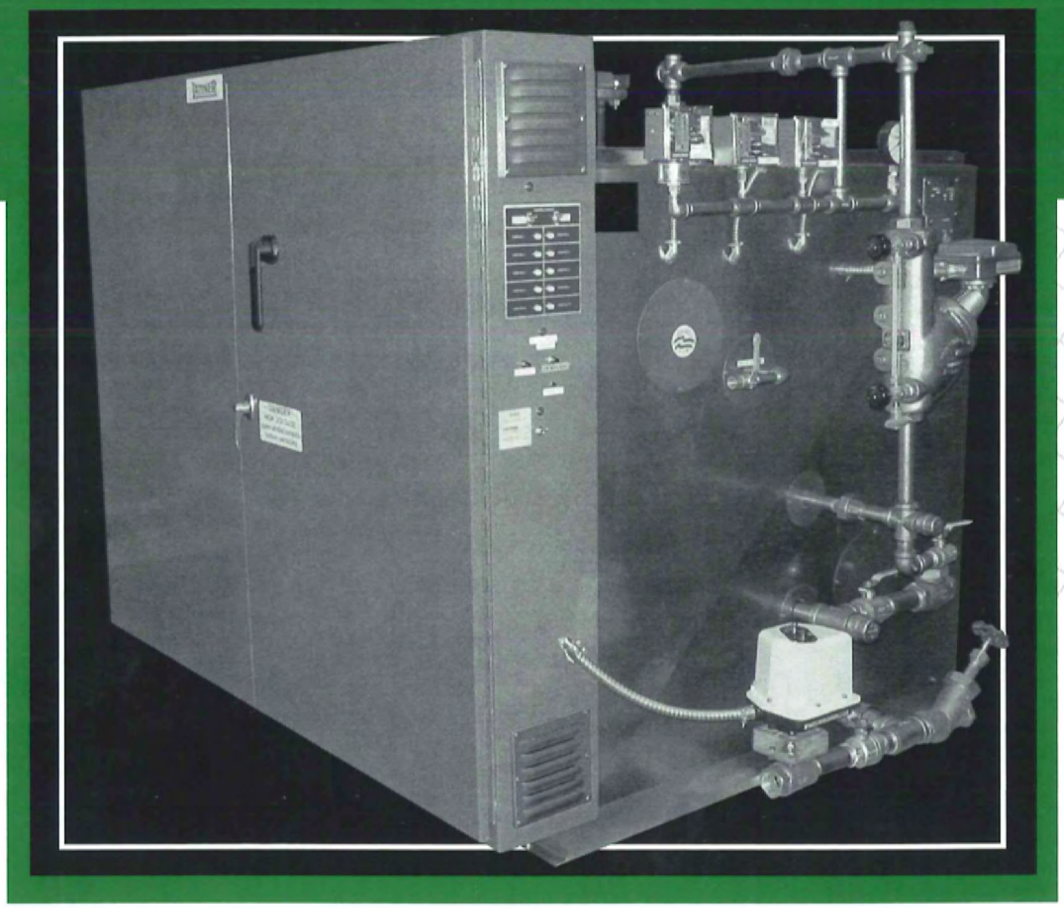
LATTNER

Safe • Sure • Secure

Cabinet Series
Low and High Pressure Steam
7.5 KW to 3600 KW
25 to 12,420 Lb/Steam/Hr. 212°F

Electric Steam Boilers



applications:

LATTNER electric steam boilers provide low or high pressure steam for economical space heating and humidification in commercial, industrial and institutional buildings. Also used to supply process steam for industrial use.

construction details

VESSEL CONSTRUCTION - designed and constructed to ASME Code requirements. Low pressure steam boilers(15 psi maximum pressure relief valve setting) are designed in accordance with Section IV and "H" Stamped. High pressure steam boilers (pressures above 15 psi pressure relief valve setting) are designed in accordance with Section I and "S" or "U" Stamped. Vessels are registered with the National Board and Data Reports are furnished.

UL LISTING - up to 3600 KW, 600V under File E 30432. For larger requirements, multiple units can be piped in parallel.

ENCLOSURE - heavy gauge control panel and vessel enclosure, attached to a welded steel frame mounted on a 4" channel base. All surfaces are protected against corrosion with heat resistant silicon acrylic enamel.

INSULATION - minimum 4" fiberglass on all sides of vessel.

SAFETY VALVE - ASME rated pressure relief valve(s) furnished with each boiler per ASME Code.

HIGH PRESSURE CUTOUT - manual reset high pressure cutout deenergizes boiler in event of over-pressure condition per ASME CSD-1 Code.

LOW WATER CUTOFF - automatically deenergizes boiler in event of low water level. Can also be used to energize remote alarm or feedwater supply pump if required. Water column gauge glass with try cocks (optional) is provided.

AUXILIARY LOW WATER CUTOFF - manual reset, probe type, installed as back up protection for primary automatic reset low water cutoff. Prevents unit from returning to service unless manual reset button is depressed. Power outage feature reinstates normal control after power failure.

DRAIN/BLOWDOWN VALVE - for daily bottom cleaning and sediment removal.

GAUGES - pressure-indicating gauge with 3-1/2" dial is mounted next to the operating and limit controls for easy visibility.

