

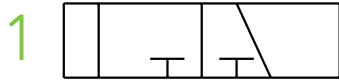
# MODULAR VALVES

## OVERVIEW

Modular valves provide a great deal of versatility with just a few simple components. They consist of essentially three base valve types combined with 18 different options for actuation. As you will see in the proceeding pages, this results in a huge variety of valve options.



## BASE VALVE TYPES



Can be used as:

- 2-Way N.C. or N.O.
- 3-Way N.C. or N.O.
- 3-Way Diverter or Selector



Can be used as:

- 4-Way fully ported
- Dual 2-Way (N.O. and N.C.)
- Dual 3-Way with common exhaust (N.O. and N.C.)

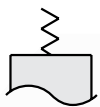


Can be used as:

- 6-Way fully ported
- Dual 2-Way N.C. or N.O.
- Dual 3-Way N.C. or N.O.
- Dual Selector

## ACTUATION OPTIONS

*Spring Return*



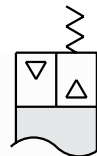
*Air Pilot*



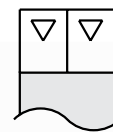
*Spring and Auxiliary Pilot*



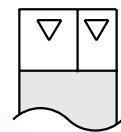
*Removable Spring and Auxiliary Pilot*



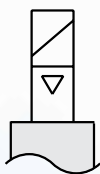
*2 Air Pilots "Or"*



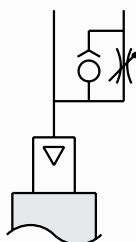
*Differential Air Pilots*



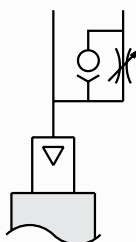
*Solenoid Piloted*



*Delay Out from Air Pilot*



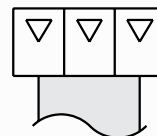
*Delay In from Air Pilot*



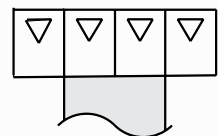
*Low Pressure Air Pilot*



*3 Air Pilots "Or"*



*4 Air Pilots "Or"*



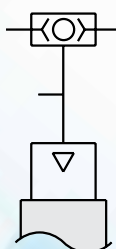
*Independent Shuttle Valve and Air Pilot*



