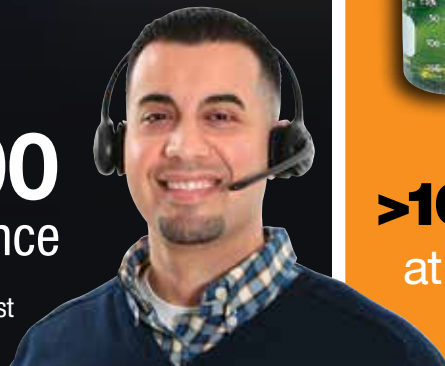


Fluid Handling SOLUTIONS



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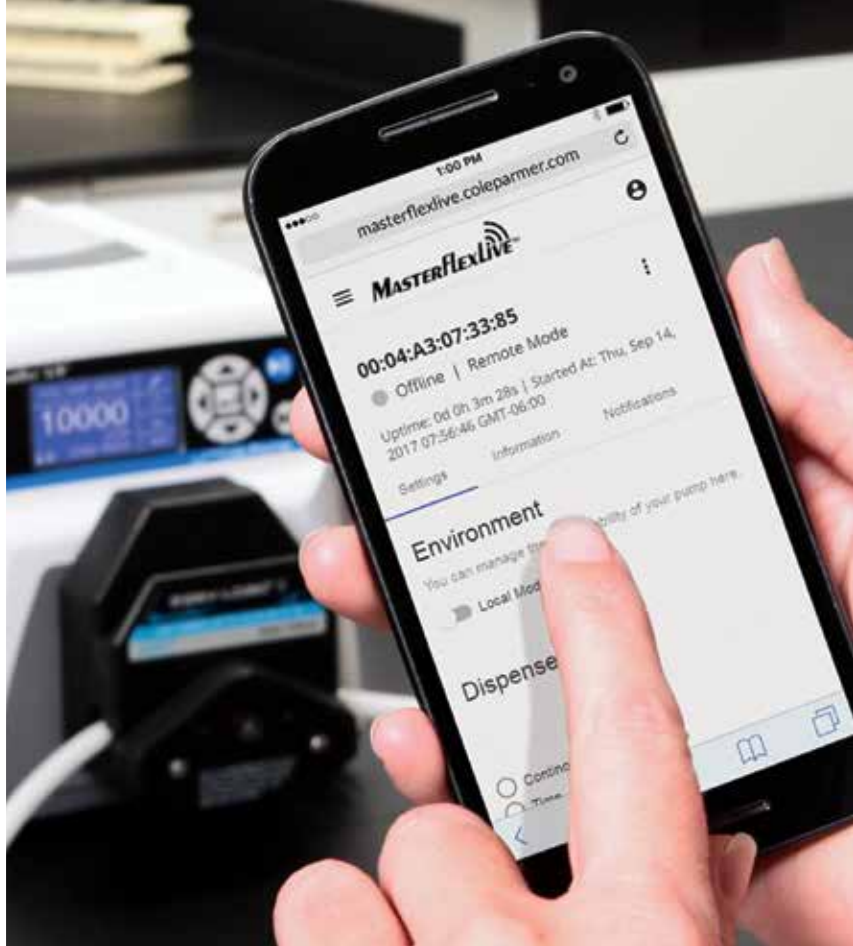
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Masterflex® Cloud-Enabled Drives Featuring MasterflexLive™

Real-time remote pump control and monitoring

- Secure, cloud-enabled platform for control and monitoring of select L/S® and I/P® pumps
- Get real-time control of all pump parameters, including speed, flow rate, dispense volume, and more
- Push notifications alert you to operating conditions and error messages
- Monitor and adjust critical processes running 24/7—no need to be onsite
- “Hands-free” operation lets you control pumps operating inside cleanrooms, glove boxes or isolation chambers
- Access from your PC, tablet or smartphone (iOS and Android compatible)
- Internet connection via standard Ethernet (RJ45) jack on rear of drive



rpm	Flow range (mL/min)	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Power (50/60 Hz)	Catalog number	Price
L/S cloud-enabled digital drive									
0.02 to 100	0.001 to 588	±0.1%	Yes	4	1/10 hp (75 W)	IP33	90 to 260 VAC	FH-07551-60	
0.1 to 600	0.006 to 3400			2				FH-07551-50	
L/S cloud-enabled digital process drive with 316 stainless steel housing									
0.1 to 600	0.006 to 3400	±0.1%	Yes	2	1/10 hp (75 W)	IP66	90 to 260 VAC	FH-07575-70	
L/S cloud-enabled digital process drive with powder-coat steel housing									
0.1 to 600	0.006 to 3400	±0.1%	Yes	2	1/10 hp (75 W)	IP66	90 to 260 VAC	FH-07575-72	
I/P cloud-enabled digital process drive with 316 stainless steel housing									
0.1 to 650	0.6 to 26,000	±0.1%	Yes	2	3/8 hp (280 W)	IP66	90 to 260 VAC	FH-77420-50	
I/P cloud-enabled digital process drive with powder-coat steel housing									
0.1 to 650	0.6 to 26,000	±0.1%	Yes	2	3/8 hp (280 W)	IP66	90 to 260 VAC	FH-77420-60	

Monitor and control your pumps via the cloud.

24/7 remote access from anywhere

Choose from standard or premium options to meet your pump remote control and monitoring needs.

Standard (free) subscription: Get the latest cloud-based technology with secure pump connectivity for remote control and monitoring.

Premium* subscription: When enhanced security and data control is critical to your operation, select a premium subscription account for complete data access and management. Meets requirements for 21CFR compliance.

Features	Standard	Premium*
Monitor pump status	✓	✓
Receive alerts & notifications by text or email	✓	✓
Emergency start/stop	✓	✓
Adjust all parameters (start/stop, tubing size, flow rate, dispense volume)	✓	✓
Set up, save, and delete programs	✓	✓
Manage up to 3 user level settings for security	✓	✓
Data access, management, and enhanced security		✓
- Log and time stamp all operating parameters		✓
- Export record of all pump activity		✓
- IQ/OQ documentation		✓
Meet 21CFR compliance		✓

*Requires a monthly subscription.

For more information, go to
ColeParmer.ca/MasterflexLive

Masterflex® Drives with Advanced Networking and Communication

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

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

NEW



For more information, go to ColeParmer.ca/Masterflex-comms

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

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) 9.4" x 5.5" x 6.2" (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	FH-07525-20	
2								FH-07525-40	

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

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



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Power supplies are:



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

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

Masterflex® L/S® Variable-Speed Console Drives

- ✓ Compact and cost effective
- ✓ Reversible motor accepts up to two pump heads
- ✓ Remote start/stop

- Compact, cost-effective for general fluid transfer applications
- Flow range: 0.42 to 2900 mL/min
- Simple operation with single-turn speed control
- Separate power switch enables you to maintain speed setting when turning drive on/off; front-panel LED indicates power on
- Reversible motor lets you easily prime/purge tubing and pump in either direction
- Remote control of start/stop via DB9 connector on back of drive

Drives accept nine different pump head types: Standard, Easy-Load®, Easy-Load II, Easy-Load 3, Multichannel, High-Performance, Cartridge, PTFE tubing, and PTFE-diaphragm. Drives 07555-00 and -05 are not recommended for use with the PTFE-tubing and PTFE-diaphragm pump heads.

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



Flow Rates in mL/min (flow rates in parentheses can only be obtained with the High-Performance pump head—see page 14)



Shown with L/S Easy-Load II pump head 77200-60

rpm	Precision pump tubing						High-performance precision pump tubing			
	L/S 13	L/S 14	L/S 16	L/S 25	L/S 17	L/S 18	L/S 15	L/S 24	L/S 35	L/S 36
	Standard†, Easy-Load®, Easy-Load® II, Easy-Load® 3						Multichannel‡, Standard, Easy-Load II, Easy-Load 3, High-Performance			
	Cartridge, Multichannel			Cartridge			Easy-Load			
20 to 600	1.2 to 36	4.2 to 130	16 to 480	34 to 1000	56 to 1700	76 to 2300	34 to 1000	56 to 1700	76 to 2300	96 to 2900
7 to 200	0.42 to 12	1.4 to 43	5.6 to 160	12 to 330	20 to 570	27 to 770	12 to 330 (13 to 370)	20 to 570 (21 to 600)	27 to 770 (30 to 870)	34 to 970 (41 to 1130)

†The Standard pump head is not available for L/S 25. ‡Multichannel head is not available for L/S 36.



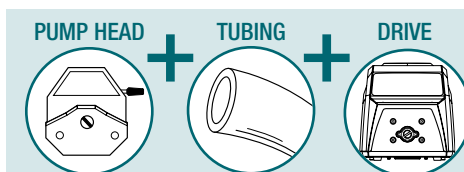
rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
20 to 600	±5%	1	½ hp (37 W)	IP22	9.1" x 7.2" x 5.3" (23 x 18.3 x 13.4 cm)	90 to 130	1.5	FH-07555-00	
7 to 200		2				180 to 260	0.8	FH-07555-05	
						90 to 130	1.5	FH-07555-10	
						180 to 260	0.8	FH-07555-15	

Accessories

[FH-17050-01](#) Foot switch, DB9 male, 6-ft (1.8 m) cable

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

[FH-07528-80](#) Handheld remote controller; for control of start/stop, route tubing through handle for dispensing into containers



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

System	Flow range	What's included			Power	Catalog number	Price
		Pump head	Tubing	Drive			
	16 to 480 mL/min	Easy-Load® II 77200-60	C-Flex® ULTRA L/S 16 tubing 06434-16 10 ft (3 m)	Console drive 07555-00 20 to 600 rpm	115 VAC, 50/60 Hz	FH-77910-40	
				Console drive 07555-05 20 to 600 rpm	230 VAC, 50/60 Hz	FH-77910-45	
	56 to 1700 mL/min	Easy-Load II 77200-62	C-Flex ULTRA L/S 24 tubing 06434-24 10 ft (3 m)	Console drive 07555-00 20 to 600 rpm	115 VAC, 50/60 Hz	FH-77910-50	
				Console drive 07555-05 20 to 600 rpm	230 VAC, 50/60 Hz	FH-77910-55	

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, $\pm 2\%$ 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.

FEATURES

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



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

[FH-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

Stack up to 4 heads to maximize productivity in less space



MASTERFLEX®

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rpm	Speed control (resolution)	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power (50/60 Hz)		Catalog number	Price
						VAC	Amps		
6 to 600	$\pm 0.25\%$ (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	FH-07528-10	
3 to 300		2						FH-07528-20	
1 to 100		4						FH-07528-30	

Accessories

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

- [FH-07528-80](#) Handheld remote controller; for remote control of start/stop, route tubing through handle for dispensing into containers
- [FH-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 13–14)
- Remote control capabilities via a watertight connector on back of drive

FEATURES

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

MASTERFLEX®



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.

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

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

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

L/S® High-Pressure Pumps

Pump at pressures up to 125 psi (8.5 bar)

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

NEW



MASTERFLEX®

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IP 66
77914-25,
-27



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

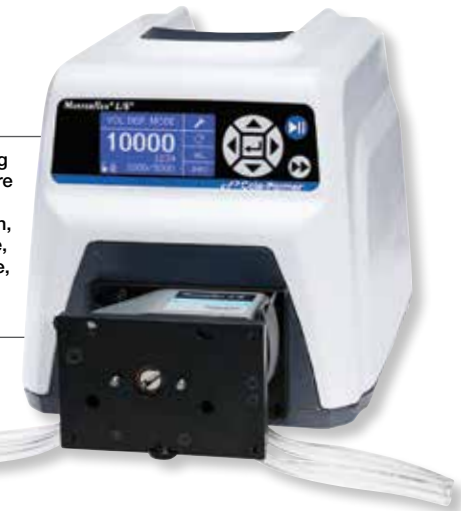
L/S® Variable-Speed Digital Drives Versatile, worry-free operation

- Brushless, maintenance-free motor provides ±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 13–14)
- 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



MASTERFLEX®

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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	±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	FH-07522-20	
		Yes						FH-07522-28	
0.02 to 100		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	FH-07522-30	
		Yes						FH-07522-38	

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

FH-07523-94 DB25 male connector. Use to create your own cable

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

FH-07523-97 Handheld remote controller; route tubing through handle for dispensing into containers

FH-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 13–14)

FEATURES

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



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

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

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

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

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

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

Masterflex® Drives Powering Quattroflow™ Pumps

Specifically designed to move delicate biological fluids

NEW

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

MASTERFLEX®



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

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

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

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

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

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

Applications

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

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

Specifications for Quattroflow Pumps

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

Specifications for Masterflex Drives

Description	ABS plastic drive for QF150	Stainless steel drive for QF150	Stainless steel drive for QF1200
Speed	3000 rpm	3000 rpm	1700 rpm
Speed control	$\pm 0.1\%$	$\pm 0.1\%$	$\pm 0.1\%$
Motor size	¼ hp (0.05 kW)	¼ hp (0.05 kW)	¾ hp (0.26 kW)
IP rating	IP33	IP66 and NEMA 4X	IP66 and NEMA 4X
Dispense modes	Motor rpm, flow rate, dispense volume, cumulative volume, dispense interval time, and copy number		
Input/output communications	Speed control: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V; Pumping direction: requires open collector or contact enclosure; Start/stop/purge: requires open collector or contact closure; Tachometer output: scalable 0 to 20 mA, 4 to 20 mA, 0 to 10 V		
Power	90 to 260 VAC		

