

# Thermo Scientific Masterflex® I/P®

## Standard Process Pump



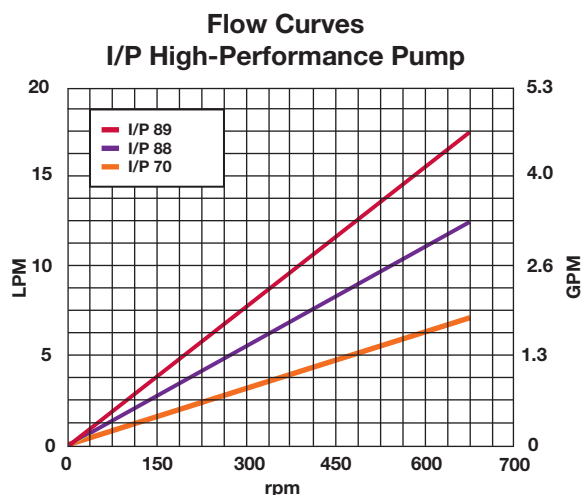
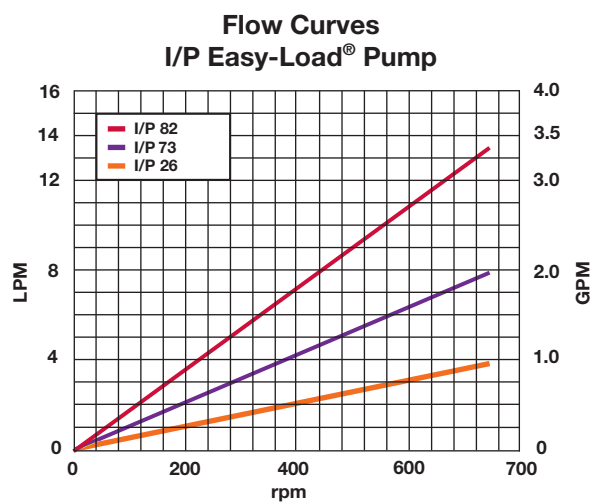
Masterflex I/P Series

### 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



I/P 1



#### Flow ranges, LPM (GPM)

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
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.

#### Specifications & Ordering Information

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

†Totally enclosed, non-ventilating.

# Thermo Scientific Masterflex® I/P®

## Industrial Process Pump



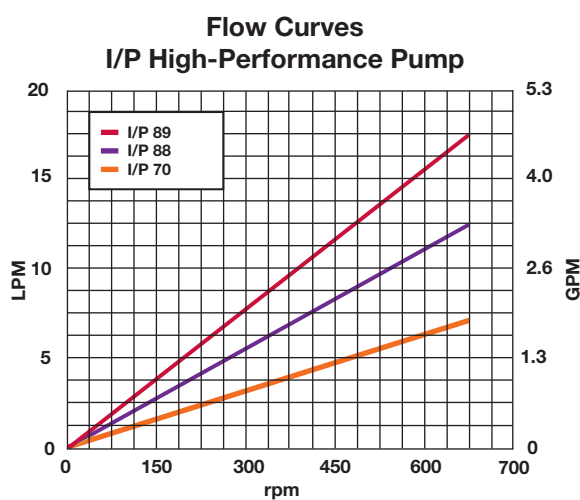
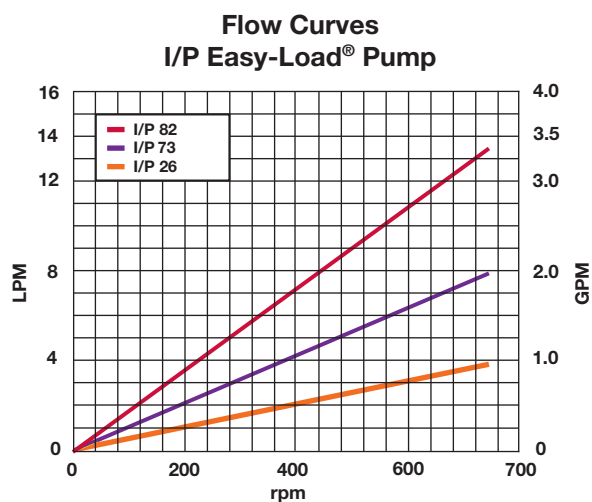
Masterflex I/P Series

