



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 perfluoroelastomer 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 perfluoroelastomer 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 modified 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

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# 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) (3.18 mm)
038T2	20 psi	n/a	20 psi	n/a	n/a
039T2	20 psi	n/a	20 psi	n/a	n/a
075T2	20 psi	n/a	20 psi	20 psi	n/a
075T3	15 psi (NC/NO) 20 psi (Com)	15 psi (NC/NO) 20 psi (Com)	n/a	n/a	n/a
079NC	20 psi	n/a	n/a	20 psi	n/a
100T2NC	n/a	n/a	n/a	15 psi	15 psi
100T2NO	n/a	n/a	n/a	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

**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
075T3	0.062"	54 µl
	0.032"	45 µl
079NC	0.046"	52 µl
	0.032"	21 µl
100T2	0.062"	31 µl
	0.062"	55 µl
100T3	0.092"	133 µl
	0.125"	296 µl
100T3	0.032"	47 µl
	0.062"	

## Flow Factors ( C<sub>v</sub> )

Valve Series	Orifice Diameter	C <sub>v</sub>
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
075T3	0.062"	0.030
	0.032"	0.010
079NC	0.046"	0.023
	0.032"	0.011
100T2	0.062"	0.027
	0.062"	0.042
100T3	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

		Diaphragm Material			
		PTFE	EPDM	Viton®	Perfluoroelastomer
Body Material	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


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# 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:

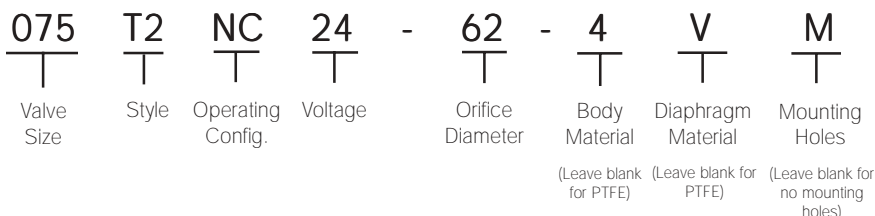
- Port threads
- Helicoils
- Terminal connectors and non-standard lead wire lengths
- Above standard operating pressure requirements
- Manifold configurations

## Accessories

Please see the following product specification sheets for accessories:

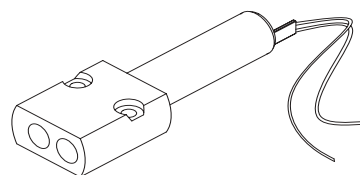
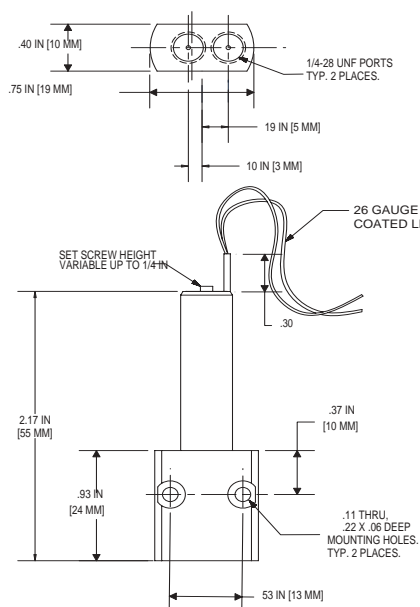
- Fitting Systems
- The Omni-Lok™ Fitting System
- CoolCube™ control module
- Mounting Accessories & Options

Example P/N:



