



Commercial Electric Hot Water Boilers

A. O. Smith's Electric Boilers are designed for demanding hydronic and industrial heating needs. A wide variety of available electrical inputs and voltages allow the units to be perfectly matched to the heating requirements of the application and the available electrical services.

FEATURES

MODULATING STEP CONTROL - A solid state modulating step control modulates heat input to match load through progressive sequencing of steps. Standard on models with 90kW or above (optional below 90kW).

INCOLOY IMMERSION HEATERS - Heavy duty medium watt density elements (3 per immersion heater) have incoloy sheathing, provides excellent protection against oxidation and scaling. The input ranges from 45kW to 6,000kW (see accompanying chart).

OPTIONAL GOLDENROD® ELEMENTS - All NW models are available with the Goldenrod 24K gold plated element. Goldenrod Elements provide long-life and five times the scaling resistance of standard incoloy elements. Goldenrod Elements carry a three-year warranty against failure due to scale.

FUSING - Control and power circuit fusing to meet the National Electrical Code. 100,000 amp I.C. cartridge-type fuses protect all elements and contactors.

PILOT SWITCH AND LIGHT - Permits manual starting and stopping of heater by interrupting power to control circuit. Pilot light indicates when control circuit is energized.

MAGNETIC CONTACTORS - Heavy duty UL rated for 100,000 cycles.

LOW WATER CUTOFF - Probe type, electric low water cutoff prevent energizing of elements in the event of low water condition.

120 VOLT CONTROL CIRCUIT - Powered by fused transformer.

ASME CODE CONSTRUCTION - All vessels manufactured to applicable ASME Code. Vessels with maximum working pressure of 160 psi or less (standard design is for 125 psi) at 240°F maximum temperature bear the "H" symbol per Section IV of ASME Code. Vessels with greater than 160 psi working pressure or higher than 240°F operating temperature will bear the "S" symbol per Section I of ASME Code.

UL LISTED - All boilers are UL listed per Underwriters' Laboratories Standard No. 834.

ONE YEAR LIMITED WARRANTY

- For complete warranty information, consult written warranty.

OTHER STANDARD FEATURES

- Two high temperature limit controls
- Cabinet has a baked powder coat finish
- Rectangular jacket made with 18 gauge (minimum) steel
- 3" fiber glass insulation
- Color coded circuitry for easier servicing
- Standard voltages include 208, 240, 480 and 575 volt, single or three-phase
- Factory installed terminal block(s)
- Combination Temperature/Pressure Gauge
- Boiler drain valve
- CSA Certified and ASME Rated T&P Relief Valve

NW-37 through NW-670



*Model shown with optional accessories



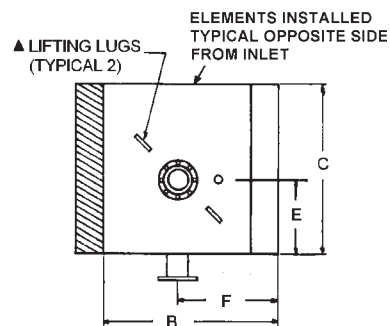
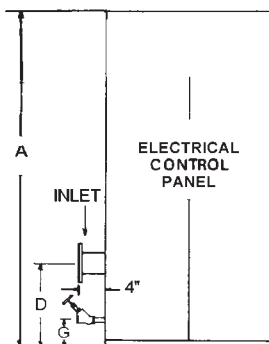
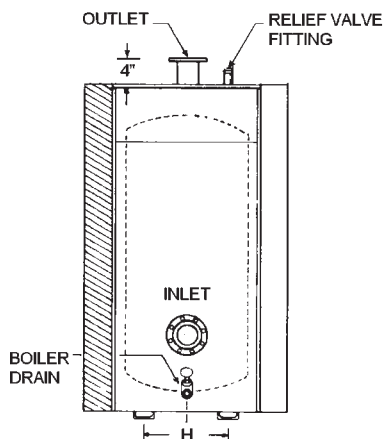


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UL MINIMUM CLEARANCE REQUIREMENTS:
24" ALL SIDES, 12" TOP

NOTE: ALLOW 30" CLEARANCE FOR HINGED CONTROL
COMPARTMENT DOORS.

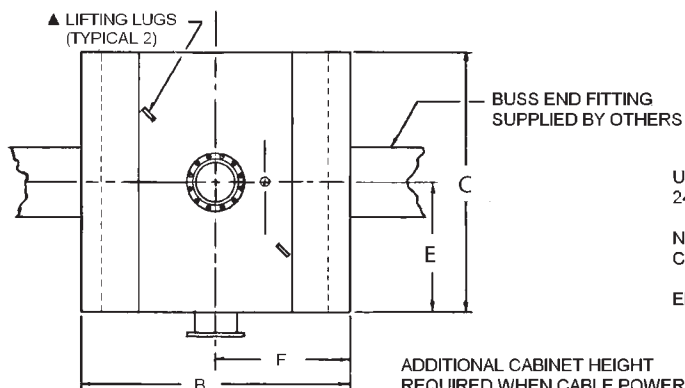
ELEMENTS CAN BE CHANGED WITH 24" CLEARANCE.



