



# 15 PSI Low Pressure Steam Boilers Power Burner Fired

## PRODUCT DESCRIPTION

Rite Power Burner Fired Low Pressure Steam Boilers have been providing our valued customers with high quality steam safely and reliably for over forty years. From autoclaves to humidifiers, bakeries to breweries - these heavy duty watertube steamers are available in 47 different models, ranging from 480 - 12,499 MBH input (11 - 300 Boiler Horsepower) for the widest selection possible.

So simple to maintain and operate, Rite Steam Boilers feature **complete waterside access** so that virtually all scale and mud deposits can be seen and mechanically cleaned during a single scheduled maintenance shutdown. The result - **Better fuel-to-steam efficiency and lower operating cost over the life of your boiler investment**. Consider a few of our other standard features: • Rite's floating heads that eliminate pressure vessel cracks and broken welds caused by thermal stress cycling (backed by our **25 Year Thermal Shock Warranty**) • Rite's "superheated" drying tubes that regularly boost steam quality at the nozzle into the 99%+ range • Rite's bolted/gasketed headplates that eliminate any possibility of hydraulic explosion in the event that safety devices fail - and you have a better boiler by design.

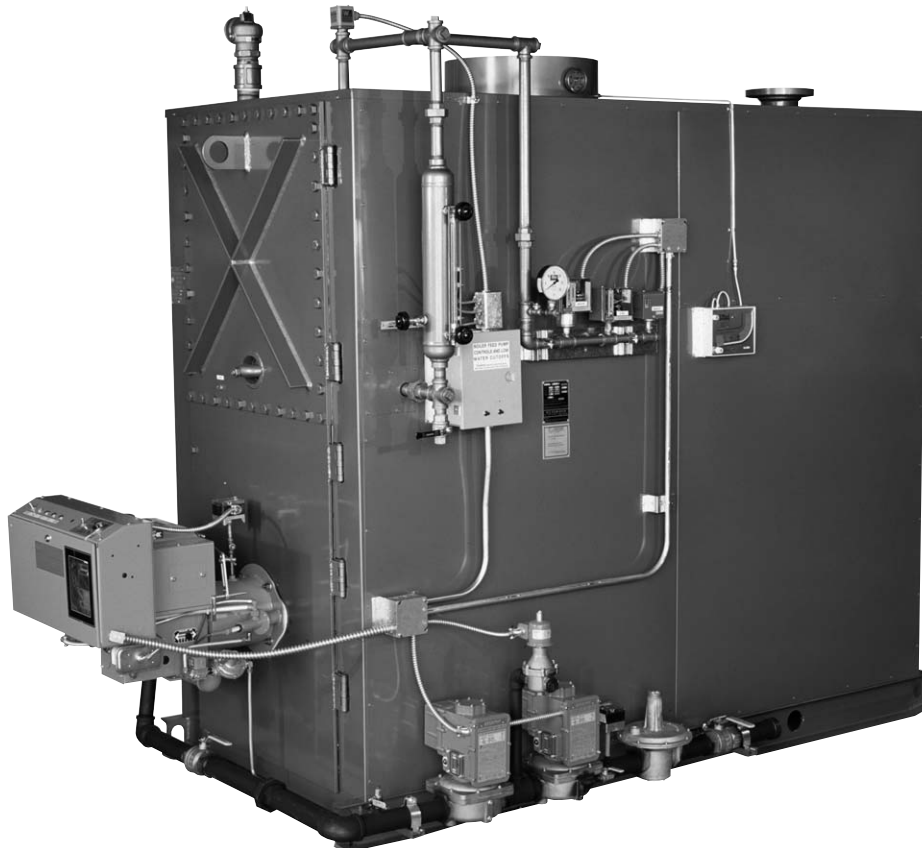
## RITE POWER BURNER FEATURES

Rite Power Burner Fired Low Pressure Steam Boilers must be specified when: Low NOx emissions are required or fuels other than natural gas will be used. While Power Burners are more expensive and use more electrical power than atmospheric, they do have one advantage: by controlling the amount of air they use for combustion, Power Burners achieve higher combustion efficiencies than atmospheric - especially at less than full fire rate.

