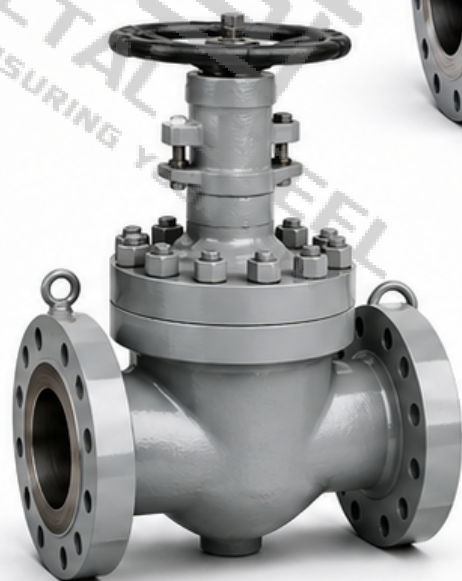




Forged Steel



Cast Steel



Pressure Seal



FORGED

- DN15–DN100 / NPS 1/2–4
- PN10–PN420 / Class 150–2500
- Carbon / Alloy / Stainless Steel
- Flanged / Butt-Welded
- Manual / Electric / Pneumatic / Hydraulic



CAST

- DN50–DN400 / NPS 2–16
- PN10–PN250 / Class 150–1500
- Carbon / Alloy / Stainless Steel
- Flanged / Butt-Welded
- Manual / Electric / Pneumatic / Hydraulic



PRESSURE SEAL

- DN50–DN600 / NPS 2–24
- PN10–PN420 / Class 150–2500
- Carbon / Alloy / Stainless Steel
- Flanged / Butt-Welded
- Manual / Electric / Pneumatic / Hydraulic



- ▶ PN and ASME Class are separate pressure-designation systems.
- ▶ Availability depends on configuration, material and applicable standard.
- ▶ Not all size, pressure class, material and end-connection combinations are supplied simultaneously.

GLOBE VALVE MATERIAL SELECTION GUIDE

Functional Zones, Representative Families, and Selection Logic

FUNCTIONAL ZONES

1 BODY / BONNET

Principal pressure boundary.

2 DISC / SEAT

Throttling and shutoff.

3 STEM

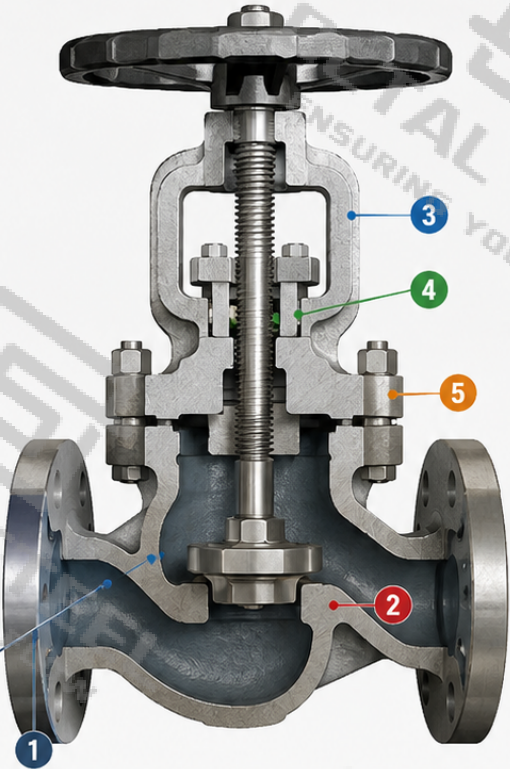
Load transfer and packing interface.

4 PACKING / GASKET

External pressure sealing.

5 BOLTING

Pressure-boundary joint integrity.



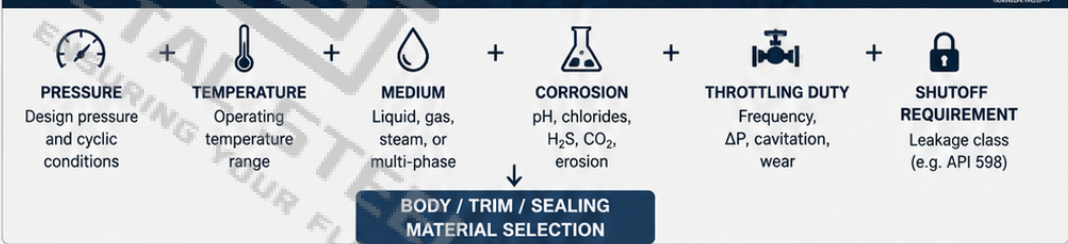
REPRESENTATIVE MATERIAL FAMILIES

	Carbon Steel
	Low-Temperature Carbon Steel
	Alloy Steel
	Stainless Steel
	Stainless / Alloy Trim
	Hardfacing Where Required

Note: Material selection is service-specific and not imply material availability across every size and Class.

