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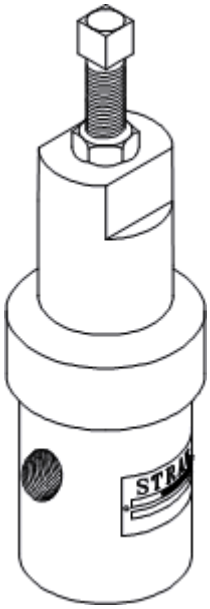
Model PRS-09i

In-Line Pressure Regulator (Reducing Valve) Our most popular model with on line pricing



- Spring operated-diaphragm pressure-reducing valve
- 1/2"-2" NPT THD
- Normal Inlet pressures to 150 PSI (10 Bar), Body rated 300 psi (20 bar) (Higher Inlet pressures are possible with higher outlet pressures) See applications
- Outlet pressures from 8 PSI to 80 PSI (5.5 Bar) (multiple spring ranges)

Features

- **Water pressure regulator and air pressure regulator parts** made from solid bar stock materials — unlike castings which have wall thickness variations.
- **Body:** Standard valve materials are stainless steel (all sizes) and some brass (1/2"-1" sizes only). Monel, titanium, Alloy 20, and Hastelloy also available.
- **Trim:** Stainless steel on valve poppet and seat is standard. Teflon sealing option is also available for air or gas service.
- **Teflon-Viton composite reinforced diaphragm** is designed for much greater poppet travel than the stainless steel diaphragm valve models PRS-05. Teflon film on the wetted side provides superior protection when used as a corrosion-resistant valve for a wide range of fluids and gases, chemicals, petroleum products, and steam. Viton is used on the non-wetted side of the diaphragm. Max temperature rating is 350 °F for most applications. Buna backing is available for lower temperature applications

- **In-line valve ports:** Simplifies installation for new or existing piping. This water pressure regulator and air pressure regulator valve can also be used as a steam pressure regulator and is also available with ANSI flanges (see PRS-09i-FLG). Our pressure-reduction valve is also available

as a sanitary valve with sanitary flanges in all-stainless steel construction.

- **Spring chamber:** Standard material is carbon steel as it is non-wetted, but can be upgraded to a stainless steel valve when the external environment is corrosive or sanitary.

Applications

This is a direct-acting diaphragm pressure-reducing valve (most often referred to as a pressure regulator) with an adjustable spring operating against a flexible elastomeric diaphragm subjected to the reduced outlet pressure of the valve which is controlled through an internal sensing port. This makes the valve an accurate pressure-sensing valve, or pressure-control valve used to control outlet pressures with a wide range of inlet pressures.

Unlike unbalanced diaphragm pressure-reducing valves, this pressure valve is a balanced inlet design and will work quite well on applications where the inlet pressure will fluctuate widely and will have little effect on outlet pressure. The valve will operate in a vertical orientation as illustrated, horizontal, or any other orientation.

This valve can be used for non-corrosive or mildly corrosive fluids including steam, depending on the materials selected. See material display notes in pricing section to help select materials. Use only clean, strained or filtered fluids to keep the pressure-regulating valve operating at maximum efficiency without clogging. Use our Stra-Val in-line strainer fitting model STF-05 or basket strainers SBS-10 or SBV-05 to keep the fluids clean. Use a #20-#40 mesh range as a minimum to keep solids from entering the valve.

Applications are for use as a water pressure-reducing valve, water pressure regulator, steam pressure regulator, air pressure regulator, oil pressure regulator. Most applications are sold where a corrosion-resistant valve is preferred, where we manufacture these mostly as a stainless steel valve for the wetted components, using type 303 stainless steel or type 316 stainless steel for chemicals or when a sanitary valve is required with sanitary flanges. For seawater applications the Monel valve, titanium valve, or Hastelloy valve is used. Inlet pressures higher than 150 psi (10bar) are possible as long as the outlet pressures are not too low, resulting in very high pressure drops. For example, outlet pressures of 50 to 80 psi (3.5 to 5.5 bar) can be regulated with inlet pressures approaching the maximum of 300 psi (20 bar) inlet pressure.

When this pressure reducing valve is selected, it is **always recommended that a relief valve be installed on the downstream side of the valve** to protect the diaphragm and other equipment downstream of the valve in case of excessive pressure buildup which may be from seat wear, corrosion, or external sources other than the valve. This is especially necessary when high inlet pressures are present. Therefore, do not attempt to use this as a shutoff valve. **For prolonged or even momentary periods of shutoff, install separate shutoff or isolation valves to keep the relief valve from tripping.** The standard construction for this pressure-reducing valve is with a metal seat, but a soft seat option can be ordered, which will improve seat leakage particularly for air or gases.

