

# SWH Series



## STONESTEEL Packaged Copper Coil Water Heaters *Steam/Boiler Water/High Temperature Hot Water- Vertical or Horizontal*

**NOW AVAILABLE**  
Automated On-line  
Sizing Program



STONESTEEL is a Registered Trademark of Cemline Corporation

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# Advantages of Celine Packaged Steam—Boiler Water Heaters

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*Celine STONESTEEL® packaged copper coil water heaters are the most economical method of furnishing domestic hot water when steam, boiler or high temperature hot water is available.*

Celine STONESTEEL® water heaters provide a high quality, high capacity, packaged water heater for use with steam, boiler water, or high temperature hot water as the heating medium.

Celine SWH comes in a wide selection of capacities which are adequate for most domestic hot water applications. Customer can mix and match storage and recovery to suit any application.

Factory packaging keeps contractor installation time to a minimum; the only connections required are cold and hot water lines and connections of steam, condensate and electric.

## Standard SWH Package

## Features

- STONESTEEL® Tank** ..... Prevents rust and corrosion.
- Vessel-ASME Code constructed National Board Registered** ..... ASME Code stamping and Registration offers the assurance of quality controlled construction.
- U-Bend heating coil** ..... Sized to handle specific load requirements.
- 3" Fiberglass insulation** ..... Prevents heat loss to cut operation costs. Meets or exceeds latest ASHRAE standards.
- 20 Gauge steel jacket** ..... Protects insulation & provides neat finished appearance hammertone enamel painted exterior.
- Standard Operating controls** ..... All components necessary for safe—complete—operation. All gauges, relief valves, controls, and piping factory piped and mounted. Over-temperature safety system which will close the main control valve upon an over-temperature condition. This system utilizes an adjustable electric thermostat which monitors the temperature of the water and if an over-temperature condition is detected, sends an electric signal to the valve. This system requires a 120 volt 5 amp circuit.
- Optional Safety System** ..... Double solenoid safety system:  
This is an optional over-temperature safety system which will deactivate the main control valve, as described above and also open a solenoid valve at the top of the vessel, thereby emptying the over-heated water to a drain. This system requires a 120 volt 5 amp circuit.

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# Standard Equipment

## Cemline STONESTEEL® Series SWH Packaged Heaters

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*Cemline STONESTEEL® SWH water heaters are completely packaged and ready for use. All components are sized, mounted and piped prior to shipment. The heaters come complete and require only connection services.*

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### Basic SWH 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 I-Beam support skid base.

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

Electronic temperature gauge.

Water pressure gauge.

Drain valve.

Copper U-Bend heating coil, rolled into copper lined tube sheet.

Integral bronze circulator.

Single solenoid safety system with electronic limit control.

Cem-Trol® control module.

### Basic SWH Package Includes:

Steam temperature control valve (electronic, pneumatic, or pilot).

Steam traps—main inlet and auxiliary.

Steam strainer, inlet.

Steam pressure gauge.

### Optional Steam Trim:

Steam pressure reducing valve.

Vacuum breaker.

Double wall coil.

### Standard Boiler Water/High Temperature Hot Water Package Includes:

Boiler water control valve (two way or three way). Pneumatic or electronic.

Boiler water temperature gauge. High temperature hot water units with 90:10 CuNi tubing, 400 PSI maximum pressure.

### Optional Boiler Water Trim:

Boiler water pump.

Double solenoid safety system.

Double wall coil.

# Cem-Trol® Solid State Water Heater Controller

*Cemline Cem-trol® Solid State Water Heater Control Module incorporates operating and limit functions in one solid state controller. The controller features an LCD display of the temperature and on board operating PID temperature control along with high temperature safety cut offs and alarm indications. The Cem-trol® simplifies the control of Cemline Packaged Steam and Boiler Water Fired Water Heaters, enhances the look of the product, and follows the industry trend to solid state controls.*

## Features:

### PID Control Signal

- PID Control Signal used to modulate an electronic valve or used to control an electronic-pneumatic transducer modulating an air operated control valve. The PID controller allows for precise temperature control of the water heater.

### On-Off Switch

- Allows for local on/off and is convenient for service in the unlikely event of service.

### Single Point Wiring

- Only one 120 VAC connection required to the unit, integral circulation pump pre-wired to control panel.

### Temperature Readout

- The Cem-trol features an easy to read LCD digital readout of the water temperature.

### High Temperature Set Point

- Closes control valve in event of a high temperature situation.

### Secondary High Temperature Set Point

- Opens an optional water solenoid to dump over heated water down the drain.

### Remote Temperature Setting

- Building Automation System can remotely set the operating temperature using a 4-20 mA signal.

### Remote Temperature Readout

- Building Automation System can remotely read water temperature via a 4-20 mA signal.

### LCD Display of Functions

- Power On
- Primary High Temperature Indication
- Secondary High Temperature Indication

### Contacts to notify BAS (Building Automation System) of functions

- Power On
- Primary High Temperature
- Secondary High Temperature

### Ratings:

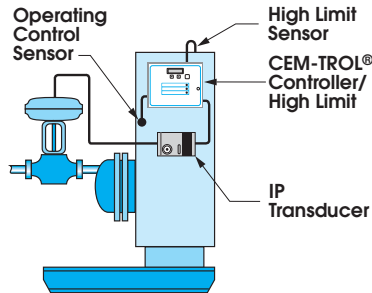
Input Selectable 120/220 VAC - 50/60 HZ  
Output Contacts: 1 amp at 24 VAC  
Building Automation outputs: Dry contacts, NO 0.5 amp maximum, non inductive  
Display: LED display with resolution of 0.3% of scale  
Available temperature ranges: 32 - 200°F  
Operating ambient temperature: Min 32°F Max 140°F  
Operating Humidity: 5% to 95% relative humidity (RH) non-condensing  
NEMA 4 enclosure



# Control Valve/Traps

*Cemline SWH water heaters can be furnished with air operated, pilot operated or electronically operated control valves. All valves are normally closed, that is closed when no air or pilot pressure or electric signal is present. The valves will close on loss of building power.*

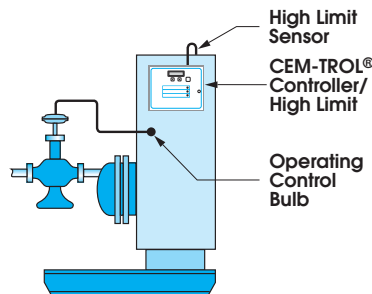
## Air Operated Control Valves



An air-operated valve can be used with either steam or hot water as the heating medium. Air operated valves are normally used in buildings when building control air is available.

