

# PRIMEROYAL® Series

## API 675 Metering Pump

### Model PH

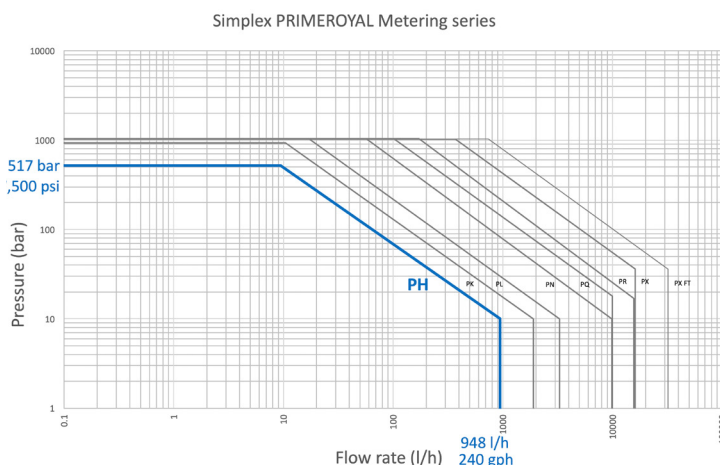
PRIMEROYAL® metering pumps are versatile, reliable pumps that consistently and accurately inject chemicals. The pumps' field-proven design enables precise control of the pump delivery rate with a  $\pm 1\%$  steady state accuracy ranging from 10 to 100% of the nominal flow rate.

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

### Simplex PRIMEROYAL® Metering Series



HPD Liquid End



|                     | 50 Hz motor   | 60 Hz motor     |
|---------------------|---------------|-----------------|
| Flow rate           | Up to 948 l/h | Up to 240 gph   |
| Pressure            | Up to 517 bar | Up to 7,500 psi |
| Thrust              | 350 daN       | 787 lbf         |
| 100% stroke         | 30 mm         | 1.18 in         |
| Ambient T° Standard | -10 to +50 °C | +14 to +122 °F  |
| Low T° design       | -40 to +50 °C | -40 to +122 °F  |

### Applications

- Chemical / Petrochemical: injection of additives, injection of co-catalyst such as TEAL for polyethylene and polypropylene, injection of sulphuric acid into water to produce diluted sulphuric acid
- Food and Beverage: injection of enzymes in starch production, injection of caustic soda for process water neutralization in refining and distilling applications
- Oil and Gas: injection of biocide, corrosion / scale inhibitors, hydrogen sulfide (H<sub>2</sub>S) scavengers to protect piping and other assets and maintaining production rates, transfer of steam condensate
- Refinery / Downstream: injection of chemicals for separation and treatment of refined products, injection of paraffin inhibitor into fuel storage tanks
- Water / Wastewater Treatment:
  - Municipal (drinking) Water Treatment: disinfection, fluoridation, coagulation / flocculation, pH control, water conditioning before and / or after RO treatment in desalination plant
  - Industrial Water Treatment: protection of installation such as boilers and hydraulic systems to prevent scale and corrosion

## Benefits

- Compliant with API 675 standards
- Adaptability and accuracy: capacity adjustable while running and stopped (stroke micrometric adjustment, ten (10) turns only from 0 to 100%, graduation scale in %)
- Space constraints: minimized footprint and weight, available in vertical or horizontal motor configurations
- Suitable for most fluids used in 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: provides cost savings in power consumption and asset footprint while reducing pulsation and required NPSH, capable of injection several different products at multiple specific flow rates
- Long life: high-quality materials engineered to a robust and proven construction, oil bath lubrication to ensure reliability during continuous operation
- Safety: leak-resistant diaphragm liquid ends with service life over 20,000 hours.
- Operates in the most extreme conditions: specific configurations to operate in saline/offshore conditions, desert, or low temperature environment
- Global design: complies with major global certifications and systems: ATEX, NACE, SASO, Customs Union, etc.
- Overpressure protection: integrated safety valve to protect the pump on diaphragm liquid ends
- Efficient maintenance: the patented Mechanically Actuated Refill System (MARS) eliminates the need for adjustments the refill valve
- PTFE and metallic diaphragm liquid ends to offer a wide chemical compatibility with the process fluids
- High performances with metallic liquid end design, up to 517 bar (7,500 psi)

