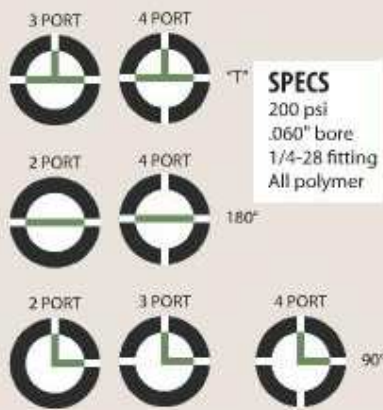


Instrumentation Valves

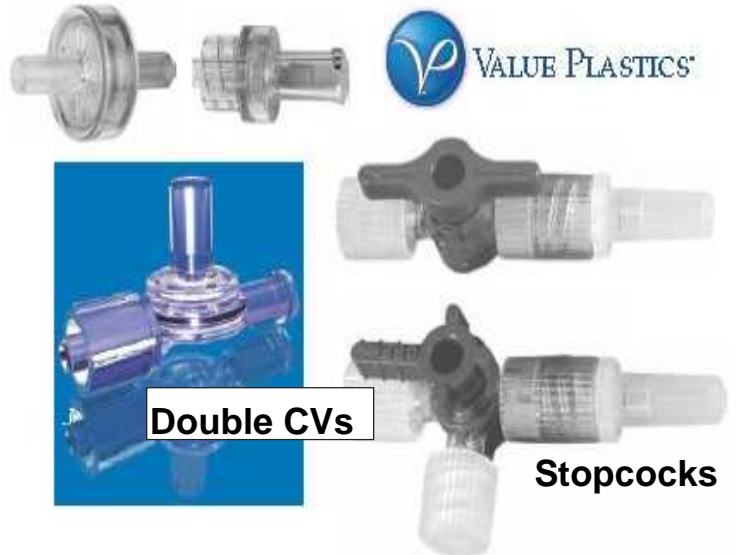


VICI Precision Sampling

Micro Valves for GC and LC



Check Valves

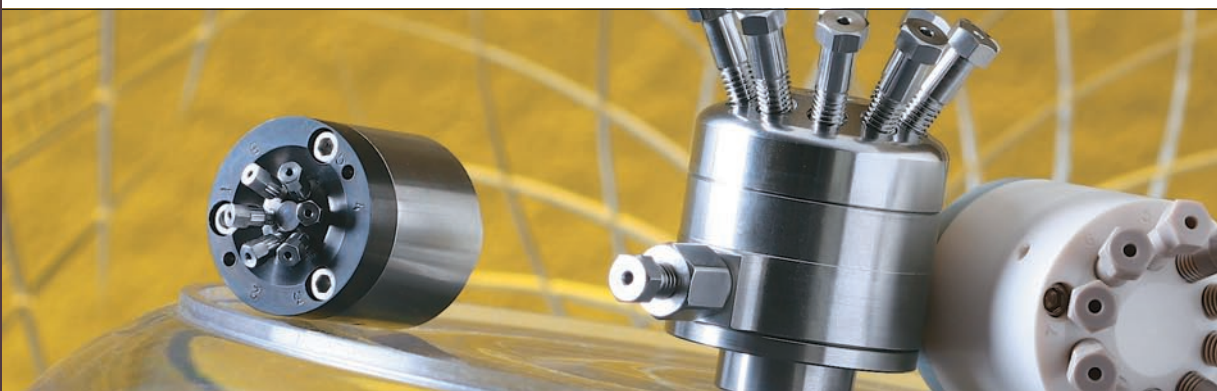


BIO-CHEM VALVE INC.

Pinch Valves

Isolation Valves





Valve Selection

Following is an overview of the many types of valves available from VICI.

Valco Injectors and Valves for GC

pages 96–99, 102–111

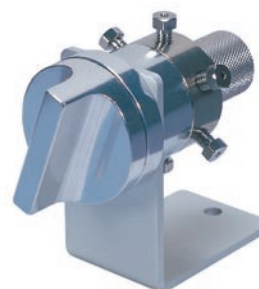
For nearly 40 years Valco valves have been the industry standard in gas chromatography. Models are available with 3, 4, 6, 8, 10, 12, or 14 ports, with 1/32", 1/16", 1/8", or 1/4" fittings, and with bore sizes from 0.25 mm (.010") to 4 mm (.156"). In addition, Valco valves offer the widest range of rotor and body materials of any valve available, with alloys and polymer composites capable of meeting virtually any system requirement. All models can be ordered in manual, pneumatic, or electrically actuated versions.



Valco Injectors and Valves for HPLC

pages 96–99, 112–116

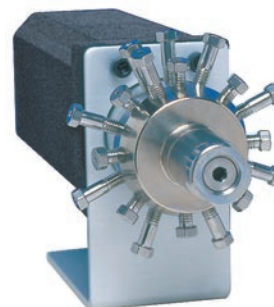
A pioneer and industry leader in products for HPLC, Valco continues to offer the market's most diverse line in terms of number of ports, fitting sizes, materials of construction, and actuation. 3, 4, 6, 8, 10, 12 port versions are offered, with 1/32", 1/16", or 1/8" fittings. As with the GC line, Valco valves offer the widest range of rotor and body materials of any valves available, with alloys and polymer composites capable of meeting virtually any system requirement. All models can be ordered in manual, pneumatic, or electrically actuated versions.



Valco Selectors

pages 100–101, 122–133

One inherent benefit of the Valco conical rotary design is that it allows multiple planes of ports, facilitating a variety of unique multiposition configurations useful for stream selection, column selection, or trapping. Versions are available for GC and HPLC applications, with 1/16", 1/8", or 1/4" fittings, with bore sizes from 0.40 to 4.0 mm (.016" to .156"). Selectors are available for up to 16 streams (34 ports), all with Valco's trademark flexibility in terms of actuation and material options.



Diaphragm Valves for GC

pages 140–143

A diaphragm valve consists of plungers and ports arranged in a circular pattern, with the plungers controlled by the reciprocating action of two air actuated pistons. Extremely long lifetime (typically 1,000,000 cycles at ambient temperature; approximately 500,000 cycles at elevated temperatures), very short actuation time (10 milliseconds), minimum internal dead volume, and reliability have made this type of valve very successful in process gas chromatography for both sample injection and column switching. Our miniature version features 1/16" or 1/32" zero dead volume fittings, and is the first to offer a 10 port configuration in addition to the 6 port and internal sample 4 port models.



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Cheminert Injectors for Nanovolume® HPLC and UHPLC

pages 146, 152–155

New nanovolume® injectors feature a uniform flowpath as small as 100 microns, with specially designed fittings for 1/32" or 360 micron PEEK, fused silica, or Valco electroformed nickel tubing. Models are rated from 5,000 to 20,000 psi, with most having a proprietary coated stainless stator and high-strength PAEK rotor to ensure long periods of maintenance-free operation.



Cheminert Injectors and Valves for HPLC and UHPLC

pages 147, 156–163

The Cheminert line includes 4, 6, 8, and 10 port versions. The submicroliter injector has an injection volume as small as 10 nanoliters. Valves feature 1/16" zero dead volume fittings, with bore sizes from 0.15 mm (.006") to 0.75 mm (.030"). Most models are available in manual, air, or electrically actuated versions, and some can be ordered with a proprietary coated stainless stator and high-strength PAEK rotor to ensure long periods of maintenance-free operation.



Cheminert Injectors and Valves for Low Pressure Applications

pages 148, 164–167

Cheminert's two position design offers 4, 6, 8, or 10 port configurations. The design features a choice of Valco 1/16" zero dead volume fittings or 1/4-28 Cheminert internal fittings for 1/16" or 1/8" OD tubing. All models are available in manual, air, or electrically actuated versions.



Cheminert Selectors

pages 150-151, 170–177

Choose among 4, 6, 8, 10, 14, 20, 24, or 26 position stream selection valves, in high pressure and low pressure models. A variety of configurations are available with bore sizes from 0.10 mm (.004") for HPLC column selection to 4.6 mm (.180") for applications requiring minimal restriction across the valve. Metal or all-polymeric valves can be ordered, with models available in manual, pneumatic, or electrically actuated versions.



40,000 psi Ultra-High Pressure Injector System

page 84

The VICI 40K injector is comprised of six miniature air actuated needle valves, plumbed to simulate the flow path of a conventional rotor/stator injector. An integral controller sends the on/off positioning signals to each valve, coordinating them to perform load, inject, and flush functions.

FOR OEMs

See our injectors for autosamplers and our new low and high pressure integrated motor/injector and motor/selector assemblies designed specifically to be built into OEM systems.

HPLCpp 178-181

Low pressure ... 182-183

Selectors 184-185





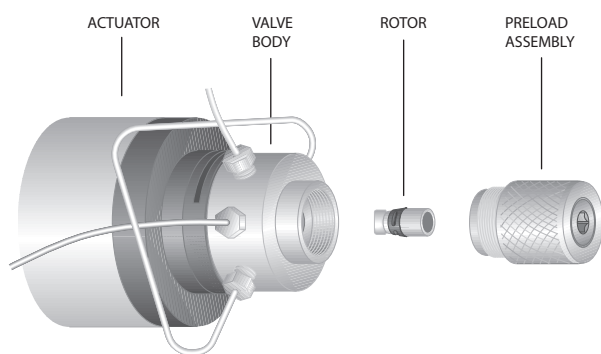
Valco Injectors and Valves

- 1/32", 1/16", 1/8", or 1/4" Valco ZDV fittings
- 3, 4, 6, 8, 10, 12, and 14 port and internal sample two position versions
- Five multiposition flowpath configurations with as many as 16 positions
- A variety of materials for hostile environments and continuous use at elevated temperature
- Can be configured for use at temperatures up to 350°C or pressures up to 10,000 psi

The Valco design lends itself to a unique variety of connecting slots and port arrangements. The rotor is held in place by a preload assembly, which allows rotor replacement without removing loops and tubing and without disengaging the valve from the actuator or mounting bracket.

In addition, the preload assembly ensures that the valve is always reassembled to the factory-set tension.

Two position injector and valve descriptions are on page 99; product numbers and prices begin on page 102. For information on **selectors**, refer to pages 100-101.



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TECH TIP

For optimal zero dead volume connections, make sure your tubing meets the best industry standards. The OD tolerance should be nominal dimension $\pm .002$ ".

Fractional dimension	Nominal dimension
1/32"	.031
1/16"	.062
1/8"	.125
1/4"	.250
3/8"	.375
1/2"	.500

Materials of Construction

The standard valve body material is Nitronic 60, a gall-resistant stainless steel which has proven superior to Type 316 or 303 in the majority of applications. Valves may also be ordered in Hastelloy C-22, Inconel 600, Type 316 stainless, Monel 400, Nickel 200, Nitronic 50, or Titanium.

Medium temperature GC valves have a rotor made of Valcon E, a polyaryletherketone/PTFE composite. The high temperature versions use a polyimide/PTFE/carbon composite designated Valcon T. Valcon H, a carbon-fiber-reinforced, PTFE-lubricated inert polymer, is standard in HPLC valves.

Appropriate fittings are supplied with all valves. Valves rated at 1000 psi or less have Type 303 stainless ferrules; those rated above 1000 psi have Type 316 stainless ferrules. A valve ordered with an optional body material is supplied with ferrules of the same material as the body, with Type 316 stainless nuts.

SPECIAL BODY MATERIAL— CODES AND PRICES

TWO POSITION VALVES

Body material	Code	1/32" and 1/4" fittings	1/16" and 1/8" fittings
HPLC grade Stainless steel	SS	Standard	Standard
Hastelloy C-22	HC		
Inconel 600	IN		
Monel 400	M4		
Nickel	NI		
Nitronic 50	N5		
Titanium *	TI		

* Not available for WT, UWT, or T series valves (high temperature) due to material temperature limit.

MULTIPOSITION VALVES

Body material	Code	1/16" and 1/8" fittings		1/4" fittings
		SC and SD flowpaths	SF and ST flowpaths	SD, SC, SF flowpaths
HPLC grade Stainless steel	SS	Standard, most versions	Standard, most versions	Standard
Hastelloy C-22	HC			
Inconel 600	IN			
Monel 400	M4			
Nickel	NI			
Nitronic 50	N5			
Titanium *	TI			

* Not available for WT, UWT, or T series valves (high temperature) due to material temperature limit.

Specifying a Special Body Material

To specify a special valve body material, add the material code to the end of the valve product number, and add the amount listed in charts opposite to the base price.

Example:

An A4C6WE (air actuated 1/16" 6 port WE valve with a 4" standoff) made of Hastelloy C-22 would be designated A4C6WEHC.

The cost is \$830 + \$170 = \$1000.

Due to design requirements, several special grades of stainless steel may be used where "HPLC grade" is noted. The specific types include Nitronic 60, Type 316 stainless steel, and Type 316L stainless steel. VICI will select the material to be used based on availability and quality. HPLC grade stainless is the standard material for all Valco two position valves and high pressure multiposition valves.

MORE INFORMATION Materials

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Leak Testing

The standard test methods for cross-port and outport leakage insure valve performance at pressures and temperatures up to the specifications listed. For valves used on mass spectrometers or for ultra-trace fixed gas analysis, we recommend an optional test method utilizing a helium mass spectrometer, which provides data on mechanical leaks and on those due to seal porosity and permeability. With this method, we can certify leak rates as low as 10^{-10} cc-atm/sec.

Please consult the factory prior to ordering, since the minimum leak rate will vary widely depending on valve configuration.

Leak Rates for Gas Sampling Valves

The actual minimum leak rates attainable vary widely with seal material and valve type. In general, the acceptable leak rates fall into three ranges. (See chart below.)

In order to seal to less than 10^{-7} , the valve loading tension is increased, which somewhat lowers the maximum operating temperature and the valve lifetime. Currently, only select material can seal to 10^{-8} in most valve styles. Valcon M rotor material can seal to 10^{-10} , but has a temperature limit of 50°C.

Not all valves can achieve these leak rates. As a general rule, the larger the valve seal and port size, the higher the leak rate.

Test Method for Liquid Sampling Valves

The standard test method for liquid valves is a pressure drop over time for both crossport and outport leakage, using isopropanol at the specified test pressure. This test is designed to ensure proper performance at the specification limit.

RANGES FOR ACCEPTABLE LEAK RATES

10^{-4} to 10^{-5} cc-atm/sec	Commercial use Not normally sold by VICI
10^{-6} to 10^{-7} cc-atm/sec	General GC use Standard tension and components
10^{-8} to 10^{-10} cc-atm/sec	Ultra trace gas analysis (ppb range) Higher tension and specially processed stator and rotor material

OPTIONAL LEAK TESTING with Helium Mass Spectrometer

To order a valve certified to have helium leak rates less than 10^{-7} cc-atm/sec, add the suffix "Z" to the valve product number and \$175 to the price.

Certified valves are supplied with gold-plated stainless steel ferrules.

We can generally tell you what leak rate is possible prior to manufacturing the valve.

About Two Position Injectors and Switching Valves



Two position injectors and switching valves have many applications, as shown in the section beginning on page 117. In this catalog, Valco two position valves are divided into GC and HPLC sections, with the GC section starting on page 102 and the HPLC section on page 112.

Sample Injectors

Since the most common method of sample injection utilizes a 6 port valve with an external sample loop, 6 port valves are often referred to as "injectors." However, as the Applications section shows, 6 port valves can do more than inject sample, and 8 and 10 port valves can be sample injectors at the same time they're also being backflushers or column switchers. One more variation is the 4 port internal sampling valve (pages 102–103 and 112), which is used when the sample size must be smaller than the smallest available loop. The internal sample "loop" is actually an engraved connecting slot on the rotor which is sized to contain a specified amount of sample.

Sample Loops

Loops are electrolytically cut and electrochemically polished to ensure square, burr-free ends, then cleaned with microfiltered steam from deionized water. Standard material is Type 316 stainless, but loops can be supplied in electroformed nickel, Hastelloy C, Nickel 200, titanium, or several polymers. Consult the factory for availability.

Valco sample loops are accurately sized for each valve type. The volume tolerance matches the ID tolerance of the tubing, which is typically ± 0.001 ". This results in a variance ranging from 30% with tubing of 0.005" diameter to 5% for loops made from tubing 0.040" in diameter.

SPECIFICATIONS

VALCO TWO POSITION VALVES

Valve type	Standard rotor material	Max pressure	Max temp	Max pressure	Max temp
		Internal sample injectors		Sampling and switching valves	
GC					
W and UW	Valcon E	1000 psi liq	175°C	400 psi gas	225°C
	Valcon T	–	–	300 psi gas	330°C
MW	Valcon E2	–	–	100 psi gas	75°C
HPLC					
W and UW	Valcon H	5000 psi liq	75°C	5000 psi liq	75°C

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VALVE TYPES

	Fitting size	Standard port diameter
W Type	1/32"	0.25 mm (.010")
	1/16"	0.40 mm (.016")
UW Type	1/16"	0.75 mm (.030")
	1/8"	0.75 mm (.030")
MW Type	1/4"	4.0 mm (.156")

For special port diameters, please consult the factory.

OPTIONAL ROTORS

Valcon M	400 psi	50°C
Valcon P	400 psi	175°C
Valcon R	400 psi	75°C
Valcon TF	200 psi	50°C

See page 257 for a discussion of these optional rotor materials.

About Selectors

Instead of the back and forth switching of two position valves, selectors (multiposition valves) step incrementally through continuous revolutions (bi-directionally with the microelectric actuator). While we can supply older models, all the valves in this catalog have a preload assembly. This design allows the rotor to be inspected or replaced without taking the valve off the actuator, and valves ordered with a microelectric actuator are permanently aligned.

Flowpath Configurations

SD (dead-ended) valves select one of 4 to 16 dead-ended streams, directing it through the valve outlet to a sample valve, pressure sensor, detector, column, etc. The same configuration can also direct one stream to a number of outlets for fraction collection.

SC (common outlet) selectors are similar to SDs, except that instead of being dead-ended the non-selected streams flow to a common outlet.

SF (flow-through) selectors are similar to SDs and SCs, selecting a stream and sending it to the outlet. However, SFs allow the non-selected streams to flow through individual outlets instead of a common outlet.

ST (trapping) selectors are used for multi-column, multi-sample, or multi-trap operations.

STF (trapping/flow-through) selectors are similar to STs, with the single difference being that the non-selected streams are returned to their own vents or sources rather than being dead-ended or trapped as they are in the standard ST configuration.

PORT DIAMETERS—

Low pressure (MW)

Fitting size	No. of Positions	Standard port diameter
SD		
1/16"	4 - 16	0.75 mm (.030")
1/8"	4 - 16	1.0 mm (.040")
1/4"	4 - 10	4.0 mm (.156")

SC		
1/16"	4 - 16	1.0 mm (.040")
1/8"	4 - 16	1.0 mm (.040")
1/4"	4 - 8	4.0 mm (.156")

SF		
1/16"	4 - 16	1.0 mm (.040")
1/8"	4 - 16	1.0 mm (.040")
1/4"	4 - 8	4.0 mm (.156")

ST		
1/16"	4 - 16	0.75 mm (.030")
1/8"	4 - 16	1.0 mm (.040")

STF		
1/16"	4 - 16	0.75 mm (.030")
1/8"	4 - 16	1.0 mm (.040")

PORT DIAMETERS—

High pressure (UW)

Fitting size	No. of Positions	Standard port diameter
SD		
1/16"	4 - 12	0.40 mm (.016")
1/8"	4, 6, 8	0.75 mm (.030")

ST		
1/16"	4, 6	0.40 mm (.016")



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Low pressure

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High pressure

SD 132
ST 133

Loops, if required, are found on corresponding valve pages.

For special port diameters, please consult the factory.

Low Pressure Selectors

Valco **MW Type** selectors are available with 1/16", 1/8", or 1/4" fittings. (For port diameters, refer to the chart on the preceding page.) The 1/16" and 1/8" selectors can be ordered with 4, 6, 8, 10, 12, or 16 positions, in any of the five flowpath configurations. Selectors with 1/4" fittings are available in SD, SC, and SF flowpaths: SDs have 4, 6, 8, or 10 positions; SCs and SFs have 4, 6, or 8.

Although not shown in this catalog, MW selectors are also available in a higher temperature version. While actual specifications vary with the configuration, typical specifications are 200 psi and 330°C. Consult our technical staff for more information.

SPECIFICATIONS

VALCO SELECTORS – Low pressure (MW)

Fittings size	Number of positions	Standard rotor material	Max pressure	Max temp	Max pressure	Max temp	Max pressure	Max temp
			SD Dead-end flowpath		SC Common outlet flowpath			
1/16"	4 - 16	Valcon E	400 psi gas	200°C	200 psi gas	200°C	Note: All low pressure 1/16" and 1/8" valves are also available in versions up to 330°C.	
1/8"	4 - 8	Valcon E	400 psi gas	200°C	200 psi gas	200°C		
	10 - 16	Valcon E	200 psi gas	200°C	200 psi gas	200°C		
1/4"	4 - 8	Valcon E2	100 psi gas	75°C	100 psi gas	75°C		
			SF Flow-through flowpath		ST Trapping flowpath		STF Trapping/Flow-through flowpath	
1/16"	4 - 16	Valcon E	200 psi gas	200°C	200 psi gas	200°C	200 psi gas	200°C
1/8"	4 - 16	Valcon E	200 psi gas	200°C	200 psi gas	200°C	200 psi gas	200°C
1/4"	4 - 8	Valcon E2	100 psi gas	75°C	—	—	—	—

High Pressure Selectors

Valco **UW Type** high pressure selectors are available in SD and ST flowpaths. SD selectors with 1/16" fittings are available in 4, 6, 8, 10, or 12 positions, while 1/8" selectors can be

ordered with 4, 6, 8, or 10 positions. ST flowpath UW selectors have 1/16" fittings, with either 4 or 6 positions. (For port diameters, refer to the chart on the preceding page.)

SPECIFICATIONS

VALCO SELECTORS – High pressure (UW)

Fittings size	Number of positions	Standard rotor material	Max pressure	Max temp	Max pressure	Max temp
<div> <div>SD</div> <div>Dead-end flowpath</div> </div> <div> <div>ST</div> <div>Trapping flowpath</div> </div>						
1/16"	4 - 12	Valcon E	5000 psi liq	75°C	5000 psi liq	75°C
1/8"	4 - 8	Valcon E	5000 psi liq	75°C	–	–

Internal sample injectors, 1/32" fittings, 0.25 mm ports (.010")

W Type

Med temp	Includes 2" standoff. Manual version is not available without standoff.	Standard electric actuator: 110 VAC for USA; 110/230 VAC to 24 VDC power supply for international Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply
Internal sample		
1/32" 0.25 mm		



SPECS

1000 psi liq
175°C max
 Nitronic 60 valve body
 Valcon E rotor

Sample volume	.06 µl		.1 µl		.2 µl		.5 µl	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual with standoff	2NI4WE.06	\$775	2NI4WE.1		2NI4WE.2		2NI4WE.5	
With air actuator	A2NI4WE.06		A2NI4WE.1		A2NI4WE.2		A2NI4WE.5	
With standard electric actuator	E2NI4WE.06		E2NI4WE.1		E2NI4WE.2		E2NI4WE.5	
With microelectric actuator	EP2NI4WE.06		EP2NI4WE.1		EP2NI4WE.2		EP2NI4WE.5	
Replacement valve	DNI4WE.06		DNI4WE.1		DNI4WE.2		DNI4WE.5	
Replacement rotor	SSANI4WE.06		SSANI4WE.1		SSANI4WE.2		SSANI4WE.5	

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)

Internal sample injectors, 1/16" fittings, 0.40 mm ports (.016")

W Type

Med temp	Includes 2" standoff. Manual version has no standoff.	Standard electric actuator: 110 VAC for USA; 110/230 VAC to 24 VDC power supply for international Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply
Internal sample		
1/16" 0.40 mm		



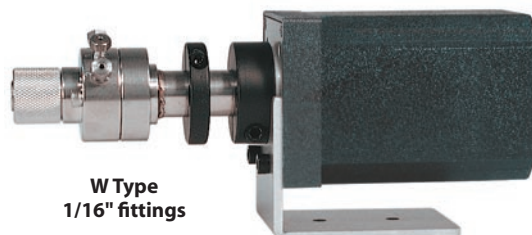
SPECS

1000 psi liq
175°C max
 Nitronic 60 valve body
 Valcon E rotor

Sample volume	.06 µl		.1 µl		.2 µl		.5 µl	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C14WE.06		C14WE.1		C14WE.2		C14WE.5	
Manual with standoff	2C14WE.06		2C14WE.1		2C14WE.2		2C14WE.5	
With air actuator	A2C14WE.06		A2C14WE.1		A2C14WE.2		A2C14WE.5	
With standard electric actuator	E2C14WE.06		E2C14WE.1		E2C14WE.2		E2C14WE.5	
With microelectric actuator	EP2C14WE.06		EP2C14WE.1		EP2C14WE.2		EP2C14WE.5	
Replacement valve	DC14WE.06		DC14WE.1		DC14WE.2		DC14WE.5	
Replacement rotor	SSAC14WE.06		SSAC14WE.1		SSAC14WE.2		SSAC14WE.5	

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)



W Type
1/16" fittings

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Internal sample injectors, 1/16" fittings, 0.75 mm ports (.030")

UW Type

SPECS
1000 psi liq
175°C maxNitronic 60 valve body
Valcon E rotorIncludes 2" standoff.
Manual version has no
standoff.Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply

Med temp

Internal sample

1/16" 0.75 mm

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)

Sample volume

	.2 µl		.5 µl		1 µl		2 µl	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	CI4UWE.2		CI4UWE.5		CI4UWE1		CI4UWE2	
Manual with standoff	2CI4UWE.2		2CI4UWE.5		2CI4UWE1		2CI4UWE2	
With air actuator	A2CI4UWE.2		A2CI4UWE.5		A2CI4UWE1		A2CI4UWE2	
With std electric actuator	E2CI4UWE.2		E2CI4UWE.5		E2CI4UWE1		E2CI4UWE2	
With microelectric actuator	ED2CI4UWE.2		ED2CI4UWE.5		ED2CI4UWE1		ED2CI4UWE2	
Replacement valve	DCI4UWE.2		DCI4UWE.5		DCI4UWE1		DCI4UWE2	
Replacement rotor	SSACI4UWE.2		SSACI4UWE.5		SSACI4UWE1		SSACI4UWE2	

Internal sample injectors, 1/8" fittings, 0.75 mm ports (.030")

UW Type

SPECS
1000 psi liq
175°C maxNitronic 60 valve body
Valcon E rotorIncludes 2" standoff.
Manual version has no
standoff.Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply

Med temp

Internal sample

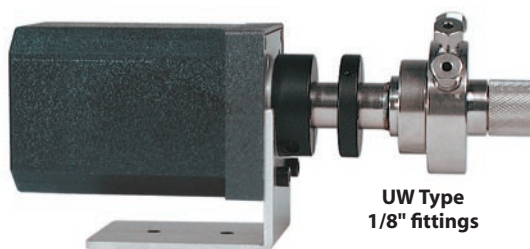
1/8" 0.75 mm

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)

Sample volume

	.2 µl		.5 µl		1 µl		2 µl	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	I4UWE.2		I4UWE.5		I4UWE1		I4UWE2	
Manual with standoff	2I4UWE.2		2I4UWE.5		2I4UWE1		2I4UWE2	
With air actuator	A2I4UWE.2		A2I4UWE.5		A2I4UWE1		A2I4UWE2	
With std electric actuator	E2I4UWE.2		E2I4UWE.5		E2I4UWE1		E2I4UWE2	
With microelectric actuator	ED2I4UWE.2		ED2I4UWE.5		ED2I4UWE1		ED2I4UWE2	
Replacement valve	DI4UWE.2		DI4UWE.5		DI4UWE1		DI4UWE2	
Replacement rotor	SSAI4UWE.2		SSAI4UWE.5		SSAI4UWE1		SSAI4UWE2	

UW Type
1/8" fittings

Capillary GC

Sampling and switching valves, 1/32" fittings, 0.25 mm ports (.010")

W Type

Med temp

1/32"

0.25 mm

Includes 4" standoff.
Manual version not
available without
standoff.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply
for international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply

Sample loops are not
included with valves.
Order separately.

SPECS

400 psi gas

225°C max

Nitronic 60 valve body
Valcon E rotor

For 300 psi, 350°C max,
see facing page.



4 Ports

Prod No Price



6 Ports

Prod No Price



8 Ports

Prod No Price



10 Ports

Prod No Price

Manual with standoff
With air actuator

4N4WE

A4N4WE

4N6WE

A4N6WE

4N8WE

A4N8WE

4N10WE

A4N10WE

With standard electric actuator
With microelectric actuator

E4N4WE

EH4N4WE

E4N6WE

EH4N6WE

E4N8WE

EH4N8WE

E4N10WE

EH4N10WE

Replacement valve
Replacement rotor

DN4WE

SSAN4WE

DN6WE

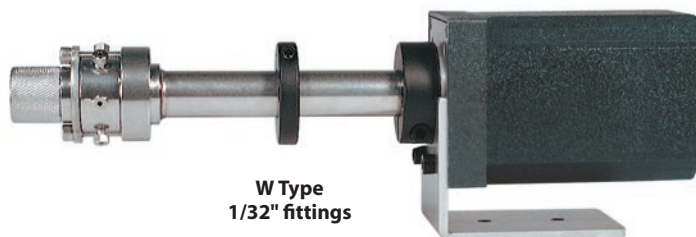
SSAN6WE

DN8WE

SSAN8WE

DN10WE

SSAN10WE



W Type
1/32" fittings

OPTIONS

- 3 and 12 port valves available
- 2", 3", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)

1/32" Stainless steel loops

for W Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.



Volume	Prod No	Price	Volume	Prod No	Price
2 µl	SL2NW		25 µl	SL25NW	
5 µl	SL5NW		50 µl	SL50NW	
10 µl	SL10NW		100 µl	SL100NW	
15 µl	SL15NW		250 µl	SL250NW	
20 µl	SL20NW		500 µl	SL500NW	

MORE INFORMATION

Actuators

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Manual 204
Microelectric .. 188-189
Standard elec. 193

Materials

Metals. 254-255
Polymers 256
Valve rotors. 257

Standoff

assemblies 205

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Nickel 200, PEEK, and PTFE

Sampling and switching valves, 1/32" fittings, 0.25 mm ports (.010")

W Type

SPECS**300 psi gas
350°C max**Nitronic 60 valve body
Valcon T rotorFor 400 psi, 225°C max,
see facing pageIncludes 4" standoff.
Manual version not
available without
standoff.Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for
international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supplySample loops are not
included with valves.
Order separately.**High temp****1/32"****0.25 mm****OPTIONS**■ 3 and 12 port
valves available

■ 2", 3", and 6" standoffs

■ Materials: Hastelloy C,
Inconel 600, Monel 400,
Nickel 200, Nitronic 50,
Titanium, Zirconium
(see pages 254-255)Manual with standoff
With air actuatorWith standard electric actuator
With microelectric actuatorReplacement valve
Replacement rotor**4 Ports**

Prod No Price

4N4WT \$725
A4N4WT 885**6 Ports**

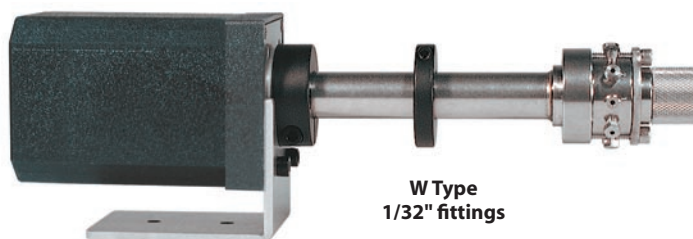
Prod No Price

4N6WT \$780
A4N6WT 940**8 Ports**

Prod No Price

4N8WT \$835
A4N8WT 995**10 Ports**

Prod No Price

4N10WT \$835
A4N10WT 995E4N4WT 1205
EH4N4WT 1375E4N6WT 1260
EH4N6WT 1430E4N8WT 1315
EH4N8WT 1485E4N10WT 1315
EH4N10WT 1485DN4WT 635
SSAN4WT 75DN6WT 690
SSAN6WT 75DN8WT 745
SSAN8WT 75DN10WT 745
SSAN10WT 75**W Type
1/32" fittings****1/32" Stainless steel loops**

for W Type valves

Each stainless steel loop includes two stainless
nuts and two stainless ferrules. Order special
fittings separately.

Volume	Prod No	Price	Volume	Prod No	Price
2 µl	SL2NW	\$25.00	25 µl	SL25NW	\$25.00
5 µl	SL5NW	25.00	50 µl	SL50NW	27.50
10 µl	SL10NW	25.00	100 µl	SL100NW	27.50
15 µl	SL15NW	25.00	250 µl	SL250NW	31.25
20 µl	SL20NW	25.00	500 µl	SL500NW	37.50

ABOUT LOOPS■ Other materials
available in many
sizes: Electroformed
Nickel, Nickel 200,
PEEK, and PTFE

Sampling and switching valves, 1/16" fittings, 0.40 mm (.016")

W Type

Med temp

1/16" 0.40 mm

Includes 4" standoff
Manual version has no
standoff

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply
for international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply

Sample loops are not
included with valves.
Order separately.

SPECS

400 psi gas
225°C max
Nitronic 60 valve body
Valcon E rotor

For 300 psi, 350°C max,
see page 108.



4 Ports

Prod No Price



6 Ports

Prod No Price



8 Ports

Prod No Price



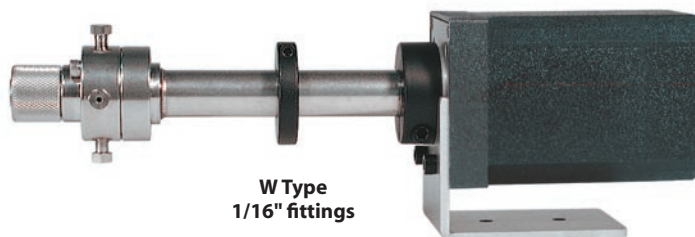
10 Ports

Prod No Price

Manual	C4WE	C6WE	C8WE	C10WE
Manual with standoff	4C4WE	4C6WE	4C8WE	4C10WE
With air actuator	A4C4WE	A4C6WE	A4C8WE	A4C10WE
With standard electric actuator	E4C4WE	E4C6WE	E4C8WE	E4C10WE
With microelectric actuator	EH4C4WE	EH4C6WE	EH4C8WE	EH4C10WE
Replacement valve	DC4WE	DC6WE	DC8WE	DC10WE
Replacement rotor	SSAC4WE	SSAC6WE	SSAC8WE	SSAC10WE

OPTIONS

- 3 and 12 port valves available
- 2", 3", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)

W Type
1/16" fittings

1/16" Stainless steel loops

for W Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.



Volume	Prod No	Price	Volume	Prod No	Price
2 µl	SL2CW		100 µl	SL100CW	
5 µl	SL5CW		250 µl	SL250CW	
10 µl	SL10CW		500 µl	SL500CW	
15 µl	SL15CW		1 ml	SL1KCW	
20 µl	SL20CW		2 ml	SL2KCW	
25 µl	SL25CW		5 ml	SL5KCW	
50 µl	SL50CW		10 ml	SL10KCW	

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Metals. 254-255
Polymers 256
Valve rotors. 257

Standoff

assemblies 205

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.

CHROMalytic TECHnology Pty Ltd AUSTRALIAN Distributors e-mail: sales@chromtech.net.au Tel: 03 9762 2034

UW Type

For 300 psi, 330°C max,
see page 109.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply
for international

Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply

Sample loops are not included with valves. Order separately.

0.75 mm

■ Larger bore available



4 Ports

Prod No	Price
---------	-------



6 Ports

Prod No	Price
---------	-------



8 Ports

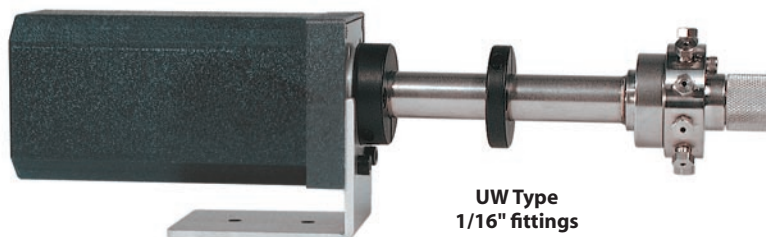
Prod No	Price
---------	-------



10 Ports

Prod No	Price
---------	-------

Manual	C4UWE	C6UWE	\$570	C8UWE	C10UWE
Manual with standoff	4C4UWE	4C6UWE	615	4C8UWE	4C10UWE
With air actuator	A4C4UWE	A4C6UWE	775	A4C8UWE	A4C10UWE
With standard electric actuator	E4C4UWE	E4C6UWE	1095	E4C8UWE	E4C10UWE
With microelectric actuator	ED4C4UWE	ED4C6UWE	1325	ED4C8UWE	ED4C10UWE
Replacement valve	DC4UWE	DC6UWE	525	DC8UWE	DC10UWE
Replacement rotor	SSAC4UWE	SSAC6UWE	75	SSAC8UWE	SSAC10UWE



for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.



- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.

Volume	Prod No	Price	Volume	Prod No	Price
5 µl	SL5CUW		100 µl	SL100CUW	
10 µl	SL10CUW		250 µl	SL250CUW	
15 µl	SL15CUW		500 µl	SL500CUW	
20 µl	SL20CUW		1 ml	SL1KCUW	
25 µl	SL25CUW		2 ml	SL2KCUW	
50 µl	SL50CUW		5 ml	SL5KCUW	
			10 ml	SL10KCUW	

High Temperature GC

Sampling and switching valves, 1/16" fittings, 0.40 mm ports (.016")

W Type

High temp

1/16" 0.40 mm

Includes 4" standoff

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply
for international

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC
power supplySample loops are not
included with valves.
Order separately.

SPECS

300 psi gas

350°C max

Nitronic 60 valve body
Valcon T rotorFor 400 psi, 225°C max,
see page 106.

4 Ports

Prod No Price



6 Ports

Prod No Price



8 Ports

Prod No Price



10 Ports

Prod No Price

Manual with standoff
With air actuator

4C4WT

A4C4WT

4C6WT

A4C6WT

4C8WT

A4C8WT

4C10WT

A4C10WT

With standard electric actuator
With microelectric actuator

E4C4WT

EH4C4WT

E4C6WT

EH4C6WT

E4C8WT

EH4C8WT

E4C10WT

EH4C10WT

Replacement valve
Replacement rotor

DC4WT

SSAC4WT

DC6WT

SSAC6WT

DC8WT

SSAC8WT

DC10WT

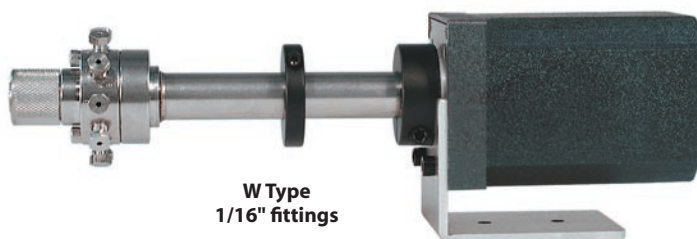
SSAC10WT

OPTIONS

■ 3 and 12 port valves
available
UW type: 3, 12, and 14
port valves available

■ 2", 3", and 6" standoffs

■ Materials: Hastelloy C,
Inconel 600, Monel 400,
Nickel 200, Nitronic 50,
Titanium, Zirconium
(see pages 254-255)

W Type
1/16" fittings

1/16" Stainless steel loops

for W Type valves

Each stainless steel loop includes two stainless nuts
and two stainless ferrules. Order special fittings
separately.

Volume	Prod No	Price	Volume	Prod No	Price
2 µl	SL2CW		100 µl	SL100CW	
5 µl	SL5CW		250 µl	SL250CW	
10 µl	SL10CW		500 µl	SL500CW	
15 µl	SL15CW		1 ml	SL1KCW	
20 µl	SL20CW		2 ml	SL2KCW	
25 µl	SL25CW		5 ml	SL5KCW	
50 µl	SL50CW		10 ml	SL10KCW	

MORE INFORMATION

Actuators

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Manual 204
Microelectric .. 188-189
Standard elec. 193

Materials

Metals. 254-255
Polymers 256
Valve rotors. 257

Standoff

assemblies 205

ABOUT LOOPS

■ Other materials
available in many
sizes: Electroformed
Nickel, Hastelloy C,
Nickel 200, PEEK,
PTFE, and Titanium

■ Loops > 2 ml are made
from 1/8" OD tubing
with brazed or welded
1/16" tube ends or
reducing unions.

Sampling and switching valves, 1/16" fittings, 0.75 mm ports (.030")

UW Type

SPECS

300 psi gas
330°C maxNitronic 60 valve body
Valcon T rotorFor 400 psi, 225°C max,
see page 107.

Includes 4" standoff

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply for
international

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC
power supplySample loops are not
included with valves.
Order separately.

High temp

1/16"

0.75 mm

OPTIONS

- 3, 12 and 14 port valves available
- 2", 3", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)
- Larger bore available



4 Ports

Prod No Price



6 Ports

Prod No Price



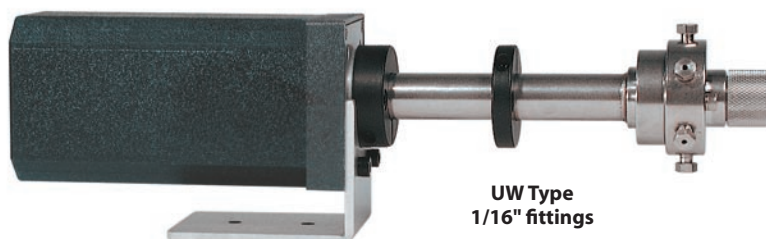
8 Ports

Prod No Price



10 Ports

Prod No Price

Manual with standoff
With air actuator4C4UWT
A4C4UWT4C6UWT
A4C6UWT4C8UWT
A4C8UWT4C10UWT \$670
A4C10UWTWith standard electric actuator
With microelectric actuatorE4C4UWT
ED4C4UWTE4C6UWT
ED4C6UWTE4C8UWT
ED4C8UWTE4C10UWT
ED4C10UWTReplacement valve
Replacement rotorDC4UWT
SSAC4UWTDC6UWT
SSAC6UWTDC8UWT
SSAC8UWTDC10UWT
SSAC10UWTUW Type
1/16" fittings

1/16" Stainless steel loops

for UW Type valves

Each stainless steel loop includes two stainless nuts
and two stainless ferrules. Order special fittings
separately.

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.

Volume	Prod No	Price	Volume	Prod No	Price
5 µl	SL5CUW		100 µl	SL100CUW	
10 µl	SL10CUW		250 µl	SL250CUW	
15 µl	SL15CUW		500 µl	SL500CUW	
20 µl	SL20CUW		1 ml	SL1KCUW	
25 µl	SL25CUW		2 ml	SL2KCUW	
50 µl	SL50CUW		5 ml	SL5KCUW	
			10 ml	SL10KCUW	

Sampling and switching valves, 1/8" fittings, 0.75 mm ports (.030")

UW Type

Med temp		Includes 4" standoff. Manual version has no standoff.	Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply		Sample loops are not included with valves. Order separately (see facing page).		
1/8"	0.75 mm						

Sampling and switching valves, 1/8" fittings, 0.75 mm ports (.030")

UW Type

SPECS

300 psi gas
330°C maxNitronic 60 valve body
Valcon T rotorFor 400 psi, 225°C max,
see facing page.Includes 4" standoff.
Manual version not
available without
standoff.Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for
international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supplySample loops are not
included with valves.
Order separately.

High temp

1/8"

0.75 mm

OPTIONS

- 3, 12, and 14 port valves available
- 2", 3", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)
- Larger bore available



4 Ports

Prod No Price



6 Ports

Prod No Price



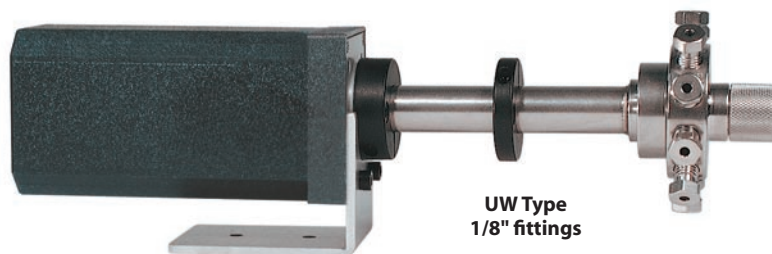
8 Ports

Prod No Price



10 Ports

Prod No Price

Manual with standoff
With air actuator44UWT
A44UWT46UWT
A46UWT48UWT
A48UWT410UWT
A410UWTWith standard electric actuator
With microelectric actuatorE44UWT
ED44UWTE46UWT
ED46UWTE48UWT
ED48UWTE410UWT
ED410UWTReplacement valve
Replacement rotorD4UWT
SSA4UWTD6UWT
SSA6UWTD8UWT
SSA8UWTD10UWT
SSA10UWTUW Type
1/8" fittings

MORE INFORMATION

Actuators

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Materials

Metals 254-255
Polymers 256
Valve rotors 257

Standoff

assemblies 205

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops <100 µl are made from 1/16" OD tubing with brazed or welded 1/8" tube ends.



1/8" Stainless steel loops

for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.

Volume	Prod No	Price	Volume	Prod No	Price
10 µl	SL10UW		250 µl	SL250UW	
15 µl	SL15UW		500 µl	SL500UW	
20 µl	SL20UW		1 ml	SL1KUW	
25 µl	SL25UW		2 ml	SL2KUW	
50 µl	SL50UW		5 ml	SL5KUW	
100 µl	SL100UW		10 ml	SL10KUW	
			20 ml	SL20KUW	

HPLC Injectors

Internal sample injectors, 1/16" fittings, 0.40 mm ports (.016")
0.25 mm column port diameter (.010")

W Type

5,000 psi

Internal sample

1/16" 0.40 mm

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC power supply.



