WEIL-McLAIN®

88

Water & Steam Boilers – Series 2

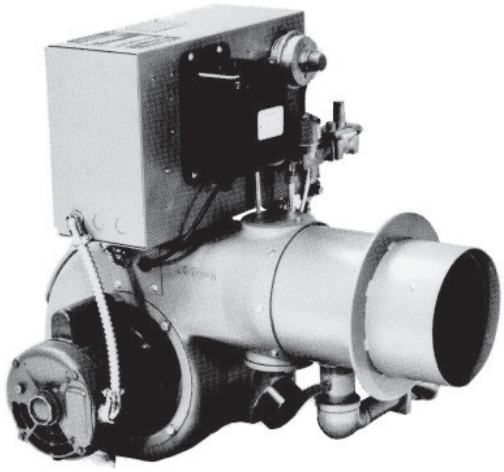
Flame retention burners for
Gas, Light Oil, & Gas/Light Oil firing

Burner Specification & Data Sheet

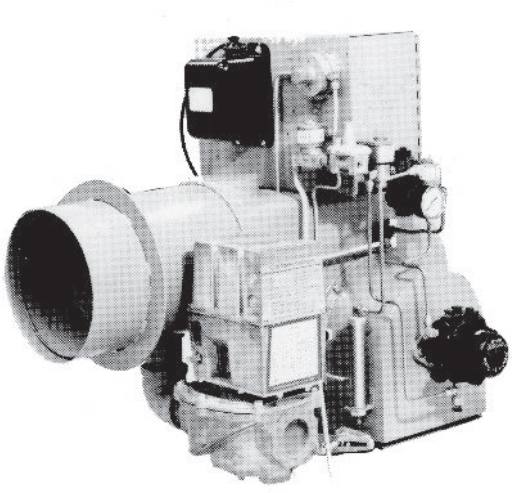
Webster

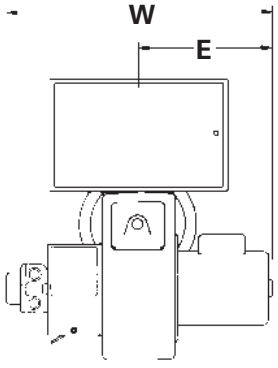
Models WJB1 & WJB2

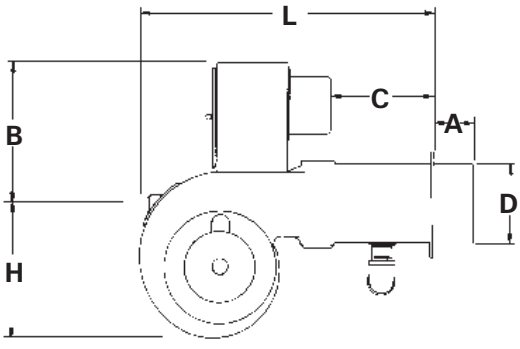
Models WJB1 & WJB2
Gas burner



Gas/light oil burner







Burner model	Dimensions, in inches								
	A	B	C	D	E	H	L	W	Approximate Weight
WJB1	4.00	14.00	9.00	7.25	11.00	11.00	25.00	23.00	155-160
WJB2	4.00	15.00	10.00	9.25	14.00	15.00	29.00	28.00	275-300

