

# Hubbell™

## Marine Products Division



*The Model MSE water heater is  
the perfect choice for your  
marine application.*

## Model MSE

# Shipboard Electric Water Heater

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

### 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

### Marine Approvals

- United States Coast Guard (USCG) conformance and American Bureau of Shipping (ABS) approved
- USCG conformance and ABS approval eliminates costly delays and uncertainties during ship inspection

### Wide Selection

- Built to meet your exact needs
- Numerous options available for specialized applications

### Mounting Systems

- Heavy-duty legs secure the tank to deck
- Side-sway bulkhead attachment points provide added mounting integrity
- The entire mounting system is integrally welded to tank for maximum stability and safety

### High Efficiency

- 2" thick polyurethane foam insulation reduces heat loss
- Built-in heat trap lowers operating costs

### 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

## A Long Lasting, Trouble-Free Water Heater

The Hubbell Model MSE water heater is specifically designed for marine use and is in USCG conformance and is ABS approved. By utilizing deck and bulkhead mounting supports, the water heater is securely fastened to the ship structure, thus providing a safer and sturdier water heater installation. To ensure tank longevity, the high quality tank is constructed of steel and internally lined with specially formulated hydrastone cement. The hydrastone cement lining, along with solid copper-silicon threaded tank openings and a built-in heat trap device, all ensure a longer lasting, energy efficient water heater that is resistant to the highly corrosive effects of hot water.

When you specify and install a Hubbell model MSE, knowing that it is in conformance with USCG regulations and ABS approved, you will have the confidence in knowing that the ship owner will be provided with a long lasting, trouble-free source for hot water.



TYPE APPROVAL PROGRAM



ISO 9001:2000 ISO

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# Cement Lined Tanks Provide Longer Service Life

Hubbell™

**Q**

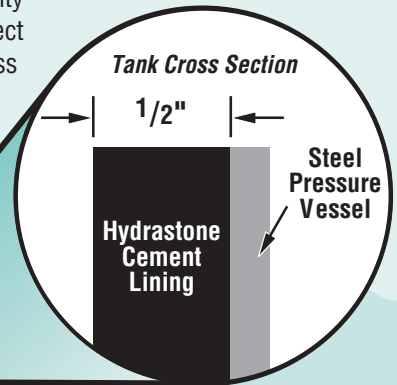
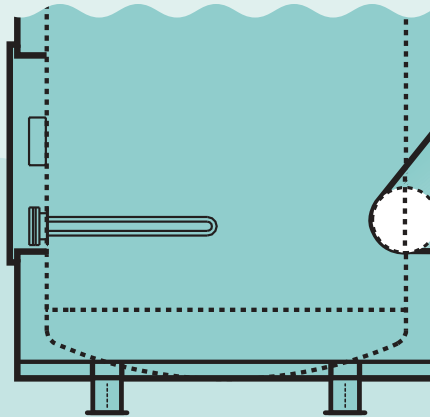
**What is the most common reason why a water heater fails?**

**A**

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.

Glass Lining



## Threaded tapping material is critical for tank longevity.

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

The Hubbell Model MSE is a longer lasting marine 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 MSE, you will have confidence in knowing that the owner will be provided with a trouble-free and long lasting marine water heater.

### Thickness

Each Hubbell Model MSE 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 specially formulated high density lining designed to provide maximum protection from the corrosive effects of hot water.

### Reduced Operating Costs

The Hubbell Model MSE marine 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 tapings.

Additionally, the Model MSE reduces operating expenses by eliminating the periodic inspection and replacement costs associated with maintaining a sacrificial anode in a glass lined tank.

