



# Fluid Handling

SOLUTIONS



## Fluid Handling



## Electrochemistry



## Equipment & Instrumentation

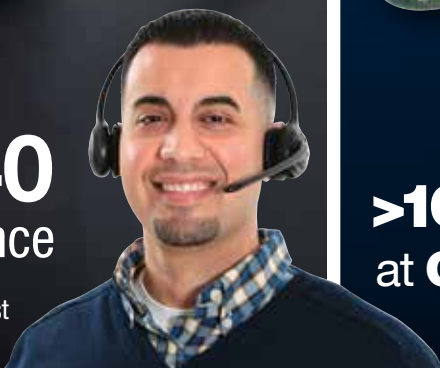


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\*Requires a TraceableLIVE subscription.



## 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	FA-07525-20	
2								FA-07525-40	

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

**FA-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:



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

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

## 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
- Painted steel housing is IP33 rated for protection from vertically falling water

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



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	¼ 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	FA-07559-00	
						190 to 260	1.2 at 230 VAC	FA-07559-05	
1 to 100	±2%	4	¼ 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	FA-07559-10	
						190 to 260	1.2 at 230 VAC	FA-07559-15	

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



**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
- 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



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	1/10 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	FA-07528-10	
3 to 300		2						FA-07528-20	
1 to 100		4						FA-07528-30	

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

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

**L/S® Precision Console Process Drives**

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

- 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
- Open-head sensor stops drive motor when pump head is opened—pair with an open-head sensor equipped pump head (see pages 7–8)
- Remote control capabilities via a watertight connector on back of drive

**NEW**

**FEATURES**

- ✓ Flow rates: 0.06 to 3400 mL/min
- ✓ Variable speed from 1 to 600 rpm
- ✓ Stack up to four pump heads for increased flow rates



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
<b>Precision process drives with 316 stainless steel housing</b>									
6 to 600	±0.25%	Yes	2	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07528-40	
1 to 100			4					FA-07528-45	
<b>Precision process drives with powder-coat steel housing</b>									
6 to 600	±0.25%	Yes	2	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07528-50	
1 to 100			4					FA-07528-55	

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

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

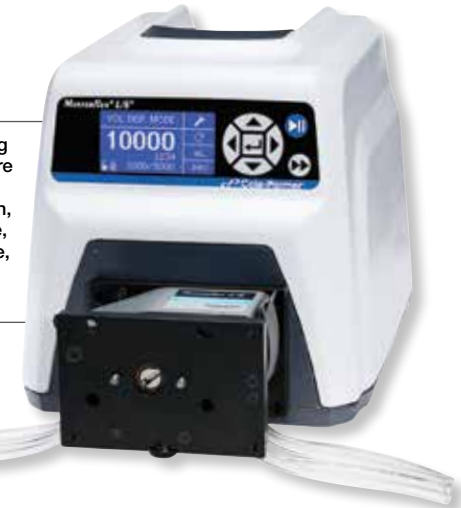
## L/S® Variable-Speed Digital Drives Versatile, worry-free operation

- Brushless, maintenance-free motor provides  $\pm 0.1\%$  speed control accuracy with 6000:1 turndown ratio
- Bright graphical LCD offers easy programming and four operating modes
- 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 7–8)
- 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	FA-07522-20	
		Yes						FA-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	FA-07522-30	
		Yes						FA-07522-38	

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

**FA-07523-97** Handheld remote controller; route tubing through handle for dispensing into containers  
**FA-17050-01** NIST-traceable calibration with data for peristaltic pump drive

## 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—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.
- Dispense by: 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 7–8)

### 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

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**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
<b>Digital process drive with 316 stainless steel housing</b>									
0.1 to 600	$\pm 0.1\%$	No	2	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07575-30	
		Yes						FA-07575-38	
0.02 to 100	$\pm 0.1\%$	No	4	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07575-35	
		Yes						FA-07575-40	
<b>Digital process drive with powder-coat steel housing</b>									
0.1 to 600	$\pm 0.1\%$	No	2	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07575-48	
		Yes						FA-07575-45	
0.02 to 100	$\pm 0.1\%$	No	4	1/10 hp (75 W)	IP66	12" x 9" x 9 9/16" (30.5 x 22.9 x 23.6 cm)	90 to 260 VAC, 50/60 Hz	FA-07575-42	
		Yes						FA-07575-45	

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

**FA-07575-80** Cable assembly for remote control; 31-pin round connector and 25-ft (7.9-m) cable with stripped wire ends

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



## L/S® Standard Pump Heads

### Ideal for accurate and repeatable fluid transfer applications

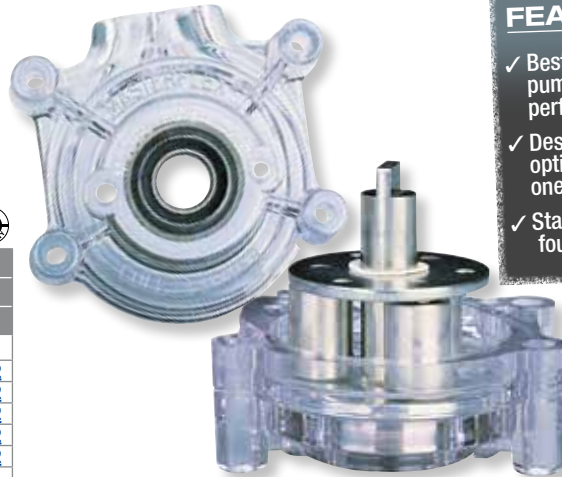
- PC housing allows you to see pump in operation;
- PPS housing and SS rotors have excellent chemical resistance



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
<b>A. Standard pump heads for precision pump tubing</b>						
L/S 13	0.06	0.001 to 6	0.36 to 36	<a href="#">FA-07013-20</a>	<a href="#">FA-07013-21</a>	<a href="#">FA-07013-52</a>
L/S 14	0.21	0.004 to 21	1.3 to 130	<a href="#">FA-07014-20</a>	<a href="#">FA-07014-21</a>	<a href="#">FA-07014-52</a>
L/S 16	0.8	0.016 to 80	4.8 to 480	<a href="#">FA-07016-20</a>	<a href="#">FA-07016-21</a>	<a href="#">FA-07016-52</a>
L/S 17	2.8	0.059 to 280	17 to 1700	<a href="#">FA-07017-20</a>	<a href="#">FA-07017-21</a>	<a href="#">FA-07017-52</a>
L/S 18	3.8	0.077 to 380	23 to 2300	<a href="#">FA-07018-20</a>	<a href="#">FA-07018-21</a>	<a href="#">FA-07018-52</a>
Price						
<b>B. Standard pump heads for high-performance precision pump tubing</b>						
L/S 15	1.7	0.033 to 170	10 to 1000	<a href="#">FA-07015-20</a>	<a href="#">FA-07015-21</a>	<a href="#">FA-07015-52</a>
L/S 24	2.8	0.057 to 280	17 to 1700	<a href="#">FA-07024-20</a>	<a href="#">FA-07024-21</a>	<a href="#">FA-07024-52</a>
L/S 35	3.8	0.077 to 380	23 to 2300	<a href="#">FA-07035-20</a>	<a href="#">FA-07035-21</a>	—
Price						
L/S 36	4.8	0.096 to 480	29 to 2900	<a href="#">FA-07036-30</a>	<a href="#">FA-07036-31</a>	—
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)



### FEATURES

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

### 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
<b>Hardware for Standard Heads L/S 13 to 35</b>		
One	<a href="#">FA-07013-04</a>	
Two	<a href="#">FA-07013-05</a>	
Three	<a href="#">FA-07013-08</a>	
Four	<a href="#">FA-07013-09</a>	
<b>Hardware for Standard Heads L/S 36</b>		
One	<a href="#">FA-07036-01</a>	
Two	<a href="#">FA-07036-02</a>	

## 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	
					Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
<b>A. Easy-Load II pump heads for precision pump tubing (not shown)</b>										
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)	<a href="#">FA-77200-50</a>		<a href="#">FA-77200-60</a>		<a href="#">FA-77200-30</a>	<a href="#">FA-77201-60</a>
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>B. Easy-Load II pump heads for high-performance precision pump tubing</b>										
L/S 15	1.7	1.7 to 170	10 to 1000	40 (2.7)						
L/S 24	2.8	2.8 to 280	17 to 1700	40 (2.7)	<a href="#">FA-77200-52</a>		<a href="#">FA-77200-62</a>		<a href="#">FA-77200-32</a>	<a href="#">FA-77201-62</a>
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)						
<b>C. Two-channel Easy-Load II pump heads for precision pump tubing</b>										
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)	<a href="#">FA-77202-50</a>		<a href="#">FA-77202-60</a>		—	—
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	<a href="#">FA-77200-01</a>	<a href="#">FA-77200-02</a>	<a href="#">FA-77200-03</a>	<a href="#">FA-77200-04</a>
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		
<b>High-performance pump heads for Precision pump tubing</b>									
L/S 16	0.9	0.018 to 90	0.09 to 614	40 (2.7)	FA-77252-60	FA-77252-70	FA-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)					
<b>High-performance pump heads for High-performance precision pump tubing</b>									
L/S 14HP†	0.3	0.006 to 30	Not recommended	150 (10.3)	FA-77252-62	FA-77252-72	FA-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)					
<b>Price</b>									

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
<b>Easy-Load 3 pump heads for Precision pump tubing</b>						
L/S 13	0.06	0.06 to 6	0.36 to 36	40 (2.7)	FA-77800-50	FA-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)		
<b>Easy-Load 3 pump heads for High-performance precision pump tubing</b>						
L/S 15	1.7	1.7 to 170	10 to 1000	30 (2.0)	FA-77800-52	FA-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)		
<b>Price</b>						

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

‡CRS = cold-rolled steel SS = stainless steel

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



## L/S® Cytoflow™ Pump Heads

### Ensure maximum protection of live cells and shear-sensitive fluids

- 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



77253-10



77253-00

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			
<b>2-roller pump heads for Precision pump tubing</b>						
L/S 16	1.7	0.03 to 170	0.17 to 1000	22 (1.5)	FA-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)		
<b>2-roller pump heads for High-Performance Precision pump tubing</b>						
L/S 15	4.0	0.08 to 390	0.40 to 2300	22 (1.5)	FA-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)		
<b>3-roller pump heads for Precision pump tubing</b>						
L/S 16	1.6	0.03 to 160	0.16 to 980	22 (1.5)	FA-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)		
<b>3-roller pump heads for High-Performance Precision pump tubing</b>						
L/S 15	3.5	0.07 to 340	0.35 to 2000	22 (1.5)	FA-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)		

**NEW**

**NEW**

## 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



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

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.



### 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

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

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

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

Find even more online!  
 Go to ColeParmer.com to see full product details.

## L/S® 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

### Silicone (peroxide-cured)

- Greater physical compression capability
- Economical, longer tubing life

### BioPharm Silicone (platinum-cured)

- Low absorption; excellent biocompatibility
- Very low extractable; weather, ozone, corona, radiation resistant

### BioPharm Plus Silicone (platinum-cured)

- Ultra-smooth—minimizes particle entrapment
- Very low extractable—ideal for lab, biotech, and pharmaceutical

### Puri-Flex™

- Heat sealable, weldable, and economical
- Long pump life when compared to silicone or many other TPE tubings

### C-Flex®

- Heat sealable, weldable, economical
- Better resistance to pH fluctuations

### C-Flex® ULTRA

- Longest life of any C-Flex formulation
- Lowest spallation and reduced residue

### PharMed® BPT

- >10,000 hours of tubing life; sealable, weldable
- Ideal for tissue and cell culture work

## L/S Precision Pump Tubing

Tubing size	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18
Inner diameter	0.8 mm (0.03")	1.6 mm (0.06")	3.1 mm (0.12")	4.8 mm (0.19")	6.4 mm (0.25")	7.9 mm (0.31")
Hose barb size	1.6 mm (1/16")	1.6 mm (1/16")	3.2 mm (1/8")	4.8 mm (3/16")	6.4 mm (1/4")	9.5 mm (3/8")
Flow range (approximate)†	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

Formulation	Complies with	Qty/pk	●	●	○	○	○	○
Silicone (platinum-cured)	MASTERFLEX USP Class V, EP, FDA, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-96410-13</a>	<a href="#">FA-96410-14</a>	<a href="#">FA-96410-16</a>	<a href="#">FA-96410-25</a>	<a href="#">FA-96410-17</a>	<a href="#">FA-96410-18</a>
Silicone (peroxide-cured)	MASTERFLEX USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-96400-13</a>	<a href="#">FA-96400-14</a>	<a href="#">FA-96400-16</a>	<a href="#">FA-96400-25</a>	<a href="#">FA-96400-17</a>	<a href="#">FA-96400-18</a>
BioPharm Silicone (platinum-cured)	MASTERFLEX USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-96420-13</a>	<a href="#">FA-96420-14</a>	<a href="#">FA-96420-16</a>	<a href="#">FA-96420-25</a>	<a href="#">FA-96420-17</a>	<a href="#">FA-96420-18</a>
BioPharm Plus Silicone (platinum-cured)	MASTERFLEX USP Class VI, EP, FDA, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-96440-13</a>	<a href="#">FA-96440-14</a>	<a href="#">FA-96440-16</a>	<a href="#">FA-96440-25</a>	<a href="#">FA-96440-17</a>	<a href="#">FA-96440-18</a>
Puri-Flex™	MASTERFLEX USP Class VI, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-96419-13</a>	<a href="#">FA-96419-14</a>	<a href="#">FA-96419-16</a>	<a href="#">FA-96419-25</a>	<a href="#">FA-96419-17</a>	<a href="#">FA-96419-18</a>
C-Flex®	MASTERFLEX USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-06424-13</a>	<a href="#">FA-06424-14</a>	<a href="#">FA-06424-16</a>	<a href="#">FA-06424-25</a>	<a href="#">FA-06424-17</a>	<a href="#">FA-06424-18</a>
C-Flex® ULTRA	MASTERFLEX USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	—	<a href="#">FA-06434-14</a>	<a href="#">FA-06434-16</a>	<a href="#">FA-06434-25</a>	<a href="#">FA-06434-17</a>	<a href="#">FA-06434-18</a>
PharMed® BPT	MASTERFLEX USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06508-13</a>	<a href="#">FA-06508-14</a>	<a href="#">FA-06508-16</a>	<a href="#">FA-06508-25</a>	<a href="#">FA-06508-17</a>	<a href="#">FA-06508-18</a>
PharmaPure® <sup>1</sup>	MASTERFLEX USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06435-13</a>	<a href="#">FA-06435-14</a>	<a href="#">FA-06435-16</a>	<a href="#">FA-06435-25</a>	<a href="#">FA-06435-17</a>	<a href="#">FA-06435-18</a>
GORE® STA-PURE® Series PCS <sup>2</sup>	—	35.6 cm (14")	—	<a href="#">FA-96211-14</a>	<a href="#">FA-96211-16</a>	<a href="#">FA-96211-25</a>	<a href="#">FA-96211-17</a>	<a href="#">FA-96211-18</a>
GORE® STA-PURE® Series PFL <sup>2</sup>	—	35.6 cm (14")	—	<a href="#">FA-96212-14</a>	<a href="#">FA-96212-16</a>	<a href="#">FA-96212-25</a>	<a href="#">FA-96212-17</a>	<a href="#">FA-96212-18</a>
Chem-Durance® Bio <sup>2</sup>	MASTERFLEX USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06442-13</a>	<a href="#">FA-06442-14</a>	<a href="#">FA-06442-16</a>	<a href="#">FA-06442-25</a>	<a href="#">FA-06442-17</a>	<a href="#">FA-06442-18</a>
Solve-Flex® <sup>2</sup>	—	3.6 m (12 ft)	—	—	<a href="#">FA-96446-16</a>	—	<a href="#">FA-96446-17</a>	—
Tygon® E-LFL	MASTERFLEX USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-06440-13</a>	<a href="#">FA-06440-14</a>	<a href="#">FA-06440-16</a>	<a href="#">FA-06440-25</a>	<a href="#">FA-06440-17</a>	<a href="#">FA-06440-18</a>
Tygon E-Food (B-44-4X)	MASTERFLEX FDA, EU Food, NSF, 3A, REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06418-13</a>	<a href="#">FA-06418-14</a>	<a href="#">FA-06418-16</a>	<a href="#">FA-06418-25</a>	<a href="#">FA-06418-17</a>	<a href="#">FA-06418-18</a>
Tygon E-Lab (E-3603)	MASTERFLEX USP Class VI, EP, FDA, EU Food, NSF, REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06509-13</a>	<a href="#">FA-06509-14</a>	<a href="#">FA-06509-16</a>	<a href="#">FA-06509-25</a>	<a href="#">FA-06509-17</a>	<a href="#">FA-06509-18</a>
Tygon Fuel & Lubricant (F-4040-A)	MASTERFLEX REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06401-13</a>	<a href="#">FA-06401-14</a>	<a href="#">FA-06401-16</a>	<a href="#">FA-06401-25</a>	<a href="#">FA-06401-17</a>	<a href="#">FA-06401-18</a>
Tygon Chemical <sup>1</sup> (2001)	MASTERFLEX FDA 21 CFR 175.300, REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06475-13</a>	<a href="#">FA-06475-14</a>	<a href="#">FA-06475-16</a>	<a href="#">FA-06475-25</a>	<a href="#">FA-06475-17</a>	<a href="#">FA-06475-18</a>
Norprene® (A-60 G)	MASTERFLEX NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06404-13</a>	<a href="#">FA-06404-14</a>	<a href="#">FA-06404-16</a>	<a href="#">FA-06404-25</a>	<a href="#">FA-06404-17</a>	<a href="#">FA-06404-18</a>
Norprene Food (A 60 F)	MASTERFLEX FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06402-13</a>	<a href="#">FA-06402-14</a>	<a href="#">FA-06402-16</a>	<a href="#">FA-06402-25</a>	<a href="#">FA-06402-17</a>	<a href="#">FA-06402-18</a>
Viton®	MASTERFLEX FDA, ADCF	7.6 m (25 ft)	<a href="#">FA-96412-13</a>	<a href="#">FA-96412-14</a>	<a href="#">FA-96412-16</a>	<a href="#">FA-96412-25</a>	<a href="#">FA-96412-17</a>	<a href="#">FA-96412-18</a>

†Determined under the following conditions: Using a 1 to 600 rpm drive; 0 psi at inlet, 0.5 psi at outlet; water temperature at 22°C (72°F).



## FEATURES

- ✓ Custom extruded to fit Masterflex pumps
- ✓ Engineered for long life in peristaltic pump applications

### PharmaPure®

- Nontoxic and nonhemolytic biocompatible
- Long life even under pressure with VERY low spallation

### GORE® STA-PURE® Series PCS

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

### GORE® STA-PURE® Series PFL

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

### Chem-Durance® Bio

- Excellent chemical compatibility and biocompatibility
- Excellent life and durability under pressure

### Solve-Flex®

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

### Tygon® E-LFL

- Longest life of all Tygon formulations
- Broad chemical resistance

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

- Smooth inner surface unaffected by commercial sanitizers
- Nontoxic; will not affect taste or odor

### Tygon E-Lab (E-3603)

- Ideal for general transfer use
- Nonaging, nonoxidizing, low gas permeability

### Tygon Fuel & Lubricant (F-4040-A)

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

### Tygon Chemical (2001)

- Excellent chemical resistance
- Plasticizer-free with low gas permeability

### Norprene® (A-60 G)

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
























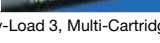
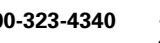
### Norprene Food (A 60 F)

- Ideal for high-temperature food applications
- Resists heat, ozone, acids, and alkalis

### Viton®

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

## L/S High-Performance Precision Pump Tubing

Formulation	Complies with	Qty/pk	Tubing size				
			L/S 15	L/S 24	L/S 35	L/S 36	
			Inner diameter	4.8 mm (0.19")	6.4 mm (0.25")	7.9 mm (0.31")	9.7 mm (0.38")
			Hose barb size	4.8 mm (3/16")	6.4 mm (1/4")	9.5 mm (3/8")	9.5 mm (3/8")
			Flow range (approximate) <sup>†</sup>	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)		USP Class V, EP, FDA, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-96410-15</a>	<a href="#">FA-96410-24</a>	<a href="#">FA-96410-35</a>	<a href="#">FA-96410-36</a>
Silicone (peroxide-cured)		USP Class VI, EP, FDA, 3A, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-96400-15</a>	<a href="#">FA-96400-24</a>	<a href="#">FA-96400-35</a>	<a href="#">FA-96400-36</a>
BioPharm Silicone (platinum-cured)		USP Class VI, EP, FDA, 3A, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-96420-15</a>	<a href="#">FA-96420-24</a>	<a href="#">FA-96420-35</a>	<a href="#">FA-96420-36</a>
BioPharm Plus Silicone (platinum-cured)		USP Class VI, EP, FDA, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-96440-15</a>	<a href="#">FA-96440-24</a>	<a href="#">FA-96440-35</a>	<a href="#">FA-96440-36</a>
Puri-Flex™		USP Class VI, FDA, 3A, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-96419-15</a>	<a href="#">FA-96419-24</a>	<a href="#">FA-96419-35</a>	<a href="#">FA-96419-36</a>
C-Flex®		USP Class VI, EP, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-06424-15</a>	<a href="#">FA-06424-24</a>	<a href="#">FA-06424-35</a>	<a href="#">FA-06424-36</a>
C-Flex® ULTRA		USP Class VI, EP, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-06434-15</a>	<a href="#">FA-06434-24</a>	<a href="#">FA-06434-35</a>	<a href="#">FA-06434-36</a>
PharMed® BPT		USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06508-15</a>	<a href="#">FA-06508-24</a>	<a href="#">FA-06508-35</a>	<a href="#">FA-06508-36</a>
PharmaPure®†		USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06435-15</a>	<a href="#">FA-06435-24</a>	—	—
GORE® STA-PURE® Series PCS <sup>‡</sup>		USP Class VI	35.6 cm (14")	<a href="#">FA-96211-15</a>	<a href="#">FA-96211-24</a>	<a href="#">FA-96211-35</a>	<a href="#">FA-96211-36</a>
GORE® STA-PURE® Series PFL <sup>‡</sup>		USP Class VI	35.6 cm (14")	<a href="#">FA-96212-15</a>	<a href="#">FA-96212-24</a>	<a href="#">FA-96212-35</a>	<a href="#">FA-96212-36</a>
Chem-Durance® Bio <sup>†</sup>		USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06442-15</a>	<a href="#">FA-06442-24</a>	<a href="#">FA-06442-35</a>	<a href="#">FA-06442-36</a>
Solve-Flex®†		USP Class VI	3.6 m (12 ft)	—	<a href="#">FA-96446-24</a>	—	—
Tygon® E-LFL		USP Class VI, EP, FDA, EU Food, REACH, RoHS, AOCF	7.6 m (25 ft)	<a href="#">FA-06440-15</a>	<a href="#">FA-06440-24</a>	<a href="#">FA-06440-35</a>	<a href="#">FA-06440-36</a>
Tygon E-Food (B-44-4X)		FDA, EU Food, NSF, 3A, REACH, RoHS, AOCF	15.2 m (50 ft)	<a href="#">FA-06418-15</a>	<a href="#">FA-06418-24</a>	<a href="#">FA-06418-35</a>	<a href="#">FA-06418-36</a>
Tygon E-Lab (E-3603)		USP Class VI, FDA, EU Food, NSF, REACH, RoHS, AOCF	15.2 m (50 ft)	<a href="#">FA-06509-15</a>	<a href="#">FA-06509-24</a>	<a href="#">FA-06509-35</a>	<a href="#">FA-06509-36</a>
Tygon Fuel & Lubricant (F-4040-A)		REACH, RoHS, AOCF	15.2 m (50 ft)	<a href="#">FA-06401-15</a>	<a href="#">FA-06401-24</a>	<a href="#">FA-06401-35</a>	<a href="#">FA-06401-36</a>
Tygon Chemical <sup>†</sup> (2001)		FDA 21 CFR 175.300, REACH, RoHS, AOCF	15.2 m (50 ft)	<a href="#">FA-06475-15</a>	<a href="#">FA-06475-24</a>	—	—
Norprene® (A-60 G)		NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06404-15</a>	<a href="#">FA-06404-24</a>	<a href="#">FA-06404-35</a>	<a href="#">FA-06404-36</a>
Norprene Food (A 60 F)		FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06402-15</a>	<a href="#">FA-06402-24</a>	<a href="#">FA-06402-35</a>	<a href="#">FA-06402-36</a>
Viton®		FDA, AOCF	7.6 m (25 ft)	<a href="#">FA-96412-15</a>	<a href="#">FA-96412-24</a>	<a href="#">FA-96412-35</a>	<a href="#">FA-96412-36</a>

<sup>†</sup>Not compatible with Easy-Load 3, Multi-Cartridge, or High-Performance pump heads.

# 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.



## Masterflex products with integrated open-head sensors

L/S Precision Console Process Drives [page 5](#)

L/S Digital Console Process Drives [page 6](#)

L/S Variable-Speed Digital Drives [page 6](#)

L/S Easy-Load II Pump Heads [page 7](#)

L/S High-Performance Pump Heads [page 8](#)

I/P Digital Console Process Drives [page 13](#)

I/P Easy-Load Pump Head [page 15](#)

## 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.

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

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

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





## 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 15)

**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

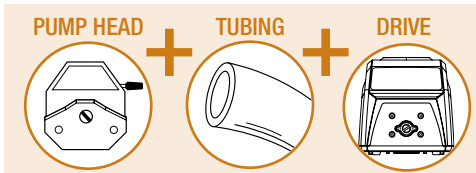
77420-10 shown with I/P High-Performance pump head 77600-62



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

**Accessories**

- [FA-07575-84](#) Washdown foot switch, momentary start/stop; 6-ft (1.8-m) cable
- [FA-07575-80](#) Cable assembly, 31-pin round connector and 25-ft (7.9-m) cable with stripped wire ends for remote control
- [FA-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	<a href="#">FA-77964-20</a>	
	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	<a href="#">FA-77964-30</a>	



## Challenge

A research institute needed to produce neutrons for scientific research by striking a liquid mercury target with a stream of protons. To set up neutron production, the research team had to pump mercury from a reservoir into a smaller receptacle quickly and efficiently. Likewise, the researchers required a pumping technology that would not allow the transfer equipment to become contaminated. Due to the hazardous nature of mercury, the pumping operation had to be carried out under a fume hood at a distance from the operator.

