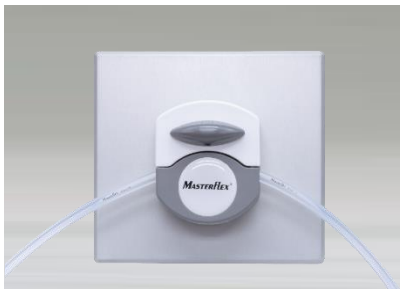
GENERAL DESCRIPTION

Masteflex® L/S® peristaltic pumps provide a reliable solution for OEM applications where precision metering, dispensing, or fluid transfer in needed. 24 VDC brushless motors provide high accuracy, low power consumption and long performance life for up to 3.4 L/min flowrates.



L/S® Miniflex®
up to 390 ml/min



L/S® Easy-Load® II
up to 2,900 ml/min



L/S® High-Performance
up to 3,400 ml/min

The Miniflex® pump offers fast tubing changes, and high accuracy for low flow applications.

The Easy-Load II design allows for up to six tubing sizes for flow rates up to 2,300 ml/min and features a more powerful 110W motor. Options are available for single channel, dual channel, or stacked heads.

The L/S® High-Performance design features same side entry and exit, higher flow, better pressure & viscosity performance.

MARKETS & APPLICATIONS

Designed for simple integration into original equipment manufactured designs where clean, low-shear, and high accuracy fluid transfer or dispensing is needed.

Key applications include:

- Biopharmaceutical Instruments and Skids
  - Bioreactors, Perfusion
  - Harvest, Filtration, TFF
  - Chromatography
  - Filling
- Laboratory instrumentation
- Chemical dosing/transfer
- Fluid sampling devices & detection
- Food & beverage dispensing
- Industrial
  - Ink & printing
  - Wastewater management
  - Fisheries





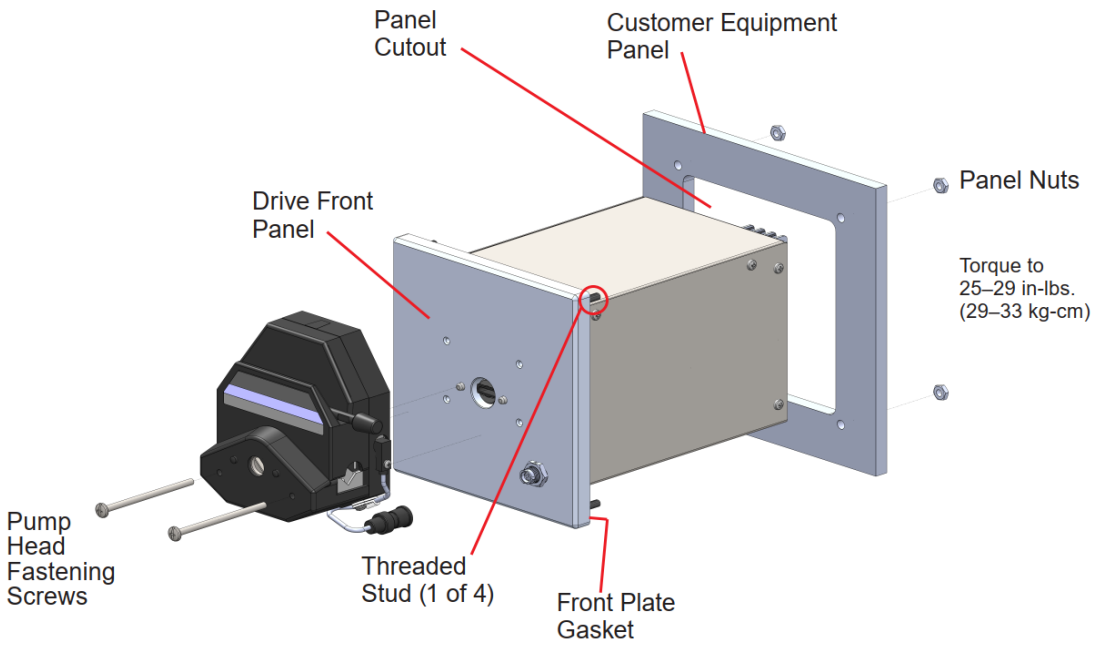
FEATURES & BENEFITS

- Fast and easy tubing changes (automatic tubing retention)
- Rugged pump head design with durable materials
- High-efficiency dependable brushless DC motors rated for max flow at 30 PSI (2 Bar)
- IP56 Ingress protection; removable pump head for spray/wipe-down cleanability
- Open head sensor helps prevents operator error
- More than 20 peristaltic pump tubing formulations to support chemical & compliance requirements
- Simplifed Input and Output control connections including tach & alarm outputs
- Elecrical and EMC compliance provide worry free final product certifications
- 2 Year warranty
- Fully customizable OEM options available

