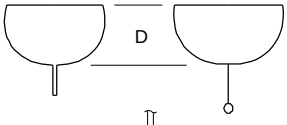
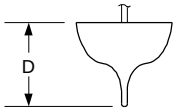
SIMPLIFIED MEASUREMENT TONNAGE FORMULAS (46 CFR SUBPART E)

Prepared by U.S. Coast Guard Marine Safety Center, Washington, DC Phone (202) 366-6441

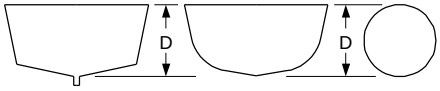
GROSS TONNAGE



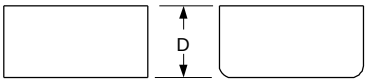
SAILING HULLS
GROSS = $\frac{0.5\ LBD}{100}$



SAILING HULLS (KEEL INCLUDED IN D)
GROSS = $\frac{0.375\ LBD}{100}$

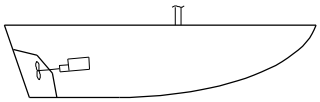


SHIP-SHAPED AND CYLINDRICAL HULLS
GROSS = $\frac{0.67\ LBD}{100}$

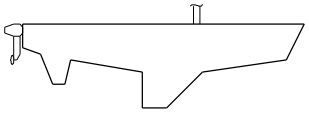


BARGE-SHAPED HULLS
GROSS = $\frac{0.84\ LBD}{100}$

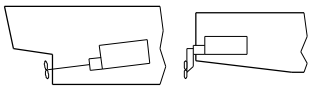
NET TONNAGE



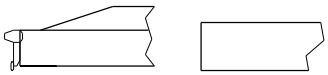
SAILING HULLS (PROPELLING MACHINERY IN HULL)
NET = 0.9 GROSS



SAILING HULLS (NO PROPELLING MACHINERY IN HULL)
NET = GROSS



SHIP-SHAPED, PONTOON AND BARGE HULLS (PROPELLING MACHINERY IN HULL)
NET = 0.8 GROSS



SHIP-SHAPED, PONTOON AND BARGE HULLS (NO PROPELLING MACHINERY IN HULL)
NET = GROSS

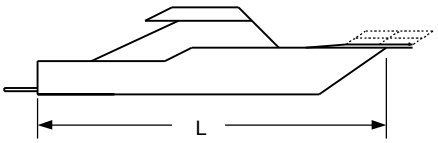
1. DIMENSIONS. The dimensions, **L**, **B** and **D**, are the length, breadth and depth, respectively, of the hull measured in feet to the nearest tenth of a foot. See the conversion table on the back of this form for converting inches to tenths of a foot.

LENGTH (L) is the horizontal distance between the outboard side of the foremost part of the stem and the outboard side of the aftermost part of the stern, excluding rudders, outboard motor brackets, and other similar fittings and attachments.

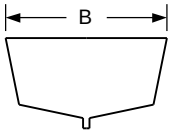
BREADTH (B) is the horizontal distance taken at the widest part of the hull, excluding rub rails and deck caps, from the outboard side of the skin (outside planking or plating) on one side of the hull, to the outboard side of the skin on the other side of the hull.

DEPTH (D) is the vertical distance taken at or near amidships from a line drawn horizontally through the uppermost edges of the skin (outside planking or plating) at the sides of the hull (excluding the cap rail, trunks, cabins, deck caps, and deckhouses) to the outboard face of the bottom skin of the hull, excluding the keel. For a vessel that is designed for sailing and has a keel faired to the bottom of the hull, the keel is included in **D** if the distance to the bottom skin of the hull cannot be determined reasonably.

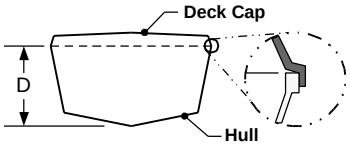
LENGTH (L)



BREADTH (B)

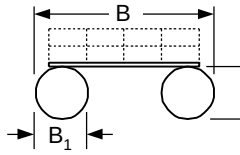


DEPTH (D)



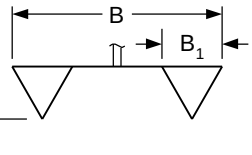
2. MULTI-HULL VESSELS. Gross tonnage of a multi-hull vessel is the sum of the gross tonnages of each hull as calculated using the formulas listed above. For example:

PONTOON HULLS



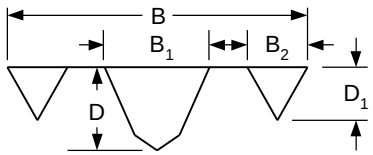
GROSS = $\frac{2(0.67\ LB_1D)}{100}$

CATAMARAN SAIL HULLS



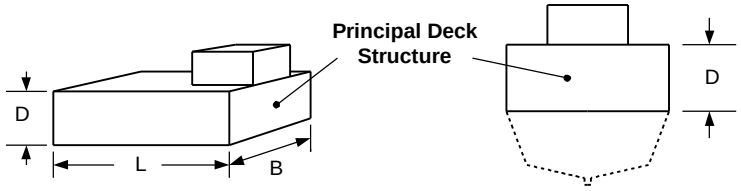
GROSS = $\frac{2(0.5\ LB_1D)}{100}$

TRIMARAN SAIL HULLS



GROSS = $\frac{0.5\ [L_1B_1D + 2(L_2B_2D_1)]}{100}$

3. DECK STRUCTURES. For most vessels, the formulas listed above account for the volumes of deck structures such as cabins and deckhouses. However, if deck structures are excessive in size, the gross tonnage is calculated by adding the principal deck structure tonnage to the gross tonnage(s) of the vessel's hull(s). Deck structures are considered excessive in size if the tonnage of the principal deck structure calculated using the formula below is equal to or exceeds the gross tonnage(s) of the vessel's hull(s).



