



PRECISION BOILERS

HWS ELECTRIC HOT WATER STORAGE HEATER

DESIGN ADVANTAGES

The **PRECISION** Model HWS (Hot Water Storage) Heaters are Commercial Volume Storage Water Heaters designed for industrial, commercial and institutional users who require large quantities of service water at preset temperatures.

When the job calls for lots of hot water — when it is called for quickly — when a continuous supply that will not quit at a crucial moment is needed — when downtime or failure will cause you a problem — **It is time to think Precision.** We offer a wide range of storage and recovery capacities to meet your job requirements.

These complete factory packaged Electric Storage Water Heaters are available in both vertical and horizontal configurations, and are ASME constructed and National Board Registered for design pressures of your choice of 125 PSI or 150 PSI. They are constructed under ASME Code Section IV and stamped HLW. Storage capacities are from 125 Gallons to 5500 Gallons, and recovery from 62 to 1968 Gallons per hour are cataloged with larger sizes available upon request. Input capacities from 10 KW to 480 KW are cataloged using PRECISION Incoloy-sheathed individually flanged elements in 10, 15, 18, and 20 KW ratings.

STANDARD FEATURES AND ACCESSORIES

- Constructed per NEC and UL Standards, and UL Labeled
- Pressure Vessel Built to ASME Code Section IV and National Board Registered (125 PSI or 150 PSI)
- Completely Assembled and Tested at the Factory
- Precision Seal Lining (NSF-61 Compliant)
- 16 Gauge Enamelled Steel Jacket on Structural Steel Base
- 4" Fiberglass Insulation
- Individually Flanged Incoloy-Sheathed Elements (75 wsi)
- Integral Electric Control Panel with Key-Locked Door(s)
- ASME Pressure and Temperature Relief Valve(s)
- Pressure Gauge (w/Cock)
- Manual Limit Toggle Switches (One Per Step)
- Main Supply Circuit Lugs
- Automatic Temperature Control via:
 - On/Off Temperature Switches (1 & 2 Step Units)
 - Electronic Multi Stage Control (3 & 4 Step Units)
 - Proportional Solid State Step Control (Units > 4 Steps)
- Magnetic Contactors
- Internal Protection Fusing
- 120 Volt Fused Control Transformer
- On/Off Control Power Switch w/Pilot Light
- Pilot Lights (One Per Step)
- High Limit Aquastats (1) Automatic Reset (1) Manual Reset
- Probe-Type Low Water Cutoff
- Magnesium Anode(s)
- Drain Valve
- Manway (Lined)
- Lifting Lugs

OPTIONAL EQUIPMENT AND ACCESSORIES

- Dual Fired – Steam or Hot Water Coil and Electric
- Lower Watt Density (50 wsi) Elements (where Lime Deposit and Water Hardness are Problems)
- Main Power Supply Disconnect Switch/Circuit Breaker
- Progressive Sequencing Solid State Step Control (First-On/First-Off)
- Proportional Step Control (for 3 or 4 Stage Models)
- KW Demand Interface Relays
- Programmable Timer
- Platisert Waterway Inserts
- Dial Pressure Gauge (4-1/2")
- Dial Temperature Gauge (3")
- Audible Alarm and Silencer
- Ammeter (1 or 3 Phase)
- Bronze Tank Circulator and Piping
- NEMA IV Electrical Enclosure
- Stainless Steel Vessel (210°F Max) for DI Water
- Cement Lining (NSF-61)
- 24 Hour or Seven Day Clock
- Safety Door Interlock
- Oversized Inlet/Outlet
- Manual Reset Probe or Float Type Low Water Cutoff
- Voltmeter (1 or 3 Phase)



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HWS ELECTRIC HOT WATER STORAGE HEATER