ORDERING INFORMATION- Panel Mount Pump Systems

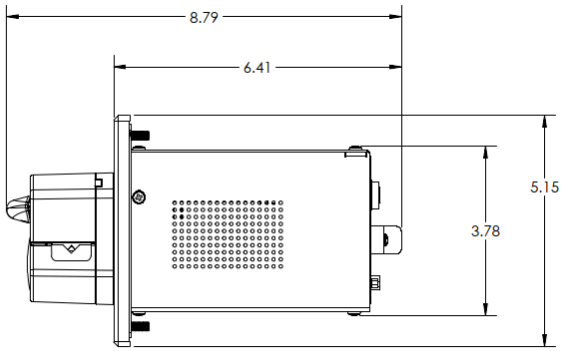
OEM L/S® panel mount pump systems, 24VDC with 4 to 20 mA input	Tubing sizes accepted	Flow range	Model Number
L/S® Miniflex® 3-Roller Pump	L/S® 13, L/S 14, L/S 16, L/S 25	0.12 to 390 ml/min	MFLX77222-10
L/S® Miniflex® 4-Roller Pump	L/S® 13, L/S 14, L/S 16, L/S 25	0.12 to 315 ml/min	MFLX77222-14
L/S® Easy-Load® II – Precision Tubing	L/S® 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	0.12 to 2300 ml/min	MFLX77222-30
L/S® Easy-Load® II – High-Performance Tubing	L/S® 15, L/S 24, L/S 35, L/S 36	10.8 to 2900 ml/min	MFLX77222-32
L/S® High-Performance Head	L/S® 15, L/S 24, L/S 35, L/S 36	10.8 to 3400 ml/min	MFLX77222-36

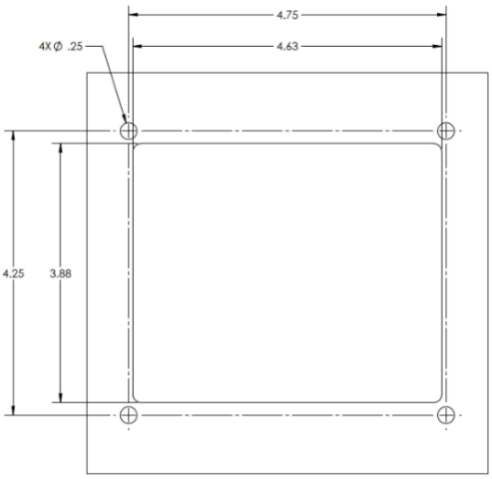
Complete systems feature a panel mount drive, pump head, and I/O cable. Tubing sold seperatley.



