

Section 7.0

F U E L S Y S T E M S

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7.1 Application

- 7.1.1 This section applies to all gasoline and diesel fuel systems for all small vessels, except where indicated otherwise.

7.2 General

- 7.2.1 A permanently installed fuel system shall provide protection from leakage caused by corrosion, shock, or fire.
- 7.2.2 All components of a fuel system, including tank penetrations and fittings, shall be accessible for inspection.
- 7.2.3 After installation, the fuel system, which includes fill pipes, tanks, vent pipes, delivery pipes, and return pipes, shall be hydrostatically pressure tested to a minimum of 21 kPa (3 lbs/in²).
- 7.2.4 The fuel system shall be designed and installed to contain at least 5% fuel expansion to minimize the risk of a fuel spill either into the vessel or the environment when:
- (a) the fuel tank is filled to its rated capacity; and
 - (b) the vessel is in the static floating position.
- 7.2.5 Fuel systems shall be liquid and vapour tight to the hull interior, except when:
- (a) permeation of hoses is within the limits of Society of Automotive Engineers – Standard SAE J1527, *Marine Fuel Hoses* (1993); and
 - (b) permeation of fuel tanks is within the limits of ABYC *Standards for Small Craft H-2, Ventilation of Vessels Using Gasoline*.
- 7.2.6 Fuel systems shall be capable of:
- (a) storage without operation at an ambient temperature range from –40°C to 80°C without failure or leakage; and
 - (b) operation at an ambient temperature range from –30°C to 80°C.
- 7.2.7 Fuel tank, fuel filter, or fuel line fittings shall not be installed over a source of ignition. Personal watercraft are exempt from this requirement.
- 7.2.8 All electrically operated components installed in GASOLINE fuel systems shall be ignition-protected.
- 7.2.9 Every drain plug or valve on every filter or fuel tank of a DIESEL system shall be:
- (a) of the type which cannot be opened inadvertently; or

(b) installed in a manner to guard against inadvertent opening.

7.2.10 Metal bowls shall be used for inboard GASOLINE engines and plastic bowls shall be used for outboard engines. Every fuel-water separator bowl used for gasoline engines must meet the requirement of National Fire Protection Association NFPA 302, *Fire Protection Standard for Pleasure and Commercial Motor Craft*

7.2.11 Every hose in a fuel system shall meet or exceed:

(a) the performance requirements of Society of Automotive Engineers – Standard SAE J1527, *Marine Fuel Hoses*; and

(b) the fire resistance tests requirements of ABYC *Standards for Small Craft H-24 for Gasoline Fuel Systems* or the fire resistance tests requirements of ABYC *Standards for Small Craft H-33 for Diesel Fuel Systems*, as applicable.

7.2.12 Every hose shall be permanently marked in capital letters and numerals at least 3 mm (0.12 in) in height and width and at intervals not greater than 305 mm (12 in) with the following information:

(a) type of hose;

(b) manufacturer's name or registered trademark; and

(c) year of manufacture.

7.2.12.1 Hoses less than 305 mm (12 in) in length may be tagged with the required marking.

7.3 Fuel Tanks

7.3.1 General

7.3.1.1 Every fuel tank shall be constructed to meet the minimum test requirements for mechanical strength and fire resistance, as detailed in ABYC *Standards for Small Craft H-24, Gasoline Fuel Systems*, or ABYC *Standards for Small Craft H-33, Diesel Fuel Systems*, as applicable.

7.3.1.2 A metallic fuel tank shall be constructed of materials in accordance with Table 7-1. Non-metallic materials are considered acceptable for corrosion resistance; however, all other requirements of this Standard must be met.

7.3.1.3 A fuel tank shall be constructed so that no external surface of the tank can retain moisture or spilled fuel.

7.3.1.4 A GASOLINE fuel tank shall have no openings in the bottom, sides, or ends.

7.3.1.5 Clean-out plates shall not be installed in GASOLINE fuel tanks; clean-out plates may be installed in the top or sides of DIESEL fuel tanks.

