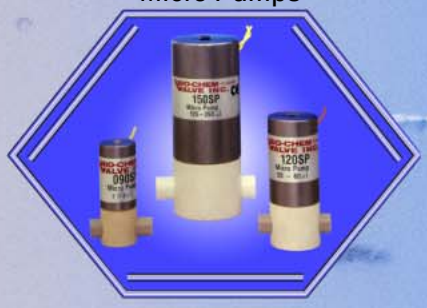
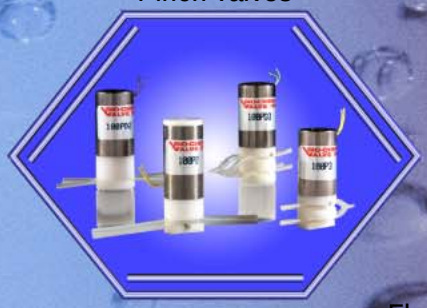
BIO-CHEM VALVE™ INC. Omnifit

Complete Fluid System Solutions™

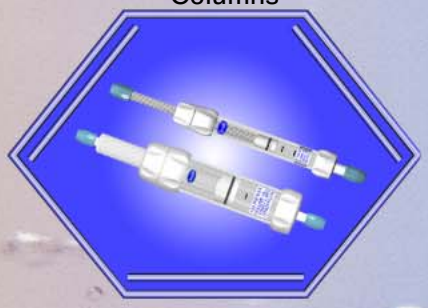
Micro Pumps



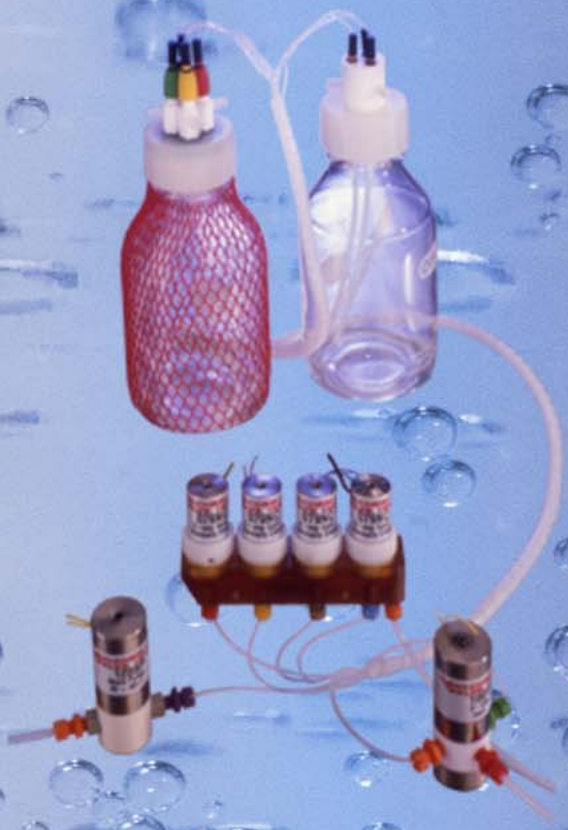
Pinch Valves



Columns



Isolation and Flow Selection Valves



Connectors and Adaptors

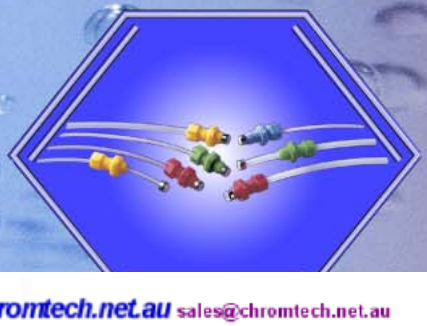
Check and Relief Valves

Bottles and Caps

Rotary Valves

Manifolds

Tubing Sets and Fittings



Inside.....

A Complete Line of Fluid System Components Combined With Over 30 Years of Market Specific Applications Experience and Design Capabilities....

Bio-Chem Valve Inc. and Omnifit Ltd., sister companies within the Halma Group, have combined their sales and marketing organizations in a strategy that focuses on delivering a total inert fluid handling solution. Through this arrangement, Bio-Chem Valve and Omnifit now offer the broadest inert fluidic products portfolio.

