

# PRIMEROYAL® Series

API 675 metering pump

## Model PR

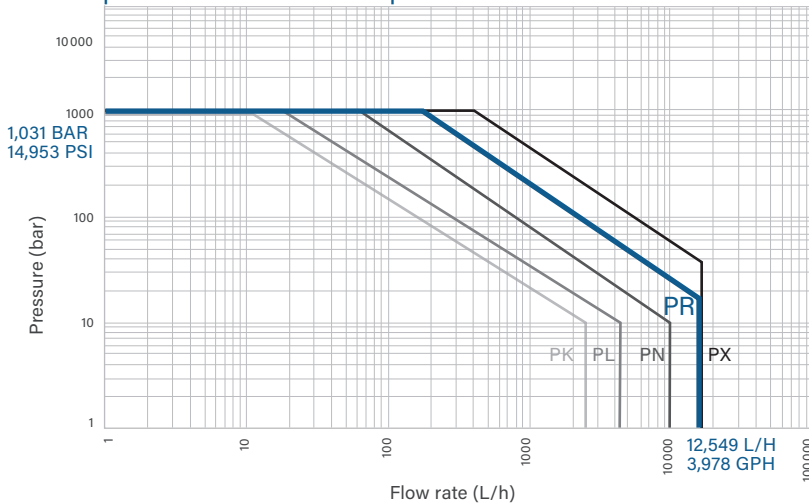
The PRIMEROYAL® metering pumps are versatile, reliable pumps that consistently and accurately inject chemicals. The pumps' field-proven design enables precise control of the pump delivery rate with a +/-1% steady state accuracy, over a range from 10 to 100% of the nominal flow rate. They feature a compact,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

Model PR provides accurate dosing of a broad spectrum of fluids used in many industrial processes due 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.



PR pump - HPD liquid end

### Simplex PRIMEROYAL® Pumps



	50 Hz motor	60 Hz motor
<b>Flow rate</b>	Up to 12,549 L/h	Up to 3,978 gph
<b>Pressure</b>	Up to 1,031 bar	Up to 14,953 psi
<b>Thrust</b>	5,000 daN	11,240
<b>100% stroke</b>	75 mm	2.95 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

- **Refinery/Petrochemical/Chemical:** pumping of hydrocarbons/LP steam condensate, transfer of ammonia water in fertilizer plant, manufacturing of DME (dimethyl ether) from methanol
- **General industry:** high pressure cleaning of mechanical parts for industry
- **Oil & Gas:**
  - Flow assurance on onshore and offshore sites: hydrate prevention by injection of thermodynamic inhibitors (methanol, MEG and glycol), prevention and removal of scale/asphaltene deposits, microbial pollution control by biocide injection, injection of corrosion inhibitors
  - Gas dehydration by MEG, TEG, DEG injection
  - Water treatment: closed drain pump for hydrocarbon condensate transfer

## Benefits

- Compliant with **API 675 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 while 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 for 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, or 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 Mechanically Actuated Refill System (MARS) 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. or 17.4 PH. Other materials such as Alloy 20, Hastelloy®, super Duplex available upon request
- Diaphragms in PTFE or 301 stainless steel; plunger in ceramic (Al2O3) or chromium oxide coated
- 6 stroke speeds/gear ratios available with 50 Hz-motor: 48, 73, 93, 117, 146 and 175 spm. 5 stroke speeds/gear ratios with 60 Hz-motor: 58, 88, 112, 140 and 175 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		
Ø	cm <sup>3</sup>	spm	rpm	L/h		bar	spm	rpm	gph		psi	
25	36.8	146	1440	310	224	1000	140	1728	79	55	14503	3/4" MP
28	46.2	146	1440	388	302	812	140	1728	99	77	11603	1" MP
32	60.3	146	1440	507	422	620	140	1728	129	107	8992	1" MP
40	94.2	146	1440	793	708	395	140	1728	201	180	5729	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		
Ø	cm <sup>3</sup>	spm	rpm	L/h		bar	spm	rpm	gph		psi	
<b>Packed Plunger (N)</b>												
44.5	116.6	146	1440	978	867	319	140	1728	249	221	4627	1" - VV1 m
50.8	152	146	1440	1278	1168	244	140	1728	325	297	3539	1" 1/2 - VV1 m
57.2	192.7	146	1440	1617	1508	192	140	1728	411	384	2785	1" 1/2 - VV1 m
63.5	237.5	146	1440	1997	1890	155	140	1728	507	480	2248	1" 1/2 - VV1 m
69.9	287.8	146	1440	2416	2311	128	140	1728	614	588	1856	1" 1/2 - VV1 m
79.4	371.4	146	1440	3121	3019	99	140	1728	793	767	1436	1" 1/2 - VV1 m
88.9	465.5	146	1440	3914	3816	79	140	1728	994	969	1146	2" - VV1 m
101.6	608	146	1440	5113	5020	60	140	1728	1299	1275	870	2" - VV1 m
127	950.1	146	1440	7989	7909	38	140	1728	2029	2008	551	3" - VV1 m
152.4	1368.1	146	1440	11505	11440	26	140	1728	2922	2905	377	4" - VV1 m
177.8	1862.1	146	1440	15659	15615	19	140	1728	3978	3965	275	4" - VV1 m

