

**LAUNCHING and EMBARKATION APPLIANCES**

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## PART I

### DAVITS AND LAUNCHING DEVICES FOR LIFEBOAT AND RESCUE BOATS

#### PRODUCTION TESTS

##### 1 STATIC TEST

- 1.1 Davits and Launching devices, except the winch brakes, shall be subjected to a static proof load of 2.2 times their maximum working load.
- 1.2 The device shall be placed at the full outboard position and the proof load shall be swung through an arc of approximately 10° to each side of vertical in the intended fore and aft plane.
- 1.3 This test shall be done first in the upright position, and then in positions simulating a shipboard condition of list of 20° both inboard and outboard.
- 1.4 The launching device, as a result of these tests shall not be deformed or damaged, and any cast components of the frame and arm shall be hammer-tested to determine that they are sound and without flaw.

##### 2 WORKING LOAD TEST

- 2.1 The Launching device shall be placed in an upright position, and a mass equal to 1.1 times the maximum working load shall be suspended from the lifting points.
- 2.2 The load shall be moved from the full inboard to the full outboard positions using the means of operation that is to be used on the ship.
- 2.3 The test under 2.2 shall be repeated with the launching device positioned to simulate a combined 20° inboard list and 10° trim.
- 2.4 The test under 2.2 and 2.3 shall be repeated with a mass equal to a fully equipped lifeboat, without persons, and the lightest survival craft intended for use with the device, to ensure the satisfactory functioning of the device under a very light load condition.
- 2.5 The device shall successfully lower the load under all of the conditions under 2.2, 2.3, and 2.4, and there shall be no evidence of significant deformation or other damage as a result of these tests.
- 2.6 The pressure parts of hydraulic luffing davits shall be hydraulically tested to 1.5 times the design pressure.

### 3 WINCH TEST

- 3.1 The launching device winch drum shall be wound to the maximum number of turns permitted, and a static test load of 1.5 times the maximum working load shall be applied and held on the winch brake for a period of not less than one minute, then lowered for at least one complete revolution of the winch barrel shaft and held.
- 3.2 Upon completion of the test under 3.1, a test load of 1.1 times the maximum working load shall then be lowered at maximum lowering speed through a distance of at least 3 metres and stopped by applying the hand brake sharply, the test load shall drop no more than 1 metre when the brake is applied.
- 3.3 The test prescribed under 3.2, shall be repeated a number of times, to the satisfaction of the attending inspector, and, if the winch design incorporates an exposed brake, at least one of these tests shall be carried out with the brake wetted, but in this case the stopping distance may be exceeded.
- 3.4 The tests required under this section shall achieve a cumulative lowering distance of at least 150 m.
- 3.5 It shall be demonstrated that the winch is capable of operation with a load of a mass equal to a fully equipped lifeboat, without persons, and in the lightest survival craft intended for use with the winch.
- 3.6 The method of attaching the wire rope falls to the winch drums shall be subjected to a proof load test of 2.2 times the working load on the drum. Where the design allows for a minimum number of turns to remain on the drum, the test may simulate such a condition.

### 4 RESCUE BOAT WINCH

- 4.1 A winch intended for use with a rescue boat launching device shall be demonstrated to recover the rescue boat with the number of persons which it is to accommodate, and its equipment, or, an equivalent mass, at a rate of not less than 0.3 metres per second.

### 5 HAND OPERATION

- 5.1 The hand operation of the winch shall be demonstrated, and if the winch is designed for quick recovery by hand with no load, it shall be demonstrated with a load of 1.5 times the mass of the empty lifting arrangements.

## 6 INSPECTION

- 6.1 Following completion of the tests prescribed under sections 3, 4 and 5, the winch shall be stripped for inspection.

## 7 INSTALLATION TESTS

- 7.1 A survival craft or rescue boat, loaded with its normal equipment or an equivalent mass shall be released by launched by means of the releasing arrangements on deck, to demonstrate that the mass of the survival craft or rescue boat is sufficient to overcome the frictional resistance of the winch, falls, blocks, and associated gear.

