

# PRIMEROYAL® Series

## API 675 metering pump

### Model PN

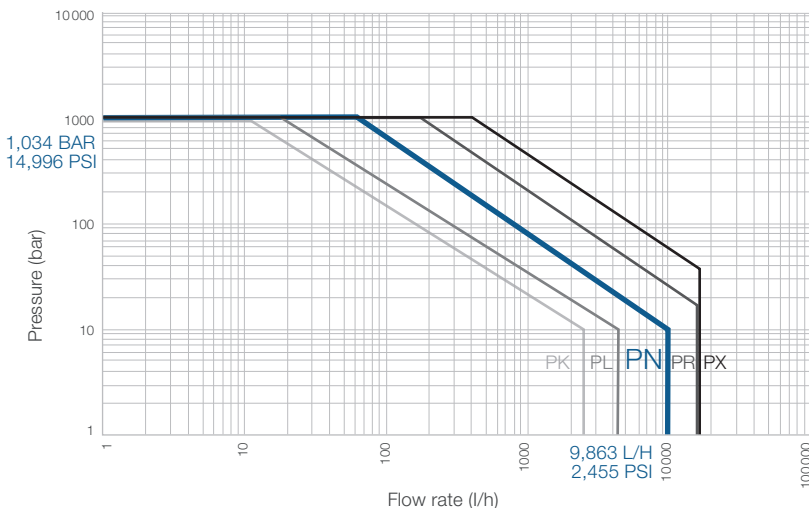
The PRIMEROYAL® metering pumps are versatile, reliable pumps that consistently and accurately inject chemicals. The pumps' field-proven design enables precise control of the pump delivery rate with a +/-1% steady state accuracy, over a range to 10 to 100% of the nominal flowrate. They feature a compact, variable eccentric drive that changes the stroke length by changing the position of the center of the shaft in the eccentric.

Model PN provides accurate dosing of a broad spectrum of fluids used in many industrial processes thanks to its modular design which offers several types of liquid ends, capacity control options and other configuration options enabling it to meet the specific requirements of your process application.



PN pump - HPD liquid end

### Simplex PRIMEROYAL® Pumps



|                      | 50 Hz motor     | 60 Hz motor      |
|----------------------|-----------------|------------------|
| <b>Flow rate</b>     | Up to 9,863 l/h | Up to 2,455 GPH  |
| <b>Pressure</b>      | Up to 1,034 bar | Up to 14,996 PSI |
| <b>Thrust</b>        | 2,000 daN       | 4,496            |
| <b>100% stroke</b>   | 63 mm           | 2.48 in          |
| <b>Ambient T°</b>    |                 |                  |
| <b>Standard</b>      | -10 to +50 °C   | +14 to +122 °F   |
| <b>Low T° design</b> | -40 to +50 °C   | -40 to +122 °F   |

### Applications

- **Oil & Gas:** injection of methanol, MEG and glycol to protect the pipes and avoid any stops of production due to hydrates; injection of wax inhibitors, demulsifiers, pour point depressants to control the oil viscosity, treatment of produced water (transfer, injection of coagulants...)
- **Refinery/Downstream:** injection of DMDS (dimethyl disulfide) to activate hydrocracking/hydrodesulphuring catalysts, boiler feed water pump, metering of additives
- **Chemistry/Petrochemistry:** ETO charge pump for the production of organosulfur compounds, dosing ENB (Ethylidene Norbornene) for manufacturing of EPDM, injection of additives and reactants, transfer of condensate before treatment
- **Power generation:** metering of biocide, hypochlorite to prevent fouling of the mechanical equipment and pipework

## Benefits

- Compliant with **API675 standards**
- **Adaptability and accuracy:** capacity adjustable while running or stopped (stroke micrometric adjustment, 10 turns only from 0 to 100%, graduation scale in %)
- **Space constraints:** available in vertical or horizontal motor configurations
- **Suitable for the majority of fluids in all industrial processes:** many stroke speeds for accurate dosing
- **Modular design to precisely fit your needs:** multiple options for liquid ends, check valves, connection types, and control...
- **Multiplexing capability:** providing cost savings in the power consumption and asset footprint whilst reducing pulsation and required NPSH and, giving the capability to inject several different products or meet a specific flow rate
- **Long life:** ensured by using high quality materials engineered to a robust and proven construction, oil bath lubrication to ensure reliability during continuous operation
- **Safety:** diaphragm liquid ends guaranteed leak-proof with service life in excess of 20,000 hours
- **Operations even in the most extreme conditions:** specific configurations to operate in saline/offshore conditions, desert, low temperature environment
- **Global design:** can comply with the main worldwide certifications and systems: ATEX, NACE, SASO, Customs Union, etc.
- **Over-pressure protection:** integrated safety valve to protect the pump on diaphragm liquid ends
- **Maintenance easy and fast:** the patented MARS system (Mechanically Actuated Refill System) on PTFE diaphragm liquid ends avoids the need to delicately adjust the refill valve

