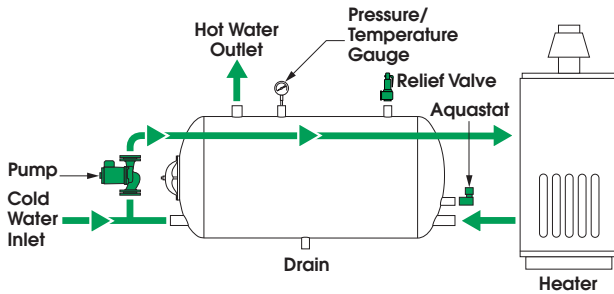


# Typical Piping Arrangements

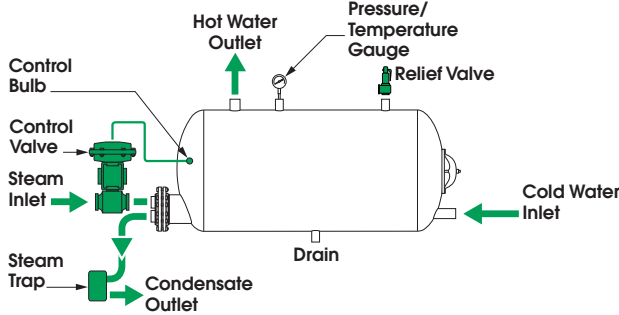
*STONESTEEL® storage tanks are normally piped as shown below. Tapping locations can be relocated to suit installation requirements. We will fabricate tanks with the location and sizes of openings to fit customer design.*

