

Process Water Heater

For Industrial Applications
All Voltages, Single or Three Phase Up To 88 KW

FEATURES

- **Industrial Grade Construction**
 - Stainless steel pressure vessel provides maximum service life
 - ASME Section VIII stamped vessel ensures high quality construction
 - Heavy duty construction withstands demanding industrial use
 - Packaged with all electrical operating controls for efficient installation
- **Versatile Design**
 - Small reserve capacity lowers peak power demand and reduces operating costs in systems with ON/OFF cyclical demand
 - Most units are easily upgradable for future expansion
 - A full range of styles, sizes and optional features are readily available to meet your exact heating needs



Applications

- Washing/Cleaning Systems
- OEM Packages
- Heat Transfer Systems
- Water Treatment Systems
- Freeze Protection
- Sanitizing Systems
- Process Heating



A Reliable Industrial Process Water Heater

The Model V is a dependable and trouble-free source for hot water in continuous, cyclical or variable flow systems in a wide range of applications. The heart of the V Model is a solid stainless steel ASME stamped pressure vessel which is impervious to the corrosive effects of hot water and provides maximum vessel longevity. Only the highest quality materials and components are used to ensure reliable operation in even

the most demanding application. The V Model is ready for immediate installation and service and all electrical operating controls are factory selected, sized and wired. When you specify and install Model V, you will have confidence in knowing the owner will be provided with a trouble-free and long lasting source for hot water.

Why Install Industrial Grade Water Heater?

1 Reliability

The process heater is designed to provide many years of operation. The tank is all stainless steel construction and is designed, constructed and stamped in strict conformance to ASME Section VIII.

