

## GENERAL DESCRIPTION

The L/S<sup>®</sup> Easy-Load<sup>®</sup> II Pump Head, when combined with a Masterflex<sup>®</sup> L/S<sup>®</sup> drive or compatible system, is designed to provide a simple, easy-to-use peristaltic pump system. The pump head accepts several different tubing sizes for a wide range of flow rates. The unique over-center cam design and automatic tubing retention allow quick tubing changes and greatly reduced maintenance time.



## APPLICATION

Easy-Load<sup>®</sup> II pump heads fit a wide range of drives, which makes them suitable for many applications. Masterflex<sup>®</sup> pumps are designed to be non-contaminating and non-invasive, and the Easy-Load<sup>®</sup> II heads are very easy to load and extremely versatile. This makes Easy-Load<sup>®</sup> II heads ideal in pharmaceutical and biotech industries, research and development, industrial and manufacturing applications, food and beverage industries, and environmental applications. These include bioprocessing, fermentation, filling stations, water treatment, sanitary sampling, and composite sampling.

## FEATURES & BENEFITS

- Automatic tubing retention allows for multiple tubing sizes—change tubing without removing head from drive
- Compatible with more than 22 Masterflex L/S<sup>®</sup> Peristaltic Pump tubing formulations
- Compact design for efficient use of space
- Four-roller rotor improves pressure performance and mechanical stability while reducing pulsation
- Models available with integrated open-head sensor—connects directly to sensor-equipped drives
- Pump heads are stackable for multichannel applications
- 2-Channel models are available for L/S<sup>®</sup> Precision pump tubing sizes
- Models suitable for use with either L/S<sup>®</sup> Precision or L/S<sup>®</sup> High-Performance Precision pump tubing



## TUBING SIZING CHART

Pump tubing size	Tube ID*	Barb size	Flow rate – mL/rev	mL/min @ 1 to 600 rpm	Max pressure†	Max vacuum†	Suction lift
<b>Precision tubing</b>							
L/S 13	0.8 mm (1/32")	1.6 mm (1/16")	0.06	0.06 to 36	2.7 bar (40 psi)	660 mm Hg (26" Hg)	8.8 m H <sub>2</sub> O (29 ft H <sub>2</sub> O)
L/S 14	1.6 mm (1/16")	1.6 mm (1/16")	0.21	0.21 to 130			
L/S 16	3.1 mm (1/8")	3.1 mm (1/8")	0.8	0.8 to 480			
L/S 25	4.8 mm (3/16")	4.8 mm (3/16")	1.7	1.7 to 1000	2.4 bar (35 psi)	510 mm Hg (20" Hg)	6.7 m H <sub>2</sub> O (22 ft H <sub>2</sub> O)
L/S 17	6.4 mm (1/4")	6.4 mm (1/4")	2.8	2.8 to 1700	1.4 bar (20 psi)		
L/S 18	7.9 mm (3/8")	9.5 mm (3/8")	3.8	3.8 to 2300	1.0 bar (15 psi)		
<b>High-performance Precision tubing</b>							
L/S 15	4.8 mm (3/16")	4.8 mm (3/16")	1.7	1.7 to 1000	2.7 bar (40 psi)	660 mm Hg (26" Hg)	8.8 m H <sub>2</sub> O (29 ft H <sub>2</sub> O)
L/S 24	6.4 mm (1/4")	6.4 mm (1/4")	2.8	2.8 to 1700			
L/S 35	7.9 mm (3/8")	9.5 mm (3/8")	3.8	3.8 to 2300	2.4 bar (35 psi)		
L/S 36	9.7 mm (3/8")	9.5 mm (3/8")	4.8	4.8 to 2900	1.4 bar (20 psi)		

\*Nominal size.

†Actual performance varies depending on tubing formulation.

## ORDERING INFORMATION

Tubing Sizes Accepted	CRS Rotor	SS Rotor	SS Rotor and OHS	SS Rotor and Adjustable Occlusion
Precision Tubing (L/S 13, 14, 16, 25, 17, 18)	MFLX77200-50	MFLX77200-60	MFLX77200-30	MFLX77201-60
Precision Tubing, 2-Channel Head (L/S 13, 14, 16, 25)	MFLX77202-50	MFLX77202-60		
High-Performance Precision Tubing (L/S 15, 24, 35, 36)	MFLX77200-52	MFLX77200-62	MFLX77200-32	MFLX77201-62