Products

Fully complimentary products include: Inert solenoid valves, Pumps, Relief Valves, Check Valves, Rotary Valves, Manifolds, Tubing, Connectors, Bottles and Caps, Filters, Adapters, Fittings, and Chromatography Columns.

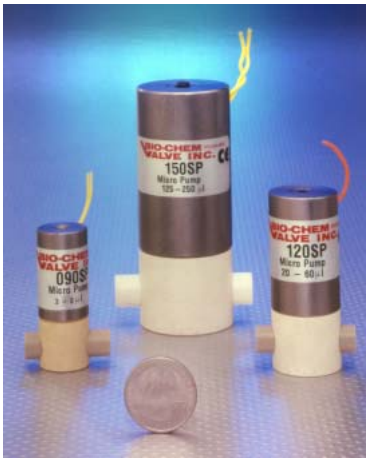
Markets

Customer markets for Bio-Chem Valve and Omnifit products include analytical, biotech, clinical diagnostics, chromatography, life sciences, environmental, pharmaceutical, semiconductor, ink jet printing, and other high purity markets.

Benefits

- Hundreds of inert fluid system components from one supplier
- Fully complimentary connections and operation
- Standard connection sizes for easy connection to other instrument sub-systems
- Customization for non-standard materials of construction, geometries, and flow requirements
- Application and design engineering resources assist in system development and integration
- Reduced engineering, purchasing, and field maintenance resource requirements
- Assembly and testing services reduce production and quality resource requirements
- 2 year warranty on all components and assembled systems

Micro Pumps



Bio-Chem Valve micro pumps provide an inert flow path for precise, repeatable dispensing with discreet, fixed output flows for high purity or aggressive fluids. The reliable, low-maintenance Bio-Chem Valve Self-Priming Micro Pump replaces pump and valve combinations, or peristaltic pumps.

FEATURES

- Precision controlled dispensing in volumes from 8 µL to 250 µL per solenoid actuation
- Compact, economical and reliable
- Dispense repeatability as tight as ± 2%

SPECIFICATIONS

Voltages:	12 VDC, 24 VDC, 115 VAC and 220 VAC
Connection Types:	1/4"-28 Flat Bottom and 5/16"-24 Flat Bottom
Dispense Range:	8 µL to 250 µL
Set-point Accuracy:	± 3%
Dispense Repeatability:	±2% to ± 5%
Flow Rates:	1.2 ml/min to 30 ml/min
Wetted Materials:	PPS, PEEK™, EPDM, PTFE, Perfluoroelastomer and Viton®
Width Range:	0.75 inches to 1.50 inches
Height Range:	1.97 inches to 3.7 inches
Part Number Series:	090SP, 110TP, 120SP, 120SPI and 150SP

Pinch Valves

Bio-Chem Valve pinch valves have been designed to assure sterility while managing the isolation, diversion, and flow of high purity fluids, blood, or saline in patient applications involving liquid or gas measurements within a fixed instrument. As the flow control component within a transfer site, the Bio-Chem Valve Pinch Valves enable fast, easy removal and replacement of sterile tubing sets, eliminate the need for disassembly or removal of the valve from the instrument, and isolate fluid contact

FEATURES

- Inertness similar to an isolation valve
- Straight, no-clog flow path
- A wide range of medical grade, class VI tubing with sizes ranging from 0.010” (0.25mm) to 5/16” (7.94mm) I.D.
- On/Off control
- A selector or diverter flow control in 3 way configurations

SPECIFICATIONS

Voltages:	12 VDC, 24 VDC, 115 VAC and 220 VAC
Tubing Size Range:	0.093" (2.36mm) to 7/16" (11.1mm) O.D.
Tubing Materials:	Silicone Select™, Bio-Chem and Custom
Body Styles:	2-way, 3-way, Dual 2-way and Dual 3-way
Life Expectancy:	20 million cycles
Pressure Range:	10 to 25 psi
Part Number Series:	075P, 100P and 150P

Isolation and Pivot Valves

Bio-Chem Valve solenoid-operated isolation and pivot valves provide a fast, reliable response to meet continuous duty performance at low power levels. Bio-Chem Valve's Standard Customization™ process lets customers choose the optimum body material, seal, flow path, flow rates and pressure to provide the best value and highest level of compatibility with a wide range of chemicals.

