PART 6

BILGE PUMPING ARRANGEMENTS

6.1 General (Regulation 49)

It should be noted that a bilge pump is not designed to deal with a large ingress of water into a space or compartment, but rather to deal with leakages.

6.2 Approval

6.2.1 In the initial examination of the bilge pumping arrangements, the following aspects should be included at the approval stage:-

6.2.2.1 The number, location, type and capacity of the pumps available for bilge pumping service together with their source(s) of power so as to ensure the availability of at least one pump at all times.

6.2.2.2 The arrangement of watertight bulkheads and the allocation of spaces between the bulkheads; the methods of sealing pipes passing through watertight bulkheads; the arrangements and sizes of main and branch bilge suction pipe lines; the direct bilge suction; the types of pipe couplings and arrangements necessary to maintain integrity of bilge line under hull damage and/or fire conditions.

6.2.2.3 Bilge and bilge suction distribution chest valves and their location.

6.2.2.4 Arrangements of remote power operated valves - actuators, pipe and/or cable runs, materials and pipe couplings.

6.2.2.5 Arrangements for draining all spaces below the bulkhead deck and means to prevent progressive flooding of other compartments when one compartment has been damaged.

6.2.2.6 Direct bilge suctions in the machinery space and spaces containing power bilge pumps.

6.2.2 Sounding arrangements, should consist of sounding pipes, or an efficient indicating apparatus. Sounding pipes should, where possible, be straight, but where this is not practicable, the curvature of the pipes must permit the ready passage of the sounding rod or chain. Indicating apparatus, used for sounding those spaces served by the bilge pumping system, should be capable of being used under all conditions of flooding that the ship is able to withstand. Where electrical power is required for its operation, this should be taken from the emergency switchboard.

6.3 Arrangements of Bilge Pipes

6.3.1 Bilge suction pipes are not to be led through oil tanks unless the pipes are enclosed in an oil tight trunkway. Such pipes should not be led through double bottom tanks of minimum height (see paragraph 2.8.3 of these Instructions). However, when the height of the double bottom exceeds the minimum, e.g. deep tanks, pipes will be accepted provided that all parts of the system is positioned above the “line of double bottom”. For ships constructed on or after 1 September 1984, where suction pipes pass through deep water ballast tanks, such pipes should be of heavy gauge material. Pipe joints should be kept to a minimum. Heavy gauge is interpreted as the normal wall thickness plus an adequate margin for corrosion over the estimated life of the pipe. Pipe joints in this context is meant to include all joints except full penetration welded joints.

6.3.2 No main bilge suction pipe in any ship should be less than 63 mm in bore, no branch suction pipe should be less than 50 mm or need be more than 100 mm in bore.

6.3.3 Such pipes should be made of flanged joints and should be thoroughly secured in position and protected where necessary against the risk of damage. Efficient expansion joints or bends should be provided in each line of pipe, and where a connection is made at a bulkhead or elsewhere with a lead bend the radius of each bend and the distance between the axes of the straight parts of the pipes should be not less than three times the diameter of the pipe and the length of any bend should be not less than eight times that diameter.

6.3.4 In every ship the bilge main should not be situated nearer to the ship's side than one-fifth of the breadth of the ship, such distance being measured at right angles to the centreline of the ship, at the level of deepest subdivision load waterline, and where any bilge pump or its pipe connecting it to the bilge main is not so situated the arrangements should be such that damage to the ship's side penetrating to the extent of one-fifth of the ship's breadth measured as described in this paragraph should not put the other bilge pumping arrangements out of action.

6.4 Additional Requirements for Ships Constructed on or After 1 September 1984

6.4.1 Pipes which may permit flammable or toxic liquids to enter the bilge pumping system should be provided with a blank spectacle piece permanently in place. A clear warning notice as to the dangers and purpose of this blank should be permanently and conspicuously placed adjacent to the blank.

6.4.2 Particular care should be taken that such toxic or flammable gases should not enter the fire main or sanitary system perhaps through general service pumps.

6.5 Bilge Valves, Cocks etc.

6.5.1 Valves in bilge distribution boxes should be of a non-return type. An arrangement of lock-up valves or of blank flanges should be provided to prevent any deep tank being inadvertently run up from the sea when it contains cargo, or pumped out through a bilge pipe when it contains water ballast; instructions for the working of such an arrangement should be conspicuously displayed nearby.