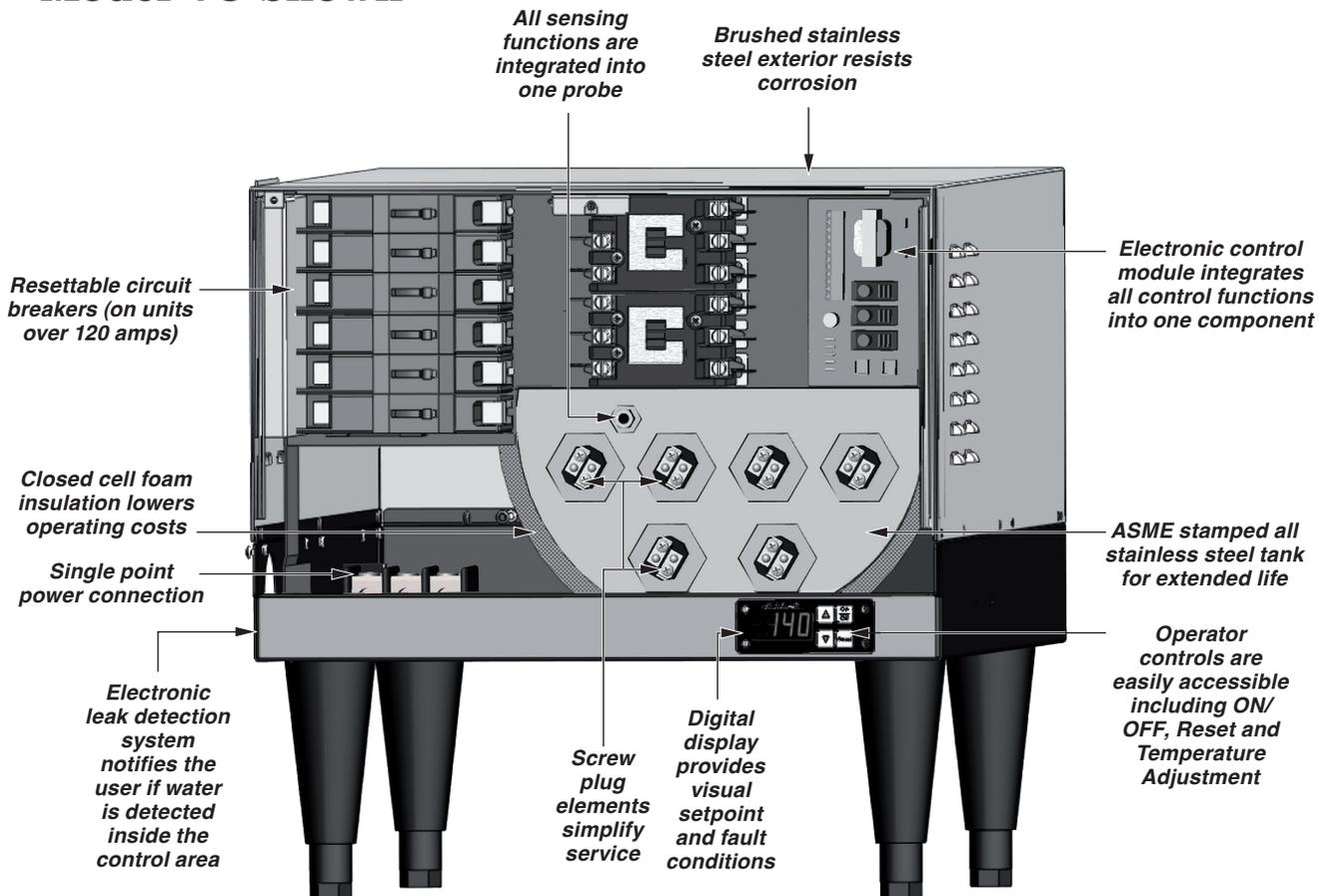
2 Lower Operating Costs

The pressure vessel is encapsulated in environmentally friendly CFC/HCFC free closed cell foam insulation to minimize stand-by heat loss. This high quality insulation reduces heat loss by more than half when compared to fiberglass type insulation.

3

Advanced Construction Provides trouble-free system integration, operation and maintenance. Temperature control is provided by an electronic solid state digital display controller. The controller is fully adjustable from 32-194°F (0°-90°C) and includes an adjustable temperature differential. The heater includes an integral low water cut off feature to prevent the heating elements from dry firing and an internal leak detection sensor notifies an operator if water is present in the control cabinet. For further ease of service and maintenance, all controls are mounted such that when a component is removed for service no other component needs to be removed and all sensing functions are integrated into one probe. The heating element and sensing probe are straight thread screw types that utilize an O-ring to minimize leakage problems as is common with flat gaskets and NPT connections.

Model V6 Shown

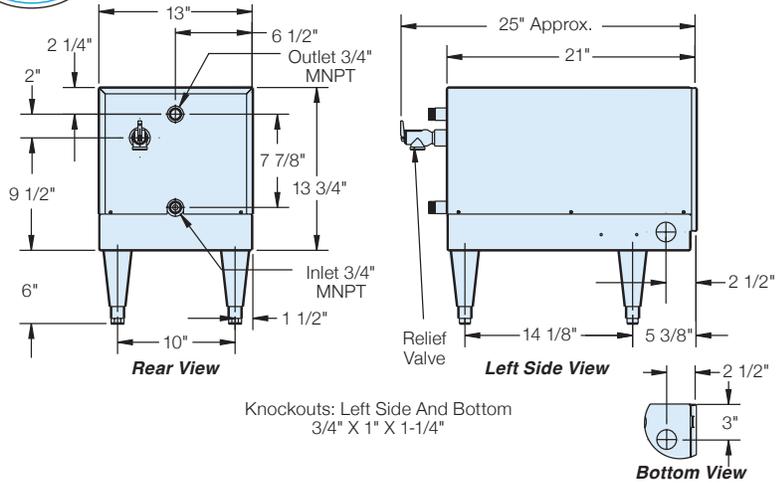


Note: All components are removable without disturbing any other component.

Model V6 - (1 to 18kW) Dimensions



Shipping Weight: 95 lbs.



