

en

*Clippard*

miniature pneumatic

» we invented it

electronic valves  
metric catalogue





Founded in 1941 by W. L. Clippard, Jr., the company started out manufacturing electronic test equipment. In the 1950's, Mr. Clippard recognized a need for miniature pneumatic devices in manufacturing, and began to produce a small line of component products. The appeal of these products was such that by the late 1960's, Clippard Instrument Laboratory was strictly a pneumatic manufacturer.

The company has continued to have steady growth through the years bolstered by periodic introductions of new and innovative products. These have included such products as the Modular series and the Mouse Valve series; the Electronic Proportional Valves, and Electronic Manifold Cards.

Today, the company remains family-owned. Manufacturing facilities are located in Cincinnati and Fairfield, Ohio; as well as a distribution and technical support center in Louvain-La-Neuve, Belgium.

Clippard is in its seventh decade of supplying fluid power, motion and process control devices to the Scientific, Medical, Dental, and Analytical markets. We understand the need for precision, reliability and purity in your critical applications and are dedicated to providing expert solutions to meet and exceed your expectations. We ensure that every product meets the highest standards of quality and performance by 100% testing all products before they reach our customers.

In addition to the Scientific market segment, Clippard offers expertise in a wide variety of markets utilizing numerous types of applications. From Semiconductor to Printing, Automotive to Packaging, our products are engineered to the exact specifications you require.

Supported by a platform of over 5,000 standard products, as well as customized solutions, we have the capability to provide you with a full range of products designed to meet the unique demands of your application. For a complete description of these products, please visit our website at [www.clippard.com](http://www.clippard.com) or [www.clippard.eu](http://www.clippard.eu).

Clippard Europe, Belgium



Cincinnati, Ohio (headquarters)



Fairfield, Ohio



## 02 Contents – Electronic Mouse Valve Series



### M-EV Series Mouse Valves

2/2 and 3/2 manifold and in-line mounting.  
Normally-Closed and fully-ported versions.  
[See Pages 06 - 21](#)



### Corrosion-Resistant (MCR-EV) Series Mouse Valves

Enhanced plating and some stainless steel components add to the life of this valve used with mildly corrosive media, such as moisture in air or gases.  
[See Pages 10 - 19](#)



### “Oxygen Clean” (MO-EV) Series Mouse Valves

Specially-cleaned valves for analytical or Oxygen use.  
[See Pages 10 - 21](#)



### M-ECN, M-EVN, M-ETN Mouse Valves

Normally-Open, manifold mount to allow Normally-Closed and Normally-Open valves on the same manifold.  
[See Pages 20 + 21](#)



### Electronic Analytical (MA-EV) Series Mouse Valves

Specially-cleaned valves and special features for the analytical industry.  
[See Pages 10 + 11](#)

**NEW**



### M-DV Series High Flow 2/2 Bidirectional Electronic Valves

The next “Gen” Valve that is compact, quick and offers flows to 100 l/min.  
[See Pages 28 - 31](#)

**NEW**



### M-SV 7mm 2/2 Normally-Closed Electronic Valves

The new series of direct acting valves that offer an extremely fast response time  
[See Pages 32 + 33](#)



### M-EVP Series Proportional Mouse Valves

Proportional control provides variable output flow. 2/2 only.  
[See Pages 34 - 39](#)



### EVP Proportional Valve Driver (EVPD)

Plug-and-Play Control for Proportional Valves.  
[See Pages 38 + 39](#)



## Stepper-Controlled Proportional Valve (M-SCPV)

High Flow Stepper-Controlled linear actuator with acme lead screw.  
See Pages 40 - 43



## M-ES Series Mouse Valves

Alternate mounting with same compact design and reliability.  
See Pages 44 - 49



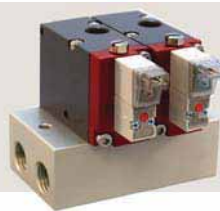
## 10 mm Valves

High quality and interchangeable 2/2 and 3/2 solenoid valves.  
Clippard's smallest electronic valve series.  
See Pages 50 - 63



## 15 mm Valves

Higher flow and manifold mount. Variety of electrical connections  
and AC/DC power.  
See Pages 64 - 76



## M-EGV Series Electronic High Flow Poppet Valves

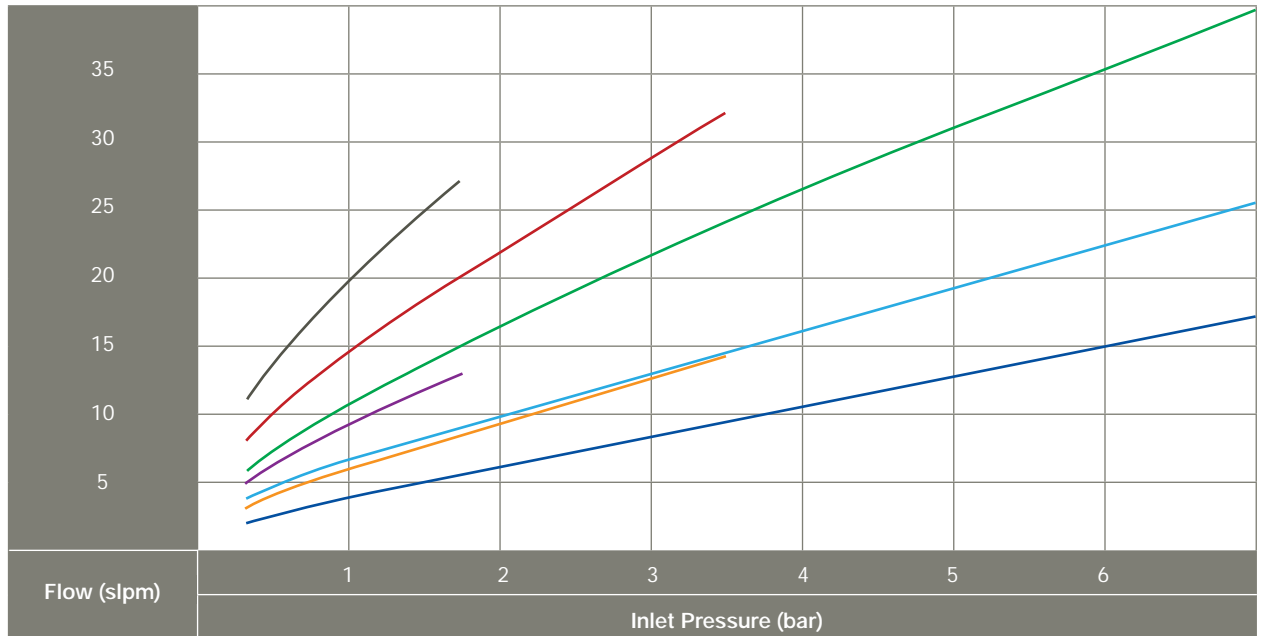
Electronically piloted version of the GV series Valves  
See Pages 77 - 80

## Clippard Mouse Series Electronic Valves

- Functional Simplicity – One Moving Part!
- 1.000.000.000 + Cycle Life
- Fast Reponse
- Low Heat Rise
- Quiet Operations

## 04 Electronic Valves – Gas Flow + Electrical Specifications

### Typical Air Flow



— ECR, ETR, EVR, EWR -H Series  
— ECR, ETR, EVR, EWR -L Series  
— ECR, ETR, EVR, EWR Series  
— ECN, EVN, ETN Series

— EC, EM, ES, ET, EV, EW -H Series  
— EC, EM, ES, ET, EV, EW -L Series  
— EC, EM, ES, ET, EV, EW Series



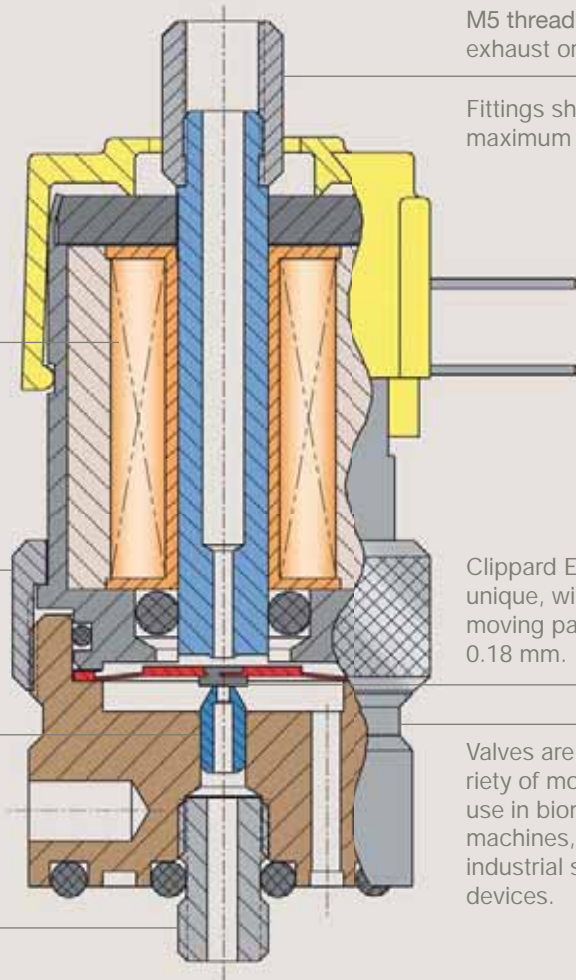
All Clippard standard ET, EC and EV valves are recognized under the Component Program of Underwriters Laboratories, Inc. File No. MH 13573

Low power coil uses only 0.67 watts at the rated voltage. Standard voltages include 12 and 24. Other voltages are available.

Adjusting ring may be loosened for positioning to orient connections. **DO NOT REMOVE.** Parts orientation will be lost and warranty voided.

Standard orifice is 0.6 mm.  
Also available are:  
L - 1 mm orifice  
H - 1.5 mm orifice.

Manifold mount base shown permits fast, secure mounting of electronic valves to manifolds for grouping in compact assemblies. Alternate standard model has convenient mounting holes.



ETO and similar styles have top M5 threaded fitting for N.C. exhaust or N.O. inlet.

Fittings should be tightened to a maximum of 1 Nm.

Clippard Electronic Valves are unique, with only one internal moving part that travels a mere 0.18 mm.

Valves are small in size with a variety of mounting options. Ideal for use in biomedical, test equipment, machines, computer-directed industrial systems, and in portable devices.

## Clippard's Unique Electronic Mouse Valves

Clippard's Electronic Valves are quiet and quick! Valves accept low voltage, low current signals, convert them into high pressure (7 bar) pneumatic outputs. Optional low pressure/medium flow and low pressure/high flow are available. (The air supply should be reasonably clean and dry for optimum performance. Recommended filtration is 40 micron.)

Clippard Minimatic electronic valves are precision-built 2/2 or 3/2 control valves, utilizing a unique patented, valving principle. There are no sliding parts. Complete poppet travel is a mere 0.18 mm. As a result, low power consumption and exceptionally long life are major benefits of this design. The valves are very quiet in operation and also very cool. The valves' small size makes them well suited to a wide range of applications in biomedical, environmental test equipment, textile machines, packaging machinery, computerized industrial automation, and portable systems.



## 06 Electronic Valves – The Mouse Valve Series



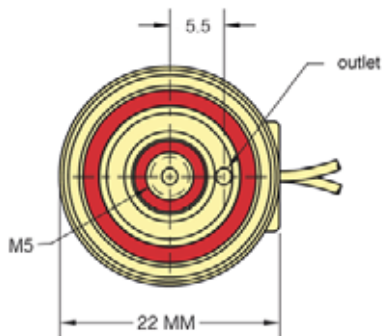
### Clippard Functional Simplicity

- The design of Clippard electronic valves is a deceptively simple arrangement with a minimum of operating parts, and remarkably straight forward low power operation.
- The Clippard “spider” is the only moving part and its motion to operate the valve is a mere 0.18 mm travel.
- Low voltage D.C. inputs, signals from simple manual switching up to computer directed systems, move the spider in extremely fast response time ... 5 to 10 milliseconds.
- The unit uses extremely low power (0.67 watts at the rated voltage) and is cool running. The valves are light in weight, compact in physical size and mount easily in space-saving packages.



### Quick Connect

Clippard ET valves feature spade lugs for simple, quick secure low voltage connections. Wire crimp-on spade lug connectors are available separately to adapt electronic wiring where necessary. Clippard original EV type valves are available in popular voltages with 450 mm wire leads. The EC model utilizes a 0.6 mm square pin connector.





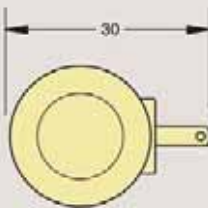
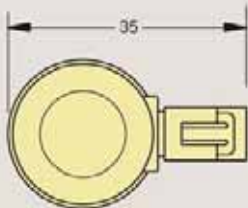
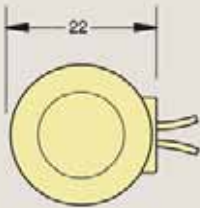



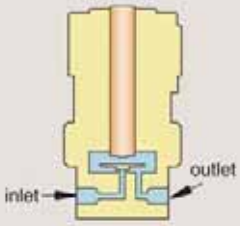
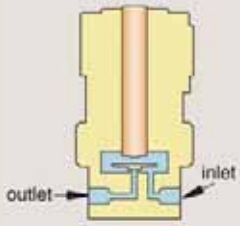
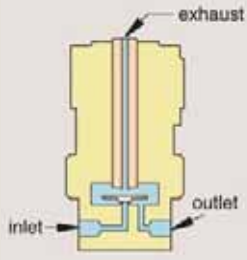
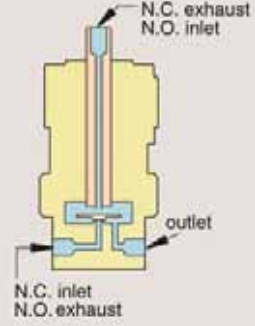
### Easy Mounting


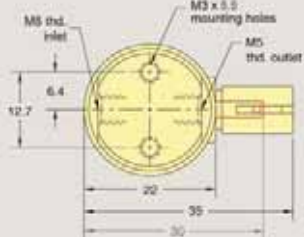


The complete line of EC, EV, ET and EW electronic valves are available with two mounting options. Standard base models have two M3 x 5.5 mounting holes. Manifold models are equipped with a bottom stud, with M5 x 4 thread, which fits Clippard standard and special manifolds, accessory valves and subplates. Spanner holes in the valve body permit tightening.

Series	Nominal			Power (watts)	Working range (cont. duty)
	Voltage	Current (amps)	Resistance (ohms)		
Standard Oxygen Clean Analytical	12	0.055	218	0.67	90 to 150% of rated voltage
	24	0.028	864	0.67	
Corrosion- Resistant	12	0.098	122	1.2	90 to 110% of rated voltage
	24	0.049	486	1.2	
EM Series	12	0.083	144	1.0	90 to 120% of rated voltage
ES Series	24	0.042	576	1.0	



Electrical Connection Options			
Terminal Spades (ET-)	0.6 mm Pin Connector (EC-)	Wire Leads Side (Radial EV-)	Wire Leads Top (Axial EW-)
			
			

Valve Types			
2/2 Normally-Closed ET-2, EC-2, EV-2, EW-2	2/2 Normally-Closed High Flow ETR-2, ECR-2, EVR-2, EWR-2	3/2 Normally-Closed ET-3, EC-3, EV-3, EW-3	3/2 Fully-Ported, ETO-3, ECO-3, EVO-3, EWO-3
			

Mounting Options			
In-Line Mount	In-Line Mount	Manifold Mount	Manifold Mount
			

## 08 Electronic Valves – Custom Solutions



Clippard's Electronic Valves are incredibly flexible from a production standpoint.

- Custom Voltage
- Custom Flow Rate
- Custom Max Pressure/Vacuum

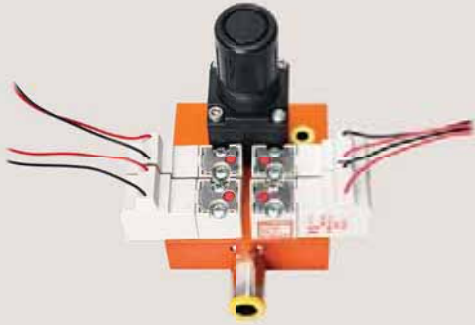


**Tight Assemblies**  
Cartridge design is desirable for integrating valves into compact assemblies. This EVP proportional valve is calibrated to meet the customers flow range and maintain „zero“ leak rate, and is incorporated into the OEM's manifold.



Clippard Integrated Solutions offer optimized pneumatic system design to increase performance, reduce cost, and make your job easier.

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need. Let us know YOUR Need, and we will help to find YOUR Solution!



### Sub-Assembly Manifold for Medical Applications

In order to blend the proper amount of gases to obtain a desired level of anesthesia, these units utilize the capabilities of Clippard control and electronic valves series. These valves allow you to deliver an accurate and continuous supply of gases with a precise concentration to the patient at a safe pressure and flow.

## 10 Electronic Valves – Mouse Valve Series Description



### Oxygen Clean Series (MO-)

All EV, ET, EC and EW series electronic valves with the “MO-” part number option are available manufactured and assembled for use in Oxygen-enriched environments for applications that are extremely sensitive to contamination.

- Valves are ultrasonically cleaned, assembled, inspected and tested in an enclosed controlled area with a state-of-the-art positive pressure HEPA filtration system
- Both organic and inorganic contaminants such as particulate matter and Hydrocarbon oils are removed
- No organic sealants, adhesives or lubricants are used in the manufacturing process
- Feature FKM (fluorocarbon) seals
- Component parts are lubricated with Oxygen compatible PFPE (perfluoropolyether) grease, only as needed for assembly
- Individual testing and inspection is accomplished utilizing compressed Nitrogen and ultra-violet light

For more information on the process, visit [www.clippard.com/products/electronic-valve-ev](http://www.clippard.com/products/electronic-valve-ev).



### Electronic Analytical Series (MA-)

Clippard’s Electronic Analytical Valve (MA-) series combines the proven features of the “Mouse” series with the specific needs of the analytical industry, and for applications where cleanliness is especially important. Special materials, manufacturing and assembly processes make this valve perfectly suited for applications where internal cleanliness, bubble-tight operation, and long life are imperative.

For more information on the process, visit [www.clippard.com/products/electronic-valve-ev](http://www.clippard.com/products/electronic-valve-ev).

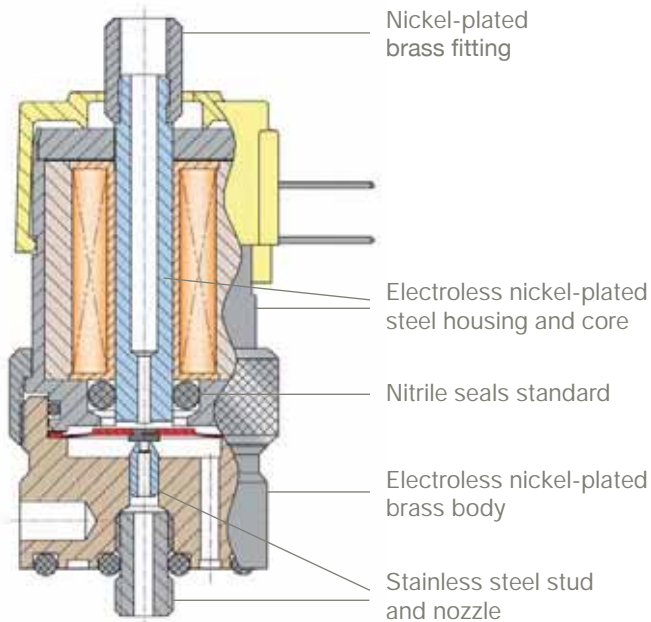


### Corrosion-Resistant Series (MCR-)

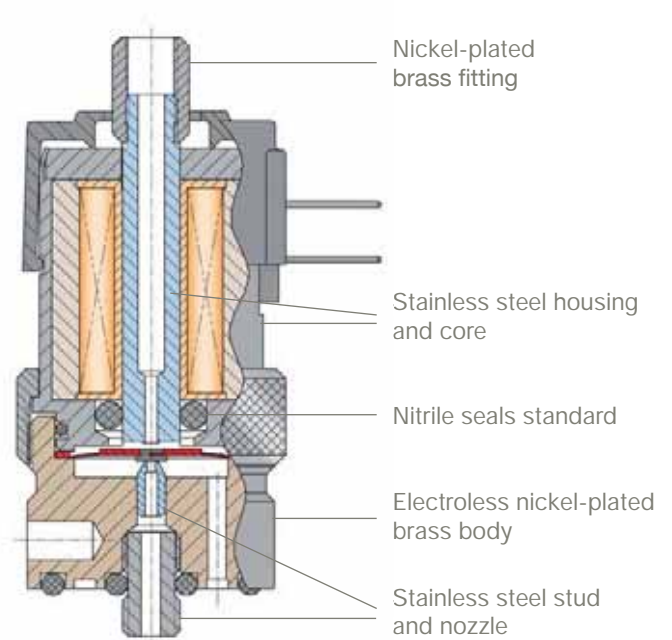
Clippard’s Corrosion-Resistant Series (MCR-) incorporates materials and construction that provides enhanced protection for valves used with mildly corrosive media. Moisture in air or gases, or other corrosive elements cause less damage to the stainless steel elements of the valve. Where stainless steel is not possible, plating is incorporated to add life to wear components. A nickel-plated brass valve body is standard, but stainless steel may be substituted.

For more information on the process, visit [www.clippard.com/products/electronic-valve-ev](http://www.clippard.com/products/electronic-valve-ev).

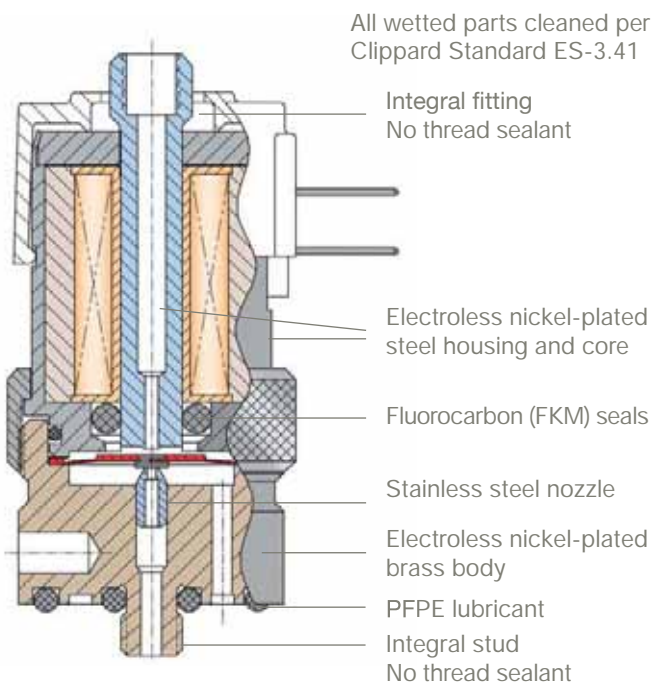
**Standard Series**



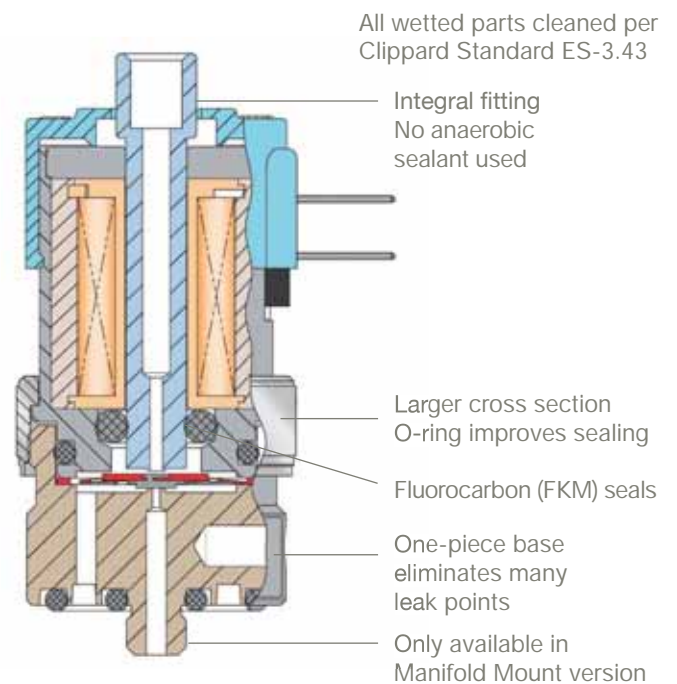
**Corrosion-Resistant Series (MCR-)**







**Cleaned for Oxygen Series (MO-)**



**Electronic Analytical Series (MA-)**



## 12 Electronic Valves – 2/2 Normally-Closed Valves, In-Line + Manifold

Electrical Connection Options	Pressure Range Vac. to			Voltage		Part No.	
	7 bar +	3.5 bar	1.8 bar	12 VDC	24 VDC	In-Line Mount	Manifold Mount
 Terminal Spades	•			•		M-ET-2-12	M-ET-2M-12
	•				•	M-ET-2-24	M-ET-2M-24
		•		•		M-ET-2-12-L	M-ET-2M-12-L
		•			•	M-ET-2-24-L	M-ET-2M-24-L
			•	•		M-ET-2-12-H	M-ET-2M-12-H
			•		•	M-ET-2-24-H	M-ET-2M-24-H
 0.6 mm Pin Connector	•			•		M-EC-2-12	M-EC-2M-12
	•				•	M-EC-2-24	M-EC-2M-24
		•		•		M-EC-2-12-L	M-EC-2M-12-L
		•			•	M-EC-2-24-L	M-EC-2M-24-L
			•	•		M-EC-2-12-H	M-EC-2M-12-H
			•		•	M-EC-2-24-H	M-EC-2M-24-H
 Wire Leads Side (Radial)	•			•		M-EV-2-12	M-EV-2M-12
	•				•	M-EV-2-24	M-EV-2M-24
		•		•		M-EV-2-12-L	M-EV-2M-12-L
		•			•	M-EV-2-24-L	M-EV-2M-24-L
			•	•		M-EV-2-12-H	M-EV-2M-12-H
			•		•	M-EV-2-24-H	M-EV-2M-24-H
 Wire Leads Top (Axial)	•			•		M-EW-2-12	M-EW-2M-12
	•				•	M-EW-2-24	M-EW-2M-24
		•		•		M-EW-2-12-L	M-EW-2M-12-L
		•			•	M-EW-2-24-L	M-EW-2M-24-L
			•	•		M-EW-2-12-H	M-EW-2M-12-H
			•		•	M-EW-2-24-H	M-EW-2M-24-H



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
0.67 watt (CR Series: 1.2 watt)

Temperature Range:  
0 to 82°C  
(CR Series: 0 to 66°C)

Response:  
5 to 10 milliseconds (nominal)

Operating Range:  
90 to 150% of rated voltage  
(CR Series: ±10%)

Ports:  
M5

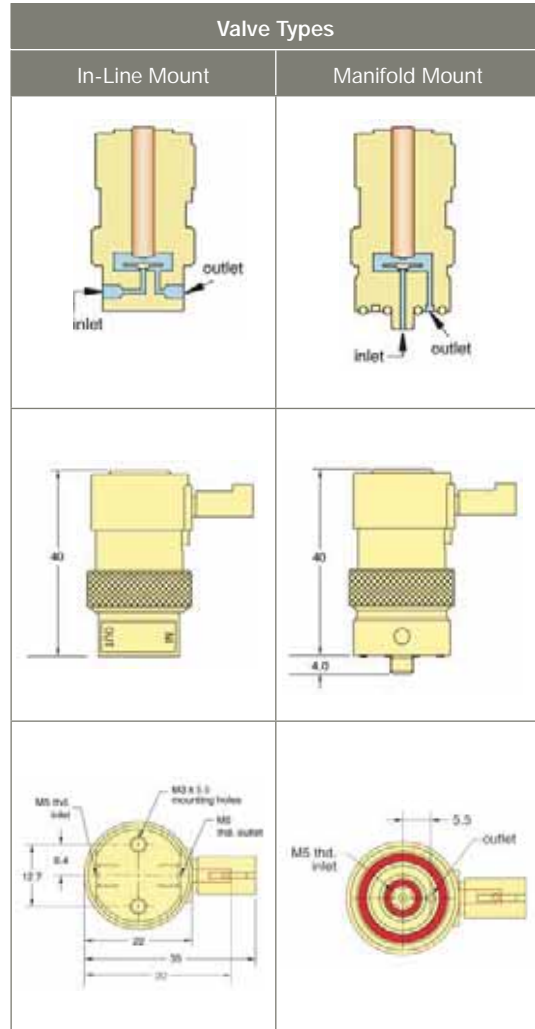


# Electronic Valves – 2/2 Normally-Closed Valves, In-Line + Manifold

Valve Series	Standard	Non-Standard
Standard	M-	See Pages 10 + 11 for further information
Oxygen Clean	MO-	
Corrosion-Resistant	MCR-	
Electronic Analytical *	MA-	
Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPR Seals	-	-E
Silicone Seals	-	-S
Diode **	-	-D





