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Ships and marine technology — Launching appliances for davit-launched lifeboats

Navires et technologie maritime — Engins de mise à l'eau des embarcations de sauvetage sous bossoirs

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15516 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

This first edition cancels and replaces ISO 6067:1985, which has been technically revised.

Introduction

This International Standard which forms a code of practical interpretation and amplification of the requirements of the CONVENTION FOR THE SAFETY OF LIFE AT SEA (SOLAS), deals with both winches and davits for lifeboats to provide an identical basis for design, manufacture and acceptance of Launching appliances for davit-launched lifeboats for use by ship-owners, shipbuilders and appropriate organizations.

This International Standard incorporates and revises the requirements of ISO 6067 and, as such, replaces ISO 6067 in its entirety. Launching appliances for free-fall lifeboats are not covered by this standard because of their different methods of launching, recovery and stowage. Considering the convenience in practice, this standard specifies some values, such as the minimum speed of recovering light-loaded lifeboats by power (when necessary) and the recovery speed of unpowered winch, which are not required by SOLAS but have been given in ISO 6067. This International Standard is also applicable to launching appliances for fast rescue boats on ro-ro passenger ships.

This International Standard is mainly based on AMENDMENTS from 1983 to 1996 to SOLAS 1974 and IMO RESOLUTIONS and protocols concerned, especially MSC.47(66) AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA 1974, MSC.48(66) INTERNATIONAL LIFE-SAVING APPLIANCE CODE and MSC.81(70) LIFE-SAVING APPLIANCE TEST.

Ships and marine technology — Launching appliances for davit-launched lifeboats

1 Scope

This International Standard specifies the requirements of performances, design, construction, safety, maintenance and test of launching appliances for davit-launched lifeboats.

This International Standard is applicable to launching appliances for davit-launched lifeboats as well as launching appliances for davit-launched rescue boats on every kind of sea-going ship, including launching appliances for fast rescue boats on ro-ro passenger ships, but is not applicable to launching appliances for free-fall lifeboats. This International Standard is also a reference for similar appliances on inland ships.

NOTE Every provision in this standard, unless expressly stated otherwise, is also applicable to launching appliances for davit-launched rescue boats.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2944, *Fluid power systems and components — Nominal pressure*

ISO 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary*

ISO 4413, *Hydraulic fluid power — General rules relating to systems*

ISO 4414, *Pneumatic fluid power — General rules relating to systems*

IEC 60092 (all parts), *Electrical installations in ships*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828 and the following apply.

3.1
non-loaded boat
lifeboat or rescue boat fully equipped without persons

NOTE Hereinafter, both lifeboat and rescue boat are referred to as boat.

3.2
light-loaded lifeboat
lifeboat fully equipped and loaded by crew.

NOTE The number of crew members is provided by design and is at least 2 persons, each having an average mass of 75 kg.

3.3
fully loaded lifeboat
boat fully equipped and loaded with a full complement of persons

3.4
boat davit
main structure of the launching appliance and its fittings, including loose gears, hanging-off pendants, lashings, bowsing, tricking gears, etc.

3.5
loose gear
parts and assemblies withstanding loads during hoisting boat

EXAMPLES falls, blocks, suspension chains, links, padeyes, shackles, hooks, swivel, fastenings and other non-structural fittings which bear loads during launching and recovery of boats

3.6
lifeboat winch
boat winch used for launching and recovering the lifeboat

3.7
rescue boat winch
boat winch used for launching and recovering the rescue boat

NOTE Hereinafter, lifeboat winch and rescue boat winch are referred to as winch.

3.8
maximum working load
load to the launching appliance during launching the maximum weight of fully loaded boats which can be assigned to this launching appliance

3.9
maximum recovering load
load to the launching appliance during recovering the maximum weight of boats which can be assigned to this launching appliance

NOTE For lifeboats, the weight of light-loaded lifeboats.
For rescue boats, the weight of fully-loaded boats.
For lifeboats which are also rescue boats, the weight of a non-loaded boat plus the weight of its rescue boat complement of persons (minimum 6 persons).