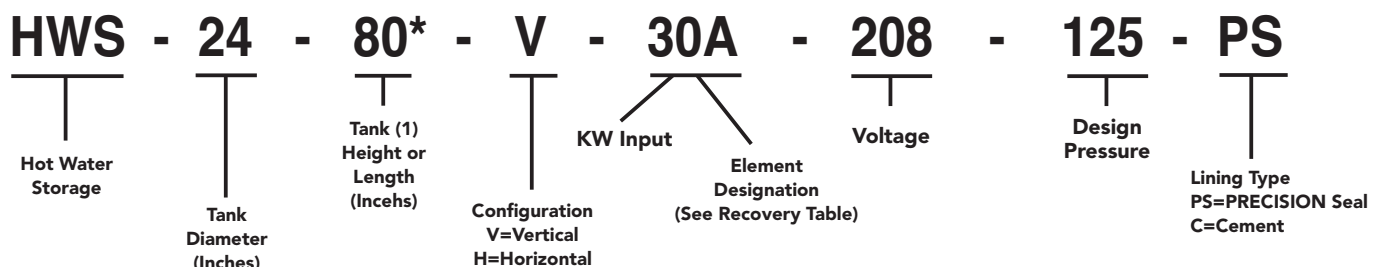
STORAGE HEATER BENEFITS

- Handles the wide variations of hot water needs by incorporating both a storage section and a recovery section in the same heater - recovery from 600 to 6000 gallons per hour - storage from 80 to 9000 gallons and available with input from 10 KW to 3000 KW in all common voltages.
- Offers 50 years experience in the manufacture of pressure vessels and heaters where craftsmanship and quality are reflected by our very name - PRECISION.
- Complete Factory package with insulation and 16 gauge enamelled jacket, assembled and tested, ready for electrical and water service connections.
- Provides energy-efficient water heating where electricity is virtually 100% efficient; and where Factory insulation and steel jacket reduce radiant heat loss to less than 4 watts per square foot of tank surface.
- Meets or exceeds the ASHRAE 90.1B-1992 energy standard.
- Integrated cabinet design on structural steel base with lifting lugs.
- Built-in safety standards, features and controls such as heater UL labelled, ASME rated temperature and pressure relief valve to relieve pressure in the event of overheating or excess pressure, two high temperature cutouts to limit the tank temperature if it exceeds setpoint, low water cutoff to keep the heater from "dry firing", fused control circuits to interrupt power in the event of overload condition, and optional safety equipment such as safety door interlock to prevent the opening of control cabinet door(s) while the main power supply is energized.

STORAGE HEATER ENGINEERING FEATURES

- Preassembled and prewired, with all necessary controls to provide a reliable and automatic supply of hot water with proper control to obtain desired flow and temperature.
- Heaters which are dual fired with both electric elements and steam coil work well to supplement capacity during peak periods and to handle the loads for off season requirements, when a central steam plant might not be operational.
- Immersion heating elements are 2-1/2" square individually flanged for ease in field replacement. The elements are made of a highly corrosion-resistant Incoloy sheath and nickel-chromium resistance wire packed in magnesium oxide powder in a U-tube design. The tubes are not in direct contact with each other nor are they a part of a bundle of elements. This increases the space between the elements and eliminates pockets where scale can collect and build, therefore minimizing the tendency of cascade failures. This design allows unrestricted water flow for optimum heat transfer.
- Elements are available in multiples of 10, 15, 18 and 20 KW at 75 watt density (50 watt density is available where lime deposits or hard water are a problem).
- All steel pressure vessels are ASME code stamped and National Board registered offering assurance of quality construction. A manway is furnished in all lined vessels for cleaning and inspection.
- A corrosive resistant lining of Precision Seal, a polymerized epoxy, is the standard tank lining used by PRECISION. This lining is NSF-61 approved for domestic water by EPA and USDA and is applied after complete fabrication. One other protective lining available is Cement also NSF-61 compliant.

HOW TO SELECT A MODEL NUMBER



1. Choose the storage capacity and vessel dimensions for the job requirements, considering space or access limitations and whether vertical or horizontal construction would be suitable.

