

# M Series – Subminiature

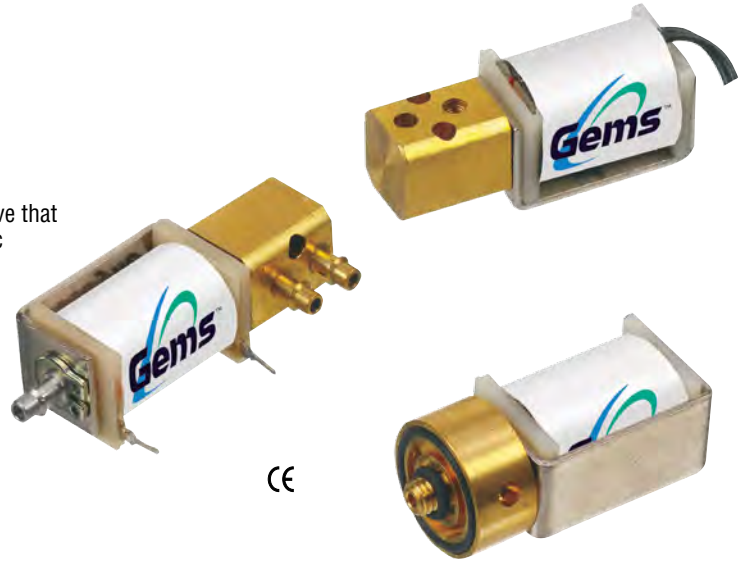
- ▶ MOPD: 100 PSI (6.9 Bar)
- ▶  $C_v$  Range: 0.018 to 0.070 ( $K_v$  Range: 0.017 to 0.032)
- ▶ As Low As 0.5 Watts

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.

## Typical Applications

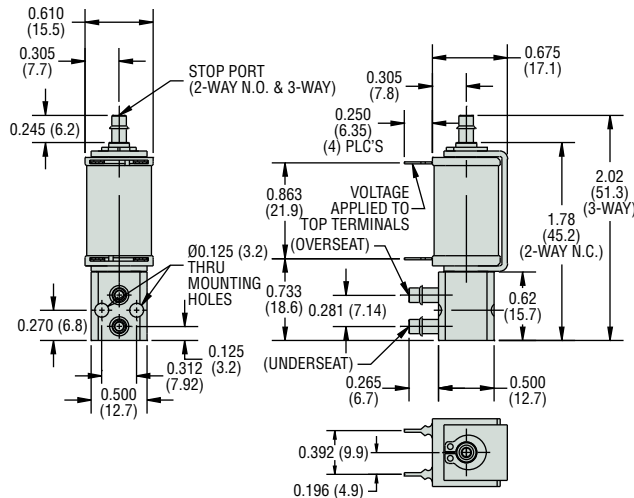
Ideal for inline PC interfacing and manifold assemblies:

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

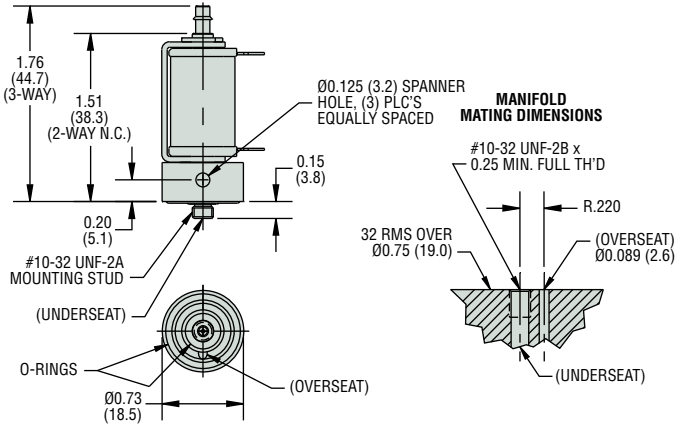


## Dimensions

### Threaded Port Body



### Manifold Mount Body



## How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.

<b>MB</b>	<b>31</b>	<b>5</b>	-	<b>E</b>	<b>B</b>	<b>3</b>	<b>3</b>	-	<b>P</b>	<b>201</b>	-	<b>OC</b>
1	2	3		4	5	6	7		8	9		10
Primary Prefix	Valve Type	Orifice Size		Plunger Seal/O-Ring Material	Body Material	Body Port Configuration	Stop Port Configuration		Coil Construction	Voltage		Additional Options

Note: After the Primary Prefix, any '-Code' may be blank when standard (blank) selections are specified.

### Example:

MB315-EB33-P-201

1 Watt 3-Way N.C. solenoid valve with a 0.052" (1.321mm) orifice, EPDM plunger seal/o-ring, brass body, 1/8" barb body and stop port, P.C. board mount (4-pin), operating at 5 VDC, and is cleaned for oxygen use.

Part Prefix Table ①

Power Rating	Orifice		MOPD		C <sub>v</sub>	K <sub>v</sub>	① Primary Prefix
	inches	mm	psi	bar			
0.5 Watt	0.031	0.787	25	1.7	0.018	0.015	MA
	0.052	1.321	10	0.7	0.037	0.032	MA
1 Watt	0.031	0.787	50	3.4	0.018	0.015	MB
	0.052	1.321	25	1.7	0.037	0.032	MB
2 Watts	0.031	0.787	100	6.9	0.018	0.015	MC
	0.052	1.321	50	3.4	0.037	0.032	MC

② Valve Type

- 20 = 2-Way normally closed
- 22 = 2-Way normally open
- 30 = 3-Way normally closed (free vent)
- 31 = 3-Way normally closed (line connection)
- 32 = 3-Way normally open
- 33 = 3-Way multi-purpose
- 34 = 3-Way directional control

③ Orifice Size

- 2 = 0.031" (0.79mm)
- 5 = 0.052" (1.32mm)

④ Plunger Seal / O-Ring Material

- V = Viton®
- N = Nitrile
- E = EPDM

⑤ Body Material

- B = Brass
- A = Aluminum

⑥ Body Port Configuration<sup>1</sup>

- 0 = Face mount
- 1 = 1/16" (1.6mm) barb
- 2 = 5/64" (2.0mm) or 3/32" (2.4mm) barb
- 3 = 1/8" (3.2mm) barb
- 4 = Manifold mount, #10-32 UNF-2A stud<sup>†</sup>
- 5 = #10-32 UNF-2B female thread (180° apart only)
- 6 = 1/8"-27 NPT ports (180° apart only)

⑦ Stop Port Configuration<sup>1</sup>

- 0 = No barb (Standard for 2-way NC & 3-way free vent)<sup>2,3</sup>
- 1 = 1/16" (1.6mm) barb (.031" orifice only)
- 2 = 5/64" (2.0mm) or 3/32" (2.4mm) barb
- 3 = 1/8" (3.2mm) barb

⑧ Coil Construction (Tape-Wrapped, 130°C Class B)

- U = P.C. board solderable (2-pin)
- P = P.C. board mount (4-pin)<sup>4</sup>
- Q = Quick connect 0.110" (2.79mm) spade
- L = Lead-wires, #26 AWG, 18" (45.7cm) long
- W\_\_ = Lead-wires (Specify length in inches)

⑨ 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)

⑩ Additional Options

- OC = Cleaned for oxygen use
- VAC = Vacuum application - 0 to 27" Hg (0 to 914 mBar)

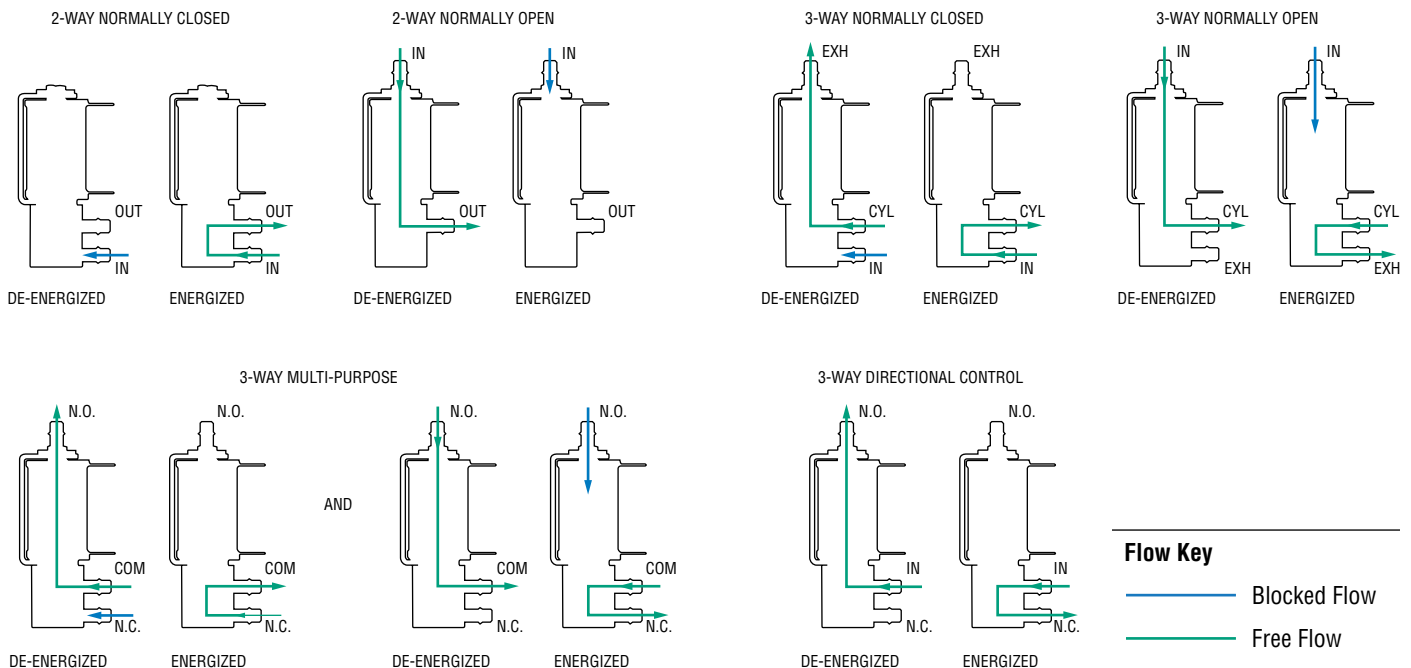
Notes

1. Barbs are brass.
2. For Stop Port Configuration, must select "0" for valve type 20 (2-way NC) and for type 30 (3-way NC Free Vent).
3. For Stop Port Configuration, must select "1" or "2" or "3" for valve types 22 (2-way NO), 31 (3-way NC Line Connect), 32 (3-way NO), 33 (3-way MP), and 34 (3-way DC). Selection "0" can not be used.
4. 2 pins near stop are active.