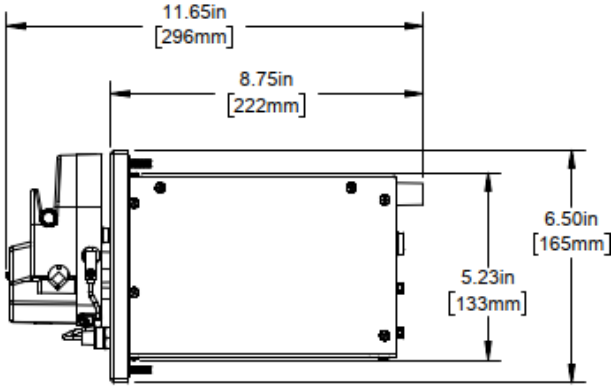
DIMENSIONS

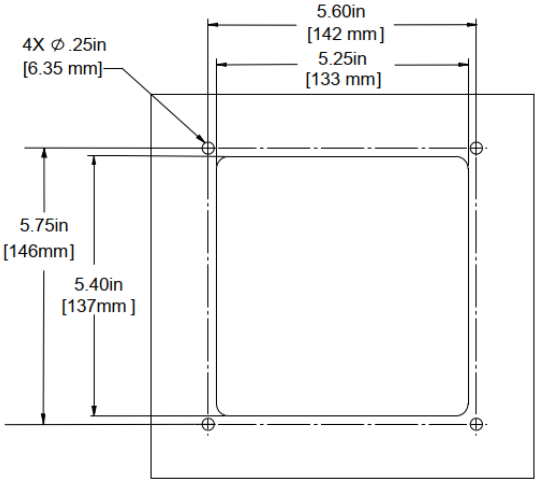
MFLX77222-10,-12,-14



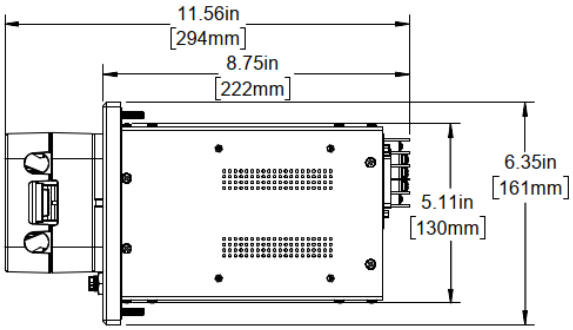


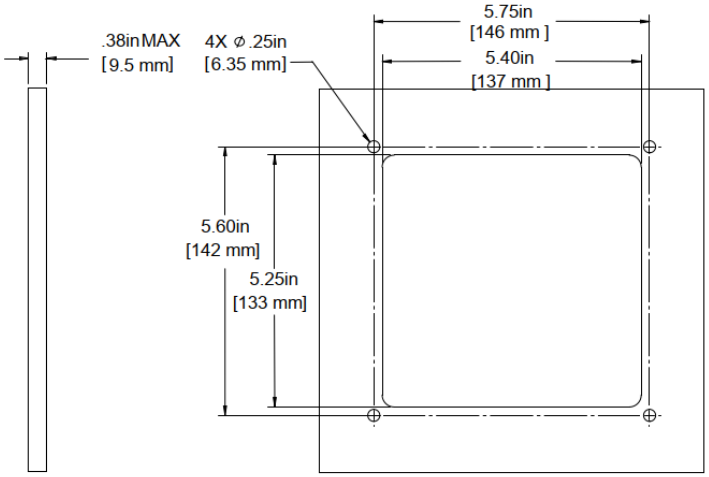
MFLX77222-30,-32





MFLX77222-36







SPECIFICATIONS L/S® Miniflex® OEM Pumps

Specification	MFLX77222-10	MFLX77222-12	MFLX77222-14
Performance specifications			
Flow capacity	0.12 to 390 mL/min		0.12 to 315 mL/min
External Speed Control (I/O)	4-20 mA	0-10 V	4-20 mA
Tubing	L/S 13, L/S 14, L/S 16, L/S 25		
Flowrate	ml/revolution vales | max flow		
L/S® 13	0.045 ml/rev | 14 ml/min		0.042 ml/rev | 12 ml/min
L/S® 14	0.18 ml./rev | 54 ml/min		0.15 ml/rev | 45 ml/min
L/S® 16	0.62 ml/rev | 188 ml/min		0.50 ml/rev | 158 ml/min
L/S® 25	1.3 ml/min | 390 ml/min		0.95 ml/rev | 315 ml/min
Number of channels	Single-Channel		
Number of rollers	3		4
External Control	Start/stop, direction, and prime via contact closure; tach output, alarm status, open head sensor status output		
Maximum rated pressure	1 Bar (15 psi) @ max flow & tubing size		
Speed Range	3 to 300 rpm		
Rear panel controls & connections	DB-25 I/O connector, power supply connection		
Materials of Construction			
Panel	Anodized Aluminum		
Pump head housing	Ixef® 1022 (glass reinforced polyacrylamide)		
Pump rollers	ERTALYTE® TX (stainless steel options available)		
Rotor	Anodized aluminum and stainless steel		
Electrical specifications			
Resolution	0.01 rpm		
Accuracy	+/- 0.1%		
Analog speed control	10 bit speed control resolution		
Motor	0.04 Hp BLDC motor		
Power Supply Requirement	24 VDC ±0.1		
Max Current	1.3 Amps		
Physical specifications			
Ingress protection	IP56 panel		
Dimensions (L x W x H)	22.2 cm x 13.0 cm x 14.3 cm		
Noise	<65 dBA @ 1 m		
Weight	2,2 kg (5 lbs.) (2.0 kg without pump head)		
Approvals	UL (61010-1), CSA, CE (EN61010-1 Low Voltage, EN61326-1 EMC Directive, EN ICE 63000 ROSH Directive, EN809 Machinery Directive), ISO9001		

