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the same standards as the original construction provided that in no case will greater departure from the standards of §§72.40–5 through 72.40–20 be permitted than presently exists.

(b) [Reserved]

[CGFR 69–72, 34 FR 17483, Oct. 29, 1969]

## **PART 76—FIRE PROTECTION EQUIPMENT**

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- 76.60-1 Application.
- 76.60-5 Number required.
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AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

EFFECTIVE DATE NOTE: By 89 FR 76697, Sept. 18, 2024, the authority for part 76 was revised, effective Oct. 18, 2024. For the convenience of the user, the revised text is set forth as follows:

AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; DHS Delegation No. 00170.1, Revision No. 01.4.

SOURCE: CGFR 65-50, 30 FR 16940, Dec. 30, 1965, unless otherwise noted.

### Subpart 76.01—Application

#### § 76.01-1 General; preemptive effect.

(a) The provisions of this part shall apply to all vessels except as specifically noted in this part.

(b) The regulations in this part have preemptive effect over State or local regulations in the same field.

[ CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by USCG-2006-24797, 77 FR 33875, June 7, 2012]

#### § 76.01-2 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030 or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html). The material is also available for inspection at Coast Guard Headquarters. Contact 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. The material is also available from the sources listed in paragraphs (b) through (d) of this section.

(b) ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, 877-909-2786, <http://www.astm.org>.

(1) ASTM F1121-87 (Reapproved 2010), Standard Specification for International Shore Connections for Marine Fire Applications ("ASTM F 1121"), (approved March 1, 2010), incorporation by reference approved for § 76.10-10.

(2) [Reserved]

(c) International Maritime Organization (IMO) Publishing, 4 Albert Embankment, London SE1 7SR, United Kingdom, +44 (0)20 7735 7611, <http://www.imo.org>.

(1) International Convention for the Safety of Life at Sea (SOLAS), as amended, Consolidated Edition, 2009, including Erratum, IBR approved for §§ 76.27-1(b) and 76.27-70 introductory text, (a) through (d) and (j).

(2) FSS Code, International Code for Fire Safety Systems, Second Edition,

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2007 Edition (Resolution MSC.98(73)), IBR approved for §§ 76.27–1(b) and 76.27–70 introductory text, and (e) through (j).

(3) Resolution A.1021(26), Code on Alerts and Indicators, 2009, adopted on 2 December 2009 (“IMO Resolution A.1021(26)”), IBR approved for § 76.27–70(j).

(d) National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169–7471, 617–770–3000, <http://nfpa.org>.

(1) NFPA 13–1996, Standard for the Installation of Sprinkler Systems, IBR approved for § 76.25–90.

(2) NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, effective August 26, 2009, IBR approved for § 76.25–1.

(e) Underwriters Laboratories Inc. (UL), 12 Laboratory Drive, Research Triangle Park, NC 27709–3995, 919–549–1400, <http://www.ul.com>.

(1) UL 19 Standard for Safety, Lined Fire Hose and Hose Assemblies (“UL 19”) (2001), incorporation by reference approved for § 76.10–10.

(2) [Reserved]

[USCG–2003–16630, 73 FR 65192, Oct. 31, 2008, as amended by USCG–2009–0702, 74 FR 49231, Sept. 25, 2009; USCG–2012–0832, 77 FR 59779, Oct. 1, 2012; USCG–2012–0866, 78 FR 13250, Feb. 27, 2013; USCG–2013–0671, 78 FR 60150, Sept. 30, 2013; USCG–2012–0196, 81 FR 48252, July 22, 2016]

## § 76.01–5 Equipment installed but not required.

(a) Where extinguishing systems or equipment are not required, but are installed, the system or equipment and its installation must meet the requirements of this part.

(b) Use of non-approved fire detection systems may be acceptable as excess equipment provided that:

(1) Components are listed by a nationally recognized testing laboratory (NRTL) as that term is defined in 46 CFR 161.002–2, and are designed, installed, tested, and maintained in accordance with an appropriate industry standard and the manufacturer’s specific guidance;

(2) Installation conforms to the requirements of 46 CFR chapter I, subchapter J (Electrical Engineering), especially the hazardous location elec-

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trical installation regulations in 46 CFR 111.105; and

(3) Coast Guard plan review is completed for wiring plans.

[USCG–2012–0196, 81 FR 48252, July 22, 2016]

## Subpart 76.05—Fire Detecting and Extinguishing Equipment, Where Required

### § 76.05–1 Fire detection and alarm systems.

(a) Approved fire detection and alarm systems must be installed on the following vessels as set forth in subpart 76.27 of this part:

(1) Any vessel on an international voyage;

(2) Any vessel of more than 150 feet (45.72 meters) in length having sleeping accommodations for passengers; and

(3) Any vessel of 150 feet (45.72 meters) or less in length, not on an international voyage, having sleeping accommodations for 50 or more passengers. Vessels in this category are not required to have a fire detection system in the cargo spaces.

(b) The arrangements and details of the fire detection systems must be as set forth in subparts 76.25 through 76.33 of this part.

[USCG–2012–0196, 81 FR 48253, July 22, 2016]

### § 76.05–5 Manual alarm system.

(a) An approved manual alarm system must be installed in all vessels as set forth in subpart 76.27 of this part.

(b) [Reserved]

[USCG–2012–0196, 81 FR 48253, July 22, 2016]

### § 76.05–10 Supervised patrol system.

(a) A supervised patrol or watchman system must be provided on all vessels as set forth in §§ 78.30–10 and 78.30–15 of this subchapter.

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48253, July 22, 2016]

### § 76.05–15 Fire main system.

(a) Fire pumps, hydrants, hose, and nozzles shall be installed on the following vessels:

(1) On all self-propelled vessels.

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(2) After July 1, 1957, on all barges with sleeping accommodations for more than six persons.

(b) The arrangement and details of the fire main system shall be as set forth in subpart 76.10.

### § 76.05–20 Fixed fire extinguishing systems.

Approved fire extinguishing systems must be installed, as required by Table

76.05–20 on all self-propelled vessels and on all barges with sleeping accommodations for more than six persons. Previously approved installations may be retained as long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

TABLE 76.05–20—REQUIRED FIXED EXTINGUISHING SYSTEMS

Space	Fixed extinguishing systems
<b>Safety Areas</b>	
Wheelhouse or fire-control room .....	None required. <sup>1</sup>
Stairway and elevator enclosures .....	None required. <sup>1</sup>
Communication corridors .....	None required. <sup>1</sup>
Lifeboat embarkation and lowering stations .....	None required.
Radio room .....	None required. <sup>1</sup>
<b>Accommodations</b>	
Staterooms, toilet spaces, isolated pantries, etc. ....	None required. <sup>1</sup>
Offices, lockers, and isolated storerooms .....	None required. <sup>1</sup>
Public spaces .....	None required. <sup>1</sup>
Open decks or enclosed promenades .....	None required.
<b>Service Spaces</b>	
Galleys .....	None required. <sup>1</sup>
Main pantries .....	None required. <sup>1</sup>
Motion picture booths and film lockers .....	None required. <sup>1,2</sup>
Paint and lamp rooms .....	Carbon dioxide. <sup>3</sup>
Inaccessible baggage, mail, and specie rooms and storerooms .....	Carbon dioxide. <sup>3</sup>
Accessible baggage, mail, and specie rooms and storerooms .....	None required. <sup>1</sup>
Refrigerated storerooms .....	None required.
Carpenter, valet, photographic, and printing shops, sales rooms, etc. ....	None required. <sup>1</sup>
<b>Machinery spaces</b>	
Coal fired boilers: Bunker and boiler space .....	None required. <sup>1</sup>
Oil fired boilers: Spaces containing oil fired boilers either main or auxiliary, their fuel oil service pumps, and/or such other fuel oil units as the heaters, strainers, valves, manifolds, etc., that are subject to the discharge pressure of the fuel oil service pumps, together with adjacent spaces to which oil can drain. ....	Carbon dioxide or foam. <sup>4</sup>
Internal combustion or gas turbine propelling machinery spaces .....	Carbon dioxide. <sup>5</sup>
Electric propulsive motors or generators of open type .....	None required.
Enclosed ventilating systems for motors and generators of electric propelling machinery. ....	Carbon dioxide (in ventilating system). <sup>6</sup>
Auxiliary spaces, internal combustion or gas turbine .....	Carbon dioxide. <sup>7</sup>
Auxiliary spaces, electric motors or generators .....	None required.
Auxiliary spaces, steam .....	None required.
Trunks to machinery spaces .....	None required.
Fuel tanks .....	None required. <sup>8</sup>
<b>Cargo Spaces</b>	
Inaccessible during voyage (combustible cargo), including trunks (excluding tanks) ...	Carbon dioxide. <sup>3</sup>
Accessible during voyage (combustible cargo) .....	Automatic or manual sprinkler system.
Vehicular deck (except where no overhead deck is 30 feet (9.14 meters) in length or less). ....	Manual sprinkler.
Cargo oil tanks .....	Carbon dioxide or foam. <sup>3</sup>
Specially suitable for vehicles .....	Carbon dioxide, automatic or manual sprinkler system.

<sup>1</sup> Vessels of 100 GT or more contracted for on or before May 27, 1936, and having combustible joiner work must be fitted with an automatic sprinkler system, except in relatively incombustible spaces.

<sup>2</sup> Sprinkler heads may be attached to a potable water system provided electrical or pneumatic detecting is installed.

<sup>3</sup> On vessels contracted for prior to January 1, 1962, a steam smothering system may be accepted. However, although existing steam smothering systems may be repaired, replaced, or extended, no new system contracted for on or after January 1, 1962, will be permitted.

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<sup>4</sup>Protection of auxiliary boilers, fuel oil units, valves, and manifolds not required on vessels contracted for prior to November 19, 1952.

<sup>5</sup>Not required on vessels of less than 300 GT (except on an international voyage) using fuel with a flashpoint higher than 110 °F, where the space is normally manned.

<sup>6</sup>Not required on vessels contracted for prior to November 19, 1952.

<sup>7</sup>Not required on vessels of less than 300 GT or on vessels contracted for prior to November 19, 1952, except where fuel, including starting fuel, has a flashpoint of 110 °F or less.

<sup>8</sup>Where fuel having a flashpoint of 110 °F or lower is used the space containing the fuel tanks must be protected by a carbon dioxide system.

[USCG–2012–0196, 81 FR 48253, July 22, 2016]

### § 76.05–25 Hand portable fire extinguishers and semiportable fire extinguishing systems.

(a) Approved hand portable fire extinguishers and semiportable fire extinguishing systems shall be installed on all vessels as set forth in subpart 76.50.

(b) [Reserved]

### Subpart 76.10—Fire Main System, Details

#### § 76.10–1 Application.

(a) The provisions of this subpart, with the exception of § 76.10–90, shall apply to all fire main installations contracted for on or after May 26, 1965. Installations contracted for prior to May 26, 1965, shall meet the requirements of § 76.10–90.

(b) [Reserved]

#### § 76.10–3 Water availability.

(a) On all vessels on an international voyage, regardless of the date of construction, water pressure from the firemain protecting enclosed spaces shall be immediately available by maintenance of water pressure on the firemain at all times when passengers are aboard the vessel, or by remote control of fire pumps which control shall be easily operable and readily accessible.

(b) Where approved remote controls are not installed, an alarm shall be fitted which will sound in the engine room indicating a drop of water pressure on the system.

[CGFR 67–87, 32 FR 19181, Dec. 20, 1967]

#### § 76.10–5 Fire pumps.

(a) Vessels must be equipped with independently driven fire pumps in accordance with table 76.10–5(a).

TABLE 76.10–5(a)

Gross tons		Minimum number of pumps		Hose and hydrant size, inches	Nozzle orifice size, inches	Length of hose, feet
Over	Not over	International voyage	Other			
.....	100	2	1	1½	½	50
100 .....	500	2	1	1½	⅝	50
500 .....	1,500	2	2	1½	⅝	50
1,500 .....	4,000	2	2	1½	1 ⅞	150
4,000 .....	.....	3	3	1½	1 ⅞	150

<sup>1</sup>Except as allowed by § 76.10–10(b).

(b) Vessels on an international voyage shall have a minimum total fire pump capacity at least equal to two-thirds of the required total bilge pump capacity, but in no case less than that required by this section. Each of the required fire pumps shall have a capacity not less than 80 percent of the total required capacity divided by the number of required pumps.

