

# Clippard



## CLIPPARDS EV SERIES MOUSE VALVES

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

Clippard Minimatic electronic valves are precisionbuilt 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.

### SPECIFICATIONS

- **Valve Type:**  
2-Way or 3-Way, N.O. or N.C.
- **Medium:**  
Air, gas, or other compatible fluids
- **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
- **Materials:**  
Nickel-plated brass body; nickel-plated steel housing, core, and spider
- **Seal Material:** Nitrile standard, FKM, EPDM1 and silicone1 available

### 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.

### 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.



# Clippard

274 Welshpool Road, Welshpool, Western Australia 6106  
08 9333 4920 | [info@pdaustralia.com.au](mailto:info@pdaustralia.com.au) | [www.pdaustralia.com.au](http://www.pdaustralia.com.au)

## 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.

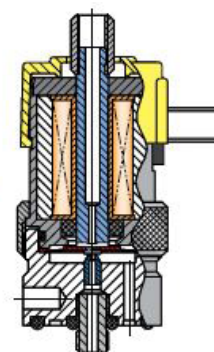
*Nickel-plated brass fitting*

*Electroless nickel-plated steel housing and core*

*Nitrile seals standard*

*Electroless nickel-plated brass body*

*Stainless steel stud and nozzle*



## 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.

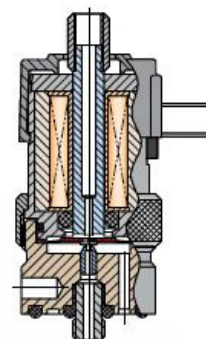
*Nickel-plated brass fitting*

*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.

*Integral fitting*

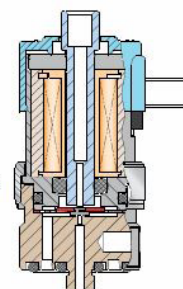
*No anaerobic sealant used*

*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*



## 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

*Integral fitting*

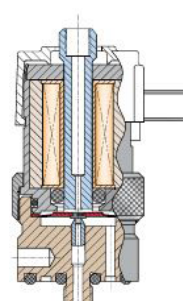
*No thread sealant*

*All wetted parts cleaned per Clippard Standard ES-3.41*

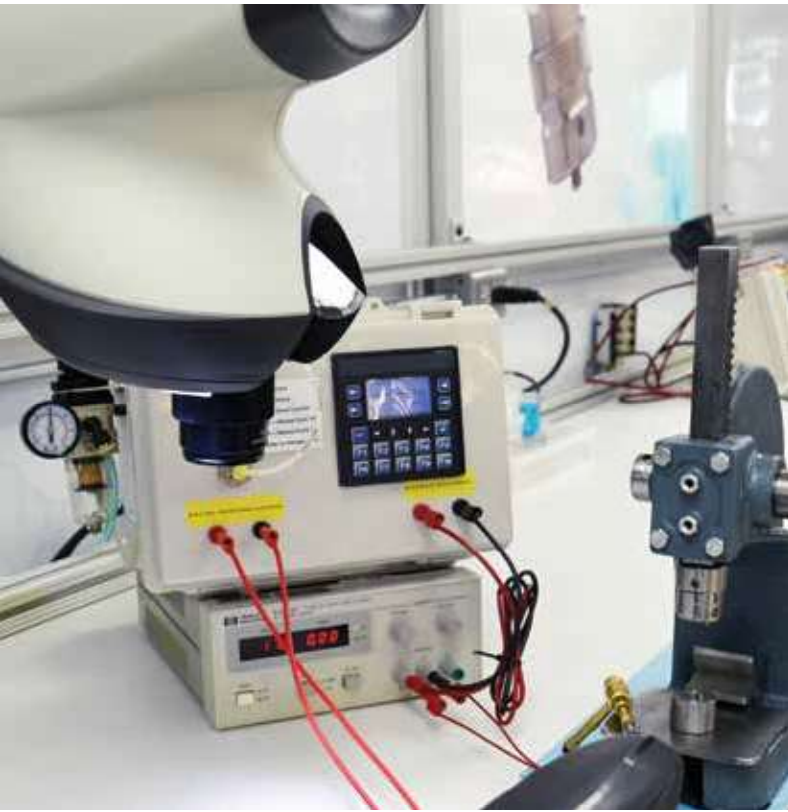
*Electroless nickel-plated steel housing and core*

