

# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> PRECISION PERISTALTIC PUMP SYSTEMS

### PRECISE SPEED CONTROL WITH A WIDE RANGE OF APPLICATIONS

These precision pumps provide precise resetting of speed control and the option of controlling the pump flow from a remote signal. Use in a broad range of critical applications—from agriculture to chemical processing; and from chemical feed to filtration. They are designed to handle a wide range of fluids from the highest purity to extremely caustic solutions.

#### FEATURES AND BENEFITS

##### Easy to Use

- Intuitive control keypad uses common control symbols to indicate functions
- Accurate, reliable control of flow - digital display of RPM for accurate control
- Universal voltage – operate anywhere in the world. Unit accepts power cord set with IEC320 plug to adapt to local electricity
- Pump system interfaces directly with plant controls and allows remote control of flow, start/stop, remote/local condition, and flow direction control
- Quick start guide included for faster set-up

##### Easy to Maintain

- Low maintenance with minimum downtime — change tubing in less than 30 seconds
- Splash-resistant front panel
- Separate start/stop control allows you to maintain your flow setting when powering down



L/S Precision  
Digital Peristaltic  
Pump System

##### Diverse Performance Range

- Deliver flow rates from 0.06 to 3400 mL/ min with Masterflex L/S pump heads
- Cartridge pump flow rates: 0.001 to 1700 mL/min
- Choose from three speed ranges for optimum control
- $\pm 0.25\%$  speed control for greater accuracy
- Interface with other instrumentation via remote control capability

##### Ergonomic Design

- Portable - motor and controller in one convenient package
- Molded handle for easy one-handed portability
- Space efficient - stackable design with a small footprint

## Flow rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance Pump Head)

RPM	Precision pump tubing						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
	Easy-Load II						Easy-Load II and High-Performance			
6 to 600	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)
3 to 300	0.18 to 18	0.65 to 65	2.4 to 240	5 to 500	8.5 to 850	12 to 1150	5 to 500 (6 to 550)	8.5 to 850 (9 to 900)	12 to 1150 (13 to 1300)	15 to 1450 (17 to 1700)
1 to 100	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.

CATALOG NUMBER			
Pump System with Easy-Load II (Thin Wall)	MK-77712-36	MK-77712-32	MK-77712-28
Pump System with Easy-Load II (Thick Wall)	MK-77712-37	MK-77712-33	MK-77712-29
Pump System with High-Performance Pump	MK-77712-38	MK-77712-34	MK-77712-30
PERFORMANCE			
Max number of pump heads	2	2	4
Flow Capacity (mL/min)	0.36 to 3400	0.18 to 1700	0.06 to 580
RPM	6 to 600	3 to 300	1 to 100
Reversible	Yes		
External Control - Input	4-20 mA; 0 – 10 V; Remote / Local; Dir (CW/CCW); Start/Stop		
ELECTRICAL SPECIFICATIONS			
Voltage (AC) 60/50 (Hz)	Universal input 90 to 260 VAC 60/50 (Hz)		
Current	2.2A @115V; 1.1A@230V		
Motor Type	PMDC		
Motor Size	1/10 HP (75W)		
Control Type	PWM (Pulse Width Modulated)		
Display (rpm)	Seven-segment, 3-digit, Blue LED, 1 RPM resolution (0.1 RPM for 1 to 100 RPM Range)		
Speed regulation (accuracy)	± 0.25%		
PHYSICAL SPECIFICATIONS			
Materials of construction	Powder-coated aluminum and ABS Plastic		
IP rating	IP33		
Agency approvals	ETL, cETL, CE, RoHS		
Operating temperature	0°C to 40°C		
Storage Temperature	– 25°C to 65°C		
Dimensions (L x W X H)	26.7 x 20.3 x 20.3 (cm) 10.5 x 8 x 8 (in)		
Shipping Weight	9.2 kg / 20.2 lb (6.8 kg / 15.0 lb - drive only)		

## Configurations Offered

- Available in three standard bundles packages with Easy-Load II or High-Performance Pumps

## Accessories

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

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

For more information:

800-637-3739 or 847-381-7050  
[ColeParmer.com/fluidhandling](http://ColeParmer.com/fluidhandling)  
[fluidhandling@coleparmer.com](mailto:fluidhandling@coleparmer.com)

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*fluid handling and analysis*



# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> STANDARD DIGITAL PUMP SYSTEMS

### IDEAL FOR CHEMICAL FEED AT WATER TREATMENT FACILITIES



Masterflex combines digital control with peristaltic pump technology to provide high-accuracy, maintenance and worry free performance to your chemical feed applications.

- Graphical display provides visual confirmation of pump operating parameters
- Brushless motor reduces downtime due to motor maintenance
- Easy-Load<sup>®</sup> II pump head allows convenient tube advancement for uninterrupted service
- High-Performance pump head option achieves high pressure operation to 100 psig

#### FEATURES AND BENEFITS

- Menu-driven LCD graphical interface provides easy system set-up
- Loaded with a broad range of remote control options—ideal for automated process applications
- The brushless motor driven by a PWM control is capable of a flow range turndown of 380,000:1
- Other control capabilities include programmable dispensing by volume, time, or copy modes with a programmable delay between cycles for convenient, automated dispensing
- Precise PWM speed control ( $\pm 0.1\%$ ) maximizes accuracy and efficiency while the brushless motor gives you quiet, maintenance-free reliability
- Optimize system accuracy by calibrating the pump system in process. The calibration is stored in memory—one calibration value per tubing size
- Program the drive via the simple membrane keypad and multi-language display
- Reversible motor so you can purge tubing before or after pumping
- IP33 rated ABS housing for improved splash and dust resistance
- Programmable anti-drip improves accuracy of filling and dosing processes