## Typical Horizontal Systems

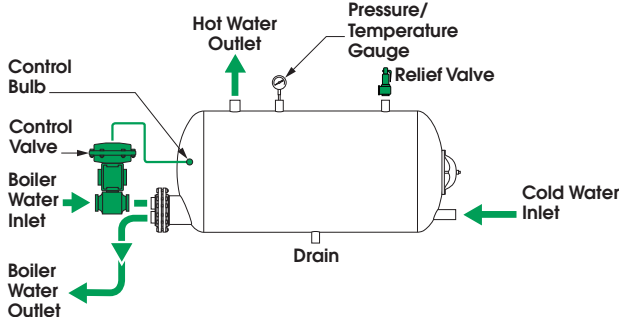
### with External Heater



### with Steam Heating

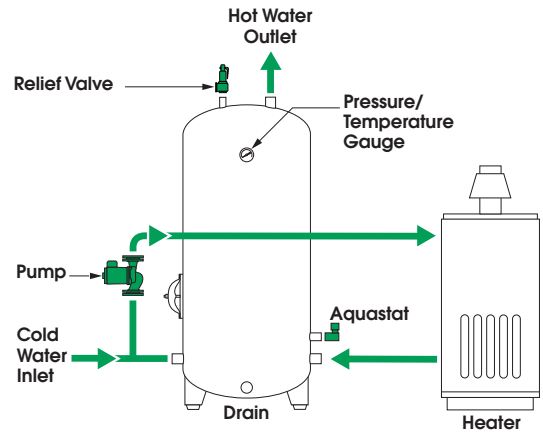


### with Boiler Water Heating

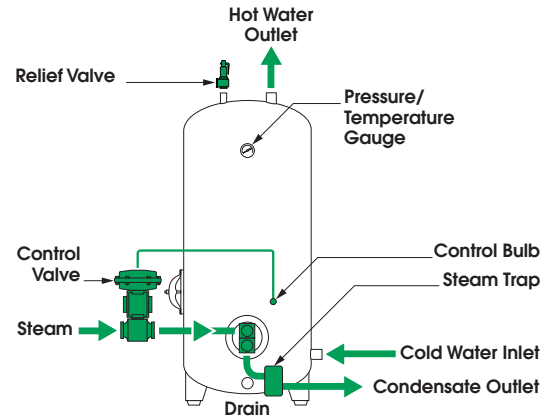


## Typical Vertical Systems

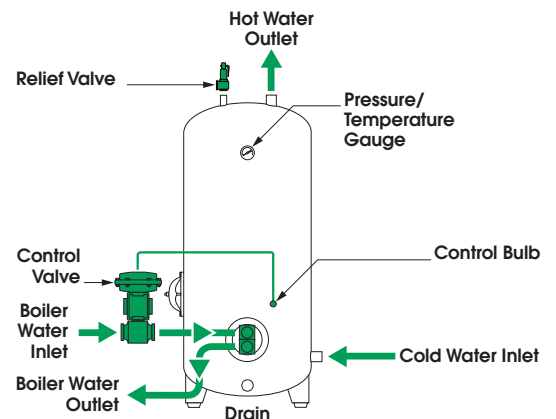
### for use with External Heater



### for use with Steam Heating



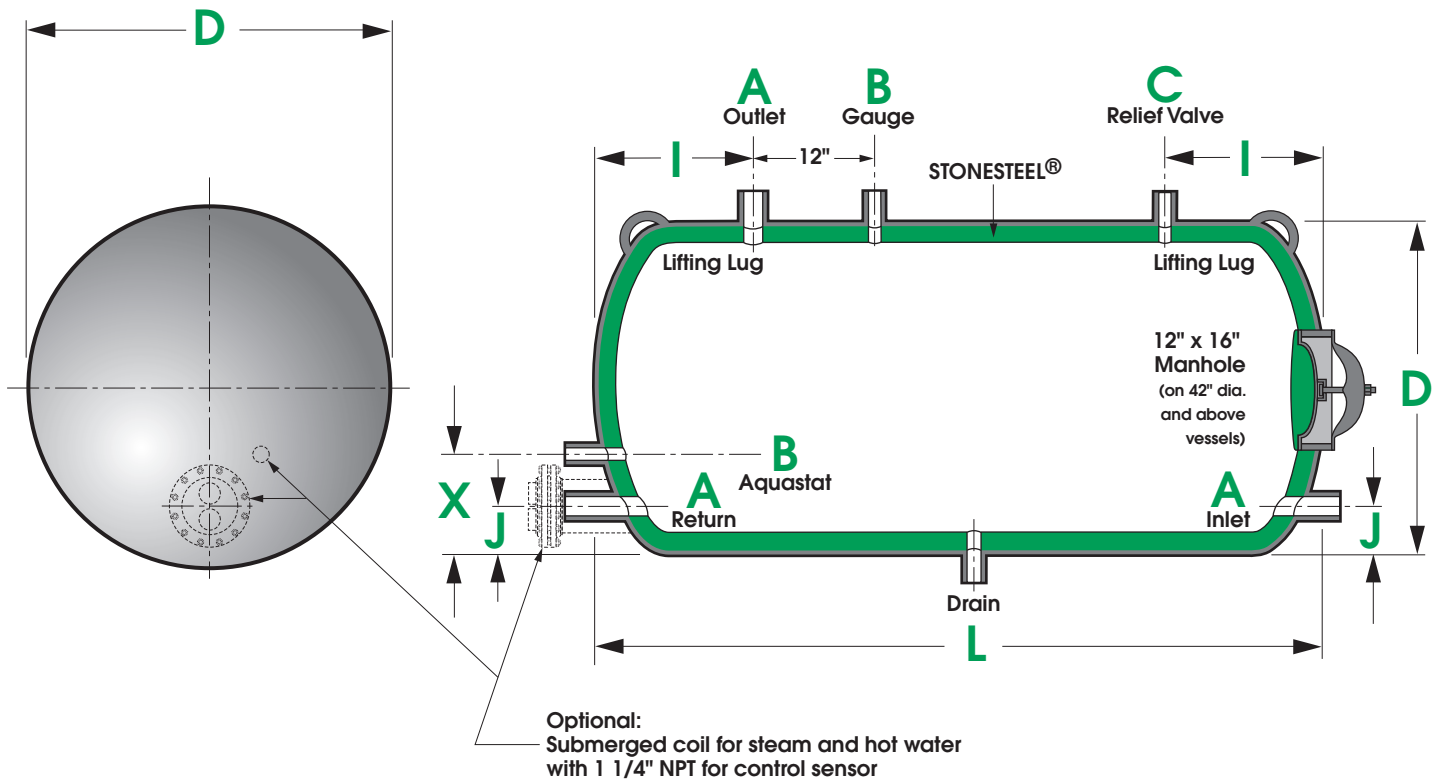
### for use with Boiler Water Heating



# CST Series Dimensional Data — Horizontal

*Cemline CST Series STONESTEEL® horizontal storage tanks are normally furnished as shown below. Tapping sizes and locations can be relocated to suit installation requirements.*

## Dimensions



\* For Submerged coil sizing, see Cemline Submerged Heating Coil catalog section or go to [www.cemline.com](http://www.cemline.com) for Automated Sizing Program.

