

## Shipbuilding - Spheroidal graphite iron (ductile iron) 10K screw-down check angle valves

**1. Scope** This Japanese Industrial Standard specifies marine spheroidal graphite iron (ductile iron) 10K (1) screw-down check 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

**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 an angle valve and maximum working pressure shall be as given in Table 1.

**Table 1 Pressure rating**

| Fluid condition                   | Unit: MPa   |             |
|-----------------------------------|-------------|-------------|
|                                   | Class B (2) | Class S (3) |
| Steam at 220°C or less            | —           | 1.0         |
| Steam at 205°C or less            | 1.0         |             |
| Air, gas, oil and pulsation water |             | 1.4         |
| Non-shock water at 120°C or less  |             |             |

**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 given 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 test pressures given in **Table 2**:

Table 2 Pressure testing

| Unit: MPa                |                                       |      |
|--------------------------|---------------------------------------|------|
| Test pressure MPa        |                                       |      |
| Leak test for valve seat | Hydraulic test of body                |      |
| From below disc          | From above disc                       |      |
| 1.54                     | Reduce test pressure from 1.54 to 0.4 | 2.10 |

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) 10K-50 screw-down check angle valve B or

F L D N 10 50 B

Class B

nominal diameter

nominal pressure

screw-down check valve

body material: spheroidal graphite iron (ductile) iron

angle valve

marine

**Example 2:** For an angle valve of Class S and nominal diameter of 50:

Marine spheroidal graphite iron (ductile iron) 10K-50 screw-down check angle valve S

or  
F L D N 10 50 S  
Class S

8. **Marking** The following particulars shall be marked on the surface of body.
- a) Material abbreviations of body and bonnet (FCD)
- b) Nominal pressure and nominal dia.
- c) Arrow indicating the flow direction
- d) Manufacturer's name or mark
- e) Year of manufacture