



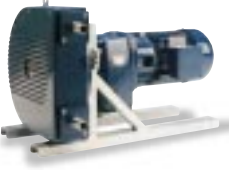


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by performance range

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SOLUTIONS FOR your applications

Barnant offers two differing pump technologies to provide you the best solution for your application—Peristaltic Hose Pumps and Diaphragm Metering Pumps

Advantages of Peristaltic Hose Pumps

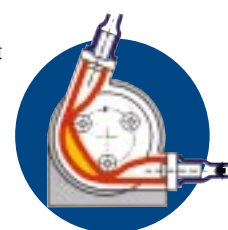
- Handles abrasive slurries and corrosive fluids with minimal wear. Ideal for TiO₂ (titanium dioxide or diatomaceous earth filter aid).
- No seals in contact with the medium pumped
- No valves to clog
- Smooth inner surfaces that are easy to clean
- Fluid contacts only the hose material
- Suction lift and self-priming up to 26 ft H₂O (8 m WC)
- Low shearing for handling the most shear-sensitive of fluids like latex or fire fighting foam
- Capable of running dry and pumping fluids with high quantities of entrained air such as black liquor soap
- High volumetric efficiency allow operation in metering or dosing applications where high accuracy is required
- Handles extremely viscous fluids
- Hose materials are available that are suitable for food and pharmaceutical use
- Dual-hose models for low pulsation requirements
- Two design choices to exactly meet your needs: dry running and lubricated bath design

Principle of Operation

Barnant Ponndorf hose pumps are self-priming rotary positive displacement pumps. They operate based on the peristaltic principle.

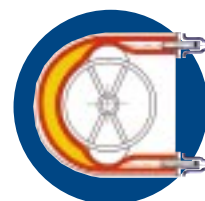
Dry-Running Design

This pump design incorporates a unique tube bed that always ensures that one roller is occluding the hose. Termed dry-running because rollers that do not operate in a lubricated bath occlude the hose. Dry running pumps are available in models capable of discharge pressures up to 60 psig. Unique dual-hose versions provide a nearly pulse-free flow stream.



Lubricated Bath Design

Used in PK series only, this design uses two sliding shoes on the rotor to occlude the hose. The rotor and hose operate in a lubricated bath that reduces friction on the hose and provides the long life typical of this type of hose pump design. These pumps are capable of operating at discharge pressures up to 220 psig (15 bar).

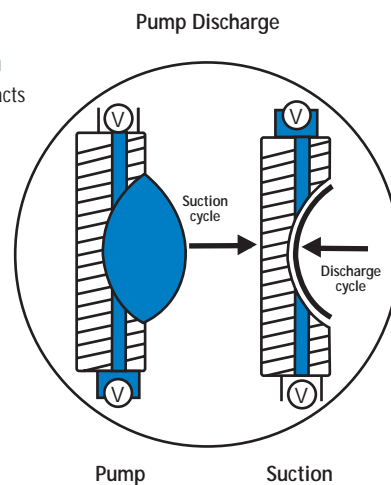


Advantages of Diaphragm Metering Pumps

- Built-in controls for pH, ORP, conductivity or chlorine—provides a complete control system in one package.
- Models available with programmable delivery in PPM pulses by an optional water meter
- IP65 waterproof and weather proof enclosures
- Small footprint

Principle of Operation

1. The electronic solenoid retracts the diaphragm when power is applied.
2. This causes the suction valve(s) to open and fluid flows into the diaphragm cavity
3. When the solenoid is deactivated, a spring returns the diaphragm and forces fluid out the discharge valves.



MASTERFLEX® LIS®







pump selection guide

Pump System Description	Flow range	Fixed speed	Variable speed	Reversible	Remote capability	Special features	Page(s)
Fixed-Speed 	0.06 to 3300 mL/min (0 to 52 GPH)	✓				Economical and compact. TEFC models available.	12-13
Washdown Modular 	0.36 to 3400 mL/min (0 to 54 GPH)		✓	✓	✓	Separate motor and controller. IP56 rated.	10-11
Precision Standard Cons 	0.06 to 3400 mL/min (0 to 54 GPH)		✓	✓	✓	Economical, 10-turn potentiometer for speed control. UL, cUL, and CE listed.	8-9
Industrial Process 	0.1 to 3400 mL/min (0 to 54 GPH)		✓	✓	✓	Digital readout. IP66 and NEMA 4X rated for washdown. Sealed, 316 stainless steel housing. Maintenance-free brushless motor with PWM speed control.	5
Brushless Digital 	0.1 to 3400 mL/min (0 to 54 GPH)		✓	✓	✓	Digital readout. Tachometer feedback for ±0.25% speed control. UL, cUL, and CE listed models.	6-7
Variable-Speed Metering Dispenser 	0.6 to 3400 mL/min (0 to 54 GPH)		✓	✓	✓	Digital readout. Economical and compact. TEFC and washdown. Separate motor and controller.	6-7
Portable Water Sampler 	125 to 1100 mL/min (0 to 24 GPH)		✓	✓		Rechargeable internal batteries for field use. IP54 rated.	17
Air-Powered 	3.6 to 3400 mL/min (0.1 to 54 GPH)		✓			Use in locations where electricity is unsafe or impractical. IP44 rated.	14
Hazardous-Duty 	0.6 to 2450 mL/min (0 to 54 GPH)		✓			Motors are agency certified for use in hazardous locations. IP56 rated.	15
Pump Adapter System 	Adapters let you use Masterflex pump heads with 56C or IEC 72/ISP 63 motors. Flow rates and features depend on motor selection. System includes pump head, adapter, and mounting hardware.						16

MASTERFLEX® L/S® pump tubing

- Manufactured to tight tolerances of Masterflex® pump heads to ensure accurate flow rates and long tubing life
- Optically inspected and factory tested—ensures clean, defect-free tubing that performs to specifications
- Fourteen pump tubing formulations are available, each with different chemical compatibility properties, agency approvals, and performance characteristics.
- Norprene®, PharMed® and Tygon® formulations are the firmest we offer; C-FLEX® and silicone are the softest.
- Firm tubing has longer life, better pressure generation, stronger vacuum/suction lift, and lower gas permeability than soft tubing
- For chemical resistance charts, tubing material, and performance information, request the Masterflex® Technical Data Book.

Specifications

Pump tubing cross sections	Masterflex® L/S® Precision pump tubing sizes					
						
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18
Inside diameter (nominal)	0.8 mm (0.03")	1.6 mm (0.06")	3.1 mm (0.12")	4.8 mm (0.19")	6.4 mm (0.25")	7.9 mm (0.31")
Hose barb size (nominal)	1.6 mm (1/16")	1.6 mm (1/16")	3.2 mm (1/8")	4.8 mm (3/16")	6.4 mm (1/4")	9.5 mm (3/8")
Flow range (approximate)* with 6 to 600 rpm drive	0.36 to 36 mL/min (0.006 to 0.57 GPH)	1.3 to 130 mL/min (0.02 to 2.0 GPH)	4.8 to 480 mL/min (0.08 to 7.6 GPH)	10 to 1000 mL/min (0.16 to 15.8 GPH)	17 to 1700 mL/min (0.27 to 27 GPH)	23 to 2300 mL/min (0.36 to 36.4 GPH)
Maximum pressure,† continuous	1.7 bar (25 psi)	1.7 bar (25 psi)	1.7 bar (25 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)	0.7 bar (10 psi)
Maximum pressure,† intermittent	2.7 bar (40 psi)	2.7 bar (40 psi)	2.7 bar (40 psi)	2.4 bar (35 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)
Maximum vacuum†	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	510 mm Hg (20" Hg)	510 mm Hg (20" Hg)
Suction lift†	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	6.7 m H ₂ O (22 ft H ₂ O)	6.7 m H ₂ O (22 ft H ₂ O)

*Flow ranges are approximate—calculated under the following conditions: 0 psig at inlet, 0.5 psig at outlet; water temperature at 22°C (72°F).

†Actual performance varies depending on tubing formulation—values shown are for firm tubing. For CHEM-SURE and STA-PURE tubing specifications, please contact factory.

Tubing formulation	Masterflex® L/S® Precision pump tubing sizes					
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18
Silicone (platinum-cured)	VA-96410-13 7.6 m (25 ft)/pk	VA-96410-14 7.6 m (25 ft)/pk	VA-96410-16 7.6 m (25 ft)/pk	VA-96410-25 7.6 m (25 ft)/pk	VA-96410-17 7.6 m (25 ft)/pk	VA-96410-18 7.6 m (25 ft)/pk
Silicone (peroxide-cured)	VA-96400-13 7.6 m (25 ft)/pk	VA-96400-14 7.6 m (25 ft)/pk	VA-96400-16 7.6 m (25 ft)/pk	VA-96400-25 7.6 m (25 ft)/pk	VA-96400-17 7.6 m (25 ft)/pk	VA-96400-18 7.6 m (25 ft)/pk
BioPharm Plus silicone (platinum-cured)	VA-96440-13 7.6 m (25 ft)/pk	VA-96440-14 7.6 m (25 ft)/pk	VA-96440-16 7.6 m (25 ft)/pk	VA-96440-25 7.6 m (25 ft)/pk	VA-96440-17 7.6 m (25 ft)/pk	VA-96440-18 7.6 m (25 ft)/pk
C-FLEX® (50 A)	VA-06424-13 7.6 m (25 ft)/pk	VA-06424-14 7.6 m (25 ft)/pk	VA-06424-16 7.6 m (25 ft)/pk	VA-06424-25 7.6 m (25 ft)/pk	VA-06424-17 7.6 m (25 ft)/pk	VA-06424-18 7.6 m (25 ft)/pk
Tygon® LFL	VA-06429-13 7.6 m (25 ft)/pk	VA-06429-14 7.6 m (25 ft)/pk	VA-06429-16 7.6 m (25 ft)/pk	VA-06429-25 7.6 m (25 ft)/pk	VA-06429-17 7.6 m (25 ft)/pk	VA-06429-18 7.6 m (25 ft)/pk
Tygon® food (B-44-4X)	VA-06419-13 15.2 m (50 ft)/pk	VA-06419-14 15.2 m (50 ft)/pk	VA-06419-16 15.2 m (50 ft)/pk	VA-06419-25 15.2 m (50 ft)/pk	VA-06419-17 15.2 m (50 ft)/pk	VA-06419-18 15.2 m (50 ft)/pk
Tygon® lab (R-3603)	VA-06409-13 15.2 m (50 ft)/pk	VA-06409-14 15.2 m (50 ft)/pk	VA-06409-16 15.2 m (50 ft)/pk	VA-06409-25 15.2 m (50 ft)/pk	VA-06409-17 15.2 m (50 ft)/pk	VA-06409-18 15.2 m (50 ft)/pk
Tygon® fuel and lubricant (F-4040-A)	VA-06401-13 15.2 m (50 ft)/pk	VA-06401-14 15.2 m (50 ft)/pk	VA-06401-16 15.2 m (50 ft)/pk	VA-06401-25 15.2 m (50 ft)/pk	VA-06401-17 15.2 m (50 ft)/pk	VA-06401-18 15.2 m (50 ft)/pk
PharMed® (65)	VA-06485-13 7.6 m (25 ft)/pk	VA-06485-14 7.6 m (25 ft)/pk	VA-06485-16 7.6 m (25 ft)/pk	VA-06485-25 7.6 m (25 ft)/pk	VA-06485-17 7.6 m (25 ft)/pk	VA-06485-18 7.6 m (25 ft)/pk
Norprene® (A 60 G)	VA-06404-13 15.2 m (50 ft)/pk	VA-06404-14 15.2 m (50 ft)/pk	VA-06404-16 15.2 m (50 ft)/pk	VA-06404-25 15.2 m (50 ft)/pk	VA-06404-17 15.2 m (50 ft)/pk	VA-06404-18 15.2 m (50 ft)/pk
Norprene® food (A 60 F)	VA-06402-13 15.2 m (50 ft)/pk	VA-06402-14 15.2 m (50 ft)/pk	VA-06402-16 15.2 m (50 ft)/pk	VA-06402-25 15.2 m (50 ft)/pk	VA-06402-17 15.2 m (50 ft)/pk	VA-06402-18 15.2 m (50 ft)/pk
Viton®	VA-06412-13 7.6 m (25 ft)/pk	VA-06412-14 7.6 m (25 ft)/pk	VA-06412-16 7.6 m (25 ft)/pk	VA-06412-25 7.6 m (25 ft)/pk	VA-06412-17 7.6 m (25 ft)/pk	VA-06412-18 7.6 m (25 ft)/pk
CHEM-SURE®	—	VA-96210-14 0.3 m (1 ft)/pk	VA-96210-16 0.3 m (1 ft)/pk	VA-96210-25 0.3 m (1 ft)/pk	VA-96210-17 0.3 m (1 ft)/pk	VA-96210-18 0.3 m (1 ft)/pk
STA-PURE®	—	VA-96200-14 0.3 m (1 ft)/pk	VA-96200-16 0.3 m (1 ft)/pk	VA-96200-25 0.3 m (1 ft)/pk	VA-96200-17 0.3 m (1 ft)/pk	VA-96200-18 0.3 m (1 ft)/pk

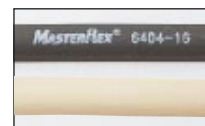
MASTERFLEX® L/S® pump tubing

Ordering the Correct Pump Tubing

- Consider all aspects of your application: flow rate, pressure, viscosity, etc.
- If your application requires high pressure, a strong vacuum/suction lift, or involves viscous fluids, consider using High-performance precision tubing.





High-Pressure Pump Tubing!

Flexible pump tubing from Masterflex that allows you to pump at continuous pressures up to 100 psi. Pack of 7.6 m (25 ft).




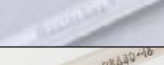


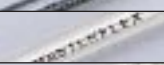


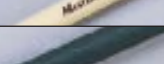


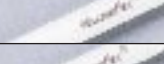



Tubing formulation	Masterflex® pump tubing sizes	
	L/S® 16HP	L/S® 15HP
Tubing ID	1/8"	3/16"
Flow range	0.9 to 90 mL/min	1.7 to 170 mL/min
Max pressure, continuous	100 psi (6.8 bar)	80 psi (5.5 bar)
Norprene®	VA-06504-16	VA-06504-15
PharMed®	VA-06585-16	VA-06585-15

Specifications

Pump tubing cross sections	Masterflex® L/S® High-performance precision pump tubing sizes			
				
	L/S® 15	L/S® 24	L/S® 35	L/S® 36
Inside diameter (nominal)	4.8 mm (0.19")	6.4 mm (0.25")	7.9 mm (0.31")	9.7 mm (0.38")
Hose barb size (nominal)	4.8 mm (3/16")	6.4 mm (1/4")	9.5 mm (3/8")	9.5 mm (3/8")
Flow range (approximate)* with 6 to 600 rpm drive	10 to 1000 mL/min (0.16 to 15.8 GPH)	17 to 1700 mL/min (0.27 to 26.8 GPH)	23 to 2300 mL/min (0.36 to 36.3 GPH)	29 to 2900 mL/min (0.46 to 45.8 GPH)
Flow range* (approx) with 6 to 600 rpm drive obtained with High-Performance pump head	11 to 1100 mL/min (0.17 to 17.4 GPH)	18 to 1800 mL/min (0.29 to 28.4 GPH)	26 to 2600 mL/min (0.41 to 41.1 GPH)	34 to 3400 mL/min (0.54 to 53.8 GPH)
Maximum pressure,† continuous	1.7 bar (25 psi)	1.7 bar (25 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)
Maximum pressure,† intermittent	2.7 bar (40 psi)	2.7 bar (40 psi)	2.4 bar (35 psi)	2.4 bar (35 psi)
Maximum vacuum†	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	610 mm Hg (24" Hg)
Suction lift†	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.3 m H ₂ O (27 ft H ₂ O)

*Flow rates are approximate—calculated under the following conditions: 0 psig at inlet, 0.5 at outlet; water temperature at 22°C (72°F).

†Actual performance varies depending on tubing formulation—values shown are for firm tubing. For CHEM-SURE and STA-PURE tubing specifications, contact factory.

