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TECHNOLOGY GROUP

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SELECTION GUIDE FOR L/S® PUMP HEADS

FEATURES OF MASTERFLEX® L/S PUMP HEADS

High Accuracy, Repeatable Performance

- Deliver flow rates from 0.00001 to 3400 mL/min
- Pump heads are designed to work best with Masterflex L/S precision pump tubing, ensuring confidence in pump performance
- Most pump designs accept continuous lengths of tubing, allowing you to:
  - Customize tubing lengths to your application
  - Simplify sanitary setups—no breaks in tubing
  - Reduce setup/cleanup time
  - Eliminate difficult fittings and clamps
  - Increase tubing life—periodically stop the pump, move tubing 15 to 20 cm (6 to 8 in.), reload, and continue pumping

Multiple Roller Design

- Ensures even flow with minimal pulsation
- Ball-bearing rollers for long service life
- Select from cold-rolled steel (CRS) or stainless steel (SS) rotor assemblies

Rugged Plastic Housings

- Molded from engineered plastics to tight specifications
- Lightweight, easy to handle
- Clear polycarbonate (PC) allows for viewing of pump head operation
- Polysulfone (PSF), polyphenylene sulfide (PPS), and polypropylene (PP) offer additional corrosion resistance

Three Occlusion Options

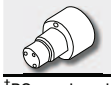
1. **Standard Fixed Occlusion:**
   Tubing "squeeze" is fixed, but at slightly different levels for each tube size to maximize performance in each pump head with respect to tubing life, vacuum and flow characteristics and repeatability. (e.g. Standard pump heads.)
2. **Average Fixed Occlusion:**
   Tubing "squeeze" is fixed at an average level for either precision or high- performance precision tube sizes. This allows pump heads to combine easy tubing loading while accepting a wide range of tubing sizes. (e.g. Easy-Load® series)
3. **Adjustable Occlusion:**
   "Squeeze" is adjustable for optimal pump performance to fit a specific application. (e.g. Easy-Load® II and cartridge heads)

Adjustable Occlusion

Reducing the occlusion increases tubing life (up to five times); reduces discharge pressure; decreases pulsation; reduces cell disruption; and increases flow slightly.

Increasing the occlusion decreases tubing life; increases discharge pressure; increases pulsation and decreases flow slightly.

One common technique for prolonging tubing life is to prime the pump with nominal or high occlusion, and then reduce the occlusion slightly.

Type	Flow rates mL/min	Number of rollers	Multichannel or stackable	Housing/roller materials†	Special features	Page number
STANDARD						
	Lowest: 0.001 Highest: 2900	3	Yes, stack up to 4 heads	PC/CRS, PC/SS, or PPS/SS	Low cost, high precision and accuracy. Best choice for dispensing applications. One head accepts one tubing size.	40–41
EASY-LOAD® 3						
	Lowest: 0.001 Highest: 2900	3	Yes, stack up to 4 heads	PP and nylon/ CRS or SS	Easiest tubing changes with automatic retention, same side tubing entry/exit. Mount and stack heads without tools or hardware.	42–43
EASY-LOAD® II						
	Lowest: 0.001 Highest: 2900	4	Yes, stack up to 4 heads	PPS/CRS or PPS/SS	Same as Easy-Load (below) but with automatic tubing retention, and higher flow rates. Models with adjustable occlusion.	44–45
EASY-LOAD®						
	Lowest: 0.001 Highest: 2300	3	Yes, stack up to 4 heads	PSF/CRS, PSF/SS, or PPS/SS	Very fast tubing changes. One head accepts many tubing sizes. Change tubing without dismounting pump head from drive.	46–47
HIGH-PERFORMANCE						
	Lowest: 0.006 Highest: 3400	3	No	Polyester, SS, PPS/SS	Accepts all high-performance precision tubing sizes. Offers highest flow rate of any L/S pump head. Tubing enters and exits same side of pump head.	48–49
PTFE-TUBING						
	Lowest: 0.001 Highest: 65	6	No	Aluminum, acetal/SS	Technology breakthrough! Rigid PTFE tubing is the only wetted part. Pressure capability to 6.9 bar (100 psi).	50–51
MULTICHANNEL						
	Lowest: 0.00005 Highest: 2300 (per channel)	3 or 6	Yes, stack for up to 32 channels	Aluminum/SS	Synchronous flow from up to 32 channels without cartridges. Two-stop tubing sets are easy to load with no adjustment needed.	52–55
MULTICHANNEL CARTRIDGE						
	Lowest: 0.00001 Highest: 1700 (per channel)	3, 4, 6, or 8	Yes, 1 to 12 channels	PSF/SS or PSF/Rulon®	Synchronous flow rates from each channel. Cartridges snap in and out quickly for multichannel applications. More rollers reduce pulsation in the output flow.	56–59
PTFE-DIAPHRAGM						
	Lowest: 10 Highest: 800	—	No	—	PTFE and borosilicate glass are the only wetted parts. Excellent for metering. Pressure capability to 6.9 bar (100 psi).	60–61
MASTERFLEX® PARTNERS						
	See pages 62-67 for exact specifications.				Choose from 3 different pump heads. Each style mounts directly onto a Masterflex drive.	62–67

†PC = polycarbonate PP = polypropylene PPS = polyphenylene sulfide PSF = polysulfone CRS = cold-rolled steel SS = stainless steel

PUMP TUBING OPTIONS FOR L/S PUMP HEADS

L/S pump head	Microbore pump tubing	L/S Precision pump tubing sizes						L/S High-performance Precision pump tubing sizes			
		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
Standard		✓	✓	✓		✓	✓	✓	✓	✓	✓
Easy-Load 3 and II		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Easy-Load		✓	✓	✓	✓	✓	✓	✓	✓		
High-Performance								✓	✓	✓	✓
Multichannel	✓	✓	✓	✓				✓	✓	✓	
Multichannel cartridge	✓	✓	✓	✓	✓	✓					

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A Pump Head for Every Application

There are nine styles of Masterflex L/S pump heads offered to meet your specific pumping needs. This selection guide is designed to help you choose the pump head that's right for your application.

To Select a Pump Head, Determine:

1. Flow rate (mL/min).
2. Maximum number of pump heads or flow channels required.
3. Fixed or adjustable occlusion feature.
4. Are corrosive fluids or vapors involved? If so, choose corrosion-resistant PSF, PP, or PPS housing and SS rotor, or a PTFE-tubing pump.

Standard Pump Head (pages 40–41)



- Best overall pump head performance
- Each pump head designed for one tube size
- Fixed occlusion set optimally for tube size
- Stack up to 4 heads

Easy-Load® 3 Pump Head (pages 42–43)



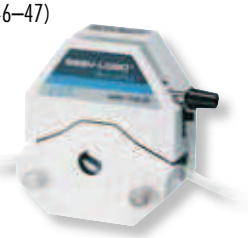
- Automatic tubing retention speeds tube loading and fluid changeover
- Same side tubing entry/exit for easy integration into space-limited applications
- Twist-lock mounting feature lets you mount and stack heads in seconds without tools or hardware
- Stack up to 4 heads

Easy-Load® II Pump Head (pages 44–45)



- Load tubing easily without removing pump head(s) from drive
- Accepts several tubing sizes for a wide flow range
- Fixed and adjustable occlusion models available
- Automatic tubing retention system
- Stack up to 4 heads

Easy-Load® Pump Head (pages 46–47)



- Load tubing easily without removing pump head(s) from drive
- Accepts several tubing sizes for a wide flow range
- Fixed occlusion averaged for several tubing sizes
- Stack up to 4 heads
- ATEX Zone 2 rated models available

High-Performance Pump Head (pages 48–49)



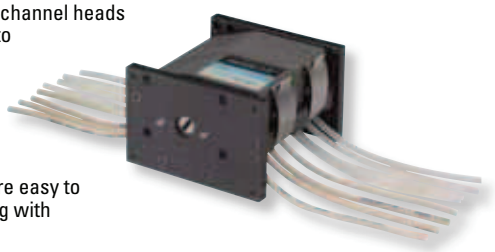
- Load tubing easily and in a "C" pattern
- Accepts only high-performance precision tubing
- Fixed occlusion averaged for several tubing sizes
- Pressures up to 150 psi with L/S HP tubing
- Not stackable
- ATEX Zone 2 rated models available

PTFE-Tubing Pump Head (pages 50–51)



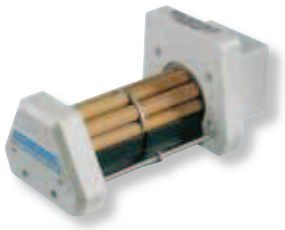
- PTFE is the only wetted part, allowing you to transfer aggressive organic solvents
- Adjustable occlusion for higher pressure or longer tubing life
- Use with rigid tubing for pressures up to 100 psi
- Pump head uses 4- or 6-mm OD rigid PTFE-tubing sets
- Not stackable

Mutichannel Pump Head (pages 52–55)



- Two-, four, and eight-channel heads are stackable for up to 32 synchronous flow channels
- Models available for microbore or L/S two-stop tube sets
- Two-stop tube sets are easy to load and self retaining with no adjustment
- Durable stainless steel and anodized aluminum construction

Mutichannel Cartridge Pump Head (pages 56–59)



- Tubing cartridges let you load tubing in a snap without removing pump head from drive
- Cartridges accept several tubing sizes for a wide flow range
- Adjustable occlusion for higher pressure or longer tubing life
- Load up to 12 small or 6 large cartridges in one head

PTFE-Diaphragm Pump Head (pages 60–61)



- Designed for demanding chemical compatibility and high-purity applications
- Maintain ±2% repeatability across varying system pressures and fluid viscosities
- Maintain a consistent flow performance up to 75 or 100 psi, depending on pump head

Drive Compatibility

Mount on all drives accepting Masterflex L/S pump heads. Look for these pump head icons on the specific drive pages to ensure compatibility.

Standard pages 40–41 
Easy-Load® 3 pages 42–43 
Easy-Load® II pages 44–45 
Easy-Load® pages 46–47 
High-Performance pages 48–49 
PTFE-Tubing pages 50–51 
Multichannel pages 52–55 
Multichannel Cartridge pages 56–59 
PTFE-Diaphragm pages 60–61 

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L/S® Standard Pump Heads

Features/Benefits

- Ideal for fluid transfer applications where accuracy and repeatability are important
- Tubing enters/exits on top of pump head
- Deliver flow rates from 0.06 to 2900 mL/min
- Precision molded housing and tubing cavity
- Each pump head is designed for one size of tubing—ensuring optimal occlusion and performance
- Adapts easily to OEM applications
- Interchangeable
- Stackable for multichannel pumping

Selection Criteria

1. Flow rate/tube size desired.
2. Materials of construction.
3. Compatibility with drives.

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Mount on all drives accepting Masterflex L/S pump heads

Pump Housing Specifications

Clear Polycarbonate (PC)

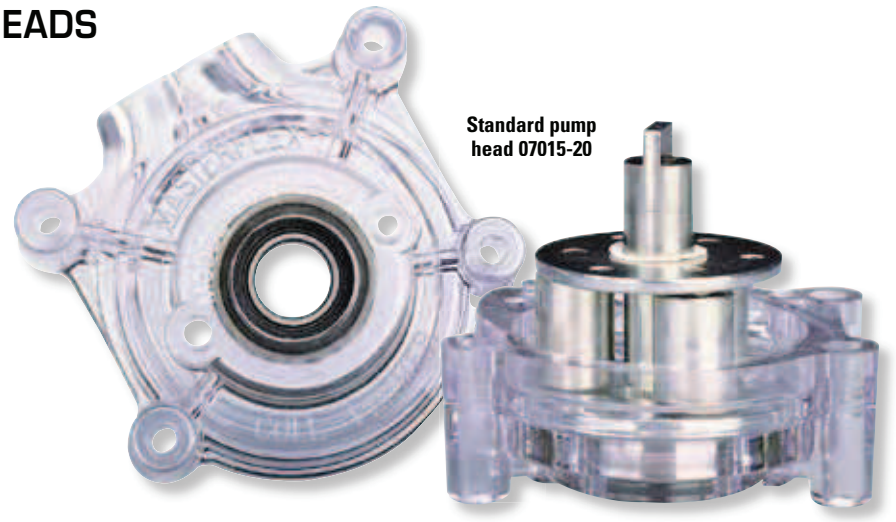
- General-purpose applications
- Pump head operation visible through housing
- Select from CRS/Buna N or 300-series SS/PTFE shielded ball-bearing

Polyphenylene Sulfide (PPS)

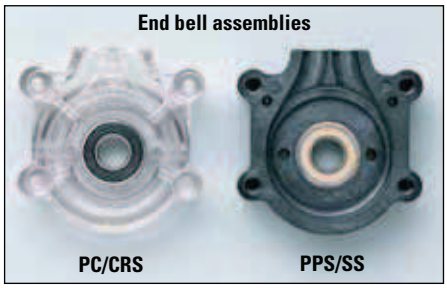
- Best protection from corrosive liquids/vapors
- 300-series stainless steel shielded ball-bearing

Watch the VIDEO!

Watch video tutorial on how to load Masterflex® L/S® Standard Pump Heads. Go to....
Masterflex.com/video

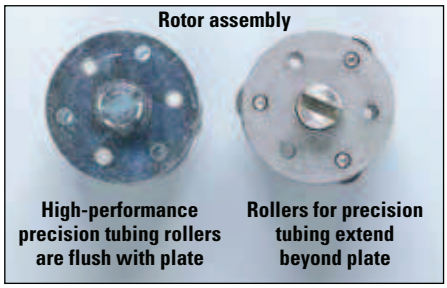


Standard pump head 07015-20



End bell assemblies

PC/CRS PPS/SS



Rotor assembly

High-performance precision tubing rollers are flush with plate

Rollers for precision tubing extend beyond plate

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Roller/Rotor Specifications

Plated Cold-Rolled Steel (CRS)

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

300-Series Stainless Steel (SS)

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

Ordering Information

Pump tubing size	PC housing		PPS housing
	CRS rotor	SS rotor	SS rotor
For Precision tubing			
L/S 13	HL-07013-20	HL-07013-21	HL-07013-52
L/S 14	HL-07014-20	HL-07014-21	HL-07014-52
L/S 16	HL-07016-20	HL-07016-21	HL-07016-52
L/S 17	HL-07017-20	HL-07017-21	HL-07017-52
L/S 18	HL-07018-20	HL-07018-21	HL-07018-52
For High-performance Precision tubing			
L/S 15	HL-07015-20	HL-07015-21	HL-07015-52
L/S 24	HL-07024-20	HL-07024-21	HL-07024-52
L/S 35	HL-07035-20	HL-07035-21	—
L/S 36	HL-07036-30	HL-07036-31	—

PC = polycarbonate PPS = polyphenylene sulfide
CRS = cold-rolled steel SS = stainless steel

L/S Pump Tubing Flow Rate Information

Order Masterflex L/S pump tubing separately on pages 68–73

Tubing cross sections	L/S Precision pump tubing					L/S High-performance Precision pump tubing			
	L/S 13	L/S 14	L/S 16	L/S 17	L/S 18	L/S 15	L/S 24	L/S 35	L/S 36
Flow rate–mL/rev	0.06	0.21	0.8	2.8	3.8	1.7	2.8	3.8	4.8
mL/min @ 600 rpm	36	130	480	1700	2300	1000	1700	2300	2900
Max pressure†	2.7 bar (40 psi)			1.4 bar (20 psi)	1.0 bar (15 psi)	2.7 bar (40 psi)		2.4 bar (35 psi)	1.4 bar (20 psi)
Max vacuum†	660 mm Hg (26" Hg)			510 mm Hg (20" Hg)		660 mm Hg (26" Hg)			
Suction lift	8.8 m H_2O (29 ft H_2O)			6.7 m H_2O (22 ft H_2O)		8.8 m H_2O (29 ft H_2O)			

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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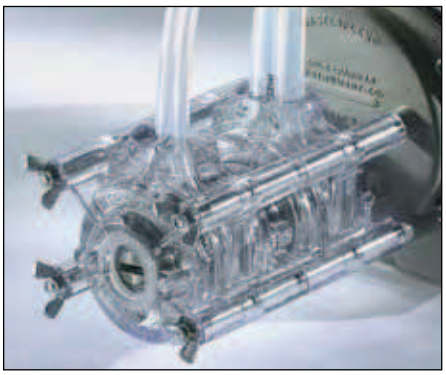
SPECIFICATIONS for L/S Standard Pump Heads

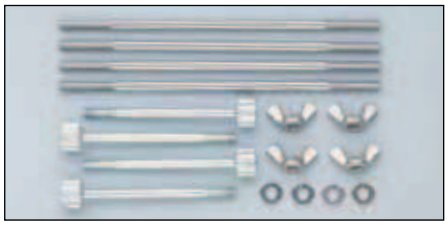
Catalog number		HL-070XX-20 and -30 Series	HL-070XX-21 and -31 Series	HL-070XX-52 Series
Performance Specifications				
Flow capacity		0.001 to 2900 mL/min (0 to 46 GPH)†		
Max rpm		600		
Number of rollers		3		
Torque Specifications‡ [a single head pumping water at 0 psi, 21°C (70°F)]				
Norprene®, PharMed® BPT	Starting torque	18.0 kg-cm (250 oz-in)		
	Running torque	5.8 kg-cm (80 oz-in)		
Tygon®, Viton®	Starting torque	27.7 kg-cm (385 oz-in)		
	Running torque	4.6 kg-cm (64 oz-in)		
C-FLEX®, Silicone	Starting torque	5.8 kg-cm (80 oz-in)		
	Running torque	2.2 kg-cm (30 oz-in)		
Physical Specifications				
Housing material		Clear polycarbonate		Polyphenylene sulfide
Rotor material		Cold-rolled steel	Stainless steel	
Operating temperature		0 to 40°C (32 to 104°F)		
Shipping weight		0.54 kg (1.18 lb)		

†Depending on pump head selected.
‡Actual torque depends on tubing size formulation. For complete torque data, please see pages 172–192.

MULTICHANNEL CAPABILITIES

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





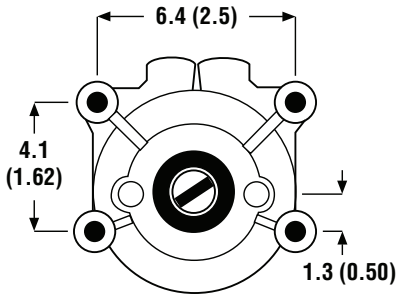
Mounting hardware

MOUNTING HARDWARE

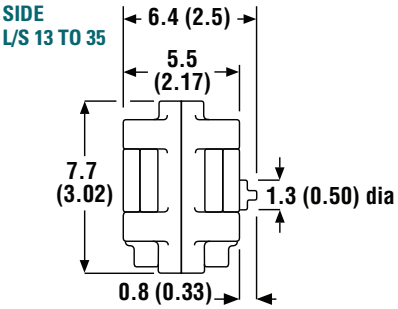
Heads to be mounted	Catalog number/set
	Stainless steel
L/S 13 to 35 Standard pump heads	
One	HL-07013-04
Two	HL-07013-05
Three	HL-07013-08
Four	HL-07013-09
L/S 36 Standard pump head	
One	HL-07036-01
Two	HL-07036-02

Dimensional Drawings cm (in.)
070XX-series

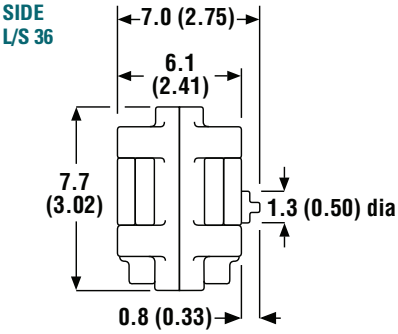
FRONT



SIDE
L/S 13 TO 35



SIDE
L/S 36



NOTES

The design of the Standard pump head enables the most precise dispensing accuracy of any Masterflex pump head.

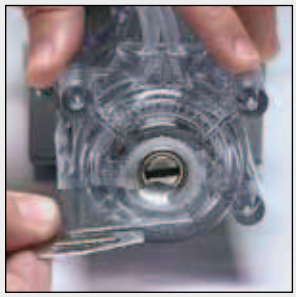
HOW TO LOAD YOUR PUMP HEAD



1. Disassemble pump head. Load tubing.



2. Use the loading key (included) to ensure proper tubing alignment and tension.



3. Reassemble two halves and mount on drive.

L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® EASY-LOAD® 3 PUMP HEADS

FEATURES/BENEFITS

- Deliver flow rates from 0.06 to 2900 mL/min
- Automatic tubing retention speeds tube loading and fluid changeover
- Same side tubing entry/exit for easy integration into space-limited applications
- Long occlusion surface prevents fluid backflow
- Included mounting plate adapts head to L/S drives
- Mount and operate head in any of four positions
- Locking tab secures head during operation in either direction of rotation
- Twist-lock mounting feature lets you mount and stack heads in seconds without tools or hardware
- Stackable for multiple-channel pumping and increased flow capacity
- Pump heads accept several tubing sizes

SELECTION CRITERIA

1. Flow rate/tube size desired.
2. Materials of construction (rotor).
3. Compatibility with drives.

Silicone tubing (43 cm or 17") and mounting plate/adapter supplied.

See specifications for more information.

Order tubing and drives separately.

COMPATIBILITY WITH DRIVES

- Mount on all drives accepting Masterflex L/S pump heads

NOTES

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

PUMP HOUSING SPECIFICATIONS

Polypropylene (PP)

- General-purpose applications
- Good protection from corrosive liquids/vapors
- Select from CRS/Buna N or 400-series SS/PTFE shielded ball bearing

ROLLER/ROTOR SPECIFICATIONS

Plated Cold-Rolled Steel (CRS)

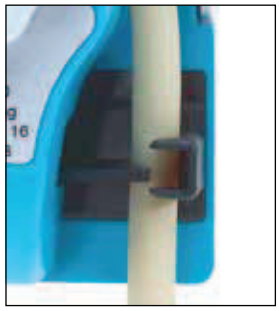
- General-purpose applications
- Humidity: 0 to 90%
- Ball-bearing construction
- Continuous duty up to 600 rpm
- Precision and high-performance precision tubing versions

300-Series Stainless Steel (SS)

- Corrosive fluids
- Humidity: 0 to 90%
- PTFE shielded ball-bearing construction (highest life expectancy)
- Continuous duty up to 600 rpm
- Precision and high-performance precision tubing versions

MULTICHANNEL CAPABILITIES

- Mount up to four Easy-Load 3 pump heads on a single drive without tools or hardware



Tubing retainers automatically stretch and grip tubing when head is closed.



Easy-Load 3 pump head 77800-60

ISO9001:2008 CERTIFIED SUPPLIER

2 year warranty

ORDERING INFORMATION

Pump tubing size	PP housing	
	CRS rotor	SS rotor
For Precision tubing		
L/S 13 L/S 14 L/S 16 L/S 25 L/S 17 L/S 18	**HL-77800-50**	**HL-77800-60**
For High-performance precision tubing		
L/S 15 L/S 24 L/S 35 L/S 36	**HL-77800-52**	**HL-77800-62**

PP = polypropylene CRS = cold-rolled steel
SS = stainless steel

L/S PUMP TUBING FLOW RATE INFORMATION

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow rate–mL/rev	0.06	0.21	0.8	1.7	2.8	3.8	1.7	2.8	3.8	4.8
mL/min @ 600 rpm	36	130	480	1000	1700	2300	1000	1700	2300	2900
Max pressure†	2.7 bar (40 psi)			2.4 bar (35 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)	2.0 bar (30 psi)		1.7 bar (25 psi)	1.4 bar (20 psi)
Max vacuum†	660 mm Hg (26" Hg)				510 mm Hg (20" Hg)		660 mm Hg (26" Hg)			
Suction lift	8.8 m H_2O (29 ft H_2O)				6.7 m H_2O (22 ft H_2O)		8.8 m H_2O (29 ft H_2O)			

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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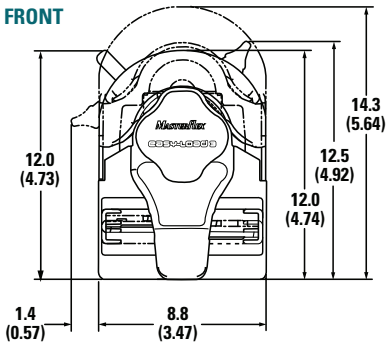
SPECIFICATIONS for L/S Easy-Load 3 Pump Heads

Catalog number		HL-77800-50 HL-77800-52	HL-77800-60 HL-77800-62
Performance Specifications			
Flow capacity		0.001 to 2900 mL/min (0.19 to 45.8 GPH)†	
Max rpm		600	
Number of rollers		3	
Torque Specifications [a single head pumping water at 0 psi, 21.1°C (70°F)]‡			
Norprene®, PharMed® BPT	Starting torque	9.4 kg-cm (130 oz-in)	
	Running torque	2.2 kg-cm (30 oz-in)	
Tygon®, Viton®	Starting torque	15.8 kg-cm (220 oz-in)	
	Running torque	3.6 kg-cm (50 oz-in)	
C-FLEX®, Silicone	Starting torque	4.7 kg-cm (65 oz-in)	
	Running torque	2.9 kg-cm (40 oz-in)	
Physical Specifications			
Housing material		Polypropylene	
Rotor material		Cold-rolled steel	Stainless steel
Operating temperature		0 to 40°C (32 to 104°F)	
Shipping weight		0.9 kg (1.9 lb)	

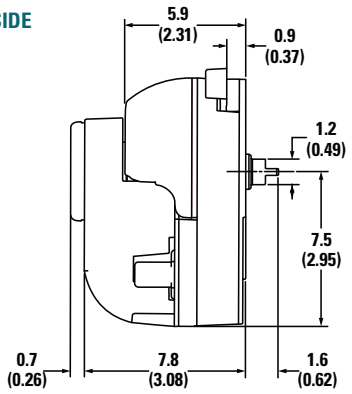
†Depending on pump head and tubing selected. ‡Maximum torque depends on tubing size.

Dimensional Drawings cm (in.)
77800-series

FRONT



SIDE



Mounting Your Pump Head

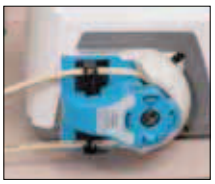


Attach mounting plate to your L/S drive.



Twist and lock Easy-Load 3 pump head onto mounting plate.

Stacking Your Pump Head



For multiple-channel applications, simply remove the front cover and . . .



Stack pump heads up to the limits of your drive.

FREE TUBING TEST KIT!

Can't find your chemical in the tables?

Request your FREE tubing kit to test compatibility of your chemicals against different tubing formulations. Request item HL-00101-10.

Call or go online to request your FREE test kit today!



HOW TO LOAD YOUR PUMP HEAD



1. With head on drive, rotate activator lever counter-clockwise to open occlusion bed and tubing retainers.



2. Place tubing over rollers and through retainers.



3. Rotate activator lever clockwise to close occlusion bed and retainers.

L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® EASY-LOAD® II PUMP HEADS

FEATURES/BENEFITS

- Deliver flow rates from 0.001 to 2900 mL/min
- Four-roller design improves pressure performance, stability, and reduces pulsation
- Improved occlusion bed geometry reduces tubing wear, lengthens tubing life
- Over-center cam for quick tubing changes
- Adjustable and fixed occlusion available
- Adapts easily to OEM applications
- Stackable for multichannel pumping
- Automatic tubing retention eliminates manual adjustments
- Pump head accepts several tubing sizes

SELECTION CRITERIA

1. Flow rate/tube size desired.
2. Materials of construction (rotor).
3. Compatibility with drives.
4. Adjustable or fixed occlusion.

- 38 cm (15") of silicone tubing and single-channel mounting hardware supplied.

See specifications for more information.

Order tubing and drives separately.

COMPATIBILITY WITH DRIVES

- Mount on most drives accepting Masterflex L/S pump heads

PUMP HOUSING SPECIFICATIONS

Polyphenylene Sulfide (PPS)

- Best protection from corrosive liquids/vapors
- Nylon tubing retainers
- Select from CRS/Buna N or 400-series SS/PTFE shielded ball-bearing

FIXED/ADJUSTABLE OCCLUSION

Fixed Occlusion

- High flow rates at an economical price
- Factory calibrated for nominal occlusion

Adjustable Occlusion

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

ROLLER/ROTOR SPECIFICATIONS

Plated Cold-Rolled Steel (CRS)

- General-purpose applications
- Humidity: 0 to 90%
- Ball-bearing construction
- Continuous duty up to 600 rpm
- Precision and High-performance precision tubing versions

300-Series Stainless Steel (SS)

- Corrosive fluids
- Humidity: 0% to 90%
- PTFE shielded ball-bearing (highest life expectancy)
- Continuous duty up to 600 rpm
- Precision and High-performance precision tubing versions



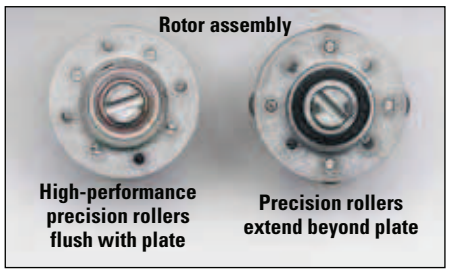
Easy-Load II fixed occlusion pump head 77200-62

MULTICHANNEL CAPABILITIES

- Mount up to four Easy-Load II pump heads on a single drive
- Order hardware depending on number of pump heads to be mounted

ISO9001:2008 CERTIFIED SUPPLIER

2 year warranty



Rotor assembly

High-performance precision rollers flush with plate

Precision rollers extend beyond plate

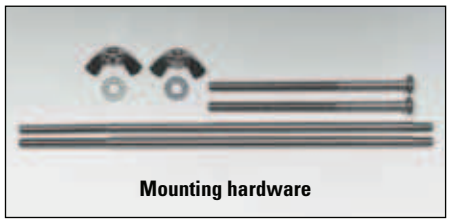
ORDERING INFORMATION

Pump tubing size	Fixed occlusion		Adjustable occlusion
	CRS rotor	SS rotor	SS rotor
For Precision tubing			
L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	**HL-77200-50**	**HL-77200-60**	**HL-77201-60**
For High-performance precision tubing			
L/S 15, L/S 24, L/S 35, L/S 36	**HL-77200-52**	**HL-77200-62**	**HL-77201-62**

CRS = cold-rolled steel SS = stainless steel

MOUNTING HARDWARE

Heads to be mounted	Catalog number/set
	Stainless steel
One	**HL-77200-01**
Two	**HL-77200-02**
Three	**HL-77200-03**
Four	**HL-77200-04**



Mounting hardware

L/S PUMP TUBING FLOW RATE INFORMATION

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow rate–mL/rev	0.06	0.21	0.8	1.7	2.8	3.8	1.7	2.8	3.8	4.8
mL/min @ 600 rpm	36	130	480	1000	1700	2300	1000	1700	2300	2900
Max pressure†	2.7 bar (40 psi)			2.4 bar (35 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)	2.7 bar (40 psi)		2.4 bar (35 psi)	1.4 bar (20 psi)
Max vacuum†	660 mm Hg (26" Hg)				510 mm Hg (20" Hg)		660 mm Hg (26" Hg)			
Suction lift	8.8 m H_2O (29 ft H_2O)				6.7 m H_2O (22 ft H_2O)		8.8 m H_2O (29 ft H_2O)			

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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SPECIFICATIONS for L/S Easy-Load II Pump Heads

Catalog number		HL-77200-50 HL-77200-52	HL-77200-60 HL-77200-62	HL-77201-60 HL-77201-62
Performance Specifications				
Flow capacity		0.001 to 2900 mL/min (9.48 to 45.82 GPH)†		
Max rpm		600		
Number of rollers		4		
Torque Specifications‡ [a single head pumping water at 0 psi, 21°C (70°F)]				
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)		
Physical Specifications				
Housing material		Polyphenylene sulfide		
Rotor material		Cold-rolled steel	Stainless steel	
Operating temperature		0 to 40°C (32 to 104°F)		
Shipping weight		0.9 kg (1.9 lb)		

†Depending on pump head and tubing selected.
‡Maximum torque depends on tubing size. For complete torque data, see pages 172–192.

L/S Easy-Load II Two-Channel Pump Heads

Identical to our Easy-Load II pump heads—except with two flow channels. Pump two channels simultaneously from one head (you must use the same size tubing in each channel), eliminating the need to stack heads. Each pump head accepts L/S 13, L/S 14, L/S 16, and L/S 25 tubing sizes in any formulation. Mount up to four two-channel pump heads on a single drive.


77202-50

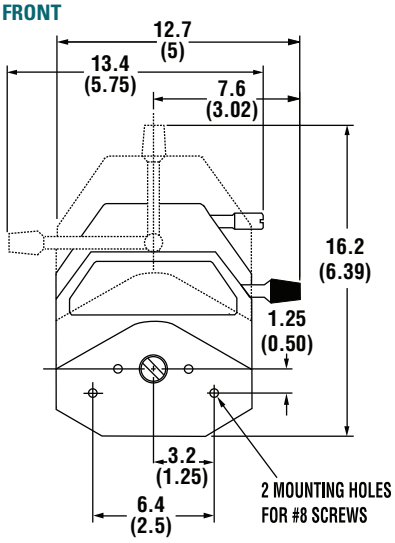
Ordering Information

Pump tubing size	mL per rev	Flow rates in mL/min at noted rpm (per channel)		Fixed occlusion	
		1 to 100	6 to 600	CRS rotor	SS rotor
L/S 13	0.06	0.06 to 6	0.36 to 36	HL-77202-50	HL-77202-60
L/S 14	0.21	0.21 to 21	1.3 to 130		
L/S 16	0.8	0.8 to 80	4.8 to 480		
L/S 25	1.7	1.7 to 170	10 to 1000		

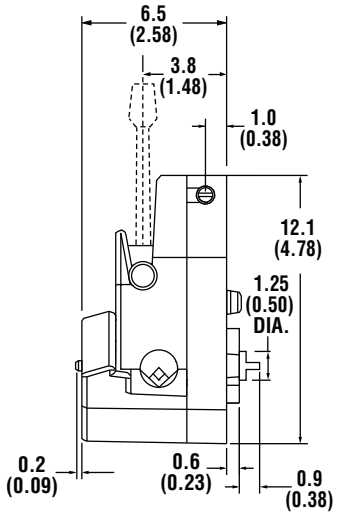
CRS = cold-rolled steel SS = stainless steel

Dimensional Drawings cm (in.)
77200-series, 77201-series, and 77202-series

FRONT



SIDE



How to Load Your Pump Head


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


2. Move lever to the right to close pump head.


3. Tubing is retained by automatic tubing retention on all models.


3. Adjustable occlusion available on 77201-60 and -62 models.

Notes

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

L/S® Tubing 68–73
L/S® Drives 74–107
L/S® Pump Systems.....108–117
Accessories.....160–171
Technical Data.....172–206

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L/S® EASY-LOAD® PUMP HEADS

FEATURES/BENEFITS

- Over-center cam design for fast tubing changes
- Deliver flow rates from 0.001 to 2300 mL/min
- Proprietary design and adjustable tubing retention feature
- Fixed occlusion for good flow repeatability
- Adapts easily to OEM applications
- Interchangeable
- Multichannel pumping
- Accepts several tubing sizes
- Models 07518-40 and 07518-42 are ATEX Zone 2 rated EEx II 3 G c IIC T6; NEC rated for Class I Division 2 Groups A, B, C, D T6



Pump head 07518-00 with polysulfone housing



Pump head 07518-60 with polyphenylene sulfide housing

SELECTION CRITERIA

1. Flow rate desired.
2. Tubing size needed.
3. Materials of construction (housing, rotor).
4. Compatibility with drives.

- 38 cm (15") of silicone tubing and single-channel mounting hardware are supplied

See specifications for more information.

Order tubing and drives separately.

COMPATIBILITY WITH DRIVES

- Mount on all drives accepting Masterflex L/S pump heads

PUMP HOUSING SPECIFICATIONS

Polysulfone (PSF)

- General-purpose applications
- Select from CRS or 300-series SS/PTFE shielded ball-bearing

Polyphenylene Sulfide (PPS)

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

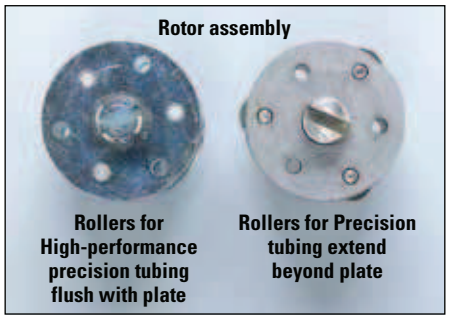
ROLLER/ROTOR SPECIFICATIONS

Plated Cold-Rolled Steel (CRS)

- General-purpose applications
- Continuous duty up to 600 rpm
- Precision and High-performance precision versions

300-Series Stainless Steel (SS)

- Corrosive fluids
- PTFE shielded ball-bearing (highest life expectancy)
- Continuous duty up to 600 rpm
- Precision and High-performance precision versions



ISO 9001:2008 CERTIFIED SUPPLIER · 2 year warranty · ATEX Zone 2 07518-40, -42

ORDERING INFORMATION

Pump tubing size	PSF housing		PPS housing	ATEX-approved PSF housing
	CRS rotor	SS rotor	SS rotor	SS rotor
For Precision tubing				
L/S 13 L/S 14 L/S 16 L/S 25 L/S 17 L/S 18	**HL-07518-00**	**HL-07518-10**	**HL-07518-60**	**HL-07518-40**
For High-performance precision tubing				
L/S 15 L/S 24	**HL-07518-02**	**HL-07518-12**	**HL-07518-62**	**HL-07518-42**

PSF= polysulfone PPS = polyphenylene sulfide
CRS = cold-rolled steel SS = stainless steel

L/S PUMP TUBING FLOW RATE INFORMATION

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow rate–mL/rev	0.06	0.21	0.8	1.92	2.8	3.8	1.7	2.8
mL/min @ 600 rpm	36	130	480	1150	1700	2300	1000	1700
Max pressure†	2.7 bar (40 psi)			2.4 bar (35 psi)	1.4 bar (20 psi)	1.0 bar (15 psi)	2.7 bar (40 psi)	
Max vacuum†	610 mm Hg (24" Hg)							
Suction lift	8.2 m H_2O (26.8 ft H_2O)							

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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SPECIFICATIONS for L/S Easy-Load Pump Heads

Catalog number		HL-07518-00 HL-07518-02	HL-07518-10 HL-07518-12 HL-07518-40 HL-07518-42	HL-07518-60 HL-07518-62
Performance Specifications				
Flow capacity		0.001 to 2300 mL/min (0 to 36 GPH)†		
Max rpm		600		
Number of rollers		3		
Torque Specifications‡ [a single pump head pumping water at 0 psi, 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		Polysulfone		Polyphenylene sulfide
Rotor material		Cold-rolled steel	Stainless steel	
Operating temperature		0 to 40°C (32 to 104°F)		
Shipping weight		0.9 kg (1.9 lb)		

†Depending on pump head selected.
‡Actual torque depends on tubing size and formulation. For complete torque data, please see pages 172–192.

MULTICHANNEL CAPABILITIES

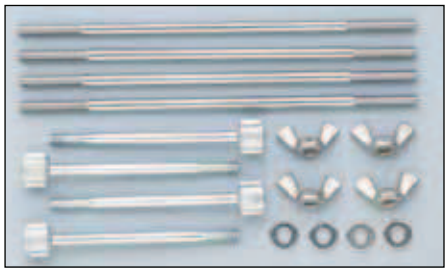
- Mount up to four Easy-Load pump heads on a single drive depending on drive specifications.
- Order hardware based on number of pump heads to be mounted.



With single or multiple channels, you can change tubing in each channel without removing the Easy-Load pump head(s) from your drive.

