

may be considered by the Chief Surveyor unless it is shown that the intact metacentric height in any service condition necessary to meet these requirements is excessive for the service intended.

(17) Relaxations from the requirements for damage stability shall be permitted only in exceptional cases and subject to the condition that the Chief Surveyor is to be satisfied that the proportions, arrangements and other characteristics of the ship are the most favourable to stability after damage which can practically and reasonably be adopted in the particular circumstances.

26. Passenger Ship Light Weight Survey—(1) At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the stability information approved under Rule 32(5) of the Load Line Rules 1970, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found, or anticipated.

(2) A report of each lightweight survey carried out in accordance with sub-clause (1) of this clause shall be submitted to the Chief Surveyor.

27. Damage Control Plans in Passenger Ships—(1) There shall be permanently exhibited, for the guidance of the officer in charge of the ship, plans showing clearly for each deck and hold the boundaries of the watertight compartments, the openings therein with the means of closure and position of any controls thereof, and the arrangements for the correction of any list due to flooding. In addition, booklets containing the aforementioned information shall be made available to the officers of the ship.

PART IV

BILGE PUMPING ARRANGEMENTS

28. General—(1) An efficient bilge pumping system shall be provided capable of pumping from and draining any watertight compartment other than a space permanently appropriated for the carriage of fresh water, water ballast, oil fuel or liquid cargo and for which other efficient means of pumping are provided, under all practical conditions. Efficient means shall be provided for draining water from insulated holds.

(2) Sanitary, ballast and general service pumps may be accepted as independent power bilge pumps if fitted with the necessary connections to the bilge pumping system.

(3) All pipes from the pumps for draining cargo spaces or any part of the machinery space shall be distinct from pipes which may be used for filling or emptying spaces in which water or oil is carried. All bilge suction pipes shall be of steel or other approved material of approved wall thickness. Bilge suction pipes in such a ship shall not be led through oil tanks, unless the pipes are enclosed in an oil-tight trunkway. Such pipes shall not be led through double-bottom tanks. Such pipes shall be made with flanged joints, and shall be thoroughly secured in position and protected where necessary against the risk of damage. Efficient expansion joints or bends shall be provided in each line of pipe.

(4) The internal diameter of main and branch bilge suction pipes shall be determined to the nearest 5mm calculated according to the following formulae:

$$d_m = 1.68 \sqrt{L(B+D)} + 25\text{mm}$$

$$d_b = 2.15 \sqrt{C(B+D)} + 25\text{mm}$$

where: d_m = internal diameter of the main bilge suction pipe in millimetres.

d_b = internal diameter of the branch bilge suction pipe in millimetres

L = length of ship in metres

B = breadth of ship in metres

D = moulded depth of ship to bulkhead deck in metres

C = length of compartment in metres.

No main bilge suction pipe shall be less than 65mm bore, and no branch bilge suction pipe shall be less than 50mm or need be more than 100mm bore.

(5) The bilge and ballast pumping systems shall be so arranged as to prevent water passing from the sea or from water-ballast spaces into the ship's cargo spaces or into any part of the machinery space or from one watertight compartment in the ship to another. The bilge connection to any pump which effects suction from the sea or from water-ballast spaces shall be made by means of either a non-return valve or a cock which cannot be opened at the same time to the bilges and to the sea or to the bilges and the water-ballast spaces. Valves in bilge distribution boxes shall be of a non-return type. An arrangement of lock-up valves or of blank flanges shall be provided to prevent any deep tank in such a ship being inadvertently run up from the sea when it contains cargo or pumped out through a bilge pipe when it contains water ballast, and instructions for the working of such an arrangement shall be conspicuously displayed nearby.

(6) All distribution boxes and manually operated valves in connection with the bilge pumping arrangements shall be in positions which are accessible under ordinary circumstances.

(7) Every bilge pump shall be self-priming unless efficient means of priming are provided. Every such pump, other than a pump provided for peak compartments only shall be so arranged as to be capable of drawing water from any space required by subclause (1) of this clause to be drained.

(8) Bilge suction in the machinery space and tunnel well of every ship to which these regulations apply shall be led from readily accessible mud boxes placed wherever practicable above the level of the working floor of the space. The boxes shall have straight tailpipes to the bilges and covers secured in such a manner as will permit them to be readily opened and closed. The suction ends in hold spaces and tunnel wells shall be enclosed in strum boxes having perforations approximately 10mm in diameter, and the combined area of such perforations shall be not less than twice that of the end of the suction pipe. Strum boxes shall be so constructed that they can be cleared without breaking any joint of the suction pipe.

(9) All tanks forming part of the structure of the ship and all watertight compartments, not being part of the machinery space, shall be provided with efficient sounding arrangements which shall be protected where necessary against damage. Where such arrangements consist of sounding pipes, a thick steel doubling plate shall be securely fixed below each sounding pipe for the sounding rod to strike upon. All such sounding pipes shall extend to positions above the ship's bulkhead deck, which shall at all times be readily accessible. Sounding pipes for bilges, coffer dams and double-bottom tanks, being bilges, coffer dams, and tanks situated in the machinery space, shall so extend, unless the upper ends of the pipes are accessible in ordinary circumstances and are furnished with cocks having parallel plugs with permanently secured handles so loaded that on being released they automatically close the cocks. Sounding pipes for the bilges of insulated holds shall be insulated and not less than 65mm in diameter.

29. Passenger Ships—(1) The bilge pumping system shall be capable of operation under all practicable conditions after a casualty whether the ship is upright or listed. For this purpose wing suction shall generally be fitted except in narrow compartments at the end of the ship where one suction may be sufficient. In compartments of unusual form, additional suction may be required. Arrangements shall be made whereby water in the compartment may find its way to the suction pipes. Where, for particular compartments, the Chief Surveyor is satisfied that the provision of drainage may be undesirable, he may allow such provision to be dispensed with if calculations made in accordance with the conditions laid