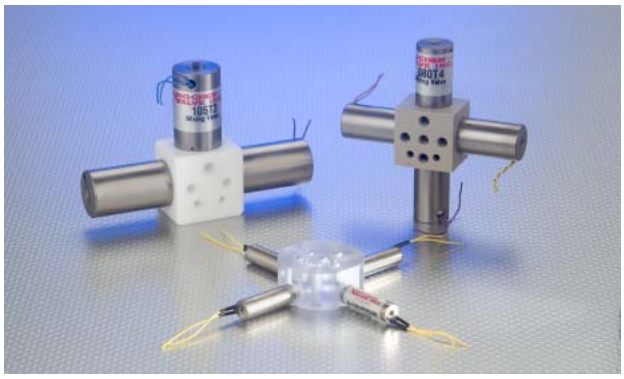
FEATURES

- Complete Inert Fluid Path
- Choice of body material resins includes: PTFE, PEEK™, PPS and Tefzel®
- Manifold Mountable for Minimizing Leak Points and Space Requirements
- Designed to operate with accuracy and reliability to over 20 million cycles
- Minimal Space Requirements - as small as 0.38" (9.7mm) valve width
- Higher Pressures Available with Quick-Change Customization™

SPECIFICATIONS

Body Styles:	2-way normally open, 2-way normally closed and 3-way multi-purpose
Orifice Range:	0.032" to 0.125"
Body width range:	0.038" to 1.500"
Overall Height range:	1.6" to 2.69"
Voltages:	12 VDC, 24 VDC, 115 VAC and 220 VAC
Internal Volume Range:	0.013 cc to 0.296 cc
Connection types:	¼"-28, Luer, 1/16" tube, M6, 10-32, 5/16"-24, 1/8" NPT and manifold mountable
Cv Range	0.01 to 0.17
Wetted Material Choices	PTFE, Viton®, Perfluoroelastomer, EPDM, PPS, PEEK™ and Tefzel®
Life Expectancy	20 million cycles
Pressure Range	0 to 60 psi
Part Number Series:	038T, 039T, 075T, 079, 079H and 100T

Gradient and Flow Selection Valves



Bio-Chem Valve flow selection valves are an excellent choice to control aggressive or high-purity fluids in a multi-liquid system or to form gradients using solvents. These valves combine multiple, reliable, 2-way isolation valves adjusted for equal flow on a body with 2-8 inlets (or outlets) and one common port. Valves can be used as a selector for multiple inlets, or as a diverter for one stream with multiple outlets. Choose from a wide range of options including size, solenoid operating configuration, and component materials.

FEATURES

- Precise flow characteristics
- Compact, robust construction
- Minimal Dead Volume
- Fast Response Time
- All PTFE wetted parts; other materials available

SPECIFICATIONS

Number of inlets/outlets available:	2 to 8
Orifice Range:	0.032" to 0.125"
Voltages:	12 VDC, 24 VDC, 115 VAC and 220 VAC
Cv Range:	0.021 to 0.136
Wetted Material Choices:	PTFE, PPS and PEEK™
Connection types:	¼"-28, M6, 10-32 and 5/16-24
Life Expectancy:	20 million cycles
Pressure Range:	0 to 35 psi
Response Time with CoolCube™ control module:	2 - 8 milliseconds
Part Number Series:	040T, 080T and 105T

Check Valves

Varibore

Barbed

Bio-Chek™

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.

The two ranges of Omnifit check valves offered are Barbed and Vari-bore with 'Omnifit Cap' connections. Omnifit check valves prevent the flow of gas and liquid in one direction, and at a preset cracking pressure.