L/S® 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

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

L/S Precision Pump Tubing

Formulation	Complies with	Qty/pk	●	●	○	○	○	○	
Silicone (platinum-cured)	MASTERFLEX	USP Class V, EP, FDA, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96410-13	FH-96410-14	FH-96410-16	FH-96410-25	FH-96410-17	FH-96410-18
Silicone (peroxide-cured)	MASTERFLEX	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96400-13	FH-96400-14	FH-96400-16	FH-96400-25	FH-96400-17	FH-96400-18
BioPharm Silicone (platinum-cured)	MASTERFLEX	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96420-13	FH-96420-14	FH-96420-16	FH-96420-25	FH-96420-17	FH-96420-18
BioPharm Plus Silicone (platinum-cured)	MASTERFLEX	USP Class VI, EP, FDA, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96440-13	FH-96440-14	FH-96440-16	FH-96440-25	FH-96440-17	FH-96440-18
Puri-Flex™	MASTERFLEX	USP Class VI, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96419-13	FH-96419-14	FH-96419-16	FH-96419-25	FH-96419-17	FH-96419-18
C-Flex®	MASTERFLEX	USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-06424-13	FH-06424-14	FH-06424-16	FH-06424-25	FH-06424-17	FH-06424-18
C-Flex® ULTRA	MASTERFLEX	USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	—	FH-06434-14	FH-06434-16	FH-06434-25	FH-06434-17	FH-06434-18
PharMed® BPT	MASTERFLEX	USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	FH-06508-13	FH-06508-14	FH-06508-16	FH-06508-25	FH-06508-17	FH-06508-18
PharmaPure®	MASTERFLEX	USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	FH-06435-13	FH-06435-14	FH-06435-16	FH-06435-25	FH-06435-17	FH-06435-18
GORE® STA-PURE® Series PCS ⁺	—	USP Class VI	35.6 cm (14")	—	FH-96241-14	FH-96241-16	FH-96241-25	FH-96241-17	FH-96241-18
GORE® STA-PURE® Series PFL ⁺	—	USP Class VI	35.6 cm (14")	—	FH-96242-14	FH-96242-16	FH-96242-25	FH-96242-17	FH-96242-18
Chem-Durance® Bio ⁺	MASTERFLEX	USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	FH-06442-13	FH-06442-14	FH-06442-16	FH-06442-25	FH-06442-17	FH-06442-18
Solve-Flex®	—	USP Class VI	3.6 m (12 ft)	—	—	FH-96446-16	—	FH-96446-17	—
Tygon® E-LFL	MASTERFLEX	USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-06440-13	FH-06440-14	FH-06440-16	FH-06440-25	FH-06440-17	FH-06440-18
Tygon E-Food (B-44-4X)	MASTERFLEX	FDA, EU Food, NSF, 3A, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06418-13	FH-06418-14	FH-06418-16	FH-06418-25	FH-06418-17	FH-06418-18
Tygon E-Lab (E-3603)	MASTERFLEX	USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06509-13	FH-06509-14	FH-06509-16	FH-06509-25	FH-06509-17	FH-06509-18
Tygon Fuel & Lubricant (F-4040-A)	MASTERFLEX	REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06401-13	FH-06401-14	FH-06401-16	FH-06401-25	FH-06401-17	FH-06401-18
Tygon Chemical ⁺ (2001)	MASTERFLEX	FDA 21 CFR 175.300, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06475-13	FH-06475-14	FH-06475-16	FH-06475-25	FH-06475-17	FH-06475-18
Norprene® (A-60 G)	MASTERFLEX	NSF, REACH, RoHS	15.2 m (50 ft)	FH-06404-13	FH-06404-14	FH-06404-16	FH-06404-25	FH-06404-17	FH-06404-18
Norprene Food (A 60 F)	MASTERFLEX	FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	FH-06402-13	FH-06402-14	FH-06402-16	FH-06402-25	FH-06402-17	FH-06402-18
Viton®	MASTERFLEX	FDA, ADCF	7.6 m (25 ft)	FH-96412-13	FH-96412-14	FH-96412-16	FH-96412-25	FH-96412-17	FH-96412-18

†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).

PharmaPure®

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

GORE® STA-PURE® PCS

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

GORE® STA-PURE® 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



FEATURES

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

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)†	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, ADFC	7.6 m (25 ft)	FH-96410-15	FH-96410-24	FH-96410-35	FH-96410-36	
Silicone (peroxide-cured)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-96400-15	FH-96400-24	FH-96400-35	FH-96400-36	
BioPharm Silicone (platinum-cured)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-96420-15	FH-96420-24	FH-96420-35	FH-96420-36	
BioPharm Plus Silicone (platinum-cured)	USP Class VI, EP, FDA, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-96440-15	FH-96440-24	FH-96440-35	FH-96440-36	
Puri-Flex™	USP Class VI, FDA, 3A, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-96419-15	FH-96419-24	FH-96419-35	FH-96419-36	
C-Flex®	USP Class VI, EP, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-06424-15	FH-06424-24	FH-06424-35	FH-06424-36	
C-Flex® ULTRA	USP Class VI, EP, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-06434-15	FH-06434-24	FH-06434-35	FH-06434-36	
PharMed® BPT	USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	FH-06508-15	FH-06508-24	FH-06508-35	FH-06508-36	
PharmaPure®†	USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	FH-06435-15	FH-06435-24	—	—	
GORE® STA-PURE® Series PCS‡	USP Class VI	35.6 cm (14")	FH-96241-15	FH-96241-24	FH-96241-35	FH-96241-36	
GORE® STA-PURE® Series PFL‡	USP Class VI	35.6 cm (14")	FH-96242-15	FH-96242-24	FH-96242-35	FH-96242-36	
Chem-Durance® Bio†	USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	FH-06442-15	FH-06442-24	FH-06442-35	FH-06442-36	
Solve-Flex®†	USP Class VI	3.6 m (12 ft)	—	FH-96446-24	—	—	
Tygon® E-LFL	USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADFC	7.6 m (25 ft)	FH-06440-15	FH-06440-24	FH-06440-35	FH-06440-36	
Tygon E-Food (B-44-4X)	FDA, EU Food, NSF, 3A, REACH, RoHS, ADFC	15.2 m (50 ft)	FH-06418-15	FH-06418-24	FH-06418-35	FH-06418-36	
Tygon E-Lab (E-3603)	USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADFC	15.2 m (50 ft)	FH-06509-15	FH-06509-24	FH-06509-35	FH-06509-36	
Tygon Fuel & Lubricant (F-4040-A)	REACH, RoHS, ADFC	15.2 m (50 ft)	FH-06401-15	FH-06401-24	FH-06401-35	FH-06401-36	
Tygon Chemical† (2001)	FDA 21 CFR 175.300, REACH, RoHS, ADFC	15.2 m (50 ft)	FH-06475-15	FH-06475-24	—	—	
Norprene® (A-60 G)	NSF, REACH, RoHS	15.2 m (50 ft)	FH-06404-15	FH-06404-24	FH-06404-35	FH-06404-36	
Norprene Food (A 60 F)	FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	FH-06402-15	FH-06402-24	FH-06402-35	FH-06402-36	
Viton®	FDA, ADFC	7.6 m (25 ft)	FH-96412-15	FH-96412-24	FH-96412-35	FH-96412-36	

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

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.

MASTERFLEX®



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

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

Masterflex® Ultrasonic Flow Sensors

Maintain accurate flow rates without affecting working fluid

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



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.

MASTERFLEX®



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		
Engineered for L/S Precision pump tubing						
13	0.57	36	0.48	30	FH-33501-13	
14	2.06	130	0.48	30	FH-33501-14	
16	7.61	480	0.48	30	FH-33501-16	
25	15.85	1000	0.48	30	FH-33501-25	
17	26.95	1700	0.48	30	FH-33501-17	
18	36.46	2300	0.48	30	FH-33501-18	
Engineered for L/S High-Performance Precision pump tubing						
15	14.4	1100	0.48	30	FH-33501-15	
24	28.53	1800	0.48	30	FH-33501-24	
35	41.21	2600	0.48	30	FH-33501-35	
36	53.89	3400	0.48	30	FH-33501-36	
Engineered for I/P Precision pump tubing						
26	63.4	4000	0.48	30	FH-33501-26	
73	126.8	8000	0.48	30	FH-33501-73	

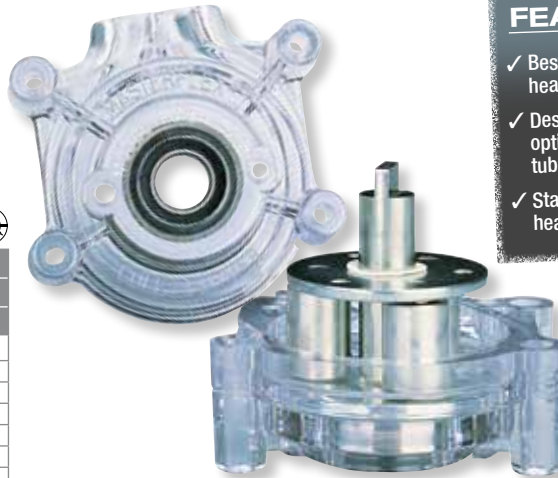
†Higher flow rates can be measured, the stated maximum flow rate is that of the tubing.

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

L/S® Standard Pump Heads

Ideal for accurate and repeatable fluid transfer applications

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



FEATURES

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

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

†PC = polycarbonate PPS = polyphenylene sulfide
 CRS = cold-rolled steel SS = stainless steel
 ‡Maximum system pressure = L/S 13, L/S 14, L/S 15, L/S 16, L/S 24: 40 psi (2.7 bar);
 L/S 17, L/S 36: 20 psi (1.4 bar); L/S 18: 15 psi (1.0 bar); L/S 35: 35 psi (2.4 bar)

Mounting Hardware

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

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

L/S® Easy-Load® II Pump Heads

Automatic retention holds tubing securely in place

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

FEATURES

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



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



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

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

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

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

L/S® High-Performance Pump Heads

All-new design offers faster tubing changes and improved ergonomics

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

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

MASTERFLEX®



ATEX

Zone 2
77252-80, 82



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

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

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

L/S® Easy-Load® 3 Pump Heads

No tools or hardware needed

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

FEATURES

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

MASTERFLEX®

ISO9001:2008
CERTIFIED SUPPLIER



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

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

‡CRS = cold-rolled steel SS = stainless steel



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

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 19)

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

MASTERFLEX®

ISO9001:2008
CERTIFIED SUPPLIER



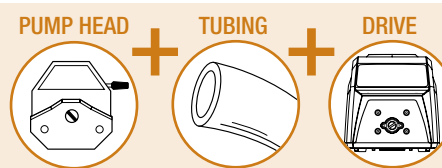
rpm	Speed control (resolution)	Open-head sensor	Pump heads accepted	Motor size	IP rating	Dimensions (L x W x H)	Power	Catalog number	Price
Digital process drive with 316 stainless steel housing									
0.1 to 650	±0.1%	No	2	¾ hp (280 W)	IP66	16 ¹ / ₁₆ " x 11 ¹ / ₈ " x 12 ⁷ / ₈ "	90 to 260 VAC, 50/60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

Accessories

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

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

FH-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	FH-77964-20	
	0.001 to 8.0 LPM	Easy-Load 77602-10	C-Flex® ULTRA I/P 73 tubing 06434-73 10 ft (3 m)	Digital process drive with powder-coat steel housing 77420-20 0.1 to 650 rpm	90 to 260 VAC, 50/60 Hz	FH-77964-30	

I/P® Precision Process Drives

Powerful, low-maintenance drives keep you pumping

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

FEATURES

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



MASTERFLEX®

ISO9001:2008
CERTIFIED SUPPLIER

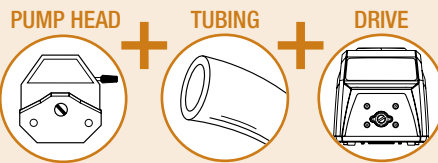


Motor speed (rpm)	Speed control (repeatability)	Pump heads accepted	Motor size	Dimensions	Power (50/60 Hz)		Catalog number	Price
					VAC	Amps		
Variable-speed brushless process drive								
33 to 650	±0.25% (2% of max rpm)	2	1/8 hp (0.25 kW)	14"L x 10"W x 9"H (35.6 x 25.4 x 22.9 cm)	90 to 260	4.5 at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

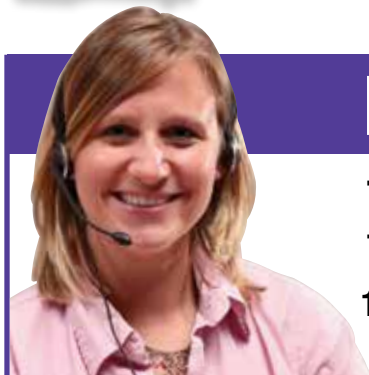
[FH-07595-43](#) Washdown foot switch for model 77411-00

[FH-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	FH-77963-10	
	0.7 to 17 LPM	High-Performance 77600-62	Tygon® E-LFL I/P 88 tubing 06440-88 3 ft (1 m)	Brushless process drive 77410-10 33 to 650 rpm	90 to 260 VAC, 50/60 Hz	FH-77963-20	



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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 (¾")	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, ADCF	7.6 m (25 ft)	FH-96410-26	FH-96410-73	FH-96410-82
Silicone (peroxide cured)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96400-26	FH-96400-73	FH-96400-82
BioPharm Silicone (platinum)	USP Class VI, EP, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96420-26	FH-96420-73	FH-96420-82
BioPharm Plus Silicone (platinum)	USP Class VI, EP, FDA, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96440-26	FH-96440-73	FH-96440-82
Puri-Flex™	USP Class VI, FDA, 3A, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-96419-26	FH-96419-73	FH-96419-82
C-Flex®	USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-06424-26	FH-06424-73	FH-06424-82
C-Flex® ULTRA	USP Class VI, EP, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-06434-26	FH-06434-73	FH-06434-82
PharMed® BPT	USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	FH-06508-26	FH-06508-73	FH-06508-82
PharmaPure® ‡	USP Class VI, EP, FDA, REACH, RoHS	7.6 m (25 ft)	FH-06435-26	FH-06435-73	FH-06435-82
GORE® STA-PURE® Series PCS	USP Class VI	0.6 m (2 ft)	FH-96241-26	FH-96241-73	FH-96241-82
GORE® STA-PURE® Series PFL	USP Class VI	0.6 m (2 ft)	FH-96242-26	FH-96242-73	FH-96242-82
Chem-Durance® Bio†	USP Class VI, FDA, REACH, RoHS	15.2 m (50 ft)	FH-06442-26	FH-06442-73	FH-06442-82
Tygon® E-LFL	USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADCF	7.6 m (25 ft)	FH-06440-26	FH-06440-73	FH-06440-82
Tygon E-Food (B-44-4X)	FDA, EU Food, NSF, 3A, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06418-26	FH-06418-73	FH-06418-82
Tygon E-Lab (E-3603)	USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06509-26	FH-06509-73	FH-06509-82
Tygon Fuel & Lubricant (F-4040-A)	REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06401-26	FH-06401-73	FH-06401-82
Tygon Chemical (2001)‡	FDA 21 CFR 175.300, REACH, RoHS, ADCF	15.2 m (50 ft)	FH-06475-26	FH-06475-73	FH-06475-82
Norprene® (A 60 G)	NSF, REACH, RoHS	15.2 m (50 ft)	FH-06404-26	FH-06404-73	FH-06404-82
Norprene Food (A 60 F)	FDA, 3A, NSF, REACH, RoHS	15.2 m (50 ft)	FH-06402-26	FH-06402-73	FH-06402-82
Viton®	FDA, ADCF	7.6 m (25 ft)	FH-96412-26	FH-96412-73	—

†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.

See next page for more...

