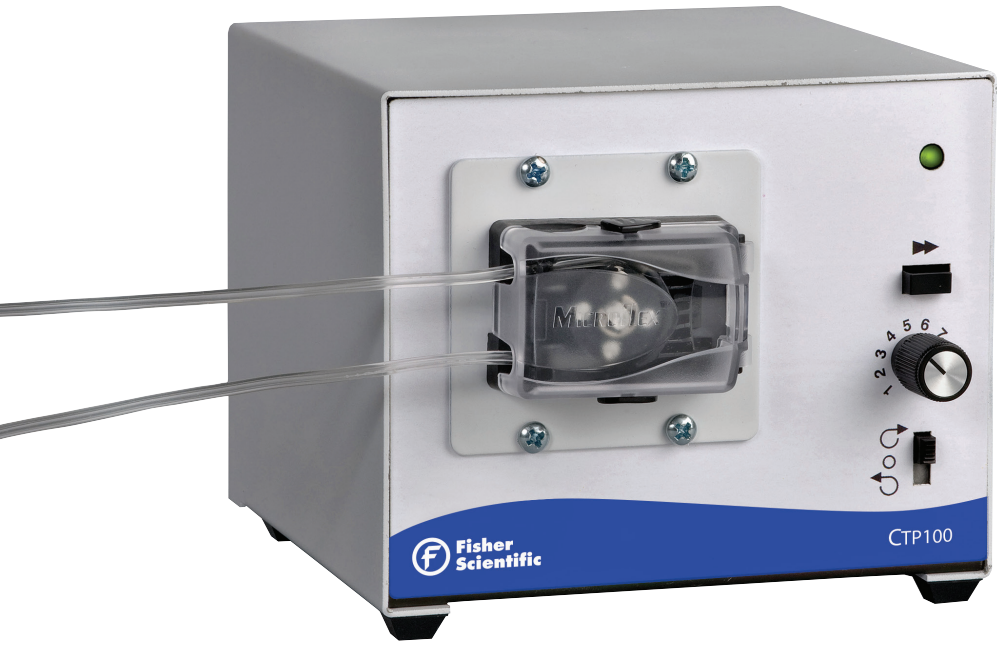
Fisherbrand™
QUALITY. RELIABILITY. VALUE.

Fluid Handling

*A series of peristaltic pump systems and tubing*

# Peristaltic pump systems




## Advantages

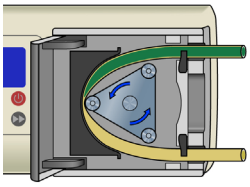
- Contamination free pumping—fluid contacts only the tubing or hose material
- High volumetric efficiency allows operation in metering or dosing applications where high accuracy is required
- Elimination of check valves prevents parts replacement and downtime
- Programmable, easy-to-use, low maintenance 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 8m WC (26 ft H20)
- Handles fluids ranging from glycerine to molasses, latex to cell suspensions, and from slurries to corrosive fluids

### The Fisherbrand advantage

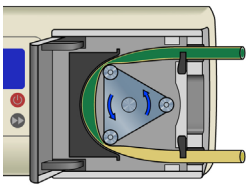
We are a leading supplier of peristaltic pump technology and a world-class innovator in fluid handling and flow control. We provide accurate, dependable tubing pump solutions throughout the world. These highly durable, accurate pumps have proven ideal for a wide variety of fluid handling applications—from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

The Fisherbrand 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.

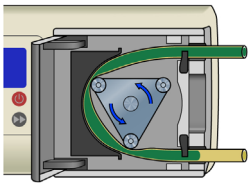
### Principle of Operation



**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 Fisherbrand series of peristaltic pumps provides a wide selection of models to meet many applications of fluid handling from lab to process scale-up. Some of these benefits include:

- A unique pump head that allows fast tube loading and minimises 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 analysers
- Reagent metering applications
- Chemical feed
- Filtration
- Tangential-flow or cross-flow filtration
- Biopharmaceuticals
- Agrochemicals
- Oil analysis
- Sampling
- Pilot to process scale-up

# Compact tubing pumps


## Quality design in a compact package

Fisherbrand 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 0.002mL/min to 105mL/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.

