

## TITLE 33--NAVIGATION AND NAVIGABLE WATERS

### CHAPTER I--COAST GUARD, DEPARTMENT OF TRANSPORTATION

#### PART 181--MANUFACTURER REQUIREMENTS

##### Subpart A—General

###### Sec.

- 181.1 Purpose and applicability.
- 181.3 Definitions.
- 181.4 Incorporation by reference.

##### Subpart B--Manufacturer Certification of Compliance

- 181.5 Purpose and applicability.
- 181.7 Compliance certification label required.
- 181.9 Affixing labels.
- 181.11 Exceptions to labeling requirement.
- 181.13 Removal of labels.
- 181.15 Contents of labels.
- 181.17 Label numbers and letters.
- 181.19 Construction of labels.

##### Subpart C--Identification of Boats

- 181.21 Purpose, applicability and effective date.
- 181.23 Hull identification numbers required.
- 181.25 Hull identification number format.
- 181.27 Information displayed near hull identification number.
- 181.29 Hull identification number display.
- 181.31 Manufacturer identification code assignment.
- 181.33 Conditions for use of manufacturer identification codes.
- 181.35 Removal of numbers.

##### Subparts D-F--[Reserved]

##### Subpart G--Instruction Pamphlet for Personal Flotation Devices

- 181.701 Applicability.
- 181.702 Information pamphlet: requirement to furnish.
- 181.703 Information pamphlet: Contents.
- 181.704 Contents of information pamphlet: recreational hybrid PFD.
- 181.705 Contents of information pamphlet: recreational inflatable PFD.

Authority: 46 U.S.C. 4302 and 4310; 49 CFR 1.46. Source: CGD 72-60, 37 FR 15779, Aug. 4, 1972, unless otherwise noted.

## Subpart A—General

**Sec. 181.1 Purpose and applicability.** This part prescribes requirements for the certification of boats and associated equipment and identification of boats to which 46 U.S.C. Chapter 43 applies.

[CGD 85-002, 51 FR 37573, Oct. 23, 1986]

**Sec. 181.3 Definitions.** As used in this part:

Associated equipment means:

- (1) Any system, part, or component of a boat as originally manufactured or any similar part or component manufactured or sold for replacement, repair, or improvement of such system, part, or component;
- (2) Any accessory or equipment for, or appurtenance to, a boat; and
- (3) Any marine safety article, accessory, or equipment intended for use by a person on board a boat; but
- (4) Excluding radio equipment.

Boat means any vessel manufactured or used primarily for noncommercial use; leased, or rented, or chartered to another for the latter's noncommercial use; or engaged in the carrying of six or fewer passengers.

Date of certification means the date on which a boat or item of associated equipment is certified to comply with all applicable U.S. Coast Guard safety standards in effect on that date.

Date of manufacture means the month and year during which construction or assembly of a boat or item of associated equipment begins.

Manufacturer means any person engaged in:

- (1) The manufacture, construction, or assembly of boats or associated equipment; or
- (2) The importation into the United States for sale of boats, associated equipment, or components thereof.

Model year means the period beginning August 1 of any year and ending on July 31 of the following year. Each model year is designated by the year in which it ends.

Private label merchandiser means any person engaged in the business of selling and distributing, under his own trade name, boats, or items of associated equipment manufactured by another.

[CGD 96-026, 61 FR 33669, June 28, 1996; 61 FR 36786, July 12, 1996]

**Sec. 181.4 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 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, 800 North Capitol Street, NW., suite 700, Washington, DC, and at the Lifesaving and Fire Safety Standards Division (G-MSE-4), 2100 Second Street, SW., Washington, DC 20593-0001, and is available from the sources listed in paragraph (b) of this section.

(b) The materials approved for incorporation by reference in this part, and the sections affected are:  
Underwriters Laboratories, Inc. 333 Pfingsten Road, Northbrook, IL 60062.UL 1123,  
Marine Buoyant Devices, 181.703. February 17, 1995.

[CGD 81-023, 55 FR 32034, Aug. 6, 1990, as amended by CGD 93-055, 61 FR 13927, Mar. 28, 1996; CGD 96-026, 61 FR 33669, June 28, 1996]

## Subpart B--Manufacturer Certification of Compliance

**Sec. 181.5 Purpose and applicability.** This subpart prescribes requirements for the certification of boats and associated equipment to which 46 U.S.C. Chapter 43 applies and to which a safety standard prescribed in Part 183 of this chapter applies.

[CGD 85-002, 51 FR 37573, Oct. 23, 1986]

**Sec. 181.7 Compliance certification label required.** Unless there is affixed to it a certification label that contains the information required by Sec. 181.15:

- (a) No person who manufactures, constructs, or assembles a boat or associated equipment may deliver that boat or equipment for the purpose of sale;
- (b) No person may import into the United States any boat or associated equipment; and
- (c) No person engaged in the business of selling or distributing boats or associated equipment may sell or offer for sale any boat or associated equipment.

**Sec. 181.9 Affixing labels.**

(a) Each manufacturer of a boat or item of associated equipment to which a standard or regulation prescribed in Part 183 of this chapter applies shall affix a certification label that contains the information required by Sec. 181.15 to that boat or equipment before it:

- (1) Leaves the place of manufacture for the purpose of sale; or
- (2) Is imported.

(b) The manufacturer of a boat or item of associated equipment that is sold to a private label merchandiser may, at the option of the private label merchandiser, affix a certification label identifying the private label merchandiser as the manufacturer before the boat or item of associated equipment leaves the place of manufacture.

**Sec. 181.11 Exceptions to labeling requirement.**

(a) This part does not apply to boats or associated equipment intended solely for export, and so labeled, tagged, or marked on the boat or equipment and on the outside of the container, if any, which is exported.

(b) If an item of associated equipment is so small that a certification label that meets the requirements in Sec. 181.15 cannot be affixed to it, a certification label that contains the information required by Sec. 181.15 may be printed on the smallest container in which the item is packed or on a slip packed with the item.

(c) This subpart does not apply to any outboard motor or starting control to which Sec. 183.710 of this chapter applies.

[CGD 72-60, 37 FR 15779, Aug. 4, 1972, as amended by CGD 79-137, 46 FR 3515, Jan. 15, 1981; 46 FR 9579, Jan. 29, 1981]

**Sec. 181.13 Removal of labels.** No person may remove a label required by this part or remove or alter any information on a label required by this part, unless authorized by the Commandant.

**Sec. 181.15 Contents of labels.**

(a) Each label required by Sec. 181.7 must contain:

(1) The name and address of the manufacturer or private label merchandiser who certifies that the boat or item of associated equipment complies with the standards prescribed in Part 183 of this subchapter; and

(2) Except as provided in paragraph (c) of this section, the words:

(i) "This (insert 'Boat' or 'Equipment') Complies With U.S. Coast Guard Safety Standards In Effect On (insert date of certification as prescribed in paragraph (b) of this section)"; or

(ii) If the item being certified is a boat or boat hull, the label may show the words, "This Boat Complies With U.S. Coast Guard Safety Standards In Effect On The Date of Certification."

(b) Date of certification must be no earlier than the date on which construction or assembly began and no later than the date on which the boat or item of associated equipment leaves the place of manufacture or assembly or import for the purposes of sale.

(c) [Reserved]

(d) Except as provided in paragraph (e) of this section, the manufacturer may, in addition to the information required by paragraphs (a) and (b) of this section, display on the certification label any or all of the following information:

(1) Model name or designation.

(2) Hull identification number (if a boat) or serial number (if an item of associated equipment).

(3) Model year.

(e) Display of the hull identification number on the certification label does not satisfy the display requirements of Sec. 181.29.

(f) Each boat which displays a maximum horsepower capacity determined in accordance with Sec. 183.53(b) must, in addition to the information required by paragraphs (a), (b) and (d) of this section, display on the certification label, the following statement in letters no less than one-quarter of an inch in height: THIS BOAT IS INTENDED FOR RACING AND OTHER HIGH PERFORMANCE ACTIVITIES. THE SKILL REQUIRED MAY EXCEED THE ABILITIES OF SOME OPERATORS.

[CGD 72-60, 37 FR 15779, Aug. 4, 1972, as amended by CGD 83-012, 49 FR 39327, Oct. 5, 1984; CGD 85-002, 51 FR 37573, Oct. 23, 1986]

**Sec. 181.17 Label numbers and letters.** Letters and numbers on each label must:

(a) Be no less than one-eighth of an inch in height; and

(b) Contrast with the basic color of the label, except that the date of certification may be permanently stamped, engraved, or embossed on the label.

**Sec. 181.19 Construction of labels.**

(a) Each label must be made of material that can withstand exposure to water, oil, salt spray, direct sunlight, heat, cold, and wear expected in normal use of the boat or item of associated equipment without deterioration of legibility.

(b) Each label must be made of material that shows visible traces of the alteration or removal of information on the label.

## Subpart C--Identification of Boats

Source: CGD 79-013, 48 FR 40718, Sept. 9, 1983, unless otherwise noted.

**Sec. 181.21 Purpose, applicability and effective dates.**

This subpart prescribes the requirements for identification of boats to which section 46 U.S.C. 4301 applies.

[CGD 79-013, 48 FR 40718, Sept. 9, 1983, as amended by USCG-1998-3799, 63 FR 35534, June 30, 1998; USCG-1999-5832, 64 FR 34716, June 29, 1999]

**Sec. 181.23 Hull identification numbers required.**

(a) A manufacturer (or importer), as defined in Sec. 181.3 of this part, must identify each boat produced or imported with two hull identification numbers that meet the requirements of this subpart:

- (1) A primary hull identification number affixed in accordance with Secs. 181.29(a) and (c) of this subpart; and
- (2) A duplicate hull identification number affixed in accordance with Secs. 181.29(b) and (c) of this subpart.

(b) A person who builds or imports a boat for his or her own use and not for the purposes of sale, must identify that boat with two hull identification numbers that meet the requirements of this subpart.

(c) No person may assign the same hull identification number to more than one boat.

**Sec. 181.25 Hull identification number format.** Each of the hull identification numbers required by Sec. 181.23 must consist of twelve characters, uninterrupted by slashes, hyphens, or spaces, as follows:

(a) The first three characters must be a manufacturer identification code assigned under Sec. 181.31(a) or the importer designation assigned under Sec. 181.31(b).

(b) Characters four through eight must be a serial number assigned by the manufacturer in letters of the English alphabet, or Arabic numerals, or both, except the letters I, O, and Q.

(c) Characters nine and ten must indicate the month and year of certification when a date of certification is required. In all other cases characters nine and ten must indicate the date of manufacture. The date indicated can be no earlier than the date construction or assembly began and no later than the date the boat leaves the place of manufacture or assembly or is imported into the United States for the purposes of sale. Character nine must be indicated using letters of the English alphabet. The first month of the year, January, must be designated by the letter "A", the second month, February, by the letter "B", and so on until the last month of the year, December. Character ten must be the last digit of the year of manufacture or certification and must be an Arabic numeral.

(d) Characters eleven and twelve must indicate the model year using Arabic numerals for the last two numbers of the model year such as "82" for 1982 and "83" for 1983.

**Sec. 181.27 Information displayed near hull identification number.** If additional information is displayed on the boat within two inches of the hull identification number, that information must be separated from the hull identification number by means of borders or must be on a separate label so that it will not be interpreted as part of the hull identification number.

**Sec. 181.29 Hull identification number display.** Two identical hull identification numbers are required to be displayed on each boat hull.

(a) The primary hull identification number must be affixed—

(1) On boats with transoms, to the starboard outboard side of the transom within two inches of the top of the transom, gunwale, or hull/deck joint, whichever is lowest.

(2) On boats without transoms or on boats on which it would be impractical to use the transom, to the starboard outboard side of the hull, aft, within one foot of the stern and within two inches of the top of the hull side, gunwale or hull/deck joint, whichever is lowest.

(3) On catamarans and pontoon boats which have readily replaceable hulls, to the aft crossbeam within one foot of the starboard hull attachment.

(4) If the hull identification number would not be visible, because of rails, fittings, or other accessories, the number must be affixed as near as possible to the location specified in paragraph (a) of this section.

(b) The duplicate hull identification number must be affixed in an unexposed location on the interior of the boat or beneath a fitting or item of hardware.

(c) Each hull identification number must be carved, burned, stamped, embossed, molded, bonded, or otherwise permanently affixed to the boat so that alteration, removal, or replacement would be obvious. If the number is on a separate plate, the plate must be fastened in such a manner that its removal would normally cause some scarring of or damage to the surrounding hull area. A hull identification number must not be attached to parts of the boat that are removable.

(d) The characters of each hull identification number must be no less than one-fourth of an inch high.

[CGD 79-013, 48 FR 40718, Sept. 19, 1983; 48 FR 53558, Nov. 28, 1983]

**Sec. 181.31 Manufacturer identification code assignment.**

(a) Each person required by Sec. 181.23 to affix hull identification numbers must request a manufacturer identification code in writing from the Recreational Boating Product Assurance Division, 2100 Second Street SW., Washington, DC 20593-0001. The request must indicate the manufacturer's name and U.S. address along with the general types and lengths of boats that will be manufactured.

(b) For boats manufactured outside of the jurisdiction of the United States, a U.S. importer must obtain a manufacturer identification code as required by paragraph (a) of this section. The request of an importer, as defined in Sec. 181.3 of this subpart, must indicate the importer's name and U.S. address along with a list of the manufacturers, their addresses, and the general types and sizes of boats that will be imported. If a nation has a hull identification number system which has been accepted by the U.S. Coast Guard for the purpose of importing boats, it may be used by the importer instead of the one specified within this subpart. To request a list of those nations having such a numbering system, write to the Recreational Boating Product Assurance Division, 2100 Second Street SW., Washington, DC 20593-0001.

(c) Persons who are required to identify boats under Sec. 181.23(b) must obtain the required hull identification number from the State Boating Law Administrator of the State where the boat will be principally used, or, if the State Boating Law Administrator does not assign these numbers, from the Coast Guard District office in the area of principal use.

[CGD 79-013, 48 FR 40718, Sept. 9, 1983, as amended by CGD 88-052, 53 FR 25122, July 1, 1988; CGD 96-026, 61 FR 33669, June 28, 1996]

**Sec. 181.33 Conditions for use of manufacturer identification codes.**

(a) No manufacturer or importer may sell or transfer a manufacturer identification code or use a manufacturer identification code that has been assigned to another.

(b) A manufacturer or importer who changes the business name or address must advise the Recreational Boating Product Assurance Division, 2100 Second Street SW., Washington, DC 20593-0001 of the change in writing.

[CGD 79-013, 48 FR 40718, Sept. 9, 1983, as amended by CGD 88-052, 53 FR 25122, July 1, 1988; CGD 96-026, 61 FR 33669, June 28, 1996]

**Sec. 181.35 Removal of numbers.** No person may remove or alter a number required by this subpart unless authorized by the Commandant, U.S. Coast Guard.