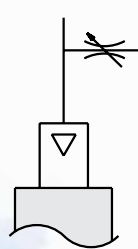
*Shuttle Valve to Air Pilot*



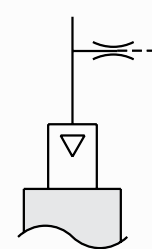
*Shuttle Valve to Low Pressure*



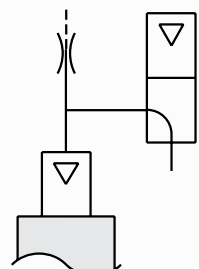
*Delay to Air Pilot*



*Bleed Pressure Pilot*

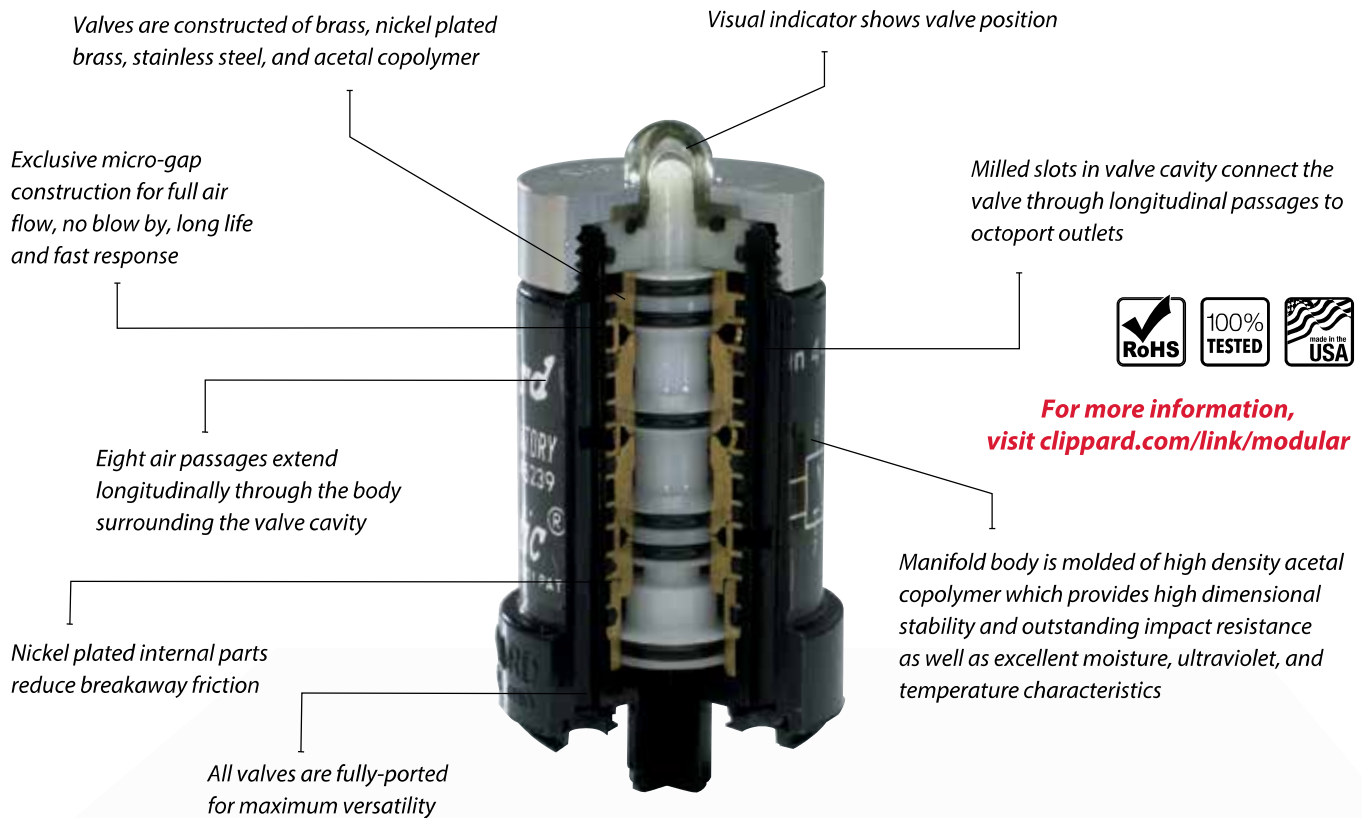


*Fluidic Interface Pilot*



# Modular Valves

Versatility is the key when it comes to these supreme "plug-and-play" pneumatic valves. Available in an unlimited variety of directional, low pressure, and special control valves, each is encased in a body designed to mount and link together with a simple piping system.



Clippard modular valves can easily be configured to perfectly meet the needs of a wide variety of applications. Call 1-877-245-6247 today to discuss your requirements.

- Air pilot pneumatic valves for air, oil, or water
- Fast response and long life
- Balanced spool design
- Keyed manifold mounting
- Over 70 configurations available
- 0 to 150 psig working pressure
- 250 l/min @ 100 psig flow

## OCTOPORT CODING

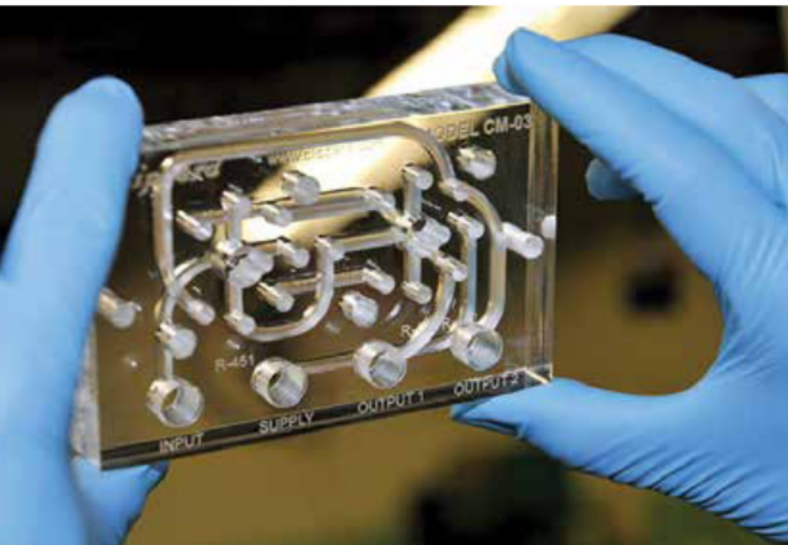
The coding method shown here is frequently used to identify port usage for different variations of Clippard modular valves. Letters are used to identify the supply or signal (S), the output (O), the exhaust (E), and the pilot input (P).

Many modular valves have multiple ported supplies, outputs, or exhausts. If duplicate ports are indicated, one may be marked with an X to indicate that it needs to be plugged. Both/either of the duplicate ports may be used, but unused duplicate ports must be plugged.



## MODULAR VALVES

### PNEUMATIC CIRCUIT MODULES



Clippard modular valves are available in an unlimited variety of directional, flow, pressure and special control valves, each in a valve body designed to mount and link together with a simple piping system. This system eases assembly and plumbing, resulting in reduced labor costs, fewer errors in installation, and less potential for plumbing leakage. Multiple valve elements can be contained in a single body, providing incredible flexibility and variety to accomplish a myriad of control challenges. Minimatic® modular valves are the supreme “plug-and-play” devices for pneumatic applications.

**Versatility** is the key  
when it comes to  
Clippard **modular valves**

### MOST POPULAR STANDARD CIRCUIT MODELS

- VA-03 Binary Redirect Module (“Flip-Flop Circuit”)
- VA-011 Oscillator Module or Auto-Cycling of a Single-Acting Cylinder
- VA-08 Module for Single Input Clamp Control
- VA-012 Two-Hand, No-Tie-Down (THNTD) Circuit
- VA-034 Add-On Module Provides Back Pressure Latch Control
- VA-038 Two-Hand, No-Tie-Down Circuit with Latching Control
- VA-028 Auto-Cycling of Double-Acting Cylinder, 2 Valves
- VA-06 Auto-Cycling of Double-Acting Cylinder, 3 Valves
- VA-031 Back Pressure Sensing for Double-Acting Cylinder
- VA-033 Back Pressure Sensing with a Double-Acting Cylinder Using External Power Valve

For more information, schematics and drawings, visit [clippard.com/link/modular](http://clippard.com/link/modular)



### SPEEDY CIRCUIT ASSEMBLY

**You can have a faster, more dependable way to produce multiples of the same pneumatic circuit!**

Clippard's modular valve system enables speedy assembly while assuring accurate connections. By utilizing Clippard's unique manufacturing process, these clear acrylic subplates provide sealed passageways between valves without the need for gaskets, clamps, or piping. **It's the fastest, most efficient circuit system available!**



# MODULAR VALVES

## MOUNTING SUBPLATES & STRIPS



Acrylic subplates provide for up to three modular valves with various port options. Metallic plates mount to standard mounting strips.