MOUNTING HARDWARE

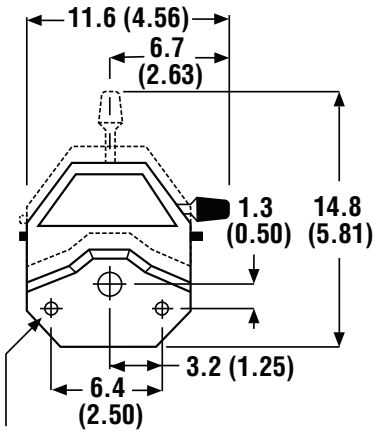
Heads to be mounted	Catalog number/set Stainless steel
One	HL-07013-04
Two	HL-07013-05
Three	HL-07013-08
Four	HL-07013-09



Mounting hardware 07013-04 (one) and 07013-05 (two channel)

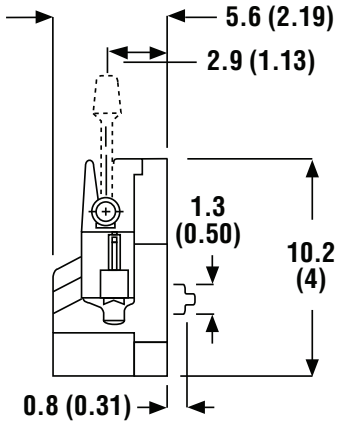
Dimensional Drawings cm (in.)
07518-series

FRONT



Mounting holes for #8 screws

SIDE



NOTES

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

HOW TO LOAD YOUR PUMP HEAD



1. Rotate lever to left to open head. Load tubing.



2. Close head. Adjust side tubing retainers to hold tubing.

L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
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L/S® High-Performance Pump Heads

Features/Benefits

- Delivers the highest flow rate of any L/S pump head
- Flow rates from 0.006 to 3400 mL/min
- To fit application needs, pump head can be mounted upright or on its side
- Tubing enters/exits same side of pump head
- Adjustable tubing retention holds tubing firmly in place
- Ideal for viscous fluid transfer
- Adapts easily to OEM applications
- Model 77250-82 is ATEX Zone 2 rated EEx II 3 G c IIC T6; NEC rated for Class I Division 2 Groups A, B, C, D T6

Selection Criteria

1. Flow rate/tube size desired.
2. Materials of construction.
3. Compatibility with drives.

- 38 cm (15") of E-LFL tubing and mounting hardware are supplied

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Compatible with all Masterflex L/S drives that accept two or more pump heads

Pump Housing Specifications

- Rollers, bearings, rotor plates, and rotor shaft are made of stainless steel
- Occlusion bed: polyphenylene sulfide
- Retainer adjusting knob: polypropylene
- Main body: polyester

Roller/Rotor Specifications

Stainless Steel (SS)

- Operating temperatures from 0 to 40°C (32 to 104°F)
- Storage temperature range: –40 to 60°C (–40 to 140°F)
- Humidity: 95% maximum, 5% minimum (noncondensing)
- Continuous duty up to 600 rpm



High-performance pump head 77250-62



High-performance pump head 77250-62 shown mounted on an L/S modular drive 07557-00

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

ATEX Zone 2 77250-82

Multichannel Capabilities

- L/S High-Performance pump heads are not designed to be stacked

See page 117

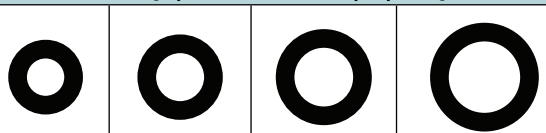
For Masterflex 100 psi high-pressure pump system.

Ordering Information

Pump tubing size	High-Performance pump head	ATEX-approved High-Performance pump head
L/S 15 L/S 24 L/S 35 L/S 36	HL-77250-62	HL-77250-82
L/S 14HP L/S 16HP L/S 15HP L/S 24HP		

L/S Pump Tubing Flow Rate Information

Order Masterflex L/S pump tubing separately on pages 68–73; order high-pressure tubing on facing page.

	L/S High-performance Precision pump tubing				L/S High-pressure Precision pump tubing			
Tubing cross sections								
	L/S 15	L/S 24	L/S 35	L/S 36	L/S 14HP	L/S 16HP	L/S 15HP	L/S 24HP
Flow rate–mL/rev	1.8	3.0	4.3	5.8	0.3	0.9	1.7	2.4
mL/min @ 100 rpm	180	300	430	580	30	90	170	240
mL/min @ 600 rpm	1100	1800	2600	3400	Not recommended		Not recommended	
Max pressure†	2.7 bar (40 psi)		2.4 bar (35 psi)	1.4 bar (20 psi)	10.2 bar (150 psi)	8.5 bar (125 psi)	6.8 bar (100 psi)	5.5 bar (80 psi)
Max vacuum†	660 mm Hg (26" Hg)			610 mm Hg (24" Hg)	660 mm Hg (26" Hg)			
Suction lift	8.8 m H_2O (29 ft H_2O)			8.3 m H_2O (27 ft H_2O)	8.8 m H_2O (29 ft H_2O)			

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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SPECIFICATIONS for L/S High-Performance Pump Heads

Catalog number		HL-77250-62, HL-77250-82
Performance Specifications		
Flow capacity		0.006 to 3400 mL/min (0 to 54 GPH)
Max rpm		600
Number of rollers		3
Torque Specifications [pumping water at 0 psi, 21°C (70°F)]†		
Norprene®, PharMed® BPT	Starting torque	13.8 kg-cm (192 oz-in)
	Running torque	3.6 kg-cm (50 oz-in)
Tygon®, Viton®	Starting torque	11.5 kg-cm (160 oz-in)
	Running torque	5.4 kg-cm (75 oz-in)
C-FLEX®, Silicone	Starting torque	5.4 kg-cm (75 oz-in)
	Running torque	2.7 kg-cm (37 oz-in)
Norprene® HP, PharMed® BPT HP	Starting torque	43.9 kg-cm (610 oz-in)
	Running torque	7.2 kg-cm (100 oz-in)
Physical Specifications		
Roller, bearings, rotor plates, and rotor shaft materials		Stainless steel
Operating temperature		0 to 40°C (32 to 104°F)
Shipping weight		1.6 kg (3.5 lb)

†For L/S 36 tubing.

ACCESSORIES

HL-77250-01 Replacement mounting hardware, stainless steel.



NOTES

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

ORDERING INFORMATION for L/S High-Pressure Pump Tubing

Tubing size	Catalog number	Tubing ID	Flow range (1 to 100 rpm)	Maximum pressure (continuous)	Length/pk
PharMed BPT					
L/S 14HP	**HL-95664-14**	1/16"	0.3 to 30 mL/min	10.2 bar (150 psi)	7.6 m (25 ft)
L/S 16HP	**HL-95664-16**	1/8"	0.9 to 90 mL/min	8.5 bar (125 psi)	
L/S 15HP	**HL-95664-15**	3/16"	1.7 to 170 mL/min	6.8 bar (100 psi)	
L/S 24HP	**HL-95664-24**	1/4"	2.4 to 240 mL/min	5.5 bar (80 psi)	
Norprene					
L/S 16HP	**HL-06504-16**	1/8"	0.9 to 90 mL/min	8.5 bar (125 psig)	7.6 m (25 ft)
L/S 15HP	**HL-06504-15**	3/16"	1.7 to 170 mL/min	6.8 bar (100 psig)	

HOW TO LOAD YOUR PUMP HEAD



1. Rotate tubing retainer knob counterclockwise to release retainer, then open cover. Lift latch to open occlusion bed.



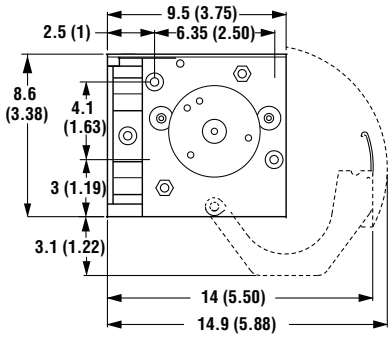
2. Insert tubing into occlusion bed, so that the tubing ends extend out of the tubing entrance and exit as shown.



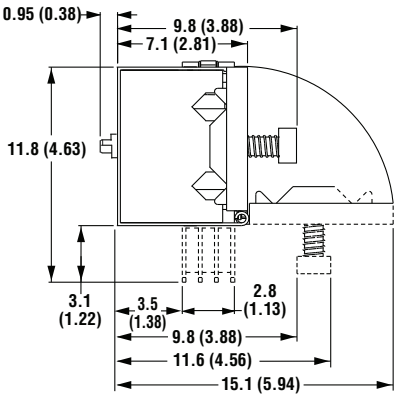
3. Press occlusion bed against tubing and snap latch closed. Pull the tubing snug around rotor, close cover, and rotate tubing retainer knob clockwise. Tighten tubing retainer knob to secure tubing.

Dimensional Drawings cm (in.)
77250-62, -82

FRONT



SIDE



FREE TUBING TEST KIT!

Can't find your chemical in the tables?

Request your FREE tubing kit to test compatibility of your chemicals against different tubing formulations. Request item HL-00101-10.

Call or go online to request your FREE test kit today!



L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® PTFE-Tubing Pump Head

Features/Benefits

- Flow range: 0.06 to 65 mL/min
- Transfer aggressive organic solvents and maintain fluid purity
- Transfer liquid containing small particulates
- Excellent chemical compatibility
- Deliver a wide range of flow rates at pressures up to 100 psi
- Adjustable occlusion
- Use precision-molded tubing sets

Selection Criteria

- Flow rate desired.
- Tube size required.
- Compatibility with drives.

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Mount on all Masterflex L/S drives that accept two or more pump heads

Pump Housing Specifications

- Pump body, bearing support, and rotor plates are anodized aluminum
- Rotor shaft, bearing, rollers, and hardware are stainless steel
- Occlusion bed: acetal
- ABS plastic occlusion knob

Notes

Use only Masterflex PTFE-tubing sets with the Masterflex PTFE-tubing pump head to ensure optimal performance. Use of other tubing may void applicable warranties.

Roller/Rotor Specifications

300-Series Stainless Steel (SS)

- Humidity from 0% to 100%
- Operating temperature from 0 to 40°C (32 to 104°F)
- Fluid temperature from 0 to 100°C (32 to 212°F)
- Ball-bearing construction
- Continuous duty up to 300 rpm



PTFE-tubing pump head 77390-00



PTFE tubing pump head 77390-00 shown on L/S variable-speed console drive 07528-20 is ideal for transferring aggressive organic solvents.

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

Catalog number	Description
HL-77390-00	L/S PTFE-tubing pump head only

PTFE-Tubing Sets and Accessories

PTFE-Tubing Sets include two 38 cm (15") lengths and cannot be substituted with ordinary PTFE tubing. Choose compression fittings below to adapt tubing sets to your system.

HL-77390-50 PTFE-tubing set, 4-mm OD, 2-mm ID. Set of two 38-m (15") lengths.

HL-77390-60 PTFE-tubing set, 6-mm OD, 4-mm ID. Set of two 38-m (15") lengths.

For 4-mm OD PTFE-Tubing Sets

HL-31321-61 Straight connector, 2.8 bar (40 psi) max pressure

HL-31321-62 Male pipe adapter with 1/8" NPT(M) connection

HL-31321-63 Male pipe adapter with 1/4" NPT(M) connection

HL-06605-53 PTFE extension tubing, 4-mm OD. Pack of 7.6 m (25 ft)

For 6-mm OD PTFE-Tubing Sets

HL-31321-64 Straight connector, 9.2 bar (135 psi) max pressure

HL-31321-43 Male pipe adapter with 1/4" NPT(M) connection

HL-06605-54 PTFE extension tubing, 6-mm OD. Pack of 7.6 m (25 ft)

HL-31321-49 Tubing grooving tool. Use when connections must withstand 40 psi (2.8 bar) or greater



PTFE tubing sets, PTFE extension tubing, and straight connectors.

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SPECIFICATIONS for L/S PTFE-Tubing Pump Head

Catalog number		HL-77390-00
Performance Specifications		
Flow capacity	4-mm OD tubing	0.06 to 17 mL/min (0 to 0.27 GPH)
	6-mm OD tubing	0.25 to 65 mL/min (0 to 1.1 GPH)
Max rpm		300
Number of rollers		6
Vacuum lift		2.4 m H_20 (8 ft H_20)
Maximum Torque [pumping water at 0 psi, 21°C (70°)]		
PTFE tubing		12.9 kg-cm (180 oz-in)
Physical Specifications		
Pump body, bearing support, and rotor plates material		Anodized aluminum
Rotor shaft, bearings, rollers, and hardware material		Stainless steel
Reversible		Yes
Run dry		No†
Operating temperature		0 to 40°C (32 to 104°F)
Shipping weight		1.5 kg (3.3 lb)

†Do not pump gases or run dry for long periods of time; run dry to prime only.

COMPLETE L/S PTFE-TUBING PUMP SYSTEM

Applications

- Pumping high-purity fluids
- Transfer of aggressive chemicals
- Chemical feed and metering
- Filtration

Benefits

- Flow rate: 0.75 to 65 mL/min; pressure up to 100 psi (6.9 bar)
- Low-pulsation, six-roller pump head
- Continuous-duty drive displays speed (rpm) and direction



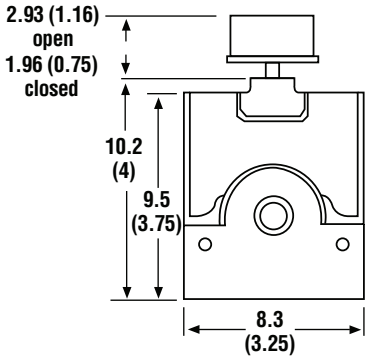
Complete system includes: L/S PTFE tubing pump head 77390-00, 6-mm OD PTFE tube set 77390-60, L/S 300 rpm variable-speed console drive 07528-20, and two ¼" NPT(M) pipe adapters.

Drive is

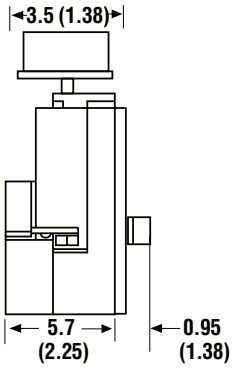
Catalog number	Power
HL-77912-10	90 to 260 VAC, 50/60 Hz

Dimensional Drawings cm (in.)
77390-00

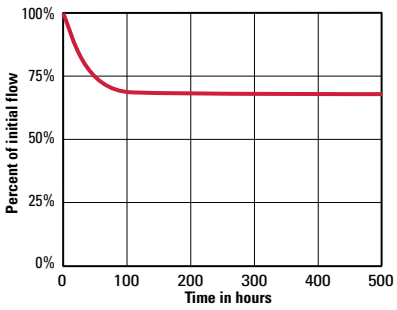
FRONT



SIDE



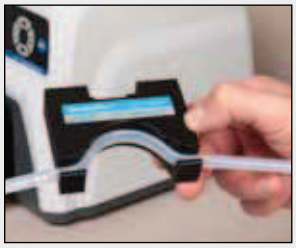
Decay of Initial Flow vs. Time at 300 rpm



HOW TO LOAD YOUR PUMP HEAD



1. Rotate locking ring then rotate the knob on top of the pump counterclockwise. Lift occlusion bed by sliding it out the front of the body assembly.



2. Install the PTFE tubing assembly in the occlusion bed groove.



3. Slide the occlusion assembly back onto the body assembly and tighten knob.

L/S® TUBING 68–73
L/S® DRIVES 74–107
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TECHNICAL DATA.....172–206

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L/S® Multichannel Pump Heads for Microbore Pump Tubing

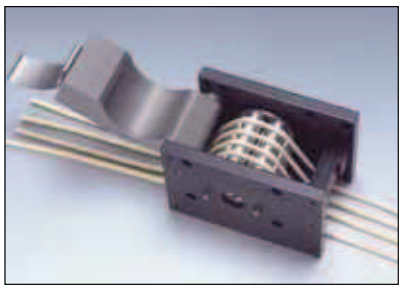
Features/Benefits

- Four- or eight-channel heads are stackable for up to 32 synchronous flow channels
- Deliver flow rates from 0.00005 to 200 mL/min per channel (flow rates depend on drive rpm and tubing size)
- Six rollers deliver low-pulsation flow
- Excellent between-channel accuracy
- Anodized aluminum and stainless steel construction for durability and reliable, continuous-duty operation up to 600 rpm
- Two-stop tubing sets are easy to load with no occlusion or retention adjustment—order tubing sets separately below
- Accept microbore two-stop tube sets from 0.19 to 2.79 mm ID for a wide flow range

Note: Multichannel pump heads require two-stop tube sets and cannot be loaded with continuous tubing.



Multichannel pump head 07534-04 for microbore tubing



Six rollers deliver accurate, low-pulsation flow.



Stack heads for up to 32 channels.

Selection Criteria

1. Flow rate and tubing size desired.
2. Number of channels needed.
3. Compatibility with drives.

Mounting hardware and hex key tool included.

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Mount on all Masterflex L/S drives that accept two or more pump heads; 1/10 hp minimum

Pump Housing Specifications

- Black anodized aluminum frame and gray, hardcoat anodized aluminum occlusion beds

Roller/Rotor Specifications

- Rollers, bearings, rotor plates, and rotor shaft are made of 303 stainless steel
- Good protection from corrosive liquids/vapors
- Humidity: 10 to 90% noncondensing
- Shielded stainless steel ball bearings
- Continuous duty up to 600 rpm

Multichannel Capabilities

- Stack heads up to the limits detailed under "Specifications" on facing page
- Mounting hardware and hex key tool are included with each pump head; hardware set attaches head to drive and/or head to head

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2 year warranty

Ordering Information

Catalog number	Number of channels
Multichannel pump heads for microbore pump tubing, 0.19 to 2.79 mm ID	
HL-07534-04	4
HL-07534-08	8

Accessories

HL-07534-01 Replacement mounting hardware set, includes four mounting screws and hex key tool.

Microbore Two-Stop Pump Tubing Set Flow Rates & Ordering Information

Order microbore extension tubing on pages 34 and 36.

Flow Rate Information (mL/min per channel using microbore two-stop tubing sets below)

Drive rpm	Microbore pump tubing					
	0.19 mm ID	0.25 mm ID	0.89 mm ID	1.42 mm ID	2.06 mm ID	2.79 mm ID
1 to 100	0.0026 to 0.26	0.0053 to 0.53	0.054 to 5.4	0.12 to 12	0.23 to 23	0.35 to 35
6 to 600	Not recommended†	Not recommended†	0.30 to 30	0.67 to 67	1.3 to 130	2.0 to 200

†Maximum recommended speed for these tubing sizes is 300 rpm.

Microbore Two-Stop Tubing Set Ordering Information

Tubing ID (mm)	Platinum-cured silicone	Santoprene®	NEW Tygon® E-LFL	Viton®
0.19	—	—	HL-06447-10	—
0.25	—	HL-06431-12	HL-06447-12	—
0.89	HL-06421-26	HL-06431-26	HL-06447-26	HL-96428-26
1.42	HL-06421-34	HL-06431-34	HL-06447-34	HL-96428-34
2.06	HL-06421-42	HL-06431-42	HL-06447-42	HL-96428-42
2.79	HL-06421-48	HL-06431-48	HL-06447-48	HL-96428-48
Qty/pk	6	12	12	12

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SPECIFICATIONS for L/S Multichannel Pump Heads

Catalog number		HL-07534-04	HL-07534-08
Performance Specifications			
Flow capacity per channel		0.00005 to 200 mL/min (0 to 3.2 GPH)	
Number of channels		4	8
Max number of channels with stacked heads†	100-rpm drive	32	
	600-rpm drive	28	
Max rpm		600	
Number of rollers		6	
Torque Specifications [a single pump head pumping water at 0 psi, 21°C (70°F)]‡			
Santoprene®	Starting torque	7.2 kg-cm (100 oz-in)	9.0 kg-cm (125 oz-in)
	Running torque	2.2 kg-cm (30 oz-in)	2.9 kg-cm (40 oz-in)
PVC	Starting torque	10.8 kg-cm (150 oz-in)	13.7 kg-cm (190 oz-in)
	Running torque	6.1 kg-cm (85 oz-in)	7.9 kg-cm (110 oz-in)
Silicone	Starting torque	4.3 kg-cm (60 oz-in)	5.0 kg-cm (70 oz-in)
	Running torque	1.8 kg-cm (25 oz-in)	2.2 kg-cm (30 oz-in)
Physical Specifications			
Housing material		Anodized aluminum	
Rotor material		Stainless steel	
Operating temperature		0 to 40°C (32 to 104°F)	
Shipping weight		1.8 kg (4 lb)	2.3 kg (5 lb)

†With softer formulations such as silicone; max number of channels will be less with firmer tubing.
‡All channels loaded with specified tubing formulations.

COMPLETE L/S MULTICHANNEL PUMP SYSTEM

Applications

- Multichannel, low-volume dispensing
- Meter fluids through multiple lines

Benefits

- Flow rate: 0.35 to 35 mL/min per channel
- Synchronous flow from four separate channels
- Low-pulsation, six-roller pump head
- Continuous-duty drive displays speed (rpm) and direction

Complete system includes: L/S multichannel pump head 07534-04, 2.79 mm ID PVC tube set 06416-48, L/S 100-rpm variable-speed console drive 07528-30.



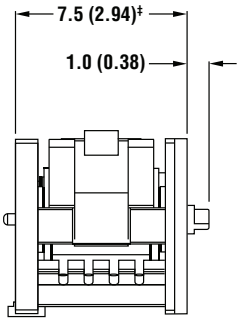
Catalog number	Power
HL-77925-10	90 to 260 VAC, 50/60 Hz

Drive is

See pages 110 and 112 for more complete L/S Multichannel Pump Systems

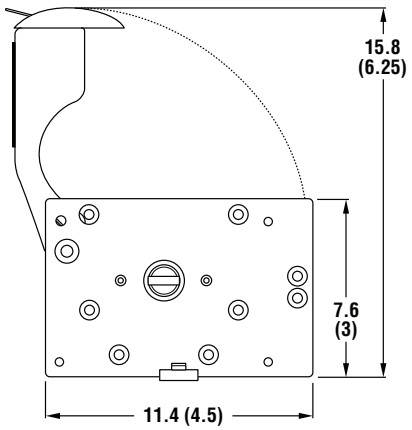
Dimensional Drawings cm (in.)
07534-series

FRONT



‡7.5 [2.94] for single-bed pump heads; 12.2 [4.8] for dual-bed pump heads.

SIDE



FOR THE LATEST...

Masterflex technical resources, see

- **ColeParmer.com**
- **Masterflex.com**

HOW TO LOAD YOUR PUMP HEAD



1. Release latch and open occlusion bed; place tubing over rollers and thread ends through retainer slots.



2. Hook left side tubing stop underneath retainer slot.



3. Stretch tubing and hook right side stop underneath retainer slot. Close and latch occlusion bed.

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L/S® DRIVES 74–107
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L/S® Multichannel Pump Heads for L/S® Pump Tubing

Features/Benefits

- Two-, four-, or eight-channel heads are stackable for up to 24 synchronous flow channels
- Deliver flow rates from 0.0009 to 2300 mL/min per channel
- Six-roller heads deliver smooth, low-pulsation flow; three-roller heads offer higher flow rates
- Excellent between-channel accuracy makes these heads ideal for multi-channel dispensing applications
- Anodized aluminum and stainless steel construction for durability and reliable, continuous-duty operation up to 600 rpm
- Two-stop tubing sets are easy to load with no occlusion or retention adjustment—order tubing sets on facing page
- Accept Masterflex® L/S Precision and High-performance precision pump tubing sizes L/S 13, L/S 14, L/S 16,L/S 15, L/S 24, and L/S 35

Note: Multichannel pump heads require two-stop tube sets and cannot be loaded with continuous tubing.



Multichannel pump head 07535-08 for L/S Precision pump tubing



Multichannel pump head 07536-04 for L/S High-performance precision pump tubing

Selection Criteria

1. Flow rate and tubing size desired.
2. Number of channels needed.
3. Compatibility with drives.

Mounting hardware, hex key tool included.

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Mount on all Masterflex L/S drives that accept two or more pump heads; 1/10 hp minimum

Pump Housing Specifications

- Black anodized aluminum frame and gray, hardcoat anodized aluminum occlusion beds

Roller/Rotor Specifications

- Good protection from corrosive liquids/vapors
- Humidity: 10 to 90% noncondensing
- Shielded stainless steel ball bearings
- Continuous duty up to 600 rpm
- Rollers, bearings, rotor plates, and rotor shaft are made of 303 stainless steel



Stack heads for up to 24 channels.

Multichannel Capabilities

- Stack heads up to the limits detailed under "Specifications" on facing page
- Mounting hardware and hex key tool are included with each pump head; hardware set attaches head to drive and/or head to head

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

Catalog number	Number of channels
Multichannel pump heads for Precision pump tubing, sizes L/S 13, L/S 14, L/S 16	
HL-07535-04	4
HL-07535-08	8
Multichannel pump heads for High-performance Precision pump tubing, sizes L/S 15, L/S 24, L/S 35	
HL-07536-02	2
HL-07536-04	4

Accessories

HL-07534-01 Replacement mounting hardware set, includes four mounting screws and hex key tool

L/S Pump Tubing Flow Rate Information

Order Masterflex L/S two-stop Precision pump tubing sets on facing page; order L/S Precision extension tubing on pages 68–73.

	L/S Precision pump tubing			L/S high-performance Precision pump tubing		
Tubing cross sections						
	L/S 13	L/S 14	L/S 16	L/S 15	L/S 24	L/S 35
Flow rate—mL/rev	0.045	0.16	0.47	1.6	2.8	3.8
mL/min @ 600 rpm	27	96	280	1000	1700	2300
Max pressure†	2.7 bar (40 psi)					2.4 bar (35 psi)
Max vacuum†	660 mm Hg (26" Hg)					
Suction lift	8.8 m H_2O (29 ft H_2O)					

†Actual performance varies depending upon tubing materials—see pages 20–24 and 172–192 for more information.

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SPECIFICATIONS for L/S Multichannel Pump Heads

Catalog number		HL-07535-04	HL-07535-08	HL-07536-02	HL-07536-04
Performance Specifications					
Flow capacity per channel		0.0009 to 280 mL/min (0 to 4.4 GPH)		0.032 to 2300 mL/min (0 to 36 GPH)	
Number of channels		4	8	2	4
Max number of channels with stacked heads†	100-rpm drive	24		12	
	600-rpm drive	12		6	
Max rpm		600		600	
Number of rollers		6		3	
Torque Specifications [a single pump head pumping water at 0 psi, 21°C (70°F)]‡					
PharMed® BPT	Starting torque	19.8 kg-cm (275 oz-in)	32.4 kg-cm (450 oz-in)	20.5 kg-cm (285 oz-in)	37 kg-cm (515 oz-in)
	Running torque	3.6 kg-cm (50 oz-in)	5.4 kg-cm (75 oz-in)	4.0 kg-cm (55 oz-in)	6.8 kg-cm (95 oz-in)
Tygon®, Viton®	Starting torque	25.1 kg-cm (350 oz-in)	33.5 kg-cm (465 oz-in)	21.2 kg-cm (295 oz-in)	37.4 kg-cm (520 oz-in)
	Running torque	8.3 kg-cm (115 oz-in)	11.2 kg-cm (155 oz-in)	6.8 kg-cm (95 oz-in)	12.9 kg-cm (180 oz-in)
Silicone	Starting torque	11.9 kg-cm (165 oz-in)	16.9 kg-cm (235 oz-in)	12.9 kg-cm (180 oz-in)	20.9 kg-cm (290 oz-in)
	Running torque	2.5 kg-cm (35 oz-in)	4.0 kg-cm (55 oz-in)	2.9 kg-cm (40 oz-in)	5.4 kg-cm (75 oz-in)
Physical Specifications					
Housing material		Anodized aluminum			
Rotor material		Stainless steel			
Operating temperature		0 to 40°C (32 to 104°F)			
Shipping weight		1.8 kg (4 lb)	2.3 kg (5 lb)	1.8 kg (4 lb)	2.3 kg (5 lb)

†With softer formulations such as silicone; max number of channels will be less with firmer tubing.
‡All channels loaded with specified tubing formulation.

HOW TO LOAD YOUR PUMP HEAD



1. Release latch and open occlusion bed; place tubing over rollers and thread ends through retainer slots.



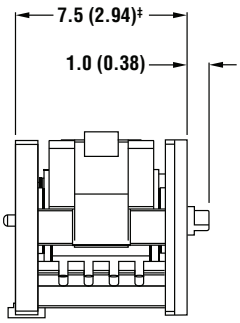
2. Hook left side tubing stop underneath retainer slot.



3. Stretch tubing and hook right side stop underneath retainer slot. Close and latch occlusion bed.

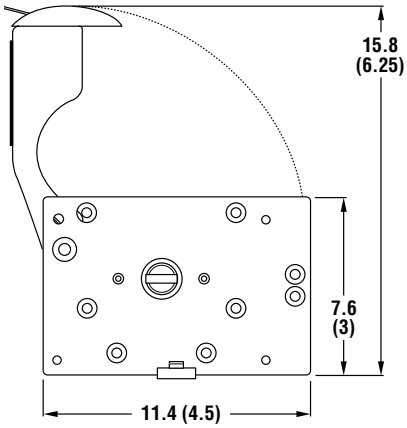
Dimensional Drawings cm (in.)
07535- and 07536-series

FRONT



‡7.5 [2.94] for single-bed pump heads; 12.2 [4.8] for dual-bed pump heads.

SIDE



L/S® TUBING 68–73
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L/S TWO-STOP PUMP TUBING SETS ORDERING INFORMATION

Pump tubing formulation	L/S Precision pump tubing			L/S High-performance Precision pump tubing		
	L/S 13	L/S 14	L/S 16	L/S 15	L/S 24	L/S 35
Tygon® E-LFL NEW	HL-06447-13	HL-06447-14	HL-06447-16	HL-06447-15	HL-06447-24	HL-06447-35
Silicone (platinum-cured)	HL-06421-13	HL-06421-14	HL-06421-16	HL-06421-15	HL-06421-24	HL-06421-35
BioPharm Plus silicone (platinum-cured)	HL-96116-13	HL-96116-14	HL-96116-16	HL-96116-15	HL-96116-24	HL-96116-35
PharMed® BPT	HL-96114-13	HL-96114-14	HL-96114-16	HL-96114-15	HL-96114-24	HL-96114-35
Chem-Durance® Bio	HL-96117-13	HL-96117-14	HL-96117-16	HL-96117-15	HL-96117-24	HL-96117-35
Viton®	HL-96428-13	HL-96428-14	HL-96428-16	HL-96428-15	HL-96428-24	HL-96428-35
Qty/pk	8	8	8	4	4	4

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L/S® Multichannel Cartridge Pump Heads

Features/Benefits

- Synchronous multichannel pumping
- Deliver flow rates from 0.005 to 1700 mL/min per channel with Masterflex L/S® or microbore tubing (flow rates depend on drive rpm and tubing size)
- Use 4 large cartridges, 8 small cartridges, or any combination of both
- Up to eight channels with a single head
- Use one cartridge or fill the pump head
- Each cartridge is individually adjustable
- Precision molded housing and tubing cavity
- Adapts easily to OEM applications

Compatibility with Drives

- Mount on most drives accepting Masterflex L/S pump heads

For more information, see specific drive pages.



Three-roller pump head 07519-05

Selection Criteria

1. Flow rate, tubing size desired.
2. Number of channels needed.
3. Drive compatibility.

See specifications for more information.

Order tubing and drives separately.

Pump Housing Specifications

Molded Polysulfone Body

- General-purpose applications
- Adjustable foot provided for head support

Roller/Rotor Specifications

300-Series Stainless Steel (SS) for 07519-06

Anodized Aluminum for 07519-05

- General-purpose applications
- Buna N shielded ball-bearing construction
- Continuous duty up to 600 rpm

See specifications for maximum drive rpm.



Four-roller pump head 07519-06

Notes

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

Cartridge Specifications

Polycarbonate and Glass-Filled Nylon

- No tools required/mechanically stable
- Anodized aluminum occlusion knob

Tangential Occlusion

- Better flow performance
- Fine tune flow rates ±5%
- Flow characteristics virtually the same in each direction of rotation
- Increase occlusion for priming/greater pressure
- Decrease occlusion to extend tubing life
- Index scale on cartridge to reference set occlusion
- Use microbore and Masterflex L/S Precision tubing sizes

ISO9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

Pump Heads

Catalog number	Max number of cartridges accepted†	Gear reduction	Max drive speed
Three-roller pump head			
HL-07519-05	4 large or 8 small	1:1	600
Four-roller pump head			
HL-07519-06	4 large or 8 small	1:1	600

†Pump heads accept both large and small cartridges—one large cartridge occupies the same space as two small ones. Use 4 large cartridges, 8 small cartridges, or any combination of both.

Cartridges

Catalog number	Tubing sizes accepted
Large cartridge	
HL-07519-70	Masterflex L/S 14, 16, 25, 17‡
Small cartridge	
HL-07519-80	Microbore two-stop tubing sets, 0.89 mm and larger; or Masterflex tubing sizes L/S 13 and L/S 14

‡Only C-FLEX® and silicone tubing formulations are recommended for L/S 17.

Specifications & Flow Rate Information (mL/min per channel)

Pump head model	No. of rollers	Maximum no. of cartridges accepted	Gear ratio	Drive rpm	Pump tubing sizes (Order microbore two-stop tubing sets on page 57 and Masterflex pump tubing on pages 68–73.‡‡)					
Using microbore two-stop tubing sets					**0.19 mm ID**	**0.25 mm ID**	**0.89 mm ID**	**1.42 mm ID**	**2.06 mm ID**	**2.79 mm ID**
HL-07519-05	3	4 large or 8 small	1:1	6 to 600	Not recommended		0.44 to 44	1.0 to 100	2.2 to 220	3.8 to 380
				0.1 to 100	Not recommended		0.007 to 7.4	0.017 to 17	0.037 to 37	0.063 to 63
HL-07519-06	4	4 large or 8 small	1:1	6 to 600	Not recommended		0.44 to 44	1.0 to 100	2.2 to 220	3.8 to 380
				0.1 to 100	Not recommended		0.007 to 7.4	0.017 to 17	0.037 to 37	0.063 to 63
Using Masterflex precision pump tubing					**L/S 13**	**L/S 14**	**L/S 16**	**L/S 25**	**L/S 17††**	—
HL-07519-05	3	4 large or 8 small	1:1	6 to 600	0.30 to 30	1.3 to 130†††	4.6 to 460	10 to 1000	17 to 1700	—
				0.1 to 100	0.005 to 5	0.021 to 21	0.076 to 76	0.17 to 170	0.28 to 280	—
HL-07519-06	4	4 large or 8 small	1:1	6 to 600	0.28 to 28	1.2 to 120	3.8 to 380	8.3 to 830	14 to 1400	—
				0.1 to 100	0.005 to 4.7	0.020 to 20	0.063 to 63	0.14 to 140	0.23 to 230	—

††Only C-FLEX and silicone formulations are recommended for L/S 17.
‡‡Tygon® E-Food and Viton (L/S sizes) are not recommended for multichannel cartridge pump heads.
†††Use a maximum of six 07519-70 cartridges when using L/S 14 Norprene®, PharMed® BPT, or Tygon tubing formulations at higher speeds with pump head 07519-05.

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SPECIFICATIONS for L/S Multichannel Cartridge Pump Heads

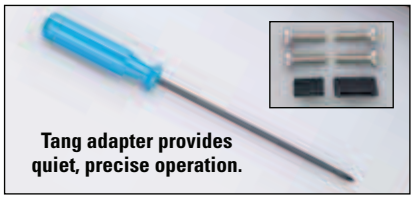
Catalog number	HL-07519-05	HL-07519-06
Performance Specifications		
Flow capacity per channel	0.005 to 1700 mL/min (0 to 27 GPH)‡‡‡	
Max rpm	600	
Number of rollers	3	4
Maximum vacuum/suction lift	660 mm Hg (26" Hg)/8.8 m H_2O (29 ft H_2O)	
Torque data	Please see pages 172–192	
Physical Specifications		
Housing/Rotor material	Stainless steel/anodized aluminum	Stainless steel
Operating temperature	0 to 40°C (32 to 104°F)	
Shipping weight	1.5 kg (3.3 lb)	

‡‡‡Depending on drive, pump head, and tubing size selected.

MULTICHANNEL CAPABILITIES

- Mount one pump head with up to eight cartridges on a single drive
- No tools required to insert, remove, or adjust the cartridges
- Change tubing without disturbing other cartridges—eliminates lost time

Mounting hardware and tool supplied with pump head.



Tang adapter provides quiet, precise operation.

MORE INFO



Tubing size settings on our cartridges allow you to simply select your tubing size for exact tubing retention every time!

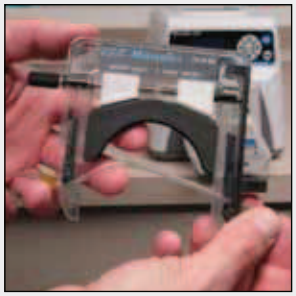
Shown: Large cartridge 07519-70 (order separately on page 56).

ORDERING INFORMATION

Microbore Two-Stop Pump Tubing Sets (for 07519-80 small cartridge)

Tubing ID (mm)	Platinum-cured silicone	Santoprene	Tygon® E-LFL	Viton®
0.89	HL-06421-26	HL-06431-26	HL-06447-26	HL-96428-26
1.42	HL-06421-34	HL-06431-34	HL-06447-34	HL-96428-34
2.06	HL-06421-42	HL-06431-42	HL-06447-42	HL-96428-42
2.79	HL-06421-48	HL-06431-48	HL-06447-48	HL-96428-48
Qty/pk	6	12	12	12

HOW TO LOAD YOUR PUMP HEAD



1. Select tubing, load tubing into cartridge, and set tubing retainers.



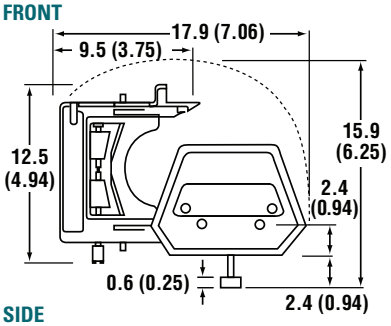
2. Snap cartridge into place on pump head.



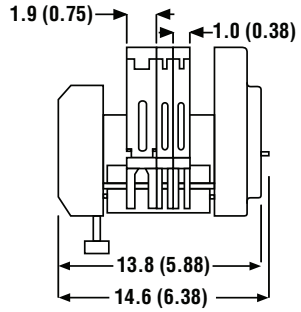
3. Adjust occlusion using index scale on cartridge.

Dimensional Drawings cm (in.)
07519-05, -06 Pump Heads

FRONT

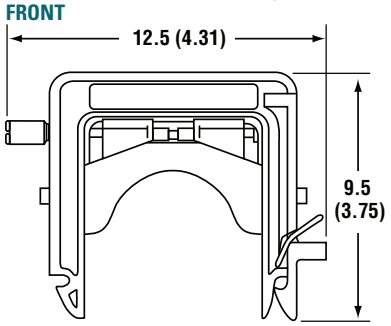


SIDE



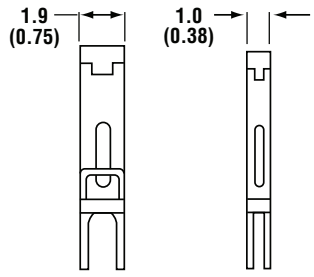
07519-70, -80 Cartridges

FRONT



07519-70 **07519-80**

SIDE



L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® Reduced-Pulsation Cartridge Pump Heads

Features/Benefits

- Synchronous multichannel pumping
- Deliver flow rates from 0.00005 to 350 mL/min per channel (flow rates depend on drive rpm and tubing size)
- Use up to 6 large cartridges or up to 12 small cartridges
- Use just one cartridge or fill the pump head
- Adapts easily to OEM applications

Selection Criteria

1. Pump head compatibility.
2. Flow rate and tubing size.

See specifications for more information.

Order tubing and drives separately.

Compatibility with Drives

- Mount on most Masterflex L/S drives

See specific drive pages for more information.

Pump Housing Specifications

Molded Polysulfone Housing

300-Series Stainless Steel (SS) Rotors and Bearings

Rulon® Rollers

- Adjustable foot on long heads for support

See specifications for maximum drive rpm.