## RITE POWER BURNER FIRED BOILERS vs. "FORCED DRAFT BOILERS"

Both use Power Burners to combust the fuel, but the similarities end there. Forced draft boilers require larger fan motors to "push" the products of combustion out a sealed combustion chamber and into a positive pressure stack. Should a leak develop in the combustion chamber or stack of a forced draft boiler - potentially toxic flue gasses could escape into the boiler room.

Rite Power Burner Fired Boilers use smaller fan motors to combust the fuel only. All Rite Boilers are designed to operate with negative pressure combustion chambers and stacks, which means flue gasses are **safely** under negative draft conditions from the time the fuel is burned until they exit the stack.





# 15 PSI Low Pressure Steam Boilers Models & Ratings/Power Burner Fired

## STACK / DRAFT REQUIREMENTS

- UL listed for use with Type B Vent when power burner is for natural or L.P. gas fired only.
- Type 304 stainless steel lined stack is required when equipped with #2 oil or combination gas & #2 oil burner.
- Minimum stack height for natural or L.P. gas fired burners is 10 feet.
- Minimum height for #2 oil or combination gas & #2 oil fired boilers is 15 ft.
- The stack should be supported independently of the boiler and an adjustable length section of stack should be installed after the barometric damper to allow for future separation. All Rite Boilers have internal stack supports to handle the weight of the stack during installation.
- Power Burner fired boilers are supplied with a barometric damper (shipped loose) and a draft gauge (installed) to help set and maintain a draft between -.05" to -.09" W.C. for all fuels and firing rates.

## AIR REQUIREMENTS

Adequate Combustion/Ventilation Air is vital for safe, efficient operation. Refer to the latest edition of the Uniform Mechanical Code or consult your local Building and Safety Department for specific requirements. **Warning: Do not install in a room that will develop negative pressure without utilizing a properly sized induced draft fan.**

## ELECTRICAL REQUIREMENTS

- A single point 1 or 3 phase supply is required to the burner panel. See separate Burner Price Lists for standard electrical power requirements.
- Separate electrical supply may be required to operate boiler feed pump.

## NATURAL GAS SUPPLY REQUIREMENTS

- Models 48 S \* - 400 S \*      7" w.c. min. to 14" w.c. max. at flow.
- Models 120 S \* - 180 S \*    7" w.c. min. to 28" w.c. max. at flow.
- Models 200 S \* - 400 S \*    7" w.c. min. to 10 psi max. at flow.
- Models 425 S \* - 600 S \*    14" w.c. min. to 10 psi max. at flow.
- Models 650 S \* - 1250 S \*   23" w.c. min. to 10 psi max. at flow.

## #2 OIL SUPPLY REQUIREMENT

- Supply to oil pump: minimum gravity flow to maximum 3 psi.

## ELEVATION DERATION

Ratings given below are for elevations up to 2000 feet. Ratings should be reduced at the rate of 4% for every 1000 feet above 2000 feet.