## Solution

The researchers opted to use the Masterflex I/P brushless drive 77411-00 with the Easy-Load pump head 77602-10 (page 15) for its efficient and rapid pumping capabilities. The customer opted to use Tygon E-LFL tubing (page 16); as the only part of the pump system coming into contact with the mercury, it was easy to replace when contaminated, while preserving the integrity of the rest of the system. The I/P process drive also offers remote input/output, making it ideal to position in the fume hood while allowing the researcher to operate the pump from a safe distance away.

## 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



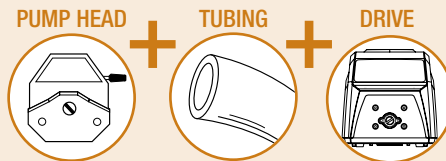
Motor speed (rpm)	Speed control (repeatability)	Pump heads accepted	Motor size	Dimensions	Power (50/60 Hz)		Catalog number	Price
					VAC	Amps		
<b>Variable-speed brushless process drive</b>								
33 to 650	±0.25% (2% of max rpm)	2	1/8 hp (0.25 kW)	14"L x 10"W x 9"H (35.6 x 25.4 x 22.9 cm)	90 to 260	4.5 at 115 VAC, 2.6 at 230 VAC	<a href="#">FA-77410-10</a>	
<b>Variable-speed brushless process drive with remote input/output</b>								
33 to 650	±0.25% (2% of max rpm)	2	1/8 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	<a href="#">FA-77411-00</a>	

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

[FA-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	<a href="#">FA-77963-10</a>	
	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	<a href="#">FA-77963-20</a>	

**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)					
I/P 73	12.3	1.2	6.8	0.2 to 8		<a href="#">FA-77602-00</a>	<a href="#">FA-77602-10</a>	<a href="#">FA-77602-30</a>	<a href="#">FA-77601-60</a>	<a href="#">FA-77602-80</a>
I/P 82	20.0	2.0	11.0	0.4 to 13	20 (1.4)					
<b>Price</b>										

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

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

**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)		
I/P 88	26.2	0.4 to 17	35 (2.4)	<a href="#">FA-77600-62</a>	<a href="#">FA-77600-82</a>
I/P 89	29.2	0.52 to 19	20 (1.4)		
<b>Price</b>					

†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

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## I/P® 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

### Silicone (peroxide-cured)

- Greater physical compression capability
- Economical, longer tubing life

### BioPharm Silicone (platinum-cured)

- Low absorption; excellent biocompatibility
- Very low extractable; weather, ozone, corona, radiation resistant

### BioPharm Plus Silicone (platinum-cured)

- Ultra-smooth—minimizes particle entrapment
- Very low extractable—ideal for lab, biotech, and pharmaceutical

### Puri-Flex™

- Heat sealable, weldable, and economical
- Long pump life when compared to silicone or many other TPE tubings

### C-Flex®




- Heat sealable, weldable, economical
- Better resistance to pH fluctuations

### C-Flex® ULTRA

- Longest life of any C-Flex formulation
- Lowest spallation and reduced residue

## I/P Precision Pump Tubing

Tubing size	I/P 26	I/P 73	I/P 82
Inner diameter	6.4 mm (0.25")	9.5 mm (0.37")	12.7 mm (0.5")
Hose barb size	6.4 mm (¼")	9.5 mm (⅜")	12.7 mm (½")
Flow range (approximate)†	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

Formulation	Complies with	Qty/pk			
Silicone (platinum cured)	USP Class V, EP, FDA, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-96410-26</a>	<a href="#">FA-96410-73</a>	<a href="#">FA-96410-82</a>
Silicone (peroxide cured)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-96400-26</a>	<a href="#">FA-96400-73</a>	<a href="#">FA-96400-82</a>
BioPharm Silicone (platinum)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-96420-26</a>	<a href="#">FA-96420-73</a>	<a href="#">FA-96420-82</a>
BioPharm Plus Silicone (platinum)	USP Class VI, EP, FDA, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-96440-26</a>	<a href="#">FA-96440-73</a>	<a href="#">FA-96440-82</a>
Puri-Flex™	USP Class VI, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-96419-26</a>	<a href="#">FA-96419-73</a>	<a href="#">FA-96419-82</a>
C-Flex®	USP Class VI, EP, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-06424-26</a>	<a href="#">FA-06424-73</a>	<a href="#">FA-06424-82</a>
C-Flex® ULTRA	USP Class VI, EP, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-06434-26</a>	<a href="#">FA-06434-73</a>	<a href="#">FA-06434-82</a>
PharMed® BPT	USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06508-26</a>	<a href="#">FA-06508-73</a>	<a href="#">FA-06508-82</a>
PharmaPure® †	USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06435-26</a>	<a href="#">FA-06435-73</a>	<a href="#">FA-06435-82</a>
GORE® STA-PURE® Series PCS	USP Class VI	0.6 m (2 ft)	<a href="#">FA-96211-26</a>	<a href="#">FA-96211-73</a>	<a href="#">FA-96211-82</a>
GORE® STA-PURE® Series PFL	USP Class VI	0.6 m (2 ft)	<a href="#">FA-96212-26</a>	<a href="#">FA-96212-73</a>	<a href="#">FA-96212-82</a>
Chem-Durance® Bio†	USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06442-26</a>	<a href="#">FA-06442-73</a>	<a href="#">FA-06442-82</a>
Tygon® E-LFL	USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADFC	7.6 m (25 ft)	<a href="#">FA-06440-26</a>	<a href="#">FA-06440-73</a>	<a href="#">FA-06440-82</a>
Tygon E-Food (B-44-4X)	FDA, EU Food, NSF, 3A, REACH, RoHS, ADFC	15.2 m (50 ft)	<a href="#">FA-06418-26</a>	<a href="#">FA-06418-73</a>	<a href="#">FA-06418-82</a>
Tygon E-Lab (E-3603)	USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADFC	15.2 m (50 ft)	<a href="#">FA-06509-26</a>	<a href="#">FA-06509-73</a>	<a href="#">FA-06509-82</a>
Tygon Fuel & Lubricant (F-4040-A)	REACH, RoHS, ADFC	15.2 m (50 ft)	<a href="#">FA-06401-26</a>	<a href="#">FA-06401-73</a>	<a href="#">FA-06401-82</a>
Tygon Chemical (2001)†	FDA 21 CFR 175.300, REACH, RoHS, ADFC	15.2 m (50 ft)	<a href="#">FA-06475-26</a>	<a href="#">FA-06475-73</a>	<a href="#">FA-06475-82</a>
Norprene® (A 60 G)	NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06404-26</a>	<a href="#">FA-06404-73</a>	<a href="#">FA-06404-82</a>
Norprene Food (A 60 F)	FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	<a href="#">FA-06402-26</a>	<a href="#">FA-06402-73</a>	<a href="#">FA-06402-82</a>
Viton®	FDA, ADFC	7.6 m (25 ft)	<a href="#">FA-96412-26</a>	<a href="#">FA-96412-73</a>	—

†Determined under these conditions: Using a 1 to 650 rpm drive; 0 psi at inlet, 0.5 psi at outlet; water temperature at 22°C (72°F). ‡Recommended for use with Easy-Load® pump heads only.

**FEATURES**

- ✓ Custom extruded to fit Masterflex pumps
- ✓ Engineered for long life in peristaltic pump applications

**PharMed® BPT**

- >10,000 hours of tubing life; sealable, weldable
- Ideal for tissue and cell culture work

**PharmaPure®**

- Nontoxic and nonhemolytic biocompatible
- Long life even under pressure with VERY low spallation

**GORE® STA-PURE® Series PCS**

- Consistent flow rate
- Long life—even in pressures up to 100 psi

**GORE® STA-PURE® Series PFL**

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

**Chem-Durance® Bio**

- Excellent chemical compatibility and biocompatibility
- Excellent life and durability under pressure

**Tygon® E-LFL**

- Longest life of all Tygon formulations
- Broad chemical resistance

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

- Smooth inner surface unaffected by commercial sanitizers
- Nontoxic; will not affect taste or odor

**Tygon E-Lab (E-3603)**

- Ideal for general transfer use
- Nonaging, nonoxidizing, low gas permeability

**Tygon Fuel & Lubricant (F-4040-A)**

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

**Tygon Chemical (2001)**

- Excellent chemical resistance
- Plasticizer-free with low gas permeability

**Norprene® (A-60 G)**

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
















**Norprene Food (A 60 F)**

- Ideal for high-temperature food applications
- Resists heat, ozone, acids, and alkalis

**Viton®**

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

**I/P High-Performance Precision Pump Tubing**

Formulation	Complies with	Qty/pk	Tubing size			
			I/P 70	I/P 88	I/P 89	
			Inner diameter 9.5 mm (3/8")	12.7 mm (0.5")	15.88 mm (0.62")	
			Hose barb size 9.5 mm (3/8")	12.7 mm (1/2")	15.88 mm (5/8")	
			Flow range (approximate)†	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
						
Silicone (platinum cured)	 USP Class V, EP, FDA, REACH, RoHS, ADCF	3 m (10 ft)	<a href="#">FA-96510-70</a>	<a href="#">FA-96510-88</a>	<a href="#">FA-96510-89</a>	
BioPharm Silicone (platinum)	 USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	3 m (10 ft)	<a href="#">FA-96421-70</a>	<a href="#">FA-96421-88</a>	<a href="#">FA-96421-89</a>	
BioPharm Plus Silicone (platinum)	 USP Class VI, EP, FDA, REACH, RoHS, ADCF	3 m (10 ft)	<a href="#">FA-96441-70</a>	<a href="#">FA-96441-88</a>	<a href="#">FA-96441-89</a>	
Puri-Flex™	 USP Class VI, FDA, 3A, REACH, RoHS, ADCF	3 m (10 ft)	<a href="#">FA-96419-70</a>	<a href="#">FA-96419-88</a>	<a href="#">FA-96419-89</a>	
C-Flex®	 USP Class VI, EP, REACH, RoHS, ADCF	3 m (10 ft)	<a href="#">FA-06424-70</a>	<a href="#">FA-06424-88</a>	<a href="#">FA-06424-89</a>	
PharMed® BPT	 USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06508-70</a>	<a href="#">FA-06508-88</a>	—	
GORE® STA-PURE® Series PCS††	USP Class VI	0.6 m (2 ft)	—	<a href="#">FA-96211-88</a>	<a href="#">FA-96211-89</a>	
GORE® STA-PURE® Series PFL††	USP Class VI	0.6 m (2 ft)	—	<a href="#">FA-96212-88</a>	<a href="#">FA-96212-89</a>	
Chem-Durance® Bio	 USP Class VI, FDA, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06442-70</a> <a href="#">/15.2 m (50 ft)</a>	<a href="#">FA-06442-88</a>	<a href="#">FA-06442-89</a>	
Tygon E-LFL	 USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADCF	7.6 m (25 ft)	<a href="#">FA-06440-70</a>	<a href="#">FA-06440-88</a>	<a href="#">FA-06440-89</a>	
Tygon E-Food (B-44-4X)	 FDA, EU Food, NSF, 3A, REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06418-70</a>	<a href="#">FA-06418-88</a>	<a href="#">FA-06418-89</a>	
Tygon E-Lab (E-3603)	 USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADCF	15.2 m (50 ft)	<a href="#">FA-06509-70</a>	<a href="#">FA-06509-88</a>	<a href="#">FA-06509-89</a>	
Norprene® (A 60 G)	 NSF, REACH, RoHS	7.6 m (25 ft)	<a href="#">FA-06404-70</a>	<a href="#">FA-06404-88</a>	<a href="#">FA-06404-89</a>	
Norprene Food (A 60 F)	 FDA, 3A, NSF, REACH, RoHS	7.6 m (25 ft)	—	<a href="#">FA-06402-88</a>	<a href="#">FA-06402-89</a>	

††Recommended for use with Standard and Easy-Load® pump heads only.



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## B/T® Fixed- and Variable-Speed Pumps

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

### 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

### 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 m<sup>3</sup>), 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

### 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

### Variable-Speed Modular Digital Pump

- High-volume, high-accuracy dispensing
- Dispense by volume or time, or pump continuously
- Separate motor and controller by up to 6 feet (1.8 m) 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 pump tubing, and a 6-ft (1.8-m) power cord (115 VAC: US standard plug; 230 VAC: European plug).



Fixed-speed pump  
77111-60



Variable-speed  
modular digital pump  
77111-70

### FEATURES

- ✓ Flow rates up to 42 LPM
- ✓ 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

### 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)



77111-37, Zone 2 77111-80  
-67, -77, -80 77111-80  
77111-30, -37  
Except 77111-30, -37

Motor type	Motor size	rpm	IP rating	Mounting type	Dimensions (L x W x H)	Power		Catalog number	Price
						VAC (Hz)	Amps		
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	FA-77111-30	
		271				220 (50)	6.3	FA-77111-37	
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 m <sup>3</sup> ) 100 psi (6.9 bar) minimum		FA-77111-80	
Variable-speed (±5%)	½ hp (0.37 kW)	12 to 321	Controller: IP56 Drive: IP56	Direct-drive	27" x 15.8" x 17.4" (68.6 x 40 x 44.2 cm)	115 (50/60)	6.5	FA-77111-60	
						230 (50/60)	3.3	FA-77111-67	
Variable-speed digital (±0.3%)	¾ hp (0.56 kW)	12 to 321	Controller: IP56 Drive: IP56	Direct-drive	Controller: 9" x 11" x 4½" (22.9 x 27.9 x 11.4 cm) Drive: 27" x 15¼" x 15" (68.6 x 40.0 x 38.4 cm)	90 to 130 (50/60)	10.5	FA-77111-70	
						190 to 260 (50/60)	5.7	FA-77111-77	

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

**FA-77111-90** Bracket for digital controller on models 77111-70 and -77

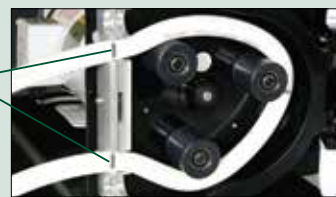


## B/T® PerfectPosition® Pump Tubing











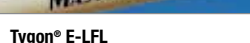


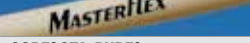
### Position more easily—retention marks indicate exact placement

– Optimized for use in B/T pumps to provide the pumping life, flow, and repeatability that you expect

PerfectPosition indicator marks confirm proper loading and ensure optimal performance.



Tubing size	B/T 87	B/T 91
Inner diameter	12.7 mm (0.5")	19.0 mm (0.75")
Hose barb size	12.7 mm (1/2")	19.0 mm (3/4")
Flow range (approximate)†	0.67 to 18.9 LPM (0.17 to 5.0 GPM)	1.4 to 42 LPM (0.4 to 11.1 GPM)

Pump tubing formulation	Description		
<b>Silicone</b> (platinum-cured) 	<ul style="list-style-type: none"> <li>Complies with USP Class V, EP, FDA, REACH, RoHS, ADFC</li> <li>Low protein binding, fungus-resistant, phthalate and latex free</li> <li>Accommodates a wide temperature range</li> </ul>	<a href="#">FA-96510-87</a>	<a href="#">FA-96510-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Silicone</b> (peroxide-cured) 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC</li> <li>Greater physical compression capability</li> <li>Economical, long life</li> </ul>	<a href="#">FA-96400-87</a>	<a href="#">FA-96400-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>BioPharm Plus Silicone</b> (platinum-cured) 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC</li> <li>Ultra-smooth inner surface minimizes particle entrapment</li> <li>Very low extractable—ideal for lab, biotech pharma applications</li> </ul>	<a href="#">FA-96445-87</a>	<a href="#">FA-96445-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Puri-Flex™</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, FDA, REACH, RoHS, ADFC</li> <li>Heat sealable, weldable, and economical</li> <li>Long pump life compared to silicone or many TPE tubings</li> </ul>	<a href="#">FA-96419-87</a>	<a href="#">FA-96419-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>C-Flex®</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, REACH, RoHS, ADFC</li> <li>Heat sealable, weldable, economical</li> <li>Better resistance to pH fluctuations</li> </ul>	<a href="#">FA-06424-87</a>	<a href="#">FA-06424-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>PharMed® BPT</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, NSF-51, REACH, RoHS</li> <li>Over 10,000 hours of tubing life, sealable, weldable</li> <li>Ideal for tissue and cell culture work</li> </ul>	<a href="#">FA-06507-87</a>	<a href="#">FA-06507-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>PharmaPure®</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, REACH, RoHS</li> <li>Nontoxic and nonhemolytic biocompatible</li> <li>Long life even under pressure with VERY low spallation</li> </ul>	<a href="#">FA-06437-87</a>	<a href="#">FA-06437-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Chem-Durance® Bio</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, FDA, REACH, RoHS</li> <li>Excellent chemical compatibility and biocompatibility</li> <li>Excellent pump life and durability under pressure</li> </ul>	<a href="#">FA-06443-87</a>	<a href="#">FA-06443-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Tygon® E-FLL</b> 	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADFC</li> <li>Longest life of all Tygon formulations</li> <li>Broad chemical resistance</li> </ul>	<a href="#">FA-06440-87</a>	<a href="#">FA-06440-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Tygon® E-Food</b> (B-44-4X) 	<ul style="list-style-type: none"> <li>Complies with FDA, EU Food, NSF-51, 3A, REACH, RoHS, ADFC</li> <li>Smooth inner surface unaffected by commercial sanitizers</li> <li>Nontoxic, will not affect taste or odor</li> </ul>	<a href="#">FA-06418-87</a>	<a href="#">FA-06418-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>Norprene® Food</b> (A-60-F) 	<ul style="list-style-type: none"> <li>Complies with FDA, 3A, NSF-51, REACH, RoHS</li> <li>Ideal for high-temperature food applications</li> <li>Resists heat, ozone, acids, and alkalis</li> </ul>	<a href="#">FA-06399-87</a>	<a href="#">FA-06399-91</a>
		3 m (10 ft)/pk	3 m (10 ft)/pk
<b>GORE® STA-PURE®</b> Series PCS 	<ul style="list-style-type: none"> <li>Complies with USP Class VI</li> <li>Excellent flow stability—even under pressures up to 100 psi</li> </ul>	<a href="#">FA-96211-87</a>	<a href="#">FA-96211-91</a>
		0.68 m (27")/pk	0.68 m (27")/pk

†Determined under the following conditions: Using a 11 to 321 rpm drive; 0 bar (0 psi) at inlet, 0.03 bar (0.5) psi at outlet; water temperature at 22°C (72°F).

## 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		
<b>A. C/L single-channel compact pumps</b>										
1.7 to 10	±5%	1	4	Yes	IP22	7" x 3¾" x 3½" (17.8 x 9.5 x 8.9 cm)	90 to 260, 50/60	110 mA at 115 VAC	<a href="#">FA-77122-04</a>	
13 to 80							12 VDC†	—	<a href="#">FA-77122-06</a>	
50 to 300			90 to 260, 50/60				175 mA at 115 VAC	<a href="#">FA-77122-14</a>		
			3				12 VDC†	—	<a href="#">FA-77122-16</a>	
							90 to 260, 50/60	400 mA at 115 VAC	<a href="#">FA-77122-24</a>	
							12 VDC†	—	<a href="#">FA-77122-26</a>	
<b>B. C/L digital Microflex pump</b>										
0.1 to 300	±0.1%	1	3	Yes	IP33	8¼" 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	<a href="#">FA-77123-00</a>	

†Power supply not included with 12 VDC models.

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

**For A models:**

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

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

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

**For B model:**

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

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

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

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

[FA-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	<a href="#">FA-06460-10</a>	—	<a href="#">FA-07625-10</a>	<a href="#">FA-95809-10</a>	<a href="#">FA-06449-10</a>	—	<a href="#">FA-96418-10</a>	<a href="#">FA-95718-10</a>	<a href="#">FA-95712-10</a>
0.25	<a href="#">FA-06460-12</a>	—	<a href="#">FA-07625-12</a>	<a href="#">FA-95809-12</a>	<a href="#">FA-06449-12</a>	—	<a href="#">FA-96418-12</a>	<a href="#">FA-95718-12</a>	<a href="#">FA-95712-12</a>
0.51	<a href="#">FA-06460-18</a>	<a href="#">FA-95590-18</a>	<a href="#">FA-07625-18</a>	<a href="#">FA-95809-18</a>	<a href="#">FA-06449-18</a>	<a href="#">FA-97632-18</a>	<a href="#">FA-96418-18</a>	<a href="#">FA-95718-18</a>	<a href="#">FA-95712-18</a>
0.89	<a href="#">FA-06460-26</a>	<a href="#">FA-95590-26</a>	<a href="#">FA-07625-26</a>	<a href="#">FA-95809-26</a>	<a href="#">FA-06449-26</a>	<a href="#">FA-97632-26</a>	<a href="#">FA-96418-26</a>	<a href="#">FA-95718-26</a>	<a href="#">FA-95712-26</a>
1.14	<a href="#">FA-06460-30</a>	<a href="#">FA-95590-30</a>	<a href="#">FA-07625-30</a>	<a href="#">FA-95809-30</a>	<a href="#">FA-06449-30</a>	<a href="#">FA-97632-30</a>	<a href="#">FA-96418-30</a>	<a href="#">FA-95718-30</a>	<a href="#">FA-95712-30</a>
1.42	<a href="#">FA-06460-34</a>	<a href="#">FA-95590-34</a>	<a href="#">FA-07625-34</a>	<a href="#">FA-95809-34</a>	<a href="#">FA-06449-34</a>	<a href="#">FA-97632-34</a>	<a href="#">FA-96418-34</a>	<a href="#">FA-95718-34</a>	<a href="#">FA-95712-34</a>
2.06	<a href="#">FA-06460-42</a>	<a href="#">FA-95590-42</a>	<a href="#">FA-07625-42</a>	<a href="#">FA-95809-42</a>	<a href="#">FA-06449-42</a>	<a href="#">FA-97632-42</a>	<a href="#">FA-96418-42</a>	<a href="#">FA-95718-42</a>	<a href="#">FA-95712-42</a>
2.79	<a href="#">FA-06460-48</a>	<a href="#">FA-95590-48</a>	<a href="#">FA-07625-48</a>	<a href="#">FA-95809-48</a>	<a href="#">FA-06449-48</a>	<a href="#">FA-97632-48</a>	<a href="#">FA-96418-48</a>	<a href="#">FA-95718-48</a>	<a href="#">FA-95712-48</a>
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	

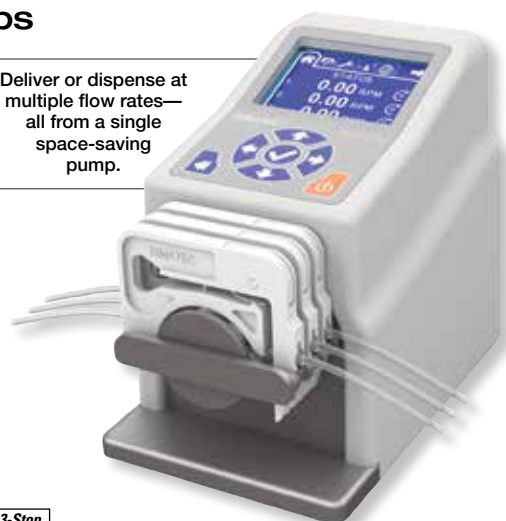
## Reglo Independent Channel Control (ICC) Pumps

### Pump each channel at different speeds and directions!

- Each pump performs the job of up to four separate pumps
- **New!** 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.

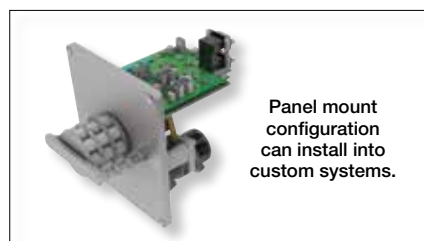


#### Specifications



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

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



Panel mount configuration can install into custom systems.

#### Minicartridges

- [FA-78016-98](#) Replacement Click'n'go™ tubing cassette, POM-C
- [FA-78016-96](#) Click'n'go™ tubing cassette, PVDF

## 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
- Easy channel changes—Click'n'go™ minicartridges snap in place

**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.



**B** Reglo digital pump 78017-00 is fully programmable.



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	<a href="#">FA-78016-00</a>		<a href="#">FA-78016-02</a>		0.003 to 68	<a href="#">FA-78016-42</a>	
	8			0.004 to 57	<a href="#">FA-78016-10</a>		<a href="#">FA-78016-12</a>		0.002 to 57	<a href="#">FA-78017-02</a>	
	12			0.003 to 38	<a href="#">FA-78017-25</a>		<a href="#">FA-78017-27</a>		0.002 to 38	<a href="#">FA-78016-47</a>	
4	6	2.0 to 100	Three-stop	0.003 to 43	<a href="#">FA-78017-30</a>		<a href="#">FA-78017-32</a>		0.002 to 43	<a href="#">FA-78017-42</a>	
	8			0.003 to 35	<a href="#">FA-78016-30</a>		<a href="#">FA-78016-32</a>		0.002 to 35	<a href="#">FA-78017-12</a>	
	12			0.002 to 24	<a href="#">FA-78017-35</a>		<a href="#">FA-78017-37</a>		0.001 to 24	<a href="#">FA-78017-22</a>	

#### Minicartridges

Optional adjustable-occlusion minicartridge to manually vary pressure on each channel.

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

[FA-07624-96](#) Replacement Click'n'go cassette, PVDF



## 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



#### 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)



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

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
<b>IPC-N models</b>									
0.0004 to 11	4	8	0.11 to 11.25	Click'n'go	Two-stop	<a href="#">FA-78001-00</a>		<a href="#">FA-78001-06</a>	
	8					<a href="#">FA-78001-10</a>		<a href="#">FA-78001-16</a>	
	12					<a href="#">FA-78001-20</a>		<a href="#">FA-78001-26</a>	
	16					<a href="#">FA-78001-30</a>		<a href="#">FA-78001-36</a>	
	24					<a href="#">FA-78001-40</a>		<a href="#">FA-78001-46</a>	
0.0004 to 11	8	8	0.11 to 11.25	Pressure lever (adjustable occlusion)	Two-stop	<a href="#">FA-78000-11</a>		<a href="#">FA-78000-17</a>	
	16					<a href="#">FA-78000-31</a>		<a href="#">FA-78000-37</a>	
	24					<a href="#">FA-78000-41</a>		<a href="#">FA-78000-47</a>	
<b>IPC models</b>									
0.002 to 44	4	8	0.4 to 45	Click'n'go	Two-stop	<a href="#">FA-78001-02</a>		<a href="#">FA-78001-08</a>	
	8					<a href="#">FA-78001-12</a>		<a href="#">FA-78001-18</a>	
	12					<a href="#">FA-78001-22</a>		<a href="#">FA-78001-28</a>	
	16					<a href="#">FA-78001-32</a>		<a href="#">FA-78001-38</a>	
	24					<a href="#">FA-78001-42</a>		<a href="#">FA-78001-48</a>	
0.002 to 44	4	8	0.4 to 45	Pressure lever (adjustable occlusion)	Two-stop	<a href="#">FA-78000-03</a>		<a href="#">FA-78000-09</a>	
	8					<a href="#">FA-78000-13</a>		<a href="#">FA-78000-19</a>	
	12					<a href="#">FA-78000-23</a>		<a href="#">FA-78000-29</a>	
	16					<a href="#">FA-78000-33</a>		<a href="#">FA-78000-39</a>	
	24					<a href="#">FA-78000-43</a>		<a href="#">FA-78000-49</a>	

Order extra cartridges and adapters for fast tubing changes.

