Commercial Electric Water Heater

6-120 Gallon Capacity, Three Phase Voltages Up To 58kW, Single Phase Voltages Over 6kW

Model SE

Features

- **Heavy Duty Construction**
  - — Hydrastone cement lining provides longer tank life
  - — Copper-silicon alloy tappings cannot rust or corrode
  - — High impact composite jacket cannot rust or corrode and eliminates damage during installation and transit
- **High Efficiency**
  - — 2" thick polyurethane foam insulation reduces heat loss
  - — Built-in heat trap lowers operating costs
- **Wide Selection**
  - — Built to meet your exact needs
  - — Numerous options available for specialized applications
- **Reliable**
  - — Full five (5) year Non Pro-rated tank warranty is standard
  - — Full ten (10) year Non Pro-rated tank warranty can be specified for extended protection

Applications

- Office Buildings
- Schools
- Hospitals
- Industrial Facilities
- Hotels

The Model SE Is A Point-Of-Use Water Heater Built For Volume Hot Water Demands.

A Long Lasting, Trouble-Free Water Heater

The Hubbell Model SE water heater incorporates a number of features not found in other conventional heaters which makes it better suited to resist the highly corrosive effects of hot water. The heart of a Hubbell water heater is a superior storage vessel which utilizes a specially formulated Hydrastone cement lining, solid copper-silicon threaded tank openings and a built-in heat trap device, all of which ensure a longer lasting and energy efficient water heater.

When you specify and install a Hubbell Model SE, you will have confidence in knowing that the owner will be provided with a long lasting, trouble-free source for hot water.

Hydrastone cement Lined Tank Ensures Long Life

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Cement Lined Tanks Provide Longer Service Life

What is the most common reason why a water heater fails?

Failure of a tank's *protective lining* allows water to come into direct contact with the steel tank causing it to *corrode* and *leak.*

Therefore, the type of protective lining is the single most important feature when determining the quality of any water heater. The ability of a lining to protect the steel tank is primarily based upon its thickness and complete coverage of all steel surfaces.

Two common internal tank linings are ***Glass*** & ***Cement.***

Glass

Glass lining is approximately 5 mils (.005") thick & *does not cover* all internal surfaces.

To compensate, all glass lined tanks require a sacrificial anode rod which must be periodically inspected and replaced.

Cement

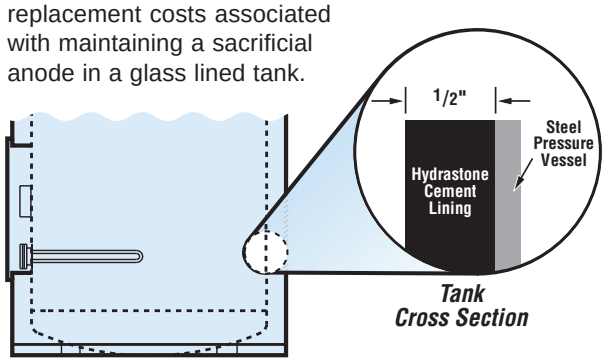
Hydrastone cement lining is a minimum of 1/2" thick (100 times thicker than glass lining) and is guaranteed to uniformly cover 100% of all internal tank surfaces. The result is a significantly longer lasting tank which does not require a sacrificial anode.

Threaded tapping material is critical for tank longevity.

Glass lined tanks are constructed with regular steel tappings which are continuously attacked by corrosive hot water due to the lack of glass lining on the internal threads. The Hubbell Model SE water heater tank is constructed with *solid non-ferrous copper-silicon tank tappings* which are impervious to the corrosive effects of hot water.

The Hubbell Model SE is a longer lasting water heater based upon the construction features found in the Hydrastone cement lined storage tank and the result is that when you specify and install a Hubbell Model SE, you will have confidence in knowing that the owner will be provided with a trouble-free and long lasting water heater.

