

SEH Series



Stainless Steel Instantaneous Packaged Steam Fired Water Heaters

Automated On-line
Sizing Program



CEMLINE CORPORATION

P.O. BOX 55 CHESWICK, PENNSYLVANIA 15024
Phone: (724) 274-5430 FAX: (724) 274-5448

www.cemline.com

Advantages of Cemline® Stainless Steel Instantaneous Packaged Water Heaters

Cemline Stainless Steel water heaters are designed for installations where space is at a premium.

Cemline Stainless Steel water heaters provide a high quality, high capacity, compact sized, instantaneous, packaged water heater for use with steam, boiler water, or high temperature hot water as the heating medium. Featuring small size for installation in new or existing boiler rooms and a wide selection of capacities that are adequate for most domestic

hot water applications. Small size makes it ideal for a replacement unit as the SEH heater is narrow enough to fit through most doorways. In any location where space is at a premium, Cemline SEH Water heaters should be used. Factory packaging keeps contractor installation time to minimum; the only connections required are cold and hot water lines and

connections of steam and condensate or boiler water, or high temperature hot water, and electric. Cemline SEH Heaters give the designer flexibility combined with space savings. Instantaneous water heaters work best when building recirculation is 20% to 30% of the recovery. Consult Cemline or your Cemline representative if using with no recirculation.

Standard SEH Package

Features

- Compact SEH size** Designed to fit in small spaces. Easily moved through standard doorways.
- Vessel-A.S.M.E. Code constructed National Board Registered** A.S.M.E. Code stamping and Registration offers the assurance of quality controlled construction.
- Stainless Steel Tank** Virtually rustproof. Type 316-L Stainless.
- 2" Foam insulation** Prevents heat loss to cut operation costs. Meets or exceeds latest ASHRAE standards.
- 20 Gauge steel jacket** Protect insulation & provides neat finished appearance with hammertone enamel painted exterior.
- Standard operating controls** Single solenoid safety system:
The over-temperature safety system 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, thereby closing 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 overheated water to a drain. This system requires a 120 volt 5 amp circuit.

Standard Equipment

Cemline Stainless Steel Packaged Water Heaters

Cemline Stainless Steel water heaters are completely packaged and ready to use. All components are sized, mounted and piped prior to shipment. These heaters come complete and require only connection to services.

Basic SEH Package Includes:

- Compact size.
- A.S.M.E. CODE constructed National Board registered storage tank.
- 316-L Stainless Steel tanks.
- 316-L Stainless Steel threaded connections.
- 2" Foam 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.
- Water pressure valve.
- Drain valve.
- Copper U-Bend heating coil, rolled into copper lined tubesheet.
- Integral bronze circulator.
- Single solenoid safety system with electronic limit control.
- Cem-trol II® control module.

Standard Steam Package Includes:

- Steam temperature control valve (pneumatic, pilot or electronic).
- Steam traps-main inlet and auxiliary.
- Steam strainer, inlet.
- Steam pressure gauge.

