

# P-K MACH'n'Roll Pool Heater®

Models MnRP-300, MnRP-399, MnRP-500, MnRP-750 & MnRP-1050  
Natural Gas, Liquid Propane, or Dual Fuel with NURO® Control

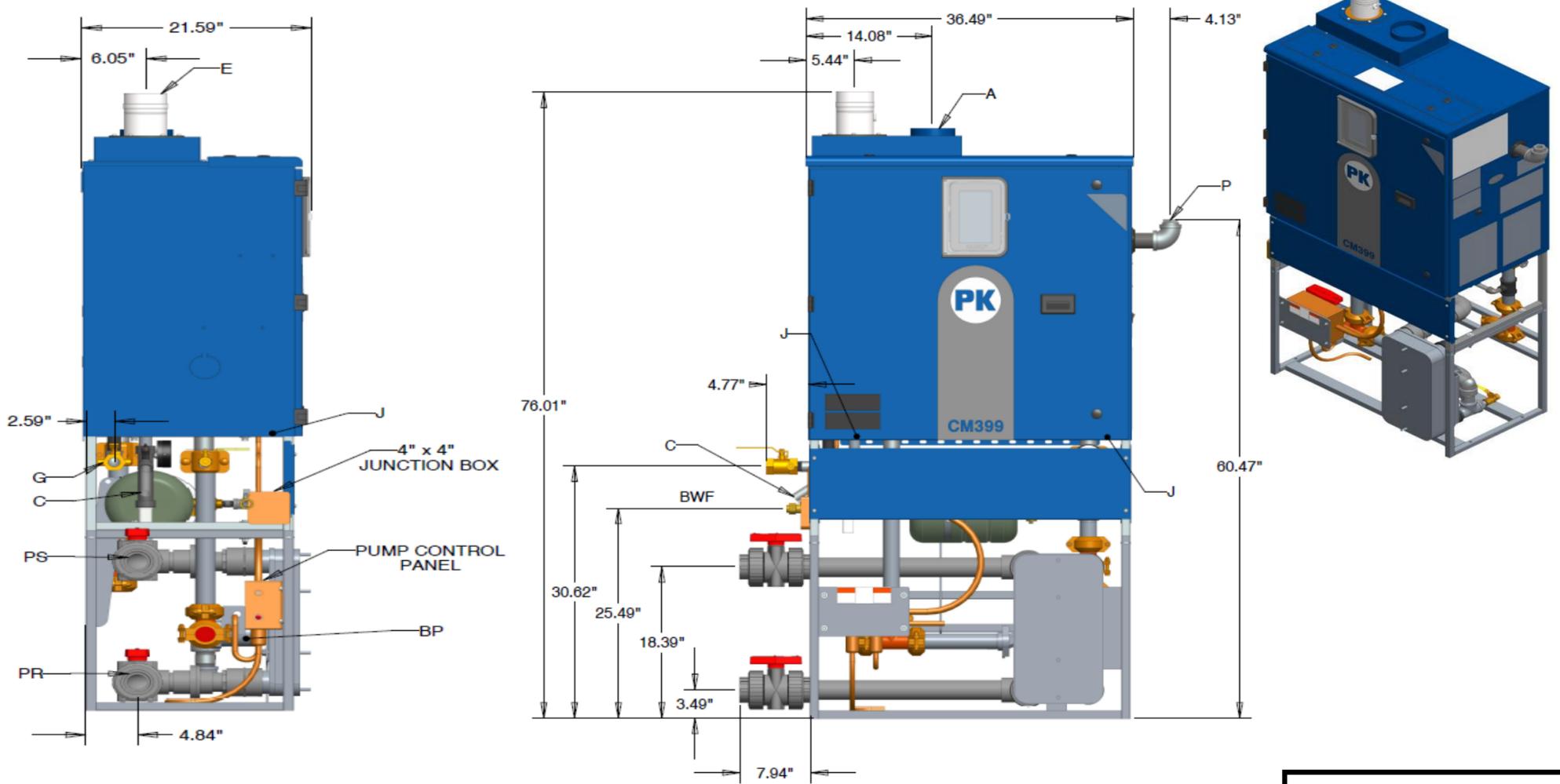


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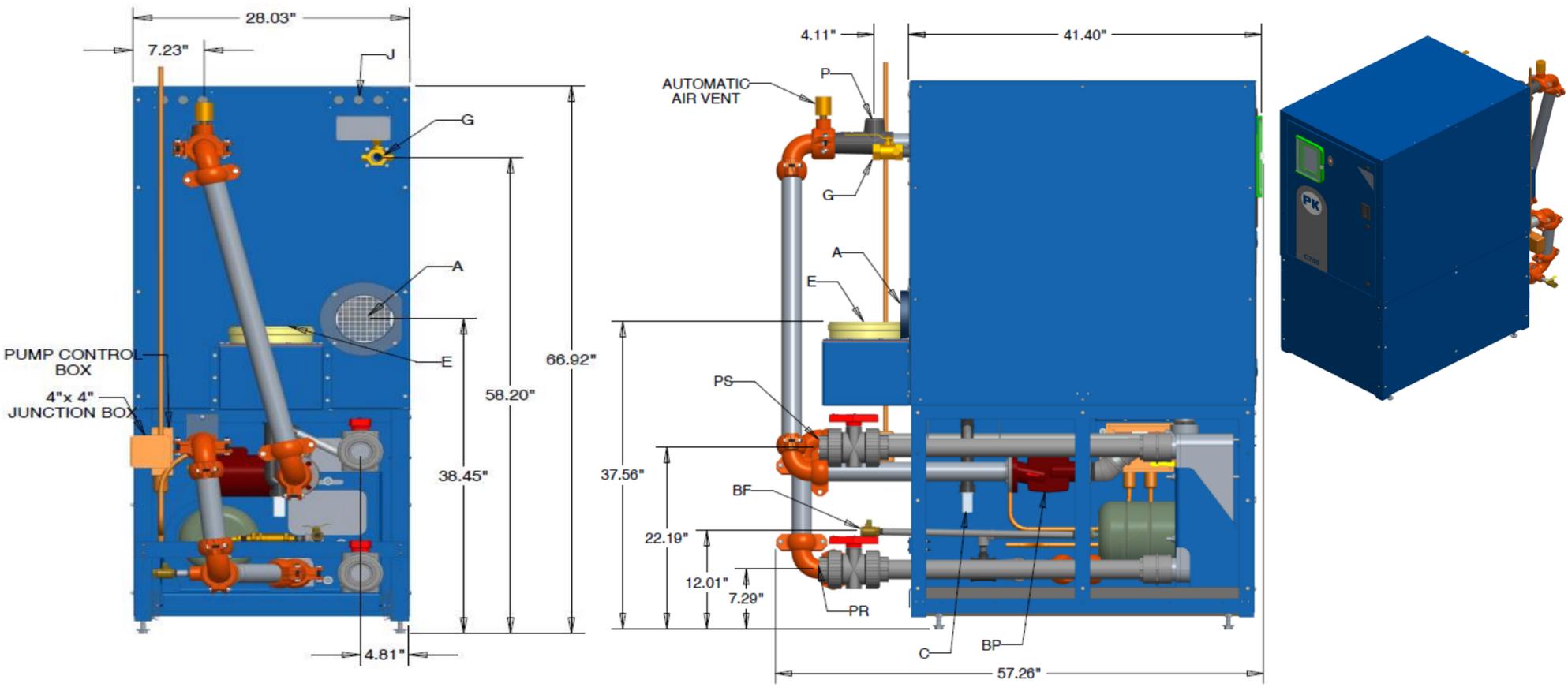
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**MnRP300 - MnRP500**



**MnRP750 - MnRP1050**



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Components		
<input type="checkbox"/> <b>Boiler Components</b>		
A	Combustion Air Inlet [MnRP300-500]	5" dia. stub
	Combustion Air Inlet [MnRP750&1050]	6" dia. Stub
C	Condensate Drain	3/4" hose
E	Exhaust Vent [MnRP300-500]	4"
	Exhaust Vent [MnRP750]	6"
	Exhaust Vent [MnRP1050]	8"
J	Wiring Junction Boxes	inside cabinet
P	Pressure Relief Valve	see list for options
R*	Boiler Return, Victaulic® clamp [MnRP300-500]	1-1/2" pipe, grooved
	Boiler Return, Victaulic clamp [MnRP750&1050]	2" pipe, grooved
S*	Boiler Supply, Victaulic clamp [MnRP300-500]	1-1/2" pipe, grooved
	Boiler Supply, Victaulic clamp [MnRP750&1050]	2" pipe, grooved
BWF	Boiler Water Fill	1/2" Female NPT Ball Valve
BP	Boiler Water Flow Device	3 speed circulation pump
<input type="checkbox"/> <b>Pool Water Components</b>		
PR	Domestic Hot Water Return	2" CPVC, Socket, Union
PS	Domestic Hot Water Supply, Victaulic® clamp	2" CPVC, Socket, Union
<input type="checkbox"/> <b>Single Fuel Boiler (NG or LP)</b>		
G	Gas Connection	1" NPT-F