- **Thickness**
  Each Hubbell Model SE storage tank is lined with a minimum of 1/2" thick Hydrastone cement to ensure protection of the steel tank.
- **Coverage**
  The Hydrastone cement lining covers a guaranteed 100% of all interior tank surfaces and is free from flaws or imperfections. Full coverage is achieved by injecting the precise amount of Hydrastone cement into each tank and then centrifugally spinning it at 250 RPM to ensure complete and uniform coverage of the lining on all interior surfaces.
- **Corrosion Resistance**
  Hydrastone cement is a specifically formulated high density lining designed to provide maximum protection from the corrosive effects of hot water.
- **Reduced Operating Costs**
  The Hubbell Model SE water heater significantly reduces the total ownership cost of a water heater due to the longer life and maintenance-free benefits derived from a Hydrastone cement lined tank. Longer tank life is directly attributable to the unmatched tank protection provided by the Hydrastone cement lining and copper-silicon tappings. Aditionally, the Model SE reduces operating expenses by eliminating the periodic inspection and replacement costs associated with maintaining a sacrificial anode in a glass lined tank.



Tank Cross Section

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Model SE
Water Heater Specifications

Tank:	Hydrastone cement Lined Steel
Capacities:	6 thru 120 Gallons
Orientation:	Vertical
Voltages:	208 thru 480 Volt
Phase:	1 or 3 Φ
Inlet Size	
Below 45 KW:	3/4" Female NPT
45 KW and over:	1 1/2" Male NPT
Outlet Size	
Below 45 KW:	3/4" Male NPT
45 KW and over:	1 1/2" Male NPT
Drain Size:	3/4" Hose Connection
Relief Valve Size:	3/4" Female NPT
Relief Valve Type:	T&P, 210°F, 150 psi
Thermostat Range	
Surface:	110-170°F
Immersion:	100-190°F
Hi-Limit:	190°F
Design WP:	150 psi
Design TP:	300 psi
Elements:	Incoloy Sheathed
Insulation:	2" Polyurethane Foam
Tank Warranty	
Standard:	5 Year Non Pro-Rated
Optional:	10 Year Non Pro-Rated
Electrical Warranty:	1 Year
Jacket:	High Impact Colorized Composite
Color:	Brown and Tan

Standard Equipment

- 1/2" thick Hydrastone cement lining.
- Non-ferrous solid copper-silicon threaded openings for maximum corrosion resistance.
- Magnetic contactor(s) are heavy duty resistive load type rated for 100,000 cycles.
- Incoloy sheathed immersion heating elements.
- Built-in heat trap to improve operating efficiency.
- Surface thermostat 110-170°F range.
- Immersion thermostat (100-190°F) furnished as standard when required due to high recovery versus storage ratio. See below for details.*

  * On 6-30 gallon heaters over 5 KW.
  On 40 and 50 gallon heaters over 8 KW.
  On 65 gallon heaters over 12 KW.
  On 80-120 gallon heaters over 15 KW.

- Surface safety hi-limit cut out with manual reset button (190°F).
- Immersion safety hi-limit cut out with manual reset button (Standard on heaters 45 KW and above).
- 1 1/2" Male NPT inlet / outlet connections (Standard on heaters 45 KW and above).
- ASME rated temperature and pressure relief valve set at 150 psi, 210°F.
- 2" thick polyurethane foam insulation.
- High impact non-corroding colorized composite protective jacket.
- Cold water inlet diffuser with drain valve.

