RIGGING TANGLES

A GUIDE TO SAILING ON THE HISTORIC 18-FOOTER TANGALOOMA OR TANGLES

Neville Turbit

Introduction

Many people want to go sailing on an Historic 18-footers. They want to know what it felt like to be one of those sailors between 1900 and 1950 when 18-footer sailing ruled supreme. Today, even for skilled sailors, it is a whole new adventure. No winches or canting keels. This is muscle and ridiculously over-canvassed wooden boats.

We took the boats to Geelong some time ago and took on board a guy who said:
"I have been hanging around hoping someone might ask me to come out on these boats".

The smile was enough to make a dentist proud. He was ecstatic. I asked him about his sailing experience. He casually mentioned had skippered some top boats in the Sydney Hobart. Won a few championships. Sailed with all the legends of ocean racing but Historic 18-footers blew him away.

Sailing these boats requires a whole new skill set. How do you learn? This book will provide a starting point. Only going out there on an Historic 18-footer will really teach you.

The book is written for those with a knowledge of sailing equal to zero to those who have confidently sailed other boats. Not all chapters are applicable to all people. For instance, the chapter on the theory of sailing is necessary for someone who has never sailed. It is unnecessary for someone who is an experienced sailor. On the other hand, the chapter on what to do in a capsize situation is applicable to everyone.

I have not tried to be perfectly technically accurate. There are some parts where I have simplified the message in order to get a general concept across. Refining the detail will come later as people gain more experience.

Tangalooma, or Tangles, is 25 years old in 2019. The original was launched in 1930 and the replica in 1994. Tangalooma has seen many crew members come and go. One of the things we are proud of is that many had never sailed before. They were quietly walking by and found themselves press-ganged into a wetsuit and out on Sydney Harbour. Most keep coming back. Our goal is not to win at any cost. It is to have a good time.

If we come last who cares? At least we got to spend more time on the water than anyone else.

Dedicated to

Peter and Dick Notley who for many years sailed and were custodians of Tangalooma.

Peter Legrove who skippered Tangalooma for over a decade

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History of the Sydney Flying Squadron

Overview

This section provides some background on the club, its origins as well as the current fleet of Historic 18-footers.

Beginnings

The club began in 1891. At that time sailing was a gentleman's sport. It was ultra-conservative and run by upper-class leaders of business. Sails were white and no marking allowed. Races were run where all boats started at the same time, and after the finish, handicaps applied so that a winner could be worked out …. eventually. Usually yachts sailed outside the heads and were not visible to spectators.

Along came a renegade called Mark Foy. He was a successful businessman who had built up a clothing store called, of all things, Mark Foys. It is still standing in Sydney and is used as the Downing Street court building. Mark Foy built the Hydro Majestic Hotel at Blackheath which is still operating today.

Mark Foy

He wanted a different sort of racing. Racing for the working man. In 1891 he formed the squadron and introduced rules never seen before. Since the Wright brothers had not yet flown an aircraft "flying" referred to the boats.

Skiffs had insignia on their sails so spectators could tell one boat from another. He also introduced a handicap start. Boat starts were staggered. The slowest started first, and the quickest last. That way, theoretically everyone should cross the line at the same time. The boats were an evolution of the working peoples rowing boats and small sailboats – many of which were already racing.

Mark Foys Store

Open skiffs had existed in various forms ranging from 6-footers to 24-footers. Racing had taken place, but not on the scale envisaged by Foy.

The establishment immediately banned the boats from the 1892 National Regatta. Somehow, however, the concept had grabbed the imagination of the public. What the establishment thought was a disruption excited the general public. Mark Foy put his own wealth on the line and donated the prize money.

He advertised the racing by driving around a truck with a calico sign advertising a new regatta. There were various size boats racing, and the public loved it. Gradually the dominant size became the 18-footers.

Spectators

Crowds flocked out on ferries. On any race day, there might be 15 to 20 ferries following the racing. An added benefit was that there was betting – highly illegal – on the ferries. Which boat would get to the next mark first? Which boat would win? Would one boat be able to pass another? The ferries were raided by the Water Police but by that time money had disappeared.

The ferries were often in danger of capsizing as people rushed from one side to another. Crowds lined the foreshore. Skiff racing, along with cricket, was the top sport in Sydney during summer. Around the turn of the century, top skippers were rock stars.

Evolution in the early 1900s

Racing spread to Brisbane and interstate championships began. New Zealand started racing similar boats so they sent teams to Sydney. Initially, boats were over eight-feet beam (width) but during the following half-century, they reduced to six-foot beam making them lighter and more competitive. Crews were often made up of Rugby Union and Rugby League players during their off-season. Football jumpers identified crews.

The rules for 18-footers were very simple. It was said there were only two rules. The boat must be eighteen feet long and the race starts at 2.30. That is a slight exaggeration but innovation was what won races. The concept was to develop boats that were spectacular to watch.

The skiffs hoisted as much sail as possible which made them highly unstable. It took exceptional teamwork from the 10 to 15 crew to keep them afloat.

During the 1930s there was a split in the racing and a breakaway group formed the 18-footer League at Double Bay which continues to this day racing very different 18-footers. Today's boats are carbon fibre machines sailed by three people – a design progression.

By the early 1990s, the original boats had largely fallen apart. They were never designed to last. 18-footers were fragile craft built as light as possible to race a few seasons. Two of the originals remain in the National Maritime Museum (Britannia and Yendys) and one in Perth (Mele Bilo).

A number of retired boatbuilders and sailors decided to reconstruct some replicas of that bygone era. The two replicas they built were Tangalooma and Scot.

The original Tangalooma was built in Queensland in 1930 by a syndicate of 8. They put in 10 pounds each. Surprisingly, when the boat was built, the boatbuilder said it cost exactly 800 pounds. It won the Australian Championship in 1931/32 and again in 1936. Part of the original boat is in the Queensland Maritime Museum.

Scot was built in 1906 and was a top boat for many seasons. Both Scot and Tangalooma are wide beam boats. Tangalooma is 8 feet 6 inches wide and Scot 7 feet 4 inches.

Since then a number of replicas have been built. There is a fleet of 11 in Sydney and 1 in Queensland. The Sydney fleet race between October and Easter each year and has done for 25 years. We still have a ferry follow the fleet but the illegal bookies and raids by the water police have gone.

The replicas have made some concessions to the years. The canvas sails have gone as have wooden masts. Hessian ropes have been replaced with modern materials. Some of the building techniques have been updated to ensure the boats last longer than the three or four years the original boats were designed to last. Otherwise, the techniques to sail the boats and the equipment is close to the original. There are no winches or course plotters. This is basic sailing as it was done 60 or 80 years ago.

One boat stands out from the fleet in authenticity. Britannia was built as close as possible to how the original Brit was built in 1919. The original is at the Maritime Museum and so there was a model to work from even though it had been through different iterations as a motorboat and a starters boat. The Britannia replica even has a wooden mast.

The ownership of the boats is a mix of individual owners and the Australian Open Skiff Trust (AOST). The goal of the AOST is to maintain the fleet in perpetuity so that in decades to come they can maintain the boats and increase their numbers.

The Historic 18-footers have drawn interest from around the world. They have been shipped to the UK, Auckland and USA and raced there. They have raced in Brisbane, Melbourne and Perth. Sailors from all over the world come to Australia and want to sail in these unique crafts. Others just want to watch them race from the ferry.

Sydney Flying Squadron (SFS) is the oldest open boat sailing club in Australia. It has been around for over 125 years. SFS has continued Mark Foy's tradition of working-class boats with ridiculous amounts of sail. Many crew members have raced 18-footers in the past but equally, many have never even sailed before. We cater to people who want to know what it was like when the 18-footer fleet was the biggest sporting event in Sydney.

The Fleet

We have only listed the Sydney boats. Jenny Too, the Brisbane boat is not listed.

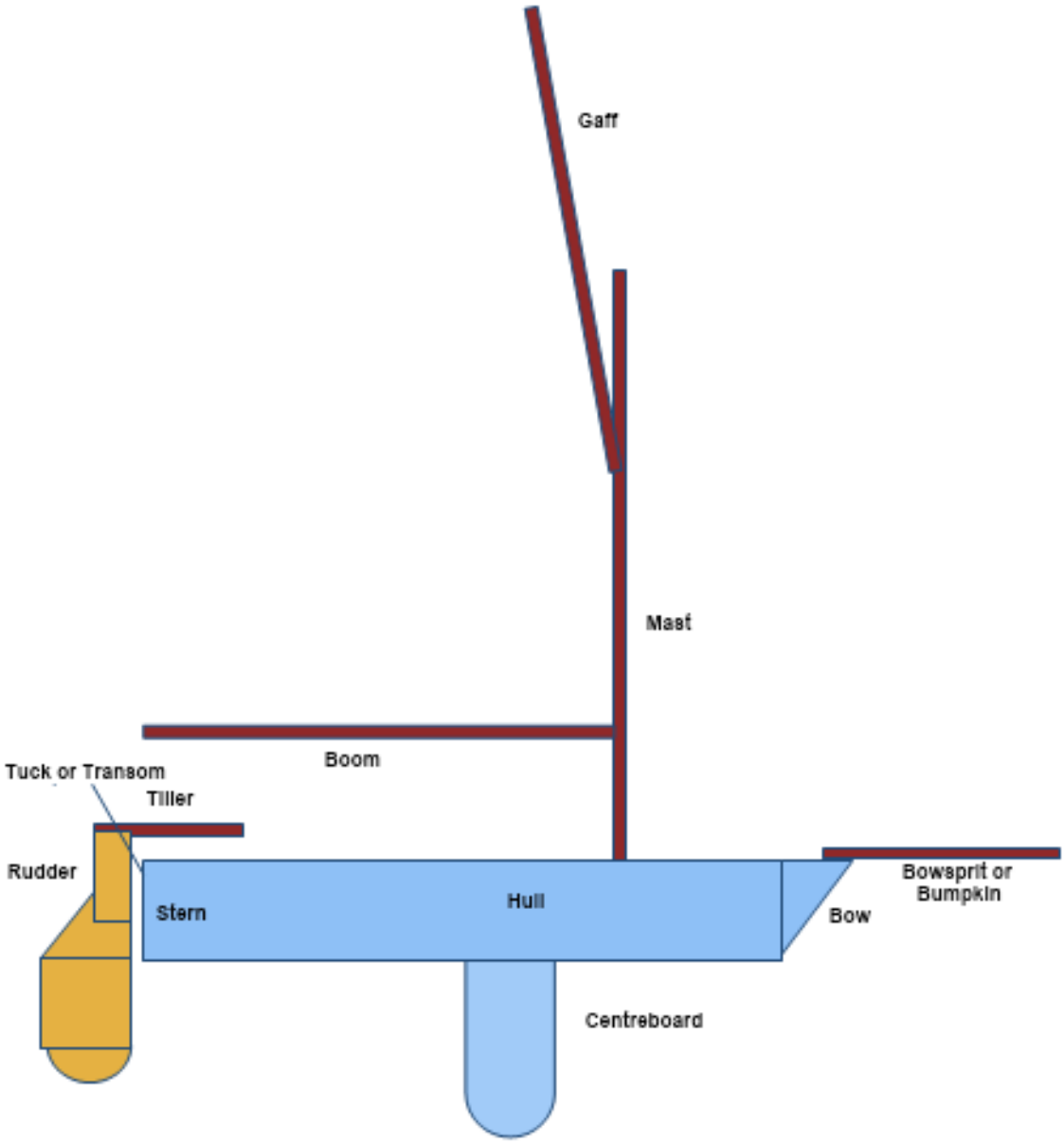
Name	Original	Replica	Beam	Sail Insignia
Aberdare	1932	2000	7 ft	
Alruth	1947	2001	7 ft	
Australia	1947	2000	6 ft	
Australia IV	1943	2007	7 ft	
Britannia	1919	2002	8 ft	
Myra Too	1950	2013	6 ft	
Scot	1906	2005	7ft 4 in	
Tangalooma	1930	1993	8 ft 6 in	
The Mistake	1933	2005	7 ft	
Top Weight	1946	2001	7 ft	
Yendys (Sydney spelt backwards)	1925	2007	7ft 4 in	

Chapter 1 – Parts of a Boat

Overview

In this chapter, we will talk about the parts of a boat. Our focus is only on the 18-footer skiffs. There are lots of other boat parts that are relevant to different types of boats but they will not be covered here.

Hull Parts



Main parts of a boat including mast and bumpkin

We will start with some of the basic components before we get into sails and rigging.

The **Hull** or boat itself starts at the Bow at the front and goes to the **Stern** at the back. The actual part of the boat at the stern is called the **Tuck** or **Transom.** At the bow, there is an extension called a **Bowsprit** or **Bumpkin**. Tuck and Bumpkin are the traditional names and we should try and preserve these traditions.

A **Fin** made of aluminium which weighs a considerable amount slides through the boat and protrudes underneath. Inside the boat is a fin case to contain the fin.

The tuck with the boat name. The fin case is in the middle of the boat. The gunwales are the outer edge of the deck areas on either side of the boat. Gunwale is a reference to old sailing ships. The gun wale (wall) was the area above the cannons used to stiffen the boat.

On the back of the boat is the **Rudder** which is attached by a pin to lock it in place. The rudder is put on the boat when it is launched. Finally, a **Tiller** fits in the rudder to enable the boat to be steered.

The mast is held in place by rigging which will be covered later. On the mast is the **Boom** to which the bottom of the mainsail is attached. The **Gaff** is slid up the mast and allows the mainsail to be hoisted well above the height of the mast.

Aberdare

There are four sails as you can see from this picture of Aberdare.

The Mainsail is the one flying from the back of the mast and gaff.

The Jib is forward of the mast and attached from the top of the mast to the end of the bumpkin. In this picture, it is just visible.

The Spinnaker is the black and white sail flying from the top of the mast and held by the spinnaker pole.

The **Ringtail** is flown outside the back edge of the mainsail. Half the ringtail is in front of the main in this picture.

Each boat has a variety of sizes of each sail (collectively known as the Wardrobe). The selection on any day depends on the strength of the wind. Big sails (No.1 gear) for light winds and small sails (No.3) for strong winds.

Chapter 2 – Theory of Sailing

Overview

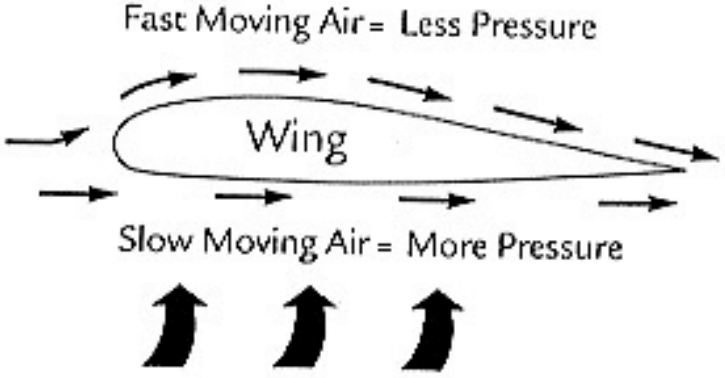
This chapter covers some of the basic theory of how a boat sails. There are some over-simplifications so please accept them as aids in understanding. If you are an experienced sailor, you can probably skip this section.

The Evolution of sailing

The first sailing boats used the concept that wind pushes a boat downwind. With the wind behind the boat, sails caught that wind and propelled the boat forward. The original square-riggers used this principle but would often spend days waiting for the wind to change direction so they could go where they wanted to go.

Bernoulli's Theorem

In 1738 Daniel Bernoulli put forward a principle that if the velocity of fluid increased, the pressure decreased. An aircraft wing is a good example.



Aircraft wing showing airflow

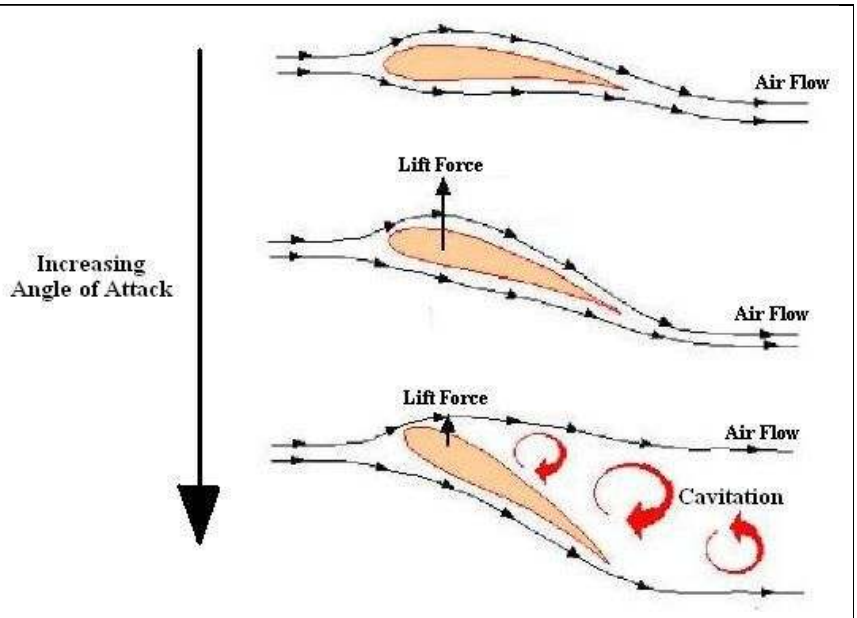
As the air moves over the curved top of the wing it accelerates and causes a low-pressure area.