CONTROLS - boilers with three or more steps are furnished with modulating step controller; pressure sensor and recycling feature returns controller to off position after power failure. Boilers with 1 or 2 steps have appropriate number of heavy duty control pressure stats for close pressure control. All boilers are provided with disconnecting break magnetic contactors, fuses with 200,000 ampere interrupting capacity, 120V control transformer with fused primary and secondary, pilot lights for each step, control circuit switch with voltage indicator light and safety circuit monitor light.

WATER LEVEL CONTROL - pump on-off switch and float-type level control are provided with separate pump relay to maintain boiler water level.

MAIN SUPPLY TERMINALS - furnished for up to 500 MCM copper or aluminum supply conductors to accept a single electrical service. Above 500 MCM, multiple supplies will be used. Knockouts located at top of control panel are standard. Specify bottom or side location if required. See Rating Tables, Pages 6 and 7 for detailed supply conductor sizing.

element bundle

Single U-bend Incoloy heating elements are minimally spaced 5/8" apart for maximum water circulation and heat transfer. Six inch cold pin and extra wide spacing add protection from hot spots under adverse water conditions when deposits build up over a period of time.

Elements are double sealed against moisture with epoxy and silicone rubber seals. Element spacers add rigidity and prevent element damage under turbulent, high velocity water conditions. Individual elements are easily replaceable in boiler flange. Elements are rated 75 Watts per square inch maximum. Incoloy will withstand oxidation and scaling up to 1600F, as compared to 450F for copper. In actual use, Incoloy has satisfactorily withstood superheated steam temperatures of 1500F in power plant boiler and 1150F as nuclear superheat fuel elements. The high temperature and corrosion resistance properties of these elements make them the most desirable elements for electric steam boilers. For other watt densities, consult representative.

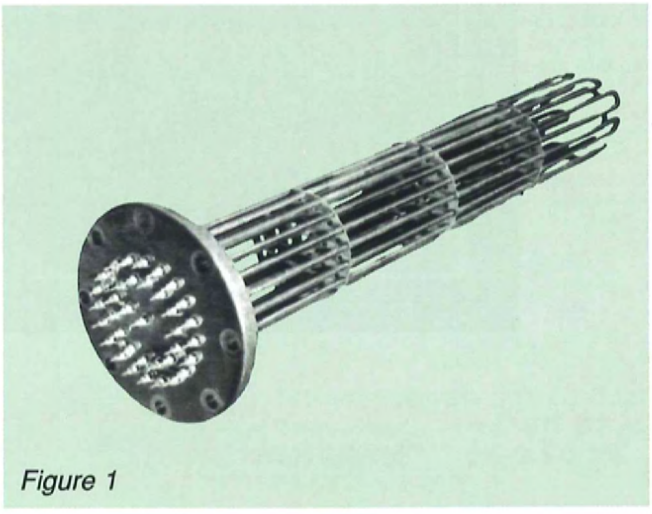


Figure 1

optional built-in features

AUXILIARY HIGH PRESSURE LIMIT - Automatic reset provided in addition to the standard manual reset. When used as an auxiliary limit, it is set to cut out before the manual reset cuts out on high pressure.

PROGRESSIVE SEQUENCE CONTROLLER - solid state, first on-first off progressive sequencing controller equalizes contactor wear and element life by alternating order in which they are energized. All circuits are dropped on power failure and recycled to starting position when power is restored. Progressive sequencing then stages the heating elements in accordance with load requirements.

DISCONNECT SWITCH - nonfused; mechanically interlocked with control panel door to prevent access unless power is disconnected. Available for boilers rated to 4000 amps, 600V. Boilers rated more than 200 amps are available with shunt trip mechanism to disconnect boiler in event of a low water or high pressure condition or to disconnect boiler from its power source from a remote location by means of an auxiliary pilot switch by others.

TOGGLE SWITCHES - wired in control circuit to deenergize heating circuits individually or for other functions, as specified.

MONITORING TERMINALS - for connection of remote readout devices such as building control centers and annunciator systems.

SURFACE SKIMMER - a collection tube with multiple openings is installed below the steaming surface with manual valve. Allows for surface blow off and reduction of totally dissolved solids (TDS).

DOOR INTERLOCK SWITCH - used in lieu of built-in interlocking disconnect switch. Interrupts power to boiler when control cabinet doors are opened. Can be wired to remote mounted disconnect switch or circuit breaker with shunt trip mechanism (provided by others). The defeatable option allows authorized personnel to service boiler with doors open and automatically resets when doors are closed.

AUTO BOTTOM BLOWDOWN - includes motorized ball valve, NEMA 1 Panel with "auto-off-override" selector switch, pilot light, programmable timers for interval and duration timing cycles, relays, boiler control interlock and manual bypass valve.

AMMETER - flush mounted on boiler panel with current transformer to monitor one phase as standard; (monitoring all three phases optional if specified); includes selector switch.

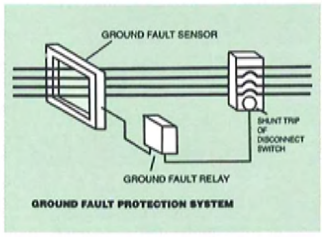
VOLTMETER - flush mounted on boiler panel for indication of line voltage.