# CST Series

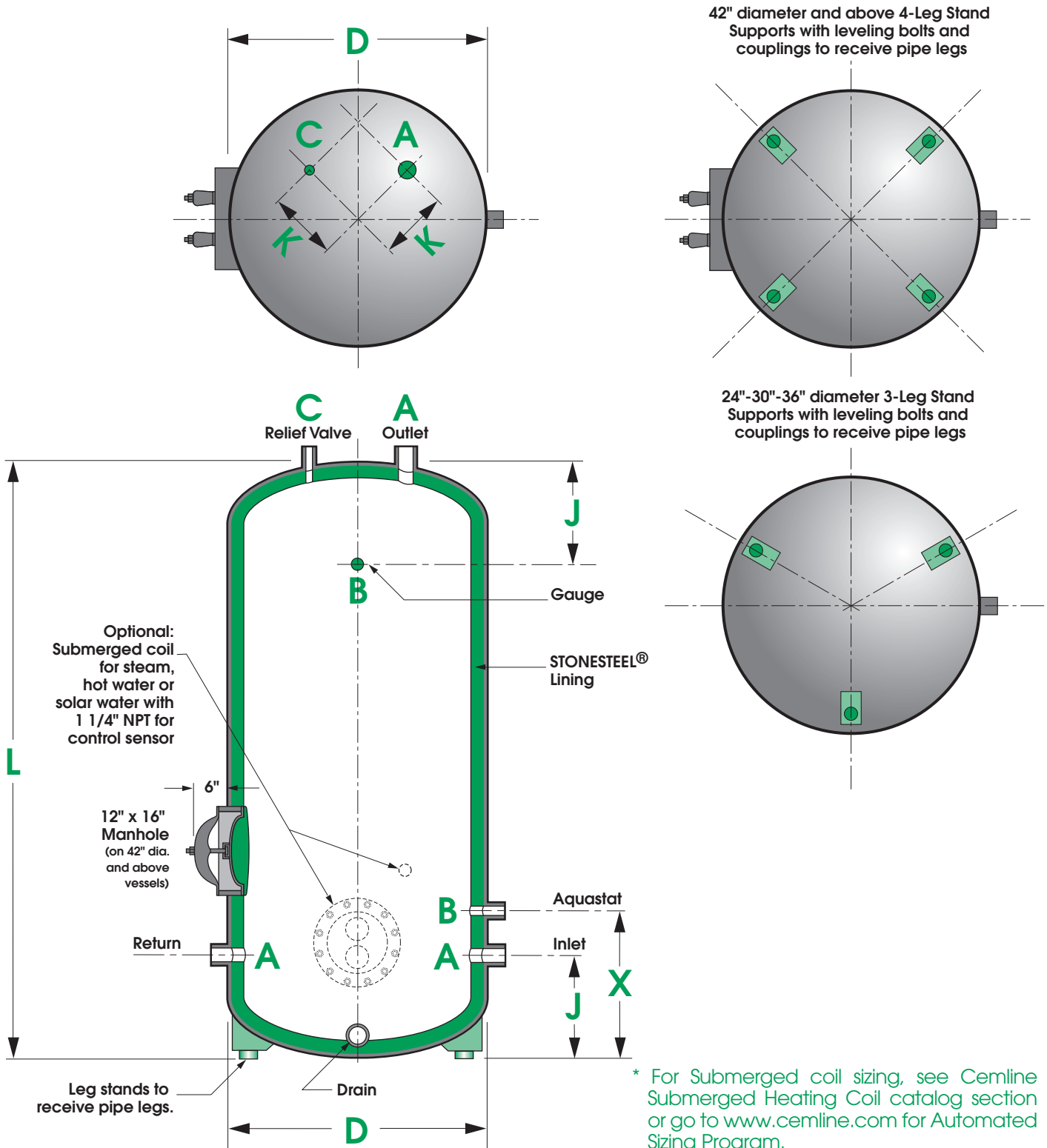
Gallon Capacity	Model No.	Tank Size D x L	I	J	X	A	B	C	WEIGHT POUNDS
100	H100CST	24" x 58"	15"	4"	9"	1-1/2"	3/4"	1"	400
120	H120CST	24" x 63"	15"	4"	9"	1-1/2"	3/4"	1"	480
140	H140CST	24" x 84"	15"	4"	9"	1-1/2"	3/4"	1"	560
165	H165CST	24" x 96"	15"	4"	9"	1-1/2"	3/4"	1"	640
200	H200CST	30" x 76"	18"	4"	9"	1-1/2"	3/4"	1"	730
225	H225CST	30" x 84"	18"	4"	9"	1-1/2"	3/4"	1"	780
255	H255CST	30" x 96"	18"	4"	9"	1-1/2"	3/4"	1"	880
320	H320CST	30" x 120"	18"	4"	9"	1-1/2"	3/4"	1"	1100
275	H275CST	36" x 72"	18"	4"	9"	1-1/2"	3/4"	1"	900
325	H325CST	36" x 84"	18"	4"	9"	1-1/2"	3/4"	1"	1030
390	H390CST	36" x 96"	18"	4"	9"	1-1/2"	3/4"	1"	1170
470	H470CST	36" x 120"	18"	4"	9"	1-1/2"	3/4"	1"	1540
565	H565CST	36" x 144"	18"	4"	9"	1-1/2"	3/4"	1"	1820
440	H440CST	42" x 84"	18"	5"	10"	2"	3/4"	1-1/2"	1350
530	H530CST	42" x 96"	18"	5"	10"	2"	3/4"	1-1/2"	1500
650	H650CST	42" x 120"	18"	5"	10"	2"	3/4"	1-1/2"	1800
770	H770CST	42" x 144"	18"	5"	10"	2"	3/4"	1-1/2"	2150
560	H560CST	48" x 84"	18"	5"	10"	2"	3/4"	1-1/2"	1730
680	H680CST	48" x 96"	18"	5"	10"	2"	3/4"	1-1/2"	1940
730	H730CST	48" x 108"	18"	5"	10"	2"	3/4"	1-1/2"	2160
865	H865CST	48" x 120"	18"	5"	10"	2"	3/4"	1-1/2"	2370
1010	H1010CST	48" x 144"	18"	5"	10"	2"	3/4"	1-1/2"	2800
1080	H1080CST	48" x 156"	18"	5"	10"	2"	3/4"	1-1/2"	3020
1170	H1170CST	48" x 168"	18"	5"	10"	2"	3/4"	1-1/2"	3240
670	H670CST	54" x 84"	24"	5"	10"	2"	3/4"	1-1/2"	2080
800	H800CST	54" x 96"	24"	5"	10"	2"	3/4"	1-1/2"	2330
