

VTA Series Pneumatic Three Way Air Switching Valves

The VTA Series Three Way Air Switching Valves are designed to switch the flow of air from one supply pressure to another in dual supply pressure control systems.



**Figure 1: VTA Series
Three Way Air Switching Valve**

Features and Benefits	
☐ Available with a Choice of Various Factory Installed Adaptor Fittings	Shortens the installation time as each valve arrives on the jobsite already equipped with appropriate fittings for the application
☐ High Volume Output Rated for 125 psig Systems	Results in a universal air switching valve, utilizing the power of the V-3000 Actuator to accommodate even the most demanding supply changeover requirements
☐ Rugged Cast Brass Body with Corrosion Resistant Mounting Bracket	Provides for sturdy mounting and piping of the valve, allowing for vibration and corrosion-free operation
☐ Documented Flow Characteristics and Cross-referencing	Simplifies product application and selection for new installations or existing product changeout

Product Overview

All VTA Series Three Way Air Switching Valves come equipped with a factory mounted V-3000 Series Exposed Pneumatic Actuator, and are available with or without a variety of factory installed adaptor fitting configurations (as noted in Table 1). The VTA Valve is also furnished with a split-clamp bracket for surface mounting in an upright position.

The V-3000 Series Actuator features a die cast aluminum housing and a molded, synthetic rubber diaphragm design. This molded diaphragm provides a constant effective area throughout the valve stem stroke. The actuator can be easily removed or repositioned by loosening a single set screw without disturbing the remainder of the valve assembly.

The cast brass valve body complies with ANSI and ISA Standards, providing certifiable control valve accuracy and performance. The valve body features an integral seat and a molded composition disc that provides tight shutoff. An arrow is cast into the valve body indicating the direction of flow for proper piping.

Note: Refer to *Specifications* for limits and factory settings, as well as other air valve specification information.

Operation

When the control air pressure in the V-3000 Series Actuator exceeds the switchover point of 13 psig (91 kPa), the valve stem and plug assembly is forced down, opening the N.C. (Normally Closed) port and closing the N.O. (Normally Open) port (as illustrated in Figure 2). When the control pressure in the V-3000 Series Actuator nears 0 psig (0 kPa), the spring allows the stem and plug assembly to return to its normal position, opening the N.O. port and closing the N.C. port.

Table 1: Ordering Data

Adaptor Fitting Configuration (All Three Ports)	Valve Shipping Weight, lb*	Code Number VTA- ☐ M047-314
Barbed Adaptors for 1/2 in. O.D. Polytubing	4.3	VTA- ☐ M047-314
Barbed Adaptors for 3/8 in. O.D. Polytubing	4.3	VTA- ☐ M047-314
Compression Adaptors for 1/2 in. O.D. Polytubing** or Copper Tubing	4.3	VTA- ☐ M047-314
1/2 in. Internal NPT on All Ports (No Fittings Installed)	3.8	VTA- ☐ M047-314

* lb x 0.454 = kg.

** A plastic ferrule (F-1000-11, ordered separately) and a metal insert (F-1000-8, ordered separately) will be required at all three compression adaptor connections when using polytubing.

Table 2: Cross-Reference Table

Adaptor Fitting Configuration (All Three Ports)	Barbed Adaptors for 1/2 in. O.D. Polytubing	Barbed Adaptors for 3/8 in. O.D. Polytubing	Compression Adaptors for 1/2 in. O.D. Polytubing or Copper Tubing	1/2 in. Internal NPT on All Ports (No Fittings Installed)
Johnson Controls VTA- ☐ M047-314	VTA- ☐ M047-314	VTA- ☐ M047-314	VTA- ☐ M047-314	VTA- ☐ M047-314
Honeywell®	--	-	--	V0519C1* VP519C1006*
Landis & Gyr Powers	--	--	VP 656-0009** VP 657-8018**	VP 657-7680* VP 658-0026* VP 658-0027*
Robertshaw® (Uni-Line)	--	--	--	AL-161-4 (2556-001)* V6000-01310 (2560-001)* V6090-10 (VP2560-001)* V6600-04301 (2566-001)* V6600-04302 (2566-002)* V6600-04306 (2566-003)* V6600-04307 (2566-004)* V6600-04309 (2566-005)*
Barber-Colman	--	--	--	AL-161-4*
Discontinued Johnson Controls	V-6139-1	V-6139-2	--	V-129-1* V-6133-1** V-6141-14* V-6143-1**

* To ensure similar flow capacities, it is recommended that the existing adaptor fittings be reused with the replacement VTA Series Three Way Air Switching Valve.

