PRIMEROYAL® Series
Metering Pump

Model PN

The PRIMEROYAL® PN 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 while meeting or exceeding industry standards for steady state accuracy and repeatability. They feature a compact, variable eccentric drive that changes the stroke length by changing the position of the center of the shaft in the eccentric. Model PN provides accurate dosing of a broad spectrum of fluids at flow rates that can reach more than 9,683 l/h (2,606 gph). The pump has a modular design that accepts three types of liquid ends and offers capacity control options so it can meet the specific requirements of a large number of demanding industrial processes.

Applications

- Oil and Gas
  - Upstream – Injection of methanol at pressures of 1,034 bar (15,000 psi) and more at the wellhead for onshore and offshore wells
  - Midstream – Injection of corrosion inhibitors for produced oil and gas integrity during transportation
  - Downstream – Injection of chemicals for separation and treatment of refined products
  - Produced water treatment – Injection of sodium hypochlorite, biocides, scale inhibitors, oxygen reducing agent, etc.
- Chemical and Petrochemical Processing
  - Dosing catalysts for polymerization of polyethylene
- Power Generation
  - High-pressure boiler feed water treatment

Features and Benefits

- Compliant with API675 standards
- Compliant with API674 standards in fixed stroke configuration
- Minimized footprint
- Available in vertical or horizontal motor configurations
- Manual or electrical stroke length adjustment
- Capacity adjustable while running or stopped
- Packed plunger, Teflon® PTFE or metallic double diaphragm liquid ends available
- Conforms to ATEX CE EX II 2G/D c T3 with ATEX motors
- Multiplexable

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General Specifications

Accuracy	± 1% over a range of 10 to 100% nominal flowrate
Flow rate adjustment	Micrometric adjustment of stroke while running or stopped
Maximum stroke	63 mm (2.48 in)
Frequencies at 50 Hz 960 rpm	64 and 78 spm
Frequencies at 50 Hz 1,440 rpm	96, 117, 149 and 175 spm
Frequencies at 60 Hz 1,140 rpm	77 and 94 spm
Frequencies at 60 Hz 1,725 rpm	115, 140, and 179 spm
Thrust	900 daN (4,946 lbf)
Ambient operating temperature	Standard: -10°C to 50°C (14°F to 122°F) Low temperature option: -40°C to 50°C (-40°F to 122°F)
API675	Confroms (exemptions available on request)
ATEX	Conforms (exemptions available on request) For plastic liquid ends, please consult us For packed plunger liquid ends, in area 1 consult us
Suction	2 m (6.57 ft) water on M, H and P liquid ends 2 m (6.57 ft) water on UT liquid ends 6 m (19.7 ft) water on N and NX liquid ends
Motor mounting	F215, F265, F300

Design Specifications

Model PN with Packed Plunger Liquid End Type NX*

Flow rate		Pressure Max. 50 Hz Motor (kW)				Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)			Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11					5.5	7.5	10			
10 bar	Pres. Max.	Q	T	U	V	960	1,440	145 psi	Pres. Max.	Q	T	U	1,140	1,725	
l/h		bar						gph		psi					
Ø 16 mm - Swept Volume: 12.7 cm³								**Ø 0.625 in - Swept Volume: 0.77 in³**							**3/8" MP**
44	26	930	1,000			64		13.9	8.2	13,488	14,504		77		(Ø 9.52 mm - LD) (Ø 0.375 in - LD)
55	33	760	1,000			78		17.4	10.5	11,023	14,504		94		
70	42	620	865	1,000			96	22.2	13.3	8,992	12,546	14,504		115	
85	52	510	710	1,000			117	26.9	16.5	7,397	10,298	14,504		140	
109	66	400	555	765	1,000		149[1]	Not applicable with a 60 Hz motor							
Ø 25 mm - Swept Volume: 30.9 cm³								**Ø 0.98 in - Swept Volume: 1.89 in³**							**1"**
107	90	380	400			64		33.9	28.5	5,511	5,801		77		(Ø 15.9 mm - LD) (Ø 0.625 in - LD)
135	114	310	400			78		42.8	36.1	4,496	5,801		94		
171	144	250	350	400			96	54.2	45.6	3,626	5,076	5,801		115	
208	176	210	290	400			117	65.9	55.8	3,046	4,206	5,801		140	
265	224	160	225	310	400		149[1]	Not applicable with a 60 Hz motor							

