

(5) Are provided for use in conjunction with a marine evacuation system and that are stowed for launching directly from the stowed position under unfavorable conditions of trim of 10 degrees and list of 20 degrees either way.

(c) With the exception of the secondary means of launching for free-fall lifeboats, each launching appliance must be arranged so that the fully equipped survival craft it serves can be safely launched against unfavorable conditions of trim of up to 10 degrees either way and of list of up to 20 degrees either way—

(1) When the survival craft is loaded with its full complement of persons; and

(2) When not more than the required operating crew is on board.

(d) A launching appliance must not depend on any means other than gravity or stored mechanical power, independent of the vessel's power supplies, to launch the survival craft it serves in both the fully loaded and equipped condition and in the light condition.

(e) Each launching appliance's structural attachment to the vessel must be designed, based on the ultimate strength of the construction material, to be at least 4.5 times the load imparted on the attachment by the launching appliance and its fully loaded survival craft under the most adverse combination of list and trim under paragraph (c) of this section.

(f) Each launching appliance must be arranged so that—

(1) All parts requiring regular maintenance by the vessel's crew are readily accessible and easily maintained;

(2) The launching appliance remains effective under conditions of icing;

(3) The same type of release mechanism is used for each similar survival craft carried on board the vessel;

(4) The preparation and handling of each survival craft at any one launching station does not interfere with the prompt preparation and handling of any other survival craft at any other station;

(5) The persons on board the vessel can safely and rapidly board the survival craft; and

(6) During preparation and launching, the survival craft, its launching appliance, and the area of water into which

it is to be launched are illuminated by lighting supplied from the vessel's emergency source of electrical power.

(g) Each launching and recovery arrangement must allow the operator on the deck to observe the survival craft at all times during launching.

(h) Means must be provided outside the machinery space to prevent any discharge of water onto survival craft during launching.

(i) If there is a danger of the survival craft being damaged by the vessel's stabilizer wings, the stabilizer wings must be able to be brought inboard using power from the emergency source of electrical power. Indicators operated by the vessel's emergency power system must be provided on the navigating bridge to show the position of the stabilizer wings.

§ 199.153 Survival craft launching and recovery arrangements using falls and a winch.

Survival craft launching and recovery arrangements, in addition to meeting the requirements in § 199.150, must meet the following requirements:

(a) Each launching mechanism must be arranged so it may be actuated by one person from a position on the vessel's deck, and except for secondary launching appliances for free-fall launching arrangements, from a position within the survival craft.

(b) Each fall wire must be of rotation-resistant and corrosion-resistant steel wire rope.

(c) The breaking strength of each fall wire and each attachment used on the fall must be at least six times the load imparted on the fall by the fully-loaded survival craft.

(d) Each fall must be long enough for the survival craft to reach the water with the vessel in its lightest seagoing condition, under unfavorable conditions of trim, and with the vessel listed not less than 20 degrees either way.

(e) Each unguarded fall must not pass near any operating position of the winch, such as hand cranks, pay out wheels, and brake levers.

(f) Each winch drum must be arranged so the fall wire winds onto the drum in one or more level wraps. A multiple drum winch must be arranged so that the falls wind off at the same

rate when lowering and onto the drums at the same rate when hoisting.

(g) Each fall, where exposed to damage or fouling, must have guards or equivalent protection. Each fall that leads along a deck must be covered with a guard that is not more than 300 millimeters (1 foot) above the deck.

(h) The lowering speed for a fully loaded survival craft must be not less than the speed obtained from one of the following formulas:

(1) $S=0.4+(0.02 H)$, where S the lowering speed in meters per second and H is the lowering height in meters from the davit head to the waterline with the vessel in its lightest seagoing condition, with H not greater than 30 regardless of the actual lowering height.

(2) $S=79+(1.2 H)$, where S is the lowering speed in feet per minute and H is the lowering height in feet from the davit head to the waterline with the vessel in its lightest seagoing condition, with H not greater than 99 regardless of the actual lowering height.

(i) The lowering speed for a survival craft loaded with all of its equipment must be not less than 70 percent of the speed required under paragraph (h) of this section.

(j) The lowering speed for a fully loaded survival craft must be not more than 1.3 meters per second (256 feet per minute).

(k) If a survival craft is recovered by electric power, the electrical installation, including the electric power-operated boat winch, must meet the requirements in subchapter J of this chapter. If a survival craft is recovered by any means using power, including a portable power source, safety devices must be provided that automatically cut off the power before the davit arms or falls reach the stops in order to avoid overstressing the falls or davits, unless the motor is designed to prevent such overstressing.

(l) Each launching appliance must be fitted with brakes that meet the following requirements:

(1) The brakes must be capable of stopping the descent of the survival craft or rescue boat and holding the survival craft or rescue boat securely when loaded with its full complement of persons and equipment.

(2) The brake pads must, where necessary, be protected from water and oil.

(3) Manual brakes must be arranged so that the brake is always applied unless the operator, or a mechanism activated by the operator, holds the brake control in the off position.

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§ 199.155 Lifeboat launching and recovery arrangements.

Lifeboat launching and recovery arrangements, in addition to meeting the requirements in §§ 199.150 and 199.153, must meet the following requirements:

(a) Each lifeboat must be provided with a launching appliance. The launching appliance must be capable of launching and recovering the lifeboat with its crew.

(b) Each launching appliance arrangement must allow the operator on the vessel to observe the lifeboat at all times during recovery.

(c) Each launching appliance arrangement must be designed to ensure persons can safely disembark from the survival craft prior to its stowage.

(d) Each lifeboat, other than a totally enclosed lifeboat, must be provided with a davit span with not less than two lifelines of sufficient length to reach the water with the vessel in its lightest seagoing condition, under unfavorable conditions of trim, and with the vessel listed up to 20 degrees either way.

§ 199.157 Free-fall lifeboat launching and recovery arrangements.

(a) The launching appliance for a free-fall lifeboat must be designed and installed so that the launching appliance and the lifeboat it serves operate as a system to protect the occupants from harmful acceleration forces and to effectively clear the vessel.

(b) The launching appliance must be designed and arranged so that, in its ready to launch position, the distance from the lowest point on the lifeboat it serves to the water surface with the vessel in its lightest seagoing condition does not exceed the lifeboat's certificated free-fall height.

(c) The launching appliance must be arranged to preclude accidental release