

TONNAGE MEASUREMENT OF SHIPS

The size of ships is measured by methods that confuse many. The incompetence of the news media doesn't help. Reports of shipping contain much misleading information.

Let's do the easy parts first.

Warships are measured by their actual weight in imperial tons or tonnes. This is properly called displacement, since a floating ship displaces a weight of water equal to its own weight. The size of warships varies greatly. A small patrol boat may displace only a few hundred tons. A nuclear-powered aircraft carrier displaces from 95,000 to 100,000 tons, depending on her mission.

Freighters, such as oil tankers and bulk carriers, are often measured by deadweight, measured in imperial tons or tonnes. Deadweight is the weight of freight, fuel, stores and anything else the ship can carry, right down to her cat. Oil tankers of around 500,000 tons deadweight have been built. This appears to be about the practical limit. Few ports can accommodate such ships, which may draw as much as 25 metres of water. The deadweight of a modern cruise ship is quite small, as she carries no freight and only limited fuel. Cruise ship deadweights of less than 10,000 tons are quite common.

It has become common to measure container ships by the number of Twenty-foot Equivalent Units (TEUs) they can carry. Several ships capable of carrying more than 10,000 TEUs have been built, but many ports are unable to handle such vessels.

Passenger ships are tricky.

Traditionally, passenger ships are measured by volume. However, to confuse us, until recently volume was expressed in tons (never in tonnes). This started centuries ago when freight was carried in big barrels, called tuns. A ship's size was measured by the number of tuns she could carry.

Over time, this practice developed into a system of calculating a ship's volume by measuring her internally according to prescribed rules. Her tonnage was then calculated on the basis of one ton for every 100 cubic feet (2.93 cubic metres). Usually, two tonnages were calculated.

Gross Registered Tonnage was the internal volume of the ship, whether it was available for profitable use or not. Net Registered Tonnage was the internal volume of the ship that was available for passengers and/or freight. Sometimes the tonnage below decks, as distinct from in deckhouses, is seen in old records.

This was the state of play in Titanic's era and for long afterwards. Titanic's GRT was 46,328.57 tons and her NRT was 21,831.34 tons.

In Titanic's time, this system was frequently also applied to freighters. Californian, for instance was of 6,223 GRT. Today it is still calculated and recorded in Lloyd's Register, but deadweight is increasingly becoming the usual measurement for freighters.

OK so far? Now for the tricky bit!

In 1994, the term 'Gross Register Tons' was replaced under the regulations of the International Maritime Organisation, a United Nations agency. The 2006-2007 edition of Lloyd's Register explains the latest terminology.

Gross Tonnage.

The Gross Tonnage...indicates that the ship has been measured in accordance with the requirements of the 1969 International Convention on Tonnage Measurement of Ships. The Gross Tonnage generally comprises the moulded volume of all enclosed spaces of the ship, to which a formula is applied in accordance with the Convention requirements. Accordingly, no unit of measurement is assigned and the figure attained is simply referred to as the ship's "Gross Tonnage" (GT).

It is now therefore correct to say that Freedom of the Seas, has a Gross Tonnage of 158,000. The terminology for Net Tonnage has been changed in the same way.

So how do we compare ships? Certainly not by comparing Gross Tonnage with displacement or deadweight, as the news media so often do. A 100,000 Gross Tonnage cruise ship is not bigger than the 97,000 ton displacement USS Nimitz. A 130,000 deadweight tons tanker might be physically smaller than either.

Displacement might provide a fair comparison, but without access to the builder's plans displacement for merchant ships is practically impossible to obtain. Comparisons of length, beam and draft would be meaningful, but even these have catches. That's another story!