Part Number 550-142-022/0110

Boiler Model Number 88 Series 2	Burner Input		Positive Pressure in Firebox In. W.C.	Standard Burner Model Designation			Standard Combustion Control			Standard Control System			Burner Motor 3450 RPM H.P.			Standard Voltage
	No. 2 Oil GPH	Gas MBH		Gas	Light Oil	Gas/ Light Oil	Gas	Light Oil	Gas/ Light Oil	Gas	Light Oil	Gas/ Light Oil	Gas	Light Oil	Gas/ Light Oil	
488R	6.9	996	0.68	WJB1G-03	WJB1O-03	WJB1C-03	RM7897A	R7184A	RM7897C	A	A	A	1/3	1/3	1/3	See notes
488	7.0	1010	0.70	WJB1G-03	WJB1O-03	WJB1C-03	RM7897A	R7184A	RM7897C	A	A	A	1/3	1/3	1/3	See notes
588	9.4	1357	0.60	WJB1G-05	WJB1O-05	WJB1C-05	RM7897A	R7184A	RM7897C	LFS	LFS	LFS	1/2	1/2	1/2	See notes
688	11.8	1701	0.58	WJB1G-07	WJB1O-07	WJB1C-07	RM7897A	R7184A	RM7897C	LFS	LFS	LFS	3/4	3/4	3/4	See notes
788	14.2	2046	0.65	WJB1G-07	WJB1O-07	WJB1C-07	RM7897A	R7184A	RM7897C	LFS	LFS	LFS	3/4	3/4	3/4	See notes
888	16.6	2382	0.66	WJB2G-07	WJB2O-10	WJB2C-10	RM7897A	RM7897A	RM7897C	LFS	LFS	LFS	3/4	1	1	See notes
988R	17.2	2482	0.54	WJB2G-10	WJB2O-10	WJB2C-10	RM7897A	RM7897A	RM7897C	LFS	LFS	LFS	1	1	1	See notes
988	18.8	2737	0.63	WJB2G-10	WJB2O-10	WJB2C-10	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	1	1	1	See notes
1088R	20.0	2887	0.68	WJB2G-10	WJB2O-15	WJB2C-15	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	1	1 1/2	1 1/2	See notes
1088	21.5	3082	0.78	WJB2G-10	WJB2O-15	WJB2C-15	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	1	1 1/2	1 1/2	See notes
1188	23.5	3428	0.78	WJB2G-15	WJB2O-15	WJB2C-15	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	1 1/2	1 1/2	1 1/2	See notes
1288	26.0	3773	0.76	WJB2G-15	WJB2O-15	WJB2C-15	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	1 1/2	1 1/2	1 1/2	See notes
1388	28.5	4119	0.77	WJB2G-20	WJB2O-20	WJB2C-20	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	2	2	2	See notes
1488	31.0	4464	0.78	WJB2G-20	WJB2O-20	WJB2C-30	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	2	2	3	See notes
1588	33.0	4809	0.73	WJB2G-20	WJB2O-30	WJB2C-20	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	2	3	2	See notes
1688R	34.5	4979	0.68	WJB2G-30	WJB2O-30	WJB2C-30	RM7897C	RM7897A	RM7897C	LFS	LFS	LFS	3	3	3	See notes
1688	35.5	5155	0.74	WJB2G-30	WJB2O-30	WJB2C-30	RM7897C	RM7897C	RM7897C	LFS	LFS	LFS	3	3	3	See notes
1788	38.0	5494	0.82	WJB2G-30	WJB2O-30	WJB2C-30	RM7897C	RM7897C	RM7897C	LFS	LFS	LFS	3	3	3	See notes
1888	40.5	5845	0.80	WJB3G-30	WJB2O-30	WJB3C-50	RM7840L	RM7897C	RM7840L	MOD	LFS	MOD	3	3	5	See notes

Standard Voltage Notes: 1/3 HP blower motor through ¾ HP – 120V/60/1 phase, 1 HP blower motor – 240V/60/1 phase, 1-½ HP blower motor through 5 HP- 240V/60/3 phase