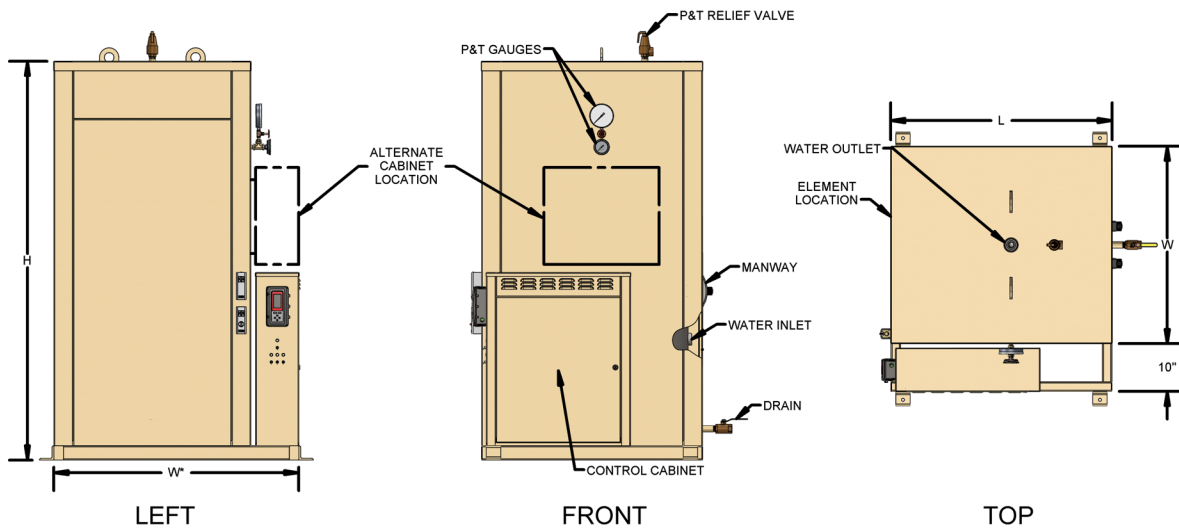
Note: Total unit weight is the sum of the storage and recovery weights.

** On length or height HWS 6024H assumes (1) in first place where needed (eg, 60 (1) 24)*



PRECISION BOILERS

HWS VERTICAL DIMENSIONAL DATA



NOTE(S): MINIMUM REQUIRED CLEARANCES: 12" ON BACK AND RIGHT SIDE, 30" ON LEFT SIDE, AND 36" ON FRONT SIDE OF WATER HEATER.
ALTERNATE LOCATION FOR CONTROL CABINET IS OPTIONAL (≤ 120 KW @ 480V, ≤ 60 KW @ 208V)
W* - WHEN ALTERNATE CABINET LOCATION IS USED OVERALL WILL BE W*+10"
W* - WHEN ALTERNATE CABINET LOCATION IS USED FOOTPRINT WILL BE W*+W
(CONTROL CABINET BOX SIZE MAY VARY DEPENDING ON KW)