## Flow rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance Pump Head)\*

	Precision pump tubing						High-performance precision pump tubing*			
RPM	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
	Easy-Load II						Easy-Load II and High-Performance			
0.1 to 600	0.021 to 130 <i>0.002 to 13.7</i>	0.021 to 130 <i>0.008 to 49.4</i>	0.08 to 480 <i>0.030 to 182.6</i>	0.17 to 1000 <i>0.065 to 380.4</i>	0.28 to 1700 <i>0.107 to 646.7</i>	0.38 to 2300 <i>0.145 to 875.0</i>	0.17 to 1000 (0.18 to 1100) <i>0.065 to 38</i> <i>(0.068 to 418)</i>	0.28 to 1700 (0.30 to 1800) <i>0.11 to 647</i> <i>(0.11 to 685)</i>	0.38 to 2300 (0.43 to 2600) <i>0.14 to 875</i> <i>(0.16 to 989)</i>	0.48 to 2900 (0.57 to 3400) <i>0.18 to 1103</i> <i>(0.22 to 1293)</i>
0.02 to 100	0.001 to 6 <i>0.000 to 2.3</i>	0.004 to 21 <i>0.002 to 8.0</i>	0.016 to 80 <i>0.006 to 30.4</i>	0.033 to 170 <i>0.013 to 64.7</i>	0.057 to 280 <i>0.022 to 106.5</i>	0.077 to 380 <i>0.029 to 114.1</i>	0.033 to 170 (0.36 to 180) <i>0.013 to 64</i> <i>(0.013 to 69)</i>	0.057 to 280 (0.057 to 300) <i>0.022 to 106</i> <i>(0.022 to 114)</i>	0.077 to 380 (0.077 to 430) <i>0.029 to 145</i> <i>(0.029 to 164)</i>	0.096 to 480 (0.096 to 580) <i>0.037 to 183</i> <i>(0.037 to 220)</i>

\*Values in parentheses are with High-Performance pump heads. Values in italics are gallons per day

CATALOG NUMBER	MK-77712-51	MK-77712-52	MK-77712-53	MK-77712-47	MK-77712-48	MK-77712-49
Includes Pump Head	EASY-LOAD® II (thin wall)	EASY-LOAD® II (thick wall)	High-Performance (thick wall)	EASY-LOAD® II (thin wall)	EASY-LOAD® II (thick wall)	High-Performance (thick wall)
Max number of pump heads	2	2	1	4	4	1
PERFORMANCE						
Flow Capacity (ml/min)	0.36 to 2300	0.17 to 2950	0.18 to 3400	0.36 to 380	0.033 to 480	0.036 to 580
RPM	0.1 to 600			0.02 to 100		
Reversible	Yes					
External Control - Input	0 to 20 mA, 4 to 20mA, 0 to 10V; Scalable					
	START/STOP, DIR. (CW/CC), PRIME via contact closure					
	Remote / Local Enable Contact					
	Secondary Speed Control 0-20mA or 4-20mA					
	Auxiliary Contact (Limit Switch)					
External Control - Output	4 to 20 mA, or 0 to 10 V					
Motor running logic	Open Collector					
Tachometer output	5V, TTL pulse					
Power supply output	24 V, 150 mA					
ELECTRICAL SPECIFICATIONS						
Voltage (AC) 60/50 (Hz)	115/230 V AC (auto selected)					
Current	2.2A @ 115V; 1.1A @ 230V					
Motor Type	Brushless continuous duty, TENV, DC, permanent lubricated bearings					
Motor Size	1/10 HP (75W)					
Control Type	PWM (Pulse Width Modulated)					
Display (rpm)	4-line graphical LCD					
Speed regulation (accuracy)	±0.1%; ±0.1 rpm @ 600 rpm %; ±0.01 rpm @ 100 rpm					
PHYSICAL SPECIFICATIONS						
Materials of construction	ABS, Powder-coated aluminum					
IP rating	IP33					
Agency approvals	ETL, cETL, CE, RoHS					
Operating temperature	0 to 40°C (32 to 104°F)					
Storage Temperature	-25 to 65°C (-13 to 149°F)					
Noise Rating	< 70 dBA @ 1 meter					
Dimensions Controller (L x W X H)	27.4 x 21.2 x 21.6 cm (10.8" x 8.3" x 8.5")					
Shipping Weight (Drive Only)	5.9 kg (13 lb)					

For more information:

800-637-3739 or 847-381-7050

ColeParmer.com/fluidhandling

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# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> NEMA 4X PROCESS DIGITAL PUMP SYSTEMS

### TRANSFER, FEED, METER, PROCESS AND WASHDOWN ENVIRONMENTS

IP66 and NEMA 4X rated. Powder coated housing and sealed keypad are protected from dust, water, and chemicals in the wash down environment—simply hose down to clean.

#### FEATURES AND BENEFITS

- Wide range flow rate: 0.006 to 3400 mL/min (0.0001 to 54 GPH) with L/S tubing. Flow rate depends on drive rpm and tubing size
- Graphical LCD display shows six different parameters: motor rpm, flow rate, feed volume, cumulative volume, feed interval time, and copy number
- Brushless, maintenance-free motor with improved 0.1% speed control accuracy between cycles for convenient, automated dispensing
- Feed by: volume—in milliliters (0.001 to 99,999), liters, and gallons; copy—1 to 99,999 feed cycles. Set time interval (SEC) between feed cycles from 1 to 99,999 seconds
- Remote control capabilities via fluid-resistant input/output connector on back of drive:
  - Speed control input: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V
  - Pumping direction
  - Start/stop/purge
  - Tachometer output: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V, or open collector
- Impervious to acids, caustics, oxidizers and organic solvents
- 6000 to 1 turndown



