BURNHAM COMMERCIAL
AMERICA'S BOILER COMPANY®

Series 4N
Natural Draft Firebox Boiler



Series 4N Natural Draft Firebox Boiler

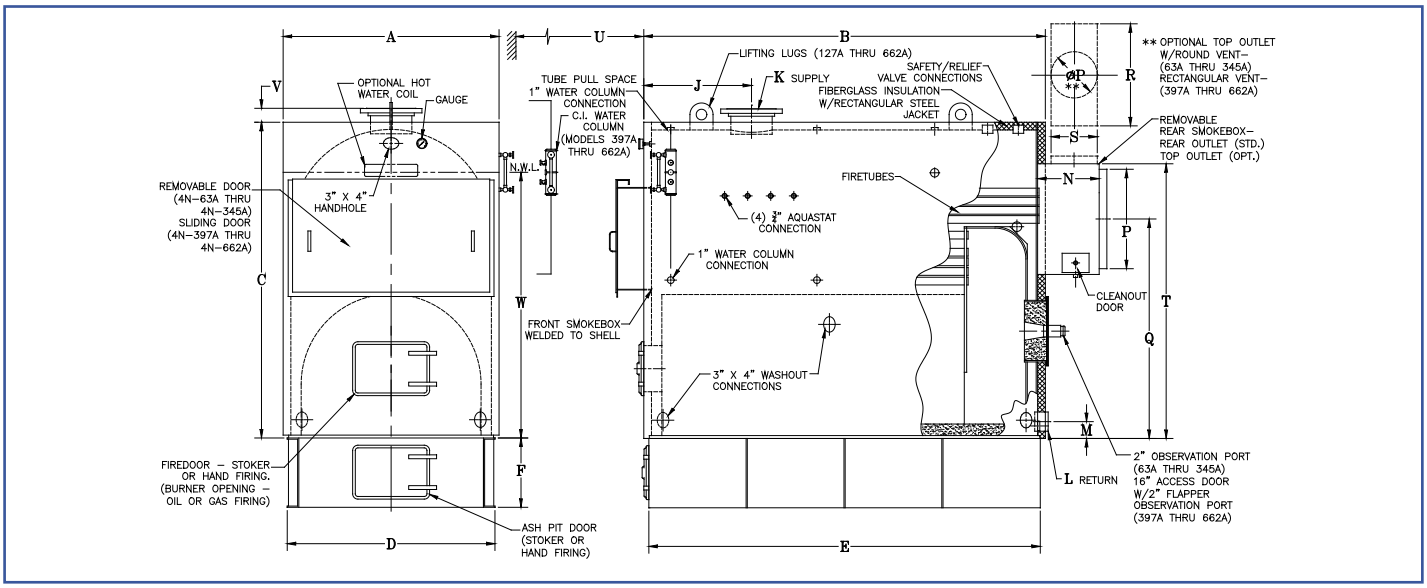
Ratings for Oil, Gas or Stoker Firing

4N Boiler Models		63	78	92	107	127	154	180	209	240	277	311	345	397
Gross Output	MBH	245	299	348	403	522	626	724	870	996	1,142	1,278	1,414	21,60
	BHP	7.3	8.9	10.4	12.0	15.6	18.7	21.6	26.0	29.8	34.1	38.2	42.2	65
	Lbs.Stm./Hr.	253	308	359	415	538	645	746	897	1,027	1,177	1,317	1,457	2,226
Net Rating Steam	MBH	190	232	270	313	405	486	562	675	773	887	992	1,098	1,667
	Sq. Ft.	790	970	1,125	1,305	1,690	2,025	2,340	2,815	3,220	3,695	4,235	4,570	6,990
Net Rating Water	MBH	213	260	303	351	454	545	630	757	867	994	1,112	1,230	1,878
Firing Rate - Gas	MBH	306	374	435	504	653	783	905	1,088	1,245	1,428	1,598	1,768	2,700
Light Oil (140,000 BTU/Gal.)		2.2	2.7	3.1	3.6	4.7	5.6	6.5	7.8	8.9	10.2	11.4	12.6	19.3
Heavy Oil (150,000 BTU/Gal.)		—	—	—	—	—	—	—	—	—	—	—	—	18.0
Coal (Stoker)	Lbs./Hr.	25	31	36	41	54	64	74	89	102	117	131	145	222
Heating Surface	Sq. Ft.													
	Fireside	45	55	64	74	96	115	133	153	183	210	235	260	397
	Waterside	47	57	67	77	100	120	139	160	193	221	247	274	429
Furnace Volume	Cu. Ft.	8.8	10.7	12.6	14.6	18.3	21.9	25.3	29.1	34.7	39.7	44.4	49.1	58.9
Heat Release	MBH/Cu. Ft.	34.8	35.0	34.5	34.5	35.7	35.8	35.8	37.4	35.9	36.0	36.0	36.0	45.8
Water Content Gals.														
	Steam	67	83	96	113	133	149	171	197	209	239	267	295	421
	Water	92	114	134	156	168	200	231	267	283	323	362	401	520
Approx. Dry Weight Lbs.		1,500	1,700	1,900	2,200	2,500	2,800	3,100	3,400	3,900	4,300	4,900	5,200	6,500
Approx. Weight Full Lbs.														
	Steam	2,055	2,390	2,700	3,140	3,605	4,040	4,525	5,040	5,635	6,285	7,120	7,650	10,005
	Water	2,265	2,650	3,020	3,500	3,895	4,465	5,025	5,620	6,250	6,985	7,910	8,535	10,830

