

Electronic Valves



EV SERIES

- Industry standard for leak-free operation
- Quiet operation and fast response
- Low power consumption
- Exceptionally long life

pp. 4-21



EM SERIES

- Fast response
- Low power consumption
- Close mounting—less than 3/4" in diameter

p. 22



ES SERIES

- Close mounting—less than 1" tall and only 7/8" on center
- Compact, geometric design allows for easy mounting

pp. 23-26



EFB SERIES

- Compact, robust design
- Multiple flow and pressure options
- Variety of power and connection options

p. 36



10 & 15 MM VALVES

- 2-Way or 3-Way operation
- Variety of circuit features, manifold options and connectors
- Detachable coil and body

pp. 39-44



MAXIMATIC® SERIES

- 2-Way, 3-Way and 4-Way operation
- Maximum value, maximum performance
- Manifold or in-line mounting

pp. 46-51



7 MM VALVES

- Extremely small dead volume
- Low vibration and noise
- Fast response time
- Low power consumption

p. 29



8 MM VALVES

- Extremely small dead volume
- Low vibration and noise
- Fast response time
- Low power consumption

p. 30



DV SERIES

- Designed to accommodate large flows with more stroke
- Fast response time
- Low heat rise
- Low power consumption

pp. 32-34



CUSTOM VALVES

- Custom voltage, connections, flow rates, materials and more
- Complete integrated solutions

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CLEANING CAPABILITIES pp. 8-9

CUSTOM SOLUTIONS p. 12

SOLENOID VALVE OVERVOLTAGE p. 27

LEAK DETECTION p. 28

HIT & HOLD CIRCUITS p. 38

Many items also available with metric ports.
For more information, visit clippard.com/link/metric

ORIGINAL EV SERIES MOUSE VALVES

2-WAY & 3-WAY, N.O. OR N.C. VALVES



Valve Type	2-Way or 3-Way, N.O. or N.C.
Medium	Clean, dry air (40 micron filter)
Pressure Range	Vac. to 105 psig
Nominal Power	0.67 watts
Response Time	5 to 10 ms
Temperature Range	32 to 180° F
Operating Range	90 to 150% of rated voltage
Voltage	12 VDC or 24 VDC
Mounting	In-line or manifold mount
Materials	Nickel-plated brass body; nickel-plated steel housing, core, and spider
Seal Material	Nitrile standard, FKM, EPDM ¹ and silicone ¹ available
More Details	clippard.com/link/ev

¹Minimum order quantity for EPDM or silicone seals

Clippard's original EV series valve design is a deceptively simple arrangement featuring a remarkably quiet, low power operation. The Clippard "spider" is the only moving part, and its motion to operate the valve is a mere 0.007" travel. As a result, this valve features an exceptionally long life—proven to last over 1,000,000,000+ cycles. Low voltage DC inputs move the spider, generating extremely fast response times of 5 to 10 milliseconds while using only 0.67 watts of power. The EV series is cool running and its compact, lightweight design makes it easy to mount in small spaces.

- 1,000,000,000+ cycle life
- Low vibration and noise
- 100% tested
- Low power
- Fast response time
- Compact and lightweight



Also available in Analytical,
Corrosion-Resistant, Oxygen Clean,
& Proportional versions

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 18" wire leads. The EC model utilizes a 0.025" square pin connector.

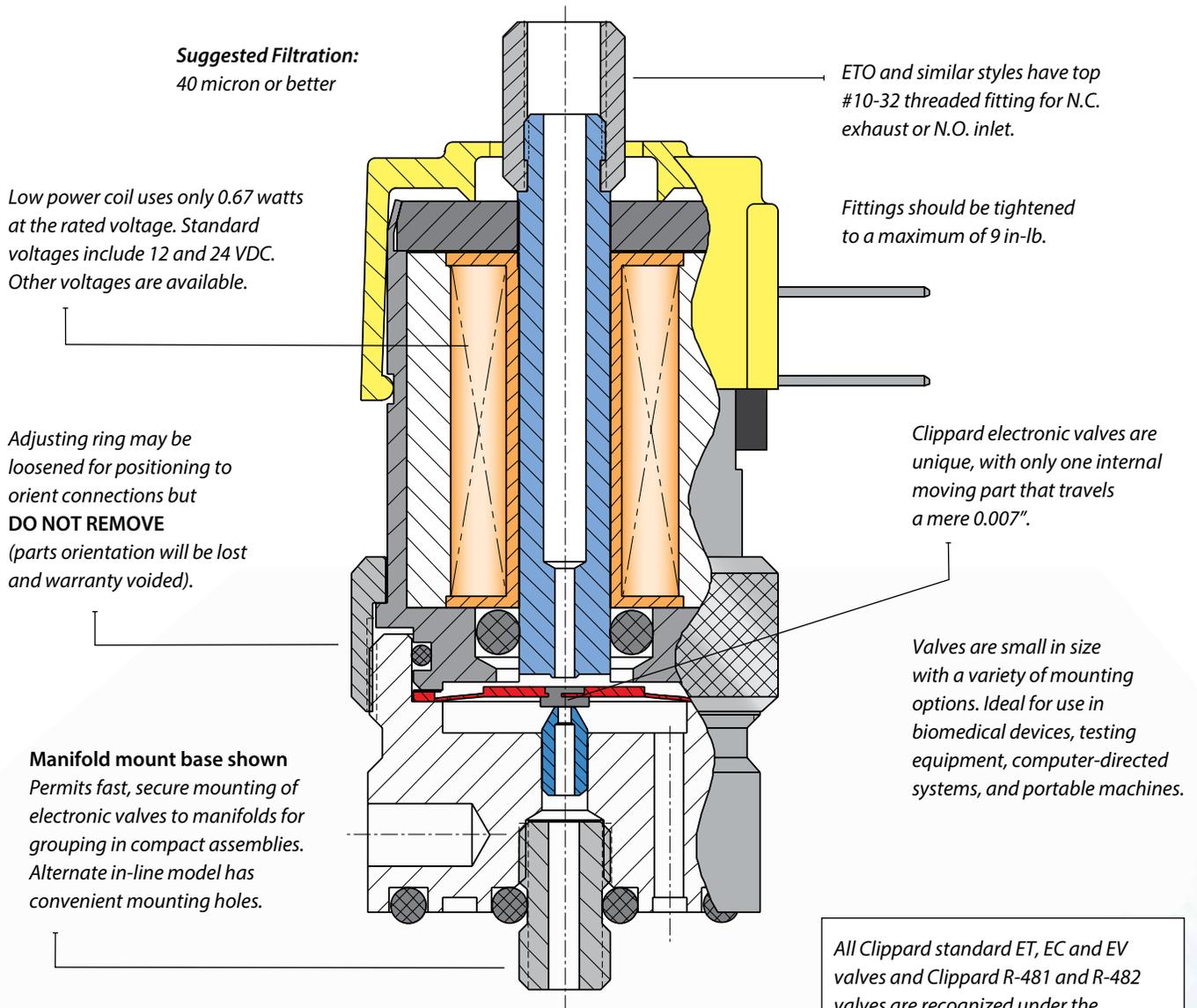


EASY MOUNTING

The complete line of EC, EV, ET and EW electronic valves are available with two mounting options. In-line base models have two #6-32 threaded, 7/32" deep mounting holes. Manifold models are equipped with a bottom stud, 5/32" long with #10-32 thread, which fits Clippard standard and special manifolds, accessory valves and subplates. Spanner holes in the valve body permit tightening.

Clippard's Best-Selling EV Series Electronic Valve

Clippard EV series electronic valves are quiet and quick. These valves accept low voltage, low current signals and convert them into high pressure (100 psig) pneumatic outputs. Optional low pressure/medium flow (-L) and low pressure/high flow (-H) are available.



All Clippard standard ET, EC and EV valves and Clippard R-481 and R-482 valves are recognized under the Component Program of Underwriters Laboratories, Inc.

File No. MH 13573



Clippard Minimatic electronic valves are precision-built 2-Way or 3-Way control valves, utilizing a unique, patented, valving principle. There are no sliding parts. Complete poppet travel is a mere 0.007". As a result, low power consumption and exceptionally long life are major benefits of this design.

Clippard EV series valves are very quiet in operation and also very cool. The small, compact size of these valves make them well suited for a wide range of applications in biomedical devices, environmental test equipment, textile machines, packaging machinery, computerized industrial automation, and portable systems.

ORIGINAL EV SERIES MOUSE VALVES



STANDARD SERIES

2-Way and 3-Way manifold and in-line mounting. Normally-Closed and fully-ported versions.

HIGH FLOW VERSION

A higher flow version is also available for 2-Way, Normally-Closed applications. Although manifold mounting is accomplished in the same fashion, the inlet is the annular port, and the outlet becomes the center port, through the convenient stud mount of the valve.

More Details: clippard.com/link/ev

Nickel-plated brass fitting

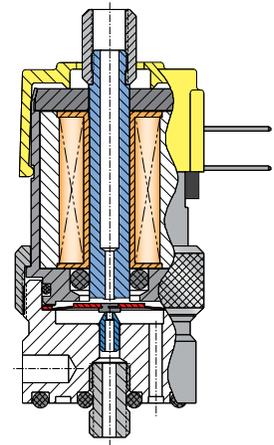
Electroless nickel-plated steel housing and core

Nitrile seals standard

Electroless nickel-plated brass body

Stainless steel stud and nozzle

(Manifold style valve shown)



CORROSION-RESISTANT SERIES

Clippard's Corrosion-Resistant Series (CR-) incorporates materials and construction that provides enhanced protection for valves used with mildly corrosive media such as moisture in air or gases. 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.

More Details: clippard.com/link/cr-ev

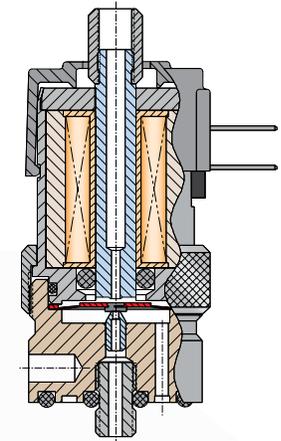
Nickel-plated brass fitting

Stainless steel housing and core

Nitrile seals standard

Electroless nickel-plated Spider

(Manifold style valve shown)



ANALYTICAL SERIES

Clippard's Analytical Valve (A-) 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.

More Details: clippard.com/link/analytical

Integral fitting

No anaerobic sealant used

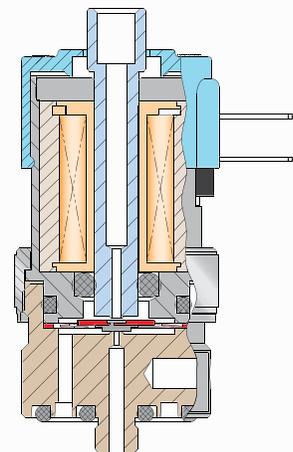
Larger cross section o-ring improves sealing

Cleaned per Clippard Standard ES-3.43

One-piece base eliminates many leak points

Outgassed FKM seals standard

(Manifold style valve shown)



ORIGINAL EV SERIES MOUSE VALVES

OXYGEN CLEAN SERIES



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

More Details: clippard.com/link/oxygen

- Valves are ultrasonically cleaned, assembled, inspected and tested in a cleanroom 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
- Component parts are lubricated with oxygen-compatible PFPE grease, only as needed for assembly
- Individual testing and inspection is accomplished utilizing compressed Nitrogen and ultra-violet light

Integral fitting

No thread sealant

All wetted parts cleaned per Clippard Standard ES-3.41

Electroless nickel-plated steel housing and core

FKM seals

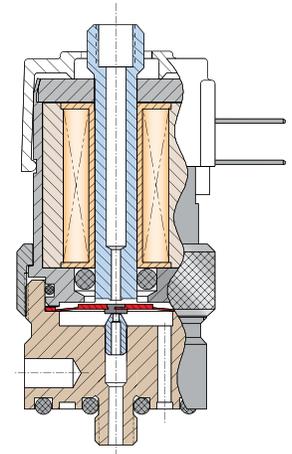
Stainless steel nozzle

Electroless nickel-plated brass body

Integral stud

PFPE lubricant

(Manifold style valve shown)



Valves are assembled in Clippard's clean room, which exceeds **ISO 13485** specification for medical devices.

ELECTRONIC VALVES



ECN, EVN, ETN MOUSE VALVES



Normally-Open, manifold mount to allow Normally-Closed and Normally-Open valves on the same manifold.

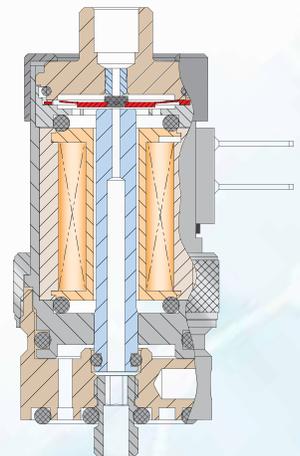
More Details: clippard.com/link/ecn

Integral fitting

Armature "spider" above coil

Mounts side-by-side with Normally-Closed version

(Manifold style valve shown)



CLEANING CAPABILITIES



It's no surprise that the cleaner your valve is, the less it will leak. However, cleanliness is also important in other ways, such as for medical applications where fluid flowing through the valves may be entering a person's body or for applications in the food and beverage industry. In these cases, the valves must not only be cleaned of any particulate matter, but also of any harmful substances used in the normal machining or assembly process. When cleanliness matters, you can count on Clippard to provide the special cleaning, assembly, and testing processes your demanding applications require.

Each of Clippard's manufacturing facilities are equipped with custom isolation enclosures designed specifically for the pharmacy and biotech industries. These clean rooms provide enclosed, controlled environments for the assembly, inspection, and testing of sensitive valves and equipment. They help to protect against airborne contaminants, ultraviolet rays, and temperature fluctuations. Additionally, the modular nature of these enclosures allows Clippard to quickly and easily expand capacity to meet special requirements or increased demand.

ANALYTICAL SERVICE

Valves intended for low-leak, high precision environments, such as laboratories, often require higher quality cleaning and handling to limit contamination. Clippard's analytical "A-" series electronic valves provide a standard valve that meets these requirements. The assembly standards for these valves can also be applied to customer specials.



- Valves are designed with reduced leak paths
- Valves are ultrasonically cleaned, assembled, inspected, and tested in a clean room area
- Seals are cleaned ultrasonically with high purity alcohol, then heated to outgas before assembly
- Cleaned parts are inspected under white and ultraviolet light to insure the absence of particulate and hydrocarbon contamination
- Components are lubricated with isopropyl alcohol, only as needed for assembly
- Valves are tested using high purity compressed nitrogen in place of standard shop air
- Valves are pressure decay leak tested
- Finished valves are double bagged in heat sealed polyethylene bags to ensure cleanliness



OXYGEN SERVICE

Due to the high flammability of oxygen, parts used in oxygen-rich environments are extremely sensitive to contamination. Clippard has a number of engineering standards in place that dictate strict cleaning requirements for valves rated for oxygen-rich environments. This includes the standard oxygen clean "O-" series of electronic valves, but can also be applied to customer special orders upon request.

Clippard's cleaning standards for oxygen service include the following:

- Valves are ultrasonically cleaned, assembled, inspected, and tested in a clean room area
- Cleaned parts are inspected under white and ultraviolet light to insure the absence of organic and inorganic contaminants, such as particulate and hydrocarbon contamination
- No organic sealants, adhesives, or lubricants are used in the manufacturing process
- Component parts are lubricated with oxygen-compatible PFPE (perfluoropolyether) grease, only as needed for assembly
- Valves are tested using high purity compressed nitrogen
- Finished valves are double bagged in heat sealed polyethylene bags

SPECIAL CLEANING REQUIREMENTS

Do you have an application which requires special cleaning for its manufacture, assembly or testing? Clippard is able to provide a wide range of special cleaning, inspection, and testing options for components or assemblies.

