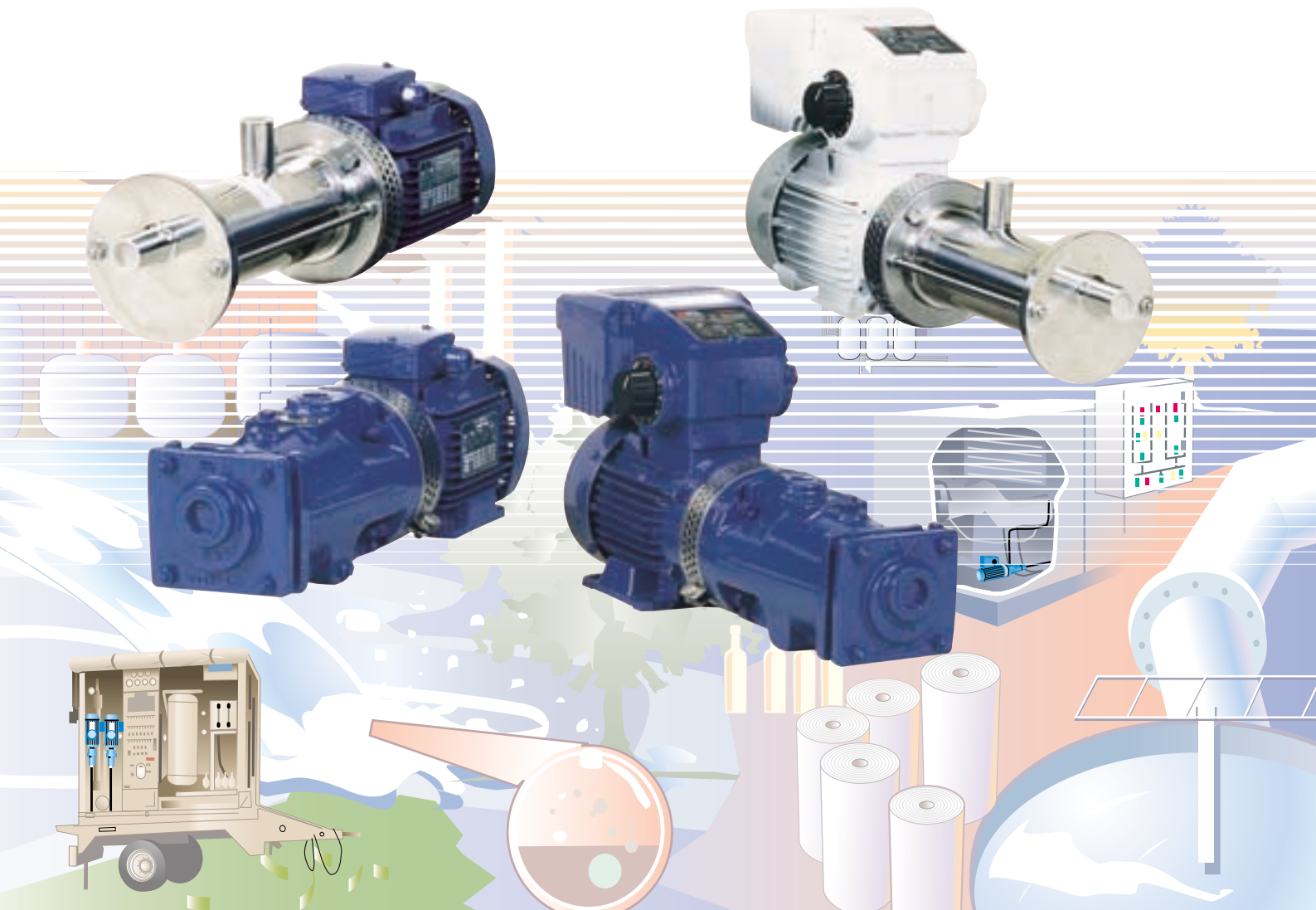


**PCM MOINEAU**

**NEW!**

# Compact Progressive-Cavity Pumps F Series



*From pumps to process*

**PCM Pompes F Series:  
The most compact  
progressive-cavity pump**



Designed specifically for applications calling for compact size combined with excellent integration flexibility, the F series pumps enable users to benefit from the advantages of MOINEAU technology for low price and compact dimensions. Unlike traditional Moineau pumps with their stator bonded into a steel tube, the F series has a floating stator i.e. a stator without a steel armature, attached at one end. The flexibility obtained in this way, combined with an elastic coupling, allows the eccentric rotor to move as if it were floating.

**▶ Benefits**

**Of the Moineau technology:**

- Pump derived directly from the invention by René Moineau, founder of PCM POMPES
- Gentle handling of products
- High suction and self-priming capability
- Constant non-pulsing flow-rate
- Ease of maintenance
- Flow-rate proportional to running speed
- Operation without valves

**Of the F series Moineau pump:**

- Compact size
- Highly simplified drive line without pinjoints
- Very quiet operation
- Simple and rugged construction of cast iron or polished stainless steel
- Particularly easy to maintain
- Versatile

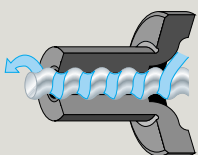
