

Shipbuilding – Steel plate starting air reservoirs

1. Scope This Japanese Industrial Standard specifies starting air reservoirs made of steel plates (hereinafter referred to as “air reservoir”) having capacity of 60 to 20 000 L, used for marine internal combustion engines.

Remark 1: In this standard, “Rules” mean the Regulations for Ship Machinery of the Ship’s Safety Law or the Rules or Regulations for the Construction and Classification of Ships of Nippon Kaiji Kyokai.

2. Reference standards The following standards form part of this Standard when quoted. The latest edition (including supplements) of these reference standards shall be applied.

JIS B 1181	Hexagon nuts and hexagon thin nuts
JIS F 7102	Shipbuilding – Piping system in machinery space – Application for gaskets and packings
JIS G 3101	Rolled steel for general structure
JIS G 3103	Carbon steel and molybdenum alloy steel plates for boilers and other pressure vessels
JIS G 3106	Rolled steels for welded structure
JIS G 3115	Steel plates for pressure vessels for intermediate temperature service
JIS G 3201	Carbon steel forgings for general use
JIS G 3452	Carbon steel pipes for ordinary piping
JIS G 4051	Carbon steels for machine structural use
JIS G 4105	Chromium molybdenum steels
JIS H 3100	Copper and copper alloy sheets, plates and strips
JIS H 3300	Copper and copper alloy seamless pipes and tubes

3. Design working pressure The design working pressure of air reservoir shall be 2.45 MPa or 2.94 MPa.

Remark The design working pressure signifies the maximum working pressure at the maximum design temperature (maximum working temperature) designed by manufacturers.

4. Construction, shape and dimensions The construction, shape and dimensions of air reservoirs shall be as shown in **Figs. 1 to 9**, and shall conform to the following requirements.

- a)** The body shall be of arc welded construction using steel plates for shell plates and end plates, and arc welding shall be carried out in accordance with the requirements specified in the applicable Rules.
- b)** The installation procedure of valves shall be either the valve header system or independent installation system. The valve header system shall, as a rule, conform to the requirements of **1)** and **2)**, and the independent system, to the requirements of **3)**.
 - 1)** For the nominal capacity of 60 - 600, the header seat shall be of Type A, B or C shown in **Fig. 9**, and shall be located at “a” or “b” in **Fig. 6**.
 - 2)** For the nominal capacity of 700 - 2 000, the header seat shall be of Type B or C shown in **Fig. 9**, and shall be located at “a” or “b” shown in **Fig. 7**.
 - 3)** For the nominal capacity of 2 500 - 20 000, it shall be determined by the parties concerned. Examples of assembly are shown in **Figs. 4 and 5**.

- c) Cleaning seat hole, inspection hole seat or inspection hole plug seat and manhole shall conform to the requirements of the applicable Rules.
- d) Pressure gauge, safety device, drain connection, etc. shall conform to the requirements of the applicable Rules.
- e) Hexagon nut shall conform to the requirements of **JIS B 1181**.

- Reference**
- 1. The air reservoir provided with manhole shall, as a rule, be fitted with internal inspection steps.
 - 2. The air reservoir shall, as a rule, be provided with an internal drain pipe.
 - 3. The air reservoir shall, as a rule, be provided with supporting legs.
 - 4. The air reservoir shall be so constructed as to allow easy removal of slags after welding and application of appropriate interior corrosion control paints.

5. Materials The materials of the air reservoir shall, as a rule, be as given in **Table 1** and shall also conform to the requirements of the applicable Rules.

6. Tests and inspection The tests and inspection of the air reservoir shall conform to the following requirements.

- a) **Edge preparation inspection** When the body (shell plate and end plates) is welded, specified edge preparations shall be carried out before welding is made.
The edge preparation inspection shall conform to the requirements of the applicable Rules.
- b) **Welding procedure inspection** The welding procedure inspection (mechanical inspection) of the air reservoir shall conform to the requirements of the applicable Rules.
- c) **Non-destructive inspection** The radiographic inspection and magnetic particle inspection of welded joints of the air reservoir shall conform to the requirements of the applicable Rules.
- d) **Hydraulic inspection** The hydraulic inspection of the air reservoir shall, as a rule, be carried out at a hydraulic test pressure corresponding to 1.5 times of the design pressure, and every part shall be free from abnormalities.

When there is special requirement, it shall be determined among the parties concerned.

7. Stress relieving When stress relieving of the air reservoir is necessary, it shall conform to the requirements of the applicable Rules.