## Two common internal tank linings are Glass & Cement

### 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.

### 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.



## Model MSE Water Heater Specifications

<b>Tank:</b>	Hydrastone cement Lined Steel
<b>Capacities:</b>	6 thru 120 Gallons
<b>Orientation:</b>	Vertical
<b>Voltages:</b>	208 thru 575 Volt
<b>Phase:</b>	1 or 3 $\Phi$
<b>Inlet Size</b>	
Below 45 KW:	3/4" Female NPT
45 KW and over:	1 1/2" Male NPT
<b>Outlet Size</b>	
Below 45 KW:	3/4" Male NPT
45 KW and over:	1 1/2" Male NPT
<b>Drain Size:</b>	3/4" GHT Hose Connection
<b>Relief Valve Size:</b>	3/4" Female NPT

**Relief Valve Type:** T&P, 210°F, 100 psi

**Thermostat Range**

Surface: 110-170°F  
Immersion: 100-190°F

**Hi-Limit:** 190°F

**Design WP:** 100 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

**Marine Classifications:** ABS and USCG

## Standard Equipment

- 1/2" thick Hydrastone cement lining.
- Integrally welded bulkhead attachment points.
- Heavy-duty integrally welded leg supports for deck mounting.
- 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.
- Low voltage control circuit (fused) transformer (units over 240 volt).
- Power circuit fuse protection (units over 48 amp).
- Incoloy sheathed immersion heating elements.
- Built-in heat trap to improve operating efficiency. ( 3/4" only)
- 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).
- ASME rated temperature and pressure relief valve set at 100 psi, 210°F.
- 2" thick polyurethane foam insulation.
- High impact non-corroding colorized composite protective jacket.
- Cold water inlet diffuser with drain valve.