# 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

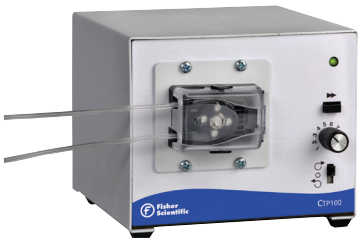
- Contamination free pumping—fluid contacts only the tubing material
- Controls are mounted on front panel with a separate single-turn speed control
- Flow direction switch with centre "OFF" position
- Green LED power "ON" indicator
- "Prime" button runs pump at maximum speed to rapidly prime or flush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

## Diverse performance range

- Flow rates less than 2µL/min to 105mL/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



CTP100

CTP150

CTP300

### Specifications and ordering information

| MODEL | CTP100 | CTP100 | CTP100 | CTP150 | CTP300 |
|---|---|---|---|---|---|
| **Cat. No** | **15327527** | **15337527** | **15307537** | **15357547** | **15367547** |
| **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) | 17.8 x 13.4 x 11.4 cm (7.0 x 5.25 x 4.5 in.) | | | | |
| Shipping weight | 1.5 kg (3.3 lb) | | | | |
| Warranty | One year | | | | |

# General purpose tubing pumps


**Precision metering, worry-free performance**

Fisherbrand 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.

# 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

- Utilises 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** | **15377547** | **15387547** |
| **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) | 31.7 x 27.9 x 15.2 cm (12.5 x 11 x 6 in.) | |
| Shipping weight | 7kg (15lb) | |
| Warranty | One year | |

15397557 Handheld remote controller. DB9; for on/off control; route tubing through handle for filling applications.

# Dispensing tubing pumps


**Pump, dispense and fill—all with one unit**

Fisherbrand 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 4000mL/min at a variable speed range of 4 to 400rpm. The powerful motor provides better than 0.25% percent speed control accuracy and repeatability as well as remote control operation.

# 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 utilises various tubing sizes providing a broad flow range
- Able to pump against pressure up to 60 PSIG providing longer filtration cycles

## Ergonomic design

- Optimises 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** | **15397547** | **15307557** |
| **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<br>START/STOP, DIR. (CW/CC), PRIME via contact closure<br>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,<br>Cold-rolled steel, Buna-N, Polycarbonate | |
| IP rating | IP31 | |
| Agency approvals | ETL, cETL, CE, RoHS | |
| Controller dimensions (L × W × H) | 31.7 x 27.9 x 15.2 cm (12.5 x 11 x 6 in.) | |
| Shipping weight | 7kg (15lb) | |
| Warranty | One year | |

15307567 Handheld remote controller. DB25; for on/off control; route tubing through handle for dispensing applications.

# Multichannel tubing pumps


## Accurate multichannel pumping

Fisherbrand 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 µL/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.


**MCP3000**

# 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 optimises tubing life
- Valveless replacement alternative to diaphragm and piston pumps