Tubing formulation		Masterflex® L/S® High-performance precision pump tubing sizes			
		L/S® 15	L/S® 24	L/S® 35	L/S® 36
Silicone (platinum-cured)		VA-96410-15 7.6 m (25 ft)/pk	VA-96410-24 7.6 m (25 ft)/pk	VA-96410-35 7.6 m (25 ft)/pk	VA-96410-36 7.6 m (25 ft)/pk
Silicone (peroxide-cured)		VA-96400-15 7.6 m (25 ft)/pk	VA-96400-24 7.6 m (25 ft)/pk	VA-96400-35 7.6 m (25 ft)/pk	VA-96400-36 7.6 m (25 ft)/pk
BioPharm Plus silicone (platinum-cured)		VA-96440-15 7.6 m (25 ft)/pk	VA-96440-24 7.6 m (25 ft)/pk	VA-96440-35 7.6 m (25 ft)/pk	VA-96440-36 7.6 m (25 ft)/pk
C-FLEX® (50 A)		VA-06424-15 7.6 m (25 ft)/pk	VA-06424-24 7.6 m (25 ft)/pk	VA-06424-35 7.6 m (25 ft)/pk	VA-06424-36 7.6 m (25 ft)/pk
Tygon® LFL		VA-06429-15 7.6 m (25 ft)/pk	VA-06429-24 7.6 m (25 ft)/pk	VA-06429-35 7.6 m (25 ft)/pk	VA-06429-36 7.6 m (25 ft)/pk
Tygon® food (B-44-4X)		VA-06419-15 15.2 m (50 ft)/pk	VA-06419-24 15.2 m (50 ft)/pk	VA-06419-35 15.2 m (50 ft)/pk	VA-06419-36 15.2 m (50 ft)/pk
Tygon® lab (R-3603)		VA-06409-15 15.2 m (50 ft)/pk	VA-06409-24 15.2 m (50 ft)/pk	VA-06409-35 15.2 m (50 ft)/pk	VA-06409-36 15.2 m (50 ft)/pk
Tygon® fuel & lubricant (F-4040-A)		VA-06401-15 15.2 m (50 ft)/pk	VA-06401-24 15.2 m (50 ft)/pk	VA-06401-35 15.2 m (50 ft)/pk	VA-06401-36 15.2 m (50 ft)/pk
PharMed® (65)		VA-06485-15 7.6 m (25 ft)/pk	VA-06485-24 7.6 m (25 ft)/pk	VA-06485-35 7.6 m (25 ft)/pk	VA-06485-36 7.6 m (25 ft)/pk
Norprene® (A 60 G)		VA-06404-15 15.2 m (50 ft)/pk	VA-06404-24 15.2 m (50 ft)/pk	VA-06404-35 15.2 m (50 ft)/pk	VA-06404-36 15.2 m (50 ft)/pk
Norprene® food (A 60 F)		VA-06402-15 15.2 m (50 ft)/pk	VA-06402-24 15.2 m (50 ft)/pk	VA-06402-35 15.2 m (50 ft)/pk	VA-06402-36 15.2 m (50 ft)/pk
Viton®		VA-06412-15 7.6 m (25 ft)/pk	VA-06412-24 7.6 m (25 ft)/pk	VA-06412-35 7.6 m (25 ft)/pk	VA-06412-36 7.6 m (25 ft)/pk
CHEM-SURE®		VA-96210-15 0.3 m (1 ft)/pk	VA-96210-24 0.3 m (1 ft)/pk	VA-96210-35 0.3 m (1 ft)/pk	VA-96210-36 0.3 m (1 ft)/pk
STA-PURE®		VA-96200-15 0.3 m (1 ft)/pk	VA-96200-24 0.3 m (1 ft)/pk	VA-96200-35 0.3 m (1 ft)/pk	VA-96200-36 0.3 m (1 ft)/pk

MASTERFLEX® L/S® industrial process drives

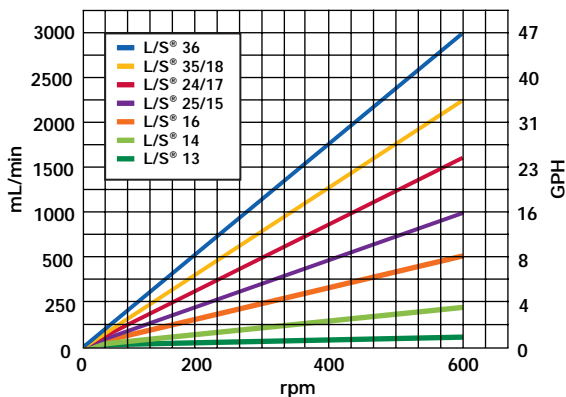
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For pressure and suction performance, see the "Specifications" on pages 3-4.

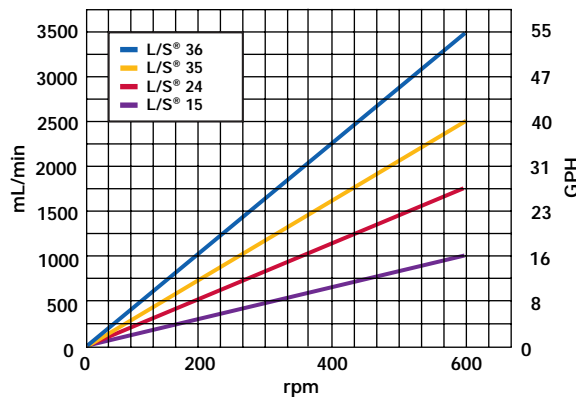
- Flow range: 0.1 to 3400 mL/min (up to 54 GPH)
- Washdown for industrial process applications
- IP66 and NEMA 4X rated. Electropolished 316 SS housing is protected from dust, water, and most chemical attacks.
- Ideal for metering applications in process and washdown environments, including pharmaceutical, food & beverage, chemical, and water treatment
- Brushless, reversible motor is quiet, efficient, maintenance-free, and easy to install
- Precise PWM speed control for $\pm 0.25\%$ accuracy
- Membrane keypad for easy programming
- Calibrate system to maximize display accuracy
- Remote control for integration into automated processes
- Five-digit LED display
- Display flow/volume in English or metric units



Flow Curves
L/S® Easy-Load® II Pump Head



Flow Curves
L/S® High-Performance Pump Head



Catalog number	VA-975-3010	VA-975-3110	VA-975-3510
Included pump head	Easy-Load II (thin wall)	Easy-Load II (thick wall)	High-Performance (thick wall)
Number of heads accepted	2		1
rpm	1 to 600		
External control—input	Scaleable 4 to 20 mA, 0 to 10 V, 0 to 20 mA, direction, start/stop, prime		
External control—output	Scalable 0 to 20, 4 to 20, 0 to 100, TTL pulse		
Voltage (50/60 Hz)	90 to 130 VAC and 190 to 260 VAC (self-sensing)		
Motor type	Brushless, continuous duty, maintenance-free		
Speed control type	PWM		
Digital display	Five-digit LED		
Operating temperature	0 to 40°C (32 to 104°F)		
Storage temperature	-25 to 65°C (-13 to 149°F)		
IP rating	IP 66		
Agency approvals	UL, cUL, CE		
Dimensions (L x W x H)	38.1 cm x 23 x 24 (15" x 9" x 9 1/4")		
Shipping weight	12.3 kg (27 lb)		



Standard brushless digital pump 975-2000 includes an Easy-Load® II pump head

Standard Brushless Digital Pump

- Wide flow ranges; durable, powerful motors; and easy-to-read digital displays
- Maintenance-free reversible motor—quiet operation and no brushes to replace
- Precise PWM speed control maximizes accuracy and efficiency
- Dual voltage: 115 VAC and 230 VAC
- Four-digit LED display shows four different parameters: flow rate, dispense volume, copy, and motor rpm
- Reversible flow, remote control, and tachometer feedback
- Keypad lock feature prevents accidents or tampering
- Field calibration function allows more accurate flow when installed in system
- 1.8-m (6-ft) line cord features IEC 320/CEE22 socket

Washdown brushless digital pump 975-3000 includes an Easy-Load II pump head and wall-mount controller



Washdown Brushless Digital Pump with Wall-Mount Controller

- Designed for accurate metering and low maintenance operations
- Feature a IP56-rated wall-mount controller and full-featured remote control capabilities
- Maintenance-free brushless motor operates quietly
- Precise PWM speed control maximizes accuracy and efficiency
- Dual voltage: 115 VAC and 230 VAC
- IP56 controller/motor—washdown rated
- 7.6-m (25-ft) cable connects motor and controller
- Field calibration function allows more accurate flow when installed in system
- Reversible—purge before or after pumping
- Keypad lock feature prevents accidents or tampering
- Remote control capabilities via weather-resistant connection on controller (use remote cable 77300-32)
- Four-digit LED display shows four different parameters: flow rate, dispense volume, copy, and motor rpm
- 1.8-m (6-ft) line cord features IEC 320/CEE22 socket

Flow Ranges, mL/min (GPH)*

Motor rpm	Masterflex® L/S® precision tubing sizes (thin wall)						Masterflex® L/S® precision tubing sizes (thick wall)			
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18	L/S® 15	L/S® 24	L/S® 35	L/S® 36
10 to 600	0.6 to 36 (0 to 0.54)	2.1 to 130 (0.03 to 1.8)	8 to 480 (0.12 to 7.6)	17 to 1000 (0.24 to 1.6)	28 to 1700 (0.42 to 26.4)	38 to 2300 (0.6 to 3.6)	17 to 1000 (0.24 to 1.6)	28 to 1700 (0.42 to 26.4)	38 to 2300 (0.6 to 36.4)	48 to 2900 (0.72 to 46)
1.6 to 100	0.1 to 6 (0 to 0.06)	0.4 to 21 (0 to 0.33)	1.4 to 80 (0.01 to 1.3)	3 to 170 (0.04 to 2.5)	5 to 280 (0.06 to 4.3)	6 to 380 (0.06 to 6)	3 to 160 (0.04 to 2.4)	4.5 to 280 (0.06 to 4.3)	6.5 to 380 (0.10 to 6)	9.5 to 560 (0.15 to 8.8)

Note: Flow ranges were determined using water at room temperature with zero back pressure and zero suction lift.

*Up to 3400 mL/min (54 GPH) with High-Performance pump head.

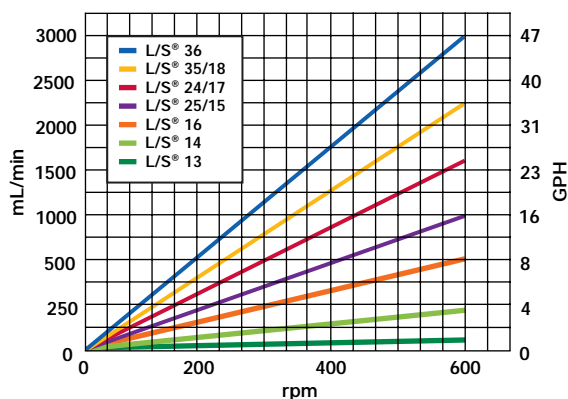


Specifications & Ordering Information

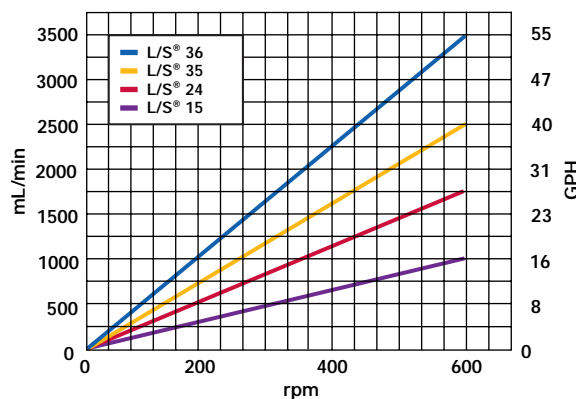
Catalog number	Benchtop digital pump						Washdown digital pump		
	VA-975-2000	VA-975-2100	VA-975-2500	VA-975-2600	VA-975-2700	VA-975-2800	VA-975-3000	VA-975-3100	VA-975-3500
Included pump head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
Number of heads accepted	2	2	1	4	4	1	2	2	1
rpm	10 to 600	10 to 600	10 to 600	1.6 to 100	1.6 to 100	1.6 to 100	10 to 600	10 to 600	10 to 600
External control—input	0 to 20 mA, 4 to 20 mA, 0 to 10V; START/STOP, DIR. (CW/CC), PRIME via contact closure								
External control—output	0 to 20 mA, 4 to 20 mA, 0 to 10 V, or TTL pulse								
Voltage (50/60 Hz)	115/230 VAC (auto selected)								
Motor type	Brushless continuous duty, TENV*, DC, permanent lubricated bearings								
Digital display (if applicable)	4-digit, 7-segment LED								
Motor/speed control type	PWM (Pulse Width Modulated)								
Speed regulation (repeatability)	±0.25%; ±1 rpm			±0.1 rpm			±0.25%; ±1 rpm		
Operating temperature	0 to 40°C (32 to 104°F)								
Storage temperature	-25 to 65°C (-13 to 149°F)								
IP rating	IP23						IP56		
Agency approvals	UL, cUL, CE								
Dimensions (L x W x H)	29.2 x 20.3 x 18.4 cm (11½" x 8" x 7¼")						22.9 x 29.8 x 11.4 cm (9" x 11¾" x 4½")		
Shipping weight	17 lb (7.7 kg)		22 lb (10 kg)		17 lb (7.7 kg)		22 lb (10 kg)	18.5 lb (8.4 kg)	24 lb (11 kg)

*Totally enclosed, non-ventilating.

Flow Curves
L/S® Easy-Load® II Pump Head



Flow Curves
L/S® High-Performance Pump Head



GO to pages 3 to 4
For pressure and suction performance, see the "Specifications" on pages 3-4.

MASTERFLEX® L/S®

precision console drives



Precision standard drive
955-1000 with Easy-Load® II
pump head



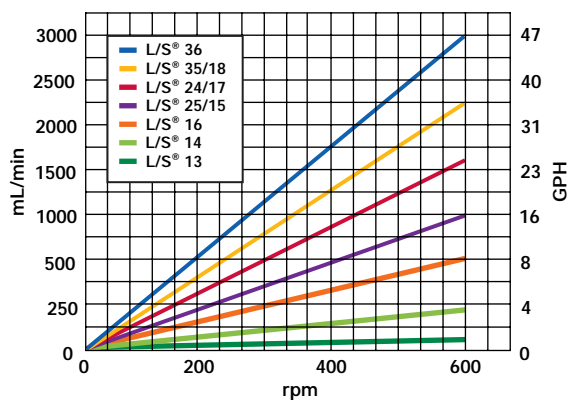
Precision standard drive
965-1000, which includes
High-Performance pump head

- Deliver flow rates from 0.06 to 3400 mL/min (up to 54 GPH) with Masterflex® L/S® pump heads
- Motor and controller in one convenient package
- Molded handle for one-handed portability
- Precise reset of speed control with lockable 10-turn potentiometer and separate on/off
- Reversible motor
- 4 to 20 mA remote speed control, START/STOP via open collector or contact closure
- Speed not affected by minor variations in power line voltage (VAC) and frequency (Hz)

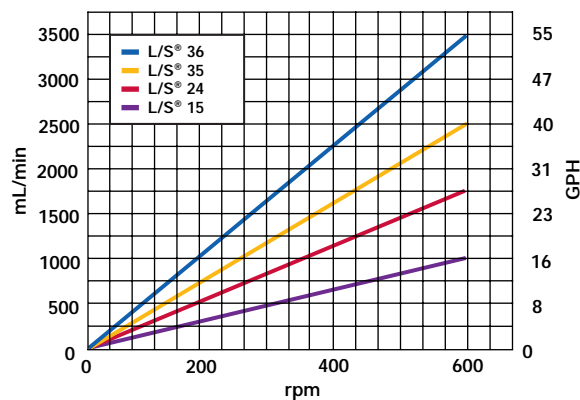
GO to pages 3 to 4

For pressure and suction performance, see the "Specifications" on pages 3-4.

Flow Curves
L/S® Easy-Load® II Pump Head



Flow Curves
L/S® High-Performance Pump Head



Flow Ranges, mL/min (GPH)*

Motor rpm	Masterflex® L/S® precision tubing sizes (thin wall)						Masterflex® L/S® high-performance precision tubing sizes (thick wall)			
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18	L/S® 15	L/S® 24	L/S® 35	L/S® 36
6 to 600	0.36 to 36 (0.005 to 0.54)	1.3 to 130 (0.01 to 1.8)	4.8 to 480 (0.06 to 7.6)	10 to 1000 (0.12 to 16)	17 to 1700 (0.26 to 26)	23 to 2300 (0.36 to 36)	10 to 1000 (0.12 to 16)	17 to 1700 (0.26 to 26)	23 to 2300 (0.36 to 36)	29 to 2900 (0.46 to 46)
1 to 100	0.06 to 6 (0.001 to 0.06)	0.21 to 21 (0.003 to 0.33)	0.8 to 80 (0.012 to 1.25)	1.7 to 170 (0.024 to 2.4)	2.8 to 280 (0.042 to 4.2)	3.8 to 380 (0.06 to 6)	1.7 to 170 (0.024 to 2.4)	2.8 to 280 (0.042 to 4.2)	3.8 to 380 (0.06 to 6)	4.8 to 480 (0.08 to 8)

Note: Flow ranges were determined using water at room temperature with zero back pressure and zero suction lift.

*Up to 3400 mL/min (54 GPH) with High-Performance pump head.



Specifications & Ordering Information

Catalog number	VA-955-1000	VA-955-1005	VA-956-1000	VA-956-1005	VA-965-1000	VA-965-1005	VA-955-1500	VA-955-1505	VA-956-1500	VA-956-1505	VA-965-1500	VA-965-1505
Included pump head	Easy-Load II (thick wall)		Easy-Load II (thin wall)		High-Performance (thick wall)		Easy-Load II (thick wall)		Easy-Load II (thin wall)		High-Performance (thick wall)	
Number of heads accepted	2		2		1		4		4		1	
rpm	6 to 600		6 to 600		6 to 600		1 to 100		1 to 100		1 to 100	
External control—input	4 to 20 mA, 2 to 10 V, TTL, signal for remote stop											
External control—output	Not applicable											
Voltage/VAC (50/60 Hz) Frequency	90-130	190-260	90-130	190-260	90-130	190-260	90-130	190-260	90-130	190-260	90-130	190-260
Motor type	Continuous duty, TENV*, permanent magnet DC; permanent lubrication bearings											
Speed control type	10-turn potentiometer, SCR, 100:1 turndown											
Speed regulation (Repeatability)	1% (10-turn potentiometer settable to 1%)											
Operating temperature	0 to 40°C (32 to 104°F)											
Storage temperature	-45 to 65°C (-49 to 149°F)											
IP rating	IP23											
Agency approvals	UL, cUL, CE (230 V units)											
Dimensions (L x W x H)	29.2 cm x 20.3 cm x 18.4 cm (8" x 7 1/4") (11.5" x 8.0" x 7.25" without pump)											
Shipping weight	7.7 kg (17 lb)		7.7 kg (17 lb)		8.4 kg (18.5 lb)		7.1 kg (15.75 lb)		7.1 kg (15.75 lb)		8.4 kg (18.5 lb)	

*Totally enclosed, non-ventilating.