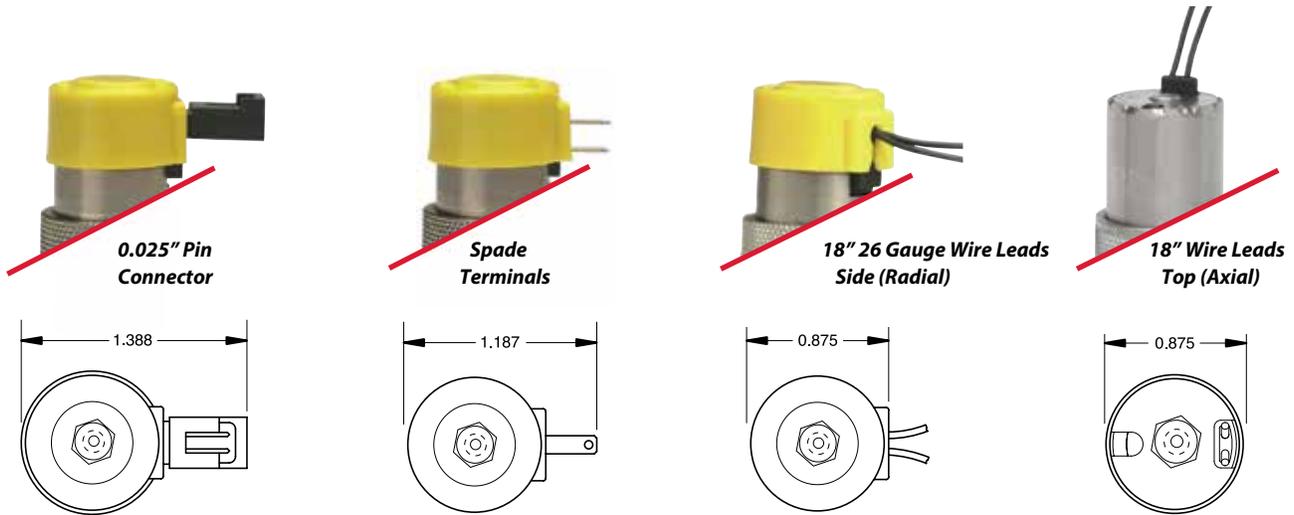
Call **877-245-6247** today to discuss how we can accommodate your unique needs, including:

- Ultrasonic cleaning of component parts
- Baking of seals in order to outgas chemicals
- Inspection of cleaned parts under ultraviolet light to detect oil or fibers
- Inspection of cleaned parts under microscopes
- Use of alternate lubricants/sealants or the exclusion of lubricants/sealants from the assembly process
- Testing using high purity compressed nitrogen in place of standard shop air
- Helium leak testing for ultra low leak requirements
- Special packaging of parts to ensure cleanliness

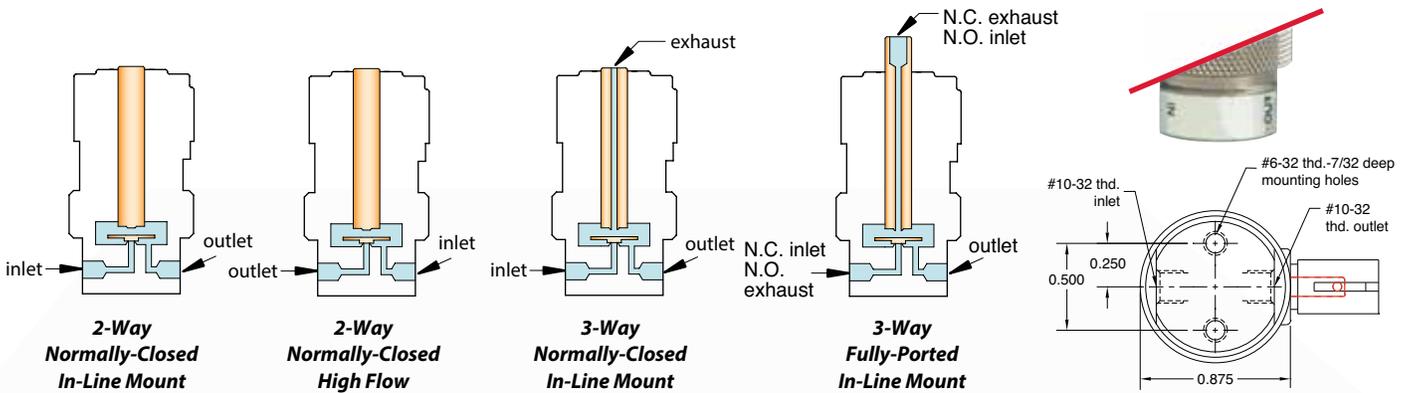


ORIGINAL EV SERIES MOUSE VALVES

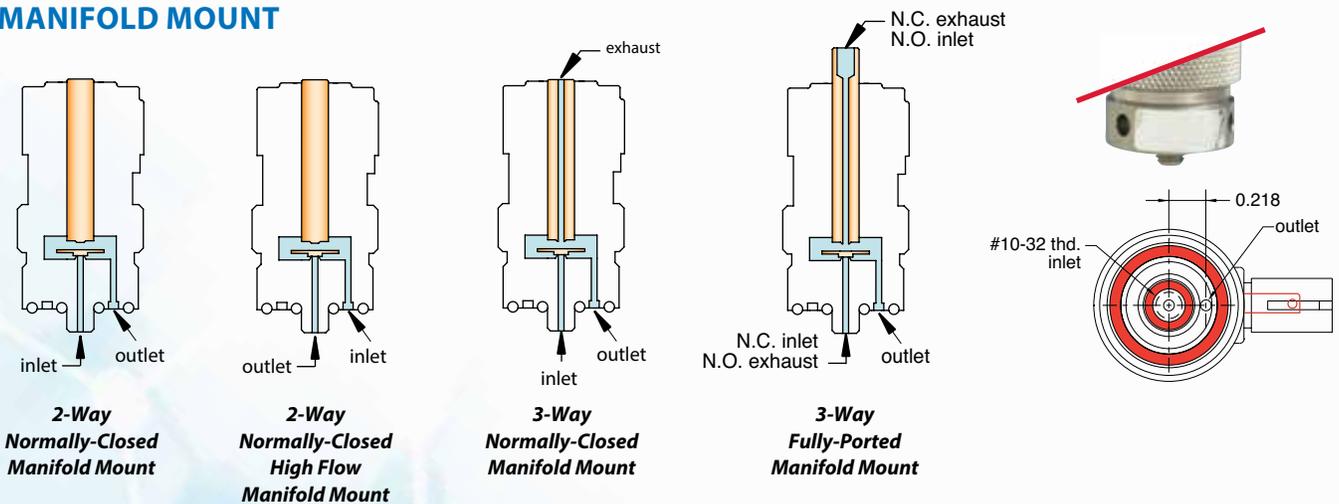
ELECTRICAL CONNECTION OPTIONS & MOUNTING STYLES



IN-LINE MOUNT



MANIFOLD MOUNT



PROBLEM

It's no surprise that the cleaner your valve is, the less it will leak. However, cleanliness is also important for medical applications where fluid flowing through the valves may be entering a person's body. This requires valves to not only be cleaned of any particulate matter, but also of any harmful substances used in the normal machining or assembly process. In this instance, the OEM's primary concern was that their equipment was not consistently meeting the standards they had set for cleanliness. They were also interested in re-designing the unit to make it smaller.

SOLUTION

Each of Clippard's manufacturing facilities are equipped with custom isolation enclosures for the assembly, inspection, and testing of sensitive valves and equipment. To eliminate the contamination issues the OEM had been experiencing, their system's valves were replaced with Clippard Oxygen Clean Series EV valves. This line conforms to Clippard's rigorous ES-3.41 cleaning specification which includes ultrasonic cleaning as well as special assembly processes, UV inspection, and high purity compressed nitrogen testing. This insures the absence of any organic or inorganic contaminants. Additionally, because Clippard's valves are 100% tested and calibrated, they also served to increase the system's reliability by providing consistent flow rates.

A standard Clippard manifold allowed the new valves to be closely mounted with a small, compact footprint. This freed up additional space within the unit which contributed to the OEM being able to reduce its overall size. Additionally, the OEM was pleasantly surprised to find that the valves—a standard catalog product, manufactured here in the USA—were always available and shipped quickly, thus eliminating the backorder delays they had been experiencing with their previous supplier.



ELECTRONIC VALVES



WHAT CAN CLIPPARD DO FOR YOU?

877-245-6247

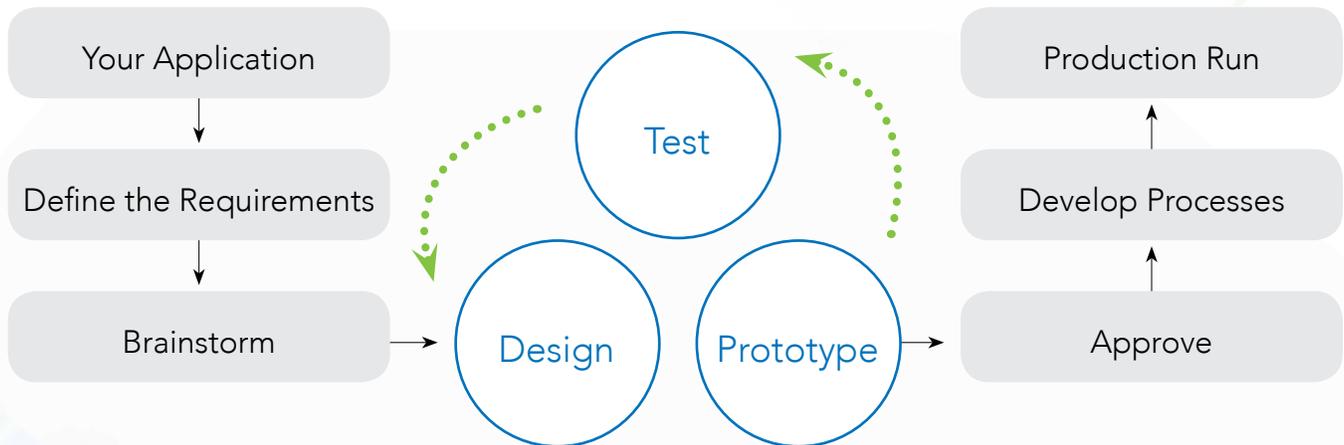
CUSTOM SOLUTIONS



Clippard understands that often, a standard catalog product may be close but not exactly what your application requires. We frequently provide modifications and custom designs to better suit specific application requirements, and we love a good challenge! Clippard takes great pride in helping customers like you design better products. Smaller, faster, lighter—what are you trying to accomplish? We can help with anything from modified standard products to special manifolds to completely custom products designed for specific, unique applications.

CONNECTING ENGINEERS WITH ENGINEERS

Our sales team and distributors are invaluable, but our engineers don't like having to relay information through other people any more than yours do. Whenever possible, we prefer to get your technical people speaking directly to ours. This enables more efficient communication and has proven to be one of the best ways to shorten project timelines and ensure mutual success.



BENEFITS

- 100% tested sub-assemblies
- Less component inventory
- Fewer vendors and purchase orders
- Less manufacturing time
- Increased production efficiency
- Specialized support
- Overall cost reduction

OPTIONS

- Special seal materials
- Flow and pressure ranges
- Voltage and power requirements
- Electrical connections
- Ports and connectors
- Mounting configurations
- Oxygen service applications
- Pressure decay testing and helium leak detection



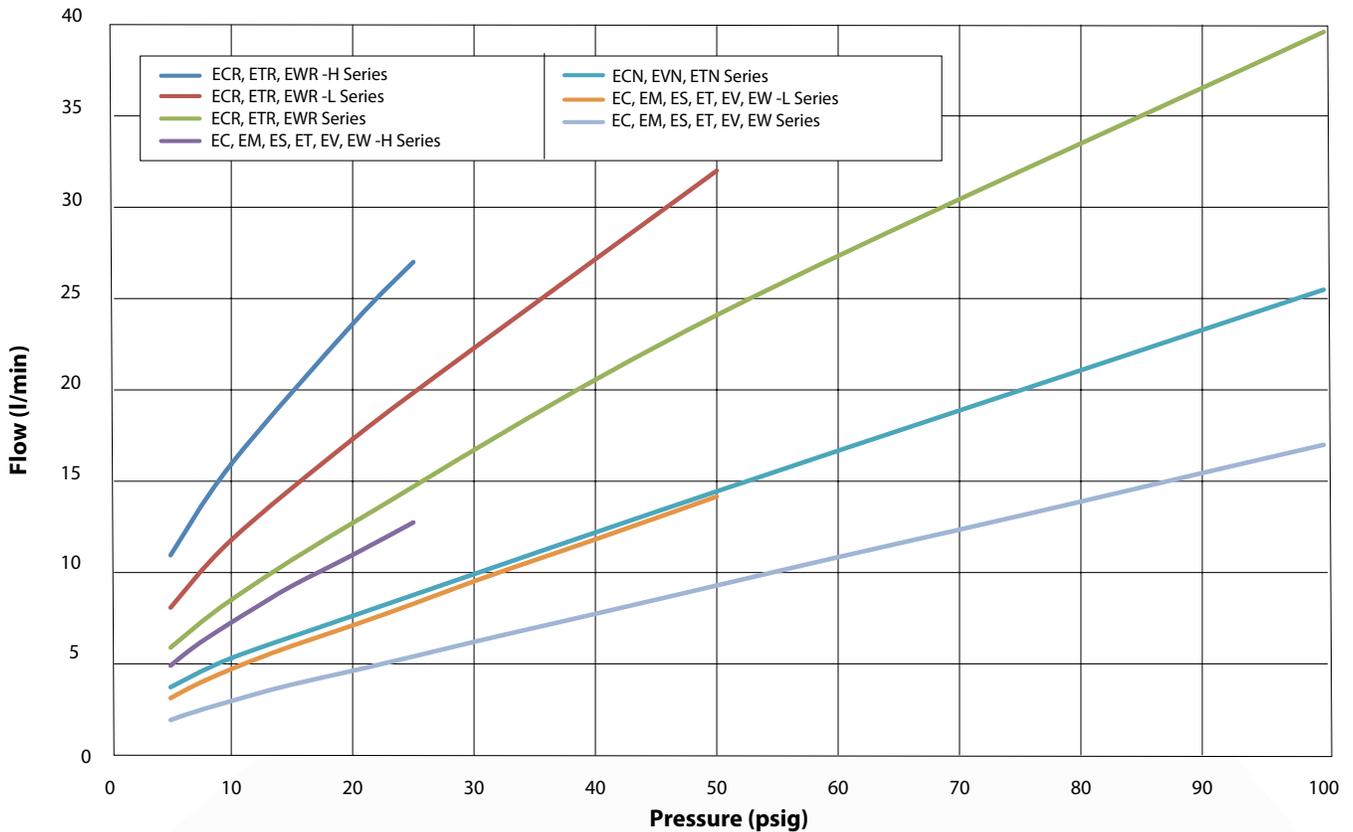
CAPABILITIES

- Designing compact, easy-to-install assemblies
- Customizing ports and connectors
- Developing integrated solutions
- Manufacturing special manifolds
- Designing pneumatic circuits
- Integrating control boxes and fitting/tubing harnesses
- Assembling and kitting components
- Performing specialized testing
- Providing KanBan services

ORIGINAL EV SERIES MOUSE VALVES

FLOW CHART & ELECTRICAL SPECIFICATIONS

TYPICAL AIR FLOW



ELECTRONIC VALVES

ELECTRICAL SPECIFICATIONS

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

Custom Solutions

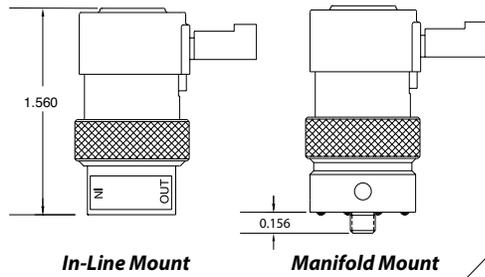
Many people shy away from asking for custom products, fearing higher prices and longer lead times. However, the reality may surprise you. Clippard's electronic valve production consists of nearly 50% customized products. From simple tweaks to complex challenges, Clippard excels at providing solutions for a wide range of applications.

Contact your local distributor or call **877-245-6247** today to discuss your specific needs.

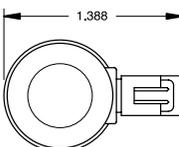
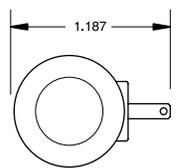
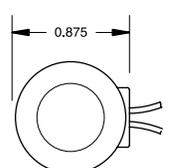
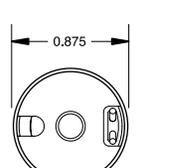


ORIGINAL EV SERIES MOUSE VALVES

2-WAY N.C. VALVES, IN-LINE & MANIFOLD MOUNT



Vac. to 105 psig
 Vac. to 50 psig
 Vac. to 25 psig
 12 VDC
 24 VDC

		Pressure Range			Voltage		In-Line Mount	Manifold Mount
 0.025" Pin Connector	•			•	•	EC-2-12	EC-2M-12	
	•			•	•	EC-2-24	EC-2M-24	
		•		•	•	EC-2-12-L	EC-2M-12-L	
		•		•	•	EC-2-24-L	EC-2M-24-L	
			•	•	•	EC-2-12-H	EC-2M-12-H	
				•	•	EC-2-24-H	EC-2M-24-H	
 Spade Terminals	•			•	•	ET-2-12	ET-2M-12	
	•			•	•	ET-2-24	ET-2M-24	
		•		•	•	ET-2-12-L	ET-2M-12-L	
		•		•	•	ET-2-24-L	ET-2M-24-L	
			•	•	•	ET-2-12-H	ET-2M-12-H	
				•	•	ET-2-24-H	ET-2M-24-H	
 Wire Leads Side (Radial)	•			•	•	EV-2-12	EV-2M-12	
	•			•	•	EV-2-24	EV-2M-24	
		•		•	•	EV-2-12-L	EV-2M-12-L	
		•		•	•	EV-2-24-L	EV-2M-24-L	
			•	•	•	EV-2-12-H	EV-2M-12-H	
				•	•	EV-2-24-H	EV-2M-24-H	
 Wire Leads Top (Axial)	•			•	•	EW-2-12	EW-2M-12	
	•			•	•	EW-2-24	EW-2M-24	
		•		•	•	EW-2-12-L	EW-2M-12-L	
		•		•	•	EW-2-24-L	EW-2M-24-L	
			•	•	•	EW-2-12-H	EW-2M-12-H	
				•	•	EW-2-24-H	EW-2M-24-H	

Medium	Clean, dry air (40 micron filter)
Power Consumption	0.67 watts; Corrosion-Resistant: 1.2 watts
Temperature Range	32 to 180°F; Corrosion-Resistant: 32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 150% of rated voltage Corrosion-Resistant: 90 to 110%
Ports	#10-32
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available Oxygen Clean: FKM only Analytical²: FKM standard; EPDM ¹ , silicone ¹ available
More Details	clippard.com/link/ev

See p. 10 for mounting option schematics

Valve Series Prefix		Options Suffix	
Oxygen Clean	O-	Nitrile Seals ³	(blank)
Analytical ²	A-	FKM Seals	-V
Corrosion-Resistant	CR-	EPDM Seals ^{1,3}	-E
		Silicone Seals ¹	-S
		Diode ⁴	-D

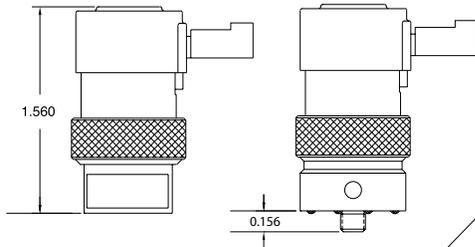
Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Example Part Numbers: ET-2M-12-V; CR-ET-2-12

¹Minimum order quantity required for EPDM or silicone seals
²Analytical series valves available in manifold mount only
³Not available for Oxygen Clean or Analytical series valves
⁴Available on EC (pin connector) models only