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\*Only available with Comfort Heat Kit

Boiler Controls	
ASME CSD-1 is standard	
Complies with: GE GAP (IRI) guidelines GAP.4.1.0 and GAP.4.1.3 FM Global 6-4 Section 1.0	
<b>Components:</b>	
Main Gas Train with Dual Shut-off	
Integrated Boiler Control, NURO™ Series	
Operating Thermostat, 70°-195°F (21°-91°C)	
High Limit Thermostat, Manual Reset, 100°-197°F (38°-93°C)	
High Exhaust Back Pressure Switch	
LWCO, Probe Type, Manual Reset	
Combustion Air Proving Switch, Differential Pressure Type	
Combustion Blower, Variable Speed, 300 Watt	

Electrical Requirements		
Power Supply		120V, 1ph, 60Hz
MnRP 300-500	Boiler Operating Current	Less than 5 Amps
	DHW Electrical Requirements	4.6 Amps
	Recommended Min Circuit Capacity	15 Amps
MnRP 750-1050	Boiler Operating Current	Less than 6 Amps
	DHW Electrical Requirements	9.6 Amps
	Recommended Min Circuit Capacity	20 Amps

Pressure Relief Valve/Press-Temp Gauge		
<input type="checkbox"/> 30 PSIG 3/4" x 1"	MnRP300-500	0-100psi/30-240°F
<input type="checkbox"/> 30 PSIG 1" x 1"	MnRP750&1050	0-100psi/30-240°F
Shipped Loose for Field Installation		

Ratings and Capacities					
Fuel Selection	<input type="checkbox"/> Natural Gas (NG) <input type="checkbox"/> Propane Gas (LP)				
Model Selection	<input type="checkbox"/> MnRP300	<input type="checkbox"/> MnRP399	<input type="checkbox"/> MnRP500	<input type="checkbox"/> MnRP750	<input type="checkbox"/> MnRP1050
Max Inlet Gas Pressure	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.
Min Inlet Gas Pressure	NG: 3.5" w.c.	NG: 3.5" w.c.	NG: 6" w.c.	NG: 3.5" w.c.	NG: 3.5" w.c.
	LP: 7.0 " w.c.	LP: 7.0 " w.c.	LP: 7.0 " w.c.	LP: 7.0 " w.c.	LP: 7.0 " w.c.
Input, BTU/hr	300,000	399,000	500,000	750,000	1,050,000 (NG) 1,000,000 (LP)
Output, BTU/hr	280,500	371,070	460,000	712,500	987,000 (NG) 940,000 (LP)
Boiler HP	8.3	11.0	13.7	21.3	29.5
Operating Weight	450 lbs.	453 lbs.	453 lbs.	1125 lbs.	1225 lbs.
Boiler Water Content	3.22 gallons	3.59 gallons	3.59 gallons	10.63 gallons	12.03 gallons
Shipping Dimensions	53"x29"x83"	53"x29"x84"	53"x29"x84"	36"x84"x74"	36"x84"x72"
Shipping Weight	579 lbs.	582 lbs.	582 lbs.	1225 lbs.	1266 lbs.

A.S.M.E. Section IV Design Data					
Maximum Pressure	80 psig				
Maximum Temperature	250°F				
Maximum Operating Temperature	194°F				
	MnRP300	MnRP399	MnRP500	MnRP750	MnRP1050
Heated Wet Surface Area	12.29 sq. ft.	15.72 sq. ft.	15.72 sq. ft.	18.35 sq. ft.	25.69 sq. ft.
Flow Rate @ 20°F	28 GPM	37 GPM	46 GPM	72 GPM	100 GPM
Flow Rate @ 40°F	14 GPM	18 GPM	23 GPM	36 GPM	50 GPM

ASME Section VIII - Div 1. Design Data					
Construction Type	Single Wall Brazed Plate		Double Wall Brazed Plate		
Maximum Pressure	150 psig				
Materials	316 Stainless Steel Plates w/ Copper Brazing				
	MnRP300	MnRP399	MnRP500	MnRP750	MnRP1050
Single Wall Surface Area	34.8 sq. ft.		58.0 sq. ft.		
Double Wall Surface Area	34.8 sq. ft.		92.8 sq. ft.		

Recommended Clearance for Service Access <sup>†</sup>	
MnRP300 - MnRP500	Front - 30"   Rear - 0"   Top - 24"   Right Side - 24"   Left Side - 24"
MnRP750 & MnRP1050	Front - 30"   Rear - 24"   Top - 24"   Right Side - 24"   Left Side - 24"

<sup>†</sup> Refer to Installation and Owner's Manual for complete clearance dimension details

Venting	
This MACH® Boiler requires Category IV venting (condensing-positive pressure) or Category II venting** (condensing-negative pressure) as defined in ANSI Z223.1/NFPA 54/CSA-B.149 Latest Edition.	