CLEAN STEAM CONSTRUCTION - ASME pressure vessel with stainless steel nipples, 12" x 16" manway and NSF approved liner.

optional features and accessories

KWH DEMAND LIMITER - reduces electrical billing created by utility demand charges by deferring portions of boiler loads according to total building demand requirements. Includes current transformers, KWH digital display and load control for programming demand limit.

GROUND FAULT PROTECTION SYSTEM - minimizes damage from a ground fault condition. Meets requirements of the NEC Article 230-95 which states ground fault protection is required for equipment rated 1000 amps or more if fed from a wye-connected, grounded neutral service measuring more than 150 volts to ground. Also used with boilers fed from a three wire service or rated less than 1000 amps. System is factory wired in panel and connected to boiler supply wires. Consists of current transformer which senses current imbalance in supply conductors, ground fault relay adjustable between 200 and 1200 fault amps and a nonfused disconnect switch with shunt trip mechanism. Disconnect switch is provided in boiler as standard but can also be mounted in a remote enclosure if specified. Suitable for systems with up to 125,000 amps available fault current.



GROUND FAULT PROTECTION SYSTEM

FEEDWATER SYSTEM - provides automatic control of boiler feedwater in systems where the steam is wasted, such as humidification or process applications. For low pressure systems (15 psi maximum), an electric solenoid valve with float switch is available for feedwater control.

An optional mechanical combination feeder-low water cutoff can be supplied in addition to the standard low water cutoff. Specify when ordering.

For high pressure systems, the boiler level controller energizes a boiler feed pump, to provide feedwater in direct proportion to the boiler load.

CONDENSATE RETURN SYSTEM - allows return of condensate water for maximum condensate heat reclamation and minimum raw feedwater usage. Includes receiver tank with sight glass, water level float valve, pump, strainer and stop valve.

STEAM SEPARATOR - generally used for dry steam and humidification applications. Centrifugal action improves steam quality by removing moisture droplets and solids.

PROGRAM CLOCK - 7 day control for automatic starting and/or operation of boiler at preset intervals. Operation on selected days may be omitted if desired.

BLOWDOWN SEPARATOR - ASME code stamped, absorbs steam flash and pressure to allow sludge and water to pass safely to sewer. Requires manual or automatic (specify) aftercooler with city water regulating valve for cooling discharge to 140°F.

CHEMICAL FEED SYSTEM - delivers premixed liquid chemical in proportion to the amount of make-up water used. Includes electric pulse water meter, NEMA 4 programmable panel, high pressure adjustable stroke, piston type pump, and stainless steel injection nozzle with check valve (115V/1/60).

Chemical mixing tank with agitator (115V/1/60) is optional - specify 30 or 50 gal.

sample specification — Lattner steam boilers for space heating and process applications

1. Contractor to furnish and install UL Listed, Lattner electric boiler(s) with capacities and voltages as scheduled, equipped with incoloy sheathed elements mounted on standard ASA flanges.

2. Pressure vessel to be horizontally constructed per ASME Standards with "H", "U", "S" or "M" Stamp, as required, and registered with National Board of Boiler and Pressure Vessel Inspectors.

3. Heating elements shall be 15 KW maximum each, 75 Watts per square inch, single U-bend construction and shall be individually removable from flange. Element bundle shall be (left-hand)* removal. Furnish 6 inch cold pin in each element terminal and allow a 5/8" minimum clearance between elements. Subdivide load branch circuits into 48 amps maximum each. Elements to be wired with UL Listed 200°C conductors. *(Left hand standard, Right hand optional)

4. All controls to be prewired and functionally tested in integral ventilated control cabinet. Boilers with 1 or 2 steps shall have an equivalent number of heavy duty control pressuretrols to provide close pressure control; boilers with three or more steps shall have a progressive sequencing step controller, pressure sensor and recycling feature to return controller to off position after power failure.

5. Furnish 200,000 ampere interrupting capacity fuses for each heating element. Boiler with large numbers of steps may have fuses mounted on copper bus. Provide disconnecting break contactors, 120V control transformer with fused primary and secondary, pilot lights for each heating step, control circuit switch with pilot light, alarm circuit monitor light and properly sized lugs for incoming conductors. Knockouts to be located in top of control cabinet above line terminal lugs (alternates: right side, left side or bottom).

6. Boiler(s) to be complete with pressure relief valve(s) per ASME Code, automatic reset, float-type low water cutoff, make-up water level control, manual reset, probe-type, auxiliary low water cutoff with power outage protection mounted in control cabinet, manual reset high pressure cutoff, 3-1/2" pressure gauge, blowdown valve(s), sight glass and sight glass protector.

7. Pressure vessel to be insulated on all sides with 4" fiberglass blanket. Removable lifting lug(s) to be provided. Pressure vessel to be mounted on a 4" steel channel base with steel vessel enclosure and heavy ventilated NEMA 1 control cabinet. Provide hinged door with two-point, key-locking handle. All surfaces to be protected against corrosion with high temperature silicon enamel.

