

Shipbuilding - Spheroidal graphite iron (ductile iron) 16K angle valves

1. Scope This Japanese Industrial Standard specifies marine spheroidal graphite iron (ductile iron) 16K ⁽¹⁾ angle valves (hereinafter referred to as “angle valve”) used for steam, air, fuel oil, lubricating oil and fresh water piping systems of ships.

Note (1): Nominal pressure (gauge 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 4305	Cold rolled stainless steel plates, sheets and strip
JIS G 4404	Alloy tool steels
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 an angle 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	1.6	1.6
Steam at 205°C or less		
Air, gas, oil and pulsation water		
Non-shock water at 120°C or less		2.2

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 angle valves shall be as shown in Fig. 1, and the permissible dimensional deviation of the thickness a of 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 angle 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.
Angle valves shall be classified into Class B and Class S according to the combination of materials.
- The materials of other parts should preferably be as shown in Fig. 2.

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

- a) Material inspection
- b) Visual inspection
- c) Dimensional inspection
- d) Assembly inspection
- e) Hydraulic inspection

The hydraulic inspection shall be carried out at the following test pressures:

- | | |
|----------------------------------|-----------|
| 1) Leak tests for valve seat | 2.42 MPa. |
| 2) Hydraulic inspection for body | 3.3 MPa. |

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

Example 1: For an angle valve of Class B and nominal diameter of 50:

Marine spheroidal graphite iron (ductile iron) 16K-50 angle valve B

or

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graph TD
    F --- L
    L --- D
    D --- 16
    16 --- 50
    50 --- B
    B --- B1[Class B.]
    B1 --- ND[nominal diameter]
    ND --- NP[nominal pressure]
    NP --- BM[body material: spheroidal graphite iron (ductile iron)]
    BM --- AV[angle valve]
    AV --- M[marine]
  
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Example 2: For an angle valve of Class S and nominal diameter of 50:

Marine spheroidal graphite iron (ductile iron) 16K-50 angle valve S

OF

F L D 16 50 S Class S

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