<sup>†</sup>Teflon® o-ring not suitable for manifold mount.

Gems specializes in the design and manufacturing of custom solenoid valves and fluidic systems. If you don't see what you're looking for, or have a question, contact us at 800-378-1600 or [info@gemssensors.com](mailto:info@gemssensors.com).

Flow Schematic



SOLENOID VALVES

## E & EH Series – Subminiature Gas

- ▶ MOPD: 175 PSI (12 Bar)
- ▶  $C_v$  Range: 0.018 to 0.070 ( $K_v$  Range: 0.015 to 0.060)
- ▶ 0.65 Watts or 2 Watts

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 0.65–2 the E & EH Series provides versatility for power conserving, high pressure, and high flow applications.

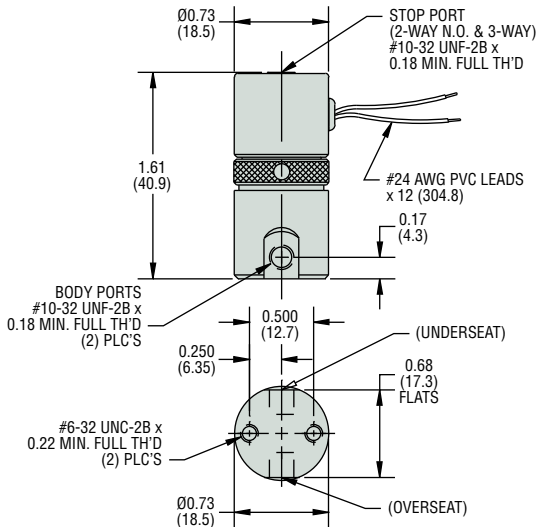
### Typical Applications

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

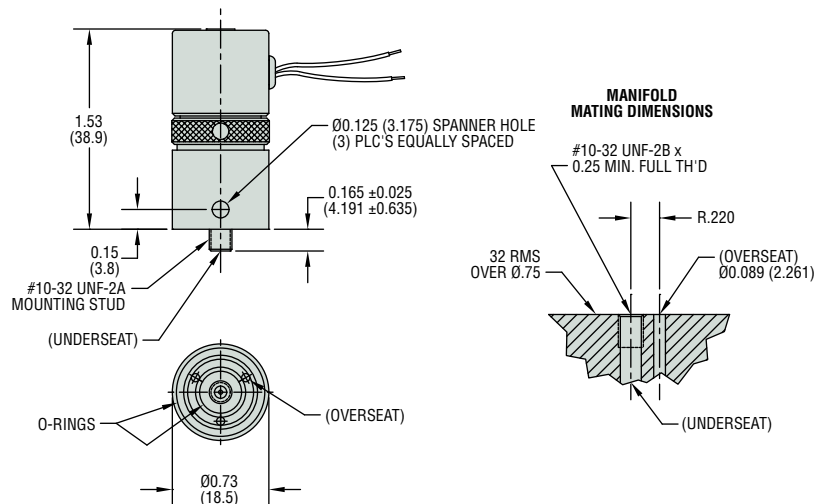


### Dimensions

#### Threaded Port Body

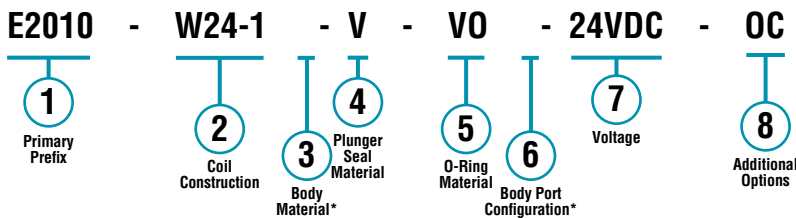


#### Manifold Mount Body



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.



\* Blank entry indicates a "Standard" selection (#10-32 straight thread ports, in this case).

### Example:

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

E-Series 2-Way N.C. solenoid valve, with 24" (61cm) lead-wires from an encapsulated coil, nickel-plated brass body, Viton® plunger seal, Viton® o-ring, #10-32 straight thread ports, operating at 24 VDC, and is cleaned for oxygen use.

Part Prefix Table ①

	Power Rating	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix
		Body		Stop		psig	bar	Body	Stop	Body	Stop	
		inches	mm	inches	mm							
2-WAY N.C.	0.65W	1/32	0.79	—	—	125	9	0.018	—	0.015	—	E2010
		3/64	1.19	—	—	70	5	0.023	—	0.020	—	E2011
		1/16	1.59	—	—	40	3	0.036	—	0.031	—	E2012
		5/64	1.98	—	—	20	1	0.070	—	0.060	—	E2013
	2W	1/32	0.79	—	—	175	12	0.018	—	0.015	—	EH2010
		3/64	1.19	—	—	150	10	0.023	—	0.020	—	EH2011
1/16		1.59	—	—	100	7	0.036	—	0.031	—	EH2012	
		5/64	1.98	—	—	50	3	0.070	—	0.060	—	EH2013
2-WAY N.O.	0.65W	—	—	1/32	0.79	125	9	—	0.018	—	0.015	E2210
		—	—	3/64	1.19	70	5	—	0.023	—	0.020	E2211
		—	—	1/16	1.59	40	3	—	0.032	—	0.027	E2212
	2W	—	—	1/32	0.79	175	12	—	0.018	—	0.015	EH2210
		—	—	3/64	1.19	150	10	—	0.023	—	0.020	EH2211
		—	—	1/16	1.59	100	7	—	0.032	—	0.027	EH2212
3-WAY N.C. Line Connection	0.65W	1/32	0.79	1/32	0.79	125	9	0.018	0.018	0.015	0.015	E3110
		3/64	1.19	3/64	1.19	70	5	0.023	0.023	0.020	0.020	E3111
		1/16	1.59	1/16	1.59	40	3	0.036	0.032	0.031	0.027	E3112
	2W	1/32	0.79	1/32	0.79	175	12	0.018	0.018	0.015	0.015	EH3110
		3/64	1.19	3/64	1.19	150	10	0.023	0.023	0.020	0.020	EH3111
		1/16	1.59	1/16	1.59	100	7	0.036	0.032	0.031	0.027	EH3112
3-WAY N.O.	0.65W	1/32	0.79	1/32	0.79	125	9	0.018	0.018	0.015	0.015	E3210
		3/64	1.19	3/64	1.19	70	5	0.023	0.023	0.020	0.020	E3211
		1/16	1.59	1/16	1.59	40	3	0.036	0.032	0.031	0.027	E3212
	2W	1/32	0.79	1/32	0.79	175	12	0.018	0.018	0.015	0.015	EH3210
		3/64	1.19	3/64	1.19	150	10	0.023	0.023	0.020	0.020	EH3211
		1/16	1.59	1/16	1.59	100	7	0.036	0.032	0.031	0.027	EH3212
3-WAY Multi Purpose	0.65W	1/32	0.79	1/32	0.79	80	6	0.018	0.018	0.015	0.015	E3310
		3/64	1.19	3/64	1.19	40	3	0.023	0.023	0.020	0.020	E3311
		1/16	1.59	1/16	1.59	20	1	0.036	0.032	0.031	0.027	E3312
	2W	1/32	0.79	1/32	0.79	150	10	0.018	0.018	0.015	0.015	EH3310
		3/64	1.19	3/64	1.19	100	7	0.023	0.023	0.020	0.020	EH3311
		1/16	1.59	1/16	1.59	50	3	0.036	0.032	0.031	0.027	EH3312
3-WAY Directional Control	0.65W	1/32	0.79	1/32	0.79	135	9	0.018	0.018	0.015	0.015	E3410
		3/64	1.19	3/64	1.19	80	6	0.023	0.023	0.020	0.020	E3411
		1/16	1.59	1/16	1.59	45	3	0.036	0.032	0.031	0.027	E3412
	2W	1/32	0.79	1/32	0.79	190	13	0.018	0.018	0.015	0.015	EH3410
		3/64	1.19	3/64	1.19	165	11	0.023	0.023	0.020	0.020	EH3411
		1/16	1.59	1/16	1.59	80	6	0.036	0.032	0.031	0.027	EH3412

Gems specializes in the design and manufacturing of custom solenoid valves and fluidic systems. If you don't see what you're looking for, or have a question, contact us at 800-378-1600 or info@gemssensors.com.

② Coil Construction

- (blank) = Tape-wrapped, Class-B, with 12" (30.48cm) long lead-wires\*
- W\_ = Lead-wires, non-standard length (specify in inches)
- 1 = Encapsulated coil
- 5 = Encapsulated coil with 0.110" (2.79mm) spade terminals
- 10 = Rectified coil for AC voltage (2 watt only)

③ Body Material

- (blank) = Nickel-plated brass\*

④ Plunger Seal Material

- (blank) = Nitrile\*
- V = Viton®
- E = EPR
- MQ = Silicone

⑤ O-Ring Material

- (blank) = Nitrile\*
- VO = Viton®
- EO = EPR
- MQO = Silicone

⑥ Body Port Configuration

- (blank) = #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 – max orifice = 1/16" (1.59mm)

⑦ Voltage

- \_VDC = DC (specify voltage)
- \_VAC = AC rectified 2-watt only (specify voltage)

⑧ Additional Options

- OC = Cleaned for oxygen use
- QO = Quiet operation (2-way N.C.)
- VAC = Vacuum application – 0 to 29.5" Hg (0 to 1000 mBar)

\* Standard selection; will be used unless otherwise specified. Standard selections are not referenced in final part number.

† Teflon® o-ring not suitable for manifold mount.

**NOTES**

A large rectangular area filled with a grid of dashed lines, intended for handwritten notes. The grid consists of approximately 20 columns and 30 rows of small squares.

## G & GH Series – Subminiature

- ▶ MOPD: 250 PSI (17 Bar)
- ▶  $C_v$  Range: 0.018 to 0.070 ( $K_v$  Range: 0.015 to 0.054)
- ▶ 0.65 Watts or 2 Watts

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 or Delrin®, and other materials available 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.