**Characteristics**

- Maximum flow-rate: 3400 l/h
- Maximum pressure: 10 bar
- Maximum continuous operating temperature: 80 °C
- Sterilisation temperature stationary: 140 °C
- Cubic capacity: 1.26 to 37 cm<sup>3</sup>
- Running speed: 240 to 1600 rpm

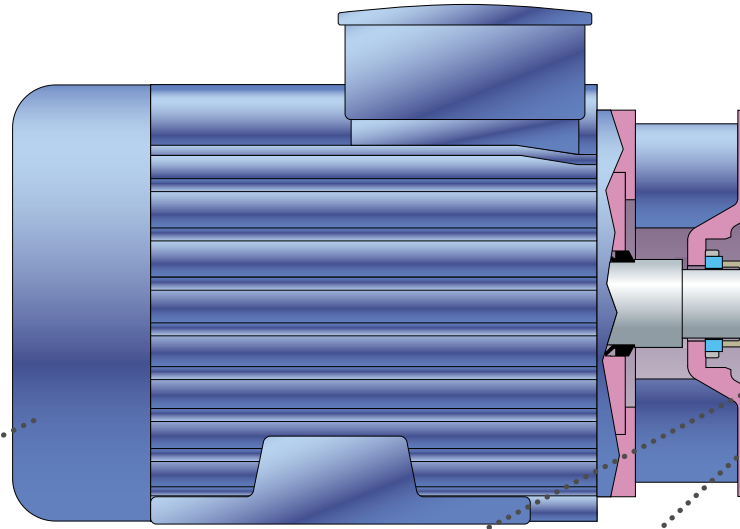
**Operation**

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 molded 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 intake to the pump discharge.

The F series pump has the special feature of discharging on the drive side. Therefore, the outlet pressure enables the pumped fluid to compress the floating stator against the rotor and ensure gradual tightening during pressure increases.



**The F series includes 12 models with a conventional motor or a frequency inverter incorporated into the terminal box so that it can be successfully integrated into processes including fixed or variable flow-rates.**



**Drive**

- ▶ Drive by standard flange-mounted motor or flange-mounted variable speed motor with an integral frequency inverter with IP55 protection, tropicalized to 90%, class F.

**Elastic coupling**

- ▶ The traditional drive shaft of the Moineau pump is replaced by a natural rubber or nitrile elastic coupling connecting the drive shaft and the rotor in their rotation. Its flexibility enables it to take up the eccentric movement between the rotor and stator.

