

MASTERFLEX[®] & ISMATEC[®]

— Pumps and Tubing —



More pump control than ever!

Masterflex drives with networking & communication – see pages 4–5

Fluid transfer from research to process



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Maintain accurate flow rates without affecting working fluid

- Noninvasive design eliminates contact with working fluid—ideal for applications with strict hygienic standards
- Continuously monitor peristaltic pump flow rates and send data directly to your computer
- Ready to use out of the box—calibrated for use with Masterflex L/S® and I/P® platinum-cured silicone tubing



Ultrasonic Flow Sensors see page 16

All-new design offers improved ergonomics

- Flow rates up to 3400 mL/min; pressure up to 150 psi (10.3 bar)
- Faster tubing changes—under 15 seconds
- Auto occlusion optimization, simply close the pump head and start your run
- Models available with open-head interlock sensor



L/S® High-Performance Pump Head see page 20

Ensure maximum protection of live cells and shear-sensitive fluids

- Convex-roller design is gentler on live cells and shear-sensitive fluids
- Large-diameter rotor delivers higher flow rates at lower speeds



L/S® Cytoflow™ Pump Heads see page 21

Make safe, SAFER

- Drive automatically shuts off when pump head is opened
- Pair an open-head interlock sensor equipped drive with a compatible pump head for a complete solution



Open-Head Sensor Technology . . . see page 12

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Masterflex® Drives with Advanced Networking and Communication

Faster, less expensive automation integration—no gateways or adapters needed

- Native Ethernet/IP or Profibus communication—no additional hardware or firmware required
- Includes .EDS or GSD standard text files for upload
- Bluetooth Low Energy (BLE) connectivity and iOS-based mobile app permit local pump monitoring and control
- Cloud-based remote pump monitoring capability provides operational status and alerts
- Compatible with most of today's advanced automation control systems, such as Allen-Bradley®, Siemens®, Emerson®, and Honeywell®

Take control of your process with Masterflex L/S® and I/P® drives with advanced networking and communication. All units are equipped with Masterflex open-head sensor technology, can accept the full range of Masterflex L/S or I/P pump heads, and use tubing from the broadest selection of performance materials in the industry. The drives are ideal for industrial networking, bioprocessing, plant automation, or water/wastewater applications.

Ask about upgrade incentives for your currently installed pumps—contact our Applications Specialists for details at **1-800-323-4340**

A. L/S Network-Compatible Digital Drives

- Graphical LCD shows four operating modes: continuous run, time dispense, copy dispense, and volume dispense. View pump performance continually
- Antidrip function ensures dispensing accuracy
- Interface drive to your PC via RJ45 or USB connector
- Open-head sensor stops the drive motor when pump head is opened—pair with an open-head sensor equipped pump head



B. L/S Network-Compatible Digital Process Drives

- IP66 and NEMA 4X rated sealed housing and keypad are protected from dust and water in the washdown environment—simply hose down to clean
- Graphical LCD shows six different parameters: motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy numbers
- Dispense by: volume, copy, or time with programmable delay interval
- Open-head sensor stops the drive motor when pump head is opened—pair with an open-head sensor equipped pump head



C. I/P Network-Compatible Digital Process Drives

- IP66 and NEMA 4X rated sealed housing and keypad are protected from dust and water in the washdown environment—simply hose down to clean
- Graphical LCD shows four operating modes: continuous run, timed dispense, copy dispense, and volume dispense
- Dispense by volume, copy, or time with programmable delay intervals
- Open-head sensor stops the drive motor when pump head is opened—pair with an open-head sensor equipped pump head



rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Power (50/60 Hz)	With Ethernet/IP		With Profibus	
							Catalog number	Price	Catalog number	Price
A. L/S network compatible digital drive										
0.1 to 600	±0.1%	Yes	2	1/10 hp (75 W)	IP33	90 to 260 VAC	PY-07551-40		PY-07551-42	
B. L/S network compatible digital process drive with 316 stainless steel housing										
0.1 to 600	±0.1%	Yes	2	1/10 hp (75 W)	IP66	90 to 260 VAC	PY-07575-50		PY-07575-52	
B. L/S network compatible digital process drive with powder-coat steel housing										
0.1 to 600	±0.1%	Yes	2	1/10 hp (75 W)	IP66	90 to 260 VAC	PY-07575-60		PY-07575-62	
C. I/P network compatible digital process drive with 316 stainless steel housing										
0.1 to 650	±0.1%	Yes	2	3/8 hp (280 W)	IP66	90 to 260 VAC	PY-77420-30		PY-77420-32	
C. I/P network compatible digital process drive with powder-coat steel housing										
0.1 to 650	±0.1%	Yes	2	3/8 hp (280 W)	IP66	90 to 260 VAC	PY-77420-40		PY-77420-42	

L/S® Computer-Compatible Digital Drives

Automate your process by interfacing drives with a computer

- Flow rate: 0.001 to 3400 mL/min with L/S tubing
- Interface drive to your PC via DB9 serial or USB connector
- Graphical LCD shows four operating modes: continuous run, time dispense, copy dispense, and volume dispense. View pump performance continually
- Antidrip function ensures dispensing accuracy
- Remote control capabilities via DB25 female connector on drive
- Models equipped with open-head sensor stop drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see pages 19–20)

FEATURES

- ✓ Flow rates: 0.001 to 3400 mL/min
- ✓ Variable speed from 0.02 to 600 rpm
- ✓ Programmable, reversible motor accepts up to four pump heads
- ✓ Remote functionality



Drive 07551-20 shown with L/S Easy-Load II pump head 77200-62

Drives offer analog remote control options and simple programming—ideal for automated process applications. Precise PWM speed control ($\pm 0.1\%$) maximizes accuracy and efficiency while the brushless motor gives you quiet, maintenance-free reliability.

What's included: 6-ft (1.8-m) line cord with IEC 320/EE22 socket. Shipped with country-specific plug/cord set; please specify ultimate destination when ordering.

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rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
							VAC	Amps		
0.1 to 600	$\pm 0.1\%$ (0.1 rpm at 600 rpm; 0.01 rpm at 100 rpm)	No	2	1/10 hp (75 W)	IP33	10" x 8 1/2" x 8 1/2" (25.4 x 21.6 x 21.6 cm)	90 to 260 VAC	2.2 at 115 VAC, 1.1 at 230 VAC	PY-07551-20	
0.02 to 100		Yes	4						PY-07551-28	
		No							PY-07551-30	
		Yes							PY-07551-38	

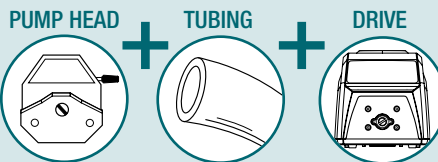
Accessories

PY-07523-92 Foot switch, momentary start/stop; 6-ft (1.8-m) cable
PY-07523-94 DB25 male connector. Use to create your own cable
PY-07523-95 Cable assembly, DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends for remote control

PY-07523-98 Tilt bail, use to securely elevate front of drive
PY-07523-97 Handheld remote controller, DB9; for on/off control; route tubing through handle for filling and dispensing applications
PY-17050-01 NIST-traceable calibration with data for peristaltic pump drive

Choose a convenient Complete System

One catalog number includes all 3!



Wait!

There's More...

See pages 19–25 for L/S pump heads and pages 34–35 for Masterflex tubing.

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.08 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Computer-compatible drive 07551-20 0.1 to 600 rpm	115/230 VAC, 50/60 Hz	PY-77924-55	
	0.28 to 1700 mL/min	Easy-Load II 77200-62	C-Flex® ULTRA L/S 24 tubing 06434-24 10 ft (3 m)			PY-77924-65	

L/S® Digital Console Process Drives

Transfer, dispense, and meter in lab, process and washdown environments

- IP66 and NEMA 4X rated. Sealed housing and sealed keypad are protected from dust, water, and chemicals in the washdown environment—simply hose down to clean.
- Flow rate: 0.001 to 3400 mL/min with L/S tubing depending on drive rpm and tubing size
- Graphical LCD shows six different parameters: motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy number.
- Brushless, maintenance-free motor with ±0.1% speed control accuracy and a 6000 to 1 turndown ratio
- Dispense by: volume—volume, copy, or time with programmable delay interval.
- Remote control capabilities via waterproof connection
- Models equipped with open-head sensor stop drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see pages 19–20)

FEATURES

- ✓ Flow rates: 0.001 to 3400 mL/min
- ✓ IP66 and NEMA 4X rated
- ✓ Programmable, reversible motor accepts two or four pump heads and offers remote functionality



Drive 07575-38 shown with L/S Easy-Load II pump head 77200-32

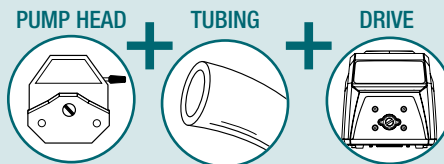
What's included: 6-ft (1.8-m) line cord—features IEC 320/CEE 22 connector coupler; watertight cord connection. Please specify destination country when ordering; drive is shipped with country-specific plug/cord set.



rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power	Catalog number	Price
Digital process drive with 316 stainless steel housing									
0.1 to 600	±0.1%	No	2	1/10 hp (75 W)	IP66	12" x 9" x 9 5/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07575-30	
0.02 to 100		Yes						4	PY-07575-38
Digital process drive with powder-coat steel housing									
0.1 to 600	±0.1%	No	2	1/10 hp (75 W)	IP66	12" x 9" x 9 5/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07575-40	
0.02 to 100		Yes						4	PY-07575-48
		No						PY-07575-35	
		No						PY-07575-45	

Accessories

- [PY-07575-84](#) Washdown foot switch, momentary start/stop; 6-ft (1.8-m) cable
- [PY-07575-80](#) Cable assembly for remote control; 31-pin round connector and 25-ft (7.9-m) cable with stripped wire ends
- [PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.28 to 1700 mL/min	Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Digital console process drive with 316 SS housing 07575-30 0.1 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77975-25	
	0.28 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Digital console process drive with powder-coat steel housing 07575-40 0.1 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77975-45	

L/S® Variable-Speed Digital Drives Versatile, worry-free operation

- Brushless, maintenance-free motor provides $\pm 0.1\%$ speed control accuracy with 6000:1 turndown ratio
- Bright graphical LCD offers easy programming, four operating modes, and seven languages
- Get more accurate dispensing with preprogrammed calibration
- Drives accept all L/S pump heads for more pumping versatility
- Models equipped with open-head sensor stop drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see pages 19–20)
- Operate remotely via DB25 female connector

FEATURES

- ✓ Flow rates: 0.001 to 3400 mL/min
- ✓ Variable speed from 0.02 to 600 rpm
- ✓ Programmable, reversible motor accepts up to four pump heads
- ✓ Ensure dispensing accuracy with antidrip function
- ✓ Hands-free dispensing via time interval dispense cycles

Four operating modes for more functionality: continuous run, time dispense, copy dispense, and volume dispense



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rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power	Catalog number	Price
0.1 to 600	$\pm 0.1\%$ (0.1 rpm at 600 rpm; 0.01 rpm at 100 rpm)	No	2	1/10 hp (75 W)	IP33	10" x 8.5" x 8.5" (25.4 x 21.6 x 21.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07522-20	
		Yes						PY-07522-28	
0.02 to 100	$\pm 0.1\%$ (0.1 rpm at 600 rpm; 0.01 rpm at 100 rpm)	No	4	1/10 hp (75 W)	IP33	10" x 8.5" x 8.5" (25.4 x 21.6 x 21.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07522-30	
		Yes						PY-07522-38	

[PY-07523-92](#) Foot switch, momentary start/stop; 6-ft (1.8-m) cable

[PY-07523-94](#) DB25 male connector. Use to create your own cable

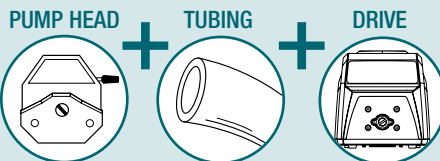
[PY-07523-95](#) Cable assembly for remote control; DB25 male connector and 25 ft (7.9 m) cable with stripped wire ends

[PY-07523-97](#) Handheld remote controller; route tubing through handle for dispensing into containers

[PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive

Choose a convenient Complete System

One catalog number includes all 3!



System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.08 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Digital drive 07522-20 0.1 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77921-65	
	0.28 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)			PY-77921-75	

Application Solution



Challenge

A manufacturer of safety glass and laminated glass was looking for a pump that could dispense coating resins for plate glass to provide protection and build shatter resistance. The resins used in the process could be polyurethane, epoxy, or other coatings, and in the past the resins ate through dispensing tubing. As a result, the manufacturer needed to find a pump system with tubing that had the appropriate chemical compatibility. Likewise, the pump system needed to offer quick maintenance for tube changes.

Solution

The customer tested silicone tubing for chemical resistance and found it to be suitable for the resins being dispensed. The customer then chose the L/S variable-speed digital drive 07522-20 for its precision pumping and speed control. The manufacturer also selected an Easy-Load II pump head for quick maintenance and reduced downtime during tubing changes.

L/S® Digital Modular Dispensing Drives

Three dispensing modes and precision low-maintenance motor

- Graphical LCD shows four operating modes: continuous run, timed dispense, copy dispense, volume dispense
- Dispense by mL—volume in mL of each dispense, 0.001 to 9999 mL; Copy—1 to 9999 dispense cycles; or SEC—time interval between each dispense cycle (1 to 9999 secs)
- Antidrip function ensures dispense accuracy
- Brushless, maintenance-free motor offers ±0.1% speed control accuracy and a 6000 to 1 turndown ratio
- Remote control capabilities: speed, direction, start/stop/prime, and tach output

What's included: 6-ft (1.8-m) cable to connect drive and controller and 6-ft (1.8-m) line cord with IEC 320/CEE22 socket. Shipped with country-specific plug/cord set; please specify destination when ordering.

A. Modular Drive with Benchtop Controller

- Stackable, splash-resistant ABS plastic controller housing is IP33 rated; drive housing is epoxy finished steel, IP33 rated
- Remote control via a DB25 female connector on back of controller

B. Washdown Modular Drive with Wall-Mount Controller

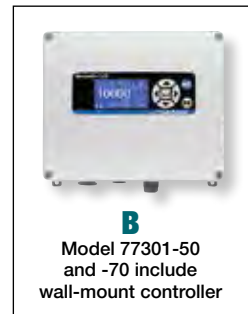
- Wall-mount controller housing is powder-coated aluminum, IP66 / NEMA4X rated for washdown; powder-coated steel drive housing is IP66 / NEMA4X rated for washdown
- Remote control via weather-resistant connection on controller



A

FEATURES

- ✓ Flow rates: 0.001 to 3400 mL/min depending on drive rpm and tubing size
- ✓ Variable speed
- ✓ Programmable, reversible motor accepts up to two pump heads and offers remote functionality



B

Model 77301-50 and -70 include wall-mount controller



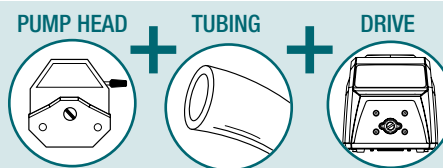
rpm	Speed control	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
A. Digital modular drive with benchtop controller									
0.1 to 600	±0.1%	2	1/10 hp (75 W)	IP33	Controller: 10 1/2" x 8 1/4" x 5" (26.7 x 21 x 12.7 cm) Drive: 10 1/2" x 3 13/16" x 4 5/8" (26.7 x 9.7 x 11.7 cm)	90 to 260	2.2 at 115 VAC, 1.1 at 230 VAC	PY-77301-40	
0.02 to 100		4						PY-77301-60	
B. Digital washdown modular drive with washdown, wall-mount controller									
0.1 to 600	±0.1%	2	1/10 hp (75 W)	IP66	Controller: 9" x 11 3/4" x 4 1/2" (23 x 30 x 11.4 cm) Drive: 15 1/16" x 7" x 6" (39.5 x 17.8 x 15.2 cm)	90 to 260	2.2 at 115 VAC, 1.1 at 230 VAC	PY-77301-50	
0.02 to 100		4						PY-77301-70	

PY-07523-95 Cable assembly, for benchtop modular drives 77301-40 and -60; DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends for remote control

PY-77301-82 Extension cable, 9 ft (2.7 m) extends distance between motor and controller

PY-07575-80 Remote control cable for washdown modular drives 77301-50 and -70; wire to controller/PLC; 25-ft (8.3-m) length

PY-17050-01 NIST-traceable calibration for peristaltic pump drive



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.28 to 1700 mL/min	Easy-Load® II 77200-62	C-Flex® ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Digital modular drive 77301-40 0.1 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77923-80	
	0.28 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Digital washdown modular drive 77301-50 0.1 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77923-90	

L/S® Precision Variable-Speed Console Drives

Don't lose control of your metering applications—digital display gives you repeatable control

- Accurate and repeatable settings with 3-digit LED display of rpm
- Pump fluid in either direction with reversible motor—perfect for purging tubing
- Save space and increase productivity by stacking 2 or 4 pump heads on the same drive to create a multichannel pump system
- Maximize processes in a minimal footprint by stacking splash-resistant, IP33-rated drives
- Two ways to control speed, direction, and start/stop—use either the membrane keypad or remote control capabilities
- Customize for your application—drives accept nine pump head types: Standard, Easy-Load®, Easy-Load® II, Easy-Load® 3, Multichannel, High-Performance, Cartridge, PTFE-Tubing, and PTFE-Diaphragm

FEATURES

- ✓ Flow rates: 0.06 to 3400 mL/min
- ✓ Variable speed from 1 to 600 rpm
- ✓ Reversible motor accepts up to four pump heads



Stack up to 4 heads to maximize productivity in less space

Flow Rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance pump head—see page 20)

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	
	Standard [†] , Easy-Load, Easy-Load II, Easy-Load 3						Multichannel [‡] , Standard [†] , Easy-Load II, Easy-Load 3, High-Performance				
	Cartridge, Multichannel			Cartridge			Easy-Load				
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)	

[†]The Standard pump head is not available for L/S 25. [‡]Multichannel head is not available for L/S 36. Multichannel and Cartridge heads are available for microbore tubing.

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rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
6 to 600	±0.25% (1 rpm at 600 rpm; 0.1 rpm at 100 rpm)	2	1/40 hp (75 W)	IP33	10" x 8.5" x 8.5" (25.4 x 21.6 x 21.6 cm)	90 to 260	1.8 at 115 VAC, 1.2 at 230 VAC	PY-07528-10	
3 to 300		2						PY-07528-20	
1 to 100		4						PY-07528-30	

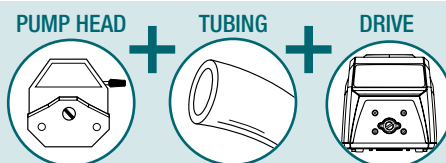
Accessories

- [PY-07595-45 Connector](#), DB9 male. Use for 4 to 20 mA remote control
- [PY-07595-47 Cable assembly](#), DB9 male connector and 25-ft (7.9-m) cable with stripped wire terminal ends. Use for remote control
- [PY-77595-35 Foot switch](#), DB9 male

- [PY-07528-80 Handheld remote controller](#); for remote control of start/stop, route tubing through handle for dispensing into containers
- [PY-17050-01 NIST-traceable calibration](#) with data for peristaltic pump drive

Choose a convenient Complete System

One catalog number includes all 3!



System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	4.8 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Precision console drive 07528-10 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77916-10	
	17 to 1700 mL/min	Easy-Load II 77200-62	C-Flex® ULTRA L/S 24 tubing 06434-24 10 ft (3 m)			PY-77916-20	

L/S® Precision Console Process Drives

Stand up to process and washdown applications—simply hose down to clean

NEW

- IP66 and NEMA 4X rated; sealed housing and sealed membrane keypad
- Available with either a 316 SS or a powder-coat steel housing
- Three-digit LED display shows motor rpm—confirm speed setting at a glance
- Easy up-front control of speed, direction, and start/stop
- Open-head sensor stops drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see pages 19–20)
- Pump fluid in either direction with reversible motor—perfect for purging tubing
- Remote control capabilities via a watertight connector on back of drive

FEATURES

- ✓ Flow rates: 0.06 to 3400 mL/min
- ✓ Variable speed from 1 to 600 rpm
- ✓ IP66 and NEMA 4X rated
- ✓ Stack up to four pump heads for increased flow rates
- ✓ Remote control



Drive 07528-40 shown with L/S Easy-Load II pump head 77200-32

Accurate console drives have powerful motors, speed display, and ±0.25% speed control for precise flow regulation—ideal for metering applications. Separate speed and power (on/off) control lets you maintain speed setting while turning pump on/off. Remote speed control requires cable assembly 77300-32.