CRS = Cold-Rolled Steel

SS = Stainless Steel

OHS = Open-Head Sensor



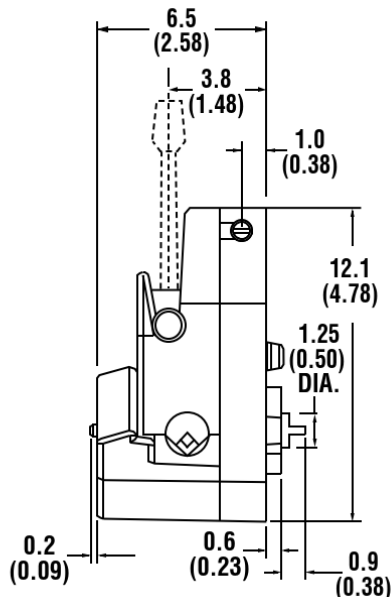
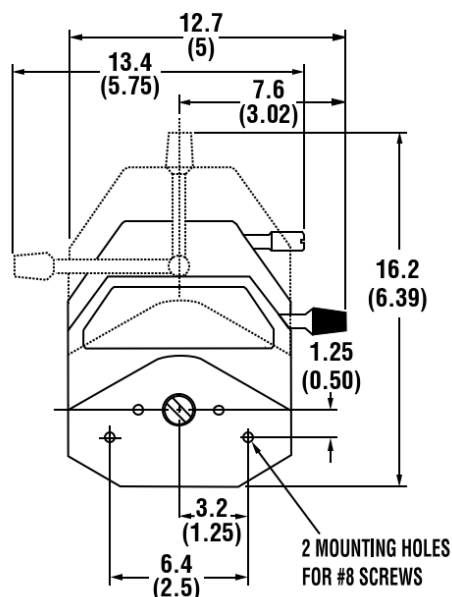
2-Channel Models

## DIMENSIONS

Dimensional Drawings cm (in.) for MFLX77200-series, MFLX77201-series, and MFLX77202-series.

**Front:**

**Side:**



## SPECIFICATIONS

Model number	MFLX77200-50	MFLX77200-60	MFLX77200-30	MFLX77201-60
	MFLX77200-52	MFLX77200-62	MFLX77200-32	MFLX77201-62
<b>Performance specifications</b>				
Flow capacity	0.001 to 2900 mL/min (9.48 to 45.82 GPH) †			
Max rpm	600			
Number of rollers	4			
Open-head sensor	No	No	Yes	No
Occlusion	Fixed (automatic)			Adjustable
<b>Torque Specifications‡ (A single head, pumping water at 0 psi (0 bar), 21°C (70°F) †</b>				
Norprene®, PharMed® BPT	Starting torque	12.9 kg-cm (180 oz-in)		
	Running torque	3.6 kg-cm (50 oz-in)		
Tygon®, Viton®	Starting torque	21.2 kg-cm (295 oz-in)		
	Running torque	4.3 kg-cm (60 oz-in)		
C-Flex®, Silicone	Starting torque	5.8 kg-cm (80 oz-in)		
	Running torque	2.2 kg-cm (30 oz-in)		
<b>Physical specifications</b>				
Housing material	Polyphenylene sulfide			
Rotor material	Cold-rolled steel	Stainless Steel		
Operating temperature	0° to 40°C (32° to 104°F)			
Dimensions (L x W x H)	26.7 x 21 x 12.7 cm (10.5" x 8.25" x 5")		23 x 30 x 11.4 cm (9" x 11.75" x 4.5")	
Shipping weight	0.9 kg (1.9 lb.)			

† Depending on pump head and tubing selected.

‡ Actual Torque depends on tubing size formulation.

## ROLLER/ROTOR SPECIFICATION

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### Clear Polycarbonate (PC)

- General purpose applications
- Ball-bearing construction
- Continuous duty up to 600 rpm

### 300-Series Stainless Steel (SS)

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

## MULTICHANNEL CAPABILITIES

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Mount up to four pump heads depending on the drive. Order hardware based on the number of pump heads to be mounted.

## FIXED/ADJUSTABLE OCCLUSION

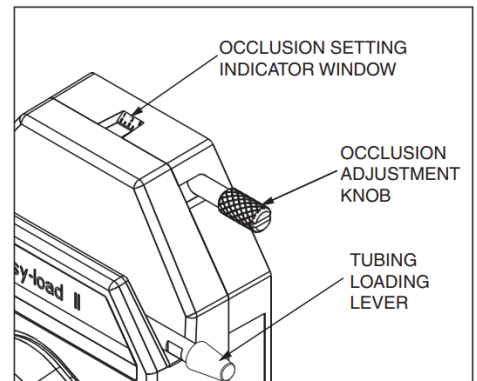
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### Fixed Occlusion

- Tubing changes with no adjustment
- High flow rates at an economical price
- Factory calibrated for nominal occlusion

### Adjustable Occlusion (MFLX77202-series) – Pictured Right

- Reduce occlusion to extend tubing life
- Increase occlusion to maximize pressure performance and obtain better suction lift



## REDUCED PULSATION

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Minimal pulsation is essential to ensuring accuracy in peristaltic dispensing. Pulsation causes variations in flow rate and splashing and frothing in the receiving vessel. Easy-Load® II pump heads feature a four roller design which offset at 45° when two pump heads are stacked. Combining the two channels of tubing with Y fittings merge a pulse from one channel with a trough from the other. The reduced pulsation is measured at the outlet and shown in the graph below.