HIGH FLOW MOUSE VALVES

2-WAY N.C. HIGH FLOW VALVES, IN-LINE & MANIFOLD MOUNT



0 to 105 psig
0 to 50 psig
0 to 25 psig
12 VDC
24 VDC

	Pressure Range	Voltage	In-Line Mount	Manifold Mount
 0.025" Pin Connector	•	•	ECR-2-12	ECR-2M-12
	•	•	ECR-2-24	ECR-2M-24
	•	•	ECR-2-12-L	ECR-2M-12-L
	•	•	ECR-2-24-L	ECR-2M-24-L
	•	•	ECR-2-12-H	ECR-2M-12-H
	•	•	ECR-2-24-H	ECR-2M-24-H
 Spade Terminals	•	•	ETR-2-12	ETR-2M-12
	•	•	ETR-2-24	ETR-2M-24
	•	•	ETR-2-12-L	ETR-2M-12-L
	•	•	ETR-2-24-L	ETR-2M-24-L
	•	•	ETR-2-12-H	ETR-2M-12-H
	•	•	ETR-2-24-H	ETR-2M-24-H
 Wire Leads Top (Axial)	•	•	EWR-2-12	EWR-2M-12
	•	•	EWR-2-24	EWR-2M-24
	•	•	EWR-2-12-L	EWR-2M-12-L
	•	•	EWR-2-24-L	EWR-2M-24-L
	•	•	EWR-2-12-H	EWR-2M-12-H
	•	•	EWR-2-24-H	EWR-2M-24-H

Medium	Clean, dry air (40 micron filter)
Power Consumption	1.2 watts
Temperature Range	32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 110% of rated voltage
Ports	#10-32
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available Analytical² : FKM standard; EPDM ¹ , silicone ¹ available
More Details	clippard.com/link/ev

Valve Series Prefix	Options Suffix
Analytical ²	A-
	Nitrile Seals ³
	FKM Seals
	EPDM Seals ¹
	Silicone Seals ¹
	Diode ⁴
	(blank)
	-V
	-E
	-S
	-D

Pressure Range	Air Flow	Options Suffix
0 to 100 psig	39.5 l/min @ 100 psig	(blank)
0 to 50 psig	31 l/min @ 50 psig	-L
0 to 25 psig	27 l/min @ 25 psig	-H

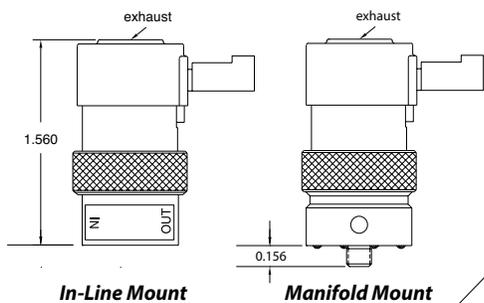
Example Part Numbers: ECR-2-12-V; A-EWR-2M-12

¹Minimum order quantity required for EPDM or silicone seals
²Analytical series valves available in manifold mount only
³Not available for Analytical series valves
⁴Available on EC (pin connector) models only

See p. 10 for mounting option schematics

ORIGINAL EV SERIES MOUSE VALVES

3-WAY N.C. VALVES, IN-LINE & MANIFOLD



		Pressure Range			Voltage		In-Line Mount	Manifold Mount
 0.025" Pin Connector	•	•	•	•	•	EC-3-12	EC-3M-12	
	•	•	•	•	•	EC-3-24	EC-3M-24	
	•	•	•	•	•	EC-3-12-L	EC-3M-12-L	
	•	•	•	•	•	EC-3-24-L	EC-3M-24-L	
	•	•	•	•	•	EC-3-12-H	EC-3M-12-H	
 Spade Terminals	•	•	•	•	•	ET-3-12	ET-3M-12	
	•	•	•	•	•	ET-3-24	ET-3M-24	
	•	•	•	•	•	ET-3-12-L	ET-3M-12-L	
	•	•	•	•	•	ET-3-24-L	ET-3M-24-L	
	•	•	•	•	•	ET-3-12-H	ET-3M-12-H	
 Wire Leads Side (Radial)	•	•	•	•	•	EV-3-12	EV-3M-12	
	•	•	•	•	•	EV-3-24	EV-3M-24	
	•	•	•	•	•	EV-3-12-L	EV-3M-12-L	
	•	•	•	•	•	EV-3-24-L	EV-3M-24-L	
	•	•	•	•	•	EV-3-12-H	EV-3M-12-H	
 Wire Leads Top (Axial)	•	•	•	•	•	EW-3-12	EW-3M-12	
	•	•	•	•	•	EW-3-24	EW-3M-24	
	•	•	•	•	•	EW-3-12-L	EW-3M-12-L	
	•	•	•	•	•	EW-3-24-L	EW-3M-24-L	
	•	•	•	•	•	EW-3-12-H	EW-3M-12-H	

Medium	Clean, dry air (40 micron filter)
Power Consumption	0.67 watts; Corrosion-Resistant: 1.2 watts
Temperature Range	32 to 180°F; Corrosion-Resistant: 32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	Standard: 90 to 150% of rated voltage Corrosion-Resistant: 90 to 110%
Ports	#10-32
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available Oxygen Clean: FKM only Analytical²: FKM standard; EPDM ¹ , silicone ¹ available
More Details	clippard.com/link/ev

See p. 10 for mounting option schematics

Valve Series Prefix		Options Suffix	
Oxygen Clean	A-	Nitrile Seals ³	(blank)
Analytical ²	CR-	FKM Seals	-V
Corrosion-Resistant		EPDM Seals ^{1,3}	-E
		Silicone Seals ^{1,3}	-S
		Diode ⁴	-D

Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Example Part Numbers: ET-3-12-S; O-EW-3-24

¹Minimum order quantity required for EPDM or silicone seals

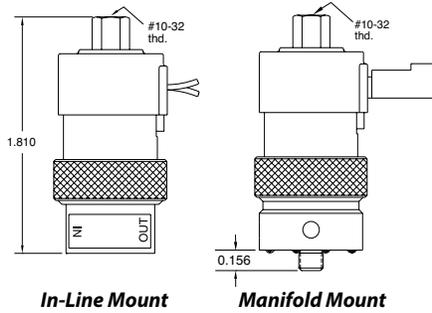
²Analytical series valves available in manifold mount only

³Not available for Oxygen Clean or Analytical series valves

⁴Available on EC (pin connector) models only

ORIGINAL EV SERIES MOUSE VALVES

3-WAY FULLY-PORTED VALVES, IN-LINE & MANIFOLD



Vac. to 105 psig
 Vac. to 50 psig
 Vac. to 25 psig
 12 VDC
 24 VDC

		Pressure Range			Voltage		In-Line Mount	Manifold Mount
 0.025" Pin Connector	•			•	•	ECO-3-12	ECO-3M-12	
	•			•	•	ECO-3-24	ECO-3M-24	
		•		•	•	ECO-3-12-L	ECO-3M-12-L	
		•		•	•	ECO-3-24-L	ECO-3M-24-L	
		•		•	•	ECO-3-12-H	ECO-3M-12-H	
	•			•	•	ECO-3-24-H	ECO-3M-24-H	
 Spade Terminals	•			•	•	ETO-3-12	ETO-3M-12	
	•			•	•	ETO-3-24	ETO-3M-24	
		•		•	•	ETO-3-12-L	ETO-3M-12-L	
		•		•	•	ETO-3-24-L	ETO-3M-24-L	
		•		•	•	ETO-3-12-H	ETO-3M-12-H	
	•			•	•	ETO-3-24-H	ETO-3M-24-H	
 Wire Leads Side (Radial)	•			•	•	EVO-3-12	EVO-3M-12	
	•			•	•	EVO-3-24	EVO-3M-24	
		•		•	•	EVO-3-12-L	EVO-3M-12-L	
		•		•	•	EVO-3-24-L	EVO-3M-24-L	
		•		•	•	EVO-3-12-H	EVO-3M-12-H	
	•			•	•	EVO-3-24-H	EVO-3M-24-H	
 Wire Leads Top (Axial)	•			•	•	EWO-3-12	EWO-3M-12	
	•			•	•	EWO-3-24	EWO-3M-24	
		•		•	•	EWO-3-12-L	EWO-3M-12-L	
		•		•	•	EWO-3-24-L	EWO-3M-24-L	
		•		•	•	EWO-3-12-H	EWO-3M-12-H	
	•			•	•	EWO-3-24-H	EWO-3M-24-H	

Medium	Clean, dry air (40 micron filter)
Power Consumption	0.67 watts; Corrosion-Resistant: 1.2 watts
Temperature Range	32 to 180°F; Corrosion-Resistant: 32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 150% of rated voltage Corrosion-Resistant: ±10%
Ports	#10-32
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available Oxygen Clean: FKM only Analytical²: FKM standard; EPDM ¹ , silicone ¹ available
More Details	clippard.com/link/ev

See p. 10 for mounting option schematics

Valve Series Prefix		Options Suffix	
Oxygen Clean	O-	Nitrile Seals ³	(blank)
Analytical ²	A-	FKM Seals	-V
Corrosion-Resistant	CR-	EPDM Seals ¹	-E
		Silicone Seals ¹	-S
		Diode ⁴	-D

Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Example Part Numbers: ETO-3M-24-D; CR-EVO-3-12

¹Minimum order quantity required for EPDM or silicone seals

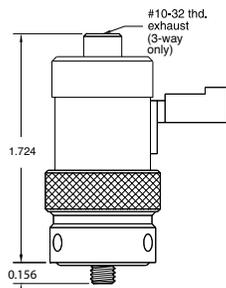
²Analytical series valves available in manifold mount only

³Not available for Oxygen Clean or Analytical series valves

⁴Available on EC (pin connector) models only

ECN, ETN, EVN SERIES MOUSE VALVES

2-WAY & 3-WAY N.O. VALVES, MANIFOLD



12 VDC

24 VDC

		Voltage	2-Way	3-Way
	 0.025" Pin Connector	•	ECN-2M-12	ECN-3M-12
		•	ECN-2M-24	ECN-3M-24
	 Spade Terminals	•	ETN-2M-12	ETN-3M-12
		•	ETN-2M-24	ETN-3M-24
	 Wire Leads Side (Radial)	•	EVN-2M-12	EVN-3M-12
		•	EVN-2M-24	EVN-3M-24

Medium	Clean, dry air (40 micron filter)
Power Consumption	0.67 watts
Temperature Range	32 to 180°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 150% of rated voltage
Voltage	12 VDC or 24 VDC; other voltages available
Ports	#10-32
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available
More Details	clippard.com/link/ecn

See p. 10 for mounting option schematics

Pressure Range | Air Flow

28" Hg Vac. to 105 psig | 25 l/min @ 100 psig

Options Suffix

Nitrile Seals	(blank)
FKM Seals	-V
EPDM Seals ¹	-E
Silicone Seals ¹	-S
Diode ²	-D

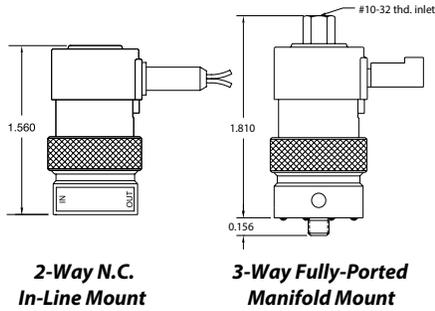
Example Part Numbers: EVN-2M-12-V; ETN-3M-24

¹Minimum order quantity required for EPDM or silicone seals

²Diode available on ECN (pin connector) models only

INTRINSICALLY SAFE MOUSE VALVES

2-WAY & 3-WAY N.C. VALVES, IN-LINE & MANIFOLD



Vac. to 105 psig
 Vac. to 50 psig
 Vac. to 25 psig

		Pressure Range		In-Line Mount	Manifold Mount
2-Way Normally-Closed	 0.025" Pin Connector	•		EI-2-15.5	EI-2M-15.5
			•	EI-2-15.5-L	EI-2M-15.5-L
			•	EI-2-15.5-H	EI-2M-15.5-H
	 18 Gauge Leads	•		EI-2-15.5-C	EI-2M-15.5-C
			•	EI-2-15.5-LC	EI-2M-15.5-LC
			•	EI-2-15.5-HC	EI-2M-15.5-HC
3-Way Normally-Closed	 0.025" Pin Connector	•		EI-3-15.5	EI-3M-15.5
			•	EI-3-15.5-L	EI-3M-15.5-L
			•	EI-3-15.5-H	EI-3M-15.5-H
	 18 Gauge Leads	•		EI-3-15.5-C	EI-3M-15.5-C
			•	EI-3-15.5-LC	EI-3M-15.5-LC
			•	EI-3-15.5-HC	EI-3M-15.5-HC
3-Way Fully-Ported	 0.025" Pin Connector	•		EIO-3-15.5	EIO-3M-15.5
			•	EIO-3-15.5-L	EIO-3M-15.5-L
			•	EIO-3-15.5-H	EIO-3M-15.5-H
	 18 Gauge Leads	•		EIO-3-15.5-C	EIO-3M-15.5-C
			•	EIO-3-15.5-LC	EIO-3M-15.5-LC
			•	EIO-3-15.5-HC	EIO-3M-15.5-HC

Medium	Clean, dry air (40 micron filter)
Power Consumption	0.67 watts
Temperature Range	32 to 104°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 150% of rated voltage
Voltage	15.5 VDC
Ports	#10-32 and manifold mount
Seals	Nitrile standard; FKM and EPDM ¹ available
More Details	clippard.com/link/analytical

Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Options Suffix	
Nitrile Seals	(blank)
FKM Seals	-V
EPDM Seals ¹	-E

Example Part Numbers: EIO-3-15.5-LC; EI-2-15.5

¹Minimum order quantity required for EPDM seals

See p. 10 for mounting option schematics

MOUSE VALVE MANIFOLDS

OXYGEN CLEAN

Oxygen series products are specially manufactured and assembled for applications in oxygen-enriched environments. Each manifold is cleaned according to Clippard Specification #ES-3.41 and double bagged in heat sealed polyethylene bags.



Part No.	Description
O-15581-2	Single-Sided, 2-Station
O-15581-4	Single-Sided, 4-Station
O-15581-6	Single-Sided, 6-Station
O-15582-8	Double-Sided, 8-Station
O-15582-12	Double-Sided, 12-Station

Input Ports	In-line 1/8" NPT
Outlet Ports	#10-32
Mounting	#10-32 tapped holes
Materials	ENP Brass

MULTI-VALVE MANIFOLDS



Black anodized aluminum

Part No.	Description
15481-2	Single-Sided, 2-Station
15481-4	Single-Sided, 4-Station
15481-6	Single-Sided, 6-Station
15482-8	Double-Sided, 8-Station
15482-12	Double-Sided, 12-Station

ET VALVE CONNECTORS



Black molded lug connectors are available for easy push-on connection

EC CONNECTOR



TE Connectivity #5-103956-1 for EC/ECO valves

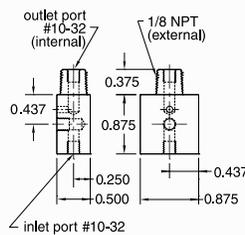
Part No.	Description
ET-C48	48° Connector
ET-C120	120° Connector

Part No.	Description
C2-RB18	18° Connector
C2-RB120	120° Connector

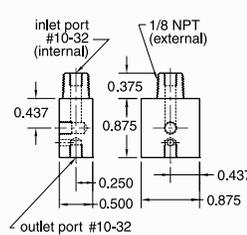
SPECIALIZED MANIFOLDS *ENP brass and oxygen clean also available*



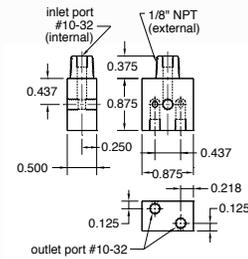
15490-2 shown



Part No.	15490-1
Description	#10-32 Inlet, 1/8" NPT Outlet



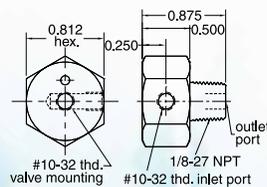
Part No.	15490-2
Description	1/8" NPT Inlet, #10-32 Outlet



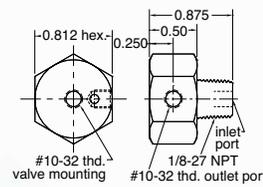
Part No.	15490-3 Dual Outlet
Description	1/8" NPT Inlet, #10-32 Outlet



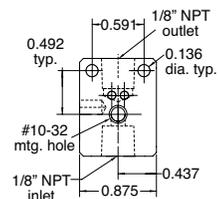
15491-1 shown



Part No.	15491-1
Description	#10-32 Inlet, 1/8" NPT Outlet



Part No.	15491-2
Description	1/8" NPT Inlet, #10-32 Outlet



Part No.	15490-5
Description	1/8" NPT Inlet, 1/8" NPT Outlet

Clippard Electronic Manifold Cards

Auxiliary Power Input

Power to operate the valves may be provided through two sources: ONE, through the 25-pin connector if your signal source also has sufficient power to operate the bank of valves, or TWO, through a separate auxiliary power input connection built into the board. To isolate power use the power source selector switch.

Reverse Polarity Protection

Circuit using diodes and capacitor provides input voltage protection against reverse polarity.

Note: In applying power on a temporary basis, use care to observe proper circuit polarity.

Power Selector Switch

Enables choice of power input source (25-pin connector or auxiliary).

Printed Circuit Board

Durable laminated fiberglass



To configure manifold cards, visit clippard.com/link/mc

Resistor-Diode-LED Circuit

Individual circuit to each valve provides protection against shut-off spikes. LED is illuminated when valve is actuated.

25-Pin Connector

Clippard Valve Manifold

Compact, efficient mounting of the valves is achieved with Clippard multi-valve manifolds.

3-Position Detented Switches

Provides for ON power, valve is activated; OFF power, valve is not connected; CONN valve is connected to 25-pin connector and will be controlled through it.

Clippard Electronic Valves

LED Bank

Illuminated LED signals that the valve is actuated.