*FKM seals*

*Stainless steel nozzle*



## 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:

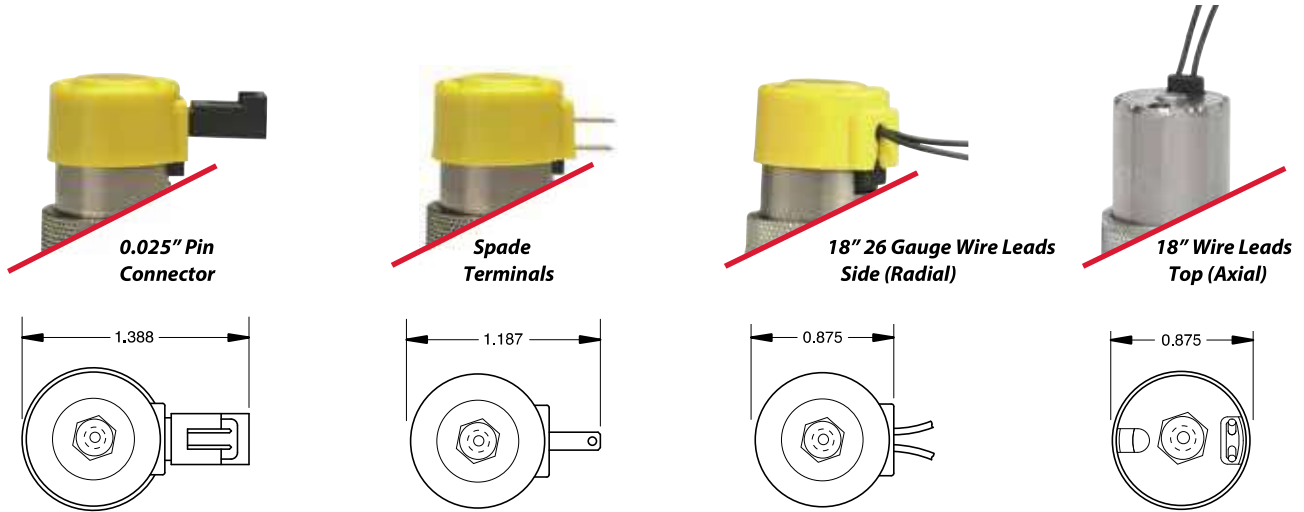
- Ultrasonic cleaning of component parts
- Baking of seals in order to outgas chemicals
- Inspection of cleaned parts under ultraviolet light to detect oil or fibers
- Inspection of cleaned parts under microscopes
- Use of alternate lubricants/sealants or the exclusion of lubricants/sealants from the 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