Table 7-1 Fuel Tank Corrosion Resistance Requirements

Material	Specification Sheet Thickness	Minimum Nominal	Gauge Processes (1)	Welding
Nickel-Copper	ASTM – B127 Class A	0.79 mm	22 U.S. std	Resistance Seam; Inert Gas Shielded Arc; Oxyacetylene
Copper-Nickel	ASTM – B122	1.14 mm	17 AWG	Inert Gas Shielded Arc; Oxyacetylene; Resistance
Copper (2)	ASTM – B152 Type E.T.P.	1.45 mm	15 AWG	Inert Gas Shielded Arc; Carbon Arc; Oxyacetylene
Copper-Silicon	ASTM – B97 Types A, B & G	1.27 mm	16 AWG	Inert Gas Shielded Arc; Carbon Arc; Oxyacetylene; Metal-Arc
Steel Sheet (3)	ASTM – A93	1.90 mm	14 Mfrs.	Metal-Arc; Oxyacetylene; Inert Gas Shielded Arc; Resistance
Aluminized Steel (5)	ASTM – A463	1.21 mm	18 Mfrs.	Metal-Arc; Oxyacetylene; Inert gas Shielded Arc; Resistance
Aluminum (4)	Alloy 5052 or 5083 or 5086	2.29 mm	—	Inert Gas Shielded Arc; Resistance
Stainless Steel	316 L	0.79 mm	22 U.S. std.	Metal-Arc; Oxyacetylene; Inert Gas Shielded Arc; Resistance

Notes:

- (1) Tank seams produced by the welding processes listed shall be ductile and non-porous.
- (2) Copper tanks shall be internally tin coated.
- (3) Steel sheet tanks, when constructed for gasoline, shall be galvanized inside and outside by the hot dip process.
- (4) Aluminum tank fitting plates shall be made of 5052, 5083, 5086, 6061 or 6063 aluminum or 300 series stainless steel.
- (5) Aluminized steel tanks shall have a corrosion inhibiting baked paint or equivalent coating not less than 0.0381mm thickness applied to the total tank exterior.

- 7.3.1.6 If baffles are provided, baffle openings shall be designed so that they do not prevent the fuel flow across the bottom or trap vapour across the top of the tank.
- 7.3.1.7 Threaded connections into fuel tanks shall be in accordance with American National Standard Taper Pipe Thread (NPT).
- 7.3.1.8 Cellular plastic used to encase metallic fuel tanks shall not change volume by more than 5% or dissolve after being immersed for 24 hours at 29°C in each of the following liquids:
- (a) reference fuel B, in accordance with American Society of Testing and Materials ASTM D471, *Standard Test Method for Rubber Property – Effects of Liquid*;
 - (b) No. 2 reference oil, in accordance with American Society of Testing and Materials ASTM D471, *Standard Test Method for Rubber Property – Effects of Liquid*; and
 - (c) a 5% solution of trisodium phosphate in water.
- 7.3.1.9 Cellular plastic used to encase metallic fuel tanks shall not absorb more than 0.58 kg (0.1 lbs.) of water per square metre (ft²) of cut surface.
- 7.3.1.10 Where plastic is bonded to a metallic tank, the adhesive strength of the bond shall exceed the cohesive strength of the plastic.
- 7.3.1.11 Non-polyurethane cellular plastic used to encase metallic fuel tanks shall have a minimum compressive strength of 410 kPa (60 lbs/in²) at a 10% deflection, measured in accordance with American Society of Testing and Materials ASTM D1622, *Standard Test Method for Apparent Density of Rigid Cellular Plastics*.
- 7.3.1.12 Polyurethane cellular plastic, which is used to encase metallic fuel tanks, shall have a minimum density of 50 kg/m³ (3 lbs/ft³) measured in accordance with American Society of Testing and Materials ASTM D1622.
- 7.3.1.13 Rigid tubes and fill pipes that extend near the bottom of the tank shall have clearance to prevent contact with the bottom due to flexing of the tank.
- 7.3.1.14 Every fuel tank shall have permanently affixed to it a label showing as a minimum:
- (a) type of fuel or fuels for which the tank is suitable;
 - (b) the manufacturer's name, or logo, and address;
 - (c) the month and the year of manufacture, or the lot number and year of manufacture;
 - (d) its capacity in litres (and optionally in gallons); and
 - (e) a statement that the tank meets the requirements of the *Construction Standards for Small Vessels* – TP1332 or an equivalent standard to TP1332, e.g. United States Government; CFR33 183.510 (a).