SPECS

5000 psi liq

75°C max

Nitronic 60 valve body
Valcon H rotor

Sample volume

.06 µl

.1 µl

.2 µl

.5 µl

Prod No Price

Prod No Price

Prod No Price

Prod No Price

Manual

CI4W.06

CI4W.1

CI4W.2

CI4W.5

With air actuator

ACI4W.06

ACI4W.1

ACI4W.2

ACI4W.5

With standard electric actuator

ECI4W.06

ECI4W.1

ECI4W.2

ECI4W.5

With microelectric actuator

EPCI4W.06

EPCI4W.1

EPCI4W.2

EPCI4W.5

Replacement valve

DCI4W.06

DCI4W.1

DCI4W.2

DCI4W.5

Replacement rotor

SSACI4W.06

SSACI4W.1

SSACI4W.2

SSACI4W.5

W Type
1/16" fittingsUW Type
1/16" fittings

OPTIONS

■ 2", 3", 4", and 6"
standoffs■ Materials: Hastelloy C,
Inconel 600, Monel 400,
Nickel 200, Nitronic 50,
Titanium, Zirconium
(see pages 254-255)■ 1/32" fittings with
0.25 mm bore (.010")
also available. Consult
factory for product
number and pricing.

Internal sample injectors, 1/16" fittings, 0.75 mm ports (.030")

UW Type

5,000 psi

Internal sample

1/16" 0.75 mm

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC power supply.



SPECS

5000 psi liq

75°C max

Nitronic 60 valve body
Valcon H rotor

Sample volume

.2 µl

.5 µl

1 µl

2 µl

Prod No Price

Prod No Price

Prod No Price

Prod No Price

Manual

CI4UW.2

CI4UW.5

CI4UW.1

CI4UW.2

With air actuator

ACI4UW.2

ACI4UW.5

ACI4UW.1

ACI4UW.2

With standard electric actuator

ECI4UW.2

ECI4UW.5

ECI4UW.1

ECI4UW.2

With microelectric actuator

EDCI4UW.2

EDCI4UW.5

EDCI4UW.1

EDCI4UW.2

Replacement valve

DCI4UW.2

DCI4UW.5

DCI4UW.1

DCI4UW.2

Replacement rotor

SSACI4UW.2

SSACI4UW.5

SSACI4UW.1

SSACI4UW.2

OPTIONS

■ 2", 3", 4", and 6"
standoffs■ Materials: Hastelloy C,
Inconel 600, Monel 400,
Nickel 200, Nitronic 50,
Titanium, Zirconium
(see pages 254-255)■ 1/32" fittings with
0.25 mm bore (.010")
also available. Consult
factory for product
number and pricing.

Injectors and switching valves, 1/16" fittings, 0.40 mm ports (.016")

W Type

SPECS

5000 psi liq
75°C maxNitronic 60 valve body
Valcon H rotor

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC power supply

Sample loops are not
included with valves.
Order separately.

5,000 psi

Analytical

1/16"

0.40 mm

OPTIONS

- 3 and 12 port valves available
- 2", 3", 4", and 6" standoffs
- 1/32" and 1/16" versions available with 0.25 mm (.010") bore
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)



4 Ports

Prod No Price

Manual
With air actuator

C4W

AC4W

With standard electric actuator
With microelectric actuator

EC4W

EPC4W

Replacement valve
Replacement rotor

DC4W

SSAC4W



6 Ports

Prod No Price

C6W

AC6W

EC6W

EPC6W

DC6W

SSAC6W



8 Ports

Prod No Price

C8W

AC8W

EC8W

EPC8W

DC8W

SSAC8W



10 Ports

Prod No Price

C10W

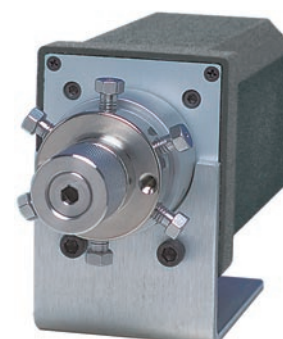
AC10W

EC10W

EPC10W

DC10W

SSAC10W

W Type
1/16" fittings

MORE INFORMATION

Actuators

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Microelectric .. 188-189

Standard elec. 193

Materials

Metals 254-255

Polymers 256

Valve rotors 257

Standoff

assemblies 205

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.

1/16" Stainless steel loops

for W Type valves

Each stainless steel loop includes
two stainless nuts and two stainless ferrules.
Order special fittings separately.

Volume	Prod No	Price	Volume	Prod No	Price
2 µl	SL2CW		100 µl	SL100CW	
5 µl	SL5CW		250 µl	SL250CW	
10 µl	SL10CW		500 µl	SL500CW	
15 µl	SL15CW		1 ml	SL1KCW	
20 µl	SL20CW		2 ml	SL2KCW	
25 µl	SL25CW		5 ml	SL5KCW	
50 µl	SL50CW		10 ml	SL10KCW	

UW Type

1/16" 0.75 mm

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international

Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply

Sample loops are not included with valves. Order separately.

Nitronic 60 valve body
Valcon H rotor



4 Ports

Prod No	Price
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100



6 Ports

Prod No	Price
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100



8 Ports

Prod No	Price
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100



10 Ports

Prod No	Price
1	10
2	20
3	30
4	40
5	50
6	60
7	70
8	80
9	90
10	100

Manual
With air actuator
With standard electric actuator
With microelectric actuator

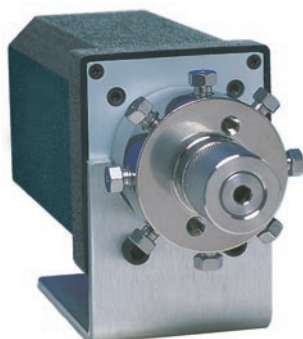
Replacement valve
Replacement rotor

C4UW
AC4UW
EC4UW
EDC4UW
DC4UW
SSAC4UW

C6UW
AC6UW
EC6UW
EDC6UW
DC6UW
SSAC6UW

C8UW
AC8UW
EC8UW
EDC8UW
DC8UW
SSAC8UW

C10UW
AC10UW
EC10UW
EDC10UW
DC10UW
SSAC10UW



**UW Type
1/16" fittings**

for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.



<i>Volume</i>	<i>Prod No</i>	<i>Price</i>
3 µl	SL3CUW	
5 µl	SL5CUW	
10 µl	SL10CUW	
15 µl	SL15CUW	
20 µl	SL20CUW	
25 µl	SL25CUW	
50 µl	SL50CUW	

<i>Volume</i>	<i>Prod No</i>	<i>Price</i>
100 µl	SL100CUW	
250 µl	SL250CUW	
500 µl	SL500CUW	
1 ml	SL1KCUW	
2 ml	SL2KCUW	
5 ml	SL5KCUW	
10 ml	SL10KCUW	

■ Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium

- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.

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Injectors and switching valves, 1/8" fittings, 0.75 mm (.030")

UW Type

SPECS
5000 psi liq
75°C maxNitronic 60 valve body
Valcon H rotorManual 10 port
includes 2" standoff.Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for
international
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supplySample loops are not
included with valves.
Order separately.**5,000 psi****Semi-prep****1/8"****0.75 mm****OPTIONS**

- 3 and 12 port valves available
- 2", 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)
- Larger bore available. (see page 116)

Manual
With air actuator

With standard electric actuator
With microelectric actuatorReplacement valve
Replacement rotor**4 Ports**

Prod No Price

4UW

A4UW

E4UW

ED4UW

D4UW

SSA4UW

**6 Ports**

Prod No Price

6UW

A6UW

E6UW

ED6UW

D6UW

SSA6UW

**8 Ports**

Prod No Price

8UW

A8UW

E8UW

ED8UW

D8UW

SSA8UW

**10 Ports**

Prod No Price

210UW \$720

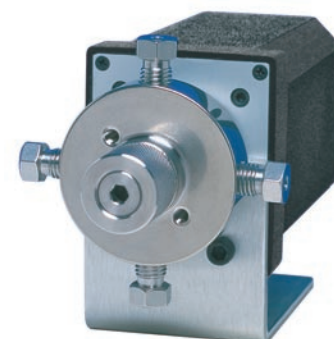
A10UW

E10UW 1200

ED10UW 1430

D10UW

SSA10UW

**UW Type**
1/8" fittings**MORE INFORMATION**

Actuators

Air page 195

Manual.....204

Microelectric .. 188-189

Standard elec.....193

Materials

Metals..... 254-255

Polymers256

Valve rotors.....257

Standoff

assemblies205

ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops < 100 µl are made from 1/16" OD tubing with brazed or welded 1/8" tube ends.

**1/8" Stainless steel loops**

for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.

Volume	Prod No	Price	Volume	Prod No	Price
10 µl	SL10UW		250 µl	SL250UW	
15 µl	SL15UW		500 µl	SL500UW	
20 µl	SL20UW		1 ml	SL1KUW	
25 µl	SL25UW		2 ml	SL2KUW	
50 µl	SL50UW		5 ml	SL5KUW	
100 µl	SL100UW		10 ml	SL10KUW	
			20 ml	SL20KUW	

Preparative HPLC

Injectors and switching valves, 1/8" fittings, large bore

UW Type

5,000 psi

Prep

1/8" Large bore

Manual 10 port
includes 2" standoff.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for
international.

Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply.

Sample loops are not
included with valves.
Order separately.

SPECS

5000 psi liq
75°C max
Nitronic 60 valve body
Valcon H rotor



4 Ports

1.7 mm (.067")

Prod No Price



6 Ports

1.7 mm (.067")

Prod No Price



8 Ports

1.3 mm (.050")

Prod No Price



10 Ports

1.0 mm (.040")

Prod No Price

Manual
With air actuator

With standard electric actuator
With microelectric actuator

Replacement valve
Replacement rotor

L4UW
AL4UW

EL4UW
EDL4UW

DL4UW
SSAL4UW

L6UW
AL6UW

EL6UW
EDL6UW

DL6UW
SSAL6UW

L8UW
AL8UW

EL8UW
EDL8UW

DL8UW
SSAL8UW

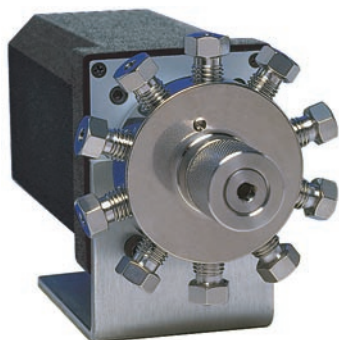
2L10UW
AL10UW

EL10UW
EDL10UW

DL10UW
SSAL10UW

OPTIONS

- 3 port valve available
- 2", 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium, Zirconium (see pages 254-255)
- Smaller bore available. (see page 115)



UW Type
1/8" fittings

MORE INFORMATION

Actuators

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Manual 204
Microelectric .. 188-189
Standard elec. 193

Materials

Metals 254-255
Polymers 256
Valve rotors. 257

Standoff

assemblies 205

1/8" Stainless steel loops for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.

Volume	Prod No	Price	Volume	Prod No	Price
100 µl	SL100UW		2 ml	SL2KUW	
250 µl	SL250UW		5 ml	SL5KUW	
500 µl	SL500UW		10 ml	SL10KUW	
1 ml	SL1KUW		20 ml	SL20KUW	



ABOUT LOOPS

- Other materials available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops < 100 µl are made from 1/16" OD tubing with brazed or welded 1/8" tube ends..

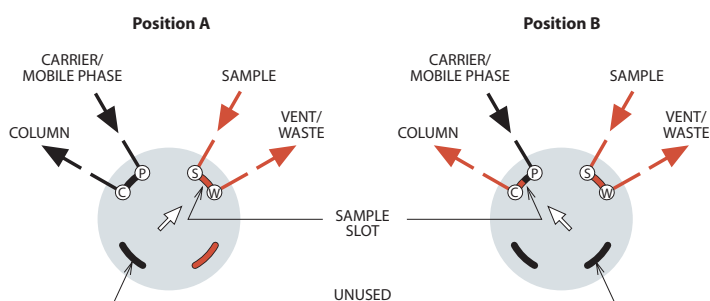
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Two Position Applications

These illustrations show basic sample injection techniques using Valco two position valves. With rare exceptions, there is no difference between switching valves and external volume sampling valves, so the same valve can be used for either function.

The unique advantage of 8 and 10 port valves is that they reduce extra column volume by combining sampling and switching functions in a single valve. This minimizes expense, maintenance, service, and risk of leaks as compared to multiple 6 port valve systems.

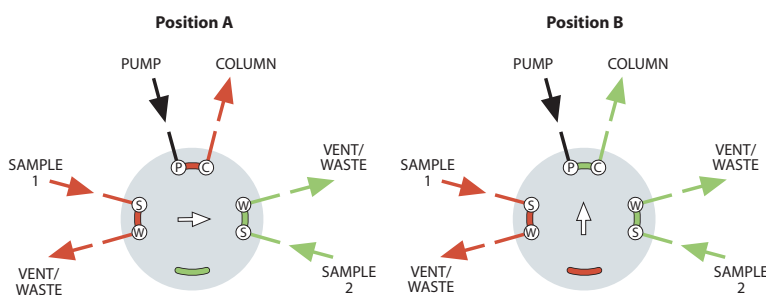
4 port internal sample injector



MICROVOLUME SAMPLE INJECTION

The internal sample (fixed volume) flowpath is used when very small sample volumes are required. The sample size is determined by a passage engraved on the valve rotor, allowing precise, repeatable injections. In Position A, the sample flows through the sample passage while the mobile phase flows through to the column. The third passage is inactive. In Position B, the sample passage is in line with the column and the mobile phase injects the contents of the sample passage onto the column. The passage which was inactive in Position A allows the sample to continue flowing without interruption.

6 port internal sample injector



DUAL MICROVOLUME SAMPLE INJECTION

This microvolume injector can be used to alternate between two different samples. Each time the valve is switched, a sample is injected. By connecting the two sample inlets in series, the valve injects the sample each time the valve switches. This is particularly useful in heavy duty cycle operations to minimize valve wear. The valve can also be used to make alternating injections of the same sample onto two different columns by swapping sample/waste and pump/column connections.

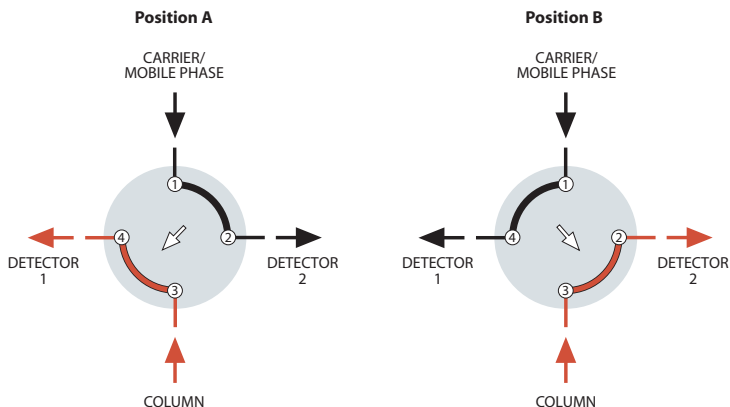
Note: This CI6 valve is not shown in this catalog. Call for details.

Two Position Applications

4 port switching valve

DETECTOR SELECTION FROM TWO COLUMNS OR ONE COLUMN AND AUXILIARY CARRIER

This unique configuration allows analyses of different parts of one analysis with two different detectors, without splitting or multiple injections. For example, fixed gases can be analyzed with a thermal conductivity detector, followed by the analysis of a hydrocarbon fraction with a flame ionization detector.

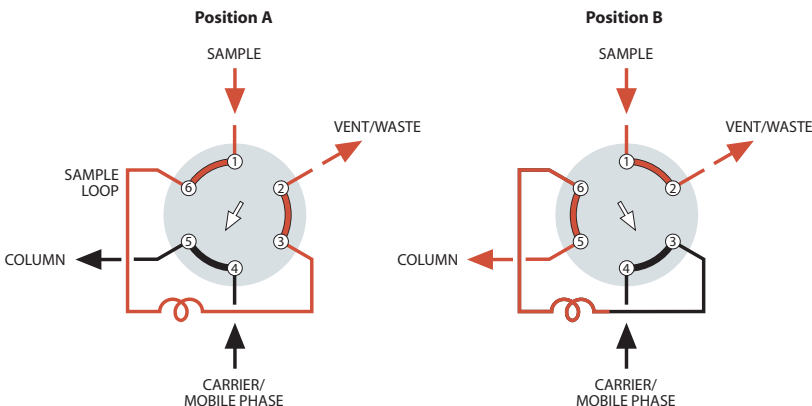


6 port external sample injector

SAMPLE INJECTION

With the valve in Position A, sample flows through the external loop while the mobile phase flows directly through to the chromatographic column. When the valve is switched to Position B, the sample contained in the sample loop and valve flow passage is displaced by the mobile phase and is carried onto the column.

Note: This is especially critical for partially-filled loops. The flow direction of the mobile phase through the loop should be opposite (backflush) to the flow direction during the loading of the loop.

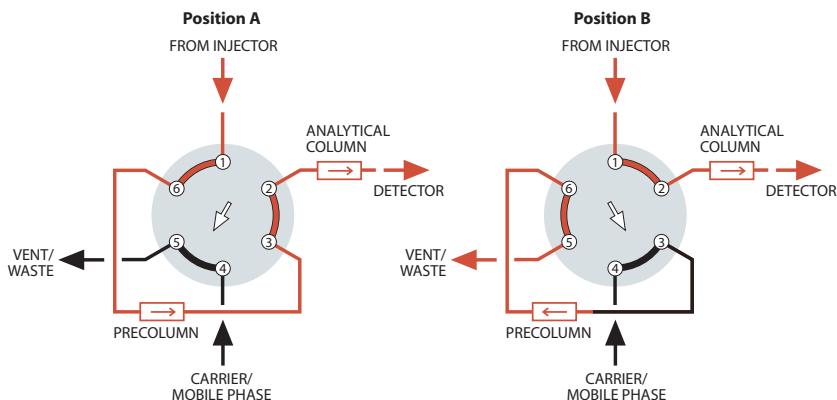


6 port column switching

BACKFLUSH OF PRECOLUMN TO VENT

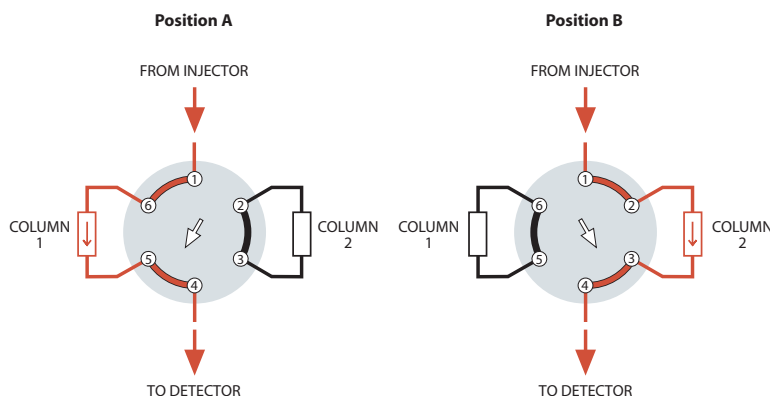
This plumbing scheme allows slower eluting components (end cut) which are not of interest to be backflushed to vent. Often a shorter version of the analytical column is used as the precolumn. Once all the components of interest have entered the main column (at port 2), the valve switches, backflushing the precolumn to vent and reducing analysis time.

Note: An auxiliary source of carrier or mobile phase is required for this application.



Two Position Applications

6 port column selection

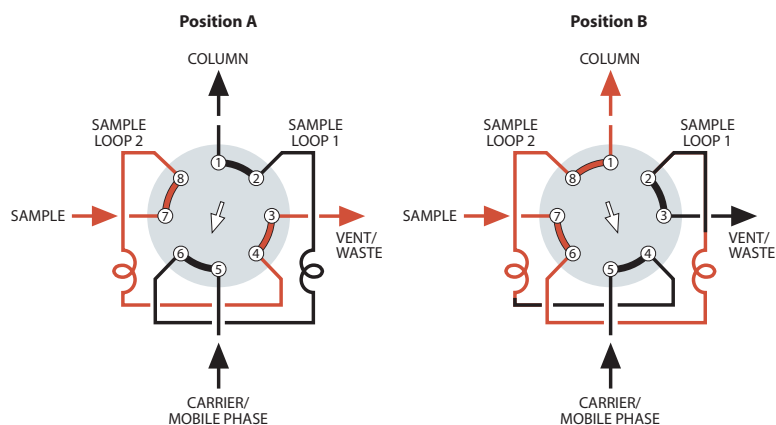


TWO COLUMN SELECTION

When two different columns are required at frequent intervals at similar oven temperatures, a 6 port valve can provide rapid selection of the one to be used. The column not in use is protected by a blanket of inert mobile phase and may be rapidly brought to equilibrium when required.

Note: If flow must be maintained to the non-selected column, an 8 or 10 port valve is required.

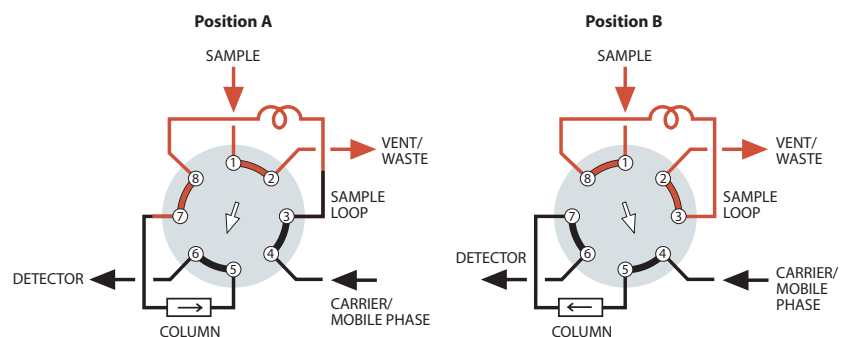
8 port dual external sample injector



SAME SAMPLE TO DIFFERENT LOOPS

In a dual external sample loop configuration, sample is injected in both positions. In Position A, Loop 2 is loaded while the mobile phase flows through Loop 1 and onto the column. In Position B, the Loop 2 sample is injected into the column and another sample is loaded into Loop 1. When the valve is returned to Position A, the Loop 1 sample is injected onto the column and Loop 2 is reloaded.

8 port sampling/switching



LOOP SAMPLING WITH BACKFLUSH TO DETECTOR

One valve functions as both a sampling and a backflush valve, simplifying operation and reducing cost. When components of interest are detected, the strongly retained components are backflushed and removed from the column without temperature programming.

Two Position Applications

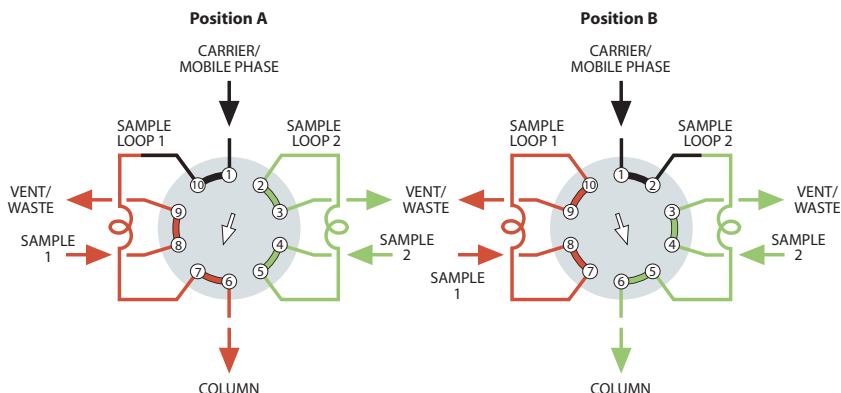
10 port dual external sampling

TWO DIFFERENT SAMPLES TO SAME COLUMN

A 10 port valve permits alternate injections from the two loops, which may be identical or of different sizes. This technique replaces a 4 port sample selector and a 6 port sample injector.

In Position A, Loop 2 is loaded with sample 2 while the mobile phase flows through Loop 1 and onto the column.

In Position B, the Loop 2 sample is injected onto the column and Loop 1 is loaded with sample 1. When the valve is returned to Position A, the Loop 1 sample is injected onto the column and Loop 2 is reloaded with sample 2.

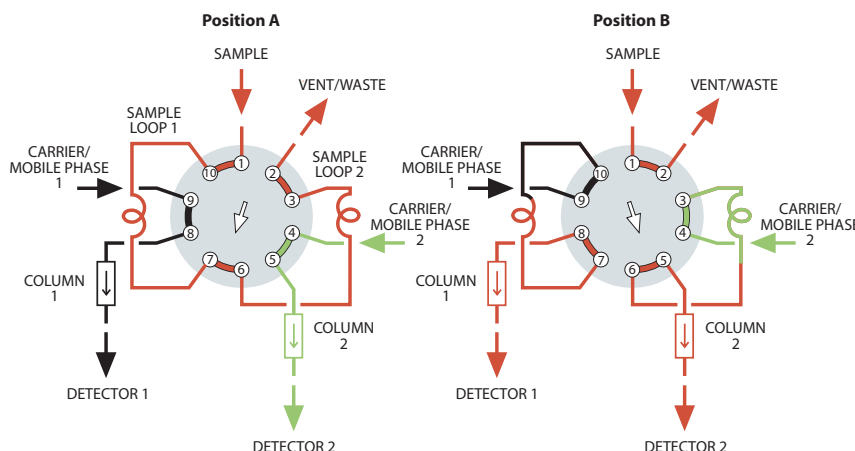


10 port dual external sampling

SIMULTANEOUS INJECTION OF THE SAME SAMPLE ONTO SEPARATE COLUMNS

In Position A, sample fills the two loops in series. In Position B, the sample is simultaneously injected into two separate flow systems. A single autosampler used with this flowpath can automate two analytical procedures for the same sample.

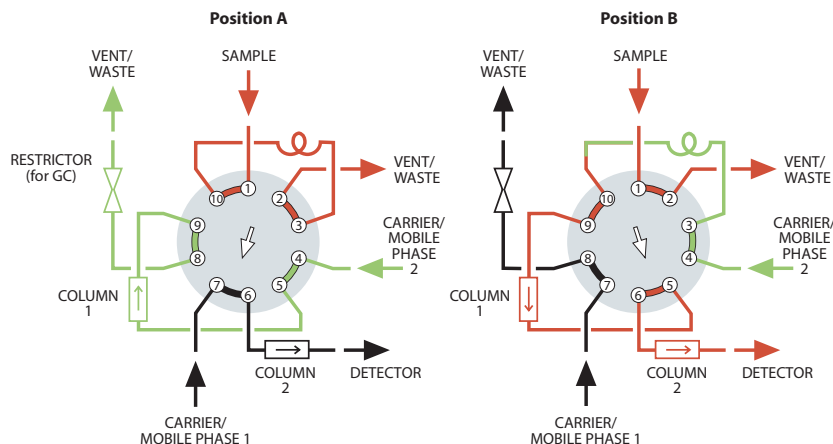
In an important non-chromatographic application, the roles of carrier and sample are reversed, permitting two different quantities of two different materials to be dispensed together, as in automatic dilution.



10 port sampling/switching

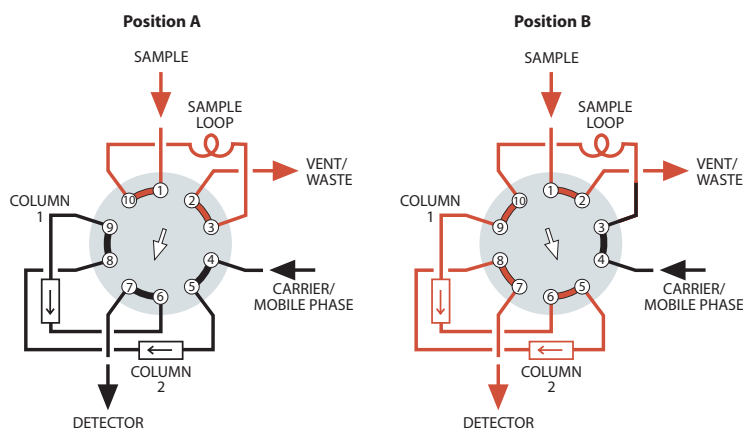
LOOP SAMPLING WITH BACKFLUSH OF PRE-COLUMN TO VENT

When components of interest have low boiling points, this plumbing scheme allows "heavy" components with long retention times to be backflushed to waste. After the sample loop is loaded in Position A, the valve is switched to Position B to inject the sample onto column 2. As soon as all components of interest have entered column 2, the valve is switched back to Position A. Column 1 is backflushed to vent during the analysis, reducing the total analysis time.



Two Position Applications

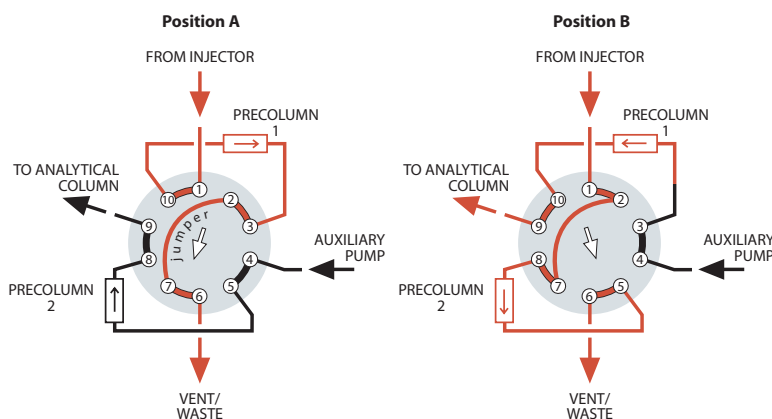
10 port sampling/switching



LOOP SAMPLING WITH TWO COLUMN SEQUENCE REVERSAL

This is ideal for fixed-gas-from- CO_2 analysis where no "high boilers" are present. Column 1 is packed with a porous polymer and Column 2 with molecular sieve. The sample loop is loaded in Position A. When the valve is switched, the loop contents are sent onto Column 1. As the inorganic gases and methane leave Column 1 and enter Column 2, the valve is returned to Position A, reversing the column sequence. CO_2 now leaves Column 1, becoming the first peak. The inorganics and methane are separated by the molecular sieve and pass through the porous polymer column to the detector.

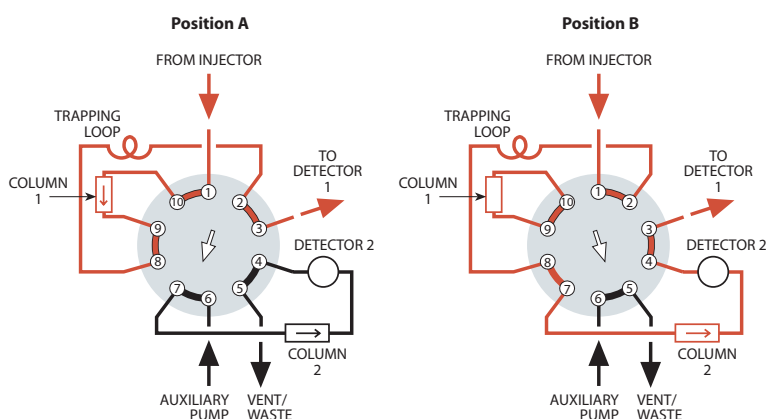
10 port column switching



SAMPLE ENRICHMENT (CLEANUP) USING DUAL PRECOLUMNS

Sample is injected by a separate injector onto one of two precolumns (stripper). Early eluting components vent at port 6 while components of interest are retained on the stripper. When the valve is switched, a new injection is made onto the second stripper while components retained on the first stripper are backflushed onto the analytical column at port 9. *Note:* This application requires an auxiliary pump at port 4.

10 port column switching



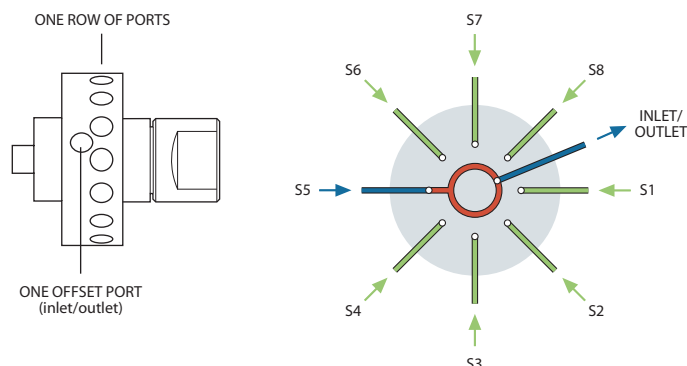
HEART CUT TRAPPED IN A LOOP AND INJECTED ONTO A SECOND COLUMN

Sample is injected (using a separate injector) onto an analytical column. Early eluting components (front cut) pass through a trapping loop and are detected (at port 3). The valve is then switched, and the center (or heartcut) which was retained in the trapping loop is injected onto the second column to the detector (at port 4). Late eluting components (end cut) are trapped on the first column. When the valve is switched again, the end cut passes through the trapping loop to the first detector, completing the analysis.

Selectors – Low Pressure

Dead-end flowpath –
SD configuration

SD valves select one of 4 to 16 dead-ended streams. The selected stream flows from the outlet to a sample valve, pressure sensor, detector, column, etc. The same flowpath can also be used to direct one stream to a number of outlets in applications such as fraction collection. For an application suggestion, see page 134.



1/16" fittings, 0.75 mm ports (.030")

MW Type

Low pressure

SD
Dead-end

1/16" 0.75 mm

Includes 2" standoff.
Ask about closemount
assembly if valve will
not be heated.

Standard electric actuators:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international
Microelectric actuators:
24 VDC (includes a 110/230 VAC to 24 VDC power supply)

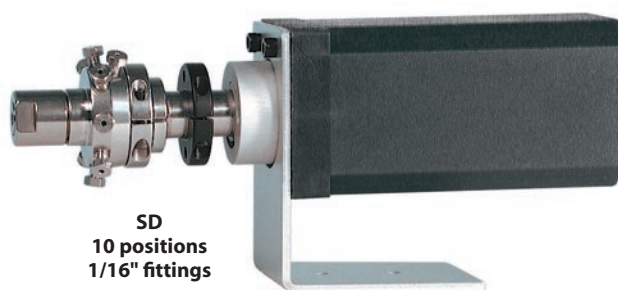
SPECS

400 psi gas
200°C max
Nitronic 60 body
Valcon E rotor

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available except 16 position

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2CSD6MWE		2CSD10MWE		2CSD12MWE		2CSD16MWE	
With air actuator	A2CSD6MWE		A2CSD10MWE		A2CSD12MWE		A2CSD16MWE	
With standard electric actuator	E2CSD6MWE		E2CSD10MWE		E2CSD12MWE		E2CSD16MWE	
With microelectric actuator	EMT2CSD6MWE		EMT2CSD10MWE		EMT2CSD12MWE		EMT2CSD16MWE	
Replacement valve	DCSD6MWE		DCSD10MWE		DCSD12MWE		DCSD16MWE	
Replacement rotor	SSACSD6MWE		SSACSD10MWE		SSACSD12MWE		SSACSD16MWE	



SD
10 positions
1/16" fittings

MORE INFORMATION

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Air194
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Selectors – Low Pressure

1/8" fittings, 1.0 mm ports (.040")

MW Type

SPECS

4-8 Positions:
400 psi gas
200°C max
 10-16 Positions:
200 psi gas
200°C max
 Nitronic 60 body
 Valcon E rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve will
 not be heated.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC power supply)

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available

Low pressure

SD
Dead-end

1/8"

1.0 mm

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2SD6MWE		2SD10MWE		2SD12MWE		2SD16MWE	
With air actuator	A2SD6MWE		A2SD10MWE		A2SD12MWE		A2SD16MWE	
With standard electric actuator	E2SD6MWE		E2SD10MWE		E2SD12MWE		E2SD16MWE	
With microelectric actuator	EMT2SD6MWE		EMT2SD10MWE		EMT2SD12MWE		EMT2SD16MWE	
Replacement valve	DSD6MWE		DSD10MWE		DSD12MWE		DSD16MWE	
Replacement rotor	SSASD6MWE		SSASD10MWE		SSASD12MWE		SSASD16MWE	

1/4" fittings, 4.0 mm ports (.156")

MW Type

SPECS

100 psi gas
75°C max
 Nitronic 60 body
 Valcon E2 rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve
 will not be heated.

Manual version not
 available.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC
 power supply)

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

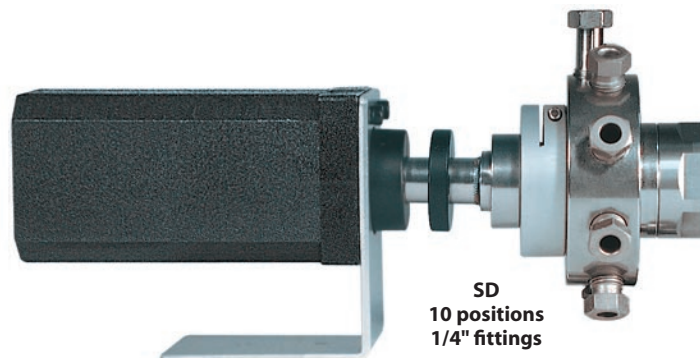
Low pressure

SD
Dead-end

1/4"

4.0 mm

	4 Position		6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
With air actuator	AH2VLS4MWE2		AH2VLS6MWE2		AH2VLS8MWE2		AH2VLS10MWE2	
With std electric actuator	E2VLS4MWE2		E2VLS6MWE2		E2VLS8MWE2		E2VLS10MWE2	
With microelectric actuator	EMT2VLS4MWE2		EMT2VLS6MWE2		EMT2VLS8MWE2		EMT2VLS10MWE2	
Replacement valve	DVLS4MWE2		DVLS6MWE2		DVLS8MWE2		DVLS10MWE2	
Replacement rotor	SSAVLS4MWE2		SSAVLS6MWE2		SSAVLS8MWE2		SSAVLS10MWE2	

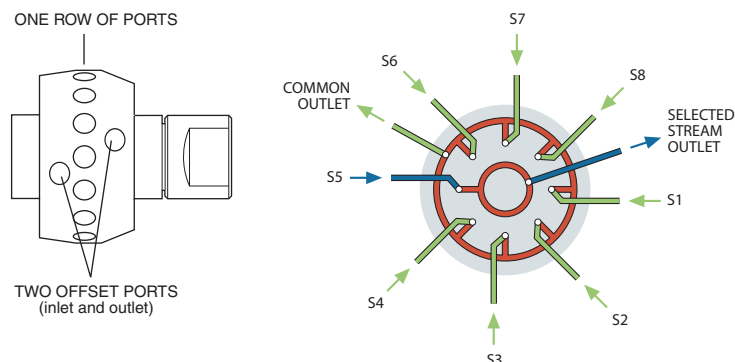


SD
 10 positions
 1/4" fittings

Selectors – Low Pressure

Common outlet flowpath –
SC configuration

SC selectors are similar to the SD configuration, except that instead of being dead-ended the non-selected streams flow to a common outlet. For an application suggestion, see page 135.



1/16" fittings, 1.0 mm ports (.040")

MW Type

Low pressure

SC
Common outlet

1/16"

1.0 mm

Includes 2" standoff.
Ask about closemount
assembly if valve will
not be heated.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

200 psi gas

200°C max

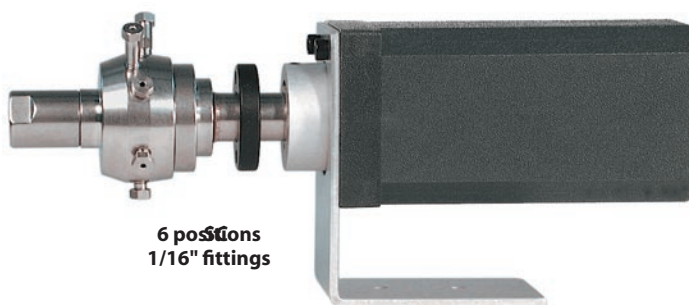
Nitronic 60 body

Valcon E rotor

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2CSC6MWE		2CSC10MWE		2CSC12MWE		2CSC16MWE	
With air actuator	A2CSC6MWE		A2CSC10MWE		A2CSC12MWE		A2CSC16MWE	
With standard electric actuator	E2CSC6MWE		E2CSC10MWE		E2CSC12MWE		E2CSC16MWE	
With microelectric actuator	EMT2CSC6MWE		EMT2CSC10MWE		EMT2CSC12MWE		EMT2CSC16MWE	
Replacement valve	DCSC6MWE		DCSC10MWE		DCSC12MWE		DCSC16MWE	
Replacement rotor	SSACSC6MWE		SSACSC10MWE		SSACSC12MWE		SSACSC16MWE	



6 positions
1/16" fittings

MORE INFORMATION

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Actuators

Air194

Microelectric . . 190-191

Standard elec. . . .193

Materials

Metals. 254-255

Polymers256

Valve rotors.257

Mounting hardware

Closemount208

Standoff.205

1/8" fittings, 1.0 mm ports (.040")

MW Type

SPECS

200 psi gas
200°C max
 Nitronic 60 body
 Valcon E rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve will
 not be heated.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC power supply)

Low pressure

SC
Common outlet

1/8"

1.0 mm

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available except 16 position

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2SC6MWE		2SC10MWE		2SC12MWE		2SC16MWE	
With air actuator	A2SC6MWE		A2SC10MWE		A2SC12MWE		A2SC16MWE	
With standard electric actuator	E2SC6MWE		E2SC10MWE		E2SC12MWE		E2SC16MWE	
With microelectric actuator	EMT2SC6MWE		EMT2SC10MWE		EMT2SC12MWE		EMT2SC16MWE	
Replacement valve	DSC6MWE		DSC10MWE		DSC12MWE		DSC16MWE	
Replacement rotor	SSASC6MWE		SSASC10MWE		SSASC12MWE		SSASC16MWE	

1/4" fittings, 4.0 mm ports (.156")

MW Type

SPECS

100 psi gas
75°C max
 Nitronic 60 body
 Valcon E2 rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve
 will not be heated.

Manual version not
 available.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC
 power supply)

Low pressure

SC
Common outlet

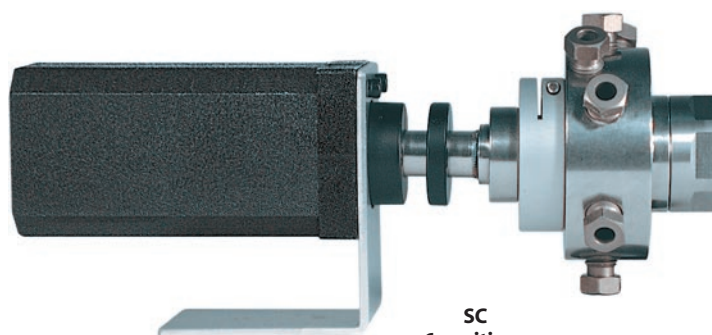
1/4"

4.0 mm

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

	4 Position		6 Position		8 Position	
	Prod No	Price	Prod No	Price	Prod No	Price
With air actuator	AH2VLSC4MWE2		AH2VLSC6MWE2		AH2VLSC8MWE2	
With std electric actuator	E2VLSC4MWE2		E2VLSC6MWE2		E2VLSC8MWE2	
With microelectric actuator	EMT2VLSC4MWE2		EMT2VLSC6MWE2		EMT2VLSC8MWE2	
Replacement valve	DVLSC4MWE2		DVLSC6MWE2		DVLSC8MWE2	
Replacement rotor	SSAVLSC4MWE2		SSAVLSC6MWE2		SSAVLSC8MWE2	



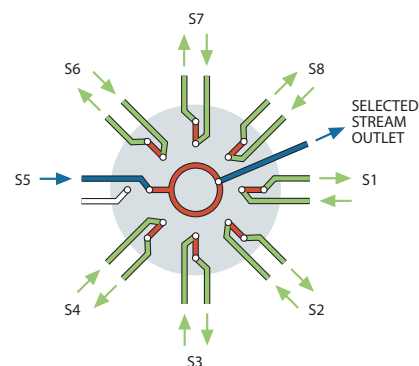
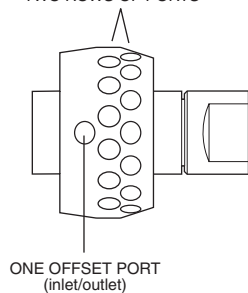
SC
 6 positions
 1/4" fittings

Selectors – Low Pressure

Flow-through flowpath – SF configuration

SD and SC valves select and isolate one of 4 to 16 streams, with the remainder dead-ended in the SD and flowing to a common outlet in the SC. The SF selector is similar, but carries the evolution a step further with the non-selected streams flowing through individual outlets. For an application suggestion, see page 136.