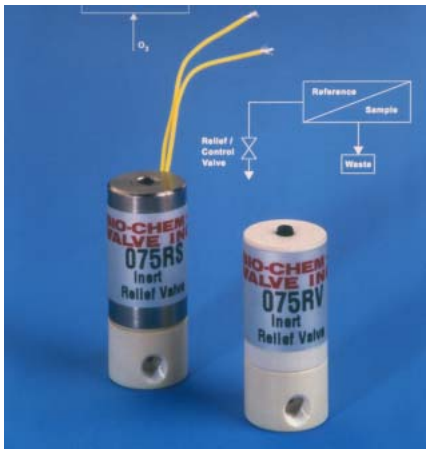
FEATURES

- 3 versions available
- Chemically inert materials
- 1/4"-28, Barbed or 'Omnifit Cap' connections

SPECIFICATIONS

Wetted materials:	PEEK™, PPS, Viton®, EPDM, Perfluoroelastomer, Polypropylene and PTFE
Connection types:	¼"-28, barbed, and 'Omnifit Cap' with 'O'-rings or cones
Width range:	0.36" to 0.77"
Height range:	1.00" to 2.42"

Relief Valves



The 075RV and 075RS relief valves are ideally suited for use with aggressive and high-purity fluids. Wetted parts consist of the PPS valve body and the perfluoroelastomer diaphragm. Custom body and diaphragm configurations are available from a broad menu of engineered plastics and elastomers, including PTFE. The unique Bio-Chem Valve diaphragm retention design ensures the most reliable performance and longest life.

FEATURES

- 2 versions available: stand-alone and with solenoid control
- 6 pressure relief settings from 20 to 150 psi
- Fully chemically inert
- Perfluoroelastomer and PPS wetted fluid path
- Minimal internal volume

SPECIFICATIONS

Pressure Relief Range:	20 to 150 psi
Orifice Size:	.062"
Voltages:	12 VDC, 24 VDC, 115 VAC and 220 VAC
Internal Volume:	0.054 cc
Cv:	0.03
Wetted Material Choices:	Perfluoroelastomer and PPS
Connection types:	¼"-28
Life Expectancy:	20 million cycles
Control option:	With or without solenoid
Part Number Series:	075RV and 075RS

Rotary Valves

Omnifit manufactures 4 types of rotary valves: small electric, large electric, small manual and small high-pressure manual. All 4 versions are designed for use with aggressive chemicals or biologically sensitive materials.

Omnifit's electrical rotary valves have an inert, Teflon® body and Kel-F® rotor. The small valve is availble in 4 and 5 port versions and the large valve is available with up to 11 ports.

Omnifit's small manual rotary valves come in 2 versions. One with the 'Omnifit Cap' connection system with a 1.5 mm bore size for pressures up to 50 psi (3.3 bar) and one with ¼"-28 helicoil ports with a 0.8 mm bore size for high pressure applications up to 500 psi (33 bar). These valves are available in 4 and 5 port versions.

FEATURES

- Chemically inert
- Manual and electric versions, 2 manual types and 2 electric types
- Low dead volume
- From 4 to 11 ports available
- Pressure ratings up to 500 psi (33 bar)

SPECIFICATIONS

Number of ports:	4 to 11
Pressure range:	30 to 500 psi
Wetted Materials:	PTFE and Kel-F®
Connections:	¼"-28 and 'Omnifit Cap' with 'O'-rings or cones
Bore size range:	0.8mm (0.032") to 1.5mm (0.062")

Manual Valves

A range of manual valves are offered with a variety of flow paths and connection options. Products include 'Omnifit Cap' connectors with valves, large distribution valves, stacked distribution valves , a manual sample injection valve, click-stop valves, and 1/4"-28 UNF screw-in valves.

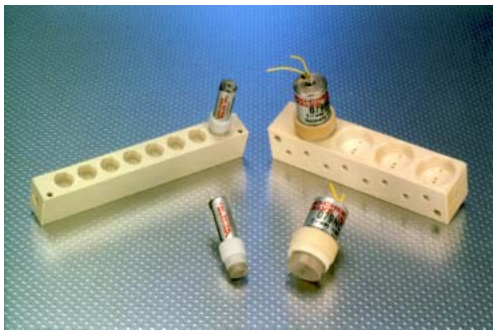
FEATURES

- Large selection
- Chemically inert materials
- 1/4"-28 UNF connections
- Pressure ratings up to 500 psi (33 bar)
- Instant tube connection

SPECIFICATIONS

Pressure range:	50 to 500 psi
Wetted materials:	PTFE
Connection:	¼"-28 and 'Omnifit Cap' with 'O'-rings or cones
Configurations:	2-way to 8-way

Manifolds



Custom manifold assemblies solve flow schematics with a space-saving organizational system that neatly contains multiple valves, pumps and tubing within an efficient, labor-saving, pre-assembled module. The finished 'product-ready' manifold is fully tested and shipped ready for use.