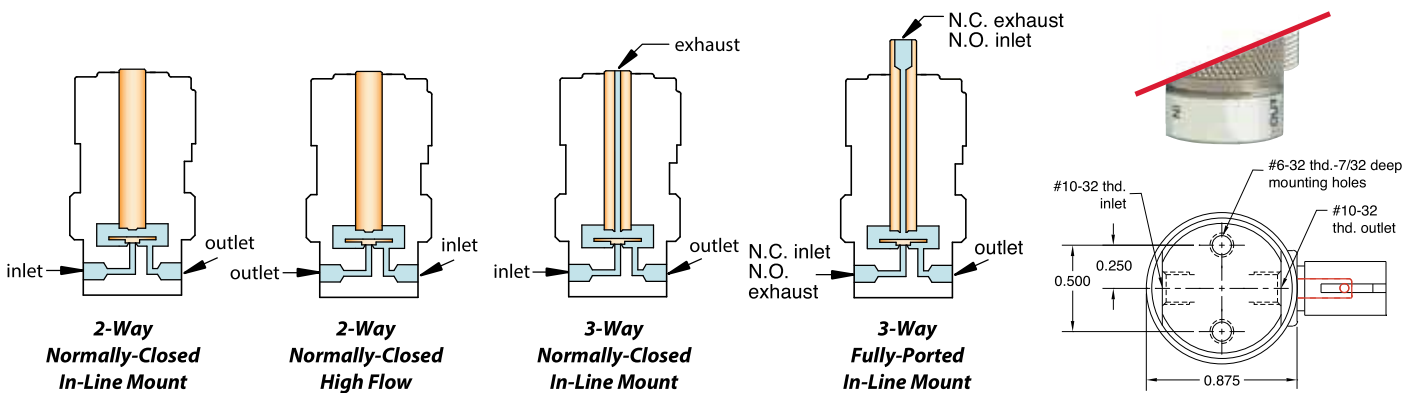


# ORIGINAL EV SERIES MOUSE VALVES

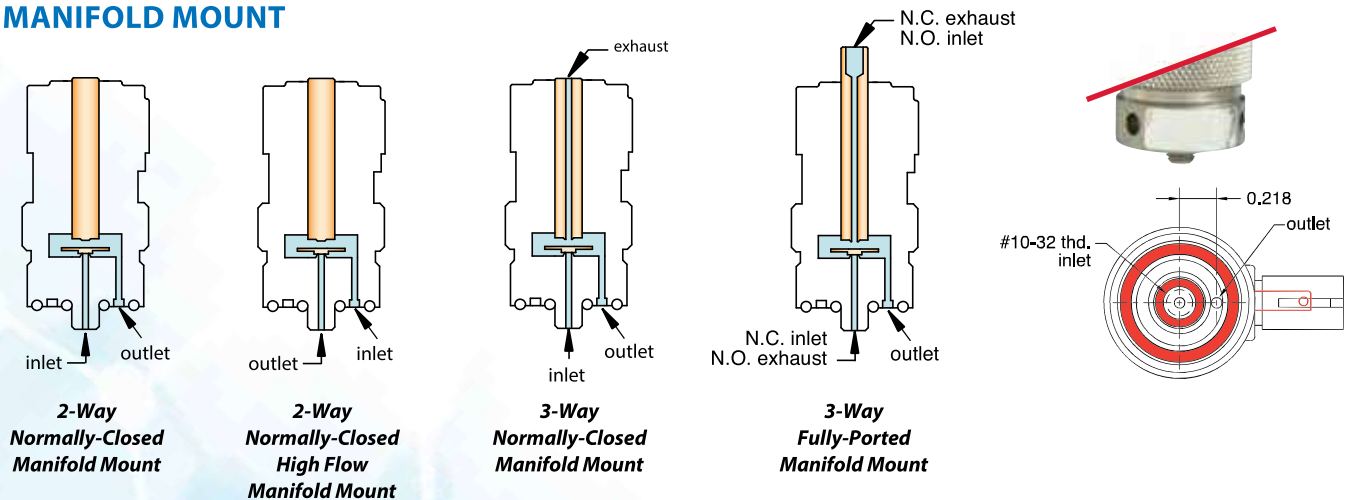
## ELECTRICAL CONNECTION OPTIONS & MOUNTING STYLES