TWO ROWS OF PORTS



1/16" fittings, 1.0 mm ports (.040")

MW Type

Low pressure

SF
Flow-through

1/16" 1.0 mm

Includes 2" standoff.
Ask about closemount assembly if valve will not be heated.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

200 psi gas

200°C max

Nitronic 60 body

Valcon E rotor

OPTIONS

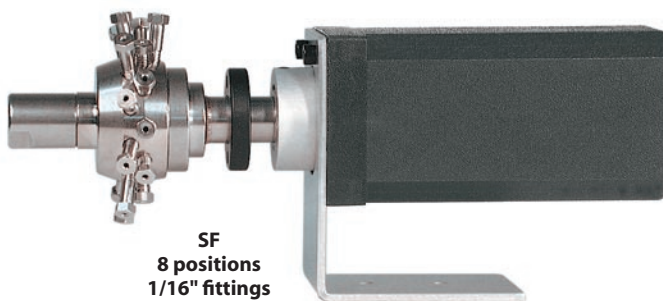
■ 4 and 8 positions available

■ 3", 4", and 6" standoffs

■ Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages

254-255)

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2CSF6MWE		2CSF10MWE		2CSF12MWE		2CSF16MWE	
With air actuator	A2CSF6MWE		A2CSF10MWE		A2CSF12MWE		A2CSF16MWE	
With standard electric actuator	E2CSF6MWE		E2CSF10MWE		E2CSF12MWE		E2CSF16MWE	
With microelectric actuator	EMT2CSF6MWE		EMT2CSF10MWE		EMT2CSF12MWE		EMT2CSF16MWE	
Replacement valve	DCSF6MWE		DCSF10MWE		DCSF12MWE		DCSF16MWE	
Replacement rotor	SSACSF6MWE		SSACSF10MWE		SSACSF12MWE		SSACSF16MWE	



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Actuators

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Microelectric .. 190-191

Standard elec.....193

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Metals..... 254-255

Polymers256

Valve rotors.....257

Mounting hardware

Closemount208

Standoff.....205

1/8" fittings, 1.0 mm ports (.040")

MW Type

SPECS
200 psi gas
200°C max
 Nitronic 60 body
 Valcon E rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve will
 not be heated.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC power supply)

Low pressure

SF
Flow-through

1/8"

1.0 mm

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available except 16 position

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2SF6MWE		2SF10MWE		2SF12MWE		2SF16MWE	
With air actuator	A2SF6MWE		A2SF10MWE		A2SF12MWE		A2SF16MWE	
With standard electric actuator	E2SF6MWE		E2SF10MWE		E2SF12MWE		E2SF16MWE	
With microelectric actuator	EMT2SF6MWE		EMT2SF10MWE		EMT2SF12MWE		EMT2SF16MWE	
Replacement valve	DSF6MWE		DSF10MWE		DSF12MWE		DSF16MWE	
Replacement rotor	SSASF6MWE		SSASF10MWE		SSASF12MWE		SSASF16MWE	

1/4" fittings, 4.0 mm ports (.156")

MW Type

SPECS
100 psi gas
75°C max
 Nitronic 60 body
 Valcon E2 rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve will
 not be heated.

Manual version is not
 available.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC
 power supply)

Low pressure

SF
Flow-through

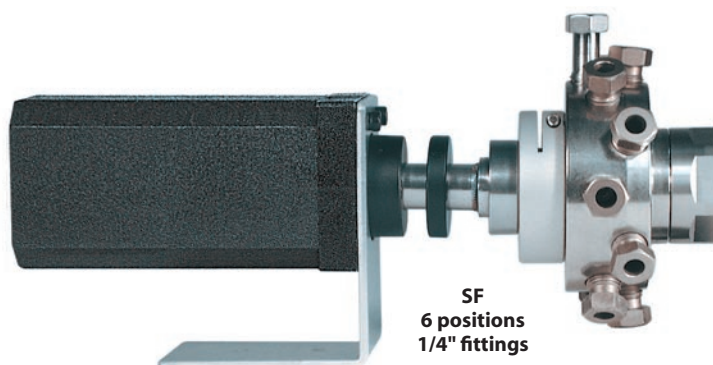
1/4"

4.0 mm

OPTIONS

- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

	4 Position		6 Position		8 Position	
	Prod No	Price	Prod No	Price	Prod No	Price
With air actuator	AH2VLSF4MWE2		AH2VLSF6MWE2		AH2VLSF8MWE2	
With std electric actuator	E2VLSF4MWE2		E2VLSF6MWE2		E2VLSF8MWE2	
With microelectric actuator	EMT2VLSF4MWE2		EMT2VLSF6MWE2		EMT2VLSF8MWE2	
Replacement valve	DVLSF4MWE2		DVLSF6MWE2		DVLSF8MWE2	
Replacement rotor	SSAVLSF4MWE2		SSAVLSF6MWE2		SSAVLSF8MWE2	

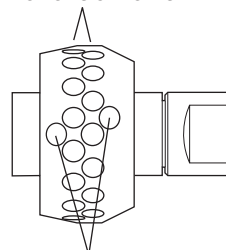
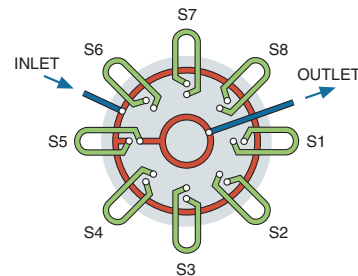


Selectors – Low Pressure

Trapping flowpath –
ST configuration

ST selectors are used for multi-column, multi-sample, or multi-trap operations, and are available for use with 4 to 16 loops, or positions. For an application suggestion, see page 137.

TWO ROWS OF PORTS

TWO OFFSET PORTS
(inlet and outlet)

1/16" fittings, 0.75 mm ports (.030")

MW Type

Low pressure

ST
Trapping

1/16"

0.75 mm

Includes 2" standoff.
Ask about closomount
assembly if valve will
not be heated.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

200 psi gas

200°C max

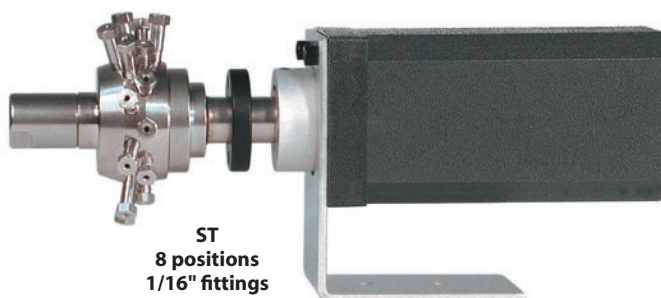
Nitronic 60 body

Valcon E rotor

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2CST6MWE		2CST10MWE		2CST12MWE		2CST16MWE	
With air actuator	A2CST6MWE		A2CST10MWE		A2CST12MWE		A2CST16MWE	
With standard electric actuator	E2CST6MWE		E2CST10MWE		E2CST12MWE		E2CST16MWE	
With microelectric actuator	EMT2CST6MWE		EMT2CST10MWE		EMT2CST12MWE		EMT2CST16MWE	
Replacement valve	DCST6MWE		DCST10MWE		DCST12MWE		DCST16MWE	
Replacement rotor	SSACST6MWE		SSACST10MWE		SSACST12MWE		SSACST16MWE	



1/16" Stainless steel loops

for MW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately. When a set of loops is ordered, loops will be supplied from the same lot.

Volume	Prod No	Price	Volume	Prod No	Price
50 µl	SL50CSTP		1 ml	SL1KCSTP	
100 µl	SL100CSTP		2 ml	SL2KCSTP	
250 µl	SL250CSTP		5 ml	SL5KCSTP	
500 µl	SL500CSTP		10 ml	SL10KCSTP	



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1/8" fittings, 1.0 mm ports (.040")

MW Type

SPECS**200 psi gas****200°C max**Nitronic 60 body
Valcon E rotorIncludes 2" standoff.
Ask about closemount
assembly if valve will
not be heated.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

Low pressure

ST
Trapping

1/8"

1.0 mm

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available except 16 position

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2ST6MWE		2ST10MWE		2ST12MWE		2ST16MWE	
With air actuator	A2ST6MWE		A2ST10MWE		A2ST12MWE		A2ST16MWE	
With standard electric actuator	E2ST6MWE		E2ST10MWE		E2ST12MWE		E2ST16MWE	
With microelectric actuator	EMT2ST6MWE		EMT2ST10MWE		EMT2ST12MWE		EMT2ST16MWE	
Replacement valve	DST6MWE		DST10MWE		DST12MWE		DST16MWE	
Replacement rotor	SSAST6MWE		SSAST10MWE		SSAST12MWE		SSAST16MWE	

ABOUT LOOPS

- Other materials are available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- 1/16" loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.
- 1/8" loops < 100 µl are made from 1/16" OD tubing with brazed or welded 1/8" tube ends.

**1/8" Stainless steel loops**

for MW Type valves

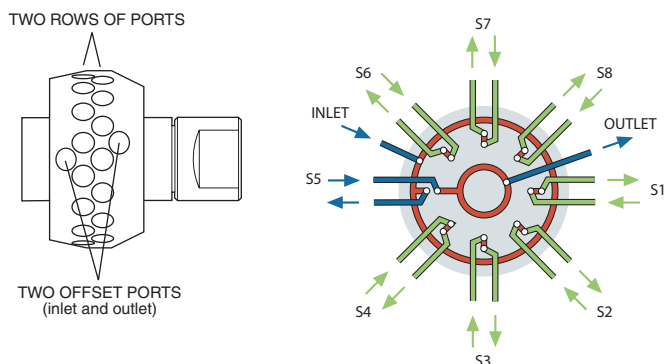
Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately. When a set of loops is ordered, loops will be supplied from the same lot.

Volume	Prod No	Price	Volume	Prod No	Price
100 µl	SL100STP		1 ml	SL1KSTP	
250 µl	SL250STP		2 ml	SL2KSTP	
500 µl	SL500STP		5 ml	SL5KSTP	
			10 ml	SL10KSTP	

Selectors – Low Pressure

Trapping/flow-through flowpath – STF configuration

The STF selector is a variation of the ST flowpath, with the single difference that the non-selected streams are returned to their own vents or sources rather than being dead-ended or trapped as they are in the standard ST configuration. For an application suggestion, see page 138.



1/16" fittings, 0.75 mm ports (.030")

MW Type

Low pressure

Includes 2" standoff.
Ask about closemount
assembly if valve will
not be heated.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

200 psi gas

200°C max

Nitronic 60 body

Valcon E rotor

STF
Trap/ flow-throw

1/16"

0.75 mm

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)

	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2CSTF6MWE		2CSTF10MWE		2CSTF12MWE		2CSTF16MWE	
With air actuator	A2CSTF6MWE		A2CSTF10MWE		A2CSTF12MWE		A2CSTF16MWE	
With standard elec actuator	E2CSTF6MWE		E2CSTF10MWE		E2CSTF12MWE		E2CSTF16MWE	
With microelectric actuator	EMT2CSTF6MWE		EMT2CSTF10MWE		EMT2CSTF12MWE		EMT2CSTF16MWE	
Replacement valve	DCSTF6MWE		DCSTF10MWE		DCSTF12MWE		DCSTF16MWE	
Replacement rotor	SSACSTF6MWE		SSACSTF10MWE		SSACSTF12MWE		SSACSTF16MWE	

MORE INFORMATION

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Closemount208

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1/8" fittings, 1.0 mm ports (.040")

MW Type

SPECS
200 psi gas
200°C max
 Nitronic 60 body
 Valcon E rotor

Includes 2" standoff.
 Ask about closemount
 assembly if valve will
 not be heated.

Standard electric actuators:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international
 Microelectric actuators:
 24 VDC (includes a 110/230 VAC to 24 VDC power supply)

Low pressure

STF
Trap/ flow-throw

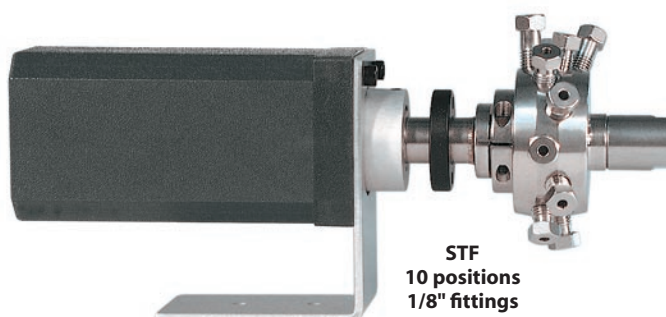
1/8"

1.0 mm

OPTIONS

- 4 and 8 positions available
- 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Larger bore available except 16 position

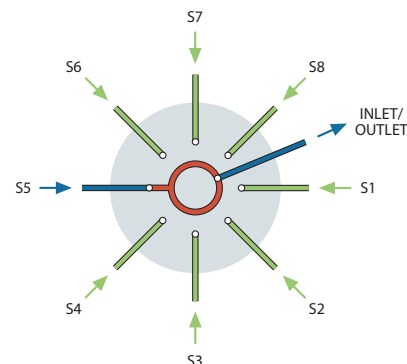
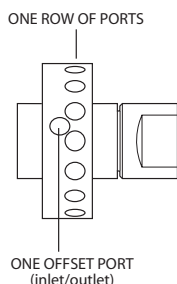
	6 Position		10 Position		12 Position		16 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual (not recommended)	2STF6MWE		2STF10MWE		2STF12MWE		2STF16MWE	
With air actuator	A2STF6MWE		A2STF10MWE		A2STF12MWE		A2STF16MWE	
With standard elec actuator	E2STF6MWE		E2STF10MWE		E2STF12MWE		E2STF16MWE	
With microelectric actuator	EMT2STF6MWE		EMT2STF10MWE		EMT2STF12MWE		EMT2STF16MWE	
Replacement valve	DSTF6MWE		DSTF10MWE		DSTF12MWE		DSTF16MWE	
Replacement rotor	SSASTF6MWE		SSASTF10MWE		SSASTF12MWE		SSASTF16MWE	



Selectors – High Pressure

Dead-end flowpath –
SD configuration

SD valves select one of 4 to 16 dead-ended streams. The selected stream flows from the valve outlet to a sample valve, pressure sensor, detector, column, etc. This configuration may also be used to direct one stream to a number of outlets for applications such as fraction collection. For an application suggestion, see page 139.



1/16" fittings, 0.4 mm ports (.016")

UW Type

5,000 psi

SD
Dead-end

1/16" 0.40 mm

Standard electric actuators:

110 VAC for USA;

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

5000 psi

75°C max

Nitronic 60 body

Valcon E rotor

OPTIONS

- 8 and 12 positions available
- 2", 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Low pressure, high temperature versions available
- Larger bore available except 10 and 12 positions

4 Position

Prod No Price

6 Position

Prod No Price

10 Position

Prod No Price

Manual (not recommended)

CSD4UW

CSD6UW

CSD10UW

With air actuator

ACSD4UW

ACSD6UW

ACSD10UW

With standard electric actuator

ECSD4UW

ECSD6UW

ECSD10UW

With microelectric actuator

EMTCS4UW

EMTCS6UW

EMTCS10UW

Replacement valve

DCSD4UW

DCSD6UW

DCSD10UW

Replacement rotor

SSACSD4UW

SSACSD6UW

SSACSD10UW

1/8" fittings, 0.75 mm ports (.030")

UW Type

5,000 psi

SD
Dead-end

1/8" 0.75 mm

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply)

SPECS

5000 psi liq

75°C max

Nitronic 60 body

Valcon E rotor

OPTIONS

- 2", 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see page 254-255)
- Low pressure, high temperature versions available
- Larger bore available except 8 position

4 Position

Prod No Price

6 Position

Prod No Price

8 Position

Prod No Price

Manual (not recommended)

SD4UW

SD6UW

SD8UW

With air actuator

ASD4UW

ASD6UW

ASD8UW

With standard electric actuator

ESD4UW

ESD6UW

ESD8UW

With microelectric actuator

EMTSD4UW

EMTSD6UW

EMTSD8UW

Replacement valve

DSD4UW

DSD6UW

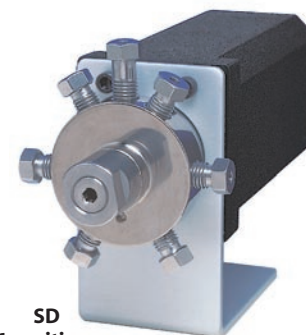
DSD8UW

Replacement rotor

SSASD4UW

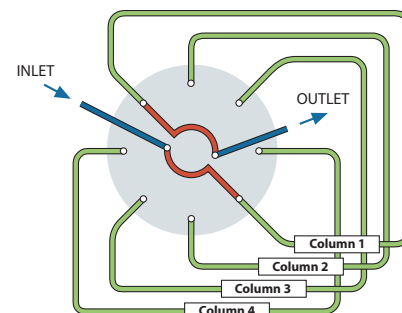
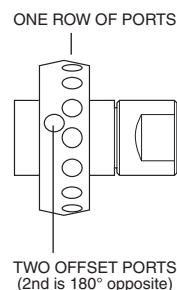
SSASD6UW

SSASD8UW

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Both column ends selected – ST configuration

ST selectors are used for multi-column, multi-sample, or multi-trap operations. This valve can be used between an injector and detector to permit manual or automated HPLC column selection. For an application suggestion, see page 139.



1/16" fittings, 0.4 mm ports (.016")

UW Type

SPECS
5000 psi liq
75°C max
Nitronic 60 body
Valcon E rotor

Manual versions are not available.

Standard electric actuators:

110 VAC for USA

110/230 VAC to 24 VDC power supply for international

Microelectric actuators:

24 VDC (includes a 110/230 VAC to 24 VDC power supply).

5,000 psi

ST
Trapping

1/16" 0.40 mm

OPTIONS

- 2", 3", 4", and 6" standoffs
- Materials: Hastelloy C, Inconel 600, Monel 400, Nickel 200, Nitronic 50, Titanium (see pages 254-255)
- Low pressure, high temperature versions available. (Consult factory.)

	4 Columns or Loops		6 Columns or Loops	
	Prod No	Price	Prod No	Price
With air actuator	ACST4UW		ACST6UW	
With standard electric actuator	ECST4UW		ECST6UW	
With microelectric actuator	EMTCST4UW		EMTCST6UW	
Replacement valve	DCST4UW		DCST6UW	
Replacement rotor	SSACST4UW		SSACST6UW	



ST
4 position
1/16" fittings

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Standard elec.....193

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Mounting hardware

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Standoff.....205

ABOUT LOOPS

- Other materials are available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, PEEK, PTFE, and Titanium
- Loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.



1/16" Stainless steel loops

for UW Type valves

Each stainless steel loop includes two stainless nuts and two stainless ferrules. Order special fittings separately.

When a set of loops is ordered, loops will be supplied from the same lot.

Volume	Prod No	Price	Volume	Prod No	Price
10 µl	SL10CSTUW		250 µl	SL250CSTUW	
15 µl	SL15CSTUW		500 µl	SL500CSTUW	
20 µl	SL20CSTUW		1 ml	SL1KCSTUW	
25 µl	SL25CSTUW		2 ml	SL2KCSTUW	
50 µl	SL50CSTUW		5 ml	SL5KCSTUW	
100 µl	SL100CSTUW		10 ml	SL10KCSTUW	

Selector Applications

SD flowpath — low pressure

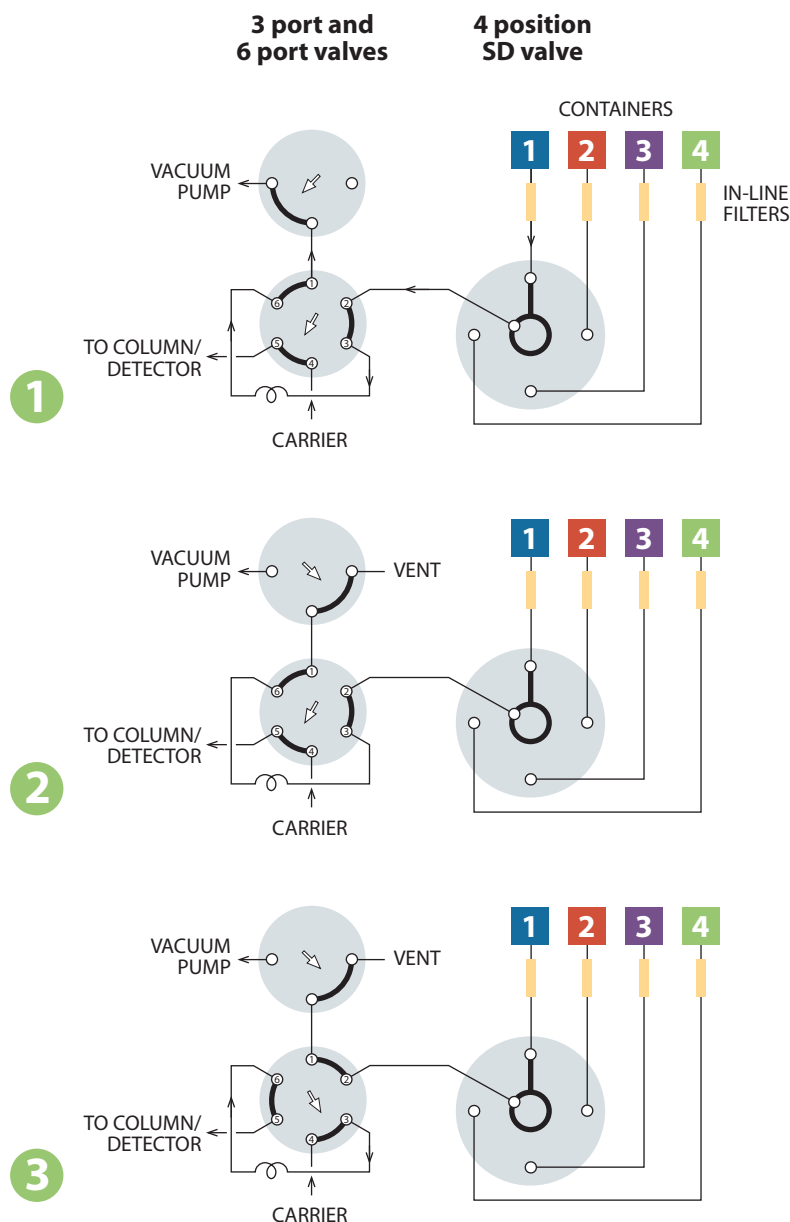
STREAM SELECTION WITH DEAD-ENDED STREAMS

SD valves select one of 4 to 16 dead-ended streams. The selected stream flows from the valve outlet to a sample valve, pressure sensor, detector, column, etc. The same configuration may also be used to direct one stream to a number of outlets for applications such as fraction collection.

This example illustrates automated sampling of non-pressurized containers.

1 A vacuum pump is used to move sample from the containers to a 6 port sampling valve. 2 The 3 port valve is used to block the vacuum flow through the sampling valve to allow the sample within the loop to equilibrate at atmospheric pressure. 3 The 6 port valve is then switched, injecting the sample. This method eliminates any possible effect from pressure differences among the containers, providing accurate and repeatable results. All three valves can be automated with air or electric actuators for unattended operation.

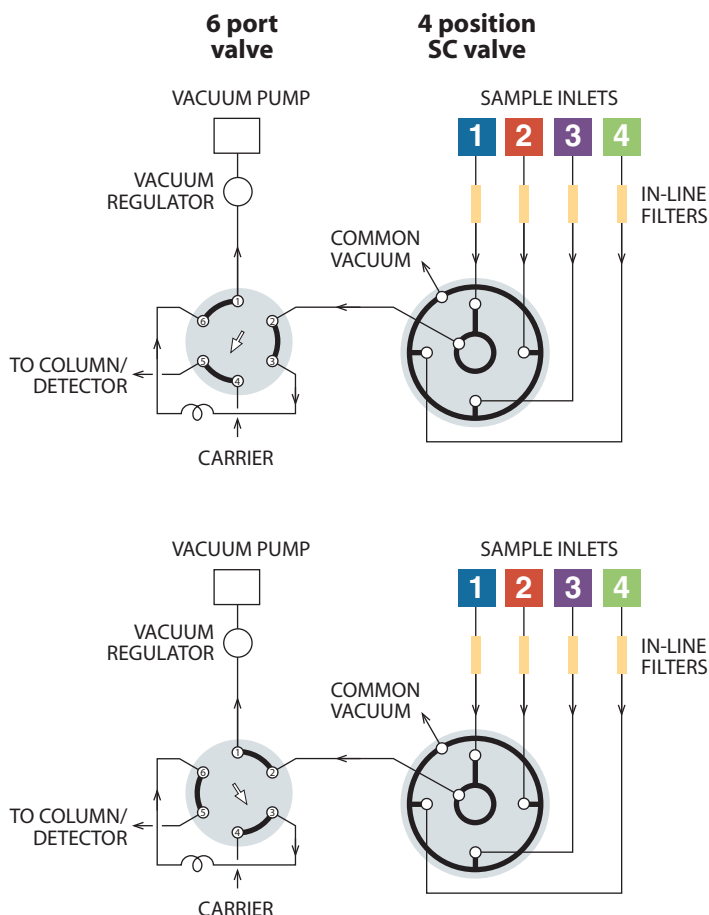
The SD flowpath isolates the unselected sample streams, but the potential exists for extraneous sample or contaminants to be in the lines when containers are first connected. To avoid problems, either prepurge each line or allow sufficient sampling time for the line to purge prior to injection.



MORE INFORMATION

SD prices
 Low pressure .. 122-123
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 High pressure SD ...139

SC flowpath



STREAM SELECTION WITH CONTINUOUS FLOW TO A COMMON OUTLET

SC selectors are similar to the SD configuration, except that instead of being dead-ended the non-selected streams flow to a common outlet. They are also available in 4, 6, 8, 10, 12, or 16 position versions.

The SC configuration is ideal for air quality monitoring, illustrated in this example.

The application is essentially the same as the one shown for the SD selectors on the previous page, except that the non-selected streams are continuously pulled through the valve, insuring that the most current sample will be provided as each point is selected for analysis. ① The sample loop on the 6 port valve is loaded from Stream 1. ② The 6 port valve is switched, injecting the sample. Both valves can be automated with air or electric actuators for unattended operation.

Because the most common cause of valve failure is stray particulates entering the valve, we strongly recommend the use of in-line filters at sample entry points.

Our ZUFR filters feature inexpensive and easily replaceable low pressure drop filter screens (2 or 10 micron). The filters are available in 1/16", 1/8", and 1/4" standard, reducing, and bulkhead versions.

Filters pages 52

MORE INFORMATION

Actuators

Air page 194

Microelectric .. 190-193

Standard elec.....

SC prices..... 124-125

Selector Applications

SF flowpath

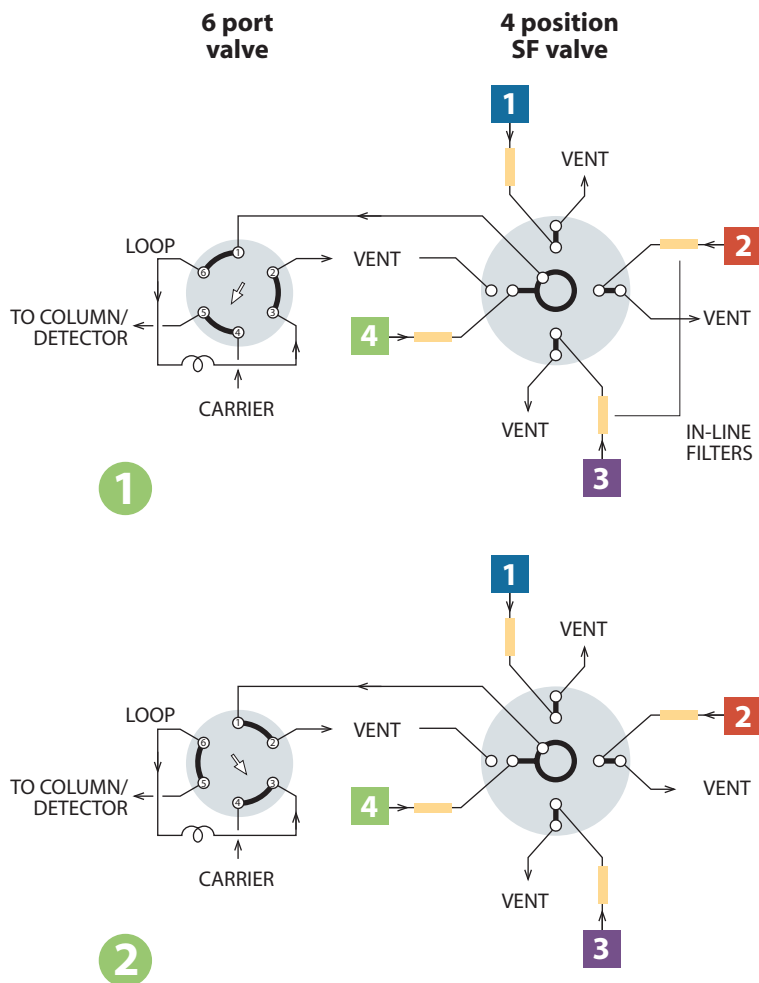
STREAM SELECTION WITH CONTINUOUS FLOW TO INDIVIDUAL OUTLETS

SD and SC valves select and isolate one of 4 to 16 streams, with the remainder dead-ended in the SD and flowing to a common outlet in the SC. The SF selector is similar, but carries the evolution a step further with the non-selected streams flowing through individual outlets.

This is the ideal solution when reactions or process streams with differing upstream pressures must be analyzed, and can also provide independent containment of toxic or noxious streams. An SF selector together with a 6 port sampling valve and pneumatic or electric actuators comprise a complete sampling system for the automated analysis of up to 16 sample points.

Note that streams 1 and 4 are vented while streams 2 and 3 are returned to their sources in this example.

Mode ① shows sample loading from stream 4, while mode ② shows sample injected onto the analytical column.

**MORE INFORMATION**

Actuators

Air page 194

Microelectric .. 190-191

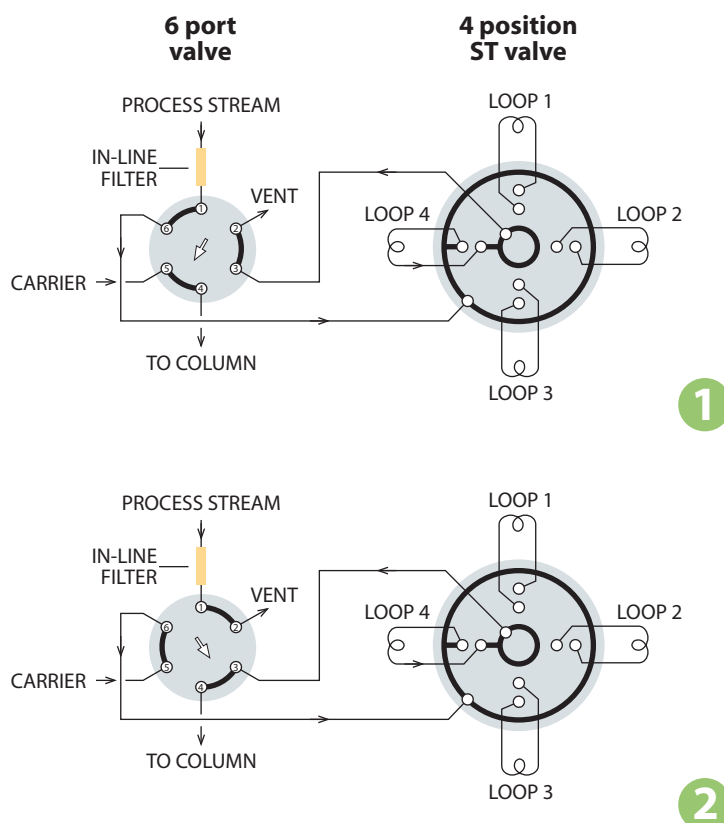
Standard elec.....193

SF prices

..... 126-127

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ST flowpath — low pressure



SAMPLE TRAPPING APPLICATIONS FOR 4 TO 16 STREAMS

ST selectors are used for multi-column, multi-sample, or multi-trap operations. The ST configuration is available in both MW and UW type designs.

A typical application, shown here, is the collection of fractions at timed intervals for analysis at a later time. Valves can be ordered with matched loops already installed.

In this example, the 6 port valve shown is used to select between **1** collection/trapping and **2** analysis/desorption. Both valves can be supplied with pneumatic or electric actuators to automate these functions.

MORE INFORMATION

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High pressure ST ...139

TECH TIP

Because the most common cause of valve failure is stray particulates entering the valve, we strongly recommend the use of in-line filters at sample entry points.

Our ZUFR filters feature inexpensive and easily replaceable low pressure drop filter screens (2 or 10 micron). The filters are available in 1/16", 1/8", and 1/4" standard, reducing, and bulkhead versions.

Filters page 52

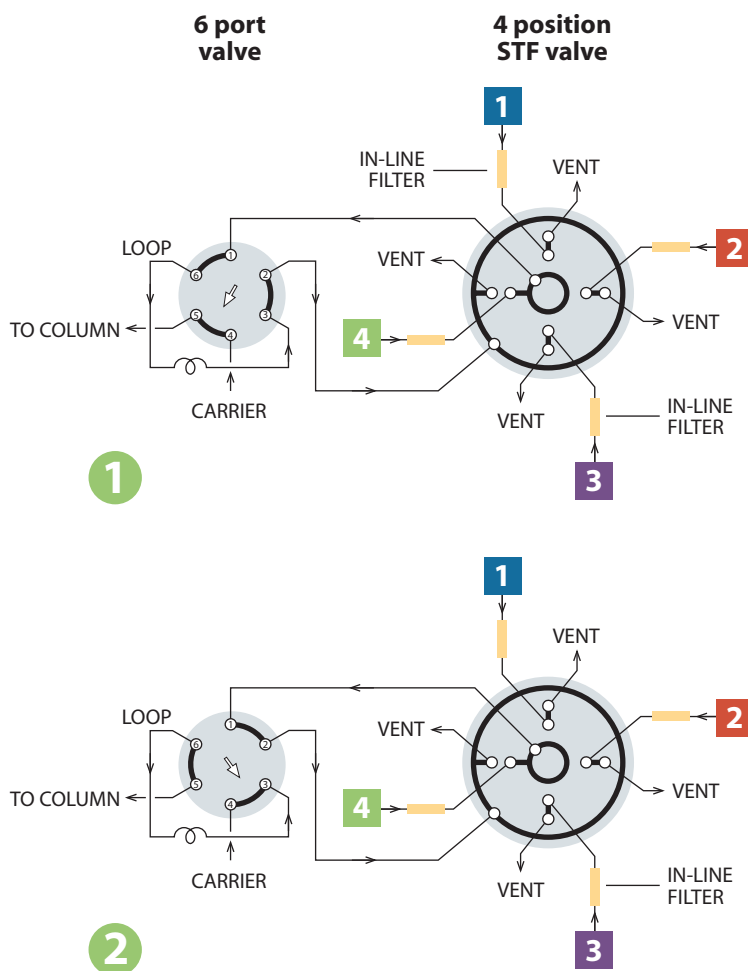
Selector Applications

STF flowpath

SAMPLE TRAPPING WITH CONTINUOUS FLOW TO INDIVIDUAL OUTLETS

The STF selector is a variation of the ST flowpath, with the single difference that the non-selected streams are returned to their own vents or sources rather than being dead-ended or trapped as they are in the standard ST configuration. This is ideal for reactor processes in which removal of substantial amounts of sample would upset the equilibrium within the reactor, or if the stream is toxic or noxious and must be isolated.

An STF selector on an air or electric actuator along with a similarly equipped 6 port valve comprise a complete sampling system for the automated analysis of up to 16 sampling points.



TECH TIP

Because the most common cause of valve failure is stray particulates entering the valve, we strongly recommend the use of in-line filters at sample entry points.

Our ZUFR filters feature inexpensive and easily replaceable low pressure drop filter screens (2 or 10 micron).

The filters are available in 1/16", 1/8", and 1/4" standard, reducing, and bulkhead versions.

MORE INFORMATION

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Microelectric .. 188-191

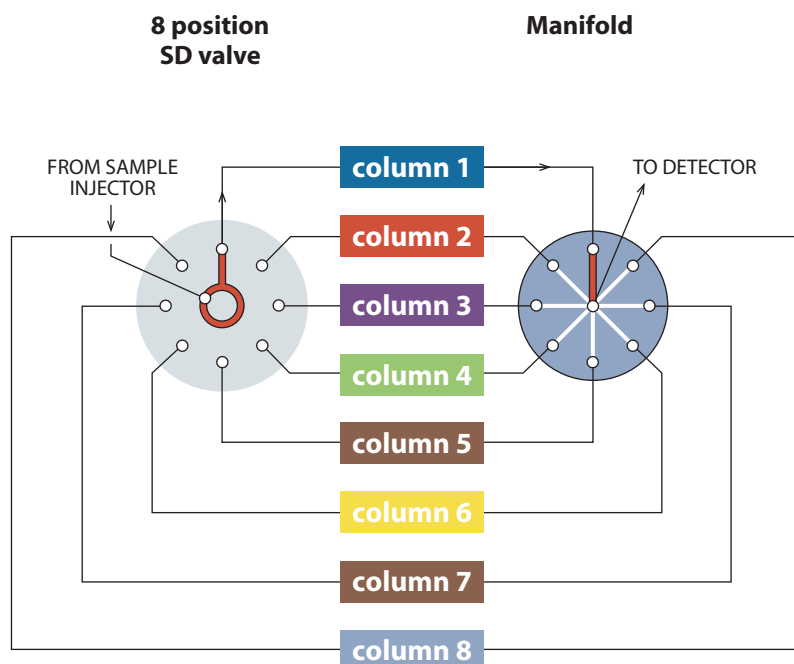
Standard elec.....193

STF prices 130-131

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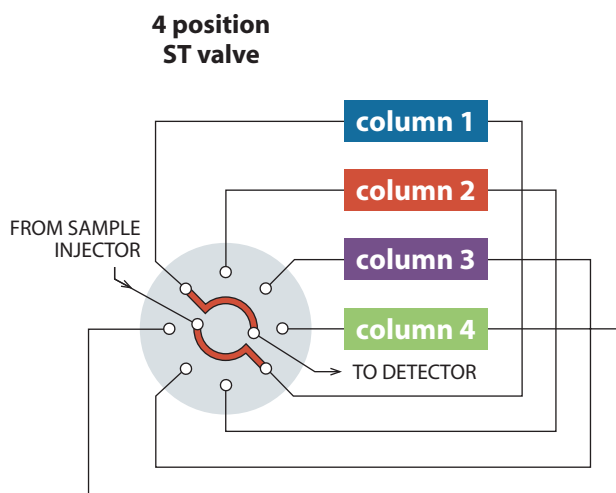
SD flowpath — high pressure



HPLC COLUMN SELECTION FOR UP TO 10 COLUMNS

This example illustrates an SD (UW type) selector used for HPLC column selection. This allows multiple columns to be installed permanently in the system, eliminating instrument downtime and leakage potential resulting from having to change columns repeatedly. The SDUW valve selects only column inlets – the column outlets are connected to the detector via a low-volume manifold. The manifold is sold separately.

ST flowpath — high pressure



HPLC COLUMN SELECTION FOR 4 OR 6 COLUMNS

Up to 6 HPLC columns can be rapidly accessed by column selection valves, eliminating the instrument downtime involved in exchanging columns and the leakage due to repeated changing of tubing fittings. The columns are installed as a part of the loop system, as shown in this drawing. A 6 position valve can support 6 columns.

MORE INFORMATION

Prices

SD high pressure ... 132

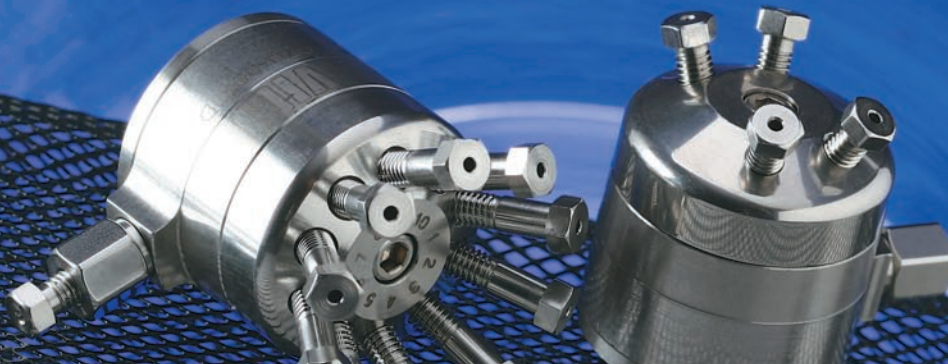
ST high pressure ... 133

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Low pressure ST ... 137

Manifolds 33



Diaphragm Valves

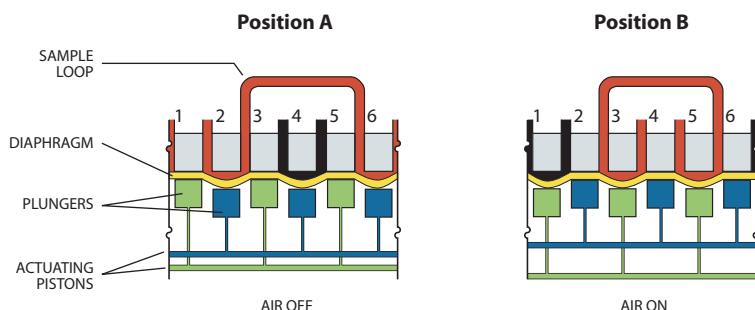
- Only 35 mm (1.375") in diameter
- >1,000,000 cycle lifetime
- Three configurations – 6 port, 10 port, and 4 port internal sample
- Built in actuator
- 1/16" or 1/32" Valco zero dead volume fittings

The VICI mini diaphragm valve is designed for trouble-free use in applications requiring minimal maintenance and maximum lifetime, making it an ideal choice for the process industry, automated lab analyzers, or continuous-monitoring environmental analyses.

Design

The mini diaphragm valve consists of plungers and ports arranged in a circular pattern, with the plungers

controlled by the reciprocation action of two air actuated pistons. Maintenance procedures are greatly simplified, since a single screw holds the valve together and locating pins ensure proper alignment. Extremely long lifetime, very short actuation time (10 milliseconds), minimum internal dead volume, and reliability have made this type of valve very successful in process gas chromatography for both sample injection and column switching.



TECH TIP

For optimal zero dead volume connections, make sure your tubing meets the best industry standards. OD tolerance should be nominal dimension $\pm .002$ ".

Fractional dimension	Nominal dimension
1/32"	.031
1/16"	.062
1/8"	.125
1/4"	.250
3/8"	.375
1/2"	.500

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Dimensions

Valve diameter is 35 mm (1.375"), height is 42 mm (1.625"), and weight is less than 255 g (9 oz).

Valve Fittings

The valve cap has Valco 1/32" or 1/16" ZDV fitting details – a rugged design which allows easy replacement of tubing or of the valve itself.

Standard bore size is 0.40 mm (.016"). Optional bore sizes are 0.25 mm (.010") and 0.75 mm (.030").

Lifetime

Diaphragm valve lifetime can exceed 1,000,000 cycles at ambient temperature or 500,000 cycles at 175°C.

Temperature/Pressure Specifications

The standard valve can be operated at temperatures up to 175°C, at 300 psi. The specially-formed diaphragm also permits sampling at subambient pressures.

Materials of Construction

The cap is Nitronic 60 stainless (optional Hastelloy C or Type 316 stainless), with remaining metal parts of 300 series stainless. The diaphragm is formed from a specialized polyimide.

Actuation

Actuator air (50-60 psi) is supplied to a side port with 10-32 female threads, permitting use of a variety of compression or barbed fittings. A 3-way solenoid is required for actuation. See information box below.

MORE INFORMATION

Materials

Metals pp 254-255

Valve descriptions

Cheminert injectors and valves 144-149

Cheminert selectors . . 144, 150-151

Valco injectors and valves 96-99

Valco selectors . . 100-101

Valve prices

Cheminert HPLC. 152-163

Cheminert low pressure 164-167

Cheminert selectors 170-177

Valco GC 102-111

Valco HPLC 112-116

Valco selectors . . 122-133

ACTUATION

A 3-way solenoid is required for actuation.

31E1-120VAC \$120

31E1-220VAC 120

Ordering Information

2009 #60

Diaphragm valves, 1/32" fittings, 0.25 mm ports (.010")





Process GC	
1/32"	0.25 mm

Includes stainless steel nuts and ferrules.

A 3-way solenoid is required for actuation. Order separately.

SPECS

Internal sample:
750 psi liq
50°C max
Sampling/switching:
300 psi gas
175°C max
Nitronic 60 valve body
Polyimide diaphragm

			
4 port	4 port	6 port	10 port
.5 µl internal sample	1 µl internal sample	sampling/switching	multifunctional
Prod No Price	Prod No Price	Prod No Price	Prod No Price
DV12-1114-.5	DV12-1114-1	DV12-1116	DV12-1110

Diaphragm valves, 1/16" fittings, 0.40 mm ports (.016")





Process GC	
1/16"	0.40 mm

Includes stainless steel nuts and ferrules.

A 3-way solenoid is required for actuation. Order separately.

SPECS

Internal sample:
750 psi liq
50°C max
Sampling/switching:
300 psi gas
175°C max
Nitronic 60 valve body
Polyimide diaphragm

			
4 port	4 port	6 port	10 port
.5 µl internal sample	1 µl internal sample	sampling/switching	multifunctional
Prod No Price	Prod No Price	Prod No Price	Prod No Price
DV22-2114-.5	DV22-2114-1	DV22-2116	DV22-2110

Diaphragm valves, 1/16" fittings, 0.75 mm ports (.030")

Process GC	
1/16"	0.75 mm

Includes stainless steel nuts and ferrules.





A 3-way solenoid is required for actuation. Order separately.

SPECS

Internal sample:
750 psi liq
50°C max
Sampling/switching:
300 psi gas
175°C max
Nitronic 60 valve body
Polyimide diaphragm



6 port
1/16" fittings

			
4 port	4 port	6 port	10 port
.5 µl internal sample	1 µl internal sample	sampling/switching	multifunctional
Prod No Price	Prod No Price	Prod No Price	Prod No Price
DV22-3114-.5	DV22-3114-1	DV22-3116	DV22-3110

1/16" Stainless steel loops

for DV valves

Each loop includes two stainless steel nuts and ferrules. Order special fittings separately. For 1/32" loops, use NW loops (page 104).