SPECIFICATIONS L/S® Easy-Load II® & L/S® High-Performance OEM Pumps




Specification	MFLX77222-30	MFLX77222-32	MFLX77222-36
Performance specifications			
Flow capacity	0.12 to 2300 ml/min	0.12 to 2900 ml/min	10.8 to 3400 ml/min
Pump head	MFLX77200-30	MFLX77200-32	MFLX7602
External Speed Control (I/O)	4-20 mA (*0-10 V optional*)		
Tubing	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	
Flowrate	ml/revolution vales | max flow		
Number of channels	Single-Channel (Dual channel option)	Single channel	Single channel
Number of Pump heads	1 included (up to two heads)	1 included (up to two heads)	1
Number of rollers	4 (*6 optional*)		3
External Control	Start/stop, direction, and prime via contact closure; tach output, alarm status, open head sensor status output		
Maximum rated pressure	2 Bar (30 psi) @ max flow & tubing size		
Speed Range	3 to 600 rpm		
Rear panel controls & connections	DB-25 I/O connector, power supply connection		
Materials of Construction			
Panel	Anodized Aluminum		
Pump head housing	PPS (PARA optional)		Glass-filled nylon PA
Pump rollers	stainless steel		
Rotor	stainless steel		
Electrical specifications			
Resolution	0.01 rpm		
Accuracy	+/- 0.5%		
Analog speed control	10 bit speed control resolution		
Motor	1/8 Hp BLDC motor		
Power Supply Requirement	24 VDC ±0.1		
Max Current	4.7 Amps		
Torque Output	140 oz-in (10.1 kg cm), 270 oz-in starting		
Physical specifications			
Ingress protection	IP56 panel		
Dimensions (L x W x H)	29.6 cm x 16.5 cm x 16.1 cm		
Noise	<65 dBA @ 1 m		
Weight	3.6 kg (8 lbs.) (2.0 kg without pump head)		
Approvals	UL (61010-1), CSA, CE (EN61010-1 Low Voltage, EN61326-1 EMC Directive, EN ICE 63000 ROSH Directive, EN809 Machinery Directive), ISO9001		

TUBING OPTIONS

For optimal pumping performance use only Masterflex pump tubing! Over 20+ unique formulations of tubing are available for optimal performance. Cut-to-length and full fluid path assemblies are available. The table below references a selection of more popular tubing options. Visit avantorsciences.com to see a full list of tubing options.

Masterflex® Pump Tubing Formulation	L/S® 13	L/S® 14	L/S® 16	L/S® 25	L/S® 17	L/S® 18
Tubing ID	0.80 mm (1//32")	1.60 mm (1/16")	3.10 mm (1/8")	4.80 mm (3/16")	6.4 mm (1/4")	7.9 mm (3/8")
PharMed® BPT	MFLX06508-13	MFLX06508-14	MFLX06508-16	MFLX06508-25	MFLX06508-17	MFLX06508-18
PharmaPure®	MFLX06435-13	MFLX06435-14	MFLX06435-16	MFLX06435-25	MFLX06435-17	MFLX06435-18
Chem-Durance® Bio	MFLX06442-13	MFLX06442-14	MFLX06442-16	MFLX06442-25	MFLX06442-17	MFLX06442-18
Puri-Flex®	MFLX96419-13	MFLX96419-14	MFLX96419-16	MFLX96419-25	MFLX96419-17	MFLX96419-18
Platinum Cured-Silicone	MFLX96410-13	MFLX96410-14	MFLX96410-16	MFLX96410-25	MFLX96410-17	MFLX96410-18
Tygon® A-60-F	MFLX06402-13	MFLX06402-14	MFLX06402-16	MFLX06402-25	MFLX06402-17	MFLX06402-18
FDA Compliant Viton®	MFLX96412-13	MFLX96412-14	MFLX96412-16	MFLX96412-25	MFLX96412-17	MFLX96412-18
S3™ E-LFL	MFLX06440-13	MFLX06440-14	MFLX06440-16	MFLX06440-25	MFLX06440-17	MFLX06440-18
Versilon™ 2001	MFLX06475-13	MFLX06475-14	MFLX06475-16	MFLX06475-25	MFLX06475-17	MFLX06475-18

