Cincinnati, Ohio (headquarters)

Quality People

Quality Products

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

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

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

Clippard Europe, Belgium

Fairfield, Ohio

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

In addition to the Scientific market segment, Clippard offers expertise in a wide variety of markets utilizing numerous types of applications. From Semiconductor to Printing, Automotive to Packaging, our products are engineered to the exact specifications you require. Supported by a platform of over 5,000 standard products, as well as customized solutions, we have the capability to provide you with a full range of products designed to meet the unique demands of your application. For a complete description of these products, please visit our website at www.clippard.eu to request a full line catalog.

Products and applications specific to these markets are featured in this catalog:

Analytical
Dental
Medical
Pharmaceutical

Additional Markets Served:

Aerospace
Agriculture
Animatronics
Automation
Automotive
Dairy
Electronics
Food & Beverage
HVAC
Machinery
Mining
Packaging
Printing
Process
Recreation
Semiconductor
Textile
Transportation

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Ophthalmic Surgery

Clippard EV and ET valves are trusted for use in Ophthalmic Surgery procedures. The valves are commonly used for controlling vacuum during cornea replacement surgery. The eye is an extremely delicate organ requiring acute care throughout the surgical procedure, so reliability and ease of use are crucial elements in this application.

EV, ET, EC Series Valves

Clippard "E" Series pneumatic valves are precision-built 2- and 3-way control valves utilizing a unique, patented valving system. These valves are quiet, quick and produce consistent results. They accept low voltage and current signals, and convert them into high pressure pneumatic outputs. The small size makes them ideal for a wide range of applications.

Clippard Functional Simplicity

- Minimal operating parts
- Low power operation (0.67 watts at the rated voltage)
- The "spider" armature is the only moving part and its motion to operate the valve is a mere 0.2 mm travel
- Low voltage D.C.
- Lightweight
- Compact in size
- Mounts easily in space-saving packages

Electrical Connection

- Spade lugs for simple, quick secure low voltage connections
- Wire leads
- Connector available with 0.64 mm pins

Easy Mounting

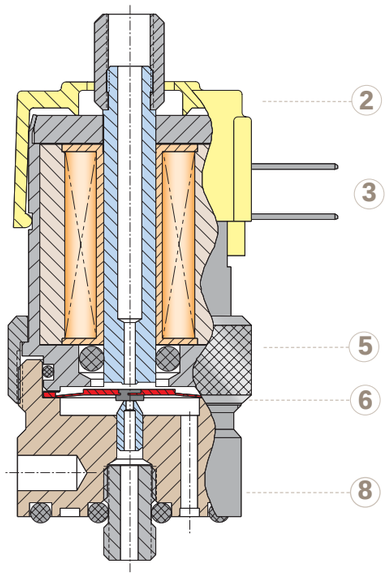
Two mounting options: in-line base models have two #6-32 threaded, 5.5 mm deep mounting holes. Manifold models are equipped with a bottom stud, 4.0 mm long with #10-32 thread, which fits Clippard standard and special manifolds, accessory valves and subplates. Spanner holes in the valve body permit easy removal.

Nominal			Power (watts)	Working Range (cont. duty)
Voltage	Current (amps)	Resistance (ohms)		
6	0.11	54	0.67	90 to 150% of rated voltage
12	0.055	218	0.67	
24	0.028	864	0.67	

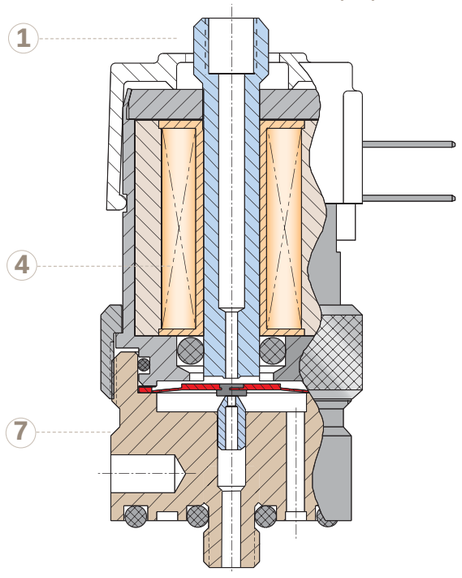
** Additional voltages are available upon request*

EV, ET & EC Series Electronic Valves

Scientific Series (S-)



Cleaned for Oxygen Service (O-)



1 ETO and similar styles have top M5 threaded fitting for N.C. exhaust or N.O. inlet. The Oxygen Clean port is integral to the core, while the Scientific port is sealed with anaerobic thread sealant

2 Valve caps are of molded Hytrel®.
Yellow Cap - Scientific Series
White Cap - Oxygen Clean Series

3 Quick-connect spade lugs are of tinned brass and furnished on all ET models. EC models are furnished with 0.64 mm square pin connector. EV models have 0.45 meter wire leads.

4 Low power coil uses only 0.67 watts at the rated voltage. Standard voltages include 6, 12 and 24. Other voltages are available.

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

6 One internal moving part that travels a mere 0.2 mm

7 Orifice sizes of 0.64, 1.0 and 1.5 mm (others available)

8 Manifold mount base shown permits fast, secure mounting of electronic valves to manifolds for grouping in compact assemblies. Nickel plated brass stud which is integral to the base on the Oxygen Clean series, and sealed with thread sealant on the Scientific version. Alternate standard model has convenient mounting holes.

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. As a result, low power consumption and exceptionally long life are major benefits of this design.

Hytrel® is a registered trademark of DuPont

Cleaned for Oxygen Service

Clippard's Oxygen Clean Series

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

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

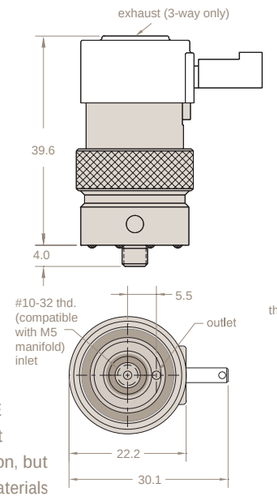
For more information on the process, visit www.clippard.com/oxygen

Products are double bagged in heat-sealed polyethylene bags

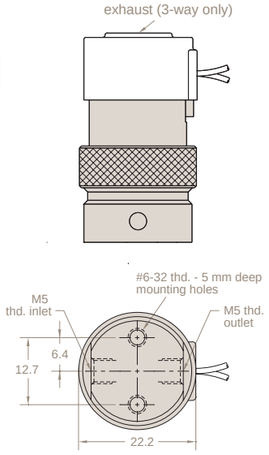
EV, ET, EC Series 2- & 3-Way Normally-Closed Valves

In-Line or Manifold Mount

Manifold



In-Line



This series of valves has the option to include FKM seals and PFPE lubrication, which is indicated by adding the "S-" prefix to the part number. The "O-" prefix also uses FKM seals and PFPE lubrication, but additionally is ultrasonically cleaned to remove Hydrocarbon materials and is sealed for Oxygen service.

Medium:	Non-Corrosive Gases
Material:	Electroless Nickel Plated Brass, Stainless Steel, ENP Steel.
Temperature Range:	0 to 82˚C
Power Consumption:	0.67 watt
Response:	5 to 10 milliseconds (approximate)
Mounting:	Manifold or In-Line
Ports:	#10-32 or M5 (In-Line version only)
Operating Range:	90 to 150% of rated voltage
Air Flow:	17 lpm @ 7 bar "L" Option: 14 lpm @ 3.5 bar "H" Option: 13 lpm @ 1.8 bar
Pressure Range:	Vac. to 7 bar max. "L" Option: Vac. to 3.5 bar max. "H" Option: Vac. to 1.8 bar max.
Seals:	FKM

Ordering System

❑ - E ❑ - ❑ ❑ - ❑ - ❑

O - Cleaned for **O**xygen Service
S - FKM Seals & PFPE Lube

C - Connector
T - Terminal Spades
V - Wire Leads

2 - 2-Way
3 - 3-Way

Blank- In-Line
M - Manifold

Voltages *
6 - 6 Volts
12 - 12 Volts
24 - 24 Volts

Standard Options
Blank - Standard 0.6 orifice
L - 1.0 orifice
H - 1.5 orifice
M5 - Metric (In-Line only)
Non-Standard Options
D - Diode

** Consult factory for availability of non-standard voltages and other options*

Gas Chromatography/ Mass Spectrometry

Special EV/ET valves are used to select gases, provide mass flow and to isolate gas samples in gas chromatography applications. These valves use special seal materials and undergo extensive cleaning in order to help customers attain accuracies to parts per trillion. Mass spectrometers also use Clippard electronic valves in similar applications where leakage concerns are critical.

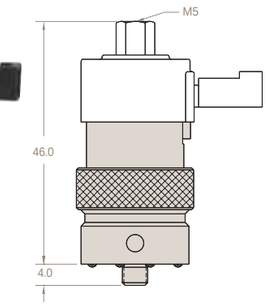
Leak Testing

The EV and ET valves are used for the protection of the differential pressure-sensors in leak test equipment. They are also used to pressurize and vent test chambers and cavities being tested for leaks. In portable gas mask leak tester devices, the EV valves pressurize the mask and hold that pressure for a given amount of time to ensure the mask is air tight. These devices are used by military troops out in the field so positive sealing and high reliability are key elements of these applications.

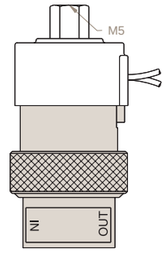
EV, ET, EC Series 3-Way Valves, All Ports Usable

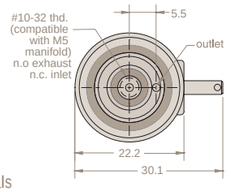
In-Line or Manifold Mount

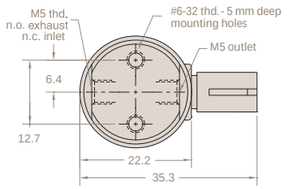
Manifold



In-Line







This series of valves has the option to include FKM seals and PFPE lubrication, which is indicated by adding the "S-" prefix to the part number. The "O-" prefix also uses FKM seals and PFPE lubrication, but additionally is ultrasonically cleaned to remove Hydrocarbon materials and is sealed for Oxygen service.

Medium:	Non-Corrosive Gases	**Pressure Range:**	Vac. to 7 bar max. "L" Option: Vac. to 3.5 bar max. "H" Option: Vac. to 1.8 bar max.
Material:	Electroless Nickel Plated Brass, Stainless Steel, ENP Steel	**Seals:**	FKM
Temperature Range:	0 to 82˚C		
Power Consumption:	0.67 watt		
Response:	5 to 10 milliseconds (approximate)		
Mounting:	Manifold or In-Line		
Ports:	M5		
Operating Range:	90 to 150% of rated voltage		
Air Flow:	17 lpm @ 7 bar* "L" Option: 14 lpm @ 3.5 bar "H" Option: 13 lpm @ 1.8 bar		

** When air supply is connected to the top port to operate valve Normally-Open, main flow is 23 lpm and exhaust flow is 17 lpm @ 7 bar.*

Ordering System

❑ - E ❑ O - 3 ❑ - ❑ - ❑

O - Cleaned for Oxygen Service
S - FKM Seals & PFPE Lube

C - Connector
T - Terminal Spades
V - Wire Leads

Blank- In-Line
M - Manifold

Voltages *
6 - 6 Volts
12 - 12 Volts
24 - 24 Volts

Standard Options
Blank - Standard 0.6 orifice
L - 1.0 orifice
H - 1.5 orifice
M5 - Metric

Non-Standard Options
D - Diode

** Consult factory for availability of non-standard voltages and other options*

Respiratory

Respirators release an intermittent flow of breathing gas into the lungs of a patient, followed by an expiration phase, in which the supply of breathing gas is stopped and the patient is exhaling on their own. It is crucial to monitor the amount of breathing gas in the patients lungs so as to inhibit a premature inspiration phase. The EV series valves can provide that control to ensure accurate and consistent repeatability.

Ventilation

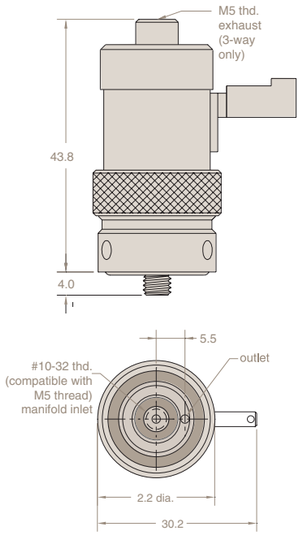
For patients who need mechanical assistance in order to breathe efficiently, ventilators regulate exact adaptation of pressure and flow characteristics to suit their specific needs. Clippard electronic valves allow the device to deliver precise, adjustable volumes of oxygen with each breath. Due to the vital issues surrounding reliability, Clippard engineers pay careful attention to design details that will ensure consistent flow and will extend the life of the valve.

Blood Pressure Monitoring

Non-invasive blood pressure monitoring involves the external measurement of pressure and pulses. Clippard's proportional valve can provide the precise control needed for accurate measuring of the patients' blood pressure.

S-EVN, S-ETN, S-ECN Series 2- & 3-Way Normally-Open Valves

Manifold Mount



S-ECN, S-ETN & S-EVN series valves are 2- and 3-way Normally-Open solenoid valves. The Normally-Open inlet is through the center mounting stud, so the valves can be supplied directly from the manifold without external tubing.

