

# 94

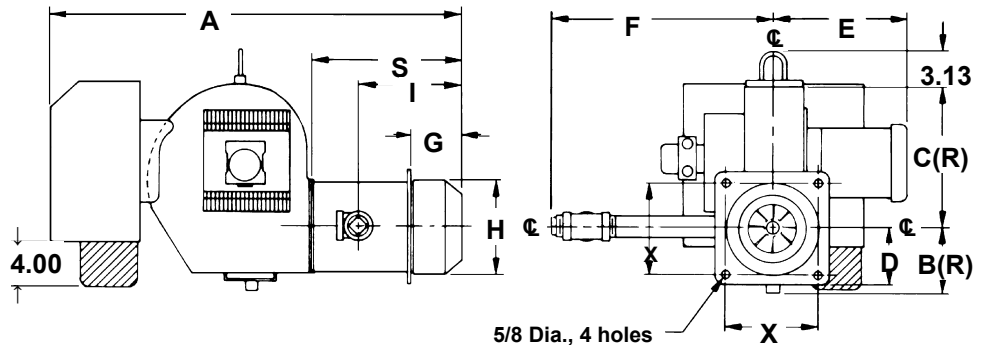
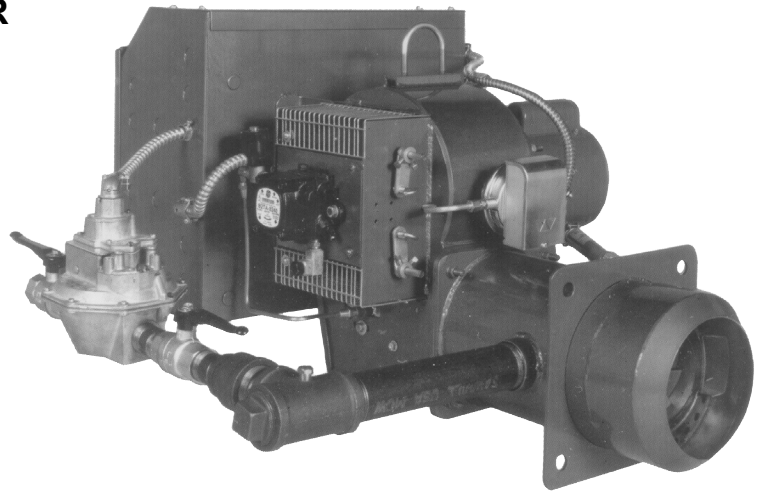
**Steam Boilers - Series 4**  
for use with Gas, Light Oil, &  
Gas/Light Oil – Fired Burners

## Burner specifications and data

# Power-Flame burners

Model **WCR** *Flame retention type, for gas, light oil or combination gas/oil firing*

Model **WCR**



Dimensions (inches)

Burner model	A	B	C	D	E	F	G	H	I	S	X
WCR4	50.00	7.31	17.69	7.00	18.50	28.00	6.00	12.13	14.25	19.13	12.00
WCR5	50.00	7.31	17.69	7.00	18.50	26.50	6.00	12.13	14.25	19.13	12.00

\*Required for installation of standard control components



Boiler model number	Burner Input		Positive pressure in firebox In. w.c.	Standard burner model designation			Standard combustion control			Standard control system			Burner motor 3450 RPM			Standard motor 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	
1494	32.50	4550	2.74"	WCR4-G-25	WCR4-OA	WCR4-GO-25	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
1594	35.00	4900	2.78"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
1694	37.50	5250	2.82"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
1794	40.00	5600	2.85"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
1894	42.50	5950	2.89"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
1994	45.00	6300	2.93"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phases
2094	47.50	6650	2.97"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	5	5	5	3-Phase*
2194	50.00	7000	3.01"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	7.5	7.5	7.5	3-Phase*
2294	52.50	7350	3.05"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	7.5	7.5	7.5	3-Phase*
2394	55.00	7700	3.08"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	7.5	7.5	7.5	3-Phase*
2494	57.50	8050	3.12"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	7.5	7.5	7.5	3-Phase*
2594	60.00	8400	3.16"	WCR5-G-30B	WCR5-OB	WCR5-GO-30B	YB110	YB110	YB110	MOD	MOD	MOD/MOD	7.5	7.5	7.5	3-Phase*

