

# Glossary of Valve Terms

## API

[American Petroleum Institute](#). The American Petroleum Institute is the national trade association for the oil and natural gas industry. The API develops standards for valves used in different types of service. Here are the most common API standards that apply to valves:

- [API 527](#) describes seat tightness testing and maximum acceptable leakage rates for pressure relief valves.
- [API 598](#) provides industry standards for valve ratings and valve leakage.
- [API Standard 6D](#) provides specifications for pipeline valves.
- [API Standard 600](#) describes valve design and construction criteria for steel gate valves.
- [API Standard 621](#) describes guidelines for reconditioning metallic gate, globe, and check valves.

## ANSI

[American National Standards Institute](#). ANSI provides valve standards in the form of temperature and pressure ratings, which are based on the valve's housing material. The ANSI pressure class ratings are: 150#, 300#, 400#, 600#, 900#, 1500#, and 2500#.

## ASME

[American Society of Mechanical Engineers](#). The ASME publishes the Boiler and Pressure Vessel Code, which establishes safety regulations for boilers and pressure vessels. The sections most relevant to valve applications are: [Section I \(Power Boilers\)](#) and [Section VIII \(Pressure Vessels\)](#).

ASME also issues stamps, which designate PRV operations a company is qualified and approved to perform:

- ASME V Stamp certifies that a company is qualified and approved to assemble PRVs for use in Section I applications.
- ASME UV Stamp certifies that a company is qualified and approved to assemble PRVs for use in Section VIII applications.
- ASME NB Stamp certifies that a company is qualified and approved to calibrate, test, and stamp PRVs for use in Section I and Section VIII applications.
- ASM VR Stamp certifies that a company is qualified and approved to repair PRVs for use in Section I and Section VIII applications.

[See Allied's ASME Stamps.](#)

### Accumulation

Pressure above the Maximum Allowable Working Pressure (MAWP) of a vessel during discharge through a pressure relief device. Accumulation is expressed either in pounds per square inch or as a percentage. Cf. [overpressure](#). Accumulation = overpressure when the set pressure of the valve equals the MAWP of the vessel.

### Actual Discharge Area

The measured minimum net area that determines the flow through a valve.

### Actuator

A device that controls the opening and closing of a valve.

### Back Pressure

The pressure that exists at the outlet of a pressure relief valve. Back pressure may be constant or variable.

- Superimposed backpressure occurs the discharge header before the PRV opens.
- Built-up back pressure develops as a result of flow after the PRV opens.

[Learn more about how back pressure affects valve operation.](#)

### Blowdown

The difference between the set pressure of a valve and the pressure at which the valve reseats. Expressed as a percentage of set pressure.

### Bubble Tight

An indication of valve leakage. No valve is 100% bubble tight. Instead, this designation indicates that a valve is not leaking above the maximum allowable amount for the valve classification. Also called [zero leakage](#).

### Capacity

The amount of liquid, gas, or vapor that can flow through a valve. Also called *relieving capacity*.

### Chatter

An abnormal rapid up-and-down movement of a valve disk on the valve seat, often due to insufficient blowdown. Chatter can damage the valve seat. Cf. [flutter](#).

### Closing Pressure

The pressure at which a valve closes or reseats.

### Cold Differential Test Pressure (CDTP)

The pressure at which a valve opens on the test bench. The CDTP includes corrections for applicable back pressure and temperature conditions.

### Design Pressure

The absolute maximum pressure at which a valve can function.

### Disc

The part of a PRV that sit on the seat, blocking flow when system pressure is normal. When pressure in a vessel rises above the set point, the disk lifts to allow flow.

### Flutter

An abnormal rapid up-and-down movement of a valve disk in which the disk doesn't come into contact with the seat. Cf. [chatter](#).

### Hot Tap

The process of drilling and tapping a pipe to test the pressure. Hot tapping allows repairs to be done online without interruption of service.

### Leak Sealing

A number of operations -- including wire wrap and pipe wrap -- that allow a valve to be serviced under normal operating conditions.

### Leak Test Pressure

The pressure at which a valve seat leak test is performed.

### Lift

The distance a valve disk moves away from the valve seat when going from a fully closed to fully open position.

### Line Stop

The process of inserting a device into a pipe to seal it. Line stopping allows valves to be serviced and replaced on pressurized systems under full operating conditions.

### Maximum Allowable Working Pressure (MAWP)

The maximum pressure allowed in a vessel at its designated temperature. The MAWP determines the set pressure of the relief devices used to protect the vessel.

### Maximum Operating Pressure

The maximum pressure expected while a vessel is in service.

## National Board

[The National Board of Boiler and Pressure Vessel Inspectors](#). The National Board is a group of inspectors charged with inspecting boilers and pressure vessels to enforce the applicable laws and regulations.

## Opening Pressure

The pressure at which the valve opens, designated by either measurable [lift](#) or a continuous discharge of fluid.

## Operating Pressure

The pressure expected while a vessel is in service. Ideally, the operating pressure is at least 10% lower than the MAWP.

## Overpressure

Pressure above the set pressure of the relief valve. Overpressure is expressed either in pounds per square inch or as a percentage. Cf. [accumulation](#). Overpressure = accumulation when the set pressure of the valve equals the MAWP of the vessel.

## PSI

Pounds per square inch

## PSIA

Pounds per square inch absolute, or absolute pressure. Equal to gauge pressure plus atmospheric pressure.

## PSIG

Pounds per square inch gauge, or gauge pressure. Equal to absolute pressure minus atmospheric pressure. PSIG is lower than PSIA.

## Pilot-Operated Pressure Relief Valve

A PRV in which the main valve is controlled by an auxiliary upstream PRV.

## Popping Pressure

The pressure at which a valve disk moves rapidly (aka “pops”) from a simmer, or warn, position to a full open position.

## Pressure Relief Valve (PRV)

A valve that opens when pressure in a vessel exceeds a specified value. The valve closes when the vessel returns to normal pressure conditions. The term *pressure relief valve* is commonly used as a blanket description for [safety valves](#), [relief valves](#), and [safety relief valves](#).

### Preventative Maintenance

A scheduled program of maintenance and repair to keep valves operating at peak performance.

### Rated Relieving Capacity

The proportion of the relieving capacity permitted to be used for an application.

### Relief Valve

A pressure relief valve that opens when the static upstream pressure exceeds the opening pressure. A relief valve opens in proportion to the increase in pressure. Normally used with incompressible fluids.

### Relieving Capacity

See [capacity](#).

### Relieving Pressure

Valve set pressure plus overpressure.

### Required Discharge Area

A computed area of a PRV that determines the size of the valve. The required discharge area is smaller than the [actual discharge area](#).

### Safety Valve

A pressure relief valve that opens in response to static upstream pressure. A safety valve opens rapidly and fully, with a popping action. Normally used with compressible fluids.

### Safety Relief Valve

A pressure relief valve that can be used as either a [safety valve](#) or a [relief valve](#).

### Set Pressure

The inlet pressure at which a valve begins to open as required by code. Also called *nameplate set pressure*.

### Simmer

An audible or visible release of fluid between the seat and the disk before a valve reaches its set pressure. Also known as *warn*.

### Spring-Loaded PRV

A PRV that is designed to reclose automatically via the action of a spring. Most PRVs are spring-loaded.

Stamped Capacity

The rated relieving capacity that is stamped on the device nameplate.

Throttling

Refers to the ability to control the amount of flow through a valve, as compared to a simple on/off function.

Warn

See [\*simmer\*](#).

Zero Leakage

See [\*bubble tight\*](#).