Supply-Pressure Effect
Supply Pressure Effect, or Dependency, is stated as a ratio describing the change in outlet pressure for every 100 psi change in inlet pressure. As outlet pressure rises the supply pressure decreases, and the opposite can be true as supply pressure increases.

The most common example would be when a gas supply cylinder or tank is used. The supply pressure of the fluid begins to decrease while the cylinder empties. This situation will increase the downstream delivery pressure.

A second example may be on start up or shutdown, where a regulator may be set to the off position before turning the supply pressure on or off to prevent overpressurization of the regulator diaphragm, outlet pressure gauges or downstream equipment.

2 Ways to Manage Supply Pressure Effect
1. Use of a two stage regulator: A changeover manifold, a 2-stage regulator, or two regulators in series can reduce these effects where consistent delivery pressure is critical. For example, a gas cylinder where a large differential pressure of supplied tank pressure and precise delivery or outlet pressure is necessary.

2. Modification of the control mechanism. The control mechanism is also known as the poppet. A balanced poppet design has an orifice machined through the poppet allowing outlet pressure to reside on both sides of the poppet. The benefits are you will reduce the area on which the inlet forces can work, and allow for a larger seat for more flow through the product.

Both of these examples use different solutions for the reduction of Supply Pressure Effect. Contact your local sales and service representative to customize a solution for your system.