

- 85% EFFICIENCY
- NON-CONDENSING DESIGN
- EASY MAINTENANCE



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BURNERS



- **PERFORMANCE** *You can trust*
- **EFFICIENCY** *You can maintain*
- **EXPERIENCE** *You can depend on*

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Rite Durafin™ Boilers

160 PSI Models & Ratings



STACK / DRAFT REQUIREMENTS

- Stack Draft (Static Pressure) at vent connector: neutral (best) to negative .1" w.c.
- Velocity: 20 to 30 feet-per-second @ full fire.
- Type B Vent (Category 1) with or without a barometric damper may be used in certain applications for natural & L.P. gas only. Boilers installed a) in high humidity or cold climates b) with modulation or high-low firing c) in battery with common stack d) with horizontal stack runs - will condense in the stack and may require category 2, 3, or 4 venting. If boiler room pressure is negative this must be factored into the stack calculation. Due to the high efficiency of Durafin boilers, every stack installation should be reviewed by a listed vent manufacturer.
- Support the stack independently of the boiler.

STACK EMISSIONS @ VENT CONNECTOR

- Gross Temperature Range: 275° to 325° F.
- Exhaust volume A.C.F.M. - see table on next page.
- Exhaust Velocity: 20 to 30 feet-per-second.
- Estimates based on high fire and Natural or L.P. gas fuels.

COMBUSTION / VENTILATION AIR

- Provide at least 1/2 square feet of free air opening from outside for every 1000 MBTUH input for combustion. Check local codes for exceptions.
- Provide the same size opening at a high point in the room for ventilation.
- Radiant heat loss from Durafin boilers is minimal. If additional ventilation is required it is better to force air into the room. Avoid exhaust fans whenever possible.
- Motorized fresh air dampers must be interlocked with boiler controls.
- Louvers can significantly reduce free air openings. Because Durafin has a sealed

combustion chamber and operates with positive firebox pressure, a carbon monoxide detector is recommended in the boiler room.

BURNER MOTOR HORSEPOWER / VOLTAGE / PHASE / Hz

- Refer to burner specification sheet or quote.

NATURAL GAS SUPPLY PRESSURE

- Refer to burner specification sheet or quote.

PROPANE GAS SUPPLY PRESSURE

- Refer to burner specification sheet or quote.

WATERSIDE



- Minimum continuous return water temperature: 135° F.
- Minimum flow rate: none (flow switch not required).
- Pressure drop: less than 2 psig all models & flow rates.
- Maximum supply water temperature: 240° F.

ELEVATION & GLYCOL DERATIONS

- Ratings shown are for elevations up to 2000' and no glycol additives. For elevations above 2000', reduce input/output and BHP 4% for every 1000'. Glycol will lower efficiency and ratings. The higher the flow rate and to a lesser extent the higher the operating temperature, the better the heat transfer when using glycol.

