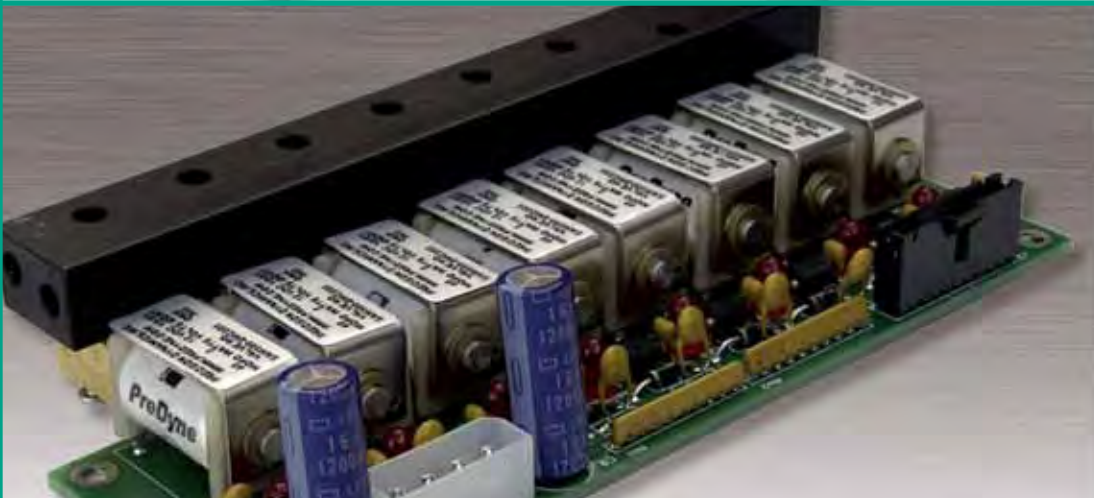
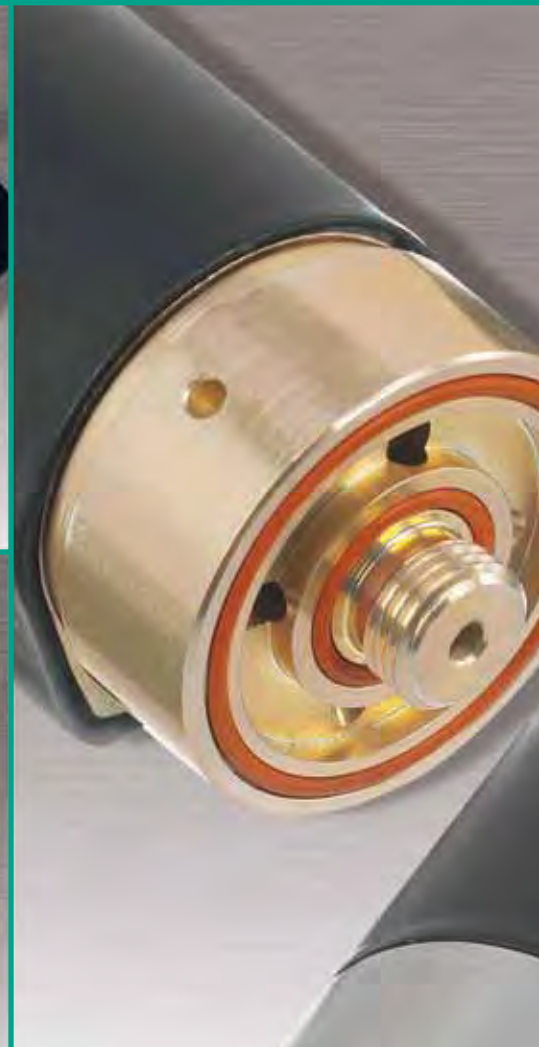


Miniature Solenoid Valves & Fluidic Solutions

Resource Guide

Gems[™]
Sensors & Controls
Our Experience • Your Solution



Defense
Medical
Home Healthcare
Aerospace
Printing
Semiconductor
HVAC

PreDyne[®]
Solenoid Valves

Gems™ Predyne® Valves

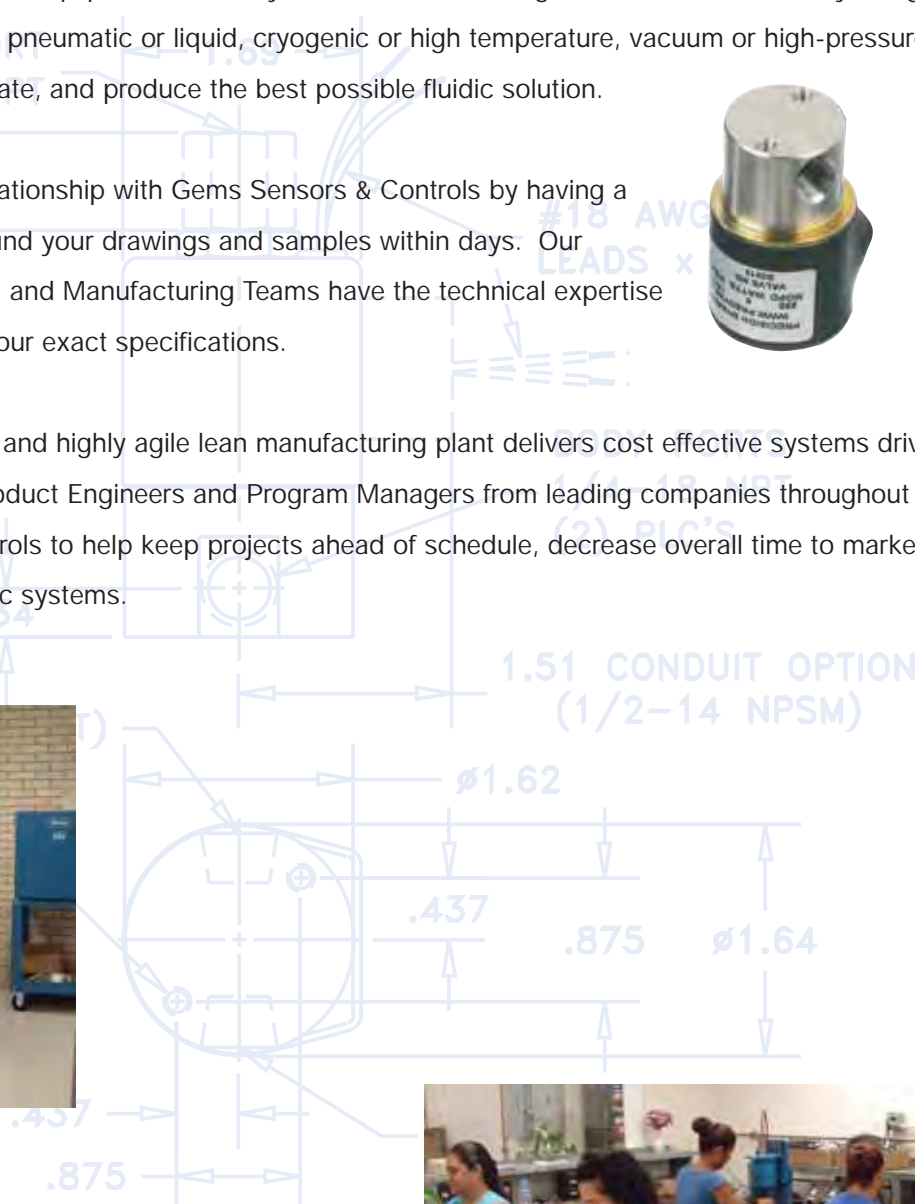


In January of 2006 Gems™ Sensors & Controls, a wholly owned subsidiary of Danaher® Corporation, acquired PreDyne® Valves. PreDyne specializes in giving each and every OEM the personal attention and company wide support that delivers the right, made-to-order fluidic system through the integration of miniature solenoid valves and manifold assemblies. For over 35 years, we have been solving fluidic problems with innovative flow control technology, across industries ranging from medical and biotech to automotive and industrial equipment. Each system and direct acting valve can be individually designed for your specific application. Whether pneumatic or liquid, cryogenic or high temperature, vacuum or high-pressure, we partner with customers to identify, create, and produce the best possible fluidic solution.

You'll experience a unique working relationship with Gems Sensors & Controls by having a design team dedicated to turning around your drawings and samples within days. Our Engineering, Customer Service, Sales, and Manufacturing Teams have the technical expertise that guarantees systems are built to your exact specifications.



Gems Sensors & Controls U.S. based and highly agile lean manufacturing plant delivers cost effective systems driven by the Danaher Business System. Product Engineers and Program Managers from leading companies throughout the world count on Gems Sensors & Controls to help keep projects ahead of schedule, decrease overall time to market, and be their one-stop-source for fluidic systems.



Valve Selection

PreDyne® specializes in made-to-order fluidic systems and valves. Our area of expertise is to accurately understand an OEM's requirements, develop smart design solutions, and build an application specific system.

The Gems™ PreDyne® Valve Resource Guide is designed to aid your search for the correct valve or fluidic system that meets your exact specifications. It is conveniently organized into three main sections:

- Solenoid Valves
- Manifold Assemblies
- Fluidic Systems

If at any time, you have a question or simply want to give us your requirements and have Gems Sensor and Controls design your valve or system, please contact LICO Electronics GmbH office@lico.at
Tel +43 1 706 43 000 www.mess-regeltechnik.at

Use the ADS

An application data sheet (ADS), located on the last page of this resource guide, will help you select performance criteria and options. Fax it directly LICO at +43 1 706 41 31

Valve Selection

The three steps described in this section will help you identify the performance criteria needed to meet your application requirements and select the right valve.

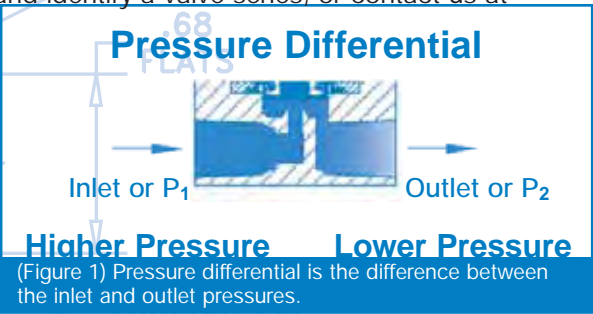
Step 1.

Calculating C_v and Valve Function

Begin by calculating the valve flow coefficient, or C_v , using: operating pressure differential; flow rate for your application; Specific Gravity; and in some circumstances, temperature.

If you already know your C_v and valve function, please go directly to Step 2 and identify a valve series, or contact us at 888-840-1230 or valveinfo@gemssensors.com.

C_v combines the effects of all flow restrictions in the valve into a single number. C_v represents the quantity of water, at 68°F and in gallons per minute (GPM) that will flow through your valve with a 1psi pressure differential. C_v can also be calculated for gases, as shown by the calculations on page two.



Specific Gravity (SG) for liquid is the ratio of the density, or specific weight of the liquid, relative to that of water. Similarly, the SG for gas is the ratio of the density, or specific weight of the gas, relative to that of air. The SG of your media is important in calculating C_v because it directly correlates to the flow rate through your valve.

Temperature is not included in the C_v calculation for non-compressible fluids (liquids) and is only used in determining SG. Conversely, because gases are compressible, temperature (T) has a greater effect on volume and therefore is included as a separate variable in gas C_v calculations.

Valve Selection

Liquid Flow

Because liquids are incompressible, their flow rate depends only on the difference between the inlet and outlet pressures (P1 - P2 or ΔP, pressure differential).

The C_V of any valve flowing liquid media can be determined with the following equation:

$$C_v = \frac{V}{\sqrt{\frac{\Delta P}{SG}}}$$

An example using water at 68° F:

V = 3.08 GPM
P1 = 100 PSI
P2 = 40 PSI
SG = 1

$$C_v = \frac{3.08}{\sqrt{\frac{100-40}{1}}}$$

Where:

C_V = Valve flow coefficient
V = Flow rate in GPM
ΔP = Pressure differential (PSID)
SG = Specific Gravity

For help calculating your C_V, please contact a LICO Electronics GmbH, office@lico.at Tel +43 1 706 43 000
www.mess-regeltechnik.at

Gas Flow

Since gases are compressible fluids there are two separate equations for high and low-pressure differential flow.

Low-pressure differential flow is when $P_2 > \frac{P_1}{2}$ and the following equation is used.

$$C_v = \frac{V}{16.05 \sqrt{\frac{(P_1^2 - P_2^2)}{(SG) T}}}$$

High-pressure differential flow is when $P_2 \leq \frac{P_1}{2}$ and the following equation is used.

$$C_v = \frac{V}{13.61 P_1 \sqrt{\frac{1}{(SG) T}}}$$

An example using air:

V = 10 SCFM
P1 = 20 PSIG = 34.7 PSIA (20 + 14.7)
P2 = 0 PSIG = 14.7 PSIA (0 + 14.7)
SG = 1
T = 72° F = 532° Rankine (72 + 460)

Where:

C_V = Valve flow coefficient
V = Flow rate in SCFM
P1 = Inlet pressure in PSIA
P2 = Outlet pressure in PSIA
SG = Specific Gravity
T = Temperature of gas in Degree Rankine

16.05 and 13.61 are constants used in gas flow equations

Since this is high-pressure differential flow ($14.7 \leq 34.7 / 2$), we use the following equation.