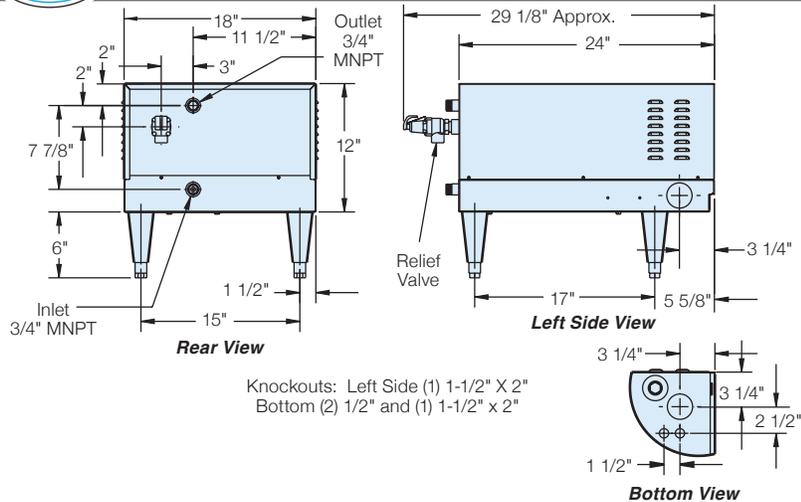
Base Model	KW Rating	Storage Capacity (Gallons)	Model Number Selection Chart With Amperage																
			Full Model Number Listed By Voltage & Phase								Amperage Draw By Voltage & Phase								
			120 V		208 V			240 V			480 V		120 V		208 V		240 V		480 V
			1Φ	3Φ	1Φ	3Φ	3Φ	1Φ	1Φ	1Φ	3Φ	1Φ	3Φ	3Φ	1Φ				
V6	1	6 Gallons	V61A	—	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—
	1.5		V61.5A	—	—	—	—	—	—	13	—	—	—	—	—	—	—	—	—
	2		V62A	—	—	—	—	—	—	17	—	—	—	—	—	—	—	—	—
	3		V63A	—	—	—	—	—	—	25	—	—	—	—	—	—	—	—	—
	4		V64RS	—	—	V64S	—	—	V64T4S	—	19	—	17	—	—	—	—	—	9
	5		V65RS	—	—	V65S	—	—	V65T4S	—	24	—	21	—	—	—	—	—	11
	6		V66RS	V66R	V66S	V66T	V66T4	—	—	29	17	25	14	7	—	—	—	—	—
	7		V67RS	V67R	V67S	V67T	V67T4	—	—	34	19	29	17	8	—	—	—	—	—
	9		V69RS	V69R	V69S	V69T	V69T4	—	—	43	25	38	22	11	—	—	—	—	—
	10.5		V610RS	V610R	V610S	V610T	V10T4	—	—	50	29	44	25	13	—	—	—	—	—
	12		V612RS	V612R	V612S	V612T	V612T4	—	—	58	33	50	29	14	—	—	—	—	—
	13.5		V613RS	V613R	V613S	V613T	V613T4	—	—	65	38	56	33	16	—	—	—	—	—
	15		V615RS	V615R	V615S	V615T	V615T4	—	—	72	42	63	36	18	—	—	—	—	—
	18		V618RS	V618R	V618S	V618T	V618T4	—	—	87	50	75	43	22	—	—	—	—	—

Note: The 6, 7, and 9kw models in 208 and 240 volt can be field converted from either 1 phase to 3 phase or from 3 phase to 1 phase

Model V6 - (24 to 58.5kW) Dimensions



Shipping Weight: 110 lbs.