## Technical features

- Liquid end body in 316L SS, PVC or PVDF. Other materials such as Alloy 20, Hastelloy®, super Duplex available upon request
- Diaphragms in PTFE - Discharge pressure up to 350 bar (5,076 psi)
- Diaphragms in 316 stainless steel - Discharge pressure up to 517 bar (7,500 psi)
- Six (6) stroke speeds / 5 gear ratios available with 50 Hz motor: 38, 58, 99, 115, 144 and 180 spm. Five (5) stroke speeds / 4 gear ratios with 60 Hz motor: 45, 69, 118, 138 and 172 spm
- Manual or electrical stroke length adjustment
- 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 II 2 G Ex h IIC T4 Gb X with ATEX motor
- Optimum protection for critical processes or pumped fluids: double diaphragm rupture detection system, temperature probes
- Special valves for any type of fluid (including concentrated sulphuric acid and slurries)
- Remote head, cooling/heating jacket to operate in 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

Based on your process requirements, we will recommend the best liquid ends to meet your specific needs. The following charts demonstrate the minimum and maximum flow rate and pressure of a pump with a single head on a basic configuration. To obtain the flow rate for multiplexed heads, 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.

## PTFE diaphragm liquid ends

- Widest chemical compatibility
- 100% leakage-free
- High operational safety: integrated relief valve
- Improved life-cycle costs
- Low flow rates and high pressure
- Mechanically Actuated Relief System (MARS) offers a number of advantages over traditional refill systems in hydraulically actuated diaphragm liquid ends: easy start-up, eliminating the need to adjust the refill valve.