[FA-78001-95](#) Replacement Click'n'go™ cartridge, POM-C

[FA-78001-90](#) Repl. adjust. occlusion cartridge with pressure lever

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

## 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



Flow range per channel	Channels	Rollers	Speed	Tubing	Power		Catalog number	Price
					115 VAC, 50/60 Hz	230 VAC, 50/60 Hz		
2.1 to 230 mL/min	1	4	3.2 to 160 rpm	Pump	115 VAC, 50/60 Hz		<a href="#">FA-78018-00</a>	
					230 VAC, 50/60 Hz		<a href="#">FA-78018-02</a>	

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

### Don't confuse your tubing—color-coded 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"> <li>Complies with USP Class VI, EP, FDA, EU food, REACH, RoHS, ADF</li> <li>Longest life of all Tygon formulations</li> <li>Broad chemical resistance</li> </ul>	10, 12, 14, 18, 22, 24, 26, 28, 30, 31, 33, 34, 36, 37, 40, 42, 43, 47, 48	12 (16")	<a href="#">FA-96449-XX</a>		<a href="#">FA-96450-XX</a>		<a href="#">FA-06449-XX</a>	100 ft	
Tygon® E-Food	<ul style="list-style-type: none"> <li>Complies with FDA, EU Food, NSF, 2A, REACH, RoHS, ADF</li> <li>Smooth inner surface; nontoxic</li> </ul>	10, 12, 18, 26, 30, 34, 42, 48	12 (16")	<a href="#">FA-96457-XX</a>		<a href="#">FA-96458-XX</a>		<a href="#">FA-06457-XX</a>	100 ft	
Tygon® E-Lab	<ul style="list-style-type: none"> <li>Complies with USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADF</li> <li>Ideal for general transfer applications</li> <li>Nonaging/nonoxidizing, low gas permeability</li> </ul>	09, 10, 12, 14, 16, 18, 19, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38, 39, 40, 42, 46, 48, 49	12 (16")	<a href="#">FA-96460-XX</a>		<a href="#">FA-96461-XX</a>		<a href="#">FA-06460-XX</a>	100 ft	
Silicone (peroxide cured)	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADF</li> <li>Greater physical compression capability</li> <li>Economical, long tubing life</li> </ul>	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	<a href="#">FA-07616-XX</a>		<a href="#">FA-07624-XX</a>		<a href="#">FA-07625-XX</a>	50 ft	
Silicone (platinum cured)	<ul style="list-style-type: none"> <li>Complies with USP Class V, EP, FDA, REACH, RoHS, ADF</li> <li>Low protein binding, fungus-resistant, phthalate and latex free</li> </ul>	22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	<a href="#">FA-95602-XX</a>		<a href="#">FA-95603-XX</a>		<a href="#">FA-95612-XX</a>	50 ft	
Viton®	<ul style="list-style-type: none"> <li>Complies with FDA, ADF</li> <li>Resists corrosives, solvents, and oils at elevated temperatures</li> </ul>	18, 22, 24, 26, 30, 34, 38, 42, 46, 48	12 (12")	<a href="#">FA-97628-XX</a>		<a href="#">FA-97629-XX</a>		<a href="#">FA-97632-XX</a>	50 ft	
PharMed® BPT	<ul style="list-style-type: none"> <li>Complies with USP Class VI, EP, FDA, NSF, REACH, RoHS</li> <li>Over 10,000 hours of tubing life, sealable, weldable</li> <li>Ideal for tissue and cell culture work</li> </ul>	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	<a href="#">FA-95723-XX</a>		<a href="#">FA-95714-XX</a>		<a href="#">FA-95809-XX</a>	100 ft	
Autoclavable PharMed® BPT		12, 32, 48	6 (16")	<a href="#">FA-95692-XX</a>		<a href="#">FA-95693-XX</a>				
PVC Solvent/ hydrocarbon	<ul style="list-style-type: none"> <li>Resistant to ozone and UV light</li> <li>Resists to cracking, swelling, hardening</li> <li>Ideal for fuels, distillates, lubricants, and glycol-based coolants</li> </ul>	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	<a href="#">FA-95606-XX</a>		<a href="#">FA-95605-XX</a>		<a href="#">FA-95712-XX</a>	50 ft	
Chem-Durance® Bio	<ul style="list-style-type: none"> <li>Suitable for acetone, MEK, and other highly aggressive chemicals</li> <li>Long life and outstanding fatigue resistance</li> </ul>	14, 18, 24, 26, 30, 34, 36, 42, 48	6 (16")	<a href="#">FA-96327-XX</a>		<a href="#">FA-96328-XX</a>		None (PharMed BPT recommended for extension tubing; see 95809-XX above)		

**STEP 2:**

Select the catalog number suffix.

Catalog number suffix	ID (mm)	Color-coded stops
-09	0.13	Orange/Black
-10	0.19	Orange/Red
-12	0.25	Orange/Blue
-14	0.38	Orange/Green
-16	0.44	Green/Yellow
-18	0.51	Orange/Yellow
-19	0.57	White/Yellow
-22	0.64	Orange/White
-24	0.76	Black/Black
-26	0.89	Orange/Orange
-27	0.95	White/Black
-28	1.02	White/White
-29	1.09	White/Red
-30	1.14	Red/Red
-31	1.22	Red/Gray
-32	1.3	Gray/Gray
-34	1.42	Yellow/Yellow
-36	1.52	Yellow/Blue
-38	1.65	Blue/Blue
-39	1.75	Blue/Green
-40	1.85	Green/Green
-42	2.06	Purple/Purple
-44	2.29	Purple/Black
-46	2.54	Purple/Orange
-48	2.79	Purple/White
-49	3.17	Black/White

**Teky's Tips**

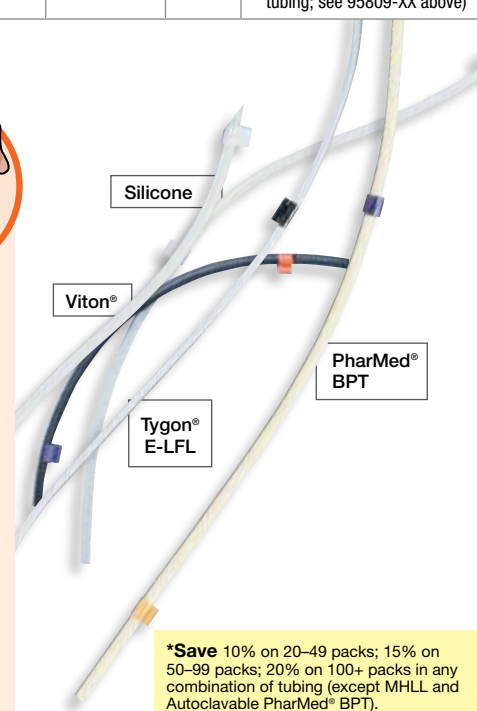


### How to order 2- and 3-stop tubing

**Step 1:** Choose a tubing material and select the corresponding catalog number prefix from the table above. Make sure to choose 2-stop or 3-stop tubing based on what your pump uses!

**Step 2:** Select the catalog number suffix based on the ID size. To find flow rates for each size with your pump system, go to ColeParmer.com and search for your pump system.

**Step 3:** Complete your system with extension tubing above. You can connect stopped tubing and extension tubing with hose barb fittings or by splicing together.



**\*Save** 10% on 20–49 packs; 15% on 50–99 packs; 20% on 100+ packs in any combination of tubing (except MHL and Autoclavable PharMed® BPT).

## Cole-Parmer® Console Drive

### Optimize performance of long-term applications

- 100:1 speed-control range controls flow over a wide range
- Separate on-off switch maintains speed (flow) setting when drive is powered down
- Maximum continuous-duty flow rates possible with Micropump® A-mount pump heads
- Gradual, one-second acceleration for smooth flow rate changes

Simple variable speed control provides flow control for many fluid handling applications from filtration to chemical injection.

**What's included:** a 6-ft (1.8-m) modular line power cord; the 115 VAC model has a US standard plug and the 230 VAC model has an IEC 320/CEE 22 connector (specify country to obtain correct plug).



Cole-Parmer®



#### Specifications

**Duty cycle:** continuous  
**Remote control (input):** none  
**Remote control (output):** none  
**Max system temperature:** 104°F (40°C)

Motor			Power		Catalog number	Price
rpm	hp	Type	VAC	Hz		
50 to 5000	0.07	PMDC	115	50/60	<a href="#">FA-75211-10</a>	
			230	50/60	<a href="#">FA-75211-15</a>	

## Ismatec® Compact Programmable Digital Drive

### Dispense by flow rate, volume, time, or number of cycles

- No more dripping—program pump to draw back fluid
- Control via a PC with RS-232 interface
- Get more accuracy with calibration of flow rate and dispensing volume



IP44-rated housing protects internal components from damage. Multiple operating modes allow for continuous pumping by drive speed, flow rate, volume, time, volume within a pre-set time or interval dispensing by volume with a pause or time with a pause. The number of dispensing cycles may also be into the pump. Pump is capable of reversible rotation (only with cavity style pump heads that indicate reversible operation). Both dispensing and pause time settings are from 0.1 seconds up to 999 hours.

**What's included:** an adapter plate for mounting Micropump® A pump heads (except 07003-02, 07003-04, 73004-00, 73004-02, and 73004-04), a driving magnet and a 6-ft (1.8-m) power cord with plug.

## Micropump® A-Mount Gear Pump Heads

- Achieve leak-free, pulseless flow
- Magnetic drive and static seals keep fluids securely inside and potential contaminants out



Flow rates (mL/min) <sup>†</sup>		Wetted parts		Catalog number	Price
at 50 rpm	at 5000 rpm	Body	Gears		
0.85	85	316 SS	Graphite	<a href="#">FA-07002-25</a>	
4.60	460	316 SS	PEEK	<a href="#">FA-73003-14</a>	
			PPS	<a href="#">FA-07002-14</a>	
13.05	1305	316 SS	PEEK	<a href="#">FA-73004-00</a>	
29.00	2900	316 SS	PEEK	<a href="#">FA-73004-02</a>	
			PPS	<a href="#">FA-07003-02</a>	
58.50	5850	316 SS	PEEK	<a href="#">FA-73004-04</a>	
			PPS	<a href="#">FA-07003-04</a>	

<sup>†</sup>Flow rates based on water at room temperature and no back pressure.

#### Specifications

**Duty cycle:** continuous from 50 to 5000 rpm  
**Remote control (input):** Speed control: RS-232 (DB9F) for pump control via PC. 9600 baud, 8 bit, 1 stopbit, no parity On/off control: TTL contact (for footswitch) 0 to 10 kHz for speed monitoring  
**Remote control (output):** RS-232 (DB9M) for cascading of up to 8 pumps  
**Max temperature:** 104°F (40°C)



Motor rpm	Power		Catalog number	Price
	VAC	Hz		
50 to 5000	90 to 264	47 to 63	<a href="#">FA-78008-15</a>	

[FA-70738-94 Replacement adapter plate](#); for mounting Micropump A-mount pump heads (except models 07003-02, 07003-04, 73004-00, 73004-02, 73004-04)



Programmable digital drive 78008-15 with Micropump pump head 07002-14 (pump head not included)





## Cole-Parmer® Syringe Pumps

### Ideal for low-flow, low-pressure applications

- Backlit alphanumeric LCD guides you through setup and operating procedures
- Don't lose your settings—nonvolatile memory retains settings even after pump is turned off

**A. Single-Syringe Infusion Pump** automatically selects display units based on syringe used, obtaining precise flow rates down to 0.2 µL/hr. A wide dynamic range (6000:1) provides excellent flexibility.

**B. Multi-Syringe Pumps** achieve flow rates down to 0.001 µL/hr. Easy programming via keypad—infusion/withdrawal pumps sequence operations. Control from a computer with RS-232 interface.†

**C. Multi-Step Multi-Syringe Pumps** allow flow rates to vary from a slow trickle to a steady stream down to 0.001 µL/hr. Program up to 8 commands and repeat up to 10 times. Pumps allow you to program flow rate hold, pause, and change of direction; each program can be run up to 12 hours. Pumps can also sequence operations. Operate your pump from a computer—great for daisy-chaining pumps!

Pump continuously and automatically delivers exact quantities of liquid.



#### Specifications

**Accuracy:** ±<1%  
**Reproducibility:** ±0.1%

Description	Number of syringes accepted	Flow rate per syringe	Syringe size accepted	Linear force	Power (VAC, Hz)	Catalog number	Price
<b>A. Single-syringe pump</b>							
Infusion	1	0.2 µL/hr to 500 mL/hr	10 µL to 60 mL	20 lb (9.1 kg)	115, 50/60 230, 50/60	<a href="#">FA-74900-00</a> <a href="#">FA-74900-05</a>	
<b>B. Multi-syringe pumps</b>							
Infusion	2	0.001 µL/hr to 147 mL/min	10 µL to 140 mL	40 lb (18.1 kg)	115, 50/60	<a href="#">FA-74900-10</a>	
	10				230, 50/60	<a href="#">FA-74900-30</a> <a href="#">FA-74900-35</a>	
Infusion/withdrawal	2	0.001 µL/hr to 147 mL/min	10 µL to 140 mL	40 lb (18.1 kg)	115, 50/60	<a href="#">FA-74900-20</a>	
	10				230, 50/60	<a href="#">FA-74900-25</a> <a href="#">FA-74900-40</a>	
<b>C. Multi-step multi-syringe pumps</b>							
Infusion	2	0.001 µL/hr to 147 mL/min	10 µL to 140 mL	40 lb (18.1 kg)	115, 50/60	<a href="#">FA-74900-60</a>	
	10				230, 50/60	<a href="#">FA-74900-65</a> <a href="#">FA-74900-80</a> <a href="#">FA-74900-85</a>	
Infusion/withdrawal	2	0.001 µL/hr to 147 mL/min	10 µL to 140 mL	40 lb (18.1 kg)	115, 50/60	<a href="#">FA-74901-00</a>	
	10				230, 50/60	<a href="#">FA-74901-05</a> <a href="#">FA-74901-10</a> <a href="#">FA-74901-15</a>	

†Order RS-232 cables separately online or call our Application Specialists.

## Cole-Parmer® High-Pressure Piston Pumps

### Precision pumping for your HPLC application

- Digital stepper motor ensures accuracy at low flow rates
- Self-flush feature washes piston with every stroke
- Interactive keypad controls make programming at the pump easy
- Pressure and leak sensors (except single-head pumps) alert you to malfunctions
- Remotely control pump with a PC via RS-232 and micro USB

**Single-Head Pumps** precisely meter and dispense chemicals, perfect for small-scale laboratory fluid transfers and HPLC applications. Small footprint saves bench and fume hood space. **High-Flow Dual-Head Pumps** are ideally suited to preparative and simulated moving bed chromatography applications and other high throughput processes. **High-Performance Isocratic Pumps** are best suited to semi-prep and other small-scale HPLC separations, and general metering and dispensing applications. **Low-Pulsation Dual-Head Pump** provides virtually pulse-free operation with a low dead-volume pulse dampener, automatic pressure compensation, and advanced linear cam technology.



#### Specifications

**Wetted parts:** synthetic ruby, sapphire, UHMWPE, PTFE  
**Maximum temperature (fluid):** 212°F (100°C)

**Duty cycle:** continuous  
**Self-priming:** no  
**Power:** 100 to 240 VAC, 50/60 Hz



Description	Single-head pumps			High-flow dual-head pumps			High-performance isocratic pumps		Low-pulsation dual-head pump	
<b>Catalog number</b>	<a href="#">FA-74931-00</a>	<a href="#">FA-74931-01</a>	<a href="#">FA-74931-20</a>	<a href="#">FA-74931-10</a>	<a href="#">FA-74931-11</a>	<a href="#">FA-74931-12</a>	<a href="#">FA-74931-25</a>	<a href="#">FA-74931-45</a>	<a href="#">FA-74931-30</a>	
Pump head material	PEEK	316 SS	316 SS	PEEK	316 SS	316 SS	316 SS	316 SS	316 SS	
Flow	Range (mL/min)	0 to 10			0 to 100		0 to 300	0 to 100	0 to 10	0 to 12
	Accuracy	±2% of set point			±3% of set point		±3% of set point	±2% of set point	±2% of set point	
	Repeatability	±1%	±0.2%	±0.5%			±0.5%	±0.2%	±0.2%	
Pressure range (psi)	0 to 2000		0 to 6000	0 to 4000		0 to 1000	0 to 4000	0 to 5000	0 to 6000	
Pulse dampener	No		Yes	Yes	No	No	Yes		Yes	
Output	RS-232, micro USB, run/stop		RS-232, micro USB, voltage flow control, run/stop	RS-232, micro USB, voltage flow control, run/stop			RS-232, micro USB, voltage flow control, run/stop		RS-232, micro USB, voltage flow control, run/stop	
<b>Price</b>										

## Standard-Duty Dry Vacuum Piston Pumps

Great for filtering, aspirating, degassing, and desiccating

- Oil free for life science applications
- Water trap prevents liquid from being drawn into the pump
- Muffler provides quiet operation

Use the convenient gauge and control knob to adjust vacuum level. Single-head models also provide pressure. Avoid using pump with organic, acidic, or basic vapors.

**What's included:** gauge, control knob, water trap, carrying handle, suction cup feet, on/off switch, two 1/4" barbed fittings, and a 6-ft (1.8-m) cord (115 VAC models come with a standard US plug; 230 VAC models come with a European (Schuko) plug).

**Service kits include** all components commonly required for refurbishment.



CE  
230 VAC models only  
RUNS DRY

Free-air capacity cfm (L/min)	Ultimate <sup>†</sup> vacuum	Maximum pressure	Wetted parts	Motor hp	Noise rating	Port size (tube ID)	Power (VAC, Hz)	Catalog number	Price	Service kits		
										Catalog number	Price	
<b>Single-head pumps</b>												
0.76 (22)	26.0" Hg (100 Torr)	100 psig (6.89 bar)	Aluminum (treated for corrosion resistance), SS, and PTFE	1/8	62 dB(A)	1/4"	115, 60	<a href="#">FA-79204-00</a>			<a href="#">FA-79204-01</a>	
0.67 (19)							230,50	<a href="#">FA-79204-05</a>				
1.20 (34)	27.2" Hg (70 Torr)	50 psig (3.45 bar)		1/8		1/4"	115, 60	<a href="#">FA-79204-10</a>				<a href="#">FA-79204-11</a>
0.99 (28)							230,50	<a href="#">FA-79204-15</a>				
1.60 (45)	27.6" Hg (60 Torr)	100 psig (6.89 bar)		1/4		1/4"	115, 60	<a href="#">FA-79204-20</a>				<a href="#">FA-79204-21</a>
1.34 (38)				230,50	<a href="#">FA-79204-25</a>							
<b>Dual-head pumps</b>												
2.1 (60)	29.8" Hg (5 Torr)	—	Aluminum (treated for corrosion resistance), SS, and PTFE	1/3	58 dB(A)	3/8"	115, 60	<a href="#">FA-79204-30</a>			<a href="#">FA-79204-31</a>	
1.8 (50)							230,50	<a href="#">FA-79204-35</a>				
7.1 (201)	27.6" Hg (60 Torr)	—		1/3		3/8"	115, 60	<a href="#">FA-79204-70</a>				
5.9 (168)							230,50	<a href="#">FA-79204-75</a>				

<sup>†</sup>Ultimate total vacuum

[FA-06414-20](#) Tygon® non-DEHP vacuum tubing, 1/4" ID x 5/8" OD. Pack of 10 ft (3.0 m)

## High-Capacity Vacuum/Pressure Pumps

Won't get overloaded

- Shaded-pole fan-cooled motor has thermal overload switch to protect your pump system
- Heads on pumps 07061-60 and -05 are connected in parallel for higher capacity; heads on 07061-11 and -13 are connected in series for greater vacuum
- Select pumps with or without gauges, regulators, and valves
- Free-air capacities up to 2.2 cfm (62.3 L/min)

**What's included:** 6-ft (1.8-m), three-wire cord (US standard plug on 115 VAC models). Models 07061-11 and -13 include a filter/muffler.



07061-40

ISO9001:2008  
CERTIFIED SUPPLIER

UL  
RUNS DRY

Pump head configuration	Free-air capacity cfm (L/min)	Max vacuum	Max pressure	Wetted parts	Motor hp	Port size	Noise rating	Power (VAC, Hz)	Catalog number	Price
<b>Pump without gauges or regulators</b> (order regulators separately below; order gauges with 1/4" NPT(M) connections online)										
Single	1.1 (31.2)	25.5" Hg	60 psi (4.14 bar)	Aluminum, stainless steel, Nordel®, and Nomex®	1/8	1/4" NPT(F), 3/8" hose barb on gauges	68 dB(A)	115, 60	<a href="#">FA-07061-21</a>	
	1.0 (28.3)	24.0" Hg						220/240, 50	<a href="#">FA-07061-22</a>	
<b>Pumps with gauges, regulators, and adjustable relief valve</b>										
Single	1.1 (31.2)	25.5" Hg	60 psi (4.14 bar)	Aluminum, stainless steel, Nordel, and Nomex	1/8	1/4" NPT(F), 3/8" hose barb on gauges	68 dB(A)	115, 60	<a href="#">FA-07061-40</a>	
	1.0 (28.3)	24.0" Hg						220/240, 50	<a href="#">FA-07061-42</a>	
Dual/parallel	2.2 (62.3)	25.5" Hg	60 psi (4.14 bar)		1/4			115, 60	<a href="#">FA-07061-60</a>	
	1.8 (51.0)	24.0" Hg						220, 50	<a href="#">FA-07061-05</a>	
<b>Pump with vacuum gauge only</b>										
Dual/series	1.15 (32.5)	29.0" Hg	—	Aluminum, stainless steel, Nordel, and Nomex	1/4	1/4" NPT(F), 3/8" hose barb on gauges	68 dB(A)	115, 60	<a href="#">FA-07061-11</a>	
	0.85 (24.0)	28.0" Hg						220, 50	<a href="#">FA-07061-13</a>	

[FA-07061-32](#) Pressure regulator assembly for pumps 07061-21 and -22

[FA-07061-30](#) Vacuum regulator assembly for pumps 07061-21 and -22

[FA-07061-01](#) Service kit for all pumps

[FA-07061-03](#) Service kit for dual-head pumps. Pumps 07061-60, -05, -11, and -13 also require kit 07061-01 above

[FA-07061-06](#) Diaphragm for all models, neoprene/nylon

[FA-07061-04](#) Replacement diaphragm for all models, Nordel/Nomex



## Cole-Parmer® Silicone Tubing

No need to worry about the heat—  
use for applications up to 460°F

### Peroxide Silicone



**Applications:** Pharmaceutical, biotechnology, food and beverage, aerospace, and general lab applications.

**Characteristics:** Peroxide-cured, excellent heat resistance, low compression set, odorless, nontoxic, translucent.

**Certifications:** Elastomer is FDA-compliant (21 CFR 177.2600) and meets USP Class VI requirements. Tubing is manufactured according to GMP.

**Temperature range:** -60 to 460°F (-51 to 238°C)

**Sterilize:** Autoclave or gamma irradiation.

### Platinum Silicone



**Applications:** Pharmaceutical, biotechnology, aerospace, food and beverage, and general lab applications.

**Characteristics:** Platinum-cured, excellent heat resistance, low compression set, odorless, nontoxic, translucent.

**Certifications:** Elastomer is FDA-compliant (21 CFR 177.2600) and meets USP Class VI. Tubing is manufactured according to GMP.

**Temperature range:** -58 to 446°F (-50 to 230°C)

**Sterilize:** Autoclave or gamma irradiation.



Buy More...Save More!

20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (21°C)	Peroxide silicone		Platinum silicone	
ID	OD	Wall		Catalog number	Price/25-ft pk	Catalog number	Price/25-ft pk
1/50 (0.5)	1/12 (2.1)	1/32 (0.8)	30	FA-06411-59		FA-95802-00	
1/32 (0.8)	3/32 (2.4)	1/32 (0.8)	30	FA-06411-60		FA-95802-01	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	15	FA-06411-62		FA-95802-02	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	15	FA-06411-63		FA-95802-03	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	10	FA-06411-64		FA-95802-04	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	20	FA-06411-67		FA-95802-05	
1/8 (3.2)	3/8 (9.6)	1/8 (3.2)	25	FA-06411-68		FA-95802-06	
5/32 (4.0)	5/32 (4.0)	1/32 (0.8)	10	FA-06411-65		FA-95802-07	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	9	FA-06411-66		FA-95802-08	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	13	FA-06411-03		FA-95802-09	
3/16 (4.8)	7/16 (11.2)	1/8 (3.2)	22	FA-06411-69		FA-95802-10	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	9	FA-06411-70		FA-95802-11	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	10	FA-06411-71		FA-95802-12	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	17	FA-06411-72		FA-95802-13	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	17	FA-06411-74		FA-95802-14	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	10	FA-06411-75		FA-95802-15	
5/16 (8.0)	1/2 (12.8)	3/32 (2.4)	16	FA-06411-76		FA-95802-16	
5/16 (8.0)	9/16 (14.4)	1/8 (3.2)	20	FA-06411-77		FA-95802-17	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	10	FA-06411-12		FA-95802-18	
3/8 (9.6)	9/16 (14.4)	3/32 (2.4)	12	FA-06411-78		FA-95802-19	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	15	FA-06411-79		FA-95802-20	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	9	FA-06411-80		FA-95802-21	
1/2 (12.8)	11/16 (17.6)	3/32 (2.4)	10	FA-06411-19		FA-95802-22	
1/2 (12.8)	3/4 (19.2)	1/8 (3.2)	12	FA-06411-55		FA-95802-23	
5/8 (16.0)	13/16 (20.8)	3/32 (2.4)	10	FA-06411-82		FA-95802-24	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	12	FA-06411-58		FA-95802-25	
3/4 (19.2)	1 (25.4)	1/8 (3.2)	9	FA-06411-83		FA-95802-26	

## Benchtop Tubing Cutter

Steel blade makes right-angle cuts in plastic tubing 1/16" to 5/8" OD.

