

Type 122A Three-Way Switching Valve

Introduction

The Type 122A valve (see Figure 1) is a high-capacity, economical three-way pneumatic switching valve for on-off applications. This valve can be used for diverging or converging gaseous service, diverging liquid service with gas-loaded liquids, and converging liquid service. Six spring ranges are available for control pressures from 3 to 150 psig (0,21 to 10,3 bar).

Features

- **Convenient Installation**—Compact construction permits easy handling and installation.
- **Easy Leak Detection**—Vent hole between body and actuator stem seals allows rapid detection of body or actuator leakage.
- **Easy Maintenance**—With the bottom piping disconnected, the valve can be completely disassembled without removing it from the line.

Principle of Operation

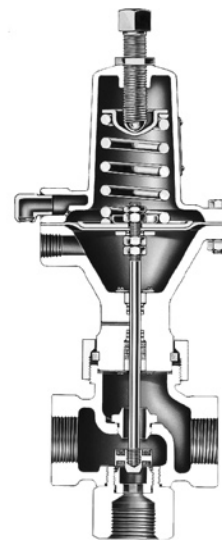
Refer to Figure 2. The flow through the Type 122A valve is normally from connection A to C, with the spring force holding the valve plug down on the connection B seat ring (diverging service).

As the pressure under the diaphragm is increased through control connection D, it acts against the force of the spring. When the control pressure overcomes the force of the spring, the valve begins to stroke, uncovering the connection B seat ring. As the pressure under the diaphragm increases to the set point, the valve completes its stroke and the connection C seat ring is covered.



W3141-1*

Figure 1. Type 122A Three-Way Switching Valve



W0157

Figure 2. Sectional of Type 122A Valve

Bulletin 71.7:122A

Specifications

Body Sizes and End Connection Styles

Connections A and C: Available in 3/4 or 1-inch body sizes with NPT end connections

Connection B: 3/4-inch NPT

Maximum Inlet Pressure

150 psig (10,3 bar)

Spring Ranges

See Table 1

Maximum Control Pressure to Diaphragm

150 psig (10,3 bar)

Material Temperature Capabilities

-20° to 150°F (-29° to 66°C)

Construction Materials

Valve Body: Cast iron

Bottom Connector: Steel

Spring Case: Aluminum

Lower Diaphragm Case: Cast iron

Disk and Disk Holder Assembly: Nitrile (NBR) and Aluminum or Nitrile (NBR) and Stainless steel

Seat Rings: Aluminum or Stainless steel

Diaphragm: Neoprene (CR)

Gasket: Asbestos

O-Rings: Nitrile (NBR)

Stem Washers: Neoprene (CR) and felt

Spring: Plated steel

Flow Coefficients

C_g⁽¹⁾

Connection A to B: 138

Connection A to C: 131

C₁

Connection A to B: 28.0

Connection A to C: 32.5

Control Connection

1/4-inch NPT female

Vent Connection

1/4-inch NPT female with screen

Approximate Weight

5 pounds (2 kg)

1. At an inlet pressure of 25 psig (1,7 bar) and with full pressure drop across the body.

Table 1. Spring Selections

SPRING RANGE		DIAPHRAGM PRESSURE CHANGE REQUIRED FOR FULL STROKE		SPRING PART NUMBER	SPRING COLOR CODE
Psig	bar	Psig	bar		
3 to 15	0,21 to 1,0	10	0,69	1D892327022	Red
5 to 20	0,34 to 1,4	13,5	0,9	1D751527022	Cadmium
5 to 35	0,34 to 2,4	22	1,5	1D665927022	Blue
30 to 60	2,1 to 4,1	30	2,1	1D7455T0012	Green
40 to 100	2,8 to 6,9	54	3,7	1E543627142	Yellow
60 to 150	4,1 to 10,3	66	4,6	1P901327142	Brown

The point at which the valve completes its stroke and the pressure change necessary to do this are dependent on the spring rate and the set point chosen. The set point is easily changed by adjusting the screw at the top of the valve.