Air operated valves use building control air pressure to modulate the control valve. A solid-state temperature sensor is wired to the CEM-TROL® electronic control module, which has an adjustable temperature set point. The CEM-TROL® compares the set point with the sensed temperature and sends an electronic control signal to an electronic-pneumatic transducer. The electronic-pneumatic transducer converts the electronic control signal to a 3 - 15 psig pneumatic control signal. The CEM-TROL® regulates the amount of air that passes to the electronic-pneumatic transducer thereby modulating the control valve. This allows steam (boiler water) to pass into the heater coil to maintain the set point of the controller. When the set point is achieved, no air is passed through the electronic-pneumatic transducer and the valve is closed. In the event of high temperature or loss of building power, the limit control will close the airline to the valve and vent any air in the actuator to atmosphere that closes the valve.

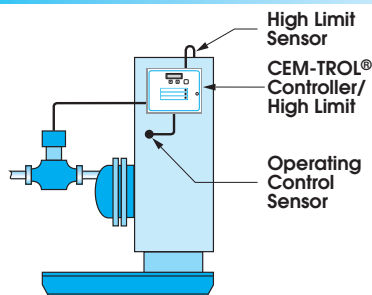
## Pilot Operated Control Valves



A pilot operated valve can be used with steam as the energy source. Pilot operated valves are not suitable when boiler water is the heating medium.

Pilot operated valves use steam pressure as the energy to modulate the control valve. Steam from upstream of the valve is directed into a pilot valve. This pilot valve has an adjustable set point and temperature-sensing bulb in the heated water. The pilot valve compares the set point to the sensed temperature and regulates the amount of steam passing through the pilot to the diaphragm in the bottom of the control valve. The steam pressure on the diaphragm opens the control valve. A pilot operated valve has a constant bleed line leading from the diaphragm to the downstream side of the valve. When the pilot valve senses that the desired temperature is reached it closes; this does not allow any more steam to pressurize the diaphragm in the bottom of the control valve. The bleed line allows any steam pressurizing the diaphragm to be relieved and the valve closes. In the event of high temperature or loss of building power the limit control closes the steam line from the pilot to the valve, which closes the valve.

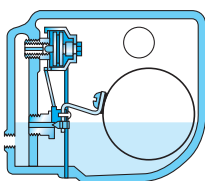
## Electronically Operated Control Valves



Electronically operated control valve can be used for either steam or boiler water.

Electronically operated control valves use a solid-state temperature sensor, which is wired to the CEM-TROL® electronic control module. The CEM-TROL® has an adjustable temperature set point. The CEM-TROL® compares the set point with the sensed temperature and sends an electric signal to a magnetic linear actuator on the control valve. The magnetic linear actuator modulates the control valve and regulates the amount of steam (boiler water) through the valve to maintain the set point of the controller. When the set point is achieved the controller sends a signal to the valve actuator and the valve closes. In the event of high temperature or loss of building power the limit control closes the electric power to the controller, which closes the valve.

## Traps



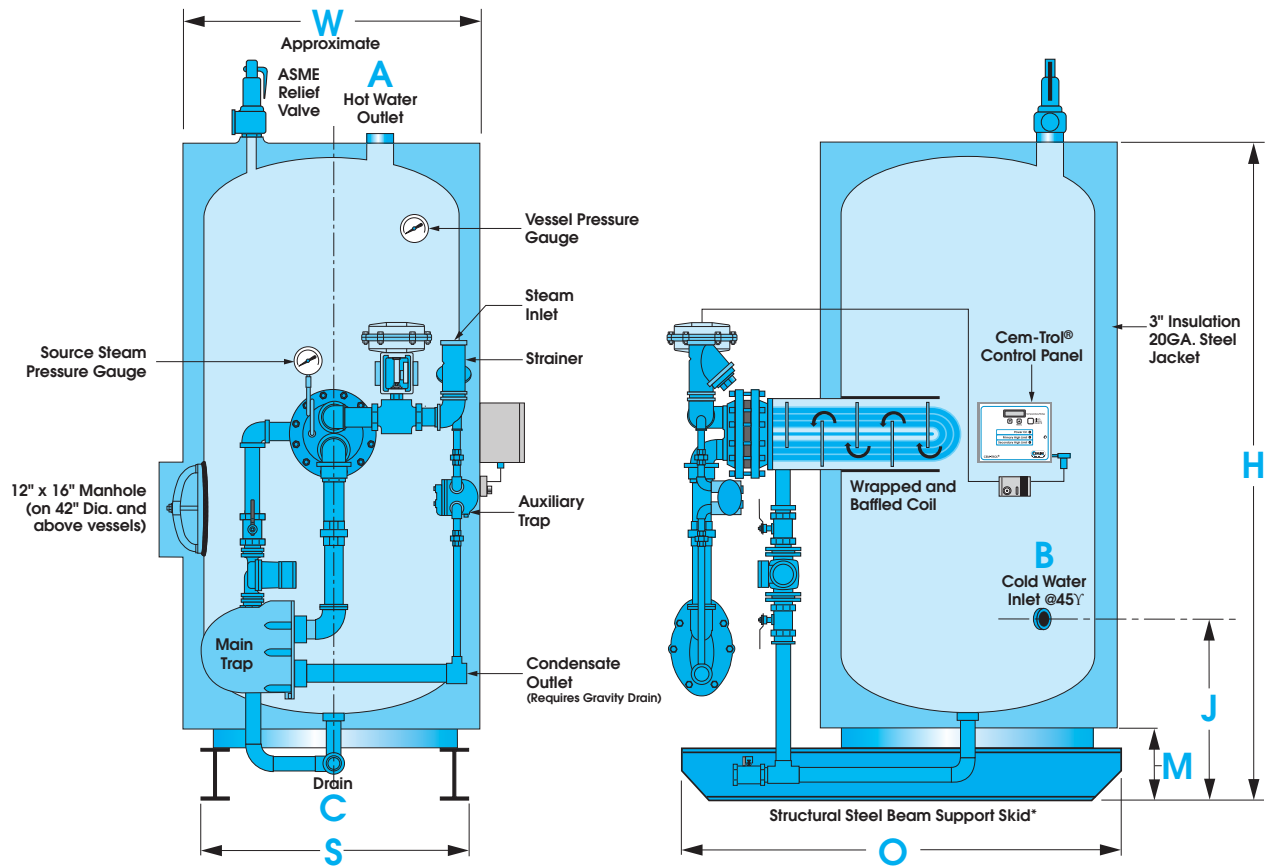
Cemline provides float and thermostat traps for both the drip and main trap.

