Hygienic Progressive-Cavity Pumps H Series
PCM H Series Pumps: The pumping solution for your ultra-clean applications.

Custom designed for applications requiring stringent hygiene, the H series pumps incorporate numerous original technical features:

- Designed to eliminate potential product-retaining
- A simplified shaft line without joint
- Mechanical seal positioning optimized to facilitate cleaning
- CIP piping, allowing the pump casing to be cleaned at a high flow-rate
- Designed to allow pump sterilisation when not running using steam or superheated water.

Operation

A Moineau pump is made up of a helical rotor turning inside a helical stator. The stainless-steel rotor is machined to a high degree of precision, and the stator is moulded in a resilient elastomer. The geometry and the dimensions of these parts are such that when the rotor is inserted into the stator, a double chain of watertight (honeycomb-shaped) cavities is created. When the rotor turns inside the stator, the honeycomb progresses spirally along the axis of the pump, without changing either shape or volume. This action transfers the product from the pump inlet to the pump discharge.

Characteristics

- Maximum flow: 40 m³/h
- Maximum pressure: 24 bar
- Maximum temperature in continuous operation: 90°C
- Sterilization temperature when idle: 140°C
- Capacity: 0.048 liter to 2.048 liter
- Size of acceptable particles: up to 40 mm.

Benefits

Of Moineau technology

- Does not alter pumped product
- High suction power
- Constant pulse-free flow
- Ease of maintenance
- Reversibility

Of Moineau Series H Pumps

- Cleanable (no retention areas, simplified shaft line, CIP piping, eccentric pipe)
- Versatile (variety of products and applications)
- Productive (limited, rapid maintenance operations)
- Control of design, manufacture and associated services.

Flexible shaft - stainless steel without external coating

A new design of the shaft line which cuts down the number of moving parts – thus the number of wear parts – and improve the cleanability of the pump.

Stator – White or black food quality elastomer

Available in 1, 2 or 4-pitch length*.

* A pitch length is the length of stator required for honeycomb cell to rotate through 360° about the pump axis.

Casing – AISI 316L Stainless steel

Glass blasted exterior
Internally polished along 220 grain SMS, DIN and CLAMP connections.

Stator envelope - AISI 316L Stainless steel

For a general hygienic respect of your workshop.

Flexible shaft - stainless steel without external coating

A new design of the shaft line which cuts down the number of moving parts – thus the number of wear parts – and improve the cleanability of the pump.

Rotor - AISI 316L stainless steel

Can be chrome-plated.

Eccentric pipe - AISI 316L stainless steel

Avoids product retention. SMS, DIN and CLAMP connections.

Feet - Plastic with stainless steel or stainless steel coated cast-iron inserts

Using the clamping system to secure the pump casing and stator facilitates disassembly for maintenance and allows to orientate suction port and CIP pipe in 3 positions (vertical, left or right horizontal).
Hygienic Progressive-Cavity Pumps H Series

Construction of H Series

**Mechanical seal cartridge assembly**
**Carbon/Ceramic or Carbide/Carbide**
The cartridge mounting (compression factory adjusted) and accessibility through the back (on the drive side) facilitates the mechanical seal's replacement. Depending on products and applications, mechanical seal can be single, single with quench, or double. The optimal positioning in relation to the suction pipe facilitates CIP.

**Cover - Stainless-steel**
Protective covering for the drive elements against splashes during workshop cleaning.

**Spacer - Cast Iron FGL 250**
This is a connecting piece between the pump casing and the drive, and supports the sealing system. The strut may be directly flanged or connected to a bearing which is hooked-up to the drive through an elastic coupling.

**Base plate - Stainless steel**
All the H Series pumps may be mounted onto a stainless-steel base plate with or without adjustable feet for leveling the pump if your workshop floor is uneven or sloping.

**CIP piping - AISI 316L Stainless steel**
Allows for cleaning in place the pump casing at a large-outflow. Orientable vertical positioning, left or right tangential SMS, DIN and CLAMP connections.

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**Applicable directives and standards**

- CE
- A3
- NF

**Optional equipment**

**Stainless-steel trolley**
Certain H Series pumps may be mounted on a stainless steel trolley with self-locking wheels to facilitate transport between factory-floor applications, thereby improving the versatility of your capital equipment. As an additional option, the pump is supplied with adjustable feet, allowing it to be horizontally oriented according to the slope of your factory floor.

**Double enveloped pump casing and stator**
Certain operations require products to be kept at temperature (hot or cold). The use of a double envelope for the pump casing and the stator allows the circulation of heat-exchanging fluid.
A new method of transmission: The flexible rod

The traditional bearing line, made up of a rod and two universal joints, is replaced by a flexible stainless-steel rod. It has particular mechanical resistance characteristics, so that by simply deforming, it converts the concentric rotation of the drive shaft into the eccentric motion of the rotor.

This allows for a considerable reduction in the number of parts making up the drive shaft, and all moving parts are eliminated, thereby simplifying assembly/disassembly during maintenance operations and the reduction in stocks of wearing parts. Furthermore, the smaller amplitude of the flexible shaft's movement has made for a reduction in the diameter of the pump casing, so increasing the speed with which cleaning solutions pass through the pump while it is being cleaned.