I/P® Pump Tubing (continued)

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

















FEATURES

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



I/P High-Performance Precision Pump Tubing

Tubing size	I/P 70	I/P 88	I/P 89
Inner diameter	9.5 mm (0.37")	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

Formulation		Complies with	Qty/pk			
Silicone (platinum cured)		USP Class V, EP, FDA, REACH, RoHS, ADF	3 m (10 ft)	FH-96510-70	FH-96510-88	FH-96510-89
BioPharm Silicone (platinum)		USP Class VI, EP, FDA, 3A, REACH, RoHS, ADF	3 m (10 ft)	FH-96421-70	FH-96421-88	FH-96421-89
BioPharm Plus Silicone (platinum)		USP Class VI, EP, FDA, REACH, RoHS, ADF	3 m (10 ft)	FH-96441-70	FH-96441-88	FH-96441-89
Puri-Flex™		USP Class VI, FDA, 3A, REACH, RoHS, ADF	3 m (10 ft)	FH-96419-70	FH-96419-88	FH-96419-89
C-Flex®		USP Class VI, EP, REACH, RoHS, ADF	3 m (10 ft)	FH-06424-70	FH-06424-88	FH-06424-89
PharMed® BPT		USP Class VI, EP, FDA, NSF, REACH, RoHS	7.6 m (25 ft)	FH-06508-70	FH-06508-88	—
GORE® STA-PURE® Series PCS††		USP Class VI	0.6 m (2 ft)	—	FH-96241-88	FH-96241-89
GORE® STA-PURE® Series PFL††		USP Class VI	0.6 m (2 ft)	—	FH-96242-88	FH-96242-89
Chem-Durance® Bio		USP Class VI, FDA, REACH, RoHS	7.6 m (25 ft)	FH-06442-70 /15.2 m (50 ft)	FH-06442-88	FH-06442-89
Tygon E-LFL		USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADF	7.6 m (25 ft)	FH-06440-70	FH-06440-88	FH-06440-89
Tygon E-Food (B-44-4X)		FDA, EU Food, NSF, 3A, REACH, RoHS, ADF	15.2 m (50 ft)	FH-06418-70	FH-06418-88	FH-06418-89
Tygon E-Lab (E-3603)		USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADF	15.2 m (50 ft)	FH-06509-70	FH-06509-88	FH-06509-89
Norprene® (A 60 G)		NSF, REACH, RoHS	7.6 m (25 ft)	FH-06404-70	FH-06404-88	FH-06404-89
Norprene Food (A 60 F)		FDA, 3A, NSF, REACH, RoHS	7.6 m (25 ft)	—	FH-06402-88	FH-06402-89

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

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)	FH-77600-62	FH-77600-82
I/P 89	29.2	0.52 to 19	20 (1.4)		
Price					

†SS = stainless steel

FEATURES

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

I/P® Easy-Load® Pump Heads

Minimize downtime with faster tubing changes

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

FEATURES

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



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

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

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

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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 m³), 100 psi (6.9 bar) minimum air required, supply your own compressor to power pump
- IP56-rated motor protects against dust and strong water jets
- Rated for ATEX Zone 2 EEx II 3 G c IIC T6; NEC Class 1, Division 2, Groups A, B, C, D, T6

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

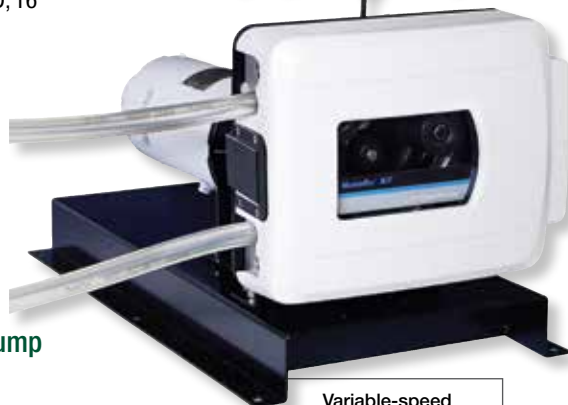
Variable-Speed Modular Digital Pump

- 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

MASTERFLEX®

Flow Rates in LPM (GPM)

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

ISO9001:2008
CERTIFIED SUPPLIER



77111-37, Zone 2 77111-80 77111-30, 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	FH-77111-30	
		271				220 (50)	6.3	FH-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 ³) 100 psi (6.9 bar) minimum		FH-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	FH-77111-60	
						230 (50/60)	3.3	FH-77111-67	
Variable-speed digital (±0.3%)	¾ hp (0.56 kW)	12 to 321	Drive: IP56	Direct-drive	Controller: 9" x 11" x 4½" (22.9 x 27.9 x 11.4 cm) Drive: 27" x 15¾" x 15" (68.6 x 40.0 x 38.4 cm)	90 to 130 (50/60)	10.5	FH-77111-70	
						190 to 260 (50/60)	5.7	FH-77111-77	

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

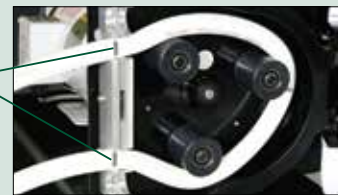
FH-77111-90 Bracket for digital controller on models 77111-70 and -77

B/T® PerfectPosition® Pump Tubing




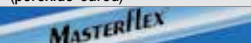


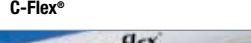







Position more easily—retention marks indicate exact placement

- 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		
Silicone (platinum-cured) 	<ul style="list-style-type: none"> – Complies with USP Class V, EP, FDA, REACH, RoHS, ADFC – Low protein binding, fungus-resistant, phthalate and latex free – Accommodates a wide temperature range 	FH-96510-87 3 m (10 ft)/pk	FH-96510-91 3 m (10 ft)/pk
Silicone (peroxide-cured) 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC – Greater physical compression capability – Economical, long life 	FH-96400-87 3 m (10 ft)/pk	FH-96400-91 3 m (10 ft)/pk
BioPharm Plus Silicone (platinum-cured) 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADFC – Ultra-smooth inner surface minimizes particle entrapment – Very low extractable—ideal for lab, biotech pharma applications 	FH-96445-87 3 m (10 ft)/pk	FH-96445-91 3 m (10 ft)/pk
Puri-Flex™ 	<ul style="list-style-type: none"> – Complies with USP Class VI, FDA, REACH, RoHS, ADFC – Heat sealable, weldable, and economical – Long pump life compared to silicone or many TPE tubings 	FH-96419-87 3 m (10 ft)/pk	FH-96419-91 3 m (10 ft)/pk
C-Flex® 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, REACH, RoHS, ADFC – Heat sealable, weldable, economical – Better resistance to pH fluctuations 	FH-06424-87 3 m (10 ft)/pk	FH-06424-91 3 m (10 ft)/pk
PharMed® BPT 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, FDA, NSF-51, REACH, RoHS – Over 10,000 hours of tubing life, sealable, weldable – Ideal for tissue and cell culture work 	FH-06507-87 3 m (10 ft)/pk	FH-06507-91 3 m (10 ft)/pk
PharmaPure® 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, FDA, REACH, RoHS – Nontoxic and nonhemolytic biocompatible – Long life even under pressure with VERY low spallation 	FH-06437-87 3 m (10 ft)/pk	FH-06437-91 3 m (10 ft)/pk
Chem-Durance® Bio 	<ul style="list-style-type: none"> – Complies with USP Class VI, FDA, REACH, RoHS – Excellent chemical compatibility and biocompatibility – Excellent pump life and durability under pressure 	FH-06443-87 3 m (10 ft)/pk	FH-06443-91 3 m (10 ft)/pk
Tygon® E-LFL 	<ul style="list-style-type: none"> – Complies with USP Class VI, EP, FDA, EU Food, REACH, RoHS, ADFC – Longest life of all Tygon formulations – Broad chemical resistance 	FH-06440-87 3 m (10 ft)/pk	FH-06440-91 3 m (10 ft)/pk
Tygon® E-Food (B-44-4X) 	<ul style="list-style-type: none"> – Complies with FDA, EU Food, NSF-51, 3A, REACH, RoHS, ADFC – Smooth inner surface unaffected by commercial sanitizers – Nontoxic, will not affect taste or odor 	FH-06418-87 3 m (10 ft)/pk	FH-06418-91 3 m (10 ft)/pk
Norprene® Food (A-60-F) 	<ul style="list-style-type: none"> – Complies with FDA, 3A, NSF-51, REACH, RoHS – Ideal for high-temperature food applications – Resists heat, ozone, acids, and alkalis 	FH-06399-87 3 m (10 ft)/pk	FH-06399-91 3 m (10 ft)/pk
GORE® STA-PURE® Series PCS 	<ul style="list-style-type: none"> – Complies with USP Class VI – Excellent flow stability—even under pressures up to 100 psi 	FH-96241-87 0.68 m (27")/pk	FH-96241-91 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



FEATURES

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

MASTERFLEX®

ISO9001:2008
CERTIFIED SUPPLIER

Power supplies are:



rpm	Speed control (repeatability)	Number of channels	Number of rollers	Reversible motor	IP rating	Dimensions—¼ DIN (L x W x H)	Power		Catalog number	Price
							VAC, Hz	Amps		
A. C/L single-channel compact pumps										
1.7 to 10	±5%	1	4	Yes	IP22	7" x 3¼" x 3½" (17.8 x 9.5 x 8.9 cm)	90 to 260, 50/60 12 VDC†	110 mA at 115 VAC	FH-77122-04	
13 to 80			90 to 260, 50/60 12 VDC†				175 mA at 115 VAC	FH-77122-14		
50 to 300			3				90 to 260, 50/60 12 VDC†	400 mA at 115 VAC	FH-77122-24	FH-77122-26
B. C/L digital Microflex pump										
0.1 to 300	±0.1%	1	3	Yes	IP33	8½" x 5½" x 6½" (20.5 x 14 x 15.7 cm)	90 to 260	0.34 at 115 VAC, 0.2 at 230 VAC	FH-77123-00	

†Power supply not included with 12 VDC models.

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

For A models:

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

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

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

For B model:

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

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

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

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

[FH-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	FH-06460-10	—	FH-07625-10	FH-95809-10	FH-06449-10	—	FH-96418-10	FH-95718-10	FH-95712-10
0.25	FH-06460-12	—	FH-07625-12	FH-95809-12	FH-06449-12	—	FH-96418-12	FH-95718-12	FH-95712-12
0.51	FH-06460-18	FH-95590-18	FH-07625-18	FH-95809-18	FH-06449-18	FH-97632-18	FH-96418-18	FH-95718-18	FH-95712-18
0.89	FH-06460-26	FH-95590-26	FH-07625-26	FH-95809-26	FH-06449-26	FH-97632-26	FH-96418-26	FH-95718-26	FH-95712-26
1.14	FH-06460-30	FH-95590-30	FH-07625-30	FH-95809-30	FH-06449-30	FH-97632-30	FH-96418-30	FH-95718-30	FH-95712-30
1.42	FH-06460-34	FH-95590-34	FH-07625-34	FH-95809-34	FH-06449-34	FH-97632-34	FH-96418-34	FH-95718-34	FH-95712-34
2.06	FH-06460-42	FH-95590-42	FH-07625-42	FH-95809-42	FH-06449-42	FH-97632-42	FH-96418-42	FH-95718-42	FH-95712-42
2.79	FH-06460-48	FH-95590-48	FH-07625-48	FH-95809-48	FH-06449-48	FH-97632-48	FH-96418-48	FH-95718-48	FH-95712-48
Length/pk	30.4 m (100 ft)	15.2 m (50 ft)	15.2 m (50 ft)	30.4 m (100 ft)	30.4 m (100 ft)	15.2 m (50 ft)	15.2 m (50 ft)	15.2 m (50 ft)	15.2 m (50 ft)
Price/pk									

Flow Rates in mL/min

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

Reglo Independent Channel Control (ICC) Pumps

Pump each channel at different speeds and directions!

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

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

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



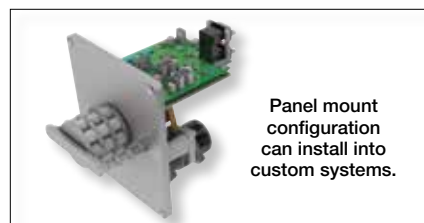
Specifications



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
Benchtop pumps					
2	6	Three-stop	100 to 240, 50/60	FH-78001-58	
	8			FH-78001-60	
	12			FH-78001-62	
3	6	Three-stop	100 to 240, 50/60	FH-78001-68	
	8			FH-78001-70	
	12			FH-78001-72	
4	6	Three-stop	100 to 240, 50/60	FH-78001-78	
	8			FH-78001-80	
	12			FH-78001-82	
Panel-mount pumps					
2	8	Three-stop	100 to 240, 50/60	FH-78001-43	
3	8			FH-78001-45	
4	8			FH-78001-47	
4	12			FH-78001-49	



Panel mount configuration can install into custom systems.

Minicartridges

- [FH-78016-98](#) Replacement Click'n'go™ tubing cassette, POM-C
- [FH-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	FH-78016-00		FH-78016-02		0.003 to 68	FH-78016-42	
	8			0.004 to 57	FH-78016-10		FH-78016-12		0.002 to 57	FH-78017-02	
	12			0.003 to 38	FH-78017-25		FH-78017-27		0.002 to 38	FH-78016-47	
4	6	2.0 to 100	Three-stop	0.003 to 43	FH-78017-30		FH-78017-32		0.002 to 43	FH-78017-42	
	8			0.003 to 35	FH-78016-30		FH-78016-32		0.002 to 35	FH-78017-12	
	12			0.002 to 24	FH-78017-35		FH-78017-37		0.001 to 24	FH-78017-22	

Minicartridges

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

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

[FH-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



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

Specifications

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



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

Order extra cartridges and adapters for fast tubing changes.

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

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

[FH-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		
2.1 to 230 mL/min	1	4	3.2 to 160 rpm	Pump	230 VAC, 50/60 Hz	FH-78018-00	
						FH-78018-02	

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"> Complies with USP Class VI, EP, FDA, EU food, REACH, RoHS, ADF Longest life of all Tygon formulations Broad chemical resistance 	10, 12, 14, 18, 22, 24, 26, 28, 30, 31, 33, 34, 36, 37, 40, 42, 43, 47, 48	12 (16")	FH-96449-12		FH-96450-12		FH-96449-12	100 ft	
Tygon® E-Food	<ul style="list-style-type: none"> Complies with FDA, EU Food, NSF, 2A, REACH, RoHS, ADF Smooth inner surface; nontoxic 	10, 12, 18, 26, 30, 34, 42, 48	12 (16")	FH-96457-12		FH-96458-12		FH-06457-12	100 ft	
Tygon® E-Lab	<ul style="list-style-type: none"> Complies with USP Class VI, FDA, EU Food, NSF, REACH, RoHS, ADF Ideal for general transfer applications Nonaging/nonoxidizing, low gas permeability 	09, 10, 12, 14, 16, 18, 19, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 36, 38, 39, 40, 42, 46, 48, 49	12 (16")	FH-96460-12		FH-96461-12		FH-06460-12	100 ft	
Silicone (peroxide cured)	<ul style="list-style-type: none"> Complies with USP Class VI, EP, FDA, 3A, REACH, RoHS, ADF Greater physical compression capability Economical, long tubing life 	18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	FH-07616-22		FH-07624-22		FH-07625-22	50 ft	
Silicone (platinum cured)	<ul style="list-style-type: none"> Complies with USP Class V, EP, FDA, REACH, RoHS, ADF Low protein binding, fungus-resistant, phthalate and latex free 	22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	6 (16")	FH-95602-22		FH-95603-22		FH-95612-22	50 ft	
Viton®	<ul style="list-style-type: none"> Complies with FDA, ADF Resists corrosives, solvents, and oils at elevated temperatures 	18, 22, 24, 26, 30, 34, 38, 42, 46, 48	12 (12")	FH-97628-22		FH-97629-22		FH-97632-22	50 ft	
PharMed® BPT	<ul style="list-style-type: none"> Complies with USP Class VI, EP, FDA, NSF, REACH, RoHS Over 10,000 hours of tubing life, sealable, weldable 	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	FH-95723-12		FH-95714-12		FH-95809-12	100 ft	
Autoclavable PharMed® BPT	<ul style="list-style-type: none"> Ideal for tissue and cell culture work 	12, 32, 48	6 (16")	FH-95692-12		FH-95693-12				
PVC Solvent/ hydrocarbon	<ul style="list-style-type: none"> Resistant to ozone and UV light Resists to cracking, swelling, hardening Ideal for fuels, distillates, lubricants, and glycol-based coolants 	10, 12, 14, 18, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48	12 (16")	FH-95606-12		FH-95605-12		FH-95712-12	50 ft	
Chem-Durance® Bio	<ul style="list-style-type: none"> Suitable for acetone, MEK, and other highly aggressive chemicals Long life and outstanding fatigue resistance 	14, 18, 24, 26, 30, 34, 36, 42, 48	6 (16")	FH-96327-14		FH-96328-14		None (PharMed BPT recommended for extension tubing; see 95809-XX above)		

STEP 2:

Select the catalog number suffix.