* This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
*To have a certification in zone 1, please add probes = CONSULT
[1]Do not use with 60 Hz Motor
LD = Hardened valves - double valve

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Design Specifications

Model PN with Packed Plunger Liquid End Type UT or N*

Flow rate		Pressure Max. 50 Hz Motor (kW)				Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar						gph		psi						
Ø 32 mm - Swept Volume: 49.88 cm³								Ø 1.26 in. - Swept volume: 3.04 in³								1”
186	168	231	244			64		59	53.3	3,350	3,539			77		(Ø 25 mm - LS) (Ø 0.98 in - LS)
227	205	189	244			78		72	65.0	2,741	3,539			94		
280	253	153	214	244			96	88.8	80.2	2,219	3,104	3,539			115	
341	309	124	175	242	244		117	108.1	98.0	1,798	2,538	3,510	3,539		140	
434	393	97	137	189	244		149[1]	Not applicable with a 60 Hz motor								
Ø 57.2 mm - Swept Volume: 161.61cm³								Ø 2.25 in. - Swept volume: 9.86 in³								1” 1/2
595	579	71	75			64		188.6	183.5	1,030	1,088			77		(Ø 40 mm - NS) (Ø 1.575 in - NS)
726	707	58	75			78		230.1	224.1	841	1,088			94		
893	869	47	66	75			96	283.1	275.5	682	957	1,088			115	
1,089	1,060	38	54	75			117	345.2	336.0	551	783	1,088			140	
1,386	1,349	29	42	58	75		149[1]	Not applicable with a 60 Hz motor								

*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
*For methanol injections, please consult us
*To be compliant with ATEX area 1 certification, additional probe is mandatory, please consult
[1]Do not use with 60 Hz Motor
LS = Hardened valves - single valve
NS = Single valve

Design Specifications

Model PN with Packed Plunger Liquid End Type UT*

Flow rate		Pressure Max. 50 Hz Motor (kW)					Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11	15					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	W	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar							gph		psi						
Ø 63.5 mm - Swept Volume: 199.5 cm³									Ø 2.5 in - Swept Volume: 12.17 in³								2”
735	720	57	61				64		233.0	228.2	827	885			77		(Ø 40 mm - NS) (Ø 1.575 in - NS)
896	877	47	61				78		284.0	278.0	682	885			94		
1,103	1,080	37	53	61				96	349.7	342.4	537	769	885			115	
1,344	1,316	30	43	60	61			117	426.1	417.2	435	624	870	885		140	
1,712	1,677	23	33	47	61			149[1]	Not applicable with a 60 Hz motor								
Ø 152.4 mm - Swept Volume: 1149.21 cm³									Ø 6 in - Swept Volume : 70.13 in³								3”
4,236	4,236	7	10				64		1,343	1,343	102	145			77		(Ø 70 mm - NS) (Ø 2.75 in - NS)[2]
5,163	5,163		8	10			78		1,637	1,637		116	145		94		
6,354	6,354		6	10				96	2,014	2,014		87	145			115	
7,744	7,744			7	10			117	2,455	2,455			102	145		140	
9,863	9,863				9	10		149[1]	Not applicable with a 60 Hz motor								

* This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative
*For “methanol” applications, please consult us.
*To be compliant with ATEX area 1 certification, additional probe is mandatory – please consult
[1]Do not use with 60 Hz motor
[2]Flat valve
NS = Single valve