**Mechanical seal**

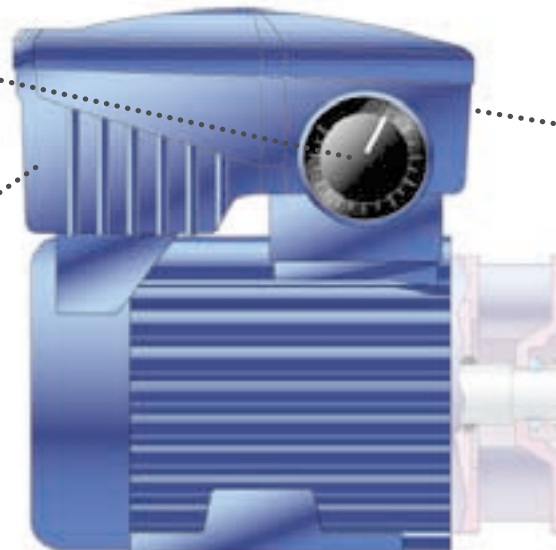
- ▶ Shaft tightness is ensured by a simple carbon/stainless steel mechanical seal or, optionally, silicon carbide/tungsten carbide.

**Adjusting knob**

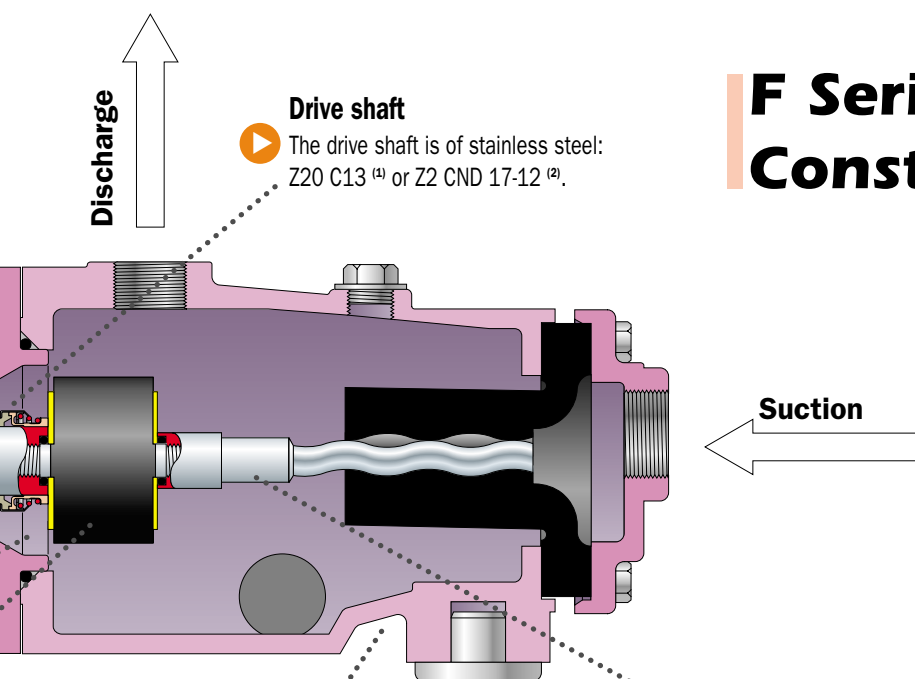
- ▶ The pump speed is adjusted directly by a large ergonomic and graduated potentiometer.

**Terminal box**

- ▶ Aluminium terminal box with electronic circuit encapsulated in resin and a brass stuffing box to ensure high mechanical resistance to vibration and insensitivity to humidity. An overload indicator, particularly useful at start-up, warns the user of incorrect pump operation, e.g. in the case of overcurrent.



# F Series Construction



## Drive shaft

- ▶ The drive shaft is of stainless steel: Z20 C13 <sup>(1)</sup> or Z2 CND 17-12 <sup>(2)</sup>.