## Technical features

- Packed plunger, PTFE or metallic diaphragm liquid ends available
- Liquid end body in 316L S.S., 17.4 PH, PVC or PVDF. Other materials such as Alloy 20, Hastelloy, super Duplex available upon request
- Diaphragms in PTFE, 316L or 301 stainless steel; plunger in ceramic (Al2O3) or chromium oxide coated
- 6 stroke speeds/gear ratios available with 50 Hz-motor: 64, 78, 96, 117, 149 and 180 spm. 5 stroke speeds/gear ratios with 60 Hz-motor: 77, 94, 115, 140 and 179 spm
- Manual, electrical or pneumatic stroke length adjustment
- Fixed stroke version. A variable speed motor can allow to instantly vary the flow rate
- IEC or NEMA mounting, motor for frequency variation
- Electric equipment for non-hazardous or hazardous area, large variety of protections and insulations
- Conforms to ATEX CE EX II 2G/D c T4/T3 with ATEX motors
- Optimum protection for critical processes or pumped fluids: double or triple diaphragm, diaphragm failure detection, temperature probes
- Special valves for any type of fluid (including concentrated sulphuric acid and slurries)
- Remote head, cooling/heating jacket to operate into processes requiring low/extreme fluid temperatures
- Full set of connections: screwed or flanged connectors (ANSI, DIN or ISO)
- Wide range of accessories available to complete your dosing installation

## Design Specifications

According to your process, we advise you on the best design of liquid ends to meet your specific requirements. The following charts demonstrate the minimum and maximum flow rate and pressure of the pump for a single head on a basic configuration. To obtain the flow rate for multiplex head, multiply the flow rate by the number of heads. For other applications, please consult us.

Standard connections are depending on the plunger diameter; a full set of connections are available upon request. Please consult us for details.

## Packed plunger liquid ends

- High pressure capabilities
- Lowest NPSH requirements
- Ideal for viscous fluids and slurries
- Robust, Reliable and Efficient operation

### TYPE P4 (NX)

- High and extreme pressure capability
- High hydraulic efficiency
- Contained leakage concept reduces monitoring and maintenance

| Plunger diameter code | Swept volume          | 50 Hz Motor      |                 |               |       |              | 60 Hz Motor      |                 |               |       |              | Connections |
|-----------------------|-----------------------|------------------|-----------------|---------------|-------|--------------|------------------|-----------------|---------------|-------|--------------|-------------|
|                       |                       | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max |             |
|                       |                       |                  |                 | 10 bar        | P.max |              |                  |                 | 145 psi       | P.max |              |             |
| <b>Ø</b>              | <b>cm<sup>3</sup></b> | <b>spm</b>       | <b>rpm</b>      | <b>l/h</b>    |       | <b>bar</b>   | <b>spm</b>       | <b>rpm</b>      | <b>GPH</b>    |       | <b>psi</b>   |             |
| 16                    | 12.7                  | 149              | 1440            | 109           | 66    | 1000         | 140              | 1728            | 27            | 16.2  | 14503        | 3/8" MP     |
| 20                    | 19.8                  | 149              | 1440            | 170           | 128   | 630          | 140              | 1728            | 42            | 32    | 9137         | 3/4" MP     |
| 25                    | 30.9                  | 149              | 1440            | 265           | 224   | 400          | 140              | 1728            | 66            | 56    | 5801         | 1" - VV2 m  |