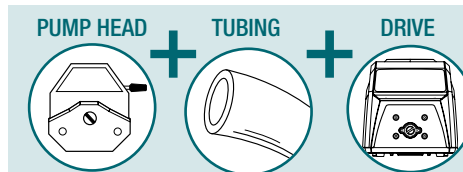
What's included: 6-ft (1.8-m) line cord with IEC 320/CEE22 socket. Shipped with country-specific plug/cord set; please specify ultimate destination when ordering.



rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power	Catalog number	Price
Precision process drives with 316 stainless steel housing									
6 to 600	±0.25%	Yes	2	1/10 hp (75 W)	IP66	12" x 9" x 9 5/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07528-40	
1 to 100			4						
Precision process drives with powder-coat steel housing									
6 to 600	±0.25%	Yes	2	1/10 hp (75 W)	IP66	12" x 9" x 9 5/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	PY-07528-50	
1 to 100			4						

[PY-77300-32](#) Cable assembly, for precision process drives; 18-pin round connector and 25-ft (7.9 m) cable with stripped wire ends

[PY-17050-01](#) NIST-traceable calibration for peristaltic pump drive



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	4.8 to 480 mL/min	Easy-Load® II (open-head sensor) 77200-30	C-Flex® ULTRA L/S 16 tubing 06434-16, 10 ft (3 m)	Drive with 316 SS housing 07528-40 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77916-40	
	17 to 1700 mL/min	Easy-Load II (open-head sensor) 77200-32	C-Flex ULTRA L/S 24 tubing 06434-24, 10 ft (3 m)			PY-77916-42	
	4.8 to 480 mL/min	Easy-Load II (open-head sensor) 77200-30	C-Flex ULTRA L/S 16 tubing 06434-16, 10 ft (3 m)	Drive with powder-coat steel housing 07528-50 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77916-50	
	17 to 1700 mL/min	Easy-Load II (open-head sensor) 77200-32	C-Flex ULTRA L/S 24 tubing 06434-24, 10 ft (3 m)			PY-77916-52	

Masterflex® Drives Enhance Worker Protection

You take your safety seriously, and so do we.

You review every step of the process to take care of your staff and to benefit your business. We've added a new option to our Masterflex product line to help enhance protection in your workplace.

Open-Head Interlock Sensor Technology

Available integrated into select L/S and I/P drives or as a retrofit system, the open-head interlock sensors add an extra level of protection for operators who maintain pumps. When paired with an open-head sensor equipped pump head, the drive automatically shuts down when the pump head is opened, eliminating exposure to the moving rollers connected to the drive shaft.

Read the article *How Masterflex Pumps with Open Head Sensors Enhance Worker Protection* on our web site at <https://www.coleparmer.com/tech-article/enhanced-worker-safety-open-head-interlock-sensor>

Masterflex products with integrated open-head sensors

L/S Computer-Compatible Digital Drives [page 6](#)

L/S Digital Console Process Drives [page 7](#)

L/S Variable-Speed Digital Drives [page 8](#)

L/S Precision Console Process Drives [page 11](#)

L/S Easy-Load II Pump Heads [page 19](#)

L/S High-Performance Pump Heads [page 20](#)

I/P Digital Console Process Drives [page 27](#)

I/P Easy-Load Pump Head [page 30](#)



Upgrade your Existing Drives

Use the retrofit system controller to incorporate open-head sensors into pump systems you already have. The system includes a control box that easily connects to your drive and an open-head sensor equipped pump head. If pump head is opened during operation, the interlock control box instantly shuts down the drive.

The retrofit system is compatible with select L/S and I/P drives. Controller 77097-00 includes power cables and a single extension cable to connect one sensor-equipped pump head. Order optional extension cable 77097-20 to connect a second pump head.

[PY-77097-00](#) Open-head interlock sensor control box

[PY-77097-02](#) Power cable for hard-wired 115 VAC drives

[PY-77097-20](#) Optional extension cable, 6 ft (1.8 m)



L/S® Precision Variable-Speed Modular Drives

Place where convenient—ideal for limited spaces, hoods, or isolation chambers

- Three-digit LED display shows motor rpm—confirm speed setting at a glance
- Remote control capabilities: speed, direction, and start/stop
- ±0.25% speed control for precise flow regulation—ideal for metering applications

A. Modular Drives with Benchtop Controller

- Splash-resistant ABS plastic controller housing is IP33 rated; drive housing is epoxy finished steel, IP33 rated
- Remote control capabilities via a DB9 female connector on back of controller

B. Washdown Modular Drives with Wall-Mount Controller

- Wall-mount controller housing is powder-coated aluminum, IP66 / NEMA 4X rated for washdown; powder-coated steel drive housing is IP66 / NEMA 4X rated for washdown
- Remote control capabilities via weather-resistant connection on controller



FEATURES

- ✓ Flow rates: 0.06 to 3400 mL/min
- ✓ Easy up-front control of speed, direction, and start/stop
- ✓ Reversible motor—purge tubing before or after pumping; pump fluid in either direction



B
Models 07557-60 and -70 include wall-mount controller



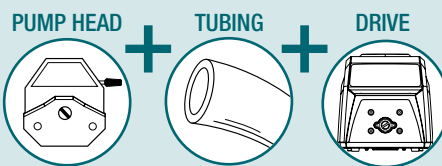
rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
A. Precision modular drives with benchtop controller									
6 to 600	±0.25% (1 rpm at 600 rpm;	2	1/10 hp (75 W)	IP33	Controller: 10½" x 8¼" x 5" Drive: 10¾" x 4¾" x 4½"	90 to 260	2.2 at 115 VAC, 1.1 at 230 VAC	PY-07557-00	PY-07557-10
1 to 100	0.1 rpm at 100 rpm)	4							
B. Precision washdown modular drives with washdown wall-mount controller									
6 to 600	±0.25% (1 rpm at 600 rpm;	2	1/10 hp (75 W)	IP66	Controller: 9" x 11¾" x 4½" Drive: 15½" x 7" x 6"	90 to 260	2.2 at 115 VAC, 1.1 at 230 VAC	PY-07557-60	PY-07557-70
1 to 100	0.1 rpm at 100 rpm)	4							

PY-07557-51 Extension cable, 9 ft (2.7 m); extend distance between motor and controller

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

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

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



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	4.8 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Modular drive 07557-00 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77913-60	
	17 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Modular drive 07557-00 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77913-70	
	17 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Modular drive 07557-60 6 to 600 rpm	90 to 260 VAC, 50/60 Hz	PY-77913-80	

L/S® Variable-Speed Economy Modular Drives

Versatile with a wide flow range and simple controls

- Separate motor and controller are connected via a 6-ft (1.9 m) cable—place components where convenient or where space allows
- Single-turn speed control and on/off switch with green power indicator—maintain speed setting while turning pump on and off
- The 1/10-hp reversible motor has soft start and back EMF for ±2% speed control
- Painted steel housing is IP33 rated for protection from vertically falling water
- 115 VAC models are ETL and cETL listed; 230 VAC models are CE marked in compliance with EU standards

A perfect upgrade from a fixed-speed drive, these variable-speed drives offer a wider rpm range, ±2% speed regulation, and ETL and CE listings. For added versatility, drives accept all L/S pump heads.

What's included: 6-ft (1.8-m) line cord—115 VAC: US standard plug; 230 VAC: IEC 320/CEE22 socket. Please specify country of destination when ordering.



NEW

FEATURES

- ✓ Flow rates: 0.06 to 3400 mL/min
- ✓ Variable speed—1 to 100 or 6 to 600 rpm
- ✓ Convenient modular design

Flow Rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance pump head—see page 20)

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
	Standard†, Easy-Load, Easy-Load II, Easy-Load 3						Multichannel‡, Standard†, Easy-Load II, Easy-Load 3, High-Performance			
	Cartridge, Multichannel			Cartridge			Easy-Load			
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)

†The Standard pump head is not available for L/S 25.

‡Multichannel head is not available for L/S 36. Multichannel and Cartridge heads are available for microbore tubing.

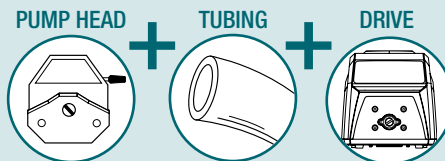
ISO 9001:2008
CERTIFIED SUPPLIER



rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
6 to 600	±2%	2	1/10 hp (75 W)	Controller: IP33 Motor: IP21	Controller: 8" x 6.4" x 3.4" (20.4 x 16.4 x 8.7 cm) Motor: 7.8" x 3.8" x 4.5" (19.8 x 9.7 x 11.5 cm)	90 to 130	2.2 at 115 VAC	PY-07559-00	
						190 to 260	1.2 at 230 VAC	PY-07559-05	
1 to 100	±2%	4	1/10 hp (75 W)	Controller: IP33 Motor: IP21	Controller: 8" x 6.4" x 3.4" (20.4 x 16.4 x 8.7 cm) Motor: 7.8" x 3.8" x 4.5" (19.8 x 9.7 x 11.5 cm)	90 to 130	2.2 at 115 VAC	PY-07559-10	
						190 to 260	1.2 at 230 VAC	PY-07559-15	

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

Choose a convenient Complete System
One catalog number includes all 3!



System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	4.8 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Modular drive 07559-00 6 to 600 rpm	115 VAC, 50/60 Hz	PY-77913-02	
				Modular drive 07559-05 6 to 600 rpm	230 VAC, 50/60 Hz	PY-77913-07	
	17 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Modular drive 07559-00 6 to 600 rpm	115 VAC, 50/60 Hz	PY-77913-12	
				Modular drive 07559-05 6 to 600 rpm	230 VAC, 50/60 Hz	PY-77913-17	

L/S® Variable-Speed Economy Console Drives

Economical variable-speed drive with a wide flow range

- Pump head flow rate: 0.42 to 2900 mL/min; cartridge head flow rate: 0.0035 to 1700 mL/min
- Separate single-turn speed control and on/off switch with green power indicator. Maintain speed setting while turning on/off
- The 1/20-hp unidirectional motor has soft start and back EMF for ±5% speed control. Smooth operation and long service life.
- 115 VAC models: UL and cUL listed; 230 VAC models: CE compliant

Drives accept nine different pump head types: Standard, Easy-Load®, Easy-Load II, Easy-Load 3, Multichannel, High-Performance, Cartridge, PTFE-tubing, and PTFE-diaphragm. Drives 07554-90 and -95 are not recommended for use with the PTFE-tubing and PTFE-diaphragm pump heads.

What's included: 6-ft (1.8-m) line cord—115 VAC: US standard plug; 230 VAC: IEC 320/CEE22 socket. Please specify country of destination when ordering.

FEATURES

- ✓ Flow rates: 0.0035 to 2900 mL/min
- ✓ Variable speed from 7 to 600 rpm
- ✓ Low-flow metering or general fluid transfer



Flow Rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance pump head—see page 20)

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
	Standard†, Easy-Load®, Easy-Load® II, Easy-Load® 3						Multichannel‡, Standard, Easy-Load II, Easy-Load 3, High-Performance			
	Cartridge, Multichannel			Cartridge			Easy-Load			
20 to 600	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
7 to 200	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)

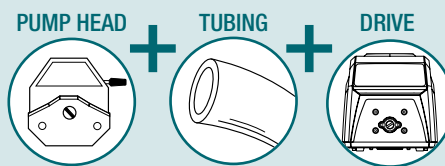
†The Standard pump head is not available for L/S 25.

‡Multichannel head is not available for L/S 36. Multichannel and Cartridge heads are available for microbore tubing.



rpm	Speed control	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H) (22.9 x 18.1 x 13.3 cm)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
20 to 600	±5%	1	1/20 hp (37 W)	IP22		90 to 130	1.5	PY-07554-90	
						180 to 260	0.8	PY-07554-95	
7 to 200		2				90 to 130	1.5	PY-07554-80	
						180 to 260	0.8	PY-07554-85	

[PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	16 to 480 mL/min	Easy-Load® 3 77800-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Console drive 07554-90 20 to 600 rpm	115 VAC, 50/60 Hz	PY-77910-30	
				Console drive 07554-95 20 to 600 rpm	230 VAC, 50/60 Hz	PY-77910-35	
	56 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Console drive 07554-90 20 to 600 rpm	115 VAC, 50/60 Hz	PY-77910-20	
				Console drive 07554-95 20 to 600 rpm	230 VAC, 50/60 Hz	PY-77910-25	

L/S® High-Pressure Pumps Pump at pressures up to 125 psi (8.5 bar)

- Three-digit LED display shows motor rpm—confirm speed setting at a glance
- High-performance pump head offers automatic occlusion—optimized when pump head is closed and latched—load tubing in 15 seconds or less
- Pump at pressures up to 125 psi (8.5 bar) with included L/S 16HP tubing—ideal for feed, filtration, and metering applications
- Models equipped with open-head sensor stop the drive motor when pump head is opened

NEW



77914-25,
-27

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.9 to 90 mL/min	High-Performance 77252-72	PharMed BPT L/S 16HP high- pressure tubing 05664-16 8 ft (2.4 m)	Precision console drive with ABS plastic housing 07528-30 1 to 100 rpm	90 to 260 VAC, 50/60 Hz	PY-77914-20	
	0.9 to 90 mL/min	High-Performance (open-head sensor) 77252-62		Precision process drive with powder-coat steel housing 07528-55 1 to 100 rpm		PY-77914-25	
	0.9 to 90 mL/min			Precision process drive with stainless steel housing 07528-45 1 to 100 rpm		PY-77914-27	

Masterflex® Ultrasonic Flow Sensors Maintain accurate flow rates without affecting working fluid

- Noninvasive design eliminates contact with working fluid—ideal for applications with strict hygienic standards
- Provides accurate readings not affected by fluid color, tube color, or electromagnetic properties of liquids
- Continuously monitor peristaltic pump flow rates and send data directly to your computer with optional communications package
- Ready to use out of the box—calibrated for use with Masterflex L/S® and I/P® platinum-cured silicone tubing
- Easily adapt your application settings using optional communications package

Each sensor comes calibrated to national measurement standards for the appropriately sized Masterflex platinum-cured silicone tubing when water is the working fluid and across the full flow range. Adapt for use with other working fluids or Masterflex tubing materials of the same size with the optional communications package. For best accuracy, the sensor should be calibrated for the specific working fluid.

What's included: flow sensor, cable, and calibration certificate.



NEW

Clamp-on sensor design makes setup easy—simply place the tubing in the sensor channel and close the lid.

For Masterflex tubing size	Max flow rate†		Min flow rate		Catalog number	Price
	GPH	mL/min	GPH	mL/min		
Engineered for L/S Precision tubing						
13	0.57	36	0.48	30	PY-33501-13	
14	2.06	130	0.48	30	PY-33501-14	
16	7.61	480	0.48	30	PY-33501-16	
25	15.85	1000	0.48	30	PY-33501-25	
17	26.95	1700	0.48	30	PY-33501-17	
18	36.46	2300	0.48	30	PY-33501-18	
Engineered for L/S High-Performance Precision tubing						
15	14.4	1100	0.48	30	PY-33501-15	
24	28.53	1800	0.48	30	PY-33501-24	
35	41.21	2600	0.48	30	PY-33501-35	
36	53.89	3400	0.48	30	PY-33501-36	
Engineered for I/P Precision tubing						
26	63.4	4000	0.48	30	PY-33501-26	
73	126.8	8000	0.48	30	PY-33501-73	

†Higher flow rates can be measured, the stated maximum flow rate is that of the tubing.

PY-33501-96 Communications package for Masterflex ultrasonic flow sensors. Includes software for data capture and calibration on USB drive and connector cable

Specifications

Accuracy: ±2 to 4% after using calibration software
Output: RS-485, 4 to 20 mA, 0 to 20 kHz, or PNP-NPN
Enclosure rating: IP65



L/S® Digital Miniflex® Pumps

Small footprint, yet delivers accurate flow over a wide range

- Flow range of 0.005 to 381 mL/min (depending on tubing size)
- Tubing calibration function ensures accuracy
- Open-head sensor stops drive when pump head is opened
- Remote control via 25-pin connector on back of drive
- Automatic tubing retention makes tube loading quick and easy

Compact, stackable pump with durable ABS housing is easy to wipe down. The Miniflex pump head features a wide occlusion angle that prevents fluid backflow up to the rated pressure of the tubing. Self-lubricating thermoplastic polyester rollers are low friction and long wearing for smooth operation and long life.

Flow Rates (mL/min) at 0.1 to 300 rpm

Pump model	Precision pump tubing			
	L/S 13	L/S 14	L/S 16	L/S 25
07525-20	0.005 to 14	0.018 to 55	0.061 to 184	0.127 to 381
07525-40	0.005 to 14	0.018 to 55	0.061 to 184	—

Number of channels	rpm	Speed control (repeatability)	Reversible motor	IP rating	Dimensions (L x W x H) (23.9 x 14.0 x 15.7 cm)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
1	0.1 to 300	±0.1%	Yes	IP33		90 to 260	0.34 at 115 VAC, 0.2 at 230 VAC	PY-07525-20	
2								PY-07525-40	

PY-07523-92 Foot switch, momentary start/stop; DB25 male; 6-ft (1.8-m) cable

PY-07523-95 Cable assembly, DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends

NEW



FEATURES

- ✓ Flow rates: 0.005 to 381 mL/min
- ✓ Intuitive icon-driven programming
- ✓ Tubing calibration for accuracy
- ✓ Single- or dual-channel models

Power supplies are:



PY-07523-97 Handheld remote controller, DB25 male, route tubing through handle for dispensing applications; 6-ft (1.8-m) cable

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

L/S® Fixed-Speed Drives

Get consistent, repeatable flow rates

- Stackable drives are ideal for field or lab use
- Lighted power switch on front of drive indicates that pump is running
- Accept five different pump head types: Standard, Easy-Load®, Easy-Load II, Easy-Load 3, and Cartridge

What's included: 6-ft (1.8-m) line cord. 115 VAC models: US standard plug; 230 VAC models: European plug.

Flow Rates in mL/min[†]

rpm	Precision pump tubing					
	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18
	Standard [†] , Easy-Load, Easy-Load II, Easy-Load 3					
	Cartridge [‡]					
1	0.06	0.21	0.8	1.7	2.8	3.8
2	0.12	0.42	1.6	3.4	5.6	7.6
6	0.36	1.3	4.8	10	17	23
12	0.72	2.5	9.6	20	34	46
20	1.2	4.2	16	34	56	76
30	1.8	6.3	24	50	84	110
60	3.6	13	48	100	170	230

rpm	High-Performance Precision pump tubing			
	L/S 15	L/S 24	L/S 35	L/S 36
	Standard, Easy-Load II, Easy-Load 3			
	Easy-Load			
1	1.7	2.8	3.8	4.8
2	3.4	5.6	7.6	9.6
6	10	17	23	29
12	20	34	46	58
20	34	56	76	96
30	50	84	110	140
60	100	170	230	290

[†]Standard pump head is not available for L/S 25. [‡]Cartridge heads are available for microbore tubing. ^{††}Motor rpm and flow rates for the 230 VAC, 50 Hz economy drives are approximately % of values shown.



FEATURES

- ✓ Flow rates: 0.06 to 290 mL/min
- ✓ General, intermittent-duty fluid transfer applications

Drive 07540-01 shown with Easy-Load II pump head 77200-62



rpm	Speed control	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Catalog number	Price
115 VAC/60 Hz models							
1	None ^{††}	2	Sub-fractional (<1/25 hp) ^{†††}	IP22	6" x 5 1/4" x 4 9/8" (15.2 x 13.4 x 11.9 cm)	PY-07540-01	
2						PY-07540-02	
6						PY-07540-06	
12						PY-07540-12	
20						PY-07540-20	
30	1					PY-07540-30	
60						PY-07540-60	
230 VAC/50 Hz models							
1	None ^{††}	2	Sub-fractional (<1/25 hp) ^{†††}	IP22	6" x 5 1/4" x 4 9/8" (15.2 x 13.4 x 11.9 cm)	PY-07542-01	
2						PY-07542-02	
5						PY-07542-06	
10						PY-07542-12	
17						PY-07542-20	
25	1					PY-07542-30	
50						PY-07542-60	

^{††}Drive speed may vary ±15%, subject to fluctuations in line voltage and frequency. ^{†††}Maximum power required is 70 W or less.

Masterflex® Drives Powering Quattroflow™ Pumps Specifically designed to move delicate biological fluids

NEW

- Diaphragms enable soft, gentle pumping through the strokes generated by the eccentric shaft
- No mechanical seal or rotating parts that can fail—only the diaphragm and body come in contact with the fluid

Quattroflow Pumps offer a unique four diaphragm (chamber) design, providing the constant low-pulsation, low-shear pumping needed for your biological fluids. In addition, the quaternary diaphragm design enables risk-free dry-running, self-priming, and a high turn-down ratio. Both the single-use and multiple-use models safely and reliably pump plasma products, proteins, monoclonal antibodies, vaccines, and more.

Single-use pump heads have a disposable wetted chamber constructed of solid polypropylene (PP) that can be replaced as a complete unit. This saves you time and money by eliminating the cleaning validation, sterilization process normally associated with permanent multiple-use systems. You can quickly turn around equipment from one batch to the next, maximizing production operations. Plus, fluid path integrity and sterility is ensured with no chance of cross-batch or cross-product contamination. Come presterilized and double bagged.

Multiple-use pump systems ensure total product containment without abrasion and minimal particle creation. Stainless steel construction handles higher pressure applications including cross-flow filtration and chromatography columns.

Special Masterflex Drives were developed to best take advantage of the operating parameters of the Quattroflow pumps. Drives feature an intuitive interface, remote control functionality, and a brushless, maintenance-free motor with $\pm 0.1\%$ speed control accuracy. The graphical LCD shows six different parameters: motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy number. Dispense by volume or time with a user-defined time interval between cycles.

Plastic-enclosed drive has an IP33 rating for benchtop lab applications and has been combined with the lower flow QF150 series pump head.

Stainless steel drives have IP66 and NEMA 4X ratings and are designed for both the QF150 and QF1200 series. Sealed stainless steel housing and sealed keypad are protected from dust, water, and chemicals in the washdown environment—simply hose down to clean.