## Floating rotor-stator

- ▶ Rotor in stainless steel Z20 C13 <sup>(1)</sup> or Z2 CND 17-12 <sup>(2)</sup> if necessary chrome-plated, and floating stator with 1 stage <sup>(3)</sup> of nitrile, hypalon, viton or neoprene.

## Body of Cast iron

- ▶ Possibility of body in mirror polished stainless steel Z2 CND 17-12 <sup>(2)</sup> for food or hygienic applications.

<sup>(1)</sup> Equivalent to AISI 420

<sup>(2)</sup> Equivalent to AISI 316 L

<sup>(3)</sup> The stage is the length of the stator needed for one cavity to turn through 360° around the pump axis.

## Frequency inverter integrated into terminal box.

- ▶ For variable flow-rates, controlled manually or remotely, these frequency inverters offer the best trade-off between price, ease of use and mechanical properties while preserving very good reliability. Pumps equipped in this way dispense with the need for a panel-mounted inverter or an electric cabinet and the resultant cabling and protection. Maintenance is negligible compared to mechanical speed variation systems.

The PCM MVF is more compact, lighter and more economical to use than a mechanical variable speed drive system. Its power factor is close to 1, allowing 100% use of the motor installed power.

## Applicable directives and standards



The F series pumps meet the machine directive requirements and its harmonised standards.

## Optional equipment

### By-pass and/or safety valve

To avoid any risks of pump damage in the event of overpressure, it is advisable to protect it with a recirculating by-pass system equipped with a safety valve whose calibration pressure can be set according to the pump discharge pressure.

### Dry running protection

Placed on the suction side, this system ensures that there is product at the inlet of the pump so as to prevent any inadvertent dry operation, which could cause deterioration of the stator or a stop of the process flow.

### Pressure sensor

To better control your process, the installation of a pressure sensor (pressure gauge, pressure switch or analogue sensor) on the pump discharge side is highly recommended. PCM POMPES offers a full range of accessories designed to improve the process operating conditions.

### Automatic level, flow-rate and pressure controls

Depending on the requirements of your installation, PCM can implement solutions to control the pump from your process.

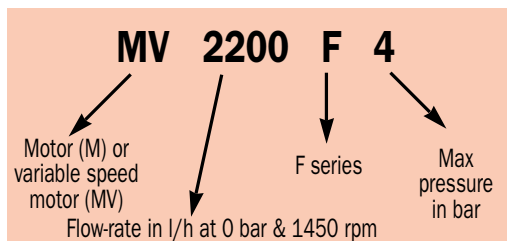
## Electrical and functional specifications for the MV-F version

- Power range from 0.37 to 1,5 kW
- Speed variation range: 1 to 7 (12 to 82 Hz)
- Power supply network: three-phase 400 V +/- 10%.
- Power supply frequency: 50/60Hz +/- 5%.
- Operation from -10 °C to +40 °C
- Starting and stopping by acceleration ramp.
- No adjustment necessary.
- Starting and stopping: either directly by 400V three-phase power supply or by remote contact or by local switch.
- Speed variation: either by local adjusting knob or by 0-10V external setpoint (standard), or by 4-20 mA signal (option).
- Protection: self-protection against under-voltages, over-voltages and short-circuits at the 0/10V inputs and outputs.
- Electrical construction: IP55 protection, 90% tropicalized, class F, sheet metal fan cover

## Options on terminal box

- On-off control.
- RFI filter to prevent electromagnetic interference.
- 4-20 mA setpoint for remote control.
- Display for remote reading.