### Specifications and ordering information

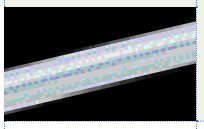
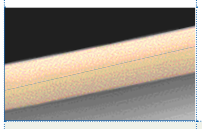
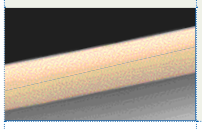
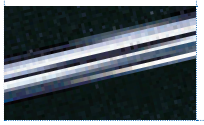
| MODEL | MCP3000 4/6 | MCP3000 4/8 | MCP3000 8/3 | MCP3000 8/4 | MCP3000 12/6 | MCP3000 12/8 |
|---|---|---|---|---|---|---|
| **Cat. No** | **15317557** | **15337557** | **15347557** | **15357557** | **15367557** | **15387557** |
| Max number of channels | 4 | 4 | 8 | 8 | 12 | 12 |
| Number of rollers | 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<br>START/STOP, DIR. (CW/CC), PRIME via contact closure<br>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, Anodised aluminium, Rulon, Buna-N;<br>Cartridge: Polycarbonate, GF Nylon, Anodised aluminium knob. | | | | | |
| IP rating | IP31 | | | | | |
| Agency approvals | ETL, cETL, CE, RoHS | | | | | |
| Controller dimensions (L × W × H) | 31.7 x 27.9 x 15.2 cm (12.5 x 11 x 6 in.) | | | | | |
| Shipping weight | 7kg (15lb) | | | | | |
| Warranty | One year | | | | | |

**15317567** Cartridge, small; for MCP3000 8/3 and 8/4
**15327567** Cartridge, large; for MCP3000 8/3 and 8/4
**15337567** Cartridge, small; for MCP3000 4/6, 4/8, 12/6 and 12/8
**15347567** Cartridge, large; for MCP3000 4/6, 4/8, 12/6 and 12/8

# Pump tubing

## Tubing formulations to meet the needs of your application

High-precision peristaltic pump tubing is manufactured to exacting specifications to optimise accuracy, repeatability, and to provide enhanced tubing life. This tubing has been tested and quality assured to operate specifically in peristaltic pumps.

| Pump tubing formulation | Advantages | Application suitability† | | | | | | | Gas permeability | Sterilisation |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Acids | Alkalis | Organic solvents | Pressure | Vacuum | Viscous fluids | Sterile fluids | | |
| **Silicone (platinum-cured)**  | • Ultra-smooth inner surface minimises particle entrapment<br>• No leachable additives, DOP, or plasticisers; phthalate and latex-free; odourless and nontoxic, fungus-resistant<br>• No taste imparted to transported fluids<br>• Weather, ozone, corona and radiation resistant<br>• Translucent, clear to light amber | N/R | N/R | N/R | F | G | F | E | $CO_2$: 25,147<br>$H_2$: —<br>$O_2$: 4715<br>$N_2$: 2284 | Sterilise by EtO, autoclave, or gamma radiation |
| | | Temperature range:<br>Static: –50 to 230°C<br>Dynamic (pumping): –40 to 100°C | | | | | | | | |
| **PharMed™ BPT**  | • Great for tissue and cell work— non-toxic and non-haemolytic<br>• Long service life (up to 10,000 hrs); reduces tubing costs and pump downtime<br>• Opaque to UV and visible light to protect light-sensitive fluids<br>• Low gas permeability<br>• Opaque, beige | G | G | N/R | G | G | E | E | $CO_2$: 1200<br>$H_2$: —<br>$O_2$: 200<br>$N_2$: 80 | Sterilise by EtO, autoclave, or gamma radiation up to 2.5 Mrad |
| | | Temperature range:<br>Static: –51 to 132°C<br>Dynamic (pumping): –20 to 100°C | | | | | | | | |
| **Norprene™ Food (A 60 F)**  | • Longest life, good flow consistency<br>• Heat and ozone resistant<br>• Good resistance to acids/alkalis<br>• Heat sealable, non-ageing and non-oxidising<br>• High dielectric constant<br>• Opaque, beige | G | G | N/R | E | E | E | G | $CO_2$: 1200<br>$H_2$: —<br>$O_2$: 200<br>$N_2$: 80 | Sterilise by EtO, autoclave, or gamma irradiation |
| | | Temperature range:<br>Static: –59 to 132°C<br>Dynamic (pumping): –20 to 100°C | | | | | | | | |
| **Tygon™ E-Food (B-44-4X)**  | • Bore is extremely smooth (better than most stainless steels)<br>• Nontoxic, will not affect taste or odour, and clear for CIP and flow verification<br>• Excellent nonwetting properties permit flush cleaning and complete drainage<br>• High dielectric constant<br>• Transparent, clear | G | G | N/R | G | G | E | F | $CO_2$: 270<br>$H_2$: 97<br>$O_2$: 60<br>$N_2$: 30 | Sterilise by EtO or autoclave |
| | | Temperature range:<br>Static: –36 to 74°C<br>Dynamic (pumping): 0 to 40°C | | | | | | | | |

