

April 2009

# Type 122A Three-Way Switching Valve

## Introduction

### Scope of the Manual

This instruction manual includes installation, adjustment, maintenance, and parts information for the Type 122A three-way switching valve.

### Description

The Type 122A valve (Figure 1) is a three-way switching valve used for on-off applications.

Refer to Figure 2. In operation, the spring (key 3) holds the disk (key 22) against the seat ring at connection B (key 37), and flow is from connection A to C (diverging service). Control pressure registers under the diaphragm (key 9) through connection D. When the force of the control pressure exceeds the force of the spring, the valve disk begins to stroke away from the connection B seat ring toward the connection C seat ring. After the valve has stroked completely, connection C is shutoff, and flow is from connection A to connection B.

### Specifications

Specifications for the Type 122A valve are shown in page 2.

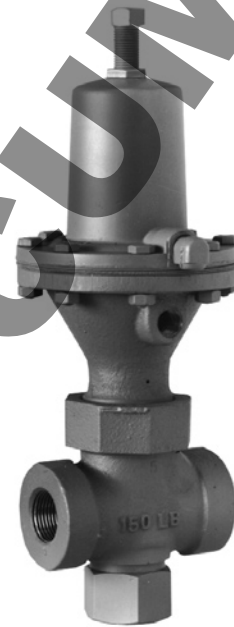
### Installation



#### WARNING

To avoid personal injury or equipment damage caused by bursting of pressure-retaining parts or explosion of accumulated gas, do not exceed the pressure or temperature limits in specifications, and do not use the Type 122A valve for installations where water hammer can be experienced.

1. The switching valve may be installed in any position. Position the vent (key 29, Figure 2) so that the vent opening is facing downward. Protect the vent opening against the entrance of moisture or any other material that could plug the vent.
2. Apply pipe compound to male pipeline threads. Connect piping to the body connections.
3. Connect the control pressure line to the 1/4 NPT connection in the lower diaphragm case.



W3141-1

Figure 1. Type 122A Three-Way Switching Valve

# Type 122A

## Specifications

### Maximum Inlet Pressure

150 psig (10,3 bar)

### Spring Ranges

See Table 1

### Maximum Control Pressure to Diaphragm

150 psig (10,3 bar)

### Temperature Capabilities

-20° to 150°F (-29° to 66°C)

### Control Connection

1/4 NPT female

### Approximate Weight

5 pounds (2 kg)

Table 1. Spring Selection

SPRING RANGE		DIAPHRAGM PRESSURE CHANGE REQUIRED FOR FULL STROKE		SPRING WIRE DIAMETER		SPRING FREE LENGTH		SPRING PART NUMBER	SPRING COLOR CODE
Psig	bar	Psi	bar	Inches	mm	Inches	mm		
3 to 15	0,21 to 1,0	10	0,69	0.168	4,27	2.94	74,6	1D892327022	Red Cadmium Blue
5 to 20	0,35 to 1,4	13,5	0,93	0.187	4,75	2.81	71,4	1D751527022	
5 to 35	0,35 to 2,4	22	1,5	0.218	5,54	2.50	63,5	1D665927022	
30 to 60	2,1 to 4,1	30	2,1	0.234	5,94	2.57	65,2	1D7455T0012	Green Yellow Brown
40 to 100	2,8 to 6,9	54	3,7	0.283	7,19	2.31	58,7	1E543627142	
60 to 150	4,1 to 10,3	66	4,6	0.240	6,10	2.63	66,8	1P901327142	

## Adjustment

Refer to the nameplate (key 25, Figure 2) for the spring range. To change the spring setting, loosen the locknut (key 30, Figure 2), and rotate the adjusting screw (key 7, Figure 2). Rotating the adjusting screw clockwise into the spring case (key 1, Figure 2) increases the control pressure at which the valve switches. Rotating the adjusting screw counterclockwise decreases the switching pressure.

