

Fluid Handling

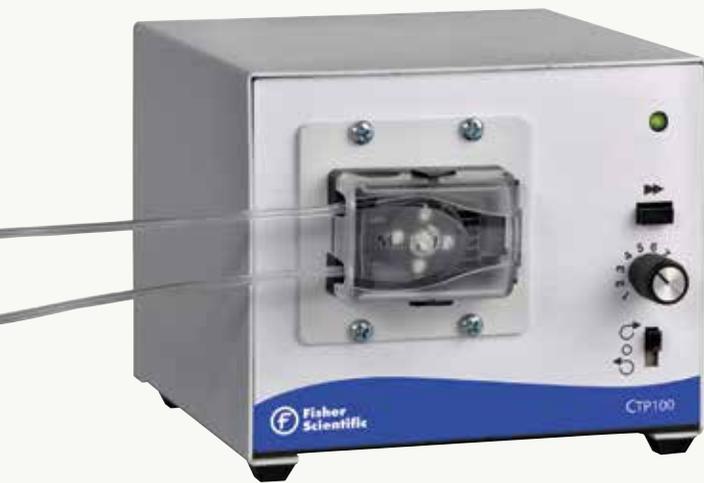


Peristaltic Pump Systems



Fisher Scientific™ Peristaltic Pumps

Peristaltic Pump Advantages



Advantages

- » Contamination free pumping—fluid contacts only the tubing or hose material
- » High volumetric efficiency allows operation in metering or dosing applications where high accuracy is required
- » Elimination of check valves prevents parts replacement and downtime
- » Programmable, easy-to-use, low maintenance units
- » Capable of running dry and pumping fluids with high quantities of entrained air, such as black liquor soap, sodium hypochlorite, or hydrogen peroxide
- » Smooth inner tubing surfaces are easy to clean and prevent particle entrapment
- » Tubing materials are available and comply with global pharmaceutical, sanitary and food standards (USP, EP, FDA and NSF)
- » Elimination of priming requirements provides suction lift and self-priming capabilities up to 8 m WC (26 ft H₂O)
- » Handles fluids ranging from glycerin to molasses, latex to cell suspensions, and from slurries to corrosive fluids

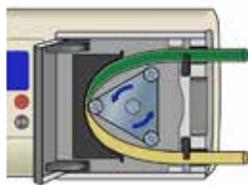
The Fisher Scientific advantage

We are a leading supplier of peristaltic pump technology and a world-class innovator in fluid handling and flow control. We provide accurate, dependable tubing pump solutions throughout the world. These highly durable, accurate pumps have proven ideal for a wide variety of fluid handling applications—from laboratory and research to plant and production floor.

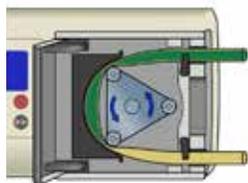
The Fisher Scientific family of peristaltic pump systems offers superior performance with precision and ease-of-use. Designed to handle a wide range of fluids, from the highest purity to extremely caustic solutions, these pumps are used in a broad range of critical applications—from agriculture to chemical processing; and from beverage dispensing to semiconductor polishing.



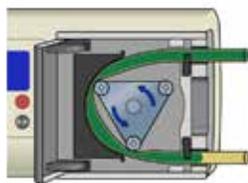
Principle of Operation



1
A pump head consists of only two parts: the rotor and the housing. The tubing is placed in the tubing bed—between the rotor and housing—where it is occluded (squeezed).



2
The rollers on the rotor move across the tubing, pushing the fluid. Tubing behind the rollers recovers its shape, creating a vacuum and drawing in fluid behind it.



3
A "pillow" of fluid is formed between the rollers. This is specific to the ID of the tubing and the geometry of the rotor. Flow rate is determined by multiplying speed by the size of the pillow. This pillow stays fairly constant except with extremely viscous fluids.

