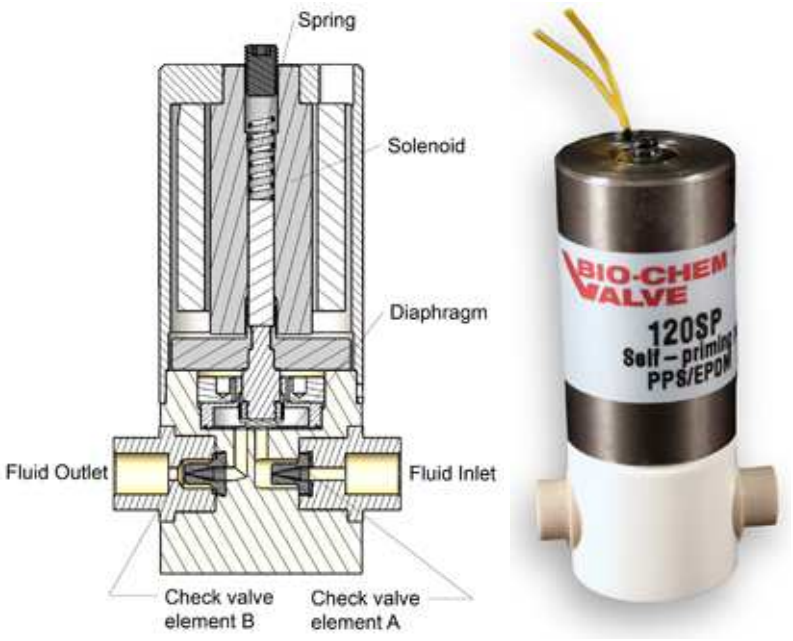
BIO-CHEM VALVE

- Solenoid Operated Micro Pumps
- Isolation Valves
- Flow Selection Valves
- Pinch Valves
- Electric Rotary Valves
- Manifolds
- Accessories
- Customization Services

You are at > Solenoid Operated Micro-Pumps

What is a Solenoid Operated Micro-Pump?

A Micro-Pump is a solenoid operated device designed to provide a precise, repeatable and discrete dispensed volume of fluid. (Download product brochure - Solenoid Operated Micro-Pumps)



The flow path is isolated from the operating mechanism by a flexible diaphragm. When the solenoid is energized the diaphragm is pulled back creating a partial vacuum within the pump body. This pulls liquid through the inlet check valve (A) and simultaneously closes the outlet check valve (B). When the solenoid is de-energized a spring pushes the diaphragm down expelling a discrete volume of liquid through check valve B while simultaneously closing check valve A. Bio-Chem Fluidics solenoid operated Micro-Pumps require a complete on-off cycle for each discrete dispense (see below). Repeatedly cycling the solenoid creates a pulsed flow.

Features of the Bio-Chem Fluidics solenoid operated Micro-Pump:

Inert materials Our pumps provide a non-metallic inert fluid path for the dispensing of high purity or aggressive fluids. We offer a range of different materials available for all the wetted parts of the pumps - body, diaphragm and check valve. Material combinations can be chosen to suit the application.

Body materials: PPS, PTFE, PEEK™, POM

Diaphragm materials: EPDM, PTFE

Check valve materials: EPDM, FKM, FFKM (Refer to the Resources page for more details on listed materials)

Self-priming At start-up, the pump is able to draw air. The suction created by the larger pumps is sufficient to pull liquids from an unpressurized container located up to 4' 3" (1.3m) beneath the pump. Once the pump is primed, it is able to generate around 5psi (0.3bar) pressure, equating to 11' 6" (3.5m) of water.

Continuous duty The pumps are designed for continuous duty. They are suitable for up to 20 million actuations, corresponding to nearly 3,000 hours of continuous use at a 2 Hz

cycle rate.

Accurate discrete dispense volumes Dispense volumes range from 4µl to 250µl per cycle. The pumps can be cycled at up to 4 Hz for the smallest version and 1.6 Hz for the largest. Pumps can be operated at less than the maximum cycle rate by increasing the length of the “off” time. The “on” time should remain unchanged to retain dispense accuracy.

(Download product brochure - Solenoid Operated Micro-Pumps)

The Micro-Pumps selection process starts here, choosing between the two configurations listed below. Then you will select the required dispense volume and materials of construction.

- Ported (threaded) connections
- Manifold mountable

Subcategories

Ported Micro-Pumps (1/4-28 and 5/16-24 threaded connections)

Manifold mounted Micro-Pumps

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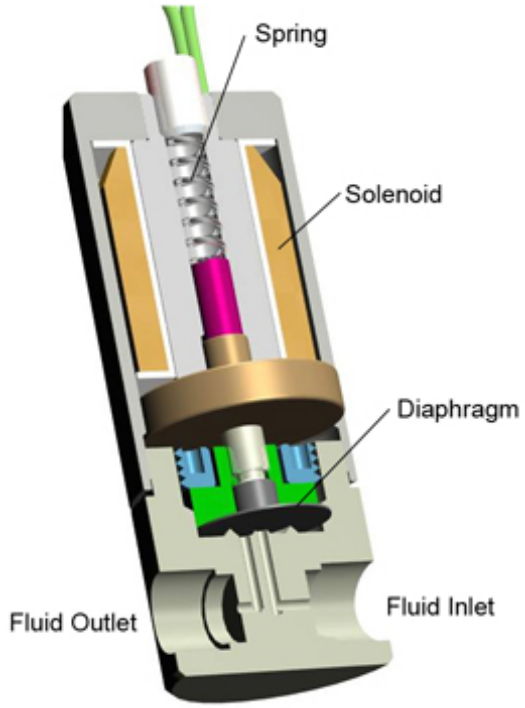
Solenoid Operated Isolation Valves

What is a Solenoid Operated Isolation Valve? An Isolation Valve is a solenoid operated valve where the fluid path is completely isolated from the valve's solenoid actuation mechanism. The only wetted parts are the valve diaphragm and the valve body – hence the name Isolation Valve. (Download brochure - Solenoid Operated Isolation Valves)



Inert For high purity applications and aggressive media handling, the fluid path in the solenoid operated isolation valve can be made entirely from extremely inert materials such as PTFE – something that can not be done with pinch valves as PTFE tubing would be too hard to pinch.
Our all-PTFE solenoid operated isolation valves are the most chemically inert valves available. We also offer a choice of PEEK and PPS valve bodies as well as a range of diaphragm materials to suit a large variety of mechanical and chemical requirements.

Reliable Our valves use continuous duty solenoids rated to over 20 million cycles. They feature low power consumption and fast response time (more details in the brochure- Solenoid Operated Isolation Valves).

Standard construction Listed below is a list of the common features and styles of our standard solenoid operated isolation valves:

- 12 volt or 24 volt
- PTFE, PEEK or PPS body materials (Refer to Resources page for details on material choice)

- 2 way, normally closed ported
- 2 way, normally closed manifold mount
- 2 way, normally open ported
- 2 way, normally open manifold mount
- 3 way ported

(Download brochure - Solenoid Operated Isolation Valves)

Customization Services We routinely offer fully customized solutions on our solenoid operated isolation valves to meet equipment makers' precise specifications. Refer to our Customization page for more details.

3-step Easy Product Selection Guide

Step 1: Select Valve Function (NC= normally closed, NO = normally open)

Subcategories

2-way, Normally Closed, ported

2-way, Normally Closed, manifold mount

2-way, Normally Open, ported

2-way, Normally Open, manifold mount

3-way, ported

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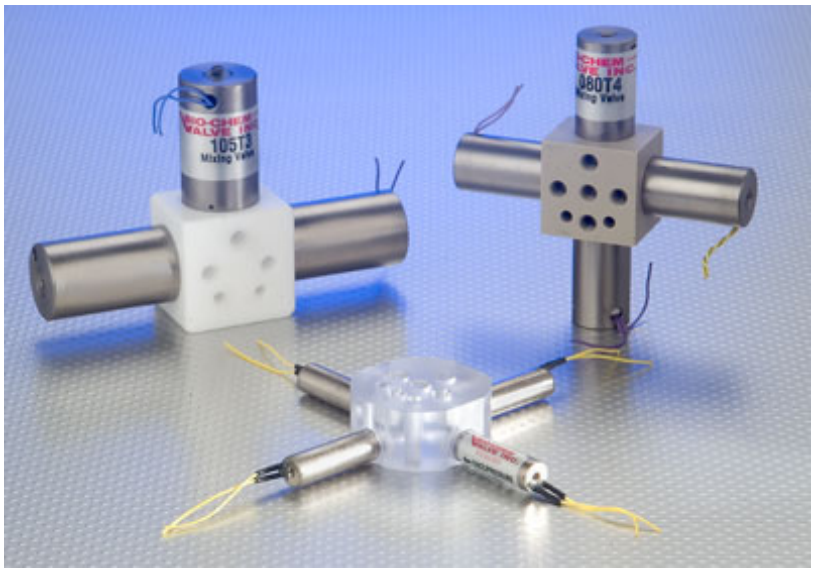
Flow Selection Valves

What is a Solenoid Operated Flow Selection Valve? Flow Selection Valves allow multiple solenoid operated valve elements to be combined into a single, compact unit. Because each element is operated independently of each other an accurately defined combined outlet flow can be produced from between 2 and 8 individual source streams. (Download brochure - Solenoid Operated Flow Selection Valves)



Compact valve/manifold configurations Bio-Chem Fluidics flow selection valves are available with three valve sizes, using 0.38 inch (designated as the 040T), 0.75 inch (080T) and 1.00 (105T) inch solenoid shell diameters. Orifice diameters from 0.032 inches to 0.125 inches cover a broad range of application requirements. For ease of installation, all inlet ports are positioned on the same side of the manifold. The common outlet port is centered between the inlet ports. (Note: in diverting applications, the inlet and outlet ports are reversed.) The compact manifold construction ensures minimal internal volumes.

Optimized flow characteristics Each solenoid actuator on the flow A HALMA COMPANY individually adjusted in the factory so as to provide equal flow rates at the same pressure. Ultra-fast response times for gradient applications. Through rapid cycling of the solenoid, the valves can be used to provide modulating flow rates at constant pressures.

Choice of inert wetted materials The isolation valve design used within the Bio-Chem Fluidics flow selection valves ensures that the only wetted parts are the valve diaphragm and the valve seat, which is part of the manifold. In the standard flow selection valve, both parts are made of PTFE, offering the most chemically inert solution available. For different mechanical and chemical requirements, the customer also has the option of using PEEK or PPS for the manifold material and EPDM, FKM or FFKM for the diaphragm material (refer to Resources page for more information).

Customization Services We routinely offer fully customized solutions on our solenoid

operated isolation valves to meet equipment makers' precise specifications. Refer to our Customization page for more details.

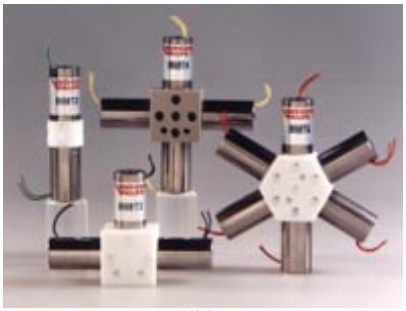
(Download brochure - Solenoid Operated Flow Selection Valves)

From the chart below select number of inlet ports needed (NOTE: all flow selection valves have a common inlet port) and then match that up against the orifice diameter needed. (cno = currently not offered on website, xx in the part number refers to operating voltage either 12 or 24 volts)

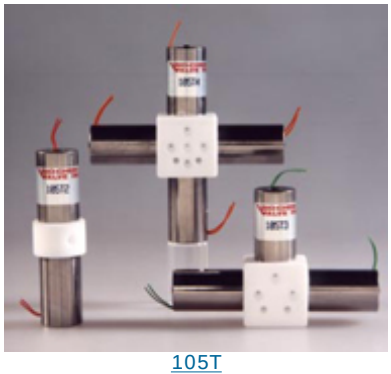
Number of inlet ports	040T		080T			105T	
	0.032"	0.054"	0.032"	0.062"	0.078"	0.092"	0.125"
2			080T2xx-32	080T2xx-62	-cno-	-cno-	105T2xx-125
3	040T3xx-32	-cno-	080T3xx-32	080T3xx-62	-cno-	-cno-	105T3xx-125
4	040T4xx-32	-cno-	080T4xx-32	080T4xx-62	-cno-	-cno-	105T4xx-125
5			080T5xx-32	080T5xx-62	-cno-	-cno-	105T5xx-125
6			080T6xx-32	080T6xx-62	-cno-	-cno-	105T6xx-125
8			080T8xx-32	080T8xx-62	-cno-		

Subcategories

040T



080T



105T

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ECHnology Pty Ltd
Australian Distributors; Importers & Manufacturers

BIO-CHEM VALVE

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What is a Solenoid Operated Pinch Valve? A Pinch Valve is a solenoid operated valve allowing a flow passage through a flexible tube which is "pinched" off to produce a tight seal. Only the easily replaceable tubing comes into contact with the fluid making this style of valve ideal for applications requiring frequent changes of the flow path. (Download brochure - Solenoid Operated Pinch Valves)

Next Generation Pinch Valves! Bio-Chem Fluidics introduces the NEXT GENERATION of Bio-Chem Valve™ Pinch Valves! The new valves incorporate a molded body which has been designed to meet market demand for better looking and easier to use valves. The molded body features a smooth profile and enhanced aesthetics with features that benefit not only instrument designers but also the system end-user. (*Molded bodies are available across most of the 075P and 100P series pinch valve ranges.)

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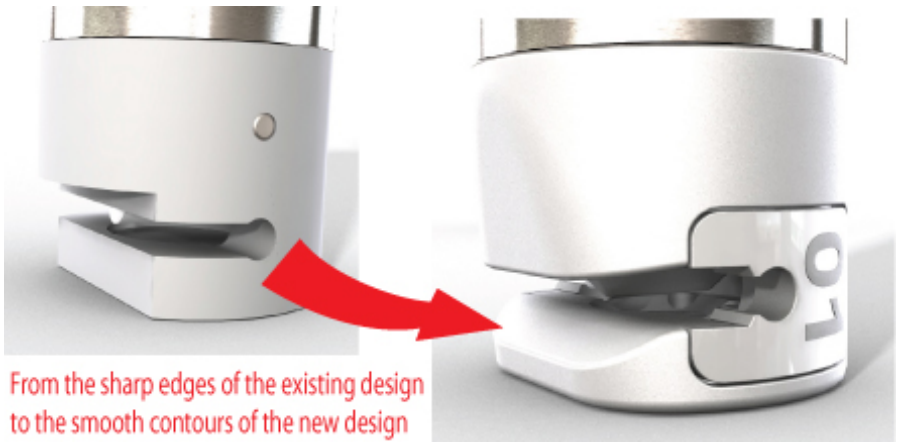


Tubing Bio-Chem Valve solenoid operated pinch valves, as standard, are supplied with either Silicone Select™ or Bio-Chem (C-Flex) tubing. (Other, customer supplied tubing may be used - refer to Customization page for more details). Silicone Select™ is a platinum cured silicone tubing complying with USP XXII, Class VI, FDA and USDA standards and is FDA master file listed and is rated for a minimum of 500,000 cycles. Bio-Chem (C-Flex) complies with the same standards and is rated to 200,000 cycles and, although it has a shorter life expectancy, it is preferred in applications where gas permeability is an issue. The C-Flex also has higher chemical resistance to certain fluids. (Download material data sheets for Silicone Select™ and Bio-Chem (C-Flex) tubing.)

Reliable Our valves use continuous duty solenoids rated to over 20 million cycles. They feature low power consumption and fast response time.

Standard construction These are a list of the common features and styles of our standard isolation valves:

- 12 volt or 24 volt
- Silicone Select™ and Bio-Chem (C-Flex) tubing (currently only valves with Silicone Select are available via online store, please contact us for C-Flex tubing)
- Quiet operation (optional)
- Feedback sensor (optional)
- 2 way, normally closed
- 2 way, normally open
- 3 way
- 2 way, dual tubing
- 3 way, dual tubing
- Multi-tube (currently unavailable via online store, please contact us)

(Download brochure - Solenoid Operated Pinch Valves)

Customization Services We routinely offer fully customized solutions on our solenoid operated isolation valves to meet equipment makers' precise specifications. Refer to our Customization page for more details.

3-step Easy Product Selection Guide

Step 1: Select Valve Function (NC= normally closed, NO = normally open)

Subcategories

Dual tubing, 3 way

2 way, normally closed

2 way, normally open

3 way

Dual tubing, 2 way

BIO-CHEM VALVE™ INC.

Isolation Valves

Solenoid valves with an isolated solenoid for use with aggressive and high-purity fluids.

- 2-way or 3-way configuration
- Low Power Consumption
- Fully Isolated Solenoid
- Choice of PTFE, PEEK™, PPS, Tefzel®, EPDM, Viton® and pefluoroelastomer wetted parts
- Manifold Mountable for Minimizing Leak Points and Space Requirements
- Designed for over 20 million cycles continuously
- Minimal Space Requirements
- Fast Response Time
- Minimal Dead Space
- Design Pressure Limits for 15 to 550 psig

Compact valve configurations

The Bio-Chem Valve isolation valves are available with three valve sizes, using 0.38 inch, 0.75 inch and 1.00 inch solenoid shell diameters. These sizes correspond to orifice diameters spanning from 0.032 inches to 0.125 inches, covering a broad range of application requirements. Valves are offered in 2-way normally open, 2-way normally closed and 3-way configurations.

Choice of inert wetted materials

The isolation valve design ensures that the only wetted parts are the valve diaphragm and the valve body. PTFE is a standard material for the majority of isolation valves, offering the most chemically inert solution available. For different mechanical and chemical requirements, the customer also has the option of using PEEK™, PPS or Tefzel® for the body material and EPDM, Viton® or a perfluorelastomer for the diaphragm material.

Quick-Change Customization™

Through Bio-Chem Valve's Quick-Change Customization™ process, the standard isolation valve configurations shown on this product data sheet can be modifed to meet the customer's specifications. For possibilities regarding solenoid and spring response times, operating pressures, port threads and locations, body configurations, wetted material and other features, please consult Bio-Chem Valve and Omnifit.

Specifications

Valve Series

The isolation valves are offered in five valve series, distinguished by the solenoid shell size, manifold mountability, and flow configuration:

Valve Series	Shell Diameter	Manifold Mountable	Flow Configuration
038T2	0.38 inches	no	2-way NC
039T2	0.38 inches	yes	2-way NC
075T2	0.75 inches	no	2-way NC/NO
075T3	0.75 inches	no	3-way
079NC	0.75 inches	yes	2-way NC/NO
100T2	1.00 inches	no	2-way NC/NO
100T3	1.00 inches	no	3-way

Electrical

Valve Series	Voltage	Power @ 70°F (21°C)	Power with CoolCube™	Current @ 70°F (21°C)
038T2	12 VDC	1.8 Watts	0.22 Watts	0.17 amps
	24 VDC	1.9 Watts	0.22 Watts	0.08 amps
039T2	12 VDC	1.8 Watts	0.22 Watts	0.17 amps
	24 VDC	1.9 Watts	0.22 Watts	0.08 amps
075T2	12 VDC	2.8 Watts	0.29 Watts	0.22 amps
	24 VDC	2.9 Watts	0.29 Watts	0.10 amps
075T3	12 VDC	2.8 Watts	0.29 Watts	0.22 amps
	24 VDC	2.9 Watts	0.29 Watts	0.10 amps
079NC	12 VDC	2.8 Watts	0.29 Watts	0.22 amps
	24 VDC	2.9 Watts	0.29 Watts	0.10 amps
100T2	12 VDC	4.0 Watts	0.44 Watts	0.32 amps
	24 VDC	4.0 Watts	0.44 Watts	0.16 amps
100T3	12 VDC	4.0 Watts	0.44 Watts	0.32 amps
	24 VDC	4.0 Watts	0.44 Watts	0.16 amps

Note: 115 VAC and 220 VAC solenoid coils are also available on all valve series except 038 and 039.
Note 2: The Bio-Chem Valve CoolCube™ control module allows the application of over-voltage to actuate the valve (e.g. using 24 VDC to actuate a valve rated for 12 VDC). After a delay of 110 milliseconds, the CoolCube™ drops the voltage to 1/3 (e.g. to 8 VDC from the original 24 VDC), which is sufficient to hold the valve in position. The CoolCube50™ is designed for use with 038 and 039 series valves and drops the voltage to 1/2. (Please refer to the CoolCube™ specification sheet.)

Orifice diameter options & maximum operating pressures

Valve Series	Orifice Diameters					
	0.032" (0.80 mm)	0.046" (1.17 mm)	0.054" (1.40 mm)	0.062" (1.57 mm)	0.092" (2.34 mm)	0.125" (3.18 mm)
038T2	20 psi	n/a	20 psi	n/a	n/a	n/a
039T2	20 psi	n/a	20 psi	n/a	na/	n/a
075T2	20 psi	n/a	20 psi	20 psi	n/a	n/a
075T3	15 psi (NC/NO) 20 psi (Com)	15 psi (NC/NO) 20 psi (Com)	n/a	n/a	n/a	n/a
079NC	20 psi	n/a	n/a	20 psi	n/a	n/a
100T2NC	n/a	n/a	n/a	15 psi	15 psi	15 psi
100T2NO	n/a	n/a	n/a	10 psi	10 psi	10 psi
100T3	30 psi (NC/NO) 60 psi (Com)	n/a	n/a	30 psi (NC/NO) 60 psi (Com)	n/a	n/a

Note: All valves can be operated at a vacuum.
Note 2: Higher pressures are available, consult factory.

Internal Volumes (µL)

Valve Series	Orifice Diameter	Internal Volume
038T2 Side-Ported	0.032"	20 µl
	0.054"	42 µl
038T2 Bottom-Ported	0.032"	18 µl
	0.054"	35 µl
039T2	0.032"	13 µl
	0.054"	21 µl
075T2	0.032"	19 µl
	0.054"	39 µl
	0.062"	54 µl
075T3	0.032"	45 µl
	0.046"	52 µl
079NC	0.032"	21 µl
	0.062"	31 µl
100T2	0.062"	55 µl
	0.092"	133 µl
	0.125"	296 µl
100T3	0.032"	47 µl
	0.062"	87 µl

Flow Factors (C_v)

Valve Series	Orifice Diameter	C_v
038T2	0.032"	0.008
	0.054"	0.015
039T2	0.032"	0.008
	0.054"	0.015
075T2	0.032"	0.011
	0.054"	0.027
	0.062"	0.030
075T3	0.032"	0.010
	0.046"	0.023
079NC	0.032"	0.011
	0.062"	0.027
100T2	0.062"	0.042
	0.092"	0.080
	0.125"	0.105
100T3	0.032"	0.010
	0.062"	0.028

Specifications (contd.)

Reaction times (for normally closed operators)

Valve Series	Opening time (milliseconds)		Closing time (milliseconds)
	Standard	with CoolCube™	
038T2	10 ms	5 ms	5 ms
039T2	10 ms	5 ms	5 ms
075T2	15 ms	5 ms	5 ms
075T3		Call Factory	
079NC	15 ms	5 ms	5 ms
100T2	20 ms	7 ms	20 ms
100T3		Call Factory	

Note 1: Reaction times were tested with air. Reaction times will vary depending on the medium.

Note 2: The Bio-Chem Valve CoolCube™ control module allows the application of over-voltage to actuate the valve (e.g. using 24 VDC to actuate a valve rated for 12 VDC). After a delay of 110 milliseconds, the CoolCube™ drops the voltage to 1/3 (e.g. to 8 VDC from the original 24 VDC), which is sufficient to hold the valve in position. The CoolCube50™ is designed for use with 038 and 039 series valves and drops the voltage to 1/2. (Please refer to the CoolCube™ specification sheet.)

Note 3: With use of CoolCube™ and CoolCube50™, power consumption will be reduced to 1/9 and 1/4 respectively after initial energization.

Port Threads

The standard isolation valve has 1/4”-28 UNF flat bottom port threads.

Other port threads are available, such as M6 x 1.0, 10-32, 5/16”-24 and 1/8” NPT. Consult factory.

Lead Wires

Valve Series	Lead Wires
038T2	24" 28-Gauge Teflon® coated
039T2	24" 28-Gauge Teflon® coated
075T2	15" 26-Gauge Teflon® coated
075T3	15" 26-Gauge Teflon® coated
079NC	15" 26-Gauge Teflon® coated
100T2	15" 26-Gauge Teflon® coated
100T3	15" 26-Gauge Teflon® coated

Fittings

The Omni-Lok™ Fitting System has been designed for connecting to Bio-Chem Valve Isolation Valve ports. The glass filled polypropylene material provides a stronger hold in PTFE ports where other fittings tend to back out. The Omni-Lok™ is also designed to provide more thread engagement in the shallow ports of an isolation valve. See The Omni-Lok™ Fitting System spec sheet for more information.

The Omni-Lok™ Fitting System

Mounting

Mounting Clips, Rings and Flanges are available for standard valves. Manifold mountable valves are also available. (Series 079NC and 039T)

Two 0.093 inch (2.4 mm) diameter mounting holes for self-tapping screws are an option with 075T2 and 100T2 series valves. Two 4-40 threaded mounting holes are an option with 075T3 and 100T3 series valves.

See Mounting Accessories & Options data sheet for more information.

Specifications (contd.)

Wetted Material Options by Valve Series

Body Material \ Diaphragm Material	PTFE	EPDM	Viton®	Perfluoroelastomer
PTFE	075T2 075T3 100T2 100T3	075T2 079NC 100T2	075T2 079NC 100T2	075T2 079NC 100T2
Tefzel®	075T2 100T2	075T2 100T2	075T2 100T2	075T2 100T2
PPS	075T2 075T3 100T2 100T3	038T2 039T2 075T2 075T3 079NC 100T2	038T2 039T2 075T2 079NC 100T2	038T2 039T2 075T2 075T3 079NC 100T2
PEEK	038T2 039T2 075T2 075T3 079NC 100T2 100T3	038T2 039T2 075T2 075T3 079NC 100T2	038T2 039T2 075T2 079NC 100T2	038T2 039T2 075T2 075T3 100T2

Ordering Information

1	Select valve size	038, 039T2M, 075, 079, 100
2	Indicate Style	T2, T3 (leave blank for 079 and 039T2M valve sizes)
3	Indicate Porting Option **(for 038 size only)**	B (bottom ported), S (side ported)
4	Indicate Operating Configuration	NC, NO (leave blank for 039T2M valve size)
5	Indicate voltage	12 VDC, 24 VDC, 115 VAC, 220 VAC
6	Indicate orifice diameter (in 1/1000 inch) (See chart on page 2 for available orifice sizes with specific models.)	32, 46, 54, 62, 92, 125
7	Body material (PTFE Standard except on 038 and 039 series. See chart on page 4 for options.)	2 (Tefzel®), 4 (PPS), 5 (PEEK™)
8	Diaphragm material (PTFE Standard. See chart on page 4 for options.)	E (EPDM), V (Viton®), P (Perfluoroelastomer)
9	Mounting holes on valve base	M

Options

Consult Bio-Chem Valve and Omnifit for options concerning:

- Port threads
- Helicoils
- Terminal connectors and non-standard lead wire lengths
- Above standard operating pressure requirements
- Manifold configurations

Accessories

Please see the following product specification sheets for accessories:

- Fitting Systems
- The Omni-Lok™ Fitting System
- CoolCube™ control module
- Mounting Accessories & Options

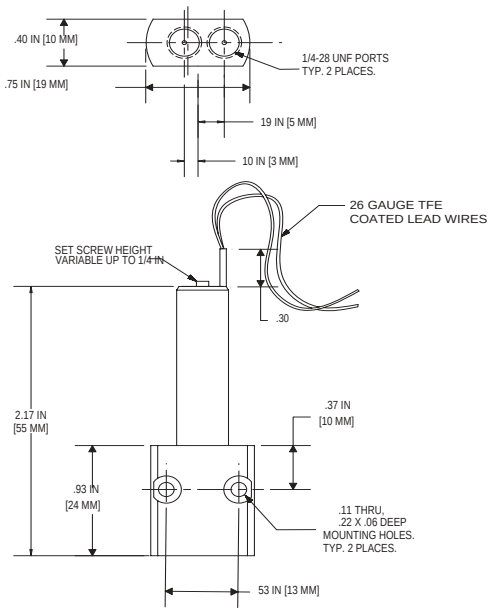
Example P/N:

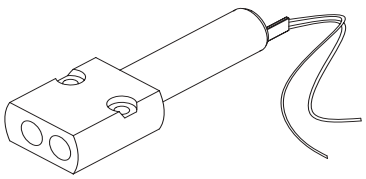
075	T2	NC	24	-	62	-	4	V	M
Valve Size	Style	Operating Config.	Voltage		Orifice Diameter		Body Material (Leave blank for PTFE)	Diaphragm Material (Leave blank for PTFE)	Mounting Holes (Leave blank for no mounting holes)

Important note:
Certain part number configurations may be subject to minimum order quantities and extended delivery schedules.
Please refer to factory before ordering.
Call: 973-263-3001 or e-mail: sales.us@biochemfluidics.com

Installation Drawings

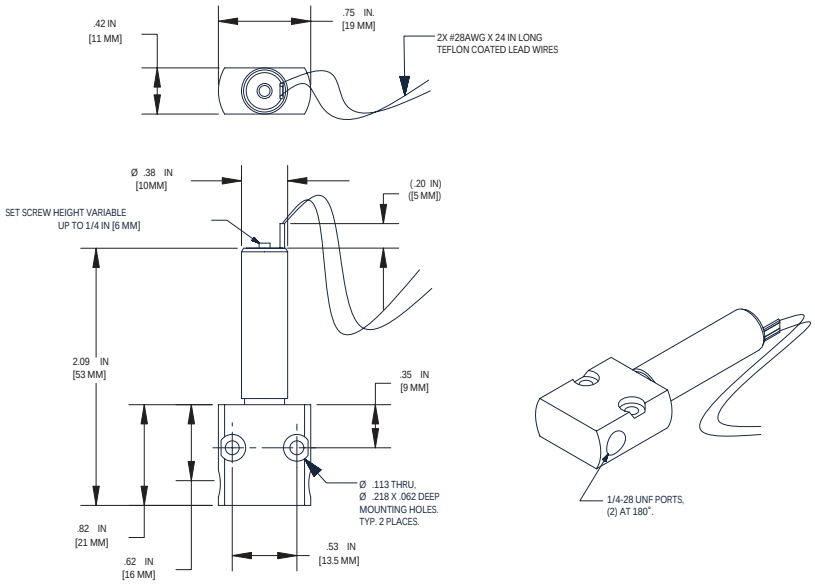
038T2B
Bottom Ported



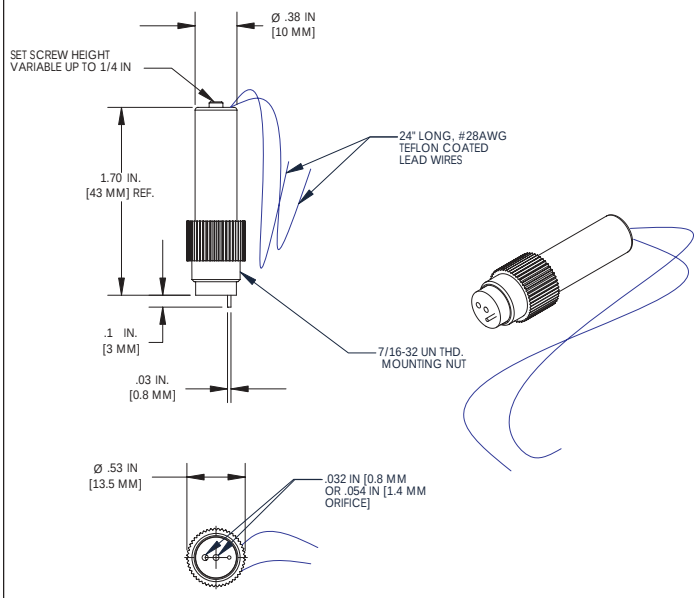


Installation Drawings

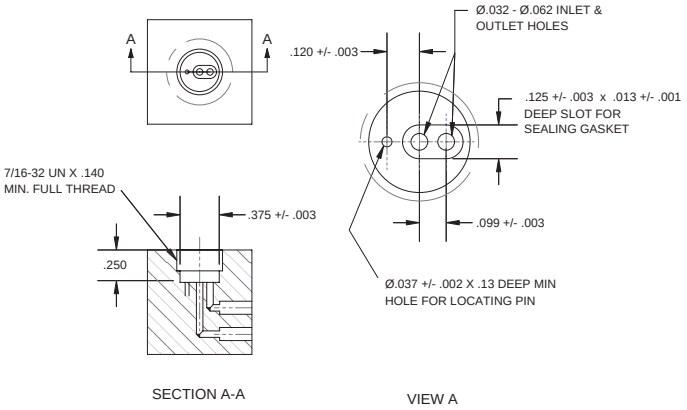
038T2S
Side Ported



039T2M
Manifold Mountable

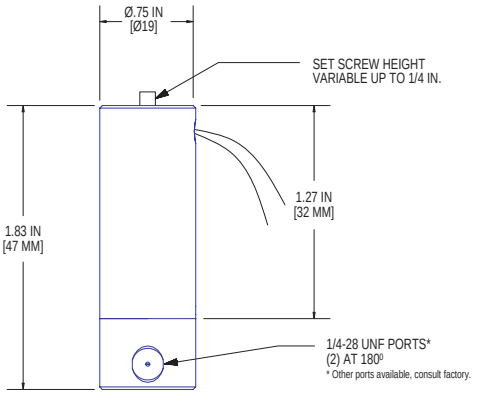


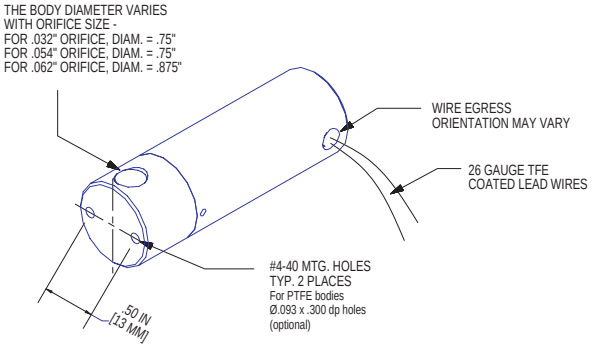
Manifold Interface



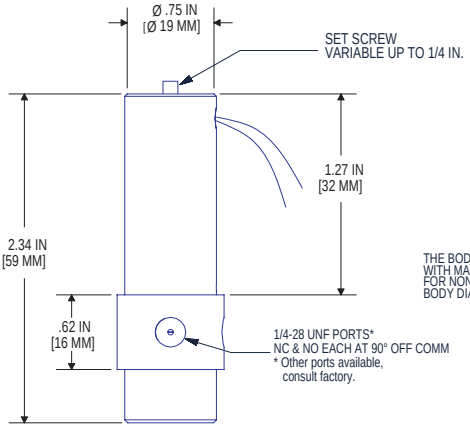
Installation Drawings (contd.)

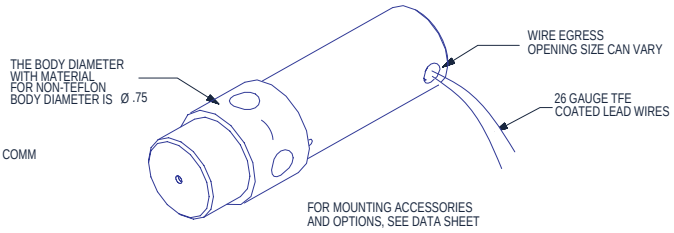
075T2NC



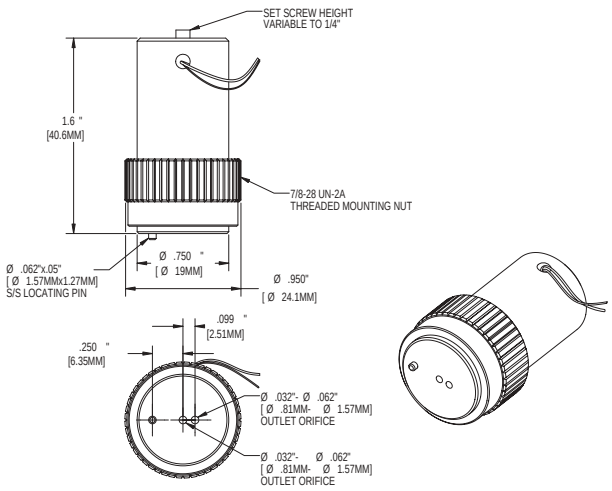


075T3MP

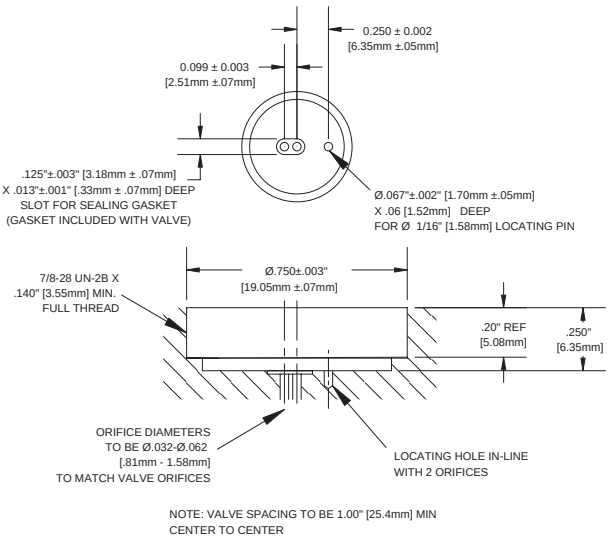




079NC
Manifold Mountable

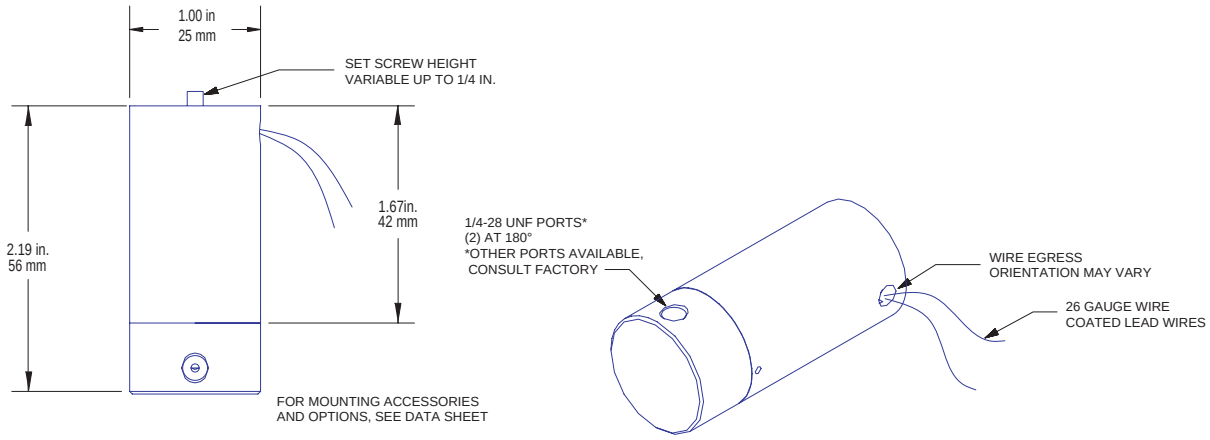


Manifold Interface



Installation Drawings (contd.)