Medium: Non-Corrosive Gases
Material: Electroless Nickel Plated Brass, Stainless Steel, ENP Steel
Temperature Range: 0 to 82˚C
Power Consumption: 0.67 watt
Response: 5 to 10 milliseconds
Mounting: Manifold with #10-32 Stud (fits M5 thread)
Operating Range: 90 to 150% of rated voltage
Air Flow: 25 lpm @ 7 bar
Pressure Range: 711 mm Hg Vac. to 7 bar max.
Seals: FKM with PFPE Lube

ORDERING SYSTEM

S - E ❑ N - ❑ M - ❑ - ❑

- **C** - Connector
  T - Terminal Spades
  V - Wire Leads
- **2** - 2-Way
  3 - 3-Way
- **Voltages***
  6 - 6 Volts
  12 - 12 Volts
  24 - 24 Volts
- **Non-Standard Option**
  D - Diode

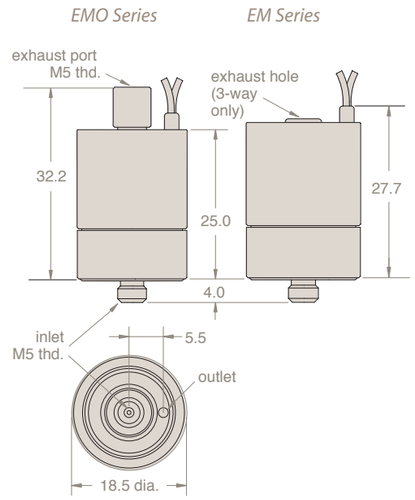
** Consult factory for availability of non-standard voltages and other options*

EM Stud Mount 2- & 3-Way Electronic Valves

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

Four valves shown on single-sided manifold

At just over an inch tall, and less than 3/4" in diameter, the EM Valve uses Clippard's special "spider" design. This reliable and proven design for long life is housed in a miniature body, and incorporates wire leads out the top, allowing body rotation for close-center mounting. In addition, the valve features higher flow; combining fast shifting speed, extremely high cycle life with the design flexibility to make this valve a "small wonder" for demanding applications.



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

Valve Type: Normally-Closed and Normally-Closed/Normally-Open
Medium: Air or Inert Gases
Ports: M5 Exhaust
Pressure Range: 711 mm Hg Vacuum to 7 bar
"L" Option: 711 mm Hg Vacuum to 3.5 bar
"H" Option: 711 mm Hg Vacuum to 1.8 bar
Air Flow (Normally-Closed): 21 lpm @ 7 bar
"L" Option: 18 lpm @ 3.5 bar
"H" Option: 15 lpm @ 1.8 bar
Response Time: 10 milliseconds at nominal voltage (15 ms N-O)
Temperature Range: 0 to 82°C
Mounting: Manifold. See Page 16
Voltage: 12-Volt DC or 24-Volt DC (custom voltage options available)
Power Consumption: 1 Watt
Seal Material: Buna-N Standard, FKM and EPDM optional (others on request)

Simply tighten valves onto the manifold using a standard 1/8" Allen hex wrench. (4-10 in-lbs. Do not over-tighten)

Operation	Order Code	Type	Order Code	Voltage	Order Code	Orifice	Order Code	Options	Order Code
Normally-Closed	(blank)	2-Way (N.C. only)	2	12-Volt DC	12	0.025"	(blank)	Buna-N Seals	(blank)
						0.040"	L	FKM Seals	V
Normally-Closed/ Normally-Open	O	3-Way	3	24-Volt DC	24			EPDM Seals	E
						0.060"	H	Metric Ports	M5

Example: EMO-3-12-L

Part No. **E M ❑ - ❑ - ❑ - ❑ - ❑**

EV, ET, EC Series Accessories

EC, EV & ET Piloted 2-Way & 3-Way Air Valve Booster

Amplifies the flow capacity of EC, EV and ET type valves by over eight times. Manifold style electronic valves mount onto booster body, which, in turn, mounts on Clippard manifolds.

- Normally-Closed, Pressure Piloted Valve
- Piloted by standard EV valve
- 1.4 to 7 bar Inlet Pressure
- 173 lpm @ 7 bar Air Flow
- Response time of 20 milliseconds at 1.4 bar; 13 milliseconds at 7 bar
- Inlet and outlet ports through manifold
- Nickel plated brass, acetyl, stainless steel and Buna-N
- Use only 3-way pilot valves in conjunction with 2-way and 3-way booster

Part No.	Description
EVB-2	Valve Booster, 2-Way
EVB-3	Valve Booster, 3-Way

High Flow EC, EV and ET Piloted 3-Way Air Valves

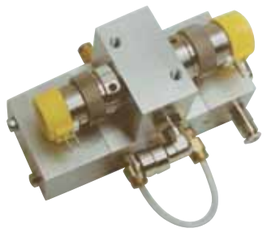
Designed to be piloted by a Clippard EC, EV and ET manifold mount electronic valve. Output from the EC, EV and ET actuates the valve to produce outputs up to 600 lpm @ 7 bar. Combines low wattage, long life and cool running of the EC, EV and ET valves with quick response and high flow of Clippard "Fluidamp" type valves. The 2020-MG and 2021-MG are identical in all respects except one. The 2020-MG has an external M5 port for the pressure supply to the EC, EV, and ET electronic pilot valve. This allows for a specific gas or pressure to be used through the valve while using an entirely different source for piloting.

- Normally-Closed, Pressure Piloted Valve
- 2 to 7 bar Inlet Pressure
- Pilot Pressure: (2020-MG) 60% of supply pressure, minimum
- 620 lpm @ 6 bar air flow
- Approximately 20 ms response
- Ports: Inlet and outlet, exhaust G1/8. Pilot supply on 2020 is M5 female
- Constructed of Anodized Aluminum, Stainless Steel and Buna-N
- Use only 3-way pilot valves in conjunction with 2020-MG/2021-MG

Part No.	Description
2020-MG	High Flow Piloted 3-Way Valve, G1/8 with M5 External Pilot
2021-MG	High Flow Piloted 3-Way Valve, G1/8, Integrated Pilot Supply

Differential Pressure Testing

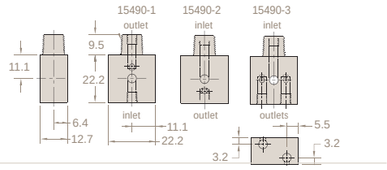
This leak tester is a fully automatic differential pressure testing device for detecting leaky parts during the cycle time of the production process. The procedure is based on comparing the pressures in the test part volume and in a tight reference volume. This allows for a high degree of sensitivity.



EV, ET, EC Manifolds

Manifolds

Part No.	Style	Inlet	Outlet
*15490-1-MR	In-Line	M5	R1/8
*15490-2-MR	In-Line	R1/8	
*15490-3-MR	Dual Valve	R1/8	M5 (2)



Single-Sided Multi-Valve Manifolds

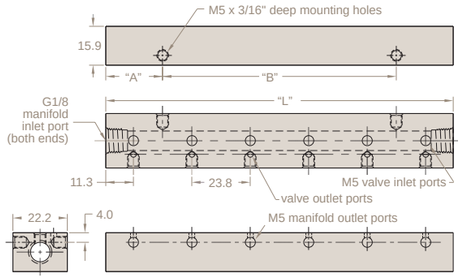
Part No.	Valves	"A"	"B"	"L"
15481-2-M5	2	11.2 mm	22.9 mm	45.7 mm
15481-4-M5	4	22.9 mm	48.3 mm	96.5 mm
15481-6-M5	6	22.9 mm	96.5 mm	142.2 mm

Double-Sided Multi-Valve Manifolds

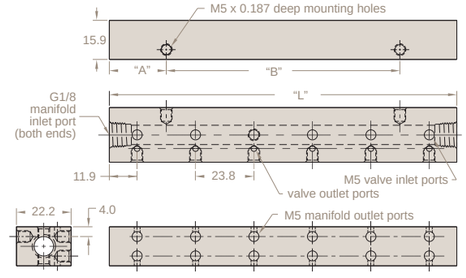
15482-8-M5	8	22.9 mm	48.3 mm	96.5 mm
15482-12-M5	12	22.9 mm	96.5 mm	143mm

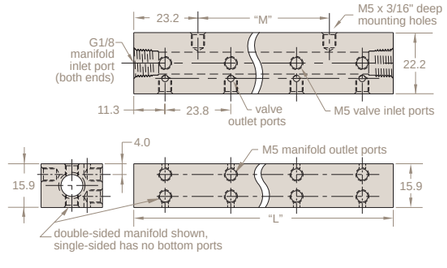
Not intended for use with Oxygen Clean Series valves. Additional Configurations and Special Manifolds Available. Call for further information.

Single-Sided Manifolds



Double-Sided Manifolds





Oxygen Clean Single-Sided Multi-Valve Manifolds

Part No.	Valves	"L"	"M"
O-15581-2-M5	2	46.4 mm	23.8 mm
O-15581-4-M5	4	94.0 mm	47.6 mm
O-15581-6-M5	6	141.7 mm	95.3 mm

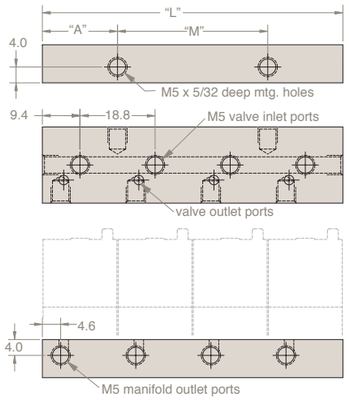
Oxygen Clean Double-Sided Multi-Valve Manifolds

Part No.	Valves	"L"	"M"
O-15582-8-M5	8	94.0 mm	47.6 mm
O-15582-12-M5	12	141.7 mm	95.3 mm

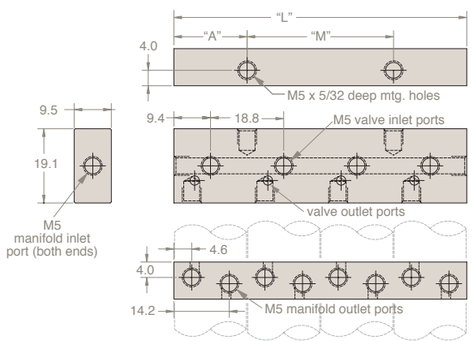
EM Series Manifolds

Multi-station single- or double-mounted manifolds are available for use with the EM series electronic valves. These manifolds are constructed of black anodized aluminum.

Single-Sided



Double-Sided



Single-Sided Multi-Valve Manifolds

Part No.	Valves	"L"	"M"	"A"
15681-2-M5	2	37.6 mm	18.8 mm	9.4 mm
15681-4-M5	4	75.2 mm	37.6 mm	18.8 mm
15681-6-M5	6	112.8 mm	75.2 mm	18.8 mm

Double-Sided Multi-Valve Manifolds

Part No.	Valves	"L"	"M"	"A"
15682-8-M5	8	75.2 mm	37.6 mm	18.8 mm
15682-12-M5	12	112.8 mm	75.2 mm	18.8 mm

ET Valve Connectors

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

Part No.	Description
ET-C48	1.2 m Connector
ET-C120	3 m Connector

EC Valve Connectors

AMP connector #S-103959-1 with 457 mm or 3 m wire leads for EC/ECO valves.

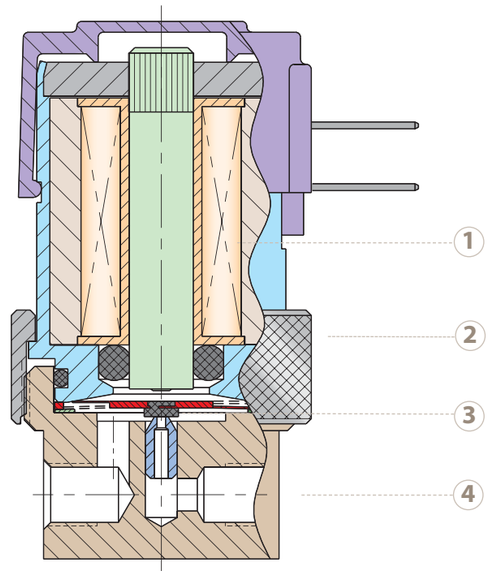
Part No.	Description
C2-RB18	457 mm Lead
C2-RB120	3 m Lead

Lug Connectors

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

Part No.	Description
3831-1	Connectors

S-EVP Series Proportional Control Valves



Features

Patented design uses single internal moving part

- Fast response and long life
- Small package
- Single moving part - low friction and wear
- Five orifice sizes
- Three voltage ranges
- Three connection styles
- Two mounting types
- Three seal options
- Convenient accessories

1 Low power coil uses only 1.9 watts at the rated voltage. Standard voltage ranges include 0 to 5, 0 to 10 and 0 to 20 volts

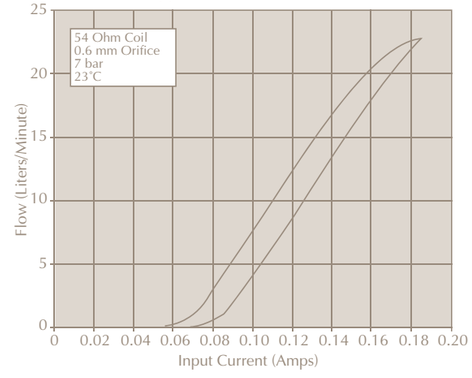
2 Adjusting ring may be loosened for positioning to orient connections. Do not remove.