Applications

- Cross-flow systems
- Tangential flow filtration
- Chromatography systems
- Reaction dosing
- Virus or sterile filtration
- Buffer mixing systems
- Virus cultures
- Bacterial and viral vaccines
- Cell cultures
- Cell culture supernatants
- Enzyme solutions
- Antibodies
- Virus inactivation

Systems				Replacement pump heads	
Pump head model	Drive type	Catalog number	Price	Catalog number	Price
QF150SU (single use)	ABS plastic, IP33	PY-74000-35		PY-76000-00	
	Stainless steel, IP66 and NEMA 4X	PY-74000-37		PY-76000-00	
QF150S (multiple use)	ABS plastic, IP33	PY-74000-31		PY-76000-06	
	Stainless steel, IP66 and NEMA 4X	PY-74000-33		PY-76000-06	
QF1200SU (single use)	Stainless steel, IP66 and NEMA 4X	PY-74000-47		PY-76000-02	
QF1200S (multiple use)	Stainless steel, IP66 and NEMA 4X	PY-74000-43		PY-76000-08	

Specifications for Quattroflow Pumps

Model	QF150SU (single use)	QF150S (multiple use)	QF1200SU (single use)	QF1200S (multiple use)
Flow range	1 to 180 L/h (0.26 to 48 GPH)	1 to 180 L/h (0.26 to 48 GPH)	20 to 960 L/h (5.3 to 253 GPH)	20 to 960 L/h (5.3 to 253 GPH)
Max pressure	For fluid temp <104°F (40°C) 58 psi (4 bar)	58 psi (4 bar)	58 psi (4 bar)	87 psi (6 bar)
	For fluid temp >104°F (40°C) 58 psi (4 bar)	58 psi (4 bar)	58 psi (4 bar)	58 psi (4 bar)
Max fluid temperature	140°F (60°C)	176°F (80°C)	140°F (60°C)	176°F (80°C)
Suction lift at 300 rpm	6.6 to 9.8 ft (2 to 3 m)	6.6 to 9.8 ft (2 to 3 m)	13.1 to 14.7 ft (4 to 4.5 m)	13.1 to 14.7 ft (4 to 4.5 m)
Volume per revolution	At free output 1.2 mL	1.2 mL	9.6 mL	9.6 mL
	Without connector 15 mL	15 mL	75 mL	75 mL
Connection type	¼" Tri-Clamp®	¼" Tri-Clamp	¾" Tri-Clamp	¾" Tri-Clamp
Position of connectors	In-line	In-line	In-line	In-line
Connector direction options	4	4	4	4
Wetted materials	PP (housing, valve plate), TPE (diaphragm), EPDM (valves, O-rings)	316L SS (housing, valve plate), TPE (diaphragm), EPDM (valves, O-rings)	PP (housing, valve plate), TPE (diaphragm), EPDM (valves, O-rings)	316L SS (housing, valve plate), TPE (diaphragm), EPDM (valves, O-rings)

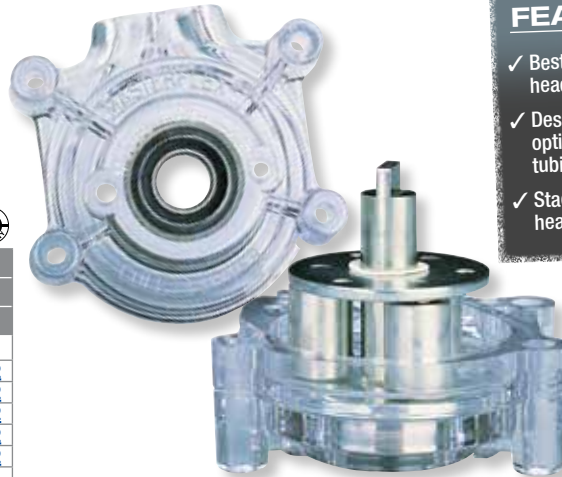
Specifications for Masterflex Drives

Description	ABS plastic drive for QF150	Stainless steel drive for QF150	Stainless steel drive for QF1200
Speed	3000 rpm	3000 rpm	1700 rpm
Speed control	$\pm 0.1\%$	$\pm 0.1\%$	$\pm 0.1\%$
Motor size	⅙ hp (0.05 kW)	⅙ hp (0.05 kW)	⅜ hp (0.26 kW)
IP rating	IP33	IP66 and NEMA 4X	IP66 and NEMA 4X
Dispense modes	Motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy number		
Input/output communications	Speed control: 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		
Power	90 to 260 VAC		

L/S® Standard Pump Heads

Ideal for accurate and repeatable fluid transfer applications

- PC housing allows you to see pump in operation;
- PPS housing and SS rotors have excellent chemical resistance



FEATURES

- ✓ Best overall pump head performance
- ✓ Designed and optimized for one tubing size
- ✓ Stack up to four heads

Pump tubing size	mL per rev	Flow rates in mL/min		Catalog number†‡		
		0.02 to 100 rpm	6 to 600 rpm	PC housing		PPS housing
				CRS rotor	SS rotor	SS rotor
A. Standard pump heads for Precision pump tubing						
L/S 13	0.06	0.001 to 6	0.36 to 36	PY-07013-20	PY-07013-21	PY-07013-52
L/S 14	0.21	0.004 to 21	1.3 to 130	PY-07014-20	PY-07014-21	PY-07014-52
L/S 16	0.8	0.016 to 80	4.8 to 480	PY-07016-20	PY-07016-21	PY-07016-52
L/S 17	2.8	0.059 to 280	17 to 1700	PY-07017-20	PY-07017-21	PY-07017-52
L/S 18	3.8	0.077 to 380	23 to 2300	PY-07018-20	PY-07018-21	PY-07018-52
Price						
B. Standard pump heads for High-Performance Precision pump tubing						
L/S 15	1.7	0.033 to 170	10 to 1000	PY-07015-20	PY-07015-21	PY-07015-52
L/S 24	2.8	0.057 to 280	17 to 1700	PY-07024-20	PY-07024-21	PY-07024-52
L/S 35	3.8	0.077 to 380	23 to 2300	PY-07035-20	PY-07035-21	—
Price						
L/S 36	4.8	0.096 to 480	29 to 2900	PY-07036-30	PY-07036-31	—
Price						

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

‡Maximum system pressure = L/S 13, L/S 14, L/S 15, L/S 16, L/S 24: 40 psi (2.7 bar); L/S 17, L/S 36: 20 psi (1.4 bar); L/S 18: 15 psi (1.0 bar); L/S 35: 35 psi (2.4 bar)

Mounting Hardware

Stack up to four L/S Standard pump heads on one drive. Hardware is stainless steel.

Heads to be mounted	Catalog number	Price/st
Hardware for Standard Heads L/S 13 to 35		
One	PY-07013-04	
Two	PY-07013-05	
Three	PY-07013-08	
Four	PY-07013-09	
Hardware for Standard Heads L/S 36		
One	PY-07036-01	
Two	PY-07036-02	

L/S® Easy-Load® II Pump Heads

Automatic retention holds tubing securely in place

- Reduced pulsation and improved pressure performance and mechanical stability with standard four-roller rotor
- Choice of rotors—economical CRS rotors or SS rotors for better chemical resistance and durability
- Don't let pressure get to you. Choose models with adjustable occlusion—tighten for higher pressure, loosen for longer tubing life
- Models with open-head interlock sensor stop drive motor when pump head is open (when used with sensor-equipped drives)

FEATURES

- ✓ Load tubing easily
- ✓ Accepts several tubing sizes for a wide flow range
- ✓ Stack up to four heads
- ✓ Durable PPS housing



What's included: single-channel mounting hardware and a 15" (38-cm) length of silicone pump tubing. Pump head comes ready to mount to drive.



Pump tubing size accepted	mL per rev	Flow rates in mL/min		Max system pressure† psi (bar)	Fixed occlusion				Adjustable occlusion	
		1 to 100 rpm	6 to 600 rpm		CRS‡ rotor		SS‡ rotor	SS‡ rotor and open-head sensor		SS‡ rotor
					Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
A. Easy-Load II pump heads for Precision pump tubing (not shown)										
L/S 13	0.06	0.06 to 6	0.36 to 36	40 (2.7)	PY-77200-50		PY-77200-60		PY-77200-30	PY-77201-60
L/S 14	0.21	0.21 to 21	1.3 to 130	40 (2.7)						
L/S 16	0.8	0.8 to 80	4.8 to 480	40 (2.7)						
L/S 25	1.7	1.7 to 170	10 to 1000	35 (2.4)						
L/S 17	2.8	2.8 to 280	17 to 1700	20 (1.4)						
L/S 18	3.8	3.8 to 380	23 to 2300	15 (1.0)						
B. Easy-Load II pump heads for High-Performance Precision pump tubing										
L/S 15	1.7	1.7 to 170	10 to 1000	40 (2.7)	PY-77200-52		PY-77200-62		PY-77200-32	PY-77201-62
L/S 24	2.8	2.8 to 280	17 to 1700	40 (2.7)						
L/S 35	3.8	3.8 to 380	23 to 2300	35 (2.4)						
L/S 36	4.8	4.8 to 480	29 to 2900	20 (1.4)						
C. Two-channel Easy-Load II pump heads for Precision pump tubing										
L/S 13	0.06	0.06 to 6	0.36 to 36	40 (2.7)	PY-77202-50		PY-77202-60			
L/S 14	0.21	0.21 to 21	1.3 to 130	40 (2.7)						
L/S 16	0.8	0.8 to 80	4.8 to 480	40 (2.7)						
L/S 25	1.7	1.7 to 170	10 to 1000	35 (2.4)						

†Actual performance varies depending on pump tubing formulation—values shown are for firm pump tubing. ‡CRS = cold-rolled steel SS = stainless steel

Mounting Hardware. Mount up to four L/S Easy-Load II pump heads on a single drive. Mounting hardware is stainless steel.

Heads to be mounted	One	Two	Three	Four
Catalog number	PY-77200-01	PY-77200-02	PY-77200-03	PY-77200-04
Price/st				

L/S® High-Performance Pump Heads

All-new design offers faster tubing changes and improved ergonomics

- Simply close the pump head and tubing occlusion is optimal and automatic
- Flow rates up to 3400 mL/min with L/S high-performance precision tubing
- Reinforced nylon housing and occlusion bed with stainless steel rotor/roller assembly
- Models with open-head interlock sensor stop drive motor when pump head is open (when used with sensor-equipped drives)
- Compatible with all L/S drives that accept two or more pump heads

NEW

FEATURES

- ✓ Pressures up to 150 psi with L/S high-pressure (HP) pump tubing
- ✓ Automatic tubing occlusion—no need to adjust
- ✓ ATEX Zone 2 rated models available



What's included: mounting hardware and 15" (38 cm) of pump tubing.

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ATEX
Zone 2
77252-80, 82



Pump tubing size	mL per rev	Flow rates in mL/min		Max system pressure psi (bar)	Catalog number					
		0.02 to 100 rpm	0.1 to 600 rpm		High-Performance pump head with open-head sensor	High-Performance pump head	ATEX-approved High-Performance pump head			
High-performance pump heads for Precision pump tubing										
L/S 16	0.9	0.018 to 90	0.09 to 614	40 (2.7)	PY-77252-60	PY-77252-70	PY-77252-80			
L/S 25	1.9	0.038 to 187	0.19 to 1278	40 (2.7)						
L/S 17	3.0	0.06 to 307	0.30 to 1883	20 (1.4)						
L/S 18	3.8	0.076 to 377	0.38 to 2812	40 (2.7)						
High-performance pump heads for High-Performance Precision pump tubing										
L/S 14HP†	0.3	0.006 to 30	Not recommended	150 (10.3)	PY-77252-62	PY-77252-72	PY-77252-82			
L/S 16HP†	0.9	0.018 to 90	Not recommended	125 (8.5)						
L/S 15HP†	1.7	0.034 to 170	Not recommended	100 (6.8)						
L/S 24HP†	2.4	0.048 to 240	Not recommended	80 (5.5)						
L/S 15	1.8	0.036 to 180	0.18 to 1100	40 (2.7)						
L/S 24	3.0	0.06 to 300	0.30 to 1800	40 (2.7)						
L/S 35	4.3	0.086 to 430	0.43 to 2600	35 (2.4)						
L/S 36	5.8	0.116 to 580	0.58 to 3400	20 (1.4)						
Price										

L/S 14HP, L/S 15HP, L/S 16HP and L/S 24HP pump tubing is for use only with the L/S High-Performance pump head mounted on any L/S 100 rpm drive capable of running two or more pump heads. **Note:** High-Performance pump heads are not stackable.

L/S® Easy-Load® 3 Pump Heads

No tools or hardware needed

- Mount and stack heads in seconds with twist-lock mounting feature
- CRS rotor is more economical while SS offers greater durability and chemical resistance
- Mount up to four pump heads without tools or hardware when using mounting plate
- Included mounting plate adapts Easy-Load 3 pump heads to L/S drives

FEATURES

- ✓ Same side tubing entry/exit for space-limited applications
- ✓ Automatic tubing retention
- ✓ Stack up to four heads



ISO9001:2008
CERTIFIED SUPPLIER



Pump tubing sizes accepted	mL per rev	Flow rates in mL/min		Maximum system pressure† psi (bar)	Catalog number‡	
		1 to 100 rpm	6 to 600 rpm		CRS rotor	SS rotor
Easy-Load 3 pump heads for Precision pump tubing						
L/S 13	0.06	0.06 to 6	0.36 to 36	40 (2.7)	PY-77800-50	PY-77800-60
L/S 14	0.22	0.22 to 22	1.3 to 130	40 (2.7)		
L/S 16	0.8	0.8 to 80	4.8 to 480	40 (2.7)		
L/S 25	1.7	1.7 to 170	10 to 1000	35 (2.4)		
L/S 17	2.8	2.8 to 280	17 to 1700	20 (1.4)		
L/S 18	3.8	3.8 to 380	23 to 2300	15 (1.0)		
Easy-Load 3 pump heads for High-Performance Precision pump tubing						
L/S 15	1.7	1.7 to 170	10 to 1000	30 (2.0)	PY-77800-52	PY-77800-62
L/S 24	2.8	2.8 to 280	17 to 1700	30 (2.0)		
L/S 35	3.8	3.8 to 380	23 to 2300	25 (1.7)		
L/S 36	4.8	4.8 to 480	29 to 2900	20 (1.4)		
Price						

†Actual performance varies depending on pump tubing formulation—values shown are for firm pump tubing.

‡CRS = cold-rolled steel SS = stainless steel

PY-77800-00 Replacement mounting kit, for mounting Easy-Load 3 pump head to Masterflex L/S pump drives. Includes mounting plate and four screws

Masterflex® L/S® Cytoflow™ Pump Heads

- Convex-roller design is gentler on live cells and shear-sensitive fluids—validated by independent test data
- Large-diameter rotor delivers higher flow rates at lower speeds
- Low-speed pumping lets you maintain the consistency and characteristics of shear-sensitive fluids
- 2-roller and 3-roller configurations available—choose 2 rollers for maximum flow rate, 3 rollers for less pulsation
- Compatible with all Masterflex L/S drives that accept two or more pump heads

Developed specifically for pumping delicate live cells and shear-sensitive fluids, the Masterflex L/S Cytoflow pump head is ideal for use in biopharma and microbiology applications where peristaltic pump operators want to minimize cell hemolysis. The extra-large tubing bed combined with fewer rollers results in high flow rates at low motor speeds, which furthers its cell viability advantages.



Pump tubing size	mL per rev	Flow rates in mL/min		Max system pressure psi (bar)	Catalog number	Price
		0.02 to 100 rpm	0.1 to 600 rpm			
2-roller pump heads for Precision pump tubing						
L/S 16	1.7	0.03 to 170	0.17 to 1000	22 (1.5)	PY-77253-00	
L/S 25	3.9	0.08 to 390	0.39 to 2300	22 (1.5)		
L/S 17	6.1	0.12 to 600	0.61 to 3600	22 (1.5)		
L/S 18	8.6	0.17 to 850	0.86 to 5100	22 (1.5)		
2-roller pump heads for High-Performance Precision pump tubing						
L/S 15	4.0	0.08 to 390	0.40 to 2300	22 (1.5)	PY-77253-02	
L/S 24	6.2	0.12 to 600	0.62 to 3700	22 (1.5)		
L/S 35	9.5	0.19 to 930	0.95 to 5600	22 (1.5)		
L/S 36	12.8	0.26 to 1270	1.3 to 7600	22 (1.5)		
3-roller pump heads for Precision pump tubing						
L/S 16	1.6	0.03 to 160	0.16 to 980	22 (1.5)	PY-77253-10	
L/S 25	3.5	0.07 to 340	0.35 to 2000	22 (1.5)		
L/S 17	5.6	0.11 to 550	0.56 to 3300	22 (1.5)		
L/S 18	7.7	0.15 to 770	0.77 to 4600	22 (1.5)		
3-roller pump heads for High-Performance Precision pump tubing						
L/S 15	3.5	0.07 to 340	0.35 to 2000	22 (1.5)	PY-77253-12	
L/S 24	5.7	0.11 to 570	0.57 to 3400	22 (1.5)		
L/S 35	7.8	0.16 to 780	0.78 to 4600	22 (1.5)		
L/S 36	9.6	0.19 to 950	0.96 to 5700	22 (1.5)		

- ✓ Ensure the survival and vitality of live cells
- ✓ Maintain the consistency of shear-sensitive fluids
- ✓ High flow at low rpm

NEW



Cell Viability Test Data

Hemolysis of blood cells was used to evaluate the sensitivity of several pump designs for live cell circulation. In vitro testing was completed using citrated bovine blood circulated through several peristaltic pump systems and settings to establish optimal conditions. Each pump system was evaluated against its Average Hemolytic Index for 180 minutes.

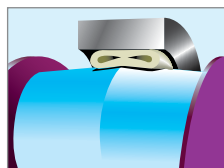
Factors Affecting Shear Sensitivity

Pump Motor Speed

Flow rates in peristaltic pumps are dictated by the rotation speed of the motor, measured in revolutions per minute (rpm). Peristaltic pumps generally present linear flow rates versus rpm with the tubing diameter, number of rollers, and overall occlusion bed size affecting the amount of flow per revolution. Chart 1 shows that the motor speed is very dominant in a pump's ability to maintain cell viability during recirculation.

Pump Head Occlusion

Less tubing occlusion allowed space for the blood cells to shift around the force of the roller which decreased the overall percent of hemolysis. Chart 2 compares the effect of flat rollers versus convex rollers on pumps running at the same speed. In this case, equipping a pump head with less than full occlusion improves cell viability 10 to 25%.



Convex roller

Chart 1: Comparison of Speeds on Cell Hemolysis

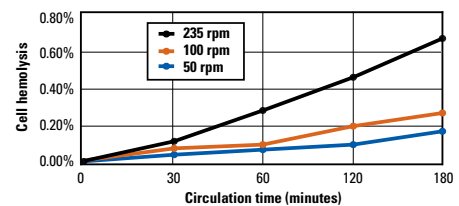
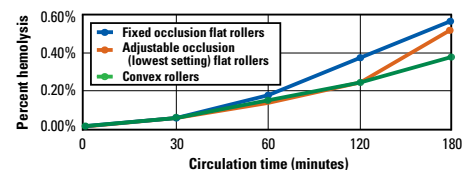


Chart 2: Percent Hemolysis Comparing Pump Head Occlusion Settings



Cole-Parmer® Single-Use Pump Head for Masterflex L/S Drives

Get steady, pulseless flow with the convenience of snap-in disposable heads

- Ideal cost-effective solution for single-use or single-campaign fluid transfer
- Disposable—eliminate cross-contamination and cleaning
- Steady, repeatable flow is ideal for dosing applications

Achieving steady pulseless fluid transfer couldn't be easier—simply mount the reusable adapter to your Masterflex L/S drive and snap in a clean disposable pump head. Standard luer connectors enable quick and secure connections to inlet and outlet tubing. Rotary, volumetric pistons produce pulseless flow up to 500 mL/min with high volume and flow rate accuracy. The consistent rate of flow over time from the dual pumping chambers minimizes the need for calibration.

Note: Maximum recommended speed is 100 rpm for optimal life and performance.

Description	Single-use pump head kit
Catalog number	PY-07539-20
mL/rev	5.0
Flow range	0.5 to 500 mL/min
Flow accuracy	±3% (<2.5 mL); ±1% (>2.5 mL)
Max pressure	36 psi (2.5 bar)
Max vacuum	-10 psi (-0.7 bar)
Max viscosity	70 cps
Materials of construction	Aluminum adapter; co-polyester pump head with FKM gaskets
Connections	Female luer lock
Price	

[PY-07539-30](#) Single-use disposable pump head. Pack of 1

[PY-07539-32](#) Single-use disposable pump head. Pack of 3

[PY-07539-34](#) Single-use disposable pump head. Pack of 6



Kit 07539-20 includes pump head mounting adapter and three single-use pump heads

L/S® Easy-Load® Pump Heads

Save time with fast tubing changes and reduced maintenance

- No need to remove head to change tubing
- PPS housing offers improved chemical resistance; SS rotor offers increased durability and chemical resistance
- Get four separate pumping channels by mounting up to four heads on one drive
- ATEX Zone 2 approved models rated to EEx II 3 G c II CT6
- Ready to use—include single-channel mounting hardware and 15" (38 cm) of silicone tubing

FEATURES

- ✓ Fixed occlusion averaged for several tubing sizes
- ✓ Stack up to four heads
- ✓ ATEX Zone 2 rated models available



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ATEX Zone 2
 07516-40, -42

Pump tubing sizes accepted	mL per rev	Flow rates in mL/min		Maximum system pressure psi (bar)	Catalog number†			
		1 to 100 rpm	6 to 600 rpm		White PPS housing		Black PPS housing	ATEX-approved PPS housing
					CRS rotor	SS rotor	SS rotor	SS rotor
Easy-Load pump heads for Precision pump tubing								
L/S 13	0.06	0.06 to 6	0.36 to 36	40 (2.7)				
L/S 14	0.21	0.21 to 21	1.3 to 130	40 (2.7)				
L/S 16	0.8	0.8 to 80	4.8 to 480	40 (2.7)	PY-07516-00	PY-07516-10	PY-07518-60	PY-07516-40
L/S 25	1.7	1.7 to 170	10 to 1000	35 (2.4)				
L/S 17	2.8	2.8 to 280	17 to 1700	20 (1.4)				
L/S 18	3.8	3.8 to 380	23 to 2300	15 (1.0)				
Easy-Load pump heads for High-Performance Precision pump tubing								
L/S 15	1.7	1.7 to 170	10 to 1000	40 (2.7)	PY-07516-02	PY-07516-12	PY-07518-62	PY-07516-42
L/S 24	2.8	2.8 to 280	17 to 1700	40 (2.7)				
				Price				

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

Mounting Hardware for Easy-Load Heads

Stack up to four L/S Easy-Load pump heads on one drive. Order mounting hardware based on number of mounted pump heads. Hardware is stainless steel.

