

GENERAL DESCRIPTION

The L/S[®] Easy-Load[®] Pump Head, when combined with a Masterflex[®] L/S[®] 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.



MARKETS & APPLICATIONS

L/S[®] Easy-Load[®] pump heads fit a wide range of drives, which makes them suitable for many applications. Masterflex[®] pumps are designed to be non-contaminating and noninvasive, and the Easy-Load[®] heads are very easy to load and extremely versatile. This makes Easy-Load[®] 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
- Easy tube changes with single-thumb actuation and automatic tubing retention
- Compatible with more than 22 Masterflex[®] L/S[®] Peristaltic Pump tubing formulations
- Compact design for efficient use of space
- Four-roller rotor improves pressure performance and mechanical stability while reducing pulsation
- Models with open-head sensor stop drive motor when pump head is open (when used with sensor-equipped drives)
- Pump heads are stackable for multichannel applications with offset rollers for reduced pulsation when combining channels
- Models for use with either L/S[®] Precision or L/S[®] High-Performance Precision pump tubing sizes
- Corrosion resistant polyacrylamide housing, stainless steel rotors, and PTFE-shielded bearings
- Tool free installation onto Masterflex[®] L/S[®] pump drives
- Customizable OEM options available



TUBING SIZING CHART

Pump tubing size	Tube ID* (in.)	Barb Size (in.)	Flow Rate – mL/rev	mL/min @ 1 to 600 rpm	Max pressure†	Max vacuum†	Suction lift		
Precision tubing (four rollers)									
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 ₂ O (29 ft H ₂ 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 ₂ O (22 ft H ₂ 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)				
Precision tubing (six rollers)									
L/S 13	0.8 mm (1/32")	1.6 mm (1/16")	0.06	0.06 to 36	2.7 bar (40 psi)	610 mm Hg (24" Hg)	8.2 m H ₂ O (27 ft H ₂ O)		
L/S 14	1.6 mm (1/16")	1.6 mm (1/16")	0.21	0.21 to 126					
L/S 16	3.1 mm (1/8")	3.1 mm (1/8")	0.75	0.8 to 450					
L/S 25	4.8 mm (3/16")	4.8 mm (3/16")	1.5	1.7 to 900	2.4 bar (35 psi)	660 mm Hg (26" Hg)	8.8 m H ₂ O (29 ft H ₂ O)		
High-performance Precision tubing									
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 ₂ O (29 ft H ₂ O)
L/S 24	6.4 mm (1/4")	6.4 mm (1/4")	2.8	2.8 to 1700					

*Nominal size.

†Actual performance varies depending on tubing formulation.

ORDERING INFORMATION

Tubing Sizes Accepted	SS Rotor, 4-Roller	SS Rotor and OHS, 4-Roller	SS Rotor, 6-Roller (reduced pulsation) **
Precision Tubing (L/S 13, 14, 16, 25, 17, 18)**	MFLX07514-10	MFLX07514-30	MFLX07514-40
High-Performance Precision Tubing (L/S 15, 24)	MFLX07514-12	MFLX07514-32	

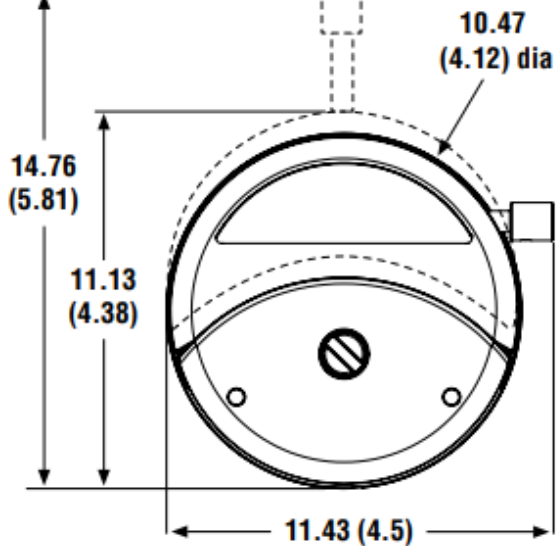
** MFLX07514-40 can only accommodate sizes L/S 13, 14, 16, and 25