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

Standard Gas Control Components And Sizes In Inches								
Boiler Model Number	Manual Hand Valve	Low Gas Pressure Switch	Gas Pressure Regulator	Motorized Operating Gas Valve	Motorized Operating Gas Valve (With Proof Of Closure)	Safety Gas Valve	Manual Checking Gas Valve	High Gas Pressure Switch
1494	2 1/2	Standard	Standard	2 1/2	2 1/2	2 1/2	2 1/2	Standard
1594-2594	3	Standard	Standard	3	3	3	3	Standard

- Notes**
- 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.
  - Manifold pressures and combustion air settings shown are for initial start-up. Final pressure and air settings should be determined after checking actual gas flow and combustion readings.
- Gas Control Systems**
- LHO: On-off operation, low fire start, high fire run. 894-1894 – two-position air controlled by damper arm on motorized gas valve, fixed damper pre-purge. 1494-1894 – two-position air controlled by separate motor, open damper pre-purge.
  - LHL: Low-high-low-off firing conditions. 894-1894 – two-position air controlled by damper arm on motorized gas valve, fixed damper pre-purge. 1494-1894 – two-position air controlled by separate motor, open damper pre-purge.
  - MOD: On-off operation, with proven low fire start and full modulating firing conditions with combustion air control. Proportional motor drives fuel metering valve and combustion air damper according to the firing conditions. Open damper pre-purge.

# Burner Specification and Data Sheet



Boiler model number	Pressure drop thru gas train Inches w.c.	Gas test tee pressure Inches w.c.	Gas pressure required control Inches		Oil nozzle (one per unit)				Oil pressures PSIG	
			Minimum	Maximum	GPH @ 100 PSIG	Brand	Type	Spray angle	Pump capacity	High fire
1494	5.09	3.71	8.80	28.00	20.00	Delavan	BPS	80°	300	264
1594	5.24	3.86	9.10	28.00	22.00	Delavan	BPS	80°	300	253
1694	6.04	4.06	10.10	28.00	24.00	Delavan	BPS	80°	300	244
1794	6.94	4.26	11.20	28.00	24.00	Delavan	BPS	80°	300	278
1894	7.82	4.48	12.30	28.00	26.00	Delavan	BPS	80°	300	267
1994	3.08	4.72	7.80	28.00	28.00	Delavan	BPS	80°	300	258
2094	3.44	4.96	8.40	28.00	28.00	Delavan	BPS	80°	300	288
2194	3.88	5.22	9.10	28.00	30.00	Delavan	BPS	80°	300	278
2294	4.22	5.48	9.70	28.00	35.00	Delavan	BPS	80°	300	229
2394	4.65	5.75	10.40	28.00	35.00	Delavan	BPS	80°	300	247
2494	5.06	6.04	11.10	28.00	35.00	Delavan	BPS	80°	300	275
2594	5.16	6.34	11.50	28.00	35.00	Delavan	BPS	80°	300	294

\* Gas pressure shown are for standard gas train arrangement  
\*\* Primary manufacturer. For alternate nozzles, contact Power-Flame

## Notes

- 8 Light Oil Control Systems:
  - LHO: On-off operation, low fire start, high fire run. Two-position air, two-position oil. Fixed damper pre-purge on 894-1194, open damper pre-purge on 1294-1894.
  - LHL: Low-high-low-off firing conditions. Two-position air, two-position oil. Fixed damper pre-purge on 894-1194, open damper pre-purge on 1294-1894.
  - 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 the firing conditions. Open damper pre-purge.
- 9 Gas/Light Oil Control Systems:
  - LHO/LHO: Combines gas and light oil characteristics listed above.
  - LHL/LHL: Combines gas and light oil characteristics listed above.
  - 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 or contactor will be furnished for all burners.
- 13 Combustion Controls:
  - a) R7284P 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) 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. Control is standard equipment with IRI – modulating (proven low fire start) system. Ultraviolet sensitive electronic flame detector is standard with infrared detector available.
  - d) 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.



## Notes

- 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 Direct spark ignition is standard on light oil units 894-1794. Electric-gas pilot is standard on gas and combination gas/light oil units and on light oil units 1894-2594. Direct spark ignition is optional on combination gas/light oil units. Consult your local Weil-McLain distributor/agent or sales office.

### Flame Safeguards Provided with Listed Control Systems by Code

#### GAS BURNERS

Boiler model number	UL			FM			CSD-1			IRI		
	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD
1494-2594	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L

#### LIGHT OIL BURNERS

Boiler model number	UL			FM			CSD-1			IRI		
	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD
1494-2594	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L

#### COMBINATION GAS/OIL BURNERS

Boiler model number	UL			FM			CSD-1			IRI		
	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD	LHO	LHL	MOD
1494-2594	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L	YB110	YB110	RM7840L