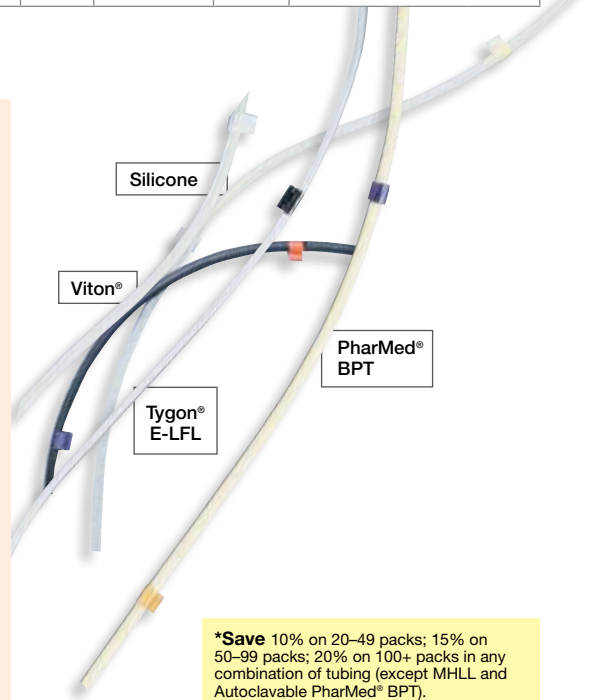
Catalog number suffix	ID (mm)	Color-coded stops
-09	0.13	Orange/Black
-10	0.19	Orange/Red
-12	0.25	Orange/Blue
-14	0.38	Orange/Green
-16	0.44	Green/Yellow
-18	0.51	Orange/Yellow
-19	0.57	White/Yellow
-22	0.64	Orange/White
-24	0.76	Black/Black
-26	0.89	Orange/Orange
-27	0.95	White/Black
-28	1.02	White/White
-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

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.



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).



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	FH-75211-10	
			230	50/60	FH-75211-15	

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.



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	FH-78008-15	

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



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) [†]		Wetted parts		Catalog number	Price
at 50 rpm	at 5000 rpm	Body	Gears		
0.85	85	316 SS	Graphite	FH-07002-25	
4.60	460	316 SS	PEEK	FH-73003-14	
			PPS	FH-07002-14	
13.05	1305	316 SS	PEEK	FH-73004-00	
29.00	2900	316 SS	PEEK	FH-73004-02	
			PPS	FH-07003-02	
58.50	5850	316 SS	PEEK	FH-73004-04	
			PPS	FH-07003-04	

[†]Flow rates based on water at room temperature and no back pressure.



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



Pump continuously and automatically delivers exact quantities of liquid.

Specifications

Accuracy: $\pm < 1\%$
Reproducibility: $\pm 0.1\%$

A. Single-Syringe Infusion Pump

automatically selects display units based on syringe used, obtaining precise flow rates down to 0.2 $\mu\text{L/hr}$. A wide dynamic range (6000:1) provides excellent flexibility.

B. Multi-Syringe Pumps achieve flow rates down to 0.001 $\mu\text{L/hr}$. 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 $\mu\text{L/hr}$. 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!

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

†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	
Catalog number	FH-74931-00	FH-74931-01	FH-74931-20	FH-74931-10	FH-74931-11	FH-74931-12	FH-74931-25	FH-74931-25	FH-74931-30	
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	$\pm 2\%$ of set point			$\pm 3\%$ of set point			$\pm 3\%$ of set point	$\pm 2\%$ of set point	$\pm 2\%$ of set point
	Repeatability	$\pm 1\%$	$\pm 0.2\%$	$\pm 0.5\%$			$\pm 0.5\%$		$\pm 0.2\%$	
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	
Price										

Abaque™ Peristaltic Hose Pumps

Built for your toughest projects

- Produce flow rates to 339 GPM and pressures as high as 217 psi (15 bar)
- Eliminate leaks and product contamination with sealless design
- Handle even your most abrasive, aggressive, viscous, and solid-laden fluids
- Use in demanding applications such as water and wastewater, mining, energy, ceramic, and chemical process

Rugged, low-maintenance Abaque pumps have none of the seats, valves, or mechanical seals that create problems on other pumps—the hose is the only component that needs to be replaced. Order a ready-to-use system below or customize a pump to suit your needs. If your application is moving a more viscous fluid or needs to lift product greater than 29 ft, a vacuum assist kit option is highly recommended.

What's included: flat pack (liquid end), gear box, motor, and natural rubber hose.

NEW



Specifications

Fluid temperature: 32 to 158°F (0 to 70°C) for natural rubber hose
Suction lift: up to 29 ft (8.8m)
Duty cycle: continuous
Run dry: yes
Construction: ductile iron and steel
Power: 208–230/460 VAC, 60 Hz

Configure an Abaque pump with numerous options:

- Vacuum assist kit for highly viscous fluids
- Leak detector
- Pulsation dampener
- Nonmetallic hose inserts: PPH, PVDF
- Hose materials: natural rubber, Buna N, EPDM, CSM

Max flow rate, continuous		Discharge pressure		Max viscosity		Max solid particulate		Max soft particulate		Motor		Catalog number	Price
GPM	L/min	psi	bar	cSt	SSU	in.	mm	in.	mm	hp	rpm		
0.25	0.95	109	7.5	13,000	60,000	0.06	1.5	0.1	2.5	0.33	37	FH-75810-01	
0.44	1.67	109	7.5	13,000	60,000	0.06	1.5	0.1	2.5	0.5	66	FH-75810-02	
0.81	3.07	116	8	30,000	139,000	0.12	3	0.2	5	0.5	37	FH-75810-03	
1.35	5.11	116	8	30,000	139,000	0.12	3	0.2	5	0.5	37	FH-75810-05	
1.61	6.09	116	8	30,000	139,000	0.12	3	0.2	5	1	66	FH-75810-04	
2.42	9.16	116	8	30,000	139,000	0.12	3	0.2	5	1	66	FH-75810-06	
2.79	10.56	217	15	22,000	102,000	0.14	3.7	0.23	6	1	38	FH-75810-07	
4.99	18.89	217	15	22,000	102,000	0.14	3.7	0.23	6	1.5	68	FH-75810-08	
5.88	22.26	217	15	28,000	165,000	0.22	5.7	0.37	9.5	1.5	26	FH-75810-09	
8.4	31.79	217	15	25,000	115,000	0.23	6	0.39	10	2	24	FH-75810-12	
9.73	36.83	217	15	28,000	165,000	0.22	5.7	0.37	9.5	2	43	FH-75810-14	
10.81	40.92	217	15	28,000	165,000	0.22	5.7	0.37	9.5	2	47	FH-75810-11	
19.47	73.69	217	15	28,000	165,000	0.22	5.7	0.37	9.5	3	86	FH-75810-15	
19.6	74.19	217	15	25,000	115,000	0.23	6	0.39	10	3	56	FH-75810-13	
25.43	96.25	217	15	40,000	185,000	0.35	9	0.63	16	10	34	FH-75810-16	
37.4	141.56	217	15	40,000	185,000	0.35	9	0.63	16	10	42	FH-75810-18	
38.14	144.36	217	15	40,000	185,000	0.35	9	0.63	16	10	51	FH-75810-17	
50.74	192.05	217	15	40,000	185,000	0.35	9	0.63	16	10	57	FH-75810-19	

Almatec® Air-Operated Double-Diaphragm Pumps

Maintenance- and lubrication-free air control

E Series Pumps are designed for liquid and slurry transfer in chemical process applications and are available in both PE and PTFE models as well as conductive PTFE (ATEX) versions. **Futur Series Pumps** are designed for more aggressive fluids with versions machined from solid blocks of PTFE (cleaned, assembled, and tested in a cleanroom line). Use the Futur H models for your higher temperature applications up to 390°F (200°C). Numerous pump configurations are available; please call our Application Specialists for assistance.



NEW

75980-02

Model	Max flow GPM (L/min)	Max temp °F (°C)	Max air pressure psi (bar)	Max suction lift ft (m)		Max particle size	Connections	Wetted parts	Catalog number	Price
				Dry	Wet					
E08	4 (15)	212 (100)	100 (7)	3.3 (1)	29.5 (9)	3/32"	1/4" NPT(F)	PTFE housing, diaphragm, and valve balls	FH-75980-00	
								Conductive PTFE housing, diaphragm, and valve balls	FH-75980-02	
E10	6 (23)	212 (100)	100 (7)	6.6 (2)	29.5 (9)	1/8"	3/8" NPT(F)	PTFE housing, diaphragm, and valve balls	FH-75980-04	
								Conductive PTFE housing; PTFE diaphragm and valve balls	FH-75980-06	
E15	15 (55)	158 (70)	100 (7)	9.8 (3)	31.2 (9.5)	5/32"	1/2" NPT(F)	PE housing; EPDM diaphragm and valve balls	FH-75980-08	
								PE housing; PTFE diaphragm and valve balls	FH-75980-10	
Futur10T	2.6 (10)	266 (130)	87 (6)	3.3 (1)	26 (8)	—	3/8" NPT(F)	PTFE-TFM center housing; PE side housing, diaphragm, and valve balls	FH-76980-00	
Futur20T	5.3 (20)			8.2 (2.5)	29.5 (9)				1/2" NPT(F)	FH-76980-02
Futur10H	2.6 (10)	390 (200)	87 (6)	3.3 (1)	26 (8)	—	3/8" NPT(F)	PTFE center housing; conductive PTFE side housing, diaphragm, and valve balls	FH-76980-06	
Futur20H	5.3 (20)			8.2 (2.5)	29.5 (9)				1/2" NPT(F)	FH-76980-08



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.



79204-70

79204-00



230 VAC models only



Free-air capacity cfm (L/min)	Ultimate [†] vacuum	Maximum pressure	Wetted parts	Motor hp	Noise rating	Port size (tube ID)	Power (VAC, Hz)	Catalog number	Price	Service kits	
										Catalog number	Price
Single-head pumps											
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	FH-79204-00		FH-79204-01	
0.67 (19)							230, 50	FH-79204-05			
1.20 (34)	27.2" Hg (70 Torr)	50 psig (3.45 bar)		1/8		1/4"	115, 60	FH-79204-10		FH-79204-11	
0.99 (28)							230, 50	FH-79204-15			
1.60 (45)	27.6" Hg (60 Torr)	100 psig (6.89 bar)		1/4		1/4"	115, 60	FH-79204-20		FH-79204-21	
1.34 (38)							230, 50	FH-79204-25			
Dual-head pumps											
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	FH-79204-30		FH-79204-31	
1.8 (50)							230, 50	FH-79204-35			
7.1 (201)	27.6" Hg (60 Torr)	—		1/3		3/8"	115, 60	FH-79204-70			
5.9 (168)							230, 50	FH-79204-75			

[†]Ultimate total vacuum

[FH-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

ISO 9001:2008
CERTIFIED SUPPLIER



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	
Pump without gauges or regulators (order regulators separately below; order gauges with 1/4" NPT(M) connections online)											
Single	1.1 (31.2)	25.5" Hg	60 psi	Aluminum, stainless steel, Nordel®, and Nomex®	1/8	1/4" NPT(F), 3/8" hose barb on gauges	68 dB(A)	115, 60	FH-07061-21		
	1.0 (28.3)	24.0" Hg	(4.14 bar)					220/240, 50	FH-07061-22		
Pumps with gauges, regulators, and adjustable relief valve											
Single	1.1 (31.2)	25.5" Hg	60 psi	Aluminum, stainless steel, Nordel, and Nomex	1/8	1/4" NPT(F), 3/8" hose barb on gauges	68 dB(A)	115, 60	FH-07061-40		
	1.0 (28.3)	24.0" Hg	(4.14 bar)					220/240, 50	FH-07061-42		
Dual/parallel	2.2 (62.3)	25.5" Hg	60 psi		1/4			115, 60	FH-07061-60		
	1.8 (51.0)	24.0" Hg	(4.14 bar)					220, 50	FH-07061-05		
Pump with vacuum gauge only											
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	FH-07061-11		
	0.85 (24.0)	28.0" Hg						220, 50	FH-07061-13		

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

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

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

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

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

[FH-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	FH-06411-59		FH-95802-00	
1/32 (0.8)	3/32 (2.4)	1/32 (0.8)	30	FH-06411-60		FH-95802-01	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	15	FH-06411-62		FH-95802-02	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	15	FH-06411-63		FH-95802-03	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	10	FH-06411-64		FH-95802-04	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	20	FH-06411-67		FH-95802-05	
1/8 (3.2)	3/8 (9.6)	1/8 (3.2)	25	FH-06411-68		FH-95802-06	
5/32 (4.0)	5/32 (4.0)	1/32 (0.8)	10	FH-06411-65		FH-95802-07	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	9	FH-06411-66		FH-95802-08	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	13	FH-06411-03		FH-95802-09	
3/16 (4.8)	7/16 (11.2)	1/8 (3.2)	22	FH-06411-69		FH-95802-10	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	9	FH-06411-70		FH-95802-11	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	10	FH-06411-71		FH-95802-12	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	17	FH-06411-72		FH-95802-13	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	17	FH-06411-74		FH-95802-14	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	10	FH-06411-75		FH-95802-15	
5/16 (8.0)	1/2 (12.8)	3/32 (2.4)	16	FH-06411-76		FH-95802-16	
5/16 (8.0)	9/16 (14.4)	1/8 (3.2)	20	FH-06411-77		FH-95802-17	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	10	FH-06411-78		FH-95802-18	
3/8 (9.6)	9/16 (14.4)	3/32 (2.4)	12	FH-06411-78		FH-95802-19	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	15	FH-06411-79		FH-95802-20	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	9	FH-06411-80		FH-95802-21	
1/2 (12.8)	11/16 (17.6)	3/32 (2.4)	10	FH-06411-19		FH-95802-22	
1/2 (12.8)	3/4 (19.2)	1/8 (3.2)	12	FH-06411-55		FH-95802-23	
5/8 (16.0)	13/16 (20.8)	3/32 (2.4)	10	FH-06411-82		FH-95802-24	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	12	FH-06411-58		FH-95802-25	
3/4 (19.2)	1 (25.4)	1/8 (3.2)	9	FH-06411-83		FH-95802-26	