3 FKM seals, PFPE lubricant

4 Small in size with a variety of mounting options

Standard Orifice Diameter	Maximum Pressure	Flow at Max. Current (±10%)
0.23 mm	7 bar	2.7 slpm / 5.7 scfh
0.33 mm	7 bar	6.7 slpm / 14.2 scfh
0.64 mm	7 bar	23.5 slpm / 50.0 scfh
1.02 mm	3.5 bar	19.0 slpm / 40.0 scfh
1.55 mm	1.7 bar	14.0 slpm / 30.0 scfh

Typical Performance



Sample part number: S-EC-PM-10-25A0-M5

S-EVP Series Proportional Control Valves

The S-EVP series Proportional Control Valves combine the features of the existing S-EV series valve - long life, low power, and Clippard's reputation for high quality components - with the additional capability for proportional control.

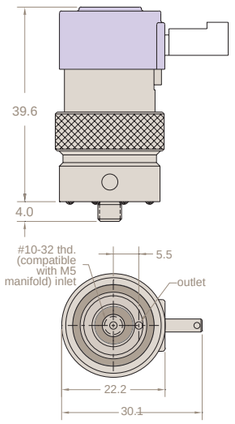
The S-EVP series valve provides air or gas flow control, and varies the output flow based on the current input to the solenoid. The consistent gain (see chart) of this valve provides a high degree of control for many applications.

Controllability and overall value are the main features of the S-EVP Proportional Valve series. The valve may be controlled using DC current, open or closed-loop control, and even PWM (Pulse Width Modulation) to cover a broad range of applications.

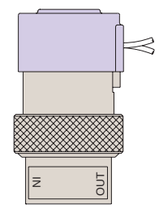
Type: 2-Way, Proportional
Medium: Air, Inert Gases
Temperature Range: 0 to 50˚C
Power Consumption: 1.9 watts at 23˚C; 2.3 watts max.
Mount: In-line or Manifold
Ports: M5 Female (In-line); #10-32 Male Stud (Manifold)
Seal Material: FKM
Maximum Hysteresis: 10% of full current

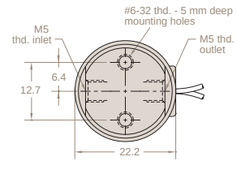
The pressures shown above are standard options. The EVP Proportional Valve can be calibrated for pressures less than the maximum shown here. For pressures less than 0.3 bar, please consult factory.

Manifold



In-Line





ORDERING SYSTEM

S - E ❑ - P ❑ - ❑ - ❑ ❑ - M 5

- **C** - Connector
- **T** - Terminal Spades
- **V** - Wire Leads

Mounting
- **Blank** - In-Line
- **M** - Manifold

Voltages: *
- **05** - 0-5 VDC
- **10** - 0-10 VDC
- **20** - 0-20 VDC

Orifice Options (Dia.): §
- **09** - 0.2 mm
- **13** - 0.3 mm
- **25** - 0.6 mm
- **40** - 1.0 mm
- **60** - 1.5 mm

Maximum Pressure (specify Operating Pressure): §
- ☐ - 0-7 bar
- ☐ - 0-3.5 bar
- ☐ - 0-1.8 bar

§ Standard Orifice Configurations: 09A0, 13A0, 25A0, 4050, 6025

* Consult factory for availability of non-standard voltages and other options

10 & 15 mm Solenoid Valves

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

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

All 10 mm and 15 mm valves are RoHS compliant.

Electrical: The coil is constructed of copper wire and is isolated according to the class "F" standard. Up to IP65 insulation available.

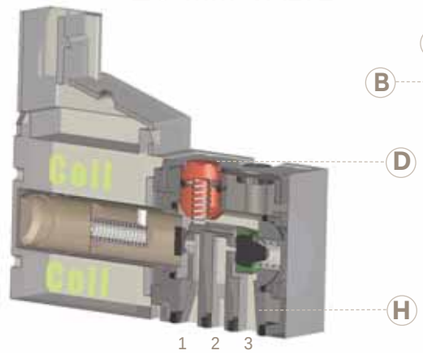
Weight: 10 mm valve - 11 grams
15 mm valve - 37 grams

Wire Leads

90° Connector

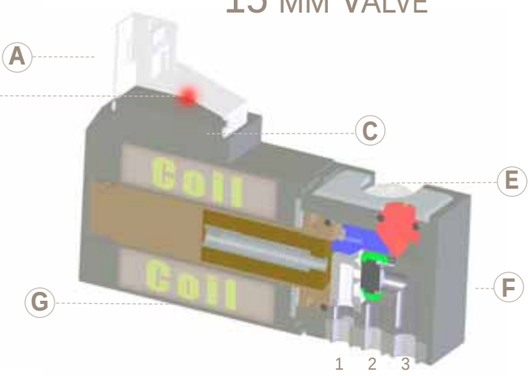
In-Line Connector

10 mm Valve



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

15 mm Valve



Configuration	1	2	3
N.C. & N.O.	exhaust	outlet	supply

A Multiple connectors
- Snap-in Plugs - Wire Leads - Custom Plugs - DIN

B LED for confirmation of operation

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

D Highly visible manual override provides actuation without power

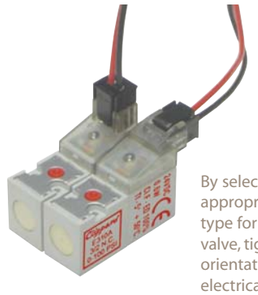
E Mounting Screws: 10 mm-M1.7 x 0.35, 15 mm-M3 x 0.5

F High durability and corrosion-resistant glass filled nylon housing

G Encapsulated low wattage coils available in many voltages

H One-piece gasket for manifold mount

10 mm Specifications



Medium: Air, Gas and other Compatible Fluids

Max. Flow Rate: See chart

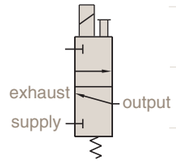
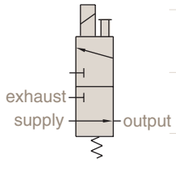
Exhaust Flow: See chart

Material: Stainless steel core and springs, nylon body, FKM dynamic seals and Buna-N gasket. FKM gasket and static seals available, consult factory.

Temp. Range: -5 to 50°C

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

Order Information

Type	Base No.	Connector
2/2 Normally Closed	E210A-1E*	90° Connector
	E210C-2E*	
	E210A-1L*	90° Connector with LED
	E210C-2L*	
	E210A-1F*	In-Line Connector
	E210C-2F*	
	E210A-1C*	In-Line Connector with LED
	E210C-2C*	
	E210A-1W*	Wire Leads, 300 mm
	E210C-2W*	
3/2 Normally Closed 	E310A-1E*	90° Connector
	E310C-2E*	
	E310A-1L*	90° Connector with LED
	E310C-2L*	
	E310A-1F*	In-Line Connector
	E310C-2F*	
	E310A-1C*	In-Line Connector with LED
	E310C-2C*	
	E310A-1W*	Wire Leads, 300 mm
	E310C-2W*	
3/2 Normally Open 	E3O10A-1E*	90° Connector
	E3O10C-2E*	
	E3O10A-1L*	90° Connector with LED
	E3O10C-2L*	
	E3O10A-1F*	In-Line Connector
	E3O10C-2F*	
	E3O10A-1C*	In-Line Connector with LED
	E3O10C-2C*	
	E3O10A-1W*	Wire Leads, 300 mm
	E3O10C-2W*	

**** Add Voltage Choice to the end of each Base Part Number. Example: E210A-1C012***

	Orifice	Wattage	Working Pressure	Max. Flow Rate	Max. Exhaust Rate
E210A E310A E3O10A	0.5 mm	0.6	1.0-7.6 bar	14 lpm	23 lpm
E210C E310C E3O10C	0.8 mm	1.3	0-7.6 bar	31 lpm	34 lpm

Electrical

Power: 0.6 or 1.3 Watts
Voltage: 12 VDC/24 VDC
Voltage Tolerance: ±10%
Response Time:
- **Energized:** 8 ms
- **De-Energized:** 10 ms

Coil Isolation Class: 155°C

Features

- Detachable coil for orientating up to 180°
- Detachable connector

10 mm Manifolds

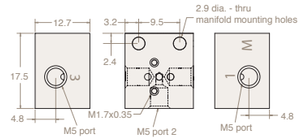
Manifolds

Manifolds are available for one to 12 valves. Spare hardware and cover plates also available.

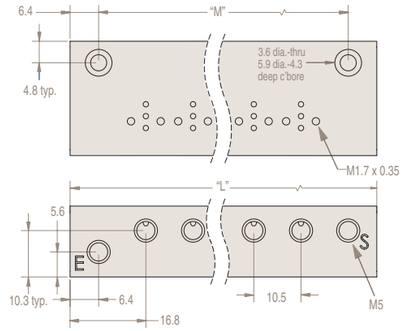
Part No.	Stations	"L"	"M"
E10M-01-M5	1		
E10M-02-M5	2	44 mm	32 mm
E10M-04-M5	4	65 mm	53 mm
E10M-08-M5	8	107 mm	95 mm
E10M-12-M5	12	170 mm	158 mm

Consult factory for custom manifolds.

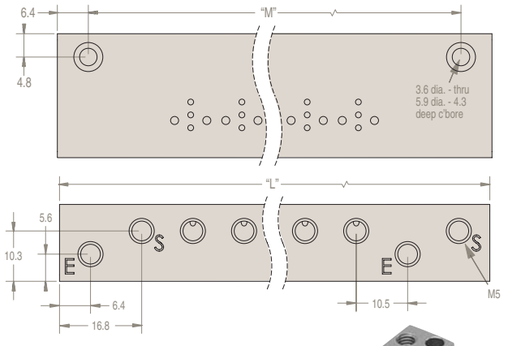
Single Station Manifold



2- to 8-Station Manifolds



12-Station Manifold



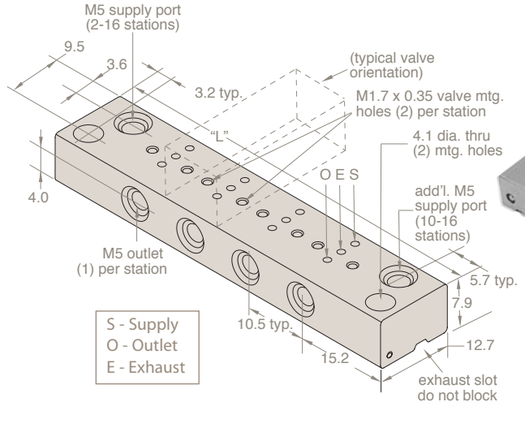
Cover Plate

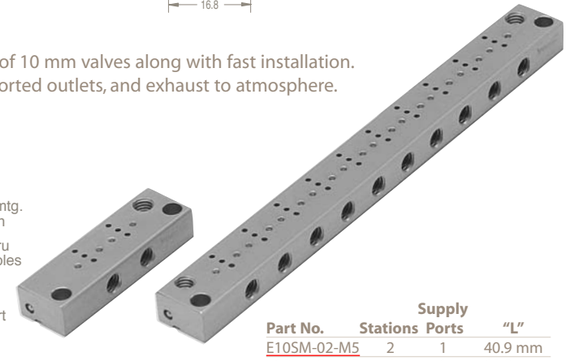
Manifold Cover Plate includes plate, gasket and two screws.

Part No.	Description
E10M-CP	10 mm Cover Plate

Sub-Miniature Manifolds

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

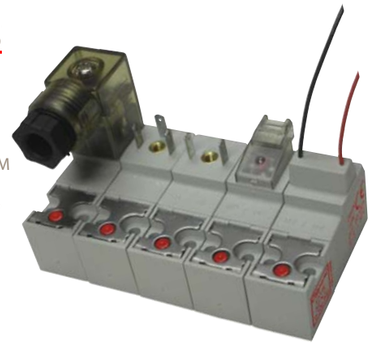




Part No.	Stations	Supply Ports	"L"
E10SM-02-M5	2	1	40.9 mm
E10SM-04-M5	4	1	62.0 mm
E10SM-08-M5	8	1	103.8 mm
E10SM-12-M5	12	2	145.8 mm

Consult factory for custom manifolds.

