168, 168H and 68 Series

English – December 2008

Introduction

This installation guide provides instructions for installation, startup and adjustment. To receive a copy of the instruction manual, contact your local Sales Office or view a copy at www.fisher.com. For further information refer to: 168, 168H and 68 Series Instruction Manual, D100275X012.

PED Categories

This product may be used as a safety accessory with pressure equipment in the following Pressure Equipment Directive categories. It may also be used outside of the Pressure Equipment Directive using sound engineering practice (SEP) per table below. For information on the current PED revision see Bulletin: *D103053X012*.

PRODUCT SIZE	CATEGORIES	FLUID TYPE
1/4 NPT	SEP	1

Specifications

Maximum Allowable Pressures

Diaphragm:
168 Series: 6.9 bar / 100 psig
168H Series: 10.3 bar / 150 psig
Body: See Table 1

Proof Test Pressure

All Pressure Retaining Components have been proof tested per Directive

Operative Temperature Limits(1)

-23 to 66°C / -10 to 150°F

Installation

WARNING

Only qualified personnel should install or service a valve. Valves should be installed, operated and maintained in accordance with international and applicable codes and regulations, and Emerson Process Management Regulator Technologies, Inc. instructions.

If the valve vents fluid or a leak develops in the system, it indicates that service is required. Failure to take the valve out of service immediately may create a hazardous condition.

Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this valve is overpressured or is installed where service conditions could exceed the limits given in the Specifications section, or where conditions exceed any ratings of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressurerelieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the valve could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the valve in a safe location.

Clean out all pipelines before installation of the valve and check to be sure the valve has not been damaged or has collected foreign material during shipping. For NPT bodies, apply pipe compound to the external pipe threads. For flanged bodies, use suitable line gaskets and approved piping and bolting practices. Install the valve in any position desired, unless otherwise specified, but be sure flow through the body is in the direction indicated by the arrow on the body.

Note

It is important that the valve be installed so that the vent hole in the spring case is unobstructed at all times For outdoor installations, the valve should be located away from vehicular traffic and positioned so that water, ice and other foreign materials cannot enter the spring case through the vent. Avoid placing the valve beneath eaves or downspouts and be sure it is above the probable snow level.

***Table 1**. Maximum Pressures and Spring Part Number*

COMPLETE SWITCHING VALVE TYPE NUMBER	DIAPHRAGM PRESSURE CHANGE BETWEEN SWITCHING POINTS				DIAPHRAGM PRESSURE RANGE		KEY 8, FIGURE 1 DIAPHRAGM SPRING COLOR CODE	MAXIMUM ALLOWABLE BODY PRESSURE		KEY 2D, FIGURE 1 BODY SPRING COLOR CODE	BODY ASSEMBLY TYPE NUMBER
	Minimum		Maximum								
	bar	psig	bar	psig	bar	psig		bar	psig		
- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	10.3	150	Metallic	68-2
168-1	0.69	10	4.00	58	0.14 to 4.14	2 to 60	Green	10.3	150	Metallic	68-1
168-2	0.69	10	2.62	38	0.14 to 2.76	2 to 40	Yellow	10.3	150	Metallic	68-1
168-3	0.69	10	4.00	58	0.14 to 4.14	2 to 60	Green	2.76	40	Yellow	68-3
168-4	0.48	7	2.62	38	0.14 to 2.76	2 to 40	Yellow	2.76	40	Yellow	68-3
168H-1	1.38	20	6.90	100	3.45 to 10.3	50 to 150	Green	10.3	150	Metallic	68-1
168H-2	1.38	20	4.48	65	2.41 to 6.90	35 to 100	Yellow	10.3	150	Metallic	68-1
168H-3	1.38	20	6.90	100	3.45 to 10.3	50 to 150	Green	2.76	40	Yellow	68-3
168H-4	1.10	16	4.48	65	2.41 to 6.90	35 to 100	Yellow	2.76	40	Yellow	68-3

Overpressure Protection

The recommended pressure limitations are stamped on the valve nameplate. Some type of overpressure protection is needed if the actual inlet pressure exceeds the maximum operating outlet pressure rating. Overpressure protection should also be provided if the valve inlet pressure is greater than the safe working pressure of the downstream equipment.

Valve operation below the maximum pressure limitations does not preclude the possibility of damage from external sources or debris in the line. The valve should be inspected for damage after any overpressure condition.

Startup

The valve is factory set at approximately the midpoint of the spring range or the pressure requested, so an initial adjustment may be required to give the desired results. With proper installation completed and relief valves properly adjusted, slowly open the upstream and downstream shutoff valves.

Adjustment

To change the control pressure, remove the closing cap or loosen the locknut and turn the adjusting screw clockwise to increase control pressure or counterclockwise to decrease pressure. Monitor the control pressure with a test gauge during the adjustment. Replace the closing cap or tighten the locknut to maintain the desired setting.

Taking Out of Service (Shutdown)

⚠ WARNING

To avoid personal injury resulting from sudden release of pressure, isolate the valve from all pressure before attempting disassembly.

