PRIMEROYAL® Series
API 675 Metering Pump

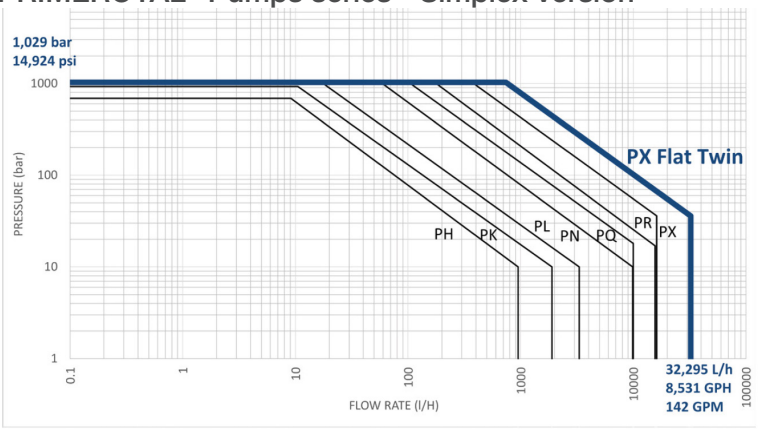
Datasheet

Model PX Flat Twin

The PRIMEROYAL® X Flat Twin metering pump is a versatile and reliable pump that consistently and accurately injects chemicals. The pump design enables precise control of the delivery rate with a +/-1% steady-state accuracy over a range of 10 to 100%. It features a compact, variable eccentric drive that changes the stroke length by changing the position of the center of the shaft in the centric. This API 675-compliant pump has been designed to deliver maximum performance within a minimized footprint.

The PX Flat Twin Model provides accurate dosing of a broad spectrum of fluids at pressures up to 1 029 bar (14,924 psi) and a maximum flow rate of up to 32 295 l/h (8,531 gph) per mechanical drive. Available in vertical or horizontal motor configurations and with ability to accommodate three types of liquid ends, Primeroyal PX Flat Twin can meet the high flow rate and high discharge pressures applications.

PRIMEROYAL® Pumps series - Simplex version



Model PX Flat Twin

	50 Hz motor	60 Hz motor
Flow rate	Up to 32 295 l/h	Up to 8,531 GPH
Pressure	Up to 1 029 bar	14,924 PSI
Thrust	6 000 daN	13,488 lbf
100% stroke	120 mm	4.72 in
Ambient T° Standard	-10 to + 50 °C	+ 14 to + 122 °F
Low T° design	- 40 to +50 °C	- 40 to + 122 °F

Applications

- **Oil and Gas:**
  - **Upstream**: injection of methanol, monoethylene glycol, corrosion inhibitors and many more to prevent hydrate formation, wax and scale deposits and corrosion in deep-water wells, polymer and CO2 injection in enhanced oil recovery (EOR) process
  - **Midstream**: Injection of corrosion inhibitors for produced oil and gas integrity during transportation
  - **Downstream**: Injection of chemicals for separation and treatment of refined products
- **Chemical and Petrochemical Processing**: Dosing catalysts for polymerization of polyethylene
- **Power Generation**: High-pressure boiler feed water treatment
- **Refinery**: Pumping of hydrocarbons/condensate
- **Water treatment in Oil and Gas**: Deep water disposal, hydrocarbon condensate transfer
- **Carbon Capture and Storage (CCS)**: CO2 injection

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Benefits

- **Utmost performances**: High flow rates (up to 32 295 L/h or 8,531 GPH) and High discharge pressure (up to 1 029 bar or 14,924 psi)
- **Compliant with API675 standards**
- **Adaptability and accuracy**: apacity adjustable while running or stopped (stroke micrometric adjustment, from 0 to 100%)
- **Space constraints**: Available in vertical or horizontal motor configurations
- **Suitable for the majority of fluids and a large number of industrial processes**: several stroke speeds for accurate dosing
- **Modular design to precisely fit your needs**: three designs of liquid ends, specific check valves, adaptable connection types, rupture detection systems
- **Multiplexing capability**: to reduce pulsations, meet a specific flow rate by reducing the number of parts, the power consumption and the footprint or to inject several products
- **Long life**: ensured by a robust and proven construction, oil bath lubrication to ensure reliability during continuous operation, using the best materials
- **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, low temperature environment
- **Global design**: can comply with the main worldwide certifications and systems: EN, ATEX, IECX, PED, NACE, SASO, Custom Union, etc.
- **Over-pressure protection**: integrated safety valve to protect the pump on diaphragm liquid ends

Design Specifications

Based on your application, we will recommend the best liquid end design to meet your specific requirements. Some connection sizes come standard, depending on the plunger diameter. A full set of connections are available upon request. The suction and discharge manifolds are also available upon request. Please consult the factory for details.