15 mm Specifications



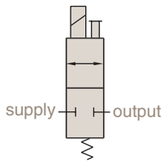
Medium: Air, Gas, and other Compatible Fluids

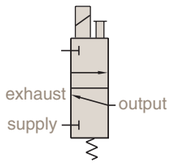
Material: Stainless steel core and springs, nylon body, FKM seals and Buna-N gasket. FKM gasket available, consult factory

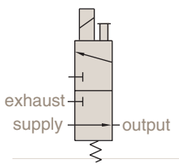
Temperature Range: -5 to 50°C

Order Information

Type	Base No.	Connector	Voltage 12 VDC	24 VDC	24 VAC	110 VAC	220 VAC
2/2 Normally-Closed	E215D-1T*	Terminal		•			
	E215E-2T*		•	•	•		
	E215F-2T*		•	•	•		
	E215D-1D*	DIN Connector		•			
	E215E-2D*		•	•	•	•	•
	E215F-2D*		•	•	•	•	•
	E215D-1W*	Wire Leads, 300 mm		•			
	E215E-2W*		•	•	•		
	E215F-2W*		•	•	•		
	E215D-1L*	90° Connector with LED		•			
	E215E-2L*		•	•			
	E215F-2L*		•	•			
	E215D-1C*	In-Line Connector with LED		•			
	E215E-2C*		•	•			
	E215F-2C*		•	•			
3/2 Normally-Closed	E315D-1T*	Terminal		•			
	E315E-2T*		•	•	•		
	E315F-2T*		•	•	•		
	E315D-1D*	DIN Connector		•			
	E315E-2D*		•	•	•	•	•
	E315F-2D*		•	•	•	•	•
	E315D-1W*	Wire Leads, 300 mm		•			
	E315E-2W*		•	•	•		
	E315F-2W*		•	•	•		
	E315D-1L*	90° Connector with LED		•			
	E315E-2L*		•	•			
	E315F-2L*		•	•			
	E315D-1C*	In-Line Connector with LED		•			
	E315E-2C*		•	•			
	E315F-2C*		•	•			
3/2 Normally-Open (7.6 bar max.)	E3O15E-2T*	Terminal	•	•	•		
	E3O15F-2T*		•	•	•		
	E3O15E-2D*	DIN Connector	•	•	•	•	•
	E3O15F-2D*		•	•	•	•	•
	E3O15E-2W*	Wire Leads, 300 mm	•	•	•		
	E3O15F-2W*		•	•	•		
	E3O15E-2L*	90° Connector with LED	•	•			
	E3O15F-2L*		•	•			
	E3O15E-2C*	In-Line Connector with LED	•	•			
	E3O15F-2C*		•	•			



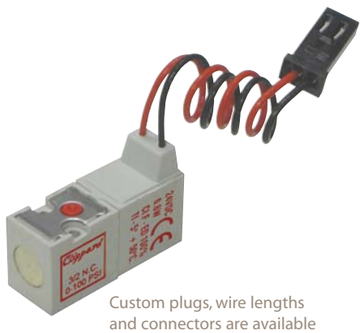




Models	Orifice	Wattage	Working Pressure	Maximum Flow Rate
E215D E315D	0.8 mm	1.0	0-10 bar	45 lpm
E215E E315E E3O15E	1.1 mm	2.5	0-7.6	70 lpm
				50 lpm
E215F E315F E3O15F	1.6 mm			84 lpm
			0-5 bar	52 lpm

Electrical

Power: 1.0 or 2.5 Watts
Voltage:
- 1.0 Watts: 24 VDC
- 2.5 Watts: 12 VDC/24 VDC/24 VAC 110 VAC/220 VAC
Voltage Tolerance: -10 to 10%
Response Time:
- Energized: 10 ms
- De-Energized: 12 ms
Coil Isolation Class: 155°C



Custom plugs, wire lengths and connectors are available for your specific requirements on both 10 mm and 15 mm valves. Call for details.

** Add Voltage Choice to the end of each Base Part Number. Example: E315F-2L024*

• Indicates standard item

15 mm Manifolds

Manifolds

Manifolds are available for one to 12 valves. Spare hardware and cover plates also available.

Part No.	Stations	"L"	"M"
E315M-01-M5	1		
E315M-02-M5	2	80 mm	79.8 mm
E315M-04-M5	4	107 mm	96.8 mm
E315M-08-M5	8	171 mm	160.8 mm
E315M-12-M5	12	267 mm	256.8 mm

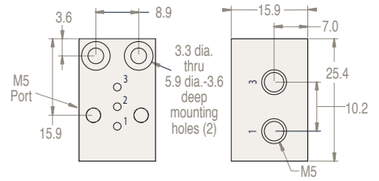
Consult factory for custom manifolds

Cover Plate

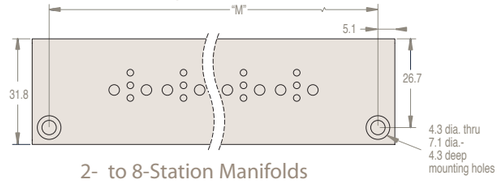
Manifold Cover Plate includes plate, gasket and two screws.

Part No.	
E15M-CP	15 mm Cover Plate

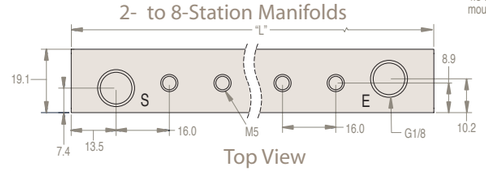
Single-Station Manifold



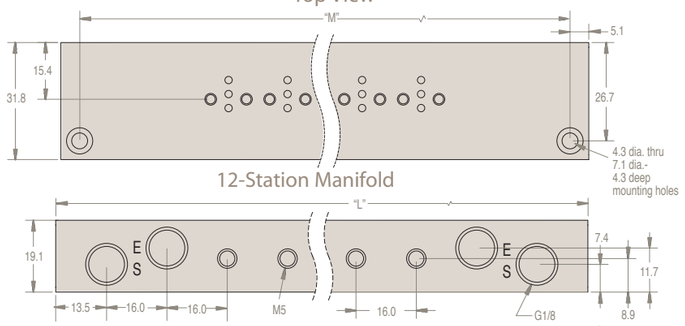
Top View



2- to 8-Station Manifolds



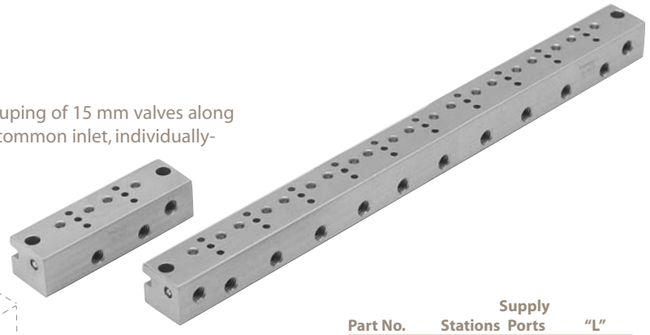
Top View

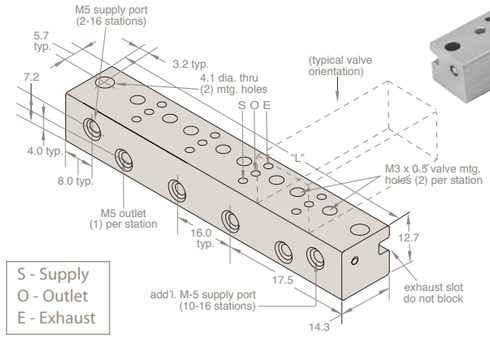


12-Station Manifold

Sub-Miniature Manifolds

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



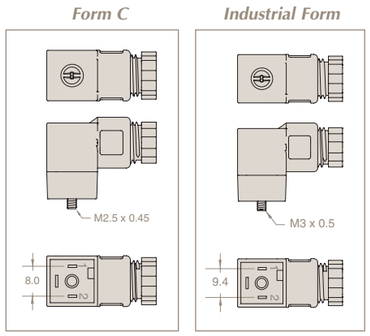


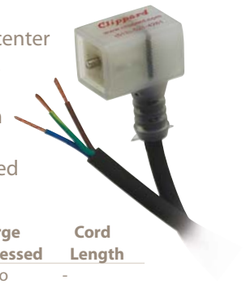
S - Supply
O - Outlet
E - Exhaust

Part No.	Stations	Supply Ports	"L"
E15SM-02-M5	2	1	51.1 mm
E15SM-04-M5	4	1	83.1 mm
E15SM-08-M5	8	1	147.1 mm
E15SM-12-M5	12	2	211.1 mm

Consult factory for custom manifolds.

15 mm Connectors





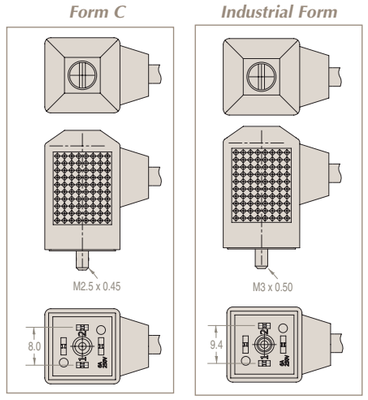
DIN Connectors

For Use with 15 mm Valves Only

DIN 43650 Form C Connectors with 8 mm spade center spacing mate with the 15 mm DIN connector coil. Industrial Form Connectors with 9.4 mm spade center spacing are designed to connect to 15 mm terminal coils. Both are available with or without surge suppression, and 152 or 381 mm PVC molded three-wire cord set.

Form C Part No.	Industrial Form Part No.	Volts	LED	Surge Suppressed	Cord Length
CC-C	CC-I	6-240		no	-
CC-C-P6	CC-I-P6		no	yes	152 mm
CC-C-P15	CC-I-P15			yes	381 mm
CC-CLL	CC-ILL	6-24		no	-
CC-CLL-P6	CC-ILL-P6			yes	152 mm
CC-CLL-P15	CC-ILL-P15		yes	yes	381 mm
CC-CLM	CC-ILM	48-110		no	-
CC-CLM-P6	CC-ILM-P6			yes	152 mm
CC-CLM-P15	CC-ILM-P15			yes	381 mm

Molded 3-Wire Cord Set

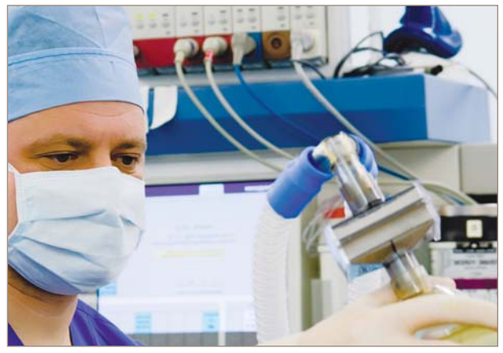


Connectors

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

Part No.	
C2A-RB300	Connector with Cable, 11.8" (300 mm)
C2A-RB500	Connector with Cable, 19.69" (500 mm)
C2A-RB1000	Connector with Cable, 39.37" (1,000 mm)

Molex terminal insert #050013-8000, #28139 plug and 24 AWG wire.



Anesthesia Machines

In order to blend the proper amount of gases to obtain a desired level of anesthesia, these machines utilize the capabilities of Clippard check valves, control valves, and the electronic valve series. These valves allow the doctor to deliver an accurate and continuous supply of medical gases mixed with an accurate concentration of an aesthetic vapor to the patient at a safe pressure and flow.

Toggle Valves

2-way valves are the simplest pneumatic component—their function is merely to turn an air supply on and off. 3-way valves have a supply, outlet and exhaust port. When the toggle is in the "on" position, air flows from the inlet to the outlet, and the exhaust port is blocked. Moving the toggle to the "off" position closes the inlet and opens the outlet to an exhaust port which vents the outlet to the atmosphere.

Medium: Air, Water or Oil

Material: ENP brass body, FKM seals, stainless steel stem and spring, and PFPE lubricant

Mounting: 15/32-32 thread for panel mounting. Nuts and lockwashers are included.