Puri-Flex™, Chem-Durance™ and registered trademarks of Avantor Inc.
Tygon®, PharMed®, Pharma-Pure® and Versilon™ are registered trademarks of Saint-Gobain Performance Plastics Corporation
Viton™ is a trademark of The Chemours Company FC, LLC

Pump tubing cross sections	L/S Precision pump tubing					
	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	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 3 to 600 rpm drive	0.2 to 36 mL/min	0.6 to 130 mL/min	2.5 to 480 mL/min	5 to 1000 mL/min	7 to 1700 mL/min	12 to 2300 mL/min
Maximum pressure‡	2.7 bar (40 psig)		2.7 bar (40 psig)	2 .4 bar (35 psig)	1.4 bar (20 psig)	1.0 bar (15 psig)
Maximum vacuum‡	660 mm Hg (26" Hg)				510 mm Hg (20" Hg)	
Suction lift‡	8.8 m H_2O (29 ft H_2O)				6.7 m H_2O (22 ft H_2O)	

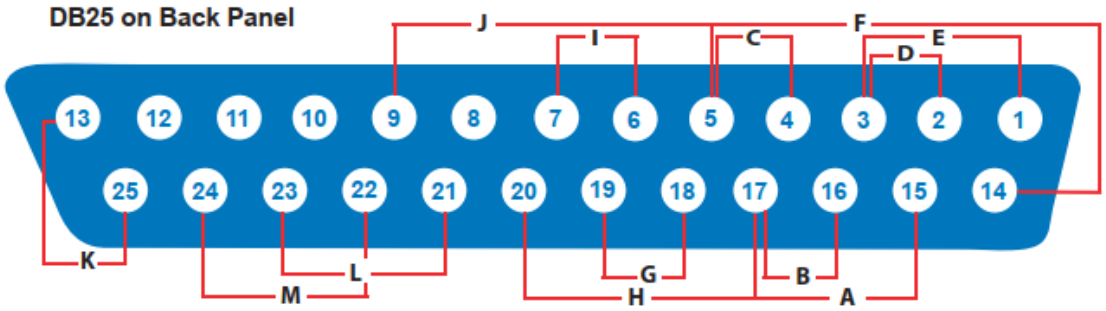
Pump tubing cross sections	L/S High-Performance Precision pump tubing			
	L/S 15	L/S 24	L/S 35	L/S 36
Inside diameter (nominal)	4.8 mm (0.19")	6.4 mm (0.25")	7.9 mm (0.31")	9.7 mm (0.38")
Hose barb size	4.8 mm (3/16")	6.4 mm (1/4")	9.5 mm (3/8")	9.5 mm (3/8")
Flow range (approximate)† with 3 to 600 rpm drive Value in ( ) obtained with High-Performance pump head	5 to 1000 mL/min (6 to 1100 mL/min)	8 to 1700 mL/min (9 to 1800 mL/min	12 to 2300 mL/min (13 to 2600 mL/min)	14 to 2900 mL/min (17 to 3400 mL/min)
Maximum pressure‡	2.7 bar (40 psig)		2.4 bar (35 psig)	1.4 bar (20 psig)
Maximum vacuum‡	660 mm Hg (26" Hg)		660 mm Hg (26" Hg)	610 mm Hg (24" Hg)
Suction lift‡	8.8 m H_2O (29 ft H_2O)		8.8 m H_2O (29 ft H_2O)	8.3 m H_2O (27 ft H_2O)

†Determined under the following conditions: 0 psi at inlet, 0.5 psi at outlet; water temperature at 22°C (72°F).
‡Actual performance varies depending on tubing formulation—values shown are for firm tubing.

Flowrates shown represent L/S Easy-Load II pump, () indicates L/S High-Performance pumps

REMOTE CONTROL I/O INTERFACE

A 1-meter (3 ft) 3-wire power supply cable (+, - and ground) and 1 m (3ft) color coded DB25 to wire cable is included with pump drives and systems.



