

**P-K MACH 'n' ROLL™
DOMESTIC HOT WATER AND
COMFORT HEAT SYSTEM**



HARSCO
INDUSTRIAL
Patterson-Kelley



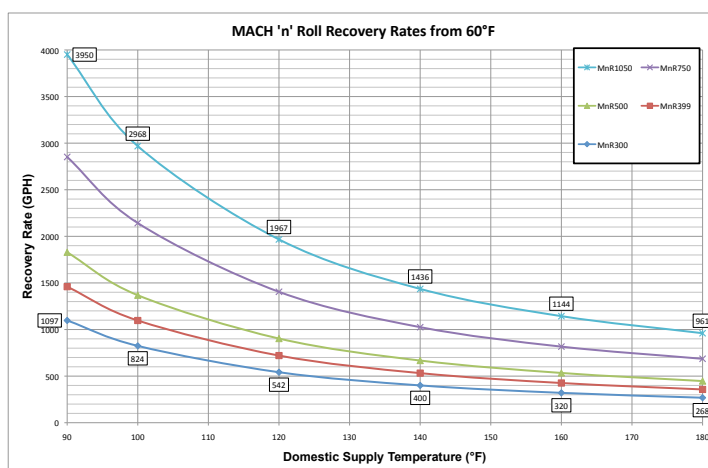
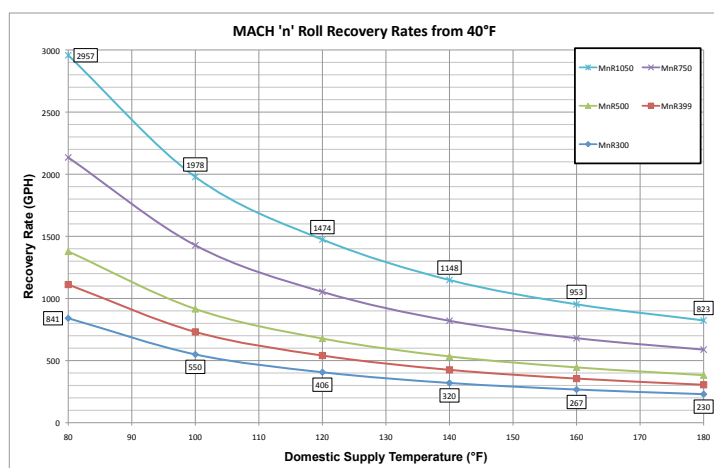
Harsco Industrial Patterson-Kelley continues to create innovative solutions that change the expectations of what a domestic hot water system can do.

The Harsco Industrial Patterson-Kelley difference.

Access to best-in-class technology, the strength of our people, and the reliability of our products are reasons alone to partner with Harsco Industrial Patterson-Kelley. But ultimately, customers rely on us for our commitment to provide the **right** solution with the lowest total cost of ownership in the industry.

We use a consultative approach. First, we understand your needs, then apply and integrate the hot water solution to best address the heating demand. We ensure that our customers consistently receive the highest level of technical and application support by utilizing over 135 years of experience. Our dedicated employees and factory trained service technicians to deploy these solutions.

P-K MACH 'n' ROLL™ Recovery Rates from 40°F & 60°F



Introducing the P-K MACH 'n' ROLL™


It's a matter of **size and scale**

The **P-K MACH 'n' ROLL™** is a highly efficient gas fired, condensing hot water and comfort heat system designed to produce reliable hot water with little-to-no scale build up. This gives the P-K MACH 'n' ROLL™ the long-term value and reliability you demand in a small footprint.

The P-K MACH 'n' ROLL™ is perfect for commercial building applications such as schools, office buildings, apartment buildings, hospitals and hotels.

Hard water is the #1 killer of hot water heating systems in the U.S.

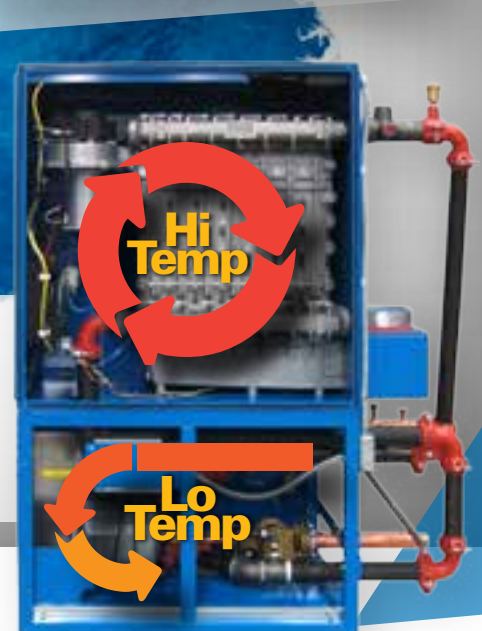
The MACH 'n' ROLL™ is designed to inhibit scale build-up.