†E = Excellent, G = Good, F = Fair, P = Poor, N/R = Not Recommended

## Tubing coils for CPT100 pumps Cat. Nos 15327527, 15337527, 15307537

| Inner diameter | 0.19mm | 0.25mm | 0.89mm | 1.42mm | 2.06mm | 2.79mm |
|---|---|---|---|---|---|---|
| Flow (mL/min) at 1.7 to 10rpm | 0.002 to 0.013 | 0.004 to 0.022 | 0.041 to 0.25 | 0.09 to 0.57 | 0.18 to 1.05 | 0.25 to 1.65 |
| Flow (mL/min) at 13 to 80rpm | 0.017 to 0.10 | 0.03 to 0.18 | 0.33 to 2.0 | 0.75 to 4.5 | 1.4 to 8.5 | 1.8 to 11.0 |
| Flow (mL/min) at 50 to 300rpm | 0.07 to 0.43 | 0.12 to 0.73 | 1.4 to 8.3 | 3.2 to 19 | 5.9 to 35.2 | 8.3 to 50 |
| Silicone, platinum-cured (15m/49.2 ft) | - | - | 15571375 | 15581375 | 15591375 | 15501385 |
| PharMed™ BPT (30 m/98.4ft) | - | 15561385 | 15571385 | 15581385 | 15591385 | 15501395 |
| Tygon™ E-Food (30 m/98.4ft) | 15561395 | 15571395 | 15581395 | 15591395 | 15501405 | 15511405 |

## *Two-stop tubing links for Cat. No 15357547 (CPT150) and Cat. No 15367547 (CPT300) pumps

| Inner diameter | 0.8mm | 1.6mm | 3.2mm | 4.8mm |
|---|---|---|---|---|
| Flow (mL/min) with FH15 | 0.8 to 4.0 | 2.8 to 14 | 11 to 54 | 21 to 105 |
| Flow (mL/min) with FH30 | 0.8 to 4.0 | 2.8 to 14 | Not recommended | |
| Silicone, platinum-cured (6/pk) | 15593042 | 15501365 | 15511365 | 15521365 |
| PharMed™ BPT (12/pk) | 15541365 | 15551365 | 15561365 | 15571365 |
| Norprene™ Food (12/pk) | 15551305 | 15561305 | 15511365 | - |
| Tygon™ E-Food (12/pk) | 15581365 | 15591365 | 15501375 | 15511375 |

## Tubing coils for Cat. Nos 15377547 (GP1000), 15387547 (GP1100), 15397547 (DP2000) and 15307557 (DP2100) pumps

| Description | 1.6mm (thin wall) tubing for GP1000 and DP2000 pumps | | | | | | 2.4mm (thick wall) tubing for GP1100 and DP2100 pumps | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inner diameter | 0.8mm | 1.6mm | 3.2mm | 4.8mm | 6.4mm | 8.0mm | 4.8mm | 6.4mm | 8mm | 9.5mm |
| Hose barb size | 0.79mm | 1.58mm | 3.17mm | 4.77mm | 6.35mm | 7.93mm | 4.77mm | 6.35mm | 7.93mm | 9.52mm |
| Flow (mL/min) | 0.5 to 40 | 2.0 to 150 | 6.5 to 550 | 16 to 1200 | 24 to 2000 | 36 to 3000 | 14 to 1200 | 24 to 2000 | 36 to 3000 | 48 to 4000 |
| Length/pack | 15m | 15m | 15m | 15m | 15m | 15m | 15m | 15m | 15m | 15m |
| Silicone, platinum cured | - | 15425603 | 15435613 | 15561315 | 15571315 | 15581315 | 15591315 | 15501325 | 15511325 | 15521325 |
| Pharmed™ BPT | 15581295 | 15591295 | 15501305 | 15511305 | 15521305 | 15531305 | - | - | - | - |
| Norprene™ Food | - | 15531305 | 15551305 | 15561305 | 15571305 | 15581305 | - | - | - | - |
| Tygon™ E-Food | - | 15420943 | 15591305 | 15501315 | 15511315 | 15521315 | - | 15531315 | 15541315 | 15551315 |