### TYPE P2 - P3 (N AND UT)

- Self-adjustment with UT design for ease of assembly and service
- User adjustment with N design, a more economical alternative
- Cost effective solution

| Plunger diameter code     | Swept volume          | 50 Hz Motor      |                 |               |       |              | 60 Hz Motor      |                 |               |       |              | Connections        |
|---------------------------|-----------------------|------------------|-----------------|---------------|-------|--------------|------------------|-----------------|---------------|-------|--------------|--------------------|
|                           |                       | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max |                    |
|                           |                       |                  |                 | 10 bar        | P.max |              |                  |                 | 145 psi       | P.max |              |                    |
| <b>Ø</b>                  | <b>cm<sup>3</sup></b> | <b>spm</b>       | <b>rpm</b>      | <b>l/h</b>    |       | <b>bar</b>   | <b>spm</b>       | <b>rpm</b>      | <b>GPH</b>    |       | <b>psi</b>   |                    |
| <b>Packed Plunger (N)</b> |                       |                  |                 |               |       |              |                  |                 |               |       |              |                    |
| 19.1                      | 18                    | 149              | 1440            | 144.5         | 90.4  | 690          | 140              | 1728            | 36            | 22.5  | 10007        | 1/2" - VV1 m       |
| 22.2                      | 24.4                  | 149              | 1440            | 205.4         | 148.9 | 509          | 140              | 1728            | 51.1          | 36.9  | 7477         | 1/2" - VV1 m       |
| 28.6                      | 40.4                  | 149              | 1440            | 343.1         | 287   | 307          | 140              | 1728            | 85.4          | 71.2  | 4523         | 1/2" - VV1 m       |
| 34.9                      | 60.4                  | 149              | 1440            | 512.5         | 457.6 | 205          | 140              | 1728            | 127.6         | 113.7 | 3027         | 1" - VV1 m         |
| 32                        | 50.7                  | 149              | 1440            | 434           | 393   | 244          | 140              | 1728            | 108           | 98    | 3538         | 1" - VV1 m         |
| 40                        | 79.2                  | 149              | 1440            | 679           | 639   | 155          | 140              | 1728            | 169           | 159   | 2248         | 1" - VV1 m         |
| 44.5                      | 98                    | 149              | 1440            | 839           | 800   | 126          | 140              | 1728            | 209           | 199   | 1827         | 1" - VV1 m         |
| 50.8                      | 127.7                 | 149              | 1440            | 1095          | 1057  | 96           | 140              | 1728            | 273           | 263   | 1392         | 1" - VV1 m         |
| 57.2                      | 161.9                 | 149              | 1440            | 1386          | 1349  | 75           | 140              | 1728            | 345           | 336   | 1087         | 1" 1/2 - VV1 m     |
| 63.5                      | 199.5                 | 149              | 1440            | 1712          | 1677  | 61           | 140              | 1728            | 426           | 417   | 884          | 2" - VV1 m         |
| 69.9                      | 241.8                 | 149              | 1440            | 2071          | 2037  | 50           | 140              | 1728            | 515           | 507   | 725          | 2" - VV1 m         |
| 79.4                      | 311.9                 | 149              | 1440            | 2675          | 2645  | 38           | 140              | 1728            | 666           | 658   | 551          | 2" - VV1 m         |
| 88.9                      | 391.1                 | 149              | 1440            | 3356          | 3329  | 30           | 140              | 1728            | 835           | 828   | 435          | 2" - VV1 m         |
| 101.6                     | 510.8                 | 149              | 1440            | 4383          | 4360  | 23           | 140              | 1728            | 1091          | 1085  | 333          | 2" - VV1 m         |
| 127                       | 798.1                 | 149              | 1440            | 6849          | 6838  | 14           | 140              | 1728            | 1705          | 1702  | 203          | 3" - VV3 - 150 lbs |
| 152.4                     | 1149.2                | 149              | 1440            | 9863          | 9863  | 10           | 140              | 1728            | 2455          | 2455  | 145          | 3" - VV3 - 150 lbs |



an Accudyne Industries brand

## PTFE diaphragm liquid ends

- Widest chemical compatibility
- 100% leakage-free
- High operational safety: integrated relief valve
- Improved lifecycle costs
- The MARS system offers a number of advantages over traditional refill systems in hydraulically actuated diaphragm liquid ends: easy start-up without the need to adjust the refill valve, a delicate procedure