980	H980CST	54" x 120"	24"	5"	10"	2"	3/4"	1-1/2"	2800
1190	H1190CST	54" x 144"	24"	5"	10"	2"	3/4"	1-1/2"	3300
1390	H1390CST	54" x 168"	24"	5"	10"	2"	3/4"	1-1/2"	3800
1000	H1000CST	60" x 96"	24"	5"	10"	2"	3/4"	1-1/2"	2600
1300	H1300CST	60" x 120"	24"	5"	10"	2"	3/4"	1-1/2"	3130
1600	H1600CST	60" x 144"	24"	5"	10"	2"	3/4"	1-1/2"	3680
1900	H1900CST	60" x 168"	24"	5"	10"	2"	3/4"	1-1/2"	4220
1380	H1380CST	72" x 96"	24"	6"	11"	2-1/2"	3/4"	1-1/2"	3650
1980	H1980CST	72" x 120"	24"	6"	11"	2-1/2"	3/4"	1-1/2"	4320
2400	H2400CST	72" x 144"	24"	6"	11"	2-1/2"	3/4"	1-1/2"	5000
2580	H2580CST	72" x 168"	24"	6"	11"	2-1/2"	3/4"	1-1/2"	5660
2780	H2780CST	72" x 180"	24"	6"	11"	2-1/2"	3/4"	1-1/2"	6000
1890	H1890CST	84" x 96"	30"	7"	12"	3"	3/4"	1-1/2"	5900
2430	H2430CST	84" x 120"	30"	7"	12"	3"	3/4"	1-1/2"	7100
2970	H2970CST	84" x 144"	30"	7"	12"	3"	3/4"	1-1/2"	8300
3500	H3500CST	84" x 168"	30"	7"	12"	3"	3/4"	1-1/2"	9500
3780	H3780CST	84" x 180"	30"	7"	12"	3"	3/4"	1-1/2"	10100
4040	H4040CST	84" x 192"	30"	7"	12"	3"	3/4"	1-1/2"	10700
4320	H4320CST	84" x 204"	30"	7"	12"	3"	3/4"	1-1/2"	11300
3200	H3200CST	96" x 120"	30"	8"	13"	3"	3/4"	1-1/2"	9500
3920	H3920CST	96" x 144"	30"	8"	13"	3"	3/4"	1-1/2"	11100
4640	H4640CST	96" x 168"	30"	8"	13"	3"	3/4"	1-1/2"	12750
5000	H5000CST	96" x 180"	30"	8"	13"	3"	3/4"	1-1/2"	13560
5360	H5360CST	96" x 192"	30"	8"	13"	3"	3/4"	1-1/2"	14370
5720	H5720CST	96" x 204"	30"	8"	13"	3"	3/4"	1-1/2"	15000
6080	H6080CST	96" x 216"	30"	8"	13"	3"	3/4"	1-1/2"	16000

