ETB Series

CEMLINE® CORPORATION

Hot Water Electric Boilers

Vertical (12 - 600 Kw)

CEMLINE CORPORATION
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Cemline® Electric Boilers (ETB Series)
Standard Equipment

Cemline Electric Boilers are designed for hydronic heating systems and process heating. Cemline Electric Boilers are furnished as a complete factory package for one source responsibility. Installation requires only pipe lines and power leads. We offer many optional extras for applications where such features are desired.

Standard EB Package	Features
Storage tank—A.S.M.E. Code Constructed National Board Registered—H or S Stamp	A.S.M.E. Code stamping and registration offer the assurance of quality controlled construction.
3" fiberglass insulation	Prevents heat loss to cut operation costs—meets or exceeds latest ASHRAE standards.
20 Gauge steel jacket with hammertone enamel-painted exterior	Protects insulation & provides neat finished appearance.
A.S.M.E. Pressure Relief Valves	Safety feature against excess pressure.
Thermometer & Pressure Gauge	Easy to read dials to monitor operating temperature and pressure.
Incoloy sheathed immersion	Long life elements of incoloy. Provides ease in field maintenance. Each rod individually removable and replaceable.
Standard operating controls	All components necessary for safe-complete operation—all thermostats, high limit resets, contactors, transformer, fusing pilot lights,and low water cut off wired to a NEMA terminal box.
Boiler-trol® Controller	A solid state proportioning type controller with adjustable settings, LED stage indicators, outdoor reset, remote enable/disable and night setback.
UL Listing	Boilers meet testing and inspection requirements of Underwriters' Laboratories and are so labeled and listed.
100kA	Standard short circuit ratings of 100 Kiloamperes (kA) meets or exceeds industry standards.
Warranty	One year against defects in materials or workmanship,

Optional Extras Available:

- Circuit breaker
- Fused or non-fused disconnect
- Power meter
- Time clock
- Element watt density to suit customer request
- Alarm bell
- Flow switch
- Outdoor sensor
- BACnet
- Remote Setpoint
- Manual reset low water level cut off
- High pressure cut off
- 4" thick fiberglass insulation
- Indoor/outdoor reset
- Timers
- Safety door interlock
- Remote on/off
- Remote alarm

Electric Boilers (ETB Series)
Standard Equipment

Cemline Electric Boilers are furnished with all accessories factory sized and mounted to insure the finest quality and most efficient package.

Tank

Cemline Boilers are constructed and stamped in strict accordance with the latest A.S.M.E. code using pressure vessel quality plate welded by certified welders. Tanks used in the boilers are built in accordance with Section IV or Section I of the A.S.M.E. Code and form H or S certificates are provided. All tanks are registered with the National Board of Boiler Pressure Vessel Inspectors and so certified. Vessels are normally built for 150 psi maximum water working pressure, or 15 psi steam. Boilers can be furnished for up to 150 psi steam working pressure.

Jacket

Cemline Boilers are neatly and attractively covered with a 20 gauge steel jacket over the fiberglass insulation. The jacket protects the insulation, and is professionally painted with superior quality enamel to allow the added advantage of an easy to maintain surface.

Insulation

Cemline Boilers are furnished with 3" thick fiberglass insulation. This high quality insulation has proven to be an extremely reliable means of minimizing heat loss and complies with current ASHRAE Standards.

Base—Support

Vertical heaters are supplied with leg supports with leveling bolts and couplings to receive pipe legs. This provides the option of mounting the unit directly on a floor or raising it with pipe legs to any desired height. Cemline Horizontal Boilers are mounted on structural I-Beam support skids which are engineered to provide correct support for the heater as a permanent base.

Electric Heating Elements

Cemline Boiler heating elements consist of one or more incoloy sheathed removable immersion rods. These rods are grouped together as three phase deltas to achieve required total kilowatt. Each rod contains resistance wire surrounded by an ample thickness of compressed magnesium oxide. Individual rods are removable and replaceable with ordinary hand tools for in the field replacement to insure worry free maintenance of the heater.