\* Available on manifold mount valves and with FKM seals only  
 \*\* Only available with the EC-Version  
 Example Part No's: M-ET-3M-12-V, MCR-ET-2-12  
 See Page 7 for mounting options

Pressure Range	Suffix	Air Flow
700 mm Hg to 7 bar	-	17 l/min. @ 7 bar
700 mm Hg to 3.5 bar	(-L)	14 l/min. @ 3.5 bar
700 mm Hg to 1.8 bar	(-H)	13 l/min. @ 1.8 bar





# 14 Electronic Valves – 2/2 Normally-Closed High Flow Valves, In-Line + Manifold Mount

Electrical Connection Options	Pressure Range Vac. to			Voltage		Part No.	
	7 bar +	3.5 bar	1.8 bar	12 VDC	24 VDC	In-Line Mount	Manifold Mount
 Terminal Spades	•			•		M-ETR-2-12	M-ETR-2M-12
	•				•	M-ETR-2-24	M-ETR-2M-24
		•		•		M-ETR-2-12-L	M-ETR-2M-12-L
		•			•	M-ETR-2-24-L	M-ETR-2M-24-L
			•	•		M-ETR-2-12-H	M-ETR-2M-12-H
			•	•	•	M-ETR-2-24-H	M-ETR-2M-24-H
 0.6 mm Pin Connector	•			•		M-ECR-2-12	M-ECR-2M-12
	•				•	M-ECR-2-24	M-ECR-2M-24
		•		•		M-ECR-2-12-L	M-ECR-2M-12-L
		•			•	M-ECR-2-24-L	M-ECR-2M-24-L
			•	•		M-ECR-2-12-H	M-ECR-2M-12-H
			•	•	•	M-ECR-2-24-H	M-ECR-2M-24-H
 Wire Leads Side (Radial)	•			•		M-EVR-2-12	M-EVR-2M-12
	•				•	M-EVR-2-24	M-EVR-2M-24
		•		•		M-EVR-2-12-L	M-EVR-2M-12-L
		•			•	M-EVR-2-24-L	M-EVR-2M-24-L
			•	•		M-EVR-2-12-H	M-EVR-2M-12-H
			•	•	•	M-EVR-2-24-H	M-EVR-2M-24-H
 Wire Leads Top (Axial)	•			•		M-EWR-2-12	M-EWR-2M-12
	•				•	M-EWR-2-24	M-EWR-2M-24
		•		•		M-EWR-2-12-L	M-EWR-2M-12-L
		•			•	M-EWR-2-24-L	M-EWR-2M-24-L
			•	•		M-EWR-2-12-H	M-EWR-2M-12-H
			•	•	•	M-EWR-2-24-H	M-EWR-2M-24-H



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
1.2 watt

Temperature Range:  
0 to 66°C

Response:  
10 milliseconds (nominal)

Operating Range:  
±10% of rated voltage

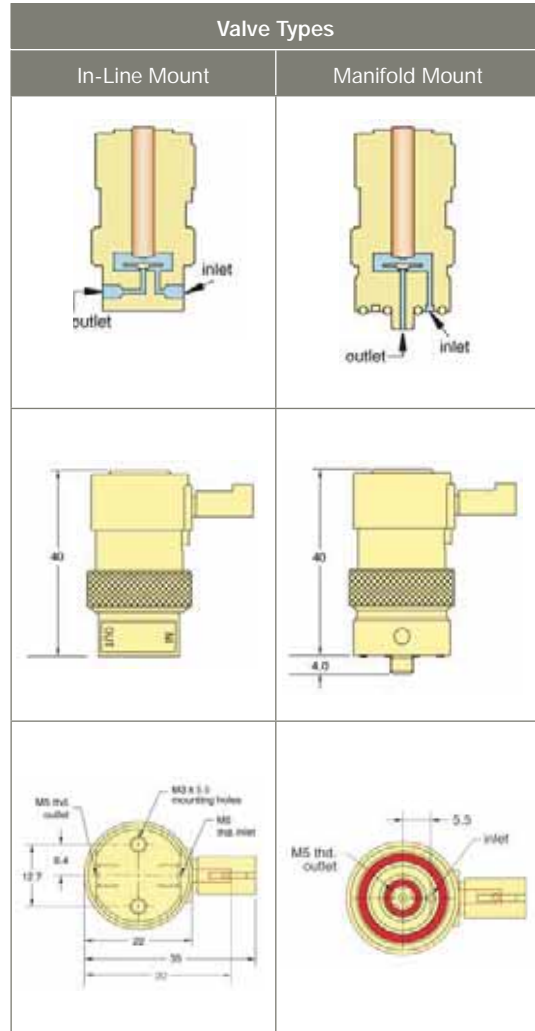
Ports:  
M5

# Electronic Valves – 2/2 Normally-Closed High Flow Valves, In-Line + Manifold Mount





Valve Series	Standard	Non-Standard
Standard	M-	See Pages 10 + 11 for further information
Electronic Analytical *	MA-	
Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPR Seals	-	-E
Silicone Seals	-	-S
Diode **	-	-D

\* Available on manifold mount valves and with FKM seals only  
 \*\* Only available with the EC-Version

Pressure Range	Suffix	Air Flow
700 mm Hg to 7 bar	(blank)	39 l/min. @ 7 bar
700 mm Hg to 3.5 bar	-L	32 l/min. @ 3.5 bar
700 mm Hg to 1.8 bar	-H	27 l/min. @ 1.8 bar



# 16 Electronic Valves – 3/2 Normally-Closed Valves, In-Line + Manifold

Electrical Connection Options	Pressure Range Vac. to			Voltage		Part No.	
	7 bar +	3.5 bar	1.8 bar	12 VDC	24 VDC	In-Line Mount	Manifold Mount
 Terminal Spades	•			•		M-ET-3-12	M-ET-3M-12
	•				•	M-ET-3-24	M-ET-3M-24
		•		•		M-ET-3-12-L	M-ET-3M-12-L
		•			•	M-ET-3-24-L	M-ET-3M-24-L
			•	•		M-ET-3-12-H	M-ET-3M-12-H
			•	•	•	M-ET-3-24-H	M-ET-3M-24-H
 0.6 mm Pin Connector	•			•		M-EC-3-12	M-EC-3M-12
	•				•	M-EC-3-24	M-EC-3M-24
		•		•		M-EC-3-12-L	M-EC-3M-12-L
		•			•	M-EC-3-24-L	M-EC-3M-24-L
			•	•		M-EC-3-12-H	M-EC-3M-12-H
			•	•	•	M-EC-3-24-H	M-EC-3M-24-H
 Wire Leads Side (Radial)	•			•		M-EV-3-12	M-EV-3M-12
	•				•	M-EV-3-24	M-EV-3M-24
		•		•		M-EV-3-12-L	M-EV-3M-12-L
		•			•	M-EV-3-24-L	M-EV-3M-24-L
			•	•		M-EV-3-12-H	M-EV-3M-12-H
			•	•	•	M-EV-3-24-H	M-EV-3M-24-H
 Wire Leads Top (Axial)	•			•		M-EW-3-12	M-EW-3M-12
	•				•	M-EW-3-24	M-EW-3M-24
		•		•		M-EW-3-12-L	M-EW-3M-12-L
		•			•	M-EW-3-24-L	M-EW-3M-24-L
			•	•		M-EW-3-12-H	M-EW-3M-12-H
			•	•	•	M-EW-3-24-H	M-EW-3M-24-H



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
0.67 watt (CR Series: 1.2 watt)

Temperature Range:  
0 to 82°C  
(CR Series: 0 to 66°C)

Response:  
5 to 10 milliseconds (nominal)

Operating Range:  
90 to 150% of rated voltage  
(CR Series: ±10%)

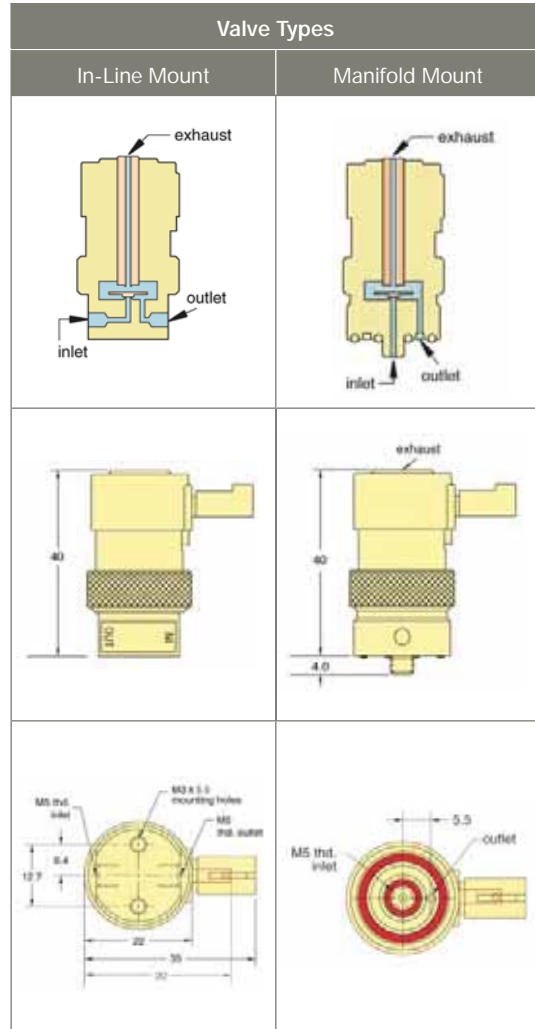
Ports:  
M5

# Electronic Valves – 3/2 Normally-Closed Valves, In-Line + Manifold





Valve Series	Standard	Non-Standard
Standard	M-	See Pages 10 + 11 for further information
Oxygen Clean	MO-	
Corrosion-Resistant	MCR-	
Electronic Analytical *	MA-	
Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPR Seals	-	-E
Silicone Seals	-	-S
Diode **	-	-D

\* Available on manifold mount valves and with FKM seals only  
 \*\* Only available with the EC-Version  
 Example Part No's: M-ET-3-12-S, MO-EW-3-24  
 See Page 7 for mounting options

Pressure Range	Suffix	Air Flow
700 mm Hg to 7 bar	-	17 l/min. @ 7 bar
700 mm Hg to 3.5 bar	(-L)	14 l/min. @ 3.5 bar
700 mm Hg to 1.8 bar	(-H)	13 l/min. @ 1.8 bar



# 18 Electronic Valves – 3/2 Fully-Ported Valves, In-Line + Manifold

Electrical Connection Options	Pressure Range Vac. to			Voltage		Part No.	
	7 bar +	3.5 bar	1.8 bar	12 VDC	24 VDC	In-Line Mount	Manifold Mount
 <p>Terminal Spades</p>	•			•		M-ETO-3-12	M-ETO-3M-12
	•				•	M-ETO-3-24	M-ETO-3M-24
		•		•		M-ETO-3-12-L	M-ETO-3M-12-L
		•			•	M-ETO-3-24-L	M-ETO-3M-24-L
			•	•		M-ETO-3-12-H	M-ETO-3M-12-H
			•	•		M-ETO-3-24-H	M-ETO-3M-24-H
 <p>0.6 mm Pin Connector</p>	•			•		M-ECO-3-12	M-ECO-3M-12
	•				•	M-ECO-3-24	M-ECO-3M-24
		•		•		M-ECO-3-12-L	M-ECO-3M-12-L
		•			•	M-ECO-3-24-L	M-ECO-3M-24-L
			•	•		M-ECO-3-12-H	M-ECO-3M-12-H
			•	•		M-ECO-3-24-H	M-ECO-3M-24-H
 <p>Wire Leads Side (Radial)</p>	•			•		M-EVO-3-12	M-EVO-3M-12
	•				•	M-EVO-3-24	M-EVO-3M-24
		•		•		M-EVO-3-12-L	M-EVO-3M-12-L
		•			•	M-EVO-3-24-L	M-EVO-3M-24-L
			•	•		M-EVO-3-12-H	M-EVO-3M-12-H
			•	•		M-EVO-3-24-H	M-EVO-3M-24-H
 <p>Wire Leads Top (Axial)</p>	•			•		M-EWO-3-12	M-EWO-3M-12
	•				•	M-EWO-3-24	M-EWO-3M-24
		•		•		M-EWO-3-12-L	M-EWO-3M-12-L
		•			•	M-EWO-3-24-L	M-EWO-3M-24-L
			•	•		M-EWO-3-12-H	M-EWO-3M-12-H
			•	•		M-EWO-3-24-H	M-EWO-3M-24-H



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
0.67 watt (CR Series: 1.2 watt)

Temperature Range:  
0 to 82°C  
(CR Series: 0 to 66°C)

Response:  
5 to 10 milliseconds (nominal)

Operating Range:  
90 to 150% of rated voltage  
(CR Series: ±10%)

Ports:  
M5

# Electronic Valves – 3/2 Fully-Ported Valves, In-Line + Manifold

Valve Series	Standard	Non-Standard
Standard	M-	See Pages 10 + 11 for further information
Oxygen Clean	MO-	
Corrosion-Resistant	MCR-	
Electronic Analytical *	MA-	
Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPR Seals	-	-E
Silicone Seals	-	-S
Diode **	-	-D

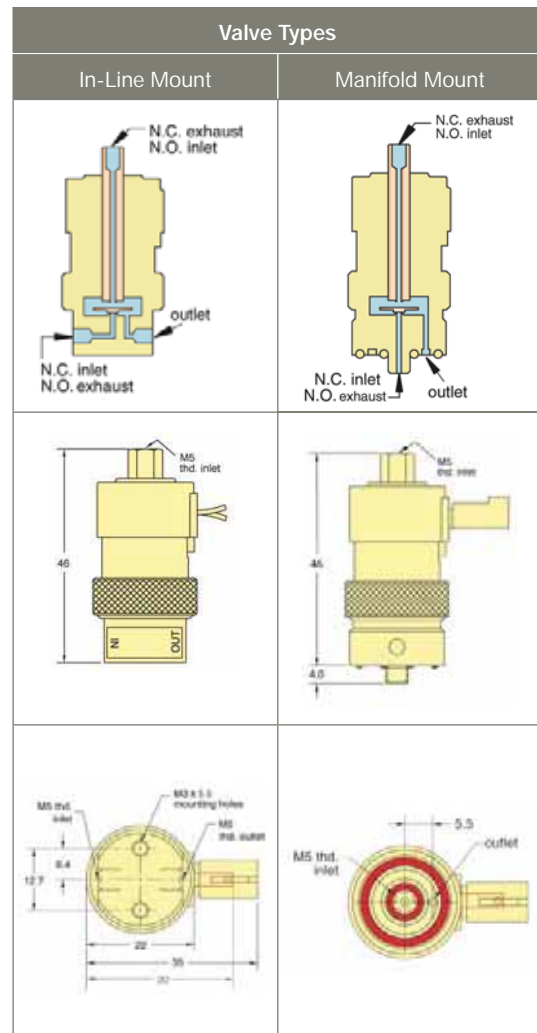
\* Available on manifold mount valves and with FKM seals only

\*\* Only available with the EC-Version

Example Part No's: M-ETO-3M-24-D, MCR-EVO-3-12




See Page 7 for mounting options

Pressure Range	Suffix	Air Flow
700 mm Hg to 7 bar	-	17 l/min. @ 7 bar
700 mm Hg to 3.5 bar	(-L)	14 l/min. @ 3.5 bar
700 mm Hg to 1.8 bar	(-H)	13 l/min. @ 1.8 bar





## 20 Electronic Valves – 2/2 + 3/2 Normally-Open Valves, Manifold

Electrical Connection Options		Voltage		Part No.	
2/2	3/2	12 VDC	24 VDC	2/2	3/2
 <p>Terminal Spades</p>		•	•	M-ETN-2M-12	M-ETN-3M-12
 <p>0.6 mm Pin Connector</p>		•	•	M-ECN-2M-12	M-ECN-3M-12
 <p>Wire Leads Side (Radial)</p>		•	•	M-EVN-2M-12	M-EVN-3M-12
				M-ETN-2M-24	M-ETN-3M-24
				M-ECN-2M-24	M-ECN-3M-24
				M-EVN-2M-24	M-EVN-3M-24



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
0.67 watt

Temperature Range:  
0 to 82°C

Response:  
5 to 10 milliseconds (nominal)

Operating Range:  
90 to 150% of rated voltage

Voltage:  
12 VDC or 24 VDC.  
Other voltages available  
upon request.

Ports:  
M5

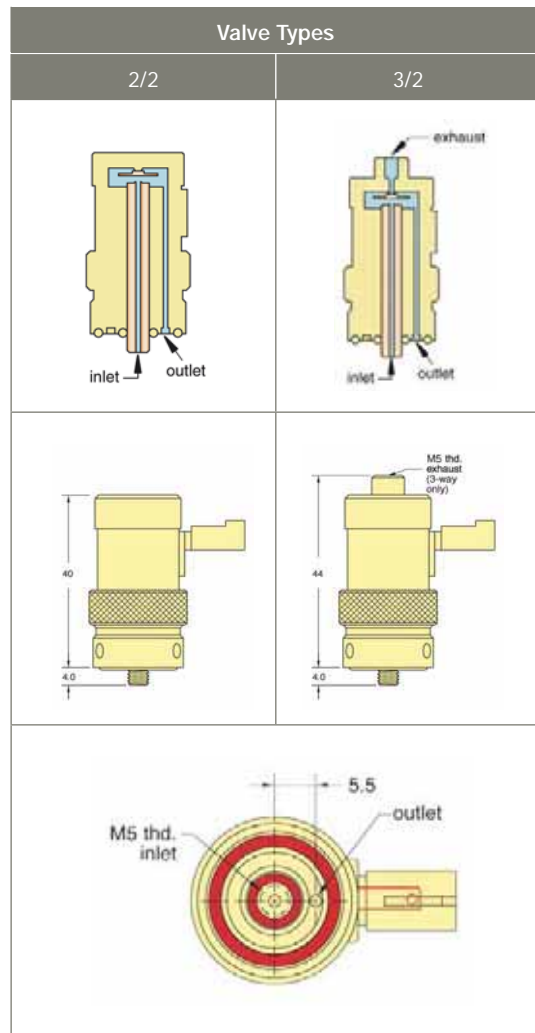


# Electronic Valves – 2/2 + 3/2 Normally-Open Valves, Manifold

Valve Series	Standard	Non-Standard
Standard	M-	See Pages 10 + 11
Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPR Seals	-	-E
Silicone Seals	-	-S
Diode *	-	-D

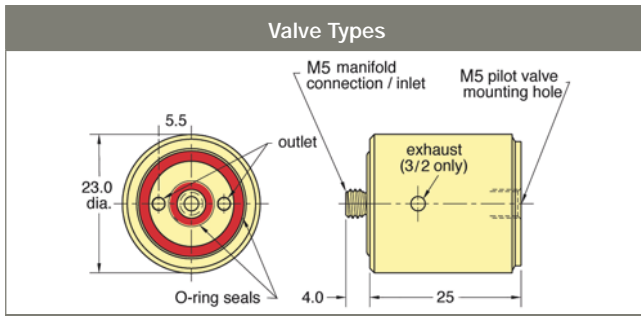
\* Only available with the EC-Version  
 Example Part No's: M-EVN-2M-12  
 See Page 7 for mounting options

Pressure Range	Air Flow
700 mm Hg to 7 bar	25 l/min. @ 7 bar



## 22 Electronic Valves Booster

### M-EVB Piloted 2/2 + 3/2 Normally-Closed, Pressure Piloted Valves, Manifold Mount



Input Pressure	Air Flow
1.5 to 10 bar	175 l/min. @ 7 bar

Part No.	Description
M-EVB-2	2/2 Valve Booster
M-EVB-3	3/2 Valve Booster

Medium:  
Air

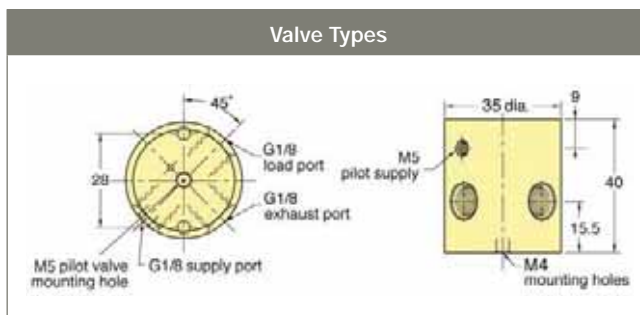
Response:  
20 milliseconds at 1.5 bar  
13 milliseconds at 7 bar

Materials:  
Nickel-plated brass, acetyl, stainless steel and Buna-N

Ports:  
Inlet and outlet through manifold

Note:  
Use only 3/2, NC or EVN, Pilot Valve

### 3/2 Normally-Closed, Pressure Piloted Valves



Input Pressure	Air Flow
2 to 7 bar *	850 l/min. @ 7 bar

\* call for special configurations

Part No.	Description
M-2020	External Piloted Valve with M5 port
M-2021	Internal Piloted Valve

Medium:  
Air

Pilot Pressure:  
(2020) 60% of supply pressure, minimum

Response:  
Approximately 20 milliseconds

Materials:  
Anodized Aluminum, stainless steel and Buna-N

Mounting:  
Mounting holes M4

Ports:  
Inlet and outlet, exhaust G1/8.  
Pilot supply on 2020 is M5 female

Note:  
Use only 3/2, NC or EVN, Pilot Valve

## ET Valve Connectors

Black molded lug connectors are available for easy push-on connection. ET-C48 is 1.2 m in length, ET-C120 is 3 m in length.



Part No.	Wire Length
ET-C48	1.2 m
ET-C120	3 m

## ET Valve Connectors

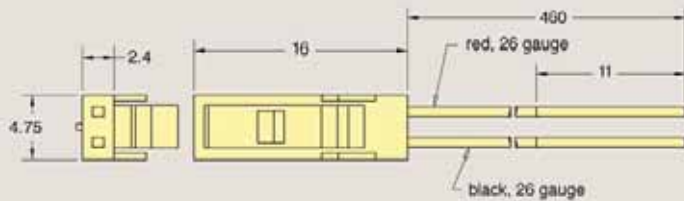
Insulated crimp-on spade lug connectors are available for wiring up leads to connect an electronic circuit to ET style valves. Accepts #22, #24, or #26 wire.



Part No.	Connector
M-3831-1	Spade Lug

## EC + EI Valve Connectors

TE Connectivity #5-103956-1 with 0.46 m or 3 m wire leads for EC/ECO valves.




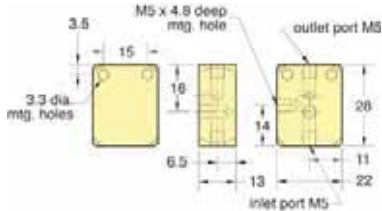

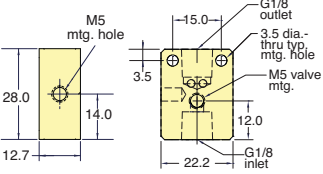
Part No.	Wire Length
C2-RB18	0.46 m
C2-RB120	3 m

## Custom Solutions Custom Ports + Connectors


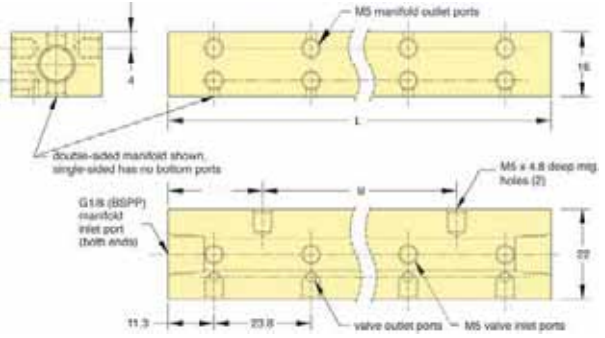
If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs.

# 24 Electronic Valves – EV, ET, EC + EW Valve Manifolds

## Single Manifolds

Single Manifolds		
		M-15490-4 and MO-15490-4 (Oxygen Clean). M5 Ports
		M-15490-5 and MO-15490-5 (Oxygen Clean). G1/8 Ports

## Multi-Valve Manifolds

Multi-Valve Manifolds	
	
Construction: Black anodized aluminium	

Single-Sided		Double-Sided		Length	Mtg.
Part No.	Stations	Part No.	Stations	L	M
M-15481-2	2	M-15482-4	4	46	24
M-15481-4	4	M-15482-8	8	94	48



Material:  
ENP brass

Use:  
Mount EV, ET and EC valves to any M5 and G1/8 supply port.

## Oxygen Clean Manifolds

Multi-station manifolds are available for use with Clippard’s Oxygen Clean series electronic valves. These manifolds offer either single-sided or double-side mounting in Oxygen-compatible ENP brass material.

The Oxygen series products are manufactured and assembled for applications in Oxygen-enriched environments which are extremely sensitive to contamination. Each manifold is cleaned according to Clippard Specification #ES-3.41, and double bagged in heat-sealed polyethylene bags.



Single-Sided		Double-Sided		Length	Mtg.
Part No.	Stations	Part No.	Stations	L	M
MO-15581-2	2	MO-15582-4	4	46	24
MO-15581-4	4	MO-15582-8	8	94	48

Medium:  
O<sub>2</sub> or air

Materials:  
ENP brass

Inlet Ports:  
G1/8

Mounting:  
M5 tapped holes

Outlet Ports:  
M5

# 26 Electronic Valves – EM Stud Mount 2/2 + 3/2 Valves

2/2 + 3/2 N.C. + 3/2 N.O./N.C. Valves, Manifold Mount

Pressure Range Vac. to			Voltage		Part No.		
7 bar +	3.5 bar	1.8 bar	12 VDC	24 VDC	2/2 N.C.	3/2 N.C.	3/2 N.O./N.C.
•			•		M-EM-2-12	M-EM-3-12	M-EMO-3-12
•				•	M-EM-2-24	M-EM-3-24	M-EMO-3-24
	•		•		M-EM-2-12-L	M-EM-3-12-L	M-EMO-3-12-L
	•			•	M-EM-2-24-L	M-EM-3-24-L	M-EMO-3-24-L
		•	•		M-EM-2-12-H	M-EM-3-12-H	M-EMO-3-12-H
		•		•	M-EM-2-24-H	M-EM-3-24-H	M-EMO-3-24-H

### Four valves shown on single-sided manifold



An even smaller Mouse valve! When space is critical, the EM Series Valve provides the best solution.

At just over 25 mm tall, and 19 mm in diameter, the EM Valve uses Clippard's special "spider" design. This reliable and proven design for long life is housed in a miniature body, and incorporates wire leads out the top, allowing body rotation for close-center mounting. In addition, the valve features higher flow; combining fast shifting speed, extremely high cycle life with the design flexibility to make this valve a "small wonder" for demanding applications.

This valve is perfect for air and/or gas control, pilot control, and any application where space is limited, but desired performance is not.



Simply tighten valves onto the manifold using a standard 3 mm. Allen hex wrench. (0.5 - 1 Nm. Do not over-tighten)



Medium:  
Clean, dry air (40 micron filter)

Power Consumption:  
1 watt

Temperature Range:  
0 to 82°C

Response:  
10 milliseconds at nominal voltage  
(15 milliseconds N.O.)

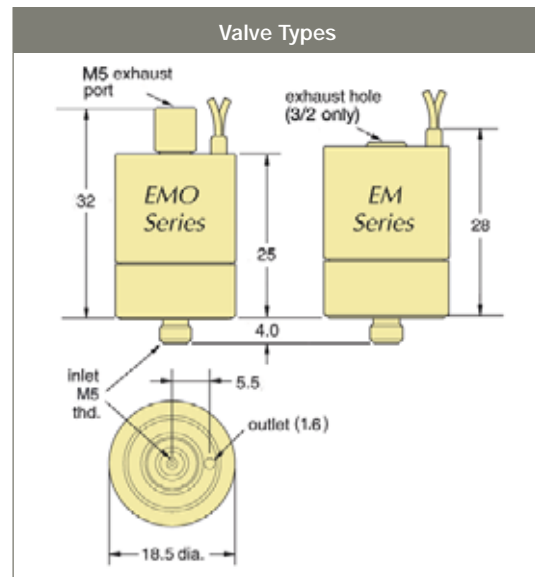
Operating Range:  
90 to 120% of rated voltage

Voltage:  
12 VDC or 24 VDC.  
Other voltages available upon request.

