

this paragraph shall be the normal source as defined in paragraph (b)(5) of this section.

(f) *Circuit testing*—(1) *Fire alarm and trouble alarm test*. Means shall be provided at the control unit for individually testing each fire detecting zone circuit. The testing means shall be capable of simulating a fire condition and a trouble condition.

(2) *Ground test*. Means shall be provided at the control unit for manual testing of each individual fire detecting zone circuit for the presence of grounds. Systems whose normal source of supply is derived from a circuit from the ship's alternating-current temporary emergency bus shall be provided with a two-winding transformer in the supply circuit and located in the control unit to isolate electrically the fire detecting system from the ship's electrical system.

(g) *Power supply transfer switch*. An automatic transfer switch with no "off" position shall be provided in the control unit for selecting the source of power, except that systems employing duplicate storage batteries may be provided with a manual transfer switch.

(1) *Automatic transfer switch*. Upon reduction of potential from the normal power source of 15 to 20 percent, the automatic fire detection system shall automatically be disconnected from the normal source and connected to the emergency source. Upon restoration of potential from the normal source of 85 to 95 percent of normal values, the automatic fire detection system shall automatically be transferred back to normal source.

(2) *Manual transfer switch*. Automatic fire detecting systems employing duplicate storage batteries as the power supplies shall be provided with a manual transfer switch with no "off" position to select the battery to supply the system and the battery to be charged.

(h) *Automatic fire detecting system, battery charging and control*—(1) *General*. Automatic fire detecting systems employing duplicate storage batteries as the power supply shall be provided with battery charging and control facilities as specified by this paragraph.

(2) *Transfer switch*. A manual transfer switch shall be provided in accordance with paragraph (g)(2) of this section.

(3) *Voltmeter and voltmeter switch*. A voltmeter and a voltmeter switch shall be provided at the control unit and connected to read (i) voltage of battery supplying system and (ii) voltage of battery on charge.

(4) *Ammeter*. An ammeter shall be provided to indicate the charging current to the battery on charge.

(5) *Reverse current protection*. An undervoltage or reverse current relay shall be provided to disconnect the battery on charge from the charging source in the event of loss of potential from the charging source unless reverse current flow is effectively blocked by a rectifier.

(6) *Resistors*. Fixed and variable resistors shall be provided to regulate the charging rate, together with a two-position switch to select between a normal charging rate and a high charging rate.

(7) *Overcurrent protection*. The batteries shall be protected against overcurrent by fuses rated at not less than 150 percent and not more than 200 percent of the maximum normal battery load.

(8) *Location*. The equipment required by this paragraph shall be located in or adjacent to the control unit.

[CGFR 56-39, 21 FR 9035, Nov. 21, 1956, as amended by CGFR 70-143, 35 FR 19666, Dec. 30, 1970; CGD 94-108, 61 FR 49691, Sept. 23, 1996; USCG-2004-18884, 69 FR 58350, Sept. 30, 2004]

#### § 161.002-12 Manual fire alarm systems.

(a) *General*. A manual fire alarm system shall consist of a power supply, a control unit on which are located visible and audible fire and trouble alarms, and fire alarm circuits as required originating from the control unit and terminating at manual fire alarm boxes. Power failure alarm devices may be separately housed from the control unit and may be combined with other power failure alarm systems when specifically approved.

(b) *Types*. Manual fire alarm systems shall be one of the following types, or a combination of several types:

(1) Manual fire alarm stations superimposed on and connected as an integral part of the fire detector circuit

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wiring of an automatic fire detection system.

(2) Electrical system using manually operated fire alarm boxes.

(3) Other types as may be developed.

(c) *Power supply.* The power supply shall be as specified for automatic fire detecting system by § 161.002-9.

(d) *Manual fire alarm system control unit.* The manual fire alarm system control unit shall be as specified for automatic fire detecting systems by § 161.002-10.

[21 FR 9032, Nov. 21, 1956, as amended by CGD 94-108, 61 FR 28292, June 4, 1996]

## § 161.002-14 Watchman's supervisory systems.

(a) *General.* The watchman's supervisory system shall consist of apparatus to verify the presence of watchmen and the regular performance of their assigned duties.

(b) *Types.* The watchman's supervisory systems shall be one of the following types, or a combination of several types:

(1) A mechanical system consisting of portable spring-motor-driven recording clocks in conjunction with key stations located along the prescribed routes of the watchmen to operate the clock recording mechanism.

(2) An electrical system employing a recorder located at a central station in conjunction with key stations along the prescribed route of the watchmen.

(3) Other types that may be developed.

(c) *Portable spring-motor-driven recording clocks.* (1) Each clock shall run for at least one week without rewinding and shall be substantially mounted and strongly encased. It shall be made so that the recordings cannot be seen without opening the case and so that the case cannot be opened without indicating, by a distinctive recording, the time of opening and closing.

(2) The records of the recording watch clock shall be legible and permanent.

(d) *Key stations for use with portable recording watch clocks.* (1) The key station shall be of substantial construction and provided with a hinged cover. The key shall be attached to the station by means of a strong link chain. The key stations shall be mounted in

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such a manner that they cannot be removed without giving evidence of removal.

(2) Keys shall be made so that they are difficult to duplicate, and shall be of a pattern susceptible of variations tending to reduce the probability that a set of keys for one clock will operate other clocks.

[21 FR 9032, Nov. 21, 1956, as amended by CGFR 59-7, 24 FR 3241, Apr. 25, 1959]

## § 161.002-15 Sample extraction smoke detection systems.

The smoke detecting system must consist of a means for continuously exhausting an air sample from the protected spaces and testing the air for contamination with smoke, together with visual and audible alarms for indicating the presence of smoke.

[CGD 94-108, 61 FR 28292, June 4, 1996]

## § 161.002-17 Equivalents.

The Commandant may approve any arrangement, fitting, appliance, apparatus, equipment, calculation, information, or test that provides a level of safety equivalent to that established by specific provisions of this subpart. Requests for approval must be submitted to Commandant (CG-ENG). If necessary, the Commandant may require engineering evaluations and tests to demonstrate the equivalence of the substitute.

[CGD 94-108, 61 FR 28292, June 4, 1996]

## § 161.002-18 Method of application for type approval.

(a) The manufacturer must submit the following material to Commandant (CG-ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593-7509:

(1) A formal written request that the system be reviewed for approval.

(2) Three copies of the system's instruction manual, including information concerning installation, programming, operation, and troubleshooting.

(3) One copy of the complete test report generated by an independent laboratory accepted by the Commandant under part 159 of this chapter for the testing and listing or certification of fire-protective systems. A current list