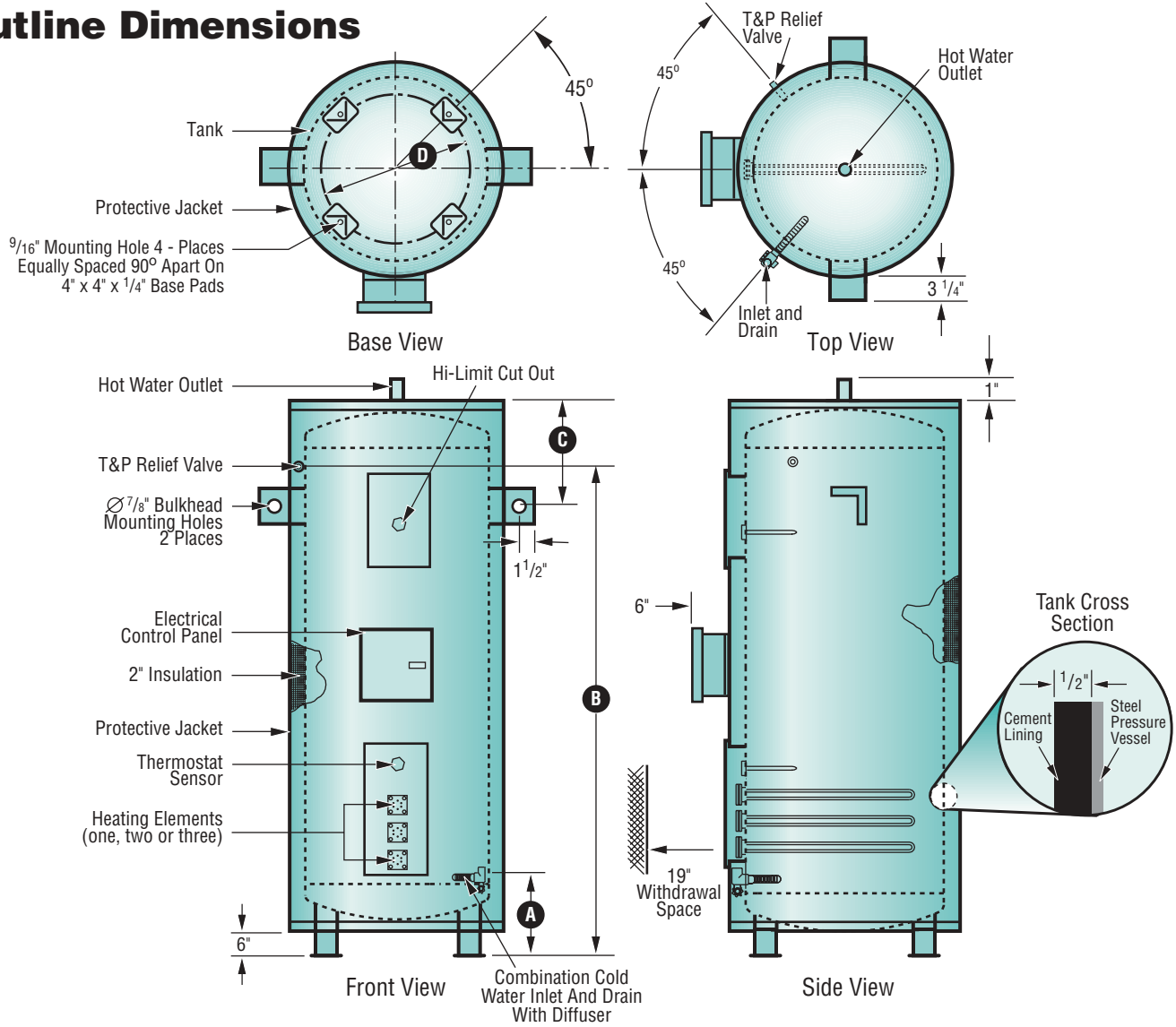
## Optional Equipment

- 1. Full 10 Year Non Pro-Rated tank warranty.
- 2. Control circuit (fused) transformer. (Standard on units over 240V).
- 3. Electronic low water cut off.
- 4. Power circuit fuse protection.
- 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 Type 316L stainless steel tank or solid copper-silicon alloy tank.
- 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. Special connection size/type: \_\_\_\_\_
- 11. Combination temperature and pressure gauge; 2 1/2" dial, 70-250°F, 0-200 psi — factory installed in tank.
- 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. Horizontal construction.
- 16. NEMA 4 water tight construction for installation in "wet" areas.
- 17. Belly-band strapping system to secure 6, 10, 20, and 30 gallon units.
- 18. Secondary heating capability provided by a tank inserted heat exchanger constructed from single wall (*Optional: double wall*) copper fin tube. Specify 20 or 40 Sq. Ft. heating surface.





### Outline Dimensions



### Dimensional Data

Storage Capacity (Gallons)	Base Model Number	Maximum KW Input	Dimensions (Inches)						Shipping Weight (lbs.)
			Overall Diameter	Overall Height	Deck to Inlet (A)	Deck to T&P (B)	Bulkhead Mounting Dimension (C)	Bolt Circle (D)	
6	MSE06	3	14	17.5	5	12.5	None	N/A	120
10	MSE10	10	20	21	7	15	None	N/A	155
20	MSE20	10	20	33	7	27	None	N/A	195
30	MSE30	15	20	41.5	7	34	None	N/A	225
40	MSE40	15	20	64.75	13	57	12	12	315
50	MSE50	58	22.75	57	13	49	12	16	330
65	MSE65	58	26	54	14	46	12	16	395
80	MSE80	58	26	64	14	57	12	16	430
100	MSE100	58	26	75.5	14	68	12	18	460
120	MSE120	58	28	75.25	14	68	12	18	510
40	MSEU40	58	26	39	13	30	None	16	320

**Note:**  
The 6, 10, 20 and 30 gallon units are not supplied with legs and bulkhead mounting points. Due to the small size of these units, it is recommended that a belly band strapping system be utilized to secure these units in place.