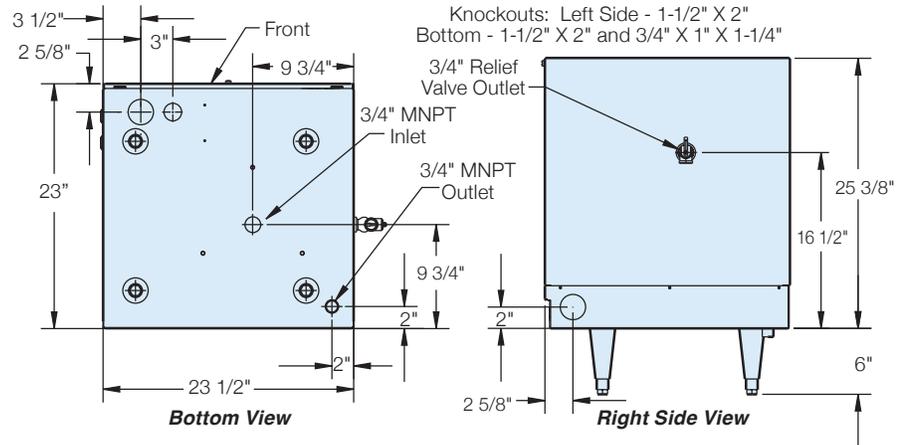


Base Model	KW Rating	Storage Capacity (Gallons)	Model Number Selection Chart With Amperage														
			Full Model Number Listed By Voltage & Phase						Amperage Draw By Voltage & Phase								
			208 V		240 V		480 V		208 V		240 V		480 V				
		1Φ	3Φ	1Φ	3Φ	3Φ	1Φ	1Φ	3Φ	1Φ	3Φ	3Φ	1Φ				
V6	24	6 Gallons	V624RS	V624R	V624S	V624T	V624T4	—	115	67	100	58	29	—	—	—	—
	27		V627RS	V627R	V627S	V627T	V627T4	—	130	75	113	65	33	—	—	—	—
	30		V630RS	V630R	V630S	V630T	V630T4	—	144	83	125	72	36	—	—	—	—
	36		V636RS	V636R	V636S	V636T	V636T4	—	173	100	150	87	43	—	—	—	—
	39		V639RS	V639R	V639S	V639T	V639T4	—	188	108	163	94	47	—	—	—	—
	40.5		V640RS	V640R	V640S	V640T	V640T4	—	192	111	167	96	48	—	—	—	—
	45		—	V645R	V645S	V645T	V645T4	—	—	119	188	108	54	—	—	—	—
	54		—	V654R	—	V654T	V654T4	—	—	150	—	130	65	—	—	—	—
	58.5		—	V658R	—	V658T	V658T4	—	—	163	—	141	70	—	—	—	—

Model **V16** - (4 to 58.5 kW) Dimensions



Shipping Weight: 180 lbs.

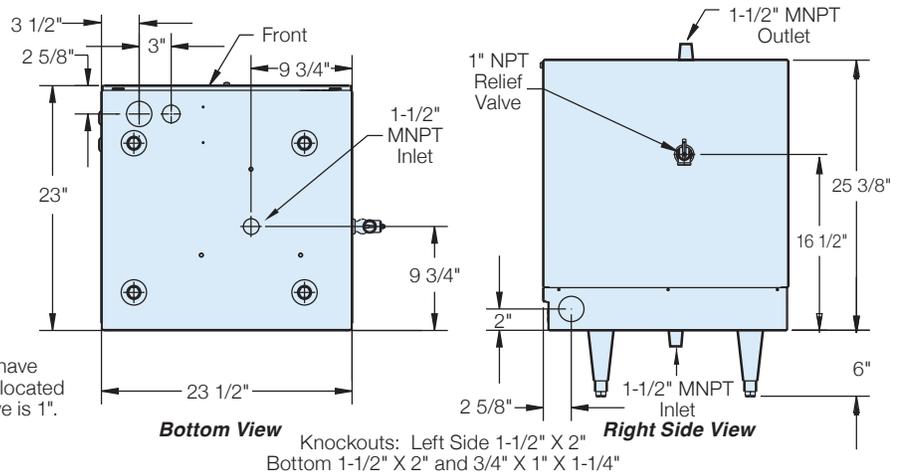


Model **V16** - (64 to 88 kW) Dimensions



Shipping Weight: 195 lbs.

Note: Models 64 kW and above have 1 1/2" inlet and outlet connections located in the top and bottom. Relief valve is 1".



