

(2) Coast Guard regulations; Marine Engineering Regulations (46 CFR subchapter F, parts 50 to 63, inclusive in this chapter).

(b) *Copies on file.* A copy of the regulations referred to in this section shall be kept on file by the manufacturer, together with the approved plans, material affidavits, and the certificate of approval.

[CGFR 58-31, 23 FR 6883, Sept. 6, 1958, as amended by CGD 72-133R, 37 FR 17038, Aug. 24, 1972]

**§ 160.015-2 General requirements for lifeboat winches.**

(a) The requirements of this subpart apply to all new construction of lifeboat winches. Lifeboat winches approved and in use prior to the regulations in this subpart may be continued in service if in satisfactory condition.

(b) Lifeboat winches for use with gravity davits shall have grooved drums of such size that there will be only one wrap of wire on the drum. Lifeboat winches for use with mechanical davits need not be grooved and may be designed to take more than one wrap.

(c) Lifeboat winches shall be designed to lower under the force of gravity alone. There shall be no provisions for power lowering. A suitable hand wheel shall be attached to the winch to overhaul the falls in addition to any hand cranks provided.

(d) If the lifeboat winch is to be used in conjunction with nested lifeboats where the same falls are used for both boats, suitable means shall be provided for rapidly retrieving the falls by hand power.

(e) The installation of lifeboat winches shall be such that the fleet angle for grooved drums does not exceed 8 degrees, and for nongrooved drums does not exceed 4 degrees.

(f) Suitable hand cranks shall be provided for hoisting in addition to any other means for hoisting.

(g) Suitable fabric covers shall be provided, so fitted over exposed mechanisms that ice formations may be readily broken adrift when necessary to operate the winch.

(h) Falls shall not lead past any position that may be needed for the operation of the winch, such as hand

cranks, pay-out wheels, brake levers, etc.

(i) Where falls lead along a deck they shall be suitably covered and so arranged that the top of the cover does not exceed 12 inches above the deck.

(j) Lifeboat winches shall be so designed that when located aboard merchant vessels the operator can observe the movement of the lifeboat during the lowering operation.

(k) For the purpose of calculations and conducting tests, the working load is the maximum load in pounds applied to the winch for which approval is desired.

(k-1) The exterior of a winch shall be designed to minimize such crevices, pockets, and inaccessible areas that when corroded would require disassembly of the winch for their scaling and painting.

(k-2) [Reserved]

(l) The requirements of this subpart shall be complied with unless other arrangements in matters of construction details, design, strength, equivalent in safety and efficiency are approved by the Commandant.

[CGFR 49-18, 14 FR 5111, Aug. 17, 1949, as amended by CGFR 58-31, 23 FR 6883, Sept. 6, 1958; CGD 72-133R, 37 FR 17038, Aug. 24, 1972]

**§ 160.015-3 Construction of lifeboat winches.**

(a) Lifeboat winches shall be of such strength that the lifeboat may be lowered safely with its full complement of persons and equipment. Additionally, a lifeboat winch used in hoisting an emergency lifeboat of a passenger vessel shall be capable of meeting the test specified in § 160.015-5(b)(9). A minimum factor of safety of six on the ultimate strength of the material shall be maintained at all times based on the approved working load.

(b) Worm gears, spur gears, or a combination of both, may be used in the construction of lifeboat winches. All gears shall be machine cut and made of steel, bronze, or other suitable material properly keyed to shafts. The use of cast iron is not permitted for these parts.

(c) Screws, nuts, bolts, pins, keys, etc., securing moving parts shall be

fitted with suitable lock washers, cotter pins, or locks to prevent them from coming adrift.

(d) Drums shall be so arranged as to keep the falls separate, and to pay out the falls at the same rate. Clutches between the drums shall not be permitted unless bolted locking devices are used.

(e) The diameter of the drums shall be at least 16 times the diameter of the falls.

(f) A weighted lever hand brake shall be used to control the lowering by the lifeboat winch. It shall be of a type which is normally in the "on" position unless manually held in the "off" position, and shall return to the "on" position as soon as the brake lever is released.

(g) In addition to the hand brake, a governor type brake shall be fitted so as to control the speed of lowering of the lifeboat in accordance with § 160.015-5(b) (4) and (5).

(h) Positive means of lubrication shall be provided for all bearings. When worm gears are used the worm wheel shall operate in an oil bath. Means shall be provided so that the oil level in the gear case may be easily checked. The manufacturer shall furnish a lubrication chart for each winch together with a plate attached to the winch indicating the lubricant recommended for extremes in temperature.

(i) When lifeboat winches are fitted with power for hoisting, a suitable clutch shall be fitted to disengage the power installation during the lowering operation. In addition, the air or electric power outlet for a portable power unit shall be located adjacent to the winch where the unit is to be coupled. This power outlet shall be interconnected with and protected by the same system of safety devices as required for winches with built-in-motors.

(j) Where power-driven lifeboat winches are used, including those driven by portable power units, such as air or electric drills, positive means shall be provided for controlling the power to the lifeboat winch. This shall be so arranged that the operator must hold the master switch or controller in the "on" or "hoist" position for hoisting, and when released will immediately shut off the power.