[FA-06438-10](#) Benchtop cutter

[FA-06438-11](#) Replacement blade



## Tygon® Non-DEHP Lab Tubing

Pliable formulation for sharp  
radius bending



**Formulation:** Tygon E-3603

**Characteristics:** Non-DEHP, phthalate free. Long-life, chemical resistant, nonoxidizing; able to bend to sharp radius curves and easily works with fittings. Transparent.

**Certifications:** FDA-compliant (21 CFR 175.300); meets USP Class VI requirements.

**Temperature range:** -51 to 165°F (-46 to 74°C)

**Sterilize:** Autoclave or ethylene oxide.

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20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (bar at 21°C)	Catalog number	Price/50-ft pk
ID	OD	Wall			
1/32 (0.8)	3/32 (2.4)	1/32 (0.8)	69 (4.8)	FA-06407-70	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	36 (2.5)	FA-06407-71	
1/16 (1.6)	3/16 (4.8)	1/16 (1.6)	69 (4.8)	FA-06407-72	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	25 (1.7)	FA-06407-73	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	20 (1.4)	FA-06407-75	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	36 (2.5)	FA-06407-76	
5/32 (4.0)	7/32 (5.6)	1/32 (0.8)	17 (1.2)	FA-06407-77	
3/16 (4.8)	9/16 (8.0)	1/16 (1.6)	25 (1.7)	FA-06407-78	
3/16 (4.8)	3/8 (9.6)	3/32 (2.4)	36 (2.5)	FA-06407-79	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	20 (1.4)	FA-06407-80	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	28 (1.9)	FA-06407-81	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	35 (2.5)	FA-06407-82	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	17 (1.2)	FA-06407-83	
5/16 (8.0)	1/2 (12.8)	3/32 (2.4)	23 (1.6)	FA-06407-84	
5/16 (8.0)	9/16 (14.4)	1/8 (3.2)	30 (2.1)	FA-06407-85	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	14 (1.0)	FA-06407-86	
3/8 (9.6)	9/16 (14.4)	3/32 (2.4)	20 (1.4)	FA-06407-87	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	25 (1.7)	FA-06407-88	
7/16 (11.2)	9/16 (14.4)	1/16 (1.6)	13 (0.9)	FA-06407-89	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	12 (1.8)	FA-06407-90	
1/2 (12.8)	11/16 (1.6)	3/32 (2.4)	15 (1.0)	FA-06407-91	
1/2 (12.8)	3/4 (19.1)	1/8 (3.2)	20 (1.4)	FA-06407-92	
1/2 (12.8)	13/16 (20.8)	3/32 (2.4)	24 (1.7)	FA-06407-93	
5/8 (16.0)	13/16 (20.8)	3/32 (2.4)	13 (0.9)	FA-06407-94	
3/4 (19.1)	7/8 (11.2)	1/8 (3.2)	17 (1.2)	FA-06407-95	
3/4 (19.1)	1 (25.4)	1/8 (3.2)	14 (1.0)	FA-06407-96	
3/4 (19.1)	1 1/8 (28.6)	3/16 (4.8)	20 (1.4)	FA-06407-97	
1 (25.4)	1 1/4 (31.8)	1/8 (3.2)	12 (0.8)	FA-06407-98	
1 (25.4)	1 1/2 (66.8)	1/4 (6.4)	20 (1.4)	FA-06407-99	

## Free Certificate of Compliance

Cole-Parmer will provide a certificate of resin or elastomer compliance FREE at your request with each order of fittings or tubing. Certificates list your company's PO number, order reference number, catalog number, formulation, compound number, lot number (where applicable), and the regulations and agencies the tubing or fitting complies with, including FDA, USP, USDA, National Formulary, NSF International, GMP, and 3A. Look for the blue "check" icon throughout this catalog to identify when a certificate of compliance is available.



## DON'T RISK IT!

Our chemical compatibility database provides important information on chemical resistance—check it out at [ColeParmer.com/ChemChart](http://ColeParmer.com/ChemChart)





## Cole-Parmer® Vinyl Tubing

Ideal for general-purpose applications



**Applications:** General-purpose lab use.

**Characteristics:** Fair chemical and abrasion resistance, odorless, nontoxic and transparent.

**Certifications:** Tubing is manufactured according to GMP.

**Temperature range:** -45 to 180°F (-43 to 82°C)

**Sterilize:** Ethylene oxide.



Buy More...Save More!

20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (bar at 21°C)	Catalog number	Ft/pk	Price/pk
ID	OD	Wall				
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	40 (2.8)	FA-06405-01	50	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	59 (4.0)	FA-06405-02	50	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	51 (3.5)	FA-06405-03	50	
3/16 (4.8)	7/16 (11.2)	1/8 (3.2)	46 (3.2)	FA-06405-04	100	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	51 (3.5)	FA-06405-06	50	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	55 (3.8)	FA-06405-07	100	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	64 (4.4)	FA-06405-08	50	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	46 (3.2)	FA-06405-09	50	
5/16 (8.0)	1/2 (12.8)	3/32 (2.4)	55 (3.8)	FA-06405-10	100	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	41 (2.8)	FA-06405-12	50	
3/8 (9.6)	9/16 (14.4)	3/32 (2.4)	46 (3.2)	FA-06405-15	100	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	55 (3.8)	FA-06405-16	100	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	28 (1.9)	FA-06405-18	50	
1/2 (12.8)	11/16 (17.6)	3/32 (2.4)	36 (2.5)	FA-06405-19	100	
1/2 (12.8)	3/4 (19.1)	1/8 (3.2)	41 (2.8)	FA-06405-20	50	
5/8 (16.0)	13/16 (20.8)	3/32 (2.4)	32 (2.2)	FA-06405-25	100	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	36 (2.5)	FA-06405-27	50	
3/4 (19.1)	1 (25.4)	1/8 (3.2)	32 (2.2)	FA-06405-31	50	
1 (25.4)	1 1/4 (31.8)	1/8 (3.2)	23 (1.6)	FA-06405-36	50	
1 1/4 (31.8)	1 3/4 (44.5)	1/4 (6.4)	41 (2.8)	FA-06405-46	50	

Fluid Handling

Tubing



**Custom Cut Tubing**  
For details, call **1-800-323-4340**

## C-Flex® Tubing

Meets the demands of various industries

– Available in three formulations—standard, clear, and animal-derived component-free (ADCF)

**Applications:** General-purpose lab uses requiring high performance and long life.

**Characteristics:** Exceptional tensile and tear strength, good biocompatibility, excellent chemical resistance, low gas permeability, and a smooth surface. Standard C-Flex is opaque white; C-Flex Clear and C-Flex ADCF are clear.

Dimensions in. (mm)			C-Flex			C-Flex Clear			C-Flex ADCF		
ID	OD	Wall	Catalog number	Max psi at 70°F (21°C)	Price/25-ft pk	Catalog number	Max psi at 70°F (21°C)	Price/25-ft pk	Catalog number	Max psi at 70°F (21°C)	Price/50-ft pk
1/50 (0.5)	1/2 (2.1)	1/32 (0.8)	FA-06424-59	30		FA-06422-00	50		—	—	—
1/32 (0.8)	3/32 (2.4)	1/32 (0.8)	FA-06424-60	31		FA-06422-01	51		—	—	—
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	FA-06424-62	15		FA-06422-02	25		—	—	—
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	FA-06424-63	14		FA-06422-03	23		—	—	—
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	FA-06424-64	10		FA-06422-04	17		—	—	—
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	FA-06424-67	21		FA-06422-05	35		FA-06432-50	35	—
5/32 (4.0)	7/32 (5.6)	1/32 (0.8)	FA-06424-65	10		FA-06422-06	17		—	—	—
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	FA-06424-66	9		FA-06422-07	15		—	—	—
3/16 (4.8)	3/16 (8.0)	1/16 (1.6)	FA-06424-03	13		FA-06422-08	22		FA-06432-51	22	—
3/16 (4.8)	7/16 (11.2)	1/8 (3.2)	FA-06424-69	22		FA-06422-09	36		—	—	—
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	FA-06424-71	12		FA-06422-10	20		FA-06432-53	20	—
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	FA-06424-72	17		FA-06422-11	28		FA-06432-54	28	—
1/4 (6.4)	1/2 (12.7)	1/8 (3.2)	FA-06424-74	17		FA-06422-12	28		FA-06432-55	28	—
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	FA-06424-75	17		FA-06422-13	17		—	—	—
5/16 (8.0)	1/2 (12.7)	3/32 (2.4)	FA-06424-76	16		FA-06422-14	27		FA-06432-56	27	—
3/8 (9.6)	1/2 (12.7)	1/16 (1.6)	FA-06424-12	10		FA-06422-15	17		FA-06432-57	17	—
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	FA-06424-79	14		FA-06422-16	23		FA-06432-59	23	—
1/2 (12.7)	1 1/16 (17.6)	3/32 (2.4)	FA-06424-19	10		FA-06422-17	17		FA-06432-60	17	—
1/2 (12.7)	3/4 (19.1)	1/8 (3.2)	FA-06424-81	10		FA-06422-18	17		FA-06432-61	17	—

## PharMed® BPT Tubing

Protect your light-sensitive samples



**Applications:** Cell and tissue culture work and pharmaceutical uses. Also good for light-sensitive samples.

**Characteristics:** Nontoxic; nonhemolytic; extremely low permeability; resists acids, alkalis, oxidizing agents, and animal and vegetable oils; heat-sealable, bondable, and formable. Opaque beige.

**Certifications:** Elastomer is FDA-compliant (21 CFR 177.2600) and meets USP Class VI and NSF (Standard 51) requirements. Meets EP requirements. Tubing is manufactured according to GMP.

**Temperature range:** -60 to 275°F (-51 to 135°C)

**Sterilize:** Autoclave, ethylene oxide, or gamma irradiation.

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20% off on 20+ 15% off on 10 to 19 10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (bar at 21°C)	Catalog number	Price/25-ft pk
ID	OD	Wall			
1/50 (0.5)	9/64 (3.7)	1/16 (1.6)	50 (3.4)	FA-96880-00	
1/32 (0.8)	5/32 (4.0)	1/16 (1.6)	40 (2.8)	FA-96880-02	
1/16 (1.6)	3/16 (4.8)	1/16 (1.6)	34 (2.3)	FA-96880-04	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	19 (1.3)	FA-96880-06	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	13 (0.9)	FA-96880-08	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	10 (0.7)	FA-96880-10	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	19 (1.3)	FA-96880-12	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	8 (0.6)	FA-96880-14	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	13 (0.9)	FA-96880-16	
1/2 (12.8)	3/4 (19.1)	1/8 (3.2)	11 (0.8)	FA-96880-18	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	8 (0.6)	FA-96880-20	
3/4 (19.1)	1 (25.4)	1/8 (3.2)	7 (0.5)	FA-96880-22	

### Microbore PharMed BPT Tubing

Dimensions: in. (mm)			Fits needle gauge	Catalog number	Price/100-ft pk
ID	OD	Wall			
0.010 (0.25)	0.082 (2.08)	0.036 (0.91)	30	FA-95809-12	
0.020 (0.51)	0.096 (2.44)	0.038 (0.97)	24	FA-95809-18	
0.035 (0.89)	0.111 (2.82)	0.038 (0.97)	20	FA-95809-26	
0.045 (1.14)	0.121 (3.07)	0.038 (0.97)	18	FA-95809-30	
0.051 (1.30)	0.127 (3.23)	0.038 (0.97)	18	FA-95809-32	
0.056 (1.42)	0.132 (3.35)	0.038 (0.97)	17	FA-95809-34	
0.060 (1.52)	0.136 (3.45)	0.038 (0.97)	16	FA-95809-36	
0.073 (1.85)	0.149 (3.78)	0.038 (0.97)	15	FA-95809-40	



## Cole-Parmer® FEP Tubing

Does not deteriorate with age



**Applications:** Demanding lab, chemical, electrical, mechanical, pharmaceutical, and automotive applications. Excellent for the transfer of extreme temperature or highly corrosive materials. Also good for high-purity work.

**Characteristics:** Chemically inert, nontoxic, heat resistant, with a low coefficient of friction. Doesn't deteriorate with age. Tough, but bends even at -454°F (-270°C). Translucent.

**Certifications:** Resin is FDA-compliant (21 CFR 177.1550). Tubing is manufactured in ISO 9001-2008 approved facility.

**Temperature range:** -454 to 400°F (-270 to 205°C)

**Sterilize:** With autoclave, ethylene oxide, or dry heat.



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20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (bar at 21°C)	Catalog number	Price/ 25-ft pk
ID	OD	Wall			
1/32 (0.8)	1/16 (1.6)	1/64 (0.4)	500 (34.5)	FA-06406-60	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	444 (30.6)	FA-06406-62	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	353 (24.3)	FA-06406-63	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	289 (19.9)	FA-06406-64	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	450 (31.0)	FA-06450-05	
5/32 (4.0)	1/4 (6.4)	3/64 (1.2)	329 (22.7)	FA-06450-04	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	209 (14.4)	FA-06406-66	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	353 (24.3)	FA-06450-06	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	150 (10.3)	FA-06406-72	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	288 (19.9)	FA-06450-07	
19/64 (7.5)	3/8 (9.6)	5/128 (1.0)	172 (11.9)	FA-06450-02	
5/16 (8.0)	3/8 (9.6)	1/32 (0.8)	140 (9.7)	FA-06406-74	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	243 (16.8)	FA-06450-08	
3/8 (9.6)	7/16 (11.2)	1/32 (0.8)	110 (7.6)	FA-06406-12	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	210 (14.5)	FA-06450-09	
7/16 (11.1)	1/2 (12.8)	1/32 (0.8)	102 (7.0)	FA-06406-76	
7/16 (11.1)	9/16 (14.3)	1/16 (1.6)	185 (12.8)	FA-06450-14	
1/2 (12.8)	9/16 (14.3)	1/32 (0.8)	88 (6.1)	FA-06406-18	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	165 (11.4)	FA-06450-15	
5/8 (16.0)	11/16 (17.5)	1/32 (0.8)	71 (4.9)	FA-06450-00	
5/8 (16.0)	3/4 (19.2)	1/16 (1.6)	135 (9.3)	FA-06450-17	
11/16 (17.5)	3/4 (19.2)	1/32 (0.8)	65 (4.5)	FA-06450-01	
3/4 (19.2)	7/8 (22.2)	1/16 (1.6)	115 (7.9)	FA-06450-19	

## Cole-Parmer® PTFE Microbore Tubing

Minimize friction, maximize chemical resistance



Use this translucent tubing in extreme temperatures and in harsh chemical environments. It's chemically inert, has low permeability, and has the lowest friction coefficient of any tubing. Temperature range is -400 to 500°F (-240 to 260°C); melts at 620°F (327°C). Tensile strength is 2500 to 4000 psi. PTFE tubing resin is UL-recognized and complies with FDA (21 CFR 177.1550) and USP Class VI requirements.



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20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions			Fits needle gauge	Catalog number	Price/ 100 ft
ID	OD	Wall			
<b>Ultramicrobore PTFE tubing (finer than a human hair)</b>					
0.002"	0.014"	0.006"	44	FA-06417-70	
0.004"	0.016"	0.006"	38	FA-06417-72	
0.006"	0.016"	0.005"	34	FA-06417-74	
0.008"	0.016"	0.004"	33	FA-06417-76	
<b>Microbore PTFE tubing</b>					
0.012"	0.030"	0.009"	30	FA-06417-11	
0.022"	0.042"	0.010"	24	FA-06417-21	
0.032"	0.056"	0.012"	21	FA-06417-31	
0.042"	0.066"	0.012"	18	FA-06417-41	
0.052"	0.076"	0.012"	16	FA-06417-51	

**FA-06417-60** Microbore tubing assortment pack. One 100-ft (30.4-m) roll each of 06417-11, -21, -31, -41, and -51 (500-ft [152.4-m] total)

## Cole-Parmer® PTFE Tubing

Won't crack under heat or pressure



**Applications:** Demanding lab, chemical, electrical, mechanical, pharmaceutical, and automotive applications. Good for high-purity work. PTFE tubing withstands extreme temperatures.

**Characteristics:** Chemically inert, nontoxic, and virtually nonporous.

Excellent crack- and stress-resistance. Low coefficient of friction. Translucent.

**Certifications:** Resin is FDA-compliant (21 CFR 177.1550).

**Temperature range:** -400 to 500°F (-240 to 260°C)

**Sterilize:** Autoclave, ethylene oxide, or dry heat.

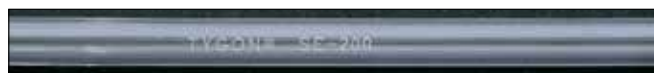
Buy More...Save More!

20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 70°F (bar at 21°C)	Catalog number	Price/ 25-ft pk
ID	OD	Wall			
1/32 (0.8)	1/16 (1.6)	1/64 (0.4)	370 (25.5)	FA-06407-41	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	370 (25.5)	FA-06605-27	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	294 (20.3)	FA-06605-28	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	240 (16.5)	FA-06605-29	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	375 (25.9)	FA-06605-30	
5/32 (4.0)	1/4 (6.4)	3/64 (1.2)	274 (18.9)	FA-06605-31	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	175 (12.1)	FA-06605-32	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	294 (20.3)	FA-06605-33	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	137 (9.4)	FA-06605-34	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	240 (16.5)	FA-06605-35	
19/64 (7.5)	3/8 (9.6)	1/25 (1.0)	143 (9.9)	FA-06605-36	
5/16 (8.0)	3/8 (9.6)	1/32 (0.8)	113 (7.8)	FA-06605-37	
3/8 (9.6)	7/16 (11.2)	1/32 (0.8)	96 (6.6)	FA-06605-39	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	175 (12.1)	FA-06605-40	
3/8 (9.6)	1/2 (12.8)	1/20 (1.4)	137 (9.4)	FA-06605-41	
7/16 (11.2)	1/2 (12.8)	1/32 (0.8)	83 (5.7)	FA-06605-42	
1/2 (12.8)	9/16 (14.3)	1/32 (0.8)	73 (5.0)	FA-06605-44	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	137 (9.4)	FA-06605-45	
9/16 (14.3)	5/8 (16.0)	1/32 (0.8)	66 (4.6)	FA-06605-46	
5/8 (16.0)	11/16 (17.5)	1/32 (0.8)	59 (4.1)	FA-06605-48	
5/8 (16.0)	3/4 (19.2)	1/16 (1.6)	113 (7.8)	FA-06605-49	
3/4 (19.2)	7/8 (22.2)	1/16 (1.6)	96 (6.6)	FA-06605-51	

## Tygon® FEP-Lined Tubing

Keep samples free of odors and taste



**Formulation:** Tygon SE-200

**Applications:** Chemical and pharmaceutical processing, beverage dispensing, paint and solvent production, semiconductor processing.

**Characteristics:** Bio-based, phthalate-free. Flexible, chemically resistant, inert, non-contaminating. Odorless, nontoxic, and taste free. Clear.

**Certifications:** FDA-compliant (21 CFR 177.1550) for contact food products.

**Temperature range:** -49 to 165°F (-45 to 74°C)

**Sterilize:** Ethylene oxide.

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20% off on 20+  
15% off on 10 to 19  
10% off on 4 to 9 packs

Dimensions: in. (mm)			Max psi at 73°F (bar at 23°C)	Catalog number	Price/ 50-ft pk
ID	OD	Wall			
1/16 (1.5)	1/8 (3.2)	1/32 (0.7)	100 (6.9)	FA-95713-50	
1/8 (3.2)	1/4 (6.4)	1/16 (1.5)	85 (5.9)	FA-95713-00	
3/16 (4.8)	5/16 (8.0)	1/16 (1.5)	75 (5.2)	FA-95713-10	
1/4 (6.4)	3/8 (9.6)	1/16 (1.5)	55 (3.8)	FA-95713-20	
3/8 (9.6)	9/16 (14.4)	3/32 (2.3)	50 (3.4)	FA-95713-30	
1/2 (12.8)	3/4 (19.1)	1/8 (3.1)	45 (3.1)	FA-95713-41	
3/4 (19.0)	1 (25.4)	1/8 (3.1)	30 (2.1)	FA-95713-60	

# Your Complete Source for Fluid Handling Products



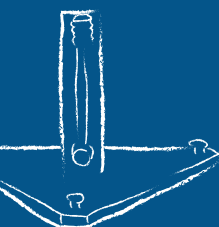
**Get Pumping:**  
 >2300 Pumps



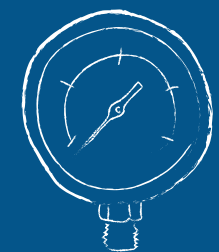
**See it Through:**  
 >170 Tubing Formulations plus Custom Cut Sizes



**The Right Fit:**  
 4500+ Fitting Options



**In the Flow:**  
 More than 3200 Flowmeter Options



**Pressure Relief:**  
 Select from 3000+ Pressure Gauges



**Control your Flow:**  
 More than 1000 Valves

## Tubing Accessories

### Handheld Tubing Cutter

Steel blade coated with PTFE resin produces clean, straight cuts through tubing up to 1 1/4" OD (cuts polyethylene tubing up to 1 1/2" OD). Order carrying pouch and replacement blade separately below.



- [FA-06438-90](#) Handheld tubing cutter
- [FA-06438-81](#) Tubing cutter pouch
- [FA-06438-92](#) Replacement blade for handheld tubing cutter 06438-90

### Benchtop Tubing Cutter

Steel blade makes right-angle cuts in plastic tubing 1/16" to 5/8" OD.



- [FA-06438-10](#) Benchtop cutter
- [FA-06438-11](#) Replacement blade

### Stainless Steel Hose Clamps



SS strap and screw housing with a steel screw. Band-type worm drive.

Clamp diameter		Catalog number	Price/pk of 10*
Min	Max		
7/32"	5/8"	<a href="#">FA-06403-11</a>	
11/16"	1 1/4"	<a href="#">FA-06403-12</a>	
13/16"	1 3/4"	<a href="#">FA-06403-13</a>	
1 1/16"	2"	<a href="#">FA-06403-14</a>	
1 5/16"	2 1/4"	<a href="#">FA-06403-15</a>	
2"	2 3/4"	<a href="#">FA-06403-16</a>	
2 3/4"	3 1/2"	<a href="#">FA-06403-21</a>	
3 1/2"	4 3/8"	<a href="#">FA-06403-22</a>	
4 3/8"	5 1/8"	<a href="#">FA-06403-23</a>	
5 1/8"	5 7/8"	<a href="#">FA-06403-24</a>	
5 1/2"	6 1/4"	<a href="#">FA-06403-25</a>	

\*Discounts: Save 10% on 5-24 pks, 15% on 25-99 pks, and 20% on 100+ pks.

### Plastic Clamp Ties



Perfect for flexible fuel line, water line, and vacuum line applications. Special curved clamp tie head ensures a tight seal. Ties measure 8" L x 0.18" W; maximum diameter of 1 3/4". Black resin resists UV degradation.

- [FA-95615-00](#) Clamp ties, white. 100/pk
- [FA-95615-10](#) Clamp ties, black. 100/pk

### Cole-Parmer® Plastic Hose Clamps and Kits

Reusable white acetal copolymer clamps will not rust or corrode. Recommended for continuous use from ambient temperature to 200°F (93°C). Clamps are nonconducting and stable in a wide variety of chemicals.

Once set, clamps stay put. To use, just position clamp on hose or tubing bundle and press the jaws together with a pair of pliers. Order clamps individually or in a handy kit.



Inside diameter				Catalog number	Qty/pk	Price/pk**
Decimal inches		Millimeters				
Min	Max	Min	Max			
0.228	0.256	5.8	6.5	<a href="#">FA-06832-01</a>	100	
0.269	0.291	6.8	7.4	<a href="#">FA-95614-00</a>	100	
0.307	0.342	7.8	8.7	<a href="#">FA-06832-03</a>	100	
0.351	0.394	8.9	10.0	<a href="#">FA-06832-02</a>	100	
0.387	0.440	9.8	11.2	<a href="#">FA-95614-01</a>	100	
0.404	0.452	10.3	11.5	<a href="#">FA-06832-04</a>	100	
0.449	0.511	11.4	13.0	<a href="#">FA-06832-06</a>	100	
0.513	0.586	13.0	14.9	<a href="#">FA-06832-08</a>	100	
0.569	0.650	14.5	16.5	<a href="#">FA-06832-10</a>	100	
0.616	0.707	15.7	18.0	<a href="#">FA-06832-12</a>	100	
0.702	0.801	17.8	20.4	<a href="#">FA-06832-14</a>	100	
0.759	0.848	19.3	21.5	<a href="#">FA-06832-16</a>	100	
0.779	0.899	19.8	22.8	<a href="#">FA-06832-18</a>	100	
0.859	0.989	21.8	25.1	<a href="#">FA-06832-20</a>	100	
0.928	1.072	23.6	27.2	<a href="#">FA-06832-22</a>	100	
0.985	1.135	25.0	28.8	<a href="#">FA-06832-24</a>	100	
1.123	1.296	28.5	32.9	<a href="#">FA-06832-28</a>	50	
1.218	1.405	30.9	35.7	<a href="#">FA-06832-32</a>	50	

\*\*Discounts: Save 10% on 4-19 pks, 15% on 20-79 pks, and 20% on 80+ pks.

[FA-06832-99](#) White acetal copolymer hose-clamp kit includes 170 assorted clamps from 0.228" to 1.405" ID

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# Cole-Parmer® Premium Luer Fittings

## Premium luer fittings for critical applications

- Manufactured from 100% virgin raw materials in a Class 100,000 environment
- Full material traceability on all items

These luer fittings are ideal for a variety of applications, including syringes or small tubing. Manufactured in compliance with ISO 594-1 standards, these fittings are inspected to be free from contaminants, and are fully traceable. All parts meet tight dimensional tolerances for increased reliability and process purity. Choose from a range of sizes, 1/16" to 1/4", with a variety of connection options. **Pack of 25.**

### Search

For our complete line of luer fittings, go to...