	Nickel Plated Toggle	Plastic Toggle	Style	Flow @ 7 bar	Ports Inlet	Ports Outlet	Exhaust
2-WAY VALVES	S-MTV-2-M5		Poppet	207 lpm	M5	M5	-
	S-TV-2S-M5	S-TV-2SF-M5	Spool	227 lpm	"	"	-
	S-TV-2M-M5	S-TV-2MF-M5	Poppet	"	"	"	-
	S-TVO-2M-M5	S-TVO-2MF-M5	Spool	"	"	"	-
	S-MTV-2P		"	207 lpm	1/8" NPT	M5	-
	S-TV-2SP	S-TV-2SFP	Spool	227 lpm	"	"	-
	S-TV-2MP	S-TV-2MFP	Poppet	193 lpm	"	"	-
	S-TVO-2MP	S-TVO-2MFP	Spool	"	"	"	-
3-WAY VALVES	S-SMTV-3		Spool	40 lpm	#3-56•	#3-56•	hole in body
	S-TV-3M	S-TV-3MF	Poppet	193 lpm	M5	M5	"
	S-MTV-3-M5		"	198 lpm	"	"	M5
	S-FTV-3-M5	S-FTV-3F-M5	Spool	283 lpm	"	"	"
	S-TV-3S	S-TV-3SF	"	227 lpm	"	"	hole in body
	S-TVO-3M-M5	S-TVO-3MF-M5	"	193 lpm	"	"	"
	S-MTV-3P		Poppet	198 lpm	1/8" NPT	"	#10-32
	S-MJTV-3-MG		"	708 lpm	G1/8	G1/8	G1/8
	S-FTV-3P-MG	S-FTV-3FP	Spool	297 lpm	"	"	"
	S-TV-3SP	S-TV-3SFP	"	227 lpm	1/8" NPT	M5	hole in body
	S-TV-3MP	S-TV-3MFP	Poppet	193 lpm	"	"	"
	S-TVO-3MP	S-TVO-3MFP	Spool	"	"	"	"
4-WAY VALVES	S-TV-4D-M5		Spool (NC)	212 lpm	M5	M5	holes in body
	S-TV-4M-M5		"	"	"	"	"
	S-TV-4DM-M5		"	"	"	"	"
	S-MTV-4-M5	S-MTV-4F-M5	Spool (NO/NC)	"	"	"	"
	S-MTV-5-M5	S-MTV-5F-M5	"	283 lpm	"	"	#10-32
	S-TV-4DP		Spool (NC)	212 lpm	1/8" NPT	1/8" NPT	holes in body
	S-TV-4MP		"	"	"	"	"
	S-TV-4DMP		"	"	"	"	"
	S-MJTV-4-MG	S-MJTV-4F-MG	Spool (NO/NC)	297 lpm	G1/8	G1/8	"
	S-MJTV-5-MG	S-MJTV-5F-MG	"	"	"	"	G1/8

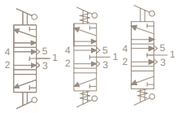
• with 1/16" ID hose barbs installed

4-Way Toggle Valves

3 Position Air Toggle Valves

Part No.	Port			
S-TV-4D-M5	M5	Detented	SPRING CENTERED supply blocked both sides exhausted	Detented
S-TV-4DP	1/8" NPT			
S-TV-4M-M5	M5	Momentary		Momentary
S-TV-4MP	1/8" NPT			
S-TV-4DM-M5	M5	Detented		Momentary
S-TV-4DMP	1/8" NPT			

- ENP brass body, FKM seals, black acetyl plastic toggle, stainless steel stem and spring, and PFPE lubricant
- 10 bar max. input pressure
- 127 lpm @ 3.5 bar; 212 lpm @ 7 bar air flow
- Force For Full Stem Travel: 226 grams nominal
- Mounting via 5/8-32 thread for panel mount or two 4.3 thru holes in body. Nut and lockwashers furnished.



Check Valves

Check valves permits flow in one direction only. Featuring ENP brass bodies that provide in-line mounting, FKM seals and stainless steel springs as standard. The S-MCV-1 series has M5 ports and a brass poppet. The S-MJCV-1 series has G1/8 ports and a Delrin® poppet.

Medium: Air, Water, Oil

- ENP brass body, FKM seals, stainless steel stem and spring
- 21 bar input pressure
- Pressure To Open: Cracks at approx. 0.03 bar
- Mounts directly or in-line
- Arrow on valve body indicates direction of flow
- Not intended for pressure relief

Part No.	Inlet/Outlet	Overall Length	Air Flow
S-MCV-1-M5	M5 F - M5 M	19.1 mm	
S-MCV-1AA-M5	M5 F Typ.	24.0 mm	184 lpm @ 3.5 bar
S-MCV-1AB-M5	M5 F - M5 M	25.4 mm	326 lpm @ 7 bar
S-MCV-1BB-M5	M5 F Typ.	20.6 mm	
S-MJCV-1AA-MG	G1/8 M Typ.	36.5 mm	
S-MJCV-1AB-MG	G1/8 F - G1/8 M	31.8 mm	566 lpm @ 3.5 bar
S-MJCV-1BA-MG	G1/8 F - G1/8 M	39.7 mm	1,019 lpm @ 7 bar
S-MJCV-1-MG	G1/8 F Typ.	34.9 mm	

Stem Valves

Stem valves are mechanically actuated 2-way, 3-way or 4-way air valves with ENP brass bodies in either a body ported, rotating port or cartridge configuration. The chart below shows the variety of valves that are currently available. For more information and dimensions, refer to Clippard's full-line catalog.

Medium: Air, Water, Oil

Material: ENP brass body, FKM seals (Buna N on S-MAV-2R-M5 and S-MAV-3R-M5), stainless steel stem and spring, and PFPE lubricant

	Part No.	Style	@ 7 bar	Ports Inlet	Ports Outlet	Exhaust	Function
2-WAY VALVES	S-MAV-2-M5-A	Poppet	193 lpm	M5	M5	-	NC
	S-MAV-2R-M5	"	"	Rotating M5	"	-	"
	S-MAVO-2-M5	Spool	283 lpm	"	"	-	NO
	S-MAV-2P	Poppet	193 lpm	1/8" NPT	"	-	NC
	S-MAVO-2P	Spool	283 lpm	"	"	-	NO
	S-MJV-2-MG	Poppet	708 lpm	G1/8	G1/8	-	NC
	S-MJVO-2-MG	Spool	"	"	"	-	NO
	S-MAV-2C	Poppet	193 lpm	Cartridge	Cartridge	-	NC
	S-MJV-2C	"	623 lpm	Cartridge	Cartridge	-	"
	S-MAVO-2C	Spool	283 lpm	Cartridge	Cartridge	-	NO
	S-MJVO-2C	"	425 lpm	Cartridge	Cartridge	-	"
3-WAY VALVES	S-SMAV-3	Spool	40 lpm	#3-56•	#3-56•	#3-56•	NO/NC
	S-FV-3-M5	"	283 lpm	M5	M5	M5	"
	S-FV-3D-M5	"	"	"	"	"	"
	S-MAV-3-M5	Poppet	193 lpm	"	"	through stem	NC
	S-MAV-3R-M5	"	"	Rotating M5	"	"	"
	S-MAVO-3-M5	Spool	283 lpm	M5	"	holes in body	NO
	S-MAVO-3P	"	"	"	"	"	"
	S-FV-3P	"	297 lpm	1/8" NPT	1/8" NPT	1/8" NPT	NC
	S-FV-3DP-MG	"	283 lpm	G1/8	G1/8	G1/8	NO/NC
	S-MAV-3P	Poppet	193 lpm	1/8" NPT	#10-32	through stem	NC
	S-MJV-3-MG	"	708 lpm	G1/8	G1/8	"	"
	S-MJVO-3-MG	Spool	"	"	"	holes in body	NO
	S-MAV-3C	Poppet	170 lpm	Cartridge	Cartridge	through stem	NC
	S-MAVO-3C	Spool	283 lpm	Cartridge	Cartridge	holes in body	NO
	S-MJV-3C	Poppet	623 lpm	Cartridge	Cartridge	through stem	NC
	S-MJVO-3C	Spool	425 lpm	Cartridge	Cartridge	holes in body	NO
4-WAY VALVES	S-MAV-4-M5	Spool	283 lpm	M5	M5	holes in body	NO/NC
	S-MAV-4D-M5	"	"	"	"	"	"
	S-FV-4-M5	"	"	"	"	"	"
	S-FV-4D-M5	"	"	"	"	"	"
	S-FV-5-M5	"	"	"	"	M5	"
	S-FV-5D-M5	"	"	"	"	"	"
	S-MJV-4-MG	"	396 lpm	G1/8	G1/8	holes in body	"
	S-MJV-4D-MG	"	"	"	"	"	"
	S-FV-4-MG	"	297 lpm	"	"	G1/8	"
	S-FV-4D-MG	"	"	"	"	"	"
	S-FV-5-MG	"	"	"	"	"	"
	S-FV-5D-MG	"	"	"	"	"	"

• with 1/16" ID hose barbs installed

Push Button Actuators

Easily actuated, clearly identifiable panel controls are the hallmark of a professional control system. These actuators will accommodate both pneumatic valves and electrical switches. Whether the system is a single valve machine control, or an operating console for controlling complex pneumatic systems, you will find the actuator you require.

Captivated Actuators

	Valve Stem Diameter	Button Style	Colors Available	Part No.
	3.2 mm 4.8 mm	Extended	● ● ● ● ○	PC-1 (color code) PC-2 (color code)

Heavy-Duty Actuators

	Mounting Hole	Button Style	Colors Available	Part No.
	16 mm 22 mm 30 mm	Extended	● ● ● ● ● ● ○ ●	PC-3E-(color code) PC-4E-(color code) PC-5E-(color code)
	16 mm 22 mm 30 mm	Flush	● ● ● ● ● ● ○ ●	PC-3F-(color code) PC-4F-(color code) PC-5F-(color code)
	16 mm 22 mm 30 mm	Mushroom	● ● ● ● ● ● ○ ●	PC-3M-(color code) PC-4M-(color code) PC-5M-(color code)

Manual Actuators

	Size	"On" Actuation	"Off" Actuation	Button Style	Colors Available	Part No.
	22 mm 30 mm	Push	Spring	Flush	● ● ● ●	P22-P2F-(color code)* PL-P2F-(color code)*
	22 mm 30 mm	Push	Spring	Extended	● ● ● ●	P22-P2E-(color code)* PL-P2E-(color code)*
	22 mm 22 mm 30 mm 30 mm	Push Latching Latching Push	Spring Twist Twist Spring	Mushroom	● ● ●	P22-P2M-(color code)* P22-L3M-(color code)* PL-L3M-(color code)* PL-P2M-(color code)*
	22 mm 30 mm	Latching	Key	Mushroom	●	P22-L4M-R* PL-L4M-R*
	22 mm 22 mm 30 mm 30 mm	Twist	Spring Twist Spring Twist	Twist	●	P22-T2T-B* P22-T3T-B* PL-T2T-B* PL-T3T-B*
	22 mm 22 mm 22 mm 30 mm 30 mm 30 mm	Push Twist Key Push Twist Key	Key Twist Twist Key Twist Twist	Key	●	P22-P4K-B* P22-T3K-B* P22-K3K-B* PL-P4K-B* PL-T3K-B* PL-K3K-B*

* PB-22-X or PB-30 Valve Adapter required, ordered separately.

Color Codes

● Black (BK) ○ White (WH) ● Red (RD) ● Grey (GR) ● Yellow (YL) ● Orange (OR) ● Blue (BL) ● Green (GN)

Valve Actuators, Indicators & Electric Switches

Single Acting Air Pilot Actuators

- 17 bar max. input pressure
- Body - ENP brass; Springs - stainless steel; Seals - FKM; Piston - Acetal Copolymer
- Mounting via 15/32-32 female thread to mount to Clippard miniature valves and components

Part No.	Description
S-MPA-3-M5	Spring Return Actuator, M5
S-MPA-3-MG	Spring Return Actuator, G1/8
S-MPA-5-M5	Spring Return Actuator, M5
S-MPA-5-MG	Spring Return Actuator, G1/8
S-MPA-7-MG	Spring Return Actuator, G1/8

Minimum Pressure Required (bar)*					
Valve	Pressure (bar) *(with S-MPA-XX or S-MVA-10)*				Vacuum (mm Hg)
	S-MPA-3	S-MPA-5	S-MPA-7	S-MPA-10	S-MVA-10
S-MAV-2	1.6	0.6	0.6	0.1	107
S-MAV-3	1.6	0.6	0.6	0.1	107
S-MAV-4	2.5	0.8	0.4	0.2	183
S-MJV-4	2.5	0.8	0.4	0.2	183
S-MAV-4D	0.9	0.3	1.0	0.1	51
S-MJV-4D	0.9	0.3	1.0	0.1	51
S-MJV-2	2.1	0.7	0.3	0.2	157
S-MJV-3	2.1	0.7	0.3	0.2	157
S-MAVO-2	1.9	0.6	0.3	0.2	132
S-MAVO-3	1.9	0.6	0.3	0.2	132
S-MJVO-2	2.1	0.7	0.3	0.2	157
S-MJVO-3	2.1	0.7	0.3	0.2	157
S-FV-3	2.8	1.0	0.5	0.3	208
S-FV-3P	2.8	1.0	0.5	0.3	208
S-FV-4	2.8	1.0	0.5	0.3	208
S-FV-4P	2.8	1.0	0.5	0.3	208
S-FV-5	2.8	1.0	0.5	0.3	208
S-FV-5P	2.8	1.0	0.5	0.3	208
S-FV-3D	1.0	0.3	0.2	0.1	81
S-FV-3DP	1.0	0.3	0.2	0.1	81
S-FV-4D	1.0	0.3	0.2	0.1	81
S-FV-4DP	1.0	0.3	0.2	0.1	81
S-FV-5D	1.0	0.3	0.2	0.1	81
S-FV-5DP	1.0	0.3	0.2	0.1	81

Single Acting, Spring Return Pilot & Vacuum Actuators

Input Pressure: S-MPA-10/S-MPA-10P: 10 bar max.; S-MVA-10/S-MVA-10P: 762 mm Hg vacuum

15/32-32 female thread to mount to Clippard Minimatic® valves and components; no spacers or washers are required when assembled to any Clippard valve; may be used with 15018-2 mounting bracket.