**Marine Products Division**  
**The Electric Heater Company**  
**Stratford, CT**

Model No: \_\_\_\_\_

Vessel Name: \_\_\_\_\_

Location: \_\_\_\_\_

QTY: \_\_\_\_\_

Date: \_\_\_\_\_

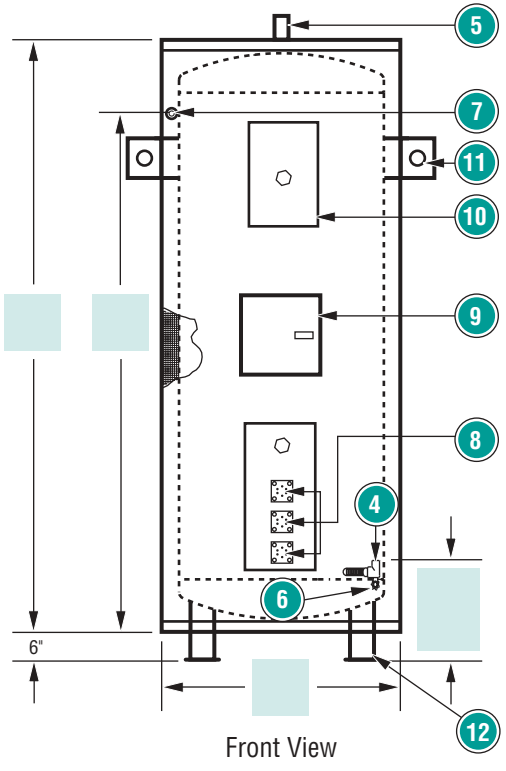
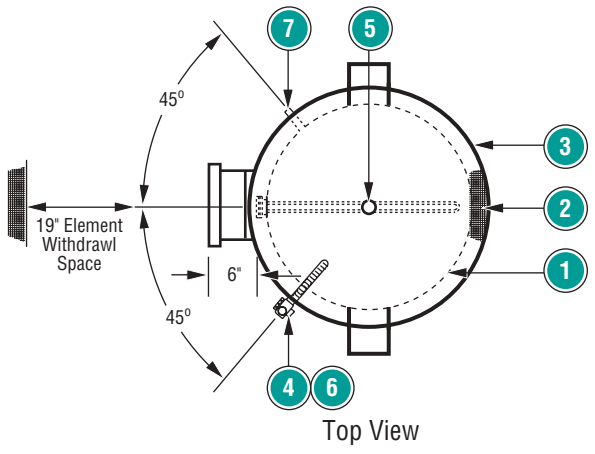
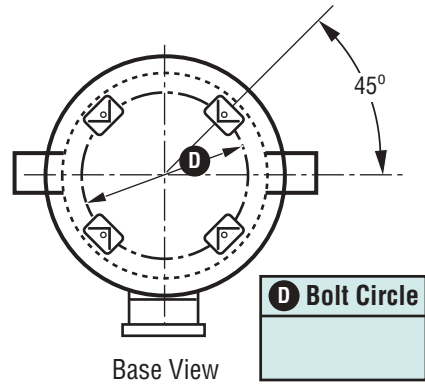
PC Number	Description
1	Hydrastone cement Lined Tank
2	2" Polyurethane Foam Insulation
3	Corrosion Resistant Jacket
4	Cold Water Inlet
5	Hot Water Outlet
6	Drain Connection
7	Relief Valve Connection
8	Heating Element(s)
9	Electrical Control Panel
10	Hi-Limit / Upper Panel
11	Bulkhead Attachment Points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

General Characteristics	
	Gallon Storage Capacity
	Total KW Rating
	Volts
	Phase
	Hertz
	Full Load Amperage
	Inlet / Outlet Size
	Dry Weight (Lbs.)
	Wet Weight (Lbs.)

Recovery Rating	
_____ GPH @ _____ °F ΔT ( _____ °F - _____ °F )	