(c) Each pump shall be capable of delivering water simultaneously from the two highest outlets at a Pitot tube pressure of approximately 50 p. s. i. Where one or both of these outlets is a 1½-inch siamese fitting, both branches of the siamese fitting at each such outlet shall be utilized for the purpose of this requirements.

(d) Fire pumps shall be fitted on the discharge side with relief valves set to relieve at 25 p. s. i. in excess of the pressure necessary to maintain the requirements of paragraph (c) of this section or 125 p. s. i., whichever is greater. Relief valves may be omitted if the pumps, operating under shutoff conditions, are not capable of developing a pressure exceeding this amount.

(e) Fire pumps shall be fitted with a pressure gauge on the discharge side of the pumps.

(f) Fire pumps may be used for other purposes provided at least one of the required pumps is kept available for use on the fire system at all times. In no case shall a pump having connection

to an oil line be used as a fire pump. Branch lines connected to the fire main for purposes other than fire and deck wash shall be arranged so that the requirements of paragraphs (b) and (c) of this section and any other services installed on the fire main can be met simultaneously.

(g) The total area of the pipes leading from a pump shall not be less than the discharge area of the pump.

(h) If a vessel uses main or auxiliary oil fired boilers or internal combustion propulsion machinery, and is required to have two fire pumps, the pumps must be in separate spaces and the arrangement of pumps, sea connections, and sources of power must be arranged to ensure that a fire in any one space will not put all of the fire pumps out of operation. However, in vessels of less than 300 feet in length, when it is shown to the satisfaction of the Commandant that it is unreasonable or impracticable to meet this requirement due to the size or arrangement of the vessel, or for other reasons, the installation of a total flooding carbon dioxide or clean agent extinguishing system may be accepted as an alternate method of extinguishing any fire that affects the powering and operation of at least one of the required fire pumps.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by CGD 95-028, 62 FR 51204, Sept. 30, 1997; USCG-2006-24797, 77 FR 33876, June 7, 2012; USCG-2012-0196, 81 FR 48254, July 22, 2016]

#### **§ 76.10-10 Fire station hydrants, hose and nozzles**

(a) The size of fire hydrants, hoses, and nozzles, and the length of hose required, must be as specified in Table 76.10-5(a) of this subpart.

(b) On vessels of more than 1,500 gross tons, the 2½-inch hose and hydrants specified in Table 76.10-5(a) may be replaced with 1½-inch hose and hydrants as follows:

(1) The hydrants in interior locations may have wye connections for 1½-inch hose. In these cases, the hose must be 75 feet (22.86 meters) in length, and only one hose will be required at each fire station; however, if every interior space can be reached by a 50-foot hose then 50-foot hoses may be installed at each interior fire hydrant; and

(2) The hydrants for external locations may consist of two 1½-inch outlets, each with a 1½-inch hose, supplied through a wye connection as a substitute.

(c) On vessels of 500 gross tons or more, there must be at least one shore connection to the fire main available to each side of the vessel in an accessible location. Suitable cut-out valves and check valves must be provided. Suitable adaptors also must be provided for furnishing the vessel's shore connections with couplings mating those on the shoreside fire lines. Vessels of 500 gross tons or more on an international voyage must be provided with at least one international shore connection complying with ASTM F 1121 (incorporated by reference, see § 76.01-2). Facilities must be available that enable an international shore connection to be used on either side of the vessel.

(d) Fire hydrants must be of sufficient number and so located that any part of the vessel accessible to the passengers or crew while the vessel is being navigated, other than main machinery spaces and cargo holds, may be reached with at least two streams of water from separate outlets, at least one of which must be from a single length of hose. All areas of the main machinery spaces and cargo holds must be capable of being reached by at least two streams of water, each of which must be from a single length of hose from separate outlets. This requirement need not apply to shaft alleys containing no assigned space for the stowage of combustibles. Fire hydrants must be numbered as required by § 78.47-20 of this subchapter.

(e) All parts of the fire main located on exposed decks must either be protected against freezing or be fitted with cut-out valves and drain valves so that the entire exposed parts of such piping may be shut off and drained in freezing weather. Except when closed to prevent freezing, such valves must be sealed open.

(f) The outlet at each fire hydrant must be provided with a cock or valve fitted in such a position that the fire-hose may be removed while the fire main is under pressure. In addition, the outlet must be limited to any position

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from the horizontal to the vertical pointing downward, so that the hose will lead horizontally or downward to minimize the possibility of kinking.

(g) Each fire hydrant must have at least one length of firehose, a spanner wrench, and a hose rack or other device for stowing the hose.

(h) Firehoses must be connected to the outlets at all times. However, on open decks where no protection is afforded to the hose in heavy weather, or where the hose may be liable to damage from the handling of cargo, the hose may be temporarily removed from the hydrant and stowed in an accessible nearby location.

(i) A firehose must not be used for any purpose other than fire extinguishing and fire drills.

(j) Each firehose on each hydrant must have a combination solid stream and water spray firehose nozzle that meets the requirements in 46 CFR 162.027. Firehose nozzles previously approved under subpart 162.027 of this chapter may be retained so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(k) Straight stream firehose nozzles approved under 46 CFR 162.027 must have low-velocity water spray applicators for—

(1) Two firehoses within the accommodation and service areas; and

(2) Each firehose within propulsion machinery spaces containing an oil-fired boiler, internal combustion machinery, or an oil fuel unit on a vessel on an international voyage or on any vessel of 1,000 gross tons or more. The length of each applicator must be not more than 1.8 meters (6 feet).

(l) Fixed brackets, hooks, or other means for stowing an applicator must be next to each fire hydrant that has an applicator under paragraph (k) of this section.

(m) Fire hydrants, nozzles, and other fittings must have threads to accommodate the hose connections noted in paragraph (l) of this section.

(n) Firehose and couplings must be as follows:

(1) Fire station hydrant connections must be brass, bronze, or other equivalent metal. Couplings must either—

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(i) Use National Standard (NS) firehose coupling threads for the 1½-in (38-mm) and 2½-in (64-mm) hose sizes, *i.e.*, 9 threads per inch for a 1½-in hose, and 7½ threads per inch for a 2½-in hose; or

(ii) Be a uniform design for each hose diameter throughout the vessel.

(2) Each section of firehose must be a lined commercial firehose that conforms to UL 19 (incorporated by reference, see § 76.01-2). A hose that bears the label of UL as a lined firehose is accepted as conforming to this requirement.

[USCG-2012-0196, 81 FR 48254, July 22, 2016]

### § 76.10-15 Piping.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) All distribution cut-off valves shall be marked as required by § 78.47-15 of this subchapter.

(c) For vessels on an international voyage, the diameter of the fire main shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously. This is in addition to § 76.10-5(c). The discharge of this quantity of water through hoses and nozzles at a sufficient number of adjacent hydrants shall be at a minimum Pitot tube pressure of approximately 50 pounds per square inch.

### § 76.10-90 Installations contracted for prior to May 26, 1965.

(a) Installations contracted for prior to May 26, 1965, shall meet the following requirements:

(1) Except as specifically modified by this paragraph, the requirements of §§ 76.10-5 through 76.10-15 shall be complied with insofar as the number and general type of equipment is concerned. Existing equipment, except firehose nozzles and low-velocity water spray applicators, previously approved but not meeting the applicable requirements of §§ 76.10-5 through 76.10-15 may be continued in service so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs, alterations, and replacements

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may be permitted to the same standards as the original installation. However, all new installations or major replacements shall meet the applicable requirements in this part.

(2) All vessels contracted for prior to November 19, 1952, shall be fitted with fire pumps, hoses, and nozzles in accordance with table 76.10–90(a)(2).

TABLE 76.10–90(a)(2)

Gross tons		Minimum number of pumps	Minimum hose and hydrant size, inches	Nozzle orifice size, inches	Length of hose, feet
Over	Not over				
100 .....	4,000	2	1 1/2	1 5/8	150
4,000 .....	.....	3	1 1/2	1 5/8	150

<sup>1</sup> May use 50 feet of 2 1/2-inch hose with 7/8-inch nozzles for exterior stations. May use 75 feet of 1 1/2-inch hose with 5/8-inch nozzles for interior station in which case such interior stations shall have siamese connections.

(3) When reasonable and practicable, where two or more fire pumps are required, they shall not all be located in the same space. Vessels on an international voyage shall, however, comply with the requirements of § 76.10–5(h).

(4) The general requirements of § 76.10–5(c) through (h), § 76.10–10(d) through (i), and § 76.10–15, shall be complied with insofar as is reasonable and practicable. In addition, vessels on an international voyage shall comply with the requirements of § 76.10–5(b).

(5) Vessels on an international voyage shall comply with the requirements of § 76.10–3.

(6) Firehose nozzles and low-velocity spray applicators must meet the requirements of §§ 76.10–10(j), 76.10–10(k), and 76.10–10(l).

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by CGFR 67–87, 32 FR 19181, Dec. 20, 1967; CGD 76–086, 44 FR 2392, Jan. 11, 1979; CGD 95–027, 61 FR 26004, May 23, 1996; USCG–2000–7790, 65 FR 58461, Sept. 29, 2000]

### Subpart 76.13—Steam Smothering Systems

#### § 76.13–1 Application.

Steam smothering systems are not permitted on vessels contracted for on or after January 1, 1962. Previously approved installations may be retained as long as they are maintained in good

condition to the satisfaction of the Officer in Charge, Marine Inspection.

[CGD 95–027, 61 FR 26004, May 23, 1996]

#### § 76.13–90 Installations contracted for prior to January 1, 1962.

(a) Installations contracted for prior to July 1, 1935, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standard as the original installation.

(2) The main pipes and their branches to the cargo compartments and similar spaces shall be not less than 1 1/2-inch pipe size and shall emanate from not more than two stations in easily accessible locations. If located on the open deck, the distribution manifolds shall be suitably protected by an enclosing cabinet or casing which shall be marked as required by § 78.47–17 of this subchapter. Each branch line shall have a valve at the manifold which shall be marked as required by § 78.47–15 of this subchapter.

(3) Branches to paint lockers and similar small spaces may be taken from the nearest steam supply line and shall be not less than 3/4-inch pipe size. The valve shall be marked as required by § 78.47–15 of this subchapter.

(b) Installations contracted for on or after July 1, 1935, but prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials and facilities previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs, and alterations may be made to the same standard as the original installation.

(2) Steam shall be available from the main or auxiliary boilers to provide at least one pound of steam per hour for each 50 cubic feet of gross volume of the largest compartment protected. Where reasonable and practicable, the



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steam pressure shall be at least 100 p.s.i.

(3) The piping system shall meet the general requirements of paragraphs (c)(5) through (12) of this section insofar as is reasonable and practicable.

(4) The minimum size of distribution piping and the number of branches to the various spaces shall be as given in table 76.13-90(b)(4) or by the following formula:

$$D = \sqrt[3]{C/30,000} \quad (1)$$

where:

$D$  = Required diameter of pipe in inches.

$C$  = Volume of compartment in cubic feet.

TABLE 76.13-90(b)(4)

Volume of compartment in cubic feet		Number of branches to compartment	Pipe size of each branch, inches
Over	Not over		
.....	30,000	1	1
30,000 .....	46,000	1	1¼
46,000 .....	67,000	1	1½
67,000 .....	94,000	.....	1¾
94,000 .....	135,000	2	1½
135,000 .....	203,000	3	1½

(5) The minimum size of the steam supply line from the boiler to the distribution and manifold shall be as given by the following formula:

$$D = \sqrt[3]{C/60,000}$$

(2)

where:

$D$  = Diameter of pipe in inches.

$C$  = Volume of all compartments in cubic feet.

(c) Installations contracted for on or after November 19, 1952, but prior to January 1, 1962, shall meet the following requirements:

(1) Existing arrangements, materials and facilities previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standard as the original installation.

(2) Steam shall be available from main or auxiliary boilers to provide at least one pound of steam per hour for each 12 cubic feet of the gross volume of the largest compartment to be protected.

(3) Although separate piping shall be led to each cargo hold and 'tween deck, for the purpose of determining the amount of steam required, a cargo compartment will be considered as the space between adjacent watertight or firescreen bulkheads and from tank top or lowest deck to the deck head of the uppermost deck on which cargo may be carried. If a trunk extends beyond such deck, the trunk space shall be included. Tonnage openings shall be considered as sealed for this purpose.

(4) A steam pressure of at least 100 p.s.i. shall be available unless specifically approved otherwise.