8. Optional features shall be as follows (select as required):
   - Interlocking Nonfused Safety Disconnect
   - Shunt Trip Mechanism
   - Auto - Reset High Limit in Addition to Manual Reset
   - Progressive Sequencer
   - Door Interlock Switch
   - Toggle Swithches
   - Monitoring Terminals
   - Surface Skimmer (Specify manual or auto blowdown)
   - Auto Bottom Blowdown with Motorized Ball Valve
   - Low Water and High Pressure Alarm Relays
   - ASME Valve Package (Discharge & Feed Water Stop & Check Valves w/Hydro Test)
   - KWH Meter with Control Transformers
   - Demand Limiter
   - Ground Fault Protection System
   - Blowdown Separator & Auto-Aftercooler
   - Feedwater Solenoid
   - Condensate System with Boiler Feed Pumps (Specify number of pumps)
   - Steam Separator
   - Ammeter (Specify one or three phases)
   - Voltmeter
   - Make up Water Softener (Specify Simplex or Duplex)
   - Program Clock
   - Audible Alarm Horn with Silencing Switch
   - Chemical Feed Systems

9. Manufacturer to provide one year warranty on all electrical control components, heating elements, and pressure vessel.

technical data — KW required for steam boilers

1. To determine KW required for steam boilers, determine BTU / # of Steam from Table 1 according to temperature of feedwater and boiler working pressure (PSIG).

2. Determine KW by inserting BTU / # figure into formula below, according to lbs. of steam per hour required.

$$KW = \frac{(\text{BTU / \# steam}) \times (\text{lbs. steam / hour required})}{3413}$$

TABLE 1: BTU PER POUND OF STEAM

Temp. of Water (°F.)	Working Pressure (PSIG)											
	5	10	15	20	25	30	40	50	60	80	100	120
50°	1138	1142	1146	1149	1152	1154	1158	1161	1164	1168	1172	1175
60°	1128	1132	1136	1139	1142	1144	1148	1151	1154	1158	1162	1165
70°	1118	1122	1126	1129	1132	1134	1138	1141	1144	1148	1152	1155
80°	1108	1112	1116	1119	1122	1124	1128	1131	1134	1138	1142	1145
90°	1098	1102	1106	1109	1112	1114	1118	1121	1124	1128	1132	1135
100°	1088	1092	1096	1099	1102	1104	1108	1111	1114	1118	1122	1125
120°	1068	1072	1076	1079	1082	1084	1088	1091	1094	1098	1102	1105
140°	1048	1052	1056	1059	1062	1064	1068	1071	1074	1078	1082	1085
160°	1028	1032	1036	1039	1042	1044	1048	1051	1054	1058	1062	1065
180°	1008	1012	1146	1019	1022	1024	1028	1031	1034	1038	1042	1045
200°	988	992	996	999	1022	1004	1008	1011	1014	1018	1022	1025
220°	968	972	976	979	982	984	988	991	994	998	1002	1005
240°	948	952	956	959	962	964	968	971	974	978	982	985
260°	928	932	936	939	942	944	948	951	954	958	962	965

$KW = BHP \times 9.809$

$$KW = \frac{EDR}{14.2}$$

EDR = Equivalent Direct Radiation (Steam)

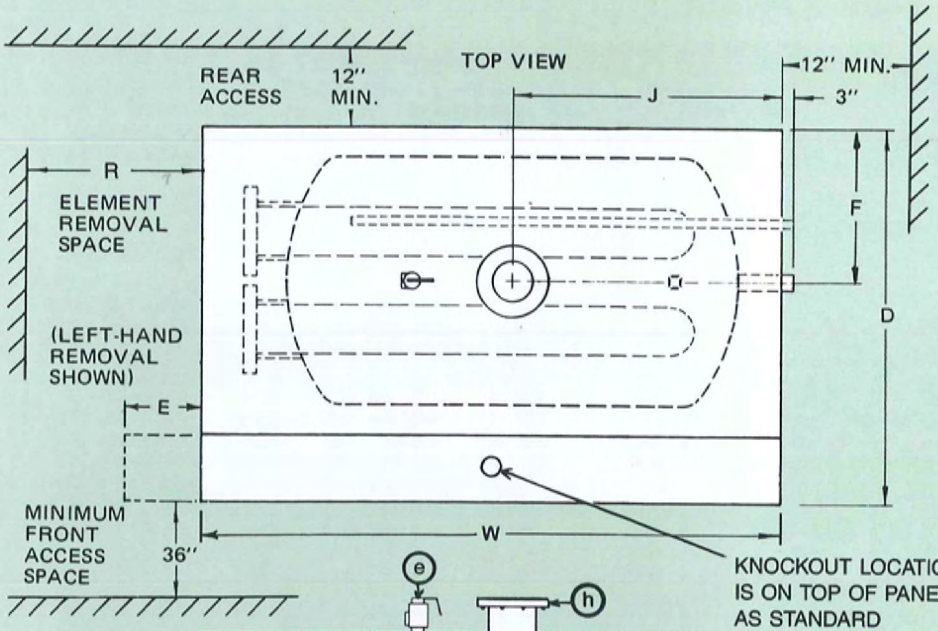
APPROX STEAM PRESSURE VS. TEMPERATURE VALVES