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Design Specifications

Model PN with Metallic Double Diaphragm Liquid End Type MX*

Flow rate		Pressure Max. 50 Hz Motor (kW)					Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11	15					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	W	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar							gph		psi						
Ø 12 mm - Swept Volume: 7.67 cm³									Ø 0.47 in - Swept Volume: 0.46 in³								
28.2	8.2	1,309					64		8.9	2.6	18,985				77		Suction: 1" NPT f Discharge 9/16" MP (Ø 9.52 mm- LD) (Ø 0.375 in - LD)
34.4	10.0	1,074	1,379				78		10.9	3.2	15,577	20,001			94		
42.3	12.3	873	1,219	1,379				96	13.4	3.9	12,662	17,680	20,001			115	
51.5	15.0	716	1,000	1,379				117	16.3	4.8	10,385	14,504	20,001			140	
65.7	19.1	562	785	1,083	1,379			149	20.8	6.1	8,151	11,385	15,707	20,001		179	
77.1	22.5	479	669	922	1,365	1,379		175[1]	Not applicable with a 60 Hz motor								
Ø 27 mm - Swept Volume: 36.1 cm³									Ø 1.06 in - Swept Volume: 2.20 in³								
132	116	278	303				64		41.8	36.8	4,032	4,395			77		Suction: 1" 1/2 NPT f Discharge 3/4" MP (Ø 15.9 mm - LD) (Ø 0.625 in - LD)
162	143	228	303				78		51.4	45.3	3,307	4,395			94		
199	176	185	259	303				96	63.1	55.8	2,683	3,756	4,395			115	
243	215	152	212	293	303			117	77.0	68.2	2,205	3,075	4,250	4,395		140	
309	273	119	167	230	303			149	98.0	86.5	1,726	2,422	3,336	4,395		179	
363	320	101	142	196	290	303		175[1]	Not applicable with a 60 Hz motor								

*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
[1]Do not use with 60 Hz motor
Suction lift: 7 feet water mini. pump flooded
LD = Hardened valves - double valve

Design Specifications

Model PN with Metallic Single Diaphragm Liquid End Type M*

Flow rate		Pressure Max. 50 Hz Motor (kW)				Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar						gph		psi						
Ø 16 mm - Swept Volume: 12.66 cm³ - Diaphragm: 162 mm								Ø 5.625 in - Swept Volume: 0.77 in³ - Diaphragm: 6.4 in								1/2"
44	31	500				64		13.9	9.8	7,252				77		(Ø 9.52 mm - LD) (Ø 0.375 in - LD)
54	38	500				78		17.1	12.0	7,252				94		
67	47	500					96	21.2	14.9	7,252					115	
81	57	500					117	25.7	18.1	7,252					140	
104	73	413	500				149	33	23.1	5,990	7,252				179	
122	86	352	487	500			175[1 2]	Not applicable with a 60 Hz motor								
Ø 22 mm - Swept Volume: 23.94 cm³ - Diaphragm: 212 mm								Ø 0.87 in - Swept Volume: 1.46 in³ - Diaphragm: 8.3 in								1"
84	59	480	500			64		26.6	18.7	6,962	7,252			77		(Ø 15.9 mm - LD) (Ø 0.625 in - LD)
102	72	406	500			78		32.3	22.8	5,888	7,252			94		
126	89	330	459	500			96	39.9	28.2	4,786	6,657	7,252			115	
154	108	278	382	500			117	48.8	34.2	4,032	5,540	7,252			140	
197	138	218	300	409	500		149	62.5	43.7	3,162	4,351	5,932	7,252		179	
230	162	186	255	348	500		175[1 2]	Not applicable with a 60 Hz motor								

*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
[1]Do not use with 60 Hz motor
[2]Use with flooded suction (7 psi)
LD = Hardened valves - double valve

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Design Specifications

Model PN with Metallic Double Diaphragm Liquid End Type M*

Flow rate		Pressure Max. 50 Hz Motor (kW)			Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)			Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5					5.5	7.5	10			
10 bar	Pres. Max.	Q	T	U	960	1,440	145 psi	Pres. Max.	Q	T	U	1,140	1,725	
l/h		bar					gph		psi					
Ø 16 mm - Swept Volume: 12.66 cm³ - Diaphragm 162 mm							Ø 0.625 in - Swept Volume: 0.77 in³ - Diaphragm: 6.4 in							1/2"
44	29	350			64		13.9	9.2	5,076			77		(Ø 9.52 mm / 0.375 in - LD)
54	35	350			78		17.1	11.1	5,076			94		
67	44	350				96	21.2	13.9	5,076				115	
81	53	350				117	25.7	16.8	5,076				140	
104	68	350				149	33	21.6	5,076				179	
122	80	350				175[1,2]	Not applicable with a 60 Hz motor							
Ø 22 mm - Swept Volume: 23.94 cm³ - Diaphragm: 212 mm							Ø 0.87 in - Swept Volume: 1.46 in³ - Diaphragm: 8.3 in							1"
84	61	350			64		26.6	19.3	5,076			77		(Ø 15.9 mm / 0.625 in - LD)
102	74	350			78		32.3	23.5	5,076			94		
126	91	330				96	39.9	28.8	4,786				115	
154	111	278	350			117	48.8	35.2	4,032	5,076			140	
197	141	218	300	350		149	62.5	44.7	3,162	4,351	5,076		179	
230	166	186	255	350		175[1,2]	Not applicable with a 60 Hz motor							