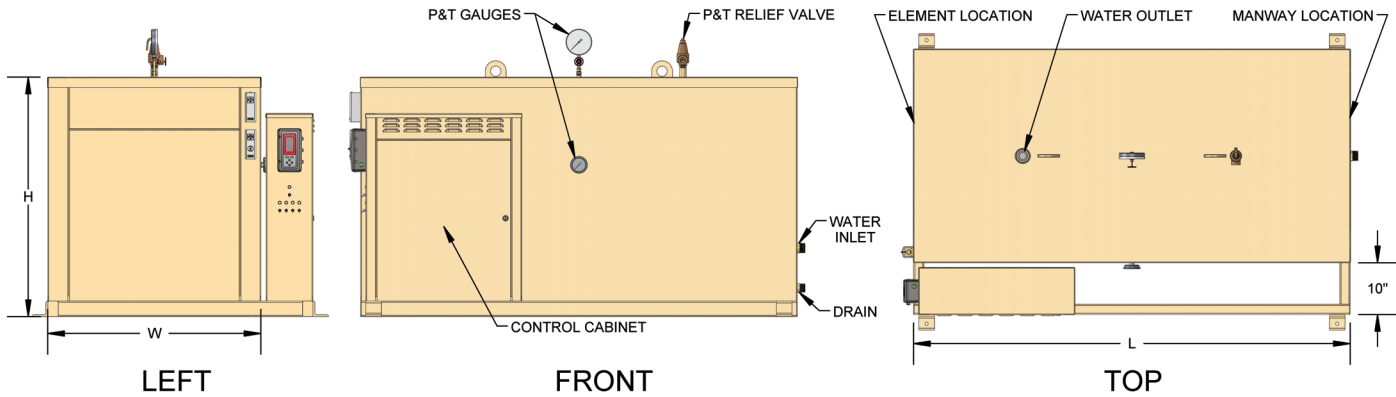
MODEL NUMBER*	ACTUAL GALLONS	DESIGN PRESSURE(PSI)		CONNECTIONS (NPT)		DIMENSIONS (IN)			WEIGHT** (LBS.)	
		STANDARD	STRONG	IN / OUT	DRAIN	L	W	H	PS	CEMENT
HWS 2468V	125	150	—	1"	1"	34	29	76	1090	—
2480V	150	150	—	1"	1"	34	29	88	1210	—
HWS 3054V	150	150	—	1 1/4"	1"	40	35	62	1100	—
3070V	200	150	—	1 1/4"	1"	40	35	78	1280	—
3086V	250	150	—	1 1/4"	1"	40	35	94	1460	—
HWS 3662V	250	125	150	1 1/4"	1 1/4"	46	41	70	1400	1680
3674V	300	125	150	1 1/4"	1 1/4"	46	41	82	1530	1840
3686V	350	125	150	1 1/4"	1 1/4"	46	41	94	1690	2030
3698V	400	125	150	1 1/4"	1 1/4"	46	41	106	1810	2170
HWS 4274V	400	125	150	1 1/2"	1 1/2"	52	47	82	1920	2300
4282V	450	125	150	1 1/2"	1 1/2"	52	47	90	2030	2440
4290V	500	125	150	1 1/2"	1 1/2"	52	47	98	2150	2580
HWS 4872V	500	125	150	2"	1 1/2"	58	53	82	2540	3050
4884V	600	125	150	2"	1 1/2"	58	53	94	2770	3320
4896V	700	125	150	2"	1 1/2"	58	53	106	3030	3640
HWS 5480V	700	125	150	2"	1 1/2"	64	59	90	3000	3600
5490V	800	125	150	2"	1 1/2"	64	59	100	3210	3850
5400V	900	125	150	2"	1 1/2"	64	59	110	3400	4080
HWS 6092V	1000	125	150	2"	1 1/2"	70	65	102	3600	4320
6000V	1100	125	150	2"	1 1/2"	70	65	110	3780	4540
6008V	1200	125	150	2"	1 1/2"	70	65	118	3960	4750
HWS 6698V	1300	125	150	2"	1 1/2"	76	71	108	4810	5770
6605V	1400	125	150	2"	1 1/2"	76	71	115	5010	6010
6612V	1500	125	150	2"	1 1/2"	76	71	122	5210	6250
HWS 7202V	1600	125	150	2"	1 1/2"	82	77	114	5340	6410
7214V	1800	125	150	2"	1 1/2"	82	77	126	5720	6860
7226V	2000	125	150	2"	1 1/2"	82	77	138	6080	7300
HWS 8408V	2250	125	150	2"	1 1/2"	94	89	120	8790	10550
8418V	2500	125	150	2"	1 1/2"	94	89	130	9250	11100
8428V	2750	125	150	2"	1 1/2"	94	89	140	9710	11650
HWS 9612V	3000	125	150	3"	1 1/2"	106	101	124	10700	12840
9628V	3500	125	150	3"	1 1/2"	106	101	140	11550	13860
9644V	4000	125	150	3"	1 1/2"	106	101	156	12740	15290

* For complete Model #, suffix given number by recovery model (see page 6). Model # = HWS 2480V - 30A - 208 - 150 CC

** Add 10% to obtain weights for "strong" design for 60", 72" and 96" Diameters.

See page 3 for instruction on calculation of total heater weight.