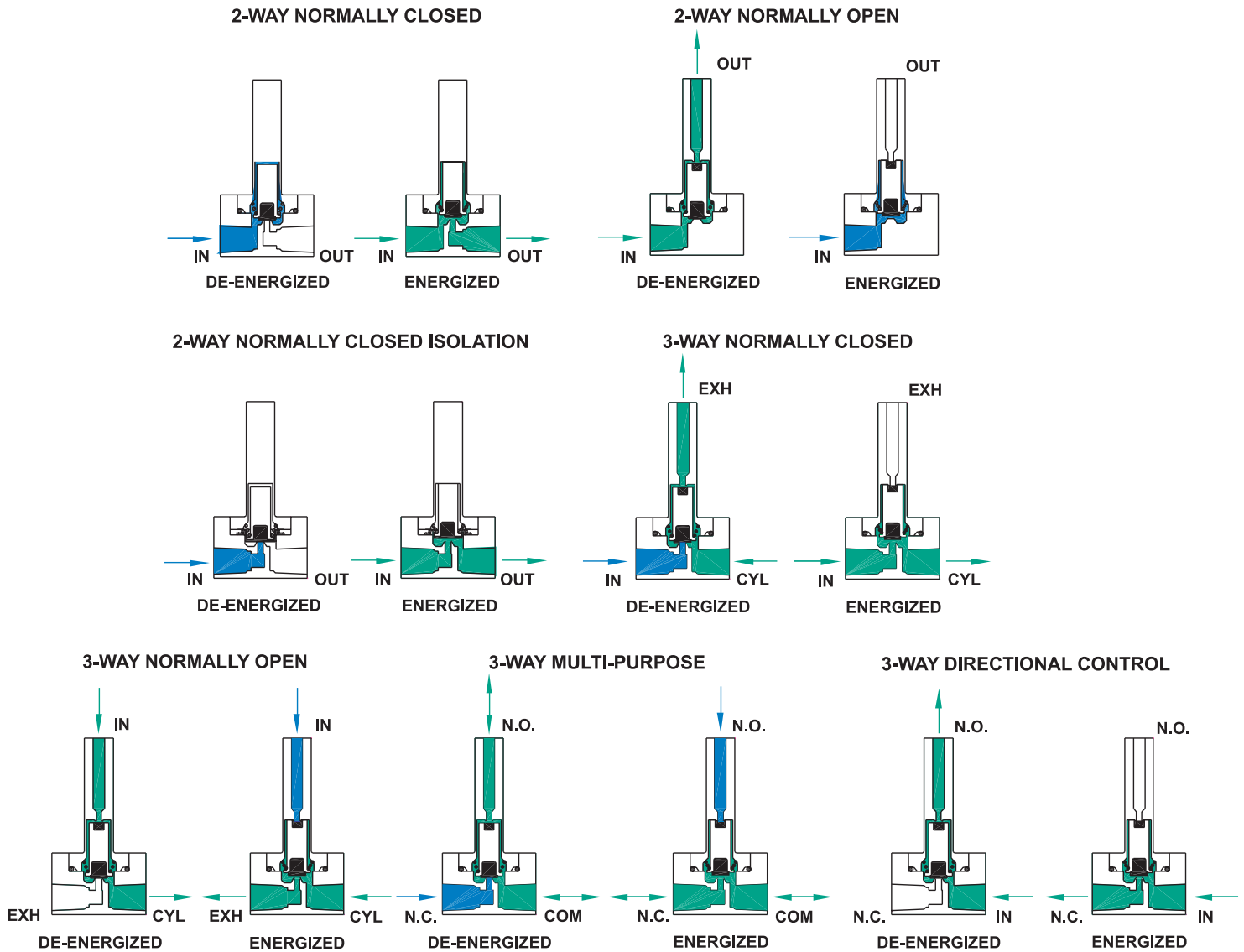
$$C_v = \frac{10}{13.61 \cdot 34.7 \sqrt{\frac{1}{(1) 532}}} = .49$$

Again, for help calculating your C_V, please contact a LICO Electronics GmbH office@lico.at Tel +43 1 706 43 000

Identify how your valve will function in your application. Pick from the following:

VALVE FLOW SCHEMATIC

█ BLOCKED FLOW █ FREE FLOW



If you don't see what you're looking for, or have a question, contact us at office@lico.at Tel +43 1 706 43 000

An important note regarding C_v and valve function:

The C_v calculated will apply to either the Body Orifice or the Stop Orifice depending on the valve's function.

For example, the Stop Orifice for a 3-way normally closed valve, when de-energized, is the exhaust port. In other words, C_v is calculated using the specific Inlet Pressure (P_1) and Outlet Pressure (P_2) for the flow paths described in the Figure 2.

Valve Selection

Step 2.

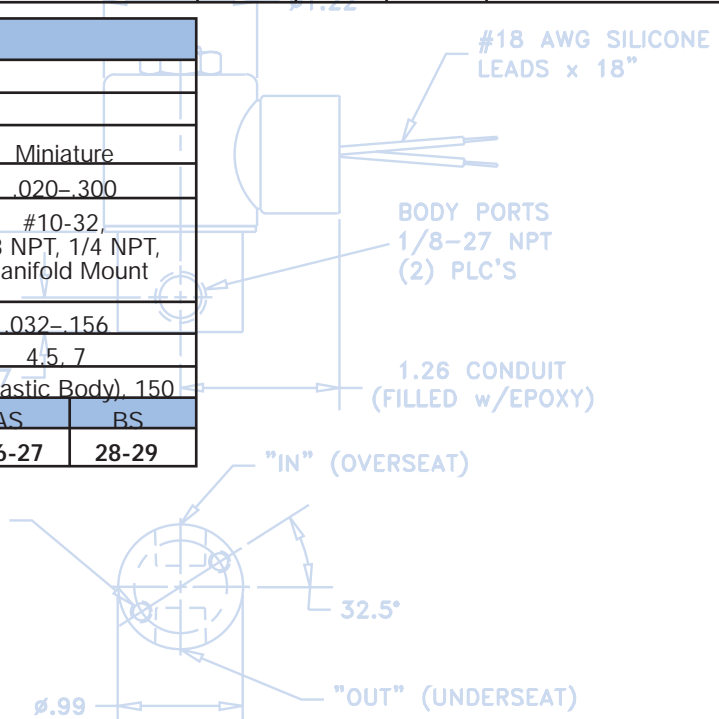
Identify Your Valve Series

Select possible valve series candidate using the overview charts below. Begin by choosing the category for your application:

- General Purpose
- Isolation
- Cryogenic

On the charts, use maximum operating pressure differential (MOPD), C_v , function, and additional specifications needed for your application to select possible valve series. The detailed performance specs for each series are located on the corresponding pages listed on the chart.

General Purpose								
Function	2- & 3-Way							
Media	Gas Only	Gas & Liquid						
Size	Sub-Miniature			Miniature				
C_v Range	.018-.070			.019-.430		.045-.880		
Port Configuration	#10-32, Manifold Mount	Barb (1/16, 5/64, 1/8), Manifold or Face-Mount	1/8 NPT	#10-32, 1/8, 1/4 NPT, Manifold Mount	1/8, 1/4, 3/8 NPT, Manifold Mount			
Orifice Dia (in)	.032-.078	.031-.052	.032-.156		.062-.210	.047-.375		
Power (watt)	.65, 2		.5, 1, 2		4.5	6	7	
MOPD (psi)	175	250	100	250	1000	400	900	
Valve Series	E, EH	G, GH	M	A (Polypro. Body)		A	B	C
Pages	8-9	10-11	6-7	14-15		12-13	16-17	18-19
Isolation								
Function	2-Way, Normally Closed Only							
Media	Gas & Liquid							
Size	Sub-Miniature			Miniature				
C_v Range	.012-.045		.016 & .040		.020-.300			
Port Configuration	#10-32, Manifold Mount	1/8 Barb, Face-Mount, #10-32 Threaded Flat Bottom		#10-32, 1/8 NPT, 1/4 NPT, Manifold Mount				
Orifice Dia (in)	.032-.078		.032 & .052		.032-.156			
Power (watt)	2							
MOPD (psi)	35		70		50 (Plastic Body), 150			
Valve Series	GS		Chem-S™		AS	BS		
Pages	24-25		22-23		26-27	28-29		
Cryogenic Valves								
Function	2-Way, Normally Closed Only							
Media	Liquid							
Size	Miniature							
C_v Range	.045-.440			.040-.770				
Port Configuration	1/8, 1/4 NPT			1/8, 1/4, 3/8 NPT				
Orifice Dia (in)	.046-.188			.046-.250				
Power (watt)	9			15				
MOPD (psi)	900			*1000				
Valve Series	B-Cryo			D-Cryo				
Pages	30-31			32-33				

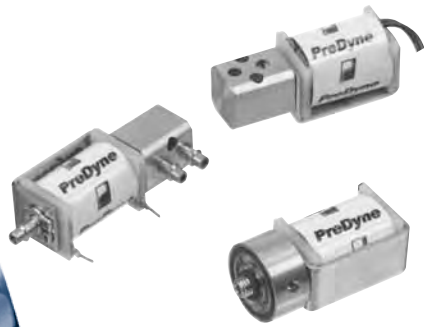


*Consult factory for higher MOPD.

If you would like assistance with your selection, want to modify a valve, or simply want a sounding board please contact LICO Electronics GmbH office@lico.at Tel +43 1 706 43 000 www.mess-regeltechnik.at

M Series

Low Power 2- and 3-Way Sub-Miniature Valve

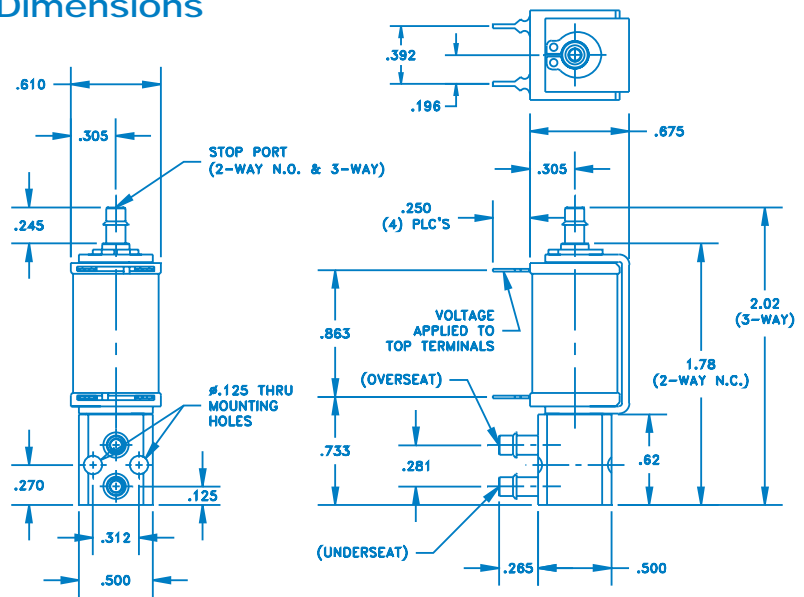


The M Series implements efficient power conservation in a solenoid valve that is specifically designed for sub-miniature two- and three-way pneumatic and select liquid applications. Field proven to exceed performance requirements in battery-powered applications, the M Series can be designed for extreme low wattage conditions. With a compact size, consistent high-speed response time, and reliable operation over 200 million cycles, the M Series delivers extended performance and precision flow control in a small lightweight environment.

Ideal for inline PC interfacing and manifold assemblies, the M Series is excellent for:

- Medical and Therapeutic Healthcare
- Clinical Chemistry and Analysis Equipment
- Drop-on-Demand Printing
- Environmental Instrumentation

Dimensions



Configure Your M Series Part Number: Example Below

MB315-EB33-P-201

- Prefix From Spec. Chart
- 3-Way N.C.
- 1 Watt Coil
- .052" Orifice Dia.
- Brass Body
- EPDM Plunger Seal & O-Ring
- 1/8" Stop Fitting
- 1/8" Body Fitting
- 4-Pin PC Mount Coil
- 5 Volt DC



MA: .5 Watt • MB: 1 Watt • MC: 2 Watts

Valve Options

Power Rating

A	.5 watt
B	1 watt
C	2 watts

Valve Type

20	2-Way normally closed
22	2-Way normally open
31	3-Way normally closed
32	3-Way normally open
33	3-Way multi-purpose
34	3-Way directional control

Orifice Size

2	.031"
5	.052"

Plunger Seal / O-Ring Material

V	Viton
N	Nitrile
E	EPDM

Body Material

B	Brass
A	Aluminum

Body Port Configuration

0	Face mount
1	1/16" barb
2	5/64" or 3/32" barb
3	1/8" barb
4	Manifold mount, #10-32 UNF-2A stud
5	#10-32 UNF-2B female thread (180° apart only)
6	1/8"-27 NPT ports (180° apart only)

Stop Port Configuration

0	No barb (Standard for 2-way NC & 3-way free vent)
1	1/16" barb (.031" orifice only)
2	5/64" or 3/32" barb
3	1/8" barb

Coil Construction

U	P.C. board solderable (2-pin)
P	P.C. board mount (4-pin)
Q	Quick connect .110 spade
L	Lead-wires, #26 AWG, 18" long
W__	Lead-wires (Specify length in inches)

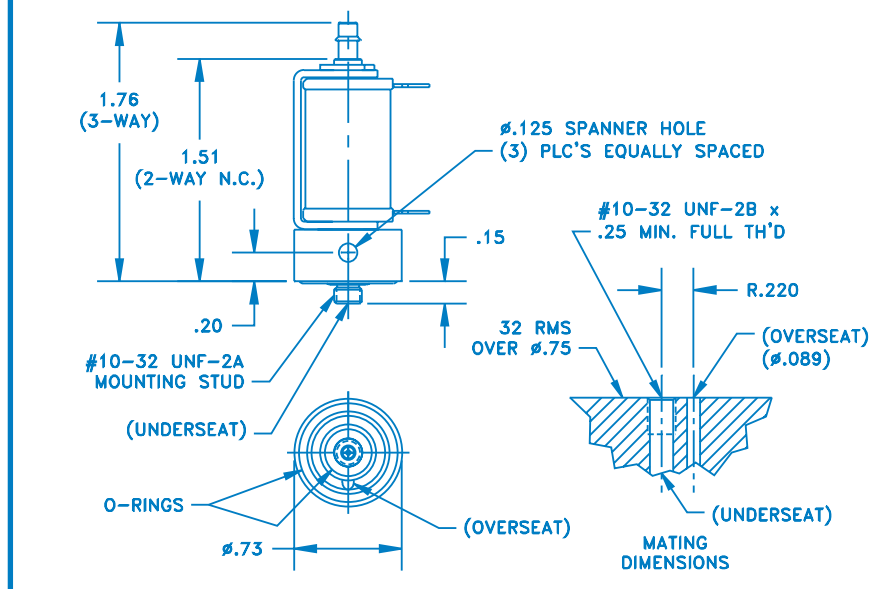
Voltage

200	3 VDC
201	5 VDC
203	12 VDC
204	24 VDC
___ VDC	DC (specify voltage)
___ VAC	AC Rectified 2-watt coil only (specify voltage, lead-wires only)

Additional Options

OC	Cleaned for oxygen use
VAC	Vacuum application (0 to 27" Hg)

Dimensions



Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	C _v
			BODY
MA	.031	25	0.020
MA	.052	10	0.038
MB	.031	50	0.020
MB	.052	25	0.038
MC	.031	100	0.020
MC	.052	50	0.038

E & EH Series

Sub-Miniature 2- and 3-Way Pneumatic Solenoid Valve

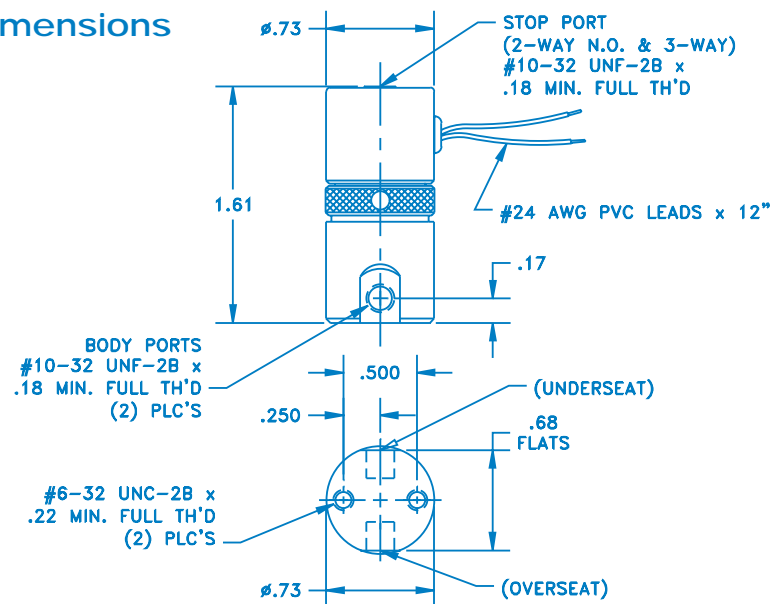


A 2- or 3-way sub-miniature solenoid valve that delivers faster response times—and higher flow rates, the E & EH Series is specifically engineered for air and dry gas applications. A nickel-plated body and coil housing construction produces a highly durable, corrosion resistant valve. With a wattage range of .65–2 the E & EH Series provides versatility for power conserving, high pressure, and high flow applications.

