



# — 88 —

## Water & Steam Boilers – Series 2

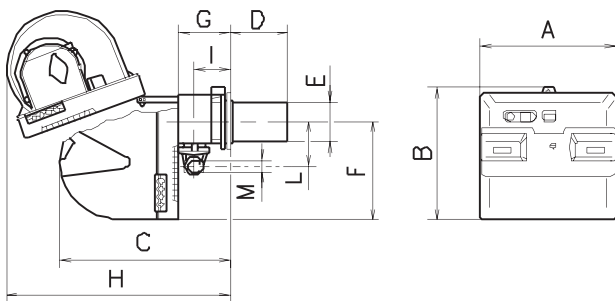
For Gas, Light Oil, & Gas/Light Oil – Fired Burners

### Burner Specification & Data Sheet

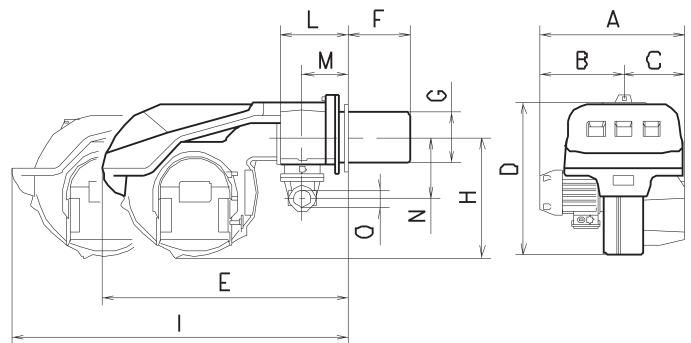
### Riello Gas Burners Model RS



**Figure 1** Model RS28 – 50 dimensions



**Figure 2** Model RS70 – 190 dimensions



Burner Model Number	A	B	C	D	E	F	G	H	I	L	M	Approx. Wt. (pounds)
RS28/1	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	82
RS38/1	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	88
RS28/M	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	84
RS38/M	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	88
RS50/M	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	91

Burner Model Number	A	B	C	D	E	F	G	H	I	L	M	N	O	Approx. Wt. (pounds)
RS70/M	20.13	11.63	8.50	21.88	33.00	9.88 – 15.19	7.06	16.94	45.75 – 51.00	8.44	5.31	8.75	2.00	154
RS100/M	20.06	12.31	8.50	21.88	33.00	9.88 – 15.19	7.06	16.94	45.75 – 51.00	8.44	5.31	8.75	2.00	161
RS130/M	21.75	13.31	8.50	21.88	33.00	11.00 – 15.19	7.06	16.94	45.75 – 51.00	8.44	5.31	8.75	2.00	168
RS190/M	26.81	14.41	12.40	21.88	33.70	14.65 – 20.87	8.74	16.93	51.65	7.32	5.91	7.32	2.00	181



# Burner specifications and settings

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**Table 1** Burner data — Natural gas — Modulating