Optional Steam Trim

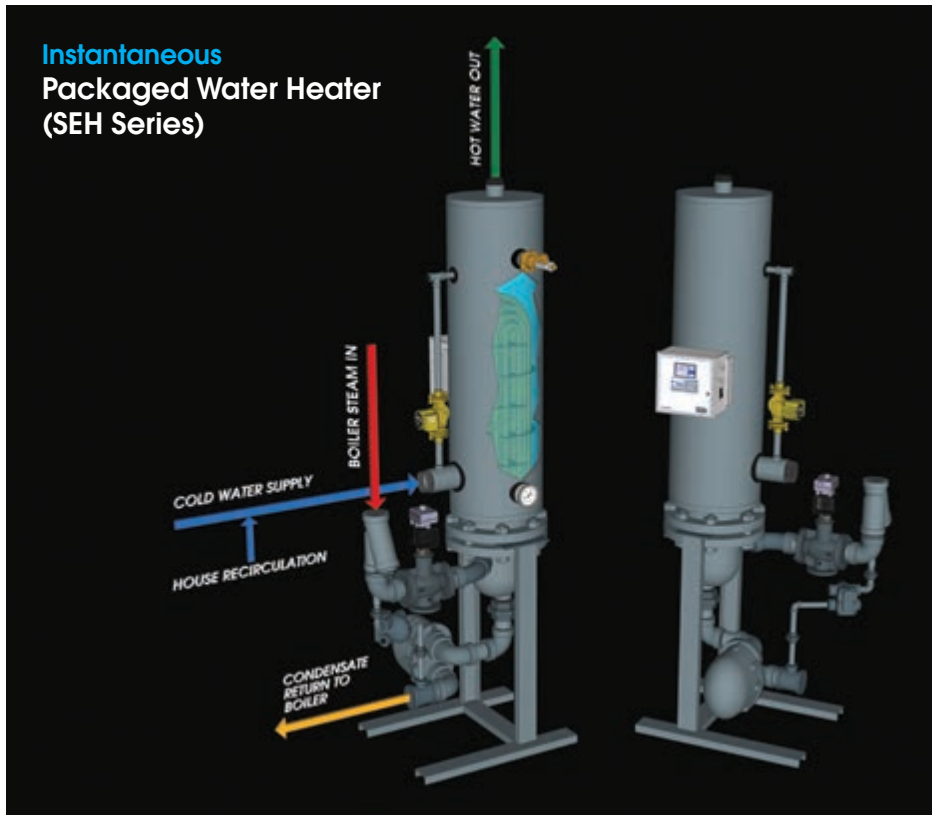
- Steam pressure reducing valve.
- Vacuum breaker.
- Double solenoid safety system.
- Double wall coil.

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.
- Aquastat for boiler water pump.
- Double solenoid safety system.
- Double wall coil.



Cem-Trol® II Solid State Water Heater Controller

Cemline Cem-trol® II Solid State Water Heater Control Module combines all temperature control and limit functions for Cemline Packaged Steam and Boiler Water Fired Water Heaters into one simple to use and easy to understand control module.



Features:

PID Control Signal

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

LCD Touch Screen Display

- Display of operating temperature, set point temperature, control output signal along with user friendly interface of the controller.

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® II features an easy to read LCD digital readout of the water temperature.

High Temperature Set Point

- Closes control valve in the 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 temperature using a 4-20 mA signal.

Remote Temperature Readout

- Building automation system can remotely read the temperature using 4-20 mA signal

Modbus Interface

- Building automation system can remotely communicate with the Cem-Trol® II via an RS-485 connection.

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

Remote ON/OFF Control

- Building Automation System can remotely turn the unit ON/OFF via a dry contact.

Ratings:

Input Selectable 120/220 VAC - 50/60 HZ

Output Contacts: 1 amp at 24v AC

Building Automation outputs: Dry contacts, NO 0.5 amp maximum, non inductive

Display: LCD display with resolution of 0.3% of scale

Available temperature ranges: 32°F - 200°F

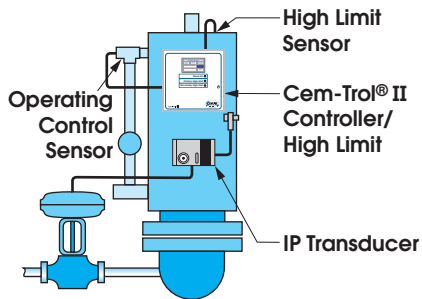
Operating ambient temperature: Min 32°F max 140°F

Operating Humidity: 5% to 95% relative humidity (RH) non-condensing NEMA 4 enclosure

Control Valve/Traps

Cemline SEH 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.

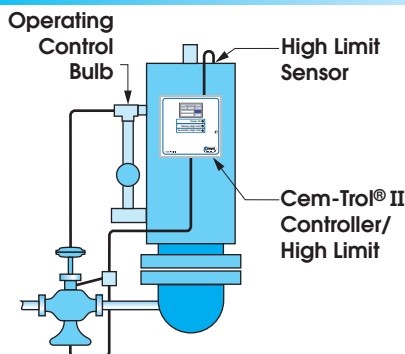
Air Operated Control Valves



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® II electronic control module, which has an adjustable temperature set point. The Cem-Trol® II 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® II 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.