### Typical Applications

Stainless Steel Bodies:

- Hospital Equipment
- Laboratory Equipment
- Air Sampling Systems

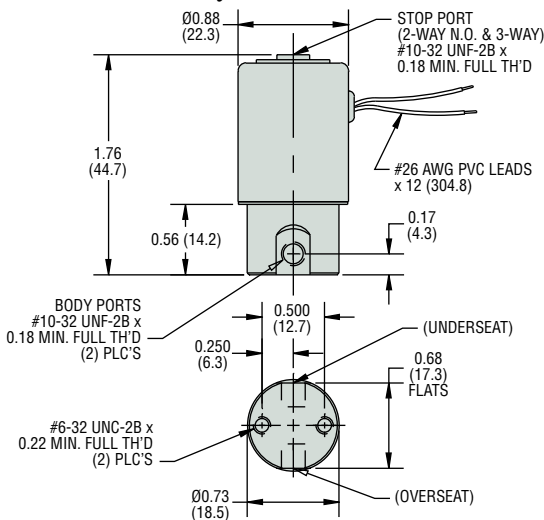
Acetal Bodies:

- Water Purification Systems
- Analytical Equipment

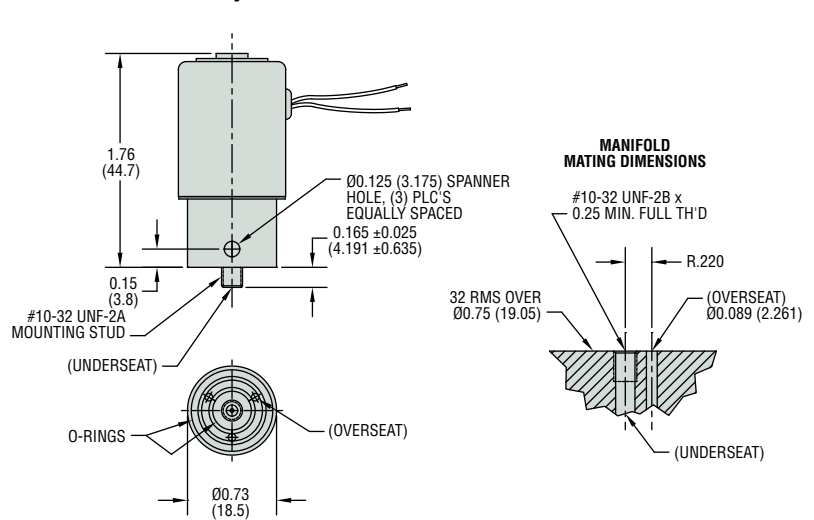


### Dimensions

#### Threaded Port Body

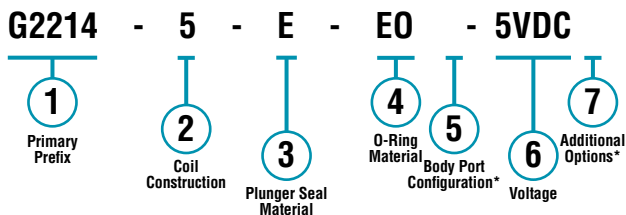


#### Manifold Mount Body



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.



\* Blank entry indicates a "Standard" selection (#10-32 straight thread ports, in this case).

#### Example:

G2214-5-E-EO-5VDC

G-Series 303 Stainless Steel 2-Way N.O. solenoid valve, with tape-wrapped, Class-B, with 12" (30.48cm) long lead-wires, encapsulated coil with 0.110" (2.79mm) spade terminals, EPR plunger seal, EPR o-ring, #10-32 straight thread ports, operating at 5 VDC.



Part Prefix Table ①

	Power Rating	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix
		Body		Stop		psig	bar	Body	Stop	Body	Stop	303 Stainless Steel <sup>1</sup>
		inches	mm	inches	mm							
2-WAY N.C.	0.65W	0.030	0.762	—	—	125	8.6	0.015	0.018	—	—	G2012
		0.040	1.016	—	—	70	4.8	0.020	0.023	—	—	G2013
		0.055	1.397	—	—	40	2.8	0.032	0.038	—	—	G2014
		0.078	1.981	—	—	20	1.4	0.054	0.063	—	—	G2015
	2W	0.030	0.762	—	—	250	17	0.015	0.018	—	—	GH2012
		0.040	1.016	—	—	175	12	0.020	0.023	—	—	GH2013
		0.055	1.397	—	—	100	6.9	0.032	0.038	—	—	GH2014
		0.078	1.981	—	—	50	3.4	0.054	0.063	—	—	GH2015
2-WAY N.O.	0.65W	—	—	0.030	0.762	125	8.6	—	—	0.018	0.015	G2212
		—	—	0.040	1.016	70	4.8	—	—	0.023	0.020	G2213
		—	—	0.055	1.397	40	2.8	—	—	0.038	0.032	G2214
		—	—	0.078	1.981	20	1.4	—	—	0.057	0.049	G2215
	2W	—	—	0.030	0.762	200	14	—	—	0.018	0.015	GH2212
		—	—	0.040	1.016	150	10	—	—	0.023	0.020	GH2213
		—	—	0.055	1.397	100	6.9	—	—	0.038	0.032	GH2214
		—	—	0.078	1.981	50	3.4	—	—	0.057	0.049	GH2215
3-WAY N.C.	0.65W	0.030	0.762	0.030	0.762	125	8.6	0.018	0.015	0.0153	0.018	G3012
		0.040	1.016	0.040	1.016	70	4.8	0.023	0.020	0.01955	0.023	G3013
		0.055	1.397	0.055	1.397	40	2.8	0.038	0.032	0.0323	0.038	G3014
		0.078	1.981	0.078	1.981	20	1.4	0.063	0.054	0.04845	0.057	G3015
	2W	0.030	0.762	0.030	0.762	200	14	0.018	0.015	0.01955	0.023	GH3012
		0.040	1.016	0.040	1.016	150	10	0.023	0.020	0.01955	0.023	GH3013
		0.055	1.397	0.055	1.397	100	6.9	0.038	0.032	0.0323	0.038	GH3014
		0.078	1.981	0.078	1.981	50	3.4	0.063	0.054	0.04845	0.057	GH3015
3-WAY N.O.	0.65W	0.030	0.762	0.030	0.762	125	8.6	0.015	0.018	0.018	0.015	G3212
		0.040	1.016	0.040	1.016	70	4.8	0.020	0.023	0.023	0.020	G3213
		0.055	1.397	0.055	1.397	40	2.8	0.032	0.038	0.038	0.032	G3214
		0.078	1.981	0.078	1.981	20	1.4	0.048	0.057	0.057	0.049	G3215
	2W	0.030	0.762	0.030	0.762	175	12	0.015	0.018	0.018	0.015	GH3212
		0.040	1.016	0.040	1.016	150	10	0.020	0.023	0.023	0.020	GH3213
		0.055	1.397	0.055	1.397	80	5.5	0.032	0.038	0.038	0.032	GH3214
		0.078	1.981	0.078	1.981	40	2.8	0.048	0.057	0.057	0.049	GH3215
3-WAY Multi Purpose	0.65W	0.030	0.762	0.030	0.762	80	5.5	0.015	0.018	0.018	0.015	G3312
		0.040	1.016	0.040	1.016	40	2.8	0.020	0.023	0.023	0.020	G3313
		0.055	1.397	0.055	1.397	20	1.4	0.031	0.036	0.029	0.024	G3314
		0.078	1.981	0.078	1.981	10	0.7	0.054	0.063	0.053	0.045	G3315
	2W	0.030	0.762	0.030	0.762	110	7.6	0.015	0.018	0.018	0.015	GH3312
		0.040	1.016	0.040	1.016	85	5.9	0.020	0.023	0.023	0.020	GH3313
		0.055	1.397	0.055	1.397	50	3.4	0.031	0.036	0.029	0.024	GH3314
		0.078	1.981	0.078	1.981	25	1.7	0.054	0.063	0.057	0.049	GH3315
3-WAY Directional Control	0.65W	0.030	0.762	0.030	0.762	135	9.3	0.015	0.018	0.018	0.015	G3412
		0.040	1.016	0.040	1.016	80	5.5	0.020	0.023	0.023	0.020	G3413
		0.055	1.397	0.055	1.397	45	3.1	0.025	0.029	0.029	0.024	G3414
		0.078	1.981	0.078	1.981	20	1.4	0.054	0.063	0.055	0.046	G3415
	2W	0.030	0.762	0.030	0.762	190	13	0.015	0.018	0.018	0.015	GH3412
		0.040	1.016	0.040	1.016	165	11	0.020	0.023	0.020	0.017	GH3413
		0.055	1.397	0.055	1.397	80	5.5	0.032	0.038	0.038	0.032	GH3414
		0.078	1.981	0.078	1.981	40	2.8	0.054	0.063	0.063	0.053	GH3415

SOLENOID VALVES

**② Coil Construction**

- (blank) = Tape-wrapped, Class-B, with 12" (30.48cm) long lead-wires\*  
**W** = Lead-wires, non-standard length (specify in inches)  
**1** = Encapsulated coil  
**5** = Encapsulated coil with 0.110" (2.79mm) spade terminals  
**10** = Rectified coil for AC voltage (2-watt only)

**③ Plunger Seal Material**

- (blank) = Viton®\*  
**NB** = Nitrile  
**E** = EPR  
**N** = Neoprene

**④ O-Ring Material**

- (blank) = Viton®\*  
**NBO** = Nitrile  
**EO** = EPR  
**NO** = Neoprene

**⑤ Body Port Configuration**

- (blank) = #10-32 straight thread ports\*  
**LC** = 1/8"-27 NPT ports (2-way valves only)  
**BM** = M5 x 0.8 ports  
**MM** = Manifold mount with #10-32 threaded stud†  
**MM2** = Manifold mount with M5 x 0.8 threaded stud†

**⑥ Voltage**

- \_\_\_ **VDC** = DC (specify voltage)  
 \_\_\_ **VAC** = AC Rectified 2-watt only (specify voltage)

**⑦ Additional Options**

- OC** = Cleaned for oxygen use  
**TP** = PTFE coated plunger  
**VAC** = Vacuum application – 0 to 29.5" Hg (0 to 1000 mBar)

\* Standard selection; will be used unless otherwise specified.  
 Standard selections are not referenced in final part number.

## Notes

1. Use prefixes from this column if you plan to select a Body Port Configuration other than the #10-32 straight thread ports.

† Teflon® o-ring not suitable for manifold mount.