Boiler Model Number	Burner Model Number	Pressure Drop Thru Gas Train Inches W.C.	Manifold Pressure Inches W.C.	Gas Pressure Required at Gas Control Inlet		Gas Pilot Pressure Inches W.C.	Combustion Head Setting	Combustion Air Settings		Servo Motor Cam Position Settings					
				Min	Max			27	52	0	22	90	—	—	—
				Inches W.C.	Inches W.C.										
488R	RS28/M	0.75	3.30	4.05	14	5.00	3	27	52	0	22	90	—	—	—
488	RS28/M	0.75	3.60	4.30	14	5.00	4	27	52	0	22	90	—	—	—
588	RS38/M	1.30	3.70	5.00	14	5.00	2	17	70	0	25	90	—	—	—
688	RS50/M	1.83	2.90	4.73	14	2.70	3	16	65	0	18	90	—	—	—
788	RS50/M	2.40	3.50	5.85	14	2.50	4	28	85	0	20	90	—	—	—
888	RS70/M	2.98	3.70	6.63	14	8.25	3	2.5	7.0	—	—	—	130	0	35
988R	RS70/M	3.16	3.87	7.03	14	8.25	4	2.5	7.5	—	—	—	130	0	35
988	RS70/M	3.16	4.10	7.28	14	8.25	5	2.5	7.5	—	—	—	130	0	35
1088R	RS70/M	3.00	4.65	7.65	14	6.50	8	3.0	8.5	—	—	—	130	0	40
1088	RS70/M	3.00	4.90	7.90	14	6.50	9	3.0	8.5	—	—	—	130	0	40
1188	RS100/M	3.80	3.10	6.90	14	6.50	4	2.5	6.0	—	—	—	130	0	35
1288	RS100/M	3.82	3.63	7.45	14	7.50	4	3.0	6.5	—	—	—	130	0	35
1388	RS100/M	2.41	4.50	6.91	14	7.60	3	2.5	9.0	—	—	—	130	0	30
1488	RS130/M	3.76	3.30	7.01	14	7.80	5	2.0	7.0	—	—	—	130	0	50
1588	RS130/M	4.09	3.50	7.59	14	7.20	7	2.5	7.0	—	—	—	130	0	50
1688R	RS130/M	3.19	3.45	6.64	14	7.20	8	2.5	8.5	—	—	—	130	0	30
1688	RS130/M	3.19	3.70	6.89	14	7.20	9	2.5	8.5	—	—	—	130	0	30
1788	RS130/M	3.70	4.80	8.50	14	7.20	9	2.5	9.0	—	—	—	130	0	55
1888	RS190/M	3.71	3.50	7.21	14	5.00	0	0.5	3.8	—	—	—	130	0	45

## Notes for Table 1, Table 2 and Table 3

- Burner capacities listed for elevations up to 2,000 feet. For higher elevations, consult local Weil-McLain distributor/agent or sales office.
- Gas ratings based on natural gas with heating value of 1,000 Btu per cubic foot and specific gravity of 0.60. Gas burners for other gases are available. Consult local Weil-McLain distributor/agent or sales office.
- Boiler-burner unit to be adjusted to achieve +0.10 inches W.C. pressure at the flue collar, resulting in positive pressure in firebox as listed.
- Minimum gas pressures listed are subject to variations due to job conditions. Gas burners for other gas pressures are available. Consult local Weil-McLain distributor/agent or sales office.
- All settings and pressures shown are for initial start-up. Final values should be confirmed with combustion analysis.
- Gas train sizes for models 488R to 1288 are based on a supply pressure to the regulator of 7 inches W.C. Gas train sizes for models 1388 to 1888 are based on a supply pressure to the regulator of 12 inches W.C. Optional trains are available for other pressures upon request.
- Gas Control Systems:
  - OO: On - Off operation. Single-position air damper
  - LHL: Low-high-low-off firing conditions – two-position air and fuel controlled by separate motor, open damper pre-purge.
  - MOD: On - Off operation with proven low fire start and full modulating firing conditions. Proportional motor drives fuel metering valve and combustion air damper according to firing conditions; open damper pre-purge.
- 120/60/1 control circuit is used for all burners. Control circuit transformer is available as an option.
- Airflow safety switch is standard for all gas and combination gas/light oil units.
- Burners will be completely assembled and wired (except gas train) and factory test-fired. Burners listed by Underwriters Laboratories, Inc., state of Connecticut, Fire Marshal state of Massachusetts, city of New York MEA, and others.
- Special controls can be provided to meet other code requirements not listed. Consult your local Weil-McLain distributor/agent or sales office. Electric gas pilot will be furnished as standard equipment on all gas and combination gas/light oil units.
- Direct spark ignition is standard for light oil units. Direct spark ignition is available as an option for combination gas/light oil units. Consult your local Weil-McLain distributor/agent or sales office.
- All 3 phase models require a separate 120/60/1 control voltage supply.
- Combustion Controls:
  - Siemens LFL 1.335 flame safeguard control monitors the oil or gas burner flame with visual diagnostic window, provides pre-purge and post purge, provides switching necessary to allow firing rate motor to be driven to both low fire and high fire positions, prevent start up if pre-ignition interlocks are open and has low fire start proven circuit. In the event pre-ignition interlock circuit or running interlock circuit does not “prove”, system will lock out on safety. Ultra violet sensitive electronic flame detector is standard.
- All units require a single SPDT controller for LHL firing rate operation.
- Modulating units 488R to 788 require a 120v bumping type signal or PID control for modulation.
- Modulating units 888 to 1888 require a 4–20mA, 0–10vdc or 135 ohm signal for modulation.
- Motor relay or contractor will be furnished on all units.