(5) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(6) The distribution piping shall emanate from not more than three stations in easily accessible locations on the weather deck, and shall lead to the lower portion of each cargo hold, cargo 'tween deck, and other compartments protected. However, lines to paint lockers and similar small spaces may be taken from the nearest steam supply line.

(7) The distribution line to each compartment shall be fitted with a shutoff valve. The valve shall be marked as required by § 78.47-15 of this subchapter.

(8) The manifold steam supply line shall be fitted with a master valve at the manifold.

(9) Provisions shall be made for draining the manifold and distribution lines to prevent them from freezing.

(10) If located on the open deck, the distribution manifolds shall be suitably protected by an enclosing cabinet or casing. In any case, it shall be marked as required by § 78.47-17 of this subchapter.

(11) Piping shall not be led into or through spaces accessible to the passengers or crew while the vessel is being navigated, with the exception of machinery spaces and corridors. However, in special cases, arrangements to run piping through such spaces may be specifically approved by the Commandant, provided all joints are welded, suitable expansion bends are provided, and all piping is extra heavy.

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(12) Piping shall be used for no other purpose except that it may be incorporated with the fire detecting system, and where suitable provisions are made, it may be used for steaming out tanks.

(13) The minimum size and number of branches to the various spaces shall be as given in table 76.13-90(c)(13). The distribution piping from the manifold to the branch lines shall have an area approximately equal to the combined areas of the branch lines served.

TABLE 76.13-90(c)(13)

Volume of spaces in cubic feet		Number of branches to spaces	Pipe size of each branch, inches
Over	Not over		
.....	500	1	¾
500 .....	5,000	1	1
5,000 .....	15,000	1	1¼
15,000 .....	30,000	1	1½
30,000 .....	60,000	2	1½
60,000 .....	100,000	3	1½
100,000 .....	190,000	4	1½

(14) The steam supply line from the boiler to any distribution manifold shall be of sufficient size to supply all the branch lines to the largest compartment and to all adjacent compartments.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by CGFR 66-33, 31 FR 15283, Dec. 6, 1966]

### Subpart 76.15—Carbon Dioxide Extinguishing Systems, Details

#### § 76.15-1 Application.

(a) Where a carbon dioxide extinguishing system is installed, the provisions of this subpart, with the exception of § 76.15-90, shall apply to all installations contracted for on or after November 19, 1952. Installations contracted for prior to November 19, 1952, shall meet the requirements of § 76.15-90.

(b) The requirements of this subpart are based on a "high pressure system", i.e., one in which the carbon dioxide is stored in liquid form at atmospheric temperature. Details for "low pressure systems", i.e., those in which the carbon dioxide is stored in liquid form at a continuously controlled low temperature, may be specifically approved by the Commandant where it is dem-

onstrated that a comparable degree of safety and fire extinguishing ability is achieved.

#### § 76.15-5 Quantity, pipe sizes, and discharge rate.

(a) *General.* The amount of carbon dioxide required for each space shall be as determined by the following paragraphs in this section.

(b) *Total available supply.* A separate supply of carbon dioxide need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(c) *Cargo spaces.* (1) The number of pounds of carbon dioxide required for each space in cubic feet shall be equal to the gross volume of the space in cubic feet divided by 30.

(2) Although separate piping shall be led to each cargo hold and 'tween deck, for the purpose of determining the amount of carbon dioxide required, a cargo compartment will be considered as the space between adjacent watertight or firescreen bulkheads and from the tank top or lowest deck to the deck head of the uppermost space on which cargo may be carried. If a trunk extends beyond such deck, the trunk volume shall be included. Tonnage openings shall be considered as sealed for this purpose.

(3) Branch lines to the various cargo holds and 'tween decks shall not be less than ¾ inch standard pipe size.

(4) No specific discharge rate need be applied to such systems.

(d) *Machinery spaces, paint lockers, tanks, and similar spaces.* (1) Except as provided in paragraph (d)(3) of this section, the number of pounds of carbon dioxide required for each space shall be equal to the gross volume of the space divided by the appropriate factor noted in table 76.15-5(d)(1). If fuel can drain from the compartment being protected to an adjacent compartment, or if the compartments are not entirely separate, the requirements for both compartments shall be used to determine the amount of carbon dioxide to be provided. The carbon dioxide shall be arranged to discharge into both such compartments simultaneously.

TABLE 76.15-5(d)(1)

Gross volume of compartment, cubic feet		Factor
Over	Not over	
.....	500	15
500 .....	1,600	16
1,600 .....	4,500	18
4,500 .....	50,000	20
50,000 .....	.....	22

(2) For the purpose of the above requirement of this paragraph, the volume of a machinery space shall be taken as exclusive of the normal machinery casing unless the boiler, internal combustion machinery, or fuel oil installations extend into such space in which case the volume shall be taken to the top of the casing or the next material reduction in casing area, whichever is lower. For installations contracted for on or after October 1, 1959, “normal machinery casing” and “material reduction in casing area” shall be defined as follows:

(i) By “normal machinery casing” shall be meant a casing the area of which is not more than 40 percent of the maximum area of the machinery space.

(ii) By “material reduction in casing area” shall be meant a reduction to at least 40 percent of the casing area.

(3) For vessels on an international voyage contracted for on or after May 26, 1965, the amount of carbon dioxide required for a space containing propulsion boilers or internal combustion propulsion machinery shall be as given by paragraphs (d) (1) and (2) of this section or by dividing the entire volume, including the casing, by a factor of 25, whichever is the larger.

(4) Branch lines to the various spaces shall be as noted in table 76.15-5(d)(4).

TABLE 76.15-5(d)(4)

Maximum quantity of carbon dioxide required, pounds	Minimum nominal pipe size, inches	Maximum quantity of carbon dioxide required, pounds	Minimum nominal pipe size, inches
100 .....	1/2	2,500 .....	2 1/2
225 .....	3/4	4,450 .....	3
300 .....	1	7,100 .....	3 1/2
600 .....	1 1/4	10,450 .....	4
1,000 .....	1 1/2	15,000 .....	4 1/2
2,450 .....	2		

(5) Distribution piping within the space shall be proportioned from the supply line to give proper distribution to the outlets without throttling.

(6) The number, type, and location of discharge outlets shall be such as to give a uniform distribution throughout the space.

(7) The total area of all discharge outlets shall not exceed 85 percent nor be less than 35 percent of the nominal cylinder outlet area or the area of the supply pipe, whichever is smaller. The nominal cylinder outlet area in square inches shall be determined by multiplying the factor 0.0022 by the number of pounds of carbon dioxide required, except that in no case shall this outlet area be less than 0.110 square inch.

(8) The discharge of at least 85 percent of the required amount of carbon dioxide shall be complete within 2 minutes.

(e) *Spaces specially suitable for vehicles.* (1) The number of pounds of carbon dioxide required shall be equal to the gross volume of the largest “tight” space divided by 22. In no case, however, shall it be less than that required by paragraph (c) of this section.

(2) The arrangement of valves and piping shall be such that the required quantity of carbon dioxide may be discharged into any “tight” space. The discharge of the required quantity of carbon dioxide shall be completed within 2 minutes.

(3) Except as noted in paragraphs (e) (1) and (2) of this section, the requirements of paragraph (d) of this section shall apply.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by CGFR 66-33, 31 FR 15283, Dec. 6, 1966; CGD 95-028, 62 FR 51204, Sept. 30, 1997; USCG-1999-6216, 64 FR 53225, 53226, Oct. 1, 1999; USCG-2010-0759, 75 FR 60003, Sept. 29, 2010]

#### § 76.15-10 Controls.

(a) Except as noted in § 76.15-20(b), all controls and valves for the operation of the system shall be outside the space protected, and shall not be located in any space that might be cut off or made inaccessible in the event of fire in any of the spaces protected.

(b) If the same cylinders are used to protect more than one hazard, a manifold with normally closed stop valves

shall be used to direct the carbon dioxide into the proper space. If cylinders are used to protect only one hazard, a normally closed stop valve shall be installed between the cylinders and the hazard except for systems of the type indicated in § 76.15-5(d) which contain not more than 300 pounds of carbon dioxide.

(c) Distribution piping to the various cargo spaces shall be controlled from not more than two stations. One of the stations controlling the system for the main machinery space shall be located as convenient as practicable to one of the main escapes from the space. All control stations and the individual valves and controls shall be marked as required by §§ 78.47-15 and 78.47-17 of this subchapter.

(d) Systems of the type indicated in § 76.15-5(d) shall be actuated by one control operating the valve to the space and a separate control releasing at least the required amount of carbon dioxide. These two controls shall be located in a box or other enclosure clearly identified for the particular space. Those systems installed without a stop valve shall be operated by one control releasing at least the required amount of carbon dioxide.

(e) Where provisions are made for the simultaneous release of a given amount of carbon dioxide by operation of a remote control, provisions shall also be made for manual control at the cylinders. Where gas pressure from pilot cylinders is used as a means for releasing the remaining cylinders, not less than two pilot cylinders shall be used for systems consisting of more than two cylinders. Each of the pilot cylinders shall be capable of manual control at the cylinder, but the remaining cylinders need not be capable of individual manual control.

(f) Systems of the type indicated in § 76.15-5(d), other than systems for tanks, which are of more than 300 pounds of carbon dioxide, shall be fitted with an approved delayed discharge so arranged that the alarm will be sounded for at least 20 seconds before the carbon dioxide is released into the space. Such systems of not more than 300 pounds of carbon dioxide shall also have a similar delayed discharge, except for those systems for tanks and

for spaces which have a suitable horizontal escape. This paragraph shall be applicable only to systems installed on or after July 1, 1957.

(g) All distribution valves and controls shall be of an approved type. All controls shall be suitably protected.

(h) Complete but simple instructions for the operation of the systems must be located in a conspicuous place at or near all pull boxes, stop valve controls and in the CO<sub>2</sub> cylinder storage room. On systems in which the CO<sub>2</sub> cylinders are not within the protected space, these instructions must also include a schematic diagram of the system and instructions detailing alternate methods of discharging the system should the manual release or stop valve controls fail to operate. Each control valve to branch lines must be marked to indicate the related space served.

(i) If the space or enclosure containing the carbon dioxide supply or controls is to be locked, a key to the space or enclosure shall be in a break-glass-type box conspicuously located adjacent to the opening.

[CGFR 65-60, 30 FR 16940, Dec. 30, 1965, as amended by CGD 74-100R, 40 FR 6209, Feb. 10, 1975; USCG-1999-6216, 64 FR 53226, Oct. 1, 1999]

#### § 76.15-15 Piping.

(a) The piping, valves, and fittings shall have a bursting pressure of not less than 6,000 p.s.i.

(b) All piping, in nominal sizes not over ¾ inch, shall be at least Schedule 40 (standard weight), and in nominal sizes over ¾ inch, shall be at least Schedule 80 (extra heavy).

(c) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(d) A pressure relief valve or equivalent set to relieve between 2,400 and 2,800 p.s.i. shall be installed in the distributing manifold or such other location as to protect the piping in the event that all branch line shut-off valves are closed.

(e) All dead end lines shall extend at least 2 inches beyond the last orifice and shall be closed with cap or plug.

(f) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

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(g) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture. Drains and dirt traps shall be located in accessible locations where possible.

(h) Piping shall be used for no other purpose except that it may be incorporated with the fire detecting system.

(i) Piping passing through living quarters shall not be fitted with drains or other openings within such spaces.

(j) Installation test requirements:

(1) Upon completion of the piping installation, and before the cylinders are connected, a pressure test shall be applied as set forth in this paragraph. Only carbon dioxide or other inert gas shall be used for this test.

(2) The piping from the cylinders to the stop valves in the manifold shall be subjected to a pressure of 1,000 p.s.i. With no additional gas being introduced to the system, it shall be demonstrated that the leakage of the system is such as not to permit a pressure drop of more than 150 p.s.i. per minute for a 2-minute period.

(3) The individual branch lines to the various spaces protected shall be subjected to a test similar to that described in the preceding paragraph with the exception that the pressure used shall be 600 p.s.i. in lieu of 1,000 p.s.i. For the purpose of this test, the distribution piping shall be capped within the space protected at the first joint ahead of the nozzles.

(4) In lieu of the tests prescribed in the preceding paragraphs in this section, small independent systems protecting spaces such as emergency generator rooms, lamp lockers, etc., may be tested by blowing out the piping with air at a pressure of at least 100 p.s.i.

### § 76.15-20 Carbon dioxide storage.

(a) Except as provided in paragraph (b) of this section, the cylinders shall be located outside the spaces protected, and shall not be located in any space that might be cut off or made inaccessible in the event of a fire in any of the spaces protected.

