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Commercial
Hot Water Heating
Solutions

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HYDRONIC BOILERS

Condensing Boilers

P-K MACH®

PK MACH® OUTDOOR

PK MACH® DUAL FUEL

P-K MACH® CM Series

P-K SONIC®

Non-Condensing Boilers

P-K MODU-FIRE® FD

P-K THERMIFIC®

WATER HEATERS

FABRICATED SYSTEMS

CONTROLS

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QUESTION REGARDING... *

Boilers

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P-K MACH® Condensing Boilers

Models: C750 (750 MBTU), C900 (900 MBTU), C1050 (1050 MBTU), C1500H (1500 MBTU), C2000H (2000 MBTU), C2500 (2500 MBTU), C3000 (3000 MBTU), C4000 (4000 MBTU)



Documents



Rep Locator



Product News



Many customers have relied on P-K MACH® boilers for when they need a condensing boiler that is reliable, efficient and constructed of quality materials.

The P-K MACH condensing boiler is an ideal choice for a wide variety of commercial and industrial building applications, including new construction as well as retrofit projects.

Once again, Harsco Industrial Patterson-Kelley leads the industry into a whole new dimension with a boiler of vastly greater capability and performance precisely tailored to today's conditions and requirements: the P-K MACH boiler.

Research shows the P-K MACH boiler features the best, most advanced metallurgy ever offered in a commercial heating boiler. The P-K MACH boiler works as well in older systems as in modern ones and in a wide range of temperatures to achieve unprecedented cost savings and efficiencies. After installing the P-K MACH boiler, countless users have been able to reduce their fuel bills and total cost of ownership.

All P-K MACH boilers, including dual fuel boilers and outdoor boilers, come standard with our easy to operate NURO® control system. The NURO® control even allows a P-K MACH boiler to be paired with a P-K MODU-FIRE® Forced Draft boiler to create a cost-effective hybrid boiler system.

Sized to get in and fit in.

Installation time is reduced

There's no rigging required to put your P-K MACH condensing boiler in any room of your building, whether it's the basement or the penthouse. All P-K MACH condensing boilers fit through a standard 36 inch doorway or a standard elevator.

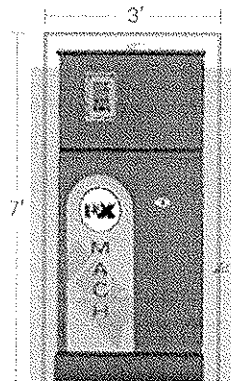
Our largest models (1,500,000 BTU/hr and larger) are equipped with wheels which means they can be moved by two people without a forklift. The narrow design of all P-K MACH condensing boilers allow them to navigate corners and hallways with ease.

P-K MACH condensing boilers are perfect for new installation and retrofit projects, requiring only 4 hook ups – gas, water, electric and venting.

Fire it up!

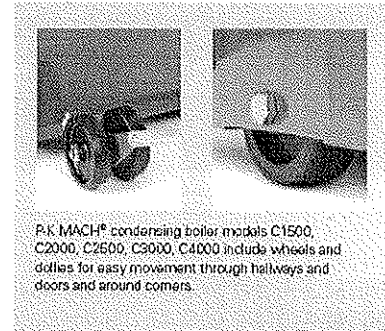
P-K MACH condensing boilers feature fully independent cast aluminum heat exchangers. Aluminum is easier to cast than other metals. The result is increased heat transfer surface for higher efficiency. The aluminum heat engine easily sheds condensate thanks to an aluminum oxide barrier that forms during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

Smaller.



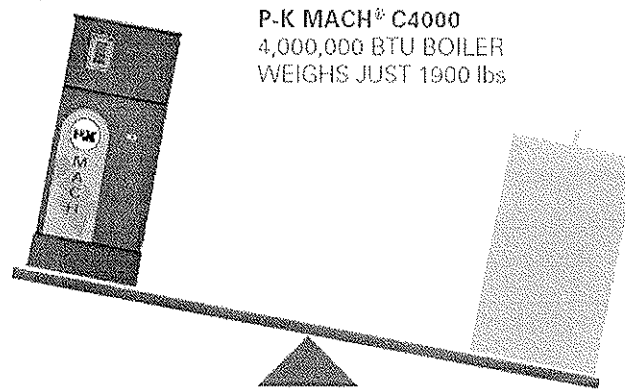
COMPETITORS
4,000,000 BTU
BOILERS
AVERAGE
40.5" - 66"W

P-K MACH® C4000
4,000,000 BTU BOILER
IS ONLY 31.75"W



P-K MACH® condensing boiler models C1500, C2000, C2500, C3000, C4000 include wheels and dollies for easy movement through hallways and doors and around corners.