## Subparts D-F--[Reserved]

## Subpart G--Instruction Pamphlet for Personal Flotation Devices

Source: CGD 75-008a, 43 FR 9767, Mar. 9, 1978, unless otherwise noted.

**Sec. 181.701 Applicability.** This subpart applies to all personal flotation devices that are sold or offered for sale for use on recreational boats.

**Sec. 181.702 Information pamphlet: requirement to furnish.**

(a) Each manufacturer of a Type I, II, III, IV, or V personal flotation device (PFD) must furnish with each PFD that is sold or offered for sale for use on a recreational boat, an information pamphlet meeting the requirements of Sec. 181.703, Sec. 181.704, or Sec. 181.705 of this subpart, as appropriate.

(b) No person may sell or offer for sale for use on a recreational boat, a Type I, II, III, IV, or V PFD unless an information pamphlet required by this section is attached in such a way that it can be read prior to purchase.

[CGD 93-055, 61 FR 13927, Mar. 28, 1996]

**Sec. 181.703 Information pamphlet: Contents.** Unless otherwise specified in this subpart, each information pamphlet must contain the information specified in sections 33, 34 and 35 of UL 1123.

[CGD 93-055, 61 FR 13927, Mar. 28, 1996]

**Sec. 181.704 Contents of information pamphlet: Recreational hybrid PFD.** Each information pamphlet for a recreational hybrid PFD approved under 46 CFR 160.077 must contain the information specified in 46 CFR 160.077-27.

[CGD 93-055, 61 FR 13927, Mar. 28, 1996]

**Sec. 181.705 Contents of information pamphlet: Recreational inflatable PFD.** Each information pamphlet for a recreational inflatable PFD approved under 46 CFR 160.076 must contain the information required by 46 CFR 160.076-35.

[CGD 93-055, 61 FR 13927, Mar. 28, 1996]

## TITLE 33--NAVIGATION AND NAVIGABLE WATERS

### CHAPTER I--COAST GUARD, DEPARTMENT OF TRANSPORTATION

## **PART 183--BOATS AND ASSOCIATED EQUIPMENT**

### **Subpart A—General**

#### **Sec.**

- 183.1 Purpose and applicability.
- 183.3 Definitions.
- 183.5 Incorporation by reference.

#### Subpart B--Display of Capacity Information

- 183.21 Applicability.
- 183.23 Capacity marking required.
- 183.25 Display of markings.
- 183.27 Construction of markings.

#### Subpart C--Safe Loading

- 183.31 Applicability.
- 183.33 Maximum weight capacity: Inboard and inboard-outdrive boats.
- 183.35 Maximum weight capacity: Outboard boats.
- 183.37 Maximum weight capacity: Boats rated for manual propulsion and boats rated for motors of two horsepower or less.
- 183.39 Persons capacity: Inboard and inboard-outdrive boats.
- 183.41 Persons capacity: Outboard boats.
- 183.43 Persons capacity: Boats rated for manual propulsion and boats rated for motors of two horsepower or less.

#### Subpart D--Safe Powering

- 183.51 Applicability.
- 183.53 Horsepower capacity.

#### Subpart E [Reserved]

#### Subpart F--Flotation Requirements for Inboard Boats, Inboard/Outdrive Boats, and Airboats

- 183.101 Applicability.
- 183.105 Quantity of flotation required.
- 183.110 Definitions.
- 183.112 Flotation material and air chambers.
- 183.114 Test of flotation materials.

#### Subpart G--Flotation Requirements for Outboard Boats Rated for Engines of More Than 2 Horsepower

##### General

- 183.201 Applicability.
- 183.202 Flotation and certification requirements.
- 183.205 Passenger carrying area.
- 183.210 Reference areas.
- 183.215 Reference depth.
- 183.220 Preconditioning for tests.
- 183.222 Flotation material and air chambers.

##### Tests

- 183.225 Flotation test for persons capacity.
- 183.230 Stability test.
- 183.235 Level flotation test without weights for persons capacity.

#### Subpart H--Flotation Requirements for Outboard Boats Rated for Engines of 2 Horsepower or Less

##### General

- 183.301 Applicability.
- 183.302 Flotation requirements.

- 183.305 Passenger carrying area.
- 183.310 Reference areas.
- 183.315 Reference depth.
- 183.320 Preconditioning for tests.
- 183.322 Flotation materials.

Tests

- 183.325 Flotation test for persons capacity.
- 183.330 Stability test.
- 183.335 Level flotation test without weights for persons capacity.

Table

Figures

Subpart I--Electrical Systems

General

- 183.401 Purpose, applicability, and effective dates.
- 183.402 Definitions.
- 183.405 General.

Manufacturer Requirements

- 183.410 Ignition protection.
- 183.415 Grounding.
- 183.420 Batteries.
- 183.425 Conductors: General.
- 183.430 Conductors in circuits of less than 50 volts.
- 183.435 Conductors in circuits of 50 volts or more.
- 183.440 Secondary circuits of ignition systems.
- 183.445 Conductors: Protection.
- 183.455 Overcurrent protection: General.
- 183.460 Overcurrent protection: Special applications.

Subpart J--Fuel systems

General

- 183.501 Applicability.
- 183.505 Definitions.
- 183.507 General. Equipment Standards
- 183.510 Fuel tanks.
- 183.512 Fuel tanks: Prohibited materials.
- 183.514 Fuel tanks: Labels.
- 183.516 Cellular plastic used to encase fuel tanks.
- 183.518 Fuel tank openings.
- 183.520 Fuel tank vent systems.
- 183.524 Fuel pumps.
- 183.526 Carburetors.
- 183.528 Fuel stop valves.
- 183.530 Spud, pipe, and hose fitting configuration.
- 183.532 Clips, straps, and hose clamps.
- 183.534 Fuel filters and strainers.
- 183.536 Seals and gaskets in fuel filters and strainers.
- 183.538 Metallic fuel line materials.
- 183.540 Hoses: Standards and markings.
- 183.542 Fuel systems.

Manufacturer Requirements

- 183.550 Fuel tanks: Installation.
- 183.552 Plastic encased fuel tanks: Installation.
- 183.554 Fittings, joints, and connections.
- 183.556 Plug and fittings.
- 183.558 Hoses and connections.
- 183.560 Hose clamps: Installation.
- 183.562 Metallic fuel lines.

- 183.564 Fuel tank fill system.
- 183.566 Fuel pumps: Placement.
- 183.568 Anti-siphon protection.
- 183.570 Fuel filters and strainers: Installation.
- 183.572 Grounding.

Tests

- 183.580 Static pressure test for fuel tanks.
- 183.584 Shock test.
- 183.586 Pressure impluse test.
- 183.588 Slosh test.
- 183.590 Fire test.

Subpart K—Ventilation

- 183.601 Applicability.
- 183.605 Definitions.
- 183.607 Incorporation by reference.
- 183.610 Powered ventilation system.
- 183.620 Natural ventilation system.
- 183.630 Standards for natural ventilation.

Subpart L--Start-in-Gear Protection

- 183.701 Applicability.
- 183.705 Definitions.
- 183.710 Start-in-gear protection required.
- 183.715 Exception.

Subpart M--[Reserved]

Subpart N--Special Provisions

- 183.901 Applicability to ``OMC Sea Drive" installations.

Source: CGD 72-61R, 37 FR 15782, Aug. 4, 1972, unless otherwise noted.[

## Subpart A

Authority: 46 U.S.C. 4302; 49 CFR 1.46. Source: CGD 72-61R, 37 FR 15782, Aug. 4, 1972, unless otherwise noted. [[Page 697]]

## General

**Sec. 183.1 Purpose and applicability.** This part prescribes standards and regulations for boats and associated equipment to which 46 U.S.C. Chapter 43 applies and to which certification requirements in Part 181 of this subchapter apply.

[CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.3 Definitions.**

Beam means the transverse distance between the outer sides of the boat excluding handles, and other similar fittings, attachments, and extensions.

Boat means any vessel manufactured or used primarily for noncommercial use; leased, rented, or chartered to another for the latter's noncommercial use; or engaged in the carrying of six or fewer passengers.

Full transom means a transom with a maximum width which exceeds one-half the maximum beam of the boat.

Length means the straight line horizontal measurement of the overall length from the foremost part of the boat to the aftermost part of the boat, measured from end to end over the deck excluding sheer, and measured parallel to the centerline. Bow sprits, bumpkins, rudders, outboard motor brackets, handles, and other similar fittings, attachments, and extensions are not included in the measurement.

Monohull boat means a boat on which the line of intersection of the water surface and the boat at any operating draft forms a single closed curve. For example, a catamaran, trimaran, or a pontoon boat is not a monohull boat.

Motorwell means any arrangement of bulkheads or structures that prevents water from entering the passenger carrying area of the boat through any cutout area in the transom for mounting an outboard motor.



Motorwell height means the vertical distance from the lowest point of water ingress along the top of the motorwell to a line representing a longitudinal extension of the centerline of the boat's bottom surface, excluding keels. This distance is measured as a projection on the centerline plane of the boat. See Figure 183.3.

Permanent appurtenances means equipment that is mounted or fastened, so that it is not removable without the use of tools. Seats, inboard engines, windshields, helm stations, or hardtops are permanent appurtenances. Outboard motors, controls, batteries, and portable fuel tanks are not permanent appurtenances.

Remote steering means any mechanical assist device which is rigidly attached to the boat and used in steering the vessel, including but not limited to mechanical, hydraulic, or electrical control systems.

Sailboat means a boat designed or intended to use sails as the primary means of propulsion.

Sheer means the topmost line in a boat's side. The sheer intersects the vertical centerline plane of the boat at the forward end and intersects the transom (stern) at the aft end. For the purposes of this definition, the topmost line in a boat's side is the line defined by a series of points of contact with the boat structure, by straight lines at 45 degree angles to the horizontal and contained in a vertical plane normal to the outside edge of the boat as seen from above and which are brought into contact with the outside of the horizontal boat. A boat is horizontal when it is transversely level and when the lowest points at 40 percent and 75 percent of the boat's length behind the most forward point of the boat are level.

Transom means the surface at the stern of a boat projecting or facing aft. The upper boundary of the transom is the line defined by a series of points of contact, with the boat structure, by straight lines at 45 degree angles to the horizontal and contained in a vertical longitudinal plane and which are brought into contact with the stern of the horizontal boat. A boat is horizontal when it is transversely level and when the lowest points at 40 percent and 75 percent of the boat's length behind the most forward point of the boat are level.

Transom height means the vertical distance from the lowest point of water ingress along the top of the transom to a line representing a longitudinal extension of the centerline of the boat's bottom surface, excluding keels. This distance is measured as a projection on the centerline plane of the boat. See Figure 183.3.

Vessel includes every description of watercraft, other than a seaplane on the water, used or capable of being used as a means of transportation on the water.

### **Figure 183.3.--Transom and Motorwell Height**

[CGD 73-250, 40 FR 43856, Sept. 23, 1975, as amended by CGD 75-176, 42 FR 2681, Jan. 13, 1977; CGD 85-002, 51 FR 37574, Oct. 23, 1986; CGD 96-026, 61 FR 33669, June 28, 1996; 61 FR 36629, July 12, 1996]

**Sec. 183.5 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 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, 800 North Capitol Street, NW., suite 700, Washington, DC, and at the Recreational Boating Product Assurance Division, Washington, DC 20593-0001, and is available from the sources listed in paragraph (b) of this section.

(b) The materials approved for incorporation by reference in this part, and the sections affected are:

*Air Movement and Control Association,*  
30 W. University Drive, Arlington Heights, IL 60004:  
AMCA 210-74: Laboratory Methods of Testing Fans \_\_\_\_\_ Sec. 183.610  
for Ratings--1974.

*American Society for Testing and Materials,*  
1916 Race Street, Philadelphia, PA 19103:  
ASTM D-471 Rubber Property \_\_\_\_\_ Secs. 183.114; 183.516; 183.620  
--Effect of Liquids --1979.

ASTM D-1621 Compressive Strength \_\_\_\_\_ Sec. 183.516  
of Rigid Cellular Plastics --1979.

ASTM D-1622 Apparent Density \_\_\_\_\_ Sec. 183.516  
of Rigid Cellular Plastics --1983.

ASTM D-2842 Water Absorption \_\_\_\_\_ Sec. 183.114  
of Rigid Cellular Plastics --1975.

*Institute of Electrical and Electronics Engineers, Inc.,*  
445 Hoes Lane, Piscataway, NJ 08854:  
IEEE 45 IEEE Recommended Practice for Electrical \_\_\_\_\_ Sec. 183.435  
Installations on Shipboard --1983. Cable Construction.

*National Fire Protection Association,*  
1 Batterymarch Park, Quincy, MA 02269:  
NFPA No. 70 National Electrical Code \_\_\_\_\_ Sec. 183.435  
-- 1987. Articles 310 & 400.

*Naval Publications Forms Center,*  
Customer Service--Code 1052, 5801  
Tabor Avenue, Philadelphia, PA 19120:  
MILSPEC-P-21929B Plastic Material, \_\_\_\_\_ Sec. 183.516  
Cellular Polyurethane, Foam-In-Place, Rigid -- 1970.

*Society of Automotive Engineers, Inc.,*  
400 Commonwealth Drive, Warrendale, PA 15096:  
SAE J378 Marine Engine Wiring -- 1984 \_\_\_\_\_ Sec. 183.430  
SAE J557 High Tension Ignition Cable -- 1968 \_\_\_\_\_ Sec. 183.440  
SAE J1127 Battery Cable -- 1980 \_\_\_\_\_ Sec. 183.430  
SAE J1128 Low Tension Primary Cable -- 1975. \_\_\_\_\_ Sec. 183.430  
SAE J1527DEC85 Marine Fuel Hoses --1985 \_\_\_\_\_ Sec. 183.540

*Underwriters Laboratories, Inc.,*  
333 Pfingsten Road, Northbrook, IL 60062:  
UL 1114 Marine (USCG Type A) Flexible Fuel Line \_\_\_\_\_ Sec. 183.540  
Hose --1987.

UL 1128 Marine Blowers --1977. \_\_\_\_\_ Sec. 183.610

UL 1426 Cables for Boats--1987 \_\_\_\_\_ Sec. 183.435

[CGD 87-009, 53 FR 36971, Sept. 23, 1988, as amended by CGD 96-026, 61 FR 33670, June 28, 1996]

## Subpart B--Display of Capacity Information

**Sec. 183.21 Applicability.** This subpart applies to monohull boats less than 20 feet in length, except sailboats, canoes, kayaks, and inflatable boats.

**Sec. 183.23 Capacity marking required.** Each boat must be marked in the manner prescribed in Secs. 183.25 and 183.27 with the maximum persons capacity in whole numbers of persons and in pounds, the maximum weight capacity in pounds, determined under Secs. 183.33 through 183.43, and the maximum horsepower capacity determined under Sec. 183.53 or the statement "This Boat Not Rated for Propulsion by Motor".