Float and thermostat traps are acknowledged as the correct traps to use with continuously modulating control valves. Float and thermostat traps provide immediate drainage of condensate and include a built in thermostatic air vent for venting air. The drain orifice is designed to provide a water seal and eliminate the loss of any live steam under all load conditions. Float and thermostatic traps should not be used to lift condensate.

# SWH Series Vertical STONESTEEL® Storage System

*Cemline SWH Series vertical package heaters are normally piped as shown below.*

## Dimensions



Units for use with boiler water or high temperature boiler water instead of steam will have a boiler water control valve and/or boiler water pump for control and will not have steam traps or strainers. (See page 13)

All tanks with a diameter of 42" and larger are furnished with an 12" x 16" manhole.

\* Structural Steel Beam Support:  
8" x 6.5 lbs. per ft. for vessel diameters 42" or less.

10" x 12 lbs. per ft. for vessel diameters 48" and above.





# SWH Series

The dimensions suggested below are well proportioned and suitable for most installations. When building space or other conditions demand, other sizes are readily available. Please consult factory.

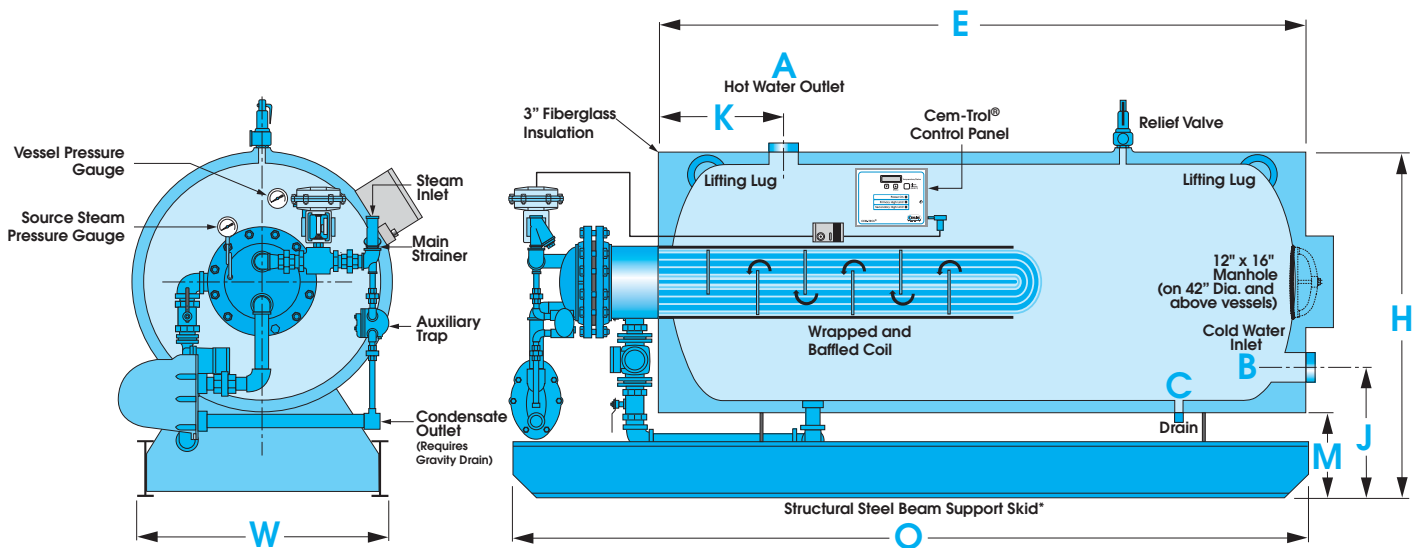
## Dimensions

Gallon Capacity	Model No.	Tank Size D x L	W	H	O	J	M	S	A & B	C
120	V120SWH	24" x 63"	28"	77"	48"	24"	10"	20"	1 1/2"	1"
140	V140SWH	24" x 84"	28"	98"	48"	24"	10"	20"	1 1/2"	1"
200	V200SWH	30" x 76"	34"	90"	54"	28"	10"	24"	1 1/2"	1"
255	V255SWH	30" x 96"	34"	110"	54"	28"	10"	24"	1 1/2"	1"
275	V275SWH	36" x 72"	40"	86"	60"	28"	10"	25"	1 1/2"	1 1/2"
300	V300SWH	36" x 80"	40"	94"	60"	28"	10"	25"	1 1/2"	1 1/2"
390	V390SWH	36" x 96"	40"	110"	60"	28"	10"	25"	1 1/2"	1 1/2"
425	V425SWH	36" x 108"	40"	122"	60"	28"	10"	25"	1 1/2"	1 1/2"
470	V470SWH	36" x 120"	40"	134"	60"	28"	10"	25"	1 1/2"	1 1/2"
375	V375SWH	42" x 72"	46"	86"	66"	30"	10"	32"	2"	1 1/2"
440	V440SWH	42" x 84"	46"	98"	66"	30"	10"	32"	2"	1 1/2"
500	V500SWH	42" x 90"	46"	104"	66"	30"	10"	32"	2"	1 1/2"
570	V570SWH	42" x 108"	46"	122"	66"	30"	10"	32"	2"	1 1/2"
650	V650SWH	42" x 120"	46"	134"	66"	30"	10"	32"	2"	1 1/2"
700	V700SWH	42" x 132"	46"	146"	66"	30"	10"	32"	2"	1 1/2"
770	V770SWH	42" x 144"	46"	158"	66"	30"	10"	32"	2"	1 1/2"
560	V560SWH	48" x 84"	52"	98"	72"	30"	12"	42"	2"	1 1/2"
680	V680SWH	48" x 96"	52"	110"	72"	30"	12"	42"	2"	1 1/2"
730	V730SWH	48" x 108"	52"	122"	72"	30"	12"	42"	2"	1 1/2"
865	V865SWH	48" x 120"	52"	134"	72"	30"	12"	42"	2"	1 1/2"
915	V915SWH	48" x 132"	52"	146"	72"	30"	12"	42"	2"	1 1/2"
1010	V1010SWH	48" x 144"	52"	158"	72"	30"	12"	42"	2"	1 1/2"
670	V670SWH	54" x 84"	58"	98"	78"	31"	12"	44"	2"	1 1/2"
800	V800SWH	54" x 96"	58"	110"	78"	31"	12"	44"	2"	1 1/2"
880	V880SWH	54" x 108"	58"	122"	78"	31"	12"	44"	2"	1 1/2"
980	V980SWH	54" x 120"	58"	134"	78"	31"	12"	44"	2"	1 1/2"
1085	V1085SWH	54" x 132"	58"	146"	78"	31"	12"	44"	2"	1 1/2"
1190	V1190SWH	54" x 144"	58"	158"	78"	31"	12"	44"	2"	1 1/2"
850	V850SWH	60" x 84"	64"	98"	84"	40"	12"	46"	2"	2"
1000	V1000SWH	60" x 96"	64"	110"	84"	40"	12"	46"	2"	2"
1130	V1130SWH	60" x 108"	64"	122"	84"	40"	12"	46"	2"	2"
1300	V1300SWH	60" x 120"	64"	134"	84"	40"	12"	46"	2"	2"
1400	V1400SWH	60" x 132"	64"	146"	84"	40"	12"	46"	2"	2"
1600	V1600SWH	60" x 144"	64"	158"	84"	40"	12"	46"	2"	2"
1180	V1180SWH	72" x 84"	76"	98"	96"	41"	12"	54"	2 1/2"	2"
1380	V1380SWH	72" x 96"	76"	110"	96"	41"	12"	54"	2 1/2"	2"
1600	V1600SWH	72" x 108"	76"	122"	96"	41"	12"	54"	2 1/2"	2"
1980	V1980SWH	72" x 120"	76"	134"	96"	41"	12"	54"	2 1/2"	2"
2480	V2480SWH	72" x 144"	76"	158"	96"	41"	12"	54"	2 1/2"	2"
1620	V1620SWH	84" x 84"	88"	98"	108"	43"	12"	64"	3"	2"
1890	V1890SWH	84" x 96"	88"	110"	108"	43"	12"	64"	3"	2"
2160	V2160SWH	84" x 108"	88"	122"	108"	43"	12"	64"	3"	2"
2430	V2430SWH	84" x 120"	88"	134"	108"	43"	12"	64"	3"	2"
2700	V2700SWH	84" x 132"	88"	146"	108"	43"	12"	64"	3"	2"
2970	V2970SWH	84" x 144"	88"	158"	108"	43"	12"	64"	3"	2"
2120	V2120SWH	96" x 84"	100"	98"	120"	45"	12"	76"	3"	2"
2480	V2480SWH	96" x 96"	100"	110"	120"	45"	12"	76"	3"	2"
2840	V2840SWH	96" x 108"	100"	122"	120"	45"	12"	76"	3"	2"
3200	V3200SWH	96" x 120"	100"	134"	120"	45"	12"	76"	3"	2"
3560	V3560SWH	96" x 132"	100"	146"	120"	45"	12"	76"	3"	2"
3920	V3920SWH	96" x 144"	100"	158"	120"	45"	12"	76"	3"	2"