## *Two-stop tubing links for MCP3000 pumps - for small cartridges

| For use with pump model: | Number of rollers | Flow rates (mL/min) for indicated pump model and tubing internal diameter (ID) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0.19mm ID | 0.25mm ID | 0.89mm ID | 1.42mm ID | 2.06mm ID | 2.79mm ID |
| Cat. No 15337557 (MCP3000 4/8)W | 8 | 0.013 to 0.60 | 0.018 to 0.91 | 0.18 to 9.1 | 0.04 to 20.0 | 0.88 to 44.0 | 1.38 to 67.0 |
| Cat. No 15357557 (MCP3000 8/4) | 4 | 0.02 to 0.85 | 0.03 to 1.0 | 0.26 to 13.0 | 0.53 to 26.0 | 1.14 to 57.0 | 2.06 to 100.0 |
| Cat. No 15387557 (MPC3000 12/8) | 8 | 0.002 to 0.11 | 0.004 to 0.20 | 0.03 to 1.9 | 0.07 to 4.3 | 0.14 to 8.6 | 0.25 to 14.0 |
| Silicone, platinum-cured (6/pk) | | - | - | 15531375 | 15541375 | 15551375 | 15561375 |
| PharMed™ BPT (12/pk) | | 15541385 | 15511385 | 15521385 | 15531385 | 15541385 | 15551385 |
| Tygon™ E-Food (12/pk) | | 15511395 | 15521395 | 15531395 | 15541395 | 15408914 | 15551395 |

## *Two-stop tubing links for MCP3000 pumps - for large cartridges

| For use with pump model: | Number of rollers | Flow rates (mL/min) for indicated pump model and tubing internal diameter (ID) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0.8mm ID | 1.6mm ID | 3.2mm ID | 4.8mm ID | 6.4mm ID | 2.79mm ID |
| 153175557 (MCP3000 4/6) | 6 | 0.21 to 10.0 | 0.6 to 30.0 | 2.2 to 110 | 4.0 to 200 | 5.6 to 280 | 1.38 to 67.0 |
| 15347557 (MCP3000 8/3) | 3 | 0.22 to 11.0 | 0.84 to 42.0 | 3.2 to 160 | 6.8 to 340 | 10.6 to 530 | 2.06 to 100.0 |
| 15367557 (MCP3000 12/6) | 6 | 0.033 to 1.9 | 0.012 to 6.6 | 0.35 to 20.0 | 0.70 to 40.0 | 0.98 to 56.0 | 0.25 to 14.0 |
| Silicone, platinum-cured (6/pk) | | 15593042 | 15501365 | 15511365 | 15521365 | 15531365 | 15561375 |
| PharMed™ BPT (12/pk) | | 15541365 | 15551365 | 15561365 | 15571365 | 15531365 | 15551385 |
| Norprene™ Food (12/pk) | | 15551305 | 15561305 | 15511365 | - | 15531365 | 15551395 |
| Tygon™ E-Food (12/pk) | | 15581365 | 15591365 | 15501375 | 15511375 | 15521375 | |

*Two-stop tubing links are 40.6cm long

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# Pump tubing compatability charts