### TYPE H1 - H2 - H3 - H4 (HPD)

- Universal solution
- High hydraulic efficiency

| Plunger diameter code        | Swept volume    | 50 Hz Motor      |                 |               |       |              | 60 Hz Motor      |                 |               |       |              | Connections      |
|------------------------------|-----------------|------------------|-----------------|---------------|-------|--------------|------------------|-----------------|---------------|-------|--------------|------------------|
|                              |                 | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max |                  |
|                              |                 |                  |                 | 10 bar        | P.max |              |                  |                 | 145 psi       | P.max |              |                  |
| Ø                            | cm <sup>3</sup> | spm              | rpm             | l/h           | bar   | spm          | rpm              | GPH             | psi           |       |              |                  |
| Metallic.type H - Série 6 HP |                 |                  |                 |               |       |              |                  |                 |               |       |              |                  |
| 25                           | 30.9            | 149              | 1440            | 262           | 155   | 300          | 140              | 1728            | 65            | 39    | 4351         | 1/2" - WV1 m     |
| Metallic.type H - Série 6 BP |                 |                  |                 |               |       |              |                  |                 |               |       |              |                  |
| 25                           | 30.9            | 149              | 1440            | 262           | 235   | 96           | 140              | 1728            | 65            | 39    | 1392         | 1/2" - WV1 m     |
| 32                           | 50.7            | 149              | 1440            | 430           | 383   | 87           | 140              | 1728            | 107           | 95    | 1261         | 1" - WV1 m       |
| 40                           | 79.2            | 149              | 1440            | 672           | 599   | 87           | 140              | 1728            | 167           | 149   | 1261         | 1" - WV1 m       |
| 50                           | 123.7           | 149              | 1440            | 1050          | 936   | 87           | 140              | 1728            | 261           | 233   | 1261         | 1" - WV1 m       |
| 55                           | 149.7           | 149              | 1440            | 1271          | 1137  | 84           | 140              | 1728            | 316           | 283   | 1218         | 1" - WV1 m       |
| 63                           | 196.4           | 175              | 1440            | 1958          | 1889  | 35           | 140              | 1728            | 528           | 510   | 507          | 1" 1/2 - WV1 m   |
| 80                           | 316.7           | 175              | 1440            | 3158          | 3064  | 35           | 178              | 1728            | 852           | 827   | 507          | 1" 1/2 - WV1 m   |
| 90                           | 400.8           | 175              | 1440            | 3997          | 3879  | 31           | 140              | 1728            | 847           | 822   | 449          | 1" 1/2 - WV1 m   |
| 100                          | 494.8           | 149              | 1440            | 4202          | 4113  | 25           | 140              | 1728            | 1046          | 1024  | 362          | 1" 1/2 - WV1 m   |
| 110                          | 598.7           | 149              | 1440            | 4977          | 4375  | 21           | 140              | 1728            | 1239          | 1089  | 304          | 3" - WV3 150 lbs |
| 125                          | 773.1           | 149              | 1440            | 6427          | 6002  | 16           | 140              | 1728            | 1600          | 1494  | 232          | 3" - WV3 150 lbs |
| 145                          | 1040.3          | 149              | 1440            | 8649          | 8458  | 12           | 140              | 1728            | 2153          | 2105  | 174          | 3" - WV3 150 lbs |
| Metallic.type H - Série 8    |                 |                  |                 |               |       |              |                  |                 |               |       |              |                  |
| 28                           | 38.8            | 175              | 1440            | 386           | 257   | 300          | 178              | 1728            | 104           | 69    | 4351         | 1" 1/2 - WV1 m   |
| 32                           | 50.7            | 175              | 1440            | 505           | 378   | 248          | 178              | 1728            | 136           | 102   | 3596         | 1" 1/2 - WV1 m   |
| 35                           | 60.6            | 175              | 1440            | 604           | 479   | 207          | 178              | 1728            | 163           | 129   | 3002         | 1" 1/2 - WV1 m   |
| 40                           | 79.2            | 175              | 1440            | 789           | 694   | 159          | 178              | 1728            | 213           | 187   | 2306         | 1" 1/2 - WV1 m   |
| 45                           | 100.2           | 175              | 1440            | 999           | 907   | 125          | 178              | 1728            | 269           | 245   | 1812         | 1" 1/2 - WV1 m   |
| 50                           | 123.7           | 175              | 1440            | 1233          | 1143  | 101          | 178              | 1728            | 333           | 308   | 1464         | 1" 1/2 - WV1 m   |
| 60                           | 178.1           | 175              | 1440            | 1776          | 1691  | 70           | 178              | 1728            | 479           | 456   | 1015         | 1" 1/2 - WV1 m   |
| 63                           | 196.4           | 175              | 1440            | 1958          | 1873  | 64           | 178              | 1728            | 528           | 505   | 928          | 1" 1/2 - WV1 m   |
| Plastic. type P              |                 |                  |                 |               |       |              |                  |                 |               |       |              |                  |
| 100                          | 494.8           | 117              | 1440            | 3299          | 3299  | 10           | 115              | 1728            | 858           | 858   | 145          | 1" 1/2 - WV1 m   |
| 125                          | 773.1           | 117              | 1440            | 5047          | 5047  | 10           | 115              | 1728            | 1313          | 1313  | 145          | 3" - WV3 150 lbs |
| 145                          | 1040.3          | 117              | 1440            | 6791          | 6791  | 10           | 115              | 1728            | 1766          | 1766  | 145          | 3" - WV3 150 lbs |