B.T.U. FORMULA

- BTUH output @ 0-2000' elevation= 60 x 8.3 x ΔT x G.P.M

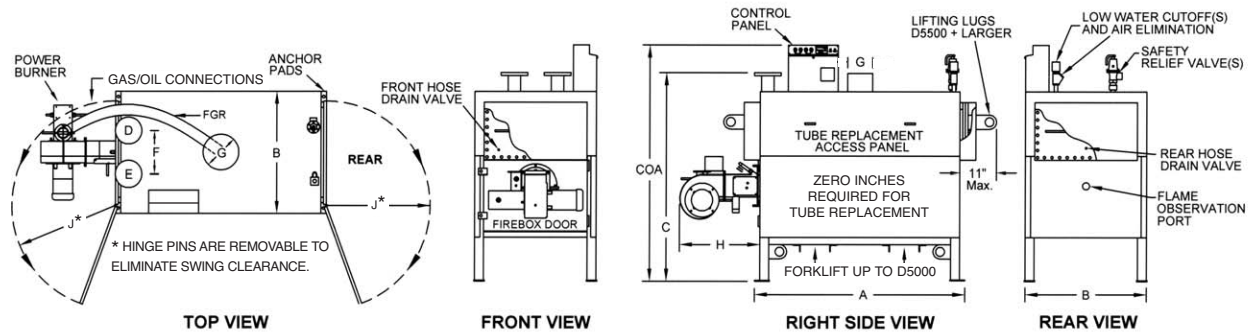
BOILER MODEL 	Input MBTUH	Output MBTUH			Heating Surface Square Feet	Square Feet Heating Surface per Boiler H.P.	Firebox Volume (Cubic Feet)	Furnace Heat Release MBTUH/FT ³	Water Content (US Gallons)	Nominal Shipping Weight (lbs)
		Ec 	Et	Boiler Horsepower						
D300	300	255	252	7	56	7.5	4	75	19	1750
D500	500	425	420	12	91	7.4	7	72	22	1930
D750	750	638	630	19	137	7.4	10	75	24	2150
D1000	1000	850	840	25	183	7.4	13	77	27	2400
D1250	1250	1063	1050	31	228	7.4	16	78	30	2600
D1500	1500	1275	1260	37	274	7.4	19	79	33	2850
D1750	1750	1488	1470	43	320	7.4	22	80	36	3000
D2000	2000	1700	1680	50	365	7.4	25	80	38	3200
D2250	2250	1913	1890	56	411	7.4	28	80	41	3350
D2500	2500	2125	2100	62	457	7.4	31	81	44	3500
DA2000	2000	1700	1680	50	360	7.3	25	80	51	3700
DA2250	2250	1913	1890	56	405	7.3	41	55	54	4200
DA2500	2500	2125	2100	62	449	7.3	45	56	57	4500
D2750	2750	2338	2310	68	494	7.3	50	55	59	4750
D3000	3000	2550	2520	74	539	7.2	54	56	62	5000
D3500	3500	2975	2940	87	628	7.2	63	56	67	5350
D4000	4000	3400	3360	99	717	7.2	71	56	72	5750
D4500	4500	3825	3780	112	806	7.2	80	56	78	6100
D5000	5000	4250	4200	124	895	7.2	88	57	83	6500
D5500	5500	4675	4620	136	985	7.2	111	50	121	8800
D6000	6000	5100	5040	149	1073	7.2	121	50	126	9100
D6500	6500	5525	5460	161	1165	7.2	130	50	131	9500
D7000	7000	5950	5880	174	1253	7.2	140	50	137	9900
D7500	7500	6375	6300	186	1341	7.2	149	50	142	10350
D8000	8000	6800	6720	198	1435	7.2	160	50	159	11500
D8500	8500	7225	7140	211	1521	7.2	169	50	164	12750
D9000	9000	7650	7560	223	1614	7.2	178	51	170	14000
D9500	9500	8075	7980	236	1701	7.2	187	51	175	15250
D10000	10000	8500	8400	248	1793	7.2	197	51	180	16500

△ Add suffix "W" for weatherproofing. "NG" for natural gas, "LPG" for propane, "02", "04", "05", "06" for oil & grade

△ Ec = Combustion Efficiency Et = Thermal Efficiency

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160 PSIG Models, Dimensions & Ratings