### Example of model composition



## Performance

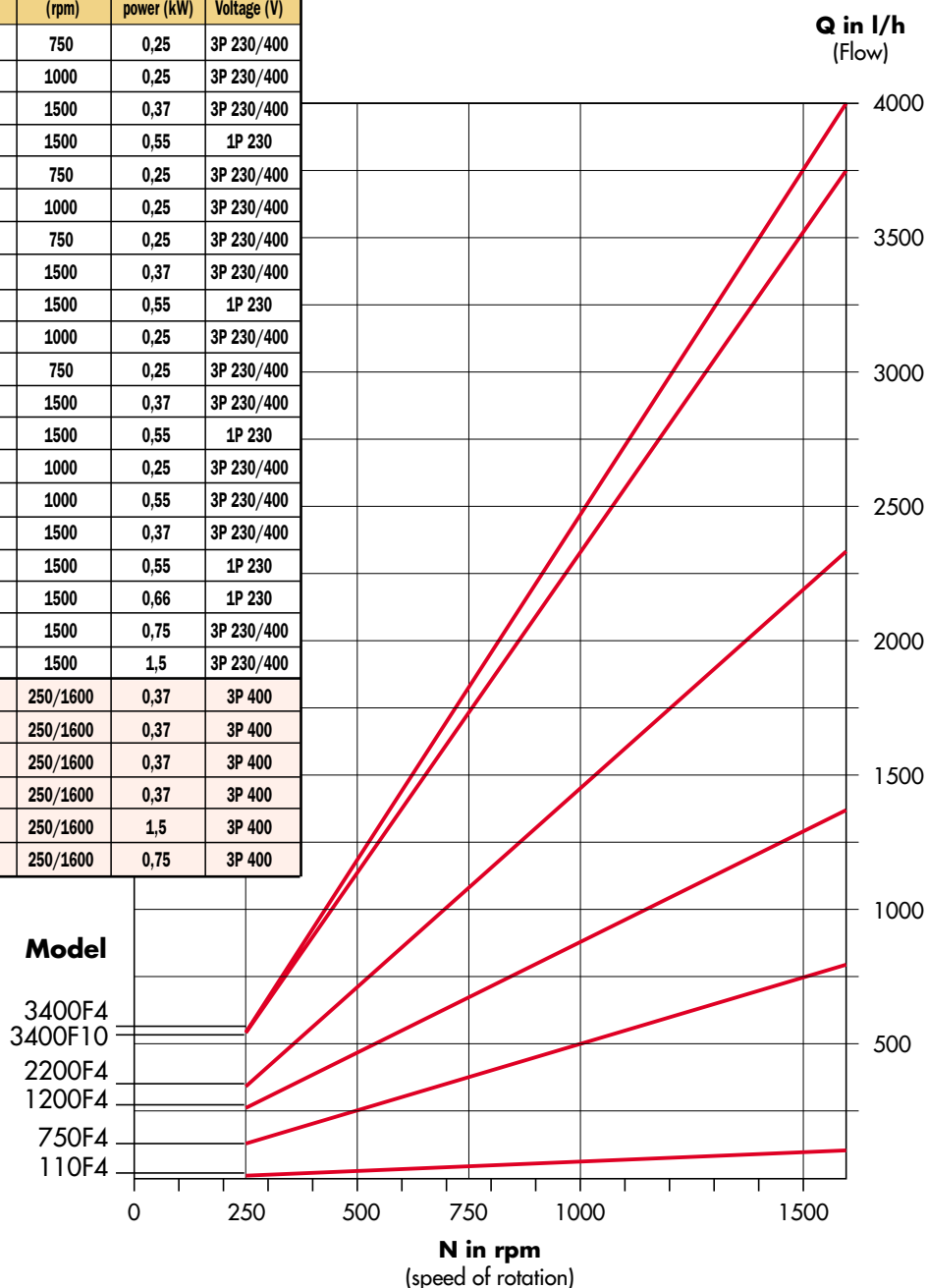
The running speeds and pressures indicated on these curves correspond to basic performance levels attained with water at a temperature of 20°C and a 0 bar discharge pressure.