# CST Series

## Dimensional Data — Vertical

Cemline CST Series STONESTEEL® vertical storage tanks are normally furnished as shown below. Tapping sizes and locations can be relocated to suit installation requirements.

### Dimensions





# CST Series

Gallon Capacity	Model No.	Tank Size D x L	J	X	A	B	C	K	WEIGHT POUNDS
120	V120CST*	24" x 63"	15"	20"	2-1/2"	3/4"	3/4"	8"	480
140	V140CST	24" x 84"	15"	20"	1-1/2"	3/4"	3/4"	8"	560
165	V165CST	24" x 96"	15"	20"	1-1/2"	3/4"	3/4"	8"	640
200	V200CST*	30" x 76"	16"	21"	2-1/2"	3/4"	1"	8"	730
225	V225CST	30" x 84"	16"	21"	1-1/2"	3/4"	1"	8"	780
255	V255CST	30" x 96"	16"	21"	1-1/2"	3/4"	1"	8"	880
275	V275CST	36" x 72"	16"	21"	1-1/2"	3/4"	1"	8"	900
300	V300CST*	36" x 80"	16"	21"	2-1/2"	3/4"	1"	8"	960
390	V390CST	36" x 96"	16"	21"	1-1/2"	3/4"	1"	8"	1170
425	V425CST	36" x 108"	16"	21"	1-1/2"	3/4"	1"	8"	1400
470	V470CST	36" x 120"	16"	21"	1-1/2"	3/4"	1"	8"	1550
375	V375CST	42" x 72"	18"	23"	2"	3/4"	1"	10"	1200
440	V440CST	42" x 84"	18"	23"	2"	3/4"	1"	10"	1340
500	V500CST*	42" x 90"	18"	23"	2-1/2"	3/4"	1"	10"	1430
570	V570CST	42" x 108"	18"	23"	2"	3/4"	1"	10"	1670
650	V650CST	42" x 120"	18"	23"	2"	3/4"	1"	10"	1850
700	V700CST	42" x 132"	18"	23"	2"	3/4"	1"	10"	2000
770	V770CST	42" x 144"	18"	23"	2"	3/4"	1"	10"	2150
560	V560CST	48" x 84"	18"	23"	2"	3/4"	1-1/2"	10"	1750
680	V680CST	48" x 96"	18"	23"	2"	3/4"	1-1/2"	10"	1950
730	V730CST	48" x 108"	18"	23"	2"	3/4"	1-1/2"	10"	2150
865	V865CST	48" x 120"	18"	23"	2"	3/4"	1-1/2"	10"	2400
915	V915CST	48" x 132"	18"	23"	2"	3/4"	1-1/2"	10"	2500
1010	V1010CST	48" x 144"	18"	23"	2"	3/4"	1-1/2"	10"	2800
670	V670CST	54" x 84"	18"	23"	2"	3/4"	1-1/2"	10"	2080
800	V800CST	54" x 96"	18"	23"	2"	3/4"	1-1/2"	10"	2330
880	V880CST	54" x 108"	18"	23"	2"	3/4"	1-1/2"	10"	2570
980	V980CST	54" x 120"	18"	23"	2"	3/4"	1-1/2"	10"	2800
1085	V1085CST	54" x 132"	18"	23"	2"	3/4"	1-1/2"	10"	3060
1190	V1190CST	54" x 144"	18"	23"	2"	3/4"	1-1/2"	10"	3300