Optional Equipment

- ☐ **1.** Full 10 Year Non Pro-Rated tank warranty.
- ☐ **2.** Low voltage control circuit (fused) transformer.
- ☐ **3.** Electronic low water cut off.
- ☐ **4.** Individually fused elements.
- ☐ **5.** Immersion thermostat (specify 100-190°F or 30-110°F Range).
- ☐ **6.** Immersion adjustable (100-240°F) safety hi-limit cut out with manual reset.
- ☐ **7.** Solid copper-silicon tank (ASTM SB-96) for maximum tank life.
- ☐ **8.** 1 1/2" Male NPT brass inlet and outlet water connections (heat trap not available).
- ☐ **9.** 2" Male NPT brass inlet and outlet water connections (heat trap not available).
- ☐ **10.** Combination temperature and pressure gauge; 2 1/2" dial, 70-250°F, 0-200 psi - factory installed.
- ☐ **11.** Upper and lower heating element design for quicker recovery.
- ☐ **12.** Built-in circuit breaker, specify with or without shunt trip protection.
- ☐ **13.** Built-in non-fused On/Off disconnect switch.
- ☐ **14.** Electro-mechanical 7-day time clock with battery back-up.
- ☐ **15.** Building Management System (BMS) control package for remote operating / alarm capability.
- ☐ **16.** Horizontal construction, specify ceiling hung or base mounted.
- ☐ **17.** NEMA 4x water tight construction for installation in “wet” areas.
- ☐ **18.** Steel wall shelf for 6 and 10 gallon models.
- ☐ **19.** Integrally welded seismic attachment points.

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KW Selection Chart With Amperage

Standard Rating KW	BTU/HR	GPH Recovery at 100°F Rise	Amperage Ratings At Various Voltages							
			Single Phase			Three Phase				
			208V	240V	480V	208V	240V	380V	415V	480V
3	10,236	12	14	13	6	8	7	5	4	4
4	13,648	16	19	17	8	11	10	6	6	5
6	20,472	25	29	25	13	17	15	9	8	7
8	27,296	33	39	33	17	22	19	12	11	10
10	34,120	41	48	42	21	28	24	15	14	12
12	40,944	49	58	50	25	33	29	18	17	15
15	51,180	62	72	63	31	42	36	23	21	18
18	61,416	74	87	75	38	50	43	27	25	22
20	68,240	82	96	83	42	56	48	30	28	24
24	81,888	98	115	100	50	67	58	37	33	29
30	102,360	123	144	125	63	83	72	46	42	36
36	122,832	148	173	150	75	100	87	55	50	43
40	136,480	164	192	167	83	111	96	61	56	48
45	153,540	185	216	188	94	125	108	69	63	54
50	170,600	205	240	208	104	139	120	76	70	60
54	184,248	221	260	225	113	150	130	82	75	65
58	197,896	238	279	242	121	161	140	88	81	70

Notes:

1. The KW selections above are shown for convenience. A full selection of KW ratings from 1 to 58 KW is available by simply entering the desired KW into the model number.
2. Units 45 KW and over are supplied with 1 1/2" Male NPT inlet/outlet connections and immersion hi-limit.

Formulas To Solve For:

