

# 80 Water & steam boilers

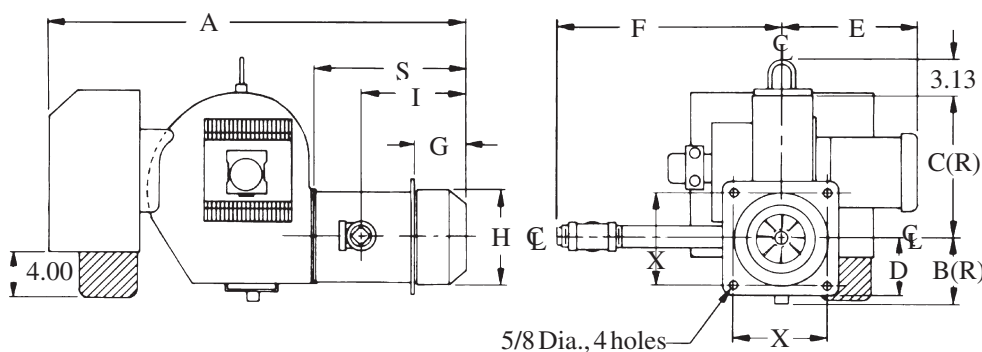
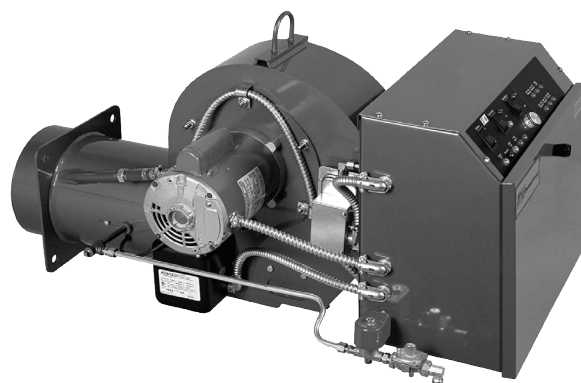
for use with Gas, Light Oil, &  
Gas/Light Oil - Fired Burners

## 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 number	A	B(R)	C(R)	D	E	F*	G	H	I	S	X
WCR1	34.13	5.56	14.50	4.63	12.25	20.00	3.25	7.25	7.38	12.63	7.25
WCR2	39.13	6.13	14.00	5.25	14.00	20.00	3.25	8.75	8.50	13.38	8.50

\* Required for installation of standard control components.



Boiler model number	Burner Input (Forced Draft)		Positive pressure in firebox in. w.c.	Standard burner model designation			Standard combustion control			Standard control system			Burner motor 3450 RPM H.P.			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	Gas	Light Oil or Gas/Light Oil
480	3.40	494	0.27	WCR1-G-10	WCR1-O	WCR1-GO-10	RM7897A	R7284P	RM7897C	OO	OO	OO/OO	1/3	1/3	1/3	120/60/1	120/60/1
580	4.45	641	0.27	WCR1-G-10	WCR1-O	WCR1-GO-10	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/3	1/3	1/3	120/60/1	120/60/1
680	5.50	789	0.27	WCR1-G-10	WCR1-O	WCR1-GO-10	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/3	1/3	1/3	120/60/1	120/60/1
780	6.50	937	0.26	WCR1-G-12	WCR1-O	WCR1-GO-12	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	1/2	1/2	120/60/1	120/60/1
880	7.50	1084	0.26	WCR1-G-12	WCR1-O	WCR1-GO-12	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	1/2	1/2	120/60/1	120/60/1
980	8.50	1232	0.26	WCR1-G-12	WCR1-O	WCR1-GO-12	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	1/2	1/2	120/60/1	120/60/1
1080	9.60	1379	0.26	WCR1-G-12	WCR1-O	WCR1-GO-12	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	1/2	1/2	120/60/1	120/60/1
1180	10.60	1527	0.25	WCR2-G-15	WCR1-OA	WCR2-GO-15	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	3/4	3/4	120/60/1	240/60/1
1280	11.60	1674	0.25	WCR2-G-15	WCR1-OA	WCR2-GO-15	RM7897A	R7284P	RM7897C	OO	LHO	OO/RALFS	1/2	3/4	3/4	120/60/1	240/60/1

Standard Gas Control Components and Sizes in Inches				
Boiler model number	Manual hand valve (point of field connection)	Combination diaphragm operating gas valve and regulator	Safety gas valve	Manual checking gas valve
480–1080	1	1	1	1
1180–1280	1	1	1 1/4	1 1/4

## 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 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.
- Gas tee pressures shown are for initial start-up. Final pressure should be determined after checking actual gas flow and combustion readings.
- Gas Control Systems:
  - OO: On-off operation, low fire start, high fire run. Single-position air, adjustable opening gas valve.
  - LHO: On-off operation, low fire start, high fire run. Two-position air controlled by damper arm on motorized gas valve, fixed damper pre-purge.
  - LHL: Low-high-low-off firing conditions. Two-position air controlled by damper arm on motorized gas valve, fixed 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. Fixed damper pre-purge.
- Light Oil Control Systems:
  - RALFS: On-off operation, reduced air, low fire start, high fire run. Two-position air, two-position oil.
  - OO: On-off operation, low fire start, high fire run. Single-position air, single-position oil.
  - LHO: On-off operation, low fire start, high fire run. Two-position air, two-position oil. Fixed damper.
  - LHL: Low-high-low-off firing conditions. Two-position air, two-position oil. Fixed 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 the firing conditions. Fixed damper pre-purge.