Benefits

The Fisher Scientific series of Peristaltic pumps provides a wide selection of models to meet many applications of fluid handling from lab to process. Some of these benefits include:

- » A unique pump head that allows fast tube loading and minimizes downtime
- » Safety interlock powers down unit when changing tubing
- » Robust design assures years of reliable service
- » Integrated pump and drive systems are provided fully assembled reducing set-up time
- » Compact housings conserve valuable space whether in the lab or on the process floor
- » Intuitive controls and a simple menu available in seven languages (on DP2000 and MCP 3000 models)
- » Integration with plant control systems allows automation of the fluid handling process
- » Complies with stringent safety standards of UL, ETL, CE, C1 and with RoHS and WEEE directives

Markets/Applications

Ideal for a wide variety of life science and industrial applications:

- » Sample prep
- » General, media and reagent dispensing
- » Filling
- » Buffer recirculation
- » Chromatography
- » Fermenter recirculation
- » Stem cell research
- » Bio-reactor feed and chemistry control
- » Cell culture
- » Cell harvesting
- » Spectroscopy
- » Lab analyzers
- » Reagent metering applications
- » Chemical feed
- » Filtration
- » Tangential-flow or cross-flow filtration
- » Biopharmaceuticals
- » Agrochemicals
- » Oil analysis
- » Sampling
- » Pilot to process scale-up

Fisher Scientific™ Peristaltic Pumps

Compact Tubing Pumps



Quality design in a compact package

Fisher Scientific CTP100, CTP150, and CTP300 pumps offer enhanced and versatile performance in an ultra-compact, low-maintenance design. These highly innovative peristaltic pumps are ideal for meeting a wide range of fluid handling needs and provide long-term, reliable service.

These units are provided as complete pumping systems, consisting of a pump, motor, and control in a stackable steel housing. With standard flow ranges from 0.002 mL/min to 105 mL/min and pressures to 2.5 bar, these instrument quality peristaltic pumps provide an ideal, cost-effective alternative to syringe pumps. A robust, fixed occlusion design allows for reliable, accurate pumping and dispensing with a wide variety of tubing materials and varying differential pressure applications.

Fisher Scientific™ Peristaltic Pumps

Compact Tubing Pumps



Fisher Scientific Compact Tubing Pumps — Product Benefits and Features

Easy to maintain

- » Simple, fast tubing changes
- » Fixed occlusion eliminates adjustment after tubing changes and assures operation against pressure up to 30 PSIG

Easy to use

- » Contamination free pumping—fluid contacts only the tubing material
- » Controls are mounted on front panel with a separate single-turn speed control
- » Flow direction switch with center “OFF” position
- » Green LED power “ON” indicator
- » “Prime” button runs pump at maximum speed to rapidly prime or flush tubing
- » Reversible pump direction permits purging of tubing prior to use

Diverse performance range

- » Flow rates less than 2 µL/min to 105 mL/min
- » Pressure up to 2.5 bar (30 PSIG)
- » Accurate and repeatable flow delivery
- » Address a wide range of critical applications with tubing materials that comply to USP class VI, FDA and NSF standards
- » Accommodates all sizes and formulations of microbore flow rated tubing

Ergonomic design

- » Space efficient—low profile, stackable design
- » Remote capability—actuate unit with a foot switch or contact closure



Specifications and Ordering Information

MODEL	CTP100			CTP150	CTP300
Cat. no.	13-310-651	13-310-652	13-310-653	13-310-654	13-310-655
PERFORMANCE					
Number of channels	1	1	1	1	2
Flow Capacity (mL/min)	0.002 to 1.65	0.017 to 11	0.07 to 50	0.8 to 105	0.8 to 14
RPM	1.2 to 10	13 to 80	50 to 300	20 to 100	20 to 100
ELECTRICAL					
Voltage (50/60 Hz)	90-130 or 160-260V AC (auto selected)				
Motor type	PMDC				
Control type	PWM (Pulse Width Modulated)				
PHYSICAL SPECIFICATIONS					
Operating temperature	0 to 40°C (32 to 104°F)				
Housing materials	Powder-coated steel				
IP rating	IP22				
Agency approvals	UL, cUL, CE, RoHS Power Supply				
Controller dimensions (L x W x H)	7.0 x 5.25 x 4.5 in. (17.8 x 13.4 x 11.4 cm)				
Shipping weight	3.3 lb (1.5 kg)				