Heads to be mounted	Catalog number	Price/st
One	PY-07013-04	
Two	PY-07013-05	
Three	PY-07013-08	
Four	PY-07013-09	

L/S® Multichannel Pump Heads

Get low-pulsation synchronous flow in multiple channels without cartridges

- Load the tubing, latch the occlusion bed, and run the pump—two-stop tubing gives you optimal tension with no adjustment
- Stackable two, four, or eight-channel heads for up to 24 channels
- Six roller heads deliver low-pulsation flow; three-roller heads offer higher flow rates
- Heads for L/S Precision pump tubing accept two-stop tubing set sizes L/S 13, L/S 14, and L/S 16; heads for L/S High-Performance Precision pump tubing accept two-stop tubing set sizes L/S 15, L/S 24, and L/S 35
- Compatible with L/S drives that accept two or more pump heads; 1/10 hp min



FEATURES

- ✓ Stackable for up to 24 synchronous flow channels
- ✓ Models for L/S two-stop tubing sets available
- ✓ Durable stainless steel and anodized aluminum construction



Stack heads for even more channels!

What's included: mounting hardware and hex key tool.



Number of channels	Number of rollers	Max channels with stacked heads†		Catalog number	Price
		100 rpm drive	600 rpm drive		
A. L/S Multichannel pump heads for Precision pump tubing, sizes L/S 13, L/S 14, L/S 16					
4	6	24	12	PY-07535-04	
8				PY-07535-08	
B. L/S Multichannel pump heads for High-Performance Precision pump tubing, sizes L/S 15, L/S 24, L/S 35					
2	3	12	6	PY-07536-02	
4				PY-07536-04	

†Maximum channel capacity depends on drive torque capability and tubing formulation used.

L/S Two-Stop Precision Tubing Sets Ordering Information for 07535- and 07536-series pump heads

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	PY-06447-13 /pk of 8	PY-06447-14 /pk of 8	PY-06447-16 /pk of 8	PY-06447-15 /pk of 4	PY-06447-24 /pk of 4	PY-06447-35 /pk of 4
Silicone (platinum-cured)	PY-06421-13 /pk of 8	PY-06421-14 /pk of 8	PY-06421-16 /pk of 8	PY-06421-15 /pk of 4	PY-06421-24 /pk of 4	PY-06421-35 /pk of 4
BioPharm Plus Silicone (platinum-cured)	PY-96116-13 /pk of 8	PY-96116-14 /pk of 8	PY-96116-16 /pk of 8	PY-96116-15 /pk of 4	PY-96116-24 /pk of 4	PY-96116-35 /pk of 4
PharMed® BPT	PY-96114-13 /pk of 8	PY-96114-14 /pk of 8	PY-96114-16 /pk of 8	PY-96114-15 /pk of 4	PY-96114-24 /pk of 4	PY-96114-35 /pk of 4
Chem-Durance® Bio	PY-96117-13 /pk of 8	PY-96117-14 /pk of 8	PY-96117-16 /pk of 8	PY-96117-15 /pk of 4	PY-96117-24 /pk of 4	PY-96117-35 /pk of 4
Viton®	PY-96428-13 /pk of 8	PY-96428-14 /pk of 8	PY-96428-16 /pk of 8	PY-96428-15 /pk of 4	PY-96428-24 /pk of 4	PY-96428-35 /pk of 4

Flow Rates per Channel in mL/min with L/S Two-Stop Precision Pump Tubing Sets above

Drive rpm	Precision pump tubing			High-Performance Precision pump tubing		
	L/S 13	L/S 14	L/S 16	L/S 15	L/S 24	L/S 35
1 to 100	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	0.27 to 27	0.96 to 96	2.8 to 280	10 to 1000	17 to 1700	23 to 2300

Application Solution



Challenge

A pharmaceutical manufacturer needed to dispense volumes of 300 mL in 15 seconds or less repeating three times per minute; and 20 mL in 2 seconds or less repeating 20 times per minute. The desired accuracy target for both applications was ±1.5%. The efficiency of simultaneously pumping multiple channels was critical.

Solution

The manufacturer now uses a Masterflex L/S digital drive with an L/S four-channel pump head 07536-04. Size L/S 15 two-stop silicone tubing (06421-15) met the smaller flow requirement; while size L/S 35 two-stop silicone tubing (06421-35) met the larger flow requirement. Careful calibration of the drive, and the synchronous multichannel flow capability of the pump head enabled the manufacturer to meet the accuracy target.

L/S® PTFE-Tubing Pump Head

Ideal for high-purity fluids and aggressive organic solvents

- Pump fluids at pressures up to 100 psi (6.9 bar)
- Use for applications including filtration, chemical injection, and high-purity sampling
- PTFE tubing is the only wetted part; anodized aluminum and acetal body; stainless steel rotor assembly
- Compatible with L/S drives that accept two or more pump heads (1/10 hp min); For best results, run at 1 to 300 rpm

Note: PTFE-tubing pump head accepts **only** the Masterflex L/S PTFE tubing sets sold below; ordinary PTFE tubing cannot be substituted. Use the connectors to adapt the tubing sets to your system.

FEATURES

- ✓ PTFE is the only wetted part—safely transfer aggressive organic solvents
- ✓ Adjustable occlusion for higher pressure or longer tubing life
- ✓ Use with rigid tubing for pressures up to 100 psi (6.9 bar)
- ✓ Not stackable



ISO9001:2008
CERTIFIED SUPPLIER

Flow rates (mL/min at 1 to 300 rpm)		Maximum continuous pressure	Max suction lift	Avg tubing life (100 rpm, 0 psi)	Number of rollers	Catalog number	Price
4-mm OD tubing	6-mm OD tubing						
0.06 to 17	0.25 to 65	100 psi (6.9 bar)	8 ft (2.4 m)	500 hours	Six	PY-77390-00	

PTFE-Tubing Sets include two 15" (38 cm) lengths and cannot be substituted with ordinary PTFE tubing.

[PY-77390-50](#) PTFE-tubing set. 2-mm ID, 4-mm OD. Set of 2

[PY-77390-60](#) PTFE-tubing set. 4-mm ID, 6-mm OD. Set of 2

Compression Fittings adapt tubing sets to your system.

For 4-mm OD PTFE-Tubing Sets

[PY-31321-61](#) Straight connector, 40 psi (2.8 bar) max

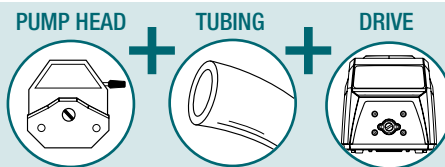
[PY-06605-53](#) PTFE extension tubing, 4-mm OD. Pack of 25 ft (7.6 m)


For 6-mm OD PTFE-Tubing Sets

[PY-31321-64](#) Straight connector, 135 psi (9.2 bar) max

[PY-06605-54](#) PTFE extension tubing, 6-mm OD. Pack of 25 ft (7.6 m)

Choose a convenient
Complete System
One catalog number includes all 3!



System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.75 to 65 mL/min	PTFE-tubing pump head 77390-00	PTFE-tubing set, 6-mm OD 77390-60	Variable-speed drive 07528-20 3 to 300 rpm	90 to 260 VAC, 50/60 Hz	PY-77912-10	

Note: Systems also include two 1/4" NPT(M) pipe adapters.

Application Solution



Challenge

A manufacturer of insect repellents needed to inject a viscous pheromone suspension into 40 meters of fine-gauge pipe without contaminating the fluid. They were using a vacuum pump to draw the suspension into the pipe, but this method was very slow and had a problem with pressure buildup.

Solution

The L/S PTFE-tubing pump system 77912-10 solved the problem. The rigid PTFE tubing withstands pressures up to 100 psi and the all-PTFE wetted parts eliminate the risk of contamination in the flow line. This particular step in the manufacturing process was reduced from one hour to six minutes—a 1000% improvement!

L/S® “Partner” Pump Heads

Customize your L/S drive for special applications

- Ismatec® minicartridge pump heads offer variable flow from multiple channels—each head accepts up to eight cartridges (included)
- Valveless piston pump heads give you options to handle a wide range of fluids at pressures up to 100 psi
- All pump heads listed below can be used with Masterflex drives found on pages 6–17

Masterflex tubing pumps offer a large selection of L/S pump heads: Standard, Easy-Load®, Easy-Load® II, Easy-Load® 3, High-Performance, multichannel cartridge, PTFE-diaphragm, or PTFE-tubing.

And, while Masterflex tubing pump heads are designed to meet many of your demands, you may need something different on occasion.



Ismatec® minicartridge pump head 07623-00 with L/S drive 07528-30 (order three-stop tubing on pages 46–47)

Valveless piston pump head 07104-56 with L/S drive 07554-80 and adapter 07104-48

Wait! There's More...

See [page 45](#) for additional technical information on Ismatec® pump heads.

Ismatec® Minicartridge Pump Heads

Pump head type	Advantages	Maximum flow rate (100 rpm)	Maximum pressure	Channels	Rollers	Catalog number	Price
Peristaltic minicartridge pump head	Multichannel pumping and variable occlusion	32.5 mL/min	25 psi	8	6	PY-07623-00	
		28.5 mL/min		8	8	PY-07623-10	

[PY-78016-98](#) Replacement minicartridge

Valveless Piston Pump Heads (requires adapter kit 07104-48 below)

Max flow rate (mL/min) at various rpm (vary flow rate by adjusting rpm or stroke length)		Max psi	Piston dia of body	Max temp of liner	Materials of construction			Catalog number	Price
1 to 100 rpm	6 to 600 rpm				Piston	Cylinderbody	Cylinder liner		
Standard high-flow pump heads									
0.08 to 8	0.48 to 48	100	1/8"	140°F (60°C)	316 SS	316 SS	Carbon	PY-07104-50	
		60			316 SS	PVDF	Carbon	PY-07104-52	
0.32 to 32	1.92 to 192	60	1/4"	140°F (60°C)	316 SS	PVDF	Carbon	PY-07117-26	
		100			316 SS	316 SS	Carbon	PY-07104-62	
0.32 to 32	1.92 to 192	60	1/4"	212°F (100°C)	Ceramic	PVDF	Ceramic	PY-07104-54	
		60			Ceramic	PVDF	Carbon	PY-07104-58	
0.32 to 32	1.92 to 192	100	1/4"	350°F (177°C)	Ceramic	316 SS	Ceramic	PY-07104-56	
		100			Ceramic	316 SS	Carbon	PY-07104-60	
0.72 to 72	4.32 to 432	60	3/8"	140°F (60°C)	316 SS	PVDF	Carbon	PY-07117-28	
		100			316 SS	316 SS	Carbon	PY-07104-72	
0.72 to 72	4.32 to 432	60	3/8"	212°F (100°C)	Ceramic	PVDF	Ceramic	PY-07104-64	
		60			Ceramic	PVDF	Carbon	PY-07104-68	
0.72 to 72	4.32 to 432	100	3/8"	350°F (177°C)	Ceramic	316 SS	Ceramic	PY-07104-66	
		100			Ceramic	316 SS	Carbon	PY-07104-70	
Sanitary high-flow pump heads (3A-approved for use with foods)									
0.32 to 32	1.92 to 192	100	1/4"	350°F (177°C)	Ceramic	316 SS	Ceramic	PY-07117-20	
0.72 to 72	4.32 to 432		3/8"					PY-07117-22	

Adapter Ordering Information

The Masterflex adapter kit listed below is required to convert your L/S drive for use with the valveless piston pump heads. (Order pump heads separately above.) The adapter allows you to select from these valveless piston pump heads, which are ideal for dispensing and metering. Valveless piston metering pump heads have adjustable stroke length to adjust flow rate, allowing you to convert your fixed-speed drive into a variable flow pump.

[PY-07104-48](#) Masterflex adapter kit for use with valveless piston pump heads. Includes all necessary hardware and fittings



I/P® Variable-Speed Modular Digital Dispensing Drives

Get precise digital dispensing with virtually no maintenance

- Graphical LCD shows four operating modes: continuous run, timed dispense, copy dispense, and volume dispense
- Programmable dispense interval lets you set the delay between dispense cycles for convenient, automated dispensing by time or by volume
- Brushless motor gives you quiet, maintenance-free reliability
- 6-ft (1.8-m) cable connects drive and controller; optional extension cable is available

A. Modular Drive with Benchtop Controller

- Splash-resistant ABS plastic controller housing is IP33 rated; drive housing is epoxy finished steel, IP33 rated
- Remote control capabilities via a DB25 female connector on controller

B. Washdown Modular Drive with Wall-Mount Controller

- Wall-mount controller housing is powder-coated aluminum, IP66 / NEMA 4X rated for washdown; powder-coated steel drive housing is IP66 / NEMA 4X rated for washdown
- Remote control capabilities via weather-resistant connection on controller

What's included: 6-ft (1.8-m) line cord with IEC 320/CEE22 socket. Shipped with country-specific plug/cord set; please specify ultimate destination when ordering.



A.
07594-00

FEATURES

- ✓ Flow rates: 0.0006 to 19 LPM
- ✓ Accuracy of ±0.1% speed control
- ✓ Four-line graphical display
- ✓ Antidrip, reversible motor
- ✓ Remote control capabilities
- ✓ Accept up to 2 pump heads



B.
Model 07594-10 includes wall-mount controller



rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
A. Digital modular dispensing drive with benchtop controller									
0.1 to 650	±0.1% (0.1 rpm at 650 rpm)	2	3/8 hp (280 W)	IP33	Controller: 10½" x 8¼" x 5" Drive: 15½" x 7" x 6"	90 to 260	4.5 at 115 VAC, 2.5 at 230 VAC	PY-07594-00	
B. Digital washdown modular dispensing drive with wall-mount controller									
0.1 to 650	±0.1% (0.1 rpm at 650 rpm)	2	3/8 hp (280 W)	IP66	Controller: 9" x 11¾" x 4½" Drive: 15½" x 7" x 6"	90 to 260	4.5 at 115 VAC, 2.5 at 230 VAC	PY-07594-10	

[PY-77301-82](#) Extension cable, 9 ft (2.7 m); extend distance between motor and controller

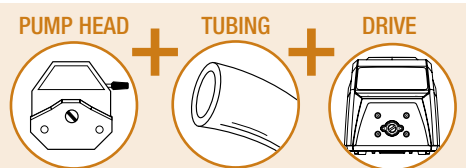
[PY-07523-95](#) Cable assembly for benchtop drive 07594-00; DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends for remote control

[PY-07575-80](#) Cable assembly for washdown drive 07594-10; 31-pin round connector and 25-ft (7.9-m) cable with stripped wire ends for remote control

[PY-17050-01](#) NIST-traceable calibration for peristaltic pump drive

Choose a convenient Complete System

One catalog number includes all 3!



System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.001 to 8 LPM	Easy-Load® 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Digital dispensing drive 07594-00 0.1 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77970-40	
	0.001 to 8 LPM	Easy-Load 77602-10	C-Flex ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Digital washdown dispensing drive 07594-10 0.1 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77970-50	

Application Solution

Challenge

A customer is pouring hot wax into containers that hold from 50 grams to 3 pounds. Another peristaltic pump was used to pump the wax, but it was slow. The customer needs to put the containers on a conveyor belt and wants to operate the pump with a remote control feature so that the operator does not get too close to the wax. Intervals of 1 to 2 seconds between filling sessions is required, so this needs to be controlled by the pump as well.

Solution

The larger I/P pump system 77970-50 fulfills the customer's needs to accurately dispense wax into a range of container capacities in quick succession with time-controlled intervals. Plus, the option to remotely control the pump allows the operator to be a safe distance away.

I/P® Digital Console Process Drives

Maintenance-free drives built for process applications

- Graphical LCD shows four operating modes: continuous run, timed dispense, copy dispense, volume dispense
- Dispense by volume, copy, or time with programmable delay interval
- Models equipped with open-head sensor stop drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see page 30)

Models 77420-10 and -18 feature a 316 stainless steel housing with an anodized aluminum base. Ideal for pharmaceutical, dairy, biotech, and food and beverage applications.

Models 77420-20 and -28 feature a powder-coated steel housing with anodized aluminum base. Use in process, manufacturing, and water-treatment applications where stainless steel is not a critical requirement.

What's included: 6-ft (1.8-m) line cord with IEC 320/CEE22 socket. Shipped with country-specific plug/cord set; please specify ultimate destination when ordering.



FEATURES

- ✓ Flow rates: 0.0006 to 19 LPM
- ✓ Accuracy of ±0.1% speed control
- ✓ Four-line graphical display
- ✓ Reversible motor
- ✓ IP66-rated for easy washdown
- ✓ Accept up to 2 pump heads

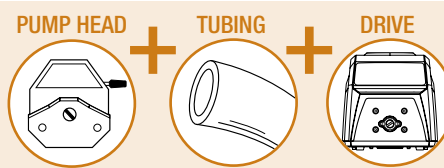
77420-10 shown with I/P High-Performance pump head 77600-62



rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power	Catalog number	Price
Digital process drive with 316 stainless steel housing									
0.1 to 650	±0.1%	No	2	¾ hp (280 W)	IP66	16 ¹ / ₁₆ " x 11 ¹ / ₈ " x 12 ⁷ / ₈ "	90 to 260 VAC, 50/60 Hz	PY-77420-10	
		Yes						PY-77420-18	
Digital process drive with powder-coat steel housing									
0.1 to 650	±0.1%	No	2	¾ hp (280 W)	IP66	16 ¹ / ₁₆ " x 11 ¹ / ₈ " x 12 ⁷ / ₈ "	90 to 260 VAC, 50/60 Hz	PY-77420-20	
		Yes						PY-77420-28	

Accessories

- [PY-07575-84](#) Washdown foot switch, momentary start/stop; 6-ft (1.8-m) cable
- [PY-07575-80](#) Cable assembly, 31-pin round connector and 25-ft (7.9-m) cable with stripped wire ends for remote control
- [PY-17050-01](#) NIST-traceable calibration for peristaltic pump drive



Choose a convenient Complete System
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.001 to 8.0 LPM	Easy-Load® 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Digital process drive with 316 SS housing 77420-10 0.1 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77964-20	
	0.001 to 8.0 LPM	Easy-Load 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Digital process drive with powder-coat steel housing 77420-20 0.1 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77964-30	

I/P® Precision Variable-Speed Modular Drives

Place motor and controller where convenient with modular design

- Easy control of speed, direction, and start/stop with membrane keypad
- Ideal for metering and critical transfer applications
- 6-ft (1.8-m) cable connects drive and controller; optional extension cable is available

A. Modular Drive with Benchtop Controller

- Splash-resistant ABS plastic controller housing is IP33 rated; drive housing is epoxy finished steel, IP33 rated
- Remote control via DB9 female connector on controller

B. Washdown Modular Drive with Wall-Mount Controller

- Wall-mount controller housing is powder-coated aluminum, IP66 / NEMA 4X rated for washdown; powder-coated steel drive housing is IP66 / NEMA 4X rated for washdown
- Remote control via weather-resistant connection on controller

What's included: 6-ft (1.8-m) line cord with IEC 320/CEE22 socket. These models are shipped with country-specific plug/cord set; please specify ultimate destination when ordering.



A.
07591-20

FEATURES

- ✓ Flow rates: 0.036 to 19 LPM
- ✓ Accuracy of ±0.25% speed control
- ✓ LED display
- ✓ Reversible motor
- ✓ Remote control capabilities
- ✓ Accept up to 2 pump heads

B.
Model 07591-30
includes wall-mount
controller.



rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
A. Precision modular drive with benchtop controller									
6 to 650	±0.25% (1 rpm at 650 rpm)	2†	1/5 hp (149 W)	IP33	Controller: 10 3/8" x 8 3/8" x 5 1/2" Drive: 13 3/8" x 5 1/2" x 6 1/8"	90 to 260	4.4 at 115 VAC, 2.2 at 230 VAC	PY-07591-20	
B. Precision washdown modular drive with wall-mount controller									
6 to 650	±0.25% (1 rpm at 650 rpm)	2†	1/5 hp (149 W)	IP66	Controller: 10 1/8" x 11" x 4 3/4" Drive: 14 1/4" x 7" x 6 1/2"	90 to 260	4.4 at 115 VAC, 2.2 at 230 VAC	PY-07591-30	

† Drive accepts two pump heads when loaded with silicone or C-Flex® tubing.