## 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



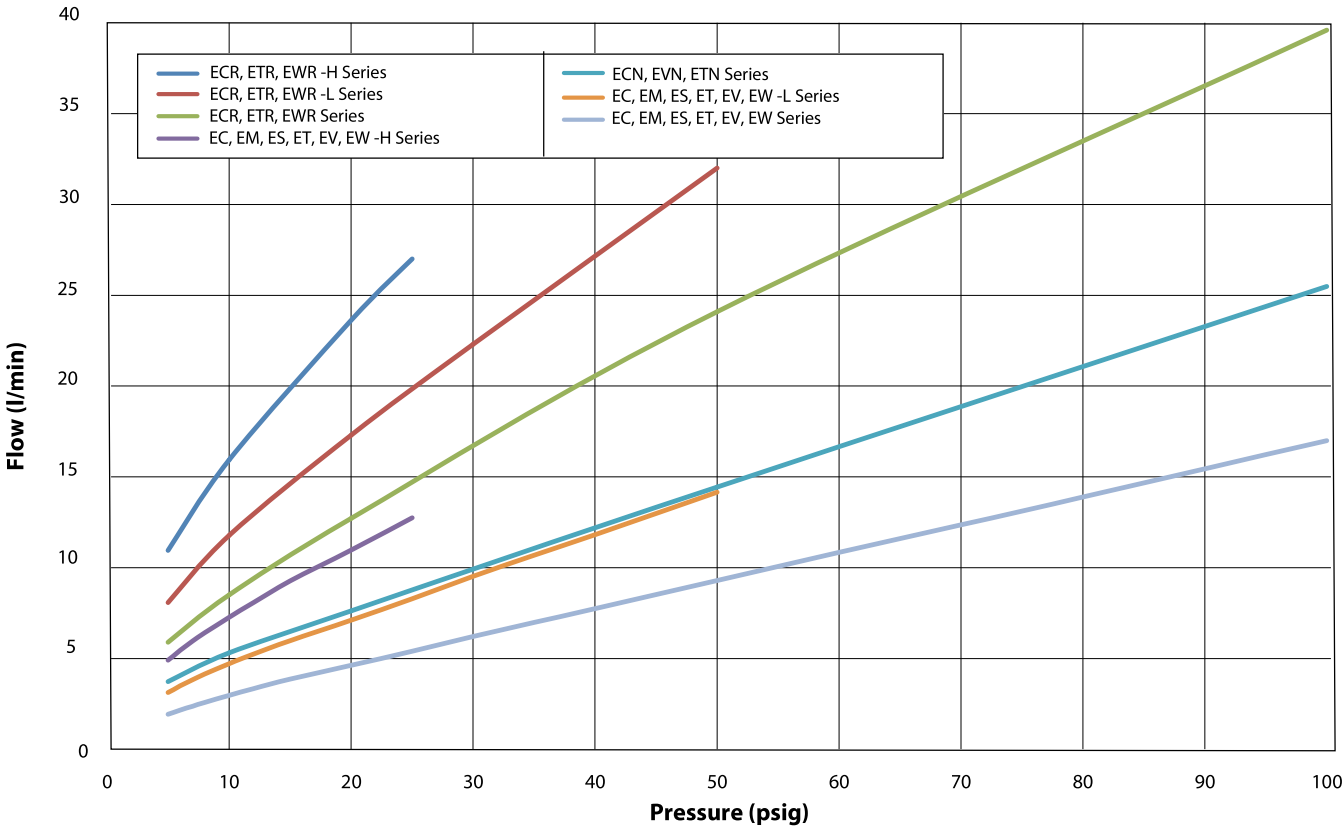
WHAT CAN CLIPPARD DO FOR YOU?

877-245-6247

# 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.

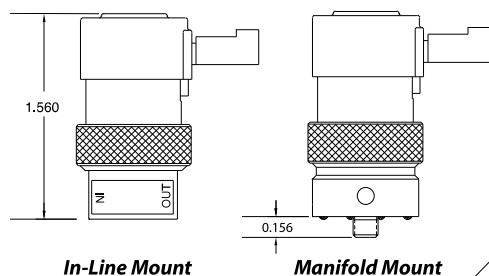
Contact your local distributor or call **877-245-6247** today to discuss your specific needs.

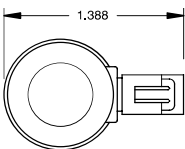
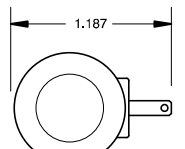
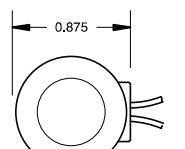
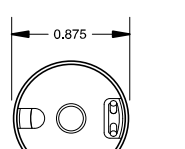




# ORIGINAL EV SERIES MOUSE VALVES

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



		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
 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
 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
 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

<b>Medium</b>	Clean, dry air (40 micron filter)
<b>Power Consumption</b>	0.67 watts; <b>Corrosion-Resistant:</b> 1.2 watts
<b>Temperature Range</b>	32 to 180°F; <b>Corrosion-Resistant:</b> 32 to 150°F
<b>Response Time</b>	5 to 10 ms (nominal)
<b>Operating Range</b>	90 to 150% of rated voltage <b>Corrosion-Resistant:</b> 90 to 110%
<b>Ports</b>	#10-32
<b>Seals</b>	Nitrile standard; FKM, EPDM <sup>1</sup> , and silicone <sup>1</sup> available <b>Oxygen Clean:</b> FKM only <b>Analytical<sup>2</sup>:</b> FKM standard; EPDM <sup>1</sup> , silicone <sup>1</sup> available
<b>More Details</b>	<a href="http://clippard.com/link/ev">clippard.com/link/ev</a>

See p. 10 for mounting option schematics

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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