Fisher Scientific™ Peristaltic Pumps

General-Purpose Tubing Pumps



Precision metering, worry free performance

Fisher Scientific GP1000 and GP1100 peristaltic pumps are ideal general-purpose tubing pumps for high-repeatability, precision metering, and worry free performance in a variety of life science, industrial and process applications. The broad flow range capability of these units make them ideal for laboratory to pilot process scale-up requirements.

With the GP1000 and GP1100 units, our highly regarded peristaltic pump technology is combined with innovative digital control to provide robust performance at an economical value. These units offer a reliable alternative to lab piston metering pumps, gear pumps and small circulating pumps used in life science laboratory applications. These stackable, variable speed pumps are self priming, able to operate dry, and contain no valves or seals eliminating replacement needs. Fluid contacts only the tubing, providing for contamination-free pumping in high-purity applications.

Fisher Scientific™ Peristaltic Pumps

General-Purpose Tubing Pumps



Fisher Scientific General-Purpose Tubing Pumps — Product Benefits and Features

Easy to maintain

- » Pump head enables rapid tubing changes
- » Robust motor and drive system provides low-maintenance long-term operation
- » Contamination free pumping—the fluid contacts only the tubing material

Easy to use

- » Intuitive control keypad
- » Stop and start from the front panel
- » Easily increase/decrease flow through the membrane key-pad
- » Universal voltage and frequency capability allows operation world-wide—IEC320 socket provided
- » Reversible pump direction permits purging of tubing prior to use
- » Quick start guide included for fast easy set-up

Diverse performance range

- » Utilizes various tubing sizes to provide a broad flow range
- » Ability to pump against pressure up to 60 PSIG providing longer filtration cycles

Ergonomic design

- » Space efficient—low-profile, stackable design
- » Safety interlock powers unit down when changing tubing
- » Remote control capability—ideal for automated process applications
- » Accurate, reliable control of flow and dosing—digital display of RPM for accurate control



GP1000

GP1100

Specifications and Ordering Information

MODEL	GP1000 (thin wall)	GP1100 (thick wall)
Cat. no.	13-310-656	13-310-657
PERFORMANCE		
Flow Capacity (mL/min)	0.5 to 3,000	14 to 4,000
RPM		4 to 400
Reversible		Yes
External Control - Input	4–20 mA; 0–10V; Remote/Local; Dir (CW/CCW); Start/Stop	
Pump Open Lockout or Door Sensor		Yes
ELECTRICAL		
Voltage (AC) 60/50 (Hz)	90 to 130V AC or 200 to 260V AC; Single phase, auto-selected	
Current	1.6 A @ 115V; 1.9A @ 230V	
Motor Type	PMDC	
Motor Size	1/10 hp (75w)	
Display (rpm)	Seven-segment, 3-digit, Blue LED, 1 RPM resolution	
Speed regulation (accuracy)	± 0.25%	
PHYSICAL SPECIFICATIONS		
Housing and pump head construction	Housing: ABS; Pump head: GF Nylon, Delrin®, Stainless steel, Cold-rolled steel, Buna N, Polycarbonate)	
Agency approvals	ETL, cETL, CE, RoHS	
Operating temperature	0 to 40°C (32 to 104°F)	
Dimensions (L x W x H)	12.5 x 11 x 6 in. (31.7 x 27.9 x 15.2 cm)	
Shipping weight	15 lb (7 kg)	

13-310-666 Handheld remote controller. DB9; for on/off control; route tubing through handle for filling applications.

Fisher Scientific™ Peristaltic Pumps

Dispensing Tubing Pumps



Pump, dispense and fill—all with one unit

Fisher Scientific DP2000 and DP2100 peristaltic pumps are specifically designed for critical metering and dispensing applications—you can pump, dispense and fill—all with one unit.