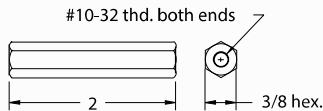
Part No.	Valves	Port(s)	Material	Length	Width	Height	Mounting
R-101	1	-	Metallic	1.625"	2.500"	0.375"	#10-32
R-111	1	-	Metallic	1.734"	1.734"	0.437"	#10-32
CM-04	1	#10-32	Acrylic	3.000"	3.000"	0.625"	(2) 0.196" dia.
CM-02	1	1/8" NPT	Acrylic	3.500"	3.000"	0.625"	(2) 0.196" dia.
CM-036	2	1/8" NPT	Acrylic	7.000"	3.000"	0.625"	(4) 0.196" dia.
CM-037	3	1/8" NPT	Acrylic	10.75"	3.000"	0.625"	(4) 0.196" dia.



### MOUNTING STRIPS & STANDOFF DIMENSIONS

For providing space beneath assembled group of modules, use R-106 (order R-107-20, packet of four with hardware). Provides 2" clearance from enclosure wall for piping with Clippard fittings and tubing. Keeps piping and installation neat.

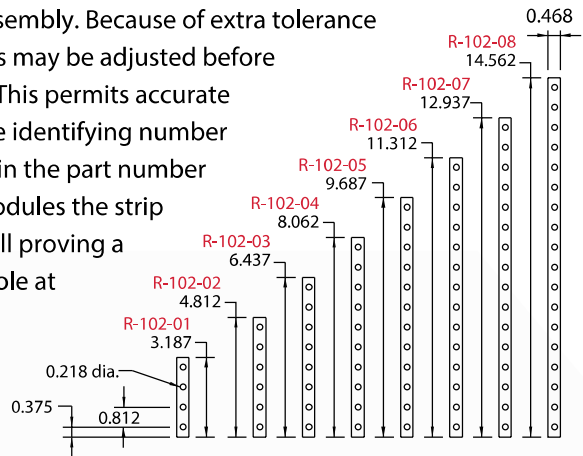
#### R-107-20



When metallic subplates are mounted to mounting strips, the components build into a strong, rigid assembly. Because of extra tolerance in the holes, note that strips may be adjusted before screws are fully tightened. This permits accurate alignment of subplates. The identifying number following the second dash in the part number indicates the number of modules the strip will accommodate while still proving a

short extension with one hole at both ends for using in mounting the assembly to stand-offs or other structures. The strip will accommodate one additional

module if no extensions for mounting are needed. (Every two holes will accept a subplate.)



### Adding Value is Our Business

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

Clippard has a unique advantage by providing custom products and value-added assemblies based on the most successful miniature pneumatic line in the world.



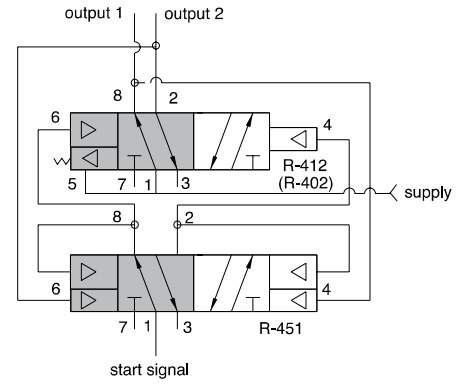
Clippard has designed and manufactured thousands of custom manifolds and assemblies based on specific customer requirements.

# MODULAR VALVES

## STANDARD CIRCUIT MODELS

### BINARY REDIRECT MODULE ("Flip-Flip" Circuit)

Input signal alternates outputs A and B, sometimes referred to as a push-on/push-off circuit. The circuit manifold combines the R-451 and R-412 in a binary redirect or flip-flop circuit. Use of the R-412 provides a "memory" function to return the output to known position (port 8 whenever air is first turned on to the circuit. This output pilots port 4 of the R-451, positioning it for the next signal. A signal input passes through the R-451, ports 1 to 2, and pilots port 4 of the R-412. The output of the R-412 shifts to port 2 and also pilots port 6 of the R-451. When the next signal input is received, it passes through the R-451, ports 1 to 8, and pilots port 6 of the R-412, shifting its output back to port 8.

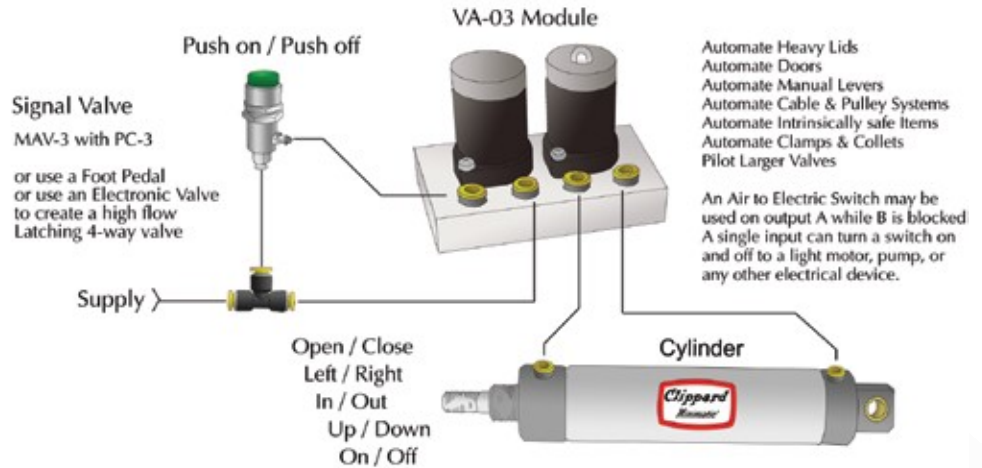


**Pressure Range** 40 to 150 psig

Part No.	Description
----------	-------------

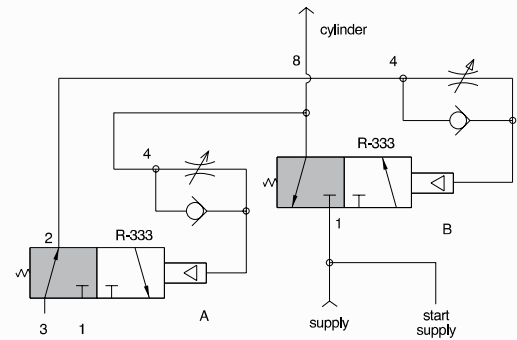
VA-03	Binary Redirect Module
-------	------------------------