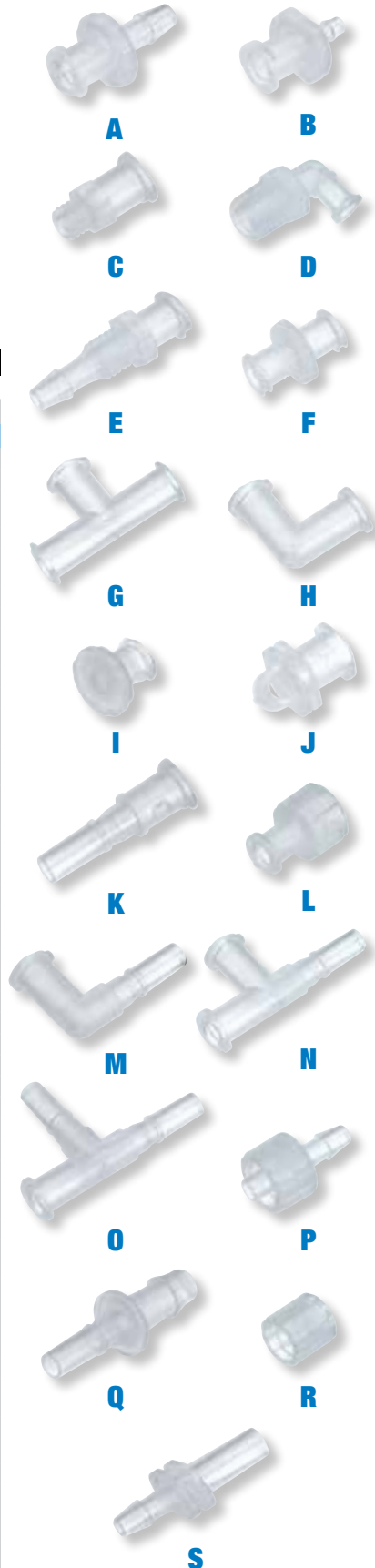
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- 15% off on 50 to 99
- 10% off on 10 to 49 packs



Key	Description	Polypropylene		Polycarbonate		Nylon	
		Cat. no.	Price/pk	Cat. no.	Price/pk	Cat. no.	Price/pk
<b>Female luer x hose barb adapters</b>							
A	Female luer x 1/16" hose barb	<a href="#">FA-45508-00</a>		<a href="#">FA-45501-00</a>		<a href="#">FA-45502-00</a>	
	Female luer x 3/32" hose barb	<a href="#">FA-45508-02</a>		<a href="#">FA-45501-02</a>		<a href="#">FA-45502-02</a>	
	Female luer x 1/8" hose barb	<a href="#">FA-30800-08</a>		<a href="#">FA-45501-04</a>		<a href="#">FA-45502-04</a>	
	Female luer x 5/32" hose barb	<a href="#">FA-45508-06</a>		<a href="#">FA-45501-06</a>		<a href="#">FA-45502-06</a>	
	Female luer x 3/16" hose barb	<a href="#">FA-45508-08</a>		<a href="#">FA-45501-08</a>		<a href="#">FA-45502-08</a>	
	Female luer x 1/4" hose barb	<a href="#">FA-30800-06</a>		<a href="#">FA-45501-20</a>		<a href="#">FA-45502-20</a>	
<b>Female luer x hose barb adapters (smooth bore)</b>							
B	Female luer x 1/16" hose barb (smooth bore)	<a href="#">FA-45508-50</a>		<a href="#">FA-45501-50</a>		<a href="#">FA-45502-50</a>	
	Female luer x 3/32" hose barb (smooth bore)	<a href="#">FA-45508-52</a>		<a href="#">FA-45501-52</a>		<a href="#">FA-45502-52</a>	
	Female luer x 1/8" hose barb (smooth bore)	<a href="#">FA-45508-54</a>		<a href="#">FA-45501-54</a>		<a href="#">FA-45502-54</a>	
<b>Female luer x thread adapters</b>							
C	Female luer x 10-32 special tapered thread	<a href="#">FA-45508-70</a>		<a href="#">FA-45501-70</a>		<a href="#">FA-45502-70</a>	
	Female luer x 10-32 UNF thread	<a href="#">FA-45508-60</a>		<a href="#">FA-45501-60</a>		<a href="#">FA-45502-60</a>	
	Female luer x 1/4-28 UNF thread	<a href="#">FA-45508-66</a>		<a href="#">FA-45501-66</a>		<a href="#">FA-45502-66</a>	
	Female luer x 1/4-28 UNF bottom sealing thread	<a href="#">FA-45508-76</a>		---		<a href="#">FA-45505-76</a>	
	Female luer x 1/8-27 NPT thread	<a href="#">FA-30800-00</a>		---		<a href="#">FA-45505-78</a>	
D	Female luer x 1/8-27 NPT thread elbow	<a href="#">FA-45518-80</a>		---		<a href="#">FA-45505-80</a>	
<b>Female luer bulkhead x hose barb adapters</b>							
E	Female luer x 1/4-28 UNF thread to 1/16" hose barb	<a href="#">FA-45508-30</a>		<a href="#">FA-45501-30</a>		<a href="#">FA-45502-30</a>	
	Female luer x 1/4-28 UNF thread to 3/32" hose barb	<a href="#">FA-45508-32</a>		<a href="#">FA-45501-32</a>		<a href="#">FA-45502-32</a>	
	Female luer x 1/4-28 UNF thread to 1/8" hose barb	<a href="#">FA-45508-34</a>		<a href="#">FA-45501-34</a>		<a href="#">FA-45502-34</a>	
<b>Female adapters</b>							
F	Female luer x female luer	<a href="#">FA-45508-22</a>		<a href="#">FA-45501-22</a>		<a href="#">FA-45502-22</a>	
G	Female tee	<a href="#">FA-45508-56</a>		<a href="#">FA-45501-56</a>		<a href="#">FA-45502-56</a>	
H	Female elbow	<a href="#">FA-45508-26</a>		<a href="#">FA-45501-26</a>		<a href="#">FA-45502-26</a>	
I	Female luer x cap	<a href="#">FA-30800-12</a>		<a href="#">FA-45501-28</a>		<a href="#">FA-45502-28</a>	
J	Female luer x cap with tether loop	<a href="#">FA-45508-64</a>		<a href="#">FA-45501-64</a>		<a href="#">FA-45502-64</a>	
<b>Male x female adapters</b>							
K	Male luer x female luer coupler	<a href="#">FA-45508-82</a>		<a href="#">FA-45501-82</a>		<a href="#">FA-45502-82</a>	
L	Male luer x female luer coupler with lock ring	<a href="#">FA-45508-80</a>		<a href="#">FA-45501-80</a>		<a href="#">FA-45502-80</a>	
M	Male luer x female luer elbow	<a href="#">FA-45508-84</a>		<a href="#">FA-45501-84</a>		<a href="#">FA-45502-84</a>	
N	Male x female x female tee	<a href="#">FA-45508-85</a>		<a href="#">FA-45501-85</a>		<a href="#">FA-45502-85</a>	
O	Male x male x female tee	<a href="#">FA-45508-75</a>		<a href="#">FA-45501-75</a>		<a href="#">FA-45502-75</a>	
<b>Male luer lock x hose barb adapters</b>							
P	Male luer lock x 1/16" hose barb	<a href="#">FA-45518-00</a>		<a href="#">FA-45504-00</a>		<a href="#">FA-45505-00</a>	
	Male luer lock x 3/32" hose barb	<a href="#">FA-45518-02</a>		<a href="#">FA-45504-02</a>		<a href="#">FA-45505-02</a>	
	Male luer lock x 1/8" hose barb	<a href="#">FA-30800-24</a>		<a href="#">FA-45504-04</a>		<a href="#">FA-45505-04</a>	
	Male luer lock x 5/32" hose barb	<a href="#">FA-45518-06</a>		<a href="#">FA-45504-06</a>		<a href="#">FA-45505-06</a>	
	Male luer lock x 3/16" hose barb	<a href="#">FA-45518-08</a>		<a href="#">FA-45504-08</a>		<a href="#">FA-45505-08</a>	
	Male luer lock x 1/4" hose barb	<a href="#">FA-30800-22</a>		<a href="#">FA-45504-19</a>		<a href="#">FA-45505-19</a>	
<b>Male luer x hose barb adapters (for use with separate rotating lock ring "R")</b>							
Q	Male luer x 1/16" hose barb	<a href="#">FA-45518-40</a>		<a href="#">FA-45504-40</a>		<a href="#">FA-45505-40</a>	
	Male luer x 3/32" hose barb	<a href="#">FA-45518-42</a>		<a href="#">FA-45504-42</a>		<a href="#">FA-45505-42</a>	
	Male luer x 1/8" hose barb	<a href="#">FA-45518-44</a>		<a href="#">FA-45504-44</a>		<a href="#">FA-45505-44</a>	
	Male luer x 5/32" hose barb	<a href="#">FA-45518-46</a>		<a href="#">FA-45504-46</a>		<a href="#">FA-45505-46</a>	
	Male luer x 3/16" hose barb	<a href="#">FA-45518-48</a>		<a href="#">FA-45504-48</a>		<a href="#">FA-45505-48</a>	
	Male luer x 1/4" hose barb	<a href="#">FA-45518-50</a>		<a href="#">FA-45504-50</a>		<a href="#">FA-45505-50</a>	
R	Snap luer lock ring	<a href="#">FA-45518-74</a>		<a href="#">FA-45504-74</a>		<a href="#">FA-45505-74</a>	
<b>Male slip luer x hose barb adapters (no lock ring)</b>							
S	Male luer x 1/16" hose barb	<a href="#">FA-45518-22</a>		<a href="#">FA-45504-22</a>		<a href="#">FA-45505-22</a>	
	Male luer x 3/32" hose barb	<a href="#">FA-45518-24</a>		<a href="#">FA-45504-24</a>		<a href="#">FA-45505-24</a>	
	Male luer x 1/8" hose barb	<a href="#">FA-45518-26</a>		<a href="#">FA-45504-26</a>		<a href="#">FA-45505-26</a>	
	Male luer x 5/32" hose barb	<a href="#">FA-45518-28</a>		<a href="#">FA-45504-28</a>		<a href="#">FA-45505-28</a>	
	Male luer x 3/16" hose barb	<a href="#">FA-45518-52</a>		<a href="#">FA-45504-52</a>		<a href="#">FA-45505-52</a>	
	Male luer x 1/4" hose barb	<a href="#">FA-45518-54</a>		<a href="#">FA-45504-54</a>		<a href="#">FA-45505-54</a>	



Fluid Handling

Fittings

## Cole-Parmer® Barbed Fittings

### No tools needed for assembly

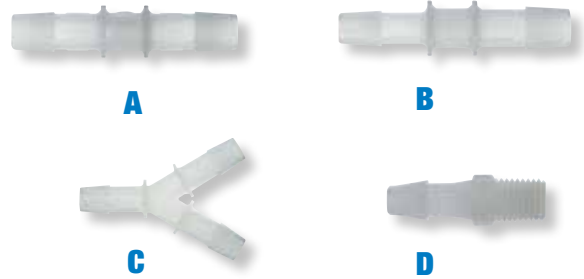
Combine these fittings with our flexible tubing for use in your low-pressure applications (less than 30 psi).

**High-Density Polyethylene (HDPE).** Very good chemical resistance. Temp range: -65 to 150°F (-53 to 65°C). Sterilize by ethylene oxide.

**Nylon.** Good chemical resistance. Temp range: -50 to 250°F (-46 to 121°C). Sterilize by ethylene oxide.

**Polypropylene (PP).** Very good chemical resistance. Temp range: 9 to 180°F (-13 to 66°C). Sterilize by ethylene oxide or gamma irradiation.

**PVDF.** Excellent chemical resistance. Temp range: -80 to 265°F (-62 to 129°C). Sterilize by ethylene oxide or autoclave.



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15% off on 50 to 99  
10% off on 10 to 49 packs

**FREE**  
certificate  
of compliance  
for these fittings



Tubing ID	HDPE			Nylon			Polypropylene			PVDF		
	Catalog number	Qty/pk	Price/pk	Catalog number	Qty/pk	Price/pk	Catalog number	Qty/pk	Price/pk	Catalog number	Qty/pk	Price/pk
<b>A. Straight connectors</b>												
1/16"	FA-40622-47	10		FA-40622-48	10		FA-50622-49	10		FA-40703-00	10	
3/32"	FA-40622-44	10		FA-40622-45	10		FA-50622-46	10		FA-40703-01	10	
1/8"	FA-40622-53	10		FA-40622-54	10		FA-51518-05	10		FA-40703-02	10	
3/16"	FA-30622-55	10		FA-30622-56	10		FA-40622-57	10		FA-30703-04	10	
1/4"	FA-30621-85	10		FA-30621-86	10		FA-40610-00	10		FA-30703-05	10	
3/8"	FA-30621-89	10		FA-30621-90	10		FA-40610-02	10		FA-30703-07	10	
1/2"	FA-30621-92	10		FA-30621-93	10		FA-40610-03	10		FA-30703-08	10	
5/8"	FA-30621-79	10		FA-30621-80	10		FA-40610-04	10		FA-30703-09	10	
3/4"	FA-30621-81	10		FA-30621-82	10		FA-40610-05	5		FA-30703-10	5	
1"	FA-30621-83	10		FA-30621-84	10		FA-40610-06	5		FA-30703-11	5	
<b>B. Reducing connectors</b>												
1/8" x 1/16"	FA-41518-29	10		FA-40622-22	25		FA-50622-23	25		FA-40703-41	10	
1/4" x 1/8"	FA-30622-27	10		FA-30622-28	10		FA-41518-36	10		FA-30703-50	10	
1/4" x 3/16"	FA-30622-29	10		FA-30622-30	10		FA-40622-32	10		FA-30703-52	10	
3/8" x 1/4"	FA-30622-35	10		FA-30703-99	10		FA-40610-08	10		FA-30703-54	10	
1/2" x 1/4"	FA-30622-38	10		FA-30622-39	10		FA-40610-10	10		FA-30703-56	10	
1/2" x 3/8"	FA-30622-42	10		FA-30622-43	10		FA-40610-12	10		FA-30703-58	10	
5/8" x 1/4"	FA-30621-96	10		FA-30621-97	10		FA-40610-13	10		FA-30703-59	10	
5/8" x 1/2"	FA-30622-03	10		FA-30622-04	10		FA-40610-16	10		FA-30703-62	10	
3/4" x 1/2"	FA-30622-09	5		FA-30622-10	5		FA-40610-18	5		FA-30703-64	5	
1" x 1/2"	FA-30622-15	5		FA-30622-16	5		FA-40610-20	5		FA-30703-66	5	
1" x 3/4"	FA-30622-13	5		FA-30622-14	5		FA-40610-22	5		FA-30703-68	5	
<b>C. Y connectors</b>												
1/16"	FA-30726-01	10		FA-30726-21	10		FA-40726-41	10		FA-30703-90	10	
3/32"	FA-30726-02	10		FA-30726-22	10		FA-40726-42	10		FA-30703-91	10	
1/8"	FA-30726-03	10		FA-30726-23	10		FA-40726-43	10		FA-30703-92	10	
3/16"	FA-30726-04	10		FA-30726-24	10		FA-40726-44	10		FA-30726-64	10	
1/4"	FA-30726-05	10		FA-30726-25	10		FA-40726-45	10		FA-30726-65	10	
3/8"	FA-30726-06	10		FA-30726-26	10		FA-40726-46	10		FA-30703-93	10	
1/2"	FA-30726-07	10		FA-30726-27	10		FA-40726-47	10		FA-30703-94	10	
5/8"	FA-30726-08	10		FA-30726-28	10		FA-40726-48	10		FA-30726-68	10	
<b>D. NPT male threaded adapters, NPT(M) x tubing ID</b>												
1/8" x 1/8"	FA-30621-26	10		FA-30621-27	10		FA-40621-28	25		FA-30704-07	10	
1/8" x 1/4"	FA-30621-31	10		FA-30621-32	10		FA-40610-36	10		FA-30704-09	10	
1/4" x 1/8"	FA-30621-42	10		FA-30621-44	10		FA-40621-45	10		FA-30621-43	10	
1/4" x 1/4"	FA-30621-46	10		FA-30621-47	10		FA-40610-38	10		FA-30704-11	10	
3/8" x 1/4"	FA-30621-56	10		FA-30621-57	10		FA-40610-41	10		FA-30704-14	10	
3/8" x 3/8"	FA-30621-62	10		FA-30621-63	10		FA-40610-42	10		FA-30704-15	10	
1/2" x 1/4"	FA-30621-73	10		FA-30621-74	10		FA-40610-44	10		FA-30704-17	10	
1/2" x 3/8"	FA-30621-75	10		FA-30621-76	10		FA-40610-45	10		FA-30704-18	10	
1/2" x 1/2"	FA-30621-77	10		FA-30621-78	10		FA-40610-46	10		FA-30704-19	10	
3/4" x 1/2"	FA-30621-20	10		FA-30621-21	10		FA-40610-50	5		FA-30704-23	5	
3/4" x 3/4"	FA-30621-12	10		FA-30621-13	10		FA-40610-51	5		FA-30704-24	5	
1" x 1"	FA-31517-18	10		FA-30401-34	10		FA-40610-53	5		FA-30704-26	5	



### Free Certificate of Compliance

Cole-Parmer will provide a certificate of resin or elastomer compliance FREE at your request with each order of fittings, gaskets, or tubing. Certificates list your company's PO number, order reference number, catalog number, formulation, compound number, lot number (where applicable), and the regulations and agencies the fitting, tubing, or gasket complies with, including FDA, USP, USDA, National Formulary, NSF International, GMP, and 3A. Look for the blue "check" icon throughout this catalog to identify when a certificate of compliance is available.

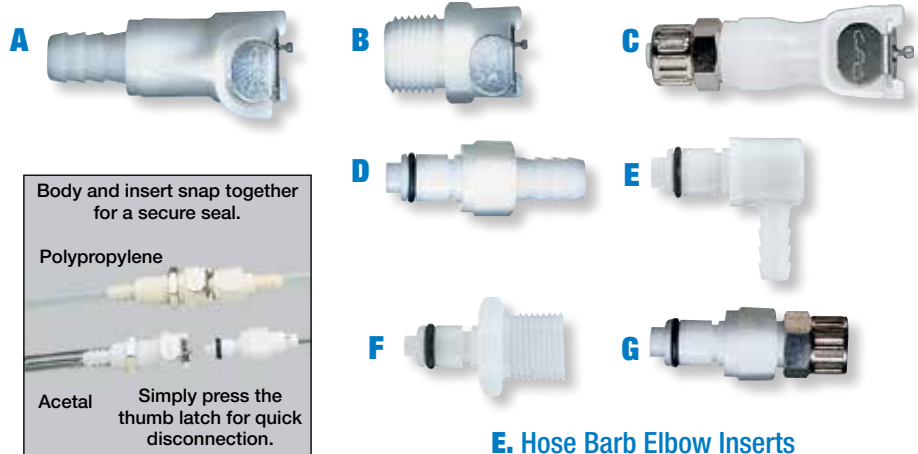


# CPC™ Quick-Disconnect Couplings

## No more struggling—just press thumb latch to disconnect

- Valved fittings shut off flow when disconnected
- Available in three styles—hose barb, compression, and pipe adapter—with standard in-line configurations

For each complete quick-disconnect fitting, order one body and one insert with the same flow size. Plug insert into body to connect fitting—fitting halves lock in place immediately. To disconnect, simply press the lever on the coupling body. All fitting bodies have 316 stainless steel springs and latches.



### Specifications

Body material	Acetal	Polypropylene (PP)
Seal material	Buna N	EPR
Max temp	180°F (-82°C)	160°F (71°C)
Max pressure	120 psi	100 psi
Max vacuum	28" Hg	28" Hg
Sterilization	Autoclave or ETO	Gamma or ETO

Buy More... Save More!

- 20% off on 100+
- 15% off on 50 to 99
- 10% off on 10 to 49 packs

## Quick-Disconnect Bodies

(Female Coupling Halves)

### A. Hose Barb Bodies

Catalog number	Tubing ID	Flow size	Length	Resin	Price/pk of 1
<b>Valved fittings</b>					
<a href="#">FA-06360-19</a>	1/16"	1/8"	1.41"	Acetal	
<a href="#">FA-06360-20</a>	1/8"	1/8"	1.65"	Acetal	
<a href="#">FA-06360-22</a>	3/16"	1/8"	1.85"	Acetal	
<a href="#">FA-06360-25</a>	1/4"	1/8"	1.85"	Acetal	
<a href="#">FA-06360-65</a>	1/4"	1/4"	1.95"	Acetal	
<a href="#">FA-06360-67</a>	5/16"	1/4"	1.95"	Acetal	
<a href="#">FA-06360-70</a>	3/8"	1/4"	1.95"	Acetal	
<a href="#">FA-06364-19</a>	1/16"	1/8"	1.41"	PP	
<a href="#">FA-06364-20</a>	1/8"	1/8"	1.67"	PP	
<a href="#">FA-06364-25</a>	1/4"	1/8"	1.87"	PP	
<a href="#">FA-06364-65</a>	1/4"	1/4"	1.97"	PP	
<a href="#">FA-06364-70</a>	3/8"	1/4"	1.97"	PP	
<b>Straight-through fittings</b>					
<a href="#">FA-06361-09</a>	1/16"	1/8"	1.41"	Acetal	
<a href="#">FA-06361-11</a>	1/8"	1/8"	1.65"	Acetal	
<a href="#">FA-06361-12</a>	3/16"	1/8"	1.85"	Acetal	
<a href="#">FA-06361-13</a>	1/4"	1/8"	1.85"	Acetal	
<a href="#">FA-06361-51</a>	1/4"	1/4"	1.95"	Acetal	
<a href="#">FA-06361-52</a>	5/16"	1/4"	1.95"	Acetal	
<a href="#">FA-06361-53</a>	3/8"	1/4"	1.95"	Acetal	

### B. NPT(M) Pipe Adapter Bodies

Catalog number	NPT(M)	Flow size	Resin	Price/pk of 1
<b>Valved fittings</b>				
<a href="#">FA-06359-70</a>	1/8"	1/8"	Acetal	
<a href="#">FA-06359-71</a>	1/4"	1/8"	Acetal	
<a href="#">FA-06359-72</a>	1/4"	1/4"	Acetal	
<a href="#">FA-06359-73</a>	3/8"	1/4"	Acetal	
<a href="#">FA-06359-80</a>	1/8"	1/8"	PP	
<a href="#">FA-06359-81</a>	1/4"	1/8"	PP	
<a href="#">FA-06359-82</a>	1/4"	1/4"	PP	
<a href="#">FA-06359-83</a>	3/8"	1/4"	PP	
<b>Straight-through fittings</b>				
<a href="#">FA-06361-00</a>	1/8"	1/8"	Acetal	
<a href="#">FA-06361-01</a>	1/4"	1/8"	Acetal	
<a href="#">FA-06361-42</a>	1/4"	1/4"	Acetal	
<a href="#">FA-06361-43</a>	3/8"	1/4"	Acetal	

### C. Compression Bodies

Catalog number	Tubing OD	Flow size	Length	Resin	Price/pk of 1
<b>Valved fittings</b>					
<a href="#">FA-06360-98</a>	1/4"	1/8"	1.73"	Acetal	
<a href="#">FA-06359-90</a>	1/4"	1/4"	1.82"	Acetal	
<a href="#">FA-06359-91</a>	3/8"	1/4"	1.95"	Acetal	
<a href="#">FA-06364-90</a>	1/4"	1/8"	1.74"	PP	
<a href="#">FA-06364-91</a>	3/8"	1/4"	1.97"	PP	
<b>Straight-through fittings</b>					
<a href="#">FA-06361-08</a>	1/4"	1/8"	1.73"	Acetal	
<a href="#">FA-06361-49</a>	3/8"	1/4"	1.95"	Acetal	

## Quick-Disconnect Inserts

(Male Coupling Halves)

### D. Hose Barb Inserts

Catalog number	Tubing ID	Flow size	Length	Resin	Price/pk of 1
<b>Valved fittings</b>					
<a href="#">FA-06360-36</a>	1/16"	1/8"	1.35"	Acetal	
<a href="#">FA-06360-40</a>	1/8"	1/8"	1.55"	Acetal	
<a href="#">FA-06360-43</a>	3/16"	1/8"	1.75"	Acetal	
<a href="#">FA-06360-45</a>	1/4"	1/8"	1.58"	Acetal	
<a href="#">FA-06360-80</a>	1/4"	1/4"	1.86"	Acetal	
<a href="#">FA-06360-83</a>	5/16"	1/4"	1.86"	Acetal	
<a href="#">FA-06360-85</a>	3/8"	1/4"	1.86"	Acetal	
<a href="#">FA-06364-38</a>	1/16"	1/8"	1.35"	PP	
<a href="#">FA-06364-40</a>	1/8"	1/8"	1.55"	PP	
<a href="#">FA-06364-45</a>	1/4"	1/8"	1.58"	PP	
<a href="#">FA-06364-80</a>	1/4"	1/4"	1.86"	PP	
<a href="#">FA-06364-85</a>	3/8"	1/4"	1.67"	PP	
<b>Straight-through fittings</b>					
<a href="#">FA-06360-38</a>	1/16"	1/8"	0.80"	Acetal	
<a href="#">FA-06360-42</a>	1/8"	1/8"	1.05"	Acetal	
<a href="#">FA-06360-44</a>	3/16"	1/8"	1.25"	Acetal	
<a href="#">FA-06360-47</a>	1/4"	1/8"	1.25"	Acetal	
<a href="#">FA-06360-82</a>	1/4"	1/4"	1.35"	Acetal	
<a href="#">FA-06360-84</a>	5/16"	1/4"	1.35"	Acetal	
<a href="#">FA-06360-87</a>	3/8"	1/4"	1.35"	Acetal	
<a href="#">FA-06364-39</a>	1/16"	1/8"	0.80"	PP	
<a href="#">FA-06364-42</a>	1/8"	1/8"	1.05"	PP	
<a href="#">FA-06364-47</a>	1/4"	1/8"	1.25"	PP	
<a href="#">FA-06364-82</a>	1/4"	1/4"	1.35"	PP	
<a href="#">FA-06364-87</a>	3/8"	1/4"	1.35"	PP	

