

## Water & Steam Boilers – Series 2

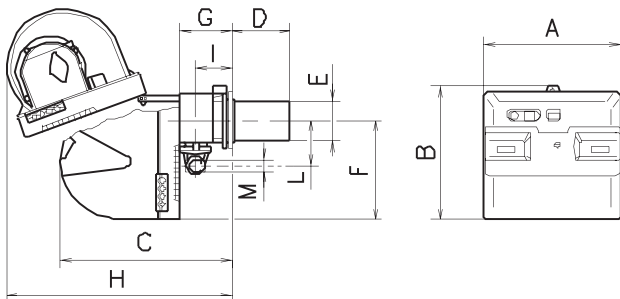
For Gas, Light Oil, & Gas/Light Oil – Fired Burners

### Burner Specification & Data Sheet

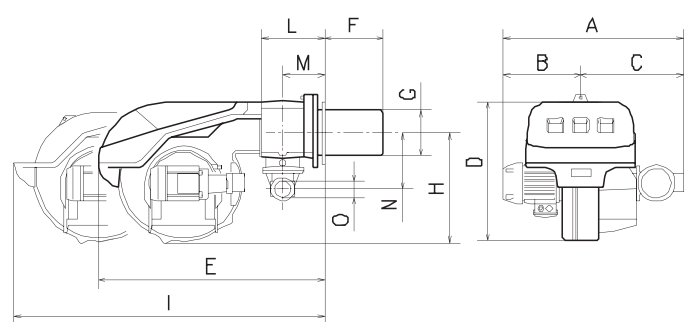
### Riello Gas/Oil Burners Model RLS



**Figure 1** Model RLS28 – 50 dimensions



**Figure 2** Model RLS70 – 190 dimensions



Burner Model Number	A	B	C	D	E	F	G	H	I	L	M	Approx. Wt. (pounds)
RLS28	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	95
RLS38	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	99
RLS50	18.75	18.69	22.88	8.50	5.50	13.88	6.44	31.88	4.25	6.63	1.50	101

Burner Model Number	A	B	C	D	E	F	G	H	I	L	M	N	O	Approx. Wt. (pounds)
RLS70	27.50	11.38	16.13	21.88	33.13	9.88	7.06	16.94	45.75	8.44	5.31	8.75	2.00	159
RLS100	28.88	12.75	16.13	21.88	33.13	9.88	7.06	16.94	45.75	8.44	5.31	8.75	2.00	165
RLS130	28.88	12.75	16.13	21.88	33.13	9.88	7.44	16.94	45.75	8.44	5.31	8.75	2.00	170