*Circuit includes one R-451 valve, one R-412 valve, one CM-03-PQ circuit manifold, and fittings*



### OSCILLATOR / AUTO-CYCLING MODULE

The VA-011 module is designed to use an "on-off" toggle valve (or alternative input) for an oscillating output that can be used to actuate a single-acting cylinder. With no start input, the cylinder will remain in a retracted position. Turning on the start input signal causes each valve to shift upon the others output signal. The output "on time" can be adjusted for longer or shorter times, and the "off time" is also adjustable.



**Pressure Range** 40 to 150 psig

Part No.	Description
----------	-------------

VA-011	Oscillator or Auto-Cycling Module
--------	-----------------------------------

*Circuit includes two R-333 valves, one CM-011-PQ circuit manifold, fittings, and tubing*

# MODULAR VALVES

## STANDARD CIRCUIT MODELS

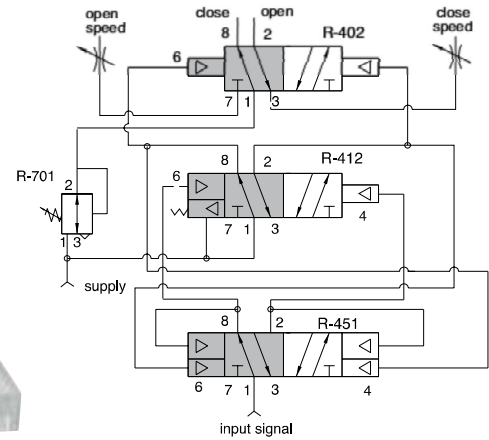
### MODULE FOR SINGLE INPUT CLAMP CONTROL

Uses a single input (from pneumatic foot pedal or button) to provide a simple and clean “open/close” clamp control with adjustable pressure and speed controls. “Auto-reset” feature ensures when supply is turned on, clamp will always go to the open position.

- Saves time and reduces cost and labor of piping
- Automates product tasks with easy-to-apply unit
- Provides binary push-button operation and built-in speed control
- Pressure regulation included
- May be operated remotely



Circuit includes one R-402 valve, one R-412 valve, one R-451 valve, one R-701 valve, one CM-08-PQ circuit manifold, one MNV-1KP valve, one pressure gauge, one noise muffler, fittings, and tubing.



Pressure Range 40 to 150 psig

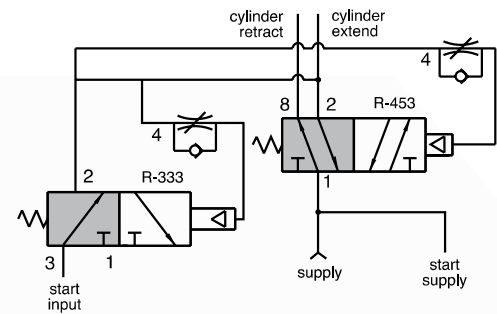
Part No.	Description
VA-08	Module Only
VA-08-FP	Module with Foot Pedal Actuator
VA-08-GN	Module with Green Palm Button

### AUTO-CYCLING OF A DOUBLE-ACTING CYLINDER



Circuit includes one R-333 valve, one R-453 valve, one TV-3S valve, one CM-028-PQ circuit manifold, fitting adapter, fittings and tubing

Similar to the VA-06, this is a more compact version designed for automatic cycling of double-acting cylinders without the use of limit valves or a magnetic sensor. This circuit enables a double-acting cylinder to reciprocate without the use of limit valves and to control its speed in each direction. The two R-333 and R-453 valves also incorporate adjustable delay features that will control the time between retract and extend cycles.



Pressure Range 40 to 150 psig

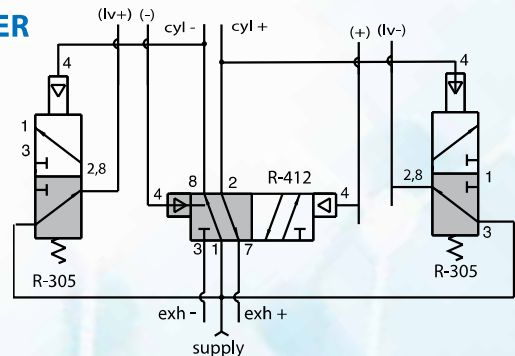
Part No.	Description
VA-028	Auto-Cycling Module

### BACK-PRESSURE SENSING FOR DOUBLE-ACTING CYLINDER



Circuit includes one R-333 valve, one R-453 valve, one TV-3S valve, one CM-028-PQ circuit manifold, fitting adapter, fittings, and tubing

Very versatile for controlling a double-acting cylinder without limits. The circuit uses back pressure to send a signal when the cylinder finishes moving. This module is ideal for integrating into a larger circuit with electronic valves or all pneumatic components.