**Ratings**

A: No effect; little noticeable change
B: Minor effect; slight corrosion or discoloration
C: Moderate effect; not recommended for continuous use; softening, loss of strength, swelling and/or shrinkage
D: Severe effect; not recommended for use; severe softening, swelling and/or shrinkage
— No data available

**Tubing formulations**

PN: PharMed™ BPT, Norprene™ Food
S: Silicone (platinum-cured)
T: Tygon™ E-Food

| Fluid | Tubing formulation PN | S | T |
|---|---|---|---|
| Acetaldehyde | D | B | D |
| Acetate LMW | A | — | D |
| Acetic acid <5% | A | A | A |
| Acetic acid >5% | A | A | B |
| Acetic anhydride | A | C | D |
| Acetone | D | C | D |
| Acetonitrile | B | — | D |
| Acetyl bromide | C | — | D |
| Acetyl chloride | C | C | D |
| Air | A | A | A |
| Aliphatic hydrocarbons | D | — | D |
| Aluminium chloride | A | B | A |
| Aluminium sulfate | A | A | A |
| Alums | A | A | A |
| Ammonia, gas/liquid | A | C | B |
| Ammonium acetate | A | — | A |
| Ammonium carbonate | A | C | A |
| Ammonium chloride | A | C | A |
| Ammonium hydroxide | A | A | B |
| Ammonium nitrate | A | C | A |
| Ammonium phosphate | A | A | A |
| Ammonium sulfate | A | A | A |
| Amyl acetate | B | D | D |
| Amyl alcohol | D | D | D |
| Amyl chloride | C | D | D |
| Aniline | C | D | D |
| Aniline hydrochloride | C | D | D |
| Aqua regia (80% HCl, 20% $HNO_3$) | D | D | D |
| Aromatic hydrocarbons | D | — | D |
| Arsenic salts | A | — | A |
| Barium salts | A | A | A |
| Benzaldehyde | D | B | D |
| Benzenesulfonic acid | D | D | D |
| Bleaching liquors | A | B | A |
| Boric acid | A | A | A |
| Bromine | D | D | D |
| Butane | A | D | A |
| Butanol (butyl alcohol) | D | B | D |
| Butyl acetate | B | D | D |
| Butyric acid | B | D | D |
| Calcium oxide | A | A | A |
| Calcium salts | A | B | A |
| Carbon bisulfide | D | D | D |
| Carbon dioxide | A | B | A |
| Carbon tetrachloride | D | D | D |
| Chlorine, dry | C | D | A |
| Chlorine, wet | D | D | C |
| Chloroacetic acid | B | — | A |
| Chlorobenzene | D | D | D |

| Fluid | Tubing formulation PN | S | T |
|---|---|---|---|
| Chlorobromomethane | B | D | D |
| Chloroform | C | D | D |
| Chlorosulfonic acid | D | D | D |
| Chromic acid, 30% | A | C | C |
| Chromium salts | A | — | A |
| Copper salts | A | A | A |
| Cresol | D | D | B |
| Cyclohexane | D | D | D |
| Cyclohexanone | D | D | D |
| Diacetone alcohol | A | B | D |
| Dimethyl formamide | B | B | D |
| Dimethyl sulfoxide (DMSO) | A | — | — |
| Essential oils | D | C | D |
| Ethanol (ethyl alcohol) | C | A | D |
| Ether | C | D | D |
| Ethyl acetate | B | B | D |
| Ethyl bromide | D | D | D |
| Ethyl chloride | C | D | D |
| Ethylamine | D | C | D |
| Ethylene chlorohydrin | A | C | D |
| Ethylene dichloride | C | D | D |
| Ethylene glycol | A | A | A |
| Ethylene oxide | A | D | A |
| Fatty acids | C | C | B |
| Ferric chloride | A | B | A |
| Ferric sulfate | A | B | A |
| Ferrous chloride | A | C | A |
| Ferrous sulfate | A | C | A |
| Fluoroboric acid | D | A | C |
| Fluoroborate salts | A | — | A |
| Fluorosilicic acid | C | D | A |
| Formaldehyde | D | B | D |
| Formic acid, 25% | A | B | B |
| Freon™ TMS | D | — | D |
| Gasoline, high-aromatic | D | D | D |
| Gasoline, nonaromatic | D | D | D |
| Glucose | A | A | A |
| Glue, P.V.A. | A | A | A |
| Glycerin | A | A | A |
| Hydriodic acid | D | — | A |
| Hydrobromic acid, 30% | D | D | B |
| Hydrochloric acid (dil) | A | D | A |
| Hydrochloric acid (med) | B | D | C |
| Hydrochloric acid (conc) | — | D | C |
| Hydrocyanic acid | A | C | A |
| Hydrocyanic acid, gas, 10% | A | C | A |
| Hydrofluoric acid, 50% | D | D | C |
| Hydrofluoric acid, 75% | — | D | D |
| Hydrogen peroxide (dil) | A | A | A |