Lighter.



P-K MACH® C4000
4,000,000 BTU BOILER
WEIGHS JUST 1900 lbs

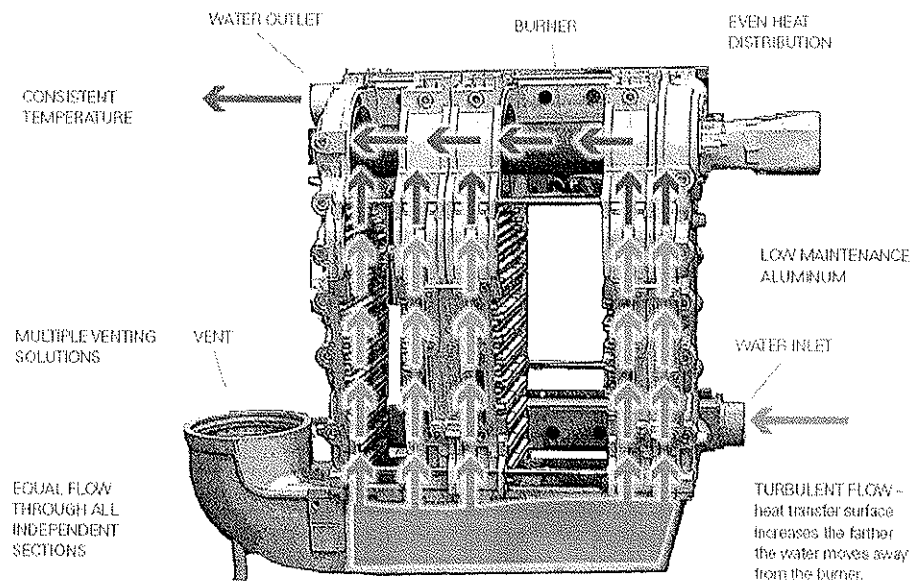
COMPETITORS
4,000,000 BTU
BOILERS
AVERAGE
3,700 lbs

And even if rigging is required, lower weight means lower costs

Your aluminum solution

The Heat Engine

The heart of the P-K MACH Condensing Boiler



P-K MACH condensing boilers are CSA certified at 92% – 96% efficiency, with actual thermal efficiencies up to 99%. This can help qualify for federal, state and utility rebates.

NURO™ Touch-Screen Control System

Turndown energy usage

The P-K SONIC® is equipped with the latest touch-screen technology, the NURO™ Touch-Screen Control. It provides the most intuitive interface in the industry. Designed to maximize efficiency, the NURO Control System monitors and modulates the combustion and ignition of the boiler to maintain the desired outlet temperature.

EASY TO USE.

The NURO's easy-to-use touch-screen interface provides simple step-by-step navigation for set-up, maintenance, custom adjustments, efficiency, help and more.

EASY TO SET-UP.

The true power of NURO's intuitive software is in its simple step-by-step boiler set-up. Whether you are installing one boiler or more, the NURO makes it a snap. Whether installing a single boiler or cascading, with a simple touch, select from a variety of pre-configured settings for optimal system efficiency.

Configuring multiple boilers doesn't get any easier than with NURO. Since NURO uses a computer with advanced software, just copy the settings to a USB stick, and transfer them to each boiler (two USB ports are available). This dramatically reduces set-up costs and time.

EASY TO UPDATE.

While most competitors have hardware driven controllers that are a costly hassle to upgrade and maintain, the NURO provides the long-term ROI you've been waiting for. Our software driven computer allows for on-site upgrades to be easily made with minimal boiler knowledge. This reduces the amount of maintenance hours needed by expensive boiler technicians. Software upgrades provide long-term upgradability, which eliminates hardware replacement and costly service calls.

