

STABLE SET PRESSURE | SSP SERIES

Pressure Reducing Regulators

Premier Industries patent pending **Stable Set Pressure (SSP)** regulators are designed to offer improved outlet pressure stability while maintaining the compact and economical design of traditional single-stage regulators.

WHAT IS "SUPPLY PRESSURE EFFECT"?

Supply Pressure Effect or SPE, describes the phenomenon in regulators when changes in supply pressure cause a corresponding change in delivery pressure. A common example of SPE is seen when a single stage regulator is used with a compressed gas source; as the cylinder empties and the supply pressure begins to decrease, the delivery pressure of the regulator begins to increase. This can pose a variety of issues as outlined below.



WHY MINIMIZE SUPPLY PRESSURE EFFECT?

- If a single stage regulator uses a compressed gas source and is not monitored and re-adjusted periodically, as the source drops off the subsequent change in delivery pressure may interfere with pressure sensitive processes or damage pressure sensitive equipment.
- High SPE can significantly change a preset flow rate affecting the quality of a calibration.
- Increased outlet pressures could result in higher flow rates and an unnecessary waste of gas.

FINDING A SOLUTION:

Traditional solutions to reduce supply pressure effect require the use of bulky, expensive two stage regulators, or two single stage regulators in series. Premier Industries patent pending *Stable Set Pressure* regulators reduce supply pressure effect without the added weight or expense; near two stage performance in a single stage! These new compact, low-cost Stable Set Pressure regulators are offered in a variety of materials, pressure ranges, porting & mounting configurations, and sizes.

PREMIER SSP SERIES REGULATORS

1. Significantly reduce supply pressure effect.
2. Cost less than two stage regulators
3. Feature compact designs which take up less space than traditional two stage regulators.
4. Reduce the need for constant readjustments.
5. Feature increased flow capacity relative to a comparable two stage regulator.
6. Stable pre-set flow as supply pressure drops.

	COMPACT SIZE	LOW COST	LOW SUPPLY PRESSURE EFFECT
SSP REGULATOR	✓	✓	✓
SINGLE STAGE REGULATOR	✓	✓	X
TWO STAGE REGULATOR	X	X	✓

The charts below demonstrate the performance of Premier Industries SSP series regulators, when compared to traditional single stage and two stage designs.



PREMIER 2310 PERFORMANCE

The supply pressure effect of the 2310 Series is -6.40 psi out / 1000 psi in (-0.64%). That is a 77% reduction when compared to the comparable single stage regulator.

REGULATOR SERIES	DECAYING INLET / SUPPLY PRESSURE EFFECT <i>Outlet increase per 1000 PSI Inlet decrease (PSI)</i>	% DECAYING INLET / SUPPLY PRESSURE EFFECT REDUCTION <i>(When compared to the 2300 single stage)**</i>
Premier 2300 Series <i>(Standard single stage)</i>	6.40	0% <i>(Configuration to compare to)</i>
Premier 2310 Series <i>(SSP design)</i>	1.5	77%
Premier 4300 Series <i>(Standard two stage)</i>	-0.23	96%

** % Decaying Inlet / Supply Pressure Effect is calculated with the following equation:

$$\%REDUCTION = 1 - \left| \frac{\%SUPPLY PRESSURE}{\%SUPPLY PRESSURE EFFECT 2300} \right|$$



PREMIER 2510 PERFORMANCE

The supply pressure effect of the 2510 Series is 1.3 psi out / 1000 psi in (0.13%). That is a 91.5% reduction when compared to the comparable single stage regulator.

REGULATOR SERIES	DECAYING INLET / SUPPLY PRESSURE EFFECT <i>Outlet increase per 1000 PSI Inlet decrease (PSI)</i>	% DECAYING INLET / SUPPLY PRESSURE EFFECT REDUCTION <i>(When compared to the 2500 single stage)**</i>
Premier 2500 Series <i>(Standard single stage)</i>	15.18	0% <i>(Configuration to compare to)</i>
Premier 2510 Series <i>(SSP design)</i>	-1.29	91.5%
Premier 4500 Series <i>(Standard two stage)</i>	-0.84	94.5%

** % Decaying Inlet / Supply Pressure Effect is calculated with the following equation:

$$\%REDUCTION = 1 - \left| \frac{\%SUPPLY PRESSURE}{\%SUPPLY PRESSURE EFFECT 2500} \right|$$