- 7.2 The speed at which the survival craft is lowered into the water, shall not exceed 1.3 m/sec. and shall not be less than that obtained from the formula:

$$S = 0.4 + (0.02 \times H)$$

where S = speed of lowering, in metres per second  
H = height in metres from davit head to the waterline at the lightest seagoing condition.

- 7.3 If the launching gear is controlled from within the survival craft or rescue boat, a person shall board the survival craft or rescue boat and a test of the launching operation shall be conducted from within the survival craft or rescue boat.
- 7.4 The survival craft or rescue boat loaded with its normal equipment or an equivalent mass, and a distributed mass equal to the number of persons it is to accommodate, each having an average mass of 75 kg, plus 10 % of the working load, shall be released by the operation of the launching controls on deck, and when the craft has reached its maximum lowering speed, the brake shall be abruptly applied to demonstrate that the attachments of the davits and winches to the ship's structure are satisfactory.
- 7.5 In the case of a lifeboat, if the lowering of the lifeboat is controlled from within by means of a control wire paid out from an auxiliary drum on the winch, particular consideration shall be given to the following, after installation of the davits and winches on board ship
- (a) that the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire when turning out the lifeboat from the stowed to the embarkation position;
  - (b) that it shall be possible to operate the winch brake from within the lifeboat;

- (c) that the winch brake shall not be affected by the mass of the fully extended control wire;
  - (d) that there shall be sufficient length of control wire available at the lifeboat during all stages of lowering; and,
  - (e) that means shall be provided to retain the free end of the control wire in the lifeboat until the lifeboat is detached from the launching device by the operator.
- 7.6 If the winch brake is exposed to the weather, the lowering test shall be repeated with the braking surface wetted.
- 7.7 It shall be demonstrated that the survival craft can be recovered to its stowage position by means of operating the hand gear, and, can be safely and properly secured.
- 7.8 Where davits are recovered by power, it shall be demonstrated that the power is automatically cut off before the davit arms come against the stops.
- 7.9 In the case of rescue boats, it shall be demonstrated that the fully equipped rescue boat, when loaded with the number of persons it is to accommodate, can be recovered at a rate of not less than 0.3 m/s.
- 7.10 It shall be demonstrated that the rescue boat can be recovered with the same winch as described under 5.3, by means of a hand gear.
- 7.11 When luffing type davits are turned out by means of hydraulic cylinders, a test shall be carried out under 'dead ship' conditions to ensure that the lifeboat or rescue boat can be safely launched from the stowed position.

## **PART II**

### **LIFE RAFT LAUNCHING APPLIANCES**

#### **PRODUCTION TESTS**

##### **1 STATIC TEST**

- 1.1 Each launching appliance, except the winch brakes, shall be subjected to a static proof load of 2.2 times their maximum working load.
- 1.2 The device shall be placed at the full outboard position and the proof load shall be swung through an arc of approximately 10° to each side of vertical in the intended fore and aft plane.
- 1.3 This test shall be done first in the upright position, and then in positions simulating a shipboard condition of list of 20° both inboard and outboard.
- 1.4 The launching device, as a result of these tests shall not be deformed or damaged, and any cast components of the frame and arm shall be hammer-tested to determine that they are sound and without flaw.

##### **2 SLEWING**

- 2.1 Where the launching appliance is a mechanically controlled single arm davit, the davit shall be loaded with a mass equivalent to the weight of the largest life raft, equipment and container it is intended to be used or 185 kg, whichever is greater, and shall be tested on a platform tilted 20° in both directions to demonstrate that the davit can be freely turned out.
- 2.2 All pressure parts of a hydraulic luffing device associated with the launching device shall be tested hydraulically to 1.5 times the design pressure.

##### **3 WINCH TEST**

- 3.1 The launching device winch drum shall be wound to the maximum number of turns permitted, and a static test load of 1.5 times the maximum working load shall be applied and held on the winch brake for a period of not less than one minute, then lowered for at least one complete revolution of the winch barrel shaft and held.
- 3.2 Upon completion of the test under 3.1, a test load of 1.1 times the maximum working load shall then be lowered at maximum lowering speed through a distance of at least 3 metres and stopped by applying the hand brake sharply, the test load shall drop no more than 1 metre when the brake is applied.