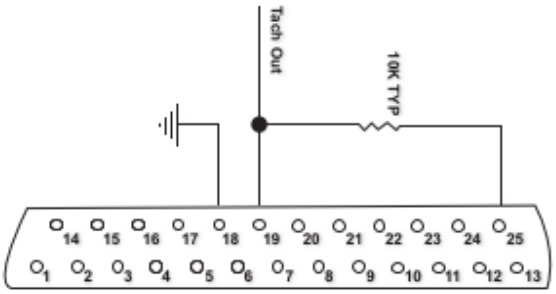
A	Start/Stop	H	Prime
B	CW/CCW	I	Motor Running N.O. (1A @ 24V)
C	Output 4-20 mA	J	Open Head Sensor Enable/Disable (input)
D	Input 4-20 mA	K	24V (150 mA max.)
E	Input 0–10V	L	General Alarm N.O. (1A @ 24V)
F	Output 0–10V	M	Open Head Sensor Open/Closed status (output)
G	Tach Output		

NOTE: Pins 5, 13, 17, and 18 are at earth ground, all are suitable for use with Start/Stop, Prime, CW/CCW, Tach Output as well as Current and Voltage Outputs.

NOTE: Tach Output is open an drain, requires an external pull-up to 24V.

Tach Out Signal

DB25 Pin-19 is pump speed output in the form of a frequency train ranging from 3–3000 Hz to represent 3–300 RPM pump speed.