[CGD 78-034, 45 FR 2029, Jan. 10, 1980]

### Sec. 183.25 Display of markings.

(a) Each marking required by Sec. 183.23 must be permanently displayed in a legible manner where it is clearly visible to the operator when getting the boat underway.

(b) The information required by Sec. 183.23 must be displayed in the following manner:

(1) For outboard boats:

U.S. Coast Guard Maximum Capacities

XX Persons or XXX Pounds  
XXX Pounds, persons, motor, gear  
XXX Horsepower, motor

or

U.S. Coast Guard Maximum Capacities

XX Persons or XXX Pounds  
XXX Pounds, persons, motor, gear  
XXX Horsepower, motor with remote steering  
XXX Horsepower, motor without remote steering

(2) For inboard boats and inboard-outboard boats:

U.S. Coast Guard Maximum Capacities

XX Persons or XXX Pounds  
XXX Pounds, persons, gear

(3) For boats rated for motors of 2 horsepower or less:

U.S. Coast Guard Maximum Capacities

XX Persons or XXX Pounds  
XXX Pounds, persons, motor, gear  
XXX Horsepower, motor

(4) For boats rated for manual propulsion:

U.S. Coast Guard Maximum Capacities

XX Persons or XXX Pounds  
XXX Pounds, persons, gear  
This Boat Not Rated for Propulsion by Motor

(c) The capacity information displays required in paragraph (b) must meet the following as illustrated in Figure 183.25:

## Figure 183.25

- (1) The capacity information required in Sec. 183.23 must be displayed within a yellow area that—
  - (i) Is at least 4 inches wide; and
  - (ii) Is high enough that each line of print is separated by at least  $\frac{1}{8}$  inch from each other and from the borders of the yellow area;
- (2) The persons capacity in whole numbers must be black print with the following dimensions:
  - (i) The height must not be smaller than one-half inch;
  - (ii) The width of the numbers must be three-fifths of the height except for the number "4", which shall be one stroke width wider, and the number "1", which shall be one stroke in width;
  - (iii) The stroke width shall be one-sixth of the height; and (iv) The minimum space between the numbers shall be one stroke width.
- (3) The words in the line "XX Persons or XXX Pounds" must be at least one-quarter inch in height but not larger than one-half the height of the persons capacity number and of a color contrasting with yellow. The number of pounds in this line must be at least one-eighth inch in height but no larger than one-half the height of the persons capacity number and of a color contrasting with yellow.
- (4) All remaining words and numbers required to be within the yellow area required in paragraph (c)(1) must be at least one-eighth inch in height, but no larger than one-half the height of the persons capacity number.
- (5) All other words and numbers on the displays must be located outside the yellow area on a background color which contrasts with yellow.
- (6) The words "Maximum Capacities" must be at least one-quarter inch in height and of color contrasting with its background.
- (7) The words "U.S. Coast Guard" must be at least one-eighth inch in height and of color contrasting with its background.

[CGD 78-034, 45 FR 2029, Jan. 10, 1980]

**Sec. 183.27 Construction of markings.** Each marking required by Sec. 183.23 must be—

- (a) Capable of withstanding the combined effects of exposure to water, oil, salt spray, direct sunlight, heat, cold, and wear expected in normal operation of the boat, without loss of legibility; and
- (b) Resistant to efforts to remove or alter the information without leaving some obvious sign of such efforts.

[CGD 78-034, 45 FR 2030, Jan. 10, 1980]

## Subpart C--Safe Loading

**Sec. 183.31 Applicability.** This subpart applies to monohull boats less than 20 feet in length except sailboats, canoes, kayaks, and inflatable boats.

**Sec. 183.33 Maximum weight capacity: Inboard and inboard-outdrive boats.**

(a) The maximum weight capacity (W) marked on a boat that has one or more inboard or inboard-outdrive units for propulsion must not exceed the greater value of W obtained from either of the following formulas:

$$W = \frac{(\text{maximum displacement})}{5} - \frac{\text{boat weight}}{5} - \frac{4(\text{machinery weight})}{5}$$

or

$$W = \frac{(\text{maximum displacement} - \text{boat weight})}{7}$$

(b) For the purposes of paragraph (a) of this section:

(1) "Maximum displacement" is the weight of the volume of water displaced by the boat at its maximum level immersion in calm water without water coming aboard. For the purpose of this paragraph, a boat is level when it is transversely level and when either of the two following conditions are met:

(i) The forward point where the sheer intersects the vertical centerline plane and the aft point where the sheer intersects the upper boundary of the transom (stern) are equidistant above the water surface or are equidistant below the water surface.

(ii) The most forward point of the boat is level with or above the lowest point of water ingress.

(2) "Boat weight" is the combination of:

(i) Hull weight;

(ii) Deck and superstructure weight;

(iii) Weight of permanent appurtenances; and

(iv) Weight of full permanent fuel tanks.

(3) "Machinery weight" is the combined weight of installed engines or motors, control equipment, drive units, and batteries.

[CGD 72-61R, 37 FR 15782, Aug. 4, 1972]

**Sec. 183.35 Maximum weight capacity: Outboard boats.**

(a) The maximum weight capacity marked on a boat that is designed or intended to use one or more outboard motors for propulsion must be a number that does not exceed one-fifth of the difference between its maximum displacement and boat weight.

(b) For the purposes of paragraph (a) of this section:

(1) "Maximum displacement" is the weight of the volume of water displaced by the boat at its maximum level immersion in calm water without water coming aboard except for water coming through one opening in the motor well with its greatest dimension not over 3 inches for outboard motor controls or fuel lines. For the purpose of this paragraph, a boat is level when it is transversely level and when either of the two following conditions are met: (i) The forward point where the sheer intersects the vertical centerline plane and the aft point where the sheer intersects the upper boundary of the transom (stern) are equidistant above the water surface or are equidistant below the water surface. (ii) The most forward point of the boat is level with or above the lowest point of water ingress.

(2) "Boat weight" is the combination of:

(i) Hull weight;

(ii) Deck and superstructure weight;

(iii) Weight of permanent appurtenances; and

(iv) Weight of full permanent fuel tanks.

[CGD 72-61, 37 FR 15782, Aug. 4, 1972, as amended by CGD 73-250, 40 FR 43857, Sept. 23, 1975; CGD 75-176, 42 FR 2681, Jan. 13, 1977]

**Sec. 183.37 Maximum weight capacity: Boats rated for manual propulsion and boats rated for motors of two horsepower or less.**

(a) The maximum weight capacity marked on a boat that is rated for manual propulsion or for motors of two horsepower or less must not exceed 3/10 of the difference between the boat's maximum displacement and the boat's weight in pounds.

(b) For the purposes of paragraph (a) of this section:

(1) "Maximum displacement" is the weight of the volume of water displaced by the boat at its maximum level immersion in calm water without water coming aboard. For the purpose of this paragraph, a boat is level when it is transversely level and when either of the two following conditions are met:

- (i) The forward point where the sheer intersects the vertical centerline plane and the aft point where the sheer intersects the upper boundary of the transom (stern) are equidistant above the water surface or are equidistant below the water surface.
- (ii) The most forward point of the boat is level with or above the lowest point of water ingress.
- (2) "Boat weight" is the combination of:
  - (i) Hull weight;
  - (ii) Deck and superstructure weight; and
  - (iii) Weight of permanent appurtenances.

[CGD 72-61R, 37 FR 15782, Aug. 4, 1972]

**Sec. 183.39 Persons capacity: Inboard and inboard-outdrive boats.**

- (a) The persons capacity in pounds marked on a boat that is designed to use one or more inboard engines or inboard-outdrive units for propulsion must not exceed the lesser of:
  - (1) The maximum weight capacity determined under Sec. 183.33 for the boat; or
  - (2) For boats with a maximum persons capacity less than 550 pounds, the maximum persons capacity determined in the following manner:
    - (i) Float the boat in calm water with all its permanent appurtenances, including installed engines, full fuel system and tanks, control equipment, drive units and batteries.
    - (ii) Gradually add weights along one outboard extremity of each passenger carrying area, at the height of the seat nearest the center of that area, but no higher than the height of the gunwale and distributed equally forward and aft of that center in a plane parallel to the floorboards, until the boat assumes the maximum list or trim or both, without water coming aboard.
    - (iii) Compute the persons capacity in pounds in the following formula:  $\text{Persons capacity} = A/0.6$  where A is the total of the weights added in paragraph (a)(2)(ii) of this section.
- (b) The maximum persons capacity in whole numbers of persons marked on a boat that is designed or intended to use one or more inboard engines or inboard-outboard units must not exceed the value obtained by adding 32 pounds to the value determined in paragraph (a)(2)(iii), dividing the sum by 141 and rounding off the result to the nearest whole number. If the fraction is less than one-half, round down to the next whole integer and if the fraction is equal to or greater than one-half, round up to the next higher whole integer.

[CGD 78-034, 45 FR 2030, Jan. 10, 1980, as amended by CGD 83-012, 49 FR 39328, Oct. 5, 1984; 50 FR 18636, May 2, 1985]

**Sec. 183.41 Persons capacity: Outboard boats.**

- (a) The persons capacity in pounds marked on a boat that is designed to use one or more outboard motors for propulsion must not exceed the lesser of:
  - (1) The maximum weight capacity determined under Sec. 183.35 for the boat minus the motor and control weight, battery weight (dry), and full portable fuel tank weight from Table 4 of Subpart H of this part; or
  - (2) For boats with a maximum persons capacity less than 550 pounds, the maximum persons capacity determined in the following manner:
    - (i) Float the boat with all its permanent appurtenances.
    - (ii) Add, in normal operating positions, the dry motor and control weight, battery weight, and full portable fuel tank weight, if any, shown in Table 4 of Subpart H of this part for the maximum horsepower capacity marked on the boat. Permanently installed fuel tanks shall be full of fuel.
    - (iii) Gradually add weights along one outboard extremity of each passenger carrying area, at the height of the seat nearest the center of that area, but no higher than the height of the gunwale, and distributed equally forward and aft of that center in a plane parallel to the floorboards until the boat assumes the maximum list or trim, or both without water coming aboard.
    - (iv) Compute the persons capacity in pounds using the following formula:  $\text{Persons capacity} = A/0.6$  where A is the total of the weights added in paragraph (a)(2)(iii) of this section.
- (b) The maximum persons capacity in whole numbers of persons marked on a boat designed or intended to use one or more outboard motors for propulsion must not exceed the value obtained by adding 32 pounds to the lesser of the values determined in paragraph (a)(1) or (a)(2)(iv), dividing the sum by 141, and rounding off the result to the nearest whole number. If the fraction is less than one-half, round down to the next lower whole integer and if the fraction is equal to or greater than one-half, round up to the next higher whole integer.

[CGD 78-034, 45 FR 2030, Jan. 10, 1980, as amended by CGD 83-012, 49 FR 39328, Oct. 5, 1984; 50 FR 18636, May 2, 1985]

**Sec. 183.43 Persons capacity: Boats rated for manual propulsion and boats rated for motors of 2 horsepower or less.**

- (a) The persons capacity in pounds marked on a boat that is rated for manual propulsion or for motors of 2 horsepower or less must not exceed:
  - (1) For boats rated for manual propulsion, 90 percent of the maximum weight capacity in pounds; and

(2) For boats rated for motors of 2 horsepower or less, 90 percent of the maximum weight capacity in pounds, less 25 pounds.

(b) The maximum persons capacity, in whole numbers of persons marked on a boat that is rated for manual propulsion must not exceed the value obtained by adding 32 pounds to the value determined in paragraph (a)(1), dividing the sum by 141, and rounding off the result to the nearest whole number. If the fraction is less than one-half, round down to the next lower integer and if the fraction is equal to or greater than one-half, round up to the next higher whole integer.

(c) The maximum persons capacity in whole numbers of persons marked on a boat rated for motors of 2 horsepower or less must not exceed the value obtained by adding 32 pounds to the value determined in paragraph (a)(2), dividing the sum by 141, and rounding off the result to the nearest whole number. If the fraction is less than one-half, round down to the next lower whole integer and if the fraction is equal to or greater than one-half, round up to the next higher whole integer.

[CGD 78-034, 45 FR 2031, Jan. 10, 1980]

## Subpart D--Safe Powering

**Sec. 183.51 Applicability.** This subpart applies to monohull boats less than 20 feet in length, except sailboats, canoes, kayaks, and inflatable boats, that are designed or intended to use one or more outboard motors for propulsion.

**Sec. 183.53 Horsepower capacity.** The maximum horsepower capacity marked on a boat must not exceed the horsepower capacity determined by the computation method discussed in paragraph (a) of this section, or for certain qualifying boats, the performance test method discussed in paragraph (b) of this section.

(a) The maximum horsepower capacity must be computed as follows:

(1) Compute a factor by multiplying the boat length in feet by the maximum transom width in feet excluding handles and other similar fittings, attachments, and extensions. If the boat does not have a full transom, the transom width is the broadest beam in the aftermost quarter length of the boat.

(2) Locate horsepower capacity corresponding to the factor in Table 183.53.

(3) For a boat with a factor over 52.5, if the horsepower capacity calculated in Table 183.53 is not an exact multiple of 5, it may be raised to the next exact multiple of 5.

(4) For flat bottom hard chine boats with a factor of 52 or less, the horsepower capacity must be reduced by one horsepower capacity increment in Table 183.53.

**Table 183.53--Outboard Boat Horsepower Capacity**

[Compute: Factor = Boat Length X Transom Width]

|                                |      |       |       |       |       |
|--------------------------------|------|-------|-------|-------|-------|
| If factor (nearest integer) is | 0-35 | 36-39 | 40-42 | 43-45 | 46-52 |
| Horsepower Capacity is -----   | 3    | 5     | 7.5   | 10    | 15    |

[Note: For flat bottom hard chine boats, with factor of 52 or less, reduce one capacity limit (e.g. 5 to 3)]

|   |  |   |                     |
|---|--|---|---------------------|
| If factor is over 52.5 and the boat has                 | Remote steering and at last 20" transom height | No remote steering, or less than 20" transom height<br>For flat bottom hard boats | For other boats     |
| Horsepower capacity is (raise to nearest multiple of 5) | (2 x Factor) – 90                              | (0.5 x Factor) – 15   | (0.8 x Factor) – 25 |

(b) For boats qualifying under this paragraph, the performance test method described in this paragraph may be used to determine the horsepower capacity.

(1) Qualifying criteria.

(i) Thirteen feet or less in length;

(ii) Remote wheel steering;

(iii) Transom height (A) Minimum 19 inch transom height; or, (B) For boats with at least a 19 inch motorwell height, a minimum 15 inch transom height;

(iv) Maximum persons capacity not over two persons;

(2) Boat preparation.

