

## SMALL PASSENGER VESSEL INFORMATION PACKAGE

**Section G – Miscellaneous:**

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- **Ventilation System**
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**Bilge & Bilge Level Alarm Systems - 46 CFR 182.500 - 182.540**

<b>Introduction</b>	<p>Vessels of at least 26 feet in length must be fitted with individual bilge suction lines and bilge suctions for each watertight compartment.</p> <p>The space forward of the collision bulkhead need not be fitted with a bilge suction line, if a hand operated bilge pump or other equipment can be used to remove water and if the equipment is provided aboard the vessel.</p>
<b>Bilge Piping</b>	<p>Bilge piping sizes must be as follows:</p> <ul style="list-style-type: none"> <li>• Vessel <math>\leq</math> 65 feet - not less than 1 inch.</li> <li>• Vessel <math>&gt;</math> 65 feet - not less than 1 1/2 inches.</li> </ul> <p>Except when individual bilge pumps are provided for separate spaces, individual bilge suction lines must be led to a central control point or manifold and provided with a stop valve at the control point or manifold and a check valve.</p>
<b>Bilge Suctions</b>	Bilge suctions shall be fitted with suitable strainers having an area of not less than 3 times the bilge pipe diameter.
<b>Table 182.520(a)</b>	<p>Any number of passengers on a vessel more than 65 feet are required to have 2 fixed power pumps @ 50GPM.</p> <p>More than 49 passengers and all ferry vessels, not more than 65 feet are</p>

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	<p>required to have 1 fixed power pump @ 25GPM, and 1 portable hand pump @ 10GPM.</p> <p>Not more than 49 passengers, other than ferry vessels, 26 feet up to 65 feet are required to have 1 fixed power pump and 1 portable hand pump @ 10GPM each or, 1 fixed hand pump @ 10GPM and 1 portable @ 5GPM. Less than 26 feet, 1 portable hand pump @ 5GPM is required.</p> <p>Each fixed power bilge pump:</p> <ul style="list-style-type: none"> <li>• must be self-priming</li> <li>• may be driven off the main engine or other source of power.</li> <li>• must be permanently connected to the bilge manifold and may connect to the fire main. (If of sufficient capacity, a power bilge pump may also serve as a fire pump).</li> </ul> <p>Where two fixed power bilge pumps are installed, they must be driven by different sources of power. If one pump is driven by the main engine, the other must be driven by another source of power, such as batteries. In a twin-engine vessel, each pump may be driven off of a different engine.</p>
<p><b>Hand Operated Bilge Pumps</b></p>	<p>The Hand Operated Bilge Pump must be:</p> <ul style="list-style-type: none"> <li>• capable of pumping the minimum quantity of water as listed in the chart.</li> <li>• capable of pumping water from the bilge to overboard, but not necessarily, from all watertight compartments at the same time.</li> <li>• provided with suitable suction and discharge hose capable of reaching the bilges of each watertight compartment and pumping the water over the side.</li> </ul> <p>Note: A second power pump is an acceptable alternative to a hand pump, if it is supplied by a source of power independent of the first power bilge pump.</p>
<p><b>Bilge High Level Alarms</b></p>	<p>Vessels of 26 feet and over are required to have a Bilge High Level Alarm that indicates a visible and audible alarm at the vessels operating station, in each of the following unmanned spaces.</p> <ul style="list-style-type: none"> <li>• A space with a thru hull fitting below the deepest load waterline.</li> <li>• A machinery space bilge, bilge well or other spaces subject to flooding from sea water piping within the space.</li> <li>• A space with a non-watertight closure, such as a space with a non-watertight hatch on the main deck.</li> </ul> <p>Vessels constructed of wood must have bilge high-level alarms in each</p>

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	watertight space in addition to those required above.
<b>Automatic Bilge Pump Indicator</b>	A visual indicator must be provided at the vessel's operating station to indicate when any automatic bilge pump is operating.