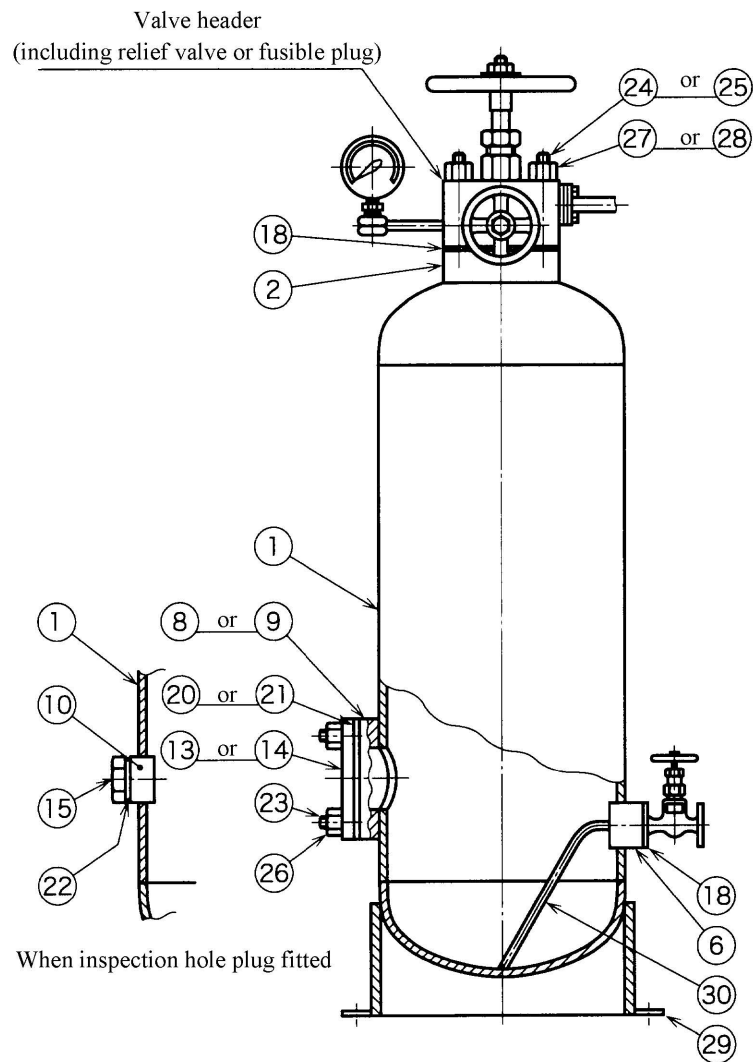
8. Designation The air reservoir shall be designated by the title or JIS number and nominal capacity.
Example: Marine Steel Plate Starting Air Reservoir 60 or **JIS F 7230-60**.

9. Marking A name plate stating the following particulars inscribed by a non-erasable way shall be fitted at a conspicuous place of the body.

- a) Manufacturer's name or mark
- b) Year of manufacture or mark
- c) Serial number
- d) Design pressure MPa
- e) Hydraulic test pressure MPa
- f) Capacity L or m³

Table 1

No.	Component		Material
1	Body	Shell plate	JIS G 3103 – SB410 or JIS G 3115 – SPV355
		End plate	JIS G 3103 – SB410 or JIS G 3115 – SPV355
2	Header seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
3	Air inlet valve seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
4	Air outlet valve seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
5	Manhole ring		JIS G 3103 – SB410 or JIS G 3115 – SPV355
6	Drain valve seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
7	Relief valve or fusible plug seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
8	Cleaning hole seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
9	Inspection hole seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
10	Inspection hole plug seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
11	Pressure gauge valve hole seat		JIS G 3201 – SF440 or JIS G 4051 – S25C
12	Manhole cover		JIS G 3103 – SB410 or JIS G 3115 – SPV355
13	Cleaning hole cover		JIS G 3201 – SF440 or JIS G 4051 – S30C,S35C
14	Inspection hole cover		JIS G 3201 – SF440 or JIS G 4051 – S30C,S35C
15	Inspection hole plug		JIS G 3201 – SF440 or JIS G 4051 – S30C,S35C
16	Manhole keep plate		JIS G 3101 – SS400 or JIS G 3201 – SF440
17	Manhole hinge		JIS G 3101 – SS400 or JIS G 3206 – SM400
18	Header gasket		JIS H 3100 – C1100P or JIS F 7102
19	Manhole cover gasket		JIS F 7102
20	Cleaning hole cover gasket		JIS H 3100 – C1100P
21	Inspection hole cover gasket		JIS H 3100 – C1100P
22	Inspection hole plug gasket		JIS H 3100 – C1100P
23	Stud bolt (for cleaning hole, inspection hole and manhole)		JIS G 3101 – SS490 or JIS G 4051 – S30C
24	Stud bolt (for valve headers A and B)		JIS G 3101 – SS490 or JIS G 4051 – S30C see Fig. 9
25	Stud bolt (for valve header C)		JIS G 4105 – SCM435 see Fig. 9
26	Hexagon nut (for cleaning hole, inspection hole and manhole)		JIS G 3101 – SS490 or JIS G 4051 – S30C
27	Hexagon nut (for valve headers A and B)		JIS G 3101 – SS490 or JIS G 4051 – S30C see Fig. 9
28	Hexagon nut (for valve header C)		JIS G 4105 – SCM435 see Fig. 9
29	Support leg		JIS G 3101 – SS400 or JIS G 3106 – SM400
30	Internal drain pipe		JIS G 3452 – SGP or JIS H 3300 – C1201T



Remark: Assembly plan shows an example.

Fig. 1 Assembly (Upright type) capacity 60 - 600