850	V850CST	60" x 84"	18"	23"	2"	3/4"	1-1/2"	10"	2350
1000	V1000CST	60" x 96"	18"	23"	2"	3/4"	1-1/2"	10"	2600
1130	V1130CST	60" x 108"	18"	23"	2"	3/4"	1-1/2"	10"	2850
1300	V1300CST	60" x 120"	18"	23"	2"	3/4"	1-1/2"	10"	3150
1400	V1400CST	60" x 132"	18"	23"	2"	3/4"	1-1/2"	10"	3400
1600	V1600CST	60" x 144"	18"	23"	2"	3/4"	1-1/2"	10"	3650
1180	V1180CST	72" x 84"	23"	28"	2 1/2"	3/4"	1-1/2"	12"	3350
1380	V1380CST	72" x 96"	23"	28"	2 1/2"	3/4"	1-1/2"	12"	3650
1600	V1600CST	72" x 108"	23"	28"	2 1/2"	3/4"	1-1/2"	12"	4000
1980	V1980CST	72" x 120"	23"	28"	2 1/2"	3/4"	1-1/2"	12"	4350
2480	V2480CST	72" x 144"	23"	28"	2 1/2"	3/4"	1-1/2"	12"	5000
1620	V1620CST	84" x 84"	27"	32"	3"	3/4"	1-1/2"	12"	5270
1890	V1890CST	84" x 96"	27"	32"	3"	3/4"	1-1/2"	12"	5870
2160	V2160CST	84" x 108"	27"	32"	3"	3/4"	1-1/2"	12"	6470
2430	V2430CST	84" x 120"	27"	32"	3"	3/4"	1-1/2"	12"	7080
2700	V2700CST	84" x 132"	27"	32"	3"	3/4"	1-1/2"	12"	7680
2970	V2970CST	84" x 144"	27"	32"	3"	3/4"	1-1/2"	12"	8280
2120	V2120CST	96" x 84"	29"	34"	3"	3/4"	1-1/2"	12"	7060
2480	V2480CST	96" x 96"	29"	34"	3"	3/4"	1-1/2"	12"	7900
2840	V2840CST	96" x 108"	29"	34"	3"	3/4"	1-1/2"	12"	8700
3200	V3200CST	96" x 120"	29"	34"	3"	3/4"	1-1/2"	12"	9500
3560	V3560CST	96" x 132"	29"	34"	3"	3/4"	1-1/2"	12"	10300
3920	V3920CST	96" x 144"	29"	34"	3"	3/4"	1-1/2"	12"	11100

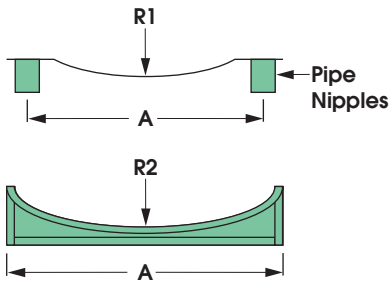
\* Stock sizes available for quick shipment.

# STONESTEEL® Storage Tanks

## Tank Support

Cemline offers a variety of supports for both horizontal and vertical storage tanks. Standard supports are shown below.

### Saddles



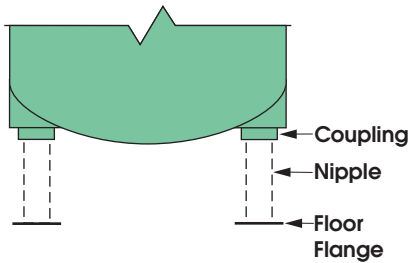
24" through 36"  
R1 = Tank radius (1/2 diameter)

42" through 96"  
R2 = Tank radius (1/2 diameter)

Dia.	"A"	Dia.	"A"
24	22"	54	22"
30	24"	60	24"
36	26"	66	28"
		72	30"
42	18"	84	42"
48	20"	96	42"

Note:  
Normally two saddles are used on tanks up to 16' length.  
Three saddles over 16' tank length.