**Diesel Fuel System Requirements - 46 CFR 182.435 - 182.480 & 182.720(e)**

<b>Integral Fuel Tank Construction</b>	<p>Fuel tanks integral with the vessel's hull are allowed if the hull material is</p> <ul style="list-style-type: none"> <li>• Steel</li> <li>• Aluminum</li> <li>• FRP (Sandwiched construction cannot be used, unless the core material used is closed cell polyvinyl chloride.)</li> </ul>
<b>Independent Fuel Tank Construction</b>	<p>Independent fuel tanks can be constructed of</p> <ul style="list-style-type: none"> <li>• Nickel-copper</li> <li>• Copper-nickel</li> <li>• Copper</li> <li>• Copper-silicon</li> <li>• Steel</li> <li>• Iron</li> <li>• Aluminum or</li> <li>• FRP</li> </ul> <p>Table 182.440(a)(1) lists thickness and construction requirements based on fuel tank capacity.</p> <p>Metal tanks must have baffles at least every 30 inches, that are welded or brazed to the side of the tank. Baffles must have air holes at the top and limber holes at the bottom.</p>
<b>Fuel Tank Fill Piping</b>	<p>Fuel tank fill and sounding piping must be a minimum of 1.5 inches in diameter.</p> <p>There must be a means of determining the amount of fuel either by sounding through a separate sounding tube, fill pipe or by a marine type fuel gage.</p> <p>They must run as directly as possible, preferably in a straight line from the deck connection to the top of the tank. And so arranged that overflow of fuel will not run into the vessel.</p> <p>If flexible hose is used it must:</p>

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	<ul style="list-style-type: none"> <li>• be suitable for the intended service</li> <li>• overlap the metallic pipe ends at the least 1.5 times the pipe diameter and must be secured at each end by double hose clamps.</li> <li>• if a non conductor, be provided with a method to make the fuel tank electrically continuous with the fill pipe.</li> </ul>
<b>Fuel Supply Piping</b>	<p>Fuel supply piping shall be of copper, nickel copper, or copper nickel having a minimum wall thickness of 0.035 inch except that piping of other materials such as seamless steel pipe or tubing which provides an equivalent level of safety may be used. Aluminum pipe must be a minimum of schedule 80 and is acceptable for use on aluminum vessels only.</p> <p>Fuel lines shall be accessible, protected from mechanical damage, and secured against excessive movement and vibration by the use of metal straps with no sharp edges.</p> <p>Where fuel lines pass through watertight bulkheads, they shall be protected by close fitting ferrules or stuffing boxes.</p>
<b>Fuel Supply Hose as Supply Line</b>	<p>Flexible hose may be used as supply line provided it is fitted with suitable connection fittings and has high resistance to saltwater, petroleum oils and vibrations.</p> <p>Flexible hose runs shall be visible, easily accessible, protected from mechanical damage, and shall not penetrate watertight bulkheads.</p> <p>Flexible non-metallic may be used for fuel supply, the hose shall meet SAE standard J-1942 "Hose and Hose Assemblies for Marine Applications", or be specifically approved by the Commandant. The hose must either be factory assembled requiring no further adjustment of the fittings of the hose or fittings meeting SAE J-1475 or equivalent shall be used. If special equipment is required such as crimping machines, it must be of the type and design specified by the manufacturer.</p>
<b>Flexible Hose at the Engine</b>	<p>A flexible hose or loop of tubing shall be installed in the fuel supply line at or near the engine to protect the line from vibration.</p> <p>Flexible hose used for this purpose shall not be longer than 30" in length. The hose must meet the requirements as listed above or hose USCG approved type A1, A2, B1 or B2 is acceptable. The line must be attached using double hose clamps on each end, unless an approved fitting is used.</p>
<b>Fuel Shutoff Valves</b>	<p>Fuel shutoff valves shall be installed on the fuel supply piping at the fuel tank and at the engine.</p>