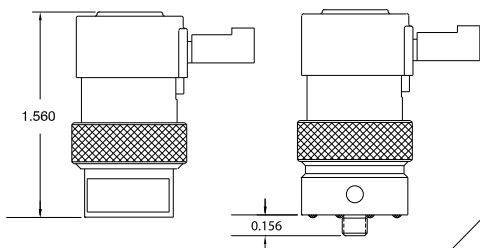
<sup>2</sup>Analytical series valves available in manifold mount only

<sup>3</sup>Not available for Oxygen Clean or Analytical series valves

<sup>4</sup>Available on EC (pin connector) models only

# HIGH FLOW MOUSE VALVES

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



		Pressure Range			Voltage		In-Line Mount	Manifold Mount
		0 to 105 psig			0 to 50 psig		0 to 25 psig	
		12 VDC			24 VDC			
 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 <sup>1</sup> , and silicone <sup>1</sup> available <b>Analytical<sup>2</sup></b> : FKM standard; EPDM <sup>1</sup> , silicone <sup>1</sup> available
More Details	<a href="http://clippard.com/link/ev">clippard.com/link/ev</a>

See p. 10 for mounting option schematics

Valve Series Prefix	Options Suffix
Analytical <sup>2</sup>	A-
	Nitrile Seals <sup>3</sup>
	FKM Seals
	EPDM Seals <sup>1</sup>
	Silicone Seals <sup>1</sup>
	Diode <sup>4</sup>
	(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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

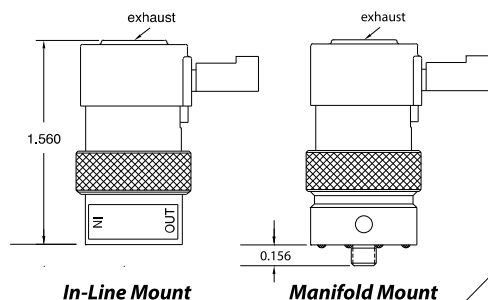
<sup>2</sup>Analytical series valves available in manifold mount only

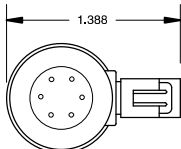

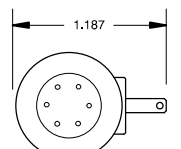

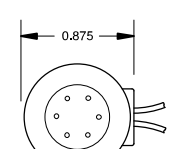
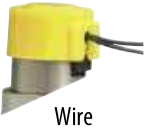
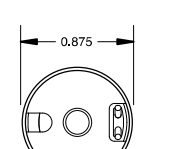

<sup>3</sup>Not available for Analytical series valves

<sup>4</sup>Available on EC (pin connector) models only

# 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
				•	•		EC-3-24-H	EC-3M-24-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
				•	•		ET-3-24-H	ET-3M-24-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
				•	•		EV-3-24-H	EV-3M-24-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
				•	•		EW-3-24-H	EW-3M-24-H

<b>Medium</b>	Clean, dry air (40 micron filter)
<b>Power Consumption</b>	0.67 watts; <b>Corrosion-Resistant:</b> 1.2 watts
<b>Temperature Range</b>	32 to 180°F; <b>Corrosion-Resistant:</b> 32 to 150°F
<b>Response Time</b>	5 to 10 ms (nominal)
<b>Operating Range</b>	<b>Standard:</b> 90 to 150% of rated voltage <b>Corrosion-Resistant:</b> 90 to 110%
<b>Ports</b>	#10-32
<b>Seals</b>	Nitrile standard; FKM, EPDM <sup>1</sup> , and silicone <sup>1</sup> available <b>Oxygen Clean:</b> FKM only <b>Analytical<sup>2</sup>:</b> FKM standard; EPDM <sup>1</sup> , silicone <sup>1</sup> available
<b>More Details</b>	<a href="http://clippard.com/link/ev">clippard.com/link/ev</a>

See p. 10 for mounting option schematics

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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

<sup>2</sup>Analytical series valves available in manifold mount only

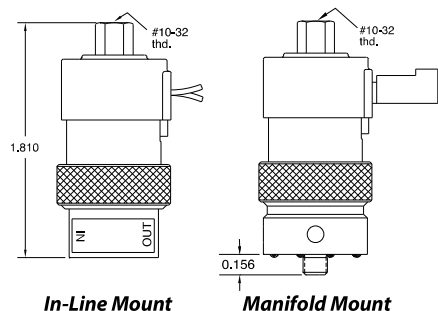
<sup>3</sup>Not available for Oxygen Clean or Analytical series valves