Ports:  
M5

Options (add to end of Part No.)	Standard	Non-Standard
FKM Seals	-V	-
EPDM Seals	-	-E
Silicone Seals	-	-S

Pressure Range	Orifice	Air Flow
700 mm Hg to 7 bar	0.6 mm	17 l/min. @ 7 bar
700 mm Hg to 3.5 bar	1 mm (-L)	14 l/min. @ 3.5 bar
700 mm Hg to 1.8 bar	1.5mm (-H)	13 l/min. @ 1.8 bar



## EM Series Manifolds

Single-Sided

M5 manifold inlet port (both ends)

M5 x 4 mm deep mtg. holes

M5 valve inlet ports

valve outlet ports

M5 manifold outlet ports

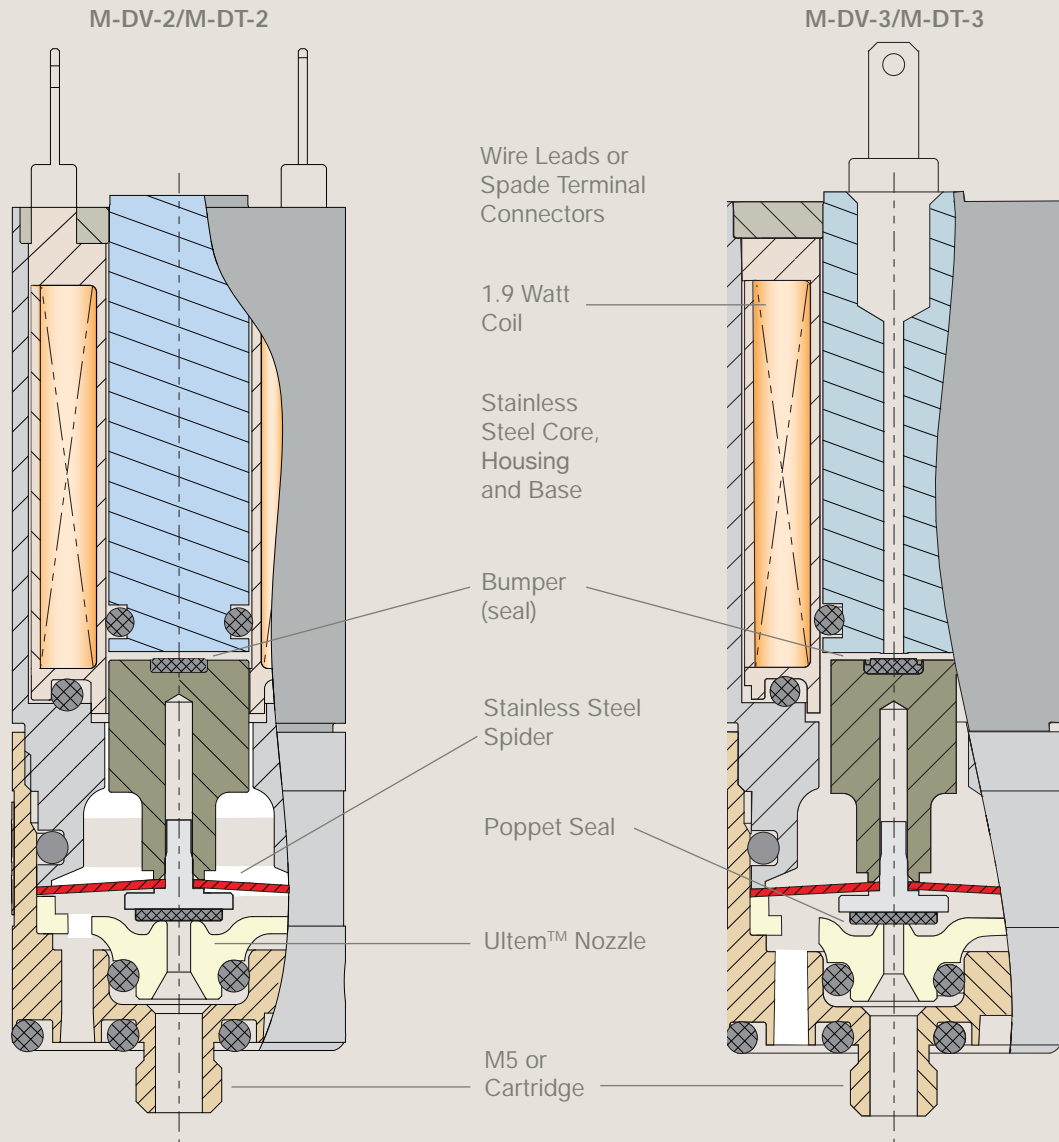
Construction:  
Black anodized aluminium

Single-Sided		Length	Mtg.	
Part No.	Stations	L	M	A
M-15681-2	2	38	20	9
M-15681-4	4	76	38	19
M-15681-6	6	113	76	19



**NEW**

## Electronic Valves – DV Series High Flow

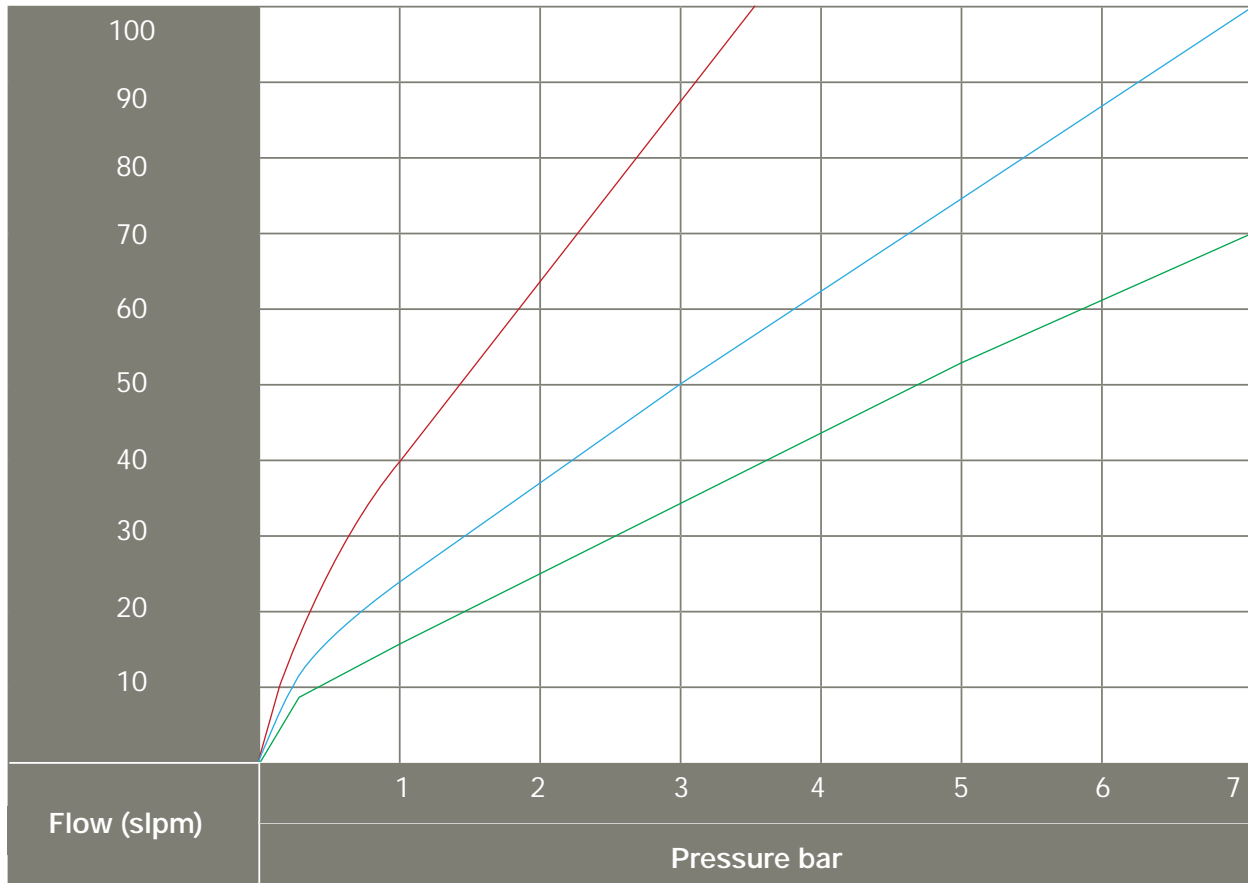


### The Next "Gen" Valve that is compact, quick and offers flows to 100 l/min!

Clippard Minimatic® electronic valves are precision-built 2/2 and 3/2 control valves, utilizing a unique, patented valving principle. The powerful M-DV- Series was designed as the next generation of the well-known and trusted original M-EV line of Clippard "Mouse" valves. With a cycle life of over a billion, a solid, compact design, and extremely high flow rates, these valves are suitable for many applications across numerous diverse industries. A variety of voltage, connector and mounting options are available.

- Industry standard for leak-free operation
- Over 1,000,000,000 cycles
- Bidirectional flow
- Fast response time
- Large flows in small, sleek design
- Low heat rise/low power
- Robust stainless steel "Spider" flat armature spring

Air Flow



— M-DV/M-DT-2M-12/24-L (1.8 orifice)      — M-DV/M-DT-3  
— M-DV/M-DT-2M-12/24 (1.3 orifice)

Medium:  
Air or Compatible Gases

Power Consumption:  
1,9 watts

Ambient Temperature Range:  
0 to 55°C at continuous duty

Response:  
10 to 15 milliseconds

Pressure Range:  
Vac. to 7 bar

Wetted Parts:  
Stainless Steel, PPS & Ultem™

Voltage:  
12 or 24 VDC

Electrical Connection:  
Spade Terminals or Wire Leads

Material  
Nitrile standard. FKM („-V“) optional

Ports:  
M5

Mounting:  
Manifold or Cartridge Style (inserts into 19.0 mm bore)



# NEW Electronic Valves – DV Series High Flow

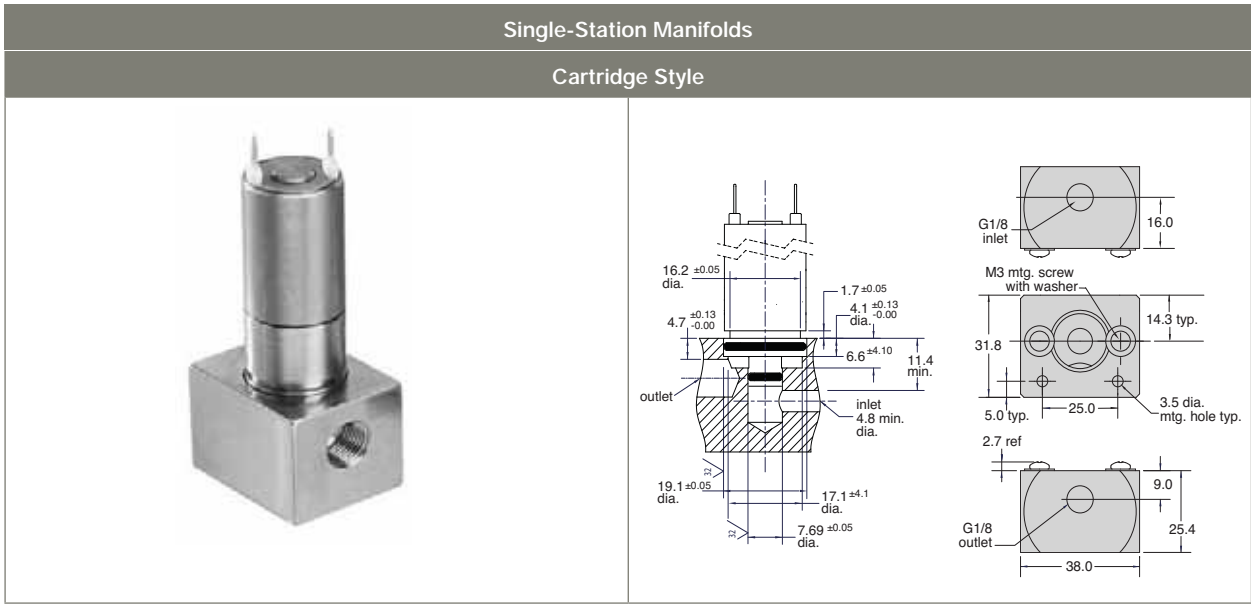
Order Information				
Spade Terminals				
	Manifold Mount	Cartridge Style	Voltage	Spade Terminals Cartridge
	2/2			
	M-DT-2M-12	M-DT-2C-12	12 VDC	
	M-DT-2M-24	M-DT-2C-24	24 VDC	
	M-DT-2M-12-L	M-DT-2C-12-L	12 VDC	
	M-DT-2M-24-L	M-DT-2C-24-L	24 VDC	
	3/2			
	M-DT-3M-12	M-DT-3C-12	12 VDC	
	M-DT-3M-24	M-DT-3C-24	24 VDC	

Order Information				
Wire Leads				
	Manifold Mount	Cartridge Style	Voltage	Wire Leads Manifold Mount
	2/2			
	M-DV-2M-12	M-DV-2C-12	12 VDC	
	M-DV-2M-24	M-DV-2C-24	24 VDC	
	M-DV-2M-12-L	M-DV-2C-12-L	12 VDC	
	M-DV-2M-24-L	M-DV-2C-24-L	24 VDC	
	3/2			
	M-DV-3M-12	M-DV-3C-12	12 VDC	
	M-DV-3M-24	M-DV-3C-24	24 VDC	

Multi-Station Manifolds	

Black anodized aluminium. G1/8  
*Custom manifolds available. Consult factory.*

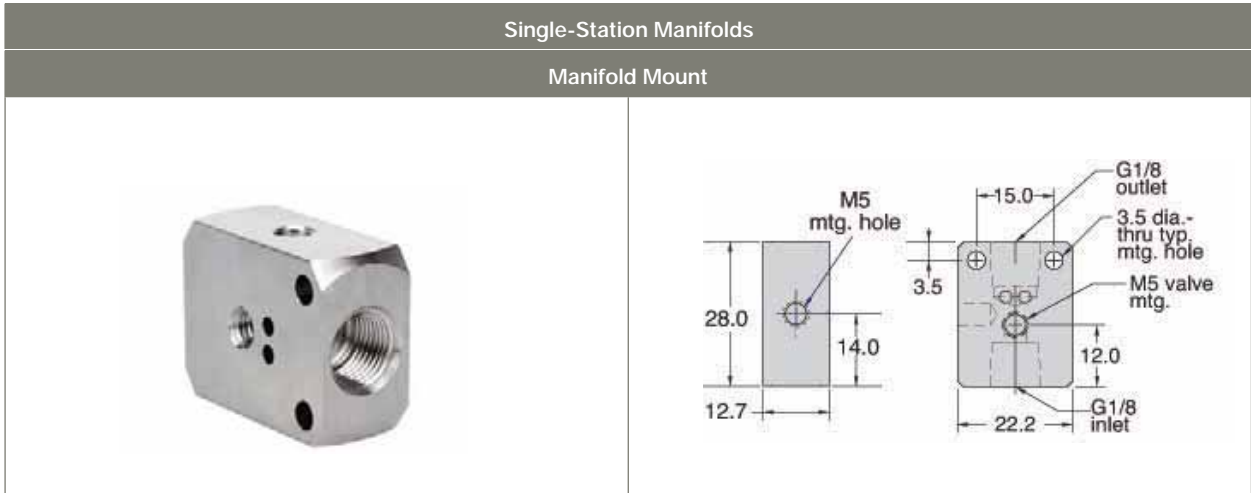
Part No.	Description
M-15781-2	2-Station Manifold
M-15781-4	4-Station Manifold



ENP brass standard. Other materials available. Consult factory.

Mounting screw and washer furnished

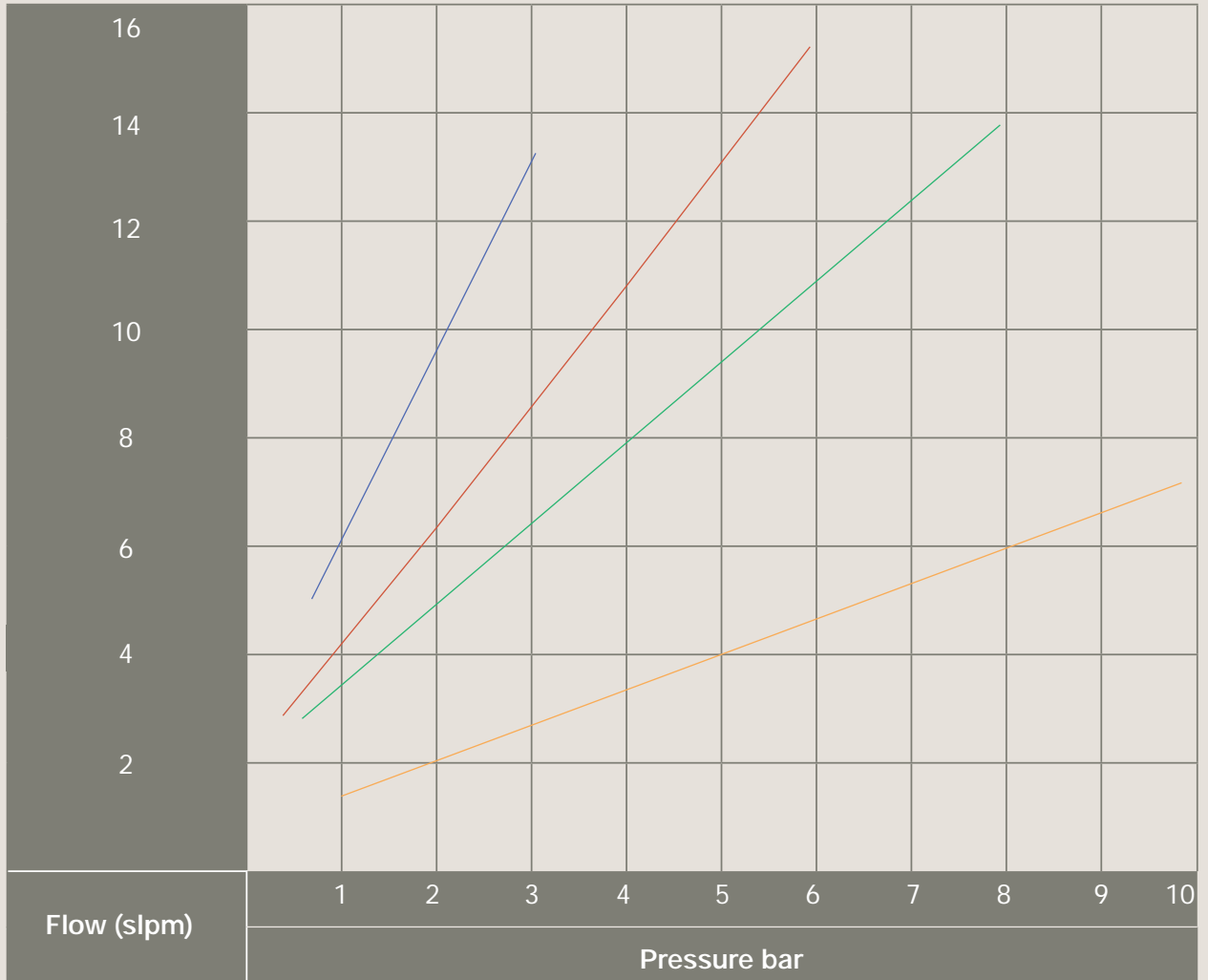
Part No.	Description
M-15492-1	Cartridge Style Manifold



Part No.	Description
M-15490-5	Manifold Mount

# 32 Electronic Valves – 7mm 2/2 Normally-Closed Electronic Valves

## Air Flow



- SV-2C-12/24-10
- SV-2C-12/24-8
- SV-2C-12/24-5
- SV-2C-12/24-3

**These new direct actuating valves offer an extremely fast response time for accurate dosing of minute volumes with the same long life you expect from the original Clippard M-EV line of electronic valves, now in a 7mm cartridge package.** Due to very low moving weights, they are extremely quiet and emit very low vibration. Subminiature size and low energy consumption make them ideal for transportable and mobile systems, among others. The SV series valves can be fully customized according to the user's unique requirements. Consult Clippard with your specific application.

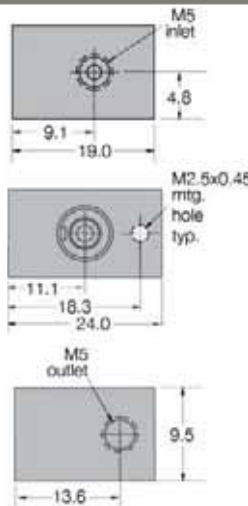
- Expected life of over 1 billion cycles\*
- Extremely small dead volume
- Low vibration and noise

\* under certain conditions

## Single-Station Manifolds

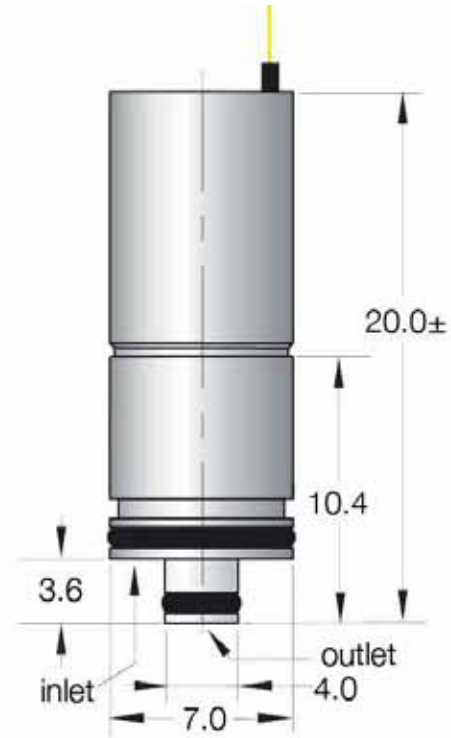


Black anodized aluminum manifold comes with mounting clip and screw. Other materials available.



Part No.	Description
M-SVM-01	Single-Station Manifold, M5
SVM-MC	Mounting Clip & Screw Only

Pressure	Seals	12VDC	24 VDC
Vac to 10 bar	FKM	SV-2C-12-3-V	SV-2C-24-3-V
Vac to 8 bar	FKM	SV-2C-12-5-V	SV-2C-24-5-V
Vac to 6 bar	FKM	SV-2C-12-8-V	SV-2C-24-8-V
Vac to 3 bar	FKM	SV-2C-12-10-V	SV-2C-24-10-V
Vac to 10 bar	EPDM	SV-2C-12-3-E	SV-2C-24-3-E
Vac to 8 bar	EPDM	SV-2C-12-5-E	SV-2C-24-5-E
Vac to 6 bar	EPDM	SV-2C-12-8-E	SV-2C-24-8-E
Vac to 3 bar	EPDM	SV-2C-12-10-E	SV-2C-24-10-E



Medium:  
Air, Gas or other Compatible Fluids

Nominal Power:  
0.85 watts

Temperature Range:  
Up to 50°C

Switching Time:  
<4 ms\*

Electrical Connection:  
76 mm Leads

Voltage:  
12 or 24 VDC

Mounting:  
Cartridge

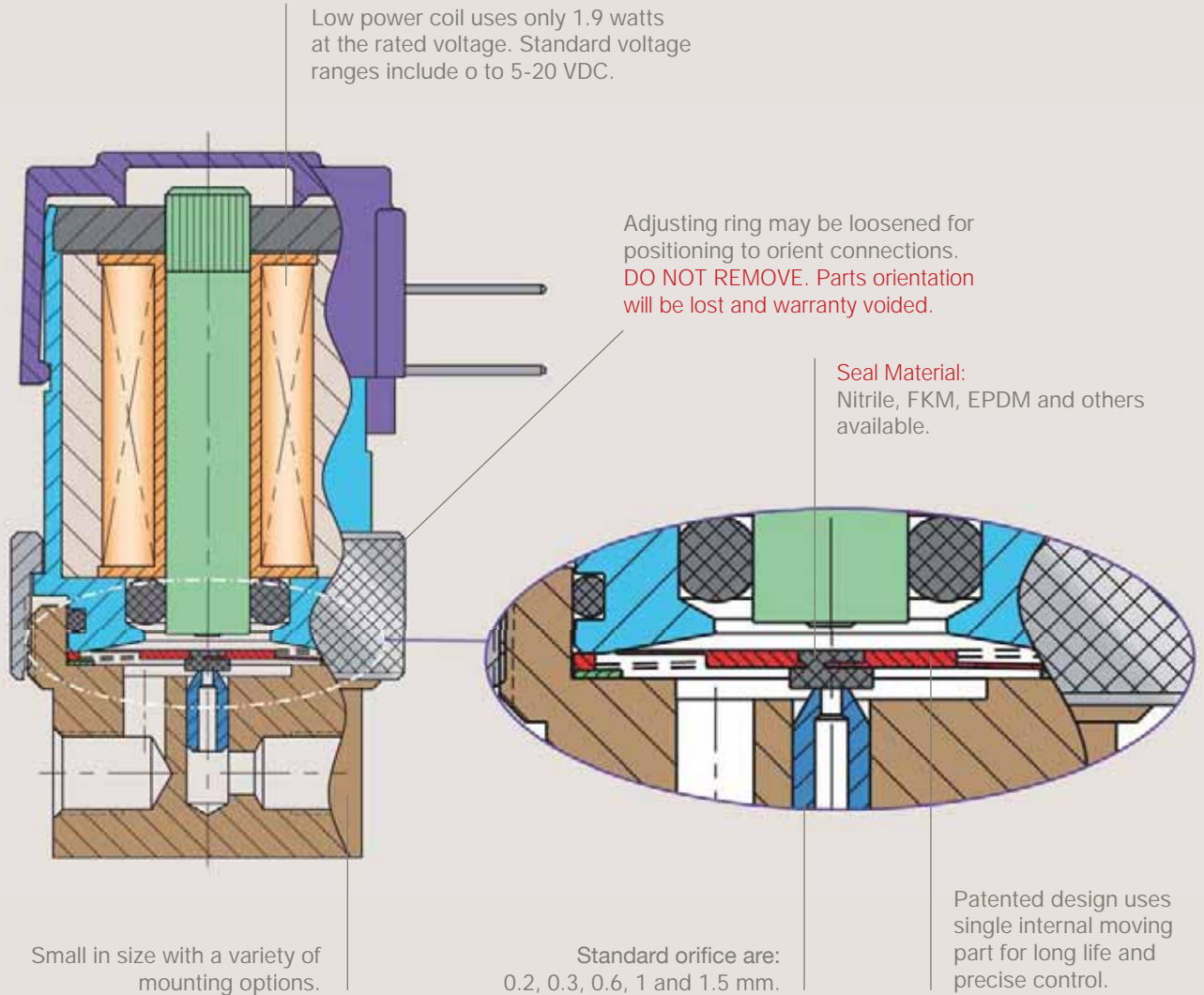
Weight:  
4 grams

Wetted Materials:  
Stainless Steel

Seal Material:  
FKM or EPDM standard.  
FFKM available upon request.



# 34 Electronic Valves – EVP Series Proportional Control Valves



The EVP series Proportional Control Valves combine the features of the existing EV series valve - long life, low power, and Clippard's reputation for high quality components with the additional capability for proportional control. The EVP series valve provides air or gas flow control, and varies the output flow based on the current input to the solenoid. The consistent gain (see chart) of this valve provides a high degree of control for many applications. Controllability and overall value are the main features of the EVP Proportional Valve series. The valve may be controlled using DC current, open or closed-loop control, and even PWM (pulse width modulation) to cover a broad range of applications.

### Features:

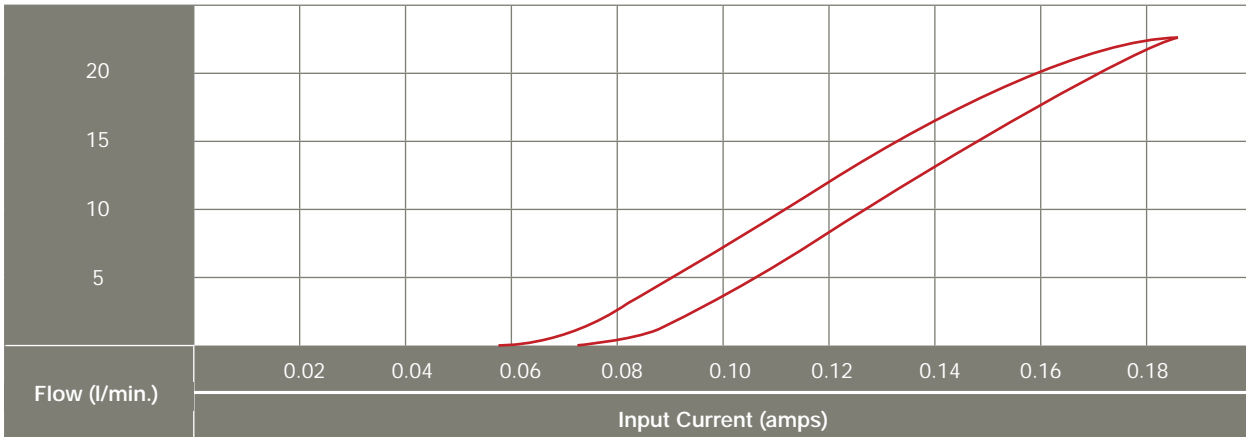
- Flow proportional to input current
- Fast response
- Long life
- Small package
- Single moving part - low friction and wear
- Five orifice sizes
- Three connection styles
- Two mounting types

### Designed for:

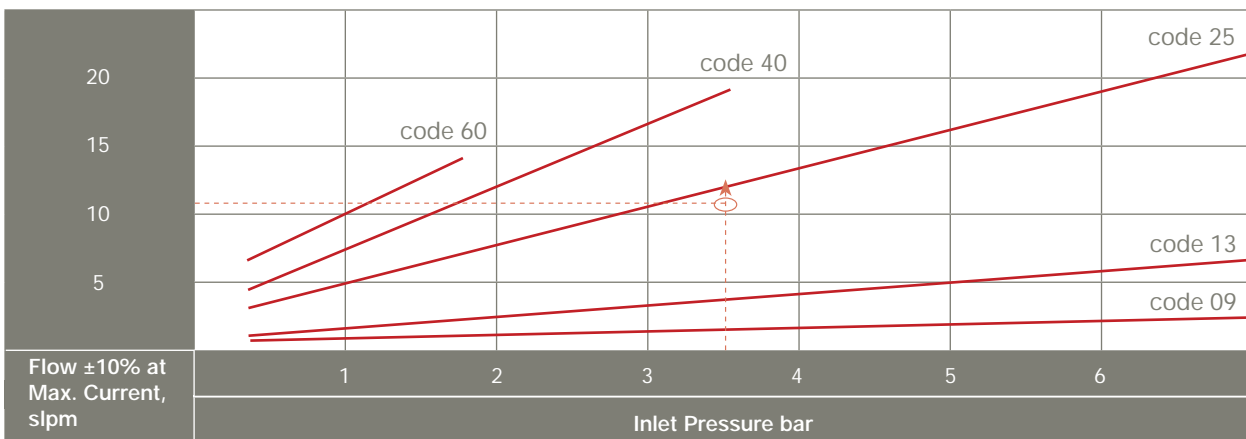
- Analytical Instruments
- Automotive
- Gas Chromatography
- Blood pressure monitoring
- Gas Controllers
- Respirators / Ventilators
- Precise pressure control
- Mass Flow Control and many more...
- Patient Simulators



Typical Performance Flow Curve.