Benchtop Tubing Cutter

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

FH-06438-10 Benchtop cutter
FH-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)	FH-06407-70	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	36 (2.5)	FH-06407-71	
1/16 (1.6)	3/16 (4.8)	1/16 (1.6)	69 (4.8)	FH-06407-72	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	25 (1.7)	FH-06407-73	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	20 (1.4)	FH-06407-75	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	36 (2.5)	FH-06407-76	
5/32 (4.0)	7/32 (5.6)	1/32 (0.8)	17 (1.2)	FH-06407-77	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	25 (1.7)	FH-06407-78	
3/16 (4.8)	3/8 (9.6)	3/32 (2.4)	36 (2.5)	FH-06407-79	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	20 (1.4)	FH-06407-80	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	28 (1.9)	FH-06407-81	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	35 (2.5)	FH-06407-82	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	17 (1.2)	FH-06407-83	
5/16 (8.0)	1/2 (12.8)	3/32 (2.4)	23 (1.6)	FH-06407-84	
5/16 (8.0)	9/16 (14.4)	1/8 (3.2)	30 (2.1)	FH-06407-85	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	14 (1.0)	FH-06407-86	
3/8 (9.6)	5/8 (16.0)	3/32 (2.4)	20 (1.4)	FH-06407-87	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	25 (1.7)	FH-06407-88	
7/16 (11.2)	9/16 (14.4)	1/16 (1.6)	13 (0.9)	FH-06407-89	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	12 (1.8)	FH-06407-90	
1/2 (12.8)	11/16 (17.6)	3/32 (2.4)	15 (1.0)	FH-06407-91	
1/2 (12.8)	3/4 (19.1)	1/8 (3.2)	20 (1.4)	FH-06407-92	
1/2 (12.8)	13/16 (20.8)	5/32 (4.0)	24 (1.7)	FH-06407-93	
5/8 (16.0)	13/16 (20.8)	3/32 (2.4)	13 (0.9)	FH-06407-94	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	17 (1.2)	FH-06407-95	
3/4 (19.1)	1 (25.4)	1/8 (3.2)	14 (1.0)	FH-06407-96	
3/4 (19.1)	1 1/8 (28.6)	3/16 (4.8)	20 (1.4)	FH-06407-97	
1 (25.4)	1 1/4 (31.8)	1/8 (3.2)	12 (0.8)	FH-06407-98	
1 (25.4)	1 1/2 (38.1)	1/4 (6.4)	20 (1.4)	FH-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.ca/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.



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

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

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)	FH-96880-00	
1/32 (0.8)	5/32 (4.0)	1/16 (1.6)	40 (2.8)	FH-96880-02	
1/16 (1.6)	3/16 (4.8)	1/16 (1.6)	34 (2.3)	FH-96880-04	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	19 (1.3)	FH-96880-06	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	13 (0.9)	FH-96880-08	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	10 (0.7)	FH-96880-10	
1/4 (6.4)	1/2 (12.8)	1/8 (3.2)	19 (1.3)	FH-96880-12	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	8 (0.6)	FH-96880-14	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	13 (0.9)	FH-96880-16	
1/2 (12.8)	3/4 (19.1)	1/8 (3.2)	11 (0.8)	FH-96880-18	
5/8 (16.0)	7/8 (22.4)	1/8 (3.2)	8 (0.6)	FH-96880-20	
3/4 (19.1)	1 (25.4)	1/8 (3.2)	7 (0.5)	FH-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	FH-95809-12	
0.020 (0.51)	0.096 (2.44)	0.038 (0.97)	24	FH-95809-18	
0.035 (0.89)	0.111 (2.82)	0.038 (0.97)	20	FH-95809-26	
0.045 (1.14)	0.121 (3.07)	0.038 (0.97)	18	FH-95809-30	
0.051 (1.30)	0.127 (3.23)	0.038 (0.97)	18	FH-95809-32	
0.056 (1.42)	0.132 (3.35)	0.038 (0.97)	17	FH-95809-34	
0.060 (1.52)	0.136 (3.45)	0.038 (0.97)	16	FH-95809-36	
0.073 (1.85)	0.149 (3.78)	0.038 (0.97)	15	FH-95809-40	

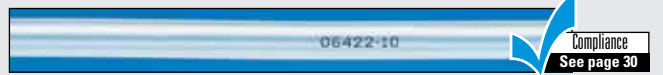
C-Flex® Tubing

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.



Certifications: Meets USP Class VI.
Tubing is manufactured according to GMP.

Temperature range:
-50 to 275°F (-45 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)			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)	1/12 (2.1)	1/32 (0.8)	FH-06424-59	30		FH-06422-00	50				
1/32 (0.8)	3/32 (2.4)	1/32 (0.8)	FH-06424-60	31		FH-06422-01	51				
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	FH-06424-62	15		FH-06422-02	25				
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	FH-06424-63	14		FH-06422-03	23				
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	FH-06424-64	10		FH-06422-04	17				
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	FH-06424-67	21		FH-06422-05	35		FH-06432-50	35	
5/32 (4.0)	7/32 (5.6)	1/32 (0.8)	FH-06424-65	10		FH-06422-06	17				
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	FH-06424-66	9		FH-06422-07	15				
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	FH-06424-03	13		FH-06422-08	22		FH-06432-51	22	
3/16 (4.8)	7/16 (11.2)	1/8 (3.2)	FH-06424-69	22		FH-06422-09	36				
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	FH-06424-71	12		FH-06422-10	20		FH-06432-53	20	
1/4 (6.4)	7/16 (11.2)	3/32 (2.4)	FH-06424-72	17		FH-06422-11	28		FH-06432-54	28	
1/4 (6.4)	1/2 (12.7)	1/8 (3.2)	FH-06424-74	17		FH-06422-12	28		FH-06432-55	28	
3/16 (8.0)	7/16 (11.2)	1/16 (1.6)	FH-06424-75	17		FH-06422-13	17				
5/16 (8.0)	1/2 (12.7)	3/32 (2.4)	FH-06424-76	16		FH-06422-14	27		FH-06432-56	27	
3/8 (9.6)	1/2 (12.7)	1/16 (1.6)	FH-06424-12	10		FH-06422-15	17		FH-06432-57	17	
3/8 (9.6)	5/8 (16.0)	1/8 (3.2)	FH-06424-79	14		FH-06422-16	23		FH-06432-59	23	
1/2 (12.7)	1 1/16 (17.6)	3/32 (2.4)	FH-06424-19	10		FH-06422-17	17		FH-06432-60	17	
1/2 (12.7)	3/4 (19.1)	1/8 (3.2)	FH-06424-81	10		FH-06422-18	17		FH-06432-61	17	

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.

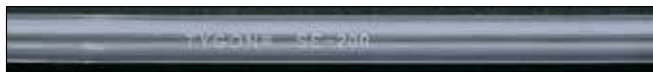
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10% off on 4 to 9 packs



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)	FH-06406-60	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	444 (30.6)	FH-06406-62	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	353 (24.3)	FH-06406-63	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	289 (19.9)	FH-06406-64	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	450 (31.0)	FH-06450-05	
5/32 (4.0)	1/4 (6.4)	3/64 (1.2)	329 (22.7)	FH-06450-04	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	209 (14.4)	FH-06406-66	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	353 (24.3)	FH-06450-06	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	150 (10.3)	FH-06406-72	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	288 (19.9)	FH-06450-07	
19/64 (7.5)	3/8 (9.6)	5/128 (1.0)	172 (11.9)	FH-06450-02	
5/16 (8.0)	3/8 (9.6)	1/32 (0.8)	140 (9.7)	FH-06406-74	
5/16 (8.0)	7/16 (11.2)	1/16 (1.6)	243 (16.8)	FH-06450-08	
3/8 (9.6)	7/16 (11.2)	1/32 (0.8)	110 (7.6)	FH-06406-12	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	210 (14.5)	FH-06450-09	
7/16 (11.1)	1/2 (12.8)	1/32 (0.8)	102 (7.0)	FH-06406-76	
7/16 (11.1)	9/16 (14.3)	1/16 (1.6)	185 (12.8)	FH-06450-14	
1/2 (12.8)	9/16 (14.3)	1/32 (0.8)	88 (6.1)	FH-06406-18	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	165 (11.4)	FH-06450-15	
5/8 (16.0)	11/16 (17.5)	1/32 (0.8)	71 (4.9)	FH-06450-00	
5/8 (16.0)	3/4 (19.2)	1/16 (1.6)	135 (9.3)	FH-06450-17	
11/16 (17.5)	3/4 (19.1)	1/32 (0.8)	65 (4.5)	FH-06450-01	
3/4 (19.2)	7/8 (22.2)	1/16 (1.6)	115 (7.9)	FH-06450-19	

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.

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 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)	FH-95713-50	
1/8 (3.2)	1/4 (6.4)	1/16 (1.5)	85 (5.9)	FH-95713-00	
3/16 (4.8)	5/16 (8.0)	1/16 (1.5)	75 (5.2)	FH-95713-10	
1/4 (6.4)	3/8 (9.6)	1/16 (1.5)	55 (3.8)	FH-95713-20	
3/8 (9.6)	5/16 (14.4)	3/32 (2.3)	50 (3.4)	FH-95713-30	
1/2 (12.8)	3/4 (19.1)	1/8 (3.1)	45 (3.1)	FH-95713-41	
3/4 (19.0)	1 (25.4)	1/8 (3.1)	30 (2.1)	FH-95713-60	

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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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			
Ultramicrobore PTFE tubing (finer than a human hair)					
0.002"	0.014"	0.006"	44	FH-06417-70	
0.004"	0.016"	0.006"	38	FH-06417-72	
0.006"	0.016"	0.005"	34	FH-06417-74	
0.008"	0.016"	0.004"	33	FH-06417-76	
Microbore PTFE tubing					
0.012"	0.030"	0.009"	30	FH-06417-11	
0.022"	0.042"	0.010"	24	FH-06417-21	
0.032"	0.056"	0.012"	21	FH-06417-31	
0.042"	0.066"	0.012"	18	FH-06417-41	
0.052"	0.076"	0.012"	16	FH-06417-51	

FH-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.

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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)	FH-06407-41	
1/16 (1.6)	1/8 (3.2)	1/32 (0.8)	370 (25.5)	FH-06605-27	
3/32 (2.4)	5/32 (4.0)	1/32 (0.8)	294 (20.3)	FH-06605-28	
1/8 (3.2)	3/16 (4.8)	1/32 (0.8)	240 (16.5)	FH-06605-29	
1/8 (3.2)	1/4 (6.4)	1/16 (1.6)	375 (25.9)	FH-06605-30	
5/32 (4.0)	1/4 (6.4)	3/64 (1.2)	274 (18.9)	FH-06605-31	
3/16 (4.8)	1/4 (6.4)	1/32 (0.8)	175 (12.1)	FH-06605-32	
3/16 (4.8)	5/16 (8.0)	1/16 (1.6)	294 (20.3)	FH-06605-33	
1/4 (6.4)	5/16 (8.0)	1/32 (0.8)	137 (9.4)	FH-06605-34	
1/4 (6.4)	3/8 (9.6)	1/16 (1.6)	240 (16.5)	FH-06605-35	
19/64 (7.5)	3/8 (9.6)	1/25 (1.0)	143 (9.9)	FH-06605-36	
5/16 (8.0)	3/8 (9.6)	1/32 (0.8)	113 (7.8)	FH-06605-37	
3/8 (9.6)	7/16 (11.2)	1/32 (0.8)	96 (6.6)	FH-06605-39	
3/8 (9.6)	1/2 (12.8)	1/16 (1.6)	175 (12.1)	FH-06605-40	
25/64 (10.2)	1/2 (12.8)	1/20 (1.4)	137 (9.4)	FH-06605-41	
7/16 (11.2)	1/2 (12.8)	1/32 (0.8)	83 (5.7)	FH-06605-42	
1/2 (12.8)	9/16 (14.3)	1/32 (0.8)	73 (5.0)	FH-06605-44	
1/2 (12.8)	5/8 (16.0)	1/16 (1.6)	137 (9.4)	FH-06605-45	
9/16 (14.3)	5/8 (16.0)	1/32 (0.8)	66 (4.6)	FH-06605-46	
5/8 (16.0)	11/16 (17.5)	1/32 (0.8)	59 (4.1)	FH-06605-48	
1/2 (16.0)	3/4 (19.2)	1/16 (1.6)	113 (7.8)	FH-06605-49	
3/4 (19.2)	7/8 (22.2)	1/16 (1.6)	96 (6.6)	FH-06605-51	

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.



[FH-06438-90](#) Handheld tubing cutter

[FH-06438-81](#) Carrying pouch

[FH-06438-92](#) 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"	FH-06403-11	
11/16"	1 1/4"	FH-06403-12	
13/16"	1 3/4"	FH-06403-13	
1 1/16"	2"	FH-06403-14	
1 5/16"	2 1/4"	FH-06403-15	
2"	2 3/4"	FH-06403-16	
2 3/4"	3 1/2"	FH-06403-21	
3 1/2"	4 3/8"	FH-06403-22	
4 3/8"	5 1/8"	FH-06403-23	
5 1/8"	5 7/8"	FH-06403-24	
5 1/2"	6 1/4"	FH-06403-25	

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

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	FH-06832-01	100	
0.269	0.291	6.8	7.4	FH-95614-00	100	
0.307	0.342	7.8	8.7	FH-06832-03	100	
0.351	0.394	8.9	10.0	FH-06832-02	100	
0.387	0.440	9.8	11.2	FH-95614-01	100	
0.404	0.452	10.3	11.5	FH-06832-04	100	
0.449	0.511	11.4	13.0	FH-06832-06	100	
0.513	0.586	13.0	14.9	FH-06832-08	100	
0.569	0.650	14.5	16.5	FH-06832-10	100	
0.616	0.707	15.7	18.0	FH-06832-12	100	
0.702	0.801	17.8	20.4	FH-06832-14	100	
0.759	0.848	19.3	21.5	FH-06832-16	100	
0.779	0.899	19.8	22.8	FH-06832-18	100	
0.859	0.989	21.8	25.1	FH-06832-20	100	
0.928	1.072	23.6	27.2	FH-06832-22	100	
0.985	1.135	25.0	28.8	FH-06832-24	100	
1.123	1.296	28.5	32.9	FH-06832-28	50	
1.218	1.405	30.9	35.7	FH-06832-32	50	

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

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

Need Single-Use Products?

We've got your entire fluid handling process covered.