100T2NC



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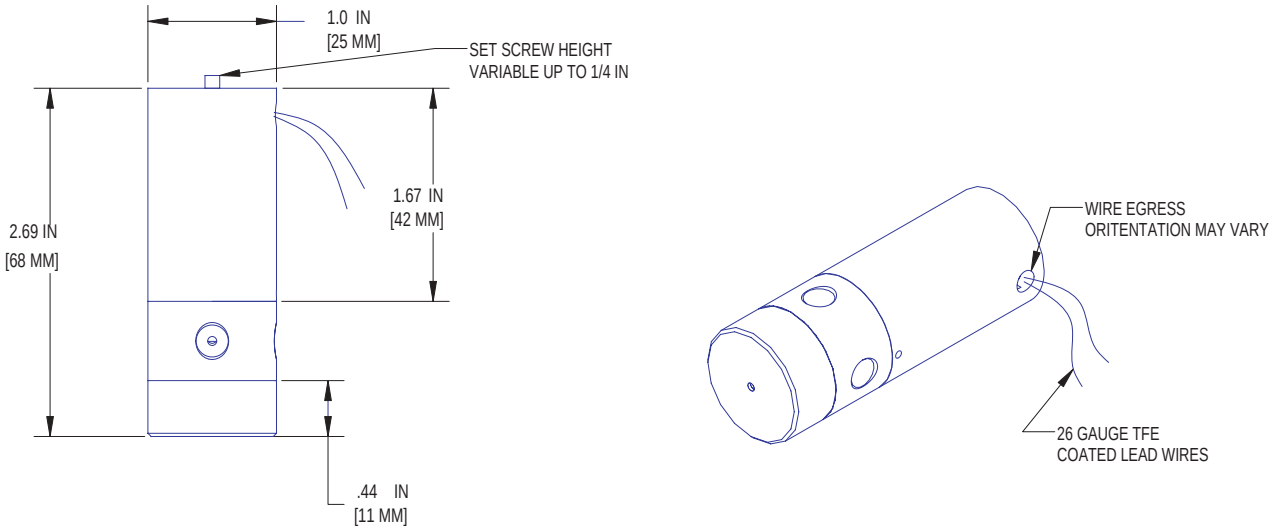

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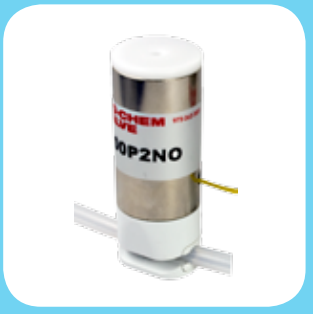
Rev. 0805

BIO-CHEM VALVE

Solenoid Operated Pinch Valves



BIO-CHEM FLUIDICS

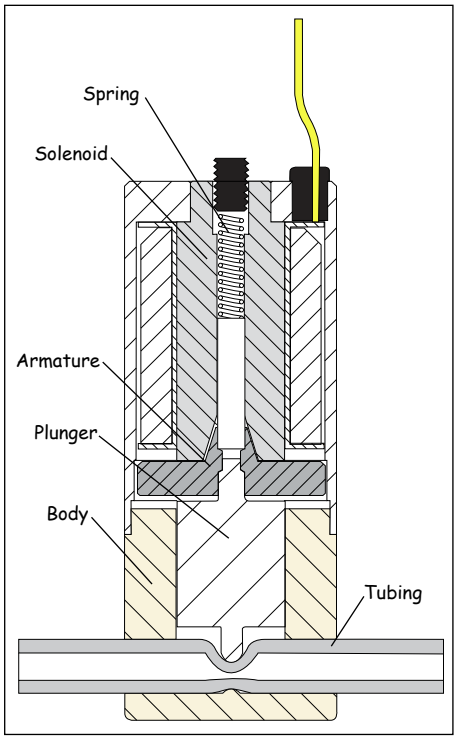
A HALMA COMPANY

INDEX

PINCH VALVES GENERAL INFORMATION

What is a Pinch Valve?

The Bio-Chem Valve™ Pinch Valve is a solenoid-operated device. It is designed to open and close tubing to achieve controlled fluid flow.



Only the inside of the tubing contacts the fluid. Energizing the solenoid retracts the valve plunger. This either opens the tubing (in the normally closed configuration, as shown left) or closes the tubing (normally open configuration). De-energizing the solenoid allows a spring to push the plunger back to its original position. This returns the tubing to its original open or closed position. A 3-way valve has both a normally open and a normally closed flow path, which are operated simultaneously. The tubing is held in place by precisely sized grooves in the valve body.

Why choose a Pinch Valve?

There are many reasons to use Bio-Chem Valve™ Pinch Valves (refer to page 4 for more details) but pinch valves themselves have specific features that lend themselves to particular applications:

- Unobstructed flow path. Pinch valves create minimal pressure drop, which is important for controlling downstream instrumentation.
- Tubing is soft yet durable. Pinch valves are highly tolerant of particulates in the fluid stream.
- Tubing is easy to change. The user can change tubes if a sterile fluid path is required (for instance, blood collection) or when chemicals create clogs (for instance, system waste lines).
- Zero dead volume. Consecutive samples are not contaminated by the previous one.
- Fluid contacts tubing only. The materials of construction of the body and plunger do not have to be highly corrosion resistant, which means pinch valves are often very economical when compared to alternatives.
- Simple. Pinch valves do not require complicated electronic controls - they are either energized or not. Pinch valves do support the use of "Hit and Hold" circuits which significantly reduce the power required to hold the valve in its energized position (for more detail see the CoolCube™ on page 16).

Pinch Valve Selection Guide

Valves with Bio-Chem Valve™ silicone or C-Flex® tubing

1. Select the tubing material – either silicone or C-Flex®. (See page 5 for additional information about these tubing material options.)
2. Choose your required tubing internal diameter or flow rate, then flow configuration - normally closed (NC), normally open (NO), 3-way or multi-tube
3. Turn to the pages indicated to see full details and ordering information for each valve.

Silicone tubing

Tubing designation	Internal diameter	Full flow* lpm	Flow configuration			
			2-way NC	2-way NO	3-way	2 or 3-way dual tube
10S	0.010" / 0.3mm		075P2NC (pg. 6)	075P2NO (pg. 6)		
23S	0.023" / 0.6mm				075P3MP (pg. 6)	
01S	1/32" / 0.8mm					
50S	0.050" / 1.3mm					
02S	1/16" / 1.6mm					
01S	1/32" / 0.8mm		100P2NC (pg. 9)	100P2NO (pg. 9)	100P3MP (pg. 9)	100PD (pg. 10)
02S / 03S	1/16" / 1.6mm					
05S	1/8" / 3.2mm					

C-Flex® tubing

Tubing designation	Internal diameter	Full flow* lpm	Flow configuration			
			2-way NC	2-way NO	3-way	2 or 3-way dual tube
23B	0.023" / 0.6mm		075P2NC (pg. 6)	075P2NO (pg. 6)	075P3MP (pg. 6)	
01B	1/32" / 0.8mm					
02B	1/16" / 1.6mm					
01B	1/32" / 0.8mm		100P2NC (pg. 9)	100P2NO (pg. 9)	100P3MP (pg. 9)	100PD (pg. 10)
02B / 03B	1/16" / 1.6mm					
05B	1/8" / 3.2mm					
01B	1/32" / 0.8mm Multi-tube			108P (pg. 15)		

* flow through open tube at maximum rated pressure

Valves for customer-specific tubing

If the customer intends to use the pinch valves with tubing other than Bio-Chem Fluidics-supplied tubing, this can be easily accommodated. The customer should provide a sample of tubing to Bio-Chem Fluidics, who will select the appropriate valve size and adjust the stroke and force settings to match the tubing diameter and durometer.

Bio-Chem Fluidics will assign a special part number to this valve - contact your local office for more details.

Polymers referenced in this brochure:

ASA/PC = acrylonitrile styrene acrylate / polycarbonate
PPS = polyphenelyne sulfide
POM = polyoxymethylene (Acetal resin)
PEEK = polyetheretherketone

Features of Bio-Chem Valve™ Pinch Valves

Molded Body*

Bio-Chem Valve™ Pinch Valves incorporate a molded body which designed to meet the market demand for better looking and easier to use valves. The molded body features a smooth profile and enhanced aesthetics with features that benefit not only instrument designers but also the system end-user. *(*Molded bodies are available across most of the 075P and 100P series pinch valve ranges.)*

Choice of de-engerized state

Bio-Chem Valve™ Pinch Valves are supplied in the following standard configurations:

- 2-way normally closed.
- 2-way normally open.
- 3-way (where one tube, or set of tubes, is normally open and the other normally closed. When the valve is energized the operation is reversed so the normally open tube is closed and the normally closed tube is opened).

Dual tubing configurations (i.e. two tubes being operated simultaneously) are offered for smaller tubing sizes. Multi-tube pinch valves with 4, 6 or 8 tubes and normally open operation are also available

2-way
Normally Closed

2-way
Normally Open

3-way

Choice of tubing materials

Bio-Chem Fluidics offers two high-purity medical grade tubing materials for pinch valves:

- Platinum cured silicone tubing.
- C-Flex® tubing.

Bio-Chem Valve™ Pinch Valves can also be configured to use customer supplied tubing, within a recommended durometer range of 45-60 Shore A.

Easy tube insertion

The tubing entry area of the valve body is contoured to guide the tubing into its seat.

Molded body is contoured to aid tube insertion. Grooved insert clearly identifies the tubing size.

Tubing securely seated

Molded grooves hold the tubing securely in the proper position. The gap between the valve plunger and the valve's anvil is slightly smaller than the tubing's outer diameter. The tubing is held in place during operation without need for mechanical locking features. Fluid flow and pressure drop are minimally affected, achieving around 95% of full flow given the nominal tubing inner diameter.

Long life cycles

Bio-Chem Valve™ Pinch Valves are designed to last for a minimum of 2 million open-and close cycles**. Silicone tubing is rated for over 500,000 cycles and C-Flex tubing is rated for over 200,000 cycles.

Continuous duty

Bio-Chem Valve™ Pinch Valves can remain in the fully energized state indefinitely without damage to the valve or the tubing.

Low power consumption

The pinch valves' efficient construction permits the use of low wattage solenoid coils, ranging from 2.8 Watt for 075-series valves to 8.1 Watt for 100-series valves, which in turn minimizes heat generation. Both power usage and heat generation can be lowered further by stepping down the voltage after actuation by using a CoolCube™ "Hit and Hold" circuit (refer to page 16 for more details).

*** As tested under accelerated laboratory conditions at nominal voltage, maximum rated pressure (air), 3Hz cycle rate and ambient temperature. Actual results may vary depending upon application parameters.*

Tubing for Bio-Chem Valve™ Pinch Valves

Platinum-cured silicone tubing

1. Test Standards. Bio-Chem Valve™ silicone tubing is tested in accordance to the standards set by the United States Pharmacopoeia National Formulary XVII, 1990, Class VI Biological Test for Plastics. It is FDA Masterfile listed (MAF 819).
2. Durability. This tubing has been selected for use with pinch valves. Platinum curing performed on the tubing during the extrusion process imparts superior strength and durability. The tubing has a low compression set and resists sticking shut even after prolonged periods in the closed position. Excellent memory characteristics ensure full opening and unencumbered flow. The silicone tubing is rated for 500,000 pinch valve cycles.
3. Sterilization. The silicone tubing can be sterilized through steam autoclaving, boiling, dry heat, steam, and gamma radiation.
4. Gas permeability. Silicone tubing has a poor gas permeability rating.

Bio-Chem Valve™ Pinch Valves with an "S" suffix have silicone tubing already installed. The tubing is also available in 50-foot (15-meter) coils. The coils can be ordered under the part numbers listed below:

Tubing Designation	Diameter		Pressure		Nominal Durometer*
	Inner	Outer	Minimum	Maximum	
10025-10S	0.010"/0.3mm	0.093"/2.4mm	28.2 inHg vac.	30 psi / 2.0 bar	50
10025-23S	0.023"/0.6mm	0.093"/2.4mm	28.2 inHg vac.	20 psi / 1.3 bar	60
10025-01S	1/32"/0.8mm	3/32"/2.4mm	28.2 inHg vac.	25 psi / 1.6 bar	60
10025-50S	0.05"/1.3mm	0.134"/3.4mm	28.2 inHg vac.	15 psi / 1.0 bar	60
10025-02S	1/16"/1.6mm	1/8"/3.2mm	28.2 inHg vac.	25 psi / 1.6 bar	50
10025-03S	1/16"/1.6mm	3/16"/4.8mm	28.2 inHg vac.	25 psi / 1.6 bar	50
10025-05S	1/8"/3.2mm	1/4"/6.4mm	28.2 inHg vac.	20 psi / 1.3 bar	50

* Shore A

C-Flex® tubing

1. Test Standards. The C-Flex® tubing used in Bio-Chem Valve™ pinch valves is tested in accordance to the standards set by the United States Pharmacopoeia National Formulary XVII, 1990, Class VI Biological Test for Plastics. It is FDA Masterfile listed.
2. Material. C-Flex® tubing is made from a thermoplastic elastomer based on styrene-ethylene-butylene. It does not contain leachable plasticizers.
3. Chemical compatibility. C-Flex® can be used with many acids and alkalis. It is not recommended for use with oils and organic solvents.
4. Durability. This tubing has been selected for use with pinch valves. The tubing has a low compression set and resists sticking shut even after prolonged periods in the closed position. Good memory characteristics ensure full opening and unencumbered flow. C-Flex® tubing is rated for 200,000 pinch valve cycles.
5. Sterilization. C-Flex® tubing can be sterilized through steam autoclaving, ethylene oxide (ETO), and gamma radiation.
6. Gas permeability. C-Flex® tubing has a fair gas permeability rating. It has lower gas permeability than silicone.

Bio-Chem Valve™ Pinch Valves with a "B" suffix have C-Flex® tubing already installed. The tubing is also available in 50-foot (15-meter) coils. The coils can be ordered under the part numbers listed below:

Tubing Designation	Diameter		Pressure		Nominal Durometer*
	Inner	Outer	Minimum	Maximum	
10025-23B	0.023"/0.6mm	0.093"/2.4mm	28.2 inHg vac.	20 psi / 1.3 bar	45
10025-01B	1/32"/0.8mm	3/32"/2.4mm	28.2 inHg vac.	25 psi / 1.6 bar	45
10025-02B	1/16"/1.6mm	1/8"/3.2mm	28.2 inHg vac.	25 psi / 1.6 bar	45
10025-03B	1/16"/1.6mm	3/16"/4.8mm	28.2 inHg vac.	25 psi / 1.6 bar	50
10025-05B	1/8"/3.2mm	1/4"/6.4mm	28.2 inHg vac.	20 psi / 1.3 bar	50

* Shore A

075P SERIES PINCH VALVES

For use with soft-walled tubing with inner diameters from 0.010"/0.3mm to 1/16"/1.6mm

- Continuous duty solenoid operated valve. Can remain fully energized for indefinite time period.
- Valve life above 2 million cycles.
- Precise stroke and closing force setting to protect tubing and extend valve life.
- Chemically resistant PPS plunger and ASA/PC body materials
- 24" (610mm) lead wires
- Low power consumption (3.6 Watts or less) and minimal heat generation.

075P2NC (2-way Normally Closed)

075P2NO (2-way Normally Open)

075P3 (3-way)

NOTE:
1. For 24 VDC, replace 075P2Nx12 with 075P2Nx24 (or for a 3-way valve replace 075P3MP12 with 075P3MP24) in any of the part numbers listed.

A. 2-way normally closed valves

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, 12" (305mm) strip of silicone tubing is installed in the valve.					
075P2NC12-10S	0.010 / 0.3	0.093 / 2.4	28.2	30 / 2.0	2.9
075P2NC12-23S	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	2.9
075P2NC12-01S	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	2.9
075P2NC12-50S	0.050 / 1.3	0.134 / 3.4	28.2	15 / 1.0	3.6
075P2NC12-02S	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	2.9
12 VDC valves with C-Flex® tubing, 12" (305mm) strip of C-Flex® tubing is installed in the valve.					
075P2NC12-23B	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	2.9
075P2NC12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	2.9
075P2NC12-02B	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	2.9

B. 2-way normally open valves

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, 12" (305mm) strip of silicone tubing is installed in the valve.					
075P2NO12-10S	0.010 / 0.3	0.093 / 2.4	28.2	30 / 2.0	2.9
075P2NO12-23S	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	2.9
075P2NO12-01S	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	2.9
075P2NO12-50S	0.050 / 1.3	0.134 / 3.4	28.2	15 / 1.0	3.6
075P2NO12-02S	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	2.9
12 VDC valves with C-Flex® tubing, 12" (305mm) strip of C-Flex® tubing is installed in the valve.					
075P2NO12-23B	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	2.9
075P2NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	2.9
075P2NO12-02B	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	2.9

075P SERIES PINCH VALVES continued

C. 3-way valves (one port normally open, other port normally closed)*

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, two 6" (152mm) strips of silicone tubing joined by 'Y' connector installed in the valve.					
075P3MP12-23S	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	3.6
075P3MP12-01S	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	3.6
075P3MP12-50S	0.050 / 1.3	0.134 / 3.4	28.2	15 / 1.0	3.6
075P3MP12-02S	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	3.6
12 VDC valves with C-Flex® tubing, two 6" (152mm) strips of C-Flex® tubing joined by 'Y' connector installed in the valve.					
075P3MP12-23B	0.023 / 0.6	0.093 / 2.4	28.2	20 / 1.3	3.6
075P3MP12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 / 1.0	2.9
075P3MP12-02B	1/16" / 1.6	1/8" / 3.2	28.2	15 / 1.0	2.9

* The operation of 3-way valves can be compromised by extended continuous operation. A "Hit and Hold" circuit is strongly recommended to reduce heat generation in extended use applications.

D. Available options, 075P series pinch valves

1. "Quiet" operation (suffix = "Q"). The quiet option reduces the valve noise level from about 72 dB (A) to less than 50 dB (A). The quiet option is available for:

   a. 075P2NC 2-way normally closed valves.

   b. 075P2NO 2-way normally open valves.

The quiet option cannot be used on 075P3MP three-way valves. The noise level of the 3-way valves is inherently attenuated by the tubing which dampens the motion in both directions.

2. Mounting holes (suffix = "M") situated on the bottom of the valve body. Refer to installation drawing (page 8) for details and dimensions.

The mounting holes cannot be used in combination with the manual override button.

3. Manual override button (suffix = "K"). The manual override button releases the tubing either to facilitate easier tubing changes or in the event of electrical power loss. The manual override is available for:

   a. 075P2NC 2-way normally closed valves.

   b. 075P3 3-way valves

4. Position feedback sensor (suffix = "F"). The feedback sensor provides secondary, independent confirmation of the plunger position (more details on page 16). The feedback option is available for:

   a. 075P2NC 2-way normally closed valves.

   b. 075P3 3-way valves

5. Factory-installed mounting flange (suffix = "L"). The mounting flanges are available for all 075P pinch valve configurations. They will be installed at a 90° angle to the tubing with the orientation to the outside of the bulkhead.

This mounting flange can be purchased as a stand-alone item under part number MU-075 (more details on page 17).

E. "Hit and Hold" voltage reduction

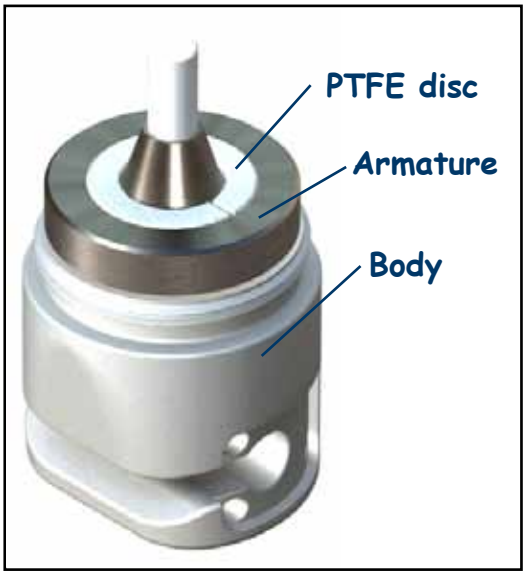
Within 100 ms of valve actuation, the voltage required to hold the valve in position can be reduced. The voltage step-down results in the dual benefits of power conservation and heat reduction. The amount of the voltage reduction possible is 66% (i.e. 24 Vdc to 8 Vdc or 12 Vdc to 4 Vdc) for all 075P pinch valves that do not incorporate the "quiet" feature. This results in a power usage reduction of 89%, resulting in a correspondingly large drop in heat generation.

For the 075P pinch valves with the "quiet" feature, voltage can be reduced by 50% (i.e. 24 Vdc to 12 Vdc and 12 Vdc to 6 Vdc) after 100 ms for a power usage drop of 75%.

This voltage reduction can be accomplished using the Bio-Chem Fluidics CoolCube™ hit-and-hold circuit (more details on page 16).

Option Highlight

Quiet Option



Features: Reduces the valve noise level from about 72 dB (A) to less than 50 dB (A).

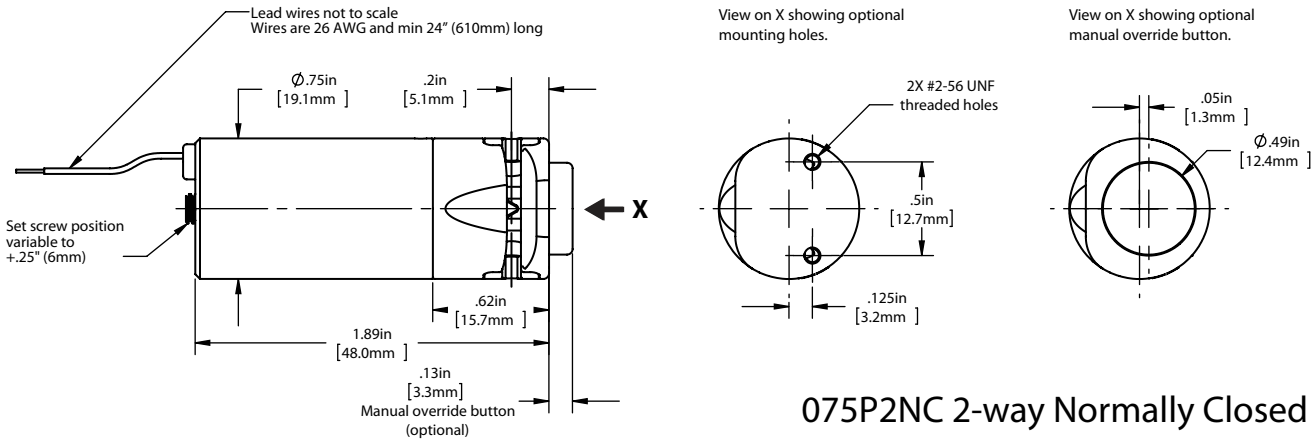
How it works: A PTFE disc is inserted between the internal components. The disc cushions the motion of the plunger, leading to a substantial reduction in noise.

Availability: 075P2NC, 075P2NO, 100P2NC and 100P2NO valves.

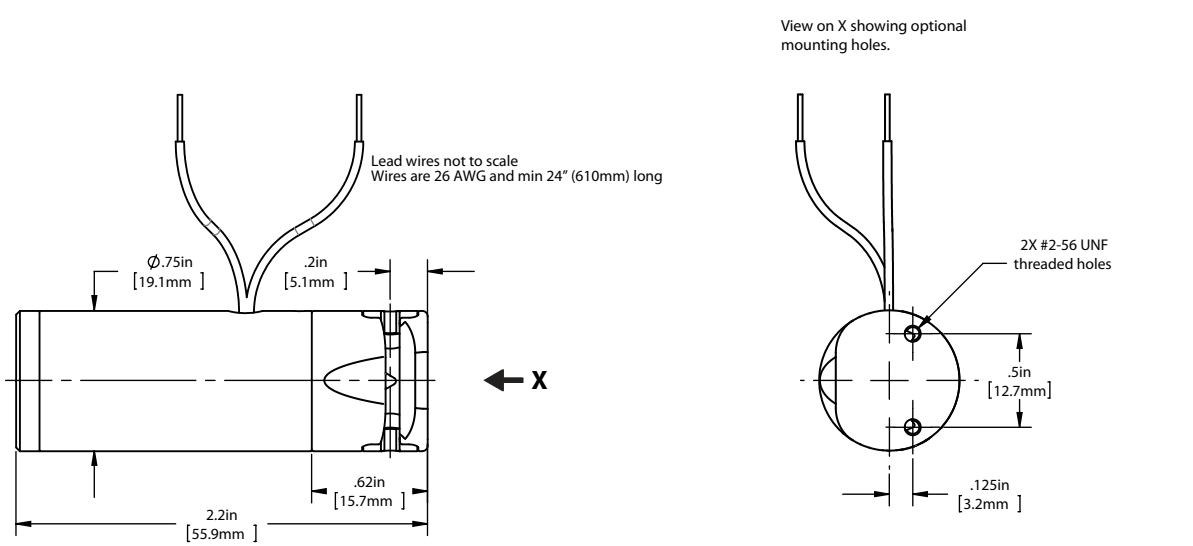
Ordering info: Add suffix "Q" to part number (refer to numbering convention on page 18 for more details).

075P SERIES PINCH VALVES continued

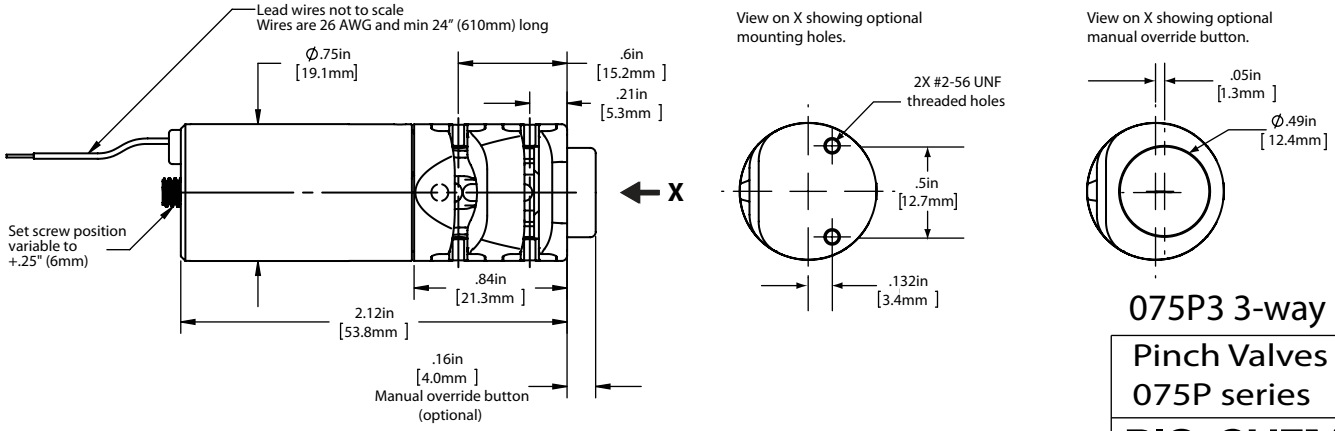
INSTALLATION DRAWINGS



075P2NC 2-way Normally Closed



075P2NO 2-way Normally Open



075P3 3-way

Pinch Valves
075P series

BIO·CHEM FLUIDICS

100P SERIES PINCH VALVES

For use with soft-walled tubing with inner diameters from 1/32"/0.8mm to 1/4"/6.4mm

- Continuous duty solenoid operated valve. Can remain fully energized for indefinite time period.
- Valve life above 2 million cycles.
- Precise stroke and closing force setting to protect tubing and extend valve life.
- Chemically resistant PPS plunger and ASA/PC body materials (unless otherwise noted).
- 24" (610mm) lead wires.
- Low power consumption (mostly 4.0 Watts) and minimal heat generation.

100P2NC (2-way Normally Closed)

100P2NO (2-way Normally Open)

100P3 (3-way)

NOTE:
1. For 24 VDC, replace 100P2Nx12 with 100P2Nx24 (or for a 3-way valve replace 100P3MP12 with 100P3MP24) in any of the part numbers listed.

A. 2-way normally closed valves

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, 12" (305mm) strip of silicone tubing is installed in the valve.					
100P2NC12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P2NC12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P2NC12-03S	1/16" / 1.6	3/16" / 4.8	28.2	25 / 1.6	4.0
100P2NC12-05S*	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	4.0
12 VDC valves with C-Flex® tubing, 12" (305mm) strip of C-Flex® tubing is installed in the valve.					
100P2NC12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P2NC12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P2NC12-03B	1/16" / 1.6	3/16" / 4.8	28.2	25 / 1.6	4.0
100P2NC12-05B*	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	4.0

B. 2-way normally open valves

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, 12" (305mm) strip of silicone tubing is installed in the valve.					
100P2NO12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P2NO12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P2NO12-03S	1/16" / 1.6	3/16" / 4.8	28.2	25 / 1.6	4.0
100P2NO12-05S	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	4.0
12 VDC valves with C-Flex® tubing, 12" (305mm) strip of C-Flex® tubing is installed in the valve.					
100P2NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P2NO12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P2NO12-03B	1/16" / 1.6	3/16" / 4.8	28.2	25 / 1.6	4.0
100P2NO12-05B	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	4.0

** These valves are not molded and utilize machined POM plunger and body materials.*

C. 3-way valves (one port normally open, other port normally closed)*

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, two 6" (152mm) strips of silicone tubing joined by 'Y' connector installed in the valve.					
100P3MP12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P3MP12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P3MP12-05S	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	8.1

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
12 VDC valves with silicone tubing, two 6" (152mm) strips of C-Flex® tubing joined by 'Y' connector installed in the valve.					
100P3MP12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100P3MP12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
100P3MP12-05B	1/8" / 3.2	1/4" / 6.4	28.2	20 / 1.3	8.1

* The operation of 3-way valves can be compromised by extended continuous operation. A "Hit and Hold" circuit is strongly recommended to reduce heat generation in extended use applications.

D. Valves with Dual Tubing

For use with soft-walled tubing with inner diameters of 1/32" / 0.8mm and 1/16" / 1.6mm.

Features of standard 100PD series dual-tubing pinch valves are identical to those of single-tubing pinch valves except:

- The body and plunger material is POM
- There are two sets of tubing in every valve

100PD2NC (2-way Normally Closed, Dual tubing)

NOTE:
1. For 24 VDC, replace 100PD2Nx12 with 100PD2Nx24 (or for a 3-way valve replace 100PD3MP12 with 100PD3MP24) in any of the part numbers listed.

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
2-way normally closed 12 VDC valves with silicone tubing, two 12" (305mm) strips of silicone tubing are installed in the valve.					
100PD2NC12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD2NC12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
2-way normally open 12 VDC valves with silicone tubing, two 12" (305mm) strips of silicone tubing are installed in the valve.					
100PD2NO12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD2NO12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
3-way 12 VDC valves with silicone tubing, four 6" (152mm) strips of silicone tubing joined by 'Y' connectors installed in the valve.					
100PD3MP12-01S	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD3MP12-02S	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
2-way normally closed 12 VDC valves with C-Flex® tubing, two 12" (305mm) strips of C-Flex® tubing are installed in the valve.					
100PD2NC12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD2NC12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
2-way normally open 12 VDC valves with C-Flex® tubing, two 12" (305mm) strips of C-Flex® tubing are installed in the valve.					
100PD2NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD2NO12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0
3-way 12 VDC valves with C-Flex® tubing, four 6" (152mm) strips of C-Flex® tubing joined by 'Y' connectors installed in the valve.					
100PD3MP12-01B	1/32" / 0.8	3/32" / 2.4	28.2	25 / 1.6	4.0
100PD3MP12-02B	1/16" / 1.6	1/8" / 3.2	28.2	25 / 1.6	4.0

E. Available options, 100P series pinch valves

1. "Quiet" operation (suffix = "Q"). The quiet option reduces the valve noise level from about 72 dB (A) to less than 50 dB (A). The quiet option is available for:

   a. 100P2NC-way normally closed valves.

   b. 100P2NO-way normally open valves.

The "quiet" option cannot be used on 100P3MP three-way valves. The noise level of the 3-way valves is inherently attenuated by tubing dampening the motion in both directions.

2. Mounting holes (suffix = "M") situated on the bottom of the valve body. Refer to installation drawing (page 12) for dimensions.

The mounting holes cannot be used in combination with the manual override button.

3. Manual override button (suffix = "K"). The manual override button releases the tubing either to facilitate easier tubing changes or in the event of electrical power loss. The manual override is available for:

   a. 100P2NC 2-way normally closed valves.

   b. 100P3 3-way valves

4. Position feedback sensor (suffix = "F"). The feedback sensor provides secondary, independent confirmation of the plunger position (more details on page 16). The feedback option is available for:

   a. 100P2NC 2-way normally closed valves.

   b. 100P3 3-way valves

   c. 100PD dual tubing valves

5. Factory-installed mounting flange (suffix = "L"). The mounting flanges are available for all 100P pinch valve configurations. They will be installed at a 90° angle to the tubing with the orientation to the outside of the bulkhead.

This mounting flange can be purchased as a stand-alone item under part number MU-100 (more details on page 17).

E. "Hit and Hold" voltage reduction

Within 100 ms of valve actuation, the voltage required to hold the valve in position can be reduced. The voltage step-down results in the dual benefits of power conservation and heat reduction. The amount of the voltage reduction possible is 66% (i.e. 24 Vdc to 8 Vdc or 12 Vdc to 4 Vdc) for all 100P pinch valves that do not incorporate the "quiet" feature. This results in a power usage reduction of 89%, resulting in a correspondingly large drop in heat generation.

For the 100P pinch valves with the "quiet" feature, voltage can be reduced by 50% (i.e. 24 Vdc to 12 Vdc and 12 Vdc to 6 Vdc) after 100 ms for a power usage drop of 75%.

This voltage reduction can be accomplished using the Bio-Chem Fluidics CoolCube™ hit-and-hold circuit (more details on page 16).

Option Highlight

Manual override button

Features: A manual button that releases the tubing either to facilitate easier tubing changes or in the event of electrical power loss.

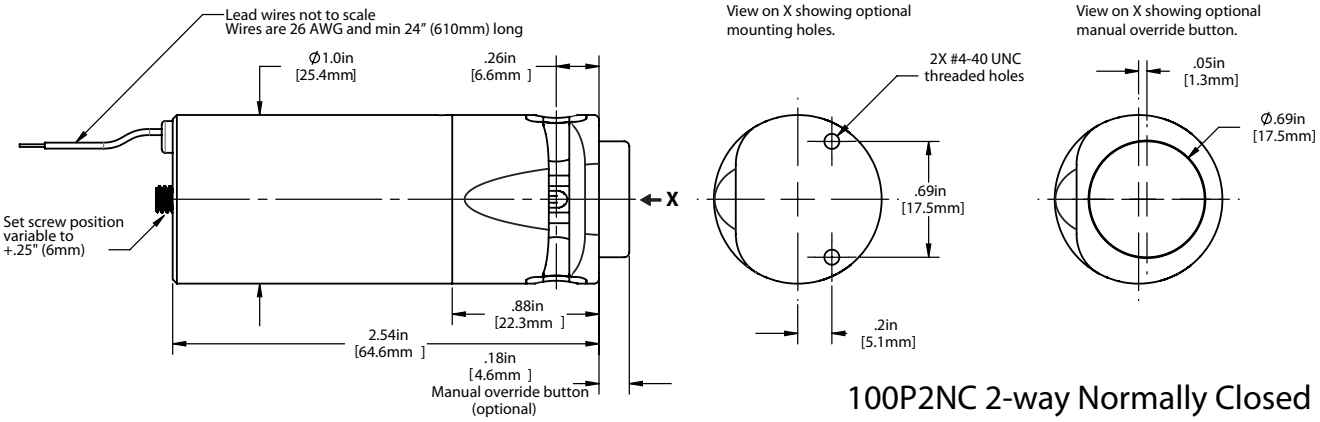
How it works: The button attaches to the plunger through the valve body. Pressing the button pushes the plunger into the energized state, thereby releasing the tubing.

Availability: 075P2NC, 100P2NC, 075P3 and 100P3 valves.

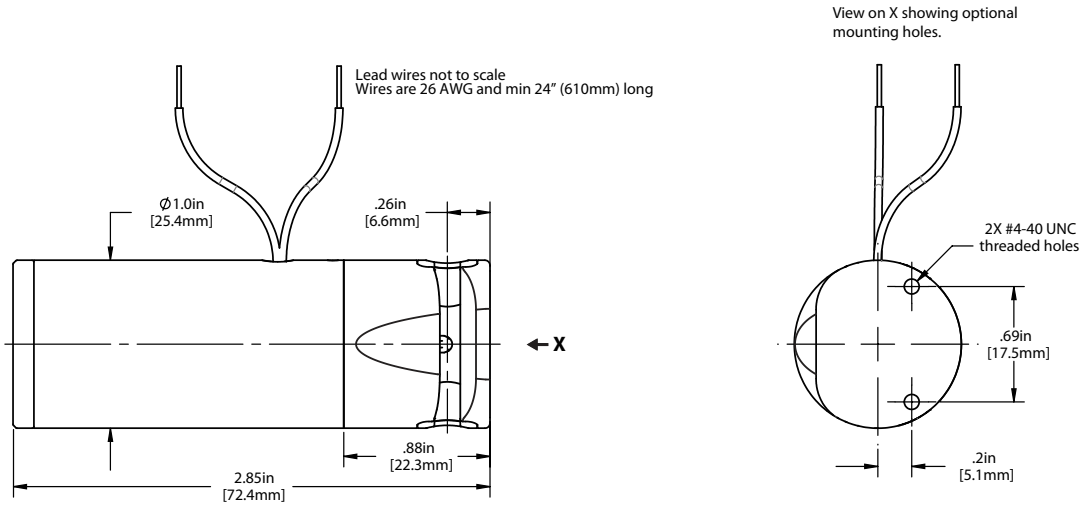
Ordering info: Add suffix "K" to part number (refer to numbering convention on page 18 for more details).

100P SERIES PINCH VALVES continued

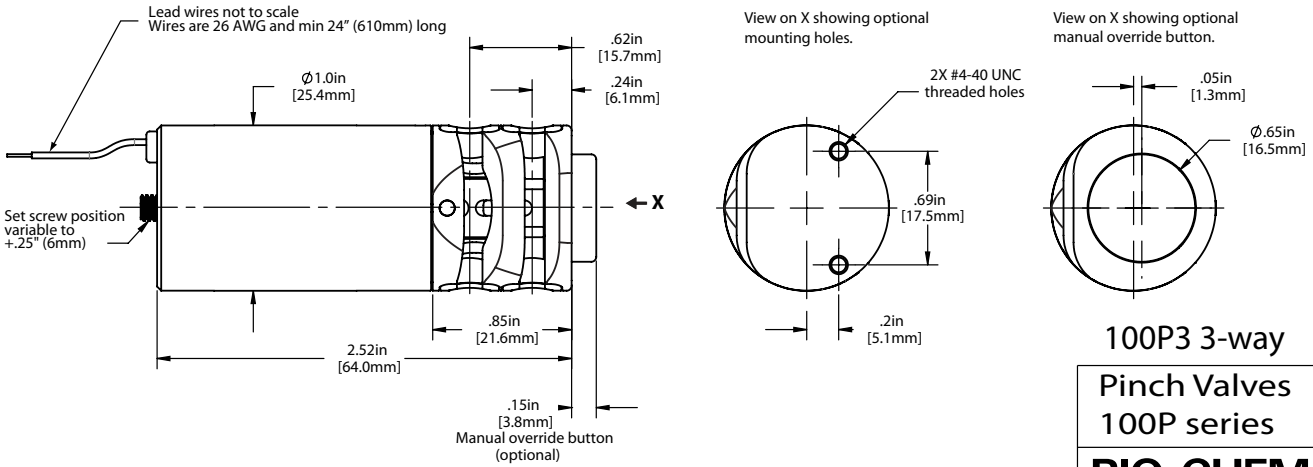
INSTALLATION DRAWINGS



100P2NC 2-way Normally Closed



100P2NO 2-way Normally Open



100P3 3-way

Pinch Valves
100P series

BIO-CHEM FLUIDICS

Installation drawings for 100PD series are available on request.

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This section intentionally left blank

Option Highlight

Mounting holes

Features: Mounting holes allow a valve to be mounted directly to a plate or base.

How it works: Small tapped holes are drilled directly into the bottom of the valve body.

Availability: All 075P and 100P valves. Can not be used in combination with manual override button.

Ordering info: Add suffix "M" to part number (refer to numbering convention on page 18 for more details).

108P SERIES MULTI-TUBING PINCH VALVES

For use with soft-walled tubing with inner diameter of 1/32"/0.8mm. Simultaneous operation of 4, 6 or 8 tubes.