The air moving under the wing does not have as far to travel so is higher pressure.

The result is that the wing rises and takes the aircraft with it.

So what happens when an aircraft stalls? As you can see from the diagram, the air breaks away from the top surface and starts to swirl. Lift is destroyed in the turbulent air.

No longer do we have air accelerating over the top surface and causing a drop in pressure. It now just swirls and causes the aerofoil to drop.



A wing reaching stall angle

A sail is just a wing on its side. In fact, some high-performance catamarans use a solid wing for a sail.

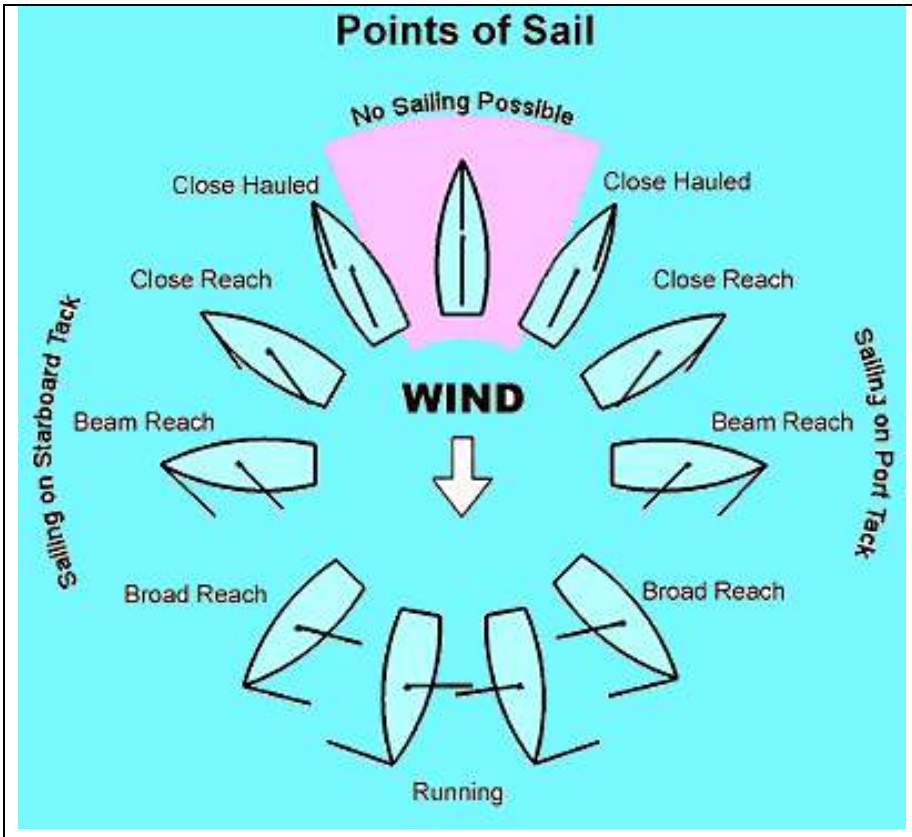
The same applies with a sail. If the angle to the wind is too acute, the sail will flap and not drive the boat. The air on one side of the sail is just swirling around, causing turbulence.

Sailing boats cannot sail directly into the wind. They can sail at an angle of somewhere between 40 and 50 degrees to the wind. The angle depends on the design of the boat, and the cut of the sails.

The term “pointing” is used to describe the angle of sailing into the wind. “Pointing higher” is sailing at a closer angle to the wind. A boat pointing higher may be sailing at 45 degrees to the wind whereas one pointing lower may only be at 50 degrees.

In conclusion, boats can sail in two ways. They can be blown along by the wind (sailing downwind) or use aerodynamic principles to sail into the wind (sailing upwind).

Points of Sailing



Points of Sailing

So, all this upwind and downwind gives rise to points of sailing.

The diagram shows the points of sailing a boat. Note the position of the sails.

When a boat goes from a port tack to a starboard tack while sailing into the wind it is called **"Going about"** or simply **"Tacking".**

A port tack is where the wind is coming over the port or left side of the boat. A starboard tack is the opposite.

Sailing at right angles to the wind is called **Reaching**.

When a boat going downwind changes direction so that the boom moves from one side of the boat to the other (often very quickly and with a lot of force) it is called **"Gybing".** In the diagram it is shown as "Running" and you can see the sails over different sides of the boat as it gybes.

Forces on the Boat

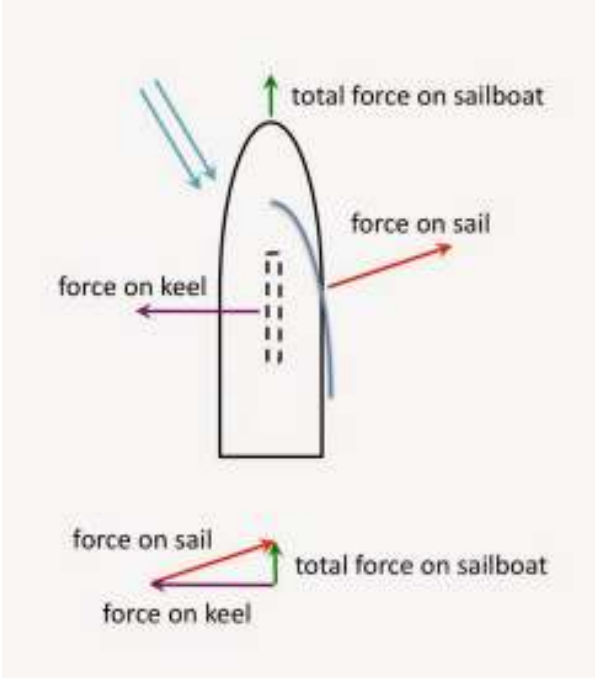


Diagram of forces

We will now look at what this all means in terms of making a boat being close-hauled (see diagram above) go forward.

If there was no keel or fin, the only force would be the wind on the sails. The boat would go in the direction of the red arrow. Think again of the sail as a wing. The lift is the red arrow but of course, it is rotated 90 degrees. From the horizontal to the vertical.

If there is a fin or keel, under the water it will resist being dragged sideways. That is the purple arrow.

To use the analogy of a clock, the sail is trying to move the boat towards 2 o'clock and the keel or fin is trying to move it towards 9 o'clock. The result is that it goes towards 12 o'clock.

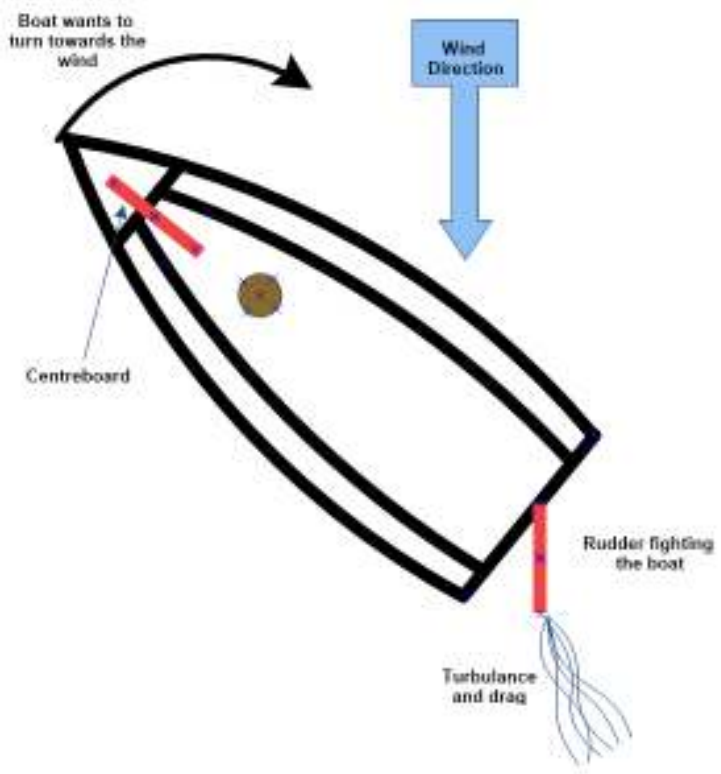
The Rudder

Which brings us to the role of the rudder.

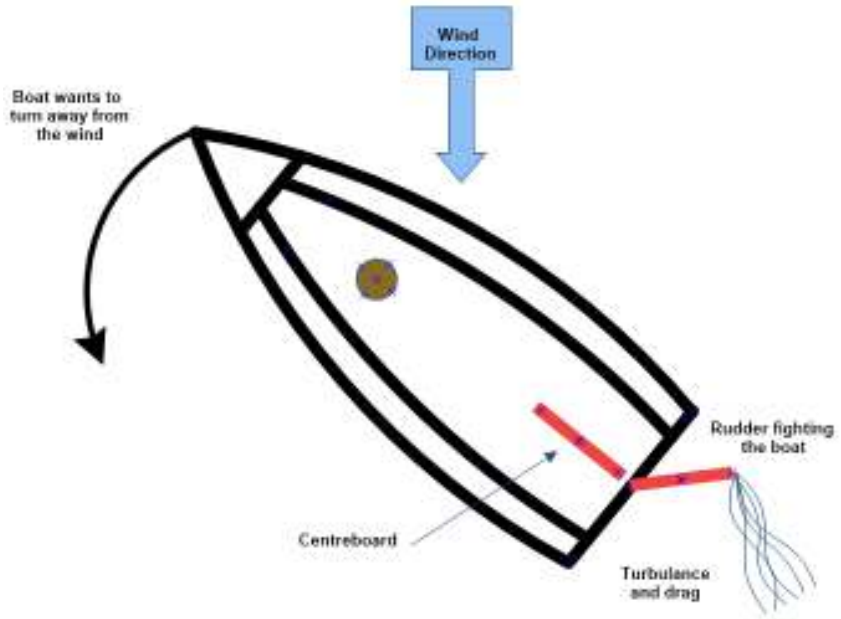
It would never happen, but imagine the fin was at the bow, or front, of the boat. The boat would pivot around the fin and in the diagram rotate clockwise.

The back of the boat would want to swing away from the direction the wind was coming much like a wind vane.

The rudder would have to fight the boat to make it go forward. It would be an enormous drag on the boat.



***Weather helm**. The boat wants to turn into the wind.*



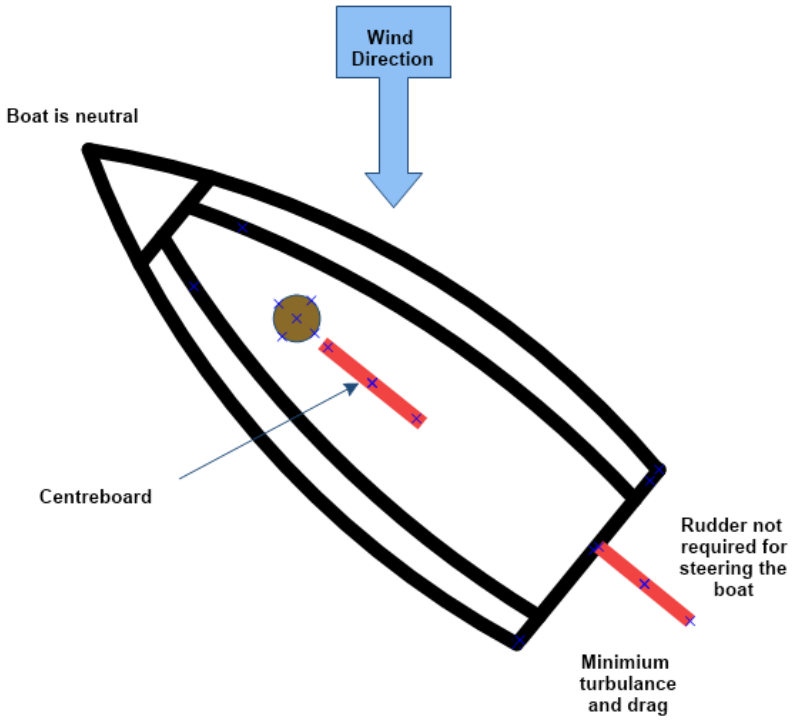
***Lee helm**. The boat wants to turn away from the wind*

Now imagine the fin was at the back of the boat. The boat would rotate anticlockwise.

The bow would be blown away from the wind.

Once again the rudder is causing drag on the boat to keep it pointed in the direction you want to go

Although the fin is actually located in the centre of the boat, there can still be forces that cause the boat to want to turn towards the wind or away from the wind. That is corrected by the rudder. The person steering the boat is constantly making adjustments as the wind swings around, and the different forces come into play.



The rudder causes drag on the boat. Turning the rudder blade away from the neutral position is a drag which slows the boat down.

Since the sails and fin position determine the balance of the boat, the ideal position is one that gives a neutral rudder. 18-footers have a fin case that allows the fin to be moved fore and aft a small distance.

***Neutral helm**. Rudder not required*

The ideal position depends on the strength of the wind, and the size of the sails as well as how tight or loose they are. Remember changing the shape of the sail by tightening or loosening the sail can impact the force the sail generates and hence the balance.

Sailing at right angles to the wind is a different situation. In this position, the sails are released and held at about 30 degrees to the boat. This is the fastest point of sailing. The objective is to keep the boat balanced (neutral rudder) and flat.

- While sailing towards the wind, (tacking) the boat is best kept on a lean or heeled over
- Sailing at right angles (reaching) is best done with the mast vertical and the boat upright.

Tangalooma heeled over on a port tack. Note the gunwale or edge of the hull, is just at water level. Crew using their weight to balance the force on the sails.

Controlling Sails

Winds are not consistent and it is not possible to steer in a fixed direction due to waves and currents. The sails need to be constantly adjusted. Some of the adjustments are typically done once before the race such as the tightness of the sail when it is hoisted.

There are ropes called **sheets** which control the sail and have to be constantly adjusted. There is the **main sheet** which controls the mainsail, a **jib sheet** which controls the jib or front sail and a **spinnaker sheet** which controls the spinnaker when it is in use.

Chapter 3 – Sails and Rigging

Introduction

This chapter covers the fixed parts of the rigging including mast and bumpkin. It also covers the different sails and the names of the parts of the sail.

Sails

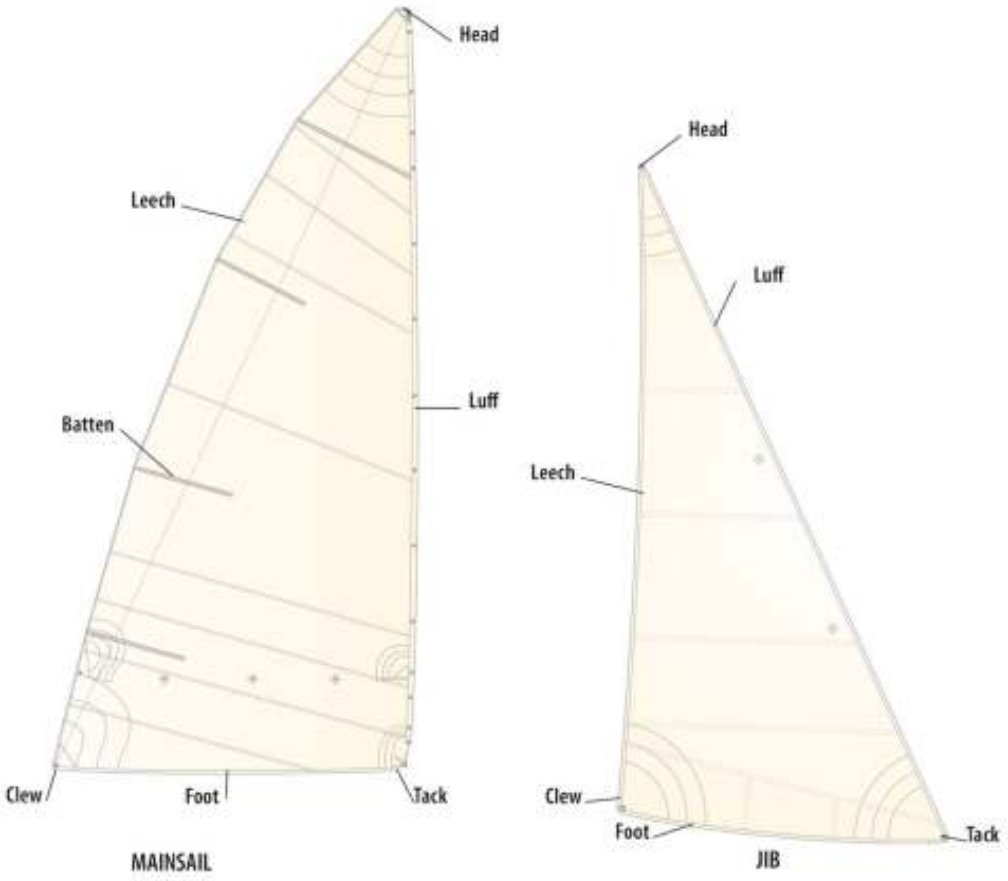
There are four sails used on historic 18-footers. They are:

- Mainsail
- Jib
- Spinnaker
- Ringtail (on some boats)

The **mainsail** is located behind the mast. The **jib** in front of the mast. The **spinnaker** flies from a spinnaker pole attached to the mast and is used for running downwind. The **ringtail** is flown outside the edge of the mainsail and is flown downwind. Not all boats use a ringtail, and it can not be carried in heavy weather.