Pressure Range 40 to 150 psig

Part No.	Description
VA-031	Back Pressure Sensing Module



# MODULAR VALVES

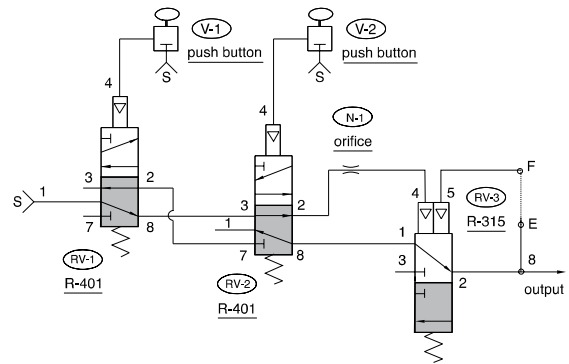
## STANDARD CIRCUIT MODELS

### TWO-HAND, NO-TIE-DOWN (THNTD) CIRCUIT

This module is a self-contained circuit board with all interconnections required to provide a Two-Hand, No-Tie-Down (THNTD) pneumatic circuit. The main function of this control is to require a machine operator to use both hands at the same time to actuate the equipment, helping to insure that the operator's hands are not in a position to be injured by the machine as it is in motion.

Enables simple, rapid installation of a pneumatic Two-Hand, No-Tie-Down pneumatic circuit

For more information, visit [clippard.com/link/thntd](http://clippard.com/link/thntd)



Absolutely no alterations or modifications should be made to this circuit or its components parts.

Pressure Range 50 to 120 psig

Part No.	Description
VA-023	THNTD Circuit, No Palm Buttons
VA-023-GN	THNTD Circuit with 2 Green Palm Buttons
VA-023-RD	THNTD Circuit with 2 Red Palm Buttons

Circuit includes one R-315 valve, two R-401 valves, one CM-023-PQ circuit manifold, fittings, and tubing



RV-3 is held open by supply air that passes through RV-1, RV-2 and N-1. When RV-1 is actuated alone, the pilot air for RV-3 flows back through the N-1 and RV-2 to atmosphere at RV-1, and RV-3 is closed by the spring. When RV-2 is actuated alone, the same sequence occurs except the pilot air from RV-3 exhausts to atmosphere via RV-2.

Restriction N-1 determines the time span during which both signals must be received in order to obtain the output. When RV-1 and RV-2 are actuated together, supply air is directed through RV-1, RV-2 and RV-3 to the output, providing a momentary output signal that is determined by N-1. If a maintained signal is required, a jumper between E and F maintains an output as long as the operator is depressing both palm buttons.

The indicator on RV-3 (R-315) must be down for an output to be obtained. If either RV-1 or RV-2 is actuated separately, their respective indicator will go up, but after approximately one second, the indicator on RV-3 (R-315) will go down showing that the valve has shifted and an output cannot be obtained. Circuit performance and sequence should be periodically observed to verify proper function.

#### LIMITED WARRANTY

When properly used, this equipment meets ANSI B11.1-1971 and OSHA 1910.217 safety standards for Two-Hand, No-Tie-Down controls. It is the buyer's sole responsibility to determine proper application, location installation, use and maintenance of this equipment. This equipment performs the function of a Two-Hand, No-Tie-Down control only. All other prescribed safety devices must be used with this equipment. Seller shall not be responsible for any failure to so comply which results from the application, installation, location, operation, use or maintenance of this equipment or from alteration of the equipment by persons other than the seller, or from design or instruction furnished by the buyer or his agents.

Sellers liability shall be limited to replacement or modification of the equipment to comply with OSHA standards or to refund the purchase price. Seller will be responsible for any fines, penalties or consequential damage. Clippard makes no other warranty of any kind, expressed or implied.

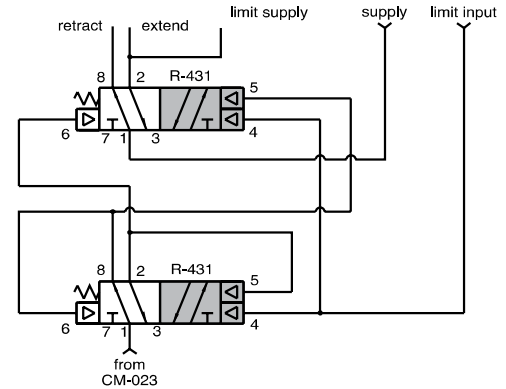
# MODULAR VALVES

## STANDARD CIRCUIT MODELS

### BACK PRESSURE LATCH CONTROL

The VA-034 module is for operation of a clamp or collet system where Two-Hand, No-Tie-Down (THNTD) input is required to be held continuously until the position desired (limit valve) is fully engaged. THNTD circuit is re-engaged to release the clamp mechanism.

Output of the CM-023 or VA-023 goes to the VA-034 module and begins to extend cylinder. The two palm buttons on the THNTD must remain actuated until the limit valve is actuated or unit will retract the cylinder. When the cylinder has depressed the limit valve, the unit locks the valve, and the cylinder continues to see pressure on the extend port. The unit is latched and buttons can now be released. A second input from the CM-023 or VA-023 (depressing both buttons) will now release the latch and retract the cylinder to the starting position as shown, and the circuit is ready for another operation.



**Pressure Range** 40 to 150 psig

Part No.	Description
VA-034	Back Pressure Latch Control for VA-023

*Circuit includes two R-431 valves, one CM-034-PQ circuit manifold, fittings, and tubing*

### TWO-HAND, NO-TIE-DOWN CIRCUIT WITH LATCHING CONTROL

The VA-038 module is for operation of a clamp or cylinder operation where Two-Hand, No-Tie-Down (THNTD) input is required to be held continuously until the position desired (limit valve) is fully engaged. The THNTD circuit releases the latch and returns the cylinder to the retracted position.

