

PRIMEROYAL® Series

API 675 metering pump

Model PN

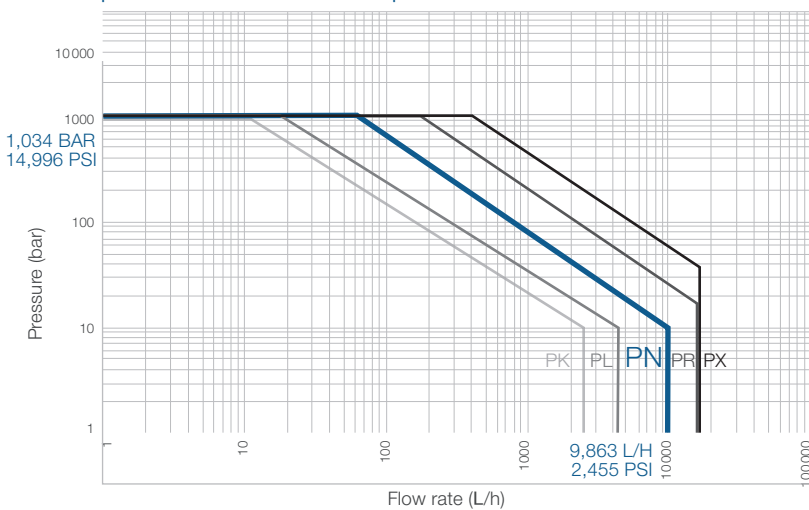
PRIMEROYAL® metering pumps are versatile, reliable pumps that consistently and accurately inject chemicals. The pumps' field-proven design enables precise control of the pump delivery rate with a +/-1% steady state accuracy, over a range from 10 to 100% of the nominal flow rate. They feature a compact,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

Model PN 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, and other configuration options to meet the specific requirements of your process application.



PN pump - HPD liquid end

Simplex PRIMEROYAL® Pumps



	50 Hz motor	60 Hz motor
Flow rate	Up to 9,863 L/h	Up to 2,455 gph
Pressure	Up to 1,034 bar	Up to 14,996 psi
Thrust	2,000 daN	4,496
100% stroke	63 mm	2.48 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
- **Oil and Gas:** injection of methanol, MEG and glycol to protect 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)
- **Power Generation:** metering of biocide, hydrochlorite to prevent fouling of the mechanical equipment of the mechanical equipment and pipework
- **Refinery/Downstream:** injection of dimethyl disulfide (DMD) to activate hydrocracking/hydrodesulfuring catalysts, boiler feed water pump, metering of additives
- **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:** 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 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
- **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., 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 (Al_2O_3) 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		
Ø	cm ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
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		
Ø	cm ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
Packed Plunger (N)												
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 lb
152.4	1149.2	149	1440	9863	9863	10	140	1728	2455	2455	145	3" - VV3 - 150 lb

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 - Series 6 HP												
25	30.9	149	1440	262	155	300	140	1728	65	39	4351	1/2" - VV1 m
Metallic, Type H - Series 6 BP												
25	30.9	149	1440	262	235	96	140	1728	65	39	1392	1/2" - VV1 m
32	50.7	149	1440	430	383	87	140	1728	107	95	1261	1" - VV1 m
40	79.2	149	1440	672	599	87	140	1728	167	149	1261	1" - VV1 m
50	123.7	149	1440	1050	936	87	140	1728	261	233	1261	1" - VV1 m
55	149.7	149	1440	1271	1137	84	140	1728	316	283	1218	1" - VV1 m
63	196.4	175	1440	1958	1889	35	140	1728	528	510	507	1 1/2" - VV1 m
80	316.7	175	1440	3158	3064	35	178	1728	852	827	507	1 1/2" - VV1 m
90	400.8	175	1440	3997	3879	31	140	1728	847	822	449	1 1/2" - VV1 m
100	494.8	149	1440	4202	4113	25	140	1728	1046	1024	362	1 1/2" - VV1 m
110	598.7	149	1440	4977	4375	21	140	1728	1239	1089	304	3" - VV3 150 lb
125	773.1	149	1440	6427	6002	16	140	1728	1600	1494	232	3" - VV3 150 lb
145	1040.3	149	1440	8649	8458	12	140	1728	2153	2105	174	3" - VV3 150 lb
Metallic, Type H - Series 8												
28	38.8	175	1440	386	257	300	178	1728	104	69	4351	1 1/2" - VV1 m
32	50.7	175	1440	505	378	248	178	1728	136	102	3596	1 1/2" - VV1 m
35	60.6	175	1440	604	479	207	178	1728	163	129	3002	1 1/2" - VV1 m
40	79.2	175	1440	789	694	159	178	1728	213	187	2306	1 1/2" - VV1 m
45	100.2	175	1440	999	907	125	178	1728	269	245	1812	1 1/2" - VV1 m
50	123.7	175	1440	1233	1143	101	178	1728	333	308	1464	1 1/2" - VV1 m
60	178.1	175	1440	1776	1691	70	178	1728	479	456	1015	1 1/2" - VV1 m
63	196.4	175	1440	1958	1873	64	178	1728	528	505	928	1 1/2" - VV1 m
Plastic, Type P												
100	494.8	117	1440	3299	3299	10	115	1728	858	858	145	1 1/2" - VV1 m
125	773.1	117	1440	5047	5047	10	115	1728	1313	1313	145	3" - VV3 150 lb
145	1040.3	117	1440	6791	6791	10	115	1728	1766	1766	145	3" - VV3 150 lb