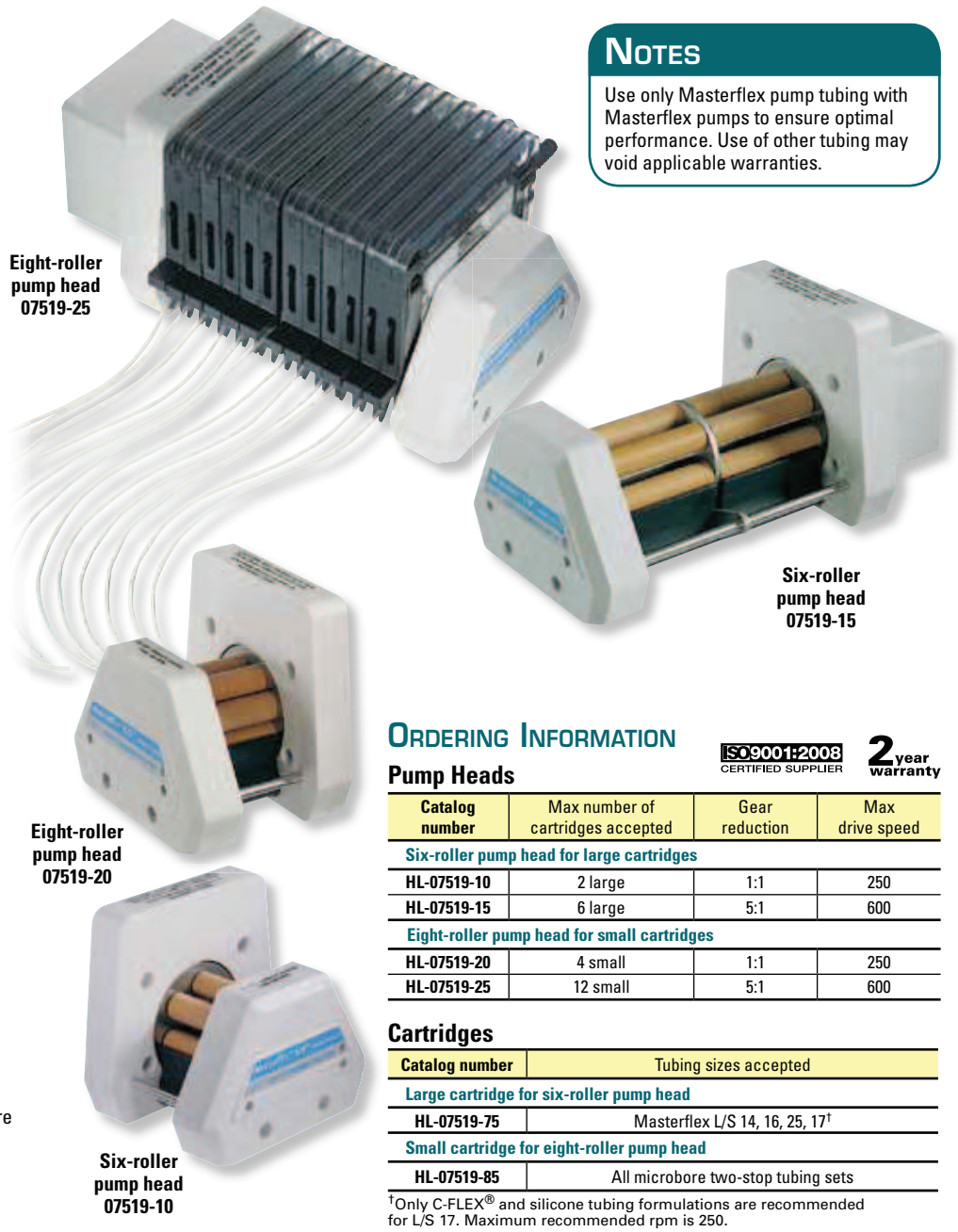
Cartridge Specifications

Polycarbonate and Glass-Filled Nylon

- No tools required/mechanically stable
- Anodized aluminum occlusion knob

Offset Tangential Occlusion

- Better flow performance
- Fine tune flow rate ±5%
- Flow characteristics virtually the same in each direction of rotation (see note on facing page regarding reduced-pulsation setup)
- Increase occlusion for priming/greater pressure
- Decrease occlusion to extend tubing life
- Index scale on cartridge
- Use microbore and Masterflex L/S Precision pump tubing sizes



Notes

Use only Masterflex pump tubing with Masterflex pumps to ensure optimal performance. Use of other tubing may void applicable warranties.

Ordering Information

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Pump Heads

Catalog number	Max number of cartridges accepted	Gear reduction	Max drive speed
Six-roller pump head for large cartridges			
HL-07519-10	2 large	1:1	250
HL-07519-15	6 large	5:1	600
Eight-roller pump head for small cartridges			
HL-07519-20	4 small	1:1	250
HL-07519-25	12 small	5:1	600

Cartridges

Catalog number	Tubing sizes accepted
Large cartridge for six-roller pump head	
HL-07519-75	Masterflex L/S 14, 16, 25, 17†
Small cartridge for eight-roller pump head	
HL-07519-85	All microbore two-stop tubing sets

†Only C-FLEX® and silicone tubing formulations are recommended for L/S 17. Maximum recommended rpm is 250.

Specifications & Flow Rate Information (mL/min per channel)

Pump head model	No. of rollers	Maximum no. of cartridges accepted‡	Gear ratio	Drive rpm	Pump tubing sizes (Order microbore two-stop tubing sets on page 57 and Masterflex pump tubing on pages 68–73††.)					
Using microbore two-stop tubing sets					**0.19 mm ID**	**0.25 mm ID**	**0.89 mm ID**	**1.42 mm ID**	**2.06 mm ID**	**2.79 mm ID**
HL-07519-20	8	4 small	1:1	6 to 250	0.017 to 0.70	0.31 to 1.3	0.31 to 13	0.70 to 29	1.3 to 54	2.0 to 85
				0.1 to 100	0.003 to 0.28	0.0005 to 0.52	0.005 to 5.2	0.012 to 12	0.022 to 22	0.034 to 34
HL-07519-25	8	12 small	5:1	6 to 600	0.0030 to 0.30	0.060 to 0.60	0.062 to 6.2	0.14 to 14	0.26 to 26	0.41 to 41
				0.1 to 100	0.00005 to 0.050	0.0001 to 0.10	0.001 to 1.0	0.002 to 2.3	0.004 to 4.3	0.007 to 6.8
Using Masterflex Precision pump tubing					—	**L/S 14**	**L/S 16**	**L/S 25**	**L/S 17‡‡**	—
HL-07519-10	6	2 large	1:1	6 to 250	—	0.94 to 39	3.1 to 130	5.8 to 240	8.4 to 350	—
				0.1 to 100	—	0.016 to 16	0.052 to 52	0.096 to 96	0.14 to 140	—
HL-07519-15	6	6 large	5:1	6 to 600	—	0.20 to 20	0.65 to 65	1.2 to 120	1.7 to 170	—
				0.1 to 100	—	0.003 to 3.3	0.011 to 11	0.020 to 20	0.028 to 28	—

‡Check pump head torque requirement with drive torque to determine actual number of cartridges.
††Tygon® Food and Viton® (L/S sizes) are not recommended for these reduced-pulsation cartridge pump heads.
‡‡Only C-FLEX® or silicone tubing is recommended for size L/S 17.

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SPECIFICATIONS for L/S Reduced-Pulsation Cartridge Pump Heads

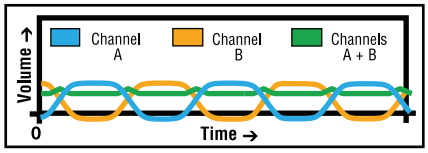
Catalog number	HL-07519-10	HL-07519-15	HL-07519-20	HL-07519-25
Performance Specifications				
Flow capacity per channel	0.00005 to 350 mL/min (0 to 5.5 GPH)†			
Max drive rpm	250†	600†	250†	600†
Number of rollers	6		8	
Torque data	Please see page 172–192			
Physical Specifications				
Housing material	Polysulfone ends			
Rotor/roller material	Stainless steel/Rulon®			
Operating temperature	0 to 40°C (32 to 104°F)			
Shipping weight	2.1 kg (4.5 lb)			

†Depending on drive, pump head, and tubing size selected.

REDUCED-PULSATION SETUP

Mount cartridges in opposite directions to use offset occlusion for reduced pulsation.

Connect two discharge tubes together with a Y-connector. This will balance the offset occlusion of each cartridge. The reduced pulsation is measured at the outlet (shown below).



MULTICHANNEL CAPABILITIES

- Mount one pump head with up to 12 cartridges on a single drive with synchronized or offset occlusion for reduced pulsation
- No tools required to insert, remove, or adjust the cartridges
- Change tubing without disturbing other cartridges—eliminates lost time on other channels
- Best performance with 100 rpm, 1/10 hp motors. Can be used with other drives with a reduced number of cartridges

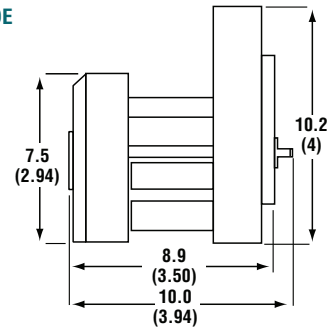


Mounting hardware and tool supplied with pump head

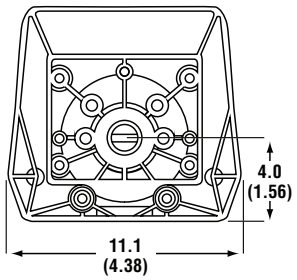
Dimensional Drawings cm (in.)

07519-10, -20 Pump Heads

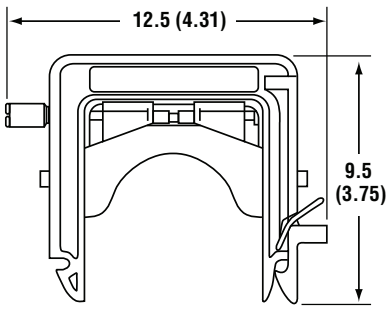
SIDE



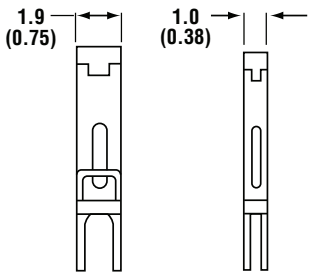
BACK



FRONT **07519-75, -85 Cartridges**

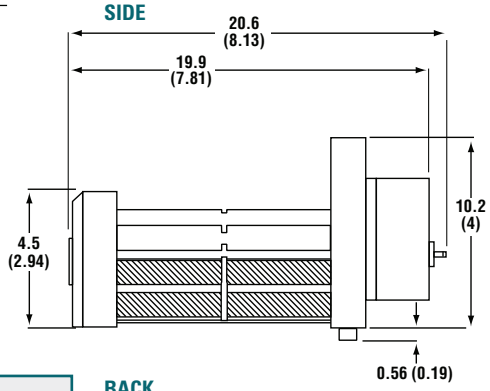


SIDE **07519-75** **07519-85**

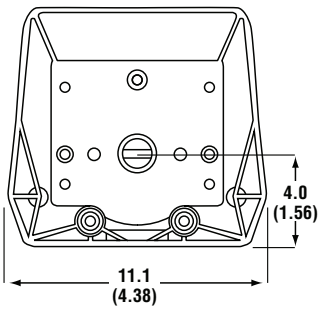


07519-15, -25 Pump Heads

SIDE



BACK



HOW TO LOAD YOUR PUMP HEAD



1. Select tubing, load cartridge, and set tubing retainers.



2. Easily snap cartridge into place on pump head.



3. Adjust occlusion using index scale on cartridge.

L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® PTFE-Diaphragm Pump Heads

Features/Benefits

- Designed for demanding chemical feed/metering applications
- Deliver flow rates from 10 to 800 mL/min
- Run dry without damage
- Maintain ±2% repeatability across varying system pressures and fluid viscosities
- Self-priming under wet and dry conditions
- Compact design minimizes fluid churning and dead volume
- Handles wide variety of fluids at temperatures up to 66°C (150°F)
- Pump through filter or into pressurized chamber
- Easy to clean, inspect, and service
- Adapts easily to OEM applications

Selection Criteria

1. Flow rate/pressure required.
2. Materials of construction.
3. Compatibility with drives.

Tang adapters and mounting hardware are supplied with each head.

See specifications for more information.

Order fittings and drives separately.



Compatibility with Drives

- Mount on most Masterflex L/S drives that accept two or more pump heads
- Drive requirements: minimum 1/10 hp

Pump Head Materials

- PTFE diaphragm and pump body
- PTFE valve seat and springs
- PTFE or borosilicate glass ball checks
- Cast aluminum housing
- Tang adapters provide positive connection of pump head to drive for better torque control and quieter operation
- To determine chemical compatibility of your fluids, see pages 198–206

ISO9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

Catalog number	Flow capacity
HL-07090-42	80 to 800 mL/min (1.3 to 13 GPH)
HL-07090-62	10 to 100 mL/min (0.16 to 1.6 GPH)

Complete L/S® PTFE-Diaphragm Pump System

Applications

- Chemical feed and metering
- Chemical injection
- High-purity fluid transfer
- Pumping aggressive chemicals
- High-pressure pumping

Benefits

- Continuous pressure up to 50 psi
- Excellent chemical compatibility
- High metering accuracy
- Self-priming
- PTFE fluid path maintains fluid purity

Features

- 1/10-hp, 6 to 600 rpm continuous-duty drive
- ±0.25% speed control accuracy
- ABS plastic housing
- DB9 female connection on back for remote control



77915-10

Specifications & Ordering Information

Catalog number	Flow range (mL/min)	Pump head included	Tubing included†	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77915-10	80 to 800	L/S PTFE diaphragm 07090-42	1/4" ID x 3/8" OD PTFE tubing 06605-15; 3.6 m (12 ft)	—	07528-10	40 to 400‡	IP33	90 to 260 VAC

†Also includes pipe adapters and check valve. ‡Recommended drive speed operating range for included pump head.

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SPECIFICATIONS for L/S PTFE-Diaphragm Pump Heads

Catalog number	HL-07090-42	HL-07090-62
Performance Specifications		
Flow capacity	80 to 800 mL/min (1.3 to 13 GPH)	10 to 100 mL/min (0.16 to 1.6 GPH)
Max rpm	400	400
Max pressure	3.4 bar (50 psi)†	5.0 bar (75 psi)†
Max suction lift (of H_2O)	61 cm (24") dry, 4.9 m (16 ft) wet	25.4 cm (10") dry, 3 m (10 ft) wet
Max dead volume	16 mL	2 mL
Intake/discharge ports	¼" NPT(M)	⅛" NPT(M)
Max fluid temperature	65°C (149°F)	
Liquid viscosity range	1 to 500 cp (6 to 2900 SSU)	
Reversible	Yes (does not affect flow direction)	
Self-priming, wet or dry	Yes	
Cracking pressure	68 m bar (<1 psi)	
Run dry	Yes	
Torque Specifications [pumping water at 0 psi, 21°C (70°F)]		
Starting torque	5.8 kg-cm (80 oz-in)	3.6 kg-cm (50 oz-in)
Running torque	1.6 kg-cm (22 oz-in)	1.3 kg-cm (18 oz-in)
Physical Specifications		
Housing, diaphragm, spring, and valve seat material	PTFE	
Ball check material	PTFE	Borosilicate glass
Operating temperature	0 to 40°C (32 to 104°F)	
Shipping weight	1.5 kg (4 lb)	1.4 kg (3 lb)

†Use a pressure relief valve to prevent higher pressures.

ACCESSORIES

For high-flow pump head (07090-42)

HL-31320-54 Female pipe adapter with ¼" NPT(F). Use with ⅜" OD tubing.

HL-06605-35 PTFE tubing, ⅜" OD x ¼" ID. Pack of 7.6 m (25 ft).

HL-07090-45 External check valve with PTFE ball. Inlet and discharge ports are ¼" NPT(M).

HL-07090-43 Service kit. Contains one PTFE diaphragm, two PTFE check valve assemblies, two drive-tang boots, installation wrench.

For low-flow pump head (07090-62)

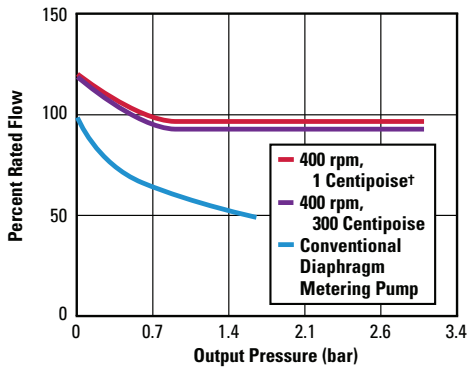
HL-31320-52 Female pipe adapter with ⅛" NPT(F). Use with ¼" OD tubing.

HL-06605-31 PTFE tubing, ¼"OD x 5⁄32" ID. Pack of 7.6 m (25 ft).

HL-07090-65 External check valve with borosilicate glass ball. Inlet and discharge ports are ⅛" NPT(M).

HL-07090-63 Service kit. Contains one PTFE diaphragm, two PTFE check valve assemblies, two drive-tang boots, installation wrench.

Rate of flow degradation with increases in pressure



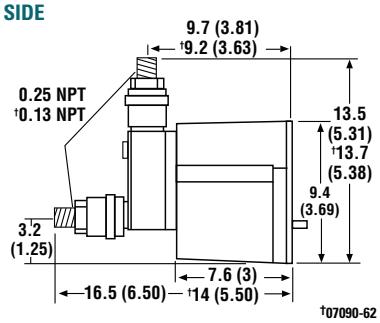
†Operation above 400 rpm will increase flow but may decrease pump head accuracy and life.



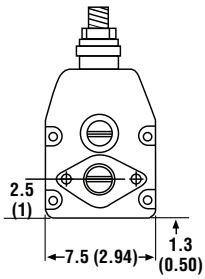
Service kit 07090-63 for PTFE-diaphragm pump head 07090-62

Dimensional Drawings cm (in.)
PTFE-Diaphragm Pump Head

SIDE

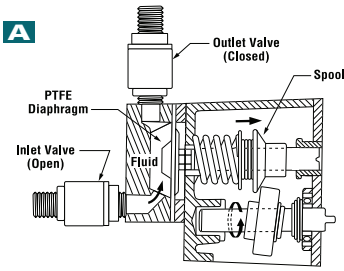


BACK



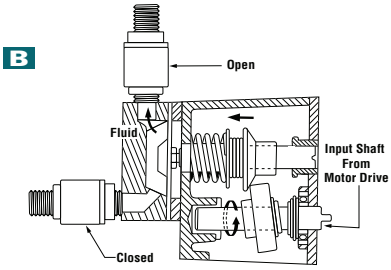
Pump Head Operation:

A



Drive coupling converts rotary to reciprocating motion. On the intake stroke, the PTFE diaphragm is fully retracted, creating a vacuum to open the inlet valve and draw in fluid.

B



On the discharge stroke, the PTFE diaphragm is driven forward, forcing fluid out through the outlet valve.

L/S® TUBING 68–73
L/S® DRIVES 74–107
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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MICROPUMP® A-MOUNT GEAR PUMP HEADS

FEATURES/BENEFITS

- Leak-free delivery of fluids
- Magnetic drive and single seal keep potential contaminants out
- Precision-geared pump heads provide smooth, accurate, pulseless fluid delivery
- Wide range of wetted parts handles a variety of challenging chemicals
- Compact and easy to service with available service kits and simple hand tools
- Cavity-style pump heads provide high inlet pressures
- Suction shoe heads provide higher delivery pressures and superior priming performance
- Continuous-duty cycle

SELECTION CRITERIA

1. Flow rate and tubing size desired.
2. Compatibility with drives.
3. Mounting adapter plate for Masterflex® L/S® drives.

See specifications for more information.

Order pump heads and drives separately.

COMPATIBILITY WITH DRIVES

- Mount on all Masterflex L/S drives using the Micropump pump head adapter for 600-rpm Masterflex L/S drives or mount to one of the Micropump-compatible drives on pages 63–64

HL-07002-15 Micropump pump head adapter kit for 600-rpm Masterflex L/S drives

PUMP HOUSING SPECIFICATIONS

- 316 stainless steel base material
- Gears can be constructed of carbon graphite, PTFE, PPS, or PEEK
- Static seal materials include Viton®, PTFE, Kalrez, and EPDM (some are standard while others may be requested when ordering, see specifications table for standard materials)



A

Cavity style design has ability to do reversible flows on models without an internal bypass.



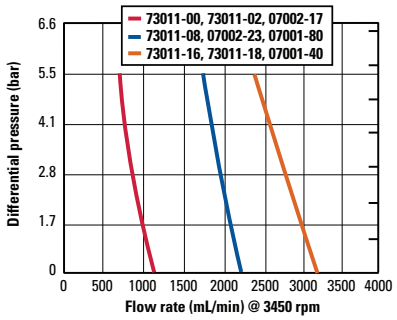
B

Suction shoe design provides constant flow even when pressure changes

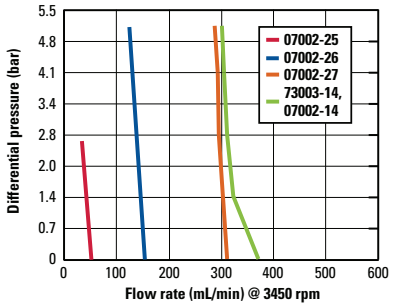
SEE PAGES 63 AND 64

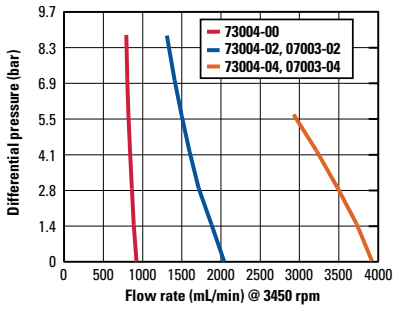
To select compatible drives.

A **Flow Curve**



B **Flow Curves**





SPECIFICATIONS & ORDERING INFORMATION

Max viscosity: 0.2 to 1500 cp **Suction lift:** 59.8 millibar (24" of H_2O at 1750 rpm)

Catalog number	Flow rates (mL/min)			Max pressure (bar)		Port size NPT(F)	Wetted parts			Temperature range	Internal bypass	Max speed (rpm)	Service kits Cat. no.
	mL/rev	at 50 rpm	at 5000 rpm	Diff	System		Body	Gears	Seals				
A Cavity-style pump heads													
HL-73011-00	0.32	16	1600	5.51	20.68	⅛"	316 SS	PEEK	PTFE	–43 to 54°C	No	10,000	HL-73011-80
HL-73011-02				5.51				PEEK		–43 to 54°C	Yes		HL-73011-80
HL-07002-17				3.44				PTFE		–45 to 76°C	Yes		HL-07144-38
HL-07002-23	0.64	32	3200	3.44	20.68	⅛"	316 SS	PTFE	PTFE	–45 to 54°C	Yes	10,000	HL-07002-08
HL-07001-80				5.17				PPS					HL-07001-89
HL-73011-08	0.64	32	3200	5.51	20.68	⅛"	316 SS	PEEK	PTFE	–43 to 54°C	No	10,000	HL-73011-84
HL-73011-10											Yes		HL-73011-84
HL-73011-16	0.91	45.5	4550	5.51	20.68	⅛"	316 SS	PEEK	PTFE	–43 to 54°C	No	10,000	HL-73011-88
HL-73011-18				5.51				PEEK		–43 to 54°C	Yes		HL-73011-88
HL-07001-40				3.44				PTFE		–45 to 98°C	Yes		HL-07001-41
B Suction shoe pump heads													
HL-07002-25	0.017	0.85	85	1.37	20.68	⅛"	316 SS	Graphite	PTFE	–45 to 176°C	No	8000	HL-07144-42
HL-07002-26	0.042	2.10	210	2.75	20.68	⅛"	316 SS	Graphite	PTFE	–45 to 176°C	No	8000	HL-07144-44
HL-07002-27	0.084	4.20	420	2.75	20.68	⅛"	316 SS	Graphite	PTFE	–45 to 176°C	No	8000	HL-07144-47
HL-73003-14	0.092	4.60	460	5.17	20.68	⅛"	316 SS	PEEK	PTFE	–45 to 176°C	No	8000	HL-73003-94
HL-07002-14								PPS					HL-07144-34
HL-73004-00	0.261	13.05	1305	8.61	20.68	⅛"	316 SS	PEEK	Viton	–45 to 176°C	Yes	10,000	HL-73004-80
HL-73004-02	0.58	29.00	2900	8.61	20.68	⅛"	316 SS	PEEK	Viton	–45 to 176°C	Yes	10,000	HL-73004-82
HL-07003-02				5.17				PPS					HL-07003-12
HL-73004-04	1.17	58.50	5850	4.13	20.68	⅛"	316 SS	PEEK	Viton	–45 to 176°C	Yes	10,000	HL-73004-84
HL-07003-04								PPS					HL-07003-14

Note: Viscosity for all models is dependent on the parameters (flow rate, pressure, etc.) of the specific applications. Flow rates based on water at room temperature and no back pressure.

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MICROPUMP®-COMPATIBLE DRIVES

FEATURES/BENEFITS

- Console or wall-mount washdown models
- Easily operate console from front panel or use optional foot switch for hands-free operation
- Wall-mount washdown drive is ideal for your industrial or dirty locations; the IP56-rated enclosure is connected to motor via 7.6-m (25-ft) cable
- Calibrate, copy, and dispense features
- Precise, pulseless batching and dispensing
- Calibration values for all Micropump® A-mount pump heads are stored in memory
- Front-panel pump head calibration
- Digital optical encoder feedback signal keeps speed control to ±0.3%
- Remote control capabilities
- Keypad lockout feature



Console digital dispensing drive 75211-30





Wall-mount digital dispensing drive 75211-40

SELECTION CRITERIA

1. Console or wall-mount version.
2. Voltage required.

See specifications for more information.

Order pump heads and drives separately.

DRIVE CONTROLS

- Controls on front panel of drive controller
- Lighted display indicates power is on
- Simple, push-button programming of the following parameters:
  - Pump SIZE
  - MODE
  - DISPense
  - CALibration
  - FLOW rate
  - PRIME
  - Up/Down (▲▼)
  - Stop/Start

Note: Up/Down keys are used to change the display value of flow rate and calibration functions during setup or operation.

PUMP HEAD COMPATIBILITY

- Use with Micropump A-mount pump heads on page 62

NOTES

To calibrate digital dispensing drives for fluids other than water, enter the actual volume of fluid dispensed during a timed run.

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ORDERING INFORMATION

Catalog number	Power (50/60 Hz)
Console digital dispensing drive	
HL-75211-30	115 VAC
HL-75211-35	230 VAC
Wall-mount washdown digital dispensing drive	
HL-75211-40	115 VAC
HL-75211-45	230 VAC

ACCESSORIES

HL-07595-42 Foot switch for remote start/stop control of 75211-30 and -35 drives.

HL-07592-83 Handheld remote controller for use with 75211-40 and -45 drives. Features start/stop, reverse, and momentary on (prime) functions.

SPECIFICATIONS for Micropump-Compatible Drives

Catalog number		HL-75211-30	HL-75211-35	HL-75211-40	HL-75211-45
Performance Specifications					
Flow capacity		3.06 to 4212 mL/min (0.048 to 67 GPH)†		1.02 to 4212 mL/min (0.016 to 67 GPH)†	
rpm		180 to 3600		60 to 3600	
Remote control – Input		ON/OFF by contact closure; 0 to 20 mA, 4 to 20 mA, 0 to 10 VDC			
Physical Specifications					
Voltage/Frequency VAC (50/60 Hz)		90 to 130	190 to 260	90 to 130	190 to 260
Current		3 A	1.5 A	3 A	1.5 A
Motor type		1/10-hp, permanent-magnet DC			
IP rating‡		IP23		IP56 (NEMA 4X)	
Operating temperature		0 to 40°C (32 to 104°F)			
Dimensions (L x W x H)	Console	29.2 x 19.7 x 18.4 cm (11½" x 7¾" x 7¼")			
	Wall-mount	Controller: 11.4 x 27.9 x 22.9 cm (11½" x 7¾" x 7¼") Drive: 20.3 x 10.2 x 11.4 cm (8" x 4" x 4½")			
Shipping weight		6.4 kg (14 lb)		9.1 kg (20 lb)	

†Depending on pump head selected. ‡See page 194 for an explanation of IP ratings.

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Cole-Parmer® Console Drive



75211-10

Features/Benefits

- Permanent-magnet, direct-current (PMDC) motor is built for long-term applications
- Maximum continuous-duty flow rates possible with Micropump® A-mount pump heads on page 62
- Gradual, one-second acceleration for smooth flow rate changes

Selection Criteria

1. Voltage required.

See specifications for more information.

Order pump heads and drives separately.

Drive Controls

- Single-turn potentiometer speed control
- Separate power switch with lighted "power-on" indicator

Pump Head Compatibility

- Use with Micropump A-mount pump heads on page 62

Specifications & Ordering Information

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Catalog number	HL-75211-10	HL-75211-15
Performance Specifications		
Flow capacity	0.85 to 5850 mL/min (0.013 to 92.7 GPH)	
rpm	50 to 5000	
Remote control – Input	No	
Physical specifications		
Voltage/Frequency VAC (50/60 Hz)	115	230
Current	2.0	1.0
Motor type	Permanent magnet DC	
IP rating†	IP22	
Operating temperature	0 to 40°C (32 to 104°F)	
Dimensions	21.6 x 16.2 x 13.2 cm (8½" x 6⅜" x 5³⁄₁₆")	
Shiping weight	5.0 kg (11 lb)	

†See page 194 for an explanation of IP ratings.

Cole-Parmer® Modular Gear Pump Drive



75211-20

Features/Benefits

- Permanent-magnet, direct-current (PMDC) motor is built for long-term applications
- "Soft-start" feature allows gradual, one-second acceleration for smooth flow rate change
- Continuous-duty drives feature 2% line/load regulation
- Controller features IP23-rated housing and single-turn potentiometer for speed control
- IP21-rated motor features a welded base for mounting or for free-standing use. Compatible with all Micropump® A-mount pump heads on page 62.

Selection Criteria

1. Voltage required.

See specifications for more information.

Order pump heads and drives separately.

Drive Controls

- Controls on front panel of drive controller
- Single-turn potentiometer speed control
- Separate power switch with lighted "power-on" indicator

Pump Head Compatibility

- Use with Micropump A-mount pump heads on page 62

Specifications & Ordering Information

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Catalog number	HL-75211-20	HL-75211-25
Performance Specifications		
Flow capacity	0.68 to 4212 mL/min (0.01 to 66.6 GPH)	
rpm	40 to 3600	
Remote control – Input	No	
Physical specifications		
Voltage/Frequency VAC (50/60 Hz)	115	230
Current	2.3	1.2
Motor type	Permanent magnet DC	
IP rating†	IP21	
Operating temperature	0 to 40°C (32 to 104°F)	
Dimensions	Controller: 17.3 x 8.3 x 13.4 cm (7" x 3¼" x 5¼") Drive: 17.3 x 12.3 x 9.2 cm (6¹³⁄₁₆" x 4¹³⁄₁₆" x 3⅝")	
Shipping weight	5.9 kg (13 lb)	

†See page 194 for an explanation of IP ratings.

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Cole-Parmer® GEAR PUMP SYSTEMS

FEATURES/BENEFITS

- Complete pump system—drive and pump head—with a single catalog number

BENCHTOP ANALOG PUMPS

- Gradual on-second acceleration offers smooth control of drive speed and flow rate
- PMD drive is built to last—excellent for long-term applications
- System includes analog console drive 75211-10 (115 V) or 75211-15 (230 V); see page 64 for drive specifications

BENCHTOP DIGITAL PUMPS

- Calibrate, copy, and dispense features produce precise, pulseless batching and dispensing
- Displacements and flow values for all Micropump® A-mount pump heads are stored in memory
- IP23-rated enclosure protects the internal components
- Controller has a DB15F connection to the optional foot switch for hands-free on/off control (order foot switch separately below)
- System includes digital console drive 75211-30 (115 V) or 75211-35 (230 V); see page 63 for drive specifications

MORE INFO

Service kits 07144-42; 74012-02, -42, and -52 include: gears, suction shoe, shaft seals, and springs.

Service kits 74012-12, -22, and -32 include: gears, bushings, and seals.

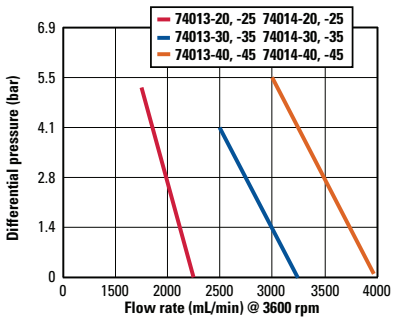


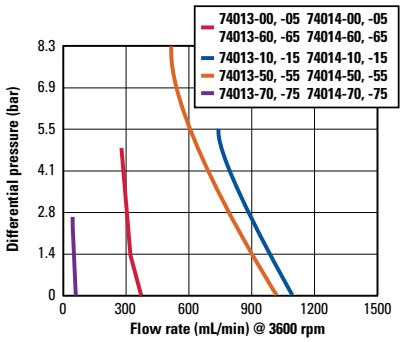
Benchtop analog pump system 74013-40



Benchtop digital pump system 74014-30

Flow Curve





SPECIFICATIONS & ORDERING INFORMATION

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Viscosity: 0.2 to 1500 cp

Suction lift: 59.8 millibar (24" of H_2O) at 1750 rpm

Duty cycle: continuous

Remote control
74013-00 to -65: none
74014-00 to -65: (input) on/off by contact closure 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA, and remote output

Max temperature: 40°C (104°F)

Speed
Analog drives: 50 to 5000 rpm
Digital drives: 60 to 3600 rpm

Dimensions (L x W x H)
Analog drives:
21.6 x 16.2 x 13.8 cm (8½" x 6⅜" x 5⁹⁄₁₂")
Digital drives:
19.7 x 29.2 x 18.4 cm (7¾" x 11½" x 7¼")

Flow rates (mL/min)†			Max pressure		Port size NPT(F)	Wetted parts			Temperature range	Power (VAC)	Benchtop analog pumps	Benchtop digital pumps	Service kits
mL/ rev	at 50 rpm	at 3600 rpm	Diff (bar)	System (bar)		Body	Gears	Seals			Catalog number	Catalog number	Catalog number
0.017	0.85	85	1.37	20.68	⅛"	316 SS	Graphite	PTFE	–46 to 177°C (–50 to 350°F)	115	HL-74013-70	HL-74014-70	HL-07144-42
										220	HL-74013-75	HL-74014-75	
0.092	4.60	331.2	5.17	20.68	⅛"	316 SS	PPS	PTFE	–46 to 177°C (–50 to 350°F)	115	HL-74013-00	HL-74014-00	HL-74012-02
										220	HL-74013-05	HL-74014-05	
0.092	4.60	331.2	5.17	20.68	⅛"	316 SS	PPS	PPS	–46 to 177°C (–50 to 350°F)	115	HL-74013-60	HL-74014-60	—
										220	HL-74013-65	HL-74014-65	
0.261	13.05	939.6	8.61	20.68	⅛"	316 SS	PEEK	Viton	–46 to 177°C (–50 to 350°F)	115	HL-74013-50	HL-74014-50	HL-74012-52
										220	HL-74013-55	HL-74014-55	
0.316	15.8	1137.6	5.17	20.68	⅛"	316 SS	PPS	PTFE	–46 to 54°C (–50 to 130°F)	115	HL-74013-10	HL-74014-10	HL-74012-12
										220	HL-74013-15	HL-74014-15	
0.64	32.0	2304	5.17	20.68	⅛"	316 SS	PPS	PTFE	–46 to 54°C (–50 to 130°F)	115	HL-74013-20	HL-74014-20	HL-74012-22
										220	HL-74013-25	HL-74014-25	
0.91	45.5	3276	5.17	20.68	⅛"	316 SS	PPS	PTFE	–46 to 54°C (–50 to 130°F)	115	HL-74013-30	HL-74014-30	HL-74012-32
										220	HL-74013-35	HL-74014-35	
1.17	58.5	4212	4.13	20.68	⅛"	316 SS	PPS	Viton®	–46 to 177°C (–50 to 350°F)	115	HL-74013-40	HL-74014-40	HL-74012-42
										220	HL-74013-45	HL-74014-45	

†Flow rates in mL/min are based on water at room temperature and no back pressure.

ACCESSORIES

HL-07595-42 Foot switch, for momentary start/stop control. 6-ft cable.

HL-06385-10 Male pipe adapter (straight); PP, ¼"OD x ⅛" NPT(M). Pack of 10.

HL-30621-31 Male pipe adapter; HDPE, ⅛" NPT(M) x ¼" ID. Pack of 10.

HL-40610-36 Male pipe adapter; natural PP, ⅛" NPT(M) x ¼" ID. Pack of 10.

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ISMATEC® MINICARTRIDGE PUMP HEADS



Ismatec® minicartridge pump head 07623-00 shown with Masterflex® L/S® drive 07528-10

SPECIFICATIONS for Ismatec® Minicartridge Pump Heads

Catalog number		HL-07623-00	HL-07623-10
Performance Specifications			
Flow capacity		0.003 to 195 mL/min (0 to 3 GPH)	0.002 to 156 mL/min (0 to 2.5 GPH)
Max rpm		600	
Number of rollers		6	8
Number of channels available		Up to 8	
Torque Specifications [single channel pumping water @ 0 psi, 21°C (70°F)]			
PharMed® BPT, Tygon®	Starting torque	0.86 kg-cm (12 oz-in)	
	Running torque	0.7 kg-cm (10 oz-in)	
Silicone	Starting torque	0.5 kg-cm (7 oz-in)	
	Running torque	0.2 kg-cm (3 oz-in)	
Physical Specifications			
Housing material		Anodized aluminum	
Rotor material		Nylatron®	
Shipping weight		1.9 kg (2 lb)	

FEATURES/BENEFITS

- Deliver flow rates from 0.002 to 195 mL/min
- Click'n'Go™ minicartridges are easy to load and feature spring occlusion
- Optimum tension; no need for adjustments
- Accepts three-stop tubing
- Tubing life is twice as long—when first tubing section fatigues, move to fresh section
- Adapts easily to OEM applications

SELECTION CRITERIA

1. Flow rate.
2. Number of rollers:
   - 6-roller pump head for higher flow rate
   - 8-roller pump head for smoother flow
3. Compatibility with drives.
4. Number of channels per drive rpm.

Order tubing and drive separately.

COMPATIBILITY WITH DRIVES

- Mount on all drives accepting Masterflex® L/S® pump heads

PUMP HEAD SPECIFICATIONS

- Anodized aluminum frame
- Nylatron® rollers
- Nylon minicartridges

PUMP HEAD LOADING

1. Thread tubing through cartridge between stops.
2. Seat the tubing collar in recessed holder.
3. Load cartridge into pump head and adjust occlusion.

MULTICHANNEL CAPABILITIES

Achieve up to eight channels depending on the drive. Minicartridges, mounting hardware, and support foot are included with pump heads.

Masterflex drive models	Recommended no. of channels
HL-07554-80, -85, -90, -95	Up to 200 rpm, 8 Up to 400 rpm, 5 Up to 600 rpm, 3
All other L/S models	Up to 200 rpm, 8 Up to 400 rpm, 7 Up to 600 rpm, 6

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ORDERING INFORMATION

Catalog number	No. of rollers	Flow range
HL-07623-00	6	0.003 to 195 mL/min
HL-07623-10	8	0.002 to 156 mL/min

HL-78016-98 Replacement Click'n'Go™ minicartridge.

THREE-STOP TUBING FLOW RATE & ORDERING INFORMATION

Step 1: See table below for catalog number prefix.

Three-stop, color-coded tubing				Extension tubing	
Cat. no. prefix	Type	Suffixes for the available sizes	Tubes/pk (length)†	**Cat. no. prefix**	Length/ pk
HL-96450-XX	Tygon® E-LFL	10, 12, 18, 26, 30, 34, 42, 48	12 (16")	**HL-06449-XX**	100 ft
HL-96458-XX	Tygon® E-Food		12 (16")	**HL-06457-XX**	100 ft
HL-96461-XX	Tygon® E-Lab		12 (16")	**HL-06460-XX**	100 ft
HL-07624-XX	Silicone (peroxide-cured)	22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	**HL-07625-XX**	50 ft
HL-95603-XX	Silicone (platinum-cured)	22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	**HL-95612-XX**	50 ft
HL-97629-XX	Viton®	26, 30, 34, 38, 42, 46, 48	12 (12")	**HL-97632-XX**	50 ft
HL-95714-XX	PharMed® BPT	12, 18, 26, 32, 36, 40, 44, 48	12 (16")	**HL-95809-XX**	100 ft
HL-95693-XX	Autoclavable Pharmed® BPT	12, 32, 48	6 (16")	**HL-95809-XX**	100 ft
HL-95605-XX	PVC Solvent/ Hydrocarbon	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 40, 42, 44, 46, 48	12 (16")	**HL-95712-XX**	50 ft
HL-96425-XX	MHLL	24, 30, 36, 42, 48	6 (16")	None (PharMed BPT recommended for extension tubing; see 95809-XX above)	

Step 2: Add on suffix to complete the catalog number.