3.10
lightest launching load
load to the launching appliance during launching the lightest weight of non-loaded boats which can be assigned to the launching appliance

3.11
maximum working load of winch
maximum load held by the falls at the winch drum, during launching and recovering the boat

3.12
hoisting load of winch
load held by the falls at the winch drum when a launching appliance hoists the maximum recovering load

3.13
maximum governing load
a load held by the falls at the winch drum when a launching appliance lowers the maximum weight of fully loaded boats which is applicable to it

3.14
fleet angle
angle between the direction of the fall winding off the drum and the perpendicular plane of the drum axis

4 Classification and composition

A launching appliance generally consists of a davit in combination with a winch.

4.1 Composition of davit

A davit is generally composed of arms, frames, loose gears and other attachments, etc.

4.2 Classification of davit

The basic construction type of davit is mainly classified as a gravity davit and mechanical stored-power davit according to the way to turn out davit arms, including other construction types of davits which comply with the requirements of this International Standard.

4.3 Classification of winch

The basic types of winch are mainly classified as below (including other construction types of davits which comply with the requirements of this International Standard).

4.3.1 Winches can be classified as

a) unpowered winch, or

b) powered winch.

The power of a winch can be electrical, hydraulic or pneumatic. Unpowered winches do not apply to rescue boats.

4.3.2 Winches can also be classified according to purpose as

a) a lifeboat winch,

b) a rescue boat winch, or

c) the winch for both lifeboats and rescue boats. This winch has the performance of both a) and b).

5 Requirements

5.1 Performance

5.1.1 Launching of boat

5.1.1.1 A launching appliance shall be capable of safely lowering a non-loaded boat and a fully loaded boat against a trim of up to 10° and a list of up to 20° either way.

5.1.1.2 Notwithstanding the requirement of 5.1.1.1, the launching appliances for oil tankers, chemical tankers and gas carriers with a final angle of heel greater than 20° shall be capable of lowering non-loaded boats and fully loaded boats at the final angle of heel on the lower side of the ship, taking into consideration the final damaged waterline of the ship.

5.1.1.3 A launching appliance shall not depend on any means other than gravity or stored mechanical power which is independent of the ship power supplies to launch the boat it serves.

5.1.1.4 A launching appliance shall be capable of lowering and halting boats in a controlled manner, and the speed at which the boat is lowered into the water shall conform to Table 1.

Table 1

Boat condition	**Lowering speed of boats** m/s	
Fully loaded boat	low limit S	$S = 0,4 + 0,02H$ where S is the lowest limit of lowering speed; H is the height in meters from davit head to the waterline with the ship at the lightest seagoing condition; S is the 1, when $H > 30$, or the value required by the Administration.
	high limit	1,3 or the value required by the Administration
		1,0 only for fast rescue boat launching appliances
Non-loaded boat	low limit	0,7S (for a rescue boat with its weight less than 550 kg. This shall be to the satisfaction of the Administration)
	high limit	1,0 or the value required by national administrations
NOTE The davit is supposed to be in the embarkation state when calculating H.		

5.1.1.5 For the launching appliances for lifeboats on cargo ships of 20 000 tons and upwards and launching appliances for rescue boats on all ships, it is taken into account that boats shall be capable of being safely launched into water with the ship making headway at speeds of up to 5 knots in calm water.

5.1.2 Recovery of boats

5.1.2.1 A launching appliance shall be capable of recovering a light-loaded lifeboat or a fully loaded rescue boat by power from water to stowed position under ship conditions of even keel. Every rescue boat launching appliance shall be fitted with a powered winch.

5.1.2.2 The speed of recovering boat by power (when necessary) shall conform to Table 2.

Table 2

Boat state	**Speed of recovering boat by power** m/s
fully loaded rescue boat	$\geqslant$ 0,3
light-loaded lifeboat	$\geqslant$ 0,05
fully loaded fast rescue boat	$\geqslant$ 0,8

5.1.2.3 Every powered winch shall also be fitted with a hand gear capable of recovering light-loaded lifeboat or fully loaded rescue boat from water to stowed position.

5.1.2.4 The recovering speed for unpowered winch of lifeboat shall be not less than 0,005 m/s.

5.1.3 Stowage of boats

5.1.3.1 A launching appliance shall serve only one boat. The stowed boat shall always be in a state of continuous readiness for launching boats.

5.1.3.2 A launching appliance shall be so designed that boats can be embarked on and launched directly from the stowed position, only if the launching appliance is carried on passenger ships where boats may be embarked on from either the stowed position or the embarkation deck, but not from both places.

