

PLAST-O-MATIC®

VALVES, INC.

INSTALLATION & MAINTENANCE INSTRUCTIONS SERIES PRD • DIFFERENTIAL PRESSURE REGULATOR

Series PRD ½"-3" Sizes With Pressure Differential From 5 to 50 PSI
Series PRD ¼" Size With Pressure Differential From 15 to 50 PSI
For Corrosives and High Purity Liquids

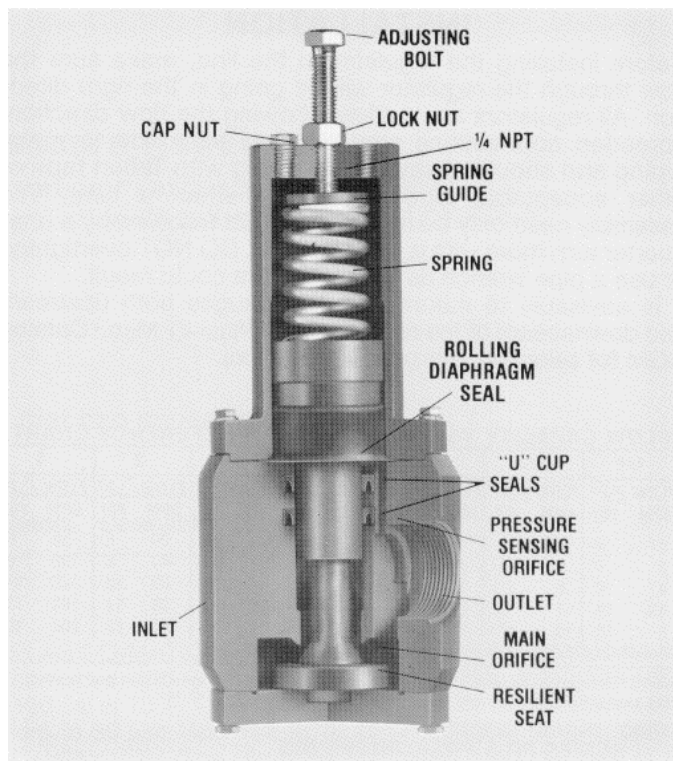
APPLICATION: Series PRD differential pressure regulators are used to control the pressure differential (ΔP) across downstream system equipment. A typical application improves optimum filter efficiencies and safety by limiting the pressure differential across a filter or combination of filters as used in the manufacture of ultra-high purity water for the semiconductor industries.

OPERATION: The differential pressure setting is P_2 minus P_3 . The differential pressure regulators operate practically the same as the standard regulator. The difference is in the second sensing line which feeds the pressure downstream of the equipment (P_3) to the top of the spring housing and aids the spring in keeping the regulator open against the pressure directly at the regulator's outlet (P_2). When downstream pressure P_3 begins to drop (as would be the case if the equipment is a filter collecting particles) the regulator begins to close and becomes fully closed when the differential pressure setting is reached. When used with a filter the differential pressure regulator eliminates the possibility of overpressure across the filter membrane.

DESIGN: The design follows that of the standard Plast-O-Matic pressure regulator which is described at www.plastomatic.com/pressure-regulators.html. It is modified by incorporating two threaded ¼ NPT ports in the top of the spring housing, one for the differential sensing line and the other for exhausting air from the housing. A sealing screw is provided for the exhaust. The control spring is stainless steel and is coated with PVC or Teflon to eliminate contamination and corrosion.

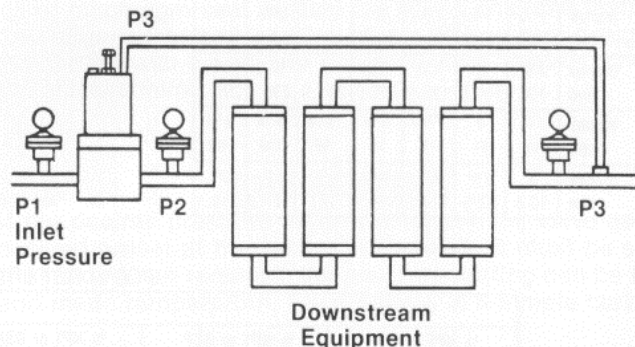
INSTALLATION: The installation is basically the same as a standard pressure regulator described at www.plastomatic.com/pr-prh-installation.pdf except the differential pressure regulator has an additional liquid sensing line connected to the top of the spring housing and is connected to the downstream line after the equipment. See schematic at right.

