

Series 3 - Packaged Firetube Boiler



Series 3 - Packaged Firetube Boiler

Save Thousands Of Dollars Over The Life Of Your Boiler

Long-term energy and maintenance efficiencies are the focus of Burnham quality engineering. When choosing a boiler, it's a good idea to select a product with these efficiencies in order to reduce enormous *hidden costs* down the road. Review our wetback versus dryback literature for cost savings.

Boiler Cost Is Not Just A First Year Proposition

With any ordinary boiler, expenses such as fuel, maintenance, and repair costs can escalate as the years go on. Burnham packaged boilers are designed to diminish these significant expenditures.

Burnham's High Life-Cycle Efficiency

While most competitive boilers can give fuel-to-steam efficiencies of 80% or over—when they're new—how consistently can they be expected to maintain this level of operation? Burnham wetback boiler performance will not drop due to deteriorating rear refractory, leaking door baffles and seals, and heat-stressed rear tube sheet as can happen with some drybacks. Easy access is a necessity for those with heavy refractory, since they need frequent and expert maintenance.

The Burnham Wetback Saves Big Money On Maintenance

Over the life of a dryback, brittle refractory baffling and rear door gasketing will require continuous monitoring, maintenance, and replacement, costing thousands upon thousands of dollars. *These built-in maintenance costs can eventually equal or exceed the original cost of the boiler.* As refractory deteriorates, leaking hot gas causes boiler efficiency to drop until the condition is noticed and the repairs can be made. Expensive flue temperature alarms are offered with some drybacks to monitor this dangerous and costly potentiality. The rear door itself can become heat-distorted, requiring an expensive replacement. In addition, boiler downtime during repairs can mean crippling losses.

This waste of time and money is eliminated with the Burnham Wetback. The actively functional water jacket eliminates the need for: refractory wall, rear door, rear door inspection and sealing, door swing space, and flue temperature alarm. These costly maintenance headaches are gone, while boiler performance is *increased*. Burnham has only a small, inexpensive refractory area in the rear access port, for burner mounting. The rear access door



liner is a ceramic fiber insert that contains no refractory. The furnace and rear turnaround area are cool running, fully wetbacked radiant heat transfer surfaces. They promote good internal water circulation and rapid heat absorption. There is no need for the forced internal circulation pumps often specified to cool the rear tube-sheets and drybacks.

The Burnham Wetback Is Built To Last

Typical dryback boilers have a common rear tubesheet that expands and contracts at different rates adjacent to each tube pass, stressing tube ends and increasing the likelihood of leaks. Additionally, the heavy refractory used in some drybacks reflects intense heat to the rear tube ends and tube sheet, accelerating their deterioration. In attempts to stop leaking, the rear ends of tubes have sometimes been welded. Cleaning or tube replacement involves opening both the front and rear covers and resealing them when the job is done. Usually, if tubes have been welded at the ends, the welds must be burned out, the tube sheet repaired (or a new segment welded in) and the new tubes welded.

These costly expenditures are not an issue with the Burnham Scotch Marine: separate rear tube sheets from each pass to expand and contract at its own rate without tube-to-sheet stress. Tubes are rolled and flared in low-pressure units; and rolled, flared and beaded in high-pressure units. No welding of tubes is permitted, nor is it necessary. Any eventual tube replacement is simply a mechanical operation, no welding involved. The end result is less cost and less headache.

“ America’s Boiler Company® ”



Front View

- Ready access to tubes through rugged front door and rear covers makes routine cleaning easier and less costly than with drybacks.
- Burner does not have to be disturbed.
- No inner air baffle door to contend with.
- No delicate expensive baffle tiles or door seals to replace.



Rear View

- After the doors have been opened on the Burnham wetback boiler, there are no specialized skills or expensive repair materials needed to reclose them as with drybacks. Simply tightening the closure bolts reseals the doors. Cleaning can be done inexpensively and the boiler can be put back on the line quickly by your in-house personnel.