Parts of a sail – Jib and Main

The edges and corners have names. The diagram below shows the name of each part.



Parts of a sail

The **Head** is the top of the sail and is hauled up the mast using a **halyard**. The term 'halyard' comes from the days of sailing ships. The sails hung from timber spars called yards. Pulling a sail up the mast was called 'hauling the yards'.

The fixed bottom corner is called the **tack**. It comes from the Old North French *tache*, "nail, pin." The tack is the front bottom corner of the sail. The term "tacking" means to change direction to the wind so if the wind is coming from the port (left) side of the boat, after tacking it comes from the starboard (right) side, and vice versa.

The **clew** is the moveable corner of the sail and is used to control the angle of the sail in relation to the wind. The origin is Old English cliwen, cleowen (denoting a rounded mass, also a ball of thread), of Germanic origin; related to Dutch kluwen. The application to sailing also goes back to square riggers. The sail was rolled up from the clew or bottom of the sail.

The **foot** is self-explanatory. It is the bottom of the sail.

Luff is the leading edge of the sail. It is basically the front of either jib or mainsail. If a sail is "luffing" the front edge is flapping.

Leech is the back edge of the sail.

On a jib, the jib halyard is attached to the head and the tack is attached to the bumpkin. The jib sheets are attached to the clew being the moveable part of the sail.

On a mainsail, the main halyard is attached to the head. The tack is attached to the inner end of the boom, and the clew to the outer end of the boom. Once again, the clew is at the end of the boom which is used to control the sail.

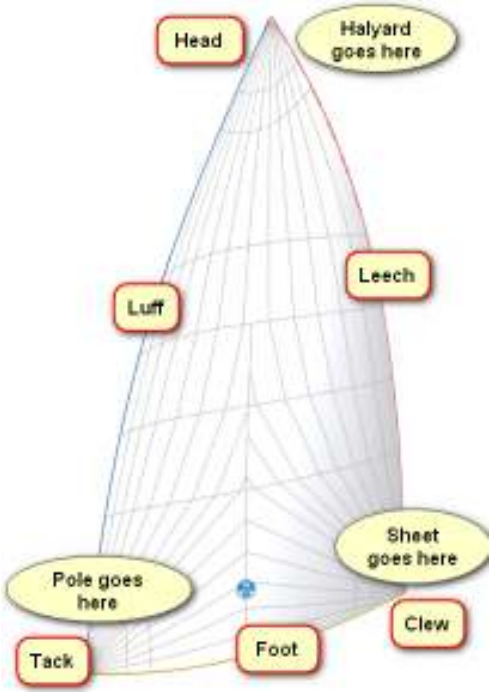
Parts of a Sail – Spinnakers

Before we get into the parts of a spinnaker, there are two types of spinnakers. Symmetrical and Asymmetrical. Only Asymmetrical are allowed for Historic 18-footers.

The difference is that both the long edges of symmetrical spinnaker are the same length. On an asymmetrical spinnaker, one edge is longer than the other.

This is an asymmetrical spinnaker.

- The front edge is the luff, and the back edge is the leech. The foot is the bottom of the sail.
- The front edge (luff) is attached to the end of the spinnaker pole at the tack.
- The back corner is attached to the spinnaker sheet at the clew.
- The spinnaker is raised with a spinnaker halyard attached to the head.



Parts of a spinnaker

Parts of a Sail – Ringtail

The ringtail is only used by Historic 18-footers. It is hoisted to the top of the gaff, or the head of the mainsail.

Aberdare with spinnaker and ringtail

In the picture of Aberdare above, you can see the triangular top of the ringtail – the lighter coloured sail - and the part of the sail behind the mainsail. There are two spars. One is at the top and can be seen on the bottom of the triangle where the rectangular part of the sail begins. The other is at the bottom of the sail.

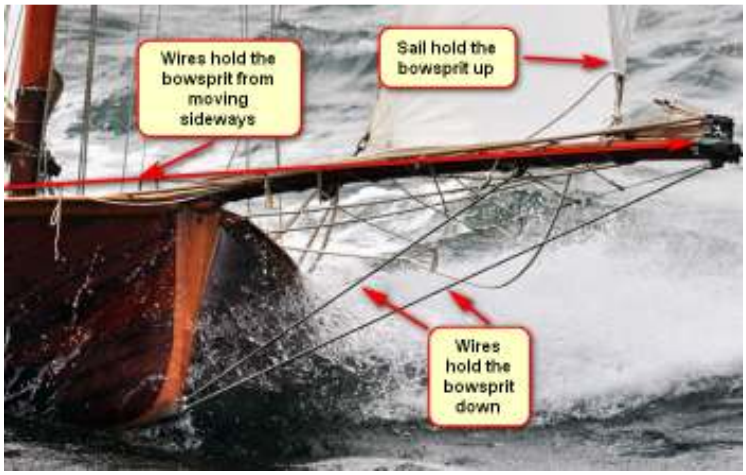
The sail is hoisted by a halyard that goes up in front of the mainsail. The ringtail is rolled out under the boom and when hoisted, is pulled out along the boom until it protrudes half its width beyond the mainsail. The force of the wind on the left side of the sail (in the diagram above) forces the right half of the sail back against the mainsail so that it keeps balanced, and roughly in line with the boom and mainsail.

Bumpkin

The bowsprit, or bumpkin, is fixed to the front of the boat. Different boats have different attachment methods.

If they were just held at the deck end of the bumpkin without any other support they would easily break. The bumpkin needs to be braced in a number of directions.

Typically two wires run from the bumpkin to the bottom of the bow to hold the bumpkin down. These are called B**obstays**. One runs from the end, and one the middle.



Wires holding the bumpkin. Bobstays hold the bumpkin down and whiskers stop it moving sideways.

A wire from the end of the bumpkin to the hull holds the bumpkin from moving left or right. There is one on each side and they are called **Whisker Stays** or just **Whiskers**

There is a wire in the sail which goes to the top of the mast and braces the bumpkin upwards so that it cannot bend down.

The Gaff

The gaff is a spar which gives the mast additional height. At the bottom, it has jaws that allow it to be loosely held around the mast. It is hauled up the mast by a gaff halyard until it extends beyond the top of the mast. The sail head is attached to the top of the gaff. In the picture below, we can see an assortment of gaffs at the start of a race.

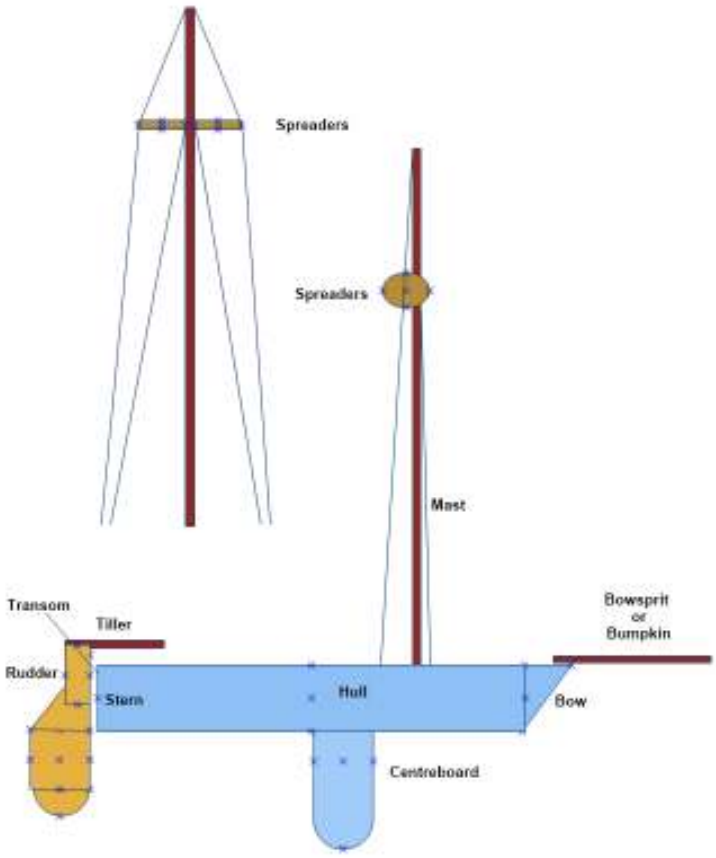
Gaffs

The Mast

Just like the bumpkin, the mast needs to be braced. It sits in a slot on the keel of the boat and pivots on two pins about 500mm from the bottom of the mast.

The slot in the keel has a block of wood in front, and one behind the mast. This enables the angle of the mast to be varied. The mast can be tilted backwards by shortening the block at the front and lengthening the rear block.

The blocks also help maintain the mast in position and reduce movement.



Stays holding up the mast

The mast is secured from falling left or right by the stays. These are two wires on each side that attach to the side of the boat.

One pair run from the top of the mast, over a spreader and are attached slightly aft of the mast.

The other pair are connected below the spreader and attached slightly forward of the mast.

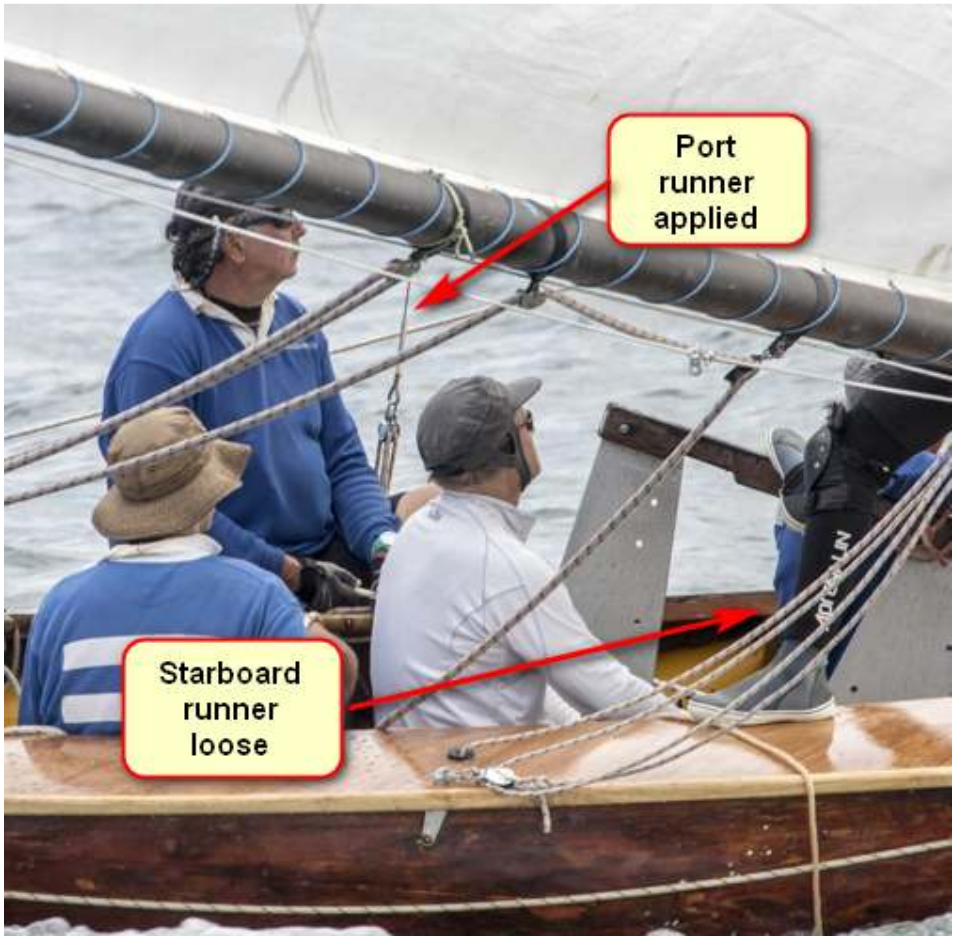
Now the mast cannot fall to the left or right.

The mast is stopped from falling backwards by the jib. The jib has a wire on the luff which is attached from the end of the bowsprit (or Bumpkin) to the top of the mast. There is an enormous force on the bumpkin from the jib, and sometimes a bumpkin will break due to the compression forces, or a broken wire on the bumpkin. The result can be catastrophic. The mast can break or a capsize occur.

So what stops is the mast falling forward? Before answering that, imagine what would happen to a wire running from the top of the mast to somewhere towards the back of the boat. With a boom hanging out the back of the boat, it would mean whenever the boom moved from side to side, it would catch the wire and cause excessive pressure. Something would give. Either the wire would break, or the mast would be pulled so far back it would snap.

Stopping the mast falling forward is a more dynamic activity. Going upwind we use runners. These are wires from the top of the mast which can be tightened and released as required. On a port tack (wind from the left), the port (left) runner is applied. The starboard (right) runner is loose. Think of it this way. The wind is coming from the left so trying to push the mast to the right. The wire bracing the mast on the left needs to be tight to stop it going right and forward.

During a tack, the port one is released and the starboard runner tightened. The runners also help the sideways movement of the mast.



Runners

Running downwind requires another approach. Since the boom is out at between 45 and 90 degrees to the boat, the runner on the lee side (the side where the boom is set) is not going to work. The boom and mainsail will be in the way. The other runner can be on to help support the mast.

The spinnaker can be flown from the top of the mast (masthead spinnaker) or the top of the gaff (peak head spinnaker) depending on the wind conditions. A masthead spinnaker is a smaller spinnaker than one flown from the gaff. If it is the top of the mast, we rely on the aft fixed stays which are slightly behind the mast to hold the mast from going forward.

If the spinnaker is flying from the gaff (peak head spinnaker), you could imagine the gaff being a big lever trying to drag the mast forward as the spinnaker pulls on the top of the gaff. A backstay is used. This is a rope that runs from the top of the gaff to the transom or back of the boat and is tied off to take the strain. The backstay is tied during the preparation for the spinnaker hoist.

This can be dangerous if the boat suddenly gybes – the boom swings across from one side to the other. The boom will hit the backstay which impedes its travel across the boat to the leeward side which can easily result in a capsize and/or broken mast.

Backstay from the top of the gaff to the transom

This picture shows Tangalooma flying an illegal spinnaker. The spinnaker is a symmetrical spinnaker. Both sides are the same length. Don't tell anyone.

Mast Summary

To summarise the rigging, the mast is held up by a variety of ropes (technically called lines) and wires.

To stop the mast falling left or right, there are four stays. Two stays on each side. Two come from the top of the mast, over the spreader, and are attached to the sides of the boat aft of the mast. The second pair of wires are attached below the spreader and connected to the edges of the boat, slightly forward of the mast. When running upwind, the runner also helps stop the mast from falling forward and sideways.

To stop the mast falling backwards, the wire in the jib attached to the end of the bumpkin holds the mast in place.

To stop the mast falling forwards, the stay from the top of the mast does some of the work. The runners contribute when running upwind and one on the lee side can be used running downwind. The backstay takes the load when flying a peak head spinnaker.

Spinnaker Rigging

We have talked about the spinnaker, but what else is involved in flying a kite? First, are the **poles**. The spinnaker can be flown from the end of the bumpkin but this is very unusual, and only works in certain conditions. Mostly it is flown from the end of the pole.

Poles come in anywhere between two and four pieces. All poles are carried within the boat on the sides under the gunwales. Poles are slotted together and pushed out with the tack of the spinnaker attached to the end of the pole. When the pole is pushed out, the last pole is attached to the mast using a piece of rope with a loop in each end. This is the **snotter**. A snotter is a short rope with a loop in either end. The snotter is passed around the mast, and one end fed through the loop in the other end. The pole is inserted in the second loop.