(b) Systems of the type indicated in § 76.15-5(d), consisting of not more than 300 pounds of carbon dioxide, may have the cylinders located within the space protected. If the cylinder stowage is

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within the space protected, the system shall be arranged in an approved manner to be automatically operated by a heat actuator within the space in addition to the regular remote and local controls.

(c) The space containing the cylinders shall be properly ventilated and designed to preclude an anticipated ambient temperature in excess of 130 degrees F.

(d) Cylinders shall be securely fastened and supported, and, where necessary, protected against injury.

(e) Cylinders shall be so mounted as to be readily accessible and capable of easy removal for recharging and inspection. Provisions shall be available for weighing the cylinders.

(f) Where subject to moisture, cylinders shall be so installed as to provide a space of at least 2 inches between the flooring and the bottom of the cylinders.

(g) Cylinders shall be mounted in an upright position or inclined not more than 30 degrees from the vertical. However, cylinders which are fitted with flexible or bent siphon tubes may be inclined not more than 80 degrees from the vertical.

(h) Where check valves are not fitted on each independent cylinder discharge, plugs or caps shall be provided for closing outlets when cylinders are removed for inspection or refilling.

(i) All cylinders used for storing carbon dioxide must be fabricated, tested, and marked in accordance with §§ 147.60 and 147.65 of this chapter.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by CGD 84-044, 53 FR 7748, Mar. 10, 1988; USCG-1999-6216, 64 FR 53226, Oct. 1, 1999; USCG-2041-0688, 79 FR 58282, Sept. 29, 2014]

### § 76.15-25 Discharge outlets.

(a) Discharge outlets shall be of an approved type.

(b) [Reserved]

### § 76.15-30 Alarms.

(a) Spaces which are protected by a carbon dioxide extinguishing system and are normally accessible to persons on board while the vessel is being navigated, other than paint and lamp lockers and similar small spaces, shall be fitted with an approved audible alarm

in such spaces which will be automatically sounded when the carbon dioxide is admitted to the space. The alarm shall be conspicuously and centrally located and shall be marked as required by § 78.47–9 of this subchapter. For systems installed on or after July 1, 1957, alarms will be mandatory only for systems required to be fitted with a delayed discharge. Such alarms shall be so arranged as to sound during the 20 second delay period prior to the discharge of carbon dioxide into the space, and the alarm shall depend on no source of power other than the carbon dioxide.

(b) [Reserved]

#### § 76.15–35 Enclosure openings.

(a) Where mechanical ventilation is provided for spaces other than cargo and similar spaces which are protected by a carbon dioxide extinguishing system, provisions shall be made so that the ventilation system is automatically shut down with the operation of the system to that space.

(b) Where natural ventilation is provided for spaces protected by a carbon dioxide extinguishing system, provisions shall be made for easily and effectively closing off the ventilation.

(c) Means shall be provided for closing all openings to the space protected from outside such space. In this respect, relatively tight doors, shutters, or dampers shall be provided for openings in the lower portion of the space. The construction shall be such that openings in the upper portion of the space can be closed off either by permanently installed means or by the use of canvas or other material which is normally carried by the vessel.

#### § 76.15–40 Pressure relief.

(a) Where necessary, relatively tight compartments such as refrigeration spaces, paint lockers, etc., shall be provided with suitable means for relieving excessive pressure accumulating within the compartment when the carbon dioxide is injected.

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by CGFR 66–33, 31 FR 15283, Dec. 6, 1966]

#### § 76.15–50 Lockout valves.

(a) A lockout valve must be provided on any carbon dioxide extinguishing system protecting a space over 6,000 cubic feet in volume and installed or altered after July 9, 2013. “Altered” means modified or refurbished beyond the maintenance required by the manufacturer’s design, installation, operation and maintenance manual.

(b) The lockout valve must be a manually operated valve located in the discharge manifold prior to the stop valve or selector valves. When in the closed position, the lockout valve must provide complete isolation of the system from the protected space or spaces, making it impossible for carbon dioxide to discharge in the event of equipment failure during maintenance.

(c) The lockout valve design or locking mechanism must make it obvious whether the valve is open or closed.

(d) A valve is considered a lockout valve if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it.

(e) The master or person-in-charge must ensure that the valve is locked open at all times, except while maintenance is being performed on the extinguishing system, when the valve must be locked in the closed position.

(f) Lockout valves added to existing systems must be approved by the Commandant as part of the installed system.

[USCG–2006–24797, 77 FR 33876, June 7, 2012]

#### § 76.15–60 Odorizing units.

Each carbon dioxide extinguishing system installed or altered after July 9, 2013, must have an approved odorizing unit to produce the scent of wintergreen, the detection of which will serve as an indication that carbon dioxide gas is present in a protected area and any other area into which the carbon dioxide may migrate. “Altered” means modified or refurbished beyond the maintenance required by the manufacturer’s design, installation, operation and maintenance manual.

[USCG–2006–24797, 77 FR 33877, June 7, 2012]

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### § 76.15–90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 76.15–5 through 76.15–40 insofar as is reasonable and practicable, with the exception of § 76.15–5(d) (1) through (3) covering spaces other than cargo spaces, which systems may be installed in accordance with paragraphs (a) (3) through (6) of this section. However, the foregoing exception shall not be permitted for vessels on an international voyage.

(3) In boilerrooms, the bilges shall be protected by a system discharging principally below the floor plates. Perforated pipe may be used in lieu of discharge nozzles for such systems. The number of pounds of carbon dioxide shall be equal to the gross volume of the boiler room taken to the top of the boilers divided by 36. In the event of an elevated boilerroom which drains to the machinery space, the system shall be installed in the engine room bilge and the gross volume shall be taken to the flat on which the boilers are installed.

(4) In machinery spaces where main propulsion internal combustion machinery is installed, the number of pounds of carbon dioxide required shall be equal to the gross volume of the space taken to the underside of the deck forming the hatch opening divided by 22.

(5) In miscellaneous spaces other than cargo or main machinery spaces, the number of pounds of carbon dioxide required shall be equal to the gross volume of the space divided by 22.

(6) Branch lines to the various spaces other than cargo and similar spaces, shall be as noted in table 76.15–90(a)(6). This table is based on cylinders having

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discharge outlets and siphon tubes of 3/8-inch diameter.

TABLE 76.15–90(a)(6)

Number of cylinders		Nominal pipe size	
Over	Not over	Inches	Type
.....	2	1/2	Standard.
2 .....	4	3/4	Do.
4 .....	6	1	Extra heavy.
6 .....	12	1 1/4	Do.
12 .....	16	1 1/2	Do.
16 .....	27	2	Do.
27 .....	39	2 1/2	Do.
39 .....	60	3	Do.
60 .....	80	3 1/2	Do.
80 .....	104	4	Do.
104 .....	165	5	Do.

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by CGFR 67–87, 32 FR 19181, Dec. 20, 1967; USCG–1999–6216, 64 FR 53226, Oct. 1, 1999]

## Subpart 76.17—Foam Extinguishing Systems, Details

### § 76.17–1 Application.

(a) Where a foam extinguishing system is installed, the provisions of this subpart, with the exception of § 76.17–90, shall apply to all installations contracted for on or after November 19, 1952. Installations contracted for prior to November 19, 1952, shall meet the requirements of § 76.17–90.

(b) [Reserved]

### § 76.17–5 Quantity of foam required.

(a) *Area protected.* (1) For machinery and similar spaces, the system shall be so designed and arranged as to spread a blanket of foam over the entire tank top or bilge of the space protected. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

(2) Where an installation is made to protect an oil fired boiler installation on a flat which is open to or can drain to the lower engine room or other space, both the flat and the lower space shall be protected simultaneously. The flat shall be fitted with suitable coamings on all openings other than deck drains to properly restrain the oil and foam at that level. Other installations of a similar nature will be considered in a like manner.

(3) Where a system is installed to protect a tank, it shall be so designed

and arranged as to spread a blanket of foam over the entire liquid surface of the tank within the range of usual trim. The arrangement of piping shall be such as to give a uniform distribution over the entire area protected.

(b) *Rate of application.* (1) For spaces other than tanks, the rate of discharge to foam outlets protecting the hazard shall be at least as set forth in this subparagraph.

(i) For chemical foam systems with stored "A" and "B" solutions, a total of at least 1.6 gallons per minute of the two solutions shall be discharged for each 10 square feet of area protected.

(ii) For other types of foam systems, the water rate to the dry powder generators or air foam production equipment shall be at least 1.6 gallons per minute for each 10 square feet of area protected.

(2) For tanks, the rate of discharge to foam outlets protecting the hazard shall be as set forth in paragraph (b)(1) of this section except that the value of 1 gallon per minute shall be substituted in both cases for the value of 1.6 gallons per minute.

(c) *Supply of foam producing material.* (1) There shall be provided a quantity of foam producing material sufficient to operate the equipment at the discharge rate specified in paragraph (b) of this section for a period of at least 3 minutes for spaces other than tanks, and for at least 5 minutes for tanks.

(2) A separate supply of foam agent need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(3) Where pumps are required, the water supply shall be from outside the space protected and shall in no way be dependent upon power from the space protected.

#### § 76.17-10 Controls.

(a) The foam agent, its container, and all controls and valves for the operation of the system shall be of an approved type.

(b) The foam agent container and all controls and valves for the operation of the system shall be outside the space protected and shall not be located in such space as might be cut off or made inaccessible in the event of fire in any

of the spaces protected. The control space shall be as convenient as practicable to one of the main escapes from spaces protected, and shall be marked as required by § 78.47-17 of this subchapter. Where pumps are required, it shall not be necessary that they be started from the control space.

(c) Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

(d) The valves to the various spaces served shall be marked as required by § 78.47-15 of this chapter.

#### § 76.17-15 Piping.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(c) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(d) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(e) Piping shall be used for no other purpose.

#### § 76.17-20 Discharge outlets.

(a) Discharge outlets shall be of an approved type.

(b) [Reserved]

#### § 76.17-25 Additional protection required.

(a) In order that any residual fires above the floor plates may be extinguished when a foam system is installed for the protection of spaces other than tanks, at least 2 fire hydrants, in addition to those required for the machinery space by subpart 76.10, shall be installed outside of the machinery space entrances. Such hydrants shall be fitted with sufficient hose so that any part of the machinery space may be reached with at least 2 streams of water, and each hose shall be equipped with an approved combination nozzle, applicator, and self-cleaning strainer as described in § 76.10-10(j)(3).



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(b) [Reserved]

### § 76.17–90 Installations contracted for prior to November 19, 1952.

(a) Installation contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§76.17–5 through 76.17–20, with the exception of §76.17–5(a)(2), insofar as is reasonable and practicable. A 6-inch blanket of foam in 5 minutes for tanks and 3 minutes for other spaces will be considered as meeting the requirements of §76.17–5.

(b) [Reserved]

## Subpart 76.23—Manual Sprinkling System, Details

### § 76.23–1 Application.

(a) Where a manual sprinkling system is installed, the provisions of this subpart, with the exception of §76.23–90, shall apply to all installations contracted for on or after November 19, 1952. Installations contracted for prior to November 19, 1952, shall meet the requirements of §76.23–90.

(b) [Reserved]

### § 76.23–5 Zoning.

(a) Separate zones may be used for each deck, and on any particular deck, spaces separated by “A” or “B” Class bulkheads may be separately zoned.

(b) On any particular deck, large common areas may be zoned in accordance with table 76.23–5(b). All such zones within one common area shall be of approximately the same size. Zones of this type shall overlap in such a manner that the end sprinkler heads of both adjoining zones will cover the identical area.

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TABLE 76.23–5(b)

Square feet of common deck area		Maximum number of zones
Over	Not over	
.....	800	1
800 .....	1,800	2
1,800 .....	3,000	3
3,000 .....	5,000	4
5,000 .....	9,000	5
9,000 .....	16,000	6
16,000 .....	30,000	7
30,000 .....	.....	8

### § 76.23–10 Quantity, pipe sizes, and discharge rates.

(a) *General.* (1) The system shall be so designed and arranged that the overhead is effectively sprayed and all portions of the deck are covered. The capacity shall be such that at least 12 gallons of water per minute are applied to each 100 square feet of deck area.

(2) Piping, fittings, sprinkler heads, and pumps installed in accordance with the remainder of this section will be considered as meeting the above requirements. If alternate sizes or arrangements are used, it shall be demonstrated that these minimum requirements have been met.