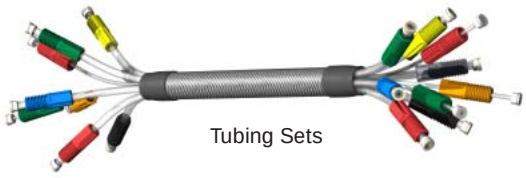
FEATURES

- Reduce internal equipment space requirements
- Combine valves, tubing, pumps and connectors into a single, pre-assembled component
- Eliminate unsightly and unmanageable wiring and tubing
- Reduce inventory and management of multiple components
- Eliminate production time and costs associated with testing, handling, and assembly

SPECIFICATIONS

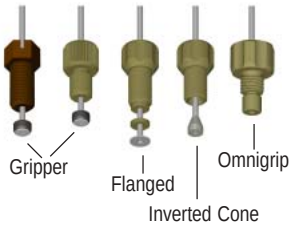
Connection types:	1/4"-28, M6, 10-32, 5/16"-24 and 1/8" NPT
Number of inlets:	2 to 12
Geometry:	Radial or linear
Materials:	PTFE, Tefzel® , PPS, PEEK™ and Acrylic
Orifice diameter range:	0.032" to 0.125"
Pressure rating:	to 500 psi

Tubing Sets & Fittings



Tubing Sets

Omni-Lok™



Omnifit fittings come in 5 different types: Omni-Lok™, Gripper, Flanged, Inverted Cone, and Omnigrip. Fully assembled PTFE tubes are availbale in varying lengths with the 1/4"-28 UNF Omni-Lok™ fitting system at one or both ends. Both 1/16" and 1/8" OD tubing options are available.

FEATURES

- Omnifit's unique Omni-Lok™ Fitting System
- Pressure rated up to 1000 psi
- Pre-assembled ready for use
- Instant, no-fuss connections

TUBING SPECIFICATIONS

Tubing materials:	PTFE
Hardwall Tubing sizes:	1/16" and 1/8" OD

FITTING SPECIFICATIONS

Fitting sizes:	1/4"-28 and M6
Pressure ratings:	to 1000 psi
Fitting types:	Omni-Lok™, Gripper, Omnigrip, Inverted Cone and Flanged

Bottles & Bottle Caps

Omnifit reagent bottles are made from borosilicate glass and protected by a safety net. Bottle caps come in several different configurations and provide a solution for multi-line connections to reagent bottles.

FEATURES

Bottles:

- Borosilicate glass
- GL32 and GL45 options
- Sizes between 50 ml & 10 litres

Bottle Caps:

- Supplied with fitted tubes
- All inert flow pattern
- Polypropylene outer cap
- PTFE sealing surfaces
- Non-Twist Tubing for easy fluid refill or replacement
- Optional built-in manual valves, 1/4”-28 ports or check valve

SPECIFICATIONS

Bottle materials:	Borosilicate Glass and Plastic-coated Borosilicate Glass
Bottle Cap wetted material:	PTFE
Size range:	50 ml to 10000 ml
Thread sizes:	GL32 and GL45
Connection types:	1/4"-28 and 'Omnifit Cap' with 'O'-rings or cones
Bottle cap configurations:	2-way and 3-way, each with or without valves
Bottle pressure rating:	15 psi (1 bar)
Bottle Cap Series:	Helicoil, Colored Cap and Low Profile

Chromatography Columns

Omnifit’s empty glass columns are the perfect solution for most low and mid-pressure liquid chromatography applications. Available with an adjustable endpiece designed for quick and easy height adjustment, they offer the chromatographer a multipurpose column that can be used again and again for a variety of different applications.