## Metallic diaphragm liquid ends

- Challenging products dosing: diffusing, radioactive or abrasive liquids
- High pumped liquid temperatures
- “Metal to Metal” sealing design assures leak free operation
- High operation safety: integrated relief valve

### TYPE M2 (MX)

- High and extreme pressures
- Low flow rates

| Plunger diameter code     | Swept volume    | 50 Hz Motor      |                 |               |       |              | 60 Hz Motor      |                 |               |       |              | Connections |
|---------------------------|-----------------|------------------|-----------------|---------------|-------|--------------|------------------|-----------------|---------------|-------|--------------|-------------|
|                           |                 | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max |             |
|                           |                 |                  |                 | 10 bar        | P.max |              |                  |                 | 145 psi       | P.max |              |             |
| Ø                         | cm <sup>3</sup> | spm              | rpm             | l/h           |       | bar          | spm              | rpm             | GPH           |       | psi          |             |
| Metallic double diaphragm |                 |                  |                 |               |       |              |                  |                 |               |       |              |             |
| 14                        | 9.7             | 175              | 1440            | 93            | 45    | 1034         | 179              | 1728            | 25            | 12    | 14996        | VV7         |
| 16                        | 12.7            | 175              | 1440            | 122           | 83    | 828          | 179              | 1728            | 33            | 22    | 12009        | VV7         |
| 19                        | 17.9            | 175              | 1440            | 172           | 131   | 604          | 179              | 1728            | 46            | 35    | 8760         | VV7         |
| 22                        | 23.9            | 175              | 1440            | 231           | 195   | 448          | 179              | 1728            | 62            | 52    | 6497         | 3/4" VV2 f  |
| 27                        | 36.1            | 175              | 1440            | 348           | 310   | 303          | 179              | 1728            | 94            | 83    | 4394         | 3/4" VV2 f  |