**NEMA 4X Process  
Digital Pump**



## Flow rates in mL/min\*

RPM	Precision pump tubing						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
	Easy-Load® II						Easy-Load® II and High-Performance			
0.1 to 600	0.006 to 36 <i>0.002 to 13.7</i>	0.021 to 130 <i>0.008 to 49.4</i>	0.08 to 480 <i>0.030 to 182.6</i>	0.17 to 1000 <i>0.065 to 380.4</i>	0.28 to 1700 <i>0.107 to 646.7</i>	0.38 to 2300 <i>0.145 to 875.0</i>	0.17 to 1000 (0.18 to 1100) <i>0.065 to 38 (0.068 to 418)</i>	0.28 to 1700 (0.30 to 1800) <i>0.11 to 647 (0.11 to 685)</i>	0.38 to 2300 (0.43 to 2600) <i>0.14 to 875 (0.16 to 989)</i>	0.48 to 2900 (0.57 to 3400) <i>0.18 to 1103 (0.22 to 1293)</i>
0.02 to 100	0.001 to 6 <i>0.000 to 2.3</i>	0.004 to 21 <i>0.002 to 8.0</i>	0.016 to 80 <i>0.006 to 30.4</i>	0.033 to 170 <i>0.013 to 64.7</i>	0.057 to 280 <i>0.022 to 106.5</i>	0.077 to 380 <i>0.029 to 114.1</i>	0.033 to 170 (0.033 to 180) <i>0.013 to 64 (0.013 to 69)</i>	0.057 to 280 (0.057 to 1800) <i>0.022 to 106 (0.022 to 114)</i>	0.077 to 380 (0.077 to 430) <i>0.029 to 145 (0.029 to 164)</i>	0.096 to 480 (0.096 to 580) <i>0.037 to 183 (0.037 to 220)</i>

\*Values in italics are gallons per day. Values in parentheses are with High-Performance pump head.

CATALOG NUMBER	MK-77712-59	MK-77712-60	MK-77712-61	MK-77712-63	MK-77712-69	MK-77712-65
Includes Pump Head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
Max number of pump heads	2	2	1	4	4	1
PERFORMANCE						
RPM	0.1 to 600			0.02 to 100		
External Control - Input	0 to 20 mA, 4 to 20mA, 0 to 10V; Scalable					
	START/STOP, DIR. (CW/CC), PRIME via contact closure					
	Remote / Local Enable Contact					
	Secondary Speed Control 0-20mA or 4-20mA					
	Auxiliary Contact (Limit Switch)					
External Control - Output	4 to 20 mA, or 0 to 10 V					
Motor running logic	N.O. or N.C. (1A @ 24V)					
Tachometer output	5V, TTL pulse					
Power supply output	24 V, 150 mA					
ELECTRICAL SPECIFICATIONS						
Voltage (AC) 60/50 (Hz)	115/230 V AC (auto selected)					
Motor Type	Brushless continuous duty, TENV, DC, permanent lubricated bearings					
Control Type	PWM (Pulse Width Modulated)					
Speed regulation (repeatability)	±0.1%; ±0.1 rpm @ 600 rpm %; ±0.01 rpm @ 100 rpm					
PHYSICAL SPECIFICATIONS						
Materials of construction	Polyester powder coated CRS					
IP rating	IP66 and NEMA 4X					
Agency approvals	ETL, cETL, CE, RoHS					
Operating temperature	0 to 40°C (32 to 104°F)					
Storage Temperature	−25 to 65°C (−13 to 149°F)					
Dimensions Controller (L x W X H)	13 × 8 × 8 in. (33 x 20.3 x 20.3 cm)					
Shipping Weight (Drive Only)	30 lbs./ 13.6kgs					

For more information:

800-637-3739 or 847-381-7050  
[ColeParmer.com/fluidhandling](http://ColeParmer.com/fluidhandling)  
[fluidhandling@coleparmer.com](mailto:fluidhandling@coleparmer.com)

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# **MASTERflex<sup>®</sup>**

## **L/S<sup>®</sup> SERIES PRECISION MODULAR DRIVES AND PUMP SYSTEMS**

### **MODULAR SYSTEMS PROVIDE INSTALLATION FLEXIBILITY AND OPTIMIZE SYSTEM PERFORMANCE**

Modular components provide easy access to controls and optimize pump motor location for enhanced system performance. Ideal for locating pump motor in secondary containment locations or limited space areas.

- A choice of either wipe-down (IP33) or wash-down (IP66/NEMA 4X) ingress protection
- Repeatable and accurate flow control with digital display of pump speed in 1 RPM increments (0.1 RPM on 100 RPM models)
- Robust, continuous-duty performance with a powerful 1/10HP motor that allows operation with up to 2 or 4 pump heads depending on model speed selected (100 or 600 RPM)
- Pump system interfaces directly with plant controls and allows remote control of flow, start/stop, remote/local condition, and flow direction control
- Easy-to-set-up and operate with simple keypad control and universal control symbols
- LED indicators confirm motor direction



**Wall-Mount  
Controller**



**Bench-Top  
Controller**

### **PRECISION PUMP SYSTEMS AND DRIVES**

Wipe-down bench-top units (IP33 ingress protection rated) to control contamination

Wall-mount units (IP66 / NEMA 4X ingress protection rated) for use in wet or corrosive areas

Regulatory compliance to ETL, cETL, and CE

Drive includes motor, controller, 6ft (1.8M control cable), 6 ft (1.8m) standard NEMA 3-prong cord set, quick-start guide and CD manual

Pump systems include all of above in addition to a pump head

Available accessories include remote control cable, dispensing handle, foot switch, motor cable extensions and International power cord sets



**Benchtop Pump**



**Wall-Mount Pump**

## Flow rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance Pump Head)

RPM	Precision pump tubing						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
	Easy-Load® II						Easy-Load® II and High-Performance			
6 to 600	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)
1 to 100	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)

