

(f) When, in a vessel of less than 1,600 gross tons, an auxiliary steering gear, which § 58.25-10(c)(3) requires to be operated by power, is not operated by electric power or is operated by an electric motor primarily intended for other service, the main steering gear may be fed by one circuit from the main switchboard. When such an electric motor is arranged to operate an auxiliary steering gear, neither § 58.25-25(e) nor paragraphs (a) through (c) of this section need be complied with if both the overcurrent protection and compliance with §§ 58.25-25(d), 58.25-30, and 58.25-70 (j) and (k) satisfy the Commanding Officer, Marine Safety Center.

**§ 58.25-60 Non-duplicated hydraulic rudder actuators.**

Non-duplicated hydraulic rudder actuators may be installed in the steering-gear control systems on each vessel of less than 100,000 deadweight tons. These actuators must meet IMO Assembly Resolution A.467(XII), Guidelines for Acceptance of Non-Duplicated Rudder Actuators for Tankers, Chemical Tankers, and Gas Carriers of 10,000 Tons Gross Tonnage and Above But Less Than 100,000 Tonnes Deadweight, 1981, and be acceptable to the Commanding Officer, Marine Safety Center. Also, the piping for the main gear must comply with § 58.25-10(e)(3).

**§ 58.25-65 Feeder circuits.**

(a) Each vessel with one or more electric-driven steering-gear power units must have at least two feeder circuits, which must be separated as widely as practicable. One or more of these circuits must be supplied from the vessel's service switchboard. On a vessel where the rudder stock is over 23 centimeters (9 inches) in diameter in way of the tiller, excluding strengthening for navigation in ice, and where a final source of emergency power is required by § 112.05-5(a) of this chapter, one or more of these circuits must be supplied from the emergency switchboard, or from an alternative source of power that—

(1) Is available automatically within 45 seconds of loss of power from the vessel's service switchboard;

(2) Comes from an independent source of power in the steering-gear compartment;

(3) Is used for no other purpose; and

(4) Has a capacity for one half-hour of continuous operation, to move the rudder from 15° on either side to 15° on the other in not more than 60 seconds with the vessel at its deepest loadline draft and running at one-half maximum ahead service speed or 7 knots, whichever is greater.

(b) Each vessel that has a steering gear with multiple electric-driven power units must be arranged so that each power unit is supplied by a separate feeder.

(c) Each feeder circuit must have a disconnect switch in the steering-gear compartment.

(d) Each feeder circuit must have a current-carrying capacity of—

(1) 125% of the rated full-load current rating of the electric steering-gear motor or power unit; and

(2) 100% of the normal current of one steering-gear control system including all associated motors.

**§ 58.25-70 Steering-gear control systems.**

(a) Each power-driven steering-gear system must be provided with at least one steering-gear control system.

(b) The main steering gear must be operable from the pilothouse by mechanical, hydraulic, electrical, or other means acceptable to the Commanding Officer, Marine Safety Center. This gear and its components must give full followup control of the rudder. Supplementary steering-gear control not giving full followup may also be provided from the pilothouse.

(c) Each steering-gear control system must have in the pilothouse a switch arranged so that one operation of the switch's lever automatically supplies power to a complete system and its associated power unit or units. This switch must be—

(1) Operated by one lever;

(2) Arranged so that not more than one control system and its associated power unit or units can be energized from the pilothouse at any one time;

(3) Arranged so that the lever passes through "off" during transfer of control from one control system to another; and

(4) Arranged so that the switches for each control system are in separate enclosures or are separated by fire-resistant barriers.

(d) Each steering-gear control system must receive its power from—

(1) The feeder circuit supplying power to its steering-gear power unit or units in the steering-gear compartment; or

(2) A direct connection to the busbars supplying the circuit for its steering-gear power unit or units from a point on the switchboard adjacent to that supply.

(e) Each steering-gear control system must have a switch that—

(1) Is in the steering-gear compartment; and

(2) Disconnects the system from its power source and from the steering gear that the system serves.

(f) Each motor controller for a steering gear must be in the steering-gear compartment.

(g) A means of starting and stopping each motor for a steering gear must be in the steering-gear compartment.

(h) When the main steering gear is arranged in accordance with § 58.25-10(e), two separate and independent systems for full followup control must be provided in the pilothouse; except that—

(1) The steering wheel or lever need not be duplicated; and

(2) If the system consists of a hydraulic telemotor, no second separate and independent system need be provided other than on each tank vessel subject to § 58.25-85.

(i) When only the main steering gear is power-driven, two separate and independent systems for full followup control must be provided in the pilothouse; except that the steering wheel or lever need not be duplicated.

(j) When the auxiliary steering gear is power-driven, a control system for the auxiliary steering gear must be provided in the pilothouse that is separate and independent from the control system for the main steering gear; except that the steering wheel or lever need not be duplicated.

(k) On a vessel of 500 gross tons or above, each main steering gear and auxiliary steering gear must be arranged so that its power unit or units are operable by controls from the steering-gear compartment. These controls must not be rendered inoperable by failure of the controls in the pilothouse.

#### § 58.25-75 Materials.

(a) Materials used for the mechanical or hydraulic transmission of power to the rudder stock must have an elongation of at least 15% in 5 centimeters (2 inches); otherwise, components used for this purpose must be shock-tested in accordance with subpart 58.30 of this part.

(b) No materials with low melting-points, including such materials as aluminum and nonmetallic seals, may be used in control systems for steering gear or in power actuating systems unless—

(1) The materials are within a compartment having little or no risk of fire;

(2) Because of redundancy in the system, damage by fire to any component would not prevent immediate restoration of steering capability; or

(3) The materials are within a steering-gear power actuating system.

#### § 58.25-80 Automatic pilots and ancillary steering gear.

(a) Automatic pilots and ancillary steering gear, and steering-gear control systems, must be arranged to allow immediate resumption of manual operation of the steering-gear control system required in the pilothouse. A switch must be provided, at the primary steering position in the pilothouse, to completely disconnect the automatic equipment from the steering-gear controls.

(b) Automatic pilots and ancillary steering gear must be arranged so that no single failure affects proper operation and independence of the main or auxiliary steering gear, required controls, rudder-angle indicators, or steering-failure alarm.