HWS HORIZONTAL DIMENSIONAL DATA



NOTE: MINIMUM OF 12" AROUND THE BOILER, 30" FOR MANWAY ACCESS AND ELEMENT REMOVAL, AND 36" IN FRONT OF THE CONTROL CABINET.
(FOR LOW KW UNITS CABINET LOCATION IS ON THE LEFT OF THE UNIT)

Note: Alternate Control Cabinet Location for Low KW Units

MODEL NUMBER*	ACTUAL GALLONS	DESIGN PRESSURE (PSI)		CONNECTIONS (NPT)		DIMENSIONS (IN)			WEIGHT** (LBS.)	
		STANDARD	STRONG	IN / OUT	DRAIN	L	W	H	PS	CEMENT
HWS 3070H	200	150	—	1 1/4"	1"	80	35	40	1260	—
3086H	250	150	—	1 1/4"	1"	96	35	40	1440	—
3003H	300	150	—	1 1/4"	1"	114	35	40	1620	—
HWS 3674H	300	125	150	1 1/2"	1 1/4"	84	41	46	1570	1880
3696H	400	125	150	1 1/2"	1 1/4"	106	41	46	1860	2230
3620H	500	125	150	1 1/2"	1 1/4"	130	41	46	2150	2580
HWS 4290H	500	125	150	2"	1 1/2"	100	47	52	2200	2640
4207H	600	125	150	2"	1 1/2"	118	47	52	2430	2920
4224H	700	125	150	2"	1 1/2"	134	47	52	2680	3220
HWS 4898H	700	125	150	2"	1 1/2"	108	53	60	3110	3730
4810H	800	125	150	2"	1 1/2"	122	53	60	3350	4020
4823H	900	125	150	2"	1 1/2"	134	53	60	3600	4320
4836H	1000	125	150	2"	1 1/2"	146	53	60	3870	4640
4848H	1100	125	150	2"	1 1/2"	158	53	60	4130	4960
HWS 5410H	1000	125	150	2"	1 1/2"	120	59	66	3840	4610
5430H	1200	125	150	2"	1 1/2"	140	59	66	4290	5150
5450H	1400	125	150	2"	1 1/2"	160	59	66	4740	5690
HWS 6008H	1200	125	150	2"	1 1/2"	118	65	72	4160	4990
6024H	1400	125	150	2"	1 1/2"	134	65	72	4540	5450
6040H	1600	125	150	2"	1 1/2"	150	65	72	4940	5930
6056H	1800	125	150	2"	1 1/2"	166	65	72	5350	6420
HWS 6620H	1600	125	150	2"	1 1/2"	130	71	78	5530	6640
6632H	1800	125	150	2"	1 1/2"	142	71	78	5940	7130
6644H	2000	125	150	2"	1 1/2"	154	71	78	6360	7630
HWS 7226H	2000	125	150	3"	1 1/2"	136	77	84	6240	7490
7254H	2500	125	150	3"	1 1/2"	164	77	84	7140	8570
7282H	3000	125	150	3"	1 1/2"	192	77	84	8030	9640
HWS 8450H	3250	125	150	3"	1 1/2"	160	89	96	11450	13740
8460H	3500	125	150	3"	1 1/2"	170	89	96	11950	14340
8470H	3750	125	150	3"	1 1/2"	180	89	96	12450	14940
HWS 9644H	4000	125	150	3"	1 1/2"	154	101	108	12740	15290
9660H	4500	125	150	3"	1 1/2"	170	101	108	13620	16340
9676H	5000	125	150	3"	1 1/2"	186	101	108	14490	17390
9692H	5500	125	150	3"	1 1/2"	202	101	108	15380	18460

NOTE: Many other sizes available - call Factory for additional selection and dimensions needed.