If service conditions differ from this standard, it will be necessary to limit performance according to:

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

| Model     | Motor   | Flow-rate at 0 bar (l/h) | Flow-rate at P max. (l/h) | Max pressure (bar) | Speed (rpm) | Motor power (kW) | Phases & Voltage (V) |
|-----------|---------|--------------------------|---------------------------|--------------------|-------------|------------------|----------------------|
| M110F4    | 80L     | 45                       | 20                        | 4                  | 750         | 0,25             | 3P 230/400           |
| M110F4    | 80L     | 65                       | 35                        | 4                  | 1000        | 0,25             | 3P 230/400           |
| M110F4    | 71L     | 95                       | 65                        | 4                  | 1500        | 0,37             | 3P 230/400           |
| M110F4    | 80L     | 95                       | 65                        | 4                  | 1500        | 0,55             | 1P 230               |
| M750F4    | 80L     | 365                      | 275                       | 4                  | 750         | 0,25             | 3P 230/400           |
| M750F4    | 80L     | 400                      | 390                       | 4                  | 1000        | 0,25             | 3P 230/400           |
| M1200F4   | 80L     | 610                      | 500                       | 4                  | 750         | 0,25             | 3P 230/400           |
| M750F4    | 71L     | 745                      | 615                       | 4                  | 1500        | 0,37             | 3P 230/400           |
| M750F4    | 80L     | 745                      | 615                       | 4                  | 1500        | 0,55             | 1P 230               |
| M1200F4   | 80L     | 870                      | 460                       | 4                  | 1000        | 0,25             | 3P 230/400           |
| M2200F4   | 80L     | 1100                     | 840                       | 4                  | 750         | 0,25             | 3P 230/400           |
| M1200F4   | 71L     | 1305                     | 540                       | 4                  | 1500        | 0,37             | 3P 230/400           |
| M1200F4   | 80L     | 1305                     | 540                       | 4                  | 1500        | 0,55             | 1P 230               |
| M2200F4   | 80L     | 1480                     | 1130                      | 4                  | 1000        | 0,25             | 3P 230/400           |
| M3400F4   | 80L     | 2170                     | 1370                      | 4                  | 1000        | 0,55             | 3P 230/400           |
| M2200F4   | 71L     | 2220                     | 1660                      | 4                  | 1500        | 0,37             | 3P 230/400           |
| M2200F4   | 80L     | 2220                     | 1660                      | 4                  | 1500        | 0,55             | 1P 230               |
| M3400F4   | 80C     | 3300                     | 2460                      | 4                  | 1500        | 0,66             | 1P 230               |
| M3400F4   | 80L     | 3300                     | 2460                      | 4                  | 1500        | 0,75             | 3P 230/400           |
| M3400F10  | 90L     | 3330                     | 2000                      | 10                 | 1500        | 1,5              | 3P 230/400           |
| MV110F4   | 80LVMA  | 10/105                   | -/75*                     | 4                  | 250/1600    | 0,37             | 3P 400               |
| MV750F4   | 80LVMA  | 130/795                  | 55/660                    | 4                  | 250/1600    | 0,37             | 3P 400               |
| MV1200F4  | 80LVMA  | 260/1380                 | 160/1080                  | 4                  | 250/1600    | 0,37             | 3P 400               |
| MV2200F4  | 80LVMA  | 340/2360                 | 240/1770                  | 4                  | 250/1600    | 0,37             | 3P 400               |
| MV3400F10 | 100LVMA | 540/3750                 | -/2350*                   | 10                 | 250/1600    | 1,5              | 3P 400               |
| MV3400F4  | 90SVMA  | 540/4000                 | -/2670*                   | 4                  | 250/1600    | 0,75             | 3P 400               |

\* No flow at N min for Pmax.