Catalog number suffix	ID (mm)	Color-coded stops	Flow rates (mL/min)‡			
			1 to 100 rpm drives		6 to 600 rpm drives	
			6 rollers	8 rollers	6 rollers	8 rollers
-10	0.19	Orange/red	0.003 to 0.32	0.002 to 0.26	0.030 to 1.2	0.002 to 1.0
-12	0.25	Orange/blue	0.004 to 0.65	0.003 to 0.54	0.007 to 2.7	0.005 to 2.1
-14	0.38	Orange/green	0.008 to 1.1	0.007 to 0.09	0.011 to 4.6	0.009 to 3.6
-16	0.44	Green/yellow	0.012 to 1.6	0.009 to 1.3	0.014 to 5.5	0.011 to 4.4
-18	0.51	Orange/yellow	0.016 to 2.0	0.013 to 1.7	0.017 to 6.9	0.014 to 5.5
-22	0.64	Orange/white	0.025 to 3.1	0.020 to 2.6	0.033 to 20	0.026 to 15
-24	0.76	Black/black	0.030 to 3.9	0.025 to 3.2	0.047 to 28	0.037 to 22
-26	0.89	Orange/orange	0.043 to 5.4	0.036 to 4.5	0.060 to 36	0.048 to 39
-28	1.02	White/white	0.058 to 7.0	0.048 to 5.9	0.082 to 4.9	0.065 to 39
-30	1.14	Red/red	0.072 to 8.6	0.060 to 7.2	0.088 to 53	0.071 to 42
-32	1.30	Gray/gray	0.079 to 10	0.066 to 8.6	0.11 to 67	0.089 to 54
-34	1.42	Yellow/yellow	0.086 to 12	0.072 to 9.9	0.14 to 81	0.11 to 65
-36	1.52	Blue/blue	0.10 to 14	0.084 to 11	0.14 to 85	0.11 to 68
-38	1.65	Blue/blue	0.12 to 15	0.096 to 13	0.17 to 103	0.14 to 82
-40	1.85	Green/green	0.16 to 20	0.13 to 16	0.20 to 121	0.16 to 97
-42	2.06	Purple/purple	0.19 to 23	0.16 to 19	0.23 to 136	0.18 to 109
-44	2.29	Purple/black	0.20 to 24	0.17 to 20	0.24 to 148	0.20 to 118
-46	2.54	Purple/orange	0.23 to 29	0.19 to 24	0.29 to 173	0.23 to 138
-48	2.79	Purple/white	0.26 to 32	0.22 to 27	0.32 to 195	0.26 to 156

†Length of assembly may vary by ±1".
‡Flow rates (mL/min) are nominal. Actual flow rates will depend on occlusion, fluid viscosity, pressure, etc.

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VALVELESS PISTON PUMP HEADS

FEATURES/BENEFITS

- Deliver flow rate from 0.08 to 432 mL/min
- Ideal for dispensing and metering
- No valves to clog or wear
- Sensitive mechanical stroke length adjustment is accurate to within ±1%
- Maximum viscosity: 500 centipoise
- Maximum pressure: 6.9 bar (100 psi)
- Low dead volume; self-priming
- 3A-approved sanitary models available
- Build your own pump systems using interchangeable heads, drives, and accessories

SELECTION CRITERIA

1. Flow rate.
2. Piston diameter.
3. Construction material.

Order pump head, adapter kit, drive, and tubing separately.

COMPATIBILITY WITH DRIVES

- Mount on Masterflex® L/S® drives using optional Adapter Kit
- Depending on setup, drive may need to be elevated for proper adapter use.

PUMP HEAD SPECIFICATIONS

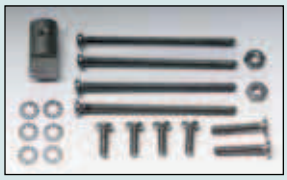
Stainless steel (SS) and ceramic models

- Handle temperatures to 177°C (350°F)
- Kynar® PVDF cylinder body available



MASTERFLEX® L/S® ADAPTER KIT

This adapter kit is required to convert your L/S drive for use with these valveless piston pump heads. Pump heads have adjustable stroke length to adjust flow rate, allowing you to convert your fixed-speed drive into a variable-flow pump.



Mounting hardware included in the adapter kit.

Catalog number	Description	Includes
HL-07104-48	Masterflex L/S adapter kit	All necessary mounting hardware and fittings

ORDERING INFORMATION for Valveless Piston Pump Heads

Catalog number	Max flow rate (mL/min) at various rpm (vary flow rate by adjusting rpm or stroke length)		Max bar	Max temperature	Piston diameter	Materials of construction			Shpg wt kg (lb)
	1 to 100 rpm	6 to 600 rpm				Piston	Cylinder body	Cylinder liner	
Standard high-flow pump heads									
HL-07104-50	0.08 to 8.00	0.48 to 48.00	6.8	60°C (140°F)	1/8"	316 SS	316 SS	Carbon	0.6 (1.3)
HL-07104-52			4.1				Kynar PVDF		0.3 (0.7)
HL-07117-26	0.32 to 32.00	1.92 to 192.00	4.1	60°C (140°F)	1/4"	316 SS	Kynar PVDF	Carbon	0.4 (0.8)
HL-07104-62			6.8				316 SS		0.5 (1.1)
HL-07104-54	0.32 to 32.00	1.92 to 192.00	4.1	100°C (212°F)	1/4"	Ceramic	Kynar PVDF	Ceramic	0.4 (0.8)
HL-07104-58								Carbon	0.6 (1.2)
HL-07104-56	0.32 to 32.00	1.92 to 192.00	6.8	177°C (350°F)	1/4"	Ceramic	316 SS	Ceramic	0.6 (1.2)
HL-07104-60								Carbon	0.5 (1.1)
HL-07117-28	0.72 to 72.00	4.32 to 432.00	4.1	60°C (140°F)	3/8"	316 SS	Kynar PVDF	Carbon	0.5 (1.1)
HL-07104-72			6.8				316 SS		
HL-07104-64	0.72 to 72.00	4.32 to 432.00	4.1	100°C (212°F)	3/8"	Ceramic	Kynar PVDF	Ceramic	0.4 (0.8)
HL-07104-68								Carbon	
HL-07104-66	0.72 to 72.00	4.32 to 432.00	6.8	177°C (350°F)	3/8"	Ceramic	316 SS	Ceramic	0.5 (1.1)
HL-07104-70								Carbon	
Sanitary high-flow pump heads; meet 3A Sanitary Standard 02-08A1 for use with foods									
HL-07117-20	0.32 to 32.00	1.92 to 192.00	6.8	177°C (350°F)	1/4"	Ceramic	316 SS	Ceramic	0.5 (1.1)
HL-07117-22	0.72 to 72.00	4.32 to 432.00			3/8"				

ACCESSORIES

Kynar® PVDF Tubing Adapters

(for 1/4"OD compression fittings)

Cat. no. (each)	Description
HL-07115-81	For 1/8"ID tubing
HL-07115-83	For 1/4" ID tubing
HL-07115-88	For 3/8" ID tubing
HL-07115-89	For 1/4"-28 female thread
HL-07115-97	For 1/8" OD tubing



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L/S® Precision Pump Tubing

- Ensure optimal performance from your Masterflex pump
- Custom extruded to fit Masterflex pumps
- Engineered for long life in peristaltic pump applications
- Lot-to-lot consistency provides superior accuracy and repeatability

Masterflex L/S pump tubing is manufactured to extremely close tolerances that match our L/S pump heads, ensuring accurate, repeatable flow and long tubing life. Our pump tubing is factory-tested and optically inspected to provide the best performance from your peristaltic pump. With 21 different materials available, there is an L/S pump tubing formulation suitable for nearly any fluid handling application.

Our High-performance Precision pump tubing features a thicker wall compared to our Precision pump tubing, making it the best choice for applications involving pressure, suction lift, viscous fluids, or long tubing life. See pages 70–71 to order.

Specifications

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 (⅛")	4.8 mm (3⁄16")	6.4 mm (¼")	9.5 mm (⅜")
Flow range (approximate)† with 1 to 600 rpm drive	0.06 to 36 mL/min	0.21 to 130 mL/min	0.8 to 480 mL/min	1.7 to 1000 mL/min	2.8 to 1700 mL/min	3.8 to 2300 mL/min
Maximum pressure‡	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)	

†Determined under the following conditions: 0 psi at inlet, 0.5 psi at outlet; water temperature at 22°C (72°F). values shown are for firm tubing. Value for GORE® pump tubing is 4.1 bar (60 psi) continuous.

‡Actual performance varies depending on tubing formulation—

Ordering Information

Pump tubing formulation	L/S Pump Head Compatibility: Standard	Easy-Load®	Easy-Load II	Easy-Load 3	Multichannel Cartridge	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18
Silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96410-13** 7.6 m (25 ft)/pk	**HL-96410-14** 7.6 m (25 ft)/pk	**HL-96410-16** 7.6 m (25 ft)/pk	**HL-96410-25** 7.6 m (25 ft)/pk	**HL-96410-17** 7.6 m (25 ft)/pk	**HL-96410-18** 7.6 m (25 ft)/pk
Silicone (peroxide-cured)	✓	✓	✓	✓	✓	**HL-96400-13** 7.6 m (25 ft)/pk	**HL-96400-14** 7.6 m (25 ft)/pk	**HL-96400-16** 7.6 m (25 ft)/pk	**HL-96400-25** 7.6 m (25 ft)/pk	**HL-96400-17** 7.6 m (25 ft)/pk	**HL-96400-18** 7.6 m (25 ft)/pk
BioPharm silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96420-13** 7.6 m (25 ft)/pk	**HL-96420-14** 7.6 m (25 ft)/pk	**HL-96420-16** 7.6 m (25 ft)/pk	**HL-96420-25** 7.6 m (25 ft)/pk	**HL-96420-17** 7.6 m (25 ft)/pk	**HL-96420-18** 7.6 m (25 ft)/pk
BioPharm Plus silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96440-13** 7.6 m (25 ft)/pk	**HL-96440-14** 7.6 m (25 ft)/pk	**HL-96440-16** 7.6 m (25 ft)/pk	**HL-96440-25** 7.6 m (25 ft)/pk	**HL-96440-17** 7.6 m (25 ft)/pk	**HL-96440-18** 7.6 m (25 ft)/pk
Puri-Flex™	✓	✓	✓	✓	✓	**HL-96419-13** 7.6 m (25 ft)/pk	**HL-96419-14** 7.6 m (25 ft)/pk	**HL-96419-16** 7.6 m (25 ft)/pk	**HL-96419-25** 7.6 m (25 ft)/pk	**HL-96419-17** 7.6 m (25 ft)/pk	**HL-96419-18** 7.6 m (25 ft)/pk
C-Flex®	✓	✓	✓	✓	✓	**HL-06424-13** 7.6 m (25 ft)/pk	**HL-06424-14** 7.6 m (25 ft)/pk	**HL-06424-16** 7.6 m (25 ft)/pk	**HL-06424-25** 7.6 m (25 ft)/pk	**HL-06424-17** 7.6 m (25 ft)/pk	**HL-06424-18** 7.6 m (25 ft)/pk
C-Flex® ULTRA	✓	✓	✓	✓	✓	—	**HL-06434-14** 7.6 m (25 ft)/pk	**HL-06434-16** 7.6 m (25 ft)/pk	**HL-06434-25** 7.6 m (25 ft)/pk	**HL-06434-17** 7.6 m (25 ft)/pk	**HL-06434-18** 7.6 m (25 ft)/pk
PharMed® BPT	✓	✓	✓	✓	✓	**HL-06508-13** 7.6 m (25 ft)/pk	**HL-06508-14** 7.6 m (25 ft)/pk	**HL-06508-16** 7.6 m (25 ft)/pk	**HL-06508-25** 7.6 m (25 ft)/pk	**HL-06508-17** 7.6 m (25 ft)/pk	**HL-06508-18** 7.6 m (25 ft)/pk
PharmaPure®		✓	✓			**HL-06435-13** 7.6 m (25 ft)/pk	**HL-06435-14** 7.6 m (25 ft)/pk	**HL-06435-16** 7.6 m (25 ft)/pk	**HL-06435-25** 7.6 m (25 ft)/pk	**HL-06435-17** 7.6 m (25 ft)/pk	**HL-06435-18** 7.6 m (25 ft)/pk

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SEE PAGES 20 TO 24
For detailed formulation descriptions and specifications.

ORDERING INFORMATION

Pump tubing formulation	L/S Pump Head Compatibility: Standard	Easy-Load®	Easy-Load II	Easy-Load 3	Multichannel Cartridge	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18
Chem-Durance® Bio		✓	✓			HL-06442-13 15.2 m (50 ft)/pk	HL-06442-14 15.2 m (50 ft)/pk	HL-06442-16 15.2 m (50 ft)/pk	HL-06442-25 15.2 m (50 ft)/pk	HL-06442-17 15.2 m (50 ft)/pk	HL-06442-18 15.2 m (50 ft)/pk
Tygon® E-LFL NEW	✓	✓	✓	✓	✓	HL-06440-13 7.6 m (25 ft)/pk	HL-06440-14 7.6 m (25 ft)/pk	HL-06440-16 7.6 m (25 ft)/pk	HL-06440-25 7.6 m (25 ft)/pk	HL-06440-17 7.6 m (25 ft)/pk	HL-06440-18 7.6 m (25 ft)/pk
Tygon® E-Food (B-44-4X) NEW	✓	✓	✓	✓	✓	HL-06418-13 15.2 m (50 ft)/pk	HL-06418-14 15.2 m (50 ft)/pk	HL-06418-16 15.2 m (50 ft)/pk	HL-06418-25 15.2 m (50 ft)/pk	HL-06418-17 15.2 m (50 ft)/pk	HL-06418-18 15.2 m (50 ft)/pk
Tygon® E-Lab (E-3603) NEW	✓	✓	✓	✓	✓	HL-06509-13 15.2 m (50 ft)/pk	HL-06509-14 15.2 m (50 ft)/pk	HL-06509-16 15.2 m (50 ft)/pk	HL-06509-25 15.2 m (50 ft)/pk	HL-06509-17 15.2 m (50 ft)/pk	HL-06509-18 15.2 m (50 ft)/pk
Tygon® Fuel & Lubricant (F-4040-A)	✓	✓	✓	✓	✓	HL-06401-13 15.2 m (50 ft)/pk	HL-06401-14 15.2 m (50 ft)/pk	HL-06401-16 15.2 m (50 ft)/pk	HL-06401-25 15.2 m (50 ft)/pk	HL-06401-17 15.2 m (50 ft)/pk	HL-06401-18 15.2 m (50 ft)/pk
Tygon® Chemical (2001)		✓	✓			HL-06475-13 15.2 m (50 ft)/pk	HL-06475-14 15.2 m (50 ft)/pk	HL-06475-16 15.2 m (50 ft)/pk	HL-06475-25 15.2 m (50 ft)/pk	HL-06475-17 15.2 m (50 ft)/pk	HL-06475-18 15.2 m (50 ft)/pk
Norprene® (A 60 G)	✓	✓	✓	✓	✓	HL-06404-13 15.2 m (50 ft)/pk	HL-06404-14 15.2 m (50 ft)/pk	HL-06404-16 15.2 m (50 ft)/pk	HL-06404-25 15.2 m (50 ft)/pk	HL-06404-17 15.2 m (50 ft)/pk	HL-06404-18 15.2 m (50 ft)/pk
Norprene® Food (A 60 F)	✓	✓	✓	✓	✓	HL-06402-13 15.2 m (50 ft)/pk	HL-06402-14 15.2 m (50 ft)/pk	HL-06402-16 15.2 m (50 ft)/pk	HL-06402-25 15.2 m (50 ft)/pk	HL-06402-17 15.2 m (50 ft)/pk	HL-06402-18 15.2 m (50 ft)/pk
GORE® Style 100SC	✓	✓	✓			—	HL-96190-14 30.5 cm (12")/pk	HL-96190-16 30.5 cm (12")/pk	HL-96190-25 30.5 cm (12")/pk	HL-96190-17 30.5 cm (12")/pk	HL-96190-18 30.5 cm (12")/pk
GORE® Style 500	✓	✓	✓			—	HL-96191-14 30.5 cm (12")/pk	HL-96191-16 30.5 cm (12")/pk	HL-96191-25 30.5 cm (12")/pk	HL-96191-17 30.5 cm (12")/pk	HL-96191-18 30.5 cm (12")/pk
GORE® Style 400	✓	✓	✓			—	—	HL-06439-16 30.5 cm (12")/pk	—	HL-06439-17 30.5 cm (12")/pk	—
Viton®	✓	✓	✓	✓	✓	HL-96412-13 7.6 m (25 ft)/pk	HL-96412-14 7.6 m (25 ft)/pk	HL-96412-16 7.6 m (25 ft)/pk	HL-96412-25 7.6 m (25 ft)/pk	HL-96412-17 7.6 m (25 ft)/pk	HL-96412-18 7.6 m (25 ft)/pk

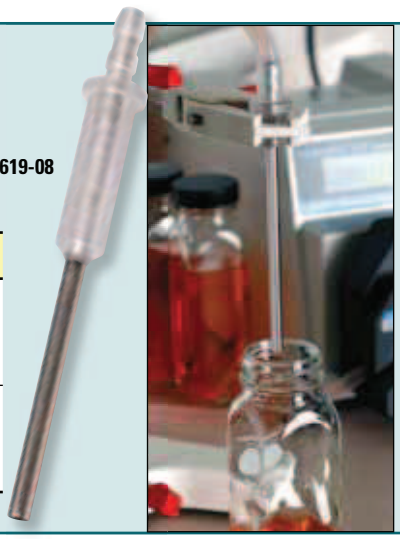
Verlook Industries, Inc. FILLER/DISPENSING NOZZLES

- Maximize the speed, precision, and accuracy of dispensing and filling applications
- Minimize splashing and dripping when dispensing into narrow- or wide-mouth containers
- Dimensional tolerances of ±0.05% for assured repeatability

These nozzles combine the ease of plastic components with the accuracy and reliability of stainless steel filler needles. Tight dimensional tolerances help to ensure precision in your dispensing applications. Nozzles feature a 316L stainless steel tube and a polycarbonate base with hose barb adapter. Materials comply with FDA, USDA and USP Class VI requirements. All filler nozzles are sterilizable by ethylene oxide, autoclaving, or gamma irradiation.

Catalog number	Tubing ID	Fits Masterflex® tubing sizes
HL-30619-06	1/32"	L/S® 13
HL-30619-01	1/16"	L/S 14
HL-30619-07	1/8"	L/S 16
HL-30619-02	3/16"	L/S 15, 25
HL-30619-08	1/4"	L/S 17, 24; I/P® 26
HL-30619-03	5/16"	L/S 35
HL-30619-09	3/8"	L/S 18, 36; I/P 70, 73; B/T® 86
HL-30619-04	1/2"	I/P 82, 88; B/T 87
HL-30619-10	5/8"	I/P 89
HL-30619-05	3/4"	B/T 91

30619-08



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L/S® High-Performance Precision Pump Tubing

- Ensure optimal performance from your Masterflex pump
- Custom extruded to fit Masterflex pumps
- Engineered for long life in peristaltic pump applications
- Lot-to-lot consistency provides superior accuracy and repeatability

Masterflex L/S pump tubing is manufactured to extremely close tolerances that match our L/S pump heads, ensuring accurate, repeatable flow and long tubing life. Our pump tubing is factory-tested and optically inspected to provide the best performance from your peristaltic pump. With 21 different materials available, there is an L/S pump tubing formulation suitable for nearly any fluid handling application.

Our High-performance Precision pump tubing features a thicker wall compared to our Precision pump tubing, making it the best choice for applications involving pressure, suction lift, viscous fluids, or long tubing life.

Specifications

	L/S High-performance Precision pump tubing			
Pump tubing cross sections	 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 1 to 600 rpm drive Value in ( ) obtained with High-Performance pump head	1.7 to 1000 mL/min (1.8 to 1100 mL/min)	2.8 to 1700 mL/min (3.0 to 1800 mL/min)	3.8 to 2300 mL/min (4.3 to 2600 mL/min)	4.8 to 2900 mL/min (5.8 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)			610 mm Hg (24" Hg)
Suction lift‡	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. Value for GORE® pump tubing is 4.1 bar (60 psi) continuous.

Ordering Information

Pump tubing formulation	L/S Pump Head Compatibility: Standard	Easy-Load®	Easy-Load II	Easy-Load 3	High-Performance	L/S 15	L/S 24	L/S 35	L/S 36
Silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96410-15** 7.6 m (25 ft)/pk	**HL-96410-24** 7.6 m (25 ft)/pk	**HL-96410-35** 7.6 m (25 ft)/pk	**HL-96410-36** 7.6 m (25 ft)/pk
Silicone (peroxide-cured)	✓	✓	✓	✓	✓	**HL-96400-15** 7.6 m (25 ft)/pk	**HL-96400-24** 7.6 m (25 ft)/pk	**HL-96400-35** 7.6 m (25 ft)/pk	**HL-96400-36** 7.6 m (25 ft)/pk
BioPharm silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96420-15** 7.6 m (25 ft)/pk	**HL-96420-24** 7.6 m (25 ft)/pk	**HL-96420-35** 7.6 m (25 ft)/pk	**HL-96420-36** 7.6 m (25 ft)/pk
BioPharm Plus silicone (platinum-cured)	✓	✓	✓	✓	✓	**HL-96440-15** 7.6 m (25 ft)/pk	**HL-96440-24** 7.6 m (25 ft)/pk	**HL-96440-35** 7.6 m (25 ft)/pk	**HL-96440-36** 7.6 m (25 ft)/pk
Puri-Flex™	✓	✓	✓	✓	✓	**HL-96419-15** 7.6 m (25 ft)/pk	**HL-96419-24** 7.6 m (25 ft)/pk	**HL-96419-35** 7.6 m (25 ft)/pk	**HL-96419-36** 7.6 m (25 ft)/pk
C-Flex®	✓	✓	✓	✓	✓	**HL-06424-15** 7.6 m (25 ft)/pk	**HL-06424-24** 7.6 m (25 ft)/pk	**HL-06424-35** 7.6 m (25 ft)/pk	**HL-06424-36** 7.6 m (25 ft)/pk
C-Flex® ULTRA	✓	✓	✓	✓	✓	**HL-06434-15** 7.6 m (25 ft)/pk	**HL-06434-24** 7.6 m (25 ft)/pk	**HL-06434-35** 7.6 m (25 ft)/pk	**HL-06434-36** 7.6 m (25 ft)/pk
PharMed® BPT	✓	✓	✓	✓	✓	**HL-06508-15** 7.6 m (25 ft)/pk	**HL-06508-24** 7.6 m (25 ft)/pk	**HL-06508-35** 7.6 m (25 ft)/pk	**HL-06508-36** 7.6 m (25 ft)/pk
PharmaPure®		✓	✓			**HL-06435-15** 7.6 m (25 ft)/pk	**HL-06435-24** 7.6 m (25 ft)/pk	—	—

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ORDERING INFORMATION

Pump tubing formulation	L/S Pump Head Compatibility: Standard	Easy-Load®	Easy-Load II	Easy-Load 3	High-Performance	L/S 15	L/S 24	L/S 35	L/S 36
Chem-Durance® Bio		✓	✓			HL-06442-15 15.2 m (50 ft)/pk	HL-06442-24 15.2 m (50 ft)/pk	HL-06442-35 15.2 m (50 ft)/pk	HL-06442-36 15.2 m (50 ft)/pk
Tygon® E-LFL NEW	✓	✓	✓	✓	✓	HL-06440-15 7.6 m (25 ft)/pk	HL-06440-24 7.6 m (25 ft)/pk	HL-06440-35 7.6 m (25 ft)/pk	HL-06440-36 7.6 m (25 ft)/pk
Tygon® E-Food (B-44-4X) NEW		✓	✓	✓	✓	HL-06418-15 15.2 m (50 ft)/pk	HL-06418-24 15.2 m (50 ft)/pk	HL-06418-35 15.2 m (50 ft)/pk	HL-06418-36 15.2 m (50 ft)/pk
Tygon® E-Lab (E-3603) NEW	✓	✓	✓	✓	✓	HL-06509-15 15.2 m (50 ft)/pk	HL-06509-24 15.2 m (50 ft)/pk	HL-06509-35 15.2 m (50 ft)/pk	HL-06509-36 15.2 m (50 ft)/pk
Tygon® Fuel & Lubricant (F-4040-A)	✓	✓	✓	✓	✓	HL-06401-15 15.2 m (50 ft)/pk	HL-06401-24 15.2 m (50 ft)/pk	HL-06401-35 15.2 m (50 ft)/pk	HL-06401-36 15.2 m (50 ft)/pk
Tygon® Chemical (2001)		✓	✓			HL-06475-15 15.2 m (50 ft)/pk	HL-06475-24 15.2 m (50 ft)/pk	—	—
Norprene® (A 60 G)	✓	✓	✓	✓	✓	HL-06404-15 15.2 m (50 ft)/pk	HL-06404-24 15.2 m (50 ft)/pk	HL-06404-35 15.2 m (50 ft)/pk	HL-06404-36 15.2 m (50 ft)/pk
Norprene® Food (A 60 F)	✓	✓	✓	✓	✓	HL-06402-15 15.2 m (50 ft)/pk	HL-06402-24 15.2 m (50 ft)/pk	HL-06402-35 15.2 m (50 ft)/pk	HL-06402-36 15.2 m (50 ft)/pk
GORE® Style 100SC	✓	✓	✓		✓	HL-96190-15 35.6 cm (14")/pk	HL-96190-24 35.6 cm (14")/pk	HL-96190-35 35.6 cm (14")/pk	—
GORE® Style 500	✓	✓	✓		✓	HL-96191-15 35.6 cm (14")/pk	HL-96191-24 35.6 cm (14")/pk	HL-96191-35 35.6 cm (14")/pk	—
GORE® Style 400	✓	✓	✓		✓	HL-06439-15 35.6 cm (14")/pk	HL-06439-24 34.2 cm (13.5")/pk	HL-06439-35 35.6 cm (14")/pk	HL-06439-36 35.6 cm (14")/pk
Viton®	✓	✓	✓	✓	✓	HL-96412-15 7.6 m (25 ft)/pk	HL-96412-24 7.6 m (25 ft)/pk	HL-96412-35 7.6 m (25 ft)/pk	HL-96412-36 7.6 m (25 ft)/pk

Verlook Industries, Inc. — Solutions for Your Solution

BASKET-TIP FILLER NOZZLES

NEW



- Reduce foaming and splashing
- Lower costs for cleaning, sterilization, and validation

These nozzles offer the benefits of the standard filler/dispensing nozzles by combining the ease of single-use plastic components with the accuracy and reliability of stainless steel filler needles. Plus, nozzles feature a basket tube tip that has two outlets angled at 10° to split the flow into two streams, forcing the fluid to gently cascade down the sides of your container. This basket tip is especially useful for liquids that have issues with foaming or splashing and/or maintaining a fluid column.

Tight dimensional tolerances help to ensure precision in your dispensing applications. Nozzles feature a 316L stainless steel tube and a base with hose barb adapter. Materials comply with FDA, USDA and USP Class VI requirements. All filler nozzles are sterilizable by ethylene oxide, autoclaving, or gamma irradiation.

Catalog number	Tubing ID	Fits Masterflex® tubing sizes
HL-30619-11	1/16"	L/S® 14
HL-30619-17	1/8"	L/S 16
HL-30619-12	3/16"	L/S 15, 25
HL-30619-18	1/4"	L/S 17, 24, I/P® 26
HL-30619-13	5/16"	L/S 35
HL-30619-19	3/8"	L/S 18, 36, I/P 70, 73
HL-30619-15	3/4"	B/T® 91

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L/S® Sanitary Pump Tubing Assemblies

Features/Benefits

- Meets stringent demands of biotechnology, pharmaceutical, and the food, beverage, and dairy processing industries
- Smooth, pre-molded tubing ends allow quick connection to an adapter or to another length of sanitary tubing
- Connectors help maintain cleanliness and purity of your fluids
- Sanitary tubing is less thermally conductive than metallic tubing systems and not subject to galvanic action, RFI, or EMI
- All L/S platinum-cured silicone and PharMed® BPT sanitary tubing complies with USP Class VI and FDA standards
- FREE Certificate of resin or elastomer Compliance is available upon request

How to Connect Tubing

- Each length of tubing features pre-molded ends. Tubing with ½" mini-connections uses molded-in gasket at one end to ensure quality seal.
- Pre-molded ends allow quick connection to an adapter or additional length of sanitary tubing. Order adapters below, right.
- Join ½" mini-connection to another ½" mini-connection, adapter, or to your system with a push/pull clamp.

How to Order

1. Order your desired tubing formulation and length. Choose tubing size based on flow range (see "Specifications" on pages 66 and 68).
2. Order PVDF push/pull clamp (separately below).
3. Order silicone or Viton® gaskets as needed to connect to your system or to adapters.
4. Select sanitary adapters as needed.



Platinum-cured silicone tubing with premolded ½" mini connections



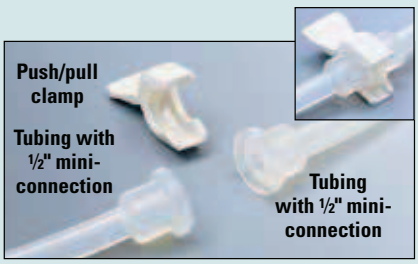
Ordering Information

Tubing size	Platinum-cured silicone (96410-series) 1.5-m (5-ft) length	Platinum-cured silicone (96410-series) 3-m (10-ft) length	PharMed BPT (06508-series) 1.5-m (5-ft) length	PharMed BPT (06508-series) 3-m (10-ft) length
	Catalog number	Catalog number	Catalog number	Catalog number
L/S Precision sanitary pump tubing				
L/S 13	HL-96100-13	HL-96101-13	HL-96112-13	HL-96113-13
L/S 14	HL-96100-14	HL-96101-14	HL-96112-14	HL-96113-14
L/S 16	HL-96100-16	HL-96101-16	HL-96112-16	HL-96113-16
L/S 25	HL-96100-25	HL-96101-25	HL-96112-25	HL-96113-25
L/S 17	HL-96100-17	HL-96101-17	HL-96112-17	HL-96113-17
L/S 18	HL-96100-18	HL-96101-18	HL-96112-18	HL-96113-18
L/S High-performance Precision sanitary pump tubing				
L/S 15	HL-96100-15	HL-96101-15	HL-96112-15	HL-96113-15
L/S 24	HL-96100-24	HL-96101-24	HL-96112-24	HL-96113-24
L/S 35	—	—	HL-96112-35	HL-96113-35
L/S 36	—	—	HL-96112-36	HL-96113-36

Accessories for L/S Sanitary Pump Tubing



Adapters



HL-31201-88 Push/pull clamp, PVDF. For quick joining of two ½" mini connections.

Gaskets. Order gaskets to join ½" mini connection without molded-in gasket to another ½" mini connection without molded-in gasket or to an adapter (sold separately at right).

HL-30548-00 Silicone gasket for use with sanitary silicone (platinum-cured) tubing. Pack of 10.

HL-30548-20 Viton® gasket for use with sanitary PharMed® BPT tubing. Pack of 10.

Adapter Ordering Information

Adapter connections	Polypropylene	PVDF
	Catalog number	Catalog number
½" mini to ⅛" NPT(M)	HL-31200-00	HL-31201-00
½" mini to ⅛" NPT(F)	HL-31200-10	—
½" mini to ¼" NPT(M)	HL-31200-01	HL-31201-01
½" mini to ¼" NPT(F)	HL-31200-11	HL-31201-11
½" mini to ¼" hose barb	HL-31805-25	HL-31808-25
½" mini to ⅜" NPT(M)	HL-31200-02	HL-31201-02
½" mini to ⅜" NPT(F)	HL-31200-12	HL-31201-12
½" mini to ⅜" hose barb	HL-31805-26	HL-31808-26
½" mini to ½" NPT(M)	HL-31200-03	HL-31201-03
½" mini to ½" NPT(F)	HL-31200-13	HL-31201-13
½" mini to ½" hose barb	HL-31805-27	—
½" mini to 1" maxi	HL-31200-30	—
½" mini to 1" ladish	HL-31805-05	HL-31201-40
½" mini to female luer lock	HL-31200-50	HL-31201-50

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L/S® Spooled Pump Tubing

- Eliminate waste by cutting the exact length to fit your application
- Cost-effective, efficient, and convenient
- Up to 152.4 m (500 ft) of tubing (depending on tubing size) on each spool.
- Always have enough tubing on hand
- Save space and shipping costs
- Good choice for applications requiring long, continuous runs of tubing, or which use odd-size lengths that generate scrap when using standard 7.6- or 15.2-m (25- or 50-ft) coils

Save Money and Reduce Downtime!



96403-15

Ordering Information

Tubing size	Peroxide-cured silicone (96400-series)		Platinum-cured silicone (96410-series)		PharMed® BPT (06508-series)		BioPharm Silicone (96420-series)		C-Flex® (06424-series)		Norprene® Food (06402-series)	
	m (ft)	Catalog number	m (ft)	Catalog number	m (ft)	Catalog number	m (ft)	Catalog number	m (ft)	Catalog number	m (ft)	Catalog number
L/S 13	76.2 (250)	**HL-96407-13**	152.4 (500)	**HL-96403-13**	—	—	—	—	121.9 (400)	**HL-06427-13**	—	—
L/S 14	76.2 (250)	**HL-96407-14**	152.4 (500)	**HL-96403-14**	152.4 (500)	**HL-95687-14**	121.9 (400)	**HL-96423-14**	121.9 (400)	**HL-06427-14**	152.4 (500)	**HL-06415-14**
L/S 16	76.2 (250)	**HL-96407-16**	152.4 (500)	**HL-96403-16**	152.4 (500)	**HL-95687-16**	121.9 (400)	**HL-96423-16**	121.9 (400)	**HL-06427-16**	152.4 (500)	**HL-06415-16**
L/S 25	76.2 (250)	**HL-96407-25**	152.4 (500)	**HL-96403-25**	—	—	121.9 (400)	**HL-96423-25**	121.9 (400)	**HL-06427-25**	—	—
L/S 17	76.2 (250)	**HL-96407-17**	152.4 (500)	**HL-96403-17**	152.4 (500)	**HL-95687-17**	121.9 (400)	**HL-96423-17**	121.9 (400)	**HL-06427-17**	—	—
L/S 18	61.0 (200)	**HL-96407-18**	121.9 (400)	**HL-96403-18**	121.9 (400)	**HL-95687-18**	121.9 (400)	**HL-96423-18**	121.9 (400)	**HL-06427-18**	—	—
L/S 15	76.2 (250)	**HL-96407-15**	121.9 (400)	**HL-96403-15**	121.9 (400)	**HL-95687-15**	121.9 (400)	**HL-96423-15**	121.9 (400)	**HL-06427-15**	—	—
L/S 24	61.0 (200)	**HL-96407-24**	91.4 (300)	**HL-96403-24**	91.4 (300)	**HL-95687-24**	121.9 (400)	**HL-96423-24**	121.9 (400)	**HL-06427-24**	—	—
L/S 35	—	—	91.4 (300)	**HL-96403-35**	91.4 (300)	**HL-95687-35**	—	—	121.9 (400)	**HL-06427-35**	—	—
L/S 36	—	—	30.5 (100)	**HL-96403-36**	30.5 (100)	**HL-95687-36**	—	—	121.9 (400)	**HL-06427-36**	—	—

L/S® Bulk-Packed Pump Tubing

- Save on shipping costs and reduce storage space
- Up to 20 sealed bags of tubing (depending on tubing size) in each case
- Lot-traceable certificates of tubing compliance available
- Use as many or as few as you need and store the rest
- Tubing coils are individually bagged and sealed to prevent contamination



96404-16

Ordering Information

Tubing size	Number of 7.6-m (25-ft) bags per box	Platinum-cured silicone (96410-series)	C-Flex® (06424-series)
		Catalog number	Catalog number
L/S 13	20	**HL-96404-13**	**HL-06436-13**
L/S 14	20	**HL-96404-14**	**HL-06436-14**
L/S 16	20	**HL-96404-16**	—
L/S 25	20	**HL-96404-25**	**HL-06436-25**
L/S 17	20	**HL-96404-17**	**HL-06436-17**
L/S 18	10	**HL-96404-18**	—
L/S 15	20	**HL-96404-15**	**HL-06436-15**
L/S 24	20	**HL-96404-24**	**HL-06436-24**
L/S 35	10	**HL-96404-35**	**HL-06436-35**
L/S 36	10	**HL-96404-36**	**HL-06436-36**

Accessories for L/S Precision Pump Tubing

Benchtop Tubing Cutter

Steel blade makes right-angle cuts in several sizes of Masterflex tubing:

C/L® 2.06 mm, 2.79 mm OD
L/S® sizes 13, 14, 15, 16, 17, 18, 24, 25, 35, 36
I/P® sizes 26, 73



06438-10

HL-06438-10 Benchtop tubing cutter

HL-06438-11 Replacement blade for 06438-10

Pulse Dampener

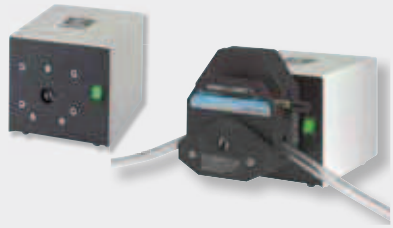
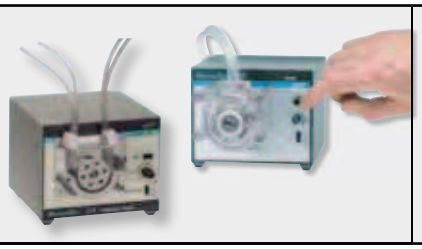
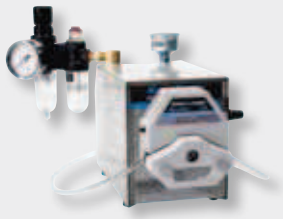
Virtually eliminate pulsation in your output flow. Pulse dampener features a polyethylene body. It includes five pairs of fittings and PTFE-pipe thread tape. Pulse dampener accepts all L/S tubing sizes and I/P 26 size tubing.