Part No.	Description
S-MPA-10	Pilot Actuator, #10-32
S-MPA-10P	Pilot Actuator, 1/8" NPT
S-MVA-10	Vacuum Actuator, #10-32
S-MVA-10P	Vacuum Actuator, 1/8" NPT

Multi-Pin Air Indicator

Plunger type (when extended 7-pin color display signals "on")

Medium: Air

1 to 10 bar max. input pressure

1 bar (approx) minimum actuation pressure

Approx. 10 ms @ 3.5 bar response

Filtration: 40 micron recommended

Mounting: IND-3: Panel mount in hole. #15/32-32 nut and lockwasher provided; IND-3P: Direct mount into M5 port

Maximum Panel Thickness: 4.8 mm

Part No.	Description
IND-3-(color)-M5	Multi-Pin Air Indicator, M5
IND-3P-(color)	Multi-Pin Air Indicator, 1/8" NPT

GN-Green, WH-White, RD-Red, YL-Yellow

Pneumatic Electric Switches

Electrical Rating: 60 ma. AC resistive/40 ma. DC resistive @ 120 volts

Switching Speed: 125 Hz, Normally-Open

- Actuating Pressure: ±75 mm of water with 10% tolerance
- 0.6 bar (continuous) maximum pressure
- ABS plastic case gold plated contacts natural rubber diaphragm
- Used for interfacing fluidic or other low pressure air signals with electronic circuitry/dual inputs operates on pressure, vacuum, or differential pressure signals

Part No.	Description
5100-3-NO	Switch, Normally-Open Contacts
5100-3-NC	Switch, Normally-Closed Contacts

Pressure Actuated Switches

Medium: Air
Inlet Pressure: 0.3 to 10.3 bar
Pilot Port: 1/8" NPT, M5
Mounting: External thread and nut for panel, bracket, or bulkhead mounting, 5/8-32 pressure actuated 15/32-32 manually operated
Accuracy: Actuation and deactuation pressures listed are nominal values. Each has a tolerance of ±12% or 0.1 bar whichever is greater

❑ ❑ ❑ - 1 ❑ ❑ - ❑ ❑ - ❑

SAS Sub-Miniature Air Switch
MAS Miniature Air Switch

Design Series

Switch Current Rating:
SAS
A 5A @ 125/250 VAC
3A @ 30 VDC/.1A 60 VDC
X no switch
MAS
B 3A @ 125/250 VAC
3A @ 30 VDC
C 10A @ 125/250 VAC
5A @ 50 VDC
X no switch

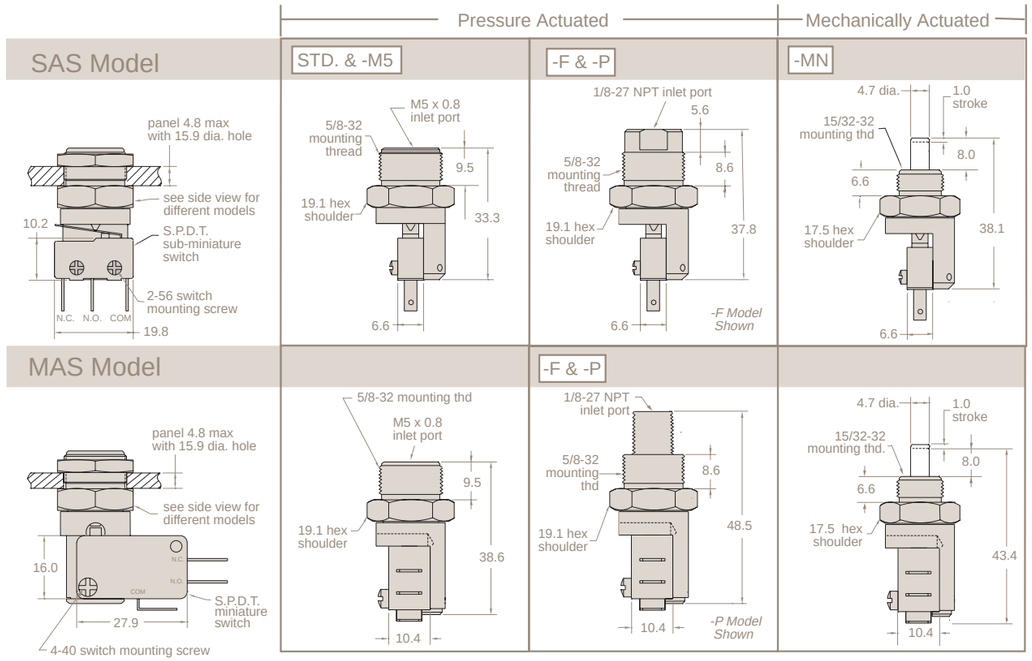
Switch Terminals:
SAS: **0** no switch
1 110 series Q.C.
MAS: **0** no switch
2 187 series Q.C.
3 screw terminals

Actuation Pressure*
06 0.4 bar
20 1.4 bar
40 2.8 bar
65 4.5 bar
MN Manual

Deactuation Pressure*
06 0.3 bar
20 1.2 bar
40 2.5 bar
65 4.0 bar
MN Manual

Inlet Port:
F 1/8" NPT female
P 1/8" NPT male
M5 M5 x 0.8 thd

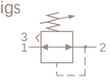
*Nominal value +/- 12% or 0.1 bar, whichever is greater when used with Clippard switches



Miniature Pressure Regulators

Medium: Air

- 85 lpm @ 3.5 bar; 142 lpm @ 7 bar
- Panel mounting (15/32-32 mounting thread) permits unit to be located with other controls on a control console or panel board for pilot operation of larger regulators or for remote control; mounting nuts and lockwashers furnished
- Small, compact - ideal for mounting on individual jigs and fixtures as well as in control circuits
- Input Pressure of 21 bar max.
- Adjustment by means of a knob with micro-adjustment (40 pitch thd.)
- ENP brass body, FKM seals, stainless steel stem and spring



Regulators are offered in either relieving or non-relieving versions. The relieving design maintains a constant pressure output even when downstream conditions change. As downstream pressure increases, the pressure overcomes the regulator piston and the pressure is relieved to atmosphere to maintain a constant output pressure.

The non-relieving regulator does not automatically compensate for changes in downstream flow or pressure. There is no vent to atmosphere, as in a relieving type regulator, and the output pressure can increase due to a downstream change.

Range (bar)	M5 Relieving	#10-32 Knob	1/8" NPT Non-Relieving	1/8" NPT
1.4	S-MAR-1-2-M5	S-MAR-1K-2	S-MAR-1NR-2	S-MAR-1P-2
2.1	S-MAR-1-3-M5	S-MAR-1K-3	S-MAR-1NR-3	S-MAR-1P-3
2.8	S-MAR-1-4-M5	S-MAR-1K-4	S-MAR-1NR-4	S-MAR-1P-4
3.4	S-MAR-1-5-M5	S-MAR-1K-5	S-MAR-1NR-5	S-MAR-1P-5
4.1	S-MAR-1-6-M5	S-MAR-1K-6	S-MAR-1NR-6	S-MAR-1P-6
4.8	S-MAR-1-7-M5	S-MAR-1K-7	S-MAR-1NR-7	S-MAR-1P-7
6.9	S-MAR-1	S-MAR-1K	S-MAR-1NR	S-MAR-1P

Clippard's line of Modular Valves and Acrylic Subplates are the premier "plug and play" devices for many pneumatic applications. Refer to Clippard's full-line catalog or to www.clippard.eu.

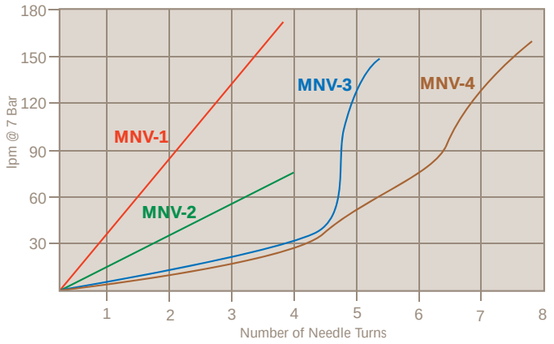
2 Position 2-Way or 3-Way Sleeve Valves

- Medium: Air
- 3.2 mm stem travel
- 10 bar max. input pressure
- 280 lpm @ 6 bar air flow
- Force to Actuate: Approx. 1,134 grams
- Mounts in-line or direct to fitting
- ENP brass body and sleeve, FKM seals

Part No.	Description
S-SLV-2	2-Way Sleeve Valve, #10-32
S-SLV-3	3-Way Sleeve Valve, #10-32

For larger size Sleeve Valves, refer to Clippard's full-line catalog or to www.clippard.eu

Needle Valves



Adjustable control needle valves restrict flow in both directions. There are four models with various needle configurations to provide coarse or fine flow adjustment. The diagram of needle shapes and the chart on this page show the difference between these models.

Medium: Air, Water or Oil

ENP brass body; stainless steel needle; FKM seal

Mount direct, in-line or #15/32-32 thread nut and lockwashers furnished

Part No.	Turn Degree	Port	Input Pressure	Air Flow	Mount	Adjustment
S-MNV-1		#10-32				Screwdriver Slot
S-MNV-1K	15°		40 bar max.	85 lpm @ 3.5 bar;	In-Line	Knurled Knob
S-MNV-1P		1/8" NPT		170 lpm @ 7 bar		Screwdriver Slot
S-MNV-1KP						Knurled Knob
S-MNV-2	5°	#10-32	21 bar max.	28 lpm @ 3.5 bar;	Panel	Screwdriver Slot
S-MNV-2K				71 lpm @ 7 bar		Knurled Knob
S-MNV-3-M5		M5				Screwdriver Slot
S-MNV-3K-M5		M5	40 bar max.	71 lpm @ 3.5 bar;	In-Line	Knurled Knob
S-MNV-3P-MG		G1/8		142 lpm @ 7 bar		Screwdriver Slot
S-MNV-3KP-MG		G1/8				Knurled Knob
S-MNV-45		M5				Knurled Locking Nut
S-MNV-41	3°	1/16" Barb				Knurled Locking Nut
S-MNV-42		1/8" Barb	21 bar max.	0 to 142 lpm	In-Line	Knurled Locking Nut
S-MNV-4K5		M5		@ 7 bar		Knurled Knob
S-MNV-4K1		1/16" Barb				Knurled Knob
S-MNV-4K2		1/8" Barb				Knurled Knob

Note: S-MFC-3 and S-MNV-4 bodies are ENP zinc castings

Patient Simulation

Simulation of many symptoms and other external indicators can be easily performed using the 10 mm valve, along with other control valves, needle valves, fittings, and tubing. Pulse, heartbeat, and even jaw resistance can all be controlled using pneumatics and the control of the 10 mm valve.

Flow Control Valves

#10-32 Valves, Recessed Needle

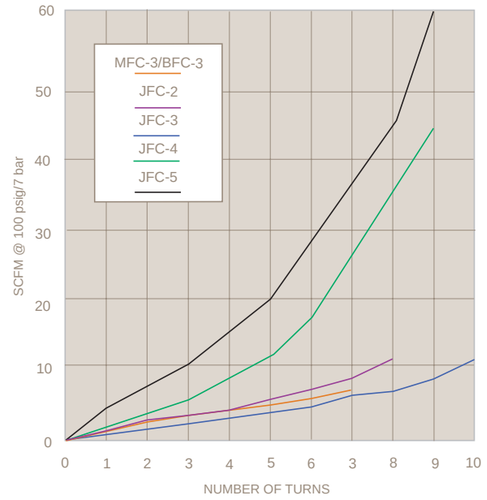
Part No.	Adjustment	
MFC-3AR5	Meter Out	M5 Female Side Port
MFC-3AR1	"	1/16" Barb Side Port
MFC-3AR2	"	1/8" Barb Side Port
MFC-3BR5	Meter In	M5 Female Side Port
MFC-3BR1	"	1/16" Barb Side Port
MFC-3BR2	"	1/8" Barb Side Port

#10-32 Valves, Screwdriver Slot

MFC-3A5	Meter Out	M5 Female Side Port
MFC-3A1	"	1/16" Barb Side Port
MFC-3A2	"	1/8" Barb Side Port
MFC-3B5	Meter In	M-5 Female Side Port
MFC-3B1	"	1/16" Barb Side Port
MFC-3B2	"	1/8" Barb Side Port

#10-32 Valves, Knurled Knob

MFC-3AK5	Meter Out	M5 Female Side Port
MFC-3AK1	"	1/16" Barb Side Port
MFC-3AK2	"	1/8" Barb Side Port
MFC-3BK5	Meter In	M5 Female Side Port
MFC-3BK1	"	1/16" Barb Side Port
MFC-3BK2	"	1/8" Barb Side Port



Clippard offers five models of adjustable flow controls with M5 through 3/8" NPT ports. These combination needle and check valve flow controls are typically used to control air flow from air cylinders, thereby controlling the speed at which the piston strokes, either while extending or retracting, depending on their location in the circuit.