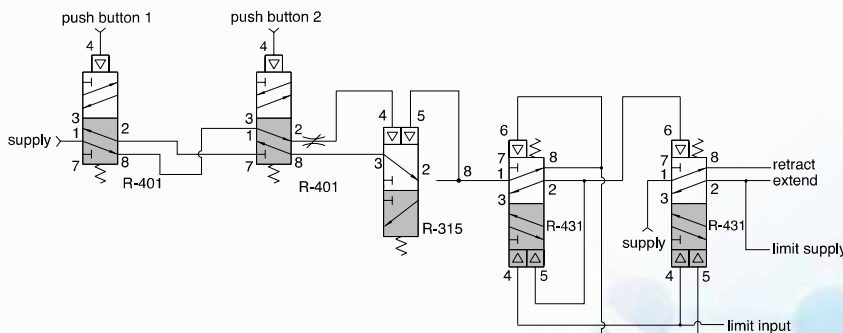
The two palm buttons on the THNTD must remain actuated until the limit valve is actuated, or the unit will retract the cylinder. When the cylinder has depressed the limit valve, the unit locks the valve, and the cylinder continues to see pressure on the extend port. The unit is latched, and buttons can now be released. A second input from depressing both buttons will now release the latch and retract the cylinder to the starting position as shown, and the circuit is ready for another operation.



**Pressure Range** 40 to 150 psig

Part No.	Description
VA-038	Module Only, No Palm Buttons
VA-038-GN	Module with 2 Green Palm Buttons
VA-038-RD	Module with 2 Red Palm Buttons

*Circuit includes two R-431 valves, two R-401 valves, one R-315 Valve, one CM-038-PQ circuit manifold, two palm buttons (as ordered), fittings, and tubing*





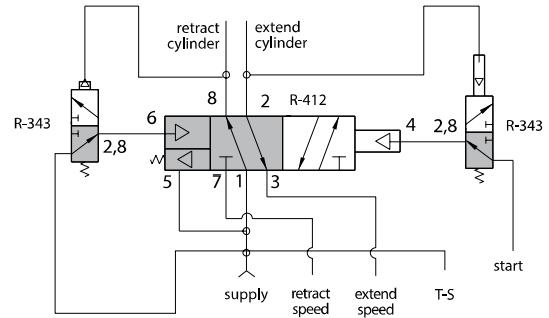
# MODULAR VALVES

## STANDARD CIRCUIT MODELS

### AUTO-CYCLING OF A DOUBLE-ACTING CYLINDER

The VA-06 module is designed to use an “on-off” toggle valve (or alternative input) for the cycling of a double-acting cylinder without the use of limit valves.

This circuit enables a double-acting cylinder to reciprocate without the use of limit valves and to control its speed in each direction. The two R-343 valves also incorporate adjustable delay features that will control the time between retract and extend cycles. With the miniature needle valves, the speed of the cylinder is also adjustable for your application.



**Pressure Range** 40 to 150 psig

Part No.	Description
VA-06	Auto-Cycling Module

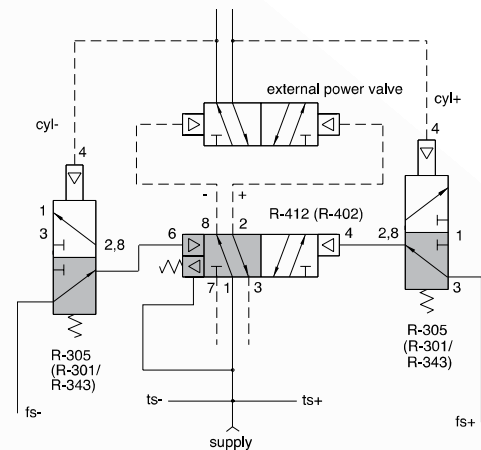
*Circuit includes two R-343 valves, one R-412 valve, one TV-3S valve, one MNV-1KP valve, one CM-06-PQ circuit manifold, mufflers, adapter, fittings, and tubing*

### BACK PRESSURE SENSING WITH A DOUBLE-ACTING CYLINDER USING EXTERNAL POWER VALVE

The VA-033 module is very similar to the VA-031 for controlling a double-acting cylinder without limits. The circuit uses back pressure to send a signal when the cylinder finishes moving. This module is designed to be used in conjunction with an external power valve.

This circuit enables feedback from the external valve outputs to signal back to the module ports (CYL+ and -) when back pressure is building. Utilizing ports TS and FS allows you to loop them back to the module’s inputs, and create an auto-cycling circuit using back pressure, as opposed to a timing signal (such as the VA-06 module). You can also choose to use the output to go to a manual button, pneumatic delay valve, electronic valve and PLC, or pneumatic sequencer (such as a R-932 circuit) and allow those options to signal back to the module to begin the next cycle.

For assistance with selecting or configuring Clippard pneumatic circuit modules for your application, call **877-245-6247**.



**Pressure Range** 40 to 150 psig

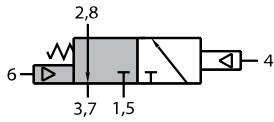
Part No.	Description
VA-033	Back Pressure Module

*Circuit includes two R-305 valves, one R-412 valve, one CM-033-PQ circuit manifold, fittings, and tubing*

# MODULAR VALVES

## 3-WAY PILOT VALVES

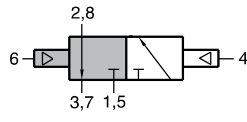
Normally-Closed, Normally-Open, Selector, Diverter



Normally-Closed shown

**R-301**

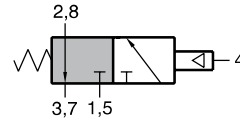
3-Way spring return, fully-ported



Normally-Closed shown

**R-302**

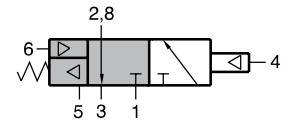
3-Way double pilot, fully-ported



Normally-Closed shown

**R-305**

3-Way, spring return, fully-ported with low pressure pilot



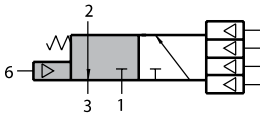
Normally-Closed shown

**R-310**

3-Way, fully-ported with special spring reset to return to preset position when pressure is lost

