

Bryan BH-Series Electric Boilers

How Water or Steam



B BRYAN BOILERS



Bryan electric hot water or steam boilers...

A capacity for most applications



*BH Series
Hot Water boiler
shown with optional features*



*BS Series
Steam boiler
shown with optional features*

Our Bryan electric hot water or steam boilers provide fast, efficient and economical heating for office buildings, apartment houses, schools, hospitals, factories, swimming pools and many other commercial and industrial applications. These advanced boilers combine the advantage of modern electric operation with hydronic or steam heating to create an entirely new concept in complete comfort engineering. By simply adding a chiller or heat pump to your modern Bryan-equipped hydronic or steam system, you can have year 'round air conditioning.

The Bryan Electric Steam Boiler is ideally suited for high or low pressure process steam. Hospitals, dairies, restaurants, laundries, dry cleaners, food processing, tire recapping and metal plating are just a few of the possible applications.

Fully automatic Bryan Electric Boilers are specifically designed to meet the performance standards dictated by specifying engineers. Bryan electric-powered boilers eliminate soot, flues, vents, fuel storage tanks, oil lines and gas piping. Boiler room space can be kept to a minimum. In Bryan Electric Boilers, postulating controls automatically actuate the heating elements to maintain the precise system temperature or steam pressure.

Our boilers are also delivered to your job site preassembled and thoroughly factory-tested.

Electric Heating Elements

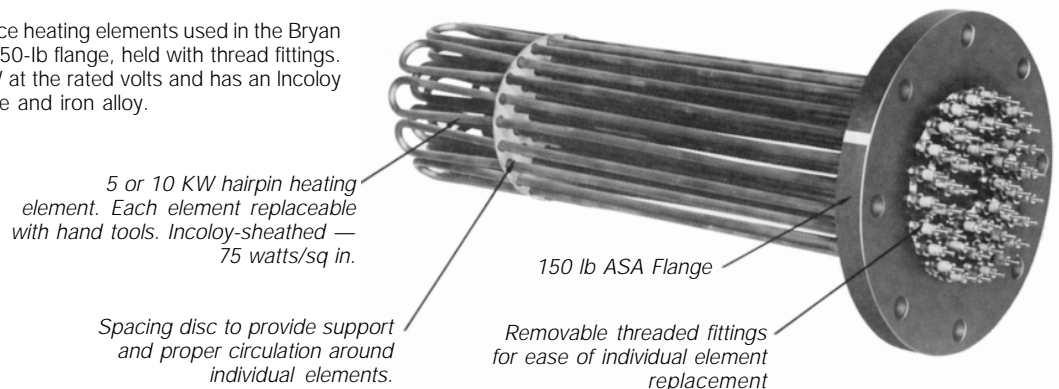
The immersion-type electric resistance heating elements used in the Bryan Boilers are mounted in a standard 150-lb flange, held with thread fittings. Each element is rated at 5 or 10 KW at the rated volts and has an Incoloy sheath composed of nickel, chrome and iron alloy.

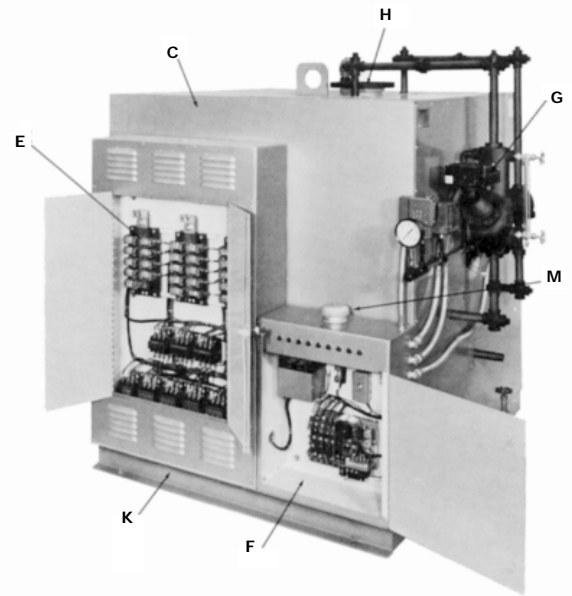
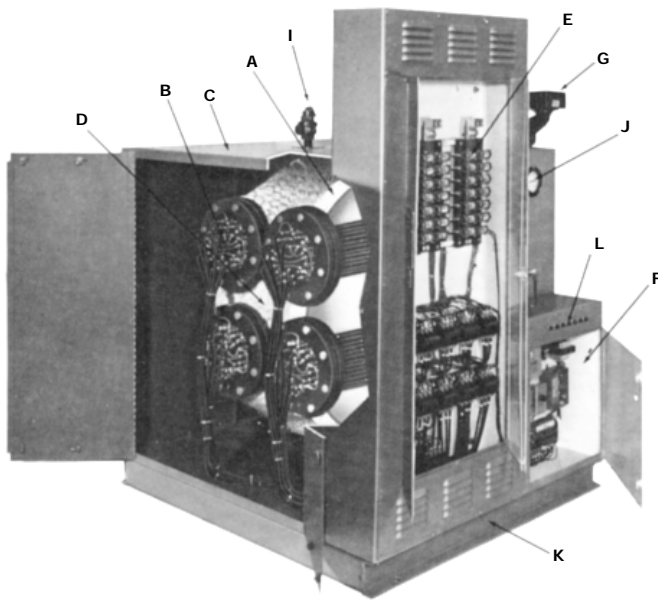
This superior sheath provides excellent resistance to oxidation and has particularly good strength characteristics at elevated temperatures. For comparison, the following are maximum temperature limits for several of the sheath materials normally used: Copper—350°, Steel—750°F, Type 304 Stainless Steel—1400°F, Incoloy—1800°F.