Boiler Model Number	Pressure drop thru gas train Inches W.C.	Gas orifice pressure Inches W.C. HIGH FIRE	Gas Pressure required at Gas Control Inlet Inches W.C.		Initial Damper Setting Inches (Oil)		Initial Damper Setting Inches (Gas)	Initial Damper Setting Inches (Gas/Light Oil)		Oil Nozzle(s)			Oil Pressure PSIG		Fuel Unit Burner-Motor Driven 3450 RPM	
			Min.	Max.	Low Fire	High Fire	High Fire	High Fire (Gas)	High Fire (Oil)	Qty.	GPH @ 100 PSIG	Brand	Spray Angle	High Fire	Low Fire	Type	Gear GPH
488R	2.3	2.4	5.5	28	1/4	1	1-1/4	1-5/16	1	1	4.00	Hago P	45º	300	100	22R220D	45
488	2.3	2.5	5.7	28	1/4	1-13/16	1-7/16	1-9/16	1-3/16	1	4.00	Hago P	45º	305	100	22R220D	45
588	3.7	2.8	7.0	28	1/2	13/16	1-7/8	1-7/8	1-3/16	1	5.50	Hago P	45º	290	100	22R220D	45
688	2.7	3.2	6.2	28	7/16	7/8	1-3/16	1-5/16	1	1	7.00	Hago P	45º	290	100	22R220D	45
788	2.9	2.8	5.1	28	1/2	1-3/8	1-13/16	1-7/8	1-1/2	2	4.25	Hago P	60º	285	100	22R221D	70
888	2.55	1.8	4.9	28	5/8	1-1/2	1	1-3/4	1-1/2	1	10.00	Hago P	45º	280	100	22R221D	70
988R	3.15	1.7	5.1	28	5/8	1-3/4	1-1/8	1-7/8	1-3/4	1	10.00	Hago P	45º	300	100	22R221D	70
988	3.8	1.8	5.8	28	13/16	1-5/16	1-1/4	1-1/2	1-3/16	1	11.00	Hago P	45º	290	100	22R221D	70
1088R	4.4	2.2	6.6	28	5/8	1-1/8	1-3/8	1-1/4	1-1/8	2	6.00	Hago P	45º	280	100	22R221D	70
1088	3.2	2.4	6.0	28	3/4	1-5/16	1-7/16	1-7/16	1-5/16	2	6.50	Hago P	45º	280	100	22R221D	70
1188	4.0	2.0	6.4	28	3/4	1-3/4	1-13/16	1-7/8	1-3/4	2	7.00	Hago P	45º	280	100	22R221D	70
1288	3.0	2.4	6.0	28	13/16	2-1/16	2-5/16	2-5/8	2-1/8	2	7.50	Hago P	45º	300	100	22R221D	70
1388	3.8	2.0	6.3	28	3/4	1-1/2	2-1/2	2-1/2	1 7/8	2	8.50	Hago P	60º	290	100	22R322D	105
1488	4.6	2.6	7.7	28	15/16	2-3/16	2-1/8	2-1/4	2	2	9.00	Hago P	60º	300	100	22R322D	105
1588	5.1	2.8	8.7	28	1	2-1/8	3-3/8	3-1/4	2-1/4	2	10.00	Hago P	60º	280	100	22R322D	105
1688R	4.6	2.9	9.2	28	1 1/16	2-1/2	1-7/8	2-1/4	1-1/2	2	10.00	Hago P	60º	300	100	22R623D	135
1688	6.1	3.1	9.8	28	1	2-5/8	2-1/4	2-1/2	2-1/8	2	10.50	Hago P	60º	295	100	22R623D	135
1788	5.25	3.4	9.1	28	9/16	2-1/4	3-1/4	3-1/4	3	2	11.00	Hago P	60º	300	100	22R623D	135
1888	5.7	5.6	12.2	28	1	3	1-3/4	1-7/8	1-7/8	3	8.0	Delevan	60º	300	65	SG0550	108

Standard Oil Pump Location:
488R through 1488 Gas / Oil – Integral to Burner, 1588 through 1888 Remote Pump
488R through 1688 Oil – Integral to Burner, 1788 and 1888 Remote Pump

Notes

1. Burner capacities listed for elevations up to 2,000 feet. For higher elevations, consult local Weil-McLain distributor/agent or sales office.
2. Light Oil ratings based on No. 2 fuel oil with heating value of 140,000 Btu per gallon.
3. 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.
4. 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.