(b) *Sprinkler heads.* (1) Three-eighth inch open type sprinkler heads shall be used. Sprinkler heads shall be so arranged that no portion of the overhead is more than 7 feet from a sprinkler head.

(2) [Reserved]

(c) *Pipe sizes.* (1) The various pipe sizes shall be in proportion to the number of heads served. Minimum pipe sizes shall be as given in table 76.23–10(c).

TABLE 76.23–10(c)

Number of 3/8 inch heads served		Minimum nominal pipe sizes, inches
Over	Not over	
.....	1	3/4
1 .....	2	1
2 .....	4	1 1/4
4 .....	6	1 1/2
6 .....	12	2
12 .....	18	2 1/2
18 .....	30	3
30 .....	46	3 1/2
46 .....	66	4
66 .....	120	5

(d) *Fire pumps.* (1) The fire pumps may be used for the sprinkling system

provided there is sufficient total capacity to operate the largest zone of the sprinkling system with a Pitot tube pressure of at least 15 p.s.i. at all heads and at the same time to deliver water from the two highest fire hose outlets in a manner similar to that described in § 76.10–5(c). In addition, on vessels over 750 gross tons, there shall be sufficient pumping capacity to also operate the second largest zone.

#### § 76.23–15 Controls.

(a) The controls for the system shall be outside the spaces protected, and shall not be located in such space as might be cut off or made inaccessible in the event of fire in any of the spaces protected. The control space shall be marked as required by § 78.47–18 of this subchapter. It shall not be necessary to start the pumps from the control space.

(b) Distribution piping to the various zones shall be controlled from one station. Each branch line to the various zones shall be fitted with a stop valve which shall be marked as required by § 78.47–15 of this subchapter.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2004–18884, 69 FR 58347, Sept. 30, 2004]

#### § 76.23–20 Piping.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved by the Commandant.

(c) All piping, valves, fittings, and sprinkler heads shall be securely supported, and where necessary, protected against injury.

(d) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(e) Piping shall be used for no other purpose.

#### § 76.23–25 Sprinkler heads.

(a) Sprinkler heads shall be of an approved type.

(b) [Reserved]

#### § 76.23–90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and replacements may be made to the same standards as the original installation.

(2) The details of the system shall be in general agreement with §§ 76.23–5 through 76.23–25 insofar as is reasonable and practicable. Existing piping, pumping facilities, and sprinkler heads or perforated pipes may be retained provided all portions of the overhead are effectively sprayed and all portions of the deck are covered.

(b) [Reserved]

### Subpart 76.25—Automatic Sprinkling System, Details

#### § 76.25–1 Application.

Automatic sprinkler systems must comply with Chapter 25 of NFPA 13 (incorporation by reference, see § 76.01–2).

[USCG–2012–0196, 81 FR 48255, July 22, 2016]

#### §§ 76.25–5—76.25–35 [Reserved]

#### § 76.25–90 Installations contracted for prior to September 30, 1997.

(a) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph, and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and replacements may be made to the same standards as the original installation.

(b) The details of the system must be in general agreement with NFPA 13 (incorporated by reference, see 46 CFR 76.01–2) insofar as is reasonable and practicable. Existing piping, pumping facilities, sprinkler heads, and operating devices may be retained provided

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a reasonable coverage of the spaces protected is assured.

[CGD 95-028, 62 FR 51204, Sept. 30, 1997, as amended by USCG-2003-16630, 73 FR 65192, Oct. 31, 2008]

## Subpart 76.27—Fire Detection and Alarm System, Details

SOURCE: USCG-2012-0196, 81 FR 48255, July 22, 2016, unless otherwise noted.

### § 76.27-1 Application.

(a) Where a fire detection and alarm system is installed, the provisions of this subpart, with the exception of §§ 76.27-80 and 76.27-90, apply to all installations contracted for on or after July 22, 2021. Installations contracted for on or after November 19, 1952, and prior to July 22, 2021 must meet the requirements of § 76.27-80. Installations contracted for prior to November 19, 1952, must meet the requirements of § 76.27-90.

(b) The design, manufacture, installation, and operation of fire detection and alarm systems must be in accordance with either:

(1) Sections 76.27-5 through 76.27-35; or

(2) SOLAS Chapter II-2, Regulation 7 and FSS Code Chapter 9 (both incorporated by reference, see § 76.01-2) as detailed in § 76.27-70.

### § 76.27-5 General.

(a) Detectors, manual alarm stations, control panels, cabinets, alarms, and other notifying devices must be of approved types.

(b) The fire detection and alarm system must be capable of immediate operation at all times that the vessel is in service.

(c) The fire detection and alarm system must control and monitor input signals for all connected detectors and manual pull stations or call points.

(d) The fire detection and alarm system must provide fire or fault output signals to the pilothouse or fire control station.

(e) The fire detection and alarm system must notify crew and passengers of a fire when appropriate.

(f) The fire detection and alarm system must be so arranged and installed

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that the presence of a fire in any of the protected spaces will be automatically registered visibly and audibly in the pilothouse or fire control station. The visible notice must indicate the zone in which the alarm originated. On vessels of more than 150 feet (45.72 meters) in length, there must also be an audible alarm in the engine room.

### § 76.27-10 Operation.

(a) Means to manually acknowledge all alarm and fault signals must be provided at the control panel. The audible alarm on the control panel may be manually silenced. The control panel must clearly distinguish between normal, alarm, acknowledged alarm, fault, and silence conditions.

(b) The activation of any detector or manual pull station must cause an audible and visual fire detection alarm signal at the control panel. If the alarm signal has not been acknowledged within 2 minutes, an audible fire alarm must be automatically sounded throughout the crew accommodations and service spaces, control stations, and manned machinery spaces.

(c) A fire detection and alarm system must automatically reset to a normal operating condition after alarm and fault situations are cleared.

(d) Detectors in certain spaces, such as workshops during hot work and ro-ro spaces during on- and off-loading, may be disabled. The system must be restored automatically to normal surveillance after a predetermined time. Spaces must be manned when any detectors are disabled. Detectors in all other spaces must remain operational.

(e) In fire detection and alarm systems with addressable detectors and manual pull stations, every fault (such as an open circuit, short circuit, or ground fault) must be monitored and must not prevent the continued individual identification of the remaining detectors and manual pull stations.

(f) In fire detection and alarm systems with addressable detectors and manual alarm stations, the initiation of the first fire detector and resulting alarm must not prevent any other detector from responding.

(g) Fire detection and alarm systems without addressable detectors and manual alarm stations must identify

the zone that contains the activated detector or station upon activation of a detector or manual pull station.

(h) Fire detection and alarm systems may output signals to other fire safety systems including, but not limited to, paging systems, fire alarm or public address systems, fan stops, fire doors, fire dampers, sprinkler systems, smoke extraction systems, low-location lighting systems, fixed local application fire extinguishing systems, and closed-circuit television systems.

(i) Fire detection and alarm systems may accept signals from other safety systems. For example, a signal initiated from actuation of an automatic sprinkler valve may be sent to a fire detection and alarm system.

(j) The fire detection and alarm system may be connected to a decision management system provided that—

(1) The decision management system is compatible with the fire detection and alarm system;

(2) The decision management system can be disconnected without affecting the performance of the fire detection and alarm system; and

(3) Any malfunction of the interfaced and connected decision management equipment must not render the fire detection and alarm system ineffective.

#### § 76.27–15 Detectors.

(a) Detectors must be responsive to heat, smoke, or other products of combustion, flame, or any combination of these factors. Detectors responsive to other indicators of incipient fires may be used if approved.

(b) Detectors must be capable of being triggered or tested and restored to service without the replacement of any component.

(c) Heat detectors must be rated not lower than 130 °F (54 °C) and not higher than 172 °F (78 °C). The operating temperature of heat detectors located in spaces of high normal ambient temperatures may be up to 260 °F (130 °C). The operating temperatures of heat detectors in saunas may be up to 284 °F (140 °C).

(d) Fire detectors fitted in passenger cabins must also emit, or cause to be emitted, an audible alarm within the cabin when activated.

(e) The required sensitivity and other performance criteria of detectors must be as set forth in 46 CFR 161.002.

#### § 76.27–20 Alarm indicators.

(a) Audible alarms must generate sound pressure levels as set forth in 46 CFR 161.002 and must:

(1) Be at least 75 dBA as measured at the sleeping position in cabins;

(2) Be at least 10 dBA above ambient noise levels existing during normal operation with the ship under way in moderate weather when measured at a point 5 feet (1.5 meters) above the finished floor and at least 3 feet (1 meter) from the source;

(3) Not exceed 120 dBA; and

(4) The sound pressure level must be measured in the third octave band about the fundamental frequency.

(b) Visual alarms must generate light of an intensity and period as set forth in 46 CFR 161.002.

(c) All audible and visual alarms must be audible and visible throughout the spaces they are intended to alert.

#### § 76.27–25 Power and circuitry.

(a) The power supply and emergency power supply for all fire detection and alarm systems must be in accordance with 46 CFR chapter I, subchapter J (Electrical Engineering). At the end of the required period for which the fire detection and alarm system must remain operable under emergency power, the system must remain capable of operating all audible and visual fire alarm signals for an additional period of 30 minutes.

(b) All wiring and electrical circuits and equipment must be in accordance with 46 CFR chapter I, subchapter J (Electrical Engineering).

(c) All fire detection and alarm systems must monitor power supplies and circuits necessary for the operation of the system during loss of power and fault conditions.

#### § 76.27–30 Zoning.

(a) The fire detection system must be divided into separate zones to restrict the area covered by any particular alarm signal.

(b) The fire detection zone must not include spaces in more than one main

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vertical zone, except on cabin balconies.

(c) The fire detection zone must not include spaces on more than one deck, except—

(1) Adjacent and communicating spaces on different decks at the ends of the vessel having a combined ceiling area of not more than 3,000 sq ft;

(2) Isolated rooms or lockers in such spaces as mast houses or wheelhouse tops, which are easily communicable with the area of the fire detection circuit to which they are connected; and

(3) Systems with addressable detectors and manual alarm stations that can have their status individually determined.

(d) Any fire detection zone with non-addressable detectors and manual pull stations must not contain more than 25 protected rooms or spaces.

### § 76.27-35 Installation.

(a) Detectors must be located in all spaces except those having little or no fire risk such as void spaces with no stowage of combustibles, private bathrooms, public toilets, fire extinguishing medium storage rooms, deck spaces, and enclosed promenades that are naturally ventilated by permanent openings.

(b) The detectors must be located on the overhead in the space protected at a minimum distance of 18 in (0.5 m) away from bulkheads, except in corridors, lockers, and stairways. Positions near beams and ventilation ducts, or other positions where patterns of air flow could adversely affect performance should be avoided. Where liable to physical damage, the detector must be suitably protected.

(c) Detectors must be located in accordance with spacing requirements as tested and approved.

(d) Detectors in stairways must be located at least at the top level of the stairs and at every second level beneath.

(e) There must be at least one manual alarm station in each zone.

(f) Manual alarm stations must be located in main passageways, stairway enclosures, public spaces, or similar locations where they will be readily available and easily seen in case of need.

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(g) A sufficient number of manual alarm stations must be employed to enable a person escaping from any space to find a manual alarm station on his or her normal escape route.

(h) Cables that form part of a fire detection and alarm system must be arranged to avoid galleys and machinery and other high fire risk spaces except where it is necessary to provide for fire detection and alarms in such spaces or to connect to an appropriate power supply.

(i) Clear information about the installation and operation of a fire detection and alarm system must be displayed on or adjacent to its control panels.

(j) The audible alarms must be identified as required by § 78.47-13 of this subchapter.

(k) The entire main vertical zone containing an atrium must be protected throughout with smoke detectors.

### § 76.27-70 Application of SOLAS and FSS Code.

When the design, manufacture, installation, and operation of a fire detection and alarm system is to be in accordance with SOLAS Chapter II-2, Part C, Regulation 7 and FSS Code Chapter 9 (both incorporated by reference, see § 76.01-2) as allowed by § 76.27-1(b)(2), the following requirements apply:

(a) The periodic testing of fire detection and alarm systems required in SOLAS Chapter II-2, Regulation 7.3.2 must be conducted as part of the annual inspection mandated in subpart 71.25 of this subchapter.

(b) Control stations must be included among the spaces to be protected by a fire detection and alarm system under SOLAS Chapter II-2, Regulation 7.5.3.

(c) The Commanding Officer of the U.S. Coast Guard Marine Safety Center will determine whether a cargo space in a passenger vessel is inaccessible and whether or not it is reasonable to provide fire detection for the space under SOLAS Chapter II-2, Regulation 7.6.