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 ³	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

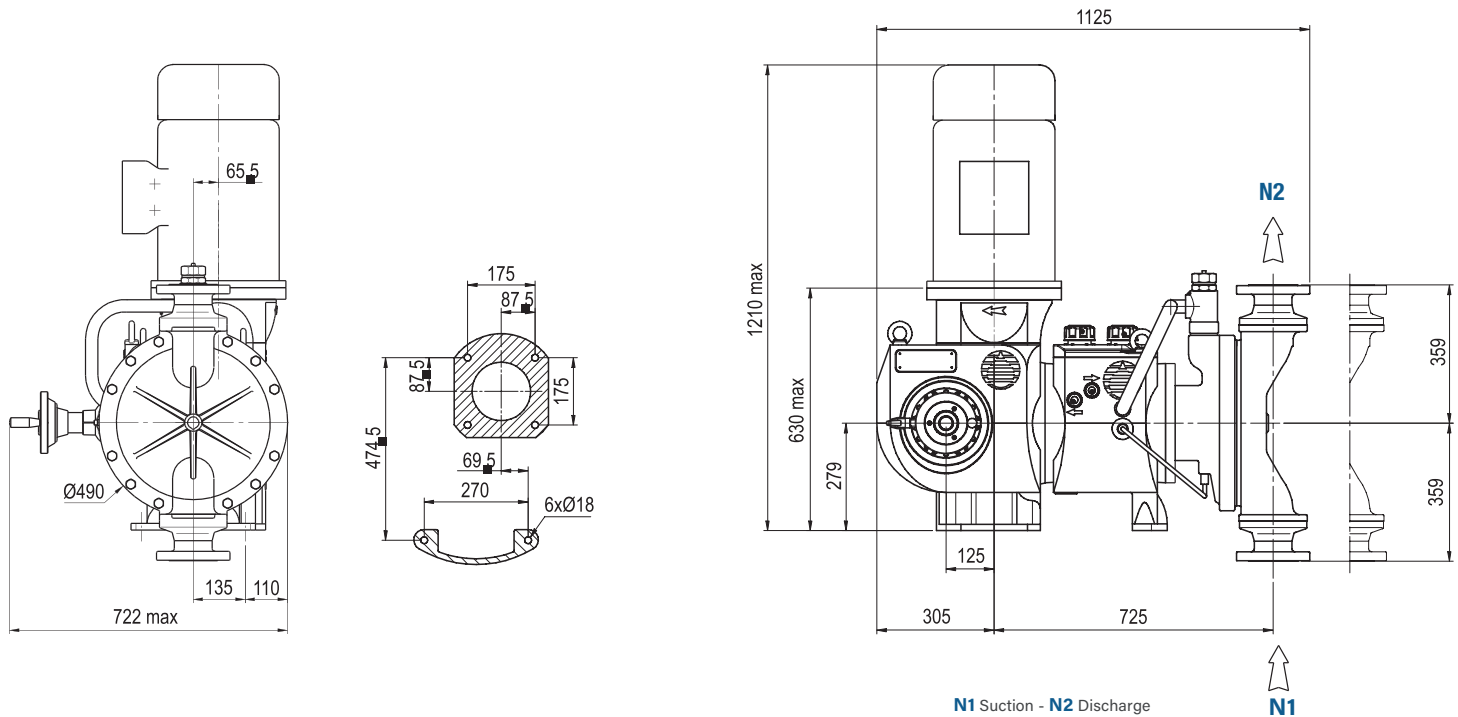
Plunger diameter code	Swept volume	50 Hz Motor					60 Hz Motor					Connections
		Stroke speed max	Motor speed max	Flow rate max		Pressure max	Stroke speed max	Motor speed max	Flow rate max		Pressure max	
				10 bar	P.max				145 psi	P.max		
Ø	cm ³	spm	rpm	L/h		bar	spm	rpm	gph		psi	
M single diaphragm												
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	lb	kg	lb	(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 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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