

Planetary ball mill

HP-PKM



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Specially developed for laboratory automation

The HP-PKM features an innovative system for the automatic clamping of grinding vessels which allows integration into fully automated laboratories. This not only relieves staff of tedious and time-consuming tasks, but also significantly increases laboratory efficiency.

In a fully automatic system, the machine is loaded and unloaded with grinding jars either by a handling system connected to a conveyor system or by a multi-axis robot. The jars are loaded via a separate opening from the rear of the HP-PKM. As a result, manual access for the operator via the front machine flap is not restricted.

After grinding, a separate emptying unit (option) can be used to automatically transfer the sample material from the jar into a cup for further processing. The grinding balls and grinding vessel are automatically cleaned using compressed air or water and made available to the system again.

Innovative automation:
relieving the laboratory
of routine tasks thanks
to patented grinding
vessel clamping.



Innovative design

For the first time, the innovative design of the HP-PKM makes it possible to clamp and close grinding vessels completely automatically. Each of the four grinding positions on the large sun wheel is equipped with its own hydraulic fixation system, which ensures reliable clamping of the jar during grinding.

The grinding vessels can be automatically pushed into the safety cage by a handling system or can be manually inserted by the operator. For clamping, the vessel is automatically positioned over the clamping unit of the HP-PKM. This tightens the fixation system, which presses the grinding vessel hydraulically against the roof of the safety cage. This also ensures a dust-free closure of the grinding chamber and prevents the finely ground sample particles from leaking.



Automation technology for optimized
efficiency and minimal workload

Optimize efficiency and
minimize operator intervention.

- Automatic clamping and closing of the grinding vessel
- Can be used in conveyor or robot automation, with magazine or as a standalone machine
- Considerable reduction in workload and significant increase in efficiency
- Perfectly suited for laboratories in the mining, cement, chemical, recycling, steel, food and other industries
- Selection of various machine parameters for optimum grinding results
- Grinding vessels available in chrome steel or ceramic in various volumes
- Small footprint, low noise level, excellent maintainability

Semi-automatic operation with magazine

Semi-automatic operation of the machine is also possible using a magazine for grinding vessels (optional). The operator inserts up to four grinding jars on the input side of the magazine.

These are then successively and automatically pushed onto one of the four grinding positions within the HP-PKM and clamped. Once the grinding process has been completed, all vessels are placed on the output side of the magazine and can be removed by the operator.

Manual operation of the HP-PKM possible at any time

Regardless of whether the machine is integrated into an automatic system, the HP-PKM can be operated manually at any time. To do this, the operator opens the front machine flap and loads the jars into the grinding positions.

The sun wheel is simply rotated to the next position at the touch of a button. After closing the machine flap, the grinding vessels are automatically clamped and the grinding process is started. Once grinding is complete, all grinding vessels are automatically released from their fixation and the machine flap is released for removal.

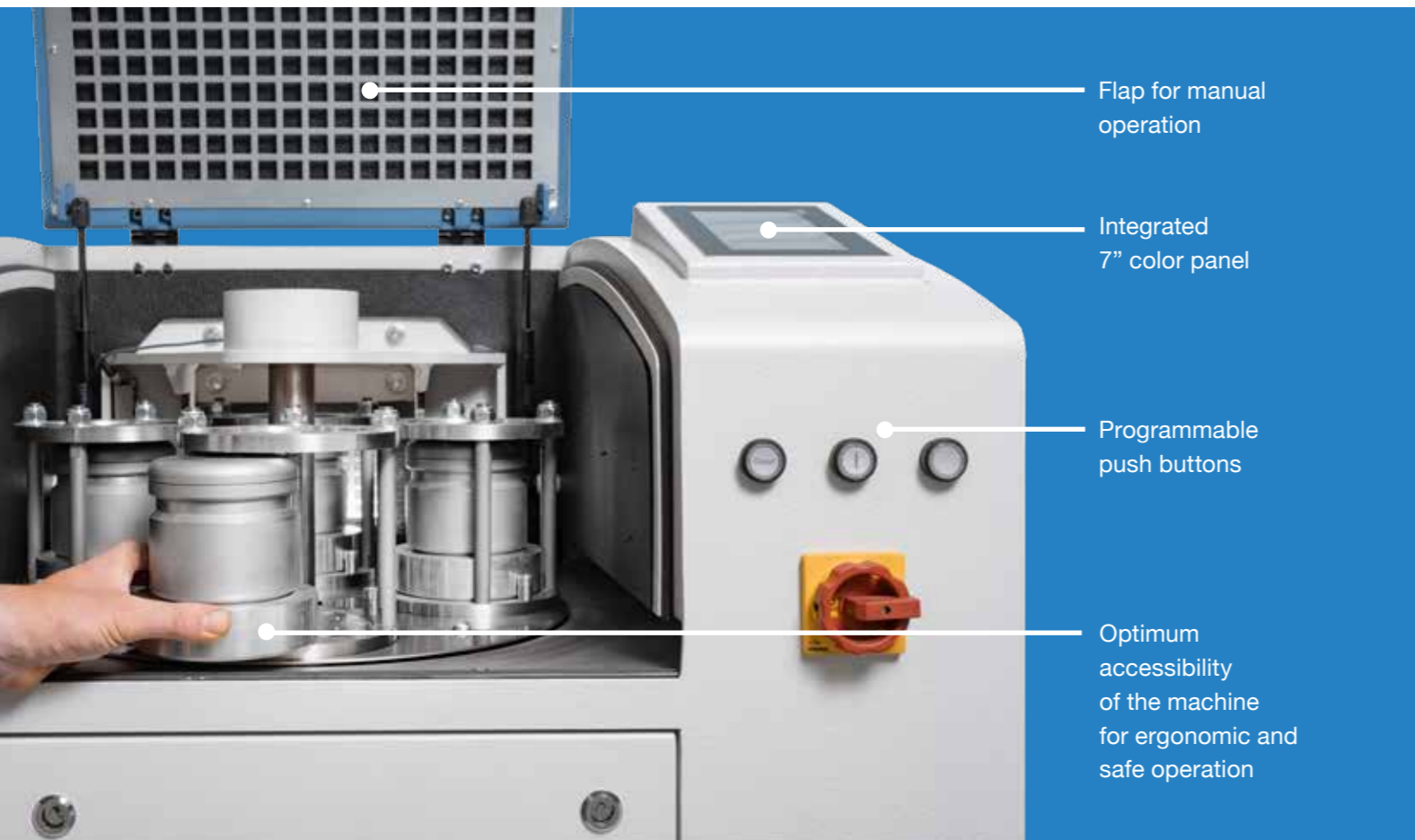
Numerous options for optimum grinding results