| Fluid | Tubing formulation PN | S | T |
|---|---|---|---|
| Hydrogen peroxide, 90% | B | B | D |
| Hypochlorous acid | A | D | A |
| Iodine solutions | A | C | A |
| Iodoform | — | — | — |
| Kerosene | D | D | D |
| Ketones | D | — | D |
| Lacquer solvents | B | D | D |
| Lactic acid, 3–10% | A | A | A |
| Lead acetate | A | D | A |
| Linseed oil | C | A | D |
| Lithium hydroxide | B | D | A |
| Magnesium chloride | A | A | A |
| Magnesium sulfate | A | A | A |
| Malic acid | A | B | A |
| Manganese salts | A | B | A |
| Mercury salts | A | — | A |
| Methane | A | D | A |
| Methanol (methyl alcohol) | A | A | C |
| Methyl chloride | C | D | D |
| Methyl ethyl ketone (MEK) | D | D | D |
| Mixed acid (40% $H_2SO_4$, 15% $HNO_3$) | B | — | B |
| Molybdenum disulfide | — | — | — |
| Monoethanolamine | C | B | D |
| Naphtha | D | D | D |
| Natural gas | A | A | A |
| Nickel salts | A | A | A |
| Nitric acid (dil) | A | B | A |
| Nitric acid (med) | A | C | C |
| Nitric acid (conc) | D | D | D |
| Nitrobenzene | D | D | D |
| Nitrogen oxides | A | D | A |
| Nitrous acid | A | — | A |
| Oils, animal | C | B | D |
| Oils, mineral | D | B | C |
| Oils, vegetable | C | B | D |
| Oleic acid | C | D | D |
| Oxalic acid, cold | B | B | C |
| Oxygen, gas | A | B | A |
| Palmitic acid, 100% in ether | C | D | D |
| Perchloric acid | A | D | C |
| Perchloroethylene | C | D | D |
| Phenol (carbolic acid) | A | D | B |
| Phosphoric acid, 50% | A | C | C |
| Phthalic acid | A | B | D |
| Plating solutions | A | D | A |
| Polyglycol | B | A | A |
| Potassium carbonate | A | — | A |
| Potassium chlorate | B | B | B |