[PY-07557-51](#) Extension cable, 9 ft (2.7 m); extend distance between motor and controller

[PY-07595-47](#) Cable assembly for benchtop drive 07591-20; DB9 male connector and 25-ft (7.9-m) cable with stripped wire terminal ends. Use for remote control

[PY-77300-32](#) Cable assembly for washdown drive 07591-30; 18-pin round connector and 25-ft (7.9-m) cable with stripped wire terminal ends. Use for remote control

[PY-17050-01](#) NIST-traceable calibration for peristaltic pump drive

Choose a convenient Complete System

One catalog number includes all 3!

PUMP HEAD

TUBING

DRIVE

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.06 to 8 LPM	Easy-Load® 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Modular drive 07591-20 6 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77962-20	
	0.06 to 8 LPM	Easy-Load 77601-10	C-Flex ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Washdown modular drive 07591-30 6 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77962-30	

I/P® Precision Process Drives

Powerful, low-maintenance drives keep you pumping

- Don't worry about moisture, chemicals, or dust—IP55-rated nonchip epoxy-coated steel housing
- Goes where you need it—compact and light enough to carry with one hand, powerful enough to drive two pump heads
- Get up to speed quickly—easy to adjust speed knob and LED display for improved repeatability

FEATURES

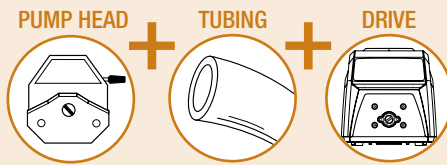
- ✓ Flow rates: 0.2 to 19 LPM
- ✓ Accuracy of ±0.25% speed control
- ✓ LED display
- ✓ Reversible motor and remote control capabilities
- ✓ Accept up to 2 pump heads



Motor speed (rpm)	Speed control (repeatability)	Pump heads accepted	Motor size	Dimensions	Power (50/60 Hz)		Catalog number	Price
					VAC	Amps		
Variable-speed brushless process drive								
33 to 650	±0.25% (2% of max rpm)	2	1/3 hp (0.25 kW)	14"L x 10"W x 9"H (35.6 x 25.4 x 22.9 cm)	90 to 260	4.5 at 115 VAC, 2.6 at 230 VAC	PY-77410-10	
Variable-speed brushless process drive with remote input/output								
33 to 650	±0.25% (2% of max rpm)	2	1/3 hp (0.25 kW)	14"L x 10"W x 9"H (35.6 x 25.4 x 22.9 cm)	90 to 260	4.5 at 115 VAC, 2.6 at 230 VAC	PY-77411-00	

[PY-07595-43](#) Washdown foot switch for model 77411-00

[PY-77300-32](#) Remote cable kit. Required for model 77411-00 to operate the remote inputs and outputs



Choose a convenient **Complete System**
One catalog number includes all 3!

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	0.4 to 8 LPM	Easy-Load® 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Brushless process drive 77410-10 33 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77963-10	
	0.7 to 17 LPM	High-Performance 77600-62	Tygon® E-LFL I/P 88 tubing 06440-88 3 ft (1 m)	Brushless process drive 77410-10 33 to 650 rpm	90 to 260 VAC, 50/60 Hz	PY-77963-20	



Need Help Selecting?

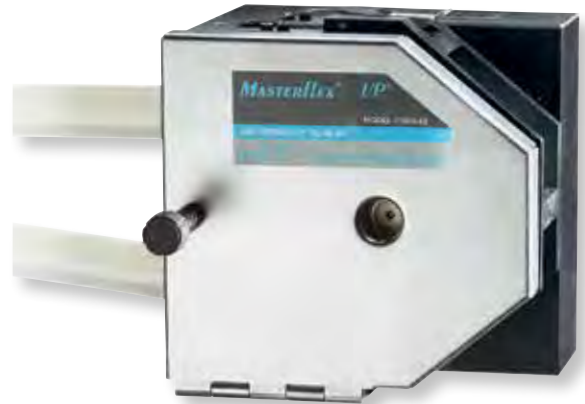
Trust our **expert** Application Specialists to help you find the right product.

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Kim, 12 years of experience

I/P® High-Performance Pump Heads Get higher flow rates and pressure

- Easily transfer viscous fluids
- Pump up to 19 LPM for higher volume processing
- Durable design for longer life—made of stainless steel rollers, bearings, rotor plates, and rotor shaft. Occlusion bed is made of thermoset polyester
- Compatible with I/P drives that accept two or more pump heads; pump head is not stackable



Pump tubing sizes accepted	mL per rev	Flow rates (LPM) at 20 to 650 rpm	Maximum system psi (bar)	Catalog number†	
				Polyester and SS housing, SS rotor	ATEX-approved; polyester and SS housing, SS rotor
I/P 70	12.3	0.26 to 8	40 (2.7)	PY-77600-62	PY-77600-82
I/P 88	26.2	0.4 to 17	35 (2.4)		
I/P 89	29.2	0.52 to 19	20 (1.4)		
Price					

†SS = stainless steel

FEATURES

- ✓ Easy to load tubing
- ✓ Adjustable tubing retention
- ✓ “C”-shaped design—tubing enters/exits the same side
- ✓ ATEX Zone 2 rated model available

I/P® Easy-Load® Pump Heads Minimize downtime with faster tubing changes

- Optimize pressure capabilities and tubing life with adjustable occlusion
- Less maintenance and quieter operation with included tang boot
- No more loose pump heads—five-screw mounting for more secure attachment
- Adjust flow rate to your needs—can pump from 0.01 to 13 LPM
- PPS housing with CRS or SS rotor available. CRS rotors have sealed bearings; SS rotors have PTFE-sealed bearings
- Model with open-head interlock sensor stops drive motor when pump head is open (when used with sensor-equipped drives)

FEATURES

- ✓ Load tubing without removing pump head from drive
- ✓ Automatic tubing retention
- ✓ Stack up to two pump heads
- ✓ ATEX Zone 2 rated model available



Pump tubing sizes accepted	mL per rev	Flow rates (LPM) at indicated rpm			Maximum system psi (bar)	Catalog number†				
		100	540	20 to 650		White PPS housing			Black PPS housing	ATEX-approved; PPS housing
						CRS rotor	SS rotor	SS rotor and open-head sensor	SS rotor	SS rotor
I/P 26	6.15	0.6	3.2	0.12 to 4	40 (2.7)	PY-77602-00	PY-77602-10	PY-77602-30	PY-77601-60	PY-77602-80
I/P 73	12.3	1.2	6.8	0.2 to 8						
I/P 82	20.0	2.0	11.0	0.4 to 13	20 (1.4)					
Price										

†PPS = polyphenylene sulfide CRS = cold-rolled steel SS = stainless steel

[PY-77601-96](#) Dual-channel mounting hardware for two pump heads, stainless steel

Wait!

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ColeParmer.com

Browse **100,000+** products plus find
Technical Resources to help you choose

B/T® Fixed- and Variable-Speed Pumps

Achieve the highest flow rates of any Masterflex pump—up to 42 LPM (11.1 GPM)

- Interlock switch shuts off power when pump head is opened
- Washdown pumps handle the toughest process and production applications, then clean up with ease
- Gentle peristaltic action is ideal for pumping shear-sensitive or viscous fluids (up to 10,000 cps)
- Rotor and occlusion bed design allow easier tube loading and prevent “tubing roll” during operation

A. Fixed-Speed Pumps

- Economical and easy to operate
- Reversible motor: purge before or after pumping, pump fluid in either direction
- IP55-rated motor—wash off dirt and debris

B. Air-Powered Pump

- Use in locations where electricity is unsafe or impractical
- Includes pressure regulator—control your compressor air to match pump requirements
- 24 cfm (0.68 m³), 100 psi (6.9 bar) minimum air required, supply your own compressor to power pump
- IP56-rated motor protects against dust and strong water jets
- Rated for ATEX Zone 2 EEx II 3 G c IIC T6; NEC Class 1, Division 2, Groups A, B, C, D, T6

C. Variable-Speed Modular Pump

- Place washdown controller wherever it's convenient
- Controller with 16-ft (4.9-m) cord mounts on pump or wall
- IP56-rated motor protects against dust and strong water jets
- Reversible motor: purge before or after pumping, pump fluid in either direction

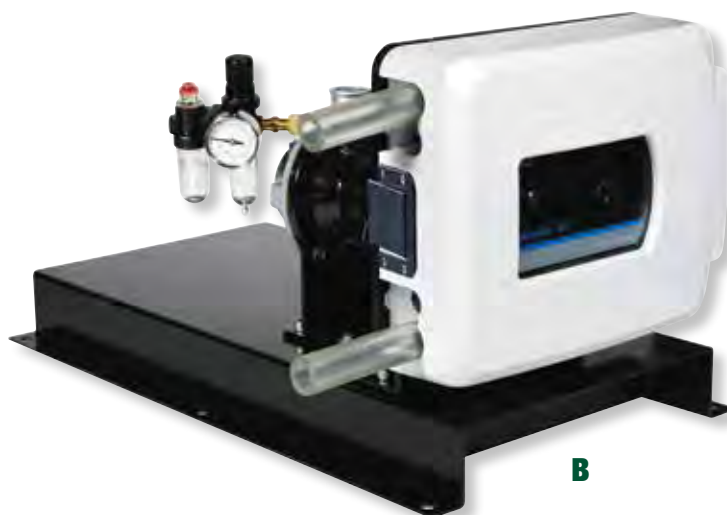
D. Variable-Speed Modular Digital Pump

- High-volume filling and dispensing
- Dispense by volume or time, or pump continuously
- Separate motor and controller by up to 6 feet (1.8 meters) for convenient operation
- IP56-rated controller and motor protect against dust and water

What's included: a Rapid-Load® pump head, 3 ft (1 m) of Tygon® E-LFL B/T 91 tubing 06440-91, and a 6-ft (1.8-m) power cord (115 VAC: US standard plug; 230 VAC: European plug) for models “A, C, D.”



A



B

See next page for more information...

Application Solution



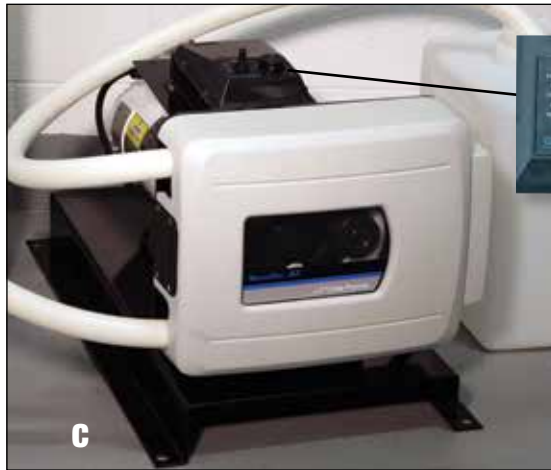
Challenge

A dairy farm that produces over 7 million liters (1.9 million gallons) of milk annually needed to transfer raw milk from a storage tank to its treatment and bottling line. They absolutely required a pump system whose wetted parts were in compliance with regulatory guidelines, but also wanted a system that would minimally agitate the milk during transfer. The dairy was considering other sanitary pumps, such as a rotary lobe pump, for the application. While the pump would not see continual use, it must be ready to operate on demand.

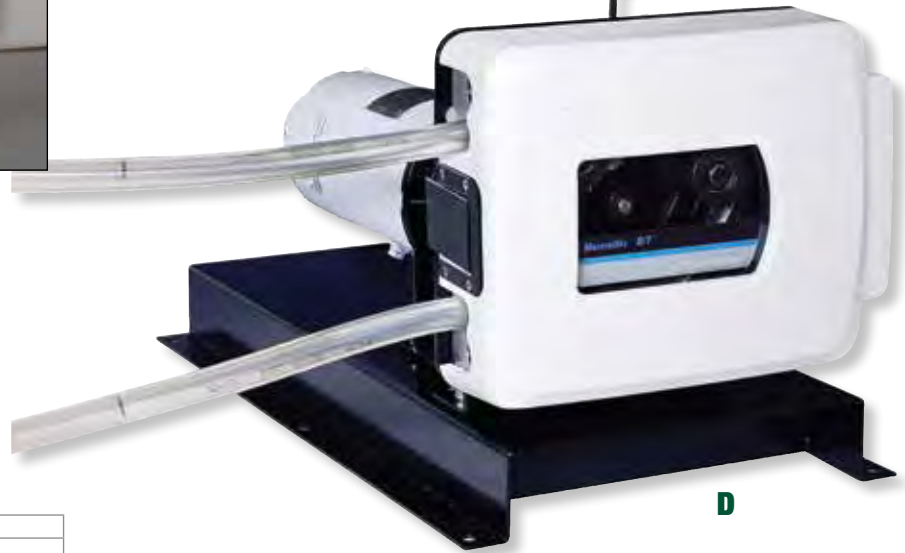
Solution

The customer chose the B/T fixed-speed pump (77111-30) and Tygon® E-Food tubing. Because milk only touched the tubing and none of the pump's mechanical parts, the dairy was assured of compliance with regulatory guidelines and protected against contamination. The fixed-speed pump offers high flow rates for efficient pumping but also ensures minimal agitation to the fluid. Finally, when compared with the stainless steel rotary lobe pump, the B/T system was much less expensive.

B/T® Fixed- and Variable-Speed Pumps (continued)



Detachable wall-mount controller for variable-speed pump 77111-60



Flow Rates in LPM (GPM)

rpm	PerfectPosition® pump tubing	
	B/T 87	B/T 91
321	18.9 (5.0)	42 (11.1)
271	16.0 (4.2)	35 (9.4)
35 to 321	1.9 to 17.7 (0.5 to 4.7)	4.0 to 37 (1.06 to 9.8)
12 to 321	0.71 to 18.9 (0.19 to 5.0)	1.4 to 42 (0.4 to 11.1)

ISO9001:2008
CERTIFIED SUPPLIER



77111-37, -67, -77, -80



Zone 2
77111-80



77111-30, -37



Except 77111-30, -37



Key	Motor type	Motor size	rpm	IP rating	Mounting type	Dimensions (L x W x H)	Power		Catalog number	Price
							VAC (Hz)	Amps		
A	Fixed-speed	1 hp (0.75 kW)	321	IP55	Direct-drive	27" x 15.8" x 15.1" (68.6 x 40 x 38.4 cm)	115 (60)	12.6	PY-77111-30	
			271				220 (50)	6.3		
B	Variable-speed, air powered	¾ hp (0.56 kW)	35 to 321	IP56	Direct-drive	27" x 15.8" x 15.1" (68.6 x 40 x 38.4 cm)	Requires 24 cfm (0.68 m³) 100 psi (6.9 bar) minimum		PY-77111-80	
C	Variable-speed (±5%)	½ hp (0.37 kW)	12 to 321	Controller: IP56	Direct-drive	27" x 15.8" x 17.4" (68.6 x 40 x 44.2 cm)	115 (50/60)	6.5	PY-77111-60	
							230 (50/60)	3.3		
D	Variable-speed digital (±0.3%)	¾ hp (0.56 kW)	12 to 321	Drive: IP56	Direct-drive	Controller: 9" x 11" x 4½" (22.9 x 27.9 x 11.4 cm)	90 to 130 (50/60)	10.5	PY-77111-70	
						Drive: 27" x 15¾" x 15" (68.6 x 40.0 x 38.4 cm)	190 to 260 (50/60)	5.7		

[PY-77300-32](#) Remote cable, required for remote control operation of models 77111-70 and -77; 25 ft (7.6 m)

[PY-77111-90](#) Bracket for digital controller on models 77111-70 and -77

Challenge

A pharmaceutical company needs to pump diluents, which they use to adjust the final concentration of their injectable drugs, from a large 100-L tank where it is mixed and stored, into 10-L totes they can easily transport to their production lines. They want to dispense exactly 10 L into each tote, and they want to do so quickly.

Solution

We recommend using the B/T digital pump (77111-70, -77) because it dispenses large volumes precisely and quickly. The controller and drive are both washdown IP56 rated; an important feature for the extremely clean pharmaceutical production environment. Plus, the easy-opening cover swings away to allow for CIP or SIP protocols. Using size B/T 91 pump tubing will provide the company with a ±1% accuracy at a dispense volume of 10 L, ensuring that very little diluent is lost during the dispensing process.



Application Solution

C/L® Variable-Speed Compact Pumps

Pump in even the tightest spaces!

- Pump fluids in either direction—easily switchable reversing motor
- Easy tubing changes—open cover and release occlusion bed in one motion

A. C/L Single-Channel Pumps

- Stop/start remotely via contact closure
- MAX button quickly primes or purges tubing
- Pump from 0.002 to 43 mL/min

B. C/L Digital Microflex® Pump

- Icon-driven menu allows quick programming and setup
- Flow range of 0.00013 to 43 mL/min
- Copy dispense function for filling and dispensing applications
- Remote control of speed, direction, and start/stop/prime via 25-pin connector on back of drive
- Microflex pump head accepts continuous lengths of tubing for clean flow paths
- Tubing calibration ensures accuracy

NEW



A



B

FEATURES

- ✓ Flow range: 0.00013 to 43 mL/min
- ✓ Reversible pumping
- ✓ Remote control capabilities

ISO9001:2008
CERTIFIED SUPPLIER

Power supplies are:



rpm	Speed control (repeatability)	Number of channels	Number of rollers	Reversible motor	IP rating	Dimensions—¼ DIN (L x W x H)	Power		Catalog number	Price
							VAC, Hz	Amps		
A. C/L single-channel compact pumps										
1.7 to 10	±5%	1	4	Yes	IP22	7" x 3¼" x 3½" (17.8 x 9.5 x 8.9 cm)	90 to 260, 50/60	110 mA at 115 VAC	PY-77122-04	
13 to 80							12 VDC†	—	PY-77122-06	
50 to 300			90 to 260, 50/60				175 mA at 115 VAC	PY-77122-14		
			3				12 VDC†	—	PY-77122-16	
							90 to 260, 50/60	400 mA at 115 VAC	PY-77122-24	
							12 VDC†	—	PY-77122-26	
B. C/L digital Microflex pump										
0.1 to 300	±0.1%	1	3	Yes	IP33	8½" x 5½" x 6¾" (20.5 x 14 x 15.7 cm)	90 to 260	0.34 at 115 VAC, 0.2 at 230 VAC	PY-77123-00	

†Power supply not included with 12 VDC models.

[PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive

For A models:

[PY-77120-03](#) Brackets for panel mounting. Set of 2

[PY-77200-07](#) Replacement power supply, 100 to 240 VAC, for pump 77122-24

[PY-77120-11](#) Replacement power supply, 100 to 240 VAC, for pumps 77122-04, -14

For B model:

[PY-07523-92](#) Foot switch, momentary start/stop; DB25 male; 6-ft (1.8-m) cable

[PY-07523-95](#) Cable assembly, DB25 male connector and 25-ft (7.9-m) cable with stripped wire ends

[PY-07523-97](#) Handheld remote controller, DB25 male, route tubing through handle for dispensing applications; 6-ft (1.8-m) cable

[PY-77123-80](#) Replacement single-channel Microflex pump head

[PY-07525-90](#) Replacement power supply, 90 to 260 VAC

Microbore Pump Tubing Ordering Information

Tube ID (mm)	Tygon® E-Lab	Silicone (platinum-cured)	Silicone (peroxide-cured)	PharMed® BPT	Tygon E-LFL (long flex life)	Viton®	Puri-Flex™	C-Flex®	Solvent/hydrocarbon
0.19	PY-06460-10	—	PY-07625-10	PY-95809-10	PY-06449-10	—	PY-96418-10	PY-95718-10	PY-95712-10
0.25	PY-06460-12	—	PY-07625-12	PY-95809-12	PY-06449-12	—	PY-96418-12	PY-95718-12	PY-95712-12
0.51	PY-06460-18	PY-95590-18	PY-07625-18	PY-95809-18	PY-06449-18	PY-97632-18	PY-96418-18	PY-95718-18	PY-95712-18
0.89	PY-06460-26	PY-95590-26	PY-07625-26	PY-95809-26	PY-06449-26	PY-97632-26	PY-96418-26	PY-95718-26	PY-95712-26
1.14	PY-06460-30	PY-95590-30	PY-07625-30	PY-95809-30	PY-06449-30	PY-97632-30	PY-96418-30	PY-95718-30	PY-95712-30
1.42	PY-06460-34	PY-95590-34	PY-07625-34	PY-95809-34	PY-06449-34	PY-97632-34	PY-96418-34	PY-95718-34	PY-95712-34
2.06	PY-06460-42	PY-95590-42	PY-07625-42	PY-95809-42	PY-06449-42	PY-97632-42	PY-96418-42	PY-95718-42	PY-95712-42
2.79	PY-06460-48	PY-95590-48	PY-07625-48	PY-95809-48	PY-06449-48	PY-97632-48	PY-96418-48	PY-95718-48	PY-95712-48
Length/pk	30.4 m (100 ft)	15.2 m (50 ft)	15.2 m (50 ft)	30.4 m (100 ft)	30.4 m (100 ft)	15.2 m (50 ft)	15.2 m (50 ft)	15.2 m (50 ft)	15.2 m (50 ft)
Price/pk									