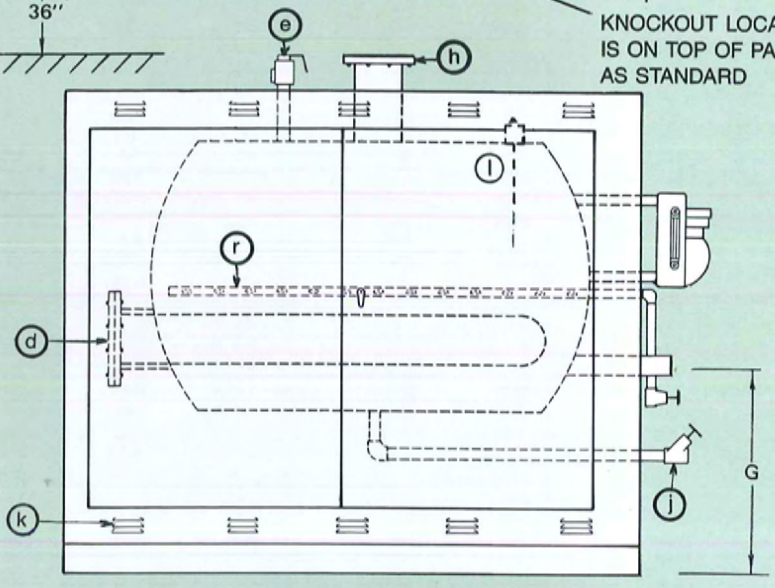
STEAM AT 0 PSIG 212°F.
STEAM AT 10 PSIG 240°F.
STEAM AT 15 PSIG 250°F.
STEAM AT 25 PSIG 267°F.
STEAM AT 35 PSIG 280°F.
STEAM AT 50 PSIG 298°F.
STEAM AT 75 PSIG 320°F.
STEAM AT 100 PSIG 338°F.
STEAM AT 125 PSIG 353°F.
STEAM AT 150 PSIG 366°F.

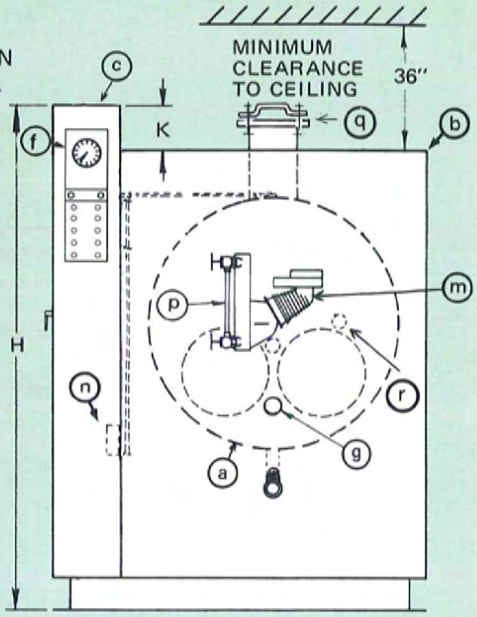
$$\text{3 Phase Amps} = \frac{\text{Watts}}{\text{Voltage} \times 1.73}$$

$$\text{1 Phase Amps} = \frac{\text{Watts}}{\text{Voltage}}$$

dimensions - Lattner steam boilers







STANDARD FEATURES

a. ASME BOILER VESSEL
b. BOILER ENCLOSURE
c. CONTROL PANEL
d. ELEMENTS
e. ASME PRESSURE RELIEF VALVE
f. PRESSURE GAUGE
g. INLET-CONDENSATE RETURN
h. OUTLET
j. DRAIN/BLOWDOWN VALVE
k. VENTILATION LOUVERS
l. AUXILIARY LOW WATER CUTOFF
m. LOW WATER CUTOFF
n. HIGH PRESSURE LIMIT CONTROLS
p. SIGHT GLASS
q. REMOVABLE LIFTING LUG
r. SURFACE BLOWDOWN (optional)

TABLE 2: DIMENSIONS*, WEIGHTS AND CAPACITIES

KW Range	Overall Size (inches)					Piping Size (inches)			Piping Location (inches)				Approx. Weight (pounds)		Water Capacity (gallons)	Vessel Diameter (inches)
	W	H	D	R	K	Return	Outlet (15 PSI)	Size (150 PSI)	Blow Down	F	G	J	Shipping	Operating		
120	70	40	32	44	6	1TH	2TH	2TH	1	12	15	29½	950	1200	30	16
127-240	70	52	36	44	0	1TH	3TH	2TH	1	16	15	31	1500	1960	50	20
247-480	70	40	48	44	0	1¼TH	4FL	3TH	1¼	19	16	32	2300	3050	90	30
495-600	70	72	54	44	18	1¼TH	4FL	3TH	1¼	22	18	32	2500	3600	130	36
615-720	70	72	54	44	18	1¼TH	6FL	3TH	1¼	22	18	32	2600	3700	130	36
735-1080	70	80	60	44	21	1½TH	6FL	4FL	1½	25	15½	33	3400	5320	230	42
1000-1440	96	80	60	64	21	1½TH	6FL	4FL	1½	25	15½	44	5800	8300	300	42
1480-1760	96	80	68	64	15	2TH	8FL	6FL	1½	28	20	45	6200	9580	405	48
†1800-2080	96	80	74	64	15	2TH	8FL	6FL	1½	31	22	45	7500	11750	510	54
†2120-2400	CONSULT FACTORY					2TH	8FL	6FL	2	CONSULT FACTORY						
†2130-3300	CONSULT FACTORY					2TH	10FL	6FL	2	CONSULT FACTORY						
†3330-3600	CONSULT FACTORY					2TH	12FL	8FL	2	CONSULT FACTORY						