4N Boiler Models		463	563	662	827	993	1157	1323	1654	1985	2315	2645	3075
Gross Output	MBH	2,519	3,063	3,601	4,499	5,402	6,294	7,197	8,998	10,798	12,594	14,389	16,738
	BHP	75	92	108	134	161	188	215	269	323	376	430	500
	Lbs.Stm./Hr.	2,596	3,156	3,712	4,636	5,567	6,484	7,417	9,273	11,129	12,979	14,829	17,250
Net Rating Steam	MBH	1,956	2,378	2,796	3,493	4,194	4,887	5,588	6,986	8,384	9,778	11,172	12,989
	Sq. Ft.	8,150	9,910	11,650	14,555	17,475	20,360	23,280	29,110	34,930	40,740	46,550	54,120
Net Rating Water	MBH	2,190	2,663	3,131	3,912	4,697	5,473	6,258	7,824	9,390	10,951	12,512	14,554
Firing Rate - Gas	MBH	3,149	3,829	4,501	5,624	6,753	7,868	8,996	11,248	13,498	15,743	17,986	20,923
Light Oil (140,000 BTU/Gal.)		22.5	27.3	32.1	40.2	48.2	56.2	64.3	80.3	96.4	112.5	128.5	149.5
Heavy Oil (150,000 BTU/Gal.)		21.0	25.5	30.0	37.5	45.0	52.5	60.0	75.0	90.0	104.9	120.0	139.5
Coal (Stoker)	Lbs./Hr.	258	314	369	461	554	646	738	923	1,108	1,292	1,476	1,717
Heating Surface	Sq. Ft.												
	Fireside	463	563	662	827	993	1,157	1,323	1,654	1,985	2,315	2,645	3,075
	Waterside	500	608	715	893	1,072	1,250	1,429	1,786	2,143	2,500	2,857	3,321
Furnace Volume	Cu. Ft.	68.0	89.3	104.7	115.6	139.2	160.7	186.5	234.0	301.6	348.6	383.8	505.6
Heat Release	MBH/Cu. Ft.	46.3	42.9	43.0	48.7	48.5	49.0	48.2	48.1	44.8	45.2	46.9	41.4
Water Content Gals.													
	Steam	492	602	712	761	925	1,050	1,227	1,443	1,720	1,979	2,173	2,814
	Water	607	740	875	1,003	1,220	1,330	1,554	1,826	2,147	2,473	2,718	3,665
Approx. Dry Weight Lbs.		8,000	8,500	10,100	12,300	13,300	16,600	18,600	21,700	26,500	32,800	37,500	48,200
Approx. Weight Full Lbs.													
	Steam	12,100	13,515	16,030	18,630	21,005	25,340	28,815	33,710	40,815	49,270	55,590	71,630
	Water	13,055	14,665	17,390	20,645	23,455	27,675	31,540	36,900	44,370	53,385	60,120	78,710