Model Number Selection Chart With Amperage														
Base Model	KW Rating	Storage Capacity (Gallons)	Full Model Number Listed By Voltage & Phase						Amperage Draw By Voltage & Phase					
			208 V		240 V		480 V		208 V		240 V		480 V	
			1Φ	3Φ	1Φ	3Φ	3Φ	1Φ	1Φ	3Φ	1Φ	3Φ	1Φ	
V16 3/4" Inlet & Outlet	4	16 Gallons	V164RS	—	V164S	—	—	V164T4S	19	—	17	—	—	9
	5		V165RS	—	V165S	—	—	V165T4S	24	—	21	—	—	11
	6		V166RS	V166R	V166S	V166T	V166T4	—	29	17	25	14	7	—
	7		V167RS	V167R	V167S	V167T	V167T4	—	34	19	29	17	8	—
	9		V169RS	V169R	V169S	V169T	V169T4	—	43	25	38	22	11	—
	10.5		V1610RS	V1610R	V1610S	V1610T	V1610T4	—	50	29	44	25	13	—
	12		V1612RS	V1612R	V1612S	V1612T	V1612T4	—	58	33	50	29	14	—
	13.5		V1613RS	V1613R	V1613S	V1613T	V1613T4	—	65	38	56	33	16	—
	15		V1615RS	V1615R	V1615S	V1615T	V1615T4	—	72	42	63	36	18	—
	18		V1618RS	V1618R	V1618S	V1618T	V1618T4	—	87	50	75	43	22	—
	24		V1624RS	V1624R	V1624S	V1624T	V1624T4	—	115	67	100	58	29	—
	27		V1627RS	V1627R	V1627S	V1627T	V1627T4	—	130	75	113	65	33	—
	30		V1630RS	V1630R	V1630S	V1630T	V1630T4	—	144	83	125	72	36	—
	36		V1636RS	V1636R	V1636S	V1636T	V1636T4	—	173	100	150	87	43	—
	39		V1639RS	V1639R	V1639S	V1639T	V1639T4	—	188	108	163	94	47	—
	40		V1640RS	V1640R	V1640S	V1640T	V1640T4	—	192	111	167	96	48	—
45	—	V1645R	V1645S	V1645T	V1645T4	—	—	119	188	108	54	—		
54	—	V1654R	—	V1654T	V1654T4	—	—	150	—	130	65	—		
58.5	—	V1658R	—	V1658T	V1658T4	—	—	163	—	141	70	—		
V16 1-1/2" Inlet & Outlet	64	16 Gallons	—	V1664R	—	—	—	—	178	—	—	—	—	
	68		—	—	—	V1668T	V1668T4	—	—	—	164	82	—	
	81		—	V1681R	—	V1681T	V1681T4	—	—	225	—	195	98	—
	86		—	V1686R	—	—	—	—	—	239	—	—	—	—
	88		—	—	—	V1688T	V1688T4	—	—	—	—	212	106	—

Model V - Recovery Ratings in GPM

KW Rating	Recovery Rate in GPM for °F Temperature Rise Listed Below (°FΔT)									
	20°	30°	40°	60°	70°	80°	100°	110°	120°	140°
1	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
1.5	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
2	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
3	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
4	1.36	0.91	0.68	0.45	0.39	0.34	0.27	0.25	0.23	0.19
5	1.71	1.14	0.85	0.57	0.49	0.43	0.34	0.31	0.28	0.24
6	2.05	1.36	1.02	0.68	0.58	0.51	0.41	0.37	0.34	0.29
7	2.39	1.59	1.19	0.80	0.68	0.60	0.48	0.43	0.40	0.34
9	3.07	2.05	1.54	1.02	0.88	0.77	0.61	0.56	0.51	0.44
10.5	3.58	2.39	1.79	1.19	1.02	0.90	0.72	0.65	0.60	0.51
12	4.09	2.73	2.05	1.36	1.17	1.02	0.82	0.74	0.68	0.58
13.5	4.61	3.07	2.30	1.54	1.32	1.15	0.92	0.84	0.77	0.66
15	5.12	3.41	2.56	1.71	1.46	1.28	1.02	0.93	0.85	0.73
18	6.14	4.09	3.07	2.05	1.75	1.54	1.23	1.12	1.02	0.88
24	8.19	5.46	4.09	2.73	2.34	2.05	1.64	1.49	1.36	1.17
27	9.21	6.14	4.61	3.07	2.63	2.30	1.84	1.67	1.54	1.32
30	10.24	6.82	5.12	3.41	2.92	2.56	2.05	1.86	1.71	1.46
36	12.28	8.19	6.14	4.09	3.51	3.07	2.46	2.23	2.05	1.75
39	13.31	8.87	6.65	4.44	3.80	3.33	2.66	2.42	2.22	1.90
40.5	13.82	9.21	6.91	4.61	3.95	3.45	2.76	2.51	2.30	1.97
45	15.35	10.24	7.68	5.12	4.39	3.84	3.07	2.79	2.56	2.19
54	18.42	12.28	9.21	6.14	5.26	4.61	3.68	3.35	3.07	2.63
58.5	19.96	13.31	9.98	6.65	5.70	4.99	3.99	3.63	3.33	2.85
64	21.84	14.56	10.92	7.28	6.24	5.46	4.37	3.97	3.64	3.12
68	23.20	15.47	11.60	7.73	6.63	5.80	4.64	4.22	3.87	3.31
81	27.64	18.42	13.82	9.21	7.90	6.91	5.53	5.02	4.61	3.95
86	29.34	19.56	14.67	9.78	8.38	7.34	5.87	5.34	4.89	4.19
88	30.03	20.02	15.01	10.01	8.58	7.51	6.01	5.46	5.00	4.29