Now you can direct low-voltage DC signals from controllers, systems, computers, or other sources to operate powerful pneumatic valves with a minimum of piping and hook-up.

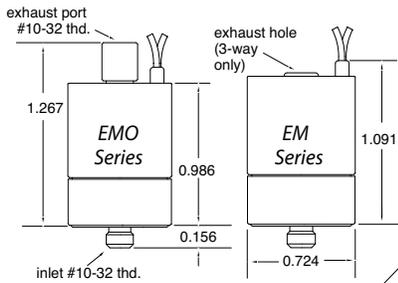
Self-contained card includes:

- 8 or 12 Clippard ET interface valves
- Manifold mount for single air supply
- Circuit board fully wired
- Instant plug-in with 25-pin connector
- Resistor, diode, LED and switch for each valve
- Auxiliary power supply connection

- Fast, easy to mount
- Pre-assembled; all valves mounted
- Low power requirements (0.67 watt per valve)
- Choice of valve types
- Each valve switchable
- Shut-off spike protection
- No expensive card rack required

EM SERIES MOUSE VALVES

2-WAY & 3-WAY N.O. & N.C. VALVES, MANIFOLD MOUNT



	Pressure Range	Voltage	2-Way N.C.	3-Way N.C.	3-Way N.O./N.C.
	• •	• •	EM-2-12 EM-2-24		
	• •	• •	EM-2-12-L EM-2-24-L		
	• •	• •	EM-2-12-H EM-2-24-H		
	• •	• •		EM-3-12 EM-3-24	
	• •	• •		EM-3-12-L EM-3-24-L	
	• •	• •		EM-3-12-H EM-3-24-H	
	• •	• •			EMO-3-12 EMO-3-24
	• •	• •			EMO-3-12-L EMO-3-24-L
	• •	• •			EMO-3-12-H EMO-3-24-H

At just over 1" tall and less than 3/4" in diameter, the EM series is an ideal choice when space is critical. This reliable, proven design is housed in a miniature body with wire leads out the top to allow body rotation for close-center mounting. High flow combined with fast shifting speed, extremely high cycle life, and design flexibility make this valve a small wonder for demanding applications.

Medium	Clean, dry air (40 micron filter)
Power Consumption	1 watt
Temperature Range	32 to 150°F
Response Time	10 ms nominal; 15 ms N.O.
Operating Range	90 to 120% of rated voltage
Voltage	12 VDC or 24 VDC; other voltages available
Ports	#10-32 exhaust (EMO)
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available
More Details	clippard.com/link/em

¹Minimum order quantity required for EPDM or silicone seals

Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Options Suffix	
Nitrile Seals	(blank)
FKM Seals	-V
EPDM Seals ¹	-E
Silicone Seals ¹	-S

MANIFOLDS

Black anodized aluminum



Description	Part No.
Single-Sided, 2-Station	15681-2
Single-Sided, 4-Station	15681-4
Single-Sided, 6-Station	15681-6
Single-Sided, 8-Station	15681-8
Double-Sided, 8-Station	15482-8
Double-Sided, 12-Station	15482-12
Double-Sided, 16-Station	15482-16

ES & ESO Series Mouse Valves

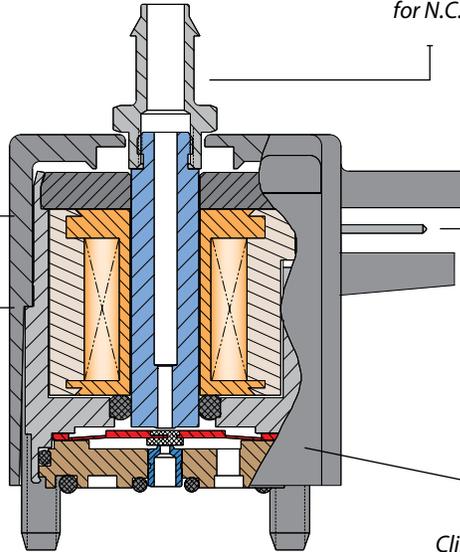
Valves are small in size with a variety of coil voltages and flow options. Mounting is as close as 7/8" on center.

ESO and similar styles have top hose barb or #10-32 threaded fitting for N.C. exhaust or N.O. inlet.

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.

For more details, visit clippard.com/link/es



Coils are available to mate with TE Connectivity #5-103956-2 connector or with 18" wire leads which utilize #26 wire.

Clippard ES valves are unique, with only one internal moving part that travels a mere 0.007".



- Close mounting—7/8" on center and overall height less than 1"
- Easy to mount on manifold with two #4-40 screws
- Geometric design
- Polymer housing—Zytel ST 801® super tough
- TE connectivity-style pin connection or 18" wire leads
- Flow up to 17 l/min

Zytel ST 801® Super Tough and Zytel® are registered trademarks of DuPont™

Voltage*	Nominal Current	Resistance	Power	Working Range
12 VDC	0.083 amps	144 ohms	1.0 watt	90 to 120% of rated voltage (cont. duty)
24 VDC	0.042 amps	576 ohms	1.0 watt	

*Other voltages available—call 877-245-6247

The ES valve, like Clippard EV and ET valves, converts low voltage, low current signals into high pressure (0 to 105 psig) pneumatic outputs utilizing a unique, patented valving principle.

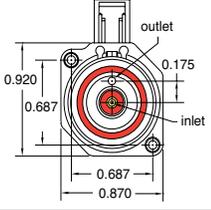
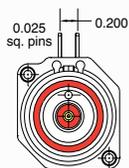
Since there are no sliding parts, and complete poppet travel is only 0.007", low power consumption and exceptionally long life are assured with this design.

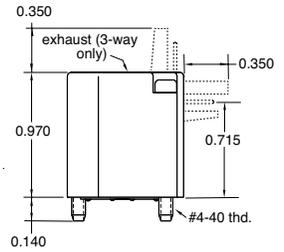
No flow is required for cooling because the compact ES is both quiet and exceptionally cool in operation.

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.

ES SERIES MOUSE VALVES

2-WAY & 3-WAY N.C. VALVES

		Pressure Range			Voltage		2-Way	3-Way
		Vac. to 105 psig	Vac. to 50 psig	Vac. to 25 psig	12 VDC	24 VDC		
	 <p>Side Pin Connector</p>	•			•		ES-2S-12	ES-3S-12
		•			•		ES-2S-24	ES-3S-24
			•		•		ES-2S-12-L	ES-3S-12-L
			•		•		ES-2S-24-L	ES-3S-24-L
				•		•	ES-2S-12-H	ES-3S-12-H
			•		•	ES-2S-24-H	ES-3S-24-H	
	 <p>Top Pin Connector</p>	•			•		ES-2T-12	ES-3T-12
		•			•		ES-2T-24	ET-3T-24
			•		•		ES-2T-12-L	ES-3T-12-L
			•		•		ES-2T-24-L	ES-3T-24-L
				•		•	ES-2T-12-H	ES-3T-12-H
			•		•	ES-2T-24-H	ES-3T-24-H	
	 <p>Wire Leads Side (Radial)</p>	•			•		ES-2W-12	ES-3W-12
		•			•		ES-2W-24	ES-3W-24
			•		•		ES-2W-12-L	ES-3W-12-L
			•		•		ES-2W-24-L	ES-3W-24-L
				•		•	ES-2W-12-H	ES-3W-12-H
			•		•	ES-2W-24-H	ES-3W-24-H	
	 <p>Board Mount</p>	•			•		ES-2B-12	ES-3B-12
		•			•		ES-2B-24	ES-3B-24
			•		•		ES-2B-12-L	ES-3B-12-L
			•		•		ES-2B-24-L	ES-3B-24-L
				•		•	ES-2B-12-H	ES-3B-12-H
			•		•	ES-2B-24-H	ES-3B-24-H	



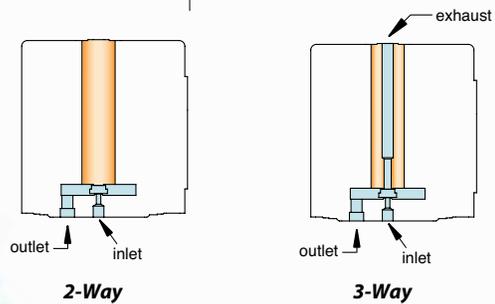
Medium	Clean, dry air (40 micron filter)
Power Consumption	1 watt at rated voltage
Temperature Range	32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 120% of rated voltage
Voltage	12 VDC or 24 VDC
Ports	Inlet and outlet through manifold 3-Way: Exhaust through top of valve
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available
More Details	clippard.com/link/es

See p. 13 for flow charts

¹Minimum order quantity required for EPDM or silicone seals

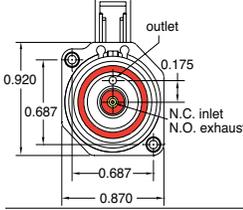
Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

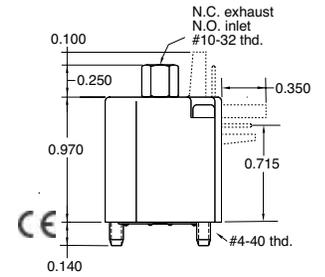
Options Suffix	
Nitrile Seals	(blank)
FKM Seals	-V
EPDM Seals ¹	-E
Silicone Seals ¹	-S



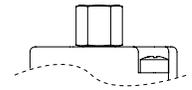
ESO SERIES MOUSE VALVES

3-WAY FULLY-PORTED VALVES

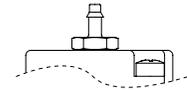
		Vac. to 105 psig	Vac. to 50 psig	Vac. to 25 psig	12 VDC	24 VDC	Part No.
 <p>Side Pin Connector</p>	•				•		ESO-3S-12
	•				•		ESO-3S-24
		•				•	ESO-3S-12-L
		•				•	ESO-3S-24-L
 <p>Top Pin Connector</p>	•				•		ESO-3T-12
	•				•		ETO-3T-24
		•				•	ESO-3T-12-L
		•				•	ESO-3T-24-L
 <p>Wire Leads Side (Radial)</p>	•				•		ESO-3W-12
	•				•		ESO-3W-24
		•				•	ESO-3W-12-L
		•				•	ESO-3W-24-L
 <p>Board Mount</p>	•				•		ESO-3B-12
	•				•		ESO-3B-24
		•				•	ESO-3B-12-L
		•				•	ESO-3B-24-L
					•		ESO-3B-12-H
					•		ESO-3B-24-H



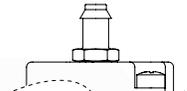
Top Port Options (below)



#10-32 (standard)



1/16" I.D. Hose Barb (option "-1")



1/8" I.D. Hose Barb (option "-2")

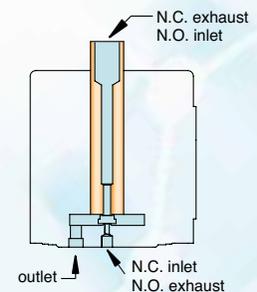
Medium	Clean, dry air (40 micron filter)
Power Consumption	1 watt at rated voltage
Temperature Range	32 to 150°F
Response Time	5 to 10 ms (nominal)
Operating Range	90 to 120% of rated voltage
Voltage	12 VDC or 24 VDC
Normally-Closed Ports	Inlet and outlet through manifold, exhaust through top of valve (#10-32)
Normally-Open Ports	Exhaust and outlet through manifold, inlet through top of valve (#10-32)
Seals	Nitrile standard; FKM, EPDM ¹ , and silicone ¹ available
More Details	clippard.com/link/es

See p. 13 for flow charts • For cable & connectors, see p. 20

¹Minimum order quantity required for EPDM or silicone seals

Pressure Range	Air Flow	Options Suffix
28" Hg Vac. to 105 psig	17 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	14 l/min @ 50 psig	-L
28" Hg Vac. to 25 psig	12.5 l/min @ 25 psig	-H

Options Suffix	
Nitrile Seals	(blank)
FKM Seals	-V
EPDM Seals ¹	-E
Silicone Seals ¹	-S
1/16" I.D. Hose Barb	-1
1/8" I.D. Hose Barb	-2



ES & ESO SERIES MOUSE VALVE MANIFOLDS

SINGLE- & MULTI-STATION MANIFOLDS



REAR MOUNT MANIFOLD



DUAL MOUNT MANIFOLD



Part No.	Description
26090-1	Single-Station, Side Port
26090-2	Single-Station, Bottom Port
26090-3	Double-Station

Part No.	Description
26083-4	4-Station Single-Sided
26083-6	6-Station Single-Sided
26083-8	8-Station Single-Sided
26084-8	8-Station Double-Sided
26084-12	12-Station Double-Sided
26084-16	16-Station Double-Sided

Part No.	Description
26081-4	4-Station Single-Sided
26081-6	6-Station Single-Sided
26081-8	8-Station Single-Sided
26082-12	12-Station Double-Sided
26082-16	16-Station Double-Sided

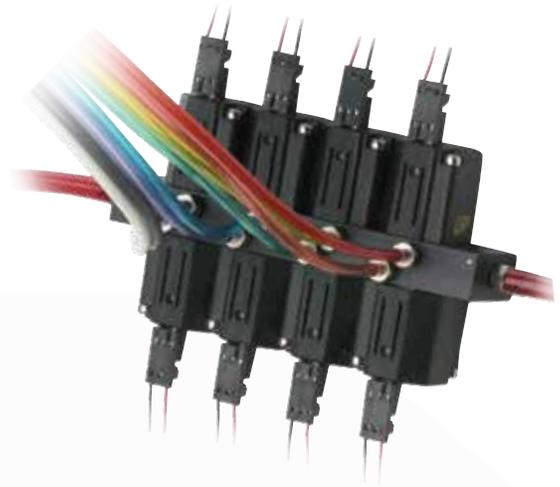
ACCESSORIES

Cover for an individual, unused manifold station.

Part No. ESM-CP



TE Connectivity #5-103956-2 with 18" Wire Leads.
#26 Gauge. Part No. C3-RXB18



For all the latest product news and updates, visit us online at **clippard.com**

Product Specifications • 2D & 3D Files • Online Ordering



SOLENOID VALVE **OVERVOLTAGE**

Every solenoid valve has a nominal actuation voltage, which is usually based on common power supply voltages such as 12 VDC, 24 VDC, 110 VAC, or 220 VAC. The nominal voltage is typically printed somewhere on the valve body or coil and is the voltage required to actuate (shift) the valve.

Applying less than the nominal voltage will result in undervoltage and may result in a slower “on” response time or the valve not actuating at all. Applying more than the nominal voltage will result in overvoltage, which can result in a faster “on” response time of a valve. However, extreme overvoltage could permanently damage the coil.

NOMINAL VS. RATED VOLTAGE

Most solenoid valves also have a rated voltage range, such as +/- 10% of the nominal voltage. For example, a 12 VDC +/- 10% rated voltage would allow between 10.8 VDC and 13.2 VDC to be applied to a solenoid and still achieve normal operation for the valve.

BENEFITS & DRAWBACKS

Users will sometimes intentionally overvoltage solenoid valves while remaining within the rated voltage range in order to get a faster “on” response time. While this will not damage the solenoid, it is important to understand the benefits and drawbacks when doing this.

Benefits:

- “On” response time will decrease as voltage is increased

Drawbacks:

- “Off” response time will increase as voltage is increased
- Power required will increase as voltage is increased
- Due to increased power usage, heat generation will also increase

CLIPPARD VALVES & OVERVOLTAGE

Many of Clippard’s valves actually allow a significant overvoltage. Our EV series valves, for instance, are rated for 90-150% of the nominal voltage, as are our 2013 series valves. Our DV series valves are rated for 95-125% of the nominal voltage and our NIV isolation valves are rated for 100-120% of the nominal voltage. This allows customers to get faster “on” response times if their application requires it.

Questions? Call **877-245-6247** or contact your local Clippard distributor.



EV / ET Coil Rated Voltage Ranges



Solenoid	Working Range
0.8VDC	0.7 - 1.2VDC
1.4VDC	1.3 - 2.1VDC
3VDC	2.7 - 4.5VDC
5VDC	4.5 - 7.5VDC
5.7VDC	5.1 - 8.5VDC
6VDC	5.4 - 9.0VDC
9VDC	8.1 - 14.0VDC
12VDC	10.8 - 18.0VDC
15.5VDC	14.0 - 23.0VDC
18VDC	16.0 - 27.0VDC
24VDC	21.5 - 36.0VDC

2013 Coil Rated Voltage Ranges



Solenoid	Working Range
6VDC	5.4 - 9.0VDC
12VDC	10.8 - 18.0VDC
24VDC	21.5 - 36.0VDC

DV Coil Rated Voltage Ranges



Solenoid	Working Range
12VDC	11.4 - 15.0VDC
24VDC	22.8 - 30.0VDC

LEAK DETECTION

Understandably, manufacturers of leak decay testing equipment have especially high standards for the valves they use. In order for their testing equipment to function, it must hold a pressure or vacuum over a period of time, which is not possible if the valve leakage exceeds a certain amount. However, low leak valves are critical in other situations as well—such as for performing chemical analysis, controlling a flammable gas, or achieving a particular level of vacuum. When your application is very sensitive to leaks, how does Clippard ensure that your valve meets your requirements?



Leaks in a valve are characterized by a leak rate, which is often given as a volumetric flow rate at a standard temperature and pressure (e.g. standard cubic centimeters per minute; sccm). The standard conditions take away any ambiguity about how much gas (in terms of mass) is leaking out. In many cases, but not all, the standard pressure is 1 atm and the standard temperature is 20° C. Since even units that have the “standard” word in them do not necessarily reference the same standard, other units have the standard pressure built right into them, such as atm-cc/s and Pa-m³/s. According to the NIST website, any volumetric flow rate that includes “atm” also assumes that the standard temperature is 0°C.

There are many ways that valves can be checked for leaks. Clippard uses two of the most popular ways: pressure decay testing and helium leak detection.