By virtue of its relatively high nickel content, the Incoloy does not become brittle after prolonged exposure to temperatures. Corrosion resistance of the Incoloy is attributed to the chrome and nickel content of the alloy. This material is highly resistant to corrosion, oxidation and attack caused by various water impurities.

If you do burn out one of our elements, your maintenance man can replace it easily with hand tools. Being able to easily replace individual elements eliminates the need for stocking a complete element bundle of spares and the expense and inconvenience of having to return the element bundle to the manufacturer for repair. All Bryan BH Series boilers feature copper bus bar distribution, wherein the fuse clip for each branch circuit and the main power lugs are all bolted directly to a bus bar. The bus bar can carry the full load current of the boiler withstanding the largest available fault current from the entering power system. Use of the bus bar protects all current-carrying pads and prevents damage to the boiler.

We produce an outstanding line of boilers. We invite any comparison.





Construction Features

- A. Heavy steel pressure vessel, built and stamped in accordance with ASME Boiler Cre. 125 psi and 150 psi design standard On hot water boilers. 15 psi Or 125 psi and 150 psi standard On steam boilers. Higher pressure available upon application.
- B. Heating element bundles-immersion type-mounted on standard 150-lb. ANSI flanges. Individual elements replaceable with hand tools. Element watt density is 75 watts/sq. in. Of surface area. Incoloy-sheathed.
- C. Boiler jacket 16-gauge/zinc coated, rust-resistant primer and attractive enamel finish.
- D. Heavy boiler insulation—4" fiberglass.
- E. Power panel contains main busing, Entrance lugs, Class J fuses and

- magnetic compactors.
- F. Control panel contains maculating step controller, control transformer, recycle relay, control circuit fuse and on-off control circuit switch.
- G. Low water cutoff or combination low water cutoff and pump control.
- H. changed flow and return connections.
- I. Relief valve.
- J. Temperature and pressure gauge.
- K. Structural steel base.
- L. Sequence indicating lights.
- M. Alarm bell (optional).

Standard Equipment

Modulating step controller • Operating control • High limit control • Low water cutoff • Magnetic contactors • 4" fiberglass boiler insulation • Heavy-duty copper internal busing • JKS fusing • Pilot lights—one per step • Bus lugs • ASME safety relief valve • Control

transformer • Recycle relay • On-Off control switch • Incoloy-sheather, immersion type heating elements • Lifting lugs • 16-gauge steel jacket • Key-operate lock in handle of power panel • Factory assembled and tested.

Optional Equipment

Solid state, First On-First Off progressive sequencing step control • Power panel door interlock • Preheat switch • Ammeter—one phase or three phase • Voltmeter—one or three phase • Time clock—24 hrs or seven day • Flow switch • Outdoor reset control • Manual reset high limit control • Low water cutoff drain valve • Boiler drain or blowdown valve • Manufal reset low water cut-off • Operational hour meter (running time) • Lead-lag control • Kilowatt limiter based on outdoor temperature • Ground fault protection • Automatic boiler

blowdown valve • Manhole—when not furnished as standard (Standard on 125 and 150 psi steam) • Alarm bell (specify function) • Alarm silencing switch • Special indicating lights • Factory operating test • Boiler feed system • Combination low water cutoff and feeder • Auxillary low water cutoff • National Board stamping • Other than standard size inlet and outlet • 50-watt density heating elements.