85%
of the U.S. has
hard water.



The **P-K MACH 'N' ROLL™** uses lower approach temperatures to produce domestic hot water...this inhibits scale formation as well as increases efficiency.



2in1

Hot water and building heat combined in a compact easy to maintain design.

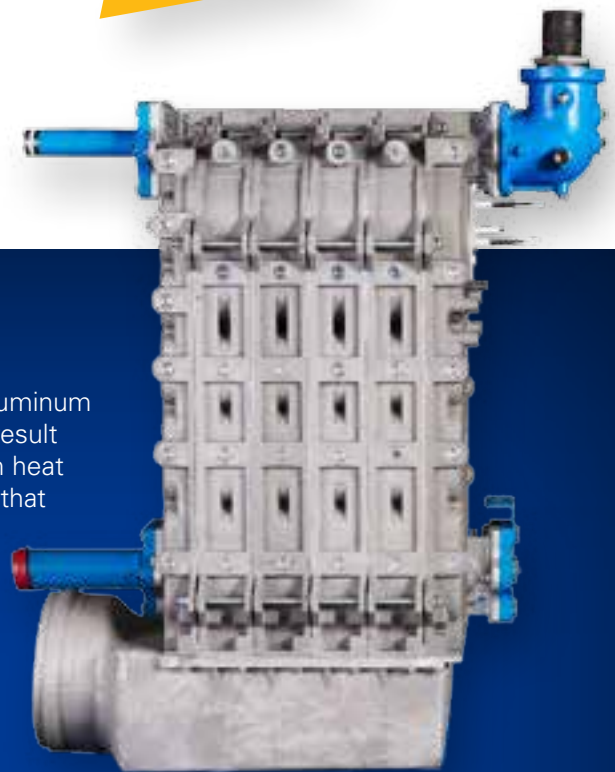
The P-K MACH 'n' ROLL™ system was designed with service in mind. The indirect heat exchanger section is fully accessible from the front of the unit. Inspect, clean, or repair the water side without having to "tear the boiler apart." For full access—isolate the boiler and domestic lines, remove couplings and unions, take off the front access panel.



Applicable to the MNR 1050, MNR 750

The Heat Engine—Reliable to the core.

The P-K MACH 'n' ROLL™ systems feature fully independent cast aluminum heat exchangers. Aluminum is easier to cast than other metals. The result is increased heat transfer surface for higher efficiency. The aluminum heat engine easily sheds condensate thanks to an aluminum oxide barrier that forms during use for extreme corrosion resistance.



Domestic Loop—Isolated for a longer life.

The P-K MACH 'n' ROLL™ condensing indirect water heating loop is fitted with a high quality stainless steel brazed plate and is designed to operate at temperatures between 120°F and 140° F to prevent scaling. These low approach temperatures protect your condensing boiler from the harsh conditions found in domestic water by isolating the boiler loop from the domestic hot water supply loop.



Ready-to-ROLL with 5 easy connections

The P-K MACH 'n' ROLL™ system needs only five connections to get it running. Ideal for replacement or new construction, each unit is delivered with the boiler loop ready to go, and only requires connections to:

- 1 Domestic Water Supply
- 2 Domestic Water Return
- 3 Electrical connection
- 4 Venting: Polypropylene, Stainless Steel, CPVC
- 5 Gas Connection

Models available

- **MnR 300** (300 MBTU/hr)
- **MnR 399** (399 MBTU/hr)
- **MnR 500** (500 MBTU/hr)
- **MnR 750** (750 MBTU/hr)
- **MnR 1050** (1050 MBTU/hr)



Expand Your Options

The P-K MACH 'n' ROLL™ 750 and 1050 are available as a factory skid-mounted package with a tank. Piped, wired, and ready to connect to utilities and plumbing for streamlined installation.

Maximize efficiency with NURO® touch-screen control system.

Get long-term ROI with this simple to set-up, and easy-to-maintain boiler control system.



The NURO® touch-screen control system provides the most intuitive interface in the industry. Designed to maximize efficiency, NURO® monitors and modulates the combustion and ignition of the boiler to maintain the desired outlet temperature. The lead/lag setup and boiler start rotation ensures run times are equally distributed across each unit in the system, extending the life of the system.