PRINICPAL DECK STRUCTURE TONNGE = $\frac{LBD}{100}$

Subpart E—Simplified Measurement System

§ 69.201 Purpose.

This subpart prescribes the procedures for measuring a vessel under the Simplified Measurement System de-scribed in 46 U.S.C. chapter 145, sub-chapter III.

§ 69.203 Definitions.

As used in this subpart and in Coast Guard Form CG–5397 under § 69.205—

Overall breadth means the horizontal distance taken at the widest part of the hull, excluding rub rails, from the outboard side of the skin (outside planking or plating) on one side of the hull to the outboard side of the skin on the other side of the hull.

Overall depth means the vertical distance taken at or near midships from a line drawn horizontally through the uppermost edges of the skin (outside planking or plating) at the sides of the hull (excluding the cap rail, trunks, cabins, and deckhouses) to the outboard face of the bottom skin of the hull, excluding the keel. For a vessel that is designed for sailing and has a keel faired to the hull, the keel is included in ''overall depth'' if the distance to the bottom skin of the hull cannot be determined reasonably.

Overall length means the horizontal distance between the outboard side of the foremost part of the stem and the outboard side of the aftermost part of the stern, excluding rudders, outboard motor brackets, and other similar fittings and attachments.

Registered breadth means—

(a) For a single-hull vessel, the vessel's overall breadth; and

(b) For a multi-hull vessel, the horizontal distance taken at the widest part of the complete vessel between the outboard side of the skin (outside planking or plating) on the outboardmost side of one of the outboardmost hulls to the outboard side of the skin on the outboardmost side of the other outboardmost hull, excluding rubrails.

Registered depth means—

(a) For a single-hull vessel, the vessel's overall depth; and

(b) For a multi-hull vessel, the overall depth of the deepest hull.

Registered length means—

(a) For a single-hull vessel, the vessel's overall length; and

(b) For a multi-hull vessel, the horizontal distance between the outboard side of the foremost part of the stem of the foremost hull and the outboard side of the aftermost part of the stem of the aftermost hull, excluding fittings or attachments.

Vessel designed for sailing means a vessel which has the fine lines of a sailing craft and is capable of being propelled by sail, whether or not the vessel is equipped with an auxiliary motor, a decorative sail, or a sail designed only to steady the vessel.

[CGD 87–015b, 54 FR 37657, Sept. 12, 1989; 54 FR 40240, Sept. 29, 1989]

§ 69.205 Application for measurement services.

To apply for measurement under the Simplified Measurement System, the owner of the vessel must complete either an Application for Simplified Measurement (form CG–5397), or a Builder's Certification and First Transfer of Title (form CG–1261) which has the information in Part III ''Dimensions'' completed, and submit it to the National Vessel Documentation Center.

[CGD 95–014, 60 FR 31606, June 15, 1995]

§ 69.207 Measurements.

(a) All lengths and depths must be measured in a vertical plane at centerline and breadths must be measured in a line at right angles to that plane. All dimensions must be expressed in feet and inches to the nearest half inch or in feet and tenths of a foot to the nearest .05 of a foot.

(b) For a multi-hull vessel, each hull must be measured separately for overall length, breadth, and depth and the vessel as a whole must be measured for registered length, breadth, and depth.

(c) The Coast Guard may verify dimensions of vessels measured under this subpart.

§ 69.209 Calculation of tonnages.

(a) *Gross tonnage.* (1) Except as in paragraphs (a)(2) through (a)(5) of this section, the gross tonnage of a vessel designed for sailing is one-half of the product of its overall length, overall breadth, and overall depth (LBD) divided by one hundred (i.e., 0.50 LBD/100), and the gross tonnage of a vessel not designed for sailing is 0.67 LBD/100.

(2) The gross tonnage of a vessel with a hull that approximates in shape a rectangular geometric solid (barge-shape) is 0.84 LBD/100.

(3) The gross tonnage of a multi-hull vessel is the sum of all the hulls as calculated under this section.

(4) If the volume of the principal deck structure of a vessel is as large as, or larger than, the volume of the vessel's hull, the volume of the principal deck structure in tons of 100 cubic feet is added to the tonnage of the hull to establish the vessel's gross tonnage. The volume of the principal deck structure of a vessel is determined by the product of its average dimensions.

(5) If the overall depth of a vessel designed for sailing includes the keel, only 75 percent of that depth is used for gross tonnage calculations.

(b) *Net tonnage.* (1) For a vessel having propelling machinery in its hull—

(i) The net tonnage is 90 percent of its gross tonnage, if it is a vessel designed for sailing; or

(ii) The net tonnage is 80 percent of its gross tonnage, if it is not a vessel designed for sailing.

(2) For a vessel having no propelling machinery in its hull, the net tonnage is the same as its gross tonnage.

[CGD 87–015b, 54 FR 37657, Sept. 12, 1989, as amended by CGD 97–057, 62 FR 51045, Sept. 30, 1997]