Sample specifications for electric hot water or steam* boilers.

General

Furnish and install where shown on the plans (1, 2, 3, etc.) package type electric hot water (steam)* boiler(s) Model as manufactured by Bryan Steam Corporation. Unit shall be completely factory assembled including accessories as described herein, precised, factory tested and U.L. labeled.

Each boiler herein shall have an input of _____ KW at _____ volts. The pressure vessel, insulation, jacket, electrical cabinet(s) and control cabinet shall be mounted on a unitary structural steel frame. Each boiler shall be equipped with a dial type panel mounted temperature gauge and pressure gauge (pressure gauge only for steamed).

Pressure vessel

The pressure vessel shall be of all-welded steel construction, designed for a pressure of psig in accordance with the ASME Boiler & Pressure Vessel Code and stamped with the appropriate ASME symbol.

The vessel shall be provided with:

The necessary inspection openings as required by the ASME Code, lifting lug(s), openings for flanged elements and controls, four inches of fiberglass insulation, wire netting to hold insulation in place, drain line of a size as required by the ASME Code, flanged outlet inch pipe size, flanged inlet inch pipe size, ASME safety relief velvets) with capacity and size as required by the ASME Code, set to relieve at prig. A 16 ga. zinc coated metal jacket painted with two coats of enamel.

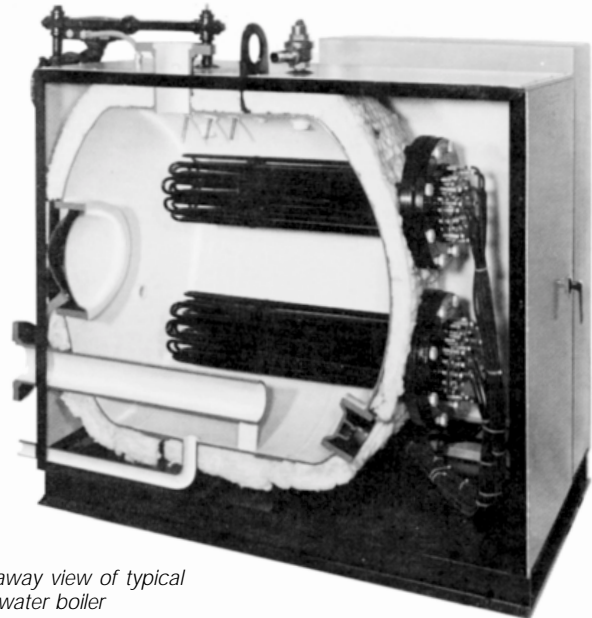
Electrical

(An) electrical power panel cabinet(s) shall be provided. There shall be no operating nor limit controls mounted in this cabinet. It shall be equipped with louvers which will facilitate natural air circulation to minimize temperature rise. The cabinet hinged doors shall be equipped with a key lock handle to prevent access by unauthorized personnel, The main power supply to the boiler shall be from _____ (1, 2, 3, etc.) sources and shall be _____ (208, 240, 480, etc.) volts, 3 phase, 60 Hz, 3 wire system supplied to the electrical cabinet(s) by _____ (1, 2, 3, etc.) _____ (250, 350, 500, eta) MCM conductors per phase and the copper bus bars located in the cabinet(s) shall be equipped with lugs to accommodate these incoming conductors.

The distribution of power within the unit shall be from the copper bus bar through class "J" fuses, through magnetic compactors to the elements. The class "J" fuses shall be installed in fuse clips having a reinforcing member. One of the fuse clips for each fuse shall be mounted directly on the copper bus bar and the other clip shall be mounted on a laminated insulating bar. All power wiring in the unit shall terminate in the box type connectors. Crimp connectors in the ewer circuit will not be acceptable. The power wiring from the class "J" fuses to the magnetic contacted shall be of a size not less than number 8 AWG with insulation of a rating not less than 90°C.

Elements

The boiler shall be equipped with immersion type heating elements mounted in standard 150 lb. A.N.S.I. flanges. Each element shall be



Cutaway view of typical hot water boiler

mechanically mounted and field replaceable without welding or brazing. Elements shall be incoloy sheathed and have maximum watt density of 75 wads per square inch. Elements shall be rated for voltage specified.