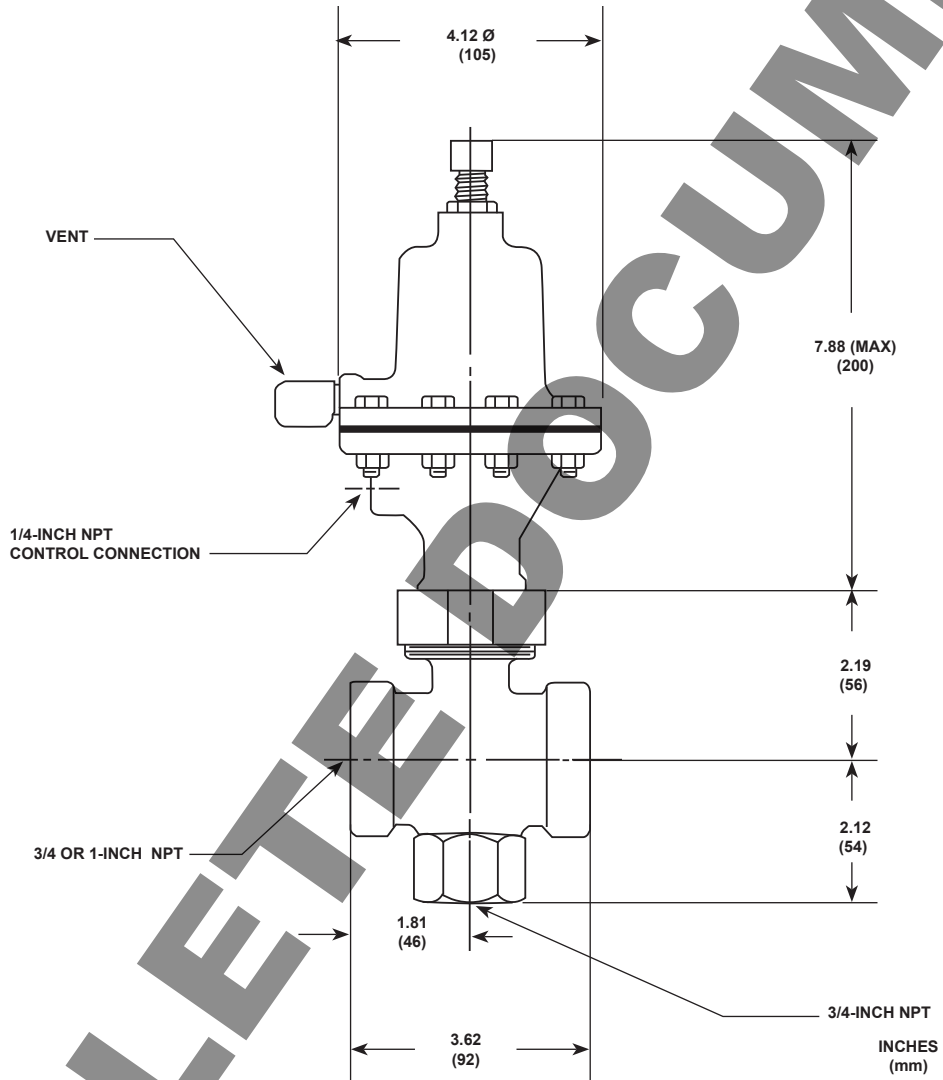
Installation

The Type 122A valve may be installed in any position. Be certain the spring case vent opening is pointing down and is protected against the entrance of the

moisture and any other material that may plug the vent. The Type 122A valve should not be used in installations where water hammer can be experienced. Dimensions are shown in Figure 3.

Ordering Information

Refer to the Specifications section. Review the description to the right of each specification and in the referenced table and specify the desired choice wherever there is a selection to be made. Also be sure to specify the desired set point.



AR1545-A
A1164-1

Figure 3. Dimensions

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