

CHAPTER 9

LIFEBOAT AND RESCUE BOAT DISENGAGING GEARS AND SIMILAR ARRANGEMENTS

9.1 General conditions of acceptance of disengaging gears

9.1.1 The statutory requirements for lifeboat and rescue boat disengaging gears are contained in Schedule 2, Part 1, paragraphs 8.1 to 8.7 of MSN 1676(M).

9.1.2 Full details of disengaging gears for which acceptance is sought should be submitted to the Nominated or Notified Body and sample gears should be subjected to the programme of tests detailed in paragraph 9.2.

9.2 Tests for disengaging gears

9.2.1 Strength tests for prototype disengaging gears

Lifeboat and rescue boat disengaging gears shall be tested in accordance with Chapter 1, Part IX, Section 1 and Chapter 2, Part IV, Section 1 respectively of Volume 2 - Testing of Life-Saving Appliances.

9.2.2 Proof testing of production hooks

Disengaging gears for lifeboats and rescue boats shall be proof tested in accordance with Chapter 1, Part IX, Section 2 and Chapter 2, Part IV, Section 2 respectively of Volume 2 - Testing of Life-Saving Appliances.

9.2.3 Towing and disengaging tests

The various types of lowering and disengaging tests required are contained in Chapter 1, Part IX, Section 3 and Chapter 2, Part IV, Section 3 of Volume 2 - Testing of Life-Saving Appliances. The 10% overload "on-load" release test need only be carried out once, either at the lifeboat and rescue boat builders works or when installed on the ship.

9.3 Certificate of test

9.3.1 The manufacturer should submit evidence of the quality assurance and the quality control procedures at their works for the Nominated or Notified Body's assessment. The manufacturer should also submit drawings and detailed specifications, which, subject to the Nominated or Notified Body's acceptance will be referred to in the Certificate and the Schedule attached to it.

9.3.2 If a disengaging gear fulfils the conditions specified in Schedule 2, Part 1, paragraph 8 of MSN 1676(M) and has been tested in the manner indicated in paragraph 9.2 with satisfactory results a Certificate of Inspection and Tests shall be issued to the manufacturer.

9.4 Marking of emergency hand release

In all lifeboats and rescue boats fitted with disengaging gear the position of the emergency hand release should be clearly indicated.

9.5 Operating instructions

A card containing simple operating instructions should be supplied to every lifeboat and rescue boat fitted with disengaging gear, for the guidance of officers and lifeboatmen.

9.6 Lubrication

Only grease which will function satisfactorily over a wide temperature range should be used to lubricate disengaging gear.

9.7 Installation and inspection of disengaging gears

In dealing with the installation of disengaging gears surveyors should satisfy themselves that such gears comply in all respects with the specification referred to in the certificate. Fitting should be carried out strictly in accordance with the accepted arrangements and the gear should be subjected to the programme of tests detailed in Sections 2 and 3 of Chapters 1 or 2 as appropriate of Volume 2 Testing of Life-Saving Appliances. See also Merchant Shipping Notices Nos M.1492 and M.1523.

9.8 Tests at periodic surveys

9.8.1 At the periodic surveys of MCA on board ships, disengaging gears should be tested to ensure the simultaneous release when the lifeboat or rescue boats is waterborne. Where the rods are found to be defective in certain standard type disengaging gear comprising part rod, part chain release, they should be replaced with all chain release. When the surveyor is satisfied that the simultaneous release mechanism is in good working order it should be further tested with the lifeboat suspended just above the water to ensure that release does not take place until the lifeboat is waterborne.

9.8.2 Surveyors should be satisfied that the safety pin or safety catch and clip on the release lever are effective. Every opportunity should be taken to impress upon masters and officers the need for ensuring that the lifting hooks are fully engaged with the lower fall blocks and that the release lever safety pin or safety catch and clip are in the safe position before lifeboats are recovered and stowed after boat drills, lowering tests, etc.

9.9 Statutory proof testing of disengaging gears

9.9.1 Regulation 84(10)(a) of the Merchant Shipping (Life-Saving Appliances for Ships other than Ships of Classes III to VI(A)) Regulations 1999 require (among other things) that “at least once every 5 years rescue boats and lifeboats shall be turned out and lowered when loaded with weights to simulate 1.1 times the total mass of the lifeboat or rescue boat when loaded with its full complement of persons and equipment”.

9.9.2 Such a test is intended to prove the adequacy of every part of the fully loaded launching system such as davits, winches and their foundations; falls, blocks, connecting loose gear such as shackles, rings; release gear hooks and their connections to the boat etc. In addition it tests the tricing and bousing arrangements and load distribution on the boat itself as would be imposed in a real evacuation situation.