MASTERFLEX® L/S® high-pressure pump systems

Continuous pressure up to 100 psi

- Same features as precision drives 965-1500 and 965-1505
- Feed chemicals continuously at up to 100 psi
- Convenient package comes complete with motor, High-Performance pump head, and 10 feet of PharMed® high-pressure pump tubing
- Norprene® high-pressure tubing also available for these pumps (see page 4 to order)



High-Pressure pump system 970-1500

Specifications & Ordering Information

Catalog number	VA-970-1500	VA-970-1500
Motor rpm	100	
Max flow rate	80 mL/min (1.25 GPH)	170 mL/min (2.4 GPH)
Tubing size	16	15
Tubing	06485-16	06485-15

MASTERFLEX® LIS® washdown modular drives



- For wet or hostile environments
- Protected from dust and strong jets of water
- Deliver flow rates from 0.36 to 3400 mL/min (up to 54 GPH)
- Multichannel pumping
- Reversible motor
- Manual controls on front panel
- Single-turn potentiometer speed control
- Forward/off/reverse switch with red LED power indicator
- Remote/internal control switch
- Washdown enclosure/motor
- 4 to 20 mA remote variable-speed control
- Interface via terminal strip inside enclosure

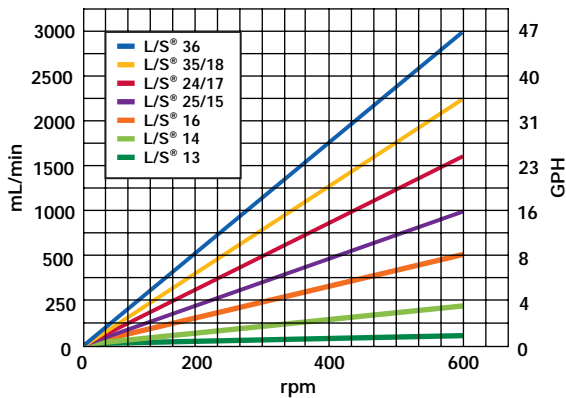


Washdown variable-speed drive 955-1010 includes an Easy-Load® II pump head

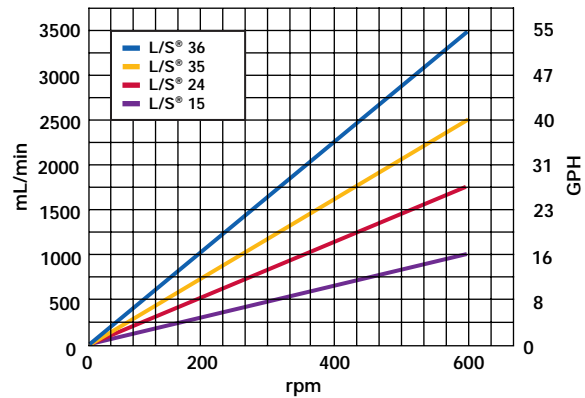


Washdown modular variable-speed drive 965-1010 includes a High-Performance pump head

Flow Curves
L/S® Easy-Load® II Pump Head



Flow Curves
L/S® High-Performance Pump Head





Washdown modular variable-speed drive 965-1010 includes a High-Performance pump head

Motor rpm	Masterflex® L/S® precision tubing sizes (thin wall)						Masterflex® L/S® high-performance precision tubing sizes (thick wall)			
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18	L/S® 15	L/S® 24	L/S® 35	L/S® 36
6 to 600	0.36 to 36 (0.005 to 0.5)	1.3 to 130 (0.02 to 2.04)	4.8 to 480 (0.72 to 7.56)	10 to 1000 (0.12 to 15.6)	17 to 1700 (0.24 to 26.4)	23 to 2300 (0.36 to 36.5)	10 to 1000 (0.12 to 15.6)	17 to 1700 (0.24 to 26.4)	23 to 2300 (0.36 to 36.5)	29 to 2900 (0.46 to 46)

Note: Flow ranges were determined using water at room temperature with zero back pressure and zero suction lift.

*Up to 3400 mL/min (54 GPH) with High-Performance pump head.



Catalog number	VA-955-1010	VA-955-1015	VA-956-1010	VA-956-1015	VA-965-1010	VA-965-1015
Included pump head	Easy-Load II (thin wall)		Easy-Load II (thick wall)		High-Performance (thick wall)	
Number of heads accepted	2				1	
rpm	6 to 600					
Voltage/Frequency VAC (50/60Hz)	90 to 130	190 to 260	90 to 130	190 to 260	90 to 130	190 to 260
Fuse rating (250 V)	3 A	1.5 A	3 A	1.5 A	3 A	1.5 A
Motor type	Continuous duty, TENV, permanent magnet DC, permanent lubricated bearings					
Motor/Speed control type	Single-turn potentiometer, solid-state circuit					
Speed regulation (Repeatability)	±10%					
Operating temperature	0 to 40°C (32 to 104°F)					
Storage temperature	10 to 60°C (-49 to 149°F)					
IP rating	IP56					
Controller dimensions (L x W x H)	13.6 cm x 16.5 cm x 20 cm (5 1/16" x 6 1/2" x 8")					
Footprint (L x W x H)	20 cm x 9.7 cm x 11.7 cm (7 1/2" x 3 13/16" x 4 5/8")					
Shipping weight	9.1 kg (20 lb)				9.8 kg (21.5 lb)	

MASTERFLEX® LIS® fixed-speed pumps

- Ideal for very low-flow applications
- Deliver flow rates from 0.06 to 348 mL/min (0.001 to 5.5 GPH)
- Compact drives feature durable epoxy-coated steel housings
- Operate 24 hours per day—drives feature continuous-duty brushless AC motors
- On/off switch provides easy, safe control of motor
- Thermally protected motor automatically shuts down in overheat conditions



Fixed-speed pump 955-1205 includes an Easy-Load II pump head



Fixed-speed pump 965-1200 includes a High-Performance pump head

Specifications & Ordering Information

Catalog number	VA-955-1100	VA-955-1105	VA-955-1200	VA-955-1205	VA-955-1300	VA-955-1305	VA-955-1400	VA-955-1405	VA-956-1100	VA-956-1105	VA-956-1200	VA-956-1205	VA-956-1300	VA-956-1305	VA-956-1400	VA-956-1405
Included pump head	Easy-Load II (thin wall)		Easy-Load II (thin wall)		Easy-Load II (thin wall)		Easy-Load II (thin wall)		Easy-Load II (thick wall)		Easy-Load II (thick wall)		Easy-Load II (thick wall)		Easy-Load II (thick wall)	
Number of heads accepted	2		2		2		1		2		2		2		1	
Motor rpm (fixed)	1		6		30		60		1		6		30		60	
Voltage (50/60 Hz)	115	230	115	230	115	230	115	230	115	230	115	230	115	230	115	230
Current	0.3 A	0.2 A	0.5 A	0.2 A	0.5 A	0.4 A	0.9 A	0.4 A	0.3 A	0.2 A	0.5 A	0.2 A	0.5 A	0.4 A	0.9 A	0.4 A
Fuse rating	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4
Motor type	AC, shaded pole															
Speed regulation (Repeatability)	±10%															
Operating temperature	0 to 40°C (32 to 104°F)															
Storage temperature	25 to 65°C (-49 to 149°F)															
IP rating	IP22															
Agency approvals	UL, cUL, CE (230 V units)															
Dimensions (L x W x H)	13.4 cm x 11.8 cm x 15.2 cm (5 3/8" x 4 5/8" x 6")															
Shipping weight	4.0 kg (9.0 lb)															

Flow Rates, mL/min (GPH)*

Motor rpm	Masterflex® L/S® precision tubing sizes					
	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18
Easy-Load® II (thin wall)						
1	0.06 (0.001)	0.21 (0.003)	0.8 (0.013)	1.7 (0.027)	2.8 (0.044)	3.8 (0.060)
6	0.36 (0.006)	1.26 (0.020)	4.8 (0.076)	10.2 (0.16)	16.8 (0.27)	22.8 (0.36)
30	1.8 (0.03)	6.3 (0.10)	24 (0.38)	51 (0.81)	84 (1.3)	114 (1.8)
60	3.6 (0.06)	12.6 (0.20)	48 (0.76)	102 (1.6)	168 (2.7)	228 (3.6)

Motor rpm	Masterflex® L/S® High-performance precision tubing sizes			
	L/S® 15	L/S® 24	L/S® 35	L/S® 36
Easy-Load® II (thick wall)				
1	1.7 (0.03)	2.8 (0.04)	3.8 (0.06)	4.8 (0.08)
6	10.2 (0.16)	16.8 (0.27)	22.8 (0.36)	28.8 (0.46)
30	51 (0.81)	84 (1.3)	114 (1.8)	144 (2.3)
60	102 (1.6)	168 (2.7)	228 (3.6)	288 (4.6)
High-Performance (thick wall)				
1	1.8 (0.03)	3 (0.05)	4.3 (0.07)	5.8 (0.09)
6	10.8 (0.17)	18 (0.29)	25.8 (0.41)	34.8 (0.55)
30	54 (0.86)	90 (1.4)	129 (2.0)	174 (2.8)
60	108 (1.7)	180 (2.9)	258 (4.1)	348 (5.5)

Note: Flow rates were calculated under the following conditions: zero psig at inlet, 0.5 psig at outlet; water temperature at 22°C (72°F).

*Flow rates listed in parentheses are obtainable only with High-Performance pump head.



	Catalog number	VA-965-1100	VA-965-1105	VA-965-1200	VA-965-1205	VA-965-1300	VA-965-1305
Included pump head		High-Performance (thick wall)					
Number of heads accepted		1		6		30	
Motor rpm (fixed)		1		1		1	
Voltage (50/60 Hz)		115	230	115	230	115	230
Current		0.3 A	0.2 A	0.5 A	0.2 A	0.5 A	0.4 A
Fuse rating		0.8 A	0.4 A	0.8 A	0.4 A	0.8 A	0.4 A
Motor type		AC, shaded pole					
Speed regulation (Repeatability)		±10% (±10%)					
Operating temperature		0 to 40°C (32 to 104°F)					
Storage temperature		-45 to 65°C (-49 to 149°F)					
IP rating		IP22					
Agency approvals		UL, cUL, CE (230 V units)					
Dimensions (L x W x H)		13.4 cm x 11.8 cm x 15.2 cm (5 1/8" x 4 5/8" x 6")					
Shipping weight		4.5 kg (10.0 lb)					

MASTERFLEX® L/S®

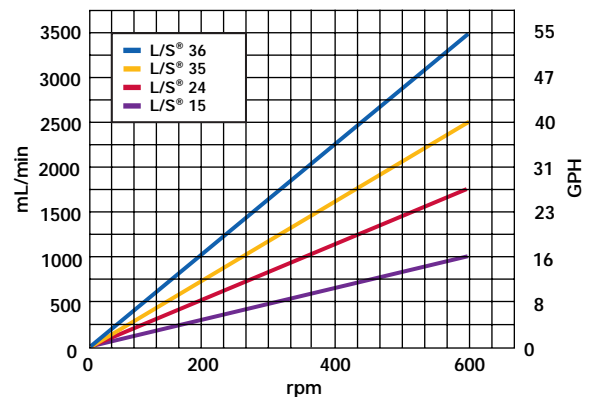
variable-speed air-powered drives



Air-powered drive
965-1029 includes a
High-Performance
pump head

- Deliver flow rates from 3.6 to 3400 mL/min (up to 54 GPH)
- Ideal for hazardous-duty locations
- Intrinsically safe when properly grounded for static electricity
- No electrical power required
- Wide flow control range (10:1 turndown)
- Compact, portable console package
- Reversible

Flow Curves
L/S® High-Performance Pump Head

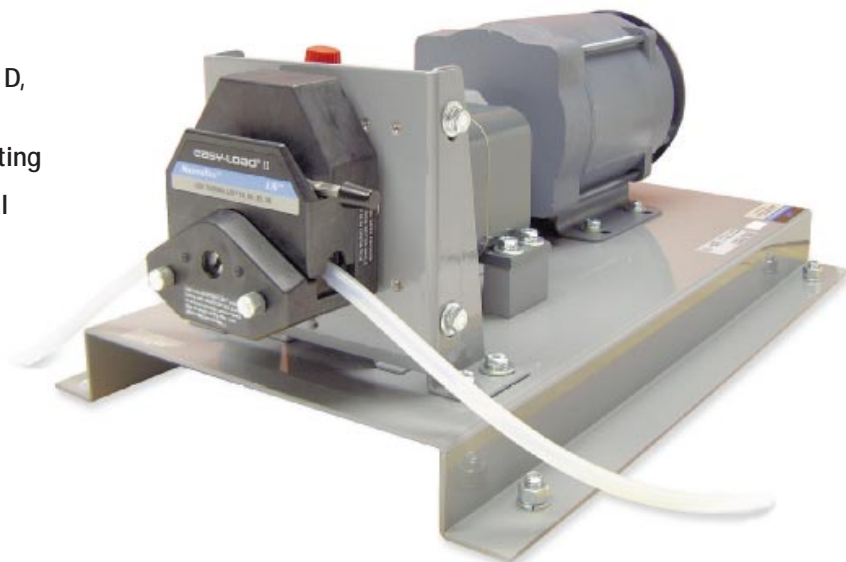


Catalog number	VA-955-1029	VA-956-1029	VA-965-1029
Included pump head	Easy-Load II (thin wall)	Easy-Load II (thick wall)	High-Performance (thick wall)
Number of heads accepted	2		
rpm	60 to 600		
Air supply requirements	10 cfm @ 150 psig		
Motor type	Rotary vane air motor		
Speed regulation (Repeatability)	±10% (±15 rpm @ 60 to 150 rpm) (±20 rpm @ 150 to 600 rpm)		
Operating temperature	0 to 40°C (32 to 104°F)		
Storage temperature	-10 to 65°C (-49 to 149°F)		
IP rating	IP44		
Agency approvals	UL, cUL, CE		
Footprint (L x W x H)	25.1 cm x 12.2 cm x 22.4 cm (9 7/8" x 4 13/16" x 8 13/16")		
Shipping weight	6.9 kg (15 lb)		7.6 kg (17 lb)

MASTERFLEX® L/S®

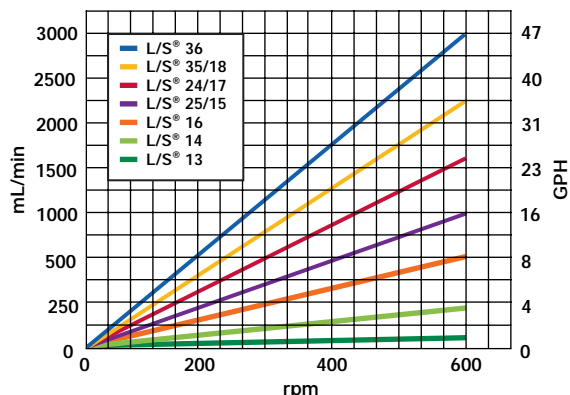
variable-speed hazardous-duty drives

- Deliver flow rates from 0.6 to 2500 mL/min (up to 40 GPH)
- 115 VAC motor: UL-listed for Class 1, Group D, Division 1 hazardous locations
- 230/400 VAC, 3-phase motor: EEx-d IIBT4 rating
- Ideal for areas that require special electrical precautions



Hazardous-duty drive 955-1730 includes an Easy-Load® II pump head

Flow Curves
L/S® Easy-Load® II Pump Head



Catalog number	VA-955-1010	VA-955-1015	VA-956-1010	VA-956-1015	VA-965-1010	VA-965-1015
Included pump head	Easy-Load® II (thin wall)		Easy-Load® II (thick wall)		High-Performance (thick wall)	
Number of heads accepted	2			1		1
rpm	6 to 600					
Voltage/Frequency VAC (50/60Hz)	90 to 130	190 to 260	90 to 130	190 to 260	90 to 130	190 to 260
Fuse rating (250 V)	3 A	1.5 A	3 A	1.5 A	3 A	1.5 A
Motor type	Continuous duty, TENV*, permanent magnet DC, permanent lubricated bearings					
Speed control type	Single-turn potentiometer, solid-state circuit					
Speed regulation (repeatability)	±10%					
Operating temperature	0 to 40°C (32 to 104°F)					
Storage temperature	10 to 60°C (-49 to 149°F)					
IP rating	IP56					
Controller dimensions (L x W x H)	13.6 cm x 16.5 cm x 20 cm (5 1/16" x 6 1/2" x 8")					
Footprint dimensions (L x W x H)	20 cm x 9.7 cm x 11.7 cm (7 1/2" x 3 13/16" x 4 5/8")					
Shipping weight	9.1 kg (20 lb)			9.8 kg (22 lb)		

*Totally enclosed, non-ventilating.

MASTERFLEX® L/S®

pump adapter systems

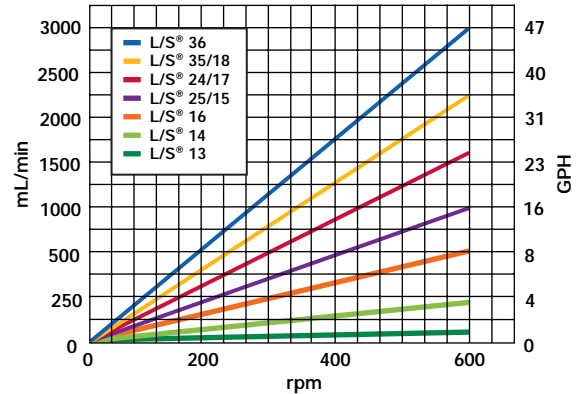
(for 56C face and IEC 72 motors)



Adapter system includes Easy-Load® II pump head, adapter, and hardware. Motor not included.

- System includes pump head, adapter, and mounting hardware
- Deliver flow rates up to 3400 mL/min (up to 54 GPH) with Masterflex® L/S® pump heads
- Attach your own motor to meet local electrical standards, hazardous-duty, or washdown requirements
- Multichannel capabilities
- Accepts NEMA 56C or IEC 72 frame motors with base
- Use any motors with a 56C face
- For metric motors, select the IEC 72 frame type

Flow Curves
L/S® Easy-Load® II Pump Head



Recommended motor rpm limits	Adapter gear ratio	Pump head rpm	L/S® precision tubing sizes (thin wall)						L/S® high-performance tubing sizes (thick wall)			
			L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18	L/S® 15	L/S® 24	L/S® 35	L/S® 36
		1	0.06	0.21	0.8	1.7	2.8	3.8	1.7 (1.8)	2.8 (3.0)	3.8 (4.3)	4.8 (5.8)
3.7 to 2220	3.7:1	1 to 600	0.06 to 36 (0 to 0.54)	0.21 to 130 (0 to 1.8)	0.8 to 480 (0.012 to 7.6)	1.7 to 1000 (0.024 to 16)	2.8 to 1700 (0.042 to 26.4)	3.8 to 2300 (0.06 to 36)	1.7 to 1000 (0.024 to 16)	2.8 to 1700 (0.042 to 26)	3.8 to 2300 (0.06 to 36)	4.8 to 2900 (0.06 to 46)
18.3 to 3450	18.3:1	1 to 190	0.06 to 12 (0 to 0.18)	0.21 to 40 (0 to 0.6)	0.8 to 150 (0.012 to 2.34)	1.7 to 320 (0.024 to 5.04)	2.8 to 540 (0.042 to 8.4)	3.8 to 720 (0.06 to 11.4)	1.7 to 320 (0.024 to 5)	2.8 to 540 (0.042 to 8)	3.8 to 720 (0.06 to 11)	4.8 to 900 (0.06 to 14)

Note: Flow rates were determined using water at room temperature with zero back pressure and zero suction lift. Max flow rate with High-Performance pump head is 3400 mL/min.