Maximum Flow vs. Operating Pressure.



To determine the correct orifice code, locate the red line immediately above the flow/pressure intersection.  
 Example: 11 slpm @ 3.5 bar inlet, acquires the orifice code 25 for your part numbering system at following two pages.  
 Based on Clippard’s original spider design from 1973, the EVP’s armature is the heart of the valve which provides precise flow control.

Type:  
2/2, Proportional

Medium:  
Air or Inert Gases

Power Consumption:  
1.9 watts at 23°C, 2.3 watts max.

Temperature Range:  
0 to 50°C

Mounting:  
In-Line or Manifold

Seal Material:  
Nitrile, Fluorocarbon and EPDM.  
Others available.




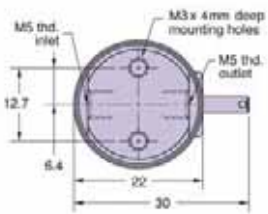
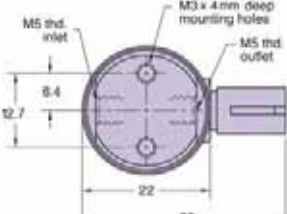
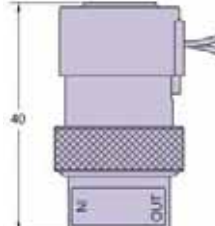
Maximum Hysteresis:  
10% of full current

Ports:  
M5



# 36 Electronic Valves – EVP Series Proportional Control Valves

## In-line Mount

Electrical Connection Options		
Connector (M-ET-P)	Terminal Spades (M-EC-P)	Wire Leads (M-EV-P)
		
		

Type:  
2/2, Proportional

Medium:  
Air or Inert Gases

Power Consumption:  
1.9 watts at 23°C,  
2.3 watts max.

Temperature Range:  
0 to 50°C

Mounting:  
In-line

Ports:  
M5

Nominal Values at 23°C			Max. Voltage
Voltage (vdc)	Current (amps)	Resistance (ohms)	Required (vdc)
0-5	0-0.370	13.5	6.2
0-10	0-0.185	54	12.4
0-20	0-0.092	218	24.8

Do not exceed input current range.

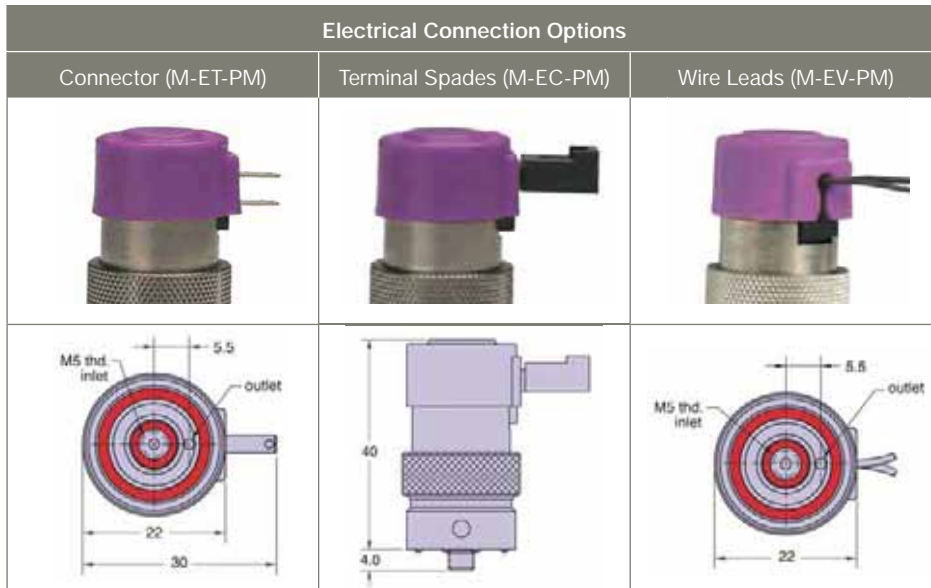
The EVP Proportional Valve can be calibrated for pressures less than the maximum shown on the graph from page 29. Lower pressures may be substituted, and will be used for calibration. The pressures shown are standard options. For pressures less than 0.4 bar, please consult factory.

Numbering System						
Base	Electrical Connection	Mount	Voltages *	Orifice Code	Pressure Max.	Seals Options
M	EC - Connector ET - Terminal Spades EV - Wire Leads	P	05 - 0-5 VDC 10 - 0-10 VDC 20 - 0-20 VDC	09 = 0.2 mm 13 = 0.3 mm 25 = 0.6 mm 40 = 1.0 mm 60 = 1.5 mm	15 = 1 bar 30 = 2 bar 45 = 3 bar 50 = 3.5 bar 60 = 4 bar 75 = 5 bar 90 = 6 bar A0 = 7 bar	Blank - none E - EPDM Seals V - FKM Seals
M	EC	P	10	25	50	V

\* Consult factory for availability of Non-Standard Voltages and other Options.  
For Cable and Connectors, see Page 25.

# Electronic Valves – EVP Series Proportional Control Valves 37

## Manifold Mount



Type:  
2/2, Proportional

Medium:  
Air or Inert Gases

Power Consumption:  
1.9 watts at 23°C,  
2.3 watts max.

Temperature Range:  
0 to 50°C

Mounting:  
Manifold

Ports:  
M5

Nominal Values at 23°C			Max. Voltage
Voltage (vdc)	Current (amps)	Resistance (ohms)	Required (vdc)
0-5	0-0.370	13.5	6.2
0-10	0-0.185	54	12.4
0-20	0-0.092	218	24.8

Do not exceed input current range.

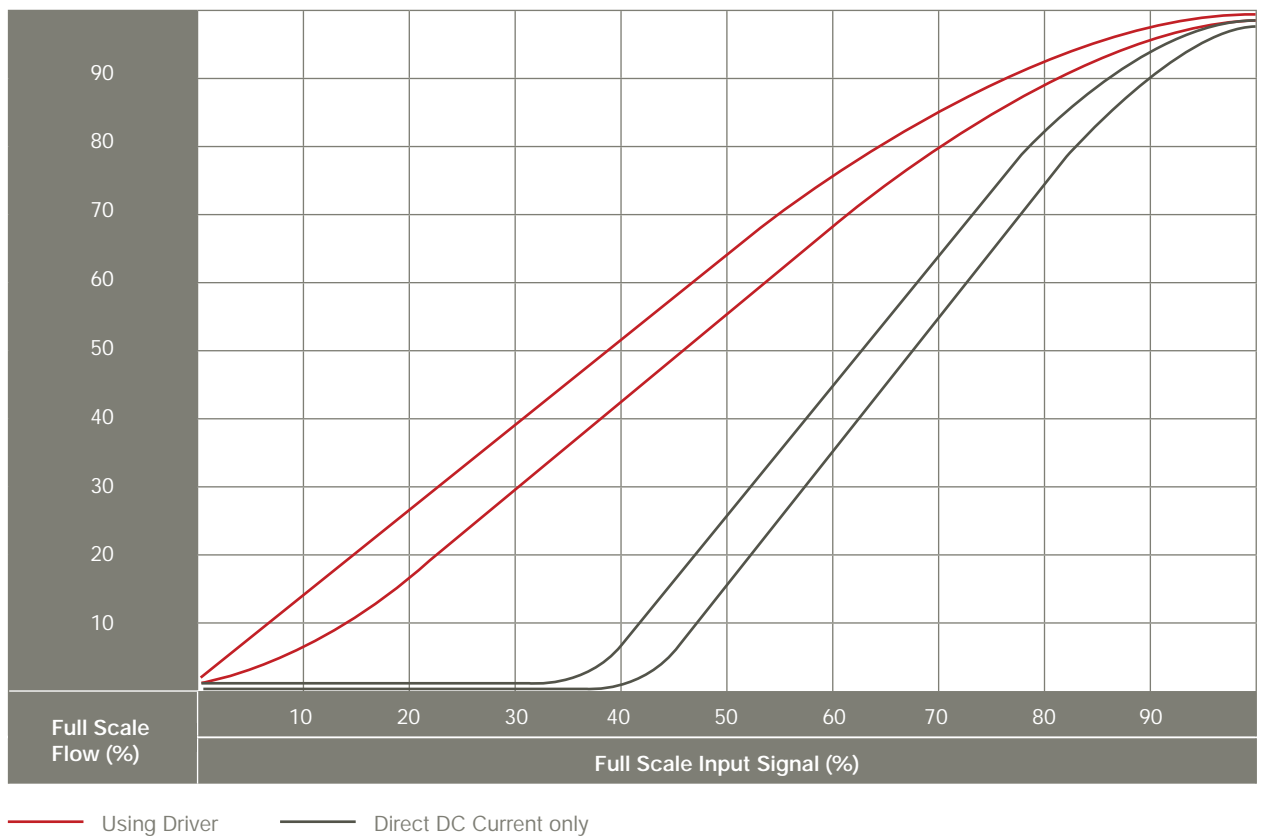
The EVP Proportional Valve can be calibrated for pressures less than the maximum shown on the graph from page 29. Lower pressures may be substituted, and will be used for calibration. The pressures shown are standard options. For pressures less than 0.4 bar, please consult factory.

Numbering System												
Base	Electrical Connection	Mount	Voltages *	Orifice Code	Pressure Max.	Seals Options						
M	<b>EC</b> - Connector <b>ET</b> - Terminal Spades <b>EV</b> - Wire Leads	PM	<b>05</b> - 0-5 VDC <b>10</b> - 0-10 VDC <b>20</b> - 0-20 VDC	<b>09</b> = 0.2 mm <b>13</b> = 0.3 mm <b>25</b> = 0.6 mm <b>40</b> = 1.0 mm <b>60</b> = 1.5 mm	<b>15</b> = 1 bar <b>30</b> = 2 bar <b>45</b> = 3 bar <b>50</b> = 3.5 bar <b>60</b> = 4 bar <b>75</b> = 5 bar <b>90</b> = 6 bar <b>A0</b> = 7 bar	<b>Blank</b> - none <b>E</b> - EPDM Seals <b>V</b> - FKM Seals						
M	-	EC	-	PM	-	10	-	25	-	50	-	V

\* Consult factory for availability of Non-Standard Voltages and other Options.  
For Cable and Connectors, see Page 25.

## Plug-and-Play Control for Proportional Valves Effect on Valve Flow.

The New EVPD Proportional Valve Driver fast-tracks valve control applications. This product is ideal for laboratories and OEM product development, and can be customized to fit OEM applications including control parameters. The EVPD produces driver current for Clippard’s EVP series valves proportional to input control signals.



Power Requirement:  
7 to 28 VDC @ 5 Watt (see chart)

Input Impedance:  
200 kΩ

Command Set-Point Signal Type:  
Selectable: 0 to 5 or 10 VDC, 0 to 20 mA,  
4 to 20 mA, PWM @ ≥2 kHz duty cycle

Adjustments:  
Minimum Drive Current, Maximum  
Drive Current, Command Deadband

LED Indicators:  
Power; Activity Status & Faults

Output:  
0 to 0.4 A (selectable range)

Temperature Range:  
0° to 50°C

Size:  
Driver Board only: 38 x 33 x 10 mm  
Driver Board w/Enclosure:  
56 x 46 x 18 mm excluding DIN clip

RoHS Compliant


## Power Requirements

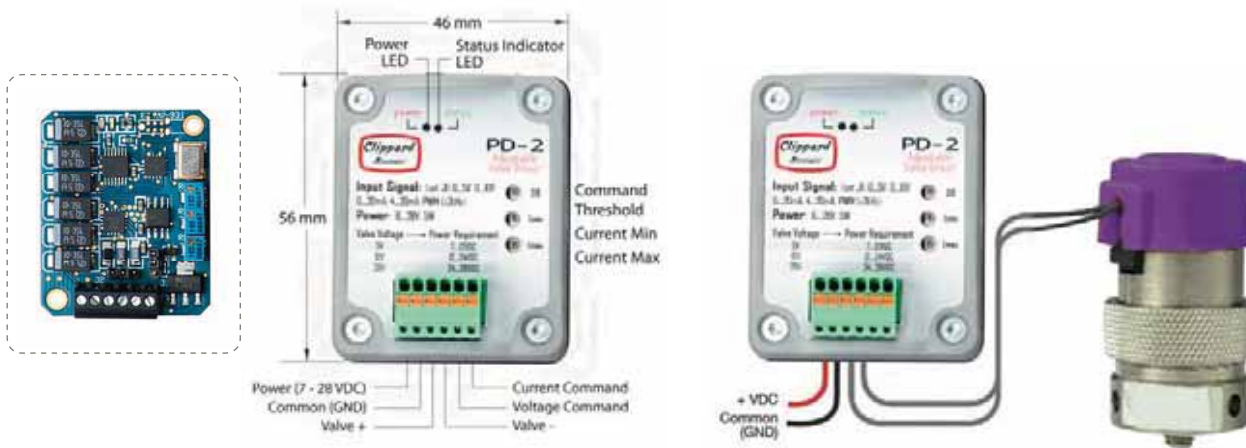
Power input requirements are specified as supply voltage ranges for each EVP valve. Supplying voltages outside of these ranges may result in valve malfunctioning. Power requirements are determined by the valve voltage specification.

For more information on the process, visit [www.clippard.com](http://www.clippard.com).

EVP Valve Type	Input Voltage Range	EVPD Max Output *
0 to 5 VDC	7 to 12 VDC	400 mA
0 to 10 VDC	12 to 28 VDC	200 mA
0 to 20 VDC	14 to 28 VDC	100 mA

\* see EVP Valve Current Requirements

Part No.	Description	
EVPD-2	EVPD Driver Assembly in Enclosure	
EVPD-1	EVPD Driver Board	
EVPD-2DIN	DIN Rail Mounting Clip (shown at right) with Screws	



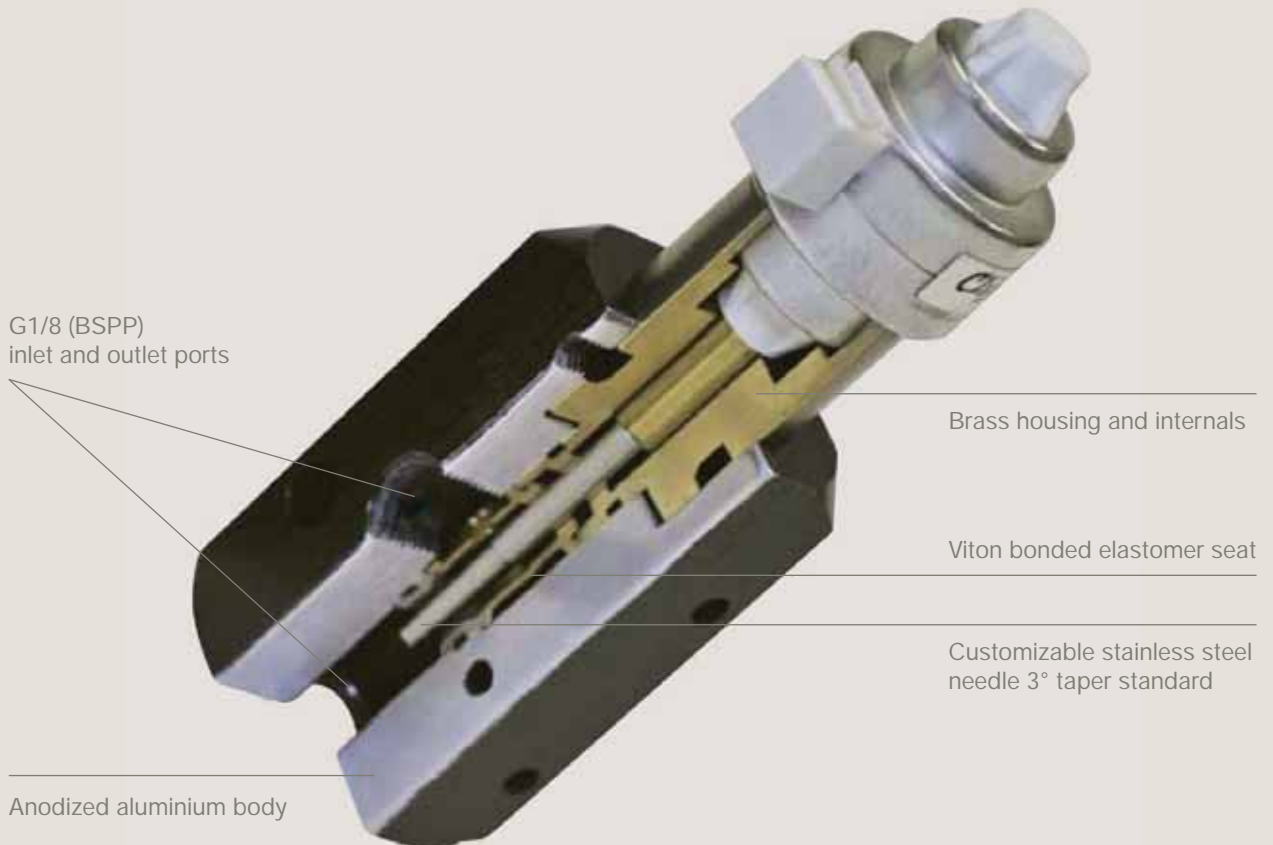
### Features:

- Plug-and-play interface between Clippard's EVP series valves and PLCs or other controls
- Linearized valve response right "out of the box"
- Three selectable valve output ranges
- Five signal inputs to choose from
- Easy integration with existing machine controls
- User-adjustable parameters
- Automatic Temperature Compensation to maintain constant current
- Two configuration options: stand-alone PCB or enclosed in housing
- Compact size.

**NEW**

## Electronic Valves – 2/2 Stepper-Controlled Proportional Valve

Stepper-controlled linear actuator with acme lead screw.



Wetted Material:  
Stainless steel, aluminium, brass  
and FKM \*

Medium:  
Compatible gases and liquids

Power Consumption:  
3.85 watts nominal only during ad-  
justment. Zero power consumption  
to maintain position.

Temperature Range:  
0° to 84°C

Pressure Range:  
VAC to 7 bar \*

Flow Range:  
0 to 300 slpm \*

Flow Resolution:  
0.56 slpm per step

Position Resolution:  
25 µ per step

Typical Cycle Time for Full Travel:  
0.95 seconds at 100% duty cycle;  
0.55 seconds at 25% duty cycle  
(full open to full close or full close  
to full open)

Response Time:  
0.95 sec. fully-open to fully-closed \*

Driver:  
Bipolar chopper drive required

Supply Voltage:  
12 to 40 VDC (40 VDC optimal)

Mounting:  
In-line, Manifold or Cartridge

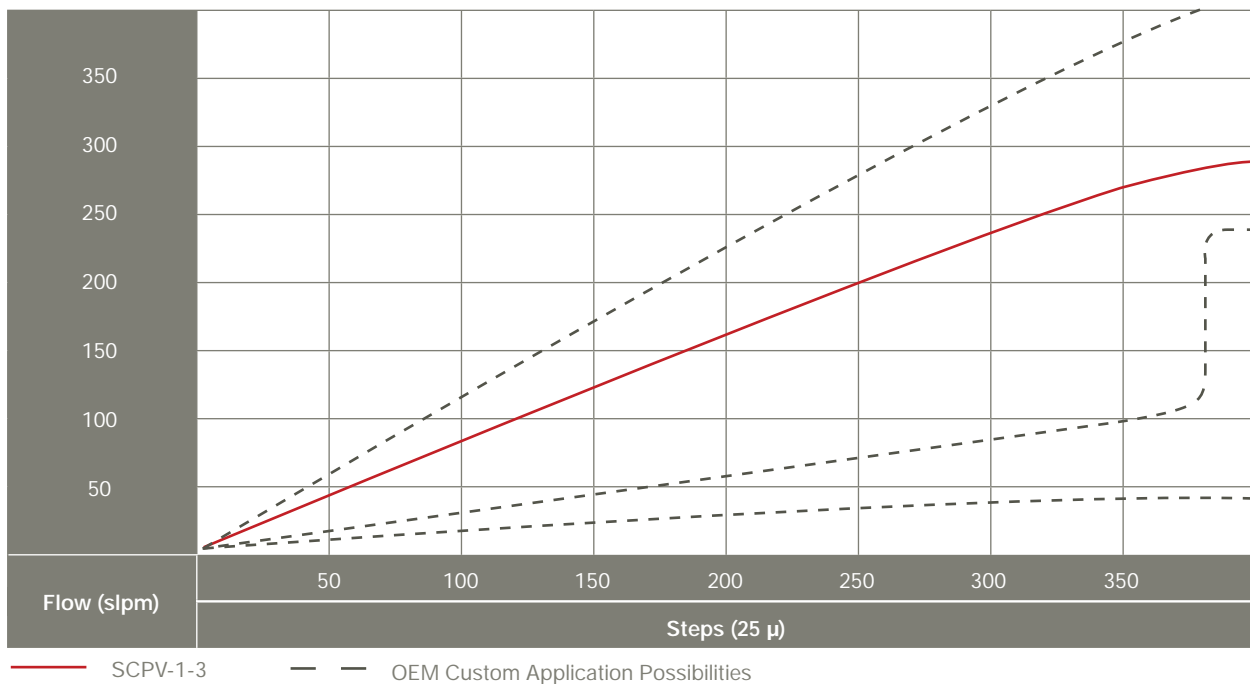
Configuration:  
28.5 square body with G1/8 ports

Ports:  
G1/8. Others available upon  
request.

Seals:  
FKM standard. Others available.

\* this product is highly modifiable for OEM applications including alternate body materials , flow profiles, cartridge styles, manifold mounting, etc. Please consult factory.

Characteristic Curve. Flow Rate for SCPV-1-3 @7 bar.



Valve Types		
M-SCPV-1-3	M-SCPV-1-3M	M-SCPV-1-3C

Utilizing the industry’s most robust and powerful linear actuator, the high-flow stepper-controlled proportional valve outperforms the competition in performance and durability.

The bonded elastomeric seat achieves excellent sealing ensuring smooth opening and fine control at low flow for millions of cycles.

This valve is ideal in critical applications such as gas delivery, medical, analytical, and industrial automation requiring high resolution, high flow, and low hysteresis. In addition, the unique design allows for custom flow profiles when required.

Features:

- 2% hysteresis
- Excellent linearity — 2.5% of full-scale
- 2 milliseconds reaction time
- Millions of cycles
- Holds position for power savings or at loss of power





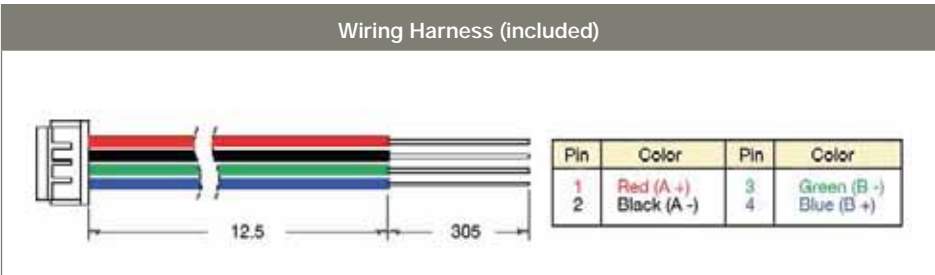
# Electronic Valves – 2/2 Stepper-Controlled Proportional Valve

## Control Data

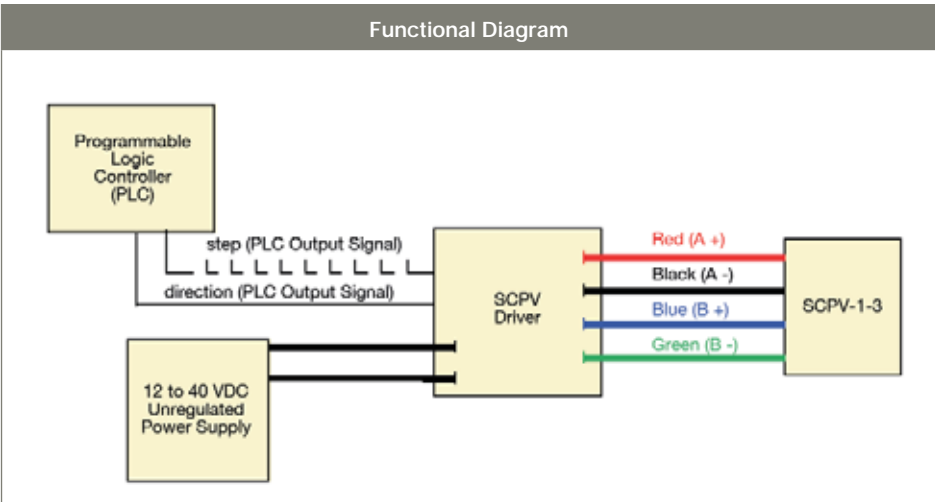
A Bipolar Chopper Drive (not included) is a power-efficient method of using current to drive a stepping motor to obtain high stepping rates. The chopper gets its name from the technique of rapidly turning the output voltage on and off (chopping) to control motor current.

Stepper motors require some external electrical components in order to operate. These components typically include a power supply, logic sequencer switching components and a clock pulse source to determine the step rate. Many commercially available drives have integrated these components into a complete package.

For more information on the process, visit [www.clippard.com/cms/wiki/clippard-stepper-controlled-proportional-valve](http://www.clippard.com/cms/wiki/clippard-stepper-controlled-proportional-valve).

