

Series 5 - Packaged Firetube Boiler



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Why Burnham Industrial?

For years, specifying engineers and contractors have turned to Burnham Industrial for quality steel firetube boilers when their specs have called for reliable, durable, and versatile heating equipment. Ideal in commercial and industrial applications, Burnham Industrial has nearly 140 years of manufacturing expertise in producing boilers for steam and water systems.

This tradition of excellence continues today as all of Burnham Industrial's products are sold nationwide through a network of experienced independent manufacturers representatives.

The Series 5 is the first choice of specifying engineers and building owners because of competitive pricing, minimal maintenance, a space-saving footprint, and the wetback design advantage.

Introducing the Series 5

The Series 5 scotch marine boiler delivers all the quality you've come to expect from Burnham Industrial - packaged in a compact, competitively priced wetback design. The Series 5 offers five square feet of heating surface for operation from 40–1500 BHP, and is available with your choice of popular options like forced-draft firing with oil (No. 2–6), gas, or combination gas/oil in both high and low pressure steam and hot water applications.



Proven Wetback Design

Burnham Industrial's Series 5 is proof-positive that Burnham employs sound engineering and manufacturing knowledge by utilizing its proven wetback design. Long-term performance and operational efficiencies are direct results of this design allowing building owners to save money on operational and maintenance costs immediately. Consider this comparison between Burnham Industrial's wetback design and competitor's traditional dryback arrangement.

Series 5 Wetback Advantage

- Multi-functional water jacket allows for installation flexibility in a variety of boiler rooms while providing great insulation.
- Cool-running furnace and rear turnaround provides for low maintenance.
- Separate rear tube sheets, free to expand and contract at their own rate without tube-to-sheet stress, allowing maintenance free operation longer than comparable drybacks.
- Tubes are rolled and flared in low-pressure models; rolled, flared, and beaded in high-pressure models for durability.
- Since there is no refractory radiant heat loss, the maximum amount of heat is absorbed resulting in improved thermal performance.
- Any eventual tube replacement is a simple mechanical servicing issue, not a welding operation. This results in easier and less costly maintenance.
- No costly special rear door gaskets to replace.
- No expensive refractory to maintain.
- No rear door clearance area is required, thus minimizing floor space requirements.

Competitors' Dryback Disadvantage

- Dryback designs reflect heat decreasing the efficient operations of the boiler.
- Dryback designs require assessment of a number of cumbersome details including continuous rear door inspection and sealing, planning for the door swing space, and an expensive flue temperature alarm.
- Over the life of a dryback boiler, brittle refractory baffling and rear door gasketing will require continual monitoring, maintenance, and replacement which may cost tens of thousands of dollars.
- As refractory deteriorates, leaking hot gas causes boiler efficiency to fall. The rear door can become heat-distorted, requiring expensive replacement.
- Typical drybacks have a common rear tube sheet exposed to temperature differentials of hundreds of degrees. This condition increases the likelihood of leaks, flue gas bypassing and high stack temperatures, expensive retubing, and deterioration.
- Flue gas bypassing and high stack temperatures lead to decreases in operating efficiencies.
- Opening a dryback rear door is cumbersome because it often requires a waiting period for cool down and a heavy come along, special winches, jack, or even a forklift.

Series 5 - Standard Equipment

Boiler:

Three-pass full wetback firetube type, constructed in accordance with requirements of the ASME Code, Section IV for 50 PSI and 125 PSI water or 15 PSI steam; Section I for higher-pressure steam. All units are registered with the National Board.

Turbulator baffles are not used in tubes. Separate second and third pass rear tube sheets allow safe expansion and contraction.

Waterbacked rear turnaround promotes rapid internal circulation and reduces gas temperatures at the entrance to the second pass, reducing tube end stress.

Easy opening hinged, insulated front flue doors with bolted closure provide full access to all tubes. A 16-inch diameter bolted rear access door with observation port provides access to the boiler furnace. Rear tube access is provided by removing lightweight gasketed doors(s) installed on the rear smokebox. No elaborate seals are used.

A manhole is furnished as standard on water and low-pressure steam boilers sizes 125 HP and larger; on high-pressure steam boilers sizes 70 HP and larger.

Handhole washouts are provided for easy inspection and cleaning of waterside surfaces.

All steam boilers provided with a dry pan to ensure dry steam. A feedwater diffuser is provided on high-pressure boilers. All water boilers are equipped with a dip tube at supply outlet and diffuser at return inlet.

The round-flanged vertical smoke outlet is equipped with a locking quadrant damper. All boilers are provided with an enameled steel jacket installed over 2 inches of fiberglass insulation and lifting lugs.