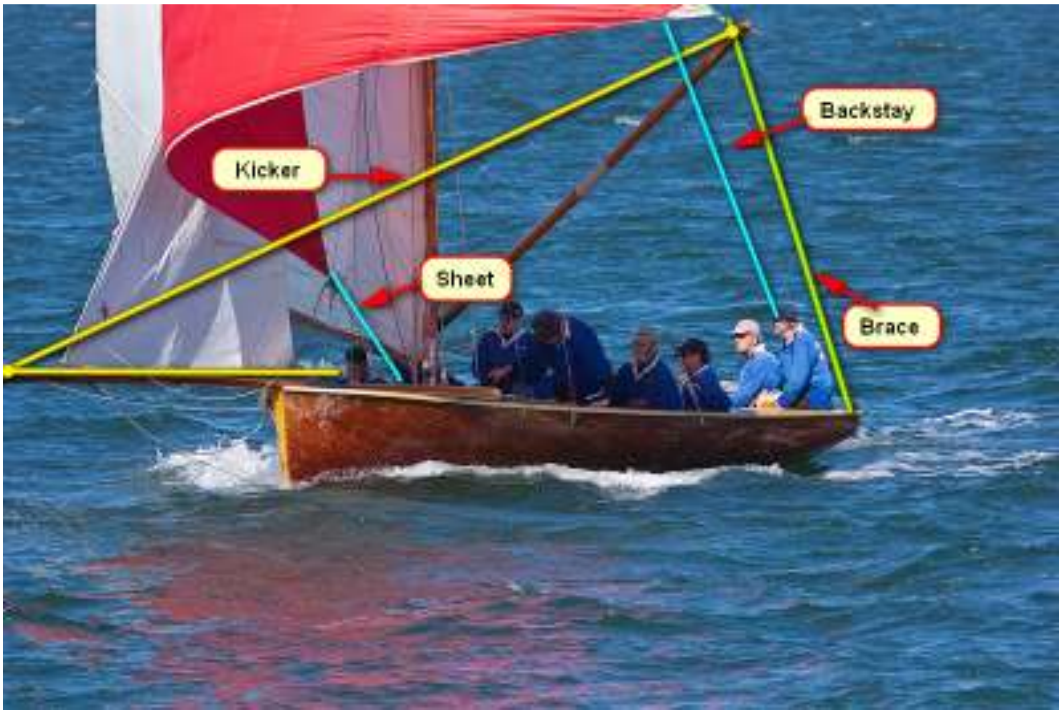
The next task is to locate the end of the pole and the tack of the spinnaker in relation to the boat. In other words, the angle of the pole in relation to the boat. It can range from almost pointed straight ahead to being back pulled against the forestay.

To hold it back, a rope runs from the pole end to the back of the boat. This is called the **brace**. It is tied off to make sure the pole cannot go forward.

To stop the pole flying up, another rope runs from the pole end to the tip of the bumpkin and back to the boat. This is the **kicker**. It stops the pole from kicking up in the air. If this is released accidentally, it will typically result in a capsize. The sail will bag up around the top of the mast or the gaff and exert enough force to pull the boat over.

The brace and kicker need to be managed in unison. If the end of the pole is to be moved further towards the front of the boat, as the brace is released, the kicker needs to be tightened and vice versa.

The sail is trying to lift the pole so the three forces (sail, brace and kicker) keep the pole in place.



Note: The spinnaker is inside sheeting. It is behind the jib rather than the sheet being outside the jib.

If the spinnaker is set across the front of the boat, the clew is on the opposite side of the boat to the pole. The sheet runs outside the jib (**outside sheeting**) and is fed through a block further back in the boat.

The other corner (the clew) is controlled by the spinnaker sheet. There are two ways this can happen. If the pole is out around 90 degrees, and the spinnaker is flying almost completely on one side of the boat, the spinnaker sheet is fed under the thwart near the mast. The thwart is the cross piece that looks like a seat. The sheet is then trimmed by someone in the middle of the boat. The spinnaker sheet is behind the jib so it is called **inside sheeting**.

Chapter 4 - Rigging the Boat

Overview

This section covers the work required to get the boat in the water. It covers the attachment of the bumpkin, hoisting and securing the mast, attaching the mainsail to the boom and gaff, hoisting the jib, and finally hoisting the mainsail.

Rigs

Each boat has a number of rigs. Typically a big, medium and small. Big is number 1, the medium is number 2 and the small number 3. There are variations and sometimes mix and match. For example, you might use a number 2 main with a number 3 jib.

In this picture, we have the small or number 3 rig on the boat. Note the position of the gaff throat which is low on the mast. The mainsail is reefed (see below), and the jib is only halfway along the bumpkin.

Tangalooma Number 3 Rig

Now contrast the sail with number 2 medium rig. Note where the gaff is in relation to the mast. This is a much higher, bigger sail.

Tangalooma Number 2 Rig

Reefing

The mainsail can also be reduced in size. This is called **reefing** the sail. The sail has a number of eyelets running along the sail parallel to the boom. Typically there may be two rows about 400mm and 800mm above the boom. The sail can be laced down to the boom to reduce the size. This must be done before the boat goes in the water. In the image below, you can see Britannia's sail is reefed to the first set of eyelets. You can also see the second reefing points above the boom.

Brit with one reef

Rigging Spar

Rigging spar with ropes tied to the boat

The first job after the boat is pushed into the park is to attach the rigging spar. The spar is supported by a chair at each end.

The purpose of the spar is to stop the boat rocking while people are climbing in and out to rig the boat.

The Bumpkin (also called bowsprit)

The next task is to fit the bumpkin. There are two bumpkins for Tangalooma – one long and one short. Which one we use will depend on the sails to be used. The longer one is for the bigger sails. A bigger jib will need more length in the bumpkin as the foot is longer.

The bumpkin is pushed into place through a bracket on the tip of the bow. It is then pushed through another bracket at the end of the foredeck.

Once located, there are two wires – one from the tip, and one midway. along the bumpkin, that are joined together with a shackle. The shackle is attached to a plate at the bottom of the bow. In order to do this, one person needs to bend the end of the bumpkin down. When attached, the bumpkin wires are under considerable tension.

Bumpkin wires attached to the bottom of the bow.

There are two wires that attach to the side of the boat (one each side) about a metre back from the bow. These are the whiskers. While someone is leaning on the bumpkin, two other people take about two turns on the whiskers using a rope on the end of the wire. Pull back as hard as you can to ensure the bumpkin is as tight as possible.

A common way of fastening rigging is to use the following technique. The pictures below are on the wires holding up the mast – the stays.

- Take about three or four turns on the rope attached to the wire.
- Pull as tight as possible. Sometimes you can only do this with two turns as the ropes overlap and lock up. If so, use two turns then keep adding turns until you have about 30-40 cm of rope remaining.
- A good technique to pull tight is to pull down from the top and put a foot on the rope to get extra tension.

- Wind the rope around the turns about three or four times.

- Without letting off the tension, prise one of the turns away from the rest and feed the end of the rope through the loose turn. A shackle knife with a blade on the end is good for this task.

- Repeat until the rope is all used and only a small tail remains.
- Always wind the rope in the same direction. Do not change direction after poking the rope through.

Setting up the Mast

The mast is first laid across the boat and allowed to pivot on the **mainsheet horse**. That is the stainless steel "U" shaped rod on the back of the boat to which the main sheet attaches. The mast can be balanced on the horse and manoeuvred into the boat and the pins in the tabernacle. The tabernacle is the timber structure surrounding the base of the mast.

Mast resting on the horse

On the mast are the following wires and ropes.

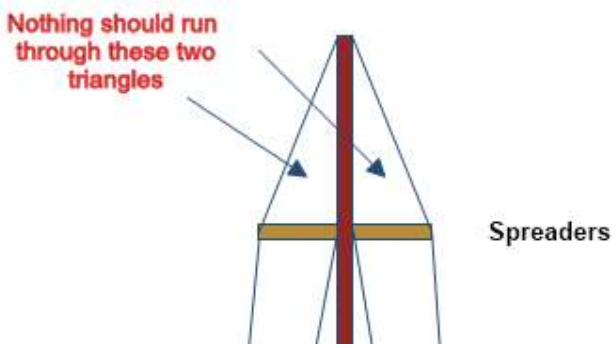
- Two wire stays from the top of the mast which attach to the points just behind the mast on the gunwale. They will have a short rope attached to the end.
- Two stays wire from underneath the spreaders which attach to the points forward of the mast on the gunwale. They will have a short rope attached to the end.

- Two wire runners from the top of the mast that attach with shackles to the blocks about a metre and a half aft of the mast.
- A jib halyard. Make sure the ends are tied together.
- A masthead spinnaker halyard. Make sure the ends are tied together.
- A gaff peak halyard. This attaches to a wire on the gaff using a shackle and determines the angle between the mast and the gaff. Make sure the ends are tied together.
- A gaff throat halyard. This attaches to the bottom of the gaff and lifts it. Make sure the ends are tied together.

All the ropes and wires need to be sorted out to ensure they do not tangle when the mast is hoisted. There are two important things to check. First, all halyards are tied together at the ends so that one end does not have to be retrieved once the mast is in place.

Second, there are no wires or ropes going through the triangles formed between the spreaders, the wires running to the top of the mast from the spreaders, and the mast section from the top down to the spreader.

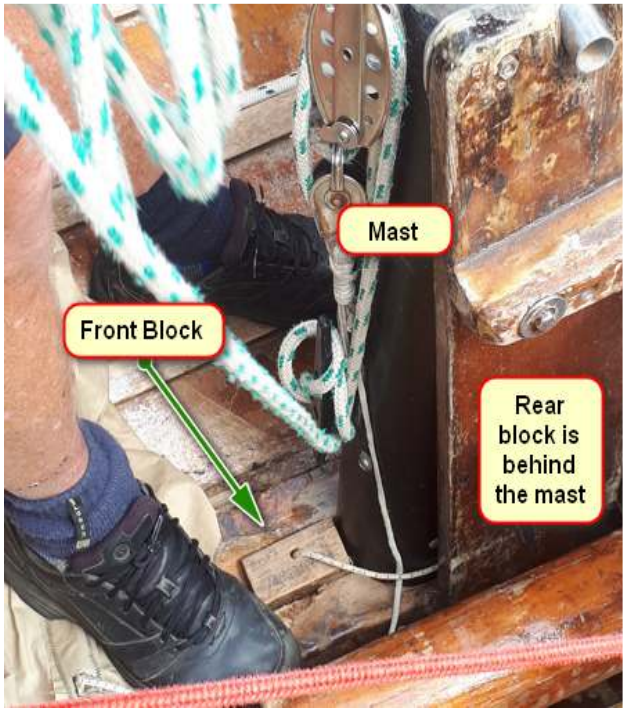
There will be halyards running from the top of the mast to the bottom, but these will run in front of, or behind the spreaders, never through the triangles.



No-go zone for ropes

Before hoisting the sail, the top of the mast (right) should have all the ropes separated and untangled. The stays can be loosely tied to the gunwales.

The top of the mast before it is hoisted.



Before hoisting the mast, be sure the block is in the slot where the bottom of the mast will be located. The back block is inserted, and the front one is put in once the mast is vertical.

The blocks joined by a light rope

Raising the Mast

The ends of the spinnaker halyard are tied together and then attached to one end of a kicker which runs to the end of the bumpkin. The other end of the kicker can be pulled by two or three people to hoist the mast.

This exercise also requires a person each side holding onto a stay to ensure the mast does not fall sideways. Sometimes one person will need to pull the mast to one side or the other using the stay to keep the mast from falling sideways.

Another person is at the foot of the mast guiding it into the slot, and ensuring the foot does not get tangled with anything forward of the mast as it is rotated. That person will put in the block when the mast is raised.

A person further back in the boat can help lift the mast initially until the angle on the rope enables the mast to be easily hoisted. The picture below shows the spinnaker halyard tied to the kicker. This is taken after the mast was hoisted.

The mast is held in place by the blocks on the foot of the mast, but the kicker should be tied loosely as a precaution until all the stays are in place.

Attaching the Runners.

Attaching the runners.

Runners

The next step is to attach the runners. The runners are then pulled on tight to bend the mast backwards. Unless the kicker attached to the spinnaker halyard has been tied loosely, the runners cannot be pulled back so ensure the kicker is loose.

At this point, someone standing behind the boat can see if the mast needs to be adjusted left or right by tightening or loosening the runners.

Tightening the runners

Once the mast is located properly, attach the aft stays (these are the ones from the top of the mast).

Note the forward stay has been loosely attached but not tightened.

The runners can be released once the aft stays are tied off.

Tightening the back stay

Raise the Jib

Next, the jib is attached. The tack is attached to the bumpkin. The location is dependant on the jib being used. Some are at the end of the bumpkin, some to an attachment point about a metre in from the end, and some have a short rope that attaches to the end but is tied down to a midpoint between the two normal attachments.

The jib halyard is attached, and the jib hoisted. Once it is near the top, the rope is threaded through blocks to give extra tension. The mast is actually bent until the halyard looks like the string on a bow. The jib should be three to five centimetres from the mast. The forward stays can now be tied down.

Lacing the Boom and Gaff

The mainsail is laced onto the boom and gaff before it is attached to the mast. There are stands for the spars which enable the job to be done more comfortably.

Put the boom on the stands. There are a number of booms but only one gaff, so ensure the boom is the correct one for the sail. The foot of the sail is attached either through a bolt, or a shackle depending on the boom.

Shackle on the boom to attach the foot.

The clew of the sail is attached to the end of the boom using a short length of rope. It should be as tight as possible.

Clew of the mainsail tied to the end of the boom.

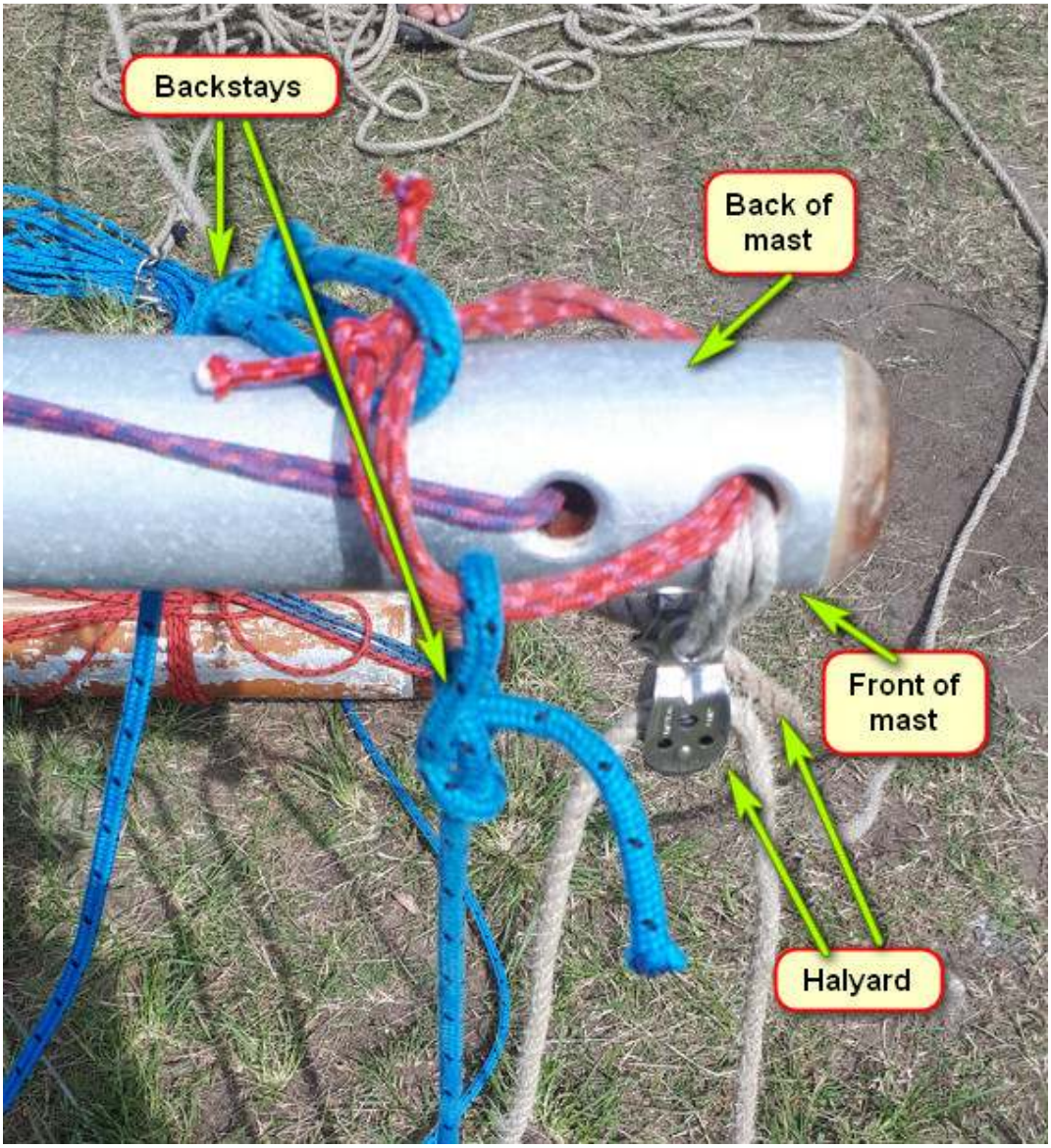
The sail is then laced to the boom. Thread the rope through the sail loosely until you reach the end. Go back and tighten the lacing before tying off. The lacing must not impair the blocks.

Mainsail laced to the boom using round lashing

The gaff is now attached to the sail. The attaching is similar to the boom except a blanket or square stitch lacing is used rather than the simple wrap approach of the boom. The wire running down the gaff must always be above the lashing. In other words, poke the lashing rope under the wire.

Gaff showing the blanket stitch or square lacing

On the top of the gaff, are two rope loops. One loop has two backstays which are tied on with a simple bowline knot. The other loop has two blocks. These are used for the two peak halyards. These are used to hoist a peak head spinnaker.