# SWH Series Horizontal STONESTEEL® Storage System

Cemline SWH Series horizontal package heaters are normally piped as shown below.

## Dimensions



Units for use with boiler water instead of steam will have boiler water control valve and/or boiler water pump for control and will not have steam traps or strainers. (See page 13)

All tanks with a diameter of 42" and larger are furnished with an 12" x 16" manhole.

\* Structural Steel Beam Support:  
8" x 6.5 lbs. per ft. for vessel diameters 42" or less.

10" x 12 lbs. per ft. for vessel diameters 48" and above.





# SWH Series

The dimensions suggested below are well proportioned and suitable for most installations. When building space or other conditions demand, other sizes are readily available. Please consult factory.

## Dimensions

Gallon Capacity	Model No.	Tank Size D x L	W	H	O	J	M	K	E	A & B	C
100	H100SWH	24" x 58"	28"	46"	80"	24"	18"	17"	62"	1 1/2"	1"
120	H120SWH	24" x 63"	28"	46"	85"	24"	18"	17"	67"	1 1/2"	1"
140	H140SWH	24" x 84"	28"	46"	106"	24"	18"	17"	88"	1 1/2"	1"
165	H165SWH	24" x 96"	28"	46"	118"	24"	18"	17"	100"	1 1/2"	1"
200	H200SWH	30" x 76"	34"	49"	98"	21"	15"	18"	80"	1 1/2"	1"
225	H225SWH	30" x 84"	34"	49"	106"	21"	15"	18"	88"	1 1/2"	1"
255	H255SWH	30" x 96"	34"	49"	118"	21"	15"	18"	100"	1 1/2"	1"
320	H320SWH	30" x 120"	34"	49"	142"	21"	15"	18"	124"	1 1/2"	1"
275	H275SWH	36" x 72"	40"	52"	94"	20"	12"	20"	76"	1 1/2"	1"
325	H325SWH	36" x 84"	40"	52"	106"	20"	12"	20"	88"	1 1/2"	1"
390	H390SWH	36" x 96"	40"	52"	118"	20"	12"	20"	100"	1 1/2"	1"
470	H470SWH	36" x 120"	40"	52"	142"	20"	12"	20"	124"	1 1/2"	1"
565	H565SWH	36" x 144"	40"	52"	166"	20"	12"	20"	148"	1 1/2"	1"
440	H440SWH	42" x 84"	46"	58"	106"	20"	12"	22"	88"	2"	1 1/2"
530	H530SWH	42" x 96"	46"	58"	118"	20"	12"	22"	100"	2"	1 1/2"
650	H650SWH	42" x 120"	46"	58"	142"	20"	12"	22"	124"	2"	1 1/2"
770	H770SWH	42" x 144"	46"	58"	166"	20"	12"	22"	148"	2"	1 1/2"
560	H560SWH	48" x 84"	52"	64"	106"	20"	12"	24"	88"	2"	1 1/2"
680	H680SWH	48" x 96"	52"	64"	118"	20"	12"	24"	100"	2"	1 1/2"
730	H730SWH	48" x 108"	52"	64"	130"	20"	12"	24"	112"	2"	1 1/2"
865	H865SWH	48" x 120"	52"	64"	142"	20"	12"	24"	124"	2"	1 1/2"
1010	H1010SWH	48" x 144"	52"	64"	166"	20"	12"	24"	148"	2"	1 1/2"
1080	H1080SWH	48" x 156"	52"	64"	178"	20"	12"	24"	160"	2"	1 1/2"
1170	H1170SWH	48" x 168"	52"	64"	190"	20"	12"	24"	172"	2"	1 1/2"
670	H670SWH	54" x 84"	58"	70"	106"	22"	12"	28"	88"	2"	1 1/2"
800	H800SWH	54" x 96"	58"	70"	118"	22"	12"	28"	100"	2"	1 1/2"
980	H980SWH	54" x 120"	58"	70"	142"	22"	12"	28"	124"	2"	1 1/2"
1190	H1190SWH	54" x 144"	58"	70"	166"	22"	12"	28"	148"	2"	1 1/2"
1390	H1390SWH	54" x 168"	58"	70"	190"	22"	12"	28"	172"	2"	1 1/2"
1000	H1000SWH	60" x 96"	64"	76"	118"	22"	12"	28"	100"	2"	2"
1300	H1300SWH	60" x 120"	64"	76"	142"	22"	12"	28"	124"	2"	2"
1600	H1600SWH	60" x 144"	64"	76"	166"	22"	12"	28"	148"	2"	2"
1900	H1900SWH	60" x 168"	64"	76"	190"	22"	12"	28"	172"	2"	2"
1380	H1380SWH	72" x 96"	76"	88"	118"	24"	12"	30"	100"	2 1/2"	2"
1980	H1980SWH	72" x 120"	76"	88"	142"	24"	12"	30"	124"	2 1/2"	2"
2400	H2400SWH	72" x 144"	76"	88"	166"	24"	12"	30"	148"	2 1/2"	2"
2580	H2580SWH	72" x 168"	76"	88"	190"	24"	12"	30"	172"	2 1/2"	2"
2780	H2780SWH	72" x 180"	76"	88"	202"	24"	12"	30"	184"	2 1/2"	2"
1890	H1890SWH	84" x 96"	88"	98"	118"	22"	10"	30"	100"	3"	2"
2430	H2430SWH	84" x 120"	88"	98"	142"	22"	10"	30"	124"	3"	2"
2970	H2970SWH	84" x 144"	88"	98"	166"	22"	10"	30"	148"	3"	2"
3500	H3500SWH	84" x 168"	88"	98"	190"	22"	10"	30"	172"	3"	2"
3780	H3780SWH	84" x 180"	88"	98"	202"	22"	10"	30"	184"	3"	2"
4040	H4040SWH	84" x 192"	88"	98"	214"	22"	10"	30"	196"	3"	2"
4320	H4320SWH	84" x 204"	88"	98"	226"	22"	10"	30"	208"	3"	2"
3200	H3200SWH	96" x 120"	100"	110"	142"	22"	10"	30"	124"	3"	2"
3920	H3920SWH	96" x 144"	100"	110"	166"	22"	10"	30"	148"	3"	2"
4640	H4640SWH	96" x 168"	100"	110"	190"	22"	10"	30"	172"	3"	2"
5000	H5000SWH	96" x 180"	100"	110"	202"	22"	10"	30"	184"	3"	2"
5360	H5360SWH	96" x 192"	100"	110"	214"	22"	10"	30"	196"	3"	2"
5720	H5720SWH	96" x 204"	100"	110"	226"	22"	10"	30"	208"	3"	2"
6080	H6080SWH	96" x 216"	100"	110"	238"	22"	10"	30"	220"	3"	2"