Masterflex® Drives Powering Quattroflow™ Pump Systems



See page 9

Masterflex® Ultrasonic Flow Sensors



See page 12

PendoTECH Single-Use Temperature and Pressure Sensors



See online

Cole-Parmer® Pulseless Disposable Pump Head



See online

Masterflex® Straight and Reducing Connectors



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See more at ColeParmer.ca

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

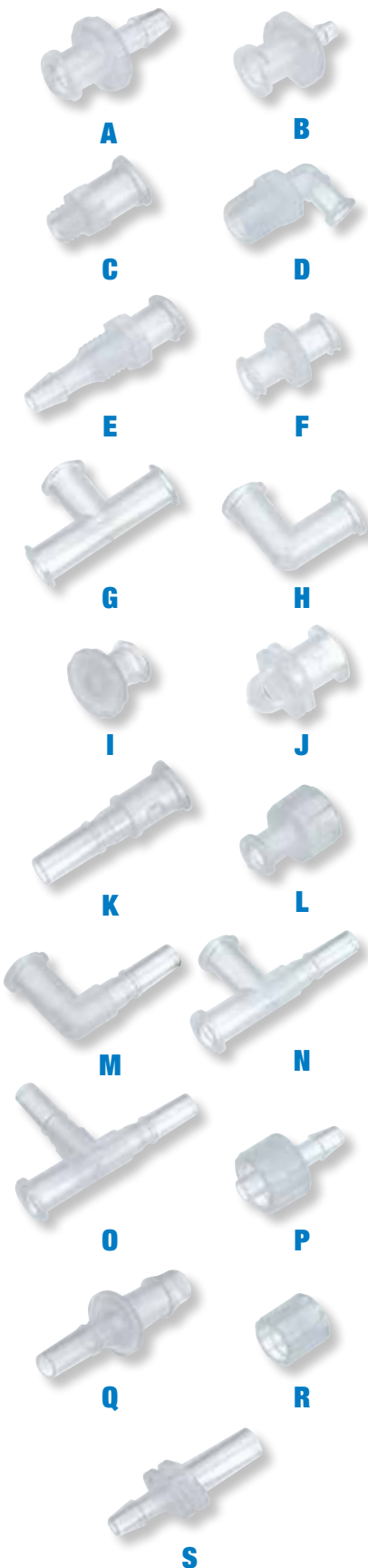
These luer fittings are ideal for a variety of applications, including syringes or small tubing. Manufactured in compliance with ISO 594-1 standards, these fittings are inspected to be free from contaminants, and are fully traceable. All parts meet tight dimensional tolerances for increased reliability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



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For our complete line of luer fittings, go to...
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 15% off on 50 to 99
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Key	Description	Polypropylene		Polycarbonate		Nylon	
		Cat. no.	Price/pk	Cat. no.	Price/pk	Cat. no.	Price/pk
Female luer x hose barb adapters							
A	Female luer x 1/16" hose barb	FH-45508-00		FH-45501-00		FH-45502-00	
	Female luer x 3/32" hose barb	FH-45508-02		FH-45501-02		FH-45502-02	
	Female luer x 1/8" hose barb	FH-30800-08		FH-45501-04		FH-45502-04	
	Female luer x 3/32" hose barb	FH-45508-06		FH-45501-06		FH-45502-06	
	Female luer x 3/16" hose barb	FH-45508-08		FH-45501-08		FH-45502-08	
	Female luer x 1/4" hose barb	FH-30800-06		FH-45501-20		FH-45502-20	
Female luer x hose barb adapters (smooth bore)							
B	Female luer x 1/16" hose barb (smooth bore)	FH-45508-50		FH-45501-50		FH-45502-50	
	Female luer x 3/32" hose barb (smooth bore)	FH-45508-52		FH-45501-52		FH-45502-52	
	Female luer x 1/8" hose barb (smooth bore)	FH-45508-54		FH-45501-54		FH-45502-54	
Female luer x thread adapters							
C	Female luer x 10-32 special tapered thread	FH-45508-70		FH-45501-70		FH-45502-70	
	Female luer x 10-32 UNF thread	FH-45508-60		FH-45501-60		FH-45502-60	
	Female luer x 1/4-28 UNF thread	FH-45508-66		FH-45501-66		FH-45502-66	
	Female luer x 1/4-28 UNF bottom sealing thread	FH-45508-76		—	—	FH-45505-76	
	Female luer x 1/8-27 NPT thread	FH-30800-00		—	—	FH-45505-78	
D	Female luer x 1/8-27 NPT thread elbow	FH-45518-80		—	—	FH-45505-80	
Female luer bulkhead x hose barb adapters							
E	Female luer x 1/4-28 UNF thread to 1/16" hose barb	FH-45508-30		FH-45501-30		FH-45502-30	
	Female luer x 1/4-28 UNF thread to 3/32" hose barb	FH-45508-32		FH-45501-32		FH-45502-32	
	Female luer x 1/4-28 UNF thread to 1/8" hose barb	FH-45508-34		FH-45501-34		FH-45502-34	
Female adapters							
F	Female luer x female luer	FH-45508-22		FH-45501-22		FH-45502-22	
G	Female tee	FH-45508-56		FH-45501-56		FH-45502-56	
H	Female elbow	FH-45508-26		FH-45501-26		FH-45502-26	
I	Female luer x cap	FH-30800-12		FH-45501-28		FH-45502-28	
J	Female luer x cap with tether loop	FH-45508-64		FH-45501-64		FH-45502-64	
Male x female adapters							
K	Male luer x female luer coupler	FH-45508-82		FH-45501-82		FH-45502-82	
L	Male luer x female luer coupler with lock ring	FH-45508-80		FH-45501-80		FH-45502-80	
M	Male luer x female luer elbow	FH-45508-84		FH-45501-84		FH-45502-84	
N	Male x female x female tee	FH-45508-85		FH-45501-85		FH-45502-85	
O	Male x male x female tee	FH-45508-75		FH-45501-75		FH-45502-75	
Male luer lock x hose barb adapters							
P	Male luer lock x 1/16" hose barb	FH-45518-00		FH-45504-00		FH-45505-00	
	Male luer lock x 3/32" hose barb	FH-45518-02		FH-45504-02		FH-45505-02	
	Male luer lock x 1/8" hose barb	FH-30800-24		FH-45504-04		FH-45505-04	
	Male luer lock x 3/32" hose barb	FH-45518-06		FH-45504-06		FH-45505-06	
	Male luer lock x 3/16" hose barb	FH-45518-08		FH-45504-08		FH-45505-08	
	Male luer lock x 1/4" hose barb	FH-30800-22		FH-45504-19		FH-45505-19	
Male luer x hose barb adapters (for use with separate rotating lock ring "R")							
Q	Male luer x 1/16" hose barb	FH-45518-40		FH-45504-40		FH-45505-40	
	Male luer x 3/32" hose barb	FH-45518-42		FH-45504-42		FH-45505-42	
	Male luer x 1/8" hose barb	FH-45518-44		FH-45504-44		FH-45505-44	
	Male luer x 3/32" hose barb	FH-45518-46		FH-45504-46		FH-45505-46	
	Male luer x 3/16" hose barb	FH-45518-48		FH-45504-48		FH-45505-48	
	Male luer x 1/4" hose barb	FH-45518-50		FH-45504-50		FH-45505-50	
R	Snap luer lock ring	FH-45518-74		FH-45504-74		FH-45505-74	
Male slip luer x hose barb adapters (no lock ring)							
S	Male luer x 1/16" hose barb	FH-45518-22		FH-45504-22		FH-45505-22	
	Male luer x 3/32" hose barb	FH-45518-24		FH-45504-24		FH-45505-24	
	Male luer x 1/8" hose barb	FH-45518-26		FH-45504-26		FH-45505-26	
	Male luer x 3/32" hose barb	FH-45518-28		FH-45504-28		FH-45505-28	
	Male luer x 3/16" hose barb	FH-45518-52		FH-45504-52		FH-45505-52	
	Male luer x 1/4" hose barb	FH-45518-54		FH-45504-54		FH-45505-54	



Cole-Parmer® Barbed Fittings

No tools needed for assembly

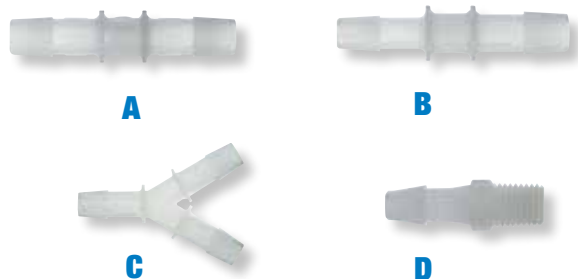
Combine these fittings with our flexible tubing for use in your low-pressure applications (less than 30 psi).

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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Fluid Handling

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

Fittings connect in a snap

- Acetal fittings are ideal for use with corrosive fluids
- Polycarbonate and polysulfone materials meet USP Class VI requirements

Simply press the thumb latch to disconnect coupling halves. Polycarbonate and polysulfone materials meet USP Class VI requirements and pass all physicochemical, cytotoxicity, leachables, and extractables tests. Order complete couplings or separate bodies and inserts from the tables below.

Note: Standard bodies and inserts fit together; won't work with large bodies and inserts and vice versa.



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 10% off on 10 to 49 packs

Specifications

Body material	Acetal	Polycarbonate (PC)	Polysulfone (PSF)
Temperature range	-40 to 180°F (-40 to 82°C)	-40 to 250°F (-40 to 121°C)	-40 to 300°F (-40 to 148°C)
Max pressure	120 psi	125 psi†	120 psi
Max vacuum	28" Hg	25" Hg	25" Hg
Sterilization	Autoclave or EtO	Autoclave, EtO, or gamma irradiation	Autoclave, EtO, or gamma irradiation

†Max pressure for 1/2" polycarbonate fittings is 60 psi.

Fluid Handling

Fittings



Complete Couplings

Key	Size	Material	Length	Catalog number	Qty/pk	Price/pk
A	1/4" tubing ID	Acetal	—	FH-06360-90	10	
		PC	—	FH-31305-00	10	
	3/8" tubing ID	Acetal	—	FH-06360-91	10	
		PC	—	FH-31305-05	10	
		PSF	—	FH-31306-05	10	

Standard Bodies and Caps

Key	Size	Material	Length	Catalog number	Qty/pk	Price/pk
Barbed bodies						
B	1/4" tubing ID	Acetal	1.31" (33.3 mm)	FH-06360-94	10	
		PC		FH-31311-11	5	
		PSF		FH-31311-21	5	
	3/8" tubing ID	Acetal	1.31" (33.3 mm)	FH-06360-95	10	
PC		FH-31311-12		5		
PSF		FH-31311-22		5		
Hose barb coupling bodies with lock						
C	1/4" tubing ID	PC	1.31" (33.3 mm)	FH-31311-16	5	
		PSF		FH-31311-26	5	
	3/8" tubing ID	PC	1.31" (33.3 mm)	FH-31311-17	5	
		PSF		FH-31311-27	5	
BSP straight-through bodies						
D	1/4" BSP	Acetal	1.31" (33.3 mm)	FH-06360-01	10	
	3/8" BSP			FH-06360-02	10	
NPT(M) bodies						
E	1/4" NPT	Acetal	1.31" (33.3 mm)	FH-06360-00	10	
	3/8" NPT			FH-06360-96	10	
Compression coupling bodies						
F	1/4" OD	Acetal	1.31" (33.3 mm)	FH-06360-06	10	
	3/8" OD			FH-06360-08	10	
Sealing caps						
G	1/4"	PC	1.31" (33.3 mm)	FH-31311-64	5	
	1/4"	PSF		FH-31311-74	5	
Sealing caps with lock						
H	1/4"	PC	1.31" (33.3 mm)	FH-31311-64	5	
	1/4"	PSF		FH-31311-74	5	

Standard Inserts and Plugs

Key	Size	Material	Length	Catalog number	Qty/pk	Price/pk
Barbed inserts						
I	1/4" tubing ID	Acetal	1.28" (32.5 mm)	FH-06360-92	10	
		PC		FH-31311-61	5	
		PSF		FH-31311-71	5	
	3/8" tubing ID	Acetal	1.28" (32.5 mm)	FH-06360-93	10	
		PC		FH-31311-62	5	
		PSF		FH-31311-72	5	
BSP straight-through inserts						
J	1/4" BSP	Acetal	1.28" (32.5 mm)	FH-06360-27	10	
	3/8" BSP			FH-06360-97	10	
NPT(M) inserts						
K	1/4" NPT	Acetal	1.28" (32.5 mm)	FH-06360-16	10	
	3/8" NPT			FH-06360-18	10	
Compression coupling inserts						
L	1/4" OD	Acetal	1.28" (32.5 mm)	FH-06360-21	10	
	3/8" OD			FH-06360-24	10	
Sealing caps						
M	1/4" OD	Acetal	1.28" (32.5 mm)	FH-06360-31	10	
	3/8" OD			FH-06360-34	10	
Plugs with lock						
N	1/4"	PC	1.20" (30.5 mm)	FH-31311-68	5	
	1/4"	PSF		FH-31311-78	5	

Large Bodies and Inserts (use these bodies and inserts together)

Key	Size	Material	Length	Catalog number	Qty/pk	Price/pk
Barbed bodies						
O	1/2" tubing ID	PC	1.96" (49.8 mm)	FH-31311-13	5	
		PSF		FH-31311-23	5	
Hose barb coupling bodies with lock						
P	3/8" tubing ID	PC	1.96" (49.8 mm)	FH-31311-18	5	
		PSF		FH-31311-28	5	
Barbed inserts						
Q	1/2" tubing ID	PC	1.90" (48.3 mm)	FH-31311-63	5	
		PSF	1.40" (35.6 mm)	FH-31311-73	5	



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



PTFE Filters

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

Glass Prefilters with Final Filter

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

Nylon Filters

Pore size	Membrane dia	Housing	Color	Qty/bx	Catalog number	Price/bx
Nonsterile filters						
0.22 µm	25 mm	PP	Natural	100	FH-02915-16	
0.45 µm					FH-02915-14	
Sterile filters						
0.20 µm	25 mm	PP	Red	50	FH-02915-04	
0.45 µm			Natural		FH-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 ²)		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 ₂ 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	FH-06639-25		FH-06639-28		FH-06639-31		FH-06639-34		FH-06639-41		FH-36230-81	
0.20	54.5	0.018	2.4	FH-06639-01		FH-06639-05		FH-06639-11		FH-06639-35		FH-06639-17		FH-36230-82	
0.45	35.0	0.045	3.7	FH-06639-02		FH-06639-06		FH-06639-14		FH-06639-36		FH-06639-18		FH-36230-83	
0.80	16.4	0.165	15.0	FH-06645-30		FH-06645-32		FH-06645-34		FH-06645-36		FH-06645-38		FH-36230-84	
1.00	13.9	0.220	20.4	FH-06639-47		FH-06639-49		FH-06639-51		FH-06639-55		FH-06639-53		FH-36230-85	
3.00	10.2	0.300	28.3	FH-06639-26		FH-06639-29		FH-06639-32		FH-06639-39		FH-06639-42		FH-36230-86	
5.00	8.5	0.400	40.9	FH-06639-27		FH-06639-30		FH-06639-33		FH-06639-40		FH-06639-43		FH-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	FH-06623-32	6	
In-line	47 mm	FH-06623-22	1	

[FH-02930-95](#) Support screen, 25 mm. Pack of 8

[FH-06645-90](#) Support screen, 47 mm. Pack of 4

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



ISO9001:2008
CERTIFIED SUPPLIER



Description		EcoTestr (CTS) Con/TDS/Salinity
Catalog number		FH-35462-11
Range	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)
Resolution	Conductivity	10 µS, 0.1 mS
	TDS	10 ppm, 0.1 ppt
	Salinity	0.1 ppt
	Temperature	0.1°F (0.1°C)
Accuracy	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
Calibration		Single point
Temperature compensation		Automatic
Power		Four 1.5 V miniature batteries (included)
Price		

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



ISO9001:2008
CERTIFIED SUPPLIER



Model	CTSTestr 50P (pin-style sensor)	CTSTestr 50C (cup-style sensor)
Catalog number		FH-35634-55 FH-35634-65
Range	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)
Accuracy		±1% full-scale (conductivity, TDS, and salinity)
Calibration		Up to 3 points (conductivity and TDS); 1 point (salinity)
TDS factor		0.40 to 1.00 (selectable)
Temperature compensation		Automatic
Power		Four AAA 1.5 V batteries (included)
Price		

Oakton® Waterproof CON 150 Meter

Get more for your money

- Best value for an IP67-rated waterproof meter
- 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
- Versatile power supply—battery or AC



Rugged, waterproof housing is ideal for use in any environment. View more data simultaneously with large, three-line LCD providing conductivity or TDS measurement with temperature. Get faster calibration with auto-ranging and auto-cal functions for one calibration point per measurement range.