Top of the gaff. The backstay loop faces the back of the boat and the spinnaker halyards to the front

There is a trick to determining which way to thread the halyards through the blocks on the top of the gaff. Work out which is the front of the gaff when it is hoisted. This will be the side the jaws of the gaff (which fit around the mast) are on. Now imagine the spinnaker is flying out from the front of the boat. The clip on the halyard is going to be pointing away from the mast because it is holding the head of the spinnaker. The other end will be used to pull up the sail. It will go down the mast. Thread the halyard through the block and down the mast.

Sail Battens

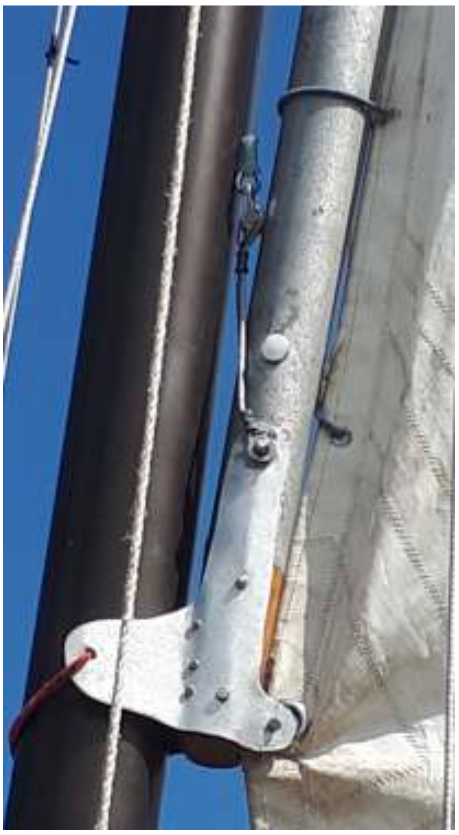
Before the sails are being attached to the boom and gaff, put in the battens. Each sail has a set of battens which are marked. You will notice that most are tapered in their thickness. The thin end points towards the mast. Remember thin end in and thick out.

Hoisting the Mainsail

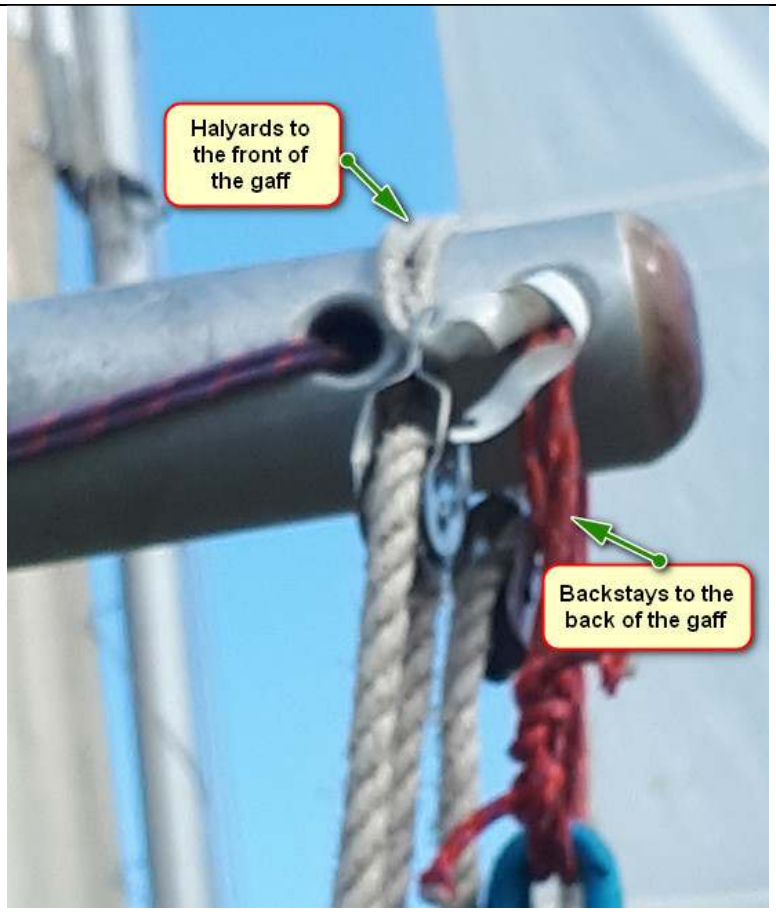
It takes a number of people to hoist the gaff, boom and mainsail. The boom and gaff are passed to a person on the boat. The boom is positioned on the mast first. The peak halyard is attached to the wire on the gaff. The gaff halyard or throat halyard is attached to the bottom of the gaff.

Peak Halyard

Note the lacing is under the wire.



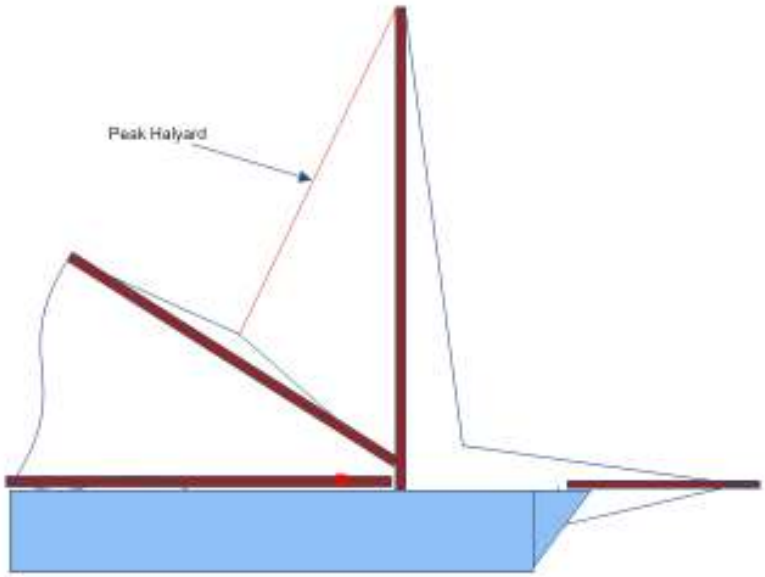
Gaff or Throat Halyard



End of the Gaff

As the gaff is raised, ensure the backstays and peak halyards are on the correct sides of the boat, and that the loops are in their correct position.

Backstay loop aft and halyard loop forward.



Start to lift the gaff. Boom still on the deck

The gaff is pulled into a semi-upright position by pulling the peak halyard. The jaws of the gaff have a rope which needs to be tied so that the gaff cannot come away from the mast.

The gaff halyard can now be pulled to lift the gaff.

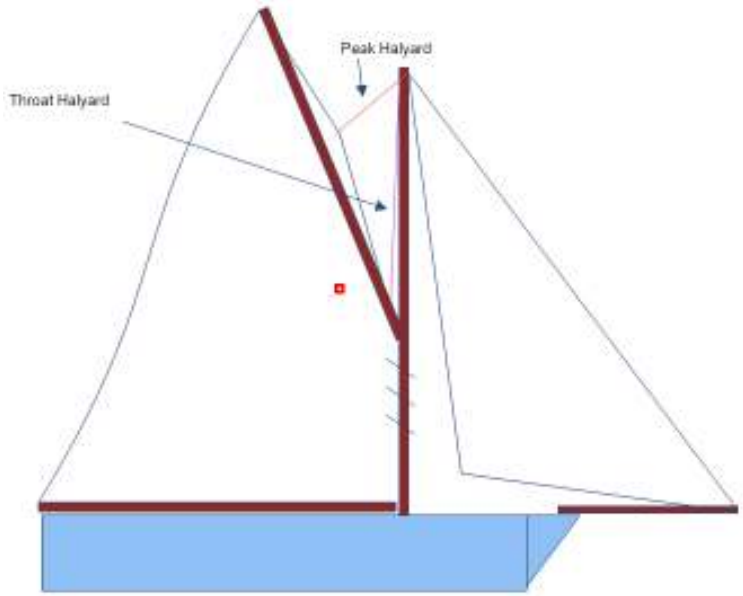
Lacing

As this is happening, someone needs to lace the mainsail leech between the gaff and boom to the mast.

The yoke of the boom also has a short rope that needs to be tied so that the boom cannot come away from the mast.

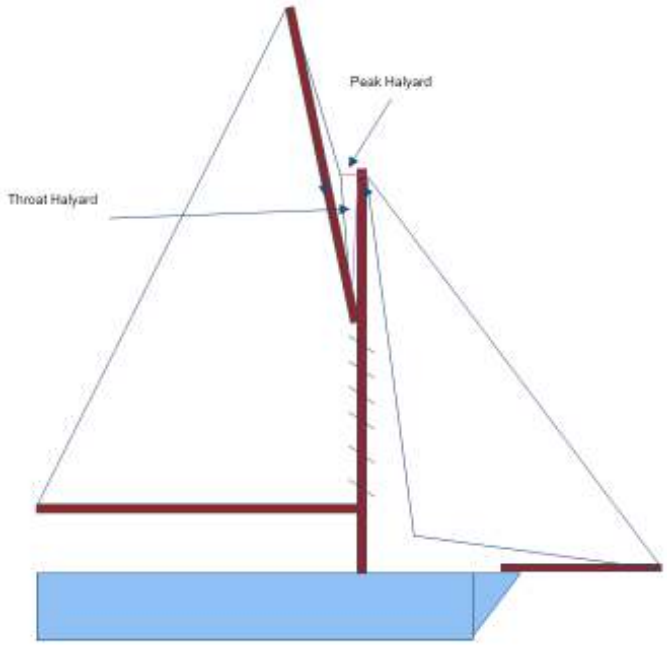
Gaff rope attached to the Mast

As the gaff approaches the correct height, the boom may need to be physically lifted to get the final position. The boom will always come down slightly when sailing, so it is usual to raise it about 10 cm higher than is needed. There is a downhaul on the bottom of the boom to stop the boom sliding up the mast when sailing. This will also pull the boom down a few centimetres when it is tightened.



Gaff is raised and lacing begins on the mast. Boom is still on the deck

Once the sail is at the correct height, and the gaff angle adjusted, the lacing on the mast can be tied off. The mainsheet needs to be threaded and run through the block on the bottom of the boat near the steering position. Make sure it is knotted so it cannot slip out.



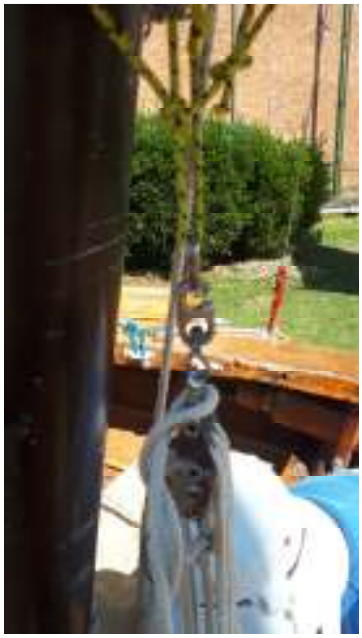
Boom off the deck. Lacing complete. Gaff angle adjusted using the peak halyard

There are a couple of final tidying up tasks to do. The spinnaker halyards on the gaff need to be secured. The clip end is positioned just inside the front of the gunwale. The other end is looped around a peg on the boom. Over the top of the peg, the backstay is also looped.

Peg on the boom

The blue rope is the backstay and underneath is the spinnaker halyard. This setup is a reminder to make sure the backstay is attached before the spinnaker is hauled up.

Under the boom is a downhaul. This keeps the pressure on the boom so it does not ride up.



Downhaul

Finally, the fin is placed in the boat. To avoid scratching the gunwale, put some rope on the gunwale, and slide the fin over the rope. The boat is now ready to launch.

Chapter 5 – Sailing Upwind

Overview

In this chapter, we cover what you need to do to sail the boat upwind. It also covers the various roles and the activities required during different points of sailing. Sailing downwind is covered in the next chapter.

Roles

The boat is roughly organised into three groups of people. Each has a role, but they all need to interact to make sure the boat sails as fast as possible and stays upright.

At the front, we have the For'ard Hands. Their role is to manage the jib, and setting of the spinnaker. In reality, most of the crew are involved in hoisting the spinnaker, but the For'ard Hand is the one who manages the process.

How 10 people fit in a boat

In the middle will be most of the crew. Their role is to balance the boat, bail any water, and assist with the spinnaker hoist. They are also responsible for the runners. These take the strain of the mast when sailing upwind. The runners also need to be released when the boom is going to move past the runner otherwise a capsize or broken mast can result.

Aft is the Mainsheet Hand who controls the mainsail and the Skipper who steers the boat.

Throwing your Weight Around.

Consider this. An 18-footer weighs about 550kg fully rigged. A crew of 10 with an average weight of 80kg is worth 800kg of ballast. Even without the effect of wind, it is easy to see that the crew have a major impact on balancing the boat.

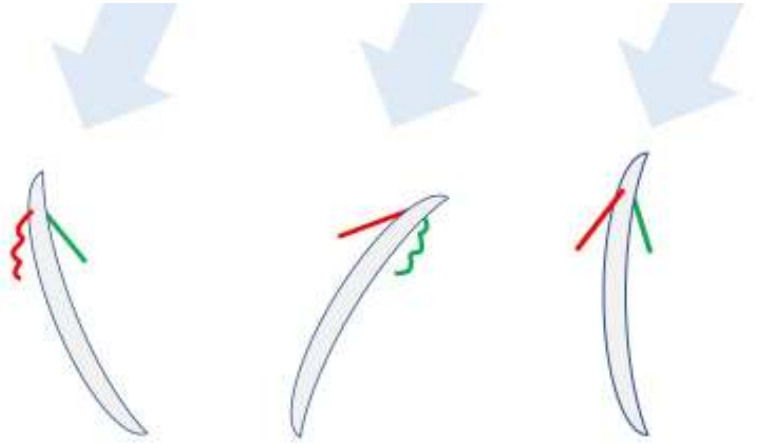
At the back of the boat, the person steering, and the person on the mainsheet have limited chance to move about in order to balance the boat. At the front, the Jib Hand is also restricted in moving about. It is the middle of the boat that does most of the work to keep the boat at the right angle.

In another dimension, when running downwind under spinnaker, you want to keep the boat bow high and stern low. If the bow is too low, you can come off a wave, dig in and capsize. The crew needs to move aft to keep the bow high.

The middle of the boat needs to keep moving inboard, and outboard as the wind changes. Not everyone moves at once so there is a degree of coordination required. Typically light people move first, and the heavier crew last.

Telltales

On the sails – both jib and main – are a number of ribbons or **telltales**. They are on either side of the sail. They allow you to see if the wind is flowing smoothly over the sail. If the telltale is streaming, the wind is flowing smoothly. If it is fluttering, the wind is breaking away from the sail and the sail is not doing its job.



In the three images above you can see the sail from above, and the wind direction. The red telltale is on the outside of the sail, and the green on the inside.

The first image shows the air flowing smoothly down the inside of the sail so the green telltale is streaming. The angle of the sail to the wind is such that the wind has trouble bending around the sail and flowing smoothly down the outside. The outside telltale is fluttering.

The second image shows the wind streaming smoothly down the outside of the sail so the red telltale is streaming. The wind, however, is causing cavitation on the inside of the sail. It is breaking away from the inside surface and causing the green telltale to flutter.

The third image has both telltales streaming. The sail is at the right angle. The wind is flowing smoothly down both sides of the sail. This is the correct position for the sail.

How can the angle of the sail to the wind be altered? There are a couple of ways but the main two are:

- The direction of the boat is changed until both are streaming
- The sail is sheeted in or released.

Typically the sail is sheeted in, and the helmsman steers the boat to keep both streaming. As the wind constantly shifts, this may require constant alterations of direction.

Gusts can also overpower the boat so the person controlling the jib or mainsheet may need to release the sail when a gust hits, and pull it in again when the gust passes.

Sometimes, telltales on different parts of the sail may be giving different signals. The wind direction at the top of the mast can be different from the direction at water level. Also there is twist in the sail between the bottom and the top. There are telltales on the back of a sail which also contribute to trimming. Many books have been devoted to sail trimming and it is outside the scope of this book to go into the intricacies of trimming sails.

A good general rule is “trim the front of the jib, and the back of the mainsail”. In other words, where the wind meets and leaves the sail plan. Both sails work together and if the wind is correct at the beginning and end, it is probably working well in the middle.

If handling the sheet, a simple way to know what to do is to remember this.

- If the inside telltale is streaming and the outside fluttering, the sail needs to be eased.
- If the outside telltale is streaming and the inside fluttering, the sail needs to be pulled in.

Move the sail in the direction of the fluttering telltale. “Out” if the outside is fluttering, and “In” if the inside is fluttering.

The Course of the Day

The course will usually be announced prior to sailing. Sometimes when the wind direction is changing, it may be made on the start boat before the start. The start boat will have a number indicating the course to be sailed.

Each year we have one race that is a triangular race. The course is set on the day of the race dependant on the wind direction that day. The five courses we sail are in the next chapter.