### 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



I/P 3



#### Flow ranges, LPM (GPM)

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)

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

#### Specifications & Ordering Information

Industrial process pump		
Catalog number	961-3000	961-3010
Included pump head	Easy-Load®	High-Performance
Number of heads accepted	2	1
rpm	1 to 650	
External control, input	0 to 20 mA, 4 to 20 mA, start/stop/CW/CCW, prime purge	
External control, output	4-20 mA "drive running" contact, 4-20 mA, 0-10 V	
Voltage (50/60 Hz)	115 or 230 VAC auto selected	
Motor type	Direct-drive brushless DC TENV†	
Speed control type	PWM microprocessor	
Speed regulation (repeatability)	±0.25% (±1 rpm)	
Digital display	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	IP66 (Nema 4x)	
Agency approvals	UL, cUL, CE	
Controller dimensions (L x W x H)	18 x 11 x 17 cm (7 x 4.3 x 6.7")	
Shipping weight	32 kg (70 lb)	

†Totally enclosed, non-ventilating.



# Thermo Scientific Masterflex® I/P®

## Digital Metering Systems

Masterflex I/P Series



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



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



- 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 rated—provides protection in harsh environments
- 7.6-m (25-ft) cable connects motor and controller



I/P 5

## 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)

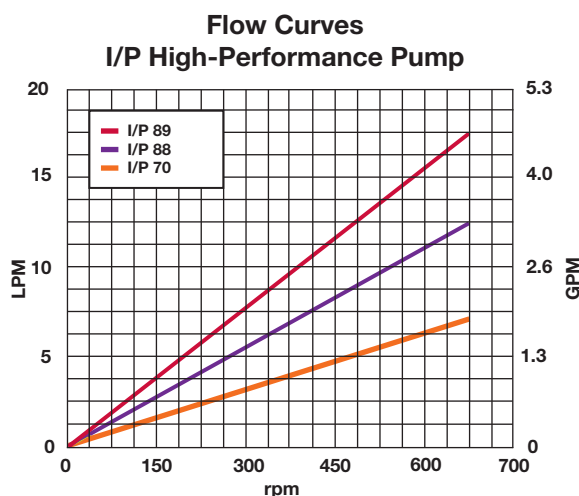
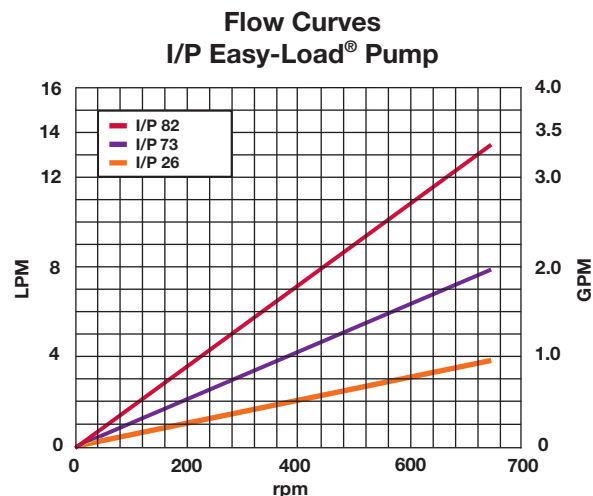
\* Use High-performance precision tubing with High-Performance pump head only.



## Specifications & Ordering Information

Catalog number	950-2010	950-2015	960-2010	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 <sup>†</sup> , 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 controller, IP 34 motor			
Agency approvals	UL, cUL, CE			
Controller dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 <sup>1</sup> / <sub>8</sub> x 5 <sup>9</sup> / <sub>16</sub> x 6")			
Motor footprint dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 <sup>1</sup> / <sub>8</sub> x 5 <sup>9</sup> / <sub>16</sub> x 6")			
Shipping weight	12.8 kg (27 lb)		14.3 kg (32 lb)	

<sup>†</sup>Totally enclosed, non-ventilating.



