

GENERAL DESCRIPTION

The Masterflex[®] I/P[®] Easy-Load[®] pump head combines an over-center cam with automatic tubing retention in a rugged, chemical-resistant housing. This design allows fast, easy tubing changes without removing the pump head from the drive. Built-in tubing guide ensures correct positioning of tubing to maximize performance and pump tubing life. Spring-loaded tubing retainers ensure tubing is secured automatically to promote long tubing life and optimize performance of each tubing size.



MARKETS & APPLICATIONS

I/P[®] Easy-Load[®] pump heads fit a range of compatible Masterflex[®] I/P[®] drives, which makes them suitable for many applications. Masterflex[®] pumps are designed to be non-contaminating and noninvasive. This makes Easy-Load[®] heads ideal in pharmaceutical and biotech industries, research and development, process and manufacturing applications, food and beverage industries, and environmental applications. These include bioprocessing, fermentation, filling, filtration, transfer, water treatment, and sampling.

FEATURES & BENEFITS

- Automatic tubing retention allow for multiple tubing sizes—change tubing without removing head from drive
- Three roller design for smooth flow
- Choose from stainless steel (SS) or cold-rolled steel (CRS) roller/rotor assemblies; choose stainless steel for greater durability and chemical resistance
- Pump heads are stackable for multichannel applications
- Compact design for efficient use of space
- Accept multiple tubing sizes for maximum flexibility
- Automatic tubing retention eliminates user adjustments and makes setup easy—offers improved tubing life and improved performance
- Adjustable occlusion lets you optimize pressure and suction capabilities

TUBING SIZING CHART

Pump tubing size	Tube ID	Flow rate – mL/rev	Flow rate @ 650 rpm	Max pressure [†]	Max vacuum [†]	Suction lift
I/P 26	6.4mm (1/4")	6.2	4 LPM (1.1 GPM)	2.7 bar	610 Hg (24" Hg)	7.6 m H ₂ O (25 ft H ₂ O)
I/P 73	9.5 mm (3/8")	12.3	8 LPM (2.1 GPM)			
I/P 82	12.7 mm (1/2")	20.0	13 LPM (3.5 GPM)	1.4 bar	510 Hg (20" Hg)	7.0 m H ₂ O (23 ft H ₂ O)

[†]Actual performance varies depending upon tubing materials.

ORDERING INFORMATION

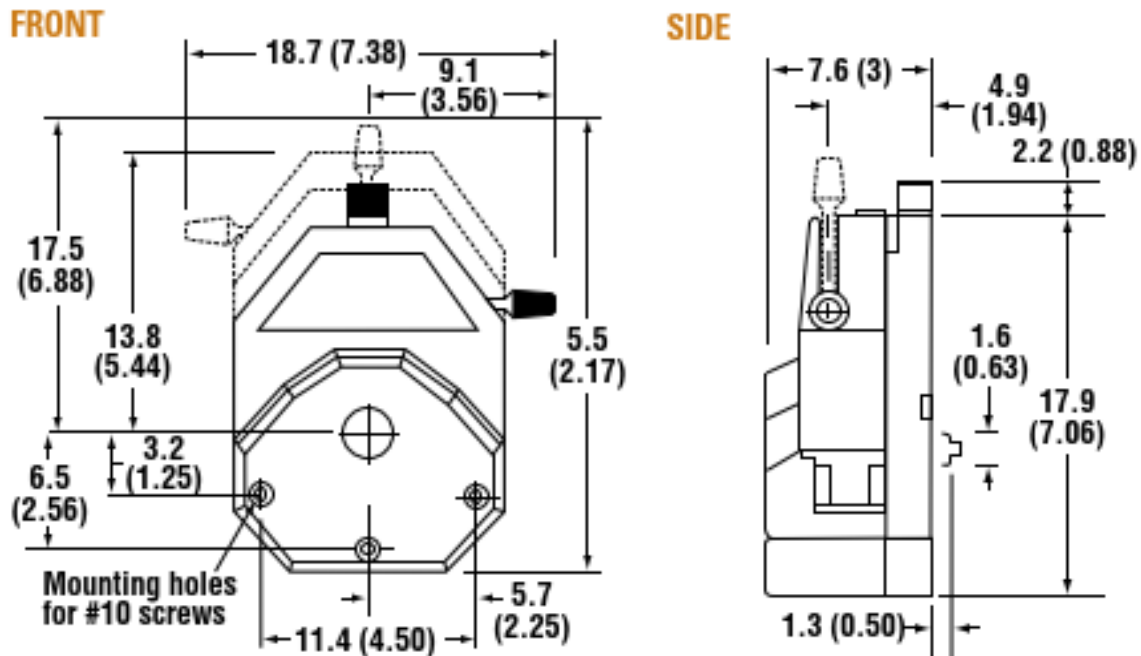
Pump tubing size	White PPS housing				Black PPS housing
	CRS rotor	SS rotor	ATEX-approved SS rotor	SS rotor and Open Head Sensor	SS rotor
For Precision pump tubing					
I/P 26	MFLX77602-00	MFLX77602-10	MFLX77602-80	MFLX77602-30	MFLX77601-60
I/P 73					
I/P 82					