The E & EH Series is an excellent choice for:

- Medical and Respiratory Healthcare
- Printing Machinery and Sorting Equipment
- Automated Packaging Equipment
- Air Monitoring Systems

Dimensions



Configure Your E & EH Series Part Number: Example Below

E2010-W24-1-V-VO-24VDC-OC

Prefix From Spec. Chart

24" Lead Wires

Encapsulated Coil

Viton O-Ring
Viton Plunger Seal

24 Volt DC

Cleaned For Oxygen Use



E Series: .65 Watt • EH Series: 2 Watts

Valve Options

Coil Construction

*Tape-wrapped, Class-B, with lead-wires (12" long)

- W_ _ Lead-wires, non-standard length (specify in inches)
 1 Encapsulated coil
 5 Encapsulated coil with .110 spade terminals
 10 Rectified coil for AC voltage (2 watt only)

Body Material

*Nickel-plated brass

Plunger Seal Material

*Nitrile

- V Viton
 E EPR
 MQ Silicone

O-Ring Material

*Nitrile

- VO Viton
 EO EPR
 MQO Silicone

Body Port Configuration

*#10-32 straight thread ports

- BM M5 x 0.8 ports
 MM Manifold mount with #10-32 threaded stud
 MM2 Manifold mount with M5 x 0.8 threaded stud
 BO Bottom under-seat port

Voltage

- ___ VDC DC (specify voltage)
 ___ VAC AC rectified 2-watt only (specify voltage)

Additional Options

- OC Cleaned for oxygen use
 QO Quiet operation (2-way N.C.)
 VAC Vacuum application (0 to 29.5" Hg)

* E and EH Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
E2010	1/32		125	0.018	
E2011	3/64		70	0.023	
E2012	1/16		40	0.036	
E2013	5/64		20	0.070	
EH2010	1/32		175	0.018	
EH2011	3/64		150	0.023	
EH2012	1/16		100	0.036	
EH2013	5/64		50	0.070	
2-WAY Normally Opened					
E2210		1/32	125		0.018
E2211		3/64	70		0.023
E2212		1/16	40		0.032
EH2210		1/32	175		0.018
EH2211		3/64	150		0.023
EH2212		1/16	100		0.032
3-WAY Normally Closed, Free Vent/Line Connection					
E3110	1/32	1/32	125	0.018	0.018
E3111	3/64	3/64	70	0.023	0.023
E3112	1/16	1/16	40	0.036	0.032
EH3110	1/32	1/32	175	0.018	0.018
EH3111	3/64	3/64	150	0.023	0.023
EH3112	1/16	1/16	100	0.036	0.032
3-WAY Normally Open					
E3210	1/32	1/32	125	0.018	0.018
E3211	3/64	3/64	70	0.023	0.023
E3212	1/16	1/16	40	0.036	0.032
EH3210	1/32	1/32	175	0.018	0.018
EH3211	3/64	3/64	150	0.023	0.023
EH3212	1/16	1/16	100	0.036	0.032
3-WAY Multi Purpose					
E3310	1/32	1/32	80	0.018	0.018
E3311	3/64	3/64	40	0.023	0.023
E3312	1/16	1/16	20	0.036	0.032
EH3310	1/32	1/32	150	0.018	0.018
EH3311	3/64	3/64	100	0.023	0.023
EH3312	1/16	1/16	50	0.036	0.032
3-WAY Directional Control					
E3410	1/32	1/32	135	0.018	0.018
E3411	3/64	3/64	80	0.023	0.023
E3412	1/16	1/16	45	0.036	0.032
EH3410	1/32	1/32	190	0.018	0.018
EH3411	3/64	3/64	165	0.023	0.023
EH3412	1/16	1/16	80	0.036	0.032

G & GH Series

2- and 3-Way Sub-Miniature Valve



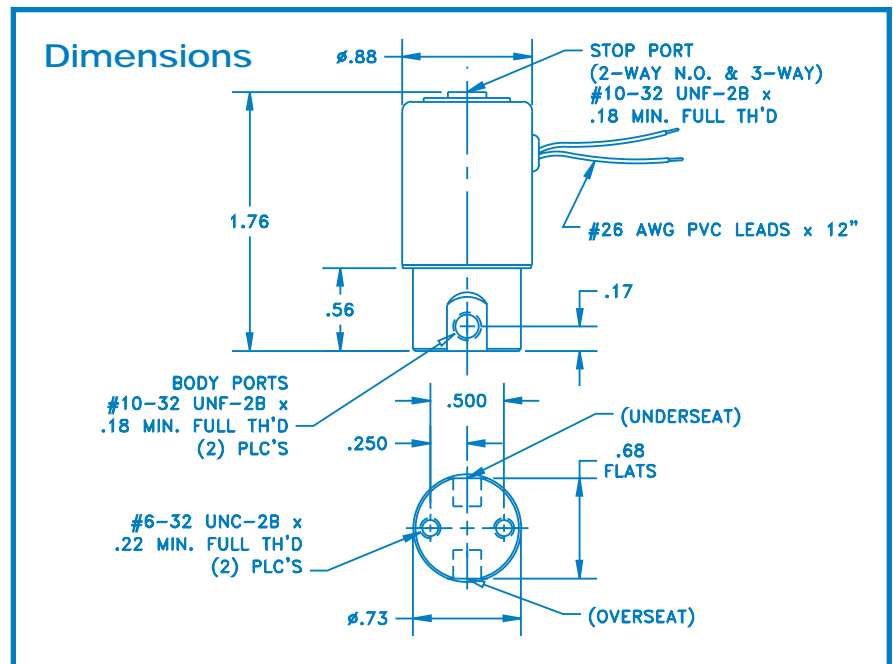
This extremely versatile 2- or 3-way sub-miniature valve gives you the option of choosing the highly durable stainless steel or the lightweight corrosion resistant acetal body, to meet your overall design parameters. Select stainless steel to resist corrosion in most acids and alkaline solutions, or pick acetal for a tough and heat resistant metal substitute to meet your weight and chemical inert requirements.

G & GH Series with a stainless steel body is often the first choice for:

- Hospital Equipment
- Laboratory Equipment
- Air Sampling Systems

G & GH Series with the acetal body is an excellent choice for:

- Water Purification Systems
- Analytical Equipment



Configure Your G & GH Series Part Number: Example Below

G2214-5-E-EO-5VDC

Prefix From Spec. Chart

EPR Plunger Seal

5 Volt DC

EPR O-Ring

Encapsulated Coil w/.110 Spade Terminals



G Series: .65 Watt • GH Series: 2 Watts

Valve Options

Coil Construction

*Tape-wrapped, Class-B, with lead-wires (12" long)

W_ _ Lead-wires, non-standard length (specify in inches)

1 Encapsulated coil

5 Encapsulated coil with .110 spade terminals

10 Rectified coil for AC voltage (2-watt only)

Body Material

G_ _1_ *303 Stainless Steel

G_ _3_ *Acetal (#10-32 port only)

Plunger Seal Material

*Viton®

NB Nitrile

E EPR

N Neoprene

O-Ring Material

*Viton

NBO Nitrile

EO EPR

NO Neoprene

Body Port Configuration

*#10-32 straight thread ports

LC 1/8"-27 NPT ports

BM M5 x 0.8 ports

MM Manifold mount with #10-32 threaded stud

MM2 Manifold mount with M5 x 0.8 threaded stud

Voltage

___ VDC DC (specify voltage)

___ VAC AC Rectified 2-watt only (specify voltage)

Additional Options

OC Cleaned for oxygen use

TP Teflon coated plunger

VAC Vacuum application (0 to 29.5" Hg)

* G and GH Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
G20_2	.032		125	0.018	
G20_3	.040		70	0.023	
G20_4	.055		40	0.038	
G20_5	.078		20	0.063	
GH20_2	.032		250	0.018	
GH20_3	.040		175	0.023	
GH20_4	.055		100	0.038	
GH20_5	.078		50	0.063	
2-WAY Normally Opened					
G22_2		.032	125		0.018
G22_3		.040	70		0.023
G22_4		.055	40		0.038
G22_5		.078	20		0.057
GH22_2		.032	200		0.018
GH22_3		.040	150		0.023
GH22_4		.055	100		0.038
GH22_5		.078	50		0.057
3-WAY Normally Closed, Free Vent/Line Connection					
G31_2	.032	.032	125	0.018	0.018
G31_3	.040	.040	70	0.023	0.023
G31_4	.055	.055	40	0.038	0.038
G31_5	.078	.078	20	0.063	0.057
GH31_2	.032	.032	200	0.018	0.018
GH31_3	.040	.040	150	0.023	0.023
GH31_4	.055	.055	100	0.038	0.038
GH31_5	.078	.078	50	0.063	0.057
3-WAY Normally Open					
G32_2	.032	.032	125	0.018	0.018
G32_3	.040	.040	70	0.023	0.023
G32_4	.055	.055	40	0.038	0.038
G32_5	.078	.078	20	0.057	0.057
GH32_2	.032	.032	175	0.018	0.018
GH32_3	.040	.040	150	0.023	0.023
GH32_4	.055	.055	80	0.038	0.038
GH32_5	.078	.078	40	0.057	0.057
3-WAY Multi Purpose					
G33_2	.032	.032	80	0.018	0.018
G33_3	.040	.040	40	0.023	0.023
G33_4	.055	.055	20	0.036	0.029
G33_5	.078	.078	10	0.063	0.053
GH33_2	.032	.032	110	0.018	0.018
GH33_3	.040	.040	85	0.023	0.023
GH33_4	.055	.055	50	0.036	0.029
GH33_5	.078	.078	25	0.063	0.057
3-WAY Directional Control					
G34_2	.032	.032	135	0.018	0.018
G34_3	.040	.040	80	0.023	0.023
G34_4	.055	.055	45	0.029	0.029
G34_5	.078	.078	20	0.063	0.055
GH34_2	.032	.032	190	0.018	0.018
GH34_3	.040	.040	165	0.023	0.020
GH34_4	.055	.055	80	0.038	0.038
GH34_5	.078	.078	40	0.063	0.063

A Series

2- and 3-Way Modular Design

The A Series gives you a highly adaptable design for practically all applications requiring flow between C_v .019 and .300. This robust 2- or 3-way miniature solenoid utilizes a stainless steel body to resist corrosion for most acids, alkaline solutions, and harsh environments. The A Series can also be made with a brass body for a more cost effective solution. Available in numerous port configurations, orifice sizes, and material combinations, the A Series is a highly flexible valve that fulfills the requirements for most applications.