Sailing Upwind

When sailing upwind, the runner on the windward side needs to be on tight. That is the side the wind is coming from. When tacking, one runner is released and the other tightened. It should be clear who is doing the runners, and they have to be coordinated. The runner should only be released just as the tack begins. The other runner needs to be on before the tack is complete. When the boat is close hauling or running upwind on a series of tacks as close to the wind as possible, both runners can be left on.

During a tack, the jib is not released until it has stopped doing its work. As long as the jib is driving the boat forward, it is kept on. If not, the boat can stall and be “in irons”, that is pointed into the wind and stopped. If this does happen, the jib can be held out to blow the boat backwards. The Skipper can then turn the rudder the other way to steer backwards and continue to turn the boat.

Before the tack, the for’ard hands should make sure the jib sheet is clear. It is easy to get a jib sheet tangled with other gear around the mast. They must organise who will pull on the jib during the tack. Timing is critical for a successful tack.

As the turn is complete, the jib is pulled on reasonably quickly. Once it fills, the boat will start moving forward. If you remember back to an earlier chapter, we talked about how the boat pivots around the fin. If the boat is almost stationary as it completes a tack, all the force is on the front of the boat. As the jib is on hard, it will turn the boat away from the wind which is what is needed to pick up speed. If however the mainsail is too tight, and the jib too loose, the mainsail will pivot the boat around the fin and point towards the wind. The boat will stall.

For this reason, the jib comes on before the main. Once the boat is moving the mainsail is pulled on. That is not to say the mainsail is completely loose. It just means the mainsail is only 80% and the jib is 100% on as the boat starts to pick up speed.

In terms of weight, the crew need to balance the boat during a tack. Immediately rushing to the other side should not be a stampede. The crew needs to make sure they keep the boat flat during the tack, and gradually move their weight out as the boat picks up speed.

The boat sails best when on a lean. The best angle is when the gunwale on the leeward side is just in the water. The crew must constantly be moving about to keep the boat on the right angle of lean.

Notice the gunwale is just in the water and the crew leaning out to balance the boat. This is about the right angle to be sailing upwind.

The wind is not going to be consistent during a race. It can vary in strength in a second. Watch for gusts coming across the water. You can see the shadows on the surface as a gust approaches. Also, look for wind shadows when sailing behind a ferry or larger yacht. The wind will drop to almost nothing, and it is an opportunity to see the top of the mast in the water if you are not careful.

You need to be conscious of everyone not moving at once. If the wind suddenly drops, it should not be a sign for everyone on the gunwale to rush inboard. Work out who moves first and move progressively. If the first one or two people moving into the middle of the boat does not work, another two or three may need to do so. It is useful if the middle of the boat organises themselves in deciding who will go first and who will follow.

Reaching

An 18-footer sails best on a reach when it is flat. The forces on the boat are different from being on a tack and the crew needs to keep the mast at ninety degrees to the water. Also, the fin can be raised halfway to avoid drag. The biggest danger in reaching is the sudden wind gust that can cause a capsize. The crew has to be vigilant and ready to jump up, or in some cases down, if the wind changes.

Other fun activities

Watching

The skipper can rarely see 360 degrees. Very often the view is restricted on the leeward (downwind) side by the sails. Everyone needs to be alert to boats around your boat, and tell the Skipper about boats crossing your path. Even if it seems obvious, you will never be criticised for letting the Skipper know about a boat that will cross your path. That boat may not be visible to the person on the helm, or they could be concentrating on something and not see the boat.

This is particularly important with ferries to Manly. They travel quite fast in relation to the 18-footers, and the course needs to be planned to avoid their path. Sometimes the Skipper will plan when to tack for a ferry that may be way off in the distance.

Bailing

It is important to keep water out of the boat for two reasons. Firstly, the weight of the water can slow the boat down, and have an impact on how low the boat is in the water. The lower the boat, the more effort it takes to push the boat through the water and hence a lower speed.

The second reason is that the more water there is in the boat, the more the impact of a flood of water from one side of the boat to the other can have. During a tack, a rush of water from one side to the other can cause a sudden tilt and result in a capsize.

Tidy the boat

It is easy for ropes to tangle jamming blocks or getting caught on parts of the boat. It is a constant effort to make sure ropes are kept tidy and clear of each other. Aside from causing jams, there is a safety element. Ropes can get caught around legs and result in tripping, or worse in the case of a capsize.

The same goes for spinnaker poles. These should be stowed when not in use. A spinnaker pole lying in the bottom of the boat, and a loose rope is almost guaranteed to cause a tangle. Poles are stored in locations that minimise this risk and should always find their way back to those locations.

Since on some races, spinnakers will be used on successive legs, it is also critical to get the spinnaker being lowered into a bag and out of the way as quickly as possible. It is best if the bag is at the back of the boat, and the sail is passed back to be stowed. The for'ard hands will be busy tidying up ropes so a free pair of hands in the middle of the boat can put the spinnaker away. Also, make sure the bag is tied in. Spinnakers have been lost during a capsize as have poles that were not tied in or jammed in place.

Using a Cleat

There are a number of cleats on the boat. Some are traditionally made and some are plastic from the local boat shop. There is a standard way to tie ropes to a cleat which we will explain below. There are two requirements for a rope tied to a cleat. First it should not come undone or slip. Second it should be easy to release. If you have to release a rope in a hurry, you do not want to be trying to free up a jammed rope.

This is a traditional cleat. Note that one end is "V" shaped and one end rounded. The "V" end jams the rope.
On many boats some well intentioned person has sanded out the "V" without realising that it is rough inside to make sure the rope does not slip. If it is rough with paint lumps that is all the better. It will hold the rope more firmly.

Pass the rope around the rounded end of the cleat. In this case we are looking at a spinnaker brace which is coming from right to left.
You can use the rounded end of the cleat to pull the rope tight. If it was the “V” end the rope would jam in the cleat and you would not be able to pull it tight.

When the rope is tight, pass the rope through the “V” end. You will not be able to pull the rope tight now without removing it from the “V”

Bring the end of the rope around the open end again.

Take the rope diagonally back to the "V" end.

Make a loop in the rope with the tail under the rope and place over the rounded cleat.
Both parallel diagonal ropes should be under the single diagonal rope.
Pull tight.

The rope is now secure, and easy to release. The diagonal sections are released and the "V" will still take much of the strain on the rope until it is released.

Normal commercial plastic cleats do not usually have a "V" section however the method to tie the rope is the same.

The Fin (also called a centreboard)

When we move away from Kirribilli and the fin is dropped, the first thing should be to attach the safety strap to the rope on the fin. If the boat capsizes and goes completely upside down, the fin will drop out. They don't float. A number are at the bottom of Sydney Harbour.

In fact once, in late 2018, we did invert the boat and the fin dropped out. The boat was dragged back to Kirribilli with the fin hanging underneath the boat by the safety strap. Another boat without a strap had lost their fin a few weeks before.

Fin safety strap

During a downwind run, or on a reach, the board may be lifted. It serves little purpose and only causes drag. When it is down, it provides some stability because of its weight and the effort required to drag it sideways through the water. When it is up, the boat lacks that stability so balance is even more important.

Chapter 6 - Downwind Sailing

Overview

There are a number of parts to this which include gybing, hoisting the spinnaker, sailing with a spinnaker and dropping the spinnaker. We will start with gybing.

Gybing

Gybing is where the wind is behind the boat and the mainsail is out to one side. The boat changes direction and the boom needs to be moved to the other side. The boom will swing through anything up to around 160 degrees. There is enormous force involved, and many sailors have lost their lives either by being hit with a boom in a gybe or knocked overboard. Safety is a prime concern.

The gybe also means that the runner has to be released on the side on which the boom is to be set. Not doing this will almost certainly result in a capsize or breakage.

There is another way to turn the boat called to “granny”. In this case, the boat turns through 270 degrees or so. The boat turns towards the wind so it is sailing upwind. The boat is tacked and turned downwind again with the boom on the other side. This approach is prudent in stronger winds to avoid drama from capsizing or breakage.

Wooling the Spinnaker

Before the boat hits the water, the spinnaker has to be tied. The sail is folded and about every 80 cm tied with light wool. The intention is to keep the sail tied until it is hoisted and the pole is in place. The sheet can then be pulled, and the sail break open.

When wooling the sail, the sail is tied by the head to a post or rail. Both edges of the sail are then stretched out. While holding the two edges together, the rest of the sail is folded and rolled so that the edges are not tangled. The wool used must be very weak in order to break. Two-ply is the best although old wool which has lost its strength is also suitable. Colour is optional.

When tied, the sail is put in a bag so that the three corners are on top. This makes it easy for the for’ard hand to pull out the sail and attach the corners.

Spinnaker hoisted and ready to be broken

Hoisting the Spinnaker

It is worth running through what needs to happen in summary first.

- If it is a peak head spinnaker the backstay is put on
- The halyard is attached to the head
- The sail is hoisted
- The clew is attached to the sheet
- The tack is attached to the brace and the kicker
- The pole is pushed into a loop on the tack and pushed out
- The pole is put into the snotter on the mast
- The brace is pulled back as the kicker is released until the pole is in the desired position
- The sheet is pulled to break the wool and the sail is trimmed.

Sound easy?

The Backstay

The backstay runs from the top of the gaff to the back of the boat. There is a pin on the transom and the backstay is wound around the pin as tightly as possible.

The purpose of the backstay is to stop the gaff being dragged forward by the spinnaker. Without the backstay, the top of the spinnaker is trying to bend the gaff, and hence the mast forward. Something will eventually break – usually the mast.

Pin on the Transom

The backstay is only used if it is a peak spinnaker. In other words, a spinnaker flown from the top of the gaff. A smaller masthead spinnaker does not require a backstay as there is no additional load on the gaff.

Hoisting the Spinnaker

Since the sail can be either masthead or peak head, the for'ard hand needs to determine which halyard to use. There is one masthead halyard but two peak head halyards. One each side. In hoisting the sail, it may require someone to lean out of the boat and feed it around the spreaders. The sail can easily catch and tear on the spreaders.

Attaching the Clew

The clew is attached to the sheet using sister clips. It may be inside sheeting where the sheet runs inside the jib or outside sheeting where the sheet runs outside the jib.

If the boat is running square, with the pole at about 90 degrees to the boat, it will usually be inside sheeting. The clew needs to be pulled further back towards the mast and will probably be over the boat.

Sister clips

If the pole is set 45 degrees or less to the boat, it will probably be outside sheeting where the sail will be set with the jib inside the spinnaker. The sheet will be outside the jib.

In some cases, both sheets might be set as it is not clear which will be required. The sail can be pulled on with one and the other remain slack. The first is released, and the second pulled on.

Outside sheeting. The sheet is outside the jib

The outside sheet needs to be taken back to a block aft of the mast. It is either threaded through the block or, if a snatch block is used, inserted in the block. In either case, make sure the sheet is secured and does not end up overboard.

The inside sheet goes under the thwart (the seat type piece of timber that runs across the boat near the mast). There is no block.

The original Tangalooma with inside sheeting. The sheet is inside the jib.

Attaching the Tack

The tack has two ropes and the pole attached. The kicker and the brace are attached to the tack. There is also a loop of rope where the pole is inserted. The kicker runs from the outboard end of the pole to the end of the bumpkin and stops the pole flying up in the air. The brace runs from the outboard end of the pole to the back of the boat and stops the pole going forward. They need to be adjusted in unison.

The Pole

The spinnaker pole may consist of two to four lengths. The skipper will determine which poles to use before the hoist. The number of poles is dependent on which bumpkin is used and which spinnaker. Currently, our spinnakers range in size from 14 square metres to 47 square metres. The poles need to not only push the spinnaker out but also keep it clear of the water. If the poles are too short, the end of the pole will dip in the water with catastrophic results.

The poles have to be pushed out in order. The first pole has the cut-down end fed forward first. This cut-down section goes in the loop on the tack. The other end has the metal sleeve which takes the second pole. There are two long poles, a shorter pole which goes in the middle, and a stub pole.

As one person feeds the first pole to the For'ard Hand, another person is waiting with the second pole to push into the metal sleeve. When the final pole is connected, all the poles are pushed out and the cut-down inboard end of the last pole inserted in the snotter.

Kicker and Brace

During the pushing out of the poles, the kicker and brace need to be adjusted to keep tension on the pole. The kicker is pulled in and the brace released as the pole goes forward. When the outboard end of the pole reaches the end of the bumpkin, both kicker and brace need to be released. When the pole is in the snotter, the brace is pulled in to bring the pole to the correct angle with the boat.

During this process, the kicker will need to be released to allow the pole to be pulled aft. It is critical at this time that the kicker is not released suddenly or the pole will fly up in the air, and a capsize is likely. The kicker needs to be fed out to allow the pole to move, but not for the pole to fly up in then air. When in position, both are tied off.

Finally, the sheet can be pulled on and the wool will break filling the sail.

Aberdare under Spinnaker

In this picture of Aberdare, you can see the pole held back by the brace running to the back of the boat (green). It cannot fly up in the air because the kicker from the pole end to the bumpkin is holding it down (yellow). The backstay is just near the hand of the person sitting on the transom and runs to the top of the gaff (yellow). The sheet (pink) is inside the jib (inside sheeting) as the sail is relatively square. In other words, the pole is close to ninety degrees to the boat.

Summary of Terminology

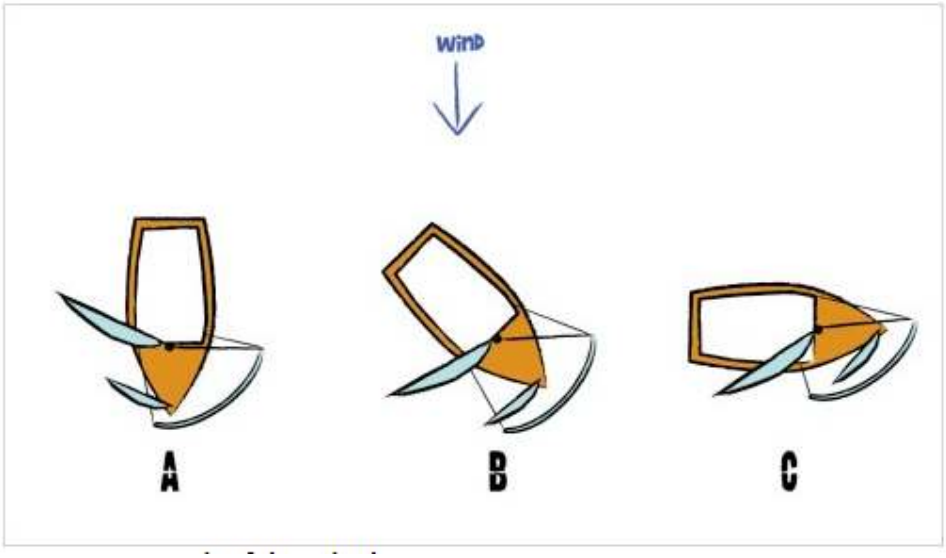
It can be confusing so here are the main terms.

Masthead spinnaker	The spinnaker is flown from the top of the mast
Peak head spinnaker	The spinnaker is flown from the top of the gaff
Spinnaker halyards	Ropes used to haul up the sail. There is one for the masthead and two for peak head spinnakers on Tangalooma
Backstay	Rope from the top of the gaff to the back of the boat. Used to take the strain on the gaff when flying a spinnaker from the top of the gaff (peak head spinnaker only)
Snotter	Rope looped around the mast to hold the inboard end of the pole

Kicker	Rope from the outboard end of the pole, through a pully on the end of the bumpkin and back into the boat. Used to stop the pole rising in the air.
Brace	Rope from the outboard end of the pole to the back of the boat. Locates the pole fore and aft.
Spinnaker sheet	Rope from the loose end of the sail to a block. Controls the sail.
Stump	A short pole sometimes used on the end of the two or three spinnaker poles.
Jockey pole	A pole used between the mast and brace if the spinnaker is shy. It provides an angle on the brace to take some of the strain. See explanation below

Controlling the Spinnaker

The spinnaker pole should be set approximately 90 degrees to the wind. Since a spinnaker can be carried from the wind dead astern, to having the wind at 90 degrees to the boat, the position of the pole can vary.



In “A” above the wind is dead astern and the pole is 90 degrees to the boat. The pole is pulled back by the brace until it is against the wires holding the mast up.

In “B“ the pole has been let forward to about 45 degrees to the boat.