Volume	Prod No	Price	Volume	Prod No	Price
2 µl	CSL2		250 µl	CSL250	
5 µl	CSL5		500 µl	CSL500	
10 µl	CSL10		1 ml	CSL1K	
20 µl	CSL20		2 ml	CSL2K	
50 µl	CSL50		5 ml	CSL5K	
100 µl	CSL100		10 ml	CSL10K	

Replacement diaphragms

Description	Prod No	Price
Polyimide diaphragm for .010" or .016"	DV22-21D	
for .030"	DV22-31D	
PTFE diaphragm	DV22-22D	

MORE INFORMATION

More applications . . . pp 117-121

OPTIONS

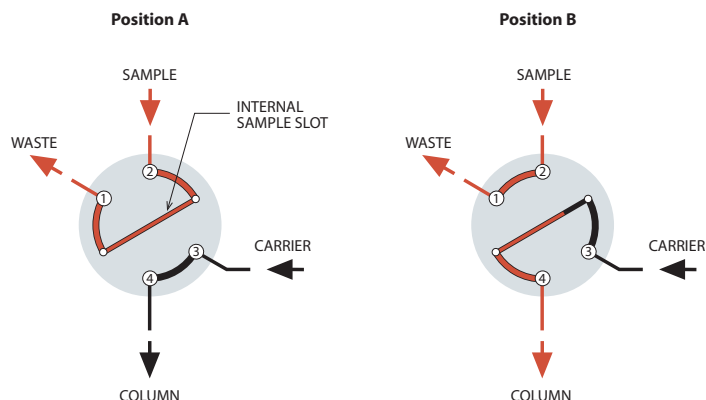
- Mounting kit
Use this ring to attach diaphragm valves to a surface.
Prod No Price
DVBRKIT \$20

- Materials:
Hastelloy C
Type 316 stainless

For more information, refer to the metals discussion on pages 254-255 .

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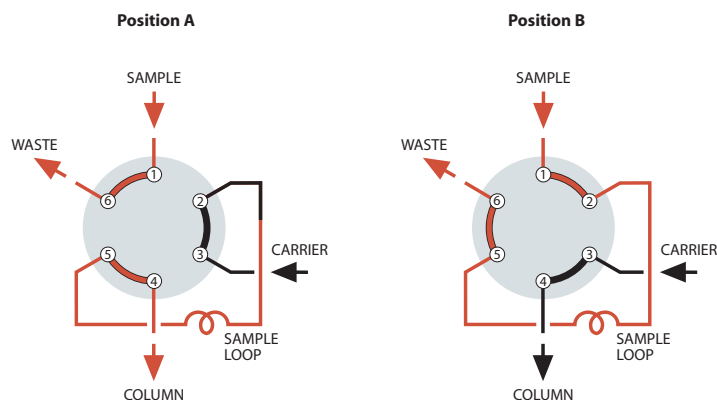
4 port sample injector



MICROVOLUME SAMPLE INJECTION

The internal sample (fixed volume) flowpath is used when very small sample volumes are required. The sample size is determined by a passage engraved on the valve cap, allowing precise, repeatable injections. In Position A, the sample flows through the sample passage while the carrier flows through to the column. In Position B, the sample passage is in line with the column and the carrier injects the contents of the sample passage into the column.

6 port sample injector



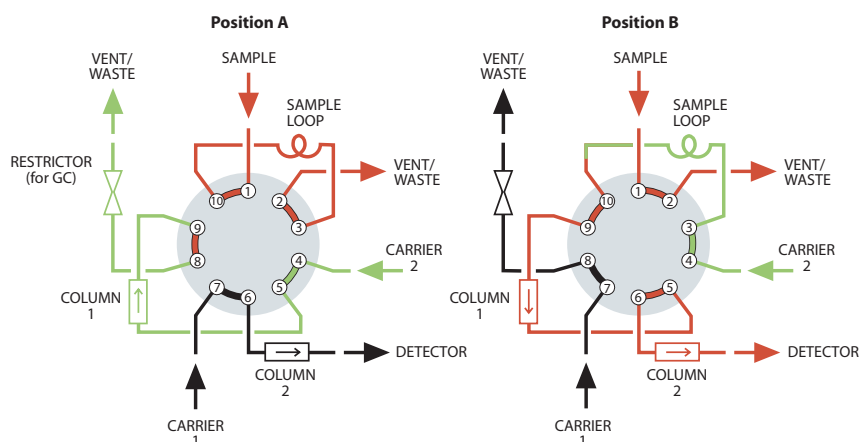
SAMPLE INJECTION

With the valve in Position A, sample flows through the external loop while the carrier flows directly through to the column. When the valve is switched to Position B, the sample contained in the sample loop and valve flow passage is injected into the column.

MORE INFORMATION

More applicationspages 118-119

10 port sample injector



LOOP SAMPLING WITH BACKFLUSH OF PRE-COLUMN TO VENT

When components of interest are low boiling, this plumbing scheme allows "heavy" components with long retention times to be backflushed to waste. After the sample loop is loaded in Position A, the valve is switched to Position B to inject the sample into column 1. As soon as all components of interest have entered column 2, the valve is switched back to Position A. Column 1 is backflushed to vent during the analysis, reducing the total analysis time.

MORE INFORMATION

More applicationspages 120-121



Cheminert® Injectors and Valves

- Pressure ratings from 100 psi to 20,000 psi
- Inert, biocompatible construction
- Easy field service
- Automated operation – pneumatic or electric
- 4, 6, 8, and 10 port and internal sample two position models
- Multiposition stream selection versions with up to 26 positions

Design

The basic Cheminert design involves a flat rotor which is engraved with slots which connect the ports. A stator is held at a constant, preset force against the rotor. When repairs are required, all that is necessary for rotor access is the removal of two or three screws. Remove the old rotor and replace it, put the screws back in and tighten them, and the valve is ready for use at the factory-set pressure specification. No adjustments are possible, much less required. Other advantages of the design include easy panel mounting, low actuating torque, and compact size. The flat plate design offers flow paths for basic flow switching, sample injection, and stream selection up to 10 positions (26 positions in some models).

Two position valve descriptions, product numbers, and prices begin on page 146.

Selector (multiposition valve) information may be found on pages 150-151.

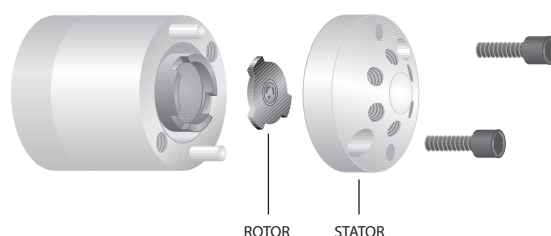
OEM injectors and selectors are on pages 178-185.

Materials of Construction

UHPLC models have stators of specially coated stainless steel, with PAEK rotors. **HPLC** models have stators of Nitronic 60 stainless steel, PAEK, Hastelloy C, or titanium, all of which are compatible with common HPLC solvents. Many are available with a proprietary long-life coating. Valcon H rotors are used with metal stators, and Valcon E with PAEK. **Low pressure** models have PPS stators and rotors of Valcon E2, a proprietary reinforced PTFE composite.

Metal valves are supplied with stainless nuts, with ferrules of the same material as the stator. Fittings for polymeric valves vary with the valve design. The valve price lists contain more detailed information.

Sample injection loops are available in a variety of materials, and are found on the pages with their corresponding valves.



TECH TIP

For optimal zero dead volume connections, make sure your tubing meets the best industry standards. OD tolerance should be nominal dimension $\pm .002$ ".

Fractional dimension	Nominal dimension
1/32"	.031
1/16"	.062
1/8"	.125
1/4"	.250
3/8"	.375
1/2"	.500

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Injectors and Switching Valves

The applications section beginning on pages 168-169 gives an overview of the many functions which can be performed by two position valves. Since the most common method of sample injection utilizes a 6 port valve with an external sample loop, 6 port valves are often referred to as "injectors". However, as the Applications section illustrates, 6 port valves can do more than inject sample, and 8 and 10 port valves can be sample injectors at the same time they're also used for backflushing or column switching.

One more variation is the 4 port internal sample injector, which is used when the sample size must be smaller than the smallest available loop. The internal sample "loop" is actually an engraved connecting slot on the rotor, sized to contain a specified amount of sample.

All these valves (except manual Models C1 and C1CF) are compatible with all VICI actuation options, with position feedback available for manual valves.

Stream Selectors (Multiposition Valves)

Selectors move in continuous revolutions by incremental steps, unlike the back and forth switching of two position valves. Each step selects one of 4 to 26 streams, directing it through the valve outlet to a sample valve, pressure sensor, detector, column, etc. The same valve can also direct one stream to a number of outlets for fraction collection.

In the standard models, the non-selected streams are dead-ended. However, some valves can be ordered with an optional rotor that returns each stream to its source. Consult the factory for more information.

MORE INFORMATION

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Cheminert valve
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Actuation 186-209

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Valco
injectors..... 99
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Nanovolume®
..... 152-155, 170-171
Selectors 170-177
OEM..... 178-185


Nanovolume® HPLC Injectors and Switching Valves

Cheminert nanovolume injectors and switching valves are ideal for high speed, high throughput techniques which demand a valve and fitting system that minimize internal volume and eliminate dead volume. A proprietary rotor material and stator coating achieve pressures to 20,000 psi, suitable for the most demanding analytical techniques. All models are compatible with any VICI actuation option.



NEW Injectors with 360 micron fittings, 100 or 150 micron bore


Models C72MU and C72MX [p. 152](#)

- 360 µm Cheminert fittings 
- Choice of 100 or 150 µm flowpath
- 10,000, 15,000, and 20,000 psi versions
- 4, 6, 8, or 10 ports (4 or 6 in 20,000 psi versions)
- Coated stator

These injectors incorporate our unique fittings which permit direct connection of 360 micron OD fused silica, PEEK, stainless, or electroformed nickel tubing.


Injectors with 1/32" Cheminert fittings, 100 micron bore

Models CN2 and CN4 [pp. 154-155](#)

- 1/32" Cheminert fittings 
- 100 or 150 µm flowpath
- 5,000 psi rating
- 6 or 10 ports
- Internal sample version with sample size of 4, 10, or 20 nanoliters
- Uncoated PAEK stator

Injectors with 1/32" Valco fittings, 100 or 150 micron bore


Models C72NX and C74NX [p. 153](#)

- 1/32" Valco fittings 
- Choice of 100 or 150 µm flowpath
- 10,000, 15,000, and 20,000 psi versions
- 4, 6, 8, or 10 ports (4 or 6 in 20,000 psi versions)
- Internal sample version with sample size of 4, 10, or 20 nanoliters
- Coated stator

Selectors with 1/32" or 1/16" Valco fittings, 100 - 250 micron bore

Model C75NX [p. 170](#)

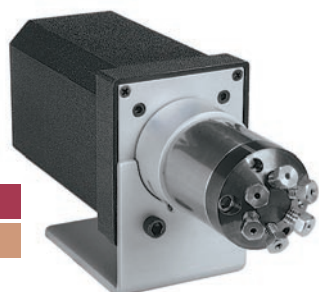
Model C75H [p. 171](#)

- 1/32" or 1/16" Valco fittings 
- 150 or 250 µm flowpath
- 10,000, 15,000, and 20,000 psi versions
- 4, 6, 8, or 10 ports (4 or 6 in 20,000 psi versions)
- Coated stator

Model C72
page 156

15,000 psi

10,000 psi



NEW UHPLC Injectors and Switching Valves

New this year from VICI are UHPLC **Models C72X** and **C72H** valves, with pressure ratings of 15,000 psi and 10,000 psi, respectively. They can be used as injectors or switching valves.

Microbore **Models C74X** and **C74H** are equivalent internal volume sample injectors, with sample sizes ranging from 4 nanoliters to 50 nanoliters.

HPLC Injectors and Switching Valves

Microbore

Model C2 valves can be used as injectors or switching valves.

Model C4 is an internal volume sample injector with sample sizes ranging from 10 nl to 50 nl.

Model C6 continuous flow injector is designed to maintain pump flow during most of the switching cycle, virtually eliminating pressure spikes.

Model C1 is a through-the-handle (front-loading) injector designed for direct replacement of existing competitive models. All Model C1 injectors are manual, with position feedback standard.

Model C1CF is a 6 port through-the-handle continuous flow injector. An engraving on the stator maintains pump flow between ports 5 and 4 during most of the switching cycle, virtually eliminating pressure spikes. Because the handle is integral to the design, all Model C1CF valves are manual, with position feedback standard.

Analytical

Models C2, C6, and **C1** are also available for analytical injection and switching, with port sizes of 0.40 mm (.016"). **Model C4** offers internal volume sample sizes ranging from 0.1 to 0.5 µl.

Semi-Preparative HPLC

Model C2 valves are available with flow passages optimized for semi-preparative HPLC. Choose from 4, 6, 8, or 10 port versions. Contact our sales or technical support departments for more information.

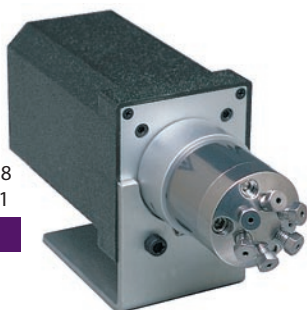
Autosampler Replacements

We supply direct replacements for injectors in many popular autosamplers. Call technical support to determine which replacement is best for your application.

Model C2

Microbore, page 158
Analytical, page 161

5,000 psi



Model C4

Microbore, page 159
Analytical, page 162

5,000 psi

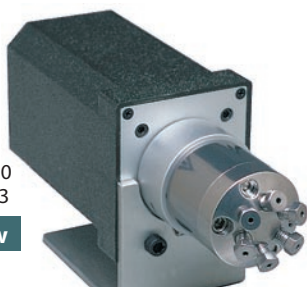
Internal sample



Model C6

Microbore, page 160
Analytical, page 163

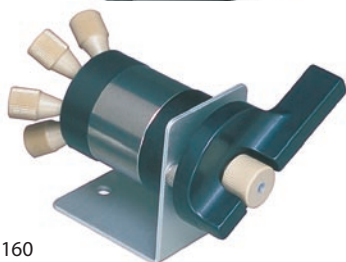
Continuous flow



Model C1

Microbore, page 160
Analytical, page 163

Through-handle



Low Pressure Injectors and Switching Valves

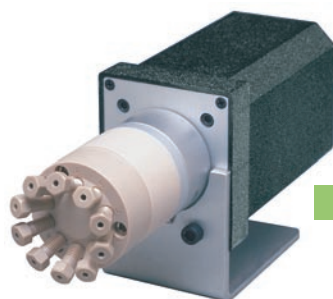
With Valco Zero Dead Volume (ZDV) Fittings

C20Z valves with zero dead volume fittings (10-32 thread) are shipped with standard PEEK nuts and ferrules. Zero dead volume fingertight fittings and nuts and ferrules of other materials may be ordered separately. Standard specifications are 100 psi gas/250 psi liquid at 75°C. On request, the pressure rating can be as high as 600 psi liquid.

Caution: Metal fittings will damage the threads and details of C20Z series valves. Use of metal fittings in a C20Z valve voids the warranty.

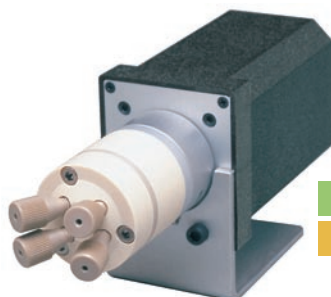
The **Model C22Z** is a conventional two position sample injector and switching valve, with 4, 6, 8, or 10 ports. Sample injection requires a loop, ordered separately.

The **Model C24Z** is an internal sample injector, for applications in which the sample size is smaller than that of any available external loop. Sample sizes available are 0.2, 0.5, and 1 µl.



Model C22Z
page 164

10-32 ZDV



Model C24Z
page 166

10-32 ZDV

Internal sample

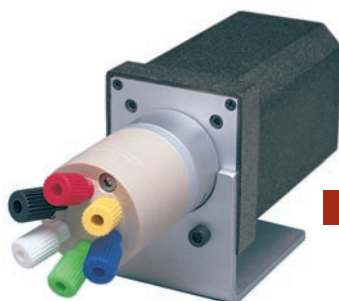
With Cheminert 1/4-28 Fittings

C20 Series valve caps have female threads for direct connection of lines – no couplings are required. C20 Series valves are available in 4, 6, 8, and 10 port versions. Standard specifications are 100 psi gas/250 psi liquid at 75°C.

Multicolored Cheminert 1/4-28 flangeless fittings for 1/16" or 1/8" OD tubing (depending on the valve model) are included.

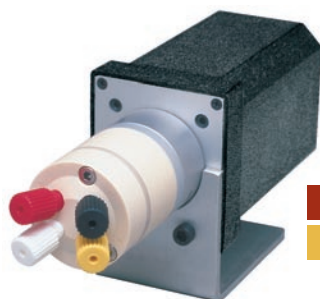
Model C22 valves are used for sample injection or switching. (Functionally equivalent to Model C22Z) Sample injection requires a loop, ordered separately.

The **Model C24** is an internal sample injector like the C24Z, available with 0.5, 1.0, or 2.0 µl sample size.



Model C22
page 165

1/4-28 Int.



Model C24
page 167

1/4-28 Int.

Internal sample

MORE INFORMATION

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Cheminert valve
product no's... 264-265

Actuation 186-209

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Cheminert valve prices

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Selectors 170-177
OEM..... 178-185

CAUTION

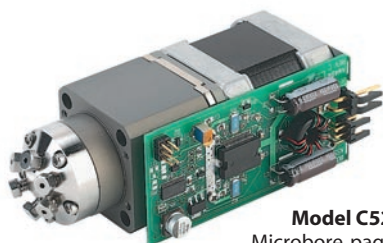
Metal fittings will damage the threads and details of C20Z series valves (models C22Z, C24Z, C25Z). Use of metal fittings in a C20Z valve voids the warranty.

TECH TIP

Our life tests indicate that these valves will typically give more than 100,000 cycles before requiring any service. This assumes that the fluid used is free of particulates and not reactive toward the valve components. If the stream may contain particulates, or if it has high salt content which could precipitate within the sample lines, use an in-line filter.

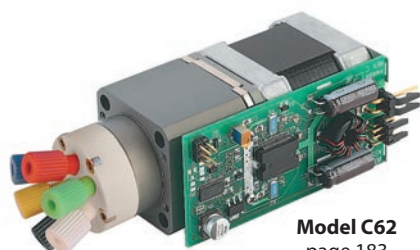
Note: Valves with purge ports are available on request.

Injectors for OEM Applications



Model C52
Microbore, page 178
Analytical, page 180

5,000 psi



Model C62
page 183

Low pressure

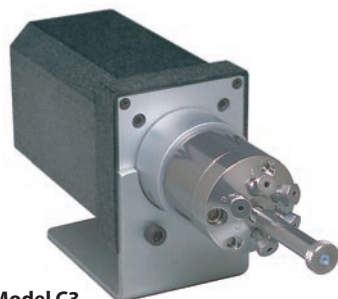
NEW Integrated Motor/Injector Assemblies for OEMs

Cheminert's new **Model C52** (HPLC) and **Model C62** (low pressure) injectors are integrated motor/valve assemblies designed specifically to be built into an OEM system. Using the well-proven Cheminert injector designs and the 24 volt motor from our popular microelectric actuators, the C52 and C62 need only to be connected to the instrument's power supply.

Control is simplified to require a single contact closure; the injector's position is determined by whether the closure is held high or low. There's even an easy way for the instrument to confirm the valve's position by sensing the output from a built-in sensor.

In the default control mode, a contact closure moves the injector from load to inject, where it remains until the contact is broken and the injector reverts to the load position. A simple jumper change shifts the mode to dual contact closure, in which one contact closure shifts the injector to inject and a second is required to shift it back to load. Jumper settings can also be modified to change the motor's degree of rotation so it can be used with any of the valve models available.

All these features are built into a compact and lightweight package and are available in 4, 6, 8, and 10 port configurations.

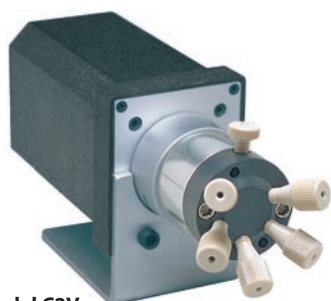
Autosampler and Other OEM Injectors

Model C3
Microbore, page 179
Analytical, page 181

Centered port

Model C3 is a unique injector with a syringe injection port centered on the rear face of the valve (opposite the handle or actuator), allowing convenient syringe insertion when the valve is mounted on an actuator inside an instrument.

Model C2V is designed specifically for use in an autosampler. It is like the standard C2 except that the sample port is perpendicular to the valve axis. This permits the valve and actuator to be installed horizontally, while the syringe loads the injector vertically.

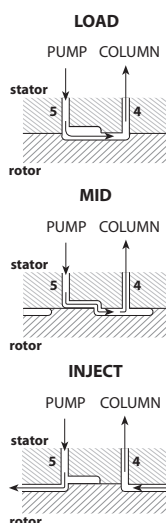


Model C2V
Microbore, page 179
Analytical, page 181

Vertical port

UNIVERSAL ACTUATOR

The new universal actuator for OEMs operates virtually any Valco or Cheminert rotary valve – two position and selector alike – greatly simplifying the electronic aspect of instrument design.
See page 192.

MODEL C1CF FLOWPATH**OEM SELECTOR VALVES**

See pages 151, 184-185 for selector (multiposition) valves for OEMs.

Stream Selectors

UHPLC and High Pressure Selectors

NEW Model C75 selectors offer pressure ratings of 15,000 psi and 10,000 psi with 1/32" and 1/16" fittings.

The **Model C5**, with Valco ZDV fitting details, is available with 4, 6, 8, or 10 positions. Stators are available in Nitronic 60 stainless, titanium, and Hastelloy C-22, with rotors of Valcon H, all of which are compatible with common HPLC solvents. PAEK stators are used in combination with Valcon E rotors.

The C5 valve is the backbone of the Cheminert **HPLC column selector system**, which includes two stream selection valves mounted on a single microelectric actuator. Columns are not included.

Model C75
pages 170 and 171

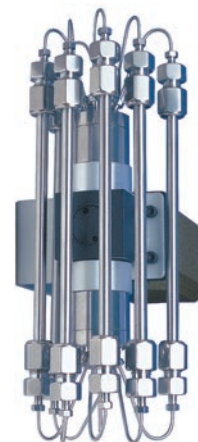
15,000 psi

10,000 psi



Model C5
page 172

5,000 psi



**HPLC
column selector
system**
page 173

5,000 psi

**Column selector
system**

Low Pressure Selectors

With Valco Zero Dead Volume Fittings

Model C25Z valves have Valco ZDV fitting details, and are available in 4, 6, 8, 10, 12, and 14 position models.

Model C35Z valves have 1/16" Valco ZDV details, and are available in 20, 24, and 26 position models. This is a tapered rotor valve limited to 100 psi liquid. Rotors are made from Valcon E2, with valve body made from PPS.

With Cheminert 1/4-28 Fittings

The **Model C25** has female 1/4-28 threaded fitting details for direct connection of lines – no couplings are required. The C25 is available in 4, 6, 8, and 10 position models. Multicolored Cheminert 1/16" or 1/8" flangeless fittings are included. Order other fittings separately as required. Rotors are made of Valcon E2, a proprietary reinforced PTFE composite, with stators of PPS.

With Cheminert 1/2-20 Fittings

Model C45 valves feature 1/2-20 threaded fitting details for use with 1/4" OD tubing. This is a tapered rotor valve with large bore for high flow applications. Rotors are made from Valcon E2, with valve body made from PPS. Available in 4 and 6 port configurations.



Model C25Z
page 174

Low pressure

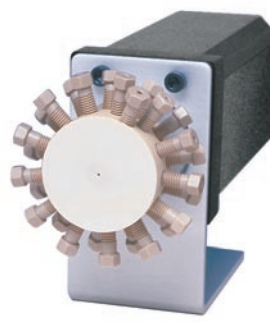
10-32 ZDV



Model C25
page 175

Low pressure

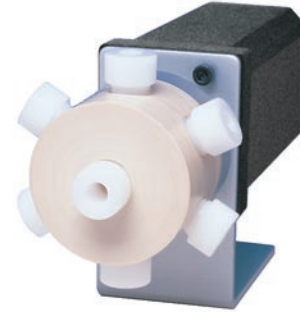
1/4-28 Internal



Model C35Z
page 176

Low pressure

10-32 ZDV



Model C45
page 177

Low pressure

1/2-20 Int.

Stream Selectors for OEM Applications

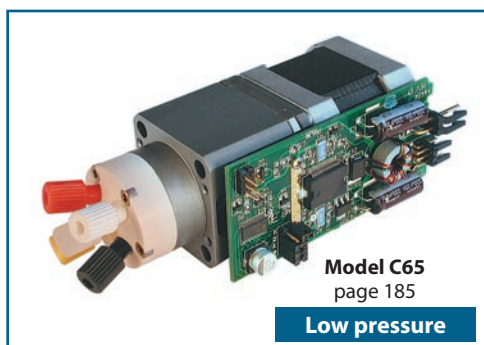
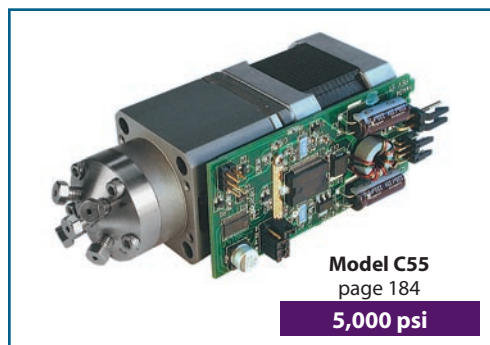
NEW Integrated Motor/Stream Selectors for OEMs

Cheminert's new **Model C55** (HPLC) and **Model C65** (low pressure) stream selectors are integrated motor/valve assemblies designed specifically to be built into an OEM system. The compact, lightweight package is available in 4, 6, 8, and 10 position configurations.

Using the well-proven Cheminert stream selector design and the 24 volt motor from our popular microelectric actuators, the Models C55, C65, and C65Z need only to be connected to an instrument's power supply. A single momentary contact closure steps the valve to the next position; a separate

contact closure moves the valve to position 1 (Home).

See how our stream selectors can simplify your instrument design and minimize time to market – all while trimming your costs.

**UNIVERSAL ACTUATOR**

The new universal actuator for OEMs operates virtually any Valco or Cheminert rotary valve – two position and selector alike – greatly simplifying the electronic aspect of instrument design.

See page 192.

MORE INFORMATION

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selectors..... 150-151
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Diaphragm 140-141
Valco
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selectors..... 100-101

Cheminert valve prices

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Nanovolume®
..... 152-155, 170-171
Selectors 170-177
OEM..... 178-185

TECH TIP**Caution:**

Metal fittings will damage the threads and details of C25Z, C35Z, and C65Z series valves.

Use of metal fittings in these valves voids the warranty.

SPECIFICATIONS**CHEMINERT MULTIPOSITION VALVES**

Model	Stator material	Std rotor material	Max pressure	Max temp	Number of positions
High Pressure					
C5	Metal	Valcon H	5000 psi liq	75°C	4, 6, 8, 10
	PAEK	Valcon E	5000 psi liq	50°C	4, 6, 8, 10
Low Pressure					
C25Z	PPS	Valcon E2	100 psi gas/ 250 psi liq	75°C	4, 6, 8, 10, 12, 14
C25	PPS	Valcon E2	100 psi gas/ 250 psi liq	75°C	4, 6, 8, 10
C35Z	PPS	Valcon E2	100 psi liq	50°C	20, 24, 26
C45	PPS	Valcon TF	100 psi liq	50°C	4, 6, 8
OEM – High Pressure					
C55	Metal	Valcon H	5000 psi liq	50°C	4, 6, 8, 10
	PAEK	Valcon E	5000 psi liq	50°C	4, 6, 8, 10
OEM – Low Pressure					
C65Z	PPS	Valcon E2	100 psi gas/ 250 psi liq	50°C	4, 6, 8, 10
C65	PPS	Valcon E2	100 psi gas/ 250 psi liq	50°C	4, 6, 8, 10


PORT DIAMETERS

Model	Fitting size	Standard port diameter
High Pressure		
C5	1/16" ZDV	0.15 mm (.006") 0.25 mm (.010") 0.40 mm (.016") 0.75 mm (.030")
Low Pressure		
C25Z	1/16" ZDV	0.75 mm (.030")
C25	1/4-28 for 1/16" tubing	0.75 mm (.030")
	1/4-28 for 1/8" tubing	1.50 mm (.060")
C35Z	1/16" ZDV	0.75 mm (.030")
C45	1/2-20 for 1/4" tubing	4.6 mm (.180")
OEM – High Pressure		
C55	1/16" ZDV	0.25 mm (.010") 0.40 mm (.016") 0.75 mm (.030")
OEM – Low Pressure		
C65Z	1/16" ZDV	0.75 mm (.030")
C65	1/4-28 for 1/16" tubing	0.75 mm (.030")
	1/4-28 for 1/8" tubing	1.50 mm (.060")

NEW UHPLC Nanovolume Injectors with 360 µm fittings

NEW 20,000 psi UHPLC Nanovolume valves 360 micron fittings, 100 micron bore (.004")

Model C72MU

20,000 psi	Includes stainless 360 micron fittings.	Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.
360µm 100 µm		

SPECS

20,000 psi liq
50°C max
Stainless w/ inert coating
stator
Valcon E3 rotor

OPTIONS

- 150 micron (.006") bore
- Internal sample injector (4 - 20 nl)
- 10,000 and 15,000 psi versions available

Coated stainless stator

Manual	C72MU-4694	C72MU-4696
With pneumatic actuator	C72MU-4694A	C72MU-4696A
With standard electric actuator	C72MU-4694E	C72MU-4696E
With microelectric actuator	C72MU-4694EH	C72MU-4696EH
Replacement valve	C72MU-4694D	C72MU-4696D
Replacement rotor	C72M-46R4	C72M-46R6
Replacement stator	C72M-4C94	C72M-4C96



4 Port

Prod No

Price



6 Port

Prod No


Price



Model C72MU
360 micron fittings
(Model C72MX is similar)

NEW 15,000 psi UHPLC Nanovolume valves 360 micron fittings, 150 micron bore (.006")

Model C72MX

15,000 psi	Includes stainless 360 micron fittings.	Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.
360µm 150 µm		

SPECS

15,000 psi liq
50°C max
Stainless w/ inert coating
stator
Valcon E3 rotor

OPTIONS

- 100 micron (.004") bore
- Internal sample injector (4 - 20 nl)
- 10,000 psi version available
- 4 and 8 port versions available

Coated stainless stator

Manual	C72MX-6696	C72MX-6690
With pneumatic actuator	C72MX-6696A	C72MX-6690A
With standard electric actuator	C72MX-6696E	C72MX-6690E
With microelectric actuator	C72MX-6696EH	C72MX-6690EH
Replacement valve	C72MX-6696D	C72MX-6690D
Replacement rotor	C72M-66R6	C72M-66R0
Replacement stator	C72M-6C96	C72M-6C90



6 Port

Prod No

Price



10 Port

Prod No

Price

MORE INFORMATION

360 micron nanovolume
fittings page 58

UHPLC Nanovolume Injectors with 1/32" Valco stainless fittings **NEW****NEW 15,000 psi UHPLC Nanovolume valves**
1/32" Valco stainless fittings, 150 micron bore (.006")

Model C72NX

SPECS
15,000 psi liq
50°C maxStainless w/ inert coating
stator
Valcon E3 rotorIncludes 1/32" Valco
stainless steel fittings.Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply.* The 6 port valve
includes a 5 µl loop of
the stator material.**15,000 psi****1/32"****150 µm****6 Port ***

Prod No

Price

**10 Port**

Prod No

Price

OPTIONS

- 100 micron (.004") bore
- 250 micron (.010") bore
- 10,000 psi version available
- 4 and 8 port versions available

Coated stainless statorManual
With pneumatic actuatorWith standard electric actuator
With microelectric actuatorReplacement valve
Replacement rotor
Replacement statorC72NX-6696
C72NX-6696AC72NX-6696E
C72NX-6696EHC72NX-6696D
C72N-66R6
C72N-6C96C72NX-6690
C72NX-6690AC72NX-6690E
C72NX-6690EDC72NX-6690D
C72N-66R0
C72N-6C90**Model C72NX**
1/32" Valco stainless fittings**Sample loops for C72NX valves**

Each stainless loop includes two stainless 1/32" Cheminert nanovolume fittings.

Volume	Stainless	
	Prod No	Price
1 µl	CSLN1K	\$35.00
2 µl	CSLN2K	45.00
5 µl	CSLN5K	52.50

**Model C74NX**
1/32" Valco stainless fittings**NEW 15,000 psi UHPLC Nanovolume internal sample injectors**
1/32" Valco stainless fittings, 150 micron bore (.006")

Model C74NX

SPECS
15,000 psi liq
50°C maxStainless w/ inert coating
stator
Valcon E3 rotorIncludes 1/32" Valco
stainless steel fittings.Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.**15,000 psi****Internal sample****1/32"****150 µm****4 nanoliters**

Prod No

Price

10 nanoliters

Prod No

Price

20 nanoliters

Prod No

Price

Coated stainless statorManual
With pneumatic actuatorWith standard electric actuator
With microelectric actuatorReplacement valve
Replacement rotor
Replacement statorC74NX-6694-.004
C74NX-6694-.004AC74NX-6694-.004E
C74NX-6694-.004EHC74NX-6694-.004D
C74N-66R-.004
C74N-6C9C74NX-6694-.01
C74NX-6694-.01AC74NX-6694-.01E
C74NX-6694-.01EHC74NX-6694-.01D
C74N-66R-.01
C74N-6C9C74NX-6694-.02
C74NX-6694-.02AC74NX-6694-.02E
C74NX-6694-.02EHC74NX-6694-.02D
C74N-66R-.02
C74N-6C9**OPTIONS**





- 250 micron (.010") bore
- 10,000 and 20,000 psi versions available

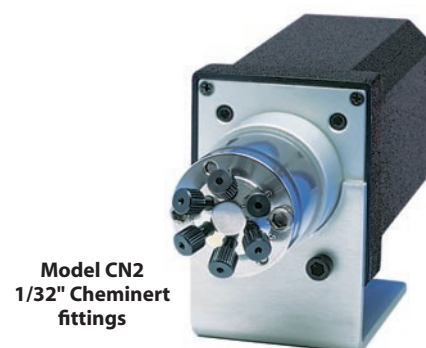
MORE INFORMATION1/32" Valco
fittings pages 10, 12
1/16" nanovolume
injectors
C72X156
C74X157

Nanovolume Injectors with 1/32" Cheminert Fittings

**5,000 psi Nanovolume valves,
1/32" Cheminert fittings, 100 micron ports (.004")**

Model CN2

<div>5,000 psi</div> <div>1/32"100 µm</div>		Includes 1/32" PEEK Cheminert nanovolume fittings.		Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.		* The 6 port valve includes a 250 nI PEEK loop.		<div>SPECS</div> <div>5000 psi liq</div> <div>50°C max</div> <div>PAEK stator</div> <div>Valcon E rotor</div>	
<div><div></div><div>For 6 port</div></div> <div><div></div><div>For 10 port</div></div>				<div><div></div><div>6 Port*</div></div> <div><div>Prod No</div><div>Price</div></div>		<div><div></div><div>10 Port</div></div> <div><div>Prod No</div><div>Price</div></div>			
<div>PAEK stator</div> <div>Manual</div>		CN2-4346		CN2-4340					
<div>With microelectric actuator</div>		CN2-4346EH		CN2-4340EH					
<div>Replacement valve</div>		CN2-4346D		CN2-4340D					
<div>Replacement rotor</div>		CN2-43R6		CN2-43R0					
<div>Replacement stator</div>		CN2-4C46I		CN2-4C40I					
								<div>OPTIONS</div> <div>■ 150 micron (.006") bore</div>	



Sample loops *for CN2 valves*

Each PEEK loop includes two PEEK Cheminert nanovolume fittings.

	PEEK	
Volume	Prod No	Price
250 nl	CNSL250PK	
500 nl	CNSL500PK	
1 µl	CNSL1KPK	
2 µl	CNSL2KPK	
5 µl	CNSL5KPK	



MORE INFORMATION
 1/32" PEEK Cheminert fitting (nut with collapsible ferrule) p.59

Nanovolume Injectors with 1/32" Cheminert Fittings

5,000 psi Nanovolume internal sample injector, 1/32" Cheminert fittings, 100 micron ports (.004")

Model CN4

SPECS
5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Includes 1/32"
PEEK Cheminert
nanovolume fittings.



Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.



5,000 psi

Internal sample

1/32"

100 µm

OPTIONS

- 150 micron (.006") bore

Sample volume

4 nanoliters

Prod No

Price

10 nanoliters

Prod No

Price

20 nanoliters

Prod No

Price

PAEK stator

Manual

CN4-4344-.004

CN4-4344-.01

CN4-4344-.02

With microelectric actuator

CN4-4344-.004EH

CN4-4344-.01EH

CN4-4344-.02EH

Replacement valve

CN4-4344-.004D

CN4-4344-.01D

CN4-4344-.02D

Replacement rotor

CN4-43R-.004

CN4-43R-.01

CN4-43R-.02

Replacement stator

CN4-4C4I

CN4-4C4I

CN4-4C4I



Model CN4
1/32" Cheminert
fittings

MORE INFORMATION

1/32" PEEK Cheminert
fitting (nut with
collapsible ferrule) p.59

CHROMalytic TECHNOlogy Pty Ltd AUSTRALIAN Distributors e-mail: sales@chromtech.net.au Tel: 03 9762 2034

Microbore UHPLC

NEW 15,000 psi UHPLC microbore valves, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C72X

<div>15,000 psi</div> <div>Microbore</div> <div>1/16"0.25 mm</div>	Includes stainless steel nuts and ferrules.		Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international.		* The 6 port valve includes a 5 µl stainless steel sample loop.		<div>SPECS</div> <div>15,000 psi liq</div> <div>50°C max</div> <div>Stainless stator with inert coating</div> <div>Valcon E3 rotor</div>	
			Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.				<div>OPTIONS</div> <div>0.15 mm ports (.006")</div>	

**NEW 15,000 psi UHPLC microbore internal sample injectors,
1/16" Valco fittings, 0.25 mm ports (.010")**

Model C74X

SPECS

15,000 psi liq
50°C max
 Stainless stator
 with inert coating
 Valcon E3 rotor

Includes stainless steel
 nuts and ferrules.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC
 power supply.



15,000 psi

Microbore

Internal sample

1/16" 0.25 mm

OPTIONS

0.15 mm ports (.006")

	10 nanoliters		20 nanoliters		50 nanoliters	
	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C74X-1694-.01		C74X-1694-.02		C74X-1694-.05	
With pneumatic actuator	C74X-1694-.01A		C74X-1694-.02A		C74X-1694-.05A	
With standard electric actuator	C74X-1694-.01E		C74X-1694-.02E		C74X-1694-.05E	
With microelectric actuator	C74X-1694-.01EH		C74X-1694-.02EH		C74X-1694-.05EH	
Replacement valve	C74X-1694-.01D		C74X-1694-.02D		C74X-1694-.05D	
Replacement rotor	C74-16R-.01		C74-16R-.02		C74-16R-.05	
Replacement stator	C74-1C9		C74-1C9		C74-1C9	

**NEW 10,000 psi UHPLC microbore internal sample injectors,
1/16" Valco fittings, 0.25 mm ports (.010")**

Model C74H

SPECS

10,000 psi liq
50°C max
 Stainless stator
 with inert coating
 Valcon E3 rotor

Includes stainless steel
 nuts and ferrules.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC
 power supply.



10,000 psi

Microbore

Internal sample

1/16" 0.25 mm

OPTIONS

0.15 mm ports (.006")

	10 nanoliters		20 nanoliters		50 nanoliters	
	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C74H-1694-.01		C74H-1694-.02		C74H-1694-.05	
With pneumatic actuator	C74H-1694-.01A		C74H-1694-.02A		C74H-1694-.05A	
With standard electric actuator	C74H-1694-.01E		C74H-1694-.02E		C74H-1694-.05E	
With microelectric actuator	C74H-1694-.01EH		C74H-1694-.02EH		C74H-1694-.05EH	
Replacement valve	C74H-1694-.01D		C74H-1694-.02D		C74H-1694-.05D	
Replacement rotor	C74-16R-.01		C74-16R-.02		C74-16R-.05	
Replacement stator	C74-1C9		C74-1C9		C74-1C9	

MORE INFORMATION

Actuators

Air page 195

Microelectric .. 188-189

Standard electric ... 193

Materials

Metals..... 254-255

Polymers 256

Valve rotors..... 257

Standoff

assemblies 205-207



Model C74H
(C74X similar)
 1/16" ZDV fittings

Microbore HPLC

Microbore valves, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C2

5,000 psi	Includes stainless steel nuts and ferrules of the stator material. Valves with PEEK stators have PEEK nuts and ferrules.	Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international.	* The 6 port valve includes a 5 µl loop of the stator material.
Microbore		Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.	
1/16"	0.25 mm		

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor



4 Port

Prod No Price



6 Port*

Prod No Price



8 Port

Prod No Price



10 Port

Prod No Price

N60 stainless stator

Manual	C2-1004	C2-1006	C2H-1008	C2H-1000
With pneumatic actuator	C2-1004A	C2-1006A	C2H-1008A	C2H-1000A
With standard electric actuator	C2-1004E	C2-1006E	C2H-1008E	C2H-1000E
With microelectric actuator	C2-1004EH	C2-1006EH	C2H-1008EH	C2H-1000EH
Replacement valve	C2-1004D	C2-1006D	C2H-1008D	C2H-1000D
Replacement rotor	C2-10R4	C2-10R6	C2-10R8H	C2-10R0H
Replacement stator	C-1C04	C-1C06	C-1C08H	C-1C00H

PAEK stator

Manual	C2-1344	C2-1346	C2H-1348	C2H-1340
With pneumatic actuator	C2-1344A	C2-1346A	C2H-1348A	C2H-1340A
With standard electric actuator	C2-1344E	C2-1346E	C2H-1348E	C2H-1340E
With microelectric actuator	C2-1344EH	C2-1346EH	C2H-1348EH	C2H-1340EH
Replacement valve	C2-1344D	C2-1346D	C2H-1348D	C2H-1340D
Replacement rotor	C2-13R4	C2-13R6	C2-13R8H	C2-13R0H
Replacement stator	C-1C44	C-1C46	C-1C48H	C-1C40H

Titanium stator

Manual	C2-1034	C2-1036	C2H-1038	C2H-1030
With pneumatic actuator	C2-1034A	C2-1036A	C2H-1038A	C2H-1030A
With standard electric actuator	C2-1034E	C2-1036E	C2H-1038E	C2H-1030E
With microelectric actuator	C2-1034EH	C2-1036EH	C2H-1038EH	C2H-1030EH
Replacement valve	C2-1034D	C2-1036D	C2H-1038D	C2H-1030D
Replacement rotor	C2-10R4	C2-10R6	C2-10R8H	C2-10R0H
Replacement stator	C-1C34	C-1C36	C-1C38H	C-1C30H

OPTIONS

- Continuous flow version is available as Model C6.
See page 160.
- Hastelloy C stators
- Loop fill port assembly for injection from front of the valve.
See page 41.
- 0.15 mm (0.006") bore



Order loops from page 159.



Model C2
1/16" ZDV fittings

MORE INFORMATION

- Actuators
- Air page 195
 - Microelectric .. 188-189
 - Standard electric ... 193
- Materials
- Metals..... 254-255
 - Polymers 256
 - Valve rotors..... 257
- Nuts
- Metal..... 10
 - PEEK 63
- Ferrules
- Metal..... 12
 - PEEK 63
- Standoff assemblies 205-207

Microbore nanoliter sample injector, 1/16" Valco fittings, 0.15 mm ports (.006")

Model C4

SPECS
5000 psi liq
75°C max
 Metal stator
 Valcon H rotor

5000 psi liq
50°C max
 PAEK stator
 Valcon E rotor

Includes stainless steel nuts and ferrules of the stator material. Valves with PAEK stators have PEEK nuts and ferrules.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC power supply.



5,000 psi

Microbore

Internal sample

1/16"

0.15 mm

OPTIONS

- 100, 200, and 500 nl sample volumes are also available in 0.25 mm bore. See page 162.
- Loop fill port assembly for injection from front of the valve. See page 41.
- 0.25 mm (0.010") bore

Sample volume

	10 nanoliters		20 nanoliters		50 nanoliters	
	Prod No	Price	Prod No	Price	Prod No	Price
N60 stainless stator						
Manual	C4-0004-.01		C4-0004-.02		C4-0004-.05	
With pneumatic actuator	C4-0004-.01A		C4-0004-.02A		C4-0004-.05A	
With standard electric actuator	C4-0004-.01E		C4-0004-.02E		C4-0004-.05E	
With microelectric actuator	C4-0004-.01EH		C4-0004-.02EH		C4-0004-.05EH	
Replacement valve	C4-0004-.01D		C4-0004-.02D		C4-0004-.05D	
Replacement rotor	C4-00R-.01		C4-00R-.02		C4-00R-.05	
Replacement stator	C4-0C0		C4-0C0		C4-0C0	
PAEK stator						
Manual	C4-0344-.01		C4-0344-.02		C4-0344-.05	
With pneumatic actuator	C4-0344-.01A		C4-0344-.02A		C4-0344-.05A	
With standard electric actuator	C4-0344-.01E		C4-0344-.02E		C4-0344-.05E	
With microelectric actuator	C4-0344-.01EH		C4-0344-.02EH		C4-0344-.05EH	
Replacement valve	C4-0344-.01D		C4-0344-.02D		C4-0344-.05D	
Replacement rotor	C4-03R-.01		C4-03R-.02		C4-03R-.05	
Replacement stator	C4-0C4		C4-0C4		C4-0C4	



Sample loops for C1, C2, C2V, C3, and C6 valves

Each metal loop includes two stainless steel nuts and ferrules.
 Each PEEK loop includes two PEEK nuts and ferrules.