** Changeout will require piping modifications.

Table 3: Nominal Flow Capabilities scim/(mL/s)

VTA Series Valve	15 psig (105 kPa) Supply Pressure				20 psig (140 kPa) Supply Pressure				30 psig (210 kPa) Supply Pressure			
	Pressure Drop in psi				Pressure Drop in psi				Pressure Drop in psi			
	0.125	0.250	0.500	1.00	0.125	0.250	0.500	1.00	0.125	0.250	0.500	1.00
With 1/2 in. Barbed Fittings	7.000 (1911)	10.000 (2730)	13.500 (3686)	16.500 (4505)	7.500 (2048)	11.000 (3003)	15.000 (4095)	18.500 (5051)	7.500 (2048)	12.000 (3276)	17.000 (4641)	21.500 (5870)
With 3/8 in. Barbed Fittings	4.000 (1092)	4.500 (1229)	6.500 (1775)	8.000 (2184)	4.000 (1092)	5.500 (1365)	6.500 (1775)	8.000 (2184)	4.000 (1092)	5.000 (1365)	7.000 (1911)	9.500 (2594)
With 1/2 in. Compression Fittings	8.5000 (2321)	9.500 (2594)	14.500 (3979)	21.000 (5733)	9.000 (2457)	12.000 (3276)	17.000 (4641)	22.500 (6143)	10.500 (2867)	15.000 (4095)	21.000 (5733)	25.500 (6962)
1/2 in. NPT on All Ports	7.500 (2048)	9.500 (2594)	13.500 (3686)	19.500 (5324)	9.000 (2457)	12.000 (3276)	17.000 (4641)	22.500 (6143)	9.000 (2457)	13.500 (3686)	19.500 (5324)	24.000 (6552)