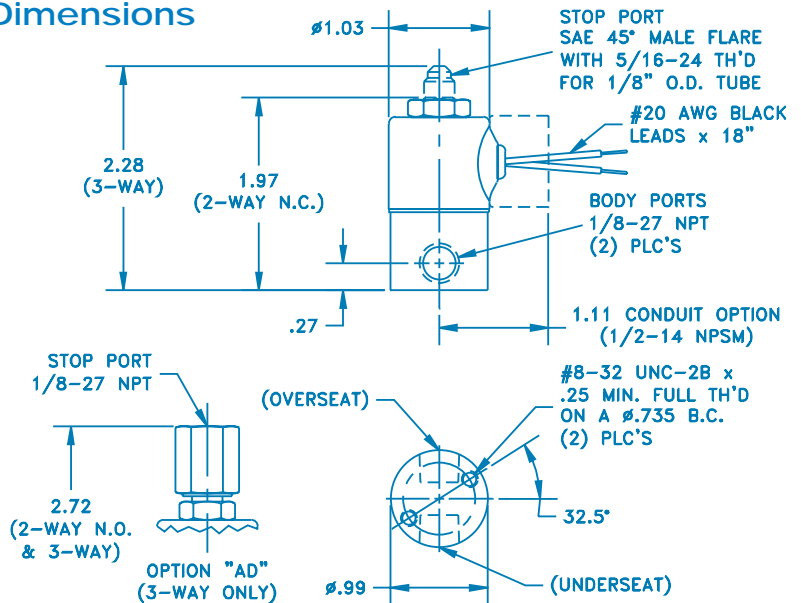
A Series with a stainless steel body is often the first choice for:

- Medical Equipment
- Laboratory Equipment
- Food Processing Equipment

A Series with a brass body is an excellent choice for:

- Industrial Applications
- Automotive
- Water Transfer Systems

Dimensions



Configure Your A Series Part Number: Example Below

A2213-3-BB-N- NO- LB-110/60VAC-WM

Prefix From Spec. Chart

Brass Body

1/4" NPT Ports

110/60 Volt AC

Mounting Bracket

Encapsulated Coil Class-H, 18" Lead -Wires

Neoprene O-Ring

Neoprene Plunger Seal



A Series Metal Body: 6 Watts

Valve Options

Coil Construction

- *Tape-wrapped, Class-B, with 18" lead-wires
- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires
- 2 Molded coil, Class-F, lead-wires
- 3 Encapsulated coil, Class-H, lead-wires
- 4 Encapsulated coil, Class-B, 3/16" spade terminals (1/4" spade optional)
- 5 Encapsulated coil, Class-B, .110" spade terminals
- 8 Molded coil, Class-F, 3/16" spade terminals
- 10 Externally rectified coil (lead-wires only)
- 11 Tape-wrapped coil, Class-H, lead-wires
- 12 Molded coil, Class-H, lead-wires
- HC Molded coil, Class-F, EN175301-803 Style B, Industrial, 11mm, 2+1 poles
- HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

- A_ _1_ *303 Stainless Steel (grommet housing)
- A_ _2_ *303 Stainless Steel (1/2" conduit housing)
- BB Brass
- SB 304 Stainless Steel
- SB5 316 Stainless Steel
- SBF 430F Stainless Steel

Plunger Seal Material

- *Nitrile
- E EPR
- GV Gasoline Viton (2-way valves only)
- N Neoprene
- NS Nitrile (NSF/FDA, 2-way valves only)
- PF Perfluoroelastomer
- R Rulon (2-way valves only)
- T Teflon
- V Viton

O-Ring Material

- *Nitrile
- EO EPR
- NO Neoprene
- NSO Nitrile (NSF/FDA, 2-way valves only)
- PFO Perfluoroelastomer
- TO Teflon
- VO Viton

Body Port Configuration

- *1/8-27 NPT female thread
- LB 1/4-18 NPT female thread
- BD #10-32 female straight thread (max. orifice = 1/8")
- LT 1/8-28 BSPT female thread (2-way valves only)
- LU 1/4-19 BSPT female thread (2-way valves only)
- MM Manifold mount (1/4-28 UNF-2A mounting stud)
- MM3 Manifold mount (5/16-24 UNF-2A mounting stud)
- OB Omit body (operator style)
- MB Bottom metering (max. orifice = 3/32")
- BI Bottom over-seat port, female thread (max. orifice = 1/8")
- BIM Bottom over-seat port, 1/8-27 NPT male thread
- BO Bottom under-seat port, female thread
- BOM Bottom under-seat port, 1/8-27 NPT male thread
- RL 90° porting - left hand
- RR 90° porting - right hand

Voltage

- VDC DC (specify voltage)
- VAC AC (specify voltage; copper shading ring or rectified w/out shading ring)

Additional Options

- Y Yoke
- WM Mounting bracket
- TP Teflon coated plunger
- AD 1/8 - 27 NPT stop port adapter
- QO Quiet operation (2-way valves only)
- S Silver shading ring
- OC Cleaned for oxygen use
- VAC Vacuum application (0 to 29.5" Hg)
- G1 One-piece 303 Stainless Steel guide assembly
- G5 One piece 316 Stainless Steel guide assembly

* A Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
A20_1	1/32		1000	0.020	
A20_2	3/64		500	0.035	
A20_3	1/16		300	0.065	
A20_4	5/64		200	0.090	
A20_5	3/32		175	0.155	
A20_6	1/8		100	0.240	
A20_7	5/32		50	0.300	
2-WAY Normally Opened (option AD standard)					
A22_1		1/32	200		0.019
A22_2		3/64	150		0.040
A22_3		1/16	100		0.075
3-WAY Normally Closed, Free Vent/Line Connection					
A3_ _1	1/32	1/32	200	0.019	0.019
A3_ _2	3/64	3/64	150	0.040	0.040
A3_ _3	1/16	3/64	100	0.070	0.040
A3_ _4	1/16	1/16	75	0.070	0.070
A3_ _5	3/32	3/64	50	0.170	0.040
3-WAY Normally Open					
A32_1	1/32	1/32	150	0.019	0.019
A32_2	3/64	3/64	100	0.040	0.040
A32_3	1/16	3/64	90	0.070	0.040
A32_4	1/16	1/16	75	0.070	0.070
A32_5	3/32	3/64	50	0.170	0.040
3-WAY Multi Purpose					
A33_1	1/32	1/32	125	0.019	0.019
A33_2	3/64	3/64	100	0.040	0.040
A33_3	1/16	3/64	90	0.070	0.040
A33_4	1/16	1/16	75	0.070	0.070
A33_5	3/32	3/64	25	0.170	0.040
3-WAY Directional Control					
A34_1	1/32	1/32	225	0.019	0.019
A34_2	3/64	3/64	150	0.040	0.040
A34_3	1/16	3/64	100	0.070	0.040
A34_4	1/16	1/16	75	0.070	0.070
A34_5	3/32	3/64	50	0.155	0.040

A Series

2- and 3-Way Plastic Body Valve

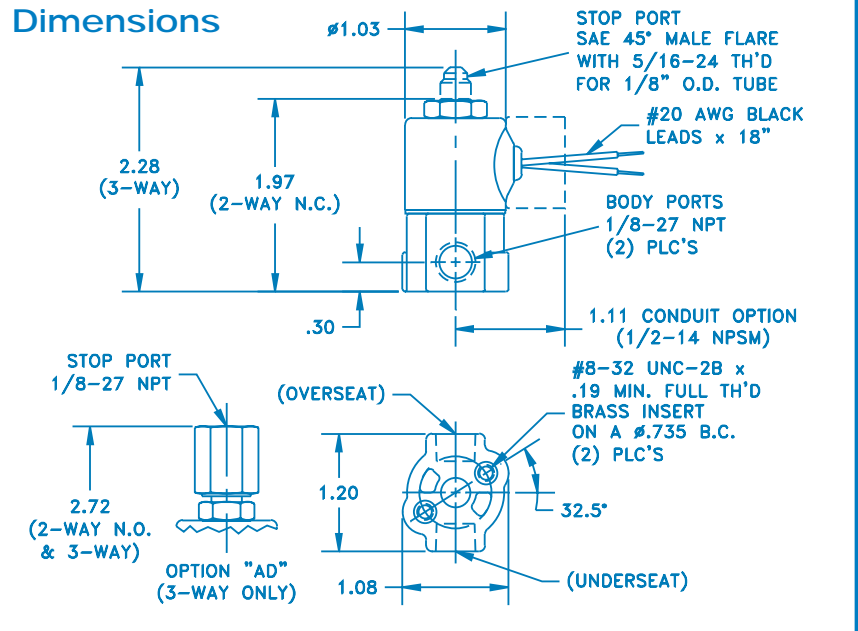


The A Series with a polypropylene body provides the same flexibility of design as the brass and stainless steel options while being resistant to many chemical solvents, bases, and acids. The plastic body is also highly resistant to erosion throughout the flow path. The wide range of physical properties and relative ease of processing make polypropylene an extremely attractive material capable of competing with more expensive resins in a number of demanding applications. An excellent lightweight alternative to metal bodies.

The A Series with a plastic body exceptional for:

- Laboratory Equipment
- Food Processing
- Automotive Systems

Dimensions



Configure Your A Series Part Number: Example Below

A2033-V-VO-28VDC

Prefix From Spec. Chart

Viton Plunger Seal

Viton O-Ring

28 Volt DC



A Series Plastic Body: 4.5 Watts

Valve Options

Coil Construction

- *Tape-wrapped, Class-B, with 18" lead-wires
- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires
- 2 Molded coil, Class-F, lead-wires
- 4 Encapsulated coil, Class-B, 3/16" spade terminals (1/4" spade optional)
- 5 Encapsulated coil, Class-B, .110" spade terminals
- 8 Molded coil, Class-F, 3/16" spade terminals
- 10 Externally rectified coil (lead-wires only)
- HC Molded coil, Class-F, EN175301-803 Style B, Industrial, 11mm, 2+1 poles
- HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

- A_ _3_ *Polypropylene (grommet housing)
- A_ _4_ *Polypropylene (1/2" conduit housing)

Plunger Seal Material

- *Nitrile
- E EPR
- N Neoprene
- NS Nitrile (NSF/FDA, 2-way valves only)
- PF Perfluoroelastomer
- V Viton

O-Ring Material

- *Nitrile
- EO EPR
- NO Neoprene
- NSO Nitrile (NSF/FDA, 2-way valves only)
- PFO Perfluoroelastomer
- VO Viton

Body Port Configuration

- *1/8-27 NPT female thread
- OB Omit body (operator style)

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC (specify voltage; copper shading ring or rectified w/out shading ring)

Additional Options

- Y Yoke
- WM Mounting bracket
- TP Teflon coated plunger
- AD 1/8-27 NPT stop port adapter
- QO Quiet operation (2-way valves only)
- S Silver shading ring
- OC Cleaned for oxygen use
- VAC Vacuum application (0 to 29.5" Hg)
- G1 One-piece 303 Stainless Steel guide assembly
- G5 One piece 316 Stainless Steel guide assembly

* A Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
A20_3	1/16		250	0.065	
A20_6	1/8		60	0.150	
A20_7	5/32		30	0.180	
2-WAY Normally Opened (option AD standard)					
A22_1		1/32	125		0.019
A22_2		3/64	90		0.040
A22_3		1/16	60		0.075
3-WAY Normally Closed, Free Vent/Line Connection					
A3_ _3	1/16	3/64	60	0.065	0.040
A3_ _4	1/16	1/16	40	0.065	0.070
3-WAY Normally Open					
A32_3	1/16	3/64	50	0.065	0.040
A32_4	1/16	1/16	45	0.065	0.070
3-WAY Multi Purpose					
A33_3	1/16	3/64	50	0.065	0.040
A33_4	1/16	1/16	45	0.065	0.070
3-WAY Directional Control					
A34_3	1/16	3/64	60	0.065	0.040
A34_4	1/16	1/16	45	0.065	0.070

B Series

2- and 3-Way Modular Design

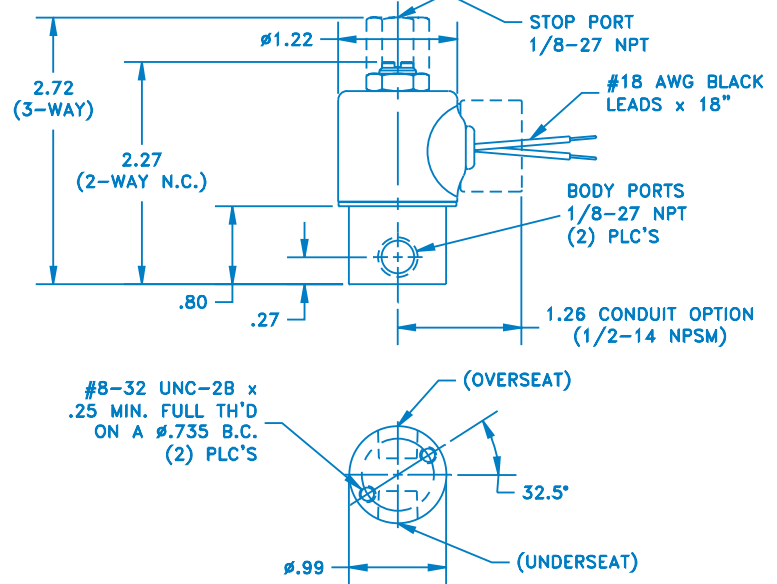


The B Series is a direct acting solenoid valve, available in 2- or 3-way functionality. Like all of our valves, the B Series has bubble tight plunger construction and is designed to last for millions of cycles in general purpose liquid, gas, and vacuum applications. The B Series is available in various orifice sizes, a variety of body materials, wattages, and coil constructions for the utmost adaptability to your application requirements. The B Series is an excellent choice for most general-purpose application requiring a C_v of .018 to .430.

An excellent choice for:

- Printing
- HVAC
- Semiconductor Equipment
- Medical Equipment

Dimensions



Configure Your B Series Part Number: Example Below

B3023-W36-SB5-PF-PFO-12VDC-G5

Prefix From Spec. Chart

36" Lead -Wires

PFE Plunger Seal

316 Stainless Steel Body

PFE O-Ring

1-Piece 316 Stainless Steel Guide Assembly

12 Volt DC



B Series: 7 Watts

Valve Options

Coil Construction

- *Tape-wrapped, Class-B, with 18" lead-wires
- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
 - 1 Encapsulated coil, Class-B, lead-wires
 - 3 Encapsulated coil, Class-H, lead-wires
 - 4 Encapsulated coil, Class-B, 1/4" spade terminals (3/16" spade optional)
 - 10 Externally rectified coil (lead-wires only)
 - 11 Tape-wrapped coil, Class-H, lead-wires
 - HC Molded coil, Class-F, EN175301-803 Style B, Industrial, 11mm, 2+1 poles (2-way N.C. only)
 - HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles
 - TK Higher efficiency coil (2-way N.C. only)

Body Material

- B_ _1_ *303 Stainless Steel (grommet housing)
- B_ _2_ *303 Stainless Steel (1/2" conduit housing)
- BB Brass
- SB 304 Stainless Steel
- SB5 316 Stainless Steel
- SBF 430F Stainless Steel

Plunger Seal Material

- *Nitrile
- E EPDM
- GV Gasoline Viton (2-way N.C. only)
- N Neoprene
- NS Nitrile (NSF/FDA material)
- PF Perfluoroelastomer
- R Rulon (2-way N.C. only)
- T Teflon
- V Viton

O-Ring Material

- *Nitrile
- EO EPDM
- NO Neoprene
- NSO Nitrile (NSF/FDA material)
- PFO Perfluoroelastomer
- TO Teflon
- VO Viton

Body Port Configuration

- *1/8-27 NPT female thread
- LB 1/4-18 NPT female thread
- BD #10-32 female straight thread (max. orifice = 1/8")
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread (2-way N.C. only)
- MM Manifold mount (1/4-28 UNF-2A mounting stud)
- MM3 Manifold mount (5/16-24 UNF-2A mounting stud)
- OB Omit body (operator style)
- MB Bottom metering (2-way N.C. only)
- BI Bottom over-seat port, female thread (max. orifice = 1/8")
- BIM Bottom over-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
- BO Bottom under-seat port, female thread
- BOM Bottom under-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
- RL 90° porting - left hand
- RR 90° porting - right hand
- BS Stop port, #10-32 female straight thread

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC (specify voltage; copper shading ring or rectified w/out shading ring)

Additional Options

- Y Yoke (2-way N.C. only)
- WM Mounting bracket
- TP Teflon coated plunger
- QO Quiet operation (2-way N.C. only)
- S Silver shading ring
- OC Cleaned for oxygen use
- VAC Vacuum application (0 to 29.5" Hg)
- G1 One-piece 303 Stainless Steel guide assembly (standard on 2-way normally open and all 3-way valves)

- G5 One piece 316 Stainless Steel guide assembly
- SH 1" Diameter housing, grommet
- SC 1" Diameter housing, conduit

* B Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials..