The boiler is mounted on a heavy-duty structural steel base with extended skid and burner platform for protection of the burner during shipment and rigging.

Standard Trim and Controls:

Steam: 157 pump control/low water cut-off with alarm contacts—piped with quick opening blowoff valve. Gauge glass set with hand-operated gauge and try cocks. Steam pressure gauge—4 ½-inch dial on sizes 100 HP and smaller, 6-inch dial on larger sizes. L404A operating pressuretrol, L404C manual reset high limit pressuretrol and appropriate firing rate control when required. Manual reset probe auxiliary low water cut-off.

ASME side outlet safety valve(s).

Water: 63M manual reset low water cut-off with 30 PSI units, 150M low water cut-off with higher-pressure units—piped with quick opening blowoff valve. Combination pressure/temperature gauge—3 ½ inch dial on 100 HP and smaller. On larger sizes a 6-inch combination pressure/altitude gauge and 5-inch dial temperature gauge. L4006A operating aquastat and L4006E manual reset high limit aquastat and appropriate firing rate control when required.

ASME side outlet relief valve(s).

Burner Equipment:

Burner mounts directly to front head boiler with no elaborate seals.

Factory packaged units available with forced draft burners for all commonly used fuels—gas, all grades of oil—No. 2 through No. 6—a combination gas/oil. Choice of pressure or air atomizing burners for No. 2 oil—air-atomizing burners for No. 2 oil—air atomizing on heavy oil. Gas burners are available for either natural or LP gas.

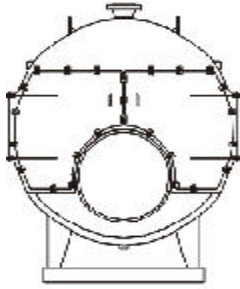
Refer to burner data sheets for standard burner equipment and operating sequence.

Accessories and Optional Equipment:

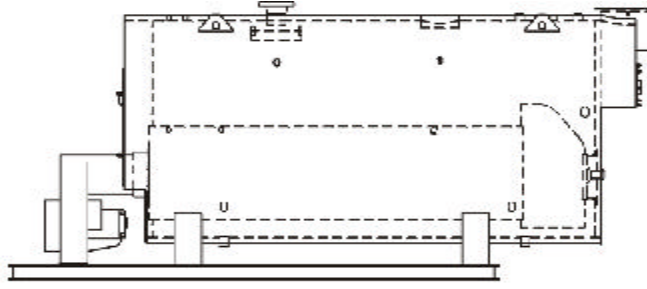
Accessories and optional equipment available at extra cost, including, but not limited to:

- Solid-state annunciators
- Alternate or additional water level controls or low water cut-offs
- Built-in tankless heater coils—low-pressure boilers only
- Motorized or pneumatic feed valves
- Surface skimmers and blowoff valves
- Bottom blowdown valves and drain valves
- Feed stop and check valves
- Sequence draft controls
- Lead/lag sequencing systems
- Boiler Feed systems
- Low NOx burners
- Deaerators
- Water Softeners
- Chemical Feed systems
- Blowdown systems
- Sample Coolers