# Thermo Scientific Masterflex® I/P®

## Washdown Modular Systems

Masterflex I/P Series



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

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 (IP34) 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



I/P 7

## 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.

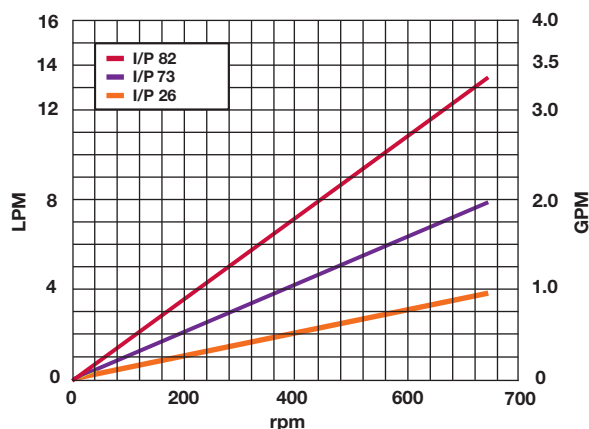


## Specifications & Ordering Information

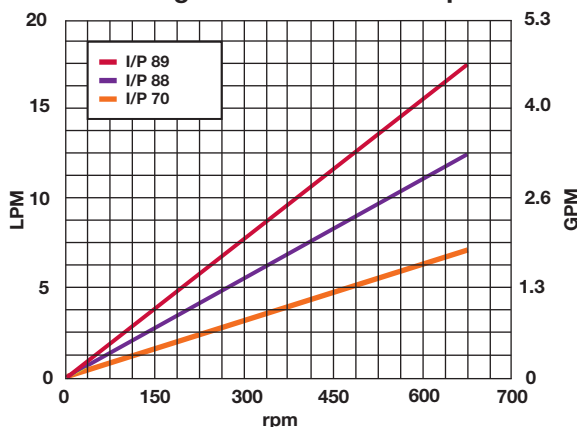
Catalog number	950-1010	950-1015	960-1010	960-1015
Included pump head	Easy-Load®		High-Performance	
Number of heads accepted	2		1	
rpm	20 to 650			
External control, input	4 to 20 mA, on/off and speed control			
Voltage (50/60 Hz)	90 to 130 VAC	190 to 260 VAC	90 to 130 VAC	190 to 260 VAC
Motor type	Continuous duty, TENV <sup>†</sup> , 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: IP34			
Agency approvals	UL, cUL, CE			
Controller dimensions (L x W x H)	25.8 x 23.3 x 12.9 cm (9 <sup>7</sup> / <sub>8</sub> x 9 <sup>3</sup> / <sub>16</sub> x 5")			
Motor footprint dimensions (L x W x H)	35.9 x 14.1 x 15.2 cm (14 <sup>1</sup> / <sub>8</sub> x 5 <sup>5</sup> / <sub>16</sub> 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**



I/P 8

[www.thermo.com/fluidhandling](http://www.thermo.com/fluidhandling)

Barrington, IL 60010  
1-800-637-3739  
1-847-381-7050  
1-847-381-7053 fax

**Thermo**  
SCIENTIFIC



# Thermo Scientific Masterflex® I/P®

## Air-Powered Pumps Masterflex® I/P Air-Powered



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



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

- 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



## Flow ranges, LPM (GPM)

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)