### TYPE M1 (M)

- High pressures
- Medium flow rates

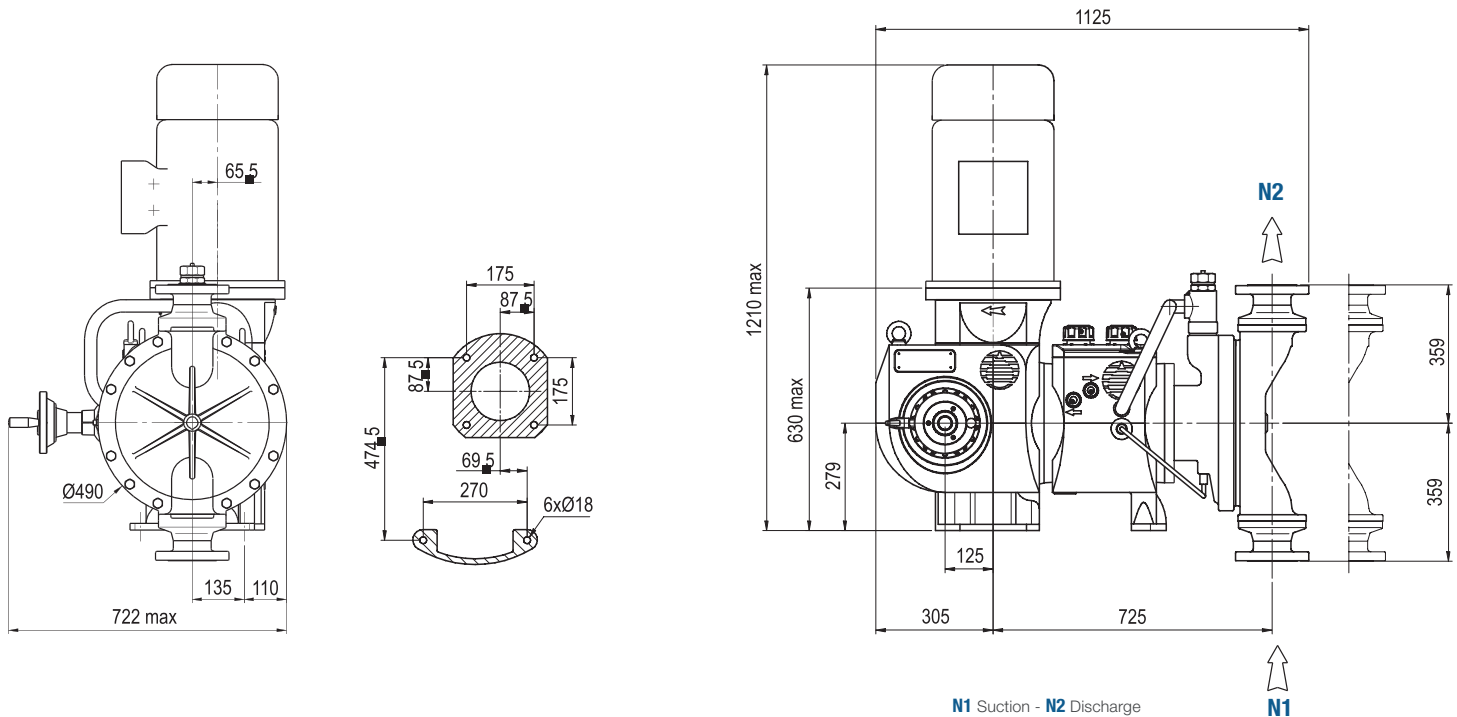
| Plunger diameter code | Swept volume    | 50 Hz Motor      |                 |               |       |              | 60 Hz Motor      |                 |               |       |              | Connections  |
|-----------------------|-----------------|------------------|-----------------|---------------|-------|--------------|------------------|-----------------|---------------|-------|--------------|--------------|
|                       |                 | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max | Stroke speed max | Motor speed max | Flow rate max |       | Pressure max |              |
|                       |                 |                  |                 | 10 bar        | P.max |              |                  |                 | 145 psi       | P.max |              |              |
| Ø                     | cm <sup>3</sup> | spm              | rpm             | l/h           |       | bar          | spm              | rpm             | GPH           |       | psi          |              |
| M single diaphragm    |                 |                  |                 |               |       |              |                  |                 |               |       |              |              |
| 16                    | 12.7            | 175              | 1440            | 122           | 86    | 500          | 179              | 1728            | 33            | 23    | 7251         | 1/2" - VV1 m |
| 18                    | 16              | 175              | 1440            | 154           | 108   | 500          | 179              | 1728            | 42            | 29    | 7251         | 1" - VV1 m   |
| 20                    | 19.8            | 175              | 1440            | 191           | 134   | 500          | 179              | 1728            | 51            | 36    | 7251         | 1" - VV1 m   |
| 22                    | 23.9            | 175              | 1440            | 230           | 162   | 500          | 179              | 1728            | 62            | 44    | 7251         | 1" - VV1 m   |

## Dimensions, Weight and Packing

The general dimensions are given in mm and as an indication only. The dimensions given correspond to the maximum dimensions (largest liquid ends, most powerful motor)

### HPD PTFE DIAPHRAGM LIQUID END

#### Simplex configuration



| Version           | Net weight(*) |     | Gross weight(*) |      | Packing           |                    |
|-------------------|---------------|-----|-----------------|------|-------------------|--------------------|
|                   | kg            | lbs | kg              | lbs  | (L x W x H) mm    | (L x W x H) in     |
| Series PN Simplex | 450           | 992 | 635             | 1400 | 1280 x 880 x 1450 | 50.4 x 34.6 x 57.1 |

(\*) Approximately

### Milton Roy and our trusted partners can help to:

- Guide you in selecting the turnkey solution that best suits your needs
- Advise you on the optimum installation of your equipment
- Propose a wide range of accessories to complete the installation of your pump
- Advise you on the essential wear parts to be kept on hand in order to optimize the performance of your equipment
- Provide turnkey dosing solutions, from a skid-mounted pump to a complex, 100% customized chemical injection package

Picture for illustration purposes only. We reserve the right to modify the characteristics of our products without prior notice  
Literature #59194.01