DP2000 and DP2100 peristaltic pumps are simple to set-up as dosing pumps, or dispensing systems by volume, time, or copy mode with a timed interval. The pump is also reversible, allowing for purging of transfer lines or emptying containers. These innovative systems provide a number of important advantages for users, including single-channel variable flow from 0.5 to 4000 mL/min at a variable speed range of 4 to 400 rpm. The powerful motor provides better than 0.25% percent speed control accuracy and repeatability as well as remote control operation.

Fisher Scientific™ Peristaltic Pumps

Dispensing Tubing Pumps



Fisher Scientific Dispensing Tubing Pumps — Product Benefits and Features

Easy to maintain

- » Pump head allows tubing change in less than 30 seconds
- » Robust motor and drive system provides low-maintenance long-term operation
- » Contamination free pumping—the fluid contacts only the tubing material

Easy to use

- » Programmable in seven languages, provides easy set-up in almost any global location
- » Universal voltage and frequency capability allows operation world-wide (IEC320 socket provided)

- » Reversible pump direction permits purging of tubing prior to use
- » Quick start guide included for fast, easy set-up

Diverse performance range

- » Control capabilities include programmable dispensing by volume, time, or copy modes with a programmable delay between cycles for convenient, automated dispensing
- » Each pump utilizes various tubing sizes providing a broad flow range
- » Able to pump against pressure up to 60 PSIG providing longer filtration cycles

Ergonomic design

- » Optimizes system accuracy by calibrating the pump system in process—the calibration is stored in memory—one calibration value per tubing size
- » Safety interlock powers down unit when changing tubing
- » Broad range of remote control options—ideal for automated process applications
- » Space efficient—low-profile, stackable design
- » Accurate, reliable control of flow and dosing—digital display of RPM for accurate control



DP2000

DP2100

Specifications and Ordering Information

MODEL	DP2000 (thin wall)	DP2100 (thick wall)
Cat. no.	13-310-658	13-310-659
PERFORMANCE		
Flow Capacity (mL/min)	0.5 to 3,000	14 to 4,000
RPM		4 to 400
Reversible		Yes
Pump Open Lockout or Door Sensor		Yes
ELECTRICAL		
External control – input	0 to 20 mA, 4 to 20 mA, or 0 to 10V; Scalable START/STOP, DIR. (CW/CC), PRIME via contact closure Remote / Local Indication	
External control – output	4 to 20 mA, or 0 to 10V	
Motor running logic	N.O. or N.C. (1A @ 24V)	
Tachometer output	5V, TTL pulse	
Voltage (50/60 Hz)	115/230V AC (auto selected)	
Motor type	1/10 hp, (75 w) PMDC	
Speed resolution (repeatability)	±0.1 rpm @ 4 to 400 RPM	
Speed regulation	±0.25% (full scale)	
PHYSICAL SPECIFICATIONS		
Operating temperature	0 to 40°C (32 to 104°F)	
Materials	Housing: ABS; Pump head: GF Nylon, Delrin®, Stainless steel, Cold-rolled steel, Buna N, Polycarbonate	
IP rating	IP31	
Agency approvals	ETL, cETL, CE, RoHS	
Controller dimensions (L x W x H)	12.5 x 11 x 6 in. (31.7 x 27.9 x 15.2 cm)	
Shipping weight	15 lb (7 kg)	

13-310-667 Handheld remote controller. DB25; for on/off control; route tubing through handle for dispensing applications.

Fisher Scientific™ Peristaltic Pumps

Multichannel Tubing Pumps



Accurate multichannel pumping

Fisher Scientific MCP3000 Series peristaltic pumps provide multichannel pumping with the accuracy of flow control and broad flow range to efficiently service most pumping applications, including bioassays, electrophoresis, chromatography, and pH control.

With flow ranges from 1.2 $\mu\text{L}/\text{min}$ to 760 mL/min and three modes of operation: flow, timed flow and programmable cycle dispensing—these multichannel pumps can save considerable time and resources while greatly improving process efficiency.