(i) The boat must be rigged with equipment recommended or provided by the boat and motor manufacturer and tested with the highest horsepower production powerplant for which the boat is to be rated, not to exceed 40 horsepower.

(ii) Standard equipment must be installed in accordance with manufacturers' instructions.

(iii) The lowest ratio (quickest) steering system offered on the boat model being tested must be installed.

(iv) The outboard motor must be fitted with the manufacturer's recommended propeller providing maximum speed.

(v) Standard permanently installed fuel tanks must be no more than one-half full. Boats without permanent tanks must be tested with one full portable tank.

(vi) Portable tanks must be in their designated location or placed as far aft as possible.

(vii) The outboard motor must be placed in the lowest vertical position on the transom or, if mounting instructions are provided with the boat, at the height recommended.

(viii) Boat bottom, motor and propeller must be in new or almost new condition.

Note: The use of the following special equipment should be considered because of the potential for exceeding the capabilities of the boat while performing the test:

Racing Type Personal Flotation Device

Helmet.

(3) Test conditions. Testing must be conducted on smooth, calm water with the wind speed below 10 knots. The test must be conducted with no load other than a driver who must weigh no more than 200 pounds. The motor trim angle must be adjusted to provide maximum full throttle speed short of excessive porpoising or propeller ventilation or "cavitation", so that there is no loss of directional control.

(4) Quick turn test procedure. Set throttle at a low maneuvering speed and steer the boat straight ahead. Turn the steering wheel 180 deg. in the direction of least resistance in ½ second or less and hold it at that position without changing the throttle or trim settings during or after the wheel change. The boat completes the maneuver successfully if it is capable of completing a 90 deg. turn without the driver losing control of the boat or reducing the throttle setting. Gradually increase the boat's turn entry speed incrementally until the boat does not complete the Quick Turn Test successfully or successfully completes it at maximum throttle. Note: It is recognized that operator skill and familiarity with a particular boat and motor combination will affect the test results. It is permissible to make a number of practice runs through the quick turn test at any throttle setting.

(5) Test course method. Set throttle for 30 miles per hour boat speed and run the test course set up in accordance with Figure 183.53, passing outside the designated avoidance marker for 35 to 37.5 miles per hour without contacting any of the course markers. If the boat successfully completes this run of the test course, increase the throttle setting to 35 to 37.5 miles per hour boat speed and run the course passing outside the designated avoidance marker for that speed without contacting any of the course markers. If the boat successfully completes this run of the test course and the motor was not at full throttle, increase the throttle setting to 37.5 to 42.5 miles per hour boat speed and run the course passing outside the designated avoidance marker for that speed without contacting any of the course markers. If the boat successfully completes this run of the test course and the motor was not at full throttle, increase the throttle setting to 42.5 miles per hour or more and run the course passing outside the designated avoidance marker for that speed without contacting any of the course markers. If the boat successfully completes this run of the test course and the motor was not at full throttle, continue to increase the throttle setting and run the test course passing outside the designated avoidance marker for 42.5 miles per hour or more until the boat fails to complete the test successfully or the boat completes the test course maneuvers successfully at full throttle. The boat successfully completes the test course if the driver is able to maneuver it between the designated avoidance markers without striking the markers and without losing control of the boat or reducing the throttle setting. There must be no change in position of any equipment on board and there must be no change of position of personnel in order to influence the test results. There must be no instability evidenced by oscillating motion in the roll or yaw axes exhibited while negotiating the course. Note: It is recognized that operator skill and familiarity with a particular boat and motor combination will affect the test results. It is therefore considered permissible to make a number of practice runs through the test course at any throttle setting.

(6) Maximum horsepower capacity.

(i) For boats capable of less than 35 miles per hour, the maximum horsepower capacity must be the maximum horsepower with which the boat was able to successfully complete the Quick Turn Test Procedure in Sec. 183.53(b)(4) at full throttle or the maximum horsepower determined under the calculations in Sec. 183.53(a) of this section.

(ii) For boats capable of 35 miles per hour or more, the maximum horsepower capacity must be the maximum horsepower with which the boat was able to successfully complete both the Quick Turn Test Procedure in Sec. 183.53(b)(4) and the Test Course Method in Sec. 183.53(b)(5) at full throttle or the calculations in Sec. 183.53(a) of this section.

(iii) The maximum horsepower capacity determined in accordance with Sec. 183.53(b) must not exceed 40 horsepower.

**Figure 183.53.--Boat Horsepower Capacity Test Course--35 mph or more**



[CGD 85-002, 51 FR 37574, Oct. 23, 1986]

## Subpart E--[Reserved]

## Subpart F--Flotation Requirements for Inboard Boats, Inboard/Outdrive Boats, and Airboats

Source: CGD 75-168, 42 FR 20243, Apr. 18, 1977, unless otherwise noted.

**Sec. 183.101 Applicability.** This subpart applies to monohull inboard boats, inboard/outdrive boats, and airboats less than 20 feet in length, the construction or assembly of which is begun after July 31, 1978, except sailboats, canoes, kayaks, inflatable boats, submersibles, surface effect vessels, amphibious vessels, and raceboats.

### **Sec. 183.105 Quantity of flotation required.**

(a) Each boat must have enough flotation to keep any portion of the boat above the surface of the water when the boat has been submerged in calm, fresh water for at least 18 hours and loaded with:

(1) A weight that, when submerged, equals two-fifteenths of the persons capacity marked on the boat;

(2) A weight that, when submerged, equals 25 percent of the dead weight; and

(3) A weight in pounds that, when submerged, equals 62.4 times the volume in cubic feet of the two largest air chambers, if air chambers are used for flotation.

(b) For the purpose of this section, "dead weight" means the maximum weight capacity marked on the boat minus the persons capacity marked on the boat.

**Sec. 183.110 Definitions.** For the purpose of this subpart:

ASTM means American Society for Testing and Materials. The Coast Guard incorporates by reference ASTM Standard D-471, dated March 28, 1975, in Sec. 183.114 of this subpart. This incorporation by reference was approved by the Director of the Office of the Federal Register on December 6, 1977. The Coast Guard also incorporates by reference ASTM Standard D-2482, dated November 14, 1969 (reapproved 1975), in Sec. 183.114 of this subpart. This incorporation by reference was approved by the Director of the Office of the Federal Register on September 11, 1978. The incorporated standards are available for inspection at Coast Guard Headquarters, Room 1308, Transpoint Building, 2100 2nd St., SW., Washington DC 20593 and at the Office of the Federal Register library, 800 North Capitol Street, NW., suite 700, Washington DC 20408. The incorporated standards may be obtained from the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103.

Bilge means the area in the boat, below a height of 4 inches measured from the lowest point in the boat where liquid can collect when the boat is in its static floating position, except engine rooms.

Connected means allowing a flow of water in excess of one-quarter ounce per hour from the engine room bilge into any other compartment with a 12 inch head of water on the engine room side of the bulkhead.

Engine room bilge means the area in the engine room or a connected compartment below a height of 12 inches measured from the lowest point where liquid can collect in these compartments when the boat is in its static floating position.

Engine room means the compartment where a permanently installed gasoline or diesel engine is installed, including connected compartments.

Open to atmosphere means a compartment that has at least 15 square inches of open area directly exposed to the atmosphere for each cubic foot of net compartment volume.

Sealed compartment means an enclosure that can resist an exterior water level of 12 inches without seepage of more than one-quarter fluid ounce per hour.

[CGD 77-145, 43 FR 56858, Dec. 4, 1978, as amended by CGD 82-010, 48 FR 8273, Feb. 28, 1983; CGD 85-098, 52 FR 19728, May 27, 1987; CGD 96-026, 61 FR 33670, June 28, 1996]

**Sec. 183.112 Flotation material and air chambers.**

(a) Flotation materials must meet the requirements in Sec. 183.114 as listed in Table 183.114 when used in the:

- (1) Engine room bilge,
- (2) engine room, or
- (3) bilge, unless located in a sealed compartment.

(b) Air chambers used to meet the flotation requirements of this subpart must not be integral with the hull.

[CGD 77-145, 43 FR 56859, Dec. 4, 1978; 44 FR 47934, Aug. 16, 1979]

**Sec. 183.114 Test of flotation materials.**

(a) Vapor test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed in a fully saturated gasoline vapor atmosphere for 30 days at a minimum temperature of 38 deg. C.

(b) 24-hour gasoline test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 24 hours at 23 plus or minus 2 deg. C in reference fuel B, of ASTM D-471.

(c) 30-day gasoline test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 30 days at 23 plus or minus 2 deg. C in reference fuel B, of ASTM D-471.

(d) 24-hour oil test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 24 hours at 23 plus or minus 2 deg. C in reference oil No. 2, of ASTM D-471.

(e) 30-day oil test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 30 days at 23 plus or minus 2 deg. C in reference oil No. 2, of ASTM D-471.

(f) 24-hour bilge cleaner test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 24 hours at 23 plus or minus 2 deg. C in a 5-percent solution of trisodium phosphate in water.

(g) 30-day bilge cleaner test. The flotation material must not reduce in buoyant force more than 5 percent after being immersed for 30 days at 23 plus or minus 2 deg. C in a 5-percent solution of trisodium phosphate in water.

(h) The buoyant force reduction in paragraphs (a) through (g) of this section is measured in accordance with ASTM D-2842.

**Table 183.114--Flotation Performance Tests**

| -----Area 183.110-----              |                      |  |           |
|-------------------------------------|----------------------|--|-----------|
|                                     | (b) Engineroom Bilge | (c) Engineroom Unless Open to the Atmosphere | (d) Bilge |
| (a) Vapor test.....                 |                      | X  |           |
| (b) 24 hour gasoline test.....      |                      |  | X         |
| (c) 30 day gasoline test.....       | X                    |  |           |
| (d) 24 hour oil test.....           |                      |  | X         |
| (e) 30 day oil test.....            | X                    |  |           |
| (f) 24 hour bilge cleaner test..... |                      |  | X         |
| (g) 30 day bilge cleaner test.....  | X                    |  |           |

[CGD 77-145, 43 FR 56859, Dec. 4, 1978; 44 FR 47934, Aug. 16, 1979]

**Subpart G--Flotation Requirements for Outboard Boats Rated for Engines of More Than 2 Horsepower**

Source: CGD 75-168; 42 FR 20243, Apr. 18, 1977, unless otherwise noted.

**General**

**Sec. 183.201 Applicability.**

(a) This subpart applies to monohull outboard boats that are:

- (1) Less than 20 feet in length;
- (2) Rated for outboard engines of more than 2 horsepower; and
- (3) Constructed or assembled after July 31, 1978.

(b) This subpart does not apply to sailboats, canoes, kayaks, inflatable boats, submersibles, surface effect vessels, amphibious vessels, and raceboats.

**Sec. 183.202 Flotation and certification requirements.** Each boat to which this subpart applies must be manufactured, constructed, or assembled to pass the stability and flotation tests prescribed in Secs. 183.225(a), 183.230(a), and 183.235(a).

**Sec. 183.205 Passenger carrying area.**

(a) For the purpose of this section a boat is level when it is supported on its keel at the two points shown in Figure 2.

(b) As used in this subpart, the term "passenger carrying area" means each area in a boat in which persons can sit in a normal sitting position or stand while the boat is in operation. Passenger carrying areas are illustrated in Figures 3 through 8.

(c) The length of the passenger carrying area is the distance along the centerline of the boat between two vertical lines, one at the forward end and one at the aft end of the passenger carrying area when the boat is level as illustrated in Figures 3 and 4. For boats with a curved stem inside the passenger carrying area, the forward vertical line is where a line 45 degrees to the horizontal when the boat is level is tangent to the curve of the stem, as illustrated in Figure 5. For boats with cabins, the forward vertical line is where is a minimum distance of two feet between the inside top of the cabin and the water line formed when the boat is swamped and loaded with weights under Sec. 183.220 as illustrated in Figure 6.

(d) The breadth of each passenger carrying area is the distance between two vertical lines at the mid-length, excluding consoles, of the passenger carrying area when the boat is level as illustrated in Figures 7 and 8. For boats with round chines inside the passenger carrying area, the vertical line is where a transverse line 45 degrees to the horizontal is tangent to the arc of the chine, as illustrated in Figure 8.

**Sec. 183.210 Reference areas.**

(a) The forward reference area of a boat is the forward most 2 feet of the top surface of the hull or deck, as illustrated in Figure 9.

(b) The aft reference area of a boat is the aft most two feet of the top surface of the hull or deck, as illustrated in Figure 9.

**Sec. 183.215 Reference depth.** Reference depth is the minimum distance between the uppermost surface of the submerged reference area of a boat and the surface of the water measured at the centerline of the boat, as illustrated in Figure 10. If there is no deck surface at the centerline of the boat from which a measurement can be made, the reference depth is the average of two depth measurements made on opposite sides of, and at an equal distance from, the centerline of the boat.

**Sec. 183.220 Preconditioning for tests.** A boat must meet the following conditions for at least 18 hours before the tests required by Secs. 183.225, 183.230, and 183.235:

(a) Manufacturer supplied permanent appurtenances such as windshields and convertible tops must be installed on the boat.

(b) The boat must be loaded with a quantity of weight that, when submerged, is equal to the sum of the following:

- (1) The sum of 50 percent of 550 pounds of the persons capacity marked on the boat and 12 1/2 percent of the remainder of the persons capacity.
- (2) Twenty-five percent of the result of the following calculation, but not less than zero: The maximum weight capacity marked on the boat; less the weight shown in Column 6 of Table 4 for maximum horsepower marked on the boat; less the persons capacity marked on the boat.

(c) The weights required by paragraph (b) of this section must be placed in the boat so that the center of gravity of each amount of weight required by paragraphs (b)(1) and (b)(2) of this section is within the shaded area illustrated in Figure 11. The location and dimensions of the shaded area are as follows:

- (1) The shaded area is centered at the mid-length of the passenger carrying area and at the mid-breadth of the boat;
- (2) The length of the shaded area, measured along the centerline of the boat, is equal to 40 percent of the length of the passenger carrying area of the boat; and
- (3) The breadth of the shaded area, measured at the midlength of the passenger carrying area, is equal to 40 percent of the breadth of the passenger carrying area of the boat.

(d) Weight must be placed in the normal operating position of the motor and controls and the battery in lieu of this equipment. The required quantity of weight used for this purpose depends upon the maximum rated horsepower of the boat being tested and is specified in Columns 2 and 4 of Table 4 for the swamped weight of the motor and controls and for the submerged weight or the battery, respectively.

(e) Permanent fuel tanks must be filled with fuel and each external opening into the fuel tank must be sealed.

(f) The boat must be keel down in the water.

(g) The boat must be swamped, allowing water to flow between the inside and outside of the boat, either over the sides, through a hull opening, or both. Entrapped air in the flooded portion of the boat must be eliminated.