HL-07596-20 Pulse dampener

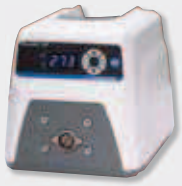
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SELECTION GUIDE FOR L/S® DRIVES

	Description	Flow rates (mL/min)	Fixed speed (rpm)	Variable speed (rpm)	Reversible	Remote control capabilities	Special features	Page number
Analog	**FIXED-SPEED**							
		Lowest: 0.06 Highest: 290	1, 2, 6, 12, 20, 30, 60	—	—	—	Consistent repeatable flow rates. Economical and compact. UL, cUL, and CE listed models	76–77
	COMPACT							
		Lowest: 0.8 Highest: 560	—	20 to 100, 35 to 200	✓	Start/stop	Economical and compact. UL, cUL, and CE listed models. Compact pump with integral pump head and quick-loading tube sets—single or dual channel. Drives are stackable.	78–81
	ECONOMY CONSOLE							
		Lowest: 0.42 Highest: 2900	—	7 to 200, 20 to 600	✓	—	Economical variable flow; simple speed control. UL, cUL, and CE listed models. Drives accept stacked pump heads for multiple channels.	82–83
Specialty	**AIR-POWERED AND HAZARDOUS-DUTY**							
		Lowest: 0.6 Highest: 3400	—	60 to 600	—	—	Use air-powered drives in locations where electricity is unsafe or impractical. Air drive is ATEX Zone 2 approved. Stack pump heads.	101–102
	SAMPLERS							
		Lowest: 4.2 Highest: 1650	600	70 to 400	✓	—	Samplers float up to 30 minutes if inadvertently dropped in water. Rechargeable internal batteries for field use. Ideal for sampling in the field or in the plant as a portable pump. Programmable digital composite samplers available.	104–106
	DC-POWERED							
		Lowest: 1.2 Highest: 2700	100, 540, 570	20 to 90, 100 to 500	✓	—	Operate from 12 or 24 VDC supply. Versatile, portable, and easy to use.	107

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Digital

Description	Flow rates (mL/min)	Fixed speed (rpm)	Variable speed (rpm)	Reversible	Remote control capabilities	Special features	Page number
PRECISION CONSOLE							
	Lowest: 0.06 Highest: 3400	—	1 to 100, 3 to 300, 6 to 600	✓	Speed, start/stop, direction	Economical variable flow; simple speed control. ETL and CE listed models. Drives accept stacked pump heads for multiple channels. Drives are stackable.	84–85
PRECISION MODULAR							
 NEW	Lowest: 0.06 Highest: 3400	—	1 to 100, 6 to 600	✓	Speed, start/stop, direction	Separate motor and controller up to 4.6 m (15 ft). Models available with either benchtop or IP66-rated wall-mount controller. Pump heads can be stacked.	86–87
STANDARD DIGITAL AND COMPUTER COMPATIBLE							
	Lowest: 0.001 Highest: 3400	—	0.1 to 600, 0.02 to 100	✓	Speed, direction, start/stop, prime	Four-line graphical LCD with menu-driven programming. Maintenance-free brushless motor. PWM speed control with 6000:1 turndown. Tachometer feedback for ±0.1% speed control. Housings are stackable. Calibration capability. Programmable for all L/S tubing sizes. Pump heads can be stacked. Control brushless computerized drive with Windows®-based software; stores up to 30 user programs. Use as stand-alone or programmable drives.	88–89, 94–95
MODULAR DISPENSERS							
 NEW	Lowest: 0.001 Highest: 3400	—	0.1 to 600	✓	Speed, direction, start/stop, prime	Maintenance-free brushless motor. Special features for precise repetitive dispensing include anti-drip. Precise PWM speed control. Quiet operation. Tachometer feedback for ±0.1% speed control. Pump heads can be stacked. Benchtop or washdown wall-mount controller. Calibration capability. Programmable for all L/S tubing sizes.	90–91
DIGITAL PROCESS							
	Lowest: 0.006 Highest: 3400	—	0.1 to 600	✓	Speed, direction, start/stop, prime	Four-line graphical LCD with menu-driven programming. IP66 and NEMA 4X rated for washdown. Sealed housing. Maintenance-free brushless motor with PWM speed control. Dispensing features include delay interval and cumulative volume. Full remote control capability.	92–93
DIGI-STALTIC® DISPENSER							
	Lowest: 0.72 Highest: 5800	—	6 to 600	✓	Start/stop	Control multiple Digi-Staltic drives from a single controller. Controller stores up to 30 programs. Ideal for automated process applications. Stack pump heads.	98–99

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L/S® Fixed-Speed Drives

Features/Benefits

- Flow rates: 0.06 to 290 mL/min depending on drive model and tubing size
- Simple, economical pump drives for general, intermittent-duty fluid transfer applications
- Lighted power switch on front of drive lets you know that pump is running
- Seven speeds available—choose speed and tubing size to achieve your desired flow rate(s)
- Drives are UL, cUL listed and CE compliant
- Ideal as an acid/base or nutrient feed pump in fermentation applications
- Housing is stackable for efficient use of limited space



L/S fixed-speed drive 07540-01 shown with Easy-Load II pump head 77200-62



L/S fixed-speed drive 07540-12 shown with Standard pump head 07015-21

Drive Controls

- Use lighted power switch on front of drive to turn drive on/off

Setup

1. Mount pump head(s) onto drive.
2. Select tubing size required to deliver desired flow rate; load tubing in pump head.
3. Turn pump on.

Speed Control/Circuitry

- Fixed-speed drives; no speed control
- Drive speed may vary ±15% depending on line voltage/frequency fluctuations
- 115 VAC: UL778, CSA C22.2 No. 108-01; 230 VAC For CE mark: EN61010-1 (EU Low Voltage) and EN61326 (EU EMC)

Pump Heads Accepted

- Accept five different types of L/S pump heads: Standard, Easy-Load® 3, Easy-Load® II, Easy-Load®, and multichannel cartridge

Note: The 60-rpm drives accept only one pump head and should not be used with multichannel or multichannel cartridge pump heads.

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

Catalog number			
rpm†	115 VAC, 60 Hz	rpm†	230 VAC, 50 Hz
1	**HL-07540-01**	1	**HL-07542-01**
2	**HL-07540-02**	2	**HL-07542-02**
6	**HL-07540-06**	5	**HL-07542-06**
12	**HL-07540-12**	10	**HL-07542-12**
20	**HL-07540-20**	17	**HL-07542-20**
30	**HL-07540-30**	25	**HL-07542-30**
60	**HL-07540-60**	50	**HL-07542-60**

†Drive speed may vary ±15% depending on fluctuations in line voltage and frequency.

L/S Pump Tubing Flow Rate Information (mL/min)‡

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow rate @ 1 rpm	0.06	0.21	0.8	1.7	2.8	3.8	1.7	2.8	3.8	4.8
Flow rate @ 2 rpm	0.12	0.42	1.6	3.4	5.6	7.6	3.4	5.6	7.6	9.6
Flow rate @ 6 rpm	0.36	1.3	4.8	10	17	23	10	17	23	29
Flow rate @ 12 rpm	0.72	2.5	9.6	20	34	46	20	34	46	58
Flow rate @ 20 rpm	1.2	4.2	16	34	56	76	34	56	76	96
Flow rate @ 30 rpm	1.8	6.3	24	50	84	110	50	84	110	140
Flow rate @ 60 rpm	3.6	13	48	100	170	230	100	170	230	290

‡Motor rpm and flow rates for the 230 VAC, 50 Hz drives are approximately 5% of the values shown.

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SPECIFICATIONS for L/S Fixed-Speed Drives

Catalog number	HL-07540-01, -02, -06, -12, -20, -30, -60	HL-07542-01, -02, -06, -12, -20, -30, -60
Performance Specifications		
Flow capacity	0.06 to 290 mL/min (0 to 4.6 GPH)	
Fixed rpm††	1, 2, 6, 12, 20, 30, 60	
Number of heads accepted	2 (1 on 60 rpm)	
Maximum torque – running	127 N-cm (180 oz-in) for 1, 2, 6, 12, 20, 30 rpm 64 N-cm (90 oz-in) for 60 rpm	
Reversible	No‡‡	
External control – Input	Not applicable	
External control – Output		
Electrical Specifications		
Voltage/Frequency VAC (Hz)	115 (60)	230 (50)
Current	0.3 A for 1, 2 rpm; 0.5 A for 6, 12 rpm; 0.6 A for 20 rpm; 0.9 A for 30, 60 rpm	
Motor type	AC shaded pole	
Motor size	Sub-fractional†††	
Motor/speed control type	Not applicable	
Speed regulation (repeatability)	±8% (±8%)	
Soft start/Electronic brake	None	
Physical Specifications		
Housing materials	Painted steel housing	
IP rating‡‡‡	IP22	
Agency listings	UL, cUL, CE	
Storage temperature	–25 to 65°C (–13 to 149°F)	
Operating temperature	0 to 40°C (32 to 104°F)	
Dimensions (L x W x H)	15.2 x 13.4 x 11.9 cm (6" x 5¼" x 4⅝")	
Shipping weight	2.9 kg (6.3 lb)	

††Drive speed may vary ±15% depending on fluctuations in line voltage and frequency.
‡‡All nonreversible drives turn CW as viewed from front.
†††Maximum power required is 70 W or less for indicated models.
‡‡‡See page 194 for an explanation of IP ratings.

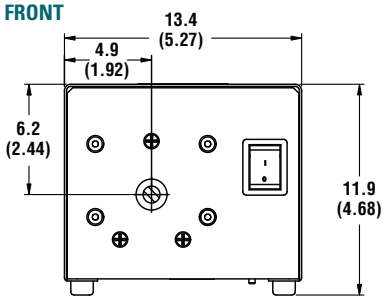
ACCESSORIES

HL-08670-02 Start/stop foot switch
for all 115 VAC drives; 1.8-m (6-ft) cable.

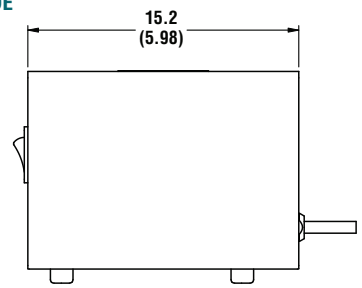
HL-17050-01 NIST-traceable calibration
for peristaltic pump drive.

Dimensional Drawings cm (in.)
07540-, 07542-series

FRONT



SIDE



FREE TUBING TEST KIT!

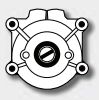
Can't find your chemical in the tables?

Request your FREE tubing kit to test compatibility of your chemicals against different tubing formulations. Request item HL-00101-10.

Call or go online to request your FREE test kit today!



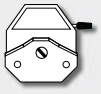
STANDARD
0.06 to 2900 mL/min
pages 40–41



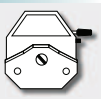
EASY-LOAD® 3
0.06 to 2900 mL/min
pages 42–43



EASY-LOAD® II
0.06 to 2900 mL/min
pages 44–45



EASY-LOAD®
0.06 to 2300 mL/min
pages 46–47



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.047 to 1700 mL/min
pages 56–57



6- or 8-roller;
up to 12 channels
0.0005 to 350 mL/min
pages 58–59

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® Compact Variable-Speed Pumps

Features/Benefits

- Flow rates: 0.8 to 105 mL/min depending on drive model and tubing size
- Single- or dual-channel models; dual-channel model delivers synchronous flow from two separate channels
- Integral pump head accepts L/S two-stop pump tubing sets
- Tubing sets are easy to load with no occlusion or retention adjustment
- Separate single-turn speed control and CW/OFF/CCW switch—maintain speed setting when turning pump on/off
- Potentiometer is indexed for repeatability
- Remote start/stop via contact closure on back of pump
- Self-lubricating, thermoplastic polyester (Ertalyte® TX) rollers are low friction for smooth operation and long life
- Durable, anodized aluminum occlusion bed swings open for loading; locks securely shut during operation
- Three rollers and wide occlusion angle prevent fluid backflow up to rated pressure of tubing
- Painted-steel housing is stackable—ideal for crowded benchtops
- Powered by remote, dual-voltage (115/230 VAC) power supply

Drive Controls

- All manual controls are on the front panel of pump
- Separate CW/OFF/CCW with green LED power indicator
- Single-turn potentiometer speed control
- MAX button runs pump at full speed to prime or flush tubing

Setup

1. Select and load tubing.
2. Select motor direction (CW/CCW).
3. Turn pump on.
4. Adjust flow rate and speed with indexed, single-turn potentiometer.



L/S single-channel compact pump 77240-00



L/S dual-channel compact pump 77240-10

Speed Control/Circuitry

- Single-turn potentiometer
- Speed control (repeatability): ±5%
- Meets UL 508C, CSA C22.2, No. 14, EN61010-1 and EN61326-1 (for CE mark)

Remote Control

- Remote start/stop via contact closure

Pump Heads Accepted

- These compact pumps include an integral single- or dual-channel pump head

ISO9001:2008 CERTIFIED SUPPLIER · c UL us · CE · 2 year warranty

Ordering Information

Catalog number	No. of channels	rpm	Power (50/60 Hz)
HL-77240-00	1	20 to 100	115/230 VAC, dual voltage
HL-77240-10	2		

Accessories

HL-77200-07 Replacement power supply, dual-voltage 115/230 VAC.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

L/S Two-Stop Pump Tubing Set Flow Rate Information (mL/min)

Order Masterflex L/S two-stop tubing sets separately on page 79; order L/S extension tubing on pages 68–73.

Pump model	Motor rpm range	L/S Precision pump tubing			
		L/S 13	L/S 14	L/S 16	L/S 25
HL-77240-00	20 to 100	0.8 to 40	2.8 to 14	11 to 54	21 to 105
HL-77240-10		0.8 to 40	2.8 to 14	Not recommended	Not recommended

Note: All flow rates are approximate—calculated under the following conditions: 0 bar (0 psig) at inlet, 0.03 bar (0.5 psig) at outlet; water temperature at 22°C (72°F).

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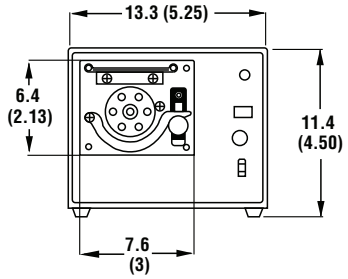
SPECIFICATIONS for L/S Compact Variable-Speed Pumps

Catalog number		HL-77240-00	HL-77240-10
Performance Specifications			
Flow capacity (per channel)		0.8 to 105 mL/min (0 to 1.66 GPH)	0.8 to 14 mL/min (0 to 0.22 GPH)
Number of channels		1	2
rpm		20 to 100	
Number of heads accepted		Integral single-channel head	Integral dual-channel head
Maximum torque	Starting	113 N-cm (160 oz-in)	
	Running	35 N-cm (50 oz-in)	
Reversible		Yes (three-position switch for CW/OFF/CCW)	
External control – Input		Start/stop via contact closure	
External control – Output		Not applicable	
Electrical Specifications			
Voltage/Frequency VAC (50/60 Hz)		90 to 130 and 190 to 260 dual-voltage (13.5 VDC nominal)	
Current		0.5 A at 115 V; 0.3 A at 230 V	
Motor type		Permanent-magnet brushed DC	
Motor size		6 W	
Motor/speed control type		Single-turn potentiometer	
Speed regulation (repeatability)		±5%	
Soft start/Electronic brake		Yes/No	
Physical Specifications			
Housing materials		Painted steel	
IP rating†		IP22	
Agency listings		UL, cUL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)		16.5 x 13.3 x 11.4 cm (6½" x 5¼" x 4½")	
Shipping weight		2.7 kg (6 lb)	

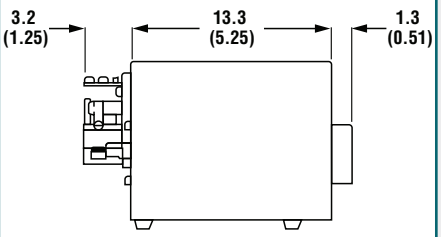
†See page 194 for an explanation of IP ratings.

Dimensional Drawings cm (in.)
77240-00, -10

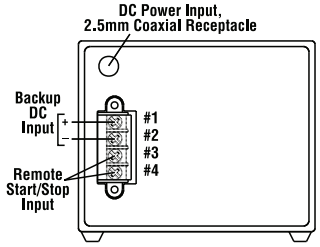
FRONT



SIDE



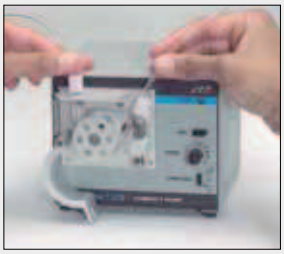
BACK



HOW TO LOAD YOUR PUMP HEAD



1. Release occlusion bed latch and open occlusion bed.



2. Hook left-side tubing stop to the top of the left-side retainer slot. Stretch tubing around rollers and hook right-side stop to the top of the right-side retainer slot.



3. Lift occlusion bed and close latch; locking occlusion bed in place.

L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

L/S TWO-STOP PRECISION PUMP TUBING SETS ORDERING INFORMATION

Tubing size	Tygon® E-LFL	Platinum-cured silicone	BioPharm Plus Silicone (platinum-cured)	PharMed® BPT	Viton®	Chem-Durance® Bio
	NEW					
L/S 13	HL-06447-13	HL-06421-13	HL-96116-13	HL-96114-13	HL-96428-13	HL-96117-13
L/S 14	HL-06447-14	HL-06421-14	HL-96116-14	HL-96114-14	HL-96428-14	HL-96117-14
L/S 16	HL-06447-16	HL-06421-16	HL-96116-16	HL-96114-16	HL-96428-16	HL-96117-16
L/S 25	HL-06447-25	HL-06421-25	HL-96116-25	HL-96114-25	HL-96428-25	HL-96117-25
Qty/pk	8	8	8	8	8	8

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L/S® Compact, Low-Flow, Variable-Speed Drives

Features/Benefits

- Deliver flow rates from 2.1 to 560 mL/min (0.03 to 8.8 GPH) with Masterflex® L/S pump head†
- Ideal for smaller work spaces
- Compact size: 13.6 x 13.3 x 11.4 cm (5⅜" x 5⅜₁₆" x 4½")
- Stackable, painted-steel housing
- Economically priced
- Housing protects drive from vertically falling water
- Reversible permanent-magnet DC motor
- Purge before or after pumping; pump in either direction
- Remote control capabilities
- IP22 enclosure rating per IEC

Drive Controls

- All manual controls are on the front panel of drive
- Separate CW/OFF/CCW switch with green power indicator
- Single-turn potentiometer speed control
- MAX button facilitates priming or flushing at maximum rpm

Setup

1. Mount pump head.
2. Load tubing.
3. Select motor direction (CW/CCW).
4. Turn pump on.
5. Adjust flow rate with the one-turn potentiometer speed control.

Speed Control/Circuitry

- Single-turn potentiometer
- Speed control (repeatability): ±5%
- Meets UL508C, CSA C22.2, No. 14; for CE mark EN61010-1 and EN61326-1 (EU EMC)

Remote Control

- Remote start/stop via contact closure

Pump Heads Accepted

- Drive accepts two different types of pump heads—Standard or Easy-Load®
- No pump head stacking capability

†Depending on drive rpm and tubing size.



L/S compact drive 77200-20 shown with Standard pump head 07016-21

ISO9001:2008 CERTIFIED SUPPLIER

Power supply is: c UL us

CE 1 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz)
HL-77200-20	35 to 200	115/230 VAC
HL-77200-12		12 VDC



Compact variable-speed drives accept a single pump head—either Standard or Easy-Load®.

Accessories

HL-77200-07 Replacement power supply, dual-voltage 115/230 VAC.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

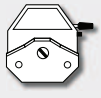
Tubing cross sections	L/S Precision pump tubing				
	L/S 13	L/S 14	L/S 16	L/S 25‡	L/S 17‡
Flow range @ 35 to 200 rpm	2.1 to 12	7.4 to 42	28 to 160	60 to 340	98 to 560

‡C-FLEX® and silicone tubing formulations are recommended for L/S 17 and L/S 25 size tubing.
Note: All flow rates are approximate—calculated under the following conditions: 0 bar (0 psig) at inlet, 0.03 bar (0.5 psig) at outlet; water temperature at 22°C (72°F).

Standard
2.1 to 560 mL/min
pages 40–41



Easy-Load®
2.1 to 560 mL/min
pages 46–47



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SPECIFICATIONS for L/S Compact, Low-Flow, Variable-Speed Drives

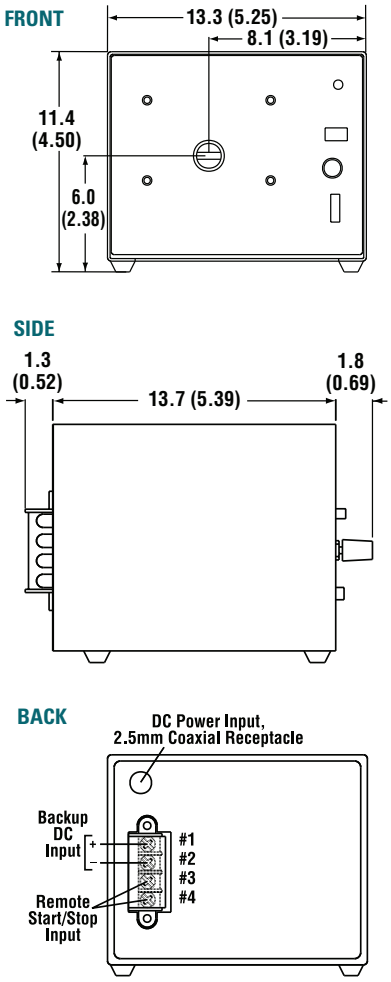
Catalog number		HL-77200-20	HL-77200-12
Performance Specifications			
Flow capacity		2.1 to 560 mL/min (0.03 to 8.8 GPH)†	
rpm		35 to 200	
Number of heads accepted		1	
Maximum torque	Starting	56 N-cm (80 oz-in)	
	Running	18 N-cm (25 oz-in)	
Reversible		Yes (three-position switch for CW/OFF/CCW)	
External control – Input		START/STOP via contact closure	
External control – Output		Not applicable	
Electrical Specifications			
Voltage/Frequency		90 to 260 VAC (50/60 Hz)	13.5 VDC nominal
Current		120 mA @ 115 V; 60 mA @ 230 V (AC)	2.4 A (DC)
Motor type		Permanent magnet DC	
Motor size		6 W	
Motor/speed control type		Single-turn potentiometer	
Speed regulation (repeatability)		±5% (5% of max rpm)	
Soft start/Electronic brake		Yes (remote)/No	
Physical Specifications			
Housing materials		Painted steel	
IP rating‡		IP22	
Agency listings		CE, Power supply: UL, cUL	—
Storage temperature		–25 to 65°C (–13 to 149°F)	
Operating temperature		0 to 40°C (32 to 104°F)	
Humidity		10 to 90% (noncondensing)	
Dimensions (L x W x H)		13.6 x 13.3 x 11.4 cm (5⅜" x 5¼" x 4½")	
Shipping weight		1.7 kg (3.7 lb)	

†Depending on drive rpm and tubing size selected.
‡See page 194 for an explanation of IP ratings.



Drives are stackable—ideal where space is limited.

Dimensional Drawings cm (in.)
77200-series



FOR THE LATEST...

Masterflex technical resources, see

- **ColeParmer.com**
- **Masterflex.com**

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® Variable-Speed Economy Drives

Features/Benefits

- Perfect upgrade from a fixed-speed drive to a variable-speed system
- Deliver flow rates from 0.42 to 2900 mL/min with Masterflex® L/S pump heads
- Deliver flow rates from 0.0035 to 1700 mL/min with cartridge pump heads
- Wide flow control range (30:1 turndown)
- Long-lasting, stackable steel housing
- Ideal for low-flow metering or general fluid transfer
- Safe, reliable continuous-duty motor
- Unidirectional operation
- Multichannel pumping

Drive Controls

- All manual controls are on the front panel
- Single-turn potentiometer for speed control
- On/off switch, green power-on indicator

Setup

1. Mount pump head and load tubing.
2. Turn pump on.
3. Adjust flow rate with potentiometer.

Selection Criteria

1. Motor rpm/flow rate.
2. Voltage required.
3. Pump heads accepted.

Order pump heads and tubing separately.

Speed Control/Circuitry

- Single-turn potentiometer
- Solid-state circuit
- Soft-start for no power surges
- Speed not affected by minimum variations in line voltage or frequency
- Switch: ON/OFF
- Meets or exceeds UL, CSA, EN, and selected IEC limits



L/S variable-speed console drive 07554-90 with L/S Easy-Load pump head 07518-12

ISO9001:2008 CERTIFIED SUPPLIER c UL us CE 2 year warranty

Motor Specifications

- Permanently lubricated
- Designed around a 90 or 180 VDC motor

Pump Heads Accepted

- Drive accepts nine different pump heads:

Standard	High-Performance
Easy-Load® 3	PTFE-Tubing
Easy-Load II	Multichannel
Easy-Load	Multichannel Cartridge
PTFE-Diaphragm	

Notes

Use drives 07554-90 and 07554-95 with High-Performance, Multichannel, and Cartridge pump heads only when loaded with C-FLEX® or silicone tubing. Do not use these 600-rpm drives with the PTFE-tubing or PTFE-diaphragm pump heads.

Ordering Information

Catalog number	rpm	Power (50/60 Hz)
HL-07554-90	20 to 600	90 to 130 VAC
HL-07554-95		180 to 260 VAC
HL-07554-80	7 to 200	90 to 130 VAC
HL-07554-85		180 to 260 VAC

Accessories

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

See pages 108–117

For complete L/S pump systems.



77910-30

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 20 to 600 rpm	1.2 to 36	4.2 to 130	16 to 480	34 to 1000	56 to 1700	76 to 2300	34 to 1000	56 to 1700	76 to 2300	96 to 2900
Flow range @ 7 to 200 rpm	0.42 to 12	1.4 to 43	5.6 to 160	12 to 330	20 to 570	27 to 770	12 to 330 (13 to 370)	20 to 570 (21 to 600)	27 to 770 (30 to 870)	34 to 970 (41 to 1130)

Note: Flow rates in parentheses can be obtained only with L/S High-Performance pump heads.

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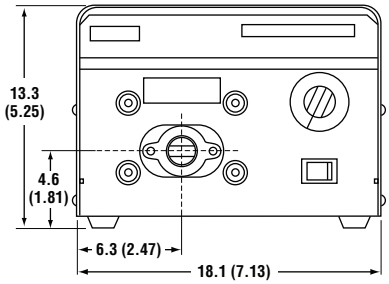
SPECIFICATIONS for L/S Variable-Speed Economy Drives

Catalog number		HL-07554-90	HL-07554-95	HL-07554-80	HL-07554-85
Performance Specifications					
Flow capacity		1.2 to 2900 mL/min (0 to 46 GPH)		0.42 to 970 mL/min (0 to 15 GPH)	
rpm		20 to 600		7 to 200	
Number of heads accepted		1		2	
Maximum torque	Starting	191 N-cm (270 oz-in)		381 N-cm (540 oz-in)	
	Running	64 N-cm (90 oz-in)		127 N-cm (180 oz-in)	
Reversible		No			
External control – Input		Not applicable			
External control – Output		Not applicable			
Electrical Specifications					
Voltage/frequency VAC (50/60 Hz)		90 to 130	180 to 260	90 to 130	180 to 260
Current		1.5 A	0.8 A	1.5 A	0.8 A
Fuse rating		2.0 A / 250 V	1.0 A / 250 V	2.0 A / 250 V	1.0 A / 250 V
Motor type		Continuous-duty, permanent magnet DC			
Motor size		37 W (1/20 hp)			
Motor/speed control type		Single-turn potentiometer, solid-state			
Speed regulation (repeatability)		±5% (±3%)			
Soft start/Electronic brake		Yes/No			
Physical Specifications					
Housing materials		Painted steel			
IP rating		IP22†			
Agency listings		UL, cUL, CE			
Operating temperature		0 to 40°C (32 to 104°F)			
Storage temperature		–25 to 65°C (–13 to 149°F)			
Dimensions (L x W x H)		22.9 x 18.1 x 13.3 cm (9" x 7⅛" x 5¼")			
Shipping weight		3.7 kg (8 lb)			

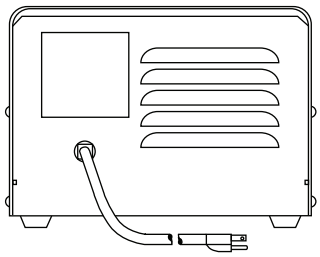
†See page 194 for an explanation of IP ratings.

Dimensional Drawings cm (in.)
07554- Series

FRONT



BACK



24-HOUR PROTECTION

The Liqui-Sense® emergency cut-off system protects you from pumping problems 24 hours a day. Detection of a leak or a high/low liquid level in a tank signals the Liqui-Sense controller to turn off your pump and turn on a back-up. Please see pages 160–161 for a complete description.



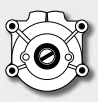
MORE INFO

Request your FREE Masterflex Tubing Test Kit to test compatibility of your chemicals against different tubing formulations. Request item HL-00101-10.

Call today!



STANDARD
0.42 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
12 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.33 to 1700 mL/min
pages 56–57

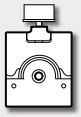


6- or 8-roller;
up to 12 channels
0.0035 to 350 mL/min
pages 58–59

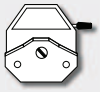
EASY-LOAD® 3
0.42 to 2900 mL/min
pages 42–43



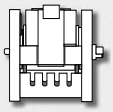
PTFE-TUBING
0.42 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.42 to 2900 mL/min
pages 44–45



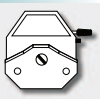
MULTICHANNEL
4- or 8-channel
for microbore tubing
0.02 to 200 mL/min
pages 52–53



PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61



EASY-LOAD®
0.42 to 2300 mL/min
pages 46–47



2-, 4-, or 8-channel
for L/S® Precision tubing
0.32 to 2300 mL/min
pages 54–55

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117

ACCESSORIES.....160–171

TECHNICAL DATA.....172–206

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L/S® Variable-Speed Analog Console Drives

Features/Benefits

- Flow rates: 0.06 to 3400 mL/min (0.001 to 54 GPH) with L/S tubing
- Cartridge flow rate: 0.0005 to 1700 mL/min per channel
- Three-digit LED shows motor speed (rpm)
- PWM speed control for precise, efficient control; ±0.25% speed control accuracy
- Reversible motor—easily reverse direction of flow
- Stackable housing is IP33 rated for wipedown
- Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- Compatible with all L/S pump heads



07528-10

Drive Controls

- Protected power switch located on back of drive
- Lighted display indicates power is on
- LED indicator shows motor/pumping direction
- Simple programming and operation of the following via sealed membrane keypad:
  - Flow direction
  - Motor speed (rpm)
  - Control mode (remote/internal)
  - Start/stop

Setup

1. Mount pump head(s) and load tubing.
2. Turn drive power on.
3. Select manual (internal) or remote (external) control.
4. Select motor direction.
5. Set drive speed (rpm) through keypad.
6. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CSA C22.2, No. 61010-1; For CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

Remote Control

- Speed control input: 4 to 20 mA, and 0 to 10 V
- START/STOP, CW/CCW via contact closure
- 9-pin (DB9) female connection
- Handheld remote and foot switch options; order separately under "Accessories"

Keypad Lock/Unlock Feature

- Lock out keypad and protect settings with special key sequence

Selection Criteria

1. Motor rpm / flow rate.
2. Number of pump heads accepted.

Order pump heads and tubing separately.

Ordering Information

ISO 9001:2008 CERTIFIED SUPPLIER · ETL US · CE · 2 year warranty

Catalog number	rpm	Power (50/60 Hz)
HL-07528-10	6 to 600	90 to 260 VAC
HL-07528-20	3 to 300	
HL-07528-30	1 to 100	

Accessories

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

	L/S Precision pump tubing						L/S High-performance Precision pump tubing			
Tubing cross sections	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
Flow range @ 6 to 600 rpm	0.36 to 36	1.3 to 130	4.8 to 480	10 to 1000	17 to 1700	23 to 2300	10 to 1000 (11 to 1100)	17 to 1700 (18 to 1800)	23 to 2300 (26 to 2600)	29 to 2900 (34 to 3400)
Flow range @ 3 to 300 rpm	0.18 to 18	0.65 to 65	2.4 to 240	5 to 500	8.5 to 850	11.5 to 1150	5 to 500 (5.5 to 550)	8.5 to 850 (9 to 900)	11.5 to 1150 (13 to 1300)	14.5 to 1450 (17 to 1700)
Flow range @ 1 to 100 rpm	0.06 to 6	0.21 to 21	0.8 to 80	1.7 to 170	2.8 to 280	3.8 to 380	1.7 to 170 (1.8 to 180)	2.8 to 280 (3.0 to 300)	3.8 to 380 (4.3 to 430)	4.8 to 480 (5.8 to 580)

Note: Flow rates were determined using water at room temperature and with zero back pressure and zero suction lift.
Higher flow rates in parentheses can be obtained only with L/S High-Performance pump heads.

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SPECIFICATIONS for L/S Variable-Speed Analog Console Drives

Catalog number		HL-07528-10	HL-07528-20	HL-07528-30
Performance Specifications				
Flow capacity		0.36 to 3400 mL/min (0 to 54 GPH)	0.18 to 1700 mL/min (0 to 27 GPH)	0.06 to 580 mL/min (0 to 9 GPH)
rpm		6 to 600	3 to 300	1 to 100
Number of heads accepted		2	2	4
Maximum torque	Starting	381 N-cm (540 oz-in)	381 N-cm (540 oz-in)	763 N-cm (1080 oz-in)
	Running	127 N-cm (180 oz-in)	127 N-cm (180 oz-in)	254 N-cm (360 oz-in)
Reversible		Yes		
External control – Input		4 to 20 mA, 0 to 10 V; START/STOP, CW/CCW via contact closure		
External control – Output		Not applicable		
Electrical Specifications				
Voltage/Frequency VAC (Hz)		90 to 260 (50/60)		
Current		2.2 A at 115 V; 1.1 A at 230 V		
Fuse rating		3.15 A / 250 V		
Motor type†		Continuous duty, TENV†, permanent-magnet DC		
Motor size		75 W (1/10 hp)		
Display		Three-digit LED		
Motor/speed control type		PWM		
Speed regulation		±0.25%		
Soft start/Electronic brake		Yes/No		
Physical Specifications				
Housing materials		Stackable ABS plastic housing/coated aluminum chassis		
IP rating‡		IP33		
Agency listings		ETL, cETL, CE		
Operating temperature		0 to 40°C (32 to 104°F)		
Storage temperature		–25 to 65°C (–13 to 149°F)		
Dimensions (L x W x H)		27.4 x 21.2 x 21.6 cm (10¾" x 8¼" x 8½")		
Shipping weight		6.9 kg (15.2 lb)		

†TENV—totally enclosed, nonventilating.
‡See page 194 for an explanation of IP ratings.

ACCESSORIES

HL-77595-35 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07595-45 DB9 male connector, use to create your own cable.

HL-07595-47 Cable assembly, DB9 male connector and 7.9 m (25-ft) cable with stripped wire terminal ends. Use for remote control.

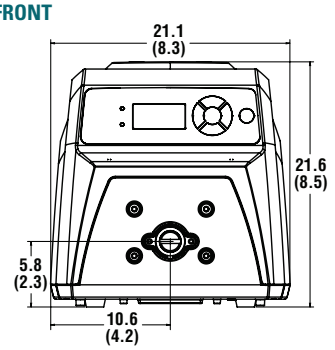
HL-07523-98 Tilt bail; use to securely elevate front of drive.

HL-07528-80 Handheld remote controller, DB9 male; for on/off control; route tubing through handle for filling and dispensing applications.

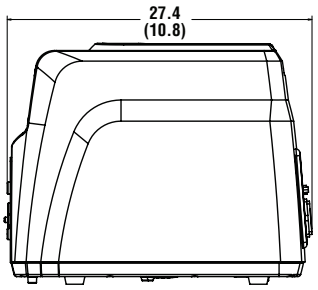


Dimensional Drawings cm (in.)
07528-series

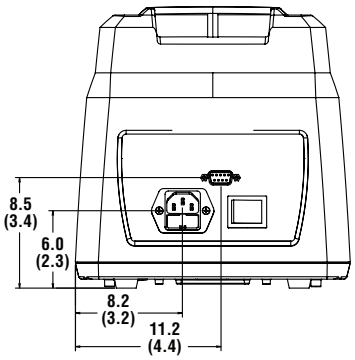
FRONT



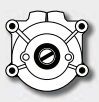
SIDE



BACK



STANDARD
0.06 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
0.9 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.047 to 1700 mL/min
pages 56–57

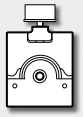


6- or 8-roller;
up to 12 channels
0.0005 to 350 mL/min
pages 58–59

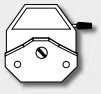
EASY-LOAD® 3
0.06 to 2900 mL/min
pages 42–43



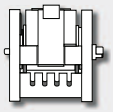
PTFE-TUBING
0.06 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.06 to 2900 mL/min
pages 44–45



MULTICHANNEL
4- or 8-channel
for microbore tubing
0.0026 to 200 mL/min
pages 52–53

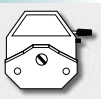


2-, 4-, or 8-channel
for L/S® Precision tubing
0.045 to 2300 mL/min
pages 54–55

PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61



EASY-LOAD®
0.06 to 2300 mL/min
pages 46–47



L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® Variable-Speed Precision Modular Drives

Features/Benefits

- Flow rates: 0.06 to 3400 mL/min (0.001 to 54 GPH) with L/S tubing
- Cartridge flow rate: 0.0005 to 1700 mL/min per channel
- Modular format lets you separate drive and controller for convenient placement; a 1.8-m (6-ft) control cable is included. Extend that distance with optional 2.7-m (9-ft) extension cable
- Three-digit LED shows motor speed (rpm)—confirm speed setting at a glance
- PWM speed control for precise, efficient control; ±0.25% speed control accuracy
- Reversible motor—easily reverse direction of flow to purge or prime tubing
- Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- Compatible with all L/S pump heads

Drive Controls

- Protected power switch located on controller
- Lighted display indicates power is on
- LED indicator shows motor/pumping direction
- Simple programming and operation of the following via sealed membrane keypad:
  - Flow direction
  - Motor speed (rpm)
  - Control mode (remote/internal)
  - Start/stop



Modular drive 07557-60 shown with Easy-Load® II pump head 77200-62



Benchtop modular drive 07557-00

Setup

1. Mount pump head(s) and load tubing.
2. Connect drive cable to controller.
3. Turn drive power on.
4. Select manual (internal) or remote (external) control.
5. Select motor direction.
6. Set drive speed (rpm) through keypad.
7. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) or frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CAN/CSA C22.2, No. 61010-1; For CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC).

Remote Control

Benchtop Modular Drives

- Remote control via 9-pin (DB9) female connection on back of controller
- Speed control input: 4 to 20 mA, and 0 to 10 V
- START/STOP, CW/CCW via contact closure
- Handheld remote, cable, and foot switch options; order separately under "Accessories"

Modular Drive with Washdown, Wall-Mount Controller

- Remote control via 18-pin weather-resistant circular connection on bottom of controller
- Speed control input: 4 to 20 mA, and 0 to 10 V
- START/STOP, CW/CCW via contact closure
- Remote cable and foot switch options; order separately under "Accessories"

Selection Criteria

1. Motor rpm / flow rate.
2. Number of pump heads accepted.
3. Benchtop or washdown, wall-mount controller.

Order pump heads and tubing separately.

ISO9001:2008 CERTIFIED SUPPLIER · ETL US · CE · IP66 07557-60 and -70 · 2 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz)
Benchtop precision modular drive		
HL-07557-00	6 to 600	90 to 260 VAC
HL-07557-10	1 to 100	
Precision modular drive with washdown controller		
HL-07557-60	6 to 600	90 to 260 VAC
HL-07557-70	1 to 100	

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross section	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 6 to 600 rpm	0.36 to 36	1.3 to 130	4.8 to 480	10 to 1000	17 to 1700	23 to 2300	10 to 1000 (11 to 1100)	17 to 1700 (18 to 1800)	23 to 2300 (26 to 2600)	29 to 2900 (34 to 3400)
Flow range @ 1 to 100 rpm	0.06 to 6	0.21 to 21	0.8 to 80	1.7 to 170	2.8 to 280	3.8 to 380	1.7 to 170 (1.8 to 180)	2.8 to 280 (3.0 to 300)	3.8 to 380 (4.3 to 430)	4.8 to 480 (5.8 to 580)

Note: Flow rates were determined using water at room temperature and with zero back pressure and zero suction lift.
Higher flow rates in parentheses can be obtained only with High-Performance pump head.

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SPECIFICATIONS for L/S Variable-Speed Precision Modular Drives

Catalog number		HL-07557-00	HL-07557-10	HL-07557-60	HL-07557-70
Performance Specifications					
Flow capacity		0.36 to 3400 mL/min	0.06 to 580 mL/min	0.36 to 3400 mL/min	0.06 to 580 mL/min
rpm		6 to 600	1 to 100	6 to 600	1 to 100
Number of heads accepted		2	4	2	4
Maximum torque	Starting	381 N·cm (540 oz-in)	763 N·cm (1080 oz-in)	381 N·cm (540 oz-in)	763 N·cm (1080 oz-in)
	Running	127 N·cm (180 oz-in)	254 N·cm (360 oz-in)	127 N·cm (180 oz-in)	254 N·cm (360 oz-in)
Reversible		Yes			
External control – Input		4 to 20 mA, 0 to 10 V; START/STOP, CW/CCW via contact closure			
External control – Output		Not applicable			
Electrical Specifications					
Voltage/Frequency VAC (Hz)		90 to 260 (50/60)			
Current		2.2 A at 115 V; 1.1 A at 230 V			
Fuse rating		3.15 A / 250 V			
Motor type		Continuous duty, TENV, permanent magnet DC			
Motor size		75 W (1/10 hp)			
Display		Three-digit LED			
Motor/speed control type		PWM			
Speed regulation		±0.25%			
Soft start/Electronic brake		Yes/No			
Physical Specifications					
Housing materials	Drive	Painted steel and aluminum		Painted steel and aluminum	
	Controller	ABS plastic housing, coated aluminum chassis		Painted aluminum	
IP rating†		IP33		IP66 (NEMA 4X)	
Agency listings		ETL, cETL, CE			
Operating temperature		0 to 40°C (32 to 104°F)			
Storage temperature		–25 to 65°C (–13 to 149°F)			
Dimensions (L x W x H)	Drive	27.7 x 9.7 x 11.7 cm (10⅞" x 3¾" x 4⅝")		36.2 x 17.8 x 16.5 cm (14¼" x 7" x 6½")	
	Controller	26.3 x 21.1 x 14.0 cm (10⅜" x 8⅜" x 5½")		28.5 x 27.9 x 11.9 cm (10⅛" x 11" x 4¾")	
Shipping weight		7.1 kg (15.6 lb)		14.1 kg (31.1 lb)	

†See page 194 for an explanation of IP ratings.

