

# COMMERCIAL BOILERS

## COMMERCIAL ELECTRIC HOT WATER BOILERS

### STANDARD FEATURES

#### PRESSURE VESSEL AND ENCLOSURE

Built to 150 psi, 250 °F design standard  
Wrapped with 4" thick blanket of fiberglass insulation.  
Boiler vessel enclosure is 16-Gauge painted steel jacket mounted on a full-size, flanged steel base.  
Electronic control panel built into the NEMA-1 compliant enclosure, accessible via key-locked door(s).

#### STANDARD ELECTRIC & CONTROL PACKAGE

Incoloy sheathed, U-Shaped heating elements rated to 75 watts-per-square-inch and individually mounted in 2-1/2 inch-square flanges for easy removal and replacement.  
Main supply circuit lugs with integral branch circuit fusing.  
Magnetic contactors rated @ 500,000 cycles  
120 volt fused control transformer  
Automatic electronic temperature control varies by model:  
1) For one to four step models, electronic multi-stage step control.  
2) For models with five or more steps, Proportional Progressive Sequence Step Control  
Short Circuit Current Rating (SCCR) of 5,000 A

#### STANDARD TRIM PACKAGE

Full port drain valve  
On/Off power switch with pilot light  
Pressure gauge w/cock  
SME safety relief valve(s)  
One status pilot light for each step  
Water inlet & outlet connections:  
> Flange  
Low Water Cut-Off Switch:  
> Probe type with manual reset, test & pilot light to meet CSD-1 requirements.  
KW Limiting Switch(es):  
> All BW\*24-42 models feature an On/Off toggle switch for each step. In the off position, the toggle switch cuts power to its assigned step, disabling that step, thereby limiting the maximum KW output from the boiler.  
High Temperature Limit Switches:  
> All BW\*24-42 models are equipped with two temperature limit switches: one with an auto reset and one with a manual reset.  
Temperature Gauge:  
> All BW\*24-42 models are equipped with a dial type temperature gauge plus a digital electronic temperature readout on the temperature controller interface.

#### CODES & REGISTRATIONS

UL Subject 834  
NEC/NFPA Article 424-G  
ASME Safety Code CSD-1  
ASME Certified, "H" Stamp / National Board  
NEMA-1 (Electronic Control Panel)