150	175	200	250	300	350	400	500	600	700	800	900	1000
66	66	66	78	78	90	90	102	102	102	108	114	144
150	175	200	250	300	350	400	500	600	700	800	900	1000
5021	5858	6695	8369	10043	11716	13390	16738	30085	23433	26780	30128	33476
5175	6040	6900	8625	10350	12075	13800	17250	20700	24150	27600	33217	34500
3898	4548	5198	6498	7797	9096	10396	12995	15594	18193	20792	23500	25990
16243	18950	21658	27074	32489	37901	43317	54147	64957	75805	86633	97615	108294
4366	5094	5822	7277	8733	10188	11643	14555	17465	20377	23287	N/A	N/A
750	875	1000	1250	1500	1750	2000	2500	3000	3500	4000	4500	5000
835	970	1110	1360	1630	1900	2175	2715	3260	3805	4349	4905	5430
6276	7333	8369	10461	12500	14645	16738	20923	25106	29319	33475	37660	41846
45/42	52/49	60/56	75/70	90/84	105/98	120/112	150/140	180/168	210/196	240/224	269/252	300/280
47.7	53.1	58.8	86.6	99.1	113.5	124.7	152.0	174.3	195.8	302.3	278	309
6660	7758	8829	11174	12315	15392	16765	18515	22128	25767	33945	40893	45437
7947	9245	10519	13983	16649	19340	22125	23788	28381	33005	43762	N/A	N/A
9700	10900	12300	15400	18100	21000	23200	27400	31500	35700	43900	47800	51600
10600	11600	13300	18600	21400	23700	26100	30600	35500	39700	52900	56600	102200



It All Adds Up To Significant Cost-Performance Advantage.

What do all these features and specifications mean? More savings for you! Our Packaged Wetback Firetube boilers are designed for long-term efficiency and economical operation, making Burnham your cost-performance leader!

The Series 3 matches burner to boiler, providing a fuel-efficient, low-maintenance package. Maintenance costs can be further controlled in your boiler room with optional accessories. Such options include state-of-the-art annunciator systems, custom-designed to monitor all boiler and burner interlocks vital to your specific installation. They provide instant readouts of both normal and abnormal operating conditions. These features will pinpoint the cause of unscheduled shutdowns; reducing maintenance time and skill required.

- Forced-draft firing with oil (No. 2, 4, 5, or 6), gas or combination gas/oil
- Low or high pressure steam or water
- Highly efficient three-pass design
- Fully waterbacked primary heating surfaces
- Separate rear tube sheets for longer service life
- Wetback design allows easy front and rear access
- No expensive refractory or door replacement as with some drybacks.

Series 3 — Standard Equipment

Boiler:

Three pass full wetback, packaged firetube type, constructed in accordance with requirements of the ASME Code Section IV for 30 psi and 125 psi water or 15 psi steam; Section I for higher pressure steam. All units are registered with the National Board.

Boiler tubes are expanded and flared in low pressure boilers; expanded and beaded in high pressure boilers. 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 entrance to second pass, reducing tube end stress.

Easy opening hinged, insulated front flue doors with lightweight 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 light weight gasketed door(s) installed in the rear smokebox. No elaborate seals are used.

A manhole is furnished as standard on water and low pressure steam boilers sizes 3-125 and larger; on high pressure steam boilers sizes 3-70 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 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 and try cocks. Steam pressure gauge—4 1/2 inch dial on sizes 100 hp and smaller, 6 inch dial on larger sizes. L404C manual reset high limit pressure control 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, 150 low water cut-off with higher pressure units—piped with quick opening blowoff valve. Combination pressure/temperature gauge—3 1/2 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 safety valve(s).

Burner Equipment:

Burner mounts to front head of 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—and combination gas/oil. Choice of pressure or 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



Lancaster, PA 17601
Phone: 1-888-791-3790
www.burnhamcommercial.com