Control Circuit System

Cemline Electric Boiler control circuits are equipped with a line voltage to 120 volt isolation transformer to provide 120 volt control. This transformer is fused on the primary side and fused and grounded on the secondary side in accordance with A.S.M.E. Code, National Electric Code, and Underwriters' Laboratories.

High Limit Thermostats or Pressure Switch

Cemline Electric Boilers are provided with built in safety protection against high temperature conditions. Electric boilers are furnished with both an adjustable automatic reset type high limit and a manual reset high limit thermostat with a manual reset button. These thermostats open the control circuit if the temperature of the boiler exceeds the set point. On steam boilers, pressure switches perform the same function if the steam pressure exceeds the desired pressure.

Contactors

Cemline Electric Boilers are equipped with heavy duty magnetic contactors to close and open circuits as required for load control. The contactors are controlled by a solid state step controller.

Final Assembly & Testing

Cemline Electric Boilers are thoroughly tested prior to shipment. All components and workmanship are guaranteed for a period of one year from date of start-up or eighteen months from the date of shipment.

Fuses

Cemline Electric Boilers utilize "Class J" type fuses. Each contactor line is protected by an individual fuse which is designed to interrupt power in the event of an overload condition in that circuit.

Electric Boilers (ETB Series)
Standard Equipment (Continued)

Cemline Electric Boilers are furnished as a complete factory package and are UL listed.

Wiring

Cemline Electric Boilers are factory wired, utilizing heat resistant, color coded copper wire. All components are factory wired to a generously sized terminal strip for solderless connections. Heaters furnished with circuit breaker or disconnect switch are factory wired to load side of breaker switch.

Low Water Cut-Off

Cemline Electric Boilers are furnished with float type low water cut-off, wired to open the control circuit on a low water condition.

Electric Control Cabinet

Cemline electric elements and controls are mounted in a NEMA I enclosure with key lock door.

Pilot Lights

Pilot lights are supplied to enable the operator to see the status at a glance.

Relief Valves

Cemline Electric Boilers are provided with a A.S.M.E. pressure relief valve. The valve is sized to relieve the total BTU input of the heating elements.

UL Listing

Cemline Electric Boilers meet testing and inspection requirements of Underwriters' Laboratories and are listed and labeled as required by Underwriters' Laboratories.

Thermometer and Pressure Gauge

Cemline Electric Boilers are furnished with a thermometer to monitor vessel temperature and a dial pressure gauge to monitor pressure within the vessel. These gauges are mounted in an easily accessible position so that they may be read from the floor. Steam boilers are furnished with pressure gauge only.

Boiler-trol® Controller

Cemline Electric Boilers are furnished with a Boiler-trol® solid state step controller. The step controller is programmable to allow for multiple rotation options to promote even wear on the elements. The controller can operate the boiler based upon temperature or outdoor reset. The controller can be configured to run a system pump and has an adjustable night setting to help reduce electrical consumption. Optionally, Cemline can provide remote set point via 4-20 from the building management system or can provide BACnet IP communication.

