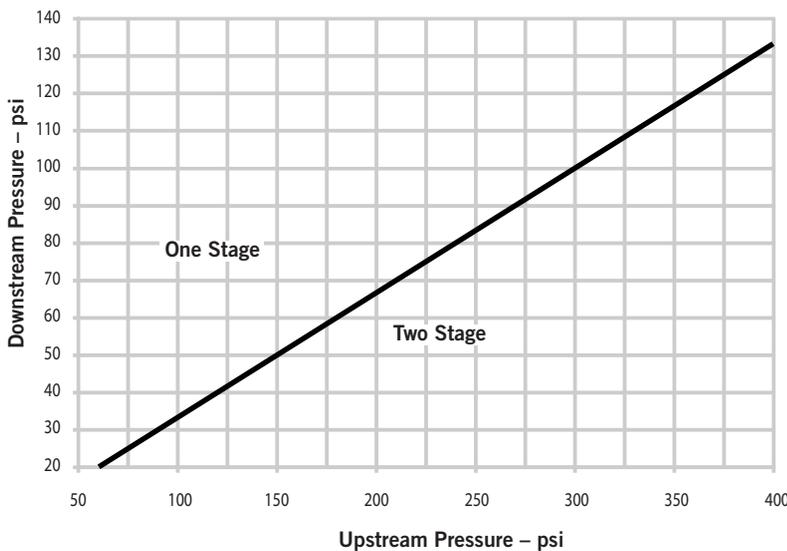


Many factors come into play when trying to determine the number of pressure reduction stages in a pressure reduction application. Some of these factors include: upstream and downstream pressure; media temperature and viscosity; flow velocity; valve body type; construction materials; and plug contour. All of these factors can affect the regulation load of the hydraulic control valve. There is a correlation between the regulation load and the wear and tear of the valve, as well as the required maintenance intervals. The regulation load also affects the hydraulic noise coming from the valve. In order to avoid extreme wear and tear, Victaulic recommends using a multi-stage reduction, which divides the load between two or more pressure reducing valves in series.

There are certain methods used to determine the number of valves in a multi-stage reduction; they require various mathematical formulas or computer software. Alternatively, a general rule of thumb, also recognized as an industry standard based on both mathematics and years of field experience, can be used. Per this rule of thumb, the ratio between the upstream and downstream pressure should be limited to 3:1. For example: If the upstream pressure is 100 psi | 689 kPa, and the downstream is 40 psi | 276 kPa, the ratio is 2.5:1, and therefore, only one valve is necessary. Conversely, if the upstream pressure is 160 psi | 1103 kPa, and the downstream is 40 psi | 276 kPa, the ratio is 4:1, and the reduction load should be divided between two pressure reducing valves.

This 3:1 rule of thumb has been used for many years in various industries, including commercial buildings, municipal waterworks, and fire protection systems, and has been proven to work well to reduce the cost of ownership of the regulating valves.

**Pressure Reduction Stages Guide**



**ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.**

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	