BOILERS WITH SINGLE CONTROL PANEL CAN BE
FURNISHED WITH PANEL MOUNTED RIGHT OR
LEFT SIDE FACING INLET.

AN ADDITIONAL CONTROL PANEL IS REQUIRED ON
UNITS ABOVE 500kW RATED AT 208 OR 240 VOLTS.

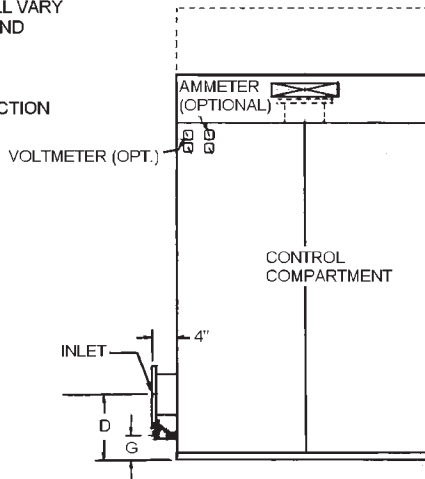
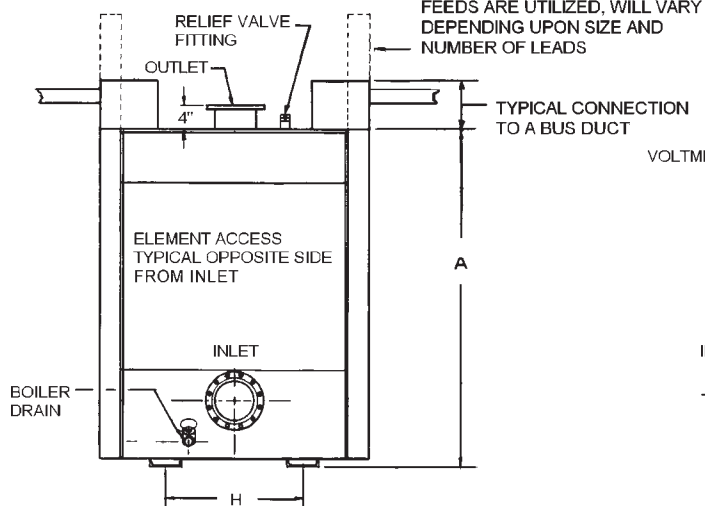
MODELS: NW-37, NW-60, NW-96 AND NW-150



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MODELS: NW-220, NW-334, NW-400, NW-500 AND NW-670



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Model Number	Nominal Gallon Capacity	Maximum kW Input	Height A**	Width B	Depth C	D	E	F	G	H	Inlet and Outlet*	Boiler Drain
NW-37	37	180	42	32	30	12-1/2	12	20	4	—	3	1
NW-60	60	300	57	32	30	12-1/2	12	20	4	—	3	1
NW-96	96	480	69-1/2	36	38	17	16	24	5	17	4	1-1/4
NW-150	150	720	69-1/2	54	44	20	19	27	5-1/2	20	5	1-1/2
NW-220	220	1140	71	60	50	21	25	30	5-1/2	25-1/2	5	1-1/2
NW-334	334	1740	99	60	50	25	25	30	7-1/4	25-1/2	6	2
NW-400	400	2100	90-1/2	66	56	25-1/2	28	33	7-3/4	30	8	2
NW-500	500	2580	90-1/2	72	62	26-1/2	31	36	7-3/4	34	8	2
NW-670	670	3300	96-1/2	78	68	30-1/2	34	39	7-3/4	38	8	2

NOTE: For boilers 3400kW to 6000kW, consult factory.

* All fittings under 4" will be threaded type. All fittings 4" and larger will be flanged.

** Where overall height is a problem a larger diameter vessel with a reduced height may be furnished.

▲ Lifting lugs are channel skid base on 96 gallon and larger units.