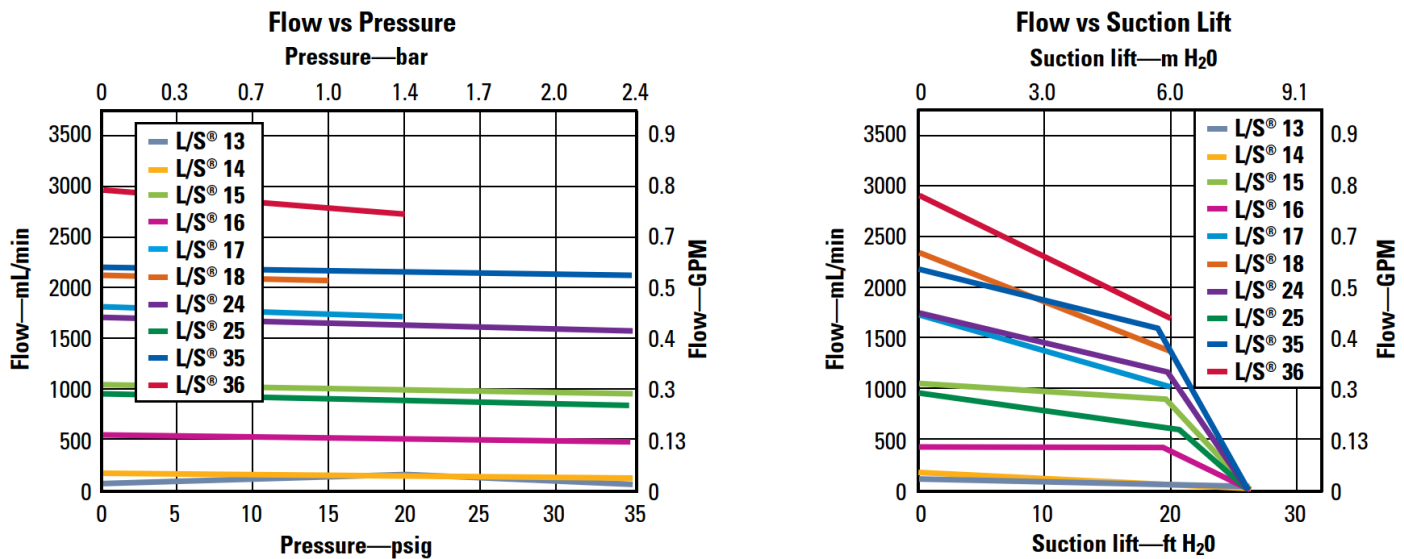


## VISCOSITY

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. Choose a high-performance head/tubing. The thicker tubing wall will allow the tubing to return to its original shape quicker than precision tubing which allows for greater suction 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.

## PUMP CURVES



## 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
MFLX77200-01	L/S® Easy-Load® II Pump Head Mounting Hardware for One Pump Head
MFLX77200-02	L/S® Easy-Load® II Pump Head Mounting Hardware for Two Pump Heads
MFLX77200-03	L/S® Easy-Load® II Pump Head Mounting Hardware for Three Pump Heads
MFLX77200-04	L/S® Easy-Load® II Pump Head Mounting Hardware for Four Pump Heads

## COMPATIBLE PUMP DRIVES

Mount on all drives accepting Masterflex® L/S® pump heads. When stacking multiple heads, maximum torque requirements should be verified.

## COMPLETE SYSTEMS

Order components for complete system or choose from our example complete systems referenced below. Use only L/S® Masterflex® Pump tubing for optimal performance.

- L/S® Series Pump Drive
- L/S® Pump Heads (this brochure)
- L/S® Pump Tubing

### Preconfigured Complete Systems (Examples):

- MFLX77920-42 L/S® MasterSense™ ABS Plastic Drive with Easy-Load® II for High-Performance tubing
- MFLX77976-02 L/S® MasterSense™ Process Drive with Easy-Load® II for Precision tubing
- MFLX77910-40 L/S® Analog Variable-Speed Console Drive with Easy-Load® II for Precision tubing



Model MFLX77976-02  
(complete system)



Model MFLX77910-40  
(complete system)