*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
[1]Do not use with 60 Hz motor
[2]Use with flooded suction (7 psi)
LD = Hardened valves - double valve

Design Specifications

Model PN with HPD Diaphragm Liquid End: Metallic Type H*

Flow rate		Pressure Max. 50 Hz Motor (kW)				Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar						gph		psi						
Ø 25 mm - Swept Volume: 30.92 cm³ - Diaphragm: 106 mm								Ø 0.98 in - Swept Volume: 1.88 in³ - Diaphragm: 4.2 in								1/2"
112	66	300				64		35.5	20.9	4,351				77		(Ø 15.9 mm / 0.37 in - LS)
137	81	300				78		43.4	25.7	4,351				94		
169	100	256	300				96	53.6	31.7	3,713	4,351				115	
206	122	210	293	300			117	65.3	38.7	3,046	4,250	4,351			140	
262	155	165	230	300			149[1]	Not applicable with a 60Hz motor								
Ø 145 mm - Swept Volume: 1,040.31 cm³ - Diaphragm: 366 mm								Ø 5.71 in - Swept Volume: 63.48 in³ - Diaphragm: 14.4 in								3"
3,715	3,633	9	12			64		1,177	1,152	131	174			77		(Ø 73 mm / 2.87 in - NS)[2]
4,527	4,427	6	11	12		78		1,435	1,403	87	159	174		94		
5,572	5,449	4	8	12			96	1,766	1,727	58	116	174			115	
6,791	6,641		6	9	12		117	2,153	2,105		87	131	174		140	
8,649	8,458			6	12		149[1]	Not applicable with a 60Hz motor								

*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
[1]Do not use with 60 Hz Motor
[2]Flat valves
Note: Detections C5, C6, C7 and C8 for diaphragm Ø 106 liquid ends: pressure limitation of 2,901 psi
LS = Hardened valves - single valve
NS = Single valve

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Design Specifications

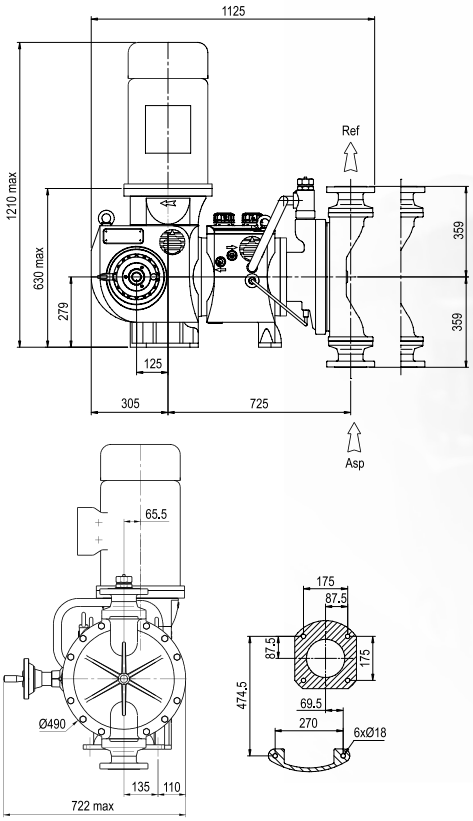
Model PN with HPD Diaphragm Liquid End: Metallic Type P*

