

# PRIMEROYAL® Series

## API 675 Metering Pump

DATA SHEET

### Model PH



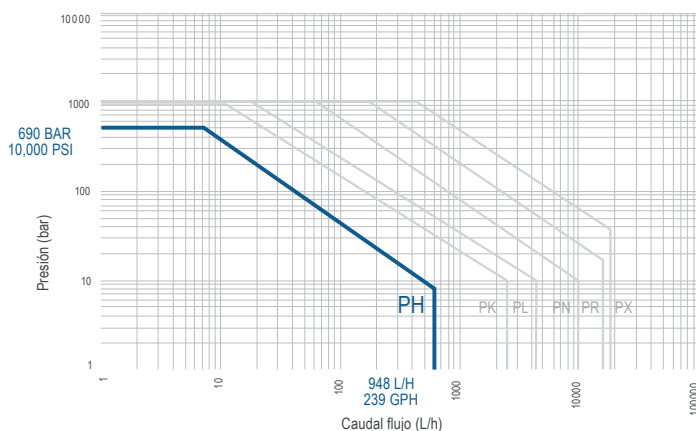
PRIMEROYAL® metering pumps are versatile, reliable pumps that consistently and accurately inject chemicals. The pumps' field-proven design enables precise control of the pump delivery rate with a +/-1% steady state accuracy ranging from 10 to 100% of the nominal flow rate. They feature a compact, variable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

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.



Primeroyal H - HPD Liquid End

### Simplex PRIMEROYAL® Metering Series



	50 Hz motor	60 Hz motor
Flow rate	Up to 948 L/h	Up to 239 gph
Pressure	Up to 690 bar	Up to 10,000 psi
Thrust	350 daN	787 lbf
100% stroke	30 mm	1.18 in
Ambient T°		
Standard	-10 to +55 °C	+14 to +131 °F
Low T° design	-40 to +55 °C	-40 to +131 °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
- 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
- Packed plunger, PTFE or metallic diaphragm liquid ends available

### Illinois Location:

(847) 841-7867

860 Church Rd Elgin, IL 60123

### Minnesota Location:

(651) 758-7867

330 Mill Bay South Suite 1511 Afton, MN 55001

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## Technical features

- Liquid end body in 316L SS, 17-4P-H, PVC or PVDF. Other materials such as Alloy 20, Hastelloy®, super Duplex available upon request
- Diaphragms in PTFE or 316L stainless steel; plunger in ceramic
- 7 stroke speeds / 5 gear ratios available with 50 Hz motor: 38, 57, 99, 115, 120, 144 and 180 spm. Five (5) stroke speeds / gear ratios with 60 Hz motor: 46, 68, 119, 138 and 173 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 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 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

- 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 H3 (HPD) and H6 (Low Flow/High Pressure)

- Universal solution
- High hydraulic efficiency
- Low flow rates and high pressure



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			
<b>Stainless steel liquid end - Type H3 - H6 - PTFE diaphragm</b>												
12	2.9	144	1440	15	10.9	250	1728	138	3.8	2.8	3625	1/2" - VV1 m
14	4.8	144	1440	29	22.1	218	1728	138	7.4	5.6	3166	1/2" - VV1 m
16	5.9	144	1440	41	33.2	176	1728	138	10.4	8.4	2564	1/2" - VV1 m
20	9.4	180	1440	96	84	111	173	1728	24.4	21.2	1615	1/2" - VV1 m
22	11.4	180	1440	117	105	92	173	1728	29.4	26.6	1335	1/2" - VV1 m
25	14.7	180	1440	151	139	71	173	1728	38.0	35.1	1034	1/2" - VV1 m
28	18.5	180	1440	189	178	56	173	1728	47.8	45.3	824	1/2" - VV1 m
32	24.1	180	1440	247	237	43	173	1728	62.7	60.2	631	1/2" - VV1 m
36	30.5	180	1440	313	304	34	173	1728	79.2	77.0	498	1/2" - VV1 m
40	37.7	180	1440	386	378	27	173	1728	97.9	95.7	403	1/2" - VV1 m
45	47.7	144	1440	391	385	22	138	1728	98.9	97.6	319	1" - VV1 m
50	58.9	144	1440	483	478	17	138	1728	122.3	121.1	258	1" - VV1 m
55	71.3	144	1440	585	581	14	138	1728	148.0	147.0	213	1" - VV1 m
60	84.8	144	1440	696	694	12	138	1728	176.2	175.6	179	1" - VV1 m
63	93.5	144	1440	--	766	11	138	1728	--	193.6	162	1" - VV1 m
70	115.5	144	1440	--	948	9	138	1728	--	239.9	131	1" - VV1 m
<b>PVC liquid end - Type H3 - PTFE diaphragm</b>												
20	9.4	180	1440	-	96	10	173	1728	-	24.4	145	1/2" - VV1 f
22	11.4	180	1440	-	117	10	173	1728	-	29.4	145	1/2" - VV1 f
25	14.7	180	1440	-	151	10	173	1728	-	38.0	145	1/2" - VV1 f
28	18.5	180	1440	-	189	10	173	1728	-	47.8	145	1/2" - VV1 f
32	24.1	180	1440	-	247	10	173	1728	-	62.7	145	1/2" - VV1 f
36	30.5	180	1440	-	313	10	173	1728	-	79.2	145	1/2" - VV1 f
40	37.7	180	1440	-	386	10	173	1728	-	97.9	145	1/2" - VV1 f
45	47.7	115	1440	-	313	10	119	1728	-	85.2	145	1" - VV1 f
50	58.9	115	1440	-	386	10	119	1728	-	105.2	145	1" - VV1 f
55	71.3	115	1440	-	467	10	119	1728	-	127.4	145	1" - VV1 f
60	84.8	115	1440	-	556	10	119	1728	-	151.5	145	1" - VV1 f
63	93.5	115	1440	-	611	10	119	1728	-	166.7	145	1" - VV1 f
70	115.5	115	1440	-	757	9	119	1728	-	206.6	131	1" - VV1 f