(h) Water must flood the two largest air chambers and all air chambers integral with the hull.

**Sec. 183.222 Flotation material and air chambers.**

(a) Flotation materials must meet the requirements in Sec. 183.114 as listed in Table 183.114 when used in the bilge, unless located in a sealed compartment.

(b) Air chambers used to meet the flotation requirements of this subpart must not be integral with the hull.

[CGD 77-145, 43 FR 56859, Dec. 4, 1978; 44 FR 47934, Aug. 16, 1979]

## Tests

**Sec. 183.225 Flotation test for persons capacity. Flotation standard.** When the conditions prescribed in Sec. 183.220 are met, the boat must float in fresh, calm water as follows:

(a) The angle of heel does not exceed 10 degrees from the horizontal.

(b) Any point on either the forward or aft reference area is above the surface of the water.

(c) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 6 inches or less.

**Sec. 183.230 Stability test.**

(a) Flotation standard. When the conditions prescribed in Sec. 183.220 (a), (d) through (h) and paragraphs (b) and (c) of this section are met, the boat must float in fresh, calm water as follows:

(1) The angle of heel does not exceed 30 degrees from the horizontal.

(2) Any point on either the forward or aft reference area is above the surface of the water.

(3) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 12 inches or less.

(b) Quantity of weight used. Load the boat with a quantity of weight that, when submerged, is equal to the sum of the following:

(1) One-half of the quantity of weight required by Sec. 183.220(b)(1).

(2) The quantity of weight required by Sec. 183.220(b)(2).

(c) Placement of quantity of weight: starboard side. Place the weight required by paragraph (b) of this section in the boat so that:

(1) The quantity of weight required by Sec. 183.220(b)(2) is positioned in accordance with Sec. 183.220(c); and

(2) One-half the quantity of weight required by Sec. 183.220(b)(1) is uniformly distributed over a distance along the outboard perimeter of the starboard side of the passenger carrying area that is equal to at least 30 percent of the length of the passenger carrying area so that the center of gravity of the quantity of weight is located within the shaded area illustrated in Figure 12, the center of gravity of the amount of weight placed on the floor of the boat is at least 4 inches above the floor, and the center of gravity of the amount of weight placed on a seat is at least 4 inches above the seat. The location and dimensions of the shaded area are as follows:

(i) The shaded area is centered at the mid-length of the passenger carrying area;

(ii) The length of the shaded area is equal to 70 percent of the length of the passenger carrying area; and

(iii) The breadth of the shaded area is 6 inches from:

(A) For weights placed on the floor, the outboard perimeter of the passenger carrying area; and

(B) For weights placed on a seat, a vertical line inside the passenger carrying area as illustrated in Figure 13. (d)

Placement of quantity of weight: port side. The quantity of weight required by paragraph (b)(1) of this section is placed along the port side of the passenger carrying area in accordance with the conditions prescribed in paragraph (c)(2) of this section.

**Sec. 183.235 Level flotation test without weights for persons capacity.** When the conditions prescribed in Sec. 183.220 (a), (d) through (h) are met, the boat must float in fresh, calm water as follows:

(a) The angle of heel does not exceed 10 degrees from the horizontal.

(b) Any point on either the forward or aft reference area is above the surface of the water.

(c) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 6 inches or less.

## Subpart H--Flotation Requirements for Outboard Boats Rated for Engines of 2 Horsepower or Less

Source: CGD 75-168, 42 FR 20245, Apr. 18, 1977, unless otherwise noted.

General

**Sec. 183.301 Applicability.**

- (a) This subpart applies to monohull boats that are:
- (1) Less than 20 feet in length;
  - (2) Rated for manual propulsion or outboard engines of 2 horsepower or less; and
  - (3) Constructed or assembled after July 31, 1978.
- (b) This subpart does not apply to sailboats, canoes, kayaks, inflatable boats, submersibles, surface effect vessels, amphibious vessels, and raceboats.

**Sec. 183.302 Flotation requirements.** Each boat to which this subpart applies must be manufactured, constructed, or assembled to pass the stability and flotation tests prescribed in Secs. 183.325(a), 183.330(a), and 183.335(a).

**Sec. 183.305 Passenger carrying area.**

- (a) For the purpose of this section, a boat is level when it is supported on its keel at the two points shown in Figure 2.
- (b) As used in this subpart, the term "passenger carrying area" means each area in a boat in which persons can sit in a normal sitting position or stand while the boat is in operation. Passenger carrying areas are illustrated in Figures 3 through 8.
- (c) The length of each passenger carrying area is the distance along the centerline of the boat between two vertical lines, one at the forward end and one at the aft end of the passenger carrying area, when the boat is level, as illustrated in Figures 3 and 4. For boats with a curved stem inside the passenger carrying area, the forward vertical line is where a line 45 degrees to the horizontal when the boat is level is tangent to the curve of the stem, as illustrated in Figure 5. For boats with cabins, the forward vertical line is where there is a minimum distance of two feet between the inside top of the cabin and the water line formed when the boat is swamped and loaded with weights under Sec. 183.320 as illustrated in Figure 6.
- (d) The breadth of the passenger carrying area is the distance between two vertical lines at the mid-length, excluding consoles, of the passenger carrying area when the boat is level as illustrated in Figures 7 and 8. For boats with round chines inside the passenger carrying area, the vertical line is where a transverse line 45 degrees to the horizontal is tangent to the arc of the chine, as illustrated in Figure 7.

[CGD 75-168, 42 FR 20245, Apr. 18, 1977; 42 FR 24738, May 16, 1977]

**Sec. 183.310 Reference areas.**

- (a) The forward reference area of a boat is the forwardmost 2 feet of the top surface of the hull or deck as illustrated in Figure 9.
- (b) The aft reference area of a boat is the aftmost two feet of the top surface of the hull or deck, as illustrated in Figure 9.

**Sec. 183.315 Reference depth.** Reference depth is the minimum distance between the uppermost surface of the submerged reference area of a boat and the surface of the water measured at the centerline of the boat, as illustrated in Figure 10. If there is no deck surface at the centerline of the boat from which a measurement can be made, the reference depth is the average of two depth measurements made on opposite sides of, and at an equal distance from, the centerline of the boat.

**Sec. 183.320 Preconditioning for tests.** A boat must meet the following conditions for at least 18 hours before the tests required by Secs. 183.325, 183.330, and 183.335:

- (a) Manufacturer supplied permanent appurtenances such as windshields, and convertible tops must be installed on the boat.
- (b) The boat must be loaded with a quantity of weight that, when submerged, is equal to the sum of the following:
- (1) Two-fifteenths of the persons capacity marked on the boat.
  - (2) Twenty-five percent of the result of the following calculation, but not less than zero: the maximum weight capacity marked on the boat; less the weight shown in column 6 of Table 4 for the maximum horsepower marked on the boat; less the persons capacity marked on the boat.
- (c) The weights required by paragraph (b) of this section are placed in the boat so that the center of gravity of each amount of weight required by paragraphs (b)(1) and (b)(2) of this section is within the shaded area illustrated in Figure 11. The location and dimensions of the shaded area are as follows:
- (1) The shaded area is centered at the mid-length of the passenger carrying area and at the mid-breadth of the boat;
  - (2) The length of the shaded area, measured along the centerline of the boat, is equal to 40 percent of the length of the passenger carrying area of the boat; and
  - (3) The breadth of the shaded area, measured at the mid-length of the passenger carrying area, is equal to 40 percent of the breadth of the passenger carrying area of the boat.
- (d) Weight must be placed in the normal operating position of the motor and controls in lieu of this equipment. The quantity of weight used for this purpose depends upon the maximum rated horsepower of the boat being tested and is specified in Column 2 of Table 4 for the swamped weight of the motor and controls.
- (e) Permanent fuel tanks must be filled with fuel and each external opening into the fuel tank must be sealed.
- (f) The boat must be keel down in the water.
- (g) The boat must be swamped, allowing water to flow between the inside and the outside of the boat, either over the sides, through a hull opening, or both. Entrapped air in the flooded portion of the boat must be eliminated.

**Sec. 183.322 Flotation materials.**

(a) Flotation materials must meet the requirements in Sec. 183.114 as listed in Table 183.114 when used in the bilge, unless located in a sealed compartment.

[CGD 77-145, 43 FR 56859, Dec. 4, 1978; 44 FR 47934, Aug. 16, 1979]

Tests

**Sec. 183.325 Flotation test for persons capacity. Flotation standard.** When the conditions prescribed in Sec. 183.320 are met, the boat must float in fresh, calm water as follows:

- (a) The angle of heel does not exceed 10 degrees from the horizontal.
- (b) Any point on either the forward or aft reference area is above the surface of the water.
- (c) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 6 inches or less.

**Sec. 183.330 Stability test.**

(a) Flotation standard. When the conditions prescribed in Sec. 183.320 (a), (d) through (g) and paragraphs (b) and (c) of this section are met, the boat must float in fresh, calm water as follows:

- (1) The angle of heel does not exceed 30 degrees from the horizontal.
  - (2) Any point on either the forward or aft reference area is above the surface of the water.
  - (3) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 12 inches or less.
- (b) Quantity of weight used. Load the boat with quantity of weight that, when submerged, is equal to the sum of the following:
- (1) One-half the quantity of weight required by Sec. 183.320(b)(1).
  - (2) The quantity of weight required by Sec. 183.320(b)(2).
- (c) Placement of quantity of weight: starboard side. Place the quantity of weight required by paragraph (b) of this section in the boat so that:
- (1) The quantity of weight required by Sec. 183.320(b)(2) is positioned in accordance with Sec. 183.320(c); and
  - (2) One-half the quantity of weight required by Sec. 183.320(b)(1) is uniformly distributed over a distance along the outboard perimeter of the starboard side of the passenger carrying area that is equal to at least 30 percent of the length of the passenger carrying area so that the center of gravity of the quantity of weight is located within the shaded area illustrated in Figure 12, the center of gravity of the amount of weight placed on the floor of the boat is at least 4 inches above the floor and the center of gravity of the amount of weight placed on a seat is at least 4 inches above the seat. The location and dimensions of the shaded area are as follows:
    - (i) The shaded area is centered at the mid-length of the passenger carrying area;
    - (ii) The length of the shaded area is equal to 70 percent of the length of the passenger carrying area; and
    - (iii) The breadth of the shaded area is 6 inches from:
      - (a) For weights placed on the floor, the outboard perimeter of the passenger carrying area; and
      - (b) For weights placed on a seat, a vertical line inside the passenger carrying area as illustrated in Figure 13.
- (d) Placement of quantity of weight: port side. The quantity of weight required by paragraph (b)(1) of this section is placed along the port side of the passenger carrying area in accordance with the conditions prescribed in paragraph (c)(2) of this section.

**Sec. 183.335 Level flotation test without weights for persons capacity.** When the conditions prescribed in Sec. 183.320

- (a), (d) through (g) are met, the boat must float in fresh, calm water as follows:
- (a) The angle of the heel does not exceed 10 degrees from the horizontal.
  - (b) Any point on either the forward or aft reference area is above the surface of the water.
  - (c) The reference depth at the reference area that is opposite the reference area that is above the surface of the water is 6 inches or less.

**Table 4--Weights (Pounds) of Outboard Motor and Related Equipment  
for Various Boat Horsepower Ratings**

| Boat horsepower rating            | Motor and control weight |           | Battery weight |           | Full portable fuel tank 1+3+5 weight |      |
|-----------------------------------|--------------------------|-----------|----------------|-----------|--------------------------------------|------|
|                                   | Dry                      | Swamped   | Dry            | Submerged |                                      |      |
| Column No.                        |                          |           |                |           |                                      |      |
|                                   | 1                        | 2         | 3              | 4         | 5                                    | 6    |
| 0.1 to 2.....                     | 25.....                  | 20.....   |                |           |                                      | 25   |
| 2.1 to 3.9.....                   | 40.....                  | 34.....   |                |           |                                      | 40   |
| 4.0 to 7.....                     | 60.....                  | 52.....   |                |           | 25.....                              | 35   |
| 7.1 to 15.....                    | 90.....                  | 82.....   | 20.....        | 11.....   | 50.....                              | 160  |
| 15.1 to 25.....                   | 125.....                 | 105.....  | 45.....        | 25.....   | 50.....                              | 220  |
| 25.1 to 45.....                   | 170.....                 | 143.....  | 45.....        | 25.....   | 100.....                             | 315  |
| 45.1 to 60.....                   | 235.....                 | 195.....  | 45.....        | 25.....   | 100.....                             | 380  |
| 60.1 to 80.....                   | 280.....                 | 235.....  | 45.....        | 25.....   | 100.....                             | 425  |
| 80.1 to 145.....                  | 405.....                 | 352.....  | 45.....        | 25.....   | 100.....                             | 550  |
| 145.1 to 275.....                 | 430.....                 | 380.....  | 45.....        | 25.....   | 100.....                             | 575  |
| 275.1 and up.....                 | 605.....                 | 538.....  | 45.....        | 25.....   | 100.....                             | 750  |
| Transoms designed for twin motors |                          |           |                |           |                                      |      |
| 50.1 to 90.....                   | 340.....                 | 286.....  | 90.....        | 50.....   | 100.....                             | 530  |
| 90.1 to 120.....                  | 470.....                 | 390.....  | 90.....        | 50.....   | 100.....                             | 660  |
| 120.1 to 160.....                 | 560.....                 | 470.....  | 90.....        | 50.....   | 100.....                             | 750  |
| 160.1 to 290.....                 | 810.....                 | 704.....  | 90.....        | 50.....   | 100.....                             | 1000 |
| 290.1 to 550.....                 | 860.....                 | 760.....  | 90.....        | 50.....   | 100.....                             | 1050 |
| 550.1 and up.....                 | 1210.....                | 1076..... | 90.....        | 50.....   | 100.....                             | 1400 |









## Subpart I--Electrical Systems

Source: CGD 73-217, 42 FR 5944, Jan. 31, 1977, unless otherwise noted.

### General

**Sec. 183.401 Purpose, applicability, and effective dates.**

(a) This subpart applies to all boats that have gasoline engines for electrical or mechanical power or propulsion, except outboard engines.

(b) [Reserved]

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.402 Definitions.** As used in this subpart—

*AWG* means American Wire Gauge.

*Electrical component* means electrical equipment such as, but not limited to, conductors, solenoids, motors, generators, alternators, distributors, resistors, appliances and electrical control devices.

*Pigtails* means external power conductors or wires that are part of electrical components and appliances, such as bilge pumps, blowers, lamps, switches, solenoids, and fuses.

*Sheath* means a material used as a continuous protective covering, such as electrical tape, molded rubber, molded plastic, or flexible tubing, around one or more insulated conductors.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 85-098, 52 FR 19728, May 27, 1987; CGD 96-026, 61 FR 33670, June 28, 1996]

**Sec. 183.405 General.** Each electrical component on a boat to which this subpart applies must meet the requirements of this subpart unless the component is part of an outboard engine or part of portable equipment.