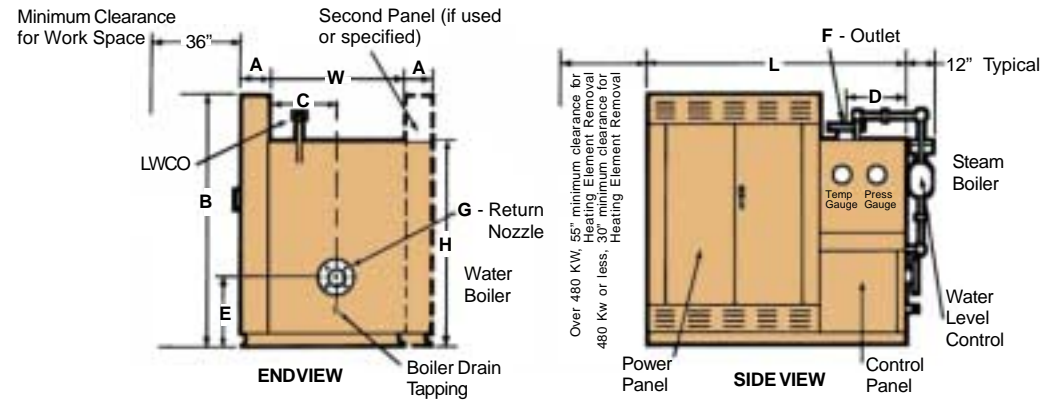
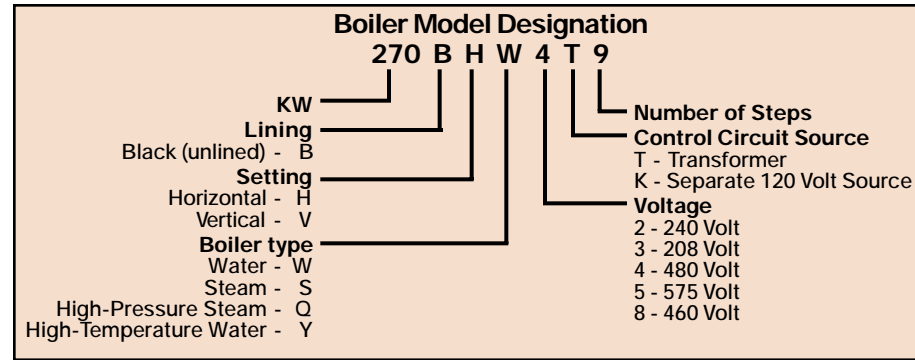
Controls

A control cabinet shall be provided. The control circuit shall be 120 volts, single phase, 60 Hz, supplied by a stepdown transformer of the proper size. Both sides of the control transformer primary shall be protected by class "J" fuses located in the electrical cabinet. One side of the control transformer secondary shall be grounded and the other side fused. The control circuit shall also include:

An on-off switch to shut off current to controls, high limit control which will interrupt control circuit if operating operating conditions are exceeded, low water cutoff, recycle relay which will, in case of circuit interruption, cause the modulating step controller to modulate to the start position before the circuit will be re-energized, modulating step controller will be re-energized modulating step controller with _____ (3, 5, 7, eta) steps, and (1) Indicating light for each step of the step controller.

The operating control shall be set to maintain an outlet temperature (pressure steam)* of _____°F (PSI Steam)*.