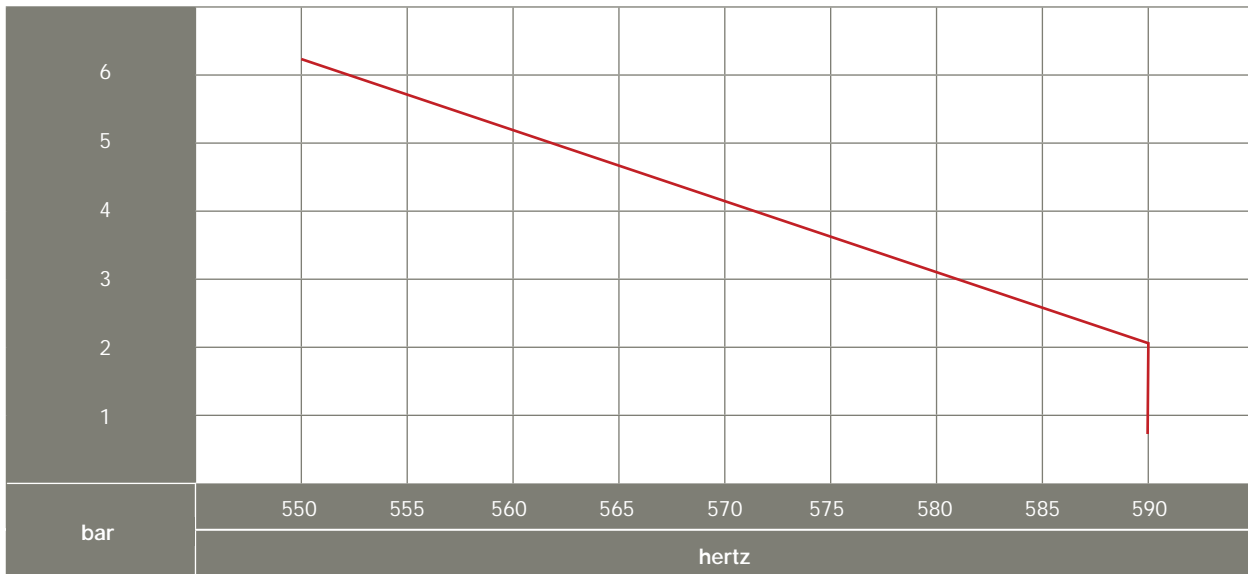


- Wiring: Bipolar
- Power Consumption: 3.85 watts
- Temperature Rise: 75°C
- Current/Phase: 385 mA
- Resistance/Phase: 13 W
- Inductance/Phase: 8.08 mH
- Motor Voltage: 5 VDC
- Rotor Inertia: 1.07 gcm<sup>2</sup>
- Insulation Resistance: 20M ohms



Part No.	Description
M-SCPV-1-3	Proportional Valve, in-Line
M-SCPV-1-3M	Proportional Valve, Manifold
M-SCPV-1-3C	Proportional Valve, Cartridge

## Maximum Step Pulse Frequency vs. Operating Pressure



Potential Applications:

- Medical/Analytical/Industrial Gas Mixing
- Anesthesia Equipment
- Precision Flow Control
- Cuff/Bladder Pressure Control
- Process Flow Control
- Variable Speed Control
- Automation of Needle Valve

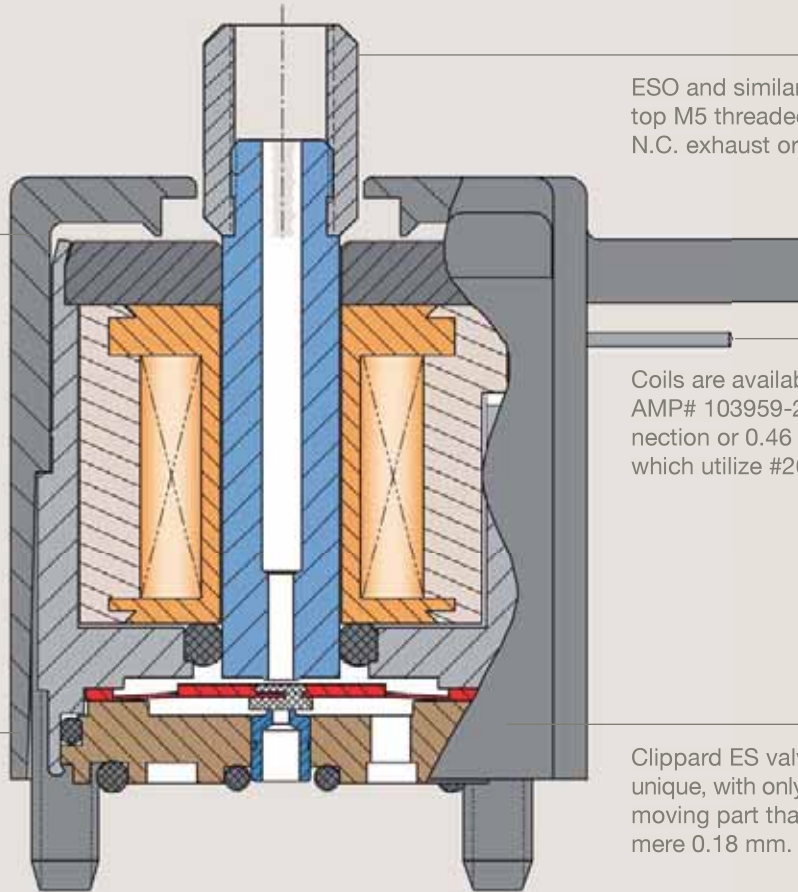


## 44 Electronic Valves – ES, ESO Series Valves

Zytel® is a registered trademark of E.I. DuPont.

Housing is molded Zytel® ST 801 for toughness and rigidity.

Valves feature low power, cool running, quiet operation and fast response time. They convert low voltage, low current signals into high pressure pneumatic outputs.



ESO and similar styles have top M5 threaded fitting for N.C. exhaust or N.O. inlet.

Coils are available with an AMP# 103959-2 pin connection or 0.46 m wire leads which utilize #26 wire.

Clippard ES valves are unique, with only one internal moving part that travels a mere 0.18 mm.

### ES, ESO Series Compact Valves

Valves are small in size with a variety of coil voltages and flow options. Mounting is as close as 22.5 mm on center.

## Quality Design

The compact ES valve, like Clippard EV and ET valves, converts low voltage, low current signals into high pressure (0 to 7 bar) pneumatic outputs, utilizing a unique, patented, valving principle. Since there are no sliding parts, and complete poppet travel is only 0.18 mm, low power consumption and exceptionally long life are assured with this design. No flow is required for cooling because the compact ES is cool, as well as quiet, in operation.

The compact nature of design makes this valve well suited to a wide range of applications in biomedical, environmental test equipment, textile machines, packaging machinery, computerized industrial automation, and portable systems.

Nominal			Power	Working range
Voltage	Current (amps)	Resistance (ohms)	(watts)	(cont. duty)
12	0.083	144	1	90 to 120% of rated voltage
24	0.042	576	1	



Numbering System						
Base	Electrical Connection	Valve Type	Coil Connection	Voltage	Orifice Code = Pressure Max.	Air Flow
M	ES Blank - Normally-Closed	2 - 2/2	S - Side Pin	12 - VDC	Blank mm dia. = 7 bar (A0)	17 l/min.
	ESO - Normally-Open or Captivated Exhaust	3 - 3/2	T - Top Pin W - Wires B - Board Mount	24 - VDC	L mm dia. = 3.5 bar (50) H mm dia. = 1.8 bar (25)	15 l/min. 13 l/min.
M - ESO - 3 S - 24 - L						

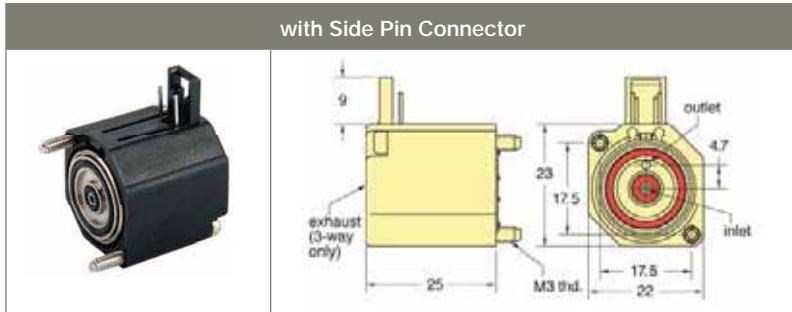
Features:

- Medium: Air (40 micron filtration)
- Low power consumption - 1 watt at rated voltage
- Temperature Range: 0° to 66°C
- Response: 5 to 10 milliseconds at max rated pressure
- Close mounting - 22.5 mm on center
- Voltage Options: 12 or 24 VDC
- Overall height less than 28 mm
- Easy to mount on manifold with two M3 screws
- Geometric design
- Polymer housing - Zytel ST 801® super tough
- Pin connectors - AMP # 103959-2 or 1.2 m wire; leads: #26 wire
- Flow up to 17 l/min.

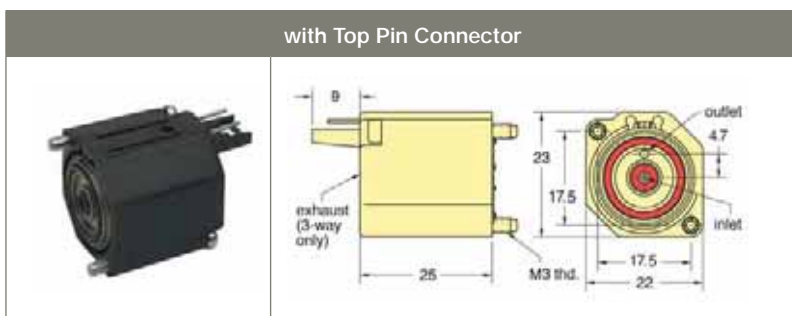


# 46 Electronic Valves – ES Series 2/2 + 3/2 Valves

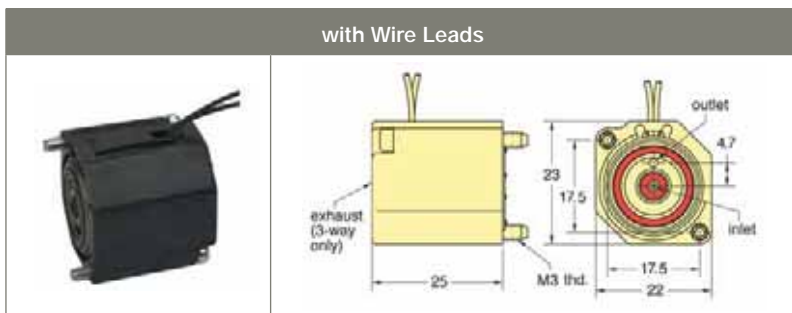
## Normally-Closed 2/2 + 3/2 Electronic Poppet Valves



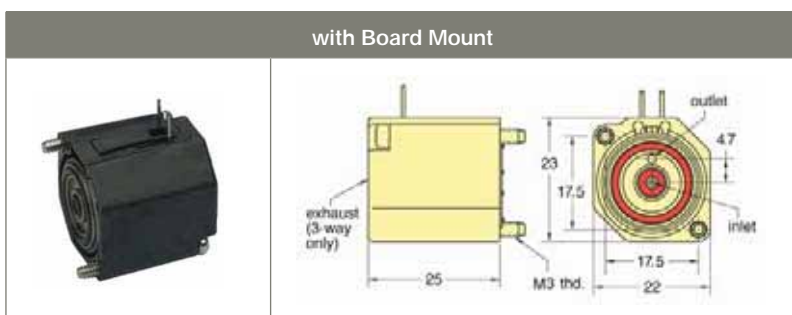
Part No.	Description
M-ES-2S-__	2/2-12 or 24 VDC
M-ES-3S-__	3/2-12 or 24 VDC



Part No.	Description
M-ES-2T-__	2/2-12 or 24 VDC
M-ES-3T-__	3/2-12 or 24 VDC



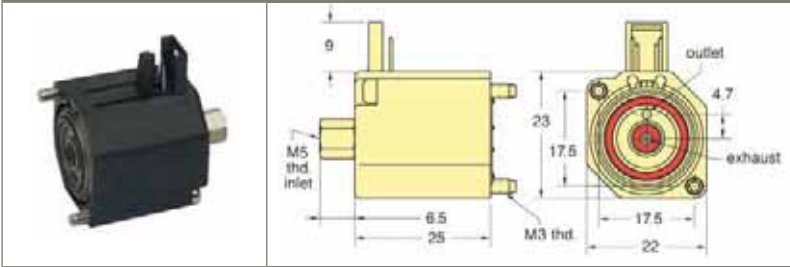
Part No.	Description
M-ES-2W-__	2/2-12 or 24 VDC
M-ES-3W-__	3/2-12 or 24 VDC



Part No.	Description
M-ES-2B-__	2/2-12 or 24 VDC
M-ES-3B-__	3/2-12 or 24 VDC

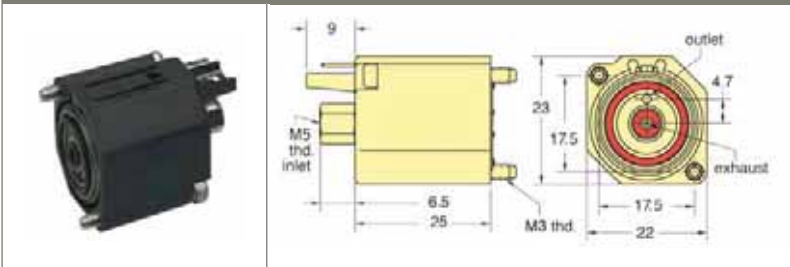
Pressure Range	Air Flow	Ports
700 mm Hg to 7 bar	17 l/min. @ 7 bar	Inlet and outlet through manifold; 3/2 exhaust through top of valve (3/2 only)
700 mm Hg to 3.5 bar	15 l/min. @ 3.5 bar	
700 mm Hg to 1.8 bar	13 l/min. @ 1.8 bar	

with Side Pin Connector



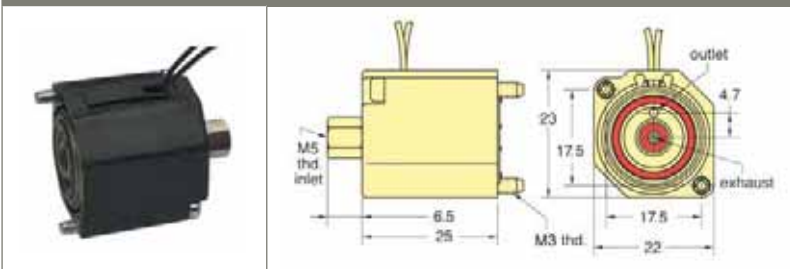
Part No.	Description
M-ESO-3S- <u>  </u>	3/2-12 or 24 VDC

with Top Pin Connector



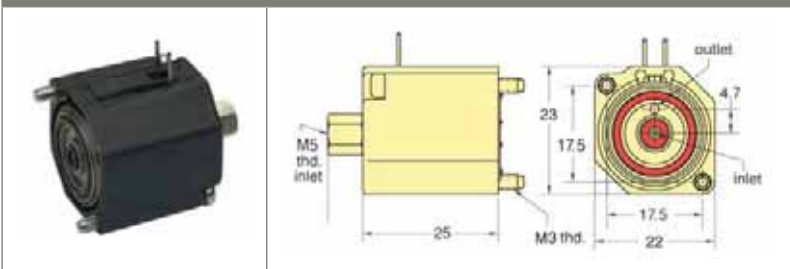
Part No.	Description
M-ESO-3T- <u>  </u>	3/2-12 or 24 VDC

with Wire Leads



Part No.	Description
M-ESO-3W- <u>  </u>	3/2-12 or 24 VDC

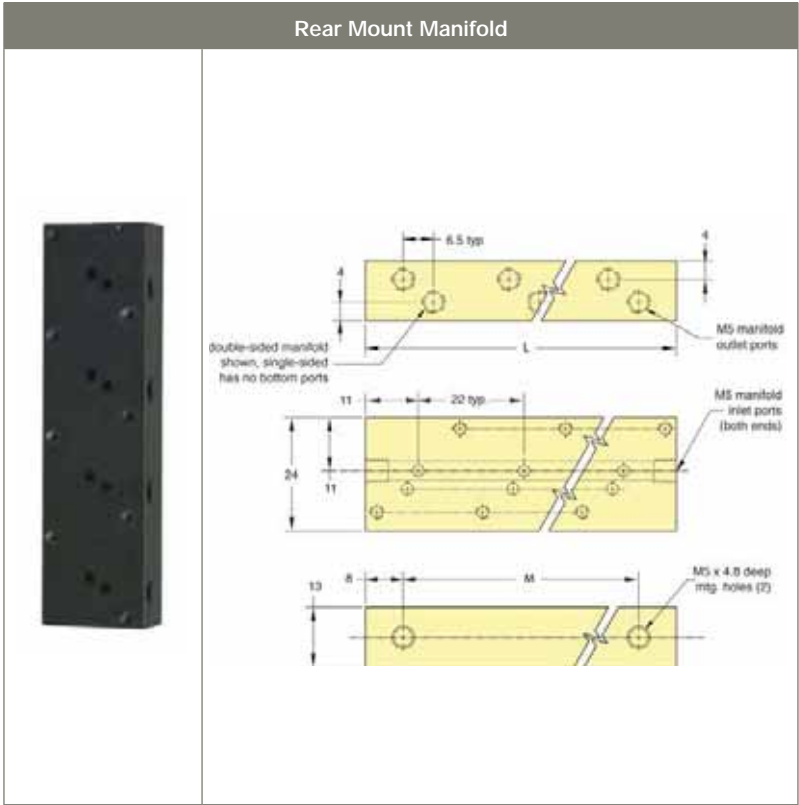
with Board Mount



Part No.	Description
M-ESO-3B- <u>  </u>	3/2-12 or 24 VDC

Pressure Range	Air Flow	Ports
700 mm Hg to 7 bar	17 l/min. @ 7 bar	Exhaust and outlet through manifold; 3/2 supply (M5) through top of valve
700 mm Hg to 3.5 bar	15 l/min. @ 3.5 bar	
700 mm Hg to 1.8 bar	13 l/min. @ 1.8 bar	

# 48 Electronic Valves – ES, ESO Series Valves Manifolds



Single-Sided Rear Mount Manifold			
Suffix	Valves	Length L	Mtg. M
-2	2	44.5 mm	28.6 mm
-4	4	89 mm	73 mm

Double-Sided Rear Mount Manifold			
Suffix	Valves	Length L	Mtg. M
-4	4	44.5 mm	28.6 mm
-8	8	89 mm	73 mm

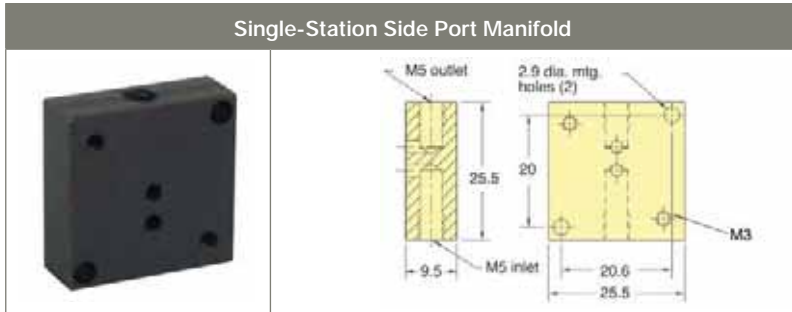
Part No.	Description
M-26083- <u>  </u>	Single-Sided Manifold

Part No.	Description
M-26084- <u>  </u>	Double-Sided Manifold

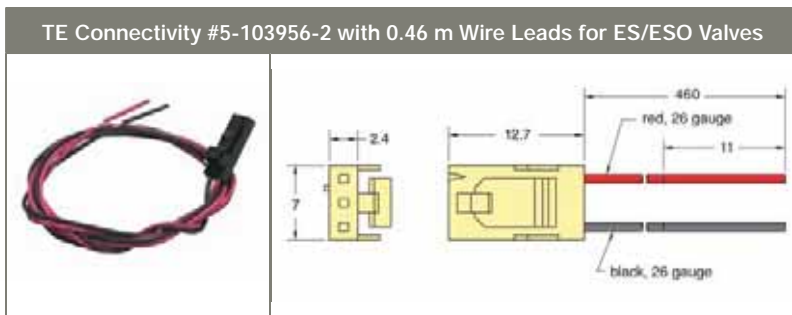


# Electronic Valves – ES, ESO Series Valves

## Single Manifold and Wire Connector



Part No.	Description
M-26090-1	Side Port Manifold



Part No.	Description
C3-RXB18	Wire Connector

**Lead Set Chart for ES Valve**

Used On	Pin 1	Pin 2	Pin 3	Lead Length	Wire Gage
ES	red	-	black	0.46 m	#26



# 50 Electronic Valves – 10 mm + 15 mm Miniature Valves



This numbering schematic is shown for illustration purposes only. All possible configurations are not available. For standard models, see the products illustrated in this catalog.



Another feature of the Clippard 10 mm valve is the ability to detach the coil and connector from the valve body. This can be useful for the purpose of orientating the coil by 180°, or exchanging connector types or voltages.

All of the benefits of Clippard quality and reliability are now available in these 10 mm and 15 mm valves. Offered in both Normally-Open or Normally-Closed models, these 2/2 and 3/2 valves are perfect for small areas where compact electronically-controlled pneumatics are needed.

This series has a high strength, engineered lightweight glass filled nylon body, along with stainless steel, copper and Buna-N, making it suitable for a broad range of applications. With exceptional life and reliability this is the perfect sub-miniature valve for tomorrow's needs in a wide variety of industries.

**All 10 mm and 15 mm valves are RoHS compliant.**

Numbering System				
Valve Type	Orifice Code	Power	Electrical Connection	Voltage
E210 - 2/2 N.C.	A - 0.5 mm	1 - 0.6 Watts	F - In-Line	012 - 12 VDC
E310 - 3/2 N.C.	C - 0.75 mm	2 - 1.3 Watts	C - In-Line with LED	024 - 24 VDC
E3010 - 3/2 N.O.			E - 90° L - 90° with LED W - Wire Leads, 300 mm	
<b>E210</b>	<b>A</b>	<b>-</b>	<b>1</b>	<b>C</b>
				<b>012</b>

Multiple connectors:  
Snap-in Plugs | Wire Leads  
Custom Plugs | DIN

LED for confirmation of operation is also available.

Diodes for current spike suppression and a power saving circuit is available

HIGHLY VISIBLE manual override provides valve actuation without power

Mounting Screws: M1.7 x 0.35

Coil

Coil

1 2 3

Front left corner of valve!

High durability and corrosion-resistant glass filled nylon housing

FKM seal and Nitrile gaskets (FKM available)

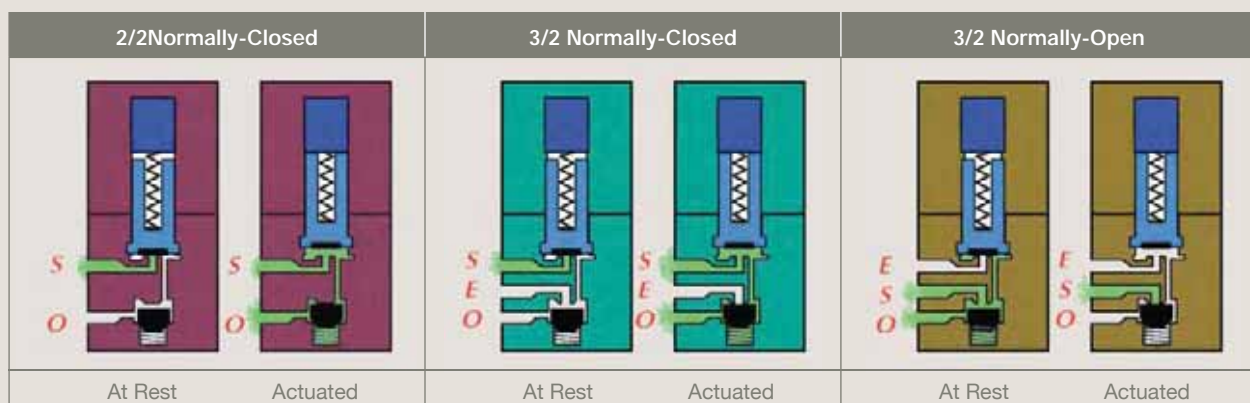
2/2 or 3/2 valves in Normally-Closed and Normally-Open

Encapsulated low wattage coils. Available in 12 VDC or 24 VDC. Special voltages available for OEMs.

One-piece gasket for manifold mount

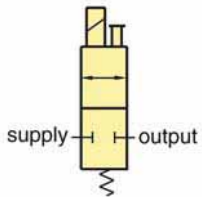
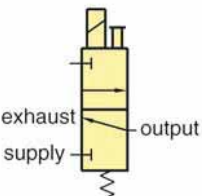
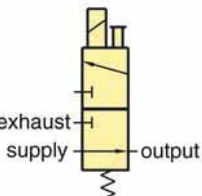
Config.	1	2	3
N.C.	supply	exhaust	outlet
N.O.	exhaust	supply	outlet

## Functional Schematics



S - Supply | E - Exhaust | O - Outlet

# 52 Electronic Valves – 10 mm Miniature Valves

Order Information					
Type	Working Pressure	Watts	Orifice	Connector	Base No.
 <p>2/2 Normally-Closed</p>	1 to 7 bar	0.6	0.5	90°	E210A-1E *
	0 to 7 bar	1.3	0.75		E210C-2E *
	1 to 7 bar	0.6	0.5	90° with LED	E210A-1L *
	0 to 7 bar	1.3	0.75		E210C-2L *
	1 to 7 bar	0.6	0.5	In-Line	E210A-1F *
	0 to 7 bar	1.3	0.75		E210C-2F *
	1 to 7 bar	0.6	0.5	In-Line with LED	E210A-1C *
	0 to 7 bar	1.3	0.75		E210C-2C *
	1 to 7 bar	0.6	0.5	Wire Leads, 300 mm	E210A-1W *
	0 to 7 bar	1.3	0.75		E210C-2W *
 <p>3/2 Normally-Closed</p>	1 to 7 bar	0.6	0.5	90°	E310A-1E *
	0 to 7 bar	1.3	0.75		E310C-2E *
	1 to 7 bar	0.6	0.5	90° with LED	E310A-1L *
	0 to 7 bar	1.3	0.75		E310C-2L *
	1 to 7 bar	0.6	0.5	In-Line	E310A-1F *
	0 to 7 bar	1.3	0.75		E310C-2F *
	1 to 7 bar	0.6	0.5	In-Line with LED	E310A-1C *
	0 to 7 bar	1.3	0.75		E310C-2C *
	1 to 7 bar	0.6	0.5	Wire Leads, 300 mm	E310A-1W *
	0 to 7 bar	1.3	0.75		E310C-2W
 <p>3/2 Normally-Open</p>	1 to 5 bar	0.6	0.5	90°	E3O10C-1E *
	0 to 7 bar	1.3	0.75		E3O10C-2E *
	1 to 5 bar	0.6	0.5	90° with LED	E3O10A-1L *
	0 to 7 bar	1.3	0.75		E3O10C-2L *
	1 to 5 bar	0.6	0.5	In-Line	E3O10A-1F *
	0 to 7 bar	1.3	0.75		E3O10C-2F *
	1 to 5 bar	0.6	0.5	In-Line with LED	E3O10A-1C *
	0 to 7 bar	1.3	0.75		E3O10C-2C *
	1 to 5 bar	0.6	0.5	Wire Leads, 300 mm	E3O10A-1W *
	0 to 7 bar	1.3	0.75		E3O10C-2W

\* Add Voltage Choice to the end of each Base Part Number. Example E210A-1E012

## Specifications

**Material:**

Stainless steel core and springs, nylon body, FKM dynamic seals, and Nitrile gasket and static seals. FKM gasket and static seals available, consult factory.

**Medium:**

Air, Gas or other compatible Fluids

**Power Consumption:**

0.6 or 1.3 watts dependent on Orifice Size and Pressure

**Temperature Range:**

-5 to 50°C. When below 0°C must use clean, dry air

**Coil Insulation Class:**

F 155°C

**Response:**

8 milliseconds when energized;  
10 milliseconds when de-energized

**Voltage:**

12 VDC or 24 VDC

**Working Pressure:**

See chart Page before

**Max. Flow Rate:**

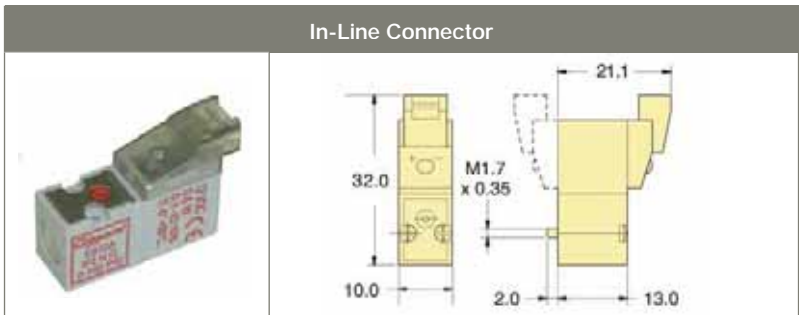
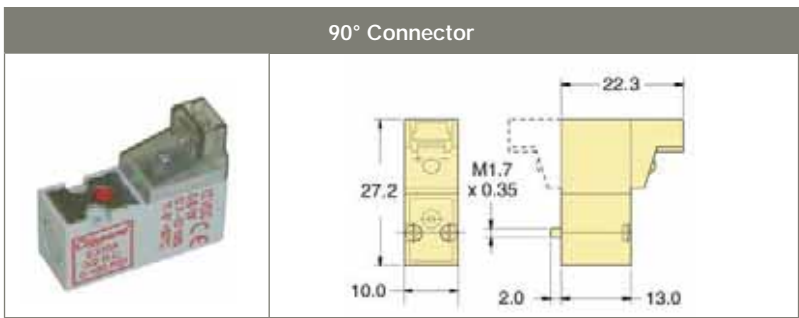
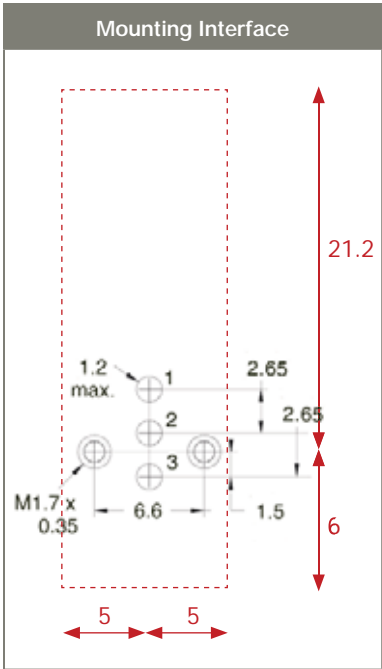
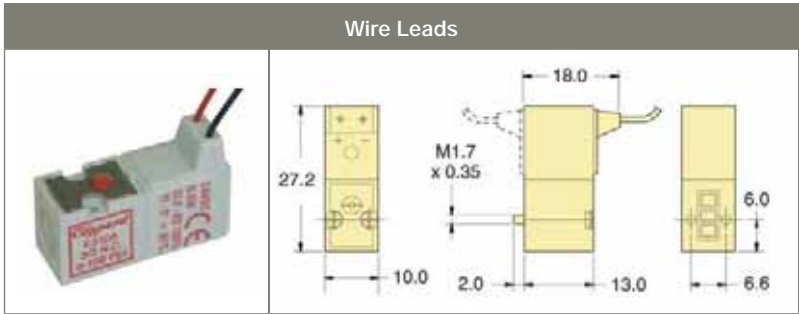
0.5 Orifice: 14 l/min.  
0.75 Orifice: 31.2 l/min.