PRESSURE DECAY TESTING

Pressure decay methods are an easy choice for many applications. Though decay testers can be quite sophisticated, they are fairly simple in theory. The integrity of the seals of a valve can be measured by how well the valve holds pressure in an otherwise closed volume. The tester pressurizes the volume with a gas, closes the volume, allows the pressure to stabilize, and then measures the volume pressure. After a specified amount of time it reads the pressure again. The amount of the pressure drop between the first reading and the second reading is an indication in the size of the leak in the VUT.

Pressure decay testing can very effectively determine whether a valve is bubble tight, but its sensitivity is limited. Increasing its sensitivity requires very long test times, and a pressure decay test does not by itself give customers a good indication of the actual leak rate of the valve. The relationship between leak rate and pressure decay depends on the size of the volume under test and the length of time between the two pressure readings. To overcome these limitations, Clippard utilizes helium leak detection.

HELIUM LEAK DETECTION

A helium leak detector uses a mass spectrometer that is calibrated to detect helium ions in a very deep vacuum. The valve-under-test is connected by fixturing to the test port of the detector, and the detector is then pumped down to the test vacuum level. Once the proper test vacuum has been achieved, the tester is zeroed to get rid of background helium levels. Then helium is sprayed around the VUT. If there is a detectable leak, the mass spectrometer quickly starts to see an increase of helium. The number of helium ions counted by the mass spec is expressed as a leak rate of the VUT.

For more information about Clippard's leak testing capabilities, call **877-245-6247** or contact your local Clippard distributor.

7 MM VALVES

2-WAY & 3-WAY SUBMINIATURE VALVES



Valve Type	2-Way and 3-Way Normally-Closed
Medium	Air, water, gas, or compatible fluids
Nominal Power	0.5 to 1.2 watts
Response Time	<5 ms*
Temperature Range	32 to 122°F
Electrical Connection	3" Wire Leads
Voltage	12 VDC or 24 VDC
Mounting	Cartridge
Wetted Materials	Stainless Steel
Seal Material	FKM standard, EPDM available
More Details	clippard.com/link/sv

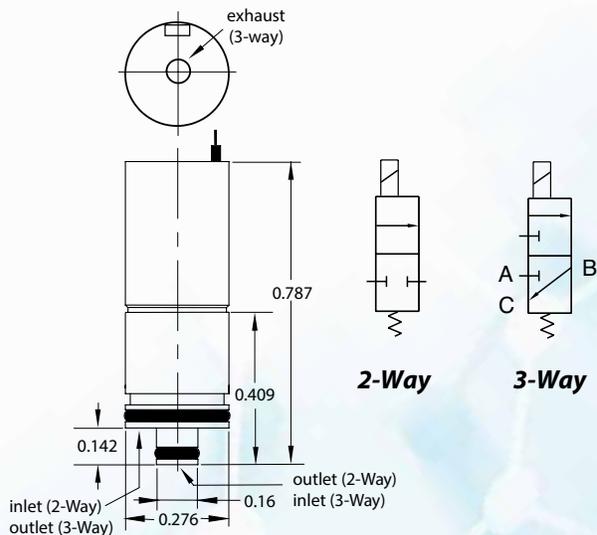
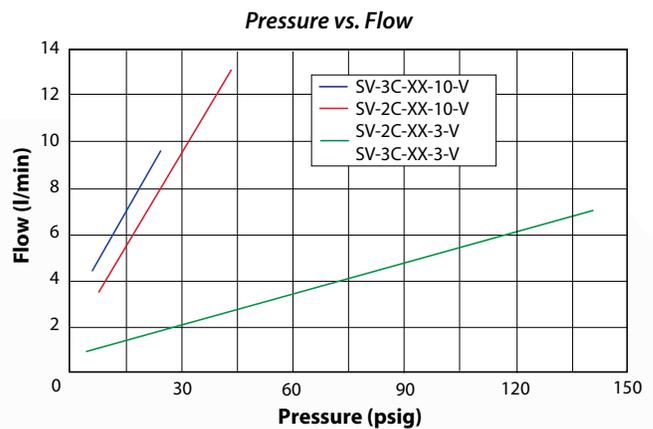
*Customizable to the specifications of the application. Call 877-245-6247.

Type	Pressure	Orifice	Part No.	Voltage
2-Way	0 to 145 psig	0.012"	SV-2C-12-3-V	12 VDC
			SV-2C-24-3-V	24 VDC
	0 to 45 psig	0.039"	SV-2C-12-10-V	12 VDC
			SV-2C-24-10-V	24 VDC
3-Way	0 to 144 psig	0.012"	SV-3C-12-3-V	12 VDC
			SV-3C-24-3-V	24 VDC
	0 to 22 psig	0.039"	SV-3C-12-10-V	12 VDC
			SV-3C-24-10-V	24 VDC

These 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 EV line of electronic valves, in a 7 mm 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.

Standard products offered will fit the needs of most applications, however this series can be fully customized according to the user's unique requirements.

- 1,000,000,000+ cycle life
- Extremely minimal dead volume
- Low vibration and noise
- 100% tested



SINGLE-STATION MANIFOLD

Black anodized aluminum.
Other materials available.



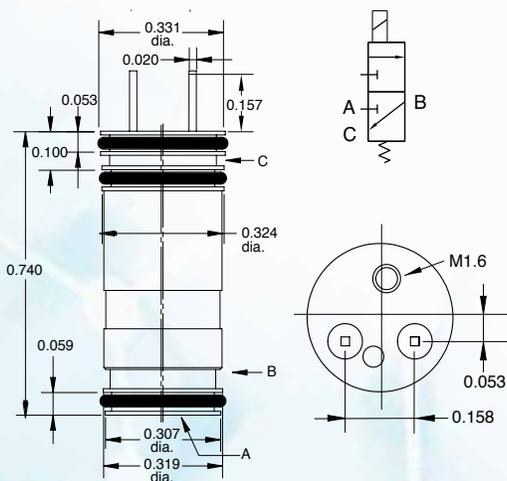
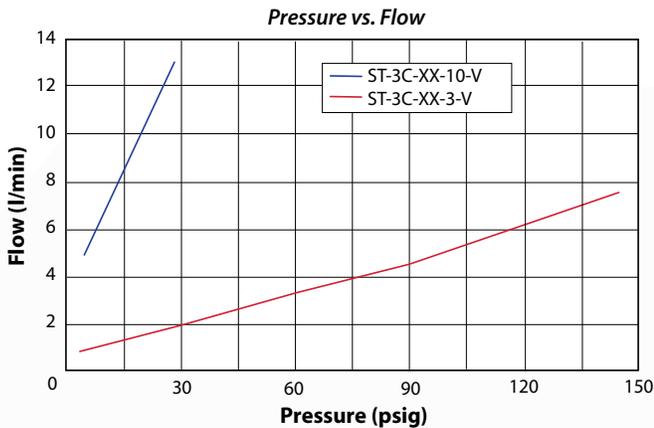
Part No.	Description
SVM-01	Single-Station Manifold, #10-32
M-SVM-01	Single-Station Manifold, M5
SVM-MC	Mounting Clip & Screw Only

8 MM VALVES

3-WAY SUBMINIATURE VALVES



- 1,000,000,000+ cycle life
- Extremely small dead volume
- Low vibration and noise
- Exceptional repeatability and reliability
- Compact and ideal for sub-assemblies
- 100% tested



These 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 EV line of electronic valves, in a 8 mm cartridge package. Due to very low moving weights, they are extremely quiet and emit very little vibration. Subminiature size and low energy consumption make them ideal for many medical and diagnostic applications.

Standard products offered will fit the needs of most applications, however this series can be fully customized according to the user's unique requirements. Consult Clippard with your specific application.

Valve Type	3-Way, Normally-Closed
Medium	Air, water, gas, or compatible fluids
Nominal Power	0.55 watts*
Response Time	<5 ms*
Temperature Range	32 to 122°F
Electrical Connection	Terminal pins
Voltage	12 VDC or 24 VDC*
Mounting	Cartridge
Wetted Materials	Stainless steel
Seal Material	FKM standard; EPDM available
More Details	clippard.com/link/st

*Customizable to the specifications of the application. Call 877-245-6247.

Part No.	Pressure	Orifice	Voltage
ST-3C-12-3-V	0 to 145 psig	0.012"	12 VDC
ST-3C-24-3-V			24 VDC
ST-3C-12-10-V	0 to 29 psig	0.039"	12 VDC
ST-3C-24-10-V			24 VDC

SINGLE-STATION MANIFOLD

Part No.	Description
STM-01	Single-Station Manifold, #10-32
M-STM-01	Single-Station Manifold, M5

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



PROBLEM

Highly specialized equipment often presents very specific design challenges. This can be especially true in laboratory or analytical environments where the optimization of new equipment requires special components that are able to meet unique demands such as specific pressure, flow, and heat requirements. This OEM's system was leaking, but the fix would not be simple. Their application included a long list of critical specifications. On top of needing to maintain an existing footprint, the system also needed to minimize internal volume, could not generate much heat, and had to control a precise flow at a very specific pressure.

SOLUTION

While the requirements may seem daunting, this is just the type of problem that Clippard excels at solving. Our subminiature 8 mm valves provide precise, accurate flow control and generate very little heat—they were perfectly suited for this application. The OEM's existing system was leaking, so Clippard closely examined factors which could be contributing to this. Replacing the valves was a step forward, but Clippard also found that the gaskets in the existing manifold were leak points as well.

To ensure the fewest possible leak points, Clippard designed an acrylic diffusion-bonded manifold which not only eliminated the need for gaskets, but also allowed critical passages at tight tolerances. The special manifold allowed the new valves to be mounted together tightly and compactly, providing a leakproof solution with an even smaller footprint than the OEM had previously.



ELECTRONIC VALVES



"When our engineering team is working directly with the customer's engineering team—that is when Clippard's experience, creativity, and expertise are of most benefit to all involved."

JERRY GROTELUESCHEN

ENGINEERING MANAGER,
APPLICATION ENGINEERING GROUP

WHAT CAN CLIPPARD DO FOR YOU?

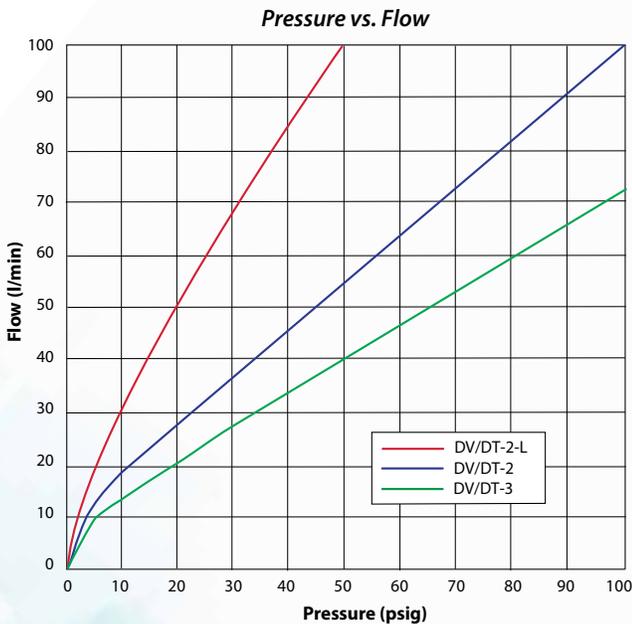
877-245-6247

DV SERIES HIGH FLOW VALVES

2-WAY & 3-WAY HIGH FLOW VALVES



- Industry standard for leak-free operation
- Design flexibility and fast response
- Designed to accommodate large flows with more stroke
- Robust stainless steel “spider”



QUICK CONNECT

Clippard DT Series valves feature spade lugs for simple, quick secure low voltage connections. The DV type valves are available in popular voltages with 18" wire leads.

Clippard DV series electronic valves are high flow, precision-built control valves. This powerful series was designed as the next generation of the well-known and trusted original EV series valves. With a life of over a billion cycles, 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.

Proportional version also available—See p. 58-59

- Fast response
- Low heat rise/low power
- Small package
- Single moving part for low friction and wear
- Two orifice sizes
- Two connection styles
- Two mounting types

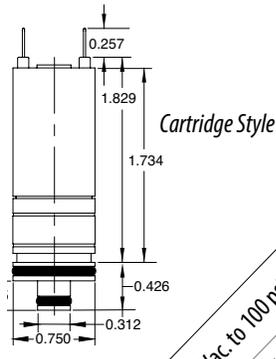
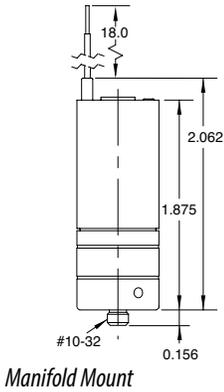
Medium	Air or compatible gases (40 micron filter)
Air Flow	DV-2/DT-2: 100 l/min @ 100 psig DV-2-L/DT-2-L: 100 l/min @ 50 psig DV-3/DT-3: 70 l/min @ 100 psig
Power Consumption	1.9 watts
Ports	#10-32 (on manifold mount valve)
Temperature Range	32 to 130° F
Response	10 to 15 ms
Electrical Connection	Spade terminals or wire leads
Operating Range	95 to 125% of rated voltage
Mounting	Manifold or cartridge (inserts into a 3/4" bore)
Wetted Materials	PPS, PEI, stainless steel
Seal Material	FKM standard Nitrile, EPDM ¹ , and silicone ¹ available
More Details	clippard.com/link/dv

*Customizable to the specifications of the application. Call 1-877-245-6247.

¹Minimum order quantity required for EPDM or silicone seals

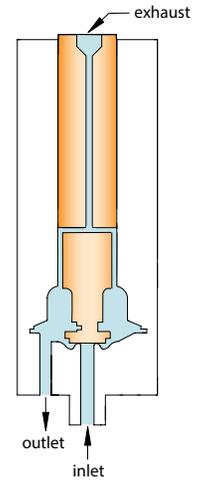
DV SERIES HIGH FLOW VALVES

2-WAY & 3-WAY VALVES, MANIFOLD & CARTRIDGE MOUNT



Vac. to 100 psig
Vac. to 50 psig

12 VDC
24 VDC



	Pressure Range	Voltage	In-Line	Cartridge	In-Line	Cartridge
<p>Spade Terminals</p>	•	•	DT-2M-12	DT-2C-12	DT-3M-12	DT-3C-12
	•	•	DT-2M-24	DT-2C-24	DT-3M-24	DT-3C-24
	•	•	DT-2M-12-L	DT-2C-12-L		
	•	•	DT-2M-24-L	DT-2C-24-L		
<p>Wire Leads Top (Axial)</p>	•	•	DV-2M-12	DV-2C-12	DV-3M-12	DV-3C-12
	•	•	DV-2M-24	DV-2C-24	DV-3M-24	DV-3C-24
	•	•	DV-2M-12-L	DV-2C-12-L		
	•	•	DV-2M-24-L	DV-2C-24-L		

Medium	Air or compatible gases (40 micron filter)
Materials, Seals	FKM standard; nitrile, EPDM ¹ , and silicone ¹ available
Materials, Wetted	PPS, PEI, stainless steel
Mounting	Manifold or cartridge
Operating Range	95 to 125% of rated voltage
Ports	#10-32 (on manifold mount valve)
Power Consumption	1.9 watts
Response Time	10 to 15 ms
Temperature Range	32 to 130°F
More Details	clippard.com/link/dv

See p. 10 for mounting option schematics

¹Minimum order quantity required for EPDM or silicone seals

Pressure Range	Version	Air Flow	Options Suffix
28" Hg Vac. to 100 psig	2-Way	100 l/min @ 100 psig	(blank)
	3-Way	70 l/min @ 100 psig	(blank)
28" Hg Vac. to 50 psig	2-Way	100 l/min @ 50 psig	-L

Options Suffix

Nitrile seals	(blank)
FKM seals	-V
EPDM seals ¹	-E
Silicone seals ¹	-S

Example Part Numbers:
DV-2M-12-V

MULTI-STATION MANIFOLDS

Black anodized aluminum;
1/8" NPT ports



Part No.	Description
15781-2	2-Station
15781-4	4-Station
15781-6	6-Station

SINGLE-STATION MANIFOLDS

ENP brass standard

Other materials also available,
call 877-245-6247.