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Series PRD Differential Pressure Regulator

NOTE: For dimensions and part numbers see previous page.



SERIES “PRD” • DIFFERENTIAL PRESSURE REGULATORS

I. INSTALLATION AND PRESSURE SETTING INSTRUCTIONS

The series “PRD” Differential Pressure Regulator, when properly installed and adjusted, will maintain a constant set pressure across a filter or similar pressure sensitive device. The “PRD” valve body is similar to the standard “PR” body with the addition of a “sensing port” and bleed port to the top of the spring housing. In addition the wetted metallic components are furnished in stainless steel.

During installation the “sensing port” on top of the regulator is to be piped to the downstream side of the device being protected. During the filling of the system the bleed port is to be opened slightly to allow air in the spring cavity and sensing line to be expelled. This bleed off will insure the accurate sensing and control of differential pressure across the device.

The “PRD” can be set for a maximum differential pressure (between 5 & 50 PSI) in two ways. The first is to set the pressure while using as a pressure regulator. When set in this manner, without feedback at the sensing port, the valves maximum differential is established. After the sensing line is hooked up and the system pressurized the maximum differential is maintained. The second method is to set the valve while in operation; this requires a means to shut off the flow immediately prior to the protected device and sensing line to be zero. The pressure immediately following the valve is adjusted to the maximum differential and then the sealing washer is tightened with the lock nut.

II. PRESSURE RATINGS

A. Maximum Inlet Pressures for Water*

Body Mat'l	Color	at		at		at Max. Temp.	
		77°F (25°C)	104°F (40°C)	104°F (40°C)	104°F (40°C)	PSI @ °F	Bar @ °C
PVC	Dk. Gray	150 PSI 10 Bar	106 PSI 7 Bar	106 PSI 7 Bar	34 @ 140°F	2 @ 60°C	
CPVC	Lt. Gray	150 PSI 10 Bar	120 PSI 8 Bar	120 PSI 8 Bar	37 @ 180°F	2 @ 80°C	
Polypro	Trans. Wht.	150 PSI 10 Bar	120 PSI 8 Bar	120 PSI 8 Bar	40 @ 180°F	2 @ 80°C	
PVDF	Trans. Wht.	150 PSI 10 Bar	120 PSI 8 Bar	120 PSI 8 Bar	22 @ 280°F	1 @ 140°C	
PTFE	Opaq. Wht.	150 PSI 10 Bar	140 PSI 10 Bar	140 PSI 10 Bar	Consult Factory		

* or compatible chemical – ratings reduced for some applications
Not rated for suction or vacuum. Min. Temperature 40°F (5°C).

III. INSTALLATION

Install the valve in the proper flow direction as indicated by the flow label. The valve may be positioned vertically or horizontally. Proper installation should include pressure gauges mounted upstream and downstream of the regulator for pressure setting and verification.

Threaded Connections – Apply a suitable thread sealant (for example, PTFE Tape) to male tapered threads to assure a “leak-tight” seal. Assemble “hand-tight” followed by a quarter (1/4) turn with a strap wrench. Do not over tighten or use pipe wrenches on plastic pipe and components.

Caution: PTFE tape will “string” as pipe threads are joined. Loose “strings” could lie across the seating surface and prevent the valve from completely closing. To avoid this problem, clean out old tape, and do not apply tape to the first thread.

Caution: Connect to plastic pipe and fittings only; when using metal pipe, install an intervening plastic fitting. Metal pipe and straight threaded pipe tends to cut, stretch, and distort the plastic bodies, resulting in cracking or leaking over time.

Non-Threaded Connections – For solvent cementing or heat fusion, follow the instructions supplied with the cement or fusion equipment, or contact your distributor.

Mounting – These valves are designed to be supported by the piping. The piping must be properly supported, taking into account the weight of the valve, piping and process liquid.

MADE IN USA

PLAST-O-MATIC
VALVES, INC.