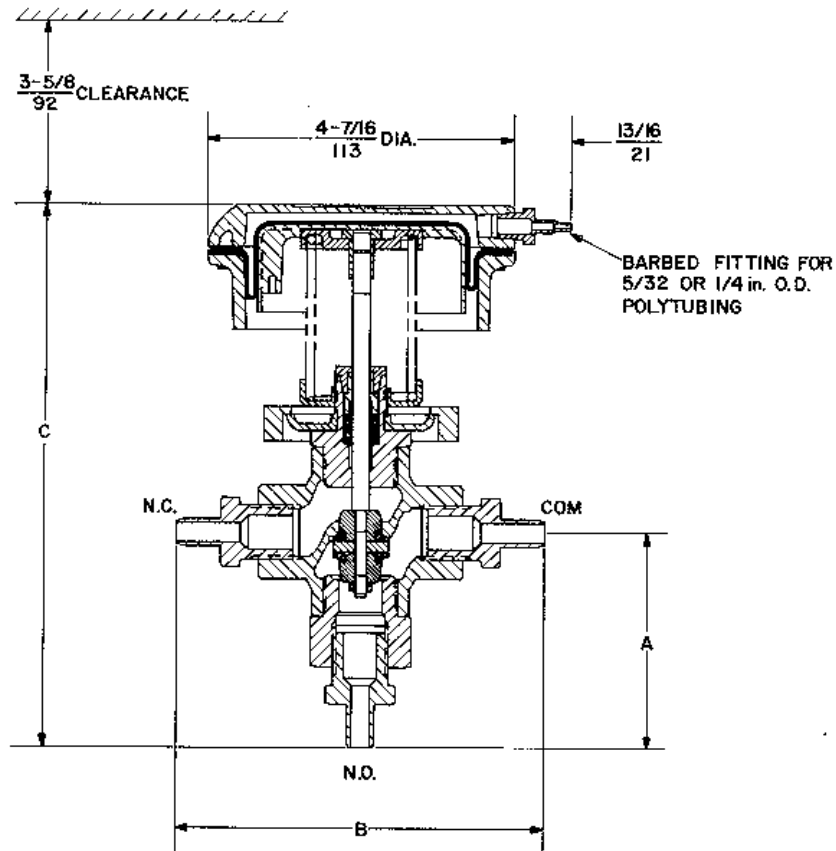


Table 4: VTA Series Air Switching Valve Dimensions

Code Number VTA-  M047-314	Adaptor Fitting Configuration (All Three Ports)	Dimensions $\frac{\text{in.}}{\text{mm}}$		
		A	B	C
VTA-  M047-314	Barbed Adaptors for 1/2 in. O.D. Poly tubing	$\frac{4-7/8}{124}$	$\frac{2-29/32}{74}$	$\frac{9-19/32}{244}$
VTA-  M047-314	Barbed Adaptors for 3/8 in. O.D. Poly tubing	$\frac{4-27/32}{123}$	$\frac{2-7/8}{73}$	$\frac{9-9/16}{243}$
VTA-  M047-314	Compression Adaptors for 1/2 in. O.D. Poly tubing or Copper Tubing	$\frac{5-7/16}{138}$	$\frac{3-3/16}{81}$	$\frac{10-5/32}{258}$
VTA-  M047-314	1/2 in. Internal NPT on All Ports (No Fittings Installed)	$\frac{3-1/32}{77}$	$\frac{1-31/32}{50}$	$\frac{7-3/4}{197}$

Installation

The VTA Series Three Way Air Switching Valve is furnished with a split-clamp bracket for surface mounting in an upright position.

To mount the valve, refer to Figure 2 and proceed as follows:

1. Choose a suitable mounting location which would allow sufficient clearance for actuator removal.
2. Using the mounting bracket provided as a template, mark the two mounting hole locations on the surface.
3. For drywall or concrete mounting surfaces, drill a 3/16 in. (5 mm) hole at each of the marked locations. An F-1000-328 Anchor Kit (includes 100 screws, 100 anchors, and a drill bit for concrete surfaces) must be ordered separately to make the installation.

For all other mounting surfaces, drill a pilot hole at each of the marked locations for No. 10 or 12 thread-forming screws (field furnished).

4. Secure the bracket to the surface.
5. Install the valve into the mounting bracket, securing the bracket around the valve body just above the N.O. connection (as illustrated in Figure 1).

6. Make the appropriate air connections to the valve, ensuring that the valve is piped with the flows in the directions indicated by the arrows cast into the valve body.
7. Attach the control air line to the barbed fitting on the actuator to complete the installation.



WARNING: When servicing the actuator and valve assembly, the control air line must be removed first. Failure to do so may result in personal injury.

Application and Drawing Identification

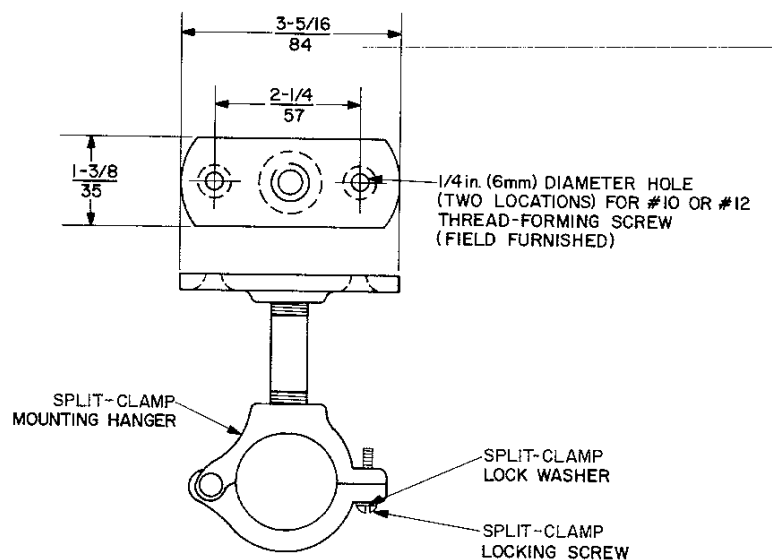
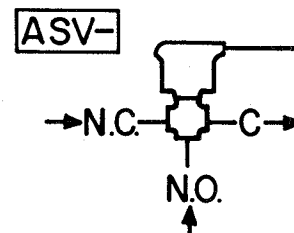
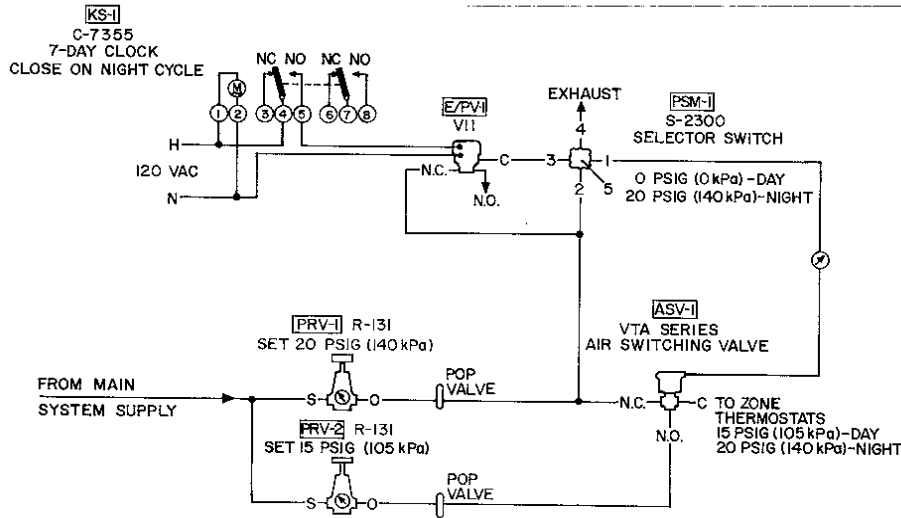
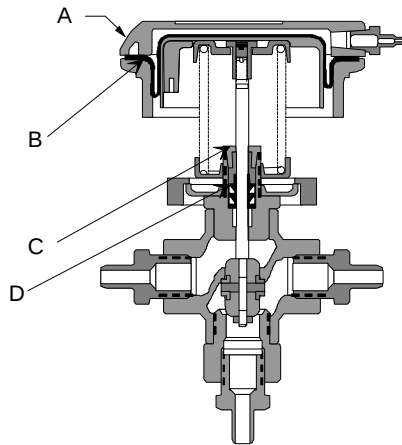