PHYSICAL DATA

MODEL NUMBER SUFFIX	(1) INPUT KW	MBTU's PER HOUR	GPH@ 100°F RISE	(2) ELEMENTS		NUMBER OF CIRCUITS		(3) NUMBER & KW SIZE OF STEPS			AMPERAGE (3-PHASE)			(4) SHIP WEIGHT	
				QTY	KW	<250V	>250V	208/240V	380/415V	480V	208V	380V	480V	<250V	>250V
-10A	10	34	41	1	10	1	1	1@10	1@10	1@10	29	16	12	125	125
-20A	20	68	82	2	10	2	1	1@20	1@20	1@20	56	31	24	150	125
-30A	30	102	123	3	10	3	1	1@10, 1@20	1@30	1@30	84	46	36	175	125
-40A	40	136	164	4	10	4	2	2@20	1@40	1@40	112	61	49	200	150
-50A	50	171	205	5	10	5	2	1@20, 1@30	1@20, 1@30	1@20, 1@30	140	76	61	225	150
-60A	60	205	246	6	10	6	2	2@30	2@30	2@30	167	92	73	250	150
-70A	70	239	287	7	10	7	3	2@20, 1@30	1@40, 1@30	1@40, 1@30	195	107	85	275	175
-80A	80	273	328	8	10	8	3	1@20, 2@30	1@20, 2@30	1@20, 2@30	223	122	97	300	175
-90A	90	307	369	9	10	9	3	3@30	3@30	3@30	251	137	109	325	175
-100A	100	341	410	10	10	10	4	2@20, 2@30	2@20, 2@30	2@20, 2@30	279	152	121	350	200
-110A	110	375	451	11	10	11	4	1@20, 3@30	1@20, 3@30	1@20, 3@30	306	168	133	375	200
-120A	120	409	492	12	10	12	4	4@30	4@30	4@30	334	183	145	400	200
-15B	15	51	62	1	15	1	1	1@15	1@15	1@15	43	23	18	125	125
-30B	30	102	123	2	15	2	1	1@30	1@30	1@30	84	46	36	150	125
-45B	45	154	185	3	15	3	2	1@15, 1@30	1@15, 1@30	1@15, 1@30	126	69	55	175	150
-60B	60	205	246	4	15	4	2	2@30	2@30	2@30	167	92	73	200	150
-75B	75	256	308	5	15	5	3	1@15, 2@30	1@45, 1@30	1@45, 1@30	209	114	91	225	175
-90B	90	307	369	6	15	6	3	3@30	3@30	3@30	251	137	109	250	175
-105B	105	358	431	7	15	7	4	1@15, 3@30	1@45, 2@30	1@45, 2@30	292	160	127	275	200
-120B	120	409	492	8	15	8	4	4@30	4@30	4@30	334	183	145	300	200
-135B	135	461	554	9	15	9	5	1@15, 4@30	1@45, 3@30	1@45, 3@30	376	206	163	375	225
-150B	150	512	615	10	15	10	5	5@30	5@30	5@30	417	228	181	400	275
-165B	165	563	677	11	15	11	6	1@15, 5@30	1@45, 4@30	1@45, 4@30	459	251	199	425	300
-180B	180	614	738	12	15	12	6	6@30	6@30	6@30	501	274	217	450	300
-195B	195	665	800	13	15	13	7	1@15, 6@30	1@45, 5@30	1@45, 5@30	542	297	235	475	325
-210B	210	717	861	14	15	14	7	7@30	7@30	7@30	584	319	253	500	325
-225B	225	768	923	15	15	15	8	1@15, 7@30	1@45, 6@30	1@45, 6@30	626	342	271	525	350
-240B	240	819	984	16	15	16	8	8@30	8@30	8@30	667	365	289	550	350
-270B	270	921	1107	18	15	18	9	1@60, 7@30	1@60, 7@30	1@60, 7@30	750	411	325	550	325
-300B	300	1024	1230	20	15	20	10	2@60, 6@30	2@60, 6@30	2@60, 6@30	834	456	361	600	350
-330B	330	1126	1353	22	15	22	11	3@60, 5@30	3@60, 5@30	3@60, 5@30	917	502	397	650	375