# Burner Specification and Data Sheet



Boiler model number	Pressure drop thru gas train Inches w.c.	Gas tee pressure Inches w.c.	Side orifice drill size Inches	Gas pressure required at gas control inlet Inches w.c. (note 1)		Initial low fire damper setting Inches		Oil nozzle (one per unit)				Oil pressures PSIG			Fuel unit Burner-motor driven 3450 RPM	
				Min.	Max.	Top	Bottom	GPH @ 100 PSIG	Brand (note 2)	Type	Spray angle	Pump capacity	High fire	Low fire	Type	Gear GPH
480	0.50	3.60	13/32	4.10	14.00	1/4	Closed	2.00	Delavan	B	80°	300	290	--	CV4	19
580	0.90	3.00	1/2	3.90	14.00	1/4	Closed	2.75	Delavan	B	60°	300	265	100-150	B2TA-8850	29
680	1.40	3.20	9/16	4.60	14.00	1 1/2	Closed	3.25	Delavan	B	60°	300	290	100-150	B2TA-8850	29
780	1.90	2.70	11/16	4.60	14.00	1/2	Closed	4.00	Delavan	B	80°	300	270	100-150	B2TA-8850	29
880	2.60	2.40	7/8	5.00	14.00	3/8	Closed	4.50	Delavan	B	80°	300	280	100-150	B2TA-8850	29
980	3.20	2.10	1.0	5.40	14.00	1/2	Closed	5.00	Delavan	B	60°	300	290	100-150	B2TA-8850	29
1080	4.10	1.80	--	5.90	14.00	1/2	Closed	6.00	Delavan	B	70°	300	260	100-150	B2TA-8850	29
1180	3.50	2.70	7/8	6.20	14.00	1/2**	Closed	6.50	Delavan	B	80°	300	270	100-150	B2TA-8851	35
1280	4.20	2.90	15/16	7.00	14.00	1/2**	Closed	7.00	Delavan	B	80°	300	275	100-150	B2TA-8851	35

Note 1: Gas pressure shown is for standard gas train arrangements.

Note 2: Primary manufacturer. For alternate nozzles, contact Power-Flame.

\*\* Tube slot at 25% open.

## Notes

- 9 Gas/Light Oil Control Systems:
  - OO/RALFS: Combines gas and light oil characteristics listed above.
  - OO/OO: Combines gas and light oil characteristics listed above.
  - LHO/LHO: 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 relay or contactor will be furnished for all units except 480 through 680.
- 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/EPD160 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/EP160 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 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.
- 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 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.



## Flame Safeguards Provided with Listed Control Systems by Code

### LIGHT OIL BURNERS

Boiler model number	UL				FM				CSD-1				IRI			
	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD
480	R7284P	--	--	--	R7284P	--	--	--	R7284P	--	--	--	RM7897C	--	--	--
580-780	--	R7284P	R7284P	R7284P	--	R7284P	R7284P	R7284P	--	R7284P	R7284P	R7284P	--	RM7897C	RM7897C	RM7840L
880-1280	--	R7284P	R7284P	R7284P	--	R7284P	R7284P	R7284P	--	R7284P	R7284P	R7284P	--	RM7897C	RM7897C	RM7840L

### GAS BURNERS

Boiler model number	UL				FM				CSD-1				IRI			
	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD	OO	LHO	LHL	MOD
480-580	RM7897A	--	--	--	RM7897A	--	--	--	RM7897A	--	--	--	RM7897C	--	--	--
680-1280	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897A	RM7897C	RM7897C	RM7897C	RM7840L

### COMBINATION GAS/OIL BURNERS

Boiler model number	UL					FM					CSD-1					IRI				
	OO	OO/ RALFS	LHO	LHL	MOD	OO	OO/ RALFS	LHO	LHL	MOD	OO	OO/ RALFS	LHO	LHL	MOD	OO	OO/ RALFS	LHO	LHL	MOD
480	RM7897C	--	RM7897C	RM7897C	RM7897C	RM7897C	--	RM7897C	RM7897C	RM7897C	RM7897C	--	RM7897C	RM7897C	RM7897C	RM7897C	--	RM7897C	RM7897C	RM7840L
580-1280	--	RM7897C	RM7897C	RM7897C	RM7897C	--	RM7897C	RM7897C	RM7897C	RM7897C	--	RM7897C	RM7897C	RM7897C	RM7897C	---	RM7897C	RM7897C	RM7897C	RM7840L