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	<p>The fuel shut off valve at the tank must be accessible from outside the fuel tank space, preferably on the weather deck. The location is required to be labeled in 1" high letters, indicating the purpose of the valve and direction of operation.. If reach rods are installed in the weather deck, some form of flame impingement protection shall be provided for the handle.</p>
<b>Fuel Strainers</b>	<p>Suitable marine type strainers shall be fitted in the fuel supply line in the engine compartment.</p> <p>Drip pans fitted with flame screens may be required under each fuel strainers other than those mounted on the engine.</p>
<b>Fuel Tank Vents</b>	<p>Fuel tanks shall be fitted with a vent pipe at its highest point under normal operating conditions.</p> <p>The minimum net cross-sectional area of the vent pipe shall be as follows:</p> <ul style="list-style-type: none"> <li>• Not less than 5/8" O.D. tubing (.035" wall thickness-20 gage), if the fill pipe terminates at the top of the tank.</li> <li>• Not less than 3/4" O.D. tubing (.035" wall thickness-20 gage), if the fill pipe extends into the tank.</li> <li>• The discharge end must be fitted with a removable flame screen of corrosion resistant wire of 30 X 30 mesh and be located:             <ul style="list-style-type: none"> <li>• On the hull exterior, as high as practicable above the waterline and away from any hull opening, or</li> <li>• Terminate in U-bends as high above the weather deck as practicable and away from any living quarters or below deck spaces.</li> <li>• So installed as to prevent water contamination during normal operating conditions.</li> </ul> </li> </ul>

**Gasoline Fuel System Requirements - 46 CFR 182.435 - 182.480 & 182.720(e)**

<b>Note</b>	<p>Gasoline propelled vessels can be certified for carrying passengers. Although similar to diesel fuel system requirements, due to the increased flammability, there are additional requirements.</p>
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	<p>Included among these is the requirement to install a fixed fire extinguishing system in the machinery space, a vapor detection system, forced ventilation for the engine space, as well as differences in the fuel system.</p> <p>If certifying a gasoline-propelled vessel, the inspector assigned to you will assist with the additional requirements, these requirements can be found by reading the Code of Federal Regulations.</p>
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**Ventilation System Requirements - 46 CFR 182.465 & .470**

<p><b>Compartments Containing Machinery</b></p>	<p>Spaces containing machinery shall be fitted with at least two ducts to furnish natural or mechanical supply and exhaust ventilation.</p> <p>One duct shall extend to a point near the bottom of the compartment, so installed that the ordinary collection of water in the bilge will not trap the duct.</p> <p>Where forced ventilation is installed, the duct extending near the bottom shall be the exhaust.</p> <p>The total inlet and outlet area of each duct shall be not less than one square inch for each foot of beam of the vessel. This minimum shall be increased if ducts are also used to provide air for the engine intakes.</p>
<p><b>Ducting Material</b></p>	<p>All duct material shall be of rigid permanent construction and made of the same material as the hull or of a non-combustible material and must be reasonably gastight.</p> <p>The ducts must lead as direct as possible and be securely fastened and supported.</p>
<p><b>Duct Cowls</b></p>	<p>All supply ducts for ventilation shall be provided with cowls or scoops having a free area not less than twice the required duct area. If the mouth of the duct is screened the area must be increased to compensate for the area of the screen.</p>
<p><b>Compartments Containing Diesel Fuel Tanks</b></p>	<p>Unless provided with ventilation as stated above, enclosed compartments containing diesel fuel tanks and no machinery shall be provided with a gooseneck vent of not less than 2 1/2 inches in diameter. Openings shall not be located adjacent to possible sources of vapor ignition.</p> <p>In small compartments, a vent of not less than 1 1/2 inches may be used.</p>

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	Compartments that are adequately ventilated are not required to have gooseneck vents installed.
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**Marine Sanitation Devices - 46 CFR 184.704 & 33 CFR 159.7**

<b>General Requirements</b>	<p>Vessels are not required by regulation to have a toilet or Marine Sanitation Device (MSD). If installed the installation must be as follows:</p> <p>MSD's are classified as a Type I, II, or III. Type I and II treat the sewage so that it can be pumped overboard. Type III MSD's are holding tanks and can only be pumped ashore or in the territorial seas, beyond 3 miles from shore.</p> <p>Vessels less than 65 feet are allowed to use a Type I, II or III MSD, all other vessels are required to use a Type II or III.</p> <p>MSDs must have a Coast Guard certified label and be certified for inspected vessels.</p>
<b>MSD Piping</b>	<p>Type I and II MSD's can be piped for discharge of sewage overboard. Note that state and local laws may have "No Discharge Zones" in which <u>no</u> sewage may be pumped overboard. Operators should check with state and local authorities as to the laws in your area of operation.</p> <p>Federal Regulations do not allow the pumping of untreated sewage overboard within 3 miles of the mainland shore.</p> <p>Vessels with Type III MSD's with routes restricted inside the 3 mile limit cannot be plumbed overboard but must be plumbed to a pump out connection on the deck.</p> <p>Vessels with Type III MSD's with routes outside the three miles may install a Y-valve to allow pumping overboard when beyond three miles from shore. But whenever the vessel is inside the 3 mile limit, the valve must be locked in the closed position, preventing discharge over the side.</p>
<b>Placard Required</b>	<p>Operators on routes greater than 3 miles from shore shall install a placard at the Y-valve that states; "This valve to remain locked in the closed position when within 3 miles of the mainland shore."</p>