## FEEDWATER SYSTEMS & BLOWDOWN TANKS

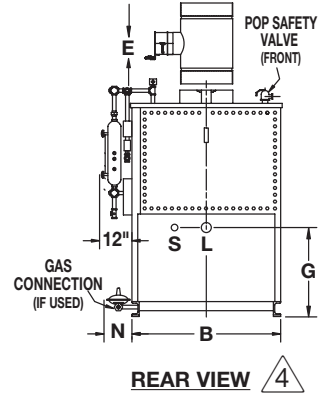
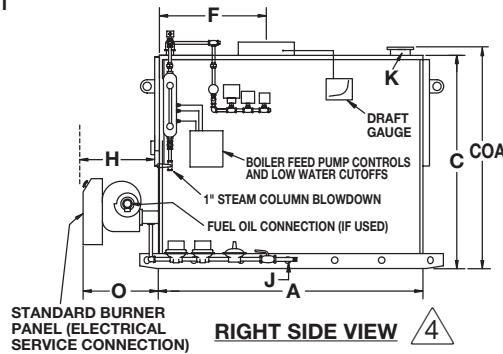
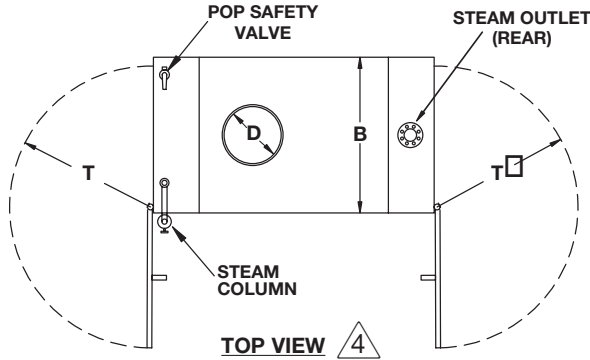
Rite manufactures a complete line of Condensate Return Feedwater Tanks and Blowdown Tanks for our Steam Boilers shown below.

BOILER MODEL	Input MBH	Nominal Output		Heating Surface Sq. Ft.	Flooded Water Content Gallons	Normal Water Level Content Gallons	Pounds of Steam per Hour @ 212°F	Nominal Shipping Weight (lbs)
		MBH	Boiler Horsepower					
48 S *	480	384	11	49	35	25	395	2100
55 S *	550	440	13	56	40	27	453	2300
63 S *	630	506	15	63	45	29	519	2500
76 S *	760	608	18	75	54	32	626	2700
85 S *	850	680	20	88	61	49	700	3100
90 S *	900	720	21	88	64	49	742	3100
105 S *	1050	840	25	101	76	52	865	3600
120 S *	1200	960	28	115	85	55	989	3900
135 S *	1350	1080	32	131	97	58	1113	4300
150 S *	1500	1200	35	145	105	60	1236	4600
165 S *	1650	1320	39	159	118	64	1360	4900
180 S *	1800	1440	43	174	130	68	1484	5200
200 S *	2000	1600	47	192	140	74	1649	5800
A150 S *	1500	1200	35	160	120	74	1236	4600
A165 S *	1650	1320	39	168	128	78	1360	4900
A180 S *	1800	1440	43	190	140	81	1484	5200
A200 S *	2000	1600	47	205	150	84	1649	5800
225 S *	2250	1800	53	230	162	87	1855	5900
250 S *	2500	2000	59	252	180	92	2061	6500
275 S *	2750	2200	65	273	196	96	2267	6900
300 S *	3000	2400	71	295	215	100	2473	7300
325 S *	3250	2600	77	318	234	105	2679	7700
350 S *	3500	2800	83	340	251	110	2885	8200
375 S *	3750	3000	89	362	268	115	3091	8600
400 S *	4000	3200	95	383	287	125	3297	10600
425 S *	4250	3400	101	405	304	129	3504	11200
450 S *	4500	3600	107	428	322	132	3710	11700
475 S *	4750	3800	113	450	337	135	3916	12300
500 S *	5000	4000	119	473	352	140	4122	13000
550 S *	5500	4400	131	526	370	147	4534	14000
600 S *	6000	4800	143	574	387	158	4946	15100
A650 S *	6500	5200	155	622	405	166	5359	16600
A700 S *	7000	5600	167	670	430	174	5731	17700
A750 S *	7500	6000	180	722	455	179	6183	18700
A400 S *	4000	3200	95	390	300	165	3297	11000
A450 S *	4500	3600	107	440	325	174	3710	11900
A500 S *	5000	4000	119	486	345	183	4122	12700
A550 S *	5500	4400	131	535	380	199	4534	13600
A600 S *	6000	4800	143	584	405	207	4946	14600
650 S *	6500	5200	155	632	425	215	5359	15500
700 S *	7000	5600	167	680	450	223	5771	16400
750 S *	7500	6000	180	730	470	232	6183	18300
840 S *	8400	6700	200	800	490	399	6935	23700
940 S *	9400	7500	225	900	515	419	7250	25000
1050 S *	10500	8400	250	1000	540	439	8657	26300
1150 S *	11500	9200	275	1100	565	459	9481	27200
1250 S *	12499	9999	300	1200	590	480	10300	28000

\* Add G for natural gas or propane, O for #2 oil or GO for combination gas & #2 oil.