Model V Sizing Information

Step 1

Solve for the unknown using the formulas stated below.

Variables To Solve For:

1. KW Requirement:

$$\text{_____ GPM} \times \text{_____ } ^\circ\text{F}\Delta\text{T} \times 0.1465 = \text{_____ KW}$$

2. Temperature Rise:

$$\text{_____ KW} \times 6.824 \div \text{_____ GPM} = \text{_____ } ^\circ\text{F}\Delta\text{T}$$

3. Flow Rate:

$$\text{_____ KW} \times 6.824 \div \text{_____ } ^\circ\text{F}\Delta\text{T} = \text{_____ GPM}$$

Step 2 - A

For continuous demand systems, choose the V Model with the KW rating which meets the peak demand (GPM) of your system.

Step 2 - B

For cyclical ON/OFF demand systems, please consult factory for sizing assistance. The following data will be required to properly size the heater.

1. Hot Water Flow Rate:

_____ GPM

5. Total Gallons used per cycle (#1 x #2)

_____ Gallons

2. Time hot water at above rate is required:

_____ Minutes

6. Water Temperature:

_____ °F Incoming Cold

_____ °F Outgoing Hot

3. Time between usages:

_____ Minutes

7. Power supply available:

_____ Volts _____ Phase _____ Amps

4. Total Cycle Time (Add #2 and #3)

_____ Minutes

Model V - Water Heater Specifications

Vessel: 304L Stainless Steel
Storage Capacity: 6 or 16 Gallons
Voltage: 120 thru 600 Volt
Phase: 1Φ or 3Φ
Connections (1-58kW):
 Material: Bronze
 Inlet: 3/4" Male NPT
 Outlet: 3/4" Male NPT
 Relief Valve: 3/4" Female NPT

Connections (64-88kW):
 Material: Bronze
 Inlet: 1 1/2" Male NPT
 Outlet: 1 1/2" Male NPT
 Relief Valve: 1" Female NPT

Temperature Controller:
 Type: Solid State
 Style: Immersion
 Range: 32-194°F (0-90°C)

Hi-Limit:
 Type: Solid State
 Style: Immersion
 Reset: Manual
 Range: 210°F (Fixed)

Pressure Drop:	V6	V16 (3/4")	V16 (1 1/2")
5 GPM	0.11 psi	0.15 psi	<1psi
10 GPM	0.43 psi	0.58 psi	<1psi
25 GPM	2.6 psi	3.6 psi	<1psi
50 GPM	10.5 psi	14.4 psi	<1psi

Heating Element:
 Type: Screw Plug with Buna-N O-ring
 Style: Tubular
 Sheathing: Copper with Brass Plug

Controller:
 Degrees: °F or °C (Default °F)
 Differential: 1° thru 20° (Default: 2°)
 Display: Shows set point or actual temperature (Default: Set point)
 Low Water Sensing: On or Off (Default: On)
 Low Water Reset: Manual or Automatic (Default: Automatic)
 Staging: Up to 3 stages