†Control panels both sides (front & back or side by side). Allow 36" for NEC clearance.
* Dimensions based on standard horizontal 480/600 volt construction and may vary for vertical units, other voltages or units with optional features; accurate dimensions provided on certified prints. For vertical units or other voltages, consult factory.

ratings—600V, 480V, 240V 3 PHASE ***

TABLE 3: RATINGS AND WIRING INFORMATION

MODELS AND RATINGS				600V 3 PHASE		480V 3 PHASE		240V 3 PHASE	
KW	No. of Steps**	Model No.	lbs/hr	Amps	*Total No. & Size of Conductors	Amps	*Total No. & Size of Conductors	Amps	*Total No. & Size of Conductors
7.5	1								
15.0	1								
22.5	1		See Horizontal Electric Bulletin #SB 106						
30	1								
60	1								
90	2								
120	2	120–	410	115	3 - 1/0	144	3 - 3/0	289	3 - 500
150	5	150–	512	144	3 - 3/0	180	3 - 4/0	361	6 - #4
180	6	180–	614	173	3 - 4/0	216	3 - 300	433	6 - 300
210	7	210–	717	202	3 - 250	253	3 - 400	505	6 - 400
240	8	240–	819	231	3 - 350	289	3 - 500	577	6 - 500
270	8	270–	922	260	3 - 400	325	6 - #3/0	650	9 - 300
300	8	300–	1024	289	3 - 500	361	6 - #4	722	9 - 350
330	8	330–	1126	318	6 - #3/0	397	6 - 250	794	9 - 400
360	8	360–	1229	349	6 - 4/0	433	6 - 300	866	9 - 500
390	10	390–	1331	375	6 - 250	469	6 - 350	938	12 - 350
420	10	420–	1433	404	6 - 250	506	6 - 400	1010	12 - 400
450	10	450–	1536	433	6 - 300	540	6 - 500	1083	12 - 400
480	10	480–	1638	462	6 - 350	577	6 - 500	1155	12 - 400
510	10	510–	1741	491	6 - 350	613	9 - 300	1227	15 - 400
540	10	540–	1843	520	6 - 400	650	9 - 300	1299	15 - 400
570	10	570–	1945	548	6 - 500	686	9 - 350	1371	15 - 500
600	10	600–	2048	577	6 - 500	722	9 - 350	1443	15 - 500
630	11	630–	2150	606	6 - 500	758	9 - 400	1516	15 - 500
660	11	660–	2253	635	9 - 300	794	9 - 400	1588	18 - 500
690	12	690–	2356	664	9 - 300	830	9 - 500	1660	18 - 500
720	12	720–	2457	693	9 - 350	866	9 - 500	1732	18 - 500
750	13	750–	2560	722	9 - 350	902	9 - 500	1804	18 - 500
780	13	780–	2662	751	9 - 400	938	12 - 350	1876	21 - 400
810	14	810–	2765	779	9 - 400	976	12 - 350	1949	21 - 500
840	14	840–	2867	808	9 - 500	1010	12 - 400	2021	21 - 500
870	15	870–	2969	837	9 - 500	1046	12 - 400	2093	21 - 500
900	15	900–	3072	866	9 - 500	1083	12 - 400	2165	24 - 500
930	16	930–	3174	895	9 - 500	1119	12 - 500	2237	24 - 500
960	16	960–	3276	924	12 - 350	1155	12 - 500	2309	24 - 500
990	17	990–	3379	953	12 - 350	1191	12 - 500	2382	24 - 500
1020	17	1020–	3481	1000	12 - 350	1227	15 - 400	2454	30 - 350
1050	18	1050–	3584	1010	12 - 400	1263	15 - 400	2525	30 - 400
1080	14	1080–	3686	1039	12 - 400	1299	15 - 400	2598	30 - 400
1120	14	1120–	3823	1075	12 - 400	1347	15 - 500	2694	30 - 500
1160	15	1160–	3959	1116	12 - 500	1395	15 - 500	2790	30 - 500
1200	15	1200–	4096	1155	12 - 500	1443	15 - 500	2887	30 - 500
1240	16	1240–	4232	1193	12 - 500	1491	15 - 500	2983	30 - 500
1280	16	1280–	4368	1232	15 - 350	1540	18 - 400		
1320	17	1320–	4505	1270	15 - 400	1588	18 - 400		
1360	17	1360–	4641	1308	15 - 400	1636	18 - 500		
1400	18	1400–	4778	1347	15 - 600	1684	18 - 500		
1440	18	1440–	4915	1386	15 - 500	1732	18 - 500		
1480	19	1480–	5051	1424	15 - 500	1780	18 - 500		
1520	19	1520–	5188	1463	15 - 500	1828	21 - 400		
1560	20	1560–	5324	1501	15 - 500	1876	18 - 500		
1600	20	1600–	5460	1540	18 - 400	1924	21 - 500		
1640	20	1640–	5597	1578	18 - 400	1973	21 - 500		
1680	20	1680–	5734	1616	18 - 500	2021	21 - 500		
1720	20	1720–	5870	1655	18 - 500	2069	21 - 500		
1760	20	1760–	6007	1693	18 - 500	2117	21 - 500		
1800	20	1800–	6143	1732	18 - 500	2165	24 - 500		
1840	20	1840–	6280	1770	18 - 500	2213	24 - 500		
1880	20	1880–	6416	1809	18 - 500	2261	24 - 500		
1920	20	1920–	6553	1847	24 - 350	2309	24 - 500		
1960	20	1960–	6689	1886	24 - 350	2357	24 - 500		
2000	20	2000–	6828	1924	24 - 350	2405	24 - 500		
2040	20	2040–	6962	1963	24 - 350	2454	30 - 350		
2080	20	2080–	7099	2001	24 - 400	2502	30 - 400		
2160	20	2160–	7372	2078	24 - 500	2598	30 - 400		
2240	20	2240–	7645	2155	24 - 500	2694	30 - 500		
2320	20	2320–	7918	2232	24 - 500	2790	30 - 500		
2400	20	2400–	8191	2309	24 - 500	2887	30 - 500		
2480	20	2480–	8464	2386	24 - 500	2983	36 - 400		
2560	20	2560-	8737	2463	24 - 350	3079	36 - 400		
2640	20	2640–	9010	2540	24 - 350	3175	36 - 400		
2720	20	2720–	9283	2617	24 - 400	3272	36 - 500		
2800	20	2800–	9556	2694	24 - 500	3368	36 - 500		
2880	20	2880–	9829	2771	30 - 500	3464	36 - 500		
2960	20	2960–	10,102	2848	30 - 500	3560	36 - 500		
3040-3600	20	CONSULT FACTORY							