SS = Stainless Steel

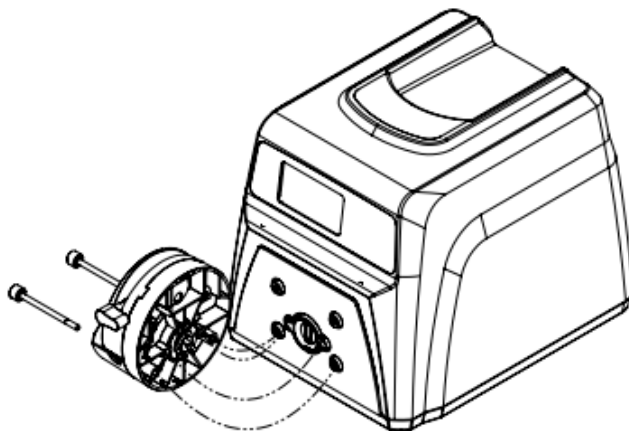
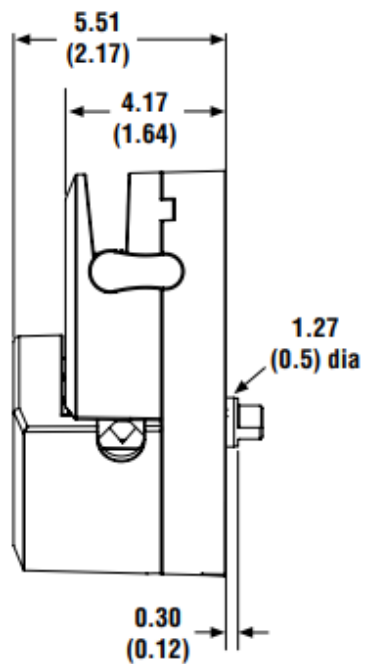
OHS = Open-Head Sensor

DIMENSIONS/DRAWING

Front:



Side:



SPECIFICATIONS

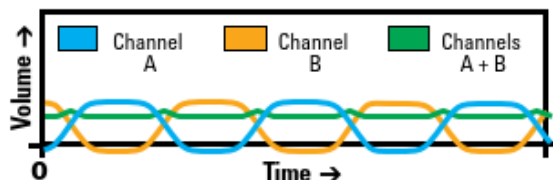
Catalog number	MFLX07514-10	MFLX07514-30	MFLX07514-40
	MFLX07514-12	MFLX07514-32	
Performance specifications			
Flow capacity	0.001 to 2300 mL/min (9.48 to 36.46 GPH) †		
Max rpm	600		
Number of rollers	4		6
Open-head sensor	No	Yes	No
Torque Specifications[†] (A single head, pumping water at 0 psi (0 bar), 21°C (70°F))			
Norprene®, PharMed® BPT	Starting torque	8.6 kg-cm (120 oz-in)	
	Running torque	1.5 kg-cm (21 oz-in)	
Tygon®, Viton®	Starting torque	13.0 kg-cm (180 oz-in)	
	Running torque	2.5 kg-cm (35 oz-in)	
C-Flex®, Silicone	Starting torque	5.0 kg-cm (70 oz-in)	
	Running torque	1.0 kg-cm (14 oz-in)	
Physical specifications			
Housing material	Polyarylamide (PARA)		
Rotor material	Stainless Steel		
Operating temperature	0° to 40°C (32° to 104°F)		
Dimensions (Ø x D):	Operating: Ø105 mm x 56 mm (Ø4 1/8 in x 2 3/16 in) Open: Ø116 mm x 56 mm (Ø4 9/16 in x 2 3/16 in)		
Shipping weight	0.45 kg (1 lb.)		

† Depending on pump head and tubing selected.

† Actual Torque depends on tubing size formulation.