### TYPE H1-H3 (HPD) and H7 (for High Pressure and Low Flow applications)

- Universal solution
- High hydraulic efficiency

|                                                                       |              | 50 Hz Motor      |                 |               |        |              | 60 Hz Motor      |                 |               |        |              |              |
|-----------------------------------------------------------------------|--------------|------------------|-----------------|---------------|--------|--------------|------------------|-----------------|---------------|--------|--------------|--------------|
| Plunger diameter code                                                 | Swept volume | Stroke speed max | Motor speed max | Flow rate max |        | Pressure max | Stroke speed max | Motor speed max | Flow rate max |        | Pressure max | Connections  |
|                                                                       |              |                  |                 | 10 bar        | P. max |              |                  |                 | 145 psi       | P. max |              |              |
| Ø                                                                     | cm³          | spm              | rpm             | l/h           |        | bar          | spm              | rpm             | gph           |        | psi          |              |
| Stainless Steel 316L liquid end with PTFE diaphragm - Type H1, H3, H7 |              |                  |                 |               |        |              |                  |                 |               |        |              |              |
| 11                                                                    | 2.9          | 180              | 1440            | 24.0          | 17.0   | 350          | 173              | 1728            | 6.0           | 4.3    | 5076         | 1/2" - WV1 m |
| 12                                                                    | 3.4          | 180              | 1440            | 28.5          | 21.3   | 309          | 173              | 1728            | 7.2           | 5.4    | 4488         | 1/2" - WV1 m |
| 13                                                                    | 4.0          | 180              | 1440            | 33.5          | 26.3   | 264          | 173              | 1728            | 8.5           | 6.6    | 3824         | 1/2" - WV1 m |
| 14                                                                    | 4.6          | 180              | 1440            | 38.8          | 31.7   | 227          | 173              | 1728            | 9.8           | 8.0    | 3297         | 1/2" - WV1 m |
| 15                                                                    | 5.3          | 180              | 1440            | 44.6          | 37.5   | 198          | 173              | 1728            | 11.3          | 9.5    | 2872         | 1/2" - WV1 m |
| 16                                                                    | 6.0          | 180              | 1440            | 50.8          | 43.7   | 174          | 173              | 1728            | 12.8          | 11.0   | 2524         | 1/2" - WV1 m |
| 20                                                                    | 9.4          | 180              | 1440            | 96            | 84     | 111          | 173              | 1728            | 24.4          | 21.2   | 1615         | 1/2" - WV1 m |
| 22                                                                    | 11.4         | 180              | 1440            | 117           | 105    | 92           | 173              | 1728            | 29.4          | 26.6   | 1335         | 1/2" - WV1 m |
| 25                                                                    | 14.7         | 180              | 1440            | 151           | 139    | 71           | 173              | 1728            | 38.0          | 35.1   | 1034         | 1/2" - WV1 m |
| 28                                                                    | 18.5         | 180              | 1440            | 189           | 178    | 56           | 173              | 1728            | 47.8          | 45.3   | 824          | 1/2" - WV1 m |
| 32                                                                    | 24.1         | 180              | 1440            | 247           | 237    | 43           | 173              | 1728            | 62.7          | 60.2   | 631          | 1/2" - WV1 m |
| 36                                                                    | 30.5         | 180              | 1440            | 313           | 304    | 34           | 173              | 1728            | 79.2          | 77.0   | 498          | 1/2" - WV1 m |
| 40                                                                    | 37.7         | 180              | 1440            | 386           | 378    | 27           | 173              | 1728            | 97.9          | 95.7   | 403          | 1/2" - WV1 m |