<sup>4</sup>Available on EC (pin connector) models only



# ORIGINAL EV SERIES MOUSE VALVES

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



		Pressure Range			Voltage		In-Line Mount	Manifold Mount
		Vac. to 105 psig			Vac. to 50 psig		Vac. to 25 psig	
					12 VDC		24 VDC	
 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)		•			•		EW0-3-12	EW0-3M-12
		•			•		EW0-3-24	EW0-3M-24
			•		•		EW0-3-12-L	EW0-3M-12-L
			•		•		EW0-3-24-L	EW0-3M-24-L
				•	•		EW0-3-12-H	EW0-3M-12-H
				•	•		EW0-3-24-H	EW0-3M-24-H

<b>Medium</b>	Clean, dry air (40 micron filter)
<b>Power Consumption</b>	0.67 watts; <b>Corrosion-Resistant:</b> 1.2 watts
<b>Temperature Range</b>	32 to 180°F; <b>Corrosion-Resistant:</b> 32 to 150°F
<b>Response Time</b>	5 to 10 ms (nominal)
<b>Operating Range</b>	90 to 150% of rated voltage <b>Corrosion-Resistant:</b> ±10%
<b>Ports</b>	#10-32
<b>Seals</b>	Nitrile standard; FKM, EPDM <sup>1</sup> , and silicone <sup>1</sup> available <b>Oxygen Clean:</b> FKM only <b>Analytical<sup>2</sup>:</b> FKM standard; EPDM <sup>1</sup> , silicone <sup>1</sup> available
<b>More Details</b>	<a href="http://clippard.com/link/ev">clippard.com/link/ev</a>

See p. 10 for mounting option schematics

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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

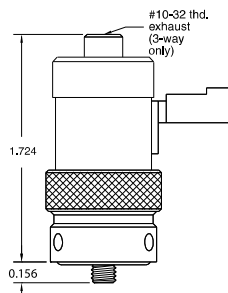
<sup>2</sup>Analytical series valves available in manifold mount only

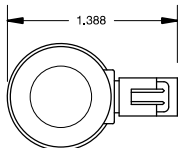

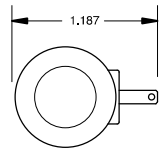

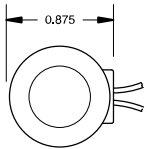

<sup>3</sup>Not available for Oxygen Clean or Analytical series valves

<sup>4</sup>Available on EC (pin connector) models only

# ECN, ETN, EVN SERIES MOUSE VALVES

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



		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

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

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 <sup>1</sup>	-E
Silicone Seals <sup>1</sup>	-S
Diode <sup>2</sup>	-D

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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

<sup>2</sup>Diode available on ECN (pin connector) models only

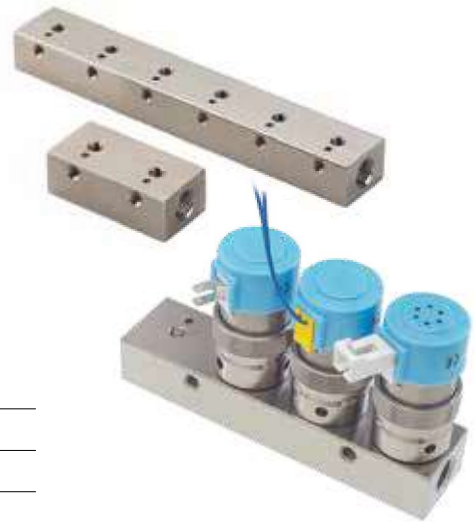
# MOUSE VALVE MANIFOLDS

## 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

<b>Input Ports</b>	In-line 1/8" NPT
<b>Outlet Ports</b>	#10-32
<b>Mounting</b>	#10-32 tapped holes
<b>Materials</b>	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

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

## EC & EI CONNECTORS



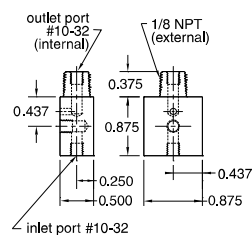
TE Connectivity #5-103956-1 for EC/ECO and EI/EIO valves