5. 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.
6. Gas orifice pressures shown are for initial start-up. Final pressures should be determined after checking actual gas flow and combustion readings.
7. Gas Control Systems:
   - A (OO): On-off operation. Single-position air and fuel.
   - L (LFS): On-off operation, low fire start, high fire run. Air controlled by damper arm on motorized gas valve.
   - H (LHL): Low-high-low-off firing conditions. Two-position air controlled by damper arm on motorized gas valve.
   - M (MOD): On-off operation, with proven low fire start. Proportional motor drives fuel metering valve and combustion air damper according to the firing conditions. Fixed damper pre-purge on 488-988R, open damper pre-purge on 988-1888.

Standard Gas Components and Sizes in Inches									
Boiler Model Number	Manual Hand Valve	Low Gas Pressure Switch	Gas Pressure Regulator	Safety Gas Valve	Motorized Operating Gas Valve	Motorized Operating Gas Valve w/ Proof of Closure	Diaphragm Operating Gas Valve	Manual Checking Gas Valve	High Gas Pressure Switch
488R	1-¼	Optional	1-¼	1	n/a	n/a	1-¼	1	Optional
488	1-¼	Optional	1-¼	1	n/a	n/a	1-¼	1	Optional
588	1-¼	Optional	1-¼	n/a	1-¼	n/a	1-¼	1-¼	Optional
688	1-½	Optional	1 ½	n/a	1-½	n/a	1-½	1-½	Optional
788	1-½	Optional	1 ½	n/a	2	n/a	2	2	Optional
888	1-½	Optional	1 ½	n/a	2	n/a	2	2	Optional
988R	1-½	Optional	1 ½	n/a	2	n/a	2	2	Optional
988	1-½	Standard	1 ½	n/a	2	n/a	2	2	Standard
1088R	1-½	Standard	1 ½	n/a	2	n/a	2	2	Standard
1088	2	Standard	2	n/a	2	n/a	2	2	Standard
1188	2	Standard	2	n/a	2	n/a	2	2	Standard
1288	2-½	Standard	2-½	n/a	2	n/a	2-½	2	Standard
1388	2-½	Standard	2-½	n/a	2	n/a	2-½	2	Standard
1488	2-½	Standard	2-½	n/a	2	n/a	2-½	2	Standard
1588	2-½	Standard	2-½	n/a	2	n/a	2-½	2	Standard
1688R	2-½	Standard	2-½	n/a	2	n/a	2-½	2	Standard
1688	2-½	Standard	2-½	n/a	2	2”	2-½	2	Standard
1788	2-½	Standard	2-½	n/a	2-½	2-½	2-½	2-½	Standard
1888	2-½	Standard	2-½	n/a	2-½	2-½	2-½	2-½	Standard

8. Light Oil Control Systems:
   - A (OO): On-off operation, fixed air. Single-position air and fuel.
   - L (LHO): On-off operation, low fire start, high fire run. Two-position air, two-position oil.
   - H (LHL): Low-high-low-off firing conditions. Two-position air, two-position oil.
   - M (MOD): On-off operation, with proven low fire start. Proportional motor drives fuel metering valve and combustion air damper according to the firing conditions. Fixed damper pre-purge on 488-1088R, open damper pre-purge on 1088-1888.
9. Gas/Light Oil Control Systems:
   - A/A: Combines gas and light oil characteristics listed above.
   - L/L (LHO/LHO): Combines gas and light oil characteristics listed above.
   - H/H (LHL/LHL): Combines gas and light oil characteristics listed above.
   - M/M (MOD/MOD): Combines gas and light oil characteristics listed above.
10. 120/60/1 control circuit is used for all burners.
11. Control circuit transformer is available as an option.
12. Motor starter contactor will be furnished for all units.
13. Combustion Controls:
    a) R7184A combustion control uses cadmium cell for flame detector to monitor oil burner flame, also furnishes intermittent ignition.
    b) RM7897 flame safeguard control uses ultraviolet electronic flame detector to monitor gas or oil burner flame and provides pre-purge programming. “A” models provide intermittent pilot; “C” models provide interrupted pilot and RUN/TEST switch.
    c) RM7840M, E110/EPD390 flame safeguard control monitors the oil or gas burner flame, provides pre-purge and post-purge programming. Timed low fire start is provided by means of timing built into control. Control is used with UL on-off (low fire start) systems. Ultraviolet sensitive electronic flame detector is standard with infrared detector available.
    d) RM7840L, E110/EPD170 flame safeguard control monitors the oil or gas burner flame, provides pre-purge and post-purge programming, provides switching necessary to allow firing rate motor to be driven to both low fire and high fire positions, prevents start-up if pre-ignition interlocks are open and has low fire start proving circuit. In the event pre-ignition interlock circuit or running interlock circuit does not “prove”, system will lock out on safety. Ultraviolet sensitive electronic flame detector is standard with infrared detector available.