| Fluid | Tubing formulation PN | S | T |
|---|---|---|---|
| Potassium hydroxide (med) | A | B | B |
| Potassium hydroxide (conc) | A | C | D |
| Potassium iodide | A | — | A |
| Propanol (propyl alcohol) | C | A | D |
| Pyridine | C | D | D |
| Silicone fluids | A | C | B |
| Silicone oils | C | C | B |
| Silver nitrate | A | A | A |
| Soap solutions | B | A | A |
| Sodium bicarbonate | A | A | A |
| Sodium bisulfate | A | — | A |
| Sodium bisulfite | A | A | A |
| Sodium borate | A | A | A |
| Sodium carbonate | A | A | A |
| Sodium chlorate | A | C | A |
| Sodium chloride | A | A | A |
| Sodium ferrocyanide | A | — | B |
| Sodium hydrosulfite | B | — | A |
| Sodium hydroxide (dil) | A | A | A |
| Sodium hydroxide, 25% | A | B | C |
| Sodium hydroxide (conc) | — | — | C |
| Sodium hypochlorite, <5% | A | B | A |
| Sodium hypochlorite, >5% | A | B | A |
| Sodium nitrate | A | D | A |
| Sodium silicate | A | A | A |
| Sodium sulfide | A | A | A |
| Sodium sulfite | A | A | A |
| Steam, up to 40 psi | C | A | D |
| Stearic acid | C | B | A |
| Styrene | D | D | D |
| Sulfuric acid (dil) | A | D | A |
| Sulfuric acid (med) | A | D | A |
| Sulfuric acid (conc) | D | D | D |
| Sulfurous acid | A | D | A |
| Tannic acid | B | B | C |
| Tanning liquors | A | — | A |
| Tartaric acid | A | A | A |
| Tin salts | A | B | A |
| Toluene (toluol) | D | D | D |
| Trichloroacetic acid | B | D | A |
| Trichloroethylene | D | D | D |
| Trisodium phosphate | A | — | A |
| Turpentine | D | D | D |
| Urea | A | B | A |
| Uric acid | A | — | A |
| Water, fresh | A | B | A |
| Water, salt | A | A | A |
| Xylene | D | D | D |
| Zinc chloride | A | A | A |

## ⚠ Caution

The ratings in the charts do not reflect the extent to which extraction or leaching may occur or the extent to which fluids may undergo any physical changes in properties or composition as a result of coming into contact with the wetted materials. it is the user's responsibility to test and ensure the suitability of wetted materials for all intended uses, including establishing the compatibility of any fluid with the material through which it is coming into contact.

## ⚠ Warning

The information in these tables has been supplied by the tubing manufacturers and is to be used ONLY as a guide to select your tubing. Always test fluids and tubing before use. Supplier does not warrant (neither express or implied) that the information in these tables is accurate or complete or that any material is suitable for any purpose.

## ⚠ Danger

Even if tubing passes the immersion test, variations in temperature, pressure, or concentration may cause tubing failure.

**SERIOUS INJURY MAY RESULT.**

Use suitable guards and/or personal protection when pumping chemicals.

## Other pump and tubing accessories

| Cat. No | Description | Pack qty |
|---|---|---|
| **13571850** | Pump foot switch for Cat. No 15377547 (GP1000) and Cat. No 15387547 (GP1100) | 1 |
| **12683606** | Barbed tubing connector, straight, polypropylene 6.4mm ID | 10 |
| **15511295** | Barbed tubing connector, straight, polypropylene 8.0mm ID | 10 |
| **15521295** | Barbed tubing connector, straight, polypropylene 9.6mm ID | 10 |
| **15531295** | Barbed tubing connector, straight, polypropylene 4.8mm ID | 10 |
| **13288169** | Barbed tubing connector, straight, polypropylene 3.2mm ID | 10 |
| **15397557** | DH120 Dispense handle for Cat. No 15377547 (GP1000) | 1 |
| **15307567** | DH120 Dispense handle for Cat. No 15397547 (DP2000) | 1 |
| **15541295** | Dispensing tip with luer lock | 1 |
| **15551295** | Luer kit | 1 |
| **15331122** | 16-Gauge dispensing nozzle SS with luer connector | 1 |
| **15212665** | 13-Gauge dispensing nozzle SS with luer connector | 1 |
| **11736289** | Tubing sinker set 1 large and 1 small | 1 |
| **15392959** | Small sinker for tube ID 6mm to 3.2mm | 1 |
| **15571295** | Large sinker for tube ID 4.8mm to 6.4mm | 1 |

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