DESIGNED ★ ENGINEERED ★ ASSEMBLED

# USA



# Lochinvar®

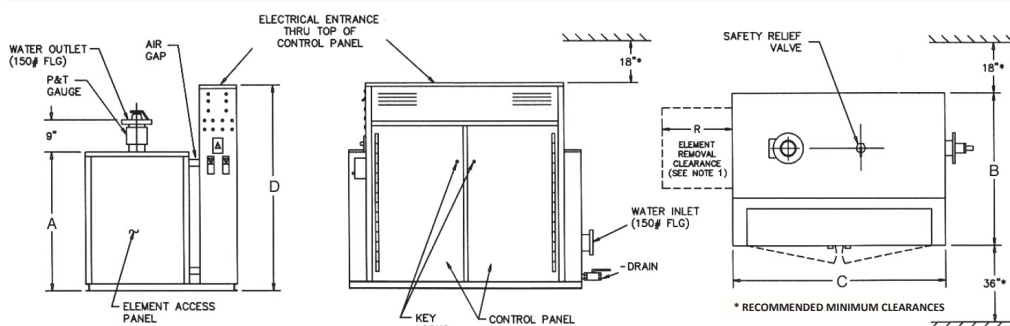
HIGH EFFICIENCY BOILERS & WATER HEATERS

## OPTIONAL EQUIPMENT

<b>Auto Air Vent:</b>	› Vent automatically purges excess air from boiler.
<b>Flow Switch:</b>	› Installed on the inlet side of the boiler to prevent the boiler from operating when little or no flow is present.
<b>Additional Step Control:</b>	› Allows for more steps to be added to the control. The number of steps cannot exceed the total number of elements available in the boiler. Includes an On/Off toggle switch and status light. › Price is per step. › For more information, please contact factory.
<b>Additional Step Control Circuits:</b>	› Additional circuits may be required when adding additional steps. Cabinet space is fixed so the maximum number of additional circuits may be limited. › Price is per circuit. › For more information, please contact factory.
<b>Auxiliary Temperature Limit Switches:</b>	› High temperature limit switch that interfaces with sensors typically installed outside of the boiler in the system water loop. Includes switch, temperature sensor, dry-well, and available in either a manual or auto reset configuration (must be specified when ordering).
<b>High Pressure Limit Switch:</b>	› Activates when the boiler pressure exceeds a specified limit and cuts power to the elements.
<b>Control Panel Door Solenoid Interlock:</b>	› When main power is on to the boiler, a solenoid is energized and locks the control panel door. When main power is off to the boiler the solenoid deenergizes and unlocks the control panel door. Power must be off to the boiler to access control panel.
<b>Substitute Float-type Low Water Cut Off Switch</b>	› In lieu of probe-type LWCO. Complies with CSD-1
<b>Auxiliary Low Water Cutoff Switch:</b>	› Adds an auxiliary/redundant LWCO that complies with CSD-1. › Available in either probe or float type.
<b>Audible Alarm (Standard on BW*2&amp;3):</b>	› Audible alarm buzzer that includes both a light and a silencing switch. Alarm signals for any or all of the following conditions: excessive tank temperature, low or zero flow into the boiler tank, and/or low water condition in the tank.
<b>BMS Alarm Interface:</b>	› Upgrade to include dry contacts that permit connection with BMS. Interface allows BMS to monitor boiler conditions and recognize any or all of the following abnormal conditions: (1) excessive tank temperature, (2) zero flow or low flow into the boiler tank, and/or (3) low water condition in the tank.
<b>BMS Remote Set-Point Control:</b>	› Temperature controller upgrade that allows for a BMS link with onboard controller, permitting BMS to adjust boiler temperature set-point. › 4-20 mA or 0-10 V available.
<b>BMS Remote Step Control:</b>	› On-board manual switch that allows step control to switch from either the boiler's on-board temperature controller or to BMS. › 4-20 mA or 0-10 V available. › Requires analog input signal from the system.
<b>BMS 120 V Interface to Limit Boiler Power Demand:</b>	› This option provides a terminal strip with dry contacts that allow a 120V interface for BMS. This interface permits BMS to interrupt power to specific steps, limiting maximum KW output from boiler when total power demand inside building peaks and power must be rationed. › Price is per step.
<b>BMS 24V Interface to Limit Boiler Power Demand:</b>	› This option adds 24V Relay(s) to provide an interface for BMS. This option permits BMS to interrupt power to specific steps, limiting maximum KW output from boiler when total building power demand peaks and total available power must be rationed. › Price is per step.
<b>Outdoor Temperature Reset:</b>	› Upgrade to the temperature controller that automatically uses an outdoor temperature sensor to adjust boiler set-point temperatures. Set points are predetermined by the operator via the temperature controller. › Note that controller cannot accommodate both Outdoor Temperature Reset and BMS Remote Set-Point Control. › For more information, consult factory.
<b>Time Clock (24-hr or 7-day):</b>	› Controller upgrade that allows building management to predetermine boiler operating periods.
<b>Dual Feed Electrical Supply</b>	› For more information, consult factory
<b>E-Stop Mushroom Button:</b>	› Emergency stop button that is mounted to the side of the boiler or shipped loose for field installation.