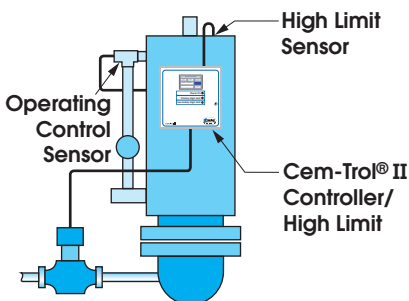
Pilot Operated Control Valves



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.

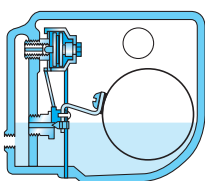
Electronically Operated Control Valves



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® II electronic control module. The Cem-Trol® II has an adjustable temperature set point. The Cem-Trol® II 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

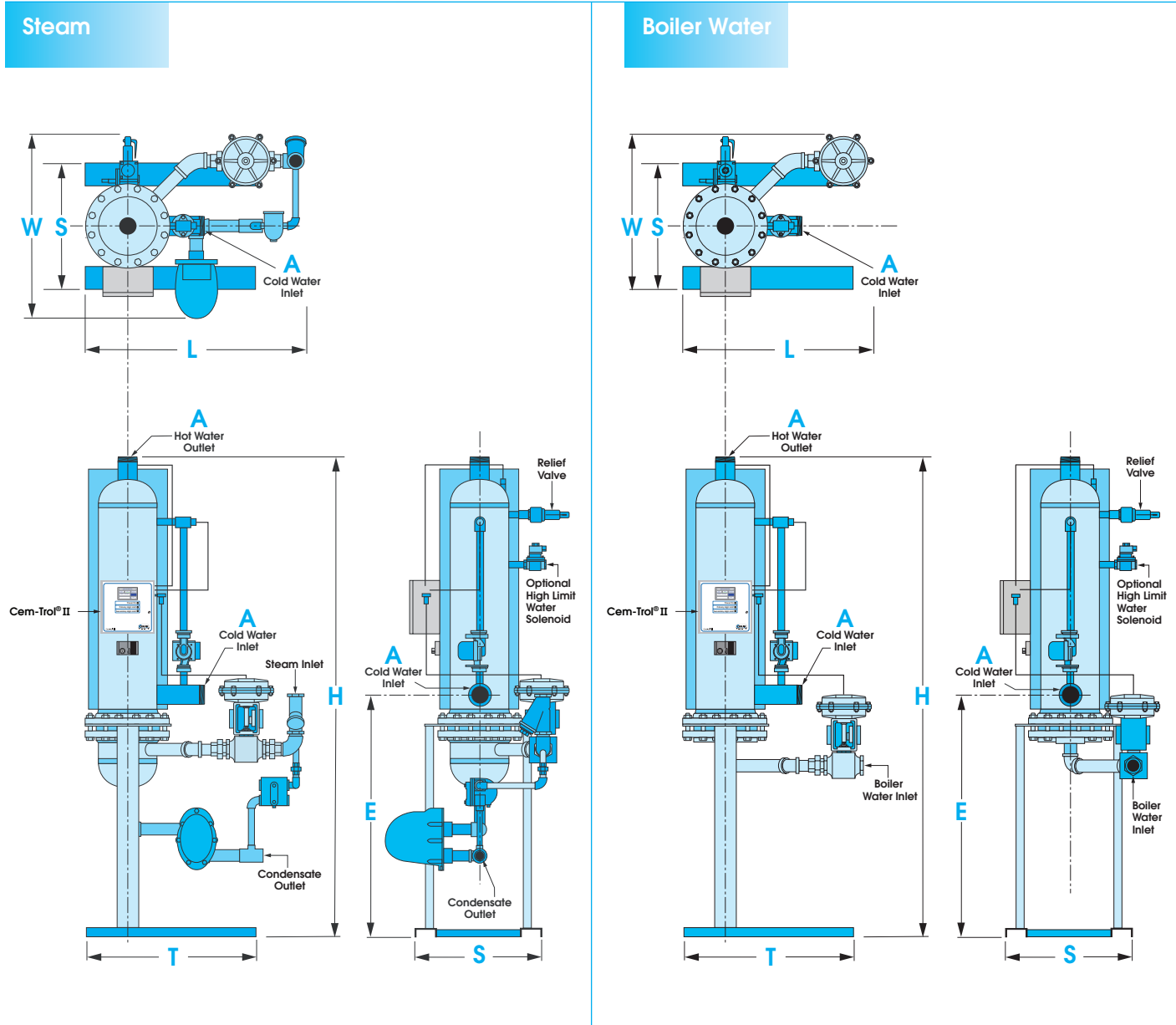


Cemline provides float and thermostat traps for both the drip and main trap.

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.

Stainless Steel Water Heaters-Vertical Dimensional Data

Cemline SEH Series Stainless Steel water heaters are normally piped as shown below.



Vertical Dimensions							
	H	L	W	S	T	A	E
	Approximate	Approximate	Approximate				
V6SEH624	84"	33"	31"	18 3/4"	24"	2" M.N.P.T.	38 1/2"
V6SEH636	84"	33"	31"	18 3/4"	24"	2" M.N.P.T.	38 1/2"
V8SEH830	84"	33"	30"	21 1/4"	30"	2 1/2" M.N.P.T.	38 1/2"
V10SEH1030	83"	36"	33"	23 3/4"	32"	3" M.N.P.T.	40"
V10SEH1036	89"	36"	33"	23 3/4"	32"	3" M.N.P.T.	46"
V12SEH1236	89"	37"	35"	26 3/4"	34"	3" M.N.P.T.	46"