ACCESSORIES

For Benchtop Models 07557-00, -10

HL-07557-51 Extension cable, 2.7 m (9 ft), to extend distance between motor and controller.

HL-07528-80 Handheld remote controller; control start/stop and direction; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07595-47 Cable assembly, DB9 male connector and 7.9-m (25-ft) cable with stripped wire terminal ends. Use for remote control.

HL-77595-35 Foot switch, DB9 male, with 1.8-m (6-ft) cable.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

For Washdown Models 07557-60, -70

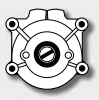
HL-07557-51 Extension cable, 2.7 m (9 ft), to extend distance between motor and controller.

HL-77300-32 Cable assembly, 18-pin round connector and 7.9-m (25-ft) cable with stripped wire terminal ends. Use for remote control.

HL-07595-43 Washdown foot switch, 18-pin round with 1.8-m (6-ft) cable.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

STANDARD
0.06 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
0.9 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.047 to 1700 mL/min
pages 56–57

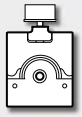


6- or 8-roller;
up to 12 channels
0.0005 to 350 mL/min
pages 58–59

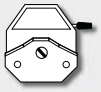
EASY-LOAD® 3
0.06 to 2900 mL/min
pages 42–43



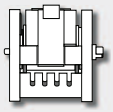
PTFE-TUBING
0.06 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.06 to 2900 mL/min
pages 44–45



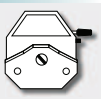
MULTICHANNEL
4- or 8-channel
for microbore tubing
0.0026 to 200 mL/min
pages 52–53



PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61



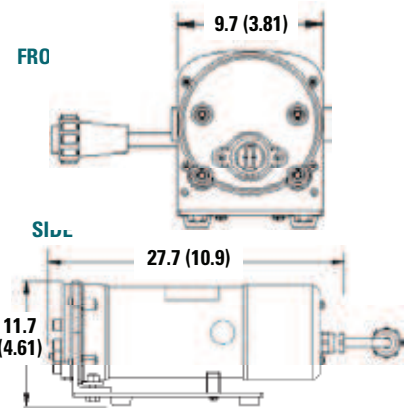
EASY-LOAD®
0.06 to 2300 mL/min
pages 46–47



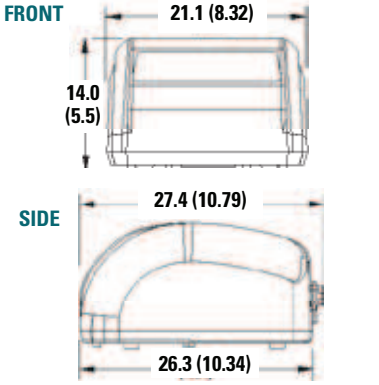
2-, 4-, or 8-channel
for L/S® Precision tubing
0.045 to 2300 mL/min
pages 54–55

Dimensional Drawings cm (in.)

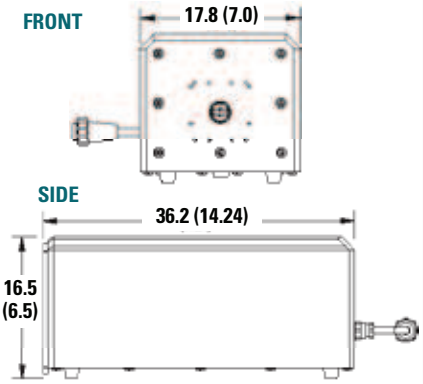
Drive 07557-00, -10



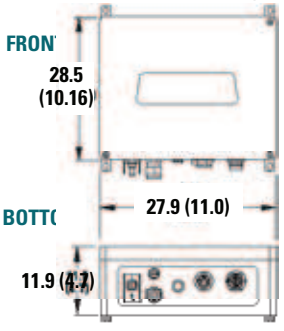
Controller 07557-00, -10



Drive 07557-60, -70



Controller 07557-60, -70



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L/S® Variable-Speed Digital Standard Drive

Features/Benefits

- Flow rates: 0.001 to 3400 mL/min (0.0001 to 54 GPH) with L/S tubing
- Cartridge flow rate: 0.00001 to 1700 mL/min per channel
- Four-line graphical LCD display shows four operating modes: continuous run, volume dispense, time dispense, and copy dispense—interface permits precise setting of desired flow rate or volume without over- or undershoot
- Menu-driven interface lets you select one of seven languages for programming and operation
- Set time interval (delay) between dispense cycles for hands-free dispensing
- Antidrip function ensures dispensing accuracy
- Batch count lets you set the desired number of batches and displays batches completed
- Cumulative volume function (totalizer) tracks total volume dispensed/pumped
- User-selectable metric or English units
- PWM speed control with tachometer feedback for precise, efficient control; ±0.1% speed control accuracy
- Reversible, maintenance-free brushless motor
- Drive stores one calibration value per tubing size, even when turned off
- Stackable housing is IP33 rated for wipedown
- Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- Compatible with all L/S pump heads

Drive Controls

- Protected power switch located on back of drive
- Lighted display indicates power is on
- Simple programming and operation of the following via sealed membrane keypad:
  - Tubing size
  - Flow rate
  - Flow direction
  - Flow units (metric or English)
  - Motor speed (rpm)
  - Total volume
  - Dispense (volume/copy/time)
  - Antidrip
  - Batch count
  - On/off time
  - Control mode (remote/internal)
  - Prime
  - Start/stop
  - Calibration

Setup

1. Mount pump head(s) and load tubing.
2. Turn drive power on and select language.
3. Select manual (internal) or remote control.
4. Select motor direction.
5. Prime and calibrate pump if required.
6. Set flow rate through keypad.
7. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad and menus, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CSA C22.2, No. 61010-1; For CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

Remote Control

- Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- START/STOP, CW/CCW, PRIME via contact closure
- Tach output: open collector
- Motor running indicator
- 25-pin (DB25) female connection
- Handheld remote and foot switch options; order separately under "Accessories"

Calibration

1. Select TUBING CAL through the Main or Setup menu.
2. Set flow direction, tubing size, and flow rate.
3. Prime the tubing
4. Highlight START and press ENTER, drive will run based on default volume.
5. Press ENTER and adjust CAL VOLUME to the actual measured volume.
6. Press ENTER to SAVE setting and EXIT.

Note: Digital signal processor retains one calibration value for each tubing size, even when power is turned off.

NEW



L/S digital standard drive 07522-20 shown with multichannel pump head 07535-04

Keypad Lock/Unlock Feature

- Lock keypad and protect settings by highlighting the lock icon and pressing ENTER
- Select LOCK and press ENTER to exit menu
- Repeat above steps to unlock keypad

ISO 9001:2008 CERTIFIED SUPPLIER · ETL · CE · 2 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz) universal voltage
HL-07522-20	0.1 to 600	90 to 260 VAC
HL-07522-30	0.02 to 100	

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross section	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 0.1 to 600 rpm	0.006 to 36	0.021 to 130	0.08 to 480	0.17 to 1000	0.28 to 1700	0.38 to 2300	0.17 to 1000 (0.18 to 1100)	0.28 to 1700 (0.30 to 1800)	0.38 to 2300 (0.43 to 2600)	0.48 to 2900 (0.58 to 3400)
Flow range @ 0.02 to 100 rpm	0.001 to 6	0.004 to 21	0.016 to 80	0.033 to 170	0.057 to 280	0.077 to 380	0.033 to 170 (0.036 to 180)	0.057 to 280 (0.057 to 300)	0.077 to 380 (0.086 to 430)	0.096 to 480 (0.113 to 580)

Note: Flow rates in parentheses can be obtained only with High-Performance pump heads.

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SPECIFICATIONS for L/S Variable-Speed Digital Standard Drive

Catalog number		HL-07522-20	HL-07522-30
Performance Specifications			
Flow capacity		0.006 to 3400 mL/min (0 to 54 GPH)	0.001 to 580 mL/min (0 to 9.2 GPH)
rpm		0.1 to 600	0.02 to 100
Number of heads accepted		2	4
Maximum torque	Starting	381 N-cm (540 oz-in)	763 N-cm (1080 oz-in)
	Running	127 N-cm (180 oz-in)	254 N-cm (360 oz-in)
Reversible		Yes	
External control – Input		0-20 mA, 4-20 mA, 0-10 V; START/STOP, CW/CCW, PRIME via contact closure	
External control – Output		0 to 20 mA, 4 to 20 mA, 0 to 10 V, TTL pulse, drive running	
Electrical Specifications			
Voltage/Frequency VAC (50/60 Hz)		90 to 260, universal-voltage autoselecting	
Current		2.2 A at 115 V; 1.1 A at 230 V	
Fuse rating		3.15 A / 250 V	
Motor type		Continuous-duty, brushless DC	
Motor size		75 W (1/10 hp)	
Display		Four-line graphical LCD	
Motor/speed control type		PWM with microprocessor	
Speed regulation (repeatability)		±0.1% (±0.1 rpm at 600 rpm, ±0.01 rpm at 100 rpm)	
Soft start/Electronic brake		Yes/Yes	
Physical Specifications			
Housing materials		Stackable ABS plastic housing, coated aluminum chassis	
IP rating†		IP33	
Agency listings		ETL, cETL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)		27.4 x 21.2 x 21.6 cm (10¾" x 8⅜" x 8½")	
Shipping weight		5.9 kg (13 lb)	

†See page 194 for an explanation of IP ratings

ACCESSORIES

HL-07523-92 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 7.9-m (25-ft) cable with stripped wire ends for remote control.

HL-07523-94 DB25 male connector, use to create your own cable.

HL-07523-97 Handheld remote controller; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07523-98 Tilt bail; use to securely elevate front of drive.

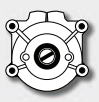
HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

SEE PAGES 108–117
For complete L/S pump systems



77921-65

STANDARD
0.001 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
0.018 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller; up to 8 channels
0.001 to 1700 mL/min
pages 56–57

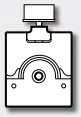


6- or 8-roller; up to 12 channels
0.00001 to 350 mL/min
pages 58–59

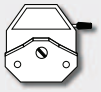
EASY-LOAD® 3
0.001 to 2900 mL/min
pages 42–43



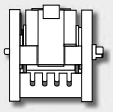
PTFE-TUBING
0.001 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.001 to 2900 mL/min
pages 44–45



MULTICHANNEL
4- or 8-channel for microbore tubing
0.00005 to 200 mL/min
pages 52–53

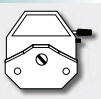


2-, 4-, or 8-channel for L/S® Precision tubing
0.001 to 2300 mL/min
pages 54–55

PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61

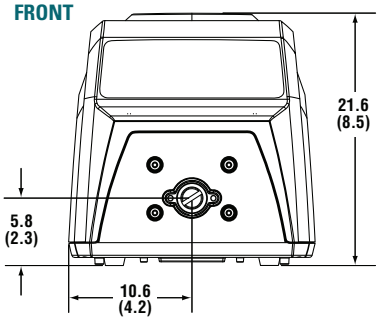


EASY-LOAD®
0.001 to 2300 mL/min
pages 46–47

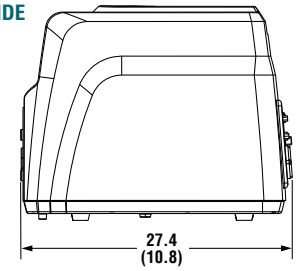


Dimensional Drawings cm (in.)
07522-series

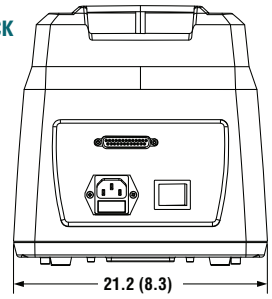
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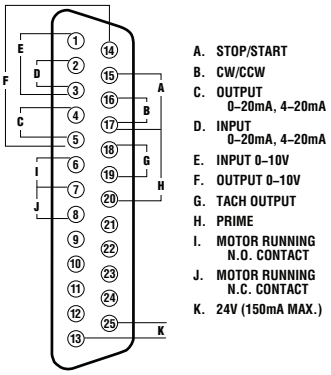


SIDE



BACK





L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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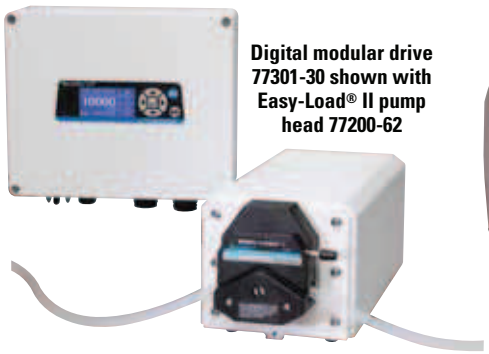
L/S® Digital Modular Dispensing Drives

Features/Benefits

- Flow rates: 0.006 to 3400 mL/min with L/S tubing
- Cartridge flow rate: 0.00005 to 1700 mL/min per channel
- Modular format lets you separate drive and controller for convenient placement; a 1.8-m (6-ft) control cable is included. Extend that distance with optional 2.7-m (9-ft) extension cable
- Four-line graphical LCD shows four operating modes: continuous run, volume dispense, time dispense, and copy dispense—interface permits precise setting of desired flow rate or volume without over- or undershoot
- Select one of seven languages for programming and operation
- Set time interval (delay) between dispense cycles for hands-free dispensing
- Antidrip function ensures dispensing accuracy
- Batch count lets you set the number of batches and displays number of batches completed
- Cumulative volume function (totalizer) tracks total volume dispensed/pumped
- User selectable English or metric flow/volume units
- PWM speed control with tachometer feedback for ±0.1% speed control accuracy
- Reversible, maintenance-free brushless motor
- Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- Compatible with all L/S pump heads

Drive Controls

- Protected power switch located on back of drive
- Lighted display indicates power is on
- Simple programming and operation of the following via sealed membrane keypad:
  - Tubing size
  - Flow rate
  - Flow direction
  - Flow units (English or metric)
  - Motor speed (rpm)
  - Total volume
  - Dispense (volume/copy/time)
  - Batch count
  - On/off time
  - Antidrip
  - Control mode (remote/internal)
  - Prime
  - Start/stop
  - Calibration



Digital modular drive 77301-30 shown with Easy-Load® II pump head 77200-62

Setup

1. Mount pump head(s) and load tubing.
2. Turn drive power on and select language.
3. Select manual (internal) or remote control.
4. Select motor direction.
5. Prime and calibrate pump if required.
6. Set flow rate through keypad.
7. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad and menus, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CSA C22.2, No. 61010-1; for CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

Remote Control

Benchtop Modular Drive

- Remote control via 25-pin (DB25) female connection on back of controller
- Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- START/STOP, CW/CCW, PRIME via contact closure
- Tach output: open collector
- Motor running indicator
- Handheld remote, cable, and foot switch options; order separately under "Accessories"



Benchtop modular digital drive 77301-20

Modular Drive with Washdown, Wall-Mount Controller

- Remote control via 31-pin weather-resistant circular connection on bottom of controller
- Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- START/STOP, CW/CCW, PRIME via contact closure
- Tach output: open collector
- Motor running indicator
- Remote cable and foot switch options; order separately under "Accessories"

Calibration

1. Select TUBING CAL via the Main or Setup menu.
2. Set flow direction, tubing size, and flow rate.
3. Prime the tubing.
4. Highlight START and press ENTER, drive will run based on default volume.
5. Press ENTER and adjust CAL VOLUME to the actual measured volume.
6. Press ENTER to SAVE setting and EXIT.

NOTE: Digital signal processor retains one calibration value for each tubing size, even when power is turned off.

ISO 9001:2008 CERTIFIED SUPPLIER · 77301-50 · 2 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz)
Benchtop digital modular drive		
HL-77301-40	0.1 to 600	90 to 260 VAC
Digital modular drive with washdown controller		
HL-77301-50	0.1 to 600	90 to 260 VAC

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 0.1 to 600 rpm	0.006 to 36	0.021 to 130	0.08 to 480	0.17 to 1000	0.28 to 1700	0.38 to 2300	0.18 to 1000 (0.18 to 1100)	0.28 to 1700 (0.30 to 1800)	0.38 to 2300 (0.43 to 2600)	0.48 to 2900 (0.58 to 3400)

Note: Higher flow rates in parentheses can be obtained only with High-Performance pump head.

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SPECIFICATIONS for L/S Digital Modular Dispensing Drives

Catalog number		HL-77301-40	HL-77301-50
Performance Specifications			
Flow capacity		0.006 to 3400 mL/min (0 to 54 GPH)	
rpm		0.1 to 600	
Number of heads accepted		2	
Maximum torque	Starting	381 N·cm (540 oz-in)	
	Running	127 N·cm (180 oz-in)	
Reversible		Yes	
External control – Input		0 to 20 mA, 4 to 20 mA, 0 to 10 V; START/STOP, CW/CCW, PRIME via contact closure	
External control – Output		1 to 20 mA, 4 to 20 mA, 0 to 10 V; TTL pulse, drive running	
Electrical Specifications			
Voltage/Frequency VAC (Hz)		90 to 260 (50/60)	
Current		1.8 A at 115 V; 1.1 A at 230 V	
Fuse rating		3.15 A / 250 V	
Motor type		Continuous duty, brushless DC	
Motor size		75 W (1/10 hp)	
Display		Four-line graphical LCD	
Motor/speed control type		PWM with microprocessor	
Speed regulation		±0.1%	
Soft start/Electronic brake		Yes /Yes	
Physical Specifications			
Housing materials	Drive	Painted steel and aluminum	Painted steel and aluminum
	Controller	ABS plastic housing, coated aluminum chassis	Painted aluminum
IP rating		IP33	IP66 (NEMA 4X)
Agency listings		ETL, cETL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)	Drive	22.7 x 9.7 x 12 cm (8⅞" x 3¾" x 4¾")	36.2 x 17.8 x 16.5 cm (14¼" x 7" x 6½")
	Controller	26.3 x 21.1 x 14.0 cm (10⅜" x 8⅜" x 5½")	28.5 x 27.9 x 11.9 cm (10⅛" x 11" x 4¾")
Shipping weight		7.1 kg (15.6 lb)	14.1 kg (31.1 lb)

ACCESSORIES

For Benchtop Model 77301-40

HL-07523-97 Handheld remote controller; control start/stop, direction, and prime; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07523-92 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 7.9-m (25-ft) cable with stripped wire ends for remote control.

HL-77301-82 Extension cable, 2.7 m (9 ft), for benchtop modular drive 77301-40; extends distance between motor and controller.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

For Washdown Model 77301-50

HL-07575-84 Washdown foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-77301-82 Extension cable, 2.7 m (9 ft), for washdown modular drive 77301-50; extends distance between motor and controller.

HL-07575-80 Remote control cable; wire to controller/PLC; 8.3-m (25-ft) length.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

KEYPAD LOCK/UNLOCK FEATURE

- Lock keypad and protect settings by highlighting the lock icon and pressing ENTER.
- Select LOCK and press ENTER to exit menu.
- Repeat above steps to unlock keypad.

SELECTION CRITERIA

1. Motor rpm / flow rate.
2. Number of pump heads accepted.
3. Benchtop or washdown, wall-mount controller.

Order pump heads and tubing separately.

STANDARD
0.06 to 2900 mL/min
pages 40–41

HIGH-PERFORMANCE
0.9 to 3400 mL/min
pages 48–49

MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.047 to 1700 mL/min
pages 56–57

6- or 8-roller;
up to 12 channels
0.0005 to 350 mL/min
pages 58–59

EASY-LOAD® 3
0.06 to 2900 mL/min
pages 42–43

PTFE-TUBING
0.06 to 65 mL/min
pages 50–51

EASY-LOAD® II
0.06 to 2900 mL/min
pages 44–45

MULTICHANNEL
4- or 8-channel
for microbore tubing
0.0026 to 200 mL/min
pages 52–53

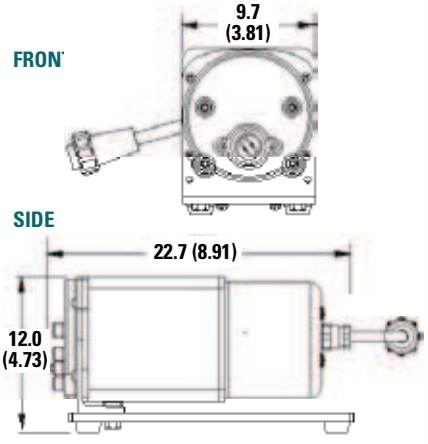
2-, 4-, or 8-channel
for L/S® Precision tubing
0.045 to 2300 mL/min
pages 54–55

PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61

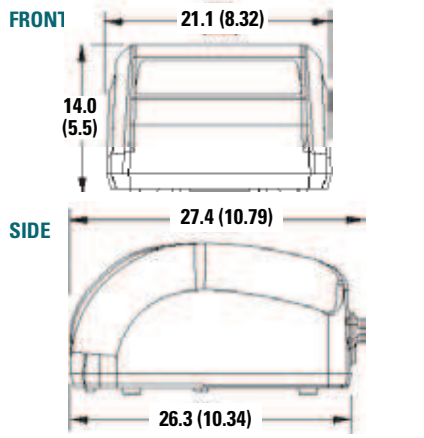
EASY-LOAD®
0.06 to 2300 mL/min
pages 46–47

Dimensional Drawings cm (in.)

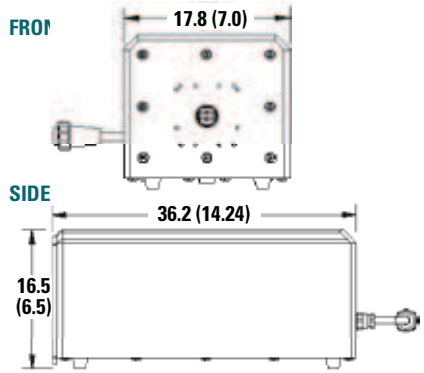
77301-40 Drive



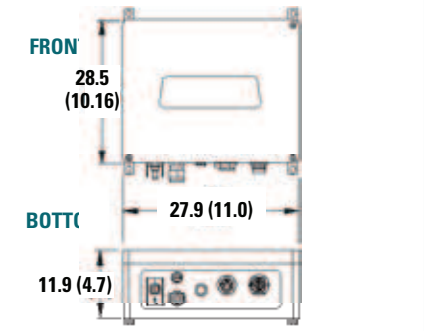
77301-40 Controller



77301-50 Drive



77301-50 Controller



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L/S® Digital Process Drives

Features/Benefits

- Flow rates: 0.006 to 3400 mL/min (0.0001 to 54 GPH) with L/S tubing
- Cartridge flow rate: 0.0005 to 1700 mL/min per channel
- Washdown process drive is IP66, NEMA 4X rated
- Model 07575-10 with electropolished 316 stainless steel housing withstands common cleaning and sanitizing solutions; use powder-coat steel model 07575-20 in applications where stainless steel is not a critical requirement
- Four-line graphical LCD shows four operating modes: continuous run, volume dispense, time dispense, and copy dispense—interface permits precise setting of desired flow rate or volume without over- or undershoot
- Menu-driven interface lets you select one of seven languages for programming and operation
- Set time interval (delay) between dispense cycles for hands-free dispensing
- Batch count lets you set the desired number of batches and displays number completed
- Cumulative volume function (totalizer) tracks total volume dispensed/pumped
- User-selectable metric or English units
- PWM speed control with tachometer feedback for ±0.1% speed control accuracy
- Reversible, maintenance-free brushless motor
- Drive stores one calibration value per tubing size
- Universal voltage, 90 to 260 VAC autoselect
- Compatible with all L/S pump heads

Drive Controls

- Protected power switch located on back of drive
- Lighted display indicates power is on
- Simple programming and operation of the following via sealed membrane keypad:
  - Tubing size
  - Flow rate
  - Flow direction
  - Flow units (metric or English)
  - Motor speed (rpm)
  - Total volume
  - Dispense (volume/copy/time)
  - Batch count
  - On/off time
  - Control mode (remote/internal)
  - Prime
  - Start/stop
  - Calibration



L/S digital process drive 07575-10 shown with High-Performance pump head 77250-62

WASHDOWN



L/S digital process drive 07575-20 shown with Easy-Load® II pump head 77200-62

Setup

1. Mount pump head(s) and load tubing.
2. Turn drive power on and select language.
3. Select manual (internal) or remote control.
4. Select motor direction.
5. Prime and calibrate pump if required.
6. Set flow rate through keypad.
7. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad and menus, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CSA C22.2, No. 61010-1; For CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

Remote Control

- Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- START/STOP, CW/CCW, PRIME via contact closure
- Tach output: open collector
- Motor running indicator
- 31-pin circular waterproof connection
- Remote control and foot switch options; order separately under “Accessories”

ISO 9001:2008 CERTIFIED SUPPLIER · 2 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz) universal voltage
Digital process drive with 316 stainless steel housing		
HL-07575-10	0.1 to 600	90 to 260 VAC
Digital process drive with powder-coat steel housing		
HL-07575-20	0.1 to 600	90 to 260 VAC

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68-73

Tubing cross section	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 0.1 to 600 rpm	0.006 to 36	0.02 to 130	0.08 to 480	0.17 to 1000	0.28 to 1700	0.38 to 2300	0.17 to 1000 (0.18 to 1100)	0.28 to 1700 (0.30 to 1800)	0.38 to 2300 (0.43 to 2600)	0.48 to 2900 (0.57 to 3400)

Note: Flow rates in parentheses can be obtained only with the High-Performance pump head

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SPECIFICATIONS for L/S Digital Process Drives

Catalog number		HL-07575-10	HL-07575-20
Performance Specifications			
Flow capacity		0.006 to 3400 mL/min (0.0001 to 54 GPH)	
rpm		0.1 to 600	
Number of heads accepted		2	
Maximum torque	Starting	381 N·cm (540 oz-in)	
	Running	127 N·cm (180 oz-in)	
Reversible		Yes	
External control–Input		0 to 20 mA, 4 to 20 mA, 0 to 10 V; Start/Stop, CW/CCW, Prime	
External control–Output		0 to 20 mA, 4 to 20 mA, 0 to 10 V; TTL; "drive running" contact	
Electrical Specifications			
Voltage/Frequency VAC (50/60 Hz)		90 to 260, universal-voltage, autoselecting	
Current		2.2 A at 115 V; 1.1 A at 230 V	
Fuse rating		3.15 A	
Motor type		Continuous-duty, brushless DC	
Motor size		75 W (1/10 hp)	
Display		Four-line graphical LCD	
Motor/speed control type		PWM with microprocessor	
Speed regulation (repeatability)		±0.1%	
Soft-Start/Electronic brake		Yes/Yes	
Physical Specifications			
Housing materials		316 stainless steel, electropolished	Powder-coated steel
IP rating†		IP66 (NEMA 4X)	
Agency listings		ETL, cETL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)		30.5 x 22.9 x 23.6 cm (12" x 9" x 9 5/16")	
Shipping weight		11.8 kg (26 lb)	

†See page 194 for an explanation of IP ratings.

CALIBRATION

1. Select TUBING CAL through the Main or Setup menu.
2. Set flow direction, tubing size, and flow rate
3. Prime the tubing.
4. Highlight START and press ENTER, drive will run based on default volume.
5. Press ENTER and adjust CAL VOLUME to the actual measured volume.
6. Press ENTER to SAVE setting and EXIT.

Note: Digital signal processor retains one calibration value for each tubing size, even when power is turned off.

KEYPAD LOCK/UNLOCK FEATURE

- Lock keypad and protect settings by highlighting the lock icon and pressing ENTER
- Select LOCK and press ENTER to exit menu
- Repeat above steps to unlock keypad

STANDARD
0.006 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
0.09 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.005 to 1700 mL/min
pages 56–57

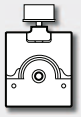


6- or 8-roller;
up to 12 channels
0.00005 to 350 mL/min
pages 58–59

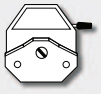
EASY-LOAD® 3
0.006 to 2900 mL/min
pages 42–43



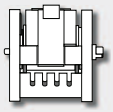
PTFE-TUBING
0.006 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.006 to 2900 mL/min
pages 44–45



MULTICHANNEL
4- or 8-channel
for microbore tubing
0.0003 to 200 mL/min
pages 52–53

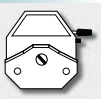


2-, 4-, or 8-channel
for L/S® Precision tubing
0.005 to 2300 mL/min
pages 54–55

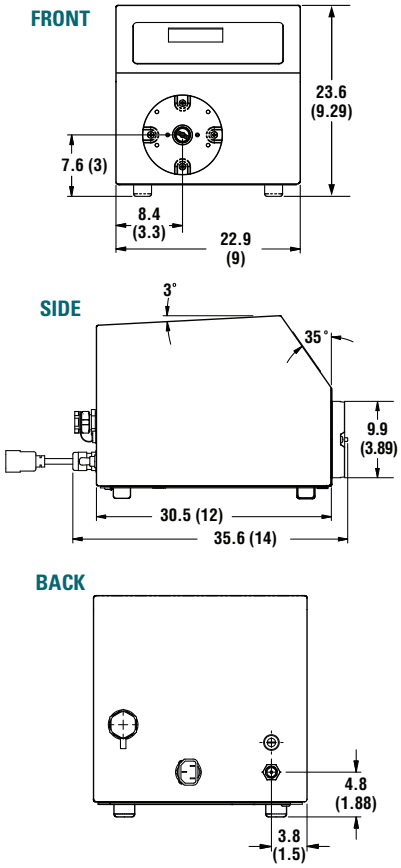
PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61



EASY-LOAD®
0.006 to 2300 mL/min
pages 46–47



Dimensional Drawings cm (in.)
07575-10 and -20



ACCESSORIES

HL-07575-84 Washdown foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07575-80 Remote control cable; wire to controller/PLC; 8.3-m (25-ft) length.

HL-07575-01 Replacement seal kit includes shaft seal, hardware, and gasket.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.



Pump heads can be stacked on the L/S digital process drive to increase flow rates. Shown are stacked L/S Easy-Load® II pump heads 77200-62.

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® Computer-Compatible Programmable Drives

Features/Benefits

- Flow rates: 0.001 to 3400 mL/min (0.0001 to 54 GPH) with L/S tubing
- Cartridge flow rate: 0.00001 to 1700 mL/min per channel
- Use as a stand-alone digital dispensing drive or interface with a PC for automated and multi-drive applications
- Four-line graphical LCD shows four operating modes: continuous run, volume dispense, time dispense, and copy dispense
- Menu-driven interface lets you select from one of seven languages for programming and operation
- Set time interval (delay) between dispense cycles for hands-free dispensing
- Batch count lets you set the desired number of batches and displays number of batches completed
- Cumulative volume function (totalizer) tracks total volume dispensed/pumped
- User-selectable metric or English flow units
- PWM speed control with tachometer feedback; ±0.1% speed control accuracy
- Reversible, maintenance-free brushless motor
- Drive stores one calibration value per tubing size, even when turned off
- Stackable housing is IP33 rated for wipedown
- Compatible with all L/S pump heads

Drive Controls

- Protected power switch located on back of drive
- Lighted display indicates power is on
- Simple programming and operation of the following via sealed membrane keypad:
  - Tubing size
  - Flow rate
  - Flow direction
  - Flow units (metric or English)
  - Motor speed (rpm)
  - Total volume
  - Dispense (volume/copy/time)
  - Batch count
  - On/off time
  - Control mode (remote/internal)
  - Prime
  - Start/stop
  - Calibration

Setup

1. Mount pump head(s) and load tubing.
2. Turn drive power on and select language.
3. Select manual (internal) or remote control.
4. Select motor direction.
5. Prime and calibrate pump if required.
6. Set flow rate through keypad.
7. Press START key to begin pumping.

Speed Control/Circuitry

- Regulate motor through keypad and menus, 4 to 20 mA, or 0 to 10 V signal
- Soft start for starts without power surges
- Speed not affected by variations in power line voltage (VAC) and frequency (Hz)
- Line filters reduce outside interference
- Meets UL 61010-1, CSA C22.2, No. 61010-1; For CE mark: EN61010-1 (EU low voltage) and EN61326-1 (EU EMC)

Remote Control

- Speed control input: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- Speed signal output: 0 to 20 mA, 4 to 20 mA, and 0 to 10 V (scaleable/invertable)
- START/STOP, CW/CCW, PRIME via contact closure
- Tach output: open collector
- Motor running indicator
- 25-pin (DB25) female connection
- Two programmable auxiliary contacts and auxiliary 24 VDC power supply output
- Input/output via RS-232 serial (DB9) and USB Type B mini port
- Handheld remote and foot switch options; order separately under "Accessories"

Calibration

1. Select TUBING CAL through the Main or Setup menu.
2. Set flow direction, tubing size, and flow rate.
3. Prime the tubing.
4. Highlight START and press ENTER, drive will run based on default volume.
5. Press ENTER and adjust CAL VOLUME to the actual measured volume.
6. Press ENTER to SAVE setting and EXIT.

NOTE: Digital signal processor retains one calibration value for each tubing size, even when power is turned off.



L/S® Computer-compatible brushless drive 07551-00 shown with L/S High-performance pump head 77250-62 and L/S 15 PharmaPure® tubing.

Keypad Lock/Unlock Feature

- Lock keypad and protect settings by highlighting the lock icon and pressing ENTER
- Select LOCK and press ENTER to exit menu
- Repeat above steps to unlock keypad

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Ordering Information

Catalog number	rpm	Power (50/60 Hz) universal voltage
HL-07551-00	0.1 to 600	90 to 260 VAC
HL-07551-10	0.02 to 100	

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross section	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 0.1 to 600 rpm	0.006 to 36	0.021 to 130	0.08 to 480	0.17 to 1000	0.28 to 1700	0.38 to 2300	0.17 to 1000 (0.18 to 1100)	0.28 to 1700 (0.30 to 1800)	0.38 to 2300 (0.43 to 2600)	0.48 to 2900 (0.58 to 3400)
Flow range @ 0.02 to 100 rpm	0.001 to 6	0.004 to 21	0.016 to 80	0.033 to 170	0.057 to 280	0.077 to 380	0.033 to 170 (0.036 to 180)	0.057 to 280 (0.057 to 300)	0.077 to 380 (0.086 to 430)	0.096 to 480 (0.113 to 580)

Note: Flow rates in parentheses can be obtained only with Masterflex L/S High-Performance pump heads.

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SPECIFICATIONS for L/S Computer-Compatible Programmable Drives

Catalog number		HL-07551-00	HL-07551-10
Performance Specifications			
Flow capacity		0.006 to 3400 mL/min (0 to 54 GPH)	0.001 to 580 mL/min (0 to 9.2 GPH)
rpm		0.1 to 600	0.02 to 100
Number of heads accepted		2	4
Maximum torque	Starting	381 N·cm (540 oz-in)	763 N·cm (1080 oz-in)
	Running	127 N·cm (180 oz-in)	254 N·cm (360 oz-in)
Reversible		Yes	
External control–Input		RS-232, USB, 0–20 mA, 4–20 mA, 0–10 V; START/STOP, CW/CCW, PRIME via contact closure	
External control–Output		RS-232, USB, 0–20 mA, 4–20 mA, 0–10 V, TTL pulse, drive running	
Electrical Specifications			
Voltage/Frequency VAC (50/60 Hz)		90 to 260, universal-voltage autoselecting	
Current		2.2 A at 115 V; 1.1 A at 230 V	
Fuse rating		3.15 A / 250 V	
Motor type		Continuous-duty, brushless DC	
Motor size		75 W (1/10 hp)	
Display		Four-line graphical LCD	
Motor/speed control type		PWM with microprocessor	
Speed regulation (repeatability)		±0.1% (±0.1 rpm at 600 rpm, ±0.01 rpm at 100 rpm)	
Soft start/Electronic brake		Yes/Yes	
Physical Specifications			
Housing materials		Stackable ABS plastic housing, coated aluminum chassis	
IP rating†		IP33	
Agency listings		ETL, cETL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)		27.4 x 21.2 x 21.6 cm (10.8" x 8.3" x 8.5")	
Shipping weight		5.9 kg (13 lb)	

†See page 194 for an explanation of IP ratings

ACCESSORIES

HL-07523-92 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 7.9-m (25-ft) cable with stripped wire ends for remote control.

HL-07523-94 DB25 male connector, use to create your own cable.

HL-07523-97 Handheld remote controller; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07523-98 Tilt bail; use to securely elevate front of drive.