- Continuous duty solenoid operated valve. Can remain fully energized for indefinite time period.
- Valve life above 2 million cycles.
- Precise stroke and closing force setting to protect tubing and extend valve life.
- Chemically resistant PEEK plunger and POM body materials
- 15-inch (38cm) lead wires.
- Low power consumption (3.5 Watts) and minimal heat generation.
- Integrated flange with mounting holes.
- Stainless steel push bar.
- C-Flex® tubing (silicone tubing is not available for this pinch valve series)

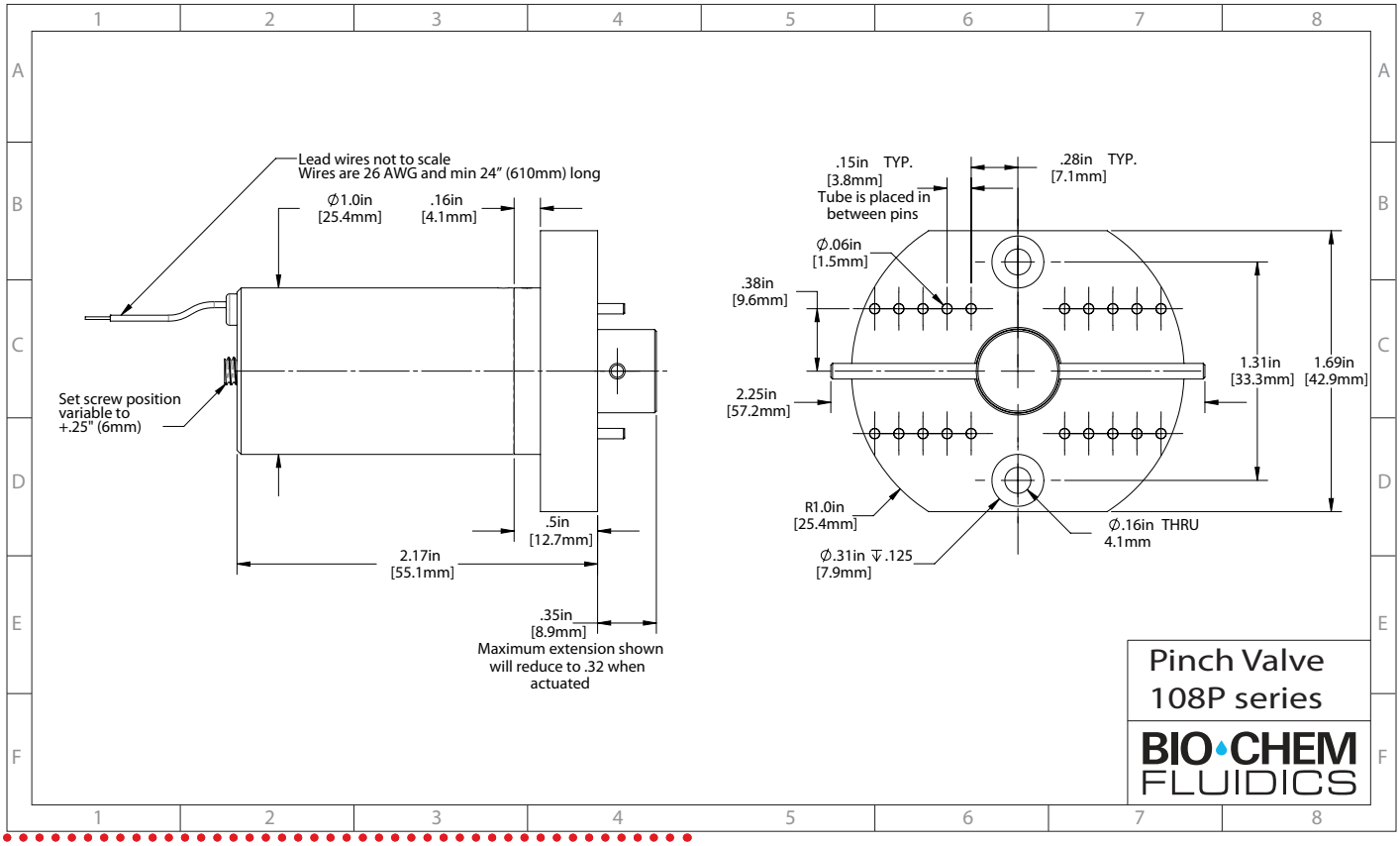
NOTE:
1. For 24 VDC, replace 108PxNO12 with 108PxNO24 in any of the part numbers listed.

108P8NO (8-tube Normally Open)

4, 6 & 8 - tube normally open valves with C-Flex® tubing

PART NO.	INNER DIAMETER inch/mm	OUTER DIAMETER inch/mm	MIN PRESSURE inHg vac.	MAX PRESSURE psi/bar	POWER AT 21°C Watts
4 tube, 12 VDC valves with C-Flex® tubing, each strip of tubing is 12" (305mm) long.					
108P4NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 /1.0	3.5
6 tube, 12 VDC valves with C-Flex® tubing, each strip of tubing is 12" (305mm) long.					
108P6NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 /1.0	3.5
8 tube, 12 VDC valves with C-Flex® tubing, each strip of tubing is 12" (305mm) long.					
108P8NO12-01B	1/32" / 0.8	3/32" / 2.4	28.2	15 /1.0	3.5

INSTALLATION DRAWINGS



OPTICAL POSITION FEEDBACK SENSOR

Position feedback is provided through a compact, factory-mounted infrared optical sensor that instantaneously detects the position of the pinch valve pusher/armature assembly. An electrical signal is transmitted back to the instrument control system, confirming whether the valve is open or closed. With no moving parts, the optical sensor has a virtually unlimited life. The position feedback sensor is an essential feature in many critical operations, such as in medical applications.

Feedback sensor mounted on 100P2NC valve

Availability:

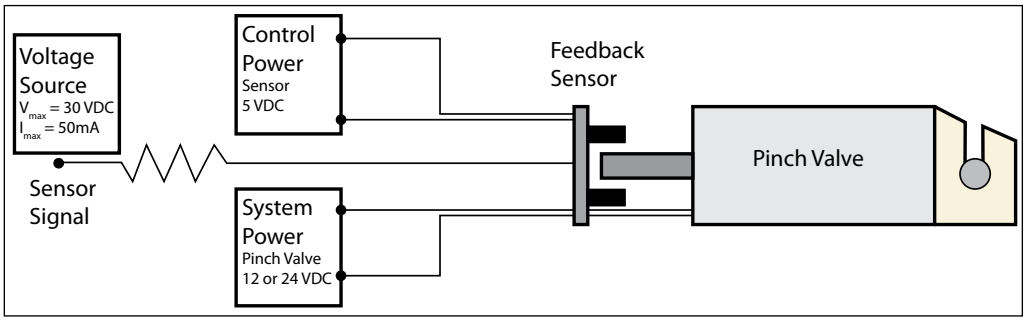
075P2NC, 100P2NC, 075P3, 100P3 and 100PD valves

Electrical specifications:

Input voltage:	5.0 VDC
Maximum output voltage:	30.0 VDC
Maximum output current:	50.0 mA

Proper valve function is indicated by a drop in feedback voltage when the valve is open.

Typical set-up diagram:



CoolCube™ "HIT AND HOLD" CIRCUIT

The CoolCube™ "Hit and Hold" circuit steps down DC voltage through pulse width modulation after 100 ms. This reduces power consumption and heat generation while in "hold" setting and permits faster response and longer stroke through brief use of voltage above valve nominal rating. There is no power storage and the valve turns off immediately when power is cut to the circuit. The CoolCube™ includes terminal pins for easy in-line installation.

CoolCube™

Availability:

CoolCube™ is available for ALL pinch valve configurations. For pinch valves with "quiet" option select the CoolCube-50R, otherwise select the CoolCube-R.

Specifications:

SERIES	COOLCUBE-R	COOLCUBE-50R
Time from "hit" to "hold" voltage:	100 ms	100 ms
Voltage step down percentage:	67%	50%
Max input voltage:	36 VDC	36 VDC
Max input current:	1 amp	1 amp
"Hold" voltage with 36 VDC input:	12 VDC	18 VDC
"Hold" voltage with 24 VDC input:	8 VDC	12 VDC
"Hold" voltage with 12 VDC input:	4 VDC	6 VDC
Power consumption reduction:	89%	75%

For more information please refer to "CoolCube™" spec sheet.

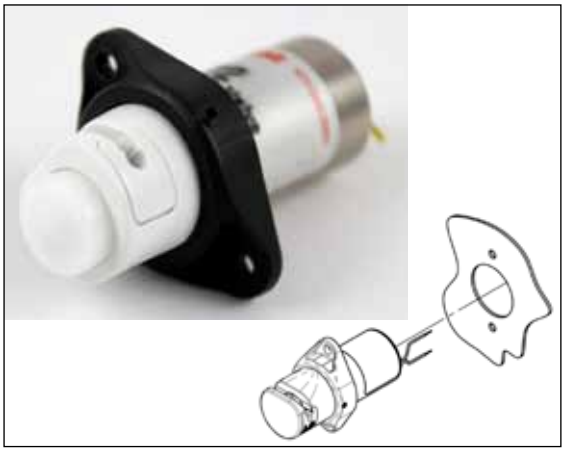
MOUNTING OPTIONS

Bio-Chem Valve™ Pinch Valves are easy to mount using one of our stock mounting accessories. The MU-series mounting flanges were designed specifically with these pinch valves in mind. The flanges allow direct attachment to a bulkhead - either inside or outside the panel. Screw hole spacing matches dimensions from other manufacturers for simple replacement in existing systems.

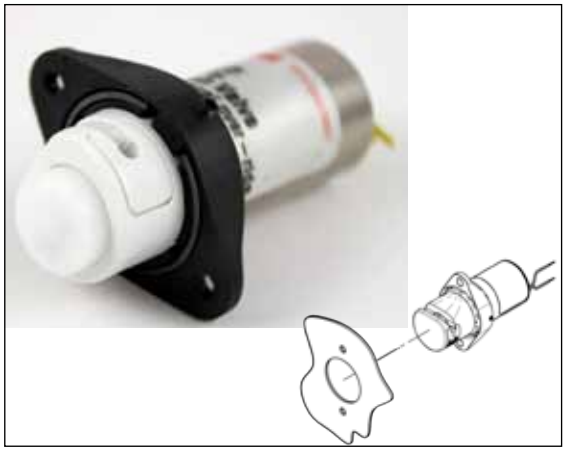
MU-series mounting flanges

Features of MU-series mounting flange:

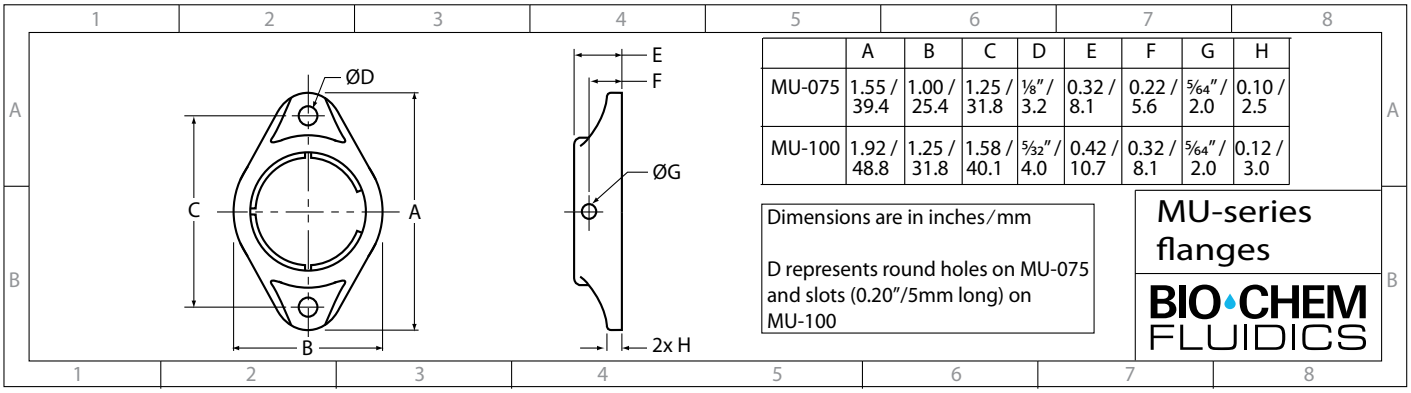
- Constructed from sturdy, glass-filled polypropylene
- Spring steel retainer and set screw ensure a secure fit
- Surface withstands alcohol, bleaches and other common cleaning agents
- Screw hole orientation relative to tubing can be adjusted to fit available system space.



Outside bulkhead mounted



Inside bulkhead mounted



	A	B	C	D	E	F	G	H
MU-075	1.55 / 39.4	1.00 / 25.4	1.25 / 31.8	⅛" / 3.2	0.32 / 8.1	0.22 / 5.6	5⁄64" / 2.0	0.10 / 2.5
MU-100	1.92 / 48.8	1.25 / 31.8	1.58 / 40.1	5⁄32" / 4.0	0.42 / 10.7	0.32 / 8.1	5⁄64" / 2.0	0.12 / 3.0

Dimensions are in inches/mm

D represents round holes on MU-075 and slots (0.20"/5mm long) on MU-100

MU-series flanges

BIO•CHEM FLUIDICS

Other options:

Aluminum mounting rings (MR-075 & MR-100) and steel mounting clips (MC-075 & MC-100) are also available. Both provide economic options for securing the valves within an instrument.

MR-series
Mounting ring

MC-series
Mounting clip

For more information please refer to "Mounting accessories & options" spec sheet.

PINCH VALVE PART NUMBERING

Single or dual tube pinch valves (refer to page 15 for options on 108P range)

Part numbers are constructed according to the following convention:

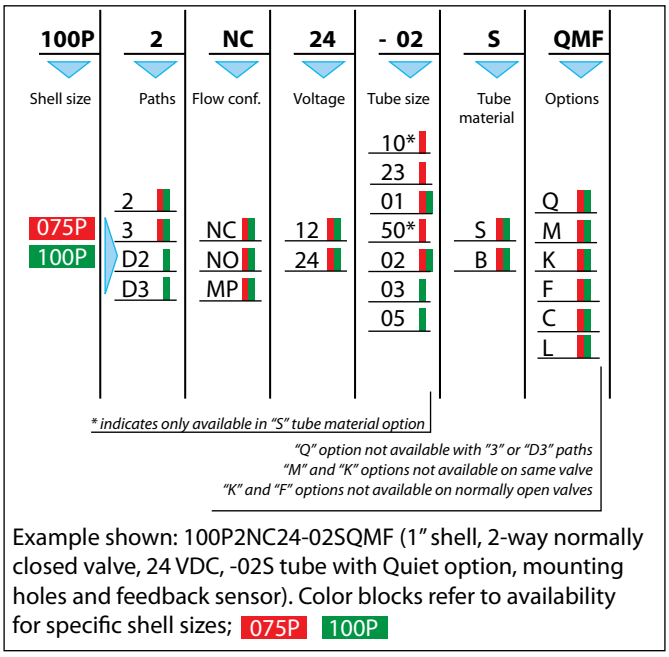
1. Shell size corresponds to the diameter of the solenoid shell. Available sizes are 075P (3/4" diameter) and 100P (1" diameter).

2. Flow path options are "2" (2-way), "3" (3-way), "D2" (dual 2-way), and "D3" (dual 3-way).

3. Flow configuration options are "NC" (normally closed), "NO" (normally open), and "MP" (3-way with one port normally open and the other port normally closed).

4. Voltages offered are "12" (12 Vdc) and "24" (24 Vdc).

5. Tube size designators are assigned according to the table on page 3:



Example shown: 100P2NC24-02SQMF (1" shell, 2-way normally closed valve, 24 VDC, -02S tube with Quiet option, mounting holes and feedback sensor). Color blocks refer to availability for specific shell sizes; 075P 100P

6. Tubing material options are "S" (silicone) and "B" (C-Flex®).

7. Valve options can be designated by the following letters, which should be added in the sequence indicated below:

Q – "quiet" valves, available for 075P and 100P 2-way valves.

M – mounting holes situated on the bottom of the valve body.

K – manual override button, available for 075P and 100P normally open valves without dual tubing. When the manual override button is chosen, the "M" for mounting holes cannot be selected.

F – position feedback sensor, available for 075P and 100P normally open valves.

C - factory-installed CoolCube™, available for all Bio-Chem Valve™ pinch valves.

L – factory-installed mounting flange, available for 075P and 100P valves. The flanges will be installed at 90° to the tubing path.

When an option is not selected, the corresponding part number position is simply left blank.

CUSTOMIZED SOLUTIONS

We understand that many applications require customized solutions. Our design and prototyping expertise enables us to offer simple modifications of standard products as well as completely customized designs. Over 90% of the solenoid valves we sell are customized to one extent or another. Customizable options include (but are not limited to):

- Materials of construction
- Operating voltage
- Mounting options
- Tagging / labeling
- Length and/or style of connecting leads
- Custom manifolds

We look forward to working with you to meet your design engineering objectives!

THE BIO-CHEM FLUIDICS BRAND FAMILY

Bio-Chem Fluidics is dedicated to providing instrument manufacturers and laboratories with the industry's best choice of inert, miniature fluid handling components.

Under the Bio-Chem Valve™ brand name we offer a complete fluid system solution for a wide range of industries including analytical chemistry, clinical diagnostics and medical device manufacturers as well as a world-class labware portfolio for the scientific community.

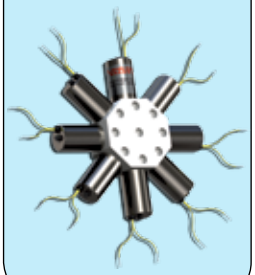
BIO-CHEM VALVE

INERT SOLENOID VALVES AND PUMPS, ELECTRIC ROTARY VALVES

MICRO-PUMPS

ISOLATION VALVES

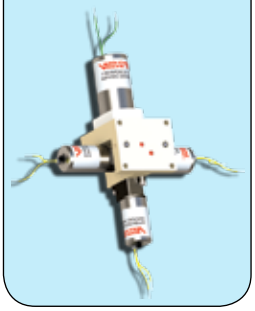
FLOW SELECTION VALVES



PINCH VALVES

ELECTRIC ROTARY VALVES

MANIFOLD ASSEMBLIES



ACCESSORIES

CUSTOMIZATION SERVICES

INERT FLUID HANDLING COMPONENTS AND ACCESSORIES

- ¼"-28, 5⁄16"-24, and M6 fittings for pressures up to 1000 psig
- CoolCube™, "Hit and hold" circuit for all Bio-Chem Valve™ solenoid operated valves
- PTFE, Silicone and C-Flex® tubing

BIO·CHEM FLUIDICS

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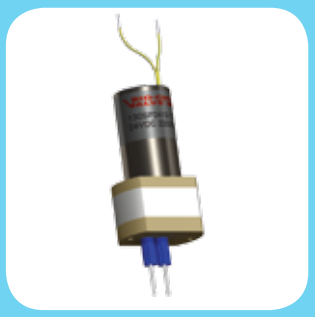
BCF PVCat September 2010

BIO·CHEM FLUIDICS

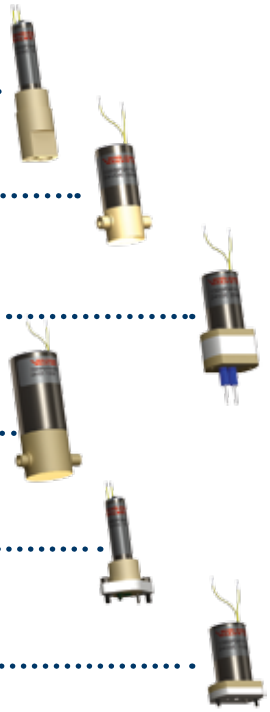
BIO-CHEM VALVE

Solenoid Operated Micro-Pumps

130SP Series Micro-Pump



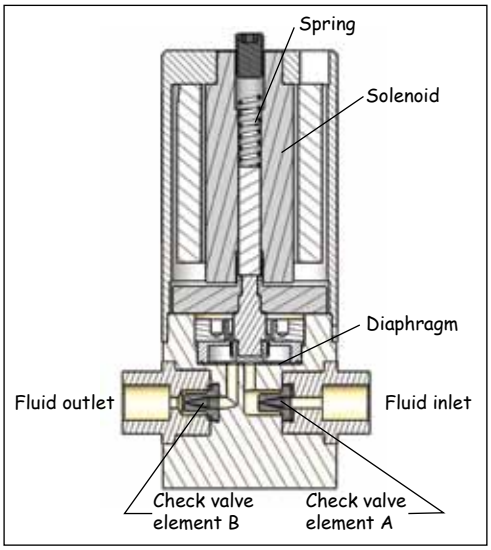
INDEX



MICRO-PUMPS GENERAL INFORMATION

What is a Micro-Pump?

A Micro-Pump is a solenoid operated device designed to provide a precise, repeatable and discrete dispensed volume of fluid. The flow path is isolated from the operating mechanism by a flexible diaphragm. When the solenoid is energized, the diaphragm is retracted creating a partial vacuum within the pump body. This pulls liquid through the inlet check valve (A) and simultaneously closes the outlet check valve (B). When the solenoid is de-energized a spring pushes the diaphragm down, expelling a discrete volume of liquid through check valve B while simultaneously closing check valve A. Micro-Pumps require a complete on-off cycle for each discrete dispense. Repeatedly cycling the solenoid creates a pulsed flow *(refer to "Accurate discrete dispense volumes" in next column)*.



Features of the Bio-Chem Valve™ Micro-Pump

Inert materials

Our pumps provide a non-metallic inert fluid path for the dispensing of high purity or aggressive fluids. There is a range of different materials available for all the wetted parts of the pumps - body, diaphragm and check valve. Material combinations can be chosen to suit the application (*refer to individual product selection pages for standard combinations - custom combinations are available, refer to page 18*).

Body materials: PPS, PTFE, PEEK™, POM

Diaphragm materials: EPDM, PTFE

Check valve materials: EPDM, FKM, FFKM

Self-priming

At start-up, pumps with dispense volumes ≥ 20µl are able to draw air. The suction created by the larger pumps is sufficient to pull liquids from an unpressurized container located up to 4' 3" (1.3m) beneath the pump. Once the pump is primed, it is able to generate around 5psi (0.3bar) pressure, equating to 11' 6" (3.5m) of water.

Continuous duty

The pumps are capable of continuous duty. They are suitable for up to 20 million actuations, corresponding to nearly 3,000 hours of continuous use at a 2 Hz cycle rate.

Accurate discrete dispense volumes

Dispense volumes range from 4µl to 250µl per cycle. The pumps can be cycled at up to 4 Hz for the smallest version and 1.6 Hz for the largest. Pumps can be operated at less than the maximum cycle rate by increasing the length of the "off" time. The "on" time should remain unchanged to retain dispense accuracy.

Micro-Pump Selection Guide

1. Select pump style; either Ported or Manifold mount and work from the appropriate table:
   - Ported for direct connection with ¼"-28 fittings (*5/16"-24 for 150SP*)
   - Manifold mount for use with manifolds (see page 16)

Then:

2. Locate the volumetric characteristics that best suit your needs
3. Choose your preferred body material depending on the level of chemical inertness you require
4. Turn to the pages indicated to see full details and ordering information for each pump.

	Volumetric output		Body Material			
	Discrete Dispense Vol (µl)	Max flow rate (ml/min)	PTFE	PPS	PEEK™	POM
Ported	4	0.96		030SP (pg. 4)		
	10	1.2				
	20	2.4				
	30	3.6	130SP (pg. 8)	120SP (pg. 6)	120SP (pg. 6)	130SP (pg. 8)
	40	4.8				
	50	6.0				
	60	7.2				
	100	9.6				
	125	12.0				
	150	14.4				
	175	16.8		150SP (pg. 10)	150SP (pg. 10)	
	200	19.2				
	225	21.6				
	250	24.0				

	Volumetric output		Body Material			
	Discrete Dispense Vol (µl)	Max flow rate (ml/min)	PTFE	PPS	PEEK™	POM
Manifold mounted	4	0.96		039SP (pg. 12)		
	10	1.2				
	20	2.4				
	30	3.6	139SP (pg. 14)		139SP (pg. 14)	139SP (pg. 14)
	40	4.8				
	50	6.0				
	60	7.2				

Polymers referenced in this brochure:

EPDM = ethylene-propylene-diene
ETFE = ethylene tetrafluoroethylene
FEP = fluorinated ethylene propylene
FKM = fluorinated elastomer
FFKM = perfluoro elastomer
PEEK™ = polyetheretherketone
POM = polyoxymethylene (Acetal resin)
PPS = polyphenelyne sulfide
PTFE = polytetrafluoroethylene.

030SP SERIES MICRO-PUMP

For precise dispensing of 4µl and flow rates up to 0.96 ml/min

- 4µl discrete dispense volume
- 960µl/min maximum flow rate
- ¼"-28 UNF threaded ports

The 030SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. (030SP series Micro-Pumps are not self-priming)

Materials available for the wetted parts are:

- Body materials: PPS
- Diaphragm materials: PTFE
- Check valve materials: FKM

030SP series options

PART NO.	VDC	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 4µl dispense					
030SP124-4TV	12	4	PPS	PTFE	FKM
24 VDC; 4µl dispense					
030SP244-4TV	24	4	PPS	PTFE	FKM

ARRANGEMENT

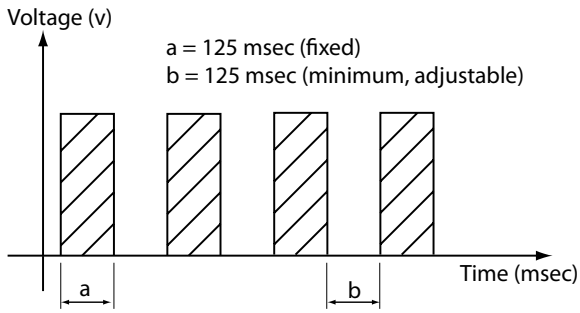
SPECIFICATIONS

030SP Fluid Data	
Dispense Volume (µl)	4
Set-point accuracy	+/- 25%
Repeatability	+/- 5%
Max flow rate (µl/min)	960
Internal vol (µl)	130

030SP Electrical Data			
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate
12 VDC	1.9 Watts	0.22 amps	0.9 Watts
24 VDC	1.9 Watts	0.11 amps	0.9 Watts

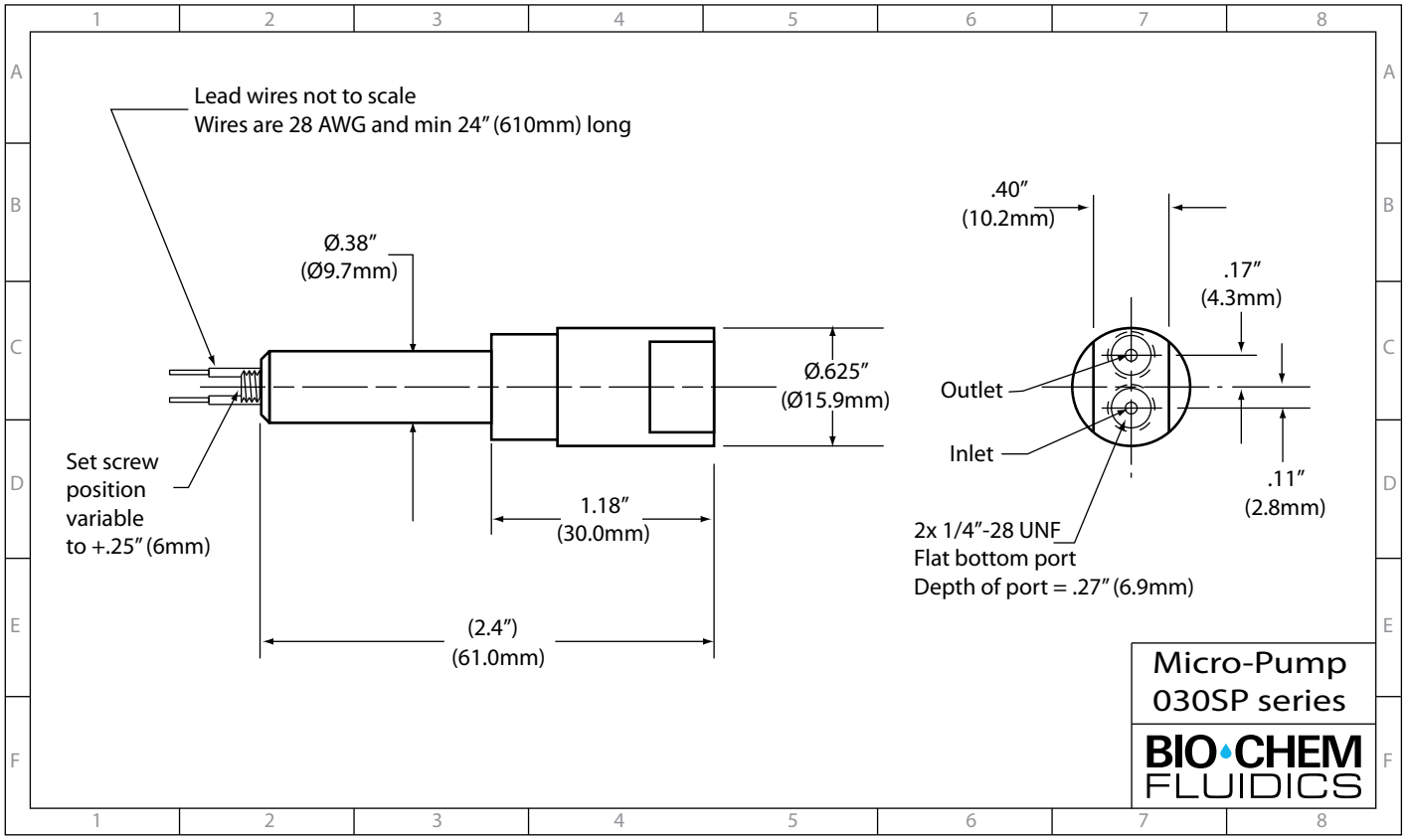
030SP Cycle Rates		
Fixed "on" time	Min "off" time	Max cycle rate
125 msec	125 msec	4.0 Hz

030SP Micro-Pumps can be cycled at up to 4 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



Recommended tubing for 030SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

INSTALLATION DRAWING



120SP SERIES MICRO-PUMP

For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- ¼"-28 UNF threaded ports

The 120SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

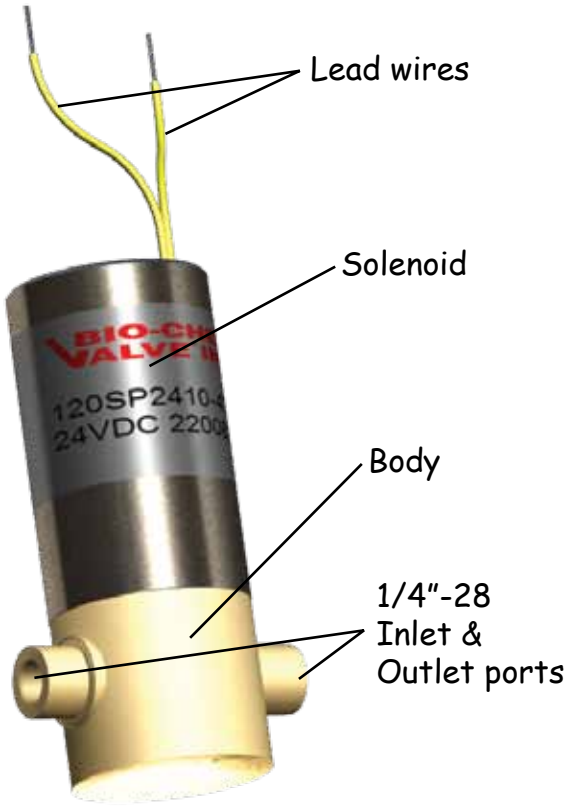
- Body materials: PPS, PEEK™
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

120SP series options

NOTE: For 24 VDC, replace 120SP12 with 120SP24 in any of the part numbers listed.

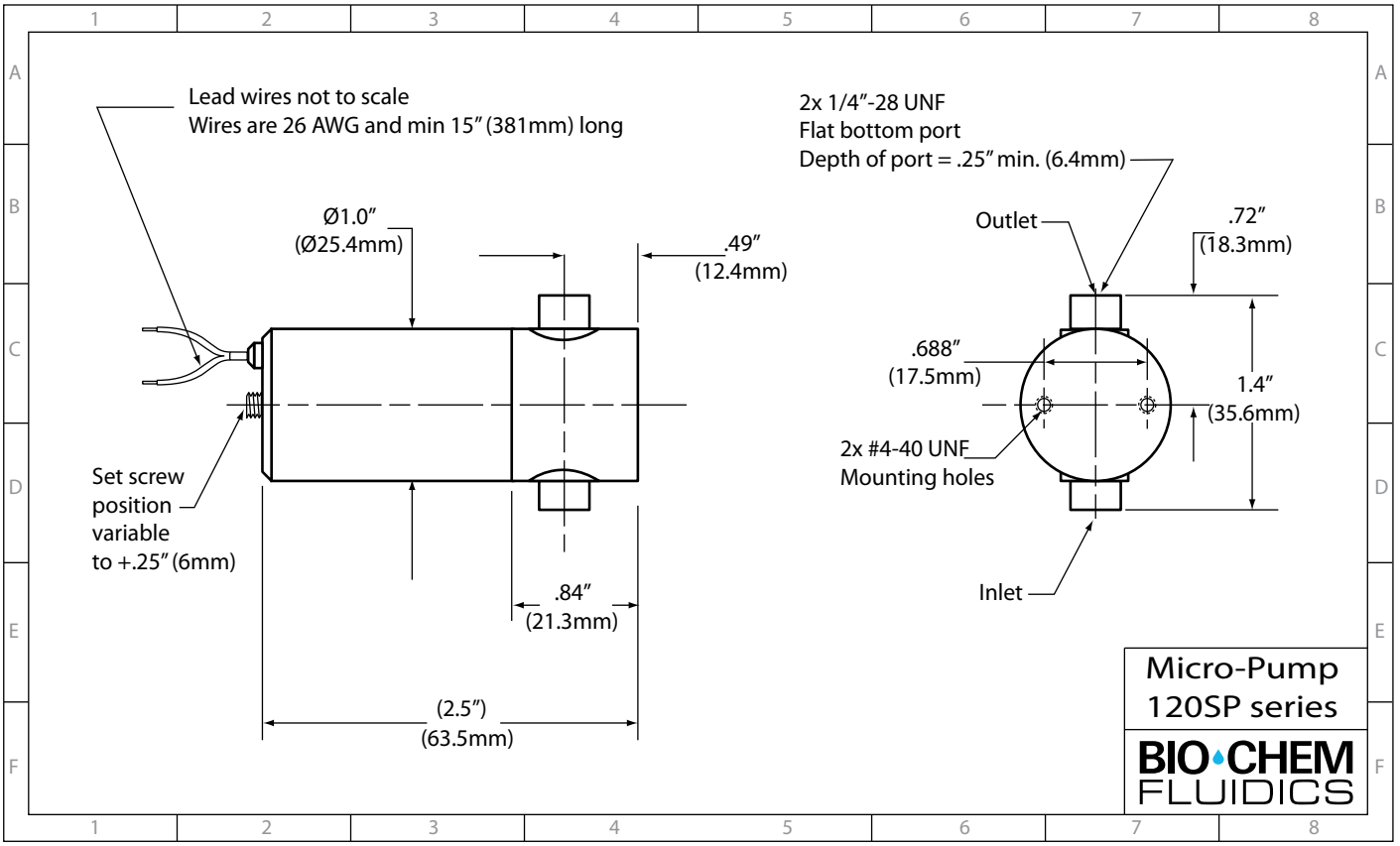
PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
120SP1210-4TE	10	PPS	PTFE	EPDM
120SP1210-4TV	10	PPS	PTFE	FKM
120SP1210-4TP	10	PPS	PTFE	FFKM
120SP1210-5TE	10	PEEK™	PTFE	EPDM
120SP1210-5TV	10	PEEK™	PTFE	FKM
120SP1210-5TP	10	PEEK™	PTFE	FFKM
12 VDC; 20µl dispense				
120SP1220-4EE	20	PPS	EPDM	EPDM
120SP1220-4TV	20	PPS	PTFE	FKM
120SP1220-4TP	20	PPS	PTFE	FFKM
120SP1220-5EE	20	PEEK™	EPDM	EPDM
120SP1220-5TV	20	PEEK™	PTFE	FKM
120SP1220-5TP	20	PEEK™	PTFE	FFKM
12 VDC; 30µl dispense				
120SP1230-4EE	30	PPS	EPDM	EPDM
120SP1230-4TV	30	PPS	PTFE	FKM
120SP1230-4TP	30	PPS	PTFE	FFKM
120SP1230-5EE	30	PEEK™	EPDM	EPDM
120SP1230-5TV	30	PEEK™	PTFE	FKM
120SP1230-5TP	30	PEEK™	PTFE	FFKM

ARRANGEMENT



PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 40µl dispense				
120SP1240-4EE	40	PPS	EPDM	EPDM
120SP1240-4TV	40	PPS	PTFE	FKM
120SP1240-4TP	40	PPS	PTFE	FFKM
120SP1240-5EE	40	PEEK™	EPDM	EPDM
120SP1240-5TV	40	PEEK™	PTFE	FKM
120SP1240-5TP	40	PEEK™	PTFE	FFKM
12 VDC; 50µl dispense				
120SP1250-4EE	50	PPS	EPDM	EPDM
120SP1250-4TV	50	PPS	PTFE	FKM
120SP1250-4TP	50	PPS	PTFE	FFKM
120SP1250-5EE	50	PEEK™	EPDM	EPDM
120SP1250-5TV	50	PEEK™	PTFE	FKM
120SP1250-5TP	50	PEEK™	PTFE	FFKM
12 VDC; 60µl dispense (Note: EPDM diaphragm for all 60 µl options)				
120SP1260-4EE	60	PPS	EPDM	EPDM
120SP1260-5EE	60	PEEK™	EPDM	EPDM

INSTALLATION DRAWING



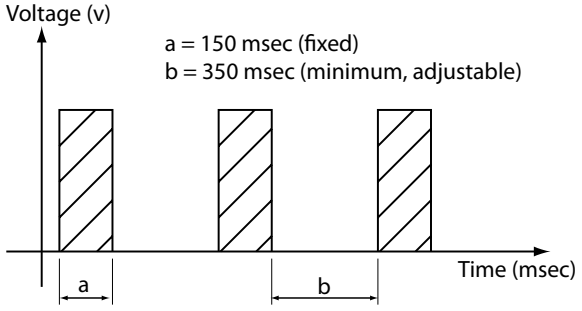
SPECIFICATIONS

120SP Fluid Data						
Dispense Volume (µl)	10	20	30	40	50	60
Set-point accuracy	+/- 20%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	1200	2400	3600	4800	6000	7200
Internal vol (µl)	105	105	105	105	105	105

120SP Electrical Data				120SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	4.0 Watts	0.32 amps	1.2 Watts	150 msec	350 msec	2.0 Hz
24 VDC	4.0 Watts	0.16 amps	1.2 Watts			

Recommended tubing for 120SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

120SP Micro-Pumps can be cycled at up to 2 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



130SP SERIES MICRO-PUMP

For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- ¼"-28 UNF threaded ports
- Most inert body material for harshest applications

The 130SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

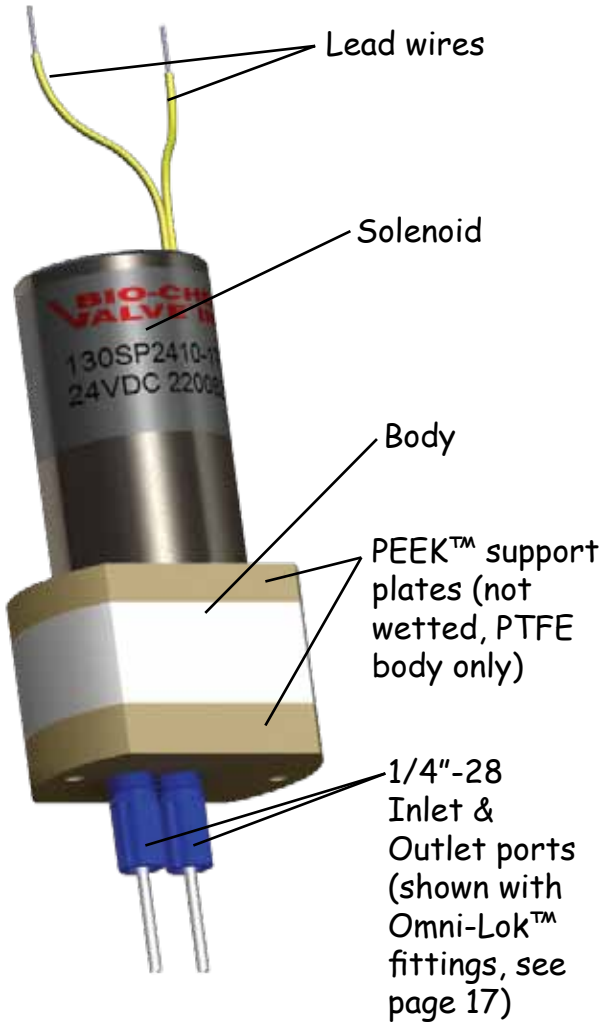
- Body materials: PTFE, POM
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

130SP series options

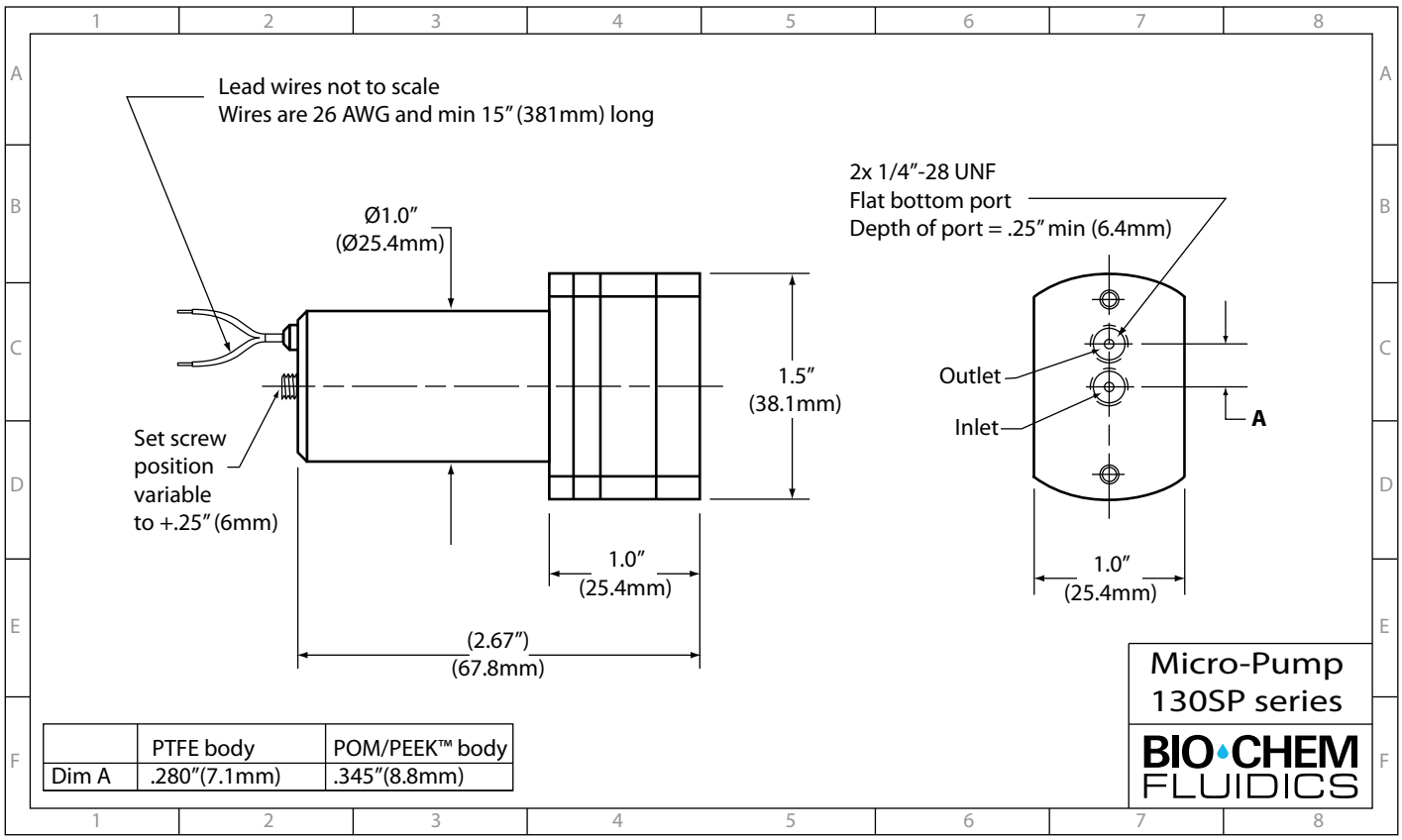
NOTE: For 24 VDC, replace 130SP12 with 130SP24 in any of the part numbers listed.