Recovery

GPH x _____ $^{o}F\ \Delta T$ x 0.00244 = KW

KW x 410 ÷ GPH = _____ $^{o}F\ \Delta T$

KW x 410 ÷ _____ $^{o}F\ \Delta T$ = GPH

Note: *1 KW will heat 4.1 GPH at a 100$^{o}F\ \Delta T$*

Electrical

$$\frac{KW \times 1000}{Volts} \div 1.73 = Amps\ 3\ \Phi$$

$$\frac{KW \times 1000}{Volts} = Amps\ 1\ \Phi$$

Metric Conversion

Liters x 0.2641 = Gallons

Gallons x 3.79 = Liters

Gallons x 0.003785 = m^3

m^3 x 264.2 = Gallons

$1^{o}C\ \Delta T = 1.8^{o}F\ \Delta T$

$^{o}F = (^{o}C \times 1.8) + 32$

$^{o}C = (^{o}F - 32) \times 0.556$

psi x 0.06896 = Bar

Bar x 14.5 = psi

psi x 6.86 = kPa

kPa x 0.1456 = psi

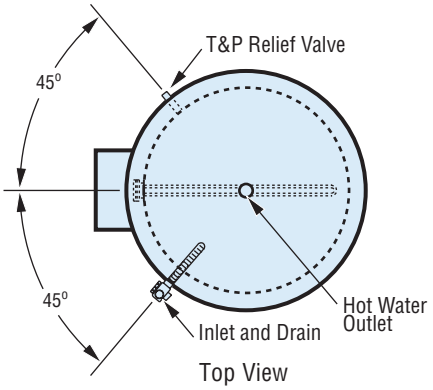
Lbs x 0.4536 = Kg

Kg x 2.2 = Lbs

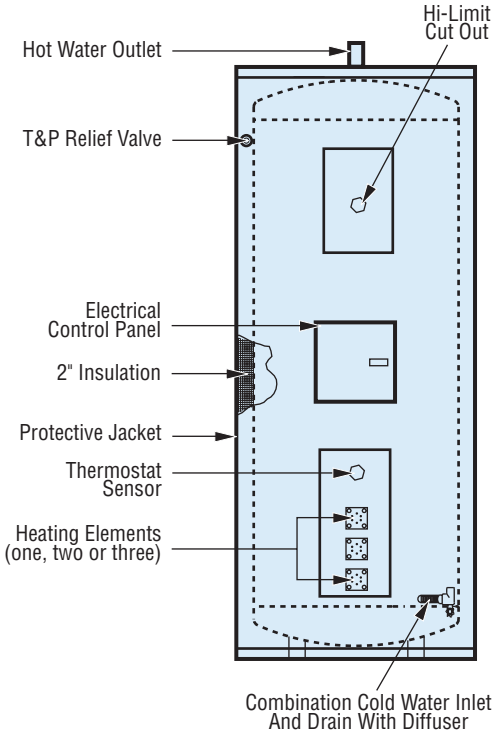
Watts/Sq.Cm. x 6.4 = Watts/Sq.In.

Watts/Sq.In. x 0.155 = Watts/Sq.Cm.