## PTFE diaphragm liquid ends

- Widest chemical compatibility
- 100% leakage-free
- High operational safety: integrated relief valve
- Improved lifecycle costs
- MARS 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 H5 AND H (HX AND HPD)

- Universal solution
- Higher pressure capabilities
- 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 HX												
35	72.2	146	1440	600	413	400	140	1728	152	105	5801	1" - VV2 m
40	94.25	146	1440	784	560	397	140	1728	199	142	5757	1" - VV2 m
42	103.9	146	1440	864	641	360	140	1728	219	163	5221	1" - VV2 m
45	119.3	146	1440	992	770	314	140	1728	252	196	4554	1" - VV2 m
Metallic, type H												
50	147.3	175	1729	1468	1229	254	175	1728	388	325	3683	1" 1/2 - VV1 m 1"
55	178.2	175	1729	1777	1541	210	175	1728	470	408	3045	1/2 - VV1 m 2" - VV1 m
60	212.1	175	1729	2115	1905	176	175	1728	559	498	2552	2" - VV1 m
63	233.8	175	1729	2332	2100	160	175	1728	617	556	2320	2" - VV1 m
65	248.9	175	1729	2482	2252	150	175	1728	657	596	2175	2" - VV1 m
70	288.6	175	1729	2879	2648	129	175	1728	761	701	1870	2" - VV1 m
75	331.3	175	1729	3305	3080	113	175	1728	874	815	1638	2" - VV1 m
80	377	175	1729	3760	3532	99	175	1728	994	936	1435	2" - VV1 m
85	425.6	175	1440	4245	4028	88	175	1728	900	1065	1276	2" - VV1 m
90	477.1	146	1440	3970	3765	78	140	1728	1008	958	1131	2" - VV1 m
95	531.6	146	1440	4424	4232	70	140	1728	1124	1075	1015	2" - VV1 m
100	589	146	1440	4902	4705	63	140	1728	1245	1197	913	2" - VV1 m
105	649.4	146	1440	5404	5218	57	140	1728	1373	1326	826	3" - VV3 - 600 lb
110	712.7	146	1440	5931	5751	52	140	1728	1507	1461	754	3" - VV3 - 600 lb
115	779	146	1440	6482	6306	48	140	1728	1647	1601	696	3" - VV3 - 600 lb
120	848.2	146	1440	7059	6889	44	140	1728	1793	1750	638	3" - VV3 - 600 lb
125	920.4	146	1440	7659	7494	40	140	1728	1946	1904	580	3" - VV3 - 600 lb
130	995.5	146	1440	8284	8121	37	140	1728	2104	2064	536	3" - VV3 - 600 lb
145	1238.5	146	1440	10306	10183	25	140	1728	2618	2587	362	4" - VV3 - 300 lb
160	1508	146	1440	12549	12429	24	140	1728	3188	3152	348	4" - VV3 - 300 lb