Cartridge style shown

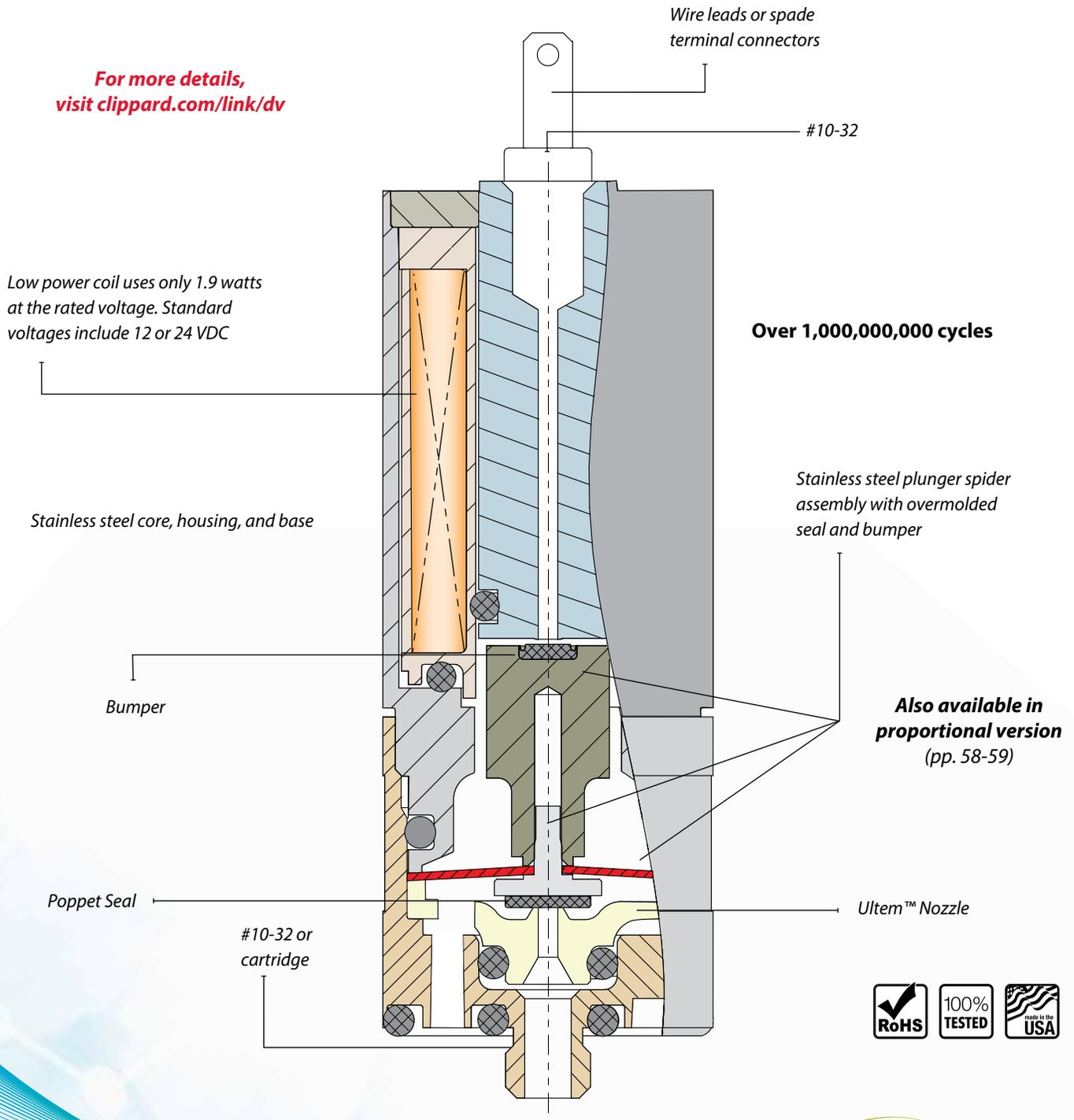


Part No.	Description
15490-5	Manifold Mount
15492-1	Cartridge Manifold

Clippard's Next Generation DV Series Valve

Clippard DV series electronic valves feature the same exceptional long life as the trusted EV series, but with even more flow! Proportional version also available (see pp. 58-59).

**For more details,
visit clippard.com/link/dv**



PROBLEM

Any component which fails prematurely presents obvious problems. Therefore, in an effort to reduce down time and costly maintenance, manufacturers often seek components with longer lifespans. In this case, the equipment required numerous high flow valves which were failing to provide sufficient longevity. Maintenance was becoming prohibitively costly as technicians were having to routinely replace valves, a process which, due to the size of the equipment, had to be performed on-site.



ELECTRONIC VALVES

SOLUTION

The OEM's primary concern was to reduce the costs required to maintain their equipment. The first step towards solving this was to replace the existing valves with Clippard DV valves. With a lifespan of over a billion cycles, this switch significantly reduced the number of service calls technicians had to make. As an added bonus, the new valves also provided lower power consumption and higher flow rates.

Along with the new DV valves, Clippard designed a special new manifold. With all the valves mounted together in a single, compact block, it became much quicker and easier to remove the entire valve system. This further reduced maintenance time by enabling technicians easier access to other components within the system.



WHAT CAN CLIPPARD DO FOR YOU?

877-245-6247

"The world is changing so fast now that you need the engineering support. And once you are in contact with Clippard's engineering team, Clippard is probably the most supportive engineering staff we deal with."

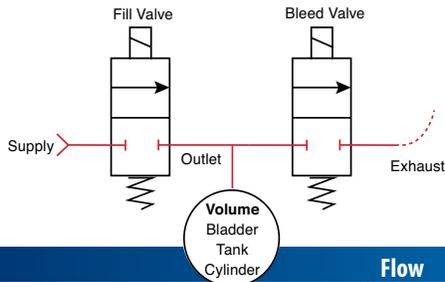
CUSTOMER TESTIMONIAL

EFB SERIES FILL & BLEED CIRCUITS

ELECTRONIC FILL & BLEED CIRCUITS

A fill and bleed circuit is a combination of pneumatic valve components used to inflate a volume or apparatus in one controllable function, and to release or vent pressure in a second controllable function.

- Extremely fast response
- Multiple flow and pressure options
- Compact, robust design with exceptionally long life



	Flow	Max. Pressure	Voltage	Part No.	Valve
In-Line Mount 	100 l/min @ 100 psig	•	•	EFB-1DV-12	DV-2M-12
		•	•	EFB-1DV-24	DV-2M-24
	80 l/min @ 50 psig	•	•	EFB-1DV-12-L	DV-2M-12-L
		•	•	EFB-1DV-24-L	DV-2M-24-L
	13 l/min @ 25 psig		•	EFB-1EM-12-H	EM-2-12-H
			•	EFB-1EM-24-H	EM-2-24-H
Manifold Mount 	17 l/min @ 100 psig	•	•	EFB-2EV-12	EV-2M-12
		•	•	EFB-2EV-24	EV-2M-24
	14 l/min @ 50 psig	•	•	EFB-2EV-12-L	EV-2M-12-L
		•	•	EFB-2EV-24-L	EV-2M-24-L
	13 l/min @ 25 psig		•	EFB-2EV-12-H	EV-2M-12-H
			•	EFB-2EV-24-H	EV-2M-24-H
	100 l/min @ 100 psig	•	•	EFB-2DV-12	DV-2M-12
		•	•	EFB-2DV-24	DV-2M-24
	100 l/min @ 50 psig	•	•	EFB-2DV-12-L	DV-2M-12-L
		•	•	EFB-2DV-24-L	DV-2M-24-L

MANIFOLD

Black anodized aluminum

Manifold Mount

In-Line Mount

For more details, visit clippard.com/link/efb

Part No.	Description	Notes
EFB-1M	In-Line Manifold Only	Specify your manifold mount DV, DT or EM valve when selecting the manifold only.
EFB-2M	Manifold Mount Manifold Only	Specify your manifold mount DV, DT, EV or EM valve when selecting the manifold only.

PROBLEM

Medical equipment manufacturers are often looking to design smaller, more portable systems. This presents unique challenges with regard to power requirements, size, and weight. Reliability can also be critical, as it can quite literally be a matter of life or death. Equipment being used in the field must not only be precise and accurate, but also robust and durable. These types of systems—and their components—must be designed and assembled to withstand rough handling, such as what might occur during an emergency situation or while treating a patient in the back of an ambulance or helicopter.

SOLUTION

The OEM's primary concern was to improve the overall accuracy and precision of their system, a problem which was easily solved by replacing select components with Clippard valves. Clippard then designed a special manifold which allowed the new valves to be mounted alongside the system's other components. This new all-in-one solution provided a significant reduction in leak points, thereby enhancing the system's overall reliability.

The new manifold provided a footprint which was so much smaller and more compact that it led the OEM to develop a new version of their own product. The new unit not only provided enhanced accuracy and precision, but was also smaller in size and lighter in weight.

WHAT CAN CLIPPARD DO FOR YOU?

877-245-6247



ELECTRONIC VALVES

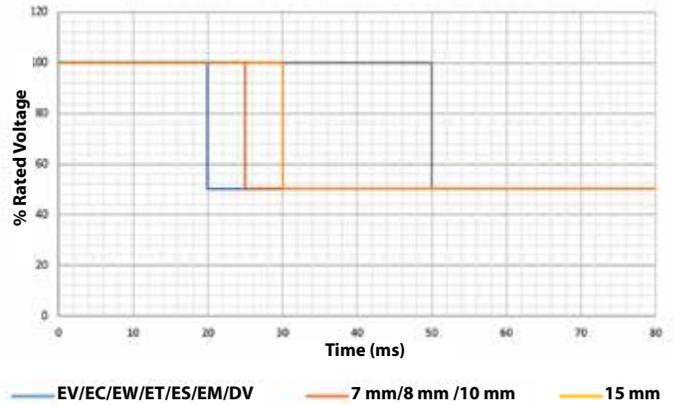


"Clippard's responsiveness during the project has been phenomenal."

CUSTOMER TESTIMONIAL

HIT & HOLD CIRCUIT RECOMMENDATIONS

Hit and hold circuits allow valves to be held on for long periods of time at a lower voltage than their rated voltage. The general principle is that the valve is energized to full power for a short period of time before dropping the voltage and current to a specified level. In a typical hit and hold circuit, the hit is at the standard rated voltage for a specified period of time. The hold is usually 50% (or less) of the rated voltage. Here are some of our recommendations for designing successful hit and hold circuits using Clippard valves.



EV, ES, EM, AND DV VALVES

For our standard mouse valves, Clippard recommends hitting the valve with 100% of the rated voltage for 20 ms minimum, and then dropping the voltage to 50% of the rated value. If the valve is being used with reverse flow, the hit time may need to be extended depending on the pressure.

- EV Series (p. 4)
- ES (p. 23)
- EM Series (p. 22)
- DV Series (p. 32)

Example:

For a 12 VDC valve, hit the valve with 12 VDC for 20 ms, then drop the voltage to 6 VDC



7 MM (SV), 8 MM (ST), AND 10 MM VALVES

For our 7 mm, 8 mm, and 10 mm valves, Clippard recommends hitting the valve with 100% of the rated voltage for 25 ms minimum, and then dropping the voltage to 50% of the rated value.

- 7 mm SV Series (p. 29)
- 8 mm ST Series (p. 30)
- 10 mm (p. 40)

Example:

For a 12 VDC valve, hit the valve with 12 VDC for 25 ms, then drop the voltage to 6 VDC

15 MM VALVES

For our 15 mm manifold mounted valves, Clippard recommends hitting the valve with 100% of the rated voltage for 30 ms minimum, and then dropping the voltage to 50% of the rated value.

- 15 mm (p. 42)

Example:

For a 12 VDC valve, hit the valve with 12 VDC for 30 ms, then drop the voltage to 6 VDC



10 & 15 MM MINIATURE VALVES

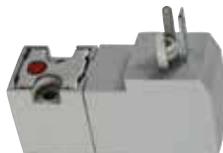
All of the benefits of Clippard quality and reliability are available in these 10 mm and 15 mm miniature valves. Offered in both Normally-Open or Normally-Closed models, these 2-Way and 3-Way valves are perfect for small areas where compact electronically-controlled pneumatics are needed.

A high strength, engineered lightweight glass-filled nylon body—along with stainless steel, FKM and nitrile—makes this series suitable for a broad range of applications. With exceptional life and reliability, this versatile miniature valve is a smart choice for many types of systems across many different industries.



10 MM STANDARD

Direct operating valves well-suited for single- or multiple-valve mounting in small spaces.
(90° connector shown)



15 MM STANDARD

Direct operating valves well-suited for single- or multiple-valve mounting in small spaces.
(DIN connector shown)



10 MM LATCHING

A short pulse of current shifts this valve which “latches” indefinitely; another pulse returns the valve.
(Wire leads shown)



15 MM LATCHING

A short pulse of current shifts this valve which “latches” indefinitely; another pulse returns the valve.
(Wire lead shown)



10 MM HIGH FLOW 2-WAY

Specialty series for high flow applications.
(In-line connector shown)



15 MM HIGH FLOW 2-WAY

Specialty series for high flow applications.
(In-line connector shown)



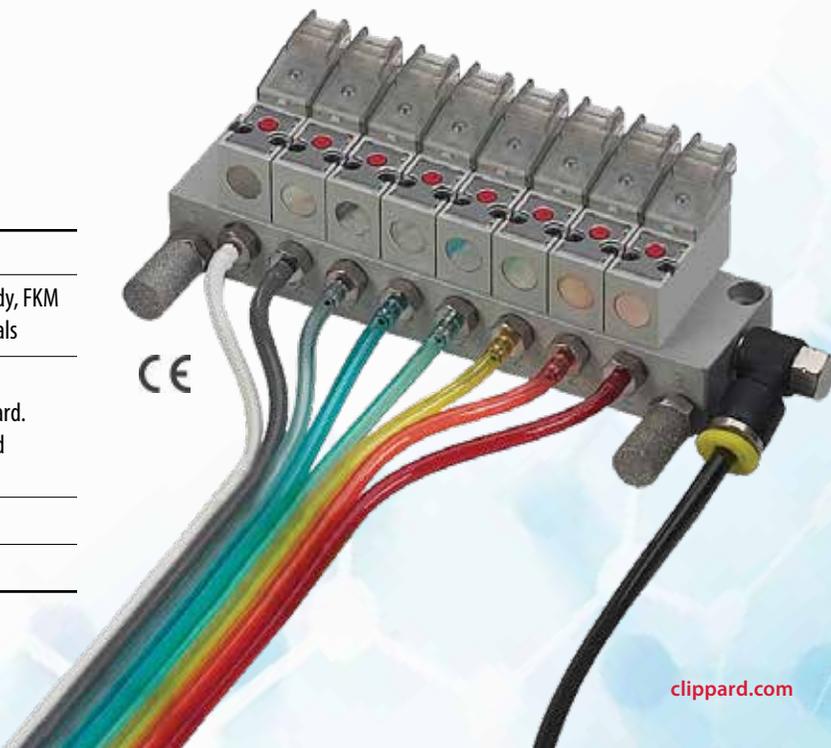
10 MM ISO 15218 SERIES

Conforms to ISO standard for mounting and port locations.
(90° connector shown)

Medium	Air, gas, or other compatible fluids
Material	Stainless steel core and springs, Nylon body, FKM dynamic seals, nitrile gasket and static seals
Electrical	The coil is constructed of copper wire and insulated according to the class "F" standard. All circuitry and connections are protected from corrosion

CE, RoHS Compliant

More Details clippard.com/link/10-15mm



10 MM MINIATURE VALVES

LATCHING 10 MM MINIATURE VALVES

Clippard's Latching series features 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.

Working Pressure	0 to 100 psig
Max. Flow Rate	15 to 22 l/min @ 87 psig
Orifice	0.031"
Electrical Connection	2-Wire reverse polarity, 300 mm, 24 AWG
Wattage	2.0 watts
Voltage Tolerance	±10%
Connector	Wire leads



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

Minimum order quantities may apply.

Type	Part No.	Voltage
2-Way	E2L10C-7W012	12 VDC
	E2L10C-7W024	24 VDC
3-Way	E3L10C-7W012	12 VDC
	E3L10C-7W024	24 VDC

HIGH FLOW 2-WAY 10 MM MINIATURE VALVES

Working Pressure	0 to 36 psig
Max. Flow Rate	35 l/min @ 36 psig
Orifice	0.055"
Power Consumption	3.5 watts in-rush phase; 15 ms/0.35 watts maintenance phase
Voltage Tolerance	±10%



10 MM HIGH FLOW SINGLE-STATION MANIFOLD

Spare hardware and cover plates available.

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

Part No.	Connector	Voltage
E210H-3L012	90° Connector with LED	12 VDC
E210H-3L024		24 VDC
E210H-3C012	In-Line Connector with LED	12 VDC
E210H-3C024		24 VDC



ISO 15218 10 MM 3-WAY MINIATURE VALVES

Working Pressure	0 to 100 psig
Maximum Flow Rate	24 l/min @ 6 bar
Exhaust Flow	38 l/min @ 6 bar
Orifice	0.043" (inlet to outlet), 0.051" (outlet to exhaust)
Power Consumption	3.5 watts in-rush phase; 15 ms/0.35 watts maintenance phase
Voltage Tolerance	±10%



10 MM SINGLE-STATION ISO MANIFOLD

Spare hardware and cover plates available.