Features

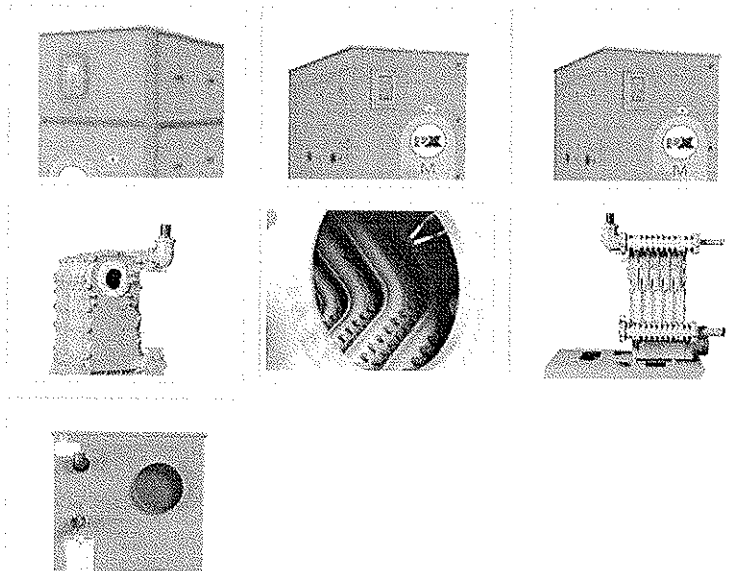
- All-purpose boiler suitable for condensing and non-condensing systems
- Revolutionary new, fully independent cast sectional heat exchanger

- Unique aluminum alloy resists corrosive condensate
- New boiler room layouts and control methods
- Certified low NO_x performance
- Low water-side pressure drop
- Full modulation burner with 5:1 turndown
- Variable speed combustion air blower
- Automatically compensates for changes in air temperature and pressure
- Certified at 3.5" minimum gas pressure
- Optional outdoor, roof, and dual fuel models

Advantages:

- A viable option for existing system retrofit as well as in new installations
- Works well at low or high temperatures
- Simplifies construction
- Reduces overall plant lifecycle costs
- Improves comfort
- Enhances your system's technical and economic performance
- Extremely low electrical energy consumption increases potential savings
- Dramatically improves cycle efficiency
- Powerful new tool for building LEED® points
- Qualify for utility rebates
- Barely audible, even at high fire
- Actual net thermal efficiencies may be achieved up to 99%
- Water temperatures as low as 34° F

LEED® is a registered trademark owned by U.S. Green Building Council Corporation.



For more information about this or any of our other products, please contact us or [click here](#) to find your authorized Harsco Industrial Patterson-Kelley representative.

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P-K MACH® Model C750, C900, & C1050

Natural Gas or Propane Gas - 120V - NURO™ Control

Boiler Connections		
A	Combustion Air Inlet	6" dia. stub
C	Condensate Drain	3/4" hose
E	Exhaust Vent	C750-9" C900 & C1050-9"
J	Wiring Junction Boxes	inside cabinet
P	Pressure Relief Valve	see list for options
R	Boiler Water Return, Victaulic® clamp	2" pipe, grooved
S	Boiler Water Supply, Victaulic® clamp	2" pipe, grooved
(W) Single Fuel Boiler (NG or LP)		
G	Gas Connection	1" NPT-F

Victaulic is a registered trademark of Victaulic Company, Easton, PA, USA

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	
Components: 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	

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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Pressure Relief Valve/Press-Temp Gauge		
Shipped Loose for Field Installation		
□	30 PSIG 1" x 1"	0-100psi/30-240°F
□	50 PSIG 3/4" x 1"	0-100psi/30-240°F
x	60 PSIG 3/4" x 3/4"	0-100psi/30-240°F
□	75 PSIG 3/4" x 1"	0-240psi/30-240°F
□	80 PSIG 3/4" x 1"	0-240psi/30-240°F

Ratings and Capacities			
Fuel	x Natural Gas (NG)		
	□ Propane Gas (LP)		
	□ C750	x 900	□ C1050
Maximum Inlet Gas Pressure	14" w.c.	14" w.c.	14" w.c.
Minimum Inlet Gas Pressure	□ NG: 3.5" w.c. □ LP: 7.0" w.c.	□ NG: 3.5" w.c. □ LP: 7.0" w.c.	□ NG: 3.5" w.c. □ LP: 7.0" w.c.
Input, BTU/hr	750,000	900,000	1,050,000 (NG) 1,000,000 (LP)
Output, BTU/hr	712,500	846,000	987,000 (NG) 940,000 (LP)
Boiler HP	21.3	25.3	29.5
Operating Weight	695 lbs.	735 lbs.	780 lbs.
Water Content	5.9 gallons	6.6 gallons	7.3 gallons
Shipping Dimensions	61"x36"x62"	61"x36"x62"	61"x36"x62"
Shipping Weight	735 lbs.	780 lbs.	820 lbs.