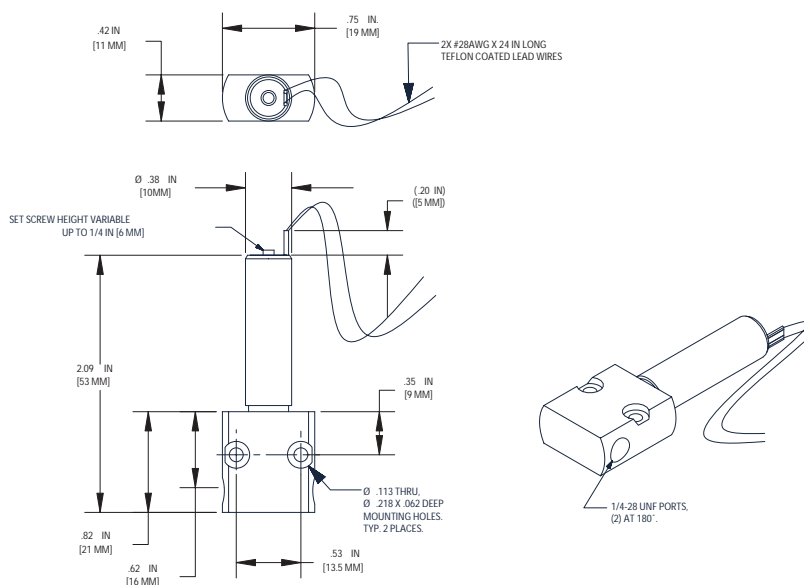
# Installation Drawings

## 038T2B Bottom Ported

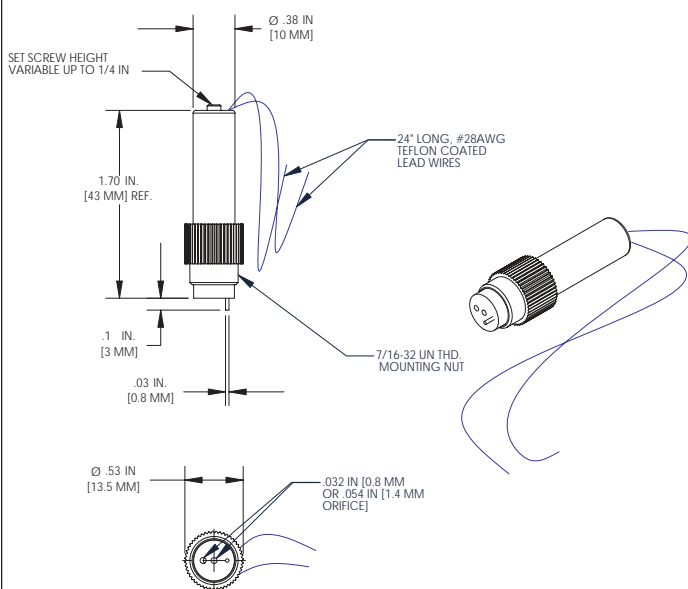


# Installation Drawings

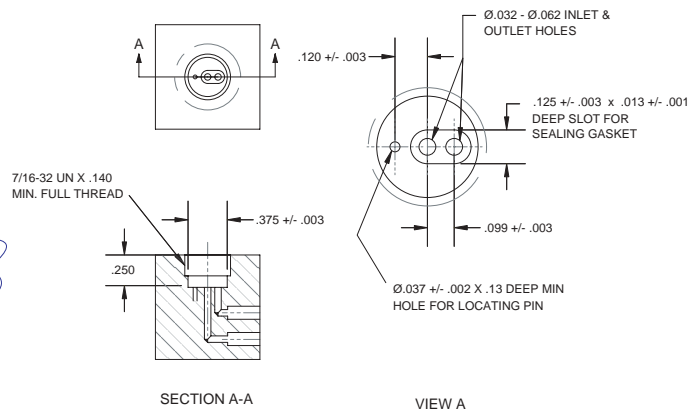
## 038T2S Side Ported



## 039T2M Manifold Mountable

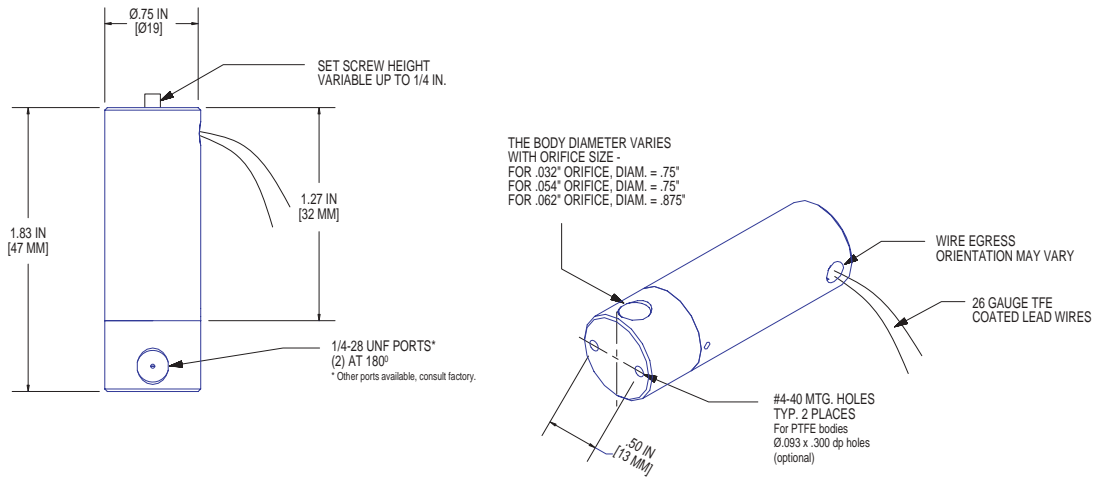


## Manifold Interface

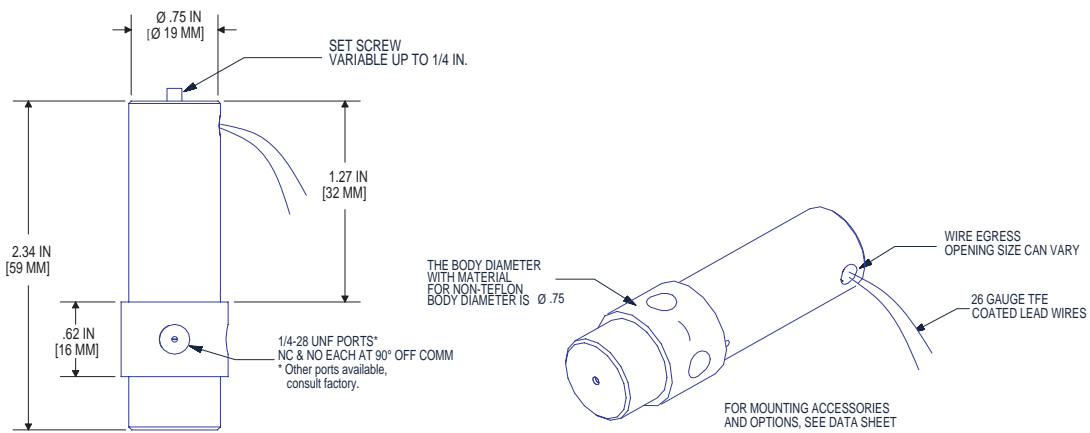


# Installation Drawings (contd.)

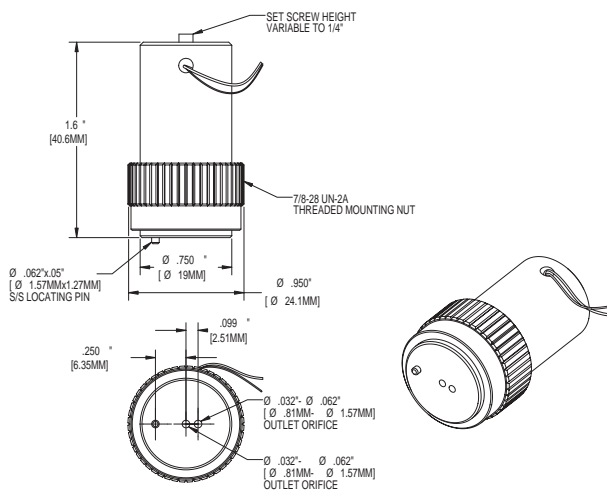
## 075T2NC



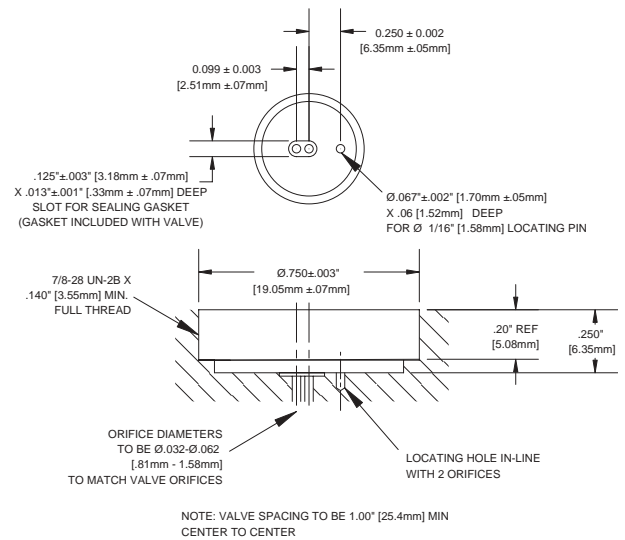