Medium: Air, Water or Oil

- Nickel plated or anodized aluminum body, stainless steel stem, Buna N seals
- 10.3 bar max. input pressure
- Mounts directly into port, panel or in-line
- Rotating input port allows 360° positioning of M5 or 1/8" NPT port

1/8" NPT Valves, Recessed Needle

JFC-3AR	Meter Out	1/8" NPT
JFC-3BR	Meter In	1/8" NPT
JFC-3AP08	Meter Out	1/4" Push-Quick Fitting
JFC-3BP08	Meter In	1/4" Push-Quick Fitting

1/8" NPT Valves, Knurled Knob

JFC-3A	Meter Out	1/8" NPT
JFC-3B	Meter In	1/8" NPT
JFC-3AP08	Meter Out	1/4" Push-Quick Fitting
JFC-3BP08	Meter In	1/4" Push-Quick Fitting

Panel Mount 1/8" NPT Control Valves, Knurled

JFC-2A	Meter Out	1/8" NPT
JFC-2B	Meter In	1/8" NPT

1/4" NPT Valves, Recessed Needle

JFC-4R	Meter Out	1/4" NPT
JFC-4R-P08	"	1/4" Push-Quick Fitting
JFC-4R-P12	"	3/8" Push-Quick Fitting

1/4" NPT Valves, Adjusting Knob

JFC-4K	Meter Out	1/4" NPT
JFC-4K-P08	"	1/4" Push-Quick Fitting
JFC-4K-P12	"	3/8" Push-Quick Fitting

3/8" NPT Valves, Adjusting Knob

JFC-5K	Meter Out	3/8" NPT
JFC-5K-P12	"	3/8" Push-Quick Fitting

3/8" NPT Valves, Recessed Needle

JFC-5R	Meter Out	3/8" NPT
JFC-5R-P12	"	3/8" Push-Quick Fitting

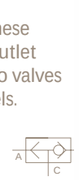
Shuttle Valves

There are three models of shuttle valves offered by Clippard. These valves feature a shuttle that allows flow from one inlet to the outlet while blocking the other inlet. They may be mounted directly to valves and cylinders or in-line using the hose barbs on the MSV models.

Medium: Air, Water or Oil

Mounting: Direct or in-line

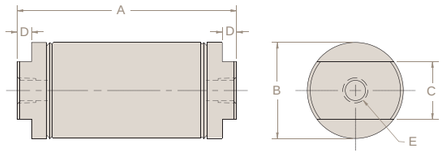
▷ Exhaust through port where pressure was last applied



Poppet type shuttle (double check) valve. ENP brass body and FKM seals

	Part No.	Ports	Input Pressure	Body	Flow	Pressure to Shift
	S-MSV-1-M5	M5	17 bar	9.5 mm sq.	269 lpm @ 7 bar	0.03 bar
	S-JSV-2YYY	1/4" NPT	21 bar	17.5 mm hex.	1,415 lpm @ 7 bar	0.07 bar
	S-MJSV-1-MG	G1/8	21 bar Air; 70 bar Hydraulic	15.9 mm sq.	736 lpm @ 7 bar	0.03 bar

Air Volume Tanks



Part Number	A	B	C	D	E	Volume (cc)
AVT-12-1	3.3 mm	20.6 mm	15.9 mm	4.0 mm	1/8"27	16
AVT-17-2	91.3 mm	28.6 mm	22.2 mm	4.7 mm	1/8"27	33
AVT-17-3	120 mm					49
AVT-24-4	93.6 mm	39.7 mm	22.2 mm	6.4 mm	1/8"27	66
AVT-24-6	123 mm					98
AVT-24-8	152 mm					131
AVT-24-10	180 mm					164
AVT-32-12	145 mm	52.4 mm	31.8 mm	7.9 mm	1/4"18	197
AVT-32-14	161 mm					229
AVT-32-16	177 mm					262

** Additional models are available upon request*

Push-Quick Fittings

Clippard Push-Quick Fittings provide a simple method of connecting pneumatic components to each other and system piping. They are designed for use with both flexible hose and stiff tubing made of nylon, urethane, polyethylene or polypropylene.

▷ Thread sizes M5 through R3/8

▷ Tubing sizes 4 mm OD through 8 mm OD

Pressure Range: 0 to 10.3 bar @ 54˚C
Vacuum: 0 to 749 mm Hg
Temperature Range: 0 to 60˚C
Media: Air, Non-corrosive water
Tube Pull Out Force: >9 kg @ 24˚C (non-pressurized)
Burst Pressure: 24 bar @ 24˚C
Materials: Body - Plastic Resin
Metal Stud - Nickel Plated Brass
Gripper Ring - Stainless Steel
Seals - Buna N

Threaded Fittings

Female Connector *(PQ-FC)*

Male Compact Connector *(PQ-CC)*

Male Connector *(PQ-MC)*

Male Elbow *(PQ-ME)*

Run Tee *(PQ-RT)*

Branch Tee *(PQ-BT)*

Universal Elbow *(PQ-UE)*

Male Angle Connector *(PQ-MA)*

Bulkhead Connector *(PQ-BC)*

Non-Threaded Fittings

Straight Union *(PQ-SU)*

Reduced Union *(PQ-RU)*

Elbow Union *(PQ-EU)*

Tee Union *(PQ-TU)*

Y Union *(PQ-YU)*

Cross Union *(PQ-CU)*

Bulkhead Union *(PQ-BU)*

Manifold Union *(PQ-MU)*

See www.clippard.eu for a full selection. Sub-Miniature Fittings also available.

Minimatic® Slip-On Fittings

Minimatic Slip-On fittings provide a flexible, easy alternative to ferrule and push-to-connect design fittings.

Clippard Slip-On fittings are designed to be used with Clippard urethane hose found on Page 41. The flexibility and strength of urethane hose and the compact design of the fittings are ideal for pneumatic applications where convenience and size are considerations. The Minimatic Slip-On fittings used with Clippard urethane hose will provide a leak free connection that will hold well beyond the working pressure of the hose without the need for additional clamps.

- Single barb design for quick and easy positive seal
- Miniature size provides low profile
- Multiple configurations for every need
- Electroless nickel plated brass, FKM seals, as indicated
- Available with 1/16", 3/32" or 1/8" hose barb
- Available with #10-32 thread (compatible with M5) and 1/8" NPT
- Holds to the burst pressure of hose

Thread to Barb Connectors

#10-32 Hose
Comes with Buna N O-ring installed. *

Part No.	Description
CT2	1/16" Barb
CT3	3/32" Barb
CT4	1/8" Barb

ENP Barb to #10-32 Fittings

Part No.	Description
12841-ENP	1/16" ID Hose Barb
12842-ENP	3/32" ID Hose Barb
12843-ENP	1/8" ID Hose Barb

** FKM gasket available. Order Part Number 11761-8.*

ENP Barb to #10-32 Fittings with Captivated O-Rings
Comes with FKM O-ring installed.*

Part No.	Description
S-11792-5	1/16" ID Hose Barb
S-11792-8	3/32" ID Hose Barb
S-11792-4	1/8" ID Hose Barb

3-56 Threaded Hose Barb Fitting

Part No.	Description
11750-2-ENP	1/16" ID Hose Barb

#10-32 Connectors/Plugs

#10-32 Stainless Steel Flush Screw Plug
Use 3/32" allen wrench to install. Thread sealant recommended.

Part No.	Description
0035-2	#10-32 Headless Screw Plug

#10-32 ENP Screw Plug
For plugging unused ports in manifolds, air lines and other devices.

Part No.	Description
11755-ENP	#10-32 Plug

#10-32 Extension
To provide extension for convenience in assembling components.

Part No.	Description
15010-ENP	#10-32 Extension

#10-32 ENP Male Connector
For coupling cylinders directly to valves, and many other coupling arrangements.

Part No.	Description
11999-ENP	#10-32 Male Connector

#10-32 Male Coupling
Excellent for a surface-to-surface connection of female #10-32 products. Stainless steel. Loctite necessary.

Part No.	Description
15453	#10-32 Male Coupling

M5 Female Hex Coupling
For coupling two M5 male fittings.

Part No.	Description
15004-M5-ENP	M5 Female Hex Coupling

Minimatic® Slip-On Fittings

In-Line Barb Connectors

Hose-to-Hose Connectors

Item	Barb	Barb
C22	1/16"	1/16"
C32	3/32"	1/16"
C33	3/32"	3/32"
C42	1/16"	1/8"
C43	3/32"	1/8"
C44	1/8"	1/8"

Hose-to-Hose "T" Connectors

Item	Barb	Top Barb	Barb
T22-2	1/16"	1/16"	1/16"
T22-3	1/16"	1/8"	3/32"
T22-4	1/16"	1/8"	1/16"
T33-2	3/32"	1/16"	3/32"
T33-3	3/32"	3/32"	3/32"
T33-4	3/32"	1/8"	3/32"
T42-4	1/16"	1/8"	1/8"
T44-2	1/8"	1/16"	1/8"
T44-3	1/8"	3/32"	1/8"
T44-4	1/8"	1/8"	1/8"

"X" Connectors (barbs clockwise)

Item	Barb #1	Barb #2	Barb #3	Barb #4
X22-202	1/16"	1/16"	1/16"	1/16"
X32-202	1/16"	1/16"	1/16"	3/32"
X33-202	1/16"	3/32"	1/16"	3/32"
X33-303	3/32"	3/32"	3/32"	3/32"
X42-202	1/16"	1/16"	1/16"	1/8"
X42-402	1/8"	1/16"	1/16"	1/8"
X43-303	3/32"	3/32"	3/32"	1/8"
X44-202	1/16"	1/8"	1/16"	1/8"
X44-303	3/32"	1/8"	3/32"	1/8"
X44-402	1/16"	1/8"	1/8"	1/8"
X44-404	1/8"	1/8"	1/8"	1/8"

#10-32 Barb Connectors

#10-32 "L" Connectors

CT0-2	1/16" Barb
CT0-3	3/32" Barb
CT0-4	1/8" Barb

Buna N gasket included

#10-32 "T" Connectors

Item	Barb	Barb
TT0-202	1/16"	1/16"
TT0-303	3/32"	3/32"
TT0-402	1/8"	1/16"
TT0-404	1/8"	1/8"

Buna N gasket included

#10-32 "T" Connectors

TT2-2	1/16" 1/16"
TT2-4	1/16" 1/8"
TT3-3	3/32" 3/32"
TT4-2	1/8" 1/16"
TT4-4	1/8" 1/8"

Buna N gasket included

#10-32 "X" Connectors

Item	Barb	Top Barb	Barb
XT2-202	1/16"	1/16"	1/16"
XT2-402	1/8"	1/16"	1/16"
XT2-404	1/8"	1/16"	1/8"
XT4-202	1/16"	1/8"	1/16"
XT4-402	1/8"	1/8"	1/16"
XT4-404	1/8"	1/8"	1/8"

Buna N gasket included

#10-32 Universal Connectors

"T" Connectors

UT0-2	1/16" Barb
UT0-3	3/32" Barb
UT0-4	1/8" Barb

"T" Connectors

Item	Barb	Barb
UT0-2002	1/16"	1/16"
UT0-3002	1/16"	3/32"
UT0-3003	3/32"	3/32"
UT0-4002	1/8"	1/16"
UT0-4003	1/8"	3/32"
UT0-4004	1/8"	1/8"

"T" Connectors

UTF-2	1/16" Barb
UTF-3	3/32" Barb
UTF-4	1/8" Barb

"X" Connectors

Item	Barb	Barb
UTF-2002	1/16"	1/16"
UTF-3003	3/32"	3/32"
UTF-4002	1/8"	1/16"
UTF-4004	1/8"	1/8"

"T" Connectors

UTF-F-M5	"T" Fitting
UTF-FOF-M5	"X" Fitting

"L" Connectors

UT0-FOF	#10-32 Threads

"T" Connectors

UT0-F	#10-32 Threads

** FKM gasket available. Order Part Number 11761-8.*

Minimatic® Slip-On Fittings

Swivel Fittings

#10-32 Swivel

ST2	1/16″ Barb
ST3	3/32″ Barb
ST4	1/8″ Barb

Buna N gasket included, not installed

1/8″ NPT Swivel

Item	Top	Bottom
S4F	1/8″ Barb	#10-32 Female
S44	1/8″ Barb	1/8″ Barb
S4N	1/8″ Barb	1/8″ NPT

1/8″ NPT Swivel "L"

SP0-2	1/16″ Barb
SP0-3	3/32″ Barb
SP0-4	1/8″ Barb

1/8″ NPT Swivel "T"

SP2-2	1/16″ Barbs
SP3-3	3/32″ Barbs
SP4-4	1/8″ Barbs

** FKM gasket available. Order Part Number 11761-8.*

#10-32 Swivel "T"

ST2-2	1/16″ Barbs
ST3-3	3/32″ Barbs
ST4-4	1/8″ Barbs

Buna N gasket included, not installed

Hose-to-Hose Swivel "T"

Item	Top	Side	Bottom
S42-2	1/16″	1/16″	1/8″
S44-4	1/8″	1/8″	1/8″

Hose-to-Hose Swivel "L"

S40-4	1/8″ Barbs

1/8″ NPT Swivel "T"

SP0-2002	1/16″ Barbs
SP0-3003	3/32″ Barbs
SP0-4004	1/8″ Barbs

#10-32 Swivel "T"

ST0-2002	1/16″ Barbs
ST0-3003	3/32″ Barbs
ST0-4004	1/8″ Barbs

Buna N gasket included, not installed

Tube Compression Fittings

ENP brass. Joins standard size pipe to copper (3811-1) or nylon tubing (NYT1-0403-CLT-050) .

Part No.	Description
S-11923	Fitting, #10-32 to 1/8″ O.D.
S-15160	Fitting, #10-32 to 1/16″ O.D.
S-3810-1	Fitting, 1/8″ NPT to 1/8″ O.D.
S-3810-2	Fitting, 1/16″ NPT to 1/8″ O.D.

Analysis Equipment

A manufacturer of point of care (doctor's office) immunoassay analyzers utilizes a custom Clippard acrylic subplate that provides a mounting for ES valves along with sensors and servos. This instrument enables doctors to obtain an instant analysis for TSH, Free T4, and PSA. The valves control actuators that punch reagent bags during the test. Cost, compact size, mounting ease and reliability are the main reasons Clippard products are used in this application.