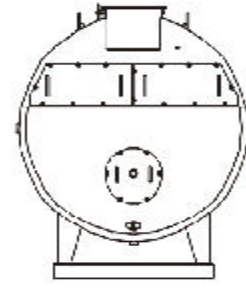
40-400 HP Steam Boiler



Front View



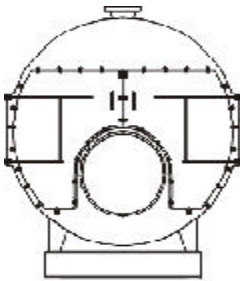
Right Side View



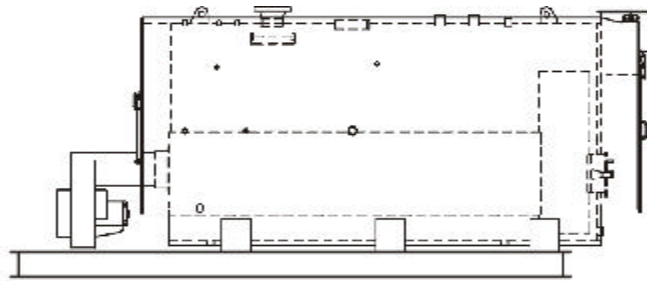
Rear View

BOILER AND DATA BOILER MODEL NO. 5	40	50	60	70	80	90	100	125	150	175	200	250	300	350	400
Shell Diameter	48	48	48	48	54	54	54	54	66	66	66	66	78	78	90
Gross Output, BHP	40	50	60	70	80	90	100	125	150	175	200	250	300	350	400
Gross Output, MBP	1339	1674	2009	2343	2678	3013	3348	4184	5021	5858	6695	8369	10043	11716	13390
Gross Output, LBS/HR	1380	1725	2070	2415	2760	3105	3450	4313	5175	6040	6900	8625	10350	12075	13800
Net Rating-Steam, MBH	1011	1290	1560	1819	2079	2339	2599	3248	3898	4548	5198	6498	7797	9096	10396
Net Rating-Steam, SQ. FT.	4211	5376	6499	7580	8663	9747	10830	13535	16243	18950	21658	27074	32489	37901	43317
Net Rating-Water, MBH	1164	1456	1747	2037	2329	2620	2911	3638	4366	5094	5822	7277	8733	10188	11643
Heating Surface SQ. FT. F.S. SQ. FT. W.S.	200 220	250 280	300 335	350 390	400 445	450 500	500 555	625 695	750 835	875 970	1000 1110	1250 1360	1500 1630	1750 1900	2000 2175
Firing Rate Gas, MBH Oil, GPH (140 MBTU/GAL.: 150 MBTU/GAL.)	1674 12/11	2093 15/14	2500 18/17	2930 21/20	3348 24/23	3766 27/25	4185 30/28	5230 38/35	6276 45/42	7333 52/49	8369 60/56	10461 75/70	12500 90/84	14645 105/98	16738 120/112
Shipping Weight-15 PSI Shipping Weight-150 PSI Water Content-NWL-GAL.	3812 4324 300	4313 4802 379	4866 5410 458	5392 6049 537	5731 6490 523	6244 7030 589	6682 7493 655	7881 8900 820	9260 10353 824	10256 11418 962	11819 12884 1100	13890 15261 1375	17506 20922 1591	19859 23381 1852	22562 25448 1969

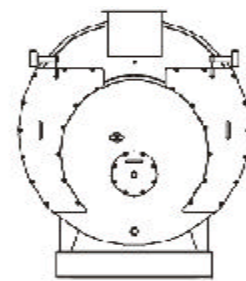
500-1500 HP Steam Boiler



Front View



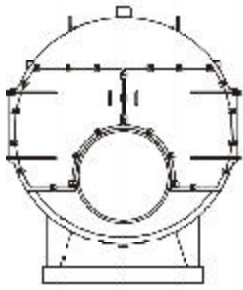
Right Side View



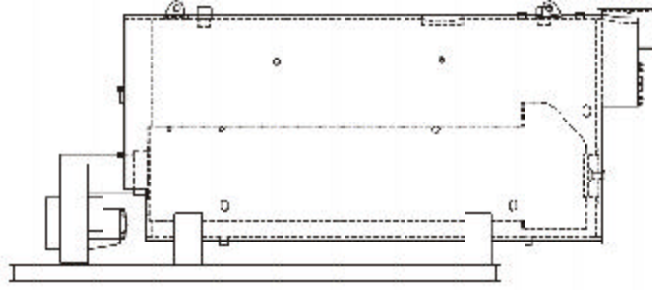
Rear View

BOILER AND DATA BOILER MODEL NO. 5	500	600	750	800	900	1000	1200	1500
Shell Diameter	90	96	96	96	101	101	113	124
Gross Output, BHP	500	600	750	800	900	1000	1200	1500
Gross Output, MBP	16738	20085	25106	26780	30128	33476	40170	50212
Gross Output, LBS/HR	17250	20700	25875	27600	33217	34500	41400	51750
Net Rating-Steam, MBH	12995	15594	19493	20792	23500	25990	31172	38984
Net Rating-Steam, SQ. FT.	54147	64975	81219	86633	97615	108294	129883	162435
Net Rating-Water, MBH	14555	17465	21831	23287	26199	29110	34932	43684
Heating Surface SQ. FT. F.S. SQ. FT. W.S.	2500 2715	3000 3260	3750 4125	3750 4125	4500 4905	5000 5430	6000 6550	7500 8154
Firing Rate Gas, MBH Oil, GPH (140 MBTU/GAL.: 150 MBTU/GAL.)	20923 150/140	25106 180/168	31383 225/210	33475 240/224	37660 269/252	41846 300/280	50213 359/335	62765 450/420
Shipping Weight-15 PSI Shipping Weight-150 PSI Water Content-NWL-GAL.	29300 31900 2427	34700 38100 2875	42900 46900 3589	42900 46900 3589	65865 70431 4357	68311 73186 4868	CF CF CF	CF CF CF