EASY TO USE: Touch-screen interface provides simple step-by-step navigation for set-up, maintenance, custom configurations, efficiency, help and more.

EASY TO SET-UP: Whether installing a single boiler or cascading, with a simple touch, select from a variety of pre-configured settings for optimal system efficiency.

EASY TO MAINTAIN: Software upgrades provide long-term upgradability, which eliminates hardware replacement and costly service calls.



The NURO® control easily interfaces with building management systems (BMS) via the integrated MODBUS® RS-485 protocol or a 0-10 vdc analog control signal. BACnet, LONWORKS®, and METASYS® N2 are also available by adding a protocol converter for even greater application flexibility.

MODBUS® is a registered trademark of Schneider Automation Inc. LONWORKS® is a registered trademark of Echelon Corporation. METASYS® is a registered trademark of Johnson Controls, Inc.



BOILER RATINGS	300	399	500	750	1050
EFFICIENCY	93.5%	93.0%	92.0%	95.0%	94.0%
INPUT, BTU/HR.	300,000	399,000	500,000	750,000	1,050,000
OUTPUT, BTU/HR	280,500	371,070	460,000	712,500	987,000
INDOOR/OUTDOOR	Indoor	Indoor	Indoor	Indoor	Indoor
TURNDOWN	5:1	5:1	5:1	5:1	5:1
FUEL	NG, LP	NG, LP	NG, LP	NG, LP	NG, LP

OPERATING PARAMETERS	300	399	500	750	1050
BOILER HP	8.3	11	13.7	21.3	29.5
MAX GAS PRESSURE	14" w.c.	14" w.c.	14" w.c.	14" w.c.	14" w.c.
MIN GAS PRESSURE	3.5" w.c.	3.5" w.c.	*6" w.c.	3.5" w.c.	3.5" w.c.
TOTAL ELECTRICAL REQUIREMENTS	120v, 1ph, 60hz, 20 amps	120v, 1ph, 60hz, 20 amps	120v, 1ph, 60hz, 20 amps	120v, 1ph, 60hz, 20 amps	120v, 1ph, 60hz, 20 amps
OPERATING WEIGHT	290 lbs	313 lbs	313 lbs	1125 lbs	1225 lbs
DHW WATER CONTENT	2.3 gallons	2.3 gallons	2.3 gallons	4.7 gallons	4.7 gallons
BOILER WATER CONTENT	3.1 gallons	3.5 gallons	3.5 gallons	10.63 gallons	12.0 gallons

BOILER A.S.M.E. SECTION IV DESIGN DATA	300	399	500	750	1050
MAX PRESSURE	80 psig	80 psig	80 psig	80 psig	80 psig
MAX TEMPERATURE	250F	250F	250F	200F	200F
FLOW RATE @ 20F ΔT	28 gpm	37 gpm	46 gpm	72 gpm	100 gpm
FLOW RATE @ 40F ΔT	14 gpm	18 gpm	23 gpm	36 gpm	50 gpm
HEATED WET SURFACE AREA	12.29 sq. ft.	15.72 sq. ft.	15.72 sq. ft.	18.35 sq. ft.	25.69 sq. ft.

BOILER A.S.M.E. DOUBLE WALL HEAT EXCHANGER DESIGN DATA	300	399	500	750	1050
MAX PRESSURE	150 psig	150 psig	150 psig	150 psig	150 psig
MAX TEMPERATURE	225F	225F	225F	225F	225F
RECOVERY RATE @ 40F TO 140F	320 gph	425 gph	533 gph	820 gph	1148 gph
RECOVERY RATE @ 60F TO 120F	542 gph	721 gph	903 gph	1405 gph	1967 gph

DHW CONNECTIONS	300	399	500	750	1050
DHW WATER RETURN	2"	2"	2"	2"	2"
DHW WATER SUPPLY	2"	2"	2"	2"	2"

DIMENSIONS	300	399	500	750	1050
DEPTH	21.75"	21.75"	21.75"	57.47"	57.47"
WIDTH	36.5"	36.5"	36.5"	28"	28"
HEIGHT	76"	76"	76"	65.6"	65.6"
MOUNTING	Floor	Floor	Floor	Floor	Floor

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**PROUDLY
DESIGNED & ASSEMBLED
IN THE U.S.A.**

Certifications

GE GAP (IRI) GAP4.1.0
AND GAP4.1.3

FM Global 6-4/12-69



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