Multifunction Power and Energy Meter:	› Displays and records multiple values, including: Volts, Amps, kW, kVAR, PF, kVA, etc. Includes 4-20 mA output.							
Ground Fault Detection (GFI):	› Interrupts power to boiler upon high ground current.							
Main Power Disconnect - Rotary Handle:	› Disconnect that features a rotary handle that is mounted on the control panel door. Connected to this rotary handle is a switch mechanism that is mounted on the control panel. The door cannot be opened when the switch is in the “ON” position. › This rotary handle door interlock can be combined with the control panel door solenoid interlock to enhance boiler room safety. › Non-Fused › Fused							
Main Power Disconnect - Circuit Breaker:	› Disconnect that features a circuit breaker mounted on the control panel. The circuit breaker switch protrudes through a slot in the control panel door. › Non-Auto › Auto							
SCR (Silicon Controlled Rectifier)	› Provides modulation capability with one step of elements.							
SCCR (Short Circuit Current Rating)	› Upgraded contactors, fuse blocks, and fuses are installed to meet the applicable SCCR rating. Electrical feeds must be divided into loads rated at or below 600 MCA. Main power fused disconnects are required for each electrical feed and are included as part of the elevated SCCR. › 65,000 A › 100,000 A							
Mechanical Options	› Lifting Lugs › Inlet/Outlet connections (reference chart below)							
	Inlet/Outlet Connections							
	Standard Size	3" NPT	3" FLG	4" FLG	6" FLG	8" FLG	10" FLG	12"FLG
	4" FLG (BW*24 480-600kW)	X	X		X			
	6" FLG (BW*24 640-1096kW, BW*30)			X		X	X	
	8" FLG (BW*36)			X	X		X	X
	10" FLG (BW*42)				X	X		X
BACnet & Modbus	› Interface to Building Management Systems (BMS) via either the BACnet or Modbus communication protocol. Allows the ability to monitor (read) or control (write) boiler operating parameters and pre-sets. Includes a standard 4” Siemens HMI touchscreen.							
	Standard Pre-Selected Monitoring and Control Points							
	› Monitor (Read) Boiler Parameter Boiler Temp/Pressure Set-Point Boiler Actual Temp/Pressure Boiler Low Water Alarm Boiler High Temperature Alarm Number of Heating Steps On Boiler Load Status (% Max Rated) Boiler Load Limit (% Max Rated) Alarm History				› Control (Write) Boiler Parameter Reset Boiler Temp/Pressure Set-Point Remote Boiler Start/Stop Reset Boiler Load Limit (% Max Rated)			
	› Modbus TCP/IP RTU IP Address Required: CPU HMI				› BACnet IP MSTP IP Addresses Required: CPU HMI Gateway			

## COMMERCIAL ELECTRIC COMPACT BOILER DIMENSIONS & SPECIFICATIONS



**Note 1:** Element removal clearance (R") is equal to 2 times the element kW.

**Note 2:** Optional equipment may change overall boiler dimensions. Please consult factory for dimensional information.

**Note:** Detailed electrical and dimensional drawings are supplied with the shipment of the boiler. If these documents are required prior to unit order, please contact Customer Service as additional charges may apply.

## COMMERCIAL ELECTRIC HOT WATER BOILER DIMENSIONS & SPECIFICATIONS

Model Number	Max Input	MBH Per Hour	Max # of Elements	Connection Sizes (NPT)		Max. Flow GPM	Tank Dims (In)	Data Vol (Gal)	Dimensions (Inches)				Weight (lbs.)	
	kW			In/Out	Drain				A	B	C	D	Ship	Oper.
BW*24	600	2047	30	4" FLG	1-1/4"	470	24x44	70	34"	40"	52"	51"	1300	1860
BW*24	920	3139	46	6" FLG	1-1/2"	680	24x44	70	34"	40"	56"	63"	1500	2060
BW*30	1825	6228	78	6" FLG	1-1/2"	900	30x48	125	40"	50"	60"	75"	1900	2900
BW*36	2246	7665	100	8" FLG	2"	1170	36x48	165	46"	56"	62"	87"	2400	3720
BW*42	3089	10529	150	10" FLG	2"	1840	42x50	260	54"	76"	64"	77"	3600	5760