## 3-WAY PILOT VALVES

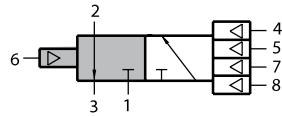
Normally-Closed, Normally-Open, Selector, Diverter



Normally-Closed shown

**R-311**

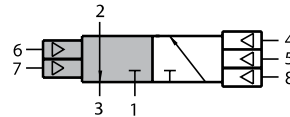
3-Way spring return, fully-ported with 4 pilots; any will actuate valve



Normally-Closed shown

**R-312**

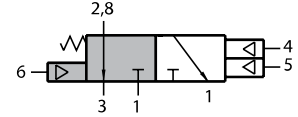
3-Way fully-ported with 1 pilot on side and 4 pilots on opposite side; any will actuate valve



Normally-Closed shown

**R-314**

3-Way, fully-ported with 2 pilots on side and 3 pilots on opposite side; any will actuate valve



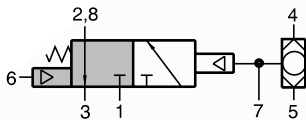
Normally-Closed shown

**R-315**

3-Way, spring return, fully-ported with 2 pilots, either will actuate valve, and aux. pilot on spring side

## 3-WAY COMBINATION VALVES

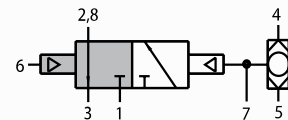
Normally-Closed, Normally-Open, Selector, Diverter



Normally-Closed shown

**R-321**

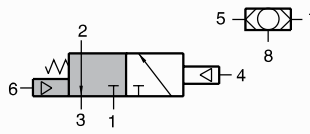
3-Way spring return, fully-ported with shuttle valve on the pilot



Normally-Closed shown

**R-322**

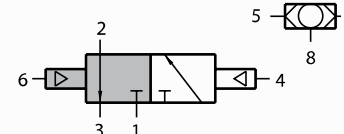
3-Way fully-ported with shuttle valve on 1 sides pilot



Normally-Closed shown

**R-323**

3-Way, spring return, fully-ported with independent shuttle valve in the same body



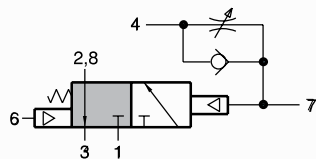
Normally-Closed shown

**R-324**

3-Way fully-ported with independent shuttle valve in body

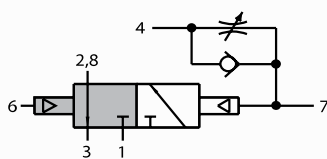
## 3-WAY 2-POSITION AIR PILOT DELAY VALVES

Normally-Closed, Normally-Open, Selector, Diverter



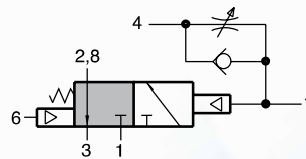
**R-331/333**

Delay "In" function will allow a signal at port 4 to delay through an adjustable flow control and delay the actuation of the valve



**R-332/334**

Delay "In" function will allow a signal at port 4 to delay through an adjustable flow control and delay the actuation of the valve. Pressure at port 6 will shift the valve back



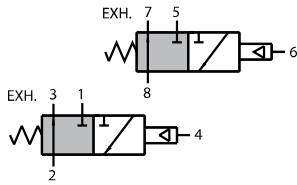
**R-341/343**

Delay out function will allow a signal at port 4 to shift the valve immediately. Loss of air at port 4 will delay the valve to shift to its original position



# MODULAR VALVES

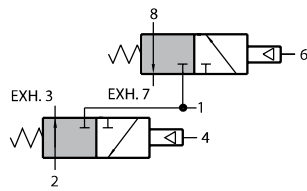
## 3-WAY SPECIALTY VALVES



**Normally-Closed Double**

**R-351**

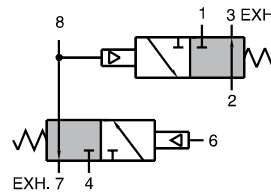
Combination of two independent 3-Way, Normally-Closed, 2-position spring return valves



**Normally-Closed Double with Common Supply**

**R-352**

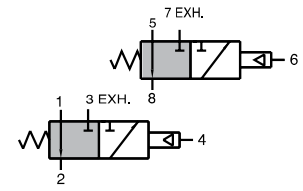
Combination of two independent 3-Way, Normally-Closed, 2-position, spring return valves with a common supply port for convenience



**Normally-Closed Double "AND" Valve**

**R-353**

Combination of two 3-Way, Normally-Closed, 2-position spring return valves that make up a 3-input "AND" subcircuit

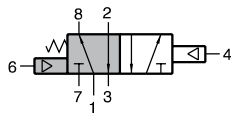


**Normally-Open Double**

**R-355**

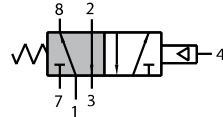
Combination of two independent 3-Way, Normally-Open, 2-position spring return valves

## 4-WAY SINGLE PILOT VALVES



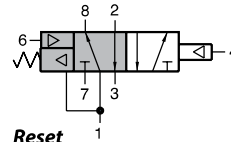
**R-401/R-402**

4-Way, fully-ported, 2-position. R-401 is a spring return valve



**R-405**

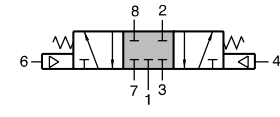
4-Way, spring return, fully-ported with low pressure pilot



**Reset**

**R-412**

4-Way fully-ported, 2-position double air-pilot valve with a return to home when supply air is exhausted

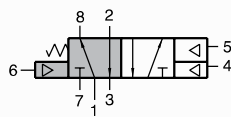


**3-Position**

**R-421**

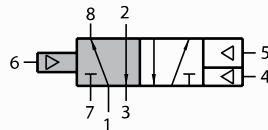
4-Way fully-ported 3-position spring to center valve

## 4-WAY MULTI-PILOT VALVES



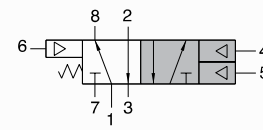
**R-431**

5-ported, 4-Way spring return, dual pilot. Indicator shows valve in shaded position.