Technical features

- Liquid end body in 316L S.S., 17-4 PH Duplex. Other materials like Alloy 20, Hastelloy, super Duplex available upon request
- PTFE diaphragm design (H7 type) for high discharge pressure, up to 517 bar (7,500 psi) and suction pressure of 70 bar (1,015 psi)
- PTFE diaphragm - H5 type (HX) for medium pressure, up to 252 bar (3,654 psi)
- Stainless steel 316L diaphragm for high discharge pressure up to 1 029 bar (14,924 psi)
- Packed plunger liquid end in Z55CDV17 steel or chromium oxide coated
- Maximum allowable suction pressure performances (up to 407 bar / 5,908 psi)
- 5 stroke speeds/gear ratios available with 50 Hz motor: 73, 93, 117, 146 and 175 spm
- 4 stroke speeds/gear ratios available with 60 Hz motor: 88, 112, 140 and 175 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 II 2 G Ex h IIC T3 Gb X with Atex motors
- Optimum protection for critical processes or pumped fluids: double diaphragm, diaphragm failure detection, temperature probes and cooling system.
- Special check valves for any type of fluid (including concentrated sulfuric acid and slurries)
- Remote head, cooling/heating jacket for handle processing requiring low/extreme fluid temperatures
- Full set of connections: NPT thread, Medium Pressure, - MP type connection, flange (ANSI, DIN, ISO)
- Wide range of accessories available to complete your dosing instalation

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PTFE diaphragm liquid ends

- Widest chemical compatibility
- Leak free design
- High operational safety: integrated relief valve
- Cost effective solution in the entire product cycle life
- Liquid End Type H7 - High Pressure
- Liquid End type H5 (HX) Medium Pressure
- The MARS system offers a number of advantages over traditional refill systems in hydraulically actuated diaphragm liquid ends: easy start-up without need to adjust the refill valve
- Higher pressure capabilities
- High hydraulic efficiency

		50 Hz Motor					60 Hz Motor					
Plunger diameter code	Swept volume	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Connections
				10 bar	P.max				145 psi	P.max		
Ø	cm³	spm	rpm	l/h		bar	spm	rpm	GPH		psi	
PTFE diaphragm, type H7 - High Pressure												
38	136.1	175	1440	2715	1891	517	175	1728	717	500	7500	1" 13/16 - W3
40	150.8	175	1440	3008	2165	477	175	1728	795	573	6918	1" 13/16 - W3
42	166.3	175	1440	3316	2474	433	175	1728	877	654	6280	1" 13/16 - W3
45	190.9	175	1440	3807	2969	377	175	1728	1007	785	5468	Suction: 1" 1/2 V3 Discharge: 1" V3
50	235.6	175	1440	4700	3868	305	175	1728	1243	1023	4423	1" 1/2 W3
Liquid End type H5 (HX) - Medium Pressure												
55	285.1	146	1440	4745	3826	252	140	1728	1205	972	3654	2" - W2 m
60	339.3	146	1440	5647	4734	212	140	1728	1434	1203	3074	2" - W2 m
63	374.1	146	1440	6226	5319	192	140	1728	1582	1351	2784	2" - W2 m
65	398.2	146	1440	6627	5721	180	140	1728	1684	1453	2622	2" - W2 m
70	461.8	146	1440	7686	6794	155	140	1728	1952	1726	2248	2" - W2 m
75	530.1	146	1440	8823	7941	135	140	1728	2242	2017	1958	2" - W2 m
80	603.2	146	1440	10039	9163	119	140	1728	2550	2328	1725	3" - W3
85	680.9	146	1440	11333	10472	105	140	1728	2879	2660	1522	3" - W3
90	763.4	146	1440	12706	11852	94	140	1728	3228	3011	1363	3" - W3
95	850.6	146	1440	14157	11319	84	140	1728	3596	3383	1218	3" - W3
100	942.5	146	1440	15686	14858	76	140	1728	3985	3775	1102	3" - W3
105	1039.1	146	1440	17294	16478	69	140	1728	4393	4186	1000	3" - W3
110	1140.4	146	1440	18980	18176	63	140	1728	4822	4617	913	4"
115	1246.4	146	1440	20745	19965	57	140	1728	5270	5072	826	4"
120	1357.2	146	1440	22588	21811	53	140	1728	5738	5541	768	4"
125	1472.6	146	1440	24410	23765	48	140	1728	6226	6037	696	4"
130	1592.8	146	1440	26510	25768	45	140	1728	6734	6546	652	4"
135	1717.7	146	1440	28588	27879	41	140	1728	7263	7083	594	4"
140	1847.3	146	1440	30745	30033	39	140	1728	7810	7629	565	4"
145	1981.6	146	1440	32981	32295	36	140	1728	8378	8204	522	4"