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
130SP1210-1TP	10	PTFE	PTFE	FFKM
130SP1210-6TV	10	POM	PTFE	FKM
130SP1210-6TE	10	POM	PTFE	EPDM
12 VDC; 20µl dispense				
130SP1220-1TP	20	PTFE	PTFE	FFKM
130SP1220-6TV	20	POM	PTFE	FKM
130SP1220-6EE	20	POM	EPDM	EPDM
12 VDC; 30µl dispense				
130SP1230-1TP	30	PTFE	PTFE	FFKM
130SP1230-6TV	30	POM	PTFE	FKM
130SP1230-6EE	30	POM	EPDM	EPDM
12 VDC; 40µl dispense				
130SP1240-1TP	40	PTFE	PTFE	FFKM
130SP1240-6TV	40	POM	PTFE	FKM
130SP1240-6EE	40	POM	EPDM	EPDM
12 VDC; 50µl dispense				
130SP1250-1TP	50	PTFE	PTFE	FFKM
130SP1250-6TV	50	POM	PTFE	FKM
130SP1250-6EE	50	POM	EPDM	EPDM
12 VDC; 60µl dispense				
130SP1260-6EE	60	POM	EPDM	EPDM

ARRANGEMENT



INSTALLATION DRAWING



	PTFE body	POM/PEEK™ body
Dim A	.280"(7.1mm)	.345"(8.8mm)

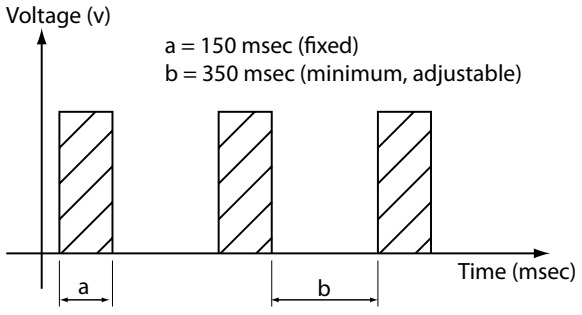
SPECIFICATIONS

130SP Volumetric Data						
Dispense Volume (µl)	10	20	30	40	50	60
Set-point accuracy	+/- 20%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	1200	2400	3600	4800	6000	7200
Internal vol (µl)	105	105	105	105	105	105

130SP Electrical Data				130SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	4.0 Watts	0.32 amps	1.2 Watts	150 msec	350 msec	2.0 Hz
24 VDC	4.0 Watts	0.16 amps	1.2 Watts			

Recommended tubing for 130SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

130SP Micro-Pumps can be cycled at up to 2 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



150SP SERIES MICRO-PUMP

For precise dispensing between 100 and 250µl and flow rates up to 24 ml/min

- Self-priming
- 100-250µl discrete dispense volumes
- Up to 24 ml/min maximum flow rate
- 5⁄16"-24 UNF threaded ports

The 150SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

- Body materials: PPS, PEEK™
- Diaphragm materials: EPDM
- Check valve materials: EPDM

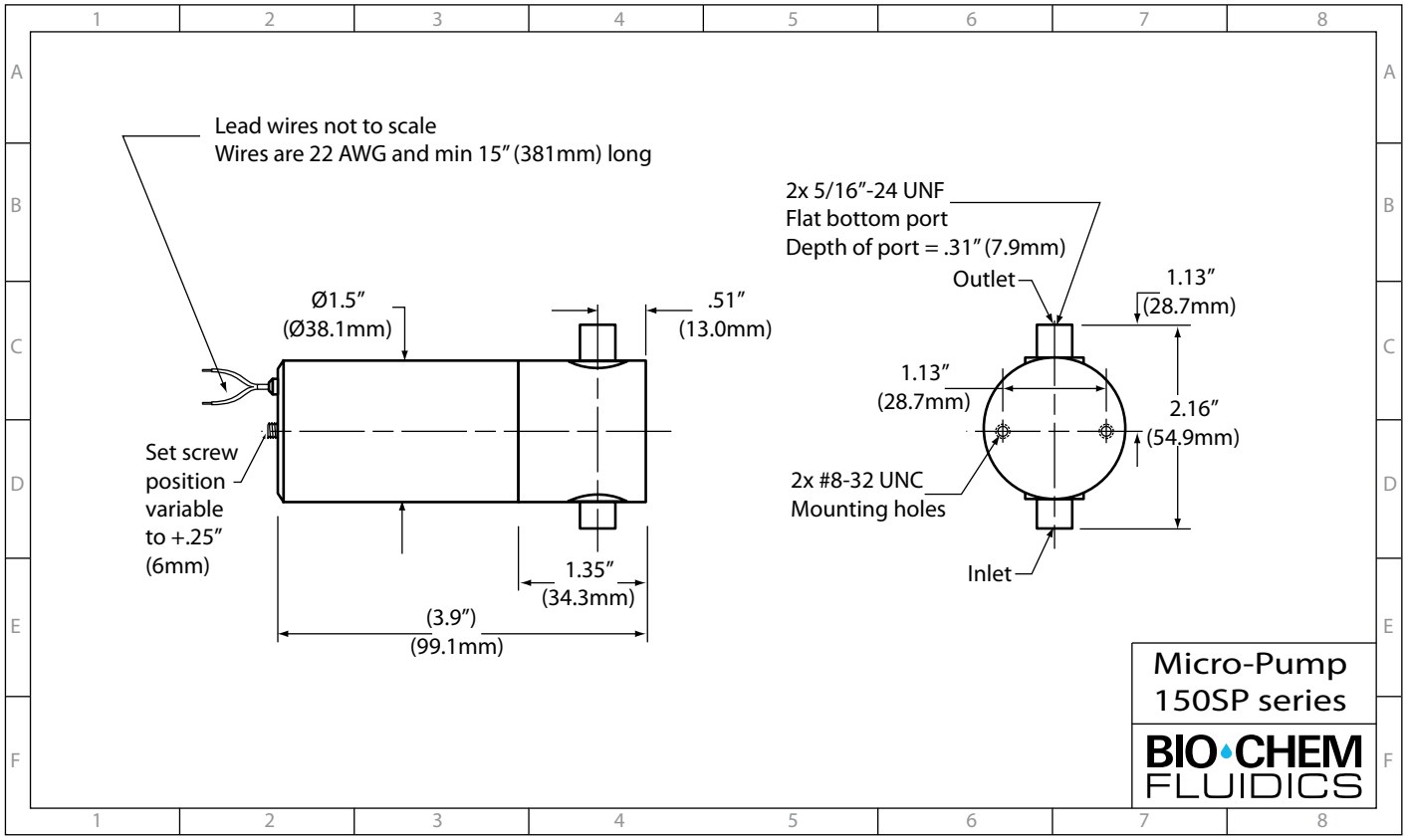
150SP series options

NOTE: For 24 VDC, replace 150SP12 with 150SP24 in any of the part numbers listed.

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 100µl dispense				
150SP12100-4EE	100	PPS	EPDM	EPDM
150SP12100-5EE	100	PEEK™	EPDM	EPDM
12 VDC; 125µl dispense				
150SP12125-4EE	125	PPS	EPDM	EPDM
150SP12125-5EE	125	PEEK™	EPDM	EPDM
12 VDC; 150µl dispense				
150SP12150-4EE	150	PPS	EPDM	EPDM
150SP12150-5EE	150	PEEK™	EPDM	EPDM
12 VDC; 175µl dispense				
150SP12175-4EE	175	PPS	EPDM	EPDM
150SP12175-5EE	175	PEEK™	EPDM	EPDM
12 VDC; 200µl dispense				
150SP12200-4EE	200	PPS	EPDM	EPDM
150SP12200-5EE	200	PEEK™	EPDM	EPDM
12 VDC; 225µl dispense				
150SP12225-4EE	225	PPS	EPDM	EPDM
150SP12225-5EE	225	PEEK™	EPDM	EPDM
12 VDC; 250µl dispense				
150SP12250-4EE	250	PPS	EPDM	EPDM
150SP12250-5EE	250	PEEK™	EPDM	EPDM

ARRANGEMENT

INSTALLATION DRAWING



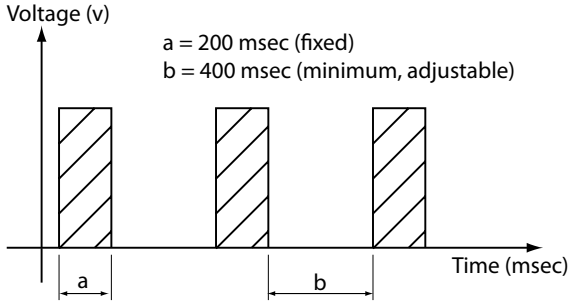
SPECIFICATIONS

150SP Fluid Data							
Dispense Volume (µl)	100	125	150	175	200	225	250
Set-point accuracy	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	9600	12000	14400	16800	19200	21600	24000
Internal vol (µl)	710	710	710	710	710	710	710

150SP Electrical Data				150SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	8.0 Watts	0.66 amps	3.2 Watts	200 msec	400 msec	1.6 Hz
24 VDC	8.0 Watts	0.33 amps	3.2 Watts			

Recommended tubing for 150SP
Inlet & outlet, 1/8" (3.2mm) ID, hardwall tubing, PART NUMBER 008T47-032

150SP Micro-Pumps can be cycled at up to 1.6 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



039SP SERIES MICRO-PUMP

For precise dispensing of 4µl and flow rates up to 0.96 ml/min in a manifold mountable design

- 4µl discrete dispense volume
- 960µl/min maximum flow rate
- Manifold mountable

This sibling to the 030SP Micro-Pump duplicates the performance characteristics but is supplied ready for mounting in your manifold. (039SP series Micro-Pumps are not self-priming). *Please contact us if you would like us to supply the manifold (see page 16).*

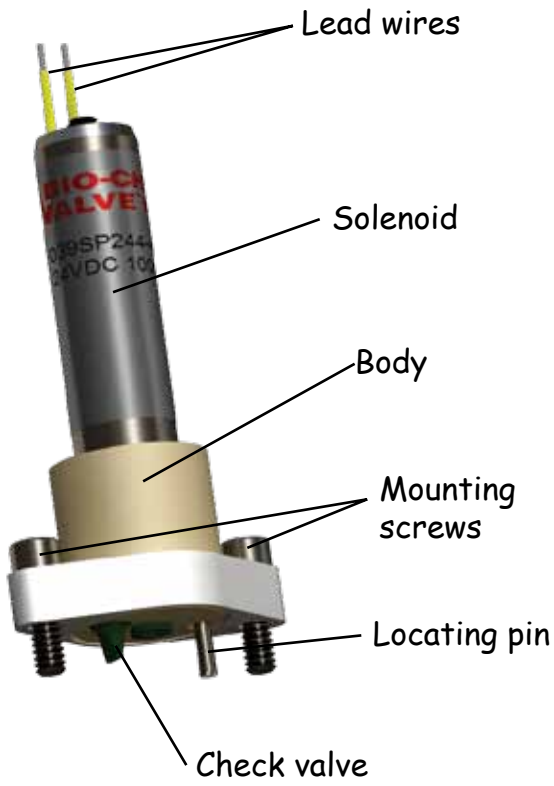
Materials available for the wetted parts of the pump are:

- Body materials: PPS
- Diaphragm materials: PTFE
- Check valve materials: FKM

039SP series options

PART NO.	VDC	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 4µl dispense					
039SP124-4TV	12	4	PPS	PTFE	FKM
24 VDC; 4µl dispense					
039SP244-4TV	24	4	PPS	PTFE	FKM

ARRANGEMENT



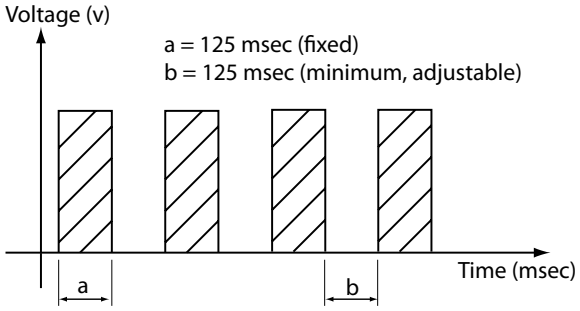
SPECIFICATIONS

039SP Volumetric Data	
Dispense Volume (µl)	4
Set-point accuracy	+/- 25%
Repeatability	+/- 5%
Max flow rate (µl/min)	960
Internal vol (µl)	130

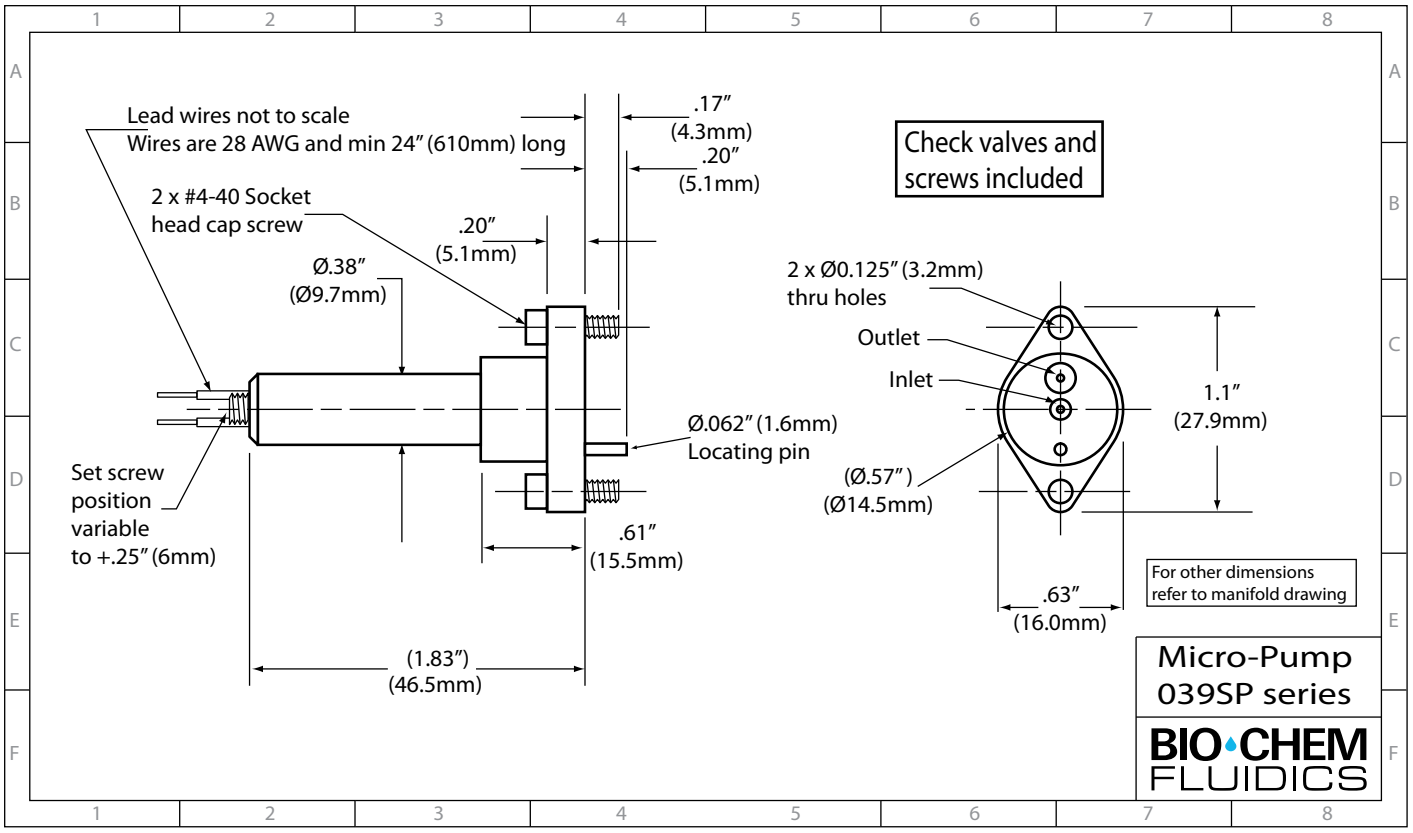
039SP Electrical Data			
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate
12 VDC	1.9 Watts	0.22 amps	0.9 Watts
24 VDC	1.9 Watts	0.11 amps	0.9 Watts

039SP Cycle Rates		
Fixed "on" time	Min "off" time	Max cycle rate
125 msec	125 msec	4.0 Hz

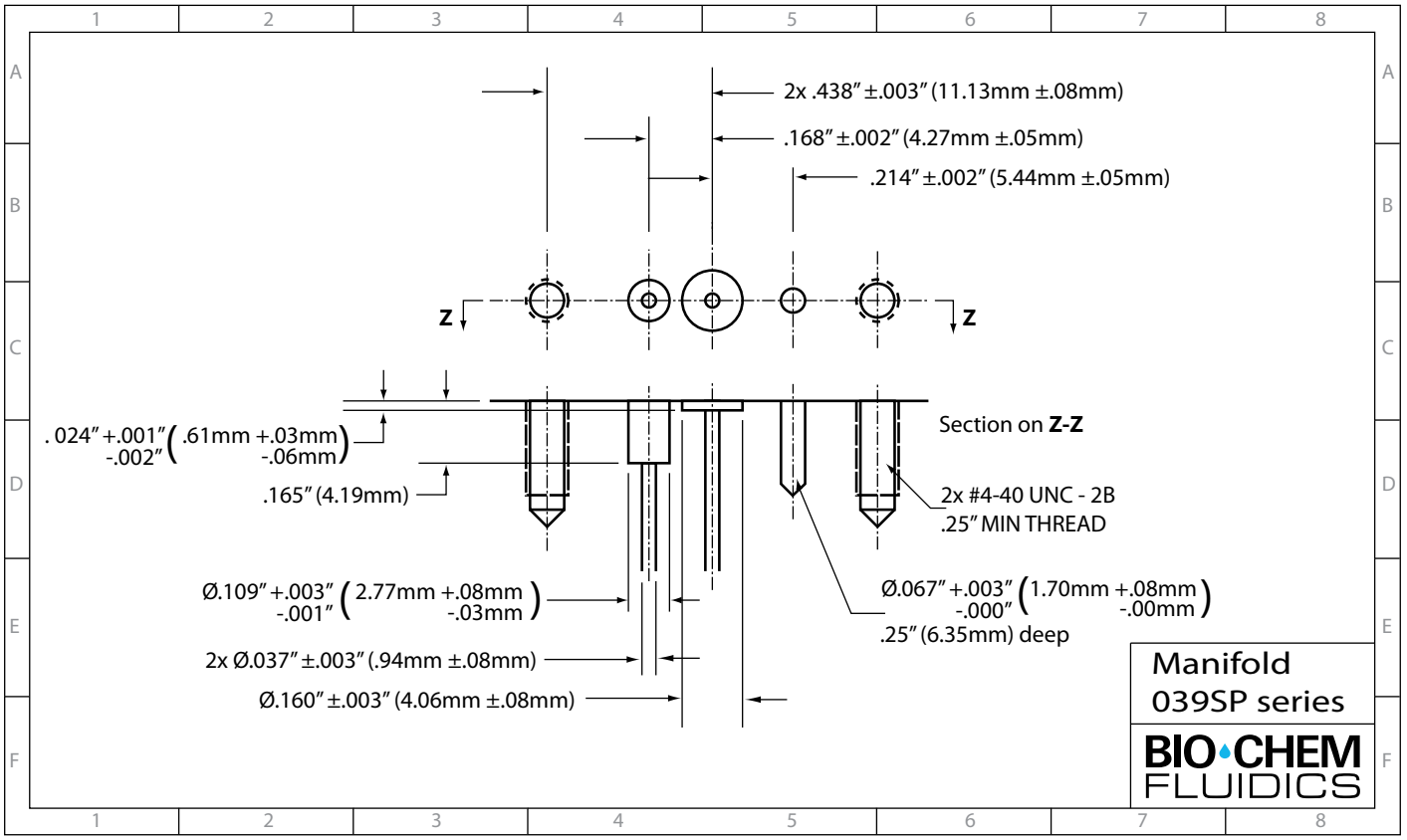
039SP Micro-Pumps can be cycled at up to 4 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



INSTALLATION DRAWING



MANIFOLD INTERFACE DRAWING



139SP SERIES MICRO-PUMP

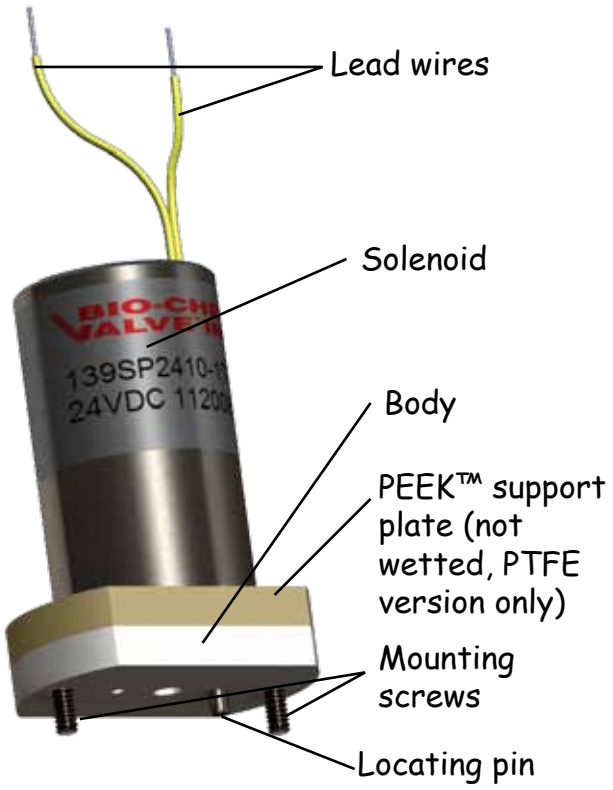
For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min in a manifold mountable design

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- Manifold mountable

This sibling to the 130SP Micro-Pump duplicates the performance characteristics but is supplied ready for mounting in your manifold. *Please contact us if you would like us to supply the manifold (see page 16).* Materials available for the wetted parts are:

- Body materials: PTFE, POM, PEEK™
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

ARRANGEMENT



139SP series options

NOTE: For 24 VDC, replace 139SP12 with 139SP24 in any of the part numbers listed.

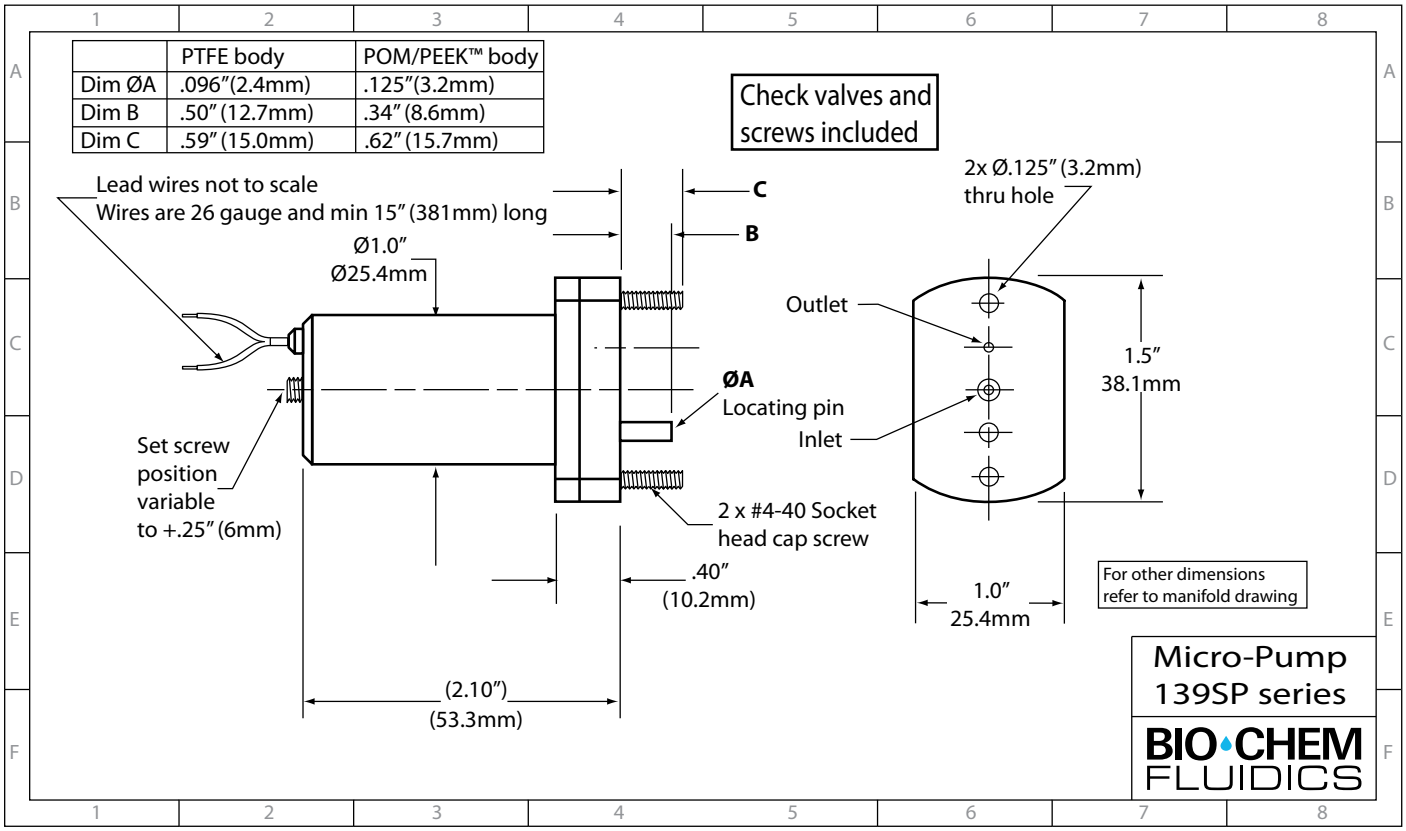
PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
139SP1210-1TP	10	PTFE	PTFE	FFKM
139SP1210-5TP	10	PEEK™	PTFE	FFKM
139SP1210-5TV	10	PEEK™	PTFE	FKM
139SP1210-5TE	10	PEEK™	PTFE	EPDM
139SP1210-6TV	10	POM	PTFE	FKM
139SP1210-6TE	10	POM	PTFE	EPDM
12 VDC; 20µl dispense				
139SP1220-1TP	20	PTFE	PTFE	FFKM
139SP1220-5TP	20	PEEK™	PTFE	FFKM
139SP1220-5TV	20	PEEK™	PTFE	FKM
139SP1220-5TE	20	PEEK™	PTFE	EPDM
139SP1220-6TV	20	POM	PTFE	FKM
139SP1220-6EE	20	POM	EPDM	EPDM
12 VDC; 30µl dispense				
139SP1230-1TP	30	PTFE	PTFE	FFKM
139SP1230-5TP	30	PEEK™	PTFE	FFKM
139SP1230-5TV	30	PEEK™	PTFE	FKM
139SP1230-5TE	30	PEEK™	PTFE	EPDM
139SP1230-6TV	30	POM	PTFE	FKM
139SP1230-6EE	30	POM	EPDM	EPDM

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 40µl dispense				
139SP1240-1TP	40	PTFE	PTFE	FFKM
139SP1240-5TP	40	PEEK™	PTFE	FFKM
139SP1240-5TV	40	PEEK™	PTFE	FKM
139SP1240-5TE	40	PEEK™	PTFE	EPDM
139SP1240-6TV	40	POM	PTFE	FKM
139SP1240-6EE	40	POM	EPDM	EPDM
12 VDC; 50µl dispense				
139SP1250-1TP	50	PTFE	PTFE	FFKM
139SP1250-5TP	50	PEEK™	PTFE	FFKM
139SP1250-5TV	50	PEEK™	PTFE	FKM
139SP1250-5TE	50	PEEK™	PTFE	EPDM
139SP1250-6TV	50	POM	PTFE	FKM
139SP1250-6EE	50	POM	EPDM	EPDM
12 VDC; 60µl dispense				
139SP1260-6EE	60	POM	EPDM	EPDM

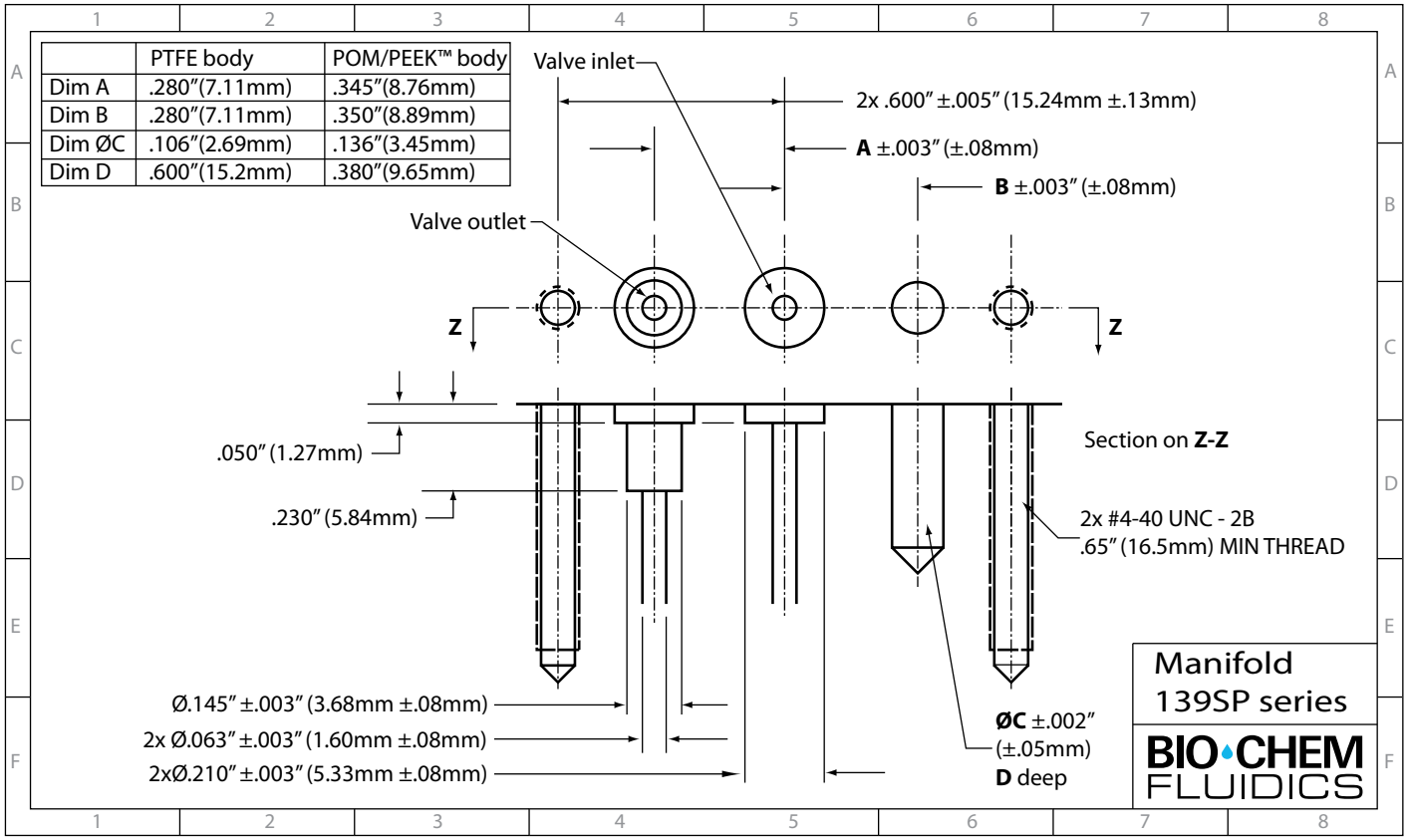
SPECIFICATIONS

The 139SP has the same specifications as the 130SP (see page 7)

INSTALLATION DRAWING



MANIFOLD INTERFACE DRAWING



MANIFOLDS

Custom manifold for (1) 139SP Micro-Pump (shown) and (3) isolation valves (not shown). Blue lines indicate the fluid path; the red dots are ruby balls used as plugs.

Custom-built manifolds are used to organize multiple Micro-Pumps and other Fluid Control Devices such as Isolation Valves into an efficient, pre-assembled, space-saving module that is designed to meet your specific flow needs. Manifolds can range from simple blocks for two devices to complex shapes with intricate flow paths for many devices. Bio-Chem Fluidics has produced complex manifolds for as many as 84 Micro-Pumps on a single block.

Features:

- Reduction of internal equipment space requirements.
- Allows for the combining of valves, tubing, pumps and connectors into a single, pre-assembled component.
- Elimination of unsightly and unmanageable wiring and tubing.
- Helps to reduce inventory.
- Reduces production time and costs associated with testing, handling and assembling multiple components.
- Materials of construction to suit fluid characteristics including, but not limited to; PTFE, POM, PEEK™, acrylic and PPS.

Please contact your local Bio-Chem Fluidics facility to discuss your manifold requirements with one of our engineers.

Custom manifold for (2) 139SP Micro-Pumps (not shown).

FlowTest™ - AUTOMATED CONTROLLER FOR MICRO-FLUIDIC SYSTEMS

FlowTest™ is an automated controller that operates up to eight fluidic control devices (FCD's, such as solenoid valves and pumps), each of which can be run in parallel or independently. Programming is carried out using the dedicated CosDesigner™ software running on a PC or a laptop computer. Multiple programs can be set up, stored and managed. Fields of use include laboratory and industrial applications requiring precise liquid transfers, sampling and injection.
FlowTest™ can also operate as a stand-alone instrument, without a computer. In this mode, programs are loaded using a USB key. The controller is operated by "run" and "stop" buttons conveniently located on top of the control unit.

Technical specifications

Dimensions:	22 x 18 x 8.5 cm / 9 x 7 x 3.5 inches
Capacity:	Up to 8 valves and pumps running in parallel.
Output voltage:	12 V or 24 V
External trigger:	4 IRQ's (0-5V TTL, dry contact) permitting the start or stop of valve or pump operation. IRQ inputs through female CINCH/AV connectors.
FCD connection:	Spring-loaded terminal blocks with bi-color LED's indicating state of actuation.
USB-A port:	Designated for USB key for loading programs into controller. A USB key loaded with the Bio-Chem Fluidics database is supplied with the controller.
USB-B port:	Designated for PC or laptop connection.
Input voltage:	110-120 V, 60 Hz / 220-240 V, 50 Hz. Power cables with U.S. and European plugs are supplied with the controller.
Programming:	CosDesigner™ tool can be run on Windows Vista and Windows XP operating systems in either 32-bit or 64-bit versions.