| 45                                                                    | 47.7         | 144              | 1440            | 391           | 385    | 22           | 138              | 1728            | 98.9          | 97.6   | 319          | 1" - WV1 m   |
| 50                                                                    | 58.9         | 144              | 1440            | 483           | 478    | 17           | 138              | 1728            | 122.3         | 121.1  | 258          | 1" - WV1 m   |
| 55                                                                    | 71.3         | 144              | 1440            | 585           | 581    | 14           | 138              | 1728            | 148.0         | 147.0  | 213          | 1" - WV1 m   |
| 60                                                                    | 84.8         | 144              | 1440            | 696           | 694    | 12           | 138              | 1728            | 176.2         | 175.6  | 179          | 1" - WV1 m   |
| 63                                                                    | 93.5         | 144              | 1440            | -             | 766    | 11           | 138              | 1728            | -             | 193.6  | 162          | 1" - WV1 m   |
| 70                                                                    | 115.5        | 144              | 1440            | -             | 948    | 9            | 138              | 1728            | -             | 240.0  | 131          | 1" - WV1 m   |
| PVC liquid end with PTFE diaphragm - Type H1                          |              |                  |                 |               |        |              |                  |                 |               |        |              |              |
| 20                                                                    | 9.4          | 180              | 1440            | -             | 92.6   | 10           | 172              | 1728            | -             | 23.5   | 145          | 1/2" - WV1 f |
| 22                                                                    | 11.4         | 180              | 1440            | -             | 110.8  | 10           | 172              | 1728            | -             | 28.1   | 145          | 1/2" - WV1 f |
| 25                                                                    | 14.7         | 180              | 1440            | -             | 140.6  | 10           | 172              | 1728            | -             | 36     | 145          | 1/2" - WV1 f |
| 28                                                                    | 18.5         | 180              | 1440            | -             | 189    | 10           | 172              | 1728            | -             | 48     | 145          | 1/2" - WV1 f |
| 32                                                                    | 24.1         | 180              | 1440            | -             | 247    | 10           | 172              | 1728            | -             | 63     | 145          | 1/2" - WV1 f |
| 36                                                                    | 30.5         | 180              | 1440            | -             | 313    | 10           | 172              | 1728            | -             | 79     | 145          | 1/2" - WV1 f |
| 40                                                                    | 37.7         | 180              | 1440            | -             | 386    | 10           | 172              | 1728            | -             | 98     | 145          | 1/2" - WV1 f |
| 45                                                                    | 47.7         | 144              | 1440            | -             | 391    | 10           | 138              | 1728            | -             | 99     | 145          | 1" - WV1 f   |
| 50                                                                    | 58.9         | 144              | 1440            | -             | 483    | 10           | 138              | 1728            | -             | 122    | 145          | 1" - WV1 f   |
| 55                                                                    | 71.3         | 144              | 1440            | -             | 585    | 10           | 138              | 1728            | -             | 148    | 145          | 1" - WV1 f   |
| 60                                                                    | 84.8         | 144              | 1440            | -             | 696    | 10           | 138              | 1728            | -             | 176    | 145          | 1" - WV1 f   |
| 63                                                                    | 93.5         | 144              | 1440            | -             | 766    | 10           | 138              | 1728            | -             | 194    | 145          | 1" - WV1 f   |
| 70                                                                    | 115.5        | 144              | 1440            | -             | 948    | 9            | 138              | 1728            | -             | 240    | 131          | 1" - WV1 f   |