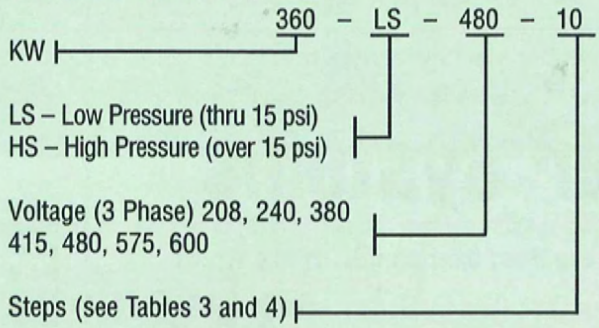
* Conductor sizes based on 125% ampacity for process applications per NEC with three 75C copper wires in a conduit. Disconnect option may permit larger wire size.
** Subject to change, depending on step-controller stages and amps per stage.
*** For other voltages, consult factory.

ratings—208V 3 PHASE

TABLE 4: RATINGS AND WIRING INFORMATION

MODELS AND RATINGS				208V 3 PHASE	
kw	No. of Steps**	Model No.	lbs/hr	Amps	*Total No. & Size of Conductors
119.7	5	120	408	332	6 - 4/0
136.8	5	137	466	379	6 - 250
153.9	8	154	525	427	6 - 300
171.0	8	171	584	474	6 - 350
188.1	10	188	642	521	6 - 400
205.2	10	205	700	569	6 - 500
222.3	10	222	459	616	9 - 300
239.4	10	239	817	664	9 - 300
256.5	10	257	874	711	9 - 350
273.6	10	274	934	759	9 - 400
290.7	10	291	992	806	9 - 500
307.8	10	308	1050	854	9 - 500
324.9	10	325	1109	901	9 - 500
342	10	342	1167	949	9 - 600
359.1	11	359	1225	996	9 - 600
376.2	11	376	1284	1044	12 - 600
393.3	12	394	1342	1091	12 - 500
410.4	12	410	1401	1138	12 - 500
427.5	13	428	1459	1186	12 - 500
444.6	13	445	1517	1233	15 - 350
461.7	14	462	1576	1281	15 - 400
478.8	14	479	1634	1328	15 - 500
495.9	15	496	1693	1375	15 - 500
513.0	15	513	1751	1423	15 - 500
530.1	15	530	1809	1470	15 - 500
547.2	15	547	1869	1518	15 - 500
564.3	15	564	1926	1565	18 - 350
581.4	15	581	1984	1613	18 - 500
598.5	20	598	2043	1660	18 - 500
615.6	20	615	2101	1708	18 - 500
632.7	20	633	2154	1755	18 - 500
649.8	20	650	2218	1804	18 - 500
666.9	20	667	2276	1850	21 - 400
684	20	684	2334	1897	21 - 500
701.1	20	701	2393	1944	21 - 500
718.2	20	718	2451	1992	21 - 500
752.4	20	752	2568	2087	21 - 500
769.5	20	770	2626	2136	24 - 400

MODEL DESIGNATION



how to order

Specify:

- Model Designation (see above)
- Construction (standard horizontal or optional vertical)
- Operating Pressure Range (psi)
- Vessel Design Pressure (high pressure 150 psi or low pressure 15 psi)
- Specify Safety Valve (select: 15, 30, 50, 100, 125, or 150 psi)
- Supply Conductors (size, quantity and type (aluminum or copper)
- Supply Conduits and Disconnects (quantity and size)
- Conduit Location (standard top or optional bottom)
- Element Removal (standard left or optional right hand)
- Optional Features
- Application (space heating, humidification or process)
- Installation Location (for ASME Reports)
- Shipping Instructions

