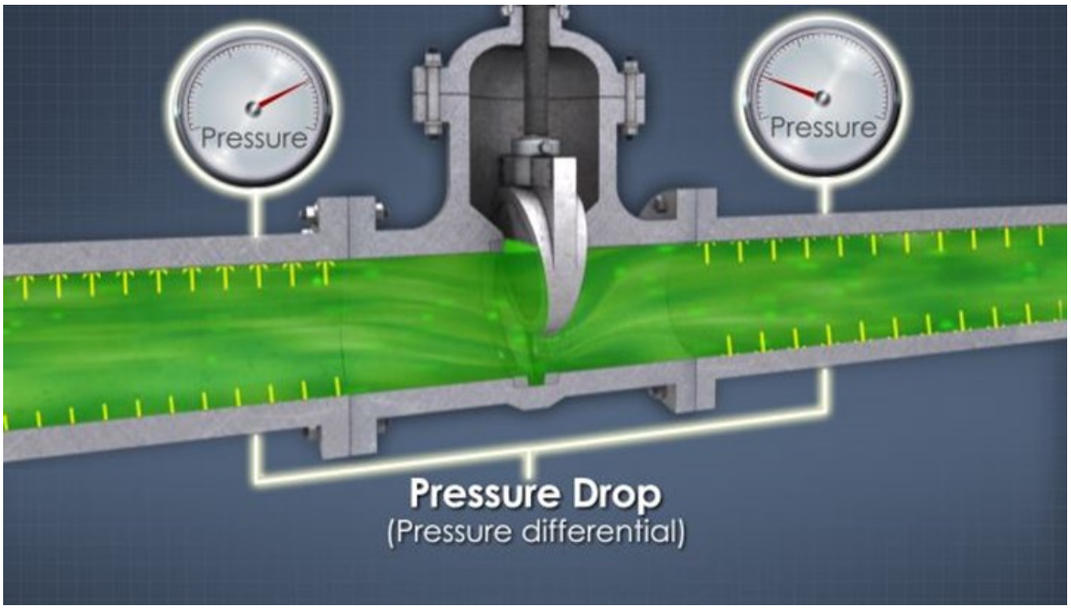
The More You Know

March 12, 2025

Pressure Drop & Cv Values

Frequently, regional managers, customer-service staff and product managers are asked “What is the pressure drop across a *(fill in the blank)* valve?” This information is essential for engineers and designers to consider as part of their overall system design.

Simply put, pressure drop is the difference in total pressure between two points in a fluid-carrying network. When a liquid material enters one end of a piping system, and leaves the other, pressure drop, or pressure loss, will occur.



For our purposes today, pressure drop is calculated using a valve’s Flow Coefficient value, also known as the Cv value. The Cv value is the number of gallons of water per minute that can pass through a valve with a pressure drop of 1 psi. *(**NOTE:** Pressure drop, ΔP, and differential pressure are all synonymous terms.)* For example, on a 2-inch 509 check valve, the Cv from our spec sheet is 131.0. Therefore, this valve can pass 131 gallons per minute of water with a 1 psi drop.

Using a simple formula, we can calculate either

the valve **Cv** required OR the **pressure drop** across the valve using the Cv value from our spec sheets. One variable required for these calculations is the specific gravity of the liquid. Most applications will utilize a specific gravity equal or close to that of water, which is 1 at 60°F. The formula below implies a specific gravity of 1.

$$\text{Pressure Drop } \Delta P \text{ (psig)} = \frac{\text{Flowrate in GPM}^2}{\text{Valve } C_v^2}$$

Hate doing math? No calculator handy? Milwaukee Valve has you covered. On the **Milwaukee Valve** website, two calculators are found on the same page. One calculates **pressure drop** and the other will calculate the required valve **Cv**. Just navigate to the **Technical/Service Information** section, and scroll down to **Cv Calculator** or **Pressure Drop Calculator**. Both links will take you to the same page.

As mentioned, a specific gravity of 1 will suffice in most cases and is a good starting point. If you are using our calculator for liquids that have specific gravities other than 1, enter that value in the field provided.

Please note that these calculations are for **Liquids Only**. For gases or steam, please contact your **Milwaukee Valve Customer & Field Support Representative**.

MILWAUKEE VALVE
www.milwaukeevalve.com
262.432.2700

HAMMONDVALVE
www.hammondvalve.com
262.432.2702

MARINE PRODUCTS
www.milwaukeevalve.com
262.432.2700

16550 West Stratton Drive, New Berlin, WI 53151