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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 12235-2007

**Steel globe valves and lift check valve for petroleum,
petrochemical and allied industries [including MODIFICATION
1]**

(English Translation)

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1 Scope

This Standard specifies the structural types, technical requirements, materials, test methods and inspection rules, marking, packaging, storage and transportation of steel globe valves and lift check valves with bolted bonnets.

This standard is applicable to the steel globe valves and lift check valves with bolted bonnets and flanged or welded ends, with a nominal pressure of PN 16~PN 420, nominal dimension of DN 15~DN 400 and service temperature of -29°C~538°C, for petroleum, petrochemical and allied industries.

This standard is applicable to the straight pattern, angle or Y pattern globe valves, steel lift check valves and steel globe stop valves.

Steel throttle valves may refer to this standard.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. For dated reference, subsequent amendments to (excluding correction to), or revisions of, any of these publications do not apply. However, the parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards. For undated references, the latest edition of the normative document referred to applies.

GB 150 Steel Pressure Vessels

GB/T 152.4 Fasteners-Counterbores for Hexagon Bolts and Nuts

GB/T 196 General Purpose Metric Screw Threads - Basic Dimensions (GB/T 196-2003, ISO 724: 1993, MOD)

GB/T 197 General Purpose Metric Screw Threads-Tolerances (GB/T 197-2003, ISO 965-1: 1998, MOD)

GB/T 228 Metallic Materials-Tensile Testing at Ambient Temperature (GB/T 228-2002, eqv ISO 6892: 1998)

GB/T 798 Hex bolts

GB/T 5796.1 Trapezoidal Screw Threads-Part 1: Profiles (GB/T 5796.1-2005, ISO 2901: 1993, MOD)

GB/T 5796.2 Trapezoidal Screw Threads-Part 2: General Plan (GB/T 5796.2-2005, ISO 2902: 1977, MOD)

GB/T 5796.3 Trapezoidal Screw Threads-Part 3: Basic Dimensions (GB/T 5796.3-2005, ISO 2904: 1977, MOD)

GB/T 5796.4 Trapezoidal Screw Threads-Part 4: Tolerances (GB/T 5796.4-2005, ISO 2903: 1993, MOD)

GB/T 7306.2 Pipe Threads with 55 Degree Thread Angle Where Pressure-Tight Joints are Made on the Threads--Part 2: Taper Internal and External Threads (GB/T 7306.2-2000, eqv ISO 7-1: 1994)

GB/T 9113 (All Parts) Integral Steel Pipe Flanges

GB/T 9124 Specification for steel pipe flanges

GB/T 12220 General purpose industrial valves-Marking (GB/T 12220-1989, idt ISO 5209: 1977)

GB/T 12221 Metal valves--Face to face, end to end, center to face and center to end dimensions (GB/T 12221-2005, ISO 5752: 1982, MOD)

GB/T 12222 Multi-turn valve actuator attachments (GB/T 12222-2005, ISO 5210: 1991, MOD)

GB/T 12224 General Requirements for Industrial Steel Valves (GB/T 12224-2005, ASTM B16.34a: 1998, NEQ)

GB/T 12228 General Purpose Industrial Valves-Specification of Carbon Steel Forgings

GB/T 12229 General Purpose Industrial Valves-Specification of Carbon Steel Castings

GB/T 12230 General Purpose Industrial Valves-Specification of Austenitic Steel Castings

JB/T 106 Valves Marking and Paint

JB/T 6440 Methods of Radiographic Examination for Steel Castings Valves

JB/T 8859 Globe valve-potential pressure life test regulation

JB/T 9092 Valve Inspection and Testing

4.10.1 The packing uncompressed may be either square, rectangular or V-shaped in cross-section.

4.10.2 The depth of the packing box shall accommodate a minimum of five uncompressed rings of packing, unless otherwise specified. The packing box surface area in contact with the packing shall have a surface finish, Ra of 3.2 μm or smoother.

4.10.3 The bore (inside diameter) of the packing box shall be equal to the stem diameter plus twice the packing width plus 0.8 mm.

4.10.4 A packing gland shall consist of a gland flange and a gland follower (spherical joint face). The gland flange shall have through hole (non-opening) flange to receive two erection bolts. The gland follower shall have a shoulder at its outside diameter on the top of spherical surface so as to prevent complete entry of the gland into the packing box. The bolting of the packing gland may be one of the following types:

- a) Eyebolts secured on the bonnet by pins having separation controls through the holes;
- b) Studs passing through the holes on the bonnet neck flanges and secured on the flanges by two nuts (on both sides of the flanges).

4.10.5 A lantern ring shall be provided only if it is specified in the order contract. Holes shall be located 180° apart on each end for its installation or removal. These holes may be either through holes for use with a hook or M3 threaded holes as specified in GB/T 196 for use with holders. The packing box shall be tapped opposite the centre of the installed lantern ring and shall be fitted with a plug. The nominal dimension of the taper-thread shall not be less than DN 8. Bosses as specified in GB/T 12224 shall be provided at the taper thread outside the packing box. When a lantern ring is installed, the packing box depth shall be at least equivalent to that of a minimum of six uncompressed rings of packing plus the thickness of the lantern ring.

4.11 Handwheel and operation

4.11.1

Unless otherwise specified in the order contract, the globe valve and globe stop valve shall be supplied with a direct operated handwheel that opens the valve when turned in a

counter-clockwise direction.

4.11.2

The handwheel operating globe valve shall be a spoke-rim type with a maximum of six spokes. Unless otherwise specified in the order contract, the handwheel shall be a one-piece carbon steel cast or forging, malleable cast iron, or spheroidal graphite iron casting's structure or a multi-piece carbon steel fabrication that includes other carbon steel product forms. Fabricated handwheels shall have strength and toughness characteristics comparable to that of one-piece handwheels.

4.11.3

Unless the handwheel is too small, the handwheel shall be marked with the word "OPEN" and an arrow pointing in the rotation direction.

4.14.1 Welding position at welded end

4.14.1.1

As for all the valves at the welded ends, liquid penetrant testing must be carried out at the welding ends to be free from injurious defects.

4.14.1.2 As for the welding ends with the following junction conditions, radiographic

testing shall be carried out in accordance with JB/T 6440 and the results shall conform to the requirements of JB/T 6440 or the order contract.

a) Carbon steel connecting pipeline that the outside diameter is greater than 273mm and wall thickness is greater than 19mm; alloy steel pipeline that the outside diameter is greater than

410 mm and wall thickness is greater than 19mm;

b) Other than a), carbon steel pipeline that the wall thickness is greater than 29mm; alloy steel pipeline that the wall thickness is greater than 41mm.

4.14.1.3 As for the valves at special pressure levels as specified in GB/T 12224, radiographic testing shall be carried out in accordance with JB/T 6440 and the results shall conform to the requirements of JB/T 6440 or the order contract.

4.14.2 Pressure-bearing parts of body and bonnet

As for the alloy steel cast valves that the nominal pressure is greater than or equal to PN 250 and those at special pressure levels as specified in GB/T 12224, radiographic testing shall be carried out for the bodies and bonnets of the first five valves of new models one by one in accordance with GB/T 12224 and the results shall conform to the requirements of