## 075T3MP



## 079NC Manifold Mountable

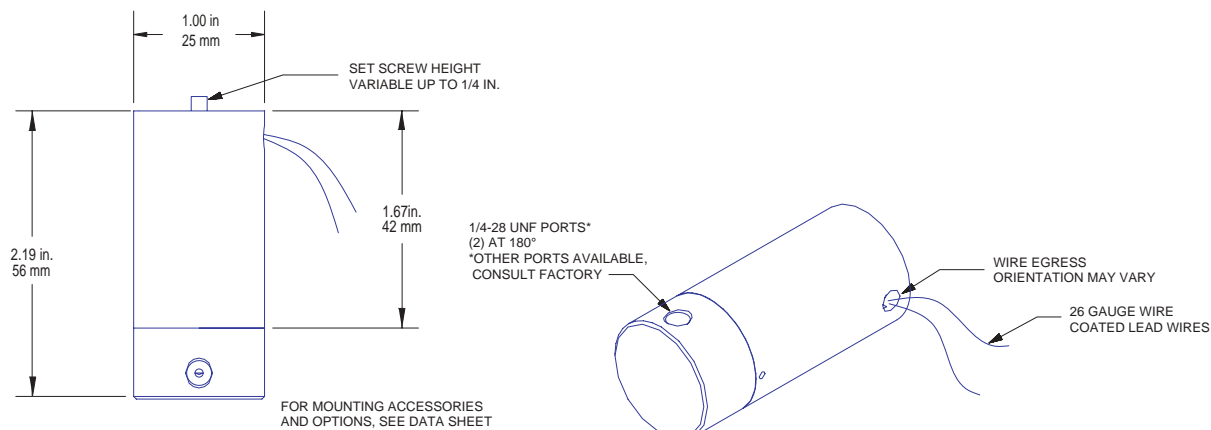


## Manifold Interface

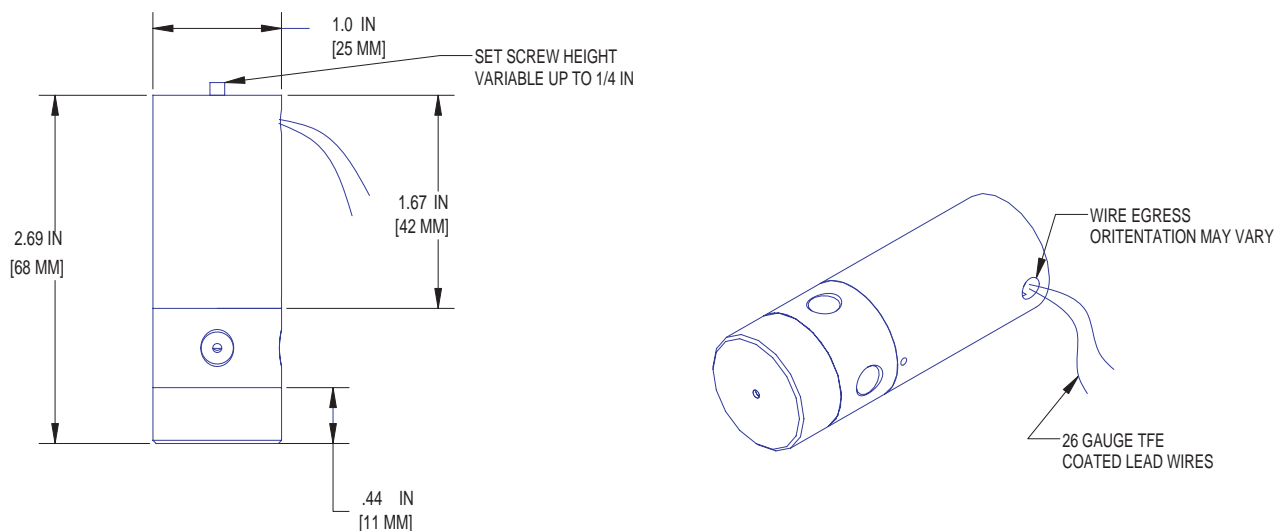


# Installation Drawings (contd.)

## 100T2NC



## 100T3MP



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PEEK™ is a trademark of Victrex plc

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### BIO-CHEM VALVE

#### Inert solenoid valves, electric rotary valves and pumps

##### Micro Pumps



##### Isolation Valves



##### Flow Selection Valves & Manifolds



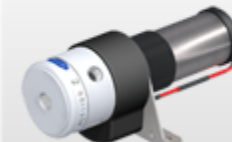
##### Pinch Valves



##### Relief Valves



##### Electric Rotary Valves



### Omnifit

#### Inert fluid handling components & labware

##### Fitting Systems



##### Connectors & Adaptors



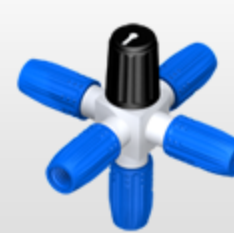
##### Bottle Caps & Reservoirs



##### Chromatography Columns



##### Manual Rotary Valves



##### Check Valves, Filters, Bubble Traps