5.1.3.3 A launching appliance shall be so designed and arranged that it is convenient for people to embark. Arrangement for rescue boat embarkation and recovery shall allow for safe and efficient handling of a stretcher case.

5.1.4 Operation of launching appliances

5.1.4.1 A launching appliance may be actuated by one person on the ship's deck, and the boat shall always be visible to the person during operating.

5.1.4.2 There shall be a function such that a launching appliance can be remotely actuated to lower the boat from a position within the boat and without a person remaining on the ship's deck.

5.1.4.3 A launching appliance shall, as far as practicable, remain effective when operated in icy conditions.

5.1.4.4 The launching appliance for a fast rescue boat shall be fitted with a device to dampen the forces due to interaction with the wave when the fast rescue boat is launched or recovered. The device shall include a flexible element to soften shock forces and a damping element to minimize oscillations.

5.1.4.5 The winch for a fast rescue boat shall be fitted with an automatic high-speed tensioning device which prevents the fall from going slack in all sea-state conditions in which the fast rescue boat is intended to operate.

5.2 Design and construction

5.2.1 Materials

5.2.1.1 The materials for launching appliances shall not be damaged during stowage throughout the air temperature range − 30 °C to + 65 °C.

5.2.1.2 Materials exposed to weather shall be rot-proof, corrosion-resistant, deterioration-resistant, and not be unduly affected by seawater. Painting, zinc-plating and other safeguarding may be adopted.

5.2.1.3 Structural members shall be made of shipbuilding plates with satisfactory formability and weldability characteristics.

5.2.1.4 Grey cast-iron or similar fragile materials should be avoided. Winch gears should be made of machine-cut steel, bronze or other suitable materials.

5.2.2 Safety factor

Loose gears, structural members and all other fittings used in connection with launching equipment shall be designed with a factor of safety on the basis of the maximum load assigned, and the ultimate strength of the materials used for construction, in accordance with Table 3.

Table 3

Name of parts	Minimum safety factor
loose gears, hanging-off pendants and recovery strops	6
structural members of davits and fittings	4,5
parts of winches	4,5

5.2.3 Davit arms and frames

5.2.3.1 The minimum thickness of steel plate of arms and frames and rolled-steel sections shall be not less than 6 mm, only if the material is corrosion-resistant.

5.2.3.2 Gravity davits shall be so designed that there is a positive turning-out moment for a davit arm in its stowed position, against a trim of up to 10° and an inboard list of up to 20°.

5.2.3.3 When the davit arm is at the full outboard position, it is permissible that the boat can be safely launched with the help of skates on the ship's deck, against a trim of up to 10° and an inboard list of up to 20°.

5.2.3.4 When the davit arm is at the full outboard position, sufficient extension shall be provided to allow recovery of boats without damage, against a trim of 2° and an inboard list of 5°.

5.2.4 Loose gears

5.2.4.1 Chains, links, shackles, hooks and other loose gears shall be of satisfactory plasticity and shock resistance ($\geqslant$ 27 J at 0 °C).

5.2.4.2 Falls shall be rotation-resistant and of galvanized steel wire rope.

5.2.4.3 The minimum diameter of falls shall be not less than 10 mm, except when falls are corrosion-resistant.

5.2.4.4 Falls shall be long enough to have at least 3 rounds of rope remaining on the winch's drum after boats are launched from the stowed position into water with the ship in its lightest seagoing condition, against a trim of up to 10° and an inboard list of up to 20°.

5.2.5 Boat blocks and guide sheaves

5.2.5.1 The diameter at the bottom of the sheave groove shall be at least 12 times the diameter of falls, and the depth of the sheave groove shall be at least 1,5 times the diameter of falls.

5.2.5.2 Means such as retainers shall be provided to retain the fall within the sheaves. The gap between the retainer and the sheave shall be less than 3 mm to prevent seizing up of the fall in the sheave.

5.2.5.3 Boat blocks shall be capable of leaving the horn of the davit arm, where applicable, against a list of up to 20° either way, or against the final angle of heel for oil tankers, chemical tankers and gas carriers with the final angle of heel greater than 20°.

5.2.5.4 During recovery of the rescue boat, fully equipped with a crew of 6 persons, foul-weather recovery strops shall be provided for safety if heavy fall blocks constitute a danger.