Minimatic® Fittings

Barb to Pipe Fittings

ENP brass pipe threads.

Single-Barb Fittings

Part No.	External Thread	Hex.	Hose Barb
1CJ2-ENP	1/16″ NPT	5/16″	1/16″ ID
1CJ3-ENP			3/32″ ID
1CJ4-ENP			1/8″ ID
2CP2-ENP	1/8″ NPT	7/16″	1/16″ ID
2CP3-ENP			3/32″ ID
2CP4-ENP			1/8″ ID
12844-ENP			1/4″ ID
4CQ2-ENP	1/4″ NPT	9/16″	1/16″ ID
4CQ3-ENP			3/32″ ID
4CQ4-ENP			1/8″ ID
12845-ENP			1/4″ ID
6CW2-ENP	3/8″ NPT	11/16″	1/16″ ID
6CW3-ENP			3/32″ ID
6CW4-ENP			1/8″ ID
8CZ2-ENP	1/2″ NPT	13/16″	1/16″ ID
8CZ3-ENP			3/32″ ID
8CZ4-ENP			1/8″ ID

Multi-Barb Fittings

Part No.	External Thread	Hex	Hose Barb
11924-2-ENP	1/16″ NPT	5/16″	1/8″ ID
11924-1-ENP	1/8″ NPT	7/16″	1/8″ ID

Pipe Reducer Bushings

Pipe Reducer Bushings are designed to thread into a pipe fitting and reduce it to a smaller pipe size. ENP brass.

Part No.	External Thread	Hex.	Internal Thread
1CJF-ENP	1/16″ NPT	5/16″	#10-32
2CPF-ENP	1/8″ NPT	7/16″	#10-32
2CPK-ENP			1/16″ NPT
4CQF-ENP	1/4″ NPT	9/16″	#10-32
4CQK-ENP			1/16″ NPT
4CQN-ENP			1/8″ NPT
6CWF-ENP	3/8″ NPT	11/16″	#10-32
6CWK-ENP			1/16″ NPT
6CWN-ENP			1/8″ NPT
6CWY-ENP			1/4″ NPT
8CZF-ENP	1/2″ NPT	13/16″	#10-32
8CZK-ENP			1/16″ NPT
8CZN-ENP			1/8″ NPT
8CZY-ENP			1/4″ NPT
8CZD-ENP			3/8″ NPT

Part No.	External Thread	Internal Thread
15036	1/8″ NPT	#10-32

Bulkhead Fittings

Provides rigid connection through panels or bulkheads up to 12.7 mm thick. Furnished with two steel lockwashers. ENP brass.

Part No.	Description
15027-ENP	#10-32 Thread, 9/16″ Hex.
15029-1-ENP	1/8″ NPT Thread, 7/8″ Hex.
15029-2-ENP	1/4″ NPT Thread, 7/8″ Hex.

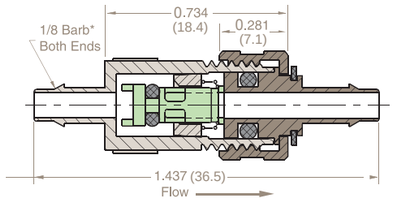
1/8″ NPT to M5 Fittings

To provide connections between the two thread sizes with mounting convenience. ENP.

Part No.	Description
15090-1-M5-ENP	"L" Fitting
15090-2-M5-ENP	"T" Fitting
15090-3-M5-ENP	"X" Fitting

Minimatic® J-Series Quick Connect Fittings

The Minimatic J-Series quick connect consists of two component parts that are joined to form the complete connector. The valve body contains a 2-way spring-loaded poppet valve that is generally connected to the main air supply. When the poppet is not depressed, the air supply is shut-off by this valve. The Cap contains a valve depressor that when assembled to the valve body, depresses the poppet allowing air to flow from the main supply to circuitry or equipment downstream. Valve body & cap assemblies contain both components.



- High flow of 396 lpm @ 7 bar
- Space saving attractive miniature design
- Wide variety of connectors
- Adds convenience to equipment and circuits
- Brass body, electroless nickel plated
- Non-corrosive - Delrin® poppet
- Fills the gap between clumsy, large quick connects and smaller quick connects with less flow
- Buna-N seals, positive shut off
- Positive threaded connection, stays connected
- Medium: Air, oil, and water
- 0 to 10 bar max. working pressure

Valve Body & Cap Assemblies

Part No.	Description
MJQC-B4B4*	1/8" Barbs Typ.
MJQC-PFB4	1/8" Barb-#10-32 F
MJQC-MPB4	1/8" Barb-1/8" NPT M
MJQC-B4MP	1/8" Barb-1/8" NPT M
MJQC-PBB4*	1/8" Barbs Typ.

** Supplied with mounting nut and two washers*

Valve Bodies

Part No.	Description
MJQC-VB4	1/8" Barb
MJQC-VMT	#10-32 M
MJQC-VFT	#10-32 F
MJQC-VFP	1/8" NPT F
MJQC-VMQ	1/4" NPT M
MJQC-VMP	1/8" NPT M

Caps

Part No.	Description
MJQC-CB4	1/8" Barb
MJQC-CFT	#10-32 F
MJQC-CPB*	3/8-24 Thd.-1/8" Barb
MJQC-CMQ	1/4" NPT M
MJQC-CPF	3/8" Thread M-#10-32 F
MJQC-CMP	1/8" NPT M

** Supplied with mounting nut and two washers*

Hose & Tubing

Tubing

		O.D.-I.D.	Working Range	Available Color(s)	Bend Radius	Roll Length 15 m	Roll Length 152 m	Part No.
	**High Pressure Copper**	3 mm-1.6 mm	to 172 bar	Copper		●		3811-1-RL
	Nylon	3 mm-2.4 mm	to 17 bar	✲		●	●	NYT-0403-CLT-*
	**Polyethylene**	4 mm-2.4 mm	0 to 7 bar @ 37°C (Max 48°C)	● ●	12.7 mm	●	●	PET1-0503-*
		6 mm-4 mm		● ●	32 mm	●	●	PET1-0604M-*
		6.4 mm-4 mm		● ●	32 mm	●	●	PET1-0805-*
		9.5 mm-6.4 mm		● ●	50 mm	●	●	PET1-1208-*
	**95 Durometer Polyurethane**	4 mm-2.4 mm	0 to 7 bar @ 37°C (Max 48°C)	● ● ● ● ● ✲ ✲ ✲ ✲ ✲		●	●	URT1-0503-*
		6 mm-4 mm		● ● ● ● ● ✲ ✲ ✲ ✲ ✲		●	●	URT1-0604M-*
		6.4 mm-4mm		● ● ● ● ● ✲ ✲ ✲ ✲ ✲		●	●	URT1-0805-*
		9.5-6.4 mm		● ● ● ● ● ✲ ✲ ✲ ✲ ✲		●	●	URT1-1208-*

Hose

	**Vinyl**	3 mm-1.6 mm	0 to 7 bar @ 21°C Max. 4 bar @ 26°C or above (Max. 37°C)	✲	3x Hose Dia.	●	●	VYH1-0402-CLT-*
		6.4 mm-3 mm		✲	3x Hose Dia.	●	●	VYH1-0804-CLT-*
	**Twin Vinyl**	6.4 mm-3 mm	0 to 10 bar @ 21°C Max. 4 bar @ 26°C or above (Max. 37°C)	●		●	●	VYH2-0804-GYS-*
	**Polyurethane**	3 mm-1.6 mm	0 to 7 bar @ 37°C (Max. 48°C)	● ● ○ ● ● ✲ ✲ ✲ ✲ ✲		●	●	URH1-0402-*
		6.4 mm-3 mm		● ● ○ ● ● ✲ ✲ ✲ ✲ ✲	2x Hose Dia.	●	●	URH1-0804-*
	**Polyurethane Ribbon**	3 mm-1.6 mm	0 to 7 bar @ 37°C (Max. 48°C)	● ○ ✲ ✲ ✲ ✲		●		URH8-0402-02T-050
		6.4 mm-3 mm		● ○ ✲ ✲ ✲ ✲		●		URH8-0804-02T-050
	**Twin Polyurethane**	6.4 mm-3 mm	0 to 7 bar @ 37°C	● ●	2x Hose Dia.	●	●	URH2-0804-01S-*

** Specify Color and Roll Length*

Color Key

Solid: Blue (BLS) Black (BKS) Brown (BRS) Green (GNS) Gray (GYS) Natural (NAS) Orange (ORS) Red (RDS) White (WHS) Yellow (YLS)

Translucent: Blue (BLT) Clear (CLT) Green (GNT) Purple (PUT) Orange (ORT) Red (RDT) Yellow (YLT)

Integrated Value-Added Services

Clippard offers the following services:

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

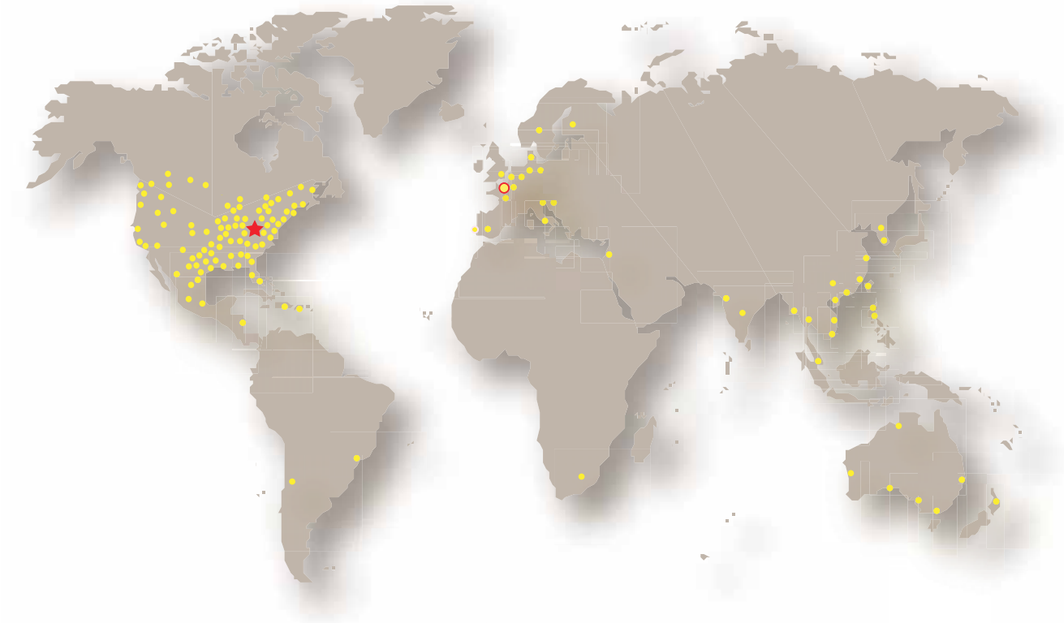
Advantages

- 100% tested sub-assemblies
- Less component stock/inventory
- Fewer vendors and purchase orders
- Requires less manufacturing time
- Increase production efficiency
- Specialized support
- Overall cost reduction
- Taking advantage of Clippard's expertise

Plastic Subplate Features

- *Faster assembly time saves you money*
- *Greatly reduces the possibility of leakage*
- *Helps assure accuracy of connections*
- *Provides a more compact solution*
- *Aesthetically pleasing*
- *Inputs and outputs clearly marked*
- *Threaded inserts hold components securely*
- *Change valves quickly without affecting connections*
- *Less weight than metal manifolds*
- *Makes sophisticated circuitry manageable*

Worldwide Distribution



★ ***Clippard Sales & Manufacturing Facility, Cincinnati, Ohio***
● ***Clippard European Sales Office, Belgium***
● ***Clippard Distributor***

Clippard fluid power and control devices are distributed worldwide through a network of over 100 stocking distributors, with over 800 pneumatic specialists. Our distributors and/or technical support representatives will work with you to find superior business solutions to your critical application. We are committed to delivering an exceptional level of quality and service to create a competitive advantage for our customers. Please visit our web site to find a distributor in your region, detailed product information, helpful downloads, CAD files, conversion tables, product configurators and more.

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Limited Warranty

Clippard Instrument Laboratory, Inc. (seller) warrants its products to be free from defects in material and workmanship for a period of one (1) year from the date of sale. Seller's liability shall be limited at seller's option to repair, replacement or refund of purchase price of product found by seller's examination to be defective. All claims under this warranty must be made in writing to seller's factory sales department giving full details, prior to return of product, postpaid, to factory. Seller shall not be responsible for product failure due to normal wear, accident, buyer's misapplication, abuse, neglect or alteration of product. Seller will not be responsible for any consequential damages. Clippard Instrument Laboratory, Inc. makes no other warranty of any kind, expressed or implied. Circuits shown in this catalog are for instructional purposes only. All circuits used on equipment and machinery should be thoroughly tested by qualified personnel under actual working conditions to determine their suitability for buyer's intended use. All technical data and operations are average values based on standard production models. Some deviations can be expected and considerations should be given during initial design stages. All operating characteristics are based on new equipment, under normal conditions of use and environments and oil free air supply.