Magnetic Contactor:
 Type: Definite Purpose

Control Circuit: 208/240 Volt

Internal Wiring: Tefzel 750 200°C

Digital Display: 3 digit 7 segment LED display

Fault Indicators: Low Water
 Hi-Temperature
 No Probe
 Leak Detection

Low Water Type: Conductivity

Design WP: 150 psi

Design TP: 225 psi

Relief Valve:
 Approvals: ASME / CSA
 Temperature: 210°F
 Pressure: 150 psi
 Material: Bronze

Insulation: CFC/HCFC Free
 Closed Cell Foam

Outer Jacket: 304 Stainless Steel

Warranty:
 Tank: 3 Years
 Electrical: 1 Year

Voltage De-Rating Factors

Rated Voltage	Applied Voltage	De-Rating Factor
600	575	92%
600	550	84%
480	460	92%
480	440	84%
240	230	92%
240	220	84%

When the actual supply voltage (applied voltage) is different than the design voltage (rated voltage) the resulting KW output will be affected. Please see the chart for typical voltage de-rating factors or use the following formula.

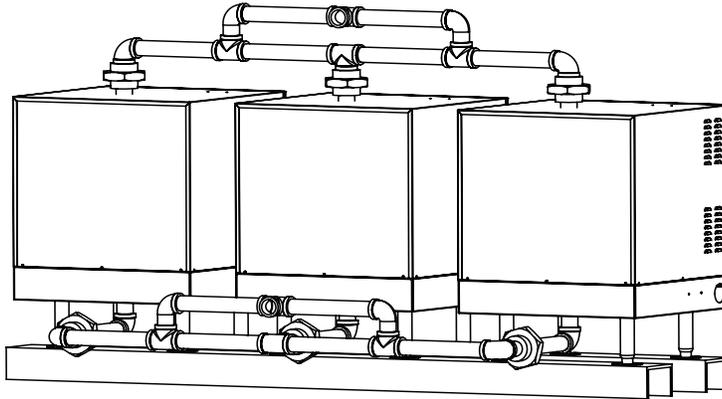
$$\frac{\text{Applied Voltage}^2}{\text{Rated Voltage}^2} \times \text{Rated KW} = \text{KW output at applied voltage}$$

Optional Feature Selection Chart

Optional Code	Optional Feature
K	Slide mounting bracket for hanging installation (Model V6 only)
W	Form fitted protective outer cover for wet locations
N	Flanged toe stainless steel legs for floor mounting
F	Flanged inlet and outlet connections (ANSI Class 150, please specify size)
B	Alternate threaded inlet/outlet connection size (Model V16 only)
H	Alternate high-temperature setpoint (please specify, 210°F maximum)
T	Alarm contact for Hi-Limit or Low Water fault condition (Specify N.O. or N.C.)
L	Low-temperature interlock/alarm
I	Pump interlock terminal block to prevent energizing when pump is not on
R	Sanitary connections (specify size)
G	Dial temperature/pressure gauge for in-line installation (2 1/2" dial)
C	Solid state power controllers for increased temperature accuracy (consult factory)
D	Type 316L stainless steel heating elements
P	Additional tank tapping
M	Factory supplied manifold kit single point connection for redundancy and high demand applications
XX	Customized features, please consult factory

MANIFOLD ASSEMBLY

- Single point connection
- High demand applications
- Multiple units for redundancy



MODEL NUMBER DESIGNATION



■ Step 1

Base Model:
V6
V16

■ Step 2

KW Rating:
1 thru 88

■ Step 3

Voltage/ Phase/Hz:
A = 120-1-60
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 = 600-3-60

■ Step 4

Optional Features:
(See Optional Feature Selection Chart)

Example: V645T4

An industrial process V model water heater with 6 gallons storage capacity, 45 KW rated at 480 volt 3 phase 60 Hz power.

Option Note

Any and all optional equipment for process water heater must be called out in the written specification. A model number in and of itself may not reflect all optional equipment selected.
(Manufacturer reserves the right to change specifications without notice)



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