## Metallic diaphragm liquid end

- High pressures
- High pumped liquid temperatures
- Challenging dosing products: diffusing, radioactive
- Leak-resistant "Metal to Metal" sealing design

### Type M1 (M) and M3 - Double Metallic diaphragm - 316L SS Liquid end

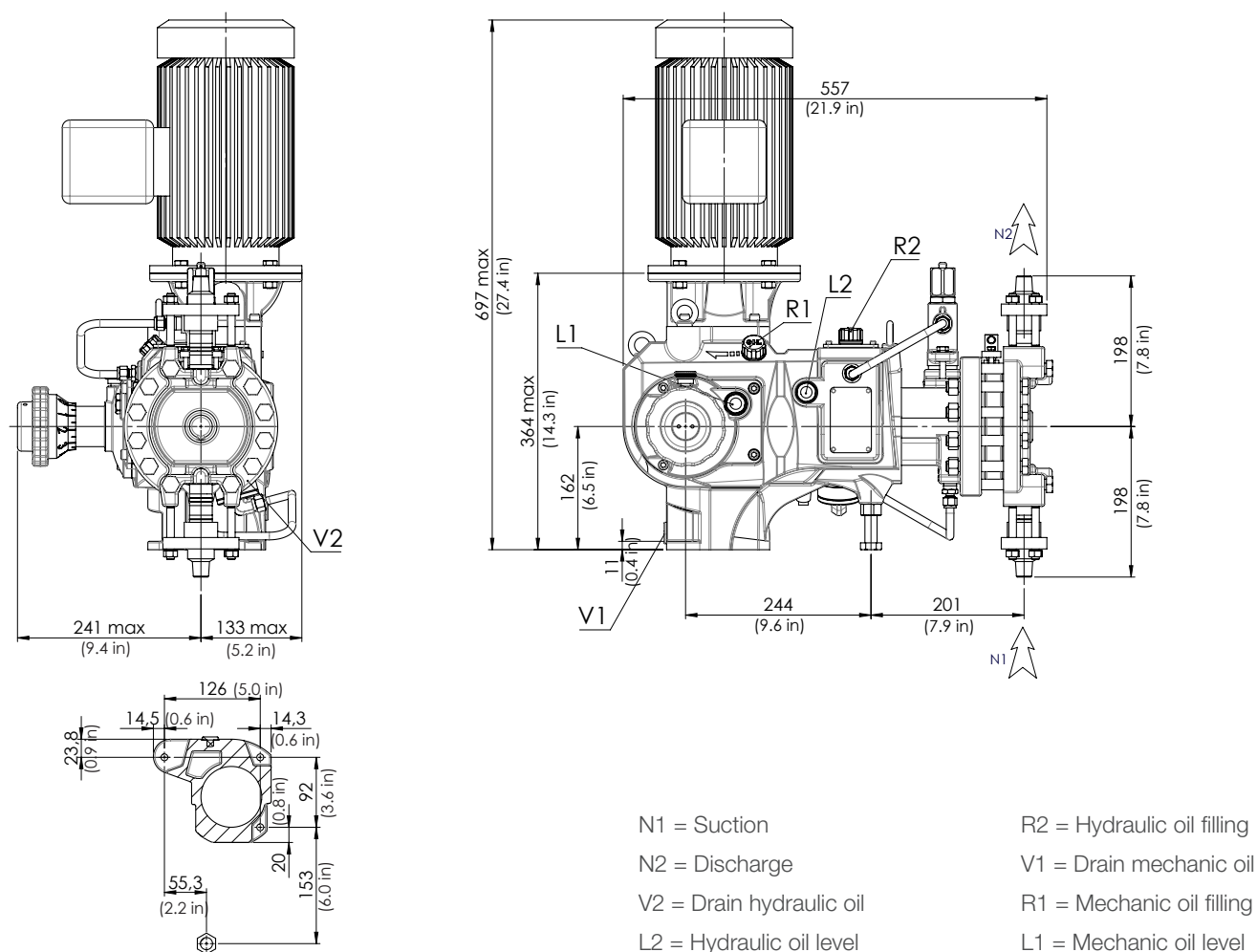
|                                                                                           |              | 50 Hz Motor      |                 |               |        |              | 60 Hz Motor      |                 |               |        |              | Connections |
|-------------------------------------------------------------------------------------------|--------------|------------------|-----------------|---------------|--------|--------------|------------------|-----------------|---------------|--------|--------------|-------------|
| Plunger diameter code                                                                     | Swept volume | 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                                                                                         | cm³          | spm              | rpm             | l/h           |        | bar          | spm              | rpm             | gph           |        | psi          |             |
| Stainless steel 316L liquid end with stainless steel 316L double diaphragm - Type M3 (MH) |              |                  |                 |               |        |              |                  |                 |               |        |              |             |
| 5.5                                                                                       | 0.7          | 144              | 1440            | 5.5           | 4      | 517          | 138              | 1728            | 1.4           | 0.99   | 7500         | 1/2" - W1 m |
| Stainless steel 316L liquid end with stainless steel 316L double diaphragm - Type M1 (M)  |              |                  |                 |               |        |              |                  |                 |               |        |              |             |
| 8                                                                                         | 1.5          | 180              | 1440            | 14.9          | 9.8    | 350          | 173              | 1728            | 3.7           | 2.5    | 5076         | 1/2" - W1 m |
| 10                                                                                        | 2.4          | 180              | 1440            | 23.4          | 15.4   | 350          | 173              | 1728            | 5.9           | 3.9    | 5076         | 1/2" - W1 m |
| 12                                                                                        | 3.4          | 180              | 1440            | 33.7          | 23.6   | 309          | 173              | 1728            | 8.5           | 6.0    | 4488         | 1/2" - W1 m |
| 14                                                                                        | 4.6          | 180              | 1440            | 45            | 35     | 227          | 173              | 1728            | 11.4          | 8.9    | 3297         | 1/2" - W1 m |
| 16                                                                                        | 6.0          | 180              | 1440            | 59            | 50     | 174          | 173              | 1728            | 14.9          | 12.7   | 2524         | 1/2" - W1 m |
| 18                                                                                        | 7.6          | 180              | 1440            | 75            | 66     | 137          | 173              | 1728            | 19.0          | 16.5   | 1994         | 1/2" - W1 m |
| 20                                                                                        | 9.4          | 180              | 1440            | 93            | 84     | 111          | 173              | 1728            | 23.4          | 21.0   | 1615         | 1/2" - W1 m |