(d) The Commanding Officer of the U.S. Coast Guard Marine Safety Center will determine whether or not there is risk of fire originating in concealed

and inaccessible places that otherwise would require access of a fire patrol under SOLAS Chapter II-2, Regulation 7.8.2.

(e) Any detectors operated by factors other than heat, smoke, or other products of combustion, or flame as addressed in FSS Code Chapter 9.2.3.1.1, may be used if they are approved types.

(f) Notwithstanding the provisions of FSS Code Chapter 9.2.3.1.2, the required sensitivity and other performance criteria of smoke detectors must be as set forth in 46 CFR 161.002.

(g) Notwithstanding the provisions of FSS Code Chapter 9.2.3.1.3, the required sensitivity and other performance criteria of heat detectors must be as set forth in 46 CFR 161.002.

(h) As addressed in FSS Code Chapter 9.2.4.1.3, when a fire detection and alarm system does not include means for identifying each detector individually, no section of detectors and manually operated call points may include more than 25 enclosed spaces.

(i) Notwithstanding the spacing set forth in FSS Code Chapter 9, Table 9.1, fire detectors must be placed in accordance with spacing requirements as tested and approved.

(j) Footnotes to SOLAS Chapter II-2, Regulation 7.9 and FSS Code Chapter 9.2.51 refer to the Code on Alarms and Indicators, 2009, as adopted by IMO Resolution A.1021(26) (incorporated by reference, see § 76.01–2). The provisions of the Code on Alarms and Indicators are recommended but not required under the option in § 76.27–1(b)(2).

**§ 76.27–80 Installations contracted for on or after November 19, 1952 and prior to July 22, 2021.**

Installations contracted for on or after November 19, 1952 and prior to July 22, 2021, must meet the following requirements:

(a) *Location and spacing of detectors.*

(1) The detectors must be located close to the overhead in the space protected. Where prone to physical damage, the detector(s) must be suitably protected.

(2) Unless specifically approved otherwise, every point on the overhead of a protected space must be within 10 feet (3.05 meters) of a detector. Where beams or girders extend below the ceiling, or where the ceiling is installed at

more than one level, the detectors must be so located as to be most effective.

(b) *Operation and installation.* (1) The system must be so arranged and installed that the presence of a fire in any of the protected spaces will be automatically registered visibly and audibly in the pilothouse or fire control station. The visible notice must indicate the zone in which the alarm originated. On vessels of more than 150 feet (45.72 meters) in length, there must also be an audible alarm in the engine room.

(2) The detectors, the fire detection cabinet, and alarms must be of an approved type.

(3) In general, the detectors must be rated not lower than 135 °F and not higher than 165 °F. However, in spaces where a high ambient temperature may be expected, detectors must be rated not lower than 175 °F and not higher than 225 °F.

(4) The fire detection system must be used for no other purpose, except that it may be integrated with the manual alarm system.

(5) All wiring and electrical circuits and equipment must meet the applicable requirements of 46 CFR chapter I, subchapter J (Electrical Engineering) of this chapter.

(6) A framed chart or diagram must be installed in the wheelhouse or control station adjacent to the detecting cabinet indicating the location of the various detecting zones and giving instructions for the operation, maintenance, and testing of the system. This chart, or a separate card or booklet to be kept near the chart, must have tabulated spaces for the date and signature of the licensed officer of the vessel who must witness or conduct the periodic tests.

(7) The audible alarms must be identified as required by § 78.47–13 of this subchapter.

(c) *Zoning.* (1) The fire detection system must be divided into separate zones to restrict the area covered by any particular alarm signal.

(2) All spaces in a fire detection zone must be accessible from one to another without leaving the deck involved. All

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doors in watertight subdivision bulkheads and main vertical zone bulkheads must be assumed closed for the purpose of this requirement.

(3) The fire detection zone must not include spaces on more than one deck, except:

(i) Adjacent and communicating spaces on different decks at the ends of the vessel having a combined ceiling area of not more than 3,000 sq ft;

(ii) Isolated rooms or lockers in such spaces as mast houses, wheelhouse top, etc., which are easily communicable with the area of the fire detection circuit to which they are connected; and

(iii) Systems with indicators for individual spaces.

(4) The fire detection zone must not contain more than 50 protected rooms or spaces.

(d) *Repair of existing systems.* (1) If the status of the approval for the system is other than “Former—Do not use”, the

system may be repaired by the following means:

(i) Repair in kind using the same components as installed and listed on the approved drawings;

(ii) Repair using equivalent components from the authorized component list for the type approval for that system;

(iii) Repair using equivalent components from the authorized component list for the type approval for another fire detection system, provided that the replacement devices are compatible with the installed system; and

(iv) Repair using devices that are currently type approved, provided that the replacement devices are compatible with the installed system.

(2) Any changes to the system that will result in the fire detection system not complying with the approved drawings require the drawings to be revised and submitted to the Marine Safety Center for review.

TABLE 76.27–80—INSTALLATIONS

Space	Detecting systems
<b>Safety Areas</b>	
Wheelhouse or fire-control room .....	None required. <sup>1</sup>
Stairway and elevator enclosures .....	None required. <sup>1</sup>
Communication corridors .....	None required. <sup>1</sup>
Lifeboat embarkation and lowering stations .....	None required.
Radio room .....	None required. <sup>1</sup>
<b>Accommodations</b>	
Staterooms, toilet spaces, isolated pantries, etc .....	None required. <sup>1</sup>
Offices, lockers, and isolated storerooms .....	Electric, pneumatic, or automatic sprinkling. <sup>1</sup>
Public spaces .....	None required with 20-minute patrol. Electric, pneumatic, or automatic sprinkling with 1 hour patrol. <sup>1</sup>
Open decks or enclosed promenades .....	None required.
<b>Service Spaces</b>	
Galleys .....	None required. <sup>1</sup>
Main pantries .....	None required. <sup>1</sup>
Motion picture booths and film lockers .....	Electric, pneumatic, or automatic sprinkling. <sup>1,2</sup>
Paint and lamp rooms .....	Smoke detecting. <sup>3</sup>
Inaccessible baggage, mail, and specie rooms and storerooms ..	Smoke detecting. <sup>3</sup>
Accessible baggage, mail, and specie rooms and storerooms ..	Electric, pneumatic, or automatic sprinkling.
Refrigerated storerooms .....	None required.
Carpenter, valet, photographic, and printing shops, sales rooms, etc.	Electric, pneumatic, or automatic sprinkling.
<b>Machinery Spaces</b>	
Coal fired boilers: Bunker and boiler space .....	None required.
Oil fired boilers: Spaces containing oil fired boilers either main or auxiliary, their fuel oil service pumps, and/or such other fuel oil units as the heaters, strainers, valves, manifolds, etc., that are subject to the discharge pressure of the fuel oil service pumps, together with adjacent spaces to which oil can drain.	None required.
Internal combustion or gas turbine propelling machinery spaces	None required.
Electric propulsive motors or generators of open type .....	None required.

TABLE 76.27-80—INSTALLATIONS—Continued

Space	Detecting systems
Enclosed ventilating systems for motors and generators of electric propelling machinery.	None required.
Auxiliary spaces, internal combustion or gas turbine .....	None required.
Auxiliary spaces, electric motors or generators .....	None required.
Auxiliary spaces, steam .....	None required.
Trunks to machinery spaces .....	None required.
Fuel tanks .....	None required.
<b>Cargo Spaces</b>	
Inaccessible during voyage (combustible cargo), including trunks (excluding tanks).	Smoke detecting.
Accessible during voyage (combustible cargo) .....	Smoke detecting, electric, pneumatic or automatic sprinkling.
Vehicular deck (except where no overhead deck is 30 feet (9.14 meters) in length or less).	None required.
Cargo oil tanks .....	None required.
Specially suitable for vehicles .....	Smoke detecting, electric, pneumatic or automatic sprinkling.

<sup>1</sup> Vessels of 100 GT or more contracted for on or before May 27, 1936, and having combustible joiner work must be fitted with an automatic sprinkler system, except in relatively incombustible spaces.

<sup>2</sup> Sprinkler heads may be attached to a sanitary system provided electrical or pneumatic detecting is installed.

<sup>3</sup> On vessels contracted for prior to January 1, 1962, a steam smothering system may be accepted. However, although existing steam smothering systems may be repaired, replaced, or extended, no new system contracted for on or after January 1, 1962, will be permitted.

#### § 76.27-90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, must meet the following requirements:

(1) Existing arrangements, materials, and equipment previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph, and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems must be in general agreement with §§ 76.27-5 through 76.27-15 insofar as is reasonable and practicable.

(b) [Reserved]

#### Subpart 76.30—Pneumatic Fire Detection System, Details

##### § 76.30-1 Application.

(a) Where a pneumatic fire detection system is installed, the provisions of this subpart, with the exception of § 76.30-90, must apply to all installations contracted for on or after November 19, 1952, and prior to July 22, 2021. Installations contracted for prior to November 19, 1952, must meet the requirements of § 76.30-90.

(b) [Reserved]

[USCG-2012-0196, 81 FR 48258, July 22, 2016]

##### § 76.30-5 Zoning.

(a) The fire detection system must be divided into separate zones to restrict the area covered by any particular alarm signal.

(b) All spaces in a fire detection zone must be accessible from one to another without leaving the deck involved. All doors in watertight subdivision bulkheads and main vertical zone bulkheads must be assumed closed for the purpose of this requirement.

(c) The fire detection zone must not include spaces on more than one deck, except:

(1) Adjacent and communicating spaces on different decks in the ends of the vessel, having a combined deck area of not more than 3,000 feet.

(2) Isolated rooms or lockers in such spaces as mast houses, wheelhouse top, etc., which are easily communicable with the area of the fire-detection circuit to which they are connected.

(d) The fire detection zone must not include more than 50 protected rooms or spaces.

(e) Individual tubing circuits must not contain more than 1,000 feet of pneumatic tubing or its equivalent. However, more than one tubing circuit



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may be included in the same fire detection zone.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by USCG-2012-0196, 81 FR 48258, July 22, 2016]

### § 76.30-10 Location and spacing of tubing.

(a) The tubing must be located on the overhead or within 12 inches of the overhead on the bulkheads. Where liable to physical damage, the tubing must be suitably protected.

(b) In each enclosed space or separate room there must be exposed at least 5 percent of the total length of tubing in that circuit, but in no case may the amount be less than 25 feet.

(c) No spot on the overhead of a protected space may be more than 12 feet from the nearest point of tubing. Where beams or girders extend below the ceiling, or where the ceiling is installed at more than one level, the tubing must be located so as to be most effective.

[USCG-2012-0196, 81 FR 48258, July 22, 2016]

### § 76.30-15 Operation and installation.

(a) The system must be so arranged and installed that the presence of a fire in any of the protected spaces will automatically be registered visibly and audibly in the pilothouse or fire control station. The visible notice must automatically indicate the zone in which the alarm originated. On vessels greater than 150 feet in length, there must also be an audible alarm in the engine room.

(b) The tubing or detecting devices, pneumatic-electric converting units, detecting cabinets, and alarms must be of an approved type.

(c) In general, the system must be adjusted to operate at a temperature rise of approximately 40 °F . per minute at the center of the circuit.

(d) The fire detection system must be used for no other purpose except that it may be incorporated with the manual alarm system.

(e) All wiring and electrical circuits and equipment must meet the applicable requirements of subchapter J (Electrical Engineering) of this chapter.

(f) A framed chart or diagram must be installed in the wheelhouse or con-

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trol station adjacent to the detecting cabinet indicating the location of the various detecting zones and giving instructions for the operation, maintenance, and testing of the system. This chart, or a separate card or booklet to be kept near the chart, must have tabulated spaces for the date and signature of the licensed officer of the vessel who must witness or conduct the periodic tests.

(g) The audible alarms must be identified as required by § 78.47-13 of this subchapter.

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by USCG-2012-0196, 81 FR 48258, July 22, 2016]

### § 76.30-90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, must meet the following requirements:

(1) Existing arrangements, materials, and equipment previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems must be in general agreement with §§ 76.27-5 through 76.27-35 insofar as is reasonable and practicable.