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
B20_1	1/16		400	0.065	
B20_2	5/64		300	0.090	
B20_3	3/32		250	0.155	
B20_4	7/64		200	0.200	
B20_5	1/8		150	0.240	
B20_6	5/32		100	0.300	
B20_7	3/16		50	0.430	
2-WAY Normally Opened					
B22_1		1/32	400		0.019
B22_2		3/64	300		0.040
B22_3		1/16	200		0.075
B22_4		5/64	150		0.090
3-WAY Normally Closed, Free Vent/Line Connection					
B3_ _1	1/32	1/32	250	0.018	0.018
B3_ _2	3/64	3/64	175	0.040	0.040
B3_ _3	1/16	1/16	125	0.065	0.070
B3_ _4	5/64	5/64	100	0.090	0.090
B3_ _5	3/32	5/64	75	0.155	0.090
B3_ _6	1/8	5/64	50	0.240	0.090
B3_ _7	5/32	5/64	15	0.300	0.090
3-WAY Normally Open					
B32_1	1/32	1/32	200	0.018	0.018
B32_2	3/64	3/64	150	0.040	0.040
B32_3	1/16	1/16	125	0.065	0.070
B32_4	5/64	5/64	100	0.090	0.090
B32_5	3/32	5/64	75	0.155	0.090
B32_6	1/8	5/64	50	0.240	0.090
B32_7	5/32	5/64	15	0.300	0.090
3-WAY Multi Purpose					
B33_1	1/32	1/32	175	0.018	0.018
B33_2	3/64	3/64	125	0.040	0.040
B33_3	1/16	1/16	100	0.065	0.070
B33_4	5/64	5/64	75	0.090	0.090
B33_5	3/32	5/64	50	0.155	0.090
B33_6	1/8	5/64	25	0.240	0.090
B33_7	5/32	5/64	15	0.300	0.090
3-WAY Directional Control					
B34_1	1/32	1/32	275	0.018	0.018
B34_2	3/64	3/64	200	0.040	0.040
B34_3	1/16	1/16	150	0.065	0.070
B34_4	5/64	5/64	100	0.090	0.090
B34_5	3/32	5/64	75	0.155	0.090
B34_6	1/8	5/64	50	0.240	0.090
B34_7	5/32	5/64	25	0.300	0.090

C Series

2- or 3-Way High Flow Valve

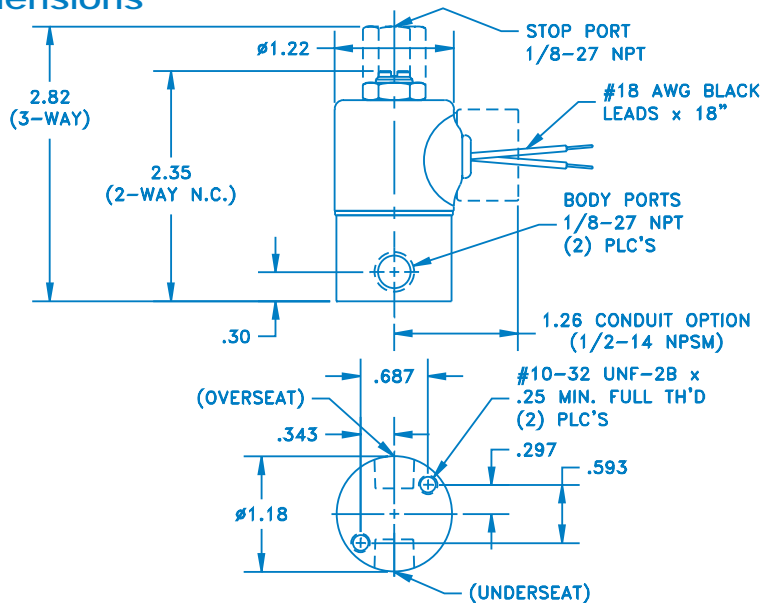
The C Series, available only in brass, is a highly durable miniature 2- or 3-way direct acting valve for applications that require a higher flow control. The C Series also utilizes a larger diameter body and larger port connections for higher C_v valves rates. The free machining brass body allows for fast and precise machining, translating into lower product costs as compared to stainless steel. Design engineers appreciate the quality inherent in solid brass components.

Choose the C Series for:

- Therapeutic Beds
- Automotive Applications
- Packaging Equipment

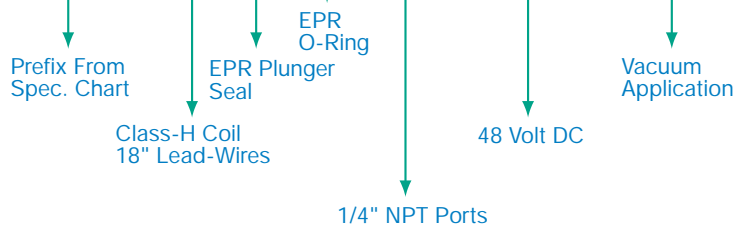


Dimensions



Configure Your C Series Part Number: Example Below

C2016-11-E-EO-LB-48VDC-VAC





C Series: 7 Watts

Valve Options

Coil Construction

*Tape-wrapped, Class-B, with 18" lead-wires

- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires
- 3 Encapsulated coil, Class-H, lead-wires
- 4 Encapsulated coil, Class-B, 1/4" spade terminals (3/16" spade optional)
- 10 Externally rectified coil (lead-wires only)
- 11 Tape-wrapped coil, Class-H, lead-wires
- HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

- C_ _1_ *Brass (grommet housing)
- C_ _2_ *Brass (1/2" conduit housing)
- SB 304 Stainless Steel
- SB1 303 Stainless Steel
- SB5 316 Stainless Steel
- SBF 430F Stainless Steel

Plunger Seal Material

*Nitrile

- E EPR
- GV Gasoline Viton (2-way N.C. only)
- N Neoprene
- NS Nitrile (NSF/FDA material)
- PF Perfluoroelastomer
- R Rulon (2-way N.C. only)
- T Teflon
- V Viton

O-Ring Material

*Nitrile

- EO EPR
- NO Neoprene
- NSO Nitrile (NSF/FDA material)
- PFO Perfluoroelastomer
- TO Teflon
- VO Viton

Body Port Configuration

*1/8-27 NPT female thread

- LB 1/4-18 NPT female thread
- BD #10-32 female straight thread (2-way N.C. only, max. orifice = 1/8")
- LU 1/4-19 BSPT female thread (2-way N.C. only)
- OB Omit body (operator style)
- BO Bottom under-seat port, female thread
- RL 90° porting - left hand
- RR 90° porting - right hand
- MM4 Manifold mount (5/16-24 UNF-2A mounting stud)
- BS Stop port, #10-32 female straight thread

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC (specify voltage; copper shading ring or rectified w/out shading ring)

Additional Options

- WM Mounting bracket
- TP Teflon coated plunger
- QO Quiet operation (2-way normally closed valves only)
- S Silver shading ring
- OC Cleaned for oxygen use
- VAC Vacuum application (0 to 29.5" Hg)
- G1 One-piece 303 Stainless Steel guide assembly (standard on 2-way normally open and all 3-way valves)
- G5 One piece 316 Stainless Steel guide assembly

* C Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	BODY	C _v	STOP
	BODY	STOP				
2-WAY Normally Closed						
C20_1	1/16		400	0.080		
C20_2	7/64		200	0.180		
C20_3	1/8		150	0.240		
C20_4	5/32		100	0.300		
C20_5	3/16		75	0.360		
C20_6	7/32		40	0.420		
2-WAY Normally Opened						
C22_1		1/32	400			0.019
C22_2		3/64	300			0.040
C22_3		1/16	200			0.075
C22_4		5/64	150			0.105
3-WAY Normally Closed, Free Vent/Line Connection						
C3_ _1	1/16	1/16	125	0.080		0.075
C3_ _2	5/64	5/64	100	0.105		0.105
C3_ _3	1/8	5/64	50	0.240		0.105
C3_ _4	3/16	5/64	25	0.360		0.105
C3_ _5	7/32	5/64	VAC	0.420		0.105
3-WAY Normally Open						
C32_1	1/16	1/16	125	0.080		0.075
C32_2	5/64	5/64	100	0.105		0.105
C32_3	1/8	5/64	75	0.240		0.105
C32_4	3/16	5/64	40	0.360		0.105
C32_5	7/32	5/64	VAC	0.420		0.105
3-WAY Multi Purpose						
C33_1	1/16	1/16	100	0.080		0.075
C33_2	5/64	5/64	75	0.105		0.105
C33_3	1/8	5/64	25	0.240		0.105
C33_4	3/16	5/64	10	0.360		0.105
C33_5	7/32	5/64	5	0.420		0.105
3-WAY Directional Control						
C34_1	1/16	1/16	150	0.080		0.075
C34_2	5/64	5/64	100	0.105		0.105
C34_3	1/8	5/64	50	0.240		0.105
C34_4	3/16	5/64	25	0.360		0.105
C34_5	7/32	5/64	5	0.420		0.105

D Series

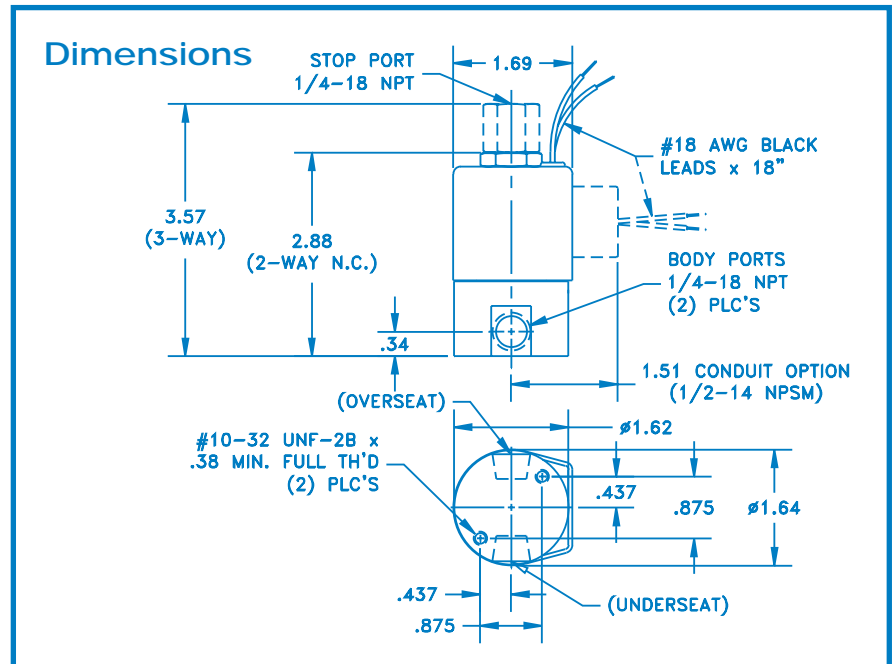
2- and 3-Way High Flow Valve



For maximum flow in a miniature solenoid valve the D Series valves delivers a wide range of C_V values and maximum operating pressures. The D Series is also available in multiple body materials, seal materials, coil constructions, voltages, and wattages. Proven to perform for millions of cycles without failure, the D valve—as with the entire valve series—is ideal for manifold configurations, sub-assemblies, and complete fluidic systems. The D Series is the largest in a progression—A Series, B Series, and C Series—of the highly flexible, modular design, (general purpose) valves.

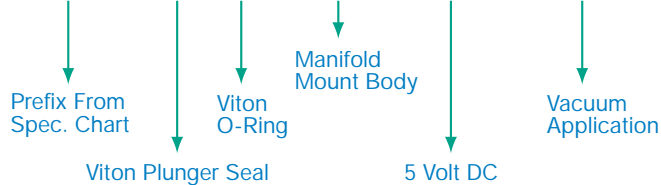
The D Series is excellent for applications in:

- Agriculture
- Defense
- Sterilization Equipment
- Industrial Automation



Configure Your D Series Part Number: Example Below

D3323-V-VO-MM-5VDC-VAC





D Series: 10 Watts

Valve Options

Coil Construction

- *Tape-wrapped, Class-B, with 18" lead-wires
- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires
- 2 Molded coil, Class-F, lead-wires
- 3 Encapsulated coil, Class-H, lead-wires
- 4 Encapsulated coil, Class-B, 1/4" spade terminals
- 10 Externally rectified coil (lead-wires only)
- 11 Tape-wrapped coil, Class-H, lead-wires
- HC Encapsulated coil, Class-B, EN175301-803 Style A, Industrial, 18mm, 2+1 poles
- HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

- D_ _1 *430F Stainless Steel (grommet housing)
- D_ _2 *430F Stainless Steel (1/2" conduit housing)

- BB Brass
- SB1 303 Stainless Steel
- SB5 316 Stainless Steel

Plunger Seal Material

- *Nitrile
- E EPR
- GV Gasoline Viton (2-way normally open and 3-way valves max. orifice = 3/32")
- N Neoprene (2-way normally closed valves only, max. orifice = 1/4")
- NS Nitrile (NSF/FDA, max. orifice = 1/4")
- PF Perfluoroelastomer (max. orifice = 1/4")
- R Rulon (2-way normally closed valves only)
- T Teflon
- V Viton

O-Ring Material

- *Nitrile
- EO EPR
- NO Neoprene
- NSO Nitrile (NSF/FDA, 2-way valves only)
- PFO Perfluoroelastomer
- TO Teflon
- VO Viton

Body Port Configuration

- *1/4-18 NPT female thread
- LC 1/8-27 NPT female thread (max. orifice = 1/4")
- LD 3/8-18 NPT female thread
- LT 1/8-28 BSPT female thread (max. orifice = 1/4")
- LU 1/4-19 BSPT female thread
- MM Manifold mount (1/2-20 UNF-2A mounting stud, max. orifice = 1/4")
- OB Omit body (operator style)
- BI Bottom over-seat port, female thread (max. orifice = 1/4")
- BO Bottom under-seat port, female thread