PPS = polyphenylene sulfide

CRS = cold-rolled steel SS = stainless steel

DIMENSIONS/DRAWING

2D Drawing:



SPECIFICATIONS

Catalog number	MFLX77602-00	MFLX77602-10 MFLX77602-80	MFLX77602-30	MFLX77601-60
Performance specifications				
Flow capacity	0.01 to 13 LPM (0.002 to 3.5 GPM) †			
Max rpm	650			
Number of rollers	3			
Open-head sensor	No	No	Yes	No
Torque Specifications‡ (A single head, pumping water at 0 psi (0 bar), 21°C (70°F))				
Norprene®, PharMed® BPT	Starting torque	316 N-cm (448 oz-in)		
	Running torque	64 N-cm (90 oz-in)		
Tygon®, Viton®	Starting torque	316 N-cm (448 oz-in)		
	Running torque	64 N-cm (90 oz-in)		
C-Flex®, Silicone	Starting torque	180 N-cm (256 oz-in)		
	Running torque	46 N-cm (65 oz-in)		
Physical specifications				
Housing material	White Polyphenylene sulfide (PPS)		Black Polyphenylene sulfide (PPS)	
Rotor material	Cold-rolled steel	Stainless Steel		
Operating temperature	0° to 40°C (32° to 104°F)			
Shipping weight	2.3 kg (5 lb.)			

† Depending on tubing size.

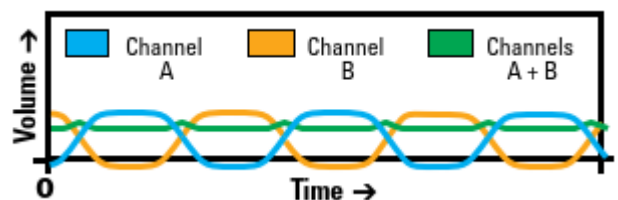
‡ Tested with water as 0 PSI at room temperature

MULTICHANNEL CAPABILITIES

Mount up to two Easy-Load® pump heads on single drive. Change tubing without removing heads. Order dual channel mounting hardware separately. Rollers are offset 60° to allow for reduced pulsation when stacked and combined into a tubing "y" assembly.



Two I/P® Easy-Load® pump heads mounted on drive MFLX77411-00



Reduced pulsation when combining two channels

PUMP HOUSING SPECIFICATION

Polyphenylene Sulfide (PPS)

- Protection from corrosive liquids/vapors
- 300-series SS/PTFE shielded ball-bearing

ROLLER/ROTOR SPECIFICATION

Plated Cold-Rolled Steel (CRS)

- General-purpose applications
- Recommended for fluids at temperatures below 80°C (175 °F)
- Buna N shielded ball-bearing construction

300-Series Stainless Steel (SS)

- Corrosive fluids
- Shielded ball-bearing construction (highest life expectancy)
- Continuous duty up to 600 rpm