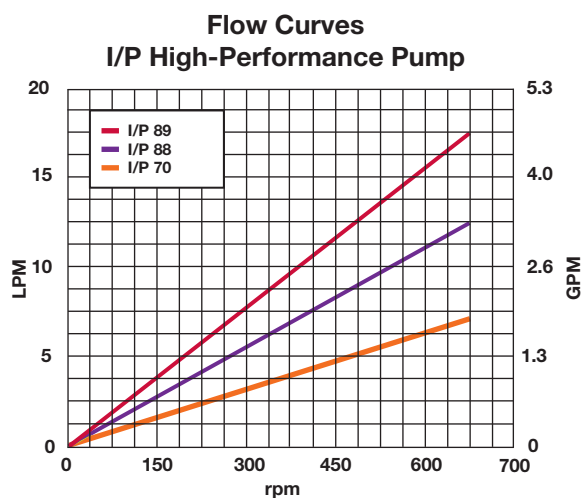
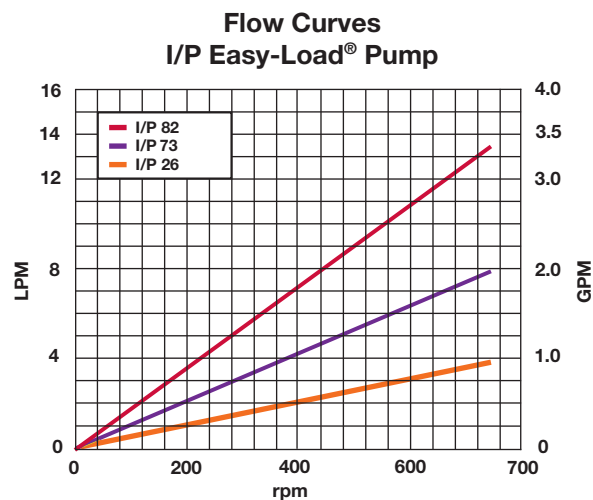
\*Use High-performance precision tubing with High-Performance pump head only.



## Specifications & Ordering Information

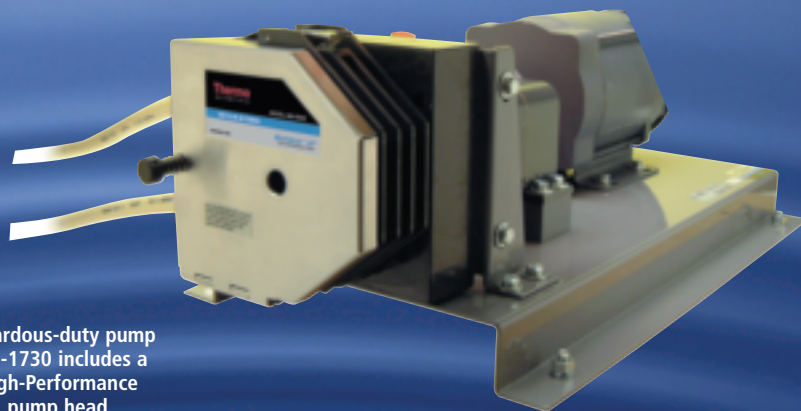
Catalog number	Air-powered pumps	
	950-1020	960-1020
Pump head type	Easy-Load®	High-Performance
Number of heads accepted	2	1
rpm	100 to 650	
Voltage (50/60 Hz)	N/A	
Motor type	Rotary vane air motor	
Speed control type	Via FRL (filter regulator, lubricator) included	
Speed regulation (repeatability)	±10%	
Operating temperature	1 to 40°C (34 to 104°F)	
Storage temperature	-10 to 60°C (14 to 149°F)	
IP rating	IP56	
Agency approvals	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")	
Shipping weight	11.9 kg (26 lb)	16.6 kg (28 lb)

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



# Thermo Scientific Masterflex® I/P®

## Hazardous-Duty Pumps



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



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

- 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 15:1 mechanical turndown



## Flow ranges, LPM (GPM)

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.