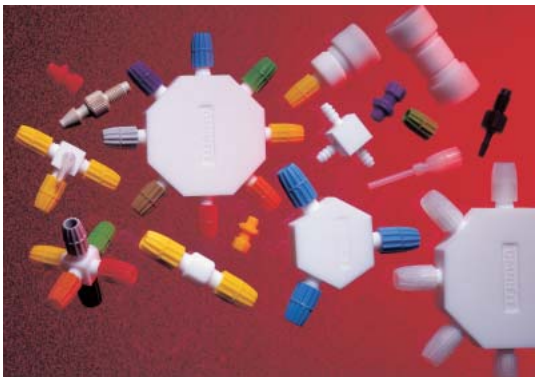
FEATURES

- Pressure ratings to 1200 psi (80 bar)
- Solvent resistant
- Fixed or adjustable height
- Robust and easy to use

SPECIFICATIONS

Wetted materials:	Borosilicate glass, PTFE and PE
Connection options:	1/4"-28 and M6
Frit porosity range:	5 to 100 µm
Pressure range:	150 psi (10 bar) to 1200 psi (80 bar)
Bore size range:	3 mm to 50.5 mm
Length range:	25 mm to 1000 mm
End piece types:	Fixed and Adjustable

Connectors & Adaptors



The Omnifit range of connectors is a versatile system for connecting different types of tubing instantly, including stainless steel, PTFE, glass and silicone. Tubing O.D. sizes between 1 and 11 mm can be connected using either Viton® 'O'-rings or PTFE cones. Configurations include 2, 3, 4, 6 and 8-way options.

The Omnifit line of adaptors includes connections for luer, pipe, 1/4"-28, glass tubing, stainless steel tubing, barb, and 'Omnifit Cap' interfaces.

FEATURES

- All PTFE body
- Autoclavable
- For use with tube outside diameters of 1 - 11 mm
- Chemically inert

SPECIFICATIONS

Wetted materials:	PTFE
Configurations:	2 to 8-way
Cap Color options:	9
Compatible tubing sizes:	1 to 11mm O.D. hardwall tubing
Connection types:	1/4"-28, 'Omnifit Cap' with 'O'-rings or cones, luer, pipe, glass tubing, stainless steel tubing and Barbed

Filters

A range of in-line, bottom-of-bottle, and slip on disposable filters suitable for an array of applications. Inert materials allow for use with aggressive and high-purity fluids. The filters ensure that particulates are removed from the medium, protecting downstream instrumentation from damage – especially Teflon® solenoid valves. In-line filters include a removable PTFE filter that can be easily and economically replaced. A distribution pattern machined into the filter housing ensures that the liquid spreads across the entire filter surface. Slip-On disposable filters are economical and easy to replace for end-of-tube applications in the bottom of reagent and solvent bottles and are low profile for maximum bottle usage.

FEATURES

- Simple filter replacement
- Disposable economic slip-on filters
- Fluid distribution pattern for optimum filtration
- Used to protect PTFE solenoid valves from particulates
- Low filter height allows maximum use of bottle fluids
- Available assembled in tube set

SPECIFICATIONS

Types:	In-line, Bottom-of-Bottle, and Slip-On Disposable
Wetted materials:	PTFE, Polyethylene and Polypropylene
Connection types:	1/4"-28 UNF, Slip-On for 1/8" OD or 1/16" OD tubing, Barbed and 'Omnifit Cap' with 'O'-rings or cones
Porosity:	5 µm to 100 µm

Bio-Chem Valve and Omnifit's *Quick-Change Customization™*

Quickly, Easily and Economically Customized Off-the-Shelf Components

Beginning with standard, pre-engineered designs and existing tooling, Bio-Chem and Omnifit are able to modify and adapt proven, pre-existing components to create working prototypes that minimize performance risks. Quick-Change Customization™ meets time-to-market manufacturing objectives quickly, with costs that are much lower than comparable "start-from-scratch" designs.

Port Sizes, Tubing Sizes and Threads
¼-28, 5/16-24, M6, NPT, BPT, 10-32, Special Bottle Cap Sizes, Customer Supplied Pinch Tubing, etc...