## Metallic diaphragm liquid end

- High pressures
- High pumped liquid temperatures
- Challenging dosing products: diffusing, radioactive or abrasive liquids
- Leak-resistant “Metal to Metal” sealing design


### TYPE M1 (M)

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			
<b>Stainless steel liquid end, Type M1, with Stainless steel diaphragm</b>												
8	1.5	180	1440	14.9	10.5	500	173	1728	3.7	2.6	7251	1/2" - VV1 m
10	2.4	180	1440	23.4	17.2	445	173	1728	5.9	4.3	6463	1/2" - VV1 m
12	3.4	180	1440	33.7	27.6	309	173	1728	8.5	7.0	4488	1/2" - VV1 m
14	4.6	180	1440	45.0	39.0	227	173	1728	11.4	9.8	3297	1/2" - VV1 m
16	6.0	180	1440	59.0	54.0	174	173	1728	14.9	13.6	2524	1/2" - VV1 m
18	7.6	180	1440	75.0	70.0	137	173	1728	19.0	17.7	1994	1/2" - VV1 m
20	9.4	180	1440	93.0	87.0	111	173	1728	23.4	22.1	1615	1/2" - VV1 m

**Illinois Location:**  
 (847) 841-7867  
 860 Church Rd Elgin, IL 60120

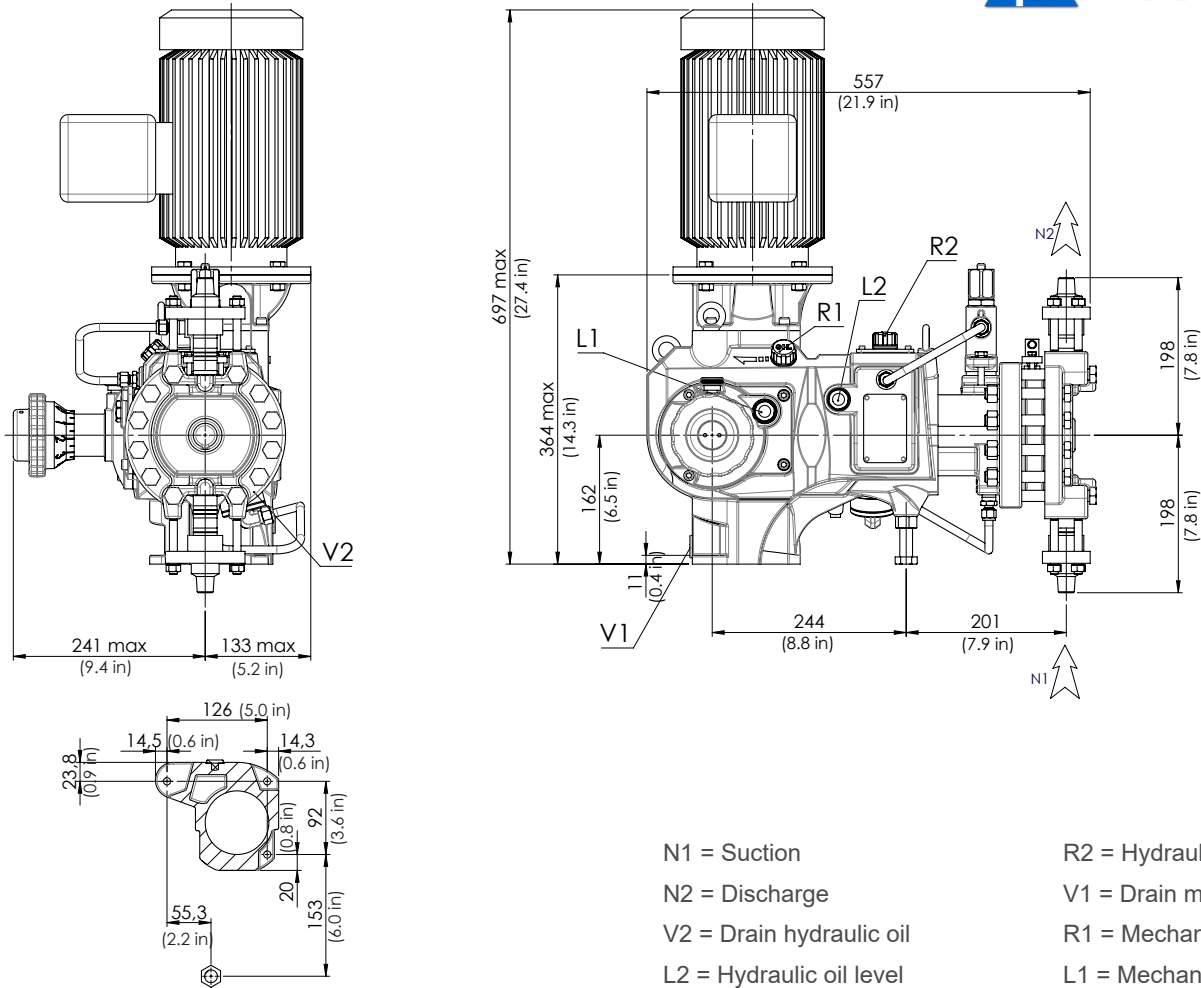
**Minnesota Location:**  
 (651) 758-7867  
 330 Mill Bay South Suite  
 Afton, MN 55001

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## 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
Series PH - Simplex Series	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

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

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