# Recovery Systems—Steam

The listings below are for those steam pressures and temperature rises which are most widely used. Go to [www.cemline.com](http://www.cemline.com) for informational sections and sizing programs. The Storage Type Water Heater (SWH) sizing program allows the customer to size and select a SWH. Cemline SWH specifications and drawings can be downloaded to CAD and/or word processing files. This program is available upon request from Cemline or your Cemline representative.

## Dimensions

Steam Pressure	GPH heated 40-110° F. 70° Rise						GPH heated 40-140° F. 100° Rise						GPH heated 40-180° F. 140° Rise					
	0	5	10	15	25	50	0	5	10	15	25	50	0	5	10	15	25	50
<b>Cemline Model No.</b>																		
<b>424</b>	244	285	311	329	363	418	148	167	189	200	222	266	78	93	107	118	133	167
<b>430</b>	310	362	395	418	461	531	188	212	240	254	282	338	99	117	136	150	169	211
<b>436</b>	376	439	479	507	569	644	228	257	291	308	342	410	120	143	165	182	205	257
<b>442</b>	442	516	563	596	657	757	268	302	342	362	402	482	141	167	194	214	241	301
<b>448</b>	508	593	647	685	755	870	308	347	393	416	462	554	162	193	223	246	277	347
<b>624</b>	647	755	823	872	960	1107	392	441	500	529	588	706	206	245	284	314	353	441
<b>630</b>	818	955	1042	1104	1215	1401	496	558	632	670	744	893	260	310	360	397	446	558
<b>636</b>	990	1155	1260	1335	1470	1695	600	675	765	810	900	1080	315	375	435	480	540	675
<b>642</b>	1162	1355	1478	1566	1725	1989	704	792	898	950	1056	1267	370	440	510	563	634	792
<b>648</b>	1320	1540	1680	1780	1960	2260	800	900	1020	1080	1200	1440	420	500	580	640	720	900
<b>824</b>	990	1155	1260	1335	1470	1695	600	675	765	810	900	1080	315	375	435	480	540	675
<b>830</b>	1320	1540	1680	1780	1960	2260	800	900	1020	1080	1200	1440	420	500	580	640	720	900
<b>836</b>	1650	1925	2100	2225	2450	2825	1000	1125	1275	1350	1500	1800	525	625	725	800	900	1125
<b>842</b>	1980	2310	2520	2670	2940	3390	1200	1350	1530	1620	1800	2160	630	750	870	960	1080	1350
<b>848</b>	2244	2618	2856	3026	3332	3842	1360	1530	1734	1836	2040	2448	714	850	986	1088	1224	1530
<b>854</b>	2574	3003	3276	3471	3822	4407	1560	1755	1979	2106	2340	2808	819	975	1131	1248	1404	1755
<b>860</b>	2904	3388	3696	3916	4312	4972	1760	1980	2224	2376	2640	3168	924	1100	1276	1408	1584	1980
<b>1030</b>	2310	2695	2940	3115	3430	3955	1400	1575	1785	1890	2100	2520	735	875	1015	1120	1260	1575
<b>1036</b>	2772	3234	3528	3738	4116	4746	1680	1890	2142	2268	2322	3024	882	1050	1218	1344	1512	1890
<b>1042</b>	3300	3850	4200	4450	4900	5650	2000	2250	2550	2700	3000	3600	1050	1250	1450	1600	1800	2250
<b>1048</b>	3762	4389	4788	5073	5586	6441	2280	2565	2907	3078	3420	4104	1197	1425	1653	1824	2052	2565
<b>1054</b>	4257	4966	5418	5740	6321	7288	2580	2902	3289	3483	3870	4644	1354	1612	1870	2064	2322	2902
<b>1060</b>	4752	5544	6048	6408	7056	8136	2880	3240	3672	3888	4320	5184	1512	1800	2088	2304	2592	3240
<b>1236</b>	4158	4851	5292	5607	6174	7119	2520	2835	3213	3402	3780	4536	1323	1575	1827	2016	2268	2835
<b>1242</b>	4950	5575	6300	6675	7350	8475	3000	3375	3825	4050	4500	5400	1575	1875	2175	2400	2700	3375
<b>1248</b>	5742	6699	7038	7743	8526	9831	3480	3915	4437	4698	5220	6264	1827	2175	2523	2784	3132	3915
<b>1254</b>	6534	7623	8316	8811	9702	11187	3960	4455	5049	5346	5940	7128	2079	2475	2871	3168	3564	4455
<b>1260</b>	7326	8547	9324	9879	10878	12543	4440	4995	5661	5994	6660	7992	2331	2775	3219	3552	3996	4995
<b>1266</b>	8118	9471	10332	10947	12054	13899	4920	5535	6273	6642	7380	8856	2583	3075	3567	3936	4428	5535
<b>1272</b>	8910	10395	11340	12015	13230	15255	5400	6075	6885	7290	8100	9720	2385	3375	3915	4320	4860	6075
<b>1436</b>	4996	5829	6359	6737	7419	8554	3280	3690	4182	4428	4920	5904	1590	1893	2195	2422	2725	3407
<b>1442</b>	6369	7430	8106	8588	9457	10904	3860	4342	4921	5211	5790	6948	2026	2412	2798	3088	3474	4342
<b>1448</b>	6758	7885	8602	9114	10035	11571	4440	4995	5661	5994	6660	7992	2150	2560	2970	3277	3686	4608
<b>1454</b>	8316	9702	10584	11214	12348	14238	5040	5670	6426	6804	7560	9072	2646	3150	3654	4032	4536	5670
<b>1460</b>	8521	9941	10844	11490	12652	14588	5640	6345	7191	7614	8460	10152	2711	3228	3744	4131	4648	5810
<b>1466</b>	10263	11973	13062	13839	15239	17572	6220	6998	7930	8397	9330	11196	3265	3887	4509	4976	5598	6997
<b>1472</b>	10283	11997	13087	13866	15268	17605	6800	7650	8670	9180	10200	12240	3272	3895	4518	4986	5609	7011