### Programs



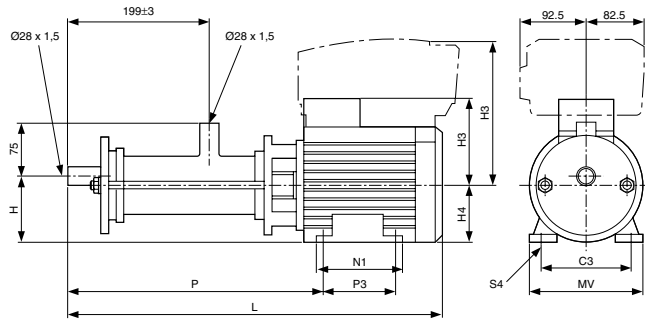
To improve customer service, PCM has now implemented programs available on CD-ROM disk.

PCM ENVIRONMENT produces technical specifications and detailed dimensional drawing in DXF format for direct use on CAD systems.

PCM MOINEAU allows pumps to be selected according to the specifications of the product and the application.

# Sizes F Series

## Stainless steel body

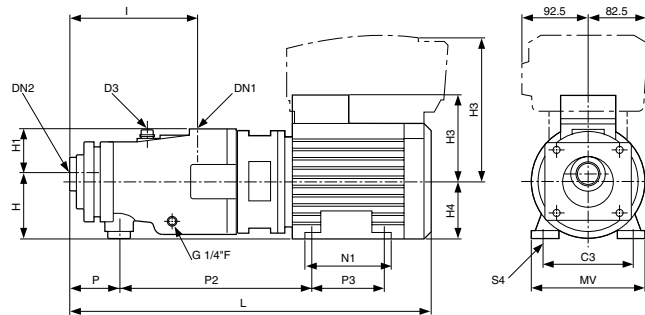


| Model    | Motor  | C3  | H  | H3  | H4 | L   | MV  | N1  | P   | P3  | S4 | Kg |
|----------|--------|-----|----|-----|----|-----|-----|-----|-----|-----|----|----|
| M110F4   | 71L    | 112 | 84 | 102 | 71 | 484 | 126 | 104 | 346 | 90  | 7  | 18 |
| M110F4   | 80L    | 125 | 93 | 122 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 21 |
| MV110F4  | 80LVMA | 125 | 93 | 205 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 28 |
| M750F4   | 71L    | 112 | 84 | 102 | 71 | 484 | 126 | 104 | 346 | 90  | 7  | 18 |
| M750F4   | 80L    | 125 | 93 | 122 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 21 |
| MV750F4  | 80LVMA | 125 | 93 | 205 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 28 |
| M1200F4  | 71L    | 112 | 84 | 102 | 71 | 484 | 126 | 104 | 346 | 90  | 7  | 18 |
| M1200F4  | 80L    | 125 | 93 | 122 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 21 |
| MV1200F4 | 80LVMA | 125 | 93 | 205 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 28 |
| M2200F4  | 71L    | 112 | 84 | 102 | 71 | 484 | 126 | 104 | 346 | 90  | 7  | 18 |
| M2200F4  | 80L    | 125 | 93 | 122 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 21 |
| MV2200F4 | 80LVMA | 125 | 93 | 205 | 80 | 526 | 157 | 120 | 361 | 100 | 9  | 28 |

The connections on the stainless steel pumps are plainended pipes.