(b) [Reserved]

[CGFR 65-50, 30 FR 16940, Dec. 30, 1965, as amended by USCG-2012-0196, 81 FR 48259, July 22, 2016]

## Subpart 76.33—Smoke Detection System, Details

### § 76.33-1 Application.

(a) Where a smoke detection system is installed, the provisions of this subpart, with the exception of § 76.33-90, apply to all installations contracted for on or after November 19, 1952, and prior to July 22, 2021. Installations contracted for prior to November 19, 1952, must meet the requirements of § 76.33-90 of this subpart.

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(b) Vessels must comply with the requirements of § 76.33–20(c) of this subpart not later than July 22, 2021.

[USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.33–5 Zoning.

(a) The smoke detection system must be divided into separate zones to restrict the area covered by any particular alarm signal.

(b) The smoke detection zone must not include spaces on more than one deck, except the small adjacent spaces mentioned in paragraph (c) of this section.

(c) Each separate space must be considered as a zone, except that two or three small adjacent spaces having a combined volume not exceeding 5,000 cubic feet may be connected on the same zone.

(d) Where a space is of such size that one accumulator is not sufficient, not more than two accumulators may be combined in one zone.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.33–10 Location and spacing of accumulators.

(a) Smoke accumulators must be located overhead in each compartment. Where liable to physical damage, the accumulators and piping must be suitably protected.

(b) No spot on the overhead of a protected space may be more than 40 feet from an accumulator.

(c) Accumulators must not be located closer to the opening of a ventilator than three times the diameter or equivalent diameter of the opening.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.33–15 Piping.

(a) Individual pipes must be not less than ¾-inch standard pipe size.

(b) All piping, valves, and fittings of ferrous materials must be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(c) Where a smoke detection system serves a space used alternately for liquid and dry cargo, a valve must be in-

stalled between the tank and the detection cabinet so that the line may be shut off when liquids are carried. When the smoke detection system is combined with a fire extinguishing system, the operation of the valve must not affect the operation of the fire extinguishing system.

(d) All piping, valves, and fittings must be securely supported, and where necessary, protected against injury. The piping must be installed with as easy bends as practicable, and must be installed to grade to low points for drainage.

(e) Drains and dirt traps must be fitted where necessary to prevent the accumulation of dirt or moisture.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0832, 77 FR 59779, Oct. 1, 2012; USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.33–20 Operation and installation.

(a) The system must be so arranged and installed that the presence of smoke in any of the protected spaces will automatically be indicated visually to an observer directly in front of the detection cabinet. The visible notice must automatically indicate the zone in which the smoke originated. The detection cabinet must normally be located in the pilothouse or fire control station. On vessels greater than 5,000 gross tons, there must also be an automatic audible alarm in the wheelhouse together with an auxiliary audible alarm in the engine room.

(b) If the detection cabinet is not located in the pilothouse or fire control station, it must be located in convenient proximity to the valve control station of the extinguishing system. In this case, there must be in the pilothouse or fire control station automatic visual alarms, one for each zone in which an alarm may originate, as well as an automatic audible alarm. There must also be an auxiliary audible alarm in the engine room. For installations contracted for on or after January 1, 1962, where detection cabinets are not located in the pilothouse or an adjacent fire control station having direct access to the pilothouse, an efficient means of direct communication

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must be provided between the pilot-house and the stations where the detection cabinets are located.

(c) No exhaust from the detection cabinet may be discharged in the vicinity of the cabinet to permit the detection of fire by odor. Instead, the exhaust must be directed to the outside. Vessels must comply with this requirement not later than July 22, 2021.

(d) The smoke detection system must be used for no other purpose except that it may be incorporated with the fire extinguishing system to the spaces covered by the smoke detection system.

(e) The accumulators, detection cabinet, interconnecting valves with the fire extinguishing system, alarms, and indicating devices must be of an approved type.

(f) All wiring and electrical circuits and equipment must meet the applicable requirements of subchapter J (Electrical Engineering) of this chapter.

(g) A framed chart or diagram must be installed adjacent to the detection cabinet and auxiliary panel indicating the location of the various zones and giving instructions for the operation, maintenance, and testing of the system. The chart at the cabinet location or a separate card or booklet to be kept near the chart, must have tabulated spaces for the date and signature of the licensed officer of the vessel who must witness or conduct the periodic tests.

(h) The audible smoke detection alarms must be identified as required by § 78.47–13 of this subchapter.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

## § 76.33–90 Installations contracted for prior to November 19, 1952.

(a) Installations contracted for prior to November 19, 1952, must meet the following requirements:

(1) Existing arrangements, material, and equipment previously approved will be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

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(2) The details of the systems must be in general agreement with §§ 76.27–5 through 76.27–35 insofar as is reasonable and practicable.

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

## Subpart 76.35—Manual Alarm System, Details

### § 76.35–1 Application.

(a) Where a manual alarm system is installed, the provisions of this subpart, with the exception of § 76.35–90, must apply to all installations contracted for on or after November 19, 1952, and prior to July 22, 2021. Installations contracted for prior to November 19, 1952, must meet the requirements of § 76.35–90.

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.35–5 Zoning.

(a) The zoning of the manual alarm system must meet the same requirements as those for the fire detection system set forth in § 76.27–15(d).

(b) [Reserved]

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

### § 76.35–10 Location and spacing of manual alarm stations.

(a) There must be at least one manual alarm station in each zone.

(b) Manual alarms must be located in main passageways, stairway enclosures, public spaces, or similar locations where they will be readily available and easily seen in case of need.

(c) In general, a sufficient number of manual alarm stations must be employed that a person escaping from any space would find a manual alarm station convenient on his normal route of escape.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

**§ 76.35–15 Operation and installation.**

(a) The system must be so arranged and installed that the presence of a fire may be reported from any of the protected spaces and be automatically registered visibly and audibly in the pilothouse or fire control station. The visible notice must indicate the zone in which the alarm originated. There must also be an audible alarm in the engine room.

(b) The manual alarm stations, cabinet, and alarms must be of an approved type.

(c) The manual alarm system must be used for no other purpose, except that it may be incorporated with the fire detection system.

(d) All wiring and electrical circuits and equipment must meet the applicable requirements of subchapter J (Electrical Engineering) of this chapter.

(e) A framed chart or diagram must be installed in the wheelhouse or control station adjacent to the detection cabinet indicating the location of the various detection zones and giving instructions for the operation, maintenance, and testing of the system. This chart, or a separate booklet to be kept near the chart, must have tabulated spaces for the date and signature of the licensed officer of the vessel who must witness or conduct the periodic tests.

(f) The manual alarm stations and bells must be identified as required by § 78.47–10 of this subchapter.

[CGFR 65–50, 30 FR 16940, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48259, July 22, 2016]

**§ 76.35–90 Installations contracted for prior to November 19, 1952.**

(a) Installations contracted for prior to November 19, 1952, shall meet the following requirements:

(1) Existing arrangements, materials, and equipment previously approved shall be considered satisfactory so long

as they meet the minimum requirements of this paragraph, and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 76.35–5 through 76.35–15 insofar as is reasonable and practicable.

(b) [Reserved]

### **Subpart 76.50—Hand Portable Fire Extinguishers and Semiportable Fire Extinguishing Systems, Arrangements and Details**

**§ 76.50–1 Application.**

(a) The provisions of this subpart, with the exception of §§ 76.50–80 and 76.50–90, as applicable, apply to all vessels contracted for on or after November 19, 1952.

(b) Vessels contracted for prior to January 18, 2017 and on or after November 19, 1952, must meet the requirements of § 76.50–80.

(c) Vessels contracted for prior to November 19, 1952, must meet the requirements of § 76.50–90.

[USCG–2012–0196, 81 FR 48259, July 22, 2016]

**§ 76.50–5 [Reserved]****§ 76.50–10 Location.**

(a) Approved portable and semi-portable extinguishers must be installed in accordance with table 76.50–10(a) of this section.

(b) Table 76.50–10(a) indicates the minimum required number and type of extinguisher for each space listed. Extinguishers with larger numerical ratings or multiple letter designations may be used if the extinguishers meet the requirements of the table.

TABLE 76.50—10(a)—CARRIAGE OF PORTABLE AND SEMI-PORTABLE FIRE EXTINGUISHERS

Space	Fire extinguishing	
	Minimum required rating	Quantity and location
<b>Safety Area <sup>1</sup></b>		
Wheelhouse or fire control room .....	20-B:C .....	1 of each classification on vessels over 1,000 GT. (Not required in both spaces.) (Multiple classifications may be recognized.)
Stairway and elevator enclosures .....	.....	None required.
Communicating corridors .....	2-A .....	1 in each main corridor in each main vertical zone. (May be located in stairway enclosures.)
Lifeboat embarkation and lowering stations .....	.....	None required.
Radio room .....	20-B:C <sup>3</sup> .....	2 in the vicinity of the exit. <sup>2</sup>
<b>Accommodations <sup>1</sup></b>		
Staterooms, toilet spaces, isolated pantries, etc. ....	.....	None required.
Offices, lockers, and isolated storerooms .....	.....	None required.
Public spaces .....	2-A .....	1 for each 2,500 sq ft or fraction thereof located in vicinity of the exits, except that none are required for spaces under 500 sq ft.
Open decks or enclosed promenades .....	.....	None required.
<b>Service Spaces</b>		
Galleys .....	40-B:C .....	1 for each 2,500 sq ft or fraction thereof suitable for hazards involved.
Main pantries .....	2-A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits.
Motion picture booths and film lockers .....	10-B:C <sup>3</sup> .....	1 outside in the vicinity of the exit.
Paint and lamp rooms .....	40-B .....	1 outside space in the vicinity of the exit.
Inaccessible baggage, mail, and specie rooms, and storerooms. ....	.....	None required.
Accessible baggage, mail, and specie rooms, and storerooms. ....	2-A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits, either inside or outside the spaces.
Refrigerated storerooms .....	2-A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits, outside the spaces.
Carpenter, valet, photographic, printing shops sales rooms, etc. ....	2-A .....	1 outside the space in the vicinity of the exit.
<b>Machinery Spaces</b>		
Coal-fired boilers: Bunker and boiler space .....	.....	None required.
Oil-fired boilers: Spaces, containing oil fired boilers, either main or auxiliary, or their fuel oil units. ....	40-B .....	2 required. <sup>3</sup>
Internal combustion or gas turbine propelling machinery spaces. ....	160-B .....	1 required. <sup>4</sup>
	40-B .....	1 for each 1,000 brake horsepower, but not less than 2 or more than 6.
Electric propulsive motors or generators of open type. ....	120-B .....	1 required. <sup>5</sup>
	40-B:C .....	1 for each propulsion motor or generator unit.
Enclosed ventilating systems for motors and generators of electric propelling machinery. ....	.....	None required.
Auxiliary spaces, internal combustion or gas turbine. ....	40-B .....	1 outside the space in the vicinity of the exit. <sup>6</sup>
Auxiliary spaces, electric emergency motors or generators. ....	40-B:C .....	1 outside the space in the vicinity of the exit. <sup>6</sup>
Auxiliary spaces, steam .....	.....	None required.
Trunks to machinery spaces .....	.....	None required.
Fuel tanks .....	.....	None required.
<b>Cargo Spaces</b>		
Inaccessible during voyage, including trunks (excluding tanks). ....	.....	None required.
Accessible during voyage .....	2-A .....	1 for each 1,200 sq ft or fraction thereof.
Vehicular spaces (covered by a sprinkler system) ..	40-B .....	1, plus 1 for each 6,000 sq ft or fraction thereof.
Vehicular spaces (not covered by a sprinkler system). ....	40-B .....	1, plus 1 for each 1,500 sq ft or fraction thereof. <sup>7</sup>
Cargo oil tanks .....	.....	None required.

TABLE 76.50—10(a)—CARRIAGE OF PORTABLE AND SEMI-PORTABLE FIRE EXTINGUISHERS—  
Continued

Space	Fire extinguishing	
	Minimum required rating	Quantity and location
<b>Spare Units</b>		
	2-A .....	10 percent of the required number for public spaces rounded up.
	40-B .....	10 percent of the required number for cargo spaces rounded up.
	40-B:C .....	1.

<sup>1</sup> In any case, on vessels of 150 feet (45.72 meters) in length and over, there must be at least two 2-A units on each passenger deck.

<sup>2</sup> For vessels on an international voyage, substitute 1 20-B:C in the vicinity of the exit.

<sup>3</sup> Vessels of less than 1,000 GT and not on an international voyage require 1.

<sup>4</sup> Vessels of less than 1,000 GT and not on an international voyage may substitute 1 160-B.

<sup>5</sup> If an oil-burning donkey boiler is fitted in the space, the 160-B previously required for the protection of the boiler room may be substituted. Not required on vessels of less than 300 GT if the fuel has a flashpoint of 110 °F or lower except those on an international voyage.