Volume	Stainless Steel		PEEK (for PAEK stators)		Titanium	
	Prod No	Price	Prod No	Price	Prod No	Price
2 µl	CSL2		CZSL2PK		–	
5 µl	CSL5		CZSL5PK		–	
10 µl	CSL10		CZSL10PK		CSL10TI	
20 µl	CSL20		CZSL20PK		CSL20TI	
50 µl	CSL50		CZSL50PK		CSL50TI	
100 µl	CSL100		CZSL100PK		CSL100TI	
250 µl	CSL250		CZSL250PK		CSL250TI	
500 µl	CSL500		CZSL500PK		CSL500TI	
1 ml	CSL1K		CZSL1KPK		CSL1KTI	
2 ml	CSL2K		CZSL2KPK		–	
5 ml	CSL5K		CZSL5KPK		–	
10 ml	CSL10K		–		–	

ABOUT LOOPS

- Other materials are available in many sizes: Electroformed Nickel, Hastelloy C, Nickel 200, and PTFE (see pages 254-256).
- Metal loops > 2 ml are made from 1/8" OD tubing with brazed or welded 1/16" tube ends or reducing unions.



Model C4
1/16" ZDV fittings

Microbore HPLC

Microbore through-the-handle injector, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C1

5,000 psi
Microbore
Through-handle
1/16" 0.25 mm



Available only in manual version.
Position feedback included.

Includes stainless steel nuts and ferrules.
Valves with PEEK stators have PEEK nuts and ferrules.

Includes one 5 µl loop of the stator material.

SPECS
5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor



Model C1 and C1CF
1/16" ZDV fittings

6 port injector
Replacement rotor
Replacement stator

Replacement injector fitting

N60 stainless stator

Prod No	Price
C1-1006	
C1-10R6	
C-1C06	

Prod No	Price
C-261	

PAEK stator

Prod No	Price
C1-1346	
C1-13R6	
C-1C46	



OPTIONS

- Titanium and Hastelloy stators available.
- 0.40 mm bore (.016") on page 163.

Microbore continuous flow through-the-handle injector, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C1CF

5,000 psi
Microbore
Continuous flow
Through-handle
1/16" 0.25 mm



Available only in manual version.
Position feedback included.

Includes stainless steel nuts and ferrules.
Valves with PEEK stators have PEEK nuts and ferrules.

Includes one 5 µl loop of the stator material.

SPECS
5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

6 port injector
Replacement rotor
Replacement stator

Replacement injector fitting

N60 stainless stator

Prod No	Price
C1CF-1006	
C1-10R6	
C6-1C06	

Prod No	Price
C-261	

PAEK stator

Prod No	Price
C1CF-1346	
C1-13R6	
C6-1C46	



OPTIONS

- 0.40 mm bore (.016") on page 163.

Microbore continuous flow injector, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C6

5,000 psi
Microbore
Continuous flow
1/16" 0.25 mm

Includes stainless steel nuts and ferrules.

* Includes a 5 µl loop of the stator material.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.

Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.

N60 stainless stator

Prod No	Price
C6-1006	
C6-1006A	

C6-1006E	
C6-1006EH	

C6-1006D	
C2-10R6	
C6-1C06	

PAEK stator

Prod No	Price
C6-1346	
C6-1346A	

C6-1346E	
C6-1346EH	

C6-1346D	
C2-13R6	
C6-1C46	

SPECS
5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

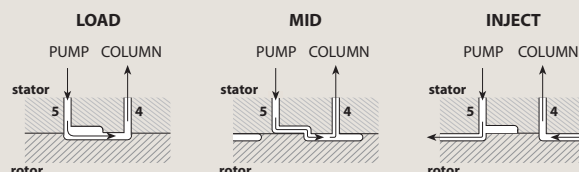
Order loops from page 159.



Model C6
1/16" ZDV fittings

C1CF and C6 CONTINUOUS FLOWPATH

An engraving on the stator maintains pump flow between ports 5 and 4 during most of the switching cycle, virtually eliminating pressure spikes.



Analytical valves, 1/16" Valco fittings, 0.40 mm ports (.016")

Model C2

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Includes stainless steel nuts and ferrules of the stator material. Valves with PEEK stators have PEEK nuts and ferrules.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.

* The 6 port valve includes a 20 µl loop of the stator material.

5,000 psi**Analytical****1/16"****0.40 mm****OPTIONS**

- Continuous flow version is available as Model C6. See page 163.
- Hastelloy C stators
- Semi-prep version with 0.75 mm ports (.030") available
- Loop fill port assembly for injection from front of the valve. See page 41.



Order loops from page 159.

OPTIONAL FLOWPATH

Model C2 6 port valves can also be ordered with a dual 3-way rotor, as described in EPA Method 555.

To specify this flowpath, substitute "6X" for "6" in the valve or rotor product number.

**AUTOSAMPLER REPLACEMENT VALVES**

The Cheminert Model C2 6 port valve is an excellent replacement for the valve originally supplied in many autosamplers, including autosamplers manufactured by Beckman, Gilson, Spark-Holland, CTC, Thermo Fisher, and Varian.

Call technical support to determine which replacement is best for your application.

**4 Port**

Prod No Price

**6 Port***

Prod No Price

**8 Port**

Prod No Price

**10 Port**

Prod No Price

N60 stainless stator

Manual C2-2004
With pneumatic actuator C2-2004A

With standard electric actuator C2-2004E
With microelectric actuator C2-2004EH

Replacement valve C2-2004D
Replacement rotor C2-20R4
Replacement stator C-2C04

PAEK stator

Manual C2-2344
With pneumatic actuator C2-2344A

With standard electric actuator C2-2344E
With microelectric actuator C2-2344EH

Replacement valve C2-2344D
Replacement rotor C2-23R4
Replacement stator C-2C44

Titanium stator

Manual C2-2034
With pneumatic actuator C2-2034A

With standard electric actuator C2-2034E
With microelectric actuator C2-2034EH

Replacement valve C2-2034D
Replacement rotor C2-20R4
Replacement stator C-2C34

C2-2006
C2-2006A

C2-2006E
C2-2006EH

C2-2006D
C2-20R6
C-2C06

C2-2346
C2-2346A

C2-2346E
C2-2346EH

C2-2346D
C2-23R6
C-2C46

C2-2036
C2-2036A

C2-2036E
C2-2036EH

C2-2036D
C2-20R6
C-2C36

C2H-2008
C2H-2008A

C2H-2008E
C2H-2008EH

C2H-2008D
C2-20R8H
C-2C08H

C2H-2348
C2H-2348A

C2H-2348E
C2H-2348EH

C2H-2348D
C2-23R8H
C-2C48H

C2H-2038
C2H-2038A

C2H-2038E
C2H-2038EH

C2H-2038D
C2-20R8H
C-2C38H

C2H-2000
C2H-2000A

C2H-2000E
C2H-2000EH

C2H-2000D
C2-20R0H
C-2C00H

C2H-2340
C2H-2340A

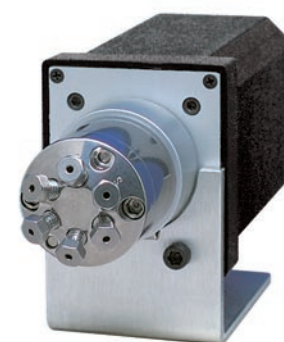
C2H-2340E
C2H-2340EH

C2H-2340D
C2-23R0H
C-2C40H

C2H-2030
C2H-2030A

C2H-2030E
C2H-2030EH

C2H-2030D
C2-20R0H
C-2C30H



Model C2
1/16" ZDV fittings

Analytical HPLC

Analytical internal sample injector, 1/16" Valco fittings, 0.25 mm ports (.010")

Model C4

5,000 psi

Analytical

Internal sample

1/16"

0.25 mm



Includes stainless steel nuts and ferrules of the stator material. Valves with PAEK stators have PEEK nuts and ferrules.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Sample volume	0.1 µl		0.2 µl		0.5 µl	
	Prod No	Price	Prod No	Price	Prod No	Price
N60 stainless stator						
Manual	C4-1004-.1		C4-1004-.2		C4-1004-.5	
With pneumatic actuator	C4-1004-.1A		C4-1004-.2A		C4-1004-.5A	
With standard electric actuator	C4-1004-.1E		C4-1004-.2E		C4-1004-.5E	
With microelectric actuator	C4-1004-.1EH		C4-1004-.2EH		C4-1004-.5EH	
Replacement valve	C4-1004-.1D		C4-1004-.2D		C4-1004-.5D	
Replacement rotor	C4-10R-.1		C4-10R-.2		C4-10R-.5	
Replacement stator	C4-1C0		C4-1C0		C4-1C0	
PAEK stator						
Manual	C4-1344-.1		C4-1344-.2		C4-1344-.5	
With pneumatic actuator	C4-1344-.1A		C4-1344-.2A		C4-1344-.5A	
With standard electric actuator	C4-1344-.1E		C4-1344-.2E		C4-1344-.5E	
With microelectric actuator	C4-1344-.1EH		C4-1344-.2EH		C4-1344-.5EH	
Replacement valve	C4-1344-.1D		C4-1344-.2D		C4-1344-.5D	
Replacement rotor	C4-13R-.1		C4-13R-.2		C4-13R-.5	
Replacement stator	C4-1C4		C4-1C4		C4-1C4	
Titanium stator						
Manual	C4-1034-.1		C4-1034-.2		C4-1034-.5	
With pneumatic actuator	C4-1034-.1A		C4-1034-.2A		C4-1034-.5A	
With standard electric actuator	C4-1034-.1E		C4-1034-.2E		C4-1034-.5E	
With microelectric actuator	C4-1034-.1EH		C4-1034-.2EH		C4-1034-.5EH	
Replacement valve	C4-1034-.1D		C4-1034-.2D		C4-1034-.5D	
Replacement rotor	C4-10R-.1		C4-10R-.2		C4-10R-.5	
Replacement stator	C4-1C3		C4-1C3		C4-1C3	

OPTIONS

- .05 µl sample volumes are also available.
- Loop fill port assembly for injection from front of the valve.
See page 41.



Model C4
1/16" ZDV fittings

MORE INFORMATION

Actuators
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Microelectric .. 188-189
Standard electric ... 193
Materials
Metals..... 254-255
Polymers 256
Valve rotors..... 257
Standoff
assemblies 205-207

Analytical through-the-handle injector, 1/16" Valco fittings, 0.40 mm ports (.016")

Model C1

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Available only in manual version.
Position feedback included.

Includes stainless steel nuts and ferrules.
Valves with PAEK stators have PEEK nuts and ferrules.

Includes one 20 µl loop of the stator material.



5,000 psi

Analytical

Through-handle

1/16" 0.40 mm

OPTIONS

- Titanium stator available.
- 0.25 mm bore (.010") on page 160.

6 port injector
Replacement rotor
Replacement stator

N60 stainless stator

Prod No

Price

C1-2006

C1-20R6

C-2C06

Prod No

Price

C-261

**PAEK stator**

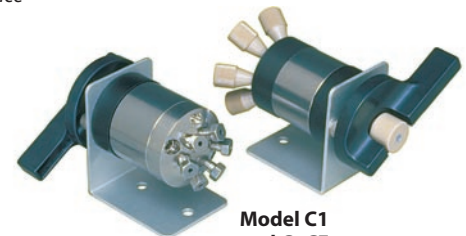
Prod No

Price

C1-2346

C1-23R6

C-2C46



Model C1 and C1CF
1/16" ZDV fittings

Analytical continuous flow through-the-handle injector, 1/16" Valco fittings, 0.40 mm ports (.016")

Model C1CF

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Available only in manual version.
Position feedback included.

Includes stainless steel nuts and ferrules.
Valves with PAEK stators have PEEK nuts and ferrules.

Includes one 20 µl loop of the stator material.



5,000 psi

Analytical

Continuous flow

Through-handle

1/16" 0.40 mm

OPTIONS

- 0.25 mm bore (.010") on page 160.

6 port injector
Replacement rotor
Replacement stator
Prod No

N60 stainless stator

Prod No

Price

C1CF-2006

C1-20R6

C6-2C06

Price

PAEK stator

Prod No

Price

C1CF-2346

C1-23R6

C6-2C46

C-261



Analytical continuous flow injector, 1/16" Valco fittings, 0.40 mm ports (.016")

Model C6

SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

Includes stainless steel nuts and ferrules.

Includes a 20 µl loop of the stator material.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.

Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.

N60 stainless stator

Prod No

Price

C6-2006

C6-2006A

C6-2006E

C6-2006EH

C6-2006D

C2-20R6

C6-2C06

PAEK stator

Prod No

Price

C6-2346

C6-2346A

C6-2346E

C6-2346EH

C6-2346D

C2-23R6

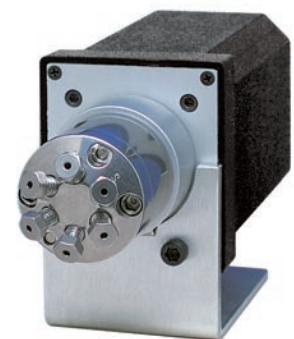
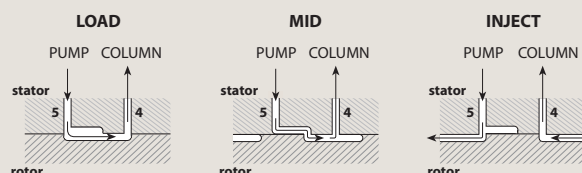
C6-2C46

Manual
With pneumatic actuator
With standard electric actuator
With microelectric actuator
Replacement valve
Replacement rotor
Replacement stator

Order loops from page 159.

C1CF and C6 CONTINUOUS FLOWPATH

An engraving on the stator maintains pump flow between ports 5 and 4 during most of the switching cycle, virtually eliminating pressure spikes.



Model C6
1/16" ZDV fittings

Low Pressure




Valves with 1/16" Valco ZDV fittings, 0.75 mm ports (.030")

Model C22Z

<div>Low pressure</div> <div>10-32 ZDV</div> <div>1/16"0.75 mm</div>	Includes Valco ZDV PEEK nuts and ferrules.		Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international. Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.		Sample loops are not included with valves. Order separately.		<div>SPECS</div> <div>100 psi gas/ 250 psi liq</div> <div>75°C max</div> <div>PPS stator</div> <div>Valcon E2 rotor</div>	
							<div>OPTIONS</div> <div>■ Purge option</div> <div>■ Other polymeric rotors and stators are available.</div> <div>Consult the factory for prices and information.</div>	
							<div>PURGE OPTION</div> <div>The purge option permits</div>	

Valves with 1/4-28 fitting details for 1/16" tubing, 0.75 mm ports (.030")

Model C22

<div>SPECS</div> <div>100 psi gas/ 250 psi liq</div> <div>75°C max</div> <div>PPS stator</div> <div>Valcon E2 rotor</div>	Includes multicolored Cheminert 1/4-28 flangeless fittings for 1/16" tubing.		Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international.		Sample loops are not included with valves. Order separately.		<div>Low pressure</div> <div>1/4-28 Internal</div> <div>1/16"0.75 mm</div>				
			Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.								
											
			4 Port		6 Port		8 Port				
			Prod NoPrice		Prod NoPrice		Prod NoPrice				
		Manual		C22-3184		C22-3186		C22-3188		C22-3180	
		With pneumatic actuator		C22-3184A		C22-3186A		C22-3188A		C22-3180A	
		With standard electric actuator		C22-3184E		C22-3186E		C22-3188E		C22-3180E	
		With microelectric actuator		C22-3184EH		C22-3186EH		C22-3188EH		C22-3180EH	
		Replacement valve		C22-3184D		C22-3186D		C22-3188D		C22-3180D	
		Replacement rotor		C22-314		C22-316		C22-318		C22-310	
		Replacement stator		C22-384		C22-386		C22-388		C22-380	

Valves with 1/4-28 fitting details for 1/8" tubing, 1.50 mm ports (.060")

Model

<div>SPECS</div> <div>100 psi gas/ 250 psi liq</div> <div>75°C max</div> <div>PPS stator</div> <div>Valcon E2 rotor</div>	Includes multicolored Cheminert 1/4-28 flangeless fittings for 1/8" tubing.		Standard electric actuator: 110 VAC for USA 110/230 VAC to 24 VDC power supply for international.		Sample loops are not included with valves. Order separately.		<div>Low pressure</div> <div>1/4-28 Internal</div> <div>1/8"1.50 mm</div>		
			Microelectric actuator: 24 VDC, with 110/230 VAC to 24 VDC power supply.						
			<div>4 Port</div> <div>Prod NoPrice</div>		<div>6 Port</div> <div>Prod NoPrice</div>		<div>8 Port</div> <div>Prod NoPrice</div>		<div>10 Port</div> <div>Prod NoPrice</div>
	Manual		C22-6184		C22-6186		C22-6188		C22-6180
	With pneumatic actuator		C22-6184A		C22-6186A		C22-6188A		C22-6180A
With standard electric actuator		C22-6184E		C22-6186E		C22-6188E		C22-6180E	
With microelectric actuator		C22-6184EH		C22-6186EH		C22-6188EH		C22-6180EH	
Replacement valve		C22-6184D		C22-6186D		C22-6188D		C22-6180D	
Replacement rotor		C22-614		C22-616		C22-618		C22-610	
Replacement stator		C22-684		C22-686		C22-688		C22-680	

Sample loops

for Model C22

Loops include flangeless fittings with white color nuts. Loops smaller than 500 µl are made from 1/16" OD tubing; loops 500 µl or bigger are made from 1/8" OD tubing.

Volume	FEP		PTFE		PEEK	
	Prod No	Price	Prod No	Price	Prod No	Price
20 µl	CFSL20FEP		CFSL20TF	\$17.50	CFSL20PK	
50 µl	CFSL50FEP		CFSL50TF		CFSL50PK	
100 µl	CFSL100FEP		CFSL100TF		CFSL100PK	
250 µl	CFSL250FEP		CFSL250TF		CFSL250PK	
500 µl	CFSL500FEP		CFSL500TF		CFSL500PK	
1 ml	CFSL1KFEP		CFSL1KTF		CFSL1KPK	
2 ml	CFSL2KFEP		CFSL2KTF		CFSL2KPK	



Model C22
1/4-28 fittings

Low Pressure

Internal sample injectors, 1/16" Valco ZDV fittings, 0.40 mm ports (.016")

Model C24Z

Low pressure

Internal sample

10-32 ZDV

1/16" 0.40 mm



Includes Valco ZDV
PEEK nuts and ferrules.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for
international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply.

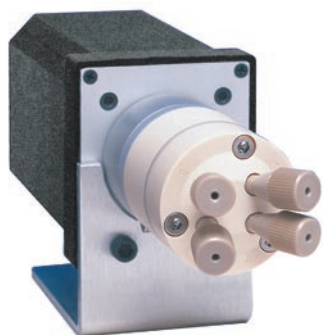
SPECS

100 psi gas/ 250 psi liq
75°C max
PPS stator
Valcon E2 rotor

Sample volume	0.2 µl		0.5 µl		1 µl	
	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C24Z-2184-.2		C24Z-2184-.5		C24Z-2184-1	
With pneumatic actuator	C24Z-2184-.2A		C24Z-2184-.5A		C24Z-2184-1A	
With standard electric actuator	C24Z-2184-.2E		C24Z-2184-.5E		C24Z-2184-1E	
With microelectric actuator	C24Z-2184-.2EH		C24Z-2184-.5EH		C24Z-2184-1EH	
Replacement valve	C24Z-2184-.2D		C24Z-2184-.5D		C24Z-2184-1D	
Replacement rotor	C24-10R-.2		C24-10R-.5		C24-10R-1	
Replacement stator	C24Z-1C8		C24Z-1C8		C24Z-1C8	

OPTIONS

- 2.0 µl sample volumes are also available.
- Purge option. *See more information below.*
- Other polymeric rotors and stators are available. Consult the factory for prices and information.



Model C24Z
1/16" ZDV fittings

PURGE OPTION

The purge option permits a flow of liquid or gas to flush the valve interior of potentially toxic or corrosive components. We recommend this option for applications using materials (such as salt solutions) that could damage the metal parts of the valve.

Consult our technical staff for details.

MORE INFORMATION

Actuators	
.....	page 195
Microelectric ..	188-189
Standard electric ...	193
Materials	
.....	254-255
.....	256
Metals	
Polymers	257
Standoff	
Valve rotors....	205-207
assemblies	

Internal sample injectors, 1/4-28 for 1/16" tubing, 0.50 mm ports (.020")

Model C24

SPECS
 100 psi gas/ 250 psi liq
 75°C max
 PPS stator
 Valcon E2 rotor

Includes multicolored
 Cheminert 1/4-28
 flangeless fittings for
 1/16" tubing.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC
 power supply.



Low pressure

Internal sample

1/4-28 Internal

1/16" 0.50 mm

OPTIONS

- 0.2 µl sample volumes are also available.
- Purge option
- Other polymeric rotors and stators are available. Consult the factory for prices and information.

Sample volume

0.5 µl

1 µl

2 µl

	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C24-2184-.5		C24-2184-1		C24-2184-2	
With pneumatic actuator	C24-2184-.5A		C24-2184-1A		C24-2184-2A	
With standard electric actuator	C24-2184-.5E		C24-2184-1E		C24-2184-2E	
With microelectric actuator	C24-2184-.5EH		C24-2184-1EH		C24-2184-2EH	
Replacement valve	C24-2184-.5D		C24-2184-1D		C24-2184-2D	
Replacement rotor	C24-10R-.5		C24-10R-1		C24-10R-2	
Replacement stator	C24-1C8		C24-1C8		C24-1C8	



Model C24
 1/4-28 fittings

Injector and Switching Valve Applications

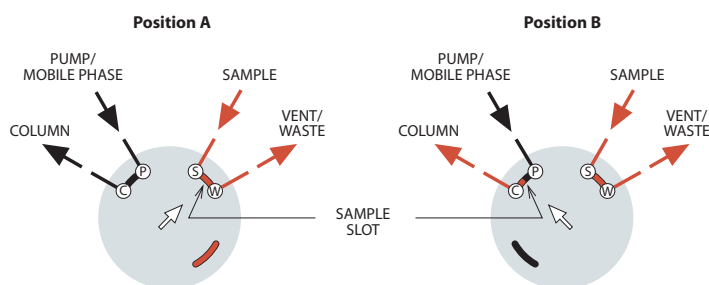
These illustrations show basic sample injection techniques using Valco two position valves. With rare exceptions, there is no difference between switching valves and external volume sampling valves, so the same valve can be used for either function.

The unique advantage of 8 and 10 port valves is that they reduce extra column volume by combining sampling and switching functions in a single valve. This minimizes expense, maintenance, service, and risk of leaks as compared to multiple 6 port valve systems.

4 port internal sample injector

MICROVOLUME SAMPLE INJECTION

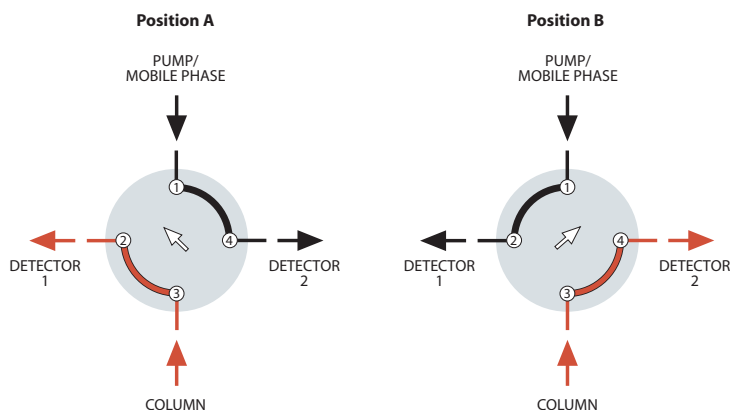
The internal sample (fixed volume) flowpath is used when very small sample volumes are required. The sample size is determined by a passage engraved on the valve rotor, allowing precise, repeatable injections. In Position A, the sample flows through the sample passage while the mobile phase flows through the column. The third passage is inactive. In Position B, the sample passage is in line with the column and the mobile phase injects the contents of the sample passage into the column. The passage which was inactive in Position A allows the sample to continue flowing without interruption.



4 port switching valve

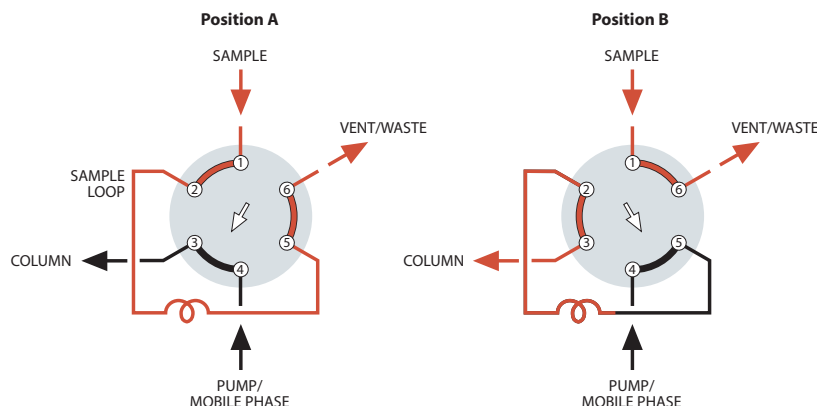
DETECTOR SELECTION FROM TWO COLUMNS OR ONE COLUMN AND AUXILIARY CARRIER

This unique configuration allows analyses of different parts of one analysis with two different detectors, without splitting or multiple injections.



Injector and Switching Valve Applications

6 port external sample injector

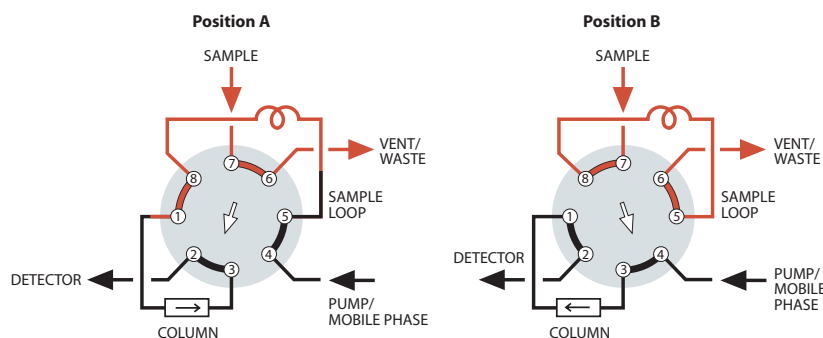


SAMPLE INJECTION

With the valve in Position A, sample flows through the external loop while the mobile phase flows directly through to the column. When the valve is switched to Position B, the sample contained in the sample loop and valve flow passage is displaced by the mobile phase and is carried into the column. *Note:* Especially for partial-filled loops, the flow direction of the mobile phase through the loop should be opposite (backflush) to the flow direction during the loading of the loop.

More applicationspages 118-119

8 port sampling/switching

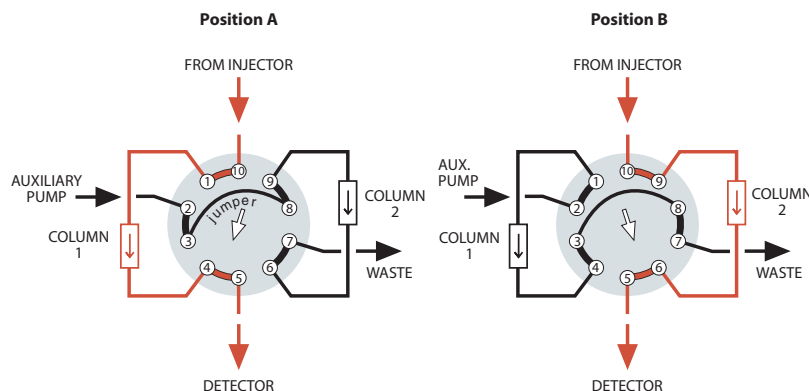


LOOP SAMPLING WITH BACKFLUSH TO DETECTOR

One valve performs the functions of sampling and backflush valves, simplifying operation and reducing cost. When components of interest are detected, the strongly retained components are backflushed and removed from the column without temperature programming.

More applications page 119

10 port sampling/switching



ALTERNATE COLUMN REGENERATION

When columns must be regenerated following each analysis, this technique permits automation of the process. While one column performs the analysis, the second column undergoes regeneration through use of an auxiliary pump. Once the first analysis is complete, the valve is switched and the regenerated column is ready for analytical use.

More applicationspages 120-121

NEW Selectors – Nanovolume UHPLC

NEW 15,000 psi UHPLC Nanovolume selectors, 1/32" Valco fittings, 150 micron ports (.006")

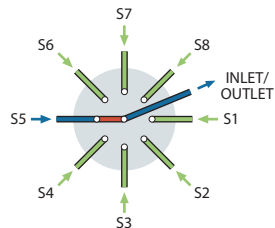
Model C75NX

15,000 psi
Stream selector
1/32" **150 µm**

Includes 1/32" Valco stainless steel fittings.



Manual version not available.
Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.



SPECS

15,000 psi liq
50°C max
Stainless stator
with inert coating
Valcon E3 rotor

OPTIONS

- 100 micron (.004") bore
- 250 micron (.010") bore
- 10,000 and 20,000 psi versions available
- 4 positions

	6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price
Coated stainless stator						
With pneumatic actuator	C75NX-6696A		C75NX-6698A		C75NX-6690A	
With standard electric actuator	C75NX-6696E		C75NX-6698E		C75NX-6690E	
With microelectric actuator	C75NX-6696EMH		C75NX-6698EMT		C75NX-6690EMT	
Replacement valve	C75NX-6696D		C75NX-6698D		C75NX-6690D	
Replacement rotor	C75N-66R6		C75N-66R8		C75N-66R0	
Replacement stator	C75N-6C96		C75N-6C98		C75N-6C90	



Model C75NX
1/32" Valco stainless
fittings

**NEW 10,000 psi UHPLC microbore selectors,
1/16" Valco fittings, 250 micron ports (.010")**

Model C75H

SPECS

10,000 psi liq
50°C max
 Stainless stator
 with inert coating
 Valcon E3 rotor



Includes 1/16" Valco
 stainless steel fittings.

Manual version not available.

Standard electric actuator:

110 VAC for USA

110/230 VAC to 24 VDC power supply for
 international.

Microelectric actuator:

24 VDC, with 110/230 VAC to 24 VDC
 power supply.

10,000 psi

Stream selector

1/16"

250 µm

OPTIONS

- 150 micron (.006") bore
- 15,000 psi version available
- 4 positions

	6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price
Coated stainless stator						
With pneumatic actuator	C75H-1696A		C75H-1698A		C75H-1690A	
With standard electric actuator	C75H-1696E		C75H-1698E		C75H-1690E	
With microelectric actuator	C75H-1696EMH		C75H-1698EMT		C75H-1690EMT	
Replacement valve	C75H-1696D		C75H-1698D		C75H-1690D	
Replacement rotor	C75-16R6		C75-16R8		C75-16R0	
Replacement stator	C75-1C96		C75-1C98		C75-1C90	



Model C75H
 1/16" Valco stainless
 fittings

Selectors – High Pressure

HPLC stream selector, 1/16" Valco ZDV fittings, 0.40 mm ports (.016")

Model C5

5,000 psi

Stream selector

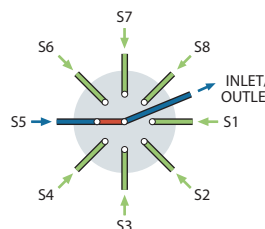
10-32 ZDV

1/16"

0.40 mm

Includes stainless steel nuts and ferrules of the stator material. Valves with PAEK stators have PEEK nuts and ferrules.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power supply for international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC power supply.



SPECS

5000 psi liq
75°C max
Metal stator
Valcon H rotor

5000 psi liq
50°C max
PAEK stator
Valcon E rotor

	4 Position		6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
N60 stainless stator								
Manual	C5-2004		C5-2006		C5H-2008		C5H-2000	
With pneumatic actuator	C5-2004A		C5-2006A		C5H-2008A		C5H-2000A	
With standard electric actuator	C5-2004E		C5-2006E		C5H-2008E		C5H-2000E	
With microelectric actuator	C5-2004EMH		C5-2006EMH		C5H-2008EMT		C5H-2000EMT	
Replacement valve	C5-2004D		C5-2006D		C5H-2008D		C5H-2000D	
Replacement rotor	C5-20R4		C5-20R6		C5-20R8H		C5-20R0H	
Replacement stator	C5-2C04		C5-2C06		C5-2C08H		C5-2C00H	
PAEK stator								
Manual	C5-2344		C5-2346		C5H-2348		C5H-2340	
With pneumatic actuator	C5-2344A		C5-2346A		C5H-2348A		C5H-2340A	
With standard electric actuator	C5-2344E		C5-2346E		C5H-2348E		C5H-2340E	
With microelectric actuator	C5-2344EMH		C5-2346EMH		C5H-2348EMT		C5H-2340EMT	
Replacement valve	C5-2344D		C5-2346D		C5H-2348D		C5H-2340D	
Replacement rotor	C5-23R4		C5-23R6		C5-23R8H		C5-23R0H	
Replacement stator	C5-2C44		C5-2C46		C5-2C48H		C5-2C40H	
Titanium stator								
Manual	C5-2034		C5-2036		C5H-2038		C5H-2030	
With pneumatic actuator	C5-2034A		C5-2036A		C5H-2038A		C5H-2030A	
With standard electric actuator	C5-2034E		C5-2036E		C5H-2038E		C5H-2030E	
With microelectric actuator	C5-2034EMH		C5-2036EMH		C5H-2038EMT		C5H-2030EMT	
Replacement valve	C5-2034D		C5-2036D		C5H-2038D		C5H-2030D	
Replacement rotor	C5-20R4		C5-20R6		C5-20R8H		C5-20R0H	
Replacement stator	C5-2C34		C5-2C36		C5-2C38H		C5-2C30H	

OPTIONS

- 2", 3", 4", and 6" standoffs
- Hastelloy C stator
- Optional 0.15 mm (.006") and 0.25 mm (.010") bores available
- Optional 0.75 mm (.030") bore for Prep HPLC available

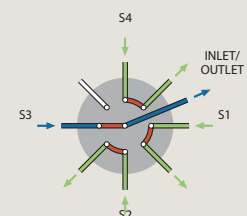
MORE INFORMATION

Manifolds page 33

OPTIONAL FLOWPATH

Model C5F, the flow-through version, is similar to the C5 but its non-selected streams continue flowing through individual outlets. 3, 4, and 5 positions are available.

Consult the factory for C5F prices and information.



Model C5F
schematic diagram



Model C5
6 positions
1/16" ZDV fittings

Selectors – High Pressure

HPLC column selector system with 1/16" Valco ZDV fittings, 0.40 mm ports (.016")

Model C5

SPECS

5000 psi liq
75°C max
 Metal stator
 Valcon H rotor

5000 psi liq
50°C max
 PAEK stator
 Valcon E rotor

The system comprises two stream selection valves mounted on a single microelectric actuator, which can be controlled manually, via remote logic level signal, or by RS-232 interface (RS-485 optional). See plumbing diagram below.

Includes stainless steel nuts and ferrules of the stator material.

Valves with PAEK stators have PEEK nuts and ferrules.

Includes microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC power supply.

5,000 psi**Column selector system****10-32 ZDV****1/16" 0.40 mm****OPTIONS**

- 2", 3", 4", and 6" standoffs
- Hastelloy C stator
- Optional 0.25 mm (.010") bore available
- Optional 0.75 mm (.030") bore for Prep HPLC available

N60 stainless stator

System

Replacement valve

Replacement rotor

Replacement stator*

PAEK stator

System

Replacement valve

Replacement rotor

Replacement stator*

6 Column

Prod No

Price

8 Column

Prod No

Price

10 Column

Prod No

Price

C5-2006EMTD

C5H-2008EMTD

C5H-2000EMTD

C5-2006D

C5H-2008D

C5H-2000D

C5-20R6

C5-20R8H

C5-20R0H

C5-2C06

C5-2C08H

C5-2C00H

C5-2346EMTD

C5H-2348EMTD

C5H-2340EMTD

C5-2346D

C5H-2348D

C5H-2340D

C5-23R6

C5-23R8H

C5-23R0H

C5-2C46

C5-2C48H

C5-2C40H

* See note on ordering stators, below.

RS-232 interface cable

Prod No

Price

I-22697

MORE INFORMATION**Actuators**

Air page 194

Microelectric .. 190-191

Standard electric ... 193

Loop fill port

assembly 41

Materials

Metals..... 254-255

Polymers 256

Valve rotors..... 257

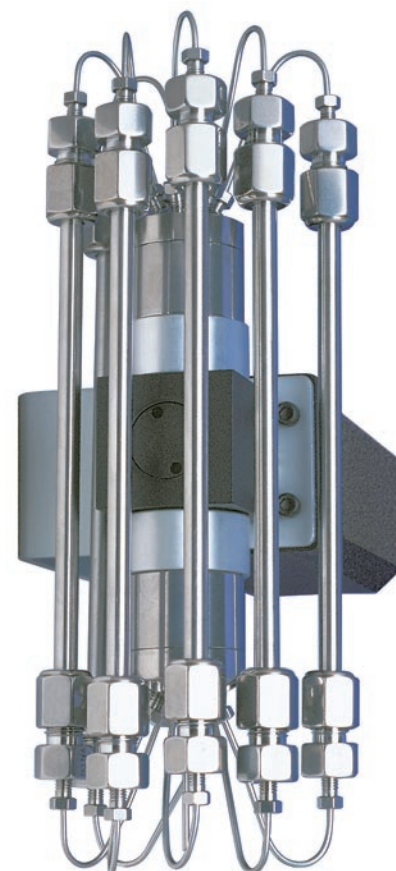
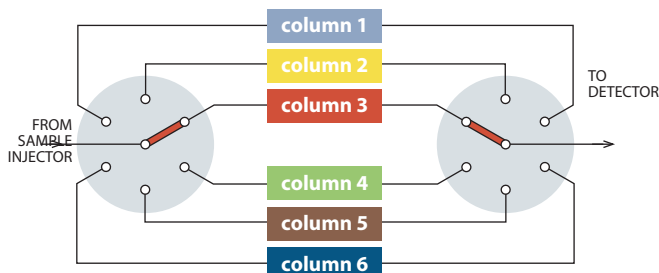
Standoff

assemblies 205-207

ORDERING STATORS

Valves for dual drive assemblies have mirror image stators. Consult Technical Support for correct product number before ordering.

Both valves use the same rotor.

**Model C5 system**

Columns not included

Selectors – Low Pressure

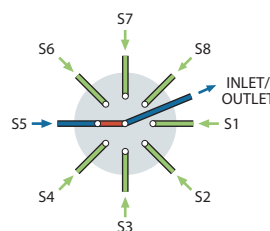
Stream selector, 1/16" Valco ZDV fittings, 0.75 mm ports (.030")

Model C25Z

Low pressure
Stream selector
10-32 ZDV
1/16" 0.75 mm

Includes Valco ZDV
PEEK nuts and ferrules.

Standard electric actuator:
110 VAC for USA
110/230 VAC to 24 VDC power
supply for international.
Microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply.



SPECS

100 psi gas/ 250 psi liq
75°C max
PPS stator
Valcon E2 rotor

OPTIONS

- 4 and 12 positions available
- 2", 3", 4", and 6" standoffs
- Other polymeric materials are available. Consult the factory.

	6 Position		8 Position		10 Position		14 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C25Z-3186		C25Z-3188		C25Z-3180		C25Z-31814	
With pneumatic act.	C25Z-3186A		C25Z-3188A		C25Z-3180A		C25Z-31814A	
With std electric act.	C25Z-3186E		C25Z-3188E		C25Z-3180E		C25Z-31814E	
With microelectric act.	C25Z-3186EMH		C25Z-3188EMH		C25Z-3180EMH		C25Z-31814EMH	
Replacement valve	C25Z-3186D		C25Z-3188D		C25Z-3180D		C25Z-31814D	
Replacement rotor	C15-310		C15-310		C15-310		C25Z-325	
Replacement stator	C25Z-386		C25Z-388		C25Z-380		C25Z-38-14	

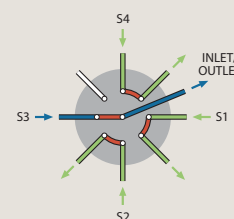


Model C25Z
10 positions
1/16" ZDV fittings

OPTIONAL FLOWPATH

Model C25ZF, the flow-through version, is similar to the C25Z but its non-selected streams continue flowing through individual outlets, instead of being dead-ended. 3, 4, 5, 6, and 7 positions are available.

Consult the factory for C25ZF prices and information.



Selectors – Low Pressure

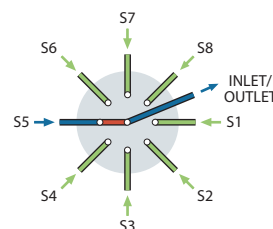
Stream selector, 1/4-28 fittings for 1/16" tubing, 0.75 mm ports (.030")

Model C25

SPECS
 100 psi gas/ 250 psi liq
 75°C max
 PPS stator
 Valcon E2 rotor

Includes multicolored
 Cheminert 1/4-28
 flangeless fittings
 for 1/16" tubing.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power
 supply for international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC
 power supply.



Low pressure

Stream selector

1/4-28 Internal

1/16" 0.75 mm

OPTIONS

- 2", 3", 4", and 6" standoffs
- CTFE stator

	4 Position		6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C25-3184		C25-3186		C25-3188		C25-3180	
With pneumatic act.	C25-3184A		C25-3186A		C25-3188A		C25-3180A	
With std electric act.	C25-3184E		C25-3186E		C25-3188E		C25-3180E	
With microelec act.	C25-3184EMH		C25-3186EMH		C25-3188EMH		C25-3180EMH	
Replacement valve	C25-3184D		C25-3186D		C25-3188D		C25-3180D	
Replacement rotor	C25-314		C25-316		C25-318		C25-310	
Replacement stator	C25-384		C25-386		C25-388		C25-380	

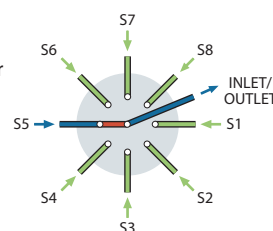
Stream selector, 1/4-28 fittings for 1/8" tubing, 1.50 mm ports (.060")

Model C25

SPECS
 100 psi gas/ 250 psi liq
 75°C max
 PPS stator
 Valcon E2 rotor

Includes multicolored
 Cheminert 1/4-28
 flangeless fittings
 for 1/8" tubing.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for
 international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC
 power supply.



Low pressure

Stream selector

1/4-28 Internal

1/8" 1.50 mm

OPTIONS

- 2", 3", 4", and 6" standoffs
- CTFE stator

	4 Position		6 Position		8 Position		10 Position	
	Prod No	Price	Prod No	Price	Prod No	Price	Prod No	Price
Manual	C25-6184		C25-6186		C25-6188		C25-6180	
With pneumatic act.	C25-6184A		C25-6186A		C25-6188A		C25-6180A	
With std electric act.	C25-6184E		C25-6186E		C25-6188E		C25-6180E	
With microelec act.	C25-6184EMH		C25-6186EMH		C25-6188EMH		C25-6180EMH	
Replacement valve	C25-6184D		C25-6186D		C25-6188D		C25-6180D	
Replacement rotor	C25-614		C25-616		C25-618		C25-610	
Replacement stator	C25-684		C25-686		C25-688		C25-680	

MORE INFORMATION

Actuators

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 Standard electric ... 193
 Materials
 Metals..... 254-255
 Polymers 256
 Valve rotors. 257
 Standoff
 assemblies 205-207

OPTIONAL FLOWPATH

Model C25F is the
 flow-through version of
 C25. (See discussion on
 facing page.) 3, 4, 5, 6, and
 7 positions are available.

Consult the factory
 for C25F prices and
 information.



Model C25
 10 position
 1/4-28 fittings

CHROMalytic TECHnology Pty Ltd AUSTRALIAN Distributors e-mail: sales@chromtech.net.au Tel: 03 9762 2034

Selectors – Low Pressure

Stream selector, 1/16" Valco ZDV fittings, 0.75 mm ports (.030")

Model C35Z

Low pressure

Stream selector

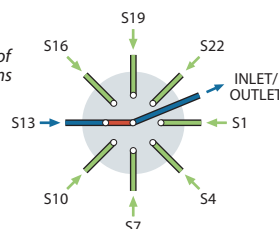
10-32 ZDV

1/16" 0.75 mm

Includes Valco ZDV
PEEK nuts and ferrules.

Available only with microelectric actuator:
24 VDC, with 110/230 VAC to 24 VDC
power supply.

(For clarity, only eight of
the twenty-four streams
are illustrated.)



SPECS

100 psi liq
50°C max
PPS stator
Valcon E2 rotor

OPTIONS

- Optional bore:
0.5 mm (.020")
1.0 mm (.040")
- 2", 3", 4", and 6"
standoffs
- Consult the factory
for optional materials.