Gems specializes in the design and manufacturing of custom solenoid valves and fluidic systems. If you don't see what you're looking for, or have a question, contact us at 800-378-1600 or [info@gemssensors.com](mailto:info@gemssensors.com).



**NOTES**

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows.



**Next Day Shipping**  
On Many Configurations

## A Series

- ▶ MOPD: 1000 PSI (69 Bar)
- ▶  $C_v$  Range: 0.019 to 0.3 ( $K_v$  Range: 0.016 to 0.256)
- ▶ 6 Watts

The A Series gives you a highly adaptable design for practically all applications requiring flow between  $C_v$  0.019 and 0.300 ( $K_v$  0.016 to 0.259). This robust 2- or 3-way miniature solenoid utilizes a stainless steel body to resist corrosion for most acids, alkaline solutions, and harsh environments. Also available in plastic—from polypropylene to Delrin®—when specific inert or demanding requirements are needed. 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.

### Typical Applications

Stainless Steel Bodies:

- Medical Equipment
- Laboratory Equipment
- Food Processing Equipment

Brass Bodies:

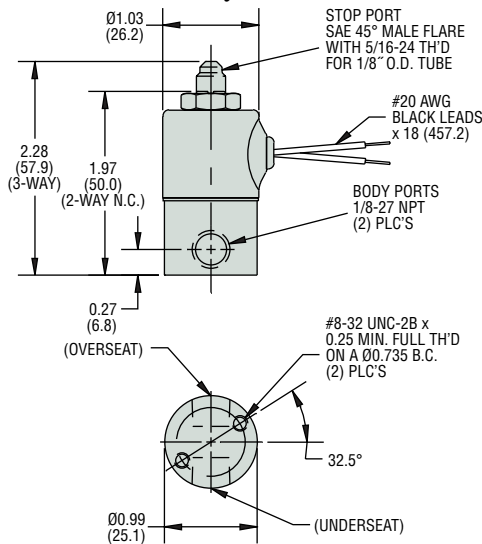
- Industrial Applications
- Automotive
- Water Transfer Systems



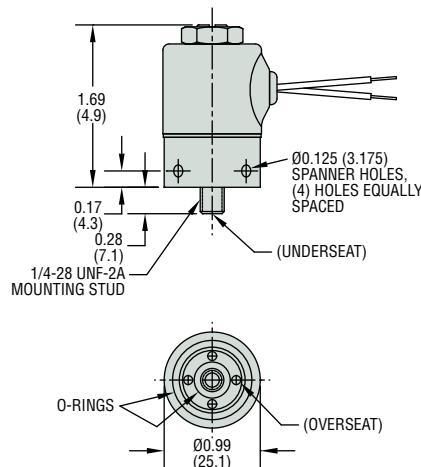
CE

### Dimensions

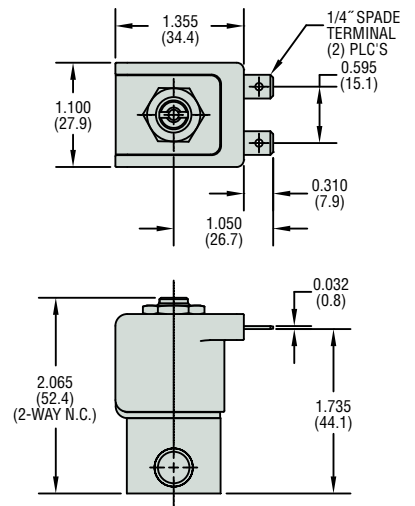
#### Threaded Port Body



#### Manifold Mount Body



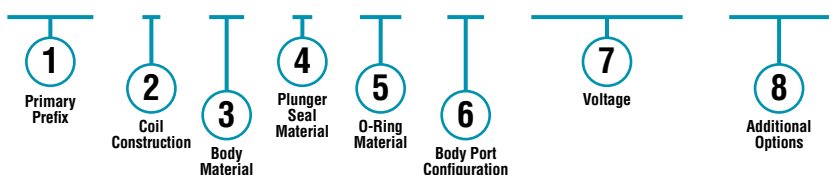
#### Molded Coil



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.

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



Note: After the Primary Prefix, any "-Code" may be blank when standard (blank) selections are specified.

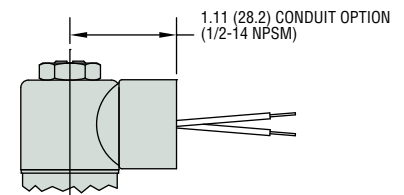
#### Example:

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

2-Way N.O. (with 1/8"-27 NPT stop port adaptor) solenoid valve, with brass body, neoprene plunger seal, neoprene O-ring, 1/4"-18 FNPT body ports, operating at 110/60 VAC/Hz, and includes the mounting bracket and PTFE coated plunger options.

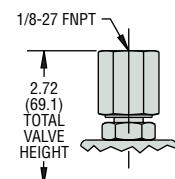
### Alternate 1/2" Conduit Housing

Available on all body configurations



### Stop Port

Standard on 2-way N.O.;  
Option "AD" on 3-Way.





Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.

Part Prefix Table ①

	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix	
	Body		Stop		psig	bar	Body	Stop	Body	Stop	Grommet Housing	Conduit Housing
	inches	mm	inches	mm								
2-WAY N.C.	1/32	0.79	—	—	1000	69	0.020	—	0.017	—	A2011 ⚡	A2021
	3/64	1.19	—	—	500	34	0.035	—	0.030	—	A2012 ⚡	A2022
	1/16	1.59	—	—	300	21	0.065	—	0.055	—	A2013 ⚡	A2023
	5/64	1.98	—	—	200	14	0.090	—	0.077	—	A2014 ⚡	A2024
	3/32	2.38	—	—	175	12	0.155	—	0.132	—	A2015 ⚡	A2025
	1/8	3.18	—	—	100	6.9	0.240	—	0.205	—	A2016 ⚡	A2026
	5/32	3.97	—	—	50	3.4	0.300	—	0.256	—	A2017 ⚡	A2027
2-WAY N.O. (option AD standard)	—	—	1/32	0.79	200	14	—	0.019	—	0.016	A2211 ⚡	A2221
	—	—	3/64	1.19	150	10	—	0.040	—	0.034	A2212 ⚡	A2222
	—	—	1/16	1.59	100	6.9	—	0.075	—	0.064	A2213 ⚡	A2223
3-WAY N.C. Free Vent	1/32	0.79	1/32	0.79	200	14	0.019	0.019	0.016	0.016	A3011 ⚡	A3021
	3/64	1.19	3/64	1.19	150	10	0.040	0.040	0.034	0.034	A3012 ⚡	A3022
	1/16	1.59	3/64	1.19	100	6.9	0.070	0.040	0.060	0.034	A3013 ⚡	A3023
	1/16	1.59	1/16	1.59	75	5.2	0.070	0.070	0.060	0.060	A3014 ⚡	A3024
	3/32	2.38	3/64	1.19	50	3.4	0.170	0.040	0.145	0.034	A3015 ⚡	A3025
3-WAY N.C. Line Connection	1/32	0.79	1/32	0.79	200	14	0.019	0.019	0.016	0.016	A3111 ⚡	A3121
	3/64	1.19	3/64	1.19	150	10	0.040	0.040	0.034	0.034	A3112 ⚡	A3122
	1/16	1.59	3/64	1.19	100	6.9	0.070	0.040	0.060	0.034	A3113 ⚡	A3123
	1/16	1.59	1/16	1.59	75	5.2	0.070	0.070	0.060	0.060	A3114 ⚡	A3124
	3/32	2.38	3/64	1.19	50	3.4	0.170	0.040	0.145	0.034	A3115 ⚡	A3125
3-WAY N.O.	1/32	0.79	1/32	0.79	150	10	0.019	0.019	0.016	0.016	A3211 ⚡	A3221
	3/64	1.19	3/64	1.19	100	6.9	0.040	0.040	0.034	0.034	A3212 ⚡	A3222
	1/16	1.59	3/64	1.19	90	6.2	0.070	0.040	0.060	0.034	A3213 ⚡	A3223
	1/16	1.59	1/16	1.59	75	5.2	0.070	0.070	0.060	0.060	A3214 ⚡	A3224
	3/32	2.38	3/64	1.19	50	3.4	0.170	0.040	0.145	0.034	A3215 ⚡	A3225
3-WAY Multi Purpose	1/32	0.79	1/32	0.79	125	8.6	0.019	0.019	0.016	0.016	A3311 ⚡	A3321
	3/64	1.19	3/64	1.19	100	6.9	0.040	0.040	0.034	0.034	A3312 ⚡	A3322
	1/16	1.59	3/64	1.19	90	6.2	0.070	0.040	0.060	0.034	A3313 ⚡	A3323
	1/16	1.59	1/16	1.59	75	5.2	0.070	0.070	0.060	0.060	A3314 ⚡	A3324
	3/32	2.38	3/64	1.19	25	1.7	0.170	0.040	0.145	0.034	A3315 ⚡	A3325
3-WAY Directional Control	1/32	0.79	1/32	0.79	225	16	0.019	0.019	0.016	0.016	A3411 ⚡	A3421
	3/64	1.19	3/64	1.19	150	10	0.040	0.040	0.034	0.034	A3412 ⚡	A3422
	1/16	1.59	3/64	1.19	100	6.9	0.070	0.040	0.060	0.034	A3413 ⚡	A3423
	1/16	1.59	1/16	1.59	75	5.2	0.070	0.070	0.060	0.060	A3414 ⚡	A3424
	3/32	2.38	3/64	1.19	50	3.4	0.155	0.040	0.132	0.034	A3415 ⚡	A3425

**2 Coil Construction**

- (blank)** = Tape-wrapped, Class B, with 18" (45.7cm) lead wires\* ⚡
- W** \_\_\_ = Tape-wrapped coil, lead wires, non-standard length (specify length)
- 1** = Encapsulated coil, Class B, lead wires
- 2M** = Over molded coil, Class F, lead wires
- 3** = Encapsulated coil, Class H, lead wires
- 3M** = Over molded coil, Class H, lead wires
- 4** = Encapsulated coil, Class B, 3/16" (4.76mm) spade terminals
- 5M** = Over molded coil, Class F, 1/4" (6.35mm) spade terminals
- 6M** = Over molded coil, Class H, 1/4" (6.35mm) spade terminals
- 10** = Externally rectified coil, AC Voltages (lead wires only) ⚡
- 11** = Tape-wrapped coil, Class H, lead wires
- HC2** = Encapsulated coil, Class B, EN175301-803 Form C DIN, Industrial, 9.4mm, 2+1 poles