The capacities in the chart are approximate. Exact sizing can be obtained by using automated sizing program available online at [www.cemline.com](http://www.cemline.com).

# Recovery Systems—Boiler Water

The listings below are for those steam pressures and temperature rises which are most widely used. Go to [www.cemline.com](http://www.cemline.com) for informational sections and sizing programs. The Storage Type Water Heater (SWH) sizing program allows the customer to size and select a SWH. Cemline SWH specifications and drawings can be downloaded to CAD and/or word processing files. This program is available upon request from Cemline or your Cemline representative.

## Dimensions

Boiler Water Temperature	Recovery 40-110° F.								Recovery GPH 40-140° F.							
	180°		190°		200°		212°		180°		190°		200°		212°	
	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd	Water Heated GPH	GPM BW Req'd
<b>424</b>	126	7.3	137	8.0	148	8.6	178	10.3	67	5.5	78	6.5	89	7.4	104	8.6
<b>430</b>	160	9.3	174	10.1	188	10.9	226	13.2	85	7.0	99	8.2	113	9.4	132	10.9
<b>436</b>	194	11.2	211	12.2	228	13.2	274	15.9	103	8.5	120	9.9	137	11.4	160	13.3
<b>442</b>	228	13.3	248	14.4	268	15.6	322	18.8	121	10.1	141	11.7	161	13.4	188	15.6
<b>448</b>	262	15.0	285	17.0	308	17.8	370	21.0	139	11.5	162	13.4	185	15.3	216	17.9
<b>624</b>	333	19	363	21	392	22	470	27	176	14	206	17	235	19	274	22
<b>630</b>	422	25	459	27	496	29	595	35	223	18.6	260	22	298	25	347	29
<b>636</b>	510	29	555	32	600	34	720	41	270	22	315	26	360	29	420	34
<b>642</b>	598	35	651	38	704	41	845	49	317	27	370	31	422	35	493	41
<b>648</b>	680	39	740	43	800	46	960	55	360	29	420	34	480	39	560	46
<b>824</b>	510	29	555	32	600	34	720	41	270	22	315	26	360	29	420	34
<b>830</b>	680	40	740	43	800	47	960	56	360	30	420	35	480	40	560	47
<b>836</b>	850	49	925	54	1000	58	1200	69	450	37	525	43	600	49	700	58
<b>842</b>	1020	59	1100	65	1200	70	1440	84	540	45	630	52	720	60	840	70
<b>848</b>	1156	67	1258	73	1360	78	1632	94	612	50	714	59	816	67	952	79
<b>854</b>	1326	77	1443	84	1560	91	1872	109	702	59	819	68	936	78	1092	91
<b>860</b>	1496	87	1628	94	1760	102	2112	122	792	65	924	76	1056	87	1232	102
<b>1030</b>	1190	69	1295	76	1400	82	1680	98	630	52	735	61	840	70	980	82
<b>1036</b>	1428	85	1554	91	1680	99	2016	117	756	63	882	73	1008	84	1176	98
<b>1042</b>	1700	99	1850	108	2000	117	2400	140	900	75	1050	87	1200	100	1400	117
<b>1048</b>	1938	112	2109	122	2280	132	2636	158	1026	85	1197	99	1368	113	1596	132
<b>1054</b>	2176	127	2368	138	2560	149	3072	179	1152	96	1344	112	1536	128	1792	149
<b>1060</b>	2448	142	2664	155	2880	167	3456	200	1296	107	1512	125	1728	143	2016	167
<b>1236</b>	2142	124	2331	135	2520	146	3024	175	1134	94	1323	109	1512	125	1764	146
<b>1242</b>	2550	149	2775	162	3000	175	3600	210	1350	112	1575	131	1800	150	2100	175
<b>1248</b>	2958	172	3219	187	3480	201	4176	242	1566	129	1827	151	2088	173	2436	202
<b>1254</b>	3366	196	3663	213	3960	231	4752	277	1782	148	2079	173	2376	198	2772	231
<b>1260</b>	3774	219	4107	238	4440	257	5328	309	1998	165	2331	193	2664	221	3108	257
<b>1266</b>	4182	244	4551	255	4920	287	5904	344	2214	184	2583	215	2952	246	3444	287
<b>1272</b>	4590	266	4995	290	5400	313	6480	375	2430	201	2835	235	3240	268	3780	313
<b>1436</b>	2574	149	2801	163	3028	175	3634	210	1363	113	1590	131	1817	150	2120	175
<b>1442</b>	3264	190	3552	207	3840	224	4608	269	1728	144	2016	168	2304	192	2688	224
<b>1448</b>	3482	202	3789	220	4096	237	4915	285	1843	152	2150	178	2458	240	2867	237
<b>1454</b>	4284	250	4662	272	5040	294	6048	353	2268	189	2646	220	3024	252	3528	294
<b>1460</b>	4389	255	4777	277	5164	299	6197	359	2343	192	2711	225	3098	257	3615	300
<b>1466</b>	5270	307	5735	334	6200	361	7440	434	2790	232	3255	271	3720	310	4340	361
<b>1472</b>	5297	308	5765	336	6232	363	7478	436	2804	234	3272	273	3739	311	4362	364