# 15 PSI Low Pressure Steam Boilers Models & Dimensions/Power Burner Fired



- DIMENSIONS ARE IN INCHES - SUBJECT TO PRODUCTION TOLERANCES AND CHANGE WITHOUT NOTICE. CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST.
- BOILERS APPROVED FOR INSTALLATION ON NON - COMBUSTIBLE FLOORS ONLY.
- ⚠ Barometric Damper will be shipped one size smaller than **D** dimension for stacks up to 25 feet of vertical height (as shown below in column **E**), full size (same as **D** dimension) for stacks 25 to 50 feet tall and one size larger for stacks over 50 feet tall. Barometric Damper Tee by others.
- ⚠ May vary-sizes shown are for UL gas trains at standard supply pressures. Gas connections can be male or female NPT. All other threaded connections are female NPT.
- ⚠ Flanges are ANSI 150 lb. SA-105 flat face.
- ⚠ Standard right hand construction shown illustrated above. Left hand construction available at no extra charge.

BOILER MODEL	A	B	C	COA	D	E ⚠	F	G	H	J ⚠	K ⚠	L	N	O	S	T
	Length Jacket	Width Jacket	Height Flush	Height Overall	Stack Dia.	Draft Control	Stack Conn.		Tube Maint.	Gas Conn.	Steam Supply	Feed Water	Side Space	Power Burner	Blow Down	Head Swing
48 S *	47	33	65	69	10	9 BARO	17	32	40	1	3 FL	1 1/4	10	26	1	20
55 S *	52	33	65	69	10	9 BARO	18	32	45	1	3 FL	1 1/4	10	26	1	20
63 S *	56	33	65	69	10	9 BARO	20	32	49	1	3 FL	1 1/4	10	26	1	20
76 S *	64	33	65	69	12	10 BARO	22	32	57	1	3 FL	1 1/4	10	26	1	20
85 S *	59	39	78	82	12	10 BARO	22	39	47	1	4 FL	1 1/2	12	26	1 1/4	26
90 S *	59	39	78	82	12	10 BARO	22	39	47	1 1/4	4 FL	1 1/2	12	26	1 1/4	26
105 S *	65	39	78	82	12	10 BARO	24	39	53	1 1/4	4 FL	1 1/2	12	26	1 1/4	26
120 S *	71	39	78	82	14	12 BARO	26	39	59	1 1/4	4 FL	1 1/2	12	31	1 1/4	26
135 S *	77	39	78	82	14	12 BARO	28	39	65	1 1/2	4 FL	1 1/2	12	31	1 1/4	26
150 S *	83	39	78	82	16	14 BARO	30	39	71	1 1/2	4 FL	1 1/2	12	31	1 1/4	26
165 S *	89	39	78	82	16	14 BARO	32	39	77	1 1/2	4 FL	1 1/2	12	31	1 1/4	26
180 S *	96	39	78	82	16	14 BARO	34	39	84	2	4 FL	1 1/2	12	31	1 1/4	26
200 S *	103	39	78	82	18	16 BARO	37	39	91	2	4 FL	1 1/2	12	31	1 1/4	26
A150 S *	69	46	84	88	16	14 BARO	29	40	53	2	5 FL	2	14	31	1 1/2	34
A165 S *	73	46	84	88	16	14 BARO	30	40	57	2	5 FL	2	14	31	1 1/2	34
A180 S *	79	46	84	88	16	14 BARO	31	40	63	2	5 FL	2	14	31	1 1/2	34