**3 Body Material**

- (blank)** = 303 Stainless Steel\* ⚡
- BB** = Brass
- SB** = 304 Stainless Steel
- SB5** = 316 Stainless Steel
- SBF** = 430F Stainless Steel

**4 Plunger Seal Material**

- (blank)** = Nitrile\* ⚡
- E** = EPR ⚡
- GV** = Gasoline Viton® (2-way N.C. valves only)
- N** = Neoprene ⚡
- NS** = Nitrile (NSF/FDA, 2-way N.C. valves only) ⚡
- PF** = Perfluoroelastomer ⚡
- R** = Rulon® (2-way N.C. valves only)
- T** = PTFE
- V** = Viton® ⚡

**5 O-Ring Material**

- (blank)** = Nitrile\* ⚡
- EO** = EPR ⚡
- NO** = Neoprene ⚡
- NSO** = Nitrile (NSF/FDA, 2-way N.C. valves only) ⚡
- PFO** = Perfluoroelastomer ⚡
- TO** = PTFE
- VO** = Viton® ⚡

**6 Body Port Configuration**

- (blank)** = 1/8-27 NPT female thread\* ⚡
- LB** = 1/4-18 NPT female thread
- BD** = #10-32 female straight thread
  - max. orifice = 1/8" (3.18mm)
- LT** = 1/8-28 BSPT female thread (2-way N.C. valves only)
- LU** = 1/4-19 BSPT female thread (2-way N.C. valves only)
- MM** = Manifold mount (1/4-28 UNF-2A mounting stud)<sup>†††</sup>
- MM3** = Manifold mount (5/16-24 UNF-2A mounting stud)<sup>†††</sup>
- OB** = Omit body (operator style)
- MB** = Bottom metering - max. orifice = 3/32" (2.38mm)
- BI** = Bottom over-seat port, female thread
  - max. orifice = 1/8" (3.18mm)
- BIM** = Bottom over-seat port, 1/8-27 NPT male thread
  - max orifice = 5/64" (1.98mm) 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" (3.18mm) brass body only
- RL** = 90° porting - left hand
- RR** = 90° porting - right hand
- BS** = Stop port, #10-32 female straight thread<sup>†</sup>

**7 Voltage<sup>††</sup> (see note below)**


- C203** = 12 VDC ⚡
- C204** = 24 VDC ⚡
- C301** = 120/50/60R (add Coil Option -10) ⚡
- C303** = 240/50/60R (add Coil Option -10) ⚡
- \_\_\_ **VDC** = DC (specify DC voltage)
- \_\_\_ **VAC** = AC (specify AC voltage; includes copper shading ring)

**8 Additional Options**

- Y** = Yoke
- WM** = Mounting bracket
- TP** = PTFE coated plunger
- AD** = 1/8 - 27 NPT stop port adapter (3-way valves only) ⚡
- QQ** = Quiet operation (2-way valves only)
- S** = Silver shading ring
- OC** = Cleaned for oxygen use
- VAC** = Vacuum application - 0 to 29.5" Hg (0 to 1000mBar)
- G1** = One-piece 303 Stainless Steel guide assembly
- G5** = One piece 316 Stainless Steel guide assembly

\* Standard selection; will be used unless otherwise specified. Standard selections are not referenced in final part number.

<sup>†</sup> Plastic body available, contact Gems.  
<sup>††</sup> Can be AC rectified without shading ring. Use coil construction Code 10.  
<sup>†††</sup> Teflon® o-ring not suitable for manifold mount.

 Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.

Gems specializes in the design and manufacturing of custom solenoid valves and fluidic systems. If you don't see what you're looking for, or have a question, contact us at 800-378-1600 or [info@gemssensors.com](mailto:info@gemssensors.com).

**NOTES**

A large grid of dashed lines for taking notes, consisting of 20 columns and 30 rows.

**SOLENOID VALVES**

## B Series – Modular

- ▶ MOPD: 400 PSI (28 Bar)
- ▶  $C_v$  Range: 0.018 to 0.430 ( $K_v$  Range: 0.016 to 0.372)
- ▶ 7 Watts

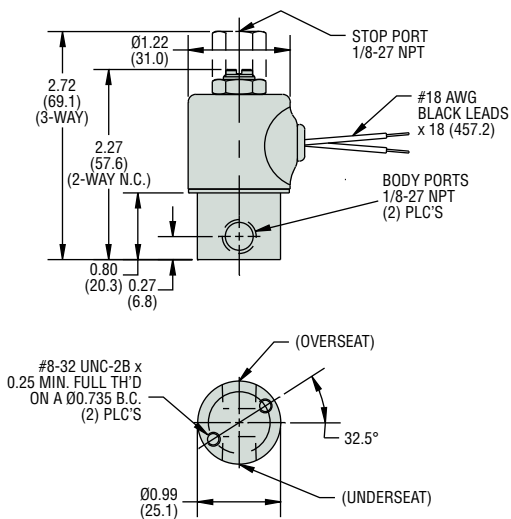
The B Series is a direct acting solenoid valve, available in 2- or 3-way functionality. Like all of our valves, the B Series has bubble tight plunger construction and is designed to last for millions of cycles in general purpose liquid, gas, and vacuum applications. The B Series is available in various 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 0.018 to 0.430 ( $K_v$  of 0.016 to 0.372).

### Typical Applications

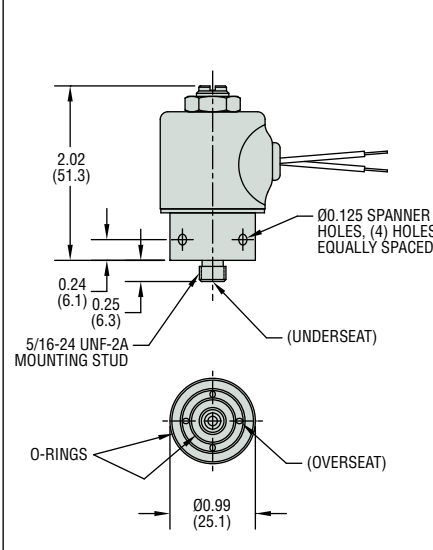
- Printing
- HVAC
- Semiconductor Equipment
- Medical Equipment

### Dimensions

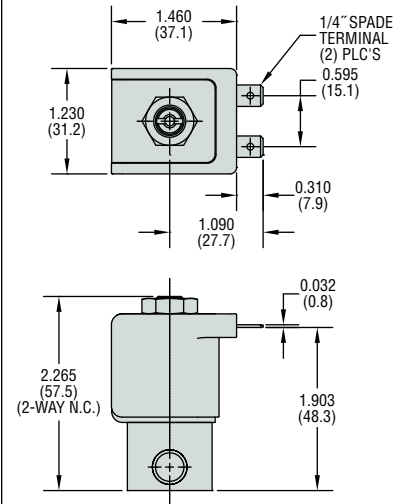
#### Threaded Port Body



#### Manifold Mount Body

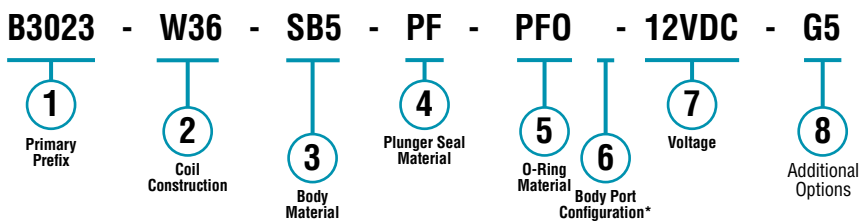


#### Molded Coil



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.



\* Blank entry indicates a "Standard" selection (1/8-27 NPT female thread, in this case).

#### Example:

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

2-Way N.C. Free Vent (with 1.26 Conduit Option) solenoid valve, with 36" (91cm) tape-wrapped coil, lead-wired, non-standard length, 316 stainless steel body, perfluoroelastomer plunger seal, perfluoroelastomer o-ring, 1/8-27 NPT female thread, operating at 12 VDC, and includes a one piece 316 stainless steel guide assembly option.

Order from: **C A Briggs Company**; 622 Mary Street; Suite 101 - Warminster, PA 18974  
 Phone: 267-673-8117 - Fax: 267-673-8118; E-Mail: [Sales@cabriggs.com](mailto:Sales@cabriggs.com) - [www.cabriggs.com](http://www.cabriggs.com)



**Next Day Shipping**  
On Many Configurations



CE





Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.