Catalog number	VA-955-3999	VA-956-3999	VA-965-3999	VA-955-4999	VA-956-4999	VA-965-4999
Included pump head	Easy-Load II (thin wall)	Easy-Load II (thick wall)	High-Performance (thick wall)	Easy-Load II (thin wall)	Easy-Load II (thick wall)	High-Performance (thick wall)
Type	56C Frame Adapter 4:1			IEC 72		
Number of heads accepted	2		1	2		1
IP rating	IP56 with gasket (included) mounted to motor.					
Operating temperature	-10 to 50°C (14 to 122°F)					
Storage temperature	-40 to 60°C (-40 to 140°F)					
Dimensions (L x W x H)	14.6 cm x 16.5 cm x 16.5 cm (5¾" x 6½" x 6½")					
Shipping weight	1.9 kg (4 lb)					

MASTERFLEX® E/S®

water sampling systems

Portable Sampler

- Sample rate from 125 to 1100 mL/min; suction lift up to 26 feet
- IP54-rated when open or closed
- Variable-speed motor, reversible flow, and prime/purge function
- Run up to 4 hours on self-contained 12 VDC rechargeable battery, or indefinitely from AC or 12 VDC power supply (automotive, etc.)
- Comes complete with pump head, AC adapter with 12-ft cord, and 50 feet of High-Performance PVC tubing
- Dimensions: 41 x 29 x 27 cm (16"H x 11.3"W x 10.5"D). Weight: 7.5 kg (16.5 lb).



Portable sampler
950-1990

Ordering Information

Catalog number	Flow range	AC adapter voltage
VA-950-1990	125 to 1100 mL/min	115 VAC, 50/60 Hz
VA-950-1995	(1.98 to 17.4 GPH)	230 VAC, 50/60 Hz

Composite Sampler

- Sampler floats in water for up to 30 minutes when case is closed and latched!
- Easily passes through standard 18-inch diameter manhole
- Adjustable backlit LCD and glow-in-the-dark keypad help you read the control panel in low-light environments
- Controls can wait up to 90 days for a remote signal
- Program operation to meet EPA sampling requirements
- IP56-rated control panel protects against inclement weather and splashing water
- Rechargeable battery makes it ideal for field applications
- Comes complete with pump head, tubing, reservoir, and charger



Composite sampler
950-3990

Ordering Information

Catalog number	Tubing size	Flow rate	AC adapter voltage
VA-950-3990	15	170 mL/min (2.7 GPH)	115 VAC, 50/60 Hz
VA-950-3995	24	270 mL/min (4.3 GPH)	115 VAC, 50/60 Hz

MASTERFLEX® I/P®





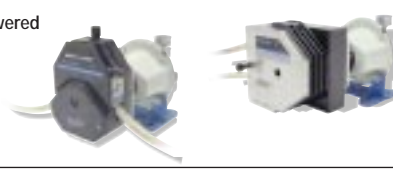
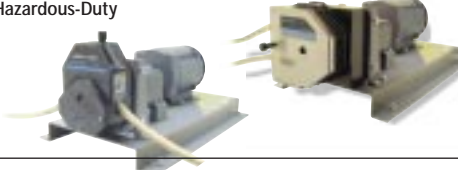

pump selection guide

- For applications requiring high flow rates and rugged dependability
- Ideal for transfer of viscous or shear-sensitive materials
- Each pump system comes complete with pump head and drive system.

Your choice of pump heads:

Easy-Load® pump heads provide the fastest tubing changeover. Flow up to 13 LPM (3.5 GPM) and pressure up to 2.7 bar (40 psi). Stack pump heads for multichannel pumping capability.







High-Performance pump heads are designed for applications requiring a more rugged pump design, particularly for continuous pressure operation between 1.0 to 2.7 bar (15 to 60 psi) and when using new composite tubing materials.

Pump System Description	Flow range	Fixed speed	Variable speed	Reversible	Remote capability	Special features	Page(s)
Fixed-Speed & Multichannel 	0.12 to 17 LPM (0 to 4.5 GPM)	✓			✓	Economical and simple to operate. Use multichannel pumps for expanded pumping capacity. UL, cUL, CE listed. IP55 rated.	28-29
Process Brushless 	0.01 to 17 LPM (0 to 4.5 GPM)		✓	✓	✓	Maintenance-free brushless motor is small and lightweight. UL, cUL, and CE listed. Washdown. IP55, IP66 rated	20-21
Modular Digital Metering 	0.12 to 17 LPM (0 to 4.5 GPM)		✓	✓	✓	Digital display. Ideal for dispensing. Separate motor and wall-mount controller. Expanded remote control. Washdown, IP56 rated.	22-23
Washdown Modular 	0.12 to 17 LPM (0 to 4.5 GPM)		✓	✓	✓	Separate motor and wall-mount controller. UL, cUL, CE listed. Washdown; IP55, IP56 rated.	24-25
Air-Powered 	0.12 to 17 LPM (0 to 4.5 GPM)		✓	✓		Use in locations where electricity is unsafe or impractical. Rotary vane air motor. CE listed. IP56 rated.	26-27
Hazardous-Duty 	0.12 to 17 LPM (0 to 4.5 GPM)		✓			Use in areas that require special electrical precautions. 115 VAC motors are UL-listed for use in hazardous locations. IP55 rated.	27
Pump Adapter Systems 	Gear reducer adapters let you use Masterflex® pump heads with 56C frame motors. Flow rates and features depend on motor selection. System includes pump head, adapter, and mounting hardware.						28

MASTERFLEX® I/P® pump tubing

- Manufactured to tight tolerances of Masterflex® pump heads to ensure accurate flow rates and long tubing life
- Optically inspected and factory tested—ensures clean, defect-free tubing that performs to specifications
- Fourteen pump tubing formulations are available, each with different chemical compatibility properties, agency approvals, and performance characteristics
- Norprene®, PharMed® and Tygon® formulations are the firmest we offer; C-FLEX® and silicone are the softest
- Firm tubing has longer life, better pressure generation, stronger vacuum/suction lift, and lower gas permeability than soft tubing
- For chemical resistance charts and performance information, request the Masterflex® Technical Data Book

Specifications

Pump tubing cross sections	Masterflex® I/P® Precision pump tubing sizes			Masterflex® I/P® High-performance precision pump tubing sizes		
						
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
Inside diameter (nominal)	6.4 mm (0.25")	9.5 mm (0.37")	12.7 mm (0.5")	9.5 mm (0.37")	12.7 mm (0.5")	15.88 mm (0.62")
Hose barb size (nominal)	6.4 mm (¼")	9.5 mm (⅜")	12.7 mm (½")	9.5 mm (⅜")	12.7 mm (½")	15.88 mm (⅝")
Flow range (approximate)* with 20 to 650 rpm drive	0.12 to 4 LPM (0.03 to 1.1 GPM)	0.2 to 8 LPM (0.05 to 2.1 GPM)	0.4 to 13 LPM (0.1 to 3.5 GPM)	0.24 to 8 LPM (0.06 to 2.1 GPM)	0.4 to 13 LPM (0.15 to 4 GPM)	0.52 to 17 LPM (0.14 to 4.5 GPM)
Maximum pressure [†] , continuous	1.7 bar (25 psi)	1.7 bar (25 psi)	0.7 bar (10 psi)	1.7 bar (25 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)
Maximum pressure [†] , intermittent	2.7 bar (40 psi)	2.7 bar (40 psi)	1.4 bar (20 psi)	2.7 bar (40 psi)	2.4 bar (35 psi)	1.7 bar (25 psi)
Maximum vacuum [†]	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	510 mm Hg (20" Hg)	660 mm Hg (26" Hg)	660 mm Hg (26" Hg)	610 mm Hg (24" Hg)
Suction lift [†]	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	7.0 m H ₂ O (23 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.8 m H ₂ O (29 ft H ₂ O)	8.2 m H ₂ O (27 ft H ₂ O)

*Flow rates are approximate—calculated under the following conditions: 0 psig at inlet, 0.5 at outlet; water temperature at 22°C (72°F).

[†]Actual performance varies depending on tubing formulation—values shown are for firm tubing. For CHEM-SURE and STA-PURE tubing specifications, please contact factory.

Tubing formulation	Masterflex® I/P® Precision pump tubing sizes			Masterflex® I/P® High-performance precision pump tubing sizes		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
Silicone (platinum-cured)	VA-96410-26 7.6 m (25 ft)/pk	VA-96410-73 7.6 m (25 ft)/pk	VA-96410-82 7.6 m (25 ft)/pk	VA-96510-70 3.0 m (10 ft)/pk	VA-96510-88 3.0 m (10 ft)/pk	VA-96510-89 3.0 m (10 ft)/pk
Silicone (peroxide-cured)	VA-96400-26 7.6 m (25 ft)/pk	VA-96400-73 7.6 m (25 ft)/pk	VA-96400-82 7.6 m (25 ft)/pk	VA-96400-70 3.0 m (10 ft)/pk	VA-96400-88 3.0 m (10 ft)/pk	VA-96400-89 3.0 m (10 ft)/pk
BioPharm Plus silicone (platinum-cured)	VA-96440-26 7.6 m (25 ft)/pk	VA-96440-73 7.6 m (25 ft)/pk	VA-96440-82 7.6 m (25 ft)/pk	VA-96441-70 3.0 m (10 ft)/pk	VA-96441-88 3.0 m (10 ft)/pk	VA-96441-89 3.0 m (10 ft)/pk
C-FLEX® (50 A)	VA-06424-26 7.6 m (25 ft)/pk	VA-06424-73 7.6 m (25 ft)/pk	VA-06424-82 7.6 m (25 ft)/pk	VA-06424-70 3.0 m (10 ft)/pk	VA-06424-88 3.0 m (10 ft)/pk	VA-06424-89 3.0 m (10 ft)/pk
Tygon® LFL	VA-06429-26 7.6 m (25 ft)/pk	VA-06429-73 7.6 m (25 ft)/pk	VA-06429-82 7.6 m (25 ft)/pk	VA-06429-70 7.6 m (25 ft)/pk	VA-06429-88 7.6 m (25 ft)/pk	VA-06429-89 7.6 m (25 ft)/pk
Tygon® food (B-44-4X)	VA-06419-26 15.2 m (50 ft)/pk	VA-06419-73 15.2 m (50 ft)/pk	VA-06419-82 15.2 m (50 ft)/pk	VA-06419-70 15.2 m (50 ft)/pk	VA-06419-88 15.2 m (50 ft)/pk	VA-06419-89 15.2 m (50 ft)/pk
Tygon® lab (R-3603)	VA-06409-26 15.2 m (50 ft)/pk	VA-06408-73 15.2 m (50 ft)/pk	VA-06408-82 15.2 m (50 ft)/pk	VA-06409-70 15.2 m (50 ft)/pk	VA-06409-88 15.2 m (50 ft)/pk	VA-06409-89 15.2 m (50 ft)/pk
Tygon® fuel and lubricant (F-4040-A)	VA-06401-26 15.2 m (50 ft)/pk	VA-06401-73 15.2 m (50 ft)/pk	VA-06401-82 15.2 m (50 ft)/pk	VA-06401-70 15.2 m (50 ft)/pk	VA-06401-88 15.2 m (50 ft)/pk	VA-06401-89 15.2 m (50 ft)/pk
PharMed® (BPT)	VA-06508-26 7.6 m (25 ft)/pk	VA-06508-73 7.6 m (25 ft)/pk	VA-06508-82 7.6 m (25 ft)/pk	VA-06508-70 7.6 m (25 ft)/pk	VA-06508-88 7.6 m (25 ft)/pk	VA-06508-89 7.6 m (25 ft)/pk
Norprene® (A 60 G)	VA-06404-26 15.2 m (50 ft)/pk	VA-06404-73 15.2 m (50 ft)/pk	VA-06404-82 15.2 m (50 ft)/pk	VA-06404-70 15.2 m (50 ft)/pk	VA-06404-88 15.2 m (50 ft)/pk	VA-06404-89 15.2 m (50 ft)/pk
Norprene® food (A60 F)	VA-06402-26 15.2 m (50 ft)/pk	VA-06402-73 15.2 m (50 ft)/pk	VA-06402-82 15.2 m (50 ft)/pk	VA-06402-70 15.2 m (50 ft)/pk	VA-06402-88 15.2 m (50 ft)/pk	VA-06402-89 15.2 m (50 ft)/pk
Viton®	VA-06412-26 7.6 m (25 ft)/pk	VA-06412-73 7.6 m (25 ft)/pk	—	—	—	—
CHEM-SURE®	VA-96210-26 0.30 m (1 ft)/pk	VA-96210-73 0.30 m (1 ft)/pk	VA-96210-82 0.30 m (1 ft)/pk	—	—	—
STA-PURE®	VA-96200-26 0.30 m (1 ft)/pk	VA-96200-73 0.30 m (1 ft)/pk	VA-96200-82 0.30 m (1 ft)/pk	—	—	—

MASTERFLEX® I/P®

process pump



Brushless digital pump
950-1050

Standard Process Pump

- Brushless motor handles challenging applications with minimal maintenance
- Non-chip epoxy-coated, washdown IP55-rated steel enclosure protects against moisture, chemicals, and dust
- Compact drive is light enough to carry with one hand, but powerful enough to drive two pump heads
- Speed control via three-turn potentiometer for quick, easy adjustments
- Speed is displayed on an easy-to-read LED display from 0 to 100% of full speed, with 1% resolution.
- Remote outputs: "pump ready" signal and 4 to 20 mA outputs (requires 77300-32 remote cable kit)
- 1.8-m (6-ft) line cord with IEC 320/CEE 22 socket



Industrial Process Pump

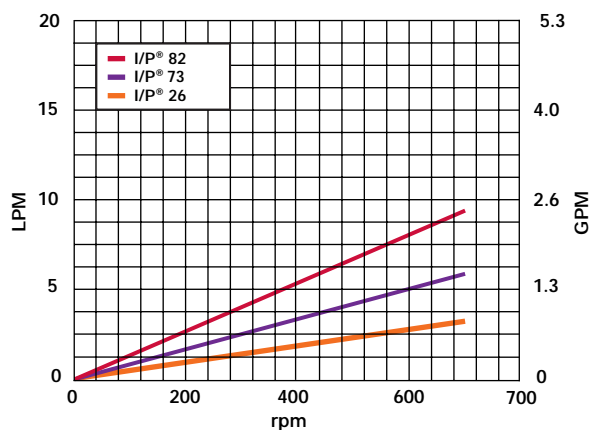
- Reversible, maintenance-free brushless motor with precise PWM control via a digital signal processor (DSP)
- Digital display of flow rate, dispense volume/cumulative amount per dispense, copy, and motor rpm
- Calibrate in system for accurate flow rate display
- Keypad lock feature prevents accidents or tampering
- Remote control of flow speed (4 to 20 mA), direction, on/off, and tachometer output
- Completely sealed 316 stainless steel enclosure is NEMA 4X (IP66-rated) for protection from tough process environments.
- 1.8-m (6-ft) line cord with IEC 320/CEE 22 socket



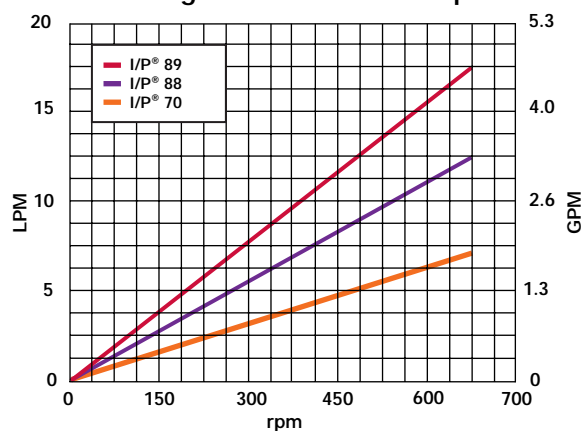
Industrial process pump
961-3010

GO to page 19
 For pressure and suction performance, see the "Specifications" on page 19.

Flow Curves
I/P® Easy-Load® Pump



Flow Curves
I/P® High-Performance Pump



Motor rpm	Masterflex® I/P® precision tubing sizes			Masterflex® I/P® high-performance precision tubing sizes*		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
1 to 650	0.01 to 4.0 (0.002 to 1.0)	0.01 to 8.0 (0.002 to 2.1)	0.02 to 13.0 (0.005 to 3.5)	0.01 to 8.0 (0.002 to 2.1)	0.02 to 13.0 (0.005 to 3.5)	0.02 to 17.0 (0.005 to 4.5)
50 to 650	0.3 to 4.0 (0.08 to 1.0)	0.6 to 8.0 (0.16 to 2.1)	1.0 to 13.0 (0.25 to 3.5)	0.6 to 8.0 (0.16 to 2.1)	1.0 to 13.0 (0.25 to 3.5)	1.3 to 17.0 (0.35 to 4.5)

*Use High-Performance precision tubing with High-Performance pump head only.



Catalog number	Standard process/brushless pump		Industrial process pump	
	VA-950-1050	VA-960-1050	VA-961-3000	VA-961-3010
Included pump head	Easy-Load® II	High-Performance	Easy-Load® II	High-Performance
Number of heads accepted	2	1	2	1
rpm	50 to 650		1 to 650	
External control, input	4 to 20 mA, 0 to 10 V, start up, direction		0 to 20 mA, 4 to 20 mA, start/stop/CW/CCW, prime purge	
External control, output	"Pump ready" signal		4-20 mA "drive running" contact, 4-20 mA, 0-10 V	
Voltage (50/60 Hz)	115 or 230 VAC auto selected		115 /230 VAC auto selected	
Motor type	Brushless DC TENV ¹		Direct-drive brushless DC TENV ¹	
Speed control type	PWM microprocessor			
Speed regulation (repeatability)	±0.25% (2% of max rpm)		±0.25% (±1 rpm)	
Digital display	3-digit green LED, percent of speed		6-digit microprocessor	
Operating temperature	0 to 40°C (32 to 104°F)			
Storage temperature	-45 to 65°C (-49 to 149°F)			
IP rating	IP55		IP66	
Agency approvals	UL, cUL, CE			
Dimensions (L x W x H)	19 x 10 x 9 cm (7.5 x 3.9 x 3.5")		18 x 11 x 17 cm (7 x 4.3 x 6.7")	
Shipping weight	13 kg (28 lb)		32 kg (70 lb)	

¹Totally enclosed, non-ventilating.