## Maintenance

Parts are subject to normal wear and must be inspected and replaced periodically. The frequency of parts inspection and replacement depends upon the severity of service conditions.

Instructions are given below for complete disassembly and assembly. Disassemble the valve only as far as needed. Then, begin the "Assembly" procedure at the appropriate step.

Key numbers used in these procedures are shown in Figure 2.



### WARNING

To avoid personal injury and equipment damage caused by sudden release

of process pressure or uncontrolled process fluid, isolate the valve from all pressure, and release all pressure from the valve body and diaphragm casing before attempting maintenance.

## Disassembly

1. Loosen the locknut (key 30). Rotate the adjusting screw (key 7) counterclockwise until all compression has been relieved from the spring (key 3).
2. Disconnect piping from the bottom connector (key 36). Unscrew and remove the bottom connector.
3. To remove the lower seat ring (key 37), insert a hexagonal bar into the seat ring hole, and use the bar to unscrew the seat ring. The hexagonal hole in the seat ring is 7/16-inch (11 mm) across the flats.
4. Unscrew and remove the spring case cap screws and nuts (keys 26 and 4). Remove the spring case, upper spring seat, and spring (keys 1, 31, and 3).
5. Unscrew the hex nuts (key 4) from the stem (key 5). Remove the spring guide, diaphragm head, diaphragm, O-ring, back-up ring, and washer (keys 6, 8, 9, 12, 13, and 10).
6. Unscrew the remaining hex nuts from the stem, and pull the disk holder assembly (key 22) and attached stem out through the bottom opening.

7. Remove the disk holder from the stem.
8. Disconnect the control line from the diaphragm case (key 2). Unscrew the union nut (key 19), and remove the diaphragm case, snap ring (key 20), and body gasket (key 21) from the body (key 23).
9. Unscrew the self-tapping screws (key 16) from each end of the diaphragm case. Remove the washers and guide bushings (keys 14 and 15).
10. Remove the O-ring and back-up rings (keys 12 and 13) from the diaphragm end of the diaphragm case, and remove the felt washers, flat washer, O-ring, and back-up rings (keys 18, 17, 12, and 13) from the valve end of the diaphragm casing.
11. Use a thin-wall socket wrench to remove the upper seat ring (key 24).

## Assembly

1. Screw the upper seat ring (key 24) into the body (key 23).
2. Install the back-up rings and O-rings (keys 13 and 12) into each end of the diaphragm case (key 2).
3. Install the washer (key 17) and three felt washers (key 18) into the valve end of the diaphragm case. Replace the guide bushings (key 15) in each end of the diaphragm casing. Carefully insert the stem (key 5) through the diaphragm casing to be sure the parts are aligned. Attach the washers (key 14) with self-tapping screws (key 16). Remove the stem.
4. Replace the body gasket and snap ring (keys 21 and 20). Secure the diaphragm case to the body with the union nut (key 19).
5. Coat the threads on the valve end of the stem with Loctite<sup>†</sup> 271 or equivalent sealant. Attach the disk holder assembly (key 22) to the stem. Carefully install the stem through the opening of the body.
6. Screw two hex lock nuts onto the stem. Install the back-up ring, washer, O-ring, diaphragm, diaphragm head, and spring guide (keys 13, 10, 12, 9, 8, and 6). Secure with two hex lock nuts (key 4).
7. Set the spring and spring seat (keys 3 and 31) onto the spring guide. Attach the spring case with cap screws in a crisscross pattern.

8. Screw the lower seat ring (key 37) into the bottom connector (key 36). Install the bottom connector into the body.
9. Re-connect piping to the bottom connector and to the control connection in the diaphragm casing.
10. Adjust the spring by following the "Adjustment" instructions.