**Exhaust Flow:**

0.5 Orifice: 22.7 l/min.  
0.75 Orifice: 34 l/min.



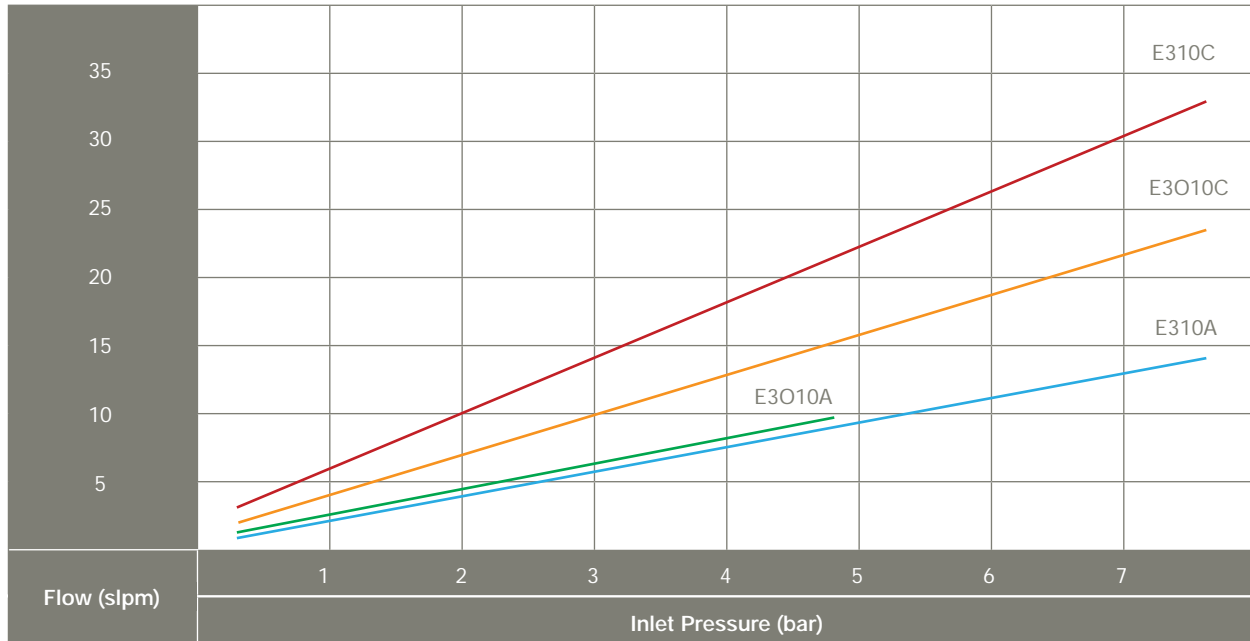
# 54 Electronic Valves – 10 mm Miniature Valves



Electrical Specifications					
Voltage	Voltage Tolerance	Power (watts)	Response Time (Energized)	Response Time (De-Energized)	Coil Insulation Class
12/24 VDC	-5 to 10%	0.6 or 1.3	8 milliseconds	10 milliseconds	155°C

By selecting the appropriate connector type for your 10 mm valve, tight spaces, orientation issues and electrical requirements can be accommodated easily.

## Typical Air Flow



- E310C
- E3010C
- E3010A
- E310A

**Cover Plate**

**Mounting Interface**

Part No.	Description
E10M-CP	10 mm Cover Plate



Wire Connector must be ordered separately. 24 AWG. Stranding 7/32.

Part No.	Wire Length
C2A-RB300	* 300 mm
C2A-RB500	* 500 mm
C2A-RB1000	* 1.000 mm

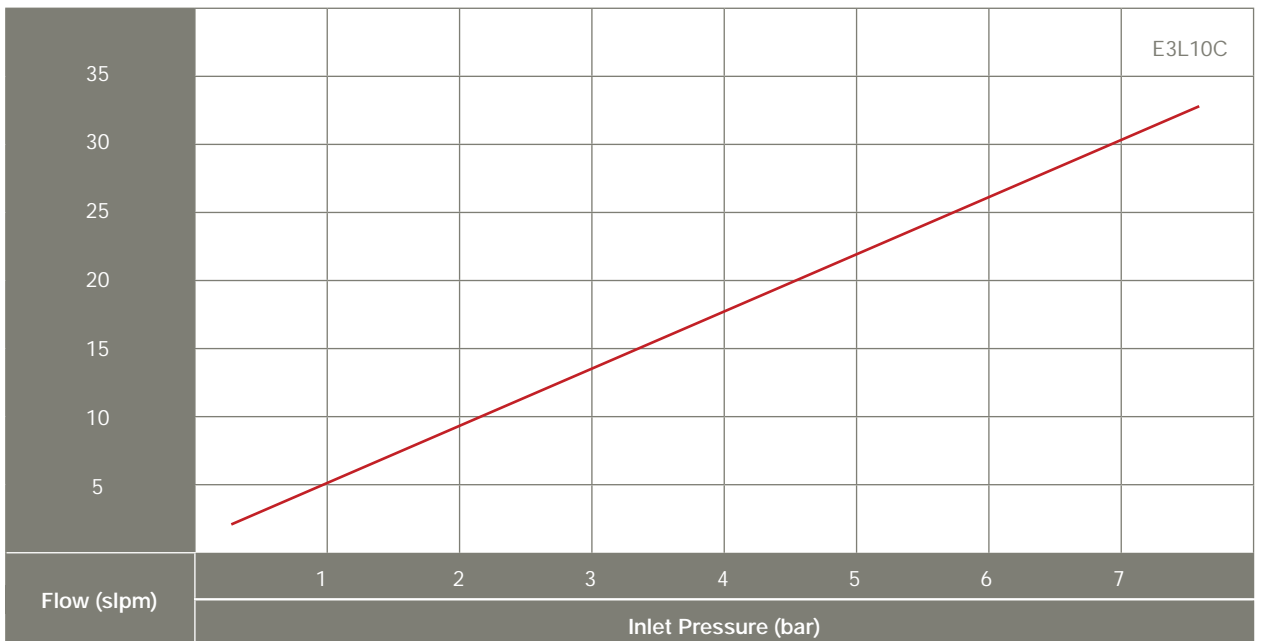
\* Connector with Cable



## Latching

Clippard’s 10 mm Latching Valves have many of the same features as the popular 10 mm valve line including small, compact design, exceptional life and reliability, light-weight design and more. A careful balance of forces—through the precise placement of a permanent magnet in the valve core—produces a bi-stable valve. A short pulse of current opens the valve, which “latches” open indefinitely after the current stops. A subsequent pulse of current in the opposite direction closes the valve. The valve consumes less energy and produces less heat than a standard solenoid valve when used in extended duty cycle applications, since the coil is energized for only a small fraction of the total duty cycle.

## Typical Air Flow



## Specifications

**Material:**  
Stainless steel core and springs, nylon body, FKM dynamic seals, and Nitrile gasket and static seals. FKM gasket available, consult factory.

**Medium:**  
Air, Gas or other compatible Fluids

**Temperature Range:**  
-5 to 50°C. When below 0°C must use clean, dry air

**Copper Wire Insulation Class:**  
F 115°C

**Response:**  
8 milliseconds when energized;  
10 milliseconds when de-energized

**Voltage:**  
12 VDC or 24 VDC. 6 VDC also available. Call for further information.

**Voltage Tolerance:**  
-5 to 10%

**Electrical Connection:**  
2-Wire Reverse Polarity,  
300 mm, 24 AWG

**Working Pressure:**  
See chart below.

**Max. Flow Rate:**  
0.75 Orifice: 31.2 l/min.

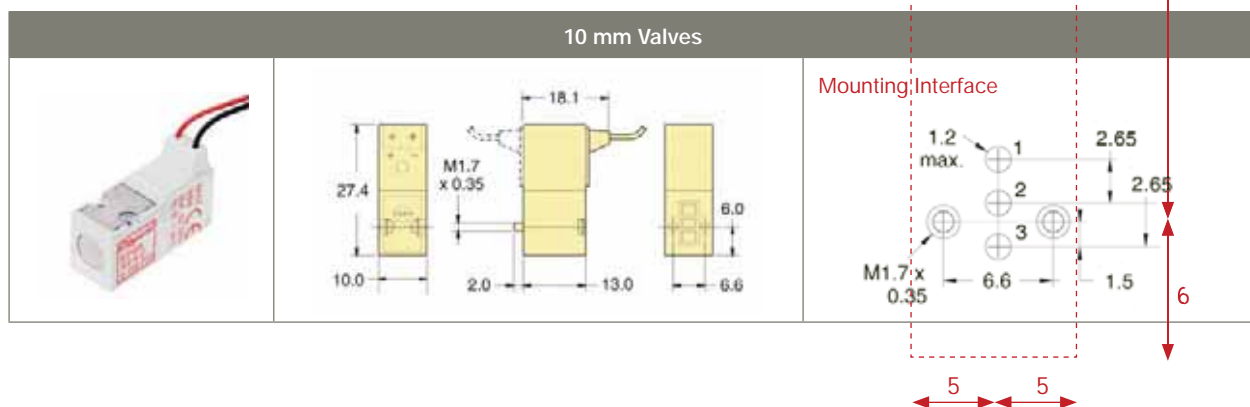


10 mm Miniature Valves

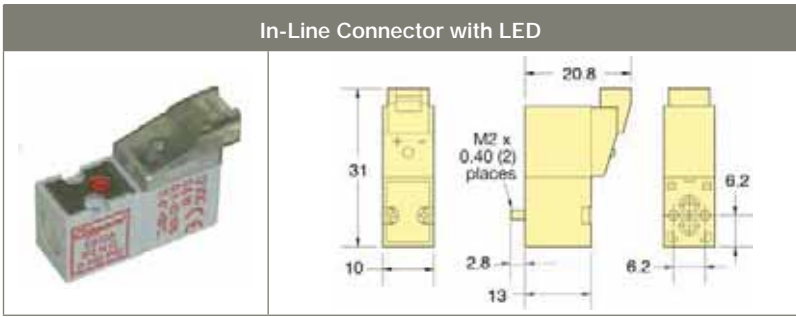
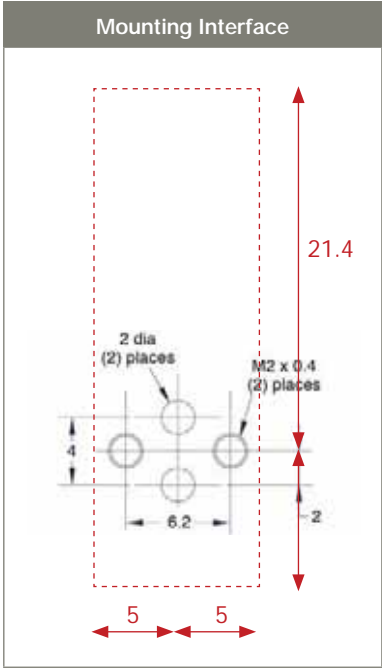
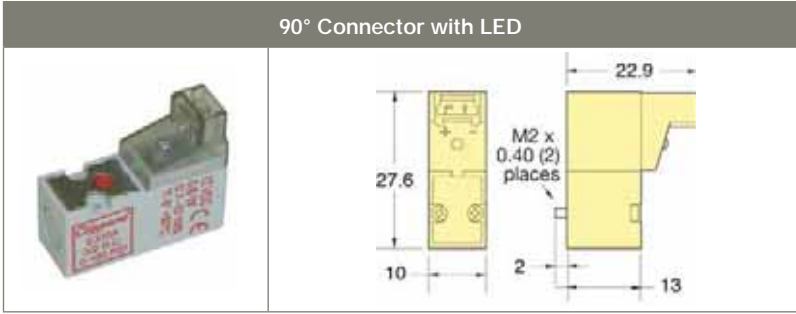
- 2/2 + 3/2 Normally-Closed configurations
- Pulse-actuated (on or off)
- Polarity reverse required
- Stable latch

Order Information						
Type	Working Pressure	Watts	Voltage	Orifice	Connector	Base No.
10 mm 2/2	0 to 7 bar	2	12 VDC	0.75	Wire Leads	E2L10C-7W012
	0 to 7 bar	2	24 VDC	0.75		E2L10C-7W024
10 mm 3/2	0 to 7 bar	2	12 VDC	0.75	Wire Leads	E3L10C-7W012
	0 to 7 bar	2	24 VDC	0.75		E3L10C-7W024

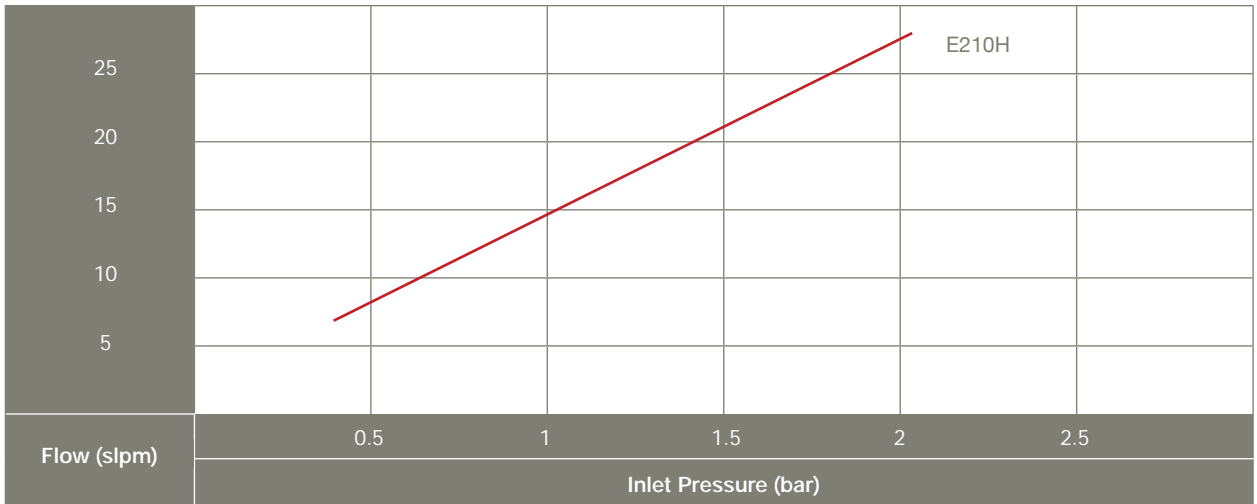
See Pages 48 + 49 and 56 + 57 for Connectors and Manifolds.



# 58 Electronic Valves – High Flow 2/2 10 mm Miniature Valves



## Typical Air Flow



## Specifications

**Material:**  
Stainless steel core and springs, nylon body, FKM dynamic seals, and Nitrile gasket and static seals. FKM gasket and static seals available, consult factory.

**Medium:**  
Air, Gas or other compatible Fluids

**Power Consumption:**  
3.5 watts in rush phase;  
15 milliseconds/0.35 watts in maintenance phase

**Temperature Range:**  
-5 to 50°C. When below 0°C must use clean, dry air

**Response:**  
8 milliseconds when energized; 10 milliseconds when de-energized

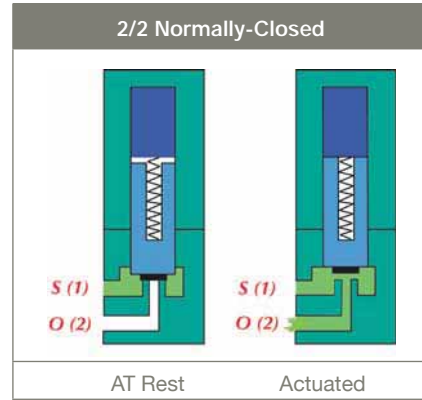
**Voltage:**  
12 VDC or 24 VDC

**Voltage Tolerance:**  
-5 to 10%

**Working Pressure:**  
See chart below.

**Max. Flow Rate:**  
1.4 Orifice: 28 l/min.

## Function. Schematics



S - Supply | O - Outlet

Order Information						
Type	Working Pressure	Watts	Voltage	Orifice	Connector	Base No.
10 mm 2/2	0 to 2 bar	3.5	12 VDC	1.4	90° with LED	E210H-3L012
	0 to 2 bar	3.5	24 VDC	1.4		E210H-3L024
10 mm 2/2	0 to 2 bar	3.5	12 VDC	1.4	In-Line with LED	E210H-3C012
	0 to 2 bar	3.5	24 VDC	1.4		E210H-3C024

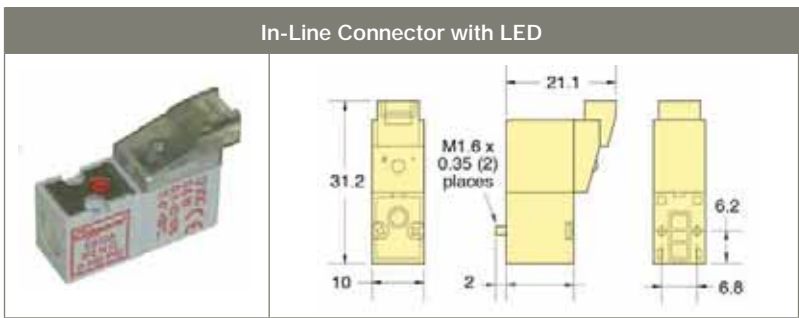
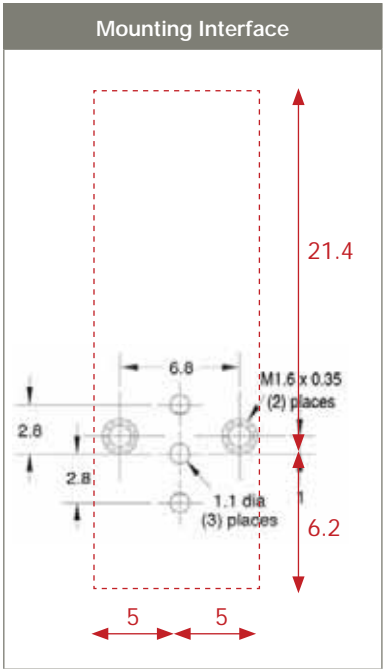
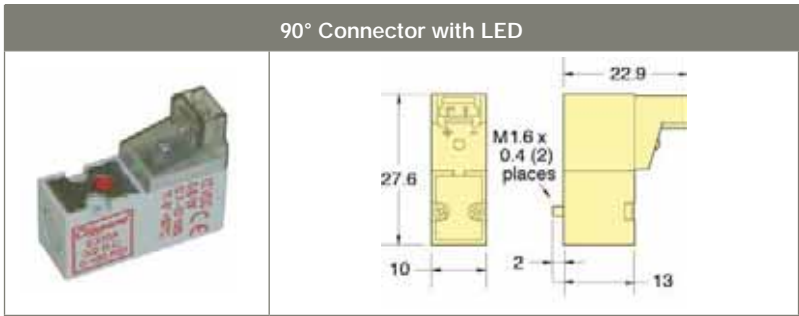
See Pages 48 + 49 and 56 + 57 for Connectors and Manifolds.

**10 mm Valves**

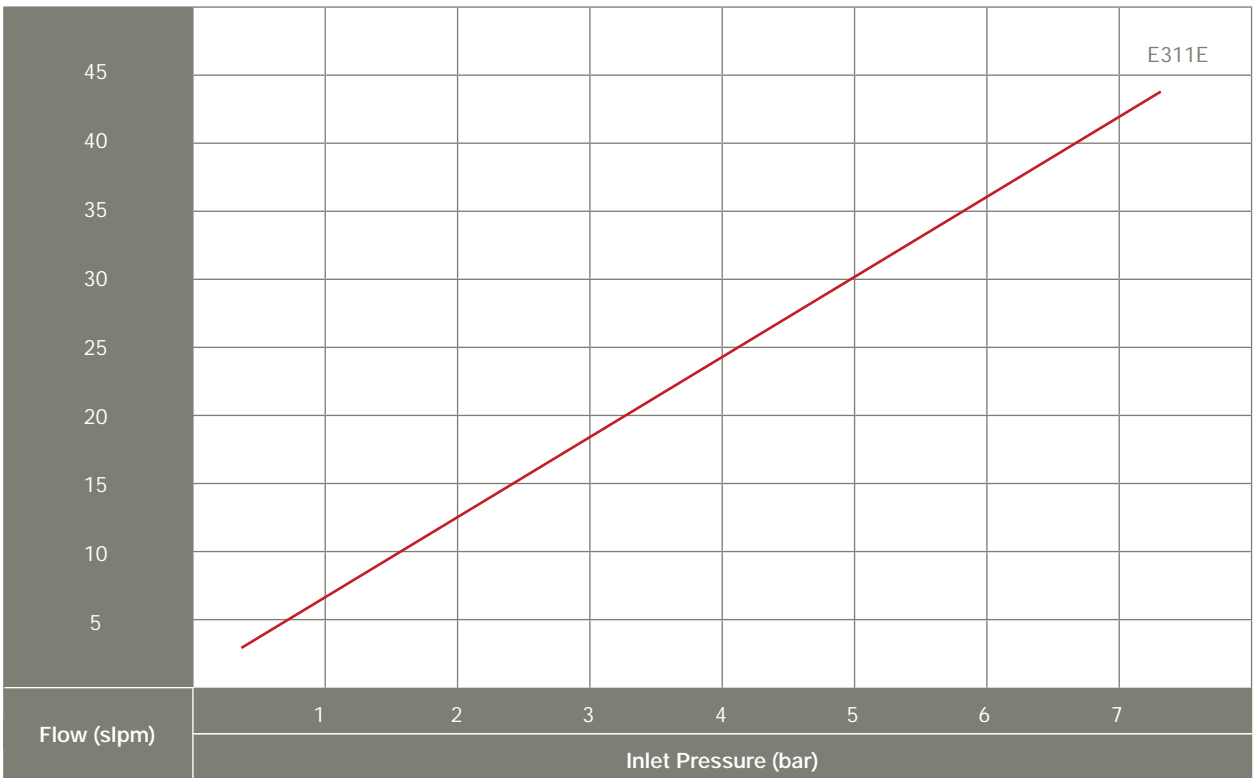
Mounting Interface

Part No.	Description
M-E10HM-01	10 mm Single-Station Manifold

# 60 Electronic Valves – ISO 15218 10 mm 3/2 Miniature Valves



## Typical Air Flow



## Specifications

**Material:**  
Stainless steel core and springs, nylon body, FKM seals, and Nitrile gasket and static seals. FKM gasket available, consult factory.

**Medium:**  
Air, Gas or other compatible Fluids

**Power Consumption:**  
3.5 watts in rush phase;  
15 milliseconds/0.35 watts in maintenance phase

**Temperature Range:**  
-5 to 50°C

**Coil Insulation Class:**  
F 155°C

**Response:**  
8 milliseconds when energized; 10 milliseconds when de-energized

**Voltage:**  
12 VDC or 24 VDC.

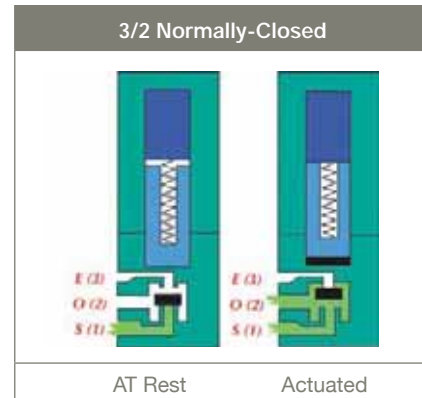
**Voltage Tolerance:**  
-5 to 10%

**Working Pressure:**  
See chart below.

**Max. Flow Rate:**  
1.1 Orifice: 42 l/min.

**Exhaust Flow:**  
1.1 Orifice: 49 l/min.

## Function. Schematics



S - Supply | E - Exhaust | O - Outlet

Order Information						
Type	Working Pressure	Watts	Voltage	Orifice	Connector	Base No.
10 mm 3/2	0 to 7 bar	3.5	12 VDC	1.1	90° with LED	E311E-3L012
	0 to 7 bar	3.5	24 VDC	1.1		E311E-3L024
10 mm 3/2	0 to 7 bar	3.5	12 VDC	1.1	In-Line with LED	E311E-3C012
	0 to 7 bar	3.5	24 VDC	1.1		E311E-3C024

See Pages 48 + 49 and 56 + 57 for Connectors and Manifolds.

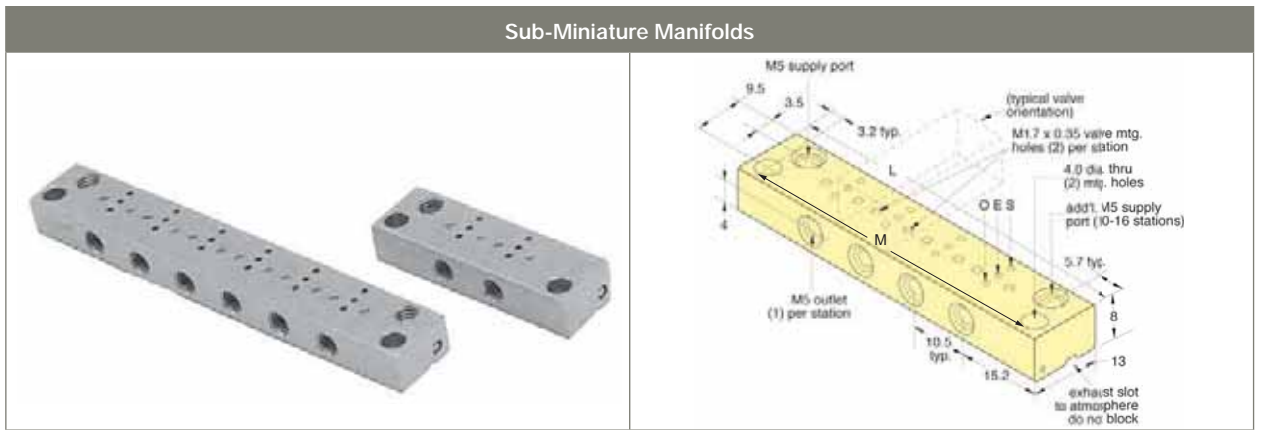
**10 mm Valves**

**Mounting Interface**

Part No.	Description
M-E10LM-01	ISO 10 mm Single-Station Manifold

### Sub-Miniature Manifolds

Small, compact manifolds offer the efficient grouping of 10 mm valves along with fast installation. Each manifold features a common inlet, individually-ported outlets, and exhaust to atmosphere.



S - Supply | E - Exhaust | O - Outlet

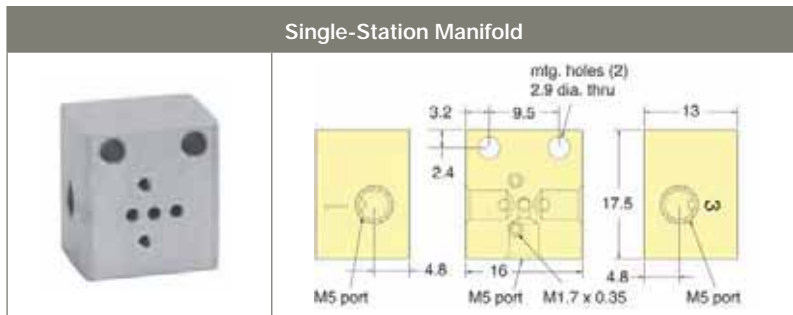
Part No.	Stations	Supply Ports	Length L	Mounting M
M-E10SM-02	2	1	41	34.5
M-E10SM-04	4	1	62	55.5
M-E10SM-06	6	1	83	76.5

\* Consult factory for other stations number.