- 7.3.1.14.1 **Note:** In lieu of the requirements of 7.3.1.1 to 7.3.1.13, the design and construction of the fuel tank may conform to an equivalent standard to those requirements, e.g. United States Government; CFR33, 183.510 (a).
- 7.3.1.15 Every letter and numeral on any fuel tank shall be:
- (a) at least 1.5 mm ($1/16$ in) in height and width; and
 - (b) be of a contrasting colour to the basic colour of the label or be embossed on the label.
- 7.3.1.16 Every tank label shall be readily visible and legible on the tank as installed.

7.3.2 Fuel Tank Installation

- 7.3.2.1 Every fuel tank, including those encased in cellular plastic foam or fibre reinforced plastic, shall be so installed that all connections, accessories, and labels are accessible for inspection and maintenance.
- 7.3.2.2 A GASOLINE fuel tank shall not be made integral with the hull.
- 7.3.2.3 No fuel tank shall support any deck, bulkhead, or structural component, or bear any extraneous load unless it is designed and built to do so.
- 7.3.2.4 Adequate supports shall be fitted as necessary to ensure the structural integrity of every tank.
- 7.3.2.5 A fuel tank shall be installed and restrained to provide as close to no movement as possible.
- 7.3.2.6 Metallic fuel tank supports and hold-downs shall be isolated from the tank surface by non-abrasive, non-absorbent and non-conductive materials.
- 7.3.2.7 Cellular plastic shall not be used as the sole support for a metal fuel tank.
- 7.3.2.8 Cellular plastic used as the sole support for a non-metallic fuel tank shall meet the requirements of American Society of Testing and Materials ASTM D1621, *Standard Test Method for Compressive Properties of Rigid Cellular Plastic*, or American Society of Testing and Materials ASTM D1622, *Standard Test Method for Apparent Density of Rigid Cellular Plastic*.
- 7.3.2.9 No cellular or fibre reinforced plastic fuel tank encasement shall permit water to:
- (a) collect between the plastic and the tank; or
 - (b) be held against the tank by capillary action.
- 7.3.2.10 Metallic fuel tanks installed above a flat surface shall be separated from the surfaces by at least a 6 mm ($1/4$ in) air space when filled with fuel.

7.3.3 Fuel Tank Gauges

7.3.3.1 Every fuel tank shall be installed with mechanical or remote reading fuel gauges, unless the tank installation permits sounding.

7.3.4 Fuel Tank Fill System

7.3.4.1 Fuel fill lines shall be hose or metal pipe.

7.3.4.2 Each fuel tank shall have an individual fill line.

7.3.4.3 Deck fill plates:

(a) shall be located at least 380 mm (15 in) from any fresh air intake for gasoline systems;

(b) shall not permit a fuel overflow to enter the vessel;

(c) shall be permanently marked GASOLINE, GAS, or with the ISO symbol for gasoline in GASOLINE systems; or

(d) shall be permanently marked DIESEL, or with the ISO symbol for diesel in DIESEL systems.

7.3.4.4 Fuel shall not blow back through the fuel fitting when the tank is being refueled at a rate of 23 L/min (6 U.S. gal/min).

7.3.4.5 The fill pipe installation shall be self-draining and lead directly from the deck fill to the tank in such a way as to prevent any vapour locks.

7.3.4.6 The minimum inside diameter of the fill system shall be 32 mm (1¹/₄ in) In order to maintain the minimum diameter, the minimum hose ID using standard fittings shall be 38 mm (1¹/₂ in).

7.3.4.7 The hose in a fuel tank fill system shall be secured to the deck fill and the tank with corrosion resistant and galvanically compatible fittings consisting of:

(a) a swaged sleeve;

(b) a sleeve and threaded insert; or

(c) two metallic hose clamps of a type that is not dependent upon spring tension for compressive force.

7.3.4.8 Every hose clamp used in a tank fill system shall:

(a) be used with a hose that is designed for clamps;

(b) have a minimum nominal band width of 12 mm (1/2 in);

- (c) fasten over the hose and the spud, pipe, or hose fitting; and
- (d) be installed not be less than 12 mm ($1/2$ in) from the end of the hose.

- 7.3.4.9 Fuel fill hose shall be of neoprene fabric or wire reinforced neoprene material that meets the requirements for fuel hose in 7.2.11 and 7.2.12.
- 7.3.4.10 Every fuel fill hose installed in the engine compartments shall be USCG Type A1 or A2.
- 7.3.4.11 Fuel hose shall not be installed on helical threading or knurling that provides a path for fuel leakage.