OMNI-LOK™ INVERTED CONE FITTINGS

Removable and reusable system for quick and convenient low-pressure connections

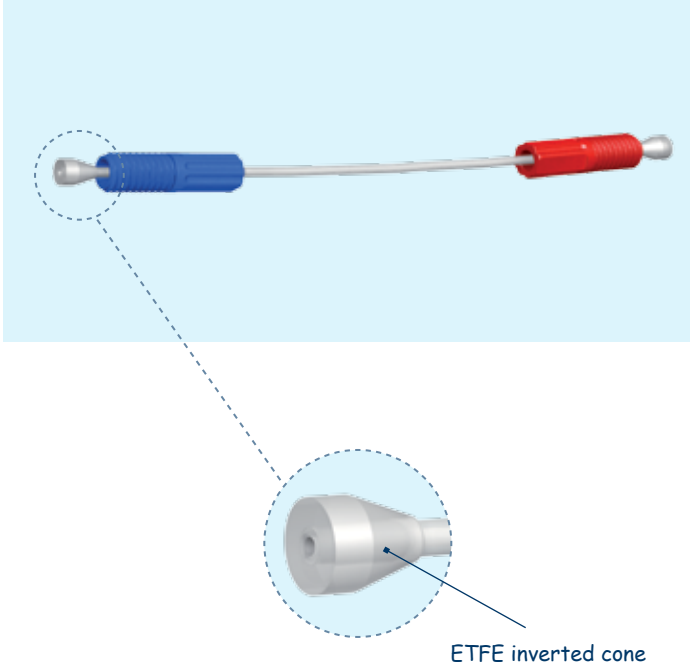
- Pressure rated up to 250psi (17 bar)
- For 1⁄16", 1⁄8" or 3⁄16" OD semi-rigid tubing e.g. PTFE, ETFE, FEP
- For flat-bottom 1⁄4"-28 UNF or 5⁄16"-24 UNF ports

Omni-Lok™ inverted cone fittings provide a simple, easy to use low-pressure connection. Only the ETFE cone and the tubing itself are in the fluid path.

No tools are required to assemble the flangeless fitting quickly and economically - just slip the fitting nut and the ETFE cone over the tubing and screw into the port. None of the parts are permanently attached to the tubing, so that the fitting nuts and inverted cones can easily be removed and re-used. A recess in the fitting nut houses the inverted cone. This allows maximum thread engagement with the port. The system seals up to 250psi (17 bar) pressure even in shallow PTFE ports. Note: The Omni-Lok™ inverted cone and fitting nut for 3⁄16" OD tubing and 5⁄16"-24 UNF flat-bottom ports is pressure rated up to 30 psi (2 bar).

Fitting nuts in robust, glass-filled polypropylene are available in a range of different colors for easy line identification. Nuts are also available in PEEK™ with standard and compact head designs (see the Omnifit® Fittings Systems Brochure for our full range).

SPECIFICATIONS



For 1⁄16" OD Tubing

INVERTED CONES FOR 1⁄16" OD TUBING

PART NUMBER	DESCRIPTION	QTY
008CZ16	ETFE inverted cone	10pk

NUTS FOR 1⁄16" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC16-YC5U	PP	Blue	1⁄4•28	10pk
008NC16-YC5G	PP	Green	1⁄4•28	10pk

For 1⁄8" OD Tubing

INVERTED CONES FOR 1⁄8" OD TUBING

PART NUMBER	DESCRIPTION	QTY
008CZ32	ETFE inverted cone	10pk

NUTS FOR 1⁄8" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC32-YC5U	PP	Blue	1⁄4•28	10pk
008NC32-YC5G	PP	Green	1⁄4•28	10pk
008NC32-YC5N	PP	Orange	1⁄4•28	10pk
008NC32-YC5R	PP	Red	1⁄4•28	10pk
008NC32-YC5Y	PP	Yellow	1⁄4•28	10pk

TECH TIP:

Need more connection options?

See the Omnifit® Fitting Systems Brochure for our full range of threaded fittings, connectors and adaptors.

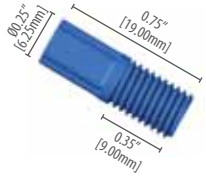
For 3⁄16" OD Tubing

INVERTED CONE FOR 3⁄16" OD TUBING

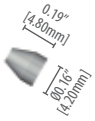
PART NUMBER	DESCRIPTION	QTY
008CZ47	ETFE inverted cone	10pk

NUTS FOR 3⁄16" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC47-YC7U	PP	Blue	5⁄16•24	10pk

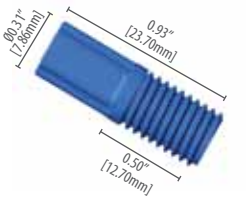


008NC16-YC5U
Nut for 1⁄16" OD tubing
1⁄4•28, blue

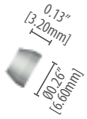


008CZ16
Omni-Lok™ inverted cone for 1⁄16" OD tubing

For use with 030SP, 120SP & 130SP series pumps



008NC47-YC7U
Nut for 3⁄16" OD tubing
5⁄16•24, blue



008CZ47
Omni-Lok™ inverted cone for 3⁄16" OD tubing

For use with 150SP series pumps

MICRO-PUMP TECH TIPS

OPERATING PARAMETERS

Output volume and accuracy: A number of factors influence the output volume of our pumps. In our factory the pump's setpoint is determined using the following test conditions:

- Fluid: De-ionized water at 70°F/21°C
- Fittings: Omni-Lok™ ¼"-28 inverted cone fittings for the 030SP, 120SP and 130SP pump families and 5⁄16"-24 inverted cone fittings for the 150SP pumps (see page 17).
- Tubing: PTFE tubing with the following dimensions:
  - 030SP, 120SP and 130SP pump families: Internal diameter of 1⁄32", 3"/8cm ≤ tubing length ≤ 14"/35cm.
  - 150SP pumps: Internal diameter of 1⁄8" on the inlet and 1⁄16" on the outlet, 3"/8cm ≤ tubing length ≤ 10"/25cm
- Pressure: Negligible pressure on both the inlet and outlet ports.
- Cycle rates:
  - 030SP pump family: 125ms on / 125ms off
  - 120SP & 130SP pump families: 250ms on / 350ms off
  - 150SP pump family: 250ms on / 750ms off
- No air or gas bubbles in the line once the priming process is complete. (See the Priming section below and the Omnifit® bubble-trap in our Fitting Systems Brochure)

If your application parameters deviate significantly from the above, you may experience dispense rates that are different from the setpoint. In that case, please contact Bio-Chem Fluidics to discuss your application and we will make appropriate adjustments for you.

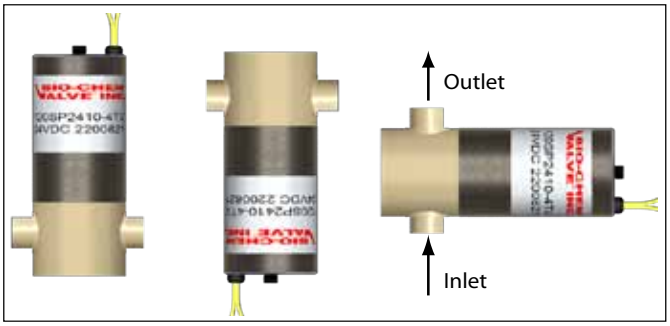
Pressure limits: Although Micro-Pumps are capable of producing outlet pressures of up to 5 psi (0.35 bar) while a dispense is taking place, for optimal dispense accuracy, the pressure on both the inlet and the outlet side of the pump should be kept between ± 0.5 psi (0.035 bar), equivalent to a head of ± 12" (300mm) water.

During the pump's up-stroke, suction is created on the inlet. Positive pressure is generated at the outlet during the down-stroke. When the pump is not actuated, it will shut-off flow as long as the pressure on the inlet does not exceed the maximum holding pressure. To ensure correct operation, pressure on the inlet side should never exceed 2 psi (0.14 bar) even when the pump is in the closed position. The check valves in the pump prevent fluid from flowing against the intended flow direction.

Priming: Micro-Pumps must be fully primed prior to operation to ensure that all air is removed from the pump cavity. Priming is achieved by cycling the pump until no air bubbles are seen in the dispense. This normally takes 30-60 seconds. Excessive air bubbles in the dispense are generally caused by air leaks due to loose fittings - check all the fittings in the system and tighten accordingly.

INSTALLATION TIPS

Orientation: Pumps should be installed with the solenoid portion of the pump pointing upwards, downwards or in a horizontal position with the outlet on top. This ensures that any air in the system will be evacuated quickly and also minimizes the effects of a pressure head acting to keep the check elements open when they should be closed.



Preferred mounting positions

Lead Wires: As a standard all lead wires are PTFE coated. Lead wires are provided with stripped ends for easy wiring into your control system - refer to drawings on product pages for more details. Different lengths and terminal connectors can be provided - refer to customization notes below.

Mounting options: The Micro-Pumps can be installed into your equipment with a variety of mounting options including mounting clips, rings and flanges. Some of the pumps can be mounted directly via mounting holes that are drilled into the pump body. For more details refer to the "Mounting Accessories & Options" spec sheet.

MC-100
Mounting clip

MR-100
Mounting ring

CUSTOMIZED SOLUTIONS

We understand that many applications require customized solutions. Our design and prototyping expertise enables us to offer simple modifications of standard products as well as completely customized designs. Over 90% of the Micro-Pumps we sell are customized to one extent or another. Customizable options include (but are not limited to):

- Materials of construction
- Operating voltage
- Dispense volume
- Mounting options
- Tagging / labeling
- Length and/or style of connecting leads
- Custom manifolds

We look forward to working with you to meet your design engineering objectives!

THE BIO-CHEM FLUIDICS BRAND FAMILY

Bio-Chem Fluidics is dedicated to providing instrument manufacturers and laboratories with the industry's best choice of inert, miniature fluid handling components.

Under the Bio-Chem Valve™ brand name we offer a complete fluid system solution for a wide range of industries including analytical chemistry, clinical diagnostics and medical device manufacturers as well as a world-class labware portfolio for the scientific community.

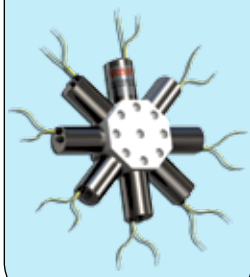
BIO-CHEM VALVE

INERT SOLENOID VALVES AND PUMPS, ELECTRIC ROTARY VALVES

MICRO-PUMPS

ISOLATION VALVES

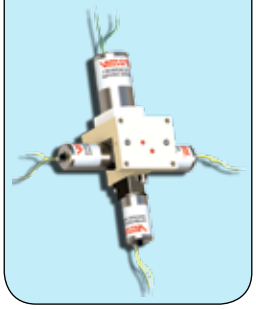
FLOW SELECTION VALVES



PINCH VALVES

ELECTRIC ROTARY VALVES

MANIFOLD ASSEMBLIES



ACCESSORIES

CUSTOMIZATION SERVICES

INERT FLUID HANDLING COMPONENTS AND ACCESSORIES

- Omni-Lok™ ¼"-28, 5⁄16"-24, and M6 fittings for pressures up to 1000 psig
- Bottle caps
- Bubble traps
- Relief Valves
- CoolCube™, "Hit and hold" circuit for all Bio-Chem Valve™ solenoid operated valves
- PTFE, Silicone and C-Flex® tubing
- Inert connectors and adaptors
- In-line filters

BIO·CHEM FLUIDICS

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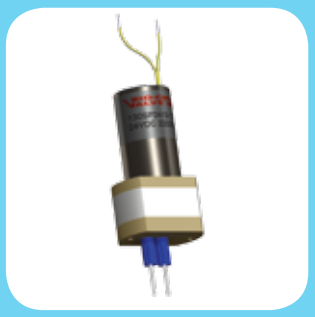
BIO·CHEM FLUIDICS

BIO-CHEM VALVE

Solenoid Operated Micro-Pumps

130SP Series Micro-Pump



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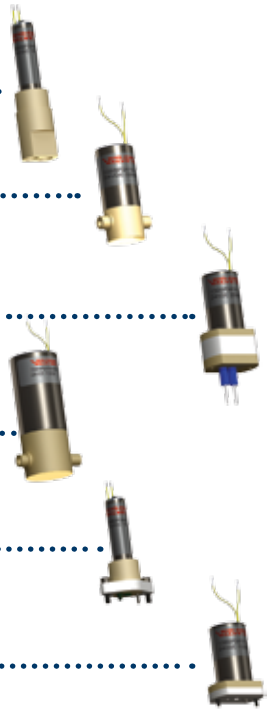
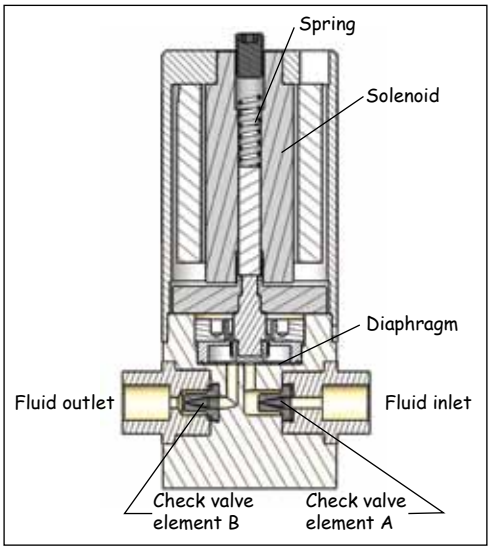


MICRO-PUMPS GENERAL INFORMATION

What is a Micro-Pump?

A Micro-Pump is a solenoid operated device designed to provide a precise, repeatable and discrete dispensed volume of fluid. The flow path is isolated from the operating mechanism by a flexible diaphragm. When the solenoid is energized, the diaphragm is retracted creating a partial vacuum within the pump body. This pulls liquid through the inlet check valve (A) and simultaneously closes the outlet check valve (B). When the solenoid is de-energized a spring pushes the diaphragm down, expelling a discrete volume of liquid through check valve B while simultaneously closing check valve A. Micro-Pumps require a complete on-off cycle for each discrete dispense. Repeatedly cycling the solenoid creates a pulsed flow *(refer to "Accurate discrete dispense volumes" in next column)*.



Features of the Bio-Chem Valve™ Micro-Pump

Inert materials

Our pumps provide a non-metallic inert fluid path for the dispensing of high purity or aggressive fluids. There is a range of different materials available for all the wetted parts of the pumps - body, diaphragm and check valve. Material combinations can be chosen to suit the application (*refer to individual product selection pages for standard combinations - custom combinations are available, refer to page 18*).

Body materials: PPS, PTFE, PEEK™, POM

Diaphragm materials: EPDM, PTFE

Check valve materials: EPDM, FKM, FFKM

Self-priming

At start-up, pumps with dispense volumes ≥ 20µl are able to draw air. The suction created by the larger pumps is sufficient to pull liquids from an unpressurized container located up to 4' 3" (1.3m) beneath the pump. Once the pump is primed, it is able to generate around 5psi (0.3bar) pressure, equating to 11' 6" (3.5m) of water.

Continuous duty

The pumps are capable of continuous duty. They are suitable for up to 20 million actuations, corresponding to nearly 3,000 hours of continuous use at a 2 Hz cycle rate.

Accurate discrete dispense volumes

Dispense volumes range from 4µl to 250µl per cycle. The pumps can be cycled at up to 4 Hz for the smallest version and 1.6 Hz for the largest. Pumps can be operated at less than the maximum cycle rate by increasing the length of the "off" time. The "on" time should remain unchanged to retain dispense accuracy.

Micro-Pump Selection Guide

1. Select pump style; either Ported or Manifold mount and work from the appropriate table:
   - Ported for direct connection with ¼"-28 fittings (*5/16"-24 for 150SP*)
   - Manifold mount for use with manifolds (see page 16)

Then:

2. Locate the volumetric characteristics that best suit your needs
3. Choose your preferred body material depending on the level of chemical inertness you require
4. Turn to the pages indicated to see full details and ordering information for each pump.

	Volumetric output		Body Material			
	Discrete Dispense Vol (µl)	Max flow rate (ml/min)	PTFE	PPS	PEEK™	POM
Ported	4	0.96		030SP (pg. 4)		
	10	1.2				
	20	2.4				
	30	3.6	130SP (pg. 8)	120SP (pg. 6)	120SP (pg. 6)	130SP (pg. 8)
	40	4.8				
	50	6.0				
	60	7.2				
	100	9.6				
	125	12.0				
	150	14.4				
	175	16.8		150SP (pg. 10)	150SP (pg. 10)	
	200	19.2				
	225	21.6				
	250	24.0				

	Volumetric output		Body Material			
	Discrete Dispense Vol (µl)	Max flow rate (ml/min)	PTFE	PPS	PEEK™	POM
Manifold mounted	4	0.96		039SP (pg. 12)		
	10	1.2				
	20	2.4				
	30	3.6	139SP (pg. 14)		139SP (pg. 14)	139SP (pg. 14)
	40	4.8				
	50	6.0				
	60	7.2				

Polymers referenced in this brochure:

EPDM = ethylene-propylene-diene
ETFE = ethylene tetrafluoroethylene
FEP = fluorinated ethylene propylene
FKM = fluorinated elastomer
FFKM = perfluoro elastomer
PEEK™ = polyetheretherketone
POM = polyoxymethylene (Acetal resin)
PPS = polyphenelyne sulfide
PTFE = polytetrafluoroethylene.

030SP SERIES MICRO-PUMP

For precise dispensing of 4µl and flow rates up to 0.96 ml/min

- 4µl discrete dispense volume
- 960µl/min maximum flow rate
- ¼"-28 UNF threaded ports

The 030SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. (030SP series Micro-Pumps are not self-priming)

Materials available for the wetted parts are:

- Body materials: PPS
- Diaphragm materials: PTFE
- Check valve materials: FKM

030SP series options

PART NO.	VDC	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 4µl dispense					
030SP124-4TV	12	4	PPS	PTFE	FKM
24 VDC; 4µl dispense					
030SP244-4TV	24	4	PPS	PTFE	FKM

ARRANGEMENT

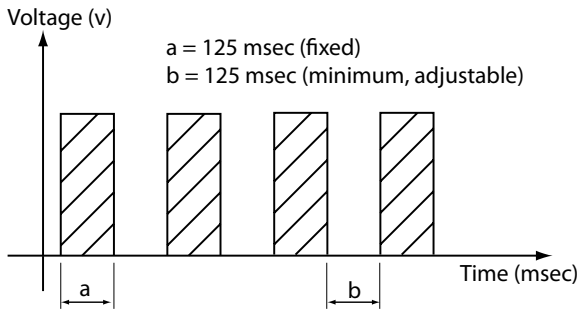
SPECIFICATIONS

030SP Fluid Data	
Dispense Volume (µl)	4
Set-point accuracy	+/- 25%
Repeatability	+/- 5%
Max flow rate (µl/min)	960
Internal vol (µl)	130

030SP Electrical Data			
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate
12 VDC	1.9 Watts	0.22 amps	0.9 Watts
24 VDC	1.9 Watts	0.11 amps	0.9 Watts

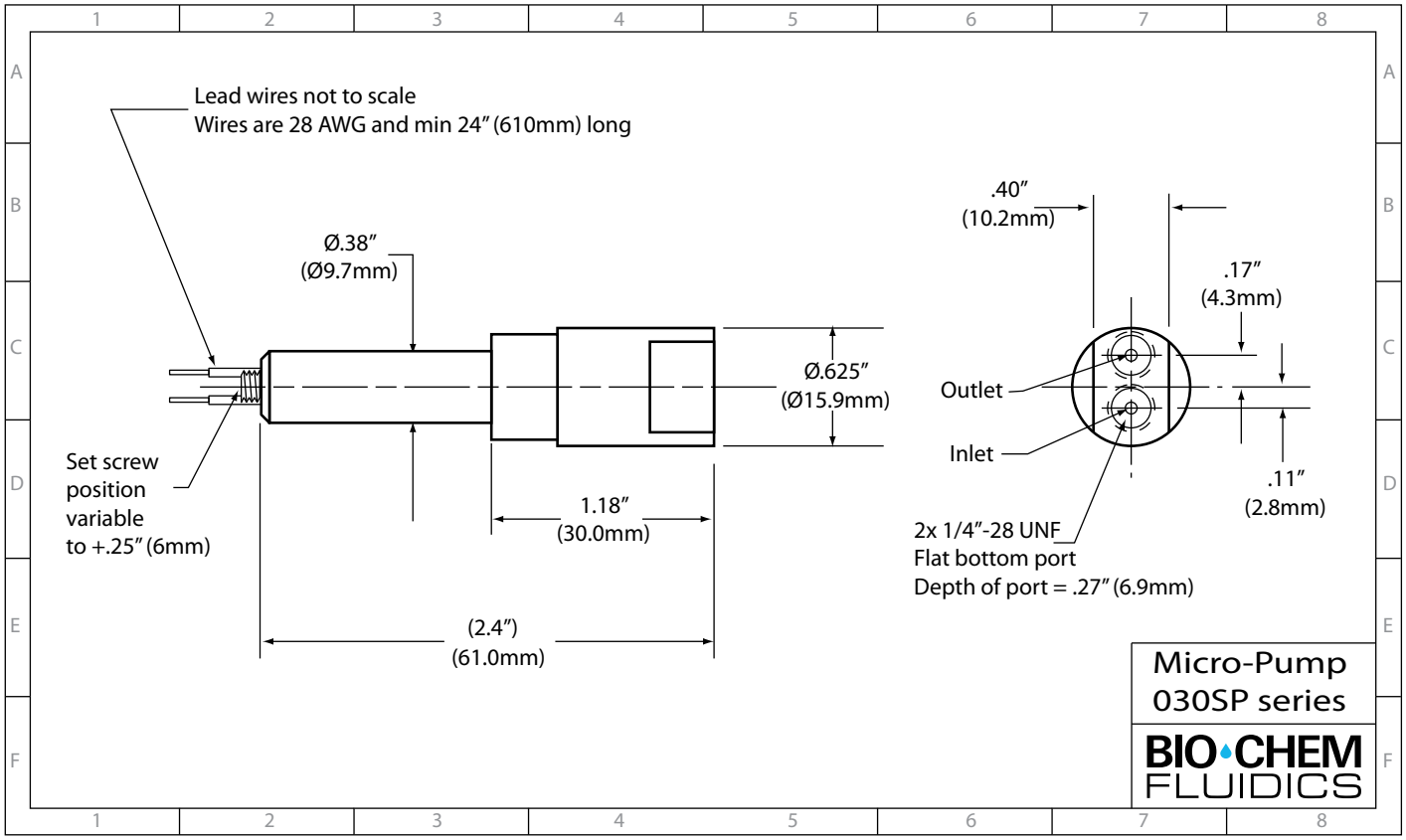
030SP Cycle Rates		
Fixed "on" time	Min "off" time	Max cycle rate
125 msec	125 msec	4.0 Hz

030SP Micro-Pumps can be cycled at up to 4 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



Recommended tubing for 030SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

INSTALLATION DRAWING



120SP SERIES MICRO-PUMP

For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- ¼"-28 UNF threaded ports

The 120SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

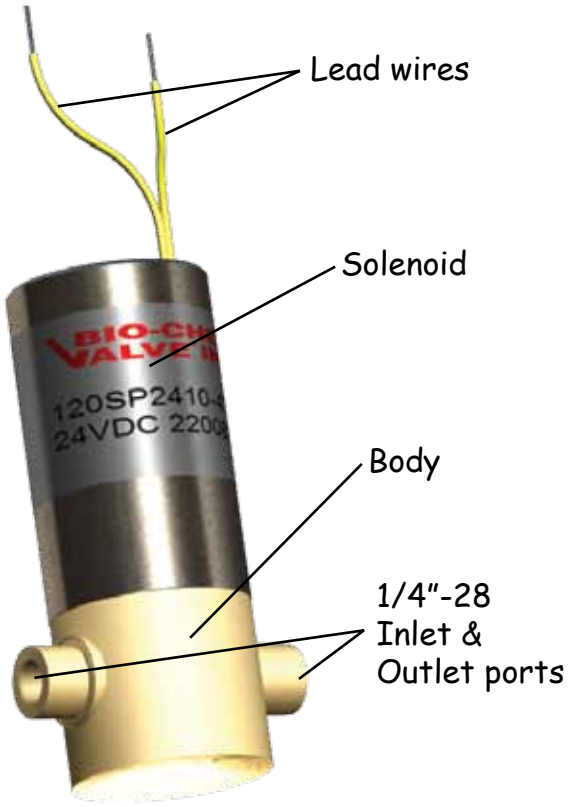
- Body materials: PPS, PEEK™
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

120SP series options

NOTE: For 24 VDC, replace 120SP12 with 120SP24 in any of the part numbers listed.

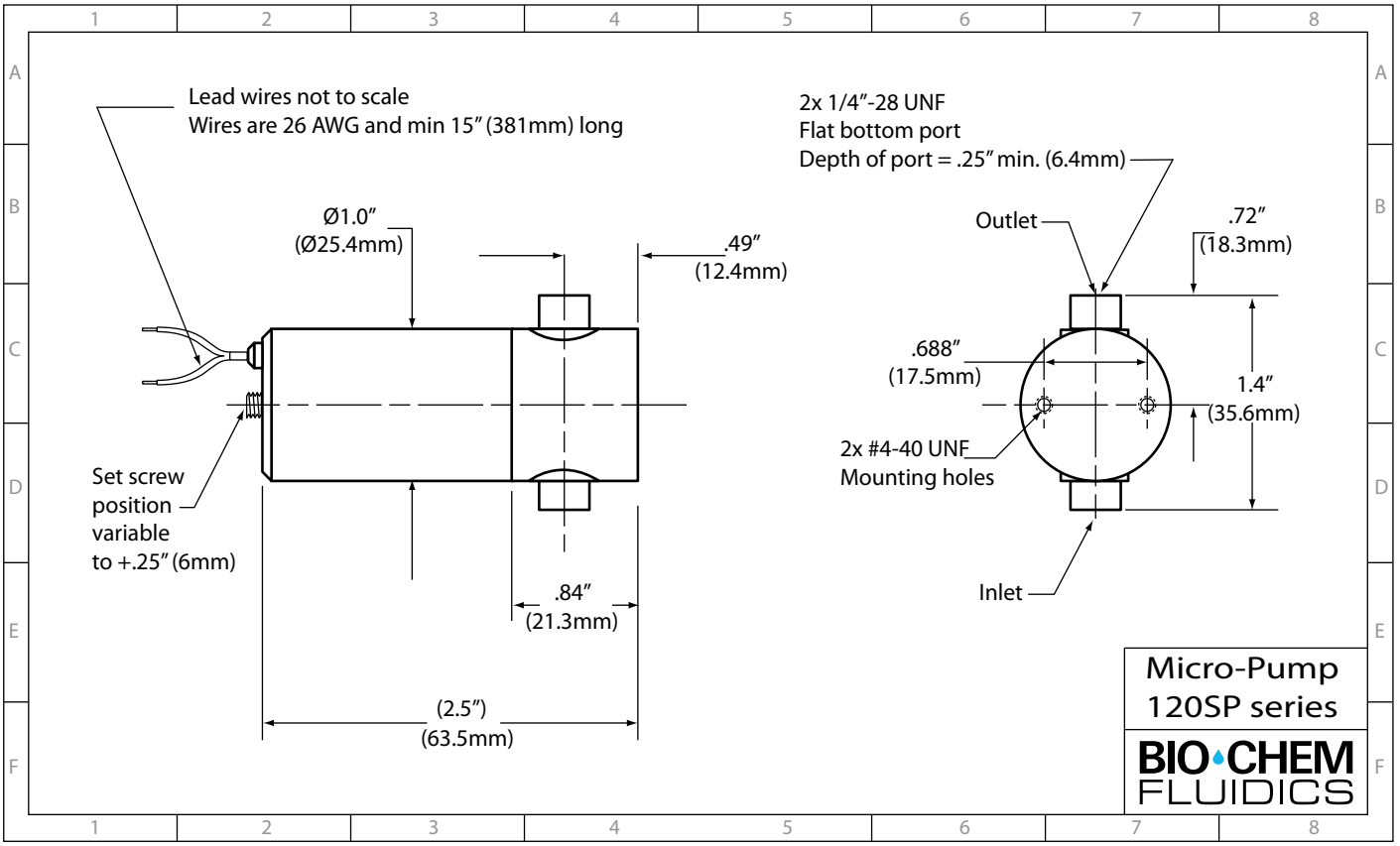
PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
120SP1210-4TE	10	PPS	PTFE	EPDM
120SP1210-4TV	10	PPS	PTFE	FKM
120SP1210-4TP	10	PPS	PTFE	FFKM
120SP1210-5TE	10	PEEK™	PTFE	EPDM
120SP1210-5TV	10	PEEK™	PTFE	FKM
120SP1210-5TP	10	PEEK™	PTFE	FFKM
12 VDC; 20µl dispense				
120SP1220-4EE	20	PPS	EPDM	EPDM
120SP1220-4TV	20	PPS	PTFE	FKM
120SP1220-4TP	20	PPS	PTFE	FFKM
120SP1220-5EE	20	PEEK™	EPDM	EPDM
120SP1220-5TV	20	PEEK™	PTFE	FKM
120SP1220-5TP	20	PEEK™	PTFE	FFKM
12 VDC; 30µl dispense				
120SP1230-4EE	30	PPS	EPDM	EPDM
120SP1230-4TV	30	PPS	PTFE	FKM
120SP1230-4TP	30	PPS	PTFE	FFKM
120SP1230-5EE	30	PEEK™	EPDM	EPDM
120SP1230-5TV	30	PEEK™	PTFE	FKM
120SP1230-5TP	30	PEEK™	PTFE	FFKM

ARRANGEMENT



PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 40µl dispense				
120SP1240-4EE	40	PPS	EPDM	EPDM
120SP1240-4TV	40	PPS	PTFE	FKM
120SP1240-4TP	40	PPS	PTFE	FFKM
120SP1240-5EE	40	PEEK™	EPDM	EPDM
120SP1240-5TV	40	PEEK™	PTFE	FKM
120SP1240-5TP	40	PEEK™	PTFE	FFKM
12 VDC; 50µl dispense				
120SP1250-4EE	50	PPS	EPDM	EPDM
120SP1250-4TV	50	PPS	PTFE	FKM
120SP1250-4TP	50	PPS	PTFE	FFKM
120SP1250-5EE	50	PEEK™	EPDM	EPDM
120SP1250-5TV	50	PEEK™	PTFE	FKM
120SP1250-5TP	50	PEEK™	PTFE	FFKM
12 VDC; 60µl dispense (Note: EPDM diaphragm for all 60 µl options)				
120SP1260-4EE	60	PPS	EPDM	EPDM
120SP1260-5EE	60	PEEK™	EPDM	EPDM

INSTALLATION DRAWING



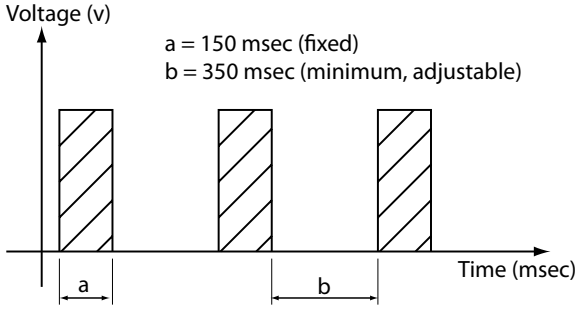
SPECIFICATIONS

120SP Fluid Data						
Dispense Volume (µl)	10	20	30	40	50	60
Set-point accuracy	+/- 20%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	1200	2400	3600	4800	6000	7200
Internal vol (µl)	105	105	105	105	105	105

120SP Electrical Data				120SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	4.0 Watts	0.32 amps	1.2 Watts	150 msec	350 msec	2.0 Hz
24 VDC	4.0 Watts	0.16 amps	1.2 Watts			

Recommended tubing for 120SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

120SP Micro-Pumps can be cycled at up to 2 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



130SP SERIES MICRO-PUMP

For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- ¼"-28 UNF threaded ports
- Most inert body material for harshest applications

The 130SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

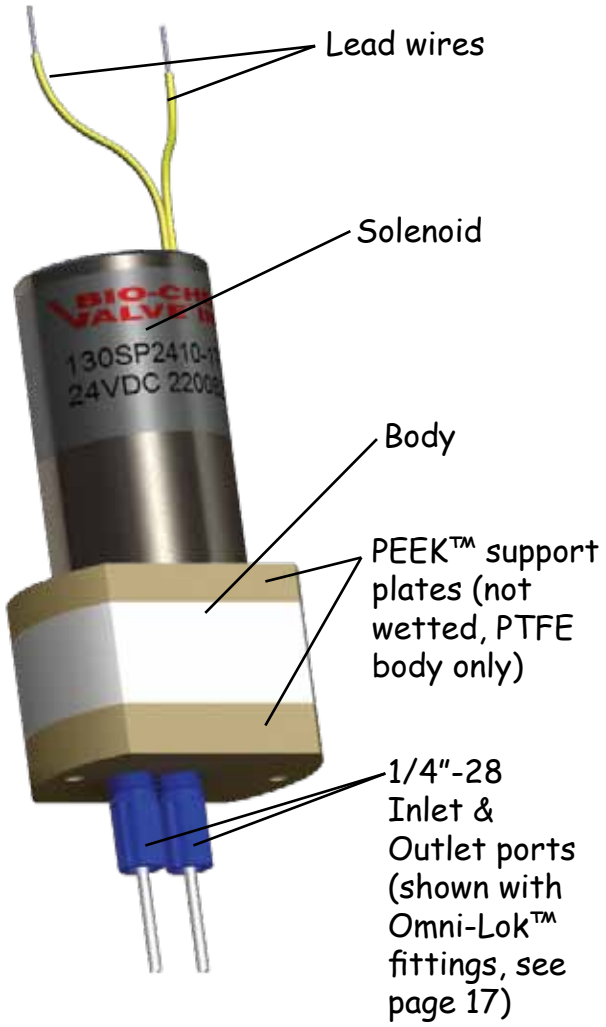
- Body materials: PTFE, POM
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

130SP series options

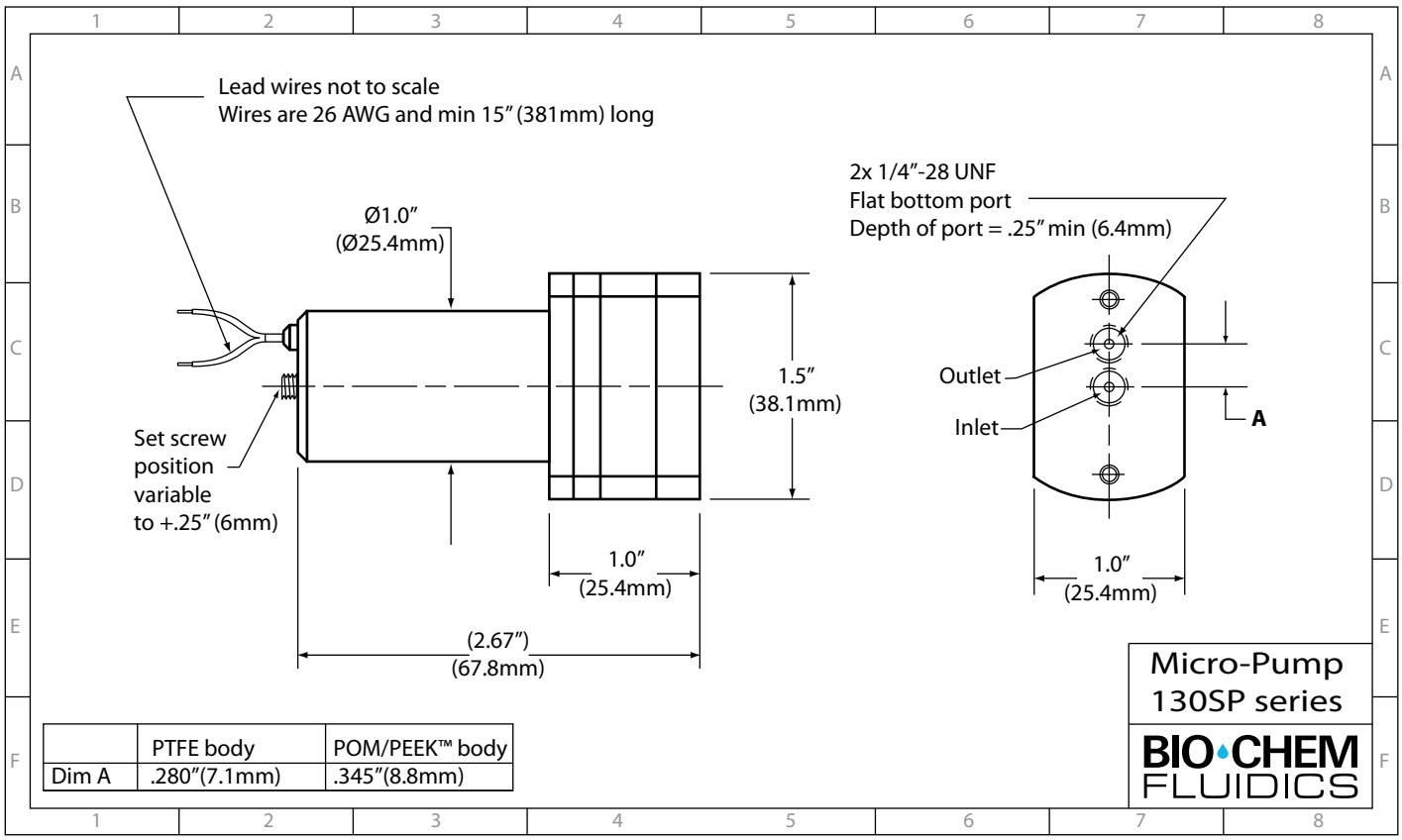
NOTE: For 24 VDC, replace 130SP12 with 130SP24 in any of the part numbers listed.

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
130SP1210-1TP	10	PTFE	PTFE	FFKM
130SP1210-6TV	10	POM	PTFE	FKM
130SP1210-6TE	10	POM	PTFE	EPDM
12 VDC; 20µl dispense				
130SP1220-1TP	20	PTFE	PTFE	FFKM
130SP1220-6TV	20	POM	PTFE	FKM
130SP1220-6EE	20	POM	EPDM	EPDM
12 VDC; 30µl dispense				
130SP1230-1TP	30	PTFE	PTFE	FFKM
130SP1230-6TV	30	POM	PTFE	FKM
130SP1230-6EE	30	POM	EPDM	EPDM
12 VDC; 40µl dispense				
130SP1240-1TP	40	PTFE	PTFE	FFKM
130SP1240-6TV	40	POM	PTFE	FKM
130SP1240-6EE	40	POM	EPDM	EPDM
12 VDC; 50µl dispense				
130SP1250-1TP	50	PTFE	PTFE	FFKM
130SP1250-6TV	50	POM	PTFE	FKM
130SP1250-6EE	50	POM	EPDM	EPDM
12 VDC; 60µl dispense				
130SP1260-6EE	60	POM	EPDM	EPDM

ARRANGEMENT



INSTALLATION DRAWING



	PTFE body	POM/PEEK™ body
Dim A	.280"(7.1mm)	.345"(8.8mm)

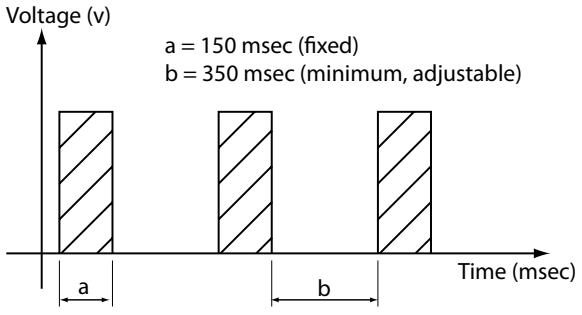
SPECIFICATIONS

130SP Volumetric Data						
Dispense Volume (µl)	10	20	30	40	50	60
Set-point accuracy	+/- 20%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	1200	2400	3600	4800	6000	7200
Internal vol (µl)	105	105	105	105	105	105

130SP Electrical Data				130SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	4.0 Watts	0.32 amps	1.2 Watts	150 msec	350 msec	2.0 Hz
24 VDC	4.0 Watts	0.16 amps	1.2 Watts			

Recommended tubing for 130SP
Inlet & outlet, 1/32" (0.80mm) ID, hardwall tubing, PART NO. 008T16-080

130SP Micro-Pumps can be cycled at up to 2 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



150SP SERIES MICRO-PUMP

For precise dispensing between 100 and 250µl and flow rates up to 24 ml/min

- Self-priming
- 100-250µl discrete dispense volumes
- Up to 24 ml/min maximum flow rate
- 5⁄16"-24 UNF threaded ports

The 150SP series Micro-Pumps are solenoid operated, with the operating mechanism isolated from the flow path by a diaphragm. Check valves situated at the inlet and outlet of the pump control the direction of flow. The combination of materials for each component can be selected to best suit your specific application.