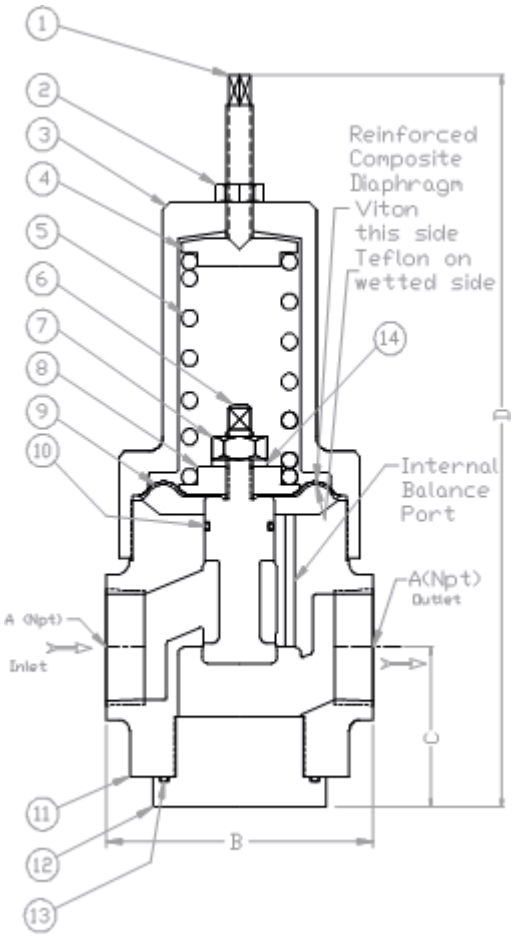
This in-line pressure regulator has fairly adequate Cv values for most applications. See below. For higher flow rates and larger Cv values, use the pressure valve model PRS-09 with the porting arrangement parallel and slightly offset which requires additional elbows to restore in-line piping.

Options

Select the valve size, spring range, material options in the customized pricing and ordering section indicated by the red arrows. You have the ability to customize your valve choices by selecting the wetted and nonwetted materials, and choice of seat materials to suit your shutoff requirements, using the softer seats for improved shutoff, particularly for air or gas applications. Once these selections are made a price quote can be generated and printed directly to your computer or immediately e-mailed to you.

Principle of Operation

The valve operates on the principle of balancing the spring force that is set by the user against the outlet pressure acting under the diaphragm. There is an internal pressure balancing port that subjects the outlet pressure directly to the underside of the diaphragm. When the outlet pressure falls below the set pressure required by the system on the outlet side of the valve, the spring force overcomes the force balance under the diaphragm causing the poppet and diaphragm assembly to drop down causing the valve to open and allow higher pressure at the valve inlet to pass through the valve. When the pressure rises to a sufficient level to restore the force balance agains the spring, the valve will move toward the closed position. The valve is completely self regulating and the poppet is constantly moving to respond to pressure changes on the outlet side of the valve, not the inlet. The only time the poppet closes completely is when the outlet pressure has been reached to its set point. As long as the valve is able to shut off properly without solids or other material build up in the seat or because of seat wear, the valve should be able to maintain and hold the outlet pressure and keep it from rising for brief periods of time. If the valve is set with no flow passing through the system, there will be some droop (drop in outlet pressure) caused by relaxation of the spring when the valve first has to open. This occurs with all direct spring operated valves and can be compensated by making a slight readjustment to the set pressure once the desired capacity has been achieved.



PRS-09i

Material List and Specification

1.	Adjusting screw	Steel
2.	Lock nut	Steel
3.	Spring chamber	Steel
4.	Spring pusher	Steel
5.	Adjusting spring	Steel
6.	Main valve	Stainless steel
7.	Lock nut	Steel
8.	Nut, diaphragm	Steel
9.	Diaphragm	TFE / Viton
10.	Seal	Viton

11.	Body	Stainless steel
12.	Bottom plug	Stainless steel
13.	Seal	Viton
14.	Lock washer	Steel

Dimensions

Dimensions (inch)				**Flow Data**		
NPT A	**B**	**C**	**D**	**Cv**	**Flow orifice inch**	**GPM***
1/4	2.25	1.53	7.25	0.67	.219	3.4
3/8	2.50	1.78	7.38	1.38	.313	6.9
1/2	2.50	1.88	7.50	1.98	.375	9.9
3/4	3.00	1.88	7.75	3.53	.50	17.6
1	4.00	2.13	12.00	7.95	.75	40
1-1/4	4.00	2.38	12.50	10.3	.81	51
1-1/2	5.50	2.63	13.50	14.9	1.00	75
2	5.75	3.25	13.75	23.3	1.25	117

*Flow is in USGPM based on 25 PSI pressure drop

Note: Dimensions are approximate and are subject to change without notice. Request certified dimensions before final product installation.

1/4" PRS09i-02T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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3/8" PRS09i-03T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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1/2" PRS09i-05T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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3/4" PRS09i-07T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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1" PRS09i-10T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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1 1/4" PRS09i-12T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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1 1/2" PRS09i-15T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:5-80 psig (0.345-5.52 barg) Select spring from pricing page

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2" PRS09i-20T

Max inlet pressure 150 psi (10 barg) Rated press 300 psi(20 bar)

Multiple Spring Ranges from:2-80 psig (0.138-5.52 barg) Select spring from pricing page

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The spring ranges listed above are not achievable with one spring, but are compressed to show overall product capability. Select a specific spring range in the pricing pages or specify a set pressure when ordering.