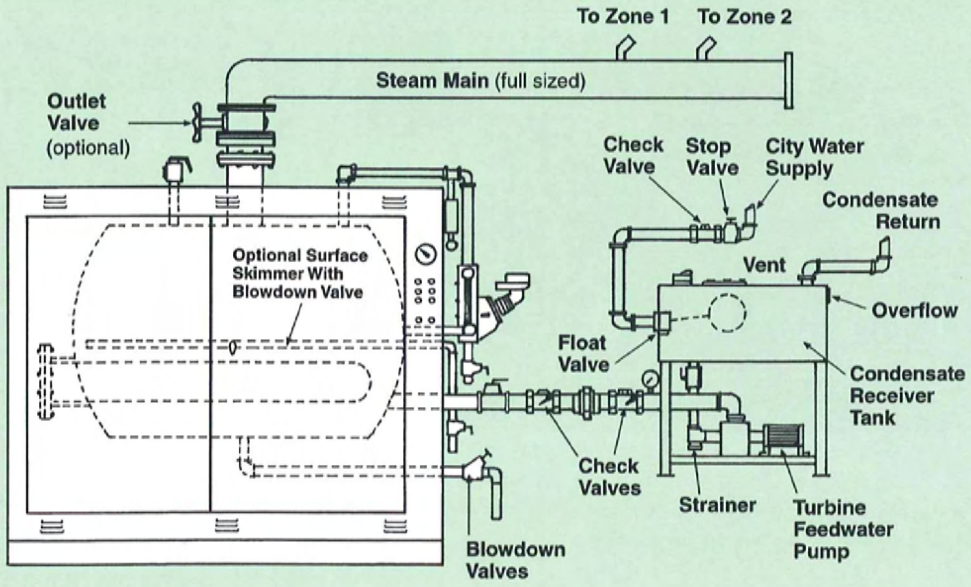


Figure 3

More Steam & Hot Water Boiler Systems

Trusted By the Best Companies in the World Since 1918

A Few Users of Lattner Boiler Systems

Radio Corporation of America	Kodak
United Nuclear Corp.	European Health Spas
Hart Schaffner & Marx	K.C. Power & Light
Honeywell	General Electric
Montgomery Ward	Sears, Roebuck
C B S Labs	Ireco Chemical Company
Marshall Field & Co.	El duPont de Nemours
Control Data Corp.	Allis Chalmers
Armstrong Rubber	IBM
Chicago Health & Racquet Clubs	Carson Pirie Scott
Lawrence Radiation Labs	DISNEY WORLD
Vic Tanney/Bally	J.C. Penney
Nordstrom Dept. Stores	General Motors Corp.

For catalogs or custom engineering:

800-345-1527

Representatives in all major cities.

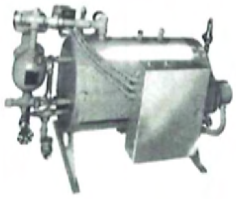
MANUFACTURER'S WARRANTY

A Lattner boiler shell is guaranteed to be constructed in accordance with ASME Code. A boiler inspector, not in our employ, certified by the National Board of Boiler and Pressure Vessel inspectors, supervises the construction, gives final hydrostatic test, and places stamp of approval on the completed shell.

Boiler accessories are guaranteed for one year from date of shipment against defective workman ship and material and such items will be replaced FOB factory. Liability for damages caused by such defective parts is limited to such replacements and in no event shall we be liable for indirect or consequential damages.

For complete warranty, see form No. 2-98

Horizontal Electric Boiler



Small (27" x38" x29") delivers low and high pressure steam to 125 psi. 9 to 148 KW. Ideal for humidifiers, sterilizers and process. ASME, UL Listed.

Space Saver Hot Water Boilers

Compact (2 ft. x 2 ft. x 4 ft.) vertical cabinet saves floor space. Suitable for closet mounting. Up to 120KW UL Listed.

Electric Hot Water Boilers

Up to 3600 KW for each module. Vessel meets ASME Code and certified by National Board of Boiler and Pressure Vessel inspectors.
UL Listed

WLF IV Tubeless 4-Pass Power Burner

Serviceable sizes. 10 to 50 HP - Steam, Gas, Oil, Dual Fuel; Vertical, high efficiency compact, quiet design ASME up to 300 PSIG.

Gas/Oil Fired Steam Horizontal Return Tubular (HRT)

Up to 60 HP. Delivers extra dry steam at 82% overall efficiency. Available with atmospheric and forced draft burners.

Steam & Hot Water Scotch Marine Fire Tube Boilers

ASME 3-PASS, Dry or wet back design for process steam or hot water heating with full modulation burners.
UL Listed

SteamEase Gas Fired Tubeless

Up to 20 HP. Miniature and pro-series types.- Deliver full rating with atmospheric natural draft burners.

Condensate Return and Feed Water Units

Custom and Standard designs includes tank, pump(s), automatic make-up valve and pre-wired control panel. Sizes up to 750 gal.

BlowDown Separators & Automatic Aftercooler

Safely reduce steam pressure for external venting; to 5 psi max. Four standard ASME sizes plus custom. Optional: Automatic Aftercooler with temperature regulating valve.

1411 9th Street SW, P.O. Box 1527
Cedar Rapids, Iowa 52406, U.S.A.
800-345-1527 319-366-0778
FAX 319-366-0770
e-mail info@lattner.com
http://www.lattner.com

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Lattner Boiler Manufacturing Co.

Bulletin No. SB 116-07