Materials available for the wetted parts are:

- Body materials: PPS, PEEK™
- Diaphragm materials: EPDM
- Check valve materials: EPDM

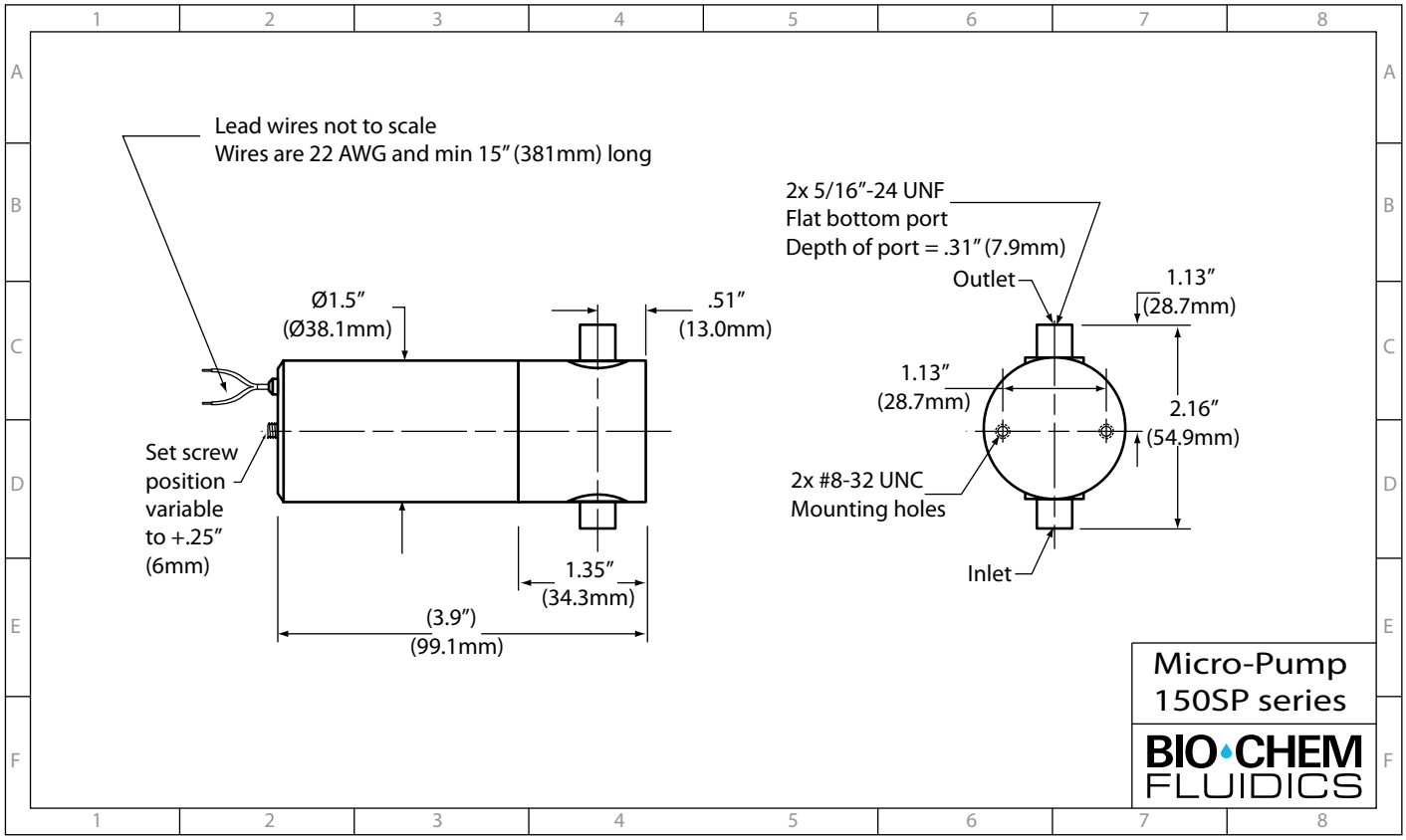
150SP series options

NOTE: For 24 VDC, replace 150SP12 with 150SP24 in any of the part numbers listed.

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 100µl dispense				
150SP12100-4EE	100	PPS	EPDM	EPDM
150SP12100-5EE	100	PEEK™	EPDM	EPDM
12 VDC; 125µl dispense				
150SP12125-4EE	125	PPS	EPDM	EPDM
150SP12125-5EE	125	PEEK™	EPDM	EPDM
12 VDC; 150µl dispense				
150SP12150-4EE	150	PPS	EPDM	EPDM
150SP12150-5EE	150	PEEK™	EPDM	EPDM
12 VDC; 175µl dispense				
150SP12175-4EE	175	PPS	EPDM	EPDM
150SP12175-5EE	175	PEEK™	EPDM	EPDM
12 VDC; 200µl dispense				
150SP12200-4EE	200	PPS	EPDM	EPDM
150SP12200-5EE	200	PEEK™	EPDM	EPDM
12 VDC; 225µl dispense				
150SP12225-4EE	225	PPS	EPDM	EPDM
150SP12225-5EE	225	PEEK™	EPDM	EPDM
12 VDC; 250µl dispense				
150SP12250-4EE	250	PPS	EPDM	EPDM
150SP12250-5EE	250	PEEK™	EPDM	EPDM

ARRANGEMENT

INSTALLATION DRAWING



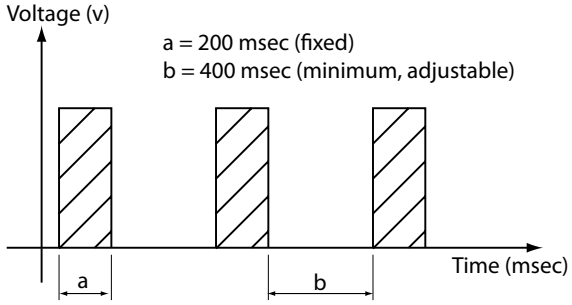
SPECIFICATIONS

150SP Fluid Data							
Dispense Volume (µl)	100	125	150	175	200	225	250
Set-point accuracy	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%	+/- 10%
Repeatability	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%	+/- 5%
Max flow rate (µl/min)	9600	12000	14400	16800	19200	21600	24000
Internal vol (µl)	710	710	710	710	710	710	710

150SP Electrical Data				150SP Cycle Rates		
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate	Fixed "on" time	Min "off" time	Max cycle rate
12 VDC	8.0 Watts	0.66 amps	3.2 Watts	200 msec	400 msec	1.6 Hz
24 VDC	8.0 Watts	0.33 amps	3.2 Watts			

Recommended tubing for 150SP
Inlet & outlet, 1/8" (3.2mm) ID, hardwall tubing, PART NUMBER 008T47-032

150SP Micro-Pumps can be cycled at up to 1.6 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



039SP SERIES MICRO-PUMP

For precise dispensing of 4µl and flow rates up to 0.96 ml/min in a manifold mountable design

- 4µl discrete dispense volume
- 960µl/min maximum flow rate
- Manifold mountable

This sibling to the 030SP Micro-Pump duplicates the performance characteristics but is supplied ready for mounting in your manifold. (039SP series Micro-Pumps are not self-priming). *Please contact us if you would like us to supply the manifold (see page 16).*

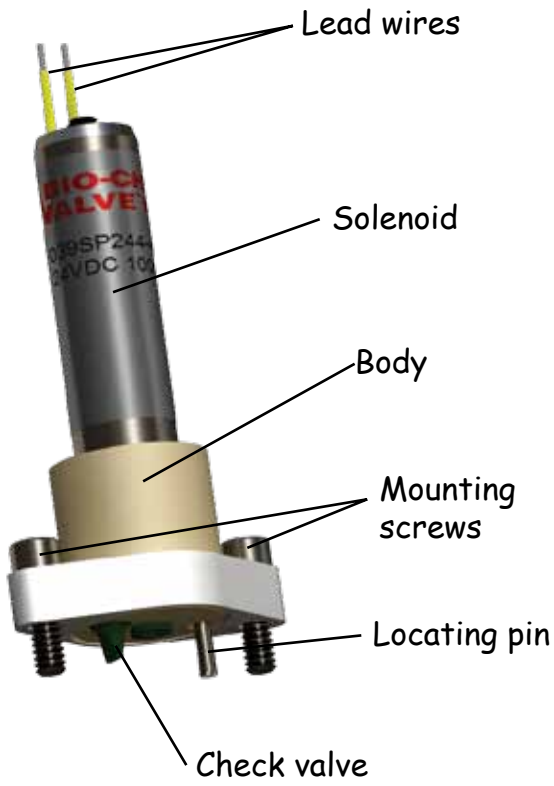
Materials available for the wetted parts of the pump are:

- Body materials: PPS
- Diaphragm materials: PTFE
- Check valve materials: FKM

039SP series options

PART NO.	VDC	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 4µl dispense					
039SP124-4TV	12	4	PPS	PTFE	FKM
24 VDC; 4µl dispense					
039SP244-4TV	24	4	PPS	PTFE	FKM

ARRANGEMENT



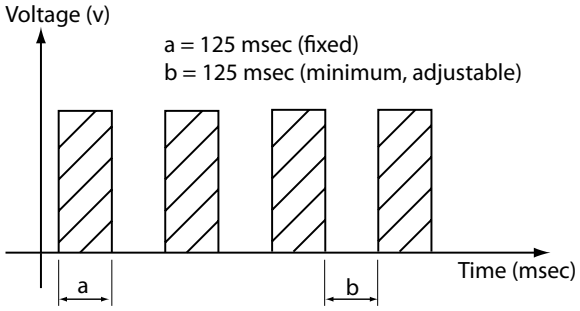
SPECIFICATIONS

039SP Volumetric Data	
Dispense Volume (µl)	4
Set-point accuracy	+/- 25%
Repeatability	+/- 5%
Max flow rate (µl/min)	960
Internal vol (µl)	130

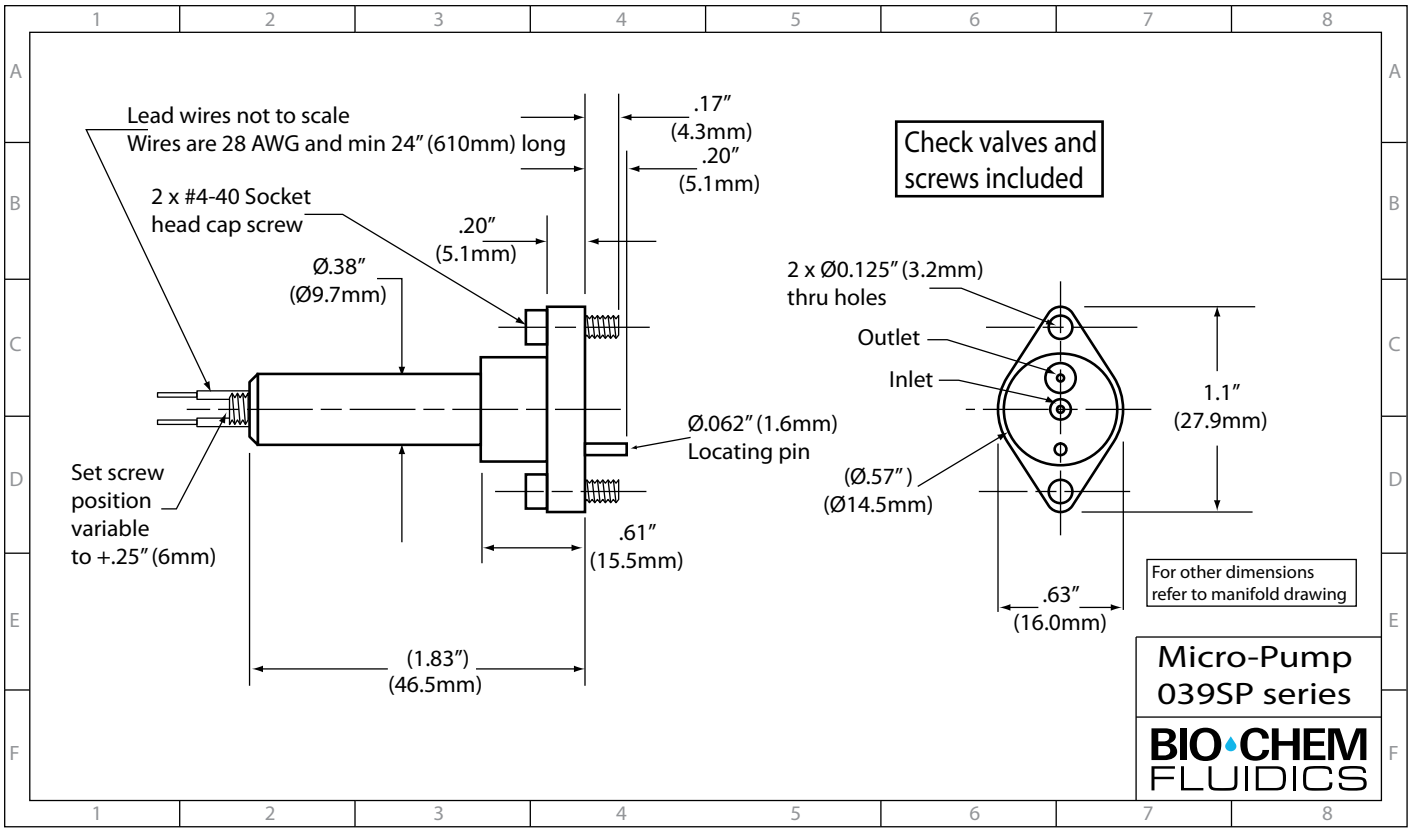
039SP Electrical Data			
Voltage	Power @70°F (21°C)	Current @70°F (21°C)	Effective continuous power @ max cycle rate
12 VDC	1.9 Watts	0.22 amps	0.9 Watts
24 VDC	1.9 Watts	0.11 amps	0.9 Watts

039SP Cycle Rates		
Fixed "on" time	Min "off" time	Max cycle rate
125 msec	125 msec	4.0 Hz

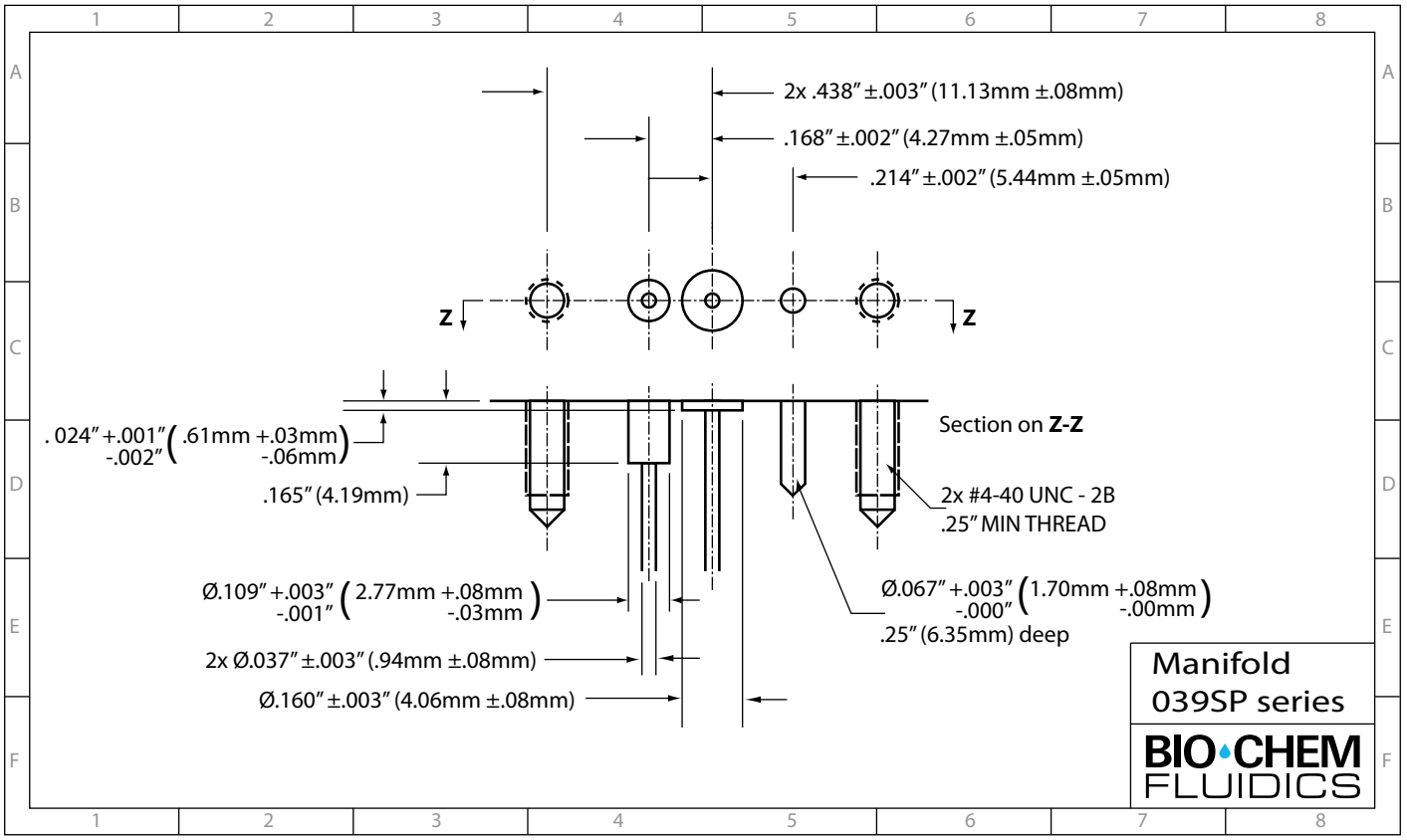
039SP Micro-Pumps can be cycled at up to 4 Hz. To maintain pumping precision the voltage "on" time should remain fixed - the pumping rate can be changed by increasing the "off" time.



INSTALLATION DRAWING



MANIFOLD INTERFACE DRAWING



139SP SERIES MICRO-PUMP

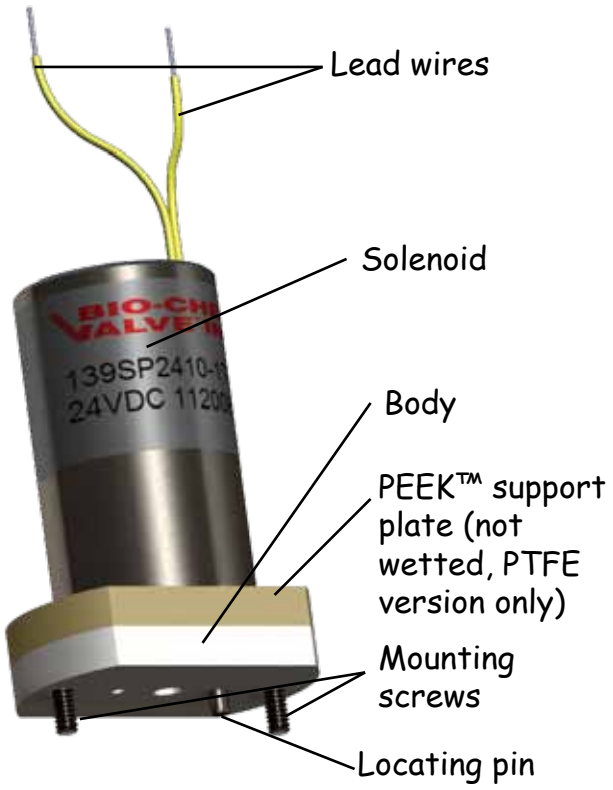
For precise dispensing between 10 and 60µl and flow rates up to 7.2 ml/min in a manifold mountable design

- Self-priming for dispense volumes ≥ 20µl
- 10-60µl discrete dispense volumes
- Up to 7.2 ml/min maximum flow rate
- Manifold mountable

This sibling to the 130SP Micro-Pump duplicates the performance characteristics but is supplied ready for mounting in your manifold. *Please contact us if you would like us to supply the manifold (see page 16).* Materials available for the wetted parts are:

- Body materials: PTFE, POM, PEEK™
- Diaphragm materials: PTFE, EPDM
- Check valve materials: EPDM, FKM, FFKM

ARRANGEMENT



139SP series options

NOTE: For 24 VDC, replace 139SP12 with 139SP24 in any of the part numbers listed.

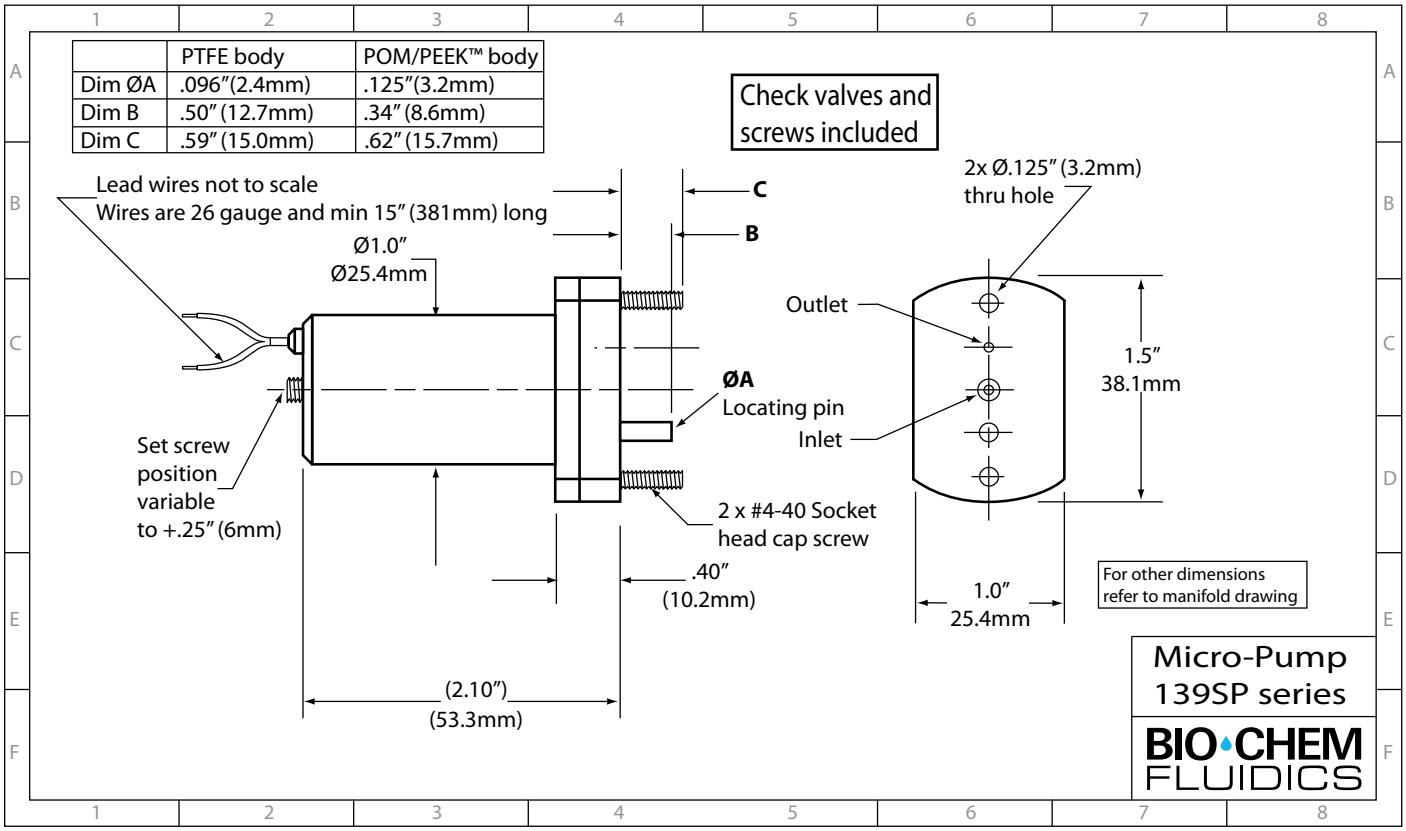
PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 10µl dispense (Note: PTFE diaphragm for all 10 µl options)				
139SP1210-1TP	10	PTFE	PTFE	FFKM
139SP1210-5TP	10	PEEK™	PTFE	FFKM
139SP1210-5TV	10	PEEK™	PTFE	FKM
139SP1210-5TE	10	PEEK™	PTFE	EPDM
139SP1210-6TV	10	POM	PTFE	FKM
139SP1210-6TE	10	POM	PTFE	EPDM
12 VDC; 20µl dispense				
139SP1220-1TP	20	PTFE	PTFE	FFKM
139SP1220-5TP	20	PEEK™	PTFE	FFKM
139SP1220-5TV	20	PEEK™	PTFE	FKM
139SP1220-5TE	20	PEEK™	PTFE	EPDM
139SP1220-6TV	20	POM	PTFE	FKM
139SP1220-6EE	20	POM	EPDM	EPDM
12 VDC; 30µl dispense				
139SP1230-1TP	30	PTFE	PTFE	FFKM
139SP1230-5TP	30	PEEK™	PTFE	FFKM
139SP1230-5TV	30	PEEK™	PTFE	FKM
139SP1230-5TE	30	PEEK™	PTFE	EPDM
139SP1230-6TV	30	POM	PTFE	FKM
139SP1230-6EE	30	POM	EPDM	EPDM

PART NO.	DISPENSE VOL (µL)	BODY MATERIAL	DIAPHRAGM MATERIAL	CHECK VALVE MATERIAL
12 VDC; 40µl dispense				
139SP1240-1TP	40	PTFE	PTFE	FFKM
139SP1240-5TP	40	PEEK™	PTFE	FFKM
139SP1240-5TV	40	PEEK™	PTFE	FKM
139SP1240-5TE	40	PEEK™	PTFE	EPDM
139SP1240-6TV	40	POM	PTFE	FKM
139SP1240-6EE	40	POM	EPDM	EPDM
12 VDC; 50µl dispense				
139SP1250-1TP	50	PTFE	PTFE	FFKM
139SP1250-5TP	50	PEEK™	PTFE	FFKM
139SP1250-5TV	50	PEEK™	PTFE	FKM
139SP1250-5TE	50	PEEK™	PTFE	EPDM
139SP1250-6TV	50	POM	PTFE	FKM
139SP1250-6EE	50	POM	EPDM	EPDM
12 VDC; 60µl dispense				
139SP1260-6EE	60	POM	EPDM	EPDM

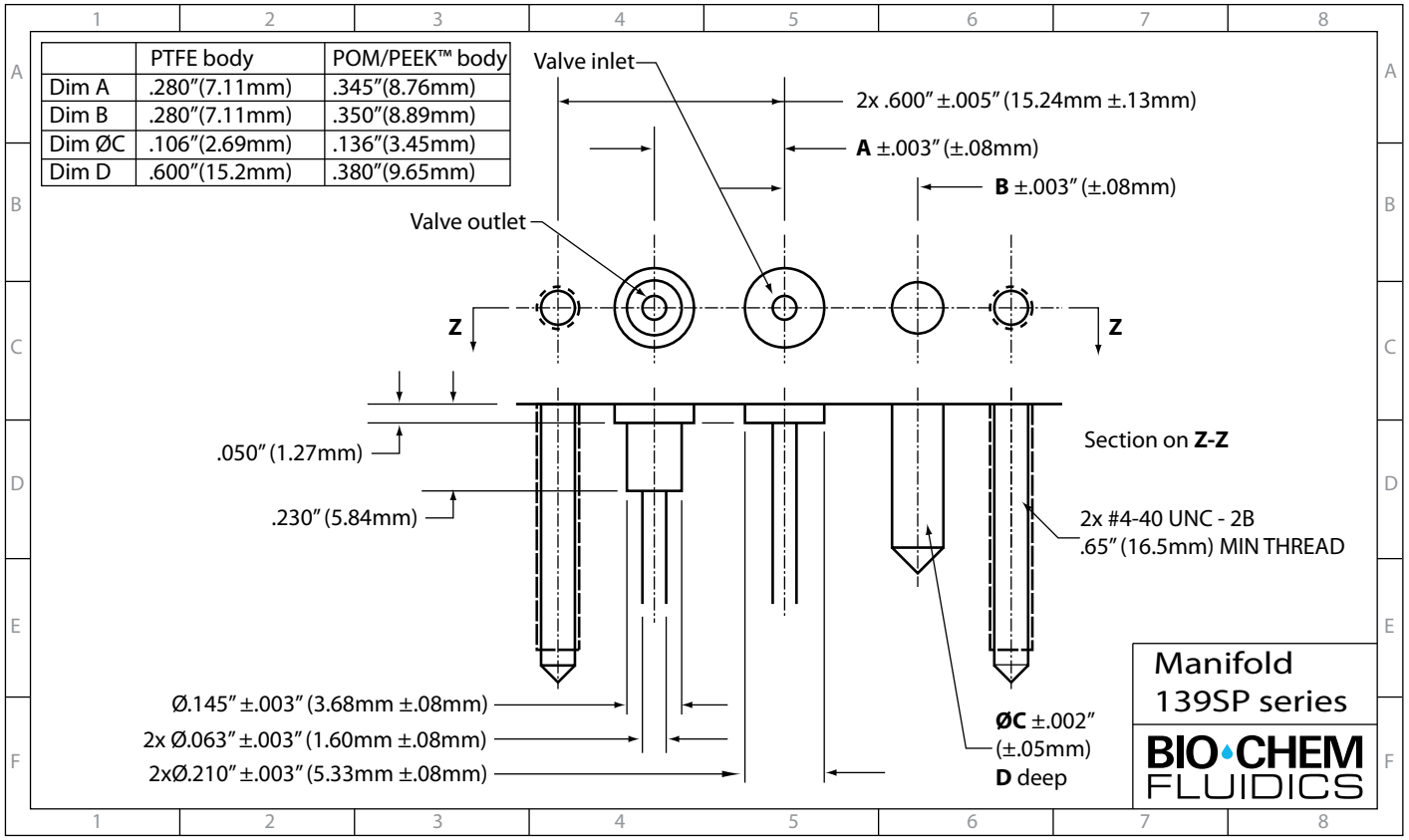
SPECIFICATIONS

The 139SP has the same specifications as the 130SP (see page 7)

INSTALLATION DRAWING



MANIFOLD INTERFACE DRAWING



MANIFOLDS

Custom manifold for (1) 139SP Micro-Pump (shown) and (3) isolation valves (not shown). Blue lines indicate the fluid path; the red dots are ruby balls used as plugs.

Custom-built manifolds are used to organize multiple Micro-Pumps and other Fluid Control Devices such as Isolation Valves into an efficient, pre-assembled, space-saving module that is designed to meet your specific flow needs. Manifolds can range from simple blocks for two devices to complex shapes with intricate flow paths for many devices. Bio-Chem Fluidics has produced complex manifolds for as many as 84 Micro-Pumps on a single block.

Features:

- Reduction of internal equipment space requirements.
- Allows for the combining of valves, tubing, pumps and connectors into a single, pre-assembled component.
- Elimination of unsightly and unmanageable wiring and tubing.
- Helps to reduce inventory.
- Reduces production time and costs associated with testing, handling and assembling multiple components.
- Materials of construction to suit fluid characteristics including, but not limited to; PTFE, POM, PEEK™, acrylic and PPS.

Please contact your local Bio-Chem Fluidics facility to discuss your manifold requirements with one of our engineers.

Custom manifold for (2) 139SP Micro-Pumps (not shown).

FlowTest™ - AUTOMATED CONTROLLER FOR MICRO-FLUIDIC SYSTEMS

FlowTest™ is an automated controller that operates up to eight fluidic control devices (FCD's, such as solenoid valves and pumps), each of which can be run in parallel or independently. Programming is carried out using the dedicated CosDesigner™ software running on a PC or a laptop computer. Multiple programs can be set up, stored and managed. Fields of use include laboratory and industrial applications requiring precise liquid transfers, sampling and injection.
FlowTest™ can also operate as a stand-alone instrument, without a computer. In this mode, programs are loaded using a USB key. The controller is operated by "run" and "stop" buttons conveniently located on top of the control unit.

Technical specifications

Dimensions:	22 x 18 x 8.5 cm / 9 x 7 x 3.5 inches
Capacity:	Up to 8 valves and pumps running in parallel.
Output voltage:	12 V or 24 V
External trigger:	4 IRQ's (0-5V TTL, dry contact) permitting the start or stop of valve or pump operation. IRQ inputs through female CINCH/AV connectors.
FCD connection:	Spring-loaded terminal blocks with bi-color LED's indicating state of actuation.
USB-A port:	Designated for USB key for loading programs into controller. A USB key loaded with the Bio-Chem Fluidics database is supplied with the controller.
USB-B port:	Designated for PC or laptop connection.
Input voltage:	110-120 V, 60 Hz / 220-240 V, 50 Hz. Power cables with U.S. and European plugs are supplied with the controller.
Programming:	CosDesigner™ tool can be run on Windows Vista and Windows XP operating systems in either 32-bit or 64-bit versions.

OMNI-LOK™ INVERTED CONE FITTINGS

Removable and reusable system for quick and convenient low-pressure connections

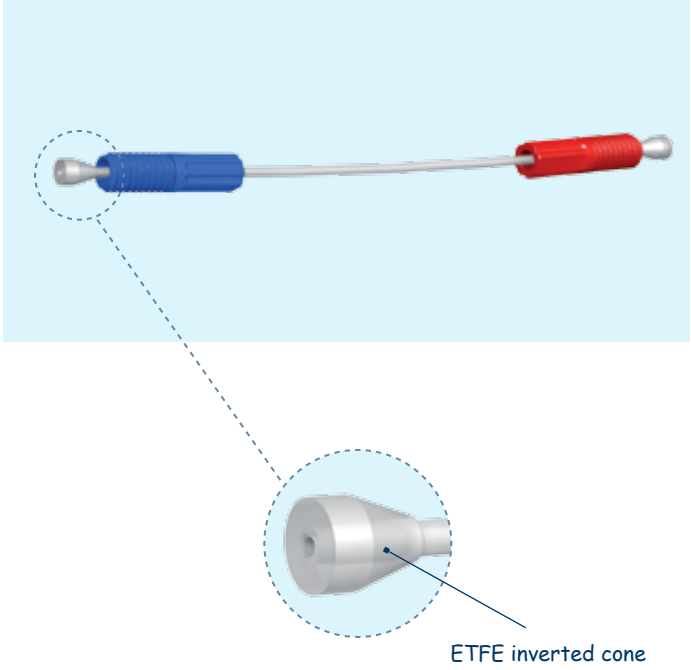
- Pressure rated up to 250psi (17 bar)
- For 1⁄16", 1⁄8" or 3⁄16" OD semi-rigid tubing e.g. PTFE, ETFE, FEP
- For flat-bottom 1⁄4"-28 UNF or 5⁄16"-24 UNF ports

Omni-Lok™ inverted cone fittings provide a simple, easy to use low-pressure connection. Only the ETFE cone and the tubing itself are in the fluid path.

No tools are required to assemble the flangeless fitting quickly and economically - just slip the fitting nut and the ETFE cone over the tubing and screw into the port. None of the parts are permanently attached to the tubing, so that the fitting nuts and inverted cones can easily be removed and re-used. A recess in the fitting nut houses the inverted cone. This allows maximum thread engagement with the port. The system seals up to 250psi (17 bar) pressure even in shallow PTFE ports. Note: The Omni-Lok™ inverted cone and fitting nut for 3⁄16" OD tubing and 5⁄16"-24 UNF flat-bottom ports is pressure rated up to 30 psi (2 bar).

Fitting nuts in robust, glass-filled polypropylene are available in a range of different colors for easy line identification. Nuts are also available in PEEK™ with standard and compact head designs (see the Omnifit® Fittings Systems Brochure for our full range).

SPECIFICATIONS



For 1⁄16" OD Tubing

INVERTED CONES FOR 1⁄16" OD TUBING

PART NUMBER	DESCRIPTION	QTY
008CZ16	ETFE inverted cone	10pk

NUTS FOR 1⁄16" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC16-YC5U	PP	Blue	1⁄4•28	10pk
008NC16-YC5G	PP	Green	1⁄4•28	10pk

For 1⁄8" OD Tubing

INVERTED CONES FOR 1⁄8" OD TUBING

PART NUMBER	DESCRIPTION	QTY
008CZ32	ETFE inverted cone	10pk

NUTS FOR 1⁄8" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC32-YC5U	PP	Blue	1⁄4•28	10pk
008NC32-YC5G	PP	Green	1⁄4•28	10pk
008NC32-YC5N	PP	Orange	1⁄4•28	10pk
008NC32-YC5R	PP	Red	1⁄4•28	10pk
008NC32-YC5Y	PP	Yellow	1⁄4•28	10pk

TECH TIP:

Need more connection options?

See the Omnifit® Fitting Systems Brochure for our full range of threaded fittings, connectors and adaptors.

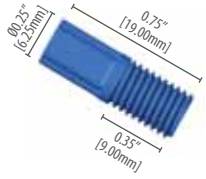
For 3⁄16" OD Tubing

INVERTED CONE FOR 3⁄16" OD TUBING

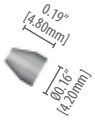
PART NUMBER	DESCRIPTION	QTY
008CZ47	ETFE inverted cone	10pk

NUTS FOR 3⁄16" OD TUBING

PART NUMBER	MATERIAL	COLOR	THREAD	QTY
008NC47-YC7U	PP	Blue	5⁄16•24	10pk

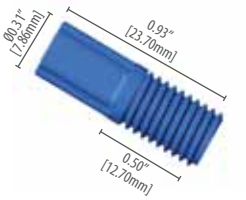


008NC16-YC5U
Nut for 1⁄16" OD tubing
1⁄4•28, blue

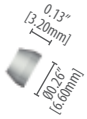


008CZ16
Omni-Lok™ inverted cone for 1⁄16" OD tubing

For use with 030SP, 120SP & 130SP series pumps



008NC47-YC7U
Nut for 3⁄16" OD tubing
5⁄16•24, blue



008CZ47
Omni-Lok™ inverted cone for 3⁄16" OD tubing

For use with 150SP series pumps

MICRO-PUMP TECH TIPS

OPERATING PARAMETERS

Output volume and accuracy: A number of factors influence the output volume of our pumps. In our factory the pump's setpoint is determined using the following test conditions:

- Fluid: De-ionized water at 70°F/21°C
- Fittings: Omni-Lok™ ¼"-28 inverted cone fittings for the 030SP, 120SP and 130SP pump families and 5⁄16"-24 inverted cone fittings for the 150SP pumps (see page 17).
- Tubing: PTFE tubing with the following dimensions:
  - 030SP, 120SP and 130SP pump families: Internal diameter of 1⁄32", 3"/8cm ≤ tubing length ≤ 14"/35cm.
  - 150SP pumps: Internal diameter of 1⁄8" on the inlet and 1⁄16" on the outlet, 3"/8cm ≤ tubing length ≤ 10"/25cm
- Pressure: Negligible pressure on both the inlet and outlet ports.
- Cycle rates:
  - 030SP pump family: 125ms on / 125ms off
  - 120SP & 130SP pump families: 250ms on / 350ms off
  - 150SP pump family: 250ms on / 750ms off
- No air or gas bubbles in the line once the priming process is complete. (See the Priming section below and the Omnifit® bubble-trap in our Fitting Systems Brochure)

If your application parameters deviate significantly from the above, you may experience dispense rates that are different from the setpoint. In that case, please contact Bio-Chem Fluidics to discuss your application and we will make appropriate adjustments for you.

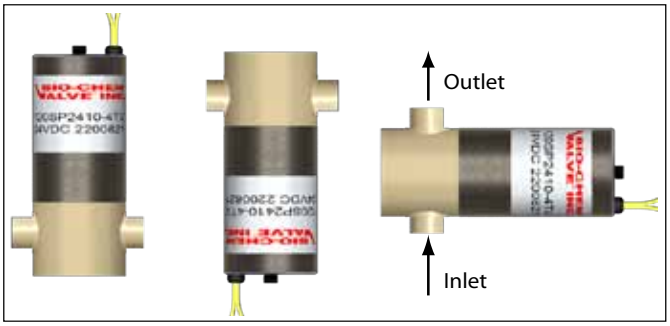
Pressure limits: Although Micro-Pumps are capable of producing outlet pressures of up to 5 psi (0.35 bar) while a dispense is taking place, for optimal dispense accuracy, the pressure on both the inlet and the outlet side of the pump should be kept between ± 0.5 psi (0.035 bar), equivalent to a head of ± 12" (300mm) water.