Notes

e) RM7800L, E110/EP170 flame safeguard control monitors the oil or gas burner flame with digital readout control system, provides pre-purge and post-purge programming, provides switching necessary to allow firing rate motor to be driven to both low fire and high fire position, prevents start-up if pre-ignition interlocks are open and has low fire start proving circuit. In the event pre-ignition interlock circuit or running interlock circuit does not "prove", system will lock out on safety. Ultraviolet sensitive electronic flame detector is standard with infrared detector available.

14. Airflow safety switch is standard for all gas and combination gas/light oil units.
15. Burners will be completely assembled and wired (except gas train) and factory test-fired.
16. Burners listed by Underwriters Laboratories, Inc., state of Connecticut, Fire Marshal state of Massachusetts, city of New York MEA, and others.
17. Special controls can be provided to meet other code requirements not listed. Consult your local Weil-McLain distributor/agent or sales office.
18. Electric gas pilot is standard equipment on all gas and combination gas/light oil units and on oil units 1688-1888.
    Direct spark ignition is standard on light oil units 488R-1688R. Direct spark ignition is optional on combination gas/ light oil units 488R-1688R.
    Consult your local Weil-McLain distributor/agent or sales offices.
19. Available for Low NOx applications. Consult your local Weil-McLain distributor/agent or sales offices.

Flame Safeguards Provided with Listed Control Systems by Code

GAS BURNERS

Boiler model number	UL				FM				CSD-1				IRI			
	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD
488R-488	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897C	RM7897C	RM7897C	RM7840L
588-988R	– –	RM7897A	RM7897A	RM7897A	– –	RM7897A	RM7897A	RM7897A	– –	RM7897A	RM7897A	RM7897A	– –	RM7897C	RM7897C	RM7840L
988-1888	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L

LIGHT OIL BURNERS

Boiler model number	UL				FM				CSD-1				IRI			
	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD
488R	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	RM7897C	RM7897C	RM7897C	RM7840L
488-588	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	RM7897A	RM7897A	RM7897A	RM7895A	RM7897C	RM7897C	RM7897C	RM7840L
688-988R	– –	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	– –	RM7897A	RM7897A	RM7895A	– –	RM7897C	RM7897C	RM7840L
988-1088R	– –	R7184A	R7184A	R7184A	R7184A	R7184A	R7184A	RM7840L	– –	RM7897A	RM7897A	RM7895A	– –	RM7897C	RM7897C	RM7840L
1088-1888	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L

GAS/LIGHT OIL BURNERS

Boiler model number	UL				FM				CSD-1				IRI			
	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD	A/OO	L/LHO	H/LHL	MOD
488R-488	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7840L
588-988R	– –	RM7897A	RM7897A	RM7897A	– –	RM7897A	RM7897A	RM7897A	– –	RM7897A	RM7897A	RM7897A	– –	RM7897A	RM7897A	RM7840L
988-1888	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L	– –	RM7897C	RM7897C	RM7840L

WEIL-McLAIN®

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