Dimensional Requirements
Miniature Components, Stacked Valves, Low Profile Bottle Caps and Custom Footprints

Body Configurations
2-Way through 16-Way, Manifold Mountable, Port Locations and Reduced Carry-Over Volumes

Mounting Requirements
Bulk Head, Flanged, Through-Holes, Clips and Rings

Manifold Assemblies
1-valve to 100-valve configurations, multiple flow paths and multiple materials

Valve Orifice Sizes
0.020" to 0.250" and Designs to Optimize Flow

Vacuum to High Pressures
Vacuum to 500psi Valves, Columns, Manifolds and Caps

High Flow Rates
0 to over 5000 ml / min

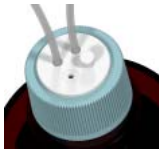
Custom Materials
PEEK, PPS, Tefzel®, PFA, Teflon®, Acrylic, Delrin®, EPDM, Viton®, Polypropylene, Polyethylene, Perfluoroelastomers (Chemraz®, Kalrez®, Perlast®) Silicone, Stainless Steel and Aluminum

Voltage Options
6VDC, 12VDC, 24VDC, 120VAC and 220VAC

Electrical Connectors
Molex connectors, Amp connectors and special lead wire lengths

Custom Adapters / Fittings / Connectors & Tubing Sets
Bundled tube sets, custom materials, custom fitting sizes, luer adapters, plugs, close-packed fittings, short & long fittings, non-spin tubing connectors, quick connection fittings and high pressure connections

Bottle Caps



Pinch Valves

Electric Rotary Valves

Manifolds

Isolation Valves

Adaptors

Tubing Sets

Chromatography Columns

Special Customized Solutions

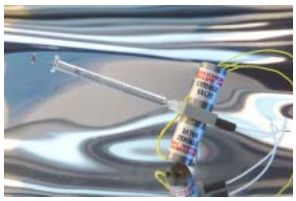
For truly unique OEM applications, Bio-Chem Valve and Omnifit can design, engineer and manufacture a complete custom solution. Custom valves, pumps, tubing sets, connections, bottle caps, columns, manifolds, and PC board connections are offered to streamline materials management and assembly time.

Quiet Operating & Position Feedback Pinch Valves

Quiet Pinch Valve
Eliminates the clicking noise associated with solenoid actuation through the use of sound dampening materials in the valve's armature assembly.

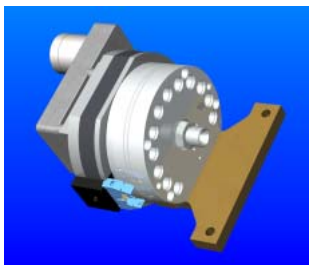
Pinch Valve with Position Feedback Sensor
For critical applications where position feedback is needed, a compact infrared optical sensor is mounted to the valve that instantaneously detects the position of the pinch valve pusher/armature assembly by sending an electrical signal to the control system to verify whether the valve is open or closed.

3-way Dual Solenoid Valve for Syringe Pump



Modified 3-way valve has compressed rectangular body for minimal internal volume and side-by-side mounting in minimal space. Dual Solenoids allow capability of switching on demand for independent operation of each inlet port. The 4 possible on/off combinations between the normally-open and normally-closed ports (both on, both off, on/off, off/on) allow wash cycle without operation of syringe pump.

32 Position Valve for Cell Analysis Instrument



16 port rotary valve with 32-positions to allow a stop between each port. Stainless steel rotor and inert PTFE body stable up to 200°C. Optical encoder accurately positions rotor to maximize flow rates. Integral heaters maintain a steady 70°C temperature so high viscosity fluid flows smoothly through the valve. Valve is positioned and driven by a 24 volt DC motor using computer-controlled TTL compatible signal.

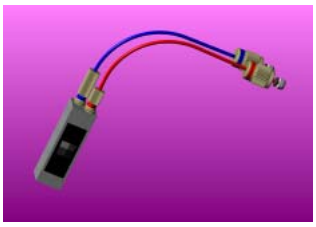
High Pressure Chromatography Column

Glass columns customized for up to 1200 psi through use of an aluminum retaining sleeve, high-grade thick-walled glass, and adjustable acetyl end-caps that allow for variable bed heights.