During the pump's up-stroke, suction is created on the inlet. Positive pressure is generated at the outlet during the down-stroke. When the pump is not actuated, it will shut-off flow as long as the pressure on the inlet does not exceed the maximum holding pressure. To ensure correct operation, pressure on the inlet side should never exceed 2 psi (0.14 bar) even when the pump is in the closed position. The check valves in the pump prevent fluid from flowing against the intended flow direction.

Priming: Micro-Pumps must be fully primed prior to operation to ensure that all air is removed from the pump cavity. Priming is achieved by cycling the pump until no air bubbles are seen in the dispense. This normally takes 30-60 seconds. Excessive air bubbles in the dispense are generally caused by air leaks due to loose fittings - check all the fittings in the system and tighten accordingly.

INSTALLATION TIPS

Orientation: Pumps should be installed with the solenoid portion of the pump pointing upwards, downwards or in a horizontal position with the outlet on top. This ensures that any air in the system will be evacuated quickly and also minimizes the effects of a pressure head acting to keep the check elements open when they should be closed.



Preferred mounting positions

Lead Wires: As a standard all lead wires are PTFE coated. Lead wires are provided with stripped ends for easy wiring into your control system - refer to drawings on product pages for more details. Different lengths and terminal connectors can be provided - refer to customization notes below.

Mounting options: The Micro-Pumps can be installed into your equipment with a variety of mounting options including mounting clips, rings and flanges. Some of the pumps can be mounted directly via mounting holes that are drilled into the pump body. For more details refer to the "Mounting Accessories & Options" spec sheet.

MC-100
Mounting clip

MR-100
Mounting ring

CUSTOMIZED SOLUTIONS

We understand that many applications require customized solutions. Our design and prototyping expertise enables us to offer simple modifications of standard products as well as completely customized designs. Over 90% of the Micro-Pumps we sell are customized to one extent or another. Customizable options include (but are not limited to):

- Materials of construction
- Operating voltage
- Dispense volume
- Mounting options
- Tagging / labeling
- Length and/or style of connecting leads
- Custom manifolds

We look forward to working with you to meet your design engineering objectives!

THE BIO-CHEM FLUIDICS BRAND FAMILY

Bio-Chem Fluidics is dedicated to providing instrument manufacturers and laboratories with the industry's best choice of inert, miniature fluid handling components.

Under the Bio-Chem Valve™ brand name we offer a complete fluid system solution for a wide range of industries including analytical chemistry, clinical diagnostics and medical device manufacturers as well as a world-class labware portfolio for the scientific community.

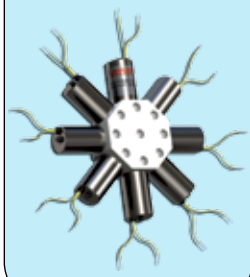
BIO-CHEM VALVE

INERT SOLENOID VALVES AND PUMPS, ELECTRIC ROTARY VALVES

MICRO-PUMPS

ISOLATION VALVES

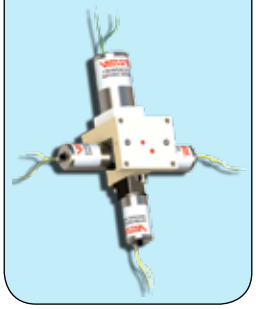
FLOW SELECTION VALVES



PINCH VALVES

ELECTRIC ROTARY VALVES

MANIFOLD ASSEMBLIES



ACCESSORIES

CUSTOMIZATION SERVICES

INERT FLUID HANDLING COMPONENTS AND ACCESSORIES

- Omni-Lok™ ¼"-28, 5⁄16"-24, and M6 fittings for pressures up to 1000 psig
- Bottle caps
- Bubble traps
- Relief Valves
- CoolCube™, "Hit and hold" circuit for all Bio-Chem Valve™ solenoid operated valves
- PTFE, Silicone and C-Flex® tubing
- Inert connectors and adaptors
- In-line filters

BIO·CHEM FLUIDICS

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DN IBPMP-01/3

BIO-CHEM VALVE

Relief Valves

SERIES: 075RV AND 075RS INERT RELIEF VALVES

FEATURES

Options available:

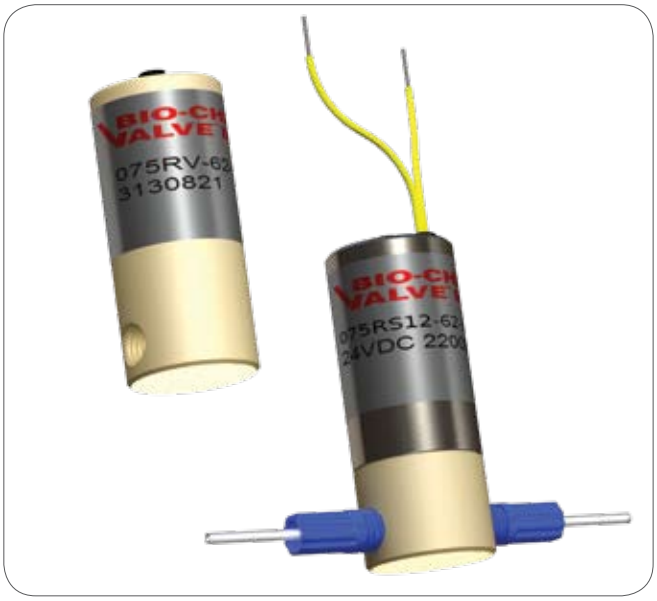
- 075RV - stand-alone, spring loaded
- 075RS - spring loaded with solenoid control

Standard Features:

- 6 Pressure relief settings from 20 to 150 psi
- FFKM and PPS fluid path
- Minimal internal volume

Series 075RS Solenoid Features:

- Isolated solenoid
- Continuous duty coil
- Low power consumption
- Fast response time
- High cycle life



The 075RV / 075RS relief valve series is ideally suited for use with aggressive and high-purity fluids. Wetted parts consist of a PPS valve body and an FFKM diaphragm. The unique Bio-Chem Valve™ diaphragm retention design ensures reliable performance and long life.

The solenoid operated, normally closed 075RS relief valve provides dual functionality as a solenoid valve with pressure relief function. This provides flow control and the capability to periodically purge the system.

Customized configurations are available, including:

- Broad range of wetted materials including PTFE, ETFE, PFA, PEEK™, POM, EPDM, FKM
- Port threads such as M6, 10-32
- Larger or smaller orifice sizes
- Alternate port configurations, including 3-port designs
- Special relief and/or operating pressure settings
- Mounting options including manifold mountable configurations

Please contact Bio-Chem Fluidics to discuss your custom requirements.

SPECIFICATIONS

SERIES	075RV / 075RS	
Orifice diameter:	0.062" (1.57mm)	
Flow rate:	C_v = 0.030 +/- 0.005	
Internal volume:	54 µl	
Ports:	¼"-28 Flat Bottom	
SERIES	**075RS**	
Voltage:	12 VDC	24 VDC
Power Watts @ 70º F (21º C) :	2.8	2.8
Current Amps @ 70º F (21º C):	0.23	0.12
Lead Wires:	15" (381mm) 26 Gauge PTFE Coated	

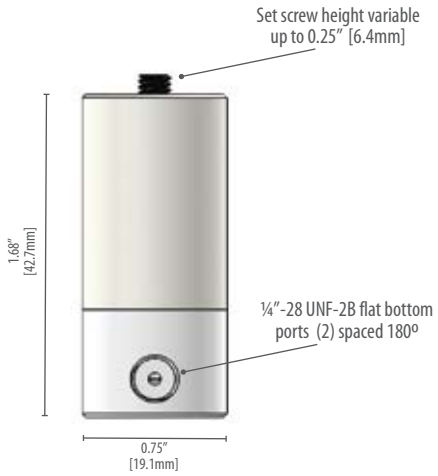
STANDARD PRESSURE CONFIGURATIONS

Operating Pressure	Relief Pressure
0 - 17 psig	20 +/- 3 psi
0 - 31 psig	35 +/- 4 psi
0 - 54 psig	60 +/- 6 psi
0 - 77 psig	85 +/- 8 psi
0 - 100 psig	110 +/- 10 psi
0 - 138 psig	150 +/- 12 psi

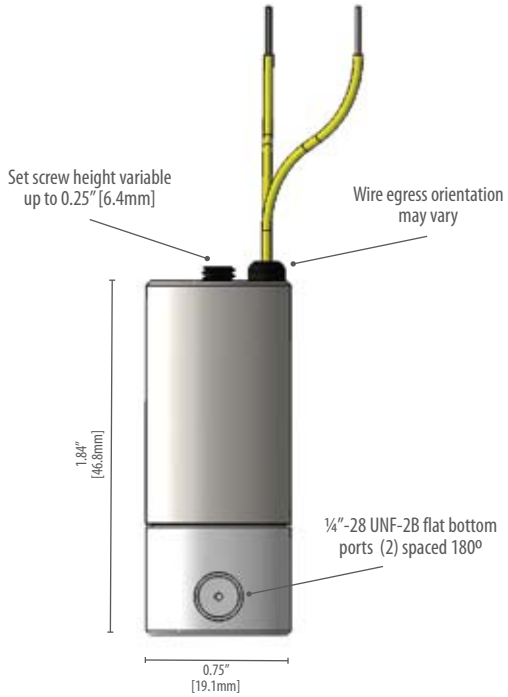
Materials:
EPDM = ethylene-propylene-diene
ETFE = ethylene tetrafluoroethylene
FFKM = perfluoroelastomer
FKM = fluoroelastomer
PEEK™ = polyetheretherketone
PFA = perfluoroalkoxy
POM = polyoxymethylene
PPS = polyphenylene sulphide
PTFE = polytetrafluoroethylene

INSTALLATION INSTRUCTIONS

Series 075RV relief valve



Series 075RS relief valve with solenoid



Ordering Information:

Series 075RV relief valve

Spring loaded only

PART NO.	SET PRESSURE (psig)	BODY MATERIAL	DIAPHRAGM MATERIAL
075RV-62-20	20	PPS	FFKM
075RV-62-35	35	PPS	FFKM
075RV-62-60	60	PPS	FFKM
075RV-62-85	85	PPS	FFKM
075RV-62-110	110	PPS	FFKM
075RV-62-150	150	PPS	FFKM

Series 075RS relief valve

Spring loaded with 12VDC solenoid

PART NO.	SET PRESSURE (psig)	BODY MATERIAL	DIAPHRAGM MATERIAL
075RS12-62-20	20	PPS	FFKM
075RS12-62-35	35	PPS	FFKM
075RS12-62-60	60	PPS	FFKM
075RS12-62-85	85	PPS	FFKM
075RS12-62-110	110	PPS	FFKM
075RS12-62-150	150	PPS	FFKM

NOTE: For 24 VDC, replace 075RS12 with 075RS24 in any of the part numbers listed.

BIO·CHEM FLUIDICS

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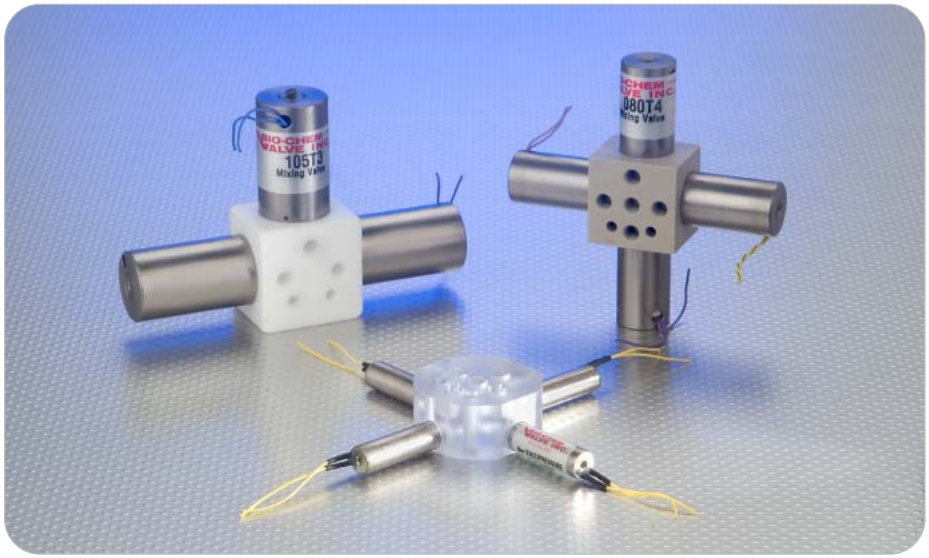
Registered in England No. 1138135 VAT Registration No. GB 214 4798 56

BIO-CHEM VALVE™ INC.

Solenoid Actuated Gradient and Flow Selection Valves



Manifold mounted solenoid valves for gradient, mixing and diverting applications

- Precise flow characteristics
- Compact, robust construction
- Minimal dead volume
- Fast response time
- All PTFE wetted parts; other materials available

Inside.....

Compact valve / manifold configurations

The Bio-Chem Valve flow selection valves are available with three valve sizes, using 0.38 inch, 0.75 inch and 1.00 inch solenoid shell diameters. These sizes correspond to orifice diameters spanning from 0.032 inches to 0.125 inches, covering a broad range of application requirements. For ease of installation, all inlet ports are positioned on the same side of the manifold. The common outlet port is centered between the inlet ports. (Note: in diverting applications, the inlet and outlet ports are reversed.) The compact manifold construction ensures minimal internal volumes.

Optimized flow characteristics

Every solenoid actuator on the flow selection valve is individually adjusted in the factory so as to provide equal flow rates at the same pressure. Ultra-fast response times for gradient applications. Through rapid cycling of the solenoid, the valves can be used to provide modulatiing flow rates at constant pressures. With opening and closing times of only 2 milliseconds, the 040T valve series is ideally suited to gradient applications.

Choice of inert wetted materials

The isolation valve design used with the Bio-Chem Valve flow selection valves ensures that the only wetted parts are the valve diaphragm and the valve seat, which is part of the manifold. In the standard flow selection valve, both parts are made of PTFE, offering the most chemically inert solution available. For different mechanical and chemical requirements, the customer also has the option of using PEEK™ or PPS for the manifold material and EPDM, Viton® or a perfluorelastomer for the diaphragm material.

Quick-Change Customization™

Through Bio-Chem Valve's Quick-Change Customization™ process, the standard flow selection valve configurations shown on this product data sheet can be modifed to meet the customer's specifications. For possibilities regarding solenoid and spring response times, operating pressures, port threads and locations, wetted material and other features, please consult Bio-Chem Valve and Omnifit.

Specifications

Valve Series

The flow selection valves are offered in three valve series, distinguished by the solenoid shell sizes:

Valve Series	Shell Diameter
040T	0.38 inches
080T	0.75 inches
105T	1.00 inches

Electrical

Valve Series	Voltage	Power @ 70°F (21°C)	Current @ 70°F (21°C)
040T	12 VDC	1.9 Watts	0.17 amps
040T	24 VDC	1.9 Watts	0.08 amps
080T	12 VDC	2.6 Watts	0.22 amps
080T	24 VDC	2.6 Watts	0.10 amps
105T	12 VDC	8.0 Watts	0.63 amps
105T	24 VDC	8.0 Watts	0.33 amps

Note: 115 VAC and 220 VAC solenoid coils are also available.

Flow Configurations

Valve Series	Number of Inlet Ports Available						
	2	3	4	5	6	8	10
040T		✓	✓				
080T	✓	✓	✓	✓	✓	✓	✓
105T	✓	✓	✓		✓		

Note 1: All flow selection valves have a common outlet port.
Note 2: In fluid diverting applications, the inlet and outlet ports are reversed.
Note 3: The standard flow selection valves are offered with all ports normally closed. For the 080T and 105T series, normally open ports are optionally available.

Internal Volumes (µL)

Valve Series	Orifice Diameter	Common Port						Inlet Ports (per port)	
		T2	T3	T4	T5	T6	T8	T2	T3+
040T	0.032"	n/a	28 µl	36 µl	n/a	n/a	n/a	n/a	21 µl
040T	0.054"	n/a	60 µl	77 µl	n/a	n/a	n/a	n/a	44 µl
080T	0.032"	7 µl	24 µl	30 µl	45 µl	53 µl	96 µl	14 µl	15 µl
080T	0.062"	27 µl	91 µl	117 µl	174 µl	207 µl	373 µl	24 µl	35 µl
080T	0.078"	42 µl	140 µl	180 µl	269 µl	318 µl	574 µl	69 µl	69 µl
105T	0.092"	79 µl	233 µl	300 µl	n/a	616 µl	n/a	105 µl	110 µl
105T	0.125"	146 µl	444 µl	573 µl	n/a	1175 µl	n/a	233 µl	240 µl

Orifice diameter options & maximum operating pressures

Valve Series	Orifice Diameters					
	0.032" (0.80 mm)	0.054" (1.40 mm)	0.062" (1.57 mm)	0.078" (1.98 mm)	0.092" (2.34 mm)	0.125" (3.18 mm)
040T	20 psi	20 psi	n/a	n/a	n/a	n/a
080T	20 psi	n/a	20 psi	10 psi	na/	n/a
105T	n/a	n/a	n/a	n/a	10 psi	10 psi

Note : All valves can be operated at a vacuum.

Specifications (contd.)

Reaction times (for normally closed operators)

Valve Series	Opening time (milliseconds)		Closing time (milliseconds)
	Standard	with CoolCube™	
040T	5 ms	2 ms	2 ms
080T	10 ms	5 ms	3 ms
105T	20 ms	8 ms	8 ms

Note 1: Reaction times were tested with air. Reaction times will vary depending on the medium.

Note 2: The Bio-Chem Valve CoolCube™ control module allows the application of over-voltage to actuate the valve (e.g. using 24 VDC to actuate a valve rated for 12 VDC). After a delay of 110 milliseconds, the CoolCube drops the voltage to 1/3 (e.g. to 8 VDC from the original 24 VDC), which is sufficient to hold the valve in position. (Please refer to the CoolCube specification sheet.)

Note 3: The reaction times of the 040T valves are optimized for use in gradient applications. Assuming that the valves are used with over-voltage (24 VDC with a 12 VDC valve or 48 VDC for a 24 VDC valve), the opening and closing times are equal at 2 ms, ensuring a well controlled flow characteristic.

Port Threads

The standard flow selection valve has 1/4”-28 flat bottom port threads.

Other port threads are available, such as M6 x 1.0 and 10-32. 5/16”-24 threads are available for valves with three or more inlets.

Wetted material options

Bio-Chem Valve offers a selection of material options for both the valve diaphragms as well as the manifolds:

- Manifold materials: PTFE, PEEK™, PPS
- Valve diaphragm materials: PTFE, EPDM, Viton®, Perfluoroelastomer

Mounting

Clip mounting is available for 2-inlet valves. (Please see Mounting Accessories and Options specifications sheet.)

Two 0.156 inch (4 mm) diameter mounting holes are provided in the manifold body for flow selection valves with 3 or more inlets.

Lead Wires

15 inches (380 mm) 26-gauge Teflon® coated. Different lengths of lead wires and terminal connectors can be provided.

Ordering Information

1	Select valve size	040T, 080T, 105T
2	Indicate number of inlets (all valves have one common outlet).	2, 3, 4, 5, 6, 8, 10
3	Indicate voltage	12 VDC, 24 VDC, 115 VAC, 220 VAC
4	Indicate orifice diameter (in 1/1000 inch)	32, 54, 62, 78, 92, 125
5	Manifold body material (PTFE Standard)	4 (PPS), 5 (PEEK™)
6	Diaphragm material (PTFE Standard)	E (EPDM), V (Viton®), P (Perfluoroelastomer)

Part Number Example:

080T	4	24	-	62	-	5	V
Valve Size	Inlets	Voltage		Orifice Diameter		Body Material (Leave blank for PTFE)	Diaphragm Material (Leave blank for PTFE)

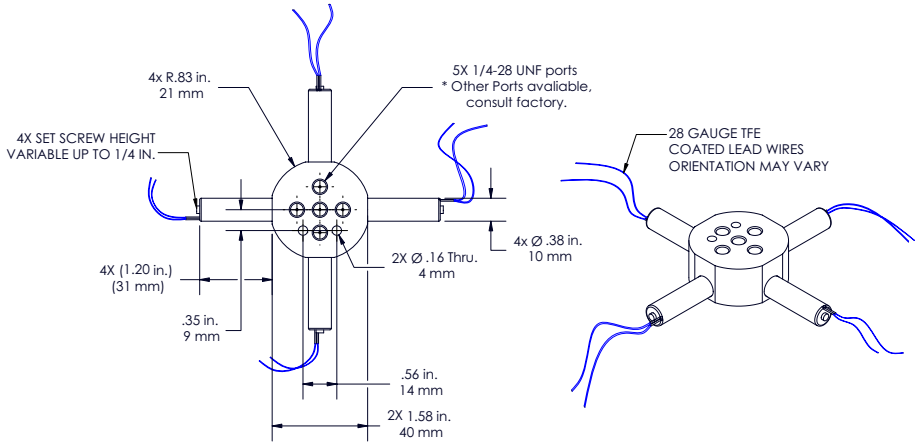
Important note:
Certain part number configurations may be subject to minimum order quantities and extended delivery schedules.
Please refer to factory before ordering.
Call: 973-263-3001 or e-mail: sales.us@biochemfluidics.com

Consult Bio-Chem Valve for options concerning:
- Normally open valve operators
- Port threads
- Helicoils
- Terminal connectors and non-standard lead wire lengths
- Above standard operating pressure requirements
- Manifold configurations

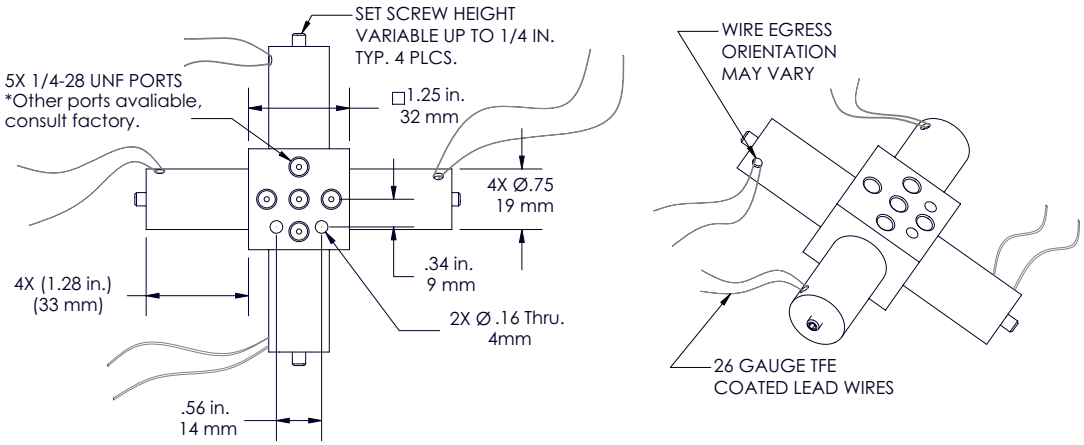
Please see the following product specification sheets for accessories:
- Fitting Systems
- CoolCube™ control module
- Mounting Accessories & Options

Installation Drawings

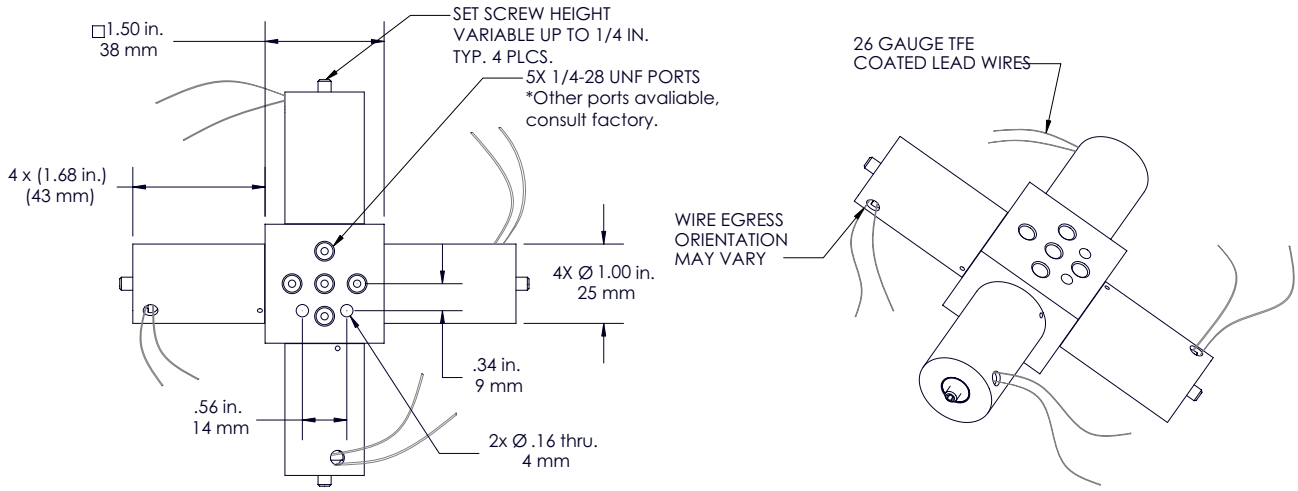
040T4



080T4



105T4



Rev. 1104

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BIO-CHEM VALVE

Relief Valves

SERIES: 075RV AND 075RS INERT RELIEF VALVES

FEATURES

Options available:

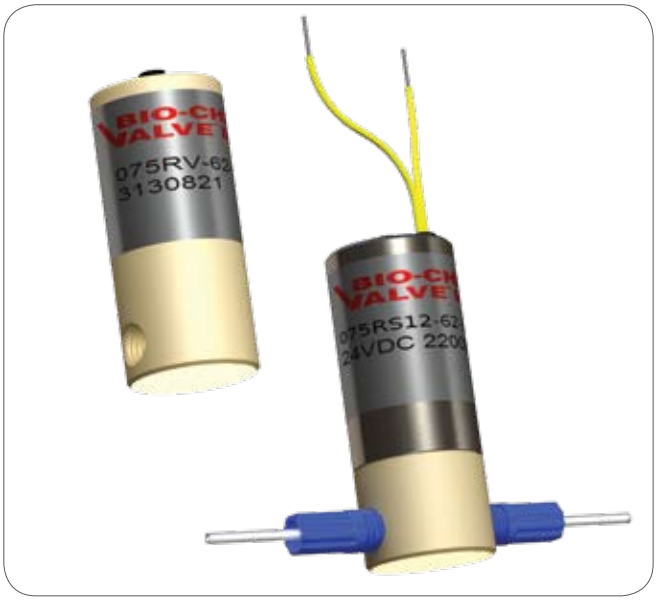
- 075RV - stand-alone, spring loaded
- 075RS - spring loaded with solenoid control

Standard Features:

- 6 Pressure relief settings from 20 to 150 psi
- FFKM and PPS fluid path
- Minimal internal volume

Series 075RS Solenoid Features:

- Isolated solenoid
- Continuous duty coil
- Low power consumption
- Fast response time
- High cycle life



The 075RV / 075RS relief valve series is ideally suited for use with aggressive and high-purity fluids. Wetted parts consist of a PPS valve body and an FFKM diaphragm. The unique Bio-Chem Valve™ diaphragm retention design ensures reliable performance and long life.

The solenoid operated, normally closed 075RS relief valve provides dual functionality as a solenoid valve with pressure relief function. This provides flow control and the capability to periodically purge the system.

Customized configurations are available, including:

- Broad range of wetted materials including PTFE, ETFE, PFA, PEEK™, POM, EPDM, FKM
- Port threads such as M6, 10-32
- Larger or smaller orifice sizes
- Alternate port configurations, including 3-port designs
- Special relief and/or operating pressure settings
- Mounting options including manifold mountable configurations

Please contact Bio-Chem Fluidics to discuss your custom requirements.

SPECIFICATIONS

SERIES	075RV / 075RS	
Orifice diameter:	0.062" (1.57mm)	
Flow rate:	C_v = 0.030 +/- 0.005	
Internal volume:	54 µl	
Ports:	¼"-28 Flat Bottom	
SERIES	**075RS**	
Voltage:	12 VDC	24 VDC
Power Watts @ 70º F (21º C) :	2.8	2.8
Current Amps @ 70º F (21º C):	0.23	0.12
Lead Wires:	15" (381mm) 26 Gauge PTFE Coated	

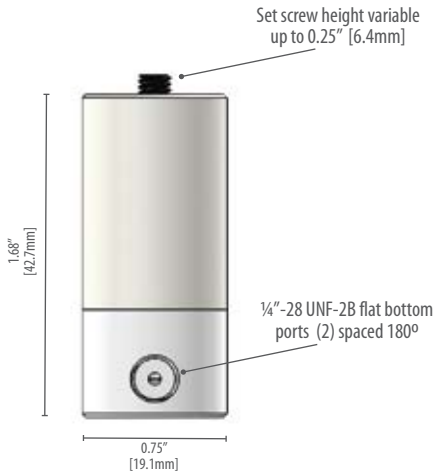
STANDARD PRESSURE CONFIGURATIONS

Operating Pressure	Relief Pressure
0 - 17 psig	20 +/- 3 psi
0 - 31 psig	35 +/- 4 psi
0 - 54 psig	60 +/- 6 psi
0 - 77 psig	85 +/- 8 psi
0 - 100 psig	110 +/- 10 psi
0 - 138 psig	150 +/- 12 psi

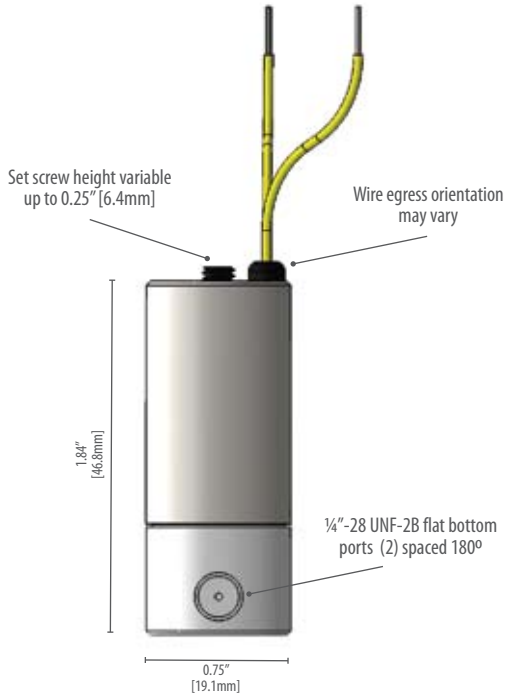
Materials:
EPDM = ethylene-propylene-diene
ETFE = ethylene tetrafluoroethylene
FFKM = perfluoroelastomer
FKM = fluoroelastomer
PEEK™ = polyetheretherketone
PFA = perfluoroalkoxy
POM = polyoxymethylene
PPS = polyphenylene sulphide
PTFE = polytetrafluoroethylene

INSTALLATION INSTRUCTIONS

Series 075RV relief valve



Series 075RS relief valve with solenoid



Ordering Information:

Series 075RV relief valve

Spring loaded only

PART NO.	SET PRESSURE (psig)	BODY MATERIAL	DIAPHRAGM MATERIAL
075RV-62-20	20	PPS	FFKM
075RV-62-35	35	PPS	FFKM
075RV-62-60	60	PPS	FFKM
075RV-62-85	85	PPS	FFKM
075RV-62-110	110	PPS	FFKM
075RV-62-150	150	PPS	FFKM

Series 075RS relief valve

Spring loaded with 12VDC solenoid

PART NO.	SET PRESSURE (psig)	BODY MATERIAL	DIAPHRAGM MATERIAL
075RS12-62-20	20	PPS	FFKM
075RS12-62-35	35	PPS	FFKM
075RS12-62-60	60	PPS	FFKM
075RS12-62-85	85	PPS	FFKM
075RS12-62-110	110	PPS	FFKM
075RS12-62-150	150	PPS	FFKM

NOTE: For 24 VDC, replace 075RS12 with 075RS24 in any of the part numbers listed.

BIO·CHEM FLUIDICS

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Registered in England No. 1138135 VAT Registration No. GB 214 4798 56

BIO-CHEM VALVE™ INC.

SERIES: C

BIO-CHEK™ IN-LINE CHECK VALVE

FEATURES

- Inert Flow Path, no metal parts
- Choice of EPDM, Viton®, or Chemraz® check element
- PEEK or PPS housing materials
- Check against backflow pressure to 100 psi
- Small Internal Volume
- Low Cracking Pressure
- Gravity Independent installation

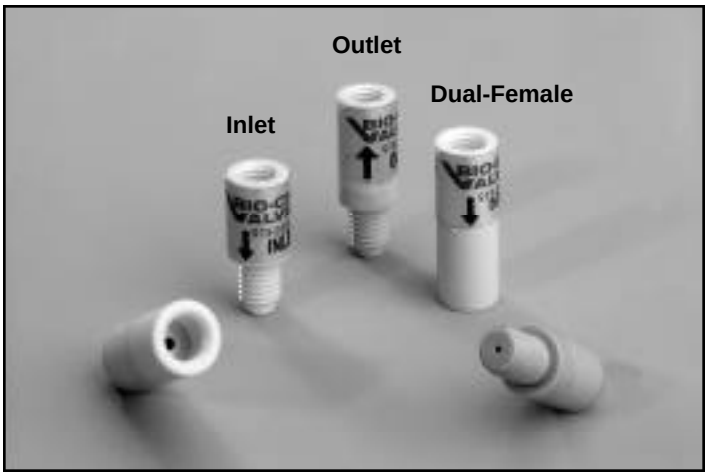
SPECIFICATIONS

Series	C	
Cracking Pressure:	EPDM Viton® Chemraz®	1.0 psi 0.8 psi 0.3 psi
Backpressure generated:	@0-30 psi @30-50 psi	< 1 psi 1 - 2 psi
Maximum Pressure Rating	50 psi	
Maximum Backpressure	100 psi	
Internal Volume:	Inlet Outlet Dual-Female	60 µl 68 µl 49 µl
Connection*	1/4 - 28 UNF flat bottom	
Flow	See chart on back page	

* Consult factory for other connection options.
Note:These check valves are intended for liquids only.
® Viton is a registered trademark of DuPont Co.
® Chemraz is a registered trademark of Greene Tweede & Co.

DIMENSIONS

Series	Diameter	Female Port Depth	Male Thread Length	Total Length
CI	0.36”	0.25”	0.41”	1.00”
CO	0.36”	0.25”	0.34”	1.00”
CF	0.36”	0.25”	-----	0.87”



The *Bio-Chek*™ self-sealing in-line check valves feature an inert flow path, no metal components and zero maintenance in high-purity, low-pressure applications.

Unlike spring-actuated check valves that can restrict or impede the flow path causing content (product) damage, the *Bio-Chek*™ in-line check valve design features a smooth flow path that minimizes shear and turbulence. The *Bio-Chek*™ valve provides a flow rate equivalent to a 0.030" orifice, a cracking pressure of 1 psi or less and check against backflow pressure to 100 psi. Available in inlet, outlet, or dual-female configurations, applications include handling syringe pump systems, vacuum systems and other low-flow processes. The valves connect to standard 1/4 - 28 flat bottom ports and fittings. Please contact a Bio-Chem Valve applications engineer for customized modifications.

Option 5 only

How to order:

1	C (check valve)	
2	Operating configuration	O (Outlet), I (Inlet), F (Dual-Female)
3	Housing material*	~~4 (PPS),~~ 5 (PEEK)
4	Check element material	E (EPDM), V (Viton), C (Chemraz®)

* Note: PPS housing only with Chemraz® check element

Example:	P/N	C	O	-	5	E
		Style	Operating Configuration		Housing Material	Check Element Material

A HALMA GROUP COMPANY

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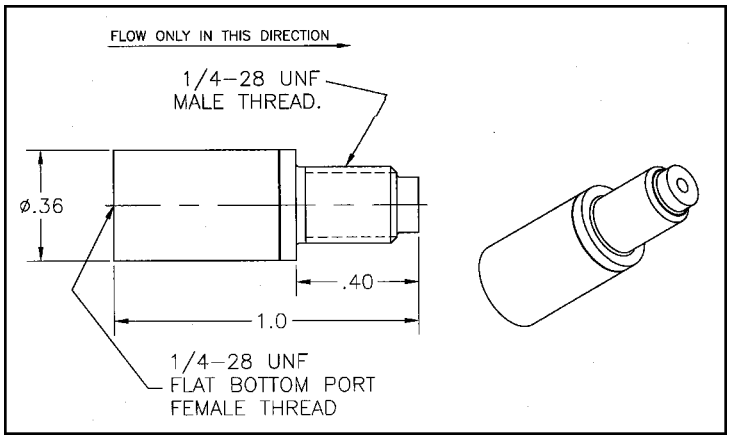
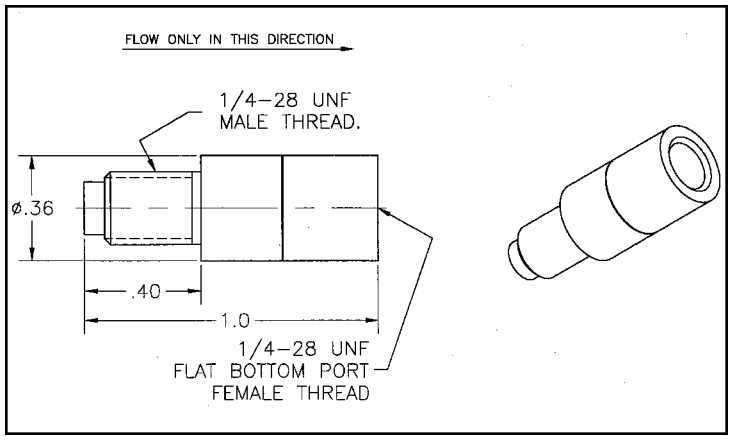
Email: info@bio-chemvalve.com

INSTALLATION DIMENSIONS

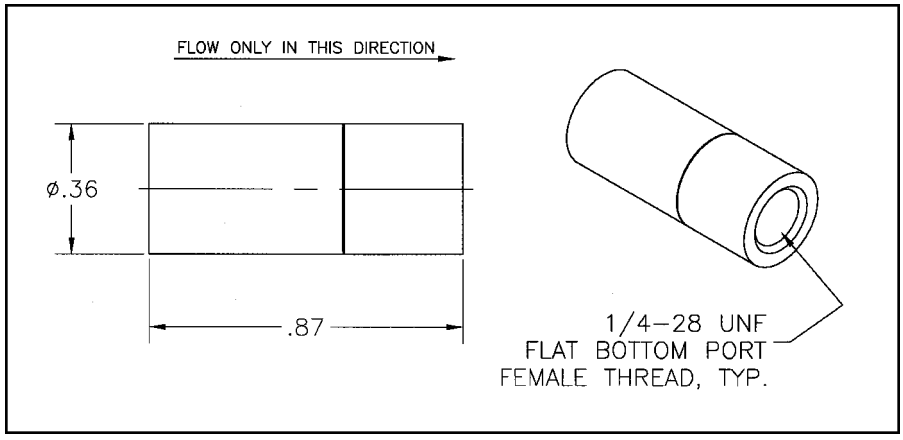
Series CI Inlet Check Valve



Series CO Outlet Check Valve

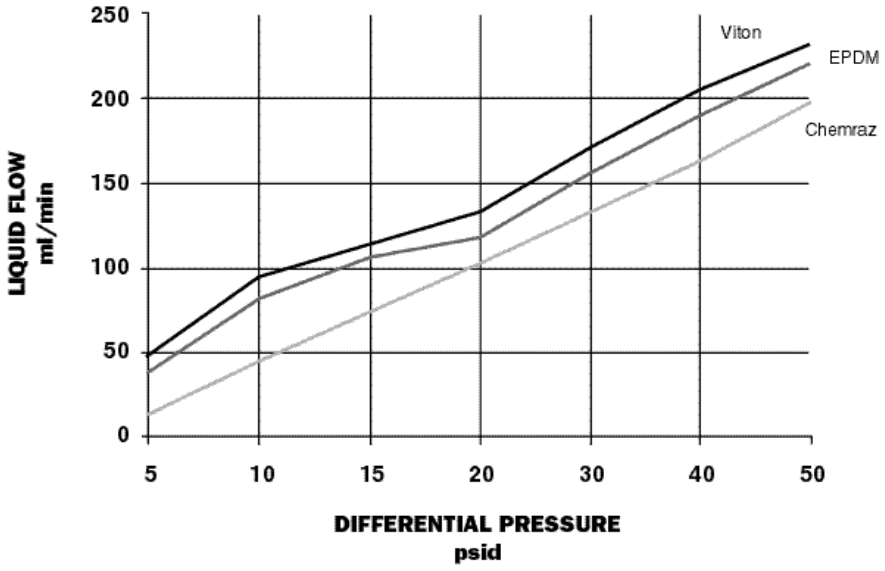


Series CF Dual-Female Check Valve



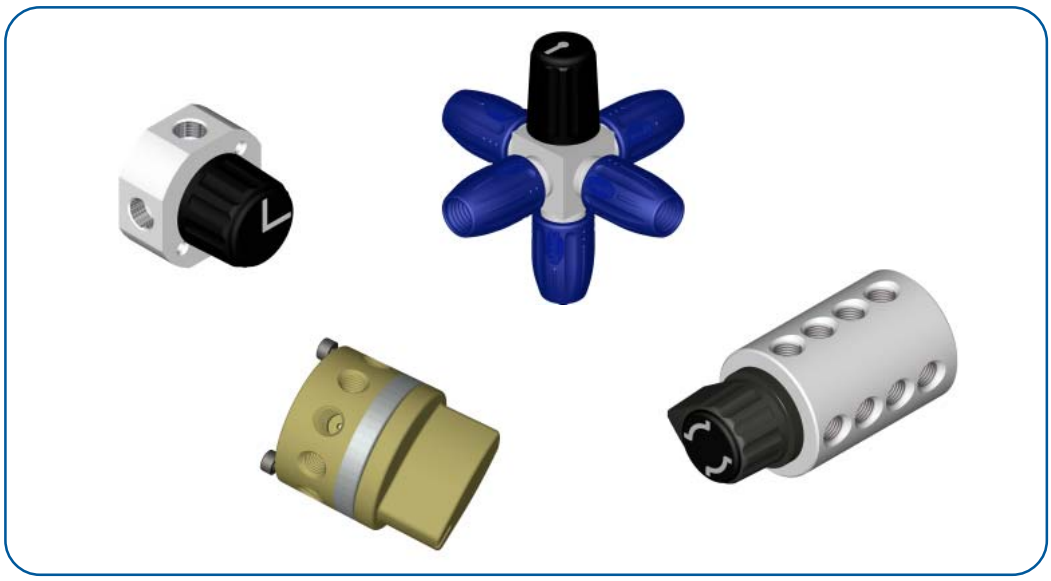
Average Flow vs. Pressure

(Intended as a guide only)



A HALMA GROUP COMPANY

Manual Valves



A range of large and small manual valves offering a variety of flow paths and connection options

- Low and high pressure versions
- Excellent chemical resistance
- Accept 1/4”-28 UNF fittings
- Custom designs available for OEM applications

Inside.....