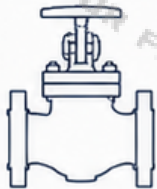
1 BODY / BONNET Principal pressure boundary	2 DISC / SEAT Throttling and shutoff	3 STEM Load transfer and packing interface	4 PACKING / GASKET External pressure sealing	5 BOLTING Pressure-boundary joint integrity
- Carbon Steel - Low-Temperature Carbon Steel - Alloy Steel - Stainless Steel (Material per service conditions)	- Stainless / Alloy Trim - Hardfacing - Stellited / CoCr - Nitrided (Material per throttling duty and shutoff class)	- Stainless Steel - Alloy Steel - Surface Hardened - Coated (as required) (Material per load and corrosion conditions)	- Graphite - PTFE - Flexible Graphite - Spiral Wound (Material per temperature, medium and emissions)	- Carbon Steel - Alloy Steel - Low-Temperature Carbon Steel - Stainless Steel (Material per temperature and service)

DECISION LOGIC FOR GLOBE VALVE MATERIAL SELECTION



Final material selection shall be determined per project specification, applicable standards (e.g., API, ASME, ASTM), and engineering evaluation. Technical validation and documentation (e.g., MTR, NDE, PMIs) required.

1 API 623: Steel Globe Valve Product Standard



- ▶ Defines the steel globe valve product requirements
- ▶ Bolted bonnet construction
- ▶ Flanged and butt-welding end connections

3 ASME B16.34: Design Control for Valves – Flanged, Threaded, and Welding End



- ▶ Pressure-Temperature
- ▶ Materials
- ▶ Dimensions / Tolerances
- ▶ NDE
- ▶ Testing / Marking

5 ASME B16.25: Butt-Welding End Preparation



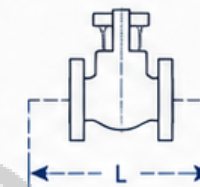
- ▶ Controls the butt-welding end bevel, root face, and wall thickness tolerances

2 API 602: Compact Gate / Globe / Check



- ▶ Applies to compact valves DN100 / NPS 4 and smaller

4 ASME B16.10: Face-to-Face / End-to-End

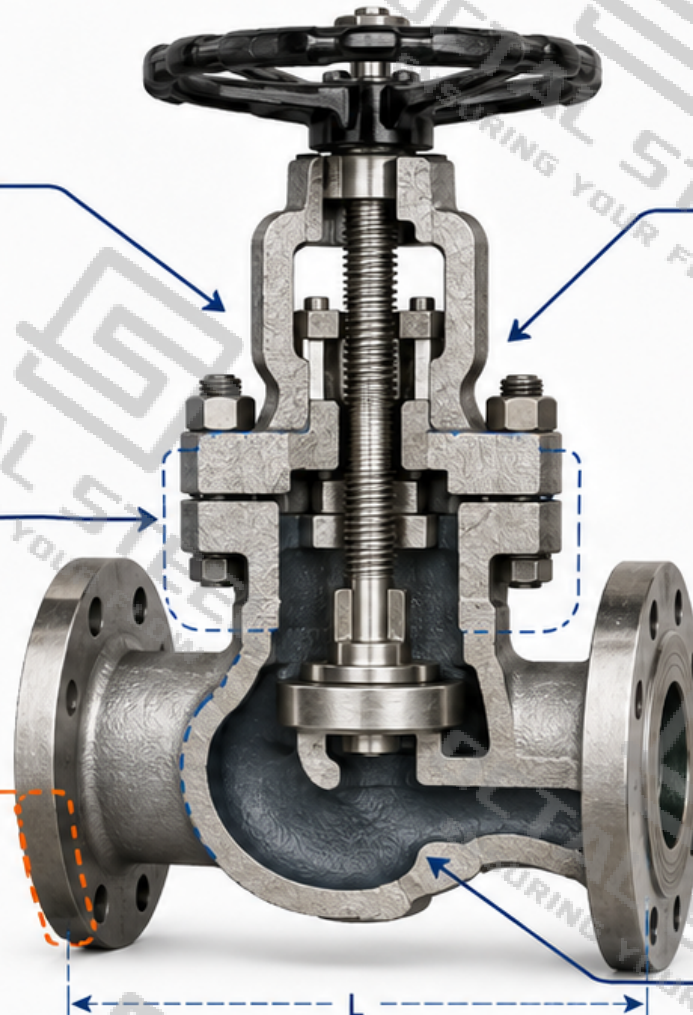


- ▶ Controls the installation envelope: face-to-face or end-to-end dimensions

6 API 598: Inspection / Examination / Pressure Testing



- ▶ Defines inspection, examination, and pressure testing for release and verification



Each standard controls a different scope of the valve life cycle. These documents are complementary and must be applied together.