Flow rate		Pressure Max. 50 Hz Motor (kW)				Freq. (spm) Motor Speed (rpm)		Flow rate		Pressure Max. 60 Hz Motor (HP)				Freq. (spm) Motor Speed (rpm)		Connections ball valves
		4	5.5	7.5	11					5.5	7.5	10	15			
10 bar	Pres. Max.	Q	T	U	V	960	1,440	145 psi	Pres. Max.	Q	T	U	V	1,140	1,725	
l/h		bar						gph		psi						
Ø 100 mm - Swept Volume: 494.80 cm³ - Diaphragm 266 mm								Ø 3.94 in - Swept Volume: 30.19 in³ - Diaphragm: 10.5 in								1 1/2"
1,805	1,805	10				64		572.2	572.2	145				77		(Ø 40 mm / 1.575 in - NS)
2,199	2,199	10				78		697.1	697.1	145				94		
2,707	2,707	10					96	858.1	858.1	145					115	
3,299	3,299	10					117[1]	Not applicable with a 60 Hz motor								
Ø 145 mm - Swept Volume: 1040.31 cm³ - Diaphragm: 366 mm								Ø 5.71 in - Swept Volume: 63.48 in³ - Diaphragm: 14.4 in								3"
3,715	3,715	9	10			64		1,178	1,178	131	145			77		(Ø 70 mm / 2.76 in - NS)
4,527	4,527	6	10			78		1,435	1,435	87	145			94		
5,572	5,572	4	8	10			96	1,766	1,766	58	116	145			115	
6,791	6,791		6	9	10		117[1]	Not applicable with a 60 Hz motor								

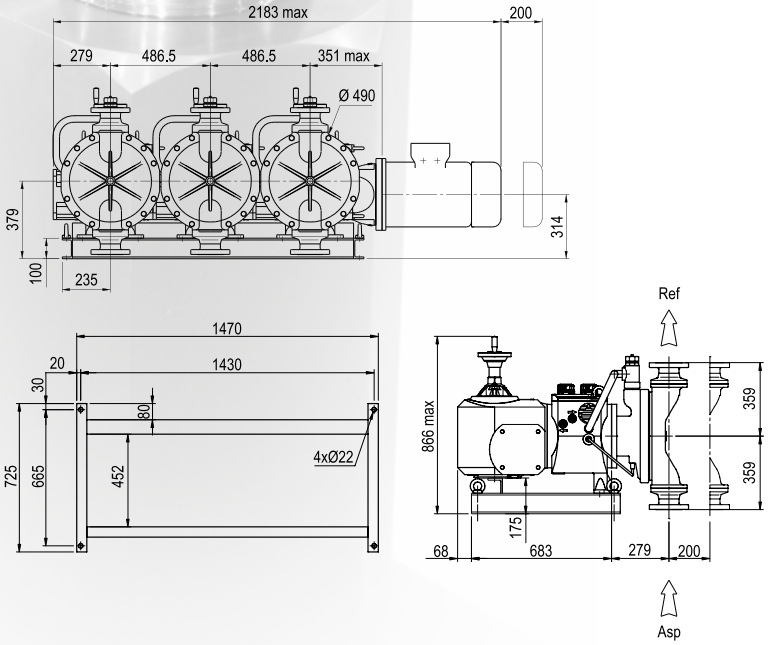
*This chart demonstrates the minimum and maximum flow rate and pressure of the pump. For other specifications, please consult your local representative.
[1]Do not use with 60 Hz Motor
NS = Single valve

Dimensions

Diaphragm liquid end simplex configuration



Diaphragm liquid end triplex configuration



Weight and Packing

Version	Net weight		Gross weight		Packing	
	lbs	kg	lbs	kg	(L x W x H) in	(L x W x H) mm
PN Series						
Simplex	992	450	1,400	635	50.4 x 34.65 x 57.1	1,280 x 880 x 1,450

Full case - SEI IV B
- side panels and cover: full butt jointed wood doubled plastic film
- floor: full butt jointed wood doubled plastic film, palletizable

Full case - SEI IV C
Same as SEI IV B plus:
- waterproof thermo welded sheeting with dehydrating sachets
- storage period to be specified: 6, 12 or months

Teflon is a registered trademark of E.I. du Pont de Nemours and company.

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