- **DIMENSIONS** ARE IN INCHES AND SUBJECT TO PRODUCTION TOLERANCES. WHENEVER TOLERANCES ARE CRITICAL, NOTIFY THE FACTORY BEFOREHAND.
- **WEATHERPROOF** BOILERS WILL SLIGHTLY INCREASE IN WIDTH, LENGTH AND HEIGHT.
- **OIL FIRED** BOILER DIMENSIONS WILL VARY - ESPECIALLY #4, #5 & #6 OIL.
- **RIGGING:** MODELS D300 TO D5000 ARE DESIGNED TO BE FORKLIFTED FROM EITHER SIDE. TIE DOWN EYES (4) ARE 2 1/2" DIAMETER AND CAN BE USED FOR HOISTING. MODELS D5500 AND LARGER HAVE LIFTING LUGS IN THE FRONT AND REAR HEADPLATES FOR OFFLOADING AND RIGGING.
- **HINGES AND ACCESS DOOR:** THE BURNER (FIREBOX ACCESS) DOOR AND BOTH THE HEADPLATES ARE HINGED ON THE RIGHT HAND SIDE AS SHOWN ABOVE (LEFT HAND AVAILABLE IF SPECIFIED). THE REAR HEADPLATE CAN BE SPECIFIED NON-HINGED IF SPACE DOES NOT PERMIT FULL OPENING.
- **ALL HINGE PINS ARE REMOVABLE** FOR "ZERO" SWING REQUIREMENT. 24" SPACE IS RECOMMENDED AT THE REAR FOR TUBE MAINTENANCE.
- **ANCHORING:** 4 ANCHORING PADS ARE PROVIDED. O.D. TO O.D. PAD LENGTH = BASE LENGTH "A" DIMENSION. PADS ARE 3/8" THICK. PREDRILLED ANCHOR HOLES IN PADS ARE: 9/16" FOR D300-D1000, 11/16" FOR D1250-D5000 AND 13/16" FOR D5500-D10000.
- **"D" & "E" FLANGES** ARE ANSI 150 LBS. RAISED FACE.
- **CALCULATED ACFM** BASED ON NATURAL OR L.P. GAS @ 25 FEET-PER-SECOND STACK VELOCITY, 300° F STACK TEMPERATURE, 25% EXCESS AIR AND SEA LEVEL ELEVATION.
- **"ZERO" TUBE PULL CLEARANCE REQUIRED.** NATIONAL BOARD INSPECTION CODE I-3340 REQUIRES 36" CLEARANCE ON BOTH SIDES.

BOILER MODEL	A	B	C	COA	D	E	F	G	H**	J*	TOTAL # TUBES	ACFM STACK EXHAUST	SOUND LEVELS (dBA)
	BASE LENGTH	OVERALL WIDTH	FLANGES & STACK HEIGHT	OVERALL HEIGHT	WATER RETURN (IN)	WATER SUPPLY (OUT)	C/L TO C/L SUPPLY & RETURN	ROUND VENT CONNECTOR O.D.	POWER BURNER	HEADPLATE SWING			
D300	29	35	58	68	2 MNPT	2 MNPT	12	4	22 (J)	29	23	87	50
D500	37	35	58	68	2 MNPT	2 MNPT	12	5	22 (J)	29	23	145	50
D750	48	35	58	68	2 MNPT	2 MNPT	12	6	22 (J)	29	23	218	50
D1000	59	35	58	68	3 FL	3 FL	12	7	22 (J)	29	23	291	50
D1250	70	35	58	68	3 FL	3 FL	12	8	22 (J)	29	23	364	55
D1500	81	35	58	68	3 FL	3 FL	12	8	26 (J)	29	23	436	55
D1750	92	35	58	68	3 FL	3 FL	12	9	26 (J)	29	23	509	55
D2000	103	35	58	68	3 FL	3 FL	12	9	26 (J)	29	23	582	55
D2250	114	35	58	68	3 FL	3 FL	12	10	35 (C)	29	23	654	60
D2500	125	35	58	68	3 FL	3 FL	12	10	35 (C)	29	23	727	60
DA2000	73	49	58	68	4 FL	4 FL	20	9	26 (J)	44	37	582	55
DA2250	80	49	62	72	4 FL	4 FL	20	10	35 (C)	44	37	654	60
DA2500	86	49	62	72	4 FL	4 FL	20	10	35 (C)	44	37	727	60
D2750	93	49	62	72	4 FL	4 FL	20	12	35 (C)	44	37	800	60
D3000	99	49	62	72	4 FL	4 FL	20	12	35 (C)	44	37	873	65
D3500	112	49	62	72	4 FL	4 FL	20	12	40 (C)	44	37	1018	65
D4000	125	49	62	72	4 FL	4 FL	20	14	40 (C)	44	37	1163	70
D4500	138	49	62	72	4 FL	4 FL	20	14	40 (C)	44	37	1309	70
D5000	151	49	62	72	4 FL	4 FL	20	14	40 (C)	44	37	1454	70
D5500	122	67	65	75	6 FL	6 FL	23	16	44 (C)	63	56	1600	70
D6000	131	67	65	75	6 FL	6 FL	23	16	44 (C)	63	56	1745	75
D6500	140	67	65	75	6 FL	6 FL	23	16	44 (C)	63	56	1890	75
D7000	148	67	65	75	6 FL	6 FL	23	18	44 (C)	63	56	2036	75
D7500	157	67	65	75	6 FL	6 FL	23	18	44 (C)	63	56	2181	75
D8000	143	78	65	75	6 FL	6 FL	31	18	44 (C)	73	67	2327	80
D8500	150	78	65	75	6 FL	6 FL	31	18	44 (C)	73	67	2472	80
D9000	157	78	65	75	6 FL	6 FL	31	20	44 (C)	73	67	2618	80
D9500	164	78	65	75	6 FL	6 FL	31	20	44 (C)	73	67	2763	80
D10000	172	78	65	75	6 FL	6 FL	31	20	44 (C)	73	67	2908	80