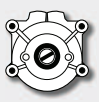
HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

SEE PAGES 108–117
For complete L/S pump systems



77924-50

STANDARD
0.001 to 2900 mL/min
pages 40–41



HIGH-PERFORMANCE
0.018 to 3400 mL/min
pages 48–49



MULTICHANNEL CARTRIDGE
3- or 4-roller;
up to 8 channels
0.001 to 1700 mL/min
pages 56–57

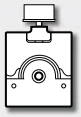


6- or 8-roller;
up to 12 channels
0.00001 to 350 mL/min
pages 58–59

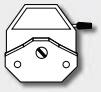
EASY-LOAD® 3
0.001 to 2900 mL/min
pages 42–43



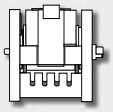
PTFE-TUBING
0.001 to 65 mL/min
pages 50–51



EASY-LOAD® II
0.001 to 2900 mL/min
pages 44–45



MULTICHANNEL
4- or 8-channel
for microbore tubing
0.00005 to 200 mL/min
pages 52–53

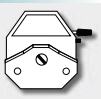


2-, 4-, or 8-channel
for L/S® Precision tubing
0.001 to 2300 mL/min
pages 54–55

PTFE-DIAPHRAGM
10 to 800 mL/min
pages 60–61

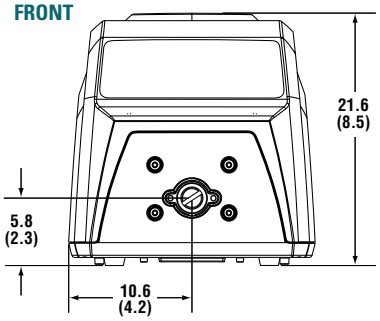


EASY-LOAD®
0.001 to 2300 mL/min
pages 46–47

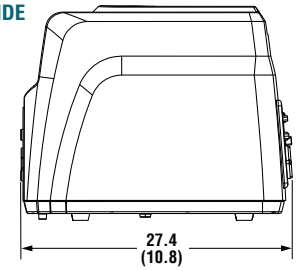


Dimensional Drawings cm (in.)
07551-series

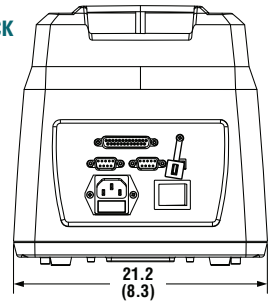
FRONT

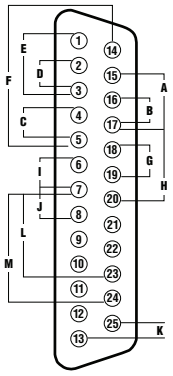


SIDE



BACK





A. STOP/START
B. CW/CCW
C. OUTPUT 0–20mA, 4–20mA
D. INPUT 0–20mA, 4–20mA
E. INPUT 0–10V
F. OUTPUT 0–10V
G. TACH OUTPUT
H. PRIME
I. MOTOR RUNNING N.O. CONTACT
J. MOTOR RUNNING N.C. CONTACT
K. 24V (150mA MAX.)
L. GENERAL ALARM
M. LOCAL REMOTE INDICATOR

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
L/S® PUMP SYSTEMS.....108–117
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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SERVODYNE™ ELECTRONIC MIXERS

FEATURES/BENEFITS

- Modular design features easy customization to suit your needs
- Convenient, ready-made systems come complete with controller, mixer head, shaft, propeller, clamp, and stand
- Speed ranges up to 6000 rpm
- Torque ranges to 360 N-cm
- All components operate on 115 VAC, 50/60 Hz

COMPUTER COMPATIBILITY

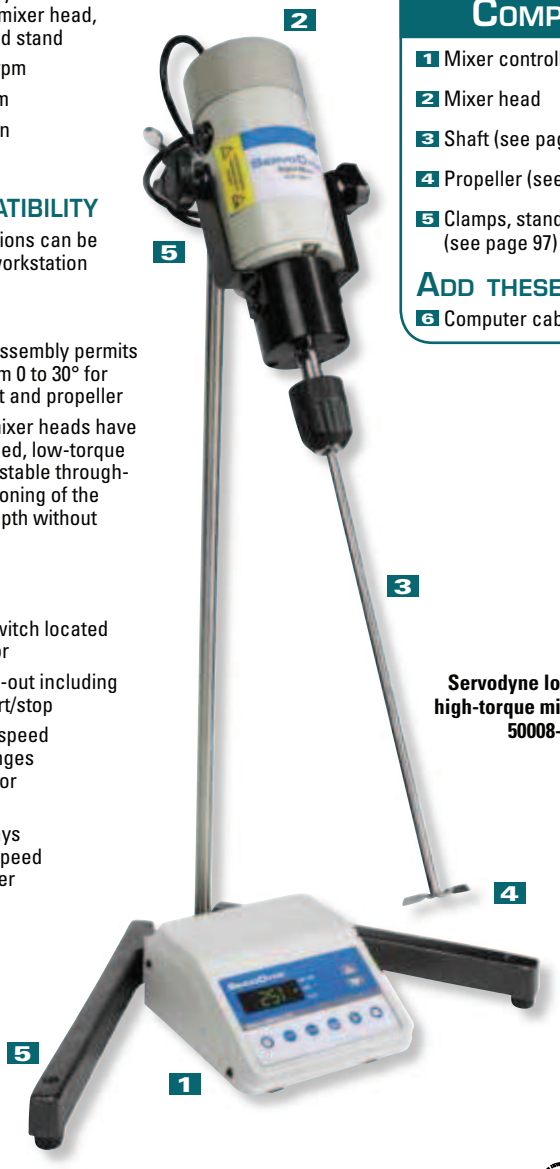
- All Servodyne mixer functions can be controlled through a PC workstation

MIXER HEADS

- Adjustable-tilt mounting assembly permits rotation of mixer head from 0 to 30° for proper positioning of shaft and propeller
- High-torque, low-speed mixer heads have a keyless chuck; high-speed, low-torque mixer heads have an adjustable through-shaft collet to allow positioning of the mixing propeller at any depth without moving the mixer head

DRIVE CONTROLS

- Protected on/off power switch located on top of each mixer motor
- LED display provides read-out including time, torque, rpm, and start/stop
- Precise control of mixing speed within ±0.2% despite changes in viscosity, temperature, or line voltage
- Optical shaft encoder relays the exact motor rotation speed data to the electronic mixer controller



Servodyne low-speed, high-torque mixer system 50008-22

REQUIRED SYSTEM COMPONENTS

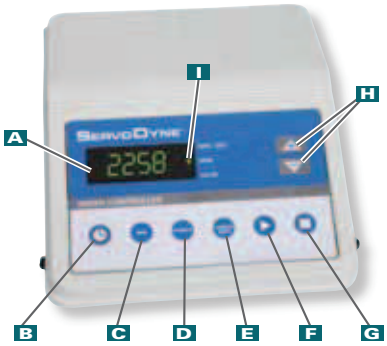
1. Mixer controller
2. Mixer head
3. Shaft (see page 97)
4. Propeller (see page 97)
5. Clamps, stand and supports (see page 97)

ADD THESE OPTIONS

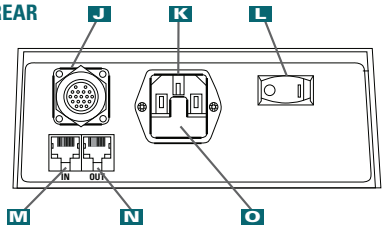
6. Computer cable

Controller Features

FRONT



REAR



- **A Display:** Shows selected mixing time, mixing time remaining, rpm, and torque values.
- **B Time:** Starts counting down when the START key is pressed.
- **C Rpm:** Displays the last adjusted mixer shaft speed.
- **D Torque:** Displays current torque value (oz-in for 115 VAC model, kg-cm for 230 VAC model) and high and low torque limits.
- **E Torque zero:** Lets you zero the torque when propeller is running in free air or in a reference fluid.
- **F Start:** Operates the mixer shaft. Stops when countdown reaches zero.
- **G Stop:** Press at any time to stop rotation of the mixer shaft.
- **H Up/down arrow keys:** Adjust time, rpm, and torque parameters.
- **I LEDs** indicate the function being displayed.
- **J Mixer head plug receptacle:** Multipin plug enables microprocessor to identify connected mixer head and properly control speed and torque.
- **K IEC 320:** Power entry module.
- **L Power switch:** All settings are retained in memory
- **M IN RS-232:** Connect cable from host computer.
- **N OUT RS-232:** Connect cable to next mixer.
- **O Fuse:** T3.15A (115 VAC), T1.6A (230 VAC).

ORDERING INFORMATION

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2 year warranty

1 Controller	2 Mixer heads						Complete systems
Catalog number	Catalog number	Description	Speed (rpm)	hp	Max torque (N-cm)		Catalog number
					Continuous	Intermittent	
HL-50008-00	HL-50008-10	High torque, low speed	3 to 180	50 W	240	360	HL-50008-12
	HL-50008-20		20 to 900	50 W	49	74	HL-50008-22
	HL-50008-30	High speed, low torque	60 to 2300	75 W	32	46	HL-50008-32
	HL-50008-40		150 to 6000	75 W	12	18	HL-50008-42

6 Computer Cable

HL-07550-64 RS-232 interface cable, 2.4-m (8-ft) long. Connects Servodyne mixer system to a PC. RJ11 to DB25 connection; includes DB25/DB9 adapter

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Stir-Pak® Heavy-Duty Mixers

Features/Benefits

- Modular design offers maximum versatility, easily customize to your needs
- Convenient, ready-made systems come complete with controller, mixer head, shaft, propeller, clamp, and stand
- Speed ranges up to 6000 rpm
- Torque ranges to 240 N-cm
- All components operate on 115 VAC, 50/60 Hz

Mixer Heads

- Adjustable-tilt mounting assembly permits rotation of mixer head from 0 to 30° for proper positioning of shaft and propeller
- High-torque, low-speed mixer heads have a keyless chuck; high-speed, low-torque mixer heads have an adjustable through-shaft collet to allow positioning of the mixing propeller at any depth without moving the mixer head

Drive Controls

- Solid-state controller offers precise speed control with a 100:1 adjustment range
- Separate FORWARD/OFF/REVERSE switch works independently from speed control dial, allowing you to repeat mixer speed settings from one run to the next
- Electronic control maintains speed regulation better than ±0.2% despite changes in viscosity, temperature, or line voltage
- Connects to mixer heads via a 1.8-m (6-ft), three-wire cord to protect electronics from hazardous spills or splashes



Stir-Pak® high-speed, low-torque mixer system 50007-32

Required System Components

1. Speed controller
2. Mixer head
3. Shaft
4. Propeller
5. Clamps, stand and supports

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

Ordering Information

1 Controller	2 Mixer heads					Complete systems
Catalog number	Catalog number	Description	Speed (rpm)	hp	Max torque (N-cm)	Catalog number
HL-50007-00	HL-50007-10	High torque, low speed	2 to 180	50 W	240	HL-50007-12
	HL-50007-20		9 to 900	50 W	49	HL-50007-22
	HL-50007-30	High speed, low torque	23 to 2300	75 W	32	HL-50007-32
	HL-50007-40		60 to 6000	75 W	12	HL-50007-42

3 Mixing Shafts

Shafts are 316 stainless steel. All 10 mm (⅜") dia shafts are machined on one end to accept a 8 mm (5⁄16") bore dia propeller.

Catalog number	Shaft dimensions (dia x L)
HL-04552-20	8 x 305 mm (5⁄16" x 12")
HL-04552-30	8 x 457 mm (5⁄16" x 18")
HL-04552-25	10 x 305 mm (⅜" x 12")
HL-04552-35	10 x 457 mm (⅜" x 18")
HL-04552-00	10 x 610 mm (⅜" x 24")
HL-04552-05	10 x 762 mm (⅜" x 30")

HL-17050-03 NIST-traceable calibration with data for mixer

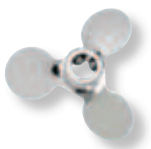
4 Propellers

Three-bladed electropolished propellers have 8 mm (5⁄16") bore diameter.

Catalog number	Overall diameter
HL-04552-40	25 mm (1")
HL-04552-45	38 mm (1½")
HL-04552-50	51 mm (2")
HL-04552-60	76 mm (3")



04552-40



04552-50



04552-60

5 Clamps, Stands, and Supports

HL-04552-65 Tank clamp lets you mount a mixer head and a controller support (either model 04552-70 or 04552-75) directly onto an open top drum or container (maximum 38 mm [1½"] wall thickness)

HL-08041-22 Double clamp for mounting the mixer head onto a stand; holds rods up to 22 mm (⅞") dia

HL-04552-80 Support stand has an electropolished cast steel base and 303 SS support rod measuring 737 mm H x 16 mm dia (29"H x ⅝" dia). Both legs of base accept an optional screw-in support rod

HL-04552-85 Optional screw-in support rod for 04552-80 stand

HL-04552-70 Pivot-mount controller support secures on to the controller. A hinged rod lets you adjust the controller for easy access from various angles. Includes a dual-rod clamp

HL-04552-75 Controller support platform. Mount your controller adjacent to your mixer head. Rack-mount 13 mm (½") dia rod fits into a dual-rod clamp (included) or use with our tank clamp 04552-65 (sold above)

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L/S® DIGI-STALTIC® MODULAR DISPENSING PUMP SYSTEMS

FEATURES/BENEFITS

- Deliver flow rates from 0.72 to 5800 mL/min
- Simultaneously control up to four drives—from one controller or PC workstation
- Transfer four fluids at the same flow rate or vary each independently
- Two stacked Easy-Load® II pump heads (included) with offset rollers eliminate pulsation
- Use as stand-alone system or with PC
- Ideal for accurate dispensing, diluting, or general fluid transfer
- Save up to 30 programs into memory; no reprogramming once application is set up
- No calibration needed with volume changes
- Input volumes, flow rates, and speed range on 20-key keypad
- Two sets of NO/NC contacts—"pump running" and "cycle running" signaling at each drive
- Built-in direct connection and control to Ohaus®, Sartorius®, A & D®, and Mettler Toledo® balances



Digi-Staltic system 77310-00 includes controller, drive, dispensing handle, software (see page 100), and two Easy-Load® II pump heads (77200-62).

DISPENSING/DILUTING

- Dispense volumes 0.5 mL to 8000 L
- Cycles: 1 to 999
- Interval delay time: 0.1 sec to 167 min in 0.1-second increments
- Dilute sizes: Sample: 0.1 mL to 100.0 mL; Delivery: 0.1 mL to 8000 L
- Programmable anti-drip feature
- Audible prompt after completed dispense cycles (immediate to 60 seconds)

COMPUTER COMPATIBILITY

- All Digi-Staltic pump functions can be controlled through a PC workstation
- Windows®-compatible CD-ROM software included with each drive—see page 100 for details

SETUP

1. Mount heads, load correct tubing size.
2. Turn on pump drive(s).
3. Select dispense or dilute mode.
4. Input tubing size and select flow rate.
5. Select pumping direction, press ENTER.

REMOTE CONTROL

- Remote via contact closure on each drive
- ON/OFF control with dispensing handle (included) or optional foot switch (07595-40)

DRIVE CONTROLS

- Power switch on front of each drive
- Lighted display indicates power is on
- Simple, push-button programming:
  - SPEED/VOLUME
  - ENTER
  - BACK
  - ARROWS (▲)‡
  - STOP ALL
  - PUMP #
  - CANCEL/STOP

ISO9001:2008 CERTIFIED SUPPLIER c UL us CE 2 year warranty

ORDERING INFORMATION

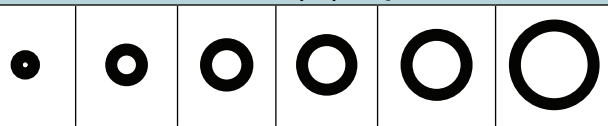
Catalog number	rpm	Power, 50/60 Hz
For L/S Precison tubing		
HL-77340-00	6 to 600	Selectable†† 90 to 130 and 180 to 260 VAC
For L/S High-performance precison tubing		
HL-77310-00	6 to 600	Selectable†† 90 to 130 and 180 to 260 VAC

‡Used to select dispense, dilute, and general transfer programs, and to choose options during programming.

††Operates on 115 VAC or 230 VAC; drive is switch-selectable to meet specific needs.

L/S PUMP TUBING FLOW RATE INFORMATION (mL/min)†

Order Masterflex L/S pump tubing separately on pages 68–73.

	L/S Precision pump tubing						L/S High-performance Precision pump tubing			
Tubing cross section										
	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
Flow range @ 6 to 600	0.72 to 72	2.6 to 260	9.6 to 960	20 to 2000	34 to 3400	46 to 4600	20 to 2000	34 to 3400	46 to 4600	58 to 5800

†Based on the use of two Easy-Load II pump heads; flow rate depends on tubing size.

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SPECIFICATIONS for L/S Digi-Staltic Modular Dispensing Pumps

Catalog number		HL-77340-00	HL-77310-00
Performance Specifications			
Flow capacity		0.72 to 4600 mL/min (0.012 to 73 GPH)	20 to 5800 mL/min (0.32 to 92 GPH)
rpm		6 to 600	
Number of heads accepted		2 (included)	
Max torque	Starting	19.4 kg-cm (270 oz-in)	
Max torque	Running	12.9 kg-cm (180 oz-in)	
Reversible		Yes	
External control – Input		Start/Stop +5 VDC, 5 mA	
External control – Output		28 VAC/VDC, 1 A	
Electrical Specifications			
Voltage/Frequency VAC (50/60 Hz)		Drives are switch-selectable: 90 to 130 or 180 to 260 VAC	
Current		1.5 A at 90 to 130 VAC; 0.75 A at 180 to 260 VAC	
Fuse rating		3.15 A / 250 V	
Motor type		Continuous-duty TENV†, permanent-magnet DC	
Motor size		75 W (1/10 hp)	
Display		Eighty character, 2-line LCD	
Motor/speed control type		Membrane keypad/microprocessor	
Speed regulation (repeatability)		±0.3%	
Soft start/Electronic brake		Yes/No	
Physical Specifications			
Housing materials		Steel drive and steel controller enclosure, painted finish	
IP rating‡		IP22	
Agency listings		UL, cUL, CE	
Operating temperature		0 to 40°C (32 to 104°F)	
Storage temperature		–25 to 65°C (–13 to 149°F)	
Dimensions (L x W x H)	Controller	16.5 x 22.6 x 6.9 cm (6½" x 9" x 2¾")	
	Drive	31.7 x 23.4 x 18.3 cm (12½" x 9¼" x 7¼")	
Shipping weight		13.7 kg (30 lb)	

†Totally enclosed, nonventilating. ‡See page 194 for an explanation of IP ratings.

ACCESSORIES

HL-77340-50 Add-on Digi-Staltic dispensing drive for Precision tubing includes drive and two 77200-60 Easy-Load II pump heads.

HL-77310-50 Add-on Digi-Staltic dispensing drive for High-performance precision tubing includes pump drive and two 77200-62 Easy-Load II pump heads.

HL-77095-03 RJ-12 Cord/cable 3 m (10 ft), for connecting drive to controller (1-m [3½-ft] cord included with each drive).

HL-77095-04 RJ-12 Cord/cable 4.6 m (15 ft), for connecting drive to controller (1-m [3½-ft] cord included with each drive).

HL-77310-01 Replacement Digi-Staltic drive (drive only). Use one or two pump heads per drive.

HL-77310-02 Replacement Digi-Staltic controller (controller only).

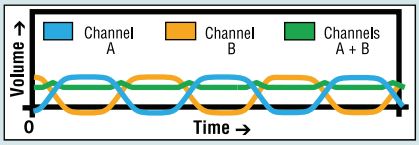
HL-07595-40 Foot switch, momentary start/stop, 1.8-m (6-ft) cable.

HL-77310-03 Tubing weights of PTFE, flow-through type. Keep tubing in place during dispense cycle; insert into end of tubing and place in receiving vessel. Set of two: one for L/S 16, L/S 15, and L/S 25 size tubing; and one for L/S 17, L/S 18, L/S 24, L/S 35, and L/S 36 size tubing.

REDUCED PULSATION

Minimal pulsation ensures 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 II pump heads merges a pulse from one channel with a trough from the other. The reduced pulsation is measured at the outlet and shown in the graph.

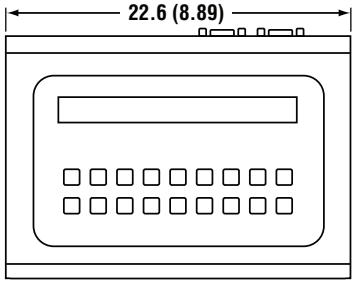




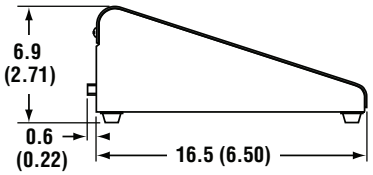
Dimensional Drawings cm (in.)
77310-00 and 77340-00

TOP

Controller

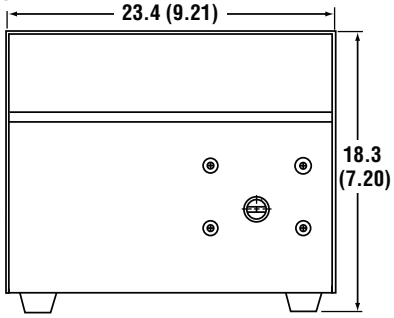


SIDE



Drive

FRONT



DISPENSING PRECISION

For all Easy-Load II pump heads

Tubing size	Minimum dose (for ±0.5% precision)	Precision (±)
L/S 13	3 mL	15 µL
L/S 14	11 mL	55 µL
L/S 16	40 mL	200 µL
L/S 25	84 mL	420 µL
L/S 17	140 mL	0.7 mL
L/S 18	200 mL	1 mL
L/S 15	84 mL	420 µL
L/S 24	140 mL	0.7 mL
L/S 35	200 mL	1 mL
L/S 36	240 mL	1.2 mL

L/S® PUMP HEADS 38–67
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L/S® DIGI-STALTIC® SOFTWARE AND BALANCE CAPABILITIES

PROGRAM AND CONTROL YOUR DIGI-STALTIC PUMP SYSTEM FROM YOUR PC

- Dispense, Dilute, and Transfer

Masterflex® CD-ROM software is included with each Digi-Staltic dispensing pump system. The software, compatible with Windows® 95/98/NT/2000/XP, enables you to save up to 30 fluid handling programs—any combination of dispense, dilute, or general transfer. Also, it allows you to download new programs to the controller created on your computer; download existing programs on the computer to the controller; upload programs from the controller to make revisions; calibrate pumps from the computer; and review feedback of pump activity on the computer screen.



This CD-ROM software is included with the Digi-Staltic dispensing systems (77310- and 77340-series). Order on pages 98–99.

TYPE OF PROGRAMS

Dispensing

This program dispenses a specific volume at a programmed rate with a delay between cycles. The cycle can be automatic or manual. To program for dispensing, determine:

- Number of pump heads
- Tubing size
- Flow rate
- Volume
- Pump direction

Optional parameters include acceleration and deceleration times, anti-drip system, cycle, auto/manual, delay, beep, units of measure, as-well as balance and PC interface.

Diluting

As a diluter, the pump is first primed. Then, a dilute cycle consists of two separate actions— sample and delivery. For diluting, select the following:

- Number of pump heads
- Tubing size
- Flow rate
- Sample delivery
- Pump direction

Optional parameters: anti-drip system, hold, acceleration and deceleration times, cycle, auto/manual, delay, beep, and PC interface.

General Transfer

A pump program runs continuously at a programmed rate until the CANCEL/STOP or STOP ALL keys are pressed. For general transfer, choose the following parameters:

- Number of pump heads
- Tubing size
- Flow rate

Optional parameters: anti-drip system, acceleration and deceleration times, pump direction, and PC interface.

PROGRAM PARAMETERS

Program Type: Pump, dispense, dilute

Tubing Size: Size depends on application.

Flow Rate: Software calculates flow range for tubing size selected.

Flow Unit: Choose from mL/min or LPM

Flow Direction: Default direction is CW; in dilute program, sample phase direction is opposite of dilute phase direction.

Acceleration Time: Amount of time to reach programmed speed (0 to 9.9 sec)

Deceleration Time: Amount of time for pump to reach zero from programmed speed (0 to 9.9 sec)

Anti-Drip: Reverse pump direction before stopping to prevent dripping (0 to 10; 10=1 revolution).

Beep Length: End of cycle alert can be programmed from 0 to 60 seconds.

Use Balance: Enables balance use in dispense mode

Continuous Cycling: Program continues until the programmed number of cycles is completed.

Dispense Amount: Volume to be dispensed (0.5 mL to 8000 L)

Dispense Unit: Select units; if balance is selected, unit is set to grams.

Number of Cycles: Number of cycles (single dispense or sample and delivery sequence) to be dispensed (1 to 999)

Program Cycles: Automatic or manual

Delay Between Cycles: Enter delay between cycles in Automatic program (0 to 999.9 sec)

Delivery Amount: Equals sample volume and diluent volume

Delivery Unit: mL, L; g and kg for dispense

Sample Amount: Enter sample volume

Sample Delay: Enter delay time between end of the sampling phase and the beginning of the diluent delivery phase.

Compatibility with Balances

For dispensing applications, the Digi-Staltic® pump controller features a connection to an electronic balance RS-232 cable. A built-in connection and control to Ohaus®, Sartorius®, and A&D® balances eliminates the need to program the controller to read these balances. The Digi-Staltic® pump provides communication through a nine-pin male RS-232 DTE port, and communicates at 9600 baud, 7 databits, 2 stop bits, odd parity.



Balance Interface Cables are 1.8 m (6 ft) in length; use for connecting Digi-Staltic controller to noted balances.

Catalog number	Description
HL-77310-06	Cable for Ohaus and Sartorius balances
HL-77310-07	Cable for A&D balances

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L/S® VARIABLE-SPEED AIR-POWERED DRIVE



L/S variable-speed air-powered drive 07569-00 with L/S Easy-Load® pump head 07518-42

ISO9001:2008 CERTIFIED SUPPLIER · CE · ATEX Zone 2 · 2 year warranty

FEATURES/BENEFITS

- Deliver flow rates from 3.6 to 3400 mL/min
- Ideal for locations where electrical power may be unsafe or impractical
  - Intrinsically safe when properly grounded for static electricity
  - No electric power required
- Wide flow control range (10:1 turndown)
- Compact, portable console package
- ATEX Zone 2 rated: EEx II 3 G C II C T6; NEC Class 1, Division 2, Groups A, B, C, D, T6

SETUP

1. Install 0 to 30 psi pressure gauge, pressure regulator with 5-µm filter, automatic lubricator, and muffler (all items included).
2. Connect compressed air line to ¼" NPT(F) connection on regulator.
3. Mount pump head and load Masterflex L/S pump tubing.
4. Turn on compressed air line.

Air hose and compressor are not included.

ORDERING INFORMATION

Catalog number	rpm	Power
HL-07569-00	60 to 600	0.08 to 0.7 m³/min (3 to 25 cfm) @ 1.4 to 6.9 bar (20 to 100 psi)

PUMP HEADS ACCEPTED

- Drive accepts nine different types of L/S pump heads:

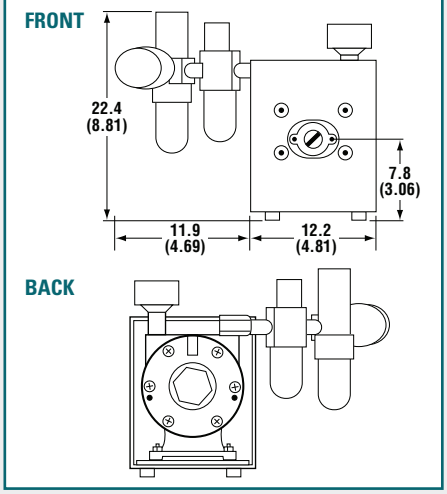
Standard	High-Performance
Easy-Load® 3	PTFE-Tubing
Easy-Load II	Multichannel
Easy-Load	Multichannel cartridge
PTFE-Diaphragm	

SPECIFICATIONS

Catalog number		HL-07569-00
Performance Specifications		
Flow capacity		3.6 to 3400 mL/min (0 to 54 GPH)
rpm		60 to 600
Number of heads accepted		2
Maximum torque	Starting	381 N-cm (540 oz-in)
	Running	127 N-cm (180 oz-in)
Electrical Specifications		
Motor type		Rotary vane air motor
Motor size		250 W (⅓ hp)
Speed regulation (repeatability)		±10% (±15 rpm @ 60 to 150 rpm; ±20 rpm @ 150 to 600 rpm)
Physical Specifications		
Housing material		Painted steel
IP rating†		IP44
Agency listings		CE
Operating temperature		0 to 40°C (32 to 104°F)
Storage temperature		–10 to 65°C (14 to 149°F)
Dimensions (L x W x H)		25.1 x 12.2 x 22.4 cm (9⅞" x 4¹³⁄₁₆" x 8¹³⁄₁₆")
Shipping weight		6.0 kg (13.2 lb)

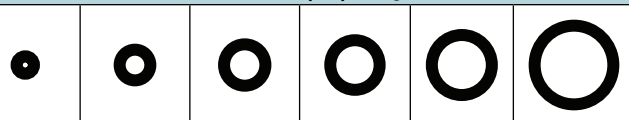
†See page 194 for an explanation of IP ratings.

Dimensional Drawings cm (in.) 07569-00



L/S PUMP TUBING FLOW RATE INFORMATION (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

	L/S Precision pump tubing						L/S High-performance Precision pump tubing			
Tubing cross sections										
	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
Flow range @ 60 to 600 rpm	3.6 to 36	13 to 130	48 to 480	100 to 1000	170 to 1700	230 to 2300	100 to 1000 (110 to 1100)	170 to 1700 (180 to 1800)	230 to 2300 (260 to 2600)	290 to 2900 (340 to 3400)

Note: Flow rates were determined using water at room temperature and with zero back pressure and suction lift.
Flow rates in parentheses can be obtained only with the Masterflex L/S High-performance pump head.

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L/S® Variable-Speed Hazardous-Duty Drive

Features/Benefits

- Flow rates from 0.6 to 2500 mL/min (0.06 to 11.5 LPM using I/P® pump heads)
- 115 VAC motor: UL-listed for Class 1, Groups C and D, Division 1 hazardous locations
- Ideal for areas that require special electrical precautions



Variable-speed hazardous-duty drive 07583-50 with L/S Easy-Load® II pump head 77200-62

Setup

1. Mount L/S or I/P pump head to mounting plate.
2. Load Masterflex® L/S or I/P tubing.
3. Turn pump on.

Power switch and line cord are not included.

Speed Control/Circuitry

- Mechanical speed control (zero-max) with lever
- Locking knob to maintain speed control

Pump Heads Accepted

- Drive accepts 11 different pump heads:
  - L/S pump heads: Standard, Easy-Load® 3, Easy-Load II, Easy-Load, High-Performance, PTFE-Tubing, Multichannel Cartridge, PTFE-Diaphragm
  - I/P pump heads: Standard, Easy-Load, High-Performance
- For flow rate information using I/P pump heads, see page 144

Specifications for L/S Variable-Speed Hazardous-Duty Drive

Catalog number		HL-07583-50
Performance Specifications		
Flow capacity†		0.6 to 2500 mL/min
rpm		10 to 430
Number of heads accepted		2
Maximum torque	Starting	572 N-cm (810 oz-in)
	Running	191 N-cm (270 oz-in)
Reversible		No (CCW from front)
Electrical Specifications		
Voltage/Frequency VAC (Hz)		115 (60)
Current		4.7 A
Motor type		1725 rpm AC
Motor size		190 W (¼ hp)
Motor/speed control type		Mechanical (zero-max) with lever
Physical Specifications		
Housing materials		Painted steel
IP rating‡		IP21
Dimensions (L x W x H)		56.0 cm x 34.6 cm x 22.3 cm (22 1/16" x 13 5/8" x 8 3/4")
Operating temperature		0 to 40°C (32 to 104°F)
Storage temperature		–25 to 65°C (–13 to 149°F)
Shipping weight		26.6 kg (58.6 lb)

†Depending on drive rpm and tubing size. ‡See page 194 for an explanation of IP ratings.

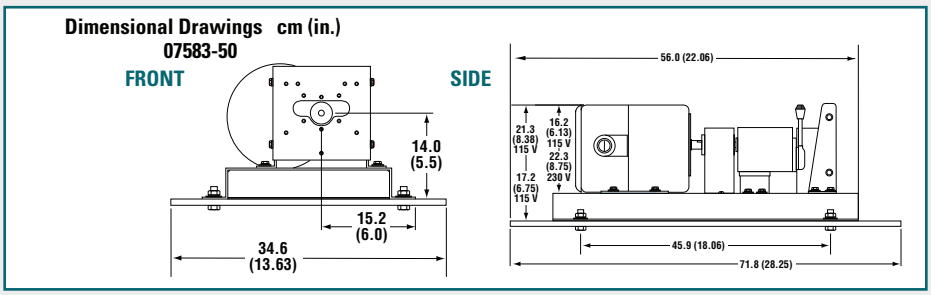
Ordering Information

Catalog number	rpm	Power
HL-07583-50	10 to 430	115 VAC, 60 Hz



I/P Variable-speed hazardous-duty drive 07583-50 with I/P Easy-Load® pump head 77601-00

Dimensional Drawings cm (in.)
07583-50



L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing sizes	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 10 to 430 rpm	0.6 to 26	2.1 to 86	8 to 350	17 to 730	28 to 1200	38 to 1600	17 to 730 (18 to 780)	28 to 1200 (30 to 1300)	38 to 1600 (43 to 1900)	48 to 2100 (58 to 2500)

Note: Flow rates were determined using water at room temperature and with zero back pressure and suction lift. Flow rates in parentheses can be obtained only with the Masterflex L/S High-performance pump head.

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L/S® NEMA TYPE 56C PUMP HEAD ADAPTERS

FEATURES/BENEFITS

- Deliver flow rates up to 3400 mL/min with Masterflex® L/S pump heads
- Attach your own special motor to meet local electrical standards, hazardous-duty requirements, or washdown requirements
- Multichannel capabilities

SELECTION CRITERIA

1. Determine flow rate/gear ratio required. (You must select a gear ratio that will keep pump head speed from exceeding 600 rpm.)

   To calculate nominal flow rate (use "Flow Rate" table to obtain values):

$$\frac{\text{motor rpm}}{\text{gear ratio}} \times \text{flow per revolution} = \text{flow rate}$$

SETUP

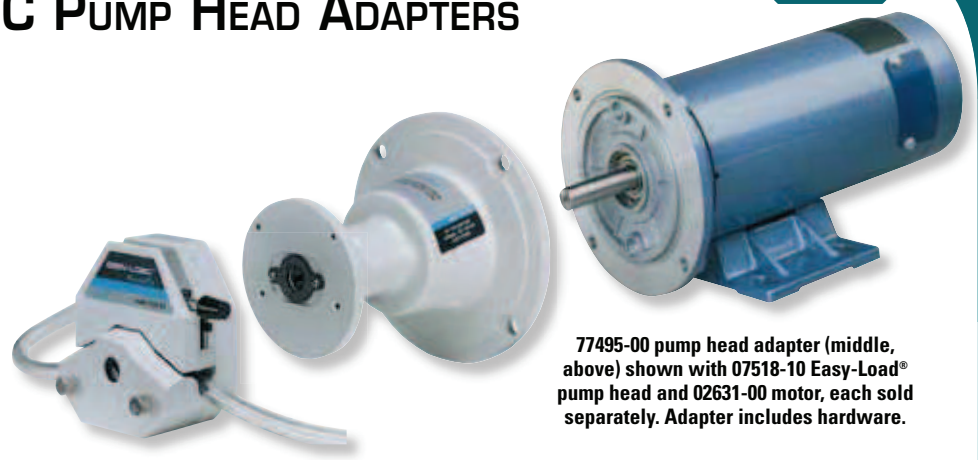
1. Slide shaft adapter over motor shaft and tighten set screws with hex wrench.
2. Position housing over shaft adapter.
3. Attach housing to motor with four bolts (supplied).
4. Mount pump head and load L/S tubing.
5. Turn pump on.

PUMP HEADS ACCEPTED

- Accepts nine different pump heads:
  - Standard
  - Easy-Load® 3
  - Easy-Load II
  - Easy-Load
  - High-Performance
  - PTFE-Tubing
  - Multichannel
  - Multichannel cartridge
  - PTFE-Diaphragm

MOTOR SPECIFICATIONS

- Use a ¼-hp motor or larger
- Go to www.coleparmer.com/motors for additional motor options and for VFD controllers to vary the speed of the motors listed below right
- Select fixed or variable speed; TEFC (IP44), washdown (IP56), or hazardous-duty; AC or DC; 50, 60, or 50/60 Hz



77495-00 pump head adapter (middle, above) shown with 07518-10 Easy-Load® pump head and 02631-00 motor, each sold separately. Adapter includes hardware.

SPECIFICATIONS for L/S Pump Head Adapters

Catalog number	HL-77495-00, -20
Performance Specifications	
Flow capacity	0.06 to 3400 mL/min (0 to 54 GPH)
Number of heads accepted	Up to 2
Physical Specifications	
Construction material	Painted aluminum
IP rating†	IP34 with gasket (included) mounted to motor
Operating temperature	0 to 40°C (32 to 104°F)
Storage temperature	–25 to 65°C (–13 to 149°F)
Dimensions (L x W x H)	14.6 x 16.5 x 16.5 cm (5¾" x 6½" x 6½")
Shipping weight	6.0 kg (13.2 lb)

†See page 194 for an explanation of IP ratings.

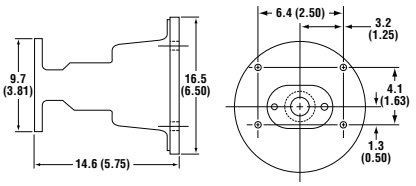
ISO9001:2008 CERTIFIED SUPPLIER

2 year warranty

ORDERING INFORMATION

Catalog number	Gear ratio	Max motor rpm	Max torque kg-cm (oz-in)
HL-77495-00	3.7:1	2220	12 (170)
HL-77495-20	18.3:1	3450	15 (210)

Dimensional Drawings cm (in.)
77495-series



DC MOTORS WITH 56C FRAME

Cat. no.	hp	Wattage	rpm	Type‡	Voltage	IP rating†	Overall dimensions (L x W x H)
HL-70072-00	¼	225	1800	TENV	12 VDC	IP44	23.2 x 16.5 x 17.1 cm (9⅛" x 6½" x 6¾")
HL-70074-00	⅓	248	1800	XPRF	90 VDC	IP55	26.5 x 16.5 x 17.1 cm (10⅓₂" x 6½" x 6¾")
HL-70073-00	¼	225	1750	WDN	90 VDC	IP56	28.6 x 16.5 x 17.5 cm (11¼" x 6½" x 6⅛")

‡TENV–Totally enclosed, nonventilating TEFC–Totally enclosed, fan-cooled WDN–Washdown
XPRF–Explosion proof †See page 194 for an explanation of IP ratings.

L/S PUMP TUBING FLOW RATE INFORMATION (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Recommended motor rpm limits	Adapter gear ratio	Pump head rpm	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow per revolution		1	0.06	0.21	0.8	1.7	2.8	3.8	1.7 (1.8)	2.8 (3.0)	3.8 (4.3)	4.8 (5.8)
3.7 to 2220	3.7:1	1 to 600	0.06 to 36	0.21 to 130	0.8 to 480	1.7 to 1000	2.8 to 1700	3.8 to 2300	1.7 to 1000 (1.8 to 1100)	2.8 to 1700 (3.0 to 1800)	3.8 to 2300 (4.3 to 2600)	4.8 to 2900 (5.8 to 3400)
18.3 to 3450	18.3:1	1 to 190	0.06 to 12	0.21 to 40	0.8 to 150	1.7 to 320	2.8 to 540	3.8 to 720	1.7 to 320 (1.8 to 340)	2.8 to 540 (3.0 to 580)	3.8 to 720 (4.3 to 800)	4.8 to 900 (5.8 to 1100)

Note: Flow ranges are approximate—calculated under the following conditions: 0 psig at inlet and outlet; water temperature at 22°C (72°F).
Flow rates in parentheses obtainable with High-Performance pump head.

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E/S® Portable Sampling Drive

Features/Benefits

- Floats up to 30 minutes if dropped in water when case is closed and latched
- IP54-rated control panel protects against inclement weather and splashing water
- High-visibility housing for easy recovery
- Can be used in the field for sampling or in the plant as a portable pump
- Flow rate: 4.2 to 1100 mL/min depending on tubing size used
- Sample depths to 7.9 m (26 ft)†
- Reversible flow and prime/purge function
- Use it even where there is no electrical power
- Sealed and self-contained 12 VDC rechargeable battery provides up to four hours of nonstop operation in the field
- Convenient battery-status indicator
- Operate on internal batteries, 12 V car battery, or AC outlet
- Variable-speed motor; 400 rpm max

Pump Heads Accepted

- Accepts three Masterflex® L/S® pump head types: Standard, Easy-Load®, or PTFE-Tubing

Drive Controls

- Single-turn potentiometer for speed control
- ON indicator illuminates when internal batteries are fully charged
- Three position power/reversing switch
- Purge and fill via CW/CCW direction toggle switch

Setup

1. Load pump head with Masterflex L/S precision tubing (use L/S 15 or L/S 24 C-FLEX® or silicone tubing for optimal performance).
2. Mount head to drive.
3. Select power source.
4. Turn drive on.
5. Adjust for desired flow or sample rate.

†Maximum sampling depth can be achieved with either a L/S 15 or L/S 24 Standard pump head.



E/S portable sampling drive 07571-00 with Easy-Load pump head 07518-02



ISO9001:2008 CERTIFIED SUPPLIER · c UL us · CE · 2 year warranty

Ordering Information

Catalog number	rpm	Power (50/60 Hz)
HL-07571-00	70 to 400	115 VAC
HL-07571-05		230 VAC

Accessories

HL-07570-04 Flow-through tubing weight, SS. Prevents curling or floating. Fits L/S 15, L/S 24, and L/S 25 tubing.

HL-07571-50 Cigarette lighter adapter, with 7.6-m (25-ft) cable.

HL-07571-52 Auxiliary power kit for 07571-00 drive; 12 VDC. Includes cable to connect to external power supply input.

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing separately on pages 68–73.

Tubing cross sections	L/S Precision pump tubing						L/S High-performance Precision pump 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
Flow range @ 70 to 400 rpm	4.2 to 24	15 to 84	56 to 320	120 to 680	Not recommended		120 to 680	200 to 1100

Standard
4.2 to 320 mL/min
pages 40–41

Easy-Load®
4.2 to 1100 mL/min
pages 46–47

PTFE-Tubing
0.06 to 65 mL/min
pages 50–51

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SPECIFICATIONS for E/S Portable Sampling Drive

Catalog number	HL-07571-00	HL-07571-05
Performance Specifications		
Flow capacity	4.2 to 1100 mL/min (0.06 to 17.4 GPH)	
rpm	70 to 400	
Number of heads accepted	1	
Reversible	Yes	
External control – Input/Output	Not applicable	
Electrical Specifications		
Voltage/Frequency VAC (Hz)†	115 (50/60)	230 (50/60)
Current	0.25 A	0.125 A
Motor type	Permanent-magnet DC	
Motor size	37 W (1/20 hp)	
Motor/speed control type	Solid state	
Speed regulation (repeatability)	±5% (±5%)	
Soft start/Electronic brake	No	
Physical Specifications		
Housing materials	HDPE, anodized aluminum, stainless steel, and polyester	
IP rating‡	IP54	
Agency listings	CE, (power supplies are UL, cUL)	
Operating temperature	0 to 40°C (32 to 104°F)	
Storage temperature	–25 to 65°C (–13 to 149°F)	
Humidity limits	10 to 90% noncondensing	
Dimensions (L x W x H)	27.9 x 25.4 x 40.6 cm (11" x 10" x 16")	
Shipping weight	8.7 kg (16 lb)	

†Also runs on internal battery or 12 VDC external source.
‡See page 194 for an explanation of IP ratings)



When closed and latched, E/S portable sampling pump will float up to 30 minutes if dropped in water.

MORE INFO

Our FREE Tubing Test Kit is a simple way to test your chemicals against different tubing formulations. Kit contains samples of different pump tubing formulations, formulation descriptions, a selection guide, instructions on how to test your tubing, and complete ordering information. Request item HL-00101-10.