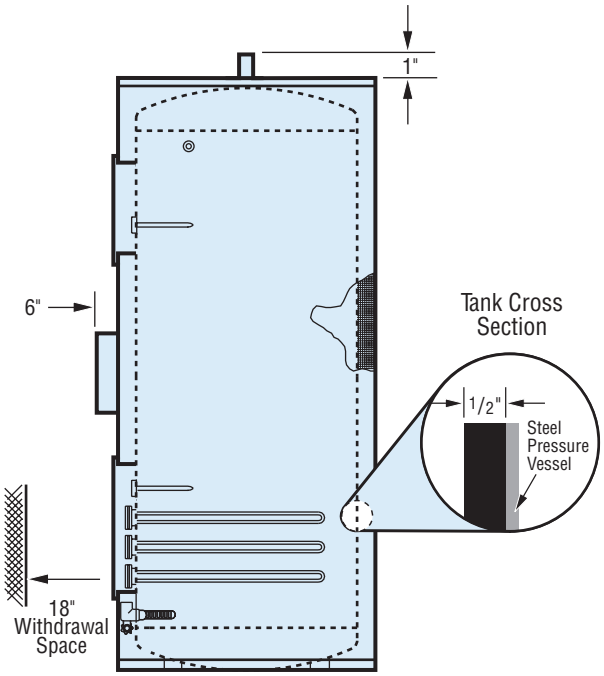
Outline Dimensions



Top View



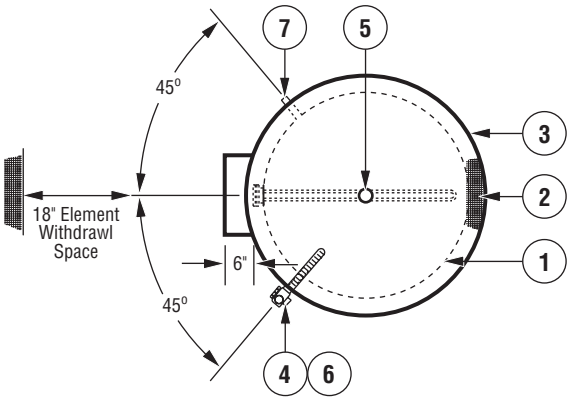
Front View



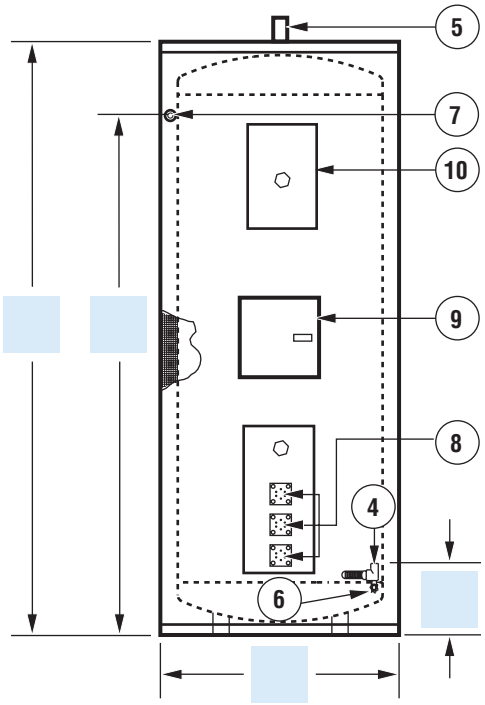
Side View

Model SE Dimensional Data

Storage Capacity (Gallons)	Base Model Number	Maximum KW Input	Dimensions (Inches)				Shipping Weight (lbs.)
			Diameter	Height	Floor to Inlet	Floor to T&P	
6	**SE06**	3	14	17.5	5	12	80
10	**SE10**	10	20	21	7	15	105
20	**SE20**	10	20	33	7	27	145
30	**SE30**	20	20	41.5	7	34	175
40	**SE40**	20	20	58.75	7	51	225
50	**SE50**	58	22.75	51	7	43	240
65	**SE65**	58	26	48	8	40	305
80	**SE80**	58	26	58	8	51	340
100	**SE100**	58	26	69.5	8	62	370
120	**SE120**	58	28	69.25	8	62	420
40	**SEU40**	58	26	33	7	24	230



Top View



Front View

PC Number	Description
1	Hydrastone cement Lined Tank
2	2" Polyurethane Foam Insulation
3	Corrosion Resistant Jacket
4	Cold Water Inlet
5	Hot Water Outlet
6	Drain Connection
7	Relief Valve Connection
8	Heating Element(s)
9	Electrical Control Panel
10	Hi-Limit / Upper Panel

General Characteristics

	Gallon Storage Capacity
	Total KW Rating
	Volts
	Phase
	Hertz
	Full Load Amperage
	Inlet / Outlet Size
	Dry Weight (Lbs.)
	Tank Warranty (Years)

Recovery Rating

GPH @ °F ΔT (°F - °F)

Notes:

1. Storage tank rated for 150 psi WP
2. ASME rated T&P relief valve shipped loose
3. Built-in heat trap supplied in hot water outlet
4. All electrical controls are factory wired and tested

Hubbell™
Electric Water Heater

The Electric Heater Company ▪ Stratford, CT

Model No.:

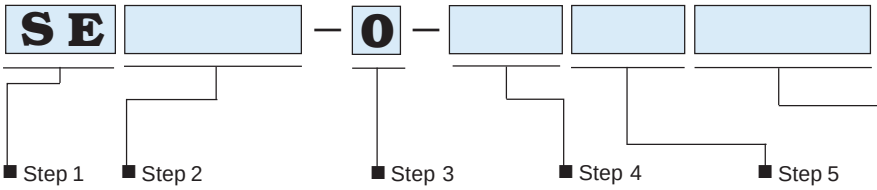
Location:

QTY:

Date:

By: R.P. **DWG No.**

Model Number Designation



Step 1
Model:
SE

Step 2
Gallon Capacity:
6-120 U.S. Gallons

Step 3
Upper KW:
Element bank
0 - 58 KW
(typically 0)
Not available in 6, 10, 20 Gallon capacity heaters

Step 4
Lower KW:
Element bank
1 - 58 KW

Step 5
Tank:
SL =
Hydrastone Cement lined tank
CS =
Solid copper-silicon alloy tank

Step 6
Voltage / Phase / Hz:
RS = 208-1-60
R = 208-3-60
S = 240-1-60
T = 240-3-60
W = 277-1-60
T3 = 380-3-50/60
T7 = 415-3-50/60
T5 = 440-3-60
T4 = 480-3-60
T4S = 480-1-60
T6 = 575-3-60

Example: SE120 - 0 - 18SLT4

Model SE with a storage capacity of 120 Gallons with 18 KW in the lower element bank. Storage tank is lined with Hydrastone cement and the electrical controls operate at 480 V, three phase, 60 Hz power.