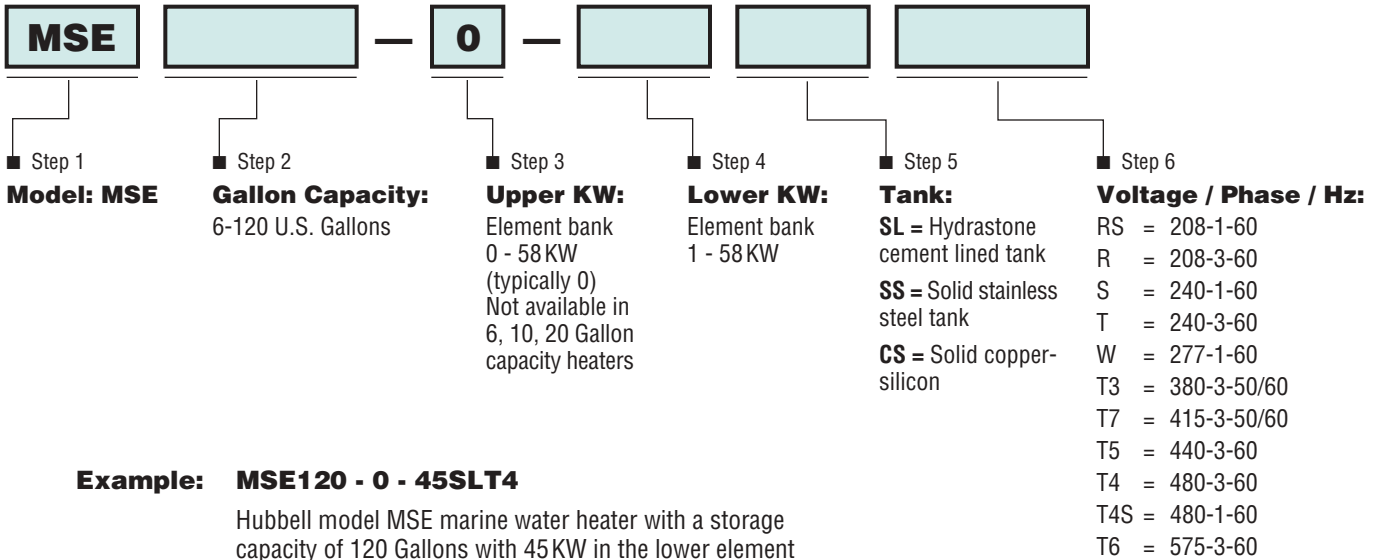
**Notes:**

1. Storage tank rated for 100psi WP
2. ASME rated T&P relief valve shipped loose
3. Built-in heat trap supplied in hot water outlet (3/4" size only)
4. All electrical controls are factory wired and tested
5. Unit is in conformance to USCG regulations and ABS approved and listed for shipboard installation.





## Model Number Designation



**Example: MSE120 - 0 - 45SLT4**

Hubbell model MSE marine water heater with a storage capacity of 120 Gallons with 45KW in the lower element bank. Storage tank is lined with Hydrastone cement and the electrical controls operate at 480V, 3 phase, 60Hz power.

*(Manufacturer reserves the right to change specifications without notice.)*

### 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.



## Model MSE

# Master Specifications

SHIP NAME \_\_\_\_\_

ENGINEER / NAVAL ARCHITECT \_\_\_\_\_

SHIPYARD \_\_\_\_\_

CONTRACTOR \_\_\_\_\_

### General

Provide a quantity of \_\_\_\_\_ heavy-duty marine electric water heater(s) Model No. \_\_\_\_\_ as manufactured by HUBBELL Electric Heater Co., Stratford CT. The water heater shall be constructed specifically for shipboard installation utilizing deck and bulkhead mounting supports that are integrally welded to the pressure vessel. The entire water heater shall meet USCG regulations and be ABS listed and approved for marine use and shall be complete with all operating controls requiring only plumbing and electrical service connections. The tank shall be all welded steel commercial construction designed for 100psi working pressure and contain \_\_\_\_\_ gallons of storage. The tank shall 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 alloy or type 316L stainless steel. For this option no internal lining is required due to the non-ferrous materials used in construction of the pressure vessel.* ) The tank 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 shall 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 unit shall bear the ABS approval mark certifying the entire water heater.

The heater shall be supplied with separate cold water and hot water connections. Water entering the cold water inlet shall be deflected by means of a baffle within the tank. Dip tubes shall not be accepted. The hot water outlet shall include a built-in heat trap to prevent hot water from radiating out from the heater during standby periods. A separate 3/4" FNPT connection shall be provided for mounting a combination safety temperature and pressure relief valve. A 3/4" GHT connection is supplied for draining. An ASME rated automatic reseating combination temperature and pressure safety valve set at 100psi and 210°F shall be factory supplied.

### Recovery

The heating element(s) shall be high quality incoloy sheathed immersion type and rated at a total of \_\_\_\_\_ KW that will heat \_\_\_\_\_ GPH of water at \_\_\_\_\_ °F rise ( \_\_\_\_\_ to \_\_\_\_\_ °F).

### Electric

The heater shall be designed to operate at \_\_\_\_\_ volts \_\_\_\_\_ phase \_\_\_\_\_ Hz (balanced) with all necessary operating controls factory mounted, wired and tested. Each circuit shall be independently operated through a definite purpose magnetic contactor rated for 100,000 cycles. Water temperature shall be controlled through an adjustable thermostat. 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 options:

- 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 Tank Warranty* ) 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.

*Continuing research results in product improvement; therefore these specifications are subject to change without notice. For the most updated information, consult the factory.*

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