V12SEH1242	102"	37"	35"	26 3/4"	34"	3" M.N.P.T.	52"
V14SEH1442	103"	38"	35"	28 3/4"	36"	4" FLANGE	54"

Recovery Capacities– Steam

The listing below is for those steam pressures and temperature rises which are most widely used. Coils are available for other steam pressures and/or different temperature rises. Consult factory for further information.

	Steam As Energy Source Single Wall, 40-120 °F							
	Inlet Steam Pressure (PSIG)							
	2	5	10	15	25	50	75	100
6SEH624	22	23	25	28	31	38	43	47
6SEH636	37	40	44	47	53	64	70	70
8SEH830	60	65	71	77	86	92	92	92
10SEH1030	91	91	112	116	116	116	116	116
10SEH1036	114	116	116	116	116	116	116	116
12SEH1236	169	169	175	180	208	208	208	208
12SEH1242	207	207	208	208	208	208	208	208
14SEH1442	212	212	212	212	212	212	212	212

	Steam As Energy Source Single Wall, 40-140 °F							
	Inlet Steam Pressure (PSIG)							
	2	5	10	15	25	50	75	100
6SEH624	14	15	17	18	21	27	31	34
6SEH636	25	27	30	33	37	46	52	58
8SEH830	40	44	49	53	61	74	85	92
10SEH1030	60	66	77	84	95	116	116	116
10SEH1036	77	87	98	106	116	116	116	116
12SEH1236	113	113	118	140	177	209	209	209
12SEH1242	140	140	162	181	209	209	209	209
14SEH1442	199	210	213	213	213	213	213	213