The HP-PKM offers all the advantages of a planetary ball mill. These include high grinding efficiency, fine particle size distribution, good control of the heat development in the grinding vessel and usability for a wide range of applications.

With an extensive selection of parameters, the HP-PKM provides numerous options to ensure an optimum grinding result for every sample material. In addition to the speed, the direction of rotation, grinding duration and pause intervals can be parameterized and combined in different programs.

The programs can be selected either via the convenient 7-inch color display, via the programmable buttons on the front of the machine or, in the case of an automatic system, via the PrepMaster system.

Different grinding vessel volumes of up to 500 ccm are available for the HP-PKM. The grinding vessel chamber is available in either a chrome steel or ceramic version. Grinding balls with a diameter of at least 5 mm can be used for fully automatic operation of the HP-PKM in conjunction with automatic emptying of the grinding vessels.



Safety and easy maintainability

The complete fixation of the grinding vessels is monitored by sensors to ensure safe operation in every situation. Automatic monitoring of the grinding positions on the sun wheel prevents uneven loading of the machine. During the grinding process, an imbalance sensor also monitors the smooth operation of the machine so that any malfunctions are detected immediately. The machine flap is also protected against access during grinding by a safety switch with locking mechanism.

Thanks to the design optimization of the individual machine components and effective insulation of the machine housing, the machine's noise emission is low, so that interference-free operation within a laboratory is possible.

In addition, the generously dimensioned flaps of the HP-PKM facilitate access for maintenance and service work.



HP-PKM with magazine for automatic loading and unloading of grinding vessels



Technical Data

Model	HP-PKM
Color	RAL 5007 / 7035
Dimensions	
Machine	660 x 780 x 1,275 mm (L x W x H)
Machine incl. packaging	1,200 x 1,200 x 1,800 mm (L x W x H)
Weights	
Machine	Approx. 390 kg
Machine incl. crate packaging	Approx. 520 kg
Power supply and consumption	
Voltage	Voltage 380 - 480 V, 50/60 Hz (other voltages available upon request)
Center conductor	Not required
Power consumption	3.5 kVA
Electrical control cabinet (integrated)	
Control voltage	24 V DC
Compressed air supply and consumption	
Pressure	Min 6 bar, max. 10 bar (not necessary for manual version)
Consumption	10 dm ³
Processing parameters	
Number of grinding positions	2/4
Effective sun wheel diameter	300 mm
Speed ratio	1:2
Sun wheel speed	0-400 min ⁻¹ (infinitely adjustable)
Intermittent operation	Yes, with reversal of direction of rotation
Processed samples	
Material	Soft, hard, brittle, fibrous - dry or wet
Max. ball size	30 mm
Application	
Feed grain size	< 10 mm
Vessel size	125 ccm, 250 ccm, 500 ccm
Application	Fine grinding of sample material for X-ray fluorescence, diffractometry and other analytical methods
Materials	Different materials
Operating mode	Manual Automatic (can be used in automation, magazine operation)

Input and output magazine for HP-PKM (option)

Dimensions	
Machine	3,035 x 806 x 1,275 mm (L x W x H)
Weights	
Machine	Approx. 330 kg
Power supply and consumption	
Voltage	Supplied by HP-PKM
Power consumption	0.5 kVA
Compressed air supply and consumption	
Pressure	Min. 6 bar, max. 10 bar
Processing parameters	
Magazine size grinding vessel input	Max. 4 vessels
Magazine size grinding vessel output	Max. 4 vessels
Grinding vessel sizes	125, 250, and 500 ccm



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