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Pressure Recovery Factor Explained - Jordan Valve

2~3분

Cv is defined as the number of gallons per minute of water that will pass through a given flow restriction with a pressure drop of 1 psi and is a capacity index useful for rapidly and accurately estimating the required size of any fully opened valve in a flow system.

Example: a valve with Cv 25 fully opened allows 25 gpm of water to flow with a 1 psi pressure drop.

Fig. 1 Illustrates how velocity and pressure vary as fluid passes through a valve.

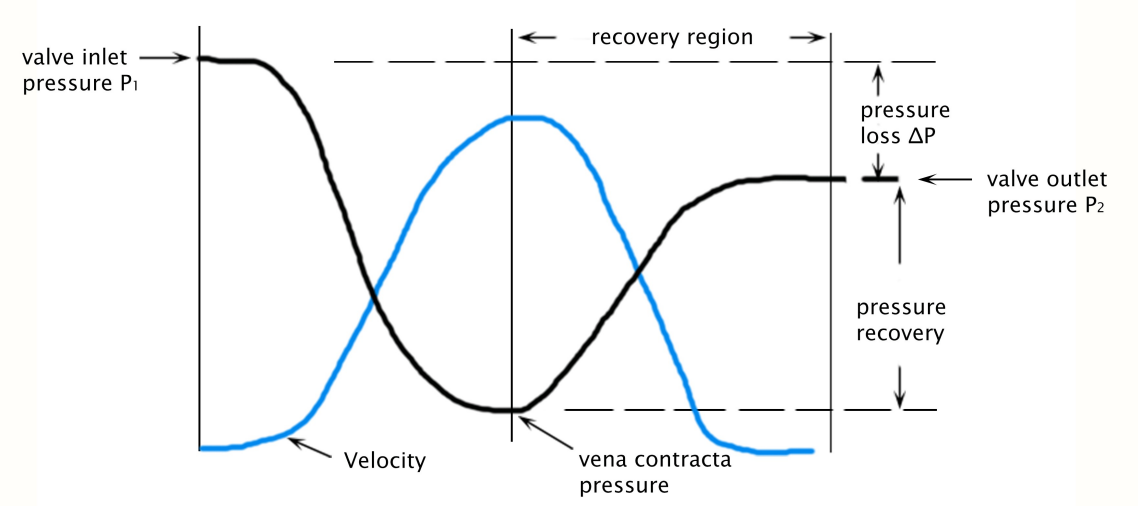

Figure 1

First, velocity increases, then decreases as it moves through

the valve. It thus obeys the continuity principle which requires the velocity to increase when the area decreases for a uniform flow rate. This increased velocity in turn requires a lower pressure. The point of maximum fluid jet contraction — and thus lowest pressure — is called the **vena contracta**. Beyond this point, the flow area returns to its former value in the **recovery region**. It is in this region that most friction and turbulence losses occur, a fact that accounts for most of the pressure drop between P1 and P2. The difference between exit pressure P2 and pressure at the vena contracta is called **pressure recovery**. This is expressed as Pressure Recovery Factor (often abbreviated as "PRF" or "F_L") that is used to determine the true pressure drop across the valve seat, and to determine if cavitation is likely to occur.