



## **Type P289 Backpressure Regulator**

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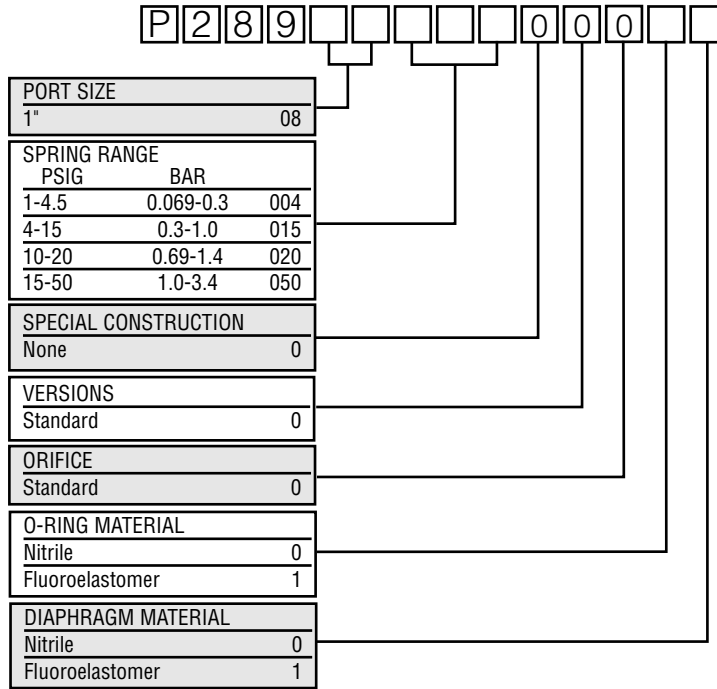


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**Instruction Manual**

**TYPE P289 1" NPT PART MATRIX:**



**APPLICATIONS**

- Pressure Reducing Regulators
- Fuel Gas Relief valves
- Gas Gathering Relief valves

**MATERIALS OF CONSTRUCTION**

- Body, Bonnet .....Aluminum
- Diaphragm .....Nitrile or fluoroelastomer
- Gaskets .....Neoprene
- O-rings .....Nitrile or fluoroelastomer
- O-ring piston and spacer .....Aluminum
- Pitot tube .....Aluminum
- Spring .....Zinc-plated steel
- Diaphragm Piston .....Zinc-plated steel

**SPECIFICATIONS**

- Port size ..... 1"
- Approximate Weight ..... 2 lbs.
- Temperature Range ..... -20 to 150° F
- Maximum Relief Inlet Pressure .....100 PSIG (6.9 BAR)

**INTRODUCTION**

The Type P289 Backpressure Regulator valve functions as a high flow pneumatic relief valve with an adjustable set point. The P289 can be used in place of a standard relief valve to provide protection against over pressurization in the downstream system. The design of a large diaphragm area and a pitot tube booster allow the valve to respond quickly and relieve the excessive pressure smoothly, especially in low-pressure settings.

Maximum Allowable Inlet and Relief Set Pressure			
Body Size	Relief Set Pressure Range (PSIG)	Spring Part Number	Maximum Relief (Inlet) Pressure (PSIG)
1"	1-4.5	655-688-000	100
	4-15	655-689-000	
	10-20	655-676-000	
	15-50	655-690-000	

## INSTALLATION

Qualified personnel should perform installation, operation, and maintenance. The valve can be mounted in any position, however the flow through the body must be in the direction from inlet to outlet (inlet connection is marked on the body). Also make sure to position the regulator to prevent any contamination, rain and debris from entering the screened vent. Prior to installation, inspect the relief valve and the piping lines for any debris or contamination. After installation, periodically inspect the relief valve for damage, especially after any overpressure condition.

### Warning!

In applications involving flammable or hazardous gases, the vented gas may accumulate and lead to fire or explosion. To prevent personal injury and property damage, it may become necessary to vent the gas to a safe, well-ventilated area with piping or tubing. Periodically check the vent opening and line for any restrictions due to clogging or condensation.