		Bench-top	Wall-mount	
CATALOG NUMBER				
Pump System with Easy-Load II (Thin Wall)		Contact Factory	MK-77712-43	MK-77713-60
Pump System with Easy-Load II (Thick Wall)			MK-77712-44	MK-77713-62
Pump System with High-Performance Pump			MK-77712-45	MK-77713-64
PERFORMANCE				
Max number of pump heads		2	4	2
Flow Capacity (ml/min)		0.36 to 3400	0.06 to 580	0.36 to 3400
RPM		6 to 600	1 to 100	6 to 600
Reversible		Yes		Yes
External Control - Input		4-20 mA; 0 – 10 V; Remote / Local; Dir (CW/CCW); Start/Stop		
ELECTRICAL SPECIFICATIONS				
Voltage (AC) 60/50 (Hz)		Universal input 90 to 260 VAC 60/50 (Hz)		
Current		2.2A @115V; 1.1A@230V		
Motor Type		PMDC		
Motor Size		1/10 HP (75W)		
Control Type		PWM (Pulse Width Modulated)		
Display (rpm)		Seven-segment, 3-digit, Blue LED, 1RPM resolution (0.1RPM for 1 to 100RPM Range)		
Speed regulation (accuracy)		± 0.25%		
PHYSICAL SPECIFICATIONS				
Materials of construction		Aluminum, vinyl powder-coated aluminum, steel and ABS Plastic	Vinyl powder-coated aluminum and steel	
IP rating		IP33	IP66 / NEMA 4X	
Agency approvals		ETL, cETL, CE, RoHS		
Operating temperature		0°C to 40°C		
Storage Temperature		– 25°C to 65°C		
Noise Rating		< 70 dBA @ 1 meter		
Dimensions (L x W X H)	Drive	10.8 x 3.7 x 4.6 in. (27.7 x 9.7 x 11.7 cm)		14.2 x 7 x 6.5 in. (36.2 x 17.8 x 16.5 cm)
	Controller	10.4 x 8.4 x 5.5 in. (26.3 x 21.1 x 14.0 cm)		10.2 x 11" x 4.7 in. (28.5 x 27.9 x 11.9 cm)
Shipping Weight (Drive Only)		8.1 kqs / 17.8 lbs		16 kg / 35 lbs

### For Benchtop Models

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

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

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

### For Wall-Mount Models

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

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

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

For more information:

800-637-3739 or 847-381-7050

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# **Masterflex<sup>®</sup>**

## **L/S<sup>®</sup> PUMP ADAPTER SYSTEMS**

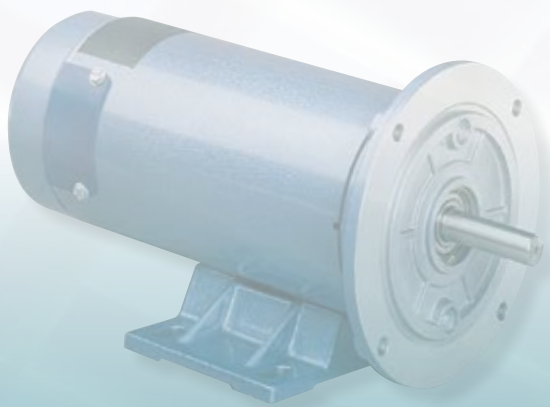
### FOR 56C FACE MOTORS



Attach your own motor to meet local electrical standards, hazardous-duty, or washdown requirements.

#### FEATURES AND BENEFITS

- System includes Pump Head, adapter, and mounting hardware
- Deliver flow rates up to 3400 mL/min (up to 54 GPH) with Masterflex L/S Pump Heads
- Multichannel capabilities
- Accepts NEMA 56C frame motors with base



Adapter System includes  
EASY-LOAD<sup>®</sup> II Pump Head,  
Adapter, and Hardware.  
Motor not included

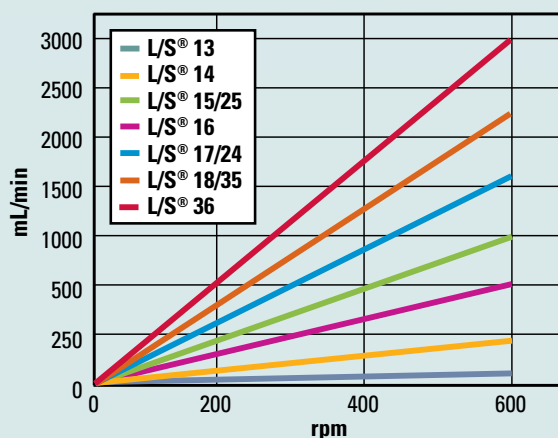
## Flow Ranges, mL/min (flow rates in parentheses can only be obtained with the High-Performance Pump Head)

Recommended motor RPM limits	Adapter gear ratio	Pump head RPM	L/S Precision Tubing Sizes (thin wall)						L/S High-Performance Tubing Sizes (thick wall)			
			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)

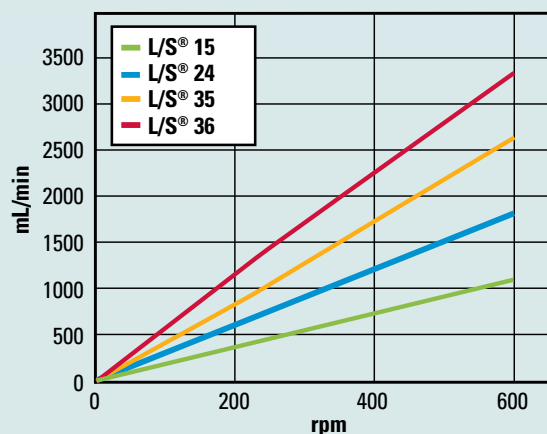
Note: Flow rates were determined using water at room temperature with zero back pressure and zero suction lift.

CATALOG NUMBER	MK-77713-03	MK-77713-05	MK-77713-07	MK-77713-04	MK-77713-06	MK-77713-08
Includes Pump Head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
Type	56C Frame Adapter					
Gear ratio	3.7:1			18.3:1		
Max number of pump heads	2		1	2		1
PHYSICAL SPECIFICATIONS						
IP rating	IP56 with gasket (included) mounted to motor					
Operating temperature	−10 to 50°C (14 to 122°F)					
Storage Temperature	−40 to 60°C (−40 to 140°F)					
Dimensions (L x W x H)	14.6 cm x 16.5 cm x 16.5 cm (5¾" x 6½" x 6½")					
Shipping Weight	1.9 kg (4 lb)					

**Flow Curves**  
L/S Easy-Load® II Pump Head



**Flow Curves**  
L/S® High-Performance Pump Head



For more information:

800-637-3739 or 847-381-7050  
ColeParmer.com/fluidhandling  
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fluid handling and analysis

# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> DIGITAL DISPENSING MODULAR PUMP SYSTEMS

### BENCHTOP AND WASH-DOWN PUMP SYSTEMS FOR LIFE SCIENCE AND INDUSTRY APPLICATIONS

Modular components provide easy access to controls and optimize pump motor location for enhanced system performance. Durable housing and sealed keypad are protected from dust, water, and chemicals in the wash down environment—simply hose down to clean. Ideal for locating pump motor in secondary containment locations or limited space areas.