Flow Rates in mL/min

rpm	Microbore pump tubing size (ID)								
	0.19 mm	0.25 mm	0.51 mm	0.89 mm	1.14 mm	1.42 mm	2.06 mm	2.79 mm	
1.7 to 10	0.002 to 0.013	0.004 to 0.022	0.015 to 0.087	0.041 to 0.25	0.064 to 0.39	0.09 to 0.57	0.18 to 1.05	0.28 to 1.65	
13 to 80	0.017 to 0.10	0.03 to 0.18	0.12 to 0.70	0.33 to 2.0	0.52 to 3.1	0.75 to 4.5	1.4 to 8.5	1.8 to 11.0	
50 to 300	0.06 to 0.39	0.11 to 0.66	0.43 to 2.6	1.2 to 7.5	1.9 to 11.4	2.8 to 17.1	5.3 to 32	7.2 to 43	
0.1 to 300	0.00013 to 0.39	0.0002 to 0.66	0.0009 to 2.6	0.003 to 7.5	0.004 to 11.4	0.006 to 17.1	0.011 to 32	0.014 to 43	

Masterflex® Pump Tubing

Ensure optimal performance from your Masterflex Pump

Silicone (platinum-cured)

- Low protein binding, fungus resistant, phthalate and latex-free
- Accommodates a wide temperature range
- USP Class V, EP, FDA, REACH, RoHS, ADF

Silicone (peroxide-cured)

- Greater physical compression capability
- Economical, longer tubing life
- USP Class VI, EP, FDA, 3A, REACH, RoHS, ADF

BioPharm Silicone (platinum-cured)

- Low absorption; excellent biocompatibility
- Very low extractable; weather, ozone, corona, radiation resistant
- USP Class VI, EP, FDA, 3A, REACH, RoHS, ADF

BioPharm Plus Silicone (platinum-cured)

- Ultra-smooth—minimizes particle entrapment
- Very low extractable—ideal for lab, biotech, and pharmaceutical
- USP Class VI, EP, FDA, REACH, RoHS, ADF

Puri-Flex™

- Heat sealable, weldable, and economical
- Long pump life when compared to silicone or many other TPE tubings
- USP Class VI, FDA, 3A, REACH, RoHS, ADF

C-Flex®

- Heat sealable, weldable, economical
- Better resistance to pH fluctuations
- USP Class VI, EP, REACH, RoHS, ADF

C-Flex® ULTRA

- Longest life of any C-Flex formulation
- Lowest spallation and reduced residue
- USP Class VI, EP, REACH, RoHS, ADF

PharMed® BPT

- >10,000 hours of tubing life; sealable, weldable
- Ideal for tissue and cell culture work
- USP Class VI, EP, FDA, NSF, REACH, RoHS

PharmaPure®

- Nontoxic and nonhemolytic biocompatible
- Long life even under pressure with VERY low spallation
- USP Class VI, EP, FDA, REACH, RoHS

GORÉ® STA-PURE® Series PCS

- Long life—even in pressures up to 100 psi
- Excellent flow stability
- USP Class VI

GORÉ® STA-PURE® Series PFL

- Long life—even in pressures up to 100 psi
- Excellent biocompatibility and flow stability
- USP Class VI

Chem-Durance® Bio

- Excellent chemical compatibility and biocompatibility
- Excellent life and durability under pressure
- USP Class VI, FDA, REACH, RoHS

Solve-Flex®

- Excellent chemical resistance, especially solvents
- Fluoropolymer lined with low spallation
- USP Class VI

Tygon® E-LFL

- Longest life of all Tygon formulations
- Broad chemical resistance
- USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADF

Tygon E-Food (B-44-4X)

- Smooth inner surface unaffected by commercial sanitizers
- Nontoxic; will not affect taste or odor
- FDA, EU Food, NSF, 3A, REACH, RoHS, ADF

Tygon E-Lab (E-3603)

- Ideal for general transfer use
- Nonaging, nonoxidizing, low gas permeability
- USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADF

Tygon Fuel & Lubricant (F-4040-A)

- Formulated to transport hydrocarbons, petroleum products, and distillates
- Low gas permeability
- REACH, RoHS, ADF

Tygon Chemical (2001)

- Excellent chemical resistance
- Plasticizer-free with low gas permeability
- FDA 21 CFR 175.300, REACH, RoHS, ADF

Norprene® (A-60 G)

- Up to 10,000 hours of tubing life
- Excellent choice for pressure/vacuum applications
- NSF, REACH, RoHS

Norprene Food (A 60 F)

- Ideal for high-temperature food applications
- Resists heat, ozone, acids, and alkalis
- FDA, 3A, NSF, REACH, RoHS

Viton®

- Perfect for applications where FDA and chemical compatibility is needed
- Resists corrosives, solvents, and oils at elevated temperatures
- FDA, ADF

Masterflex® Gamma Irradiated Tubing

Reduce the risk of microbial contamination

- Save time—many sizes of packaged and pretreated tubing available for quick shipment!
- Tubing is double bagged prior to gamma irradiation
- Irradiation at 32.5 kGy offers optimal microbial control for the tubing's critical fluid pathway
- Gamma-sensitive labeling confirms treatment
- Select from popular biocompatible tubing formulations

Formulation	Qty/pk	L/S 16		L/S 15		L/S 24		I/P 73		I/P 82	
		Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
Silicone (platinum-cured)	7.6 m (25 ft)	PY-96119-16		PY-96119-15		PY-96119-24		PY-96119-73		PY-96119-82	
PharMed® BPT	7.6 m (25 ft)	PY-96122-16		PY-96122-15		PY-96122-24		PY-96122-73		PY-96122-82	
C-Flex®	7.6 m (25 ft)	PY-96123-16		PY-96123-15		PY-96123-24		PY-96123-73		PY-96123-82	

		L/S® Precision Pump Tubing						L/S® High-Performance Precision Pump Tubing			
	Qty/pk	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
		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	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)
Silicone (platinum-cured)	7.6 m (25 ft)	PY-96410-13	PY-96410-14	PY-96410-16	PY-96410-25	PY-96410-17	PY-96410-18	PY-96410-15	PY-96410-24	PY-96410-35	PY-96410-36
Silicone (peroxide-cured)	7.6 m (25 ft)	PY-96400-13	PY-96400-14	PY-96400-16	PY-96400-25	PY-96400-17	PY-96400-18	PY-96400-15	PY-96400-24	PY-96400-35	PY-96400-36
BioPharm Silicone (platinum-cured)	7.6 m (25 ft)	PY-96420-13	PY-96420-14	PY-96420-16	PY-96420-25	PY-96420-17	PY-96420-18	PY-96420-15	PY-96420-24	PY-96420-35	PY-96420-36
BioPharm Plus Silicone (platinum-cured)	7.6 m (25 ft)	PY-96440-13	PY-96440-14	PY-96440-16	PY-96440-25	PY-96440-17	PY-96440-18	PY-96440-15	PY-96440-24	PY-96440-35	PY-96440-36
Puri-Flex™	7.6 m (25 ft)	PY-96419-13	PY-96419-14	PY-96419-16	PY-96419-25	PY-96419-17	PY-96419-18	PY-96419-15	PY-96419-24	PY-96419-35	PY-96419-36
C-Flex®	7.6 m (25 ft)	PY-06424-13	PY-06424-14	PY-06424-16	PY-06424-25	PY-06424-17	PY-06424-18	PY-06424-15	PY-06424-24	PY-06424-35	PY-06424-36
C-Flex® ULTRA	7.6 m (25 ft)	—	PY-06434-14	PY-06434-16	PY-06434-25	PY-06434-17	PY-06434-18	PY-06434-15	PY-06434-24	PY-06434-35	PY-06434-36
PharMed® BPT	7.6 m (25 ft)	PY-06508-13	PY-06508-14	PY-06508-16	PY-06508-25	PY-06508-17	PY-06508-18	PY-06508-15	PY-06508-24	PY-06508-35	PY-06508-36
PharmaPure®	7.6 m (25 ft)	PY-06435-13	PY-06435-14	PY-06435-16	PY-06435-25	PY-06435-17	PY-06435-18	PY-06435-15	PY-06435-24	—	—
GORE® STA-PURE® Series PCS	35.6 cm (14")	—	PY-96241-14	PY-96241-16	PY-96241-25	PY-96241-17	PY-96241-18	PY-96241-15	PY-96241-24	PY-96241-35	PY-96241-36
GORE® STA-PURE® Series PFL	35.6 cm (14")	—	PY-96242-14	PY-96242-16	PY-96242-25	PY-96242-17	PY-96242-18	PY-96242-15	PY-96242-24	PY-96242-35	PY-96242-36
Chem-Durance® Bio	15.2 m (50 ft)	PY-06442-13	PY-06442-14	PY-06442-16	PY-06442-25	PY-06442-17	PY-06442-18	PY-06442-15	PY-06442-24	PY-06442-35	PY-06442-36
Solve-Flex®	3.6 m (12 ft)	—	—	PY-96446-16	—	PY-96446-17	—	—	PY-96446-24	—	—
Tygon® E-LFL	7.6 m (25 ft)	PY-06440-13	PY-06440-14	PY-06440-16	PY-06440-25	PY-06440-17	PY-06440-18	PY-06440-15	PY-06440-24	PY-06440-35	PY-06440-36
Tygon E-Food (B-44-4X)	15.2 m (50 ft)	PY-06418-13	PY-06418-14	PY-06418-16	PY-06418-25	PY-06418-17	PY-06418-18	PY-06418-15	PY-06418-24	PY-06418-35	PY-06418-36
Tygon E-Lab (E-3603)	15.2 m (50 ft)	PY-06509-13	PY-06509-14	PY-06509-16	PY-06509-25	PY-06509-17	PY-06509-18	PY-06509-15	PY-06509-24	PY-06509-35	PY-06509-36
Tygon Fuel & Lubricant (F-4040-A)	15.2 m (50 ft)	PY-06401-13	PY-06401-14	PY-06401-16	PY-06401-25	PY-06401-17	PY-06401-18	PY-06401-15	PY-06401-24	PY-06401-35	PY-06401-36
Tygon Chemical (2001)	15.2 m (50 ft)	PY-06475-13	PY-06475-14	PY-06475-16	PY-06475-25	PY-06475-17	PY-06475-18	PY-06475-15	PY-06475-24	—	—
Norprene® (A-60 G)	15.2 m (50 ft)	PY-06404-13	PY-06404-14	PY-06404-16	PY-06404-25	PY-06404-17	PY-06404-18	PY-06404-15	PY-06404-24	PY-06404-35	PY-06404-36
Norprene Food (A 60 F)	15.2 m (50 ft)	PY-06402-13	PY-06402-14	PY-06402-16	PY-06402-25	PY-06402-17	PY-06402-18	PY-06402-15	PY-06402-24	PY-06402-35	PY-06402-36
Viton®	7.6 m (25 ft)	PY-96412-13	PY-96412-14	PY-96412-16	PY-96412-25	PY-96412-17	PY-96412-18	PY-96412-15	PY-96412-24	PY-96412-35	PY-96412-36

		I/P® Precision Pump Tubing			I/P® High-Performance Precision Pump Tubing			B/T® PerfectPosition® Pump Tubing			
	Qty/pk	I/P 26	I/P 73	I/P 82		I/P 70	I/P 88	I/P 89		B/T 87	B/T 91
		0.01 to 4 LPM 0.002 to 1.1 GPM	0.01 to 8 LPM 0.002 to 2.1 GPM	0.02 to 13 LPM 0.005 to 3.5 GPM	Qty/pk	0.01 to 8 LPM 0.002 to 2.1 GPM	0.02 to 17 LPM 0.005 to 4.5 GPM	0.03 to 19 LPM 0.007 to 5.0 GPM	Qty/pk	0.67 to 18.9 LPM 0.17 to 5.0 GPM	1.4 to 42 LPM 0.4 to 11.1 GPM
Silicone (platinum-cured)	7.6 m (25 ft)	PY-96410-26	PY-96410-73	PY-96410-82	3 m (10 ft)	PY-96510-70	PY-96510-88	PY-96510-89	3 m (10 ft)	PY-96510-87	PY-96510-91
Silicone (peroxide-cured)	7.6 m (25 ft)	PY-96400-26	PY-96400-73	PY-96400-82	—	—	—	—	3 m (10 ft)	PY-96400-87	PY-96400-91
BioPharm Silicone (platinum-cured)	7.6 m (25 ft)	PY-96420-26	PY-96420-73	PY-96420-82	3 m (10 ft)	PY-96421-70	PY-96421-88	PY-96421-89	—	—	—
BioPharm Plus Silicone (platinum-cured)	7.6 m (25 ft)	PY-96440-26	PY-96440-73	PY-96440-82	3 m (10 ft)	PY-96441-70	PY-96441-88	PY-96441-89	3 m (10 ft)	PY-96445-87	PY-96445-91
Puri-Flex™	7.6 m (25 ft)	PY-96419-26	PY-96419-73	PY-96419-82	3 m (10 ft)	PY-96419-70	PY-96419-88	PY-96419-89	3 m (10 ft)	PY-96419-87	PY-96419-91
C-Flex®	7.6 m (25 ft)	PY-06424-26	PY-06424-73	PY-06424-82	3 m (10 ft)	PY-06424-70	PY-06424-88	PY-06424-89	3 m (10 ft)	PY-06424-87	PY-06424-91
PharMed® BPT	7.6 m (25 ft)	PY-06508-26	PY-06508-73	PY-06508-82	7.6 m (25 ft)	PY-06508-70	PY-06508-88	—	3 m (10 ft)	PY-06507-87	PY-06507-91
PharmaPure®	7.6 m (25 ft)	PY-06435-26	PY-06435-73	PY-06435-82	—	—	—	—	3 m (10 ft)	PY-06437-87	PY-06437-91
GORE® STA-PURE® Series PCS	0.6 m (2 ft)	PY-96241-26	PY-96241-73	PY-96241-82	0.6 m (2 ft)	—	PY-96241-88	PY-96241-89	—	PY-96241-87	PY-96241-91
GORE® STA-PURE® Series PFL	0.6 m (2 ft)	PY-96242-26	PY-96242-73	PY-96242-82	0.6 m (2 ft)	—	PY-96242-88	PY-96242-89	—	—	—
Chem-Durance® Bio	15.2 m (50 ft)	PY-06442-26	PY-06442-73	PY-06442-82	15.2 m (50 ft)	PY-06442-70	PY-06442-88	PY-06442-89	3 m (10 ft)	PY-06443-87	PY-06443-91
Tygon® E-LFL	7.6 m (25 ft)	PY-06440-26	PY-06440-73	PY-06440-82	7.6 m (25 ft)	PY-06440-70	PY-06440-88	PY-06440-89	3 m (10 ft)	PY-06440-87	PY-06440-91
Tygon E-Food (B-44-4X)	15.2 m (50 ft)	PY-06418-26	PY-06418-73	PY-06418-82	15.2 m (50 ft)	PY-06418-70	PY-06418-88	PY-06418-89	3 m (10 ft)	PY-06418-87	PY-06418-91
Tygon E-Lab (E-3603)	15.2 m (50 ft)	PY-06509-26	PY-06509-73	PY-06509-82	15.2 m (50 ft)	PY-06509-70	PY-06509-88	PY-06509-89	15.2 m (50 ft)	—	—
Norprene® (A-60 G)	15.2 m (50 ft)	PY-06404-26	PY-06404-73	PY-06404-82	7.6 m (25 ft)	PY-06404-70	PY-06404-88	PY-06404-89	7.6 m (25 ft)	—	—
Norprene Food (A 60 F)	15.2 m (50 ft)	PY-06402-26	PY-06402-73	PY-06402-82	7.6 m (25 ft)	—	PY-06402-88	PY-06402-89	3 m (10 ft)	PY-06399-87	PY-06399-91

Masterflex® Pump Accessories

A. Pulse Dampener

Virtually eliminates pulsation in output flow. Five pairs of fittings and PTFE-pipe thread tape are included. Accepted tubing: all L/S® sizes, I/P® 26, nominal from 1/16" to 3/8" ID (1.6 to 9.5 mm ID). Fittings included (tubing ID x NPT(M) thread): 1/16" x 1/8", 1/8" x 1/8", 3/16" x 1/8", 1/4" x 1/8", and 3/8" x 1/8". Dampener connections: 1/8" NPT(F). Dead volume: 190 mL. Max pressure: 60 psi (4.3 bar). Polyethylene body.



Description	Catalog number	Price
Pulse dampener	PY-07596-20	

B. On/Off Foot Switches

Foot switches allow for remote control of specific functions of your Masterflex drive. All units have a 6-ft (1.8 m) cord. Verify the connector type on your drive before ordering.



Description	Cat. no.	Price
DB9 male connector; for 07528-, 07557-, and 07591-series Masterflex drives	PY-77595-35	
DB25 male connector; for 07522-, 07523-, 07551-, 77301-, and 07594-series Masterflex drives	PY-07523-92	
18-pin round water-tight connector; for 07557-, 07591-, and 77411-series Masterflex drives	PY-07595-43	
31-pin round water-tight connector; for 07575-, 77301-, 07594-, and 77420-series Masterflex drives	PY-07575-84	

C. DB9 Cable Assembly

Use these 9-pin interface cable assemblies with Masterflex L/S® drives (07550- and 07551-series). Cable measures 6 ft (1.8 m) long.



Description	Catalog number	Price
Interface cable with DB9 (M/F)	PY-22050-54	

D. USB to DB9(M) RS-232 Serial Adapter Cable

Use this cable to connect the Masterflex 07550- and 07551-series Computer Compatible drives to a PC with USB port. Will also connect other peripheral devices equipped with RS-232 serial interface including balances, printers, scanners, and PDA's. Includes 2-ft cable and driver software. Supports data transfer speeds up to 12 Mbps; compatible with Windows® 2000/XP/Vista/7.



Description	Catalog number	Price
USB to DB9(M) RS-232 serial adapter cable	PY-22050-58	

E. Remote Control Connectors

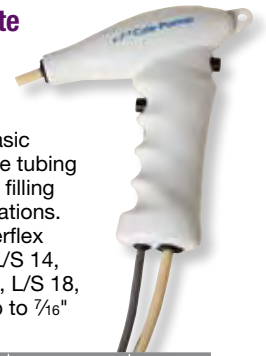
Combine these connectors with 20 to 22 gauge shielded wire to create your own interface cable. Maximum cable length is 1000 ft (300 m).



Description	Cat. no.	Price
DB9 male connector. Wire only the pins needed	PY-07595-45	
DB25 male connector. Wire only the pins needed	PY-07523-94	

F. Handheld Remote Controllers

These handheld controllers are designed to control basic drive operations. Route tubing through the handle for filling and dispensing applications. Handles accept Masterflex tubing sizes L/S® 13, L/S 14, L/S 16, L/S 25, L/S 17, L/S 18, L/S 15, and L/S 24 (up to 7/16" nominal OD).



Description	Cat. no.	Price
DB9 male connector; for 07528-series Masterflex L/S drives; control start/stop and direction	PY-07528-80	
DB25 male connector; for 07523-series and 07551-series Masterflex L/S drives; control start/stop, direction, and prime	PY-07523-97	
Stripped wire ends; control start/stop, direction, and prime	PY-07595-62	

G. Remote Control Cable Assemblies

Cable assemblies include terminal connector and 25 ft (7.9 m) cable with stripped wire ends. Verify the connector type on your drive before ordering.

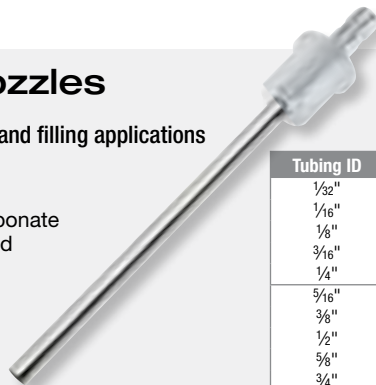


Description	Cat. no.	Price
DB9 male connector; for 07528-, 07557-, and 07591-series Masterflex drives	PY-07595-47	
DB25 male connector; for 07522-, 07523-, 07551-, 77301-, and 07594-series Masterflex drives	PY-07523-95	
18-pin round water-tight connector; for 07557-, 07591-, and 77411-series Masterflex drives	PY-77300-32	
31-pin round water-tight connector; for 07575-, 77301-, 07594-, and 77420-series Masterflex drives	PY-07575-80	

Overlook Filler/Dispensing Nozzles

- Maximize the speed, precision, and accuracy of dispensing and filling applications
- Dimensional tolerances of ±0.05% for assured repeatability

Nozzles feature a 316L stainless steel needle and a polycarbonate base with hose barb adapter. Materials meet FDA, USDA and USP Class VI requirements. Sterilize by ethylene oxide, autoclaving, or gamma irradiation.