SCCR Rating

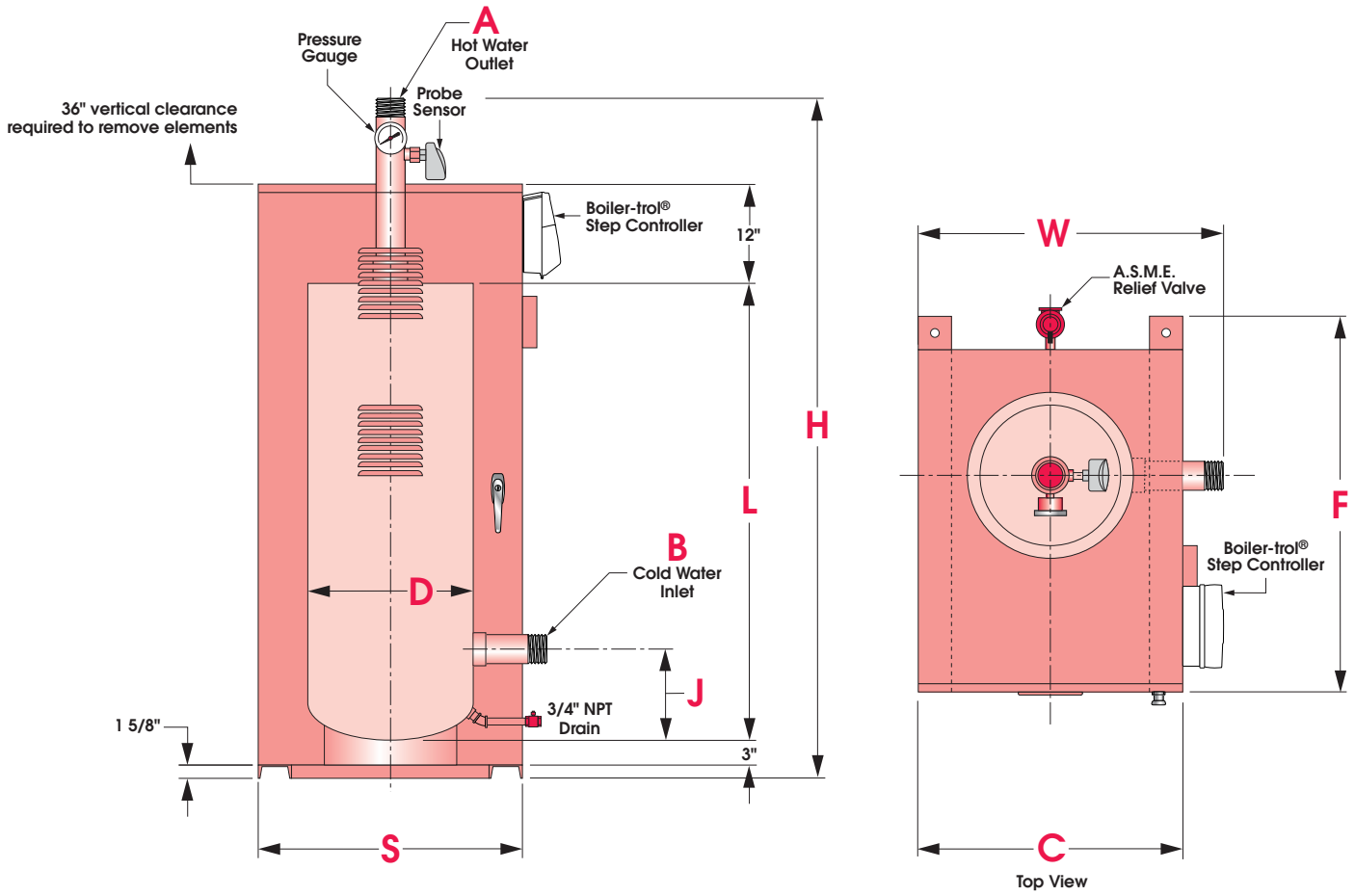
100 kA standard short circuit current rating of 100 kiloamperes (kA) meets or exceeds industry standards.

Safety Door Interlock

Provides a positive internal safety lockout on the boiler enclosures while the equipment is energized. When energized the interlock prevents the boiler door from being opened.

Hot Water Boilers (ETB Series)
Vertical High Capacity - Small Footprint

The dimensions suggested below are well proportioned and suitable for most installations. When building space or other conditions demand, other sizes are readily available. Please consult factory.