Option Note

Any and all optional equipment for a water heater must be called out in the written specifications. A model number in and of itself does not reflect any optional equipment selected.

MASTER SPECIFICATIONS: MODEL SE

JOB NAME _____ ENGINEER _____

REPRESENTATIVE _____ CONTRACTOR _____

GENERAL

Provide a quantity of _____ commercial electric water heater(s) Model No. _____ as manufactured by HUBBELL Electric Heater Co., Stratford, CT. The entire unit is to be complete with all operating controls and require only plumbing and electrical service connections. The tank shall be all welded steel commercial construction designed for 150psi working pressure and contain _____ gallons of storage. The tank is to be lined with seamless Hydrastone cement to a minimum thickness of $^{1}/_{2}$" on 100% of all interior tank surfaces **(☐ Optional Specification:** *tank to be fabricated from solid copper-silicon* **)** and shall not require any type of anodic protection. The tank shall be designed and fabricated with non-ferrous copper-silicon threaded tappings and non-ferrous inlet and outlet piping for maximum corrosion resistance. Steel tank tappings will not be acceptable. The entire tank is to be insulated with a minimum of 2" thick polyurethane foam insulation and exceed the latest ASHRAE standard for stand-by heat loss. The complete heater shall be supplied with a high impact colorized composite protective jacket which cannot rust or corrode and does not require painting.

The cold water inlet shall be $^{3}/_{4}$" Female NPT **(☐ Optional Specification:** *$1^{1}/_{2}$" Male NPT* **)** and include a non-corrosive strata-flow diffuser which prevents incoming cold water from mixing too rapidly with hot water in the tank. A $^{3}/_{4}$" hose connection drain is supplied. The hot water outlet shall be $^{3}/_{4}$" Male NPT **(☐ Optional Specification:** *$1^{1}/_{2}$" Male NPT* **)** and shall include a factory installed built-in heat trap to prevent water from radiating through the piping during stand-by periods. A separate $^{3}/_{4}$" Female NPT tapping is to be provided for relief valve installation. An ASME rated automatic reseating combination temperature and pressure safety relief valve set at 150psi and 210°F shall be factory supplied.

RECOVERY

The heating element(s) shall be a high quality incoloy sheath electric immersion type and shall be rated at _____ KW which will heat _____ GPH of water at _____ °F Rise (_____ ° to _____ °F).

ELECTRICAL

The heater shall be designed to operate at _____ volts _____ phase _____ Hz (balanced) with all necessary operating controls factory mounted, wired and tested. Each circuit is to be independently operated through a definite purpose magnetic contactor having a resistive load rating exceeding the ampere rating of that particular circuit. Water temperature shall be controlled through an adjustable snap action surface thermostat **(☐ Optional Specification:** *an immersion thermostat 100-180°F or 30-110°F* **)**. An over-temperature manual reset Hi-Limit shall be factory installed to disconnect all conductors to the heating element(s) in the event of an over-temperature condition in the pressure vessel.

In addition, the water heater shall be supplied with the following optional features:

☐ **Option** _____

☐ **Option** _____

☐ **Option** _____

The water heater manufacturer shall warranty all electrical components against defects in workmanship and material for a period of one (1) year from date of start-up, and the pressure vessel for a full five (5) years Non Pro-Rated **(☐ Optional Specification:** *full ten (10) years Non Pro-Rated* **)** from date of start-up, provided that the unit is started within three (3) months of date of shipment and installed and operated within the scope of the tank design and operating capability. Each water heater shall be shipped with a complete set of installation and operating instructions including spare parts list and approved drawings.

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