Tubing ID	Catalog number	Price/ea
1/32"	PY-30619-06	
1/16"	PY-30619-01	
1/8"	PY-30619-07	
3/16"	PY-30619-02	
1/4"	PY-30619-08	
5/16"	PY-30619-03	
3/8"	PY-30619-09	
1/2"	PY-30619-04	
5/8"	PY-30619-10	
3/4"	PY-30619-05	

Masterflex® Barbed Fittings

Designed to tight tolerances and made from virgin materials

Size	Use with Masterflex® tubing sizes			HDPE		Polypropylene		Kynar® PVDF	
	L/S°	I/P°	B/T°	Catalog number	Price/ pk of 10	Catalog number	Price/ pk of 10	Catalog number	Price/ pk of 10
A. Straight barsbs									
1/16"	13, 14	—	—	PY-40612-01		PY-40612-43		PY-40612-04	
1/8"	16	—	—	PY-40612-05		PY-40612-47		PY-40612-08	
3/16"	15, 25	—	—	PY-30612-09		PY-30612-51		PY-30612-12	
1/4"	17, 24	26	—	PY-30612-13		PY-30612-55		PY-30612-16	
3/8"	18, 35, 36	70, 73	86	PY-30612-17		PY-30612-59		PY-30612-20	
1/2"	—	82, 88	87	PY-30612-21		PY-30612-63		PY-30612-24	
5/8"	—	89	—	PY-30612-25		PY-30612-67		PY-30612-28	
3/4"	—	—	91	PY-30612-29		PY-30612-71		PY-30612-32	
1"	—	—	92	PY-30612-33		PY-30612-75		PY-30612-36	
B. Tee connectors (equal leg)									
1/16"	13, 14	—	—	PY-40613-01		PY-40613-43		PY-40613-04	
1/8"	16	—	—	PY-40613-05		PY-40613-47		PY-40613-08	
3/16"	15, 25	—	—	PY-30613-09		PY-30613-51		PY-30613-12	
1/4"	17, 24	26	—	PY-30613-13		PY-30613-55		—	—
3/8"	18, 35, 36	70, 73	86	PY-30613-17		PY-30613-59		PY-30613-20	
1/2"	—	82, 88	87	PY-30613-21		PY-30613-63		PY-30613-24	
5/8"	—	89	—	PY-30613-25		PY-30613-67		PY-30613-28	
3/4"	—	—	91	PY-30613-29		PY-30613-71		PY-30613-32	
1"	—	—	92	PY-30613-33		PY-30613-75		PY-30613-36	
C. Y-connectors (equal leg)									
1/16"	13, 14	—	—	PY-30614-01		PY-30614-43		PY-30614-04	
1/8"	16	—	—	PY-30614-05		PY-30614-47		PY-30614-08	
3/16"	15, 25	—	—	PY-30614-09		PY-30614-51		PY-30614-12	
1/4"	17, 24	26	—	PY-30614-13		PY-30614-55		PY-30614-16	
3/8"	18, 35, 36	70, 73	86	PY-30614-17		PY-30614-59		PY-30614-20	
1/2"	—	82, 88	87	PY-30614-21		PY-30614-63		PY-30614-24	



A
Straight barb



B
Tee connector



C
"Y" connector

Cole-Parmer® Solenoid Two-Way Pinch Valves

Specifically designed for Masterflex® pump tubing

- Use with tubing that has durometer rating of 50 or less such as C-Flex® or silicone—7.25 psi max
- Excellent for clean processes—fluid stays contained within tubing
- Use for on/off flow control applications



Cole-Parmer®

Tube size	Response time	Watts	12 VDC valves		24 VDC valves	
			Catalog number	Price	Catalog number	Price
Normally closed						
L/S® 14	30 to 50 msec	10	PY-98306-00		PY-98306-02	
L/S 16			PY-98306-08		PY-98306-10	
L/S 25			PY-98306-16		PY-98306-18	
L/S 17			PY-98306-24		PY-98306-26	
Normally open						
L/S 14	30 to 50 msec	10	PY-98306-04		PY-98306-06	
L/S 16			PY-98306-12		PY-98306-14	
L/S 25			PY-98306-20		PY-98306-22	
L/S 17			PY-98306-28		PY-98306-30	

Tubing Weights

Keep tubing in place during dispense cycles



Flow-through PTFE weights fit Masterflex L/S® tubing sizes noted.

Description	Catalog number	Price
Weight for L/S 16, 15, and 25	PY-78226-81	
Weight for L/S 17, 18, 24, 35, 36	PY-78226-82	
Set of two; one each of 78226-81 and 78226-82	PY-77310-03	

Pure-Fit® Tru Valve

Easy implementation in your system

- Reusable for multiple cycles and applications

The valve's butterfly design allows easy installation to existing lines; purity is maintained because the valve goes around the exterior of the tubing and never comes in contact with process fluid.



Simple threaded handle and calibrated scale ensure accurate control of flow and can also be written into validation protocols. The valve also features lockout positioning for use in steam-in-place (SIP) cycles. Withstands autoclaving or gamma irradiation. Accommodates any flexible tubing up to 17.8 mm (0.700") in outer diameter.

Fits Masterflex® tubing sizes	Material	Catalog number	Price
L/S® 13, 14, 15, 16, 17, 18, 24, 25, 35, 36; I/P® 26, 73	Glass-reinforced nylon	PY-20002-00	

Why Choose Ismatec® Peristaltic Pumps?

1 Precise

Flow rates as low as 0.0004 mL/min for delivering accurate volumes.

2 Reduced Pulsation

Better reproducibility and longer tubing life with planetary gear drive construction.

3 Gentle Handling

Select pumps with convex rollers to extend tubing life and use with fragile samples such as live cells.

4 Customizable

Mix and match drives, pump heads, and tubing for a system tailored to your needs.

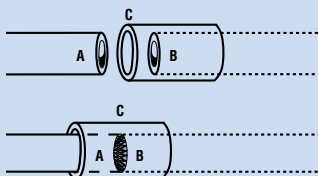
5 Quality & Durability

Swiss-engineered design manufactured to strict ISO 9001:2008 standards with two-year warranty in most models.



How to splice microbore tubing

1. Bring together one end of a length of color-coded tubing (A) and one end of a length of extension tubing (B). Both lengths of tubing should have the same ID and OD.
2. Center a 1 to 2" piece of larger tubing (C) over the ends of the two pieces to be joined (A and B). The short tubing piece should be of similar material and with an ID approximately equal to the OD of the tubing to be joined.
3. With the short piece (C) centered over the joint, apply solvent or sealant to the outside of tubing (B) and slide tubing (C) onto (B). Repeat the process for tubing (A) to join tubing permanently. If future tubing changes are necessary, then apply solvent or sealant only to tubing (B) and (C). Use a ketone-type solvent to splice Tygon® or Viton® tubing; an RTV adhesive for silicone tubing; and a tetrahydrofuran with PharMed® BPT tubing.



Note: Tubing can be found on pages 46–47.



Selecting the Right Ismatec Pump

Pump Series	Features	Flow range	See page(s)
Reglo independent channel control (ICC)	Independently controlled channels with different speed capabilities. Bidirectional flow in each channel. 2, 3 or 4 channels.	0.0001 to 43 mL/min	39
IPC Low-flow high-accuracy	High-precision multichannel dispensing and delivery pumps for analytical applications. Planetary drive. RS-232 or analog interface. 4, 8, 12, 16, or 24 channels.	0.0004 to 44 mL/min	40
Reglo compact multichannel	Compact cassette dispensing pumps. Some models with calibrating functions. RS-232 or analog interface. 2 or 4 channels.	0.003 to 68 mL/min	41
Reglo Quick™	Compact tubing-bed dispensing pump. Simple tubing changeout. Analog interface only. 1 channel.	2.1 to 230 mL/min	42
Fixed-speed rack-mount	Use these rack-mounted pumps almost anywhere. Easy tubing changes even while pump is running. 2 or 4 channels.	0.047 to 22 mL/min	42
eoline	Economical and powerful. Stackable stainless steel housing. Simple set up and operation. Models with analog interface. 1 to 8 channels.	0.0075 to 5400 mL/min	43
Flowmaster™	Powerful pump for heavy-duty processes. Stainless steel housing, IP65 rated; dust-tight and waterproof. Analog interface. 1 channel.	37 to 13,000 mL/min	43
BVP and MCP Quick-couple drives, Standard and Process versions	Variety of drives and pump heads allow a wide range of pumping solutions. Drives come in basic (BVP) models and programmable (MCP) models with calibrating function and RS-232 and analog interfaces. Process versions are IP65-rated; dust-tight and waterproof. Interchangeable pump heads are easy to install; with 1 to 24 channels.	0.003 to 3600 mL/min	44–45

Reglo Independent Channel Control (ICC) Pumps

Pump each channel at different speeds and directions!

- Each pump performs the job of up to four separate pumps
- Additional options in channel and roller configurations allow balanced pulsation control at desired flow rate
- USB interface for quick computer connections using redesigned graphical user-interface

These two-, three- and four-channel peristaltic pumps let you individually control the flow and direction of each channel from the intuitive keypad or via your computer—expanding your benchtop pumping capabilities with a single compact unit! Pump delivers continuous pumping or precision dispensing up to 43 mL/min with the capability of Bidirectional flow in each channel. Plus, independent channel calibration minimizes tube-to-tube differences, resulting in high calibration accuracy.



Deliver or dispense at multiple flow rates—all from a single space-saving pump.



See pages 46–47.

Specifications

Speed: 0.1 to 100 rpm **Pressure:** up to 14.5 psi (1.0 bar)
Accuracy: ±1%



Channels	Rollers	Tubing	Power (VAC, Hz)	Catalog number	Price
Benchtop pumps					
2	6	Three-stop	100 to 240, 50/60	PY-78001-58	
	8			PY-78001-60	
	12			PY-78001-62	
3	6	Three-stop	100 to 240, 50/60	PY-78001-68	
	8			PY-78001-70	
	12			PY-78001-72	
4	6	Three-stop	100 to 240, 50/60	PY-78001-78	
	8			PY-78001-80	
	12			PY-78001-82	
Panel-mount pumps					
2	8	Three-stop	100 to 240, 50/60	PY-78001-43	
3	8			PY-78001-45	
4	8			PY-78001-47	
4	12			PY-78001-49	

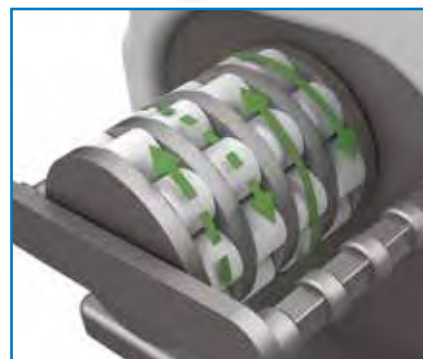
Accessories

[PY-78016-98](#) Replacement Click'n'go™ tubing cassette, POM-C

[PY-78016-96](#) Click'n'go™ tubing cassette, PVDF

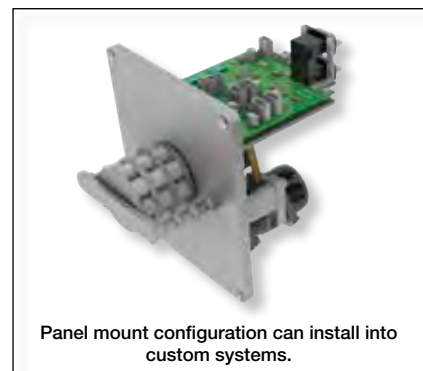
Flow Ranges (mL/min per channel)

Tubing ID (mm)	6 rollers	8 rollers	12 rollers
0.13	0.0002 to 0.14	0.0002 to 0.11	0.0001 to 0.093
0.51	0.0019 to 1.9	0.0017 to 1.7	0.0016 to 1.6
0.57	0.0024 to 2.4	0.0021 to 2.1	0.0019 to 1.9
0.64	0.0030 to 3.0	0.0026 to 2.6	0.0024 to 2.4
0.95	0.0064 to 6.4	0.0056 to 5.6	0.0050 to 5.0
1.02	0.0073 to 7.3	0.0063 to 6.3	0.0056 to 5.6
1.42	0.013 to 13	0.011 to 11	0.0094 to 9.4
1.75	0.019 to 19	0.016 to 16	0.013 to 13
1.85	0.021 to 21	0.017 to 17	0.014 to 14
2.54	0.033 to 33	0.027 to 27	0.019 to 19
2.79	0.036 to 36	0.031 to 31	0.021 to 21
3.17	0.043 to 43	0.035 to 35	0.024 to 24



Independent Channel Design

- ✓ Up to four independently controllable channels
- ✓ Flexibility of bidirectional flow in each channel
- ✓ Continuous pumping or precision dispensing
- ✓ Enhanced accuracy through separate channel calibration



Panel mount configuration can install into custom systems.

IPC Low-Flow High-Accuracy Pumps Fewer tubing changes

- Planetary drive for less pulsation and longer tubing life
- Smooth rotation and accurate liquid flow provided by eight SS rotors
- Easy repeatability with four-digit LED
- Simple to use—automatic occlusion cartridges provide reproducible results
- Five modes for pumping or dispensing including flow rate, time, batches, drip-free, and volume
- Control via keypad, computer, or remote control
- IP and IP-N pumps available online



Choose from 4, 8, 12, 16 and 24 channel configurations for application flexibility.



 2-Stop Tubing
See pages 46–47.

Specifications

Accuracy: better than $\pm 1\%$ **Pressure**
Click'n'go cassettes: up to 14.5 psi (1 bar)
Pressure lever cassettes: up to 22 psi (1.5 bar)



Flow range per channel (mL/min)	Channels	Rollers	Speed (rpm)	Cassette style	Tubing	115 VAC, 50/60 Hz		230 VAC, 50/60 Hz	
						Catalog number	Price	Catalog number	Price
IPC-N models									
0.0004 to 11	4	8	0.11 to 11.25	Click'n'go	Two-stop	PY-78001-00		PY-78001-06	
	8					PY-78001-10		PY-78001-16	
	12					PY-78001-20		PY-78001-26	
	16					PY-78001-30		PY-78001-36	
0.0004 to 11	24	8	0.11 to 11.25	Click'n'go	Two-stop	PY-78001-40		PY-78001-46	
	8					PY-78000-11		PY-78000-17	
	16					PY-78000-31		PY-78000-37	
	24					PY-78000-41		PY-78000-47	
IPC models									
0.002 to 44	4	8	0.4 to 45	Click'n'go	Two-stop	PY-78001-02		PY-78001-08	
	8					PY-78001-12		PY-78001-18	
	12					PY-78001-22		PY-78001-28	
	16					PY-78001-32		PY-78001-38	
0.002 to 44	24	8	0.4 to 45	Click'n'go	Two-stop	PY-78001-42		PY-78001-48	
	4					PY-78000-03		PY-78000-09	
	8					PY-78000-13		PY-78000-19	
	12					PY-78000-23		PY-78000-29	
0.002 to 44	16	8	0.4 to 45	Pressure lever (adjustable occlusion)	Two-stop	PY-78000-33		PY-78000-39	
	24					PY-78000-43		PY-78000-49	

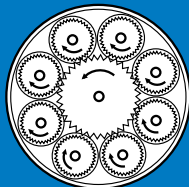
Order extra cartridges/adapters when fast tubing changes are crucial.

[PY-78001-95](#) Replacement Click'n'go™ cartridge, POM-C
[PY-78001-90](#) Repl. adjust. occlusion cartridge with pressure lever

[PY-07618-71](#) Replacement adapters hold two-stop color-coded tubing in cartridge. Two adapters required per cartridge. Pack of 12

Planetary Drive System

With the planetary drive system, each roller is directly driven by the sun wheel. This mechanism prevents axial push-pull friction on the tubing—resulting in longer tubing life, lower pulsation, and high repeatability.



Pressure Level Cassettes

These cassettes feature a pressure lever that allows you to set a different tubing pressure for each channel. Depending on the application, tubing material, and diameter, you can adjust to optimal tubing pressure for your requirements.



Reglo Compact Multichannel Pumps

No more inconsistent results

- Consistent flow and reduced tubing wear for improved results
- Very small footprint for a stand-alone “smart” pump
- Get balanced pulsation control at your desired flow rate with choice of channel and roller configuration
- No maintenance—rollers are self-lubricating
- Easy channel changes—Click’n’go™ minicartridges snap in place
- Maintain uniform channel-to-channel performance with Click’n’go cassette spring-tensioning design

A. Reglo Analog Pumps

Speed is adjustable in 1% steps (2 to 100%) via 2-digit potentiometer. Control speed remotely. Start/stop pump or change direction via contact closure; monitor speed through frequency output.

B. Reglo Digital Programmable Pumps

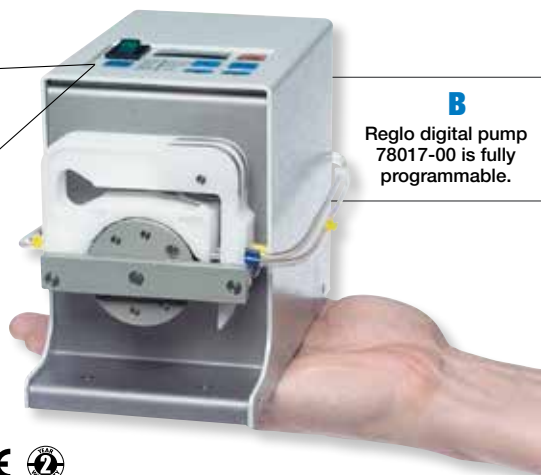
Continuously pump or dispense in any of four modes—flow rate, time, batches, or drip-free. Pumps feature analog input and output controls, as well as an RS-232 interface for control by a computer. Remote control capable.



A
Reglo analog pump 78016-30



B
Reglo digital pump 78017-00 is fully programmable.



Specifications

Pressure

Click’n’go cassettes: up to 14.5 psi (1 bar)
Pressure lever cassettes: up to 22 psi (1.5 bar)



See pages 46-47.

Channels	Rollers	Speed (rpm)	Tubing	A. Reglo Analog pumps				B. Reglo Digital programmable pumps with calibrating function			
				Flow range per channel (mL/min)	115 VAC, 50/60 Hz		230 VAC, 50/60 Hz		Flow range per channel (mL/min)	115/230 VAC, 50/60 Hz	
					Cat. no.	Price	Cat. no.	Price		Cat. no.	Price
2	6	3.2 to 160	Three-stop	0.005 to 68	PY-78016-00		PY-78016-02		0.003 to 68	PY-78016-42	
	8			0.004 to 57	PY-78016-10		PY-78016-12		0.002 to 57	PY-78017-02	
	12			0.003 to 38	PY-78017-25		PY-78017-27		0.002 to 38	PY-78016-47	
4	6	2.0 to 100	Three-stop	0.003 to 43	PY-78017-30		PY-78017-32		0.002 to 43	PY-78017-42	
	8			0.003 to 35	PY-78016-30		PY-78016-32		0.002 to 35	PY-78017-12	
	12			0.002 to 24	PY-78017-35		PY-78017-37		0.001 to 24	PY-78017-22	

Minicartridges

Optional minicartridge with adjustable occlusion lets you manually vary pressure on each channel.

[PY-07624-64](#) Optional adjustable occlusion cassette with pressure lever, POM-C

[PY-78016-98](#) Replacement Click’n’go cassette, POM-C

Reglo Quick™ Pump

Reduce downtime with easy tubing changeovers

- Wide opening angle makes tube bed easily accessible for quick tubing changes
- Four-roller head achieves flow rates up to 230 mL/min
- Compact design frees valuable space on your benchtop
- Input/output control adds versatility



Head allows alternate placement of tubing.



Pump Tubing Flow Range Information

Tubing ID in. (mm)	Wall thickness in. (mm)	Flow rate (mL/min)	
		Min	Max
1/8 (3.2)	1/16 (1.6)	2.1	103
3/16 (4.8)	1/16 (1.6)	4.6	230



ISO9001:2008
CERTIFIED SUPPLIER



Flow range per channel	Channels	Rollers	Speed	Tubing	Power	Catalog number	Price
2.1 to 230 mL/min	1	4	3.2 to 160 rpm	Pump	115 VAC, 50/60 Hz	PY-78018-00	
					230 VAC, 50/60 Hz	PY-78018-02	

Fixed-Speed Rack-Mount Pumps

No need to stop pump to change tubing!

- Use these pumps almost anywhere with compact size mounting rod
- A constant-speed, synchronous motor ensures a steady, repeatable flow rate
- Three-position toggle switch runs pump in either direction

Minicartridge design offers the easiest and most convenient tubing changes of all—even replace tubing while your pump is running! Order extra minicartridges (below). Have extra tubing on hand when fast tubing changes are crucial.

What's included: a 5 1/2" L x 1/2" dia (14 x 0.5 cm) mounting rod, a 6-ft (1.8-m) cord with plug, and two or four minicartridges.



Minicartridge design—fast tubing changes even when pump is running.

Specifications

Pressure

Click'n'go cassettes: up to 14.5 psi (1 bar)
Pressure lever cassettes: up to 22 psi (1.5 bar)

ISO9001:2008
CERTIFIED SUPPLIER



See pages
46–47.

Flow range (mL/min)	Channels	Rollers	Speed	Cassette style	Tubing	115 VAC, 60 Hz		230 VAC, 50 Hz	
						Catalog number	Price	Catalog number	Price
0.047 to 6.2	2	8	20 rpm	Click'n'go	Three-stop	PY-78012-00		PY-78012-05	
0.14 to 19.0		8	60 rpm			PY-78012-20		PY-78012-25	
0.17 to 22.0		6	60 rpm			PY-78012-80		PY-78012-85	
0.056 to 7.4		6	20 rpm			PY-78012-90		PY-78012-95	
0.047 to 6.2	4	8	20 rpm	Click'n'go	Three-stop	PY-78012-30		PY-78012-35	
0.093 to 12.0		8	40 rpm			PY-78012-40		PY-78012-45	
0.056 to 7.4		6	20 rpm			PY-78012-50		PY-78012-55	
0.11 to 15.0		6	40 rpm			PY-78012-60		PY-78012-65	

Minicartridges

[PY-07624-64](#) Optional adjustable occlusion cassette with pressure lever, POM-C

[PY-78016-98](#) Replacement Click'n'go™ cassette, POM-C

ecoline Pumps

Save space—pumps stack easily

- Durable stainless steel housing and four stabilizing feet for easier stacking
- Simple setup and operation—start, stop, and reverse flow with a single switch
- Rotors accommodate 1.6 or 2.4 mm wall tubing

Pumps A, B, C, and E are controllable remotely via an analog input signal (0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, or 4 to 20 mA); start/stop drive or reverse direction via contact closure (eight-pin DIN). Input signals from your existing instruments actuate drive functions.