Sizes in mm

## Cast iron body



| Model     | Motor   | C3  | DN1     | DN2     | D3     | H   | H1 | H3  | H4  | I     | L   | MV  | N1  | P  | P2  | P3  | S4 | Kg |
|-----------|---------|-----|---------|---------|--------|-----|----|-----|-----|-------|-----|-----|-----|----|-----|-----|----|----|
| M110F4    | 71L     | 112 | G3/4"F  | G1"F    | G3/8"F | 81  | 62 | 102 | 71  | 190±3 | 464 | 126 | 104 | 70 | 256 | 90  | 7  | 22 |
| M110F4    | 80L     | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 122 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 25 |
| MV110F4   | 80LVMA  | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 205 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 28 |
| M750F4    | 71L     | 112 | G3/4"F  | G1"F    | G3/8"F | 81  | 62 | 102 | 71  | 190±3 | 464 | 126 | 104 | 70 | 256 | 90  | 7  | 22 |
| M750F4    | 80L     | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 122 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 25 |
| MV750F4   | 80LVMA  | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 205 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 28 |
| M1200F4   | 71L     | 112 | G3/4"F  | G1"F    | G3/8"F | 81  | 62 | 102 | 71  | 190±3 | 464 | 126 | 104 | 70 | 256 | 90  | 7  | 22 |
| M1200F4   | 80L     | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 122 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 25 |
| MV1200F4  | 80LVMA  | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 205 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 28 |
| M2200F4   | 71L     | 112 | G3/4"F  | G1"F    | G3/8"F | 81  | 62 | 102 | 71  | 190±3 | 464 | 126 | 104 | 70 | 256 | 90  | 7  | 22 |
| M2200F4   | 80L     | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 122 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 25 |
| MV2200F4  | 80LVMA  | 125 | G3/4"F  | G1"F    | G3/8"F | 90  | 62 | 205 | 80  | 190±3 | 506 | 157 | 120 | 70 | 271 | 100 | 9  | 28 |
| M3400F4   | 80L     | 125 | G1"F    | G1"1/4F | G3/4"F | 95  | 62 | 122 | 80  | 238±3 | 562 | 157 | 120 | 80 | 317 | 100 | 9  | 28 |
| MV3400F4  | 90SVMA  | 140 | G1"F    | G1"1/4F | G3/4"F | 105 | 62 | 215 | 90  | 238±3 | 585 | 172 | 120 | 80 | 343 | 100 | 10 | 38 |
| MV3400F10 | 90L     | 156 | G1"1/2F | G1"1/2F | G3/4"F | 112 | 68 | 133 | 90  | 243±3 | 643 | 172 | 162 | 85 | 369 | 125 | 11 | 43 |
| MV3400F10 | 100LVMA | 160 | G1"1/2F | G1"1/2F | G3/4"F | 122 | 68 | 220 | 100 | 243±3 | 668 | 196 | 165 | 85 | 376 | 140 | 12 | 52 |

Sizes in mm

# Applications



TMI Photo

In many cases, the F series Moineau pump can be used as a dosing pump. It is an advantageous replacement for traditional dosing units for highly viscous, articulate or abrasive products.

It is compact and rugged, making it particularly suitable for machine or system integration.



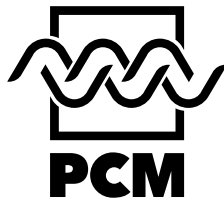
Three MV1200F4 pumps with cast iron bodies from a set of 7 waste water treatment plant polymer dosing pumps. These pumps ensure injection proportional to a sludge flow into a dewatering unit with a centrifugal decanter.

M2200F4 pump with stainless steel body for feeding salty water jets in a salty rain and spray simulation installation for high voltage insulator tests.



| Activity sector           | Products transferred or dosed with PCM Moineau F series pumps   |
|---------------------------|---|
| Water treatment           | Flocculants in waste water treatment plant, deionized water. Polyelectrolytes and various polymers.   |
| Agro-food and paramedical | Honey, cream, glycolated water, wine, cosmetic base, liquid soap  |
| Mechanical                | Machine coolant, oil and cutting oil.<br>Used oils (drainage, machine tool effluents)<br>Acidic surface treatment effluents (nitric, phosphoric acids...)   |
| Chemicals and energy      | Detergent products (detergents, surfactants, sodium hydroxide...)<br>Dyes and inks, phytosanitary products (fungicides, liquid fertilisers)<br>Starch, acrylic glues.<br>Hydrocarbons, domestic and heavy fuel oils (boiler supply).<br>Emulsions (water/oil, water/soap...)<br>Water-based paint, plasticizers, urea/formol resins |

This table is not exhaustive but refers to the most general applications. Obviously, there are many more in different fields.



*From pumps to process*