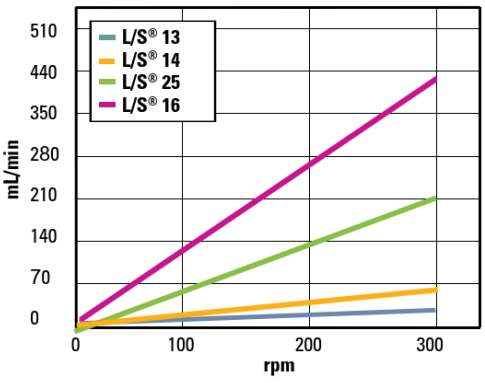


PERFORMANCE CHARTS

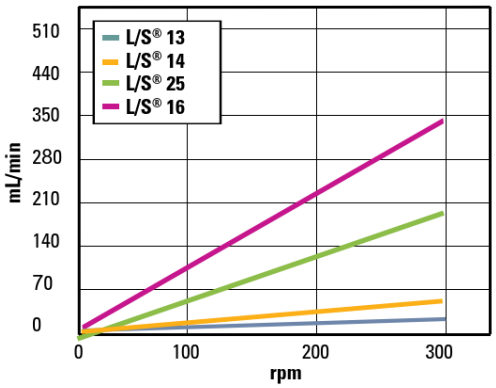


L/S® MiniFlex

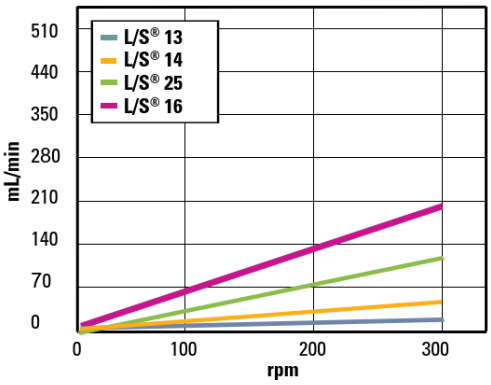
L/S® MINIFLEX 3-ROLLER



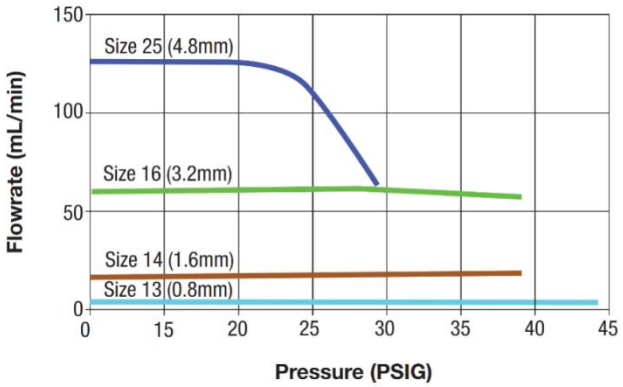
L/S® MINIFLEX 4-ROLLER



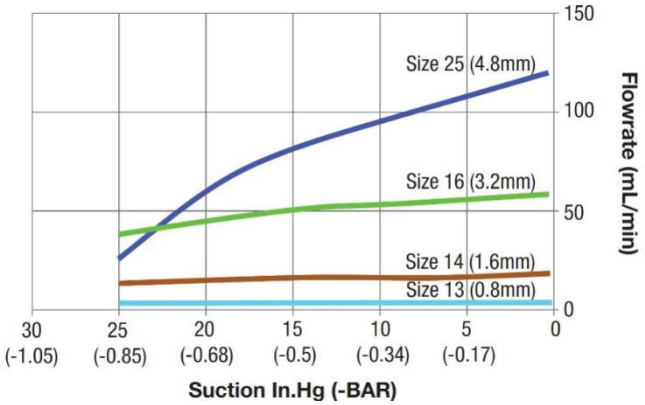
L/S® MINIFLEX 6-ROLLER

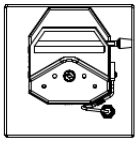


Flow vs Pressure

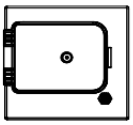


Flow vs Suction Lift

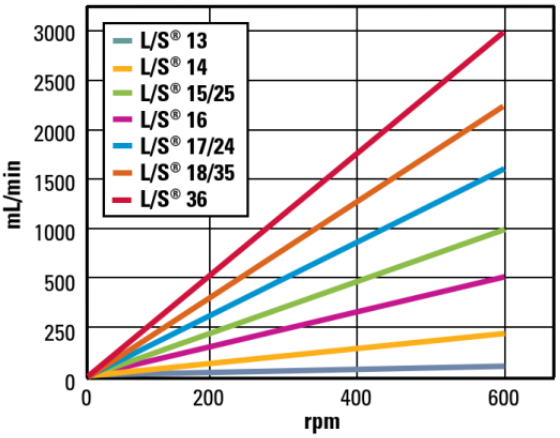


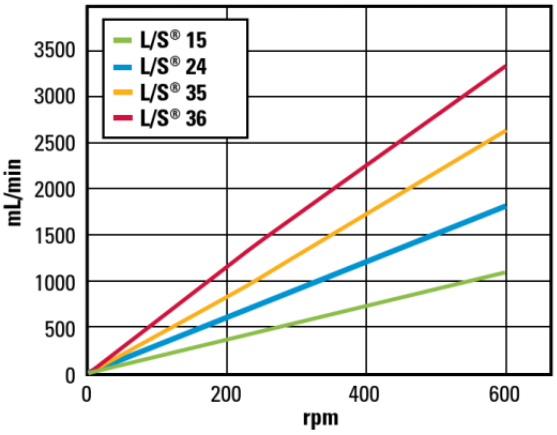


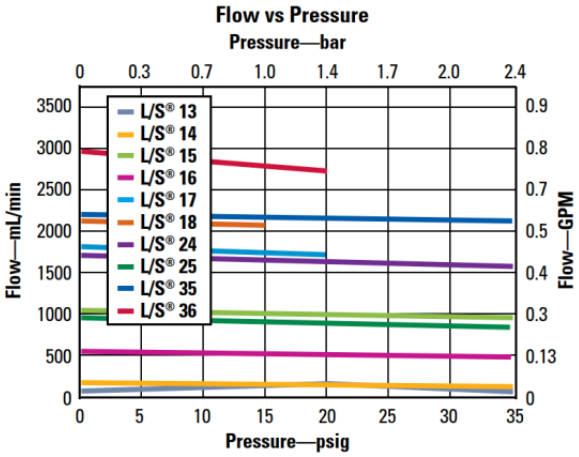
L/S Easy-Load II

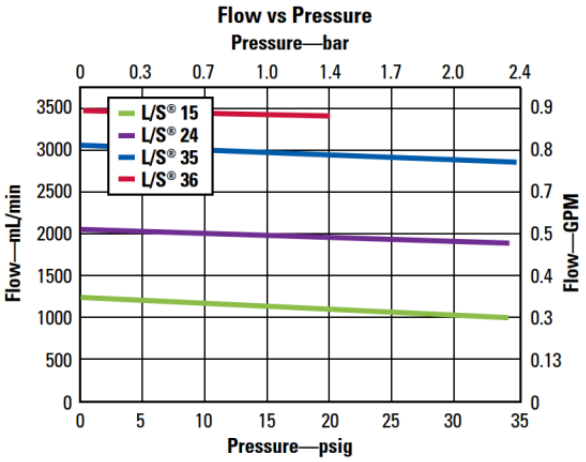


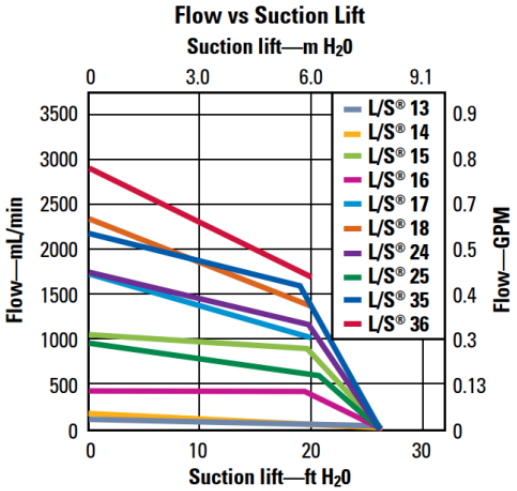
L/S High-Performance

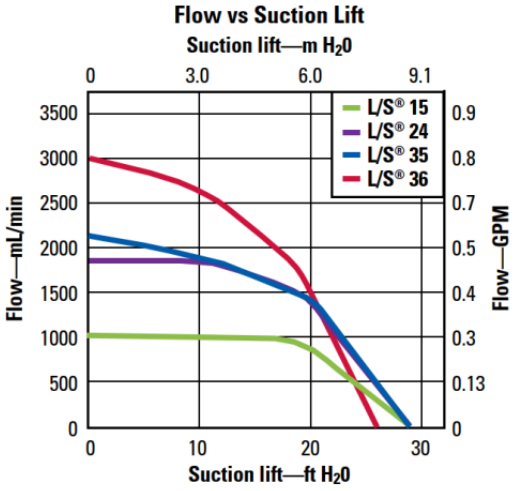












ORDERING INFORMATION- Pump and Drive Components (Drive + Pump head system)

Pump drives are designed to accept various L/S® pump heads allowing for quick-turn tailored OEM pump systems. The specific OEM pump drives are compatible with select pump heads as coded below.



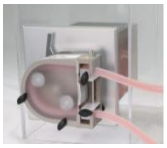
L/S® Miniflex®

1



L/S® High-Performance

2



L/S® Cytoflow™



L/S® Standard



L/S® PTFE Tubing



L/S® Easy-Load® II

3

OEM Drives (requires pump head from table below)		
Pump heads Accepted (color coded for compatibility)	**Control**	**Model Number**
1 L/S® Miniflex® Spline-shaft heads	4-20 mA	MFLX77222-00
	0-10 V	MFLX77222-02
2 L/S® High-Performance head	4-20 mA	MFLX77222-24
