

SCOPE

- I 1.1 This practice **covers general requirements governing the design, inspection, testing, and preparation for shipment of valves.**
- I 1.2 **An asterisk (*)** indicates that a decision by the Purchaser is required or that additional information is furnished by the Purchaser.

SUMMARY OF ADDITIONAL REQUIREMENTS

- I 2.1 **Table 1** lists the practices and standards which shall be used with this practice.

TABLE 1

PRACTICES	
IP 3-12-8	Block Valve Packing Systems
IP 20-1-1	Inspection of Equipment and Materials
STANDARDS	
API Standard	
598	Valve Inspection and Testing
ASME	
B16.34	Valves, Flanged, Threaded, and Welding End

- I * 2.2 **Table 2** lists the practices, code, and standards that shall be used with this practice as specified by the Purchaser.

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TABLE 2

PRACTICES	
IP 3-16-1	Flanged Joints, Gaskets, and Bolting
IP 15-9-2	Motor Actuators for Valves
IP 18-3-4	Casting Quality for Valves in Hydrogen Service and High Pressure Service
IP 18-4-1	Postweld Heat Treatment of Equipment Handling Alkaline Solutions
IP 18-7-1	Welding Procedures
IP 18-10-1	Additional Requirements for Materials
IP 18-12-1	Positive Materials Identification
CODE AND STANDARDS	
ASME Code	
B31.3	Process Piping
API Standards	
600	Steel Gate Valves, Flanged and Buttwelding Ends
602	Compact Steel Gate Valves - Flanged, Threaded, Welding and Extended-Body Ends
607	Fire Test for Soft-Seated Quarter-Turn Valves
ASME Standard	
B16.5	Pipe Flanges and Flanged Fittings
B16.47	Large Diameter Steel Flanges (Series B)

MATERIALS

- R ↕ * 3.1 **Austenitic stainless steel and nickel alloy valves** (body, bonnet, cover, and cap):
 - a. **Trim including stem and seats, gland assemblies including bolting, and trunnion support materials** shall be of the same nominal chemistry as the body. Hard facing equal to CoCr-A shall be provided for seating surfaces when specified, and is always an acceptable alternative for seating surfaces.

Note: Hard facing (equal to CoCr-A) includes such trademarked materials as Stellite 6, Stoddy 6 and Wallex 6.
 - b. **Bonnet and cover bolting material** for valves NPS 3 and larger will be specified and shall be of the same material specification as the bolting used for connecting piping.



IP 3-12-9		General Requirements for Valves	
Page 2 of 5			
Rev. 2	June 2000		

(This practice is appropriate for attachment to Inquiry or Purchase Document)	
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DESIGN

- O * 4.1 **When chainwheels are specified**, they shall be of the **direct mounted adjustable sprocket rim type**. Chain guides shall be included. **Clamp-on type chainwheels are not permitted** unless specified.
- R * 4.2 All **pressure containing welds**, and **welds made on pressure containing components** shall meet the requirements of **IP 18-7-1**. Hardfacing welds on components that are not part of the pressure boundary may be exempted from this requirement if weld adequacy is demonstrated by an appropriate mockup.
- S 4.3 **Valve stems and check valve/butterfly valve shafts** shall be **blow-out proof** if the stem or shaft becomes separated from the closure device, if the stemnut becomes detached from the yoke, or if the packing gland is removed. Valve stems shall be designed such that the weakest link is outside of the pressure boundary.
- O,M 4.4 **Counterweight designs** for check valves shall be submitted to the Purchaser for approval by the Owner's Engineer. **Drawings for counterweighted check valves** shall clearly indicate whether the counterweights are provided to assist quick closure or to provide damping. **They shall also indicate** the weight and center of gravity of all components attached to the hinge pin, and the required counterweight location.
- O,R ♦ * 4.5 When **horizontal stem orientation** is required or specified for **gate valves** NPS 10 or greater in horizontal lines, valve internals shall be **designed to avoid wedge jamming** and the design shall be approved by the Owner's Engineer.

ADDITIONAL REQUIREMENTS FOR LOW ALLOY VALVES IN HYDROGEN SERVICE AND AUSTENITIC STAINLESS STEEL VALVES IN HIGH PRESSURE SERVICE

- R * 5.1 **When hydrogen service** is specified, **low alloy valve castings (P-numbers 3, 4, and 5 materials)** shall be magnetic particle and radiographically examined per **IP 18-3-4**.
- R 5.2 **Austenitic stainless steel valve castings**, with a rating of Class 1500 or 2500 shall be liquid penetrant and radiographically examined per **IP 18-3-4**.

ADDITIONAL REQUIREMENTS FOR VALVES IN WET H₂S SERVICE

- R 6.1 **PWHT** is required for all carbon and ferritic alloy steel pressure-containing components that are **welded and/or weld repaired**, except as specifically exempted in a. through c. below. The PWHT procedure outlined in **ASME B31.3**, Par. 331.1 shall be followed; however, the **exceptions** provided in Table 331.1.1, based on wall thickness, **are not permitted**. The **minimum PWHT temperature** shall be per **ASME B31.3** for the material used, but not less than 1150°F (620°C).

The specific types of welds listed in a. through c. below are exempt from the special PWHT requirements of this paragraph. However, this does not exempt these welds from PWHT which may be required for other reasons.
 - a. Multipass girth welds, welded from the outside surface only.
 - b. External attachment welds, when the weld is not in contact with wet H₂S.
 - c. Multipass seal and socket welds.
- R 6.2 **Hardness** of the base metal of the **body, bonnet, cap, stem, closure components (excluding locally hardened seating surfaces)**, and **butterfly valve seat retainer ring**, and of the **weld metal and related heat affected zone (HAZ)** of any pressure retaining welds, shall not exceed the limits given by **Table 3**.