Performance data for Simplex pump configuration (2 liquid ends)

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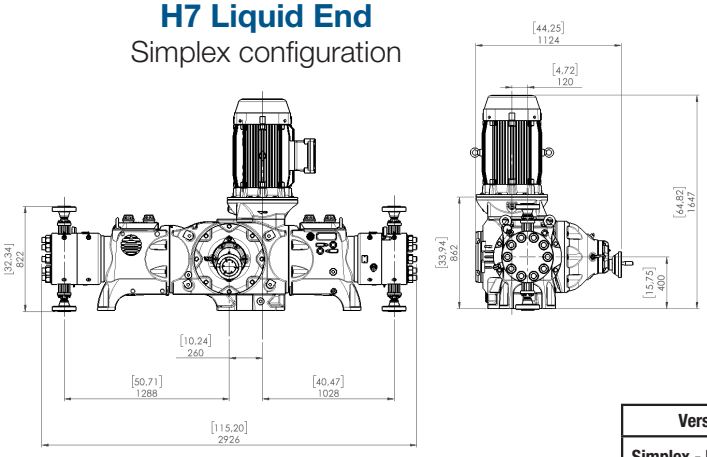
Dimensions, Weight and Packing

The general dimensions are given as an indication only.
The dimensions given correspond to the maximum dimensions (largest liquid ends, most powerful motor)

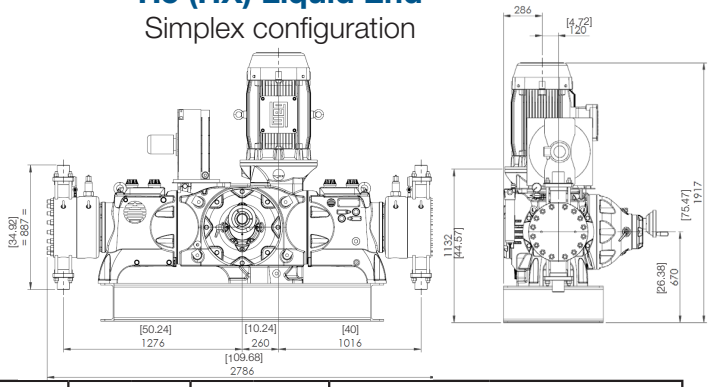
H7 Liquid End

Simplex configuration



H5 (HX) Liquid End

Simplex configuration



Version	Net weight(*)		Gross weight (*)		Packing	
Simplex - H7 and H5 liquid ends	kg	lbs	kg	lbs	(L x W x H) mm	(L x W x H) in
	3700	8,157	3930	8,664	3330 x 1510 x 2290	129.92 x 59.45 x 90.16

(*) Approximately

Packed plunger liquid end

- High pressure capabilities
- Lowest NPSH requirements
- Ideal for viscous fluids and slurries
- Long term success, reliability, and efficiency

LIQUID END TYPE P4 (NX)

- High and extreme pressure capability
- High hydraulic efficiency
- Contained leakage concept reduces monitoring & maintenance

		50 Hz Motor					60 Hz Motor					
Plunger diameter code	Swept volume	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Connections
				10 bar	P.max				145 psi	P.max		
Ø	cm³	spm	rpm	L/h		bar	spm	rpm	GPH		psi	
Packed plunger liquid ends, P4 type (NX)												
28	73.9	146	1440	1242	881	980	140	1728	315	224	14132	1" MP
32	96.5	146	1440	1623	1262	750	140	1728	412	321	10820	1" MP
36	122.2	146	1440	2054	1696	590	140	1728	522	431	8549	1" MP
40	150.8	146	1440	2536	2178	480	140	1728	644	553	6925	1" MP