All models have 3 inch diameter tubes—except 3075 has 2-1/2 inch tubes

Series 4N — Models 63 - 662

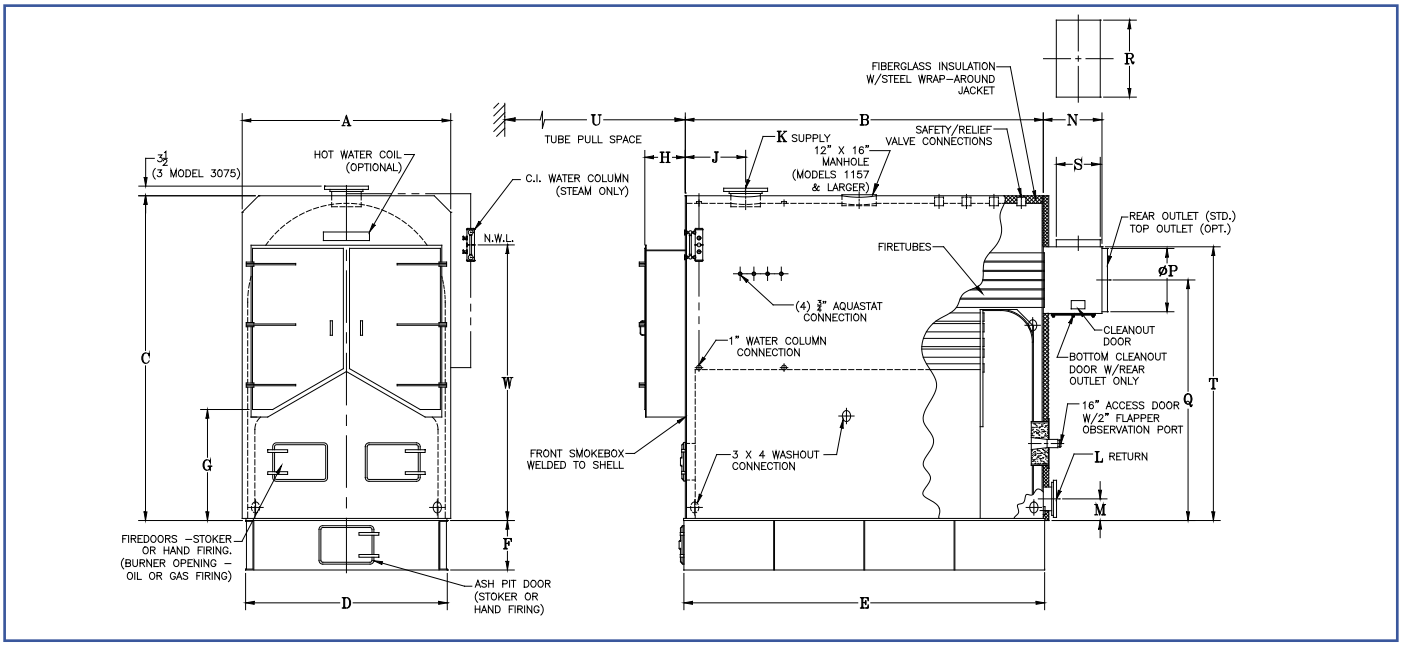


Dimensions

4N Boiler Models	63	78	92	107	127	154	180	209	240	277	311	345	397	463	563	662
A - Boiler Width	30-1/4	30-1/4	30-1/4	30-1/4	35-7/8	35-7/8	35-7/8	35-7/8	44-5/8	44-5/8	44-5/8	44-5/8	52-1/4	52-1/4	56	56
B - Boiler Length	30	37	43-1/2	50-1/2	42-1/2	51	59	68	55	63	70-1/2	78	76-3/4	89-1/4	100-3/8	118-1/4
C - Boiler Height	52-1/8	52-1/8	52-1/8	52-1/8	60-1/2	60-1/2	60-1/2	60-1/2	67-1/2	67-1/2	67-1/2	67-1/2	79-1/4	79-1/4	82	82
D - Base Width	29-3/4	29-3/4	29-3/4	29-3/4	35-1/8	35-1/8	35-1/8	35-1/8	43-7/8	43-7/8	43-7/8	43-7/8	50-1/8	50-1/8	54	54
E - Base Length	30-1/2	37-1/2	44	51	43	51-1/2	59-1/2	68-1/2	55-1/2	63-1/2	71	78-1/2	78-1/8	90-5/8	101-3/4	119-5/8
*F - Base Height	15	15	15	15	18	18	18	18	18	18	18	18	18	18	18	18
G - Front Smoke Box Height	22-3/4	22-3/4	22-3/4	22-3/4	24-7/8	24-7/8	24-7/8	24-7/8	30-5/8	30-5/8	30-5/8	30-5/8	33-5/8	33-5/8	36-3/4	36-3/4
H - Front Smoke Box Depth	6-1/2	6-1/2	6-1/2	6-1/2	7-1/2	7-1/2	7-1/2	7-1/2	8-1/2	8-1/2	8-1/2	8-1/4	8-1/4	8-1/4	9-3/4	9-3/4
J - Supply Location	12	12	12	12	15	15	15	15	18	18	18	18	26	26	26	26
**K - Supply Size	4	4	4	4	6	6	6	6	6	8	8	8	8	10	10	10
L - Return Size	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4