	0-10V	Contact for part
3 L/S® Standard, L/S® Easy-Load® II, L/S® Easy-Load® 3, L/S® PTFE Tubing, L/S® Cytoflow™	4-20 mA	MFLX77222-20
	0-10 V	MFLX77222-22

Pump Heads Description	**Tubing sizes**	**Model Number**
1 Miniflex 3-Roller Single-Channel Pump Head	L/S® 13, L/S 14, L/S 16, L/S 25	MFLX77220-20
Miniflex 3-Roller Dual-Channel Pump Head	L/S® 13, L/S 14, L/S 16	MFLX77220-30
Miniflex 4-Roller Single-Channel Pump Head	L/S® 13, L/S 14, L/S 16, L/S 25	MFLX77220-40
Miniflex 6-Roller Single-Channel Pump Head	L/S® 13, L/S 14, L/S 16	Contact for part
2 L/S High-Performance Head	L/S 15, 24, 35, 36	MFLX77252-72
3 L/S Easy-Load II f/Precision Tubing (White PARA)	L/S® 13, 14, 16, 25, 17, 18	MFLX77207-30
L/S Easy-Load II f/High-Performance Tubing (White PARA)	L/S 15, 24, 35, 36	MFLX77207-32
L/S Easy-Load II for Precision Tubing (Black PPS)	L/S® 13, 14, 16, 25, 17, 18	MFLX77200-30
L/S Easy-Load II for High-Performance Tubing (Black PPS)	L/S 15, 24, 35, 36	MFLX77200-32
L/S Easy-Load II dual-channel Precision Tubing	L/S® 13, 14, 16, 25	MFLX77202-60*
L/S Cytoflow 2 Roller head for High-Performance tubing	L/S 15, 24, 35, 36	MFLX77253-02*
L/S PTFE Pump head	Specialty 2 or 4 mm PTFE	MFLX77390-00*
L/S Standard Pump heads	One size per head (XX = L/S tubing size in model number)	MFLX070XX-21*

*pump heads do not include Open Head Sensor feature

Need something different?

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