## REMOTE VENT LINE INSTALLATION

For remote venting, use the largest diameter piping possible. The pipe compound should be connected to the vent port by an adaptor. Do not apply pipe compound to the internal body threads directly. For best results, limit the number of bends and keep the line as short as possible.

## START UP AND ADJUSTMENT

### Warning!

The use of pressure gauges to prevent overpressure conditions, which might cause personal injury or equipment damage, is highly recommended. Before starting up the valve, relieve the downstream pressure on the diaphragm. Failure to do so may result in personal injury or equipment damage.

When starting up the regulator, slowly open the upstream shutoff valve, and then slowly open the downstream shutoff valve. Check all piping and connections for leaks before making any final pressure adjustments. The nameplate provides the range of allowable pressure settings. For pressure settings outside the allowable range, change to appropriate range spring and remember to change the nameplate accordingly. When changing the range spring, make sure that the diaphragm is properly installed and not damaged. Check unit for external leakage after rebuilding.

**Note:** The use of a pressure measuring device is highly recommended when making any pressure adjustments with the relief valve.

## MAINTENANCE

Severity of conditions and the requirement of both state and federal laws determine the frequency to which the relief valves need to be inspected. Debris in the process line, exterior damage, and normal wear could require the replacement of parts such as the diaphragm assembly. The procedures below will provide assistance when attempting to replace these parts.

### Warning!

When attempting any inspection or disassembly, relieve all pressure from the relief valve and its adjacent piping so as to prevent personal injury or equipment damage as a result of an explosion or sudden pressure release.

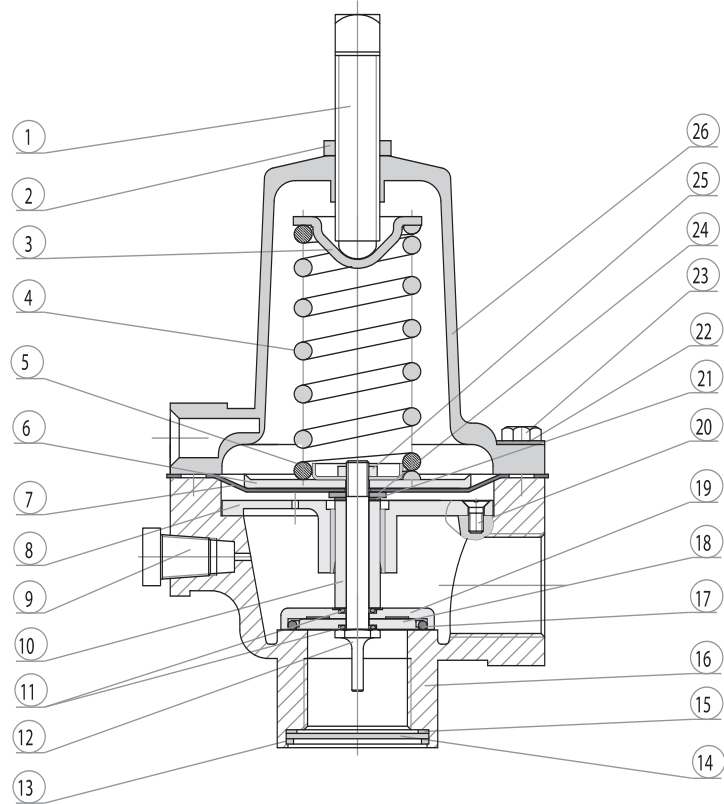
All key numbers are shown in Figure 1.