### Manufacturer Requirements

**Sec. 183.410 Ignition protection.**

(a) Each electrical component must not ignite a propane gas and air mixture that is 4.25 to 5.25 percent propane gas by volume surrounding the electrical component when it is operated at each of its manufacturer rated voltages and current

loadings, unless it is isolated from gasoline fuel sources, such as engines, and valves, connections, or other fittings in vent lines, fill lines, distribution lines or on fuel tanks, in accordance with paragraph (b) of this section.

(b) An electrical component is isolated from a gasoline fuel source if: -

(1) A bulkhead that meets the requirements of paragraph (c) of this section is between the electrical component and the gasoline fuel source;

(2) The electrical component is:

(i) Lower than the gasoline fuel source and a means is provided to prevent fuel and fuel vapors that may leak from the gasoline fuel source from becoming exposed to the electrical component; or

(ii) Higher than the gasoline fuel source and a deck or other enclosure is between it and the gasoline fuel source; or

(3) The space between the electrical component and the gasoline fuel source is at least two feet and the space is open to the atmosphere.

(c) Each bulkhead required by paragraph (b)(1) of this section must:

(1) Separate the electrical component from the gasoline fuel source and extend both vertically and horizontally the distance of the open space between the fuel source and the ignition source;

(2) Resist a water level that is 12 inches high or one-third of the maximum height of the bulkhead, whichever is less, without seepage of more than one-quarter fluid ounce of fresh water per hour; and

(3) Have no opening located higher than 12 inches or one-third the maximum height of the bulkhead, whichever is less, unless the opening is used for the passage of conductors, piping, ventilation ducts, mechanical equipment, and similar items, or doors, hatches, and access panels, and the maximum annular space around each item or door, hatch or access panel must not be more than one-quarter inch.

**Sec. 183.415 Grounding.** If a boat has more than one gasoline engine, grounded cranking motor circuits must be connected to each other by a common conductor circuit that can carry the starting current of each of the grounded cranking motor circuits.

**Sec. 183.420 Batteries.**

(a) Each installed battery must not move more than one inch in any direction when a pulling force of 90 pounds or twice the battery weight, whichever is less, is applied through the center of gravity of the battery as follows:

(1) Vertically for a duration of one minute.

(2) Horizontally and parallel to the boat's center line for a duration of one minute fore and one minute aft.

(3) Horizontally and perpendicular to the boat's center line for a duration of one minute to starboard and one minute to port.

(b) Each battery must be installed so that metallic objects cannot come in contact with the ungrounded battery terminals.

(c) Each metallic fuel line and fuel system component within 12 inches and above the horizontal plane of the battery top surface as installed must be shielded with dielectric material.

(d) Each battery must not be directly above or below a fuel tank, fuel filter, or fitting in a fuel line.

(e) A vent system or other means must be provided to permit the discharge from the boat of hydrogen gas released by the battery.

(f) [Reserved]

(g) Each battery terminal connector must not depend on spring tension for its mechanical connection to the terminal.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.425 Conductors: General.**

(a) Each conductor must be insulated, stranded copper.

(b) Except for intermittent surges each conductor must not carry a current greater than that specified in Table 5 for the conductor's gauge and temperature rating.

(c) For conductors in engine spaces, amperages must be corrected by the appropriate correction factor in note 1 of Table 5.

(d) Each conductor in a multiconductor sheath must be at least a No. 18 AWG conductor.

(e) Each conductor installed separately must be at least a No. 16 AWG conductor.

(f) Each No. 18 AWG conductor in a multiconductor sheath may not extend out of the sheath more than 30 inches.

(g) This section does not apply to communications systems; electronic navigation equipment; electronic circuits having a current flow of less than one ampere; conductors which are totally inside an equipment housing; resistance conductors that control circuit amperage; high voltage secondary conductors and terminations that are in ignition systems; pigtailed of less than seven inches of exposed length and cranking motor conductors.

**Table 5--Allowable Amperage of Conductors**

| Conductor size (AWG) | -----Temperature rating of conductor insulation----- |                 |                 |                 |                  |                  |                  |
|----------------------|--|-----------------|-----------------|-----------------|------------------|------------------|------------------|
|                      | 60°C<br>(140°F)                                      | 75°C<br>(167°F) | 80°C<br>(176°F) | 90°C<br>(194°F) | 105°C<br>(221°F) | 125°C<br>(257°F) | 200°C<br>(392°F) |
| 18.....              | 10.....  | 10.....         | 15.....         | 20.....         | 20.....          | 25.....          | 25               |
| 16.....              | 15.....  | 15.....         | 20.....         | 25.....         | 25.....          | 30.....          | 35               |
| 14.....              | 20.....  | 20.....         | 25.....         | 30.....         | 35.....          | 40.....          | 45               |
| 12.....              | 25.....  | 25.....         | 35.....         | 40.....         | 45.....          | 50.....          | 55               |
| 10.....              | 40.....  | 40.....         | 50.....         | 55.....         | 60.....          | 70.....          | 70               |
| 8.....               | 55.....  | 65.....         | 70.....         | 70.....         | 80.....          | 90.....          | 100              |
| 6.....               | 80.....  | 95.....         | 100.....        | 100.....        | 120.....         | 125.....         | 135              |
| 4.....               | 105.....   | 125.....        | 130.....        | 135.....        | 160.....         | 170.....         | 180              |
| 3.....               | 120.....   | 145.....        | 150.....        | 155.....        | 180.....         | 195.....         | 210              |
| 2.....               | 140.....   | 170.....        | 175.....        | 180.....        | 210.....         | 225.....         | 240              |
| 1.....               | 165.....   | 195.....        | 210.....        | 210.....        | 245.....         | 265.....         | 280              |
| 0.....               | 195.....   | 230.....        | 245.....        | 245.....        | 285.....         | 305.....         | 325              |
| 00.....              | 225.....   | 265.....        | 285.....        | 285.....        | 330.....         | 355.....         | 370]             |
| 000.....             | 260.....   | 310.....        | 330.....        | 330.....        | 385.....         | 410.....         | 430              |
| 0000.....            | 300.....   | 360.....        | 385.....        | 385.....        | 445.....         | 475.....         | 510              |

NOTES

|  | -----Temperature rating of conductor insulation----- |                 |                 |                 |                  |                  |                   |
|--|--|-----------------|-----------------|-----------------|------------------|------------------|-------------------|
|  | 60°C<br>(140°F)                                      | 75°C<br>(167°F) | 80°C<br>(176°F) | 90°C<br>(194°F) | 105°C<br>(221°F) | 125°C<br>(257°F) | 200°C<br>(392°F)  |
| 1. See the following table:<br>Temperature rating of conductor.....            | 0.58.....  | 0.75.....       | 0.78.....       | 0.82.....       | 0.85.....        | 0.89.....        | 1.00              |
| 2. See the following table:<br><br>Number of current carrying conductors:..... |  |                 |                 |                 |                  |                  | Correction Factor |
| <b>3.....</b>  |  |                 |                 |                 |                  |                  | <b>0.70</b>       |
| <b>4 to 6.....</b>   |  |                 |                 |                 |                  |                  | <b>.60</b>        |
| <b>7 to 24.....</b>  |  |                 |                 |                 |                  |                  | <b>.50</b>        |
| <b>25 and above.....</b>   |  |                 |                 |                 |                  |                  | <b>.40</b>        |

CGD 73-217, 42 FR 5944, Jan. 31, 1977; 42 FR 24739, May 16, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.430 Conductors in circuits of less than 50 volts.**

- (a) Each conductor in a circuit that has a nominal voltage of less than 50 volts must:
  - (1) Meet the requirements of Sec. 183.435; or
  - (2) Meet:
    - (i) The insulating material temperature rating requirements of SAE Standard J378; and
    - (ii) SAE Standard J1127, or SAE Standard 1128.
- (b) This section does not apply to communication systems; electronic navigation equipment; resistance conductors that control circuit amperage; and pigtails of less than seven inches of exposed length.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 87-009, 53 FR 36971, Sept. 23, 1988]

**Sec. 183.435 Conductors in circuits of 50 volts or more.**

- (a) Each conductor in a circuit that has a nominal voltage of 50 volts or more must be:
  - (1) A conductor that has insulation listed and classified moisture resistant and flame retardant in Article 310, NFPA No. 70, National Electric Code;
  - (2) A flexible cord type SO, STO, ST, SJO, SJT, or SJTO listed in Article 400, NFPA No. 70, National Electric Code;
  - (3) A conductor that meets IEEE Standard 45.

(4) A conductor that meets UL Standard 1426.

(b) Where the nominal circuit voltage of each of three or more current carrying conductors in a duct, bundle, or cable is 50 volts or more, the amperages of each of those conductors must not exceed the value in table 5 multiplied by the correction factor in note 2 to Table 5 for the number of conductors that carry 50 volts or more.

(c) This section does not apply to communication systems; electronic navigation equipment; resistance conductors that control circuit amperage; conductors in secondary circuits of ignition systems; and pigtails of less than seven inches of exposed length.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977; 42 FR 24739, May 16, 1977, as amended by CGD 80-047 and CGD 80-046, 45 FR 85450, Dec. 29, 1980; CGD 87-009, 53 FR 36972, Sept. 23, 1988]

**Sec. 183.440 Secondary circuits of ignition systems.**

(a) Each conductor in a secondary circuit of an ignition system must meet SAE Standard J557.

(b) The connection of each ignition conductor to a spark plug, coil, or distributor must have a tight fitting cap, boots, or nipple.

**Sec. 183.445 Conductors: Protection.**

(a) Each conductor or group of conductors that passes through a bulkhead, structural member, junction box, or other rigid surface must be protected from abrasion.

(b) A ungrounded terminal or stud that is continuously energized must meet Sec. 183.455 or must have a boot, nipple, cap, cover, or shield that prevents accidental short-circuiting at the terminals or studs.

[CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.455 Overcurrent protection: General.**

(a) Each ungrounded current-carrying conductor must be protected by a manually reset, tripfree circuit breaker or fuse.

(b) A manually reset, trip-free circuit breaker or fuse must be placed at the source of power for each circuit or conductor except:

(1) If it is physically impractical to place the circuit breaker or fuse at the source of power, it may be placed within seven inches of the source of power for each circuit or conductor measured along the conductor.

(2) If it is physically impractical to place the circuit breaker or fuse at or within seven inches of the source of power, it may be placed within 40 inches of the source of power for each circuit or conductor, measured along the conductor, if the conductor is contained throughout its entire distance between the source of power and the required circuit breaker or fuse in a sheath or enclosure such as a junction box, control box, or enclosed panel.

(c) The current rating of each circuit breaker or fuse must not exceed:

(1) For circuits of less than 50 volts, 150% of the value of the amperage in Table 5 for the conductor size it is protecting; and

(2) For circuits of 50 volts or more, the value of the amperage in Table 5 for the conductor size it is protecting. If this value does not correspond to a standard size or rated circuit breaker or fuse the next larger size or rated circuit breaker or fuse may be used if it does not exceed 150% of the allowed current capacity of the conductor.

(d) The voltage rating of each circuit breaker or fuse must not be less than the nominal circuit voltage of the circuit it is protecting.

(e) This section does not apply to resistance conductors that control circuit amperage; conductors in secondary circuits of ignition systems; pigtails of less than seven inches of exposed length; and power supply conductors in cranking motor circuits.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 78-090, 44 FR 68466, Nov. 29, 1979]

**Sec. 183.460 Overcurrent protection: Special applications.**

(a) Each ungrounded output conductor from a storage battery must have a manually reset, trip-free circuit breaker or fuse, unless the output conductor is in the main power feed circuit from the battery to an engine cranking motor. The circuit breaker or fuse must be within 72 inches of the battery measured along the conductor, unless, for boats built prior to August 1, 1985, the circuit has a switch that disconnects the battery.

(b) Each ungrounded output conductor from an alternator or generator, except for self-limiting alternators or generators, must have a circuit breaker or fuse that has a current rating that does not exceed 120 percent of the maximum rated current of the alternator or generator at 60 deg. C.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

## **Subpart J--Fuel Systems**

Source: CGD 74-209, 42 FR 5950, Jan. 31, 1977, unless otherwise noted.

### **General**

**Sec. 183.501 Applicability.**

(a) This subpart applies to all boats that have gasoline engines, except outboard engines, for electrical generation or mechanical power for propulsion.

(b) [Reserved]

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.505 Definitions.** As used in this subpart:

Flame arrestor means a device or assembly that prevents passage of flame through a fuel vent.

Fuel system means the entire assembly of the fuel fill, vent, tank, and distribution components, including pumps, valves, strainers, carburetors, and filters. Static floating position means the attitude in which a boat floats in calm water, with each fuel tank filled to its rated capacity, but with no person or item of portable equipment on board.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.507 General.** Each fuel system component on a boat to which this subpart applies must meet the requirements of this subpart unless the component is part of an outboard engine or is part of portable equipment.

**Equipment Standards**

**Sec. 183.510 Fuel tanks.**

(a) Each fuel tank in a boat must have been tested by its manufacturer under Sec. 183.580 and not leak when subjected to the pressure marked on the tank label under Sec. 183.514(b)(5).

(b) Each fuel tank must not leak if subjected to the fire test under Sec. 183.590. Leakage is determined by the static pressure test under Sec. 183.580, except that the test pressure must be at least one-fourth PSIG.

(c) Each fuel tank of less than 25 gallons capacity must not leak if tested under Sec. 183.584.

(d) Each fuel tank with a capacity of 25 to 199 gallons must not leak if tested under Sec. 183.586.

(e) Each fuel tank of 200 gallons capacity or more must not leak if tested under Secs. 183.586 and 183.588.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983]

**Sec. 183.512 Fuel tanks: Prohibited materials.**

(a) A fuel tank must not be constructed from terneplate.

(b) Unless it has an inorganic sacrificial galvanic coating on the inside and outside of the tank, a fuel tank must not be constructed from black iron or carbon steel.

(c) A fuel tank encased in cellular plastic or in fiber reinforced plastic must not be constructed from a ferrous alloy.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977; 42 FR 24739, May 16, 1977]

**Sec. 183.514 Fuel tanks: Labels.**

(a) Each fuel tank must have a label that meets the requirements of paragraphs (b) through (d) of this section.

(b) Each label required by paragraph (a) of this section must contain the following information:

(1) Fuel tank manufacturer's name (or logo) and address.

(2) Month (or lot number) and year of manufacture.

(3) Capacity in U.S. gallons.

(4) Material of construction.

(5) The pressure the tank is designed to withstand without leaking.

(6) Model number, if applicable.

(7) The statement, "This tank has been tested under 33 CFR 183.510(a)."

(8) If the tank is tested under Sec. 183.584 at less than 25g vertical accelerations the statement, "Must be installed aft of the boat's half length."