5.2.6 Lashing gears

5.2.6.1 Davits shall be provided with lashing gears or equivalent means to secure boats in the stowed position at ordinary times. The lashing gears shall be easily released and not interfere with launching boats.

5.2.6.2 The steel wire rope of lashing gears shall have a guard shield or equivalent means to protect boats from scratching.

5.2.7 Bowsing gears and lifeline gears

5.2.7.1 When embarking is from the embarkation deck, means such as bowsing gears or frapping lines shall be provided to bring and keep the boat alongside the embarkation deck and hold it securely during embarking.

5.2.7.2 When the davit serves a partially enclosed lifeboat, a set of lifeline gear shall be provided, including a davit span and at least two lifelines. The lifeline shall be long enough to reach the water with the ship in its lightest seagoing condition, under an adverse trim and a list of up to 20° either way.

5.2.7.3 Fibre ropes may be used for bowsing gears and lifelines. The diameter at the bottom of the sheave groove shall be at least 4,5 times the diameter of fibre wire rope if sheaves are required.

5.2.8 Drums

5.2.8.1 A winch may be designed with a single split drum or two separate drums. In the case of tow or multiple drum winches, falls shall be so arranged as to wind off and wind onto the drums at the same rate.

5.2.8.2 The surface of a drum can be designed to be grooved or smooth. The fleet angle shall be not more than 3° for smooth drums and not more than 5° for grooved drums.

5.2.8.3 The diameter of drums shall be not less than 16 times the diameter of falls.

5.2.8.4 The flange height shall project at least 1,5 times the rope diameter beyond the outmost layer, when the rope is fully and evenly reeled on the drum.

5.2.9 Brake

5.2.9.1 Every winch shall be fitted with a brake capable of stopping the descent of a fully loaded boat at maximum lowering speed and holding it securely.

5.2.9.2 Manual brakes for controlling the lowering of boats shall be so arranged that the brake is always applied unless the operator, or a mechanism activated by the operator, holds the brake control in the “off” position.

5.2.9.3 Brake pads shall, where necessary, be protected from water and oil.

5.2.9.4 The winch brake for a fast rescue boat shall have a gradual action. When the fast rescue boat is lowered at full speed and the brake is applied sharply, the additional dynamic force included in the fall due to retardation shall not exceed 0,5 times the working load of the launching appliance.

5.2.10 Regulation of lowering speed

5.2.10.1 A winch shall be fitted with a centrifugal clutch or other suitable means of controlling the lowering speed of boats so that it can conform to the requirements of 5.1.1.4.

5.2.10.2 The means of controlling the lowering speed shall be directly attached to the transmission gears and be capable of automatically governing the lowering speed during the boat launching.

5.2.11 Drive equipment

5.2.11.1 Electrical drives and control equipment shall conform to the requirements of IEC 60092. Deck-mounted enclosures shall conform to IEC 60529, IP56, and/or to the appropriate degree of protection for the service and environment in which they are installed.

5.2.11.2 Hydraulic drives and control equipment shall conform to the requirements of ISO 4413. System nominal pressures shall be selected from ISO 2944, and the drive shall operate satisfactorily at a pressure 10 % below the selected nominal pressure and with a performance as indicated in Table 2 of 5.1.2.2 of this International Standard.

5.2.11.3 Pneumatic drives and control equipment shall conform to the requirements of ISO 4414. System nominal pressures shall be selected from ISO 2944, and the drive shall operate satisfactorily at a pressure 10 % below the selected nominal pressures and with a performance as indicated in Table 2 of 5.1.2.2 of this International Standard.

5.2.12 Hand gears

5.2.12.1 Every powered winch shall be fitted with a hand gear capable of recovering boats. The hand gear may be activated through a grip handle of a wheel which can be turned freely on its shaft.

5.2.12.2 The rotation radius of handles or wheels shall be not more than 500 mm. Continuous effort for hand operation shall not exceed 160 N per person. The effort when stowing may be higher.

5.2.12.3 Winches shall be such that falls can be manually wound off when there is no load at the drum.

5.2.13 Winches for fast rescue boats

The winch of the launching appliance for a fast rescue boat shall be fitted with an automatic high-speed tensioning device which prevents the fall from going slack in all sea-state conditions in which the fast rescue boat is intended to operate.