- A choice of either wipe-down (IP33) or wash-down (IP66/NEMA 4X) ingress protection
- Repeatable and accurate flow control with digital display of pump speed in 1 RPM increments (0.1 RPM on 100 RPM models)
- Robust, continuous-duty performance with a powerful 1/10HP motor that allows operation with up to 2 or 4 pump heads depending on model speed selected (100 or 600 RPM)
- Pump system interfaces directly with plant controls and allows remote control of flow, start/stop, remote/local condition, and flow direction control
- Easy-to-set-up and operate with simple keypad control and universal control symbols



**Benchtop  
Pump**

**Wall-Mount  
Pump**



**Wall-Mount  
Controller**

**Bench-Top  
Controller**

### DIGITAL DISPENSING PUMP SYSTEMS

Wipe-down bench-top units (IP33 ingress protection rated) to control contamination

Wall-mount units (IP66 / NEMA 4X ingress protection rated) for use in wet or corrosive areas

Regulatory compliance to ETL, cETL, and CE

Drive includes motor, controller, 6ft (1.8M control cable), 6 ft (1.8m) standard NEMA 3-prong cord set, quick-start guide and CD manual

Pump systems include all of above in addition to a pump head

Available accessories include remote control cable, dispensing handle, foot switch, motor cable extensions and International power cord sets

## Flow rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance Pump Head)

RPM	Precision pump tubing						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
	Easy-Load® II						Easy-Load® II and High-Performance			
0.1 to 600	0.006 to 36 <i>0.002 to 13.7</i>	0.021 to 130 <i>0.008 to 49.4</i>	0.08 to 480 <i>0.030 to 182.6</i>	0.17 to 1000 <i>0.065 to 380.4</i>	0.28 to 1700 <i>0.107 to 646.7</i>	0.38 to 2300 <i>0.145 to 875.0</i>	0.17 to 1000 (0.18 to 1100) <i>0.065 to 38</i> <i>(0.068 to 418)</i>	0.28 to 1700 (0.30 to 1800) <i>0.11 to 647</i> <i>(0.11 to 685)</i>	.38 to 2300 (0.43 to 2600) <i>0.14 to 875</i> <i>(0.16 to 989)</i>	0.48 to 2900 (0.57 to 3400) <i>0.18 to 1103</i> <i>(0.22 to 1293)</i>
0.02 to 100	0.001 to 6 <i>0.000 to 2.3</i>	0.004 to 21 <i>0.002 to 8.0</i>	0.016 to 80 <i>0.006 to 30.4</i>	0.033 to 170 <i>0.013 to 64.7</i>	0.057 to 280 <i>0.022 to 106.5</i>	0.077 to 380 <i>0.029 to 114.1</i>	0.17 to 1000 (0.033 to 180) <i>0.013 to 64</i> <i>(0.013 to 69)</i>	0.033 to 170 (0.30 to 1800) <i>0.022 to 106</i> <i>(0.022 to 114)</i>	0.077 to 380 (0.077 to 430) <i>0.029 to 145</i> <i>(0.029 to 164)</i>	0.096 to 480 (0.096 to 580) <i>0.037 to 183</i> <i>(0.037 to 220)</i>

\*Values in parentheses are with high-performance pump heads. Values in italics are gallons per day

	Bench-top		Wall-mount	
CATALOG NUMBER				
Pump System with Easy-Load II (Thin Wall)	Contact Factory		MK-77712-24	MK-77713-70
Pump System with Easy-Load II (Thick Wall)			MK-77712-25	MK-77713-72
Pump System with High-Performance Pump			MK-77712-26	MK-77713-74
PERFORMANCE				
Max number of pump heads	2	4	2	4
Flow Capacity (ml/min)	0.36 to 3400	0.06 to 580	0.36 to 3400	0.06 to 580
RPM	0.1 to 600	0.02 to 100	0.1 to 600	0.02 to 100
Reversible	Yes		Yes	
External Control - Input	4-20 mA; 0 – 10 V; Remote / Local; Dir (CW/CCW); Start/Stop			
External Control - Output	Scalable 0-20 mA; 4-20 mA; 0 – 10 V; 5 V tach output, motor running, Remote / Local Indication			
ELECTRICAL SPECIFICATIONS				
Voltage (AC) 60/50 (Hz)	Universal input 90 to 260 VAC 60/50 (Hz)			
Current	2.2A @115V; 1.1A@230V			
Motor Type	Brushless DC			
Motor Size	1/10 HP (75W)			
Control Type	PWM (Pulse Width Modulated)			
Display (rpm)	Seven-segment, 3-digit, Blue LED, 1RPM resolution (0.1RPM for 1 to 100RPM Range)			
Speed regulation (accuracy)	± 0.25%			
PHYSICAL SPECIFICATIONS				
Materials of construction	Aluminum, vinyl powder-coated aluminum, steel and ABS Plastic		Vinyl powder-coated aluminum and steel	
IP rating	IP33		IP66 / NEMA 4X	
Agency approvals	ETL, cETL, CE, RoHS			
Operating temperature	0°C to 40°C			
Storage Temperature	– 25°C to 65°C			
Noise Rating	< 70 dBA @ 1 meter			
Dimensions (L x W X H)	Controller	10.5 x 8.3 x 5 in. (26.7 x 21 x 12.7 cm)	10.5 x 11 x 6.5 in. (26.7 x 27.9 x 11.4 cm)	
	Motor	15.1 x 5.6 x 6 in. (38.4 x 14.1 x 15.2 cm)	15.6 x 7 x 6 in. (39.5 x 17.8 x 15.2 cm)	
Shipping Weight (Drive Only)	8.1 kgs / 17.8 lbs		16 kg / 35 lbs	

## Accessories for Digital Dispensing Bench-Top Systems

**MK-77301-82 Motor extension cable**, 9 ft (2.7 m) for bench top modular drives; extend distance between motor and controller