(c) Each letter and each number on a label must:

(1) Be at least 1/16 inch high and

(2) Contrast with the basic color of the label or be embossed on the label.

(d) Each label must:

(1) Withstand the combined effects of exposure to water, oil, salt spray, direct sunlight, heat, cold, and wear expected in normal operation of the boat, without loss of legibility; and

(2) Resist efforts to remove or alter the information on the label without leaving some obvious sign of such efforts.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.516 Cellular plastic used to encase fuel tanks.**

(a) Cellular plastic used to encase metallic fuel tanks must:

- (1) Not change volume by more than five percent or dissolve after being immersed in any of the following liquids for 24 hours at 29 deg. C:
  - (i) Reference fuel B ASTM D-471.
  - (ii) No. 2 reference oil of ASTM D-471.
  - (iii) Five percent solution of trisodium phosphate in water; and
- (2) Not absorb more than 0.12 pound of water per square foot of cut surface, measure under Military Specification MIL P-21929B.
  - (b) Non-polyurethane cellular plastic used to encase metallic fuel tanks must have a compressive strength of at least 60 pounds per square inch at ten percent deflection measured under ASTM D-1621, "Compressive Strength of Rigid Cellular Plastics".
  - (c) Polyurethane cellular plastic used to encase metallic fuel tanks must have a density of at least 2.0 pounds per cubic foot, measured under ASTM D-1622, "Apparent Density of Rigid Cellular Plastics."

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 77-98, 42 FR 36253, July 14, 1977; CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.518 Fuel tank openings.**

Each opening into the fuel tank must be at or above the topmost surface of the tank.

**Sec. 183.520 Fuel tank vent systems.**

- (a) Each fuel tank must have a vent system that prevents pressure in the tank from exceeding 80 percent of the pressure marked on the tank label under Sec. 183.514(b)(5).
- (b) Each vent must:
  - (1) Have a flame arrester that can be cleaned unless the vent is itself a flame arrester; and
  - (2) Not allow a fuel overflow at the rate of up to two gallons per minute to enter the boat.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 77-98, 42 FR 36253, July 14, 1977]

**Sec. 183.524 Fuel pumps.**

- (a) Each diaphragm pump must not leak fuel from the pump if the primary diaphragm fails.
- (b) Each electrically operated fuel pump must not operate except when the engine is operating or when the engine is started.
- (c) If tested under Sec. 183.590, each fuel pump, as installed in the boat, must not leak more than five ounces of fuel in 2 ½ minutes, inclusive of leaks from fuel line, fuel filter and strainer.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 77-98, 42 FR 36253, July 14, 1977]

**Sec. 183.526 Carburetors.**

- (a) [Reserved]
- (b) Each carburetor must not leak more than five cubic centimeters of fuel in 30 seconds when:
  - (1) The float valve is open;
  - (2) The carburetor is at half throttle; and
  - (3) The engine is cranked without starting; or
  - (4) The fuel pump is delivering the maximum pressure specified by its manufacturer.
- (c) Each updraft and horizontal draft carburetor must have a device that:
  - (1) Collects and holds fuel that flows out of the carburetor venturi section toward the air intake;
  - (2) Prevents collected fuel from being carried out of the carburetor assembly by the shock wave of a backfire or by reverse air flow; and
  - (3) Returns collected fuel to the engine induction system after the engine starts,

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 77-98, 42 FR 36253, July 14, 1977]

**Sec. 183.528 Fuel stop valves.**

- (a) Each electrically operated fuel stop valve in a fuel line between the fuel tank and the engine must:
  - (1) Open electrically only when the ignition switch is on; and
  - (2) Operate manually.
- (b) If tested in accordance with the fire test under Sec. 183.590, a fuel stop valve installed in a fuel line system requiring metallic fuel lines or "USCG Type A1" hose must not leak fuel.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.530 Spud, pipe, and hose fitting configuration.** Except when used for a tank fill line, each spud, pipe, or hose fitting used with hose clamps must have:

- (a) A bead;



- (b) A flare; or
- (c) A series of annular grooves or serrations no less than 0.015 inches deep, except a continuous helical thread, knurl, or groove.

**Sec. 183.532 Clips, straps, and hose clamps.**

- (a) Each clip, strap, and hose clamp must:
  - (1) Be made from a corrosion resistant material; and
  - (2) Not cut or abrade the fuel line.
- (b) If tested in accordance with the fire test under Sec. 183.590, a hose clamp installed on a fuel line system requiring metallic fuel lines or ``USCG Type A1'' hose must not separate under a one pound tensile force.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.534 Fuel filters and strainers.** If tested under Sec. 183.590, each fuel filter and strainer, as installed in the boat, must not leak more than five ounces of fuel in 2 ½ minutes inclusive of leaks from the fuel pump and fuel line.

[CGD 77-98, 42 FR 36253, July 14, 1977]

**Sec. 183.536 Seals and gaskets in fuel filters and strainers.**

- (a) [Reserved]
- (b) Each gasket and each sealed joint in a fuel filter and strainer must not leak when subjected for 24 hours to a gasoline that has at least a 50 percent aromatic content at the test pressure marked on the fuel tank label.

[CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.538 Metallic fuel line materials.** Each metallic fuel line connecting the fuel tank with the fuel inlet connection on the engine must:

- (a) Be made of seamless annealed copper, nickel copper, or copper-nickel; and
- (b) Except for corrugated flexible fuel line, have a minimum wall thickness of 0.029 inches.

**Sec. 183.540 Hoses: Standards and markings.**

- (a) ``USCG Type A1'' hose means hose that meets the performance requirements of:
    - (1) SAE Standard J1527DEC85, Class 1 and the fire test in Sec. 183.590; or
    - (2) Underwriters' Laboratories, Inc. (UL) Standard 1114.
  - (b) ``USCG Type A2'' hose means hose that meets the performance requirements of SAE Standard J1527DEC85, Class 2 and the fire test in Sec. 183.590;
  - (c) ``USCG Type B1'' hose means hose that meets the performance requirements of SAE Standard J1527DEC85, Class 1.
  - (d) ``USCG Type B2'' hose means hose that meets the performance requirements of SAE Standard J1527DEC85, Class 2.
- Note: SAE Class 1 hose has a permeation rating of 100 grams or less fuel loss per square meter of interior surface in 24 hours. SAE Class 2 hose has a permeation rating of 300 grams or less fuel loss per square meter of interior surface in 24 hours.
- (e) Each ``USCG Type A1,'' ``USCG Type A2,'' ``USCG Type B1,'' and ``USCG Type B2'' hose must be identified by the manufacturer by a marking on the hose. (f) Each marking must contain the following information in English:
    - (1) The statement ``USCG TYPE (insert A1 or A2 or B1 or B2).''
    - (2) The year in which the hose was manufactured.
    - (3) The manufacturer's name or registered trademark.
  - (g) Each character must be block capital letters and numerals that are at least one eighth-inch high.
  - (h) Each marking must be permanent, legible, and on the outside of the hose at intervals of 12 inches or less.

[CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.542 Fuel systems.**

- (a) Each fuel system in a boat must have been tested by the boat manufacturer and not leak when subjected to the greater of the following pressures:
  - (1) Three pounds per square inch; or
  - (2) One and one-half times the pressure created in the lowest part of the fuel system when it is filled to the level of overflow with fuel.
- (b) The test pressure shall be obtained with air or inert gas.

[CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Manufacturer Requirements**

**Sec. 183.550 Fuel tanks: Installation.**

- (a) Each fuel tank must not be integral with any boat structure or mounted on an engine.
- (b) Each fuel tank must not move at the mounting surface more than one-fourth inch in any direction.
- (c) Each fuel tank must not support a deck, bulkhead, or other structural component.
- (d) Water must drain from the top surface of each metallic fuel tank when the boat is in its static floating position.
- (e) Each fuel tank support, chock, or strap that is not integral with a metallic fuel tank must be insulated from the tank surface by a non-moisture absorbing material.
- (f) Cellular plastic must not be the sole support for a metallic fuel tank.
- (g) If cellular plastic is the sole support of a non-metallic fuel tank, the cellular plastic must meet the requirements of Sec. 183.516 (b) or (c).
- (h) Each fuel tank labeled under Sec. 183.514(b)(8) for installation aft of the boat's half-length must be installed with its center of gravity aft of the boat's half-length.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.552 Plastic encased fuel tanks: Installation.**

- (a) Each fuel tank encased in cellular plastic foam or in fiber reinforced plastic must have the connections, fittings, and labels accessible for inspection and maintenance.
- (b) If a metallic fuel tank is encased in cellular plastic or in fiber reinforced plastic, water must not collect between the plastic and the surface of the tank or be held against the tank by capillary action.
- (c) If the plastic is bonded to the surface of a metallic fuel tank, the adhesive strength of the metal to the plastic bond must exceed the cohesive strength of the plastic.

**Sec. 183.554 Fittings, joints, and connections.** Each fuel system fitting, joint, and connection must be arranged so that it can be reached for inspection, removal, or maintenance without removal of permanent boat structure.

**Sec. 183.556 Plugs and fittings.**

- (a) A fuel system must not have a fitting for draining fuel.
- (b) A plug used to service the fuel filter or strainer must have a tapered pipethread or be a screw type fitted with a locking device other than a split lock washer.

**Sec. 183.558 Hoses and connections.**

- (a) Each hose used between the fuel pump and the carburetor must be ``USCG Type A1" hose.
- (b) Each hose used—
  - (1) For a vent line or fill line must be:
    - (i) ``USCG Type A1" or ``USCG Type A2"; or
    - (ii) ``USCG Type B1" or ``USCG Type B2" if no more than five ounces of fuel is discharged in 2 1/2 minutes when:
      - (A) The hose is severed at the point where maximum drainage of fuel would occur,
      - (B) The boat is in its static floating position, and
      - (C) The fuel system is filled to the capacity marked on the tank label under Sec. 183.514(b)(3).
  - (2) From the fuel tank to the fuel inlet connection on the engine must be:
    - (i) ``USCG Type A1"; or
    - (ii) ``USCG Type B1" if no more than five ounces of fuel is discharged in 2 1/2 minutes when:
      - (A) The hose is severed at the point where maximum drainage of fuel would occur,
      - (B) The boat is in its static floating position, and
      - (C) The fuel system is filled to the capacity marked on the tank label under Sec. 183.514(b)(3).
- (c) Each hose must be secured by:
  - (1) A swaged sleeve;
  - (2) A sleeve and threaded insert; or
  - (3) A hose clamp.
- (d) The inside diameter of a hose must not exceed the actual minor outside diameter of the connecting spud, pipe, or fitting by more than the distance shown in Table 8.

**Table 8**

If minor outside diameter of the connecting spud, pipe, or fitting is--

The inside diameter of the hose must not exceed the minor outside diameter of the connecting spud, pipe, or hose fitting by more than the following distance:

Less than 3/8 in.....0.020 in

|                        |           |
|------------------------|-----------|
| 3/8 in. to 1 in.....   | 0.035 in  |
| Greater than 1 in..... | 0.065 in. |

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 85-098, 52 FR 19728, May 27, 1987]

**Sec. 183.560 Hose clamps: Installation.** Each hose clamp on a hose from the fuel tank to the fuel inlet connection on the engine, a hose between the fuel pump and the carburetor, or a vent line must:

- (a) Be used with hose designed for clamps;
- (b) [Reserved]
- (c) Be beyond the bead, flare, or over the serrations of the mating spud, pipe, or hose fitting; and
- (d) Not depend solely on the spring tension of the clamp for compressive force.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.562 Metallic fuel lines.**

- (a) Each metallic fuel line that is mounted to the boat structure must be connected to the engine by a flexible fuel line.
- (b) Each metallic fuel line must be attached to the boat's structure within four inches of its connection to a flexible fuel line.

**Sec. 183.564 Fuel tank fill system.**

- (a) Each fuel fill opening must be located so that a gasoline overflow of up to five gallons per minute for at least five seconds will not enter the boat when the boat is in its static floating position.
- (b) Each hose in the tank fill system must be secured to a pipe, spud, or hose fitting by:
  - (1) A swaged sleeve;
  - (2) A sleeve and threaded insert; or
  - (3) Two adjacent metallic hose clamps that do not depend solely on the spring tension of the clamps for compressive force.
- (c) Each hose clamp in the tank fill system must be used with a hose designed for clamps.
- (d) Hose clamps used in the tank fill system must:
  - (1) Have a minimum nominal band width of at least one-half inch; and
  - (2) Be over the hose and the spud, pipe, or hose fitting.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55737, Dec. 15, 1983]

**Sec. 183.566 Fuel pumps: Placement.** Each fuel pump must be on the engine it serves or within 12 inches of the engine, unless it is a fuel pump used to transfer fuel between tanks.

**Sec. 183.568 Anti-siphon protection.** Each fuel line from the fuel tank to the fuel inlet connection on the carburetor must:

- (a) Be above the level of the tank top; or
- (b) Have an anti-siphon device or an electrically operated fuel stop valve:
  - (1) At the tank withdrawal fitting; or
  - (2) Installed so the line from the fuel tank is above the top of the tank; or
- (c) Provided that the fuel tank top is below the level of the carburetor inlet, be metallic fuel lines meeting the construction requirements of Sec. 183.538 or "USCG Type A1" hose, with one or two manual shutoff valves installed as follows:
  - (1) Directly at the fuel tank connection arranged to be readily accessible for operation from outside of the compartment, and
  - (2) If the length of fuel line from the tank outlet to the engine inlet is greater than 12 feet, a manual shutoff valve shall be installed at the fuel inlet connection to the engine.

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55737, Dec. 15, 1983; CGD 85-098, 52 FR 19729, May 27, 1987]

**Sec. 183.570 Fuel filters and strainers: Installation.** Each fuel filter and strainer must be supported on the engine or boat structure independent from its fuel line connections, unless the fuel filter or strainer is inside a fuel tank.

**Sec. 183.572 Grounding.** Each metallic component of the fuel fill system and fuel tank which is in contact with fuel must be statically grounded so that the resistance between the ground and each metallic component of the fuel fill system and fuel tank is less than 100 ohms.

**Tests**

**Sec. 183.580 Static pressure test for fuel tanks.** A fuel tank is tested by performing the following procedures in the following order:

- (a) Fill the tank with air or inert gas to the pressure marked on the tank label under Sec. 183.514(b)(5).
- (b) Examine each tank fitting and seam for leaks using a leak detection method other than the pressure drop method.