MODEL NUMBER	H	W	C	D	L	F	J	S	A&B
VB30ETB	72"	23"	20"	12 ¾"	44"	33 ½"	11"	20"	3" NPT
VB40ETB	72"	27"	24"	16"	44"	36 ¾"	11"	24"	3" NPT
VB60ETB	72"	31"	28"	20"	44"	40 ¾"	11"	28"	3" NPT
VB80ETB	72"	35"	32"	24"	44"	44 ¾"	11"	32"	3" NPT

Electric Boilers (ETB Series) - Hot Water - 3 Phase
Vertical High Capacity - Small Footprint

600V, 480V, 415V, 380V

Model No.	KW	Btu/Hr	Contactors	KW Per Circuit	Steps	KW Per Step	KW Per Element	Total # Elements	600V 3 Phase Amps	480V 3 Phase Amps	415V 3 Phase Amps	380V 3 Phase Amps
VB30ETB15	15	51,225	1	15	1	15	15	1	14	18	21	23
VB30ETB20	20	68,304	1	20	1	20	20	1	19	24	28	30
VB30ETB30	30	102,450	2	15	2	15	15	2	29	36	42	46
VB30ETB40	40	136,607	2	20	2	20	20	3	39	48	56	61
VB30ETB45	45	153,675	2	1@15, 1@30	2	1@15, 1@30	15	3	43	54	63	68
VB30ETB60	60	204,900	3	20	3	20	20	3	58	72	84	91
VB30ETB75	75	256,125	3	1@15, 2@30	3	1@15, 2@30	15	5	72	90	104	114
VB30ETB80	80	273,214	4	20	4	20	20	4	77	96	111	123
VB30ETB100	100	341,518	5	20	5	40	20	5	96	120	139	152
VB30ETB120	120	409,800	3	40	3	40	20	6	116	145	167	183
VB40ETB140	140	478,125	4	1@20, 3@40	4	1@20, 3@40	20	7	135	169	195	213
VB40ETB160	160	546,429	4	40	4	40	20	8	154	193	223	243
VB40ETB180	180	614,700	5	1@20, 4@40	5	1@20, 4@40	20	9	173	217	251	274
VB60ETB200	200	683,036	5	40	5	40	20	10	193	241	279	304
VB60ETB240	240	819,600	6	40	6	40	20	12	231	289	334	365
VB60ETB280	280	956,250	7	40	7	40	20	14	270	337	390	426
VB60ETB300	300	1,024,500	8	1@20, 7@40	8	1@20, 7@40	20	15	289	361	418	456
VB60ETB320	320	1,092,857	8	40	8	40	20	16	308	385	446	487
VB60ETB360	360	1,229,400	9	40	8	7@40, 1@80	20	18	347	434	501	548
VB60ETB400	400	1,366,072	10	40	8	6@40, 2@80	20	20	385	482	557	609
VB60ETB440	440	1,502,679	11	40	8	6@40, 2@80	20	22	424	530	613	669
VB80ETB480	480	1,639,200	12	40	8	4@40, 4@80	20	24	462	578	669	730
VB80ETB520	520	1,775,893	13	40	7	1@40, 6@80	20	26	501	626	724	791
VB80ETB560	560	1,912,500	14	40	7	80	20	27	539	674	780	852
VB80ETB600	600	2,049,000	15	40	8	1@40, 7@80	20	30	578	723	836	913

240V, 208V

Model No.	KW	Btu/Hr	Contactors	KW Per Circuit	Steps	KW Per Step	KW Per Element	Total # Elements	240V 3 Phase Amps	208V 3 Phase Amps
VB30ETB12	12	40,980	1	12	1	12	12	1	29	33
VB30ETB15	15	51,225	1	15	1	15	15	1	36	42
VB30ETB24	24	81,960	2	12	2	12	12	2	58	67
VB30ETB30	30	102,450	2	15	2	15	15	2	72	83
VB30ETB45	45	153,675	3	15	3	15	15	3	108	125
VB30ETB60	60	204,900	4	15	4	15	15	4	145	167
VB30ETB75	75	256,125	5	15	5	15	15	5	181	208
VB30ETB90	90	307,366	6	15	6	15	15	6	217	250
VB30ETB105	105	358,594	7	15	7	15	15	7	253	292
VB30ETB120	120	409,800	8	15	8	15	15	8	289	333
VB40ETB150	150	512,250	10	15	5	30	15	10	361	417
VB40ETB180	180	614,700	12	15	6	30	15	12	434	500
VB60ETB210	210	717,150	14	15	7	30	15	14	506	583
VB60ETB240	240	819,600	16	15	8	30	15	16	578	666
VB60ETB270	270	922,098	18	15	9	30	15	18	650	750
VB60ETB300	300	1,024,500	20	15	10	30	15	20	723	833

