

17.5 Group II Piping Flanges

Similar attachments are also to be used in Group II piping. However, modifications are permitted for welded flanges, as noted in 2-4-2/9.5 and 2-4-2/9.7, and screwed flanges of suitable material may be used in all sizes.

17.7 Group II Plastic Piping Flanges

Rigid plastic compounds for flanges in plastic piping systems will be considered for Group II piping systems. The design pressure and temperature together with the physical characteristics of the material are to be submitted in all cases.

19 Sea Inlets and Overboard Discharges

19.1 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 welded to the inside of the shell, studs may be used. For compensation in way of holes in the shell plating, see 3-2-2/11.

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

19.3 Valve Connections to Shell

Pipe connections fitted between the shell and the valves are to be of substantial construction (i.e., pipe wall thickness is to be equal to the shell plating thickness, but need not be greater than extra heavy) and as short as possible. Wafer type valves are not to be used for any connections to the vessel's shell unless specially approved. Lug type butterfly valves used as shell valves are to have a separate set of bolts on each end of the valve so that the inboard end may be disconnected with the valve closed to maintain its watertight integrity.

19.5 Materials

All shell fittings and valves required by 4-4-2/21 and 4-4-2/23 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 of not less than 12% in 50 mm (2 in.). All pipes to which this subsection refers are to be of steel or other equivalent material, subject to special approval.

19.7 Shell Reinforcement

Overboard discharges are to have spigots extending through the shell plate and doubling plate, where fitted, but need not project beyond the outside surface of the vessel.

19.9 Common Overboard Discharge

In general, various types of systems which discharge overboard are not to be interconnected without special approval; that is, closed pumping systems, deck scuppers, gravity drains, etc. are not to have a common overboard discharge.

21 Machinery and Pumping Systems

21.1 Valves Required (2006)

Positive closing valves are to be fitted at the shell in inlet and discharge 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.

21.3 Sea Chests

The locations of sea chests are to be such as to minimize the probability of blanking off the suction and arranged so that the valves may be operated from the floors or gratings. Power-operated sea valves are to be arranged for manual operation in the event of a failure of the power supply.

21.3.1 Strainer Plates

Sea chests are to be fitted with strainer plates at the vessel's side. The strainers are to have a clear area of at least 1.5 times the area of the sea valves. Efficient means are to be provided for clearing the strainers.

21.3.2 Ice Strengthening

For vessels with ice strengthening, see Part 6, Chapter 1 of the *Steel Vessel Rules*.

23 Scuppers and Drains

23.1 General (2007)

23.1.1 Application

These requirements apply to gravity drain systems from watertight and non-watertight spaces located either above or below the freeboard deck.

23.1.2 Definitions

23.1.2(a) Gravity drain system. A gravity drain system is a piping system in which flow is accomplished solely by the difference between the height of the inlet end and the outlet end. For the purposes of the Rules, gravity drain systems include those which discharge both inside and outside the vessel.

23.1.2(b) Gravity discharge. A gravity discharge is an overboard drain from a watertight space such as spaces below freeboard deck or within enclosed superstructures or deckhouses. Back-flooding through a gravity discharge would affect the reserve buoyancy of the vessel.

23.1.2(c) Inboard end. The inboard end of an overboard gravity discharge pipe is that part of the pipe at which the discharge originates. The inboard end to be considered for these requirements is the lowest inboard end where water would enter the vessel if back-flooding would occur.

23.1.2(d) Scupper. A scupper is an overboard drain from a non-watertight space or deck area. Back-flooding through a scupper would not affect the reserve buoyancy of the vessel.