Bryan BH-Series Electric Boilers Dimensions And Ratings



Boiler	Total Load Amps Inc. Control Amps					Dimensions - Hot Water Boilers								Fluid Capacity Gallons		Power Panel*						Dimensions - Steam Boilers						Std. No. Of Steps	Standard Bus Lugs (per Phase per Panel)			Operating Weight		Approximate Shipping Weight									
	Input	Output MBH	208	240	460	480	575	L		W	H	C	D	E	F	G	Water	Steam	A			B			L		W		H	C	D	E	F		G		208/240/3	460/480/3	575/3	Water	Steam	Water	Steam
			60	60	60	60	60	240	460										208	460	575	208	460	575	208	460							15	125	15	125							
60	196	168	146	76	73	61	50	50	23	32	11 1/2	12	15	2	2	24	51	10	10	10	40	40	40	50	50	31	40	15 1/2	15	16	3	2	2	1	4	250MCM	1/0	1/0	1045	1,377	900	1,000	
75	245	210	183	96	92	77	50	50	23	32	11 1/2	12	15	2	2	24	51	10	10	10	40	40	40	50	50	31	40	15 1/2	15	16	3	2	2	1	5	350MCM	1/0	1/0	1,045	1,377	900	1,000	
90	294	252	219	114	109	91	50	50	23	32	11 1/2	12	15	2	2	24	51	10	10	10	40	40	40	50	50	31	40	15 1/2	15	16	3	2	2	1	3	500MCM	250MCM	1/0	1,144	1,477	1,000	1,100	
105	343	294	255	133	127	106	50	50	23	32	11 1/2	12	15	2	2	24	51	10	10	10	52	40	40	50	50	31	40	15 1/2	15	16	3	2	2	1	4	500MCM	250MCM	250MCM	1,144	1,677	1,000	1,300	
120	393	335	291	152	145	121	50	50	23	32	11 1/2	12	15	2	2	24	51	10	10	10	52	40	40	50	50	31	40	15 1/2	15	16	3	2	2	1	4	(2)350MCM	250MCM	250MCM	1,144	1,677	1,000	1,300	
135	442	377	327	171	164	137	50	50	31	40	15 1/2	15	16	2	2	51	82	10	10	10	52	40	40	50	50	37	46	18 1/2	16	17	4	3	3	1	4	(2)350MCM	250MCM	250MCM	1,577	2,025	1,200	1,400	
150	491	420	365	190	182	152	50	50	31	40	15 1/2	15	16	2	2	51	82	10	10	10	52	40	40	50	50	37	46	18 1/2	16	17	4	3	3	1	4	(2)350MCM	250MCM	250MCM	1,577	2,125	1,200	1,600	
165	540	461	401	209	200	165	50	50	37	46	18 1/2	16	17	3	3	82	82	10	10	10	52	40	40	50	50	37	46	18 1/2	16	17	4	3	3	1	6	(2)350MCM	250MCM	250MCM	1,935	2,125	1,300	1,500	
180	589	508	437	228	219	182	50	50	37	46	18 1/2	16	17	3	3	82	82	10	10	10	52	40	40	50	50	37	46	18 1/2	16	17	4	3	3	1	6	(2)500MCM	350MCM	250MCM	1,935	2,125	1,300	1,500	
195	638	545	473	247	237	197	50	50	37	46	18 1/2	16	17	3	3	82	82	10	10	10	70	52	50	50	50	37	46	18 1/2	16	17	4	3	3	1	7	(2)500MCM	350MCM	250MCM	2,035	2,225	1,400	1,600	
210	687	587	509	266	255	212	50	50	37	46	18 1/2	16	17	3	3	82	82	10	10	10	70	52	50	50	50	37	46	18 1/2	16	17	4	3	3	1	7	(2)500MCM	500MCM	250MCM	2,035	2,325	1,400	1,700	
225	737	629	546	284	273	228	50	50	37	46	18 1/2	16	17	3	3	82	82	10	10	10	70	52	50	50	50	37	46	18 1/2	16	17	4	3	3	1	8	(3)500MCM	500MCM	350MCM	2,135	2,425	1,500	1,800	
240	786	671	582	303	291	242	50	50	23	32	18 1/2	16	17	3	3	82	82	10	10	10	70	52	50	50	50	37	46	18 1/2	16	17	4	3	3	1	8	(3)500MCM	500MCM	500MCM	2,235	2,525	1,600	1,900	
270	884	785	665	341	327	273	50	50	37	46	18 1/2	16	17	3	3	82	180	10	10	10	76	52	52	56	56	49	58	24 1/2	21	17	6	3	6	1	9	(3)500MCM	(2)350MCM	500MCM	2,235	2,754	1,600	2,000	
300	982	889	728	380	364	303	56	50	37	46	18 1/2	16	17	3	3	82	180	10	10	10	76	52	52	56	56	49	58	24 1/2	21	17	6	3	6	1	10	(3)500MCM	(2)350MCM	500MCM	2,335	2,954	1,700	2,200	
