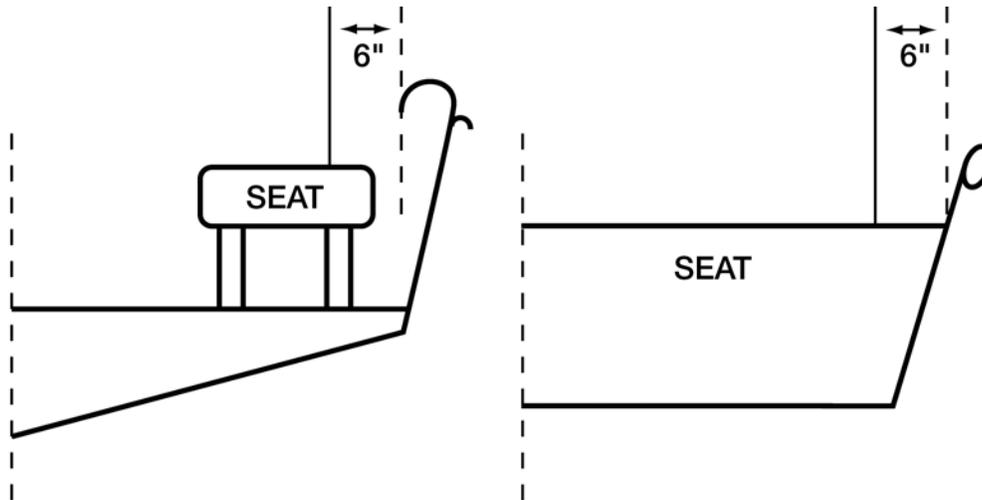


Figure 13—Locations of Center of Gravity of Weights on Seats



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, except outboard engines, for electrical generation, mechanical power, or propulsion.

(b) [Reserved]

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983; USCG-1999-5832, 64 FR 34716, June 29, 1999]

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; pigtails 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 deg.C (140 deg.F)	75 deg.C (167 deg.F)	80 deg.C (176 deg.F)	90 deg.C (194 deg.F)	105 deg.C (221 deg.F)	125 deg.C (257 deg.F)	200 deg.C (392 deg.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

1. See the following table:	60 deg.C (140 deg.F)	75 deg.C (167 deg.F)	80 deg.C (176 deg.F)	90 deg.C (194 deg.F)	105 deg.C (221 deg.F)	125 deg.C (257 deg.F)	200 deg.C (392 deg.F)
Temperature rating of conductor	0.58	0.75	0.78	0.82	0.85	0.89	1.00
2. See the following table:	<i>Correction factor</i>						
Number of current carrying conductors:							
3	0.70						
4 to 6	0.60						
7 to 24	0.50						
25 and above	0.40						

[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 ampereages 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 pigtailed 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, boot, or nipple.

[CGD 73-217, 42 FR 5944, Jan. 31, 1977, as amended by USCG-1999-5832, 64 FR 34716, June 29, 1999]

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) Each 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; pigtailed 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, mechanical power, or propulsion.
- (b) [Reserved]

[CGD 74-209, 42 FR 5950, Jan. 31, 1977, as amended by CGD 81-092, 48 FR 55736, Dec. 15, 1983; USCG-1999-5832, 64 FR 34716, June 29, 1999]

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.