### E. Hose Barb Elbow Inserts

Catalog number	Tubing ID	Flow size	Length	Resin	Price/pk of 1
<b>Valved fittings</b>					
<a href="#">FA-06361-39</a>	1/8"	1/8"	1.09"	Acetal	
<a href="#">FA-06361-41</a>	1/4"	1/8"	1.09"	Acetal	
<a href="#">FA-06361-75</a>	1/4"	1/4"	1.22"	Acetal	
<a href="#">FA-06361-76</a>	3/8"	1/4"	1.22"	Acetal	
<a href="#">FA-06361-98</a>	1/8"	1/8"	1.09"	PP	
<a href="#">FA-06361-99</a>	1/4"	1/8"	1.09"	PP	
<a href="#">FA-06362-00</a>	1/4"	1/4"	1.21"	PP	
<a href="#">FA-06362-01</a>	3/8"	1/4"	1.21"	PP	
<b>Straight-through fittings</b>					
<a href="#">FA-06361-27</a>	1/8"	1/8"	0.85"	Acetal	
<a href="#">FA-06361-28</a>	1/4"	1/8"	1.00"	Acetal	
<a href="#">FA-06361-63</a>	1/4"	1/4"	1.10"	Acetal	
<a href="#">FA-06361-64</a>	3/8"	1/4"	1.20"	Acetal	
<a href="#">FA-06361-85</a>	1/8"	1/8"	1.09"	PP	
<a href="#">FA-06361-86</a>	1/4"	1/8"	1.09"	PP	
<a href="#">FA-06361-87</a>	1/4"	1/4"	1.21"	PP	
<a href="#">FA-06361-88</a>	3/8"	1/4"	1.21"	PP	

### F. NPT(M) Pipe Adapter Inserts

Catalog number	NPT(M)	Flow size	Resin	Price/pk of 1
<b>Valved fittings</b>				
<a href="#">FA-06361-29</a>	1/8"	1/8"	Acetal	
<a href="#">FA-06361-31</a>	1/4"	1/8"	Acetal	
<a href="#">FA-06361-65</a>	1/4"	1/4"	Acetal	
<a href="#">FA-06361-66</a>	3/8"	1/4"	Acetal	
<a href="#">FA-06361-89</a>	1/8"	1/8"	PP	
<a href="#">FA-06361-91</a>	1/4"	1/4"	PP	
<b>Straight-through fittings</b>				
<a href="#">FA-06361-17</a>	1/8"	1/8"	Acetal	
<a href="#">FA-06361-18</a>	1/4"	1/8"	Acetal	
<a href="#">FA-06361-54</a>	1/4"	1/4"	Acetal	
<a href="#">FA-06361-55</a>	3/8"	1/4"	Acetal	
<a href="#">FA-06361-79</a>	1/8"	1/8"	PP	
<a href="#">FA-06361-81</a>	1/4"	1/4"	PP	

### G. Compression Inserts

Catalog number	Tubing OD	Flow size	Length	Resin	Price/pk of 1
<b>Valved fittings</b>					
<a href="#">FA-06360-30</a>	1/4"	1/8"	1.45"	Acetal	
<a href="#">FA-06360-35</a>	3/8"	1/8"	1.40"	Acetal	
<a href="#">FA-06360-74</a>	1/4"	1/4"	1.75"	Acetal	
<a href="#">FA-06360-75</a>	3/8"	1/4"	1.68"	Acetal	
<a href="#">FA-06364-30</a>	1/4"	1/8"	1.45"	PP	
<a href="#">FA-06364-75</a>	3/8"	1/4"	1.68"	PP	
<b>Straight-through fittings</b>					
<a href="#">FA-06360-32</a>	1/4"	1/8"	1.15"	Acetal	
<a href="#">FA-06360-37</a>	3/8"	1/8"	1.30"	Acetal	
<a href="#">FA-06360-76</a>	1/4"	1/4"	1.25"	Acetal	
<a href="#">FA-06360-77</a>	3/8"	1/4"	1.38"	Acetal	
<a href="#">FA-06364-32</a>	1/4"	1/8"	1.15"	PP	
<a href="#">FA-06364-77</a>	3/8"	1/4"	1.38"	PP	



## Cole-Parmer® Syringe Filters

Get easy, reliable filtration—just slip on and twist

- Easy identification—membrane type and pore size printed on each filter
- Filter more confidently—filters are 100% integrity tested and manufactured in accordance with ISO 9002 standards
- Get a secure fit—bidirectional membrane support and luer lock inlet/outlet
- Sterile filters are sterilized by gamma irradiation and certified nonpyrogenic, noncytotoxic, and blister packed



### Glass Prefilters with Final Filter

Membrane		Pore size	Housing	Retention volume	Qty/ bx	Catalog number	Price/ bx
Type	Dia						
<b>Nonsterile filters</b>							
Cellulose acetate	26 mm	0.20 µm	Acrylic	0.23 mL	100	FA-02915-90	
		0.45 µm				FA-02915-92	
		0.80 µm				FA-02915-94	
<b>Sterile filter</b>							
Cellulose acetate	26 mm	0.20 µm	Acrylic	0.23 mL	50	FA-02915-40	



### PTFE Filters

Pore size	Membrane dia	Housing	Color	Qty/bx	Cat. no.	Price/bx
<b>Nonsterile filters</b>						
0.20 µm	15 mm	PP	Natural	100	FA-29550-08	
0.45 µm					FA-29550-10	
0.20 µm	25 mm	PP	Natural	100	FA-02915-20	
0.45 µm					FA-02915-22	
0.20 µm	50 mm	PP	Natural	20	FA-02915-28	
0.45 µm					FA-02915-30	
<b>Sterile filters</b>						
0.20 µm	25 mm	PP	Natural	50	FA-02915-08	
0.50 µm					FA-02915-06	

### Nylon Filters

Pore size	Membrane dia	Housing	Color	Qty/ bx	Catalog number	Price/bx
<b>Nonsterile filters</b>						
0.22 µm	25 mm	PP	Natural	100	FA-02915-16	
0.45 µm					FA-02915-14	
<b>Sterile filters</b>						
0.20 µm	25 mm	PP	Red	50	FA-02915-04	
0.45 µm			Natural		FA-02915-02	

## Advantec® Mixed Cellulose Ester Membranes

High quality at low prices

- Made from over 90% cellulose nitrate for strength and thermostability

These MCE membranes can be exposed to temperatures up to 266°F (130°C). Can be used for many laboratory applications including filter sterilizing biological fluids, microbiology, contamination analysis, and air monitoring.



Pore size (µm)	Bubble point (psi)	Flow (L/min/cm <sup>2</sup> )		13 mm (100/pk)		25 mm (100/pk)		47 mm (100/pk)		90 mm (25/pk)		142 mm (25/pk)		293 mm (25/pk)	
		H <sub>2</sub> O†	Air	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
0.10	35.3	0.027	0.67	FA-06639-25		FA-06639-28		FA-06639-31		FA-06639-34		FA-06639-41		FA-36230-81	
0.20	54.5	0.018	2.4	FA-06639-01		FA-06639-05		FA-06639-13		FA-06639-35		FA-06639-17		FA-36230-82	
0.45	35.0	0.045	3.7	FA-06639-02		FA-06639-06		FA-06639-14		FA-06639-36		FA-06639-18		FA-36230-83	
0.80	16.4	0.165	15.0	FA-06645-30		FA-06645-32		FA-06645-34		FA-06645-36		FA-06645-38		FA-36230-84	
1.00	13.9	0.220	20.4	FA-06639-47		FA-06639-49		FA-06639-51		FA-06639-55		FA-06639-53		FA-36230-85	
3.00	10.2	0.300	28.3	FA-06639-26		FA-06639-29		FA-06639-32		FA-06639-39		FA-06639-42		FA-36230-86	
5.00	8.5	0.400	40.9	FA-06639-27		FA-06639-30		FA-06639-33		FA-06639-40		FA-06639-43		FA-36230-87	

†Using water prefiltered to 0.1 µm at 10 psi.

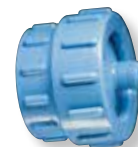
## Advantec® Filter Holders

Easy assembly

Polypropylene (PP) holders are ideal for ultracleaning and sterilizing liquids under pressure, or for aseptic sampling of liquids and gases. Max operating temperature (liquids) is 176°F (80°C); max operating pressure is 42 psi (2.9 bar) for the 25-mm holder and 71 psi (4.8 bar) for the 47-mm holder.

Holders feature PP dual support screens and silicone O-rings. Dual support screens allow for flow in both directions. Assemble holders quickly and efficiently without membrane tears with the specially designed inlet cap and exterior lock.

The 25-mm holder features a female luer-lock on the inlet and a male luer-slip on the outlet. The 47-mm holder features a ¼" NPT(M) thread on the inlet and a ¼" NPT(M)-female luer-slip on the outlet. Both are autoclavable.



06623-22



06623-32

Type of holder	Diameter	Catalog number	Qty/pk	Price/pk
Syringe	25 mm	FA-06623-32	6	
In-line	47 mm	FA-06623-22	1	

FA-02930-95 Support screen, 25 mm. Pack of 8

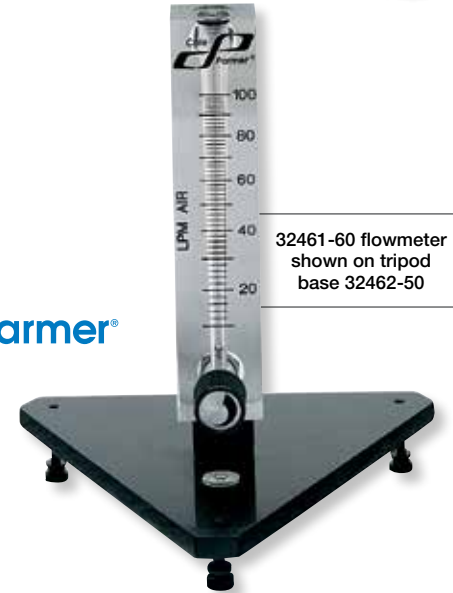
FA-06645-90 Support screen, 47 mm. Pack of 4



# Cole-Parmer® Acrylic Variable-Area Flowmeters for Bench or Panel Mount

## Don't sacrifice durability for precision

- Easily and precisely control flow of your application via manual valve
- Durable acrylic bodies with integral metering tubes for accurate readings
- Stand up to even aggressive plant environments
- Versatile—easy panel installation or move from bench to bench with optional tripod base 32462-50 (order separately at [ColeParmer.com](http://ColeParmer.com))



### Specifications

**Accuracy:**  
 2" and 50-mm models: ±5% FS  
 4" and 100-mm models: ±3% FS  
 5" and 127-mm models: ±2% FS

**Max operating temp:** 150°F (65°C)

**Connections:**  
 2", 4", 50-mm, and 100-mm models: 1/8" NPT(F)<sup>†</sup>  
 5" and 127-mm models: 1" NPT(F)

**Media type:** liquids or gases

**Max pressure:** 100 psi (6.9 bar)

### Materials of construction

Part	2" and 50 mm	4" and 100 mm	5" and 127 mm
Body	Acrylic		
Fittings	Brass		PVC
O-rings	Buna N		
Float	Black glass (BG), Aluminum (AL)	316 Stainless steel (SS)	

### Flowmeters with Valves; English-Unit Scale

Float <sup>‡</sup>	For liquid applications			For air applications		
	Flow range	Cat. no.	Price	Flow range	Cat. no.	Price
<b>Flowmeters with 2" scale</b>						
BG	0.2–2 GPH	<a href="#">FA-32460-00</a>	—	0.1–1 scfh	<a href="#">FA-32460-10</a>	—
SS	0.4–5 GPH	<a href="#">FA-32460-02</a>	—	0.2–2 scfh	<a href="#">FA-32460-12</a>	—
BG	1–10 GPH	<a href="#">FA-32460-04</a>	—	0.4–5 scfh	<a href="#">FA-32460-14</a>	—
SS	2–20 GPH	<a href="#">FA-32460-06</a>	—	0.5–10 scfh	<a href="#">FA-32460-16</a>	—
SS	4–40 GPH	<a href="#">FA-32460-08</a>	—	—	—	—
BG	—	—	—	4–50 scfh	<a href="#">FA-32460-22</a>	—
SS	—	—	—	10–100 scfh	<a href="#">FA-32460-24</a>	—
SS	—	—	—	20–200 scfh	<a href="#">FA-32460-26</a>	—
<b>Flowmeters with 4" scale</b>						
SS	1–10 GPH	<a href="#">FA-32461-00</a>	—	0.4–5 scfh	<a href="#">FA-32461-10</a>	—
SS	2–25 GPH	<a href="#">FA-32461-02</a>	—	1–10 scfh	<a href="#">FA-32461-12</a>	—
SS	6–60 GPH	<a href="#">FA-32461-06</a>	—	4–40 scfh	<a href="#">FA-32461-16</a>	—
SS	0.2–2.5 GPM	<a href="#">FA-32461-07<sup>†</sup></a>	—	10–100 scfh	<a href="#">FA-32461-18</a>	—
SS	0.4–5 GPM	<a href="#">FA-32461-08<sup>†</sup></a>	—	—	—	—
SS	—	—	—	20–200 scfh	<a href="#">FA-32461-22</a>	—
AL	—	—	—	0.5–5 scfm	<a href="#">FA-32461-24<sup>†</sup></a>	—
SS	—	—	—	1–10 scfm	<a href="#">FA-32461-26<sup>†</sup></a>	—
<b>Flowmeters with 5" scale</b>						
SS	1–10 GPM	<a href="#">FA-32466-50</a>	—	3–25 scfm	<a href="#">FA-32466-60</a>	—
SS	2–20 GPM	<a href="#">FA-32466-52</a>	—	4–50 scfm	<a href="#">FA-32466-62</a>	—

<sup>†</sup>These models have dual scale: GPM/GPH, scfm/scfh, LPM/LPH; they also have 1/4" NPT(F) connections and use optional tripod base 32462-60 sold separately online.  
<sup>‡</sup>Float material key: BG = black glass, SS = stainless steel, AL = aluminum.

### Flowmeters without Valves; English-Unit Scales

Float <sup>‡</sup>	For liquid applications			For air applications		
	Flow range	Cat. no.	Price	Flow range	Cat. no.	Price
<b>Flowmeters with 4" scale</b>						
SS	1–10 GPH	<a href="#">FA-32458-00</a>	—	0.4–5 scfh	<a href="#">FA-32458-10</a>	—
SS	—	—	—	0.5–5 scfm	<a href="#">FA-32458-24<sup>†</sup></a>	—
SS	—	—	—	1–10 scfm	<a href="#">FA-32458-26<sup>†</sup></a>	—
<b>Flowmeters with 5" scale</b>						
SS	0.4–5 GPM	<a href="#">FA-32462-00</a>	—	3–25 scfm	<a href="#">FA-32458-10</a>	—
SS	2–20 GPM	<a href="#">FA-32462-04</a>	—	—	—	—

### Flowmeters with Valves; Metric-Unit Scales

Float <sup>‡</sup>	For liquid applications			For air applications		
	Flow range (mL/min)	Catalog number	Price	Flow range (LPM)	Catalog number	Price
<b>Flowmeters with 50-mm scale</b>						
BG	—	—	—	0.04 to 0.5	<a href="#">FA-32460-40</a>	—
SS	10 to 100	<a href="#">FA-32460-32</a>	—	0.1 to 1	<a href="#">FA-32460-42</a>	—
SS	20 to 240	<a href="#">FA-32460-34</a>	—	0.4 to 5	<a href="#">FA-32460-44</a>	—
SS	—	—	—	1 to 10	<a href="#">FA-32460-46</a>	—
AL	—	—	—	2 to 25	<a href="#">FA-32460-48</a>	—
SS	—	—	—	4 to 50	<a href="#">FA-32460-50</a>	—
SS	—	—	—	10 to 100	<a href="#">FA-32460-52</a>	—
<b>Flowmeters with 100-mm scale</b>						
SS	4 to 50	<a href="#">FA-32461-30</a>	—	0.4 to 5	<a href="#">FA-32461-50</a>	—
SS	10 to 120	<a href="#">FA-32461-32</a>	—	1 to 10	<a href="#">FA-32461-52</a>	—
BG	25 to 225	<a href="#">FA-32461-34</a>	—	2 to 20	<a href="#">FA-32461-54</a>	—
SS	40 to 400	<a href="#">FA-32461-36</a>	—	3 to 30	<a href="#">FA-32461-56</a>	—
SS	40 to 660	<a href="#">FA-32461-38</a>	—	4 to 50	<a href="#">FA-32461-58</a>	—
SS	100 to 1500	<a href="#">FA-32461-40</a>	—	10 to 100	<a href="#">FA-32461-60</a>	—
SS	200 to 3000	<a href="#">FA-32461-42</a>	—	14 to 140	<a href="#">FA-32461-62<sup>†</sup></a>	—
SS	0.8 to 9 LPM	<a href="#">FA-32461-44<sup>†</sup></a>	—	30 to 280	<a href="#">FA-32461-64<sup>†</sup></a>	—
SS	1.5 to 20 LPM	<a href="#">FA-32461-46<sup>†</sup></a>	—	—	—	—
<b>Flowmeters with 127-mm scale</b>						
SS	4 to 36 LPM	<a href="#">FA-32466-54</a>	—	100 to 700	<a href="#">FA-32466-66</a>	—
SS	—	—	—	400 to 3400	<a href="#">FA-32466-70</a>	—

### Flowmeters without Valves; Metric-Unit Scales

Float <sup>‡</sup>	For liquid applications			For air applications		
	Flow range (mL/min)	Catalog number	Price	Flow range (LPM)	Catalog number	Price
<b>Flowmeters with 50-mm scale</b>						
BG	—	—	—	0.04 to 0.5	<a href="#">FA-32457-40</a>	—
BG	10 to 100	<a href="#">FA-32457-32</a>	—	0.1 to 1	<a href="#">FA-32457-42</a>	—
SS	20 to 240	<a href="#">FA-32457-34</a>	—	0.4 to 5	<a href="#">FA-32457-44</a>	—
SS	—	—	—	1 to 10	<a href="#">FA-32457-46</a>	—
<b>Flowmeters with 100-mm scale</b>						
BG	4 to 50	<a href="#">FA-32458-30</a>	—	0.4 to 5	<a href="#">FA-32458-50</a>	—
SS	10 to 120	<a href="#">FA-32458-32</a>	—	1 to 10	<a href="#">FA-32458-52</a>	—
BG	25 to 225	<a href="#">FA-32458-34</a>	—	2 to 20	<a href="#">FA-32458-54</a>	—
SS	40 to 400	<a href="#">FA-32458-36</a>	—	3 to 30	<a href="#">FA-32458-56</a>	—
SS	40 to 660	<a href="#">FA-32458-38</a>	—	4 to 50	<a href="#">FA-32458-58</a>	—
SS	100 to 1500	<a href="#">FA-32458-40</a>	—	10 to 100	<a href="#">FA-32458-60</a>	—
SS	200 to 3000	<a href="#">FA-32458-42</a>	—	14 to 140	<a href="#">FA-32458-62<sup>†</sup></a>	—
SS	0.8 to 9 LPM	<a href="#">FA-32458-44<sup>†</sup></a>	—	30 to 280	<a href="#">FA-32458-64<sup>†</sup></a>	—
SS	1.5 to 20 LPM	<a href="#">FA-32458-46<sup>†</sup></a>	—	80 to 560	<a href="#">FA-32458-65<sup>†</sup></a>	—
<b>Flowmeters with 127-mm scale</b>						
SS	1 to 15 LPM	<a href="#">FA-32462-20</a>	—	100 to 700	<a href="#">FA-32462-30</a>	—
SS	4 to 36 LPM	<a href="#">FA-32462-22</a>	—	100 to 1400	<a href="#">FA-32462-32</a>	—
SS	5 to 75 LPM	<a href="#">FA-32462-24</a>	—	400 to 3000	<a href="#">FA-32462-34</a>	—

## Cole-Parmer® Heavy-Duty Flowmeters/Totalizers

### Eliminate the need for expensive wiring with battery power

– Two totalizers allow for process or period-specific volume monitoring

These heavy-duty in-line flowmeters/totalizers display flow rate and accumulated flow in gallons or liters. The compact, yet robust design makes them ideal for use in manufacturing, pilot-plant, or quality control areas.

All flowmeters measure linearly across a range and record a cumulative volume plus a resettable volume. Meters are factory-calibrated using water but can store two application-specific K-factors determined in process. To conserve power, the six-digit display automatically turns on with flow and then turns off four minutes after flow ceases. The internal parts are simple to replace for easy maintenance—contact our Application Specialists for details.

Meters operate on two lithium batteries (included). Remote installation of the flowmeter body is possible using the optional remote installation kit 05609-93 (order separately below). Calibration container and replacement battery kits can be ordered below.



Flowmeter 05609-17 with sanitary connection



Flowmeter 05609-21 with NPT(F) connection

Fluid Handling

Flowmeters

#### Specifications

**Repeatability:** ±0.1% of reading

**Maximum pressure:**

Aluminum: 300 psig (21 bar);  
NPT SS: 1500 psig (105 bar);  
Sanitary SS: 450 psig (31 bar);  
ANSI SS: 285 psig (19 bar)

**Operating temp:** 14 to 140°F (–10 to 60°C)

**Wetted materials:** 316 SS or aluminum housing, PVDF rotor and supports, tungsten carbide shaft, 316 SS retainers, and ceramic bearings

**Maximum particulate size:**

Models with ≤50 GPM (190 LPM)  
max flow rate: 125 µm  
Models with >50 GPM (190 LPM)  
max flow rate: 500 µm

**Display:** 6-digit LCD, ½"H (with floating decimal)

**Input power:** two 3 V lithium batteries (included)

**Battery life:** 9000 hours nominal

**Approvals:** EEx II 3 G IIC T4



Flow range	Connections	Body material	Accuracy	Catalog number	Price
1 to 10 GPM (3.8 to 37.9 LPM)	½" NPT(F)	Aluminum	±2% of rdg	FA-05609-01	
	½" NPT(F)	316 SS		FA-05609-03	
	¾" Sanitary†	316 SS		FA-05609-05	
2 to 20 GPM (7.6 to 75.7 LPM)	¾" NPT(F)	Aluminum	±2.0% of rdg	FA-05609-07	
	¾" NPT(F)	316 SS		FA-05609-09	
	1" Sanitary†	316 SS		FA-05609-11	
5 to 50 GPM (18.9 to 190 LPM)	1" NPT(F)	Aluminum	±1.5% of rdg	FA-05609-13	
	1" NPT(F)	316 SS		FA-05609-15	
	1½" Sanitary†	316 SS		FA-05609-17	
10 to 100 GPM (38 to 380 LPM)	1" ANSI‡	316 SS	±1% of rdg	FA-05609-19	
	1½" NPT(F)	Aluminum		FA-05609-21	
	1½" NPT(F)	316 SS		FA-05609-23	
20 to 200 GPM (6 to 760 LPM)	2" Sanitary†	316 SS	±1% of rdg	FA-05609-25	
	1½" ANSI‡	316 SS		FA-05609-27	
	2" NPT(F)	Aluminum		FA-05609-29	
	2" NPT(F)	316 SS	±1% of rdg	FA-05609-31	
	2½" Sanitary†	316 SS		FA-05609-33	
	2" ANSI‡	316 SS		FA-05609-35	

†Sanitary flange †150# ANSI flange

#### Accessories

[FA-05610-70](#) Calibration container; HDPE, 5-gal. (19 L) capacity

[FA-05610-96](#) Replacement battery kit

[FA-05609-93](#) Remote installation kit. Mount display up to 100 feet (30 m) from sensor—ideal for measuring flow in hot pipes (up to 250°F/121°C) or in inaccessible areas. Kit includes a sensor cover with 10-ft (3-m) cable, remote display housing, and installation hardware

[FA-05609-91](#) Output module, pulse output. Module provides a digital open collector output for interfacing with compatible instrumentation

[FA-05609-92](#) Output module, 4 to 20 mA or 5 to 20 volts. Module provides an output for interfacing with compatible instrumentation

[FA-17080-12](#) NIST-traceable calibration



Order your Product with  
**NIST-Traceable Calibration**

866-466-6225 InnoCalSolutions.com

**INNOCAL**  
INNOVATIVE CALIBRATION SOLUTIONS





## Oakton® CTSTestr™ 50 Pocket Testers

**NEW**

### Get benchtop accuracy in the field

- Measure conductivity, TDS, and salinity with ±1% FS accuracy
- Save money—replaceable sensor lets you use tester body over and over again
- Set up and calibrate quickly with easy-to-navigate interface
- Selectable TDS factor adds versatility
- Leakproof, stabilizing cap—use to calibrate, stand upright, and store sensor
- Waterproof IP67 rated and factory calibrated



Model	CTSTestr 50P (pin-style sensor)	CTSTestr 50C (cup-style sensor)
<b>Catalog number</b>	<a href="#">FA-35634-55</a>	<a href="#">FA-35634-65</a>
<b>Range</b>	Conductivity	0.0 to 200.0 µS, 200 to 2000 µS; 2.00 to 20.00 mS
	TDS	0.0 to 100.0 ppm, 100 to 1000 ppm; 0.10 to 10.00 ppt (TDS factor 0.5)
	Salinity	0.00 to 10.00 ppt
	Temperature	32 to 140°F (0 to 60°C)
<b>Accuracy</b>	±1% full-scale (conductivity, TDS, and salinity)	
<b>Calibration</b>	Up to 3 points (conductivity and TDS); 1 point (salinity)	
<b>TDS factor</b>	0.40 to 1.00 (selectable)	
<b>Temperature compensation</b>	Automatic	
<b>Power</b>	Four AAA 1.5 V batteries (included)	
<b>Price</b>		

## Oakton® Waterproof CON 150 Meter

### Get more for your money

- Best value for an IP67-rated waterproof meter—ideal for any environment
- Know the status of your probe—intuitive, user-friendly icon displays cell constant
- Get quick and easy electrode attachment to a beaker or container with Grip-Clip™ holder
- Recall more data with expanded data logging for up to 150 data sets
- Use as a benchtop meter as well—built-in stand and wall-mount option



**Meter includes:** conductivity cell (K = 1.0), Grip-Clip holder, and two AA batteries.  
**Kit adds:** two calibration standards and hard carrying case.