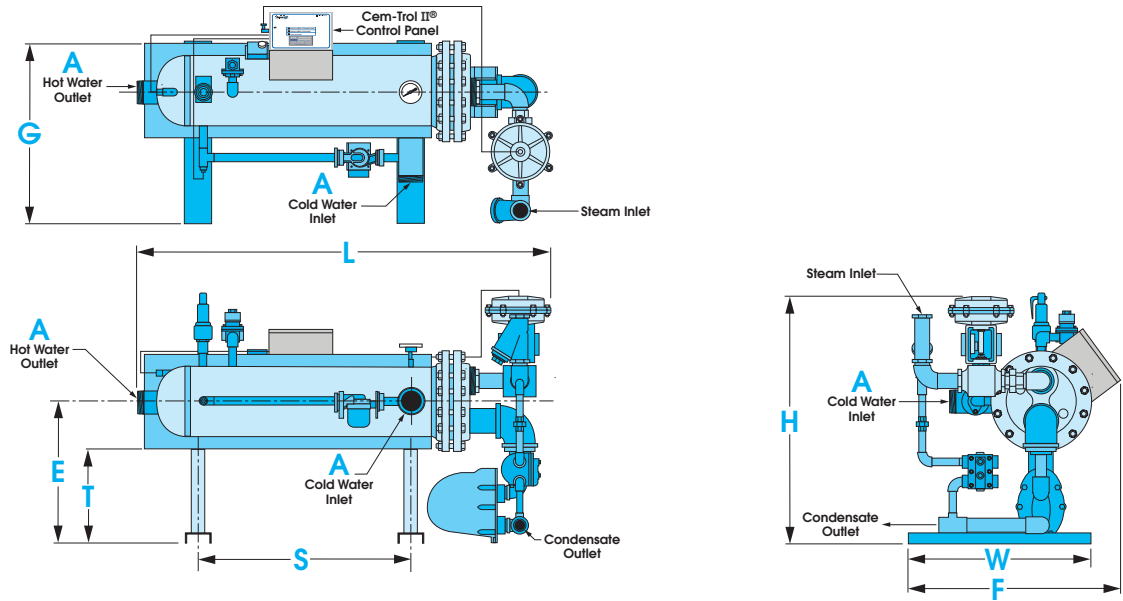
The capacities in the chart are approximate. Exact sizing can be obtained by using the automated sizing program on the Cemline CD-ROM or on-line at www.cemline.com. Please request sizing or a copy of the CD-ROM from your Cemline representative or from Cemline or visit www.cemline.com to size on-line.

Sizing in the charts is based upon using an air-operated control valve, copper tubing, and a 0.0000 fouling factor. Unit size may be different due to altering variables such as control valve type, tube material, and fouling factor.

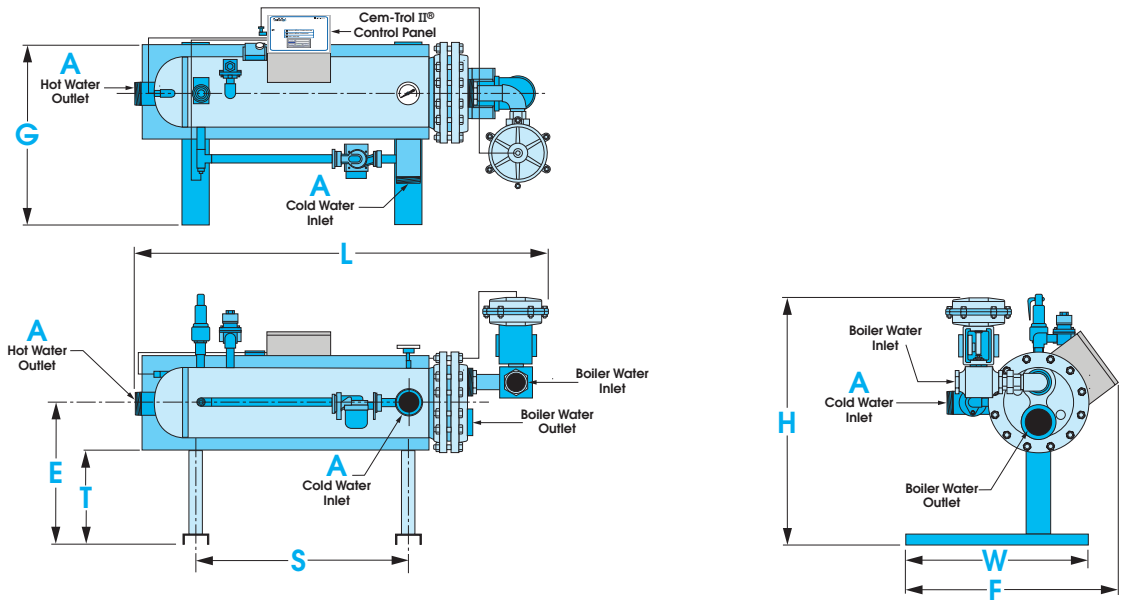
Stainless Steel Water Heaters—Horizontal Dimensional Data

Cemline SEH Series Stainless Steel water fired water heaters are normally piped as shown below.