- 3.3 The test prescribed under 3.2, shall be repeated a number of times, to the satisfaction of the attending inspector, and, if the winch design incorporates an exposed brake, at least one of these tests shall be carried out with the brake wetted, but in this case the stopping distance may be exceeded.
- 3.4 The tests required under this section shall achieve a cumulative lowering distance of at least 150 m.
- 3.5 If the winch is designed for quick recovery by hand with no load, a load of 1.5 times the mass of the release hook and fall at its lowest position shall be hoisted in the hand recovery mode.

#### 4 Installation Tests

- 4.1 If more than one life raft is served by any launching appliance on a passenger ship, effective successive launching of at least 3 fully loaded life rafts shall be demonstrated to determine that the total number of life rafts may be loaded and launched within 30 minutes.
- 4.2 If more than one life raft is served by any launching appliance on a cargo ship, the total number of life rafts the davit serves shall be launched to determine that the total number of life rafts may be loaded and launched within 10 minutes.
- 4.3 The release arrangements shall be demonstrated and verified with the life raft loaded in order to ensure that the automatic release hook will not release where the load is still applied.
- 4.4 One life raft which is ballasted to represent a 10% overload, or, an equivalent mass, shall be lowered from each launching device in order to establish the rate of lowering does not exceed 1.3 m/sec.
- 4.5 The 10% overload, required under 4.4, shall be 10% of the mass of the life raft assembly together with its equipment and full complement of persons, each having an average mass of 75 kg.
- 4.6 During the lowering test, required under 4.4, the life raft shall be jerked by rapidly applying and releasing the brake, to ensure that the life raft launching device, its fastenings and supporting structures can withstand the associated loads.
- 4.7 The sequence of tests under 4.1 and 4.2 need not be carried out on every launching appliance on a ship, except at least one example of each launching appliance type and arrangement shall be tested on each ship.

- 4.8 When lowering of the life raft is controlled from within by means of a control wire paid out from an auxiliary drum on the winch, particular consideration shall be given to the following, after installation of the davits and winches on board ship
- (a) that the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire when turning out the life raft from the stowed to the embarkation position;
  - (b) that it shall be possible to operate the winch brake from within the life raft;
  - (c) that the winch brake shall not be affected by the mass of the fully extended control wire;
  - (d) that there shall be sufficient length of control wire available at the life raft during all stages of lowering; and,
  - (e) that means shall be provided to retain the free end of the control wire in the life raft until the life raft is detached from the launching device by the operator.
- 4.9 When luffing type davits are turned out by means of hydraulic cylinders, a test shall be carried out under 'dead ship' conditions to ensure that the life raft can be safely launched from the stowed position.

## **PART III**

### **EMERGENCY BOAT LAUNCHING DEVICES**

#### **PRODUCTION TESTS**

##### **1 STATIC TEST**

- 1.1 Each launching appliance, except the winch brakes, shall be subjected to a static proof load of 2.2 times their maximum working load.
- 1.2 The device shall be placed at the full outboard position and the proof load shall be swung through an arc of approximately 10° to each side of vertical in the intended fore and aft plane.
- 1.3 This test shall be done first in the upright position, and then in positions simulating a shipboard condition of list of 20° both inboard and outboard.
- 1.4 The launching device, as a result of these tests shall not be deformed or damaged, and any cast components of the frame and arm shall be hammer-tested to determine that they are sound and without flaw.

##### **2 WINCH TEST**

- 2.1 The launching device winch drum shall be wound to the maximum number of turns permitted, and a static test load of 1.5 times the maximum working load shall be applied and held on the winch brake for a period of not less than one minute, then lowered for at least one complete revolution of the winch barrel shaft and held.
- 2.2 Upon completion of the test under 2.1, a test load of 1.1 times the maximum working load shall then be lowered at maximum lowering speed through a distance of at least 3 metres and stopped by applying the hand brake sharply, the test load shall drop no more than 1 metre when the brake is applied.
- 2.3 The test prescribed under 2.2, shall be repeated a number of times, to the satisfaction of the attending inspector, and, if the winch design incorporates an exposed brake, at least one of these tests shall be carried out with the brake wetted, but in this case the stopping distance may be exceeded.
- 2.4 It shall be demonstrated that the emergency boat with a launching crew of at least two persons, its engine and full equipment can be hoisted by means of hand gear or power.