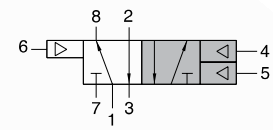
**R-432**

5-ported, 4-Way dual pilot. Indicator shows valve in shaded position.



**R-433**

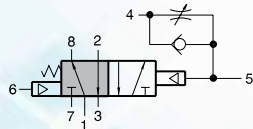
5-ported, 4-Way spring return, dual pilot. Indicator shows valve in shaded position.



**R-434**

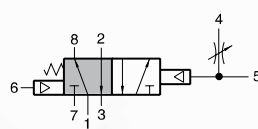
5-ported, 4-Way dual pilot. Indicator shows valve in shaded position.

## 4-WAY DELAY PILOT VALVES



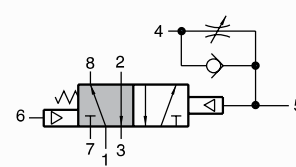
**R-443**

4-Way spring return, fully-ported with adjustable flow control. Metered "Out" on pilot



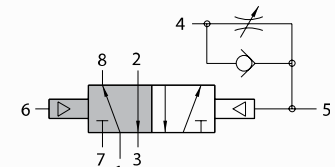
**R-445**

4-Way spring return, fully-ported with adjustable needle valve connected to pilot



**R-453**

4-Way spring return, fully-ported with adjustable flow control. Metered "In" on pilot



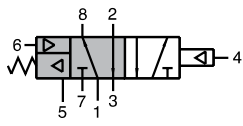
**R-454**

4-Way fully-ported with adjustable flow control. Metered "In" on pilot



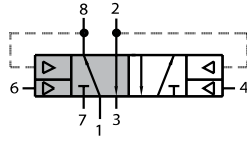
# MODULAR VALVES

## 4-WAY SPECIALTY VALVES



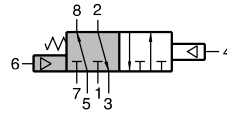
### R-410

4-Way, fully-ported with special spring reset to return to preset position when pressure is lost



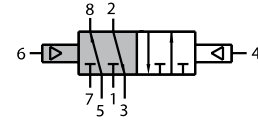
### R-451

4-Way for use with R-402/R-412 in "Flip-Flop" circuit



### R-461

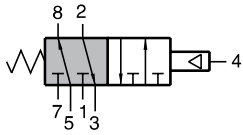
4-Way spring return, 6-ported



### R-462

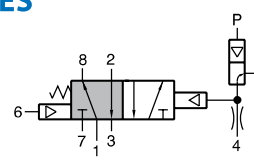
4-Way, 6-ported

## 4-WAY SPECIALTY VALVES



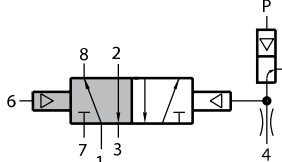
### R-465

4-Way spring return, 6-ported with low pressure pilot



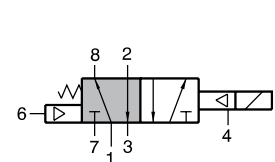
### R-471

4-Way spring return, fully-ported with amplified pilot



### R-472

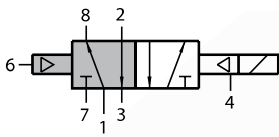
4-Way fully-ported with amplified pilot



### R-481

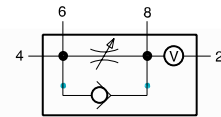
4-Way spring return, fully-ported, piloted by Clippard ET-3 valve

## SPECIALTY VALVES



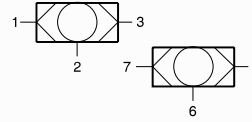
### R-482

4-Way, fully ported, piloted by Clippard ET-3 electronic valve



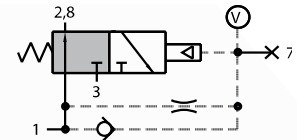
### R-501 (shown)/502

Flow control valves. R-501, Delay in, R-502, Delay out



### R-602 (shown)/603

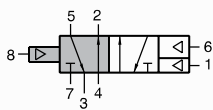
Dual shuttle valves. R-603, 3 input "OR"



### R-711

Pulse valve, Normally-Open

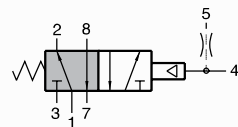
## SEQUENCE VALVE



### R-932

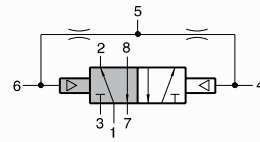
Sequence valve

## 4-WAY BLEED PILOT



### R-441

4-Way spring return, fully-ported with bleed pilot for low force sensors



### R-442

4-Way, fully-ported with bleed pilots for low force sensors

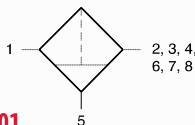
## SUBPLATE CONNECTOR



### R-811

Connector to subplate R-101, R-111 and manifolds

## FILTER MODULE



### R-801

Filter Module, 25 micron

## VOLUME CHAMBER



### R-821

Volume Chamber, 1.2 cubic inch