## Parts Ordering

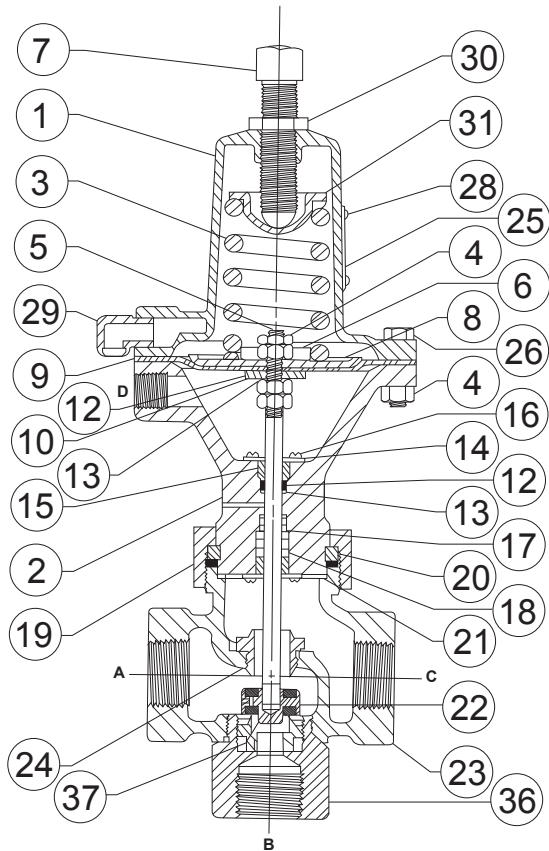
When corresponding with your local Sales Office about this valve, mention the serial number and all other data stamped on the nameplate. When ordering replacement parts, also state the complete 11-character part number of each part required as found in the following parts list.

## Parts List

Key	Description	Part Number
1	Spring Case, Aluminum	2P901508012
2	Lower Diaphragm Case, Cast iron	2L918419012
3	Spring	See Table 1
4	Hex Nut, Plated steel (12 required)	1A3915X0022
5	Stem, 316 SST	1R177435162
6	Spring Guide, Plated steel	1D666625072
7	Adjusting Screw, Plated steel	1D995448702
8	Diaphragm Plate, Plated steel	1D666428982
9*	Diaphragm, Neoprene (CR)	1D666302102
10	Washer, Plated steel	1D716228982
12*	O-Ring, Nitrile (NBR) (3 required)	1E472706992
13*	Back-up Ring, Leather (5 required)	1K786806992
14	Retaining Washer, SST (2 required)	1K786935022
15	Guide Bushing, Iron (2 required)	1K787021052
16	Self-Tapping Screw, Plated steel (4 required)	1J336928982
17	Washer, SST	1K787135022
18*	Washer, Neoprene (CR)/Felt (3 required)	1K787206992
19	Union Nut, Malleable iron	1E471119062
20	Snap Ring, Plated steel	1A832648722
21	Body Gasket, Asbestos	1A832504032
22*	Disk Holder Assembly Aluminum/Nitrile (NBR) SST/Nitrile (NBR)	1R1772000A2 1R1772X00A2
23	Body, Cast iron 3/4 NPT 1 NPT	1D312419012 1D312519012

<sup>†</sup> Trademark of Loctite Corp.  
\*Recommended Spare Parts

# Type 122A



Key	Description	Part Number
24*	Upper Valve Seat Aluminum SST	1B810309012 1B8103X0012
25	Nameplate, Aluminum	1E240111992
26	Cap Screw, Plated steel (8 required)	1B720924052
28	Drive Screw, Plated steel (4 required)	1E501728982
29	Vent Assembly	EMY602X1-A12
30	Locknut, Zinc-plated steel	1D667728982
31	Upper Spring Seat, Plated steel	1D667125072
36	Bottom Flange, Plated steel	1R177524092
37*	Lower Valve Seat Aluminum SST	1R177309012 1R1773X00A2

\*Recommended Spare Parts

20A9801-A  
A2606

Figure 2. Type 122A Three-Way Switching Valve

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