**Based on Power Flame natural gas or propane fired J or C burner.

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RITE DURAFIN™ BOILER SUGGESTED SPECIFICATION



The boiler shall have a rated capacity of _____ BTUH input @ _____ feet elevation. The boiler shall be a Section IV hot water heating boiler, ASME stamped for 160 PSIG and registered with The National Board.

The boiler and burner shall be shipped completely assembled as a package and shall meet the latest requirements of UL 795, UL 726, ASME CSD-1, ANSI Z21.13, NFPA 70 and ASHRAE 90.1.

Boiler efficiency shall be minimum 85% as measured by a stack analyzer and 84% thermal (fuel-to-water) with return water temperatures between 135° (minimum) and 230° F.

The heat exchanger shall have over 7 square feet per boiler horsepower of heating surface. Tube replacement or cleaning shall require “zero” inches of maintenance clearance*. There shall be no more than _____ (22, 36, 55 or 66) total boiler tubes. The tubes shall be rolled into header boxes with the rear header box having an expansion joint to allow the tubes to expand and contract freely. There shall be no minimum or maximum water flow rate required through the heat exchanger. A flow switch shall not be required. The headplates shall be hinged, insulated and provided with hose end ball valves for draining. Boiler tubes shall be available from more than one source. The pressure vessel shall carry a 25 year warranty against “thermal shock” and tube erosion.

No part of the burner shall be physically located under the boiler tubes. The burner shall be mounted on a hinged door that allows full access into the combustion chamber without requiring any electrical disconnection.

The combustion chamber shall be sealed to operate up to .15 inches of water column. A manometer shall be provided to show the overfire pressure. The combustion chamber (furnace) heat release shall not exceed 81,000 BTUH per cubic feet. There shall be 2” flame observation ports at the front and rear of the boiler. The boiler shall be provided with a stack thermometer.

The burner panel shall have a red strobe warning light to indicate that the return water temperature is too low and the boiler is condensing. The following energy management system features shall be provided: start-stop, dry contacts to indicate the burner is firing, dry contacts to indicate an alarm condition.

The boiler shall be designed for Seismic 4 zone installation. The boiler _____ (shall or shall not) be optionally designed for outdoor installation. The boiler _____ (shall or shall not) be optionally constructed as a partial take-a-part (tubes rolled and boiler hydrotested). The boiler _____ (shall or shall not) be optionally constructed as a full take-a-part (tubes not rolled, partial data report and field ASME hydrotest required).

*Except for D300 and D500.