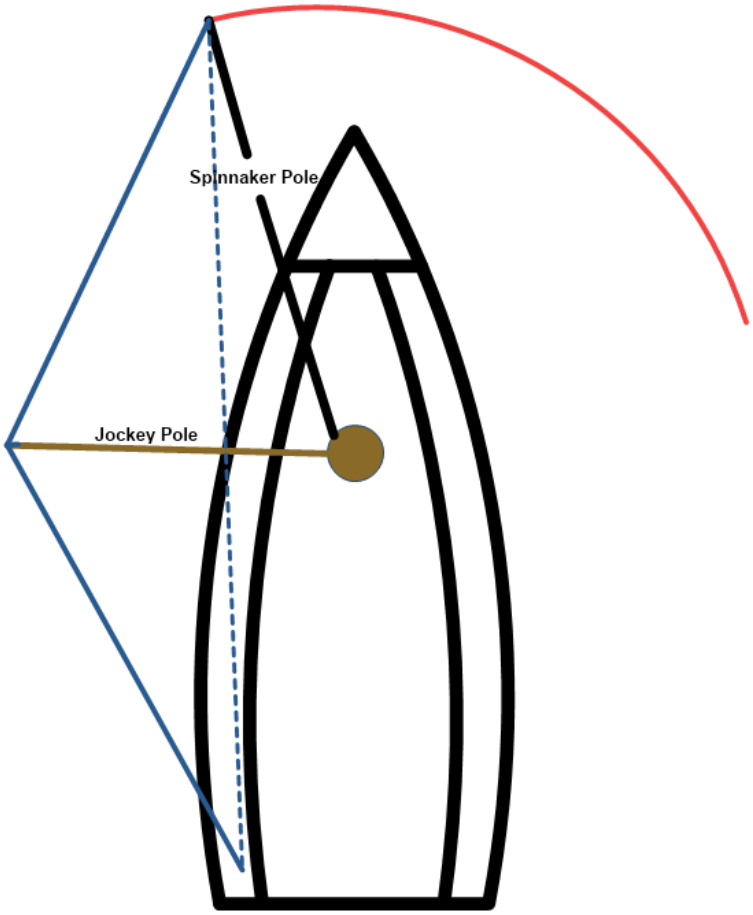
In “C” the pole is almost touching the luff of the jib. Do not let it rest on the luff as it is putting a strain on the jib luff and potentially causing failure.

Although these images are for a generic sailing boat, for an Historic 18-footer, “A” would be inside sheeting. The sheet would be between the jib and the mast and under the thwart.

“C” would be outside sheeting with the sheet running to a block in the middle of the boat.

"B" could be either so both sheets would be attached, and could be swapped during that leg of the race if conditions or the course should change.

The Jockey Pole



Because of the angle of the brace in "C" a jockey pole may be used. If you look at an 18-footer, the brace runs from the back of the boat to the pole.

If the angle between the brace and the pole is very small there is an enormous strain on the brace. You can see this strain by looking at the dotted line in the diagram in relation to the pole which is black.

A jockey pole is used with one end on the mast and the other on the brace to give more of an angle between brace and pole. This is the solid blue line. By using the jockey pole, the spinnaker pole is much more controllable.

Trimming the Spinnaker

Once the pole is positioned correctly, the spinnaker is trimmed using the sheet.

The luff is the windward edge of the spinnaker. The edge at the pole. If the spinnaker sheet is eased too far, it collapses. The first sign of collapse is slight curling of the luff at the shoulder, where the straight sides round off towards the head. To trim the spinnaker, release the sheet and look for curling at the shoulder. When it starts to curl, sheet in until it stops. The trimming is constant so the person trimming is continually adjusting the sheet.

Dropping the Spinnaker

The spinnaker is usually dropped about 100 to 200 metres from the rounding buoy. The first step is to get the fin down to provide stability during the drop. People are moving about the boat, and there could be unexpected gusts causing the boat to roll.

The sail is first de-powered. Release the sheet and the sail will flap. This takes the strain off the pole so that it can be unhooked from the snotter. The brace and kicker need to be eased, but caution is required that the pole does not fly skyward, or swing around onto the luff of the jib.

As the pole is moved in, each section is separated and the pole stowed away in its place. At this point, it is important that the people taking in the pole look behind them, and don't ram the pole into those further back in the boat. The people on the brace and kicker will need to release those ropes so that the pole can be brought in without the sail being pulled off the end of the pole. If that happens, the pole will drop in the water and be forced back or under the boat with disastrous results.

When the poles are in, the For'ard Hand will pull down the sail. Someone will be feeding out the halyard. If the halyard is released too quickly, the sail will blow forward, drop in the water, and act as a brake on the boat. It will probably rip so it is a coordinated effort between the person gathering in the sail and the person releasing the halyard.

The sail bag should be in the middle of the boat, and one person can stuff the sail in the bag. If the sail is to be used again, keep the corners on the top of the bag. If not, it can be just stored away, and the bag tied into the boat so it will not be lost in a capsize.

There are a couple of ropes to tidy up and to clip including the halyard, kicker, brace and sheet. This should all be done before the mark is rounded and the boat sails on another course. There may also be a gybe required so it is important the boat is tidy and there are no ropes and poles rolling around in the boat.

Chapter 7 – Clothing and Facilities

Overview

This section covers the clothing you need to wear and some of the personal aspects of sailing historic 18-footers.

The Environment

In one word – WET. You will likely get wet up to waist level when you launch the boat. There is no jetty to step off. You walk into the water with the boat and climb over the side. Sailing involves crashing through waves, and spray coming over the side. If you capsize, you will be in the water for up to an hour getting towed to a beach. After that, you will still be wet as you remove the sails and gear before the boat can be beached and righted.

Wetsuit

For the reasons above a wetsuit is a must. Even in mid-summer, an hour or two in the water can get chilly, particularly if you have a solid breeze to add some wind chill. Typically you will wear swimmers under the wetsuit and some people even resort to a rashie.

At the beginning of the season, a full wetsuit is desirable but by November, a short suit (short arms and legs) is a better option. Either can be worn all season, and it is really up to each person as to how much they feel the cold. Also, wetsuits come in different thicknesses.

The club has a couple of spare wetsuits but you need to check if there is a suitable size available on the day.

Rather than buy a new wetsuit, you can often pick a second-hand one up at a Salvation Army or Vinnies store. Stores closer to the beach are obvious locations to look. Prices can vary from $10 to $50. Also, check out online second-hand sites. There was a shop in Dee Why opposite the beach which did sell second-hand wetsuits and if you are in the area, is worth a look. It is near the southern end of the shops.

Boots

There are three reasons for wearing boots or shoes on the boat.

Firstly, the boat has a wet varnished surface. It is rocking and you can be tossed around so it is easy to fall. Given the number of people scrambling around it is easy to slip and get injured. Good traction is important,

Secondly, when the boat is launched, you will be walking around at the bottom of the boat ramp. There is over a century of rainwater runoff at the bottom of the ramp as well as many rocks with sharp shells. That makes a bad combination.

Thirdly, if you do capsize, you need something that is not going to restrict your ability to swim. Proper shoes or boots are a necessity.

The ideal solution is a proper pair of wetsuit boots. They cost about $45 from a sailing store. You might choose long boots as shown in the picture, or short boots that come to the ankles.

Failing that, an old pair of sneakers will do. Most people trying out sailing these boats go for the old sneakers until they are convinced that they want to continue. They then go out and buy a pair of proper wet suit boots.

Shorts and Tops

To protect the wetsuit from rips and tears, it is best to wear a pair of shorts. Nylon shorts that will not get waterlogged are good.

Most crews wear football jumpers which go back to the original clothing used in the early part of the 20th century. Many boats were crewed by footballers during the summer months. It was their form of exercise during the offseason. Each boat has a distinctive set of jumpers. Some boats have a couple of spare jumpers which can be borrowed.

If you do not have a jumper, you can just wear the wetsuit, or you might want to put a top over the wetsuit.

Hat and Glasses

You will need a hat. A baseball cap is the most common but remember, we do not turn around if your hat blows off. The best option is to tie a cord onto the hat and pin the end to your jumper so if it does blow off, you don't lose it.

Do not wear your Raybans on the boat. Like a hat, glasses can be knocked off and end up overboard. Use a strap on your glasses in case they are knocked off, or you capsize. It is not unusual to go through a few pairs of glasses in a season. Climbing around the boat with your glasses hanging around your neck is a good way to end up with two-piece sunnies.

A good option is to buy a $10 to $20 pair at the local Two Dollar Shop. Flexible is good. If you can twist the glasses they are probably suitable. Either use a strap which goes from arm to arm so they hang around your neck, or have a cord on one arm that is pinned to your jumper.

Gloves

Sailing gloves are important if you do not want to get rope burns on your hand. Wet hands and pulling on ropes can easily lead to blisters or cuts.

There are a number of different styles starting from just over $20. The pair illustrated have all fingers open. Others have just the index finger and thumb open. I prefer the latter as it allows you to still do fiddly work while protecting the other fingers.

Garbage Bag

At the end of the day, you will be left with a pile of sodden clothes. Bring along a plastic garbage bag to take the gear home.

Towel

You will need a towel if you have a shower after sailing.

Tools

The most important tool is a shackle key. These are under $20 at any boating store. You will not only use the key to undo and do up shackles but also to prise ropes apart when you are tying stays or sails. The screwdriver type blade at the top is ideal for this

Many people carry a stainless steel pocket knife to use in an emergency. If you were ever to get tangled in ropes in a capsize, you could use a knife to cut the rope. If you do carry a knife, make sure it is both safe and accessible. One way is to carry it on a lanyard inside your jumper. There are more sophisticated leather cases that can be worn on a belt but they are expensive, and probably overkill.

Stainless steel shifters are also available and can be used on reluctant shackles. Usually, someone on the boat will have one of these shifters and it can be borrowed when needed.

Facilities

There is a café on the deck at the club where you can get a coffee and light snacks. Many people buy lunch after rigging the boat and before taking to the water. If rigging is delayed, sometimes there is no time for lunch.

Male and female change rooms are inside the boatshed. There is no lock on the door, so the security of personal items is not guaranteed when the boat is on the water. You cannot take phones or wallets with you on the boat. Although there have not been any reports of theft, that is not to say it could not happen. At a minimum, do not bring lots of money to the club and leave it unattended in a change room. The ladies change room will have locable lockers from the start of 2019 season.

Timing

Boats are usually pushed out of the boatshed for rigging around 10.30 to 11.00 on a Saturday morning. Rigging will take a few hours and may be delayed if the wind forecast is proving unpredictable. Which rig to use depends on the wind

Boats go into the water around 1.30 depending on the start line. If we are sailing a northeasterly course and the start is off Point Piper, it will take half an hour to sail there. Boats may go in earlier. It can take a considerable time to get the fleet down the ramp and away.

The race starts between 2.15 and 2.30 and has a limit of 2 hours. Typically the boats are back to the club around 4.30 to 5.00 and have to be de-rigged. That can take around 30 minutes. After that it is a shower, a quiet drink and autopsy of the days racing. A presentation takes place between 6.00 to 6.30.

The boats have to be put back in the boatshed but we have to wait until all the spars have been stowed away. They hang from the roof and cannot be stowed if boats are in the way. Boats have to be pushed into their allotted position in order so, although one boat may be ready to go in the shed early, it may have to wait until others have been stored in the shed.

Chapter 8 – Courses

Overview

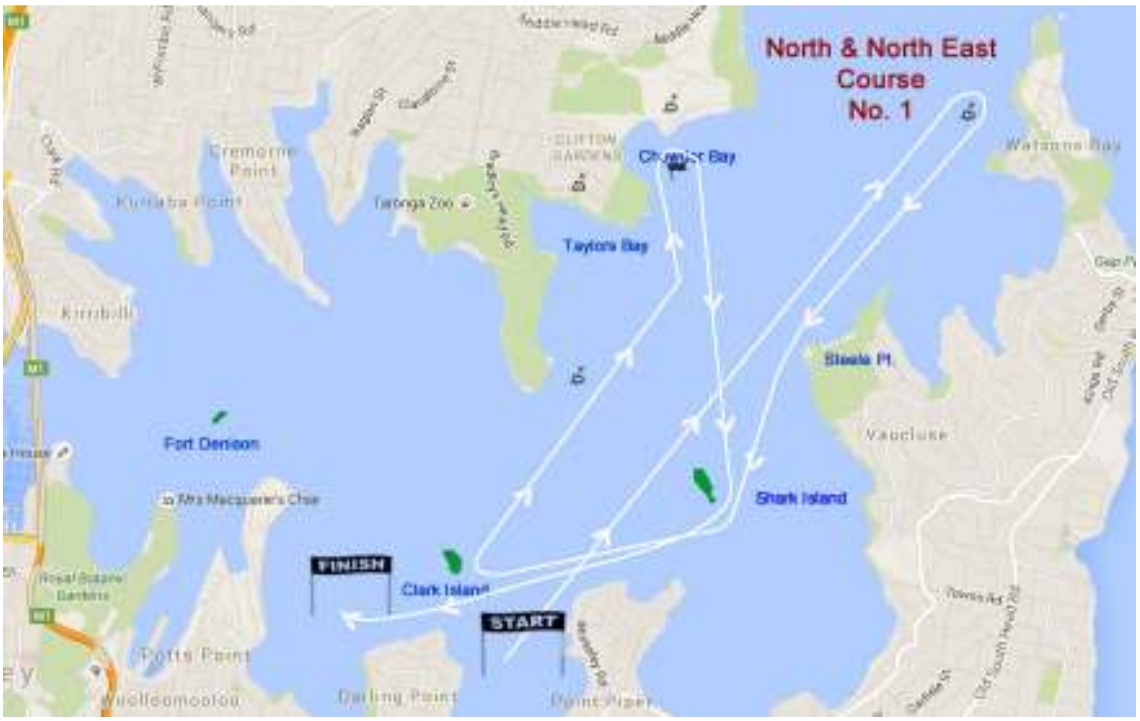
This chapter shows the courses sailed by Sydney Flying Squadron. There are five courses and they are set based on the expected wind direction. Once a year we sail a triangular course. The triangular course is set on the day based on the wind and could be anywhere on the harbour.

We also participate in some regattas that are not run by SFS. These include the Australia Day Regatta and the Balmain Regatta. Courses are set by the bodies organising the regatta.

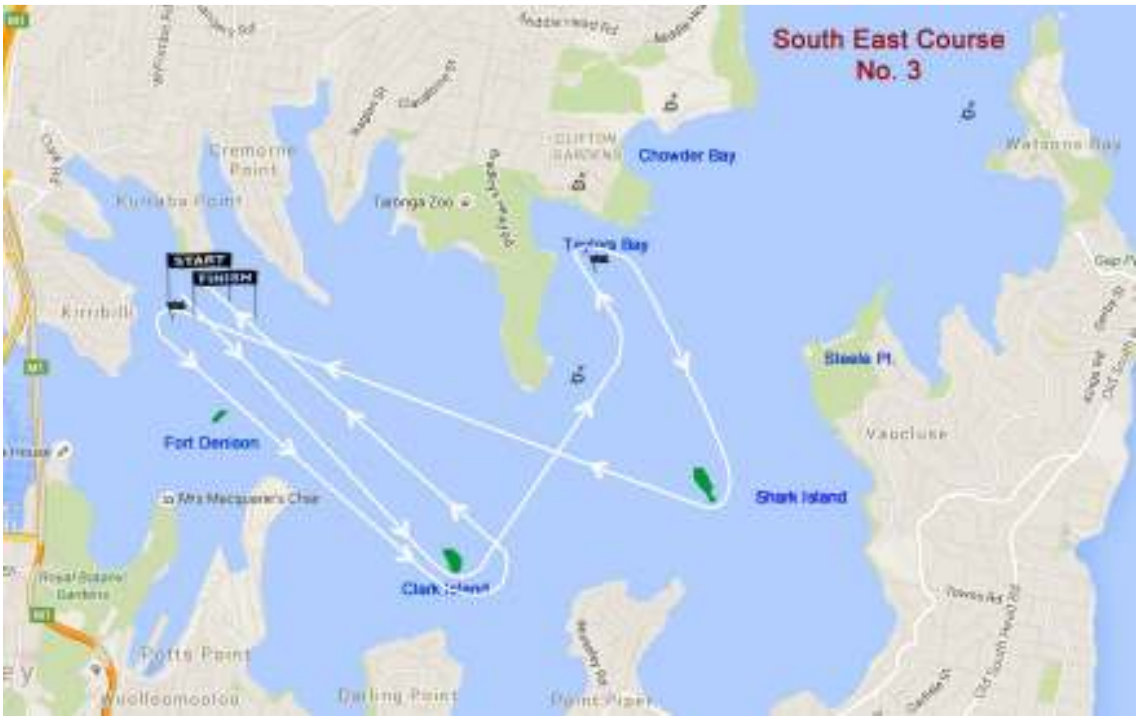
Start lines

The start line is between the starting boat and a flag. Typically the start line is at right angles to the wind so the boats start off on a tack. The finish is a downwind run under spinnaker. Of course, the wind can unexpectedly change during a race and plans have to change as well.

Regular Courses




East Course
No. 2
START
FINISH
Fort Denison
Shark Island
Clark Island
Chowder Bay
Taylors Bay
Steele Pt
Vaucluse
Cremorne Point
Kirribilli
Potts Point
Darling Point
Point Piper


South East Course
No. 3
START
FINISH
Fort Denison
Shark Island
Chowder Bay
Steele Pt
Vaucluse
Cremorne Point
Kirribilli
Potts Point
Darling Point
Point Piper


South Course
No. 4
FINISH
START
Chowder Bay
Taylors Bay
Fort Denison
Shark Island
Clark Island
Point Piper


South West,
West & North West
Course
No. 5
FINISH
START
Chowder Bay
Taylors Bay
Shark Island
Clark Island
Point Piper

Chapter 9 - Handicap and start

Overview

This chapter explains the handicap system and the various types of start we have during the year.