7.3.5 Fuel Tank Venting Systems

- 7.3.5.1 Every fuel tank shall have a venting system that:
- (a) discharges fuel vapours overboard;
 - (b) does not allow a fuel overflow to enter the vessel;
 - (c) minimizes the accidental entry of water; and
 - (d) prevents pressure in the tank from exceeding 80% of the rated pressure of the tank.
- 7.3.5.2 Every flexible vent pipe shall be:
- (a) a minimum of 15 mm ($5/8$ in) I.D. and constructed of material that conform to the performance requirements of *ABYC Standards for Small Craft H-24* and the fire resistance tests requirements of *ABYC Standards for Small Craft H-24* for GASOLINE fuel systems or the fire resistance tests requirements of *ABYC Standards for Small Craft H-33* for DIESEL fuel systems, as applicable;
 - (b) installed so that it does not kink or sag; and
 - (c) secured with corrosion resistant clamps of a type that is not dependent upon spring tension.
- 7.3.5.3 The vent shall be fitted with a flame arrestor that:
- (a) has an effective area not less than the minimum required for the vent line; and
 - (b) can be cleaned, unless the vent itself is a flame arrestor.
- 7.3.5.4 Tank vent systems shall be self-draining and connect to the highest point of the fuel tank as installed in the vessel under conditions of normal operation and normal trim.

7.4 Fuel Lines

- 7.4.1
- (a) All fuel lines, including fill, vent, delivery, and return, shall be protected from damage.
 - (b) Flexible fuel supply lines installed in engine space must be type A1 hose.

- 7.4.2 Every metallic fuel line:
- (a) shall be made of seamless annealed copper, nickel-copper, or copper-nickel;
 - (b) shall have a minimum wall thickness of 0.75 mm ($1/32$ in); and
 - (c) shall be galvanically protected from the structure in aluminum hulls.
- 7.4.3 A metallic fuel line shall be attached to the vessel structure within 102 mm (4 in) of the connection of a flexible fuel line.
- 7.4.4 A section of flexible line with sufficient slack to absorb vibration shall be installed where a rigid fuel line terminates at:
- (a) an engine or fuel filter connection; or
 - (b) a fuel tank that may vibrate.
- 7.4.5 The inside diameter of a hose shall not exceed the minimum outside diameter of the connecting spud, pipe, or fitting by more than the tolerance shown in Table 7-2.

Table 7-2 Fitting and Hose Connection Tolerances

Minimum Outside Diameter of the Fitting	Tolerance of Inside Diameter of Hose
Less than 9.5 mm ($3/8$ in)	0.51 mm (0.020 in)
9.5 mm to 25 mm ($3/8$ in to 1 in)	0.89 mm (0.035 in)
Greater than 25 mm (1 in)	1.65 mm (0.065 in)

- 7.4.6 All fuel distribution systems shall be provided with anti-siphon protection by at least one of the following:
- (a) ensuring that no part of the line can, if separated at any point, fall below the lowest level of the tank suction;
 - (b) keeping all parts of the fuel distribution and return lines above the level of the fuel line to tank connection to the carburetor inlet or its equivalent, e.g., throttle body, port fuel injection, or a location where fuel leakage cannot enter the vessel when the vessel is in its static floating position;
 - (c) fitting an anti-siphon demand valve at the fuel line to tank connection that can be opened only by the fuel pump suction to withdraw fuel from the tank and that will remain closed when the fuel pump is not operating, thereby preventing siphon action created by a break or leakage at any point in the fuel distribution system.
 - (d) installing at the fuel tank connection an electrically operated valve that when used:
 - (i) opens only when the ignition switch is on,
 - (ii) is capable of being operated manually, and