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

**MK-77716-60 Cable assembly**, DB25 male connector and 25 ft (7.9 m) cable with stripped wire terminal ends. Use for remote control

**MK-07523-92 Foot switch**, DB9 male with 6-ft (1.8 m) cable

## Accessories for Digital Dispensing Wall-mount systems

**77301-82 Motor extension cable**, 9 ft (2.7 m) for wash down modular drives; extend distance between motor and controller

**MK-07575-80 Cable assembly**, 31-pin round connector and 25 ft (7.9 m) cable with stripped wire terminal ends. Use for remote control

**MK-07575-84 Washdown foot switch**, 31-pin round with 6-ft (1.8 m) cable

For more information:

800-637-3739 or 847-381-7050

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# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> VARIABLE-SPEED AIR-POWERED DRIVES



Air-Powered Drive  
shown with a  
High-Performance  
pump head

## IDEAL FOR HAZARDOUS- DUTY LOCATIONS

Intrinsically safe when properly grounded for static electricity.

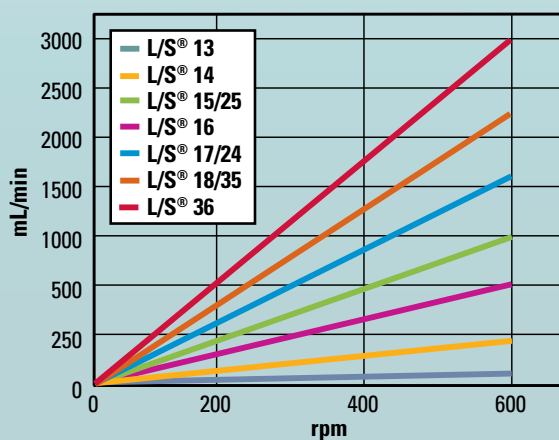
### FEATURES AND BENEFITS

- Deliver flow rates from 3.6 to 3400 mL/min (up to 54 GPH)
- Ideal for hazardous-duty locations
- Intrinsically safe when properly grounded for static electricity
- No electrical power required
- Wide flow control range (10:1 turndown)
- Reversible

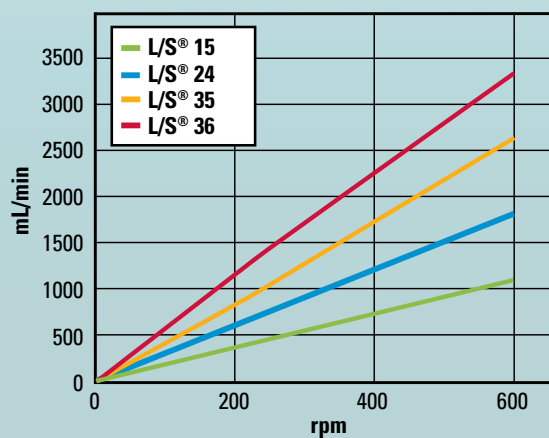


CATALOG NUMBER	MK-77712-66	MK-77712-75	MK-77712-86
Includes pump head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
PERFORMANCE			
Max number of pump heads	2		
RPM	60 to 600		
Air supply requirements	10 cfm @ 150 psig		
ELECTRICAL SPECIFICATIONS			
Motor Type	Rotary vane air motor		
Speed regulation (Repeatability)	±10% (±15 rpm @ 60 to 150 rpm) (±20 rpm @ 150 to 600 rpm)		
PHYSICAL SPECIFICATIONS			
IP rating	IP44		
Agency approvals	UL, cUL, CE		
Operating temperature	0 to 40°C (32 to 104°F)		
Storage Temperature	−10 to 65°C (−49 to 149°F)		
Footprint (L × W × H)	25.1 cm × 12.2 cm × 22.4 cm (9 7/8" × 4 13/16" × 8 13/16"		
Shipping Weight	6.9 kg (15 lb)		7.6 kg (17 lb)

**Flow Curves**  
**L/S® Easy-Load® II Pump Head**



**Flow Curves**  
**L/S® High-Performance Pump Head**



For more information:

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[fluidhandling@coleparmer.com](mailto:fluidhandling@coleparmer.com)

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# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> WATER SAMPLING SYSTEMS

### RECHARGEABLE INTERNAL BATTERIES FOR FIELD USE



#### PORTABLE SAMPLER

- Sample rate from 125 to 1100 mL/min; suction lift up to 26 feet
- IP54-rated when open or closed
- Variable-speed motor, reversible flow, and prime/purge function
- Run up to 4 hours on self-contained 12 VDC rechargeable battery, or indefinitely from AC or 12V DC power supply (automotive, etc.)
- Comes complete with Pump Head, AC adapter with 12 ft cord, and 50 feet of High- Performance PVC tubing



#### COMPOSITE SAMPLER

- Sampler floats in water for up to 30 minutes when case is closed and latched
- Easily passes through standard 18-inch diameter manhole
- Adjustable backlit LCD and glow-in-the-dark keypad help you read the control panel in low-light environments
- Controls can wait up to 90 days for a remote signal
- Program operation to meet EPA sampling requirements
- Comes complete with pump head, tubing, reservoir, and charger

Portable Sampler		
CATALOG NUMBER	MK-77713-09	MK-77713-10
PERFORMANCE		
Flow range	125 to 1100 mL/min (1.98 to 17.4 GPH)	
ELECTRICAL SPECIFICATIONS		
AC Adapter Voltage	115 VAC, 50/60 Hz	230 VAC, 50/60 Hz
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)	

Composite Sampler		
CATALOG NUMBER	MK-77713-11	MK-77713-12
Tubing size	15	24
PERFORMANCE		
Flow rate	170 mL/min (2.7 GPH)	270 mL/min (4.3 GPH)
ELECTRICAL SPECIFICATIONS		
AC Adapter Voltage	115 VAC, 50/60 Hz	
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 13 1/2" x 17 1/2")	
Shipping weight	10.9 kg (24 lb)	

For more information:

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[fluidhandling@coleparmer.com](mailto:fluidhandling@coleparmer.com)

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# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> FIXED-SPEED PUMPS