DESIGN
CONTROL



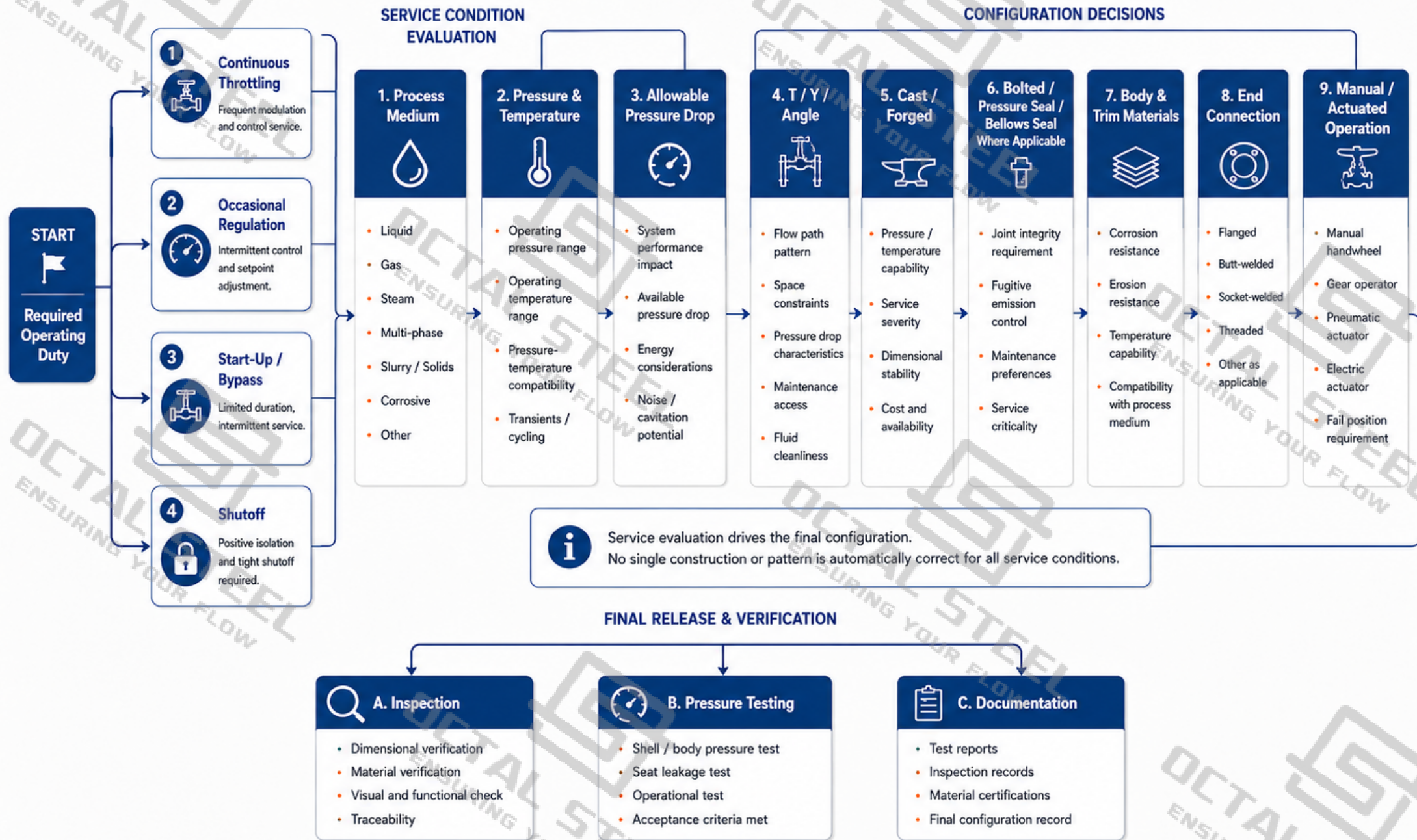
DIMENSIONAL
CONTROL



END
PREPARATION



VERIFICATION &
RELEASE



1

Material Identification



2

Body / Bonnet Machining



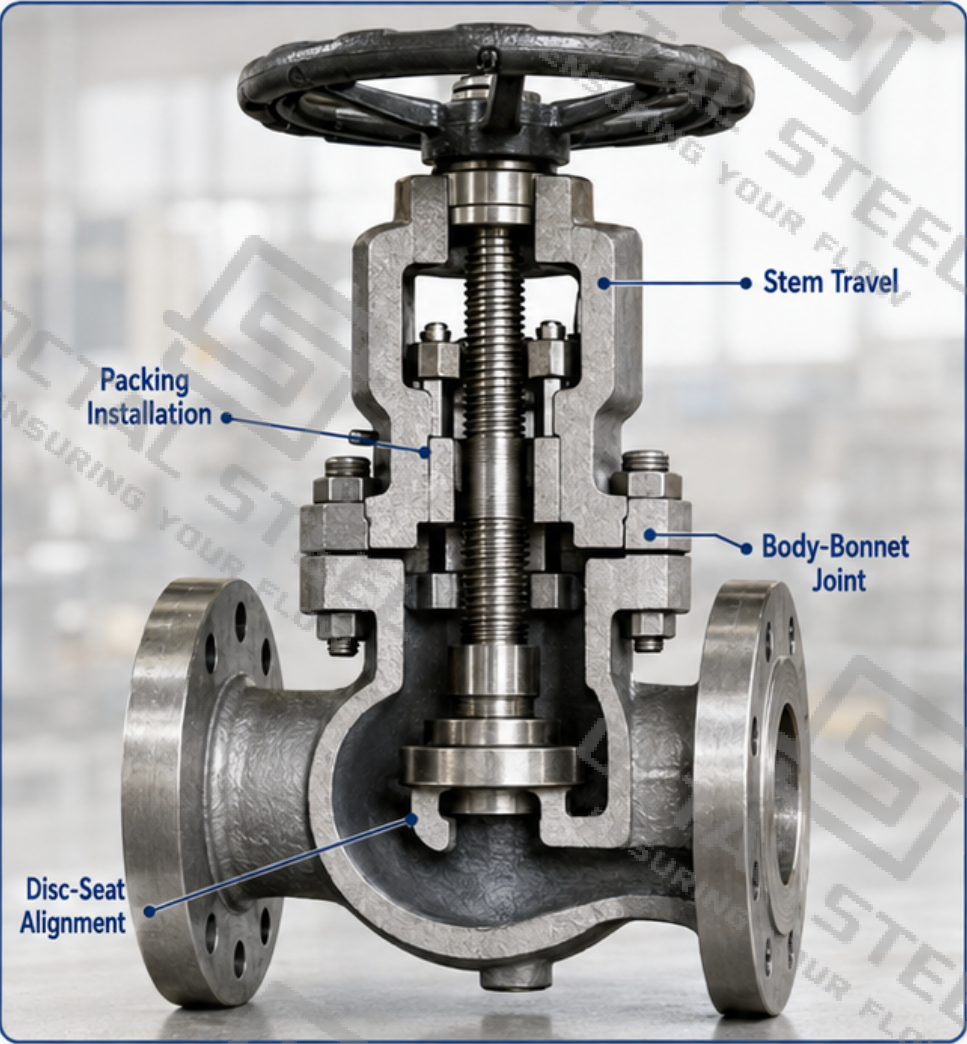
3

Stem / Disc / Seat Machining



i

Inspection, examination and pressure testing may be performed in accordance with API 598.



4

Seat Finishing / Hardfacing Where Required



5

Assembly



6

Dimensional / Functional Inspection



7

Shell / Seat Pressure Testing





1. Refinery Flow Regulation

Globe valve installed on process piping where intermediate flow adjustment is required.



2. Steam / Condensate Start-Up

Valve gradually introducing steam or utility flow.



3. Chemical Process Service

Corrosion-resistant globe valve in process piping.



4. Bypass / Commissioning

Valve regulating flow during gradual equipment start-up or pressure equalization.



Angle Globe Valve

Flow regulation and approximately 90° direction change at the same location.

PROJECT RELEASE CHECKLIST



Required Duty



Size & Pressure Class



Applicable Standard



Body Pattern



Construction



Materials / Trim



Bonnet



End Connection



Operation



Inspection / Documentation



1. Material Identity

- Heat / Lot Identification
- Material Specification
- Mill Test Certificate (MTC)



2. Inspection

- Dimensional Verification
- Visual Examination
- NDE (as applicable)



3. Pressure Test

- Shell Test
- Seat Test
- Functional Verification



4. Release Documentation

- Inspection Reports
- Test Reports
- Traceability Records
- Release Certificate