Handicap System

The handicap system works as follows:

Each boat has a handicap from 0 or scratch to 15 minutes. The fastest boat is the scratch boat and the slowest are off 15 minutes. In a handicap start, the slowest boat off 15 minutes starts at 2.15 and the fastest, or scratch boat, starts at 2.30.

Setting the Handicap

All boats have an existing handicap that rolls over year to year. Handicaps are adjusted after every race.

The winning boat gets a two-minute reduction in their handicap. For example, a 7-minute boat will reduce to 5 minutes if it wins.

If the winning boat is on scratch – it has a zero handicap, all other boats get a 2-minute increase. For example, if a scratch boat was to win, a boat on 7 minutes would go to 9 minutes.

The boat that comes second gets a one-minute reduction in their handicap. A 7-minute boat drops to 6 minutes if it comes second.

The maximum handicap is 15 minutes. Once a boat reaches 15 minutes, no further increase can occur.

In this example, a scratch boat wins and the second boat was on 7 minutes. The two minutes for the winning boat is applied. That means the 7-minute boat goes back to 9 minutes. That boat then loses a minute for coming second so become an 8-minute boat.

The Start

There are two types of start

Scratch Start is where the whole fleet starts at the same time.

Scratch Start

There are a number of scratch starts that occur during the year. Some are part of the club championship and some the Australian championship which is usually sailed over three races late January/early February. Handicaps are applied after all the boats have finished.

Signals are:

1424	6 mins to start	Hooter
1427	3 mins to start	Hooter. 3 red flags hoisted
1428	2 mins to start	1 flag dropped
1429	1 min to start	2nd flag dropped
1430	Start	Hooter and the 3rd flag dropped

Handicap Start, Boats start on their handicap. For example, a scratch boat (0-minute handicap) starts at 1430. A boat with a handicap of 10 minutes starts 10 minutes before 14.30 - 1420. Maximum handicap is 15 minutes.

Signals are:

1413	Hooter. 16-minute board raised
1414	16 minutes dropped. 15-minute board raised
1415	15 minutes dropped. 14-minute board raised
1416	14 minutes dropped. 13-minute board raised
1417	13 minutes dropped. 12-minute board raised
1418	12 minutes dropped. 11-minute board raised
1419	11 minutes dropped. 10-minute board raised
1420	10 minutes dropped. 9-minute board raised
1421	9 minutes dropped. 8-minute board raised
1422	8 minutes dropped. 7-minute board raised
1423	7 minutes dropped. 6-minute board raised
1424	6 minutes dropped. 5-minute board raised
1425	5 minutes dropped. 4-minute board raised
1426	4 minutes dropped. 3-minute board raised
1427	3 minutes dropped. 2-minute board raised
1428	2 minutes dropped. 1-minute board raised
1429	1 minute dropped. 0-minute board raised
1430	Scratch board dropped

Boats start when their handicap board drops. For example, a 10-minute boat starts on the drop of the 10-minute board at 1420.

Rules of Sailing

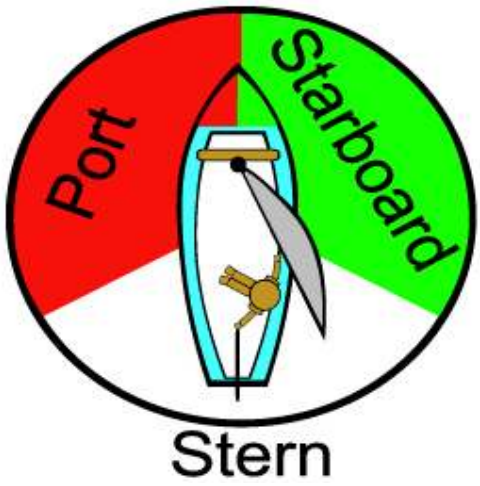
Overview

There are books about the rules of sailing, but these are the five basic rules. We also talk about some of the other regulations and penalties that apply.

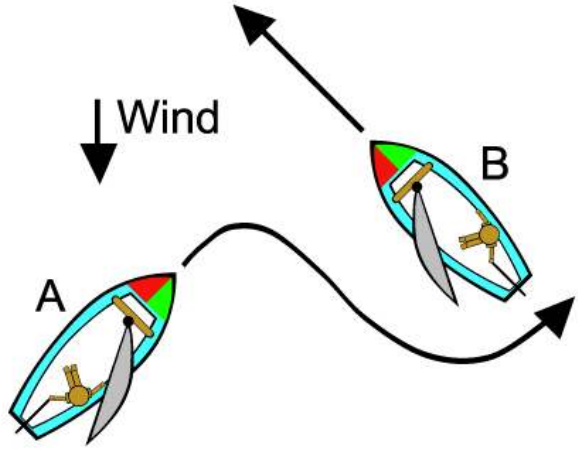
Basic rules of Sailing

Here are a couple of the important rules for sailing. The first thing to understand is the difference between port and starboard tack.

- Port tack is when the wind is coming from the left-hand side (port side) of the boat.
- Starboard tack is when the wind is coming from the right-hand side (starboard side) of the boat

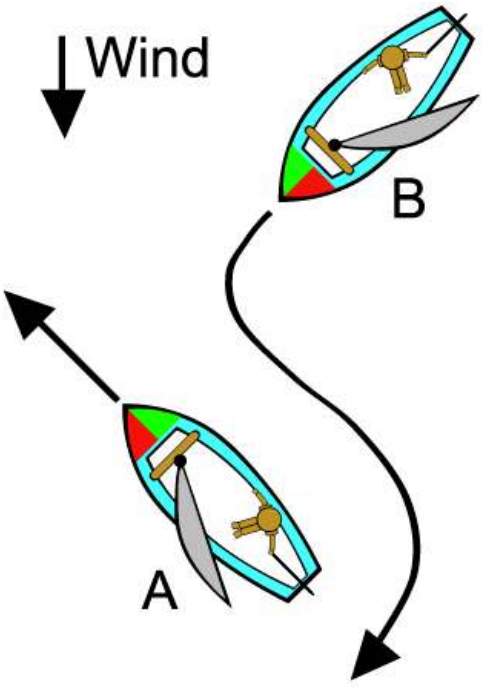


Rule 1. Port gives way to Starboard



When two sailboats are approaching each other and are on different tacks, the boat on the starboard tack has the right-of-way over the boat which is in the port tack. In the example, “A” is on a port tack so has to give way to “B”.

Rule 2. On the same tack, the windward boat gives way to the leeward boat.



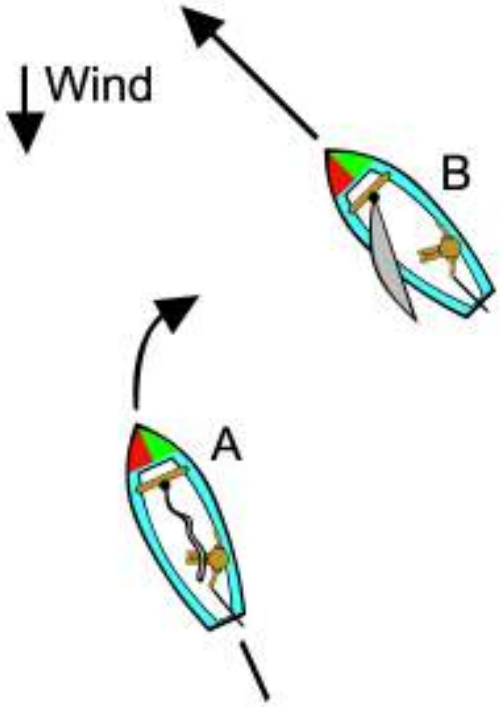
When two sailboats are approaching each other and are on the same tack, the leeward boat has the right-of-way over the windward boat. Another way to say this is that the boat closer to the wind source must keep clear. The boat further from the wind source has the right-of-way.

In the illustration below, boat "B" is the windward boat and must turn to avoid boat "A" which is leeward.

Rule 3. A boat tacking or gybing must keep clear of a boat staying on a tack

A sailboat that is staying on a tack has the right-of-way over a sailboat that is tacking or gybing. A simpler way to say this is "make sure you have room to complete a tack or a gybe without interfering with any other boats". Make sure that you have checked the boats in all directions to ensure you have room.

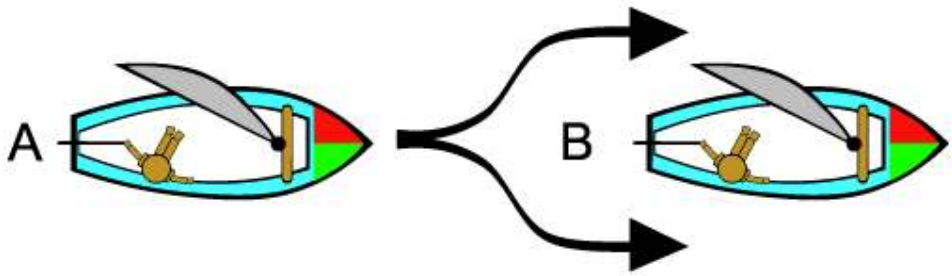
In the illustration below, boat "A" must ensure that it leaves plenty of room to avoid boat "B", who has the right-of-way since boat "B" is continuing on its tack. However, in the event that boat "A" was unable to tack due to the proximity of "B", remember that "A" is the leeward boat so therefore could tell boat "B" to give room to tack, but would lose this right of way as soon as they actually began to tack.



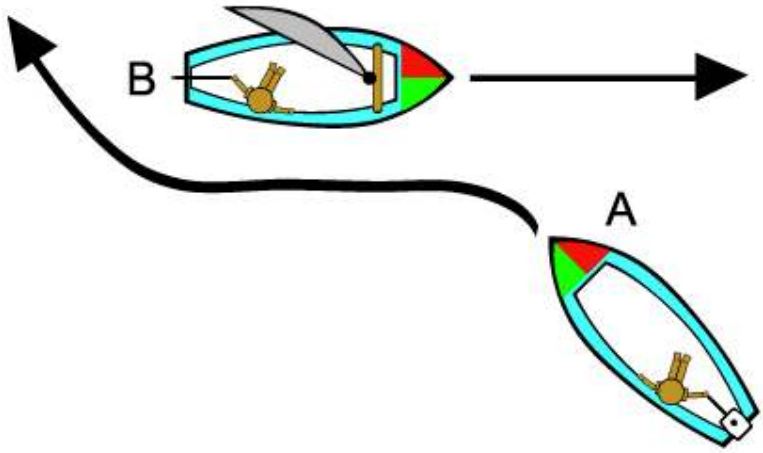
Rule 4 – Overtaking boat keep clear

Any sailboat that is overtaking a slower boat from behind must steer clear of the slower boat and give right-of-way. The slower boat should hold its course and allow the faster boat to pass.

In the illustration below, boat "A" is a faster boat and must steer around the slower boat "B", who should remain on the same course.



Rule 5. Sail has right over Power



Most of the time sailboats have the right-of-way over powerboats. Since most powerboats are more easily maneuverable than sailboats, they must steer clear. This is not always the case, however. Larger powerboats or ships are sometimes steering in the deep channel of the area, and cannot leave the channel. In this case, the sailboat does not have the right-of-way and must avoid impeding the progress of the larger vessel.

Many larger powerboats cannot simply stop quickly or easily turn to avoid a small sailboat, so it is in the sailor's best interest to steer well clear of these larger boats. Sailboats must also stay clear of ferries. In particular 18-footers must stay well clear of Manly ferries and any ferry displaying an orange diamond. Pilot boats escorting vessels should be avoided. Do not sail between the pilot boat and the ship.

In the illustration above, the powerboat "A" must turn to avoid the sailboat "B", who has the right-of-way.

Penalties

There are a couple of situations not mentioned. For example, a boat cannot touch a buoy when rounding a mark. If boats are sailing closely, sometimes they may touch or even collide. The boat at fault is required to do a 360.

A 360 is a complete turn where the boat turns through 360 degrees before proceeding. It should be undertaken as close as possible to where the error occurred. However it may require sailing a short distance before this can happen. For example, you would not do a 360 right on a buoy when other boats were trying to round the buoy. You would not attempt it when you were on a spinnaker run but would complete the manoeuvre after rounding the next buoy.

Capsize

Overview

It will happen. It happened to me on my first sail in an 18-footer. This section covers what happens in a capsize, and what to expect. If you have never capsized, you cannot be a member of the Careening Cove Swimming Club.

Tangalooma about to gate-crash a wedding at Bradleys Head

Splash

The stronger the wind, the more chance of a capsize. Not ideal conditions. The boat will probably roll until the gunwale is underwater. The boat will then fill and fall over on its side. You may just step into the water or may be dropped from the high side. Very likely you will go underwater. You need to get to the surface as quickly as possible.

On the way down

There are two main dangers. One is being knocked unconscious during the capsize. The other is being trapped under the boat either under a sail, or with rope tangled around your body. Both have the potential to be fatal.

Immediately after the Capsize

The first thing after a capsize is to count the number of people in the water. If you are short, it means someone is trapped or unconscious. Find out who is missing and where they were when the boat capsized. Dive down to find them. If they need assistance, it might require ropes to be untangled or cut. Do not hesitate to cut the sail if it will assist getting the person to the surface.

Next check for injuries that might restrict an individual. The most secure place is to put someone on top of the sail assuming the boat has only rotated 90 degrees. If the boat is completely upside down, get them onto the hull.

If the boat is on its side, get someone to stand on the fin. This will keep the boat on its side and not completely invert, and also stop the fin dropping out.

If anyone has a medical condition that might restrict them, or any other reason why they should not be in the water for any length of time, get them into a sail, or another secure position. I capsized once with two crew who needed immediate attention: a heart transplant crew member and an 85-year-old.

Standing on the fin

When the boat goes over, some gear will float away. Typically spinnaker poles, lifejackets, buckets and ropes. Once the crew are secure, gather the floating bits and pieces. Spinnakers do sink if loose so while all spinnaker bags should be tied in, check for any that are loose before they end up at the bottom of the harbour.

Everyone should stay with the boat as it will not drift quickly. A rescue boat is usually alongside within ten minutes.

What comes next

The next thing is for a rescue boat to arrive. At this stage, anyone who is at risk should be moved onto the rescue boat. This includes people with injuries, those with a medical condition that puts them at risk, and anyone who decided that today would be a good day to go without a wetsuit.

Any loose gear can also be transferred to the rescue boat. Spinnaker poles should be transferred as they tend to float off when you are being towed.

Towing

To tow the boat, a rope is tied to the mast and looped around the end of the bumpkin. This takes some juggling and diving to get in place. The experienced members of the crew will do this. It is preferable to use the tow rope from the towing vessel.

If there are a number of boats capsized, and there is a delay in getting a towboat, try to get a passing boat to stand by so that you can be seen by other boats and not run down. When you are in the water, there is not much visible and large pleasure cruisers can run you down. If you are near a buoy, it may be worthwhile to tie the boat to the buoy to stop drifting. We have had 6 boats in distress in a race. With three rescue boats, somebody had to wait.

Not easily visible to other vessels

The rescue boat will tow you to the nearest beach. This is a slow process. It usually means a couple of people need to stay with the boat to keep the fin in place, make sure the wind does not get under the sails and lift the boat, and fend off moored boats on the way into the beach.

On the Beach

When the boat is in the water where the crew can stand, the first action is to take off all the sails and drag them ashore. The fin has to come out and be taken ashore. The rudder also has to be removed. Typically the capsize occurred under spinnaker so there may be a tangle of ropes and gear. Much gear has been lost at this point as ropes sink to the bottom never to be seen again. De-rigging can take half an hour.

When all the gear is off, the boat is rolled upright. It is still full of water, and until the fin case is above water level, there is no point in bailing. The water will come back in through the case. If you are at a popular beach and there are lots of willing helpers, use the tow rope to pull the boat into shallow water. Others can push from behind or drag the boat from the sides. By using the wave action, the boat can be pushed up the shore. As a wave hits the transom, push and pull the boat towards the shore.

Once the fin case is above water level bailing can begin. Bail a bit, then push the boat forward a bit. Repeat until the boat is completely bailed out. Sometimes you can remove water by tilting the boat between waves and letting the water run over the side.

Once the boat is empty, load all the gear back on the boat. When the towboat is back to take you home, you might have to swim the rope out to the towboat. Once the boat is in enough water, the rudder is refitted and the tow begins. Having the plate down helps keep the boat straight on the tow line.

Back at the Club

When the boat is back at the club, the mast can be dropped and de-rigging completed. The boat should also be hosed out with fresh water to remove sand. The following race day the remaining sand can be vacuumed but if it is all hosed into the bottom of the boat, it is easier to remove.

Sails need to be spread out to dry including those spinnakers that were tied in bags. Spars (mast, gaff and boom) need to be drained. Some have a drain plug that needs to be removed. It is worthwhile to check all the ropes in case some have gone missing. They may be in a rescue boat or maybe on the bottom of Sydney Harbour. If you wait until the following week, you might find something missing during the race.

This is what happens when the tiller broke