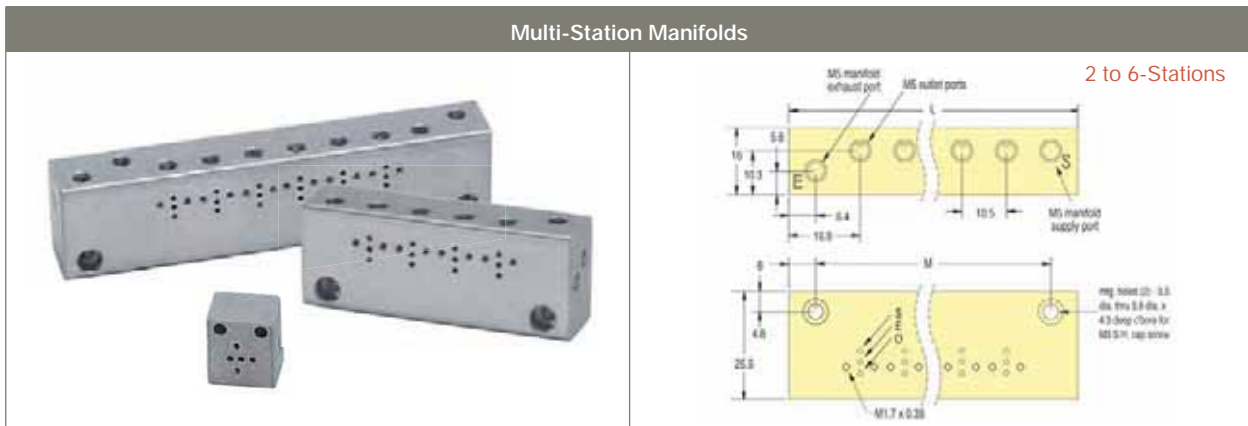


## Manifolds

Manifolds are available for 1 to 6 valves with ported exhaust. Spare hardware and closing plates also available.



Part No.	Description
M-E10M-01	Single-Station Manifold



Part No.	Stations	Length L	Mtg. M
M-E10M-02	2	44	32
M-E10M-04	4	65	53
M-E10M-06	6	86	74

\* Consult factory for other stations number.

# 64 Electronic Valves – 15 mm Miniature Valves

Multiple connectors:  
Snap-in Plugs | Wire Leads  
Custom Plugs | DIN  
Terminal Spades

LED for confirmation of operation

International diodes for current spike suppression and a power saving circuit is available

HIGHLY VISIBLE manual override provides valve actuation without power

Mounting Screws: M3 x 0.5

Front left corner of valve!

High durability and corrosion-resistant glass filled nylon housing

FKM seals and Nitrile gasket (FKM available)

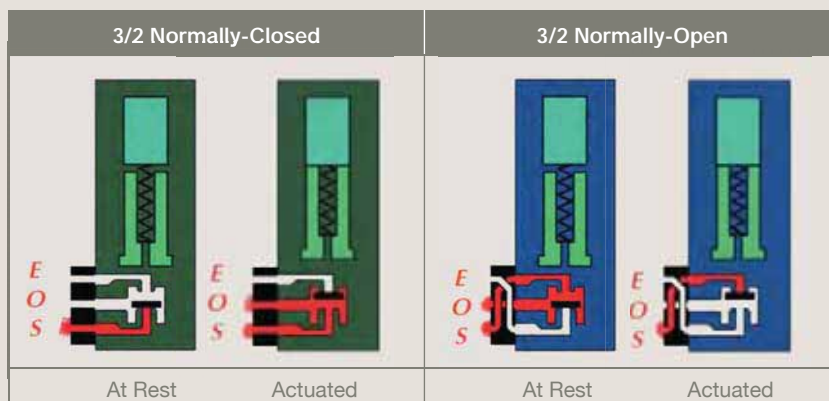
2/2 or 3/2 valves in Normally-Closed and Normally-Open

Encapsulated low wattage coils. Available in 12 VDC, 24 VDC, 24 VAC, 110 VAC or 220 VAC. Special voltages available for OEMs.

One-piece gasket for manifold mount and supply/exhaust port reversed for same manifold mounting of N.O. or N.C. valve

Config.	1	2	3
N.C. + N.O.	exhaust	outlet	supply

## Functional Schematics



### Porting Gasket

The Normally-Open and Normally-Closed configurations allow both models to be mounted on the same manifold.



S - Supply | E - Exhaust | O - Outlet

This numbering schematic is shown for illustration purposes only. All possible configurations are not available. For standard models, see the products illustrated in this catalog.



Custom plugs, wire lengths and connectors are available for your specific requirements. Call for details.

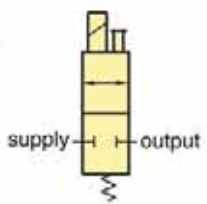
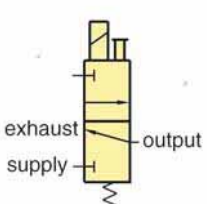
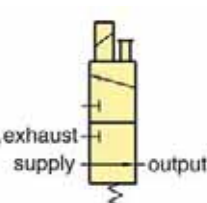


Numbering System				
Valve Type	Orifice Code	Power	Electrical Connection	Voltage
<b>E215</b> - 2/2 N.C.	<b>D</b> - 0.8 mm	<b>1</b> - 1 Watts	<b>T</b> - Terminal	<b>012</b> - 12 VDC
<b>E315</b> - 3/2 N.C.	<b>E</b> - 1.1 mm	<b>2</b> - 2.5 Watts	<b>D</b> - DIN	<b>024</b> - 24 VDC
<b>E3015</b> - 3/2 N.O.	<b>F</b> - 1.6 mm		<b>C</b> - In-Line with LED	<b>24A</b> - 24 VAC
			<b>L</b> - 90° with LED	<b>110</b> - VAC
			<b>W</b> - Wire Leads, 300 mm	<b>220</b> - VAC
<b>E315                      F                      -                      2                      L                      024</b>				

Electrical Specifications					
Voltage	Voltage Tolerance	Power (watts)	Response Time (Energized)	Response Time (De-Energized)	Coil Insulation Class
12 VDC	-5 to 10%	1/2.5 *	10 milliseconds	12 milliseconds	F 155°C
24 VDC					
24 VAC					
110 VAC					
220 VAC					

\* Depending on the orifice and the pressure.

# 66 Electronic Valves – 15 mm Miniature Valves

Order Information										
Type	Working Pressure	12 VDC	24 VDC	24 VAC	110 VAC	220 VAC	Watts	Orifice	Connector	Base No.
 <p>2/2 Normally-Closed</p>	0 to 10 bar		•				1	0.8	Terminal	E215D-1T *
	0 to 10 bar	•	•	•			2.5	1.1		E215E-2T *
	0 to 7 bar	•	•	•			2.5	1.6		E215F-2T *
	0 to 10 bar		•				1	0.8	DIN	E215D-1D *
	0 to 10 bar	•	•	•	•	•	2.5	1.1		E215E-2D *
	0 to 7 bar	•	•	•	•	•	2.5	1.6		E215F-2D *
	0 to 10 bar		•				1	0.8	Wire Leads, 300 mm	E215D-1W *
	0 to 10 bar	•	•	•			2.5	1.1		E215E-2W *
	0 to 7 bar	•	•	•			2.5	1.6		E215F-2W *
	0 to 10 bar		•				1	0.8	90° with LED	E215D-1L *
	0 to 10 bar	•	•				2.5	1.1		E215E-2L *
	0 to 7 bar	•	•				2.5	1.6		E215F-2L *
	0 to 10 bar		•				1	0.8	In-Line with LED	E215D-1C *
	0 to 10 bar	•	•				2.5	1.1		E215E-2C *
	0 to 7 bar	•	•				2.5	1.6		E215F-2C *
 <p>3/2 Normally-Closed</p>	0 to 10 bar		•				1	0.8	Terminal	E315D-1T *
	0 to 10 bar	•	•	•			2.5	1.1		E315E-2T *
	0 to 7 bar	•	•	•			2.5	1.6		E315F-2T *
	0 to 10 bar		•				1	0.8	DIN	E315D-1D *
	0 to 10 bar	•	•	•	•	•	2.5	1.1		E315E-2D *
	0 to 7 bar	•	•	•	•	•	2.5	1.6		E315F-2D *
	0 to 10 bar		•				1	0.8	Wire Leads, 300 mm	E315D-1W *
	0 to 10 bar	•	•	•			2.5	1.1		E315E-2W *
	0 to 7 bar	•	•	•			2.5	1.6		E315F-2W *
	0 to 10 bar		•				1	0.8	90° with LED	E315D-1L *
	0 to 10 bar	•	•				2.5	1.1		E315E-2L *
	0 to 7 bar	•	•				2.5	1.6		E315F-2L *
	0 to 10 bar		•				1	0.8	In-Line with LED	E315D-1C *
	0 to 10 bar	•	•				2.5	1.1		E315E-2C *
	0 to 7 bar	•	•				2.5	1.6		E315F-2C *
 <p>3/2 Normally-Open</p>	0 to 7 bar	•	•	•			2.5	1.1	Terminal	E3015E-2T *
	0 to 5 bar	•	•	•			2.5	1.6		E3015F-2T *
	0 to 7 bar	•	•	•	•	•	2.5	1.1	DIN	E3015E-2D *
	0 to 5 bar	•	•	•	•	•	2.5	1.6		E3015F-2D *
	0 to 7 bar	•	•	•			2.5	1.1	Wire Leads, 300 mm	E3015E-2W *
	0 to 5 bar	•	•	•			2.5	1.6		E3015F-2W *
	0 to 7 bar	•	•				2.5	1.1	90° with LED	E3015E-2L *
	0 to 5 bar	•	•				2.5	1.6		E3015F-2L *
	0 to 7 bar	•	•				2.5	1.1	In-Line with LED	E3015E-2C *
	0 to 5 bar	•	•				2.5	1.6		E3015F-2C *

\* Add Voltage Choice to the end of each Base Part Number. Example E315D-1L012

## Specifications

**Material:**

Stainless steel core and springs, nylon body, FKM seals, and Nitrile gasket. FKM gasket available, consult factory.

**Medium:**

Air, Gas or other compatible Fluids

**Power Consumption:**

1 or 2.5 watts dependent on Orifice Size and Pressure

**Temperature Range:**

-5 to 50°C

**Coil Insulation Class:**

F 155°C

**Response:**

10 milliseconds when energized;  
12 milliseconds when de-energized

**Voltage:**

12 VDC, 24 VDC or 24 VAC.  
110 VAC and 220 VAC only available with DIN Connectors.

**Voltage Tolerance:**

-5 to 10%

**Working Pressure:**

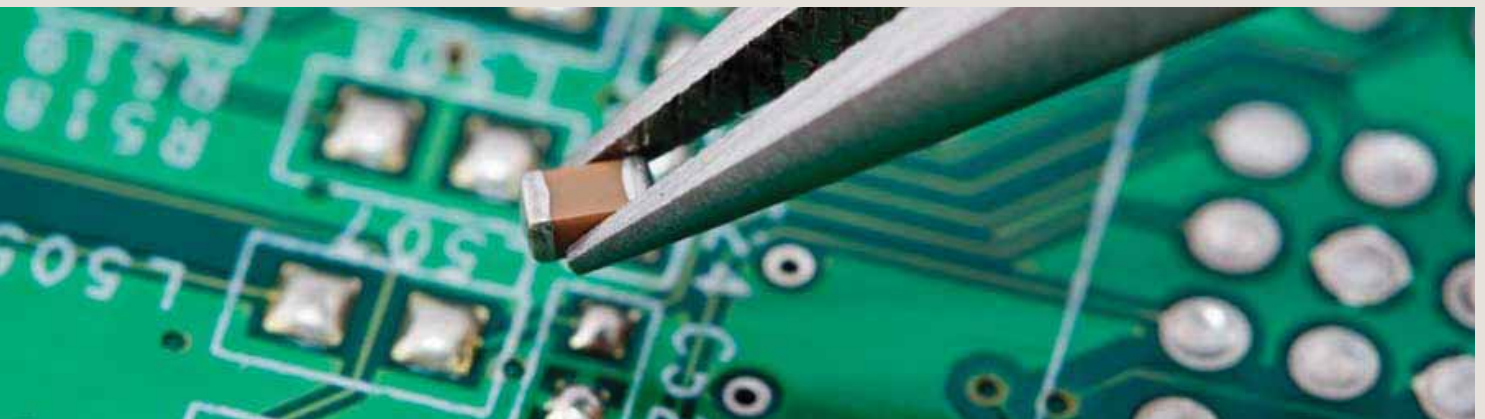
See chart Page before

**Max. Flow Rate:**

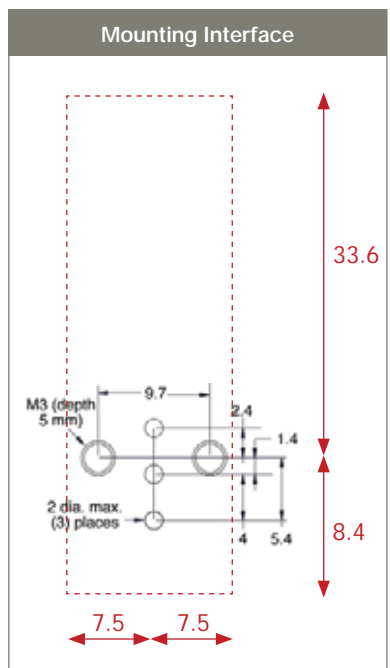
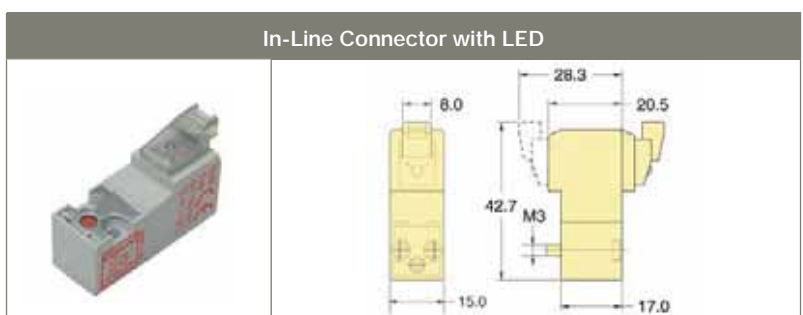
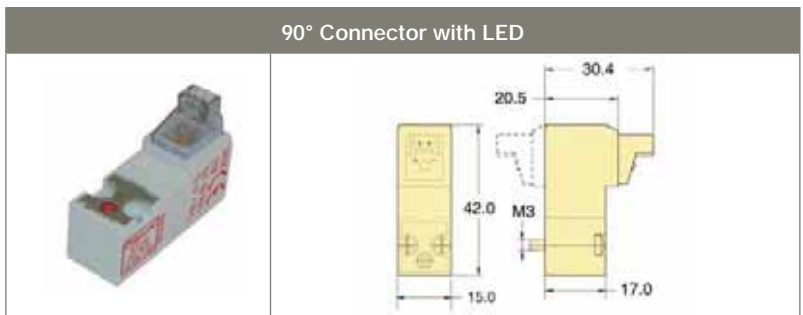
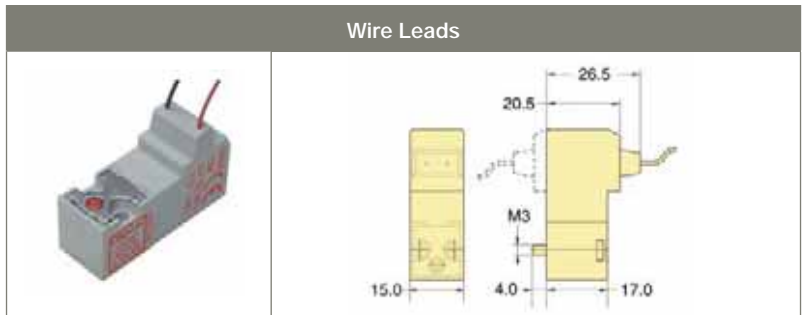
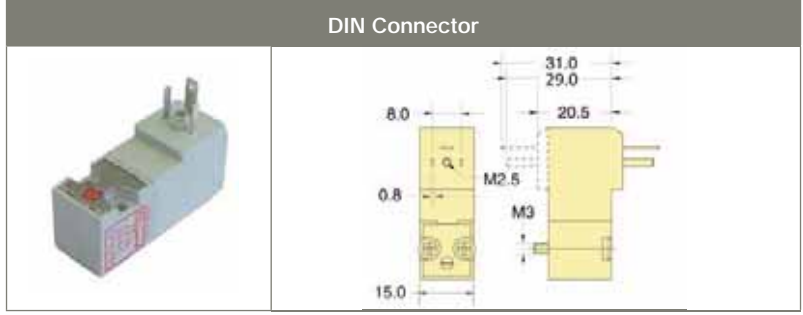
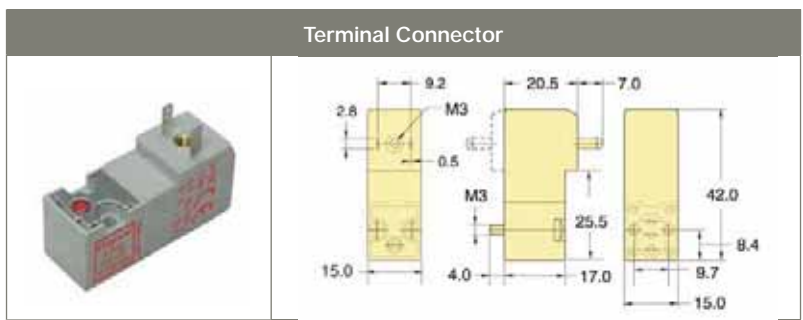
0.8 Orifice: 45 l/min.

1.1 Orifice: 70 l/min.

1.6 Orifice: 91 l/min.



# 68 Electronic Valves – 15 mm Miniature Valves

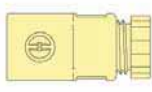
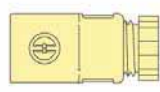
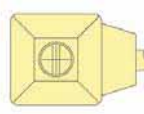
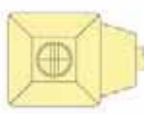
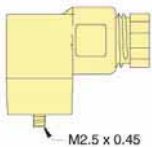
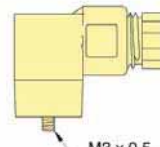
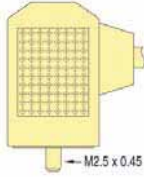
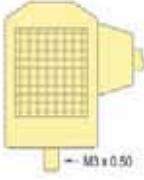
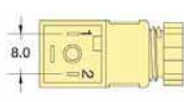

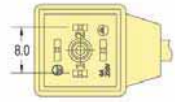



## DIN Connectors

For Use with 15 mm Valves only.

DIN 43650 Form C Connectors with 8 mm spade center spacing mate with the 15 mm DIN connector coil. Industrial Form Connectors with 9.4 mm spade center spacing are designed to connect to 15 mm terminal coils. Both are available with or without surge suppression, and 150 or 380 mm PVC molded three-wire cord set.

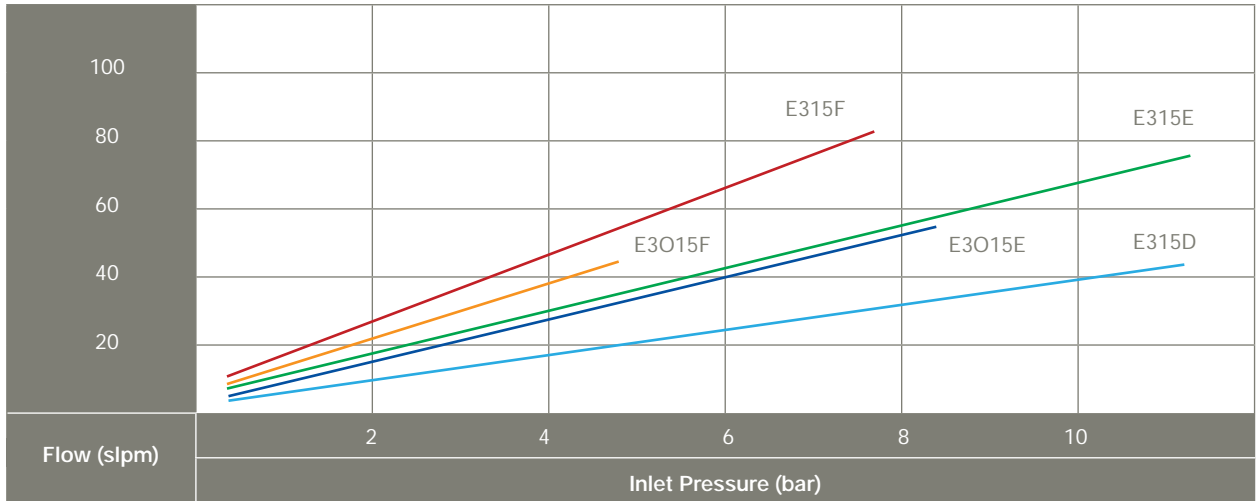
			Form C	Industrial Form
Voltage	LED	Cord	Part No.	Part No.
6-240	no	–	CC-C	CC-I
6-240	no	150 mm	CC-C-P6	CC-I-P6
6-240	no	380 mm	CC-C-P15	CC-I-P15
6-24	yes	–	CC-CLL	CC-ILL
6-24	yes	150 mm	CC-CLL-P6	CC-ILL-P6
6-24	yes	380 mm	CC-CLL-P15	CC-ILL-P15
48-110	yes	–	CC-CLM	CC-ILM
48-110	yes	150 mm	CC-CLM-P6	CC-ILM-P6
48-110	yes	380 mm	CC-CLM-P15	CC-ILM-P15

		Molded 3-Wire Cord Set	
Form C	Industrial Form	Form C	Industrial Form
			
 M2.5 x 0.45	 M3 x 0.5	 M2.5 x 0.45	 M3 x 0.50
 8.0	 9.4	 8.0	 9.4
with „DIN Connector“	with „Terminal Connector“	with „DIN Connector“	with „Terminal Connector“





### Typical Air Flow



- E315F      — E315E      — E315D
- E3015F    — E3015E

Cover Plate

Mounting Interface

Part No.	Description
E15M-CP	15 mm Cover Plate



Wire Connector must be ordered separately. 24 AWG. Stranding 7/32.

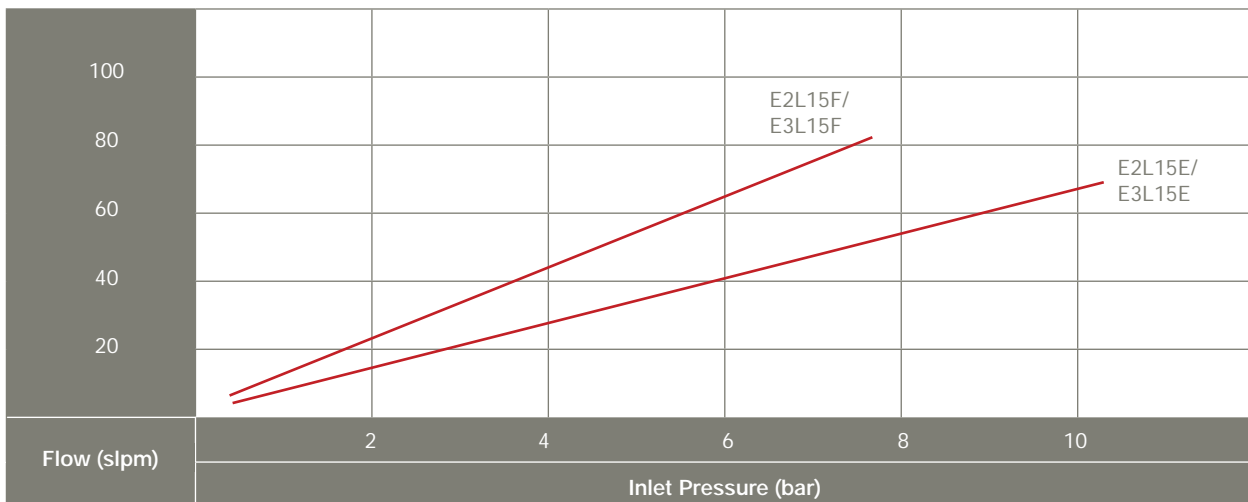
Part No.	Wire Length
C2A-RB300	* 300 mm
C2A-RB500	* 500 mm
C2A-RB1000	* 1.000 mm

\* Connector with Cable

## Latching

Clippard’s 15 mm Latching Valves have many of the same features as the popular 15 mm valve line including small, compact design, exceptional life and reliability, light-weight design and more. A careful balance of forces—through the precise placement of a permanent magnet in the valve core—produces a bi-stable valve. A short pulse of current opens the valve, which “latches” open indefinitely after the current stops. A subsequent pulse of current in the opposite direction closes the valve. The valve consumes less energy and produces less heat than a standard solenoid valve when used in extended duty cycle applications, since the coil is energized for only a small fraction of the total duty cycle.

## Typical Air Flow



# 72 Electronic Valves – Latching 15 mm Miniature Valves

## Specifications

**Material:**  
Stainless steel core and springs, nylon body, FKM dynamic seals, and Nitrile gasket and static seals. FKM gasket available, consult factory.

**Medium:**  
Air, Gas or other compatible Fluids

**Temperature Range:**  
-5 to 50°C. When below 0°C must use clean, dry air

**Copper Wire Insulation Class:**  
F 115°C

**Response:**  
10 milliseconds when energized;  
12 milliseconds when de-energized

**Voltage:**  
12 VDC or 24 VDC. 6 VDC also available. Call for further information.

**Voltage Tolerance:**  
-5 to 10%

**Electrical Connection:**  
3-Wire Molded Cord, 300 mm, 24 AWG, 4.5 mm external jacket, tinned copper wires, silicone jacket and conductor insulation.