MASTERFLEX® I/P®

digital metering systems

- Modular design lets you place system components where they are most convenient
- Deliver flow rates from 0.12 to 17 LPM (0.03 to 4.5 GPM)
- Digital readout displays exact flow rate, dispense volume, copy number, or drive rpm.
- Store one calibration value per tubing size
- Calibrate in system for accurate flow rate display
- Reversible motor allows pumping in either direction or purging when changing tubing
- Remote control capabilities via weather-resistant connection cable
- Keypad lockout feature prevents accidents or tampering
- Both wall-mount controller and separate motor are washdown, IP56 rated—provides protection in harsh environments
- 7.6-m (25-ft) cable connects motor and controller



Metering system 950-2010 includes an Easy-Load® pump head



Metering system 960-2010 includes a High-Performance pump head

GO to page 19

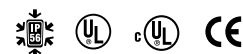
For pressure and suction performance, see the "Specifications" on page 19.



Flow ranges, LPM (GPM)

Motor rpm	Masterflex® I/P® precision tubing sizes			I/P® high-performance precision tubing sizes*		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
20 to 650	0.12 to 4 (0.03 to 1.0)	0.2 to 8 (0.05 to 2.1)	0.4 to 13 (0.01 to 3.5)	0.24 to 8 (0.07 to 2.1)	0.5 to 15 (0.11 to 3.4)	0.52 to 17 (0.14 to 4.5)

* Use High-performance precision tubing with High-Performance pump head only.

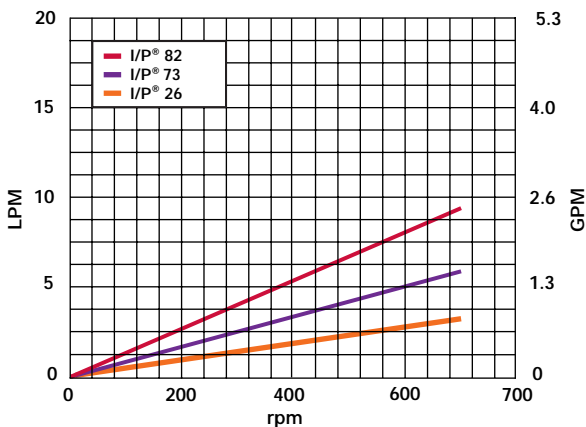


Specifications & Ordering Information

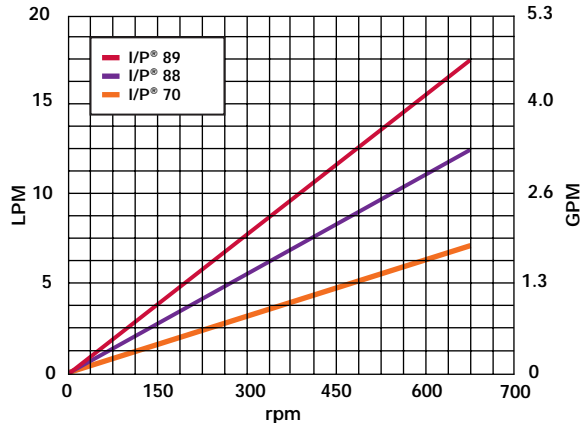
Catalog number	VA-950-2010	VA-950-2015	VA-960-2010	VA-960-2015
Included pump head	Easy-Load®		High-Performance	
Number of heads accepted	2		1	
rpm	20 to 650			
External control, input	0 to 20 mA, 4 to 20 mA, or 0 to 10 VDC/Contact closure: direction/start/stop			
External control, output	0 to 20 mA, 4 to 20 mA, or 0 to 10 VDC, or TTL pulse			
Voltage (50/60 Hz)	90 to 130 VAC	190 to 260 VAC	90 to 130 VAC	190 to 260 VAC
Motor type	Continuous duty, TENV ¹ , permanent magnet DC			
Speed control type	Membrane keypad/microprocessor			
Speed regulation (repeatability)	±0.3% (±2 rpm)			
Digital display	4-digit, 7-segment LED display			
Operating temperature	0 to 40°C (32 to 104°F)			
Storage temperature	-45 to 65°C (-49 to 149°F)			
IP rating	IP56			
Agency approvals	UL, cUL, CE			
Controller dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 1/8 x 5 9/16 x 6")			
Motor footprint dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 1/8 x 5 9/16 x 6")			
Shipping weight	12.8 kg (27 lb)		14.3 kg (32 lb)	

¹Totally enclosed, non-ventilating.

Flow Curves
I/P® Easy-Load® Pump



Flow Curves
I/P® High-Performance Pump



MASTERFLEX® I/P®

washdown modular systems

- Deliver flow rates from 0.12 to 17 LPM (0.03 to 4.5 GPM) with Masterflex® I/P® pump heads
- Convenient modular style; mount washdown controller and motor in separate locations
- Wide flow control range (over 30:1 turndown)
- Reversible motor allows pumping in either direction or easy purging
- Remote speed control
- Wall-mount controller features a NEMA 13 (IP55) enclosure; motor features a NEMA 4 (IP56) enclosure
- Manual controls on front of the controller
- Single-turn, solid-state potentiometer
- 7.3-m (24-ft) weather-resistant cable connects motor and controller for easy setup



Washdown modular system 950-1010 includes an Easy-Load® pump head

GO to page 19

For pressure and suction performance, see the "Specifications" on page 19.



Flow ranges, LPM (GPM)

Motor rpm	Masterflex® I/P® precision tubing sizes			I/P® high-performance precision tubing sizes*		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
20 to 650	0.12 to 4.0 (0.03 to 1.0)	0.2 to 8 (0.05 to 2.1)	0.4 to 13 (0.01 to 3.5)	0.26 to 8.0 (0.07 to 2.1)	0.40 to 13.0 (0.11 to 3.4)	0.52 to 17 (0.14 to 4.5)

*Use High-performance precision tubing with High-Performance pump head only.



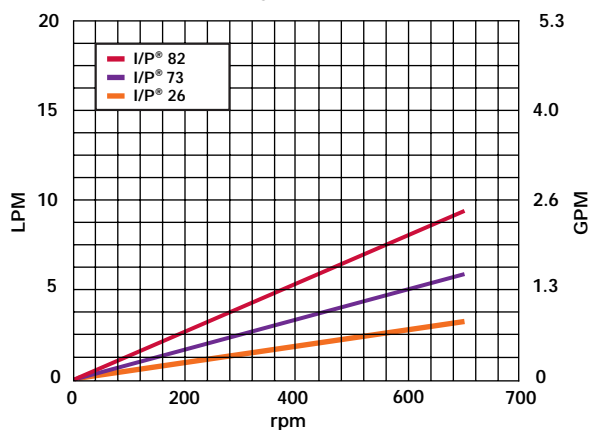
Motor only

Specifications & Ordering Information

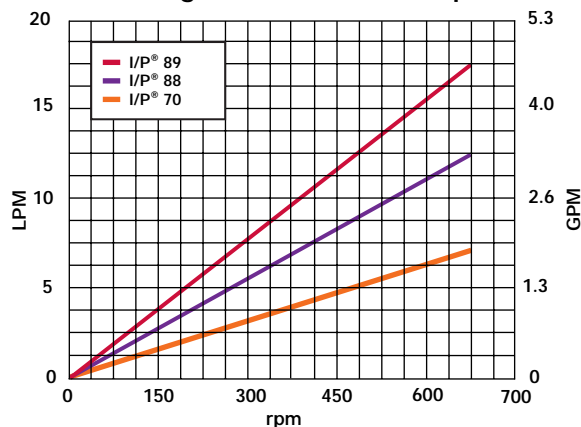
Catalog number	VA-950-1010	VA-950-1015	VA-960-1010	VA-960-1015
Included pump head	Easy-Load®		High-Performance	
Number of heads accepted	2		1	
rpm	20 to 650			
External control, input	4 to 20 mA, on/off and speed control			
Voltage (50/60 Hz)	90 to 130 VAC	190 to 260 VAC	90 to 130 VAC	190 to 260 VAC
Motor type	Continuous duty, TENV [†] , permanent magnet DC			
Speed control type	Single-turn potentiometer, SCR			
Speed regulation (repeatability)	±0.3% (±2%)			
Operating temperature	0 to 40°C (32 to 104°F)			
Storage temperature	-45 to 65°C (-49 to 149°F)			
IP rating	Controller: IP55; Motor: IP56			
Agency approvals	UL, cUL, CE			
Controller dimensions (L x W x H)	25.8 x 23.3 x 12.9 cm (9 ⁷ / ₈ x 9 ³ / ₁₆ x 5")			
Motor footprint dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 ¹ / ₈ x 5 ⁷ / ₁₆ x 6")			
Shipping weight	14.1 kg (31 lb)			

[†]Totally enclosed, non-ventilating.

Flow Curves
I/P® Easy-Load® Pump



Flow Curves
I/P® High-Performance Pump



MASTERFLEX® I/P® air-powered pumps

- Deliver flow rates from 0.12 to 17 LPM (0.03 to 4.5 GPM)
- Ideal for hazardous-duty locations
- No electric power required—use where electricity is unsafe or impractical
- Intrinsically safe when properly grounded
- Wide flow control range (10:1 turndown)
- Compact, portable console package
- Reversible motor allows pumping in either direction or purging when changing tubing
- Powerful, yet cool operation
- Smooth-starting, low-maintenance motor



Air-powered pump 960-1020 includes a High-Performance pump head



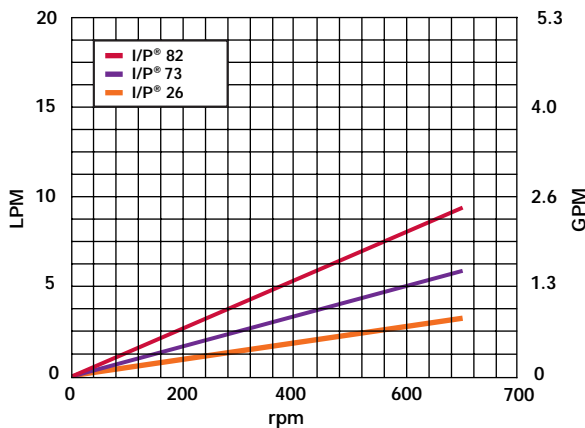
Air-powered drive 950-1020 includes an Easy-Load® pump head



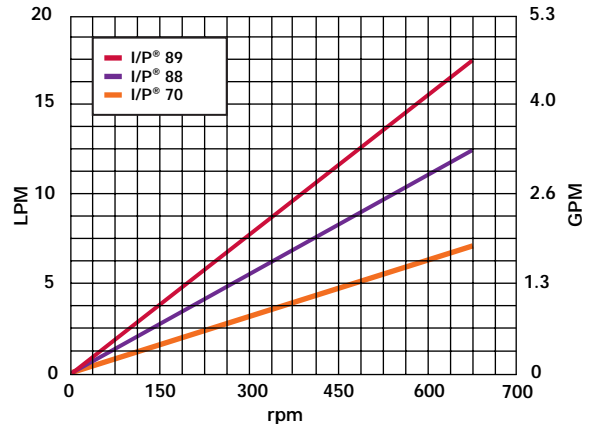
GO to page 27

Flow ranges and ordering information for air-powered pumps is on page 27.

Flow Curves
I/P® Easy-Load® Pump



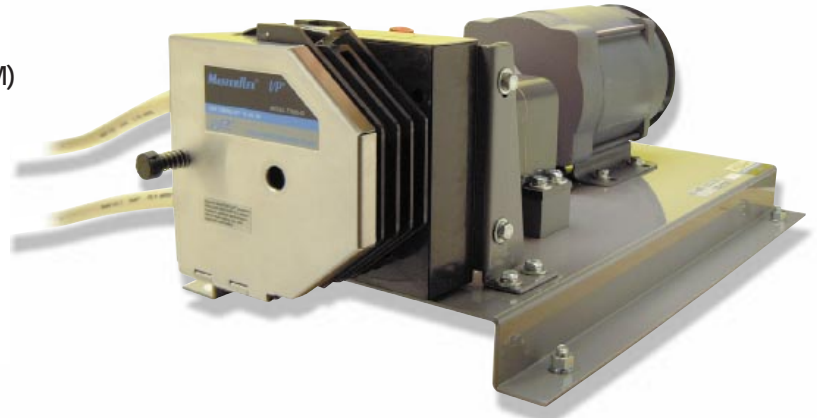
Flow Curves
I/P® High-Performance Pump



MASTERFLEX® I/P®

hazardous-duty pumps

- Flow rates from 0.12 to 17 LPM (0.03 to 4.5 GPM)
- 115 VAC motor is UL-listed for Class 1, Group D, Division 1 hazardous locations
- Ideal for areas that require special electrical precautions
- Fully mechanical speed control—safer than electrical
- Locking knob to maintain speed
- Greater than 1! mechanical turn



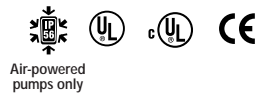
Hazardous-duty pump 960-1730 includes a High-Performance pump head



Hazardous-duty pump 950-1730 includes an Easy-Load® pump head

Motor rpm	Masterflex® I/P® precision tubing sizes			Masterflex® I/P® high-performance precision tubing sizes*		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
10 to 430*, 10 to 650	0.12 to 4.0 (0.03 to 1.0)	0.2 to 8 (0.05 to 2.1)	0.4 to 13 (0.01 to 3.5)	0.26 to 8.0 (0.07 to 2.1)	0.40 to 13.0 (0.11 to 3.4)	0.52 to 17 (0.14 to 4.5)

*Use High-performance precision tubing with High-Performance pump head only.



Catalog number	Air-powered pumps		Hazardous-duty pumps			
	VA-950-1020	VA-960-1020	VA-950-1730	VA-950-1735	VA-960-1730	VA-960-1735
Pump head type	Easy-Load®	High-Performance	Easy-Load®		High-Performance	
Number of heads accepted	2	1	2		1	
rpm	100 to 650		10 to 430			
Voltage (50/60 Hz)	N/A		115 VAC	230 VAC	115 VAC	230 VAC
Motor type	Rotary vane air motor		1725 rpm AC			
Speed control type	Via FRL (filter regulator, lubricator) included		Mechanical (zero max) with lever			
Speed regulation (repeatability)	±10%		±0.3% (±2%)			
Operating temperature	1 to 40°C (34 to 104°F)		0 to 40°C (32 to 104°F)			
Storage temperature	-10 to 60°C (14 to 149°F)		-45 to 65°C (-49 to 149°F)			
IP rating	IP56		IP55			
Agency approvals	CE		UL†		CE	
Dimensions (L x W x H)	28.2 x 21.6 x 22.9 cm (11 1/8" x 8 1/2" x 9")		56.0 x 34.6 x 22.3 cm (22 1/8" x 13 5/8" x 8 3/4")			
Shipping weight	11.9 kg (26 lb)	16.6 kg (28 lb)	29 kg (64 lb)		30 kg (66 lb)	

†Motor is UL-listed for class I, Grou D hazardous locations.

MASTERFLEX® I/P®

NEMA pump adapter systems



56C frame adapter with Easy-Load® pump head 950-3099

- System includes pump head, adapter, and mounting hardware
- Deliver flow rates from 0.12 to 17 LPM (0.3 to 4.1 GPM)
- Change flow by changing tube size
- Attach your own motor to meet local electrical codes, hazardous-duty requirements, washdown necessity, and your unique needs
- Accepts NEMA 56C frame motors with base; minimum ¼ hp, 180 W
- IP56 (TEFC) rated—maintain integrity of your motor enclosure rating

Ordering Information

Catalog number	Gear ratio	Recommended max motor rpm	Input/output speed	Weight
56C frame adapter with Easy-Load® pump head				
VA-950-3099	3:1:1	2015	1750/540	4.1 kg (9.0 lb)
VA-950-3699	4:8:1	3120	1750/360	
VA-950-3899	9:7:1	3450	1750/180	
VA-950-3599	17:8:1	3450	1750/100	
56C frame adapter with High-Performance pump head				
VA-960-3099	3:1:1	2015	1750/540	5.0 kg (11.0 lb)
VA-960-3699	4:8:1	3120	1750/360	
VA-960-3899	9:7:1	3450	1750/180	
VA-960-3599	17:8:1	3450	1750/100	

Note: Operating temperature range is -10 to 50°C (14 to 122°F); storage temperature range is -40 to 60°C (-40 to 140°F).

MASTERFLEX® I/P®

fixed-speed washdown pumps



Fixed-speed washdown pump 960-3510 includes a High-performance pump head

- Economical and simple to operate
- Easy-to-clean, IP55-rated housing—simply hose down after use
- Combination on/off/reverse switch—purge before or after pumping; pump fluid in either direction

Motor rpm	Masterflex® I/P® precision tubing sizes			Masterflex® I/P® high-performance precision tubing sizes*		
	I/P® 26	I/P® 73	I/P® 82	I/P® 70	I/P® 88	I/P® 89
100	0.6 (0.2)	1.3 (0.3)	2.0 (0.5)	1.3 (0.3)	2.0 (0.5)	2.6 (0.7)
540	3.2 (0.8)	6.8 (1.8)	11.0 (2.9)	6.8 (1.8)	11.0 (2.9)	14.0 (3.6)

*Use High-performance precision tubing with High-performance pump head only.