A200 S *	83	46	84	88	18	16 BARO	32	40	67	2	5 FL	2	14	31	1 1/2	34
225 S *	87	46	84	88	18	16 BARO	38	40	71	2	5 FL	2	16	31	1 1/2	34
250 S *	93	46	84	88	20	18 BARO	40	40	77	2	5 FL	2	16	35	1 1/2	34
275 S *	99	46	84	88	20	18 BARO	42	40	83	2	5 FL	2	16	35	1 1/2	34
300 S *	105	46	84	88	20	18 BARO	44	40	89	2	5 FL	2	16	35	1 1/2	34
325 S *	111	46	84	88	22	20 BARO	46	40	95	2	5 FL	2	16	35	1 1/2	34
350 S *	117	46	84	88	22	20 BARO	48	40	101	2 1/2	5 FL	2	16	35	1 1/2	34
375 S *	123	46	84	88	22	20 BARO	50	40	107	2 1/2	5 FL	2	16	35	1 1/2	34
400 S *	98	57	98	102	24	20 BARO	38	46	80	2 1/2	8 FL	2	16	35	2	45
425 S *	103	57	98	102	24	20 BARO	38	46	85	2	8 FL	2	16	35	2	45
450 S *	107	57	98	102	26	24 BARO	41	46	89	2	8 FL	2	16	35	2	45
475 S *	111	57	98	102	26	24 BARO	41	46	93	2	8 FL	2	16	35	2	45
500 S *	116	57	98	102	26	24 BARO	44	46	98	2	8 FL	2	16	35	2	45
550 S *	125	67	98	102	28	24 BARO	47	46	107	2	8 FL	2	16	35	2	45
600 S *	139	57	98	102	28	24 BARO	50	46	117	2 1/2	8 FL	2	16	35	2	45
A650 S *	149	57	98	102	28	24 BARO	53	46	127	2	8 FL	2	16	35	2	45
A700 S *	158	57	98	102	28	24 BARO	56	46	136	2	8 FL	2	16	35	2	45
A750 S *	167	57	98	102	30	28 BARO	59	46	147	2 1/2	8 FL	2	16	35	2	45
A400 S *	89	67	98	102	22	20 BARO	35	46	72	2 1/2	8 FL	2	16	35	2	56
A450 S *	97	67	98	102	24	20 BARO	38	46	80	2	8 FL	2	16	35	2	56
A500 S *	105	67	98	102	26	24 BARO	40	46	88	2	8 FL	2	16	35	2	56
A550 S *	119	67	98	102	26	24 BARO	46	46	102	2	8 FL	2	16	35	2	56
A600 S *	126	67	98	102	28	24 BARO	48	46	109	2 1/2	8 FL	2	16	35	2	56
650 S *	134	67	98	102	28	24 BARO	51	46	117	2	8 FL	2	16	35	2	56
700 S *	141	67	98	102	28	24 BARO	53	46	124	2	8 FL	2	16	35	2	56
750 S *	149	67	98	102	30	28 BARO	56	46	132	2 1/2	8 FL	2	16	35	2	56
840 S *	138	82	106	110	30	28 BARO	54	54	116	2 1/2	10 FL	2	18	42	2	69
940 S *	150	82	106	110	32	28 BARO	58	54	128	2 1/2	10 FL	2	18	42	2	69
1050 S *	162	82	106	110	34	28 BARO	62	54	140	3	12 FL	2	18	42	2	69
1150 S *	174	82	106	110	36	28 BARO	66	54	152	3	12 FL	2	18	42	2	69
1250 S *	186	82	106	110	36	28 BARO	70	54	164	3	12 FL	2	18	42	2	69



# 15 PSI LOW PRESSURE STEAM BOILERS /POWER BURNER FIRED SPECIFICATION & ORDER FORM

## Boiler Capacity

The Boiler shall be a Rite Model \_\_\_\_\_ Low Pressure Steam boiler with a capacity of \_\_\_\_\_ MBH input and a nominal output of \_\_\_\_\_ MBH ( \_\_\_\_\_ Boiler Horsepower).