Steam



Boiler Water



Horizontal Dimensions

	H Approximate	L Approximate	W Approximate	S	T	A	E	F Approximate	G
H6SEH624	35"	65"	25"	33"	15"	2" M.N.P.T.	20 1/2"	29 1/2"	25"
H6SEH636	35"	65"	25"	33"	15"	2" M.N.P.T.	20 1/2"	29 1/2"	28 1/2"
H8SEH830	36"	65 1/2"	29"	32"	15"	2 1/2" M.N.P.T.	21 1/2"	32 1/2"	28 1/2"
H10SEH1030	39"	65 1/2"	29"	30"	15"	3" M.N.P.T.	22 1/2"	32"	28 1/2"
H10SEH1036	39"	65 1/2"	29"	30"	15"	3" M.N.P.T.	22 1/2"	32"	28 1/2"
H12SEH1236	41"	66"	31"	30"	15"	3" M.N.P.T.	23 1/2"	33 1/2"	30"
H12SEH1242	41"	73"	31"	36"	15"	3" M.N.P.T.	23 1/2"	33 1/2"	30"
H14SEH1442	41"	74 1/2"	36"	36"	15"	4" FLANGE	24"	37 1/2"	33 1/2"

Recovery Capacities– Boiler Water

The listing below is for those boiler water temperatures and temperature rises which are most widely used. Coils are available for other boiler water temperatures or high temperature hot water and/or different temperature rises. Consult factory for further information.

	Boiler Water As Energy Source Single Wall, 40-120 °F							
	Inlet Boiler Water Temperature							
	BW Temp 180-160 °F		BW Temp 190-170 °F		BW Temp 200-179 °F		BW Temp 212-190 °F	
	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM
6SEH624	14	57	21	86	24	94	25	94
6SEH636	23	93	23	94	24	94	25	94
8SEH830	44	179	44	179	46	179	47	176
10SEH1030	66	268	66	269	69	269	72	270
10SEH1036	66	268	66	269	69	269	72	270
12SEH1236	102	414	102	416	107	417	111	416
12SEH1242	102	414	102	416	107	417	111	416
14SEH1442	132	536	132	538	138	538	143	536

	Boiler Water As Energy Source Single Wall, 40-140 °F							
	Inlet Boiler Water Temperature							
	BW Temp 180-160 °F		BW Temp 190-170 °F		BW Temp 200-179 °F		BW Temp 212-190 °F	
	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM
6SEH624	4	20	8	41	13	63	19	89
6SEH636	17	86	18	91	19	92	20	93
8SEH830	26	131	35	177	37	179	38	177
10SEH1030	47	238	53	269	56	271	58	270
10SEH1036	47	238	53	269	56	271	58	270
12SEH1236	82	414	82	415	86	417	89	415
12SEH1242	82	414	82	415	86	417	89	415
14SEH1442	106	535	106	537	111	538	115	536

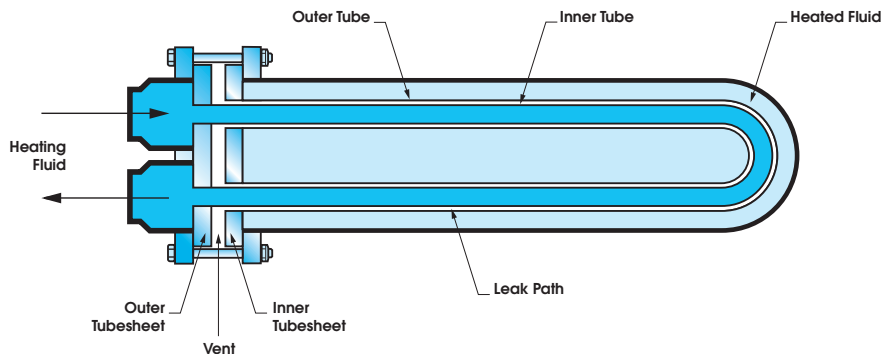
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Sizing in the charts is based upon using an air-operated control valve, copper tubing, and a 0.0000 fouling factor. Unit size may be different due to altering variables such as control valve type, tube material, and fouling factor.