A–C. Single-Channel Pumps

- Minimize tubing wear and ensure automatic centering with convex roller

D. Masterflex® L/S® Easy-Load® Pump

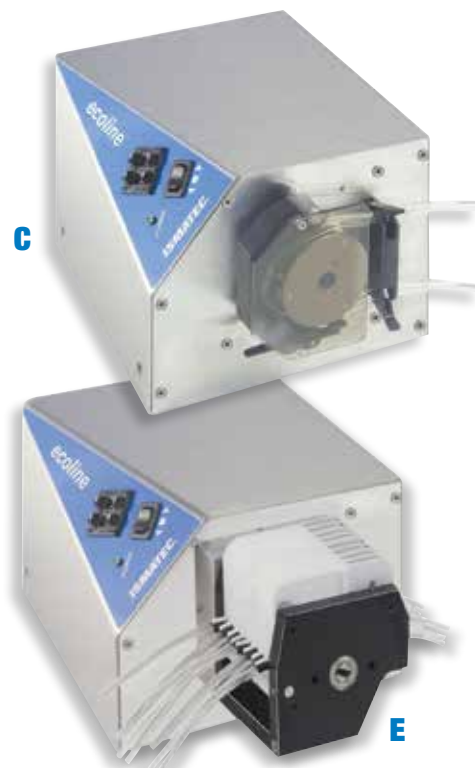
- Change tubing quickly with easily accessible head
- Polysulfone housing and stainless steel rotor

E. Minicartridge Pumps

- No adjustments needed—spring-loaded cassettes for optimal occlusion at all times
- Get consistent, low-pulse flow with 6 or 12 rollers



Key	Flow range per channel (mL/min)	Channels	Rollers	Speed	Tubing	115 VAC, 60 Hz		230 VAC, 50 Hz	
						Cat. no.	Price	Cat. no.	Price
Single-channel pumps									
A	1.7 to 5400	1	2	3.5 to 350 rpm	Pump (pgs 46–47)	PY-78022-10		PY-78022-12	
B	1.6 to 5000		3			PY-78022-20		PY-78022-22	
C	0.25 to 1300		3			PY-78022-30		PY-78022-32	
Easy-Load pump									
D	0.23 to 1600	1	3	3.5 to 350 rpm	Masterflex® (pgs 34–35)	PY-78022-50		PY-78022-52	
Minicartridge pumps with Click'n'go cassettes									
E	0.01 to 130	8	6	3.5 to 350 rpm	Three-stop (pgs 46–47)	PY-78022-40		PY-78022-42	
	0.0075 to 75	4	12			PY-78022-60		PY-78022-62	



Accessories

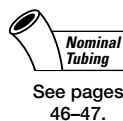
- [PY-07624-64](#) Optional adjustable occlusion cassette with pressure lever, POM-C
- [PY-78016-98](#) Replacement Click'n'go™ cassette, POM-C
- [PY-07610-25](#) Foot switch, momentary contact
- [PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive

Flowmaster™ Pump

Stainless steel construction—ideal for sanitary fluid transfer

- Easy cleaning—housing is IP65 rated for washdown
- Change tubing in just seconds!
- Easy to disassemble for cleaning
- Meets requirements of the biotech, food and beverage, and pharmaceutical industries

Single-channel pump head accommodates tubing with 6.4 to 15.9 mm ID and 3.2 mm wall thickness. Accepts a 0 to 5 VDC, 0 to 10 VDC, 1 to 20 mA, or 4 to 20 mA input signal for remote speed control. Features multiple overload protection and an extensive analog interface with status information for process control systems.



Stainless steel pump head detaches for easy cleaning.

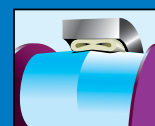
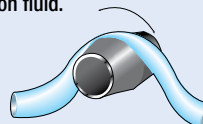


Flow range	Rollers	Speed	Tubing	Power	Catalog number	Price
37 mL/min to 13 L/min	3	5 to 500 rpm	Pump	115 VAC, 50/60 Hz	PY-78025-00	
				230 VAC, 50/60 Hz	PY-78025-05	

[PY-17050-01](#) NIST-traceable calibration with data for peristaltic pump drive

Convex Rollers

Convex rollers extend tubing life and are gentle on fluid.



BVP and MCP Quick-Couple Drives

Create a custom system with interchangeable pump heads

- Mount pump heads quickly with turn-and-lock mounting system
- Select from interchangeable tubing pump heads to achieve flow rates from 0.003 to 3700 mL/min
- Remote control and programming options add versatility
- Process washdown drives are IP-65 rated

BVP Standard and Process Drives

- Prime, flush, or prevent overflow with Max/Slow toggle switch

BVP Standard Drive features analog input that remote control of speed, start/stop or flow direction. **BVP Process Washdown Drive** is similar to the BVP Standard model, plus has a digital display for speed. The IP65-rated housing is ideal for dusty, humid, or corrosive environment and in cleanroom areas. The stainless steel housing is sealed for added durability.

MCP Standard and Process Programmable Digital Drives

- Save time—recall and store up to four programs
- Preprogrammed with tubing sizes and heads for faster setup
- Use the RS-232 interface to automate your lab or operate independently via the keypad—RS-232 in for remote operation; RS-232 out for cascading pumps

MCP Standard Drive is programmable to dispense by volume, time, flow rate, batches with variable pause time, stored programs, roller back steps, or number of dispensing cycles. Digital display shows speed, flow rate, dispensing volume, dispensing time, and pause time. **MCP Process Washdown Drive** adds an IP65-rated housing for washdown applications—ideal for dispensing and filling in dusty, humid, or corrosive environment and in cleanroom areas. The stainless steel housing is sealed for added durability.



BVP Standard drive 78002-10

BVP Process washdown drive 78003-10

MCP Standard programmable digital drive 78002-00 can store four programs downloaded from your computer.



REQUIRED System Components

- 1) Quick-couple drive 44
- 2) Pump head 44-45
- 3) Tubing 34-35, 46-47

Specifications

Duty cycle: continuous

ISO9001:2008
CERTIFIED SUPPLIER



IP 65
78003-08,
-10, -12 only

Model	BVP Standard drive		BVP Process washdown drive		MCP Standard drive		MCP Process washdown drive
Catalog number	PY-78002-10	PY-78002-12	PY-78003-10	PY-78003-12	PY-78002-00	PY-78002-02	PY-78003-08
Programmable	No		No		Yes		Yes
Speed	2.4 to 240 rpm (indicated as 1 to 99.9%)		1 to 240 rpm		1 to 240 rpm		1 to 240 rpm
Resolution	0.1% via 3-digit potentiometer		0.1 rpm		0.1 rpm		0.1 rpm
Flow range/channel	0.003 to 3700 mL/min		0.001 to 3700 mL/min		0.001 to 3700 mL/min		0.001 to 3700 mL/min
Flow rate settings	—		—		μL/min, mL/min, L/min		μL/min, mL/min, L/min
Remote control capabilities	Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 12 kHz Start/stop, rotation direction		Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 7.2 kHz Start/stop, rotation direction, autostart		RS-232 (1 in, 1 out), 1 analog Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 12 kHz Start/stop, rotation direction, autostart		RS-232 (1 in, 1 out), 1 analog Speed control: 0 to 5 VDC, 0 to 10 VDC, 0 to 20 mA, 4 to 20 mA Speed output: 0 to 10 VDC or 0 to 7.2 kHz Start/stop, rotation direction, autostart
IP rating	IP30		IP65		IP30		IP65
Power	115 VAC, 50/60 Hz	230 VAC, 50/60 Hz	115 VAC, 50/60 Hz	230 VAC, 50/60 Hz	115 VAC, 50/60 Hz	230 VAC, 50/60 Hz	115/230 VAC, 50/60 Hz
Price							

Pump Heads for Quick-Couple Drives

A. Washdown Pump Heads

Dismantle for easy cleaning—ideal for hygienic applications. Convex rollers and concave tube-bed maintain the integrity of material being pumped. Coated aluminum with stainless steel rollers.

Flow range (mL/min)	Channels	Rollers	Tubing	Wall thickness	Max pressure	Catalog number	Price
0.49 to 3700	1	2	Pump (pages 46-47)	1.6 mm	22 psi (1.5 bar)	PY-78002-11	
3.6 to 3100	1	2		2.4 mm	36 psi (2.5 bar)	PY-78002-13	
0.45 to 3400	1	3		1.6 mm	22 psi (1.5 bar)	PY-78002-16	
3.3 to 2900	1	3		2.4 mm	36 psi (2.5 bar)	PY-78002-14	



B. Minicartridge Pump Heads

Minimize pulsation with more rollers. Get up to 24 channels with 78002-50 and 07623-00 below. Get up to 16 channels of the smoothest flow with 78002-90 and 07623-30 below.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
0.002 to 100	8 (up to 24)	6	Three-stop (pages 46-47)	14.5 psi (1.0 bar) [†]	PY-78002-50	
0.001 to 57	4 (up to 16)	12			PY-78002-90	

[†]22 psi (1.5 bar) achievable with pressure lever cassettes.

[PY-07623-00](#) **Eight-channel extension pump head.** Use up to two with 78002-50 to get 24 channels

[PY-07623-30](#) **Four-channel extension pump head.** Use up to three with 78002-90 to get 16 channels

C. Standard Cartridge Pump Heads

Ideal pump head for multichannel applications at higher flow rates. Click'n'go™ cartridges allow quick and easy tubing changes.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
0.002 to 230	8	8	Two-stop (pages 46-47)	14.5 psi (1.0 bar) [†]	PY-78002-34	
	12				PY-78002-36	

[†]22 psi (1.5 bar) achievable with pressure lever cassettes.

D. Tubing Bed Pump Heads

Ideal for delicate substances which require gentle occlusion setting. Spring-loaded tubing bed adjusts occlusion for optimum pressure and tubing.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
1.1 to 1110	2	6	Pump (pages 46-47)	22 psi (1.5 bar)	PY-07611-10	
0.09 to 530	3				PY-07611-15	

E. Quick-Change Pump Heads

Hinged tube-bed allows rapid tube change-over. Easily accessible pump head. Self-centering tube-track results in longer tubing-life. Stainless steel rollers.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
0.08 to 880	1	3	Pump (pages 46-47)	22 psi (1.5 bar)	PY-78002-22	
0.44 to 2800					PY-78002-20	

F. High-Viscosity Pump Head

Ideal for media with high viscosity or with a certain level of solid content. Accepts tubing with 1.6-mm and 2.4-mm wall thickness (for elevated differential pressures). Stainless steel rollers. Pressure on tubing adjustable via rollers.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
0.41 to 3600	1	3	Pump (pages 46-47)	36 psi	PY-78002-60	

G. Masterflex® Easy-Load® Pump Heads

Allows for fast and easy tubing changes. Accepts Masterflex L/S® pump tubing (see pages 34-35). Requires mounting plate below.

Flow range (mL/min)	Channels	Rollers	Tubing	Max pressure	Catalog number	Price
3.4 to 672	1 (up to 2)	3	L/S 15, L/S 24	20 psi	PY-07516-12	
0.12 to 912			L/S 13, L/S 14, L/S 16, L/S 17, L/S 18, L/S 25		PY-07516-10	

[PY-78020-90](#) **Mounting plate** for Masterflex Easy-Load pump head

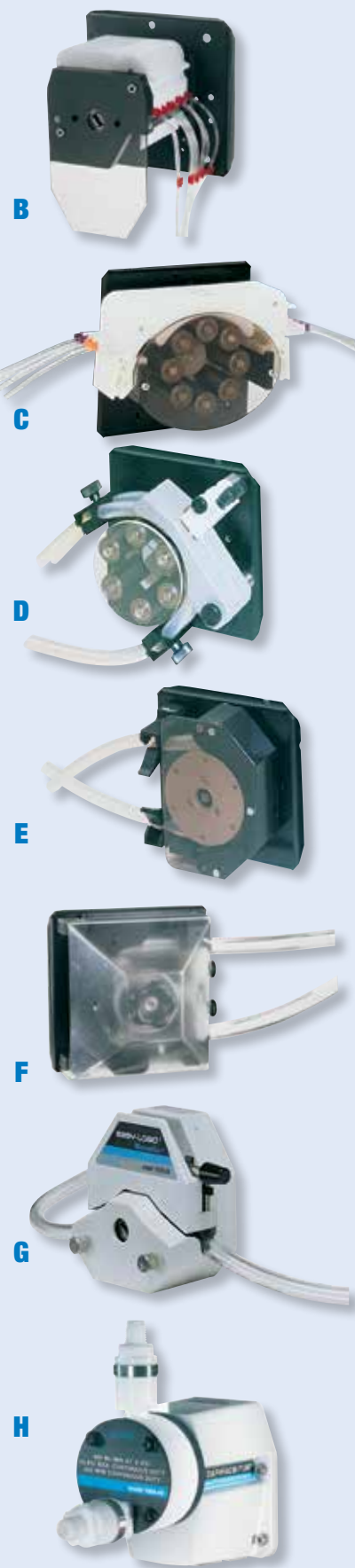
[PY-07013-05](#) **Mounting hardware** to stack two Easy-Load pump heads

H. PTFE-Diaphragm Pump Heads

Pump almost any fluid with these chemically inert PTFE-diaphragm pump heads. Pump heads withstand temperatures up to 150°F (66°C). Requires adapter 78002-70 to mount to Quick-Couple drives.

Flow range (mL/min)	Ball check	Rollers	Tubing	Max pressure	Catalog number	Price
0.5 to 60	Glass	1/8" NPT(M)	Pump (pages 46-47)	75 psi	PY-07090-62	
4 to 480	PTFE	1/4" NPT(M)		50 psi	PY-07090-42	

[PY-78002-70](#) **Adapter** for mounting PTFE Diaphragm pump heads onto 78002- and 78003-series drives



2- and 3-Stop Color-Coded Tubing for Ismatec® Pumps

Don't confuse your tubing—
color-coded stops for easy identification

STEP 1: Choose a tubing material & select the catalog number prefix.

Make sure to choose 2-stop or 3-stop tubing based on what your pump uses!

STEP 3: Complete your system with extension tubing.

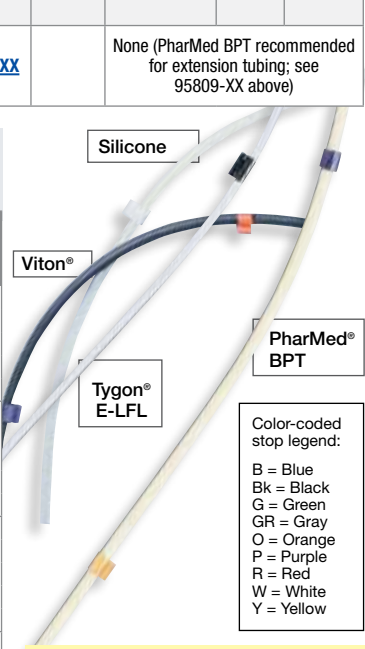
Connect stopped and extension tubing with barbed fittings or splicing.

Material	Description	Suffixes for the available sizes	Tubes/ pk (length)	2-Stop Tubing		3-Stop Tubing		Extension Tubing		
				Cat. no. prefix	Price/ pk*	Cat. no. prefix	Price/ pk*	Cat. no. prefix	Length/ pk	Price/ pk*
Tygon® E-LFL	<ul style="list-style-type: none"> Complies with USP Class VI, EP, FDA, EU food, REACH, RoHS, ADFC Longest life of all Tygon formulations Broad chemical resistance 	10, 12, 14, 18, 22, 24, 26, 28, 30, 31, 33, 34, 36, 37, 40, 42, 43, 47, 48	12 (16")	PY-96449-XX		PY-96450-XX		PY-06449-XX	100 ft	
Tygon® E-Food	<ul style="list-style-type: none"> Complies with FDA, EU Food, NSF, 2A, REACH, RoHS, ADFC Smooth inner surface; nontoxic 	10, 12, 18, 26, 30, 34, 42, 48	12 (16")	PY-96457-XX		PY-96458-XX		PY-06457-XX	100 ft	
Tygon® E-Lab	<ul style="list-style-type: none"> Complies with USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADFC Ideal for general transfer applications Nonaging/nonoxidizing, low gas permeability 	09, 10, 12, 14, 16, 18, 19, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38, 39, 40, 42, 44, 46, 48, 49	12 (16")	PY-96460-XX		PY-96461-XX		PY-06460-XX	100 ft	
Silicone (peroxide cured)	<ul style="list-style-type: none"> Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC Greater physical compression capability Economical, long tubing life 	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	PY-07616-XX		PY-07624-XX		PY-07625-XX	50 ft	
Silicone (platinum cured)	<ul style="list-style-type: none"> Complies with USP Class V, EP, FDA, REACH, RoHS, ADFC Low protein binding, fungus-resistant, phthalate and latex free 	22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	PY-95602-XX		PY-95603-XX		PY-95612-XX	50 ft	
Viton®	<ul style="list-style-type: none"> Complies with FDA, ADFC Resists corrosives, solvents, and oils at elevated temperatures 	18, 22, 24, 26, 30, 34, 38, 42, 46, 48	12 (12")	PY-97628-XX		PY-97629-XX		PY-97632-XX	50 ft	
PharMed® BPT	<ul style="list-style-type: none"> Complies with USP Class VI, EP, FDA, NSF, REACH, RoHS Over 10,000 hours of tubing life, sealable, weldable 	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	PY-95723-XX		PY-95714-XX		PY-95809-XX	100 ft	
Autoclavable PharMed® BPT	<ul style="list-style-type: none"> Ideal for tissue and cell culture work 	12, 32, 48	6 (16")	PY-95692-XX		PY-95693-XX				
PVC Solvent/ hydrocarbon	<ul style="list-style-type: none"> Resistant to ozone and UV light Resists to cracking, swelling, hardening Ideal for fuels, distillates, lubricants, and glycol-based coolants 	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	PY-95606-XX		PY-95605-XX		PY-95712-XX	50 ft	
Chem-Durance® Bio	<ul style="list-style-type: none"> Suitable for acetone, MEK, and other highly aggressive chemicals Long life and outstanding fatigue resistance 	14, 18, 24, 26, 30, 34, 36, 42, 48	6 (16")	PY-96327-XX		PY-96328-XX				None (PharMed BPT recommended for extension tubing; see 95809-XX above)

STEP 2:

Find your desired flow rate and select the catalog number suffix. See page 47 for more.

Flow rate† (mL/min) with Fixed-Speed Pumps (page 42)								Catalog number suffix	ID (mm)	Color-coded stops
78012-00, 78012-05	78012-20, 78012-25	78012-30, 78012-35	78012-40, 78012-45	78012-50, 78012-55	78012-60, 78012-65	78012-80, 78012-85	78012-90, 78012-95			
0.047	0.14	0.047	0.093	0.056	0.11	0.17	0.056	-10	0.19	O/R
0.081	0.24	0.08	0.16	0.1	0.19	0.29	0.1	-12	0.25	O/B
0.19	0.56	0.19	0.37	0.22	0.43	0.65	0.22	-14	0.38	O/G
0.25	0.75	0.25	0.5	0.29	0.58	0.86	0.29	-16	0.44	G/Y
0.34	1	0.34	0.67	0.38	0.77	1.2	0.38	-18	0.51	O/Y
0.52	1.6	0.52	1	0.6	1.2	1.8	0.6	-22	0.64	O/W
0.73	2.2	0.73	1.5	0.84	1.7	2.5	0.84	-24	0.76	Bk/Bk
1	2.9	1	2	1.1	2.3	3.4	1.1	-26	0.89	O/O
1.3	3.8	1.3	2.5	1.5	2.9	4.4	1.5	-28	1.02	W/W
1.6	4.7	1.6	3.1	1.8	3.6	5.4	1.8	-30	1.14	R/R
2	5.9	2	3.9	2.3	4.6	6.9	2.3	-32	1.3	GR/GR
2.3	6.8	2.3	4.6	2.7	5.4	8	2.7	-34	1.42	Y/Y
2.6	7.7	2.6	5.1	3	6	9.1	3	-36	1.52	Y/B
2.9	8.8	2.9	5.8	3.5	6.9	10	3.5	-38	1.65	B/B
3.5	10	3.5	7	4.2	8.4	13	4.2	-40	1.85	G/G
4.1	12	4.1	8.2	5	10	15	5	-42	2.06	P/P
4.8	14	4.8	9.5	5.8	12	17	5.8	-44	2.29	P/Bk
5.5	16	5.5	11	6.6	13	20	6.6	-46	2.54	P/O
6.2	19	6.2	12	7.4	15	22	7.4	-48	2.79	P/W



***Save 10% on 20-49 packs; 15% on 50-99 packs; 20% on 100+ packs in any combination of tubing (except Chem-Durance Bio and Autoclavable PharMed® BPT) from pages 46-47.**

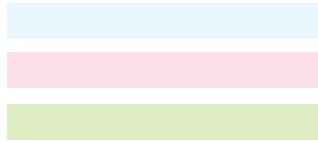


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Look Inside Masterflex® and Ismatec® Pumps Find more than **75 NEW** products

Introducing **New** and **Innovative Products** from **MASTERFLEX®**

Masterflex Open-Head Interlock Sensor Technology

Enhance worker protection with drives that automatically shut down when the pump head is opened

See page 12



Masterflex Drives with Advanced Networking & Communication

Faster, less expensive automation integration—no gateways or adapters needed

See pages 4–5



Masterflex Drives with Quattroflow™ Pump Heads

The perfect pair for pumping delicate biologic fluids

See page 18



Masterflex Ultrasonic Flow Sensors

Ensure consistent flow rates

See page 16