20 Position

Prod No

Price

24 Position

Prod No

Price

26 Position

Prod No

Price

With microelectric actuator

C35Z-31820EMT

C35Z-31824EMT

C35Z-31826EMT

Replacement valve

C35Z-31820D

C35Z-31824D

C35Z-31826D

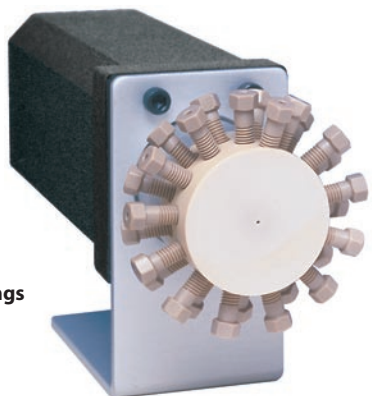
Replacement rotor

C35Z-31R20

C35Z-31R20

C35Z-31R20

Model C35Z
26 positions
1/16" ZDV fittings



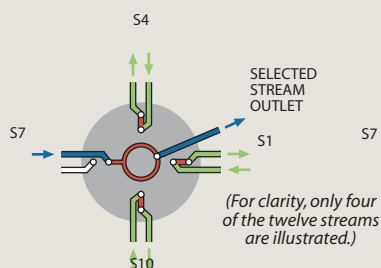
OPTIONAL FLOWPATHS

Model C35Z valves select and isolate one of 20-26 streams, with the remainder dead-ended.

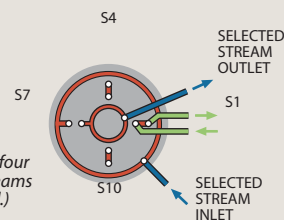
Model C35ZF, the flow-through version, is similar to the C35Z but its non-selected streams continue flowing through individual outlets. 10, 12, and 13 positions are available.

Model C35ZT, the trapping version, is similar to the C35ZF but has a second selected port. Non-selected streams continue flowing. 10, 12, and 13 positions are available.

Call for pricing and information.



Model C35ZF
schematic



Model C35ZT
schematic

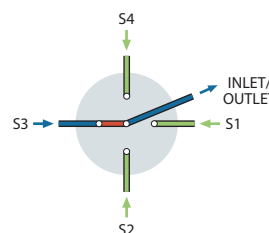
Stream selector, 1/2-20 fittings for 1/4" tubing, 4.6 mm ports (.180")

Model C45

SPECS
100 psi liq
50°C max
 PPS stator
 Valcon TF rotor

Manual version not available.
 Includes Cheminert 1/2-20 flangeless fittings for 1/4" tubing, Delrin nuts and CTFE ferrules.

Standard electric actuator:
 110 VAC for USA
 110/230 VAC to 24 VDC power supply for international.
 Microelectric actuator:
 24 VDC, with 110/230 VAC to 24 VDC power supply.



Low pressure

Stream selector

1/2-20 Internal

1/4"

4.6 mm

OPTIONS

- 2", 3", 4", and 6" standoffs
- Consult the factory for optional materials.
- 8 position selectors are available with 3 mm (.120") ports

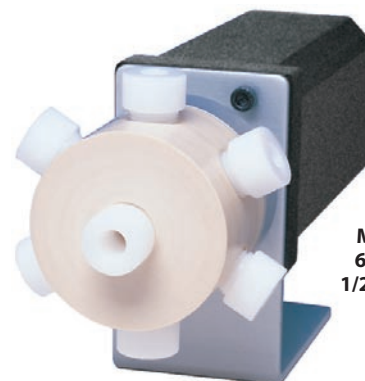
	4 Position		6 Position	
	Prod No	Price	Prod No	Price
With pneumatic actuator	C45-9784A		C45-9786A	
With std electric actuator	C45-9784E		C45-9786E	
With microelectric actuator	C45-9784EMT		C45-9786EMT	
Replacement valve	C45-9784D		C45-9786D	
Replacement rotor	C45-97R4		C45-97R6	

Fittings for C45 valves

For additional 1/2-20 fittings and adapters, see page 72.



	Prod No	Price
Delrin nut	CFL-4D	
CTFE nut	CFL-4KF	
PPS nut	CFL-4PPS	
CTFE ferrule	CFL-CB4KF-S	



Model C45
6 positions
1/2-20 fittings

MORE INFORMATION

Actuators

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Materials

Metals..... 254-255

Polymers 256

Valve rotors..... 257

Standoff

assemblies 205-207

Actuators and Accessories

Two position valves switch back and forth between Load and Inject, or Position A and Position B. Selectors operate in continuous revolutions by incremental steps. There are several ways to actuate each type of valve, along with a number of supporting controllers and devices to interface the actuators with computer-controlled systems.

With the exception of low pressure Cheminert selectors, we recommend that selectors be purchased with air or electric actuators. While a manual detent assembly is available, the higher turning torque of our other selector designs makes them more difficult to position accurately by hand.

Manual Actuation

Simplicity and low cost are the main advantages of manual actuation. Some models can be ordered with position feedback, an option which sends a signal to start a data system when the valve is switched.



Knobs
page 204

Air Actuation

Air actuators are useful in situations where any spark could be disastrous or where there is no electricity available. They are small, relatively inexpensive, very rugged and dependable, and field-serviceable. Low gas consumption and lightweight, compact construction make the air actuator suitable for aerospace flight hardware applications as well as laboratory or process applications.

With the addition of a DVI (digital valve interface) to translate the timed event signals into the necessary air pulses, air actuators can be automatically switched by a data system, integrator, or controller such as our DVSP (digital valve sequence programmer) or SVI (serial valve interface).



Air actuator
Two position, page 195
Selector, page 194

MORE INFORMATION Actuators

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Standard
electric 193

Controllers and Accessories

41E1 198
4-way solenoid
air valve
DVI 199
Digital valve interface
DVSP 196
Digital valve sequence
programmer
HSSA 198
High speed switching
accessory
MSVA 198
Manifold 3-way
solenoid valve
assembly
PFAF 199
Position feedback for
air actuators
RAD 204
Right angle drive
SVI 197
Serial valve interface

Mounting Hardware

Closemount
assembly 208-209
Standoff
assembly 205-207

Electric Actuation

The **microelectric actuator** features automatic valve alignment, high-speed switching, compact size, 24 VDC power input, and reversible direction (in the selector model).

If lower cost outranks those factors in your consideration, our **standard electric actuator** (110/230 VAC) offers a dependable, economical solution.

Both types of electric actuators can be operated manually with a controller assembly that features position-indicating LEDs and a toggle

switch, but can be easily connected to an external data system for fully automated control. The microelectric actuator has built-in multidrop RS-232 (RS-485 optional) for bidirectional communications. The SVI (serial valve interface) was designed specifically to interface our standard electric actuators with RS-232 compatible systems, allowing control of up to six actuators via modem, BASIC program, or Valco-supplied PC software.

The new **universal actuator** operates virtually any Valco or Cheminert rotary valve – two position and selector alike – greatly simplifying the electronic aspect of instrument design.



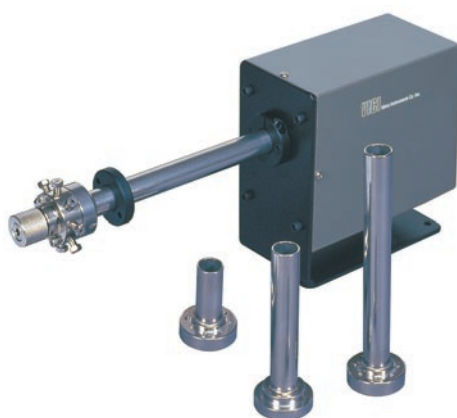
Microelectric actuator
Two position, page 189
For selectors (multiposition), page 190



Standard electric actuator
Two position and selector, page 193



Universal actuator
page 192



Standoff assemblies
page 205

Standoff Assemblies

All valves, no matter what their actuation mode, can be ordered with a standoff assembly. The standoff is an extension shaft mounted between the handle or actuator and the valve, allowing the valve to be installed within a heated zone while the actuator or handle remains outside at ambient temperature. The standoff extends through the oven wall, and is secured by a clamp ring supplied with the assembly. Standard standoff assembly lengths are 2", 3", 4", and 6". Other lengths can be special-ordered at additional cost.

Right Angle Drive

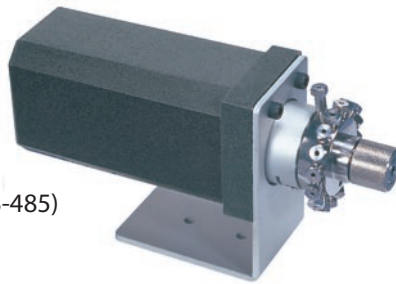
Some installations don't allow the valve and actuator to be installed in a typical in-line configuration. The RAD (right angle drive) is a 90° gearbox which permits the actuator or handle to be installed at a right angle to the valve. The RAD fits all VICI electric and air actuators.



Right angle drive
page 204

Microelectric Actuators

- CE certified
- Automatic alignment
- Manual control with position indication
- Remote control by contact closures or TTL logic level signals
- RS-232 bidirectional communication (optional RS-485)
- Two position and selector versions
- Universal power supply, 110/230 VAC to 24 VDC
-



The microelectric actuator offers Valco dependability in a unit which is less than half the size of our standard model. The actuator consists of a control module, a stepper motor/gearbox assembly, a manual remote control, interconnecting cables, and a 110/230 VAC to 24 VDC power supply. The composite version combines the stepper motor/gearbox assembly with the control module. The RS-232 interface cable, if required, must be ordered separately.

Since different valve models have varying actuation torque requirements, there are five microelectric actuator models for two position valves – EQ, EH, EP, ED, and ET – and two versions

for multiposition – EMH and EMT. Consult the chart on the respective ordering information page to determine which model meets your requirements. When a valve and actuator are ordered at the same time, the proper actuator is supplied automatically.

An actuator can be specified with closemount hardware, with a standoff, or with just the standoff mounting hardware, if your valve already has a standoff. The microelectric actuator is designed for room temperature use. Valves which will be mounted in ovens require a standoff assembly, which locates the actuator out of the heated zone.



2009 #60

MORE INFORMATION

Microelectric actuators
For two position . . . 189
For selectors . . . 190-191

Mounting Hardware

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hardware page 208
Right angle drive 204
Standoff assembly 205
Standoff mounting
hardware 205

TECH TIP

Electric actuators can be directly controlled by signals from microprocessor-based instruments, data systems, or valve programmers, unlike air actuators, which require an interface to convert the signal to an air pulse.

ORDER TIP

To purchase a **valve with a microelectric actuator installed**, see valve ordering information.

Valco

Injectors and
valves pp 102-116
Selectors 122-133

Cheminert

Injectors and
valves 152-167
Selectors 170-177

Two Position Microelectric Actuators



- CE certified
- Stall-sensing circuitry – no mechanical microswitches
- High speed switching – <100 ms in EQ model
- A model for every valve we sell

The two position microelectric actuator features exclusive stall-sensing circuitry which eliminates problems associated with valve/actuator misalignment. Power to the actuator motor is switched off when the driver pin goes against the stop of the valve cutout – no sooner, no later – and it's all done without any mechanical microswitches. Not only does this mean that alignment problems are a thing of the past, it means that you can stock one actuator for valves that turn 30°, 36°, 45°, 60°, 90°, or anything in between.

During initialization, the valve rotates at moderate speed while the actuator waits to sense the stall. Once the rotation angle has been measured and confirmed by repetition, the angle is memorized and actuation takes place at maximum speed. Valve position memory is maintained even in the event of a power failure. There is nothing more to do unless you wish to install a valve with a different angle of rotation. In that event, cycling the actuator with no valve mounted sets up reinitialization.

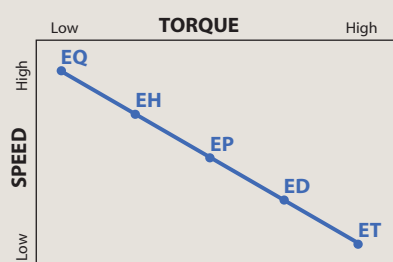
WHICH MODEL FOR WHICH TWO POSITION VALVE?

Fitting size	Valve type	Actuator model	Valve type	Actuator model
	Valco GC		Valco HPLC	
1/32"	W	EH	W	EP
1/16"	W	EH	W	EP
1/16"	UW	ED	UW	ED
1/8"	UW	ED	UW	ED
1/4"	MW	ET	—	—

Cheminert HPLC & Low Pressure

All valves EH

SPEED AND TORQUE: Inversely proportional



Microelectric actuators

for two position valves

Standard voltage 24 VDC. Includes autosensing 24 VDC power supply. Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available. Consult the chart below to determine which actuator model is best suited for your valve.

Description	With closemount assembly Prod No	With 2" standoff assembly Prod No	For use with existing standoff Prod No
Highest speed actuator	EQ	EQ2	EQS
High speed actuator	EH	EH2	EHS
Medium torque actuator	EP	EP2	EPS
High torque actuator	ED	ED2	EDS
Highest torque actuator	ET	ET2	ETS

RS-232 interface cable

Description	Prod No
RS-232 interface cable	I-22697

Multi-drop cables

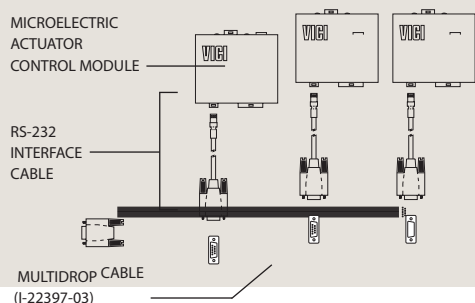
for multiple microelectric actuators

Multi-drop cables permit a single serial port (RS-232) to control multiple microelectric two position and multiposition actuators. Cables have one female DB9 and 2 to 8 male DB9 connectors – approximately 6" long.

Note: The RS-232 interface cable (I-22697), above, is required for **each** actuator.

TECH TIP

Multi-drop cables permit a single serial port (RS-232) to control multiple microelectric actuators.



No. of actuators to be controlled	Prod No
2	I-22897-02
3	I-22897-03
4	I-22897-04
5	I-22897-05
6	I-22897-06
8	I-22897-08

Microelectric Actuators for Selectors

- CE certified
- Direction reversal
- Position indication
 - LED display
 - RS-232 output
 - BCD 5V negative true output
- Manual control
 - Step and home functions
 - Clockwise and counterclockwise functions
- Remote control
 - Step and home functions with contact closure
 - Direct position access with BCD 5V negative true input
 - Direct position access with RS-232 input (RS-485 optional)
- Automatic self-alignment with keyed valves and standoffs



One actuator can be used on any selector, from 2 to 96 positions – you tell the actuator how many stops to make through its 360° of rotation. So you can stock only one type of actuator even if you have 4, 6, 8, 10, 12, and 16 position valves. Valve position memory is maintained even in the event of a power failure.

The direction reversal feature means that if a 6 position stream selection valve is on stream 1 and you select stream 6, you have the option of stepping “backwards” to stream 6 instead of passing through 2, 3, 4, and 5. The RS-232 input offers various commands like position access, direction control, shortest route, etc. (The RS-232 cable must be ordered separately.)



MORE INFORMATION

Microelectric actuators
For two position 189

Mounting Hardware

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hardware page 208
Right angle drive 204
Standoff assembly 205
Standoff mounting
hardware 205

ORDER TIP

To purchase a **valve with a microelectric actuator installed**, see valve ordering information.

Valco

Injectors and
valves pp 102-116
Selectors 122-133

Cheminert

Injectors and
valves 152-167
Selectors 170-177



Microelectric actuators

for selectors

Standard voltage 24 VDC. Includes autosensing 24 VDC power supply.
Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available.
Consult the chart below to determine which actuator model is best suited for your valve.

	With keyed closemount assembly	With keyed 2" standoff assembly	For use with existing standoff
Description	Prod No	Prod No	Prod No
High speed actuator	EMH	EMH2	EMHS
High torque actuator	EMT	EMT2	EMTS

WHICH MODEL FOR WHICH SELECTOR?

Valve model Actuator model

Valco

All valves EMT

Cheminert high pressure

C5	4, 6 positions	EMH
	8, 10 positions	EMT
C75NX		EMH
C75H		EMH

Cheminert low pressure

C25Z	EMH
C25	EMH
C35Z	EMH
C45	EMT

RS-232 interface cable

Description	Prod No
RS-232 interface cable	I-22697

Multi-drop cables

for multiple microelectric actuators

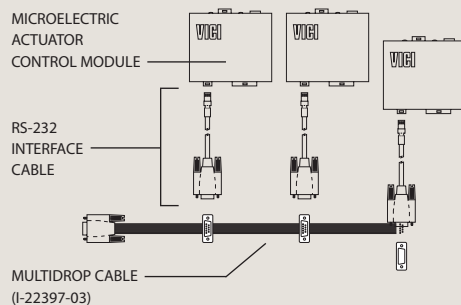
Multi-drop cables permit a single serial port (RS-232) to control multiple microelectric two position and selector actuators. Cables have one female DB9 and 2 to 8 male DB9 connectors – approximately 6" long.

Note: The RS-232 interface cable (I-22697), above, is required for **each** actuator.

No. of actuators to be controlled	Prod No
2	I-22897-02
3	I-22897-03
4	I-22897-04
5	I-22897-05
6	I-22897-06
8	I-22897-08

TECH TIP

Multi-drop cables permit a single serial port (RS-232) to control multiple microelectric actuators.



ABOUT STANDOFFS

Keyed standoff assemblies are used with selector (multiposition) microelectric actuators, to key the valve body to the actuator and standoff so that the actuators can self-align and operate valves with any number of positions.

Valco selectors are not keyed unless ordered with a microelectric actuator. To install a microelectric actuator on an existing Valco selector, the key (pin) must be removed from the actuator clamp ring assembly. This can be done easily with a pair of pliers.

See page 207, top and bottom illustrations, for drawings of keyed standoff assemblies with multiposition microelectric actuators.

NEW OEM – Universal Actuators

- One actuator works with two position valves *and* selectors
- Simplified, universal communication protocol
- Variety of interfaces
- Three versions for various valve torque requirements



The universal actuator allows instrument manufacturers to use a single motor and control software to operate virtually any Valco or Cheminert rotary valve. This simplifies the electronic aspect of instrument design and streamlines the development process.

All our Valco and Cheminert valves and selectors, with their wide range of turning torques, are covered by three actuator versions: high speed, medium speed/medium torque, and high torque. (See charts below)

Actuators listed below include universal 24 volt DC power supply and manual interface. An OEM version that excludes these items is also available. Current interface options include RS232/485, USB, and BCD.

While the actuators listed on this page are universal, the valve mounting hardware is not. The product numbers shown below do not include the hardware required for mounting a valve, since the necessary hardware depends on the valve type. If you are ordering the actuator for use

with an *existing* valve, call our sales or technical staff to determine the correct hardware needed. If you want to order the universal actuator with a *new* valve, simply substitute the actuator product number in place of a different actuator and we'll provide the correct hardware. For example, to order the universal actuator in place of the air actuator in A4C6UWE, order p/n EUD4C6UWE, or to order C2-2006EH with a universal actuator, order C2-2006EUH.

NEW Universal actuators

	High speed (EUH)	Medium torque (EUD)	High torque (EUT)
<i>Description</i>	<i>Prod no</i>	<i>Prod no</i>	<i>Prod no</i>
Without interface	EUH	EUD	EUT
With RS-232/485	EUHA	EUDA	EUTA
With USB	EUHB	EUDB	EUTB
With BCD	EUHC	EUDC	EUTC



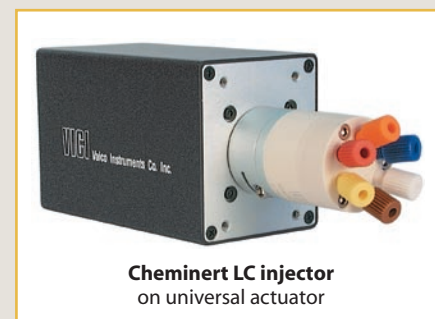
Refer to these charts to determine which of the three versions best suits the valves you use, or simply ask our sales or technical staff.

WHICH MODEL FOR WHICH SELECTOR?

Valco		
	Actuator model	
All valves	EUT	
Cheminert		
	Actuator model	Actuator model
	HPLC	UHPLC
4 and 6 position *	EUH	EUH
8 and 10 position	EUD	EUD
	Low pressure	
Model C25 and C25Z	EUH	
Model C35Z	EUD	
Model C45	EUT	
* 20,000 psi versions use EUD.		

WHICH MODEL FOR WHICH INJECTOR / TWO POSITION VALVE?

Valco			
Fitting size	Valve type	Actuator model	Actuator model
		GC	HPLC
1/32"	W	EUH	EUD
1/16"	W	EUH	EUD
1/16"	UW	EUD	EUD
1/8"	UW	EUD	EUD
1/4"	MW	EUT	—
Cheminert			
		Actuator model	Actuator model
		HPLC	UHPLC
4 and 6 ports *		EUH	EUH
8 and 10 ports		EUH	EUD
		Low pressure	
All valves		EUH	
*20,000 psi versions use EUD.			



Standard Electric Actuators



Two position standard electric actuators may be operated manually by a toggle switch or automatically by any data system with momentary contact closures or 5 VDC negative true logic outputs. A complete system, the actuator includes interface cable, power cord, and manual controller assembly with position indication.

Multiposition (selector) models work with any of our multiposition valves. The manual controller with LED display allows the user to step sequentially from one position to the next or to return to Position 1 (Home). A data system with momentary contact closures can direct the step and home functions; 5 VDC negative true logic outputs provide direct position access. A 20-conductor interface

cable permits the system to step the actuator sequentially, move the actuator directly to any position, and read the actual valve position.

Standard electric actuators can be ordered with closemount hardware, a standoff, or just the standoff mounting hardware, if your valve already has a standoff. Valves which will be mounted in ovens require a standoff assembly so that the actuator is located out of the heated zone.

The actuator's rotation (two position) or number of positions (multiposition) must be properly matched to the valve's. If you are converting a manual valve to electric actuation and have any doubts about which actuator and hardware you need, call our sales or technical staff for assistance.

ORDER TIP

To purchase a **valve with a standard electric actuator installed**, see valve ordering information.

Valco

Injectors and valves pp 102-116
Multiposition valves 122-133

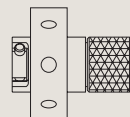
Cheminert

Injectors and valves 152-167
Multiposition valves 170-177

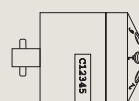
TECH TIP

Valco two position W and UW type valves and Cheminert valves have the following angles of rotation:

3 port	90°
4 port	90°
6 port	60°
8 port	45°
10 port	36°
12 port	30°
14 port	26°



Valco



Cheminert

MORE INFORMATION Controllers

DVSP page 196
Digital valve sequence programmer
SVI 197
Serial valve interface

Mounting Hardware

Closemount hardware 208
Right angle drive . 204
Standoff assembly 205
Standoff mounting hardware 205

Standard electric actuators

for two position valves

Standard voltage: 110 VAC. (230 VAC and 24 volt CE versions optional. Consult factory for product numbers and pricing.)

Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available.

No. of ports in valve	Description	With closemount assembly	With 2" standoff assembly	For use with existing standoff
		Prod No	Prod No	Prod No
3, 4	90° rotation	E90	E902	E90S
6	60° rotation	E60	E602	E60S
8	45° rotation	E45	E452	E45S
10	36° rotation	E36	E362	E36S
12	30° rotation	E30	E302	E30S

Standard electric actuators

for selectors

Standard voltage: 110 VAC. (230 VAC optional. Consult factory for product numbers and pricing.)

Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available.

Description	With closemount assembly	With 2" standoff assembly	For use with existing standoff
	Prod No	Prod No	Prod No
4 position	E4	E42	E4S
4 x 2*	E4X2	E4X22	E4X2S
6 position	E6	E62	E6S
6 x 2**	E6X2	E6X22	E6X2S
8 position	E8	E82	E8S
10 position	E10	E102	E10S
12 position	E12	E122	E12S
16 position	E16	E162	E16S

* The 4 column selection valve, CST4UW, is an 8 position valve and needs a 4 x 2 actuator.

** The 6 column selection valve, CST6UW, is a 12 position valve and needs a 6 x 2 actuator.

Air Actuators

Air actuators offer reliable performance under the most stringent conditions. Low gas consumption and lightweight, compact construction make the air actuator suitable for aerospace flight hardware applications as well as laboratory or process applications.

The standard air actuator is rated for up to 80 psig at temperatures up to 70°C. Generally speaking, valves which will be heated require a standoff assembly, which locates the air actuator out of the heated zone and supports both the valve and actuator. A high temperature model permits both valve and actuator to be mounted within an oven (175°C maximum), but it is not recommended for use below 50°C.

Air Actuators for Selectors

The recommended method for implementing a selector (multi-position) air actuator requires only a single 4-way solenoid. Up to 80 psig may be used without damaging the valve or actuator. Bottled instrument air or nitrogen is recommended.

If plant air from compressors must be used, an oil separator and water dryer are required.

Multiposition air actuators include a rotary switch which may be connected to a digital readout or your own design.

Standard air actuators

for selectors

Temperature range 0-70°C

Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available.

	With closemount assembly	With 2" standoff assembly	With standoff mounting hardware
Description	Prod No	Prod No	Prod No
4 position	A4	A42	A4S
6 position	A6	A62	A6S
8 position	A8	A82	A8S
10 position	A10	A102	A10S
12 position	A12	A122	A12S
16 position	A16	A162	A16S

High temperature air actuators

for selectors

Temperature range 50-175°C

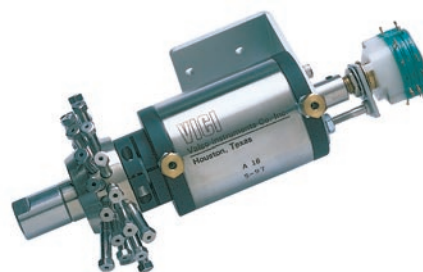
Standoff version includes a 4" standoff. 2", 3", and 6" standoffs are also available.

	With closemount assembly	With 4" standoff assembly	With standoff mounting hardware
Description	Prod No	Prod No	Prod No
4 position	AT4	AT44	AT4S
6 position	AT6	AT64	AT6S
8 position	AT8	AT84	AT8S
10 position	AT10	AT104	AT10S
12 position	AT12	AT124	AT12S
16 position	AT16	AT164	AT16S

Replacement O-rings

Includes a complete set of O-rings for a multiposition air actuator.

Description	Prod No	Price
Standard	ORMP	\$16
High temp	ORTMP	20



TECH TIP

The actuator's rotation must be properly matched to the valve's. If you are converting a manual valve to air actuation and have any doubts about which actuator and hardware you need, call our sales or technical staff for assistance.

MORE INFORMATION

PFAF page 199
Position feedback

Mounting Hardware

Closemount hardware..... page 208
Right angle drive204
Standoff assembly....205
Standoff mounting hardware.....205

ORDER TIP

To purchase a **valve with an air actuator installed**, go directly to valve ordering information.



2009 #60



Two Position Air Actuators

MORE INFORMATION

HSSA..... page 198
High speed
switching accessory
PFAF 199
Position feedback

TECH TIP

Here's what you'll get
when you order:



Air actuator with a
closemount assembly



Air actuator with a
4" standoff assembly



Air actuator for use with
an existing standoff

The recommended method for implementing a two position air actuator is a manifold solenoid valve assembly (MSVA), a block-mounted pair of 3-way solenoids that pulses air to the actuator to switch it from position to position. If air is applied continuously, the continuous rotational force applied to the valve can cause sideloads, leaking, and additional wear.

Typical actuation pressure is 40 to 50 psig, but up to 80 psig may be used.

Ideally, only enough air pressure should be used to switch the valve in 1/3 to 1/2 second. Bottled instrument air or nitrogen is recommended. If plant air from compressors must be used, an oil separator and water dryer are required.

A high speed switching accessory (HSSA) can upgrade valve switching times to less than 30 ms with air or 8 ms with helium. A position feedback (PFAF) with contact closures in both positions is also available as an option.

Standard air actuators

for two position valves

Temperature range 0-70°C

Standoff version includes a 4" standoff. 2", 3", and 6" standoffs are also available.

No. of ports in valve	Description	With closemount assembly	With 4" standoff assembly	For use with existing standoff
		Prod No	Prod No	Prod No
3, 4	90° rotation	A90	A904	A90S
6	60° rotation	A60	A604	A60S
8	45° rotation	A45	A454	A45S
10	36° rotation	A36	A364	A36S
12	30° rotation	A30	A304	A30S

High temperature air actuators

for two position valves

Temperature range 50-175°C

Standoff version includes a 2" standoff. 3", 4", and 6" standoffs are also available.

No. of ports in valve	Description	With closemount assembly	With 2" standoff assembly	For use with existing standoff
		Prod No	Prod No	Prod No
3, 4	90° rotation	AT90	AT902	AT90S
6	60° rotation	AT60	AT602	AT60S
8	45° rotation	AT45	AT452	AT45S
10	36° rotation	AT36	AT362	AT36S
12	30° rotation	AT30	AT302	AT30S

Replacement O-rings

Includes a complete set of O-rings for a two position air actuator.

Description	Prod No
Standard	OR
High temp	ORT



Actuator compression fittings

Includes 1/8" compression to 10-32 male thread, plus 1/8" brass ferrule and hex nut.

Description	Prod No
3 piece fitting assembly	F-TCF



Digital Valve Sequence Programmer (DVSP)

The digital valve sequence programmer (DVSP) is an add-on or stand-alone timer/programmer with 4 intervals, settable in ranges of 0-99 seconds, 0-9.9 minutes, or 0-99 minutes. The DVSP is most commonly used for remote operation of electrical devices such as solenoid valves, Valco two position or multiposition electric actuators, and the Valco DVI (digital valve interface), which converts contact closures into pneumatic pulses for switching Valco two position air actuators.

The DVSP has two operational modes: in the AUTO mode, the DVSP will return to the first interval and begin another sequence after the last interval is completed, and in the SINGLE CYCLE mode it stops after completing one sequence. During a cycle or sequence, simple controls allow the user to stop the cycle, reset it to Interval 1, switch to the AUTO mode, or advance to the next interval. The DVSP can also be wired for remote operation by contact closure from a data system or other control device.

Each interval has one double pole, double throw relay, rated at 5 amps, which provides two sets of contacts with no connection from one side to the other. This means that a single interval can be used to perform two separate functions requiring differing voltage requirements. For example, one side of Relay A (Interval 1) can be used to switch an electric actuator (contact closure) while the other side is connected to 110/230 VAC and switches a 110/230 VAC solenoid valve at the same time as the electric actuator. In addition, Relay E supplies a two second contact. When solenoid valves are wired in series with this relay the result is "pulsed operation" of the air actuator, which avoids the potential valve and actuator problems associated with continuously-applied air pressure.

Both 12 VDC and 110/230 VAC power supplies are included within the DVSP, but the relays may be supplied with power from an external power source. For example, 24 VDC solenoid valves can be switched by the DVSP relays if the 24 volts is supplied to the relays from an external 24 VDC power supply.

DVSP Digital valve sequence programmer

*for all air and
electric actuators*

Prod No

110 VAC	DVSP4
230 VAC	DVSP4-220



MORE INFORMATION Actuators

Air pages 194-195
Microelectric 188-191
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Controllers and Interfaces

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High speed
switching accessory
PFAF 199
Position feedback
for air actuators
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Position feedback
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Standoff assembly 205
Standoff mounting
hardware 205

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Serial Valve Interface (SVI)

The serial valve interface (SVI) is a device that converts commands from a computer, via a serial port, into positional control for two position and selectors (multiposition valves). Each SVI can control up to four air actuated (via a DVI, page 199) or electrically actuated two position valves and two electrically actuated selectors. The timing program can be run in the background, freeing the computer for other applications. Two serial ports (one male, one female) allow up to eight SVIs to be daisy-chained and run from a single serial communication port. In addition to controlling valves, the SVI can be used to control other devices which require logic level, BCD, or single line inputs.

The SVI is a self-contained unit, with its own 110 VAC (or 230 VAC Eurostandard) power supply. There is no need to open the computer to connect the SVI, because its DB-9 to DB-9 RS-232 cable connects to any available serial port. It also includes an interface cable for Valco two position actuators, and two Ansley 20-wire connectors for installation on the interface cable which comes as part of the multiposition electric actuator. For air actuated valves, optional interface cables are available for the DVI, which converts electrical signals to pneumatic pulses.

Software is supplied on a Windows-compatible CD. If different program functionality is needed, information is given in the manual which will assist in writing the necessary software.

SVI Serial valve interface

*for all air and
standard electric actuators*

	Prod No
110 VAC	SVI
230 VAC	SVI-220
DVI/SVI interface cable	I-22239



Solenoids and High Speed Accessory



41E1 4-Way solenoid air valve

for selector air actuators

This 4-way solenoid air valve with 1/8" tube fittings is the simplest method of stepping a selector air actuator. Energizing the solenoid steps the valve to its next position, and de-energizing the solenoid resets the mechanical ratchet in the actuator. This implementation, not recommended for two position actuators, can be useful when only a limited number of external events is available on the data system.

	Prod No
110 VAC	41E1-120VAC
230 VAC	41E1-220VAC
24 VAC	41E1-24VAC
12 VDC	41E1-12VDC
24 VDC	41E1-24VDC



MSVA

Manifold 3-way solenoid valve assembly

for two position

air actuators

The recommended way to switch two position air actuated valves is to "pulse" a pair of 3-way solenoid valves. This method applies air to the actuator only during switching, and alleviates problems associated with continuous air pressure. The MSVA is a block-mounted pair of 3-way solenoid air valves with 1/8" tube connections, available in 12 VDC, 24 VDC, 24 VAC, 110 VAC, and 230 VAC models.

	Prod No
110 VAC	MSVA-110VAC
230 VAC	MSVA-220VAC
24 VAC	MSVA-24VAC
12 VDC	MSVA-12VDC
24 VDC	MSVA-24VDC



HSSA High speed switching accessory

for two position air actuators

The HSSA is an add-on for our standard air actuators, providing increased air or helium flow for the fast actuation required in microbore chromatography or partial loop injections. Normal switching time for a C6W with 100 psi air is 180 ms. With the HSSA that drops to 20 ms; substitute 100 psi helium and the valve switches in 8 ms. Usually the HSSA is used in conjunction with the DVI discussed on page 199.

Prod No
HSSA



MORE INFORMATION

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Controllers and Interfaces

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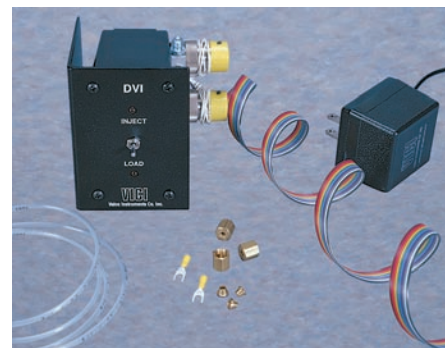


Digital Valve Interface (DVI) and Position Feedbacks

DVI Digital valve interface *for two position air actuators*

We highly recommend the DVI for use with two position air actuators. It sends a two second pulse of air to switch the valve and then vents the air, simulating switching by hand and eliminating the potential for damaging the valve or actuator with continuously-applied pressure. It also features LED position indication, manual and remote operation, and a contact closure output on arrival to the INJECT position, a feature which can be used to start a run or integration. The DVI is available for 110 or 230 VAC.

	<i>Prod No</i>
110 VAC	DVI
230 VAC	DVI-220



PFAF Position feedback *for two position air actuators*

The optional position feedback (PFAF) can be field installed on any two position standard air actuator. Each position provides a contact closure for TTL logic level signals.

<i>Prod No</i>
PFAF



Position feedback *for manual valves*

An optional position feedback is available for manual Valco W type and Cheminert C2 and C4 series valves (standard on Cheminert C1 valves). The continuous contact closure, provided only while the valve is in the inject position, can remote start a chromatograph or data system.

<i>Description</i>	<i>Prod No</i>
For Valco W type valves	
4 port	PFW90
6 port	PFW60
8 and 10 port	PFW36
For Cheminert valves	
C2 series except 4 port	PFC2
C2 series, 4 port	PFC4
C4 series	PFC4



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

* Consult factory for other connection options.

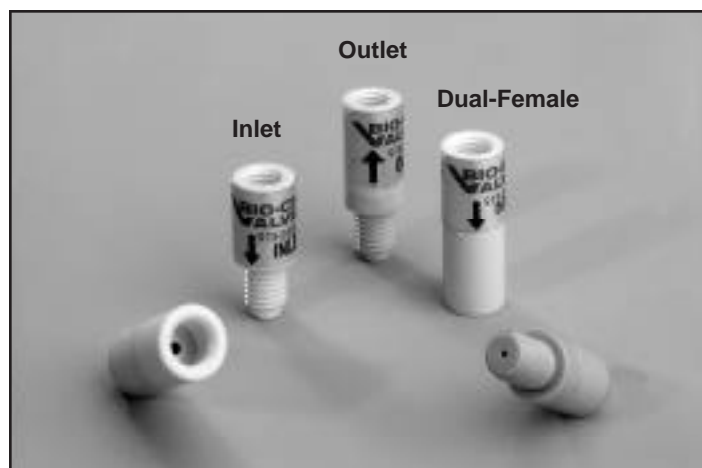
Note: These check valves are intended for liquids only.

® 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.

How to order:

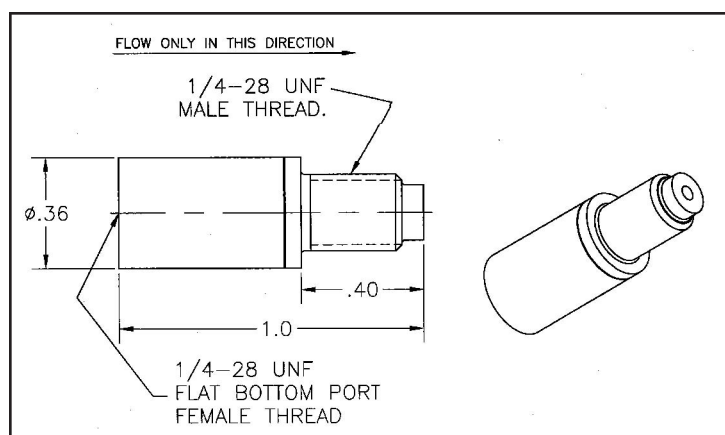
1	C (check valve)
2	Operating configuration O (Outlet), I (Inlet), F (Dual-Female)
3	Housing material* 4 (PPS), 5 (PEEK)
4	Check element material E (EPDM), V (Viton), C (Chemraz®)

* Note: PPS housing only with Chemraz® check element

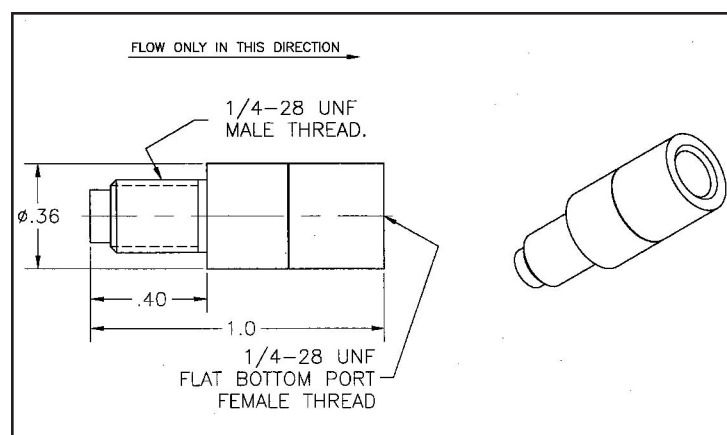
Example: P/N C O - 5 E
Style Operating Configuration Housing Material Check Element Material

INSTALLATION DIMENSIONS

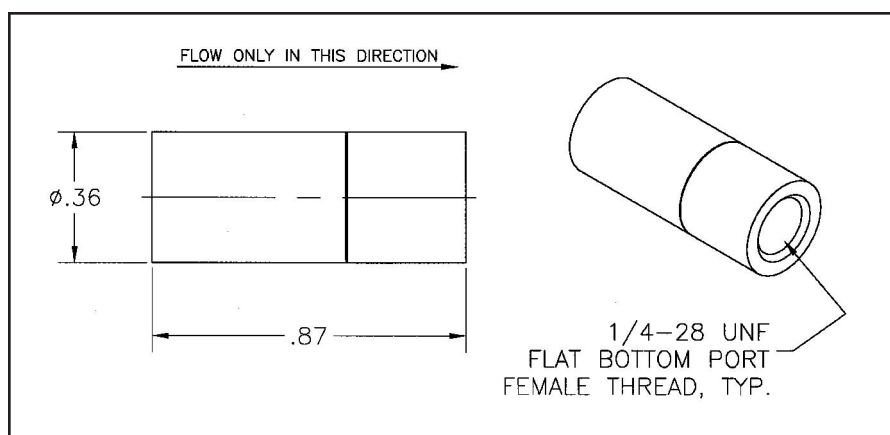
Series CI Inlet Check Valve



Series CO Outlet Check Valve

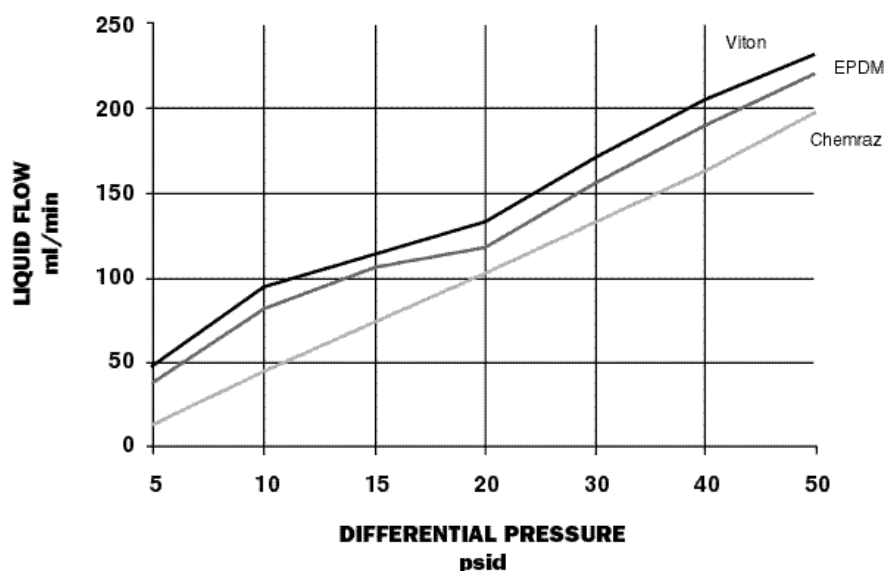


Series CF Dual-Female Check Valve



Average Flow vs. Pressure

(Intended as a guide only)



Self-Priming Micro Pumps



Inert solenoid operated self-priming fixed displacement diaphragm pumps

- High accuracy dispense settings from 8 μ l to 250 μ l
- Low power consumption / minimal heat generation
- Low internal volume
- Positive shut off
- High cycle life - up to 20 million dispense cycles
- Choice of inert wetted materials

Broad range of dispense settings and flow rates

The diaphragm pumps are factory set for discrete outputs ranging from 8 μ l to 250 μ l. The pumps can be cycled at up to 2.0 Hz for the smallest version and 1.6 Hz for the largest version. Flow rates reach up to 25 ml / minute. Depending on the dispense setting, very high accuracy can be achieved with deviations from set-point of less than 1%. For optimal accuracy, the pumps should be used for the transfer of fluids between un-pressurized containers.

Self-priming

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

Wide assortment of inert wetted materials available

The pumps provide a non-metallic, inert fluid path for the dispensing of high purity or aggressive fluids. The standard pump body is made of PPS (polyphenylsulfide). Other materials available for the pump body include PTFE, PEEK™ and Delrin®. The elastomers that can be used for the diaphragms and check valves include PTFE, EPDM, and Viton®.

High reliability

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

Inside.....

Specifications

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Internal volume	4
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Specifications

Pump series & weight

The self-priming pumps are offered in four pump series, distinguished by the solenoid shell sizes:

Valve Series	Shell Diameter	Weight
090SP	0.75 inches	2 oz. (60 g)
120SP	1.00 inches	5 oz. (140 g)
130SP	1.00 inches	6 oz. (170 g)
150SP	1.50 inches	16 oz. (450 g)

Electrical

Valve Series	Voltage	Power @ 70°F (21°C)	Current @ 70°F (21°C)	Effective continuous power at max cycle rate
090SP	12 Vdc	2.6 Watts	0.22 amps	0.8 Watts
090SP	24 Vdc	2.6 Watts	0.11 amps	0.8 Watts
120SP	12 Vdc	4.0 Watts	0.32 amps	1.2 Watts
120SP	24 Vdc	4.0 Watts	0.16 amps	1.2 Watts
130SP	12 Vdc	4.0 Watts	0.32 amps	1.2 Watts
130SP	24 Vdc	4.0 Watts	0.16 amps	1.2 Watts
150SP	12 Vdc	8.0 Watts	0.66 amps	3.2 Watts
150SP	24 Vdc	8.0 Watts	0.33 amps	3.2 Watts

Lead Wires

All lead wires are Teflon[®] coated. Different lengths of lead wires and terminal connectors can be provided. Please consult Bio-Chem Valve and Omnifit concerning non-standard lead wire lengths and the addition of terminal connectors.

Valve Series	Lead wire length	Wire thickness
090SP	15 in. / 38cm	26 gauge
120SP	15 in. / 38cm	26 gauge
130SP	15 in. / 38cm	26 gauge
150SP	15 in. / 38cm	22 gauge

Specifications (contd.)

Pressure limits

To attain optimal dispense accuracy, pressure on both the inlet and the outlet side of the pump must be kept between ± 0.5 psi (0.035 bar) and 0 psi (equating to a head of ± 12 in / 30 cm of 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 even when the pump is in the closed position. The check valves in the pump prevent fluid from flowing against the intended flow direction.