- (iii) meets the fire resistance tests requirements of ABYC *Standards for Small Craft* H-24 for GASOLINE fuel systems or the fire resistance tests requirements of ABYC *Standards for Small Craft* H-33 for DIESEL fuel systems, as applicable;
 - (e) installing a manual shut-off valve directly at the fuel tank connection, arranged to be readily accessible for operation from outside the compartment if the fuel tank top is located below the level of the carburetor inlet or the fuel line is rigid metal or USCG Type A1 hose.
- 7.4.6.1 **Note:** Readily accessible from outside, the compartment includes a shut-off valve installed at the tank, close to, and directly below, an access port in the deck through which the valve can be operated.
- 7.4.7 If the length of fuel line from the tank outlet to the engine inlet is greater than 3600 mm (11 ft 10 in), a second manual shut-off valve shall be installed at the fuel inlet connection to the engine.
- 7.4.8 Fuel systems shall be equipped with an independently supported fuel strainer or filter, complying with subsection 7.5, if a strainer or filter is not incorporated in the pick-up tube.
- 7.4.9 On vessels with multiple fuel tanks and a fuel system that returns fuel to the tank (such as fuel injection), the system shall return unused fuel to the same tank from which it was drawn.
- 7.4.10 The design and construction of the fuel system requires a warning label indicating that modifying this system may result in a fuel overflow. See ABYC *Standards for Small Craft* T-24, *Owner/Operator's Manuals*.

7.5 Fittings, Joints, and Connections

- 7.5.1 Every fuel system fitting, joint, and connection shall be accessible for inspection, maintenance, and removal, without the removal of any permanent vessel structure.
- 7.5.2 Fuel lines shall have the minimum number of connections practicable.
- 7.5.3 Hoses used in the fuel tank fill system shall be secured to pipes (smooth pipes acceptable), spuds, or other fittings at each connection, by at least two (2) metallic clamps with nominal band widths of at least 12 mm ($1/2$ in).
- 7.5.4 Every hose used in the fuel tank vent system or the fuel distribution and return line system shall be secured to a mating spud, pipe, or fitting that is formed or machined to provide serrations (at least 0.38 mm [0.15 in] depth) or a bead. At least one corrosion resistant metallic clamp shall be used with a minimum nominal band width. (Table 7-3)

Table 7-3 Minimum Hose Clamp Band Width

Outside Diameter of Hose	Clamp Width
Less Than 11 mm ($7/16$ in)	6 mm ($1/4$ in)
11 mm to 20 mm ($7/16$ in. to $25/32$ in)	8 mm ($3/8$ in)
Greater than 20 mm ($25/32$ in)	12.5 mm ($1/2$ in)

- 7.5.5 Every clip, strap, or hose clamp, including fasteners:
- shall be made from corrosion resistant material;
 - shall not cut or abrade a any fuel line; and
 - shall not be separated by a tensile force of 5 N when tested under the fire resistance requirements for fuel systems, as set forth in *ABYC Standards for Small Craft H-24* or *ABYC Standards for Small Craft H-33*, as applicable.
- 7.5.6 Every hose clamp:
- shall be used with a hose that is designed for clamps;
 - shall be at least one clamp width from the hose end;
 - shall be fitted beyond the head or flare, or over the serrations of the mating spud, pipe, or hose fitting; and
 - shall not depend on spring tension for compressive force.
- 7.5.7 The minimum nominal band width of every hose clamp shall be determined by the outside diameter of the hose, as shown in Table 7-3.
- 7.5.8 A gasoline fuel system shall not have a fitting for draining fuel other than a plug that is used to service the fuel filter or strainer and that:
- has a tapered pipe-thread;
 - is a screw type fitted with a locking device other than a split lock-washer; and
 - does not create a galvanic cell with the housing that will accelerate corrosion.

7.6 Fuel Line Valves

- 7.6.1 Valves shall pass the 2.5-minute fire test as specified in United States Government CFR 33, Section 183.590 and *ABYC Standards for Small Crafts H-24.5.7*.
- 7.6.2 Electrically operated valves shall meet the requirements of Underwriters Laboratories UL 429, *Electrically Operated Valves*.

- 7.6.3 The unit shall incorporate means for independent mounting designed to relieve strain from connected fuel lines.
- 7.6.4 Manually operated valves shall be designed with positive stops in the open and closed positions, or shall indicate their opened and closed positions.
- 7.6.5 Electrically operated shut-off valves shall be connected to be energized to open when the engine ignition switch is on. A provision for manual operation shall be incorporated in the design.
- 7.6.6 Tapered plug valves with an external spring shall not be used.