-360B	360	1228	1476	24	15	24	12	4@60, 4@30	4@60, 4@30	4@60, 4@30	1000	547	433	700	400
-390B	390	1331	1599	26	15	26	13	5@60, 3@30	5@60, 3@30	5@60, 3@30	1084	593	470	750	425
-420B	420	1433	1722	28	15	28	14	6@60, 2@30	6@60, 2@30	6@60, 2@30	1167	639	506	800	450
-450B	450	1535	1845	30	15	30	15	7@60, 1@30	7@60, 1@30	7@60, 1@30	1250	684	542	850	475
-480B	480	1638	1968	32	15	32	16	8@60	8@60	8@60	1333	730	578	900	500
-18C	18	61	74	1	18	N/A	1	N/A	N/A	1@18	-	-	22	-	125
-36C	36	123	148	2	18	N/A	1	N/A	N/A	1@36	-	-	44	-	125
-54C	54	184	221	3	18	N/A	2	N/A	N/A	1@18, 1@36	-	-	65	-	150
-72C	72	246	295	4	18	N/A	2	N/A	N/A	2@36	-	-	87	-	150
-90C	90	307	369	5	18	N/A	3	N/A	N/A	1@54, 1@36	-	-	109	-	175
-108C	108	368	443	6	18	N/A	3	N/A	N/A	3@36	-	-	130	-	175
-126C	126	430	517	7	18	N/A	4	N/A	N/A	1@54, 2@36	-	-	152	-	200
-144C	144	491	590	8	18	N/A	4	N/A	N/A	4@36	-	-	174	-	200
-162C	162	553	664	9	18	N/A	5	N/A	N/A	1@54, 3@36	-	-	195	-	225
-180C	180	614	738	10	18	N/A	5	N/A	N/A	5@36	-	-	217	-	275
-198C	198	676	812	11	18	N/A	6	N/A	N/A	1@54, 4@36	-	-	239	-	300
-216C	216	737	886	12	18	N/A	6	N/A	N/A	6@36	-	-	260	-	300
-252C	252	860	1033	14	18	N/A	7	N/A	N/A	7@36	-	-	304	-	325
-288C	288	983	1181	16	18	N/A	8	N/A	N/A	8@36	-	-	347	-	350
-324C	324	1105	1328	18	18	N/A	9	N/A	N/A	1@72, 7@36	-	-	390	-	375
-360C	360	1228	1476	20	18	N/A	10	N/A	N/A	2@72, 6@36	-	-	434	-	400
-20D	20	68	82	1	20	N/A	1	N/A	N/A	1@20	-	-	25	-	125
-40D	40	136	164	2	20	N/A	1	N/A	N/A	1@40	-	-	49	-	125
-60D	60	205	246	3	20	N/A	2	N/A	N/A	1@20, 1@40	-	-	73	-	150
-80D	80	273	328	4	20	N/A	2	N/A	N/A	2@40	-	-	97	-	150
-100D	100	341	410	5	20	N/A	3	N/A	N/A	1@60, 1@40	-	-	121	-	175
-120D	120	409	492	6	20	N/A	3	N/A	N/A	3@40	-	-	145	-	175
-140D	140	478	574	7	20	N/A	4	N/A	N/A	1@60, 2@40	-	-	169	-	200
-160D	160	546	656	8	20	N/A	4	N/A	N/A	4@40	-	-	193	-	200
-180D	180	614	738	9	20	N/A	5	N/A	N/A	1@60, 3@40	-	-	217	-	225
-200D	200	682	820	10	20	N/A	5	N/A	N/A	5@40	-	-	241	-	275
-220D	220	751	902	11	20	N/A	6	N/A	N/A	1@60, 4@40	-	-	265	-	300
-240D	240	819	984	12	20	N/A	6	N/A	N/A	6@40	-	-	289	-	300
-280D	280	955	1148	14	20	N/A	7	N/A	N/A	7@40	-	-	337	-	325
-320D	320	1092	1312	16	20	N/A	8	N/A	N/A	8@40	-	-	385	-	350
-360D	360	1228	1476	18	20	N/A	9	N/A	N/A	1@80, 7@40	-	-	434	-	375
-400D	400	1365	1640	20	20	N/A	10	N/A	N/A	2@80, 6@40	-	-	482	-	400
-440D	440	1501	1804	22	20	N/A	11	N/A	N/A	3@80, 5@40	-	-	530	-	425
-480D	480	1638	1968	24	20	N/A	12	N/A	N/A	4@80, 4@40	-	-	578	-	450