Part Prefix Table ①

	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix	
	Body		Stop		psig	bar	Body	Stop	Body	Stop	Grommet Housing	Conduit Housing
	inches	mm	inches	mm								
2-WAY N.C.	1/16	1.59	—	—	400	28	0.065	—	0.056	—	B2011	B2021
	5/64	1.98	—	—	300	21	0.090	—	0.078	—	B2012	B2022
	3/32	2.38	—	—	250	17	0.155	—	0.134	—	B2013	B2023
	7/64	2.78	—	—	200	14	0.200	—	0.173	—	B2014	B2024
	1/8	3.18	—	—	150	10	0.240	—	0.208	—	B2015	B2025
	5/32	3.97	—	—	100	6.9	0.300	—	0.259	—	B2016	B2026
	3/16	4.76	—	—	50	3.4	0.430	—	0.372	—	B2017	B2027
2-WAY N.O.	—	—	1/32	0.79	400	28	—	0.019	—	0.016	B2211	B2221
	—	—	3/64	1.19	300	21	—	0.040	—	0.035	B2212	B2222
	—	—	1/16	1.59	200	14	—	0.075	—	0.065	B2213	B2223
	—	—	5/64	1.98	150	10	—	0.090	—	0.078	B2214	B2224
3-WAY N.C. Free Vent	1/32	0.79	1/32	0.79	250	17	0.018	0.018	0.016	0.016	B3011	B3021
	3/64	1.19	3/64	1.19	175	12	0.040	0.040	0.035	0.035	B3012	B3022
	1/16	1.59	1/16	1.59	125	8.6	0.065	0.070	0.056	0.061	B3013	B3023
	5/64	1.98	5/64	1.98	100	6.9	0.090	0.090	0.078	0.078	B3014	B3024
	3/32	2.38	5/64	1.98	75	5.2	0.155	0.090	0.134	0.078	B3015	B3025
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.090	0.208	0.078	B3016	B3026
	5/32	3.97	5/64	1.98	15	1.0	0.300	0.090	0.259	0.078	B3017	B3027
3-WAY N.C. Line Connection	1/32	0.79	1/32	0.79	250	17	0.018	0.018	0.016	0.016	B3111	B3121
	3/64	1.19	3/64	1.19	175	12	0.040	0.040	0.035	0.035	B3112	B3122
	1/16	1.59	1/16	1.59	125	8.6	0.065	0.070	0.056	0.061	B3113	B3123
	5/64	1.98	5/64	1.98	100	6.9	0.090	0.090	0.078	0.078	B3114	B3124
	3/32	2.38	5/64	1.98	75	5.2	0.155	0.090	0.134	0.078	B3115	B3125
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.090	0.208	0.078	B3116	B3126
	5/32	3.97	5/64	1.98	15	1.0	0.300	0.090	0.259	0.078	B3117	B3127
3-WAY N.O.	1/32	0.79	1/32	0.79	200	14	0.018	0.018	0.016	0.016	B3211	B3221
	3/64	1.19	3/64	1.19	150	10	0.040	0.040	0.035	0.035	B3212	B3222
	1/16	1.59	1/16	1.59	125	8.6	0.065	0.070	0.056	0.061	B3213	B3223
	5/64	1.98	5/64	1.98	100	6.9	0.090	0.090	0.078	0.078	B3214	B3224
	3/32	2.38	5/64	1.98	75	5.2	0.155	0.090	0.134	0.078	B3215	B3225
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.090	0.208	0.078	B3216	B3226
	5/32	3.97	5/64	1.98	15	1.0	0.300	0.090	0.259	0.078	B3217	B3227
3-WAY Multi Purpose	1/32	0.79	1/32	0.79	175	12	0.018	0.018	0.016	0.016	B3311	B3321
	3/64	1.19	3/64	1.19	125	8.6	0.040	0.040	0.035	0.035	B3312	B3322
	1/16	1.59	1/16	1.59	100	6.9	0.065	0.070	0.056	0.061	B3313	B3323
	5/64	1.98	5/64	1.98	75	5.2	0.090	0.090	0.078	0.078	B3314	B3324
	3/32	2.38	5/64	1.98	50	3.4	0.155	0.090	0.134	0.078	B3315	B3325
	1/8	3.18	5/64	1.98	25	1.7	0.240	0.090	0.208	0.078	B3316	B3326
	5/32	3.97	5/64	1.98	15	1.0	0.300	0.090	0.259	0.078	B3317	B3327
3-WAY Directional Control	1/32	0.79	1/32	0.79	275	19	0.018	0.018	0.016	0.016	B3411	B3421
	3/64	1.19	3/64	1.19	200	14	0.040	0.040	0.035	0.035	B3412	B3422
	1/16	1.59	1/16	1.59	150	10	0.065	0.070	0.056	0.061	B3413	B3423
	5/64	1.98	5/64	1.98	100	6.9	0.090	0.090	0.078	0.078	B3414	B3424
	3/32	2.38	5/64	1.98	75	5.2	0.155	0.090	0.134	0.078	B3415	B3425
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.090	0.208	0.078	B3416	B3426
	5/32	3.97	5/64	1.98	25	1.7	0.300	0.090	0.259	0.078	B3417	B3427

SOLENOID VALVES



**2 Coil Construction**

- (blank)** = Tape-wrapped, Class B, with 18" (45.7cm) lead wires\* ⚡
- W**\_\_\_ = Tape-wrapped coil, lead wires, non-standard length (specify length)
  - 1** = Encapsulated coil, Class B, lead wires
  - 2M** = Over molded coil, Class F, lead wires (2-way N.C. only)
  - 3** = Encapsulated coil, Class H, lead wires
  - 3M** = Over molded coil, Class H, lead wires (2-way N.C. only)
  - 4** = Encapsulated coil, Class B, 3/16" (4.76mm) spade terminals
  - 5M** = Over molded coil, Class F, 1/4" (6.35mm) spade terminals (2-way N.C. only)
  - 6M** = Over molded coil, Class H, 1/4" (6.35mm) spade terminals (2-way N.C. only)
  - 10** = Externally rectified coil, AC Voltages (lead wires only) ⚡
  - 11** = Tape-wrapped coil, Class H, lead wires
  - HC2** = Encapsulated coil, Class B, EN175301-803 Form C DIN, Industrial, 9.4mm, 2+1 poles

**3 Body Material**

- (blank)** = 303 Stainless Steel\* ⚡
- BB** = Brass
- SB** = 304 Stainless Steel
- SB5** = 316 Stainless Steel
- SBF** = 430F Stainless Steel

**4 Plunger Seal Material**

- (blank)** = 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** = PTFE
- V** = Viton® ⚡

**5 O-Ring Material**

- (blank)** = Nitrile\* ⚡
- EO** = EPR ⚡
- NO** = Neoprene ⚡
- NSO** = Nitrile (NSF/FDA material) ⚡
- PFO** = Perfluoroelastomer ⚡
- TO** = PTFE
- VO** = Viton® ⚡

**6 Body Port Configuration**

- (blank)** = 1/8-27 NPT female thread\* ⚡
- LB** = 1/4-18 NPT female thread
- BD** = #10-32 female straight thread
  - max. orifice = 1/8" (3.18mm)
- 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" (3.18mm)
- BIM** = Bottom over-seat port, 1/8-27 NPT male thread
  - max. orifice = 5/64" (1.98mm), 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" (3.18mm), brass body only
- RL** = 90° porting - left hand
- RR** = 90° porting - right hand
- BS** = Stop port, #10-32 female straight thread

**7 Voltage†† (see note below)**

- C203** = 12 VDC ⚡
- C204** = 24 VDC ⚡
- C301** = 120/50/60R (add Coil Option -10) ⚡
- C303** = 240/50/60R (add Coil Option -10) ⚡
- \_\_\_ **VDC** = DC (specify DC voltage)
- \_\_\_ **VAC** = AC (specify AC voltage; includes copper shading ring)

**8 Additional Options**

- Y** = Yoke (2-way N.C. only)
- WM** = Mounting bracket
- TP** = PTFE coated plunger
- QQ** = Quiet operation (2-way N.C. only)
- S** = Silver shading ring
- OC** = Cleaned for oxygen use
- VAC** = Vacuum application - 0 to 29.5" Hg (0 to 1000mBar)
- 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

\* Standard selection; will be used unless otherwise specified. Standard selections are not referenced in final part number.

† Internal rectified available. Consult factory.

†† Can be AC rectified without shading ring. Use coil construction Code 10.

††† Teflon® o-ring not suitable for manifold mount.



Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.

**NOTES**

A large rectangular area filled with a grid of dashed lines, intended for handwritten notes.

## C Series – High Flow

- ▶ MOPD: 400 PSI (28 Bar)
- ▶  $C_v$  Range: 0.019 to 0.420 ( $K_v$  Range: 0.016 to 0.357)
- ▶ 7 Watts

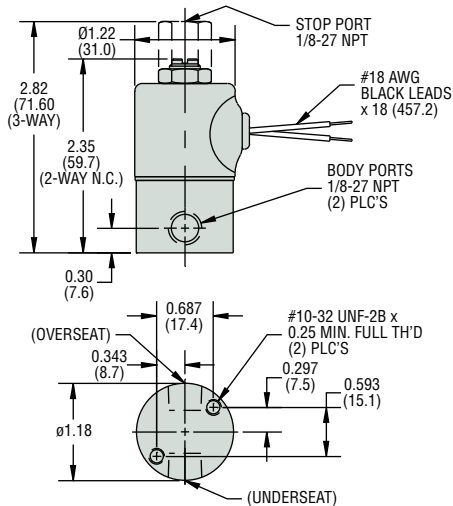
The C Series, available only in brass, is a highly durable miniature 2- or 3-way direct acting valve for applications that require a higher flow control. The C Series also utilizes a larger diameter body and larger port connections for higher  $C_v$  ( $K_v$ ) valves rates. The free machining brass body 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.

### Typical Applications

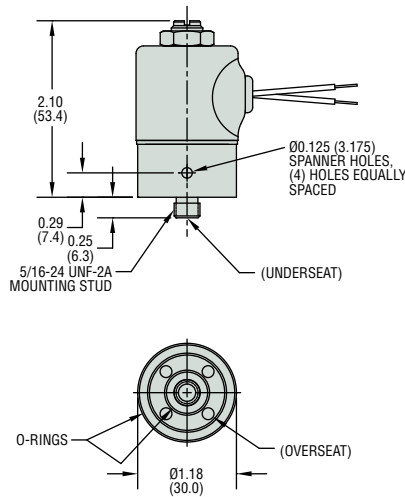
- Therapeutic Beds
- Automotive Applications
- Packaging Equipment

### Dimensions

#### Threaded Port Body

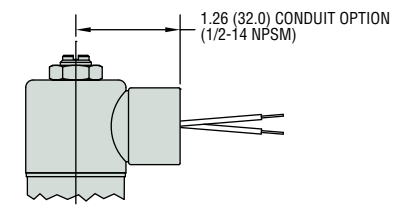


#### Manifold Mount Body



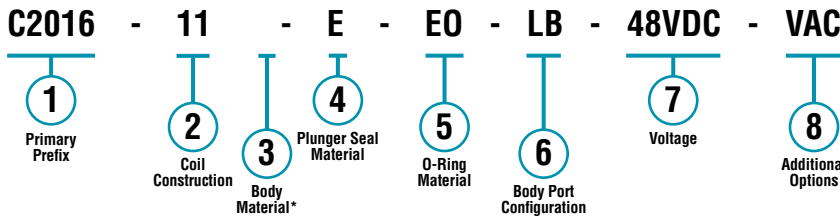
CE

#### Alternate 1/2" Conduit Housing Available on all body configurations



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.



\* Blank entry indicates a "Standard" selection (Brass, in this case).

#### Example:

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

2-Way N.C. solenoid valve, with tape-wrapped coil, Class-H, lead-wires, brass body, EPR plunger seal, EPR o-ring, 1/4-18 NPT female thread, operating at 48 VDC, and includes a vacuum application – 0 to 29.5" Hg (0 to 1000mBar) option.