M - Return Location	3-1/2	3-1/2	3-1/2	3-1/2	4	4	4	4	4	4	4	4	4-3/8	4-3/8	4-3/8	4-3/8
N - Smoke Box Depth - Top Rear	8 16-1/2	8 16-1/2	8 16-1/2	8 16-1/2	9 20-1/2	9 20-1/2	9 20-1/2	9 20-1/2	10 22-1/2	10 22-1/2	10 22-1/2	10 22-1/2	16 16	16 16	16 16	16 16
P - Vent Collar Diameter	14	14	14	14	18	18	18	18	20	20	20	20	20	24	26	28
Q - Rear Vent Collar Height	33-7/8	33-7/8	33-7/8	33-7/8	40	40	40	40	46	46	46	46	51-1/2	51-1/2	52-3/8	52-3/8
R - Smoke Box Collar Width Top Vent	—	—	—	—	—	—	—	—	—	—	—	—	35-1/4	35-1/4	42-1/2	42-1/2
S - Smoke Box Collar Depth Top Vent	—	—	—	—	—	—	—	—	—	—	—	—	10	13	12	13
T - Top Vent Collar Height	41-7/8	41-7/8	41-7/8	41-7/8	49-1/8	49-1/8	49-1/8	49-1/8	57	57	57	57	64	64	66-7/8	66-7/8
U - Tube Pull Space	32	39	45-1/2	52-1/2	44-1/2	53	61	70	57	65	72-1/2	80	81	94	105	23
V - Supply Fitting Height	1-5/8	1-5/8	1-5/8	1-5/8	3-3/8	3-3/8	3-3/8	3-3/8	3-3/8	3-3/8	3-3/8	3-3/8	3-1/2	3-1/2	3-5/8	3-5/8
W - Normal Water Line Height	40-3/4	40-3/4	40-3/4	40-3/4	48-1/2	48-1/2	48-1/2	48-1/2	55	55	55	55	66-3/16	66-3/16	69	69

*Oil, Gas, Stoker Only - See note below rating table for hand-fired boilers.
**4" is IPS female thread, 6" and larger are flanged
Specifications, dimensions data subject to change without notice.