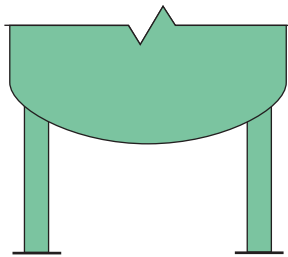
### Supports for Pipe Legs



Most popular type of vertical support – Allows installer to level to fit floor by adjusting pipe nipples.

Tank Diameter	Coupling Size	Number of Flanges
12" - 20"	1"	3
24" - 36"	1½"	3
42"	2"	4
48"	2"	4
54" - 60"	2½"	4
72" - up	3"	4

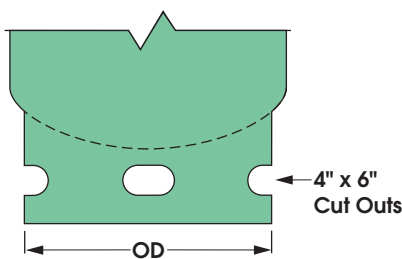
### Angle Legs



Tanks can be furnished with three or four angle legs.

Tank Diameter	Angle Size	Number of Legs
24" - 30"	1½" x 1½" x 3/16"	3
36"	2" x 2" x 1/4"	3
42" - 48"	3" x 3" x 1/4"	3
54" - 60"	3" x 3" x 1/4"	3
66" - up	4" x 4" x 1/4"	4

### Ring Base



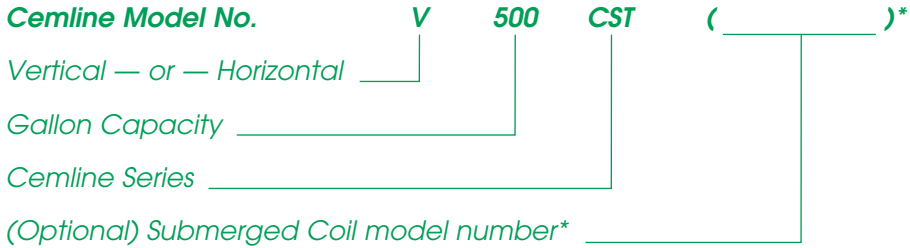
Normally used with air receivers – not recommended for water tanks as external corrosion can occur in ring.

Note:  
Outside diameter of ring is 6" less than diameter of tank.

# CST Series — STONESTEEL® Storage Tanks Sample Specification

To specify a Celine CST Series STONESTEEL® storage tank, choose the desired storage section in horizontal or vertical configuration and use specification as shown below.

*Example — To specify a vertical 500 gallon jacketed storage tank specify:*



Celine CST Series STONESTEEL® storage tank shall be furnished. The steel storage tank shall be constructed in accordance with Section VIII of the ASME Code for +125 psig working pressure. The tank shall be registered with the National Board of Boiler and Pressure Vessel Inspectors and Certificate of Shop Inspection shall be furnished. The tanks shall be lined with not less than 1/2" thick STONESTEEL® cement lining, and all threaded openings shall be of noncorrosive. Tanks above 36" diameter shall have wire mesh completely welded over the interior prior to application of lining. A 12" x 16" manhole shall be furnished as required by ASME Code on tanks above 42" diameter. Tank shall be mounted (horizontally on saddles) or (vertically with couplings for pipe legs). Storage tank shall be Celine Model \_\_\_\_\_.