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC (specify voltage; copper shading ring or rectified w/out shading ring)

Additional Options

- WM Mounting bracket on the coil housing
- TP Teflon coated plunger
- CP Chamfered plunger
- OO Quiet operation (2-way valves only)
- S Silver shading ring
- OC Cleaned for oxygen use
- VAC Vacuum application (0 to 29.5" Hg)
- G5 One piece 316 Stainless Steel guide assembly

* D Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE		MOPD (psig)	C _v	
	BODY	STOP		BODY	STOP
2-WAY Normally Closed					
D20_1	3/64		900	0.045	
D20_2	1/16		650	0.080	
D20_3	3/32		350	0.150	
D20_4	1/8		225	0.210	
D20_5	5/32		130	0.380	
D20_6	3/16		85	0.430	
D20_7	1/4		50	0.700	
D20_8	5/16		20	0.850	
D20_9	3/8		10	0.880	
2-WAY Normally Opened					
D22_1		3/64	900		0.045
D22_2		1/16	550		0.080
D22_3		5/64	300		0.110
D22_4		3/32	175		0.150
D22_5		1/8	110*		0.210
D22_6		5/32	60*		0.380
3-WAY Normally Closed, Free Vent/Line Connection					
D3_ _1	1/16	1/16	175	0.080	0.080
D3_ _2	5/64	5/64	150	0.110	0.110
D3_ _3	3/32	3/32	125	0.150	0.150
D3_ _4	1/8	1/8	85*	0.210	0.210
D3_ _5	5/32	5/32	45*	0.380	0.380
D3_ _6	3/16	5/32	30*	0.430	0.380
D3_ _7	1/4	5/32	10*	0.700	0.380
3-WAY Normally Open					
D32_1	1/16	1/16	200	0.080	0.080
D32_2	5/64	5/64	175	0.110	0.110
D32_3	3/32	3/32	150	0.150	0.150
D32_4	1/8	1/8	100*	0.210	0.210
D32_5	5/32	5/32	50*	0.380	0.380
D32_6	3/16	5/32	35*	0.430	0.380
D32_7	1/4	5/32	15*	0.700	0.380
3-WAY Multi Purpose					
D33_1	1/16	1/16	160	0.080	0.080
D33_2	5/64	5/64	130	0.110	0.110
D33_3	3/32	3/32	110	0.150	0.150
D33_4	1/8	1/8	75*	0.210	0.210
D33_5	5/32	5/32	40*	0.380	0.380
D33_6	3/16	5/32	25*	0.430	0.380
D33_7	1/4	5/32	10*	0.700	0.380
3-WAY Directional Control					
D34_1	1/16	1/16	225	0.080	0.080
D34_2	5/64	5/64	185	0.110	0.110
D34_3	3/32	3/32	150	0.150	0.150
D34_4	1/8	1/8	110*	0.210	0.210
D34_5	5/32	5/32	60*	0.380	0.380
D34_6	3/16	5/32	40*	0.430	0.380
D34_7	1/4	5/32	20*	0.700	0.380

* DC or rectified coil only

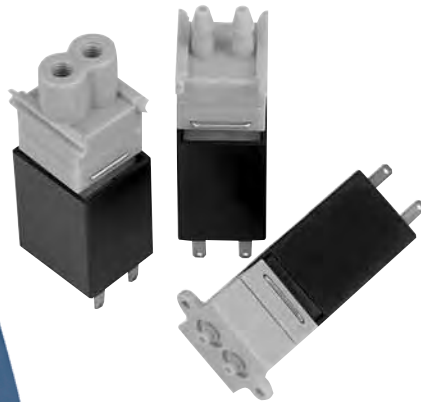
Chem-S™ Series

Sub-Miniature Inert Diaphragm Valve

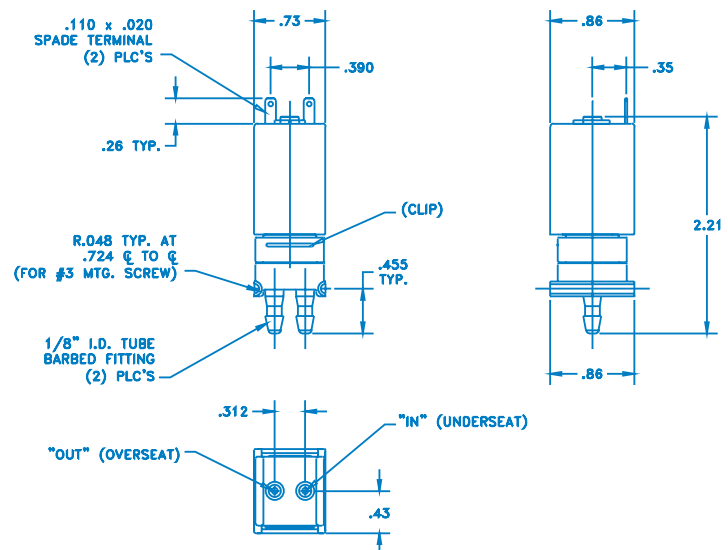
The Chem-S™ utilizes revolutionary diaphragm technology in a liquid compatible, sub-miniature inert isolation valve. With a compact size, flexible diaphragm design, low power consumption, and low cost the Chem-S provides a unique and valuable option for the medical and scientific instrumentation industries. The Chem-S specifically targets the performance and price void between the limited pinch valve and the very expensive rocker style solenoid.

An excellent choice for:

- Analytical Instrumentation
- Clinical Chemistry Equipment
- Medical Diagnostic and Testing Machinery



Dimensions



Configure Your Chem-S Series Part Number: Example Below

CHEM202-V2-C203

Prefix From
Spec. Chart

Manifold
Mount
Viton Diaphragm

12 Volt DC



Chem-S™: 2 Watts

Valve Options

Coil Construction

*Quick connect .110 spade

Body Material

*Polyurethane (Isoplast™)

Diaphragm Seal Material

V Viton
E EPDM

Body Port Configuration

- 1 1/8" barb
- 2 Manifold mount
- 3 #10-32 flat bottom straight thread ports

Voltage

C201 5 VDC
C203 12 VDC
C204 24 VDC

___ VDC DC (specify voltage)

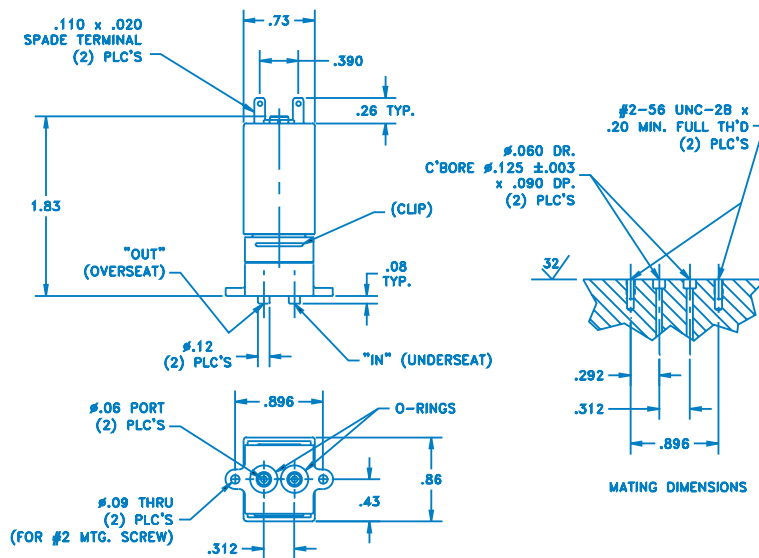
___ VAC AC Rectified 2-watt coil only (specify voltage)

Additional Options

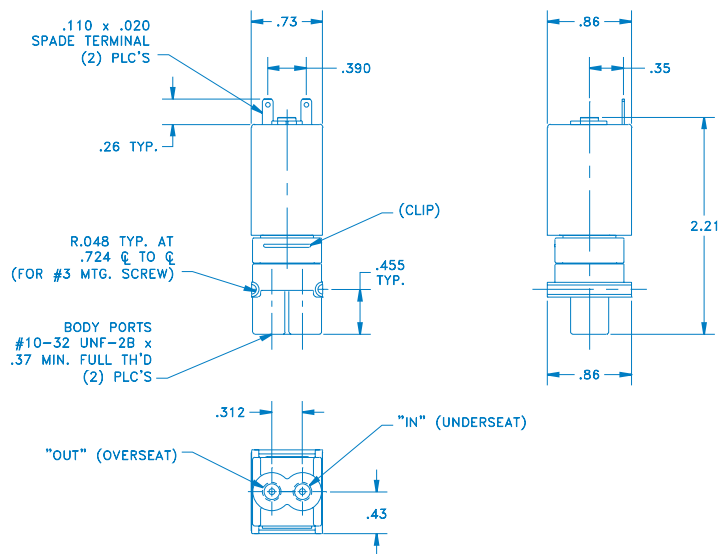
VAC Vacuum application (0 to 27" Hg)

* Chem-S Series valves will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Dimensions



Dimensions



Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	BODY CV
	2-WAY Normally Closed		
Chem202	.031	70	0.016
Chem205	.052	25	0.040



GS Series: 2 Watts

Valve Options

Coil Construction

- *Tape-wrapped, Class-B, with lead-wires (12" long)
- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires (12" long)
- 5 Encapsulated coil, Class-B, .110 spade terminals
- 10 Rectified coil for AC voltage

Body Material

- GS_ _1_ *303 Stainless Steel
- GS_ _3_ *Acetal (#10-32 port only)

Diaphragm Seal Material

*Viton diaphragm

O-Ring Material

*N/A

Body Port Configuration

- *#10-32 straight thread ports
- LC 1/8-27 NPT ports
- BM M5 x 0.8 ports
- MM Manifold mount with #10-32 threaded stud

Voltage

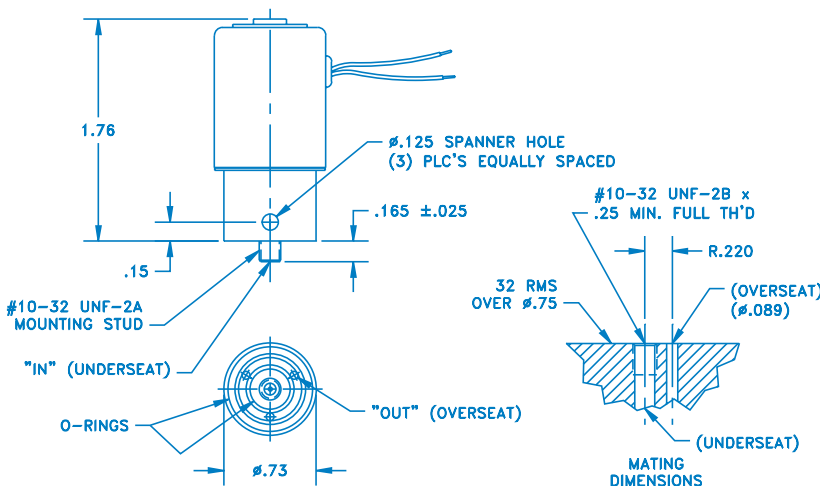
- ___ VDC DC (specify voltage)
- ___ VAC AC Rectified only (specify voltage)

Additional Options

- OC Cleaned for oxygen use

* GS Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Dimensions



Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	MAX BACK PRESSURE	C _v
	BODY			BODY
2-WAY Normally Closed				
GS20_2	.032	35	10	0.012
GS20_3	.040	35	10	0.018
GS20_4	.055	15	10	0.028
GS20_5	.078	10	5	0.045

AS Series

2-Way Miniature Diaphragm Isolation Valve

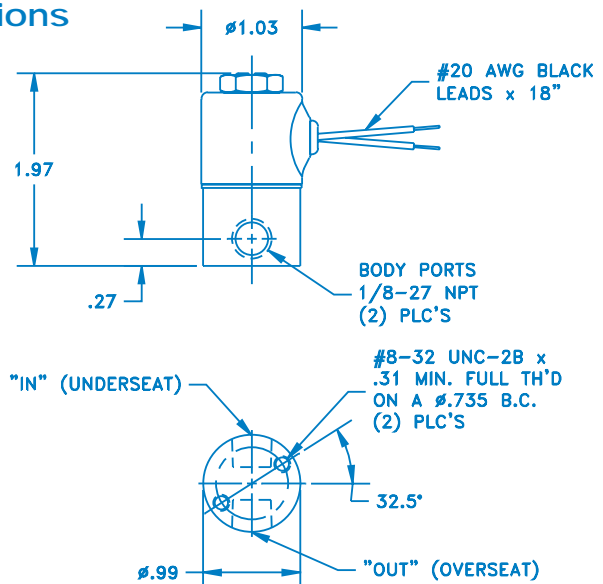


The AS Series is a 2-way isolation valve, designed to control the flow of various aggressive liquids and gases with several body and diaphragm materials. With a modular design, the AS offers performance flexibility and the protection your media needs from the solenoid's internal components. Numerous port configurations, voltage options, and coil constructions enable the AS Series to be a truly versatile miniature inert isolation valve, easily integrated into any complex or demanding system.

The AS Series is excellent for:

- Analytical Instruments
- Clinical Diagnostic Analyzers
- Bio-Instrumentation

Dimensions



Configure Your AS Series Part Number: Example Below

AS2022-10-SB-NS-BD-110/50/60RVAC

Prefix From Spec. Chart

External Rectifier

304 Stainless Body

Nitrile (NSF/FDA) Diaphragm

#10-32 Female Ports

110/50/60 Volt AC Rectified Coil



AS Series Metal Body: 7 Watts
 AS Series Plastic Body: 4.5 Watts

Valve Options

Coil Construction

*Tape-wrapped, Class-B, with 18" lead-wires

- W_ _ Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
- 1 Encapsulated coil, Class-B, lead-wires
- 2 Molded coil, Class-F, lead-wires
- 3 Encapsulated coil, Class-H, lead-wires
- 4 Encapsulated coil, Class-B, 3/16" spade terminals (1/4" spade optional)
- 10 Externally rectified coil (lead-wires only)
- 11 Tape-wrapped coil, Class-H, lead-wires
- HC2 Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

- AS_ _1_ *303 Stainless Steel (grommet housing)
- AS_ _2_ *303 Stainless Steel (1/2" conduit housing)
- AS_ _3_ *Polypropylene (grommet housing, 1/8-27 NPT female thread only, see chart for available orifice sizes)
- AS_ _4_ *Polypropylene (1/2" conduit housing, 1/8-27 NPT female thread only, see chart for available orifice sizes)
- BB Brass
- SB 304 Stainless Steel
- SB5 316 Stainless Steel

Diaphragm Seal Material

- *Viton diaphragm
- E EPR diaphragm
- NS Nitrile (NSF/FDA) diaphragm
- PF Perfluoroelastomer diaphragm

O-Ring Material

*N/A

Body Port Configuration

*1/8-27 NPT female thread

- LB 1/4-18 NPT female thread
- BD #10-32 female straight thread
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread
- MM Manifold mount (1/4-28 UNF-2A mounting stud)
- MM3 Manifold mount (5/16-24 UNF-2A mounting stud)
- OB Omit body (operator style)
- BI Bottom over-seat port, female thread (max. orifice = 1/8")

Body Port Configuration (Cont.)