5.2.14 Launching controlled from a position within boats

If lowering of the boat is controlled from within the boat by means of a control wire provided by an auxiliary drum on the winch, the following additional points should receive particular consideration after installation of the appliances.

5.2.14.1 The mass on the control wire shall be sufficient to overcome the friction of the various pulleys on the control wire, when turning the boat from the stowed position to the embarkation position.

5.2.14.2 It shall be possible to operate the winch brake from within the boat. The winch brake shall not be affected by the mass of the fully extended control wire.

5.2.14.3 There shall be a sufficient length of control wire available at the boat, during all stages of lowering.

5.2.14.4 Means shall be provided to retain the free end of the control wire in the boat until the boat is detached from the launching appliance by the operator.

5.2.15 Operating device

5.2.15.1 All operating handles, wheels, push buttons or levers shall be clearly and permanently marked to indicate their purpose, mode of operation, and the direction of hoisting for manual recovery of boats.

5.2.15.2 All operating devices shall be required to return to the stop position automatically.

5.2.16 Lubrication

5.2.16.1 The transmission of winches shall be designed with enclosed bath lubrication or other adequate lubrication means, so as to lubricate adequately all bearings and gears where required.

5.2.16.2 Winches shall be provided with a means of checking the level of the lubricating oil. In addition, a lubrication chart shall be provided to the winch identifying the proper lubricants.

5.3 Safety

5.3.1 An over-running clutch or other suitable means shall be provided to ensure that the winch motor of a powered winch is disengaged during gravity lowering.

5.3.2 Winches shall be provided with an interlock or other suitable means to ensure that hand-gear handles or wheels shall not be rotated by moving parts of the winch when the boat is being lowered or when it is being hoisted by power.

5.3.3 Where applicable, falls running above the deck surface shall be suitably covered to prevent injury.

5.3.4 Where davit arms are recovered by power, safety devices shall be fitted which will automatically cut off the power before the davit arms reach the stops in order to avoid overstressing the falls or davits, unless the driving unit is designed to prevent such overstressing.

5.3.5 Davit arms in the stowing condition shall be held by suitable means in which the davit can be deployed easily. It is not allowed to hold arms by friction only.

5.3.6 Foul-weather recovery strops shall be provided for safety, if heavy fall blocks constitute a danger.

5.4 Maintenance

5.4.1 A launching appliance shall be so designed that a minimum amount of routine maintenance is necessary.

5.4.2 All parts requiring regular maintenance by the ship's crew shall be readily accessible and easily maintained. All the lubrication points shall be checked and lubricated regularly.

5.4.3 A full set of maintenance manuals issued by the manufacturer should be available on board for use in all operations involved in the inspection, maintenance, adjustment and re-setting of launching appliances.

5.4.4 Weekly and monthly inspections, and routine maintenance as defined by the manufacturer, should be conducted under the direct supervision of a senior ship's officer, in accordance with the instruction provided by the manufacturer.

5.4.5 A launching appliance shall be subjected to a thorough examination at the annual surveys. Upon completion of the examination, it shall be subjected to a dynamic test of the winch brake at maximum lowering speed with the lightest launching load, except that, at intervals not exceeding five years, the test shall be carried out with 1.1 times the maximum working load of the winch.

5.4.6 All the inspections, serving and repair, except for weekly and monthly inspections and routine maintenance, should be conducted by the manufacturer's representative or a person appropriately trained and certified by the manufacturer for the work to be done.

5.4.7 Falls used in launching shall be turned end to end at intervals of not more than 30 months and be renewed, when necessary, due to deterioration of the falls or at intervals of not more than five years, whichever is the earlier.

5.4.8 The administration may accept, in lieu of “end to ending” as required in 5.4.7, periodic inspection of the falls and their renewal, whenever necessary, due to deterioration or at intervals of not more than 4 years, whichever one is earlier.

5.4.9 A launching appliance shall have an indicator plate for operation and maintenance instructions which are clear and illustrated.

5.4.10 A launching appliance shall be provided with a means of freeing the release gear for maintenance.

6 Test methods

6.1 Loose-gears test

The loose-gears test is indicated in Table 4.

Table 4

Test item	Test load	Test procedure	Acceptance criterion
static test	The load exerted by loose gears under the test of 2,2 times max. working load.	Withstand the test load for at least 5 min.	No evidence of permanent deformation and damage.