480 Volts								600 Volts									
Model Number	Rating MBH	kW	Elements Qty		kW	Circuits	Number of Steps@ kW	FLA Amps	Model Number	Rating MBH	kW	Elements Qty		kW	Circuits	Number of Steps@ kW	FLA Amps
BWX24-480F	1638	480	24	20	12	4@80, 4@40		577	BWN24-655F	2236	655	28	23.4	14	6@93.6, 2@46.8		630
BWX24-520F	1774	520	26	20	13	5@80, 3@40		625	BWN24-749F	2555	749	32	23.4	16	8@93.6		721
BWX24-560F	1911	560	28	20	14	6@80, 2@40		674	BWN24-796F	2715	796	34	23.4	17	7@93.6, 3@46.8		766
BWX24-600F	2047	600	30	20	15	7@80, 1@40		722	BWN24-842F	2874	842	36	23.4	18	8@93.6, 2@46.8		810
BWX24-640F	2184	640	32	20	16	8@80		770	BWN24-936F	3194	936	40	23.4	20	10@93.6		901
BWX24-680F	2320	680	34	20	17	7@80, 3@40		818	BWN24-1076F	3673	1076	46	23.4	23	11@93.6, 1@46.8		1035
BWX24-720F	2457	720	36	20	18	8@80, 2@40		866	BWN30-1170F	3992	1170	50	23.4	25	1@140.4, 11@93.6		1126
BWX24-760F	2593	760	38	20	19	9@80, 1@40		914	BWN30-1264F	4311	1264	54	23.4	27	3@140.4, 9@93.6		1216
BWX24-800F	2730	800	40	20	20	10@80		962	BWN30-1357F	4631	1357	58	23.4	29	5@140.4, 7@93.6		1306
BWX24-840F	2866	840	42	20	21	9@80, 3@40		1010	BWN30-1451F	4950	1451	62	23.4	31	7@140.4, 5@93.6		1396
BWX24-880F	3003	880	44	20	22	10@80, 2@40		1059	BWN30-1544F	5269	1544	66	23.4	33	9@140.4, 3@93.6		1486
BWX24-900F	3071	900	45	20	22	10@80, 1@60, 1@40		1083	BWN30-1638F	5589	1638	70	23.4	35	11@140.4, 1@93.6		1576
BWX30-1000F	3412	1000	50	20	25	1@120, 11@80		1203	BWN30-1778F	6068	1778	76	23.4	38	10@140.4, 4@93.6		1711
BWX30-1080F	3685	1080	54	20	27	3@120, 9@80		1299	BWN30-1825F	6228	1825	78	23.4	39	11@140.4, 3@93.6		1756
BWX30-1160F	3958	1160	58	20	29	5@120, 7@80		1395	BWN36-1919F	6547	1919	82	23.4	41	13@140.4, 1@93.6		1847
BWX30-1240F	4231	1240	62	20	31	7@120, 5@80		1492	BWN36-2059F	7026	2059	88	23.4	44	12@140.4, 4@93.6		1981
BWX30-1320F	4504	1320	66	20	33	9@120, 3@80		1588	BWN36-2153F	7345	2153	92	23.4	46	14@140.4, 2@93.6		2072
BWX30-1400F	4777	1400	70	20	35	11@120, 1@80		1684	BWN36-2246F	7665	2246	96	23.4	48	16@140.4		2161
BWX30-1480F	5050	1480	74	20	37	9@120, 5@80		1780	BWN42-2527F	8623	2527	108	23.4	54	18@140.4		2432
BWX30-1520F	5186	1520	76	20	38	10@120, 4@80		1828	BWN42-2714F	9262	2714	116	23.4	58	10@140.4,14@93.6		2612
BWX36-1600F	5459	1600	80	20	40	12@120, 2@80		1925	BWN42-2808F	9581	2808	120	23.4	60	12@140.4,12@93.6		2702
BWX36-1680F	5732	1680	84	20	42	14@120		2021	BWN42-3089F	10539	3089	132	23.4	66	18@140.4, 6@93.6		2972
BWX36-1760F	6005	1760	88	20	44	12@120, 4@80		2117									
BWX36-1840F	6278	1840	92	20	46	14@120, 2@80		2213									
BWX36-1920F	6551	1920	96	20	48	16@120		2309									
BWX36-2000F	6824	2000	100	20	50	14@120, 4@80		2406									
BWX42-2080F	7097	2080	104	20	52	16@120, 2@80		2502									
BWX42-2240F	7643	2240	112	20	56	16@120, 4@80		2694									
BWX42-2400F	8189	2400	120	20	60	20@120		2887									
BWX42-2560F	8735	2560	128	20	64	20@120, 2@80		3079									

VOLTAGE SCHEDULE

X – 480V3PH

N – 600V3PH

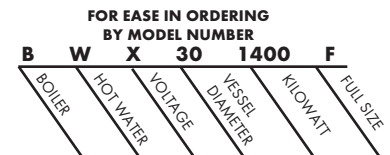
FOR EASE IN ORDERING  
BY MODEL NUMBER

BW301400F

BOILERHOT WATERVOLTAGEVESSEL DIAMETERKILOWATTFULL SIZE

### VOLTAGE SCHEDULE

X - 480V	3PH
N - 600V	3PH



This is a 480 volt, three phase, 1400 Kilowatt full size electric hot water boiler with 30 inch diameter vessel.

Operating temperature and pressure are requested prior to placing an order.

For technical information call 800-722-2101. Lochinvar LLC reserves the right to make product changes or improvements without prior notice. Dimensions are approximate and should not be used for construction purposes.

Notes: For lower kW ratings, please refer to the Compact Boiler.

Models above 1600kW are also available in 40kW increments.



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