COMPLETE L/S PTFE-TUBING PUMP SYSTEM

Applications

- Pumping high-purity fluids
- Transfer of aggressive chemicals
- Chemical feed and metering
- Filtration

Benefits

- Flow rate: 0.75 to 65 mL/min; pressure up to 100 psi (6.9 bar)
- Low-pulsation, six-roller pump head
- Continuous-duty drive displays speed (rpm) and direction



Complete system includes: L/S PTFE tubing pump head 77390-00, 6-mm OD PTFE tube set 77390-60, L/S 300 rpm variable-speed console drive 07528-20, and two ¼" NPT(M) pipe adapters.

Catalog number	Power
HL-77912-10	90 to 260 VAC, 50/60 Hz

Drive is

FOR THE LATEST...

Masterflex technical resources, see

- **ColeParmer.com**
- **Masterflex.com**

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
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ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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E/S® COMPOSITE SAMPLER

FEATURES/BENEFITS

- Program operation to meet EPA sampling requirements
- Locking latches prevent tampering and provide buoyancy—latched sampler floats at least 30 minutes if dropped in water
- IP56-rated control panel protects against inclement weather and splashing water
- Rechargeable battery makes it ideal for field applications
- Dual-line, 24-character, backlit adjustable LCD with glow-in-the-dark keypad
- Capable of standing by for up to 90 days for a remote signal
- Sample depths to 7.9 m (26 ft)
- Complete system includes: Masterflex® L/S® Easy-Load® pump head, 9-liter HDPE carboy, 12 VDC battery, 115/230 VAC power adapter/ battery recharger, quick-disconnect fittings for inlet and outlet connections, and 7.6 m (25 ft) of L/S 24 peroxide-cured silicone tubing



Power supplies are:



E/S composite sampler 07580-00

SETUP AND OPERATION

1. Load tubing (L/S 15 or L/S 24 silicone, Tygon® E-LFL, or Tygon® E-Lab).
2. Turn pump on by pressing and holding the Power/Status button until LCD responds.
3. Select menu.
4. Select program.†
5. Press Start.

- All controls are on the front panel:

CAL—sets sample volume calibration mode for accurate sampling volume

CLOCK—sets the real time 24-hour clock

CYCLE TEST—checks the sampler for correct operation (purge, rinse, draw sample) to verify correct operation

DELAY START—for programming additional time before start of the program

MENU—accesses menu selections

PROGRAM—loads program selection

SAMPLE VOLUME—allows for input of desired sample volume into program

TIME—for inputting desired time interval into program

†Select from six preprogrammed sampler programs; five programs can be customized.

ISO 9001:2008 CERTIFIED SUPPLIER

2 year warranty

LIFT HEIGHT VS TUBING SIZE, FORMULATION, AND FLOW (mL/MIN)

Lift height m (ft)	Tubing size	Flow rate (mL/min) @ 21°C (70°F), 600 rpm		
		Silicone	Tygon E-LFL	Tygon E-Lab
0.3 (1)	L/S 15	1012	1110	1110
3.7 (12)		952	1065	1035
7.6 (25)		435	855	765
0.3 (1)	L/S 24	1627	1650	1650
3.7 (12)		1095	1545	1432
7.6 (25)		4.6 m (15 ft) max lift	1005	840

SPECIFICATIONS for E/S Composite Sampler

Catalog number	HL-07580-00
Performance Specifications	
Flow capacity	1650 mL/min @ 30.5 cm (1 ft) of suction with L/S 24 Tygon® E-LFL/E-Lab tubing
Sample accuracy	±5% of programmed sample volume or ±5 mL, which is greater
Clock accuracy	±1 minute/month
rpm range	600 fixed speed
Number of heads accepted	1 (one Easy-Load® pump head 07518-12 supplied)
Power	12 VDC sealed rechargeable gel-type batteries or AC with power adapter
External control	Dry contact closure
Physical Specifications	
Housing materials	Polyethylene housing and carboy; nonferrous hardware
IP rating	When case closed: IP56‡
Agency listings	Power supplies are: UL, cUL, CE
Operating temperature	0 to 40°C (32 to 104°F)
Storage temperature	–25 to 65°C (–13 to 149°F)
Dimensions (L x W x H)	28 x 34.3 x 44.4 cm (11" x 13½" x 17½")
Shipping weight	10.9 kg (24 lb)

‡See page 194 for an explanation of IP ratings.

ORDERING INFORMATION

Catalog number	Description
HL-07580-00	E/S composite sampler

ACCESSORIES

HL-07518-12 Replacement Easy-Load pump head, for use with sizes L/S 15 and L/S 24 tubing.

HL-07571-50 Automotive adapter, 7.6-m (25-ft) cable.

HL-77200-07 Replacement universal power supply, 115/230 VAC, 3.6-m (12-ft) cable.

HL-07571-55 Replacement battery, 12 VDC.

HL-06032-20 Replacement HDPE carboy, 9 liters.

HL-06360-82 Replacement quick-disconnect fitting, ¼" hose barb for internal-external tubing connection to pump.

HL-07570-04 Flow-through tubing weight, SS. Prevents curling and floating. Fits L/S 15 and L/S 24 tubing.

HL-07580-50 Carrying strap, optional.

L/S® PUMP HEADS 38–67
L/S® TUBING 68–73
ACCESSORIES.....160–171
TECHNICAL DATA.....172–206

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L/S® DC-Powered Drives

Features/Benefits

Cabinet-Style Drives

- Deliver flow rates from 1.2 to 2400 mL/min
- Ideal for pumping fluids in remote locations
- Sample depths to 7.9 m (26 ft)†
- Reversible motor
- Adapt easily to 12 VDC power sources
- Easily portable with carrying handle
- Accept Standard, High-Performance, PTFE-tubing, Easy-Load®, Easy-Load II, and Easy-Load 3 pump heads

Compact Drives

- Deliver flow rates from 6 to 2700 mL/min
- Chemical-resistant steel motor housing
- Perfect for rugged applications that require continuous-duty pumping
- Adapt easily to 12- or 24-VDC power sources
- Ideal for OEM applications
- Accept Standard, Cartridge, PTFE-tubing, PTFE-diaphragm, High-Performance, Easy-Load, Easy-Load II, and Easy-Load 3 pump heads

Note: Drives listed in "Specifications" table that accept only one pump head cannot be used with High-Performance or PTFE pump heads.

Drive Controls

Cabinet-Style Drives

- All manual controls are on front panel
- Separate single-turn potentiometer speed control and CW/OFF/CCW switch

Compact Drives

- Vary input voltage to change drive speed; reverse input voltage polarity to reverse direction
- Three-wire, 16-gauge, 30-cm (12") long stripped-end leads for power connection

Accessories

HL-07573-02 Cigarette lighter adapter cable, 7.6 m (25 ft). For cabinet-style drives only.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.



L/S compact drive 07533-50



L/S cabinet-style drive 07533-20

Specifications & Ordering Information for L/S DC-Powered Drives

Catalog number	Cabinet-style drives		Compact drives			
	12 VDC		12 VDC		24 VDC	
	HL-07533-20	HL-07533-40	HL-07533		HL-07533	
			-60	-50	-70	-80
Performance Specifications						
Flow capacity	1.2 to 2400 mL/min (0 to 38 GPH)		6 to 2700 mL/min (0 to 43 GPH)			
rpm	20 to 90	100 to 500	540	100		570
Number of heads accepted	2	1		2		1
Maximum torque	127 N-cm (180 oz-in)	64 N-cm (90 oz-in)		127 N-cm (180 oz-in)		64 N-cm (90 oz-in)
Reversible	Yes					
Electrical Specifications						
Voltage VDC	10.8 to 13.2		1.5 to 15	1 to 15	1 to 30	1.7 to 30
Current	3 A		5.7 A	3.2 A	1.5 A	2.6 A
Motor type	Permanent-magnet, brushed DC					
Motor size	37 W (1/20 hp)					
Motor/Speed control type	Single-turn potentiometer		Not applicable			
Speed regulation (repeatability)	±5%					
Soft-start/Electronic brake	Not applicable					
Physical Specifications						
Housing materials	Painted steel		Painted steel			
IP rating‡	IP21		IP52			
Agency listings	CE					
Operating temperature	0 to 40°C (32 to 104°F)					
Storage temperature	–25 to 65°C (–13 to 149°F)					
Dimensions (L x W x H)	27.9 x 16.5 x 22.2 cm (11" x 6½" x 8¾")		21.6 x 9.7 x 11.7 cm (8⁹⁄₁₆" x 3¹³⁄₁₆" x 4⅝")			
Shipping weight	5.3 kg (11.7 lb)		4.1 kg (9 lb)			

†Max sampling depth can be achieved with either a size L/S 15 or L/S 24 Standard pump head.
‡See page 194 for an explanation of IP ratings.

L/S Pump Tubing Flow Rate Information (mL/min)

Order Masterflex L/S pump tubing on pages 68–73.

	L/S Precision pump tubing						L/S High-performance Precision pump tubing			
Tubing cross section	L/S 13	L/S 14	L/S 16	L/S 25	L/S17	L/S 18	L/S 15	L/S 24	L/S 35	L/S 36
Flow range @ 20 to 90 rpm	1.2 to 5.4	4.2 to 19	16 to 72	34 to 150	56 to 250	76 to 340	34 to 150 (36 to 160)	56 to 250 (60 to 270)	76 to 340 (86 to 390)	96 to 430 (116 to 520)
Flow range @ 100 to 500 rpm	6 to 30	21 to 105	80 to 400	170 to 850	280 to 1400	380 to 1900	170 to 850	280 to 1400	380 to 1900	480 to 2400
Flow range @ 100 rpm	6	21	80	170	280	380	170 (180)	280 (300)	380 (430)	480 (580)
Flow range @ 540 rpm	32	113	430	920	1500	2050	920	1500	2050	2600
Flow range @ 570 rpm	34	120	450	970	1600	2170	970	1600	2170	2700

Note: Flow rates in parentheses can be obtained only with Masterflex L/S High-Performance pump heads.

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L/S® Economy Pump Systems

Applications

- General fluid transfer
- Filtration
- Low-pressure chromatography
- Fermentation

Features

- Soft-start, 1/20-hp continuous-duty drive
- ±5% drive speed accuracy
- Stackable painted-steel console housing



77910-20

Benefits

- Versatile system with a wide flow range
- Easy tubing changes
- Most economical L/S pump system
- Self-priming



77910-30

Specifications & Ordering Information

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Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77910-30	16 to 480	L/S Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 06434-16; 3 m (10 ft)	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07554-90	20 to 600	IP23	90 to 130 VAC, 1.5 A
HL-77910-35					07554-95			180 to 260 VAC, 0.8 A
HL-77910-20	56 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07554-90			90 to 130 VAC, 1.5 A
HL-77910-25					07554-95			180 to 260 VAC, 0.8 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

L/S® Precision Modular Pump Systems

Applications

- Sterile fluid transfer
- Carboy or small tank pumping
- Chemical recirculation
- Printing
- Laboratory research
- Filtration
- Polishing/lapping

Features

- Controller and chemical-resistant drive connected by 1.8-m (6-ft) cable
- Soft-start, 1/10-hp continuous-duty drive
- ±0.25% speed control



77913-70



77913-60

Benefits

- Modular format lets you place drive and controller up to 1.8 meters (6 feet) apart
- Easy tubing changes
- Three-digit LED shows motor speed (rpm) for easy repeatability
- Reversible motor lets you purge tubing before or after pumping
- Optional remote control of speed, start/stop, and direction

Specifications & Ordering Information

ISO9001:2008 CERTIFIED SUPPLIER · c ETL us · CE · 2 year warranty

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
Precision modular pumps with benchtop controller								
HL-77913-60	4.8 to 480	L/S Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 06434-16; 3 m (10 ft)	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07577-00	6 to 600	IP33	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
HL-77913-70	17 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36				
Precision modular pump with washdown wall-mount controller								
HL-77913-80	17 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07577-60	6 to 600	IP66	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

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L/S® Precision Analog Console Pump Systems

Applications

- General transfer and metering
- Circulating bath pump
- Remote-controlled metering pump
- Acid-base feed
- Low-pressure filtration
- Small tank transfer and filling

Benefits

- Simple keypad controls offer operational ease
- Powerful and cost-effective pump for precision transfer and metering applications
- Control pump speed remotely with 4 to 20 mA or 0 to 10 V signal
- Three-digit LED shows motor speed (rpm) for repeatability and monitoring performance
- Reversible motor—prime/purge and easily reverse direction of flow

Features

- PWM speed control for precision and efficiency; ±0.25% speed control accuracy
- Stackable ABS housing is IP33 rated for wipedown
- Universal voltage, 90 to 260 VAC autoselect, 50/60 Hz
- Soft-start 1/10-hp continuous-duty drive



77916-10



77916-20

ISO9001:2008 CERTIFIED SUPPLIER

Specifications & Ordering Information

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77916-10	4.8 to 480	L/S Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 06434-16; 3 m (10-ft)	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07528-10	6 to 600	IP33	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
HL-77916-20	17 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10-ft)	L/S 15, L/S 24, L/S 35, L/S 36				

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-77595-35 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07595-45 DB9 male connector, use to create your own cable.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

HL-07595-47 Cable assembly, DB9 male connector and 7.9 m (25-ft) cable with stripped wire terminal ends. Use for remote control.

HL-07523-98 Tilt bail; use to securely elevate front of drive.

INNOCAL®
INNOVATIVE CALIBRATION SOLUTIONS

Pump Preventive Maintenance Package

Prevent shutdowns and ensure optimal pump performance

InnoCal, our service and repair center, offers a Preventive Maintenance Package for our Masterflex® L/S® Pumps.

5 Day Turn-Around

Description of Service:

Experienced, factory-trained technicians perform the following maintenance activities:

- Testing and adjustment of the motor to ensure correct rpm output
- Disassembly of the gearbox and examination of the armature movement
- Replacement of gears/shafts/gaskets
- Application of thermal grease
- Brush holder examination and brush replacement
- Inspection and testing of gear bearings and bushings; replacement as necessary
- Ground wire and safety check
- Asset tagging of the pump with next recommended service date
- Detailed Service Inspection Report unique to instrument by serial #

HL-17110-00 Pump preventive maintenance package

InnoCal technicians are also trained and equipped to perform Masterflex® warranty repair and any other service that may be required due to normal wear and tear.



Extend the service life of your Masterflex® pumps and protect your valuable investment with an InnoCal Preventive Maintenance Package.

Contact an InnoCal Service Technician at
866-INNOCAL (466-6225)
to schedule your service today!

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L/S® Standard Digital Pump Systems

Applications

- Acid/base pH control
- Nutrient media dispensing
- Precision fragrance delivery
- Automated fermentation
- Surfactant delivery
- Accurate metering

Features

- 1/10-hp, continuous-duty drive
- ±0.1% drive speed control with tach feedback
- Splash-resistant stackable housing
- Membrane keypad with lockout



77921-65

Benefits

- Brushless, maintenance-free motor reduces operating costs
- Reversible pumping
- Graphical LCD shows flow rate, rpm, dispense volume, dispense time, copy number, cumulative volume
- Remote control: Start/stop foot switch (order below); 0–20 mA, 4–20 mA, or 0–10 VDC speed control; Start/stop/reverse/prime (with DB25 male connector)
- Programmable flow rate and dispense interval for automated dispensing
- Can be calibrated for greater accuracy



77921-75

Specifications & Ordering Information

ISO9001:2008 CERTIFIED SUPPLIER

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77921-65	0.08 to 480	L/S Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 06434-16; 3 m (10 ft)	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07522-20	0.1 to 600	IP33	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
HL-77921-75	0.28 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36				

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-07523-92 Foot switch, momentary start/start, 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends for remote control.

HL-07523-97 Dispensing handle for momentary start/stop.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

L/S® Four-Channel Digital Dispensing Pump System

Applications

- Precision dispensing
- Synchronous multichannel filling
- Metering fluids into multiple containers or outlets
- Filtration

Features

- 1/10-hp continuous-duty brushless drive; tach feedback for ±0.1% speed control
- Remote control via DB25 female connector on drive
- Membrane keypad with lockout



77921-85

Benefits

- Digital dispensing drive features maintenance-free brushless motor
- Program dispensing parameters—including volume, copy, time, and delay interval—for automated dispensing
- Four-channel, six-roller pump head offers low pulsation and synchronous flow between channels for high accuracy and consistent fills
- BioPharm Plus platinum silicone tubing delivers exceptional flow stability over time making it ideal for dispensing applications

Specifications & Ordering Information

ISO9001:2008 CERTIFIED SUPPLIER

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77921-85	0.047 to 280	L/S Four-channel 07535-04	BioPharm Plus silicone tube set, L/S 16 96116-16; pk of 8	L/S two-stop tube sets: L/S 13, 14, 16	07522-20	0.1 to 600	IP33	90 to 130 VAC, 2.2 A; 190 to 260 VAC, 1.1 A

†Flow range per channel with included tubing; extend the flow range of this system with additional sizes of tubing; order L/S two-stop tube sets on page 55.

HL-07523-92 Foot switch, momentary start/start, 1.8-m (6-ft) cable.

HL-07523-94 DB25 Connector. Use to create your own cable.

HL-07523-97 Dispensing handle for momentary start/stop.

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L/S® COMPUTER-COMPATIBLE PUMP SYSTEMS

APPLICATIONS

- Programmable dispensing
- Automated process
- Dosing/metering additives
- Dispensing by weight/weight ratio
- Repetitive filling
- Media dispensing in cell culture and fermentation
- Gradient pump

BENEFITS

- Stand-alone digital dispenser or control through PC
- Graphical LCD shows flow rate, rpm, dispense volume, dispense time, copy number, and cumulative volume
- Programmable dispense interval for automated dispensing
- Dispense by volume or time
- Analog remote control of speed, start/stop, and direction
- Programmed calibration ensures accuracy
- Stackable, splash-resistant housing wipes down for easy cleaning

FEATURES

- 1/10-hp, continuous-duty brushless drive
- ±0.1% PWM speed control accuracy with tach output
- Remote control capability via DB25 connector on back of drive
- Membrane keypad with lockout



77924-50



77924-60

SPECIFICATIONS & ORDERING INFORMATION

ISO9001:2008 CERTIFIED SUPPLIER

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77924-50	0.08 to 480	L/S Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 06434-16; 3 m (10 ft)	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07551-00	0.1 to 600	IP33	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
HL-77924-60	0.28 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36				

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-07523-92 Foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends for remote control.

HL-07523-97 Dispensing handle for momentary start/stop.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive

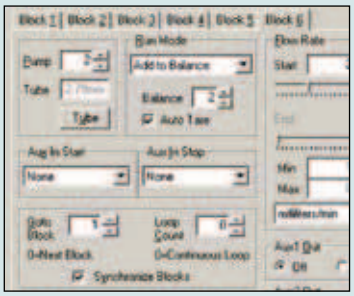
COMPLETE SYSTEM INCLUDES:

PUMP HEAD + TUBING + DRIVE

MASTERFLEX® LINKABLE INSTRUMENT CONTROL SOFTWARE

Enhanced balance interface capability and 21 CFR Part 11 compliance

- Control all functions of up to 25 Masterflex L/S computer-compatible pumps with your personal computer
- Windows®-based software has familiar pull-down menus and mouse-selectable icons
- Customize to meet your application: dispensing, mixing/diluting, flow proportioning, and single/multiple slope gradients; program each pump to automate up to 50 steps
- Improved balance interface allows you to dispense off of a balance and features weight-ratio dispensing; use of multiple balances is enabled with multiple COM ports on your PC
- Log at specific intervals, at the end of each block, or at the end of each run
- Complies with 21 CFR Part 11: password protection and authorized user list, audit trail documents all operations, file encryption permits authorized user access only



Design your own program using the simple-to-use software. Quick updates provide up-to-the-minute pump information.

ORDERING INFORMATION

Catalog number	Description
HL-07551-70	Software, WINLIN pump control; works with Windows® 95/98/NT/2000/XP; CD-ROM format.
HL-22050-54	RS-232 interface cable, DB9(M) to DB9(F), 2.4 m (8 ft). Connects drive to drive and/or drive to PC.
HL-22050-58	USB to RS-232 serial adapter cable connects RS-232 serial connector on Masterflex L/S 07551-series drives to a PC with USB port, 1.8 m (6 ft); requires cable 22050-54
HL-22050-60	USB Type A (M) to USB Type B (M) interface cable, connect Masterflex 07551-series drives to a USB port on a PC, 3 m (10 ft)
HL-07550-64	RS-232 interface cable, 2.4 m (8 ft). Connects mixer to PC. RJ11 to DB25 with DB25/DB9 adapter.

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L/S® Multichannel Pump Systems

Applications

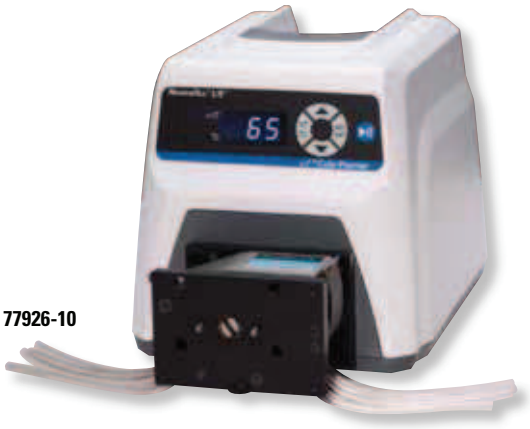
- Precision dispensing into multiple containers
- Transfer or meter fluids through multiple lines
- Rapid automated filling

Features

- Four-channel pump head
- 1/10-hp, continuous-duty drive with remote capability
- ±0.25% speed control accuracy

Benefits

- Control of multiple channels with a single drive reduces operating cost per channel
- Powerful metering and transfer pump with accurate speed control
- Synchronous flow from all four channels ensures accuracy when dispensing into multiple containers
- Reversible motor for purge before/after pumping; pump in either direction
- Simple keypad controls; bright, three-digit display of rpm for repeatability
- Remote control of speed and start/stop
- Accepts L/S two-stop tube sets for optimal tension with no adjustment
- Stackable ABS plastic housing wipes down for easy cleaning



77926-10



77927-10

Specifications & Ordering Information

ISO 9001:2008 CERTIFIED SUPPLIER

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77926-10	0.47 to 47	L/S four channel 07535-04	Tygon® E-LFL tube set, L/S 16 06447-16; pk of 8	L/S two-stop tube sets: L/S 13, L/S 14, L/S 16	07528-30	1 to 100	IP33	90 to 260 VAC
HL-77927-10	2.8 to 280	L/S four channel 07536-04	Tygon E-LFL tube set, L/S 24 06447-24; pk of 4	L/S two-stop tube sets: L/S 15, L/S 24, L/S 35	07528-30	1 to 100	IP33	90 to 260 VAC

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order two-stop tube sets below and L/S extension tubing on pages 68–73.

HL-77595-35 Foot switch, DB9 male. Use for start/stop operation.
HL-07595-45 Connector, DB9 male. Use for 4–20 mA remote control.
HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

Complete System Includes:

Pump Head + **Tubing** + **Drive**

Additional L/S Two-Stop Precision Pump Tube Sets

Pump tubing		L/S Precision pump tubing			L/S High-performance precision pump tubing		
		L/S 13	L/S 14	L/S 16	L/S 15	L/S 24	L/S 35
Flow rate per channel (mL/min)	@ 1 to 100 rpm	0.045 to 4.5	0.16 to 16	0.47 to 47	1.6 to 160	2.8 to 280	3.8 to 380
	@ 6 to 600 rpm	0.27 to 27	0.96 to 96	2.8 to 280	10 to 1000	17 to 1700	23 to 2300
Tygon® E-LFL		**HL-06447-13**	**HL-06447-14**	**HL-06447-16**	**HL-06447-15**	**HL-06447-24**	**HL-06447-35**
Silicone (platinum-cured)		**HL-06421-13**	**HL-06421-14**	**HL-06421-16**	**HL-06421-15**	**HL-06421-24**	**HL-06421-35**
BioPharm Plus silicone (platinum-cured)		**HL-96116-13**	**HL-96116-14**	**HL-96116-16**	**HL-96116-15**	**HL-96116-24**	**HL-96116-35**
PharMed® BPT		**HL-96114-13**	**HL-96114-14**	**HL-96114-16**	**HL-96114-15**	**HL-96114-24**	**HL-96114-35**
Chem-Durance® Bio		**HL-96117-13**	**HL-96117-14**	**HL-96117-16**	**HL-96117-15**	**HL-96117-24**	**HL-96117-35**
Viton®		**HL-96428-13**	**HL-96428-14**	**HL-96428-16**	**HL-96428-15**	**HL-96428-24**	**HL-96428-35**
Qty/pk		8	8	8	4	4	4

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L/S® CARTRIDGE PUMP SYSTEMS

APPLICATIONS

- Multiple-channel low-flow transfer and perfusion
- Synchronous multichannel dispensing
- Low-pressure chromatography
- Feeding automated dispensers

BENEFITS

- Cartridges accept multiple tubing sizes for wide flow range
- Cartridges snap in and out for tubing changes; change tubing in one channel without disturbing others
- Finely adjust occlusion to increase accuracy
- Use only one cartridge, or load to capacity
- Digital dispensing drive features maintenance-free brushless motor
- Program dispensing parameters, including delay interval, for automated dispensing
- Four-channel, eight-roller pump offers lowest pulsation for better accuracy

FEATURES

- 1/10-hp continuous-duty brushless drive
- Tach feedback for ±0.1% drive speed control
- Remote control via DB25 female connector on drive
- IP33 rated, stackable ABS housing
- Membrane keypad with lockout



77919-20



77919-30

SPECIFICATIONS & ORDERING INFORMATION

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Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
L/S eight-channel four-roller cartridge pump system								
HL-77919-20	0.0034 to 18	L/S Cartridge head 07519-06 with eight small cartridges 07519-80	Tygon® E-LFL microbore tube set, 1.42-mm ID 06447-34; pk of 12	Microbore tube sets; L/S 13, L/S 14	07523-90	0.02 to 100	IP33	90 to 130 VAC, 2.2 A; 190 to 260 VAC, 1.1 A
L/S reduced-pulsation four-channel eight-roller cartridge pump system								
HL-77919-30	0.0024 to 12	L/S Cartridge head 07519-20 with four small cartridges 07519-85	Tygon E-LFL microbore tube set, 1.42-mm ID 06447-34; pk of 12	Microbore tube sets; L/S 13, L/S 14	07523-90	0.02 to 100	IP33	90 to 130 VAC, 2.2 A; 190 to 260 VAC, 1.1 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order microbore two-stop tube sets below and L/S tubing on pages 68–73.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

ADDITIONAL MICROBORE TWO-STOP PUMP TUBE SETS

Pump tubing		0.89 mm ID	1.42 mm ID	2.06 mm ID	2.79 mm ID
Flow rate per channel (mL/min)	Cartridge head 07519-06	0.0015 to 7.4	0.0034 to 18	0.0074 to 37	0.0126 to 63
	Cartridge head 07519-20	0.0010 to 5.2	0.0024 to 12	0.0044 to 22	0.0068 to 34
Platinum-cured silicone		**HL-06421-26 pk of 6**	**HL-06421-34 pk of 6**	**HL-06421-42 pk of 6**	**HL-06421-48 pk of 6**
Santoprene®		**HL-06431-26 pk of 12**	**HL-06431-34 pk of 12**	**HL-06431-42 pk of 12**	**HL-06431-48 pk of 12**
Tygon® E-LFL		**HL-06447-26 pk of 12**	**HL-06447-34 pk of 12**	**HL-06447-42 pk of 12**	**HL-06447-48 pk of 12**
Viton®		**HL-96428-26 pk of 12**	**HL-96428-34 pk of 12**	**HL-96428-42 pk of 12**	**HL-96428-48 pk of 12**

ADDITIONAL CARTRIDGES

HL-07519-80 Additional small cartridge for pump system 77919-20.

HL-07519-85 Additional small cartridge for pump system 77919-30.



07519-80

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L/S® Digital Modular Pump System

Applications

- Epoxy resin delivery
- Culture media dispensing
- Coffee-additive dispensing
- FDA tablet coating

Benefits

- Separate drive/controller for placement flexibility
- Brushless motor for continuous-duty maintenance-free operation
- Remote I/O for control flexibility; tach output lets you monitor pump operation
- Easy tubing changes saves operator time
- Reverse pumping to prime or purge tubing
- Programmable time delay interval for repetitive filling

Features

- 1/10-hp, continuous-duty drive
- ±0.1% drive speed accuracy
- Controller/drive connected by a 1.8-m (6-ft) cable



77923-80

ISO9001:2008 CERTIFIED SUPPLIER

Specifications & Ordering Information

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power
HL-77923-80	0.28 to 1700	L/S Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	77301-40	0.1 to 600	IP33	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-07523-97 Handheld remote controller; control start/stop, direction, and prime; route tubing through handle for dispensing and filling applications; 1.8-m (6-ft) cable.

HL-07523-95 Cable assembly, DB25 male connector and 7.9-m (25-ft) cable with stripped wire ends for remote control.

HL-77301-82 Extension cable, 2.7 m (9 ft) for benchtop modular drive 77301-40; extend distance between motor and controller.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

L/S® Digital Modular Pump System with Wall-Mount Controller

Applications

- Adhesive resin delivery
- Salad dressing dispensing
- Food-additive dispensing
- Packaging process pump

Benefits

- Washdown IP66 (NEMA 4X)-rated components for easy cleanup in process applications
- Remote I/O for control flexibility; tach output lets you monitor pump operation
- Brushless motor for continuous-duty maintenance-free operation
- Easy tubing changes
- Repetitive dispensing with programmable delay for efficient repeat filling operations

Features

- 1/10-hp, continuous-duty drive
- ±0.1% drive speed accuracy
- IP66-rated controller/drive connected by a 1.8-m (6-ft) water-tight cable



77923-90

ISO9001:2008 CERTIFIED SUPPLIER

Specifications & Ordering Information

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power
HL-77923-90	0.28 to 1700	L/S Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	77301-50	0.1 to 600	IP66	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-07575-84 Washdown foot switch, momentary start/stop; 1.8-m (6-ft) cable.

HL-07575-80 Remote control cable; wire to controller/PLC; 8.3-m (25-ft) length.

HL-77301-82 Extension cable, 2.7 m (9 ft) for washdown modular drive 77301-50; extend distance between motor and controller.

HL-17050-01 NIST-traceable calibration with data for peristaltic pump drive.

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L/S® Digital Process Pump Systems

Applications

- Pharma, food, and dairy processing
- Metering flavorings and colorants
- Pumping buffer solutions
- Filling/emptying media bags
- Sterile filtration; sterile fluid transfer
- Spray coating
- Pumping slurries and purees

Benefits

- Digital dispenser is ideal for filling applications requiring varying flow rates and volumes
- Sealed, 316 stainless steel housing is NEMA 4X and IP66 rated for easy washdown in sanitary process environments; use model 77975-40 with powder-coat steel housing in applications where stainless steel is not a requirement
- Graphical LCD shows flow rate, rpm, dispense volume, dispense time, and copy number
- Cumulative volume function totalizes volume pumped or transferred over time
- Select to display metric or English units
- Programmable dispense interval for automated dispensing
- Analog remote control of speed, start/stop, and direction; tach output for monitoring pump operation
- Programmed calibration ensures accuracy
- Keypad lockout feature prevents inadvertent changes to programmed settings

Features

- 1/10-hp, continuous-duty brushless drive
- ±0.1% PWM speed control accuracy with tach output
- Remote control capability via fluid-resistant I/O connector on back of drive



77975-20

WASHDOWN



77975-30



77975-40



07575-84

Specifications & Ordering Information

ISO9001:2008 CERTIFIED SUPPLIER

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power
Digital process pumps with 316 stainless steel housing								
HL-77975-20	0.28 to 1700	L/S Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07575-10	0.1 to 600	IP66	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
HL-77975-30	0.28 to 1800	L/S High-Performance 77250-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07575-10	0.1 to 600	IP66	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A
Digital process pump with powder-coat steel housing								
HL-77975-40	0.28 to 1700	L/S Easy-Load II 77200-62	C-Flex ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07575-20	0.1 to 600	IP66	90 to 130 VAC, 2.2 A; and 190 to 260 VAC, 1.1 A

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.

HL-07575-84 Washdown foot switch, momentary start/stop; 1.8-m (6-ft) cable

HL-07575-80 Remote cable, 8.3 m (25 ft) for remote capabilities.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

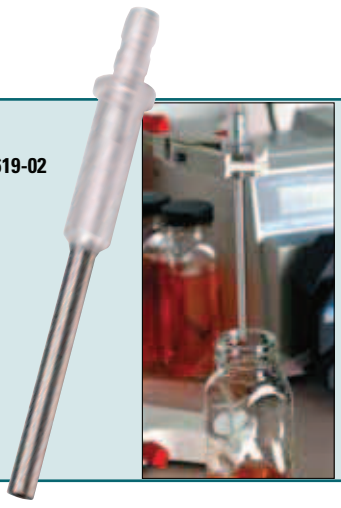
Filler/Dispensing Nozzles

- Maximize the speed, precision, and accuracy of dispensing and filling applications
- Minimize splashing and dripping when dispensing into narrow- or wide-mouth containers

These nozzles combine the ease of plastic components with the accuracy and reliability of stainless steel tubes. Tight dimensional tolerances help to ensure precision in your dispensing applications. Nozzles feature a 316L stainless steel tube and a polycarbonate base with hose barb adapter. Materials comply with FDA, USDA and USP Class VI requirements. All filler nozzles are sterilizable by ethylene oxide, autoclaving, or gamma irradiation.

Catalog number	Tubing ID
HL-30619-06	1/32"
HL-30619-01	1/16"
HL-30619-07	1/8"
HL-30619-02	3/16"
HL-30619-08	1/4"
HL-30619-03	5/16"
HL-30619-09	3/8"
HL-30619-04	1/2"
HL-30619-10	5/8"
HL-30619-05	3/4"

30619-02



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L/S® PTFE-Tubing Pump System

Applications

- Transfer of aggressive chemicals
- Filtration
- High-purity pumping
- Chemical injection

Benefits

- Excellent chemical compatibility for metering aggressive chemicals
- Higher pressures up to 6.9 bar (100 psi), low pulsation
- Inert PTFE tubing maintains fluid purity
- Adjustable occlusion
- Low maintenance

Features

- 1/10-hp, 3 to 300 rpm continuous-duty drive
- 2.4-m (8-ft) suction lift; 6.9 bar (100 psi) pressure capability



77912-10

Additional Tubing

HL-77390-60 PTFE tubing set, 6-mm OD, 4-mm ID. Set of two 38-cm (15") lengths

HL-06605-54 PTFE extension tubing, 6-mm OD. One 7.6-m (25-ft) length

HL-31321-64 Straight connector; 6 mm, 9.2 bar (135 psi) max

Specifications & Ordering Information

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Catalog number	Flow range (mL/min)	Pump head included	Tubing included†	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77912-10	0.75 to 65	L/S PTFE-tubing 77390-00	6-mm OD PTFE tubing set 77390-60	—	07528-20	3 to 300‡	IP33	90 to 260 VAC

†Also includes two ¼" pipe adapters. ‡Recommended drive speed operating range for included pump head.

HL-17050-01 NIST-traceable calibration for peristaltic pump drive.

Complete System Includes:

Pump Head + **Tubing** + **Drive**

L/S® PTFE-Diaphragm Pump System

Applications

- Chemical feed and metering
- Chemical injection
- High-purity fluid transfer
- Pumping aggressive chemicals
- High-pressure pumping

Benefits

- Continuous pressure up to 3.4 bar (50 psi); 5.2 bar (75 psi) intermittent
- Excellent chemical compatibility
- High metering accuracy
- Self-priming
- PTFE fluid path maintains fluid purity

Features

- 1/10-hp, 6 to 600 rpm continuous-duty drive
- ±0.25% speed control accuracy
- ABS plastic housing
- DB9 female connection on back for remote control



77915-10

Specifications & Ordering Information

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Catalog number	Flow range (mL/min)	Pump head included	Tubing included†	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77915-10	80 to 800	L/S PTFE diaphragm 07090-42	¼" ID x ⅜" OD PTFE tubing 06605-15; 3.6 m (12 ft)	—	07528-10	40 to 400‡	IP33	90 to 260 VAC

†Also includes pipe adapters and check valve. ‡Recommended drive speed operating range for included pump head.

HL-07090-43 Service kit includes diaphragm, check valves, installation tool and instructions.

HL-07090-45 Check valve.

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L/S® High-Pressure Pump System

Applications

- High-pressure chemical feed and metering
- High-pressure chemical injection
- Chromatography
- Pressure filtration
- Sterile filtration

Benefits

- Pump at continuous pressure up to 6.9 bar (100 psi) with included tubing
- No gears, valves, seals, or diaphragms for minimal maintenance and downtime
- Fluid remains in tubing at all times; contamination-free
- Separate speed control and power switch maintain speed setting when pump is switched on/off
- Reversible motor; pump in either direction

Features

- 1/10-hp, continuous-duty drive
- ±0.25% speed control accuracy
- ABS plastic housing

Additional Tubing

HL-95664-14 L/S PharMed BPT 14HP high-pressure tubing; 0.3 to 30 mL/min, 10.2 bar (150 psi) max pressure. Pack of 7.6 m (25 ft).

HL-95664-16 L/S PharMed BPT 16HP high-pressure tubing; 0.9 to 90 mL/min, 6.9 bar (100 psi) max pressure. Pack of 7.6 m (25 ft).

HL-95664-15 L/S PharMed BPT 15HP high-pressure tubing; 1.7 to 170 mL/min, 5.4 bar (80 psi) max pressure. Pack of 7.6 m (25 ft).

HL-95664-24 L/S PharMed BPT 24HP high-pressure tubing; 2.4 to 240 mL/min, 4.1 bar (60 psi) max pressure. Pack of 7.6 m (25 ft).



77914-10

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Specifications & Ordering Information

Catalog number	Flow range† (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power (50/60 Hz)
HL-77914-10	0.9 to 90	L/S High-Performance 77250-62	PharMed® BPT L/S 16HP 95664-16; 2.4 m (8 ft)	L/S 16HP, L/S 15HP, L/S 24HP	07528-30	1 to 100	IP33	90 to 260 VAC

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order above.

L/S® Air-Powered Pump Systems

Applications

- Transfer of chemicals where hazardous vapors are present
- Transfer of printing inks and solvents
- Transfer of heat-sensitive fluids
- Production fermentation

Benefits

- Ideal where electricity is unsafe
- Operates from your compressor
- High power, compact size
- Cooler operation
- Smooth-starting, low-maintenance 1/3-hp motor

Features

- 1/3-hp, continuous-duty drive
- ±10% drive speed accuracy
- Complete with regulator with 5-mm air filter and 1/4" NPT(F) connection, automatic lubricator, 0 to 20 psi pressure gauge, and muffler
- ATEX systems 77931-20 and -30 are ATEX Zone 2 rated: EEx II 3 G c IIC T6; NEC Class I, Division 2, Groups A, B, C, D, T6



77931-10



77931-20

ISO9001:2008 CERTIFIED SUPPLIER · CE · ATEX Zone 2 77931-20, -30 · 2 year warranty

Specifications & Ordering Information

Catalog number	Flow range (mL/min)	Pump head included	Tubing included	Tubing sizes accepted	Drive included	Drive speed range (rpm)	Drive IP rating	Power
HL-77931-10	170 to 1700†	L/S Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 06434-24; 3 m (10 ft)	L/S 15, L/S 24, L/S 35, L/S 36	07569-00	60 to 600	IP44	0.08 to 0.7 m^3/min (3 to 25 cfm) at 1.4 to 6.9 bar (20 to 100 psi)
ATEX Zone 2 rated L/S air-powered pump systems								
HL-77931-20	3.6 to 2300‡	L/S Easy-Load 07518-40	N/A††	L/S 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18	07569-00	60 to 600	IP44	0.08 to 0.7 m^3/min (3 to 25 cfm) at 1.4 to 6.9 bar (20 to 100 psi)
HL-77931-30	100 to 1700‡	L/S Easy-Load 07518-42	N/A††	L/S 15, L/S 24	07569-00	60 to 600	IP44	0.08 to 0.7 m^3/min (3 to 25 cfm) at 1.4 to 6.9 bar (20 to 100 psi)

†Flow range with included tubing; extend the flow range of these systems with additional sizes of tubing; order on pages 68–73.
‡For ATEX pump systems, flow rates will depend on tubing size selected.
††Note: ATEX pump systems do not include tubing; select tubing to be compatible with your fluid and the parameters of your application.
Note: For safe operation of Masterflex air-powered pumps, ground pump carefully to protect from static electricity.

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