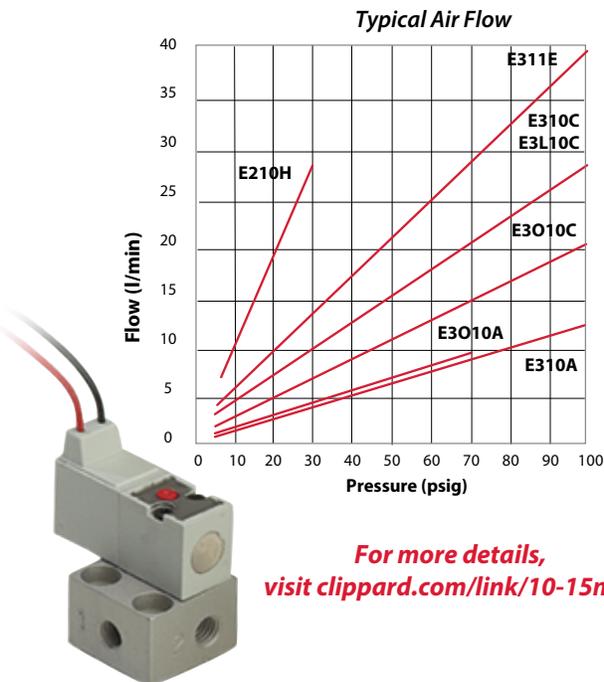
Part No.	Description
E10LM-01	ISO 10 mm Single-Station Manifold

Part No.	Connector	Voltage
E311E-3L012	90° Connector with LED	12 VDC
E311E-3L024		24 VDC
E311E-3C012	In-Line Connector with LED	12 VDC
E311E-3C024		24 VDC



10 MM MINIATURE VALVES

Medium	Air, gas, or other compatible fluids
Max. Flow Rate	0.020" Orifice: 8 l/min @ 87 psig 0.031" Orifice: 15 l/min @ 87 psig 0.028" Orifice: 55 l/min @ 36 psig
Exhaust Flow	0.020" Orifice: 12 l/min @ 87 psig 0.031" Orifice: 22 l/min @ 87 psig
Response Time	0.5 Watts: 8 ms energized, 10 ms de-energized 1.3 Watts: 6 ms energized, 8 ms de-energized
Voltage Tolerance	±10%
Power Consumption	0.6 or 1.3 watts <i>Dependent on orifice size and pressure</i>
Material	Stainless steel core and springs, nylon body, FKM dynamic seals, nitrile gasket and static seals
Coil Insulation Class	F 311°F
Temperature Range	14 to 122°F (If below 32°F, must use clean, dry air)
CE, RoHS Compliant	



Type	Base Part No.*	Connector	Orifice	Wattage	Working Pressure
2-Way Normally-Closed 	E210A-1E □□□	90° Connector	0.020"	0.6 watts	0 to 100 psig
	E210C-2E □□□		0.031"	1.3 watts	0 to 100 psig
	E210A-1L □□□	90° Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E210C-2L □□□		0.031"	1.3 watts	0 to 100 psig
	E210A-1F □□□	In-Line Connector	0.020"	0.6 watts	0 to 100 psig
	E210C-2F □□□		0.031"	1.3 watts	0 to 100 psig
	E210A-1C □□□	In-Line Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E210C-2C □□□		0.031"	1.3 watts	0 to 100 psig
E210A-1W □□□	Wire Leads, 11.8"	0.020"	0.6 watts	0 to 100 psig	
E210C-2W □□□		0.031"	1.3 watts	0 to 100 psig	
3-Way Normally-Closed 	E310A-1E □□□	90° Connector	0.020"	0.6 watts	0 to 100 psig
	E310C-2E □□□		0.031"	1.3 watts	0 to 100 psig
	E310A-1L □□□	90° Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E310C-2L □□□		0.031"	1.3 watts	0 to 100 psig
	E310A-1F □□□	In-Line Connector	0.020"	0.6 watts	0 to 100 psig
	E310C-2F □□□		0.031"	1.3 watts	0 to 100 psig
	E310A-1C □□□	In-Line Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E310C-2C □□□		0.031"	1.3 watts	0 to 100 psig
E310A-1W □□□	Wire Leads, 11.8"	0.020"	0.6 watts	0 to 100 psig	
E310C-2W □□□		0.031"	1.3 watts	0 to 100 psig	
3-Way Normally-Open 	E3010A-1E □□□	90° Connector	0.020"	0.6 watts	0 to 100 psig
	E3010C-2E □□□		0.028"	1.3 watts	0 to 100 psig
	E3010A-1L □□□	90° Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E3010C-2L □□□		0.028"	1.3 watts	0 to 100 psig
	E3010A-1F □□□	In-Line Connector	0.020"	0.6 watts	0 to 100 psig
	E3010C-2F □□□		0.028"	1.3 watts	0 to 100 psig
	E3010A-1C □□□	In-Line Connector with LED	0.020"	0.6 watts	0 to 100 psig
	E3010C-2C □□□		0.028"	1.3 watts	0 to 100 psig
E3010A-1W □□□	Wire Leads, 11.8"	0.020"	0.6 watts	0 to 100 psig	
E3010C-2W □□□		0.028"	1.3 watts	0 to 100 psig	

*Add voltage choice to the end of each base part number
12 VDC (012) or 24 VDC (024), Example: E210A-1C012

15 MM MINIATURE VALVES

CONNECTOR OPTIONS

Terminal Connector



Industrial form C connector ordered separately (p. 44)

DIN Connector



DIN connector ordered separately (p. 44)

In-Line Connector with LED



90° Connector with LED



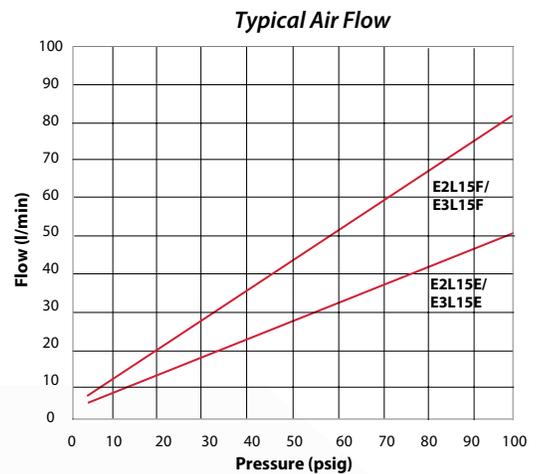
Wire Leads



LATCHING 15 MM MINIATURE VALVES

Through the precise placement of a permanent magnet in the valve core, a careful balance of forces produces a bi-stable valve. A short pulse of current to the brown lead opens the valve, which “latches” open indefinitely after the current stops. A subsequent pulse of current to the blue lead closes the valve. The valve consumes less energy and produces less heat than a standard solenoid valve.

- Max. Flow Rate** **0.043" Orifice:** 36 l/min @ 87 psig
 0.063" Orifice: 45 l/min @ 87 psig
- Electrical Connection** 3-Wire molded cord, 300 mm, 24 AWG 4.5 mm external jacket; tinned copper wires; silicone jacket and conductor insulation
- Voltage Tolerance** ±10%
- Wattage** 4.0 watts



Type	Part No.	Orifice	Voltage	Pressure
2-Way	E2L15E-4W012	0.043"	12 VDC	0 to 150 psig
	E2L15E-4W024	0.043"	24 VDC	0 to 150 psig
	E2L15F-4W012	0.063"	12 VDC	0 to 100 psig
	E2L15F-4W024	0.063"	24 VDC	0 to 100 psig
3-Way	E3L15E-4W012	0.043"	12 VDC	0 to 150 psig
	E3L15E-4W024	0.043"	24 VDC	0 to 150 psig
	E3L15F-4W012	0.063"	12 VDC	0 to 100 psig
	E3L15F-4W024	0.063"	24 VDC	0 to 100 psig



- 2-Way & 3-Way Normally-Closed configurations
- Pulse-actuated (on or off)
- 3-wire coil—no polarity reverse required
- Stable latch
- Minimum order quantities may apply

HIGH FLOW 2-WAY N.C. 15 MM VALVES

- Working Pressure** 0 to 36 psig
- Maximum Flow Rate** 118 l/min @ 36 psig
- Orifice** 0.118"
- Voltage Tolerance** ±10%
- Power Consumption** 2.5 watts

Part No.	Connector	Voltage
E215H-3L012	90° Connector	12 VDC
E215H-3L024	with LED	24 VDC
E215H-3C012	In-Line Connector	12 VDC
E215H-3C024	with LED	24 VDC



15 MM HIGH FLOW SINGLE-STATION MANIFOLD

Spare hardware and cover plates available.

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

90° Connector with LED

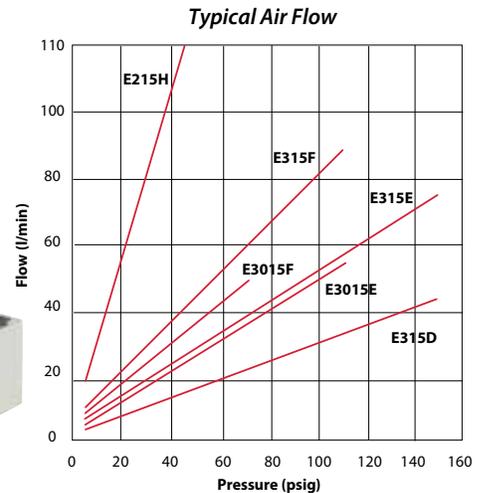


In-Line Connector with LED



15 MM MINIATURE VALVES

Medium	Air, gas, or other compatible fluids
Max. Flow Rate	0.032" Orifice: 20 l/min @ 87 psig 0.043" Orifice: 35 l/min @ 87 psig 0.063" Orifice: 50 l/min @ 87 psig
Response Time	0.1 Watt: 6 ms energized; 8 ms de-energized 2 Watts: 5 ms energized; 6 ms de-energized 2.5 Watts: 4 ms energized; 6 ms de-energized
Voltage Tolerance	±10%
Power Consumption	1.0, 2.0 or 2.5 watts <i>Dependent on orifice size and pressure</i>
Material	Stainless steel core and springs, nylon body, FKM seals, nitrile gasket
Coil Insulation Class	F 311°F
Temperature Range	23 to 122°F (If below 32°F, must use clean, dry air)



ELECTRONIC VALVES

Type	Base Part No.*	Connector	Voltage					Orifice	Wattage	Working Pressure
			12 VDC	24 VDC	24 VAC	110 VAC	220 VAC			
2-Way Normally-Closed 	E215D-1T □□□	Terminal	•	•				0.032"	1.0	0 to 150 psig
	E215E-2T □□□		•	•	•			0.043"	2.0	0 to 150 psig
	E215F-2T □□□		•	•	•			0.063"	2.5	0 to 100 psig
	DIN Connector	E215D-1D □□□	•	•				0.032"	1.0	0 to 150 psig
		E215E-2D □□□	•	•	•	•		0.043"	2.0	0 to 150 psig
		E215F-2D □□□	•	•	•	•		0.063"	2.5	0 to 100 psig
	Wire Leads, 11.8"	E215D-1W □□□	•	•				0.032"	1.0	0 to 150 psig
		E215E-2W □□□	•	•	•			0.043"	2.0	0 to 150 psig
		E215F-2W □□□	•	•	•			0.063"	2.5	0 to 100 psig
	90° Connector with LED	E215D-1L □□□	•	•				0.032"	1.0	0 to 150 psig
		E215E-2L □□□	•	•				0.043"	2.0	0 to 150 psig
		E215F-2L □□□	•	•				0.063"	2.5	0 to 100 psig
In-Line Connector with LED	E215D-1C □□□	•	•				0.032"	1.0	0 to 150 psig	
	E215E-2C □□□	•	•				0.043"	2.0	0 to 150 psig	
	E215F-2C □□□	•	•				0.063"	2.5	0 to 100 psig	
3-Way Normally-Closed 	E315D-1T □□□	Terminal	•	•				0.032"	1.0	0 to 150 psig
	E315E-2T □□□		•	•	•			0.043"	2.0	0 to 150 psig
	E315F-2T □□□		•	•	•			0.063"	2.5	0 to 100 psig
	DIN Connector	E315D-1D □□□	•	•				0.032"	1.0	0 to 150 psig
		E315E-2D □□□	•	•	•	•		0.043"	2.0	0 to 150 psig
		E315F-2D □□□	•	•	•	•		0.063"	2.5	0 to 100 psig
	Wire Leads, 11.8"	E315D-1W □□□	•	•				0.032"	1.0	0 to 150 psig
		E315E-2W □□□	•	•	•			0.043"	2.0	0 to 150 psig
		E315F-2W □□□	•	•	•			0.063"	2.5	0 to 100 psig
	90° Connector with LED	E315D-1L □□□	•	•				0.032"	1.0	0 to 150 psig
		E315E-2L □□□	•	•				0.043"	2.0	0 to 150 psig
		E315F-2L □□□	•	•				0.063"	2.5	0 to 100 psig
In-Line Connector with LED	E315D-1C □□□	•	•				0.032"	1.0	0 to 150 psig	
	E315E-2C □□□	•	•				0.043"	2.0	0 to 150 psig	
	E315F-2C □□□	•	•				0.063"	2.5	0 to 100 psig	
3-Way Normally-Open (110 psig max.) 	E3015E-2T □□□	Terminal	•	•	•			0.043"	2.0	0 to 150 psig
	E3015F-2T □□□		•	•	•			0.063"	2.5	0 to 75 psig
	DIN Connector	E3015E-2D □□□	•	•	•	•		0.043"	2.0	0 to 150 psig
		E3015F-2D □□□	•	•	•	•		0.063"	2.5	0 to 75 psig
	Wire Leads, 11.8"	E3015E-2W □□□	•	•	•			0.043"	2.0	0 to 150 psig
		E3015F-2W □□□	•	•	•			0.063"	2.5	0 to 75 psig
90° Connector with LED	E3015E-2L □□□	•	•				0.043"	2.0	0 to 150 psig	
	E3015F-2L □□□	•	•				0.063"	2.5	0 to 75 psig	
In-Line Connector with LED	E3015E-2C □□□	•	•				0.043"	2.0	0 to 150 psig	
	E3015F-2C □□□	•	•				0.063"	2.5	0 to 75 psig	

*Add voltage choice to end of base part number: 12 VDC (012), 24 VDC (024), 24 VAC (24A), 110 VAC (110), or 220 VAC (220). Example: E315D-1C012

PROBLEM

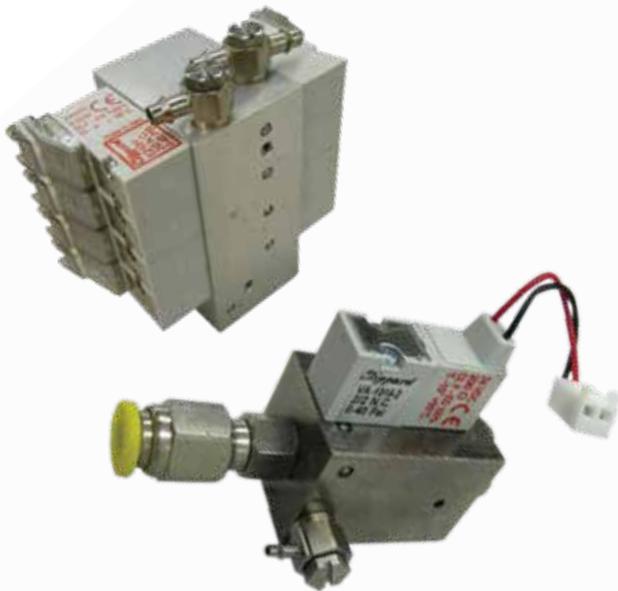
In many situations, an existing supplier may be providing an adequate solution from a product standpoint, yet other aspects of the relationship leave much to be desired. Often, this is related to problems with deliverability. This particular application needed to handle a variety of different medicaments while maintaining a tight flow tolerance at a specific pressure. Additionally, the OEM needed the solution to fit the existing footprint within their equipment.

SOLUTION

Clippard was able to design a special assembly utilizing standard miniature 10 mm and 15 mm electronic valves to meet the requirements of this application. Using standard Clippard catalog products, the OEM was assured that the valves would always be available for quick delivery. This drop-in solution not only proved to be an excellent value, but also enhanced the performance of the OEM's system.



ELECTRONIC VALVES



"Clippard's staff are great people—we have been working with them for years. That longevity speeds up problem solving because they know how the system works and can provide options to better solve particular issues."

CLIPPARD DISTRIBUTOR

WHAT CAN CLIPPARD DO FOR YOU?

877-245-6247

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

2-WAY, 3-WAY & 4-WAY VALVES

Available in 2-Way, 3-Way and 4-Way configurations in port sizes from #10-32 to 1/2" NPT. Select either a direct-acting poppet or solenoid-controlled pilot operated balanced spool design. Spool valves are body ported but can be bolted to a parallel circuit manifold. The 4-Way valves are also available in 3-position versions with either pressure center, closed center or exhaust center spool options.

Materials	Aluminum, stainless steel, thermoplastic
Max. Pressure	Spool Valves: 20 to 125 psig; Direct-Acting: 0 to 115 psig; MME-41 Series: 30 to 125 psig
Response Time	< 20 ms
Mounting	Manifold (standard), actuator (1/4") available
Manual Override	Locking or non-locking
Electrical Connection	DIN terminal with LED indicator, or 18" wire leads
DIN Connector	Plug-in electrical connector with LED, DIN 43650 Form "B" 3 mm screw; MME-31/41: DIN Industrial Form "C" (9.4 mm centers), 3 mm screw <i>Note: LED will not light if polarity is reversed</i>
Wire Leads	Not polarity sensitive
Temp. Range	32 to 150°F
Seals	Nitrile
More Details	clippard.com/link/max-solenoid



3-Way & 4-Way Valves

Port	Cv	Flow Rate	
		@ 50 psig	@ 100 psig
#10-32	0.58	450 l/min	760 l/min
1/8" NPT	0.67	510 l/min	880 l/min
1/4" NPT	0.89	740 l/min	1,400 l/min
3/8" NPT	1.68	1,400 l/min	2,600 l/min
1/2" NPT	2.79	2,600 l/min	4,800 l/min

- Small size makes valves ideal for use in compact applications
- Closed center, pressure center, and exhaust center models available

**MAXIMUM VALUE.
MAXIMUM PERFORMANCE.**

Choose either DIN connector with LED indicator or 18" wire lead connection. Both are rotatable and interchangeable.



Easily accessible locking or non-locking manual override switch

Conforms to ISO 19973-2 test standards

Port sizes from #10-32 to 1/2" NPT

All Maximatic® solenoid valves are IP 65 CE rating

Nitrile Seals

Standard models include a base that permits fast, secure mounting of electronic valves to a manifold for grouping in compact assemblies.

Operating ranges to 125 psig

Sturdy aluminum body withstands rough environments

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

ORDER GUIDE



Single solenoid electronic valves mounted on 8-station manifold

Note: 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.