(1) Recovery ratings should not exceed 1 KW per gallon of storage capacity.

(2) Element limitations for Vertical Tanks are as follows:

"A": No limitations on elements

"B" Element (15KW): Not to be used on vertical tanks <36" diameter

"C" Element (18KW): Not to be used on vertical tanks <42" diameter

"D" Element (20KW): Not to be used on vertical tanks <48" diameter

(3) Recovery ratings with 5 or more steps include a proportional step control

(4) Add recovery weight to storage tank weight to obtain total unit weight.



PRECISION BOILERS

HWS ELECTRIC HOT WATER STORAGE HEATER

SPECIFICATIONS

1. General

Furnish and install as shown on the plans a PRECISION Storage Water Heater Model HWS-_____ which shall be a complete Factory tested, packaged unit consisting of an electrically-heated water storage vessel complete with all required operating and safety controls.

The pressure vessel shall meet all the applicable requirements for ASME Section IV and stamped HLW and shall be National Board Inspected and designed for (125) (150) PSIG maximum working pressure. A copy of the Manufacturer's Data Report shall be provided to the owner.

The completed Hot Water Storage Heater shall be UL listed and be installed in accordance with all applicable state and local codes.

2. Recovery

Each Hot Water Storage Heater shall have an electrical heating capacity of _____ KW for operation at a line voltage of _____, 3 phase, _____ hertz. The control voltage shall be 120 volts derived from an integral control transformer.

Note for steam dual fired heater:

Heater shall also be provided with steam coil and controls rated to heat _____ GPH of water from _____ °F to _____ °F temperature rise and to control the outlet within 5 degrees of the selected temperature when supplied with _____ PSIG saturated steam to the control valve.

3. Controls and safety devices

Load Sequencing:

Units of 4 or less steps – The Hot Water Heater shall be equipped with on/off thermostats to provide not less than _____ stages. The limit circuit shall consist of a high limit thermostat (automatic reset), a high limit thermostat (manual reset), internal branch circuit fusing, magnetic contactors, a probe-type low water cutoff, and pilot lights (one per stage).

Units of 5 or more steps – The Hot Water Heater shall be equipped with a proportional step control to provide not less than _____ steps. The control circuit shall consist of a proportional temperature controller with adjustable throttling range, a high limit thermostat (automatic reset), a high limit thermostat (manual reset), internal branch circuit fusing, magnetic contactors, an on/off switch with pilot light, a recycle feature, a probe-type low water cutoff, and pilot lights (one per step).

Each Heater shall be equipped with an ASME pressure and temperature relief valve, a combination pressure and temperature gauge, and an integral electric control panel with key-locked door.

4. Construction

Heater shall be constructed of a (☐ vertical) (☐ horizontal) steel tank _____" (inches) diameter x _____" (inches) (☐ long) (☐ high) and shall have a storage capacity of _____ gallons.

The immersion heating elements shall be Incoloy-sheathed individually flanged and sized for a maximum of 75 watts per square inch. The U-bend shall be heat treated and re-compressed after forming, to avoid failure due to stress cracks in the bend, and then brazed into a 2-1/2" square steel flange.

The pressure vessel shall be insulated with a minimum of 4 inches of 3/4 pound density fiberglass insulation (or equivalent) and shall be enclosed in a enamelled sheet steel enclosure of at least 16 gauge thickness. The Heater shall be furnished with a 12" x 16" manway, _____" inlet, _____" outlet, drain pipe and valve, and lifting lugs.

5. Vessel Lining

Heater shall be completely lined After Fabrication with (☐ Precision Seal) (☐ Cement) lining as follows: (Insert one of the following paragraphs that applies to your selection of linings)

5.1 Precision Seal: (NSF 61 Compliant) The tank interior shall be lined with two separate coats of polymerized epoxy to a dry film thickness of 5-6 mils per coat. Each coat shall be baked and force-cured in an oven.

5.2 Cement Lined: (NSF 61 Compliant) The tank interior shall be completely lined with Hydraulic Calcium Oxide cement, good for service temperatures to 250°F with the same coefficient of expansion as medium steel. The cement is applied at a minimum thickness of 5/8" to form a hard one-piece lining.

Represented in your area by:

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