## Metallic diaphragm liquid end

- 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

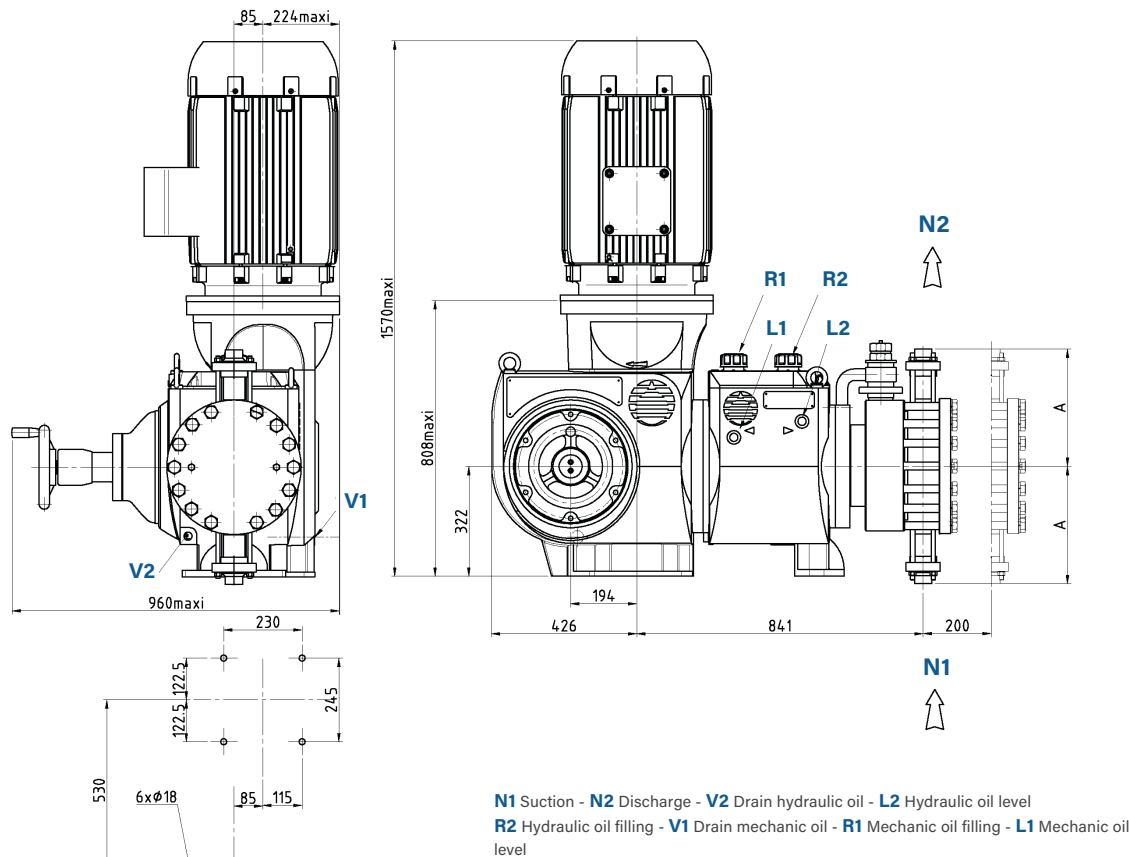
Plunger diameter code	Swept volume cm <sup>3</sup>	50 Hz Motor					60 Hz Motor					Connections
		Stroke speed max spm	Motor speed max rpm	Flow rate max		Pressure max bar	Stroke speed max spm	Motor speed max rpm	Flow rate max		Pressure max psi	
				10 bar L/h	P.max				145 psi gph	P.max		
<b>Metallic double diaphragm</b>												
22	28.5	175	1440	275	170	1031	175	1728	73	44	14953	VV7
25	36.8	175	1440	355	270	780	175	1728	94	72	10921	VV7
29	49.5	175	1440	478	363	656	175	1728	126	97	6514	VV7
32	60.3	175	1440	582	470	535	175	1728	154	126	7759	1" VV2 f
35	72.2	175	1440	697	585	442	175	1728	184	157	6410	1" VV2 f
37	80.6	175	1440	778	660	365	175	1728	206	177	5511	1" VV2 f

## 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	lb	kg	lb	(L x W x H) mm	(L x W x H) in
Series PR - Simplex	900	1984	1100	2425	1650 x 1500 x 1400	65 x 59 x 55

(\*) 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 pump
- Advise 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

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