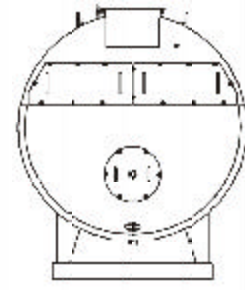
40-150 HP Water Boiler



Front View



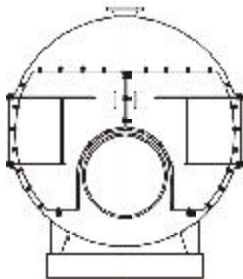
Right Side View



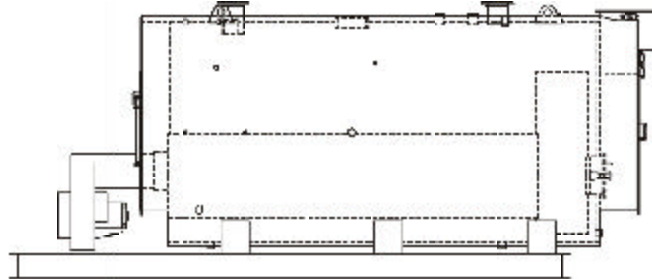
Rear View

BOILER AND DATA BOILER MODEL NO. 5	40	50	60	70	80	90	100	125	150
Shell Diameter	48	48	48	48	54	54	54	54	66
Gross Output, BHP	40	50	60	70	80	90	100	125	150
Gross Output, MBP	1339	1674	2009	2343	2678	3013	3348	4184	5021
Gross Output, LBS/HR	1380	1725	2070	2415	2760	3105	3450	4313	5175
Net Rating-Steam, MBH	1011	1290	1560	1819	2079	2339	2599	3248	3898
Net Rating-Steam, SQ. FT.	4211	5376	6499	7580	8663	9747	10830	13535	16243
Net Rating-Water, MBH	1164	1456	1747	2037	2329	2620	2911	3638	4866
Heating Surface									
SQ. FT. F.S.	200	250	300	350	400	450	500	625	750
SQ. FT. W.S.	220	280	335	390	445	500	555	695	835
Firing Rate									
Gas, MBH	1674	2093	2500	2930	3348	3766	4185	5230	6276
Oil, GPH (140 MBTU/GAL.: 150 MBTU/GAL.)	12/11	15/14	18/17	21/20	24/23	27/25	30/28	38/35	45/42
Shipping Weight	3812	4313	4866	5392	5371	6244	6682	7881	9260
Water Content-GAL.	346	435	524	613	625	703	780	974	974

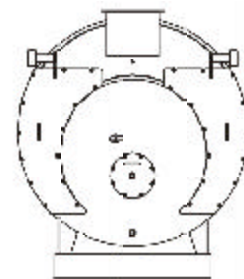
175-600 HP Water Boiler



Front View



Right Side View



Rear View

BOILER AND DATA BOILER MODEL NO. 5	175	200	250	300	350	400	500	600
Shell Diameter	66	66	66	72	78	90	90	96
Gross Output, BHP	175	200	250	300	350	400	500	600
Gross Output, MBP	5858	6695	8369	10043	11716	13390	16738	20085
Gross Output, LBS/HR	6040	6900	8625	10350	12075	13800	17250	20700
Net Rating-Steam, MBH	4548	5198	6498	7797	9096	10396	12995	15594
Net Rating-Steam, SQ. FT.	18950	21658	27074	32489	37901	43317	54147	64975
Net Rating-Water, MBH	5094	5822	7277	8733	10188	11643	14555	17465
Heating Surface								
SQ. FT. F.S.	875	1000	1250	1500	1750	2000	2500	3000
SQ. FT. W.S.	970	1110	1360	1630	1900	2175	2715	3260
Firing Rate								
Gas, MBH	7333	8369	10461	12500	14645	16738	20923	25106
Oil, GPH (140 MBTU/GAL.: 150 MBTU/GAL.)	52/49	60/56	75/70	90/84	105/98	120/112	150/140	180/168
Shipping Weigh - 30 PSI	10256	11819	13894	17506	19859	22562	29300	31700
Water Content-GAL.	1134	1295	1616	1955	2272	2492	3082	3556

The Complete Boiler Room Supplier

Series 5



Bottom Blowdown



Chemical Feed System



Condensate Return System



Surface Blowdown/
Heat Recovery System



Deaerator System



Water Softener System



Boiler Feedwater System



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