\*\* Category II venting must include optional combustion air damper



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The below values are determined using both Department of Energy and the National Swimming Pool Foundation standards. These are paired by pool size as well as equipment size according to these recommendations. If you have additional questions feel free to contact your local Patterson-Kelley Representative for further information about your specific pool heating requirements.

**Not Suitable for Salt Pools**

Pool Size with Respect to Equipment Size												
<b>20°F Rise</b>						<b>25°F Rise</b>						
Correction Factor	10	5	3.4	2.5		Correction Factor	12.5	6.3	4.25	3		
Heat Time (Hours)	24	48	72	96		Heat Time (Hours)	24	48	72	96		
	<b>Pool Size (thousands of gallons)</b>					<b>Pool Size (thousands of gallons)</b>						
MACH'n'Rool Pool Heater Size (kBTU)	1050	105				1050	84					
	750					750		119				
	500					500			118	167		
	399		80			399						
	300					300						
<b>30°F Rise</b>						<b>40°F Rise</b>						
Correction Factor	15	7.5	5.1	3.75		Correction Factor	20	10	6.8	5		
Heat Time (Hours)	24	48	72	96		Heat Time (Hours)	24	48	72	96		
	<b>Pool Size (thousands of gallons)</b>					<b>Pool Size (thousands of gallons)</b>						
MACH'n'Rool Pool Heater Size (kBTU)	1050		140			1050						
	750					750						
	500				133	500				100		
	399	27				399						
	300					300						
<b>50°F Rise</b>						<b>60°F Rise</b>						
Correction Factor	25	12.5	8.5	6.25		Correction Factor	30	15	10.2	7.5		
Heat Time (Hours)	24	48	72	96		Heat Time (Hours)	24	48	72	96		
	<b>Pool Size (thousands of gallons)</b>					<b>Pool Size (thousands of gallons)</b>						
MACH'n'Rool Pool Heater Size (kBTU)	1050			124		1050		70				
	750					750	25		74			
	500	20				500					53	
	399		32			399						
	300					300						

Equipment Size with Respect to Pool Size											
Pool Type	Length (FT)	Width (FT)	Depth (FT) [average]	Gallons	Required Heating Time	Temperature High (°F)	Temperature Low (°F)	Air Temperature (°F)	BTU to Maintain	Startup load (BTU/hr)	Pool Heater Size (kBTU)
Olympic	164	82	6.5	653,887	1°F/hr	82	78	80	322,752	2,223,217 *	2 x 1050
Standard	75	67	4.5	169,153	1°F/hr	84	80	82	120,600	1,065,666 **	1050
Community	60	36	3.5	56,553	1°F/hr	84	80	82	51,840	356,282 **	399
Aerobic	60	36	3.5	56,553	1°F/hr	88	83	84	103,680	494,836 ***	500
Rehab	40	25	3.0	22,442	1°F/hr	95	91	84	132,000	196,364 ***	300
Outdoor	150	75	5.0	420,779	1-1.25°F/hr	84	80	70	1,890,000	2,650,909 **	3 x 1050
	140	70	5.0	366,545	1-1.25°F/hr	84	80	70	1,646,400	2,309,237 **	2 x 1050
	130	65	5.0	316,052	1-1.25°F/hr	84	80	70	1,419,600	1,991,127 **	2 x 1050
	120	60	5.0	269,299	1-1.25°F/hr	84	80	70	1,209,600	1,696,582 **	2 x 1050
	110	55	5.0	226,286	1-1.25°F/hr	84	80	70	1,016,400	1,425,600 **	2 x 1050
	100	50	5.0	187,013	1-1.25°F/hr	84	80	70	840,000	1,178,182 **	1050
	90	45	5.0	151,481	1-1.25°F/hr	84	80	70	680,400	954,327 **	1050
	80	40	5.0	119,688	1-1.25°F/hr	84	80	70	537,600	754,036 **	750
	70	35	5.0	91,636	1-1.25°F/hr	84	80	70	411,600	577,309 **	750
	60	30	5.0	67,325	1-1.25°F/hr	84	80	70	302,400	424,145 **	399
	50	25	5.0	46,753	1-1.25°F/hr	84	80	70	210,000	294,545 **	300
	40	20	5.0	29,922	1-1.25°F/hr	84	80	70	134,400	188,509 **	300

\* 20°F Rise @72hr  
 \*\* 25°F Rise @48hr  
 \*\*\* 35°F Rise @48hr



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