## Pressure Vessel

The boiler shall be ASME Section IV stamped for 15 PSIG and registered with the National Board. It shall be of the inclined water tube design with 2" non-proprietary straight steel tubes (SA 178 Grade A, 13 Gauge) rolled between two headers (steel drums). Headers shall be free to expand and contract (no stay bolts shall be used) in order to reduce stresses caused by thermal shock.

## Headers (Steam Drums)

Both headers shall incorporate bolted-and-gasketed removable head-plates that will completely expose all waterside surfaces for inspection and cleaning when opened. Header flanges shall have drilled and tapped smooth surfaces for easy gasket clean-up and flange maintenance. Flange welded studs shall not be used.

## Steam Quality

High steam quality - at or near 99% at the outlet nozzle - shall be attained by passing wet saturated steam through a final pass of superheated drying tubes.

## Steam Trim

Standard steam trim shall include pop safety valve(s) set for 15 PSI and a separate steam column with blowdown valve, trycock, gauge glass and probes for feedwater pump control and a secondary (manual reset) low water cutoff. Controls mounted in siphon loop piping on the side of the boiler shall include a high limit, operator and a 0-30 PSI pressure gauge. A probe mounted into the front header drum shall function as the primary (auto reset) low water cutoff. A NEMA 1 hinged panel on the side of the boiler shall house the pump controls and both low water cutoff relays. It shall have flush mounted push buttons to test and reset the secondary low water cutoff. The panel shall be labeled and have a complete wiring diagram of its components mounted inside the cover.

## Listings/Approvals

In addition to the ASME & National Board Certifications, the boiler shall meet the requirements of CSD-1. The boiler-burner package shall be U.L. listed and A labeled with Gordon Piatt burners.



Rite manufactures a complete line of condensate return feedwater systems and blowdown tanks compatible with Rite Steam Boilers



## Stack Requirements

If gas fired (Natural or LP) the boiler shall be recognized as a Category 1 appliance and U.L. listed for use with Type B Gas Vent. If #2 oil fired, or combination gas and #2 oil fired, the boiler shall be recognized as a Category 3 appliance and the stack inner liner shall be stainless steel. All models shall be supplied with a barometric damper (shipped loose) and a draft gauge installed near the controls with the proper draft range shown in inches water column.

## Burner

The burner shall be power type with a blower motor and have air-fuel adjustment throughout the firing range. It shall have a burner mounted panel to house all burner controls including a stepdown control transformer for all 3 phase burner motors and a manual potentiometer for modulating burners. The burner shall be U.L. and U.L.C. listed.

## Flame Safeguard

The flame safeguard control shall incorporate E-PROM memory and be capable of incorporating a message center. Main Flame shall be supervised when inputs are over 2500 MBH.

## Gas Train - if used

The gas train shall be completely piped and wired with a minimum of two main safety gas shutoff valves wired in series. It shall also include a main and pilot gas pressure regulator, each suitable to handle the specified maximum supply gas pressure. Valve leak test cocks shall be provided. High and low gas pressure switches shall be provided for inputs over 2500 MBH. A motorized main safety shutoff valve with proof of closure shall be provided for inputs over 5000 MBH.

## Oil Piping - if used

The oil valve train shall consist of a minimum of two oil safety shutoff valves in series.

## Electrical

The burner shall require only one supply voltage unless otherwise noted.

## Options

The following options shall also be required:

- \_\_\_\_\_ Hinged Headplates (front & rear)
- \_\_\_\_\_ Insulated Headplates (front & rear)
- \_\_\_\_\_ 3 X 4 Handholes (front & rear)
- \_\_\_\_\_ Factory Mutual approvals
- \_\_\_\_\_ Industrial Risk Insured approvals
- \_\_\_\_\_ Other (See corresponding Yellow Price List D for more options)

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