### 3 Installation Tests

- 3.1 It shall be demonstrated that any emergency boat served by any launching device can be lowered to the water by gravity when loaded with its full equipment only.
- 3.2 The emergency boat loaded with its normal equipment, or equivalent mass, a distributed mass equal to the number of persons or equivalent mass, and which is ballasted to represent a 10% overload, shall be lowered from each launching device in order to establish the rate of lowering does not exceed 1.3 m/sec.
- 3.3 The 10% overload, required under 3.2, shall be 10% of the mass of the emergency boat assembly together with its equipment and full complement of persons, each having an average mass of 75 kg.
- 3.4 During the lowering test, required under 3.2, the emergency boat shall be jerked by rapidly applying and releasing the brake, to ensure that the launching device, its fastenings and supporting structures can withstand the associated loads.
- 3.5 When the lowering of the emergency boat is controlled from within by means of a control wire paid out from an auxiliary drum on the winch, particular consideration shall be given to the following, after installation of the davits and winches on board ship
- (a) that the mass of the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire when turning out the emergency boat from the stowed to the embarkation position;
  - (b) that it shall be possible to operate the winch brake from within the emergency boat;
  - (c) that the winch brake shall not be affected by the mass of the fully extended control wire;
  - (d) that there shall be sufficient length of control wire available at the emergency boat during all stages of lowering; and,
  - (e) that means shall be provided to retain the free end of the control wire in the emergency boat until the boat is detached from the launching device by the operator.
- 3.6 When luffing type davits are turned out by means of hydraulic cylinders, a test shall be carried out under 'dead ship' conditions to ensure that the emergency boat can be safely launched from the stowed position.

## PART IV

### FREE FALL LAUNCHING

#### PRODUCTION TESTS

##### 1 STATIC TEST

- 1.1 The structure, anchoring attachment and any other parts from which the boat is suspended shall be tested with a static test load of 2.2 times the working load in any position which gives a maximum stress concentration.
- 1.2 The launching device, as a result of these tests shall not be deformed or damaged, and any cast components of the frame and arm shall be hammer-tested to determine that they are sound and without flaw.
- 1.3 Adjustable launching ramps shall operated satisfactorily with a lifeboat loaded to 1.2 times its fully load condition.

##### 2 Launching / Recovery Arrangement

- 2.1 Davits and Launching devices, except the winch brakes, shall be subjected to a static proof load of 2.2 times their maximum working load.
- 2.2 The device shall be placed at the full outboard position and the proof load shall be swung through an arc of approximately 10° to each side of vertical in the intended fore and aft plane.
- 2.3 This test shall be done first in the upright position, and then in positions simulating a shipboard condition of list of 20° both inboard and outboard.
- 2.4 The launching device, as a result of these tests shall not be deformed or damaged, and any cast components of the frame and arm shall be hammer-tested to determine that they are sound and without flaw.

##### 3 WORKING LOAD TEST

- 3.1 The Launching device shall be placed in an upright position, and a mass equal to 1.1 times the maximum working load shall be suspended from the lifting points.
- 3.2 The load shall be moved from the full inboard to the full outboard positions using the means of operation that is to be used on the ship.

- 3.3 The test under 3.2 shall be repeated with the launching device positioned to simulate a combined 20° inboard list and 10° trim.
- 3.4 The test under 3.2 and 3.3 shall be repeated with a mass equal to a fully equipped lifeboat, without persons, and the lightest survival craft intended for use with the device, to ensure the satisfactory functioning of the device under a very light load condition.
- 3.5 The device shall successfully lower the load under all of the conditions under 3.2, 3.3, and 3.4, and there shall be no evidence of significant deformation or other damage as a result of these tests.
- 3.6 The pressure parts of hydraulic luffing davits shall be hydraulically tested to 1.5 times the design pressure.