1. Loosen the hex nut (Item 2), and then relieve spring compression by turning the adjustment screw (Item 1) counterclockwise.
2. Remove 8 build screws (Item 23) to separate the bonnet (Item 26) from body (Item 16), remove the spring guide (Item 3) and spring (Item 4).
3. Remove the hex nut (Item 25), the piston retainer (Item 5), piston (Item 6) and diaphragm (Item 7). Inspect the diaphragm.
4. Remove 2 machine screws (Item 20), and then take the stem assembly (Item 8) and attached parts from body (Item 16)
5. Disassemble the washer (Item 24), gasket (Item 21), spacer (Item 10), pitot tube (Item 12), O-rings (Item 11, Item 17), O-ring spacer (Item 19) and O-ring piston (Item 18) from the stem assembly.
6. Inspect the O-rings, the gaskets, the spacer, the orifice, and the seating surface for damage, and if necessary, replace them.
7. Apply antiseizing sealant to the adjustment screw threads, and to the end of the adjustment screw that contacts the spring guide.
8. Apply the lubricants on the internal rim of O-ring piston (Item 18) and external rim of O-ring spacer (Item 19). Press the O-ring (Item 17) and O-ring spacer into O-ring piston.
9. Slide the O-ring (Item 11), the piston-spacer assembly, the spacer, the stem guide assembly, the gasket, and the washer onto the pitot tube.
10. Reinstall the stem guide assembly with attached parts into the valve body, then secure this assembly with machine screws (Item 20).
11. Reinstall the diaphragm, the piston (Item 6), and the piston retainer (Item 5), then tighten the hex nut with a torque of 50 lb. ft.
12. Reinstall spring and spring seat, and then the bonnet.
13. Screw the hex nut (Item 2) and adjustment screw (Item 1) into the bonnet. Adjust the spring compression according to the procedures outlined in the Start up section.

**PART ORDERING**

When ordering replacement parts, always reference the Type number, which is found on the nameplate, and the item number of each needed part as found in the following parts list.

<b>PART LISTING</b>			
<b>Item</b>	<b>Part Number</b>	<b>Description</b>	<b>QTY</b>
1	648-487-000	Adjusting Screw, plated steel	1
2	634-154-000	Hex Nut, plated steel	1
3	626-090-000	Spring Guide, plated steel	1
4	655-688-000	Spring 1-4.5 PSIG (0.1-0.3 BAR), pink	1
	655-689-000	Spring 4-15 PSIG (0.3-1 BAR), red	1
	655-676-000	Spring 10-20 PSIG (0.7-1.4 BAR), silver	1
	655-690-000	Spring 15-50 PSIG (1-3.4 BAR), green	1
5	643-191-000	Piston Retainer, plated steel	1
6	637-306-000	Piston, plated steel	1
7	600-497-000	P289 1" Diaphragm, nitrile	1
	600-497-001	P289 1" Diaphragm, fluoroelastomer	1
8	814-014-000	Stem Guide Assembly	1
9	639-099-000	Pipe Plug, plated steel	1
10	654-178-000	Spacer Tube, stainless steel	1
11	649-000-003	O-Ring, nitrile	2
	649-000-343	O-Ring, fluoroelastomer	2
12	660-051-000	Pitot Tube, aluminum	1
13	644-051-000	Retaining Ring, plated steel	1
14	647-018-000	Screen, stainless steel	1
15	624-063-000	Gasket, neoprene	1
16	664-295-000	Machined Body, aluminum	1
17	649-293-000	O-Ring, nitrile	1
	649-293-001	O-Ring, fluoroelastomer	1
18	654-177-000	O-Ring Spacer, aluminum	1
19	637-311-000	O-Ring Piston, aluminum	1
20	648-488-000	Machine Screw, stainless steel	2
21	624-062-000	Gasket, neoprene	1
22	632-496-000	Nameplate, aluminum	1
23	648-466-000	Machine Screw, stainless steel	8
24	662-204-000	Washer, aluminum	1
25	634-162-000	Hex Nut, plated steel	1
26	604-221-000	Bonnet, aluminum	1
27	631-227-000	label (not shown)	1



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