Sample Specification
Electric Boilers

Specifying Boiler Model Number

1. Select desired voltage.
   - 208, 240, 380, 415, 480 volt
2. Select KW, BTU/hour or lbs. steam/hour.
3. Select vertical configuration.
4. Select any optional extras as listed on page 2.

Specifying a Cemline Boiler Model Number:

*Example:

Interpretation:	V	B30ETB75	C3	RL
	1	2	3	4

1. "V" for vertical configuration.
2. Cemline Boiler Number.
3. Symbol designating voltage — select from code below:

Voltage	Phase	Code
208	1	BY1
208	3	BY3
240	1	B1
240	3	B3
480	1	C1
480	3	C3
415	1	CY1
415	3	CY3
380	1	BZ1
380	3	BZ3
400	1	BX1
400	3	BX3
600	3	D3

4. Symbol for U.L. listing.

*Example shown above is for a vertical boiler, 75 KW, 480 volt, 3 phase.

Specifying Electric Boilers

Electric Packaged Hot Water Boiler shall be manufactured by Cemline Corporation. Tank shall be constructed and stamped in accordance with A.S.M.E. Code for 125 lbs. working pressure, and shall be registered with the National Board of Boiler and Pressure Vessel Inspectors. The boiler shall also meet the requirements of Underwriters' Laboratories and be so labeled.

The boiler shall be furnished with 3" minimum dense fiberglass insulation and 20-gauge enameled steel jacket. Elements shall be incoloy sheathed resistance type, individually removable and replaceable.

Magnetic contactors shall be factory installed, and shall disconnect all ungrounded conductors to each heater circuit. Control circuit voltage shall be 120 volts. Factory furnished Class "J" fuses shall be provided in each ungrounded conductor of each contactor circuit.

Control circuit shall include one manual reset and one automatic reset high temperature thermostats and one automatic reset electronic low water cut-off to de-energize all contactors upon actuation.

An "on-off" control switch shall be furnished. Red indicating lights shall be provided to indicate the boiler is operating, a high temperature condition or low water condition.

Cemline Commericial Electric Boilers shall include a Boiler-trol® Solid State Electronic Sequencing Step Controller. The modulating sequencing step control with proper number of steps shall control the heater contactors with rotation options including first-on/first-off, time based – rotating stages based upon time from 1 to 40 hours, or manual rotation. Step controller shall have a digital display, LED stage indicators, outdoor reset, remote enable/disable, night setback. The digital display shall include boiler temperature, set-point temperature, and other setting information.

Boiler shall be factory prewired to a power distribution block ready for connection to external power supply wiring. All contactors and controls (except those required to be mounted on the vessel) shall be housed in a NEMA 1 enclosure with key door lock. A Safety Door Interlock shall be provided. The Safety Door Interlock shall disable or prevent power to the boiler if the is door opened.

Boiler shall have a separate dial pressure gauge and A.S.M.E. rated safety relief valve. Tank shall have an accessible drain.

Boiler shall have a one-year warranty against defects in materials and workmanship.

Boiler shall be U.L. Listed

Boiler shall be Cemline Model _____. Boiler shall have _____ KW. Elements shall be designed to operate on _____volts, _____ phase_____cycle current with a total amp draw of_____ amps.

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