9.9.3 Some shipowners have approached the MCA for guidance in conducting this test safely. The MCA has therefore consulted the relevant experts in the field and one method of carrying out the test safely is described in this paragraph. (However see other main paragraphs for possible variations.)

9.9.3.1 The shipowner must look ahead and plan such tests. The launching device comprises many specialised components which require regular inspection, maintenance, replacement, overhaul etc. by specially trained personnel which should best be completed before the test. There may be a large number of boats to test (e.g. for large passenger ships), so a regular programme of tests spread over five years to cover all the boats may be essential.

9.9.3.2 Having decided to test a particular boat, preliminary inspection of key parts likely to be stressed during the test needs to be made. If specialised help from manufacturers is not available, the ship's Chief Engineer (or his delegate) should carry out such an inspection following the manufacturer's manuals and general engineering principles. In addition ship's LSA maintenance logs are to be scrutinised to confirm evidence of regular maintenance and history of any persistent problem or major fault. It is also necessary to carry out an audit of certificates on board for falls, blocks, loose gear, davits, winches, release gear hooks, lugs etc. to confirm compliance with proof load requirements and identification of correct and adequate gear. Having been satisfied by these preliminary inspections and checks that a test can go ahead, a shore or floating crane with an SWL rating of at least 2.2 times the fully loaded boat weight (to absorb shock loads in emergency) is to be arranged for assisting in the test with safety. (But see main paragraph 9.9.5 below.)

9.9.3.3 An experienced ship's officer familiar with boat launching operations is to be designated as the "person in charge" (PIC) to conduct and assume responsibility for the test. This is notwithstanding that MCA surveyors may be present to witness the tests, or component manufacturers' representatives may be present having overhauled or repaired any item, or that a dockyard foreman may be present who has arranged to supply labour, weights and the crane. Before commencing any operation, agreed signal or verbal concurrence from the PIC needs to be obtained and similarly any actual or potential problems must be quickly brought to his attention for resolution.

9.9.3.4 At a suitable time the procedure should commence with lowering of the empty boat to the embarkation deck and checking of tricing arrangement and the winch brake effectiveness. The bowsing tackle should then be set up and tightened from the shipside for this test (and not from within the boat as is normal) and the tricing pendants removed. (For directly loaded and launched boats the effectiveness of brake is to be tested by partly lowering the empty boat and then moving it back to the stowed position for loading.)

9.9.3.5 The boat should then be connected to the crane via transportation or maintenance lugs (which should have been proof load tested to at least 2.2 times the fully loaded boat), as shown in figure 8.1, ensuring that the crane main wires can be disconnected from the ship without having to climb into the boat when the loading is completed. A load cell should preferably be incorporated in the crane connection wire to verify the correct loading. The crane should then gently take up the load of the boat, causing the falls to be visibly and slightly slack.

9.9.3.6 The loading of the boat then should commence with the agreed and predetermined mode of loading (e.g. pellet bags, weights, waterbags etc. as available and suitable. Note: large waterbags have been known to cause instability during lowering and braking operation). The load should be distributed evenly simulating an actual body load of persons as nearly as practicable taking into account possibility of load shift and damage to the boat.

9.9.3.7 When the loading is completed (either determined by calculation or verified by the load cell), the boat weight should be gently transferred to the falls and crane wires made minimally but visibly slack. The boat should also be seen to be held against the shipside by the bowsing tackles and this position is to be held and observed for at least 5 minutes with further inspection of shipboard structural parts of the system under stress for integrity. Afterwards crane connections are to be slackened and pulled on board the ship (either by a boat hook, or pre-connected rope etc) and disconnected. The crane main wires should then be hoisted and cleared away and the short wire ends connected to the boat should be thrown back on the boat, or put there by a boat hook. (But see main paragraph 9.9.4 below.)