6.5.2 In any ship of Class II(A) carrying less than 250 passengers provided with a hand pump for each watertight compartment in accordance with the provisions of the Regulations, the valves and cocks on the bilge main for controlling the bilge suctions are not required to be capable of being operated from above the ship's bulkhead if they are in the same compartment as a power pump. The hand bilge pumps, however, should be workable from above the ship's bulkhead deck.

6.5.3 Any remote operating system for bilge suction valves or cocks should be led as directly as possible. Every such operating system passing through a cargo space should be protected against damage in such a space.

6.5.4 Valves required to be operable from above the bulkhead deck may be pneumatically, hydraulically, electrically or mechanically operated with the piping runs and controls sited within the B/5 line. Such valves should fail to the closed position.

6.5.5 An emergency store of energy should be provided to enable all valves to be operated in the event of power failure.

6.6 Remote Operated Bilge Valves

6.6.1 The complete installation should be located within the B/5 line and operable from above the bulkhead deck. The remote control should be capable of overriding local control.

6.6.2 Provision should be made at the remote control station to indicate that power or stored energy is available to operate the valves.

6.6.3 The air supply for a pneumatic system should be taken from an independent source located above the bulkhead deck and within the B/5 line. This independent source should normally consist of an air receiver and air compressor capable of operating in an emergency.

6.6.4 Where in special cases replenishment of the air receiver is from the main air receivers in the machinery spaces a non-return valve in the air supply line close to the air receiver should be provided to prevent reservoir depletion in the event of loss of pressure in main air receivers or damage to the air supply line. Where such a reservoir is provided it should be capable of actuating all bilge valves at least one time without replenishment of the reservoir from the main reservoirs.

6.6.5 Electro-hydraulic systems should be capable of operating on main and emergency sources of power.

6.6.6 Control pipes and couplings should be of a material not readily rendered ineffective by heat and be suitable for their intended use.

6.6.7 The system should be capable of operating submerged under the maximum possible head of sea water to be expected in the compartment. The valves should fail closed.

6.7 Bilge Mud Boxes and Strum Boxes

Bilge suctions in the machinery space of every ship should be led from readily accessible mud boxes placed wherever practicable above the level of the working floor of such space. The boxes should 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 should be enclosed in strum boxes having perforations approximately 10 mm in diameter, and the combined area of such perforations should be not less than twice that of the end of the suction pipe. Strum boxes should be so constructed that they can be cleared without breaking any joint of the suction pipe.

6.8 Sounding Pipes

6.8.1 In every ship all tanks forming part of the structure of the ship and all watertight compartments, not being part of the machinery space, should be provided with efficient sounding arrangements which should be protected where necessary against damage. Where such arrangements consist of sounding pipes, a thick steel doubling plate should be securely fixed below each sounding pipe for the sounding rod to strike upon. All such sounding pipes should extend to positions above the ship's bulkhead deck which should at all times be readily accessible. Sounding pipes for bilges, cofferdams and double bottom tanks situated in the machinery space, should also extend to above the ship's bulkhead deck 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.

6.8.2 Sounding pipes for the bilges of insulated holds should be insulated and not less than 63 mm in diameter.

6.9 Bilge Holding Tanks

6.9.1 The design of modern bilge systems usually incorporate a bilge holding tank into which the bilge water is pumped prior to discharge overboard via the oily water separator. The purpose of the holding tank is to act as a settling tank by allowing sufficient time for the separation of any oil (or oil emulsions resulting from the use of proprietary bilge cleaning agents) from the bilge water prior to its discharge overboard via the oily water separator. Apart from the obvious

advantage of reducing the work required by the separator, which will mean reduced maintenance where coalescing filters or equivalent are fitted, this arrangement also allows for the use of automatic bilge reduction without the fear of a malfunctioning separator causing oil pollution.

6.9.2 Although not a mandatory requirement the provision of a bilge holding tank is considered to be an important factor in the continuing effective operational use of the oily water separator and, as such, should be recommended to all owners, designers and builders of new vessels. Where practicable, owners of existing vessels should be encouraged to designate a suitably sized existing tank for use as a bilge holding tank and modify the bilge pump discharge and separator suction arrangements accordingly.