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

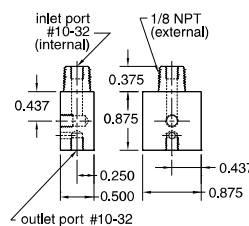
## SPECIALIZED MANIFOLDS ENP brass and oxygen clean also available



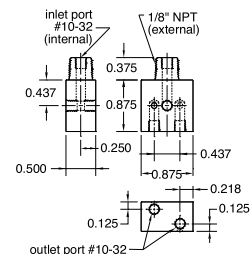
15490-2 shown



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



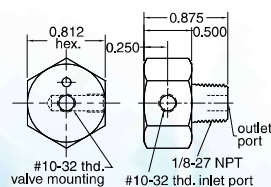
<b>Part No.</b>	15490-2
<b>Description</b>	1/8" NPT Inlet, #10-32 Outlet



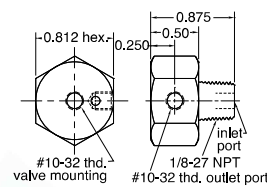
<b>Part No.</b>	15490-3 Dual Outlet
<b>Description</b>	1/8" NPT Inlet, #10-32 Outlet



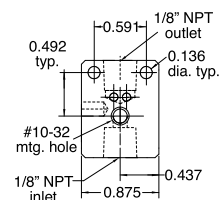
15491-1 shown



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



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



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

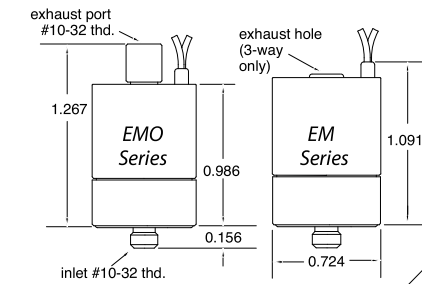


## ELECTRONIC VALVES

## 21

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

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

<sup>1</sup>Minimum 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
FKM Seals
EPDM Seals <sup>1</sup>
Silicone Seals <sup>1</sup>
(blank)
-V
-E
-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

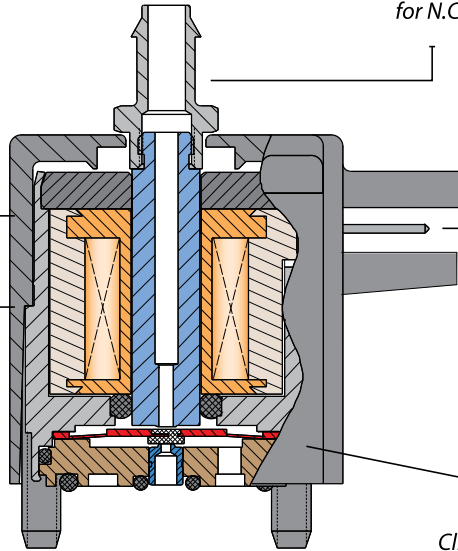
Valves are small in size with a variety of coil voltages and flow options. Mounting is as close as 7/8" on center.

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](http://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.

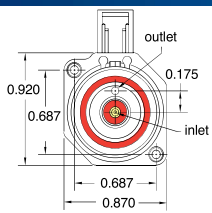

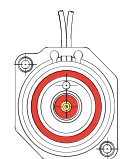
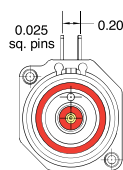
No flow is required for cooling because the compact ES is both quiet and exceptionally cool in operation.