### Type M1 (M) and M3 - Single Metallic diaphragm - 316L SS Liquid end

|                                                                                           |              | 50 Hz Motor      |                 |               |        |              | 60 Hz Motor      |                 |               |        |              | Connections |
|-------------------------------------------------------------------------------------------|--------------|------------------|-----------------|---------------|--------|--------------|------------------|-----------------|---------------|--------|--------------|-------------|
| Plunger diameter code                                                                     | Swept volume | 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                                                                                         | cm³          | spm              | rpm             | l/h           |        | bar          | spm              | rpm             | gph           |        | psi          |             |
| Stainless steel 316L liquid end with stainless steel 316L double diaphragm - Type M3 (MH) |              |                  |                 |               |        |              |                  |                 |               |        |              |             |
| 5.5                                                                                       | 0.7          | 144              | 1440            | 5.5           | 4      | 517          | 138              | 1728            | 1.4           | 0.99   | 7500         | 1/2" - W1 m |
| Stainless steel 316L liquid end with stainless steel 316L double diaphragm - Type M1 (M)  |              |                  |                 |               |        |              |                  |                 |               |        |              |             |
| 8                                                                                         | 1.5          | 180              | 1440            | 14.9          | 10.5   | 500          | 173              | 1728            | 3.7           | 2.7    | 7251         | 1/2" - W1 m |
| 10                                                                                        | 2.4          | 180              | 1440            | 23.4          | 17.2   | 445          | 173              | 1728            | 5.9           | 4.4    | 6463         | 1/2" - W1 m |
| 12                                                                                        | 3.4          | 180              | 1440            | 33.7          | 27.6   | 309          | 173              | 1728            | 8.5           | 7.0    | 4488         | 1/2" - W1 m |
| 14                                                                                        | 4.6          | 180              | 1440            | 45            | 39     | 227          | 173              | 1728            | 11.4          | 9.8    | 3297         | 1/2" - W1 m |
| 16                                                                                        | 6.0          | 180              | 1440            | 59            | 54     | 174          | 173              | 1728            | 14.9          | 13.6   | 2524         | 1/2" - W1 m |
| 18                                                                                        | 7.6          | 180              | 1440            | 75            | 70     | 137          | 173              | 1728            | 19.0          | 17.7   | 1994         | 1/2" - W1 m |
| 20                                                                                        | 9.4          | 180              | 1440            | 93            | 87     | 111          | 173              | 1728            | 23.4          | 22.1   | 1615         | 1/2" - W1 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).



| Version                           | Net weight (*) |     | Gross weight (*) |     | Packing           |                    |
|-----------------------------------|----------------|-----|------------------|-----|-------------------|--------------------|
|                                   | kg             | lb  | kg               | lb  | (L x W x H) mm    | (L x W x H) in     |
| <b>Series PH - Simplex Series</b> | 95             | 209 | 190              | 419 | 1020 x 670 x 1050 | 40.1 x 26.4 x 41.3 |

\* Approximately

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

- Guide in selecting the turnkey solution that best suits your needs
- Advise on the optimum installation of your equipment
- Propose a wide range of accessories to complete the installation of your pumps
- Advise on essential spare parts to keep on hand 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.

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## About Ingersoll Rand Inc.

Ingersoll Rand Inc. (NYSE:IR), driven by an entrepreneurial spirit and ownership mindset, is dedicated to helping make life better for our employees, customers and communities. Customers lean on us for our technology-driven excellence in mission-critical flow creation and industrial solutions across 40+ respected brands where our products and services excel in the most complex and harsh conditions. Our employees develop customers for life through their daily commitment to expertise, productivity and efficiency. For more information, visit [www.IRCO.com](http://www.IRCO.com).



To learn more about the PRIMEROYAL® Series metering pumps, contact your local representative or visit [miltonroy.com](http://miltonroy.com)