

H-32 VENTILATION OF BOATS USING DIESEL FUEL

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Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all boats, associated equipment, and systems manufactured after July 31, 2009.

32.1 PURPOSE

This standard is a guide for the design, construction, and installation of ventilation systems of boats using diesel fuel, for the purpose of removal of fixed gaseous fire extinguishing system discharge, and/or combustion air, and/or any incidental additional uses.

32.2 SCOPE

This standard applies to boats using diesel fuel for electrical generation, mechanical power, or propulsion.

NOTE: *The United States Coast Guard's mandatory requirements for ventilation for boats with gasoline engines for propulsion or auxiliary machinery are found in 33 CFR, Subpart K, Sections CFR 183.601-183.630. Refer to the CFR for complete, current federal requirements. Additionally, see ABYC H-2, Ventilation of Boats Using Gasoline.*

32.3 REFERENCES

32.3.1 The following publications form a part of this standard. Unless otherwise noted the latest version of referenced standards shall apply.

32.3.1.1 ABYC - American Boat & Yacht Council, Inc., 613 Third St. Suite 10, Annapolis, MD 21403
Phone: (410) 990-4460 Fax: (410) 990-4466. Website: www.abycinc.org

ABYC A-4, Fire Fighting Equipment

ABYC E-10, Storage Batteries

ABYC H-2, Ventilation of Boats Using Gasoline

ABYC H-5, Boat Load Capacity

32.3.1.2 CFR - Code of Federal Regulations and other government publications. Obtain from the Superintendent of Documents, United States Government Information, PO Box 371954, Pittsburgh, PA 15250-7954. Phone: (202) 512-1800. Fax: (202) 512-2250. Website: www.access.gpo.gov. An excerpted edition of the CFR is also available from ABYC, Inc.

33 CFR Section 183, Subpart K

32.4 **DEFINITIONS** - *For the purposes of this standard, the following definitions apply.*

32.4.1 Maximum heeled waterline - The line of the water on the hull when the boat is inclined to:

32.4.1.1 for powerboats, an angle of seven (7) degrees, or

32.4.1.2 for sailboats, the level of sheer amidships.

32.4.2 Sailboat - A boat designed or intended to use sail as the primary means of propulsion.

32.4.3 Static Float Plane -

32.4.3.1 The plane below the most forward point and through which the maximum displacement of a boat exists without water coming aboard, when all openings such as drains, scuppers, centerboard trunks, hull or transom doors are considered sealed. (See H-32 Figure 1.)

32.4.3.2 (Alternative) The float plane as defined above may be located above or below the sheer as long as it is equidistant above or below the most forward point and the stern. (See H-32 Figure 2.)

32.4.4 Ventilation - The changing of air within a compartment by natural or mechanical means. Ventilation may be affected by dilution of contaminated air, by local exhaust of contaminated air, or by introduction of fresh air.

32.5 REQUIREMENTS - IN GENERAL

32.5.1 Storage Batteries – For battery ventilation requirements refer to ABYC E-10, Storage Batteries.

32.5.2 Removal of Fixed Gaseous Fire Extinguishing System Discharge - DC-powered ventilation means shall be provided to remove the discharge from fixed gaseous fire extinguishing systems. (See ABYC A-4, Fire Fighting Equipment.)

32.5.3 Combustion Air – Ventilating provisions and openings to the machinery space provided for supplying combustion air shall accommodate at least the sum of the maximum air requirements specified by the engine manufacturer(s) for each propulsion and auxiliary engine(s) in that space.

NOTES:

1. Consult the engine manufacturer(s) for combustion air requirements, including inlet air temperature and restriction/depression.

2. Due to the characteristics of diesel fuel, and the closed nature of the diesel engine fuel system, neither mechanical nor natural ventilation as prescribed for gasoline powered vessels, is necessary to remove diesel fuel vapors.

32.5.4 Additional Uses of Ventilation - Power or natural ventilation may be needed to control compartment temperature. Power ventilation may also be used in the machinery space for odor control and personnel comfort while servicing equipment.

32.5.5 Ambient Temperature - For design purposes, the ambient temperature of machinery spaces is considered to be 122°F (50°C), and of all other spaces, is considered to be 86°F (30°C).

NOTE: Temperatures in machinery spaces after engine shut-down may exceed this design ambient temperature.

32.6 INSTALLATION

32.6.1 Non-metallic materials used for ventilating components installed below deck shall be capable of continuous exposure to a temperature range of -22°F (-30°C) to 185°F (85°C) without failure.

32.6.2 Non-metallic ventilating components shall be installed at least nine inches (229 mm) horizontally from or below, or 18 inches (460 mm) above, any surface capable of reaching a temperature of 200°F (93°C) under normal operating conditions.

EXCEPTION: Ventilation system components designed for use in higher temperature locations provided the component manufacturer's maximum temperature rating is not exceeded.

32.6.3 The lowest point of ventilation openings or their plenums shall be located:

32.6.3.1 For all sailboats, and powerboats 26 feet (eight meters) and longer – above the maximum heeled water line.

EXCEPTION: Pontoon Boats

32.6.3.2 For powerboats less than 26 feet (eight meters) in length and covered by ABYC H-5, Boat Load Capacity above the static float plane based on the posted maximum persons capacity and weight capacity on board.

32.6.4 External openings for ventilation intakes and exhausts shall be arranged to minimize entry and recirculation of engine exhaust fumes.

