

PRIMEROYAL® Series

API 675 metering pump

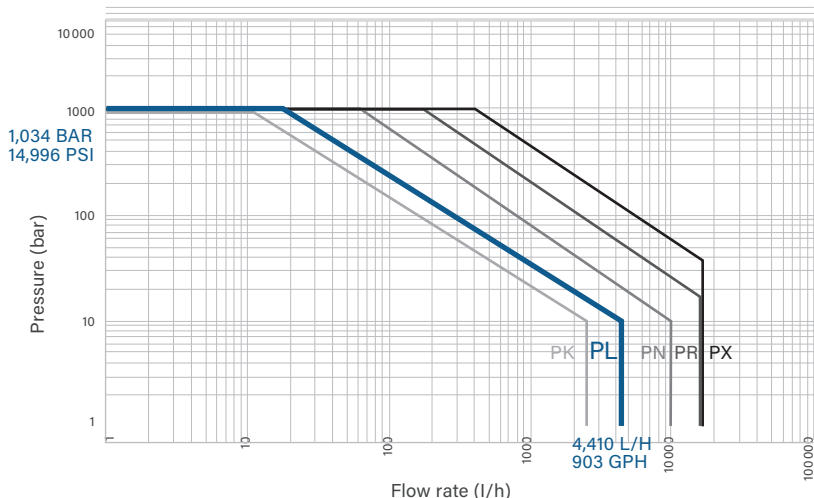


Models PL and PLG

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 flow rate. They feature a compact, variable eccentric drive that changes the stroke length by repositioning the center of the shaft in the eccentric.

Models PL and PLG provide 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 meet the specific requirements of your process application.

Simplex PRIMEROYAL® Pumps



PLG pump - GSD liquid end

	50 Hz motor	60 Hz motor
Flow rate	Up to 4,410 L/h	Up to 903 gph
Pressure	Up to 1,034 bar	Up to 14,996 psi
Thrust	900 daN	2,023
100% stroke	50 mm	1.97 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, transfer of ammonia water in fertilizer plant
- **Food and Beverage:** injection of enzymes in starch production, injection of caustic soda for process water neutralization in refining and distilling application
- **Mining:** injection of reactives to wash extracting ores such as platinum and gold
- **Oil and Gas:** injection of biocide, scale inhibitors to protect the pipes, injection of demulsifier to improve oil quality, injection of reverse emulsion breakers to meet water/water stream quality
- **Refinery/Downstream:** injection of boiler feedwater, injection of anti-fouling into the debutanizer, transfer of sour water before treatment, injection of catalyst during biodiesel
- **Utilities:** conditioning of make-up water, protection of boilers, cooling systems and hydraulic systems (biocides, antifoam, oxygen scavengers, scale inhibitors)
- **Water/Wastewater Treatment:**
 - **Municipal (drinking) Water Treatment:** disinfection, fluoridation, coagulation/flocculation, pH control, water conditioning before and/or after RO treatment in desalination, and more
 - **Industrial Water Treatment:** protection of installed equipment such as boilers and hydraulic systems to prevent scale and corrosion



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:** Minimized footprint and weight, available in vertical or horizontal motor configurations, GSD design for tiny spaces
- **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, control, and more
- **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 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, or low temperature environment
- **Global design:** can comply with the main worldwide certifications and systems: ATEX, NACE, SASO, Customs Union, etc.
- **Overpressure protection:** integrated safety valve to protect the pump on diaphragm liquid ends
- **Additional benefits with PTFE diaphragm liquid ends:**
 - **Maintenance easy and fast:** the patented Mechanically Actuated Refill System (MARS) avoids the need to delicately adjust the refill valve
 - **Triple hydraulic security with the GSD design:** in addition to the internal pressure safety valve, the diaphragm controls the hydraulic refill and the diaphragm itself is protected by a valve blocking the overrunning and the extrusion
 - **Installation Monitoring Indicator (IMI) system with the GSD design:** visual indication of over-pressure, cavitation and lack of pulsation dampening that can cause disturbance and inaccuracy in the dosing process