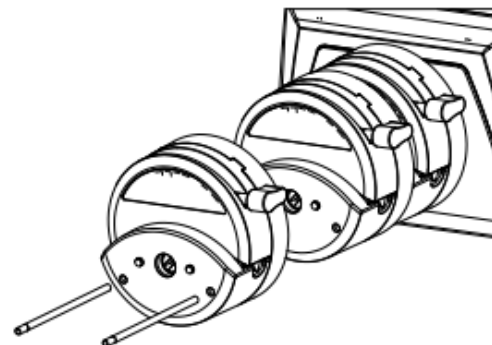
REDUCED PULSATION

Minimal pulsation is essential to ensuring accuracy in peristaltic dispensing. Pulsation causes variations in flow rate and splashing and frothing in the receiving vessel. Combining the split-channel tubing configuration with the offset rollers of two stacked Easy-Load® pump heads 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. 4-roller head are offset 45° while 6 roller heads are offset 30°.



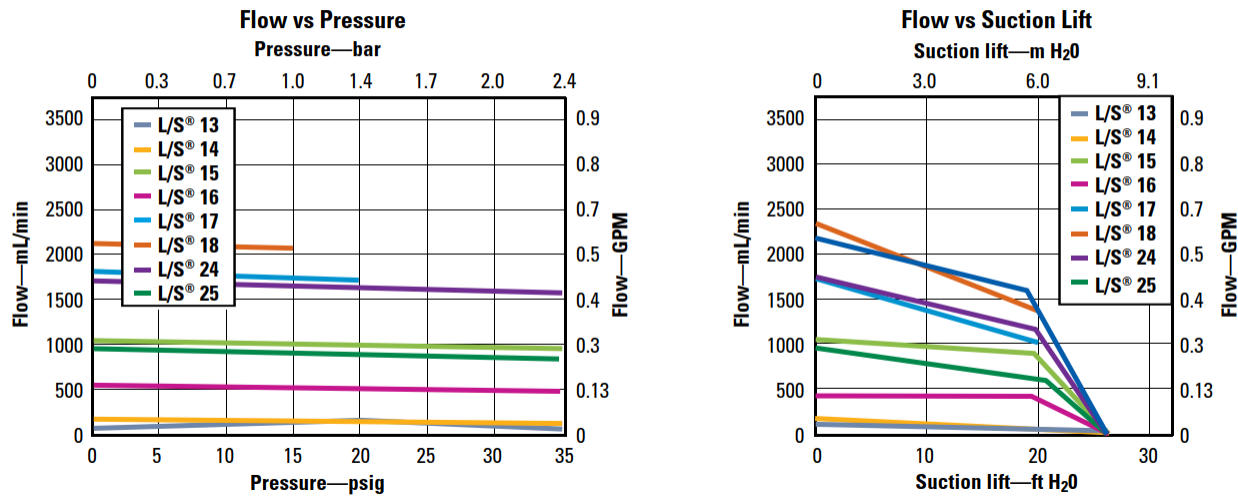
MULTICHANNEL CAPABILITIES

Mount up to four pump heads depending on the drive. Order special mounting hardware based on the number of pump heads to be mounted (see page 6).



PUMP CURVES

L/S® EASY-LOAD®



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.

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
MFLX07013-04	L/S® Easy-Load® Pump Head Mounting Hardware for One Pump Head
MFLX07013-05	L/S® Easy-Load® Pump Head Mounting Hardware for Two Pump Heads
MFLX07013-08	L/S® Easy-Load® Pump Head Mounting Hardware for Three Pump Heads
MFLX07013-09	L/S® Easy-Load® 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.

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

Preconfigured Complete Systems (Examples)

- MFLX77920-40 L/S® MasterSense™ ABS Plastic Drive with Easy-Load® for Precision tubing
- MFLX77976-00 L/S® MasterSense™ Process Drive with Easy-Load® for Precision tubing
- MFLX77910-60 L/S® Analog Variable-Speed Console Drive with Easy-Load® for Precision tubing



Model MFLX77976-00
(complete system)



Model MFLX77910-60
(complete system)