Series 4N — Models 827 - 3075



Dimensions

4N Boiler Models	827	993	1157	1323	1654	1985	2315	2645	3075
A - Boiler Width	64	64	70	70	76	82	82	82	96
B - Boiler Length	106-1/4	129	116-1/2	136	130-1/2	128	148	162	163
*C - Boiler Height	91	91	102-1/2	102-1/2	118-1/8	138-1/8	138-1/8	138-1/8	148
D - Base Width	61-1/2	61-1/2	67-1/2	67-1/2	73-1/2	79-1/2	79-1/2	79-1/2	93-1/2
E - Base Length	107-1/4	130	117-1/2	137	131-1/2	129	149	164	164
F - Base Height	18	18	18	18	18	18	18	18	18
G - Front Smoke Box Door Height	29-5/16	29-5/16	35-7/16	35-7/16	40-3/8	52-1/8	52-1/8	52-1/8	65-7/8
H - Front Smoke Box Depth	12-3/4	12-3/4	13-3/4	13-3/4	14-3/4	15-3/4	15-3/4	15-3/4	16-1/2
J - Supply Location	22	22	22	22	22	22	22	22	68
**K - Supply Size	8	8	8	8	10	12	12	12	12
**L - Return Size - Steam	4	4	4	6	6	6	6	6	6
**L - Return Size - Water	6	6	6	8	8	8	8	8	8
M - Return Location	6	6	6-7/8	6-7/8	6-7/8	7-1/4	7-1/4	7-1/4	7
N - Smoke Box Depth Rear	20-3/4	20-3/4	22-3/4	22-3/4	22-3/4	24-3/4	24-3/4	24-3/4	26
P - Rear Vent Collar Diameter	28	32	32	35	38	44	44	44	46
Q - Rear Vent Collar Height	71-1/2	71-1/2	81-1/2	81-1/2	94-5/8	110-5/8	110-5/8	110-5/8	119
R - Top Vent Collar Width	48	48	51	51	55	72	72	72	84
S - Top Vent Collar Depth	14	17	16	19	16	18	18	18	22
T - Top Vent Collar Height	87-3/4	87-3/4	99-1/4	99-1/4	113-7/8	132-7/8	132-7/8	132-7/8	142
U - Tube Pull Space	108	131	118-1/2	138	132-1/2	130	150	165	165
W - Normal Water Line Height	74	74	85-1/2	85-1/2	100-1/4	114-1/4	114-1/4	114-1/4	122-1/2

*Oil, Gas, Stoker Only - See note below rating table for hand-fired boilers.
**4" is IPS female thread, 6" and larger are flanged
Specifications, dimensions data subject to change without notice.

Series 4N Ratings

- Compact, efficient three-pass firebox design
- Applications firing solid fuel, gas or oil
- 15 psi steam, 30 psi water
- Ample firebox assures non-critical combustion, high efficiency

Ratings for Hand Firing

4N Boiler Models		63	78	92	107	127	154	180	209	240	277	311	345
Net Rating - Steam or Water Net Rating - Steam Net Rating - Water	MBH Sq. Ft. Sq. Ft.	158 660 1,055	192 800 1,280	225 935 1,500	259 1,080 1,725	337 1,405 2,245	404 1,685 2,695	468 1,950 3,120	538 2,240 3,590	649 2,700 4,330	744 3,100 4,960	831 3,460 5,540	922 3,840 6,150
Heating Surface - Sq. Ft.	Fireside Waterside	45 47	55 57	64 67	74 77	96 100	115 120	133 139	153 160	183 193	210 221	235 247	260 274
Grate Area	Sq. Ft.	4.0	5.1	6.1	7.2	7.2	8.8	10.3	12.0	12.6	12.6	13.4	14.5
Furnace Volume	Cu. Ft.	8.8	10.7	12.6	14.6	18.3	21.9	25.3	29.1	34.7	39.7	44.4	49.1
Heat Release	MBH/Cu. Ft.	39.9	40.1	39.2	39.2	40.5	41.0	41.1	42.9	41.2	41.3	41.0	41.0
Water Content - Gals.	Steam Water	67 92	83 114	96 134	113 156	133 168	149 200	171 231	197 267	209 283	239 323	267 362	295 401
Approx. Dry Weight - Lbs.		1,900	2,200	2,500	2,900	3,200	3,700	4,100	4,600	5,150	5,550	6,250	6,650
Approx. Full Weight - Lbs.	Steam Water	2,455 2,665	2,900 3,160	3,310 3,630	3,860 4,220	4,325 4,615	4,920 5,905	5,555 6,055	6,240 6,820	6,895 7,510	7,545 8,245	8,460 9,250	9,100 9,985