Catalog number	VA-950-3510	VA-950-3010	VA-960-3510	VA-960-3010
Included pump head	Easy-Load®		High-Performance	
Number of pump heads accepted	2		1	
rpm	100	540	100	540
Voltage	115 VAC, 60 Hz			
IP rating	IP55			
Agency approval	UL, cUL, CE			
Shipping weight	20 kg (44 lb)		22 kg (48 lb)	

MASTERFLEX® I/P®

multichannel, washdown pumps

- Convenient three- and four-channel fixed-speed pumps come complete with pump heads, tubing, and drive
- Use multiple channels to increase your flow rate, or pump different fluids simultaneously from a single drive
- Accept any Masterflex® tubing formulation—configure for a broad range of applications, including pumping multiple lines of inks, chemicals, and pharmaceuticals
- Fluid never contacts the pump, so clean up is quick and easy—simply replace the tubing!
- Change flow rate by changing tubing size
- Easy-to-clean, IP55-rated housing—simply hose down after use
- Combination on/off/reverse switch—purge before or after pumping; pump fluid in either direction



Three-channel washdown pump 950-3613 includes three Easy-Load® pump heads



Four-channel washdown pump 950-3614 includes four Easy-Load® pump heads

Flow rates, LPM (GPM)







Motor rpm	Masterflex® I/P® precision tubing sizes		
	I/P® 26	I/P® 73	I/P® 82
180	1.1 (0.3)	2.3 (0.6)	3.7 (1.0)



Catalog number	VA-950-3613	VA-950-3614
Included pump head	Easy-Load®	
Number of channels/pump heads	3	4
rpm	180 (with included NEMA adapter)	
Voltage	115 VAC, 60 Hz	
Speed regulation	±1% (with constant line voltage)	
IP rating	IP55	
Agency approvals	UL, cUL, CE	
Shipping weight	30 kg (66 lb)	

pump systems selection guide


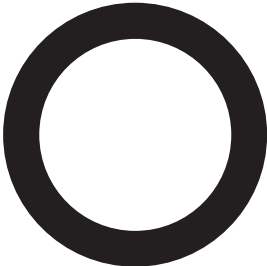

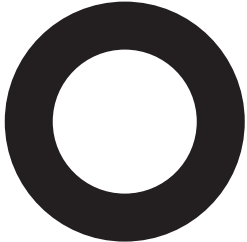
- Choose Masterflex® B/T® pumps when your application requires high flow rates up to 45 LPM (12 GPM).
- Ideal for transfer of viscous or shear-sensitive materials.
- Rapid-Load® pump head for easy tubing changes
- Adjustable occlusion knob to fine tune pressure, suction, or lift capabilities
- Polycarbonate front plate for safety and easy viewing of pump operation
- 1 m (3 ft) of Tygon® LFL B/T® 90 tubing included for immediate setup
- Stainless steel, carbon steel and acetal polymer frame facilitates installation and improves service life
- Aluminum occlusion ring and Ductile iron rotor
- Nylatron® rollers resist corrosion, promote pump life and aid in cleaning

Pump system description	Flow range LPM (GPM)	Variable Speed	Fixed Speed	TEFC	Wash Down	Digital	Remote Capability	Reversible	Special Features	Page (s)
 <p>Fixed Speed</p>	<p>115 VAC 7.5, 15, 30 or 45 (2, 4, 8, 11.9)</p> <p>220 VAC 6.2, 12.4, 24.8, 37.5 (1.6, 3.3, 6.6, 9.9)</p>		✓		✓				Wash-down motor is protected against dust and low pressure jets of water.	34-35
 <p>Modular Digital</p>	0.3 to 45 (0.07 to 12)	✓			✓	✓	✓	✓	Ideal for large fluid transfer and dispensing applications. Remote control capabilities via weather-resistant connection on controller.	32-33
 <p>Variable Speed</p>	0.3 to 45 (0.07 to 12)	✓			✓			✓	Includes detachable controller with 3-m (10-ft) connecting cord.	35
 <p>Air Powered</p>	0.8 to 45 (0.2 to 12)	✓							Air-powered motor. Use in locations where electricity is unsafe or impractical. Pressure regulator included.	34-35
 <p>Hazardous Duty</p>	<p>115 VAC 7.5, 15, 30 or 45 (2, 4, 8, 11.9)</p> <p>220 VAC 6.2, 12.4, 24.8, 37.5 (1.6, 3.3, 6.6, 9.9)</p>		✓	✓					Hazardous-duty drive. UL-listed, CSA-certified motors.	35
 <p>Pump Head Adapters</p>	6.1 to 46.3 (1.6 to 12.3)	✓	✓	✓			✓	✓	Pump heads accept standard 56C frame or IEC 72/ISO 71 with B5 flange motors to best suit your application. *Depending on motor selected	34-35

MASTERFLEX® B/T® pump tubing

- Ensure optimum performance from your Masterflex® pump
- Custom extruded to fit Masterflex® pumps
- Engineered for long life in peristaltic pump applications
- Lot-to-lot consistency provides superior accuracy and repeatability

Specifications

Pump tubing cross sections	Masterflex® B/T® Precision pump tubing sizes		Masterflex® B/T® High-performance precision pump tubing sizes	
				
	B/T® 88	B/T® 92	B/T® 86	B/T® 90
Inside diameter (nominal)	12.7 mm (0.5")	25.4 mm (1")	9.5 mm (0.37")	19.0 mm (0.75")
Hose barb size (nominal)	12.7 mm (½")	25.4 mm (1")	9.5 mm (¾")	19.0 mm (¾")
Flow range (approximate)* with 12 to 350 rpm drive	0.5 to 15 LPM (0.15 to 4 GPM)	1.5 to 45 LPM (0.4 to 12 GPM)	0.3 to 7.5 LPM (0.07 to 2 GPM)	1 to 30 LPM (0.3 to 8 GPM)
Max pressure,† continuous	1.3 bar (20 psi)	0.3 bar (5 psi)	1.7 bar (25 psi)	1.3 bar (20 psi)
Max pressure,† intermittent	2.4 bar (35 psi)	0.6 bar (10 psi)	2.7 bar (40 psi)	2.4 bar (35 psi)
Maximum vacuum†	660 mm Hg (26" Hg)			
Suction lift†	8.8 m H ₂ O (29 ft H ₂ O)			

*Flow rates are approximate—calculated under the following conditions: 0 psig at inlet, 0.5 at outlet; water temperature at 22°C (72°F).

†Actual performance varies depending on tubing formulation—values shown are for firm tubing.

Tubing formulation	Masterflex® B/T® Precision pump tubing				Masterflex® B/T® High-performance precision pump tubing			
	B/T® 88		B/T® 92		B/T® 86		B/T® 90	
Silicone (platinum-cured)	VA-96510-88 3 m (10 ft)/pk	—	VA-96510-92 3 m (10 ft)/pk	—	VA-96510-86 3 m (10 ft)/pk	—	VA-96510-90 3 m (10 ft)/pk	—
Silicone (peroxide-cured)	VA-96400-88 3 m (10 ft)/pk	—	VA-96400-92 3 m (10 ft)/pk	—	VA-96400-86 3 m (10 ft)/pk	—	VA-96400-90 3 m (10 ft)/pk	—
BioPharm Plus silicone platinum-cured	VA-96421-88 3 m (10 ft)/pk	—	VA-96421-92 3 m (10 ft)/pk	—	VA-96421-86 3 m (10 ft)/pk	—	VA-96421-90 3 m (10 ft)/pk	—
BioPharm Plus silicone platinum-cured	VA-96441-88 3 m (10 ft)/pk	—	VA-96441-92 3 m (10 ft)/pk	—	VA-96441-86 3 m (10 ft)/pk	—	VA-96441-90 3 m (10 ft)/pk	—
C-FLEX® (50 A)	VA-06424-88 3 m (10 ft)/pk	—	VA-06424-92 3 m (10 ft)/pk	—	VA-06424-86 3 m (10 ft)/pk	—	VA-06424-90 3 m (10 ft)/pk	—
Tygon® LFL	VA-06429-88 7.6 m (25 ft)/pk	VA-06430-88 0.9 m (3 ft)/pk	VA-06429-92 7.6 m (25 ft)/pk	VA-06430-92 0.9 m (3 ft)/pk	VA-06429-86 7.6 m (25 ft)/pk	VA-06430-86 0.9 m (3 ft)/pk	VA-06429-90 7.6 m (25 ft)/pk	VA-06430-90 0.9 m (3 ft)/pk
Pharmed® (BPT)	VA-06508-88 7.6 m (25 ft)/pk	VA-06508-88 0.9 m (3 ft)/pk	VA-06508-92 7.6 m (25 ft)/pk	VA-06508-92 0.9 m (3 ft)/pk	VA-06508-86 7.6 m (25 ft)/pk	VA-06508-86 0.9 m (3 ft)/pk	VA-06508-90 7.6 m (25 ft)/pk	VA-06508-90 0.9 m (3 ft)/pk
Norprene® food (A60 F)	VA-06402-88 7.6 m (25 ft)/pk	VA-06403-88 0.9 m (3 ft)/pk	VA-06402-92 7.6 m (25 ft)/pk	VA-06403-92 0.9 m (3 ft)/pk	VA-06402-86 7.6 m (25 ft)/pk	VA-06403-86 0.9 m (3 ft)/pk	VA-06402-90 7.6 m (25 ft)/pk	VA-06403-90 0.9 m (3 ft)/pk

MASTERFLEX® B/T®

washdown modular digital pumps

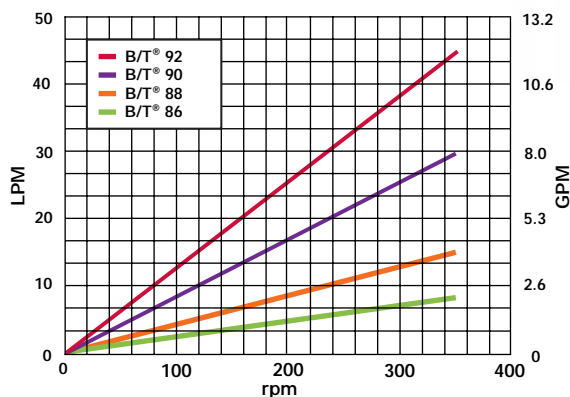


- For bulk fluid transfer and dispensing: deliver flow rates from 0.3 to 45 LPM (0.07 to 12 GPM)
- Protected from dust and water spray—washdown, IP56-rated drive and controller
- Digital display of flow rate, dispense volume, copy number, and rpm
- Modular design allows you to install wall-mount controller for your convenience
- Easy-to-use keypad lockout feature—prevents unauthorized changes
- Reversible pumping
- Remote control capabilities
- Store one user-defined calibration value



Washdown modular digital pump 950-2610 includes a Rapid-Load® pump head

Flow Curves
B/T® Series Pumps





GO to page 31

For maximum pressure data, go to page 31.

Flow ranges, LPM (GPM)

Motor rpm	Masterflex® B/T® precision tubing sizes		Masterflex® B/T® high-performance precision tubing sizes	
	B/T® 86	B/T® 88	B/T® 90	B/T® 92
Flow rate-L/rev	0.021 (0.0057)	0.043 (0.011)	0.086 (0.023)	0.129 (0.034)
12 to 350 rpm	0.3 to 7.5 (0.07 to 2)	0.5 to 15 (0.15 to 4)	1 to 30 (0.3 to 8)	1.5 to 45 (0.4 to 12)



Catalog number	VA-950-2610	VA-950-2615
Included pump head	Rapid-Load®	
Number of heads accepted	1	
rpm	12 to 350	
External control, input	0 to 20 mA, 4 to 20 mA, or 0 to 10 V; CW/CCW via contact closure	
External control, output	0 to 20 mA, 4 to 20 mA, 0 to 10 V, or TTL	
Voltage (50/60 Hz)	90 to 130 VAC	190 to 260 VAC
Motor type	Continuous duty, TENV*, permanent magnet DC	
Speed control type	Membrane keypad, microprocessor	
Speed regulation (repeatability)	±0.3% (±2 rpm)	
Display	Four digit, seven segment LED	
Operating temperature	0 to 40°C (32 to 104°F)	
Storage temperature	-45 to 65°C (-49 to 149°F)	
IP rating	IP56	
Agency approvals	UL, cUL, CE	
Controller dimensions (L x W x D)	24.9 x 27.9 x 11.6 cm (9 ¹³ / ₁₆ " x 11" x 4 ⁹ / ₁₆ ")	
Motor footprint dimensions (L x W x H)	62.2 x 35.4 x 26.8 cm (24 ¹ / ₂ " x 13 ¹⁵ / ₁₆ " x 10 ⁹ / ₁₆ ")	
Shipping weight	40.4 kg (89 lb)	

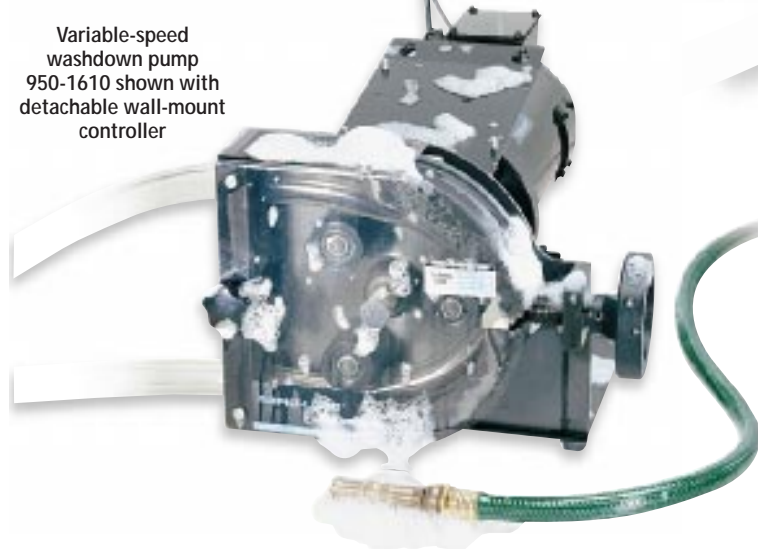
*Totally enclosed, non-ventilating

MASTERFLEX® B/T® pump systems

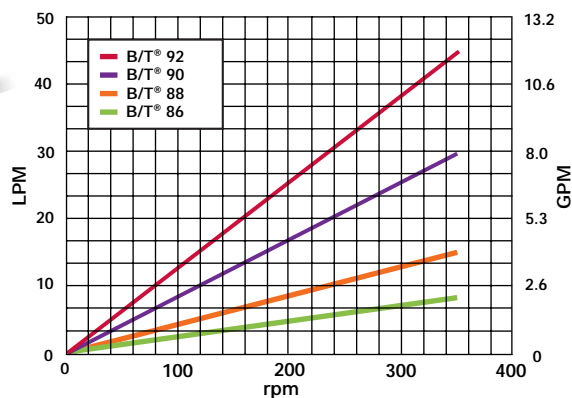
- Flow rates from 0.03 to 45 LPM (0.07 to 12 GPM)
- Designed for rugged dependability
- Polycarbonate front plate provides visibility and safety
- Fixed-speed models offer economical flow transfer; variable-speed models offer wide flow control range
- Reversible motor for pumping in either direction or purging (950-1610, 950-1615)
- Optional remote control 4 to 20 mA on some models (contact factory or your local distributor)
- Use hazardous-duty pumps (950-1630, 950-1635) in areas where sparking could be a hazard
- Air-powered motor (950-1620) for hazardous locations includes multistage F/R/L regulator valve



Variable-speed washdown pump 950-1610 shown with detachable wall-mount controller



Flow Curves
B/T® Series Pumps



Flow ranges, LPM (GPM)

Motor rpm	Masterflex® B/T® precision tubing sizes		Masterflex® B/T® high-performance precision tubing sizes	
	B/T® 88	B/T® 92	B/T® 86	B/T® 90
Fixed-speed pumps				
350	7.5 (2)	15 (4)	30 (8)	45 (12)
290	6.2 (1.6)	12.4 (3.3)	24.8 (6.6)	37.5 (9.8)
Variable-speed pumps				
12 to 350	0.03 to 7.5 (0.07 to 2)	0.5 to 15 (0.15 to 4)	1 to 30 (0.3 to 8)	1.5 to 45 (0.4 to 12)
35 to 350	0.8 to 7.5 (0.2 to 2)	1.5 to 15 (0.4 to 4)	3 to 30 (0.8 to 8)	4.5 to 45 (1.2 to 12)



NOTE: Flow ranges were determined under the following conditions: 0 psig at inlet, 0.5 psig at outlet; water at 22°C (72°F).



950-1630, 950-1635,
950-1610, 950-1615 only



950-1610,
950-1615 only



950-1625, 950-1815,
950-1630, 950-1635 only



950-1610, 950-1615,
950-1620 only

Specifications & Ordering Information

Description	Fixed-speed pumps				Variable-speed pumps		
	VA-950-1625	VA-950-1815	VA-950-1630	VA-950-1635	VA-950-1610	VA-950-1615	VA-950-1620
Included pump head	Rapid-Load®						
Number of heads accepted	1				1		
rpm	350	290	350	290	12 to 350	12 to 350	35 to 350
Voltage	115 VAC, 60 Hz	220 VAC, 50 Hz	115 VAC, 60 Hz	220 VAC, 50 Hz	100-130 VAC	200-260 VAC	—*
Motor type	Washdown				TENV, permanent magnet DC		Rotary air
Speed control type	—				1-turn potentiometer, solid state circuit		FRU/regulator
Speed regulation (repeatability)	—				±5% (±5 rpm)		±10%
Operating temperature	0 to 40°C (32 to 104°F)				0 to 40°C (32 to 104°F)		
Storage temperature	-25 to 60°C (-13 to 149°F)				-25 to 60°C (-13 to 149°F)		
IP rating	IP55				IP56		
Agency approvals	—		UL		UL, cUL		
Dimensions (L x W x H)	52 x 33 x 26.7 cm (20½" x 13" x 11½")				55.9 x 36.5 x 34.3 cm (22" x 15" x 13½")		42 x 35 x 31.8 cm (16½" x 14" x 12½")
Shipping weight	36.3 kg (80 lb)		37.7 kg (83 lb)		40.4 kg (89 lb)		25.0 kg (56 lb)

*Air motor requires 0.34 m³/min (12 cfm) at (3 bar) 45 psig; includes pressure regulator.