Double Wall Coil

Cemline SEH 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.



	Steam As Energy Source Double Wall, 40-140 °F							
	Inlet Steam Pressure (PSIG)							
	2	5	10	15	25	50	75	100
6SEH624	7	7	8	9	11	14	16	18
6SEH636	13	14	16	17	20	24	28	31
8SEH830	21	22	25	27	31	39	44	49
10SEH1030	33	36	40	45	50	62	70	77
10SEH1036	44	47	53	58	65	80	91	100
12SEH1236	61	67	79	86	98	120	137	151
12SEH1242	77	86	99	107	121	148	169	185
14SEH1442	104	111	123	134	151	185	204	204

	Boiler Water As Energy Source Double Wall, 40-140 °F							
	Inlet Boiler Water Temperature							
	BW Temp 180-160 °F		BW Temp 190-170 °F		BW Temp 200-179 °F		BW Temp 212-190 °F	
	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM	GPM	BW GPM
6SEH624	1	5	2	10	3	15	6	28
6SEH636	5	25	9	46	13	66	15	70
8SEH830	7	35	13	66	19	92	28	130
10SEH1030	13	66	22	111	33	160	44	205
10SEH1036	25	126	41	208	42	203	44	205
12SEH1236	37	187	59	299	66	320	69	322
12SEH1242	57	288	63	319	66	320	69	322
14SEH1442	76	384	78	395	82	397	85	396

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Sizing in the charts is based upon using an air-operated control valve, copper tubing, and a 0.0000 fouling factor. Unit size may be different due to altering variables such as control valve type, tube material, and fouling factor.

SEH Water Heaters- Sample Specifications

For specifying Cemline Stainless Steel SEH water heaters, select model from charts and use specification below. Cemline has representation in most major cities, or consult factory.

Instantaneous heater shall be Cemline Series SEH; factory assembled and packaged. Water heater shall be constructed in accordance with A.S.M.E. Code for working pressure of 150 psig. The packaged water heater shall be constructed with a vertical 316 stainless steel tank, with stainless threaded opening, 1/2" O.D. copper tubes, copper lined tube sheet, and steel coil head.

Steam Units

Heater shall be mounted on a steel support skid. Heater shall be insulated with foam in place insulation protected by an enameled metal jacket, 20 gauge minimum thickness. 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 be baffled and shall have an integral bronze circulator to circulate the water across the coil.

Boil Water Units

Heater shall be mounted on a steel support skid. Heater shall be insulated with foam in place insulation protected by an enameled metal jacket, 20 gauge minimum thickness. Heater shall be factory assembled and piped including incoming steam strainer, (air) or (electronic) operated (2) or (3) way temperature regulating valve. Coil shall be baffled and shall have an integral bronze circulator to circulate the water across the coil.

Heater shall be supplied with solid-state control module with LCD touch screen 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. 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 via 4-20 mA signal. Control module shall communicate with the BAS using Modbus Protocol via an RS-485 connection. 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.

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

Heater shall be CEMLINE Corporation Model _____.

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

Steam Units

Coil to heat _____ GPM from _____°F to _____°F with _____psig steam to the control valve.

Boiler Water Units

Coil to heat _____ GPM from _____°F to _____°F with _____ GPM of _____°F outlet Hot Water.

For Vertical

Heater shall be Cemline Corporation Model V _____ SEH _____.

For Horizontal

Heater shall be Cemline Corporation Model H _____ SEH _____.

Sales Offices



Other Sales Offices:

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- Saudi Arabia
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- U.A.E.

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- 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

Cemline is represented in all major cities.

Please contact your local representative or call Cemline Corporation.