Features include adjustable conductivity-to-TDS factor, selectable temperature coefficient, ready (stability) indicator, smart averaging, hold function, calibration alarm (visible), battery life indicator, and probe status.

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



ISO9001:2008
CERTIFIED SUPPLIER



Meter only

Description		CON 150 meter with probe	CON 150 meter kit
Catalog number		FH-35607-32	FH-35607-90
Precalibrated cat. no.		FH-35607-34	FH-35607-91
Range	Conductivity	0 to 200 mS	
	TDS	0 to 200 ppt	
	Temperature	–17.0 to 230.0°F (–10.0 to 110.0°C)	
Resolution	Conductivity	0.01 µS to 0.1 mS	
	TDS	0.01 ppm to 0.1 ppt	
	Temperature	0.1°F/°C	
Accuracy	Conductivity	±1% full-scale	
	TDS	±1% full-scale	
	Temperature	±0.9°F (±0.5°C)	
Calibration	Conductivity	Auto/manual; 1 point/range	
	TDS	Auto/manual; 1 point/range	
	Temperature	Offset 0.1 increments	
Temperature compensation		Automatic or manual from –10 to 110°C	
Conductivity-to-TDS factor		0.4 to 1.0	
Data logging		Stores up to 150 data sets	
Power		Two AA batteries (included); universal power adapter (optional)	
Price			
Precalibrated price			

FH-35608-55 Conductivity cell, K = 0.1

FH-35608-50 Replacement conductivity cell, K = 1.0

FH-35608-51 Conductivity cell, K = 10

FH-35614-51 Hard carrying case

FH-35420-72 Optional power adapter, 110/220 VAC

FH-17090-30 NIST-traceable calibration with data for conductivity meter



Oakton® Waterproof EcoTestr™ pH2+ Pocket Tester

Better results—
easier and faster

NEW

- Large dual-line display shows pH and temperature readings simultaneously
- Automatic temperature compensation ensures accuracy
- 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



OAKTON CE IP 67

Model		EcoTestr pH2+
Catalog number		FH-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	±0.1 pH
	Temperature	±0.9°F (0.5°C) + 1 LSD
		Up to 3 points
Calibration		Automatic
Temperature compensation		USA, NIST
Buffer recognition		Four 1.5 V miniature alkaline batteries (included)
Power		
Price		

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.

Oakton® pHTestr® 50 Pocket Tester

Get the performance of a
lab instrument in the field

NEW

- High ±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-use interface
- Recessed, glass pH bulb protects against breakage
- Leakproof, stable cap—use to calibrate, stand upright, and store sensor



OAKTON ISO9001:2008 CERTIFIED SUPPLIER CE IP 67

Model		pHTestr 50
Catalog number		FH-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	±0.01 pH
	Temperature	±0.9°F (0.5°C) + 1 LSD from 32 to 122°F (0 to 50°C); ±1.8°F (1.0°C) + 1 LSD from 122 to 140°F (50 to 60°C)
		Up to 3 points
Calibration		Automatic, 32 to 140°F (0 to 60°C)
Temperature compensation		USA 4.01, 7.00, 10.01; NIST 4.01, 6.86, 9.18
Buffer recognition		Four AAA 1.5 V batteries (included)
Power		
Price		

OAKTON ISO9001:2008 CERTIFIED SUPPLIER TUV GS CE IP 67 Meter only

Description	Meter only	Meter with probe	Meter kit
Model		pH 150	
Catalog number	FH-35614-32	FH-35614-30	FH-35614-90
Precalibrated cat. no.	FH-35614-34	FH-35614-33	FH-35614-91
Range	pH	-2.00 to 16.00	
	mV	±2000 mV	
	Temperature	-17.0° to 230.0° F (-10.0° to 110.0°C)	
Resolution	pH	0.01	
	mV	0.1 mV ±999.9 mV; 1 mV beyond	
	Temperature	0.1°F/°C	
Accuracy	pH	±0.01	
	mV	±0.2 mV ±2 LSD or ±0.5% of reading; whichever is greater	
	Temperature	±0.9°F (±0.5°C)	
Calibration	pH	Up to 6 points: USA, NIST, DIN	
	mV	±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 adapter (optional)		
Price			
Precalibrated price			

FH-35634-15 Replacement "All-in-One" combination pH electrode with built-in ATC; single-junction, epoxy body, BNC connector

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

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

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

FH-35420-72 Optional power adapter, 110/220 VAC

FH-09376-01 Replacement batteries, AA. Pack of 4

FH-17106-20 NIST-traceable calibration with data for pH meter

Electrochemistry

pH/ion

Cole-Parmer® Symmetry® LT Precision Toploading and LA Analytical Balances

Quality and precision at an affordable price

- Large, backlit LCD provides clear visibility of weighing results
- Get secure data connections via USB, RS-232, Ethernet, and Wi-Fi interfaces
- Easily adjust filter settings depending on your working environment
- Multiple working modes handle a variety of weighing functions
- Fast stabilization and response time
- Quickly diagnose weighing errors with autotest GLP function
- Industry-leading 5-year warranty

Easy to operate, these rugged balances feature a large, backlit LCD providing a clear presentation of the weighing results. Choose from internal calibration for quick and easy accuracy checks or external calibration with the use of a calibration weight.

To achieve the best possible weighing conditions, the balances feature a filter level setting that can be adjusted to a fast or slow mode depending on the working environment.

Working modes include weighing, parts counting, check weighing, dosing, percent weighing, density of solids, density of liquids, animal weighing, statistics, totalizing, and peak hold. Other features include quick access keys, balance taring, balance zeroing, auto switch-off, and backlight turn-off time.

Several built-in databases allow you to record users, products, weighings, and tares. Only users with appropriate access can adjust balance settings, export data, import data, and delete records. Use the simple external connections to a computer or printer for GLP/GMP-compliant output. The autotest GLP function provides an enhanced balance summary to aid in assessing operation and diagnosing reasons for occurrence of errors in weighing.

Specifications

Weighing units: g, mg, kg, ct, lb, oz, ozt, dwt, t/h, t/s, tit, tic, mom, gr, N, ti, baht, tola, msg, u1, u2

Stability indicator: yes

Output: RS-232 (2), USB-A, USB-B, Ethernet, and Wi-Fi (internal cal only)

Power: 100/240 VAC, 50/60 Hz



NEW

Symmetry®



10102-23



10102-27

NTEP-approved models are available online.

Capacity	Readability	Repeatability	Linearity	Pan size	Internal calibration and Wi-Fi interface		External calibration	
					Catalog number	Price	Catalog number	Price
LT toploading balances								
360 g	0.001 g	±0.002 g	±0.002 g	5 1/16" x 5 1/16" (12.8 x 12.8 cm)	FH-10102-27	—	FH-10102-37	—
600 g		±0.003 g	±0.003 g		FH-10102-28	—	FH-10102-38	—
1200 g	0.01 g	±0.02 g	±0.02 g	7 11/16" x 7 11/16" (19.5 x 19.5 cm)	FH-10102-29	—	FH-10102-39	—
2100 g		±0.02 g	±0.02 g		FH-10102-30	—	FH-10102-40	—
4500 g		±0.02 g	±0.02 g		FH-10102-31	—	FH-10102-41	—
6000 g		±0.03 g	±0.03 g		FH-10102-32	—	FH-10102-42	—
LA analytical balances								
62 g	0.0001 g	±0.00003 g	±0.00006 g	3 3/16" (9 cm)	—	—	FH-10102-33	—
82/220 g	0.00001/0.0001 g	±0.0001 g	±0.0002 g	3 15/16" (10 cm)	FH-10102-23	—	—	—
160 g	0.0001 g	±0.0001 g	±0.0002 g		FH-10102-24	—	FH-10102-34	—
220 g					FH-10102-25	—	FH-10102-35	—
310 g					FH-10102-26	—	FH-10102-36	—

[†]Includes short open-air draft shield.

[‡]Includes tall enclosed glass draft shield with three doors.

[FH-10100-83](#) Cable, RS-232 to USB

[FH-10100-84](#) Cable, RS-232 to printer

[FH-10100-85](#) Printer

[FH-10100-86](#) Printer paper. Pack of 3

[FH-10100-88](#) Density determination kit for models 10102-27, -28, -37, and -38

[FH-10100-87](#) Density determination kit for analytical models

[FH-10100-90](#) Lock-down cable, 36"L x 3/32" dia (91.4 x 0.3 cm)

[FH-10100-93](#) Draft shield for models 10102-27, -28, -37, and -38

[FH-01017-04](#) Square weigh boats, white polystyrene, 20 mL. Pack of 100

[FH-17101-52](#) NIST-traceable calibration with data for balances



Cole-Parmer® Polystat® Cooling/Heating Circulating Baths

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 five programmable set points, 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
Standard digital controller baths										
6.5 L	-20 to 100°C	±0.05°C	250 W	Force	4.4 (310)	17	5 ⁵ / ₁₆ " x 4 ¹³ / ₁₆ " x 5 ⁷ / ₈ " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	FH-12122-02 FH-12122-04	
8.6 L	-28 to 100°C	±0.05°C	500 W	Force	4.4 (310)	17	6 ¹³ / ₁₆ " x 7 ³ / ₁₆ " x 5 ⁷ / ₈ " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	FH-12122-32 FH-12122-34	
8.6 L	-28 to 150°C	±0.05°C	500 W	Force	4.4 (310)	17	6 ¹³ / ₁₆ " x 7 ³ / ₁₆ " x 5 ⁷ / ₈ " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	FH-12122-36 FH-12122-38	
Advanced digital controller baths										
6.5 L	-20 to 100°C	±0.025°C	250 W	Force/suction	11.7 (750)	21	5 ⁵ / ₁₆ " x 4 ¹³ / ₁₆ " x 5 ⁷ / ₈ " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	FH-12122-12 FH-12122-14	
6.5 L	-20 to 100°C	±0.025°C	250 W	Force/suction	11.7 (750)	21	5 ⁵ / ₁₆ " x 4 ¹³ / ₁₆ " x 5 ⁷ / ₈ " (13.5 x 12.2 x 15 cm)	115, 60 230, 50	FH-12122-26 FH-12122-28	
8.6 L	-28 to 200°C	±0.025°C	500 W	Force/suction	11.7 (750)	21	6 ¹³ / ₁₆ " x 7 ³ / ₁₆ " x 5 ⁷ / ₈ " (17.3 x 18.3 x 15 cm)	115, 60 230, 50	FH-12122-42 FH-12122-44	
8.6 L	-35 to 200°C	±0.025°C	800 W	Force/suction	11.7 (750)	21	6 ¹³ / ₁₆ " x 7 ³ / ₁₆ " x 5 ⁷ / ₈ " (17.3 x 18.3 x 15 cm)	115, 60 [†] 230, 50 [†]	FH-12122-56 FH-12122-58	

[†]Requires 20 amp current.

Cole-Parmer® StableTemp® Digital Utility Water Baths

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
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 ⁷ / ₈ " x 4 ⁹ / ₁₆ "	5 ¹ / ₂ "	FH-14576-00		FH-14576-02	
5 L	5" x 10 ¹³ / ₁₆ "	5 ¹ / ₂ "	FH-14576-04		FH-14576-06	
10 L	10 ⁹ / ₁₆ " x 11 ¹ / ₈ "	5 ¹ / ₂ "	FH-14576-08		FH-14576-10	
20 L	9 ¹ / ₂ " x 17 ¹ / ₂ "	5"	FH-14576-12		FH-14576-14	
28 L	9 ¹ / ₂ " x 17 ¹ / ₂ "	7"	FH-14576-16		FH-14576-18	

Cole-Parmer® elements™ Volumetric Flasks, Glass

Quality borosilicate 3.3 glass

- White easy-read marking for volume
- Calibrated "To Contain" (IN) by DIN at 20°C
- Withstands wide temperature range -50 to 550°C; autoclavable
- Tight tolerances from ±0.015 to ±1.2 depending on size
- With glass pennyhead stoppers

NEW



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

Capacity (mL)	Tolerance (mL)	Catalog number	Qty/pk	Price/pk
2	±0.015	FH-34502-77	10	
5	±0.02	FH-34502-78		
10	±0.025	FH-34502-79	2	
20	±0.030	FH-34502-80		
25	±0.04	FH-34502-81		
50	±0.05	FH-34502-82		
100	±0.1	FH-34502-83		
200	±0.15	FH-34502-84	2	
250	±0.15	FH-34502-85		
500	±0.2	FH-34502-86		
1000	±0.4	FH-34502-87	1	
2000	±0.6	FH-34502-88		
5000	±1.2	FH-34502-89		

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

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 zero, 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	FH-50009-00	



Accessories

- [FH-50019-94](#) Stainless steel plate mount
- [FH-50019-95](#) Replacement screen protector kit
- [FH-50019-96](#) Stainless steel multiposition C-clamp set
- [FH-50019-97](#) Replacement stainless steel chuck with key, 16-mm shaft diameter
- [FH-50019-98](#) Replacement chuck shaft guard
- [FH-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				
FH-50008-00		High torque, low speed; with keyless chuck	3 to 180	1/15	340	510	FH-50008-10		FH-50008-12	
			20 to 900	1/15	70	105	FH-50008-20		FH-50008-22	
		High speed, low torque; with adjustable through-shaft collet	60 to 2300	1/10	45	65	FH-50008-30		FH-50008-32	
			150 to 6000	1/10	17	25	FH-50008-40		FH-50008-42	



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

Accuracy: ±3-2-3% of span	Wetted materials: 316L SS	Process connection: 3/4" Tri-Clamp®
Operating temp: 50 to 257°F (10 to 125°C)	Lens: polycarbonate	Casing: 304 SS
		Dial size: 2 1/2" (64 mm)

Range	Resolution	Catalog number	Price
30 psi	0.5 psi	FH-68056-72	
60 psi	1 psi	FH-68056-74	
100 psi	2 psi	FH-68056-76	
160 psi	2 psi	FH-68056-78	

[FH-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 units plus one custom engineering units



ISO9001:2008
CERTIFIED SUPPLIER



Specifications

Accuracy: ±0.5% full-scale	Wetted materials: 17-4 ph and 316L stainless steel
Dial size: 2 1/2" (64 mm)	Lens: polycarbonate
Operating temp: -4 to 140°F (-20 to 60°C)	Process connection: 1/4" NPT(M)
Units of measure: psi, " Hg, cm Hg, mm Hg, kPa, mPa, bar, kg/cm ² , ft H ₂ O, and user-defined unit	Power: two AA batteries (included)

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

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

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

Digi-Sense® Precalibrated Thermometers

Perfect for the lab to production floor

- Reliable measurements, guaranteed! Precalibrated to NIST-traceable standards
- Electronic offset function allows compensation of probe errors
- Robust, reliable handheld temperature meters work in tough environments



Single-Input Thermometers feature an easy-to-use control panel, Min/Max and Hold functions, offset adjustment, °F/°C selection, backlit display, low-battery indicator, and auto shutoff.