### Part Prefix Table ①

	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix	
	Body		Stop		psig	bar	Body	Stop	Body	Stop	Grommet Housing	Conduit Housing
	inches	mm	inches	mm								
<b>2-WAY N.C.</b>	1/16	1.59	—	—	400	28	0.080	—	0.068	—	<b>C2011</b>	<b>C2021</b>
	7/64	2.78	—	—	200	14	0.180	—	0.153	—	<b>C2012</b>	<b>C2022</b>
	1/18	3.18	—	—	150	10	0.240	—	0.204	—	<b>C2013</b>	<b>C2023</b>
	5/32	3.97	—	—	100	6.9	0.300	—	0.255	—	<b>C2014</b>	<b>C2024</b>
	3/16	4.76	—	—	75	5.2	0.360	—	0.306	—	<b>C2015</b>	<b>C2025</b>
	7/32	5.56	—	—	40	2.8	0.420	—	0.357	—	<b>C2016</b>	<b>C2026</b>
<b>2-WAY N.O.</b>	—	—	1/32	0.79	400	28	—	0.019	—	0.016	<b>C2211</b>	<b>C2221</b>
	—	—	3/64	1.19	300	21	—	0.040	—	0.034	<b>C2212</b>	<b>C2222</b>
	—	—	1/16	1.59	200	14	—	0.075	—	0.064	<b>C2213</b>	<b>C2223</b>
	—	—	5/64	1.98	150	10	—	0.105	—	0.089	<b>C2214</b>	<b>C2224</b>
<b>3-WAY N.C. Free Vent</b>	1/16	1.59	1/16	1.59	125	8.6	0.080	0.075	0.068	0.064	<b>C3011</b>	<b>C3021</b>
	5/64	1.98	5/64	1.98	100	6.9	0.105	0.105	0.089	0.089	<b>C3012</b>	<b>C3022</b>
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.105	0.204	0.089	<b>C3013</b>	<b>C3023</b>
	3/16	4.76	5/64	1.98	25	1.7	0.360	0.105	0.306	0.089	<b>C3014</b>	<b>C3024</b>
	7/32	5.56	5/64	1.98	VAC	1000 mbar	0.420	0.105	0.357	0.089	<b>C3015</b>	<b>C3025</b>
<b>3-WAY N.C. Line Connection</b>	1/16	1.59	1/16	1.59	125	8.6	0.080	0.075	0.068	0.064	<b>C3111</b>	<b>C3121</b>
	5/64	1.98	5/64	1.98	100	6.9	0.105	0.105	0.089	0.089	<b>C3112</b>	<b>C3122</b>
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.105	0.204	0.089	<b>C3113</b>	<b>C3123</b>
	3/16	4.76	5/64	1.98	25	1.7	0.360	0.105	0.306	0.089	<b>C3114</b>	<b>C3124</b>
	7/32	5.56	5/64	1.98	VAC	1000 mbar	0.420	0.105	0.357	0.089	<b>C3115</b>	<b>C3125</b>
<b>3-WAY N.O.</b>	1/16	1.59	1/16	1.59	125	8.6	0.080	0.075	0.068	0.064	<b>C3211</b>	<b>C3221</b>
	5/64	1.98	5/64	1.98	100	6.9	0.105	0.105	0.089	0.089	<b>C3212</b>	<b>C3222</b>
	1/8	3.18	5/64	1.98	75	5.2	0.240	0.105	0.204	0.089	<b>C3213</b>	<b>C3223</b>
	3/16	4.76	5/64	1.98	40	3.4	0.360	0.105	0.306	0.089	<b>C3214</b>	<b>C3224</b>
	7/32	5.56	5/64	1.98	VAC	1000 mbar	0.420	0.105	0.357	0.089	<b>C3215</b>	<b>C3225</b>
<b>3-WAY Multi Purpose</b>	1/16	1.59	1/16	1.59	100	6.9	0.080	0.075	0.068	0.064	<b>C3311</b>	<b>C3321</b>
	5/64	1.98	5/64	1.98	75	5.2	0.105	0.105	0.089	0.089	<b>C3312</b>	<b>C3322</b>
	1/8	3.18	5/64	1.98	25	1.7	0.240	0.105	0.204	0.089	<b>C3313</b>	<b>C3323</b>
	3/16	4.76	5/64	1.98	10	0.7	0.360	0.105	0.306	0.089	<b>C3314</b>	<b>C3324</b>
	7/32	5.56	5/64	1.98	5	0.3	0.420	0.105	0.357	0.089	<b>C3315</b>	<b>C3325</b>
<b>3-WAY Directional Control</b>	1/16	1.59	1/16	1.59	150	10	0.080	0.075	0.068	0.064	<b>C3411</b>	<b>C3421</b>
	5/64	1.98	5/64	1.98	100	6.9	0.105	0.105	0.089	0.089	<b>C3412</b>	<b>C3422</b>
	1/8	3.18	5/64	1.98	50	3.4	0.240	0.105	0.204	0.089	<b>C3413</b>	<b>C3423</b>
	3/16	4.76	5/64	1.98	25	1.7	0.360	0.105	0.306	0.089	<b>C3414</b>	<b>C3424</b>
	7/32	5.56	5/64	1.98	5	0.3	0.420	0.105	0.357	0.089	<b>C3415</b>	<b>C3425</b>

**② Coil Construction****(blank)** = Tape-wrapped, Class-B, with 18" (45.7cm) 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" (6.35mm) spade terminals – 3/16" (4.76mm) 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**③ Body Material****(blank)** = Brass\***SB** = 304 Stainless Steel**SB1** = 303 Stainless Steel**SB5** = 316 Stainless Steel**SBF** = 430F Stainless Steel**④ Plunger Seal Material****(blank)** = 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** = PTFE**V** = Viton®**⑤ O-Ring Material****(blank)** = Nitrile\***EO** = EPR**NO** = Neoprene**NSO** = Nitrile (NSF/FDA material)**PFO** = Perfluoroelastomer**TO** = PTFE**VO** = Viton®**⑥ Body Port Configuration****(blank)** = 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" (3.18mm)**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)<sup>††</sup>**BS** = Stop port, #10-32 female straight thread**⑦ Voltage<sup>†</sup> (see note below)**\_\_ **VDC** = DC (specify voltage)\_\_ **VAC** = AC (specify voltage; includes copper shading ring)**⑧ Additional Options****WM** = Mounting bracket**TP** = PTFE 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 (0 to 1000 mBar)**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

\* Standard selection; will be used unless otherwise specified. Standard selections are not referenced in final part number.

<sup>†</sup> Can be AC rectified without shading ring. Use coil construction Code 10.

<sup>††</sup> Teflon® o-ring not suitable for manifold mount.

Gems specializes in the design and manufacturing of custom solenoid valves and fluidic systems. If you don't see what you're looking for, or have a question, contact us at 800-378-1600 or [info@gemssensors.com](mailto:info@gemssensors.com).

**NOTES**

A large rectangular area filled with a grid of dashed lines, intended for handwritten notes. The grid consists of approximately 20 columns and 30 rows of small squares.



**Next Day Shipping**  
On Many Configurations

## D Series – High Flow

- ▶ MOPD: 900 PSI (62 Bar)
- ▶  $C_v$  Range: 0.045 to 0.880 ( $K_v$  Range: 0.038 to 0.748)
- ▶ 10 Watts

For maximum flow in a miniature solenoid valve the D Series valves delivers a wide range of  $C_v$  ( $K_v$ ) 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.

### Typical Applications

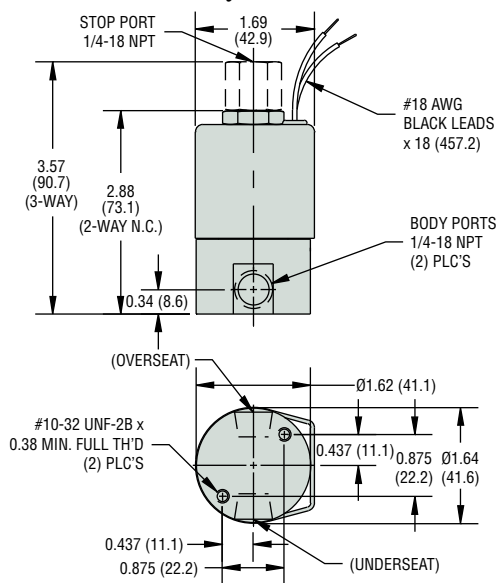
- Agriculture
- Defense
- Sterilization Equipment
- Industrial Automation



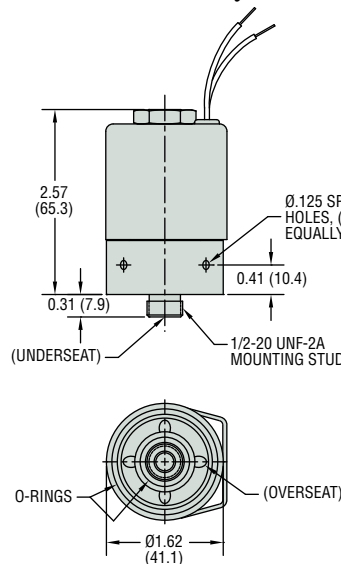
CE

### Dimensions

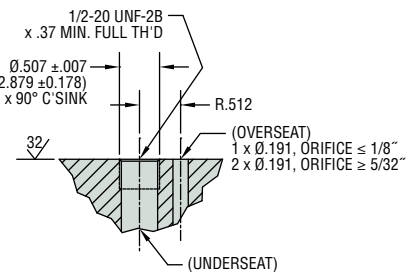
#### Threaded Port Body



#### Manifold Mount Body

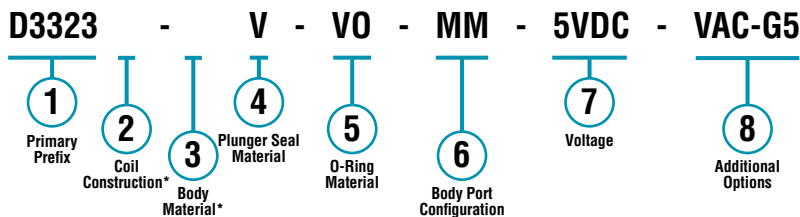


#### MANIFOLD MATING DIMENSIONS



### How To Order

Use the **Bold** characters from the choices listed on the following page to construct a product code.



\* Blank entry indicates a "Standard" selection (Tape-wrapped, Class-B, with 18" (46cm) lead-wires and 303 Stainless Steel, in this case).