Valve Series	Inlet suction (priming w/air)	Inlet suction (after priming)	Outlet pressure
090SP	1 psi / 0.07 bar	3 psi / 0.20 bar	3 psi / 0.20 bar
120SP	2 psi / 0.15 bar	5 psi / 0.35 bar	5 psi / 0.35 bar
130SP	2 psi / 0.15 bar	5 psi / 0.35 bar	5 psi / 0.35 bar
150SP	2 psi / 0.15 bar	5 psi / 0.35 bar	5 psi / 0.35 bar

Cycle rates

To operate the solenoid micro pumps, first place the rated voltage over the pump's coil (causing the intake stroke) and then turn the voltage off again (causing the output stroke). To achieve the optimal dispense accuracy, the pump must remain in the on and in the off position for a minimum amount of time. To operate the pumps at less than the maximum cycle rate, the on-time should remain unchanged and the off-time should be lengthened appropriately.

Valve Series	Minimum on time	Minimum off time	Maximum cycle rate
090SP	150 msec	350 msec	2.0 Hz
120SP	150 msec	350 msec	2.0 Hz
130SP	150 msec	350 msec	2.0 Hz
150SP	200 msec	400 msec	1.6 Hz

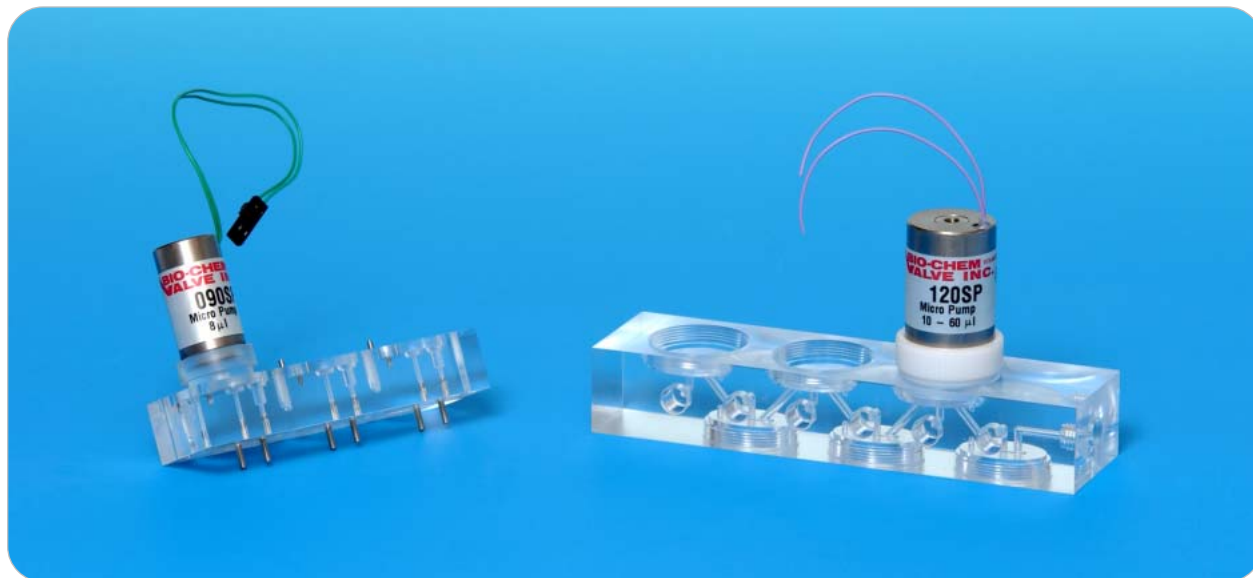
Dispense volume accuracy

Valve Series		Minimum setting	Maximum setting	Max flow rate
090SP	Dispense volume:	8 μ l	8 μ l	1.0 ml / min
	Set-point accuracy:	+/- 25%	+/- 25%	
	Repeatability:	+/- 5%	+/- 5%	
120SP	Dispense volume:	10 μ l	60 μ l	7.2 ml / min
	Set-point accuracy:	+/- 4%	+/- 2%	
	Repeatability:	+/- 3%	+/- 1%	
130SP & 120SP w/PTFE dia.	Dispense volume:	10 μ l	50 μ l	6.0 ml / min
	Set-point accuracy:	+/- 5%	+/- 5%	
	Repeatability:	+/- 3%	+/- 1%	
150SP	Dispense volume:	100 μ l	250 μ l	25 ml / min
	Set-point accuracy:	+/- 5%	+/- 3%	
	Repeatability:	+/- 1%	+/- 0.5%	

Specifications (contd.)

Manifold mounted pumps

The Bio-Chem Valve diaphragm pumps can be mounted directly on manifolds. Many configurations are possible to meet the specific needs of the application. Please consult with Bio-Chem Valve regarding manifold mounted pump designs.



Ports and tubing

To achieve an optimal dispense accuracy, the tubing should conform to the recommended inner diameters stated below and friction losses should be kept to a minimum.

For more information regarding 1/4"-28 fittings and tubing sets, please consult the Omni-Lok™ Fitting System and Fitting Systems specification sheets.

Pump Series	Standard ports	Recommended inlet tubing size	Recommended outlet tubing size
090SP	1/4"-28 flat bottom	≥ 1/32" I.D.	≥ 1/32" I.D.
120SP	1/4"-28 flat bottom	≥ 1/32" I.D.	≥ 1/32" I.D.
130SP	1/4"-28 flat bottom	≥ 1/32" I.D.	≥ 1/32" I.D.
150SP	5/16"-24 flat bottom	≥ 1/8" I.D.	≥ 1/8" I.D.

Internal volume

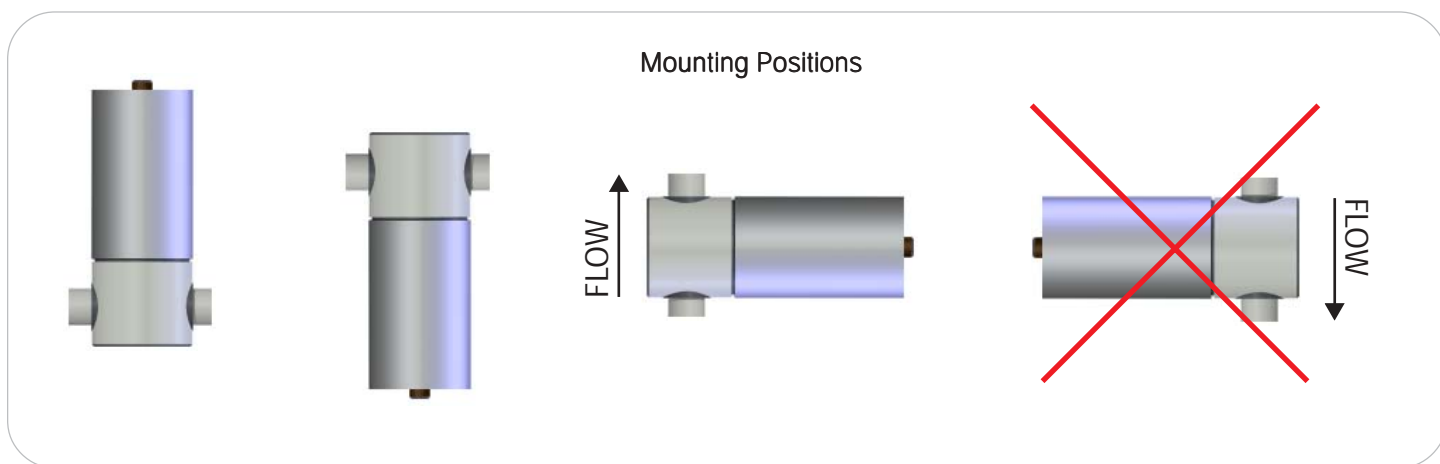
Pump Series	Internal volume
090SP	130 µl
120SP	105 µl
130SP	105 µl
150SP	710 µl

Specifications (contd.)

Mounting

For mounting clips, rings and flanges, please see the Mounting Accessories and Options specification sheet. Two mounting holes in the body permit bottom mounting in the 120SP series pumps. Please see the dimensional diagrams on the following pages for further information.

The pumps should be installed with the solenoid portion of the pump pointing upwards, downwards, or in a horizontal position with the outlet on top. The horizontal position with the outlet on the bottom could affect the output accuracy.



Adjustable pumps

In cases where the dispense volume for the application is unknown, Bio-Chem Valve offers an adjustable pump designed to be used as an R&D tool by the instrument design engineer to help determine the optimal dispense setting. By turning the shell on the pump, the engineer can compensate for the instrument's friction losses or pressure imbalances. Once the correct pump setting and dispense volume have been determined, the engineer can provide the dispense volume to the factory. This information will be used to manufacture a factory-set (non-adjustable) pump specific to the application.

Pump Series	Dispense range
090SP - adjustable	8 μ l to 12 μ l
120SP - adjustable	10 μ l to 60 μ l
150SP - adjustable	100 μ l to 250 μ l



Aside from the adjustability of these pumps, all other specifications are identical with those stated in this product data sheet for the same pump series.

For part numbers of the adjustable pump versions, please contact Bio-Chem Valve and Omnifit.

Specifications (contd.)

Wetted materials

Valve Series	Standard materials	Options
090SP	Body:	PEEK™
	Diaphragm:	
	Check valves:	Viton®, Perfluoroelastomer
120SP	Body:	Delrin®, PEEK™
	Diaphragm:	PTFE
	Check valves:	Viton®, Perfluoroelastomer
130SP	Body:	PTFE
	Diaphragm:	PTFE
	Check valves:	Perfluoroelastomer
150SP	Body:	PEEK™
	Diaphragm:	EPDM
	Check valves:	EPDM

Ordering Information

1	Select pump series	090SP, 120SP, 130SP, 150SP
2	Indicate voltage	12 VDC, 24 VDC
3	Indicate dispense setting (µl)	8 (090SP), 10, 20, 30, 40, 50, 60 (120SP), 10, 20, 30, 40, 50 (130SP), 100, 125, 150, 175, 200, 225, 250 (150SP)
4	Indicate body material (See optional materials in chart above.)	1 (PTFE, 130SP only), 4 (PPS), 5 (PEEK), 6 (Delrin®, 120SP only)
5	Indicate diaphragm material (See optional materials in chart above.)	E (EPDM), T (PTFE)
6	Indicate check valve material (See optional materials in chart above.)	E (EPDM), V (Viton®), P (Perfluoroelastomer)

Part Number Example:

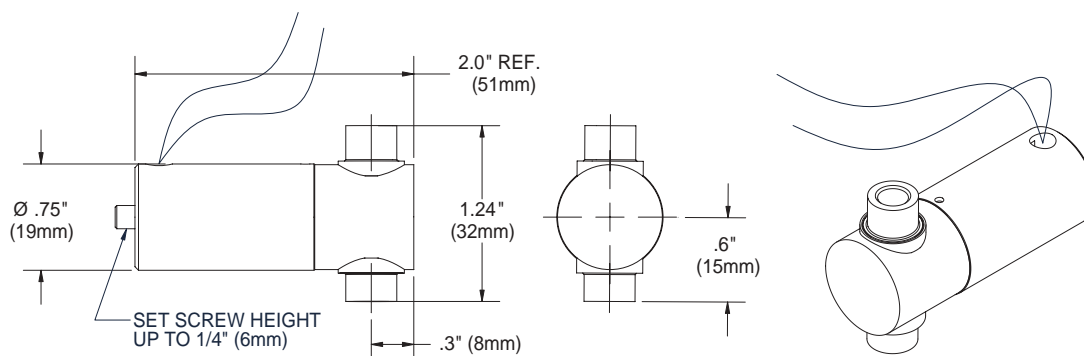
120SP	24	50	-	5	T	P
Pump Series	Voltage	Dispense setting		Body material	Diaphragm material	Check valve material

Please see our other product specification sheets for the following accessories:

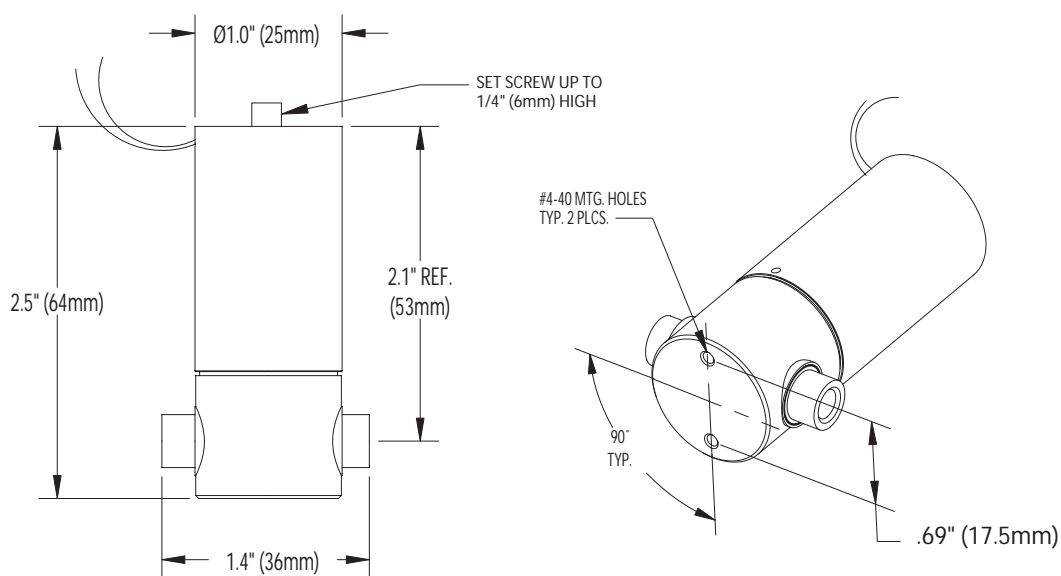
- Omni-Lok™ fittings and tubing sets
- CoolCube™ control module
- Mounting clips

Installation Drawings

090SP

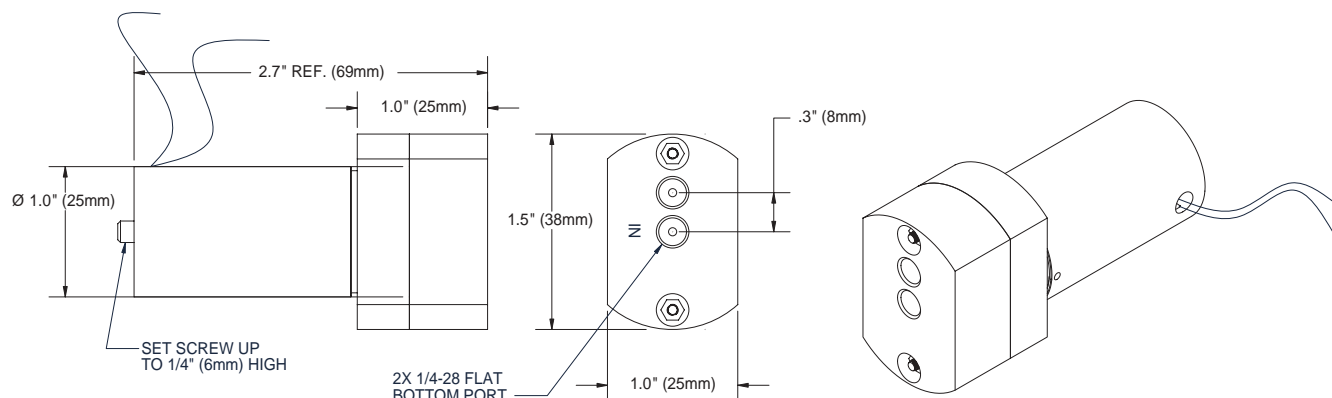


120SP

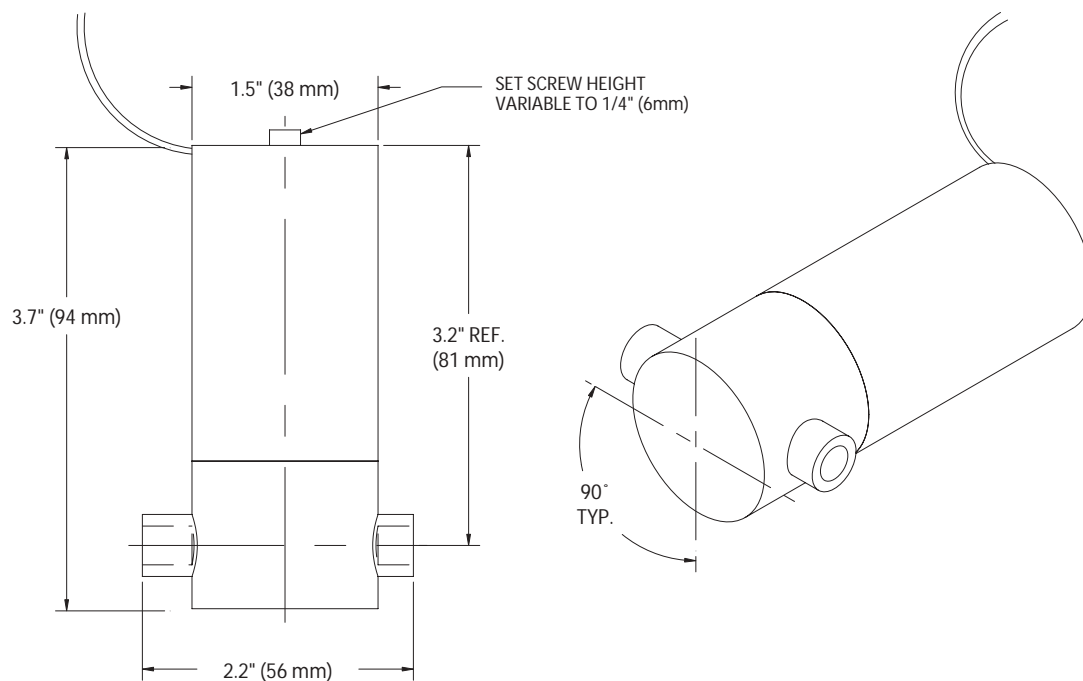


Installation Drawings (contd.)

130SP



150SP



Features

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

Series 075RV & 075RS

- 6 Pressure Relief Settings from 20 to 150 psi
- Fully Chemically Inert
- Perfluoroelastomer and PPS Wetted Fluid Path²
- Minimal Internal Volume
- High Cycle Life

Series 075RS

- Isolated solenoid
- Continuous Duty Coil
- Low Power Consumption
- Fast Response Time

Specifications

Series	075RV / 075RS
Orifice Diameter	0.062" (1.57mm)
Flow Rate	$C_v = 0.030 \pm 0.005$
Internal Volume	0.054 cc
Ports ¹	1/4" -28 Flat Bottom

Series	075RS	
Voltage	12 VDC	24 VDC
Power Watts @ 70° F (21° C)	2.8	2.8
Current Amps @ 70° F (21° C)	0.23	0.12
Lead Wires	15" (381mm) 26 Gauge Teflon® Coated	

1 Other ports available (e.g. M6 x 1.0, or 10-32). Please consult factory.

2 PTFE optionally available for body and/or diaphragm. Please consult factory.

See back for standard pressure configurations.



The 075RV / 075RS relief valve series is ideally suited for use with aggressive and high-purity fluids. Wetted parts consist of the PPS (Ryton) valve body and the Chemraz® diaphragm. Custom body and diaphragm configurations are available from a broad menu of engineered plastics and elastomers, including Teflon®. The unique Bio-Chem Valve diaphragm retention design ensures the most reliable performance and longest life available.

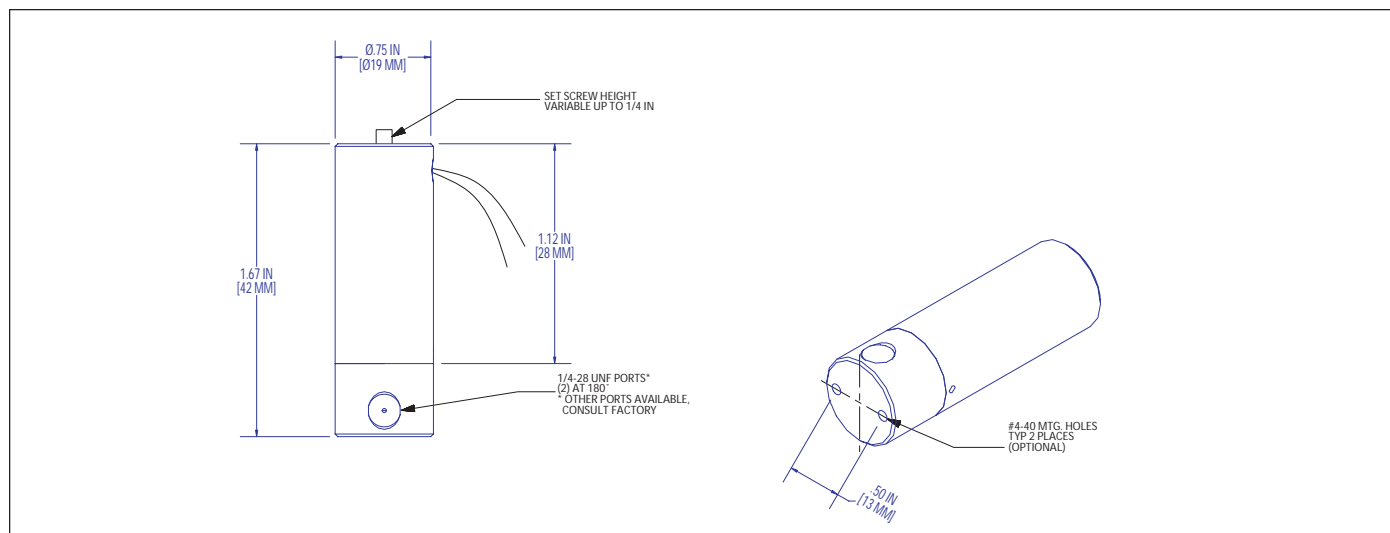
The solenoid operated, normally closed 075RS relief valve provides dual functionality as a solenoid valve with pressure relief function. This provides flow control and the capability to periodically purge the system.

Relief pressure settings other than the standard values indicated on this product data sheet are also possible. Contact Bio-Chem Valve and Omnifit for custom modifications.

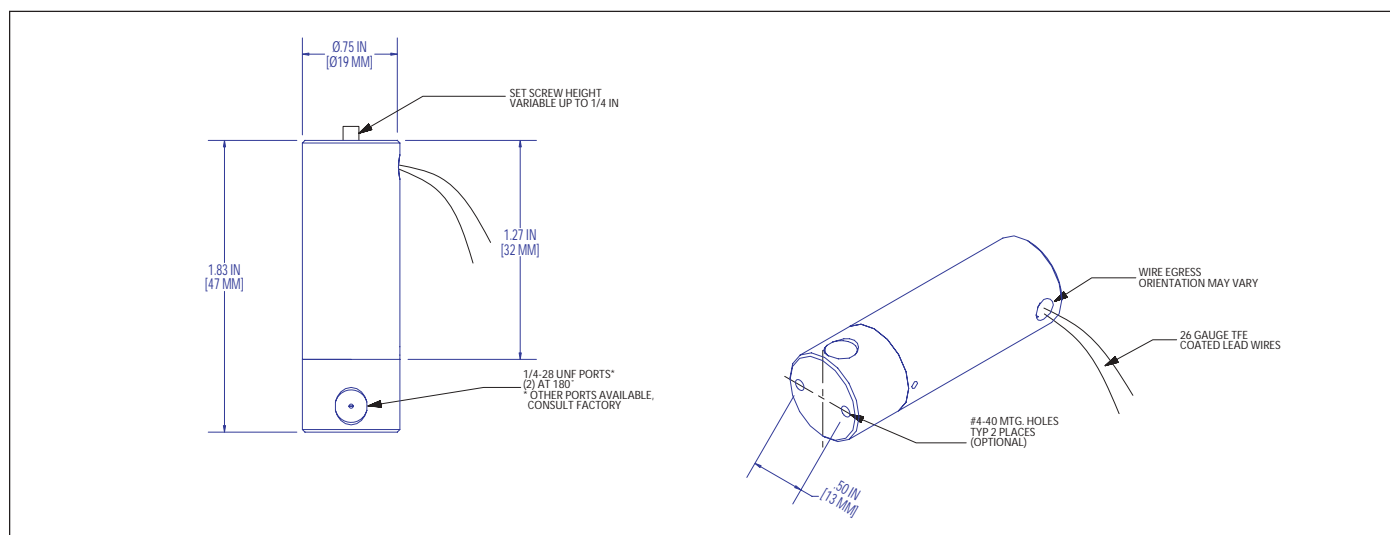
1	Select valve size	075
2	Indicate Style	RV - Relief Valve RS - Relief Valve with solenoid
3	Indicate Voltage	(Blank for RV Series), 12VDC, 24VDC
4	Indicate orifice size	0.062"
6	Indicate Relief Pressure	20, 35, 60, 85, 110, or 150 psi

Example: 075 RV - 62 - 35
 075 RS 12 - 62 - 110
 Valve Valve Voltage Orifice Relief
 Size Type Diameter Pressure

Series 075RV Relief Valve



Series 075RS Relief Valve with solenoid



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

Trademarks:

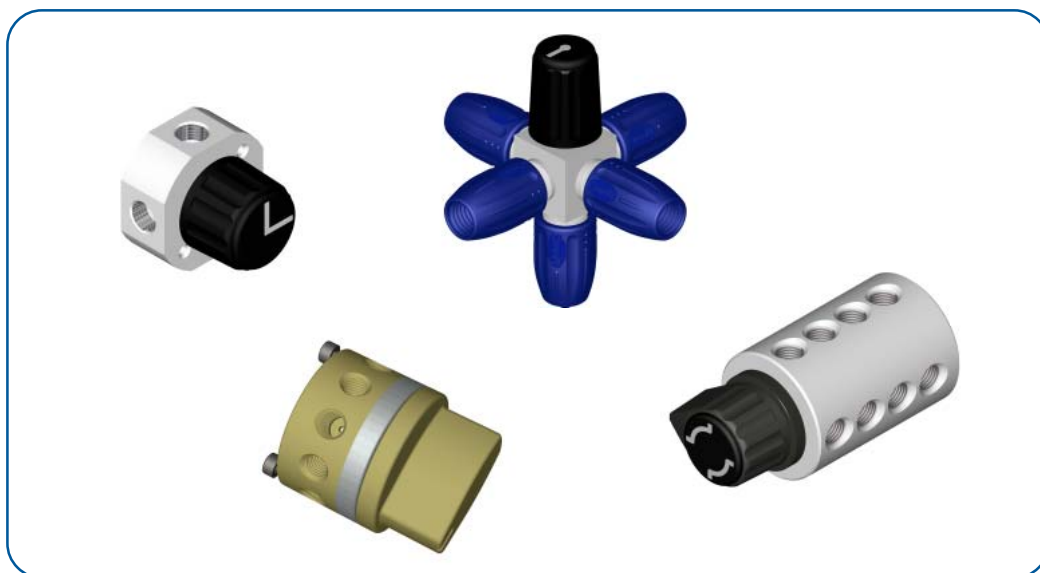
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Rev. 1104

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Manual Valves



Inside.....

Small high pressure rotary valves	2
Small rotary valves with 'Omnifit Cap' connections	2
Distribution and Loop Injection Valves	3
Stacked distribution valves ...	3
Sample injection valve	4
Application and set up notes	4

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

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 system 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 simultaneously. 1/4"-28 UNF ports are compatible with all Omnifit 1/4"-28 male fittings. A mechanical stop provides positive flow path alignment.

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



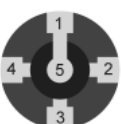
1121



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 combination 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



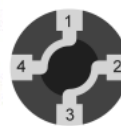
1112



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 combination 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



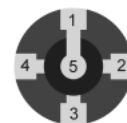
1127-6LI



1127-10LI



1127-4D



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

- Pressure rated to 500 psi (33 bar)
- Minimal dead volumes
- 2, 3 or 4 tier configurations
- Positive switch stops

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.



1142



1143



1144



1152



1153



1154



1162



1163



1164

Part Number	Description	Pressure rating	Pack Size
1142	2-tier valve allowing flow between two ports at 90°	500 psi	1
1152	3-tier valve allowing flow between two ports at 90°	100 psi	1
1162	4-tier valve allowing flow between two ports at 90°	100 psi	1
1143	2-tier valve allowing flow between 3 ports in a 'T' formation	500 psi	1
1153	3-tier valve allowing flow between 3 ports in a 'T' formation	100 psi	1
1163	4-tier valve allowing flow between 3 ports in a 'T' formation	100 psi	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 system 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.

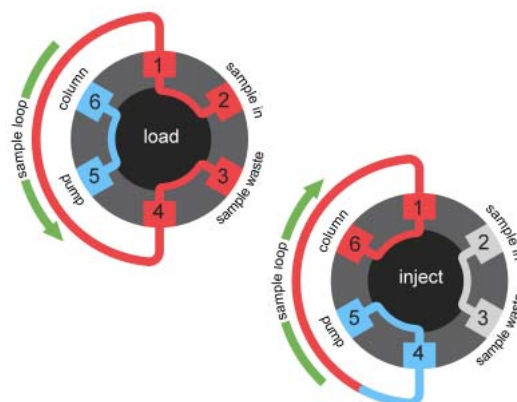
The images below show Omnifit loop inject valves in use as sample injection devices in a chromatography system. These are the most common applications but the use of the valves is not limited to these.

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.

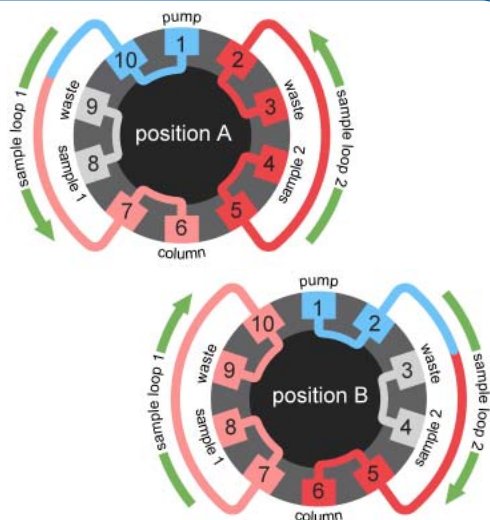


10 port loop inject valve used as a sample injector

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: _____

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PEEK™ is a trademark of Victrex plc

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Mininert push-button valves are highly dependable, leak-tight closures for screw-cap vials and other laboratory containers. When used with a glass vial, only PTFE and glass are in contact with the contents. Their unique features make Mininert valves the ideal closure for

calibration standards, air- or moisture-sensitive fluids, derivatizing reagents, or volatile chemicals. Operation is extremely simple – push the green button to open the valve, insert the needle through the septum and take a sample, withdraw the needle, and push the red button to close the valve.



Valves for vials

The screw-cap Mininert is available in a variety of sizes. The crimp-top valve for 13 mm ID glassware slides into the neck of the vial and features a threaded flange which is turned to provide a leak-tight fit.

Pkg/12:	Cap / thread size	Prod No
	13 mm-425	PS-614158
	15 mm-425	PS-614160
	18 mm-400	PS-614161
	20 mm-400	PS-614170
	24 mm-400	PS-614163
	Crimp top	PS-614250

SPECS

TEMPERATURES

Mininert valves can be used at temperature up to 105°F. However, after use at high temperatures, the valve may leak slightly when cooled to room temperature.

MATERIALS

PTFE is highly inert and may be used with most common materials. It is particularly useful for working with most acids and organic solvents. However, problems may be encountered when used with organometallics and some strong bases. We recommend actual exposure tests before use with any material.

PRESSURE

The sealing ability of Mininert valves is more than adequate for containing most volatile liquids and gases at low pressures. Mininert valves have been used as high as 120 psi without leakage, but this is **not** a recommendation for pressurizing glass containers to these levels. Such pressurization of glass containers can be extremely dangerous.



Valves with threaded fittings

Our threaded designs offer positive on/off fluid control as an in-line valve or syringe access as a termination valve at a sample point. In-line valves are 1/4-28 male to male or 1/4-28 female to female. Termination valves are offered in 1/4-28 male or female and 1/8" NPT male or female.

In-line valves	Prod No
1/4-28 male to male	PS-631205
1/4-28 female to female	PS-631206

Termination valves

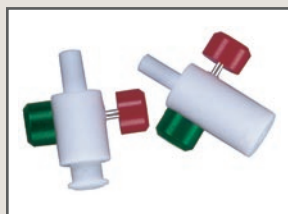
1/4-28 male	PS-631201
1/4-28 female	PS-631203
1/8" NPT male	PS-631202
1/8" NPT female	PS-631204



Replacement septa and septum installation tool

These silicone septa fit all Mininert valves. The installation tool is a handy device for quickly removing and replacing needle seal septa.

Septa, pkg/50	PS-644350
Installation tool	PS-644850



Mininert syringe valves

These convenient add-on valves allow our Series C and D syringes to store samples at up to 250 psi. The valve body is all PTFE, with a stainless steel stem. Also available to fit luer-tip syringes from any manufacturer. All accept traditional luer needles.

For C or D syringe	PS-654050
For Luer-tip syringe	PS-654051

CHROMalytic TECHNOlogy Pty Ltd AUSTRALIAN Distributors e-mail: sales@chromtech.net.au Tel: 03 9762 2034

General Description

- ▶ **Leak-tight closure with syringe access** – take a sample with no exposure of vial contents to atmosphere
- ▶ **Models for virtually any laboratory glassware** – screw-cap and crimp-top vials, test tubes, flasks, reaction chambers, 1/4-28 or pipe thread
- ▶ **Economical** – save time and money through conservation of reagents, etc.
- ▶ **Replaceable septum** – easily replaced with no exposure of contents to atmosphere
- ▶ **Simple installation** – no tools required

Mininert push-button valves are highly dependable, leak-tight closures for screw-cap vials and other laboratory containers. When used with a glass vial, only PTFE and glass are in contact with the contents. Their unique features make Mininert valves the ideal closure for calibration standards, air- or moisture-sensitive fluids, derivatizing reagents, volatile chemicals, etc.

Operation is extremely simple – push the green button to open the valve, insert the needle through the septum and take a sample, withdraw the needle, and push the red button to close the valve.

Specifications

Temperature

Mininert valves can be used at temperature up to 105°F. However, after use at high temperatures, the valve may leak slightly when cooled to room temperature.

Pressure

The sealing ability of Mininert valves is more than adequate to contain most volatile liquids and gases at low pressures. Mininert valves have been used as high as 120 psi without leakage, but this is NOT a recommendation for pressurizing glass containers to these levels. Such pressurization of glass containers can be extremely dangerous.

Chemical Resistance

PTFE is highly inert and may be used with most common materials. It is particularly useful for working with most acids and organic solvents. Problems may be encountered when used with organometallics and some strong bases. We recommend actual exposure test before use with any material.

Mininert syringe valves are found on page 9

Valves for Vials

Models are available for screw-cap and crimp-top vials. The screw-cap Mininert is available in 13, 15, 18, 20, and 24 mm cap sizes. The crimp-top valve for 13 mm ID glassware slides into the neck of the vial and features a threaded flange which is turned to secure a tight fit.



Cap size:	13 mm	15 mm	18 mm	20 mm	24 mm	Crimp top
Thread size:	13 mm-425	15 mm-425	18 mm-400	20 mm-400	24 mm-400	
Pkg. of 12:	614158	614160	614161	614170	614163	614250

Valves with Standard Tapers

The laboratory taper model brings Mininert convenience and ease to a variety of applications using standard laboratory glassware, such as reaction chambers, test tubes, and other glass systems.

Taper:	14/20	19/22
	621102	621103

Valves with Threaded Fittings

Our threaded designs offer positive on/off fluid control as an in-line valve or syringe access as a termination valve at a sample point. In-line valves are 1/4-28 male to male or 1/4-28 female to female. Termination valves are offered in 1/4-28 male or female and 1/8" NPT male or female.

In-line valve:	1/4-28, male to male	1/4-28, female to female
	631205	631206



Termination valve:	1/4-28 male	1/4-28 female	1/8" male NPT	1/8" female NPT
	631201	631203	631202	631204

Replacement Septa and Septum Installation Tool

These silicone septa fit all Mininert valves. The installation tool is a handy device for quickly removing and replacing needle seal septa.

Pkg. of 50 septa	Installation tool
644350	644850



Analytical Syringes, Valves, Probes, and Custom Bent Tubing from VICI Precision Sampling

Micro Valves for GC and LC

- 200 psi, .060" bore
- Compact 1" design
- Convenient panel mount
- Variety of configurations

Simplify your liquid or gas handling application with a VICI Precision Sampling Micro valve. The unique design of the fitting detail allows a leak-free seal with no potential for rotor damage from overtightening. Internal parts are PEEK and PTFE.



(Fittings not included.
For example fittings, see page 68.)

Micro valves for GC and LC

1/4-28

	Prod No				
"T" flow path	3 ports	660100	3 PORT	4 PORT	"T"
	4 ports	660110			
180° flow path	2 ports	660200	2 PORT	4 PORT	180°
	4 ports	660210			
90° flow path	2 ports	660300	2 PORT	3 PORT	90°
	3 ports	660310			
	4 ports	660320		4 PORT	

SPECS

200 psi
.060" bore
1/4-28 fitting detail
All polymer-based materials

MORE INFORMATION

1/4-28 fittings . . . pp 68-78

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Solenoid operated pinch valves with Silicone Select™ or Bio-Chem (C-Flex) tubing

- High cycle life (valve: 20 million; tubing: 500,000 minimum)
- Low power consumption / minimal heat generation
- Tubing securely seated in valve body
- Rated for continuous duty suitable for hit & hold
- Zero dead volume closure
- Tubing options selected for chemical resistance and superior memory characteristics
- Options for especially quiet operation and integrated optical position sensor

Inside.....

Specifications

Tubing	2
Valve Series & Weight	3
Lead wires	3
Electrical	3
Pressure limits	3
Height	4
Enhancement options	4
Mounting	5
Ordering information	5
Installation drawings	6
Accessories	8

High Cycle Life

Each valve is factory adjusted to ensure an optimal closing force with the tubing provided. The Silicone Select™ and Bio-Chem (C-Flex) tubing have been specially selected and treated for excellent memory characteristics. The tubing will not stick shut even after prolonged periods in the closed position. The Silicone Select™ tubing is rated for a minimum of 500,000 cycles.

Tubing securely seated without flow restriction

The tubing is seated within a groove in the pinch valve body. The tubing remains securely seated at all times. No mechanical locking feature is required to retain the tubing during operation. Flow is not restricted when the valve is in the open position.

Wide assortment of sizes and configurations

Bio-Chem Valve standard pinch valves are offered with tubing internal diameters ranging from 0.010" (0.25 mm) to 5/16" (7.95 mm). The valves are available in normally open, normally closed, and 3-way (one tube normally open, the other normally closed) configurations. Dual tubing configurations (two tubes being operated simultaneously) are offered with smaller tubing sizes. Multi-tube pinch valves with 4, 6, or 8 tubes are available in normally open configurations only. Through Bio-Chem Valve's Quick-Change Customization™ process, standard pinch valve configurations can be modified to meet customer specifications. For alternative tubing materials, operating pressures, electrical terminal connectors and other features, please consult Bio-Chem Valve and Omnifit.

Further advantages of Bio-Chem Valve Pinch Valves include:

- Ease of installation
- Resistance to particulate damage
- Minimal pressure drop

Specifications

Pinch Valve Tubing Options

Bio-Chem Valve supplies two choices of high-purity medical grade pinch valve tubing:

- Silicone Select™ platinum cured silicone tubing
- Bio-chem (C-Flex) tubing

Both tubing materials comply with USP XXII, Class VI, FDA and USDA standards and are FDA master file listed. These tubing options have been specially developed to withstand the rigors of usage with pinch valves. The tubing will not stick shut even after the valve has been in the closed position for an extended period of time. Excellent tubing memory characteristics ensure unencumbered flow when the valve is in the open position. The Silicone Select™ tubing is rated for a minimum of 500,000 open-and close cycles, the Bio-Chem (C-Flex) tubing is rated for a minimum of 350,000 cycles.

Due to its superior life cycle characteristic, the Silicone Select™ tubing is recommended for all pinch valve applications except:

- Bio-chem (C-flex) tubing is preferable in applications where gas permeability is at issue
- Bio-chem (C-flex) tubing exhibits higher chemical resistance with certain media

Bio-Chem Valve pinch valves are supplied with tubing mounted in the valve:

- 2-way valves: one 12-inch (30 cm) tubing section
- 3-way valves: two 6-inch (15 cm) tubing sections joined by a "Y" connector

Tubing is easily replaced without removing the valve from the system. The tubing is also offered separately from the pinch valves in 50-foot (15 meter) coils.

Note: Different tubing may be requested for special applications. In that case, tubing samples should be provided to Bio-Chem Valve so that the appropriate adjustments in the valve settings can be made. Deviations from standard Bio-Chem Valve pinch valve tubing usually results in reduced life cycle expectancy.

Tubing Dimensions and Part Numbers

Valve Part Number extension	50' (15m) coil Part Number	Silicone	Bio-Chem (C-Flex)	I.D. (in/mm)	O.D. (in/mm)	Wall thickness (in/mm)
-10	10025-10	✓		0.010" / 0.25mm	0.093" / 2.36mm	0.041" / 1.05mm
-23	10025-23	✓	✓	0.023" / 0.58mm	0.093" / 2.36mm	0.035" / 0.89mm
-50	10025-50	✓		0.050" / 1.27mm	0.134" / 3.40mm	0.042" / 1.07mm
-01	10025-01	✓	✓	1/32" / 0.79mm	3/32" / 2.38mm	1/32" / 0.79mm
-02	10025-02	✓	✓	1/16" / 1.59mm	1/8" / 3.17 mm	1/32" / 0.79mm
-03	10025-03	✓	✓	1/16" / 1.59mm	3/16" / 4.76mm	1/16" / 1.59mm
-04	10025-04	✓		3/16" / 4.76mm	1/4" / 6.35mm	1/32" / 0.79mm
-05	10025-05	✓	✓	1/8" / 3.17mm	1/4" / 6.35mm	1/16" / 1.59mm
-06	10025-06	✓	✓	1/4" / 6.35mm	3/8" / 9.52mm	1/16" / 1.59mm
-07	10025-07	✓	✓	5/16" / 7.94mm	7/16" / 11.1mm	1/16" / 1.59mm

To identify the type of tubing when ordering 50-foot (15 meter) tubing coils, add the following designators to the part numbers shown above:

- **S** - Silicone Select™ tubing
- **B** - Bio-Chem (C-Flex) tubing

Specifications (contd.)

Valve Series & Weight

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

Valve Series	Shell Diameter	Weight
075P	0.75 inches	2 oz. (57 g)
100P	1.00 inches	5 oz. (142 g)
150P	1.50 inches	16 oz. (454 g)

Lead Wires

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

Electrical

Standard:

Valve Series	Voltage	Power @ 70°F (21°C)	Current @ 70°F (21°C)
075P	12 VDC	2.8 Watts	0.22 amps
075P	24 VDC	2.8 Watts	0.10 amps
100P	12 VDC	4.0 Watts	0.32 amps
100P	24 VDC	4.0 Watts	0.16 amps
150P	12 VDC	8.0 Watts	0.66 amps
150P	24 VDC	8.0 Watts	0.33 amps

Exceptions:

Valve Series	Tubing Size	Configuration	Voltage	Power @ 70°F (21°C)	Current @ 70°F (21°C)
075P	I.D. = 0.010"	2-way	12 Vdc	3.5 Watts	0.29 amps
075P	I.D. = 0.010"	2-way	24 Vdc	3.5 Watts	0.15 amps
075P	I.D. = 1/32"	3-way	12 Vdc	3.5 Watts	0.29 amps
075P	I.D. = 1/32"	3-way	24 Vdc	3.5 Watts	0.15 amps
100P	O.D. = 3/8"	2-way	12 Vdc	8.0 Watts	0.66 amps
100P	O.D. = 3/8"	2-way	24 Vdc	8.0 Watts	0.33 amps
100P	O.D. ≥ 3/16"	3-way	12 Vdc	8.0 Watts	0.66 amps
100P	O.D. ≥ 3/16"	3-way	24 Vdc	8.0 Watts	0.33 amps
100P	O.D. ≥ 3/32"	dual 3-way	12 Vdc	8.0 Watts	0.66 amps
100P	O.D. ≥ 3/32"	dual 3-way	24 Vdc	8.0 Watts	0.33 amps

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

Configuration and Pressure Limits

Several configurations are available with the Bio-Chem Valve pinch valves:

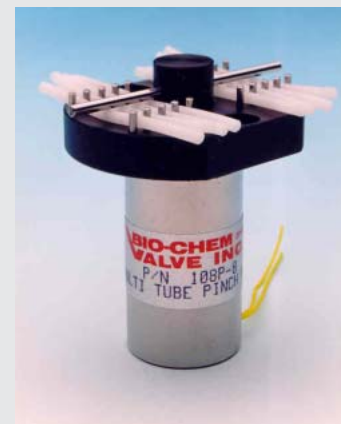
- 2-way normally closed (designated as NC)
- 2-way normally open (designated as NO)
- 3-way (designated as MP). One tube is NC and the other is NO.

Dual tubing for both 2-way and 3-way configurations is offered for some tubing sizes.