Dual-Input Data Logging Thermometers store up to 16,000 sets of readings in real time, and data can be downloaded to your PC via a USB port. Logging interval is selectable from 1 second to 60 minutes. Meters also feature Min/Max, Hold, and average functions; differential temperature; offset adjustment; °F/°C selection; time stamp/clock; out-of-range alarm with audible/visible indicator; backlit display; low-battery indicator; and auto shutoff.

What's included: protective rubber armor boot with built-in stand, one 9 V battery, and NIST-traceable calibration report with data. Data logging models 20250-92, -94, and -96 also include a USB cable and software.



Specifications

Input type	Range
J	-328 to 1832°F (-200 to 1000°C)
K	-418 to 2501°F (-250 to 1372°C)
T	-418 to 752°F (-250 to 400°C)
Thermistor	-40 to 257°F (-40 to 125°C)
RTD	-320 to 1562°F (-200 to 850°C)

Power: one 9 V battery (included)

Models 20250-92, -94, -96:
Data logging: 16,000 sets of readings

Description	Resolution	Accuracy	Cat. no.	Price
Thermocouple meters				
Single input	0.1°F (0.1°C) from -148 to 1832°F (-99.9 to 999.9°C); 1°F (1°C) outside range	±1% of reading + 1.8°F (1°C) below -148°F (-99.9°C); ±1% of reading + 0.9°F (0.5°C) above -148°F (-99.9°C)	FH-20250-91	
Dual input with data logging			FH-20250-92	
Thermistor meters				
Single input			FH-20250-93	
Dual input with data logging	0.1°F (0.1°C)	±0.9°F (±0.5°C) from 32 to 158°F (0 to 70°C); ±2°F (1°C) outside range	FH-20250-94	
RTD meters				
Single input	0.1°F (0.1°C) from -148 to 1562°F (-99.9 to 850°C); 1°F (1°C) outside range	±1.5°F (0.8°C) from -148 to 392°F (-99.9 to 199.9°C); ±2°F (1°C) ±0.5% of reading outside range	FH-20250-95	
Dual input with data logging			FH-20250-96	

Find even more online! Go to [ColeParmer.ca](#) to search more than 100,000 products.

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

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: PTFE-coated stir bar and detachable power cord with plug (EU plug for 230 VAC models). Advanced stirring hot plate also includes a temperature probe kit.

StableTemp



Top plate		Heating		Stirring		Power		Catalog number	Price
Dimensions	Material	Temperature range	Max load	Speed range	Max capacity	VAC	Hz		
Stirrers									
4 1/4" x 4 1/4" (10.8 x 10.8 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	1 L	100 to 120 230	50/60 50/60	FH-03406-01 FH-03406-06	
7 1/4" x 7 1/4" (18.4 x 18.4 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120 230	50/60 50/60	FH-03406-11 FH-03406-16	
10 1/4" x 10 1/4" (26 x 26 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	6 L	100 to 120 230	50/60 50/60	FH-03406-31 FH-03406-36	
Stirring hot plates									
4 1/4" x 4 1/4" (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 120 230	50/60 50/60	FH-03407-01 FH-03407-06	
7 1/4" x 7 1/4" (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 120 230	50/60 50/60	FH-03407-11 FH-03407-16	
10 1/4" x 10 1/4" (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 120 230	50/60 50/60	FH-03407-31 FH-03407-36	
Advanced stirrer and stirring hot plate									
7 1/4" x 7 1/4" (18.4 x 18.4 cm)	Ceramic	—	25 lb (11.4 kg)	50 to 1500 rpm	4 L	100 to 120 230	50/60 50/60	FH-03406-41 FH-03406-46	
7 1/4" x 7 1/4" (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 120 230	50/60 50/60	FH-03407-41 FH-03407-46	

[†]Based on water contained in a 20-L glass flat-bottom flask.

Accessories

FH-04600-88 Transparent splash shield for 4 1/4" x 4 1/4" units

FH-04600-89 Transparent splash shield for 7 1/4" x 7 1/4" units

FH-04600-90 Transparent splash shield for 10 1/4" x 10 1/4" units

FH-04600-91 External temperature probe, 100 Ω Pt, stainless steel, 32 to 752°F (0 to 400°C)

FH-04600-92 External temperature probe, 1000 Ω Pt, stainless steel, 32 to 752°F (0 to 400°C)

FH-04600-93 External temperature probe, 1000 Ω Pt, Hastelloy®, 32 to 752°F (0 to 400°C)

FH-04600-98 Support rod for securing sample containers

FH-04600-99 Clamp and holder for securing sample containers

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 900 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

Cole-Parmer®



230 VAC models

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



Mix multiple samples independently

Accessories

FH-17050-04 NIST-traceable calibration with data for stirrers

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



elements™
Cole-Parmer®

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

Cole-Parmer® elements™ Graduated Beakers, PP

NEW

Molded-in graduations will not wear off

- Graduated in mL and oz for easy conversion
- Stacking ribs provide easy separation so beakers will not stick together
- Accurate to ±2.5%
- Withstands temperatures from 5 to 248°F (–15 to 150°C)



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Cole-Parmer®

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

Capacity mL (oz)	Graduations (mL)	Cat. no.	Qty/pk	Price/pk
15 (½)	5	FH-06200-02	100	
30 (1)	5	FH-06200-04		
50 (1¾)	5	FH-06200-06		
100 (3½)	5	FH-06200-08	50	
150 (5)	5	FH-06200-10		
250 (8)	10	FH-06200-12		
400 (13)	25	FH-06200-14	25	
600 (20)	25	FH-06200-16		

Cole-Parmer® elements™ Griffin Low-Form Graduated Beakers, Glass

Suitable for all lab procedures

- Easy-read graduations and marking area
- Withstands wide temperature range –50 to 550°C
- Graduated tolerances from ±0.02 to ±0.05 depending on size
- Autoclavable

NEW



elements™
Cole-Parmer®

Borosilicate 3.3 glass beakers with pour spout provide excellent general use at an economical price.

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/pk	Price/pk
10 (⅓)	—	10	FH-34502-20	12	
20 (⅔)	5 to 15	5	FH-34502-36		
25 (⅞)	5 to 25	5	FH-34502-37		
30 (1)	10 to 30	5	FH-34502-38		
50 (1¾)	10 to 50	10	FH-34502-39		
100 (3)	20 to 100	10	FH-34502-40	12	
150 (5)	25 to 150	12.5	FH-34502-41		
200 (6)	50 to 200	25	FH-34502-42		
250 (8)	50 to 250	25	FH-34502-43		
300 (10)	50 to 300	25	FH-34502-44	8	
400 (13)	100 to 400	50	FH-34502-45		
500 (16)	100 to 500	50	FH-34502-46		
600 (20)	100 to 600	50	FH-34502-47	6	
800 (27)	200 to 800	100	FH-34502-48		
1000 (32)	200 to 1000	100	FH-34502-49		
1500 (51)	300 to 1500	100	FH-34502-50	2	
2000 (64)	400 to 2000	200	FH-34502-51		
3000 (96)	500 to 2500	250	FH-34502-52	1	
4000 (128)	500 to 3500	250	FH-34502-53		
5000 (160)	500 to 4500	500	FH-34502-54		

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



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/pk	Price/pk
10 (⅓)	—	—	FH-34502-01	12	
20 (⅔)	5 to 15	5	FH-34502-02		
30 (1)	5 to 25	10	FH-34502-03		
50 (1¾)	10 to 40	10	FH-34502-04		
100 (3)	20 to 80	10	FH-34502-05	12	
150 (5)	20 to 140	10	FH-34502-06		
250 (8)	25 to 200	25	FH-34502-07		
400 (13)	25 to 325	25	FH-34502-08		
600 (20)	50 to 500	50	FH-34502-09	6	
800 (27)	50 to 750	50	FH-34502-10	6	
1000 (32)	50 to 1000	50	FH-34502-11	6	
2000 (64)	200 to 2000	100	FH-34502-13	4	
3000 (96)	250 to 2500	125	FH-34502-14	1	
4000 (128)	500 to 3500	250	FH-34502-15	1	
10 (⅓)	—	—	FH-34502-21	48	
20 (⅔)	5 to 15	5	FH-34502-22		
30 (1)	5 to 25	10	FH-34502-23		
50 (1¾)	10 to 40	10	FH-34502-24		
100 (3)	20 to 80	10	FH-34502-25	48	
150 (5)	20 to 140	10	FH-34502-26		
250 (8)	25 to 200	25	FH-34502-27		
400 (13)	25 to 325	25	FH-34502-28		
600 (20)	50 to 500	50	FH-34502-29	36	
800 (27)	50 to 750	50	FH-34502-30	24	
1000 (32)	50 to 1000	50	FH-34502-31	24	
2000 (64)	200 to 2000	100	FH-34502-33	8	
3000 (96)	250 to 2500	125	FH-34502-34	6	
4000 (128)	500 to 3500	250	FH-34502-35	6	
Starter set contains one each of 50 mL, 100 mL, 250 mL, 600 mL, 1000 mL				FH-34502-90	5

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
Carboys with shoulder handles				
10 (2½)	83B	FH-06031-32	1	
15 (4)	83B	FH-06031-42		
20 (5)	83B	FH-06031-52		
25 (6½)	83B	FH-06031-62		
50 (13)	83B	FH-06031-72		
Wide-mouth carboys with shoulder handles				
10 (2½)	100 mm	FH-06056-22	1	
15 (4)	100 mm	FH-06056-32		
20 (5)	100 mm	FH-06056-52		
Carboy with spigot and shoulder handles				
4 (1)	38-430	FH-06065-10	1	
10 (2½)	83B	FH-06065-22		
20 (5)	83B	FH-06065-32		
25 (6½)	83B	FH-06065-52		
50 (13)	83B	FH-06065-62		
Carboys with ½" OD tubulation and shoulder handles				
20 (5¼)	83B	FH-06080-52	1	

Accessories

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



Cole-Parmer®

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
Heavy-duty carboys with shoulder handle				
5 (1¼)	45 mm	FH-62507-00	1	
10 (2½)	90 mm	FH-62507-10	1	
20 (5¼)	90 mm	FH-62507-20	1	
Heavy-duty carboys with shoulder handle and spigot				
5 (1¼)	45 mm	FH-62507-05	1	
10 (2½)	90 mm	FH-62507-15	1	
20 (5¼)	90 mm	FH-62507-25	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



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Liters (gallons)	Cap size	Catalog number	Qty/pk	Price/pk
FDA-compliant carboys, USP Class VI				
10 (2½)	83B	FH-06063-12	1	
20 (5)	83B	FH-06063-22		
50 (13)	83B	FH-06063-32		
FDA-compliant carboys with spigot, USP Class VI				
10 (2½)	83B	FH-06064-50	1	
20 (5)	83B	FH-06064-60		
50 (13)	83B	FH-06064-70		

Jenway® 74-Series Spectrophotometers

Day In, Day Out Spectroscopy Just Got Easier!

Intuitive Touchscreen Interface

Large, 7" HD color display makes navigation easy. The touchscreen is fast and responsive, even with gloves.



Versatile Sample Chamber

Large, domed lid provides easy access, even for tall multi-cell chambers or tubes.



Memory & USB Ports

10 GB onboard storage lets you store methods and results, with easy-access USB ports to transfer data or connect a printer.

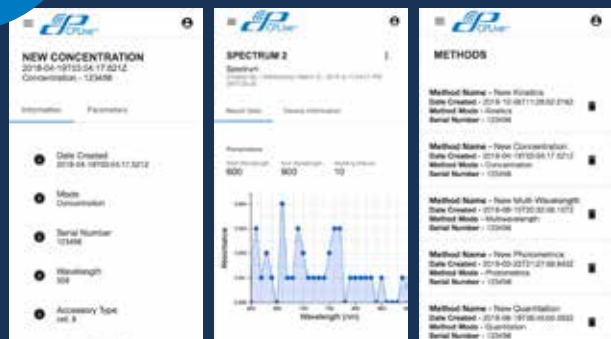


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Keep your data secure and easily accessible with CPLive connectivity—results are automatically uploaded and stored in the cloud.

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Description	7410 Visible wavelength	7415 UV/visible wavelength	7415 Nano UV/visible wavelength
Catalog number	FH-83056-21	FH-83056-22	FH-83056-23
Min sample size	3 mL	3 mL	0.5 µL (at 0.2 mm), 1.0 µL (at 0.5 mm)
Bandwidth	5 nm		5 nm
Wavelength range	320 to 1000 nm		198 to 1000 nm
Wavelength accuracy	±2 nm		±2 nm
Wavelength reproducibility	±0.5 nm		±0.5 nm
Photometric range		0 to 199.9%, -0.300 to 2.500 A	
Photometric accuracy		±1%T, ±0.01 Abs at 1.000 Absorbance	
Source lamp	Tungsten halogen lamp		Xenon lamp
Price			

Specifications

- Quantitation range:** -300 to 9999
- Kinetics measurement time:** 2 to 9999 seconds
- Spectrum scan interval:** Selectable 1, 2, 5, or 10 nm
- Output:** USB Type A x 2, USB Type B x 1, Ethernet (RJ45) connection
- Internal memory:** 10GB for results and methods
- Power:** 100 to 240 VAC, 50/60 Hz



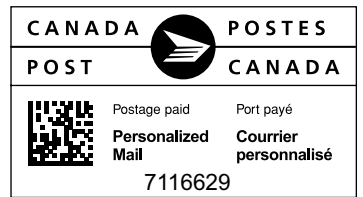
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