# Burner specifications and settings

**Table 1** Burner data — #2 Fuel oil/Natural gas — Modulating

Boiler Model Number	Burner Model Number	Pressure Drop Thru Gas Train	Manifold Pressure		Gas Pressure Required at Gas Control Inlet		Gas Pilot Pressure	Combustion Head Setting	Combustion Air Indications		Servo Motor Cam Position Settings						Oil Nozzles			Oil Pressure	Fuel Independent Motor Driven 3450 RPM					
			Inches W.C.	Inches W.C.	Inches W.C. Min	Inches W.C. Max			Low Fire	High Fire	Blue	Orange	Red	1	2	3	4	5	6		Qty.	GPH @ 100 PSIG	Brand	Type	Spray Angle	Supply PSIG
488R	RLS28	1.19	4.60	5.79	14	5.0	1	23	67	22	42	70	—	—	—	—	—	1 1	2.75 2.50	Delavan	B	70° 60°	180	AL65C	22.0	
488	RLS28	1.19	4.85	6.04	14	5.0	2	23	67	22	42	70	—	—	—	—	—	1 1	3.00 2.50	Delavan	B	70° 60°	180	AL65C	22.0	
588	RLS38	1.88	5.85	7.73	14	5.0	1	20	50	19	41	55	—	—	—	—	—	1 1	4.00 3.50	Delavan	B	60° 60°	167	AL65C	22.0	
688	RLS50	2.09	5.88	7.97	14	5.0	3	32	90	32	50	90	—	—	—	—	—	1 1	4.50 5.00	Delavan	B	60° 60°	173	AL65C	22.0	
788	RLS50	2.12	5.85	7.97	14	5.0	5	35	83	35	45	83	—	—	—	—	—	1 1	5.50 6.00	Delavan	B	60° 80°	168	AL65C	22.0	
888	RLS70	3.04	4.36	7.40	14	7.5	0	1.5	6.0	—	—	—	130	0	40	120	30	100	1 1	6.50 6.50	Delavan	B	90° 60°	180	AJ4CC	52.5
988R	RLS70	3.18	4.14	7.32	14	7.5	0	1.8	7.5	—	—	—	130	0	40	120	27	100	1 1	7.50 7.25	Delavan	B	90° 60°	180	AJ4CC	52.5
988	RLS70	3.18	4.39	7.57	14	7.5	1	1.8	7.5	—	—	—	130	0	40	120	27	100	1 1	7.50 7.50	Delavan	B	60° 60°	180	AJ4CC	52.5
1088R	RLS70	3.35	3.68	7.03	14	7.5	3	1.9	9.0	—	—	—	130	0	32	120	45	100	1 1	8.50 7.25	Delavan	B	60° 60°	209	AJ4CC	52.5
1088	RLS100	3.35	3.93	7.28	14	7.5	4	1.9	9.0	—	—	—	130	0	32	120	45	100	1 1	8.50 7.50	Delavan	B	60° 60°	209	AJ4CC	52.5
1188	RLS100	3.55	4.45	8.00	14	6.0	4	2.2	5.2	—	—	—	130	0	30	120	35	100	1 1	9.00 9.00	Delavan	B	60° 60°	180	AJ4CC	52.5
1288	RLS100	2.60	5.30	7.9	14	6.0	4	2.0	6.0	—	—	—	130	0	30	120	40	100	1 1	10.00 10.00	Delavan	B	60° 60°	180	AJ4CC	52.5
1388	RLS100	3.35	4.65	8.00	14	6.0	9	2.0	6.5	—	—	—	130	0	30	120	40	100	1 1	11.00 11.00	Delavan	B	60° 60°	200	AJ4CC	52.5
1488	RLS130	2.81	4.54	7.35	14	6.0	6	2.0	6.0	—	—	—	130	0	40	120	55	100	1 1	12.00 12.00	Delavan	B	60° 60°	200	AJ4CC	52.5
1588	RLS130	2.99	4.65	7.64	14	5.5	7	2.5	7.0	—	—	—	130	0	40	120	30	100	1 1	12.00 12.00	Delavan	B	60° 60°	220	AJ4CC	52.5
1688R	RLS130	3.40	4.85	8.25	14	5.0	8	2.5	8.0	—	—	—	130	0	40	120	30	100	1 1	13.00 12.50	Delavan	B	60° 60°	215	AJ4CC	52.5
1688	RLS130	3.40	5.10	8.5	14	5.0	9	2.0	9.0	—	—	—	130	0	50	120	30	100	1 1	13.00 13.00	Delavan	B	60° 60°	215	AJ4CC	52.5

## 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.
- Light oil ratings based on No. 2 fuel oil with heating value of 140,000 Btu per gallon.
- 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 gas train sizes shown are based on a supply pressure to the regulator of 7 inches w.c. Optional trains available for other pressures upon request.
- All Settings and pressures shown are for initial start-up. Final values should be confirmed with combustion analysis.
- Gas/Light Oil control Systems:
  - 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.
- All 3 phase models require a separate 12/60/1 control voltage supply.
- Burner settings shown are for initial start-up. Follow burner manual to adjust burner using combustion test instruments as directed.
- 120/60/1 control circuit is used for all burners.
- 488R to 788 units require a single SPDT controller for LHL firing rate operation on both fuels.
- 888 to 1688 units require a 4 – 20mA 0 – 10vdc or 135 ohm signal for modulation on gas plus a SPDT controller for LHL firing rate operation on oil.
- Motor relay or contactor is standard on all units.
- 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