Electrical Requirements	
Power Supply	120V, 1ph, 60Hz
Minimum Circuit Amps	6 Amps
Maximum Overcurrent Protection	15 Amps

A.S.M.E. Section IV Design Data			
Maximum Pressure	80 psig		
Maximum Temperature	200°F		
Maximum Operating Temperature	194°F		
	□ C750	x C900	□ C1050
Heated Wet Surface Area	18.35 sq. ft.	22.02 sq. ft.	25.69 sq. ft.
Flow Rate @ 20°F	72 GPM	86 GPM	100 GPM
Flow Rate @ 40°F	38 GPM	43 GPM	50 GPM

Recommended Clearance for Service Access**	
Front - 30" Rear - 24" Top - 24" Side - 24"	

** Refer to Installation and Owners Manual for complete clearance dimension details



PRELUDE
BY SERVICE & ASSEMBLY
BY THE U.S.A.

HARSCO
INDUSTRIAL
Patterson-Kelley

MACH[®] Boiler LIMITED WARRANTY

HARSCO
INDUSTRIAL
Patterson-Kelley

LIMITED WARRANTY

Subject to the terms and conditions herein, Harsco Industrial, Patterson-Kelley, Seller, warrants to the original owner at the original installation site that products manufactured by Seller will be free from defects in materials and workmanship for a period of one (1) year from date of start up (the "Warranty Period"), provided that start up is completed within six months from the date of shipment. The heat exchanger and burner will be warranted for a period of five (5) years and a ten (10) year warranty against failure due to thermal shock from the date of shipment (the "Warranty Period").

REMEDY

The sole remedy of this warranty is expressly limited to the repair or replacement of any part found to be defective under conditions of normal use within the Warranty Period. Installation is not included.

WARRANTY

The owner must notify the original installer of the Product and Seller (Attention: Harsco Industrial, Patterson-Kelley, 100 Burson Street, East Stroudsburg, PA 18301), in writing, within the Warranty Period, providing a detailed description of all claimed defects. Transportation to the factory or other designated facility for repairs of any products or items alleged defective shall, in all events, be the responsibility and at the cost of the owner.

EXCLUSIONS

Seller shall have no liability for and this warranty does not cover:

- 1) Incidental, special or consequential damages, such as loss of the use of products, facilities or production, inconvenience, loss of time or labor expense involved in repairing or replacing the alleged defective Product.
- 2) The performance of any Product under conditions varying materially from those under which such Product is usually tested under industry standards at the time of shipment
- 3) Any damage to the Product due to abrasion, erosion, deterioration, abnormal temperatures or the influence of foreign matter or energy.
- 4) The design or operation of owner's plant or equipment or of any facility or system of which any Product may be made a part.
- 5) The suitability of any Product for any particular application.
- 6) Any failure resulting from misuse, modification not authorized by Seller in writing, improper installation or lack of or improper maintenance.
- 7) Equipment furnished by the owner, either mounted or unmounted, or when contracted for by the owner to be installed or handled.
- 8) Leakage or other malfunction caused by:
 - i) Defective installations in general and specifically, any installation which is made:
 - (a) In violation of applicable state or local plumbing housing or building codes,
 - (b) Contrary to the written instructions furnished with the unit
 - ii) Adverse local conditions in general and, specifically, sediment or lime precipitation in the tubes and/or headers or corrosive elements in the atmosphere.
 - iii) Misuse in general and, specifically, operation and maintenance contrary to the written instructions furnished with the unit, disconnection, alteration or addition of components or apparatus, not approved by Seller, operation with fuels or settings other than those set forth on the rating plate or accidental or exterior damage.
- 9) Production of noise, odors, discoloration or rusty water.
- 10) Damage to surrounding area or property caused by leakage or malfunction.
- 11) Costs associated with the replacement and/or repair of the unit including: any freight, shipping or delivery charges, any removal, installation or reinstallation charges, any material and/or permits required for installation, reinstallation or repair, charges to return the boiler and or components. Seller's liability under this warranty shall not in any case exceed the amount paid for the Product found to be defective.

THIRD-PARTY WARRANTIES

For goods or components not manufactured by Seller, the warranty obligations of Seller shall, in all respects, conform and be limited to one (1) year from the date of shipment.

SEVERABILITY

To the extent that any provision of this warranty would be void or prohibited under applicable law, such provisions shall be limited in effect to the minimum extent necessary to render the remaining provisions hereof enforceable.

NO OTHER WARRANTIES

Seller makes no implied warranty of merchantability or fitness for a particular purpose or other warranties with respect to any products or services except as expressly set forth in this limited warranty.