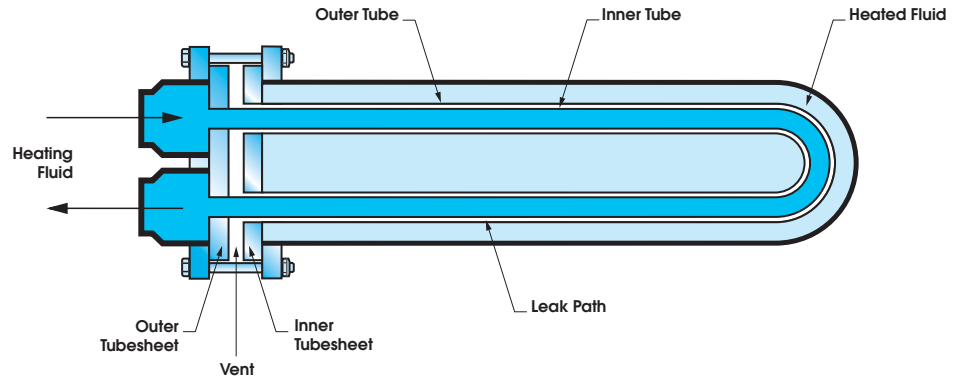
Boiler water requirements based on 20° temperature drop.

The capacities in the chart are approximate. Exact sizing can be obtained by using automated sizing program available online at [www.cemline.com](http://www.cemline.com).

# Recovery Systems—Steam Double Wall Coil

*Cemline SWH Water Heaters are available with double wall coils. Double wall coils have inner and outer tubes with a vented leak path. if either the inner or outer tube fails there can be no cross contamination of potable water and a visible indication of the leak will show.*

Some building codes require vented double wall coils to guard against cross contamination of potable water. Cemline offers these coils with copper inner/ copper outer or copper-nickel inner/copper outer tubes.



Cemline Model Number	380° F. EWT — 195° F. LWT 40—140° F. Temperature Rise		380° F. EWT — 195° F. LWT 40—180° F. Temperature Rise	
	GPH Recovered	Min. GPM BW Supplied	GPH Recovered	Min. GPM BW Supplied
*				
424 HTHW	163	1.6	108	1.6
436 HTHW	226	2.2	151	2.2
448 HTHW	322	3.1	214	3.1
624 HTHW	240	2.4	160	2.4
424 HTHW	384	3.7	256	3.7
424 HTHW	528	5.1	352	5.1
824 HTHW	384	3.7	256	3.7
836 HTHW	571	5.5	380	5.5
848 HTHW	763	7.3	508	7.4
860 HTHW	1052	10.1	700	10.1
1036 HTHW	945	9.0	628	9.0
1048 HTHW	1584	15.1	1054	15.2
1060 HTHW	1903	18.2	1266	18.3
1236 HTHW	1584	15.1	1054	15.2
1248 HTHW	2223	21.2	1479	21.4
1260 HTHW	2702	25.7	1797	25.6
1272 HTHW	3322	31.7	2210	31.9
1436 HTHW	1884	18.0	1253	18.1
1448 HTHW	2542	24.2	1691	24.4
1460 HTHW	3181	30.3	2166	30.6
1472 HTHW	3801	36.3	2528	36.5

\* Furnished with 90:10 CuNi tubing.

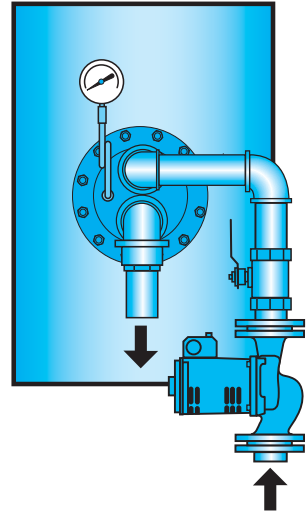
The capacities in the chart are approximate. Exact sizing can be obtained by using automated sizing program available online at [www.cemline.com](http://www.cemline.com).

# Piping Arrangements

*Cemline Boiler Water Heaters can be furnished with various choices of controls. Shown below are three examples of piping arrangements.*

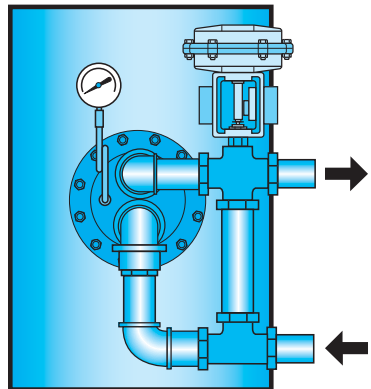
**Figure 1**

Thermostatically controlled boiler water pump



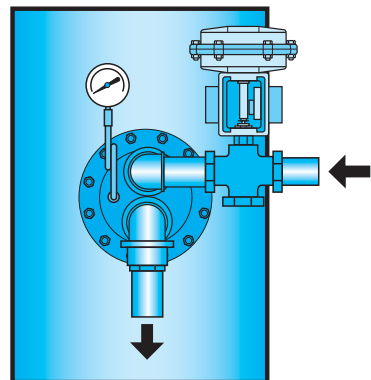
**Figure 2**

Modulating three-way valve



**Figure 3**

Modulating two-way valve



Note: Schematic is for vertical unit. Horizontal unit would be identically piped.

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# Specifying Cemline Packaged Units

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1. *Decide if horizontal or vertical configuration is suitable.*
  2. *Calculate gallon storage capacity required.*
  3. *Choose heating medium: i.e. steam, boiler water, or high temperature hot water.*
  4. *Determine recovery capacity required in GPH and temperature rise.*
- 

## Selecting Cemline Model Number:

### Example Situation:

Storage requirements .....	Vertical with 120" maximum headroom
Storage requirements .....	480 gallon minimum desired
Heating medium available .....	Steam at 10 psig pressure
Recovery required .....	500 GPH, 100° temperature rise 40—140

---

### Model Number to be specified:

Step one .....	V indicates vertical configuration
Step two .....	V500SWH indicates 500 gallon capacity (closest size to 480 gallon requirement to fit within 120" headroom available)
Step three .....	V500SWH624—Number 624 recovery system selected from charts

---

Cemline Model Number to specify: V500SWH624.  
To write final specification, complete blanks shown in Sample Specifications on page 15.