Pump Adapter Systems

- System includes B/T® Rapid-Load® pump head, adapter, and mounting hardware
- Deliver flow rates up to 46.3 LPM (12.3 GPM) with Masterflex® B/T® pump heads
- Compatible with standard 56C frame or IEC 72/ISO 71 motors with B5 motor flange
- Supply your own motor



Pump adapter system
950-3399 for NEMA
56C frame motors

Specifications & Ordering Information

Catalog number	950-3399	950-4399
Motor mount	NEMA 56C frame	IEC72/ISO71 with B flange
Pump head materials	Aluminum, NYLATRON	
Front plate materials	Polycarbonate	
Frame materials	Stainless steel, carbon steel, acetal polymer	
IP rating	IP56	
Operating temperature	-10 to 50°C (14 to 122°F)	
Storage temperature	-40 to 60°C (-40 to 140°F)	
Dimensions (L x W x H)	42.5 cm x 33 cm x 27 cm (16¾" x 13" x 10⅝")	
Shipping weight	13.6 kg (30 lb)	

Flow rates, LPM (GPM)

Motor rpm	Pump head gear ratio	Pump head rpm	Masterflex® B/T® precision tubing sizes		Masterflex® B/T® high-performance precision tubing sizes	
			B/T® 88	B/T® 92	B/T® 86	B/T® 90
1425	5:1	285	6.1 (1.6)	12.2 (3.2)	24.4 (6.5)	36.6 (9.8)
1725	5:1	345	7.4 (1.9)	14.8 (3.9)	29.6 (7.9)	44.4 (11.8)
1750	5:1	350	7.5 (2.0)	15 (4.0)	30 (8.0)	45 (12.0)
1800	5:1	360	7.7 (2.0)	15.4 (4.1)	30.9 (8.2)	46.3 (12.3)

PONNDORF

pump selection guide

Pump	Pump series	Max flow rate m ³ /hr (GPM)	Dry running	Lubricated bath	Three roller	Compression shoe	Special features	Page(s)
 PX single series	PX single	12.5 (55)	✓		✓		Molded tubing with rib and flange	38-39
	PX/2 dual	24.5 (108)						
 PDX single series	PDX single	4.0 (18)	✓		✓		Ponnprenne TPE food grade tubing	40-41
	PDX/2 dual	6.7 (30)						
 PD/2 dual series	PD single	5.5 (24.2)	✓		✓		Natural rubber higher pressure hose	42-43
	PD/2 dual	9.5 (41.8)						
 PK series	PK	32.0 (140)		✓		✓	High pressure reinforced hose	44-45

PONNDORF pump hose

- All Ponndorf pump hose is precision molded to optimize performance with Ponndorf hose pumps



PX series



PDX series



PD series



PK series

Specifications & Ordering Information

Pump series	Max flow m ³ /hr (GPM)	Max pressure bar (psig)	Max suction m (ft) of H ₂ O	Ponndorf pump hose formulation				
				Natural rubber	Food-grade natural rubber	Neoprene	Hypalon	Food-grade Ponnprene
PX 10	0.15 (0.66)	2 (30)	7 (23)	VA-61008	VA-61011	VA-61009	VA-61010	—
PX 10/2	0.25 (1.1)	2 (30)	7 (23)	VA-61008	VA-61011	VA-61009	VA-61010	—
PX 15	0.5 (2.2)	2 (30)	7 (23)	VA-61108	VA-61111	VA-61109	VA-61110	—
PX 15/2	0.95 (4.2)	2 (30)	7 (23)	VA-61108	VA-61111	VA-61109	VA-61110	—
PX 27	2.2 (9.7)	2 (30)	7 (23)	VA-61208	VA-61211	VA-61209	VA-61210	—
PX 27/2	5.0 (22)	2 (30)	7 (23)	VA-61208	VA-61211	VA-61209	VA-61210	—
PX 35	6.0 (26)	2 (30)	7 (23)	VA-61308	VA-61311	VA-61309	VA-61310	—
PX 35/2	11.5 (51)	2 (30)	7 (23)	VA-61308	VA-61311	VA-61309	VA-61310	—
PX 50	12.5 (55)	2 (30)	7 (23)	VA-61408	VA-61411	VA-61409	VA-61410	—
PX 50/2	24.5 (108)	2 (30)	7 (23)	VA-61408	VA-61411	VA-61409	VA-61410	—
PDX 19	0.5 (2.2)	2 (30)	7 (23)	—	—	—	—	VA-61808
PDX 19/2	0.85 (3.7)	2 (30)	7 (23)	—	—	—	—	VA-61808
PDX 30	2.7 (12)	2 (30)	7 (23)	—	—	—	—	VA-61908
PDX 30/2	4.5 (20)	2 (30)	7 (23)	—	—	—	—	VA-61908
PDX 35	4 (18)	2 (30)	7 (23)	—	—	—	—	VA-62008
PDX 35/2	6.7 (30)	2 (30)	7 (23)	—	—	—	—	VA-62008
PD 15	0.5 (2.2)	4 (60)	8 (26)	—	—	—	—	VA-61508
PD 15/2	0.95 (4.2)	4 (60)	8 (26)	—	—	—	—	VA-61508
PD 27	2.5 (11)	4 (60)	8 (26)	—	—	—	—	VA-61608
PD 27/2	4.8 (21)	4 (60)	8 (26)	—	—	—	—	VA-61608
PD 35	5.5 (24.2)	4 (60)	8 (26)	—	—	—	—	VA-61708
PD 35/2	9.5 (42)	4 (60)	8 (26)	—	—	—	—	VA-61708
Pump series	Max flow m ³ /hr (GPM)	Max pressure bar (psig)	Max suction m (ft) of H ₂ O	Ponndorf pump hose formulation				
				Natural rubber	EPDM	Food grade NBR	—	—
PK 15	0.7 (3)	5 (220)	8 (26)	VA-62509	VA-62508	VA-62509	—	—
PK 25	2.1 (9.2)	5 (220)	8 (26)	VA-62607	VA-62608	VA-62609	—	—
PK 40	7.7 (34)	5 (220)	8 (26)	VA-62707	VA-62708	VA-62709	—	—
PK 50	15.5 (68)	5 (220)	8 (26)	VA-62807	VA-62808	VA-62809	—	—
PK 65	32 (140)	5 (220)	8 (26)	VA-62924	VA-62925	VA-62926	—	—

PONNDORF

PX & PX/2 series



PX series
single-channel
pump PX 15



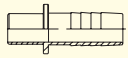
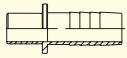
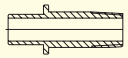
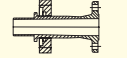
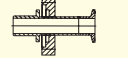
PX/2 series
dual-channel
pump PX 15/2

- Metering, transfer, self-priming, and low-pulsation models
- Easy maintenance—disassembly not required
- Rib-back hose for positive retention in pump and easy replacement without disassembly of the pump
- Dry running design provides long tubing life and prevents system contamination should the hose ever rupture
- Flow capacities are available up to 12.5 m³/hr (55 GPM) for single hose and up to 24.5 m³/hr (108 GPM) with our unique dual hose design
- Hose rib is positively captured in the tube bed and prevents the hose from side-to-side movement, which shortens hose life in other pump designs
- Pump are shipped complete with motor and fixed-speed drive systems ready to install and start
- Options include mechanical variable speed, variable-frequency, hazardous-area rated, washdown, chemical duty, air-operated, or bare-shaft pumps only

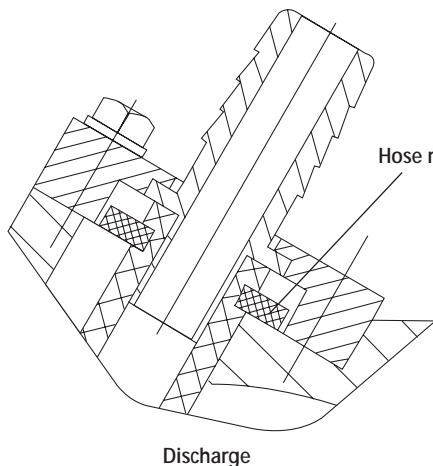
Specifications & Ordering Information

Catalog number	PX 10	PX 10/2	PX 15	PX 15/2	PX 27	PX 27/2	PX 35	PX 35/2	PX 50	PX 50/2
Normal capacity 165 rpm m ³ /hr (GPM)	0.15 (0.66)	0.25 (1.1)	0.5 (2.2)	0.95 (4.8)	2.2 (9.7)	5.0 (22)	6.0 (26)	11.5 (51)	12.5 (55)	24.5 (108)
Normal capacity 100 rpm m ³ /hr (GPM)	0.08 (0.40)	0.16 (0.7)	0.3 (1.3)	0.58 (2.5)	1.3 (5.7)	3.0 (13)	3.5 (15)	7.0 (31)	7.6 (33)	15 (66)
Hose ID, mm (in.)	10 (0.39)	10 (0.39)	15 (0.59)	15 (0.59)	27 (1.06)	27 (1.06)	35 (1.38)	35 (1.38)	50 (1.97)	50 (1.97)
Connection OD, mm (in.)	14 (0.55)	14 (0.55)	25 (0.98)	25 (0.98)	33 (1.30)	33 (1.30)	51 (2.0)	51 (2.0)	75 (2.95)	75 (2.95)
Max power, hp (kW)	½ (0.37)	½ (0.37)	½ (0.37)	¾ (0.56)	½ (0.37)	1½ (1.1)	2 (1.5)	5 (3.7)	3 (2.2)	5 (3.7)
Dimensions (L x W x H), mm (in.)	600 x 300 x 225 (23.62 x 11.81 x 8.84)		600 x 300 x 314 (23.62 x 11.81 x 12.36)		600 x 300 x 434 (23.62 x 11.81 x 17.09)		860 x 400 x 577 (33.86 x 15.75 x 22.72)		860 x 400 x 650 (33.86 x 15.75 x 25.59)	
Est. weight with motor lb (kg)	73 (33)	82 (37)	83 (38)	105 (48)	106 (48)	144 (68)	200 (91)	300 (136)	248 (113)	367 (167)
Construction materials										
Housing	Cast aluminum with epoxy coating									
Tube bed	PTFE									
Inlet/outlet fittings	Polypropylene (standard fittings); 316 SS (optional)									
Rollers	Carbon-filled PTFE									
Rotor	Cast aluminum									
Shaft	Stainless steel									
Bearings	Permanently sealed grease filled ball bearings									
Hose material options	Natural rubber, food-grade rubber, Neoprene, Hypalon									
Max rpm	165									
Max temperature (continuous)	60°C (140°F)									
Max temperature (intermittent)	80°C (176°F)									
Max pressure	2 bar (30 psig)									
Max suction height	7 m (23 ft)									
Max viscosity	35,000 cPs (160,000 SSU)									

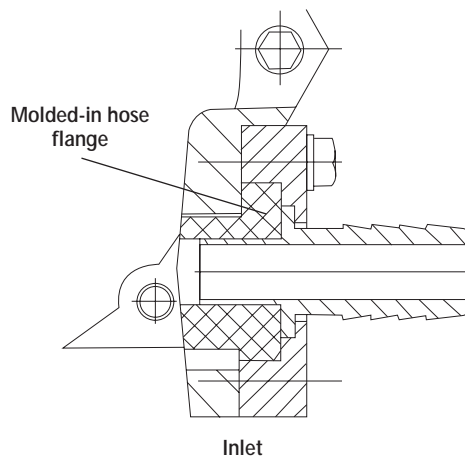
The standard inlet and outlet connections provided are a barbed hose type. Optional inlet and outlet connections available include ANSI 150# flanges, sanitary Tri-Clamp® fittings, and NPT connections.

Pump series										
	Polypropylene		Stainless steel		Stainless steel		Stainless steel		Stainless steel	
	Hose ID (mm)	Cat. no.	Hose ID (mm)	Cat. no.	NPT	Cat. no.	Flange size*	Cat. no.	Tri-Clamp size	Cat. no.
PX 10 or PX 10/2	14.0	VA-61014	14.0	VA-61015	¼"	VA-61016	½"	VA-61017	½"	VA-61016
PX 15 or PX 15/2	25.2	VA-61114	25.2	VA-61115	¾"	VA-61116	¾"	VA-61117	¾"	VA-61016
PX 27 or PX 27/2	33.0	VA-61214	33.0	VA-61215	1"	VA-61216	1"	VA-61217	1"	VA-61016
PX 35 or PX 35/2	51.0	VA-61314	51.0	VA-61315	1½"	VA-61316	1½"	VA-61317	1½"	VA-61016
PX 50 or PX 50/2	75.5	VA-61414	75.5	VA-61415	2"	VA-61416	2"	VA-61417	2"	VA-61016

*ANSI 150# flange



Unique flanged and ribbed hose improves retention and positively holds hose in pump



PONNDORF

PDX & PDX/2 series



PDX series
single-channel
pump



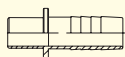
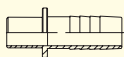
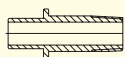
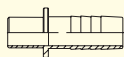
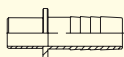
PDX/2 series
dual-channel
pump

- Metering, transfer, self-priming, and low-pulsation models
- Flow capacities are available up to 4.0 m³/hr (18 GPM) for single hose and up to 6.7 m³/hr (29 GPM) with our unique dual hose design
- Food-grade tubing is ideal for demanding pump applications in food, pharmaceutical, high-purity chemicals, and higher temperature applications
- Pressure up to 2 bar (30 psig)
- Handles hot fluids up to 130°C (266°F)
- Dry running design provides long tubing life and prevents system contamination should the hose ever rupture
- Easy maintenance and hose replacement—without disassembly of the pump
- Flanged tube bed prevents side-to-side movement of hose and improves hose life
- Pumps are shipped complete with motor and fixed-speed drive systems ready to install and start
- Optional drives include mechanical variable speed, variable-frequency, hazardous-area rate, washdown, chemical duty, and air-operated, or base shaft pumps only
- Dual hose models (PDX/2) available

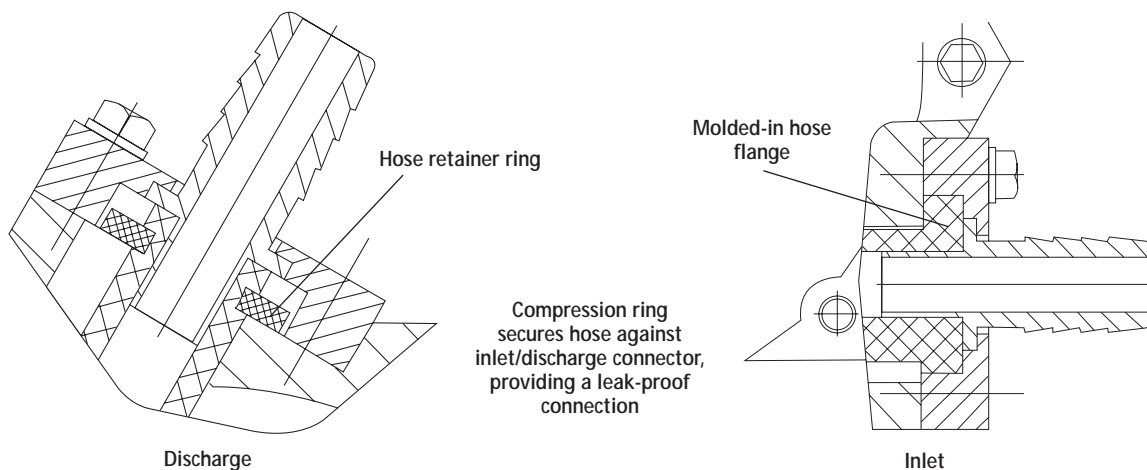
Specifications & Ordering Information

Catalog number	PDX 19	PDX 19/2	PDX 30	PDX 30/2	PDX 35	PDX 35/2
Normal capacity 165 rpm GPM (m ³ /hr)	2.2 (0.5)	3.7 (0.85)	12 (2.7)	20 (4.5)	18 (4.0)	30 (6.7)
Normal capacity 100 rpm GPM (m ³ /hr)	1.3 (0.3)	2.2 (0.5)	7.5 (1.7)	12 (2.7)	11 (2.5)	18 (4.0)
Hose ID, in (mm)	0.75 (19)	0.75 (19)	1.18 (30)	1.18 (15)	1.18 (30)	1.18 (30)
Connection OD, in (mm)	0.98 (25)	0.98 (25)	1.30 (33)	1.30 (33)	2.0 (51)	2.0 (51)
Max power, hp (kW)	½ (0.37)	1 (0.75)	¾ (0.56)	1½ (1.1)	1½ (1.1)	2 (2.2)
Dimensions (L x W x H), mm (in)	600 x 300 x 332 (23.62 x 11.81 x 12.68)	600 x 300 x 322 (23.62 x 11.81 x 12.68)	600 x 300 x 446 (23.62 x 11.81 x 17.56)	600 x 300 x 446 (23.62 x 11.81 x 17.56)	860 x 400 x 577 (33.86 x 15.76 x 23.23)	860 x 400 x 577 (33.86 x 15.76 x 23.23)
Est. wt with motor kg (lb)	38 (84)	49 (107)	49 (107)	69 (152)	92 (202)	139 (306)
Construction materials						
Housing	Cast aluminum					
Tube bed	PTFE					
Inlet/outlet fittings	Polypropylene (standard fittings); 316 SS (optional)					
Rollers	Carbon-filled PTFE					
Rotor	Cast aluminum					
Shaft	Stainless steel					
Bearings	Permanently sealed grease filled ball bearings					
Hose material options	Food grade Ponnprene—TPE (PP/EPDM)					
Max rpm	165					
Max temperature (continuous)	90°C (194°F)					
Max temperature (intermittent)	130°C (266°F)					
Max pressure	2 bar (30 psig)					
Max suction height	7 m (23 ft)					
Max viscosity	35,000 cPs (160,000 ssu)					

The standard inlet and outlet connections provided are a barbed hose type. Optional inlet and outlet connections available include ANSI 150# flanges, sanitary Tri-Clamp® fittings, and NPT connections.