Sketches

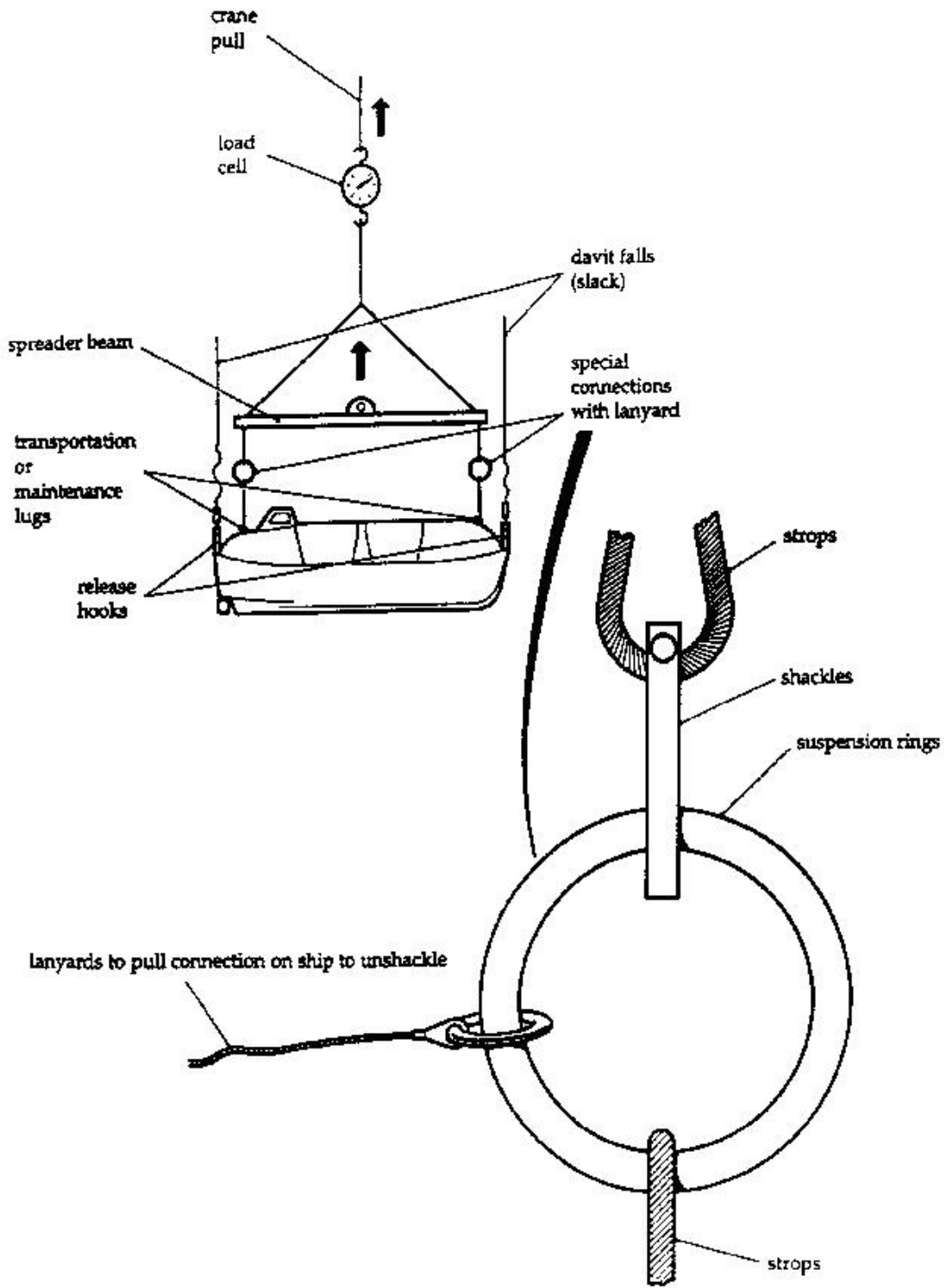


figure 8.1

9.9.3.8 The fully loaded boat, without any persons, should then be gently bowed out from the ship side (see .4 above for special bowing tackle set up for this test only) until falls are vertical and then the shipside ends of the bowing gear are to be disconnected and the loose ends put back on the boat as in subparagraph 9.9.3.7 above.

9.9.3.9 The fully loaded boat, without any person, should then be lowered away (observing look-out and other precautions) until maximum lowering speed is reached when the hand brakes should be suddenly applied and tested for effectiveness, followed by thorough visual inspection of heavily stressed parts of the davit and winch structures, including welded areas on deck. When satisfied, the boat should then be gently lowered further by easing the winch hand brake until the boat reaches a position where its keel is just touching (or clear of) the water, where the boat should be stopped. Operating crewmen should then approach the boat under test by another boat and enter it observing relevant precautions with the intention of testing of the on-load release gear. (Note: If the boat has been lowered past this position and it is necessary to hoist it back even by a small amount, the crane is again to be connected up to assist, as the shipboard winch is designed (under SOLAS and MS Regulations) to hoist a lifeboat with only the handling crew and not with full load.)

9.9.3.10 The crew having entered the boat should inspect the release hooks for proper closure (as in the manual) and the fixing arrangements to the relevant boat areas. If satisfactory, the release gear should then be operated according to the instructions manual, to test the on-load mechanism under fully loaded condition.

9.9.3.11 If it is advantageous to unload this way, the fully loaded boat can then be hoisted back by the crane and held in the embarkation position for unloading, followed by the transfer of the light boat to the davits for light boat release tests etc. as described below.