Description	CON 150 meter with probe	CON 150 meter kit
<b>Catalog number</b>	<a href="#">FA-35607-32</a>	<a href="#">FA-35607-90</a>
<b>Precalibrated catalog number</b>	<a href="#">FA-35607-34</a>	<a href="#">FA-35607-91</a>
<b>Range</b>	Conductivity	0 to 200 mS
	TDS	0 to 200 ppt
	Temperature	-17.0 to 230.0°F (-10.0 to 110.0°C)
<b>Resolution</b>	Conductivity	0.01 µS to 0.1 mS
	TDS	0.01 ppm to 0.1 ppt
	Temperature	0.1°F/°C
<b>Accuracy</b>	Conductivity	±1% full-scale
	TDS	±1% full-scale
	Temperature	±0.9°F (±0.5°C)
<b>Calibration</b>	Conductivity	Auto/manual; 1 point/range
	TDS	Auto/manual; 1 point/range
	Temperature	Offset 0.1 increments
<b>Temperature compensation</b>	Automatic or manual from -10 to 110°C	
<b>Conductivity-to-TDS factor</b>	0.4 to 1.0	
<b>Data logging</b>	Stores up to 150 data sets	
<b>Power</b>	Two AA batteries (included); universal power adapter (optional)	
<b>Price</b>		
<b>Precalibrated price</b>		

#### Accessories

- [FA-35608-55](#) Conductivity cell, K = 0.1
- [FA-35608-50](#) Replacement conductivity cell, K = 1.0
- [FA-35608-51](#) Conductivity cell, K = 10
- [FA-35614-51](#) Hard carrying case
- [FA-35420-72](#) Optional power adapter, 110/220 VAC
- [FA-17090-30](#) NIST-traceable calibration with data for conductivity meter

## Oakton® Waterproof EcoTestr™ CTS Pocket Meter

### Better results—easier and faster

- Conductivity, TDS, and salinity now combined into one meter
- Large dual-line display shows parameter and temperature readings simultaneously
- Easier, more intuitive interface and indicators for battery life, readiness, and calibration
- Use redesigned cap as sample cup and as a stabilizing base to stand the meter upright
- Convenient—attach a lanyard to prevent losing or dropping in the field

**NEW**



Description	EcoTestr (CTS) Con/TDS/Salinity	
<b>Catalog number</b>	<a href="#">FA-35462-11</a>	
<b>Range</b>	Conductivity	0.00 to 20.00 mS/cm
	TDS	0.00 to 20.00 ppt (with TDS factor 1.0)
	Salinity	0.0 to 10.0 ppt
	Temperature	32.0 to 122.0°F (0.0 to 50.0°C)
<b>Resolution</b>	Conductivity	10 µS, 0.1 mS
	TDS	10 ppm, 0.1 ppt
	Salinity	0.1 ppt
	Temperature	0.1°F (0.1°C)
<b>Accuracy</b>	Conductivity	±2% full-scale ±1 LSD
	TDS	±2% full-scale ±1 LSD
	Salinity	±2% full-scale ±1 LSD
	Temperature	±0.9°F (0.5°C) + 1 LSD
<b>Temperature compensation</b>	Automatic	
<b>Calibration</b>	Single point	
<b>Power</b>	Four 1.5 V miniature batteries (included)	
<b>Price</b>		

## Oakton® Waterproof EcoTestr™ pH2+ Pocket Meter

Better results—  
easier and faster

- Large dual-line display shows pH and temperature readings simultaneously
- Automatic temperature compensation ensures accurate readings
- Easier, more intuitive interface and indicators for calibration, readiness, and battery life
- Use redesigned cap as sample cup and as a stabilizing base to stand the meter upright
- Secure—attach a lanyard to prevent losing or dropping in the field



## Oakton® pHTestr® 50 Pocket Tester

Bring the performance  
of your lab instruments  
into the field

- High  $\pm 0.01$  pH accuracy—suitable for most ASTM and EPA test procedures
- Clog-resistant, double-junction pH electrode sensor is dependable and long-lasting!
- Use with confidence—even with demanding samples containing sulfides, heavy metals, organics, Tris buffer, or protein solutions
- Save money—replaceable sensor module lets you use tester body over and over again
- Set up and calibrate quickly with easy-to-navigate interface
- Don't let temperature interfere—automatic temperature compensation minimizes impact
- Recessed, glass pH bulb protects against breakage
- Leakproof, stabilizing cap—use to calibrate, stand upright, and store sensor
- Waterproof, IP67-rated housing resists most chemicals



Model	EcoTestr pH2+	
Catalog number	FA-35423-01	
Range	pH	0.0 to 14.0 pH
	Temperature	32.0 to 122.0°F (0.0 to 50.0°C)
Resolution	pH	0.1 pH
	Temperature	0.1°F (0.1°C)
Accuracy	pH	$\pm 0.1$ pH
	Temperature	$\pm 0.9^\circ\text{F}$ (0.5°C) + 1 LSD
Temperature compensation	Automatic	
Calibration	Up to 3 points	
Buffer recognition	USA, NIST	
Power	Four 1.5 V miniature alkaline batteries (included)	
Price		



Model	pHTestr 50	
Catalog number	FA-35634-15	
Range	pH	-1.00 to 15.00 pH
	Temperature	32 to 140°F (0 to 60°C)
Resolution	pH	0.01 pH
	Temperature	0.1°F/°C
Accuracy	pH	$\pm 0.01$ pH
	Temperature	$\pm 0.9^\circ\text{F}$ (0.5°C) + 1 LSD from 32 to 122°F (0 to 50°C); $\pm 1.8^\circ\text{F}$ (1.0°C) + 1 LSD from 122 to 140°F (50 to 60°C)
Temperature compensation	Automatic, 32 to 140°F (0 to 60°C)	
Calibration	Up to 3 points	
Buffer recognition	USA 4.01, 7.00, 10.01; NIST 4.01, 6.86, 9.18	
Power	Four AAA 1.5 V batteries (included)	
Price		

## Oakton® pH Buffer Solutions

Keep your readings accurate with these quality buffers

- Standardized against NIST-traceable pH references for meters with 0.01 resolution



pH	500-mL bottles				1-L bottles		4-L bottles			
	Catalog number	Price/ea	Catalog number	Price/cs of 12	Catalog number	Price/ea	Catalog number	Price/ea	Catalog number	Price/cs of 4
1.68	FA-00654-01		—	—	—	—	—	—	—	—
4.01	FA-00654-00		FA-05942-21		FA-05942-22		FA-05942-24		FA-05942-25	
6.86	FA-00654-03		—		—		—		—	
7.00	FA-00654-04		FA-05942-41		FA-05942-42		FA-05942-44		FA-05942-45	
9.18	FA-00654-07		—		—		—		—	
10.00	FA-00654-08		FA-05942-61		FA-05942-62		FA-05942-64		FA-05942-65	
12.45	FA-00654-12		—		—		—		—	

Save by ordering larger sizes or by the case!





## Oakton® pH 5+ and pH 6+ Meters

### Get high accuracy at low prices

- Autobuffer recognition for up to five-point calibration provides  $\pm 0.01$  pH accuracy
- Take this compact unit anywhere
- Get pH and temperature readings at the push of a button
- Improve your accuracy with automatic temperature compensation (ATC) from 0 to 100°C
- Protect your unit with protective rubber boot that doubles as a stand
- Choose the pH 6+ meter to also read mV



**Meter includes:** ATC probe, protective rubber boot, and batteries.

**Meter with probe adds:** pH electrode 59001-65.

**Meter kit adds:** "All-in-one" pH electrode, pH buffer solutions, sample bottles, rinse bottle, and carrying case.

## Oakton® Waterproof pH 150 Meter

### Get more for your money!

- Intuitive, user-friendly icons show electrode status as pH slope
- Get quick and easy electrode attachment to a beaker or container with Grip-Clip™ holder
- Recall more data with expanded data logging for up to 150 data sets
- mV offset for calibration of ORP standards, zeroing mV value, and pH diagnostics
- Use as a benchtop meter as well—built-in stand or wall-mount option



View more simultaneously with large, three-line LCD providing pH or mV measurement with temperature and calibration % slope. Get faster calibration with auto buffer recognition which identifies the correct pH buffer. Be more accurate with up to six calibration points from USA, NIST, and DIN pH buffer sets and automatic temperature compensation (ATC).

Additional features include ready (stability) indicator, smart averaging, hold function, calibration alarm (visible), battery-life indicator, and electrode status.

**Meter only includes:** Grip-Clip holder and two AA batteries.

**Meter with probe adds:** "All-in-One" pH electrode (35808-71).

**Meter kit further adds:** pH buffers, storage solution, rinse solution, and hard carrying case.

Save time, save money!

Choose Pre-calibrated

Includes a data-rich, ISO 17025-compliant certificate!

Pre-calibrated by INNOCAL®  
INNOVATIVE CALIBRATION SOLUTIONS

OAKTON®

ISO9001:2008  
CERTIFIED SUPPLIER



Meter only

### Specifications

Mode	pH	mV (pH 6+ only)	Temperature
Range	0.00 to 14.00 pH	$\pm 1000$ mV or rel mV	0 to 100.0°C
Resolution	0.01 pH	1 mV	0.1°C
Accuracy	$\pm 0.01$ pH	$\pm 2$ mV	$\pm 0.5$ °C
Calibration	Up to five points: pH 1.68, 4.01, 7.00, 10.00, 12.45 (USA); pH 1.68, 4.01, 6.86, 9.18, 12.45 (NIST) pH 4.10, 6.97 (Pb)	$\pm 20$ mV	Offset 0.1°C increments

**Temp compensation:** automatic with ATC probe, 0 to 100°C

**Power:** four AAA batteries (included)

Model	Description	Meter		Pre-calibrated	
		Catalog number	Price	Catalog number	Price
pH 5+	Meter only	FA-35613-50		FA-35613-51	
pH 6+		FA-35613-20		FA-35613-41	
pH 5+	Meter with probe	FA-35613-52		FA-35613-53	
pH 6+		FA-35613-22		FA-35613-42	
pH 5+	Meter kit	FA-35613-54		FA-35613-55	
pH 6+		FA-35613-24		FA-35613-44	

### Accessories

**FA-59001-65** Replacement pH electrode; single-junction, gel-filled. Epoxy body, BNC connector

**FA-35811-71** "All-in-one" combination pH probe with built-in ATC; single-junction sealed, epoxy body, BNC connector

**FA-35811-72** "All-in-one" combination pH probe with built-in ATC; double-junction sealed, epoxy body, BNC connector

**FA-35613-05** Replacement ATC probe, stainless steel

**FA-09376-00** Replacement batteries, AAA. Pack of 12

OAKTON®

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Meter only

Description	Meter only	Meter with probe	Meter kit
Model		pH 150	
Catalog number	FA-35614-32	FA-35614-30	FA-35614-90
Pre-calibrated cat. no.	FA-35614-34	FA-35614-33	FA-35614-91
Range	pH	-2.00 to 16.00	
	mV	$\pm 2000$ mV	
	Temperature	-17.0° to 230.0° F (-10.0° to 110.0° C)	
Resolution	pH	0.01	
	mV	0.1 mV $\pm 999.9$ mV; 1 mV beyond	
	Temperature	0.1°F/C	
Accuracy	pH	$\pm 0.01$	
	mV	$\pm 0.2$ mV $\pm 2$ LSD or $\pm 0.5\%$ of reading; whichever is greater	
	Temperature	$\pm 0.9$ °F ( $\pm 0.5$ °C)	
Calibration	pH	Up to 6 points: USA, NIST, DIN	
	mV	$\pm 200$ mV	
	Temperature	Offset 0.1 increments	
Temperature compensation	Automatic or manual from -10 to 110°C		
Data logging	Stores up to 150 data sets		
Power	Two AA batteries (included); universal power adapter (optional)		
Price			
Pre-calibrated price			

**FA-35808-71** Replacement "All-in-One" combination pH electrode with built-in ATC; single-junction, epoxy body, BNC connector

**FA-35618-05** ATC probe. Use with any standard pH electrode for temperature compensation

**FA-35614-50** Replacement Grip-Clip, holder attaches probe to side of container for hands-free measurement

**FA-35614-51** Hard carrying case, for 150/450 meters

**FA-35420-72** Optional power adapter, 110/220 VAC

**FA-09376-01** Replacement batteries, AA. Pack of 4

**FA-17106-20** NIST-traceable calibration with data for pH meter



**NEW**

# Better weighing with just a touch

## Cole-Parmer® Symmetry® Touch-Screen Toploading and Analytical Balances

- 5" color capacitive touch-screen display provides clear visibility to weighing results and menu options
- Go touchless—IR proximity sensors offer programmable touch-free control
- Customize the menu screen to match your everyday needs
- Advanced PT-T and PA-T models add a diagnostic GLP function, internal calibration, and Wi-Fi interface
- Adjust filter settings depending on the working environment
- Statistics working mode quickly analyzes data from series of measurements
- USB, RS-232, Ethernet, and Wi-Fi† interfaces offer secure connection with peripheral devices
- Industry-leading 5-year unlimited warranty

Symmetry®



Intuitive operation with large touch-screen display and personal setup



Two programmable IR proximity sensors perform common functions—touch-free



### Specifications

#### Calibration:

BT-T and BA-T Balances: external with calibration mass  
PT-T and PA-T Balances: internal and external with calibration mass

**Weighing units:** g, mg, kg, ct, lb, oz, ozt, dwt, tih, tls, tlt, tlc, mom, gr, N, ti, baht, tola, msg, custom

#### Output:

BT-T and BA-T Balances: RS-232 (2), USB A, USB B, Ethernet  
PT-T and PA-T Balances: RS-232 (2), USB (2), Ethernet, Wi-Fi

**Power:** 100 to 240 VAC (universal power adapter included)

### BT-T and BA-T Balances

Capacity	Readability	Repeatability	Linearity	Pan size	Cat. no.	Price
<b>BT-T toploading balances</b>						
200 g	0.001 g	±0.001 g	±0.002 g	5 1/16" x 5 1/16" (12.8 x 12.8 cm)	FA-10100-67	
400 g					FA-10100-68	
500 g					FA-10100-69	
800 g					FA-10100-70	
2000 g	0.01 g	±0.01 g	±0.02 g	7 1/16" x 7 1/16" (19.5 x 19.5 cm)	FA-10100-71	
4000 g					FA-10100-72	
6000 g					FA-10100-73	
10,000 g					FA-10100-74	
20,000 g	0.1 g	±0.1 g	±0.3 g	7 1/16" x 7 1/16" (19.5 x 19.5 cm)	FA-10100-75	
		±0.08 g				
		±0.1 g				
<b>BA-T analytical balances</b>						
60 g	0.0001 g	±0.0001 g	±0.0002 g	3 1/16" (10 cm)	FA-10100-61	
120 g					FA-10100-63	
210 g					FA-10100-65	

### Advanced PT-T and PA-T Balances

Capacity	Readability	Repeatability	Linearity	Pan size	Cat. no.	Price
<b>PT-T toploading balances</b>						
350 g	0.001 g	±0.001 g	±0.002 g	5" x 5"	FA-10100-33	
750 g	0.001 g	±0.001 g	±0.002 g	(12.8 x 12.8 cm)	FA-10100-34	
800 g	0.01 g	±0.01 g	±0.02 g	7 1/16" x 7 1/16"	FA-10100-35	
2000 g	0.01 g	±0.01 g	±0.02 g	(19.5 x 19.5 cm)	FA-10100-36	
4500 g	0.01 g	±0.01 g	±0.02 g	7 1/16" x 7 1/16"	FA-10100-37	
6000 g	0.01 g	±0.015 g	±0.03 g	(19.5 x 19.5 cm)	FA-10100-38	
<b>PA-T analytical balances</b>						
82/220 g	0.00001/ 0.0001 g	±0.0001 g	±0.0002 g	3 1/2" (9 cm)	FA-10100-31	
120 g	0.0001 g	±0.0001 g	±0.0002 g	3 1/16" (10 cm)	FA-10100-30	
220 g	0.0001 g	±0.0001 g	±0.0002 g	3 1/16" (10 cm)	FA-10100-32	

†Wi-Fi interface is included with PT-T and PA-T models only.



## Bath Fluids

### Get more out of your bath!

Use these bath fluids to maintain desired bath temperatures. Refer to the table below to select the appropriate bath fluid for your application. For operator safety, set the overtemperature cutoff of your bath/circulator below the flash point of the bath fluid you use.



Fluid type	Silicone 210	Dynalene® HK-50	Silicone 200 20 (hot)	Silicone 710 (hot)
Catalog number	<a href="#">FA-01294-60</a>	<a href="#">FA-01297-00</a>	<a href="#">FA-01294-40</a>	<a href="#">FA-01294-00</a>
Specific gravity	0.98	0.85	0.95	1.11
Temperature range	-65 to 280°C	-50 to 58°C	10 to 149°C	150 to 250°C
Freezing point	—	-60°C	-84°C	-22°C
Flash point	288°C	65°C	246°C	302°C
Viscosity	98 cp at 26°C	2.35 cp at 25°C	18.98 cp at 25°C	33 cp at 99°C
Quantity	1 gal. (3.8 L)	1 gal. (3.8 L)	1 gal. (3.8 L)	1 gal. (3.8 L)
Price				

**Note:** Do not use automotive antifreeze with circulating baths—additives can be harmful to the circulating pump. Silicone fluids are not compatible with silicone tubing.

## Cole-Parmer® StableTemp® Digital Utility Water Baths

### Get digital accuracy at an analog price

- Recall settings at the touch of a button
- Know when process is complete with built-in timer

Dual thermostat baths provide ±0.1°C precision and overtemperature safety feature prevents overheating. Seamless tank eliminates rusting and is easy to clean.



### StableTemp



#### Specifications

Temperature range: 5°C above ambient to 100°C

Temperature stability: ±0.1°C

Wetted materials: 304 SS

Temperature uniformity: ±0.2°C

High-temperature cutoff: yes

Bath capacity	Opening (L x W)	Working depth	120 VAC, 60 Hz		240 VAC, 50 Hz	
			Cat. no.	Price	Cat. no.	Price
2 L	3 <sup>7</sup> / <sub>8</sub> " x 4 <sup>1</sup> / <sub>16</sub> "	5 <sup>1</sup> / <sub>2</sub> "	<a href="#">FA-14576-00</a>		<a href="#">FA-14576-02</a>	
5 L	5" x 10 <sup>1</sup> / <sub>16</sub> "	5 <sup>1</sup> / <sub>2</sub> "	<a href="#">FA-14576-04</a>		<a href="#">FA-14576-06</a>	
10 L	10 <sup>5</sup> / <sub>8</sub> " x 11 <sup>1</sup> / <sub>8</sub> "	5 <sup>1</sup> / <sub>2</sub> "	<a href="#">FA-14576-08</a>		<a href="#">FA-14576-10</a>	
20 L	9 <sup>1</sup> / <sub>2</sub> " x 17 <sup>1</sup> / <sub>2</sub> "	5"	<a href="#">FA-14576-12</a>		<a href="#">FA-14576-14</a>	
28 L	9 <sup>1</sup> / <sub>2</sub> " x 17 <sup>1</sup> / <sub>2</sub> "	7"	<a href="#">FA-14576-16</a>		<a href="#">FA-14576-18</a>	

## Cole-Parmer® Polystat® Cooling/Heating Circulating Baths

### Get excellent cooling across range of temperatures

- Two-speed pump with up to 21 L/min flow
- Maximize bench space with compact size
- Protect samples and bath with high-temperature and low-level cut offs

**Standard Digital Controller Baths** feature five programmable set points, adjustable high-temperature cutoff, user-settable Min/Max temperature limits, and an adjustable pump nozzle. **Advanced Digital Controller Baths** offer all the features of the Standard Digital models (except adjustable pump nozzle) plus a two-stage (force/suction) pump for greater circulation capacity and a USB port.

**What's included:** lid, 6-ft (1.8-m) power cord with plug, M16 x 1 pump connection and 8- and 12-mm hose barb fittings with clamps for external circulation.



#### Specifications

Wetted materials: stainless steel, polymers

Low-level cutoff: yes



Bath capacity	Temperature range	Stability	Cooling capacity at 20°C	Pump type	Max pump pressure psi (mbar)	Max pump flow (L/min)	Working area (W x L x D)	Power (VAC, Hz)	Catalog number	Price
<b>Standard digital controller baths</b>										
6.5 L	-20 to 100°C	±0.05°C	250 W	Force	4.4 (310)	17	5 <sup>1</sup> / <sub>16</sub> " x 4 <sup>1</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-02</a> <a href="#">FA-12122-04</a>	
8.6 L	-28 to 100°C	±0.05°C	500 W	Force	4.4 (310)	17	6 <sup>1</sup> / <sub>16</sub> " x 7 <sup>3</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-32</a> <a href="#">FA-12122-34</a>	
8.6 L	-28 to 150°C	±0.05°C	500 W	Force	4.4 (310)	17	6 <sup>1</sup> / <sub>16</sub> " x 7 <sup>3</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-36</a> <a href="#">FA-12122-38</a>	
<b>Advanced digital controller baths</b>										
6.5 L	-20 to 100°C	±0.025°C	250 W	Force/suction	11.7 (750)	21	5 <sup>1</sup> / <sub>16</sub> " x 4 <sup>1</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-12</a> <a href="#">FA-12122-14</a>	
6.5 L	-20 to 100°C	±0.025°C	250 W	Force/suction	11.7 (750)	21	5 <sup>1</sup> / <sub>16</sub> " x 4 <sup>1</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-26</a> <a href="#">FA-12122-28</a>	
8.6 L	-28 to 200°C	±0.025°C	500 W	Force/suction	11.7 (750)	21	6 <sup>1</sup> / <sub>16</sub> " x 7 <sup>3</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	<a href="#">FA-12122-42</a> <a href="#">FA-12122-44</a>	
8.6 L	-35 to 200°C	±0.025°C	800 W	Force/suction	11.7 (750)	21	6 <sup>1</sup> / <sub>16</sub> " x 7 <sup>3</sup> / <sub>16</sub> " x 5 <sup>7</sup> / <sub>8</sub> " (17.3 x 18.3 x 15 cm)	115, 60† 230, 50†	<a href="#">FA-12122-56</a> <a href="#">FA-12122-58</a>	

†Requires 20 amp current.

## Cole-Parmer® Digital Batch Mixer

### Tackle volumes up to 55 gallons (200 L)

- User-friendly operation—PLC/PC programmability, data logging, and intuitive graphic touch-screen interface
- Two-speed transmission provides smooth, quiet operation
- Through-shaft design allows for easy impeller adjustment, less downtime

**NEW**



This portable batch mixer has enough power to mix up to 55 gallons (200 L) and viscosity up to 180,000 cps. Enclosed fan-cooled brushless DC motor maintains a constant power transfer to the shaft at speeds up to 1500 rpm. Adjustable chuck accommodates up to 5/8" (15.8 mm) dia impeller shaft.

Ideal for both laboratory and industrial uses, the mixer features RS-232 and USB interfaces to record date, time, speed, and torque data. Easy-to-use resistive digital touch-screen control enables you to select time and speed with a gloved hand or pencil tip. Other functions include alarms, timers, torque min/max setting, and clockwise and counterclockwise rotation.

Safety features include a shaft/chuck guard, chemical-resistant housing, and overload, overheat and vibration protection. A safety screen protects the display from splashes.

**What's included:** chuck (accepts up to 5/8" dia shafts), chuck key, shaft guard, installed screen protector, memory stick, mounting bolts, and power cord.



Speed range (rpm)	hp	Max torque (in-oz)	Power (VAC, Hz)	Catalog number	Price
50 to 1500	1/2	4248	120, 60	<a href="#">FA-50009-00</a>	

#### Accessories

- [FA-50019-94](#) Stainless steel plate mount
- [FA-50019-95](#) Replacement screen protector kit
- [FA-50019-96](#) Stainless steel multiposition C-clamp set
- [FA-50019-97](#) Replacement stainless steel chuck with key, 16-mm shaft diameter
- [FA-50019-98](#) Replacement chuck shaft guard
- [FA-50019-99](#) Repl. stainless steel chuck key

## ServoDyne™ Electronic Mixers

### Get more precise mixing

- Monitor and control speed, torque, and batch time through digital controller or a computer interface

#### 1. Controller

Provide precise control of mixing speed within ±0.2% despite changes in viscosity, temperature, or line voltage. Monitor torque, set torque limits, or measure and control differential torque with mixer head in use and sets the appropriate rpm and torque limits for that motor. Operates on 115 VAC, 50/60 Hz.

**High-Torque, Low-Speed Models** have a keyless chuck that accepts mixing shafts up to 3/8" (10 mm) in diameter.

**High-Speed, Low-Torque Models** have an adjustable, through-shaft precision hand-tightened collet that accepts 3/8" (10 mm) dia mixing shafts. Through-shaft design allows positioning the mixing propeller at any depth without moving the mixer head.