Pump series										
	Polypropylene		Stainless steel		Stainless steel		Stainless steel		Stainless steel	
	Hose ID (mm)	Cat. no.	Hose ID (mm)	Cat. no.	NPT	Cat. no.	Flange size*	Cat. no.	Tri-Clamp size	Cat. no.
PDX 19 or PDX 19/2	25.2	VA-61810	25.2	VA-61811	½"	VA-61812	½"	VA-61813	½"	VA-61821
PDX 30 or PDX 30/2	33.0	VA-61214	33.0	VA-61215	1"	VA-61216	1"	VA-61621	1"	VA-61921
PDX 35 or PDX 35/2	51.0	VA-62010	51.0	VA-62011	1½"	VA-62012	1½"	VA-62013	1½"	VA-62021

*ANSI 150# flange



PONNDORF

PD & PD/2 series



PD series
single-channel
pump

- Metering, transfer, and high-pressure filtration
- Self-priming and low-pulsation models
- Flow capacities are available up to 5.5 m³/hr (24 GPM) for single hose and up to 9.5 m³/hr (42 GPM) with our unique dual hose design
- Pressure up to 4 bar (60 psig)
- Dry running design provides long tubing life and prevents system contamination should the hose ever rupture
- Easy hose replacement without disassembly of the pump
- Flanged tube bed prevents side-to-side movement of the hose
- Pumps are shipped complete with motor and fixed-speed drive systems ready to install and start
- Optional drives include mechanical variable speed, variable-frequency, hazardous-area rate, washdown, chemical duty, air-operated, or base shaft pump only
- Dual hose models available (PD/2)



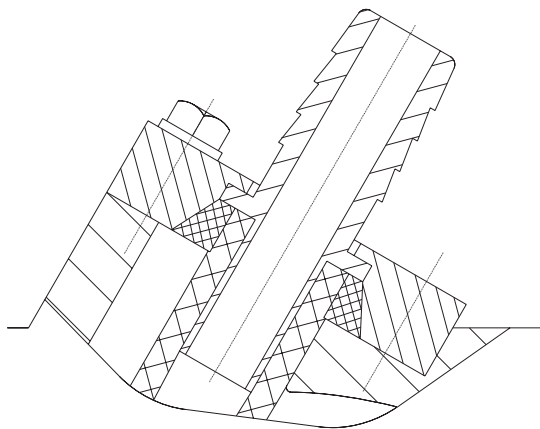
PD/2 series
dual-channel
pump

Specifications & Ordering Information

Catalog number	PD 15	PD 15/2	PD 27	PD 27/2	PD 35	PD 35/2
Normal capacity 165 rpm m ³ /hr (GPM)	0.5 (2.2)	0.95 (4.2)	2.5 (11)	4.8 (21.1)	5.5 (24.2)	9.5 (41.8)
Normal capacity 100 rpm m ³ /hr (GPM)	0.3 (1.3)	0.55 (2.6)	1.6 (6.6)	2.9 (12.8)	3.3 (14.5)	5.8 (25.4)
Hose ID, mm (in)	15 (0.59)	15 (0.59)	27 (1.06)	29 (1.06)	51 (2.01)	35 (1.38)
Connection OD, mm (in)	25 (0.98)	25 (0.98)	33 (1.30)	33 (1.30)	33 (1.30)	51 (2.01)
Max power, hp (kW)	½ (0.37)	¾ (0.55)	¾ (0.55)	2 (1.1)	2 (1.1)	5 (3)
Dimensions (L x W x H), mm (in)	600 x 300 x 225 (23.62 x 11.81 x 8.84)		600 x 300 x 314 (23.62 x 11.81 x 12.36)		600 x 300 x 434 (23.62 x 11.81 x 17.09)	
Est. wt with motor kg (lb)	38 (84)	49 (107)	49 (107)	69 (152)	92 (202)	139 (306)
Construction materials						
Housing	Cast aluminum					
Tube bed	PTFE					
Inlet/outlet fittings	Polypropylene (standard fittings): 316 SS (optional)					
Rollers	Carbon-filled PTFE					
Rotor	Cast aluminum					
Shaft	Stainless steel					
Bearings	Permanently sealed grease filled ball bearings					
Hose material options	Natural rubber					
Max rpm	165					
Max temperature (continuous)	60°C (140°F)					
Max temperature (intermittent)	80°C (176°F)					
Max pressure	4 bar (60 psig)					
Max suction height	8 m (26 ft)					
Max viscosity	35,000 cPs (160,000 ssu)					

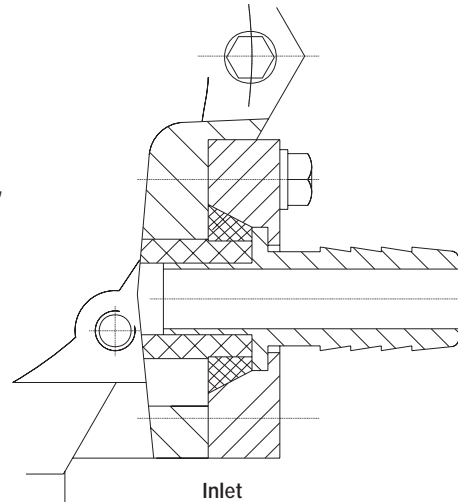
The standard inlet and outlet connections provided are a barbed hose type. Optional inlet and outlet connections available include ANSI 150# flanges, Sanitary Tri-Clamp fittings, and NPT connections.

Pump series	Polypropylene		Stainless steel		Stainless steel		Stainless steel		Stainless steel	
	Hose ID (mm)	Cat. no.	Hose ID (mm)	Cat. no.	NPT	Cat. no.	Flange size	Cat. no.	Tri-Clamp size	Cat. no.
	PD 15 or PD 15/2	25.2	VA-61114	25.2	VA-61115	½"	VA-61116	½"	VA-61522	½"
PD 27 or PD 27/2	33.0	VA-61214	33.0	VA-61215	1"	VA-61216	1"	VA-61621	1"	VA-61622
PD 35 or PD 35/2	51.0	VA-62010	51.0	VA-61711	1½"	VA-61713	1½"	VA-61714	1½"	VA-61721



Discharge

Compression ring
secures hose against
inlet/discharge connector,
providing a leak-proof
connection



Inlet

PONNDORF

PK series

- Flow capacities up to 32 m³/hr (140 GPM)—easily develop a discharge pressure up to 15 bar (220 psig)
- Multiple hose materials provide compatibility in a wide range of pump applications
- Reinforced high-pressure hoses
- Sliding shoe technology combined with a lubricated bath provides a simple, reliable pump mechanism with proven long hose life in continuous operation
- Adjustable sliding shoes optimize hose compression for long hose life
- Easy hose replacement without disassembly of the pump
- Hose connectors are uniquely designed to eliminate multiple parts, yet provide a positive seal capable of holding the maximum pressure ratings
- Pumps are shipped complete with motor and fixed-speed drive systems ready to install and start
- Optional drives include mechanical variable speed and inverter variable, or base-shaft pumps only

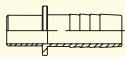
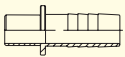
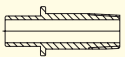
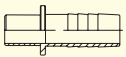
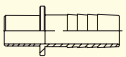


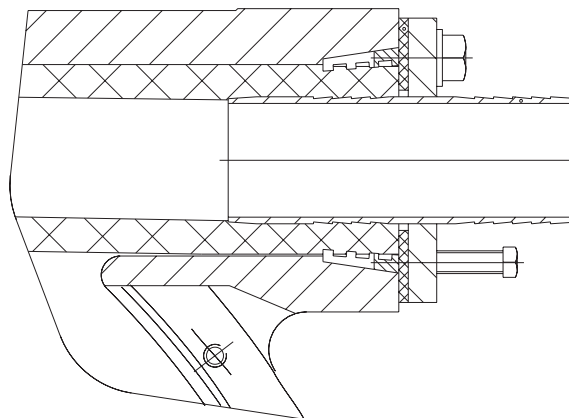
PK series pump

Specifications & Ordering Information

Catalog number	PK15	PK25	PK40	PK50	PK65
Normal capacity 90 rpm m ³ /hr (GPM)	0.7 (3)	2.1 (9.2)	7.7 (33.9)	15.5 (68)	32 (140)
Normal capacity 60 rpm m ³ /hr (GPM)	0.25 (1)	1.4 (6.2)	5.1 (22.6)	10.3 (45)	22 (97)
Hose ID, mm	15	25	40	50	65
Connection OD, mm	25	31	51	61	67
Max power, hp (kW)	3/4 (0.56)	3 (2.2)	5 (3)	3/4 (0.56)	15 (11.2)
Dimensions (L x W x H), mm (in)	712 x 155 x 347 (28.0 x 6.10 x 13.7)	973 x 194 x 475 (38.3 x 7.64 x 18.7)	1121 x 300 x 758 (44.1 x 11.8 x 29.8)	1234 x 300 x 842 (48.6 x 11.8 x 33.1)	1472 x 466 x 1040 (58.0 x 18.3 x 40.9)
Hose material options	Natural rubber, NBR, white, food grade, EPDM				
Construction materials					
Housing	Cast aluminum				
Tube bed	PTFE				
Inlet/outlet fittings	Polypropylene (standard fittings); 316 SS (optional)				
Rollers	Carbon-filled PTFE				
Rotor	Cast aluminum				
Shaft	Stainless steel				
Bearings	Permanently sealed grease filled ball bearings				
Max rpm	90				
Max temperature (continuous)	60°C (140°F)				
Max temperature (intermittent)	80°C (176°F)				
Max pressure	15 bar (220 psig)				
Max suction height	8 m (26 ft)				
Max viscosity	35,000 cPs (160,000 ssu)				

The standard inlet and outlet connections provided are a barbed hose type. Optional inlet and outlet connections available include ANSI 150# flanges, Sanitary Tri-Clamp® fittings, and NPT connections.

Pump series										
	Polypropylene		Stainless steel		Stainless steel		Stainless steel		Stainless steel	
	Hose ID (mm)	Cat. no.	Hose ID (mm)	Cat. no.	NPT	Cat. no.	Flange size	Cat. no.	Tri-Clamp size	Cat. no.
PK 15	—	—	20.0	VA-62516	1/2"	VA-62533	1/2"	VA-62532	3/4"	VA-62523
PK 25	—	—	31.0	VA-62616	3/4"	VA-62630	1"	VA-62629	1"	VA-62617
PK 40	—	—	51.0	VA-62716	1"	VA-62732	1 1/2"	VA-62731	1 1/2"	VA-62717
PK 50	—	—	61.0	VA-62816	1 1/2"	VA-62821	2"	VA-62823	2"	VA-62817
PK 65	—	—	67.0	VA-62916	2"	VA-62928	2 1/2"	VA-62927	2 1/2"	VA-62914










Unique compression ring positively holds hose in place and provides full circumference sealing to hold pressure up to 15 bar (220 psig)

ETATRON CHEMICAL METERING

pump selection guide

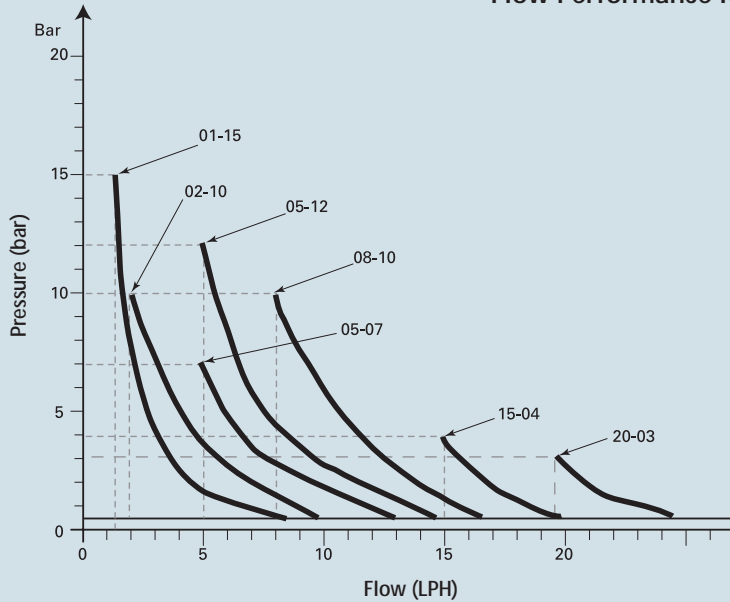
- Accurate chemical feed at pressures up to 15 bar (220 psig)
- Broad selection range—from simple manual pumps to units with built-in controllers for pH, Rx (ORP), conductivity, or chlorine applications
- Economical pump systems
- Ideal for water towers, swimming pools, spas, water features, hydroponics, agriculture, and other water treatment applications.
- Offered in two styles—wall mounted (DLX) series and foot-mounted (DLXB) series
- Plastic casing—IP65 protection
- Supplied with manual vented pump head

Pump series	Max flow rate LPH (GPD)	Analog	Digital	Level control	HRS controller	Integrated mode	Special features	Pages
MA/A 	20 (126)	✓					Simple manual control pump	47-49
MA/M 	20 (126)		✓	✓	✓		HRS mode	47-49
MF/M 	20 (126)		✓	✓		✓	Multi-function pump programming in PPM dosing, or pulse to a water meter	47-49
pH/M 	20 (126)		✓	✓		✓	Built-in pH control	47-49
Rx/M 	20 (126)		✓	✓		✓	Built-in ORP control.	47-49
CD/M 	20 (126)		✓	✓		✓	Built-in conductivity control	47-49
CL/M 	20 (126)		✓	✓		✓	Built-in chlorine control.	47-49

ETATRON CHEMICAL METERING

pump technical information

Flow Performance Ranges

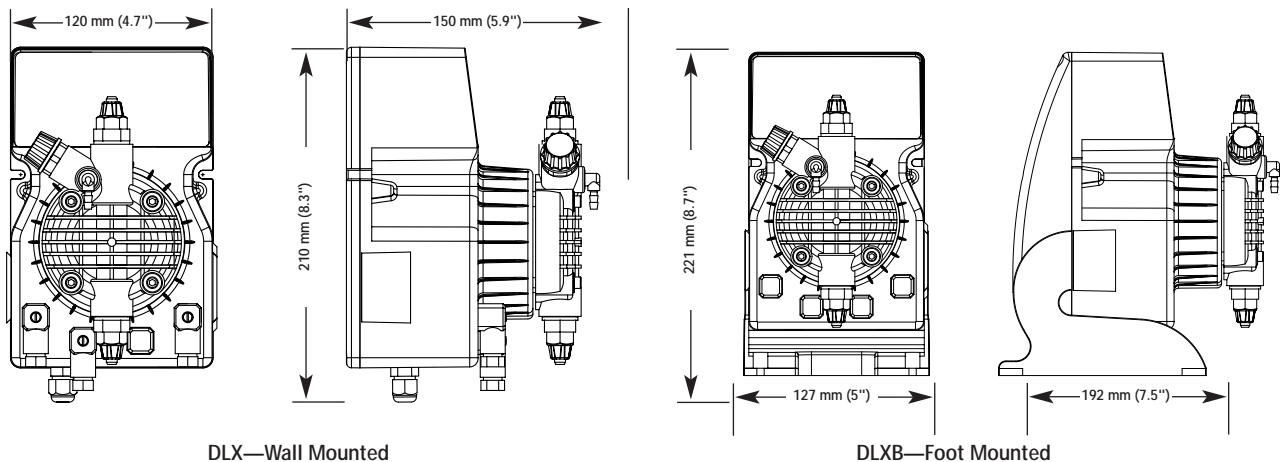


Shown at left is the flow performance of each range of pumps. The designation 08-10 stands for a pump that will deliver 8 LPH (51 GPD) at 10 bar (145 psig).

Performance ranges


Performance range	Max flow LPH (GPD)	Max pressure bar (psig)	Pulse/min	Output per stroke (mL)	Stroke length (mm)	Suction height (m)	Power (watts)	Current (amps)	Net weight (kg)
01-15	1 (6)	15 (220)	120	0.14	0.8	2.0	37	0.16	2.3
02-10	2 (13)	10 (145)	100	0.33	0.8	2.0	37	0.16	2.3
05-07	5 (32)	7 (100)	100	0.83	1.0	2.0	37	0.16	2.3
05-12	5 (32)	12 (160)	100	0.83	1.0	2.0	58	0.25	2.9
08-10	8 (51)	10 (145)	120	1.11	1.4	2.0	58	0.25	2.9
15-04	15 (95)	4 (60)	120	2.08	2.2	2.0	58	0.25	2.9
20-03	20 (126)	3 (45)	120	2.8	2.2	2.0	58	0.25	2.9

Dimensions




ETATRON CHEMICAL METERING


DLX/DLXB pumps & control pumps

Manual Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power required
	DLX	DLXB	MA/A	Manual	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V


Build the part number by combining Mounting - Design Performance Range. So DLX-MA/A 05-07 is a wall-mounted manual pump with a max flow rate of 5 LPH and a max pressure rating of 7 bar.

Digital Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	MA/M	Digital	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V


Build the part number by combining Mounting - Design Performance Range. So DLXB-MA/M 02-10 is a foot-mounted digital pump with a max flow rate of 2 LPH and a max pressure rating of 10 bar.

Multifunction Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	MF/A	Multifunction	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V


Build the part number by combining Mounting - Design Performance Range. So DLX-MF/A 15-04 is a wall-mounted multifunction pump with a max flow rate of 15 LPH and a max pressure rating of 4 bar.

pH Control Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	pH/M	pH control	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V


Build the part number by combining Mounting - Design Performance Range. So DLX-pH/M 20-03 is a wall-mounted pH control pump with a max flow rate of 20 LPH and a max pressure rating of 3 bar.

Rx (ReDOX) Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	Rx/M	Rx pump (ORP)	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V

Build the part number by combining Mounting - Design Performance Range. So DLX-Rx/M 05-07 is a wall-mounted Rx(ORP) control pump with a max flow rate of 5 LPH and a max pressure rating of 7 bar.

Conductivity Control Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	CD/M	Conductivity	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V

Build the part number by combining Mounting - Design Performance Range. So DLX-CD/M 01-15 is a wall-mounted conductivity control pump with max flow rate of 1 LPH and max pressure rating of 15 bar.

Chlorine Control Pumps	Wall mount	Foot mount	Design	Description	Performance range (see pg. 47)	Power
	DLX	DLXB	CL/M	Chlorine	01-15	115V
					02-10	115V
					05-07	115V
					05-12	115V
					08-10	115V
					15-04	115V
					20-03	115V

Build the part number by combining Mounting - Design Performance Range. So DLXB-CL/M 08-10 is a foot-mounted chlorine control pump with a max flow rate of 8 LPH and a max pressure rating of 10 bar.

Accessories

Catalog number	Description	Part number	Description	Pulses per gallon	Pipe size	Flow rate
VA-2139.002	Level probe	VA-1 CNT 028	Water meter, 1/2	15	—	6.6 GPM
VA-2061.002	Accessory kit (Injection valve, foot valve,tubing)	VA-1 CNT 086	Water meter, 3/4	15	—	11 GPM
VA-5993-90	pH/Rx (ORP) probe	VA-1 CNT 066	Water meter, 1	15	1	15 GPM
VA-27003-84	In-line Tee probe fitting	VA-1CNT 053	Water meter, 1 1/4	15	1 1/4	22 GPM
VA-1STE 036 K1	Conductivity probe 0-20000 µS/cm	VA-1 CNT 040	Water meter, 1 1/2	15	1 1/2	24 GPM
VA-1STE 039 K5	Conductivity probe 0-2000 µS/cm	VA-1 CNT 111	Water meter, 2	15	26	65 GPM
VA-1 STE 031	Chlorine cell	—	—	—	—	—