**Sec. 183.584 Shock test.** A fuel is tested by performing the following procedures in the following order:

- (a) Perform the static pressure test under Sec. 183.580.
- (b) If the tank is non-metallic, fill it to capacity with a gasoline that has at least a 50 percent aromatic content. Keep the fuel in the tank at 21 deg. C or higher for 30 days prior to testing.
- (c) Mount the tank to the platform of an impact test machine.
- (d) Fill the tank to capacity with water.
- (e) Apply one of the following accelerations within three inches of the center of the horizontal mounting surface of the tank. The duration of each vertical acceleration pulse is measured at the base of the shock envelope.
  - (1) If the tank is not labeled under Sec. 183.514(b)(8) for installation aft of the half length of the boat, apply 1000 cycles of 25g vertical accelerations at a rate of 80 cycles or less per minute. The duration of the acceleration pulse must be between 6 and 14 milliseconds.
  - (2) If the tank is manufactured for installation with its center of gravity aft of the half length of the boat, apply 1000 cycles of 15g vertical accelerations at a rate of 80 cycles or less per minute. The duration of the shock pulse must be between 6 and 14 milliseconds.
- (f) Perform the static pressure test under Sec. 183.580.

**Sec. 183.586 Pressure impulse test.** A fuel tank is tested by performing the following procedures in the following order:

- (a) Perform the static pressure test under Sec. 183.580.
- (b) If the tank is non-metallic, fill it to capacity with a gasoline that has at least a 50 percent aromatic content. Keep the fuel in the tank at 21 deg. C or higher for 30 days prior to testing.
- (c) Mount the tank on a test platform.
- (d) Fill the tank to capacity with water.
- (e) Cap and seal each opening in the tank.
- (f) Apply 25,000 cycles of pressure impulse at the rate of no more than 15 impulses per minute varying from zero to three PSIG to zero inside the tank top from a regulated source of air, inert gas, or water.
- (g) Perform the static pressure test under Sec. 183.580.

**Sec. 183.588 Slosh test.** A fuel tank is tested by performing the following procedures in the following order:

- (a) Perform the static pressure test under Sec. 183.580.
- (b) Perform the pressure impulse test under Sec. 183.586.
- (c) Secure the tank to the platform of a tank rocker assembly.
- (d) Fill the tank to one-half capacity with water.
- (e) Cap and seal each opening in the tank.
- (f) Apply 500,000 cycles of rocking motion 15 degree to each side of the tank centerline at the rate of 15 to 20 cycles a minute. The axis of rotation of the rocker and fuel tank must be perpendicular to the centerline of the tank length at a level six inches or less above or below the tank's bottom.
- (g) Perform the static pressure test under Sec. 183.580.

**Sec. 183.590 Fire test.**

- (a) A piece of equipment is tested under the following conditions and procedures:
  - (1) Fuel stop valves, ``USCG Type A1" or USCG Type A2" hoses and hose clamps are tested in a fire chamber.
  - (2) Fuel filters, strainers, and pumps are tested in a fire chamber or as installed on the engine in the boat.
  - (3) Fuel tanks must be tested filled with fuel to one-fourth the capacity marked on the tank in a fire chamber or in an actual or simulated hull section.
- (b) Each fire test is conducted with free burning heptane and the component must be subjected to a flame for 2\1/2\ minutes. (c) If the component is tested in a fire chamber:
  - (1) The temperature within one inch of the component must be at least 648 deg. C sometime during the 2\1/2\ minute test;
  - (2) The surface of the heptane must be 8 to 10 inches below the component being tested; and
  - (3) The heptane must be in a container that is large enough to permit the perimeter of the top surface of the heptane to extend beyond the vertical projection of the perimeter of the component being tested.
- (d) If the component is being tested as installed on an engine, heptane sufficient to burn 2 ½ minutes must be poured over the component and allowed to run into a flat bottomed pan under the engine. The pan must be large enough to permit the perimeter of the top surface of the heptane to extend beyond the vertical projection of the perimeter of the engine.
- (e) If a fuel tank is being tested in an actual or simulated hull section, the actual or simulated hull section must be of sufficient size to contain enough heptane to burn for 2 1/2 minutes in a place adjacent to the tank.

## Subpart K--Ventilation

Source: CGD 76-082, 44 FR 73027, Dec. 17, 1979, unless otherwise noted.

**Sec. 183.601 Applicability.** This subpart applies to all boats that: (a) Have gasoline engines for electrical generation, mechanical power, or propulsion; and (b) Are built after July 31, 1980, except that a manufacturer may elect to comply with this subpart at any time after July 31, 1978.

**Sec. 183.605 Definitions.** As used in this subpart: "Fuel" means gasoline. "Open to the atmosphere" means a compartment that has at least 15 square inches of open area directly exposed to the atmosphere for each cubic foot of net compartment volume.

[CGD 76-082, 44 FR 73027, Dec. 17, 1979, as amended by CGD 85-098, 52 FR 19729, May 27, 1987]

**Sec. 183.607 Incorporation by reference.**

(a) The following standards are incorporated by reference. Copies may be obtained from the sources indicated. They are also available for inspection at Coast Guard Headquarters, Room 4210, 2100 Second Street, SW., Washington, DC 20593 and at the Office of the Federal Register Library, 800 North Capitol Street, NW., suite 700, Washington, DC 20408.

(1) AMCA Standard 210-74, Figure 12. Air Moving and Conditioning Association, 30 West University Drive, Arlington Heights, Illinois 60004.

(2) ASTM Standard D-471. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(3) UL Standard 1128. Underwriters Laboratories, Incorporated, 207 Ohio Street, Chicago, Illinois 60611.

(b) The Director of the Federal Register approved the incorporation by reference in paragraph (a)(2) on September 26, 1976 and the incorporations in paragraphs (a) (1) and (3) on March 24, 1978.

[CGD 76-082, 44 FR 73027, Dec. 17, 1979, as amended by CGD 82-010, 48 FR 8273, Feb. 28, 1983]

**Sec. 183.610 Powered ventilation system.**

(a) Each compartment in a boat that has a permanently installed gasoline engine with a cranking motor must:

- (1) Be open to the atmosphere, or
- (2) Be ventilated by an exhaust blower system.

(b) Each exhaust blower or combination of blowers must be rated at an air flow capacity not less than that computed by the formulas given in Table 183.610, Column 2. Blower rating must be determined according to AMCA Standard 210-74, Figure 12, or UL Standard 1128.

**Table 183.610**

| Col. 1 <sup>1</sup> | Col. 2 <sup>2</sup> | Col. 3 <sup>3</sup> |
|---------------------|---------------------|---------------------|
| Below 34.....       | Fr=50.....          | Fo=20               |
| 34 to 100.....      | Fr=1.5V.....        | Fo=0.6V             |
| Over 100.....       | Fr=V/2+100.....     | Fo=0.2V+40          |

<sup>1</sup>Net compartment volume of engine compartment and compartments open thereto (V) cubic feet.

<sup>2</sup>Rated blower capacity (Fr) cubic feet per minute.

<sup>3</sup>Blower system output (Fo) cubic feet per minute.

(c) Each exhaust blower system required by paragraph (a)(2) of this section must exhaust air from the boat at a rate which meets the requirements of Table 183.610, Column 3 when the engine is not operating.

(d) Each intake duct for an exhaust blower must be in the lower one-third of the compartment and above the normal level of accumulated bilge water.

(e) More than one exhaust blower may be used in combination to meet the requirements of this section.

(f) Each boat that is required to have an exhaust blower must have a label that:

- (1) Is located as close as practicable to each ignition switch;
- (2) Is in plain view of the operator; and

(3) Has at least the following information: WARNING--GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING ENGINE OPERATE BLOWER FOR 4 MINUTES AND CHECK ENGINE COMPARTMENT BILGE FOR GASOLINE VAPORS.

**Sec. 183.620 Natural ventilation system.**

- (a) Except for compartments open to the atmosphere, a natural ventilation system that meets the requirements of Sec. 183.630 must be provided for each compartment in a boat that:
- (1) Contains a permanently installed gasoline engine;
  - (2) Has openings between it and a compartment that requires ventilation, where the aggregate area of those openings exceeds 2 percent of the area between the compartments, except as provided in paragraph (c) of this section;
  - (3) Contains a permanently installed fuel tank and an electrical component that is not ignition protected in accordance with Sec. 183.410(a);
  - (4) Contains a fuel tank that vents into that compartment; or
  - (5) Contains a non-metallic fuel tank:
    - (i) With an aggregate permeability rate exceeding 1.2 grams of fuel loss in 24 hours per cubic foot of net compartment volume, or
    - (ii) If the net compartment volume is less than one cubic foot, having a permeability rate exceeding 1.2 grams of fuel loss in 24 hours. Reference fuel "C" at 40 degrees Celsius plus or minus 2 degrees Celsius from ASTM standard D-471-1979 is to be used in determining the permeability rate.
- (b) Each supply opening required in Sec. 183.630 must be located on the exterior surface of the boat.
- (c) An accommodation compartment above a compartment requiring ventilation that is separated from the compartment requiring ventilation by a deck or other structure is excepted from paragraph (a)(2) of this section.

[CGD 76-082, 44 FR 73027, Dec. 17, 1979, as amended by CGD 76-082(a), 46 FR 27645, May 21, 1981; CGD 85-059, 51 FR 37577, Oct. 23, 1986]

**Sec. 183.630 Standards for natural ventilation.**

- (a) For the purpose of Sec. 183.620, "natural ventilation" means an airflow in a compartment in a boat achieved by having:
- (1) A supply opening or duct from the atmosphere or from a ventilated compartment or from a compartment that is open to the atmosphere; and
  - (2) An exhaust opening into another ventilated compartment or an exhaust duct to the atmosphere.
- (b) Each exhaust opening or exhaust duct must originate in the lower third of the compartment.
- (c) Each supply opening or supply duct and each exhaust opening or exhaust duct in a compartment must be above the normal accumulation of bilge water.
- (d) Except as provided in paragraph (e) of this section, supply openings or supply ducts and exhaust openings or exhaust ducts must each have a minimum aggregate internal cross-sectional area calculated as follows:  $A=5 \ln (V/5)$ ; where:
- (1) A is the minimum aggregate internal cross-sectional area of the openings or ducts in square inches;
  - (2) V is the net compartment volume in cubic feet, including the net volume of other compartments connected by openings that exceed 2 percent of the area between the compartments; and
  - (3)  $\ln (V/5)$  is the natural logarithm of the quantity  $(V/5)$ .
- (e) The minimum internal cross-sectional area of each supply opening or duct and exhaust opening or duct must exceed 3.0 square inches.
- (f) The minimum internal cross-sectional area of terminal fittings for flexible ventilation ducts installed to meet the requirements of paragraph (d) of this section must not be less than 80 percent of the required internal cross-sectional area of the flexible ventilation duct.

[CGD 76-082, 44 FR 73027, Dec. 17, 1979; 45 FR 7544, Feb. 4, 1980]

## Subpart L--Start-in-Gear Protection

Source: CGD 79-137, 46 FR 3515, Jan. 15, 1981, unless otherwise noted.

**Sec. 183.701 Applicability.** This subpart applies to outboard motors and starting controls manufactured after August 1, 1982, and to manufacturers, distributors or dealers installing such equipment after that date.

**Sec. 183.705 Definitions.** For the purposes of this subpart:

- (a) *Outboard motor* means a self-contained propulsion system of any horsepower rating designed to be installed on, and removable from the transom of a boat.
- (b) *Static thrust* means the forward or backward thrust developed by an outboard motor and associated propulsion unit while stationary.
- (c) *Starting control* means the motor throttle, shift and starting control mechanisms located at a position remote from the outboard motor.
- (d) *Local starting* means operating a mechanical or electrical starting device built into the outboard motor.
- (e) *Distributor* means any person engaged in the sale and distribution of boats or associated equipment for the purpose of resale.
- (f) *Dealer* means any person who is engaged in the sale and distribution of boats or associated equipment to purchasers who the seller in good faith believes to be purchasing any such boat or associated equipment for purposes other than resale.

**Sec. 183.710 Start-in-gear protection required.**

(a) Any outboard motor which is capable of developing a static thrust of 115 pounds or more at any motor operating speed with any propeller or jet attachment recommended for or shipped with the motor by the manufacturer, must be equipped with a device to prevent the motor being started when controls are set so as to attain that thrust level, as follows:

(1) Outboard motors designed for local starting must have a built-in start-in-gear protection device.

(2) Outboard motors designed for remote starting must have either a built-in start-in-gear protection device or be installed with remote starting controls containing this device. An outboard motor designed for remote starting that does not have a built-in start-in-gear protection device must, at the time of sale, have a tag or label attached at the location of the control connection, containing the following information: "Starting controls installed with this motor must comply with USCG requirements for start-in-gear protection in 33 CFR Part 183, Subpart L." The letters and numbers on the tag or label must be at least 1/8 inch high.

(b) Starting controls must have a tag or label with the following information to indicate whether or not they have been equipped with a start-in-gear protection device: "This control will (or will not) provide start-in-gear protection meeting USCG requirements of 33 CFR Part 183, Subpart L." The letters and numbers on the tag or label must be at least 1/8 inch high.

(c) Any manufacturer, distributor or dealer installing an outboard motor displaying the label described in paragraph (a)(2) of this section must properly match it with a compatible starting control that contains a start-in-gear protection device.

**Sec. 183.715 Exception.** Outboard motors designed to be equipped for remote starting, but which also have a provision for local starting in emergencies, need not comply with Sec. 183.710 for their local starting system. However, the following information must be displayed on the motor: "Warning--Ensure shift control is in neutral before starting motor". This information must be clearly visible to a person using the emergency starting device.

TITLE 46--SHIPPING

CHAPTER I--COAST GUARD, DEPARTMENT OF HOMELAND SECURITY

PART 25\_REQUIREMENTS--Table of Contents

Subpart 25.10\_Navigation Lights

Sec. 25.10-3 Navigation light certification requirements.

(a) Except as provided by paragraph (b) of this section, each navigation light must--

(1) Meet the technical standards of the applicable Navigation Rules;

(2) Be certified by a laboratory listed by the Coast Guard to the standards of ABYC A-16 (incorporated by reference, see Sec. 25.01-3), or equivalent, although portable battery-powered lights need only meet the requirements of the standard applicable to them; and

(3) Bear a permanent and indelible label stating the following:

(i) ``USCG Approval 33 CFR 183.810''

(ii) ``MEETS ----.''' (Insert the identification name or number of the standard under paragraph (a)(2) of this section, to which the light was type-tested.)

(iii) ``TESTED BY ----.''' (Insert the name or registered certification-mark of the laboratory listed by the Coast Guard that tested the fixture to the standard under paragraph (a)(2) of this section.)

(iv) Name of Manufacturer.

(v) Number of Model.

(vi) Visibility of the light in nautical miles (nm).

(vii) Date on which the light was type-tested.

(viii) Identification of bulb used in the compliance test.

(b) If a light is too small to attach the required label--

(1) Place the information from the label in or on the package that contains the light; and

(2) Mark each light ``USCG'' followed by the certified range of visibility in nautical miles, for example, ``USCG 2nm.''' Once installed, this mark must be visible without removing the light.