Parts List

168 and 168H Series

Key	Description	Key	Description
1	Diaphragm Case	14	Nameplate
2	Spring Case Assembly	15	Mounting Bracket
2A	Spring Case	16	Cap Screw
2B	Spring Case Bushing	17	Vent Screen
3	Diaphragm Piston	18	Body Assembly
4*	Diaphragm	19	Spacer (168H Series Only)
5	Machine Screw	20	Reset Lever
6	Stem	21	Knob
7	Range Adjusting Nut	22	Pin
8	Spring	23	Machine Screw
9	Hex Nut	24	Indicator Tag
10	Stem Protector	25	Tubing (not shown)
11	Machine Screw	26	Connector (not shown)
12	Machine Screw	27	Elbow (not shown)
13	Hex Nut		

68 Series

Key	Description
1	Body
2	Spring Case Assembly
2A	Spring Case
2B*	O-ring
2C	Trip Lever
2D	Spring
2E	Trip Lever Pin
2F	Spacer
3*	Rocker Assembly
4	Seat Ring
5	Roller Assembly
6*	O-ring
7	Rocker Pin
8	Machine Screw
9	Machine Screw

*Recommended spare part

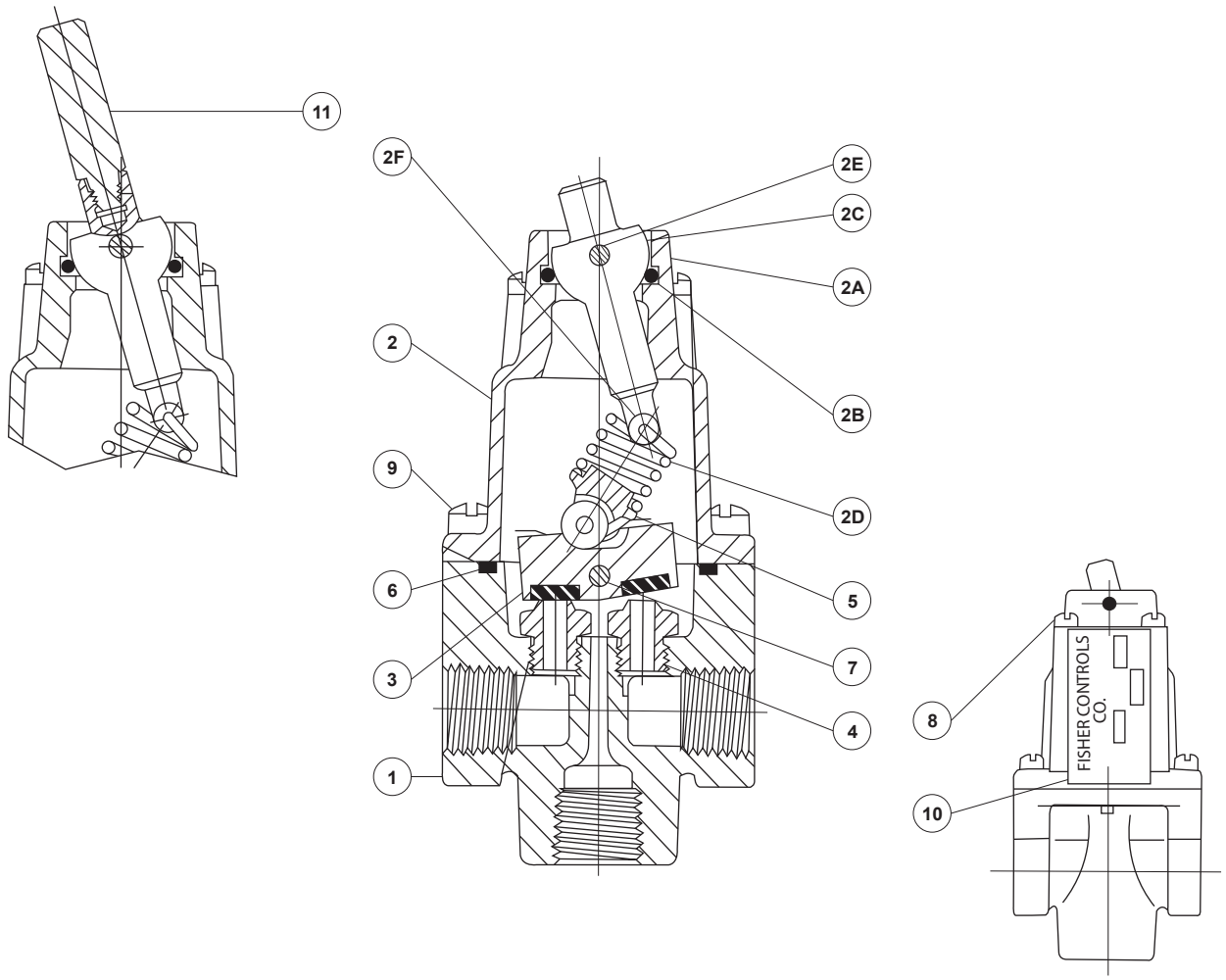

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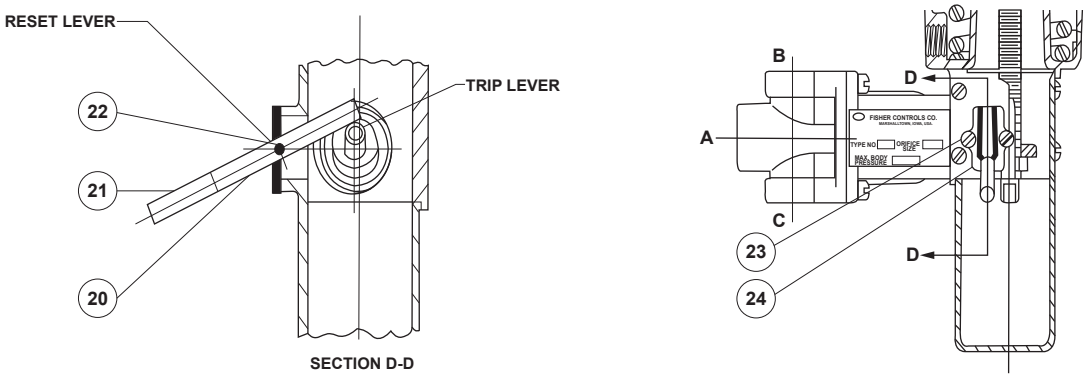
Figure 1. *68 Series Switching Valve Body Assemblies*



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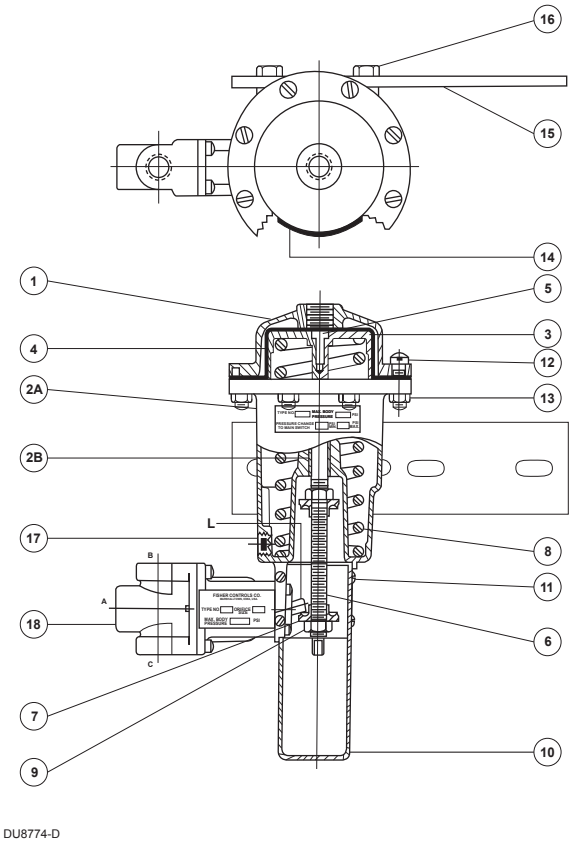
DETAIL OF MANUAL RESET SWITCH FOR USE WITH EITHER 168 OR 168H SERIES

Figure 2. *Switching Valve Constructions*



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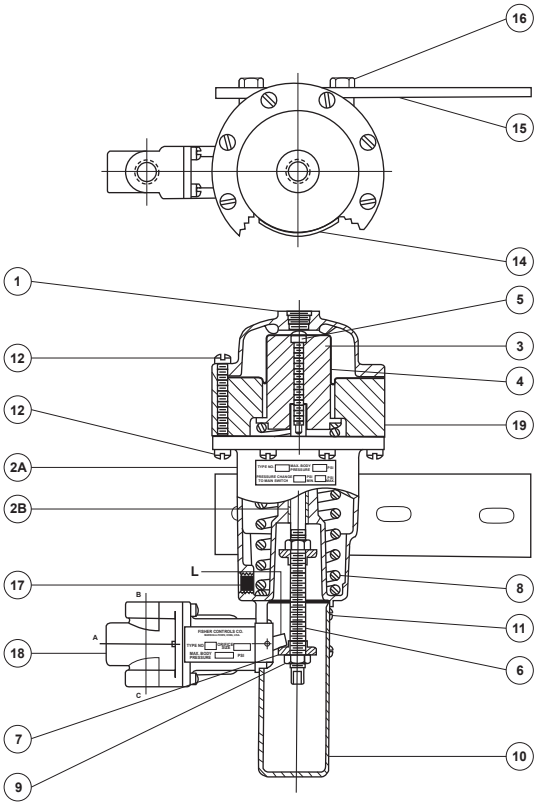
168 SERIES



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168H SERIES

Figure 2. *Switching Valve Constructions (continued)*

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For further information on the current PED revision see Bulletin: *D103053X012* or scan the QR code.

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