#### 4 WINCH TEST

- 4.1 The launching device winch drum shall be wound to the maximum number of turns permitted, and a static test load of 1.5 times the maximum working load shall be applied and held on the winch brake for a period of not less than one minute, then lowered for at least one complete revolution of the winch barrel shaft and held.
- 4.2 Upon completion of the test under 4.1, a test load of 1.1 times the maximum working load shall then be lowered at maximum lowering speed through a distance of at least 3 metres and stopped by applying the hand brake sharply, the test load shall drop no more than 1 metre when the brake is applied.
- 4.3 The test prescribed under 4.2, shall be repeated a number of times, to the satisfaction of the attending inspector, and, if the winch design incorporates an exposed brake, at least one of these tests shall be carried out with the brake wetted, but in this case the stopping distance may be exceeded.
- 4.4 The tests required under this section shall achieve a cumulative lowering distance of at least 150 m.
- 4.5 It shall be demonstrated that the winch is capable of operation with a load of a mass equal to a fully equipped lifeboat, without persons, and in the lightest survival craft intended for use with the winch.
- 4.6 The method of attaching the wire rope falls to the winch drums shall be subjected to a proof load test of 2.2 times the working load on the drum. Where the design allows for a minimum number of turns to remain on the drum, the test may simulate such a condition.

- 4.7 It shall be demonstrated that the survival craft can be recovered to its stowage position by means of operating the hand gear, and, can be safely and properly secured.
- 4.8 Where davits are recovered by power, it shall be demonstrated that the power is automatically cut off before the davit arms come against the stops.

## 5 Installation Tests

- 5.1 Each new free fall launching device shall be loaded to 1.1 times its rated load and launched by free fall with the ship on even keel and in its lightest seagoing condition.
- 5.2 It shall be demonstrated that the free fall lifeboat while loaded as per 5.1, may be launched and released by using the deck controls of the launching/recovery system.
- 5.3 Once the maximum launching speed is reached in 5.2, the brake shall be abruptly applied to demonstrate that the attachments of the davit and winch to the ship's structure are satisfactory.
- 5.4 The maximum launching speed referred to in 5.3 shall not exceed 1.3 metres/second.

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## PART V

### APPROVAL

#### 1 CONDITIONS and PROCEDURE

- 1.1 Every launching and embarkation appliance shall be constructed, tested inspected and serviced in compliance with this standard, and the requirements of the Life Saving Equipment Regulations.
- 1.2 All materials and components used in the construction and repair of launching and embarkation appliances shall be of good quality and suitable for the purpose intended, and shall not deteriorate from the effects of weathering on board ship under conditions of usual stowage, nor from contact with salt water.
- 1.3 Subject to 1.4, the Board shall not approve a launching or embarkation appliance design until
- (a) the manufacturer has
    - (i) submitted to the Board all relevant plans and specifications, including quality control assurance manuals; and,
    - (ii) subjected a prototype appliance to all applicable tests prescribed in this standard.
  - (b) the Board is satisfied that a prototype appliance meets all the requirements set out in this standard, as applicable; and,
  - (c) the Board is satisfied that provisions have been made for
    - (i) inspection and testing of each completed appliance; and,
    - (ii) the servicing of each appliance, if applicable.
- 1.4 Where a manufacturer intends to make modifications to an approved launching or embarkation appliance design, he shall
- (a) submit to the Board for its approval all details of the modification; and,
  - (b) subject the appliance incorporation the modifications to such tests as the Board considers necessary.

1.5 Where a manufacturer has complied with 1.4, and where the Board is satisfied that the modified appliance meets the requirements of this standard, the Board may approve the modification to the appliance design.

## 2 RECORDS

2.1 Manufacturers are required to maintain records relating to the quality control and production tests carried out in accordance with this standard.

2.2 Records shall include

- (a) details of material purchase and usage;
- (b) date when production commenced and terminated, if production is not continuous;
- (c) test records of all components used in the production process;
- (d) records of all prototype tests; and,
- (e) detailed descriptions of any failures.

2.3 Manufacturers shall retain the records for a period of at least 60 months, unless otherwise required by the Board.

3.4 The records shall be available for inspection by, or submission to, the Approval Authority upon request.