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
 Side Pin Connector		•			•	•	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	
 Top Pin Connector		•			•	•	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	
 Wire Leads Side (Radial)		•			•	•	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	
 Board Mount		•			•	•	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	




Side Pin Connector



Top Pin Connector

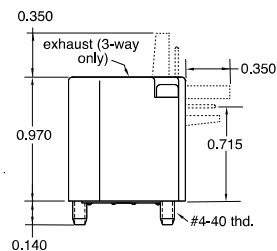


Wire Leads Side (Radial)



Board Mount





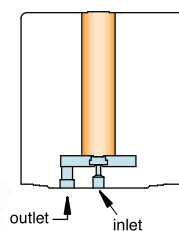
<b>Medium</b>	Clean, dry air (40 micron filter)
<b>Power Consumption</b>	1 watt at rated voltage
<b>Temperature Range</b>	32 to 150°F
<b>Response Time</b>	5 to 10 ms (nominal)
<b>Operating Range</b>	90 to 120% of rated voltage
<b>Voltage</b>	12 VDC or 24 VDC
<b>Ports</b>	Inlet and outlet through manifold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

See p. 13 for flow charts

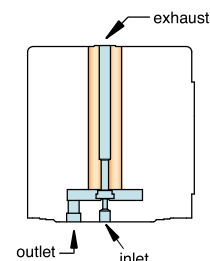
<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

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
FKM Seals
EPDM Seals <sup>1</sup>
Silicone Seals <sup>1</sup>
(blank)
-V
-E
-S



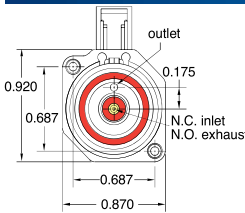

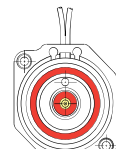
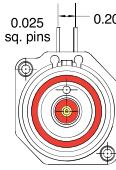
2-Way

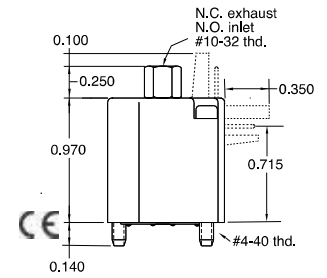


3-Way

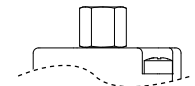
# ESO SERIES MOUSE VALVES

## 3-WAY FULLY-PORTED VALVES

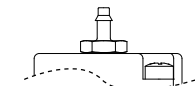
		Pressure Range			Voltage		Part No.
		Vac. to 105 psig			Vac. to 50 psig		
		Vac. to 25 psig			12 VDC		
		24 VDC					
	Side Pin Connector	•			•	•	ESO-3S-12
		•			•	•	ESO-3S-24
			•		•	•	ESO-3S-12-L
			•		•	•	ESO-3S-24-L
				•	•	•	ESO-3S-12-H
	Top Pin Connector	•			•	•	ESO-3T-12
		•			•	•	ETO-3T-24
		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



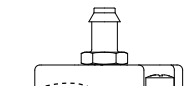
Top Port Options (below)



#10-32 (standard)



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



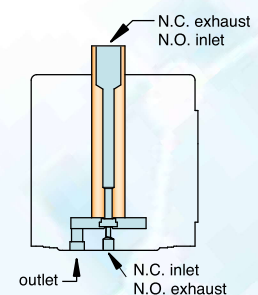
1/8" I.D. Hose Barb (option "-2")

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 <sup>1</sup> , and silicone <sup>1</sup> available
More Details	<a href="http://clippard.com/link/es">clippard.com/link/es</a>

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
FKM Seals
EPDM Seals <sup>1</sup>
Silicone Seals <sup>1</sup>
1/16" I.D. Hose Barb
1/8" I.D. Hose Barb

(blank)  
-V  
-E  
-S  
-1  
-2



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

<sup>1</sup>Minimum order quantity required for EPDM or silicone seals

## 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

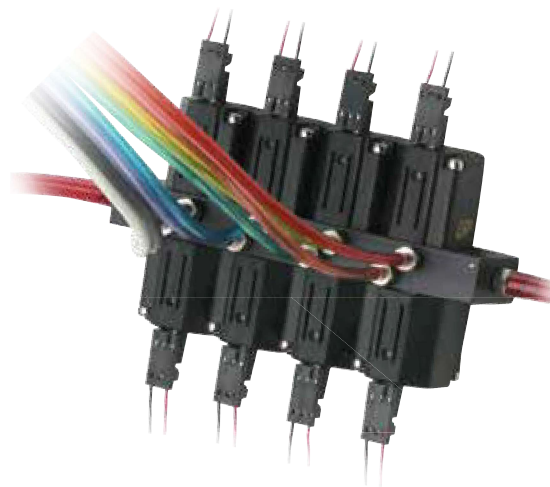
### ACCESSORIES

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