Valve Series	Tubing size (valve p/n ext)	2-Way NC	2-way NO	3-Way MP	Dual tubing	Minimum pressure	Maximum pressure
075P	-10	✓	✓			vacuum	30 psi
075P	-23	✓	✓	✓		vacuum	20 psi
075P	-50	✓	✓	✓		vacuum	15 psi
075P	-01	✓	✓	✓		vacuum	15 psi
075P	-02	✓	✓	✓		0 psi	15 psi
100P	-01	✓	✓	✓	✓	vacuum	25 psi
100P	-02	✓	✓	✓	✓	0 psi	25 psi
100P	-03	✓	✓	✓		vacuum	25 psi
100P	-04	✓	✓	✓		0 psi	10 psi
100P	-05	✓	✓	✓		vacuum	20 psi
100P	-06	✓	✓			0 psi	10 psi
150P	-06	✓		✓		0 psi	10 psi
150P	-07	✓				0 psi	10 psi

108P multi-tube pinch valves

Two-way normally open valves using the -01B and -01S tubing with 4, 6, or 8 tubes operating simultaneously are also available. The maximum pressure is 15 psi. For further information, please consult Bio-Chem Valve.



Specifications (contd.)

Valve Height

Valve Series	2-Way NC	2-Way NO	3-Way MP
075P	1.88" (48 mm)	2.19" (56 mm)	2.13" (54 mm)
100P	2.50" (64 mm)	2.81" (71 mm)	2.50" (64 mm)
150P	3.80" (97 mm)	N/A	3.78" (96 mm)

Enhancement Options



Quiet Option

Through the use of noise dampening materials on internal valve components, the noise generated at actuation of the 075P and 100P pinch valves is reduced dramatically from approximately 72 dB to 52 dB. This optional feature is recommended for applications in noise-sensitive environments, such as hospitals and certain laboratories.

Optical Sensor Position Feedback Option

An infrared optical sensor can be factory mounted on the pinch valve. The sensor detects the position of the valve pusher/armature assembly and sends an electrical signal back to the controller confirming the open or closed valve position. With no moving parts, this sensor has been designed for virtually unlimited life.

Available valve configurations: 100P series valves with normally closed and 3-way configurations. Not available with normally open valves. 12 VDC and 24 VDC versions are offered.

Wiring: The entire valve and sensor assembly requires only three electrical wires:

■ : positive lead wire ■ : negative lead wire ■ : sensor feedback wire

Feedback signal:

- NC valve not actuated at 12 VDC or 24 VDC: tubing closed, 0 milliamp current on signal wire.
- NC valve actuated at 12 VDC or 24 VDC:
 - Tubing open: 0 milliamp current on signal wire.
 - Tubing closed (i.e. failure): 20 milliamp current on signal wire.

Dimensions: the optical sensor adds 1 inch (25 mm) to the height of the pinch valve.

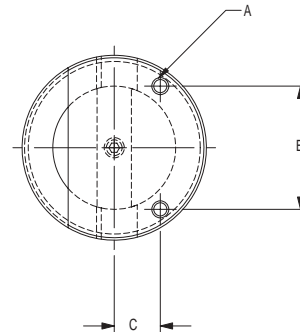
Specifications (contd.)

Mounting

For mounting clips, rings and flanges, please see the Mounting Accessories and Options specification sheet. Bottom mounting (add "M" to the end of the part number) is available for two-way normally open and normally closed pinch valves. The dimensions of the mounting holes in the pinch valve body are:

Valve Series	"A" Thread	"B" Center	"C"
075P2*	#2-56	0.500" (13mm)	0.125" (3mm)
100P2*	#4-40	0.687" (17mm)	0.218" (6mm)
150P2*	#6-32	1.000" (25mm)	0.375" (10mm)

* For P3 series consult factory.



Mounting holes can be provided in the shell on top of the valve. Please consult Bio-Chem Valve and Omnitfit concerning top mounting holes.

Ordering Information

Standard Pinch Valves

1	Select pinch valve series	075P, 100P, 150P
2	Indicate number of paths	2 (2-way), 3 (3-way), D2 (dual 2-way), D3 (dual 3-way)
3	Indicate operating configuration	NC, NO, MP (3-way)
4	Indicate voltage	12 vdc, 24 vdc, 115 vac, 220 vac
5	Indicate tube size	10, 23, 50, 01, 02, 03, etc.
6	Select tubing material	S (Silicone Select™), B (Bio-chem / C-Flex)
7	Indicate selected options	Q (Quiet), F (Feedback sensor), M (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

Part Number Example:

100P D3 MP 24 - 02 S QFM
 Valve Paths Configu- Voltage Tube Tube Options
 Size ration Size Material

Multi-tube Pinch Valves

1	Select pinch valve series	108P
2	Indicate number of tubes	4, 6, or 8
3	Indicate operating configuration	NO
4	Indicate voltage	12 vdc, 24 vdc, 115 vac, 220 vac
5	Indicate tube size	01
6	Select tubing material	S (Silicone), B (Bio-chem / C-Flex)
7	Indicate selected options	Q (Quiet), F (Feedback sensor)

Part Number Example:

108P 8 NO 24 - 01 B QF
 Valve Tubes Configu- Voltage Tube Tube Options
 Size ration Size Material

Consult Bio-Chem Valve for further options concerning:

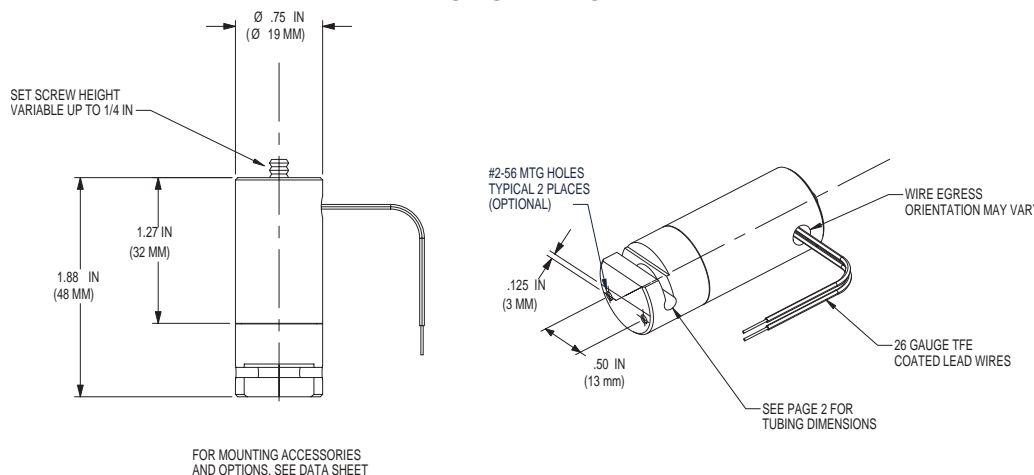
- Terminal connectors and non-standard lead wire lengths.
- Above standard operating pressure requirements.
- Custom tubing.

Please see our other product specification sheets for the following accessories:

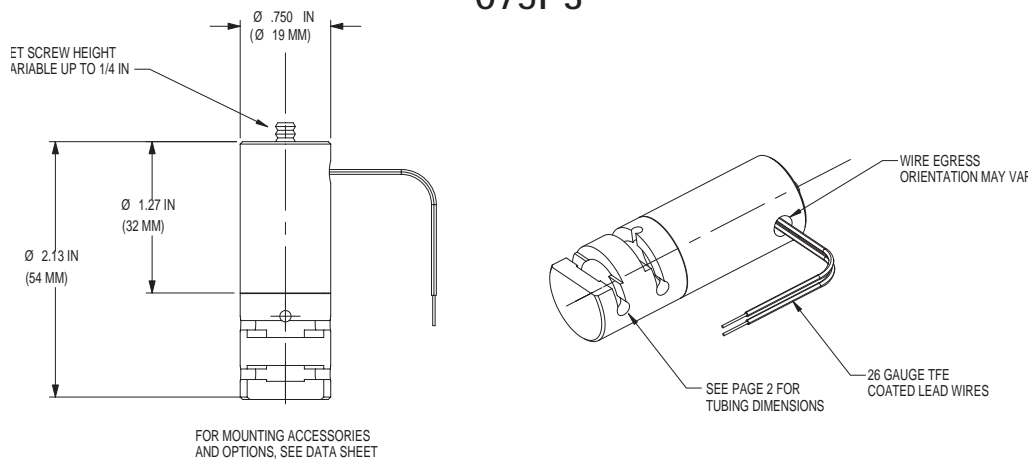
- Omnitfit PEEK barb fittings and adaptors
- CoolCube™ control module
- Mounting clips, flanges and rings

Installation Drawings

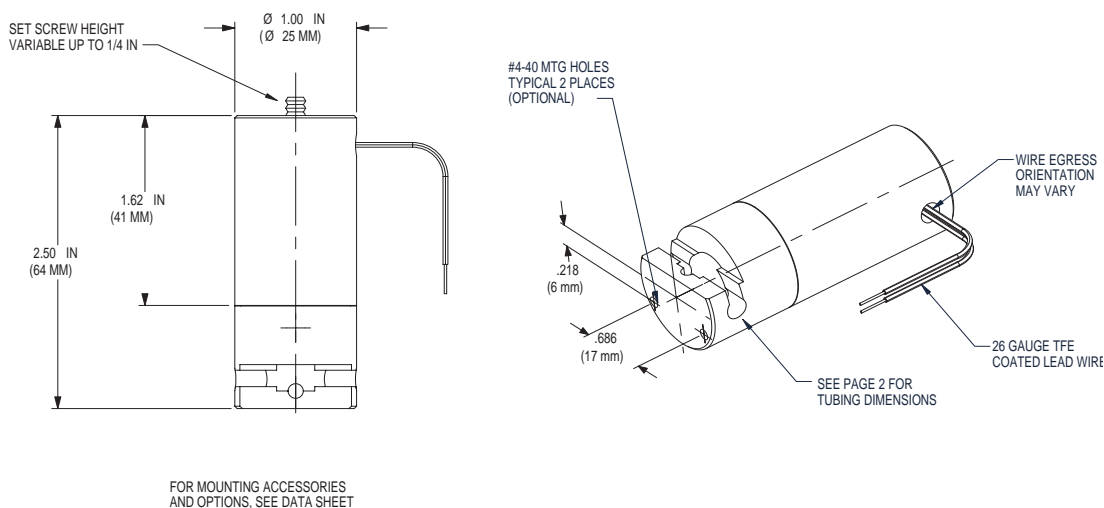
075P2NC



075P3

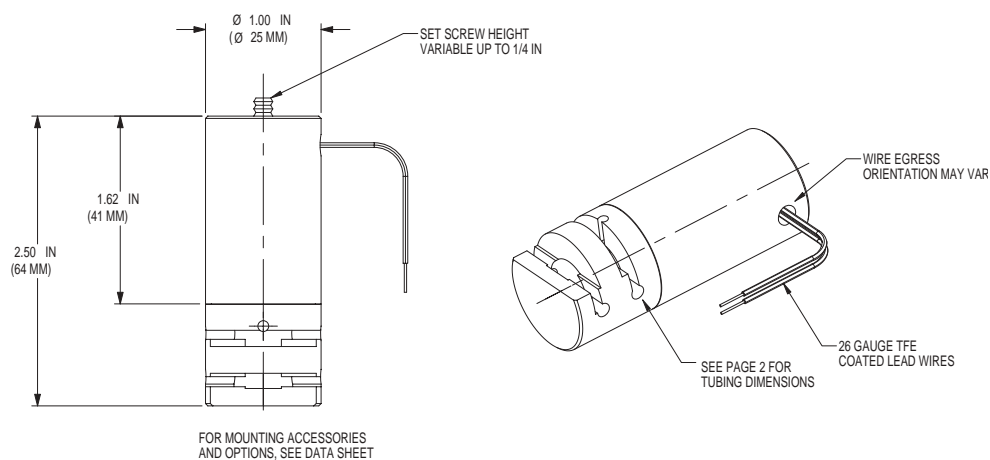


100P2NC

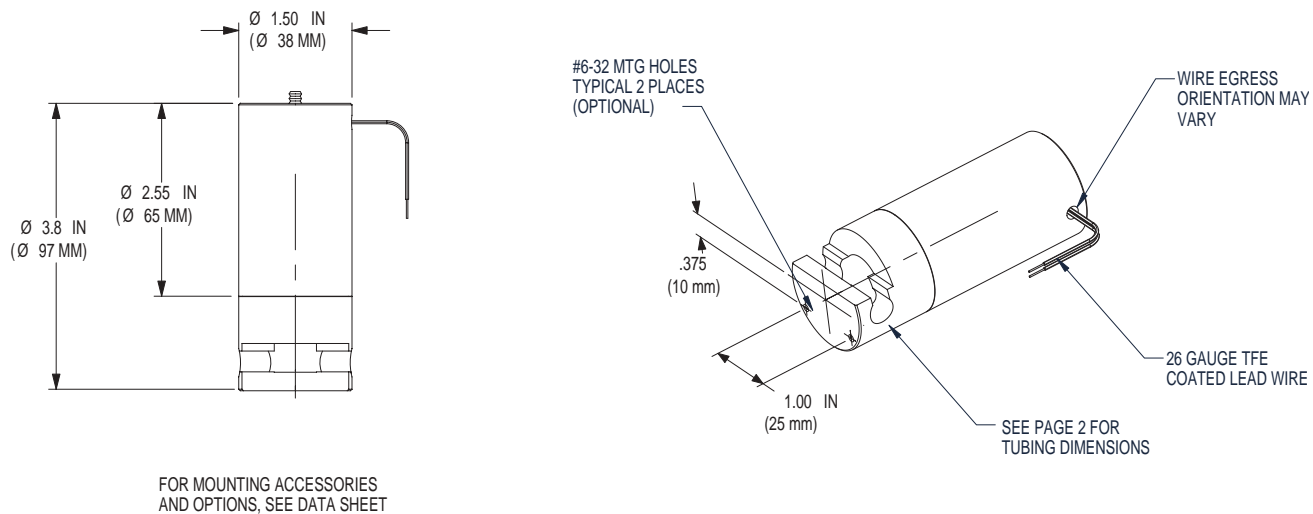


Installation Drawings (contd.)

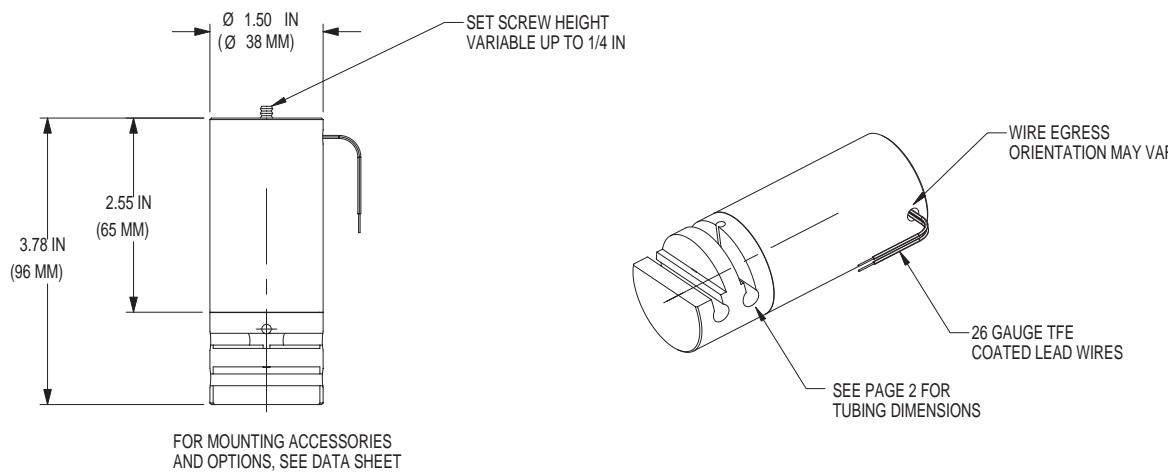
100P3



150P2NC



150P3



Accessories

Polypropylene Connectors and Fittings for Soft Tubing

Reducer



R-02/-01P



R-05/-02P

Part Number	Intended Tube Size
-------------	--------------------

R-02/-01P	1/16" to 1/32" I.D.
-----------	---------------------

R-05/-02P	1/8" to 1/16" I.D.
-----------	--------------------

Straight



S-01P



S-02P



S-05P

Part Number	Intended Tube Size
-------------	--------------------

S-01P	1/32" I.D.
-------	------------

S-02P	1/16" I.D.
-------	------------

S-05P	1/8" I.D.
-------	-----------

"Y"



Y-01P



Y-02P



Y-04P



Y-05P

Part Number	Intended Tube Size
-------------	--------------------

Y-01P	1/32" I.D.
-------	------------

Y-02P	1/16" I.D.
-------	------------

Y-04P	3/16" I.D.
-------	------------

Y-05P	1/8" I.D.
-------	-----------

1/4"-28 Flat Bottom to Barb



B-062ID



B-095ID



B-125ID

Part Number	Intended Tube Size
-------------	--------------------

B-062ID	1/16" I.D.
---------	------------

B-095ID	3/32" I.D.
---------	------------

B-125ID	1/8" I.D.
---------	-----------

Trademarks:

CoolCube™ is a trademark of Bio-Chem Valve Inc.

PEEK™ is a trademark of Victrex plc

Quick-Change Customization™ is a trademark of Bio-Chem Valve Inc.

Silicone Select™ is a trademark of Bio-Chem Valve Inc.

Teflon®, Viton® are registered trademarks of E.I. du Pont de Nemours and Company

Rev. 1104



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 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.

Inside.....

Specifications

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Internal Volumes	2
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Lead wires	3
Fittings	3
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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)	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	n/a	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
	0.062"	55 µl
100T2	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

		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

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

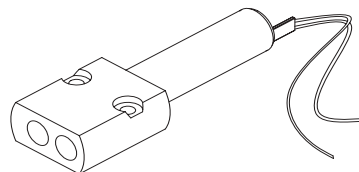
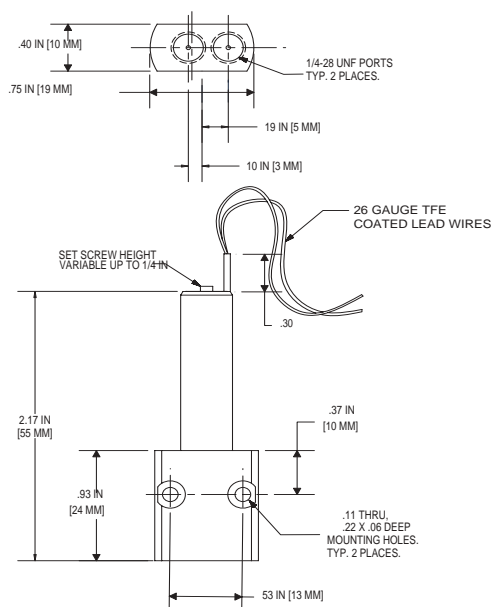
Example P/N:

<u>075</u>	<u>T2</u>	<u>NC</u>	<u>24</u>	-	<u>62</u>	-	<u>4</u>	<u>V</u>	<u>M</u>
Valve Size	Style	Operating Config.	Voltage		Orifice Diameter		Body Material	Diaphragm Material	Mounting Holes
							(Leave blank for PTFE)	(Leave blank for PTFE)	(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

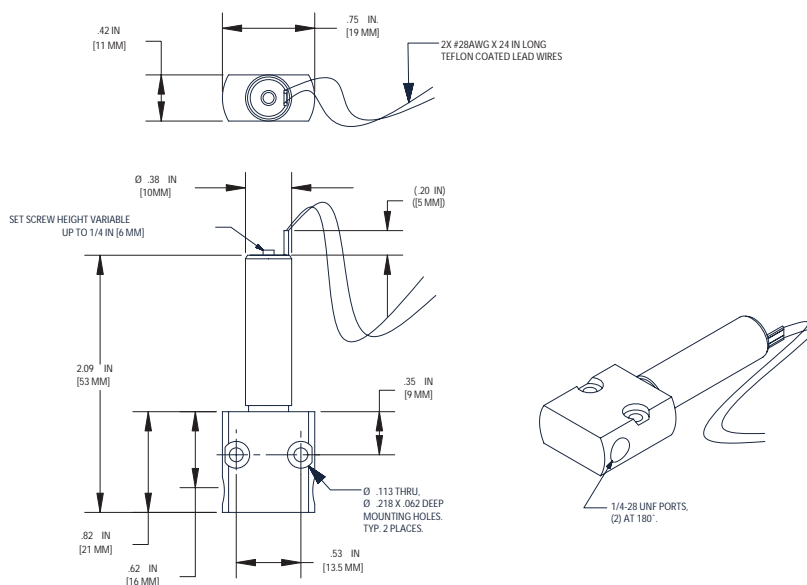
Installation Drawings

038T2B Bottom Ported



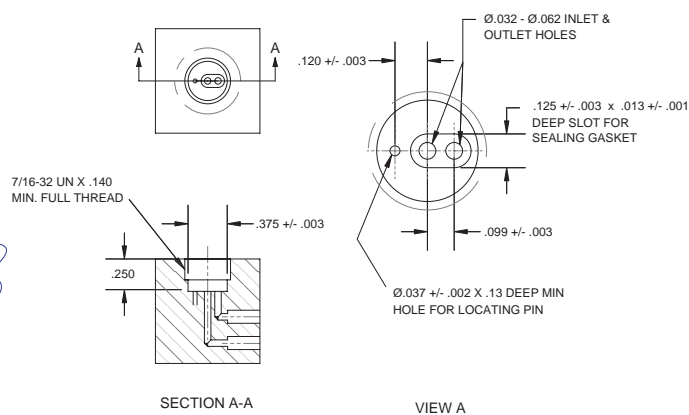
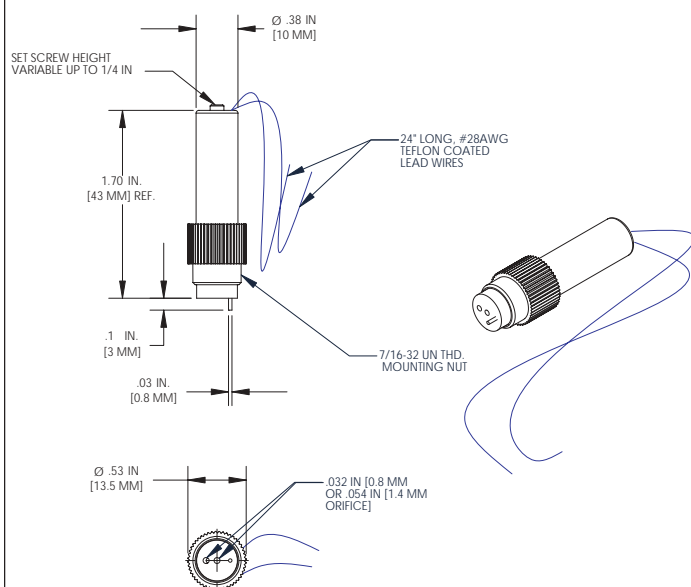
Installation Drawings

038T2S Side Ported



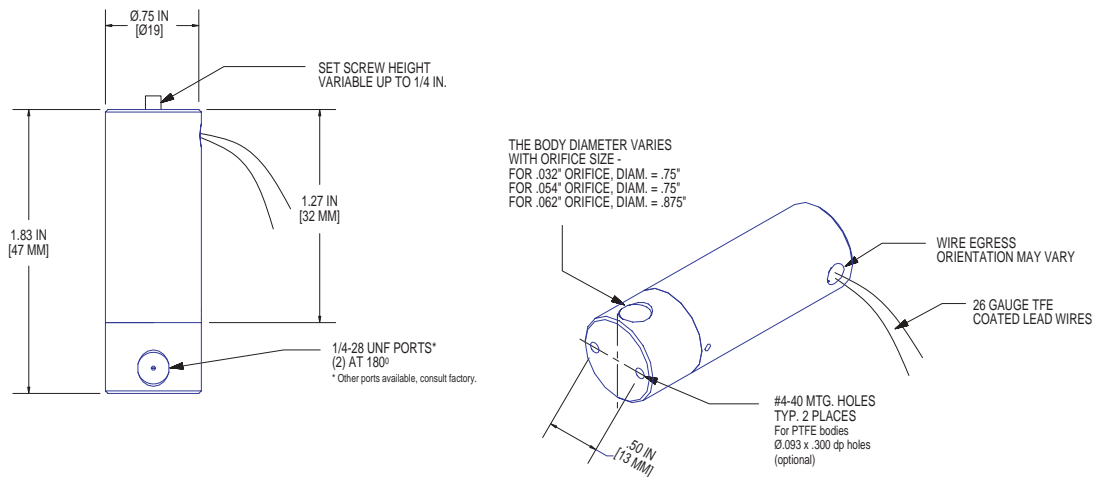
039T2M Manifold Mountable

Manifold Interface

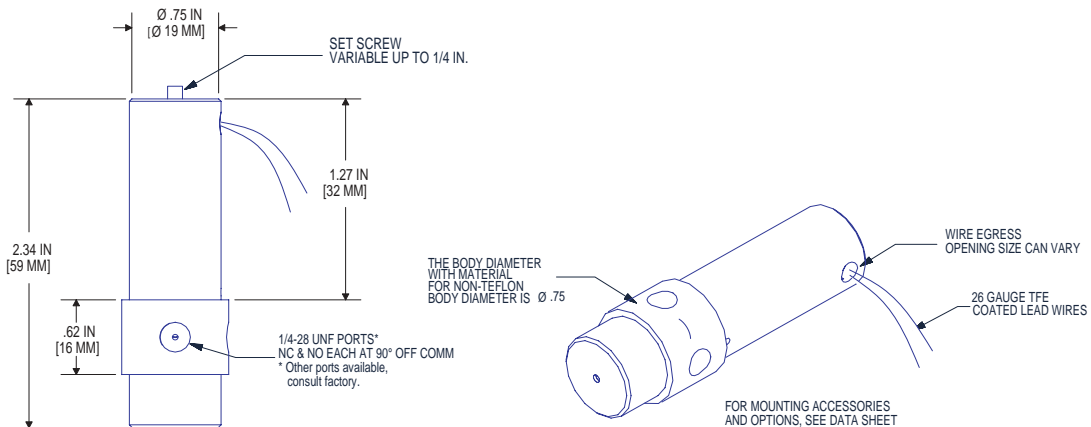


Installation Drawings (contd.)

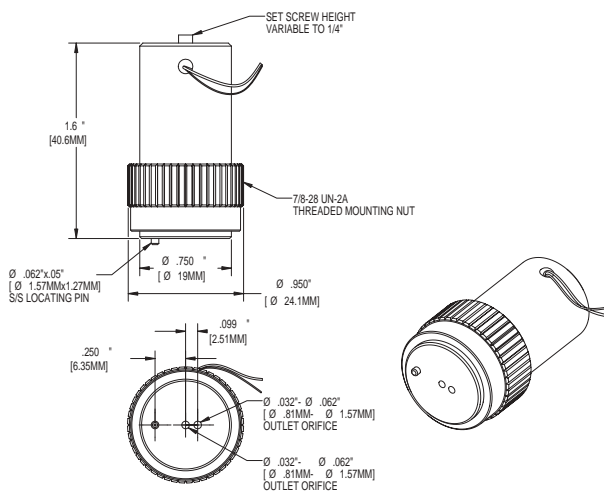
075T2NC



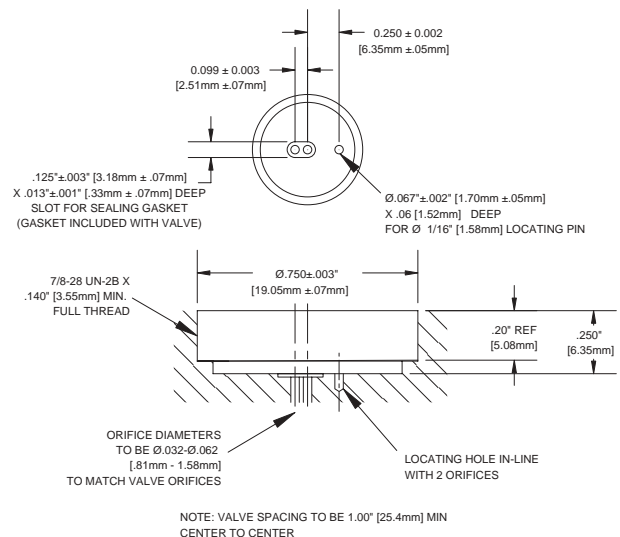
075T3MP



079NC Manifold Mountable

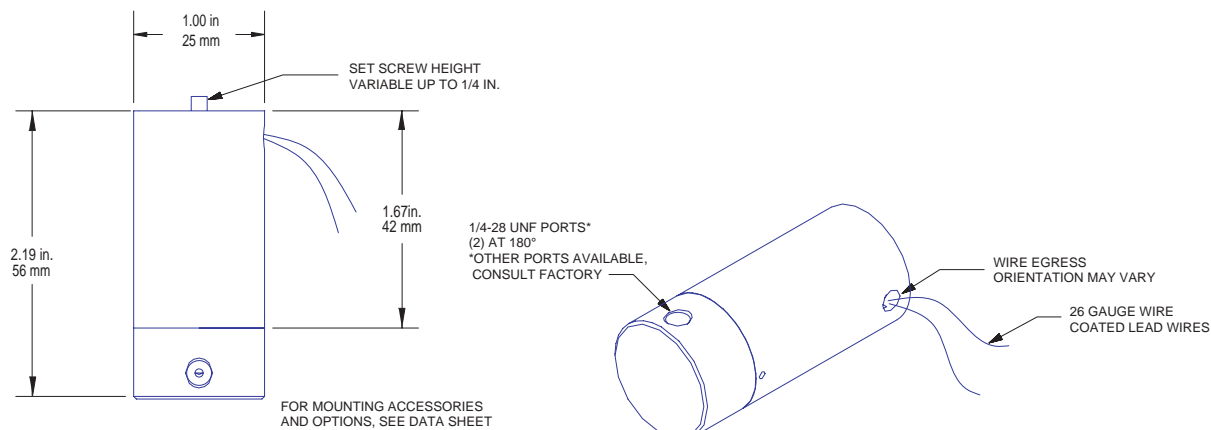


Manifold Interface

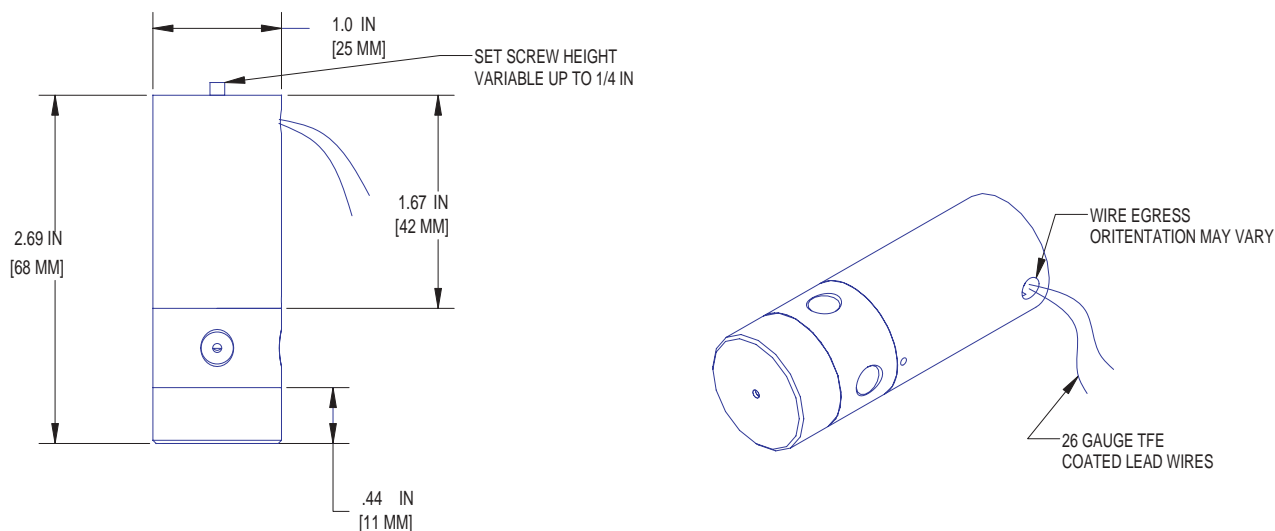


Installation Drawings (contd.)

100T2NC



100T3MP



Trademarks:

CoolCube™, CoolCube50™, Quick-Change Customization™ are trademarks of Bio-Chem Valve Inc.

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PEEK™ is a trademark of Victrex plc

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Viton® is a registered trademark of DuPont Dow Elastomers

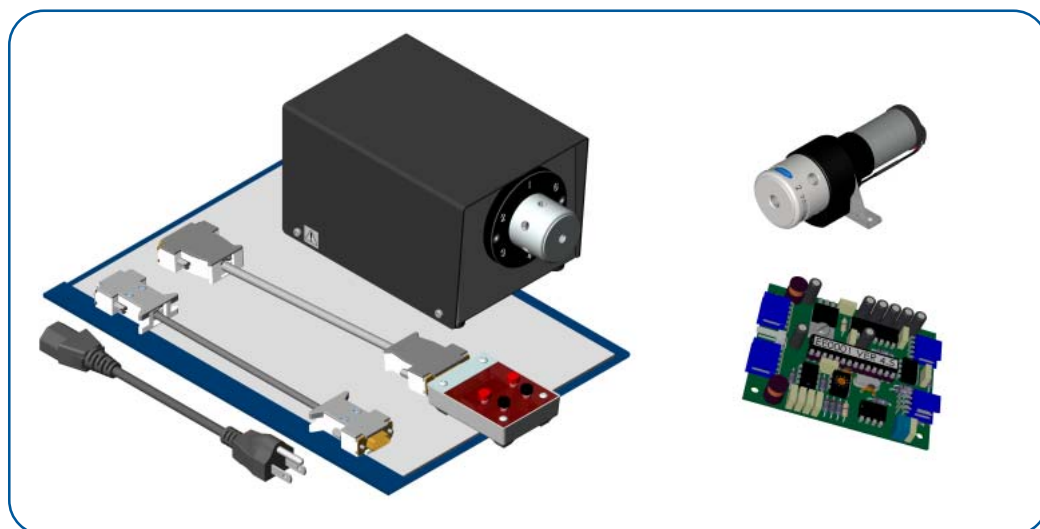
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Rev. 0805

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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 designed 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.

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Small Electric Rotary Valves

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

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



11522
4 port valve



11526
5 port valve



11528
5 port valve



Controller
PCB

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: Rotor:	PTFE 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: Supply:	4 Watts 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 vice-versa



11528

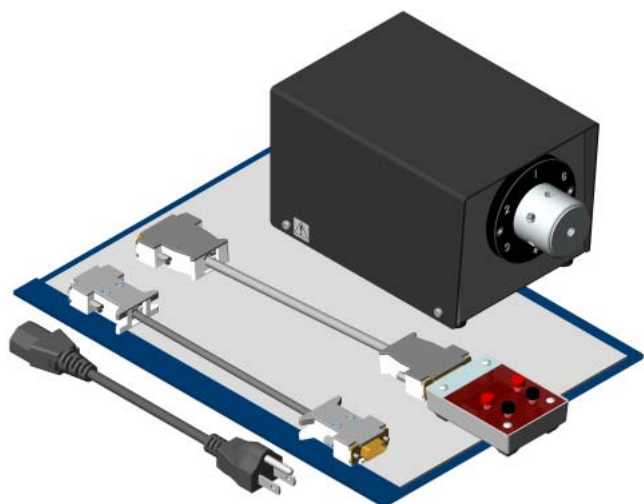
5 port valve connecting 2 radial ports at 90° and the common axial port to one other radial port

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
- Computer interface
- Software included



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	30 psi (2 bar) at 25° C	
Electrical	Supply:	100 to 240 VAC
	Power:	50 Watts
Size	W = 115mm D = 192mm H = 106mm	

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 European power lead	100 to 240 VAC	6	1
11101E/11107	Smart Actuator with 7 port distribution valve European power lead	100 to 240 VAC	7	1
11101E/111010	Smart Actuator with 10 port loop injection valve European power lead	100 to 240 VAC	10	1
11101E/11111	Smart Actuator with 11 port distribution valve European power lead	100 to 240 VAC	11	1
11101U/11106	Smart Actuator with 6 port loop injection valve UK power lead	100 to 240 VAC	6	1
11101U/11107	Smart Actuator with 7 port distribution valve UK 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

Application and set up notes.

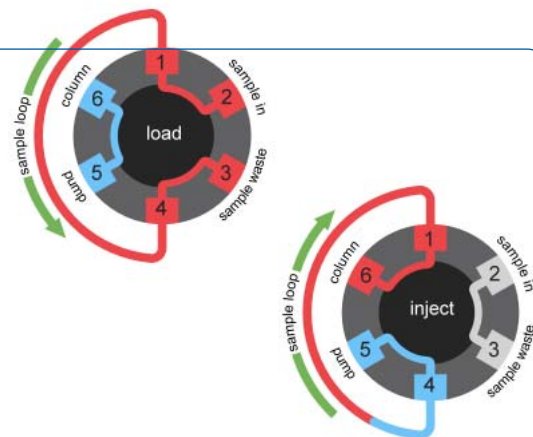
The images below show Omnifit loop inject valves in use as sample injection devices in a chromatography system. These are the most common applications but the use of the valves is not limited to these.

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.

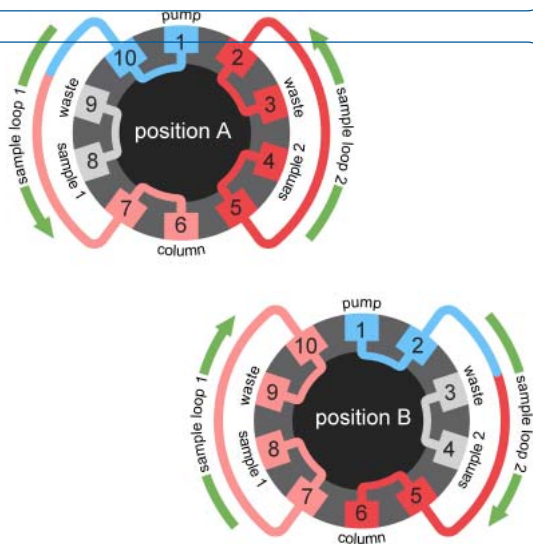


10 port loop inject valve used as a sample injector

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
Omni-Lok™ is a trademark of Omnifit Ltd.

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VPS5401068N	NUMBER	MATERIAL
	VPS5401068N	Polycarbonate with Silicone Disk
Check Valve, Male/Female Luer, 420 mL/min flow rate at 1 M head 30 psi back pressure, 1/4 psi inlet cracking pressure		


VPS5401020N	NUMBER	MATERIAL
	VPS5401020N	Polycarbonate with Silicone Disk
Check Valve, Male/Female Luer, 129 mL/min flow rate at 100mmHg, 45 psi back pressure, 1-5 psi inlet cracking pressure		


VPS5401036SN	NUMBER	MATERIAL
	VPS5401036SN	Polycarbonate with Silicone Disk
Reflex Check Valve, Male/Female Luer, 350mL/min flow rate at 1 M head, 45 psi back pressure, opens at 284 mmHg		


VPS5401001N	NUMBER	MATERIAL
	VPS5401001N	ABS Housing with Silicone Disk
Check Valve, Male Slip Luer, 420 mL/min flow rate at 1M head, 30 psi back pressure, 1/4 psi inlet cracking pressure		

VPM2930601N	NUMBER	MATERIAL
	VPM2930601N	White ABS
Tube Clamp with split, 1/8" (3.2 mm) OD Tubing		


VPS3901074N	NUMBER	MATERIAL
	VPS3901074N	Polyisoprene with ABS Acrylic Body
IN-4000 Intermittent Injection Site to Male Luer Lock		

VPM1060200N	NUMBER	MATERIAL
	VPM1060200N	Clear Low Density Polyethylene
Long Spike Guard Closed at Tip		


VPM0480201N	NUMBER	MATERIAL
	VPM0480201N	White Polyethylene
Luer Tip Syringe Cap		


VPB0850400N	NUMBER	MATERIAL
	VPB0850400N	Clear ABS
Female Luer Thread Style Coupler		


VPM0031400N	NUMBER	MATERIAL
	VPM0031400N	Clear Acrylic
Female Luer Lug Style, Bond-in 5/32" ID		


VPM3341750SN	NUMBER	MATERIAL
	VPM3341750SN	Blue Rad. Stable Polycarbonate
Tri-female Luer Y Connector to Male Luer Slip		

VPM1080303N	NUMBER	MATERIAL
	VPM1080303N	Blue Polyethylene
Male Luer Integral Lock Ring Plug		

VPB1000055N	NUMBER	MATERIAL
	VPB1000055N	Polycarbonate Body with Polyethylene Handle
One way Stopcock, Male Slip Luer to Capped Female Luer Thread Style		

VP455980	NUMBER	MATERIAL
	VP455980	Polycarbonate Body with Polyethylene Handle
One Way Stopcock, Capped Male Luer Lock to Capped Female Luer Thread Style *Sterile Version*		

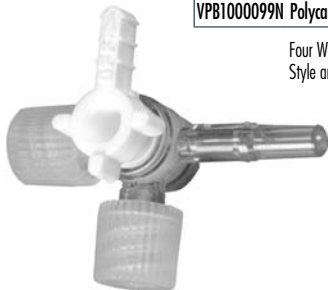
VPB1000079N	NUMBER	MATERIAL
	VPB1000079N	Polycarbonate Body with Polyethylene Handle
Three Way Stopcock, (2) Capped Female Luer Thread Style and Capped Male Luer Lock		

VPB15311LG2	NUMBER	MATERIAL
	VPB15311LG2	Rad. Stable Polycarbonate Body with White HDPE Handle
3-Way Stopcock, (2) Female Luer Thread Style & (1) Male Luer with Rotating Lock Ring (NO caps)		

VPB1000062N	NUMBER	MATERIAL
	VPB1000062N	Polycarbonate Body with Polyethylene Handle
Three Way Stopcock, (2) Female Luer Thread Style and Male Slip Luer		



VPB1000099N	NUMBER	MATERIAL
	VPB1000099N	Polycarbonate Body with Polyethylene Handle
Four Way Stopcock, (2) Capped Female Luer Thread Style and Male Slip Luer		



VPB1000110N	NUMBER	MATERIAL
	VPB1000110N	Polycarbonate Body with Polyethylene Handle
Four Way Stopcock, (2) Capped Female Luer Thread Style and Capped Male Luer Lock		



VPSS069700N	NUMBER	MATERIAL
	VPSS069700N	White Acrylic Spike with Clear LDPE Guard
Bag Spike with vented guard		



VPM1611401N	NUMBER	MATERIAL
	VPM1611401N	White Acrylic
Bag Spike		



POLYVINYL CHLORIDE (PVC) TUBING

75 Durometer

Our PVC tubing is a very cost effective product that can satisfy a broad array of end use applications. It is flexible in nature, optically clear, and easily sterilized.

Resin Grade & Technical Information:

This tubing is extruded from Unichem 7511 G-015 resin, which is in compliance with all US Food & Drug Administration regulations for food grade use under Title 21 CFR. It is also certified USP Class VI. It can be sterilized by gamma radiation or Ethylene Oxide (EtO) gas. This tubing is not autoclavable.

We recommend that you request free samples for testing in your particular applications.

DIMENSION (ID X OD X LGTH)	NUMBER
1/16" X 1/8" X 100'	PV00-1031C
1/16" X 1/8" X 1000'	PV00-1031M
3/32" X 3/16" X 100'	PV00-2047C
3/32" X 3/16" X 1000'	PV00-2047M
1/8" X 1/4" X 100'	PV00-3062C
1/8" X 1/4" X 1000'	PV00-3062M
5/32" X 9/32" X 100'	PV00-4062C
5/32" X 9/32" X 1000'	PV00-4062M
3/16" X 5/16" X 100'	PV00-5062C
3/16" X 5/16" X 1000'	PV00-5062M
1/4" X 3/8" X 100'	PV00-6062C

POLYURETHANE TUBING

80 Durometer

Our polyurethane tubing is extremely kink resistant. It is also highly resistant to abrasion and suffing. It is widely accepted as a premium material for medical device use because of its flexible nature and easy sterilizability.

Resin Grade & Technical Information:

This tubing is extruded from Dow's compound Pellethane 2363-80AE, which has passed USP Class VI testing. It can be sterilized by gamma radiation or Ethylene Oxide (EtO) gas. Please do not autoclave this tubing, as it may alter the chemical nature of the resin.

DIMENSION (ID X OD X LGTH)	NUMBER
1/16" X 1/8" X 100'	UR00-1031C
1/16" X 1/8" X 1000'	UR00-1031M
3/32" X 3/16" X 100'	UR00-2047C
3/32" X 3/16" X 1000'	UR00-2047M
1/8" X 1/4" X 100'	UR00-3062C
5/32" X 9/32" X 100'	UR00-4062C

LOW DENSITY POLYETHYLENE TUBING

92 Durometer

Our polyethylene tubing has excellent mechanical and chemical resistance properties. However, please use caution if your application involves possible bending or kinking the tubing. It is a semi-rigid material and will be permanently deformed if kinked or bent too tight.

Resin Grade & Technical Information:

This tubing is extruded from DuPont 2020T, which is in compliance with all U.S. Food & Drug Administration regulations for food grade use under Title 21 CFR. It can be sterilized by gamma radiation or Ethylene Oxide (EtO) gas. Autoclaving is not recommended.

DIMENSION (ID X OD X LGTH)	NUMBER
1/16" X 1/10" X 100'	LDPE01-1019C
1/16" X 1/10" X 1000'	LDPE01-1019M
1/16" X 1/8" X 100'	LDPE01-1031C
1/16" X 1/8" X 1000'	LDPE01-1031M
3/32" X 5/32" X 100'	LDPE01-2031C
3/32" X 5/32" X 1000'	LDPE01-2031M
1/8" X 3/16" X 100'	LDPE01-3031C
1/8" X 3/16" X 1000'	LDPE01-3031M
5/32" X 7/32" X 100'	LDPE01-4031C
5/32" X 7/32" X 1000'	LDPE01-4031M