PUMP HEAD LOADING



1. Move lever to the left to open pump head. Load the correct size tubing



2. Rotate the lever to the right to close head. Adjust occlusion setting by turning knob on top of pump head



3. Tubing is retained by automatic tubing retention.

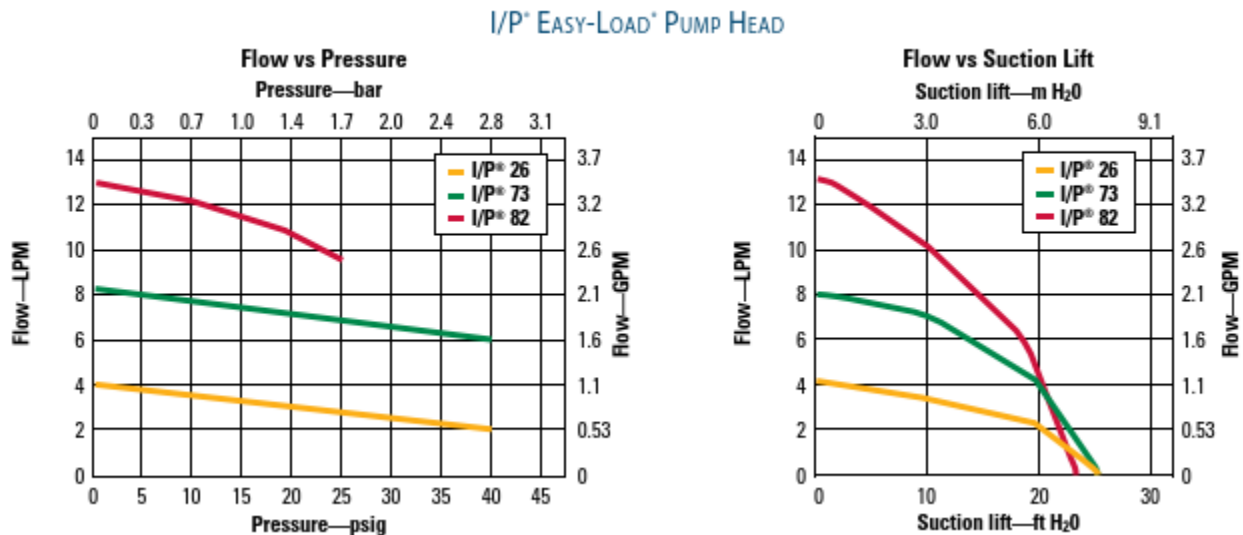
OCCUSION ADJUSTMENT

Pump heads feature an adjustable occlusion knob which allows for better performance when pumping viscous or high-pressure applications (higher force), or longer life and lower shear (lower force).

COMPATIBLE PUMP DRIVES

Mount on all drives accepting Masterflex® I/P® pump heads.

PUMP CURVES



PUMPING VISCOUS FLUIDS

Pumping fluids with higher viscosity will have an impact on flow performance. To maximize the pumping efficiency when pumping viscous fluids follow the below steps:

1. Slow down the speed of your pump. Increasing the speed beyond a certain point for high viscosity will not have any effect on flow rate. The maximum efficient speed of the pump decreases as viscosity increases and tubing size decreases.
2. Choose a larger size pump head/tubing than required to pump water.
3. Select higher durometer tubing such as Chem-Durance® Bio, GORE® PCS and PFL, Norprene®, PharmaPure®, PharMed® BPT, and or Tygon® E-LFL. Performance will be better because the tubing returns to its original shape quickly after pump head occlusion.
4. Increase occlusion adjustment to '4' or '5' setting to provide greater occlusion force.
5. Select a tubing with a smooth bore to decrease frictional forces.
6. Position the pump as close to, or below the level of the inlet fluid to reduce suction lift (flooded suction)
7. Decrease the viscosity of the fluid. Heat the fluid, if possible, to reduce viscosity.