Small High Pressure Rotary Valves

These manual rotary valves are constructed from PTFE with a Kel-F® rotor and have a 0.8mm bore size, making them suitable for pressure applications up to 500 psi (33 bar). They are available in 4 and 5 port versions. All ports are 1/4"-28 UNF flat-bottom and will accept any 1/4"-28 UNF male fitting. Omnifit’s 1000 psi (68 bar) pressure rated Gripper fittings or Omni-Lok™ fittings are ideal for use with these valves. These valves are bulkhead mountable.

Small Rotary Valves with ‘Omnifit Cap’ connections

Omnifit’s small manual rotary valves use the ‘Omnifit-Cap’ connection system and can be used for sampling, flow-splitting, mixing and fluid line interconnection. They have a 1.5mm bore size and accept tubing sizes between 0.5 and 4mm OD. They are pressure rated to 50 psi (3.3 bar).

Distribution and Loop Injection Valves

These manual valves have a click-stop mechanism to ensure correct flow path alignment. Each valve consists of a glass filled PTFE body with a Kel-F® rotor and a PEEK™ casing. These valves are rated to 500 psi (34 bar).

Sample Injection Valve

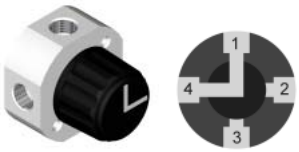
Designed for low to medium pressure chromatography systems, this injection valve sytem is supplied with 0.5ml, 1.0ml and 2.5ml loops and a 5ml syringe. Other loops can be supplied on request. Pressure rating is 500 psi (34 bar).

Stacked Distribution Valves

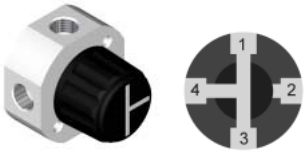
Omnifit’s manual stacked distribution valves are constructed using PTFE bodies with a Kel-F® rotor giving excellent chemical compatibility. The valves have a 1.5mm bore size and are available in 2, 3 and 4 tiers to switch 2, 3 or 4 flow lines simulta-neously. 1/4''-28 UNF ports are compatible with all Omnifit 1/4''-28 male fittings. A mechanical stop provides positive flow path aligment.

Small High Pressure Rotary Valves

- Pressure rated to 500 psi (33 bar)
- Accepts 1/4''-28 UNF fittings
- M3 holes for mounting
- Flow paths indicated by control knob



1120



1121

1122

1126

These manual rotary valves are constructed from PTFE with a Kel-F® rotor and have a 0.8mm bore size, making them suitable for high pressure applications up to 500 psi (33 bar). They are available in 4 and 5 port versions and any spare ports can be sealed with a plug (part number 2320) for maximum flexibility. All ports are 1/4"-28 UNF flat-bottom and will accept any 1/4"-28 UNF male fitting. These valves are bulkhead mountable with pre-drilled M3 threaded holes for easy mounting.

4-port valves

4-port valves allow flow across selected ports, from either one or two inlets to a comnbination of the remaining ports.

5-port valve

The 5-port valve utilizes the common port as the inlet and allows flow to a combination of the remaining 4 ports.

Part Number	Ports	Pack Size
1120	4	1
1121	4	1
1122	4	1
1126	5	1

Small Rotary Valves with 'Omnifit-Cap' connectors

- Range of flow path options
- PTFE body
- Kel-F® rotor
- Flow paths indicated by control knob

1112

1113

1114

1118

Omnifit's small manual rotary valves use the 'Omnifit Cap' connection system and can be used for sampling, flow-splitting, mixing and fluid line interconnection. They have a 1.5mm bore size and accept tubing sizes between 0.5 and 4mm OD. They are pressure rated to 50 psi (3.3 bar). The valves are available in 4 and 5 port versions and any spare ports can be sealed with a plug (part number 2320) or by using a PTFE cone blank (part number 1514) for maximum flexibility.

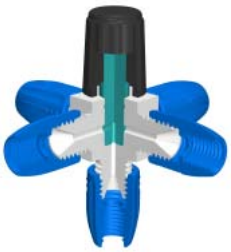
4-port valves

4-port valves allow flow across selected ports, from either one or two inlets to a comnbination of the remaining ports.

5-port valve

The 5-port valve utilizes the common port as the inlet and allows flow to a combination of the remaining 4 ports.

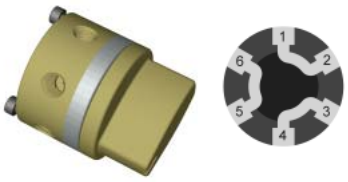
See the connectors spec sheet for information on the 'Omnifit Cap' connection system.



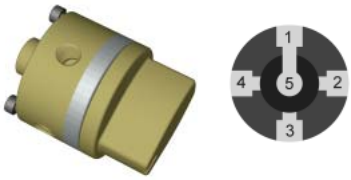
Part Number	Ports	Pack Size
1112	4	1
1113	4	1
1114	4	1
1118	5	1

Distribution and Loop Injection Valves

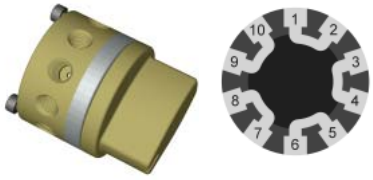
- 500 psi (33 bar) pressure rating
- Click-stop for port identification & alignment
- Ready for mounting on a flat surface
- PEEK™ casing
- Glass filled PTFE Body
- Kel-F® rotor



1127-6LI



1127-4D



1127-10LI

Distribution valve
Omnifit's click-stop distribution valve is available in a 5-port option. This enables it to be used as a 4-way distribution valve, by using one port as the inlet and selecting flow to any of the other available ports for outlet. This distribution valve can be used for sample collection and stream selection.

Loop injection valves
Omnifit's click-stop loop injection valves are available in 6 or 10-port options.

See back page for application notes.

Part Number	Valve Type	Ports	Pack Size
1127-6LI	Loop injection	6	1
1127-10LI	Loop injection	10	1
1127-4D	Distribution	5	1

Stacked Distribution Valves

- Product discontinued.
- Please refer to factory.
- Call: 973-263-3001 or e-mail:
- sales.us@biochemfluidics.com

1142 1143 1144

1152 1153 1154

1162 1163 1164

Omnifit's manual stacked distribution valves are constructed using PTFE bodies with a Kel-F® rotor giving excellent chemical compatibility. The valves have a 1.5mm bore size and are available in 2, 3 and 4 tiers to accept 2, 3 or 4 flow lines. The 1/4''-28 UNF ports are compatible with all Omnifit 1/4''-28 male fittings.

Valves are available in three flow configurations and have the same configuration on each tier.

Part Number	Description	Pressure rating	Pack Size
1142	2-tier valve allowing flow between two ports at 90⁰	500 psi	1
1152	3-tier valve allowing flow between two ports at 90⁰	100 psi	1
1162	4-tier valve allowing flow between		1
1143	Product discontinued.		1
1153	Please refer to factory.		1
1163	Call: 973-263-3001 or e-mail: sales.us@biochemfluidics.com		1
1144	2-tier valve allowing flow between pairs of adjacent ports	500 ps	1
1154	3-tier valve allowing flow between pairs of adjacent ports	100 psi	1
1164	4-tier valve allowing flow between pairs of adjacent ports	100 psi	1

Sample Injection Valve

- Allows introduction of reproducible sample volumes
- 0.5ml, 1.0ml and 2.5ml sample loops included

1106

Designed for low pressure chromatography systems, this loop injection valve sytem is supplied with 0.5ml, 1.0ml and 2.5ml loops and a 5ml syringe. Other loops can be supplied on request. A clamp for easy mounting to a retort stand is included.

See application notes below.

Part Number	Description	Pack Size
1106	Manual sample injection valve	1
1106.5	Spare sample loop for use with 1106 0.5ml	1
1106-1	Spare sample loop for use with 1106 1ml	1
1106-2	Spare sample loop for use with 1106 2.5ml	1
1106-5	Spare sample loop for use with 1106 5ml	1

Application and set up notes.

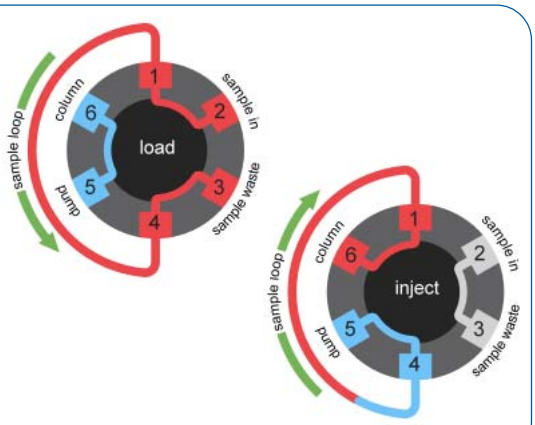
The images below show Omnifit loop inject valves in use as sample injection devices in a chromatography system. These are the most common applications but the use of the valves is not limited to these.

6 port loop inject valve used as a sample injector

With the valve in the load position the sample can be injected into the sample loop while the mobile phase is pumped directly through to the column.

When the valve is switched to the inject position, the pump is then connected to the sample loop and the sample is carried onto and through the column. The ‘sample in’ and ‘waste’ ports are joined but isolated from the loop.

It is suggested that ports are connected to the corresponding lines as shown. This ensures that the flow of the mobile phase is in opposite directions during the load and inject operations.

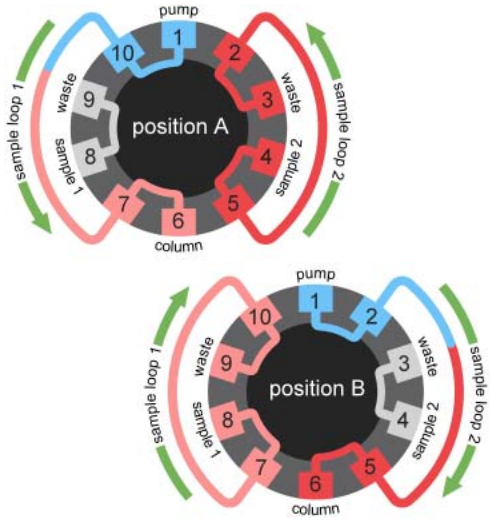


10 port loop inject valve used as a sample injector

This valve allows alternate injection from two different sample loops, either identical or of different sizes. This application can alternatively be satisfied with a 4 port switching valve and a 6 port loop inject valve.

With the valve in position A, sample 2 can be loaded into sample loop 2 while the mobile phase is pumped through sample loop 1 and carries sample 1 onto the column. The ‘sample 1 in’ and ‘waste’ ports are connected but isolated from the loop.

When the valve is switched to position B, the pump is connected to sample loop 2 and sample 2 is carried onto and through the column. The ‘sample 2 in’ and ‘waste’ ports are connected but isolated from the loop. Whilst sample 2 is pumped onto the column, sample loop 1 can be re-loaded.



Trademarks:

Kel-F® is a registered trademark of the 3M Company
PEEK™ is a trademark of Victrex plc

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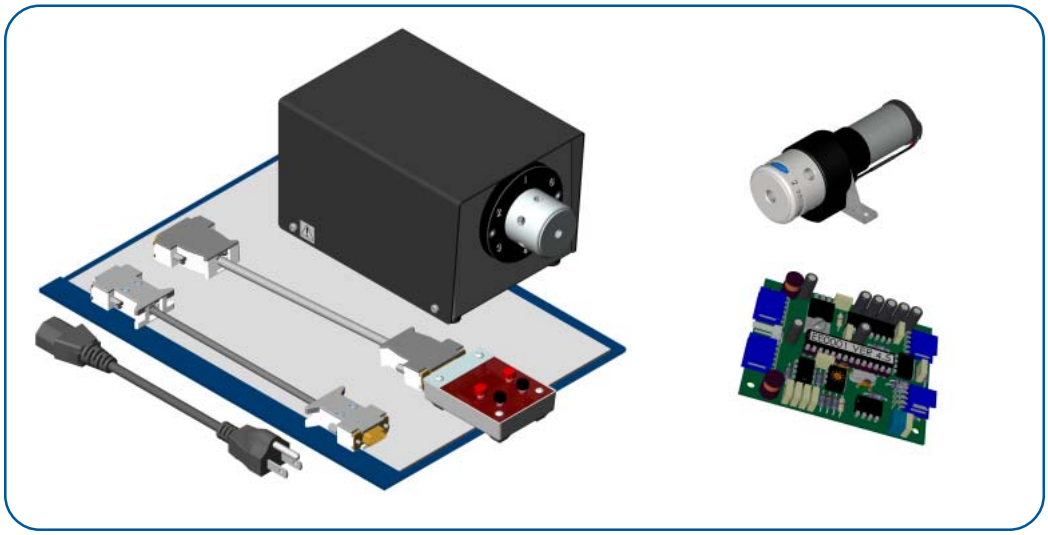
Bio-Chem Valve / Omnifit, 85 Fulton Street, Boonton, NJ 07005 USA
t: 973 263 3001 f: 973 263 2880 e: info@bio-chemvalve.com w: bio-chemvalve.com

Electric Rotary Valves



Electrically controlled rotary valves in several configurations providing high chemical resistance

- Exceptional chemical resistance
- Inert PTFE body and Kel-F® rotor
- 4 to 11 ports available
- 1.5mm standard bore size
- Custom designs available for OEM applications

Electric rotary valves

Omnifit's electrically operated rotary valves are deigned for use with aggressive and biologically sensitive materials. Each valve has an inert PTFE body and Kel-f® rotor, 1.5mm bore size, and 1/4"-28 UNF flat-bottomed ports. Omnifit's 1/4"-28 UNF Gripper or Omni-Lok™ fittings are ideal for use with these valves. Standard configurations available include 4, 5, 6 and 10 way selection/distribution and 6 port loop inject valves. Complementary Omnifit products such as fittings, tubing and bottle caps are available to satisfy all your fluid system requirements. Please see relevant specification sheets.

Small Electric Rotary Valves

Omnifit's small electric rotary valves are designed for integration into an instrument making them particularly suited for OEM applications. The valves are available in 4 or 5 port versions for either flow switching or distribution. The pressure rating for this range is 500 psi (34 bar). The valve is driven by a 12 VDC, 4 Watt motor and is shipped with a controller PCB, TTL control cable and instruction manual. A cable enabling control via RS232 interface is available as an option.

Large Electric Rotary Valves with smart actuator

Omnifit's large electric rotary valves are designed for use as a stand-alone unit, ideal for bench top fluid management. The valves are available in 6, 7, 10 and 11 port versions for flow switching, sample collecting, distribution and loop inject applications. The valves are controlled by a 'smart actuator' which is controlled via a remote handset with 4 digit display. The option of RS232 control is provided with the valve. The actuator has a universal 100 to 240 VAC power requirement. The valve and actuator combination is shipped complete with a RS232 control, power leads, hand controller and instruction manual.

An overview of flow path configurations available and typical application notes can be found on page 4.

Both ranges of valves can be customized to suit OEM applications, please contact the sales office with your requirements.

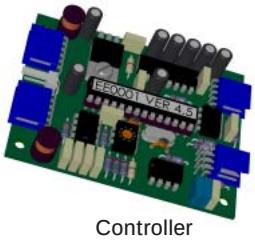
Small Electric Rotary Valves

- Exceptional chemical resistance
- Pressure ratings to 500 psi (33 bar)
- Optoelectronic encoder
- Microprocessor control
- TTL & RS232 interface
- Custom designs available

11522
4 port valve

11526
5 port valve

11528
5 port valve



Controller
PCB

This range of valves has an optoelectronic encoder and microprocessor-based control that carries out all functions to enable the user to control the valve at all times. The high speed microprocessor accommodates many functions including:

- Automatic initialisation
- Intelligent port alignment
- Manual switch debounce
- Selectable format position output code
- Reset facility
- RS232 interface

A primary function of the microprocessor is to provide exceptional alignment between the fluid paths of the rotor and valve body. This is achieved by the constant monitoring and minute adjustment of the valve position throughout the life of the valve. All of the valves may be actuated in either direction and programmed to stop at any combination of ports to provide maximum versatility.

Please visit our website to view the complete instruction manual. http://www.omnifit.com/erv_data.pdf

Specifications

Series 11500		
Wetted materials	Body:	PTFE
	Rotor:	Kel-F®
Number of ports	Standard 4 or 5 port options available with a variety of flow configurations	
Connection options	Hardwall tubing (e.g. PTFE) use Omnifit 1/4"-28 UNF Gripper fittings Softwall tubing (e.g. Silicone) use 1/4"-28 UNF to barb adaptor	
Bore size	1.5mm	
Internal volume	19 - 30 µL depending on configuration	
Max pressure	500 psi (33 bar) at 25° C	
Electrical	Power:	4 Watts
	Supply:	12 VDC
Step time	~ 300 milliseconds	
Weight	Complete Unit:	225g

Flow Configurations

11522
4 port valve allowing flow between 2 pairs of radially adjacent ports

11526
5 port valve allowing flow from the common axial port to exit through one of the 4 radial ports or vise-versa

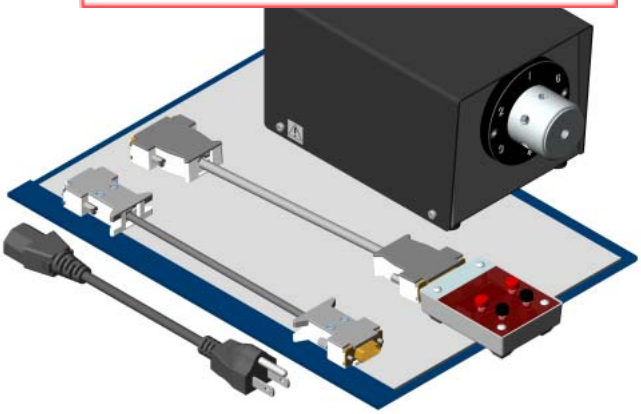
11528
5 port valve connecting 2 radial ports at 90° and the common axial port to one other radial port

Ordering Information

P/N	Configuration	Ports	Pack Size
11522	Flow between 2 pairs of radially adjacent ports	4	1
11526	Flow from the common port to exit through one port	5	1
11528	Connects 2 ports at 90° and the common port to one other port	5	1
11511	RS232 control/feedback cable	-	1
11510	TTL position feedback cable	-	1

Large Electric Rotary Valves with Smart Actuator

- Inert PTFE body and Kel-F® Rotor
- Accepts 1/4”-28 UNF fittings
- 30 psi (2 bar) pressure rating
- Remote control handset with 4 digit LED display
- Clockwise and anti-clockwise rotation
-
-



11101 Series Smart Actuator shown with a 6 port valve, remote control unit and cable, RS232C interface cable and power lead

Omnifit’s large electric rotary valves are the ideal solution for controlling the movement of fluids in the lab or similar applications where a self contained unit is required. The microprocessor-based Smart Actuator operates either a two-position loop inject or multi-position valve. The Smart Actuator allows precise valve positioning for almost any chromatography application, such as sampling and injecting samples on columns.

The actuator accepts input voltages between 100 and 240 VAC. The actuator’s configuration can be set or interrogated without removing the cover, via the remote control unit or the RS232C interface with the supplied software. For automated processing, the actuator can be controlled by a PC through the RS232C interface. Multiple actuators may be controlled from a single RS232C interface using a daisy chain cable that is available as an option.

In addition to the flexibility built into every Smart Actuator, several basic features support the functionality needed for precise valve operation:

- Electronic alignment for accuracy, control and ease of use
- Reversible rotor direction for reduced contamination and fast movement
- Automatic switching based on a timer

An overview of flow path configurations available and typical application notes can be found on page 4.

Specifications

Series 11101		
Wetted materials	Body:	PTFE
	Rotor:	Kel-F®
Number of ports	Standard 6, 7, 10, or 11 port options	
Connection options	Hardwall tubing (e.g. PTFE) use Omnifit 1/4"-28 UNF Gripper or Omni-Lok™ fittings	
	Softwall tubing (e.g. Silicone) use a 1/4"-28 UNF to barb adaptor	
Bore size	1.5mm	
Swept volume @ each position	11106 = 26 µL, 11107 = 26 µL, 11110 = 29 µL, 11111 = 29 µL	
Max pressure		
Electrical		
Size		

Flow Configurations

11106
For loop injection

11107
For sample collection and stream selection

11110
For double loop injection

11111
For sample collection and stream selection

Large Electric Rotary Valves with Smart Actuator (contd.)

Ordering Information

P/N	Description	Voltage	Ports	Pack Size
11101A/11106	Smart Actuator with 6 port loop injection valve USA power lead	100 to 240 VAC	6	1
11101A/11107	Smart Actuator with 7 port distribution valve USA power lead	100 to 240 VAC	7	1
11101A/11110	Smart Actuator with 10 port loop injection valve USA power lead	100 to 240 VAC	10	1
11101A/11111	Smart Actuator with 11 port distribution valve USA power lead	100 to 240 VAC	11	1
11101E/11106	Smart Actuator with 6 port loop injection valve UK power lead	100 to 240 VAC	6	1
11101E/11107	Smart Actuator with 7 port distribution valve UK power lead	100 to 240 VAC	7	1
11101E/111010	Smart Actuator with 10 port loop injection valve UK power lead	100 to 240 VAC	10	1
11101E/11111	Smart Actuator with 11 port distribution valve UK power lead	100 to 240 VAC	11	1
11101U/11106	Smart Actuator with 6 port loop injection valve USA power lead	100 to 240 VAC	6	1
11101U/11107	Smart Actuator with 7 port distribution valve USA power lead	100 to 240 VAC	7	1
11101U/11110	Smart Actuator with 10 port loop injection valve UK power lead	100 to 240 VAC	10	1
11101U/11111	Smart Actuator with 11 port distribution valve UK power lead	100 to 240 VAC	11	1

Product discontinued.

Please refer to factory.
Call: 973-263-3001 or e-mail:
sales.us@biochemfluidics.com

Application and set up notes.

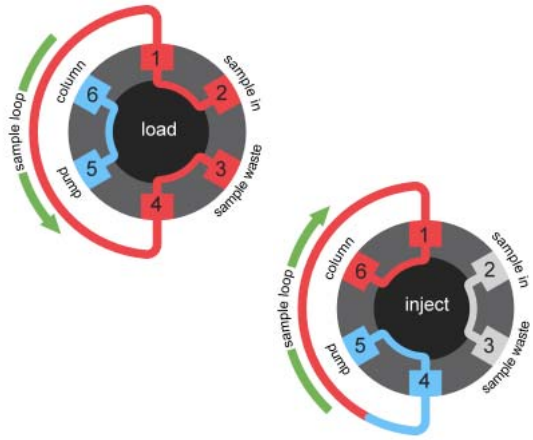
The images below show Omnifit loop inject valves in use as sample injection devices in a chromatography system. These are the most common applications but the use of the valves is not limited to these.

6 port loop inject valve used as a sample injector

With the valve in the load position the sample can be injected into the sample loop while the mobile phase is pumped directly through to the column.

When the valve is switched to the inject position, the pump is then connected to the sample loop and the sample is carried onto and through the column. The ‘sample in’ and ‘waste’ ports are joined but isolated from the loop.

It is suggested that ports are connected to the corresponding lines as shown. This ensures that the flow of the mobile phase is in opposite directions during the load and inject operations.

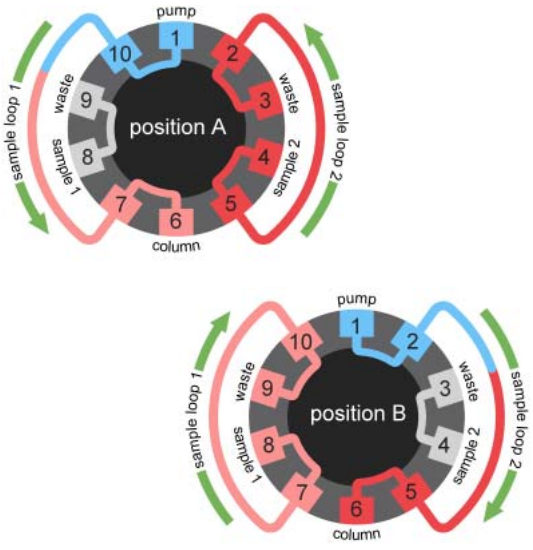


10 port loop inject valve used as a sample injector

This valve allows alternate injection from two different sample loops, either identical or of different sizes. This application can alternatively be satisfied with a 4 port switching valve and a 6 port loop inject valve.

With the valve in position A, sample 2 can be loaded into sample loop 2 while the mobile phase is pumped through sample loop 1 and carries sample 1 onto the column. The ‘sample 1 in’ and ‘waste’ ports are connected but isolated from the loop.

When the valve is switched to position B, the pump is connected to sample loop 2 and sample 2 is carried onto and through the column. The ‘sample 2 in’ and ‘waste’ ports are connected but isolated from the loop. Whilst sample 2 is pumped onto the column, sample loop 1 can be re-loaded.



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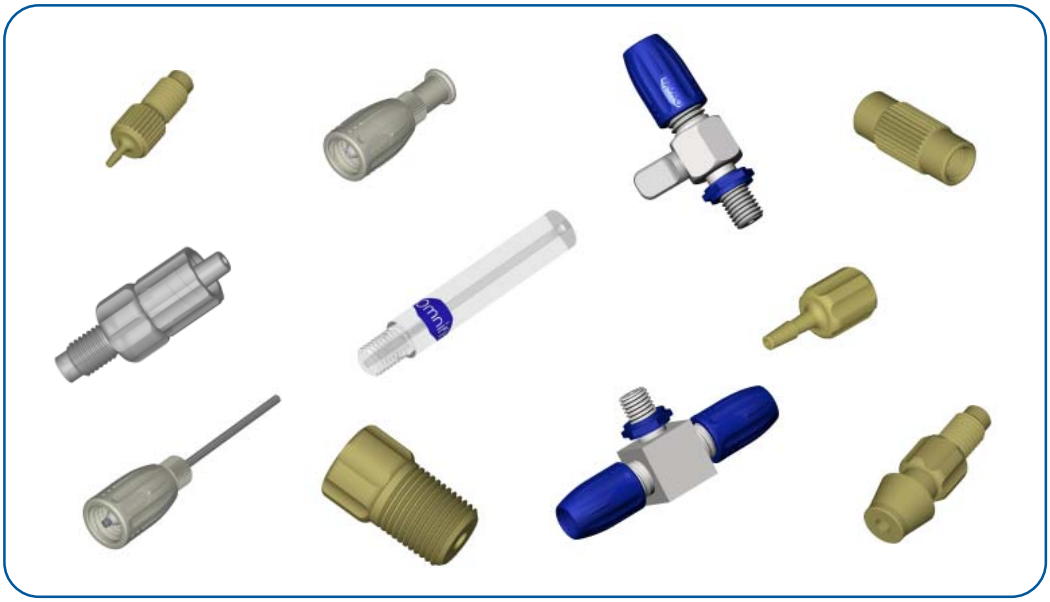
Adaptors & Couplings



Chemically inert adaptors and couplings for a variety of thread sizes and tubing types

- Luer, 1/4”-28, barbed and ‘Omnifit Cap’ connection types
- Excellent chemical resistance
- Versions for hardwall and softwall tubing
- Custom designs available for OEM applications

Barbed Adaptors

Omnifit barbed adaptors are designed for use with soft wall tubing. They are machined rather than moulded and this gives a superior barb to retain soft wall tubing.

1/4”-28 Adaptors

These 1/4"-28 UNF male thread adaptors fit into any 1/4''-28 UNF flat bottom port, as used in most Omnifit valves and connectors, giving quick, push-on connections for softwall tubing. Glass adaptors and adaptors to male and female luer are also available. The glass 1/4”-28 UNF adaptor can be fused to other laboratory glassware to give a convenient threaded connection.

‘Omnifit Cap’ Adaptors

Cap adaptors replace the coloured cap on any of Omnifit’s small variable bore connectors and valves to give either quick push-on connections for softwall tubing or luer connections.

Variable Bore Adaptors

Adaptors to fit 1/4”-28 female ports and adapt to ‘Omnifit Cap’ connections.

Couplings

Omnifit threaded couplings are a useful range of ‘problem solving’ parts that enable you to convert thread sizes quickly and easily. Omnifit couplings are available that accept a 1/4"-28 UNF male fitting at one end and convert this to a range of male and female thread types: 1/4"-28 UNF female, 10-32 female, 3/8" NPT male, 1/8" NPT male, M6, or 1/8" BSPT male.

Barbed Adaptors

1/4”-28 Male to Barb Adaptors

- PEEK™ material
- Excellent chemical resistance
- Extra sharp machined barbs for resilient connections


1070


1064


1065


1066


1071


1069


1072


1073


1074

These male 1/4”-28 to barb adaptors will connect softwall tubing to any female 1/4”-28 port.

Omnifit barbed adaptors are designed for use with softwall tubing. They are machined rather than moulded and this gives a superior barb to retain soft wall tubing.

Part Number	Compatible Tubing I.D.	Pack Size
1070	1.0mm	1
1064	1.5mm	1
1065	2.0mm	1
1066	2.5mm	1
1071	3.0mm	1
1069	3.2mm	1
1072	4.0mm	1
1073	6.0mm	1
1074	8.0mm	1

1/4”-28 Female to Barb Adaptors

- PEEK™ material
- Excellent chemical resistance
- Extra sharp machined barbs for resilient connections


1070F


1064F


1065F


1066F


1071F


1069F


1072F


1073F

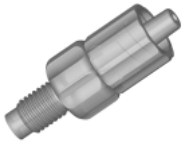

1074F

Part Number	Compatible Tubing I.D.	Pack Size
1070F	1.0mm	1
1064F	1.5mm	1
1065F	2.0mm	1
1066F	2.5mm	1
1071F	3.0mm	1
1069F	3.2mm	1
~~1072F~~	~~4.0mm~~	~~1~~
~~1073F~~	~~6.0mm~~	~~1~~
~~1074F~~	~~8.0mm~~	~~1~~

1/4”-28 Adaptors

- Inert Tefzel® or glass
- Autoclavable (Tefzel® only)
- Fit any 1/4”-28 UNF flat bottom ports

These adaptors will fit into 1/4''-28 UNF flat bottom ports in most Omnifit connectors and valves. The Tefzel® 1/4"-28 UNF male thread adaptors provide a quick, push-on connection for softwall tubing or luer. Adaptors to male and female Luer are available. The 1/4"-28 UNF male thread glass adaptors fit into any 1/4''-28 UNF flat bottom ports and are suitable for flame fusing onto other glassware.



1206

2321

2322

2501

2502

2503

2504

2505

2510

Part Number	Description	Pack Size
1206	Tefzel® Luer lock fitting with Polypropylene lock-ring	1
2321	PTFE plug for female luer	2
2322	PTFE plug for male luer	2
2501	Tefzel® male luer fitting	1
2502	Tefzel® female luer fitting	1
2503	Tefzel® 1/4" O.D. pipe connector	1
2504	Tefzel® 1/8" O.D. pipe connector	1
2505	Tefzel® 1/16" O.D. pipe connector with stainless steel tube	1
2510	1/4" glass tubing with 1.5mm bore	1

‘Omnifit Cap’ Adaptors

- Replaces the colored cap on any ‘Omnifit Cap’ connector or valve
- Push-on connection for softwall tubing
- Adaptors with luer fittings
- Autoclavable

These adaptors can replace the Omnifit cap on any ‘Omnifit Cap’ connector or valve to give either quick push-on connections for softwall tubing or luer connections. Cap-to-luer adaptors are available with male or female luer connections. Cap-to-pipe adaptors are available in Tefzel® or stainless steel to accept softwall tubing with the following internal diameters: 1/16", 1/8" and 1/4".

1201

1202

1203

1205

1204

Part Number	Description	Pack Size
1201	Tefzel® male luer fitting	1
1202	Tefzel® female luer fitting	1
1203	Tefzel® 1/4" O.D. pipe connector	1
1204	Tefzel® 1/8" O.D. pipe connector	1
1205	Tefzel® 1/16" O.D. pipe connector with a stainless steel tube	1

Variable Bore Adaptors

- 50 psi pressure rating
- 1.5mm (.062”) bore size
- Chemically inert all-PTFE body
- Polypropylene caps

Omnifit variable bore adaptors allow any size of tubing between 0.5 and 4mm O.D. to be connected to a 1/4”-28 UNF port via the ‘Omnifit Cap’. The valved version has a Tefzel® rotor. Each adaptor has a male 1/4"-28 UNF thread that will fit any female 1/4"-28 UNF threaded port.

1012

2506

2507

Part Number	Description	Pack Size
1012	3-way 'T' variable bore connector to male 1/4"-28	1
2506	1/4"-28 to variable bore	1
2507	1/4"-28 to variable bore with valve	1

Couplings

- Excellent chemical resistance
- Polypropylene, PEEK™ or Tefzel®
- Convert different thread sizes

Omnifit threaded couplings are a useful range of ‘problem solving’ parts that enable you to convert thread sizes quickly and easily.

Omnifit couplings are available that accept a 1/4"-28 UNF male fitting at one end and convert this to a range of male and female thread types including: 1/4"-28 UNF female, 10-32 female, 3/8" NPT male, 1/8" NPT male, 1/8" BSPT male and M6.

2301

2302

2306

2352

2354

2357

Part Number	Description	Pack Size
2301	Polypropylene two-way coupling	1
2302	Tefzel® two-way coupling	1
2306	PEEK™, 1/4"-28 Female to 10-32 Female	1
2352	PEEK™, 1/4"-28 Female to M6 Male	1
2354	PEEK™, 1/4"-28 Female to1/8" NPT Male	1
2356	PEEK™, 1/4"-28 Female to 3/8" NPT Male	1
2357	PEEK™, 1/4"-28 Female to 1/8"BSPT Male	1

Rev. 0205

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BIO-CHEM VALVE

- Solenoid Operated Micro Pumps
- Isolation Valves
- Flow Selection Valves
- Pinch Valves
- Electric Rotary Valves
- Manifolds
- Accessories
- Customization Services

FIND A SPECIFIC PART #

Subcategories

FlowTest™ Controller

Mounting options

CoolCube

Tubing

Fittings Systems

Bio-Chek Check Valves

Adaptors

BIO-CHEM VALVE

- Solenoid Operated Micro Pumps
- Isolation Valves
- Flow Selection Valves
- Pinch Valves
- Electric Rotary Valves
- Manifolds
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- Customization Services

FIND A SPECIFIC PART #

The **FlowTest™** is an automated controller that operates up to eight Fluid Control Devices (FCD). Although designed specifically for use with **Bio-Chem Valve™** solenoid valves and pumps, the **FlowTest™** can be used with FCD's from other sources. (Download brochure - FlowTest™ Automated Controller)

The **FlowTest™** is programmed via a computer running the dedicated **CosDesigner™** software. This programming tool is ideal for the development of new procedures that require liquid displacement, sampling, and injection.

The field of use spans laboratory and industrial applications requiring precise liquid transfers. For example, the **FlowTest™** will prove an invaluable asset in many quality testing applications.

Up to 8 FCD's can be operated at one time.

The components can be run in parallel or independently of each other. A database of Bio-Chem Valve™ Solenoid-operated Micro-Pumps and Valves is supplied with the controller.

FlowTest™ runs with or without a PC.

Although most users will operate it while it is connected to a PC or laptop, the FlowTest™ can be run as a stand-alone instrument. In this case, programs are loaded via a USB key and the controller operates by run and stop buttons.

Dedicated CosDesigner™ software allows for easy operation without having to learn a complicated programming language.

The graphic user interface (GUI) of the provided CosDesigner™ software is straightforward and intuitive. Complex sequences can be programmed with ease. (CosDesigner™ can be run on Windows Vista and Windows XP in either 32 or 64-bit versions).

Multiple programs set-up, stored and managed

Once a sequence is designed and confirmed it can be stored, retrieved and repeated as needed.

(Download brochure - FlowTest™ Automated Controller)

FlowTest™ Controller

A HALMA COMPANY

BIO-CHEM VALVE

- Solenoid Operated Micro Pumps
- Isolation Valves
- Flow Selection Valves
- Pinch Valves
- Electric Rotary Valves
- Manifolds
- Accessories
- Customization Services

FIND A SPECIFIC PART #

You are at > Accessories > CoolCube

Items listing (Search criteria: Category CoolCube ordered by: no ordering specified)

CoolCube™ Control Module

This product provides an easy way to achieve a "hit and hold" circuit independent of the rated voltage. When connected between a solenoid valve and a power supply, it delivers a "step-down" function by accepting inputs from 12 to 36 VDC and passes. After 100 ms, the CoolCube drops the voltage and current to a level sufficient to hold the solenoid in the energized position.

Two versions are available:

- CoolCube-50R Provides 1/2 input voltage step-down. Suitable for use with any Bio-Chem Fluidics solenoid operated product
- CoolCube-R Provides 1/3 input voltage step-down. Suitable for use with any Bio-Chem Fluidics solenoid operated product, except 038, 039 and 040 series valves and quiet type pinch valves

COOLCUBE-50R

Price:
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COOLCUBE-R

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