**Working Pressure:**  
See chart Page below.

**Max. Flow Rate:**  
1.1 Orifice: 59 l/min.  
1.6 Orifice: 84 l/min.

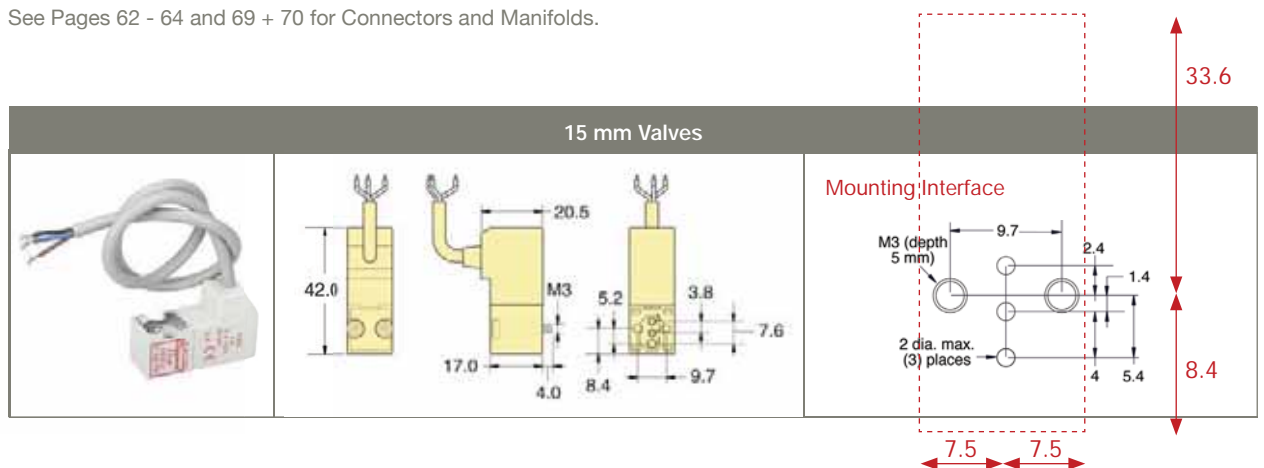


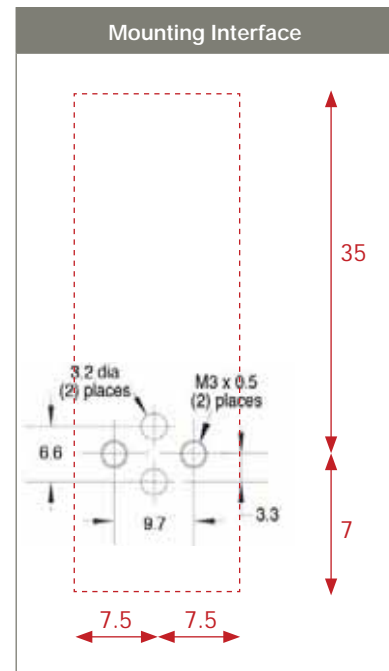
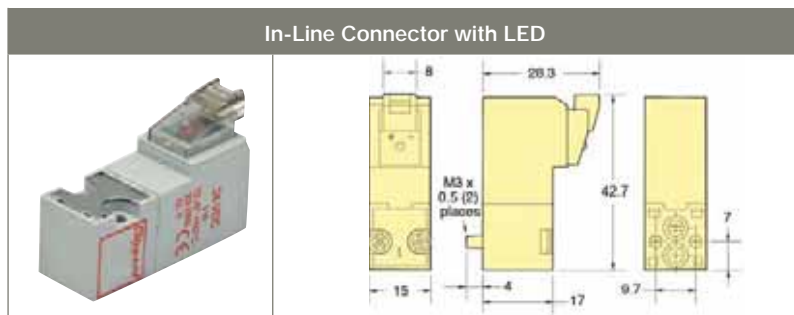
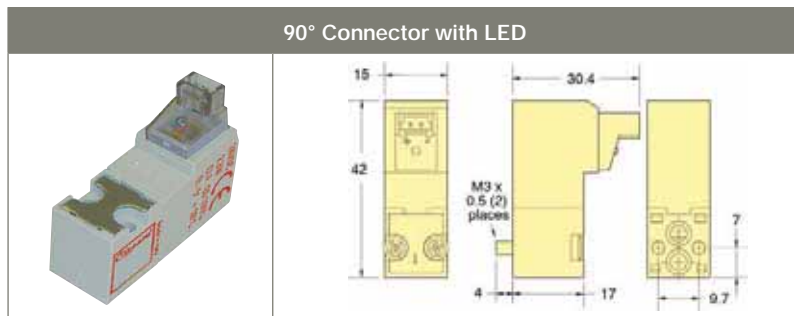
15 mm Miniature Valves

- 2/2 + 3/2 Normally-Closed configurations
- Pulse-actuated (on or off)
- 3-Wire Coil. 300 mm length. No polarity reverse required
- Stable latch

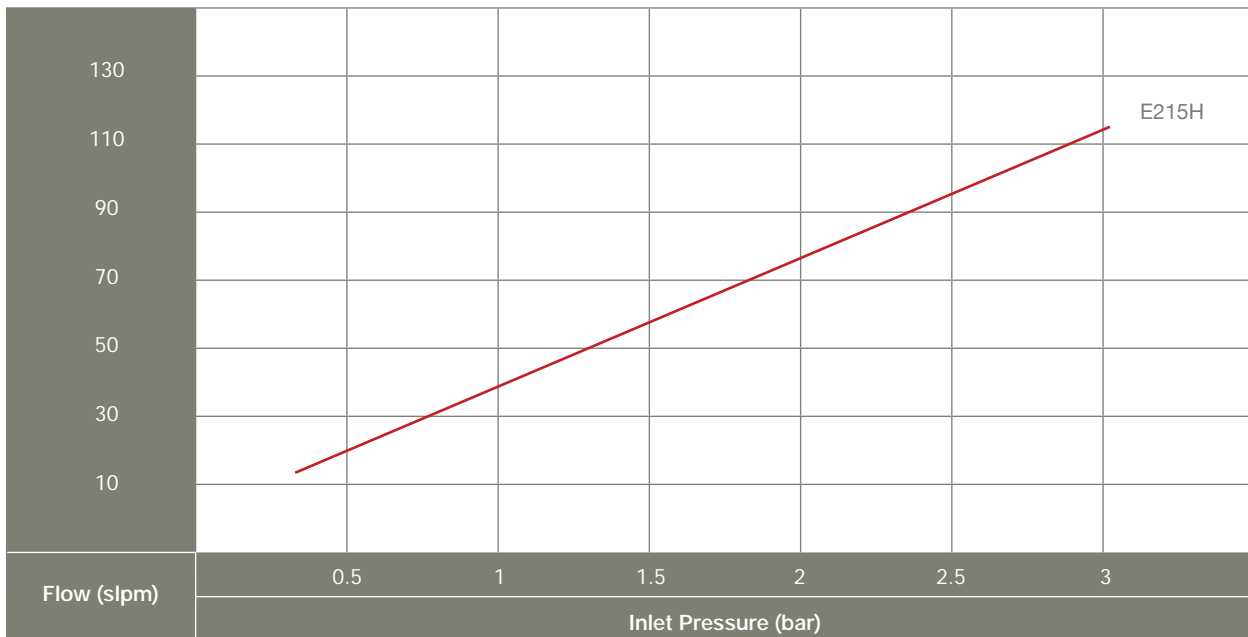
Order Information						
Type	Working Pressure	Watts	Voltage	Orifice	Connector	Base No.
15 mm 2/2	0 to 10 bar	4	12 VDC	1.1	3-Wire Molded Cord, 300 mm	E2L15E-4W012
	0 to 10 bar	4	24 VDC	1.1		E2L15E-4W024
	0 to 7 bar	4	12 VDC	1.6		E2L15F-4W012
	0 to 7 bar	4	24 VDC	1.6		E2L15F-4W024
15 mm 3/2	0 to 10 bar	4	12 VDC	1.1	3-Wire Molded Cord, 300 mm	E3L15E-4W012
	0 to 10 bar	4	24 VDC	1.1		E3L15E-4W024
	0 to 7 bar	4	12 VDC	1.6		E3L15F-4W012
	0 to 7 bar	4	24 VDC	1.6		E3L15F-4W024

See Pages 62 - 64 and 69 + 70 for Connectors and Manifolds.





## Typical Air Flow



# 74 Electronic Valves – High Flow 2/2 N.C. 15 mm Valves

## Specifications

**Material:**  
Stainless steel core and springs, nylon body, FKM seals, and Nitrile gasket. FKM gasket available, consult factory.

**Medium:**  
Air, Gas or other compatible Fluids

**Power Consumption:**  
4 watts

**Temperature Range:**  
-5 to 50°C

**Coil Insulation Class:**  
F 155°C

**Response:**  
10 milliseconds when energized; 12 milliseconds when de-energized

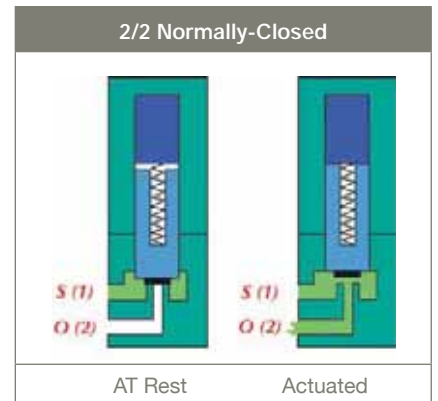
**Voltage:**  
12 VDC or 24 VDC

**Voltage Tolerance:**  
-5 to 10%

**Working Pressure:**  
See chart Page below.

**Max. Flow Rate:**  
3 mm Orifice: 120 l/min.

## Function. Schematics




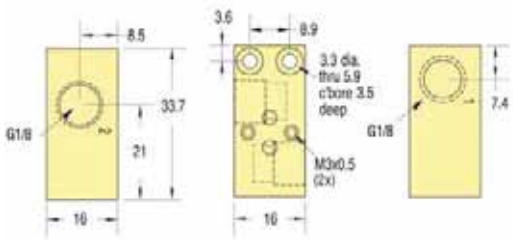
S - Supply | O - Outlet

Order Information						
Type	Working Pressure	Watts	Voltage	Orifice	Connector	Base No.
15 mm 2/2	0 to 3 bar	4	12 VDC	3	90° with LED	E215H-3L012
	0 to 3 bar	4	24 VDC	3		E215H-3L024
15 mm 2/2	0 to 3 bar	4	12 VDC	3	In-Line with LED	E215H-3C012
	0 to 3 bar	4	24 VDC	3		E215H-3C024

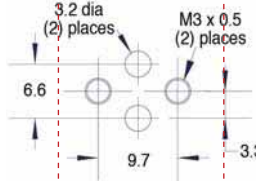
See Pages 66 - 68 and 73 + 74 for Connectors and Manifolds.

### 15 mm Valves





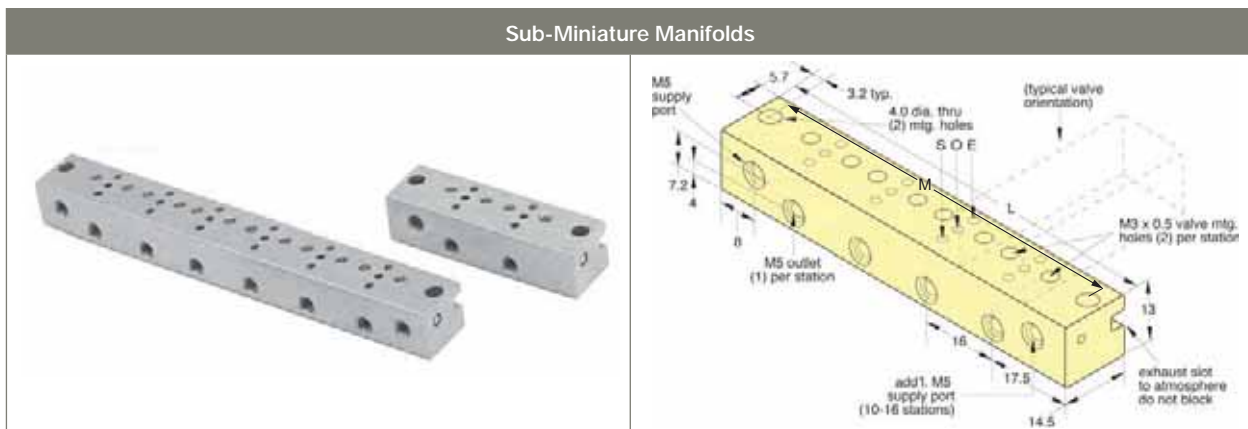
Mounting Interface



Part No.	Description
M-E15HM-01	15 mm Single-Station Manifold

## Sub-Miniature Manifolds

Small, compact manifolds offer the efficient grouping of 15 mm valves along with fast installation. Each manifold features a common inlet, individually-ported outlets, and exhaust to atmosphere.



S - Supply | E - Exhaust | O - Outlet

Part No.	Stations	Supply Ports	Length L	Mounting M
M-E15SM-02	2	1	51	44
M-E15SM-04	4	1	83	76
M-E15SM-06	6	1	115	108

\* Consult factory for other stations number.

# 76 Electronic Valves – 15 mm Valve Accessories

## Manifolds

Manifolds are available for 1 to 6 valves, and are supplied with mounting screws and gaskets. Spare hardware and closing plates also available.

**Single-Station Manifold**

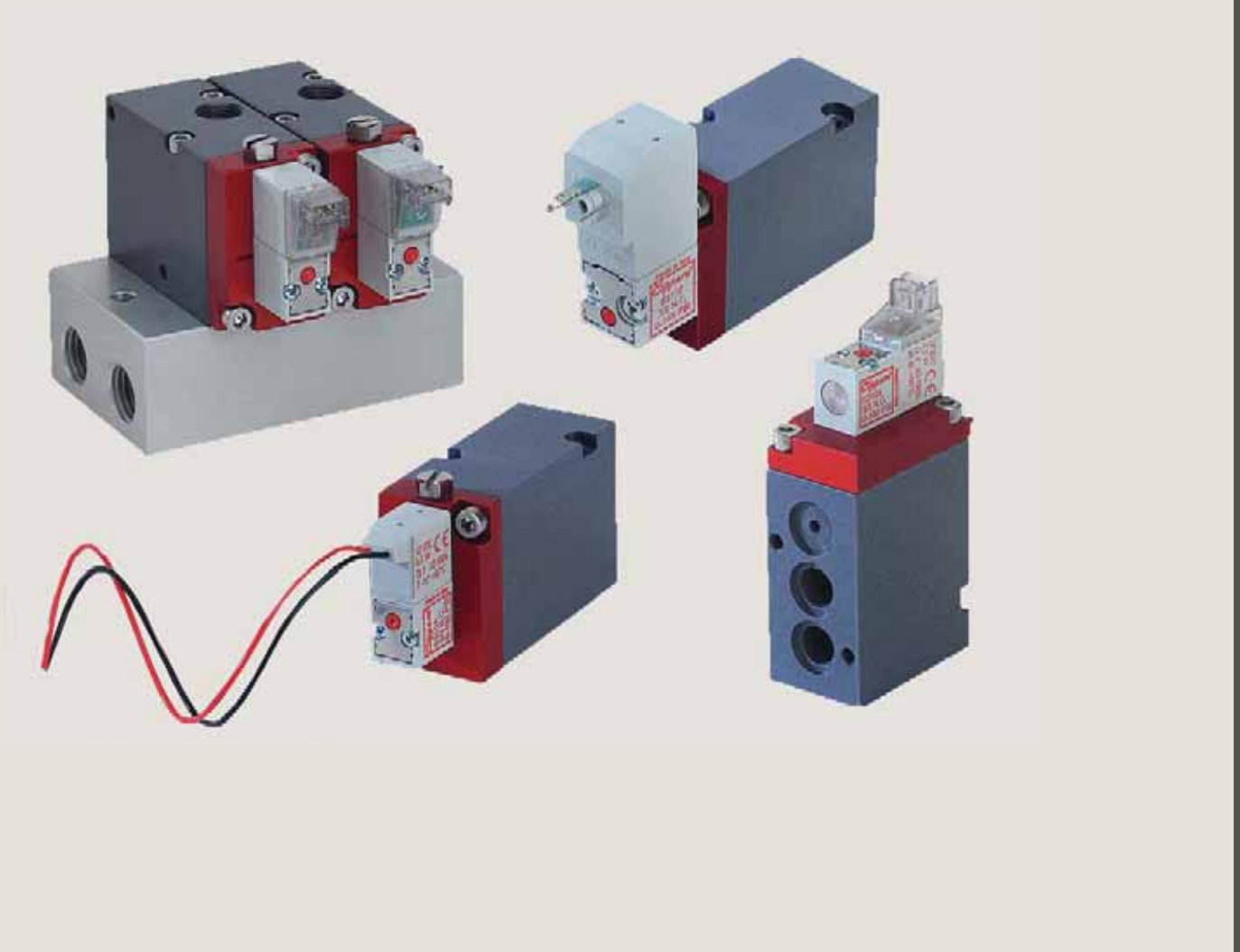
Part No.	Description
M-E15M-01	Single-Station Manifold

**Multi-Station Manifolds**

Part No.	Stations	Length L	Mtg. M
M-E15M-02	2	74	64
M-E15M-04	4	106	96
M-E15M-06	6	138	128

\* Consult factory for other stations number.



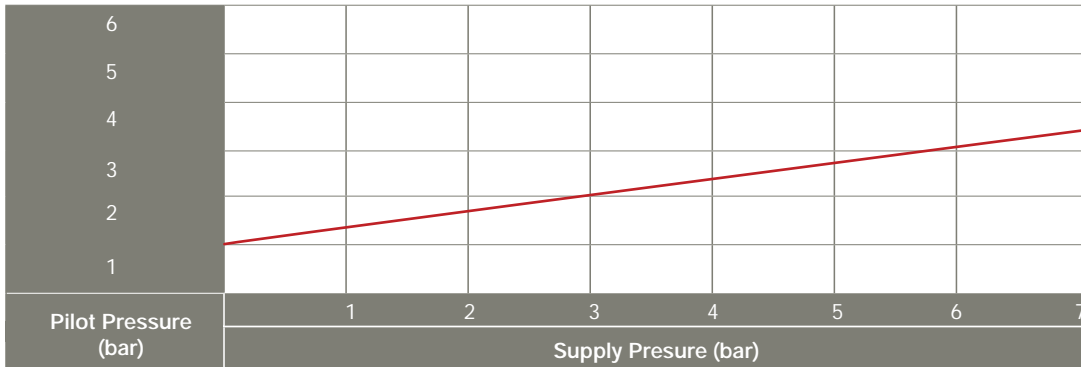


Clippard's EGV Series valves are an electronically piloted version of the GV series valves, ideal for large flow, low leak applications. Available in G1/8 ported and manifold mount, they utilize Clippard 10 mm or 15 mm valves, and offer numerous voltage and connection options. These 2/2 and 3/2 valves provide 10 times more flow than Clippard's MAV series and 2.5 times more flow than the MJV series! An externally piloted option is available for controlling lower pressures or other media.

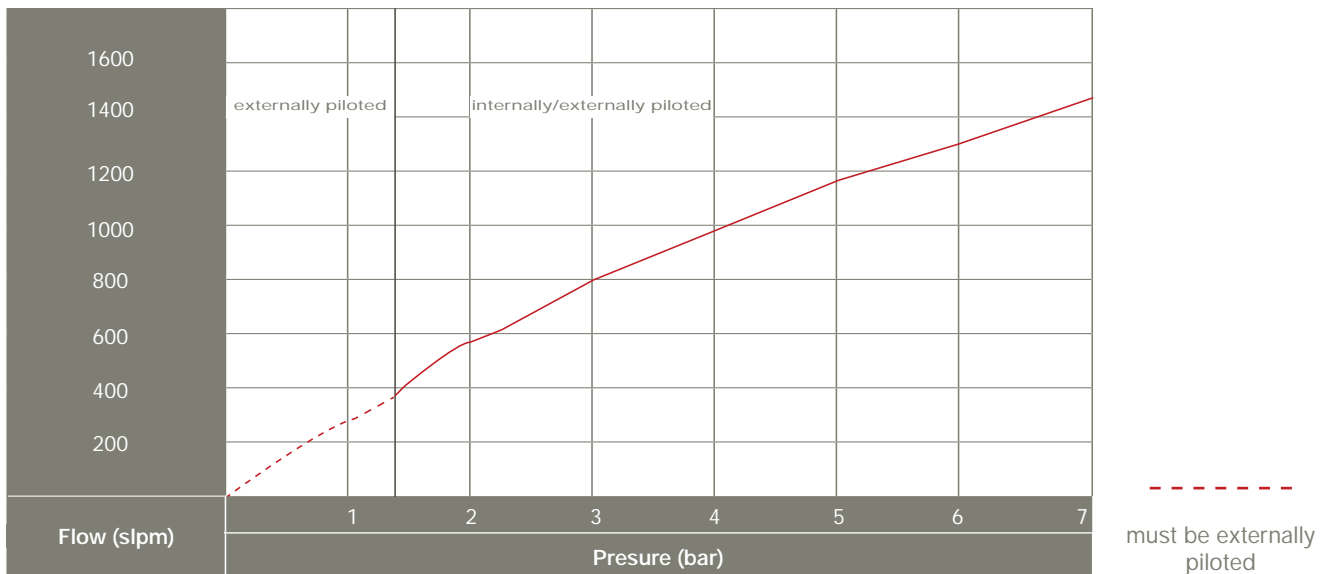
- Small, compact, lightweight with high flow
- Electroless nickel plated brass and hard coat anodized aluminum construction for long life and corrosion resistance
- Proven poppet design
- Large variety of control voltages and connections

# 78 Electronic Valves – M-EGV Series Electronic High Flow Poppet Valves

## Supply Pressure vs. Pilot Pressure



## Pressure vs. Flow



Medium:  
Air\*

Input Pressure:  
10 bar max.

Air Flow:  
850 l/min @ 3.5 bar; 1,500 l/min @ 7 bar

Temperature Range:  
0 to 50°C

Ports:  
G1/8 and manifold mount

Mounting:  
BSPP, side mounted or Manifold (come with mounting screws and seals)

Materials:  
Aluminium, Stainless Steel, Brass, Nylon

Power Consumption:  
DC version: 0,6 watts; AC version: 2.5 watts

Voltage:  
12 VDC, 24 VDC, 24 VAC, 110 VAC, 220 VAC

Seals:  
Nitrile, FKM optional (add suffix "-V" to Part No.)

\* Other pressures and media are available with externally piloted versions. Contact Clip-pard for more information.

## Order Information

Order Information									
G1/8 Ported or Mount	Manifold Mount (only)	Connector	12 VDC	24 VDC	24 VAC	110 VAC	220 VAC	Watt	Working Pressure
<b>2-Way Valves</b>									
M-EGV-2-E*	M-EGV-2M-E*	90° Connector	•	•					
M-EGV-2-L*	M-EGV-2M-L*	90° Connector with LED	•	•					
M-EGV-2-F*	M-EGV-2M-F*	In-Line Connector	•	•				0.6	1 to 7 bar
M-EGV-2-C*	M-EGV-2M-C*	In-Line Connector with LED	•	•					
M-EGV-2-W*	M-EGV-2M-W*	Wire Leads, 300 mm	•	•					
M-EGV-2-D*	M-EGV-2M-D*	DIN Connector	•	•	•	•	•	2.5	10 bar
<b>3-Way Valves</b>									
M-EGV-3-E*	M-EGV-3M-E*	90° Connector	•	•					
M-EGV-3-L*	M-EGV-3M-L*	90° Connector with LED	•	•					
M-EGV-3-F*	M-EGV-3M-F*	In-Line Connector	•	•				0.6	1 to 7 bar
M-EGV-3-C*	M-EGV-3M-C*	In-Line Connector with LED	•	•					
M-EGV-3-W*	M-EGV-3M-W*	Wire Leads, 300 mm	•	•					
M-EGV-3-D*	M-EGV-3M-D*	DIN Connector	•	•	•	•	•	2.5	10 bar

\* Add Voltage Choice to the end of each Base Part Number. "012" (12 VDC), "024" (24 VDC) "24A" (24 VAC), "110" (110 VAC) or "220" (220 VAC). Example: M-EGV-2-E012

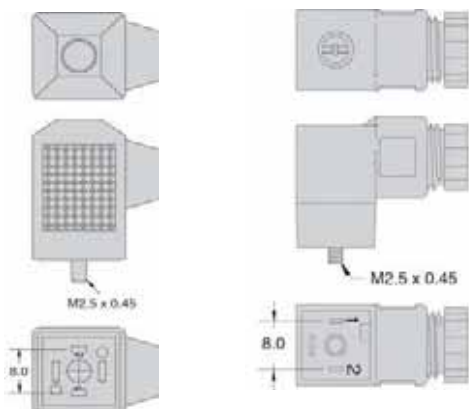
## DIN Connectors

### For Use with 15 mm Valves Only

DIN 43650 Form C Connectors with 8 mm spade center spacing mate with the 15 mm DIN connector coil. Available with or without surge suppression, and 150 or 380 mm PVC molded three-wire cord set.

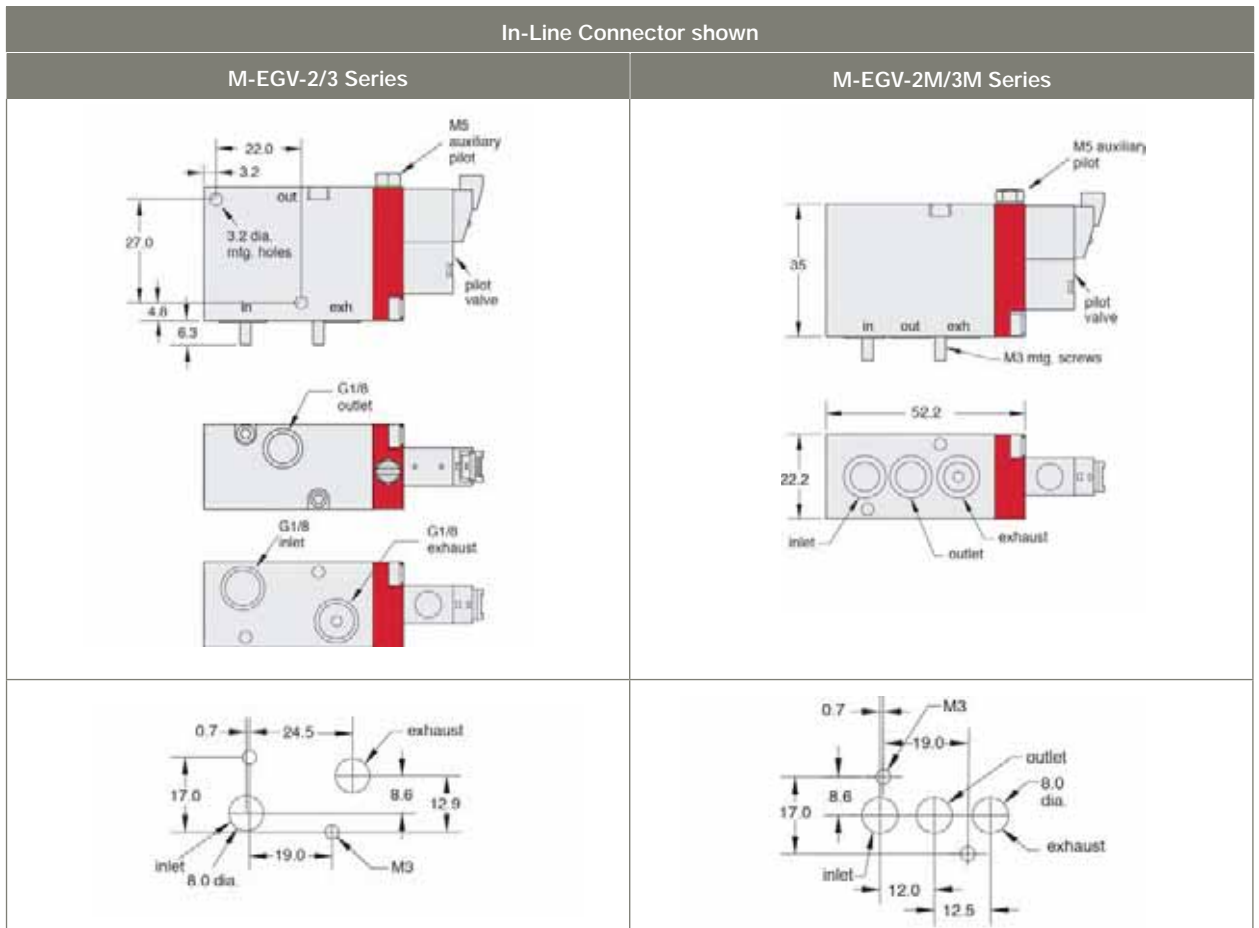


Part No.	Volts	LED	Cord
CC-C CC-C-P6 CC-C-P15	6-240	no	150 mm 380 mm
CC-CLL CC-CLL-P6 CC-CLL-P15	6-24	yes	150 mm 380 mm
CC-CLM CC-CLM-P6 CC-CLM-P15	48-110	yes	150 mm 380 mm

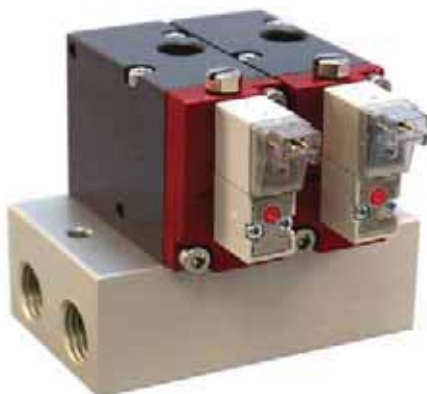


# 80 Electronic Valves – M-EGV Series Electronic High Flow Poppet Valves

## Mounting Interface



## Single-Sided Manifolds



### For Use with G1/8 Ported Valves

Pipe thread manifolds are an economical and efficient choice for grouping pneumatic valves and other components in applications where space is limited. In addition, manifolds help to reduce potential leak points and allow for faster installation with one common air supply and less piping. Clear anodized aluminium.

Part No.	Description
M-EGVM-2	2-Station Manifold
M-EGVM-4	4-Station Manifold



### Sub-Assembly Manifold for Medical Applications

In order to blend the proper amount of gases to obtain a desired level of anesthesia, these units utilize the capabilities of Clippard control and electronic valves series. These valves allow you to deliver an accurate and continuous supply of gases with a precise concentration to the patient at a safe pressure and flow.



### Customer Solutions

If you need a product that fits your application perfectly, Clippard has the capability to design or modify one of its products to suit your exact needs. We understand that a standard catalog product may be close but not be exactly what you need.



### MAR Series Regulators

Special Configurations and Assemblies.

- Robust • Multiple Medias • Preset to Pressure
- Compact • Manifold Mount • Pre-Assembled and Tested
- Reliable • Cartridge Style



### Assembly Services

Call Clippard for assistance with your application, assembly and testing. Clippard can provide full tested sub-assemblies for your application or device.

## Value-Added Service

Clippard has pioneered the miniature pneumatic industry. We have an expansive line of components that are used in thousands of applications across many markets. It is this experience and knowledge of our own products that is now available to our customers when collaborating with Clippard to develop the right solution. Our production, engineering, and sales staff will come together with your organization to design, build, QC, and ship your pneumatic assembly when you need it.

For more information on the products, visit [www.clippard.com/cms/clippard-value-added-services](http://www.clippard.com/cms/clippard-value-added-services).

## 82 Value-Added Solutions



### Clippard's Electronic Valves

are incredibly flexible from a production standpoint.

- Custom Voltage
- Custom Flow Rate
- Custom Max Pressure/Vacuum



### Tight Assemblies

Cartridge design is desirable for integrating valves into compact assemblies. This EVP proportional valve is calibrated to meet the customer's flow range and maintain „zero“ leak rate, and is incorporated into the OEM's manifold.



### Manifold Assemblies

Our Value-Added department provides assembly services for all Clippard components. If you have a need for special or standard manifolds, and would like to receive a single part number with all components assembled and tested, just contact Clippard. We provide application assistance, special testing, kitting of parts, control boxes, manifold assemblies, and more.



### Adding Value is our business

Clippard's Integrated Solutions team designed a simple, straight-forward approach for piloting process valves. This assembly greatly simplifies the installation and ease-of-use for the OEM design engineer.

#### Advantages:

- 100% tested sub-assemblies
- Less stock
- Fewer vendors and purchase orders
- Requires less manufacturing time
- Increase production efficiency
- Overall cost reduction

#### We offer these turnkey solutions:

- Pneumatic Assemblies
- Special Manifold Design
- Manifold Assemblies
- Pneumatic Circuit Design
- Control Boxes
- Fitting and Tubing Harnesses
- Component Kitting
- Specialized Testing
- KanBan Services

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