4N Boiler Models		397	463	563	662	827	993	1157	1323	1654	1985	2315	2645
Net Rating - Steam or Water Net Rating - Steam Net Rating - Water	MBH Sq. Ft. Sq. Ft.	1,408 5,865 9,391	1,724 7,185 11,500	2,188 9,115 14,595	2,572 10,715 17,155	3,214 13,390 21,435	3,859 16,080 25,740	4,496 18,730 29,990	5,141 21,420 34,290	6,427 26,780 42,870	7,713 32,135 51,445	8,996 37,485 60,005	10,278 42,825 68,555
Heating Surface - Sq. Ft.	Fireside Waterside	397 429	463 500	563 608	662 715	827 893	993 1,072	1,157 1,250	1,323 1,429	1,654 1,786	1,985 2,143	2,315 2,500	2,645 2,857
Grate Area	Sq. Ft.	16.4	18.1	20.5	22.5	25.6	28.4	30.9	33.2	37.4	41.2	44.7	48.0
Furnace Volume	Cu. Ft.	58.9	68.0	89.3	104.7	115.6	139.2	160.7	186.5	234.0	301.6	348.6	383.8
Heat Release	MBH/Cu. Ft.	52.3	53.0	49.1	49.2	55.6	55.5	56.0	55.1	55.0	51.2	51.6	53.6
Water Content - Gals.	Steam Water	421 520	492 607	602 740	712 875	761 1,003	925 1,220	1,050 1,330	1,227 1,554	1,443 1,826	1,720 2,147	1,979 2,473	2,173 2,718
Approx. Dry Weight - Lbs.		8,150	9,800	10,550	12,350	14,850	16,150	19,700	21,900	25,450	30,600	37,250	42,300
Approx. Full Weight - Lbs.	Steam Water	11,645 12,470	13,910 14,865	15,565 16,715	18,280 19,640	21,190 23,200	23,845 26,295	28,480 30,715	32,132 34,860	37,450 40,640	44,935 48,490	53,740 57,855	60,400 64,920

Grates for hand firing are not supplied by Burnham Commercial
Select boiler on net rating to match building heat loss or installed radiation.
See additional note regarding heat value of coal on back page

Series 4N Natural Draft Firebox Boiler

Hand Fired Boilers — Rating Adjustment for Heating Value of Coal

Hand fired ratings are based on coal having a heat value of 13,000 btu per pound. For coal of lesser heat value per pound, multiply the net load by the factor shown in the table before selecting boiler size:

Heat Value of Coal - BTU/Lb.	Factor
12,500	1.04
12,000	1.08
11,500	1.13
11,000	1.18
10,500	1.24
10,000	1.30
9,500	1.37
9,000	1.44

Standard Equipment

Boiler: Three-pass boiler constructed and stamped in accordance with Section IV of the ASME Boiler and Pressure Vessel Code for 15 psi steam and 30 psi water with separate base, rear smoke outlet (top outlet available when specified), gas tight front flue cleanout door, rear observation port 63A through 345A, rear access door with observation port 397A and larger, lifting lugs 127A and larger.

Jacket: Wrap-around type, with fiberglass insulation—installed.

Steam Trim: Steam pressure gauge (3-1/2 inch 63A through 662A; 6 inch 827 and larger), gauge glass set for mounting on boiler with 63A through 345A, cast iron water column with gauge glass set and tricocks 397A and larger, and ASME safety valve(s). Trim not installed.

Water Trim: Theraltimeter (3-1/2 inch) 63A through 662A, pressure/altitude gauge (6 inch) and thermometer, (6 inch) 827 and larger, ASME relief vavle(s). Trim not installed.

Additional Equipment

Oil & Gas Fired Boilers - Burner opening in front head (base refractory or combustion equipment is not supplied by Burnham Commercial).

Stoker Fired Boilers - Firedoor(s) in front head; hinged flue door, all sizes; ashpit door in base (Stoker not supplied by Burnham Commercial).

Hand Fired Boilers - Same as stoker fired (Grate sets not supplied by Burnham Commercial).

Instantaneous Hot Water Heating Coils

Coil Number	*For Use in the Following Boiler Sizes Subject to Capacity Limitation of Boiler	Rated Capacity—Gallons Heated 40° to 140°F Boiler Water Temp.		
		108°F GPM	180°F GPH	212°F GPH
INA-210	All sizes	3.5	210	325
INA-300	All except 4N-63A	5.0	300	466
INA-360	All sizes	6.0	360	560
INA-450	All except 4N-63A	7.5	450	700
INA-600	4N-154A and larger, also 4N-107A	10.0	600	933
INA-750	4N-154A and larger, also 4N-107A	12.5	750	1165
INA-900	4N-92A and larger	15.0	900	1400
INA-1125	4N-154A and larger	18.7	1125	1750
INA-1350	4N-277AS and larger, also 4N-209A	22.5	1350	2100
INA-1500	4N-345A and larger	25.0	1500	2330

*Two coils of any size or combination of sizes may be installed in 4N-1157 and larger

Lancaster, PA 17601
Phone: 888-791-3790
www.burnhamcommercial.com

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