32.6.5 External ventilation openings shall be located and oriented to prevent entry of fuel vapors. In no instance shall the ventilation openings be closer than 15 inches (380 mm) from the diesel tank fill and vent openings. (See Figure 3)

32.6.6 Ventilation openings shall remain outside of weather enclosures.

NOTE: Ventilation openings should be located in consideration of their potential for contributing to water ingress. Ventilation openings below the shear may lower the effective freeboard.

FIGURE 1 – STATIC FLOAT PLANE

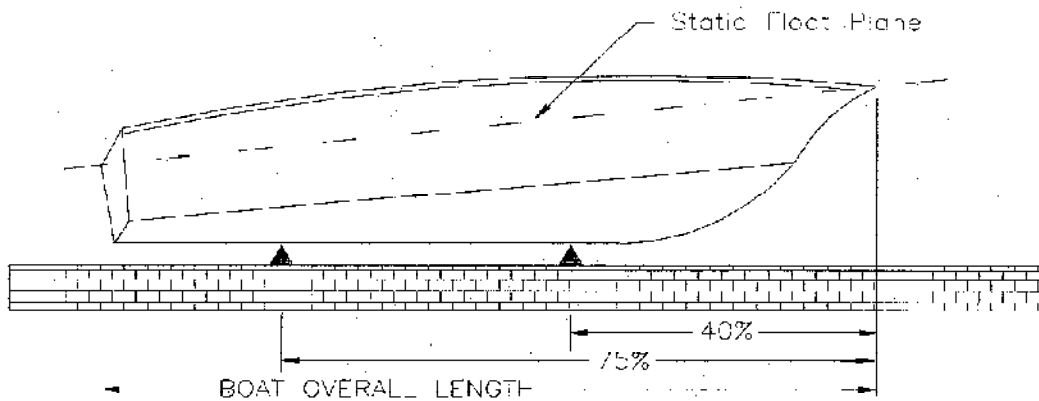


FIGURE 2 – STATIC FLOAT PLANE (ALTERNATIVE)

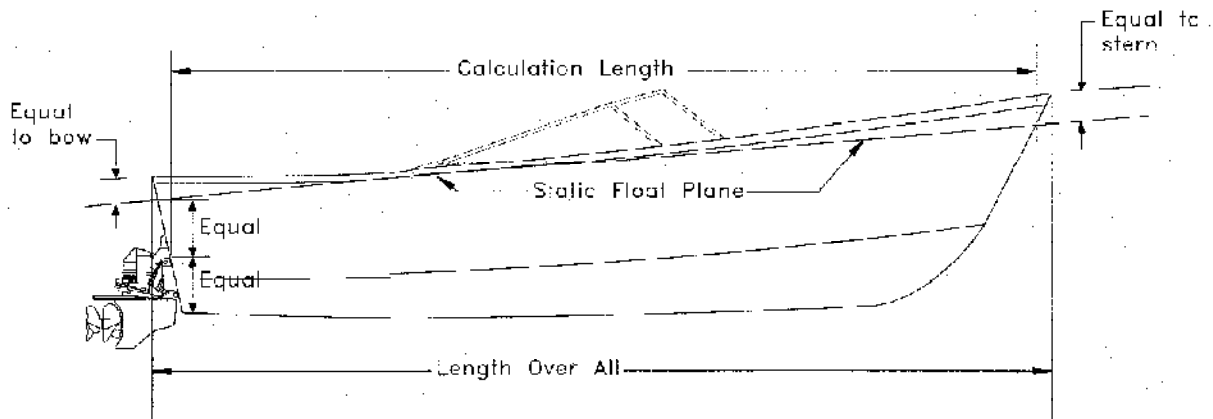
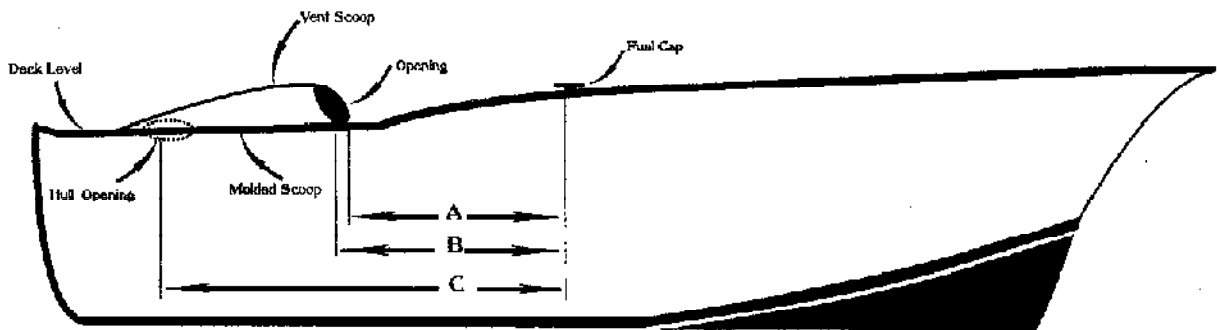


FIGURE 3 – FUEL TANK FILL/VENT AND VENTILATION OPENING SEPARATION



NOTE: In this situation the separation is measured as distance A. Distances B and C are improper measures of separation as per H-32.6.5

Origin and Development of ABYC H-32, Ventilation of Boats Using Diesel Fuel.

The requirements of this standard were originally incorporated as part of ABYC H-2, *Ventilation of Engine and Fuel Tank Compartments*, which was published in 1972. Subsequently, ABYC H-32, *Ventilation of Boats Using Diesel Fuel*, was published in 1981, 1987 and with a correction issued in 1989. A revised edition was published in 1998, and 2004. The 2008 version is the work of the Fuel and Ventilation PTC.

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