### IDEAL FOR VERY LOW-FLOW APPLICATIONS

#### FEATURES AND BENEFITS

- Deliver flow rates from 0.06 to 290 mL/min
- Compact drives feature durable epoxy-coated steel housings
- Operate 24 hours per day—drives feature continuous-duty brushless AC motors
- On/off switch provides easy, safe control of motor
- Thermally protected motor automatically shuts down in overheat conditions



Fixed-Speed Pump  
shown with an  
Easy-Load<sup>®</sup> II  
pump head



## Flow Rates, mL/min

RPM	Precision pump tubing						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
	Easy-Load® II (thin wall)						Easy-Load® II (thick wall)			
1	0.06	0.021	0.08	1.7	2.8	3.8	1.7	2.8	3.8	4.8
6	0.36	1.26	4.8	10.2	16.8	22.8	10.2	16.8	22.8	28.8
30	1.8	6.3	24	51	84	114	51	84	114	144
60	3.6	12.6	48	102	168	228	107	168	290	288

Note: Flow rates were calculated under the following conditions: zero psig at inlet, 0.5 psig at outlet; water temperature at 22°C (72°F).

## Specifications & Ordering Information

Specifications & Ordering Information								
CATALOG NUMBER	MK-77712-67	MK-77712-68	MK-77712-69	MK-77712-70	MK-77712-71	MK-77712-72	MK-77712-73	MK-77712-74
Includes Pump Head	Easy-Load® II (thin wall)		Easy-Load® II (thin wall)		Easy-Load® II (thin wall)		Easy-Load® II (thin wall)	
Max Number Of Pump Heads	2		2		2		1	
PERFORMANCE								
RPM	1		6		30		60	
ELECTRICAL SPECIFICATIONS								
Voltage (AC) 60/50 (Hz)	115	230	115	230	115	230	115	230
Fuse Rating	0.3A	0.2A	0.5A	0.2A	0.5A	0.4A	0.9A	0.4A
Current	0.8A	0.4A	0.8A	0.4A	0.8A	0.4A	0.8A	0.4A
Motor Type	AC, shaded pole							
Speed Regulation (Repeatability)	±10%							
PHYSICAL SPECIFICATIONS								
IP Rating	IP22							
Agency Approvals	UL, cUL, CE (230 V units)							
Operating Temperature	0 to 40°C (32 to 104°F)							
Storage Temperature	-25 to 65°C (-13 to 149°F)							
Dimensions Controller (L x W X H)	13.4 cm x 11.8 cm x 15.2 cm (5 3⁄8" x 4 5⁄8" x 6")							
Shipping Weight (Drive Only)	4.0 kg (9.0 lb)							

## Specifications & Ordering Information (continued)

Specifications & Ordering Information (continued)								
CATALOG NUMBER	MK-77712-76	MK-77712-77	MK-77712-78	MK-77712-79	MK-77712-80	MK-77712-81	MK-77712-82	MK-77712-83
Includes Pump Head	Easy-Load® II (thick wall)		Easy-Load® II (thick wall)		Easy-Load® II (thick wall)		Easy-Load® II (thick wall)	
Max Number Of Pump Heads	2		2		2		1	
PERFORMANCE								
RPM	1		6		30		60	
ELECTRICAL SPECIFICATIONS								
Voltage (AC) 60/50 (Hz)	115	230	115	230	115	230	115	230
Fuse Rating	0.3A	0.2A	0.5A	0.2A	0.5A	0.4A	0.9A	0.4A
Current	0.8A	0.4A	0.8A	0.4A	0.8A	0.4A	0.8A	0.4A
Motor Type	AC, shaded pole							
Speed Regulation (Repeatability)	±10% (±10%)							
PHYSICAL SPECIFICATIONS								
IP rating	IP22							
Agency Approvals	UL, cUL, CE (230 V units)							
Operating Temperature	0 to 40°C (32 to 104°F)							
Storage Temperature	-25 to 65°C (-13 to 149°F)							
Dimensions Controller (L x W X H)	13.4 cm x 11.8 cm x 15.2 cm (5 3⁄8" x 4 5⁄8" x 6")							
Shipping Weight (Drive Only)	4.0 kg (9.0 lb)							

For more information:

800-637-3739 or 847-381-7050

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# **MASTERFLEX<sup>®</sup>**

## **L/S<sup>®</sup> VARIABLE-SPEED HAZARDOUS-DUTY DRIVES**

IDEAL FOR AREAS THAT REQUIRE  
SPECIAL ELECTRICAL PRECAUTIONS



L/S Hazardous-Duty Drive  
shown with an  
Easy-Load<sup>®</sup> II pump head

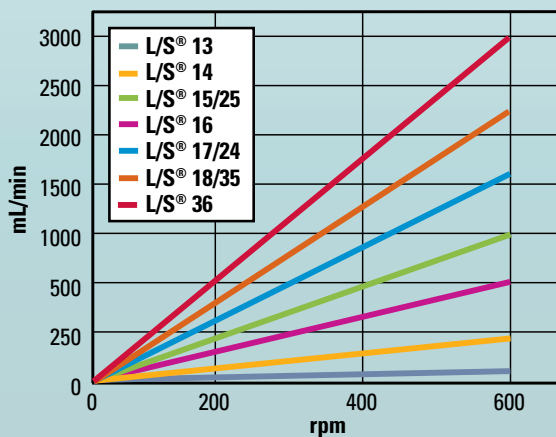
### **FEATURES AND BENEFITS**

- Deliver flow rates from 0.6 to 2450 mL/min (up to 40 GPH)
- 115 V AC motor: UL-listed for Class 1, Division 1 Group D, and Class 2, Division 1 Groups E, F and G hazardous locations
- 230/400V AC, 3-phase motor: EEx-d IIBT4 rating