The absence of joints, and of the joints protection boots, improves the pump cleanability and eliminates pollution such as lubricant leak or bacterial contamination through the boots joint protection in case of accidental or forced wearness specially during maintenance.

New leak-proofing system: Cartridge mounted mechanical seal removable through the back

The H series pumps are equipped with a new generation of mechanical seals, specially designed for applications requiring a rigorous degree of hygiene. Two friction face pairs are available: Carbon/Ceramic, and Silicon Carbide/Silicon Carbide. Mechanical seal can be single, single with quench, or double.

An optimal location of the seal in relation to the pump-casing suction piping favors cleaning.

Cartridge assembly performed at the factory facilities maintenance operations by removing the adjustment constraints at installation. Furthermore, access through the back (drive side) allows servicing without having to disassemble the entire pump, which remains connected to the installation. These two major advantages divide by two the time needed to replace the seal, thereby reducing the production stoppage time.

A thorough control of elastomer technology

Complete process control (formulation, mixing, injection, and polymerisation) have allowed our research engineers to develop elastomers perfectly compatible with the food and cosmetic products.

- Numerous available formulas:
  - PCM mixing number 244 (white) suitable for all applications,
  - PCM mixing numbers 176 and 177 (black) suitable for all applications,
  - PCM mixing numbers 164 (black) suitable for all applications on fat products.
- Wide temperature compatibilities suitable with processes and cleaning in place (CIP) from 0 up to 90 °C.
**Accessories**

**Dry running protection device**

This system is positioned at the pump inlet, and monitors the product level in the pump casing, thereby preventing any undesired dry running, a scenario which would involve stator deterioration. The system was specifically developed for applications where rigorous hygiene is necessary. It thus provides for product detection through a Pyrex or Teflon sight, thereby avoiding all contact between the sensor and the product. Because it is insensitive to temperature variations between 0°C and 80°C, this system also protects the pump during cleaning phases.

**Metering system**

If dimensioned correctly, the Moineau pump can very easily be used in dosing applications in container filling. In this case it is combined with a coding system able to deliver 10 to 20 pulses per turn, a countup/countdown system to administer the intended dose and a drive unit equipped with a brake motor or brake clutch to stop the pump once the dose is delivered.

**Pressure relief valve on by-pass**

In order to avoid the risks of equipment damage in the event of overpressure (e.g., accidental closure of one of the pump’s downstream valves), it is highly advisable to install a by-pass system fitted with a pressure relief valve of which the pressure setting has to be adjusted according to the operating pressure of the pump.

**Pressure sensor**

For better control of your process, it is highly advisable to install a pressure sensor (manometer, pressure sensitive switch or an analog sensor) at the pump discharge. The use of an integral through separator is suited to the food, cosmetic and pharmaceutical hygienic requirements.
Performances

The rotation speeds and pressures indicated on these curves correspond to ordinary performances achieved with 20°C.

If the working conditions differ from this standard, it is necessary to limit the performance according to:

- The product characteristics (viscosity, fragility, abrasiveness)
- The characteristics of the application (operating parameters, discharge pressure, available NPSH).

Selection program allowing to control exact potential of all the PCM Moineau pumps series vs product specific transfer characteristics.
### Size of H series pump

**Bare shaft pump**

#### Dimensions in millimeters

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#### PUMP DN 1/DN 2 DN 3 A B C D E F G H I J K L  Weight kg Z

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H Series applications

Container emptying – Transfer - Feeding

Proportional dosing and mixing

Equipment feeding and container filling

*DOSYMIX DM dynamic mixer from PCM DOSYS
## H Series
### Applications (continued)

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<td>Pet foods</td>
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This table is not exhaustive: it highlights the most common applications. Obviously there are many others in a variety of fields.

### 60 H 12 Moineau Pump
The PCM MOINEAU range for clean industries

Classification according to viscosity:
H series, LVA series, LVA series + pusher
PCM's commitment is embodied in the Service Charter. PCM are constantly striving to work closer with their partners by responding to their customers’ needs and offering services of Quality. Further information is contained in the PCM Services brochure. To obtain your copy call: 33 (0)1 41 08 15 15.

**Equipment repair and overhaul…**
Speed and efficiency. Our technical assistance staff undertake repairs to pumps and regularly overhaul equipment which is already installed.

**Maintenance Contract…**
PCM offer maintenance contracts drawn up to suit the requirements and operating conditions of each production unit.

**Spare parts…**
Unbeatable delivery. PCM hold a permanent stock of spare parts and accessories so that they can respond to all urgent enquiries.

**Technical assistance…**
PCM recommend that their customers take out a maintenance contract to ensure that their pumps provide optimum performance. PCM’s technical assistance staff regularly visit installations to perform preventive or corrective maintenance.

**Training…**
PCM offer a two-day training course designed to give maintenance personnel a thorough understanding of how to use and maintain positive displacement pumps.

**Pumpexpress…**
Availability and reactivity. Complete pumps are available for delivery at any time. This new service allows PCM to meet urgent requests for equipment.

**Loan or hire…**
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