330	1081	922	800	417	400	334	56	50	37	46	18 1/2	16	17	3	3	82	180	10	10	10	76	52	52	56	56	49	58	24 1/2	21	17	6	3	6	1	6	(3)500MCM	(2)350MCM	(2)350MCM	2,435	3,054	1,800	2,300	
360	1179	1006	873	455	436	364	56	50	37	46	18 1/2	16	17	3	3	82	180	14	10	10	76	52	52	56	56	49	58	24 1/2	21	17	6	3	6	1	6	(4)500MCM	(2)350MCM	(2)350MCM	2,435	3,154	1,800	2,400	
390	1277	1090	946	492	472	394	80	56	43	52	21 1/2	18	17	4	4	125	248	14	8	10	86	70	70	68	56	55	64	27 1/2	21	19	6	3	6	1/2	7	(4)500MCM	(2)350MCM	(2)350MCM	2,610	3,565	2,000	2,500	
420	1375	1173	1018	530	508	425	80	56	43	52	21 1/2	18	17	4	4	125	248	14	10	10	86	70	70	68	56	55	64	27 1/2	21	19	6	3	6	1/2	7	(4)500MCM	(2)350MCM	(2)350MCM	2,610	3,665	2,000	2,600	
450	1474	1257	1091	569	545	445	80	56	43	52	21 1/2	18	17	4	4	125	248	14	10	10	88	70	70	68	56	55	64	27 1/2	21	19	6	3	6	1/2	8	(6)500MCM	(2)350MCM	(2)350MCM	2,710	3,765	2,100	2,700	
480	1572	1341	1164	606	581	465	80	56	43	52	21 1/2	18	17	4	4	125	248	14	10	10	88	70	70	74	56	55	64	27 1/2	21	19	6	3	6	1/2	8	(6)500MCM	(2)500MCM	(2)500MCM	2,760	3,865	2,450	2,800	
510	1670			644	617	516		78	37	46	18 1/2	21	17	6	6	170	310	14	10	10		70	70		82	43	52	21 1/2	21	19	6	3	6	1/2	9		(3)500MCM	(2)500MCM	3,933	4,450	2,500	2,900	
540	1769			682	654	546		78	37	46	18 1/2	21	17	6	6	170	310		10	10			70	70		82	43	52	21 1/2	21	19	6	3	6	1/2	9		(3)500MCM	(3)500MCM	3,983	4,500	2,550	2,950
570	1867			719	690	576		78	37	46	18 1/2	21	17	6	6	170	310		10	10			76	76		82	43	52	21 1/2	21	19	6	3	6	1/2	10		(3)500MCM	(3)500MCM	4,070	4,550	2,650	3,000
600	1965			758	727	606		78	37	46	18 1/2	21	17	6	6	170	310		10	10			76	76		82	43	52	21 1/2	21	19	6	4	6	1/2	10		(3)500MCM	(3)500MCM	4,120	4,600	2,700	3,050
660	2162			833	799	677		88	43	52	21 1/2	21	17	6	6	310	310		10	10			76	76		82	43	52	21 1/2	22	20	6	4	6	1/2	11		(3)500MCM	(3)500MCM	6,385	4,650	3,800	3,100
720	2358			909	871	728		84	43	52	21 1/2	21	17	6	6	310	310		10	10			76	76		82	43	52	21 1/2	22	20	6	4	6	1/2	12		(3)500MCM	(3)500MCM	6,485	4,700	3,900	3,150
780	2555			985	944	788		84	43	52	21 1/2	21	19	6	6	310	150		14	14			86	86		84	55	64	24 1/2	22	20	8	4	6	1/2	13		(4)500MCM	(3)500MCM	6,585	6,230	4,000	4,000
840	2751			1060	1017	849		84	43	52	21 1/2	21	19	6	6	310	450		14	14			86	86		84	55	64	24 1/2	24	20	8	4	6	1/2	14		(4)500MCM	(3)500MCM	6,685	6,350	4,100	4,100
900	2948			1137	1090	910		84	43	52	21 1/2	21	19	6	6	310	450		14	14			86	86		84	55	64	24 1/2	24	20	8	4	6	1/2	15		(4)500MCM	(3)500MCM	6,785	6,450	4,200	4,200
960	3144			1212	1162	970		84	43	52	21 1/2	21	19	6	6	310	450		14	14			86	86		84	55	64	27 1/2	24	21	8	4	6	1/2	16		(4)500MCM	(3)500MCM	6,835	6,650	4,250	4,400
1020	3341			1287	1234	1031		84	43	52	21 1/2	21	19	6	6	310	450		14	14			86	86		84	55	64	27 1/2	24	21	8	6	6	1/2	17		(6)500MCM	(3)500MCM	6,885	7,250	4,300	5,000
1080	3538			1363	1307	1092		84	55	64	27 1/2	24	20	6	6	450	600		14	14			86	86		86	61	70	30 1/2	24	21	8	6	6	1/2	18		(6)500MCM	(3)500MCM	8,750	8,300	5,000	5,300
1140	3734			1439	1379	1150		84	55	64	27 1/2	24	20	6	6	450	600		14	14			86	86		86	61	70	30 1/2	24	21	8											