7.7 Fuel Filters and Strainers

- 7.7.1 Every fuel filter or strainer shall meet the fire resistance requirements for fuel systems set forth in *ABYC Standards for Small Craft H-24.5.7*, unless the filter or strainer is inside the fuel tank.
- 7.7.2 All fuel filters or strainers shall be supported on the engine or vessel structure independent from the fuel line connections, unless the filter or strainer is inside the fuel tank.
- 7.7.3 Filters, separators, and strainers shall meet the requirements of Underwriters Laboratories UL 1105, *Standard for Marine Use Filters, Strainers, and Separators*.
- 7.7.4 Fuel tank withdrawal pipes that are fitted with fuel filters:
- (a) shall extend as close to the bottom of the tank as practicable, to allow maximum drainage;
 - (b) shall permit water contamination to be withdrawn from the tank with the fuel; and
 - (c) shall be resistant to salt water, alcohol, and stale fuel.

7.8 Fuel Pumps

- 7.8.1 Every fuel pump shall be installed on the engine or within 305 mm (12 in) of the engine, with a maximum delivery hose length of 1220 mm (48 in) unless it is a fuel pump used to transfer fuel between tanks.
- 7.8.2 A diaphragm pump shall not leak fuel if the primary diaphragm fails.
- 7.8.3 Every electric fuel pump shall incorporate an automatic cutoff designed to eliminate fuel pressure at the outlet when the engine stops for any cause.
- 7.8.4 The outlet pressure of electrically operated fuel pumps, except for electric fuel pumps used to transfer fuel between tanks, shall be rated or controlled to the maximum carburetor fuel inlet pressure specified by the engine manufacturer.

- 7.8.5 A momentary type switch may override the automatic cutoff for the purpose of priming or starting the engine.

7.9 Grounding

- 7.9.1 Each metal or metallic plated component of the fuel fill system and fuel tank that is in contact with the fuel must be grounded so that its resistance to the vessel ground is less than 1 ohm.
- 7.9.2 Ground wire ends shall not be clamped between the fill pipe and hose.
- 7.9.3 Static conductive neoprene tubing or piping that is used in lieu of metallic conductors shall be:
- (a) clearly marked as static conductive; and
 - (b) installed in direct contact with non-painted attachment surfaces.

7.10 Carburetors (Gasoline)

- 7.10.1 Every carburetor, when tested to the requirements of the fire resistance test set forth in *ABYC Standards for Small Craft H-24*, Appendix A, shall not leak more than 5 mL of fuel in 30 seconds when:
- (a) the float valve is open;
 - (b) the carburetor is at half throttle; and
 - (c) the engine is cranked without starting, or the fuel pump is delivering the maximum pressure specified by the manufacturer.
- 7.10.2 Every up-draught and horizontal-draught carburetor shall have a device that:
- (a) collects and holds fuel that flows out of the carburetor venturi section toward the air intake;
 - (b) prevents collected fuel from being carried out of the carburetor assembly by the shock wave of a backfire or reverse airflow; and
 - (c) returns the collected fuel to the engine induction system after the engine starts.
- 7.10.3 Every engine shall be equipped with an effective means of backfire flame control by the use of an effective flame arrestor.
- 7.10.4 Every inboard engine that uses a carburetor shall be so designed and fitted as to prevent gasoline from leaking into the bilge.

7.11 Fuel System Labeling

- 7.11.1 A warning label shall be placed in a readily visible location on the vessel, or at a point of frequent servicing of the vessel. Labelling shall not weaken the tank.
- 7.11.2 The label shall comply with ABYC *Standards for Small Craft* T-5, "Safety, Signs and Labels," and shall contain at least the following informational elements:
- (a) the hazard intensity signal word;
 - (b) nature of the hazard;
 - (c) consequences that can result if the instructions to avoid the hazard are not followed; and
 - (d) instructions on how to avoid the hazard.

Figure 7-1 Example of Warning Label



- 7.11.3 Each valve in the fuel system shall be clearly marked with its function and with what each position means.

7.12 Outboard Motor Installations

- 7.12.1 The following additional requirements apply to all outboard installations.
- 7.12.2 All permanent fuel lines in outboard motor vessels shall terminate adjacent to the transom, so that any leakage will not enter the vessel.
- 7.12.3 Quick disconnect fittings used between fuel distribution lines and outboard motors shall automatically shut off fuel flow when disconnected.
- 7.12.4 No pressurized tanks shall be built into or be permanently attached to any hull.