# Burner specifications and settings *(continued)*

**Table 2** Burner data — #2 Fuel oil/Natural gas — Modulating

Boiler Model Number	Burner Input		Positive Pressure in Firebox	Standard Burner Model Designation	Standard Combustion Control	Standard Control System	Burner Motor 3400 RPM	Standard Motor Voltage
	No. 2 Oil	Gas						
	GPH	MBH	Inches W.C		Note 16	Gas/Oil	H.P.	
488R	6.90	996	0.89	RLS28	LFL 1.335	LHL/LHL	1/2	120/60/1
488	7.00	1010	1.00	RLS28	LFL 1.335	LHL/LHL	1/2	120/60/1
588	9.40	1357	0.84	RLS38	LFL 1.335	LHL/LHL	1/2	120/60/1
688	11.80	1703	0.72	RLS50	LFL 1.335	LHL/LHL	3/4	3 phase*
788	14.20	2049	0.65	RLS50	LFL 1.335	LHL/LHL	3/4	3 phase*
888	16.60	2396	0.85	RLS70	LFL 1.335	MOD/LHL	1 1/2	3 phase*
988R	17.20	2482	0.80	RLS70	LFL 1.335	MOD/LHL	1 1/2	3 phase*
988	18.80	2713	0.80	RLS70	LFL 1.335	MOD/LHL	1 1/2	3 phase*
1088R	20.00	2887	0.82	RLS70	LFL 1.335	MOD/LHL	1 1/2	3 phase*
1088	21.50	3103	0.82	RLS100	LFL 1.335	MOD/LHL	2 1/2	3 phase*
1188	23.50	3392	0.82	RLS100	LFL 1.335	MOD/LHL	2 1/2	3 phase*
1288	26.00	3753	0.81	RLS100	LFL 1.335	MOD/LHL	2 1/2	3 phase*
1388	28.50	4113	0.89	RLS100	LFL 1.335	MOD/LHL	2 1/2	3 phase*
1488	31.00	4474	0.86	RLS130	LFL 1.335	MOD/LHL	3	3 phase*
1588	33.00	4763	0.86	RLS130	LFL 1.335	MOD/LHL	3	3 phase*
1688R	34.50	4979	0.863	RLS130	LFL 1.335	MOD/LHL	3	3 phase*
1688	35.50	5124	0.83	RLS130	LFL 1.335	MOD/LHL	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	Inches	
488R – 588	1 1/2	Standard	1 1/2	1 1/2	Optional	1 1/2	1 1/2	Standard
688 – 1088	2	Standard	2	2	Optional	2	2	Standard
1188 – 1288	2 1/2	Standard	2 1/2	2 1/2	Optional	2 1/2	2 1/2	Standard
1388 – 1688	3	Standard	3	3	Optional	3	3	Standard

**Notes for Table 1, Table 2 and Table 3** *(continued)*

- 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.
17. Other flame safeguards available upon request.
  18. Control circuit transformer is available as an option.
  19. Airflow safety switch is standard for all gas and combination gas/light oil units.
  20. Burners will be completely assembled and wired (except gas train) and factory test-fired.
  21. Burners listed by Underwriters Laboratories, Inc., state of Connecticut, Fire Marshal state of Massachusetts, city of New York MEA, and others.
  22. Special controls can be provided to meet other code requirements not listed. Consult your local Weil-McLain distributor/agent or sales office.
  23. Electric gas pilot will be furnished as standard equipment on all combination gas/light oil units.
  24. Direct spark ignition is available as an option for combination gas/light oil units. Consult your local Weil-McLain distributor/agent or sales office.



Weil-McLain  
500 Blaine Street  
Michigan City, IN 46360-2388  
<http://www.weil-mclain.com>