# Burner specifications and settings *(continued)*

**Table 2** Burner data — Natural gas — General

Boiler Model Number	Burner Input	Positive Pressure In Firebox	Standard Burner Model Designation		Standard Combustion Control	Standard Control System		Burner Motor H.P. 3400 RPM		Standard Motor Voltage	
		Inches W.C.	On - Off	LHL/MOD	Note 14	On - Off	LHL/MOD	On - Off	LHL/MOD	On - Off	LHL/MOD
488R	996	.89	RS28/1	RS28/M	LFL 1.335**	00	LHL/MOD	1/2	1/2	120/60/1	120/60/1
488	1010	1.00	RS28/1	RS28/M	LFL 1.335**	00	LHL/MOD	1/2	1/2	120/60/1	120/60/1
588	1357	.89	RS38/1	RS38/M	LFL 1.335**	00	LHL/MOD	1/2	1/2 OR 3/4	120/60/1	120/60/1
688	1703	.72	—	RS50/M	LFL 1.335**	—	LHL/MOD	—	3/4	—	120/60/1 or 3 phase*
788	2049	.65	—	RS50/M	LFL 1.335**	—	LHL/MOD	—	3/4	—	3 phase*
888	2396	.85	—	RS70/M	LFL 1.335**	—	LHL/MOD	—	1 1/2	—	3 phase*
988R	2482	.80	—	RS70/M	LFL 1.335**	—	LHL/MOD	—	1 1/2	—	3 phase*
988	2713	.80	—	RS70/M	LFL 1.335**	—	LHL/MOD	—	1 1/2	—	3 phase*
1088R	2887	.82	—	RS70/M	LFL 1.335**	—	LHL/MOD	—	1 1/2	—	3 phase*
1088	3103	.82	—	RS100/M	LFL 1.335**	—	LHL/MOD	—	2 1/2	—	3 phase*
1188	3392	.82	—	RS100/M	LFL 1.335**	—	LHL/MOD	—	2 1/2	—	3 phase*
1288	3753	.81	—	RS100/M	LFL 1.335**	—	LHL/MOD	—	2 1/2	—	3 phase*
1388	4113	.89	—	RS100/M	LFL 1.335**	—	LHL/MOD	—	2 1/2	—	3 phase*
1488	4474	.86	—	RS130/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*
1588	4763	.86	—	RS130/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*
1688R	4979	.863	—	RS130/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*
1688	5124	.83	—	RS130/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*
1788	5485	.82	—	RS130/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*
1888	5845	.85	—	RS190/M	LFL 1.335**	—	LHL/MOD	—	3	—	3 phase*

\*208/60/3, 240/60/3, 480/60/3, 575/60/3, burner motor voltage must be specified

**Table 3** Gas control components and sizes

Boiler Model Number	Manual Hand Valve	Low Gas Pressure Switch	Gas Pressure Regulator	Operating Gas Valve	Operating Gas Valve (with Proof Of Closure)	Safety Gas Valve	Manual Checking Gas Valve	High Gas Pressure Switch
	Inches		Inches	Inches		Inches		
488R – 688	1 1/2	Standard	1 1/2	1 1/2	Optional	1 1/2	1 1/2	Standard
788 – 1188	2	Standard	2	2	Optional	2	2	Standard
1288 – 1688R	2 1/2	Standard	2 1/2	2 1/2	Optional	2 1/2	2 1/2	Standard
1688 – 1888	3	Standard	3	3	Optional	3	3	Standard