Valve Series Electronic Air Pilot	Enter E A	<input type="text"/>
Valve Type 2-Way (direct-acting only) 3-Way 4-Way	Enter 2 3 4	<input type="text"/>
Body/Port Size Direct-Acting 1/8" NPT 1/8" NPT Stacking 1/4" NPT Spool Type #10-32 1/8" NPT 1/4" NPT 1/4" NPT 3/8" NPT 1/2" NPT	Enter P S Q 1N 1P 2Q 3Q 3W 4Z	<input type="text"/>
Primary/Secondary Actuator Air/Air Air/Spring Electronic Pilot/Elec. Pilot Electronic Pilot/Spring Direct Acting/Spring	Enter AA AS EE ES DS (2- or 3-Way, #10-32, 1/8", 1/4" only)	<input type="text"/>
Mounting Standard Manifold Actuator*	Enter (blank) B	<input type="text"/> <i>* Only available on 3- or 4-Way electronic valves. 1/4" NPT actuator.</i>
Spool Type 2-Position, Spool 3-Position, Closed Center 3-Position, Exhaust Center 3-Position, Pressure Center	Enter (blank) C E P	<input type="text"/> <i>Only available on 4-Way valves with "AA" or "EE" actuator. Standard manifold mount only.</i>
Electrical Connector DIN Connector Wire Leads (18")	Enter D W	<input type="text"/> <i>Only required on electronic valves</i>
Voltage 12 VDC 24 VDC 24 VAC 110 VAC 220 VAC	Enter 012 024 24A 110 220	<input type="text"/> <i>Only required on electronic valves</i>

Example MM - -

Example MM E - 4 2Q ES - D 110

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

ORDER GUIDE

2-WAY VALVES

Series No.	Style	Inlet	Ports Outlet	Exhaust	Function	Cv	Flow @ 100 psig
MME-2PDS	Poppet	1/8" NPT	1/8" NPT	1/8" NPT	2/2	0.12	190 l/min
MME-2QDS	Poppet	1/4" NPT	1/4" NPT	1/4" NPT	2/2	0.12	190 l/min
MME-2SDS	Poppet	1/8" NPT	1/8" NPT	1/8" NPT	2/2	0.05	65 l/min

3-WAY VALVES

MME-3PDS	Poppet	1/8" NPT	1/8" NPT	1/8" NPT	3/2	0.12	190 l/min
MME-3QDS	Poppet	1/4" NPT	1/4" NPT	1/4" NPT	3/2	0.12	190 l/min
MME-3SDS	Poppet	1/8" NPT	1/8" NPT	1/8" NPT	3/2	0.05	65 l/min
MME-31NES	Spool	#10-32	#10-32	#10-32	3/2 NC	0.58	760 l/min
MME-31PES	Spool	1/8" NPT	1/8" NPT	1/8" NPT	3/2 NC	0.67	880 l/min
MME-32QES	Spool	1/4" NPT	1/4" NPT	1/8" NPT	3/2 NC	0.89	1,400 l/min
MME-33WES	Spool	3/8" NPT	3/8" NPT	1/4" NPT	3/2 NC	1.68	2,600 l/min
MME-34ZES	Spool	1/2" NPT	1/2" NPT	1/2" NPT	3/2 NC	2.79	4,800 l/min
MME-31NEE	Spool	#10-32	#10-32	#10-32	3/2	0.58	760 l/min
MME-31PEE	Spool	1/8" NPT	1/8" NPT	1/8" NPT	3/2	0.67	880 l/min
MME-32QEE	Spool	1/4" NPT	1/4" NPT	1/8" NPT	3/2	0.89	1,400 l/min
MME-33WEE	Spool	3/8" NPT	3/8" NPT	1/4" NPT	3/2	1.68	2,600 l/min
MME-34ZEE	Spool	1/2" NPT	1/2" NPT	1/2" NPT	3/2	2.79	4,800 l/min

4-WAY VALVES

Series No.	Style	Inlet	Ports Outlet	Exhaust	Function	Cv	Flow @ 100 psig	Spool Configuration		
								Closed Center	Exhaust Center	Pressure Center
MME-41NES	Spool	#10-32	#10-32	#10-32	5/2	0.58	760 l/min			
MME-41PES	Spool	1/8" NPT	1/8" NPT	1/8" NPT	5/2	0.67	880 l/min			
MME-42QES	Spool	1/4" NPT	1/4" NPT	1/8" NPT	5/2	0.89	1,400 l/min			
MME-43WES	Spool	3/8" NPT	3/8" NPT	1/4" NPT	5/2	1.68	2,600 l/min			
MME-44ZES	Spool	1/2" NPT	1/2" NPT	1/2" NPT	5/2	2.79	4,800 l/min			
MME-41NEE	Spool	#10-32	#10-32	#10-32	5/2	0.58	760 l/min			
MME-41PEE	Spool	1/8" NPT	1/8" NPT	1/8" NPT	5/2	0.67	880 l/min			
MME-42QEE	Spool	1/4" NPT	1/4" NPT	1/8" NPT	5/2	0.89	1,400 l/min			
MME-43WEE	Spool	3/8" NPT	3/8" NPT	1/4" NPT	5/2	1.68	2,600 l/min			
MME-44ZEE	Spool	1/2" NPT	1/2" NPT	1/2" NPT	5/2	2.79	4,800 l/min			
MME-41NEEC	Spool	#10-32	#10-32	#10-32	5/3	0.50	650 l/min	•		
MME-41PEEC	Spool	1/8" NPT	1/8" NPT	1/8" NPT	5/3	0.50	650 l/min	•		
MME-42QEEC	Spool	1/4" NPT	1/4" NPT	1/8" NPT	5/3	0.67	1,400 l/min	•		
MME-43WEEC	Spool	3/8" NPT	3/8" NPT	1/4" NPT	5/3	1.00	2,000 l/min	•		
MME-44ZEEC	Spool	1/2" NPT	1/2" NPT	1/2" NPT	5/3	1.68	2,600 l/min	•		
MME-41NEEP	Spool	#10-32	#10-32	#10-32	5/3	0.50	650 l/min			•
MME-41PEEP	Spool	1/8" NPT	1/8" NPT	1/8" NPT	5/3	0.50	650 l/min			•
MME-42QEEP	Spool	1/4" NPT	1/4" NPT	1/8" NPT	5/3	0.89	1,400 l/min			•
MME-43WEEP	Spool	3/8" NPT	3/8" NPT	1/4" NPT	5/3	1.00	2,000 l/min			•
MME-44ZEEP	Spool	1/2" NPT	1/2" NPT	1/2" NPT	5/3	1.68	2,600 l/min			•
MME-41NEEE	Spool	#10-32	#10-32	#10-32	5/3	0.50	650 l/min		•	
MME-41PEEE	Spool	1/8" NPT	1/8" NPT	1/8" NPT	5/3	0.50	650 l/min		•	
MME-42QEEE	Spool	1/4" NPT	1/4" NPT	1/8" NPT	5/3	0.89	1,400 l/min		•	
MME-43WEEE	Spool	3/8" NPT	3/8" NPT	1/4" NPT	5/3	1.00	2,000 l/min		•	
MME-44ZEEE	Spool	1/2" NPT	1/2" NPT	1/2" NPT	5/3	1.68	2,600 l/min		•	

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

2-WAY & 3-WAY 2-POSITION VALVES



MME-2SDS-D024

Maximatic direct-acting valves are single solenoid spring return, poppet type valves; available as either 2-Way or 3-Way configurations in 1/8" and 1/4" NPT port sizes. Hardware to stack multiple valves is included with each stacking valve (MME-3SDS and MME-2SDS). Includes two long screws, two short screw, one gasket, and two nuts. Coil included.

2-WAY OR 3-WAY DIRECT-ACTING

Medium	Air (40 micron filtration), inert gas or liquid
Operating Range	0 to 115 psig
Flow	65 l/min @ 100 psig
Electrical Connection	DIN connector with LED indicator (D) or 18" wire lead (W)
Voltage	12 VDC (012), 24 VDC (024), 24 VAC (24A), 110 VAC (110), or 220 VAC (220)
Power Consumption	6.5 watts
Number of Ports	2 or 3
Mounting	Body ported or stacking

Replacement stacking kits are available which include two long screws, two short screws, one gasket and two nuts.

Part No.	Description
27048	Replacement Stacking Kit

2-Way Valves		l/min*	3-Way Valves		Inlet	Outlet	Exhaust	l/min*	Coil Part No. ²
MME-2PDS-□□		190	MME-3PDS-□□		1/8" NPT	1/8" NPT	#10-32	65	27065-□□
MME-2SDS-□□ ¹		71	MME-3SDS-□□ ¹		1/8" NPT	1/8" NPT	#10-32	65	27065-□□
MME-2QDS-□□		190	MME-3QDS-□□		1/4" NPT	1/4" NPT	#10-32	65	27065-□□

Add electrical connection and voltage choices to the end of each base part number—**Example:** MME-2QDS-W220

*Based on flow @ 100 psig; ¹Stacking valve; ²Refer to Replacement Coil Chart, p. 51



MME-33WES-D110

MME-32QEE-D110

3-WAY SINGLE OR DOUBLE SOLENOID

Maximatic 3-Way electronic valves are either Normally-Closed single solenoid spring return, or double solenoid spool valves in #10-32 to 1/2" NPT port sizes.

Medium	Air (40 micron filtration) or inert gas
Operating Range	20 to 125 psig
Electrical Connection	DIN connector with LED indicator (D) or 18" wire lead (W)
Voltage	12 or 24 VDC (012 or 024), 24 VAC (24A), 110 VAC (110), or 220 VAC (220)
Number of Ports	3
Mounting	Body ported, manifold mount, actuator (1/4" NPT only) or NAMUR (3/8" NPT only) available
Manual Override	Non-locking on MME-31 Series; locking on all others
Power Consumption	2.5 watts on MME-31 series; 3 watts for all others

Single Solenoid Valves		Double Solenoid Valves		Inlet	Outlet	Exhaust	l/min*	Coil Part No. ²
MME-31NES-□□		MME-31NEE-□□		#10-32	#10-32	#10-32	760	27001-□□
MME-31PES-□□		MME-31PEE-□□		1/8" NPT	1/8" NPT	1/8" NPT	880	27001-□□
MME-32QES-□□		MME-32QEE-□□		1/4" NPT	1/4" NPT	1/4" NPT	1,400	27065-□□
MME-33WES-□□		MME-33WEE-□□		3/8" NPT	3/8" NPT	3/8" NPT	2,600	27065-□□
MME-34ZES-□□		MME-34ZEE-□□		1/2" NPT	1/2" NPT	1/2" NPT	4,800	27065-□□

Add electrical connection and voltage choices to the end of each base part number—**Example:** MME-34ZEE-W024

*Based on flow @ 100 psig; ²Refer to Replacement Coil Chart, p. 51

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

4-WAY 2-POSITION & 3-POSITION VALVES



4-WAY 2-POSITION, SINGLE OR DOUBLE SOLENOID

Maximatic 4-Way solenoid controlled, pilot operated valves are either single solenoid spring return or double solenoid spool valves in #10-32 thread to 1/2" NPT port sizes. Coil included.

Operating Range	20 to 125 psig
Electrical Connection	DIN connector with LED indicator (D) or 18" wire leads (W)
Voltage	12 VDC (012), 24 VDC (024), 24 VAC (24A), 110 VAC (110), or 220 VAC (220)
Number of Ports	5
Mounting	Body ported, manifold mount
Manual Override	Non-locking on MME-41 models; locking on all others
Power Consumption	2.5 watts on MME-41 models; 3 watts for all others

Single Solenoid Valves	Double Solenoid Valves	Inlet	Outlet	Exhaust	l/min*	Coil Part No. ²
MME-41NES-□□	MME-41NEE-□□	#10-32	#10-32	#10-32	27	27001-□□
MME-41PES-□□	MME-41PEE-□□	1/8" NPT	1/8" NPT	1/8" NPT	31	27001-□□
MME-42QES-□□	MME-42QEE-□□	1/4" NPT	1/4" NPT	1/8" NPT	49	27065-□□
MME-43WES-□□	MME-43WEE-□□	3/8" NPT	3/8" NPT	1/4" NPT	93	27065-□□
MME-44ZES-□□	MME-44ZEE-□□	1/2" NPT	1/2" NPT	1/2" NPT	171	27065-□□

Add electrical connection and voltage choices to the end of each base part number—**Example:** MME-43WEE-D110

*Based on flow @ 100 psig; ²Refer to Replacement Coil Chart, p. 51

4-WAY 3-POSITION, DOUBLE SOLENOID

Operating Range	30 to 125 psig MME-41 Series; 20 to 125 psig all others
Electrical Connection	DIN connector with LED indicator (D) or 18" wire leads (W)
Voltage	12 VDC (012), 24 VDC (024), 24 VAC (24A), 110 VAC (110), or 220 VAC (220)
Number of Ports	5
Mounting	Body ported, manifold mount
Manual Override	Non-locking on MME-41 series; locking on all others
Power Consumption	2.5 watts on MME-41 models; 3 watts for all others

Maximatic 4-Way double solenoid spring centered valves with closed center, pressure center or exhaust center spools are available from #10-32 thread to 1/2" NPT port sizes. Coil included.



Closed Center	Pressure Center	Exhaust Center	Inlet	Outlet	Exhaust	l/min*	Coil Part No. ²
MME-41NEEC-□□	MME-41NEEP-□□	MME-41NEEE-□□	#10-32	#10-32	#10-32	650	27001-□□
MME-41PEEC-□□	MME-41PEEP-□□	MME-41PEEE-□□	1/8" NPT	1/8" NPT	1/8" NPT	650	27001-□□
MME-42QEEC-□□	MME-42QEEP-□□	MME-42QEEE-□□	1/4" NPT	1/4" NPT	1/8" NPT	1,400	27065-□□
MME-43WEEC-□□	MME-43WEEP-□□	MME-43WEEE-□□	3/8" NPT	3/8" NPT	1/4" NPT	2,000	27065-□□
MME-44ZEEC-□□	MME-44ZEEP-□□	MME-44ZEEE-□□	1/2" NPT	1/2" NPT	1/2" NPT	2,600	27065-□□

Add electrical connection and voltage choices to the end of each base part number—**Example:** MME-41PEEP-W024

²Based on flow @ 100 psig; ²Refer to Replacement Coil Chart, p. 51

MAXIMATIC® SERIES SOLENOID-OPERATED VALVES

CONNECTORS, REPLACEMENT COILS & MANIFOLDS

DIN CONNECTORS

DIN 43650 Form B connectors with 11 mm spade center spacing. DIN type size 2, 3, and 4 Maximatic valves. Industrial Form connectors with 9.4 mm spade center spacing are designed to connect to 15mm terminal coils. Both are available with or without surge suppression and PVC molded three-wire cord set.



Form B Part No.	Industrial Form Part No.	Volts	LED	Cord
CC-B	CC-I			-
CC-B-P6	CC-I-P6	6-240	no	6'
CC-B-P15	CC-I-P15			15'
CC-BLL	CC-ILL			-
CC-BLL-P6	CC-ILL-P6	6-24	yes	6'
CC-BLL-P15	CC-ILL-P15			15'
CC-BLM	CC-ILM			-
CC-BLM-P6	CC-ILM-P6	48-110	yes	6'
CC-BLM-P15	CC-ILM-P15			15'
CC-BLH				-
CC-BLH-P6		208-240	yes	6'
CC-BLH-P15				15'

REPLACEMENT COILS

Replacement coils for solenoid valves are available in voltages from 12 VDC to 220 VAC with either DIN connector or 18" wire leads.

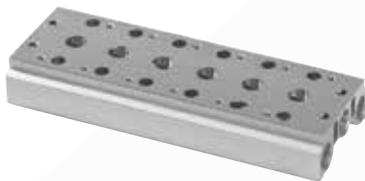
Description	2.5 Watt	3.0 Watt	6.5 Watt
	#10-32 & 1/8"	1/4", 3/8" & 1/2"	Direct-Acting
For Use with DIN Connectors	MME-31/41	MME-32-44	MME-2
12 VDC	27001-D012	27065-D012	27002-D012
24 VDC	27001-D024	27065-D024	27002-D024
110 VAC	27001-D110	27065-D110	27002-D110
220 VAC	27001-D220	27065-D220	27002-D220
24 VAC	27001-D24A	27065-D24A	27002-D24A
Wire Leads			
12 VDC	27001-W012	27065-W012	27002-W012
24 VDC	27001-W024	27065-W024	27002-W024
110 VAC	27001-W110	27065-W110	27002-W110
220 VAC	27001-W220	27065-W220	27002-W220
24 VAC	27001-W24A	27065-W24A	27002-W24A



Industrial Form, 2.5 W
#10-32 & 1/8"

Form B, 3.0 W
1/4", 3/8" & 1/2"

Form B, 6.5 W
Direct-Acting



PARALLEL BAR MANIFOLDS

Parallel circuit manifold bars are supplied with mounting screws and gaskets. Spare kits are also available which include two screws and a gasket. Blank plate supplied with one gasket, two screws and metal plate.

Valve Series	Manifold Inlet/ Exhaust	Blank Plate	2-Station	4-Station	6-Station	8-Station	16-Station
3-Way Valve Manifolds							
MME-31	1/8"	MMM-31-B	MMM-31-02	MMM-31-04	MMM-31-06	MMM-31-08	MMM-31-16
MME-32	1/4"	MMM-32-B	MMM-32-02	MMM-32-04	MMM-32-06	MMM-32-08	MMM-32-16
MME-33	3/8"	MMM-33-B	MMM-33-02	MMM-33-04	MMM-33-06	MMM-33-08	MMM-33-16
MME-34	1/2"	MMM-34-B	MMM-34-02	MMM-34-04	MMM-34-06	MMM-34-08	MMM-34-16
3-Way Spare Mounting Kit Hardware							
27041-31	Hardware Kit for MME-31 Series Valves			27041-33	Hardware Kit for MME-33 Series Valves		
27041-32	Hardware Kit for MME-32 Series Valves			27041-34	Hardware Kit for MME-34 Series Valves		

Valve Series	Manifold Inlet/ Exhaust	Blank Plate	2-Station	4-Station	6-Station	8-Station	16-Station
4-Way Valve Manifolds							
MME-41	1/8"	MMM-41-B	MMM-41-02	MMM-41-04	MMM-41-06	MMM-41-08	MMM-41-16
MME-42	1/4"	MMM-42-B	MMM-42-02	MMM-42-04	MMM-42-06	MMM-42-08	MMM-42-16
MME-43	3/8"	MMM-43-B	MMM-43-02	MMM-43-04	MMM-43-06	MMM-43-08	MMM-43-16
MME-44	1/2"	MMM-44-B	MMM-44-02	MMM-44-04	MMM-44-06	MMM-44-08	MMM-44-16
4-Way Spare Mounting Kit Hardware							
27041-41	Hardware Kit for MME-41 Series Valves			27041-43	Hardware Kit for MME-43 Series Valves		
27041-42	Hardware Kit for MME-42 Series Valves			27041-44	Hardware Kit for MME-44 Series Valves		

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CA PROPOSITION 65

All products shipped to or sold to consumers in California include Proposition 65 documentation with the shipment and reference our website. There are over nine hundred (900) chemicals on the Proposition 65 list, some of which are used in Clippard materials and/or processes. Although not all products contain chemicals within the list, Clippard is being cautious and diligent in complying with the California Law.

As of August 30, 2018, chemicals we are aware of that are listed within Proposition 65 are detailed online at clippard.com/link/prop65, or for additional information please contact tech@clippard.com.