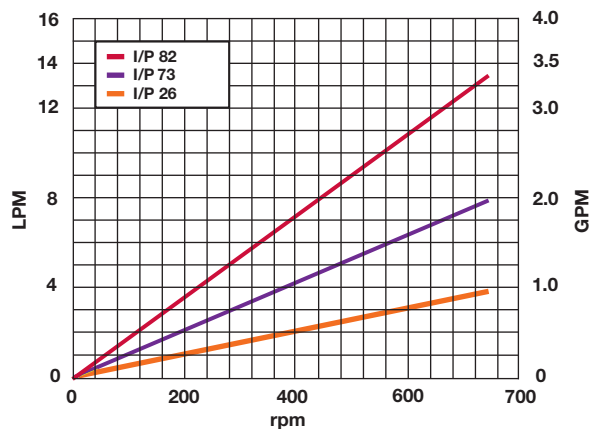


## Specifications & Ordering Information

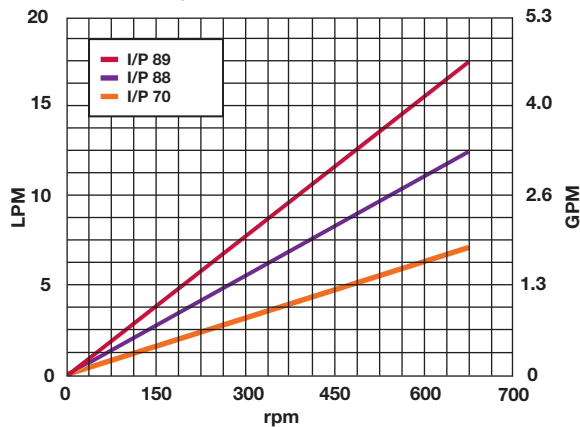
Catalog number	Hazardous-duty pumps	
	950-1730	960-1730
Pump head type	Easy-Load®	High-Performance
Number of heads accepted	2	1
rpm	10 to 430	
Voltage (50/60 Hz)	115 VAC	115 VAC
Motor type	1725 rpm AC	
Speed control type	Mechanical (zero max) with lever	
Speed regulation (repeatability)	±0.3% (±2%)	
Operating temperature	0 to 40°C (32 to 104°F)	
Storage temperature	-45 to 65°C (-49 to 149°F)	
IP rating	IP55	
Agency approvals	UL†	CE
Dimensions (L x W x H)	56.0 x 34.6 x 22.3 cm	(22 1/16" x 13 3/8" x 8 3/4")
Shipping weight	29 kg (64 lb)	30 kg (66 lb)

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

**Flow Curves**  
**I/P Easy-Load® Pump**



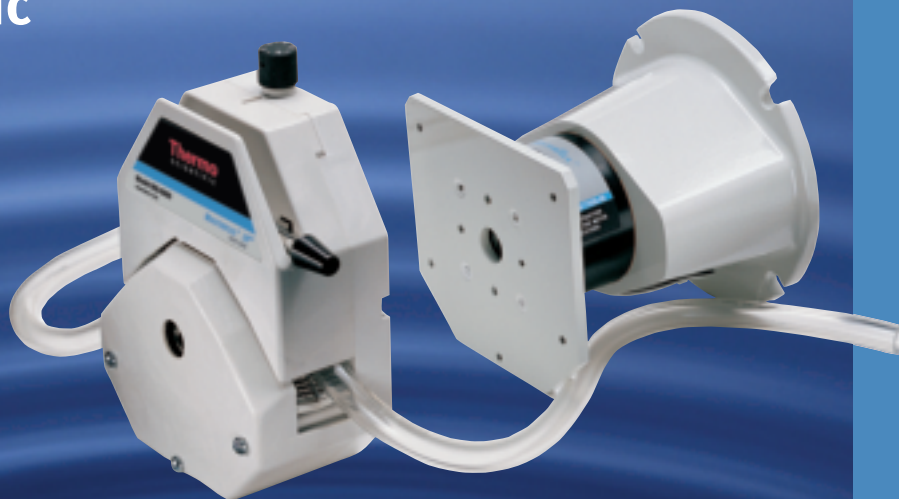
**Flow Curves**  
**I/P High-Performance Pump**





# Thermo Scientific Masterflex® I/P®

## NEMA Pump Adapter Systems and Fixed-Speed Washdown Pumps



Masterflex I/P Series

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
- Accepts NEMA 56C frame motors with base; minimum 1/4 hp, 180 W
- Attach your own motor to meet local electrical codes, hazardous-duty requirements, washdown necessity, and your unique needs



### Masterflex I/P Fixed-Speed Washdown Pumps

- 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



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



I/P 13



## Ordering Information

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

## Flow rates, LPM (GPM)

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)

## Specifications & Ordering Information

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)	

# Thermo Scientific Masterflex® I/P®

## Multichannel, Washdown Pumps



Masterflex I/P Series



- 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



I/P 15

### 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)

### Specifications & Ordering Information

Catalog number	950-3613	950-3014
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)	