WATER BOILER SPECIFICATIONS (STANDARD)

Model Number		Gal. Cap.	Std. kW Input	BTU Output	Gal./Hr. 100°F Rise	Number of Immersion Heaters	Number of Steps	Standard Number and kW of Steps	Amperage 3 Phase			
Prefix									208V	240V	480V	575V
NW	37	45K	153,585	180	3	1	1	1 @ 45	128	108	55	45
NW	37	60K	204,720	240	4	1	1	1 @ 60	171	144	73	60
NW	37	75K	255,975	300	5	1	1	1 @ 75	213	180	90	75
NW	37	90K	307,170	369	6	3	3	3 @ 30	250	217	108	90
NW	37	105K	358,365	430	7	4	4	3 @ 30 + 1 @ 15	292	253	126	105
NW	37	120K	409,560	492	8	4	4	4 @ 30	334	289	144	121
NW	37	150K	511,950	615	10	5	5	5 @ 30	417	361	180	151
NW	37	180K	614,340	738	12	5	5	4 @ 30 + 1 @ 60	500	433	216	181
NW	60	210K	716,730	861	14	5	5	3 @ 30 + 2 @ 60	584	505	252	211
NW	60	240K	819,120	984	16	5	5	2 @ 30 + 3 @ 60	668	577	288	241
NW	60	270K	921,510	1107	18	5	5	1 @ 30 + 4 @ 60	751	650	324	271
NW	60	300K	1,023,900	1230	20	5	5	5 @ 60	834	722	360	301
NW	96	330K	1,126,290	1353	22	10	10	9 @ 30 + 1 @ 60	917	794	396	331
NW	96	360K	1,228,680	1476	24	10	10	8 @ 30 + 2 @ 60	1001	866	432	362
NW	96	390K	1,331,070	1599	26	10	10	7 @ 30 + 3 @ 60	1084	938	468	392
NW	96	420K	1,433,460	1722	28	10	10	6 @ 30 + 4 @ 60	1168	1010	504	422
NW	96	450K	1,535,850	1845	30	10	10	5 @ 30 + 5 @ 60	1251	1083	540	452
NW	96	480K	1,638,240	1968	32	10	10	4 @ 30 + 6 @ 60	1334	1155	576	487
NW	150	540K	1,843,020	2214	36	10	10	2 @ 30 + 8 @ 60	1501	1299	648	542
NW	150	600K	2,047,800	2460	40	10	10	10 @ 60	1668	1443	720	602
NW	150	660K	2,252,580	2706	44	10	10	8 @ 60 + 2 @ 90	Not Recommended	Not Recommended	792	663
NW	150	720K	2,457,360	2952	48	10	10	6 @ 60 + 4 @ 90			864	723
NW	220	780K	2,662,140	3198	52	10	10	4 @ 60 + 6 @ 90	Not Recommended	Not Recommended	936	783
NW	220	840K	2,866,920	3444	56	10	10	9 @ 90 + 1 @ 30			1008	843
NW	220	900K	3,071,700	3690	60	10	10	10 @ 90			1080	904
NW	220	960K	3,276,480	3936	64	10	10	8 @ 90 + 2 @ 120			1152	964
NW	220	1020K	3,481,260	4182	68	10	10	6 @ 90 + 4 @ 120			1224	1024
NW	220	1080K	3,636,040	4428	72	10	10	4 @ 90 + 6 @ 120			1296	1084
NW	220	1140K	3,890,820	4674	76	10	10	2 @ 90 + 8 @ 120			1368	1145
NW	334	1200K	4,095,600	4920	80	10	10	10 @ 120			1440	1205
NW	334	1260K	4,300,380	5166	84	10	10	8 @ 120 + 2 @ 150			1512	1265
NW	334	1380K	4,709,940	5658	92	10	10	4 @ 120 + 6 @ 150			1656	1386
NW	334	1500K	5,119,500	6150	100	10	10	10 @ 150	Not Recommended	Not Recommended	1800	1506
NW	334	1620K	5,529,060	6642	108	15	15	6 @ 90 + 9 @ 120			1944	1627
NW	334	1740K	5,938,630	7134	116	15	15	2 @ 90 + 13 @ 150			2068	1747
NW	400	1800K	6,143,400	7380	120	15	15	15 @ 120			2160	1807
NW	400	1860K	6,348,180	7626	124	15	15	13 @ 120 + 2 @ 150			2232	1868
NW	400	1980K	6,757,740	8118	132	15	15	9 @ 120 + 6 @ 150			2376	1988
NW	400	2100K	7,167,300	8610	140	15	15	5 @ 120 + 10 @ 150			2520	2109
NW	500	2220K	7,576,860	9102	148	15	15	1 @ 120 + 14 @ 150			2664	2229
NW	500	2340K	7,986,420	9594	156	20	20	18 @ 120 + 2 @ 90			2808	2350
NW	500	2460K	8,395,980	10080	164	20	20	18 @ 120 + 2 @ 150			2952	2470
NW	500	2580K	8,805,540	10578	172	20	20	14 @ 120 + 6 @ 150			3096	2590
NW	670	2700K	9,315,100	11070	180	20	20	10 @ 120 + 10 @ 150	Not Recommended	Not Recommended	3240	2711
NW	670	2820K	9,624,660	11562	188	20	20	6 @ 120 + 14 @ 150			3384	2832
NW	670	2940K	10,034,220	12054	196	20	20	2 @ 120 + 18 @ 150			3528	2952
NW	670	3060K	10,443,780	12546	204	20	20	18 @ 150 + 2 @ 180			3672	3073
NW	670	3180K	10,853,340	13038	212	20	20	14 @ 150 + 6 @ 180			3816	3193
NW	670	3300K	11,262,900	13530	220	20	20	10 @ 150 + 10 @ 180			3960	3313

NOTE: 1. For boilers 3400kW to 6000kW, consult factory.