Technical features

- Packed plunger, PTFE or metallic diaphragm liquid ends available
- Liquid end body in 316L S.S., 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 Z55CDV17 steel or chromium oxide coated
- 6 stroke speeds/gear ratios available with 50 Hz-motor: 39, 59, 100, 120, 144 and 180 spm. 5 stroke speeds/gear ratios with 60 Hz-motor: 47, 71, 120, 144 and 173 spm
- Manual, electrical or pneumatic 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
- Food grade design (in accordance with CE 1935-2004)
- 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 on the best liquid end design to meet your specific needs. The following charts demonstrate the minimum and maximum flow rate and pressure of a 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 ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
10	3.9	149	1440	33.7	20.4	1000	144	1728	8.6	5.2	14503	3/8" MP
12	5.7	149	1440	48.5	33.4	785	144	1728	12.4	8.5	11385	3/8" MP
16	10.1	149	1440	86.3	71.4	440	144	1728	22	18.2	6381	1/2" - 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 ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
Packed Plunger (N)												
12.7	6.3	149	1440	51	31.9	690	144	1728	13	8.1	10007	1/2" - VV1 m
15.9	9.9	149	1440	83.2	63.2	446	144	1728	21.2	16.1	6478	1/2" - VV1 m
22.2	19.4	149	1440	164.7	145.1	226	144	1728	42.1	37.1	3281	1/2" - VV1 m
28.6	32.1	149	1440	272.3	253.5	135	144	1728	69.5	67.7	1970	1/2" - VV1 m
19.1	14.3	149	1440	122	107	309	144	1728	31	27	4481	1/2" - VV1 m
25.4	25.3	149	1440	217	202	172	144	1728	55	52	2494	1/2" - VV1 m
31.8	39.7	149	1440	339	325	109	144	1728	87	83	1580	1/2" - VV1 m
38.1	57	149	1440	489	476	75	144	1728	125	121	1087	1" - VV1 m
44.5	77.8	149	1440	665	653	55	144	1728	170	167	797	1" - VV1 m
50.8	101.3	149	1440	869	858	41	144	1728	222	219	594	1" - VV1 m
57.2	128.5	149	1440	1100	1090	32	144	1728	281	278	464	1" - VV1 m
63.5	158.3	149	1440	1358	1349	26	144	1728	347	344	377	2" - VV1 m
69.9	191.9	149	1440	1644	1636	21	144	1728	420	418	304	2" - VV1 m
79.4	247.6	149	1440	2123	2117	16	144	1728	542	540	232	2" - VV1 m
88.9	310.4	149	1440	2663	2659	13	144	1728	680	679	188	2" - VV1 m
101.6	405.4	149	1440	-	3480	9	144	1728	-	888	130	2" - 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 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 ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
Metallic, type H												
20	15.7	149	1440	133	89	286	144	1728	34	23	4148	1/2" - VV1 m
25	24.5	149	1440	208	157	183	144	1728	53	40	2654	1/2" - VV1 m
32	40.2	149	1440	341	292	111	144	1728	87	75	1609	1/2" - VV1 m
40	62.8	149	1440	533	487	71	144	1728	136	124	1029	1" - VV1 m
63	155.9	149	1440	1323	1289	28	144	1728	338	329	406	1" - VV1 m
115	519.3	149	1440	-	4410	8	115	1728	-	901	116	1/2" - VV1 m
Plastic, type P												
115	519,34	149	1440	-	3561	8	115	1728	-	903	116	1/2" - VV1 m

TYPE G1 - G2 (GSD)

- Compact footprint, fewer components due to the lack of hydraulic fluid reservoir
- High flow at medium pressure
- IMI system to monitor any variations in the dosing process

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 ³	spm	rpm	l/h		bar	spm	rpm	gph		psi	
Metallic, type H												
40	62.8	149	1440	506	452	45	144	1728	129	115	652	1" - VV1 m
50	98.2	149	1440	807	722	45	144	1728	206	184	652	1" - VV1 m
63	155.9	149	1440	1254	1205	23	144	1728	320	307	333	2" - VV1 m
70	192.4	149	1440	1582	1520	23	144	1728	404	388	333	2" - VV1 m
80	251.3	149	1440	2067	2023	17	144	1728	527	516	246	2" - VV1 m
90	318.1	149	1440	2616	2584	14	144	1728	668	661	203	2" - VV1 m
100	392.7	149	1440	-	3300	11	144	1728	-	842	159	2" - VV1 m
Plastic, type P												
50	98.2	149	1440	807	807	10	144	1728	206	206	145	1" - VV1 m
63	155.9	149	1440	1254	1254	10	144	1728	320	320	145	1" 1/2 - VV1 f
70	192.4	149	1440	1582	1582	10	144	1728	404	404	145	1" 1/2 - VV1 f
80	251.3	149	1440	2067	2067	10	144	1728	527	527	145	1" 1/2 - VV1 f
90	318.1	120	1440	2107	2107	10	115	1728	534	534	145	1" 1/2 - VV1 f
100	392.7	120	1440	2657	2657	10	115	1728	674	674	145	1" 1/2 - VV1 f



Metallic diaphragm liquid ends

- High pressures
- High pumped liquid temperatures
- Challenging products dosing: diffusing, radioactive or abrasive liquids
- "Metal to Metal" sealing design assures leak-free operation



TYPE M2 (MX)

- High and extreme pressures
- Low flow rates

Plunger diameter code	Swept volume cm ³	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	P.max				145 psi	P.max		
Ø				L/h				gph				
Metallic double diaphragm												
10	3.9	180	1440	39	20	1034	179	1728	10.1	5.2	14996	VV7
11	4.8	180	1440	47	31	805	179	1728	12.4	8.1	11675	VV7
13	6.6	180	1440	66	52	617	179	1728	17.1	13.6	8948	1/2" - VV2 m

TYPE M1 (M)