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# SWH Water Heaters- Sample Specifications

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*For specifying Cemline SWH water heaters, use the Cemline interactive On-line Sizing Program located at [www.cemline.com](http://www.cemline.com) on the internet to download Cemline specifications for the SWH water heater.*

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Storage heater shall be Cemline Series SWH; 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) (horizontal) steel tank, cement lined with a 12" x 16" manhole, with stainless threaded opening, 3/4" O.D. copper tubes, copper lined tube sheet, and steel or cast iron coil head.

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, with access panel to the manhole. Heater shall be factory assembled and piped including incoming steam strainer, (air) or (pilot\*) or (electronic) operated temperature regulator, main and auxiliary float and thermostatic steam traps, and condensate strainer. Coil shall have copper wrapper, shall be baffled and shall have an integral valved circulator to circulate the water across the boil into the bottom of the tank.

Heater shall be supplied with solid-state control module with LED backlit LCD display and LED pilot lights to indicate on-off, primary high limit, and secondary high limit. Solid-state control module shall be provided with a field programmable digital electronic PID controller allowing the owner to set operating and temperature limits on the display screen. Solid-state control module shall have red alarm light and alarm horn with built in alarm silence relay. Solid-state control module shall be supplied with dry contact closure outputs to indicate to building automation system (BAS) the occurrence of power on, primary high temperature, and secondary high temperature. The control module shall allow the BAS to turn the heater on or off through a remote relay suitable for 24 VAC, 1 amp. The control module shall allow the BAS to remotely set the temperature of the heater using a 4-20 mA input signal. The control module shall allow the BAS to remotely monitor the operating temperature. Control module shall be supplied with an on-off switch and shall be mounted in a NEMA 4 panel. All solenoids and limits shall be 24 VAC.

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.

Heater shall be provided with a vacuum breaker.\*

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

Heater shall be mounted (vertically) OR (horizontally).

Heater shall be Cemline Corporation Model \_\_\_\_\_ .

Tank dimensions \_\_\_\_\_ " diameter x \_\_\_\_\_ " length.

Storage gallon capacity \_\_\_\_\_ .

Coil to heat \_\_\_\_\_ GPH from \_\_\_\_\_ °F to \_\_\_\_\_ °F with \_\_\_\_\_ psig steam to the control valve.

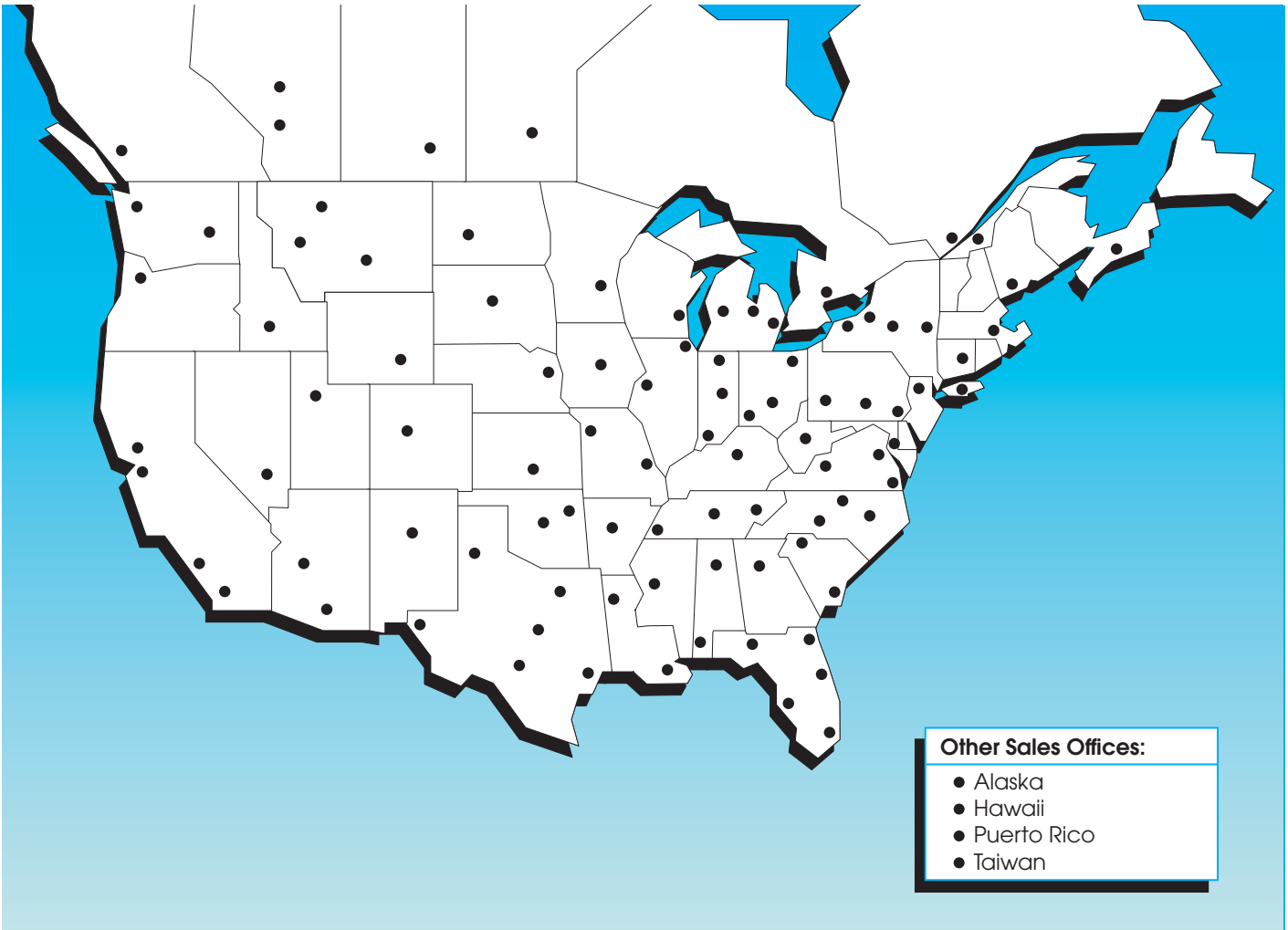
Boiler water or HTHW for energy source.

Coil to heat \_\_\_\_\_ GPH from \_\_\_\_\_ °F to \_\_\_\_\_ °F with \_\_\_\_\_ GPM of \_\_\_\_\_ °F inlet \_\_\_\_\_ °F outlet hot water.

\* Note: Not available with boiler water or HTWH for energy source.



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