- BIM Bottom over-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
- BO Bottom under-seat port, female thread
- BOM Bottom under-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
- RL 90° porting - left hand
- RR 90° porting - right hand

Voltage

- _ _ _ VDC DC (specify voltage)
- _ _ _ VAC AC Rectified only (specify voltage)

Additional Options

- Y Yoke
- WM Mounting bracket
- OC Cleaned for oxygen use

* AS Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials

Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	MAX BACK PRESSURE	C _v
	BODY			BODY
2-WAY Normally Closed (Stainless Steel Body)				
AS20_1	1/32	150	10	0.020
AS20_2	3/64	110	10	0.035
AS20_3	1/16	90	10	0.065
AS20_4	5/64	70	10	0.090
AS20_5	3/32	45	10	0.155
AS20_6	1/8	15	5	0.240
AS20_7	5/32	5	5	0.300
2-WAY Normally Closed (*Polypropylene Body)				
AS20_3	1/16	70	10	0.065
AS20_6	1/8	15	10	0.150
AS20_7	5/32	5	5	0.180

*Other body orifice sizes may be available, consult factory.

BS Series

2-Way Higher Flow Diaphragm Isolation Valve

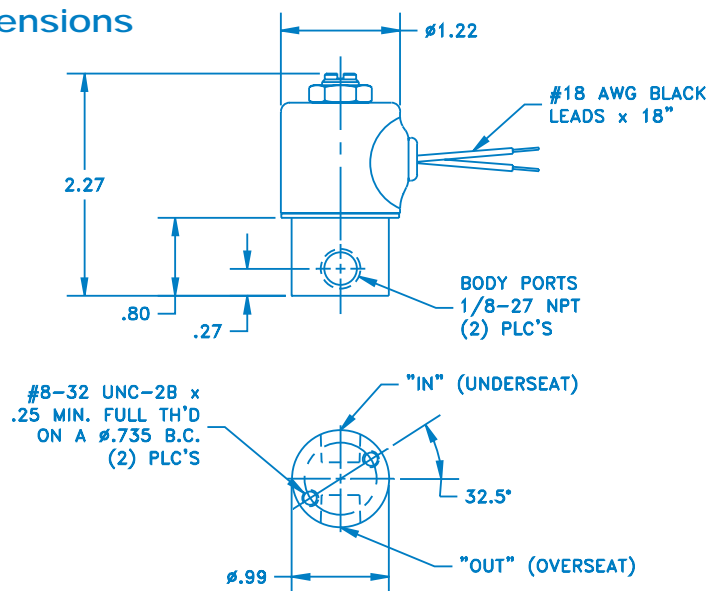
The BS Series is a 2-way, high flow, isolation valve that is designed to be virtually impervious to chemical attack and to protect high purity media. When your media cannot come in contact with any metallic materials, this highly versatile, modular valve delivers the protection you need for accurate and reliable flow control for millions of cycles. With a variety of body, and diaphragm materials, plus numerous port configurations, voltage options, and coil constructions, the BS Series is truly a miniature inert isolation valve that can be built to your exact applications requirements.

The BS Series is excellent for:

- Remediation Equipment
- Clinical Chemistry Equipment
- Analytical Instrumentation



Dimensions



Configure Your BS Series Part Number: Example Below

BS2035-W25-E-28VDC

Prefix From
Spec. Chart

25" Lead -Wires

28 Volt DC

EPR Diaphragm



BS Series Metal Body: 7 Watts
BS Series Plastic Body: 4.5 Watts

Valve Options

Coil Construction

	*Tape-wrapped, Class-B, with 18" lead-wires
W_ _	Tape-wrapped coil, lead-wires, non-standard length (specify in inches)
1	Encapsulated coil, Class-B, lead-wires
3	Encapsulated coil, Class-H, lead-wires
4	Encapsulated coil, Class-B, 1/4" spade terminals (3/16" spade optional)
10	Externally rectified coil (lead-wires only)
11	Tape-wrapped coil, Class-H, lead-wires
HC2	Encapsulated coil, Class-B, EN175301-803 Style C, Industrial, 9.4mm, 2+1 poles

Body Material

BS_ _1_	*303 Stainless Steel (grommet housing)
BS_ _2_	*303 Stainless Steel (1/2" conduit housing)
BS_ _3_	*Polypropylene (grommet housing, 1/8-27 NPT female thread only, see chart for available orifice sizes)
BS_ _4_	*Polypropylene (1/2" conduit housing, 1/8-27 NPT female thread only, see chart for available orifice sizes)
BB	Brass
SB	304 Stainless Steel
SB5	316 Stainless Steel

Diaphragm Seal Material

	*Viton diaphragm
E	EPR diaphragm
NS	Nitrile (NSF/FDA) diaphragm
PF	Perfluoroelastomer diaphragm

O-Ring Material

*N/A

Body Port Configuration

	*1/8-27 NPT female thread
LB	1/4-18 NPT female thread
BD	#10-32 female straight thread
LT	1/8-28 BSPT female thread
LU	1/4-19 BSPT female thread
MM	Manifold mount (1/4-28 UNF-2A mounting stud)
MM3	Manifold mount (5/16-24 UNF-2A mounting stud)
OB	Omit body (operator style)
BI	Bottom over-seat port, female thread orifice = 1/8"
BIM	Bottom over-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
BO	Bottom under-seat port, female thread
OM	Bottom under-seat port, 1/8-27 NPT male thread (max. orifice = 1/8", brass body only)
RL	90° porting - left hand
RR	90° porting - right hand

Voltage

_ _ _ VDC	DC (specify voltage)
_ _ _ VAC	AC Rectified only (specify voltage)

Additional Options

WM	Mounting bracket
OC	Cleaned for oxygen use

* BS Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	MAX BACK PRESSURE	C _v
	BODY			BODY
2-WAY Normally Closed (Stainless Steel Body)				
BS20_0	3/64	150	15	0.035
BS20_1	1/16	110	10	0.065
BS20_2	5/64	85	10	0.090
BS20_3	3/32	70	10	0.155
BS20_4	7/64	25	10	0.200
BS20_5	1/8	10	5	0.240
BS20_6	5/32	5	5	0.300
2-WAY Normally Closed (*Polypropylene Body)				
BS20_1	1/16	50	10	0.065
BS20_5	1/8	35	10	0.150
BS20_6	5/32	10	5	0.180

*Other body orifice sizes may be available, consult factory.

B-Cryo Series

2-Way Cryogenic Valve

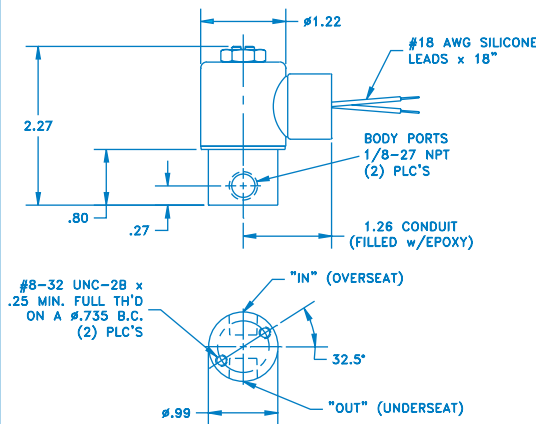


The B-Cryo Series is a 2-way miniature Cryogenic valve designed and built for service down to -320°F (-196°C) in applications needing a C_v between .045 and .440. Depending on your temperature requirements, the B-Cryo Series can be configured for liquid nitrogen (LN2), liquid carbon dioxide (LCO2), and other extreme temperature media. Teflon® coated plungers, 316 Stainless Steel guide tubes and plunger springs, encapsulated coils, and Teflon® or Rulon® seat seals produce a truly robust Cryogenic valve for applications requiring high cycle life and media temperature control.

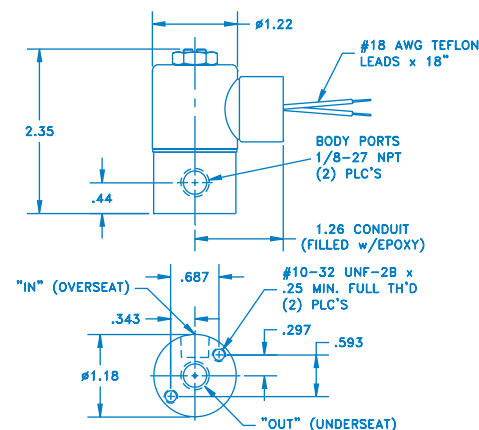
An excellent choice for:

- Environmental Chambers
- Food Processing
- Laser Surgical Equipment
- Semiconductor Manufacturing

Dimensions (B206_-LN2)



Dimensions (B206_-LCO2)



Configure Your B-Cryo Series Part Number: Example Below

B2062-LCO2-LB-120/50/60RVAC

Prefix From Spec. Chart

Liquid CO2 Valve

1/4" NPT Ports

120/50/60 Volt AC Rectified Coil

B2027-LN2-LT-24VDC

Prefix From Spec. Chart

Liquid Nitrogen Valve

24 Volt DC

1/8" BSPT Female Ports



B-Cryo Series: 9 Watts

Valve Options (LN2)

Coil Construction

- B206_LN2 *Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit filled)
- B202_LN2 Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit not filled)
- B201_LN2 Encapsulated coil, Class-H, with lead-wires, grommet housing

Body Material

*430F Stainless Steel

Plunger Seal Material

*Rulon

O-Ring Material

- *Variseal® (Teflon material with internal spring)
- TO Teflon (consult factory)

Body Port Configuration

- *1/8-27 NPT female thread
- LB 1/4-18 NPT female thread
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread
- OB Omit body (operator style)
- BI Bottom over-seat port, female thread (max. orifice = 1/8")
- BO Bottom under-seat port, female thread
- RL 90° porting - left hand
- RR 90° porting - right hand

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC Rectified (specify voltage)

Additional Options

- *Chamfered and Teflon coated plunger
- *316 Stainless Steel 1-piece guide assembly
- *316 Stainless Steel spring

* B-Cryo (LN2) Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Valve Options (LCO2)

Coil Construction

- B206_LCO2 *Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit filled)
- B202_LCO2 Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit not filled)
- B201_LCO2 Encapsulated coil, Class-H, with lead-wires, grommet housing

Body Material

- *303 Stainless Steel
- BB Brass
- SB 304 Stainless Steel
- SB5 316 Stainless Steel

Plunger Seal Material

- *Teflon
- MQ Silicone (consult factory)

O-Ring Material

- *Fluorosilicone
- TO Teflon

Body Port Configuration

- *1/8-27 NPT, bottom under-seat port, female thread
- LB 1/4-18 NPT female thread
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread
- OB Omit body (operator style)
- BOM Bottom under-seat port, male thread (max. orifice = 1/8", brass body only)
- IL Inline porting, 180° apart

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC Rectified (specify voltage)

Additional Options

- *Chamfered and Teflon coated plunger
- *316 Stainless Steel 1-piece guide assembly
- *316 Stainless Steel spring

* B-Cryo (LCO2) Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	C _v BODY
	2-WAY Normally Closed		
B20_0	3/64	900	0.045
B20_1	1/16	405	0.075
B20_2	5/64	270	0.105
B20_3	3/32	160	0.160
B20_4	7/64	110	0.190
B20_5	1/8	80	0.255
B20_6	5/32	65	0.365
B20_7	3/16	30	0.440

D-Cryo Series

2-Way High Flow Cryogenic Valve

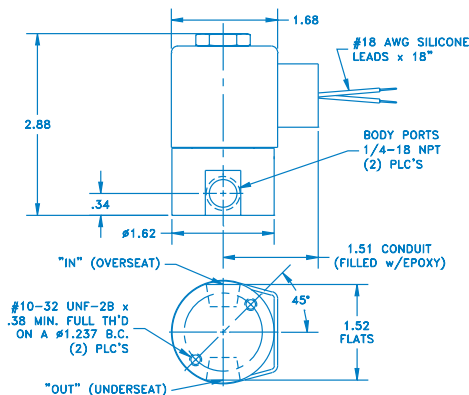


The D-Cryo Series is a 2-way, high flow, miniature Cryogenic valve designed and built for service down to -320°F (-196°C). Depending on your temperature requirements, the D-Cryo Series can be configured for liquid nitrogen (LN₂), liquid carbon dioxide (LCO₂), and other extreme temperature media. Teflon® coated plungers, 316 Stainless Steel guide tubes and plunger springs, encapsulated coils, and Teflon® or Rulon® seat seals produce a truly robust Cryogenic valve for applications requiring high cycle life and media temperature control.