- High pressures
- Medium flow rates

Plunger diameter code	Swept volume cm ³	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	P.max				145 psi	P.max		
Ø				L/h				gph				
M simple diaphragm												
10	3.9	180	1440	39	26	350	179	1728	10.1	7	5076	1/2" - VV1 m
12	5.7	180	1440	56	37	350	179	1728	14.6	10	5076	1/2" - VV1 m
14	7.7	180	1440	76	51	350	179	1728	20	13	5076	1/2" - VV1 m
16	10.1	180	1440	99	66	350	179	1728	26	17	5076	1/2" - VV1 m
18	12.7	180	1440	126	83	350	179	1728	33	22	5076	1/2" - VV1 m
20	15.7	180	1440	156	113	286	179	1728	41	30	4148	1" - VV1 m
22	19	180	1440	188	146	236	179	1728	49	38	3422	1" - VV1 m
25	24.5	180	1440	242	202	183	179	1728	63	53	2654	1" - VV1 m

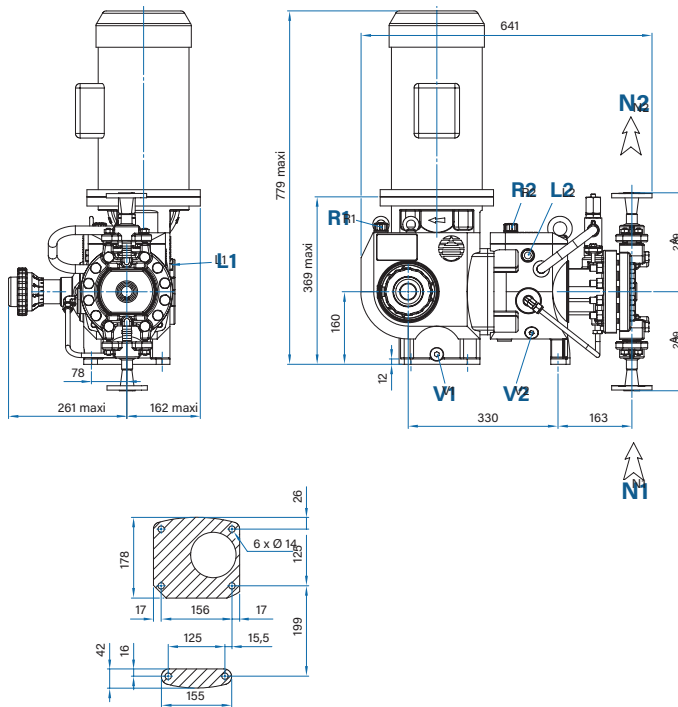


Dimensions, Weight and Packing

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)

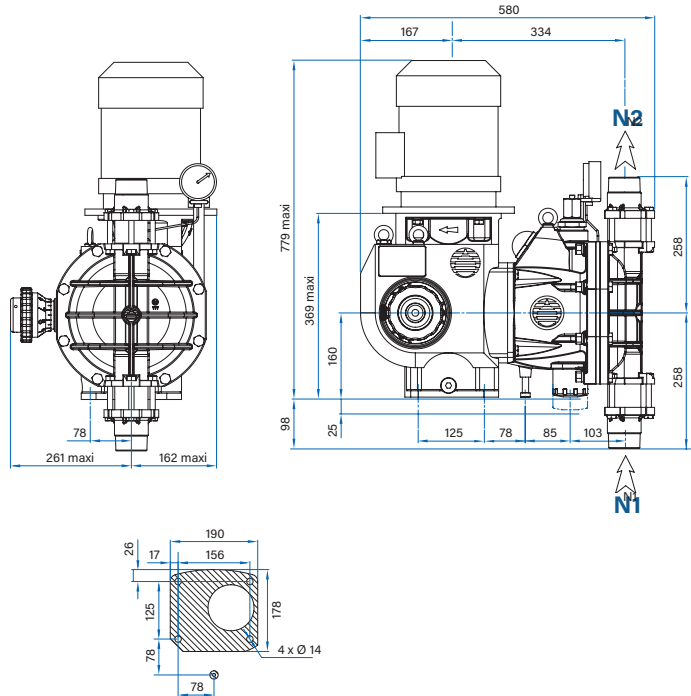
HPD PTFE DIAPHRAGM LIQUID END

Simplex configuration



GSD PTFE DIAPHRAGM LIQUID END

Simplex configuration



N1 Suction - N2 Discharge - V2 Drain hydraulic oil - L2 Hydraulic oil level - R2 Hydraulic oil filling - V1 Drain mechanic oil - R1 Mechanic oil filling - L1 Mechanic oil level

Version	Net weight(*)		Gross weight(*)		Packing	
	kg	lb	kg	lb	(L x W x H) mm	(L x W x H) in
Series PL - Simplex	250	551	370	816	1180 x 680 x 1350	46.5 x 26.8 x 53
Series PLG - Simplex	220	485	310	683	1100 x 680 x 1350	43.3 x 26.8 x 53

(*) 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 parts to keep 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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