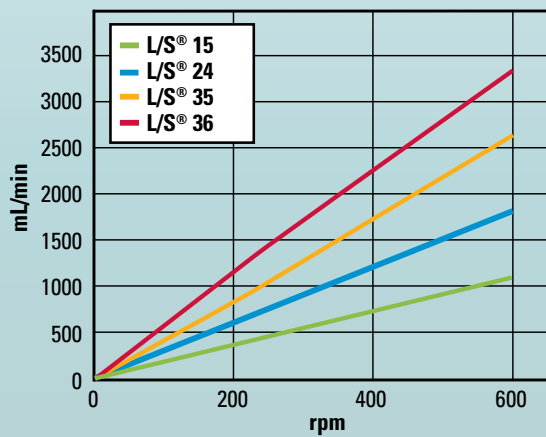


CATALOG NUMBER	MK-77713-00	MK-77713-01	MK-77713-02
Includes Pump Head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
Max number of pump heads	2		1
PERFORMANCE			
Flow Capacity (ml/min)	0.6 to 1650	17 to 2075	18 to 2450
RPM	10 to 430		
Max torque	20 kg-cm (270 oz-in)		
Reversible	No (CCW from front)		
ELECTRICAL SPECIFICATIONS			
Voltage/Frequency VAC (Hz) – Phase	115 (60) – 1f		
Current	4.7 A		
Motor Type	Class 1, Div. 1, Grp. D		
Motor Size	190 W (1/4 hp)		
Motor/speed control type	Mechanical (zero-max) with lever		
PHYSICAL SPECIFICATIONS			
IP rating	IP55		
Agency approvals	UL, cUL, CE		
Operating temperature	1 to 40°C (34 to 104°F)		
Storage Temperature	–45 to 60°C (–49 to 140°F)		
Dimensions (L x W X H)	56 cm x 34.6 cm x 22.3 cm (22 1/16" x 13 5/8" x 8 3/4")		
Shipping Weight	27.4 kg (61 lb)		28.2 kg (62 lb)

**Flow Curves**  
**L/S Easy-Load® II Pump Head**



**Flow Curves**  
**L/S® High-Performance Pump Head**



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# MASTERFLEX<sup>®</sup>

## L/S<sup>®</sup> PROCESS DIGITAL PUMP SYSTEMS

TRANSFER, DISPENSE, AND METER IN LAB,  
PROCESS AND WASHDOWN ENVIRONMENTS



### FEATURES AND BENEFITS

- IP66 and NEMA 4X rated. Sealed 316 stainless steel housing and sealed keypad are protected from dust, water, and chemicals in the wash down environment—simply hose down to clean.
- Flow rate: 0.006 to 3400 mL/min (0.0001 to 54 GPH) with L/S tubing. Flow rate depends on drive rpm and tubing size.
- Graphical LCD display shows six different parameters: motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy number.
- Brushless, maintenance-free motor with improved 0.1% speed control accuracy between cycles for convenient, automated dispensing.
- Dispense by: volume—in milliliters (0.001 to 99,999), liters, and gallons; copy—1 to 99,999 dispense cycles. Set time interval (SEC) between dispense cycles from 1 to 99,999 seconds.
- Remote control capabilities via fluid-resistant input/output connector on back of drive:
  - Speed control input: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V.
  - Pumping direction: requires open collector or contact closure;
  - Start/stop/purge: requires open collector or contact closure;
  - Tachometer output: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V, or open collector



## Flow Ranges, mL/min\*

	Precision Pump Tubing						High-Performance Precision Pump Tubing*			
RPM	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®, Easy-Load® II, Easy-Load® 3						Multichannel†, Standard*, Easy-Load®, Easy-Load® II, Easy-Load® 3			
	Cartridge, Multichannel			Cartridge			Easy-Load			
0.1 to 600	0.6 to 36 <i>0.002 to 13.7</i>	0.021 to 130 <i>0.008 to 49.4</i>	0.08 to 480 <i>0.030 to 182.6</i>	0.17 to 1000 <i>0.065 to 380.4</i>	0.28 to 1700 <i>0.107 to 646.7</i>	0.38 to 2300 <i>0.145 to 875.0</i>	0.17 to 1000 (0.18 to 1100) <i>0.065 to 38</i> (0.068 to 418)	0.28 to 1700 (0.30 to 1800) <i>0.11 to 647</i> (0.11 to 685)	0.38 to 2300 (0.43 to 2600) <i>0.14 to 875</i> (0.16 to 989)	0.48 to 2900 (0.57 to 3400) <i>0.18 to 1103</i> (0.22 to 1293)

\* Values in parentheses are with high-performance pump heads †Multichannel head is not available for P/S 36. Multichannel and Cartridge heads are available for microbore tubing. Values in italics are gallons per day.

CATALOG NUMBER			
	MK-77712-55	MK-77712-56	MK-77712-57
Includes pump head	Easy-Load® II (thin wall)	Easy-Load® II (thick wall)	High-Performance (thick wall)
PERFORMANCE			
Max number of pump heads	2	2	1
RPM	0.1 to 600		
External Control - Input	0 to 20 mA, 0 to 10 V; Scalable START/STOP, DIR. (CW/CC), PRIME via contact closure Remote / Local Enable Contact Secondary Speed Control 0-20mA or 4-20mA Auxiliary Contact (Limit Switch)		
External Control - Output	4 to 20 mA, or 0 to 10 V		
Motor running logic	N.O. or N.C. (1A @ 24 V)		
Tachometer output	5 V, TTL pulse		
Power supply output	24 V, 150 mA		
ELECTRICAL SPECIFICATIONS			
Voltage (50/60 Hz)	115/230 V AC (auto selected)		
Motor Type	Brushless continuous duty, TENV*, DC, permanent lubricated bearings		
Control type	PWM (Pulse Width Modulated)		
Speed regulation (Repeatability)	±0.1%; ±0.1 rpm @ 600 rpm; %; ±0.21 rpm @ 100 rpm		
PHYSICAL SPECIFICATIONS			
Housing materials	Electropolished, 316 Stainless steel		
IP rating	IP66 and NEMA 4X		
Agency approvals	ETL, cETL, CE, RoHS		
Operating temperature	0 to 40°C (32 to 104°F)		
Storage Temperature	-25 to 65°C (-13 to 149°F)		
Controller dimensions (L × W × H)	13.0 × 8 × 8 in.		
Shipping Weight (Drive Only)	30 lbs.		

\*Totally enclosed, non-ventilating

For more information:

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