6.2 Winch test

6.2.1 The prototype test for the winch is indicated in Table 5.

Table 5

No.	Test items	Test load	Test procedure	Acceptance criterion
1	no load test	0	Run for 10 min.	Smooth start and stop, easy operation, no abnormal phenomena of temperature rise, noise, interlocking, oil tightness, etc.
			Manual recovery of test load to 1 m high (at least twice).	
2	powered hoisting test (where applicable)	hoisting load of winch	Hoist test load up to enough height, measuring the hoisting speed (at least twice).	Run smoothly with easy operation. Brake works well. The hoisting speed, or the equivalent, conforms to the requirements of Table 2 of 5,1.2.2.
3	lowering test	maximum governing load	Turn off the brake with the test load at enough height. Measure the lowering speed when the load goes through a distance of 3 ~ 4 m.	Brake works. The lowering speed or the equivalent, conforms to the requirements of Table 1 of 5.1.1.4.
4	dynamic test	1,1 times the maximum working load of winch	Turn off the brake with the test load at sufficient height. Stop by applying the brake sharply when the lowering speed reaches a maximum, and the load goes through a distance of at least 3 m (at least twice).	Brake works. The drop of the test load after braking shall be less than 1 m.
			Repeat the test, wetting the brake surface, if the brake is exposed to weather.	Brake works. The drop of the test load could exceed 1 m in this case.
5	static test	1,5 times the maximum working load of winch	Hanging the test load on the fall from the outmost layer of the drum, hold by the brake after the load is lowered for at least a complete revolution of the drum.	The test load can be held by the winch. No evidence of deformation and damage which affect the performance.
6	manually hoisting test(1)	hoisting load of winch	Recover the test load by hand to 1 m high.	Smooth operation by hand conforming to the requirements of 5.2.12.2.
7	manually hoisting test(2)	1,5 times the weight of all loose gears	Recover the test load by hand quickly, if the winch is designed for quick recovery.	Smooth operation by hand conforming to the requirements of 5.2.12.2, and hoisting speed conforms to the design requirements.
8	Stripping of winch		Open the winch and inspect all the parts in it.	No evidence of permanent deformation and damage.
The accumulated lowering distance of all tests shall be at least 150 m.				

6.2.2 The production test for the winch is indicated in Table 6.

Table 6

	Test items	Test loads	Test procedure	Acceptance criterion
1	no load test	The same as item 1 of Table 5.		
2	powered hoisting test	The same as item 2 of Table 5.		
3	lowering test	the load held by falls at the winch drum when loading a fully loaded boat	Turn off the brake and lower the test load at sufficient height. Measure the lowering speed when the load goes through at least 3~4 m. (at least twice)	Brake works. The lowering speed or the equivalent conforms to the requirements of Table 1 of 5.1.1.4.
		the load held by falls at the winch drum when loading a non-loaded boat		
4	dynamic test	1,1 times the calculated load of the winch when loading a fully loaded boat	Turn off the brake and lower the test load which is at sufficient height. Stop by applying the brake sharply when the lowering speed reaches a maximum. Then through a distance of at least 3 m (at least twice)	Brake works. The drop of the load shall be less than 1 m.
5	static test	The same as item 5 of Table 5.		

6.3 Test of launching appliance

6.3.1 The prototype test for the launching appliance is indicated in Table 7.

Table 7

	Test items	Test loads	Test procedure		Acceptance criterion
			Simulation shipboard condition	Demonstration	
1	launching test (1)	lightest launching load	even keel	Turn out the arm from stowed to full outboard position and then lower the test load (at least twice).	Stable and smooth turning out. No evidence of damage.
2	launching test (2)		inboard list of 20° and trim of 10°		
3	recovery test	maximum recovering load	even keel	Hoist test load, then turn in the arm from full outboard to the stowed position (at least twice).	Normal work. No evidence of deformation which affects performance.
4	dynamic test (1)	1,1 times the maximum working load	even keel	Turn out the arm from stowed to full outboard position, and then lower the test load (at least twice).	Normal work. No evidence of deformation which affects performance.
5	dynamic test (2)		inboard list of 20°, trim of 10°.		
6	dynamic test (3)		even keel	Turn out the arm from stowed to full outboard position, and then lower the test load, and apply the brake with a rapid but gradual stop (at least twice).	The dynamic force thereby occurring in the fall shall not exceed 0,5 times the test load.