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**Steering System Requirements - 46 CFR 182.600 - .620**

<p><b>Main Steering</b></p>	<p>A self propelled vessel must be provided with a main steering gear that is:</p> <ul style="list-style-type: none"> <li>• of adequate strength and capable of steering the vessel at all speeds.</li> <li>• designed to operate at maximum astern speed without being damaged or jammed and,</li> <li>• capable of moving the rudder from 35 degrees on one side to 30 degrees on the other side in not more than 28 seconds with the vessel moving ahead at maximum service speed.</li> </ul>
<p><b>Auxiliary Steering</b></p>	<p>The steering must be designed so that transfer from the main steering gear or control to the auxiliary steering be achieved rapidly. Any tools or equipment necessary to make the transfer must be readily available.</p> <p>The following vessels are not required to have auxiliary steering:</p> <ul style="list-style-type: none"> <li>• main steering gear and controls are provided in duplicate.</li> <li>• multiple screw propulsion with pilot house control for each screw.</li> <li>• no regular rudder is fitted and steering action is obtained by a change of setting of the propelling unit.</li> <li>• normal means of steering is a hand tiller and rudder.</li> </ul>

**Railing Requirements - 46 CFR 177.900**

<p><b>General Requirements</b></p>	<p>Rails or equivalent protection are required near the periphery of all weather decks accessible to passengers or crew. Equivalent protection may include lifelines, wire rope, chains and bulwarks, which provide strength and support equivalent to fixed rails.</p> <p>Deck rails must withstand a 200-pound load in any direction and a 50-pound per foot load applied to the top rail in any direction.</p>
<p><b>Ferry or Excursion Type Operations</b></p>	<p>Vessels engaged in ferry or excursion type operations including but not limited to sightseeing trips, dinner and party cruises, and overnight cruises, shall have rails a minimum of 39 1/2 inches high.</p> <p>On this type of vessel the space below the upper rail is required to be fitted with:</p> <ul style="list-style-type: none"> <li>• bulwarks,</li> <li>• chain link fencing or wire mesh that has openings of not more than 4 inches in diameter, or</li> </ul>

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	<ul style="list-style-type: none"> <li>• bars, slats, rail courses, or and equivalent spaced at intervals of not more than 4 inches.</li> </ul>
<b>Sport Fishing Vessels</b>	<p>On sport fishing vessels where it can be shown that higher rails would interfere with normal operations, rails of at least 30 inches may be permitted.</p> <p>Courses must not be more than 12 inches.</p> <p>When the vessel is not being used in this capacity, the vessel must comply with the applicable railing requirement.</p>
<b>Water Taxis, Pilot Boats, Dive Boats</b>	Where the principle business of a vessel requires the discharge of personnel in a seaway, the OCMI may accept alternatives for those areas of a deck where passengers or cargo are discharged and for which removable rails, lifelines or chain would hinder discharge operations.
<b>Vessels Subject to 1966 International Loadline Rules</b>	<p>Rail height shall not be less than 39-1/2 inches.</p> <p>Courses must not be more than 15 inches.</p>
<b>All Other Vessels</b>	<p>All other vessels not mentioned above shall have a minimum rail height of 36 inches.</p> <p>Courses must not be more than 15 inches.</p> <p>Sailing vessels, small vessels of the open launch type and other vessels not specifically covered elsewhere, shall have rails or equivalent protection as considered necessary by the OCMI.</p>

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