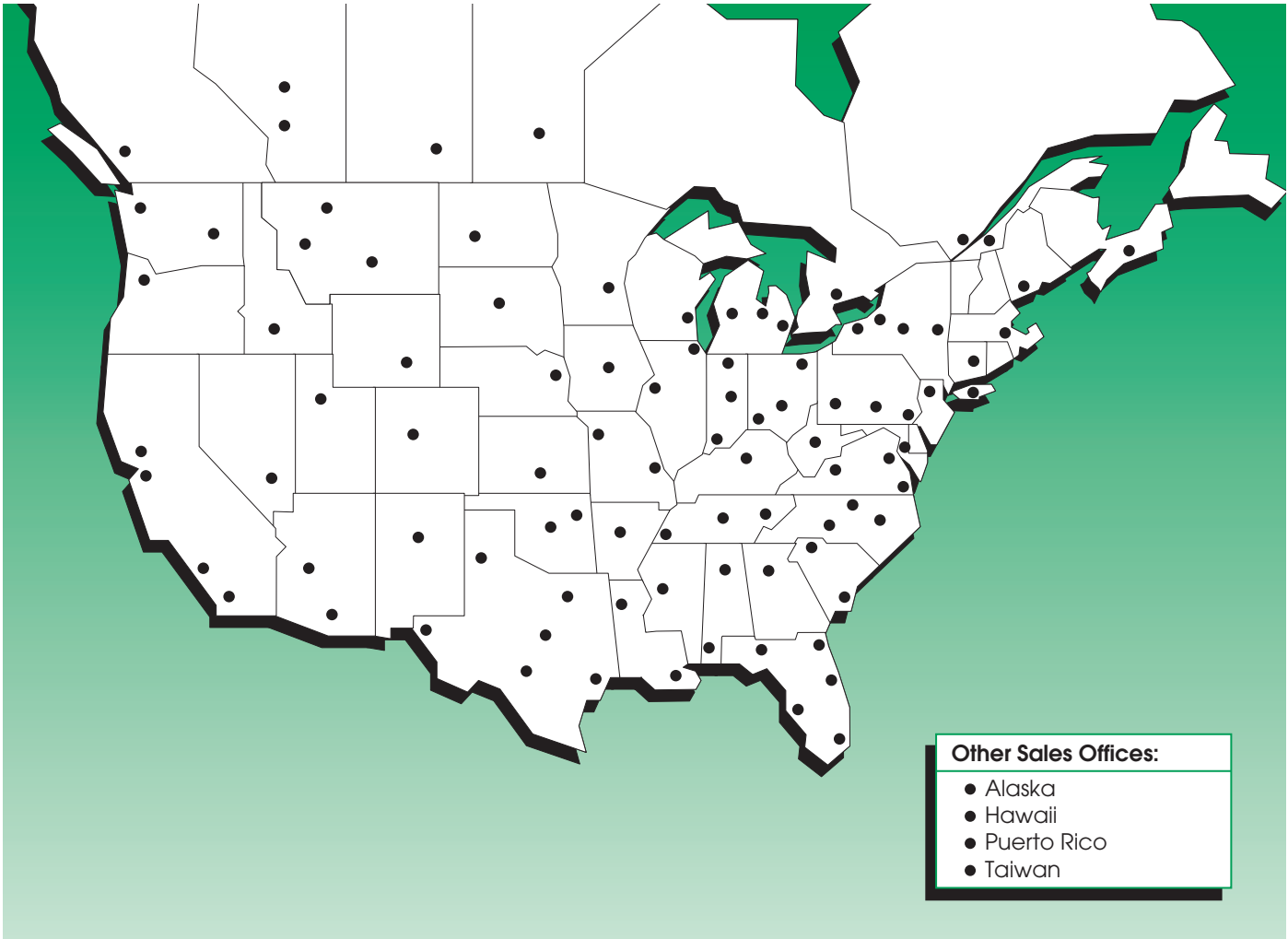
\*For submerged coil sizing and model number, refer to Celine Submerged Heating Coil catalog section or go to [www.celine.com](http://www.celine.com) for Automated Sizing Program.

When submerged heating coil is required, add the following:

Tank shall be furnished with submerged U-Bend copper coil 3/4" O.D. copper tubes, designed to heat \_\_\_\_\_ GPH, from \_\_\_\_\_°F. to \_\_\_\_\_°F. when furnished with \_\_\_\_\_. (specify steam pressure, boiler water temperature, solar temperature, or condensate temperature and flow rate).

+ Working pressure can be also furnished at 100 or 150 psig as standard. Other working pressures are available.

# Sales Offices



#### Other Sales Offices:

- Alaska
- Hawaii
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- www.cemline.com**
- Graphical Interfaces
  - Informational Sections
  - Agent Locator
  - Plant Tour
  - Sizing programs for all products

#### Catalog Brochures Available

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

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