<sup>6</sup> Not required on vessels of less than 300 GT if the fuel has a flashpoint higher than 110 °F.

<sup>7</sup> Two 5-B units may be substituted for 1 20-B unit.

The location of the equipment must be to the satisfaction of the Officer in Charge, Marine Inspection. Nothing in this paragraph should be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional equipment as he or she deems necessary for the proper protection of the vessel.

(c) Semi-portable fire extinguishing systems must be located in the open so as to be readily seen.

(d) If portable fire extinguishers are not located in the open or behind glass so that they may be readily seen, they may be placed in enclosures together with the firehose, provided such enclosures are marked as required by § 78.47–20 of this subchapter.

(e) Portable fire extinguishers and their stations must be numbered in accordance with § 78.47–30 of this subchapter.

(f) Portable or semi-portable extinguishers, which are required on their nameplates to be protected from freezing, must not be located where freezing temperatures may be expected.

[USCG–2012–0196, 81 FR 48259, July 22, 2016]

EFFECTIVE DATE NOTE: By 89 FR 76697, Sept. 18, 2024, § 76.50–10 was amended by revising and republishing paragraphs (a) and (b), effective Oct. 18, 2024. For the convenience of the user, the revised text is set forth as follows:

#### § 76.50–10 Location.

(a) Approved portable and semi-portable extinguishers must be installed in accordance with table 1 to 76.50–10(b). The location of the equipment must be to the satisfaction of the Officer in Charge, Marine Inspection. Nothing in this paragraph should be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional equipment as he or she deems necessary for the proper protection of the vessel.

(b) Table 1 to 76.50–10(b) indicates the minimum required number and type of extinguisher for each space listed. Extinguishers with larger numerical ratings or multiple letter designations may be used if the extinguishers meet the requirements of the table.

TABLE 1 TO 76.50–10(b)—CARRIAGE OF PORTABLE AND SEMI-PORTABLE FIRE EXTINGUISHERS

Space	Fire extinguishing	
	Minimum required rating	Quantity and location
<b>Safety Area <sup>1</sup></b>		
Wheelhouse or fire control room .....	2-A, 20-B:C .....	1 of each rating required for vessels over 1,000 GT. Only 1 extinguisher is required if it carries both 2-A and 20-B:C ratings.
Stairway and elevator enclosures .....	.....	None required.
Communicating corridors .....	2-A .....	1 in each main corridor in each main vertical zone. (May be located in stairway enclosures.)
Lifeboat embarkation and lowering stations .....	.....	None required.

TABLE 1 TO 76.50–10(b)—CARRIAGE OF PORTABLE AND SEMI-PORTABLE FIRE EXTINGUISHERS—  
Continued

Space	Fire extinguishing	
	Minimum required rating	Quantity and location
Radio room .....	20–B:C <sup>3</sup> .....	2 in the vicinity of the exit. <sup>2</sup>
<b>Accommodations<sup>1</sup></b>		
Staterooms, toilet spaces, isolated pantries, etc. ....	.....	None required.
Offices, lockers, and isolated storerooms .....	.....	None required.
Public spaces .....	2–A .....	1 for each 2,500 sq ft or fraction thereof located in vicinity of the exits, except that none are required for spaces under 500 sq ft.
Open decks or enclosed promenades .....	.....	None required.
<b>Service Spaces</b>		
Galleys .....	40–B:C .....	1 for each 2,500 sq ft or fraction thereof suitable for hazards involved.
Main pantries .....	2–A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits.
Motion picture booths and film lockers .....	10–B:C <sup>3</sup> .....	1 outside in the vicinity of the exit.
Paint and lamp rooms .....	40–B .....	1 outside space in the vicinity of the exit.
Inaccessible baggage, mail, and specie rooms, and storerooms.	.....	None required.
Accessible baggage, mail, and specie rooms, and storerooms.	2–A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits, either inside or outside the spaces.
Refrigerated storerooms .....	2–A .....	1 for each 2,500 sq ft or fraction thereof located in the vicinity of the exits, outside the spaces.
Carpenter, valet, photographic, printing shops sales rooms, etc..	2–A .....	1 outside the space in the vicinity of the exit.
<b>Machinery Spaces</b>		
Coal-fired boilers: Bunker and boiler space .....	.....	None required.
Oil-fired boilers: Spaces, containing oil fired boilers, either main or auxiliary, or their fuel oil units.	40–B .....	2 required. <sup>3</sup>
Internal combustion or gas turbine propelling machinery spaces.	160–B .....	1 required. <sup>4</sup>
.....	40–B .....	1 for each 1,000 brake horsepower, but not less than 2 or more than 6.
.....	120–B .....	1 required. <sup>5</sup>
Electric propulsive motors or generators of open type.	40–B:C .....	1 for each propulsion motor or generator unit.
Enclosed ventilating systems for motors and generators of electric propelling machinery.	.....	None required.
Auxiliary spaces, internal combustion or gas turbine.	40–B .....	1 outside the space in the vicinity of the exit. <sup>6</sup>
Auxiliary spaces, electric emergency motors or generators.	40–B:C .....	1 outside the space in the vicinity of the exit. <sup>6</sup>
Auxiliary spaces, steam .....	.....	None required.
Trunks to machinery spaces .....	.....	None required.
Fuel tanks .....	.....	None required.
<b>Cargo Spaces</b>		
Inaccessible during voyage, including trunks (excluding tanks).	.....	None required.
Accessible during voyage .....	2–A .....	1 for each 1,200 sq ft or fraction thereof.
Vehicular spaces (covered by a sprinkler system) ..	40–B .....	1, plus 1 for each 6,000 sq ft or fraction thereof.
Vehicular spaces (not covered by a sprinkler system).	40–B .....	1, plus 1 for each 1,500 sq ft or fraction thereof. <sup>7</sup>
Cargo oil tanks .....	.....	None required.
<b>Spare Units</b>		
.....	2–A .....	10 percent of the required number for public spaces rounded up.
.....	40–B .....	10 percent of the required number for cargo spaces rounded up.
.....	40–B:C .....	1.

<sup>1</sup> In any case, on vessels of 150 feet (45.72 meters) in length and over, there must be at least two 2–A units on each passenger deck.

<sup>2</sup>For vessels on an international voyage, substitute 1 20-B:C in the vicinity of the exit.

<sup>3</sup>Vessels of less than 1,000 GT and not on an international voyage require 1.

<sup>4</sup>Vessels of less than 1,000 GT and not on an international voyage may substitute one 120-B for one 160-B.

<sup>5</sup>If an oil-burning donkey boiler is fitted in the space, the 160-B previously required for the protection of the boiler room may be substituted. Not required on vessels of less than 300 GT if the fuel has a flashpoint of 110 °F or lower except those on an international voyage.

<sup>6</sup>Not required on vessels of less than 300 GT if the fuel has a flashpoint higher than 110 °F.

<sup>7</sup>Two 10-B units may be substituted for one 40-B unit.

#### § 76.50-20 Semi-portable fire extinguishers.

(a) The frame or support of each semi-portable fire extinguisher required by table 76.50-10(a) must be welded or otherwise permanently attached to a bulkhead or deck.

(b) If an approved semi-portable fire extinguisher has wheels and is not required by table 76.50-10(a), it must be securely stowed when not in use to prevent it from rolling out of control under heavy sea conditions.

(c) Each semi-portable extinguisher must be fitted with a suitable hose and nozzle, or other practicable means, so that all areas of the space can be protected.

[CGD 77-039, 44 FR 34132, June 14, 1979, as amended by USCG-2012-0196, 81 FR 48261, July 22, 2016]

#### § 76.50-80 Locations and number of fire extinguishers required for vessels constructed prior to January 18, 2017.

(a) Vessels contracted for prior to January 18, 2017, must meet the following requirements:

(1) Previously installed extinguishers with extinguishing capacities smaller than are required in Table 76.50-10(a) of this subpart need not be replaced and may be continued in service so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection; and

(2) All new equipment and installations must meet the applicable requirements in this subpart for new vessels.

(b) [Reserved]

[USCG-2012-0196, 81 FR 48261, July 22, 2016]

#### § 76.50-90 Vessels contracted for prior to November 19, 1952.

(a) Vessels contracted for prior to November 19, 1952, shall meet the following requirements:

(1) The provisions of §§ 76.50-5 through 76.50-15 shall be met with the exception that existing installations in

safety areas, accommodations, service spaces, and cargo spaces may be maintained if in the opinion of the Officer in Charge, Marine Inspection, they are in general agreement with the standard of safety prescribed by table 76.50-10(a). In such cases, minor modifications may be made to the same standards as the original installation, provided that in no case will a greater departure from the standards of table 76.50-10(a) be permitted than presently exists.

(2) [Reserved]

(b) [Reserved]

### Subpart 76.60—Fire Axes

#### § 76.60-1 Application.

(a) The provisions of this subpart shall apply to all vessels.

(b) [Reserved]

#### § 76.60-5 Number required.

(a) All vessels except barges shall carry at least the minimum number of fire axes as set forth in table 76.60-5(a). Nothing in this paragraph shall be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional fire axes as he deems necessary for the proper protection of the vessel.

TABLE 76.60-5(a)

Gross tons		Number of axes
Over	Not over	
.....	50	1
50 .....	200	2
200 .....	500	4
500 .....	1,000	6
1,000 .....	.....	8

(b) Covered barges shall carry at least three fire axes and uncovered barges shall carry at least two fire axes.



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### **§ 76.60–10 Location.**

(a) Fire axes shall be distributed throughout the spaces available to passengers and crew so as to be most readily available in the event of emergency.

(b) If fire axes are not located in the open or behind glass so that they may be readily seen, they may be placed in enclosures together with the fire hose, provided such enclosures are marked as required by § 78.47–20 of this subchapter.

## **PART 77—VESSEL CONTROL AND MISCELLANEOUS SYSTEMS AND EQUIPMENT**

### **Subpart 77.01—Application**

Sec.

77.01–1 General.

77.01–3 Incorporation by reference.

### **Subpart 77.03—Marine Engineering Systems**

77.03–1 Installation and details.

### **Subpart 77.05—Electrical Engineering and Interior Communication Systems**

77.05–1 Installation and details.

### **Subpart 77.06—Lifesaving Appliances and Arrangements**

77.06–1 Installation.

### **Subpart 77.07—Anchors, Chains, and Hawsers**

77.07–1 Application.

77.07–5 Ocean, coastwise, or Great Lakes service.

77.07–10 Lakes, bays, and sounds, or river service.

77.07–90 Vessels contracted for prior to November 19, 1952.

### **Subpart 77.09—Radar**

77.09–1 When required.

### **Subpart 77.11—Magnetic Compass and Gyrocompass**

77.11–1 When required.

### **Subpart 77.27—Sounding Equipment**

77.27–1 When required.

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### **Subpart 77.30—Emergency Equipment**

77.30–1 Application.

77.30–5 General.

77.30–10 Stowage.

77.30–15 Spare charges.

77.30–90 Vessels contracted for before November 23, 1992.

### **Subpart 77.35—Fireman's Outfit**

77.35–1 Application.

77.35–5 General.

77.35–10 Fireman's outfit.

77.35–15 Stowage.

77.35–20 Spare charges.

77.35–90 Vessels contracted for before November 23, 1992.

### **Subpart 77.40—Pilot Boarding Equipment**

77.40–1 Pilot boarding equipment.

AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 0170.1.

EFFECTIVE DATE NOTE: By 89 FR 76698, Sept. 18, 2024, the authority to part 77 was revised, effective Oct. 18, 2024. For the convenience of the user, the revised text is set forth as follows:

AUTHORITY: 46 U.S.C. 3306; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; DHS Delegation No. 00170.1, Revision No. 01.4.

SOURCE: CGFR 65–50, 30 FR 16953, Dec. 30, 1965, unless otherwise noted.

### **Subpart 77.01—Application**

#### **§ 77.01–1 General.**

(a) The provisions of this part shall apply to all vessels except as specifically noted.

(b) [Reserved]

#### **§ 77.01–3 Incorporation by reference.**

(a) Certain materials are incorporated by reference into this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a). To enforce any edition other than the one listed in paragraph (b) of this section, notice of the change must be published in the FEDERAL REGISTER and the material made available to the public. All approved material is on file at the Office of the Federal Register, Washington, DC 20408, and at Coast Guard Headquarters. Contact Commandant (CG-ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue, SE., Washington,