

19.3.4(b) *Test Pressure.* The test pressure supplied is to be not less than $1\frac{1}{2}$ times the maximum allowable working pressure for steel cylinders, and not less than twice the maximum allowable working pressure for cast iron and nodular iron cylinders.

19.5 Cylinders for Group II Piping Systems

Hydraulic and pneumatic power cylinders for use in Group II piping systems may be accepted on the basis of the manufacturer's data indicating pressure rating and suitability for the intended service.

21 Sea Inlets and Overboard Discharges

21.1 Installation (2006)

Piping connections bolted to the shell plating are to have the bolt heads countersunk on the outside and the bolts threaded through the plating. Where a reinforcing ring of sufficient thickness is riveted or welded to the inside of the shell, studs may be used.

Threaded connections outboard of the shell valves are not considered an acceptable method of connecting pipe to the shell.

21.3 Valve Connections to Shell

Pipe connections fitted between the shell and the valves are to be at least Extra Heavy (see 4-2-1/9.21) and as short as possible. Wafer-type valves are not to be used for any connections to the unit's shell unless specially approved.

21.5 Materials

All shell fittings and the valves required by 4-2-2/21.9 and 4-2-2/23 are to be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. The use of nodular iron, also known as ductile iron or spheroidal-graphite iron, will be accepted, provided the material has an elongation not less than 12%. All pipes to which this subsection refers are to be of steel or other equivalent material, subject to special approval.

21.7 Shell Reinforcement

Overboard discharges are to have spigots extending through the shell plate. Boiler and evaporator blow-off overboard discharges are to have doubling plates or heavy inserts fitted. The spigot is to extend through the doubling and the shell and the external doubling plate, when fitted, but the spigot need not project beyond the outside surface of the unit.

21.9 Sea-Water Inlet and Discharge Valves (2008)

Positive closing valves are to be fitted at the shell in inlet and discharging piping. The controls are to be readily accessible and are to be provided with indicators showing whether the valves are open or closed. In order to be considered readily accessible, the controls, during normal operating conditions, are to be:

- i) Located in a space normally entered without using tools,
- ii) Clear of or protected from obstructions, moving equipment and hot surfaces that prevent operation or servicing, and
- iii) Within operator's reach.

Materials readily rendered ineffective by heat are not to be used for connection to the shell where the failure of the material in the event of a fire would give rise to danger of flooding.

Power-operated valves are to meet the requirements in 4-2-1/9.19. **Position indicating systems for sea-water inlet and discharge valves are to be independent of the valves' control systems.** Additionally, sea-water valves necessary for the operation of propulsion machinery or generation of power required in 4-3-2/3.1 are to be designed to remain in the last ordered position upon loss of control power.

Valves for sea-water inlets and discharges are also to be in accordance with the following, as applicable.

21.9.1 Column-Stabilized Units

Sea-water inlets and discharges below the assigned load line are to be provided with valves which can be remotely operated from an accessible position outside of the space.

21.9.2 Self-Elevating and Surface-Type Units

Sea-water inlets and discharges in spaces below the assigned load line which are not intended to be normally manned are to be provided with valves which can be remotely operated from an accessible position outside of the space. If the valves are readily accessible, the spaces containing the inlets and discharges may be provided with bilge alarms in lieu of remote operation of the valves.

21.9.3 Self-Elevating Units

Mud pit discharges are to be provided with valves which can be operated from an accessible position. These valves are to be normally closed and a sign to this effect is to be posted near the operating position. Non-return valves need not be provided.

21.11 Sea Chests (1996)

The location of sea chests is to be such as to minimize the probability of blanking off the suction, and they are to be so arranged that the valves may be operated from the floors or gratings.

Sea chests are to be fitted with strainer plates at the shell. The strainers are to have a clear area of at least 1.5 times the area of the sea valves, and efficient means are to be provided for clearing the strainers.

23 Scuppers and Drains on Surface-Type and Self-Elevating Units

23.1 Discharges through the Shell (2005)

Discharges led through the shell either from spaces below the freeboard deck or from within superstructures and deckhouses on the freeboard deck, fitted with doors complying with the requirements of 3-2-11/5 of the *Steel Vessel Rules*, are to be fitted with efficient and accessible means for preventing water from passing inboard.

Normally, each separate discharge is to have one automatic non-return valve with a positive means of closing it from a position above the freeboard deck, or bulkhead deck, whichever is higher. Alternatively, one non-return valve and one positive closing valve controlled from above the freeboard deck may be accepted.

23.1.1

Where, however, the vertical distance from the load water-line to the inboard end of the discharge pipe exceeds $0.01L$, the discharge may have two automatic non-return valves without positive means of closing, provided that the inboard valves are always accessible for examination under service conditions. The inboard valve is to be above the deepest load waterline. If this is not practicable, then, provided a locally controlled stop valve is interposed between the two non-return valves, the inboard valve need not be fitted above the deepest load waterline.