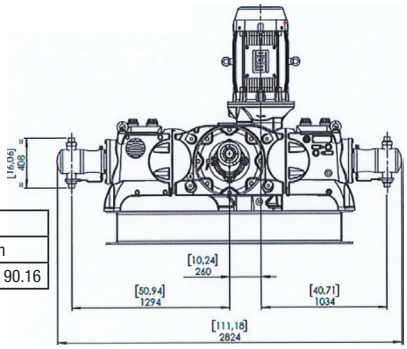
Performance data for Simplex pump configuration (2 liquid ends)

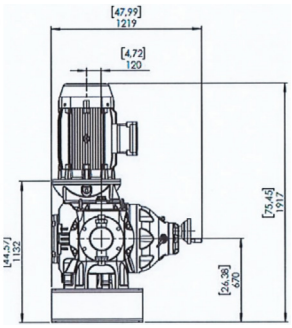
Dimensions, Weight and Packing

The general dimensions are given as an indication only.

LIQUID END TYPE P4 (NX)

Simple and vertical motor configuration





Version	Net weight(*)		Gross weight(*)		Packing	
Simplex - P4 (NX) liquid end	kg	lbs	kg	lbs	(L x W x H) mm	(L x W x H) in
	3232	7,125	3462	7,632	3090 x 1510 x 2290	121.65 x 59.45 x 90.16

(*) Approximately

Metallic diaphragm liquid end

- Challenging products dosing: diffusing, radioactive or abrasive liquids
- High pumped liquid temperatures
- Leak-free design
- High operation safety: integrated relief valve

LIQUID END TYPE M2 (MX)

		50 Hz Motor					60 Hz Motor					
Plunger diameter code	Swept volume	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Stroke speed max	Motor speed max	Flow rate max		Pressure max	Connections
				10 bar	P.max				145 psi	P.max		
Ø	cm³	spm	rpm	L/h		bar	spm	rpm	GPH		psi	
Metallic diaphragm - M2 type (MX)												
25	58.9	175	1440	1138	700	1029	175	1728	301	184	14924	W 7
30	84.8	175	1440	1638	1206	729	175	1728	433	319	10573	W 7
31	90.6	175	1440	1749	1340	694	175	1728	463	355	10065	W 7
33	102.6	175	1440	1982	1450	597	175	1728	524	384	8658	W 7
35	115.5	175	1440	2230	1710	544	175	1728	590	450	7890	W 7
38	136.1	175	1440	2629	2100	457	175	1728	695	552	6628	W2 f
42	166.3	175	1440	3212	2708	386	175	1728	849	715	5598	W2 f
47	208.2	175	1440	4022	3496	302	175	1728	1064	924	4380	W2 f

Performance data for Simplex pump configuration (2 liquid ends)

Dimensions, Weight and Packing

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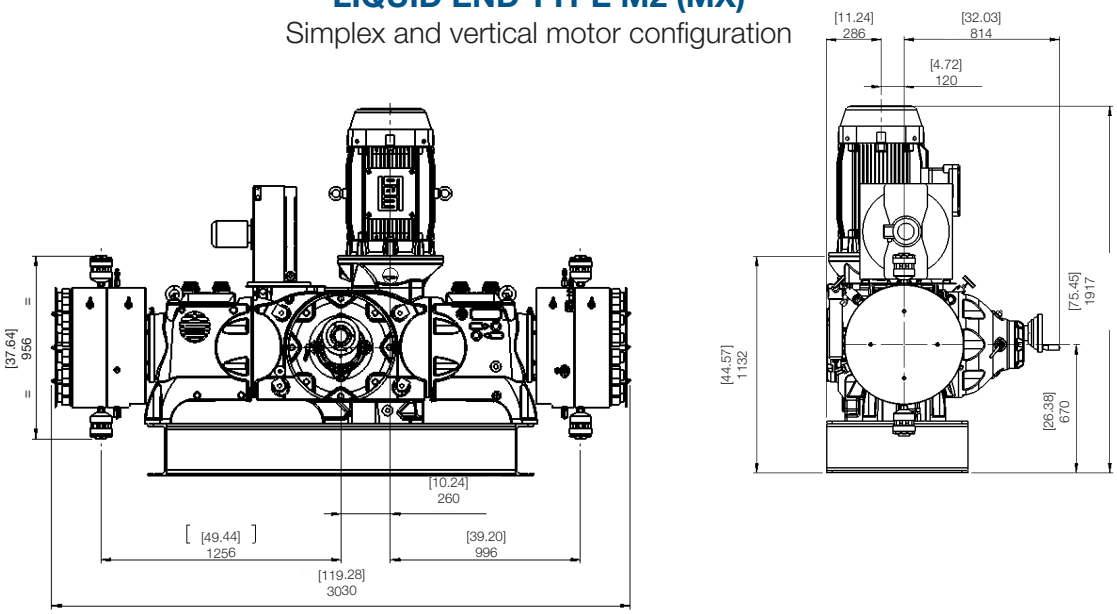
LIQUID END TYPE M2 (MX)