Quick Load/Release Bottle Cap

An innovative bottle cap design solution for an instrument manufacturer provides a fast, efficient product that with a competitive advantage by minimizing downtime during operations that require frequent liquid reagent bottle changeovers.

Custom Tubing Set for Flow Cell

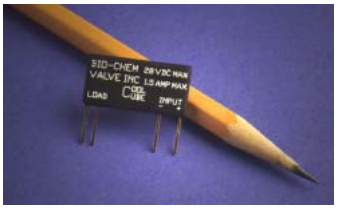


PTFE tubing assembly with Gripper fittings that seal to the glass surface of the flow cell. The 'O'-ring between the Gripper and the tube end fitting allow alignment with the cell independently of any variations in the alignment between the cell and its housing. The end of one fitting was also made slightly longer than the other to allow easy assembly, and the fittings were color-coded for simple identification.

Custom Fittings for Peristaltic Pump Tubing

1/4"-28 male fitting with an internal titanium tube made for soft walled tubing with a very small inside diameter such as peristaltic pump tubing. The peristaltic pump's tubing slides over the titanium tube, preventing compression when the fitting is tightened. An inverted cone slides over both the peristaltic and titanium tubes, providing a compression grip when the cap is screwed on.

CoolCube™ Hit-and-Hold Circuit



An energy-efficient CoolCube™ solenoid control module allows the placement of an overdrive voltage on a solenoid valve, which can decrease valve response time, increase operating pressure, reduce power consumption, and reduce solenoid heat generation. Voltage is reduced by 1/3rd and power is reduced by 1/9th.

Complete Fluid System Solutions™

One Company.....Many Solutions

Complete Fluid System Solutions are more than a simple bundling of products. A solution begins with the particular OEM fluid system specification. Application Engineers work with OEM product developers in creating a completed system that meets design requirements including the following components:

- Bottles, Bottle Caps and Filters
- Chromatography Columns
- Isolation Valves
- Manual and Electric Valves
- Mixing Valves
- Pinch Valves
- Check Valves
- Fittings, Connectors and Adaptors
- Manifolds
- Micro Pumps
- Mounting Hardware
- Relief Valves

Eliminate the cost and time spent on.....

Locating vendors, providing fluid system component and design verification, managing multiple suppliers, processing multiple purchase orders, and tracking products through the design and prototyping process.

Solutions for a Broad Range of Markets & Applications

The Complete Fluid System Solutions process has proved successful with applications in…

Chromatography
HPLC Instruments, Low to Medium Pressure Columns, Gradient Mixing, Waste Disposal, Wash Pumps, Reagent Pumps and Switching Valves

Auto-Sampling
Needles, Syringes, and probe tip liquid delivery

Blood Diagnostics
Reagent Handling, Dosing, Line Rinsing, Venting and Waste Removal

Medical Instrumentation
Dialysis, Automated Slide Staining, Saline Wash Maintenance and Solution Pumps

Bio-technology
Solvent Selection, Robotic Systems, Auto-pipetors, Auto-samplers and Liquid Delivery Systems

Pharmaceutical
Filling Machines, CIP Systems, Dissolution Testing and Combinatorial Chemistry

Life Sciences
DNA Research, Synthesis, Sequencing, Manufacturing and Proteins & Peptide Instruments

Environmental
Air & Water Sampling, Particle Counters, Daily Monitoring Units and Marine Biology Instruments

Semiconductor
Wafer Cleaning, Wafer Purity Measurements, Plasma Generation and Gas Delivery

Printing
High Volume Ink Delivery Systems

Agriculture
Distribution of Cleaning Agents, Reagents, Vaccines & Hormones, Inoculation & Vaccination, Health Monitoring and Soil Sampling

Laboratory
University and R&D

LC Packings UltiMate™ Plus Nano LC System: comprising of (from left) a FAMOS Microautosampler, a Switchos Microcolumn Switching Module and a UltiMate™ Plus Dual-Gradient System.

Gilson 215 Fraction Collector

Tecan Systems OEM Multi-Channel Syringe Pumps

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