

Shipbuilding - Spheroidal graphite iron (ductile iron) 5K screw-down check globe valves

1. **Scope** This Japanese Industrial Standard specifies marine spheroidal graphite iron (ductile iron) 5K (1) screw-down check globe valves (hereinafter referred to as "globe valve") used for steam, air, fuel oil, lubricating oil and fresh water piping systems of ships.

Note (1): Nominal pressure

2. **Reference standards** The following standards form part of the requirements of this Standard when quoted. The latest edition of these standards shall be applied.

JIS B 0205	Metric coarse screw threads
JIS B 0216	Metric trapezoidal screw threads
JIS B 2239	General rules for cast iron pipe flanges
JIS F 7102	Application for gaskets and packing to piping system in machinery space
JIS F 7400	Ships valves and cocks - General inspection requirement
JIS G 3101	Rolled steel for general structure
JIS G 4303	Stainless steel bars
JIS G 5121	Stainless steel castings
JIS G 5501	Grey iron castings
JIS G 5502	Spheroidal graphite iron castings
JIS H 3100	Copper and copper alloy sheets, plates and strips
JIS H 3250	Copper and copper alloy rods and bars
JIS H 3260	Copper and copper alloy wires
JIS H 5120	Copper and copper alloy castings

3. **Pressure rating** The relationships between the fluid condition of a globe valve and maximum working pressure shall be as given in Table 1.

Table 1 Pressure rating

Fluid condition	Maximum working pressure MPa	
	Class B (2)	Class S (3)
Steam at 220°C or less	—	0.5
Steam at 205°C or less	0.5	
Air, gas, oil and pulsation water		
Non-shock water at 120°C or less		0.7

Note (2): Class B signifies that parts tabulated in the material column of Fig. 2 are made from copper and copper alloys.

Note (3): Class S signifies that parts tabulated in the material column of Fig. 2 are made from stainless steels.

4. **Construction, shape and dimensions** The construction, shape and dimensions of globe valves shall be as shown in Fig. 1, and the permissible dimensional deviation of the thickness a of a body shall be +15/−10%. Note, however, that if the calculated permissible dimensional deviation is less than 1 mm, a deviation up to 1 mm may be permitted.

5. **Materials** The materials of globe valves shall conform to the following requirements, a) and b).

- The materials of body, bonnet, and main components (disc, valve seat and stem) shall be as shown in Fig. 2.
- Globe valves shall be classified into Class B and Class S according to the combination of materials.
- The materials of others should preferably be as shown in Fig. 2.

Fig. 1 Construction, shape and dimensions

6. **Tests and inspection** Globe valves shall be inspected for the following items, a) through e), in accordance with the requirements of JIS F 7400.

- Material inspection
- Visual inspection
- Dimensional inspection
- Assembly inspection
- Hydraulic inspection

Hydraulic inspection The hydraulic inspection shall be carried out at the test pressures given in **Table 2**:

Table 2 Pressure testing

Test pressure MPa		
Leak test for valve seat		Hydraulic test of body
From below disc	From above disc	
0.8	Reduce test pressure from 0.8 to 0.4	1.1

7. **Designation** Globe valves shall be designated by title, nominal pressure, nominal diameter, type, material symbol or abbreviation.

Example 1: For a globe valve of Class B and nominal diameter of 50:

Marine spheroidal graphite iron (ductile iron) 5K-50 screw-down check
or

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graph TD
    F --- G
    G --- D
    D --- N
    N --- S
    S --- 5
    5 --- 50
    50 --- B
    B --- CB[Class B]
    CB --- ND[nominal diameter]
    ND --- NP[nominal pressure]
    NP --- SCV[screw-down check valve]
    SCV --- BM[body material: spheroidal graphite iron (ductile iron)]
    BM --- GV[globe valve]
    GV --- M[marine]
  
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Example 2: For a globe valve of Class S and nominal diameter of 50:

Marine spheroidal graphite iron (ductile iron) 5K-50 screw-down check

or							
F	G	D	N	5	50	S	
							Class S.

8. **Marking** The following particulars shall be marked on the surface of valve body.

- Material abbreviations of body and bonnet (FCD)
- Nominal pressure and nominal diameter
- Arrow indicating the flow direction
- Manufacturer's name or mark
- Year of manufacture