9.9.3.12 If it is advantageous to lighten the boat when waterborne, the weights can be unloaded from the boat, and the boat re-hooked to the falls (observing instructions in the release gear manual) and hoisted just clear of water and stopped for inspection (as in the manual). The light boat should then be released from this position by operation of the release mechanism to test it under the light load condition.

9.9.3.13 The light boat should then be re-hoisted some distance (with precautions and observations as in the manual), and lowered back into the water, and when fully waterborne tested for satisfactory off-load operation of the release gear.

(Repeat tests with the light boat (maintaining precautions and observations as in the manual) can be made as necessary to satisfy other requirements.)

The opportunity should also be taken to test the painter release mechanism when under load. (Note: The on-load release gear test should not be conducted without a proper purpose nor from a greater height than advised.)

9.9.4 The PIC at his discretion need not disconnect the crane as described in paragraph 9.9.3.7 above but may allow it to remain connected but slackened. In such a case as the shipboard winch lowers the boat, the shore crane must correctly follow the boat movement during the brake test and thereafter down to the waterline when crewmen embarking the boat can disconnect the shore crane from the boat and then test the release mechanism at full load. (Note: While following this method it is also within the bounds of possibility that a sudden load may come on the crane due to failure of normal shipboard launching devices, and therefore minimum SWL of the crane as stated in paragraph 9.9.3.2 is important).

9.9.5 If all the component items have been maintained in the prescribed manner and preliminary inspections of equipment's, logbooks, certificates etc. do not give any cause to doubt the adequacy of the equipment for the test, then at the discretion of the PIC the assistance of the additional crane may be waived, and the PIC may institute other means to enhance safety (e.g. the final 10 or 20% of the loading may take the form of suitable water bags or drums close to the boat entrances which may be filled by a hose from the ship. Some companies produce water bag systems which can be laid out in empty condition and strapped to the boat to simulate full loading, and these bags can then be filled up from the shipside without the necessity to enter the boat).

9.9.6 Some older type lifeboats may not be fitted with on-load release gears. It is to be noted that the five yearly test is also required for such a boat and its launching appliance. The advice given in paragraph 9.9.3 should be followed as far as applicable.

9.9.7 Some individual shipowners in conjunction with lifeboat manufacturers and local MCA offices have devised alternative equivalent means for the load test which basically consist of:

9.9.7.1 Load testing (including the sudden brake test) of the davits, winch, falls and other gear connected to the davits by calculated weights supported on a spreader beam, plus other tests and procedures, as appropriate, described below.

9.9.7.2 A test for determining the adequacy of the release hook fixing arrangement to the lifeboat for fully static plus inertia loads. This usually involves loading the boat up to 200% of its designed load when the boat is suspended by its hooks and held by a crane just clear of water or a workshop floor. The actual loading required can be obtained as an estimation from the davit and winch manufacturer based on their experience, calculations, or measured records for sudden winch brake stoppage of a fully laden boat lowering a maximum speed.

9.9.7.3 The actual detailed method for such equivalent testing of any particular boat launching appliance should be proposed by the shipowner in consultation with the launching appliance manufacturer and the lifeboat builder for scrutiny and agreement by the MCA. It should be noted that in some types of boats (e.g. GRP) there is a considerable risk of distortion or damage to the boat due to excessive loading.

9.9.7.4 If the release hooks are of the on-load type, then after the test in 9.9.7.2, if it was carried out above water, the boat can be lightened to 100% full load, and the release gear operated at fully loaded condition. If the test .2 was done in a workshop, then when the light boat is resting on chocks on the workshop floor, hydraulic or mechanical jack loads can be set up between the hooks and the boat structure (provided the structure is strong enough for this purpose) and when the load on the hooks represent 100% fully loaded boat (this needs to be confirmed by hydraulic pressure or load cell), the central release gear can be operated to test simultaneous and satisfactory release at full load.

9.9.7.5 If the release hooks are of the on-load type and the 100% load release test as in 9.9.7.4 cannot be carried out, then after the test in 9.9.7.2 the light boat is transferred to the ship and connected to its davits. The light boat is then lowered to the position just above water and held there for 100% loading to enable the fully loaded on-load release gear test to be performed.

9.9.7.6 After tests as in 9.9.7.4 or 9.9.7.5, as appropriate, are carried out, further tests with the light boat being handled by the shipboard davit are made to satisfy off-load release tests and other requirements.

9.10 Lifeboat and rescue boat painter release gears

9.10.1 The statutory requirements for painter release gears installed on lifeboats and rescue boats are contained in Schedule 2, Part 1, paragraph 5.6 of MSN 1676(M).

9.10.2 Details of the prototype, production and installation tests are contained in Chapter 7, Part II of Volume 2 - Testing of Life-Saving Appliances.