

Introduction to Sail and Rigging Types

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What this presentation will cover

- Sail types: what are Bermudan, Gaff, Lug and Square sails?
- Rig types: what are catboats, sloops, cutters, yawls, ketches, schooners, brigs, brigantines, barques, barquentines and ships?

The Roots of European Sailing

Arab Dhow



- Lateen rigged; one of the earliest fore-and-aft rigs.
- Good at sailing upwind.
- Poor at sailing downwind.

Viking Longship



- Square rigged; arguably the oldest sail type.
- Poor at sailing upwind.
- Good at sailing downwind.

Square Sails

- So called because, when at rest, the sail sits across the vessel.
- One type of sail; many, many configurations.
- Generally unsuitable for small boats.
- Best for Downwind sailing.



Square Rig

- An ancient rig type, very rare for private yachts.
 - Excels downwind over long distances.
- Trapezoidal sails held onto Spars called Yards.
 - Immensely complex rigging.
- Requires large amounts of crew to operate

Fore-and-aft Sails

- So called because when at rest, the sail sits along the length of the boat, fore-and-aft.
- Comes in many varieties, of which the most popular nowadays are Bermudan, Gaff and Lug.
- Good for small boats due to relative simplicity of rigging, ease of working and superior manoeuvrability.

Lug Rig

- An evolution of Square and Lateen rig.
- Trapezoidal sail attached to a single Yard_at the top.
- Many varieties.
- Simple rig setup.
- Two main types: Dipping Lug and Standing Lug.



Gaff Rig

- An evolution of Lug rig.
- Trapezoidal sail set behind the mast with a spar at the top called the Gaff and one at the bottom called a Boom.
- Sail raised by two Halyards.
- Flexible sail type.
- Extra spars give options for setting sails.
- Doesn't require as high rig tension as Bermuda rig.



Bermudan Rig

- An evolution of Gaff rig, is now the most common sail type for modern yachts.
- Roughly triangular sail set behind the Mast with a Boom along the bottom.
- Sail raised by a single Halyard.
- Easy to handle.



Headsails

- Headsails is the generic term for the range of sails hoisted before the mast.
- Most common types are Staysails, Jibs and Spinnakers, though others do exist.
- Usually hoisted on a halyard on older vessels, though modern vessels often have roller furling headsails.

Staysail

- Triangular sail shackled onto the Stay that keeps the top of a Mast from moving too far aft.
- Raised by a single Halyard
- Two sets of sheets: Port and Starboard.
- Very quick to set; useful for manoeuvring in confined spaces.
- Usually very strongly made so as to fly in most wind conditions.



Jib

- Triangular sails usually hoisted from a Bowsprit to the top of a Mast.
- On smaller vessels with a Bowsprit, are often hoisted out to the end of the Bowsprit on a Traveller Ring
- On larger vessels with a Bowsprit (especially Square Rigged ones), are often hanked onto Stays in the manner of a Staysail.
- Two sets of sheets: Port and Starboard
- Cannot function as close to the wind as most Mainsails.



Spinnaker

- Massive sails designed to supplement the Bermudan sail's relatively poor downwind performance.
- Cannot function upwind.
- Come in two varieties: Asymmetric and Symmetric.
- Asymmetric Spinnakers are usually mounted on a bowsprit and easy to Gybe.
- Symmetric Spinnakers can be sailed directly downwind but are more difficult to Gybe.



Rig Types

We will now examine different mast and sail configurations and what they are called. Before we begin, however, these are the most common names for masts.

- Foremast: this is usually for the Mast nearest the Bow.
- Mainmast: this is usually for the largest or central Mast.
- Mizzenmast: This is usually for the mast nearest the Stern.



Catboat

The simplest rig type: a vessel with a single Mast with a Mainsail of any kind.



Sloop

A vessel with a single fore-and-aft rigged Mainmast. One Headsail.



Cutter

A vessel with a single Fore-and-aft rigged Mainmast. Two or more Headsails.



Lugger

Generic term for Lug rigged vessels with more than one mast. This is a three-masted Lugger, though two-masted Luggers are more common.



Yawl

A vessel with two Fore-and-aft rigged Masts; a Mainmast forward and a small Mizzenmast aft behind the Rudder Post. Any number of Headsails.



Ketch

A vessel with two Fore-and-aft rigged Masts; a Mainmast forward and a Mizzenmast aft before the Rudder Post. Any number of Headsails.



Schooner

A vessel with two or more Fore-and-aft rigged masts; a small Foremast, a larger Mainmast and then up to five more masts roughly equal in size to the mainmast. Any number of Headsails. Has hundreds of varieties.



Brigantine

A vessel with two masts; the Foremast being Square Rigged, the Mainmast being Fore-and-aft rigged. Any number of headsails.



Brig

A vessel with two masts, both of which are Square-rigged. Any number of Headsails.



Barquentine

A vessel with three or more masts; the Foremast being Square-rigged, the others being Fore-and-aft rigger. Any number of Headsails.



Barque

A vessel with three or more masts of which all but the aftermost are Square rigged, the aftermost being Fore-and-aft rigged.



Fully-Rigged Ship

A vessel with three or more masts, all of which are Square-rigged. Any number of Headsails.

Why do vessels have different rigs?

- Larger sails generate more power, but become increasingly difficult to use.
- Splitting up the sail area over several masts leads to multiple smaller, more manageable sails rather than a single massive one.
- With multiple sails and masts the options for what sails to fly, where and when increase exponentially.

What is the point of this presentation?

A vessel's rigging must work together with the hull to fulfil the purpose it was designed for. If you design a hull for upwind sailing and then fit it with square sails your rig and hull do not complement each other's strengths and the vessel will perform poorly. If you have a clear idea of what the vessel is supposed to do, design it so that the hull and rig work together to fulfil that purpose.