Figure 3: Mounting Bracket Dimensions $\frac{\text{in.}}{\text{mm}}$



**Figure 4: Typical Application
Using VTA Series Three Way Air Switching Valve**



**Figure 5: VTA Series Three Way Air Switching Valve
Accessories and Maintenance Parts (See Table 5.)**

Table 5: Accessories and Maintenance Parts

Item	Description	Shipping Weight lb*	Code Number
A	Actuator Complete	1.2	V-3000-1
B	Diaphragm	0.08	V-3000-600
C	Packing Nut	0.06	V-9999-649
D	Ring Pack Packing Kits: Single-Pack	0.08	V-9999-608
	Ten-Pack (Contains Enough Materials to Repack Ten Valves)	0.3	V-9999-610
	Actuator Set Screw (Not Shown)	0.01	V-3100-643
	Replacement Mounting Bracket (As Illustrated in Figure 3)	0.5	V-9999-644

* lb x 0.454 = kg

Notes

Specifications

Product		VTA Series Pneumatic Three Way Air Switching Valves*
Models and Ordering Data		See Table 1.
Nominal Spring Range		9 to 13 psig (63 to 91 kPa)
Switchover		With Control Pressure Change of 0/15 psig (0/105 kPa) or 0/20 psig (0/140 kPa)
Switchover Point		Approximately 13 psig (91 kPa)
Valve Body Pressure/Temperature Rating		Meets Requirements of ANSI B16.15, Class 250
Maximum Input Pressure	Valve	125 psig (875 kPa)
	Actuator	30 psig (210 kPa); air supply must be clean, dry, and oil-free.
Nominal Flow Capacities		See Table 3.
Adaptor Fitting Configurations		See Table 1.
Control Signal Air Connection		1/8 in. External NPT Barbed Fitting for 5/32 or 1/4 in. O.D. Poly tubing
Effective Diaphragm Area		8 sq. in. (5160 sq. mm)
Normal Position	Upper Port	Closed--Control Signal Opens
	Lower Port	Open--Control Signal Closes
Ambient Temperature Limits		-10 to 150°F (-23 to 66°C)
Materials	Trim	Bonnet Brass
		Stem 316 Stainless Steel
		Plug Brass with Molded Composition Disc
	Body Cast Brass with Integral Seat	
	Packing EPT (Ethylene Propylene Terpolymer) Ring Packs	
	Actuator Die Cast Aluminum	

* Replaces V-6139.

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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