Simplex and vertical motor configuration



Version	Net weight(*)		Gross weight(*)		Packing	
Simplex - M2 (MX) liquid end	kg	lbs	kg	lbs	(L x W x H) mm	(L x W x H) in
	5000	11,023	5320	11,532	3330 x 1510 x 2290	131.10 x 59.45 x 90.16

(*) Approximately

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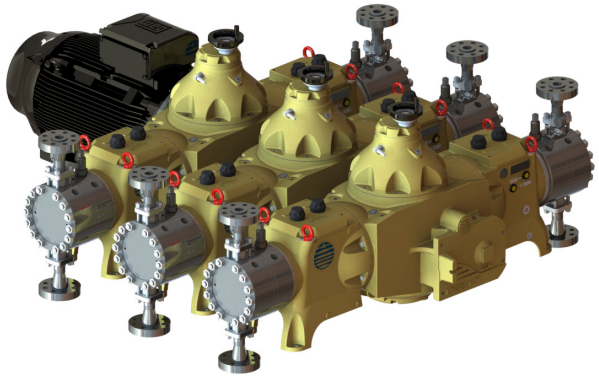
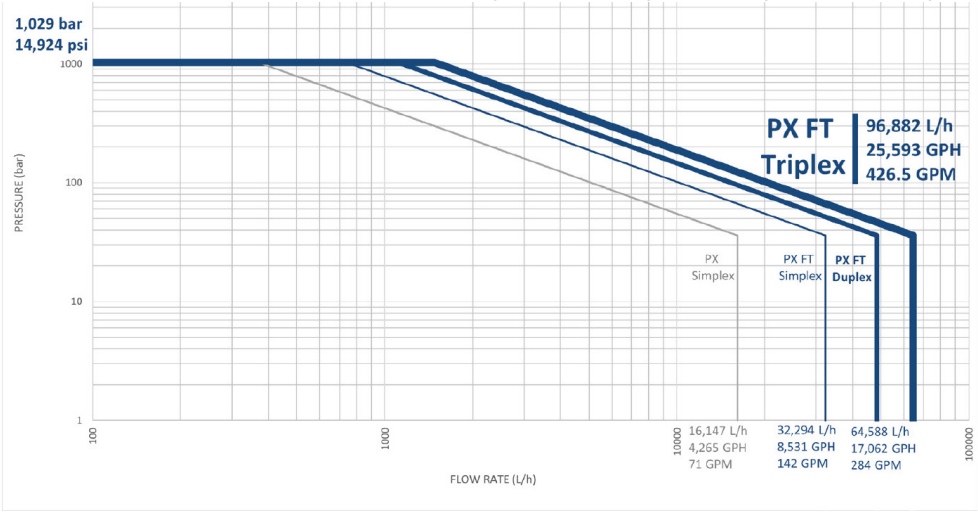
Example of Multiplex

TRIPLEX PUMP HORIZONTAL MOTOR CONFIGURATION



PRIMEROYAL® X (PX Simplex)
and PRIMEROYAL® X FLAT TWIN (PX FT Simplex, Duplex and Triplex)



- OTHER CONFIGURATIONS
  - Simplex, duplex, and triplex available
  - Optional central motor configuration
  - Suction/Discharge Manifolds and baseplate designed upon specifications
  - Guidance to select a turnkey solution that best suits your needs
- Expert advice on optimum installation of your equipment
- Recommendation of a wide range of accessories to complete the installation of your pump for maximum efficiency
- Advise you on essential parts to be kept on hand to optimize the performance of your equipment
- Turnkey dosing solutions available from a skid-mounted pump to a complex, 100% customized chemical injection package.

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