2. Other voltages available.



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OPTIONAL CONTROL FEATURES

MODULATING STEP CONTROL WITH SCR – Element modulation with an SCR slave between steps.

MANUAL RESET LOW WATER CUTOFF - Available factory mounted to meet local codes or specifications. Float type or probe type are available.

MANUAL RESET HI-LIMIT – A control that, in the event of temperature condition interrupts control circuit de-energizing elements, must be manually reset.

SAFETY DOOR INTERLOCK – Prevents opening of control panel door when boiler supply is on. NOTE: Once door is opened boiler may be energized if necessary for service diagnosis.

INDICATING LIGHTS AND OVERRIDE SWITCHES – A simple form of load control allows all or part of unit input to be controlled manually. Up to one indicating light and override switch per contactor is available.

CIRCUIT BREAKER – Factory mounted, available for those installations where there is no breaker at the electrical powersource, or the breaker is not within sight of the boiler. A safety device which disconnects power to the heater in the event of overcurrent.

GROUND FAULT INTERRUPTER – A safety device (circuit breaker) which disconnects power to the heater in the event of a current leak to ground exceeding the adjustable set point value; breaker must be manually reset.

SHUNT TRIP CIRCUIT BREAKER – A safety device (circuit breaker) which disconnects power to the heater in the event

of overcurrent, high temperature, or low water level; breaker must be manually reset.

GROUND FAULT DETECTOR – A device to provide a warning signal if there is current leak to ground exceeding the adjustable set point.

ALARMS – Horns, bells, or lights may be furnished to display or warn of any condition for which sensors have been specified

METERS – Any of the following meters can be furnished mounted on the boiler or in a panel for remote mounting: Voltmeter, Ammeter, Watthourmeter.

GOLDENROD® ELEMENTS - Available with Optional Goldenrod Elements. All NW models are available with the Goldenrod 24K gold plated elements (patent pending). Goldenrod Elements provide long-life and five times the scaling resistance of standard incoloy elements. Goldenrod Elements carry a three-year warranty against failure due to scale.

OPTIONAL TANK LINING (NON-POTABLE SERVICE)

GLASSLINED TANK – All internal surfaces of the vessel exposed to water shall be glass lined with an alkaline borosilicate composition that has been fused-to-steel by firing at a temperature range of 1400°F to 1600°F. This glass was specially developed for use in water heaters. Consult factory for operating temperature range.

EPOXY LINED TANK – A solventless two component epoxy lining applied to a minimum 10-mil (0.010") dry thickness. Available on NW-150 and larger tanks. Consult factory for operating temperature range.

SUGGESTED SPECIFICATION

Electric hot water boiler system shall be A. O. Smith Dura-Power™ model number NW____ with ____gallons capacity ASME "H" code for ____ psi working pressure. The boiler will be complete with 3" of fiber glass insulation, 18 gauge steel jacket and control cabinet. Trim to consist of CSA Certified and ASME Rated T&P relief valve. Boiler system will be complete with ____kilowatt incoloy sheathed heating elements with prewired 24" terminal leads. Each element shall be easily replaced by removing 4 bolts. Boiler output to be ____BTH or ____kW at ____V, 3 phase, ____Hertz (cycles). Heating elements to be switched by 50 ampere magnetic contactors with a minimum duty rating of 100,00 cycles at full load. Each contactor and heating element circuit is protected by fusing with a minimum of 100,000 ampere interrupting capacity. Control circuit for energizing and magnetic contactor coils shall be 120V with one side grounded, obtained through a control circuit transformer which is fused on both input legs and the ungrounded output leg. The control circuit shall have the following additional items: on-off pilot switch, pilot light, 2 high temperature limit controls, electric low water cutoff and solidstate step control. The operating control shall consist of a solid state modulating step control which will switch and balance the power input to the heating demand (90kW and above). This control will time delay each stage and progressively add or subtract stages as required by the temperature sensor. This control shall not allow more than one stage to be switch on at one time. The control shall have even load progressive sequencing, which utilizes the "first-on, first-off" principle, thereby equalizing the operating time of the heating elements and contactors. In case of power failure, automatic recycle function will occur. The boiler wiring will be prewired to solderless terminal lugs for field electrical connection. The entire boiler system shall be factory tested and bear the Underwriter's Label Service label for UL standard 834.

For Technical Information and Automated Fax Service, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.