PARTICULATES

Peristaltic pumps are generally well suited for pumping abrasive slurries due to their low shear and quick tubing changes compared to pumps with multiple wetted parts. However, steps should be taken to improve pump performance and life. Soft particles should have an ID less than 25% of the ID of the tubing. Hard particles should be even smaller in relation to the ID of the tubing (less than 5%). Maintaining these ratios will reduce the rate that the tubing is being worn from the inside.

PUMP HEAD ACCESSORIES

Model Number	Description
MFLX77601-95	Replacement mounting hardware for one Masterflex® I/P® Easy-Load® Pump Head
MFLX77601-96	Mounting hardware for two Masterflex® I/P® Easy-Load® Pump Heads
MFLX77600-03	Replacement Tang Boot (10/PK)

Masterflex® I/P® PRECISION PUMP TUBING

To ensure accurate flow rates and long tubing life, use only Masterflex tubing in your pumping applications. Masterflex® tubing should be used because it is specifically designed and manufactured for use in demanding peristaltic pump applications.

- Factory tested and optically inspected.
- 19 formulations to meet all demanding application requirements.
- Formulated and validated to comply with regulatory standards and classifications including USP, EP, EU Food, FDA, and 3A.

Formulation	I/P® Precision Pump Tubing Sizes			
	Pack size	I/P 26	I/P 73	I/P 82
Puri-Flex®	7.6 m (25 ft)	MFLX96419-26	MFLX96419-73	MFLX96419-82
Silicone (platinum-cured)	7.6 m (25 ft)	MFLX96410-26	MFLX96410-73	MFLX96410-82
Silicone (peroxide-cured)	7.6 m (25 ft)	MFLX96400-26	MFLX96400-73	MFLX96400-82
BioPharm silicone	7.6 m (25 ft)	MFLX96420-26	MFLX96420-73	MFLX96420-82
BioPharm Plus silicone	7.6 m (25 ft)	MFLX96440-26	MFLX96440-73	MFLX96440-82
C-Flex® ULTRA	7.6 m (25 ft)	MFLX06434-26	MFLX06434-73	MFLX06434-82
C-Flex®	7.6 m (25 ft)	MFLX06424-26	MFLX06424-73	MFLX06424-82
PharMed® BPT	7.6 m (25 ft)	MFLX06508-26	MFLX06508-73	MFLX06508-82
PharmaPure®	7.6 m (25 ft)	MFLX06435-26	MFLX06435-73	MFLX06435-82
Chem-Durance® Bio	15.2 m (50 ft)	MFLX06442-26	MFLX06442-73	MFLX06442-82
Tygon® E-LFL	7.6 m (25 ft)	MFLX06440-26	MFLX06440-73	MFLX06440-82
Tygon® E-Food (B-44-4X)	15.2 m (50 ft)	MFLX06418-26	MFLX06418-73	MFLX06418-82
Tygon® E-Lab (E-3603)	15.2 m (50 ft)	MFLX06509-26	MFLX06509-73	MFLX06509-82
Versilon™ 2001	15.2 m (50 ft)	MFLX06475-26	MFLX06475-73	MFLX06475-82
Tygon® Fuel & Lubricant (F-4040-A)	15.2 m (50 ft)	—	MFLX06401-73	MFLX06401-82
Versilon™ (A-60-N)	15.2 m (50 ft)	MFLX06404-26	MFLX06404-73	MFLX06404-82
Tygon® (A-60-F)	15.2 m (50 ft)	MFLX06402-26	MFLX06402-73	MFLX06402-82
GORE® Series PCS	61.0 cm (24")	MFLX96211-26	MFLX96211-73	MFLX96211-82
GORE® Series PFL	61.0 cm (24")	MFLX96212-26	MFLX96212-73	MFLX96212-82

COMPLETE SYSTEMS

Order components for complete system. Use only I/P® Masterflex® Pump tubing for optimal performance.

- Pump Drive
- I/P Pump Heads (this brochure)
- I/P Pump Tubing (above)

MasterSense™ I/P®
Pump System
MFLX77966-00