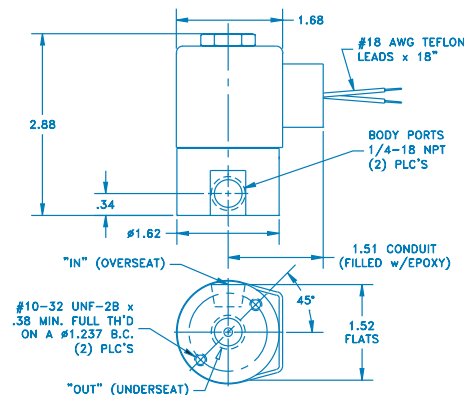
An excellent choice for:

- Environmental Chambers
- Food Processing
- Laser Surgical Equipment
- Semiconductor Manufacturing

Dimensions (D206_-LN2)



Dimensions (D206_-LCO2)



Configure Your D-Cryo Series Part Number: Example Below

D2027-LCO2-LD-24/50/60RVAC

Prefix From Spec. Chart

3/8" NPT Ports

Liquid CO₂ Valve

24/50/60 Volt AC Rectified Coil

D2062-LN2-12VDC

Prefix From Spec. Chart

12 Volt DC

Liquid Nitrogen Valve



D-Cryo Series: 15 Watts

Valve Options (LN2)

Coil Construction

- D206_-LN2 *Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit filled)
- D202_-LN2 Encapsulated coil, Class-H, with lead-wires , conduit housing (conduit not filled)
- D201_-LN2 Encapsulated coil, Class-H, with lead-wires, grommet housing

Body Material

*430F Stainless Steel

Plunger Seal Material

*Rulon

O-Ring Material

*Variseal® (Teflon material with internal spring)

Body Port Configuration

- *1/4-18 NPT female thread
- LC 1/8-27 NPT female thread
- LD 3/8-18 NPT female thread
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread
- OB Omit body (operator style)
- BI Bottom over-seat port, female thread
- BO Bottom under-seat port, female thread

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC Rectified (specify voltage)

Additional Options

- *Chamfered and Teflon coated plunger
- *316 Stainless steel 1-piece guide assembly
- *316 Stainless steel spring

* D-Cryo (LN2) Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Valve Options (LCO2)

Coil Construction

- D206_-LCO2 *Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit filled)
- D202_-LCO2 Encapsulated coil, Class-H, with lead-wires, conduit housing (conduit not filled)
- D201_-LCO2 Encapsulated coil, Class-H, with lead-wires, grommet housing

Body Material

*430F Stainless Steel

BB

Brass

Plunger Seal Material

*Teflon

MQ

Silicone (consult factory)

O-Ring Material

*Fluorosilicone

TO

Teflon

Body Port Configuration

- *1/4-18 NPT, bottom
- under-seat port, female thread
- LC 1/8-27 NPT female thread
- LD 3/8-18 NPT female thread
- LT 1/8-28 BSPT female thread
- LU 1/4-19 BSPT female thread
- OB Omit body (operator style)
- IL Inline porting, 180° apart

Voltage

- ___ VDC DC (specify voltage)
- ___ VAC AC Rectified (specify voltage)

Additional Options

- *Chamfered and Teflon coated plunger
- *316 Stainless Steel 1-piece guide assembly
- *316 Stainless Steel spring

* D-Cryo (LCO2) Series will be built with these options unless otherwise indicated. The option number is dropped in the final part number when using these materials.

Performance Specifications

Part # Prefix	ORIFICE	MOPD (psig)	BODY V
D20_1	3/64	1000*	0.040
D20_2	1/16	1000*	0.070
D20_3	3/32	640	0.165
D20_4	1/8	375	0.305
D20_5	5/32	185	0.365
D20_6	3/16	130	0.470
D20_7	1/4	40	0.770

* For higher pressures, consult factory.

Manifold Assemblies

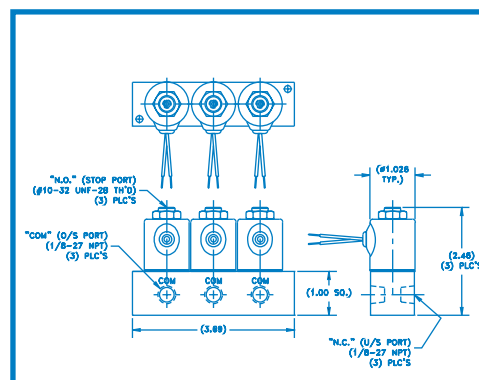
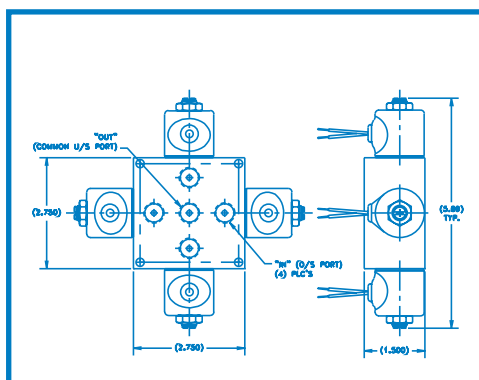
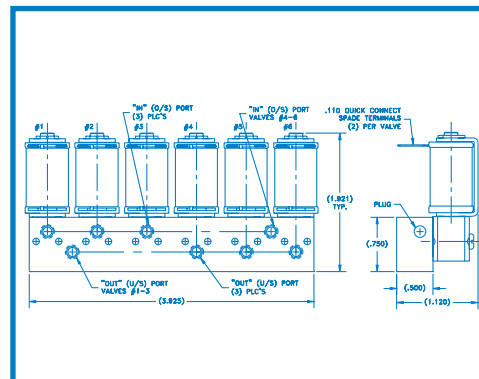
Gems™ PreDyne® Valve Engineers specialize in working with OEMs to design and manufacture integrated valve and manifold assemblies to meet most any fluidic system requirements. Our expert team of field and in-house engineers can deliver AutoCAD® or SolidWorks drawings in days for easy integration into OEM equipment. Whether it is a single or multiple position manifold—made from plastic, aluminum, brass or stainless steel—final systems are delivered completely assembled, tested, and ready for installation into your equipment.

Gems PreDyne Manifold Assemblies offer features you require, in a compact package, at a competitive price. Integrated manifold assemblies provide:

- Simplified fluidic systems
- Decreased number of potential leak paths
- Reduction in the amount of mounting hardware
- Reduced quantity of fittings and tubing via common passages
- Compact package
- Design opportunity for multiple valve configurations to handle complex and precise flow control
- Reduced labor content required by OEMs
- Easy valve maintenance or replacement



All Gems PreDyne valve families can be integrated into a manifold system. Contact your Gems PreDyne Valve Engineer for a manifold assembly that will fulfill all of your application requirements. Contact us at 888-840-1230 or valveinfo@gemssensors.com.



Fluidic Systems

More and more original equipment manufacturers are demanding a complete value added fluidic system. Purchasing through one vendor eliminates the time and effort of multiple purchase orders and reduces receiving, inspection, and coordination of different parts down to a single assembly. Plus, buying from a single source gives OEMs one contact point for design changes, expediting, and warranty questions.

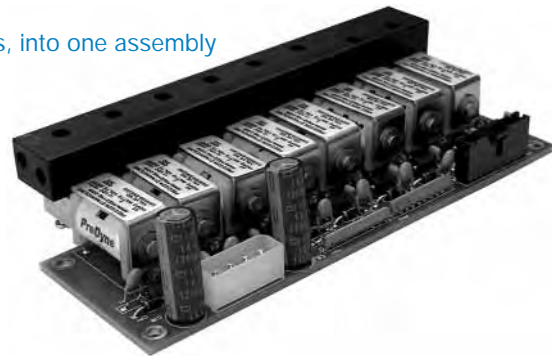
Gems™ PreDyne® Valve Engineers and Manufacturing have a 35-year history of working with OEMs to develop, design, and manufacture their complex fluidic system; from simple wiring harnesses and connectors to plug and play sub-assemblies and additional integrated fluidic components.

Designing and purchasing a complete turnkey fluidic system from Gems Sensors & Controls has many advantages.

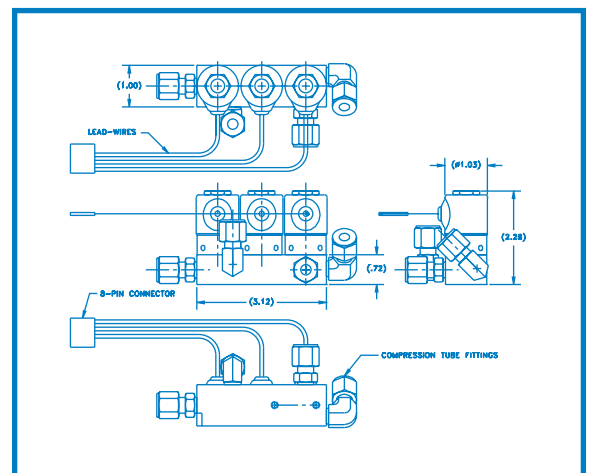
- Receiving a complete 100% tested system that can be installed directly into your end product
- Reducing the number of suppliers required
- Decreasing the assembly of numerous third-party parts
- Minimizing the number of potential leak-points by eliminating tubing and fittings
- Reducing multiple components into a smaller and simplified final system

Our team of experts can integrate:

- Multiple valve types, including 3rd party manufacturers, into one assembly
- Numerous tube and pipe fittings
- Various electrical terminations
- Sensors/Switches/Gauges:
 - Pressure switch, transducer or gauge
 - Fluid flow sensor
 - Fluid level sensor
 - Temperature switch or transducer
- Inline media filters
- Heaters and thermistors



Contact your Gems PreDyne Valve Engineer for a fluidic system that will fulfill all of your application requirements. Contact us at 888-840-1230 or valveinfo@gemssensors.com.



Name _____	Title _____	Email _____
Company _____	Phone _____	Fax _____
Address _____		Address 2 _____
City _____	Country _____	Zip _____ Date / / _____

Please describe your application: Liquid Pneumatic Vacuum Service Oxygen Service Liquid CO₂ Cryogenic Liquid N₂ Cryogenic

Immediate quantity required _____ Estimated annual quantity _____

Valve Configuration or Function

DE-ENERGIZED STATE

- 2-Way Normally Closed
- 2-Way Normally Open
- 2-Way Normally Closed (Diaphragm)
- 2-Way Normally Closed Dual Purpose
- 3-Way Normally Closed Free Vent
- 3-Way Normally Closed Line Connect
- 3-Way Normally Open
- 3-Way Multi-Purpose
- 3-Way Directional Control

FLOW REQUIREMENTS

Cv: Body _____, Stop _____ Orifice Diameter: Body _____, Stop _____
 Flow at the Body Orifice _____ (GPM0 or SCFM) with a _____ psig at the Inlet, and _____ psig at the outlet
 Flow at the Stop Orifice _____ (GPM0 or SCFM) with a _____ psig at the Inlet, and _____ psig at the outlet

PRESSURE

Operating Pressure _____
 Max. Pressure _____
 Min. Pressure _____
 Max. Back Pressure _____

TEMPERATURE

Media Temp. _____
 Max. Media Temp. _____
 Min. Media Temp. _____
 Ambient Temp. _____
 Max. Ambient Temp. _____
 Min Ambient Temp. _____

MEDIA(S) _____

BODY MATERIAL

- Brass
- Stainless Steel
- Aluminum
- Polypropylene
- Other _____

PLUNGER SEAL MATERIAL

- Nitrile
- Viton
- Ethylene Propylene
- Neoprene
- Silicone
- Perfluoroelastomer
- Other _____

O-RING MATERIAL

- Nitrile
- Viton
- Ethylene Propylene
- Neoprene
- Silicone
- Perfluoroelastomer
- Other _____

ELECTRICAL REQUIREMENTS

AC DC Operating Voltage _____, (_____ Hz) Max. Wattage _____
 Max. Voltage _____ Continuous Duty Max. Time ON _____ Max. Cycle Rate _____
 Min. Voltage _____ Intermittent Duty Min. Time OFF _____ Life Cycle Expectancy _____

COIL REQUIREMENTS

- Class B Lead Wire (Specify Length If required) _____ Rectified
- Class F 3/16" Spades Arc Suppression Diode
- Class H 1/4" Spades Special Connectors
- Tape Wound .110" Spades (Please Specify) _____
- Encapsulated 18 mm DIN _____
- Molded 11 mm DIN _____
- 9.4 mm DIN _____

HOUSE STYLE

- Grommet
- Conduit, 1/2-14 NPS
- Grommet with Bracket
- Conduit with Bracket
- Other _____

BODY CONFIGURATION

- | | | | | | |
|--|---|--|---|---|---|
| <input type="checkbox"/> Single Valve Body | Body Port <input type="checkbox"/> 1/8" NPT | Stop Port (If Different) <input type="checkbox"/> 1/8" NPT | Body Port Orientation <input type="checkbox"/> 180° | Female Bottom Port <input type="checkbox"/> Specify Port Size _____ | Male Bottom Porting <input type="checkbox"/> 1/8" NPT (Brass) |
| <input type="checkbox"/> Manifold Mount | <input type="checkbox"/> 1/4" NPT | <input type="checkbox"/> 1/4" NPT | <input type="checkbox"/> 1/4" NPT | <input type="checkbox"/> 90° Right | <input type="checkbox"/> Pressure Over-Seat |
| <input type="checkbox"/> Operator Only (No Body) | <input type="checkbox"/> 3/8" NPT | | <input type="checkbox"/> 3/8" NPT | <input type="checkbox"/> 90° Left | <input type="checkbox"/> Pressure Under Seat |
| <input type="checkbox"/> Metering | <input type="checkbox"/> #10-32 | <input type="checkbox"/> #10-32 | | | |
| | <input type="checkbox"/> 1/8" BSPT | <input type="checkbox"/> 1/8" BSPT | | | |
| | <input type="checkbox"/> M5 x 0.8 | <input type="checkbox"/> M5 x 0.8 | | | |

What will be the Valves Environment?

- Will the valve be exposed to moisture? Yes No Will the valve be exposed to external contamination? Yes No
 Will the valve be in close proximity to a heat-generating source (e.g. Transformer, pump, motor)? Yes No
 Will the valve be subject to vibration or shock? No Yes If yes: Vibration _____ CPS at _____ Gs, Shock _____ GS duration for _____ ms.



Gems™ Sensors & Controls Inc., the seller, warrants its products to be free from defects in material and workmanship in normal use and service for a period of one year from date of shipment. Gems reserves the right and option to refund the purchase price in lieu of repair or replacement upon evaluation of the returned original part. Modification, misuse, attempted repair by others, improper installation or operation shall render this guarantee null and void. Gems Sensors & Controls Inc. makes no warranty of merchantability or fitness for a part or purpose.

Limits of Liability

In no circumstances shall Gems Sensors & Controls Inc. be liable for special, consequential or exemplary damages of any kind or character, including contract, tort, and strict liability in tort and contract. Equipment sold by Gems Sensors & Controls Inc. is not intended for use in a nuclear installation, nor shall it be used as a "Basic Component" as same as defined under Part 21, Title 10 of the Code of Federal Regulations. In the event of such use, you agree to indemnify and hold us harmless from any and all subsequent liabilities and responsibilities which might arise in connection with such use.