(k) Limit switch and emergency disconnect switch requirements:

(1) A main line emergency disconnect switch shall be provided, the opening of which will disconnect all electrical potential to the lifeboat winch. This switch shall be located in a position accessible to the person in charge of the boat stowage, and for gravity davit installations, shall be in a position from which the movement of both davit arms can be observed as they approach the final stowed position.

(2) Where power driven winches are used with gravity davits, two limit switches, one for each davit arm, shall be provided to limit the travel of the davit arms as they approach the final stowed position. These switches shall be connected in series, they may be connected in either the control or the power circuit, and they shall be so arranged that the opening of either switch will disconnect all electrical potential of the circuit in which the switches are connected. These switches shall be arranged to stop the travel of the davit arms not less than 12 inches from their final stowed position and they shall remain open until the davit arms move outboard beyond the tripping position of the switches.

(3) Other arrangements equivalent in design and safety will be given special consideration.

(l) Where power driven winches are used, satisfactory means shall be provided to disconnect power to the winch before a hand crank can be engaged with the winch operating shaft, and this interruption of power shall be maintained while the hand crank is so engaged. Mechanical means for accomplishing the above, such as throw-out couplings on the sockets of the hand cranks, will be given special consideration.

(m) Motors, switches, controls, cables, etc., shall be of the waterproof type if installed on an open deck. Controls may be of the dripproof type if installed in a deck house or under deck. Installations shall be in accordance with subchapter J (Electrical Engineering) of this chapter (Electrical Engineering Regulations, CG-259).

(n) All moving parts shall have suitable guards.

(o) Welding, when employed, shall be performed by welders certified by the U. S. Coast Guard, American Bureau of Shipping, or U.S. Navy Department, and the electrodes used shall be of an approved type.

(p) Inspection openings shall be provided in the winch housing or the housing itself shall be so arranged as to permit examination of the internal working parts.

(q) Motor clutches, when used, shall be of either frictional or positive engaging type. When one motor is used for two winches, the clutch shall be so arranged that only one winch shall be engaged at any one time. The clutch operating lever shall be capable of remaining in any position when subject to vibration and shall be so arranged that when in neutral position, both lifeboats may be lowered simultaneously.

[CGFR 49-18, 14 FR 5111, Aug. 17, 1949, as amended by CGFR 51-20, 16 FR 5443, June 8, 1951; CGFR 58-31, 23 FR 6883, Sept. 6, 1958; CGFR 65-9, 30 FR 11465, Sept. 8, 1965; CGD 72-133R, 37 FR 17039, Aug. 24, 1972; CGD 73-103R, 39 FR 11273, Mar. 27, 1974]

#### § 160.015-4 Capacity of lifeboat winches.

(a) A lifeboat winch shall be approved for a working load after it has been demonstrated by detailed calculations that this working load can be carried with a minimum factor of safety of six based on the ultimate strengths of the materials. It will also be necessary to conduct the tests specified in §160.015-5.

(b) [Reserved]

[CGFR 49-18, 14 FR 5111, Aug. 17, 1949]

#### § 160.015-5 Inspection and testing of lifeboat winches.

(a) *Material testing.* (1) The manufacturer shall furnish affidavits relative to the physical and chemical properties of the materials. Such affidavits shall be furnished by the foundry or mill supplying the material.

(b) *Factory test for initial approval.* (1) Lifeboat winches shall be tested for strength and operation at a place chosen by the manufacturer of the winch in the presence of an inspector. The lifeboat winch under test shall be set up similar to the intended shipboard

installation. In the case of a lifeboat winch with nongrooved drums, the drums shall be built up or sufficiently filled with wire to simulate the maximum number of wraps for which the winch is to be approved. The tests to be conducted are as noted in paragraphs (b)(2) to (8) of this section. The limiting values of velocities and the 2 foot braking distance set forth in the following paragraphs of this section are the values to be actually achieved with the specific arrangement of falls contemplated for the shipboard installation. If a different arrangement of falls is used to facilitate testing, due consideration shall be given to the use of limiting velocities, braking distances, and test weights which will be equivalent to the test performed with an arrangement of falls identical to that used for the shipboard installation.

(2) A pull of 2.2 times the working load, equally divided between drums, shall be applied in a direction similar to a shipboard installation. The test weight producing this load shall be dropped through a distance of not less than 15 feet, at which time this weight shall be stopped within a distance of 2 feet by action of the counterweight alone on the hand brake.

(3) A test identical to that noted in paragraph (b)(2) of this section shall be conducted after the braking surfaces have been thoroughly wetted. The test weight shall be stopped by the action of the counterweight alone within a distance of 6 feet. The test need only be applied to lifeboat winches having external brakes.

(4) With a pull equal to the working load, it shall be determined that the governor brake will limit the speed of lowering of the test weight to a maximum of 120 feet per minute, except that, in the case of winches designed for use with emergency lifeboats aboard passenger vessels, the speed of lowering shall not exceed 160 feet per minute.

(5) With a pull equal to 0.3 times the working load, it shall be determined that the winch will lower the test weight at not less than 40 feet per minute, except that, in the case of