Featuring remote control of speed, pumping direction, and start/stop/purge, MCP3000 pumps are available with a wide range of interchangeable multichannel pump heads, drives, and tubing and can deliver up to 12 channels simultaneously. A pre-configured MCP3000 pump system consists of a pump head, drive, and a full set of cassettes.



Fisher Scientific™ Peristaltic Pumps

Multichannel Tubing Pumps



Fisher Scientific Multichannel Tubing Pumps — Product Benefits and Features

Easy to maintain

- » Cassette design provides fast tubing changes, and eliminates hardware in other multi-channel designs
- » Rugged motor and controls ensure long-term reliable operation
- » Contamination free pumping—the fluid contacts only the tubing material

Easy to use

- » Programmable in seven languages—provides easy set-up in almost any global location
- » Universal voltage and frequency capability allows operation world-wide—IEC320 socket provided
- » Quick start guide included for fast, easy set-up

Diverse performance range

- » Three modes of operation—Flow, Timed Flow and Programmable Cycle Dispensing

- » Lower pulsation flow and higher accuracy at low volumes and low flow rates
- » High repeatability on all channels
- » Cassettes provide defined and repeatable occlusion conditions
- » Available in 4, 8, or 12 channel models (2, 4, and 6 channels when using the large cassettes)
- » Capable of accurate, metered, parallel flows with difficult or multiphase fluids

Ergonomic design

- » Digital display of pump speed, flow rate, or number of dispense cycles
- » Adjustable occlusion setting provides flow and pressure performance, and optimizes tubing life
- » Valveless replacement alternative to diaphragm and piston pumps

Specifications and Ordering Information

MODEL	MCP3000 4/6	MCP3000 4/8	MCP3000 8/3	MCP3000 8/4	MCP3000 12/6	MCP3000 12/8
Cat. no.	13-310-660	13-310-661	13-310-662	13-310-663	13-310-664	13-310-665
Max Number of Channels	4	4	8	8	12	12
Number of Rollers	6	8	3	4	6	8
Cartridges Included:						
Small	—	4	—	8	—	12
Large	2	—	4	—	6	—
PERFORMANCE						
Flow Capacity (mL/min)	0.21 to 280	0.013 to 67.0	0.22 to 530	0.02 to 100	0.033 to 56	0.002 to 14.0
RPM	4 to 400					0.8 to 80
Reversible	Yes					
ELECTRICAL						
External control – input	0 to 20 mA, 4 to 20 mA, or 0 to 10V; Scalable START/STOP, DIR. (CW/CC), PRIME via contact closure Remote / Local Indication					
External control – output	4 to 20 mA, or 0 to 10V					
Motor running logic	N.O. or N.C. (1A @ 24V)					
Tachometer output	5V, TTL pulse					
Voltage (50/60 Hz)	115/230V AC (auto selected)					
Motor type	1/10 hp, (75 w) PMDC					
Speed resolution (repeatability)	±0.1 rpm @ 4 to 400 RPM					
Speed regulation	±0.25% (full scale)					
PHYSICAL SPECIFICATIONS						
Operating temperature	0 to 40°C (32 to 104°F)					
Materials	Housing: ABS; Pump head: Polysulfone, Stainless steel, Anodized aluminum, Rulon, Buna-N; Cartridge: Polycarbonate, GF Nylon, Anodized aluminum knob.					
IP rating	IP31					
Agency approvals	ETL, cETL, CE, RoHS					
Controller dimensions (L x W x H)	12.5 x 11 x 6 in. (31.7 x 27.9 x 15.2 cm)					
Shipping weight	15 lb (7 kg)					

13-310-909 Cartridge, small; for MCP3000 8/3 and 8/4

13-310-910 Cartridge, large; for MCP3000 8/3 and 8/4

13-310-911 Cartridge, small; for MCP3000 4/6, 4/8, 12/6 and 12/8

13-310-912 Cartridge, large; for MCP3000 4/6, 4/8, 12/6 and 12/8

Fluid Handling

Peristaltic Pump Systems

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