VALSTOM – INTERNATIONAL STANDARDS FOR VALVES

1. Introduction

A valve is a mechanical device used to start, stop, regulate, or isolate the flow of fluids within a piping system. By opening, closing, or partially obstructing internal flow paths, valves control flow rate, pressure, direction, and volume of liquids and gases.

Valves are essential components across a wide range of industries, including oil & gas, power generation, chemical processing, mining, water treatment, marine, and industrial manufacturing. They are designed to operate under extremely varied service conditions, from cryogenic temperatures to high-temperature applications exceeding 800°C, and from vacuum conditions to pressures above 20,000 psi.

Valve sizes range from small fractional bores to large diameters exceeding several meters, enabling control of diverse media such as gases, steam, corrosive chemicals, abrasive slurries, hydrocarbons, and hazardous fluids.

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2. Specification Codes and Standards

Valve design, manufacturing, testing, and inspection are governed by internationally recognized standards to ensure safety, interchangeability, reliability, and performance.

Commonly applied valve standards include:

ASME / ANSI

- ASME B16.10 – Face-to-face and end-to-end dimensions
- ASME B16.34 – Pressure-temperature ratings and valve design
- ASME B16.5 / B16.47 – Flanges and flanged connections
- ASME B16.11 – Forged fittings
- ASME B31 Series – Process, pipeline, and gas transmission piping

API (American Petroleum Institute)

- API 600 – Steel gate valves

- API 602 – Compact forged gate, globe, and check valves
- API 603 – Corrosion-resistant gate valves
- API 594 – Check valves
- API 598 – Valve inspection and pressure testing
- API 607 / API 6FA – Fire-safe testing
- API 6D – Pipeline valves

Other International Standards

- BS / EN standards for European compliance
- MSS-SP standards for manufacturing practices
- AWWA standards for water works applications
- ISO standards for global harmonization

Valstom valves are engineered and supplied in accordance with applicable international standards based on project and client requirements.

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3. International Standards for Valves

International valve standards define requirements for design, materials, manufacturing, inspection, and testing. Selection of the appropriate standard depends on valve type, size, pressure class, and service conditions.

Typical references include:

- **Gate Valves**:
    - API 600 (cast steel, larger sizes)
    - API 602 (forged steel, smaller sizes)
- **Check Valves**:
    - API 602 (compact forged designs)
    - API 594 (dual plate and wafer check valves)
    - BS 1868 / BS 5352 (swing and lift check valves)

- **Ball Valves**:
  - API 6D (pipeline ball valves)
  - BS 5351
- **Butterfly Valves**:
  - API 609
  - EN 593
- **Testing & Fire Safety**:
  - API 598 – Pressure testing
  - API 607 / API 6FA – Fire-safe qualification
- **General Valve Design**:
  - ASME B16.34

These standards ensure consistent performance, pressure integrity, and operational safety across global installations.

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4. ASME / ANSI Valve Standards Overview

The **American Society of Mechanical Engineers (ASME)** and **American National Standards Institute (ANSI)** publish widely adopted valve and piping standards, including:

- **ASME B16.34** – Valves: flanged, threaded, and welding ends
- **ASME B16.10** – Valve face-to-face dimensions
- **ASME B16.5 / B16.47** – Pipe flanges
- **ASME B16.25** – Butt-welding ends
- **ASME B31.3** – Process piping
- **ASME B31.4** – Liquid petroleum pipelines
- **ASME B31.8** – Gas transmission and distribution

These standards form the backbone of **pressure design and dimensional compatibility** for valves used in oil, gas, petrochemical, and industrial systems.

5. American Petroleum Institute (API) Standards

API standards are specifically developed for petroleum, petrochemical, and natural gas industries, addressing demanding operating conditions.

Key API standards include:

- **API 6D** – Pipeline valves
- **API 600** – Steel gate valves
- **API 602** – Forged steel gate, globe, and check valves
- **API 598** – Valve inspection and testing
- **API 607 / API 6FA** – Fire testing requirements
- **API 608** – Metal ball valves

These standards ensure valves meet stringent safety, reliability, and fire integrity requirements in hydrocarbon service.