**Complete systems include:** speed controller, mixer head, shaft, propeller, clamp and stand.

#### 2. Mixer Heads

- Maintenance-free—permanent-magnet DC motor with permanently lubricated ball-bearing construction
- Rotate mixer head from 0° to 30° for proper positioning of shaft and propeller
- Optical shaft encoder relays the exact motor rotation speed data to the electronic mixer controller



1. Controller		2. Mixer heads					Complete systems			
Catalog number	Price	Description	Speed (rpm)	hp	Max torque (in-oz)		Catalog number	Price	Catalog number	Price
					Continuous	Intermittent				
<a href="#">FA-50008-00</a>		High torque, low speed; with keyless chuck	3 to 180	1/15	340	510	<a href="#">FA-50008-10</a>		<a href="#">FA-50008-12</a>	
			20 to 900	1/15	70	105	<a href="#">FA-50008-20</a>		<a href="#">FA-50008-22</a>	
		High speed, low torque; with adjustable through-shaft collet	60 to 2300	1/10	45	65	<a href="#">FA-50008-30</a>		<a href="#">FA-50008-32</a>	
			150 to 6000	1/10	17	25	<a href="#">FA-50008-40</a>		<a href="#">FA-50008-42</a>	





## Cole-Parmer® Low-Pressure Mechanical Gauges

Perfect for accurately measuring pressures below 10 psi

- Manufactured with a chrome-plated case, use these gauges to measure low pressure in filter systems, cleanrooms, or fluidic systems



### Specifications

<b>Accuracy:</b> ±1½% full scale	<b>Wetted materials:</b> brass
<b>Dial size:</b> 2½" (64 mm)	<b>Lens:</b> polycarbonate
<b>Operating temp:</b> 0 to 150°F (0 to 66°C)	<b>Process connection:</b> ¼" NPT(M)
	<b>Casing:</b> black steel

Range	Catalog number	Price
0 to 10" H <sub>2</sub> O	<a href="#">FA-68357-00</a>	
0 to 15" H <sub>2</sub> O	<a href="#">FA-68357-02</a>	
0 to 30" H <sub>2</sub> O	<a href="#">FA-68357-04</a>	
0 to 60" H <sub>2</sub> O	<a href="#">FA-68357-06</a>	
0 to 100" H <sub>2</sub> O	<a href="#">FA-68357-08</a>	
0 to 3 psi	<a href="#">FA-68357-14</a>	
0 to 5 psi	<a href="#">FA-68357-16</a>	
0 to 10 psi	<a href="#">FA-68357-18</a>	

[FA-17040-10](#) NIST-traceable calibration with data

## Ashcroft® Digital Sanitary Pressure Gauges

Get more flexibility

- Offer 3A rating with the functionality of a digital gauge
- Get readings how you need them—ten engineering units
- Unlimited deadband throughout its range



ISO9001:2008  
CERTIFIED SUPPLIER



### Specifications

<b>Accuracy:</b> ±0.25% full-scale	<b>Display:</b> 5-digit LCD, 0.88"H
<b>Dial size:</b> 3½" (89 mm)	<b>Process connection:</b> 1½" sanitary Tri-Clamp®
<b>Operating temp:</b> 14 to 140°F (10 to 60°C)	<b>Wetted materials:</b> 316 stainless steel
<b>Units of measure:</b> psi, " H <sub>2</sub> O, ft H <sub>2</sub> O, mPa, mbar, kPa, kg/cm <sup>2</sup> , bar, " Hg, mm Hg	<b>Casing:</b> 300 stainless steel
	<b>Lens:</b> polyester
	<b>Power:</b> two C batteries

Range	Resolution	Catalog number	Price
30 to 0" Hg	0.0001" Hg	<a href="#">FA-68901-50</a>	
0 to 30 psi	0.0001 psi	<a href="#">FA-68901-51</a>	
0 to 60 psi	0.005 psi	<a href="#">FA-68901-52</a>	
0 to 100 psi	0.005 psi	<a href="#">FA-68901-53</a>	
0 to 200 psi	0.01 psi	<a href="#">FA-68901-54</a>	

[FA-17040-12](#) NIST-traceable calibration with data

## WIKA® 3A Sanitary Gauges

Get better readings

- Glycerin fill reduces fluctuations
- Manufactured for clean-in-place (CIP) applications
- All-welded gauge assembly contains an external flush diaphragm
- Assembly meets the criteria set forth by 3A standards



ISO9001:2008  
CERTIFIED SUPPLIER



### Specifications

<b>Accuracy:</b> ±3-2-3% of span	<b>Process connection:</b> ¾" Tri-Clamp®
<b>Operating temp:</b> 50 to 257°F (10 to 125°C)	<b>Casing:</b> 304 SS
<b>Wetted materials:</b> 316L SS	<b>Dial size:</b> 2½" (64 mm)
<b>Lens:</b> polycarbonate	

Range	Resolution	Catalog number	Price
30 psi	0.5 psi	<a href="#">FA-68056-72</a>	
60 psi	1 psi	<a href="#">FA-68056-74</a>	
100 psi	2 psi	<a href="#">FA-68056-76</a>	
160 psi	2 psi	<a href="#">FA-68056-78</a>	

[FA-17040-10](#) NIST-traceable calibration with data

## Ashcroft® Digital Pressure Gauges with Backlight

Simple three-button programming

- Easy-to-read, 5-digit display with backlight and 20-segment bar graph
- Stainless steel sensor; IP67-rated case
- Features tare, min/max memory, and nine engineering plus one custom engineering units



ISO9001:2008  
CERTIFIED SUPPLIER



### Specifications

<b>Accuracy:</b> ±0.5% full-scale	<b>Wetted materials:</b> 17-4 ph and 316L stainless steel
<b>Dial size:</b> 2½" (64 mm)	<b>Lens:</b> polycarbonate
<b>Operating temp:</b> -4 to 140°F (-20 to 60°C)	<b>Process connection:</b> ¼" NPT(M)
<b>Units of measure:</b> psi, " Hg, cm Hg, mm Hg, kPa, mPa, bar, kg/cm <sup>2</sup> , ft H <sub>2</sub> O, and user-defined unit	<b>Power:</b> two AA batteries (included)

Range	Resolution	Catalog number	Price
0 to 30" Hg	0.01" Hg	<a href="#">FA-68334-01</a>	
30" Hg to 30 psi	0.01" Hg	<a href="#">FA-68334-03</a>	
30" Hg to 100 psi	0.01" Hg	<a href="#">FA-68334-07</a>	
0 to 15 psi	0.001 psi	<a href="#">FA-68334-09</a>	
0 to 30 psi	0.001 psi	<a href="#">FA-68334-11</a>	
0 to 60 psi	0.001 psi	<a href="#">FA-68334-13</a>	
0 to 100 psi	0.01 psi	<a href="#">FA-68334-15</a>	
0 to 200 psi	0.01 psi	<a href="#">FA-68334-17</a>	
0 to 300 psi	0.01 psi	<a href="#">FA-68334-19</a>	
0 to 500 psi	0.01 psi	<a href="#">FA-68334-21</a>	
0 to 1000 psi	0.1 psi	<a href="#">FA-68334-25</a>	
0 to 5000 psi	0.1 psi	<a href="#">FA-68334-27</a>	
0 to 10,000 psi	1 psi	<a href="#">FA-68334-31</a>	

[FA-09376-01](#) Batteries, AA. Pk of 4

[FA-17040-12](#) NIST-traceable calibration with data

**Wait!**

**There's More at ColeParmer.com**

Find all the product specs you need!

## Cole-Parmer® Hot Plates and Multiposition Stirrers and Stirring Hot Plates

Reach max temperature in two minutes

- Stir bar won't dance—unique U-shaped magnet holds stir bar tightly
- Front-panel controls are positioned to prevent you from touching the hot plate
- Stepless speed control provides smooth stirring action to 1500 rpm



Mix multiple samples independently



Number of stirring positions	Volume per position	Top plate		Heating		Speed range	Power		Catalog number	Price
		Dimensions	Material	Temp range	Max load		VAC	Hz		
<b>Hot plates</b>										
—	—	12" x 12" (30.5 x 30.5 cm)	Ceramic	120 to 842°F (49 to 450°C)	25 lb (11.4 kg)	—	115	60	<a href="#">FA-04801-14</a>	
							230	50	<a href="#">FA-04801-16</a>	
<b>Multiposition stirrers</b>										
5	800 mL	12" x 12" (30.5 x 30.5 cm)	Ceramic	—	—	100 to 1500 rpm	120	60	<a href="#">FA-51450-21</a>	
							230	50	<a href="#">FA-51450-26</a>	
9	400 mL						120	60	<a href="#">FA-51450-23</a>	
							230	50	<a href="#">FA-51450-28</a>	
<b>Multiposition stirring hot plates</b>										
5	800 mL	12" x 12" (30.5 x 30.5 cm)	Ceramic	212 to 845°F (100 to 450°C)	40 lb (18.2 kg)	100 to 1500 rpm	120	60	<a href="#">FA-51450-71</a>	
							230	50	<a href="#">FA-51450-76</a>	
9	400 mL						120	60	<a href="#">FA-51450-73</a>	
							230	50	<a href="#">FA-51450-78</a>	

[FA-17050-04](#) NIST-traceable calibration with data for stirrers

## Cole-Parmer® StableTemp™ Stirrers and Stirring Hot Plates

Precision control ensures accurate, repeatable results

- Stay safe—hot surface warning until plate cools below 50°C
- Don't worry about spills—raised display diverts liquids away from critical components
- Optional temperature probe maintains your sample at the set temperature
- Keep samples in place—optional rod and clamps secure containers to the top plate
- Optional splash guard protects you and your sample from mishaps

**NEW**



Advanced stirring hot plate

### Advanced Stirrer and Stirring Hot Plate

- Greater accuracy and repeatability for advanced applications
- Set ramp/dwell programs and save settings for quick repeat
- Always know your status—view actual and set values simultaneously
- Protect you and your sample with overtemperature protection

**What's included:** stir bar, power cord with plug (EU plug for 230 VAC models). Advanced stirring hot plate also includes a temperature probe kit.



**StableTemp**

#### Accessories

- [FA-04600-88](#) Transparent splash shield for 4¼" x 4¼" units
- [FA-04600-89](#) Transparent splash shield for 7¼" x 7¼" units
- [FA-04600-90](#) Transparent splash shield for 10¼" x 10¼" units
- [FA-04600-91](#) External temperature probe, 100 Ω Pt, stainless steel, 32 to 752°F (0 to 400°C)
- [FA-04600-92](#) External temperature probe, 1000 Ω Pt, stainless steel, 32 to 752°F (0 to 400°C)
- [FA-04600-93](#) External temperature probe, 1000 Ω Pt, Hastelloy®, 32 to 752°F (0 to 400°C)
- [FA-04600-98](#) Support rod for securing sample containers
- [FA-04600-99](#) Clamp and holder for securing sample containers

Top plate		Heating		Stirring		Power		Catalog number	Price
Dimensions	Material	Temperature range	Max load	Speed range	Max cap.	VAC	Hz		
<b>Stirrers</b>									
4¼" x 4¼" (10.8 x 10.8 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	1 L	100 to 120	50/60	<a href="#">FA-03406-01</a>	
						230	50/60	<a href="#">FA-03406-06</a>	
7¼" x 7¼" (18.4 x 18.4 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120	50/60	<a href="#">FA-03406-11</a>	
						230	50/60	<a href="#">FA-03406-16</a>	
10¼" x 10¼" (26 x 26 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	6 L	100 to 120	50/60	<a href="#">FA-03406-31</a>	
						230	50/60	<a href="#">FA-03406-36</a>	
<b>Stirring hot plates</b>									
4¼" x 4¼" (10.8 x 10.8 cm)	Ceramic	86 to 1004°F (30 to 540°C)	25 lb (11.4 kg)	50 to 1500 rpm	1 L	100 to 120	50/60	<a href="#">FA-03407-01</a>	
						230	50/60	<a href="#">FA-03407-06</a>	
7¼" x 7¼" (18.4 x 18.4 cm)	Ceramic	86 to 1004°F (30 to 540°C)	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120	50/60	<a href="#">FA-03407-11</a>	
						230	50/60	<a href="#">FA-03407-16</a>	
10¼" x 10¼" (26 x 26 cm)	Ceramic	86 to 752°F (30 to 400°C)	25 lb (11.4 kg)	50 to 1500 rpm	6 L	100 to 120	50/60	<a href="#">FA-03407-31</a>	
						230	50/60	<a href="#">FA-03407-36</a>	
<b>Advanced stirrer and stirring hot plate</b>									
7¼" x 7¼" (18.4 x 18.4 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120	50/60	<a href="#">FA-03406-41</a>	
						230	50/60	<a href="#">FA-03406-46</a>	
7¼" x 7¼" (18.4 x 18.4 cm)	Ceramic	86 to 842°F (30 to 450°C)	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120	50/60	<a href="#">FA-03407-41</a>	
						230	50/60	<a href="#">FA-03407-46</a>	



# Digi-Sense® General-Purpose Digital Pocket Thermometers

Don't risk accuracy—precalibrated

- 304 stainless steel penetration stem
- All include a protective case with pocket clip and battery



**A. Pen-Style Pocket Thermometer** offers fast response and laboratory accuracy. Features include probe guard, Min/Max/Hold, °F/°C switchable ranges and auto power-off to conserve battery life. Includes a NIST-traceable calibration report with data supplied by InnoCal.

**B. Large Head Pocket Thermometer** offers fast response and laboratory accuracy. The head of the thermometer is square allowing the unit not to roll when placed on a flat surface. Features include probe guard, °F/°C switchable ranges and auto power-off to conserve battery life. Includes a NIST-traceable calibration report with data supplied by InnoCal.

**C. Waterproof Thermometer** features a dishwasher-safe sealed case. Features °F/°C switchable ranges, a Min/Max button, and display updates every second. Use ON/OFF button to conserve battery life.

**D. Key-Chain "Mini" Thermometer** is pocket sized and perfect for carrying around anywhere. Clip onto a lab coat, jacket zipper, belt loop, backpack, or key ring. Features °F/°C switchable ranges and display updates every second. Use ON/OFF button to conserve battery life.

**E. Long-Stem Thermometer** has an 8" or 11½" long stem, °F/°C switchable ranges, and display updates every second. Use ON/OFF button to conserve battery life.

**F. Rotating-Display Thermometer** can be angled up to 180° for easy reading. Extra-long 8" stem is ideal for measuring reagents, water baths, air, liquids, and any semisolid. Features °F/°C selection. Use ON/OFF button to conserve battery life.

**G. T-Handle Thermometer** is designed for penetrating semisolids and features °F/°C switchable ranges. Display updates every second. Use ON/OFF button to conserve battery life or auto shutoff at one hour.

**H. Pen-Style Thermometer** has °F/°C switchable ranges and display updates every second. Data Hold button freezes readings. Use ON/OFF button to conserve battery life.

**I. NIST-Traceable Pen-Style Thermometer** has a unique, flat-profile design. Probe guard snaps into handle to extend the overall length to 10¾" making it ideal for hard-to-reach locations. Features °F/°C switchable ranges, Hold button, display that updates every second, and an ON/OFF button to conserve battery life.



Key letter	Range	Resolution	Accuracy†	Probe diameter	Catalog number	Price
<b>A</b>	-40 to 482°F (-40 to 250°C)	0.1°F (0.1°C)	1.5% ± 2° full scale	4.6" L x 0.16" dia	<a href="#">FA-20250-33</a>	
<b>B</b>	-40 to 482°F (-40 to 250°C)	0.1°F (0.1°C)	1.5% ± 2° full scale	5" L x 0.16" dia	<a href="#">FA-20250-32</a>	
<b>C</b>	14 to 392°F (-10 to 200°C)	0.1° up to 199.9°; 1° above 200°	±1.8°F (±1.0°C)	5" L x 0.14" dia	<a href="#">FA-90003-00*</a>	
				10" L x 0.14" dia	<a href="#">FA-90205-05</a>	
<b>D</b>	-58 to 302°F (-50 to 150°C)	0.1°F (0.1°C)	±1.8°F (1.0°C)	1" L x 0.14" dia	<a href="#">FA-90205-10</a>	
	-58 to 302°F (-50 to 150°C)	0.1° from -19 to 199.9°; 1° outside this range	±1.8°F (±1°C)	8" L x 0.14" dia	<a href="#">FA-90225-15</a>	
<b>E</b>	-58 to 302°F (-50 to 150°C)	0.1° from -19 to 199.9°; 1° outside this range	±0.5°F (±0.2°C)	8" L x 0.14" dia	<a href="#">FA-90205-01</a>	
	-58 to 572°F (-50 to 300°C)	0.1° from -19 to 199.9°; 1° outside this range	±1.8°F (±1°C)	11.5" L x 0.14" dia	<a href="#">FA-94460-40</a>	
	-58 to 302°F (-50 to 150°C)	0.1° from -19 to 199.9°; 1° outside this range	±0.5°F (±0.2°C)	11.5" L x 0.14" dia	<a href="#">FA-90205-02</a>	
<b>F</b>	-58 to 536°F (-50 to 280°C)	0.1° from -20 to 200°F; 1° outside this range	±1.8°F (1.0°C)	8" L x 0.14" dia	<a href="#">FA-90205-25</a>	
<b>G</b>	-58 to 302°F (-50 to 150°C)	0.1° from -19 to 199.9°; 1° outside this range	±1.8°F (±1.0°C)	5.3" L x 0.14" dia	<a href="#">FA-90051-00</a>	
<b>H</b>	-58 to 572°F (-50 to 300°C)	0.1° from -19 to 199.9°; 1° outside this range	±2°F (±1.5°C)	2.5" L x 0.16" dia	<a href="#">FA-90001-02</a>	
<b>I</b>	-58 to 572°F (-50 to 300°C)	0.1° from -20 to 200°F; 1° outside this range	±3°F (1.5°C)	3.5" L x 0.14" dia	<a href="#">FA-90205-15</a>	

\*90003-00 does not come precalibrated †Basic accuracy shown, full accuracy available online

[FA-17003-00](#) NIST-traceable recalibration with data for pocket thermometers



## Cole-Parmer® Tri-Corner Beakers, PP

### Easy pouring from three sides

- Easily mix on stirrer—flat bottom keeps stir bars centered
- Accurate to ±5%; molded graduations
- Withstand temperatures to 250°F (121°C)
- Autoclavable



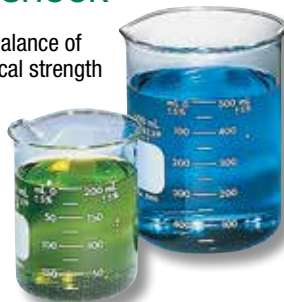
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20% off on 120+ 15% off on 30 to 119 10% off on 6 to 29 packs or cases

Capacity mL (oz)	Graduations (mL)	Cat. no.	Qty/pk	Price/pk
50 (1.5)	10	FA-06020-01	100	
100 (3.5)	10	FA-06020-03		
250 (8)	20	FA-06020-05		
400 (13)	40	FA-06020-07	100	
800 (26)	50	FA-06020-09		
1000 (32)	50	FA-06020-11		
Five of each above	—	FA-06010-07	30	

## PYREX® Brand 1000 Griffin Low-Form Beakers

### Stand up to thermal shock

- Uniform wall thickness offers optimal balance of thermal shock resistance and mechanical strength
- Know how much is left and how much is gone—double graduation scale indicates approximate content (on 250- to 400-mL sizes only)
- No mystery liquids—extra-large marking spot for easy identification
- Reference: ASTM E-960



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15% off on 10+ packs or cases 10% off on 5 to 9 packs or cases

Capacity mL (oz)	Graduation range (mL)	Graduation interval (mL)	Catalog number	Qty/pk	Price/pk
10 (1/8)	—	—	FA-34502-01	12	
20 (2/8)	5 to 15	5	FA-34502-02		
30 (1)	5 to 25	10	FA-34502-03		
50 (1 3/4)	10 to 40	10	FA-34502-04		
100 (3)	20 to 80	10	FA-34502-05	12	
150 (5)	20 to 140	10	FA-34502-06		
250 (8)	25 to 200	25	FA-34502-07		
400 (13)	25 to 325	25	FA-34502-08		
600 (20)	50 to 500	50	FA-34502-09	6	
800 (27)	50 to 750	50	FA-34502-10	6	
1000 (32)	50 to 1000	50	FA-34502-11	6	
2000 (64)	200 to 2000	100	FA-34502-13	4	
3000 (96)	250 to 2500	125	FA-34502-14	1	
4000 (128)	500 to 3500	250	FA-34502-15	1	
10 (1/8)	—	—	FA-34502-21	48	
20 (2/8)	5 to 15	5	FA-34502-22		
30 (1)	5 to 25	10	FA-34502-23		
50 (1 3/4)	10 to 40	10	FA-34502-24		
100 (3)	20 to 80	10	FA-34502-25	48	
150 (5)	20 to 140	10	FA-34502-26		
250 (8)	25 to 200	25	FA-34502-27		
400 (13)	25 to 325	25	FA-34502-28		
600 (20)	50 to 500	50	FA-34502-29	36	
800 (27)	50 to 750	50	FA-34502-30	24	
1000 (32)	50 to 1000	50	FA-34502-31	24	
2000 (64)	200 to 2000	100	FA-34502-33	8	
3000 (96)	250 to 2500	125	FA-34502-34	6	
4000 (128)	500 to 3500	250	FA-34502-35	6	
Starter set contains one each of 50 mL, 100 mL, 250 mL, 600 mL, 1000 mL				5	

## Disposable Griffin Low-Form Beakers, PP

### Molded-in graduations won't wear off

- No need to convert volumes—graduated in mL and oz
- Won't stick together—stacking rib for easier separation
- Autoclavable



**Buy More...Save More!**  
20% off on 120+ 15% off on 30 to 119 10% off on 6 to 29 packs or cases

Capacity mL (oz)	Graduations (mL)	Catalog number	Qty/pk	Price/pk
15 (0.5)	5	FA-06006-12	100	
15 (0.5)	5	FA-06006-15	1000	
30 (1)	5	FA-06006-22	100	
30 (1)	5	FA-06006-25	1000	
50 (1.7)	5	FA-06006-32	100	
50 (1.7)	5	FA-06006-35	1000	
100 (3.5)	5	FA-06006-42	100	
100 (3.5)	5	FA-06006-45	1000	
150 (5)	5	FA-06006-52	100	
150 (5)	5	FA-06006-55	1000	
250 (8)	10	FA-06006-63	50	
250 (8)	10	FA-06006-65	500	
400 (13)	25	FA-06006-72	50	
400 (13)	25	FA-06006-75	500	
600 (20)	25	FA-06006-83	25	
600 (20)	25	FA-06006-85	500	

## PYREX® Brand 1003 Heavy-Duty Griffin Beakers

### Get the best strength even under harsh conditions

- Measure initial quantity and how much is used—double metric scale on 250- to 4000-mL sizes
- Know your solution—extra-large marking spot for easier identification
- Reference: ASTM E-960



**Buy More...Save More!**  
15% off on 10+ packs or cases  
10% off on 5 to 9 packs or cases

Capacity mL (oz)	Graduation range (mL)	Graduation interval (mL)	Catalog number	Qty	Price
150 (5)	20 to 140	20	FA-34512-06	12/pk	
150 (5)	20 to 140	20	FA-34512-26	48/cs	
250 (8)	25 to 200	25	FA-34512-07	12/pk	
250 (8)	25 to 200	25	FA-34512-27	48/cs	
400 (13)	25 to 325	25	FA-34512-08	12/pk	
400 (13)	25 to 325	25	FA-34512-28	48/cs	
600 (20)	50 to 500	50	FA-34512-09	6/pk	
600 (20)	50 to 500	50	FA-34512-29	36/cs	
1000 (32)	50 to 1000	50	FA-34512-11	6/pk	
1000 (32)	50 to 1000	50	FA-34512-31	24/cs	
2000 (64)	200 to 1800	200	FA-34512-13	4/pk	
2000 (64)	200 to 1800	200	FA-34512-33	8/pk	
4000 (128)	500 to 3500	250	FA-34512-15	1/pk	
4000 (128)	500 to 3500	250	FA-34512-35	4/pk	

Find even more online! Go to ColeParmer.com to search more than 100,000 products.



## Thermo Scientific™ Nalgene™ Round Carboys, LDPE

### No more leaks

- Leakproof, polypropylene cap for no-worry transport
- Make transport easy with easy-grip handles
- Withstand corrosive materials
- Maintain adequate levels of solution—larger than 10-L carboys indicate 1-gallon and 5-liter increments
- Dispense easily with spigot models



#### Buy More...Save More!

- 20% off on 120+
- 15% off on 30 to 119
- 10% off on 6 to 29 packs or cases

Liters (gallons)	Cap size	Catalog number	Qty/pk	Price/pk
<b>Carboys with shoulder handles</b>				
10 (2½)	83B	<a href="#">FA-06031-32</a>	1	
15 (4)	83B	<a href="#">FA-06031-42</a>		
20 (5)	83B	<a href="#">FA-06031-52</a>		
25 (6½)	83B	<a href="#">FA-06031-62</a>		
50 (13)	83B	<a href="#">FA-06031-72</a>		
<b>Wide-mouth carboys with shoulder handles</b>				
10 (2½)	100 mm	<a href="#">FA-06056-22</a>	1	
15 (4)	100 mm	<a href="#">FA-06056-32</a>		
20 (5)	100 mm	<a href="#">FA-06056-52</a>		
<b>Carboy with spigot and shoulder handles</b>				
4 (1)	38-430	<a href="#">FA-06065-10</a>	1	
10 (2½)	83B	<a href="#">FA-06065-22</a>		
20 (5)	83B	<a href="#">FA-06065-32</a>		
25 (6½)	83B	<a href="#">FA-06065-52</a>		
50 (13)	83B	<a href="#">FA-06065-62</a>		
<b>Carboys with ½" OD tubulation and shoulder handles</b>				
10 (2½)	83B	<a href="#">FA-06080-42</a>	1	
20 (5¼)	83B	<a href="#">FA-06080-52</a>		

#### Accessories

- [FA-06258-30](#) Replacement cap, PP, 83B. Pack of 2
- [FA-63000-16](#) Replacement cap, PP, 100 mm. Pack of 12
- [FA-63000-18](#) Replacement cap, PP, 38-430. Pack of 12
- [FA-06070-22](#) Replacement spigot, PP

## Cole-Parmer® Economical Heavy-Duty Carboys with Shoulder Handle, PP

### Sturdy, octagonal design for added rigidity

- Easier filling and pouring with offset neck
- Leakproof spigot models have tube fitting for easier filling of containers
- Polypropylene closure reduces evaporation
- Autoclavable



#### Buy More...Save More!

- 20% off on 120+
- 15% off on 30 to 119
- 10% off on 6 to 29 packs or cases



Liters (gallons)	Cap size	Catalog number	Qty/pk	Price/pk
<b>Heavy-duty carboys with shoulder handle</b>				
5 (1¼)	45 mm	<a href="#">FA-62507-00</a>	1	
10 (2½)	90 mm	<a href="#">FA-62507-10</a>	1	
20 (5¼)	90 mm	<a href="#">FA-62507-20</a>	1	
<b>Heavy-duty carboys with shoulder handle and spigot</b>				
5 (1¼)	45 mm	<a href="#">FA-62507-05</a>	1	
10 (2½)	90 mm	<a href="#">FA-62507-15</a>	1	
20 (5¼)	90 mm	<a href="#">FA-62507-25</a>	1	

## Thermo Scientific™ Nalgene™ FDA-Compliant Carboys, PP

### Get a better grip with two-handle construction

- Dispense solutions more quickly with optional spigot models—accept ¼", ½", or ⅝" ID tubing
- Leakproof polypropylene (PP) cap
- Autoclavable



#### Buy More...Save More!

- 20% off on 120+
- 15% off on 30 to 119
- 10% off on 6 to 29 packs or cases

Liters (gallons)	Cap size	Catalog number	Qty/pk	Price/pk
<b>FDA-compliant carboys, USP Class VI</b>				
10 (2½)	83B	<a href="#">FA-06063-12</a>	1	
20 (5)	83B	<a href="#">FA-06063-22</a>		
50 (13)	83B	<a href="#">FA-06063-32</a>		
<b>FDA-compliant carboys with spigot, USP Class VI</b>				
10 (2½)	83B	<a href="#">FA-06064-50</a>	1	
20 (5)	83B	<a href="#">FA-06064-60</a>		
50 (13)	83B	<a href="#">FA-06064-70</a>		

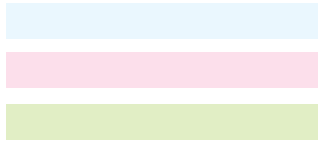


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