#### Example:

D3323-V-VO-MM-5VDC-VAC-G5

3-Way Multi Purpose (with 1.26 Conduit Option) solenoid valve, with tape-wrapped, Class-B, with 18" (46cm) lead-wires, 303 stainless steel body, Viton® plunger seal, Viton® o-ring, manifold mount (1/2-20 UNF-2A mounting stud, max. orifice = 1/4" (35.6cm)), operating at 5 VDC, and includes vacuum application (0 to 29.5" Hg (0 to 1000mBar)) and one piece 316 stainless steel guide assembly options.

Order from: **C A Briggs Company**; 622 Mary Street; Suite 101 - Warminster, PA 18974  
Phone: 267-673-8117 - Fax: 267-673-8118; E-Mail: [Sales@cabriggs.com](mailto:Sales@cabriggs.com) - [www.cabriggs.com](http://www.cabriggs.com)





Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.

Part Prefix Table ①

	Orifice				MOPD		C <sub>v</sub>		K <sub>v</sub>		① Primary Prefix	
	Body		Stop		psig	bar	Body	Stop	Body	Stop	Grommet Housing	Conduit Housing
	inches	mm	inches	mm								
2-WAY N.C.	3/64	1.19	—	—	900	62	0.045	—	0.038	—	D2011 ⚡	D2021
	1/16	1.98	—	—	650	45	0.080	—	0.068	—	D2012 ⚡	D2022
	3/32	2.38	—	—	350	24	0.150	—	0.128	—	D2013 ⚡	D2023
	1/8	3.18	—	—	225	16	0.210	—	0.179	—	D2014 ⚡	D2024
	5/32	3.97	—	—	130	9.0	0.380	—	0.323	—	D2015 ⚡	D2025
	3/16	4.76	—	—	85	5.9	0.430	—	0.366	—	D2016 ⚡	D2026
	1/4	6.35	—	—	50	3.4	0.700	—	0.595	—	D2017 ⚡	D2027
	5/16	7.94	—	—	20	1.4	0.850	—	0.723	—	D2018 ⚡	D2028
	3/8	9.53	—	—	10	0.7	0.880	—	0.748	—	D2019 ⚡	D2029
2-WAY N.O.	—	—	3/64	1.19	900	62	—	0.045	—	0.038	D2211 ⚡	D2221
	—	—	1/16	1.59	550	38	—	0.080	—	0.068	D2212 ⚡	D2222
	—	—	5/64	1.98	300	21	—	0.110	—	0.094	D2213 ⚡	D2223
	—	—	3/32	2.38	175	12	—	0.150	—	0.128	D2214 ⚡	D2224
	—	—	1/8	3.18	110**	7.6	—	0.210	—	0.179	D2215 ⚡	D2225
	—	—	5/32	3.97	60**	4.1	—	0.380	—	0.323	D2216 ⚡	D2226
3-WAY N.C. Free Vent	1/16	1.59	1/16	1.59	175	12	0.080	0.080	0.068	0.068	D3011 ⚡	D3021
	5/64	1.98	5/64	1.98	150	10	0.110	0.110	0.094	0.094	D3012 ⚡	D3022
	3/32	2.38	3/32	2.38	125	8.6	0.150	0.150	0.128	0.128	D3013 ⚡	D3023
	1/8	3.18	1/8	3.18	85**	5.9	0.210	0.210	0.179	0.179	D3014 ⚡	D3024
	5/32	3.97	5/32	3.97	45**	3.1	0.380	0.380	0.323	0.323	D3015 ⚡	D3025
	3/16	4.76	5/32	3.97	30**	2.1	0.430	0.380	0.366	0.323	D3016 ⚡	D3026
	1/4	6.35	5/32	3.97	10**	0.7	0.700	0.380	0.595	0.323	D3017 ⚡	D3027
3-WAY N.C. Line Connection	1/16	1.59	1/16	1.59	175	12	0.080	0.080	0.068	0.068	D3111 ⚡	D3121
	5/64	1.98	5/64	1.98	150	10	0.110	0.110	0.094	0.094	D3112 ⚡	D3122
	3/32	2.38	3/32	2.38	125	8.6	0.150	0.150	0.128	0.128	D3113 ⚡	D3123
	1/8	3.18	1/8	3.18	85**	5.9	0.210	0.210	0.179	0.179	D3114 ⚡	D3124
	5/32	3.97	5/32	3.97	45**	3.1	0.380	0.380	0.323	0.323	D3115 ⚡	D3125
	3/16	4.76	5/32	3.97	30**	2.1	0.430	0.380	0.366	0.323	D3116 ⚡	D3126
	1/4	6.35	5/32	3.97	10**	0.7	0.700	0.380	0.595	0.323	D3117 ⚡	D3127
3-WAY N.O.	1/16	1.59	1/16	1.59	200	14	0.080	0.080	0.068	0.068	D3211 ⚡	D3221
	5/64	1.98	5/64	1.98	175	12	0.110	0.110	0.094	0.094	D3212 ⚡	D3222
	3/32	2.38	3/32	2.38	150	10	0.150	0.150	0.128	0.128	D3213 ⚡	D3223
	1/8	3.18	1/8	3.18	100**	6.9	0.210	0.210	0.179	0.179	D3214 ⚡	D3224
	5/32	3.97	5/32	3.97	50**	3.4	0.380	0.380	0.323	0.323	D3215 ⚡	D3225
	3/16	4.76	5/32	3.97	35**	2.4	0.430	0.380	0.366	0.323	D3216 ⚡	D3226
	1/4	6.35	5/32	3.97	15**	1.0	0.700	0.380	0.595	0.323	D3217 ⚡	D3227
3-WAY Multi Purpose	1/16	1.59	1/16	1.59	160	11	0.080	0.080	0.068	0.068	D3311 ⚡	D3321
	5/64	1.98	5/64	1.98	130	9.0	0.110	0.110	0.094	0.094	D3312 ⚡	D3322
	3/32	2.38	3/32	2.38	110	7.6	0.150	0.150	0.128	0.128	D3313 ⚡	D3323
	1/8	3.18	1/8	3.18	75**	5.2	0.210	0.210	0.179	0.179	D3314 ⚡	D3324
	5/32	3.97	5/32	3.97	40**	2.8	0.380	0.380	0.323	0.323	D3315 ⚡	D3325
	3/16	4.76	5/32	3.97	25**	1.7	0.430	0.380	0.366	0.323	D3316 ⚡	D3326
	1/4	6.35	5/32	3.97	10**	0.7	0.700	0.380	0.595	0.323	D3317 ⚡	D3327
3-WAY Directional Control	1/16	1.59	1/16	1.59	225	16	0.080	0.080	0.068	0.068	D3411 ⚡	D3421
	5/64	1.98	5/64	1.98	185	13	0.110	0.110	0.094	0.094	D3412 ⚡	D3422
	3/32	2.38	3/32	2.38	150	10.3	0.150	0.150	0.128	0.128	D3413 ⚡	D3423
	1/8	3.18	1/8	3.18	110**	7.6	0.210	0.210	0.179	0.179	D3414 ⚡	D3424
	5/32	3.97	5/32	3.97	60**	4.1	0.380	0.380	0.323	0.323	D3415 ⚡	D3425
	3/16	4.76	5/32	4.76	40**	2.8	0.430	0.380	0.366	0.323	D3416 ⚡	D3426
	1/4	6.35	5/32	3.97	20**	1.4	0.700	0.380	0.595	0.323	D3417 ⚡	D3427

\*\* DC or rectified coil only

SOLENOID VALVES

**2 Coil Construction****(blank)** = Tape-wrapped, Class B, with 18" (45.7cm) 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" (6.35mm) spade terminals**10** = Externally rectified coil, AC Voltages (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**3 Body Material****(blank)** = 303 Stainless Steel\* ⚡**BB** = Brass**SB5** = 316 Stainless Steel**4 Plunger Seal Material****(blank)** = Nitrile\* ⚡**E** = EPR ⚡**GV** = Gasoline Viton® – 2-way normally open and 3-way valves  
max. orifice = 3/32" (2.38mm)**N** = Neoprene – 2-way normally closed valves only,  
max. orifice = 1/4" (6.35mm) ⚡**NS** = Nitrile – NSF/FDA, max. orifice = 1/4" (6.35mm) ⚡**PF** = Perfluoroelastomer – max. orifice = 1/4" (6.35mm) ⚡**R** = Rulon® – 2-way normally closed valves only,  
max. orifice = 1/4" (6.35mm)**T** = PTFE – max. orifice = 1/4" (6.35mm)**V** = Viton® ⚡**5 O-Ring Material****(blank)** = Nitrile\* ⚡**EO** = EPR ⚡**NO** = Neoprene ⚡**NSO** = Nitrile (NSF/FDA, 2-way valves only) ⚡**PFO** = Perfluoroelastomer ⚡**TO** = PTFE**VO** = Viton® ⚡**6 Body Port Configuration****(blank)** = 1/4-18 NPT female thread\* ⚡**LC** = 1/8-27 NPT female thread – max. orifice = 5/16" (7.94mm)**LD** = 3/8-18 NPT female thread**LT** = 1/8-28 BSPT female thread – max. orifice = 5/16" (7.94mm)**LU** = 1/4-19 BSPT female thread**MM** = Manifold mount – 1/2-20 UNF-2A mounting stud,  
max. orifice = 1/4" (6.35mm)<sup>††</sup>**OB** = Omit body (operator style)**BI** = Bottom over-seat port, female thread  
– max. orifice = 1/4" (6.35mm)**BO** = Bottom under-seat port, female thread**7 Voltage<sup>†</sup> (see note below)****C203** = 12 VDC ⚡**C204** = 24 VDC ⚡**C301** = 120/50/60R (add Coil Option -10) ⚡**C303** = 240/50/60R (add Coil Option -10) ⚡\_\_\_ **VDC** = DC (specify voltage)\_\_\_ **VAC** = AC (specify voltage; includes copper shading ring)**8 Additional Options****WM** = Mounting bracket on the coil housing**TP** = PTFE coated plunger**CP** = Chamfered plunger**S** = Silver shading ring**OC** = Cleaned for oxygen use**VAC** = Vacuum application – 0 to 29.5" Hg (0 to 1000mBar)**G5** = One piece 316 Stainless Steel guide assembly\* Standard selection; will be used unless otherwise specified.  
Standard selections are not referenced in final part number.<sup>†</sup> Can be AC rectified without shading ring. Use coil construction Code 10.  
<sup>††</sup> Teflon® o-ring not suitable for manifold mount.

Take advantage of next day shipping by making your selections from those marked with the Lightning Bolt icon.